

BID NO. 2156

PREQUAL BID # B2006878

ACTUAL BID # B2006879

2020

City of Philadelphia
Water Department

WORK NO. S-50162-G

BIDDING REQUIREMENTS, CONTRACT FORMS
and
SPECIAL SPECIFICATIONS

for

CONSTRUCTION OF GREEN STORMWATER INFRASTRUCTURE
in

**53RD STREET FROM CEDAR AVENUE TO BALTIMORE AVENUE
CEDAR AVENUE FROM 53RD STREET TO 51ST STREET
WALTON AVENUE FROM 53RD STREET TO 51ST STREET
CATHARINE STREET FROM 52ND STREET TO 50TH STREET
51ST STREET FROM CEDAR AVENUE TO BALTIMORE AVENUE**

Quotes are to be submitted until ten thirty a.m.
EST on WWW.PHLCONTRACTS.PHILA.GOV
An opening of Quotes received will be held in
Room 170A, MSB, 1401 JFK Blvd., 1st Fl., at ten
thirty a.m., prevailing time on,

TUESDAY, OCTOBER 29, 2019

NOTICE:

No quote will be accepted unless the pre-qualification questionnaire, with all questions fully answered, is submitted within the prequalification solicitation on WWW.PHLCONTRACTS.PHILA.GOV, on or before **Thursday, October 10, 2019.**

ATTENTION CONTRACTORS

THE FOLLOWING BIDS OPENING ON _____ ARE ELIGIBLE FOR A NEW BID OPENING PROCEDURE

BID NUMBERS _____

1. The bid with the highest estimate will open at 10:30 AM, with the successive bid(s) opening at approximately five (5) minute intervals.
2. After the first quote is opened and publicly read, an announcement will be made for the apparent low bidder to retrieve any remaining unopened bids (should they desire). The Contractor will be reminded by the Procurement representative that an authorization letter (on company letterhead, see sample attached) and appropriate photo identification is required to retrieve any unopened quote(s).
3. The Procurement representative will obtain the contractor authorization letter, check the identification of the contractor's representative, and have the contractor's representative sign the Bid Withdrawal form (see attached) supplied by the Procurement representative at the bid opening. The Procurement representative and Controller's representative will countersign the Quote Withdrawal form and attach it to the contractor's authorization letter. The Controller's representative will verify both the authorization letter and Bid Withdrawal form by stamping both documents. The authorization letter and Bid Withdrawal form will then be placed in the bid file. All remaining quotes will not be considered.
4. The Procurement representative will then state that the next sequential bid will open. The procedure will then be repeated for the second through final bid scheduled to open.

REMEMBER

If you intend to withdraw a quote, all remaining quotes must be withdrawn.

You must present an authorization letter on company letterhead.

You must have photo identification (company issued, driver's license, etc.) that indicates you are the person referenced in the company authorization form.



CITY OF PHILADELPHIA

PROCUREMENT DEPARTMENT
120 Municipal Services Building
Philadelphia, Pa 19102-1685
PHONE (215) 686-4750
FAX (215) 686-4728

Monique Nesmith-Joyner
Procurement Commissioner

PROCUREMENT DEPARTMENT UNOPENED QUOTE WITHDRAWAL AUTHORIZATION FORM

(To be utilized for Water Department / Water & Sewer Bids ONLY)

BID NUMBER(S): _____

OPENING DATE: _____

COMPANY NAME: _____

The undersigned, (a duly authorized company representative), has made the determination that the aforementioned contracting organization wishes to withdraw its remaining **unopened** quote(s) for the bid number(s) mentioned above. Submittal and execution of this form to the Procurement Department is binding and precludes the contracting organization from participating on **this/these** Public Works Bid(s).

SIGNED: _____
(Authorized Company Representative)

The undersigned Procurement Department and City Controller representatives hereby certify that the aforementioned company representative has provided adequate authorization and identification required for withdrawal of **this/these** unopened Public Works Quote(s).

SIGNED: _____
(Procurement Department Representative)

SIGNED: _____
(City Controller Representative)

COMPANY LETTERHEAD

Date: *(insert date, must either pre-date or be the actual date of the bid opening(s))*

Procurement Department
120 Municipal Services Building
Philadelphia, PA 19102-1685
Attn: Monique Nesmith-Joyner, Procurement Commissioner

Dear Ms. Nesmith-Joyner:

Please be advised that, *(insert name of bid opening attendee)*, a duly certified company representative, is authorized to represent *(insert the contracting organization name)* in matters concerning the public opening of Philadelphia Water Department *Water & Sewer Bids*. This authorization entitles the aforementioned company representative to retrieve **unopened** Public Works Bids upon the presentation of this letter and proper photo identification. It is understood by the corporate officers of *(insert the contracting organization name)* that the decision(s) made by the bearer of this letter bind *(insert the contracting organization name)* and preclude *(insert the contracting organization name)* from participating on the Public Works Bids retrieved by *(insert name of bid opening attendee)*.

Sincerely,

(SIGNATURE)

(Officer of the company)
(Title)

(STREET ADDRESS) . (CITY/STATE) . (ZIP/POSTAL CODE)
PHONE: (PHONE NUMBER) . FAX: (FAX NUMBER)

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ATTACHED

----- Appendix A - Maintenance of Traffic Requirements
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Bid 2156-50162					
Contractor:					
PWD ID	Description	UOM	Quantity	Unit Price	Total
G0376	Allowance for mechanical street sweeping of \$25,000.00	Allowance	1.0	\$ 25,000.00	\$ 25,000.00
G1001	Excavation & disposal for green infrastructure work including sheathing & shoring w/o classification	Cubic Yds	2,988.0		\$ -
G1016	Additional cost for testing and disposal of regulated or hazardous material of \$91,248.00	Allowance	1.0	\$ 91,248.00	\$ 91,248.00
G1120	Excavation without classification (for pipe)	Cubic Yds	232.0		\$ -
G1225	Furnishing, placing, and compacting select backfill material, as specified	Ton	632.0		\$ -
G1500	Double-ring infiltrometer tests	Each	9.0		\$ -
G3000	HDPE anti-seep collars	Each	2.0		\$ -
G3002	Geomembrane pipe penetration (boot seal)	Each	20.0		\$ -
G3008	8 inch solid HDPE pipe	Linear Ft	215.0		\$ -
G3009	8 inch perforated HDPE pipe	Linear Ft	828.0		\$ -
G3013	12 inch perforated HDPE pipe	Linear Ft	215.0		\$ -
G3112	12 inch solid PP pipe	Linear Ft	31.0		\$ -
G3113	12 inch perforated PP pipe	Linear Ft	108.0		\$ -
G3706	6 inch DI pipe	Linear Ft	96.0		\$ -
G3708	8 inch DI pipe	Linear Ft	137.0		\$ -
G3736	6" x 6" DI vent box curb trap	Each	4.0		\$ -
G4057	Furnish and place AASHTO #57 stone wrapped in geotextile	Cubic Yds	1,752.0		\$ -
G4059	Impermeable geomembrane liner	Sq Yds	2,797.0		\$ -
G4100	Furnish and place sand filter layer	Cubic Yds	167.0		\$ -
G7215	15 inch Inlet connections	Linear Ft	198.0		\$ -
G8055	Junction box	Each	3.0		\$ -
G8104	4 foot green City Inlets	Each	6.0		\$ -
G8106	4 Foot green highway grate inlet	Each	10.0		\$ -
G8112	Filling abandoned inlets	Each	2.0		\$ -
G8138	2 foot x 2 foot inlets	Each	3.0		\$ -
G8154	4 foot city inlet with orifice	Each	2.0		\$ -

G8156	4 foot highway grate inlet with orifice	Each	8.0	\$	-
G8159	Underdrain connection to existing inlet	Each	1.0	\$	-
G8172	Domed riser standpipe	Each	1.0	\$	-
G8215	Observation well	Each	16.0	\$	-
G8500	Energy dissipater	Each	10.0	\$	-
G9000	Concrete curb	Linear Ft	1,649.0	\$	-
G9003	4" concrete footway paving	Sq Yds	1,978.0	\$	-
G9009	Concrete driveway paving, 8 inch depth	Sq Yds	205.0	\$	-
G9050	Curb cuts including wheel stop and concrete apron	Each	10.0	\$	-
G9102	Tree removal (4"-10" caliper and 18'-25' height)	Each	12.0	\$	-
G9309	Stormwater soil	Cubic Yds	109.0	\$	-
G9310	Planting soil	Cubic Yds	254.0	\$	-
G9361	Landscape fencing - ornamental 18"	Linear Ft	278.0	\$	-
G9400	Plain cement concrete base course, 8 inch depth (including subgrading)	Sq Yds	758.0	\$	-
G9402	High early strength concrete base course, 10 inch depth (including subgrading)	Sq Yds	6.0	\$	-
G9447	Superpave 64-22 PG, type A, (1-1/2 binder course and 1-1/2 inch wearing course)	Sq Yds	850.0	\$	-
G9500	Maintenance and protection of traffic during work	Lump Sum	1.0	\$	-
G9514	Construction and as-built of 6" thick ADA ramps	Each	19.0	\$	-
G9550	New pavement markings and signage	Lump Sum	1.0	\$	-
G9551	Breakaway traffic delineator posts	Each	29.0	\$	-
G9705	As-built survey and drafting	Lump Sum	1.0	\$	-
G9790	Erosion and sediment control measures	Lump Sum	1.0	\$	-
AMOUNT BID FOR GSI AND RELATED WORKS.....				\$	116,248.00
AGGREGATE AMOUNT BID.....				\$	116,248.00

Public Works LBE Language

In accordance with Chapter 17-109 of The Philadelphia Code relating to Local Bidding Preferences and the Regulation promulgated thereto, this bid may be subject to a local bid preference¹. In order to determine eligibility to receive the preference, if applicable, Seller must be certified as a Local Business Entity (“LBE”) at the time of the bid opening.

Further, through submission of quote, Seller makes the following certification in connection with the grant of any local bidding preference which certification is incorporated into any contract resulting from this quote:

“Throughout the entirety of the contract, my company or my LBE certified subcontractor(s)² will perform the majority of any work on the subject contract within the geographic limits of the City of Philadelphia and my company or my LBE certified subcontractor(s) will maintain within the City a majority of the inventory or equipment that will be used on the contract or the amount of inventory that is customary for that industry.”

If the Procurement Commissioner determines that the awarded Seller fails to comply with its certification at any time during the term of its contract, the awarded Seller’s LBE certification will be revoked and the awarded Seller shall be deemed in substantial breach of such contract, shall be required to pay liquidated damages of 10% of the awarded contract amount, and may be debarred by the Procurement Commissioner in accordance with the Procurement Department Debarment Regulation for a period up to three years.

NOTE: If you wish to apply for Local Business Entity (LBE) certification, go to www.phila.gov/bids. Please provide sufficient time prior to bidding for processing of the LBE application. The Procurement Commissioner reserves the right to request any additional or clarifying information at any time prior to award of the contract, and during the performance of the contract.

¹ For quotes of One Million Dollars or less, the preference is ten percent (10%); for all other quotes the preference is five percent (5%).

² If the Seller relies upon LBE subcontractor(s) to perform the majority of the work and maintain the majority of the inventory or equipment within the City, the subcontractor(s)’ LBE Certification Number and most recent annual affidavit of continuing eligibility must be submitted to the Procurement Department.

BID BOND

FOR CITY OF PHILADELPHIA BID NUMBER: _____
(Please fill in)

KNOW ALL MEN BY THESE PRESENTS, that we _____

_____, as
Principal (hereinafter called the "Principal Obligor"), and

_____, Surety, are jointly and severally held firmly bound unto the City of Philadelphia, in the sum of

TEN PERCENT (10%) of the GROSS AMOUNT OF THE BID

lawful money of the United States of America, to be paid to the said City of Philadelphia, its successors and assigns, to which payment well and truly to be made, we do bind ourselves and each of us, our and each of our successors and assigns, jointly and severally, firmly by these presents.

Sealed with our seals and dated the _____ day of

A.D. 20 .

WHEREAS, the above bounded Principal obligor, submitted a bid pursuant to the above referenced Bid Number to perform certain work for the City of Philadelphia.

NOW, THE CONDITION OF THIS OBLIGATION IS SUCH, that if the City of Philadelphia shall accept the bid of the Principal Obligor and the Principal obligor shall enter into a contract with the City in accordance with the terms of such bid, and furnish such bond or bonds as are specified in the bid documents with good and sufficient surety, for the faithful performance of the contract and for the prompt payment of labor and material furnished in the prosecution thereof; or in the event of the failure or refusal of the Principal obligor to enter such contract and give such bond or bonds, if the Principal Obligor shall pay to the City the difference between the amount specified in said bid and such larger amount for which the City may legally contract with another party to perform the work covered by said bid, then this obligation shall be null and void, otherwise to remain in full force and effect.

And we do for ourselves and each of us, our and each of our. successors and assigns, hereby heirs, executors, administrators, authorize and empower the City solicitor of Philadelphia or any other attorney of any court of record in Pennsylvania or elsewhere by him or her deputized for the purpose, upon the filing of this instrument or a copy thereof, duly attested as correct by the City Solicitor of Philadelphia, to appear for us or either of us, our or either of our heirs, executors, administrators, successors or assigns, and confess a judgment against us or either of us, our or either of our heirs, executors, administrators, successors or assigns, in favor of the City of Philadelphia for the sum named in this bond, without defalcation, with costs of suit, release of errors, and with five percent added for collection fees; hereby waiving the benefit of all exemption laws and the holding of inquisition on any real estate that may be levied upon by virtue of such judgment, voluntarily condemning such real estate and authorizing the entry of such condemnation upon any writ of fieri facias and agreeing that said real estate may be sold under the same; and further waiving all errors, defects and imperfections whatsoever in the entering of the said judgment or any process thereon, and hereby agreeing that no writ of error or objection or motion or rule to open or strike off judgment or to stay execution or appeal, shall be made or taken thereto.

And for the doing of these acts, this instrument or a copy thereof attested as aforesaid shall be full warrant and authority.

CORPORATE SEAL:

PRINCIPAL OBLIGOR:

President or Vice President (SEAL)

Secretary or Treasurer (or either of their assistants) (SEAL)

SURETY:

Attorney-In-Fact (SEAL)

-
- Note:
- (1) All sellers must utilize this Bid Bond form when submitting a bid to the city.
 - (2) If Principal obligor is an individual or partnership, Bid Bond should be signed by owner or authorized general partner. Please identify on the Bid Bond the type of business (e.g. individual proprietorship or partnership) and title of party executing the Bid Bond.
 - (3) Bid Bond must be executed by a surety c authorized and licensed to act as surety by the Pennsylvania Insurance Commissioner pursuant to the Commonwealth of Pennsylvania.

And _____ hereby agrees to provide acceptable surety, both for the proper completion of the work and upon the penal bond, and to complete the whole of the work within **(450) CALENDAR** days from the date of the Notice to Proceed from the Chief Engineer to commence the work.

PERFORMANCE OF WORK BY CONTRACTOR

I, the undersigned Contracting Seller, am required to perform, on the site and with my own work force, work with a value of at least twenty percent (20%) of the original total contract price, exclusive of profit, overhead and the costs of procuring insurance and bonds. I, the undersigned Contracting Seller shall submit with my Quote a complete description of the work that will be performed (e.g., earthwork, paving, brickwork, roofing, etc.), the percentage of the total work this represents, and the estimated dollar value thereof.

I shall perform the following work:

Percentage of the total contract to be performed by Contracting Seller

Estimated cost of work to be performed by Contracting Seller:

City of Philadelphia – Business, Corporate and Slavery Era Insurance Disclosure

In accordance with Section 17-104 of The Philadelphia Code, the Bidder, after execution of this Contract, will complete an affidavit certifying and representing that the Bidder (including any parent company, subsidiary, exclusive distributor or company affiliated with Bidder) has searched any and all records of the Bidder or any predecessor business entity regarding records of investments or profits from slavery or slaveholder insurance policies during the slavery era. The names of any slaves or slaveholders described in those records must be disclosed in the affidavit.

The Bidder expressly understands and agrees that any false certification or representation in connection with this Paragraph and/or any failure to comply with the provisions of this Paragraph shall constitute a substantial breach of this Contract entitling the City to all rights and remedies provided in this Contract or otherwise available in law (including, but not limited to, Section 17-104 of The Philadelphia Code) or equity and the contract will be deemed voidable. In addition, it is understood that false certification or representation is subject to prosecution under Title 18 Pa.C.S.A. Section 4904.

**City of Philadelphia
Economic Opportunity Plan
[BID 2156]**

I. Introduction, Definitions and Goals

A. Chapter 17-1600 of The Philadelphia Code requires the development and implementation of “Economic Opportunity Plan(s)” for certain classes of contracts and covered projects as defined in Section 17-1601. The Economic Opportunity Plan (“Plan”) memorializes the successful Seller’s best and good faith efforts to provide meaningful and representative opportunities for Minority Business Enterprises (“MBEs”), Woman Business Enterprises (“WBEs”) and Disabled Business Enterprises (“DSBEs”), Disadvantaged Business Enterprises¹ (“DBEs”) (collectively, “M/W/DSBEs”) and an appropriately diverse building trades workforce in connection with the contract or covered project.

This Invitation and Bid and any resulting contract are subject to the Plan requirements as described in Section 17-1603 (2). Accordingly, by submission of its Quote, a responsive and responsible Seller makes a legally binding commitment to abide by the provisions of this Plan which include Seller’s commitment to exercise its best and good faith efforts throughout the contract term to provide meaningful and representative contracting opportunities for M/W/DSBEs and to employ an appropriately diverse workforce of tradespeople including minority and female persons in all phases of any contract awarded under this Bid.

Seller hereby verifies that all information submitted to the City including without limitation, the Plan and all forms and attachments thereto, are true and correct and is notified that the submission of false information by Seller is subject to the penalties of 18 Pa.C.S. Section 4904 relating to unsworn falsification to authorities. Seller also acknowledges that if it is awarded a contract resulting from this Invitation and Bid, it is a felony in the third degree under 18 Pa.C.S. Section 4107.2 (a)(4) if, in the course of this contract, it fraudulently obtains public moneys reserved for or allocated or available to minority business enterprises or women's business enterprises.

B. For the purposes of this Plan, MBE, WBE, DBE and DSBE shall refer to certified businesses so recognized by the City of Philadelphia through its Office of Economic Opportunity (“OEO”). Only the work or supply effort of firms that are certified as M/W/DSBEs by an OEO approved certifying agency² at the time of bid opening will be eligible to receive credit as a Best and Good Faith Effort. In order to be counted, certified firms must successfully complete and submit to the OEO an application to be included in the OEO Registry which is a list of registered M/W/DSBEs maintained by the OEO and available online at www.phila.gov/oEO/directory. If seller or seller’s subcontractor(s) is certified by an approved certifying agency, a copy of that certification should be furnished with the quote.

C. For this Plan, the term “Best and Good Faith Efforts,” the sufficiency of which shall be in the sole determination of the City, means: a Seller’s efforts, the scope, intensity and

¹Disadvantaged Business Enterprises (“DBEs”) are those socially or economically disadvantaged minority and woman owned businesses certified under 49 C.F.R. Part 26. If Bidder makes solicitation(s) and commitment(s) with a DBE, Seller shall indicate which category, MBE or WBE, is submitted for credit.

²A list of “OEO approved certifying agencies” can be found at www.phila.gov/oEO

appropriateness of which are designed and performed to foster meaningful and representative opportunities for participation by M/W/DSBEs and an appropriately diverse workforce and to achieve the objectives of Chapter 17-1600. Best and Good Faith Efforts are rebuttably presumed met, when a Seller makes commitments within the M/W/DSBE Participation Ranges established for this Bid and commits to employ a diverse workforce as enumerated herein.

D. Goals

1. M/W/DSBE Participation Ranges

As a benchmark for the Seller’s expression of its Best and Good Faith Efforts to provide meaningful and representative opportunities for M/W/DSBEs in the contract, the following participation ranges have been developed. These participation ranges represent, in the absence of discrimination in the solicitation and selection of M/W/DSBEs, the percentage of MBE, WBE and DSBE participation that is reasonably attainable on this contract through the exercise of Seller’s Best and Good Faith Efforts. In order to maximize opportunities for as many businesses as possible, a firm that is certified in two or more categories (e.g. MBE and WBE and DSBE or WBE and DSBE) will only be credited toward one participation range as either an MBE or WBE or DSBE. The firm will not be credited toward more than one category. These ranges are based upon an analysis of factors such as the size and scope of the contract and the availability of MBEs, WBEs and DSBEs to perform various elements of the contract:

BID	MBE	WBE	DSBE
2156	17% - 20% and	10% - 15%	

2. Workforce Diversity Goals

Seller agrees to exhaust its Best and Good Faith Efforts to employ minority persons, by race and ethnicity, and females in its workforce of apprentices and journeypersons at the following levels³:

- African American Journeypersons – 22% of all journey hours worked across all trades
- Asian Journeypersons – 3% of all journey hours worked across all trades
- Hispanic Journeypersons – 15% of all journey hours worked across all trades
- Female Journeypersons – 5% of all journey hours worked across all trades

- Minority Apprentices – 50% of all hours worked by all apprentices
- Female Apprentices – 5% of all hours worked by all apprentices

The successful Seller will be required to submit to the City, no later than seven (7) days before the starting date of work on any such contract, a Workforce Diversity Goal Plan which shall include specific availability and utilization strategies for meeting the Workforce Diversity goals. The City’s Labor Standards Unit shall have the responsibility of administering oversight of these Workforce Diversity Goals including evaluating the sufficiency of the Workforce Diversity Goal Plan, and monitoring the successful Seller’s Best and Good Faith Efforts towards realization of the goals throughout the duration of the contract.

³ These goals have been informed by the City of Philadelphia Fiscal Year 2015 Annual Disparity Study, Economic Opportunity Plan Employment Composition Analysis.

II. Seller Responsiveness and Responsibility

A. Seller shall identify all its M/W/DSBE commitments and evidence its agreement to employ minority persons and females at the levels stated herein on the form entitled, "M/W/DSBE Participation and Workforce Commitments." The Seller's identified commitment to use an M/W/DSBE on this form constitutes a representation by Seller, that the M/W/DSBE is capable of completing the subcontract with its own workforce, and that the Seller has made a legally binding commitment with the firm. The listing of the M/W/DSBE firm by Seller further represents that if Seller is awarded the contract, Seller will subcontract with the listed firm(s) for the work or supply effort described and the dollar/percentage amount(s) set forth on the form. In calculating the percentage of M/W/DSBE participation, Seller shall apply the standard mathematical rules in rounding off numbers. In the event of inconsistency between the dollar and percentage amounts listed on the form, the percentage will govern. Seller is to maintain the M/W/DSBE percentage commitments throughout the term of the contract which shall apply to the total amount of the contract and any additional increases. In the event the Successful Seller's contract is increased by change order and/or modification, or amendment, it shall be the responsibility of the Successful Seller to apply its Best and Good Faith Efforts to the amended amount in order to maintain any participation ranges committed to on the total dollar amount of the contract at the time of contract completion.

1. Commercially Acceptable Function

A Seller that enters into a subcontract with an M/W/DSBE shall be considered to have made a Best and Good Faith Effort in that regard only if its M/W/DSBE subcontractor performs a commercially acceptable function ("CAF"). An M/W/DSBE is considered to perform a CAF when it engages in meaningful work or supply effort that provides for a distinct element of the subcontract (as required by the work to be performed in accordance with Bid specifications), where the distinct element is worthy of the dollar amount of the subcontract and where the M/W/DSBE carries out its responsibilities by actually performing, managing and supervising the work involved; M/W/DSBE subcontractors must perform at least twenty percent (20%) of the cost of the subcontract (not including the cost of materials, equipment or supplies incident to the performance of the subcontract) with their own employees.

The City may evaluate the amount of work subcontracted, industry practices and any other relevant factors in determining whether the M/W/DSBE is performing a CAF and in determining the amount of credit the Seller receives towards the participation ranges. For example, a Seller using an M/W/DSBE non-stocking supplier (i.e., a firm that does not manufacture or warehouse the materials or equipment of the general character described by the Bid specifications and required under the contract) to furnish equipment or materials will only receive credit towards the participation ranges for the fees or commissions charged, not the entire value of the equipment or materials furnished.

B. Upon award, letters of intent, quotations, and any other accompanying documents regarding commitments with M/W/DSBEs, including the M/W/DSBE Participation and Workforce Commitments Form, become part of the contract. M/W/DSBE commitments are to be memorialized in a written subcontract agreement and are to be maintained throughout the term of the contract and shall apply to the total contract value (including approved change orders and amendments). Any change in commitment, including but not limited to termination of

the subcontract, reduction in the scope of committed work, substitutions for the listed firms, changes or reductions in the listed dollar/percentage amounts, must be pre-approved in writing by OEO. Throughout the term of the contract, Seller is required to continue its Best and Good Faith Efforts.

C. In the event Seller does not identify on the M/W/DSBE Participation and Workforce Commitments Form that it has made M/W/DSBE commitments within the participation ranges established for this Bid and/or does not agree to the employment goals described herein, Seller must complete and submit a *Documentation of Best and Good Faith Efforts Form* ("BGFE Form"), documenting its solicitations and any commitments with M/W/DSBEs, and detailing any efforts made to include M/W/DSBEs in the contract and to employ a diverse workforce. The submission of the BGFE Form is an element of bid responsiveness and failure to include this form may result in the rejection of the Quote. The BGFE Form must include at a minimum, certification and documentary evidence that the following actions were taken:

1. Solicitation directed to both qualified M/W/DSBEs registered with OEO and qualified M/W/DSBEs certified by agencies approved by OEO. Seller must provide a list of all certification directories used for soliciting participation for this Bid. Seller must determine with reasonable certainty if the M/W/DSBEs are interested by taking appropriate steps to follow up on initial solicitations; one time contact, without follow up, is not acceptable; and

2. Seller provided interested M/W/DSBEs with adequate information about the plans, specifications, and requirements of the contract in a timely manner to assist them in responding to a solicitation; and

3. Seller negotiated in good faith with interested M/W/DSBEs. A Seller using good business judgment would consider a number of factors in negotiating with subcontractors, including M/W/DSBE subcontractors, and would take a firm's price and capabilities as well as the objectives of the Plan into consideration; and

4. Documentation of the following:

i. Any commitments to use M/W/DSBEs in its quote for subcontracted services and materials supply even when Seller would otherwise prefer to self-perform/supply these items; and

ii. Correspondence between the Seller and any M/W/DSBE(s) related to this Bid; and

iii. Attendance logs and/or records of any scheduled pre-bid meeting;
and

5. Certification and evidence that the following actions were taken or documentation of the following, or an explanation why these actions were not taken or why documentation does not exist:

i. Any arms length business assistance provided to interested M/W/DSBEs which may include access/introduction to major manufacturer/suppliers, lines of credit and union halls; and

- ii. Solicitation through job fairs, newspapers, periodicals, advertisements and other organizations or media that are owned by M/W/DSBEs and/or focus on M/W/DSBEs; and
- iii. Telephone logs of communications related to this Bid; and
- iv. Notification of and access to bid documents at the Seller's office or other office locations for open and timely review; and
- v. Seller sought assistance from jobs training and employment referral agencies such as the Urban Affairs Coalition, PA CareerLink Philadelphia, Philadelphia OIC and Philadelphia Works to identify candidates for employment and to perform employment outreach; and
- vi. Seller published its policy of nondiscrimination in the hiring, retention and promotion of employees; and
- vii. Any agreement with an apprenticeship or training program that targets the employment of minority persons, disabled persons and women.

III. Evaluation of Responsiveness and Responsibility

A. Evaluation and Determination

1. The City, acting through its OEO, will evaluate the responsiveness of the Seller's Plan to these requirements. OEO reserves the right to request further documentation and/or clarifying information at any time prior to the award of the contract which may result in Seller's amendment of its M/W/DSBE Participation and Workforce Commitments Form or BGFE Form.

B. Administrative Reconsideration

1. If the OEO determines that the apparent low Seller has not made sufficient Best and Good Faith Efforts, the Seller will be notified and may file a written appeal with OEO within forty-eight (48) hours of the date of notification. The decision of OEO may be appealed in writing within forty-eight (48) hours of the date of OEO's decision to Chief Operating Officer of the Commerce Department or his designee whose decision shall be final. If it is determined that the apparent low Seller did not make sufficient Best and Good Faith Efforts, its Quote will be rejected.

2. Notwithstanding compliance with the requirements set forth herein, the City reserves the right to reject any or all quotes as deemed in the best interest of the City.

IV. Compliance and Monitoring of Best and Good Faith Efforts

A. A copy of the Successful Seller's Plan, as certified below by OEO, will be filed with the Chief Clerk of Council by the Procurement Department on behalf of the Successful Seller, within fifteen (15) days of the Procurement Department's issuance of the notice of award.

The Successful Seller agrees to cooperate with OEO and the Labor Standards Unit ("LSU") in their compliance monitoring efforts, and to submit, within the time limits prescribed, all documentation which may be requested by OEO and LSU relative to the awarded contract, including the items described below. The Successful Seller must provide as required and maintain the following contract documentation for a period of three (3) years following acceptance of final payment under the contract:

- Copies of signed contracts and purchase orders with M/W/DSBE subcontractors;
- Evidence of payments (cancelled checks, invoices, etc.) to subcontractors and suppliers to verify participation;
- Telephone logs and correspondence relating to M/W/DSBE commitments.
- Certified Payroll records for all on-site contractors.

B. The Successful Seller is required to use the City's electronic systems for payment verification, B2GNOW Contract Compliance Reporting System and certified payrolls, LCP Tracker.

C. Prompt Payment of M/W/DSBEs

1. The Successful Seller shall within five (5) business days after receipt of a payment from the City for work performed under the contract, deliver to its M/W/DSBE subcontractors their proportionate share of such payment for work performed (including the supply of materials). In connection with payment of its M/W/DSBE subcontractors, the Successful Seller agrees to fully comply with the City's payment reporting process which may include the use of electronic payment verification systems.
2. Each month of the contract term and at the conclusion of the contract, the Successful Seller shall provide to the OEO documentation reconciling actual dollar amounts paid to M/W/DSBE subcontractors to M/W/DSBE commitments presented in the Plan.

D. Oversight Committee

1. For this project, the City, in its sole discretion, may establish a Project Oversight Committee consisting of representatives from the Seller's company, representatives of the building trades, the construction manager, and the City which may include the Project site's District Councilperson, OEO, and appropriate community organizations ("Committee"). The Committee will meet regularly to provide advice for the purpose of facilitating compliance with the Plan.

2. If a Project Oversight Committee is established, the City will convene meetings of the Committee no later than one (1) month after issuance of the Notice To Proceed.

V. Remedies and Penalties for Non-Compliance

A. The Successful Seller agrees that its compliance with the requirements of the Plan is material to the contract. Any failure to comply with these requirements may constitute a substantial breach of the contract. It is further agreed and understood that in the event the City determines that the Successful Seller hereunder has failed to comply with these requirements the City may, in addition to remedies reserved under Section 17-1605 of The Philadelphia Code, any other rights and remedies the City may have under the contract, or any bond filed in connection therewith or at law or in equity, exercise one or more of the remedies below, which shall be deemed cumulative and concurrent:

- a. Withhold payment(s) or any part thereof until corrective action is taken.
- b. Terminate the contract, in whole or in part.
- c. Suspend/Debar the successful seller from bidding on and/or participating in any future City contracts for a period of up to three (3) years.
- d. Recover as liquidated damages, one percent of the total dollar amount of the contract for each one percent (or fraction thereof) of the commitment shortfall. (NOTE: The “total dollar amount of the contract” shall include approved change orders, amendments and for requirements contracts shall be based on actual quantities ordered by the City.)

The remedies enumerated above are for the sole benefit of the City and City’s failure to enforce any provision or the City’s indulgence of any non-compliance with any provision hereunder, shall not operate as a waiver of any of the City’s rights in connection with any contract resulting from this Invitation and Bid nor shall it give rise to actions by any third parties including identified M/W/DSBE subcontractors. No privity of contract exists between the City and the M/W/DSBE subcontractor identified in any contract resulting from this Invitation and Bid. The City does not intend to give or confer upon any such M/W/DSBE subcontractor(s) any legal rights or remedies in connection with subcontracted services under any law or Executive Order or by any reason of any contract resulting from the Invitation and Bid except such rights or remedies that the M/W/DSBE subcontractor may seek as a private cause of action under any legally binding contract to which it may be a party.

SIGNATURE OF SELLER AND TITLE⁴

DATE

⁴Seller is required to sign and date, but the City reserves the right to obtain the Successful Seller’s signature thereon at any time prior to Plan certification. The Successful Seller will receive from the City a certified copy of its Plan which will be filed by the Procurement Department with the Chief Clerk of City Council within fifteen (15) days of the

PRINT NAME OF SELLER

DATE

IOLA HARPER, Executive Director, Office of Economic Opportunity⁵

DATE

[See Forms on following pages; these Forms, as completed by Seller, must be submitted with the Quote as a matter of Responsiveness and Responsibility]

Procurement Department's issuance of a notice of award and published by OEO, in a downloadable format, on the OEO website.

⁵ Pursuant to Section 17-1603 (2) of The Philadelphia Code, the representative of the City of Philadelphia's Office of Economic Opportunity, the "certifying agency", certifies that the contents of this Plan are in compliance with Chapter 17-1600.

OEO Official Use Only

M/W/DSBE Commitments

Percent/Dollar Amount

_____ [MBE]

_____ [WBE]

_____ [DSBE]

M/W/DSBE Participation and Workforce Commitments
EOPs FOR BIDS ESTIMATED AT MORE THAN \$100,000

DEPARTMENT OF COMMERCE OFFICE OF ECONOMIC OPPORTUNITY (OEO)					
Minority (MBE), Woman (WBE), Disabled (DSBE) and Disadvantaged (M-DBE and W-DBE) Business Enterprises ¹					
BID NUMBER/PROJECT TITLE -		NAME OF BIDDER -		BID OPENING DATE -	
List below all MBE/WBE/DSBE/DBEs ² that you have a commitment to use for a Commercially Acceptable Function On this Bid - Photocopy this form as necessary					
<input type="checkbox"/> MBE	<input type="checkbox"/> WBE	<input type="checkbox"/> DSBE	<input type="checkbox"/> M-DBE ²	<input type="checkbox"/> W-DBE ²	
		<input type="checkbox"/> Subcontractor	<input type="checkbox"/> Supplier	Quote Received	
Company Name		Work or Supply Effort to be Performed	YES ³	NO	Amount Committed To
Address					Dollar Amount
Contact Person					\$
Telephone Number	Fax #				Percent of Total Proposal
E-mail Address					%
OEO Registry #	Certifying Agency				
<input type="checkbox"/> MBE	<input type="checkbox"/> WBE	<input type="checkbox"/> DSBE	<input type="checkbox"/> M-DBE ²	<input type="checkbox"/> W-DBE ²	
		<input type="checkbox"/> Subcontractor	<input type="checkbox"/> Supplier	Quote Received	Amount Committed To
Company Name		Work or Supply Effort to be Performed	YES ³	NO	Dollar Amount
Address					\$
Contact Person					Percent of Total Proposal
Telephone Number	Fax #				%
E-mail Address					
OEO Registry #	Certifying Agency				
<input type="checkbox"/> MBE	<input type="checkbox"/> WBE	<input type="checkbox"/> DSBE	<input type="checkbox"/> M-DBE ²	<input type="checkbox"/> W-DBE ²	
		<input type="checkbox"/> Subcontractor	<input type="checkbox"/> Supplier	Quote Received	Amount Committed To
Company Name		Work or Supply Effort to be Performed	YES ³	NO	Dollar Amount
Address					\$
Contact Person					Percent of Total Proposal
Telephone Number	Fax #				%
E-mail Address					
OEO Registry #	Certifying Agency				

¹MBE/WBE/DSBEs Listed above must be certified prior to bid submission date.

²If Bidder makes commitments with DBEs, Bidder shall indicate which class type M-DBE or W-DBE is submitted for credit.

³Bidder should attach quotation with this form, but the City reserves the right to request this information which shall be submitted by bidder within 48 hours of the City's Request.

**M/W/DSBE Participation and Workforce Commitments
EOPs FOR BIDS ESTIMATED AT MORE THAN \$100,000**

**DEPARTMENT OF COMMERCE
OFFICE OF ECONOMIC OPPORTUNITY (OEO)**

Bidder, by submission of this M/W/DSBE Participation and Workforce Commitments Form, certifies that it will use, for the duration of the project, its Best and Good Faith Efforts, as that term is defined in Chapter 17-1600 of The Philadelphia Code, to employ a diverse workforce for this project and achieve the following goals:

African American Journeypersons – 22% of all journey hours worked across all trades

Asian Journeypersons – 3% of all journey hours worked across all trades

Hispanic Journeypersons – 15% of all journey hours worked across all trades

Female Journeypersons – 5% of all journey hours worked across all trades

Minority Apprentices - 50% of all hours worked by all apprentices

Female Apprentices – 5% of all hours worked by all apprentices

List any and all collective bargaining agreements that Bidder is a signatory to:

DOCUMENTATION OF BEST AND GOOD FAITH EFFORTS FORM

DEPARTMENT OF COMMERCE OFFICE OF ECONOMIC OPPORTUNITY (OEO)						
Minority (MBE), Woman (WBE), Disabled (DSBE) and Disadvantaged (DBE) Business Enterprises ¹						
BID TITLE -		NAME OF BIDDER -		BID SUBMISSION DATE -		
<i>List below ALL MBE/WBE/DSBE/DBEs³ that were solicited regardless of whether a commitment resulted therefrom. - Photocopy this form as necessary.</i>						
<input type="checkbox"/> MBE <input type="checkbox"/> WBE <input type="checkbox"/> DSBE <input type="checkbox"/> M-DBE ³ <input type="checkbox"/> W-DBE ³	Please Specify Work to be Performed and/or Type of Supply Effort	Date Solicited		Commitment Made		
Company Name		By Phone	By Mail	By Advertisement	YES <input type="checkbox"/>	NO <input type="checkbox"/>
Address					(If Yes, give date solicited)	(If No, provide reasons on Page 2)
Contact Person		Date Solicited		Dollar Amount		
Telephone Number	Fax #	YES ²	NO	\$		
<input type="checkbox"/> Subcontractor <input type="checkbox"/> Supplier				Percent of Total Proposal		
OEO CERTIFICATION #				%		
<input type="checkbox"/> MBE <input type="checkbox"/> WBE <input type="checkbox"/> DSBE <input type="checkbox"/> M-DBE ³ <input type="checkbox"/> W-DBE ³	Please Specify Work to be Performed and/or Type of Supply Effort	Date Solicited		Commitment Made		
Company Name		By Phone	By Mail	By Advertisement	YES <input type="checkbox"/>	NO <input type="checkbox"/>
Address					(If Yes, give date solicited)	(If No, provide reasons on Page 2)
Contact Person		Date Solicited		Dollar Amount		
Telephone Number	Fax #	YES ²	NO	\$		
<input type="checkbox"/> Subcontractor <input type="checkbox"/> Supplier				Percent of Total Proposal		
OEO CERTIFICATION #				%		
<input type="checkbox"/> MBE <input type="checkbox"/> WBE <input type="checkbox"/> DSBE <input type="checkbox"/> M-DBE ³ <input type="checkbox"/> W-DBE ³	Please Specify Work to be Performed and/or Type of Supply Effort	Date Solicited		Commitment Made		
Company Name		By Phone	By Mail	By Advertisement	YES <input type="checkbox"/>	NO <input type="checkbox"/>
Address					(If Yes, give date solicited)	(If No, provide reasons on Page 2)
Contact Person		Date Solicited		Dollar Amount		
Telephone Number	Fax #	YES ²	NO	\$		
<input type="checkbox"/> Subcontractor <input type="checkbox"/> Supplier				Percent of Total Proposal		
OEO CERTIFICATION #				%		

¹MBE/WBE/DSBE/DBEs Listed above must be certified prior to bid submission date.

²Bidder should attach quotation with this form, but the City reserves the right to request this information which shall be submitted by bidder within 48 hours of the City's request.

³If Bidder makes solicitation(s) and commitments with a DBE, Bidder shall indicate which class type, M-DBE or W-DBE, is submitted for credit.

DOCUMENTATION OF BEST AND GOOD FAITH EFFORTS FORM

DEPARTMENT OF COMMERCE OFFICE OF ECONOMIC OPPORTUNITY (OEO)		
BID NUMBER & TITLE -	NAME OF BIDDER -	BID SUBMISSION DATE -
<i>Photocopy this form as necessary; you must respond for each solicited M/W/DSBE for which there is no commitment. Failure to do so may result in rejection of your bid.</i>		
Name of M/W/DSBE solicited for which no commitment was made:		
No commitment resulted from your solicitation of the above identified M/W/DSBE; please explain why:		
Did you attempt, in good faith, to negotiate price and scope (please be specific, attaching any dated price quotations and correspondence):		
Did you offer this M/W/DSBE any arms length business assistance (e.g., introduction to manufacturer, helped provide access to line of credit, access to union hall, etc.):		
Did you provide this M/W/DSBE with timely information about the scope of work required; be specific and attach dated documentary evidence of the foregoing:		

DOCUMENTATION OF BEST AND GOOD FAITH EFFORTS FORM

DEPARTMENT OF COMMERCE OFFICE OF ECONOMIC OPPORTUNITY (OEO)		
BID TITLE -	NAME OF BIDDER -	BID SUBMISSION DATE -
<i>Photocopy this form as necessary</i>		
<p><u>Do you operate or provide funding to any on-the-job training or apprenticeship programs? If so please describe and provide the number of trainees and breakout of minority, female and/or disabled participants:</u></p> 		
<p><u>Did you seek assistance from the Urban Affairs Coalition, Careerlink Philadelphia, Opportunity Industrial Center and the Philadelphia Workforce Development Corporation to perform employee outreach? Provide your list of minority, female, and/or disabled recruitment agencies or other community based organizaitons that your firm uses for employment placement:</u></p> 		
<p><u>Describe any specific outreach activities through job fairs, newspapers, periodicals, advertisements and other organizations or media that are owned by M/W/DSBEs and/or focus on M/W/DSBEs:</u></p> 		
<p><u>Identify the unions with which you have a collective bargaining agreement. Describe any hiring practices, or involvement in Commonwealth approved apprenticeship programs that specifically encourage the training and employment of minority, women and/or disabled persons:</u></p> 		
<p><u>List all directories of certified M/W/DSBEs (e.g., OEO Registry, Pennsylvania Unified Certification Program, Department of General Services) that you consulted in preparing your bid:</u></p> 		
<p><u>Attach your company's Equal Employment Opportunity Statement and any published nondiscrimination policies.</u></p> 		

Notice to Sellers

Workforce Diversity

Amendments to Chapter 17-1600 of The Philadelphia Code establish that the Labor Standards Unit in the Mayor’s Office of Labor is responsible for monitoring and enforcing contractor compliance with Workforce Diversity goals included in Economic Opportunity Plans (EOP) on City Contracts. This includes a requirement for a Workforce Diversity Plan. Projects that fall under the Workforce Diversity requirements are public works contracts and contracts for the purchase of services where the Procurement Department solicits sealed bids which will cost the City more than \$100,000 must include an EOP.

Compliance with the Workforce Diversity requirements will be evaluated in stages throughout the contract term. The first step is that the successful seller will be required to submit a Workforce Diversity Form upon notification of award. The Workforce Diversity Form is included with this Notice of Award. It is due back to the Procurement Department within 10 days upon receipt of notice of award. A Notice to Proceed will not be issued until the form is submitted to the City and received satisfactory review by the Labor Standards unit. Failure to return the completed Form in a timely manner may be cause for cancellation of award.

On the form Bidders must indicate what steps they will take to make their “best and good faith efforts” to meet the workforce diversity goals. This form constitutes evidence that the successful seller intends to use Best and Good Faith Efforts to meet the stated goals and has a plan to accomplish that throughout the duration of the project.

After the Notice to Proceed has been issued the contractor is required to notify the Labor Standards Unit of any changes in the information contained in the Workforce Diversity form within five (5) days of any such changes occurring.

The Labor Standards unit will review certified payrolls to ensure that workforce diversity goals are being met. If the goals are not being met, the Unit will meet with the contractor to ascertain why. Additionally, when conducting on-site interviews related to prevailing wage enforcement, the Labor Standards Unit may also include questions related to workforce diversity.

The specific Workforce Diversity Goals for FY 19 are as follows:

Apprentices	Journeyman
All minorities: 50%	African American: 22%
Female: 5%	Asian: 3%
	Hispanic: 15%
	Female: 5%



WORKFORCE DIVERSITY PLAN

BID#: _____ **CONTRACT#:** _____ **DATE SUBMITTED:** _____
PROJECT NAME: _____
COMPANY NAME: _____ **CONTACT PERSON:** _____
TELEPHONE#: _____ **EMAIL:** _____

As identified in the City of Philadelphia’s Annual Disparity Assessment of Workforce Diversity, the current employment hourly goals for Journeymen is 40% minority (22% African American, 15% Hispanic, and 3% Asian) and 5% female. Apprentice is 50% minority and 5% female. You must utilize Best and Good Faith Efforts to remain in compliance with the Workforce Diversity Goals outlined above. Overall employment goals are to be achieved by the completion of the contract.

PLEASE NOTE: Best and Good Faith Efforts are defined as efforts, the scope, intensity and appropriateness of which are designed and performed to foster meaningful and representative opportunities for an appropriately diverse workforce. Pro forma efforts are not Best and Good Faith Efforts. You are expected to make appropriate outreach to labor sources (e.g. union hiring hall, job training organizations, etc.) to satisfy the goals. Failure to demonstrate Best and Good Faith Efforts may result in the Labor Standards Unit (“LSU”) imposing remedies and penalties for non-compliance.

Please provide an estimate of your quarterly employment utilization for each category.

Quarter	Total Workers	Journeymen				Apprentice	
		African American %	Hispanic %	Asian %	Female %	Minority%	Female%
Quarter 1*							
Quarter 2							
Quarter 3							
Quarter 4							

**17-1605(4)(c) of The Philadelphia Code requires the Labor Standards Unit (“LSU”) to determine, after completion of this quarter, whether you are on track to meet the Workforce Diversity Goals. If you are not achieving your committed percentages at this stage, LSU will take appropriate enforcement action including issuance of fines of \$300. for each violation, stop payment on your contract and any other available remedies.*



City of
Philadelphia
Labor Standards Unit

Please answer the following questions concerning your efforts to achieve the diversity goals on this project. If you need more space, please attach an additional sheet of paper.

1. What are the estimated Total Project Hours for this project? _____

2. If your estimated quarterly employment utilization for each category of minority and female workers falls below the identified Workforce Diversity goals established by the Annual Disparity Assessment (referenced above), please provide a brief explanation for each category in which you anticipate a shortfall.

3. How do you plan to achieve the diversity goals on this project (Journeymen and Apprentices)?

4. Please identify the Labor Organization(s), if any, with whom you have a collective bargaining agreement.

5. Did you contact the Labor Organization(s) applicable to the scope of the work of this contract in writing (dated within 30 days of submission of this form) to request a diverse workforce?

Yes No, please provide a brief explanation

Please provide a copy of your request as well as a copy of any responses received.

Attached? Yes No

6. What resources will you utilize to recruit minority and female workers for this project?

Urban Affairs Coalition CareerLink Philadelphia Opportunity Industrial Center
 Philadelphia works Finishing Trades Institute JEVS Orleans Technical Institute
 Philadelphia Housing Authority Other: _____



City of
Philadelphia
Labor Standards Unit

7. If you have not identified any minority or female apprentices for this project, please provide your plan to meet the established Workforce Diversity Goal(s):

8. Please provide a copy of your company's Equal Employment Opportunity statement and any published non-discrimination policies.

Attached? Yes No

Contractor hereby verifies that all information submitted to the City including without limitation, this Workforce Diversity Plan and all attachments thereto, is true and correct and Contractor is notified that the submission of false information is subject to the penalties of 18 Pa.C.S. Section 4904 relating to unsworn falsification to authorities.

Prepared by: _____ Title: _____

Signature: _____ Date: _____

DISCLOSURE OF MINORITIES AND WOMEN AS BOARD MEMBERS AND EXECUTIVE STAFF

Instructions: As required by Section 17-104 of The Philadelphia Code entitled “Prerequisites to the Execution of City Contracts,” Section 17-104(3) requires seller to complete and submit this form with its quote. If seller believes that these requirements do not apply (e.g., seller is a single-member Limited Liability Company), please check the first field below and attach an explanation. This form should be submitted at the time of electronic submission of the quote, but the City reserves the right to allow seller to submit this information at any time prior to award of a contract.

Seller’s Name: _____ **Bid Number:** _____

Please check here if the requirements do not apply to seller and attach explanation:

Disclosure of Minorities¹ and Women as Board Members and Executive Staff

Pursuant to Section 17-104(3) (a) (i) of The Philadelphia Code, please provide the following information:

	(M)	(W)
1. Current percentage of minority and female executive officers in seller’s company:	<input type="text"/>	<input type="text"/>
2. Current percentage of minorities and women on the executive board of the seller’s company:	<input type="text"/>	<input type="text"/>
3. Current percentage of minorities and women on the full board of the seller’s company:	<input type="text"/>	<input type="text"/>

Aspirational Goals for Minorities and Women as Board Members and Executive Staff

Pursuant to Section 17-104(3) (a) (ii) of The Philadelphia Code, please provide the following information:

1. Percentage goal for minority and female executive officers in seller’s company:	<input type="text"/>	<input type="text"/>
2. Percentage goal for minorities and women on the executive board of the seller’s company:	<input type="text"/>	<input type="text"/>
3. Percentage goal of minorities and women on the full board of the seller’s company:	<input type="text"/>	<input type="text"/>

Identify Below Seller’s Intended Efforts to Achieve the Aforementioned Aspirational Goals:

¹ Section 17-1608 of the Philadelphia Code defines minority to include African Americans, Hispanic Americans, Asian Americans and Native Americans
Revised 7.1.14

ACT 127 VERIFICATION FORM ADDENDUM

The Contractor is hereby notified of the following state law requirement applicable to all public works contracts entered into by the City of Philadelphia:

The Commonwealth of Pennsylvania has enacted Act 127 of 2012, known as the Public Works Employment Verification Act ("the Act") which requires all public work contractors and subcontractors to utilize the Federal Government's E-Verify system to ensure that all employees performing work on public work projects are authorized to work in the United States. The effective date of the Act is January 1, 2013.

The Department defines a "Public Work" to be construction, reconstruction, demolition, alteration and/or repair work other than maintenance work, done under contract and paid for in whole or in part out of the funds of a public body where the estimated cost of the total project is in excess of twenty-five thousand dollars (\$25,000) but shall not include work performed under a rehabilitation or manpower training program. The City of Philadelphia (the "City") is a "public body" pursuant to the Act.

In accordance with section 4(A) of the Act, as a precondition of being awarded a contract for a Public Work, or with respect to a contract that was awarded prior to the effective date of the Act but was not executed prior to January 1, 2013, prior to the execution of the contract, the Contractor is required to provide the Procurement Department of the City with the Verification Form required by the Act. In addition, the Act requires that, prior to any work being performed by a subcontractor on a Public Works contract, the subcontractor must provide the Contractor with the required Verification Form, which must also be submitted to the Procurement Department by the Contractor prior to any work being performed, and that any contract between the Contractor and its subcontractor(s) shall contain information about the requirements of the Act.

The Verification Form may be downloaded by copying and pasting the following web address into your web browser:

http://www.portal.state.pa.us/portal/server.pt/community/construction_and_public_works/1235/public_works_employment_verification/1357211

and clicking on the [Public Works Employment Verification Form](#) link at the bottom of the page. In addition, a copy of the verification form is attached to this Addendum. However, the Verification Form and related federal and state requirements may change, and Contractor and subcontractors are responsible to utilize any revised form if applicable.

The Contractor may access the Federal Government's E-Verify system by copying and pasting the following web address into your web browser:

<http://www.uscis.gov/portal/site/uscis/menuitem.eb1d4c2a3e5b9ac89243c6a7543f6d1a/?vgnnextoid=75bce2e261405110VgnVCM1000004718190aRCRD&vgnnextchannel=75bce2e261405110VgnVCM1000004718190aRCRD&gclid=CLWey7SYvrQCFU-d4AodFGYA-A>

To facilitate access to the Verification Form and the E-Verify System, this Addendum shall be posted on the Procurement Department's web site. However, as stated above, Contractor and subcontractors are responsible for compliance with verification requirements as they may change from time to time, whether or not posted on Procurement's web site.

NOTICE TO SELLERS

Contractors and their subcontractors are required to submit weekly certified payroll records to the Labor Standards Unit through an electronic system, LCP Tracker, or as directed by the Labor Standards Unit. Failure to pay Prevailing Wage, as applicable, or to submit certified payroll records is a substantial breach of Contract and may be subject to fines and penalties as prescribed by Section 17-107 of The Philadelphia Code which may include withholding from any sums due to the Contractor under the Contract so much as may be necessary to pay the employees the difference between the wages required to be paid hereunder and the wages actually paid to such employees, and the City may make such payments directly to the appropriate employees.

NOTICE TO SELLERS

Pursuant to the Order, available on-line at

<http://www.phila.gov/ExecutiveOrders/Executive%20Orders/EO%207-14.pdf>, Contractor agrees that Contractor and all of its Subcontractors, at any tier, shall report to the OIG knowledge of violations subject to investigation by the OIG pursuant to the Order; shall cooperate fully with representatives of the OIG by providing complete and accurate information as well as necessary assistance in matters under investigation; shall keep conversations and contact with the OIG confidential, except and to the extent the OIG may authorize disclosure; and shall instruct their employees that under no circumstances shall any person take or threaten any action in an attempt to prevent anyone from providing information to a City official regarding conduct that may be investigated by the OIG, or from cooperating with the OIG, or retaliate against anyone for doing so or against anyone who is about to do so.

All entities and individuals affected by Mayor's Executive Order 7-14 are advised to thoroughly read the Order, especially Section 3, **Type of Matters Investigated by the OIG**, Section 4, **Entities Subject to Investigation by the OIG**, Section 8, **Duties of Executive Agencies and Other Entities**, Section 9, **Responsibilities of Officers and Employees of Executive Agencies and Other Entities**, and Section 10, **Responsibilities of City Contractors, Recipients of City Assistance and Recipients of City Funding**.



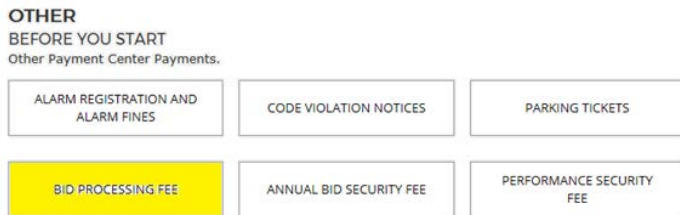
Your gateway to better business

BID PROCESSING FEES

Quotes shall be accompanied by a non-refundable processing fee and must be received by the City of Philadelphia no later than the time and date of the bid closing. Payments must be in the exact amount that is specified in paragraph 11 of the Standard Contract Requirements or the Seller Quote Checklist within the bid solicitation.

Electronic Payment Submission

Electronic payment submission of Bid Processing fees can be made at:
<https://secure.phila.gov/PaymentCenter/AccountLookup/>



Bid number must be referenced on the payment

****Please note: Electronic payments made by credit card will have an additional service charge.

Alternate Payment Submission

Mail/hand-deliver the processing fees to the Procurement Department before the closing of the bid to: MSB, 1401 JFK Blvd, Phila PA 19102 - Suite 170, Attn: Public Works Supervisor
Check payable to City of Philadelphia, RE: Bid Number



Procurement

CITY OF PHILADELPHIA
LIFE • LIBERTY • AND YOU™

1401 John F. Kennedy Blvd #120
Philadelphia, PA 19102-1685

www.PHLContracts.phila.gov

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City of Philadelphia
Specification Language Requiring Diesel Engine Emissions Controls in Public Works Projects

DIESEL ENGINE EMISSIONS CONTROLS FOR PUBLIC WORKS PROJECTS

In accordance with Executive Order 1-07 and in furtherance of *Greenworks Philadelphia*, City establishes a requirement to include clean diesel specifications in public works contracts. Contractor, by submission of its bid, agrees to meet the requirements of this Section. This Section applies to bids advertised between July 1, 2013 and June 30, 2014 in which the total estimated dollar amount is \$1,000,000 or greater, and to all bids, awarded on or after July 1, 2014, regardless of estimated dollar amount. Notwithstanding the foregoing, engine noncompliance shall not constitute a material breach of contract nor shall monetary penalties be assessed as provided in subsection E.2 until after January 1, 2014. If noncompliant vehicles subject to this Section are observed prior to January 1, 2014, the City may issue written warnings to the contractor.

- A. Covered Vehicles: Vehicles covered under this Section include any nonroad diesel engine that has a horsepower greater than 50.

- B. Requirements
 - 1. All bids for public works contracts and all applicable contracts entered into as a result of such bids covered under this Section shall include specifications that all contractors, and all of the contractor's subcontractors, if any, in the performance of such contracts use ultra-low sulfur diesel fuel, and a listed clean diesel technology for reducing the emission of pollutants for diesel-powered non-road engines. Clean diesel technologies are further defined in part D of this Section. Retrofit emission control devices shall consist of diesel oxidation catalysts ("DOC") or such other technologies that provide a minimum emissions reduction of twenty percent (20%) of particulate matter with a mean aerodynamic width of less than ten (10) microns (PM10) in the application for which it is verified. Any retrofit emission control device installed to comply with this Section must either be listed by EPA or the California Air Resources Board (CARB) as a verified diesel retrofit technology that reduces particulate matter emissions by 20% or more, or must be certified by the diesel retrofit device manufacturer as a product that reduces particulate matter emissions by 20% or more for the covered vehicle.

 - 2. No later than two business days before any covered vehicle is brought onto the City's contract site, the successful bidder (hereinafter, "contractor") shall submit to the City's project manager information about the vehicle including confirmation that the appropriate emissions control technology has been installed on the vehicle or that the vehicle is Tier 4 or Tier 4 Interim. Except as otherwise provided, any vehicle covered under this Section shall be in compliance with this Section prior to being brought onto the contract site.
 - a. Contractor shall submit the following information for each covered vehicle (using *Fleet Roster for Public Works Construction Projects* form):
 - i. vehicle identification number (VIN), if applicable, or vehicle serial number, and the vehicle type, make, year and owner;

- ii. the horsepower rating of each engine;
 - iii. the emission control device manufacturer name, model, and verifying/certifying organization; and
 - iv. the type of fuel to be used and approximate expected quantity.
 - b. In the event contractor has purchased appropriate emissions control technology, but the technology is not delivered before use of the covered vehicle is required on the contract site, the contractor shall, in addition to submission of a.i., through iv. above, submit proof of purchase of the emissions control technology. Installation of the appropriate emissions control technology must be completed within five (5) days of delivery of the technology. In no event may Contractor use the covered vehicle without the use of the emission control technology, for which the technology has already been purchased and identified, on the contract site for longer than sixty (60) days.
 - c. If a covered vehicle owned by a contractor breaks down on the contract site, contractor may use, if a compliant replacement is unavailable, a temporary vehicle that is not compliant while the covered vehicle is being repaired; the temporary vehicle cannot remain on site for more than 30 cumulative days after the date of the initial breakdown of the covered vehicle. Contractor shall notify the project manager in writing prior to bringing a non-compliant vehicle on the contract site.
3. The contractor shall establish truck-staging zones for vehicles that are waiting to load or unload material at the contract site. Such zones shall be located where the emissions from the trucks will have minimum impact to the public.
4. The contractor shall not permit idling of delivery and/or dump trucks, or equipment on the contract site during periods of non-active use, and it should be limited to three (3) minutes in accordance with the Philadelphia Traffic Code Anti-Idling Ordinance Section 12-1127(1) of The Philadelphia Code (http://www.phila.gov/philacode/html/data/title12/chapter_12_1100_miscellaneous_/12_1127_excessive_idling_of_an.html) and the Pennsylvania Diesel-Powered Motor Vehicle Idling Act, Title 35 Purdon's Pennsylvania Statutes, Section 4601 *et seq.*

C. Exemptions

1. Subject to written approval by the City of Philadelphia Air Management Services (AMS), covered vehicles will be exempted from low diesel emission controls if one or more of the following conditions exist:
- a. it is physically impossible to install appropriate emissions control technology on the vehicle;
 - b. installation of the appropriate emissions control technology would render vehicle operation unsafe due to obstructed sightline;

- c. installation of the appropriate emissions control technology would void any applicable expressed manufacturer's warranty on the vehicle; or
 - d. the covered vehicle will not be at the work site for more than a total of three (3) business days.
2. In support of a request for exemption, contractors shall provide to AMS one of the following:
- a. a signed letter from one or more diesel technology vendors, written on the vendor's formal stationary, certifying that no emissions controls that would reduce Particulate Matter (PM) emissions by at least 20% and allow for safe operation could be physically installed, or the cost of installing such control technology would cost 150% more than the purchase price of the clean diesel technology device;
 - b. a signed letter from the vehicle manufacturer certifying that the installation of any device to reduce PM emissions by 20% or more would void the applicable expressed manufacturer's warranty, along with a copy of the warranty for each vehicle for which an exemption is sought; or
 - c. a signed letter on the contractor's company letterhead stating that the covered vehicle will remain on site for no longer than three (3) days total during the duration of the project.
3. In no event will the City grant an exemption from the required use of ultra-low sulfur diesel fuel or the idling laws.

D. Definitions

- 1. Contract site – all areas covered under the contract, and areas accessed for purposes of performing activity under the contract;
- 2. Non-active use – a period of time greater than five (5) minutes when a piece of diesel equipment is not being operated in performance of its work;
- 3. Non-road – diesel vehicles listed by EPA for use in non-road applications. These include construction, agricultural, and other industrial vehicles that are not legally operable on highways;
- 4. On-road – vehicles listed by EPA for on-highway applications;
- 5. Truck-staging zone – a designated area on the contract site where delivery or pickup activities will be located;
- 6. Ultra low sulfur diesel fuel – Diesel fuel with a sulfur content of 15 parts per million or less;

7. Vehicle – a piece of diesel-powered equipment being used for contract activities; and
8. Listed clean diesel technology – includes:
 - a. *Diesel oxidation catalyst – a device similar to a catalytic converter that reduces diesel emissions and does not require regeneration;*
 - b. *Tier 4 or Tier 4 Interim – any vehicle certified by EPA as meeting Tier 4 emissions standards or Tier 4 Interim emissions standards;*
 - c. *Particulate filter – a device that traps soot produced by the engine and vaporizes this soot through the application of heat, requiring only periodic maintenance;*
 - d. *Closed crankcase ventilation – a device that reduces fugitive emissions from the vehicle’s crankcase by routing them through the tailpipe;*
 - e. *Selective catalytic reduction – A device that reduces emissions of oxides of nitrogen by treating exhaust with urea;*
 - f. *Emissions upgrade groups – groups of replacement components that, when installed during vehicle overhaul, reduce engine emissions;*
 - g. *Engine repower – the replacement of a vehicle’s engine with a newer model to reduce tailpipe emissions; and*
 - h. *Any other technology verified by EPA or CARB to reduce diesel particulate emissions by 20% or more.*

E. Monitoring and Penalties for Non-Compliance

1. City reserves the right to request purchase and/or installation documents to verify contractor’s, and any subcontractor’s installation of the retrofit in the vehicle. These purchase documents shall be provided to the City’s project manager by the contractor within five (5) days of the City’s request.
2. Any false certification or representation in connection with these requirements for Diesel Engine Emissions Controls and/or any failure to comply with these requirements shall constitute a material breach of contract entitling the City to all rights and remedies provided in the contract and otherwise available at law and/or in equity, including but not limited to the monetary assessment set forth herein. For contracts of \$500,000.00 or less, an assessment of \$500.00 per offense per day shall be imposed upon the contractor for every covered vehicle operating in violation of this section. For all other contracts, an assessment of \$1000.00 per offense per day shall be imposed upon the contractor for every covered vehicle operating in violation of this section. In addition, it is understood that false certification or representation is subject to penalties under Title 18 Pa. C.S.A. § 4904 (relating to unsworn falsification to authorities).

**PREVAILING WAGE RATE SCHEDULE
 FOR CONSTRUCTION WORK DONE ON BEHALF OF CITY OF PHILADELPHIA
 INCLUDING REPAIR, ALTERATION, AND REMODELING WORK**

I. BUILDING CONSTRUCTION

A. Job Classification and Wage Rates

	Basic Hourly Rate	Fringe Benefits
ASBESTOS WORKER		
Journeyman	51.20	36.95
Handler Level 1	28.59	22.69
Handler Level 2	40.92	22.69
BOILERMAKER	45.51	34.11
BRICKLAYER	43.45	29.96
CARPENTER	47.99	28.74
CEMENT MASON	38.50	32.81
(as of 5/1/20)	38.50	34.31
DRY WALL FINISHER	39.47	28.89
ELECTRICIAN	58.33	37.41
(Telecommunication Senior Tech)	56.16	25.84
(Telecommunication Tech A)	51.62	24.99
ELEVATOR CONSTRUCTOR	55.76	33.005
FOOTNOTES FOR ELEVATOR MECHANICS:		

A. PAID VACATION: Employer contributes 8% of basic hourly rate for 5 years or more of service or 6% for 6 months to 5 years of service.

B. Eight Paid Holidays (provided employee has worked 5 consecutive days before and the working day after the holiday): New Year's Day; Memorial Day; Independence Day; Labor Day; Veteran's Day; Thanksgiving Day and the Friday after Thanksgiving Day, and Christmas Day.

GLAZIER	43.87	33.38
IRONWORKER		
Structural & Ornamental	49.30	34.41
Reinforcing (Rodsetter)	46.41	30.85
Rigger & Machinery Mover	44.15	28.72
LABORER		
Journeyman Class One	31.65	26.62
Journeyman Class Two	31.75	26.62
Journeyman Class Three	31.80	26.62
Journeyman Class Four	31.95	26.62
Journeyman Class Five	32.05	26.62
Journeyman Class Six	31.79	26.62
Journeyman Class Seven	32.90	26.62
Journeyman Class Eight	32.95	26.62
Journeyman Class Nine	33.05	26.62

Journeyman Class Ten	33.20	26.62
Journeyman Class Eleven	33.45	26.62
Journeyman Class Twelve	32.02	26.62
LABORER: ASBESTOS ABATEMENT, LEAD ABATEMENT, TOXIC WASTE HANDLING, HAZARDOUS WASTE HANDLING		
MASTER ABATEMENT TECHNICIAN	33.15	26.50
LANDSCAPE LABORER		
Class I	24.64	23.68
Class II	24.64	23.68
LATHER	47.99	29.92
LINE CONSTRUCTION		
Lineman	53.64	27.46
(as of 5/27/19)	54.66	28.56
Winch Truck Operator	37.55	22.63
(as of 5/27/2019)	38.26	23.47
Line Truck Driver	34.87	21.82
(as of 5/27/2019)	35.53	22.62
Ground hand	32.18	21.01
(as of 5/27/2019)	32.80	21.78
Watch/Flag Person	22.94	18.24
(as of 5/27/2019)	23.37	18.85
MARBLE SETTER	43.25	29.60
MARBLE FINISHER	37.07	26.85
MILLWRIGHT	45.40	33.29
PAINTER		
Brush & Roller	39.04	28.99
Spray, Steel, & Swing	40.89	27.64
Bridges	55.52	28.39
PILEDRIVERMAN	43.45	34.57
(Diver)	52.14	34.47
(Diver Tender)	43.45	34.47
PLASTERER	40.12	30.75
(as of 5/1/2020)	40.12	31.24
PLUMBER	55.45	34.54
POINTER, CAULKER, & CLEANER	44.75	28.70
POWER EQUIPMENT OPERATOR		
Group One	46.41	30.60
Group One A	49.41	31.49
Group Two	46.16	30.53
Group Two A	49.17	31.41
Group Three	42.08	29.72
Group Four	41.78	29.23
Group Five	40.06	28.72

Group Six	39.07	28.43
Group Seven A	56.30	35.11
Group Seven B	56.00	35.03

*****TOXIC/HAZARDOUS WASTE REMOVAL*****

Add 20 percent to basic hourly rate for all classifications

ROOFER	37.15	31.27
Shingle, Slate and Tile	27.50	20.37
SHEET METAL WORKER	49.79	42.89
(Sign Makers and Hangers)	25.03	21.41
SOFT FLOOR LAYER (Resilient Floor)	48.61	28.69
(as of 5/1/20)	48.61	30.44
SPRINKLER FITTER	57.20	28.32
STEAM FITTER	56.37	37.79
STONE MASON	43.25	29.60
Surveying and Layout		
(Chief of Party)	55.19	28.19
(as of 5/1/20)	55.19	29.92
(Instrument Person)	47.99	28.19
(as of 5/1/20)	47.99	29.92
(Rodman)	24.00	19.94
(as of 5/1/20)	24.00	20.81
TERRAZZO MECHANIC	46.50	27.52
TERRAZZO FINISHER (Grinder)	41.23	25.52
TERRAZZO FINISHER (Finisher)	40.96	25.52
TILE SETTER	46.50	27.52
TILE FINISHER	37.07	26.85
TRUCK DRIVER		
Journeyman Class I	32.21	19.185
Journeyman Class II	32.31	19.185
Journeyman Class III And Low Boy	32.58	19.185
WALL COVERER	39.42	28.99
WELDER - Rate for craft to which, welding work is incidental.		

B. Job Classification Definitions: Building Construction,

1. Laborer Classifications:

Class One: Strip concrete, dismantle concrete, load, unload, handle and/or transport reinforced steel and steel mesh, carry lumber, handle miscellaneous building materials operate jack hammers, use paving breakers and other pneumatic tools, build scaffolds, perform raking, handle asphalt, perform spading and concrete pit work, perform grading, perform form pinning or shorting, perform demolition work with exception of burners, lay conduits, lay ducts, perform sheathing or lagging, lay non-metallic pipe, perform caulking.

Class Two: Power Buggies, Burners on Demolition.

Class Three: Wagon drill operator (single)

Class Four: Powderman, wagon drill operator (multiple), perform circular caissons excavations, caisson groundman, perform underpinning excavation, perform laborers' work at depth of eight (8) feet or below.

Class Five: Caisson bottom worker.

Class Six: Yard worker.

Class Seven: Trackmen, Brakemen, Groutmen, Bottom Shaft Men, All Other Men in Free Air Tunnels.

Class Eight: Caisson Foreman

Class Nine: Miner Helper, Form Setters.

Class Ten: Miners Bore Driver, Blasters, Drillers, Pneumatic Shield Operator.

Class Eleven: Welders & Burners.

Class Twelve: Mason Tenders

Landscape Laborers:

Class I: Landscape laborer

Class II: Farm tractor driver, hydro seeder, mulched nozzle worker, backhoe operator, bulldozer crawler type loader, tree crane operator.

Laborer - Lather and Plasterer: Wheel and/or hod carry any lather and plaster materials used by lathering and plastering contractors' build scaffolds; build runways; perform clean-up and removal of debris as covered by lathering and plastering contractor's contract; deliver any material used by lathering and plastering contractor, from curbside to building and back, unless motor vehicles are permitted to enter building with required materials; all mortar designated for use by plasterer shall be carried via wheel barrow or hod; all plastering and fire proofing machines, as well as guns and mixers requiring the assistance of a worker other than plasterer operator, shall be manned by helper (tender).

2. Truck driver classifications:

Class I: Helper, stake body truck operator (single axle, dumpster).

Class II: Dump truck operator, tandem truck operator, batch truck operator, semi-trailer truck operator, agitator-mixer truck operator, dump Crete type vehicle operator, asphalt distributor, farm tractor operator (when tractor used to transport materials), stake body truck (tandem) operator.

Class III: Euclid type; off highway equipment back truck operator; belly dump truck operator; double-hitched equipment trailer operator; straddle carrier (Ross) operator; low-bed trailer truck operator.

3. Power Equipment Operator Classifications – Building

Group One:

Handling steel and stone in connection with erection Cranes doing hook work
Any machines handling machinery
Cable spinning machine

Helicopters

Concrete Pumps (building)

Machines similar to above, including remote control equipment

Group One A:

Handling steel and stone in connection with erection.

Cranes doing hook work

Any machines handling machinery

Concrete Pumps (Building)

High Rail/Burro Crane

Rail Loader (Winch Boom Type)

All equipment in this group which previously received the hour in lieu of an oiler will receive Wage Group I (A). Equipment in this Wage Group that does not require an oiler.

Machines similar to above, including remote control equipment

Group Two:

All types of cranes

All types of backhoes

Cableways

Draglines

Keystones

All types of shovels

Derricks

Pavers 21E and over

Trenching machines

Trench shovels

Gradalls

Front- end Loaders

Boat Captain

Hoist with Two Towers

Building Hoists-double drum (unless used as a single drum)

Pippin type backhoes

Tandem scrapers

Tower type crane operation erecting dismantling jumping or jacking

Drills self-contained (Drillmaster type)

Fork lift (20ft. and over)

Motor Patrols (fine grade)

Batch Plant with Mixer

Carryalls, Scrapers, Tournapulls

Roller (High Grade Finishing)

Spreaders (Asphalt)

Bulldozers and Tractors

Mechanic-Welder

Conveyor Loaders (Euclid-Type Wheel)

Concrete Pumps (Heavy Highway)

Milling Machine

Bobcat

Side Boom

Directional Boring Machines

Vermeer Saw Type Machine (other than hand held)

Tractor Mounted Hydro Axe

Chipper with boom

All Autograde and concrete finishing machines
Bundle Pullers/Extractors (Tubular)

Machines similar to the above including remote control equipment

*Surcharge

Group Two (A):

Crawler backhoes and Crawler gradalls over one (1) cubic yard factory rating

Hydraulic backhoes over one (1) cubic yard factory rating

Single person operation truck cranes 15 ton and over factory rating

Cherry picker type machinery and equipment 15 ton and over factory rating, etc.

Cranes doing hook work will be paid Wage Group I (A).

All equipment in this Group which previously received the hour in lieu of an oiler will receive Wage Group II (A) including concrete pumps (Heavy/Highway).

Machines similar to the above including remote control equipment

*Surcharge

Group Three:

Asphalt Plant Engineers

Conveyors (except building conveyors)

Well Driller

Forklift Trucks of all types

Ditch Witch (small trenchers)

Motor Patrols

Fine Grade machines

Rollers

Concrete Breaking Machines (Guillotine Only)

Stump Grinder

High or Low Pressure Boilers

Building Hoist (single drum)

Elevator Operator (New Construction)

Machines similar to above including remote control equipment

Group Four:

Seamen Pulverizing Mixer

Form Line Graders

Farm Tractors

Road Finishing Machines

Concrete Spreaders (Heavy Highway)

Power Broom (self-contained)

Seed Spreader

Grease Truck

Machines similar to the above including remote control equipment

Group Five:

Compressors

Pumps

Well pint pumps

Conveyors (Building)

Welding Machines

Heaters

Tireman, Power Equipment

Maintenance Engineers (Power Boats)

Miscellaneous Equipment

Operator

Elevator Operator (Renovations)
House Car
Machines similar to above including remote control equipment
Group Six:
Fireman
Oilers and Deck Hands (Personnel Boats)/Grease Truck Helpers
*Surcharge
Group Seven (A):
Handling steel and stone in connection with erection
Cranes doing hook work
Any machines handling machinery
Cable spinning machine
Helicopters
Concrete pumps (Building)
High Rail/Burro Crane
Rail Loader (Winch Boom Type)
Machines similar to above, including remote control equipment
Group Seven B
All types of cranes
All types of backhoes
Cableways
Conveyor Loader (Euclid-Type Wheel)
Drag Lines
Keystones
All types of shovels
Derricks
Pavers 21E and over
Trench shovels
Trenching machines
Gradalls
Front-end Loaders
Boat Captain
Hoist with two towers
Concrete Pumps (Heavy, Highway)
Building Hoists-double drum (unless used as a single drum)
Milling Machine
Mucking Machines in Tunnel
Pippin type backhoes
Bobcat
Tandem scrapers
Side Boom
Tower type crane—operation, erecting, dismantling,
Jumping or jacking
Directional Boring Machines
Vermeer Saw Type Machine (other than hand held)
Drills self-contained (Drillmaster type)
Fork Lift (20 ft. & over)
Track or Mounted Hydro Axe
Motor Patrols (Fine Grade)
Chipper with boom

Batch Plant with Mixer
All autograde and concrete finishing machines
Caryalls, Scapers & Tournapulls
Rollers (High Grade Finishing)
Bundle Pullers/Extractors (Tubular)
Spreaders (Asphalt)
Bulldozers and Tractors
Mechanic – Welders
Production Switch Tamper
Ballast Regulators
Tie Replacer
Rail/Road Loader
Power Jack liner
Machines similar to above, including remote control equipment

II. HEAVY AND HIGHWAY CONSTRUCTION

A. JOB CLASSIFICATION AND WAGE RATES

	Basic Hourly Rate	Fringe Benefits
BOILERMAKER	46.89	33.73
CARPENTER	47.81	28.04
(as of 5/01/20)	47.81	29.99
(as of 5/01/21)	47.81	31.99
CEMENT MASON	36.85	32.56
(as of 5/01/20)	36.85	34.36
(as of 5/01/21)	36.85	36.16
ELECTRICIAN	58.33	37.41
IRONWORKERS		
Structural & Ornamental	49.30	34.41
Reinforcing (Rodsetter)	46.41	30.85
Rigger & Machinery Mover	44.15	28.72
LABORERS		
Group One	31.95	26.50
(as of 5/1/20)	31.95	28.15
(as of 5/1/21)	31.95	29.90
Group Two	32.15	26.50
(as of 5/1/20)	32.15	28.15
(as of 5/1/21)	32.15	29.90
Group Three	32.15	26.50
(as of 5/1/20)	32.15	28.15
(as of 5/1/21)	32.15	29.90
Group Four	26.75	26.50
(as of 5/1/20)	26.75	28.15
(as of 5/1/21)	26.75	29.90
Group Five	32.80	26.50
(as of 5/1/20)	32.80	28.15
(as of 5/1/21)	32.80	29.90
Group Six	32.85	26.50
(as of 5/1/20)	32.85	28.15
(as of 5/1/21)	32.85	29.90
Group Seven	32.70	26.50
(as of 5/1/20)	32.70	28.15
(as of 5/1/21)	32.70	29.90
Group Eight	32.45	26.50
(as of 5/1/20)	32.45	28.15
(as of 5/1/21)	32.45	29.90

Group Nine	32.30	26.50
(as of 5/1/20)	32.30	28.15
(as of 5/1/21)	32.30	29.90
Group Ten	32.45	26.50
(as of 5/1/20)	32.45	28.15
(as of 5/1/21)	32.45	29.90
Group Eleven	32.35	26.50
(as of 5/1/20)	32.35	28.15
(as of 5/1/21)	32.35	29.90
Group Twelve	34.05	26.50
(as of 5/1/20)	34.05	28.15
(as of 5/1/21)	34.05	29.90
Group Thirteen	36.08	26.50
(as of 5/1/20)	36.08	28.15
(as of 5/1/21)	36.08	29.90
Group Fourteen	32.20	26.50
(as of 5/1/20)	32.20	28.15
(as of 5/1/21)	32.20	29.90
LANDSCAPING LABORER		
Class I	24.22	23.50
Class II	24.22	23.50
LINE CONSTRUCTION		
Lineman	54.66	28.56
Winch Truck Operator	38.26	23.47
Line Truck Driver	35.53	22.62
Ground hand	32.80	21.78
Watch/Flag Person	23.37	18.85
MILLWRIGHT	45.30	33.29
PAINTERS		
Brush & Roller	39.04	28.99
Spray, Steel, & Swing	40.29	28.99
Bridges	55.52	28.39

POWER EQUIPMENT OPERATOR

Group One	46.41	30.60
(as of 5/01/20)	46.41	32.60
(as of 5/01/21)	46.41	34.60
Group One A	49.41	31.49
(as of 5/01/20)	49.41	33.49
(as of 5/01/21)	49.41	35.49
Group Two	46.16	30.53
(as of 5/01/20)	46.16	32.53
(as of 5/01/21)	46.16	34.53
Group Two A	49.17	31.41
(as of 5/01/20)	49.17	33.41
(as of 5/01/21)	49.17	35.41
Group Three	42.08	29.72
(as of 5/01/20)	42.08	31.72
(as of 5/01/21)	42.08	33.72
Group Four	41.78	29.23
(as of 5/01/20)	41.78	31.23
(as of 5/01/21)	41.78	33.23
Group Five	40.06	28.72
(as of 5/01/20)	40.06	30.72
(as of 5/01/21)	40.06	32.72
Group Six	39.07	28.43
(as of 5/01/20)	39.07	30.43
(as of 5/01/21)	39.07	32.43
Group Seven A	56.30	35.11
(as of 5/01/20)	56.30	37.51
(as of 5/01/21)	56.30	39.91
Group Seven B	56.00	35.03
(as of 5/01/20)	56.00	37.43
(as of 5/01/21)	56.00	39.83

*****TOXIC/HAZARDOUS WASTE REMOVAL*****

Add 20 percent to basic hourly rate for all classifications

POWER EQUIPMENT OPERATOR DREDGER

Class A	38.18	14.28
Class A1	46.93	29.76
Class B1	33.03	13.87
Class B2	31.09	13.71
Class C1	30.24	13.34
Class C2	29.26	13.27
Class D	24.30	12.57
PILED RIVERMAN	43.45	34.57
(Diver)	53.89	32.57
STEAM FITTER	56.37	37.79
STONE MASON	43.25	29.60

Surveying and Layout

(Chief of Party)	54.98	28.04
(as of 5/01/20)	54.98	30.28
(as of 5/01/21)	54.98	32.58
(Instrument Person)	47.81	28.04
(as of 5/01/20)	47.81	30.28
(as of 5/01/21)	47.81	32.58
(Rodman)	38.25	21.34
(as of 5/01/20)	38.25	22.90
(as of 5/01/21)	38.25	24.50
TRUCK DRIVER		
Class I	32.06	19.185
Class II	32.16	19.185
Class III	32.41	19.185

B. Job Classification Definitions: Heavy and Highway Construction

1. Laborer Classifications:

Group One: Yard workers: (laborer, scale mixerman, burnerman, dustman, feeder)

Group Two: General laborer; Asphalt Shovelers; Sheeting, Shoring & Lagging – Laborer; Stone, Granite & Artificial Stone Setting Laborer; Hod Carriers; Scaffold Building; Relief Joint & Approach Slabs; Assembling & Placing Gabions; Pneumatic Tool Laborers; Concrete Forms & Stripping Laborers; Concrete Lumber Material Laborers; Steel & Steel Mesh (carrying & handling); Form Pinners; Mortar Mixers; Pouring & Placing Concrete; Grade Men.

Group Three: Vibrator Laborers; Finish Surface Asphalt Rackers; Jackhammer Operators; Paving Breaker Operator; Pipelayer & Caulker (all joints up to within 5 feet of the Building Foundation Line); Conduit & Duct Layers

Group Four: Flagperson

Group Five: Miners

Group Six: Welders and Burners.

Group Seven: Miner Bore Driver; Blasters; Drillers Pneumatic Shield Operator

Group Eight: Form Setters

Group Nine: Trackmen; Brackmen; Groutmen; Bottom Shaft Men; All other Laborers in Free Air Tunnels; Underpinning (When an underpinning excavation for a pier hole of five feet square or less and eight feet or more deep is dug, the rate shall apply only after a depth of eight feet is reached, to the men working in the bottom)

Group Ten: Circular Caissons (Where an excavation for circular caissons are dug eight feet or more below the natural grade level adjacent to the starting point of the caisson hole, at ground level, for the men working in the bottom); Welders, Burners & Air Tuggers

Group Eleven: Powdermen; Multiple Wagon Drill Operator Laborer

Group Twelve: Caisson Laborer Foreman

Group Thirteen: Toxic/Hazardous waste Handler

Group Fourteen: Wagon Drill/Hydraulic Track Drill Operator Laborer

Landscape Laborers:

Class I: Landscape laborer

Class II: Farm tractor driver, hydroseeder, mulcher nozzle worker, backhoe operator, bulldozer crawler type loader, tree crane operator.

2. Power Equipment Operator Classifications - Heavy, & Highway

Group One:

Handling steel and stone in connection with erection Cranes doing hook work
Any machines handling machinery
Cable spinning machine
Helicopters
Concrete Pumps (building)
Machines similar to above including remote control equipment

Group One A:

Handling steel and stone in connection with erection.
Cranes doing hook work
Any machines handling machinery
Concrete Pumps (Building)
High Rail/Burro Crane
Rail Loader (Winch Boom Type)
All equipment in this group which previously received the hour in lieu of an oiler will receive Wage Group I (A). Equipment in this Wage Group that does not require an oiler.

Machines similar to above, including remote control equipment

Group Two:

All types of cranes
All types of backhoes
Draglines
Keystones
All types of shovels
Derricks
Pavers 21E and over
Trenching machines
Trench shovels
Gradalls
Front- end Loaders
Boat Captain
Hoist with Two Towers
Building Hoists-double drum (unless used as a single drum)
Pippin type backhoes
Tandem scrapers
Tower type crane operation erecting dismantling jumping or jacking
Drills self-contained (Drillmaster type)
Fork lift (20ft. and over)
Motor Patrols (fine grade)
Batch Plant with Mixer
Carryalls, Scrapers, Tournapulls
Roller (High Grade Finishing)
Spreaders (Asphalt)
Bulldozers and Tractors
Mechanic-Welder
Conveyor Loaders (Euclid-Type Wheel)
Concrete Pumps (Heavy Highway)
Milling Machine
Bobcat
Side Boom

Directional Boring Machines
Vermeer Saw Type Machine (other than hand held)
Tractor Mounted Hydro Axe
Chipper with boom
All Autograde and concrete finishing machines
Bundle Pullers/Extractors (Tubular)

Machines similar to the above including remote control equipment

Group Two A:

Crawler backhoes and Crawler gradalls over one (1) cubic yard factory rating
Hydraulic backhoes over one (1) cubic yard factory rating
Single person operation truck cranes 15 ton and over factory rating
Cherry picker type machinery and equipment 15 ton and over factory rating, etc.
Cranes doing hook work will be paid Wage Group I (A).
All equipment in this Group which previously received the hour in lieu of an oiler will receive Wage Group II (A) including concrete pumps (Heavy/Highway).

Machines similar to the above including remote control equipment

Group Three:

Asphalt Plant Engineers
Conveyors (except building conveyors)
Well Drillers
Forklift Trucks of all types
Ditch Witch (small trenchers)
Motor Patrols
Fine Grade machines
Rollers
Concrete Breaking Machines (Guillotine Only)
Stump Grinder
High or Low Pressure Boilers
Building Hoist (single drum)
Elevator Operator (New Construction)

Machines similar to above including remote control equipment

Group Four:

Seamen Pulverizing Mixer
Form Line Graders
Farm Tractors
Road Finishing Machines
Concrete Spreaders (Heavy Highway)
Power Broom (self-contained)
Seed Spreader
Grease Truck

Machines similar to the above including remote control equipment

Group Five:

Compressors
Pumps
Well pint pumps
Conveyors (Building)
Welding Machines
Heaters
Tireman, Power Equipment
Maintenance Engineers (Power Boats)

Miscellaneous Equipment Operator
Elevator Operator (Renovations)
House Car

Machines similar to above including remote control equipment

Group Six:

Fireman
Oilers and Deck Hands (Personnel Boats)
Grease Truck Helpers

Group Seven A:

Handling steel and stone in connection with erection
Cranes doing hook work
Any machines handling machinery
Cable spinning machinery
Helicopters
Concrete pumps (Building)
High Rail/Burro Crane
Rail Loader (Winch Boom Type)

Machines similar to above, including remote control equipment

Group Seven B:

All types of cranes
All types of backhoes
Cableways
Conveyor Loader (Euclid-Type Wheel)
Drag Lines
Keystones
All types of shovels
Derricks
Pavers 21E and over
Trench shovels
Trenching machines
Gradalls
Front-end Loaders
Boat Captain
Hoist with two towers
Concrete Pumps (Heavy, Highway)
Building Hoists-double drum (unless used as a single drum)
Milling Machine
Mucking Machines in Tunnel
Pippin type backhoes
Bobcat
Tandem scrapers
Side Boom
Tower type crane operation, erecting, dismantling,
Jumping or jacking
Directional Boring Machines
Vermeer Saw Type Machine (other than hand held)
Drills self-contained (Drillmaster type)
Fork Lift (20 ft & over)
Tractor Mounted Hydro Axe
Motor Patrols (Fine Grade)

Chipper with boom
Batch Plant with Mixer
All autograde and concrete finishing machines
Carryalls, Scapers & Tournapulls
Rollers (High Grade Finishing)
Bundle Pullers/Extractors (Tubular)
Spreaders (Asphalt)
Bulldozers and Tractors
Mechanic – Welders
Production Switch Tamper
Ballast Regulators
Tie Replacer
Rail/Road Loader
Power Jack liner
Machines similar to above, including remote control equipment
*Surcharge

Power Equipment Operator Dredger Classifications

Class A: Lead Dredgeman, Operator, Leverman, Licensed Tug Operator over 1000HP.

Class A1: Dozer Operator, Front-end Loader.

Class B1: Derrick Operator, Spider/Spill Barge Operator, Engineer, Electrician, Chief welder Chief Mate, Fill Placer, Operator 2, Maintenance Engineer, Licensed Boat Operator.

Class B2: Certified Welder.

Class C1: Mate, Drag Barge Operator, Steward, Assistant Fill Placer, Welder.

Class C2: Boat Operator.

Class D: Shoreman, Deckhand, Rodman, Scowman, Cook, Messman, Porter/Janitor, Oiler.

3. Truck Driver Classifications:

Class I: Helper, stake body truck operator (single axle, dumpster)

Class II: Dump truck operator, tandem truck operator, batch truck operator, semi-trailer truck operator, agitator-mixer truck operator, dumpcrete type vehicle operator, asphalt distributor, farm tractor operator (when used to transport materials), stake body truck (tandem) operator.

Class III: Euclid type, off highway equipment back truck operator, belly dump truck operator, double-hitched equipment trailer operator, straddle carrier (Ross) operator; lowbed trailer truck operator.

NOTE:

1. Contractors are advised to contact the Philadelphia Labor Standards Unit with any questions regarding job classification, prevailing wage rates, and fringe benefits.
2. Prior to employing apprentices on a public works project, the contractor is required to provide written evidence of employee's registration with a statewide training program recognized by the U.S. Bureau of Apprenticeship and Training (BAT). Contractors shall forward proper documentation for each bona fide apprentice to:

**Philadelphia Labor Standards Unit
Municipal Services Building
1401 John F. Kennedy Boulevard – 1st Floor, Room 170C
Philadelphia, PA 19102-1670
Telephone Number: (215) 686-2132
Fax Number: (215) 686-2116**

City of Philadelphia

Prices for Contingent Work

The prices listed below are for additional work and signify the amount per unit that will be paid for the complete work, furnished and installed, in place as ordered by the Project Manager in accordance with the Standard Contract Requirements for Public Work Contracts. All contingent work shall be in accordance with the applicable contract specifications, Standard Specifications, and/or Standard Details of the City of Philadelphia

Item Number	Description	Incidentals Included	Units	Unit Price
1	Sheathing & Shoring (ordered left in place)	fastening	MBF	\$1,000.00
2	Reinforcing Steel (grade 60)		LB	\$2.10
3a	Welded Steel Wire Fabric		LB	\$2.60
3b	Welded Steel Wire Fabric with epoxy coating		LB	\$10.00
4	Saw Cutting Concrete Paving (full depth)			
4a	Roadway		LF	\$11.00
4b	Footway		LF	\$6.00
5	PADOT 2A Modified Stone for Vaults	supplying & compacting	Ton	\$35.00
6	PADOT 2A Modified Stone (to replace material excavated from trenches)	supplying, hauling & disposal of unsuitable material	Ton	\$62.00
7	PADOT 2A Modified Stone (to correct soft spots in structure or pipeline subgrade)	excavation & disposal of unsuitable material; supplying & compacting stone	Ton	\$66.00
8	PADOT 2A Modified stone (to correct soft spots in subgrade)	excavation & disposal of unsuitable material; supplying & compacting stone	Ton	\$69.00
9	PADOT Pipe Foundation Underdrain (type A with type 1 backfill)	excavation	LF	\$20.00
10	Sand Backfill (for encasing water mains)	compacting	Ton	\$25.00
11	Ductile Iron Pipe (ANSI/AWWA C151, 150/A21.50, C111) (w/accessories)	joints, sand encasement		
11a	4"		LF	\$45.00
11b	6"		LF	\$60.00
11c	8"		LF	\$75.00
11d	12"		LF	\$110.00
12	Ductile Iron Gate Valves	complete with accessories, sand encasement		
12a	4"		Each	\$1,900.00
12b	6"		Each	\$2,200.00
12c	8"		Each	\$2,900.00
12d	12"		Each	\$4,800.00
13	Ductile Iron Fittings (ANSI/AWWA C153/A21.53, C110 & C104/A21.4)	complete with accessories, sand encasement	LB	\$8.00
14	Misc. Iron & Steel (for harnessing water mains)	bituminous coating	LB	\$10.00
15	Standard 7" Valve Box	furnish only	Each	\$240.00
16	Set or Reset Standard 7" Valve Box (reconstruction projects)		Each	\$275.00
17	K' Copper Water Service Pipe (relay only)	joints, swing joints and necessary fittings		
17a	3/4"		LF	\$20.00
17b	1"		LF	\$23.00
17c	1.5"		LF	\$35.00
17d	2"		LF	\$45.00

Item Number	Description	Incidentals Included	Units	Unit Price
18	Water Service Ferrule	tapping main, connections		
18a	3/4"		Each	\$175.00
18b	1"		Each	\$225.00
18c	1.5"		Each	\$300.00
18d	2"		Each	\$450.00
19	Water Service Curb Stop	flared connections		
19a	3/4"		Each	\$200.00
19b	1"		Each	\$220.00
19c	1.5"		Each	\$440.00
19d	2"		Each	\$600.00
20	Water Service Box		Each	\$120.00
21	HDPE Subdrain (6")	excavation, stone encasement 3" thick around pipe	LF	\$16.00
22	Vitrified Clay Sewer Pipe	excavation, rubber gaskets (not including concrete cradle)		
22a	5" or 6"		LF	\$70.00
22b	8"		LF	\$75.00
22c	10"		LF	\$95.00
22d	12"		LF	\$102.00
22e	15"		LF	\$122.00
23	Resilient Saddle			
23a	(5" or 6" lateral)	core drilling	Each	\$100.00
23b	(8" lateral)	core drilling	Each	\$125.00
	Vitrified Clay Pipe Bends	rubber gaskets (not including concrete cradle)		
24	5" or 6"		Each	\$110.00
24a	8"		Each	\$160.00
24b	10"		Each	\$220.00
24c	12"		Each	\$350.00
24d	15"		Each	\$725.00
25	Reinforced Concrete Pipe Sewer	rubber gaskets (not including concrete cradle)		
25a	15"		LF	\$60.00
25b	18"		LF	\$65.00
25c	21"		LF	\$70.00
25d	24"		LF	\$75.00
25e	27"		LF	\$80.00
25f	30"		LF	\$90.00
26	Manhole for sewers (30" & under)	steps and ladder bars	VF	\$280.00
27	Manhole for sewers (36" & over)	steps and ladder bars	VF	\$310.00
28	Sewer Manhole Frame & Cover (solid or vented)	furnish only	Each	\$500.00
29	Set or Reset Manhole Frame & Cover (reconstruction projects)	excavation, gasket material and HES base concrete	Each	\$310.00

Item Number	Description	Incidentals Included	Units	Unit Price
30	Stormwater Inlets (complete)	excavation, castings and iron trap		
30a	4' OMG		Each	\$7,550.00
30b	6' OMG		Each	\$8,550.00
30c	4' City		Each	\$7,550.00
30d	6' City		Each	\$8,550.00
30e	4' Highway		Each	\$7,550.00
30f	6' Highway		Each	\$8,550.00
31	Precast Concrete Inlet Top Slab (min. 3500 psi)	steel channel nosing and gray iron frame & cover		
31a	4' City		Each	\$800.00
31b	6' City		Each	\$1,000.00
32	Reset Inlet Top	excavation, raising or lowering with brick to meet proper elevation		
32a	up to 4"		Each	\$380.00
32b	over 4" (in addition to first 4" of adjustment)		VF	\$310.00
33	Dripstone (2" thick)		Each	\$180.00
34	Reset Dripstone (any type)		Each	\$125.00
35	Fill Abandoned Inlet	demolish to 12" below subgrade, seal outlet, clean earth fill	Each	\$450.00
36	Fill Abandoned Manhole	demolish to 12" below subgrade, seal pipe ends, clean earth fill	Each	\$500.00
37	Fill Abandoned Sewers (1:8 grout or 30 psi flowable fill as directed)	bulkheads	CY	\$160.00
38	Sewer Vent (complete)	curb box, trap, standpipe, setting, connections, alignment, excavation, backfill and compacting	Each	\$2,200.00
39a	Sewer Vent Box	24" of standpipe, excavation, backfill and setting	Each	\$60.00
39b	Vent pipe (schedule 40)	coupling	LF	\$20.00
40	Grading (unclassified)	greater of cut or fill		
40a	Roadway		CY	\$30.00
40b	Footway		CY	\$40.00
41	Concrete Roadway Pavement (class A)		CY	\$360.00
42	Concrete Paving Base (class A)		CY	\$310.00
43	Concrete Driveway Approach (class A, 8" thick)	forms, excavation and subbase	SY	\$110.00
44a	Concrete Footway Paving (class A, 4" thick on existing subgrade) - Utility Projects	hauling & disposal of excavated material, foundation, forms	SY	\$80.00
44b	Concrete Footway Paving (class A, 4" thick including 4" stone subbase) Paving & Improvement Projects (whole block)	hauling & disposal of excavated material, foundation, forms	SY	\$90.00
45	Brick or Flagstone Footway Repairs	4" concrete base, cement & sand bedding and new bricks where necessary	SY	\$225.00
46	8" Concrete Curb (class A, any type)	excavation, forms		
46a	Utility Projects (short runs and in-fill sections)		LF	\$45.00
46b	Paving & Improvement Projects (whole block)		LF	\$40.00

Item Number	Description	Incidentals Included	Units	Unit Price
47	Reset Concrete Curb	excavation, foundation concrete	LF	\$25.00
48	Reset Stone Curb	excavation, foundation concrete	LF	\$50.00
49	Concrete Steps (class A)	forms		
49a	1 or 2 steps		LF of Tread	\$110.00
49b	3 or more steps		LF of Tread	\$165.00
50	Base Leveling Asphaltic Binder Course (for adjustment)	preparing subgrade, placing, compacting	Ton	\$225.00
51	Asphalt Binder Course (for temporary paving)	preparing subgrade, placing, compacting	Ton	\$200.00
52	Salt Hay (6" depth)	polyethylene	SY	\$2.50
53	6" Topsoil & Seed	fine grading, lime, fertilizer	SY	\$18.00
54	4" Topsoil & Sod	fine grading, lime, fertilizer	SY	\$20.00
55	Geotextile Filter Fabric (PADOT 408 cl 4 w/ sec 735)		SY	\$6.00
56	Traffic Sign Pole (u channel)	installation	Each	\$250.00
57	Street Name Sign Pole (square breakaway)	installation	Each	\$400.00
58	Silt Barrier Fence		LF	\$6.00
59	Brick Masonry		CY	\$925.00
60	Concrete Block Masonry		CY	\$700.00
61	Rubble Masonry		CY	\$200.00
62	4000 psi Concrete (28 day strength)			
62a	unformed		CY	\$225.00
62b	formed	forms	CY	\$450.00
63	HES Cement (substituting for regular)		CY	\$8.00
64	Calcium Chloride (added to concrete, 2% by weight)		CY	\$6.00
65	Concrete Footway Handicap Ramp Pad (truncated domes)	including furnishing & installation	SF	\$40.00
66	Design of ADA Ramp	Including design, layout, and as-built	EA	\$1,100.00
67	Concrete Curb For ADA Ramp	Including excavation and subgrading	LF	\$50.00
68	Concrete Footway for ADA Ramp	Including Excavation and subbase	SY	\$120.00

PENNSYLVANIA SALES TAX

PART 1 - GENERAL

1.01 RULES AND REGULATIONS

- A. The Pennsylvania Department of Revenue on September 9, 1972 reissued and/or amended most regulations and rulings promulgated under the Tax Reform Code of 1971. The Pennsylvania sales and use tax exemption as applicable to the City of Philadelphia Water Department's Contractors, whom, when purchasing construction supplies and materials are limited to equipment, machinery and parts used directly in owner's public utility facilities.
- B. Each prospective bidder must determine for himself what materials or items of work are exempt from the Pennsylvania State Sales and Use Tax. The Water Department does not issue determinations on such matters before award of Contract and submission of the properly executed Contract Forms.

1.02 TAX EXEMPT SEWER CONSTRUCTION MATERIALS

- A. The state has indicated the following sewer construction materials when purchased by Contractors for Public Utility installations are tax exempt:
 - 1. Reinforced concrete sewer pipe, bends, fittings and rubber gaskets. All size pipe, 18 inches to 72 inches in diameter, when used in combined sewer, sanitary sewer and stormwater sewer purposes.
 - 2. Vitrified clay sewer pipe, bends, gaskets, all sizes 5 inches to 36 inches in diameter for combined, sanitary and stormwater sewers.
 - 3. Saddles, inserts or wye branches, blanks, stoppers for sewer lateral connections for combined, sanitary and stormwater sewers.
 - 4. Sub Drains.
 - 5. Cast iron, ductile iron pipe and fittings for sewer force mains, sewers, vents, laterals, and risers.
 - 6. Concrete for construction of reinforced concrete box sewers and chambers. Predominate sanitary sewer use.
 - 7. Granite block (stone) for box sewer inverts, bottoms, flagstone for well hole bases for combined, sanitary and stormwater sewers.
 - 8. Waterproof coatings (asphaltic) for box sewers, metering chambers, etc.
 - 9. Pre-cast concrete sewer manholes for combined, sanitary and stormwater sewers.
 - 10. Brick, mortar, sand, cement, cast iron castings, manhole frames and covers, inlet castings, grates, clean out doors, steps, ladder bars used for combined, sanitary and stormwater sewer construction.
 - 11. Culverts - reinforced concrete structures for transmittal of water or sewerage beneath roadways (less than 60 feet long).
 - 12. Pre-fab sewerage pumping stations used to pump sewerage from low level drainage areas to higher gravity flow sewers.
 - 13. Sewage metering flow chambers (reinforced concrete) with metering flow equipment to measure flow of sewerage for billing purposes from adjoining areas.
 - 14. Reinforced concrete sewer pipe, bends, fittings and gaskets, all sizes, when used for stormwater purposes only or predominant stormwater use in combined sewers.
 - 15. Pre-cast concrete inlet tops including cast iron frames and covers. Stormwater purposes only.
 - 16. Steel reinforcing rods, bars, ties for box sewer reinforcement and chambers.
 - 17. Concrete for reinforced concrete box sewers for combined, sanitary and stormwater use.

18. Flagstones for wellhole basestones.

- B. The Contractor is not to charge sales tax on the above tax exempt items and sales tax is not to be included in bid submitted.

1.03 SEWER CONSTRUCTION MATERIALS - NOT EXEMPT

- A. The State has indicated the following sewer construction materials, when purchased by the Contractors for Public Utility installations, are not tax exempt.

1. Lumber, used for temporary sheathing and shoring of sewer trench.
2. Lumber, used for sheathing and shoring sewer trenches, left in place.
3. Piles, wooden, driven piles for sewer support in unstable soil.
4. Steel soldier beams (H beams) for deep trench sheathing and shoring, braces, etc. left in place.
5. Plywood and lumber used for formwork for box sewers.
6. Nails, nuts, bolts, washers for box sewer formwork.
7. Concrete for reinforced concrete box sewers. Stormwater use only.
8. Broken stone for sewer foundations, soil stabilization.
9. Concrete for sewer cradles, bases, manhole bases, collars, sewer pipe encasement. All sewers.
10. Sand-cement grout (8: 1) for filling abandoned sewers.
11. Stone for rip-rap to prevent soil erosion.
12. Brick masonry - bulleyes - sewers, temporary or permanent bricking up of sewers to prevent entry, use or flow of sewers, etc.
13. Concrete for paving base, curbs, sidewalks, driveways, traffic islands, headwalls.
14. Broken stone for paving sub-base.
15. Asphalt paving, binder and surface course, restoration paving.
16. Steel or aluminum chain link type fencing and appurtenances for enclosing sewer area outlets, child protection, pumping stations security, etc.
17. Trees and shrubs - replacement or new.
18. Topsoil (restoration).
19. Backfill (dirt, soil purchased for job deficiencies) refills, embankments.
20. Fertilizer, lime (soil conditioners).
21. Grass seed (restoration).
22. Salt hay or straw (coverings).
23. Tarps, canvas, plastic coverings.
24. Reinforcing rods, bars, ties for piling tops and cradles.

- B. The above materials are subject to the Pennsylvania Sales and Use Tax and are to be taken into account by the Contractor when submitting his bid.

1.04 TAX EXEMPT WATER MAIN CONSTRUCTION MATERIALS

- A. The State has indicated the following water main construction materials when purchased by Contractors for Public Utilities installations are tax exempt:

1. Steel water pipe 6 to 48 inches - distribution/supply service mains.
2. Ductile iron pipe and rubber gaskets 3 to 36 inches.
3. Cast iron pipe 3 to 48 inches distribution/supply/service repair mains.
4. Lead or leadite, jute joints).
5. Cast iron/ductile iron M.J. fittings and specials all sizes bends, sleeves, reducers, tees, crosses, offsets, etc.
6. Gate valves - all sizes 3 to 60 inches.
7. Patent connections (tapping valves and sleeves combined, all sizes).
8. Air release valve assemblies.

9. Reinforced steel/concrete/brick valve chambers (for housing large valves).
10. 7 inch cast iron and/or plastic valve boxes and covers.
11. 21, 24 and 36 inch cast iron frames and covers (valve box covers) including precast concrete rings for water valve boxes.
12. Water service curb stops (various sizes).
13. Water service curb boxes and covers.
14. Copper/plastic water service pipe and fittings (bends, couplings, adapters, sleeves, etc., sizes ¾ inch, 1 inch, 1-1/2 inch, 2 inches).
15. Corrosion control coatings.
16. Polyethylene (tubs) film pipe wrapping for enclosing water pipe and fittings in corrosive soil.
17. Corrosion and electrolysis control installations and equipment.
18. Sand, cement used in internal coatings (relining) cast iron/steel water mains.

B. The Contractor is not to charge sales tax on the above tax exempt items and sales tax is not to be included in bid submitted.

1.05 WATER MAIN MATERIALS - NOT EXEMPT

A. The State has indicated the following water main construction materials, when purchased by Contractors for Public Utility installations, are not tax exempt:

1. Lumber used for sheathing and shoring purposes.
2. Steel soldier beams for deep trench sheathing and shoring.
3. Sand used for water pipe encasement.
4. Steel/cast iron high pressure fire service pipe, including fittings, valves, fire hydrants and appurtenances.
5. Fire hydrants (low pressure).
6. Miscellaneous iron and steel (valve and fire hydrants, straps and harnesses, including nuts and bolts).
7. Concrete - Class 15-2 (used for anchors, thrust blocks).
8. Concrete for footway paving or repaving.
9. Concrete for driveways, paving or repaving.
10. Concrete for street base.
11. Bricks and sand for sidewalk replacement.
12. Slate or flagstone for sidewalk replacement.
13. Curbs - bluestone or concrete, curved or straight, for replacement.
14. Broken stone for bedding, driveways, paving base.
15. Asphalt binder for paving base (reconstruction paving).
16. Asphalt surface paving (reconstruction paving).

B. The above materials are subject to the Pennsylvania Sales and Use Tax and are to be taken into account by the Contractor when submitting his bid.

1.06 DOCUMENTATION OF EXEMPTIONS

- A. Except as noted below, a Contractor may not claim an exemption on his purchases which he installs to become a part of the real estate.
- B. The exemption relating to contracts with public utilities, manufacturers, etc. is limited to purchase of property constituting materials, equipment, machinery and parts subsequently used directly in the rendition of a public utility service upon installation.
- C. "Certification" form will be supplied by the City with "Notice to Proceed" letter. The Contractor shall take this "Certification" to his material supplier or vendors together with a copy of "Blanket Exemption Certificate" (Form 5-RTE completed by Contractor). The supplier shall retain both forms for tax record purposes.

- D. This "Certification" relates only to tax exempt items and a tax charge is not be to included in the bid price submitted.
- E. All other materials are taxable and are to be taken into account by the Contractor when submitting his bid.

PART 2 PRODUCTS Not Used

PART 3 EXECUTION Not Used

END OF SECTION

SECTION 00100
INSTRUCTIONS TO SELLERS

PART 1 GENERAL

1.01 DEFINITIONS

- A. For the purpose of this document the words Bidder and Seller shall be interchangeable. Also please note that Bid(s) and Quote(s) are interchangeable.

1.02 SOURCES OF BIDDING DOCUMENTS

- A. Copies of the Bidding Documents, including the Special Specifications, Plans and pre-qualification questionnaire, may be obtained from WWW.PHLCONTRACTS.PHILA.GOV.

1.03 STANDARD CONTRACT REQUIREMENTS

- A. Attention is directed to the "Standard Contract Requirements for Public Works Contracts" of the Procurement Department of the City of Philadelphia (as amended), a copy of which is included with these Contract Documents. These Standard Contract Requirements contain additional provisions relating to the bidding procedures for this contract, and are an integral part of these Instructions to Sellers.

1.04 EXAMINATION OF SITE AND DOCUMENTS BY SELLERS

- A. Each seller must visit the site of the proposed work and fully acquaint himself/herself with the conditions as they exist, so that he/she may fully understand the facilities, difficulties, and restrictions attending the execution of the work under this contract.
- B. Each seller must also thoroughly examine and be familiar with the Plans and Special Specifications; the Standard Details and Standard Specifications of the Water Department; reference specifications as cited; and the Standard Contract Requirements.
- C. The failure or omission of any seller to receive or examine any form, instrument, or document, or to visit the site and acquaint himself/herself with the conditions there existing, shall in no way relieve that seller from any obligation with respect to his/her quote.
- D. The low seller must complete the whole of the work within **450 calendar days** from the date of the Notice to Proceed.

1.05 BILLS OF MATERIAL

- A. Attention is called to the fact that Bills of Material, where shown on the Plans, are for the convenience of the seller only. In no event shall this information be considered part of the contract. If this information is used by the successful seller to order materials, he/she must assume ownership of all leftover pipe, fittings, and appurtenances, since payment by the City will be made only for the amounts of pipe, fittings, and appurtenances actually installed.

1.06 INTERPRETATION OF DOCUMENTS

- A. No oral interpretations will be made to any seller as to the meaning of the Drawings and Specifications. Every request for an interpretation shall be made in writing and email to Jessica.Musti@phila.gov , by **Monday, October 21, 2019**.
- B. Every interpretation made to a Seller will be in the form of a written Amendment to the Contract Documents, which, if issued, will be uploaded to the Amendment section of WWW.PHLCONTRACTS.PHILA.GOV, not later than three days prior to the date fixed for the opening of Quotes. All Amendments so issued become part of the Contract Documents. The failure of any Seller to receive any such Amendments or interpretation shall not relieve that Seller from any obligation under his Quote as submitted.

1.07 PRE QUALIFICATION OF SELLERS

- A. No quote will be accepted unless the pre-qualification questionnaire, with all questions fully answered, is filed with WWW.PHLCONTRACTS.PHILA.GOV, on or before **Thursday, October 10, 2019.**

1.08 PRE QUALIFICATION OF SUPPLIERS

- A. Suppliers of materials must be pre qualified in accordance with Water Department Quality Certification Standards QC-1 for Precast Concrete Products, QC-2 for Gray/Ductile Iron Castings, QC-3 for Ready-Mixed Concrete, QC-4 for Welded Steel Inlet Frames and Grates, QC-5 for Standard Pressure Fire Hydrants, QC-6 for Reinforced Concrete Pipe, QC-7 for Filter Media Products, QC-8 for Ductile Iron Pipe and Fittings, QC-9 for Vitrified Clay Pipe and Fittings, QC-10 for Standard Pressure Gate valves (3" to 12") & (16" & Larger), QC-11 for Standard Pressure Butterfly Valves (3" to 20") & (24" & Larger), QC-12 for Resilient-Seated Gates Valves (3" to 12" Dia. & 16" Dia. to 48"), and QC-13 for Thermoplastic Pipe and Fittings.
- B. Prospective sellers may determine the status of suppliers of covered items by contacting the Quality Certification Staff, Central Laboratory Facility, Materials Engineering Laboratory, 1500 E. Hunting Park Avenue, Phila., PA 19124, phone (215) 685-1447.

1.09 PREPARATION

- A. Space is provided in the Bid Forms for Unit Prices, Item Totals, subtotals, and Aggregate Amount Bid. All such spaces must be filled in by the seller.
- B. Where the indicated sum of a column of figures differs from the correct sum thereof, the correct sum shall govern.
- C. Each quote shall contain an acknowledgment of receipt of all Amendments, identified by number.

1.10 SUBMISSION

- A. Quotes are to be submitted until 10:30am est. on WWW.PHLCONTRACTS.PHILA.GOV. An opening of sealed bids will be publicly held by the Procurement Commissioner in Room 170A, MSB, 1401 JFK Blvd., 1st Fl., Philadelphia, PA 19102-1685, on the date and at the time indicated.

1.11 REPRESENTATIONS AND WARRANTIES

- A. In consideration of, and to induce, the award of this contract to him/her, each seller, in submitting his/her quote, represents and warrants:
 1. That he/she is not in arrears to the City upon debt of contract.
 2. That he/she is not a defaulter, whether as contractor, as surety, or otherwise.
 3. That he/she is financially solvent, and sufficiently experienced and competent to successfully perform the work.
 4. That the facts stated and information given by him/her, including all associated documents, are true.
 5. That the Contract Documents are sufficient in scope and detail to indicate all terms and conditions necessary for successful performance of the work.
 6. That the work as called for in the Contract Documents can be successfully performed.

1.12 AWARD OF CONTRACT

- A. Quotes will be compared on the basis of the "Aggregate Amount Bid". The contract award will be to the lowest responsible seller; however, the Procurement Commissioner reserves the right to reject any or all quotes as he/she may deem best for the interest of the City.

- B. Award of this contract is contingent on the successful seller's adherence to the requirements of the City Administration's Contract Compliance Program.

1.13 OFFER BINDING

- A. The work under this contract must be performed at the prices quote and fixed in this contract. The City assumes no responsibility for variations in the cost of materials and labor from those existing at the time of submitting for the work.

PART 2 PRODUCTS Not Used

PART 3 EXECUTION Not Used

END OF SECTION

SECTION 00120

SUPPLEMENTARY INSTRUCTIONS TO SELLERS

PART 1 GENERAL

1.01 PENNSYLVANIA SALES TAX

- A. Each prospective seller must determine for himself what materials or items of work are exempt from the Pennsylvania State Sales and Use Tax. The Water Department does not issue determinations on such matters before award of Contract and submission of the properly executed Contract Forms.

1.02 HANDICAPPED-ACCESS RAMPS IN FOOTWAYS

- A. Please see Section 02510. Approved designs for all anticipated ramps shall be provided by PWD. Construction of the ramps and as-built drawings for approval are the responsibility of the Contractor.

1.03 GREEN STORMWATER INFRASTRUCTURE AS-BUILT SURVEYS

- A. Please See Section 01300.
- B. The Contractor is responsible for creating and submitting as-built elevation and location surveys of all green stormwater infrastructure installed under this Contract following all requirements defined in the GSI As-Built Survey and Drafting Manual
- C. GSI As-Built Survey and Drafting Manual and supplemental materials can be accessed at the PWD Projects Control office (1101 Market St, 2nd Floor) or online at: <http://www.phila.gov/water/aboutus/buswithpwd/Pages/contractor.aspx>

1.04 COORDINATION WITH ADJACENT OWNERS

- A. Adjacent owners shall be notified at least one (1) week prior to construction that will in any way obstruct normal ingress and egress from their respective buildings. The Contractor is to provide adequate means of pedestrian access to all adjacent buildings at all times.

1.05 SPECIAL SITE-SPECIFIC CONDITIONS

- A. Any Work in the cartway of State Routes is subject to additional temporary paving and PennDOT inspection requirements. Please see Sections 01570 and 02500 for details.

1.06 EXISTING AND PROPOSED STREET SIGNS

- A. Please see Section 02500-3.03.I for details. All permanent street signage within the area disturbed through the Work of this Contract shall be installed with breakaway sign poles.

PART 2 PRODUCTS Not Used

PART 3 EXECUTION Not Used

END OF SECTION

SECTION 00800
SUPPLEMENTARY CONDITIONS

PART 1 GENERAL

1.01 GENERAL CONDITIONS OF THE CONTRACT

- A. The General Conditions of this Contract are the "Standard Contract Requirements for Public Works Contracts" of the Procurement Department of the City of Philadelphia, as amended. A copy of this document is attached to these Specifications.

1.02 CONFORMITY WITH PLANS AND SPECIFICATIONS

- A. All materials furnished, and all work performed under this Contract, shall be in reasonably close conformity with the lines, grades, cross sections, dimensions (including tolerances), and material requirements shown on the Plans or indicated in the Specifications.
- B. PWD will determine the limits of reasonably close conformity in each individual case, and his judgment will be final and conclusive.
- C. PWD may find that the materials, or the finished work in which they are used, are not within reasonably close conformity with the Contract Documents, but that reasonably acceptable work has been produced and may remain in place. In this event, he will document the basis of acceptance by a Contract Modification, which will provide for an appropriate adjustment in the Contract Price for such work or materials, as he deems necessary to conform to this determination, based on engineering judgment.
- D. PWD may find that the materials, or the finished work in which they are used, are not within reasonably close conformity with the Contract Documents, and have resulted in inferior or unsatisfactory work. In this event, the work or materials shall be removed and replaced, or otherwise corrected by the Contractor, without cost to the City.

1.03 OSHA REQUIREMENTS

- A. The Contractor shall at all times in the performance of this Contract, comply with the requirements of the Occupational Safety and Health Act of 1970 (OSHA), as amended.

1.04 INSTRUCTIONS TO SELLERS

- A. All applicable provisions of the "Instructions to Sellers" are hereby incorporated into this Contract.

PART 2 PRODUCTS Not Used

PART 3 EXECUTION Not Used

END OF SECTION

SECTION 00850
DRAWINGS AND SCHEDULES

PART 1 GENERAL

1.01 CONTRACT DRAWINGS

- A. The following Plans illustrate the Work under this Contract, and are an integral part thereof.
- B. Green Stormwater Infrastructure Plans:

G-1 OF 30 – INDEX SHEET

G-2 OF 30 – SITE PLAN: 53RD STREET FROM CEDAR AVENUE TO BALTIMORE AVENUE

G-3 OF 30 - DESIGN PLAN: 53RD STREET - CEDAR AVENUE TO WALTON AVENUE

G-4 OF 30 - DESIGN PLAN: 53RD STREET - WALTON AVENUE TO CATHARINE STREET

G-5 OF 30 - DESIGN PLAN: 53RD STREET - WALTON AVENUE TO CATHARINE STREET

G-6 OF 30 - DESIGN PLAN: 53RD STREET - CATHARINE STREET TO WEBSTER STREET

G-7 OF 30 - DESIGN PLAN: 53RD STREET - CATHARINE STREET TO WEBSTER STREET

G-8 OF 30 - DESIGN PLAN: 53RD STREET - WEBSTER STREET TO BALTIMORE AVENUE

G-9 OF 30 - SITE PLAN: CEDAR AVENUE FROM 52ND STREET TO 51ST STREET

G-10 OF 30 - DESIGN PLAN: CEDAR AVENUE - NORTHWEST CORNER OF 52ND STREET

G-11 OF 30 - DESIGN PLAN: CEDAR AVENUE - SOUTHWEST CORNER OF 52ND STREET

G-12 OF 30 - DESIGN PLAN: CEDAR AVENUE - NORTHWEST CORNER OF 51ST STREET

G-13 OF 30 - DESIGN PLAN: CEDAR AVENUE - SOUTHWEST CORNER OF 51ST STREET

G-14 OF 30 - SITE PLAN: WALTON AVENUE FROM 53RD STREET TO 51ST STREET

G-15 OF 30 - DESIGN PLAN: WALTON AVENUE - NORTHWEST CORNER OF 52ND STREET

G-16 OF 30 - DESIGN PLAN: WALTON AVENUE - SOUTHEAST CORNER OF 52ND STREET

G-17 OF 30 - DESIGN PLAN: WALTON AVENUE - SOUTHEAST CORNER OF 52ND STREET

G-18 OF 30 - DESIGN PLAN: WALTON AVENUE - SOUTHWEST CORNER OF 51ST STREET

G-19 OF 30 - DESIGN PLAN: WALTON AVENUE - SOUTHWEST CORNER OF 51ST STREET

G-20 OF 30 - SITE PLAN: CATHARINE STREET FROM 52ND STREET TO 50TH STREET

G-21 OF 30 - DESIGN PLAN: CATHARINE STREET - 52ND STREET TO 51ST STREET

G-22 OF 30 - DESIGN PLAN: CATHARINE STREET - 51ST STREET TO 50TH STREET

G-23 OF 30 - SITE PLAN: 51ST STREET FROM CEDAR AVENUE TO BALTIMORE AVENUE

G-24 OF 30 - DESIGN PLAN: 51ST STREET - CEDAR AVENUE TO WALTON AVENUE

G-25 OF 30 - DESIGN PLAN: 51ST STREET - WEBSTER STREET TO BALTIMORE AVENUE (WEST)

G-26 OF 30 - DESIGN PLAN: 51ST STREET - WEBSTER STREET TO BALTIMORE AVENUE (WEST)

G-27 OF 30 - DESIGN PLAN: 51ST STREET - CATHARINE STREET TO BALTIMORE AVENUE (EAST)

G-28 OF 30 - CONSTRUCTION DETAILS

G-29 OF 30 - CONSTRUCTION DETAILS

G-30 OF 30 - CONSTRUCTION DETAILS

1.02 APPENDICES

- A. The following Erosion and Sedimentation Control sketches are affixed to the end of these Contract Specifications, and are an integral part thereof.

Erosion Control Blanket Installation

Filter Bag Inlet Protection Detail

Filtration Fiber Tube Detail

Pumped Water Filter Bag Detail

Rock Filter Berm Detail

Stockpile Containment Detail

Rock Construction Entrance Detail

Construction Tree Protection Fencing Detail

Construction Tree Protection Planking Detail

- B. The Maintenance of Traffic Requirements are intended to be included in the Contractor's application for roadway occupancy permits. As written, they represent the site-specific special conditions known to require inclusion in the permit applications; they are not guaranteed to be complete or exclusive in any way. The Contractor is required to follow any additional traffic maintenance requirements dictated by the permitting authority.

1.03 SOIL BORINGS

- A. The borings shown on Boring Sheets (if provided) are for the information of the City; their correctness is not guaranteed by the City and in no event is this information to be considered as part of the Contract. If this information is used by a bidder in preparing his proposal, they must assume all risks resulting from conditions differing from the approximation shown.
- B. Test Boring Logs are **not** a part of this Contract. The City assumes no responsibility for the correctness, completeness, or accuracy of the Test Boring Logs. Test Boring Logs may be available, for the Contractor's information only, upon request in writing to PWD Design Branch, 2nd Floor, Jefferson Tower 1101 Market Street, 19107.

Percolation Testing Results Report by CGC Consulting, LLC on March 21, 2016.

- C. If bidders desire to obtain their own such data, the City will afford them the opportunity, at their own expense, to make borings, soundings, or dig test pits on the site of the work. Before making any excavations whatsoever, borings or sounds, driving test piles, or digging test pits on the site of the proposed work, the Contractor shall check the records of the Committee of Highway Supervisors, Room 860, Municipal Services Building, and pursuant to the requirements of Pennsylvania Act 172 (1986), the Contractor shall contact the Pennsylvania One-Call System at 1-800-242-1776 for any City, public utility, or privately owned structures that may be so disturbed, and notify the owners of such structures seventy-two (72) hours in advance of starting work.

1.04 RECORD PLANS

- A. In an effort to provide bidders on contracts with the opportunity to make informed decisions concerning existing conditions, return plans are available for review at the Water Main Records Unit, 2nd Flr., Jefferson Tower, 1101 Market Street, Philadelphia, PA 19107-2994. These plans are not guaranteed to be correct. Any conclusions or assumptions a bidder may make based on the contents or existence of these plans are at the bidder's own risk.
- B. Following is a list of return plans available during the design of this project and are available for review:

119936	Plan of water facilities in 50 th Street from Florence Avenue to Willows Avenue
119937	Plan of water facilities in 50 th Street from Catharine Street to Cedar Avenue
119938	Plan of water facilities in 50 th Street from Baltimore Avenue to Catharine Street
119974	Plan of water facilities in 51 st Street from Baltimore Avenue to Catharine Street
119976	Plan of water facilities in 51 st Street from Catharine Street to Cedar Avenue
120014	Plan of water facilities in 52 nd Street from Florence Avenue to Willows Avenue
120015	Plan of water facilities in 52 nd Street from Hadfield Street to Whitby Avenue
120016	Plan of water facilities in 52 nd Street from Whitby Avenue to Baltimore Avenue

120018 Plan of water facilities in 52nd Street from Catharine Street to Cedar Avenue

120019 Plan of water facilities in 52nd Street from Cedar Avenue to Hazel Avenue

120020 Plan of water facilities in 52nd Street from Hazel Avenue to Larchwood Avenue

120073 Plan of water facilities at intersection of Baltimore Avenue and 53rd Street

120076 Plan of water facilities in 53rd Street from Baltimore Avenue to Catharine Street

120077 Plan of water facilities in 53rd Street from Catharine Street to Cedar Avenue

121587 Plan of sewer facilities in 52nd Street from Baltimore Avenue to South Street

121588 Plan of sewer facilities in Fitzwater Street from 52nd Street to 53rd Street

121794 Plan of sewer facilities in 52nd Street from South Street to Lombard Street

121810 Plan of sewer facilities in South Street from 53rd Street to 52nd Street

148588 Plan of water facilities in Baltimore Avenue from 52nd Street to Malcom Street

148589 Plan of water facilities in Baltimore Avenue from 53rd Street to 52nd Street

150394 Plan of water facilities in Catharine Street from 51st Street to 50th Street

150395 Plan of water facilities in Catharine Street from 52nd Street to 51st Street

150396 Plan of water facilities in Catharine Street from 53rd Street to 52nd Street

150462 Plan of water facilities in Cedar Avenue from 52nd Street to 51st Street

150463 Plan of water facilities in Cedar Avenue from 53rd Street to 52nd Street

164397 Plan of sewer facilities in Pentridge Street from 52nd Street to 51st Street

164447 Plan of sewer facilities in 51st Street from Baltimore Avenue to Catharine Street

164689 Plan of sewer facilities in Catharine Street from 53rd Street to 52nd Street

164741 Plan of sewer facilities in 51st Street from Catharine Street to Cedar Avenue

164870 Plan of sewer facilities in Webster Street from 53rd Street to 52nd Street

164871 Plan of sewer facilities in Catharine Street from 51st Street to 50th Street

164885 Plan of sewer facilities in Walton Avenue from 51st Street to 50th Street

165036 Plan of sewer facilities in Baltimore Avenue from 53rd Street to 52nd Street

165087 Plan of sewer facilities in Catharine Street from 52nd Street to 51st Street

165359 Plan of sewer facilities in Walton Street from 52nd Street to 51st Street

165575 Plan of sewer facilities in 52nd Street from Hadfield Street to Woodland Avenue

180380 Plan of water facilities in Hadfield Street from 52nd Street to 51st Street

231316 Plan of sewer facilities in Pentridge Street from 52nd Street to 51st Street

232817 Plan of sewer facilities in Whitby Avenue from 54th Street to 53rd Street

234564 Plan of sewer facilities in 50th Street from Baltimore Avenue to Lombard Street

234565 Plan of sewer facilities in South Street from 52nd Street to 49th Street

- 234635 Plan of sewer facilities in 52nd Street from Baltimore Avenue to Whitby Avenue
- 251525 Plan of sewer facilities in 52nd Street from Whitby Avenue to Hadfield Street
- 251360 Plan of sewer facilities in Baltimore Avenue from 52nd Street to 48th Street
- 251921 Plan of sewer facilities in Whitby Avenue from 53rd Street to 52nd Street
- 281173 Plan of water facilities in Walton Avenue from 51st Street to 50th Street
- 281174 Plan of water facilities in Walton Avenue from 52nd Street to 51st Street
- 281175 Plan of water facilities in Walton Avenue from 53rd Street to 52nd Street
- 281539 Plan of water facilities in Webster Street from 53rd Street to 52nd Street
- 281896 Plan of water facilities in Whitby Avenue from 53rd Street to 52nd Street
- 281897 Plan of water facilities in Whitby Avenue from 52nd Street to Baltimore Avenue
- 282067 Plan of water facilities in Willows Avenue from 52nd Street to 51st Street
- 286600 Plan of sewer facilities in Hadfield Street from 52nd Street to 51st Street and in 51st Street from Hadfield Street to Baltimore Avenue
- 286617 Plan of sewer facilities in 50th Street from Willows Avenue to Florence Avenue
- 313741 Plan of sewer facilities in Willows Avenue from 52nd Street to 51st Street
- 401635 Plan of sewer facilities in Webster Street from 52nd Street to 51st Street
- 401694 Plan of water facilities in Webster Street from 52nd Street to 51st Street
- 1075324 Plan of sewer facilities in Cobbs Creek Park (Cobbs Creek Intercepting Sewer Extension)

1.05 APPROVED ADA-COMPLIANT RAMP DESIGNS

- A. The designs shown on approved ADA-compliant ramp design sheets (if any) are an integral part of the Contract. The Contractor shall be responsible for constructing these ramp locations per the provided approved design sheets, and obtaining approval from the necessary regulatory authority of as-built conditions. The locations illustrated constitute the approved work of the Contract; the Contractor shall be solely responsible for design of any additional ramp construction attributable to means or methods of construction practice.

PART 2	PRODUCTS	Not Used
PART 3	EXECUTION	Not Used

END OF SECTION

SECTION 01000
GENERAL REQUIREMENTS

PART 1 GENERAL

1.01 SCOPE OF WORK

- A. This work includes all work necessary to install complete and fully usable green stormwater infrastructure surface and sub-surface features in the project areas as shown and described in the Contract Documents. In general, the work includes sawcutting and removal of existing sidewalk and paving; excavation of trenches and disposal of material; excavation and grading of rain gardens, stormwater bumpouts and swales; installation of check dams and spillways; installation of clean washed stone and geotextile; installation of thermoplastic, ductile iron and RCP drainage pipe and fittings, cleanouts and riser structures; installation of energy dissipators; installation of observation wells; installation of trench drains and concrete aprons; installation of new stormwater inlets, control structures and laterals; installation and modification of existing inlets, restoration of sidewalks, curbs and streets;, and placement and grading of specified stormwater and planting soils.
- B. Construction shall not begin until all erosion and sedimentation control facilities have been installed and approved by the Philadelphia Water Department (PWD). The Contractor shall minimize disturbance within the working area wherever possible, and restrict the limit of disturbance to the extent feasible.
- C. Landscaping related work is not included in the Contract. Landscaping work will be performed by a separate vendor after completion of this Contract.

1.02 SUMMARY OF WORK

- A. The work of this Contract includes all work necessary to produce complete and fully usable green stormwater infrastructure facilities as shown and described in the Contract Documents.
- B. The work of this Contract has a designed service life of 100 years. Because of the great expense involved in detecting, locating, and repairing defects, only the best methods and materials, and the most skilled workers, shall be used in the performance of this work.
- C. The paving work of this Contract has a designed service life of 40 years. All such work shall conform strictly to the requirements of the Philadelphia Streets Department (for work in City Streets) and of the Pennsylvania Department of Transportation (for work in State Highways).
- D. Past experience indicates that inadequate compacting of backfill in water sewer, and stormwater trenches frequently results in premature failure of paving patches. The Contractor will be required to adhere to the specific placement and compaction requirements as directed elsewhere in these Specifications.
- E. Past experience indicates that overcompaction of subgrade in green stormwater infiltration trenches results in failure of infiltration systems. The Contractor will be required to adhere to the specific excavation of the subgrade preparation and grading as directed elsewhere in these specifications.
- F. The Contractor shall be required to maintain a clean, functional, and safe worksite at all times. Measures indicated herein are considered the minimum acceptable requirements to maintain a responsible worksite, although site-specific conditions may mandate additional measures on any

given project. In such cases, the Contractor is required to be amenable and responsive to requests from PWD to increase site management procedures in place.

1.03 REFERENCE STANDARDS

- A. Wherever the Contract Documents (including the Standard specifications of the Department) refer to the standard specifications of technical associations, institutes, or societies, or to standard Federal, State, or City specifications, the reference shall be to the most recent revision or amendment thereof, unless otherwise noted.
- B. Pennsylvania Department of Environmental Protection, “Underground Utility Line Construction – Typical Erosion and Sediment BMPs”, August 1, 2001 or as revised.
- C. Philadelphia City Code, Title 4: The Philadelphia Building Construction and Occupancy Code.
- D. International Building Code (IBC), Chapter 33 – Safeguards During Construction, 2009 edition or most recently revised.

1.04 PROSECUTION OF WORK

- A. Work under this Contract shall be performed as day work.
- B. In order to complete all the work within the time specified, the Contractor will be required to vigorously prosecute the work without unnecessary delays.

1.05 MEASUREMENT AND PAYMENT

- A. The prices bid for the various proposal items shall include the distributed cost of all work and materials required by the Contract Documents and not noted as included in or incidental to any particular item. There will be no separate or additional payment for any such distributed costs, including but not limited to the following:
 - 1. Obtaining and maintaining insurance policies.
 - 2. Submittals: list of suppliers; certificates of insurance; shop drawings; catalog cuts; samples.
 - 3. Keeping work area in a neat, clean condition; satisfactory disposal of all debris.
 - 4. Maintaining existing curbs.
 - 5. Precautionary Measures: notification of utilities; support and protection of underground structures; repairs to or restoration of underground structures.
 - 6. Safety Measures: confined space entry requirements, etc.
 - 7. Resetting of existing L & I approved vent covers and valve boxes (with removable bolt down covers) in good condition within the limits of footway restoration.
 - 8. Contractor's Overhead and Profit.
 - 9. Project Manager's Field Office and related equipment.
 - 10. Any fines, inspection fees, or other charges incurred by the Contractor’s failure to perform the Work of the Contract in accordance with all necessary regulations and requirements.
- B. In accordance with the Standard Contract Requirements, Clause 41, Status and Authority of Project Manager, and Clause 46, Scope of Payments, PWD will order appropriate reductions in Current Estimates and/or Final Estimates should the Contractor fail to fulfill the general requirements of this Contract (e.g., keeping work area clean).

- C. As a precedent to receiving final payment, the Contractor shall submit to PWD a sworn affidavit that all bills for labor, service, and materials have been paid and that there are no suits pending in connection with the work done or labor and materials furnished under the Contract.
- D. Payment for mechanical street sweeping services shall be deducted from the allowance item for Mechanical Street Sweeping.

1.06 ABBREVIATIONS

- A. The following abbreviations are used in these Specifications:

ADA-----	Americans with Disabilities Act
BLS-----	Bureau Laboratory Services
CI-----	Cast Iron
CIP-----	Cast Iron Pipe
CRZ-----	Critical Root Zone
DI-----	Ductile Iron
DIP-----	Ductile Iron Pipe
DBH-----	Diameter, Breast-High
GSI-----	Green Stormwater Infrastructure
HDPE-----	High Density Polyethylene
MBM-----	Thousand Board Feet (Also used MFBM)
PennDOT-----	Pennsylvania Department of Transportation
PP-----	Polypropylene
PP&R -----	Philadelphia Parks and Recreation Department
PRZ-----	Prohibited Root Zone
PSD-----	Philadelphia Streets Department
PVC-----	Polyvinyl Chloride
PWD-----	Philadelphia Water Department
RC-----	Reinforced Concrete
RCP-----	Reinforced Concrete Pipe
VC-----	Vitrified Clay
VCP-----	Vitrified Clay Pipe
LF-----	Linear Foot
SY-----	Square Yard
CY-----	Cubic Yard
CO-----	Cleanout
OW-----	Observation Well

DG-----Domed Grate

1.07 MAINTAINING CURBS

- A. The maintenance of existing curbs throughout the work area (except where specifically directed in Section 02500, Paving and Surfacing, or as directed by PWD) is the responsibility of the Contractor. The work shall be prosecuted such that existing curbs are not damaged or disturbed by, or as a result of, construction operations. If existing curbs are damaged or disturbed as a result of the Contractor's operations, they shall be replaced by the Contractor, in accordance with the Philadelphia Streets Department specifications, at no additional cost to the City.

PART 2 PRODUCTS

2.01 CHAIN LINK FENCE

- A. Temporary chain link fence shall be galvanized steel and un-coated. Fence chain link fabric shall be minimum 11 gauge steel and mesh size shall be maximum 2 inches.
- B. Fence shall be 6 feet high with top and bottom rails. If a continuous fence, line posts shall be maximum 12 feet on center. If a panel fence, sections shall be maximum 12 feet wide, and each individual section shall be securely fastened to its adjacent sections.
- C. Fence shall be supported by panel stands or feet and shall be installed and secured without drilling holes in the cartway or footway.

2.02 CHAIN LINK WINDSCREEN

- A. Materials
 - 1. Chain Link Fence Windscreen shall be a 100% Polypropylene, 100% Polyethylene or solid vinyl fabric material that is weatherproof and UV protected for fade-resistance.
 - 2. The fabric shall provide a minimum 70% opacity/wind blockage.
 - 3. The fabric shall include brass grommets for affixing to the chain link fence with a maximum 24" between grommets center to center.
 - 4. The fabric shall be cut no more than 8" of the full height of the chain link fence.
 - 5. The fabric shall be a solid color of blue or green unless directed otherwise by the Engineer.

2.03 ORANGE FENCING

- A. Fence shall be Blaze or International Orange colored, mono-oriented laminar polyethylene plastic, U.V. stabilized material with a mesh size of 3 in. by 1.5 in. and porosity of 60%. The fence shall have a minimum height of 4 ft.
- B. Posts for attachment of the fence shall be 2-in. by 2-in. wood posts at a minimum of 6 ft. long, or 5-1/2 ft. high 2 in. thick steel U-channel posts.
- C. Ties for attachment of fencing to posts shall consist of plastic or wire of a gauge sufficient enough to bear the weight of the fencing on the posts.

PART 3 EXECUTION

3.01 SITE LAYOUT

- A. The Contractor shall arrange the staging and site layout such that disruption to traffic and adjacent properties is minimized. All properties must have maintained access, or an agreement

in place with the Contractor and PWD to restrict access prior to site disturbance. Right-of-way closures shall be accurately reflected in the issued permits (please see Section 01570 for details).

- B. The Contractor shall minimize the limits of disturbance wherever possible. Off-duty conditions should represent the minimum reasonable area occupied by the Contractor's equipment and protected excavation. All stockpiles, materials, equipment, and other onsite related items shall be contained in a fenced stockade area whenever possible and practicable.
- C. Site layout sketches shall be presented to PWD for approval prior to mobilization to a given worksite. These sketches may be submitted as part of and integral to the required Erosion and Sedimentation Control Drawings, as described in Section 02135.

3.02 CONTRACTOR EQUIPMENT

- A. Contractor's equipment shall all be maintained in good working order. Fluid leaks shall be remediated properly and immediately. All required inspection tags, permits, licenses, and other documentation shall be current and available.
- B. Contractor's equipment, trailers, storage bins, and other related items to be operated or stored onsite shall be free of graffiti or other unofficial markings. Equipment shall be kept reasonably clean and presentable.
- C. PWD reserves the right to proscribe remediative action regarding Contractor vehicles, including but not limited to washing, painting, repairing, or removal from the worksite of any piece of Contractor equipment that does not meet these requirements.
- D. The Contractor shall prevent equipment leaving the site from depositing sediment beyond the controlled work area. The Contractor may elect to utilize one (or more) or several different practices to alleviate this, including (but not limited to) tire washing stations, rock construction entrances, street sweeping, or any other appropriate method to minimize sedimentation of surrounding roadways and properties. PWD reserves the right to require cleanup of any affected external areas, regardless of practices in place at the time of an incident.

3.03 CLEAN WORK AREA

- A. The Contractor shall take all measures necessary to keep the work area in a clean, neat condition. Excavated materials shall be removed from the street or contained in protected stockpiles, and the area cleaned as directed by PWD. Surfaces shall be sprinkled with water or otherwise treated to keep the dust laid during the work. Daily sweeping of areas to be open to traffic is required at the end of each workday.
- B. Please see Section 02135 for guidance on specific measures to be employed for erosion and sedimentation control.
- C. At the end of each working day, clear and clean footway and driving lanes shall be provided where not fully protected by fencing and closed to traffic. Please see the Maintenance and Protection of Traffic Requirements attached to these Specifications for details.
- D. The Contractor shall be required to provide, at no additional expense to the City, adequate facilities to support the onsite workforce, including (but not limited to) toilet facilities, trash receptacles, employee parking, utility feeds/connections (including any necessary water or sewer temporary connections), site protection measures, and any and all other items or services necessary to maintain a clean, safe, and efficient worksite. PWD may inspect these and other related measures at any time, and may require additional provisions as deemed necessary.

- E. The Contractor is hereby informed that access to and use of PWD water from hydrants, mains, or other connections onsite is not inherent to this Contract. The Contractor is solely responsible for obtaining any necessary temporary permits, meters, or other required items to provide water as needed. Unmetered and unpermitted use of City water is prohibited.

3.04 SITE SEQUENCING

- A. Work shall continue on a given work location (as defined and determined by PWD in the preconstruction meetings; generally understood to be contiguous work sites) until final site stabilization at that location. The Contractor shall not have multiple work locations under construction without prior approval by PWD Construction.
- B. Construction shall not begin until all sediment and erosion control facilities have been installed and approved by the Philadelphia Water Department (PWD). The Contractor shall minimize disturbance within the working area wherever possible, and restrict the limit of disturbance to the extent feasible.
- C. The Contractor shall submit a detailed and updated sequence of operations and schedule to PWD every two (2) weeks. This sequence shall be site-specific, and shall note significant changes to the activities underway on a given site (for example: excavation, soil testing, temporary paving, landscaping, or others as appropriate). The schedule shall be assumed to be accurate for the following two (2) weeks, unless written notification is received by PWD.
- D. PWD reserves the right to not accept Work performed under this Contract that was not properly represented on the sequence of operations schedule. The schedule is an aid to having the proper inspections performed such that all installed Work can be approved and accepted for dedication to the City. Work performed outside of the established schedule may not be sufficiently or properly inspected, and therefore may be ineligible for City acceptance and dedication.

3.05 RECYCLING POLICY

- A. The Contractor is reminded of the City policy on recycling of construction materials as described in Chapter 10 – 724 of the Philadelphia Code. For the purposes of this Contract, work within the City right-of-way shall fall under the clauses applicable to ‘Regulated Premises’ as defined in 10-724.1(f) of the Philadelphia Code.
- B. The Contractor shall conform to the Streets Department Regulations for Private Collections of Recyclables and Non-Recycled Material.
- C. The Contractor is directed to the specifications of Pennsylvania Department of Environmental Protection, Act 2 – The Land Recycling and Environmental Remediation Act of 1995 (as amended), 35 PS § 6026.101 et seq. All excavated material from this project shall be treated as Unregulated Fill (Category 9; Utility Excavation, Exempt from Required Testing) as therein defined, unless visual or other evidence indicates contaminants justifying reclassification and subsequent testing as Historical Fill (Category 1) or Regulated Fill (Category 6 or as appropriate). The Contractor shall conform to all particulars of the Act and related Pennsylvania Code (especially 25 Pa. Code § 271.101 and 287.101) regarding excavated materials.
- D. The Contractor is solely responsible for full conformance with the applicable recycling and disposal policies. No additional payment shall be made by the City for recycling of construction materials.

3.06 FIELD OFFICE

- A. The Contractor shall furnish and maintain at the site a Field Office for the Inspector having floor areas not less than 120 square feet for Contracts under 120 calendar days and not less than 300 square feet for Contracts equal to or over 120 calendar days. It shall also have heat and light satisfactory to the Inspector. Telephone service, other than the "pay station" type, shall be provided for the exclusive use of the Inspector. It may be either a trailer-type office acceptable to the Inspector, or a temporary building. The Contractor shall also provide toilet and washing facilities for the exclusive use of the Inspector in Field Offices 300 square feet and larger.
- B. Should it be impossible to schedule the utility hookups prior to the scheduled start of construction, the field office shall then be equipped with a generator for electricity and cellular telephone. Construction work shall not begin until the field office is ready unless authorized in writing by PWD. Any loss time in waiting for the field office to be ready shall be made up by the Contractor in order to meet time constraints specified. In making up the loss time, any extra working hours the City incurs, the Contractor shall reimburse the City for all costs.
- C. The Contractor shall furnish and maintain internet access for the exclusive use of PWD and inspector. Internet access shall be cellular type (3G/4G mobile hot spot).
 - 1. The contractor shall provide **2** (two) units of the type specified herein.
 - 2. Wireless internet must be provided and maintained for the duration of the contract through final contract payment. Mobile hotspot devices and service provided must allow for multiple devices to connect to and use the wireless internet simultaneously. Laptops, phones, tablets and any other electronic device with the ability to connect to the internet must be able to connect to the mobile hotspot. The internet speed for the mobile hotspot device must be compatible with 3G network speeds with the ability to function on 4G network speeds when available. The devices download speed must be capable of at least 3Mbps (megabits/second) and shall be compatible with the Windows operating system. The contractor shall provide all necessary hardware and maintain the service contract for the duration of the project.
 - 3. Where construction trailers are not required by the contract, the contractor shall provide an alternative power source connection (12V car type power) in addition to the standard AC power supply. The following mobile hotspot devices are available through the following carriers and meet the minimum specifications stated above:
 - a. Verizon JetPack 4G LTE Mobile Hotspot models: MiFi® 4510L, MiFi 5510L, MH 5291L, Ellipsis
 - b. AT&T Mobile Hotspot models: Elevate 4G, Unite pro, Unite, MiFi Liberate
 - c. Sprint ETxpMress Mobile Hotspot models: Sprint LivePro, MiFi 500 LTE, Netgear Zing, Sierra Wireless 4GLTE Tri-Fi
 - d. T-Mobile® Models: Sonic 4G Mobile Hotspot, Sonic 2.0 Mobile Hotspot LTE, Samsung LTE Mobile Hotspot Pro Or an approved equal

3.07 PEDESTRIAN PROTECTION

- A. In addition to the pedestrian traffic protection requirements of Section 01570, the Contractor shall furnish and maintain additional protective measures to enhance the site safety of pedestrians and the public.
- B. Any excavation to remain open after the end of a workday (or any other time when the Contractor's employees or representatives are not onsite) shall be protected from entry. Any stormwater surface feature not yet fully stabilized shall be equally protected.

- C. Orange plastic fencing, 'caution' tape, or other non-structural barrier shall not be acceptable protection. Protective measures must constitute a visual and physical barrier to entry by a person. Suggested measures include chain-link fencing, continuous 'Jersey' barriers, or surrounding inclusion into a closed worksite. Shop drawings of protective measures are suggested but not required for submission and approval, but PWD reserves the right to refuse adequacy of unapproved measures.
 - 1. Use of extended sheeting (where already necessary and appropriate) may be considered sufficient, when continued to a height of four feet (4') above ground surface adjacent. In all other cases, additional protective measures must be employed.

3.08 CHAIN LINK FENCING WINDSCREEN FABRIC

A. Erection

- 1. Install windscreen based on manufacturers recommendations.
- 2. The site and fence shall be evaluated for prevailing wind conditions and wind flap options shall be implemented as per manufacturer's recommendations and shall be approved by the Engineer prior to ordering the necessary materials. If needed, the existing fence posts/footings shall be enhanced or further anchored to allow for increased wind loading.

B. Maintenance

- 1. The windscreen shall be kept free of graffiti. The windscreen shall be cleaned as required by the Engineer. Damaged sections shall be replaced as required by the Engineer.
- 2.

END OF SECTION

SECTION 01110
PHOTOGRAPHIC DOCUMENTATION

PART 1 GENERAL

1.01 SCOPE OF WORK

- A. Retain a competent individual knowledgeable of photographic documentation in construction practices and experienced in the implementation of established inspection procedures to perform the services specified.
- B. Contractor will assume the responsibility for the management of the photographer
- C. The photo-document is considered a product without artistic value. Photograph copyrights are equally shared and unrestricted between the photographer, PWD and/or contractor.

1.02 SUBMITTALS

- A. Prior to start of construction, furnish JPEG file for viewing and printing of each photograph with notes to PWD and to the Philadelphia Department of Records, City Hall; Room 156; Philadelphia, PA 19107; Att: Mark Brooks.
- B. Provide JPEG files of each photograph to PWD prior to start of construction. Work may not start until photographs are reviewed and accepted by PWD.
- C. Post-construction photo-documentation must be received before final contract payment is processed.
- D. Photographic files are to be saved unaltered.

1.03 PAYMENT

- A. There will be no additional or separate payments for photo documentation. This item shall be considered a distributed cost.

PART 2 PRODUCTS Not Used

PART 3 EXECUTION

3.01 PHOTO DOCUMENTATION

- A. Prior to start of construction, photo-document pre-construction conditions of all areas to be disturbed or accessed by contractor. Take sufficient number of photographs of each residence and area of disturbance including but not limited to cartway, curb, footway, steps, front wall, curb stop box, fresh air inlet, and gas shut off, trees or vegetation, fencing, guardrails, retaining walls, poor drainage areas, and signs and street features and other areas where work will occur to document pre-construction conditions.
- B. All existing trees and plantings in all areas to be disturbed or accessed by contractor shall be photo-documented.
- C. Upon completion of construction photo-document post construction conditions. Take sufficient photos to document approved post-construction conditions.
- D. All photographs shall be taken with a full frame digital camera equipped with geotagging.

- E. Electronically date & time stamp each photograph.
- F. A brief descriptive note will be recorded for each photograph. It must include date taken, photograph number assigned by the camera, directional and other reference points that help identify the photograph location in the project.
- G. Notes are to be transcribed into a typewritten searchable format such as a table or spreadsheet.
- H. All damage or claims not indicated on pre-construction photographs may be considered the result of construction. All costs to correct damages or settle claims shall be borne by the contractor.
- I. Notify PWD at least two (2) days before taking any pre-construction or post-construction photographs.
- J. PWD may communicate any special requests or instructions for photo-documentation prior to each visit.
- K. No photographs shall be taken during periods of inclement weather or when more than ten percent (10%) of the ground area is covered with obstructions, cars, snow, leaves or debris unless otherwise authorized by PWD.

END OF SECTION

SECTION 01121
PRECAUTIONARY MEASURES

PART 1 GENERAL

1.01 EXISTING UNDERGROUND UTILITIES

- A. Attention is directed to the existing underground structures adjacent to, parallel with, or over trenches. The Contractor will be held responsible for any damage done to such structures in the prosecution of the work. He shall exercise every precaution necessary to prevent damage in working underneath or adjacent to any underground structure. Any damage done to such structures shall be repaired by the Contractor. There will be no additional compensation for any work and materials necessary for protecting, supporting, or repairing active underground structures, or for removing abandoned structures (if any), as such costs are included in the prices bid under this Contract.
- B. The Contractor shall obtain from the appropriate utility company or City Department, verification of the current status of structures shown on the Plans as abandoned, before working near such structures.
- C. The underground structures shown on the Plans are plotted from record information, and are not guaranteed to be complete and correct as to location, size, and depth. The Contractor shall obtain all necessary information on existing underground structures by digging test holes. There will be no separate or additional payment for this work.
- D. If interference develops that is not otherwise provided for in the Contract Documents, the Contractor shall notify the utility company involved and make arrangements to overcome the interference to satisfaction of PWD, without additional cost to the City.
- E. In the event that some portion of the Work of the Contract is outside of the public right-of-way, the Contractor shall engage a utility locator service to identify and mark the existing utilities within the limits of disturbance. The Contractor shall be responsible for coordination with any affected utilities, and any resultant changes to the Work shall require approval by PWD. No additional payment shall be made for the engagement of the utility locator service as necessary.

1.02 NOTIFICATION OF UTILITIES

- A. Pursuant to the requirements of PA Act 287 (December 10 1974), as amended, of the Legislature of the Commonwealth of Pennsylvania, titled "Underground Utilities Line Protection Law", the Contractor shall call each utility company and City Department that follows, three days before beginning excavation.
 - 1. PECO Energy.....PA One Call System.....1-800-242-1776
 - 2. PGWPA One Call System.....1-800-242-1776
 - 3. Philadelphia Parks and Recreation Department.....(215) 685-3635, 683-3679
 - 4. SEPTA.(215) 580-4000
 - 5. Drainage Information Unit(215) 685-6271, 6272
 - 6. Water Main Information(215) 685-6273, 6274, 6275
 - 7. Traffic Engineering (Signals)..... (215) 686-5572
 - 8. Verizon.....PA One Call System..... 1-800-242-1776

- 9. Street Lighting Section..... (215) 686-5515
- 10. Communications Service Section..... (215) 686-3951
(Division of Technology, Electrical Bureau)
- 11. Cable Companies.....PA One Call System.....1-800-242-1776
(Comcast, Greater Media, and Wade Communications)
- 12. Veolia Energy Philadelphia, Inc. Pa One Call System.....1-800-242-1776

B. The Contractor shall notify the appropriate utility company or City Department three days before working in the vicinity of underground structures which the Plans show in close proximity to the work, and he shall fully cooperate with the company or Department involved.

1.03 HYDRO-HAMMER PROHIBITED

A. The use of a Hydro-Hammer or similar equipment for removal of existing paving on this project is hereby prohibited. Such equipment is prohibited because of the great possibility of damage to existing underground structures (e.g., water and gas mains, services, and laterals), and also to the probability of excessive breakage of adjacent existing paving.

1.04 PECO ENERGY FACILITIES

- A. Rearrangement of PECO Energy aerial facilities requires a four week notice and payment in advance. There will be no separate or additional payment for this work.
- B. Attention is directed to the existing underground PECO Energy facilities above or near the proposed trenches in various locations. These facilities shall be protected and supported by the Contractor during construction.
- C. Excavation near utility poles supporting PECO Energy facilities shall require that the Contractor contact PECO and request that a PECO representative evaluate the need for pole protection.
- D. It is expected that if any PECO facilities become uncovered as a result of construction activities, they will be properly supported throughout the duration of the proposed work.
- E. Maintain safe working distances from PECO aerial facilities. Relocation of PECO Energy aerial facilities requires 12 weeks' notice & payment in advance.

1.05 PROVISIONS FOR EXCAVATING NEAR PECO ENERGY ENERGIZED UNDERGROUND TRANSMISSION LINES.

- A. At least 10 days before the beginning of any excavation, the Contractor shall contact the Supervising Engineer, Underground Transmission, at PECO Energy Oregon Shops, 2610 S. Columbus Blvd., Philadelphia, PA 19148, (215) 731-3254. At that time, the Contractor's work schedule will be reviewed to determine inspection requirements and precautionary measures required.
- B. Three days before any excavation begins, the Contractor shall call the PA One-Call system, 1-800-242-1776, and specify the location where excavation work will be done. This call will result in the location of PECO Energy facilities being marked.
- C. A PECO Energy representative will inspect the job site periodically and will be available as required by calling (215) 731-3254. Presence of this representative or any other PECO representative at the job site does not relieve the Contractor of any responsibility involving injury

to workmen or the public, or damage to any underground transmission facilities, including the pipe and its coating and the Contractor's equipment.

- D. Excavation near utility poles supporting PECO Energy facilities shall require that the Contractor contact PECO and request that a PECO representative evaluate the need for pole protection.
- E. Excavation in the vicinity of the underground transmission line will be performed as follows:
 - 1. Large equipment (i.e., scrapers, bulldozers, etc.) may be used to excavate in the vicinity of the underground pipe line up to but not closer than 4 feet from the marked center line.
 - 2. Small equipment (i.e., backhoe, etc.) may be used to excavate in the vicinity of the underground pipe line up to but not closer than 2 feet from the marked center line.
 - 3. Hand excavation shall be used to remove the remaining material and uncover the underground pipe line.
- F. The Contractor shall take care not to damage any transmission facilities, including the coating of the pipe during excavation. Any damage is to be reported promptly to PECO Energy. The PECO Energy representative will decide whether repairs are required. All repairs shall be made according to PECO Energy specification S-7512.
- G. Before excavation begins, the Contractor shall present for PECO Energy review and approval a plan showing how the pipe is to be supported, where it will be undercut, and how the pipe will be protected from damage by equipment while uncovered.
- H. After excavation is complete and at least five days before any backfilling operation is to commence, the Contractor shall notify the Supervising Engineer, Underground Transmission. At that time the pipe coating shall be tested in the presence of a PECO Energy representative to assure the integrity of the coating. This testing shall be conducted according to PECO Energy specification S-7512. All necessary repairs will be made to the pipe coating prior to backfilling.
- I. At no time shall equipment of any kind run over any exposed transmission facility or pipe without appropriate protection.
- J. The Contractor shall backfill the area around the pipe from 12 inches below the pipe with corrective backfill described in PECO Energy specification 148-P-7 (for thermal sand) or 148-P-8 (for fluidized thermal backfill). Backfill shall extend to a minimum of 12 inches above the top of the pipe. Choice of backfill shall be discussed with the Supervising Engineer, Underground Transmission. Backfill shall be installed as described in the specification. Care shall be taken to prevent damage to the coating during the backfill operation.
- K. In the event that an underground transmission line is exposed, then the Contractor will be responsible for all cost for any of the following required work:
 - 1. Testing of the somastic coating on the transmission pipe line to insure its integrity.
 - 2. Repair of any damage to the somastic coating.
 - 3. Backfilling the area around the transmission pipe with corrective backfill.This work shall meet requirements contained in the PECO Energy written standards and specifications.
- L. Information concerning PECO Energy tests, standards or specifications, can be obtained from the Supervising Engineer, Underground Transmission Section.

1.06 PGW FACILITIES

- A. Attention is directed to the existing gas mains above or near the trenches in various locations. These gas mains will be abandoned as necessary, and new mains laid as necessary, by the Philadelphia Gas Works. The Contractor shall make all necessary arrangements with the Gas Works, and shall fully cooperate with them in connection with their structures. The Contractor shall notify the Philadelphia Gas Works three days before beginning work.
- B. PGW cautions all contractors to use care when performing work near PGW facilities. When making perpendicular crossings under PGW facilities, it is recommended that the stipulations of PGW's GS 40.7 & 53.8 be followed where practical so that the unnecessary disturbance of PGW structures is avoided.

1.07 PROVISIONS FOR PASSING UNDER EXISTING PGW FACILITY

- A. Installations crossing under 6 inch and smaller gas pipes shall be punched or bored.
- B. Installations crossing under 8 inch and larger gas pipes shall be accomplished by boring a hole no larger than the diameter of the conduit, water service or sewer lateral.
- C. The intended conduit or lateral bored shall have a minimum clearance of 1'0" from the bottom of the gas main to the top of the conduit or lateral pipe.
- D. The distance from the trench wall of the boring operation to the marked center line of the gas pipe shall be at least equal to the distance from the top of the gas pipe to the bottom of intended conduit or lateral bored as shown in PGW Distribution Standards, Drawing No. GS 40.8.
- E. A copy of PGW standard drawing No. GS 40.8 can be obtained from PGW Distribution Department, 800 W. Montgomery Avenue, Philadelphia, PA (215-684-6664).
- F. All voids between the conduit, water service or sewer lateral pipe and the punched or bored opening shall be filled with grout.
- G. The Contractor shall determine the actual location and depth of the gas pipe.
- H. Test openings to determine depth of gas pipe shall be as small as possible. Any excavation immediately above the pipe and within 18 inches of the outside edge of the structure must be performed using prudent techniques. This can only be done with the use of hand tools or vacuum excavation. Any damage to PGW facilities including coating damage must be reported immediately. Repairs will be made at the expense of the Contractor.
- I. Backfilling and paving restoration of test openings will be at the expense of the Contractor.
- J. If foreign structures come within 6 inches of PGW gas facilities, an insulating spacer must be installed per D.S. 23.3.
- K. PGW shall be given a minimum of three days notice to start of test openings or installation of water main, water services, sewer pipe, or sewer laterals. Call 800-242-1776.

1.08 VERIZON FACILITIES

- A. Attention is directed to the existing Verizon structures, ductbanks, and crossings above or near the trenches in various locations. The contractor must locate all facilities in the field relevant to the work and the facilities should be maintained in-place and not disturbed.
- B. The Contractor is responsible to support, protect and maintain all Verizon structures, in place, undisturbed.

- C. Any/all Verizon trenches disturbed shall be returned to original condition or better.
- D. The Contractor is financially responsible if any damage occurs and Verizon is required to repair, adjust, relocate, etc. any underground structures. Financial responsibility will include, but is not limited to, customer service interruptions.
- E. SITE-SPECIFIC CONCERNS
 - 1. Attention is directed to the Verizon conduit at the following locations: Crossing Verizon facilities at the intersection of Baltimore Ave. and 53rd St.
 - 2. Crossing Verizon facilities at the intersection of 52nd St. and Cedar Ave.
 - 3. Crossing Verizon facilities at the intersection of 51st St. and Cedar Ave.
 - 4. Crossing Verizon facilities at the intersection of 52nd St. and Walton Ave.
 - 5. Crossing Verizon facilities at the intersection of Catharine St. and 53rd St.
 - 6. Crossing Verizon facilities at the intersection of Baltimore Ave. and 51st St.

1.09 SEPTA

- A. SEPTA does not have any underground facilities within the project area.
- B. For construction on bus routes, a 15-foot travel lane is required to be maintained at all times during construction. All bus stops are to be maintained and open for passengers during construction. If these conditions cannot be met, SEPTA requires a 2-week notice so that detours or alternate stops can be arranged.
- C. For construction near railroad tracks, work within 25 feet of the outside rail requires a SEPTA right-of-entry permit.
- D. A minimum of 18” clearance between the proposed work and all SEPTA structures is required. Please be advised to shore and protect all SEPTA facilities for the duration of the work. Shoring and protection plans, prepared by a PA licensed Engineer, shall be submitted to SEPTA for review and approval. SEPTA records indicate the following conflicts listed in section E.
- E. SITE-SPECIFIC CONCERNS
 - 1. DUCTS
 - a. Duct banks run along Baltimore Avenue and 52nd Street

The following operational service routes require attention:
 - 2. BUS ROUTES
 - a. Trolley Route 34 runs along Baltimore Avenue
 - b. Route 52 runs along 52nd Street
 - 3. BUS STOPS
 - a. NEC of 53rd and Baltimore Avenue
 - b. SWC of 53rd and Baltimore Avenue
 - c. NEC of 52nd Street and Cedar Avenue
 - d. NEC of 51st Street and Baltimore Avenue
 - e. SWC of 51st Street and Baltimore Avenue
 - 4. TRACKS/CATENARY/TROLLEY POLE

a. Tracks, Catenary, and Poles on Baltimore Avenue

F. The Contractor shall note that all construction which may affect SEPTA facilities must adhere to SEPTA scheduling and regulations. Please note that this may include but is not limited to requiring construction to be conducted at night, weekend, and/or be continuous for specific phases of the project.

G. The SEPTA point of contact is:

Lydia C. Grose, Director of Engineering and Design
1234 Market Street, 13th Floor
Philadelphia, PA 19107
(215) 580-8255

1.10 PHILADELPHIA WATER DEPARTMENT FACILITIES

1.11 TRAFFIC CONTROL FACILITIES

1.12 STREET LIGHTING FACILITIES

1.13 OTHER UTILITY

1. The contractor shall note a construction site overlap with PWD Work # 50158 at the NE corner of the 53rd St & Baltimore intersection shown on G-8. The two (2) ADA ramps at the NEC 53rd Street and Baltimore Avenue (adjaced to system 1265-4) are to be constructed under separate contract S-50158-G. Contractor is to construct the connection to the existing sewer as indicated on the plans, backfill as specified, and patch disturbed footway areas with temporary hot mix asphalt at the surface. PWD and the Streets Dept have coordinated projects so that construction of System 1265-4 shall occur before the street light and ADA ramp upgrades designed in PWD Work # 50158. The contractor shall schedule construction activities so that System 1265-4 is the first site constructed.

PART 2 PRODUCTS Not Used

PART 3 EXECUTION Not Used

END OF SECTION

SECTION 01125
CONTRACTOR REQUIREMENTS FOR
CONFINED SPACE ENTRY

PART 1 GENERAL

1.01 SCOPE AND PURPOSE

- A. This Section applies to all personnel on Water Department job sites where confined space entry occurs.
- B. The purpose of this Section is to ensure that Contractor's workers are safeguarded from unsafe atmospheres while entering or occupying any confined space.

1.02 DEFINITIONS

- A. Confined Space: is any space that has limited or restricted means of access to a space not intended for continuous occupancy, and that could contain a hazardous atmosphere.
- B. Hazardous Atmosphere: is any atmosphere that has one or more of the following characteristics:
 - 1. is a toxic atmosphere;
 - 2. is oxygen-deficient or oxygen-enriched;
 - 3. is an explosive atmosphere.
- C. Toxic Atmosphere: is any atmosphere in which the concentration of any airborne contaminant exceeds the OSHA Permissible Exposure Limit (PEL) or the American Conference of Governmental Industrial Hygienists (ACGIH) Threshold Limit Value (TLV) established for the contaminant.
- D. Oxygen-Deficient Atmosphere: is any atmosphere having less than 19.5% oxygen content.
- E. Oxygen-Enriched Atmosphere: is any atmosphere having greater than 22% oxygen content.
- F. Explosive Atmosphere: is any atmosphere that contains a concentration of flammable or combustible material in excess of 10% of its Lower Flammable Limit (LFL, also called LEL).
- G. Confined spaces may include, but are not limited to, storage or processing tanks (either above or below grade), manholes, sewers, conduits or tunnels, wet pits, ducts, and open-topped spaces more than 4 feet deep.

1.03 APPLICABLE STANDARDS OF CONFORMANCE

- A. Contractor whose employees may enter confined space shall comply with the following regulations:
 - 1. Applicable sections of 29 CFR PART 1926 (OSHA Construction Industry Regulations and Standards).
 - 2. Commonwealth of Pennsylvania regulations.
- B. Unless the above regulations impose more stringent requirements, the requirements set forth in Section 27 ("Work in Confined Spaces") of the U.S. Army Corps of Engineers Safety and Health Requirements Manual, EM 385-1-1 (Rev. 1992) shall apply.

1.04 RESPONSIBILITIES

A. City of Philadelphia Responsibilities:

1. The City of Philadelphia will, wherever applicable, supply contractors with material safety data sheets (MSDSs) as follows:
 - a. Gases known to be generated from wastewater, namely, hydrogen sulfide (H₂S) and methane.
 - b. Chemicals presently known to be significant potential contaminants of wastewater from major point-source industrial discharges.
 - c. Chemicals used in City of Philadelphia treatment plants to treat fresh water and wastewater.

B. Contractor Responsibilities:

1. The Contractor shall be solely responsible for complying with applicable standards of conformance, including, but not limited to, the following:
 - a. Establish written procedures for confined space entry that includes entry permit requirements.
 - b. Ensure that all affected personnel are properly trained in all aspects that may affect their safety during confined space entry.
 - c. Ensure that affected employees are provided information and training concerning potentially hazardous atmospheres.
 - d. Provide all necessary instruments and equipment needed for complying with established procedures, including (but not limited to):
 1. Testing of atmosphere with direct-reading instruments;
 2. Personal protective equipment;
 3. Non-entry retrieval devices such as body harnesses and winches;
 4. Communications devices such as two-way radios;
 5. Positive ventilation equipment (e.g., blowers and flexible ducts).
 6. The Contractor shall be solely responsible for interpreting hazard information provided by the City of Philadelphia and for providing training and information to employees in accordance with the requirements of 29 CFR PART 1926. (OSHA Hazard Communication Standard).
 7. Properly executed permits shall be completed by the Contractor before any contractor employee or subcontractor either:
 8. Performs hot work in an area defined by the City as a hot-work permit area.
 9. Enters any space determined by the City to be a permit-required confined space.

1.05 ENFORCEMENT

- A. Performance may be audited by the job-site representative of the City of Philadelphia Water Department. The representative may, at his discretion, obtain advice from technical specialists. However, the City is under no contractual obligation to perform such functions.

- B. Failure of the Contractor to conform to applicable safety standards or to meet his responsibilities, whether or not explicitly covered in this section, may cause the job-site representative either to prevent work from starting or to stop work in progress.
- C. Repeated or egregious failures on the part of the Contractor to comply with any requirement of the Section may result in termination of the Contract and/or affect the Contractor's eligibility to bid on future contracts. The City of Philadelphia bears no liability for loses, either direct or incidental, suffered by the Contractor in such cases.

PART 2	PRODUCTS	Not Used
PART 3	EXECUTION	Not Used

END OF SECTION

SECTION 01126

CONTRACTOR REQUIREMENTS FOR ENTERING WATER DEPARTMENT
OPERATING SITES WITH HAZARDOUS MATERIALS

PART 1 GENERAL

1.01 MATERIAL SAFETY DATA SHEETS (MSDS's)

- A. Contractor who brings any hazardous material onto the site of any Water Department operating facility shall provide the PWD Project Manager a copy of the Material Safety Data Sheet (MSDS) for each hazardous material brought on site except for the items listed below:
 - 1. Fluids used in automotive equipment (e.g., gasoline, oil, transmission fluid, antifreeze, brake fluid, etc.)
 - 2. Propane; Acetylene; Oxygen; Cement; or Latex Paint

1.02 LABELING OF HAZARDOUS MATERIALS

- A. The Contractor is responsible for insuring that each portable container of hazardous materials brought on site is labeled in accordance with the requirements of the Pennsylvania Worker and Community Right-to-Know Act of 1984. Legible information firmly affixed by label or tag to the container shall include the following:
 - 1. Manufacturer's name, address, and telephone number.
 - 2. Trade name or common name of the material.
 - 3. Chemical Abstract Services (CAS) member and chemical name of each hazardous ingredient.
 - 4. Appropriate hazard warnings.

1.03 STORAGE OF HAZARDOUS MATERIALS

- A. Contractors are responsible for proper storage and dispensing of all hazardous materials brought on site. Practices shall be consistent with recommendations in their respective MSDS's and with applicable codes. Specifically, flammable materials shall be segregated from oxidizers.
- B. All hazardous materials shall be removed from the site prior to job closure.

1.04 STORAGE AND HANDLING OF CYLINDERED GASES

- A. Cylinders shall:
 - 1. Be transported and secured in the upright position.
 - 2. Have valve covers screwed in place unless a regulator is connected.
 - 3. Be kept outside and at ground level, except during periods of actual use inside a building.
 - 4. Have main valve shut off when not in use, including during lunch and break periods.
- B. Contractors shall observe all applicable recommendations of Compressed Gas Association Publication P-1, Safe Handling of Compressed Gases in Containers, and SB-8, Use of Oxy-Fuel Gas Welding and Cutting Apparatus.

PART 2 PRODUCTS Not Used

PART 3 EXECUTION Not Used

END OF SECTION

SECTION 01300
SUBMITTALS

PART 1 GENERAL

1.01 SUMMARY

- A. The requirements of this section shall apply to all Contractor submittals required as part of this Contract. The Contractor is directed to the individual specification sections for the detailed technical requirements for each submittal.
- B. It is of utmost importance that the work of this Contract be carefully planned and coordinated to ensure that the work is accomplished efficiently without unnecessary delays. The Contractor's attention is directed to the requirements for sequencing and scheduling his work in Section 01000, General Requirements, of the specification. The Contractor's submittals shall be complete and submitted sufficiently in advance of each element of work so as to prevent unnecessary delays.

1.02 ADDRESSES

- A. Mike Schramm
Acting Chief Engineer, Construction Branch
Philadelphia Water Department
Jefferson Tower, 2nd Floor
1101 Market St.
Philadelphia, PA. 19107
Phone: 215-685-6351
- B. Vahe Hovsepian
Manager, Design Branch
Philadelphia Water Department
Jefferson Tower, 2nd Floor
1101 Market St.
Philadelphia, PA. 19107
Phone: 215-685-6278
- C. Jessica Brooks
Director, GSI Unit
Philadelphia Water Department
Jefferson Tower, 4th Floor
1101 Market St.
Philadelphia, PA 19107
Phone: 215-685-6039
- D. Trisha Grace
Manager, Projects Control Unit
Philadelphia Water Department
Jefferson Tower, 2nd Floor
1101 Market St.
Philadelphia, PA. 19107
Phone: 215-685-6336
- E. Mark Waas

Chief Water Transport Engineer, Collector Systems
3201 Fox Street
Philadelphia, PA 19129
Phone: 215-685-2255

F. Gerald Bright
Manager, GSI Maintenance
Philadelphia Water Department
Jefferson Tower, 4th Floor
1101 Market St.
Philadelphia, PA 19107
Phone: 215-685-4953

G. William Roscioli
Materials Engineering Laboratory
Bureau Laboratory Services (BLS)
Philadelphia Water Department
1500 E. Hunting Park Avenue
Philadelphia, PA 19124
Phone: 215-685-1447

H. Address all submittals to Chief of Construction Branch unless otherwise directed.

1.03 PRE CONSTRUCTION SUBMITTALS

A. Certificates of Insurance:

1. Attention is directed to Clause 31 of the Standard Contract Requirements.
2. Each insurance policy required shall be endorsed to name the City of Philadelphia and the Contract Number referenced as named insured.
3. Each insurance policy required shall be so endorsed that the Philadelphia Water Department shall be notified 30 days in advance of cancellation, or any other change in the insurance provided by the policy.
4. Before receiving a Notice To Proceed under this Contract, the Contractor shall deliver acceptable Certificates of Insurance (in triplicate) for each insurance policy required to:

Philadelphia Water Department
Attn: Projects Control Unit
Jefferson Tower, 2nd Flr.
1101 Market Street, Philadelphia, PA 19107-2994

5. If the work goes beyond the expiration date of the insurance policy, Certificate of Renewal shall be sent prior to the expiration date in accordance with all of the above requirements. Failure to send this renewal could delay progress payments.

B. Streets/PennDOT Permits

1. The Contractor shall submit three (3) copies of approved Application for Street Closure permits from the Philadelphia Streets Department and any HOP permits from PennDOT to the Project Manager.

C. Schedule of Operations:

1. Within fourteen (14) calendar days of issuance of the Notice to Proceed, the Contractor shall prepare and submit five (5) copies of the proposed Schedule of Operations to PWD for review and approval.
 2. The Schedule of Operation must show the proposed method of prosecuting the work of this contract including the dates upon which the principal activities are planned to start and finish. Approval of the Schedule of Operations in no way relieves the Contractor from any of the responsibilities set forth in the Contract Documents.
 3. If so required, the schedule shall be revised until approved by PWD.
 4. Schedule shall be updated monthly, depicting progress to the last day of the month and five (5) copies distributed to PWD not later than the fifth day of each month with the application for progress payment.
 5. Schedule shall be prepared in the form of a horizontal bar chart showing in detail the proposed sequence of the work and identifying construction activities for each portion of the work.
 6. Schedule shall be time scaled, identifying the first day of each week, with the estimated date of starting and completing each stage of the work in order to complete the Project within the Contract time specified. The updated schedule shall clearly show all changes made since the previous submittal.
 7. All revisions to the schedule must have the prior approval of PWD.
- D. Lists of Suppliers and Subcontractors: Before starting work, each Contractor shall submit to the Chief of Construction Branch (with a copy to the Manager of Design Branch) lists of:
1. The suppliers of materials to be used for his Contract.
 2. The subcontractors to be used for his Contract.
- E. Lists of Exempt Materials and Items:
1. Before starting work, each Contractor shall compile and submit a list of materials and items identified as exempt from the Pennsylvania State Sales and Use Tax.
 2. The Water Department will evaluate the list and issue an Exemption Certificate (Form Rev-1220 AS +) listing the materials and items recognized as in accordance with the Commonwealth of Pennsylvania Sales and Use Tax (Tax Reform Code of 1971, Article II Tax for Education with Regulation and Rulings).
 3. The Contractor shall retain a copy of the Exemption Certificate for tax record use.
 4. Any Contractor may appeal the Water Department evaluation by contacting the Pennsylvania Department of Revenue, Pennsylvania Sales and Use Tax Bureau, 1846 Broakwood Street, Harrisburg, PA 17127.
 5. Should the Pennsylvania Department of Revenue determine any additional materials or items to be exempt, the Water Department will, upon receipt of a written request supported by adequate documentation, issue an additional Exemption Certificate for those materials or items.
- F. Disposal Areas: Before starting work, each Contractor shall submit for the approval of PWD the proposed arrangements for disposal of excess excavated material and debris. Submit true copies of all necessary approvals, permits, and certifications.

1. The Contractor is reminded of the City recycling policy as described in Chapter 10 – 724 of the Philadelphia Code.
- G. Erosion and Sedimentation Control Plan: When an Erosion and Sedimentation Control Plan is not provided with the Contract Documents, the Contractor shall be responsible for submitting a written plan in accordance with Section 02135. PWD approval of the Erosion and Sedimentation Control Plan is required prior to commencing the Work of this Contract. Any proposed amendments or other changes to a provided Erosion and Sedimentation Control Plan must be approved by PWD.
- H. Make all other pre-construction submittals in duplicate unless otherwise indicated.
- 1.04 SHOP DRAWINGS, WORKING DRAWINGS, AND SAMPLES
- A. The Contract Documents cover the general design, construction, and arrangement, and certain details, but they do not purport to cover all details involved in the performance of the work.
1. Where contract drawings do not cover all details, the Contractor shall submit working drawings clearly showing the intended arrangement of equipment and routing of conduit or piping.
 2. Where unanticipated construction conditions, building limitations, or the accommodation of different pieces of equipment requires minor deviations from the Contract Documents, the Contractor involved shall submit Working Drawings for such deviations.
 3. Working Drawings shall be submitted to construction for review prior to start of construction for the given component.
 4. Major changes will only be permitted in accordance with Clause 36 of the Standard Contract Requirements.
 5. Any product substitutions proposed by the Contractor shall require shop drawing review. As appropriate, the shop drawing submittal shall also include any manufacturer recommendations for installation, maintenance, related or appurtenant products or materials, or any other variances from the specified standard. Substitutions must be submitted before starting construction.
 6. Shop drawings are not required to be submitted for any product or item specified in the PWD Standard Details for Sewers, PWD Standard Details for Water Main, or Streets Department standard items, so long as the product is unmodified and matches the Standard Detail in all respects. Materials covered under this clause will be verified by PWD Construction to come from an approved supplier per the appropriate PWD QC list.
- B. Submit for approval by PWD complete Shop Drawings for each element of the work under each Contract.
1. Shop Drawings are generally defined as all Drawings, diagrams, illustrations, brochures, schedules, bills of material, performance charts, instructions, diagrams, and other data which are prepared by any Contractor, the subcontractors, suppliers or distributors, or equipment fabricators or manufacturers, and which illustrate the manufacture, fabrication, construction, and/or installation of the work or any part of the work, and which are submitted to PWD to establish that the materials, articles, and pieces of equipment proposed to be supplied will, when installed, meet all Contract requirements.

2. Shop Drawings shall be neatly laid out, clear, and complete. Where abbreviations are used, they shall be explained in a legend or index placed prominently on the first sheet of each submission.
 3. Assign to each Shop Drawing a sequential number for purposes of identification, and use that number (with appropriate revision number) for each resubmission.
 4. Give each Shop Drawing a title which will clearly indicate the work involved, and the proposal item(s) under which payment for the Work will be claimed.
 5. Each Shop Drawing shall be carefully reviewed by the Contractor involved for conformity to all contract requirements, and for compatibility with the other Shop Drawings and with field conditions, and shall be certified by the Contractor to be correct prior to submittal.
 6. The Shop Drawings shall show all dimensions, and all types of materials used, and shall identify each piece of equipment proposed to be installed.
 7. Shop Drawings for equipment requiring electrical connections shall include internal wiring, wiring diagrams for making connections, and terminal identification diagrams.
 8. Shop drawings must be clearly dated with the date referring to the revision date of the specific detail or drawing as depicted in the submission.
- C. Affidavits: Wherever the Contract Documents require that a material, product, or piece of equipment be in accordance with a Federal specification, an ASTM designation, an ANSI designation, or any other reference specification, the Contractor involved shall present an affidavit from the manufacturer certifying that the product or piece of equipment complies therewith, and, if required, shall furnish suitable supporting test data to substantiate compliance.
- D. Samples are physical examples which illustrate materials, equipment, or workmanship, and establish standards by which the work will be judged. Submit Samples where required.
- E. Manufacturer's standard diagrams, illustrations, brochures, and schedules, and other data may be submitted on 8-1/2" by 11" sheets of paper, with 1" left margin for binding and 1/2" top, bottom, and right margins, clearly labeled with Contract number and title, submission number and title, date of original submission, and date of resubmission.
- F. All other Shop Drawings shall be submitted on 30" by 42" sheets, with 1-1/2" left margin for binding and 1" top, bottom and right margins, with a title block in the lower right corner containing the Contract number and title, submission number and title, date of original submission, and date of resubmission. All lettering shall be at least 5/32" high.
- G. Submit 6 copies of each Shop Drawing to PWD (or electronic copy as specified herein).
1. After review, three (3) copies of each Shop Drawing will be returned to the Contractor.
 2. Revise each Shop Drawing as required, and resubmit to PWD.
 3. If no further revisions are required, three (3) "Approved" copies of each Shop Drawing will be returned to the Contractor.
- H. Transmittal Letters:
1. Each submission of Shop Drawings shall be accompanied by a Transmittal Letter listing each Shop Drawing submitted, its submittal number, whether it is a resubmission, and the number of the applicable proposal item(s).

2. The Transmittal Letter shall also clearly state any deviations from the contract requirements, and any change from prior submissions other than those required by PWD's comments.
 3. Address each Transmittal Letter to the Manager of PWD GSI Implementation Unit. Send a copy of each Transmittal Letter to the Construction Division Chief.
- I. Copies of any altered or additional ADA ramp designs submitted and subsequently approved by Streets Department shall be submitted to PWD for confirmation. Submission to PWD does not constitute acceptance or review of these designs; the Contractor shall not construct any ADA ramps until such time as approval for the individual location's design is obtained from Streets Department. Please see Section 02510 for further details.
 - J. Submit initial (unofficial) results of double-ring infiltrometer testing immediately upon completion to PWD for review. The Contractor is directed to not drill the underdrain orifice until results have been submitted to PWD. Official results shall be submitted within 15 Calendar Days from the date the test was performed. See Section 02732 for details.
 - K. Do not fabricate any work, order any equipment or materials, or perform any construction prior to approval by PWD of all applicable Shop Drawings and Samples. It is strongly suggested that the Contractor provide shop drawings at or before the pre-construction meeting for PWD review and approval.
 - L. Attention is directed to Clause 43, Shop Drawings, and Clause 54, Construction Methods to be Approved, of the Standard Contract Requirements.
 - M. PWD's approval of Shop Drawings will not relieve the Contractor from the responsibility to fulfill all contract requirements. Changes to the contract requirements may only be made by written Change Order by PWD in accordance with the Standard Contract Requirements.
 - N. Upon prior approval from PWD GSI Implementation Unit and/or PWD, submissions of shop drawings may be made electronically at the Contractor's discretion.
 1. All electronic submissions shall include a transmittal letter as specified above, and shall be sent to the Design Branch by the method agreed upon in the approval for electronic submission. Copies of the transmittal letter (or full electronic submission, if preferred) shall be sent to PWD.
 2. Website links, FTP site links, or other secondary-access methods of receiving the information are not considered acceptable; all source materials shall be included in the submission.
 3. Electronic submissions may include, but are not limited to, electronic mail attachments, compact disc data recordings, or removable flash memory device use.
 4. PWD does not assume responsibility for receipt of electronic submissions (especially electronic mail) until such time as confirmation of receipt has been sent to the Contractor.
 - O. Approved versions of all shop drawings shall be included in the Operations and Maintenance Manual for the project as specified herein.

1.05 PROJECT RECORD (CONSTRUCTION) AS-BUILT DRAWINGS

- A. The Contractor shall be responsible for producing As-Built GSI Drawings of all green stormwater infrastructure installed under this Contract following all requirements defined in the Green Stormwater Infrastructure As-Built Survey and Drafting Manual (GSI As-Built Manual).

1. GSI As-Built Manual and supplemental materials can be accessed at the Projects Control office (1101 Market St, 2nd Floor) or online at:

<http://www.phila.gov/water/aboutus/buswithpwd/Pages/contractor.aspx>

- B. Any other infrastructure (water, sewer, streets, etc.) installed shall be verified by the responsible Department or Owner, except as herein specified. Contractor As-Built Drawings shall reflect the final constructed condition of the extents of Work, but detailed survey is only required to be completed for the green stormwater infrastructure as described herein and in the GSI As-Built Manual.
- C. As the work progresses, each Contractor shall keep a complete and accurate record of all changes or deviations from the Contract Documents and the Shop Drawings, indicating the work as actually installed. The Contractor is cautioned to note that required survey elevations may need to be taken at various times during construction operations; survey completed only after final surface restoration shall be inadequate to produce the elevations described in the GSI As-Built Manual.
- D. Within 15 calendar days from substantial completion of the work performed of any Contract, that Contractor shall deliver to the Philadelphia Water Department for approval one hard copy and one electronic copy of these documents as defined in the GSI As-Built Manual and herein. Features not accurately represented on the As-Built Drawings will not be considered substantially complete as the As-Built information is considered integral to the work performed.
- E. At any time when the work is complete, the Contractor is encouraged to submit As-Built Drawings for each site.
- F. After making any corrections required by PWD, the Contractor shall submit to Construction Branch two complete final sets of Record Drawings (hard copy and electronic copy) as described above for distribution: (one (1) set to GSI Implementation Unit; one (1) set to GSI Maintenance).
- G. Final payment will not be made on any Contract until the required record sets have been reviewed and approved by PWD.
- H. No review or receipt of such documents by PWD shall be a waiver of any deviation from the Contract Documents or the Shop Drawings, or in any way relieve any Contractor from the responsibility to perform the work in accordance with the Contract Documents and the approved shop drawings.
- I. The As-Built submission shall include copies of Streets Department (or PennDOT as appropriate) approvals of constructed ADA ramps. See Section 02510 for details. No ADA-compliant ramp is considered complete until receipt of appropriate approvals by PWD.
- J. The As-Built submission shall include copies of the final soil and double ring infiltrometer test logs. See Section 02732 Soil Properties Investigation for details.
- K. On projects that include off-street green stormwater infrastructure, the affected property owner (PP&R, DPP, PWD Facility Manager, etc.) shall receive a copy of the approved as-built drawings, in either electronic or paper version at their discretion.

1.06 MEASUREMENT AND PAYMENT

- A. All work necessary to meet the requirements defined in the GSI As-Built Manual shall be paid for under the lump sum bid price for Construction As-Built Drawings. The price bid shall include the following and all appurtenant work and materials: continuous vertical surveying,

documentation of completed work, technical drafting, submission of as-built package and all revisions necessary to comply with the Manual.

- B. All work necessary to produce as-built drawings of approved ADA ramps shall be paid under the unit cost bid price for construction of ADA ramps.
- C. All work necessary to produce final soil testing logs shall be paid under the unit cost bid price for soil testing.
- D. All work necessary to complete piping and modular storage video inspection shall be paid under the unit cost bid for piping and modular storage.

PART 2 PRODUCTS Not Used

PART 3 EXECUTION

3.01 SUBMITTALS REQUIRED

- A. See individual Specifications sections for required submittals.

END OF SECTION

SECTION 01535
CONSTRUCTION TREE PROTECTION

PART 1 GENERAL

1.01 SCOPE OF WORK

- A. The work described herein includes all necessary preventative and corrective measures to ensure the health of existing and proposed trees and plantings that may encroach upon the work performed under other Sections. Tree protection is required for all trees being preserved in this project within or adjacent to the limit of disturbance (LOD) or near designated access points. The Contractor is responsible for providing, maintaining, and removing any temporary plant protection and/or remediating any damaged vegetation to the satisfaction of the PWD and Philadelphia Parks and Recreation (PP&R).

1.02 REFERENCE STANDARDS

- A. All tree repairs, pruning, fertilizing, watering, bracing, and other corrective work under this Contract shall conform to all applicable requirements of the ANSI A300 Tree Care Operations Standards and/or ANSI Z133.1 Safety Standards.
- B. ANSI Z133.1 Safety Standards
- C. Tree and Soil Protection, Philadelphia Parks and Recreation Department Item 6-9002

1.03 PHILADELPHIA PARKS AND RECREATION (PP&R) CONTACTS

- A. For street trees, contact Frances Piller, Street Tree Management Division, at 215-685-4363 (Frances.Piller@Phila.gov).
- B. For park trees, contact Tom Witmer, Division Operations Manager, at 215-683-0216 (Tom.Witmer@Phila.gov).

1.04 SUBMITTALS

- A. ISA Certified Arborist qualifications should be submitted to PWD prior to the start of construction.
- B. Submit email notification to Philadelphia Parks and Recreation (PP&R) after proper installation of construction tree protection and before starting construction.

1.05 MEASUREMENT AND PAYMENT

- A. The cost of all work and materials described in this section shall be distributed among the prices bid for the various items of work. There will be no separate or additional payment for this work.

1.06 QUALITY ASSURANCE

- A. All tree repairs, pruning, fertilizing, watering, bracing and other corrective work under this Contract shall be performed under the direction of an ISA Certified Arborist engaged by the Contractor.

1.07 DEFINITIONS

- A. Diameter at Breast Height (DBH) - The diameter at breast height (DBH) refers to the diameter of the tree at four and a half feet (4 ½') from ground surface. This is a standard measurement used by tree professionals.

- B. Tree Protection Zone (TPZ) – The tree protection zone (TPZ) refers to the arborist defined area surrounding the trunk intended to protect the roots and soil to ensure future tree health and stability. The TPZ is comprised of tree protection fencing using the dimension of the CRZ, unless otherwise authorized by PWD or the PP&R Arborist. The TPZ shall be installed as shown on the Drawings.
- C. Critical Root Zone (CRZ) - The critical root zone (CRZ) shall be a zone surrounding a tree equal to one (1) foot in radius for each one (1) inch DBH of the tree to be protected. Excavation within the CRZ by mechanical means is prohibited; all excavation shall be performed with hand tools and care taken to disturb as little of the existing root formations as possible. The CRZ shall be delineated using tree protection fencing. Tree protection fencing shall be as indicated on the Drawings. If no tree protection fencing is identified on the Drawings, the tree protection fencing shall be as depicted in the Erosion and Sediment Control Detail attached to these Specifications.
- D. Prohibited Root Zone (PRZ) - The prohibited root zone (PRZ) shall be a zone surrounding a tree equal to one-half (1/2) foot in radius for each one (1) inch DBH of the tree to be protected. Excavation within the PRZ is prohibited, unless specifically authorized by the City/Project Arborist. In no instance shall excavation within six (6) feet of the base of a tree be authorized. Tree replacement or equivalent compensation may be required for any extensive root system damage caused by construction activities.

PART 2 PRODUCTS

2.01 ROOT BUFFER PROTECTION

- A. For access roads that must go through the CRZ, a temporary protective root buffer is required. The temporary protective root buffer shall consist of shredded wood chips spread on a non-woven geotextile drainage fabric, over the roots at a minimum of six (6) inches in depth (keeping the trunk clear of chips), and covered by 3/4-inch plywood. Wood chips shall be 2-inch unpainted, untreated shredded wood or approved material. Extents of root buffer protection shall be referenced on the Drawings.

2.02 TREE PROTECTION FENCING FOR PARK TREES

- A. Tree protection fencing for park trees shall be used to establish the TPZ as indicated on the Drawings. If no tree protection fencing is identified on the Drawings, the tree protection fencing shall be as depicted in the Erosion and Sediment Control Detail attached to these Specifications and described herein.
 - 1. Tree protection fencing is to consist of six foot (6') high chain link fencing (2" mesh opening max) with two inch (2") diameter galvanized posts at a minimum of ten feet (10') spacing. Fence posts are to be set in modular concrete blocks (8"x16") or tubular steel base with sand bags; do not stake into the ground. Tubular sediment control device should be used on the inside of the fencing to prevent sediment from entering the dripline. If root buffer protection is provided, the silt sock should be placed on the existing ground elevation and not on top of the wood chips and plywood.

2.03 WARNING SIGN

- A. One heavy duty warning sign shall be prominently displayed on each tree protection fence enclosure. The sign shall be 24 x 36-inches with a white background and black two inch (2") high or larger block letters. The sign shall clearly state: TREE PROTECTION ZONE – DO NOT ENTER.

2.04 TREE TRUNK PLANKING FOR STREET TREES

- A. For work that must occur within the CRZ of Street Trees, tree trunk planking must be used. Four foot (4') wide x 0.25" thick closed-cell foam pads shall be wrapped around the trunk of the tree with untreated 2"x4" wood planks on the outside. Straps or galvanized wire shall be used to bind the planks and foam pads in place, and shall not drive fasteners into the trunk of the tree. If protective planks are to be in place longer than 6 months, Contractor shall loosen and adjust planks every 3 months to allow for growth.

PART 3 EXECUTION

3.01 GENERAL

- A. Photographic documentation shall be provided showing pre-construction conditions of trees in accordance with Section 01110 (Photographic Documentation) of these Specifications.
- B. After the pre-construction meeting has taken place, tree protection fencing shall be installed using the CRZ dimensions to establish the TPZ as shown on the Drawings.
- C. Refer to Submittal 1.04 B prior to start of construction. Property owner reserves the right to complete on-site inspections in conjunction with PWD personnel.
- D. Obtain PWD approval in writing of proposed tree damage preventative and corrective measures before hand excavating, trenching, or boring within the CRZ or PRZ of any tree if required to complete work as shown on the Drawings.
- E. Throughout the period of construction-related activity under this Contract, install all forms of tree protection and perform all appropriate tree damage preventative measures and corrective work as identified by the PWD.
- F. Engage a qualified ISA Certified Arborist acceptable to PP&R to perform all tree repairs and other corrective work, including tree removals. Engage a qualified nursery acceptable to the PWD to furnish and plant all replacement trees.

3.02 TREE PROTECTION FENCE AND PLANKING

- A. Do not proceed with any work including salvage and pruning, until Construction Tree Protection Fencing and Planking has been installed and reviewed by PWD. Construction Tree Protection Fencing and Planking shall be maintained in good repair throughout construction period and shall not be removed until construction is complete and is approved by PWD.
- B. If tree protection fencing is damaged, Contractor shall immediately execute the necessary repairs to re-establish the fencing to original condition.

3.03 PROHIBITED ACTIVITIES

- A. No construction activity shall occur within the TPZ fence without prior written approval from PWD. If construction activities must be conducted within the TPZ, PWD shall be given 24 hours notice prior to anticipated commencement of construction activities and work shall not occur without the presence an ISA Certified Arborist. Prohibited work includes but is not limited to:
 - 1. Dumping of construction waste
 - 2. Storage of materials
 - 3. Storage of vehicles and equipment
 - 4. Trenching

5. Changing soil grade
6. Compacting soil with vehicle or equipment traffic
7. Installing pavement of any kind
8. Attaching anything to trees using nails, screws, and/or spikes
9. Climbing upon, cutting, breaking bark of, or otherwise injuring or disturbing any tree
10. Or use of fire or excessive heat

- B. There shall be no excavation within the CRZ of a tree by mechanical means. If construction must occur within the CRZ, all excavation shall be performed with hand tools and care taken to disturb as little of the existing root formations as possible. If necessary, and pre-approved by PWD, all excavation or trenching within the tree protection areas shall be completed with an ISA Certified Arborist present on site. The Arborist shall be responsible for cutting all tree roots larger than one inch (1") diameter.
- C. There shall be absolutely no excavation within the PRZ of a tree unless specifically authorized by PP&R Arborist. There shall be no excavation whatsoever within six (6) feet of the base of any tree within the Limit of Disturbance.
- D. There shall be no swinging of backhoes or cranes into the canopies of the trees.
- E. There shall be no storing or dumping of supplies and materials, including stockpiling, changing site grades (raising or lowering) which could cause drainage to flow onto or to collect near protected trees – except for grading shown on Grading Plan.
- F. There shall be no driving or parking of equipment, machinery, or vehicles of any type.
- G. Trees shall not be used for crane stays, guy anchors, or other fastenings.

3.04 PREVENTATIVE MEASURES

- A. Should any tree roots be exposed through construction activities, extreme care shall be taken to limit the damage to the roots. Perform all construction activities using rubber tracked or low ground bearing pressure equipment to avoid compaction and damage to shallow root zones. Root buffer protection shall also be required when working within the CRZ, as approved by PWD. Hand tools will be used in any trench, or excavation area with root intrusion, even if said area is outside the CRZ.

3.05 TREE REPAIRS

- A. Avoid damaging existing trees. Damage includes cutting, breaking, skinning, or compacting soil around roots, skinning and bruising of bark and breaking of branches and limbs. Contractor shall be held liable for any damage to existing trees to remain and for all remedial measures required to treat broken limbs, or damaged trees and roots or for the unauthorized removal of existing trees or plants.
- B. Should any tree be damaged during construction operations, notify PWD immediately.
- C. Should PWD determine that the compacting effect of construction-related activities (including movement or parking of vehicles, or operation of heavy equipment) will have a detrimental effect on the health of the tree, the Contractor shall be responsible to aerate, fertilize, and water the soil around each affected tree as directed by PWD and ISA Certified Arborist.

- D. Promptly repair all trees damaged by construction-related activities under the direction of an ISA Certified Arborist.
- E. Should tree roots be damaged, sever cleanly perpendicular to the long axis of the root, and backfill with clean soil as soon as possible to prevent desiccation. Thoroughly disinfect all tools both before and after use.
- F. Perform corrective pruning, fertilizing, watering, bracing, etc., of damaged trees as directed by the PWD and ISA Certified Arborist.

3.06 TREE REMOVAL AND REPLACEMENT

- A. Where necessary to the prosecution of work under this Contract, remove obstructing trees. Obtain written approval from the PP&R Arborist before removing any tree.
- B. Should PWD or the PP&R Arborist determine that permanent, irreparable damage has been done to any tree by construction-related activities, the Contractor shall remove that tree. The Contractor shall replace the irreparably damaged tree with the appropriate number of suitable replacement trees, as selected by the PP&R Arborist at no additional cost to PWD.
- C. Tree replacement shall be based on the diameter of the tree that is irreparably damaged. Replacement trees shall be at minimum two to two-and-a-half-inch (2-2.5") caliper selected by PWD; no trees under this dimension shall be considered acceptable. The contractor shall be required to replace an equivalent number of diameter inches by supplying the appropriate number of 2-2.5" caliper balled and burlapped (B&B) trees rounded up to the nearest replacement tree if the tree being replaced does not have an even DBH. For instance, if a 10" tree is irreparably damaged, the contractor shall purchase, plant and maintain for one-year, five (5) B&B trees that are 2-2.5" caliper. Tree species shall be selected by the PP&R Arborist who will also provide planting locations. Planting locations may or may not be in the same park where the irreparably damaged tree was located.
- D. Exercise extreme care during excavation to prevent damage to roots of trees which are to remain. If necessary and pre-approved by PWD when excavating or grading within the root zone of the trees to remain, use air tool such as Air Spade® or Air Knife®, or equivalent, to identify location of existing roots. Cut the minimum amount of roots possible to cause minimum damage to the root system. Arborist shall prune injured roots cleanly and backfill excavation area with soil or mulch immediately to provide cover for the exposed roots. Make all attempts to preserve in good condition roots two inches (2") in diameter and larger.
- E. Tree removal shall include grinding the stump to a depth of four inches (4") below the existing surface if the planting site is to be abandoned, or to a minimum depth of twenty-four inches (24") if new plantings are proposed for the location of the removed tree.
- F. Plant replacement trees in locations selected by the PP&R Arborist. Maintain replacement trees for an eight (8)-week maintenance period and warranty replacement trees for a period of twelve (12) months after replacement planting is approved .
- G. Do not allow exposed roots to dry out before placing permanent backfill. Provide temporary earth cover if necessary. Water and maintain in a moist condition.
- H. Replacement trees shall be watered twice within the first twenty-four (24) hours of the time of planting and not less than twice per week during the eight (8)-week maintenance period. Trees shall be watered at the roots, to minimize wetting of the leaves. Water shall be released slowly to prevent runoff and in sufficient quantity to saturate the soils (approximately fifteen to twenty

(15-20) gallons per watering). Tree-watering bags, such as Treegator ® or equivalent, are a permitted method for watering. In the event of steady rainfall, frost, or yellowing of the leaves, watering may be temporarily reduced with the approval of PWD. Suitable water for planting and maintenance will be the responsibility of the Contractor. The Contractor shall furnish his own hose and hose connections or other watering equipment.

END OF SECTION

SECTION 01570
TRAFFIC REGULATION

PART 1 GENERAL

1.01 REFERENCE STANDARDS

- A. It is the Contractor's responsibility to make himself thoroughly familiar with the most recent revisions or amendment to the Pennsylvania Department of Transportation (PennDOT) standard specifications for the maintenance and protection of traffic during construction including the following:
 - 1. Publication 212, Regulations -- Traffic Signs, Signals and Markings (67 PA Code, Chapter 211).
 - 2. Publication 213, Work Zone Traffic Control (67 PA Code, Chapter 211).
 - 3. Publication 408, Specifications (as revised).
- B. Conform fully to above standard specifications. Meet all requirements for providing, placing, maintaining, and removing all necessary pavement markings, warning devices, signs, and barricades.

1.02 RELATED SECTIONS

- A. Section 02400 Project Signage

1.03 SUBMITTALS

- A. Notify Patrick O'Donnell; Manager Right-of-Way Unit; Philadelphia Streets Department, ten (10) days prior to starting work, and five (5) days prior to completing work on this project. Notification can be made via e mail to Patrick.O'Donnell@phila.gov and shall include Bid Number; Work Number, and expected start date.
- B. One week prior to starting work under this Contract, submit for all necessary permits to Kevin Koch, Chief Highway Engineer, MSB, 1401 JFK Blvd., 9th Flr., Philadelphia, PA 19102-1685.
- C. For all street closures permits under this Contract, submit application for street closure to Right-of-Way Unit no later than ten (10) days prior to the start of work. Applications should be faxed to (215) 686-5062. Application can be found at "http://philadelphiastreet.com/transportation-highways-street_closure-intro.aspx"
- D. Between the period November 1st and April 1st, the Contractor shall notify the District Highway Engineer of any steel plates used to cover excavations made in snow emergency routes.
- E. Any traffic management and pedestrian safety plans submitted by the Contractor to the Streets Department shall also be provided to PWD prior to starting work.

1.04 SPECIAL REQUIREMENTS FOR STATE ROUTES

- A. The Contractor will provide PennDOT District with 15 days notice prior to work in a State Route when the permit identifies that the permitted work will be inspected on a more than spot inspection basis, unless otherwise specified in the permit. This is to co-ordinate a PennDOT inspector. If only point inspection is specified by PennDOT, 3 days notice is required.
- B. For work in State Routes, special temporary paving regulations shall be in effect. At the end of the construction work day, the street shall be smooth, even, and drivable. Additionally, the

Contractor is responsible for ensuring the street is swept clean to the satisfaction of PWD at the end of each working day.

- C. The Contractor shall note that for work in a State Route, before the start of construction, the Contractor will be required to obtain a highway occupancy permit from PennDOT. For this project, the permit application number is 178743, and the permit application fee to be paid to PennDOT is \$40.00 (to be determined by PennDOT). This fee is to be included in the lump sum bid for Maintenance and Protection of Traffic.
- D. Inspection fees for Work completed in State Routes shall be paid out of the Allowance Item for PennDOT Inspection Fees. All paving and related work performed in State Routes will be subject to inspection by PennDOT. The Contractor shall note that the PennDOT inspection cost is an estimate and that any additional PennDOT inspection costs or delays incurred due to actions of the Contractor, as determined by PWD, are the sole responsibility of the Contractor.

1.05 MEASUREMENT AND PAYMENT

- A. All traffic regulation work will be paid for at the appropriate lump sum price bid for Maintenance and Protection of Traffic, except as otherwise provided.
- B. The price bid shall include the following and all appurtenant work and materials:
 - 1. Furnishing, placing, maintaining, and removing all necessary pavement markings, warning devices, signs (including detour and temporary no parking signs), and barricades.
 - 2. Furnishing, placing, maintaining, and removing all temporary footway and cartway paving necessary to reestablish safe and efficient traffic in the construction area (except as otherwise provided).
 - 3. Furnishing, placing, maintaining, and removing steel plates for temporary decking over excavations.
 - 4. Removal and disposal of existing paving beyond payment lines for excavation, where necessary for decking; repaving such areas upon completion of work.
 - 5. Fees and associated costs required for obtaining, maintaining, and otherwise supporting any and all permits for roadway occupancy, demolition, and restoration (except as otherwise provided).
- C. Temporary paving in State Routes will be paid at the unit price bid per ton. The price bid shall include furnishing, placing, compacting, and any subsequent maintenance necessary to provide a smooth, even, and drivable surface with a minimum asphalt depth of three inches (3”).

PART 2 PRODUCTS

2.01 STEEL PLATES FOR DECKING

- A. Each steel plate used for decking over trenches shall have clearly marked on the center of the plate the following information:

WD

Contractor's Name

- B. Each letter shall be four inches high, in a space four inches wide, and each stroke forming each character shall be 3/4 inch wide. The lettering shall always be clear and legible.

- C. Should the letters be painted, the paint used shall be white, of good quality and durability for painting on steel. The paint lettering shall be promptly repainted should it become obliterated during the contract period.

2.02 TEMPORARY PAVING

- A. Temporary paving shall be Superpave Bituminous Binder (PG 64-22 19mm mix), underlain by a minimum six inches (6") of compacted subbase PennDOT 2A aggregate.

PART 3 EXECUTION

3.01 TEMPORARY NO PARKING SIGNS

- A. Where traffic requirements specified under this Contract require use of the existing parking lanes to maintain traffic flow at various locations, where full width street restoration is required, and where the proposed trenches are located in existing parking lanes, the Contractor shall post temporary no parking signs after 6:00 p.m. the night before the start of work at each location. Signs shall indicate the dates and hours that those areas will be closed. Obtain the "Temporary No Parking" signs from the Highway District indicated on the Contract Drawings.

1. 1st Highway District, 48th & Parkside.....(215) 685-0168
2. 2nd Highway District, 11th & Wharton.....(215) 685-1858
3. 3rd Highway District, 990 Spring Garden Street.....(215) 685-3922
4. 4th Highway District, 6249 Wissahickon.....(215) 685-2191
5. 5th Highway District, Whitaker & Luzerne.....(215) 685-9843
6. 6th Highway District, Bustleton & Bowler.....(215) 685-0352

3.02 MAINTAINING TRAFFIC

- A. Provide and maintain egress and ingress to and from the nearest intersecting public street, unless otherwise directed in writing by PWD, for all local traffic which has origin, destination, or service connections, including loop-type, built-up, or Cul-de-Sac areas, within the limits of the Contract.
- B. On streets upon which people are dependent on commuter service, ample provision shall be made for accommodation of passengers.
- C. Provide and maintain approaches for vehicular and pedestrian access to transit stops; residential, business, industrial, and other public and private establishments.
- D. Provide and maintain approaches to and crossings of intersecting streets until base and surface courses and pavements have properly cured.
- E. Traffic signs in operation for guidance and direction of traffic shall remain in place or be removed or relocated, as directed by PWD.
- F. During the prosecution of work under this Contract, the Contractor shall provide for the safe passage of pedestrian traffic around the work area at all times. Provide at least a six foot (6') wide walking lane whenever possible.
- G. Any unrestored surface shall be protected from pedestrian traffic at all times. Any excavation to be left open at the end of a business day and/or as site-specific traffic needs dictate (school opening/closing times, for example) shall be fully protected by fencing or other adequate measure to prevent pedestrian access to the worksite. Any damage or degradation to the Work

attributable to insufficient site protection shall be the Contractor's sole responsibility and repairs made at no additional expense to the City.

- H. At the end of each work day, the Contractor will be responsible for leaving the site in an orderly fashion that will permit vehicle access in the event of a medical or fire emergency within the block.
- I. When the Contractor sets up his equipment, he shall make every effort to take up as little space as possible. Parking and travel lanes where work is not being done shall not be obstructed unnecessarily.
- J. Upon completion of work, the Contractor shall reinstall, repair, and/or replace any traffic signs, signals, and poles that were removed or damaged during the prosecution of work to the satisfaction of the Traffic Engineer.

3.03 STEEL PLATE FOR DECKING

- A. During working hours establish and maintain travel lanes using steel plates and flagmen as necessary to allow through traffic. During non-working hours, backfill or deck with steel plates all excavations.
- B. All steel plate shall be adequately secured to the surface to prevent lateral movement avoiding an unsafe condition.
- C. The size of the steel plate shall be large enough to span the opening, be firmly placed to prevent rocking and shall overlap the edges of trenches and openings and be sufficiently ramped to provide smooth riding and safe condition.
- D. Where deflections are more than 3/4", heavier sections of plates or immediate supports shall be installed.
- E. Prior to placing any Steel plating, the contractor shall provide the Right of Way Unit of the Department of Streets inspector with an emergency telephone number in the event any steel plating or decking is dislodged. Upon notice from the city, the contractor shall remove or restore any dislodged steel plating or decking to a safe condition within six hours upon receipt of notice by the city. In the event it becomes necessary for the City to restore or remove any steel plating or decking; the contractor shall reimburse the City for all costs.
- F. The location or any steel plate remaining in the public right of way for more than 72 hours must be reported to the Streets Department as follows:

Time	Location	Phone No.
8:00 AM to 5:00 PM Monday through Friday	Right of Way Unit	715.686.5501
5:00 PM to 8:00 AM Monday through Friday	City Dispatcher	215.686.4514*
5:00 PM Friday to 8:00 AM Monday	City Dispatcher	215.686 4514*

*Request that the dispatcher also notify the Highway Division at 215-686-5621

3.04 STATE ROUTE TEMPORARY PAVING REQUIREMENTS

- A. For work in State Routes special temporary paving regulations shall be in effect. Exposed earth or stone backfill is not acceptable surfacing on any trench at any time. Minimum temporary surface restoration for traffic use is two inches (2") of Superpave Wearing Course, Class PG 64-22 over a minimum of six inches (6") of compacted subbase material PennDOT 2A aggregate.

In sections where the trench has been opened but the proposed system/structure has not yet been installed, the Contractor may elect (with the permission through permit of PennDOT) to leave the street closed to traffic. At the end of the construction work day, the street shall be smooth, even, and drivable. Additionally, the Contractor is responsible for ensuring the street is swept clean to the satisfaction of PWD at the end of each working day.

3.05 MAINTENANCE OF TRAFFIC REQUIREMENTS

- A. The Maintenance of Traffic Requirements required under this Contract are affixed to the end of these Contract Specifications, and are an integral part thereof. These requirements are in general conformity with the outlines set forth by the Streets Department. The Traffic Engineer may find it necessary to alter or increase these measures on any particular location. As a minimum, the Contractor shall incorporate the attached requirements in his proposed traffic measures and submit them to the permits officer to obtain the necessary street occupancy and/or closure permits.

END OF SECTION

SECTION 02135

EROSION AND SEDIMENTATION CONTROL

PART 1 GENERAL

1.01 SCOPE OF WORK

- A. The work of this Section includes all temporary and permanent erosion and sediment control and related and incidental operations, including (but not limited to):
 - 1. Tubular sediment control device installation and maintenance
 - 2. Inlet protection (both temporary and permanent)
 - 3. Stockpile protection (as necessary)
 - 4. Rock Construction Entrance (as necessary)
 - 5. Maintenance and repair of erosion and sediment control measures
 - 6. Temporary stabilization of disturbed areas (as necessary).
- B. Erosion and sedimentation control measures may be left in place at the direction of PWD to protect site during subsequent landscaping activities.

1.02 RELATED SECTIONS

- A. Section 02210 Earthwork for Green Stormwater Infrastructure
- B. Section 02700 Sewerage and Drainage
- C. Section 02709 Subsurface Stormwater Storage
- D. Section 02720 Stormwater Surface Features

1.03 SUBMITTALS

- A. Submit complete shop drawings and product information for all items to be furnished under this Section upon receipt of notice to proceed and prior to construction.
- B. If an Erosion and Sedimentation Control Plan is not included in the Drawings, submit a written plan for implementation of adequate measures to be approved by PWD.

1.04 QUALITY ASSURANCE

- A. Use adequate numbers of skilled workers who are thoroughly trained and experienced in the necessary trades and who are completely familiar with the specified requirements and methods needed for proper performance of the work of this Section.
- B. Codes and Standards: Perform work in compliance with applicable requirements of governing authorities having jurisdiction. Construction operations shall be carried out in a manner such that soil erosion, air pollution, and water pollution is minimized. State, County, and Municipal laws concerning pollution abatement shall be followed.
- C. The recommendations and Standards set forth in Chapter 102 of the Pennsylvania Code (Erosion and Sediment Control Handbook), published by the PA Department of Environmental Protection, shall be applicable where the work is not specifically detailed in this Specification, the accompanying Drawings, or the Erosion and Sediment Control Plan.

- D. The Contractor shall take action to remedy foreseen and unforeseen erosion conditions and to prevent damage to adjacent properties as a result of increased runoff and/or sediment displacement. Stockpiles of wood chips, hay bales, crushed stone, and other mulches shall be held in readiness to deal immediately with emergency problems of erosion. All erosion control checks and structures shall be inspected after heavy rainfalls, and if damaged, repaired or replaced.
- E. No other construction activities may take place until appropriate Erosion and Sedimentation Control devices have been installed and approved by PWD. All changes to the Erosion and Sedimentation Control Plan must be approved by PWD prior to implementation.

1.05 MEASUREMENT AND PAYMENT

- A. Payment for all Sediment and Erosion Control work as described in the Drawings or specified herein will be included in the lump sum price bid for Erosion and Sedimentation Control, which shall include temporary protection of any open trench and inlet structure, and any and all other specified measures. No additional payment will be made for maintenance or repair to the protective devices employed.
- B. Payment for all permanent inlet protection devices to be employed on green stormwater infrastructure components shall be included in the appropriate unit price bid for that inlet component. No additional payment shall be made for purchasing or installation of permanent inlet protection. Refer to Section 02700 Sewerage and Drainage for additional details.
- C. No additional payment shall be made for additional erosion and sediment control measures or remediation necessitated by Contractor actions or methods. This may include (but is not limited to) street sweeping, increased-capacity products (substituting SuperSilt Fence for standard silt fence, for example), or additional erosion control due to excessive site clearing.

1.06 REFERENCE STANDARDS

- A. Appended to these Specifications please find attached the typical Erosion and Sediment Control sketches.
- B. PennDOT, Publication 408 Specifications (most recent edition).
- C. Pennsylvania Department of Environmental Protection, Erosion and Sediment Pollution Control Program Manual (2000 or most recent version).

PART 2 PRODUCTS

2.01 TEMPORARY INLET PROTECTION FILTER BAG

- A. Filter bags shall be manufactured with woven polypropylene geotextile and sewn by a double needle machine, using a high strength nylon thread. Filter bags will have a design flow rate of 40 gpm/sf.
- B. Filter bags shall be manufactured to fit the opening of the catch basin or drop inlet. Filter bag will have the following features:
 - 1. Two dump straps attached at the bottom to facilitate the emptying of the bag;
 - 2. Lifting loops as an internal part of the system to be used to lift the filter bag from the basin;
 - 3. Restraint cord approximately halfway up the sack to keep the sides away from the basin walls, this cord is also a visual means of indicating when the sack should be emptied.

- C. Filter bag seams shall have a minimum certified average wide width strength per ASTM D-4884 of 300 psi.
- D. Inlet filter bags for installation in new or existing highway grate and open mouth grate inlets shall be Silt Sack as manufactured by ACF Environmental or approved equal.
- E. City inlet (and curb opening portion of open-mouth grate inlet) protection shall be a synthetic filter manufactured from recycled synthetic fibers such as Gutterbuddy distributed by ACF Environmental or approved equal.

2.02 SEDIMENT PERIMETER CONTROL

- A. Sediment perimeter control (compost socks) shall be a three-dimensional tubular sediment control. The tubular sediment control devices shall be Filtrexx Siltsox manufactured by Filtrexx International LLC of Grafton, Ohio, or approved equal.

2.03 SEDIMENT FILTER BAG

- A. Sediment filter bag shall be manufactured of non-woven geotextile material that filters soil particles while allowing discharge water to pass through the bag.
- B. The sediment filter bag seams shall be a double 401 lock chain stitch seam with minimum 200 lbs/inch sewn seam strength, tested in accordance with ASTM D-4884.
- C. The sediment filter bag shall have an adjustable spout large enough to accommodate a six-inch (6") diameter discharge hose.
- D. The pump discharge hose shall be inserted into the bags in the manner specified by the manufacturer and securely clamped.
- E. Filter bag shall be inspected daily. If any problem is detected pumping shall cease immediately and not resume until the problem is corrected.
- F. Filter bag shall be GTF-FB series from Frank Roberts and Sons, Inc., Dirtbag by ACF Environmental, or approved equal, and shall have a rated flow rate fifty percent (50%) greater than the attached pump.

2.04 STABILIZED (ROCK) CONSTRUCTION ENTRANCE

- A. Stabilized (or Rock) Construction Entrance shall be as indicated on the Drawings and on the attached Rock Construction Entrance Detail (Detail E&S-09).
 - 1. If no Rock Construction Entrance is shown on the Drawings, it will be the Contractor's decision to employ this practice, or a suitable alternative (tire wash station, for example) to maintain clean roadways adjacent to the Work.
- B. Materials and construction for the stabilized construction entrance shall be in accordance with PennDOT Publication 408/2011, Section 849.
 - 1. AASHTO #1 Aggregate shall comply with PennDOT Publication 408, Section 703.
 - a. Coarse aggregates shall meet the following requirements:
 - 1 Maximum wash loss of 1% (ASTM C117)
 - 2 Minimum Durability Index of 35 (ASTM D3744)
 - 3 Maximum abrasion of 10% for 100 revolutions and maximum of 50% for 500 revolutions

- 4 All aggregate shall be clean and thoroughly washed.
- b. Unless otherwise approved by PWD, coarse aggregate for the stormwater trenches shall be uniformly graded as defined in Standard Sizes of Coarse Aggregate, Table 4, AASHTO Specifications, Part I, 19th Ed., 1998, or latest edition, unless otherwise specified.

1 Grading Requirements for AASHTO No 1

U.S. Standard Sieve Size	Percent Passing
4" (100 mm)	100
3½" (90 mm)	90-100
2½" (63 mm)	25-60
1½" (37.5 mm)	0-15
¾" (19 mm)	0-5

- c. Crushed concrete shall not be an acceptable substitute for coarse aggregate unless specifically authorized in writing by PWD prior to placement.
- 2. Geotextile shall be Class 4 Type A separation fabric per PennDOT Publication 408, Section 735.
 - a. Geotextile: Non-woven geotextile (separation fabric) shall be US 270NW, Mirafi 1120N, or approved equal.
 - 1 Minimum flow rate 65 gal/min/ft² (ASTM D-4491)
 - 2 Minimum grab tensile strength 270 lbs (ASTM D-4632)
 - 3 Minimum CBR puncture strength 700 psi (ASTM D-6241)
 - 4 Minimum tear resistance 100 lbs (ASTM D-4533)
 - 5 Minimum UV resistance 70% retained strength (ASTM D-4355)

2.05 SILT FENCING

- A. Silt fencing shall be as indicated on the Drawings, or as proposed in the Contractor's Erosion and Sedimentation Control plan.
- B. Silt fencing material to be employed shall be in accordance with PennDOT Publication 408 Section 865.
 - 1. Geotextile: PennDOT Class 3 Type A or B (Pub. 408 Section 735), and from an approved supplier named in Bulletin 15.
 - a. Maximum Apparent Opening Size Sieve #20 (ASTM D-4751)
 - b. Minimum grab tensile strength 90 lbs (ASTM D-4632)
 - c. Minimum puncture strength 40 lbs (ASTM D-4833)
 - d. Minimum tear strength 30 lbs (ASTM D-4533)
 - e. Minimum UV resistance 70% retained strength (ASTM D-4355)
 - 2. Mesh Supports: metallic coated steel, 2.0mm wire mesh, arranged in a maximum grid of 150mm x 150mm, or acceptable plastic with an equivalent section.

3. Posts: Of sufficient length for eighteen inches (18”) embedment into the ground; two inches (2”) square if wood, one inch by one and a quarter inches (1.0” x 1.25”) T-section steel, or acceptable plastic with equivalent section.

2.06 TEMPORARY STABILIZATION MEASURES FOR STREET PROJECTS

- A. A 100% coconut fiber erosion control blanket shall be installed on all slopes. The blanket shall be of consistent thickness with the coconut evenly distributed over the entire area of the mat. The blanket shall be covered on top and bottom sides with 100% biodegradable woven organic fiber netting. The blanket shall be of a minimum 0.25 inch thickness and form a 0.5 x 1.0 Leno woven mesh. On top of the erosion control blanket, polypropylene weed control fabric shall be installed. This geotextile must be designed to allow for drainage.

2.07 TEMPORARY STABILIZATION MEASURES FOR OFF-STREET PROJECTS

- A. Temporary seeding (cover crop) shall be spring oats (*Avena sativa*) for all projects seeded from April 1 – June 1 and cereal rye (*Secale cereale*) for projects seeded in the rest of the year, each at the rate of 30-60 pounds per acre.

PART 3 EXECUTION

3.01 GENERAL REQUIREMENTS

- A. All temporary erosion and sediment control measures indicated specified herein shall be in place before the beginning of any earthwork or excavation.
- B. All erosion and sediment control devices shall be installed according to the manufacturer’s specifications, or in accordance with PennDOT Pub. 408 if no manufacturer recommendation exists.
- C. When temporary erosion and sediment control measures as described herein do not provide adequate control, replacement or relocation of measures may be required as directed by PWD.
- D. Erosion and sediment control measures shall be inspected weekly and after every precipitation event.
- E. Contractor shall maintain complete written logs of inspections and shall make them available to PWD upon request.
- F. All maintenance work, including but not limited to cleaning, repair, replacement, regrading, and restabilization of temporary erosion and sediment control measures shall be performed immediately.
- G. Contractor shall ensure that erosion and sedimentation control measures remain in place and fully functional until site achieves final stabilization (subject to approval by PWD).
- H. Contractor shall ensure that permanent inlet protection devices are clean and functioning correctly prior to the completion of work.
- I. Orange fencing shall be used to delineate the limits of earth disturbance in all off-street applications.
- J. The Contractor shall note that the geotextiles specified elsewhere in the Specifications are insufficient for erosion and sediment control uses. Use of incorrect materials shall be treated as if no protection was in place, and systems thus exposed shall be assumed by PWD to be compromised and damaged.

- K. The Contractor shall not discharge to any sewer without the prior approval of PWD from the Industrial Waste Unit. Industrial Waste Unit Contact Information:

Jennifer L. Moore, Environmental Engineer
Industrial Waste Unit
1101 Market Street, 3rd Floor
Philadelphia PA, 19107
Telephone number: 215-685-6085 or 215-685-6236

3.02 PUMPED WATER FILTER BAG

- A. Sediment-laden water shall be pumped through a pumped water filter bag as specified herein.
- B. Filter bags shall be removed and replaced when they have reached their capacity to filter sediment effectively, or upon any breach of the filter bag.

3.03 TEMPORARY INLET PROTECTION

- A. The downstream inlets from the site of any disturbance or construction on the project site shall be protected with approved inlet protection practices. Downstream inlets are considered to be the next immediate inlet downslope that will receive runoff from the site of any disturbance, as well as any and all inlets within the site itself.
- B. All new inlets shall be protected with approved inlet protection practices upon installation. Inlets, curb openings, trench drains, and other stormwater structures draining exclusively to a stormwater feature ('green' inlets) shall remain fully closed to runoff until approval of final site cleanup and stabilization by PWD. This shall be accomplished using a plug in the outlet pipe, an impermeable seal across a curb opening, or other devices and methods as appropriate to keep all stormwater from entering the system.
- C. Final site cleanup shall include cleaning of all permanent inlet protection, and cleaning of all inlets (existing downstream inlets and newly installed), stormwater structures, and pipes of accumulated construction debris and sediment. Green inlets shall remain closed to all inflows until protection is removed by PWD, or specifically authorized to be removed by the Contractor at PWD's direction.
- D. Highway grate and open mouth grate inlets shall be protected using inlet filter bags as specified herein.
- E. Open mouth grate inlets and open mouth inlets (city inlets) shall be protected with a tubular sediment control device or synthetic filter as specified herein.
- F. Inlet protection shall be installed, inspected, cleaned and replaced according to manufacturer's specifications.
 - 1. Inlet filter bags and open mouth inlet protection shall be removed and replaced when filled with silt or when extended periods of ponding occur following a precipitation event. New inlet filter bags or approved inlet protection devices shall be installed and secured immediately after removal of silted protection devices.

3.04 PROTECTION OF STORMWATER SYSTEMS

- A. Any stormwater system not protected with sedimentation barriers during either a rain event or after the end of a working day shall be assumed to be compromised, and subject to scarification and/or replacement of compromised soils with clean aggregate at the discretion of PWD.

- B. Install tubular sediment control device or other measures as necessary around stormwater systems to prevent sediment from accumulating in the trench subgrade or stone. Tubular sediment control device shall be installed, inspected, cleaned, and replaced according to manufacturer's instructions. Tubular sediment control device shall not be required during active on-site construction, except as required during rain events.
- C. At the end of each working day, no stormwater storage stone shall be left unwrapped in geotextile and exposed to sedimentation. Any stormwater storage stone unprotected from sedimentation during a period of construction inactivity shall be assumed to be compromised, and shall be fully replaced at no cost to the City.
- D. All construction activities shall cease on any stormwater storage trench found to have standing water or a subgrade in unsuitable condition (sediment deposits or excessively damp soils) as determined by PWD. Appropriate measures shall then be dictated by PWD, possibly including but not limited to abandonment of the trench installation, establishment of a dewatering system for the duration of construction, or subgrade replacement measures as outlined in Section 02709 of these Specifications.

3.05 STORAGE STOCKPLIES

- A. Stockpiles of all loose materials (aggregate, fill, soils, etc.) shall be protected from dust and rain by use of a cover. The cover shall be free of defects, and secured adequately to maintain protection of the materials. PWD reserves the right to refuse use of any material that has been compromised by inadequate protection onsite.
- B. Stockpiles shall not be placed upslope from any infiltration structure. Any drainage structure (such as but not exclusively inlets) downslope of a stockpile shall be adequately protected from runoff.
- C. Stockpile heights are not to exceed 10 feet high. Stockpile slopes shall be 2:1 or flatter.

3.06 TEMPORARY STABILIZATION FOR STREET PROJECTS

- A. Any disturbed surfaces to remain unfinished and unprotected for more than four (4) days shall be temporarily stabilized. Method to be used shall be approved by PWD and shall be appropriate to the expected length of time employed (for example, use of hay alone without seeding would not be appropriate for a several month application, but could be appropriate for a week-long site delay).
- B. Install erosion control blanket first and then weed barrier geotextile over top. Geotextile and erosion control blanket to be left in place. Install temporary stabilization on same day as final grading is complete at each individual SMP.

3.07 TEMPORARY STABILIZATION FOR OFF-STREET PROJECTS

- A. Any disturbed surfaces to remain unfinished and unprotected for more than four (4) days shall be temporarily stabilized. Method to be used shall be approved by PWD and shall be appropriate to the expected length of time employed (for example, use of hay alone without seeding would not be appropriate for a several month application, but could be appropriate for a week-long site delay).
- B. Once final grading is complete, install cover crop (*Avena sativa* for all projects seeded from April 1 – June 1 and *Secale cereale* for projects seeded in the rest of the year, each at the rate of 30-60 pounds per acre). Seeds can be broadcasted and lightly pressed into soil by walking over it, lightly disking, or using a cultipacker. Do not broadcast on top of a lot of snow as seeds will

wash away. Seeds shall be no deeper than two (2) inches. Cover crop shall be watered in and must be kept moist if planted from June - November 1. Seeding shall be watered gently every three (3) days without rain until they begin to sprout. Once the seeds sprout, water deeply once a week if there is no rain until mature height. Do not mow.

3.08 REMOVAL AND FINAL CLEANUP

- A. Temporary erosion and sedimentation control measures shall be left in place at the direction of PWD. Once the site has been fully stabilized and approval is given by PWD, temporary erosion and sedimentation control measures and all accumulated silt and sediment shall be removed. All permanent inlet protection measures shall be cleaned, inspected, and verified to be in working order.
- B. Any remaining dirt or debris within the public right of way shall be removed by the Contractor, using necessary means as sufficient to remove the dirt and debris from the public right of way. This may include, but is not limited to, street sweeping, sidewalk vacuuming, inlet cleaning, power washing, or hand removal.
- C. Silt and waste materials shall be disposed of in a proper manner. No extra construction materials are to remain onsite upon completion of the Work. The Work of this Contract shall not be considered complete until all extraneous construction-related items have been removed (temporary traffic control devices, signage, etc.).

END OF SECTION

SECTION 02161
SHEETING AND SHORING

PART 1 GENERAL

1.01 SYSTEM DESCRIPTION

- A. Sheeting and shoring (where required) shall be of sufficient strength to resist all external pressures. It shall prevent settlement of adjacent buildings and underground structures and railroad facilities. Railroad loads shall be included for the shoring design of all trenches within the live load influence lines of the railroad tracks in the vicinity of the excavation.
- B. Definitions:
 - 1. Cutoff Line: a plane two feet below street surface or finished grade.
 - 2. Sheeting and Shoring: a temporary structure including sheeting, sheet piling, lagging, shoring, walers, strongbacks, soldier beams, and/or other members to maintain walls of excavation during construction.

1.02 REFERENCE STANDARDS

- A. Conform to Philadelphia Water Department Standard Specifications for Excavation, Refilling, Grading, Landscaping and Repaving, and to all applicable City, State, and Federal laws and regulations.

1.03 SUBMITTALS

- A. For all sheeting and shoring (except sheeting and shoring for trenches and excavations less than ten feet deep to invert) submit plans and calculations prepared by a registered Professional Engineer. Show size and arrangement of all members, and indicate materials to be used. State assumed loads, including any railroad loads, soil strata, and groundwater levels.

1.04 MEASUREMENT AND PAYMENT

- A. Sheeting and shoring for sewer and water piping (to be left in place), shall be paid at the fixed price of twelve hundred dollars (\$1200) per thousand board feet (MBM). The fixed price includes the following and all appurtenant work and materials: furnishing, placing, maintaining, and cutting off timber sheeting and shoring; removing and disposing of debris. Sheeting and shoring removed from water and sewer trenches shall not be measured for payment.
- B. Sheeting and shoring for green stormwater infrastructure systems (to be fully removed) shall be included in the unit price bid per cubic yard of stormwater excavation. The bid price shall include provision and installation of all sheeting and shoring materials, maintenance of emplaced sheeting and shoring during construction, removal of all sheeting materials in full, and any and all appurtenant labor and materials.
- C. The Contractor shall use a method of sheeting and shoring sufficient in strength to resist all external pressure so as to maintain the walls of the trench during construction. The method used including, but not limited to, sheeting, sheet piling, lagging, shoring, walers, strongbacks, and steel soldier beams, will be included in the price bid.
- D. Regardless of the sheeting and shoring method used, the paving restoration and excavation outside the limits of payment defined for excavation is incidental. There will be no separate or additional payment for paving beyond these limits.

- E. The Contingency cost of all work and materials for Sheeting and Shoring not incidental to other proposal items will be paid for at the fixed price of twelve hundred dollars (\$1200) per thousand feet board measure for sheeting and shoring, which price shall be full payment for all such costs.
- F. No additional payment will be made for sheeting and shoring removal from stormwater management structures. Removal of sheeting and shoring will be included in the bid price for excavation where necessary. All sheeting and shoring (to full depth) shall be removed from stormwater management structures.

PART 2 PRODUCTS Not Used

PART 3 EXECUTION

3.01 GENERAL INSTALLATION

- A. Place continuous close sheeting and shoring along entire trench, in accordance with Contract Documents and approved plans and calculations.
- B. In trenches external to stormwater systems, when backfilling has progressed to one foot below Cutoff Line remove all sheeting and shoring above Cutoff Line.
- C. Remove all sheeting and shoring entirely from stormwater system trenches as it becomes safe to do so, or upon final backfilling of the trench. Additional backfilling and compaction to maintain stability shall be employed as necessary to fill voids created by support structure removal.

END OF SECTION

SECTION 02171
ENVIRONMENTAL SOILS HANDLING

PART 1 GENERAL

1.01 SCOPE OF WORK

- A. The work of this Section includes all labor, material, equipment and services necessary to characterize, handle and dispose of unsuitable soil and related debris.
- B. No testing or special handling is required if due diligence shows no evidence of a regulated substance. The material may be managed as clean fill under PADEP Management of Fill Policy. Although a permit is not required, a Clean Fill Certification Form FP-1001 must be retained by the owner of the property receiving the fill.

1.02 RELATED SECTIONS

- A. Section 02135 Erosion and Sediment Control
- B. Section 02210 Earthwork for Green Infrastructure
- C. Section 02709 Subsurface Stormwater Storage

1.03 REFERENCE STANDARDS

- A. American Society for Testing Materials (ASTM)
 - 1. ASTM E1527-13 – Standard Practice for Phase I Environmental Assessment
- B. Pennsylvania Department of Transportation Officials (PennDOT)
 - 1. PennDOT Publication 408 - Standard Specification for Construction
- C. City of Philadelphia
 - 1. Stormwater Guidance Manual (Appendix-A)
- D. United States Environmental Protection Agency (USEPA)
 - 1. Test Method for Evaluating Solid Waste (SW-846)
- E. Pennsylvania Department of Environmental Protection (PADEP)
 - 1. 2015 Management of Fill Policy (Document 258-2182-773)
 - 2. Residual Waste and Special Handling Waste Streams (Document 258-2000-764)
 - 3. 25 Pa. Code Chapters 287 to 299 (residual waste regulations)
 - 4. 25 Pa. Code Chapters 271 to 285 (municipal waste regulations) Solid Waste Management Act, 35 P.S. §§ 6018.101 et seq.
 - 5. Land Recycling and Environmental Remediation Standards Act, 35 P.S. §§ 6026.101 et seq.
- F. Code of Federal Regulations (CFR) – 40 CFR Part 261 Subpart C

1.04 SUBMITTALS

- A. Submit complete sampling and testing plan to supplement the available information provided in the Contract Documents, sufficient to characterize the material for reuse or disposal. See PADEP Management of Fill Policy Appendix A for sampling analysis requirements per approximate volume of soil material.

- B. Submit complete analytical results of any chemical or physical analysis performed. Analytical results should be accompanied with full laboratory data packages, sample collection details and chain of custody forms. Electronic laboratory data packages are acceptable.
- C. Submit tickets/receipts/records/manifests/bills of lading for any material shipped offsite.

1.05 MEASUREMENT AND PAYMENT

- A. No measurement or payment for disposal will be made for Clean Fill that is either reused on site or transported off site.
- B. No measurement or payment will be made for Historic Fill that is reused on site.
- C. The measurement of soils deemed unsuitable for use on site and requiring disposal at a permitted facility, will be based on the unit rate per ton of soil delivered to the receiving facility. Weights shall be measured at the receiving facility scale or other means acceptable to the Owner and confirmed in writing. Payment for disposal will not be made until final tickets/receipts/records/manifests/bills of lading are provided.
- D. The payment for disposal of Contaminated Fill (Regulated, Non-hazardous Fill) at the Contractor designated facility and analytical testing required by the receiving facility for acceptance of the material shall be paid out of the Allowance Item G1016 for Additional cost for testing and disposal of regulated or hazardous material. Only the difference between the cost of disposal of Clean Fill/Historic Fill not re-used on site and the disposal of Regulated/Hazardous Fill shall be covered by Allowance Item G1016.
- E. The sampling, testing, and submission of reports, with prior written approval of the Project Manager, and as detailed in Specification Section 02171, 1.04, C., of excavated materials, shall be paid under the Allowance Item G1016 for Additional Costs for Testing and Disposal of Regulated and Hazardous Materials.

1.06 QUALITY ASSURANCE

- A. Use adequate number of skilled workers who are thoroughly trained and experienced in the necessary trades and who are completely familiar with the specified requirements and methods needed for proper performance of the work of this Section.
- B. Codes and Standards: Perform work in compliance with applicable requirements of governing authorities having jurisdiction. Excavation, transport, and disposal of contaminated material and hazardous material shall be in accordance with the rules and regulations of:
 - 1. The United States Department of Transportation (USDOT)
 - 2. United States Environmental Protection Agency (USEPA)
 - 3. Local Regulatory Agencies
- C. The Contractor shall perform analytical testing using an independent certified laboratory.

1.07 DELIVERY, STORAGE AND HANDLING

- A. Refer to Part III, Execution.

1.08 DEFINITIONS

- A. Clean Fill - Uncontaminated (as defined by concentrations of regulated substances that do not exceed the values in Table FP-1a and b. (attached hereto and excerpted from Management of Fill Policy (Document 258-2182-773), nonwater-soluble, nondecomposable inert solid material. The

term includes soil, rock, stone, dredged material, used asphalt, and brick, block or concrete from construction and demolition activities that is separate from other waste and recognizable as such (25 Pa. Code §§ 271.101 and 287.101).

- B. Historic Fill - Material (excluding landfills, waste piles and impoundments) used to bring an area to grade prior to 1988 that is a conglomeration of soil and residuals, such as ashes from the residential burning of wood and coal, incinerator ash, coal ash, slag, dredged material and construction and demolition waste. The term does not include iron or steel slag that is separate from residuals if it meets the coproduct definition and the requirements of 25 Pa. Code § 287.8. The term does not include coal ash that is separate from residuals if it is beneficially used in accordance with 25 Pa. Code §§ 287.661 - 287.666.
- C. Contaminated (Regulated, Non-hazardous) Fill - Soil, rock, stone, dredged material, used asphalt, historic fill, and brick, block or concrete from construction and demolition activities that is separate from other waste and recognizable as such that has been affected by a spill or release of a regulated substance and the concentrations of regulated substances exceed the values in Table FP-1a and b. (attached hereto and excerpted from Management of Fill Policy (Document 258-2182-773)).
- D. Hazardous Material – Fill material that contains Regulated Substances including hazardous substances and contaminants regulated under the Pennsylvania Hazardous Sites Cleanup Act (HSCA) or applicable federal RCRA regulations.

1.09 PROJECT CONDITIONS

- A. The known historical use of the site is residential surrounded by industrial use. These excavated materials may ultimately be classified as regulated or hazardous fill following appropriate sampling and testing during the construction phase.

PART 2 PRODUCTS

2.01 CONTAINERS

- A. The Contractor shall provide suitable containers to house and transport fill material. Containers shall be free and clear of deleterious material. Containers shall be sealed or lined such that no spillage or leakage can occur between locations during transport. Containers used for storage or transport of material shall be managed in such a way so that no cross contamination of clean fill can occur.

2.02 SAMPLING ARTICLES

- A. Contractor procured samples shall be placed into laboratory clean glass bottles.
- B. Sampling articles, tools, means and methods shall be of such type and be used in such a way to be consistent with USEPA SW 846 and prevent cross contamination to assure representative sampling.
- C. Documentation of sample location, horizontal and vertical.

2.03 OTHER MATERIALS

- A. Soil additives or amendments for conditioning fill for transport or disposal must be approved by the Project Manager or their representative prior to use.

PART 3 EXECUTION

3.01 GENERAL REQUIREMENTS

- A. The contractor shall classify, handle, transport, reuse or dispose of all excess fill material consistent with all applicable regulations in such a way to minimize cost to the City.
- B. The Contractor shall clearly define, in writing, the means and methods to manage the fill material prior to the start of work and clearly document the conformance during the completion of the work.

3.02 TESTING

- A. No testing or special handling is required if due diligence shows no evidence of a regulated substance. The material may be managed as clean fill under PADEP Management of Fill Policy. Although a permit is not required, a Clean Fill Certification Form FP-1001 must be retained by the owner of the property receiving the fill.
- B. Field testing using suitable field screen technologies (i.e. photo ionization device (PID)) to detect the presence of any volatile organic; colorimetric/indicator tests for other non-volatile compounds) may be required if field conditions during active construction indicate the possible presence of a regulated substance.
- C. All sampling and testing will be performed in accordance with the applicable rules, regulations, codes and ordinances of Local, State, and Federal Authorities, including but not limited to USEPA Test Methods for Evaluating Solid Wastes (SW-846). See PADEP Management of Fill Policy Appendix A for sampling analysis requirements per approximate volume of soil material, including grab vs. composite sampling for analyses.
- D. The Contractor shall furnish a qualified employee and all necessary equipment to obtain soil samples as required. The Contractor shall assist the PWD in obtaining any duplicate/split samples, as necessary.
- E. Sampling and testing, either in-situ or from excavated/staged piles shall be performed consistent with customary representative sampling protocol and as approved by PWD.
- F. The Contractor shall insure that the test samples are random and representative of the material, and are taken in accordance with the requirements of this specification and referenced standards.
- G. Sampling and testing as may be required by any receiving facility shall follow the receiving facility protocol and be submitted to PWD for recording purposes and payment.

3.03 MATERIAL STORAGE AND HANDLING

- A. The Contractor shall transport waste soil and construction debris to the designated area in a safe, efficient, and environmentally sound manner. Waste soil is that excavated soil that is not used as backfill during the performance of the work, is regulated and must be disposed of offsite. Regulated fill material may be managed under the Statewide General Permit WMGR096 effective 12/23/13 through 12/23/18. However, fill material that does not meet the Regulated Fill Limits (Table GP-1 in Permit) may not be managed by permit, and must be otherwise managed in accordance with PADEP's municipal or residual waste regulations.
- B. Any soil or debris designated for offsite disposal shall be sized and placed within containers at the locations approved by PWD.
- C. Soil designated for stockpiling onsite shall be transported to the areas shown on the Contract Drawings or as approved by PWD.

3.04 TRANSPORTATION

- A. The Contractor shall separate clean construction material from any waste soil and construction debris. Contractor shall separate and keep segregated any contaminated materials from noncontaminated materials. Containers for segregation, and inherent labor, are paid under the Allowance Item G1016 for Additional cost for testing and disposal of regulated or hazardous material.
- B. Designated construction waste and regulated soil that is moved by truck to temporary onsite waste handling areas, or other temporary stockpiles, must be in a bermed or contained area and materials shall be kept covered.
- C. Clean products may be placed by the Contractor in the areas designated on the Contract Drawings and approved by PWD. At the Owner's option, clean products may be disposed offsite at a designated facility. As per PADEP Management of Fill, regulated fill may not be placed on a greenfield property not planned for development or on a residential use property. All material handling shall be performed by the Contractor.

3.05 PREPARATION OF CONTAINERIZED DEBRIS FOR DISPOSAL

- A. The Contractor shall organize the containerization of waste soil and construction debris so as to maximize the handling and disposal efficiency and reduce the cost of the disposal operation.
- B. The Contractor shall reduce material sizes, load the containers, and manage the material water content to meet the requirements of the final disposal facility and agencies having jurisdiction over transportation and waste disposal.
- C. The Contractor shall take all necessary precautions to avoid placing free water into the disposal containers. The Contractor shall cover containers to prevent saturation by rainfall. Covers shall be provided by the Contractor.
- D. Under no circumstances shall the Contractor allow drainage of storm water from regulated waste handling activities to enter any watercourse, storm drain, or sanitary sewer. Asphalt berms or dikes shall be constructed, as necessary, by the Contractor to divert runoff from entering clean work areas of the site to be captured and disposed of properly.
- E. The Contractor shall notify the Project Manager of the disposal facility selected, and provide documentation that the disposal facility is licensed to handle the material being disposed. No material shall be disposed prior to the Project Manager approving the selected disposal facility.

3.06 HANDLING OF CLEAN MATERIALS

- A. Materials transported to the site for use in the Work shall be stored in areas to be located as directed by the Project Manager. Materials shall be protected from onsite materials by berms and other means deemed acceptable to Project Manager. The storage area must be located upslope from any waste stockpiles for drainage purposes. Stockpiles must be placed and managed to comply with the Erosion and Sediment Control Specification/Plan.

3.07 MAINTAINING CLEAN WORKPLACE

- A. The Contractor shall be responsible for providing a clean work area. Solid debris dislodged from equipment onto access roads or adjacent parcels shall be immediately collected and removed by the Contractor.

3.08 DOCUMENTATION

- A. Testing and ultimate disposal documentation shall be retained and copies provided to the Project Manager, consistent with the Submittals Section.

END OF SECTION

SECTION 02210

EARTHWORK FOR GREEN STORMWATER INFRASTRUCTURE

PART 1 GENERAL

1.01 SCOPE OF WORK

- A. In general, the work to be done under this section consists of construction activities pertaining to earthwork including clearing, excavation, filling, backfilling, compacting, and grading.
- B. Grading shall include all work necessary to bring the designated locations of the project area to the rough grades shown on the Drawings.
- C. Grading shall include all borrow excavation, transporting, placement and compaction work required to provide the necessary material volumes to complete the designed grades for the project areas as shown in the Drawings. Borrow excavation work shall be comprised of two types of excavation:
 - 1. Common Borrow Excavation. This refers to soil material salvaged within the limit of disturbance of the project. This shall include soil that will be excavated and/or stockpiled in order to complete the work depicted in the Drawings.
 - 2. Foreign Borrow Excavation. This refers to soil material required in addition to the material available from regrading operations, and will come from approved sources outside the limits of the project.
- D. Finished grades to be landscaped or seeded shall include a minimum topsoil layer of six inches (6"). Finished grades to be otherwise surfaced shall allow sufficient elevation for the completed surface to produce the finished grades and elevations as shown on the Drawings

1.02 RELATED SECTIONS

- A. Section 01535 Tree Protection
- B. Section 02135 Erosion and Sediment Control
- C. Section 02370 Geosynthetics
- D. Section 02709 Subsurface Stormwater Storage
- E. Section 02720 Stormwater Surface Features
- F. Section 02830 Green Stormwater Infrastructure Soils

1.03 REFERENCE STANDARDS

- A. American Society for Testing Materials (ASTM)
 - 1. ASTM D422 – Standard Test Method for Particle Size Analysis of Soils
 - 2. ASTM D698 – Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (Standard Proctor)
 - 3. ASTM D1557 – Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lb/ft³)
 - 4. ASTM D2487 – Standard Practice for Classification of Soils for Engineering Purposes (Unified Soil Classification System)
- B. American Association of State Highway and Transportation Officials (AASHTO)

1. AASHTO T89 - Standard Specification for Determining the Liquid Limit of Soils
2. AASHTO T90 – Standard Specification for Determining the Plastic Limit and Plasticity of Soils

C. Other Agencies

1. Philadelphia Water Department, Standard Details and Standard Specifications for Sewers.
2. Philadelphia Water Department, Standard Specifications for Excavation, Refilling, Grading, Landscaping, and Repaving (12-49).
3. Philadelphia Streets Department, Standard Specifications for Paving and Repaving.
4. Philadelphia Streets Department, Standard Construction Items.
5. PennDOT Publication 408, Section 201 – Clearing and Grubbing
6. PennDOT Publication 408, Section 205 – Borrow Excavation
7. PennDOT Publication 408, Section 206 – Embankment
8. PennDOT Publication 408, Section 802 – Topsoil Furnished and Placed
9. PennDOT Test Method 106, Method B
10. Occupational Safety and Health Administration, U.S. Department of Labor

1.04 SUBMITTALS

- A. Submit a list of materials to be provided for work under this Section including the name and address of the materials producer and the location from which the materials are to be obtained.
- B. Submit certificates, signed by the materials producer, stating that materials meet or exceed the specified requirements.
- C. Submit samples of all aggregate, select backfill and structural fill to be provided. Samples of loose material shall be in a sealed bag with name of material and manufacturer. Quantity of sample by weight shall be in accordance with ASTM standards, and may be confirmed by contacting BLS directly at (215) 685-1430. Samples shall be submitted to BLS at least two (2) weeks in advance for processing and analysis prior to site delivery. Deliver the sample(s) to the loading dock entrance of the building, and call Jerome David at (215) 685-1430 upon arrival. The sample shall include the “Request for Test” form (Appendix E of the specifications).

1.05 MEASUREMENT AND PAYMENT

- A. The cost of all work and materials necessary to complete this work effort will be included in the price bid per cubic yard of excavation. The payment will be full compensation for all materials, labor, equipment, tools and incidentals necessary to complete the clearing and grading work as specified in this Section.
 1. Excavation and disposal of material (without classification) for green infrastructure will be paid for at the appropriate unit price bid per cubic yard. The price bid shall include the following and all appurtenant work and materials: sawcutting existing pavement, curbing, and other surfacing; excavation without classification; removal of all materials of whatsoever nature encountered within the payment lines, including but not limited to rock, existing paving, abandoned pipes, masonry, and concrete; furnishing, placing, maintaining, and removing sheeting and shoring; maintaining and protecting existing underground structures; removing, hauling, and disposing of excess and unsuitable materials; dewatering, including

pumping and disposing of water; filling voids created beyond payment lines as a result of Contractor's operations; maintenance and protection of existing site features to remain; sheeting of any utility crossings within watertight conduits; relocation of street signs or street furniture; protection of trees to remain; preparation of the subgrade as specified herein.

2. Earthen check dams and earthen spillways will be paid for at the appropriate unit price bid for each. The price shall include all materials and appurtenant work needed to construct fully functioning check dams and spillways, including placement of material, compaction and specified testing to ensure adequate compaction as described herein, and placement of pipe for weep holes if specified on the Drawings.
 3. No additional payment will be made for the transportation and other costs associated with offsite disposal of excess materials, should this be necessary. This offsite disposal cost is considered incidental.
 4. Removal of trees larger than four inches diameter breast-height will be paid for at the appropriate unit price bid for each. The price bid shall include all appurtenant work and materials required to remove and dispose of the tree, including grinding of the stump to at least four inches (4") below finished grade if the location is to be abandoned, or twenty-four inches (24") if the location is to be replanted.
 - a. No additional payment shall be made for tree removal of trees under four inches diameter breast-height (4" DBH).
 5. Moving and transplanting of trees will be paid for at the appropriate unit price bid for each. The price bid shall include removal of tree with a tree spade appropriately sized to sustain the tree after planting as described herein.
 6. No additional payment shall be made for the as-built survey of grades and elevations. The cost to produce this as-built survey shall be included in the unit price bid. This as-built survey may be submitted in conjunction with any infrastructure as-built survey also required for the project.
- B. Excavation and disposal of material for pipe sewers in State Routes will be paid for at the price bid per cubic yard.
1. The price bid shall include the following and all appurtenant work and materials: excavation without classification; removal of all materials of whatsoever nature encountered within the payment lines, including rock, existing paving, abandoned pipes, masonry, and concrete; furnishing, placing, maintaining, and removing temporary sheeting and shoring; supporting and protecting existing underground structures; removing and disposing of excess and unsuitable materials; furnishing, placing, and compacting all required Ordinary Backfill Material, Select Backfill Material, all dewatering, including pumping and disposing of water; filling voids created beyond payment lines as a result of Contractor's operations; removing, hauling, and delivering to Water Department Storage Yard all existing CI frames and covers, inlet traps, grates, and grate frames; clearing and grubbing; maintenance or restoration of existing curbs; protecting trees and shrubs; fluming, damming, or otherwise managing existing sewer flow, and repairing any damage due to restriction of flow; furnishing, placing, maintaining, and removing debris grills; removing debris; filling abandoned manholes; and rodent control.
 2. Payment lines for Excavation for Pipe Sewers are the vertical lines passing through the outside limiting lines of the sewer structure as shown on the Plans or in the Standard Details;

the original ground surface or cut surface (whichever is lower), and the bottom of the sewer structure.

3. Payment lines for Excavation for Pipe Sewers not in concrete will be based upon the widths of trench specified in the Standard Details for Sewers; the original ground surface or cut surface (whichever is lower); and the outside bottom of the pipe barrel. Bell holes will not be measured for payment.
4. The volume inside existing sewers and manholes will not be measured for payment.
5. Unauthorized excavation beyond the payment lines will not be measured for payment. There will be no payment for removal of such material, or for satisfactory refill of voids so created. Where rock is excavated, no additional payment will be made for overbreakage.
6. See Section 02161 for payment of sheeting and shoring.

- C. Payment for PennDOT 2A coarse aggregate used for backfill above any subsurface stormwater trench shall be paid at the unit price bid per cubic yard and shall include furnishing and placement, compaction to specified limits.

1.06 QUALITY ASSURANCE

- A. The grading Contractor or subcontractor is subject to approval by PWD.
- B. Any fill or disposal areas, or temporary offsite storage locations shall be subject to review and approval by PWD.
- C. All finished grades and slopes shall be verified and be within 0.1 feet of the grades indicated on the Drawings. All defined slopes shall be consistent with the plans to maintain drainage.
- D. Codes and Standards: Comply with all applicable local, State and Federal rules, regulations and ordinances concerning sloping of excavation, trenching, and safety of workers, including the latest OSHA requirements.

1.07 DELIVERY, STORAGE AND HANDLING

- A. The Contractor shall be responsible for delivering, storing and handling all materials and soil brought on site and meeting the requirements stated in Section 02135 - Erosion and Sediment Control.
- B. The Contractor is reminded that unprotected stockpiles of materials may be considered as degraded condition by weathering and rendered unacceptable for use by PWD. In particular, clean washed stone may become contaminated if left unprotected onsite; PWD reserves the right to require stockpile protection and/or replacement of damaged or compromised materials at no additional cost to the City.
- C. The Water Department shall not be responsible for any materials brought to the site by the Contractor or sub-Contractor, suppliers, or anyone else for whom the Contractor is responsible.

1.08 DEFINITIONS

- A. Excavation: Excavation consists of removal of material encountered to elevations indicated and as necessary to remove unsuitable material, and subsequent disposal of materials removed.
- B. Subgrade: Subgrade designates undisturbed earth or compacted soil layer immediately below the proposed structure or stormwater feature.
- C. Fill: Fill includes materials placed in order to raise the grade above the existing contours.

D. Backfill: Backfill used herein, includes materials placed in excavations.

PART 2 PRODUCTS

2.01 FILL MATERIALS

- A. Fill material (both Common Borrow Excavation and Foreign Borrow Excavation) shall conform to PennDOT Publication 408 Specifications, Section 205.
- B. Backfill placed above any subsurface stormwater trench shall be PennDOT 2A coarse aggregate stone unless otherwise specified on Drawings. Furnish Select Backfill Material in accordance with the most recent revision or amendment to PennDOT publication 408 Specification, Section 703.2. Coarse Aggregate – 2A.
- C. All Foreign Borrow Excavation materials shall be free of seeds or live plant materials and all noxious or invasive plants and/or weeds. These materials shall be obtained from properly permitted and authorized sites. All Foreign Borrow Excavation materials shall also conform to the following:
 - 1. More than 35% passing No. 200 Sieve.
 - 2. Minimum dry mass density of 95 lb/ft³ determined by PTM No. 106, Method B.
 - 3. Maximum liquid limit of 65, determined by AASHTO T89.
 - 4. Plasticity index of not less than liquid limit minus 30 (for soils with liquid limits of 41 to 65), determined by AASHTO T90
- D. All fill materials shall be free from clay lumps, brush, litter, roots, stones 2 in. and larger, and other foreign materials.
- E. Structural Fill: Structural Fill may be imported or processed on-site material. Structural Fill must be clean and free from organic matter, roots, brush or other vegetation, trash, whole bricks, non-mineral debris, frozen material and must be approved by PWD. The required gradation for Structural Fill is as follows:

U.S. Standard Sieve Size	Percent Passing
6"	100
4"	70-100
No. 4 (4.75 mm)	50-100
No. 200 (1.18 mm)	35 (max)

2.02 TOP SOIL

- A. See Section 02830 Green Stormwater Infrastructure Soils.

2.03 AGGREGATE

- A. Coarse aggregates shall meet the size and grading requirements as defined in Standard Sizes of Coarse Aggregate, Table 4, AASHTO Specifications, Part I, 19th Ed., 1998, or latest edition, unless otherwise specified.
 - 1. Maximum wash loss of 1% (ASTM C117).

2. Maximum abrasion of 40% for 500 revolutions per ASTM C535 or C131 as appropriate to aggregate size.
3. All aggregate shall be clean and thoroughly washed. Aggregate shall be 100% crushed material.
4. Unless otherwise approved by PWD, coarse aggregate for the stormwater trenches shall be uniformly graded as defined in Standard Sizes of Coarse Aggregate, Table 4, AASHTO Specifications, Part I, 19th Ed., 1998, or latest edition, unless otherwise specified.

B. 2A MODIFIED STONE

1. Grading requirements for 2A Modified (2RC):

U.S. Standard Sieve Size	Percent Passing
2" (50 mm)	100
3/4" (19 mm)	52-100
3/8" (9.5 mm)	35-70
No. 4 (4.75 mm)	24-50
No. 16 (1.18 mm)	0-12

C. AASHTO #3 STONE

1. Grading Requirements for AASHTO No. 3:

U.S. Standard Sieve Size	Percent Passing
2 1/2" (63 mm)	100
2" (50 mm)	90-100
1 1/2" (37.5 mm)	35-70
1" (25 mm)	0-15
1/2" (12.5 mm)	0-5

D. AASHTO #57 STONE

1. Grading Requirements for AASHTO No. 57:

U.S. Standard Sieve Size	Percent Passing
1 1/2" (37.5 mm)	100
1" (25 mm)	95-100
1/2" (12.5 mm)	25-60
No. 4 (4.75 mm)	0-10
No. 8 (2.36 mm)	0-5

E. AASHTO #8 STONE

1. Grading Requirements for AASHTO No. 8:

U.S. Standard Sieve Size	Percent Passing
½”(12.5 mm)	100
3/8”(9.5 mm)	85-100
No. 4 (4.75 mm)	10-30
U.S. Standard Sieve Size	Percent Passing
No. 8 (2.36 mm)	0-10
No. 16 (1.18 mm)	0-5

F. AASHTO #9 STONE

1. Grading Requirements for AASHTO No. 9

U.S. Standard Sieve Size	Percent Passing
3/8” (9.5 mm)	100
No. 4 (4.75 mm)	85-100
No. 8 (2.36 mm)	10-40
No. 16 (1.18 mm)	0-10
No. 50 (300 µm)	0-5

G. AASHTO #10 STONE

1. Grading requirements for AASHTO No. 10

U.S. Standard Sieve Size	Percent Passing
3/8” (9.5 mm)	100
No. 4 (4.75 mm)	85-100
No. 100 (150 µm)	10-30

PART 3 EXECUTION

3.01 GENERAL REQUIREMENTS

- A. Prior to beginning earthwork operations, all utility mark out, necessary clearing and grubbing, removal of obstructions and pavements, installation of required erosion and sediment control facilities shall be completed. The Contractor shall be responsible for the condition of the trenches and filled areas.

3.02 CLEARING AND GRUBBING

- A. Clear from the surface of the existing ground all trees and shrubs marked for removal, brush, downed timber, rotten wood, heavy growth of grass and weeds, vines, rubbish and debris.
- B. See Section 01535 Tree Protection of these Specifications.
- C. Strip topsoil to the depths encountered, and prevent intermingling with underlying subsoil or objectionable material. Remove heavy growths of grass before stripping. Where trees are

indicated to remain, stop topsoil stripping a sufficient distance away from such trees to prevent damage to the main root system as approved by PWD.

- D. Stockpile topsoil in the designated area as shown on the erosion and sedimentation control plan unless otherwise approved in advance by PWD.
- E. Remove all waste materials from the site.

3.03 DUST CONTROL

- A. Refer to Section 02135 Erosion and Sediment Control for detailed requirements for dust management.

3.04 UNANTICIPATED CONDITIONS

- A. The Contractor shall notify PWD immediately upon finding evidence of existing structures or other obstructions within the excavation. The Contractor shall also notify PWD and stop work immediately upon finding evidence of historical artifacts or other sensitive objects within the excavation.

3.05 EXCAVATION BELOW GRADE

- A. Subgrade shall be unfrozen, firm, and stable with no standing water, mud, or muck. If the Contractor fails to maintain the subgrade properly, the Contractor shall remove the unsuitable material at no additional cost to PWD. If the bottom of any excavation is taken out below the limits shown on the Drawings, it shall be restored at the Contractor's expense with six inch (6") layers of AASHTO #57 aggregate to the elevations shown in the Drawings. Compacted earthen fill is not acceptable.
- B. If in the opinion of PWD or authorized representative the undisturbed natural subgrade, at or below the normal grade of the excavation as indicated on the Drawings, is unsuitable for construction, it shall be removed to such depth and width as PWD may direct and be replaced with suitable material as directed by PWD. Excavation of trenches required for the installation of all pipes and structures shall be made to the depths, widths, elevations and grades indicated on the Drawings. The Contractor shall render the bottom of the excavations firm and dry and in all respects acceptable to PWD. Pavement, when encountered, shall be sawcut along straight lines before excavating.
- C. Excavation shall be performed in the dry and shall be accomplished by methods which preserve the undisturbed state of subgrade soils. The existing subgrade shall not be compacted or subject to excessive construction equipment prior to placement of geotextile and crushed stone. If it is essential that equipment be used in the excavated area of infiltration facilities, all equipment must be approved by PWD or authorized representative. Use of equipment with narrow tracks or tires, rubber tires with large lugs, or high pressure tires that will cause excessive compaction shall not be permitted within the excavation.

3.06 GRADING

- A. Install all required Soil Erosion and Sedimentation Control measures as described in these Specifications or indicated on the Drawings. Phasing of Erosion and Sedimentation Control Measures shall follow the sequence provided, or barring provision of a specified sequence shall be installed as appropriate to the Work and as directed by PWD. At a minimum, downstream sediment protection, limit-of-disturbance fencing, and vehicle/tire cleaning shall be instituted prior to commencing any clearing or grading activities.

- B. Perform all clearing and grubbing work in accordance with this Section and PennDOT Publication 408 Specifications, Section 201.3, Clearing and Grubbing -- Construction. Complete all clearing and grubbing (including stump removal) before starting other grading work.
- C. In areas of fill, complete grading to within three feet (3') of finished grade before excavating for and constructing sewers. All grading work, except final grading where sewers are constructed in fill shall be completed within thirty (30) days of starting clearing and grubbing operations.
- D. Place embankment over pipes and embankment around manholes in accordance with the Standard Details and Standard Specifications for Sewers.

3.07 EXCAVATION SUPPORT

- A. Furnish, install, monitor and maintain excavation support (e.g., shoring, sheeting, bracing, trench boxes, etc.) as required by Federal, State or local laws, ordinances, regulations and safety requirements. Support the sides of excavation, to prevent any movement which could in any way reduce the width of the excavation below that necessary for proper construction and protect adjacent structures from undermining, settlement or other damage. The Contractor may be required to utilize the services of a licensed professional engineer in the State of Pennsylvania to provide temporary excavation support system designs and submittals as required.
- B. The Contractor shall take care to prevent the formation of voids outside of sheeting. If voids occur behind sheeting, immediately backfill and compact the voids with AASHTO #57 aggregate. Voids in locations that cannot be properly compacted upon backfilling shall be filled with lean concrete.
- C. All excavation supports shall be carefully removed in such manner so as not to endanger the Work or other adjacent structures, utilities, or properties. All voids left or caused by withdrawal of supports shall be immediately filled with crushed stone and compacted. No sheeting shall be left in the trench following installation of improvements.

3.08 SUBGRADE PREPARATION AND GRADING

- A. Subgrade of infiltration beds/trenches shall be level. Plus or minus one-half inch (+/- 1/2") is acceptable as level.
- B. Grading shall be performed to the lines and grades shown on the Drawings. All objectionable material encountered within the limits indicated shall be removed and disposed of by the Contractor.
- C. In excavation faces, all loose or protruding rocks shall be barred loose or otherwise removed to line or finished grade of slope. All cut and fill slopes shall be uniformly dressed to the slope, cross section, and alignment shown on the Drawings or as directed by PWD.
- D. In locations where subsurface stone storage underlies the stormwater surface feature, see Section 02709 Subsurface Stormwater Storage. All work to prepare the stone storage layer shall be completed prior to installation of Stormwater Surface Features (see Section 02720). Subsurface stone storage shall be approved by PWD prior to installation of surface structures. Appropriate stone foundation shall be utilized in all locations for precast and cast-in-place concrete surrounds and curbing (stone storage may be considered as foundation if compacted stone extends completely under the concrete surrounds). The bottom surface of any excavation for an infiltration system shall be uncompacted yet stable. The top three to six inches (3"-6") of remaining subgrade soils shall be scarified prior to installation of the system, unless otherwise directed by PWD.

- E. Prior to backfill for stone stormwater systems, Double Ring Infiltrometer Testing shall be conducted in one location for each system footprint that is not fully lined with an impermeable (HDPE) liner. Test holes shall be located within the limits of the proposed trench excavation and results of the testing shall be submitted to PWD or an authorized representative. See Section 02732 for additional details.
- F. In locations where subsurface stone storage underlies the stormwater surface feature, see Section 02709 Subsurface Stormwater Storage. All work to prepare the stone storage layer shall be completed prior to installation of Stormwater Surface Features (see Section 02720). Subsurface stone storage shall be approved by PWD prior to installation of surface structures. Appropriate stone foundation shall be utilized in all locations for precast and cast-in-place concrete surrounds and curbing (stone storage may be considered as foundation if compacted stone extends completely under the concrete surrounds). The bottom surface of any excavation for an infiltration system shall be uncompacted yet stable. The top three to six inches (3"-6") of remaining subgrade soils shall be scarified prior to installation of the system, unless otherwise directed by PWD.

3.09 PLACEMENT AND COMPACTION OF FILL AND BACKFILL

- A. Where fill materials are to be placed within six inches (6") of the finished graded soil surface on areas that are to be revegetated, materials shall be compacted with a roller having a mass (weight) not over one-hundred-and-twenty pounds per foot width (120 lb/ft-width) of roller or by other acceptable methods as directed by PWD. Material shall not be placed in a wet or frozen condition.
- B. Over-compaction shall be avoided within areas designated on the plans as infiltration surfaces.
- C. Areas with Stormwater Soils should be compacted per the requirements of Section 02830.

3.10 BACKFILL IN CITY STREETS

- A. Backfill shall be brought up evenly on all sides in 8-inch maximum lifts. Each layer of backfill material shall be compacted by rolling, tamping, or vibrating with mechanical compacting equipment or hand tamping. If rolling is employed, it shall be by use of a suitable roller or tractor, being careful to compact the fill throughout the full width of the trench. Use a pad foot roller for cohesive fill (silts and clay) and a smooth drum roller or vibrating plate for coarse grained fill (sands and gravels). If material is compacted by hand tamping, there must be at least one laborer tamping for each laborer shoveling material into the trench.
- B. Where pipes are laid in off-street easements, the remainder of the trench (one foot (1') or more above the top of the pipe) shall be filled with common fill in layers not to exceed eight inches (8") and compacted by rolling, tamping or vibrating with mechanical compacting equipment. Wherever a loam or gravel surface exists prior to excavations, it shall be removed, conserved and replaced to the full original depth as part of the work unless specified or shown otherwise. In some areas, it may be necessary to remove excess material during the cleanup process so that the ground may be restored to its original level and condition. If the Contractor prefers not to store loam, gravel, or topsoil it shall be replaced with material as specified herein.
- C. Where pipes are laid in PennDOT or local roadways or rights-of-way, the remainder of the trench above the crushed stone backfill and up to the bottom of the specified paving or surface restoration shall be backfilled with fill materials as specified on the Drawings or PWD standard. Lifts shall at no time exceed eight inches (8") loose, and compaction shall be in accordance with

these specifications. Preparation and paving shall be performed as shown on the Drawings or as specified herein.

- D. All Backfill directly above storage trenches shall be PennDOT 2A coarse aggregate stone, unless otherwise specified on the Drawings to be Planting Soil or other material. All backfill shall be compacted.

3.11 PLACEMENT AND FINISH GRADING OF TOPSOIL

- A. Loosen or scarify all areas to be covered by topsoil to a minimum depth of three inches (3"). Remove and dispose of any stones or other objectionable material encountered.
- B. Place topsoil on the prepared areas, and spread and compact to a uniform depth of six inches (6") to produce the elevations and grades as shown on the Drawings.
- C. Compact topsoil with a roller having a mass (weight) not over one-hundred-and-twenty pounds per foot width (120 lb/ft-width) of roller or by other acceptable methods as directed by PWD. A sheepsfoot roller may be used as appropriate.
- D. Material shall not be placed or compacted in a wet or frozen condition.

3.12 DRAINAGE AND DEWATERING

- A. The Contractor shall maintain all excavations free of water, prevent surface water and groundwater from entering excavations and ponding on prepared subgrades, and from flooding the project site and surrounding area.
- B. The Contractor shall immediately notify PWD if groundwater is encountered in the excavation at a depth that falls within an infiltration system.
- C. See Section 02135 for requirements of groundwater discharge permits from Industrial Waste Unit.

3.13 DISPOSAL OF EXCESS AND WASTE MATERIALS

- A. All materials excavated by the Contractor that are not used for backfill or restoration, must be removed from the site and disposed of by the Contractor unless otherwise specified in the Contract. All waste materials must be removed from the site.

3.14 DISPOSAL OF UNSUITABLE OR SURPLUS MATERIAL

- A. Excavated materials that will not be reused shall be removed from the site of the work and disposed of by the Contractor.
- B. Excavated material to be reused shall be stockpiled without excessive surcharge on the trench bank and without obstructing free access to utilities, private drives and public rights-of-way. Inconvenience to traffic and abutters shall be avoided as much as possible. Excavated material shall be segregated for use in backfilling as specified or shown on the Drawings, and protected as specified in Section 02135.

3.15 MAINTENANCE

- A. Protect newly graded areas from traffic, freezing and erosion. Keep completed areas free of trash and debris.
- B. Repair and reestablish grades to specified tolerances where completed or partially completed surfaces become eroded, rutted, settled or where they lose compaction due to subsequent

construction operations or weather conditions. Scarify or remove and replace soil material to a depth as directed by PWD; reshape and recompact at optimum moisture content to required density.

- C. Where settling occurs, remove finished surfacing, backfill with additional soil material, compact and reconstruct surfacing. Restore appearance, quality, and condition of finished surfacing as required.

3.16 AS-BUILT SURVEY

- A. See Section 01300 for requirements of the as-built survey.

END OF SECTION

SECTION 02370
GEOSYNTHETICS

PART 1 GENERAL

1.01 SCOPE OF WORK

- A. The work of this Section includes provision and installation of geosynthetic materials for separation, reinforcement or drainage control.
 - 1. All materials shall be manufactured, supplied, stored and placed according to the latest referenced standards and as outlined herein.
 - 2. The Contractor shall provide certification of the supplied material.
 - 3. The materials shall be placed to the limits as specified in accordance with the manufacturer's instructions and as specified herein.

1.02 RELATED SECTIONS

- A. Section 02135 Erosion and Sediment Control
- B. Section 02210 Earthwork for Green Stormwater Infrastructure
- C. Section 02709 Subsurface Stormwater Storage
- D. Section 02720 Stormwater Surface Features
- E. Section 02830 Green Stormwater Infrastructure Soils

1.03 REFERENCE STANDARDS

- A. American Society for Testing Materials (ASTM) - Geotextiles
 - 1. ASTM D3786 - Standard Test for Mullen Burst Strength
 - 2. ASTM D4491 - Standard Test for Flow Rate
 - 3. ASTM D4632 - Standard Test for Grab Tensile Strength
 - 4. ASTM D4335 - Standard Test for UV Resistance 70% Retained Strength
 - 5. ASTM D4533 - Standard Test for Tear Resistance
 - 6. ASTM D4833 - Standard Test for Puncture Resistance
 - 7. ASTM D4873 – Standard Guide for Identification, Storage and Handling of Geosynthetics
 - 8. ASTM D4751 - Standard Test for Apparent Opening Size (AOS)
- B. American Society for Testing Materials (ASTM) – Geomembranes-HDPE
 - 1. ASTM D1603 - Standard Test for Carbon Black Content in Olefin Plastics
 - 2. ASTM D4218 - Standard Test for Carbon Black Content in Polyethylene Compounds
 - 3. ASTM D5596 - Standard Test for Carbon Black Dispersion in Polyolefin Geosynthetics
 - 4. ASTM D5191 - Standard Test for Thickness Vapor Pressure of Petroleum Products
 - 5. ASTM D1505 - Standard Test for Density
 - 6. ASTM D0792 - Standard Test for Density

- 7. ASTM D6693 - Standard Test for Tensile Properties
- 8. ASTM D1004 - Standard Test for Tear Resistance
- 9. ASTM D4873 – Standard Guide for Identification, Storage and Handling of Geosynthetics
- 10. ASTM D0746 - Standard Test for Brittleness Temperature
- 11. ASTM D1204 - Standard Test for Dimensional Stability
- 12. ASTM D1693 - Standard Test for Environmental Stress Crack
- 13. ASTM D4833 - Standard Test for Puncture Resistance
- 14. ASTM D4437 - Standard Test for Integrity of Field Seams
- C. Pennsylvania Department of Transportation Officials (PennDOT)
 - 1. PennDOT Publication 408 – Highway Construction Specification
- D. City of Philadelphia Quality Control Standards
 - 1. QC 14 – City of Philadelphia Standard for Testing Geosynthetics (under development).
- 1.04 SUBMITTALS
 - A. Submit complete shop drawings and product information for all items to be furnished under this Section upon receipt of notice to proceed and prior to construction.
 - B. Submit a mill certificate from the manufacturer certifying that the supplied material meets the chemical, physical and manufacturing requirements specified herein.
- 1.05 MEASUREMENT AND PAYMENT
 - A. Payment for all geosynthetics work as described in the Drawings or specified herein shall be included in the prices bid for associated work. No additional payment will be made for maintenance or repair to the protective materials employed.
 - B. Installation of watertight boot seals at geomembrane pipe penetrations will be paid for at the unit price bid.
- 1.06 QUALITY ASSURANCE
 - A. Use adequate numbers of skilled workers who are thoroughly trained and experienced in the necessary trades and who are completely familiar with the specified requirements and methods needed for proper performance of the work of this Section.
 - B. Codes and Standards: Perform work in compliance with applicable requirements of governing authorities having jurisdiction.
 - C. General material manufacturing procedures shall be performed in accordance with the manufacturer’s internal quality control guidelines.
 - D. The Quality of the provided and placed material shall at a minimum comply with the following:
 - 1. PennDOT Publication 408 – Highway Construction Specification
- 1.07 DELIVERY, STORAGE AND HANDLING
 - A. Geotextiles - All storage and handling of the geotextiles shall conform to ASTM D 4873, "Standard Guide for Identification, Storage and Handling of Geosynthetics".

1. During all periods of shipment and storage, the geotextile shall be protected from moisture, direct sunlight, ultraviolet rays, temperatures greater than one hundred and forty (140) degrees F, mud, dirt, dust, and debris.
 2. The geotextile shall be covered in an opaque and waterproof protective wrapping, prior to leaving the manufacturing facility. Each roll of geotextile in the shipment shall be labeled with the manufacturer's name, geotextile style and type, lot and roll numbers, and roll dimensions.
 3. The geotextile shall be handled carefully both during shipment, initial unloading and handling in the work area. The Contractor shall provide sufficient manpower and equipment to ensure appropriate handling of the geotextile. If the geotextile is damaged during unloading, storage or onsite transportation, PWD shall determine the extent of the damage and the damaged material shall be rejected.
 4. The geotextile shall be stored onsite at a location selected to minimize handling.
- B. Geomembranes - All storage and handling of the geomembranes shall conform to ASTM D 4873, "Standard Guide for Identification, Storage and Handling of Geotextiles". During transportation the geomembrane shall be covered. The delivered rolls of finished material shall be marked to state the following minimum information:
1. Name of manufacturer
 2. Product type
 3. Product thickness
 4. Manufacturing batch code
 5. Date of manufacture
 6. Physical dimensions (length and width)
- C. The geomembrane rolls shall be stored onsite at a location that shall be selected to minimize onsite handling. The Contractor shall confirm that the material is stored in a secure area with provisions for protection from traffic, vandals, and adverse weather to avoid damage. Geomembrane rolls shall not be stacked in a manner that could cause damage to underlying rolls. The stacking of geomembrane shall not be higher than two rolls.
- D. The material shall be inspected to confirm that it is not damaged, including but not limited to:
1. Punctures from handling, nails, splinters or other deleterious material
 2. Tears from operation of equipment or inadequate packaging
 3. Exposure to temperature extremes resulting in unusable material
 4. Blocking resulting from the bounding together of adjacent membrane layers to excessive heat and pressure
 5. Crumpling or tearing from inadequate packaging support
- E. At the site, the geomembrane rolls shall be unloaded and placed on a smooth surface free of rocks, mud, debris, or any other protrusions that may damage the material. Materials shall not be stored directly on the ground. The Contractor shall provide adequate equipment and personnel at the time of each delivery to ensure that the geomembrane is not damaged. Personnel shall

handle the geomembrane with care. Any extrudate delivered at the site prior to the installer's mobilization shall be kept covered and dry.

1.08 DEFINITIONS

- A. MARV – Minimum Average Roll Value (MARV) is a manufacturing quality control tool used by all manufacturers to establish published values such that the user/purchaser will have a 97.7% confidence that the property in question will meet published values. MARV is calculated as the typical value minus two standard deviations.

1.09 INSPECTION AND MATERIALS

- A. All materials shall be inspected upon arrival at the site to ensure they meet specified requirements and are free of any damage.
- B. When damage to the surface of a roll has occurred, examination of the underlying material shall be conducted. If damage is found, PWD shall examine the entire roll for damage. Geomembrane materials showing damage shall be isolated, clearly labeled as damaged, and removed from site, by the Contractor. The Contractor will be held responsible for geosynthetics damaged during the construction process and will be required to replace them.

PART 2 PRODUCTS

2.01 GEOTEXTILES

- A. Non-woven geotextile (drainage filter fabric) shall have the following properties at a minimum. Non-woven Geotextile shall be Mirafi 180N, US Fabrics US205NW, Propex Geotex 801, Thrace-LINQ 180EX, or approved equal.
 - 1. Minimum flow rate 90 gal/min/ft² (ASTM D-4491)
 - 2. Minimum grab tensile strength 200 lbs (ASTM D-4632)
 - 3. Minimum CBR puncture strength 300 psi (ASTM D-6241)
 - 4. Minimum tear resistance 80 lbs (ASTM D-4533)
 - 5. Minimum UV resistance 70% retained strength (ASTM D-4355)
- B. Geotextiles associated with modular stormwater systems shall be as specified by the manufacturer. All geotextiles and geogrids to be employed are subject to approval by PWD, and products approved in conjunction with modular stormwater systems (or other proprietary requirements) shall not be considered approved for any other use unless specifically noted.

2.02 GEOMEMBRANES

- A. The geomembrane employed shall be a synthetic material that meets the physical, mechanical and chemical properties as set forth herein and as confirmed by the manufacturer. Material shall be resistant to mildew and rot, ultraviolet radiation, insects, and rodents.
- B. Geomembrane material shall be High Density Polyethylene (HDPE) with a thickness of 40 mil.
- C. The HDPE geomembrane shall generally conform to the physical requirements stipulated in Section 735, of the Commonwealth of Pennsylvania Department of Transportation Specifications and additional property requirements as tabularized below:

Geomembrane Physical Requirements - HDPE

Physical Property	Test Method	Units	Requirement	Testing Frequency
Carbon Black Content (allowable range)	ASTM D 1603 ASTM D 4218	%	2.0-3.0	50,000 sf
Carbon Black Dispersion (acceptable levels)	ASTM D 5596	na	Grade A-1, A-2, B-1	Once per 180,000 lbs of resin
Thickness	ASTM D 5191	mils	40	
Density (maximum)	ASTM D 1505 ASTM D 0792	g/cm ³	.930	50,000 sf
Tensile Strength at Break	ASTM D 6693 (modified)	lb./in. width	152	50,000 sf
Elongation at Break	ASTM D 6693 (modified)	%	700	50,000 sf
Tear Resistance	ASTM D 1004	Lbs.	28	50,000 sf
Environmental Stress Crack (min. with no failure)	ASTM D 1693	Hrs.	1500	Once per 1,800,000 lbs of resin
Puncture Resistance	ASTM D 4833	Lbs.	72	50,000 sf

D. Project specific geomembranes shall be as dictated on the Contract Drawings or equivalent product as approved by PWD.

E. Boot seals at pipe penetrations through geomembrane shall be secured to pipe with half-inch-wide stainless steel pipe clamps with neoprene rubber cushion. Double-sided butyl tape sealant and polyurethane, non-silicone caulk such as Sikaflex shall be used. For boot on corrugated pipe, a corrugated pipe adapter (Trelleborg CGA or approved equal) shall be used to provide a smooth outer pipe surface for clamps.

PART 3 EXECUTION

3.01 GENERAL REQUIREMENTS

A. All geosynthetic materials shall be placed at the lines and grades as shown on the Contract Drawings and as specified herein.

3.02 GEOTEXTILE INSTALLATION

A. During placement of the geotextile and overlying materials, no construction equipment of any kind should operate or be operated directly on the geotextiles.

B. The surface to receive fabric shall be prepared to a relatively smooth condition free of obstructions, depressions, sudden grade changes, debris, and soft or low density pockets of material. Fabric shall be laid smooth and reasonably free of tension, stress, folds, wrinkles, or creases. Geotextiles shall be cut using a manufacturer-approved geotextile cutter only.

C. The fabric shall extend a minimum of one (1) foot beyond the edge of the excavation if possible. At the time of installation, fabric shall be rejected if it has defects, rips, tears, holes, flaws, deterioration, or damage incurred during manufacture, transportation, or storage.

- D. The Contractor shall provide temporary wind anchorage during geotextile installation by means of tires, sandbags or other means submitted to PWD for approval. These temporary anchors shall be removed prior to fill placement. The geotextile rolls shall be shingled and the direction of fill placement over them shall be in the direction of this shingling so that the fill placement does not disturb the overlaps. The geotextile shall be placed in such a manner that placement of the overlying materials shall not excessively stretch or tear the geotextile. At the discretion of PWD, securing pins shall be used to hold the fabric firmly in place prior to placing aggregate, fill, or backfill.
- E. The geotextile strips shall be placed to provide a minimum width of two (2) feet of overlap for each joint. In excavations that do not allow careful positioning and securing with a suitable overlap of at least two (2) feet, sections shall be joined by field sewing. The thread shall be capable of supplying seam strength of 80 percent of the required tensile strength utilizing a Type 401 two-thread chain stitch with a "J" seam. The stitches shall be a minimum of two (2) inches from the fabric edge.
- F. The work shall be scheduled so that 14 calendar days do not expire between the placement of the geotextile and the covering of the geotextile with a layer of required material. If the 14-day maximum exposure period is exceeded, the geotextile shall be removed and replaced.
- G. Any damage to the geotextile during installation or placement of cover material shall be immediately repaired. A geotextile patch shall be placed over the damaged area and extend three (3) feet beyond the perimeter of the tear, hole, or damage.

3.03 GEOMEMBRANE INSTALLATION (HDPE)

- A. The geomembrane shall be installed in accordance with these Specifications and the manufacturer's recommendations, to the limits indicated on the Drawings. Installation work shall not begin until all required drawings and quality control data have been submitted to PWD, and the installer has certified the acceptability of the receiving subgrade surface in writing.
- B. Geomembrane liner materials shall be not placed until the receiving surface has been inspected by the installer and the installer certifies in writing that the surface on which the geomembrane shall be installed is acceptable. A walk through inspection shall be performed by PWD and the installation contractor prior to placing any geomembrane. It shall be the responsibility of the Contractor to keep the receiving surface in the accepted condition until the geomembrane installation is complete.
- C. The geomembrane shall be installed by crews experienced in the installation of HDPE sheet of the type and thickness specified. The installation supervisor shall have supervised in the field or installed at least five hundred thousand (500,000) square feet of high density polyethylene geomembrane. All seamers shall have at least five hundred thousand (500,000) square feet of high density polyethylene geomembrane seaming experience.
- D. The geomembrane surface shall be inspected as it is unrolled. If damage or faults not previously observed are discovered, they shall be clearly marked and the respective sheet roll shall be set aside. Damaged areas shall be repaired, or the entire roll shall be removed from the site.
- E. Extreme care shall be taken during installation of the geomembrane so that no damage is done to any part of the material. Smoking and use of glass containers by installation personnel shall be prohibited. All handling and installation procedures used by the Contractor shall not damage the liner. If damage occurs, changes in equipment and procedures may be required.

- F. No construction equipment shall be allowed on the HDPE. No gasoline driven generators or cans of gas or solvent shall be placed directly on the HDPE material. Under no circumstances shall the HDPE be used as a work area to prepare patches or to store tools and supplies.
- G. All rips, tears, punctures, or other injuries to the geomembrane shall be repaired the same day they occur in accordance with procedures as specified herein. Excessive patching, as determined by PWD, shall result in removal and replacement of the affected geomembrane sheet, at no expense to PWD.
- H. Cleanup within the geomembrane area shall be an ongoing responsibility of the Contractor. Particular care shall be taken to ensure that no trash, tools, and other unwanted materials are dragged across or trapped beneath the geomembrane. Care shall be taken to ensure that all scraps of geomembrane material, extrudate, and other installation related debris are removed from the work area. The geomembrane shall be swept to remove debris and wind blown soils.
- I. Only geomembrane panels scheduled for each day's field seaming shall be spread each day. Panels shall be held in position by sandbags until field seaming is complete. Sandbags shall be close knit to prevent fine material from exiting the bag. Metal or wire ties shall not be used.
- J. The geomembrane shall be placed in a manner to minimize the number and length of field seaming. All geomembrane panels over twenty five (25) square feet in area shall be designated with a panel number. The Contractor shall be responsible for assigning the number, and shall locate the panel and roll numbers near the middle of panels less than fifty (50) feet in length, and at both ends of panels over fifty (50) feet in length. These numbers shall be noted on daily progress reports, and shall correspond to the drawings initially submitted by the Contractor. Panels under twenty five (25) feet square shall be considered a patch and shall not require a panel number.
- K. The installation shall allow for thermal expansion and contraction of the geomembrane. Adequate compensation for liner thermal affects and sheet stability shall be allowed for by the installer. Compensations strips shall be installed as required and shall be clearly noted on the progress reports. The Contractor shall install at each penetration or appurtenance sufficient compensation to eliminate stress at the liner anchorages due to temperature and sheet stability contraction.
- L. The Contractor shall provide temporary wind anchorage during geomembrane installation. Placement of overlying material shall be performed in a manner that shall not damage the geomembrane. Excessive wrinkling of the geomembrane shall not be permitted prior to or while covering the geomembrane. Permanent folds or wrinkles in the geomembrane shall not be permitted. Folds or wrinkles that occur shall be uncovered and inspected. Damage to the geosynthetic materials shall be repaired immediately.

3.04 GEOMEMBRANE (HDPE) SEAMING

- A. Field seams shall be made by extrusion or fusion welding methods. Extrusion welding shall only be used in areas where fusion welding equipment cannot operate.
- B. The installer shall use only welding apparatus that allow proper control of extrudate or wedge temperature, apparatus pressure, welding speed, width of weld, and sheet preheating temperature. Certification that the welding apparatus meets these requirements shall be submitted to PWD before any field seams are made. Welding apparatus or employees shall not damage the geomembrane.

- C. A seam numbering system compatible with a panel numbering system shall be established and submitted to PWD prior to geomembrane installation. This information shall be included on the daily progress reports.
1. Test Welds - A test weld, approximately ten feet in length, a determination of sheet surface temperature, and visual inspection of the seam surface and cross-section shall be performed satisfactorily before any additional seam welding is begun each day. These requirements shall be the responsibility of the installer. Test welds shall be made under the same conditions as actual welded seams. PWD may require a test weld be made at any time during seaming production to verify equipment, operator performance, and seam integrity.
 2. Four one inch wide specimens shall be cut from the test weld, each having the seam centrally located. Using a field tensiometer, two specimens shall be tested in peel and two in shear. If any sample fails in the seam, the operation shall be repeated, until the deficiencies are corrected and two consecutive successful test welds are achieved. After positive evaluation of the test weld, the production seaming shall begin.
 3. Production Seaming - Before production seaming, the seam areas shall be cleaned of all dust, dirt, and other foreign material. A visual inspection of the seaming surface and cross-section shall be performed before any seam welding or equipment startup has begun. Welding shall not be performed unless the sheet is dry and the sheet temperature has been determined to be above thirty two (32) degrees F and below one hundred and twenty two (122) degrees F. The installer may propose seaming procedures for adverse weather conditions. Such procedures shall be submitted to PWD for review and approval prior to use.
 4. Extrusion seams shall be made by overlapping adjacent sheets a minimum of three inches (3") and extruding a ribbon of hot fusion-joining resin no less than three-quarter inch in width between the overlapped sheets or over the seams between the overlapped sheets. Extrusion field seams shall be made only in areas where fusion seaming is not practical. The sheet surface for extrusion welding shall be roughened by an acceptable means before extrudate is placed. Excessive grinding resulting in grooving of the liner or reducing liner thickness greater than ten (10) percent shall not be permitted. Grinding shall not be performed parallel to the seam.
 5. Fusion field seams shall be made by overlapping adjacent sheets a minimum of three inches (3") and forming a double welded seam separated by an air space approximately 0.375 inch in width. Fusion welded seams shall be produced by a double hot shoe welder capable of maintaining a recordable temperature determined by onsite conditions and shall not vary more than ten (10) degrees C from the target temperature.
 6. A boot seal must be used for all pipe penetrations through the geomembrane. Boot seal must be installed on the inside (stormwater storage side) of geomembrane liner. Pipe boot skirt shall be field welded to geomembrane liner using an extrusion weld joint gun. The seaming procedure shall consist of cleaning and roughening the surface, and softening the geomembrane material by application of heated air. Directly following the application of heat, a hot strip of geomembrane resin shall be extruded over the seam to produce the welded seam. Boot shall be secured to pipe with two (2) half-inch-wide stainless steel pipe clamps with a continuous strip of neoprene rubber as a cushion between clamps and boot. For boot on corrugated pipe, a corrugated pipe adapter shall be used to provide a smooth outer pipe surface for clamps. Double-sided butyl tape sealant shall be applied continuously between outer pipe surface and boot. End of boot shall be sealed with a continuous outer bead of caulk.

7. Repairs - Repairs of small holes (up to 1/2 inch diameter) in the geomembrane surface shall be made with an extrusion joint gun. Geomembrane materials shall be cleaned of all dirt, dust, and other foreign material, all HDPE surfaces roughened, heated to the prescribed temperature, and a hot strip of HDPE resin extruded over the hole to produce a fusion-welded repair.
8. Larger holes shall be repaired with a HDPE patch and extrusion joint gun. A HDPE patch, meeting the requirements of the HDPE membrane, shall be placed over the hole. The patch shall completely cover the hole, with a minimum clearance between the hole and edge of patch of three inches (3"). Membrane and patch material shall be cleaned of all dirt, dust, and other foreign material. All HDPE surfaces shall be roughened, heated to the prescribed temperature, and the patch extrusion welded to the membrane to complete the repair. All patches shall have rounded corners.

3.05 INSPECTION, TESTING AND APPROVAL

- A. Geosynthetic materials conforming to these specifications shall be used in the work. The Contractor shall supply all the documentation requested below to PWD prior to beginning geotextile installation.
- B. A competent laboratory shall be maintained by the manufacturer of the geotextile at the point of manufacture to ensure quality control in accordance with ASTM testing procedures. The laboratory shall maintain records of its quality control results and shall provide, upon request, a manufacturer's certificate that includes the following.
 1. Name of manufacturer
 2. Chemical composition
 3. Product description
 4. Statement of compliance to specification and verification test results
 5. Signature of legally authorized official attesting to the information required
- C. A program of both non-destructive and destructive testing shall be performed by the Contractor, to confirm geomembrane seam quality. Non-destructive testing shall be performed on all geomembrane seams, by employing continuous vacuum box testing or air pressure testing, as specified below.
 1. Non-destructive Vacuum Testing - Continuous vacuum box testing shall be performed on all extrusion welded seams and repairs. The vacuum box assembly shall consist of a rigid housing, a transparent viewing window, a soft neoprene gasket, a port hole or valve assembly, and a gauge to indicate chamber pressure. The vacuum box shall be in like new condition with an undamaged gasket and a clear and unobstructed viewing window. A soapy solution shall be applied to the geomembrane seam over an area of approximately twelve inches (12") by forty eight inches (48"). The vacuum pump shall be energized to reduce the tank pressure to approximately five (5) p.s.i. Sufficient pressure shall be applied to the box to provide a leak tight seal. For a period of not less than thirty (30) seconds, the seam shall be examined by viewing through the transparent window. The box shall be moved over to the next adjoining area, with no less than three inches (3") of overlap, and the process shall be repeated. If no bubbles appear, the seam shall be considered to pass this non-destructive test. If bubbles do appear, the area shall fail the test, be marked, repaired and retested. Extrusion weld seams that do not permit vacuum box testing (on short slopes, corners, or details) shall undergo

ultrasonic testing similar to the Ultrasonic Shadow Method. The Contractor shall be responsible for submitting the testing method to be used in these instances to PWD.

2. Non-destructive Air Pressure Testing - Air pressure testing shall be performed on all double fusion welded seams. Prior to testing, both ends of the seam shall be sealed without cutting or damaging the parent material. A needle, or other approved pressure feed device, shall be inserted into the channel created by the double track fusion seam process. A protective cushion shall be placed between the air pump and the geomembrane. All forty (40) mil double fusion seams shall be tested at thirty (30) psi over the maximum uninterrupted panel seam length for five (5) minutes. If the pressure drop in the seam exceeds three (3) p.s.i., or if the pressure fails to stabilize, the leak shall be located, repaired and retested. The installer, in the presence of PWD, shall verify that the air flows through the entire channel by removing the seal at the end of the channel away from the air source and observe the loss of pressure on the gauge. If it is determined that there is a blockage along the channel, the seam shall be repaired. Upon completion of this testing, the needles shall be removed from the seams, and the holes and any damage to the geomembrane be repaired.
3. Destructive Testing – Destructive testing shall be performed on samples of production seams to confirm seam quality. The location of the seam samples shall be selected by PWD. A sample coupon of production seams approximately thirty six inches (36”) long by twelve inches (12”) wide, shall be taken every four hundred feet (400’) of seam. A second sample coupon should be provided to the PWD BLS Materials Laboratory for seam quality testing. When the ambient temperature six inches (6”) above the liner reaches one hundred (100) degrees F, shear and peel destructive tests shall be run at a frequency of every one hundred to two hundred (100-200) feet of seam, or as directed by PWD. A portion of each sample coupon twelve inches (12”) x twelve inches (12”) shall be labeled and supplied to PWD for archiving purposes. The sample coupon shall allow for a total of ten (10) one inch (1”) wide production field seams to be tested. Five samples shall be tested for bonded shear strength and five samples shall be tested for seam peel adhesion in accordance with ASTM D 4437, latest revision. All testing shall be performed at the installer’s quality control laboratory.
4. A portion of each sample coupon twelve inches (12”) x twelve inches (12”) shall be labeled and supplied to PWD for archiving purposes.
5. The minimum seam strength values required for all samples obtained from fusion and extrusion welded seams shall be sixty pounds (60 lbs.) per inch for seams tested in peel, and sixty six pounds (66 lbs.) per inch for seams tested in shear. All five (5) of the specimens tested in shear and four (4) out of five (5) of the specimens tested in peel shall fail in Film Tear Bond (FTB), that is, the break should occur in the parent geomembrane. The failure mechanism of the seam shall be ductile in nature, with no indication of crystallization.
6. If the sample proves defective additional testing shall be performed to determine the extent of the defect. A test section a minimum of ten feet (10’) on both sides of the failed seam location shall be retested. If these tests pass, the weld between these areas shall be cap stripped. If failure occurs, the testing shall be continued until the extent of the defect is established. All defects shall be repaired. Cap strip repairs shall be performed and tested according to the methods described above.
7. The geomembrane shall not be covered until acceptable destructive and non-destructive testing has been completed.

8. Destructive seam sample reports shall be delivered to PWD within 48 hours of obtaining the sample from the production seam. Test results shall be signed by the installer's laboratory Quality Control Manager. It is the installer's obligation to forward to PWD all seam reports, labeled with the weld seam number as per the installation drawings.
9. Contractor is to repair all geomembrane where samples were taken.

3.06 PLACEMENT OF OVERLYING MATERIAL

- A. The placement of the overlying granular material shall be coordinated so that no more than 14 calendar days elapse following geotextile or geomembrane placement.

3.07 DOCUMENTATION

- A. The Contractor shall perform a visual inspection on each sheet for puncture, tears, rips, or other injuries. Daily installation progress reports shall be prepared including the following:
 1. Names and job description of personnel
 2. Date
 3. Weather conditions
 4. Project location
 5. Panels installed
 6. Panels seamed, including panel and seam number
 7. Repair (puncture, tears, rips, or other injuries, method of repair)
 8. Field observations
 9. Roll number of each panel
- B. Contractor shall maintain daily installation progress reports and shall make them available to PWD upon request. Installation reports shall include the following:
 1. Names and job description of personnel
 2. Date
 3. Weather conditions
 4. Project location
 5. Panels installed
 6. Panels seamed, including panel and seam number
 7. Repair (puncture, tears, rips, or other injuries, method of repair)
 8. Field observations
 9. Roll number of each panel
- C. Submit as-built survey in compliance with Section 01300.

END OF SECTION

SECTION 02400
PROJECT SIGNAGE

PART 1 GENERAL

1.01 SCOPE OF WORK AND PURPOSE

- A. To reach a higher level of communication regarding road access and construction branding, the Contractor is required to place and maintain consistent projection and traffic signage on each block under construction.
- B. Signs are intended to make the community aware of the status of road access, Contractor's presence, as well as the status of businesses, schools, SEPTA, and any other community interests throughout the construction period. Signage shall speak to the residents, pedestrians, business owners, and customers, who are affected by the construction activity. Custom Project Signage may require specific wording tailored to each establishment to inform the public. Project Signage shall also address specific traffic needs that are outside of the approved Maintenance and Protection of Traffic (MPT) plan.
- C. Project Signage includes the PWD Project Identification Sign and PWD Construction Entrance Sign plus all Custom Signs and is intended to compliment Maintenance and Protection of Traffic signage. (See Section 01570.) The Contractor shall install and place, prior to the start of construction, PWD Construction Entrance Signs and the necessary preconstruction Project Signage (Appendix B of the specifications).
- D. Signage shall be professionally prepared. The signs shall present a crisp and clear image and message, and be placed and maintained plumb and level, free of any graffiti or unofficial markings, and placed in appropriate and prominent locations such that the information in the sign is being clearly relayed.
- E. Various activities and factors affect the construction presence on a given block, such as working hours, type of work or size of the roadway. Because of this nature, PWD will require at a minimum the following messages be conveyed through the use of Project Signage.
 - 1. PWD Construction Entrance Signage
 - 2. PWD Project Identification Signage
 - 3. Road Closed
 - 4. Construction area
 - 5. Tow zone
 - 6. Custom/Special Signage for businesses and pedestrian movement as required.

1.02 RELATED SECTIONS

- A. Section 01570 Traffic Regulation

1.03 SUBMITTALS

- A. The Contractor shall be required to submit plans showing the placement of the Construction Area Signage and Construction Entrance Signs for each block, before and during construction (Appendix B of the specifications). The dates of signage placement and removal shall be noted on the Project Schedule.
- B. The Contractor shall provide a mockup of the design of each Custom Sign.

C. All signage design shall be submitted to PWD for review and approval prior to ordering.

1.04 MEASUREMENT AND PAYMENT

A. For PWD Project Identification Signs, Construction Area Signs, Construction Entrance Signs, Maintenance and Protection of Traffic Signs, No Parking Signs, and all signage not regarded as Custom Signage shall be paid for in the respective bids for Maintenance and Protection of Traffic (See section 01570). This includes all work and materials required for development, purchase, placement, maintenance and removal of the signs including restoration of the area where the sign was placed.

B. Custom Signs shall be paid for in the square foot price bid for Custom Signage. This includes all work and materials required for the development, purchase, placement, maintenance and removal of Custom Signage including restoration of the area where the sign was placed.

1.05 PWD CONSTRUCTION ENTRANCE SIGNAGE

A. PWD Construction Entrance signs shall be located at both ends of the block. Post signs a minimum of three (3) days in advance of construction activity/mobilization so all affected parties including, but not limited to: residents, vehicle owners, commercial properties, etc. on each block receive notice before start of construction work occurs. All locations in construction shall have a minimum of two (2) Construction Entrance Signs placed before active construction begins and remaining until significant construction has ended on that location.

B. The PWD Construction Entrance sign will contain the following information:

1. Philadelphia Water Department Logo
2. Contractor's Name and Logo (if applicable)
3. The Philadelphia Water Department website and general contact phone number
4. Title – "Under Construction: Green Stormwater Infrastructure".

C. The PWD Project Branding sign shall be freestanding and positioned as to be clearly seen by all pedestrians and motorists. It must be viewable at normal eyesight level.

D. A sketch detailing the Construction Entrance Sign along with an example of an acceptable support structure (Appendix B of the specifications).

E. Construction Entrance Signs shall be kept in like new condition. If the sign becomes defaced, torn or in any other way damaged it shall be immediately replaced by the Contractor upon notification of an issue. The Contractor is expected to have replacement signs available on site everyday should the need to replace one arise. Well maintained signs (in like new condition) shall be permitted to be reused on future blocks and projects.

1.06 CONSTRUCTION AREA SIGNAGE

A. Signs are to be freestanding and kept in like new condition. If a sign become defaced, has graffiti, asphalt, concrete or other construction material on them, hindering the visibility or professionalism it shall be remedied by cleaning or replacement.

B. Road Closed signage shall be placed at both ends of the end of the block and be freestanding.

C. Construction Area Signage shall be placed at both ends of the block, freestanding and must include the hours of construction operation.

- D. A Tow away sign shall be present such that it indicates to those who access the block in the Contractor's absence that their vehicles will be subject to towing upon the Contractor's return. A contact phone number must be provided so that upon towing vehicle owners may call to locate their vehicle. The provided number must be accessible from the time the car is towed until the end of the day.

1.07 PROJECT IDENTIFICATION SIGN

- A. Placement of the Project Identification Sign shall be determined by the Project Manager in coordination with the initial mobilization by the Contractor.
- B. The Project Identification Sign must be present in the location specified by the Project Manager before construction mobilization. No Work may be completed under this Contract without establishment of the Project Identification Sign.
- C. Signs shall be kept in like new condition. If a sign becomes defaced, has graffiti, asphalt, concrete or other construction material on it, hindering visibility or professionalism, it shall be remedied by cleaning or replacement.

1.08 CUSTOM SIGNAGE

- A. In certain situations, some parties are more severely affected by construction than others. Affected parties include, but are not limited to, businesses, schools, city services, or other such entities. In such cases the contractor will be required to deploy and maintain Custom Signage. Signage will be placed at the end of the block and in appropriate locations between the front of the block and the parties' entrance, to effectively control the movement and directions to patrons.
- B. Custom signs may indicate things such as, but is not limited to
 - 1. School egress and ingress. Including which entrances should be used as well as parent pick up and drop off.
 - 2. Businesses open during construction, and egress and ingress to those businesses if required. Directions for patrons as needed.
 - 3. Specific delivery truck instructions or detours.
- C. Custom signage shall be requested as shown on the Contract Documents or as requested by PWD Construction. There may possibly be no custom signage required on a project.
- D. Signs are to be freestanding and kept in like new condition. If a sign become defaced, has graffiti, asphalt, concrete or other construction material on them, hindering the visibility or professionalism it shall be remedied by cleaning or replacement. See the attached examples of acceptable conditions at the end of these Specifications.

PART 2 PRODUCTS

2.01 PWD CONSTRUCTION ENTRANCE SIGNAGE

- A. PWD Construction Entrance sign shall be temporary, portable, weather resistant and available for immediate replacement. Scrim vinyl plastic material is suggested. Sign shall be full color fabricated on at least sixteen (16) oz. material. Provide holes with brass grommets at each corner of the sign to attach to the support structure.
- B. PWD Construction Entrance Sign shall be four (4) feet by two (2) feet. Refer to the detail attached to the end of these specifications.

- C. Entrance signs shall be ordered in a quantity that allows for readily accessed storage of replacement signs.
- D. Provide stainless steel pipe support clamps to attach the sign to the support posts.

2.02 CONSTRUCTION AREA SIGNAGE

- A. Signs shall be steel and conform to PennDOT reflective sheeting requirements and MUTCD color schemes, so that are clear, visible and legible.

2.03 PROJECT IDENTIFICATION SIGNAGE

- A. The Project Identification Sign shall be 8 feet wide by 4 feet high and shall be durable enough to last the length of the contract.
- B. The sign shall identify the project as “ELMWOOD MEDIANS GREEN STORMWATER IMPROVEMENT PROJECT”.

2.04 SIGN SUPPORT STRUCTURES

- A. Signs shall be free standing structures that are moveable by the contractor, but must not present a safety hazard to residents. Structures must be appropriately weighted and sized to resist overturning and toppling forces due to things such as wind or climbing.
- B. Structures must minimize tripping hazards to pedestrian or vehicular damage and shall be of sufficient size. Weighted Type 3 barricades are suggested (Appendix B of the specifications).

PART 3 EXECUTION

3.01 TEMPLATES

- A. PWD Construction Entrance Signs, Construction Area Signs, and the Project Identification Sign shall be made to the specifications of their respective sign templates. The templates should be modified to include the Contractor’s name, the project number, and any other fields which are called out on the templates.
- B. Templates can be obtained from Project Control Unit, 2nd FL 1101 Market Street, Philadelphia PA 19107.

3.02 PWD CONSTRUCTION ENTRANCE SIGNAGE

- A. The Contractor shall provide PWD Construction Entrance Signage at the ends of each block actively under construction. The sign shall be outside the intersection and setback as to not create a visual barrier to drivers. The sign is to be posted a minimum of three (3) days prior to the contractor’s mobilization of the block. When the contractor obtains permission from construction to start the next block, he/she must put up the Construction Entrance Sign for them three (3) day minimum before starting any work. It is the contractor’s responsibility to properly schedule the sign placement such that they do not create any work delays. PWD is not responsible for any cost incurred by the contractor due to time or work loss related to sign placement.
- B. PWD Construction Entrance Sign shall remain up and in good condition (per these specifications) through the entirety of the construction activities on the block. Contractor may remove the sign after the completion of all final paving or completion of contract action items remaining on the block.
 - 1. Project Signage must not be removed until E&S control measure are removed.

3.03 CONSTRUCTION AREA SIGNAGE

- A. Project Signage shall be placed and in the appropriate locations, as approved in the contractors signage plan. The Contractor may reference or use the PWD standard signage plan (Appendix B of the specifications).
- B. Unlike the PWD Construction Entrance Sign, certain project signs will need to be placed and moved depending on contractors operations and permit requirements.
 - 1. During working hours, the contractor is privy to close the block to vehicles and allow access by permission only. The contractor may not impede all forms access to business during operation hours.
 - 2. During non-working hours, the contract is required to stage the signs such that it allows local access to the block, with appropriate notification. (Construction zone and road closed sign.) When the contractor returns for working hours, they may tow any vehicles on the block as required to perform the work that day. The contractor is required to indicate a tow zone sign for this purpose. The tow sign shall include the hours when the tow-away zone is in effect and a contact number for any owners of towed cars.
- C. As construction is started/completed the Contractor shall add/remove signs that pertain to the site.

3.04 PROJECT IDENTIFICATION SIGNAGE

- A. Placement of the Project Identification sign shall be made by the project manager in coordination with the initial mobilization of the Contractor.

3.05 *CUSTOM SIGNAGE*

- A. The contractor will be required to deploy and maintain Custom Project Signage as soon as block access is restricted. Signage will be placed at the end of the block and in appropriate locations between the front of the block and the parties entrance, to effectively control the movement and directions to patrons.
- B. Affected parties will be notified by the contractor when the custom signage is put in place. The signage shall remain in place and maintained by the contractor. The sign shall be removed when deemed necessary by the PWD inspector or at the completion of Final paving and the opening of the street.

END OF SECTION

SECTION 02500
PAVING AND SURFACING

PART 1 GENERAL

1.01 SCOPE OF WORK

- A. Furnish all labor, materials, equipment, and incidental work required to replace all pavement, surfacing, and traffic signs removed or otherwise disturbed by the Contractor's operations.
- B. Furnish all labor, materials, equipment and incidental work to replace curbs, including breakaway traffic delineators, as indicated in the Drawings.

1.02 RELATED SECTIONS

- A. Section 01570 Traffic Regulation
- B. Section 02510 Concrete Curb Ramp
- C. Section 02700 Sewerage and Drainage

1.03 REFERENCE STANDARDS

- A. It is the Contractor's responsibility to be thoroughly familiar with the most recent revision or amendment to the Philadelphia Streets Department and Pennsylvania Department of Transportation (PennDOT) standard specifications for paving work, including the following:
 - 1. Philadelphia Streets Department, Standard Specifications for Paving and Repaving.
 - 2. Philadelphia Streets Department, Standard Construction Items.
 - 3. PennDOT, Publication 408 Specifications.
 - 4. Standard Specifications of track owner for paving restoration in track areas, where applicable.
- B. Conform fully to above standard specifications. Meet all requirements for submittals; delivery, storage and handling; acceptable manufacturers; materials; equipment; mixes; preparation; placing; protection of completed work; and all appurtenant requirements.
- C. In accordance with the Americans With Disabilities Act, newly constructed or altered street level pedestrian walkways shall contain curb ramps or other sloped areas at intersections to streets, roads, or highways. To comply with the Act, the Philadelphia Water Department will construct depressed curb handicapped-access ramps at street intersections where the footway is to be replaced as a result of sewer or water main or green stormwater infrastructure work. It will be the Contractors responsibility to construct these ramps in accordance with current PennDOT Specifications. Refer to Section 02510 Concrete Curb Ramp for additional details.

1.04 SUBMITTALS

- A. PWD shall be notified at least 48 hours prior to the start of any restoration work done under this Contract in order to set up a repaving meeting with the Highway District Engineer.
 - 1. 1st Highway District, 48th & Parkside.....(215) 685-0168
 - 2. 2nd Highway District, 11th & Wharton..... (215) 685-1858
 - 3. 3rd Highway District, 9th & Spring Garden(215) 685-3922
 - 4. 4th Highway District, 6249 Wissahickon.....(215) 685-2191

- 5. 5th Highway District, Whitaker & Luzerne.....(215) 685-9843
- 6. 6th Highway District, Bustleton & Bowler.....(215) 685-0352

B. All materials used in the prosecution of Work under this Section are subject to review and approval by the appropriate Owner (Philadelphia Streets Department and/or PennDOT). PWD does not approve these materials; the Contractor shall conform to the standards and testing regimens as noted above. PWD reserves the right to refuse substandard Work under any relevant standard specification as necessary.

1.05 MEASUREMENT AND PAYMENT

A. Paving work will be paid for at the applicable unit prices bid for paving items, which will be full payment for all paving work not incidental to other items of work, as described with the City of Philadelphia Department of Streets Standard Construction Items.

B. Payment will be for quantities of paving items actually placed, measured in accordance with applicable standard specifications.

C. Curb, Footway and Driveway Repaving:

- 1. Where curb, footway and driveway restoration is incidental to any item of work listed in the Proposal, such restoration will not be measured for separate or additional payment; neither will such restoration be measured for deduction from other items of work.
- 2. Where there are no Proposal items for curb, footway and driveway paving, and small quantities of such work not incidental to other items of work are necessary and ordered in writing by PWD, this work will be paid for at the applicable Prices for Contingent Work.
- 3. Where there are Proposal items for curb, footway and/or driveway paving, all such work not incidental to other items of work will be paid for at the respective unit price bid.
- 4. The construction of handicap ramps will be included paid for in at the unit price bid for this item. This item will include all footway paving necessary to create a compliant ramp, landing, and flares as per the approved designs, all related depressed curb sections and transitions, provision and installation of a detectable warning surface, and subsequent creation of as-built documentation and accepted submission to Streets Department and/or PennDOT per Section 02510.
- 5. Where there are Proposal items for footway and/or driveway paving the following guidelines will dictate the treatment of vent boxes and water service box tops within the scope of work. Resetting of existing L & I approved boxes (with removable bolt down covers) is incidental to paving items. Replacement of non-conforming boxes will be paid for at the applicable unit prices bid providing these items are not covered under the price bid for other items in this specification (i.e. service connections, curb traps w/standpipes and vent boxes, etc.).

D. The following are incidental to paving items, and no separate or additional payment will be made for this work:

- 1. Removal of existing paving outside payment limits defined for Excavation (e.g., cutbacks).
- 2. Adjustment of manhole frames and covers.
- 3. Restoration of the original pavement markings and traffic signage, (if any).
- 4. Restoration of paving over existing manholes where frames and covers are removed outside the payments limits defined for Excavation.

- 5. Adjustment to preconstruction elevations at property line or any existing surfaces to remain.
- E. Paving done beyond limits specified or shown on Drawings will not be measured for payment unless ordered in writing by PWD. All right-of-way paving within the limits of construction disturbance shall be replaced as herein specified unless otherwise specified or directed by PWD. Footway and curb shall be restored to the nearest joint beyond the extents defined by the disturbance or as directed by PWD.
- F. Obtain from PennDOT District Highway Engineer additional requirements for excavating, backfilling, compacting, and restoring paving in any State Highways affected by this project. Meet all such additional requirements. Include all costs of such additional requirements in prices bid for repaving items. There will be no separate or additional payment for meeting such requirements.
- G. New pavement markings and traffic signage as shown on the Drawings shall be paid under the lump sum bid for New Pavement Markings and Signage. The price bid shall include provision of and proper installation of any specified signage, striping, pavement markings, or other traffic control and roadway devices required. All installations shall be in accordance with the relevant Streets Department Standard Specifications (or PennDOT, as appropriate). No additional payment will be made for new pavement markings or signage designated to be replaced under this Contract by the Specifications or Drawings. This lump sum shall not include pavement markings or signage to be replaced in kind and in-situ, as this is considered inclusive to the relevant paving item above.
- H. Inspection fees for Work completed in State Routes shall be paid out of the Allowance Item for PennDOT Inspection Fees. All paving and related work performed in State Routes will be subject to inspection by PennDOT. The estimated PennDOT inspection cost for this project is \$240/day. The Contractor shall note that the PennDOT inspection cost is an estimate and that any additional PennDOT inspection costs or delays incurred due to actions of the Contractor, as determined by PWD, are the sole responsibility of the Contractor.
- I. Breakaway traffic delineator posts shall be paid for at the appropriate unit cost per unit. Cost shall include all work necessary to install item as per manufactures recommendations and as indicated on the Drawings. No additional payment shall be made for curbing or paving restoration resulting from installation.

1.06 PHILADELPHIA STREETS DEPARTMENT REQUIREMENTS

- A. The Contractor is required to obtain a highway opening permit for work associated with the installation of green stormwater infrastructure in the right-of-way. Coordinate this activity with Michelle Brisbon of the City Highways Division – Right-of-Way Unit at 215-686-5621 or via email at michelle.brisbon@phila.gov.
- B. The Contractor may contact the Streets Department to obtain all necessary permits and to arrange for Engineering Services. The contacts for these services are listed below:
 - 1. Streets Department Permits Unit: Shaun McKeown (215) 686-5524
 - 2. Engineering Services
 - a. 2nd Survey District: Michael Labrum (215) 685-1865
 - b. 4th Survey District: Charles Fuller (215) 685-0351
 - c. 5th Survey District: Herman Ledger (215) 685-0585

- d. 7th Survey District: Karl Kriegh (215) 685-2669
- e. 9th Survey District: John Parkinson (215) 685-3053

PART 2 PRODUCTS

2.01 SUPERPAVE BINDER COURSE

- A. Furnish Superpave Bituminous Binder Course in accordance with Section 409 of PennDOT 408 / 2007 Specification with the following additions:

Binder Course Mixture: 19 mm Mix

ESAL range:

Type A: < 0.3 million

Type B: 0.3 to < 3 million

Type C: 3 to <10 million

2.02 SUPERPAVE WEARING COURSE

- A. Furnish Superpave Bituminous Wearing Course in accordance with Section 409 of PennDOT 408 Specification with the following additions:

Wearing Course Mixture: 9.5 mm Mix

ESAL range:

Type A: < 0.3 million

Type B: 0.3 to < 3 million

Type C: 3 to <10 million

2.03 CONCRETE BASE, STONE SUBBASE, CURBING AND OTHER MATERIALS

- A. All additional paving materials required to restore the street, curbs, and sidewalks to the extents defined herein and on the Drawings shall be as specified in the Philadelphia Streets Department Standard Specifications for Paving and Repaving, the Philadelphia Streets Department Standard Construction Items, PennDOT Publication 408, or other relevant document. All questions regarding materials and construction shall be referred to the Philadelphia Streets Department, and in the event of conflicting standards the more stringent shall be considered applicable.

2.04 BREAKAWAY TRAFFIC DELINEATORS

- A. Traffic delineator posts shall be installed as indicated on the Drawings.
- B. Where the product is not specified on the Drawings, posts shall be the PexCo-Davidson City Post 200DP-EFX, Street Smart Solutions 3S-5200 BounceBack, US Barricade Model 300, or approved equal. Posts shall be constructed of round thermoplastic polyurethane, MUTCD and NCHRP350 compliant, ultraviolet-resistant black with silver reflective banding.

PART 3 EXECUTION

3.01 CUTBACKS

- A. Where trench width is less than three feet (3'), concrete base restoration shall cover the trench and extend nine inches (9") over subbase material prepared as specified herein to either side.

- B. Where trench width is three feet (3') or greater, concrete base restoration shall cover the trench and extend twelve inches (12") over subbase material prepared as specified herein to either side.
- C. All cutback lines, both asphalt paving and concrete base, of all trenches shall be sawcut full depth from street grade. After restoring the disturbed paving as described, the edges between the new and existing paving shall be sealed with hot Asphalt Cement after placing the wearing course.
- D. Surface course paving restoration shall cover the concrete base and extend six inches (6") beyond on each side. Bituminous surface course includes both binder course and wearing course.
- E. Concrete pavement restoration shall cover the full area between original joints of the slab disturbed, unless PWD permits smaller paving blocks to be sawcut from the slab. Sawcutting of new joints shall be at least twelve inches (12") beyond payment lines fixed for Excavation, and perpendicular to the direction of traffic.
- F. Where side of trench is less than three feet (3') from the curb, extend paving restoration to curb line.
- G. Remove curb, where necessary, to nearest joint. Curb restoration where not otherwise adjacent to pavement replacement shall include removal and replacement of an eighteen-inch (18") width of concrete roadway base, and twenty-four inches (24") width of asphalt roadway surfacing, paid under respective prices bid for each paving item.

3.02 CARTWAY TRENCH RESTORATION PAVING RECONSTRUCTION IN CITY STREETS & STATE HIGHWAYS

A. CITY STREETS

- 53RD STREET FROM CEDAR AVENUE TO WALTON STREET
- 53RD STREET FROM WALTON AVENUE TO CATHARINE STREET
- 53RD STREET FROM CATHERINE STREET TO WEBSTER STREET
- CEDAR AVENUE FROM 53RD STREET TO 52ND STREET (S.R. 3017)
- CEDAR AVENUE FROM 52ND STREET TO 51ST STREET
- WALTON AVENUE FROM 53RD STREET TO 52ND STREET (S.R. 3017)
- WALTON AVENUE FROM 52ND STREET (S.R. 3017) TO 51ST STREET
- CATHERINE STREET FROM 52ND STREET (S.R. 3017) TO 51ST STREET
- 51ST STREET FROM CEDAR AVENUE TO WALTON AVENUE
- 51ST STREET FROM WEBSTER STREET TO BALTIMORE AVENUE

1. Streets: Restore cartway paving disturbed as follows:

Prepare subgrade in accordance with Philadelphia Streets Department standards and restore with 8 inch concrete base flush with existing base, topped with a Superpave Binder Course, Class PG 64-22, variable depth, Type A and a Superpave Wearing Course, Class PG 64-22, 1-1/2" depth, Type A flush with existing surface or to lines as grades as directed by Streets.

- a. Intersections: Prepare subgrade in accordance with Philadelphia Streets Department standards and restore with 8 inch concrete base flush with existing base, topped with a Superpave Binder Course, Class PG 64-22, variable depth, Type A and a Superpave Wearing

Course, Class PG 64-22, 1-1/2" depth, Type A flush with existing surface or to lines as grades as directed by Streets.

B. STATE HIGHWAYS

53RD STREET FROM WEBSTER STREET TO BALTIMORE AVENUE (S.R. 0013)

1. Restore cartway paving disturbed as follows:
 - a. Prepare subgrade in accordance with PennDOT standards and restore with 10 inch thick, high early strength concrete base flush with existing base, topped with a Superpave Binder Course, variable depth, Class PG 64-22, Type A and a Superpave Wearing Course, Class PG 64-22, 1-1/2 inch depth, Type A, flush with existing surface or to lines and grades as directed by PennDOT or Streets.
 - b. Restore at least 4 foot width of paving down to subgrade.
2. The Contractor may contact PennDOT directly with questions or concerns, and to arrange inspection services. Contact Anthony Antonelli (215-225-1415) for permits.

C. GENERAL REQUIREMENTS

1. Where concrete base restoration exceeds fifty percent (50%) of the street width, place 2A stone subbase, six-inch (6") depth, prior to concrete base restoration.
2. Adjust manhole frames and covers where necessary.
3. Restore paving over existing manholes or valves where frames and covers are removed outside the payment limits defined for excavation. Match existing cartway structure to the satisfaction of PWD.
4. The Streets Department, Asphalt Division performs paving operations during the paving season which spans between March 15th and October 15th of each year, and/or as determined by the Chief Highway Engineer of the Streets Department. Asphalt restorations will not be performed after the end of the paving season or before the resumption of paving season.
5. During non-paving periods, the Contractor must maintain the work area in safe condition. All manhole, utility boxes, asphalt adjustments, driveway aprons, and curb ramps shall be adjusted accordingly and made safe until paving can be completed.
6. Prior to the start of construction, the Contractor shall contact Madeleine Antinucci at phone number 215-686-5505 to coordinate construction inspection for the proposed paving work as well as to schedule the Asphalt Division work for this project.

3.03 CURB, FOOTWAY AND DRIVEWAY PAVING

- A. Replace curbs to the dimensions, shape, and workmanship as the original curb, as shown on the Drawings (especially approved ADA-compliant ramp designs), or as otherwise directed by PWD. Construction methods shall be in accordance with PennDOT Pub. 408, Section 630. Paving limits shall be in accordance with Streets Department Detail SC0101, which dictates a minimum cartway and footway replacement width inherent to curb reconstruction.
- B. Installation of curbing and footway shall be performed in a manner that does not compromise the integrity of any stormwater system. In no instances will it be acceptable to stake, pierce, or

otherwise damage an installed or existing system to facilitate curbing and footway construction. It is suggested that all curbing be formed using top-clamped forms or slip forming methods, and all surveying grades be marked with tautlines spanning the underlying systems.

- C. Where curb, footway or driveway paving are disturbed, outside of those areas shown on the drawings or otherwise specified, restore in kind, to extent determined by PWD, and to the satisfaction of the abutting property owners.
- D. Where not otherwise directed to replace the existing curbing and footway, or where not required to replace the existing curbing and footway due to construction activities, the Contractor shall maintain and support the existing curbing and footway as necessary during all construction activities.
- E. Within the limits of footway and/or driveway restoration, furnish and install L & I approved vent covers and water service boxes to replace non-conforming boxes. Existing boxes that meet code shall be reset. All work and materials shall be in accordance with the Philadelphia Streets Department, Standard Construction Items and the Philadelphia Plumbing Code.
- F. All footway surfaces shall be constructed in accordance with Streets Department Detail SC0101, such that no untreated height differential exists between the existing adjacent property and the new footway surfaces (particularly but not exclusively where footway restoration to the property line is required.). Treatments to remedy height differentials (when identified) may include, but are not limited to, cheek walls, foundation sealants, grass strips, non-compliant concrete paving, or other appropriate method as approved by PWD and Streets Department prior to installation.
- G. ADA-compliant ramps shall be installed as shown on the Drawings, or as directed by the Streets Department during the course of construction. See Section 02510 of these specifications for additional information.
- H. For any length of curbing more than twenty continuous linear feet, or area of footway/driveway paving more than fifteen linear feet in any direction or twenty-five contiguous square yards, to be restored, the Contractor shall be solely responsible for contacting the appropriate Streets Department Survey District a minimum of two (2) weeks prior to the start of work to request any necessary lines and grades to be set. No additional payment shall be made for coordination with Streets Survey, or any delays to the Work resulting from said necessary coordination.
- I. Signage disturbed in the execution of construction activities under this Contract shall be reinstalled by the Contractor at no additional cost to the City.
 - 1. Signage shall be reinstalled according to the direction of PWD and the Standard Specifications of the Streets Department (Division 20-0700, 20-760, and 20-1707).
 - 2. All signage, except for street name signage, shall be reinstalled on posts with breakaway capability that conforms to PennDOT Pub. 408, Section 930. Existing breakaway posts may be reused if not damaged. The Contractor shall provide new breakaway posts to replace any non-conforming signage posts; new posts shall be two-inch (2") square, fourteen gauge (14 AWG) hot-dipped galvanized steel with a two-and-a-quarter inch (2¼") square pole base, per Streets Department standard. Posts shall be installed per Streets Department Standard Detail Drawing #M0086 (Traffic Sign, Post-Mounted).
 - 3. All existing signage shall be located from a fixed point, catalogued by description, and a photographic record created by the Contractor prior to removal. Any signage damaged in removal, storage, or reinstallation shall be replaced by the Contractor at no cost to the City.

Any signage determined by Streets Department to be inadequate as existing upon removal shall be reinstalled as directed by Streets Department, with signs to be provided on-site by Streets Department and installation performed by the Contractor.

4. The Contractor is responsible for proper installation of all existing and proposed signage. Signage not shown on the Drawings shall be reinstalled at no additional cost to the City; the Drawings are not guaranteed by the City to contain complete signage locations. The Contractor is encouraged to coordinate with Traffic Engineering Division of Streets Department to establish signage locations and reinstallation conventions prior to commencing work.
5. All street name sign poles shall be as specified in Streets Department Standard Specification Division 20-760, and per Streets Department Standard Detail Drawing #TE0501.

J. Breakaway traffic delineators shall be installed as per manufacturer's requirement.

3.04 JOINT SEALING

- A. All joints between new and existing bituminous wearing course shall be sealed with hot asphalt cement before surface has cooled.
 1. Apply seal evenly to the surface by squeegee immediately after final rolling. Seal with hot irons to completely fill surface voids and provide a watertight joint.
- B. After the bituminous wearing course is placed adjacent to manhole frames or inlet frames or City-owned structures, or other utility owned structures and before the surface has cooled, the joint between the frame and wearing course shall be sealed with hot asphalt cement for a distance of six inches (6") from the edge of the frame.
 1. The seal shall be evenly applied to the surface by squeegee immediately after final rolling to completely fill the surface voids and provide a watertight joint between the edge of the frame and the bituminous wearing course.
 2. Precaution shall be taken so that no hot asphalt cement is poured between the frame and the cover or grate. The cover or grate must be easily removed and put back in its frame after the hot asphalt cement has cured
- C. Before acceptance of the resurfacing work, all manhole frames and inlet frames shall be sealed properly as stated in the previous paragraph. The area at the edge between the manhole frame and manhole cover, the area at the edge between the inlet frames and inlet grates, all pickholes and lift holes and vent openings shall be free of asphalt cement.

3.05 CLEAN INLET BOX

- A. Within the limit of full width street reconstruction and within the limit of full width street resurfacing, clean and remove debris from existing inlet laterals or as directed by PWD. The contractor shall remove and dispose of all debris from the inlet pipe to the storm water conduit or to the combined sewer. This work is incidental to paving items, and no separate or additional payment will be made for this work.

3.06 INLET MOUTH OPENING

- A. Within the limit of full width street reconstruction and within the limit of full width street resurfacing the contractor shall be responsible for maintaining a minimum three inches (3") curb opening to all open mouth style inlets. The Contractor shall install concrete aprons at all curb-opening stormwater collection points (city inlets, lay-by inlets, trench drains, etc.) as shown on

the Drawings, or the Contractor when necessary shall dish out the asphalt around the inlet opening, as shown on the attached sketch to accommodate for the minimum three inch (3”) curb opening. This work is incidental to paving items, and no separate or additional payment will be made for this work.

- B. Positive drainage shall be provided to any stormwater curb cut, trench drain opening, inlet opening, or other stormwater collection point. Any finished paving within the limits of the Contract that does not provide positive drainage to these or similar collection points shall be repaired to the satisfaction of PWD (up to and including full removal and replacement) by the Contractor at no additional expense to the City. This shall include any paving settlement within the first year after completion of the Work that creates an impediment to positive drainage.

3.07 PAVEMENT MARKINGS

- A. Where existing pavement markings are disturbed, the Contractor shall restore them, in kind, and to the extent determined by PWD or as shown on the Drawings. There will be no separate or additional payment for this work, unless otherwise indicated on the Drawings and in these Specifications.
- B. Where new pavement markings are proposed, the Contractor shall provide and install markings in accordance with the Streets Department Standard Specifications (or PennDOT Pub. 408, as appropriate), and at the direction of the Streets Department.

3.08 TOPSOIL AND SEEDING OR SODDING

- A. Where grass plot areas are disturbed or to be newly established, restoration shall be with topsoil and seeding or sodding as directed by PWD, and to the satisfaction of the abutting property owners. Restorative work will be paid for at the applicable Prices for Contingent Work, unless otherwise specified to be included in the prices bid. Newly seeded or sodded areas shall be established as depicted on the Drawings, and shall be paid under the price per square yard bid for seeding and sodding.

END OF SECTION

SECTION 02510
CONCRETE CURB RAMP

PART 1 GENERAL

1.01 SCOPE OF WORK

- A. New ADA-compliant curb ramps are to be constructed at locations where the Contractor damages the curb ramp during construction activity or as directed in the Drawings. Six (6) inches of concrete is required within ADA ramp construction limits. The Contractor shall avoid any unnecessary disturbance to existing curb ramps. This may include relocating proposed utility work such as shifting pipes, fire hydrants and inlets as well as substituting highway grate inlets in the place of open mouth grate inlets. Any and all changes shall be approved by PWD.
- B. The work includes the construction of concrete curb ramps in accordance with the PennDOT design standards and in compliance with the approved CS-4401 Design form, which includes all pertinent field survey information necessary for the layout and construction of the curb ramps.
- C. The work includes the construction of the new ADA-compliant ramps, flares, landings, and related depressed curbing and transitions. This shall include furnishing and installing the Detectable Warning Surface at each ramp.
- D. The work also includes creation and submission for approval of as-built drawings of each ramp location. These as-builts shall be composed of field-verified measurements of grade and dimension as necessary for approval. No ADA-compliant curb ramp is considered complete until as-built drawings have been verified and approved.
- E. The list below shall constitute the minimum ADA ramp construction locations, as dictated by the Philadelphia Streets Department review. Additional locations may be mandated by damage to existing footway during construction, best practices as determined by PWD or Streets Dept. inspectors, or other exigent circumstances.
- F. Locations for construction of ADA-compliant curb ramps are as follows:

SEC OF 51ST STREET AND CATHERINE STREET – 2 RAMPS
SWC OF 51ST STREET AND CATHERINE STREET – 2 RAMPS
NWC OF 51ST STREET AND CEDAR AVENUE – 2 RAMPS
SWC OF 51ST STREET AND CEDAR AVENUE – 2 RAMPS
NEC OF 51ST STREET AND WALTON AVENUE – 1 RAMP
NWC OF 51ST STREET AND WALTON AVENUE – 1 RAMP
SWC OF 51ST STREET AND WALTON AVENUE – 1 RAMP
SEC 52ND STREET AND WALTON AVENUE – 1 RAMP
NWC 52ND STREET AND WALTON AVENUE – 1 RAMP
NWC 53RD STREET AND CATHERINE STREET – 2 RAMPS
SWC 53RD STREET AND CATHERINE STREET – 2 RAMPS
SEC 53RD STREET AND CEDAR AVENUE – 2 RAMPS

1.02 REFERENCE STANDARDS

1. PennDOT Publication 408
2. PennDOT Design Manual 13M (DM-2), Part 6 Pedestrian Facilities
3. PennDOT Publication 72, Roadway Construction Standards.
4. PennDOT RC-67M.
5. PennDOT Form CS-4401.
6. Philadelphia Streets Department ADA Curb Ramp Design / Construction Approval Submission Requirements
7. Penn DOT District 6-0 ADA Curb Reference Guide
(<http://www.dot.state.pa.us/Internet/Bureaus/pdDesign.nsf/DesignHomepage?OpenFrameset&frame=main&src=HQADPedAccommod?OpenForm>)
8. ADA Guidelines / ADAAG Specifications.

1.03 RELATED WORK

- A. Section 02500 – Paving and Surfacing

1.04 SUBMITTALS

A. POST CONSTRUCTION

1. For every ADA curb cut ramp constructed, the Contractor's Engineer must perform an inspection to ensure full ADA compliancy (this includes a water test to show no ponding occurs at the curb ramp) and must submit a completed PennDOT CS-4401 (Post Construction) Form to the Streets Department and/or PennDOT for approval and acceptance.
2. The As-built submission must include a transmittal letter clearly indicating the name and address of the contractor and engineering companies who were responsible for the ramp design, construction and inspection referencing the Ramp approval number with date.
3. The submission must also include the following:
 - a. Summary Sheet listing intersection name, ramp locations ID # and TIF information.
 - b. Ensure that the first & last name along with company name of both the Investigator 1 (contractor) and Investigator 2 (engineer) are indicated in the PennDOT's inspection form, CS4401.
 - c. A minimum of three pictures inserted in Penn DOT's CS4401 along with copies of approved TIF.
 - d. As built ADA Ramp Plan (only if there are changes from the approved plan) should be included with TIF (if applicable)
4. One color hard copy of the above documents, bound in a 3 ring binder, and a CD with electronic files of the as-built forms in Excel format, along with the plans in PDF, must be submitted.

1.05 REVIEW PRODEDURES

- A. For Ramps within the Right-of-Way of City Streets (NOT on a State Route):
 1. Ramp As-built packages shall be submitted to:

Sunil Gill
Engineer & ADA Coordinator of Streets Department,
940 Municipal Services Building,
1401 JFK Blvd,
Philadelphia, PA 19102
(contact: ph 215 686 5511)
email: sunil.gill@phila.gov)

NOTE: Projects with State and / or Federal funds shall require PennDOT ramp approvals as described in their Specifications / contract.

B. For Ramps within the Right-of-Way of a State Route:

1. Three (3) copies to Penn DOT shall be addressed to:

Bernard B. McGowen,
ADA Construction Coordinator,
PennDOT District 6-0,
7000 Geerdes Blvd.,
King of Prussia, PA 19406-1525
(Telephone: 610 205 6718)
(Email: bmcgowen@pa.gov)

C. For all projects that are not directly funded by governmental agencies including utilities and private developments:

1. Two (2) copies to Streets Department addressed to:

Sunil Gill,
Engineer & ADA Coordinator to Streets Department,
940 Municipal Services Building,
1401 JFK Blvd, Philadelphia, PA 19102
(contact: ph 215 686 5511),
email: sunil.gill@phila.gov

2. Beginning Oct. 31, 2011 PennDOT is offering an electronic process for business partners. To participate in the electronic process an applicant must become a business partner. To become a business partner, go to the ECMS home page, <https://www.dot14.state.pa.us/ECMS/>, or contact the District 6-0 EPS Help desk,.

D. Copy of Transmittal Letter with Curb Ramp Summary listing intersections, ramp ID, TIF information, etc. shall be submitted to:

Mike Schramm,
Acting Chief, Construction Branch, Philadelphia Water Department,
Jefferson Tower, Second Floor,
1101 Market St.,
Philadelphia, PA 19107
(contact: ph 215 685 6345)

E. During construction, if any ramp does not meet approved design standards due to unforeseen site constraints, the same shall be brought to the notice of the City & State to obtain revised approval, or resolved at the risk and cost of the contractor.

F. Review times

1. Submittal reviews will be performed within twenty (20) working days for the first submission; five (5) to ten (10) working days for subsequent submissions. If submission is incomplete or otherwise requires additional information or data to properly complete the review, the review time will begin as specified for the submission when all required information is received. There shall be no additional or separate payments due to failure to obtain City's approvals within the specified review times resulting from incomplete or non-conforming submissions.

1.06 MEASUREMENT AND PAYMENT

- A. The work required to construct ADA compliant curb ramps shall be paid under the respective unit price bid for each location. A ramp location is defined as a distinct pedestrian movement direction; two ramps may share a landing yet be considered two ramp locations. The price bid for each shall include construction of all footway surfaces (ramp, flares, and landing) in accordance with the approved designs, construction of all related depressed curbing and curb transitions, furnishing and placement of a detectable warning surface for each ramp, and furnish adequate as-built packages for approval.
- B. Payment for new linestriping as shown on ADA ramp design plans shall be included in the unit price bid for ADA compliant curb ramps. Repair or replacement of existing linestriping or pavement markings shall be incidental to all paving items and no additional payment shall be made.
- C. No payment shall be made for construction of ADA compliant curb ramps until confirmation by PWD of as-built compliance with the approved design drawings. PWD reserves the right to require at no additional cost to the City reconstruction of any ramp not in accordance with the approved design drawings.

1.07 SITE-SPECIFIC CONSIDERATIONS

The contractor shall note a construction site overlap with PWD Work # 50158 at the NE corner of the 53rd St & Baltimore intersection shown on G-8. The two (2) ADA ramps at the NEC 53rd Street and Baltimore Avenue (adjaced to system 1265-4) are to be constructed under separate contract S-50158-G. Contractor is to construct the connection to the existing sewer as indicated on the plans, backfill as specified, and patch disturbed footway areas with temporary hot mix asphalt at the surface. PWD and the Streets Dept have coordinated projects so that construction of System 1265-4 shall occur before the street light and ADA ramp upgrades designed in PWD Work # 50158. The contractor shall schedule construction activities so that System 1265-4 is the first site constructed.

PART 2 PRODUCTS

2.01 DETECTABLE WARNING SURFACE

- A. Detectable warning surfaces shall consist of raised truncated domes with a nominal diameter of 0.9 in (23 mm), a nominal height of 0.2 in (5 mm) and a nominal center-to-center spacing of 2.35 in (60 mm) and shall contrast visually with adjoining surfaces, either light-on-dark, or dark-on-light. The material used to provide contrast shall be an integral part of the walking surface. Arrangement of the truncated domes shall create a square alignment pattern with the edge of curb. The minimum width of the detectable warning surface from the curb line is twenty-four inches (24"), and the maximum width is sixty inches (60"). The surface shall be slip-resistant.

2.02 CONCRETE

- A. Refer to Section 02500 Paving and Surfacing for additional information regarding concrete paving restoration.

PART 3 EXECUTION

3.01 CONSTRUCTION

- A. ADA curb cut ramp construction and as-built submissions must comply with PennDOT RC-67M and PennDOT District 6-0 ADA Curb Reference Guide.
- B. Concrete shall be installed at a depth of six (6) inches within the limits of the ADA ramp.
- C. Use PennDOT Design Manual (DM-2), Chapter 6 Pedestrian Facilities for design policy and procedures and design criteria. Refer to Publication 72, Roadway Construction Standards for additional information.
- D. If utility facilities are part of the construction effort, the Contractor shall be responsible for notifying the affected utility companies of the project construction effort in advance and incorporating their scheduling requirements into the overall project schedule.
- E. Construction shall be in accordance with the approved designs. Significant deviations from the approved designs will require approval by the relevant authority (Streets Department or PennDOT); any and all submissions deemed necessary for approval of field changes shall be the sole responsibility of the Contractor.

3.02 RAMP INSPECTION

- A. The Contractor will utilize the form entitled “ADA Curb Ramp Field Management Form” to evaluate and ensure that all constructed curb ramps comply with the referenced PennDOT standards. Slopes of constructed curb ramps will be measured with the 2.0-foot Smart Level to ensure compliance with the referenced standards. Any ramps found to be out of compliance shall be corrected to the satisfaction of PWD at no additional cost to the City.
- B. Contractor shall notify PWD prior to construction of ADA-compliant ramps to ensure joint inspection of the ramps and compliance with approved design standards.

END OF SECTION

SECTION 02700
SEWERAGE AND DRAINAGE

PART 1 GENERAL

1.01 SCOPE OF WORK

- A. This section includes all materials and appurtenant work necessary to furnish and install precast concrete inlet and manhole structures, junction boxes, control structures, and overflow structures, ductile iron pipe or HDPE/PP pipe connecting inlets or control structures to stormwater trenches, vitrified clay pipe connecting inlet structures to sewers, trench drains, curb cuts with and without wheel guard, and underdrain connections to structures from stormwater conduit piping as shown on the drawings. All orifice, underdrain, distribution, or other piping that connects to a structure shall have the connection constructed per these Specifications.

1.02 RELATED WORK

- A. Section 02135 Erosion And Sedimentation Control
- B. Section 02161 Sheeting and Shoring
- C. Section 02210 Earthwork for Green Stormwater Infrastructure
- D. Section 02500 Paving And Surfacing
- E. Section 02707 Thermoplastic Drainage Pipe And Fittings
- F. Section 02709 Subsurface Stormwater Storage
- G. Section 02720 Stormwater Surface Features

1.03 REFERENCE STANDARDS

- A. All sewer work under this contract shall be governed by, and done in accordance with the most recent revision or amendment to the Standard Specifications and Standard Details of the Philadelphia Water Department, including the following:
 - 1. Standard Details and Standard Specifications for Sewers.
 - 2. Standard Specifications for Excavation, Refilling, Grading, Landscaping and Repaving.
 - 3. Standard Specifications for Masonry: Concrete.
 - 4. Standard Specifications for Masonry: Stone and Brick.
 - 5. Standard Specifications for Gray and Ductile Iron
- B. The Standard Detail for Saddle Connection to RC Pipe Sewers is hereby modified so that the openings for the lateral connections shall be core drilled and rubber saddles shall be substituted in place of clay saddles. The 2000 psi concrete encasement around the saddle shall be extended to the cradle of sewer as shown in the Detail for Resilient Saddle Connection to RC Pipe Sewers affixed to the end of these specifications.
- C. The Standard Detail for cast in place and brick Wellholes is hereby modified so that a 5000 psi concrete base slab (12" thick) is cast separately from the brick or concrete walls. The base slab shall have the dimensions shown in the Standard Details.
- D. All materials and workmanship shall conform to the most recent revision or amendment to the following standards, except as modified by the Contract Documents:

1. ASTM C 94, Standard Specification for Ready-Mixed Concrete.
2. ASTM C 890, Standard Practice for Installation of Monolithic or Sectional Precast Concrete Water and Wastewater Structures.
3. ASTM C 109, Test Method for Compressive Strength of Hydraulic Cement Mortars (Using 2-inch or 50 mm Cube Specimens).
4. ASTM D 638, Test Method for Tensile Properties of Plastics.
5. ASTM D 695, Test Method for Compressive Properties of Rigid Plastics.

1.04 SUBMITTALS

- A. Submit a list of materials to be provided for work under this Section for any products not covered under PWD Quality Certification Standards. Include the name and address of the materials producer, the location from which the materials are to be obtained, part numbers, and shop drawings.
- B. Ready-Mixed Concrete: Before starting work, submit to Project Manager a copy of manufacturer's QCS-approved mix design for concrete to be delivered under this Contract. For each truckload of concrete delivered, submit a batch ticket in accordance with QC-3.
- C. Certificates of Compliance: Before installation of any Precast Concrete Products, Gray / Ductile Iron Casting, Ready-Mixed Concrete, Welded Steel Inlet Frame or Grates, Reinforced Concrete Pipe, Filter Media Products, Vitriified Clay Pipes & Fittings, submit an acceptable Certificate of Compliance to PWD for each such unit, in accordance with QC-1, QC-2, QC-3, QC-4, QC-6, QC-7, or QC-9 respectively.
- D. Before starting work, submit for approval of PWD, manufacturer's literature describing Epoxy Mortar Gel and Epoxy Bonding Agent. Literature must address each requirement (e.g. Compressive Strength per ASTM C109) as specified.

1.05 MEASUREMENT AND PAYMENT

- A. RCP sewers of the various sizes will be paid for at the respective prices bid per linear foot.
 1. The price bid shall include the following and all appurtenant work and materials necessary to make a complete structure: furnishing and installing RC pipe, gaskets, 2000 psi concrete cradle, blocking, manufactured bends; making connections; 2000 psi concrete collars; 2000 psi concrete cut-off walls; sealing openings with 9 inch thick brick masonry bulkheads; wye branches, saddles, inserts, and other specials; grout.
- B. Ductile Iron (DI) inlet connections, sewers, and piping of the various sizes will be paid for at the respective price bid per linear foot.
 1. The price bid shall include the following and all appurtenant work and materials necessary to make a complete structure: furnishing and installing DI pipe with gaskets and fittings; making connections; and 2000 psi concrete collars.
- C. VCP inlet connections will be paid for at the price bid per linear foot. VCP vent connections will be paid for at the price bid per linear foot. VCP lateral connections of the various sizes will be paid for at the respective prices bid per linear foot.
 1. The price bid shall include the following and all appurtenant work and materials necessary to make a complete structure: furnishing and installing VC pipe with gaskets; core drills; rubber saddles; making connections; 2000 psi concrete collars; concrete cutoff walls (in the instance

of an existing brick sewer); manufactured bends; sealing openings with nine inch (9") thick brick masonry bulkheads; Class D bedding; wye branches, stoppers, and other specials.

- D. Manholes (including wellholes) of the various types will be paid for at the respective unit prices bid.
1. The price bid shall include the following and all appurtenant work and materials necessary to make a complete structure: furnishing and installing brick work with mortar, or cast-in-place concrete of the indicated strength, or precast reinforced concrete sections with rubber gaskets; formwork; finishing concrete surfaces; gray iron frames and covers; aluminum or plastic steps; broken stone base; VC specials; brick wedges; eyebolts; drip rings or drip slabs; base slabs; epoxy coating; resilient connectors or non-shrink, non-metallic mortar; concrete fillet.
- E. Inlets of the various sizes and types will be paid for at the unit price bid for each.
1. The price bid shall include the following and all appurtenant work and materials necessary to make a complete structure: furnishing and installing brick work and mortar, or cast-in-place concrete of the strength indicated, or precast reinforced concrete sections with rubber gaskets; inlet frames and grates; cleanout covers and frames; inlet traps with gaskets (including u-traps and vents associated with Junction Box to sewer main connections); brick masonry adjustments; formwork; curb nosing; excavating, backfilling, and compacting; removing existing inlet; parging interior seams and fittings with non-shrink grout; restoring existing paving and curb; lifting inserts; removing existing inlet castings, and hauling and delivering them to the Water Department Storage Yard.
 - a. Price bid shall include on-site coring of inlet boxes required to install HDPE/PP/DI outlet connections to stormwater storage systems at precise elevations and watertight boot collars. No additional payment shall be made for installation of these connections on new inlets; connection to existing inlets shall be paid under the unit price bid for each.
 2. The price bid shall also include the filling of an abandoned inlet if the excavation for the proposed inlet encroaches into an existing inlet structure including the following and all appurtenant work and materials: removing inlet top to a depth of one foot; removing cleanout cover and frame, grate and frame, and trap, and delivering to Water Department Storage yard; sealing pipe outlet with nine inch (9") thick brick masonry bulkhead; filling trap with Ordinary Backfill Material; and paving restoration.
 3. Also included in the price bid shall be the replacement of three (3) square yards of footway paving and six (6) linear feet of curb.
- F. Green inlets (connected only to green stormwater infrastructure) of the various sizes and types, as seen on Drawings, will be paid for at the unit price bid for each.
1. The price bid shall include the replacement of three square yards of footway paving, six linear feet of standard curb and any standard or modified curb section above the grate and frame as seen on Drawings.
 2. The price bid shall include spare parts as outlined in section 3.15.
 3. The price bid shall include a plumber's plug to be installed in the distribution pipe and shall remain in place after construction.
 4. The price bid shall include on-site coring of inlet boxes required to install HDPE/PP outlet connections to stormwater storage systems at precise elevations as shown on the Drawings.

5. The price bid for Green City Inlets shall include a trash or debris screen to be installed over the distribution pipe, unless otherwise indicated on Drawings.
- G. Stormwater junction boxes, overflow structures, and control structures will be paid for at the unit price bid. The price shall include all installation and grading as specified and as may be shown on the Contract Drawings, including but not limited to, traps, permanent inlet protection, grates, frames, lids, manholes, lockable bolts, connections to stormwater piping, preparation of subgrade, or other appurtenant structures or work.
- H. Curb cuts and curb openings used for stormwater management will be paid for at the unit price per each. The price bid shall include the following and all appurtenant work:
 1. Installation of cast-in-place concrete, precast concrete or sawcutting of existing curbs to create the dimensions of the curb cut or curb opening as defined in the Drawings, precast or cast-in-place concrete apron as defined in the Drawings, metal wheel guards with bolts and attachments required to secure the wheel guard, and all footway or cartway paving necessary to create a compliant cut, depressed curb sections and transitions.
- I. Filling abandoned inlets will be paid for at the unit price bid each.
 1. The price bid shall include the following and all appurtenant work and materials: removing inlet top to a depth of one foot; removing cleanout cover and frame, grate and frame, and trap, and delivering to Water Department Storage Yard; sealing pipe outlet with nine inch (9") thick brick masonry bulkhead; filling trap with Ordinary Backfill Material; and paving restoration.
 2. No separate or additional payment will be made for filling of abandoned inlets that are included in the Proposal Item for new inlets.
- J. Flowable fill (control density fill) for filling abandoned pipe will be paid for at the price bid per cubic yard.
 1. The price bid shall include the following and all appurtenant work and materials: furnishing and placing flowable fill; sealing ends with 9 inch thick brick masonry bulkheads.
- K. Underdrain connections to existing inlets from stormwater facilities will be paid for at the unit price bid for each. Bid price shall include any additional excavation required, core-cutting a hole into the existing inlet box at the specified elevation, installing the pipe as shown on the Drawings, installing watertight boot collar, and any and all appurtenant and relevant work to complete the structure. See Section 02707 and 02709 for details. No payment shall be made for connection to inlets newly installed under this Contract; such connections (including all facets of installation) shall be included in the price bid for the relevant inlet structure.
- L. Concrete pavement warping or concrete aprons, if specified on the Drawings for installation with City and Open Mouth Grate inlets, will be included in the unit price bid for the associated inlet. No additional payment shall be made for the forming, placing, or finishing of the aprons or warping as shown on the Drawings.

PART 2 PRODUCTS

- 2.01 See PWD Standard Details and Standard Specifications for Sewers, unless otherwise noted below.
- 2.02 BACKFILL

- A. Ordinary Backfill Material may include all material excavated from the trench and free of objectionable matter unless rejected by PWD. The Contractor shall furnish any deficiency of Ordinary Backfill Material.
- B. Furnish Select Backfill Material in accordance with PennDOT Publication 408 Specifications, Section 703.3, Select Granular Material-2RC (as amended). The use of slag as Select Backfill Material is hereby prohibited.
- C. All Backfill directly above stormwater trenches shall be clean washed AASHTO #57 stone, unless otherwise specified on the Drawings to be Planting Soil or other material. All backfill to be underneath a paved surface shall be compacted; all backfill not to be paved shall be hand-tamped at a minimum.

2.03 RUBBER SADDLES

- A. Rubber Saddles for Lateral Connections to RC Pipe Sewers shall be manufactured from a blend of rubber that is laboratory tested and appropriate for sewer applications.
- B. Pipe clamps and expansion rings shall be Type 304 Stainless Steel.
- C. Rubber Saddles shall provide a watertight connection and be compatible with ASTM C-923.

2.04 DUCTILE IRON (DI) DRAINAGE PIPE

- A. DI pipe shall be Class 56 for pipe of twelve inches or less ($\leq 12''$) in nominal diameter, and Class 54 for nominal diameters greater than twelve inches ($> 12''$).
- B. Pipe shall conform to the Standard Specifications for Ductile Iron Pipe of PWD.

2.05 LOCKABLE BOLTS

- A. Locking bolts: Stainless steel machine head bolts with countersunk hex key. Bolts shall be installed clean and free of grit or debris and coated using white lithium grease or equivalent metal-to-metal lubricant and rust protector prior to initial installation.

2.06 GREEN INLET

- A. All green inlets shall be installed with standard PennDOT precast concrete inlet box (PennDOT RC-46M) unless otherwise shown on Drawings.
- B. Standard PWD OMG frames and grates shall be used for all green inlets.
- C. Pavement restoration and design must conform to current Philadelphia standards for City streets and PennDOT standards for state routes.
- D. Thermoplastic pipe will be sealed with a PVC thread cap until all construction is complete. The plug will be removed at the direction of PWD.

2.07 GREEN INLET CURB MARKERS

- A. DAS Manufacturing "Duracast 2 1/2" Custom reflective one color Curb Marker" or approved equal. Marker to match logo, size, and color presented in Appendix D Green Inlet Curb Marker Detail.
- B. DAS Manufacturing Curb Marker Adhesive #RS-222-5 / #RS-222-11 or approved equal must be used to attach marker to curb.

2.08 GREEN DUAL CATCH BASIN INLETS

- A. All green dual catch basin inlets shall be installed with standard PWD six (6) foot OMG frames and grates.

2.09 PRECAST CONCRETE CONTROL STRUCTURES

- A. All precast concrete catch basins used for overflow control structures shall have a minimum specified compressive strength of 4,000 pounds per square inch (psi) per ACI 318 / ASTM C39 unless otherwise specified. All concrete shall conform to PWD's Standard Specifications for Precast Concrete.
- B. All control structures 48 inches in diameter and larger shall include steps per standard PWD sewer specifications.
- C. Cast-in-place catch basin bases shall have a 28-day compressive strength of 3,500 psi unless otherwise noted.
- D. When connected to existing PWD sewers, catch basin traps for overflow control structures shall be Neenah Foundry series R-3705 or approved equal. For control structures not directly connected to existing sewers, traps should be installed as per Drawings.

2.10 PERMANENT INLET PROTECTION

- A. Permanent inlet protection for grate inlets shall be the GRATEMASTER Type A Inlet Protection System, as manufactured by ACF Environmental or approved equivalent.

- 1. Permanent inlet protection shall have the following properties (minimum):

- a. Sediment bag

- 1) Flow rate: 145 gallons per minute per square foot (gpm/sf)
- 2) AOS: 40 (sieve size)
- 3) Puncture Strength: 700 pounds
- 4) Filtration Efficiency: 82%
- 5) Capacity: 5.5 cubic feet (cf)

- b. Frame

- 1) Stainless steel or aluminum construction
- 2) Integral lifting points

- B. Trash and Debris Screen for Green City Inlets

- 1. For all Green City Inlets installed, a trash or debris screen shall be installed over the distribution pipe.
- 2. Trash or debris screen shall be installed according to manufacturer's recommendations. At a minimum, the screen shall be installed with vertical rails on the catch basin wall and centered over the outlet pipe and allow for the screen to be removed for cleaning. If no trash screen is identified on the drawings, the trash screen shall be TrashGuard "Plus" for underground storage systems, product number TGRD23X24S, screen size 23", as manufactured by Trash Guard, Inc. or approved equivalent. TrashGuards shall be cut by the manufacturer to fit through the inlet manhole and shall be reassembled within the inlet by the Contractor.

- C. Deflector Pan for Green Dual Catch Basin Inlets

1. Deflector pans used for green dual catch basin inlets shall be ADS Flexstorm Deflector Pans, or approved equal.
- 2.11 WATERTIGHT BOOT COLLAR FOR UNDERDRAIN CONNECTION TO CATCH BASINS
- A. Watertight boot collars shall be Kor-N-Seal 106-406 Series connectors or approved equal.
- 2.12 EPOXY GROUT FOR PIPE CONNECTIONS TO CATCH BASINS
- A. Acceptable Manufacturers
 1. The following products are acceptable as Epoxy Mortar Gel, provided they continue to meet all requirements:
 - a. Meta Bond HM Gel, as manufactured by American Meta Seal Company, 509 Washington Avenue, Carlstadt, NJ 07072.
 - b. SikEPOXY adur 31 Hi-Mod Gel, as manufactured by Sika Corporation, Box 297, Lyndhurst, NJ 07071.
 - c. Thermal-Chem Mortar Resin Gel (Product No. 304), as manufactured by Thermal-Chem, Inc., 1400 Louis Avenue, Elkgrove, IL 60007.
 - d. Approved equivalent product.
 2. The following products are acceptable as Epoxy Bonding Agent, provided they continue to meet all requirements.
 - a. Meta Bond HM, or Meta Bond HM Gel, as manufactured by American Meta Seal Company.
 - b. Sikastix 370, Sikadur Hi-Mod, or Sikadur 31 Hi-Mod Gel, as manufactured by Sika Corporation.
 - c. Thermal-Chem Mortar Resin (Product No. 3), or Thermal-Chem Mortar Resin Gel (Product No. 34), as manufactured by Thermal-Chem, Inc.
 - d. Approved equivalent product.
 - B. Materials
 1. Epoxy Mortar Gel shall:
 - a. Be a 100% solids formulation.
 - b. Have a Tensile Strength per ASTM D 638 not less than 3000 psi after 7 days at 73°F.
 - c. Have a Tensile Elongation per ASTM D 638 not over 7%.
 - d. Have a Compressive Strength per ASTM D 695 not less than 3000 psi after 24 hours at 73°F, and not less than 6000 psi after 7 days at 73°F.
 2. Sand shall:
 - a. Be oven-dry silica sand.
 - b. Have at least 70% by weight pass #20 sieve.
 - c. Have not over 35% by weight pass #40 sieve.
 3. Epoxy Bonding Agent shall meet the requirements for Epoxy Mortar Gel.

C. Mixes

1. Epoxy Mortar shall consist of Epoxy Mortar Gel and Sand mixed at a 1:1 ratio by loose volume.

2.13 WHEEL GUARDSS

- A. Wheel guards shall be steel plate with a minimum tensile strength of 35,000 psi and in conformance with PWD Standard Specifications for Gray and Ductile Iron.
- B. Bolts and attachments shall be stainless steel (Grade 304 or 316), with countersunk hex key. Bolts shall be installed clean and free of grit or debris and coated using white lithium grease or equivalent metal-to-metal lubricant and rust protector prior to initial installation.
- C. Wheel guards shall extend a minimum of 6 inches on either side of the curb cut and shall be a minimum of ½ inch in thickness.

2.14 CONCRETE APRONS

- A. Aprons shall be cast-in-place concrete unless otherwise specified on the drawings or approved by PWD.
- B. Aprons in the street shall not have slopes in excess of 15% and shall not extend more than 3 feet into the cartway. Concrete aprons shall have a minimum of an 8" base.
- C. All concrete to be used for concrete aprons shall have a minimum specified compressive strength of 3,500 pounds per square inch (psi) per ACI 318 / ASTM C39 unless otherwise specified. All concrete shall conform to PWD's Standard Specifications for Masonry Concrete.

PART 3 EXECUTION

3.01 MAINTENANCE AND PROTECTION OF TRAFFIC DURING CONSTRUCTION

- A. Maintain and protect traffic during construction as required elsewhere in these Contract Documents (See Section 01570, Traffic Regulation).

3.02 EXCAVATING

- A. See Section 02210 Earthwork for Green Stormwater Infrastructure. Excavate in accordance with the Standard Specifications for Excavation, Refilling, Grading, Landscaping, and Repaving. Excavation will not be classified, whether by type of material encountered, or by type of equipment required.
- B. Use sheeting and shoring sufficient to avoid damage to or settlement of adjacent buildings, paving, and underground structures.
- C. Protect from damage and provide adequate temporary support for all existing underground facilities, except those known to be abandoned. Repair any damage to existing underground facilities due to Contractor's operations without charge to City.
- D. Remove existing inlet grates and frames, CI sewer manhole frames and covers, and inlet traps and deliver them to Water Department Storage Yard at Fox Street and Abbottsford Avenue.
- E. Use of a Hydro-Hammer or similar equipment is hereby prohibited.

3.03 CONCRETE CUT-OFF WALLS

- A. Before removing the earth fill over the arch of the existing sewer, construct a concrete cut-off wall where called for on the Contract Drawings.

- B. The cut-off wall shall be constructed across the entire width of trench down to the spring line of the sewer. After the cut-off wall has been constructed and set, the remaining portion of earth over the sewer shall be removed down to the spring line.

3.04 DEBRIS GRILLS

- A. Take great care when breaking the sewer crown to prevent debris from being washed down the sewer.
- B. At the end of each work day, cover the open end of the sewer with a metal debris grill to prevent debris from being washed down or thrown into the sewer during non-work hours. At the beginning of each work day, remove all accumulated debris before removing the debris grill.
- C. Employ a rigid, portable metal debris grill which is sufficiently strong to withstand the impact of any debris which may be washed down stream or thrown against it. Openings shall be three inches square (3" x 3").
- D. During working hours, prevent any debris, construction material, or equipment from being washed down the sewer. Remove any such material from the sewer without charge. Use debris grill during working hours when feasible.

3.05 FLUMING AND PUMPING

- A. Flume the existing sewer flow during construction. Use only such dams as will not restrict full flow during storms. Repair all damage due to restriction of flow.

3.06 DIVERSION OF FLOWS

- A. The Water Department does not guarantee the ability to dam or divert flows. The Water Department shall approve all damming and diverting of flows prior to their inception.
- B. One week prior to damming and diverting of any flow the Contractor shall notify both of the following:
 - 1. Sewer Maintenance Superintendent at 215-685-2034.
 - 2. Flow Control Superintendent at 215-685-2004.
- C. In addition, both Sewer Maintenance and Interceptor Services shall be notified one week prior to removal of any dam and the resumption of flow. Upon completion of the removal of the dam, the Contractor shall schedule an inspection of the sewer at the location of the dam. Any damage found during this inspection shall be repaired by the Contractor at no additional cost to the City.
- D. If for any reason, it becomes necessary to remove the dam prior to completion of the project, the Contractor shall remove the dam, restore flow, and utilize an alternate means of flow control to complete the project, at no additional cost to the City.

3.07 RODENT CONTROL

- A. Rodent control measures shall be in accordance with the "Philadelphia Rat Control Project Guidelines for Eradication and Control in Demolition's and Excavations". A copy of these guidelines can be obtained by calling the Philadelphia Department of Public Health; Vector Control Services, at 215-685-9009 or 215-685-9000.
- B. A minimum of one pound (1 lb.) of water resistant bait and rodenticides approved by the EPA for use in sewers shall be hung by a galvanized tie wire at the springline of the sewer or on the shelf of the manholes within and around the sewer reconstruction as indicated on the attached

rodent control plan. All rodent control measures shall be in place fourteen (14) days prior to excavation except in emergency situations, whereas the measures shall be in place within twenty-four (24) hours of the Notice to Proceed.

- C. The bait or rodenticide is a one pound (1 lb.) block CONTRAC Super-Size BLOX. This rodenticide bait is produced by Bell Laboratories, Inc. Following is a list of local distributors:

Univar USA	Ehrlich J C Company INC.
850 Calcon Hook Road	500 Spring Ridge Drive
Bay #9	Wyomissing, PA 19160
Sharon Hill, PA 19079	800-488-9495
(610) 237-8402	(610) 374-2200

- D. There are various products on the market that serve the same purpose, however very few are made for sewer application, and many are multi-feeder which are not as effective as single feeder. Therefore, any substitutions shall be submitted to PWD for approval.
- E. The Contractor shall inspect the rodent control measures once every week or after each rain event whichever is shorter. All rodent control measures in manholes both within and around the limits of sewer reconstruction shall be maintained throughout the duration of the project. Manholes within the limits of sewer reconstruction shall include existing manholes and new manholes once the base section has been constructed. Payment for this work shall be included in the price bid for sewer excavation.

3.08 INSTALLATION

- A. Construct sewers, stormwater conduits, inlet connections, vents, lateral connections, and risers; manholes, wellholes, and inlets; concrete cradles, collars, cutoff walls, headwalls, and endwalls; RC box sewers, chambers, and flares in accordance with the 1985 Standard Details and Standard Specifications for Sewers, and the Contract Drawings and Special Specifications.
- B. All inlets shall be constructed to provide positive drainage. All associated pavement restoration shall be sloped inwards towards the inlet, and the inlet grate or throat as appropriate shall be slightly below the surrounding continuous street slope. No inlet may be constructed such that its function is restricted, and PWD reserves the right to refuse payment on any inlet that does not provide positive drainage. This may include, but is not limited to, inlets that do not meet the minimum throat opening requirements of three inches (3") after final paving and surfacing is complete, or inlets whose grate is higher than the surrounding paving surface.
- C. When connecting VCP laterals that do not require the use of a wye branch to RC Pipe, the openings shall be created with a core drill. The Standard Detail for Saddle Connections to RC Pipe Sewers within the 1985 Standard Details and Standard Specifications for Sewers shall be modified so that rubber saddles shall be substituted for clay saddles. The rubber saddles shall be expanded against the wall of the pipe to provide a watertight connection. The lateral pipe shall be secured within the saddle through the use of a stainless steel clamp. The 2000 psi concrete encasement shall be extended to the cradle of the sewer as shown in the Detail for Resilient Saddle Connection to RC Pipe Sewers affixed to the end of these specifications.
- D. Make provisions for future connections in accordance with Water Department standards.
- E. Do not construct any new inlet until the location has been approved in the field by Construction Branch. Should the Contractor construct any inlet without first receiving such approval, full responsibility for that work is assumed by the Contractor, and shall if so directed reconstruct that inlet in another location without charge to the City.

- F. When connecting new VCP laterals to existing laterals, make joints with a 1:3 grout, making a full, closed joint between the pipes.
- G. Seal all remaining openings with nine inch (9") thick brick masonry.
- H. Do not make holes in RC Pipe for lifting. Use only padded slings to lift RC pipe sections. Take care not to damage pipe surface, bell, or spigot.
- I. Connections to HDPE/PP pipe for stormwater storage systems shall be constructed such that positive drainage is created (unless otherwise directed on the Drawings). On the upstream (distribution) connection, on-site coring of the inlet box is suggested to ensure maintaining the correct or appropriate elevations. A standard PWD inlet trap shall only be employed when explicitly directed on the Drawings. The downstream (underdrain) connection, must be made with a watertight boot collar, and precise elevations as shown on the Drawings shall be maintained. Connections should be water-tight.
- J. All trapped inlets and overflow control devices shall be primed with water so that no sewer gases can escape from the inlet or overflow control device.
- K. Any orifice cap must be installed on all underdrains such that the center of the cap is a minimum of 7.5" above the trapped outlet to the sewer, unless otherwise indicated on the Drawings, and to provide positive drainage from the stormwater storage system. On-site coring of the inlet box is suggested to ensure that the correct or appropriate elevations are maintained. Any major spalling caused by core-cutting the inlet box shall be repaired by the Contractor. All trapped inlets and overflow control devices shall be primed with water so that no sewer gases can escape from the inlet or overflow control device.
- L. The Contractor shall not drill the orifice until authorization is received by PWD GSI Implementation Unit. Any deviation of orifice elevation from that shown on the Drawings shall be approved by PWD prior to installation. It should be noted that the Contractor may be directly to maintain a solid cap if test results and PWD GSI Implementation Unit indicate conditions favorable for infiltration.
- M. Within the limit of street reconstruction and within the limit of full width street resurfacing the contractor shall be responsible for maintaining a minimum three inches (3") curb opening to all open mouth style inlets and trench drains. The Contractor shall install concrete aprons at all curb-opening stormwater collection points (city inlets, lay-by inlets, trench drains, etc.) as shown on the Drawings, or the Contractor when necessary shall dish out the asphalt around the inlet opening, to accommodate the minimum three inch (3") curb opening. This work is incidental to paving items, and no separate or additional payment will be made for this work.
- N. The Inlet protection (permanent and temporary) shall be installed according to the manufacturer's specifications.

3.09 GREEN INLET INSTALLATION

- A. Construct modified green inlets to the dimensions, shape, and workmanship as shown in the Drawings, or as otherwise directed by PWD.
- B. Pipe openings will be located to provide a minimum of four inches (4") of concrete between inlet box and pipe opening.
- C. Height of inlet box shall be a minimum of three and a half (3 ½) feet and a maximum of eight (8) feet.
- D. The grate of the inlet should be no more than ½" offset with the adjacent curb.

- E. Minimum cover for thermoplastic pipe within the public right-of-way must be two (2) feet.
- F. Contractor will install watertight PVC thread cap within all distribution pipes and shall remain in place until all construction activities has been completed or at the discretion of PWD.
- G. Prior to installation, the subgrade must be compacted and carefully graded such that the inlet meets the proper elevation as shown on the Contract Drawings.

3.10 INSTALLATION OF GRATES

- A. Top of grate must be installed flush to 0.125 inches below finished grade. Bevel concrete to top of grate if below flush. Grate inflow areas shall be a minimum of 0.25 square feet per linear foot. The grate bars shall be transverse to the roadway and bicycle safe. Grates shall have openings no greater than ½ inch wide.

3.11 INSTALLATION OF CONCRETE CURB CUTS AND APRONS

- A. Construct concrete curb cuts and aprons to the dimensions, shape, and workmanship as shown on the Drawings, or as otherwise directed by PWD.
- B. Curb cut aprons shall be a minimum of 18 inches wide, measured perpendicular to the curb, unless otherwise indicated on Drawings, and shall have a minimum drop of 2 inches from the projected gutterline.
- C. Construct or replace curbs to the dimensions, shape, and workmanship as the original curb, as shown on the Drawings, or as otherwise directed by PWD. Construction methods shall be in accordance with PennDOT Pub. 408, Section 630. Paving limits shall be in accordance with Streets Department Detail L-892, which dictates a minimum cartway and footway replacement width inherent to curb reconstruction.
- D. Installation of curbing shall be performed in a manner that does not compromise the integrity of any stormwater system. In no instances will it be acceptable to stake, pierce, or otherwise damage an installed or existing system to facilitate curb cut construction. It is suggested that all curbing be formed using top-clamped forms or slipforming methods, and all surveying grades be marked with tautlines spanning the underlying systems.
- E. Where curb is disturbed outside of those areas shown on the drawings or otherwise specified, restore in kind, to extent determined by PWD, and to the satisfaction of the abutting property owners.
- F. Where not otherwise directed to replace the existing curbing, or where not required to replace the existing curbing due to construction activities, the Contractor shall maintain and support the existing curbing and footway as necessary during all construction activities.
- G. For any length of curbing more than twenty continuous linear feet to be restored, the Contractor shall be solely responsible for contacting the appropriate Streets Department Survey District and request any necessary lines and grades to be set. No additional payment shall be made for coordination with Streets Survey, or any delays to the Work resulting from said necessary coordination.
- H. Within the limit of street reconstruction and within the limit of full width street resurfacing the contractor shall be responsible for maintaining a minimum three inches (3”) curb opening to all open mouth style inlets. The Contractor shall install concrete aprons at all curb-opening stormwater collection points (city inlets, lay-by inlets, trench drains, etc.) as shown on the Drawings, or the Contractor when necessary shall dish out the asphalt around the inlet opening,

to accommodate the minimum three inch (3”) curb opening. This work is incidental to paving items, and no separate or additional payment will be made for this work.

- I. Prior to installation, the subgrade must be compacted and carefully graded such that the concrete apron slab will be seated flush on the subgrade, at the proper elevation and slope as shown on the Contract Drawings.

3.12 MAKING PIPE CONNECTIONS TO CATCH BASIN

- A. Make hole(s) in existing structure as necessary to permit connection. Core through existing concrete structures and cut reinforcing as necessary. Remove all dirt, laitance, and other loose or undesirable material from mating surfaces. Check hole(s) for fit.
- B. Comply fully with manufacturer’s instructions. Coat mating surfaces with Epoxy Bonding Agent and set pipe. Seal all openings with Epoxy Mortar. Support pipe securely to prevent movement and protect for at least 24 hours.

3.13 PERMANENT INLET PROTECTION

- A. All stormwater inlets (and domed risers) that are directly connected with and tributary to subsurface stormwater storage units (Green Inlets, labeled as “G” on the Drawings) shall be protected with both temporary measures as specified above and permanent measures as shown on the Drawings (or barring inclusion in the Drawings, as specified herein).
- B. Additional replacement parts (one of each item scheduled for replacement as part of annual maintenance per the manufacturer) shall be delivered to the PWD GSI Maintenance Garage. Refer to subsection 3.15 for address.
- C. Installation of permanent inlet protection shall be in accordance with the manufacturer’s recommended installation procedures.
- D. Permanent inlet protection shall not take the place of temporary inlet protection in any case. Green inlets (to receive permanent inlet protection) shall remain fully closed to runoff until final site cleanup. Cleaning of green inlets as part of final site cleanup shall include cleaning any installed permanent inlet protection devices.

3.14 BACKFILLING AND COMPACTING IN CITY STREETS AND STATE ROUTES

- A. See Section 02210 Earthwork for Green Stormwater Infrastructure.

3.15 INSPECTION

- A. Should PWD order City forces to inspect the sewer system using closed-circuit television equipment, the Contractor shall cooperate fully with the City forces in order to facilitate the inspection.

3.16 REPAVING

- A. Restore all disturbed paving, curb, and grass areas as required elsewhere in the Contract Documents (See Section 02500, Paving and Surfacing).

3.17 SPARE PARTS

- A. Contractor shall provide one (1) spare permanent inlet protection sediment bag per installed inlet filter location, one (1) extra hardware kit consisting of any screws/wing nuts used to fasten permanent inlet protection sediment bag components per installed inlet filter location; one (1) additional trash/debris screen per installed green city inlet location, and one (1) extra hardware

kit consisting of washers, screws, pins, and other components needed to mount trash/debris screen on rails per installed green city inlet location, as well as any other replacement parts mandated by the Specifications. For tracking purposes, quantities of each spare part item are documented in a Appendix H. Spare parts shall be delivered to the PWD GSI Maintenance Garage at the address below. No additional payment will be made for the provision, installation, or delivery of permanent inlet protection.

Attn: Gerald Bright
Cell: 215-300-9079
GSI Maintenance Garage
7800 Penrose Ferry Road
Philadelphia, PA 19153

END OF SECTION

SECTION 02707
THERMOPLASTIC DRAINAGE PIPE AND FITTINGS

PART 1 GENERAL

1.01 SCOPE OF WORK

- A. Furnish all labor, materials, equipment and incidentals required to install solid and perforated corrugated high density polyethylene (HDPE), polypropylene (PP) pipe or polyvinyl chloride (PVC) pipe and/or structures and appurtenances as shown on the Drawings and as specified herein.

1.02 RELATED WORK

- A. Section 02210 Earthwork for Green Stormwater Infrastructure.
- B. Section 02370 Geosynthetics
- C. Section 02700 Sewerage And Drainage
- D. Section 02709 Subsurface Stormwater Storage
- E. Section 02720 Stormwater Surface Features

1.03 SUBMITTALS

- A. Submit a list of materials to be provided for work under this Section for any products not covered under PWD Quality Certification Standards. Include the name and address of the materials producer, the location from which the materials are to be obtained, part numbers, and shop drawings.
- B. Certificates of Compliance: Before installation of any Thermoplastic Pipe or Fittings, submit an acceptable Certificate of Compliance to PWD for each such unit, in accordance with QC-13.
- C. In the event of unavailability of a specified product from any and all approved manufacturers, submit both certification of unavailability and shop drawings showing details of pipe, fittings, joints and construction methods from an alternate source.

1.04 REFERENCE STANDARDS

- A. American Association of State Highway and Transportation Officials (AASHTO)
 - 1. AASHTO M-252 - Standard Specification for Corrugated Polyethylene Pipe (4-in to 10-in)
 - 2. AASHTO M-294 - Standard Specification for Corrugated Polyethylene Pipe (12-in to 36-in)
- B. American Society for Testing and Materials (ASTM)
 - 1. ASTM D2321 - Standard Practice for Underground Installation of Thermoplastic Pipe for Sewers and Other Gravity Flow Application.
 - 2. ASTM F2306 – Standard Specification for 12 to 60 in. Annular Corrugated Profile-Wall Polyethylene (PE) Pipe and Fittings for Gravity- Flow Storm Sewer and Subsurface Drainage Applications
 - 3. ASTM F2881 – Standard Specification for 12 to 60in Polypropylene (PP) Dual Wall Pipe and Fittings for Non-Pressure Storm Sewer Applications.

4. ASTM D3034 – Standard for Sewer PVC Pipe and Fittings
5. ASTM F477 – Standard Specification for Elastomeric Seals (Gaskets) for Joining Plastic Pipe.
6. ASTM D3212 – Standard Specification for Joints for Drain and Sewer Plastic Pipes Using Flexible Elastomeric Seals.
7. ASTM D1785 – Standard Specification for Polyvinyl Chloride (PVC) Pipe, Schedules 40, 80, and 120.
8. ASTM D 638, Test Method for Tensile Properties of Plastics.
9. ASTM D 695, Test Method for Compressive Properties of Rigid Plastics.

C. Philadelphia Water Department Quality Certification Standards (QC)

1. QC-2 Standards for Gray/Ductile Iron Castings
2. QC-13 Standards for Thermoplastic Pipe and Fittings

D. Where reference is made to one of the above standards the revision in effect at the time of bid opening shall apply.

1.05 QUALITY ASSURANCE

- A. All pipe, fittings, cleanout covers, domed riser grates and frames, and other products shall be installed to ensure a minimum loading capacity in accordance with H-20 loading, as required by Philadelphia Department of Streets. Any deviation from manufacturer's specifications for product installation (without approval by manufacturer or signed and sealed statement of adequacy by Professional Engineer) is prohibited.
- B. Thermoplastic pipe and fittings shall be provided by a certified manufacturer listed under PWD Quality Control Standard (QC) 13. In the event a specific part is neither available nor manufactured by the approved suppliers, shop drawings shall be submitted for approval by PWD prior to installation.
- C. All pipe installed under this Section shall be clean at time of installation. The Contractor shall be responsible for ensuring no dirt, debris, or other foreign material is on any surface of the piping immediately prior to installation. Piping installed that is found to contain debris shall be refused, and (in the event of clean stone bedding) the entire trench shall be removed and replaced in its entirety at no cost to the City.

1.06 MEASUREMENT AND PAYMENT

- A. Perforated HDPE/PP pipe will be paid for at the appropriate price bid per linear foot, and shall include all materials and appurtenant work, including joints, bends and fittings necessary to construct the piping as shown on the Drawings.
- B. Solid HDPE/PP pipe will be paid for at the appropriate price bid per linear foot, and shall include all materials and appurtenant work, including furnishing and placing geotextile around pipe bedding; furnishing and placing AASHTO No. 57 for pipe bedding; all fittings and fixtures necessary to construct the piping as shown on the Drawings.
- C. Riser structures will be paid for at the appropriate unit price bid for each, and shall include all materials and appurtenant work, including pipe bends, sump, fittings, domed riser grate and frame, lockable bolts, concrete collar with rebar to support frame as indicated on Drawings,

backfill needed to secure and stabilize riser structure, provision and installation of permanent domed riser protection at each domed riser, and provision of spare parts.

- D. All additional fittings and fixtures, including but not limited to cleanout pipes, cleanout frames and lids, reducers, wyes, bends and other standard fittings, and related products or work to complete the HDPE/PP piping system, will be included in the linear foot price bid for the associated piping. No additional payment shall be made for related items under this Section.
- E. No additional payment shall be made for the provision and installation of detectable underground utility marking tape as specified herein. The Contractor shall include any costs for detectable underground marking tape in the related bid items to be marked out (piping, storage trench, etc.).

PART 2 PRODUCTS

2.01 CORRUGATED HDPE OR PP PIPE AND PVC PIPE AND FITTINGS

- A. Corrugated HDPE or PP pipe shall have an annular corrugated exterior and smooth inner wall (dual wall pipe). Pipe shall be manufactured by an approved supplier under QC-13.
- B. Corrugated pipe shall be high density polyethylene or polypropylene of the size and type as shown on the Drawings, all manufactured by the same company and shall meet or exceed the following specifications as applicable: AASHTO M-252, AASHTO M-294, ASTM F2306, or ASTM F2881.
- C. Polyvinyl Chloride Pipe shall be Schedule 80 PVC or SDR-17 as a minimum pipe wall thickness.
- D. Backfilling over the pipe shall be to ASTM D2321 or the pipe manufacturer's specifications, whichever is greater. Cover shall be compacted to at least 95 percent of its maximum dry density as determined by ASTM Test D1557, Method D.
- E. Joints shall be watertight according to the requirements of ASTM D3212. Gaskets shall be made of polyisoprene meeting the requirements of ASTM F477. Gaskets shall be installed by the pipe manufacturer and covered with a removable, protective wrap to ensure the gasket is free from debris. A joint lubricant available from the manufacturer shall be used on the gasket and bell during assembly.
- F. Fittings shall be polyvinyl chloride (PVC) or high-density HDPE of the size and type as shown on the Drawings; all manufactured by the same company and shall meet or exceed the following specifications as applicable: AASHTO M-252, AASHTO M-294, ASTM F2306, and/or ASTM D3034. Fittings shall have bell and spigot connections that utilize a spun-on or welded bell and valley or saddle gasket meeting the watertight joint performance requirements of ASTM D3212.
- G. Perforated pipe shall have AASHTO Class II perforations. Class II perforations shall be located in the outside valleys of the corrugations, be circular and/or slotted, and evenly spaced around the circumference and length of the pipe. The opening area shall be no less than 0.945 square inches per linear foot (pipe diameters 4 through 10-inches).

2.02 CLEANOUTS

- A. Cleanouts shall be PVC structures in all vertical sections, with adapters to horizontal dual wall corrugated HDPE pipe. Drain covers, grates, and frames shall be ductile iron and lockable. See detailed product information below.
 - 1. PVC Schedule pipe - Harvel Plastics or approved equal.

2. PVC Fitting; Universal Bell Adapter - Nyloplast 7001-110-275 or approved equal.
 3. PVC Fitting, 8" HDPE 1/8 Bend - Nyloplast 0894ST or approved equal.
 4. PVC Fitting, 8" HDPE Wye to 6" PVC - Nyloplast 0802AG or approved equal
 5. Frame and cover; Neenah Foundry Product #19750068 for frame and Product #19750070 for lid or approved equal. Frame and/or cover to be stamped "PHILADELPHIA WATER" as shown on Drawings. Frame and lid to be lockable by means of stainless steel bolts.
- B. Locking bolts: Stainless steel machine head bolts with countersunk hex key. Bolts shall be installed clean and free of grit or debris and coated using white lithium grease or equivalent metal-to-metal lubricant and rust protector prior to initial installation.

2.03 DOMED RISER STRUCTURES

- A. Domed riser structures shall be mated directly to HDPE/PP piping with watertight seals and fittings. Riser components shall either be HDPE/PP conforming to the standards above or ductile iron.
1. Nyloplast 12" Inline Drain, Part # 2712AG or approved equal. For domed riser with sump, Nyloplast 12" Drain Basin, Part # 2812AG or approved equal.
 2. Neenah Inlet Frame and Beehive Grate, Part # R-2560-G/C, or Nyloplast Grate and Frame, Part # 1299CGD-L, or approved equal.
 3. Locking mechanism: Crimped steel cable looped through grate bars attached to eyebolt set in concrete ring.
 - a. 3/16-inch (3/16") galvanized steel cable (W.W. Grainger, Inc. item no. 2TAE8 or approved equal).
 - b. Loops at ends of cable made with stainless steel sleeve and thimble set (W.W. Grainger, Inc. item no. 1DKJ9 or approved equal).
 - c. Stainless steel eyebolt, one-and-a-half-inch (1-1/2") minimum eye inside diameter, three-inch (3") shank length with washer and nut at end of shank set into concrete ring.

- 2.04 For domed riser standpipe, riser sections shall be solid (non-perforated) within the stormwater soil section of the Stormwater Management Practice. Standpipe shall have perforated sump sections within the stormwater trench (uniformly graded stone) section of the Stormwater Management Practice. Length of perforated sump section shall be as shown on the Drawings, but not less than twelve-inches (12"). Perforations shall be one half-inch (0.5") diameter, drilled vertically and radially two-inches (2") apart, on center, and offset one-inch (1") every other row. Bottom cap shall be a twelve-inch (12") diameter solid HDPE cap.

PERMANENT DOMED RISER PROTECTION

- A. Permanent domed riser (inline drain) protection shall be as indicated on the Drawings. If no permanent riser protection is identified on the drawings, the permanent riser protection shall be the standard ADS Product No. 6212NYFX for domed grate inlets, as manufactured by Inlet and Pipe Protection Inc. (a division of ADS, Inc.), or approved equal.
- B. Permanent riser protection shall have the following properties (minimum):
1. Sediment bag for 12" domed riser grate:
 - a. Clean Water Flow rate: 137 gallons per minute per square foot (gpm/sf)

- b. AOS: 140 (US Sieve)
- c. TSS Removal with Average Flow Rate of 70 GPM: 98%

2. Frame

- a. Stainless steel construction
- b. Integral lifting points

2.05 DETECTABLE UNDERGROUND TAPE

- A. Detectable Warning Tape shall be six inches wide (6”), 5-mil thickness, with aluminum foil core. Tape shall be printed with an appropriate legend (“Caution: Buried Storm Sewer Below” or as approved) and shall conform to the color standards of the APWA for buried utilities (green for sewer).

PART 3 EXECUTION

3.01 INSTALLATION OF HDPE AND PP PIPE AND FITTINGS

- A. No single piece of pipe shall be laid unless it is straight. The centerline of the pipe shall not deviate from a straight line drawn between the centers of the openings at the ends of the pipe by more than one-sixteenth of an inch ($1/16$ ”) per foot of length. If a piece of pipe fails to meet this requirement check for straightness, it shall be rejected and removed from the site.
- B. All pipe shall be examined before laying and no piece shall be installed which is found to be defective. All piping shall be reasonably clean and free of dirt and debris prior to installation. All pipe and fittings shall be thoroughly cleaned before installation.
- C. All piping shall be sound and clean before installation. When installation is not in progress for any length of time, the open ends of the pipe shall be closed by watertight plug or other approved means. Good alignment shall be preserved during installation. The deflection at joints shall not exceed that recommended by the manufacturer.
- D. If any defective pipe is discovered after it has been installed, it shall be removed and replaced with a sound pipe in a satisfactory manner at no additional cost to PWD.
- E. After the excavation is complete to normal grade of the bottom of the trench and bottom preparation according to the Drawings and Specifications is completed, crushed stone bedding shall be placed, compacted and graded to provide firm, uniform and continuous support for the pipe. The pipe shall be laid accurately to the lines and grades indicated on the Drawings.
- F. HDPE pipe and fittings shall be installed in accordance with ASTM D2321 and the requirements of the manufacturer (see “Corrugated HDPE Pipe Installation Guide” from ADS), or as otherwise provided herein or on the Drawings. Blocking under the pipe is not permitted. Bedding shall be placed evenly on each side of the pipe to mid-diameter and hand tools shall be used to force the bedding where needed to give firm continuous support for the pipe. AASHTO #57 aggregate shall then be placed to six inches (6”) above the top of the pipe.
- G. Detectable underground utility marking tape shall be installed over all pipe not otherwise marked (see Section 02709 for pipe within a stone storage trench). The initial three feet (3’) of backfill above the bedding shall be placed in one-foot (1’) layers and carefully compacted. Generally the compaction shall be done evenly on each side of the pipe and compaction equipment shall not be operated directly over the pipe until sufficient backfill has been placed to ensure that such

compaction equipment will not have a damaging effect on the pipe. Equipment used in compacting the initial three feet (3') of backfill shall be as approved by the pipe manufacturer.

- H. Before any joint is made, the pipe shall be checked to assure that a close joint with the next adjoining pipe has been maintained and that the inverts are matched and conform to the required grade. The pipe shall not be driven down to grade by striking it. The Contractor shall maintain close pipe joints (once made) at all stages of construction activities, such that post-construction inspection of all joints shall demonstrate them to be tight and properly seated. All necessary caution shall be exercised to prevent separation of the pipe joints during installation and backfilling.
- I. Precautions shall be taken to prevent flotation of the pipe in the trench.
- J. When moveable trench bracing such as trench boxes, moveable sheeting, shoring or plates are used to support the sides of the trench, care shall be taken in placing and moving the boxes or supporting bracing to prevent movement of the pipe, or disturbance of the pipe bedding and the backfill. Trench boxes, moveable sheeting, shoring or plates shall not be allowed to extend below the top of the pipe. As trench boxes, moveable sheeting, shoring or plates are moved, crushed stone shall be placed to fill any voids created and the backfill shall be recompacted to provide uniform side support for the pipe.
- K. The use of ninety-degree (90°) bend pipe fittings is not permitted in the installation of piping. The Contractor shall use minimum-angle fittings to construct the pipe layout diagrammatically shown in the Drawings. The maximum fitting angle approved for use is forty-five-degrees (45°), and fittings of lesser angles (22½° or 11¼°) are preferred for use where practical.
- L. Anti-seep collars shall be employed as indicated on the Drawings. See Section 02709 Subsurface Stormwater Storage.

3.02 CLEANING PIPELINES

- A. As pipe laying progresses and at the conclusion of the work, thoroughly clean all new pipelines by flushing with water or other means to remove all dirt, stones, pieces of wood or other material which may have entered during the construction period. If, after this cleaning, obstructions remain, they shall be removed prior to approval and acceptance of the pipe by PWD.
- B. All pipes shall be video inspected by PWD prior to any pavement and restoration finishes. Any pipe found to be defective (crushed, open joints, blocked or compromised in any way) shall be removed and replaced as directed by PWD at no additional cost to the City. The Contractor shall be responsible for communication with PWD in advance to schedule video inspections; delays in construction incurred by awaiting inspection shall not be compensable delays.
 - 1. If the initial inspection request results in a failed inspection, a post-construction reinspection cost will be assessed for rescheduled inspection work orders that also result in a failed inspection. This cost will be assessed for all subsequent inspection work orders thereafter. Cost will be calculated based on the time spent by inspectors and whether the time was regular or overtime:
 - a. Half day (up to four hours) regular: \$692.12
 - b. Half day (up to four hours) overtime: \$953.51
 - c. Full day (four to eight hours) regular: \$1384.24
 - d. Full day (four to eight hours) overtime: \$1907.02

3.03 SPARE PARTS

- A. Contractor shall provide one (1) spare permanent domed riser protection sediment filter bag for the permanent domed riser protection, per installed inlet filter location. For tracking and delivery purposes, quantities of each spare part item are documented in a Appendix H. Spare parts shall be delivered to PWD GSI Maintenance Garage at the address below. No additional payment will be made for the provision, installation, or delivery of permanent domed riser protection.

Attn: Gerald Bright
Cell: 215-300-9079
GSI Maintenance Garage
7800 Penrose Ferry Road
Philadelphia, PA 19153

END OF SECTION

SECTION 02709
SUBSURFACE STORMWATER STORAGE

PART 1 GENERAL

1.01 SCOPE OF WORK

- A. In general, the work to be done under this section consists of construction activities pertaining to subsurface stormwater storage, including but not limited to earthwork and excavation, protection of existing features, preparation of subgrade, check dam construction, grading, sheeting and shoring, placement and compaction of clean stone, construction of domed riser standpipes, , construction of stone storage structures, sealing and waterproofing of intersecting structures and utilities, backfilling, and any incidental and related operations.

1.02 RELATED WORK

- A. Section 02135 Erosion and Sedimentation Control
- B. Section 02161 Sheeting and Shoring
- C. Section 02210 Earthwork for Green Stormwater Infrastructure.
- D. Section 02370 Geosynthetics
- E. Section 02700 Sewerage and Drainage
- F. Section 02707 Thermoplastic Drainage Pipe and Fittings
- G. Section 02720 Stormwater Surface Features
- H. Section 02732 Soil Properties Investigation
- I. Section 02736 Observation Wells

1.03 REFERENCE STANDARDS

- A. The following apply to work in this section:
 - 1. ASTM: Specifications of the American Society for Testing and Materials latest editions. Modifications specified herein shall govern where conflicts with ASTM standards occur.
 - 2. PennDOT: Publication 408 current edition of the Commonwealth of Pennsylvania Department of Transportation Specifications.
 - 3. AASHTO: American Association of State Highway and Transportation Officials, current published standards.
 - 4. PTM: Pennsylvania Test Methods, current published standards.
 - 5. APWA: American Public Works Association, Uniform Color Code.

1.04 SUBMITTALS

- A. Submit a list of materials to be provided for work under this Section including the name and address of the materials producer and the location from which the materials are to be obtained. Include:
 - 1. Aggregate: sieve analysis

- B. Submit certificates, signed by the materials producer, stating that materials meet or exceed the specified requirements.
- C. Submit samples of coarse aggregates and sand.
 - 1. Aggregate and sand: Samples of loose material in sealed bag labeled with name of material and manufacturer to be submitted for analysis by PWD. Quantity of sample by weight shall be in accordance with ASTM standards, and may be confirmed by contacting BLS directly at (215) 685-1430. Deliver the sample(s) to the loading dock entrance of the building, and call Jerome David at (215) 685-1430 upon arrival. The sample shall include the "Request for Test" form (Appendix G of the specifications)
- D. Submit unofficial results of soil investigation and double-ring infiltrometer testing upon completion. Official results shall be submitted as part of the final as-built package. See Section 02732 for soil testing requirements and Section 01300 for as-built package requirements.

1.05 QUALITY ASSURANCE

- A. All materials, methods of construction, and workmanship shall conform to applicable requirements of ASTM, PTM, PennDOT Standard Specifications and AASHTO Standards, unless otherwise specified.
- B. Upon completion of relevant excavation work, and prior to placement of geotextile and aggregate, subgrade soil shall be inspected by PWD or authorized representative. Survey or acceptable measurement by the Contractor shall verify the finished subgrade elevation in accordance with the construction plans.
- C. Upon completion of placement of subgrade storage (stone fill or as otherwise specified) and geotextile, and prior to backfilling or surface restoration, the structure shall be inspected by PWD or authorized representative. Survey or acceptable measurement by the Contractor shall verify the finished elevation(s) of the subsurface stormwater trench in accordance with the construction plans.

1.06 MEASUREMENT AND PAYMENT

- A. Backfill and placement of stone or sand for subsurface stone stormwater trenches and storage structures will be paid for at the unit price bid per cubic yard. The price shall include furnishing clean washed aggregate as specified, placement and compaction of aggregate, furnishing and placing geotextile fabric and impermeable liners, and any necessary backfill and trench protection as may be required for construction.
- B. Anti-seep collars (also referred to as waterstops) will be paid for at the appropriate unit price bid for each, and shall include all materials and appurtenant work as necessary to install the collars as shown on the Drawings.
- C. Split pipe utility sleeving for protection of existing utility crossings will be paid for at the appropriate unit price bid per linear foot. The price bid shall include all labor and materials to fully construct a water tight seal for the utility crossing sleeving as described herein and depicted on the Drawings, including but not limited to PVC piping, seals and fittings, temporary support structures, plastic welding materials and tools, and any appurtenant materials or work necessary for a complete installation. The price bid shall encompass all sleeve diameters necessary to properly encase all utility crossings indicated to be sleeved on the Drawings.

- D. Domed Riser Standpipes will be paid for at the appropriate unit price bid for each, and shall include all materials and appurtenant work as necessary to install the stone chimneys as shown on the Drawings.
- E. Protection and waterproofing of existing manholes and other structures within the limits of the storage stone shall be included in the price bid per cubic yard for the storage aggregate. The included price for protection and waterproofing of existing structures shall include all equipment, labor, and materials necessary to complete the installation of a geomembrane wrap on the exterior of all structures within the limits of the proposed storage stone. No entry of the structures is anticipated to complete this work.

1.07 DELIVERY STORAGE AND HANDLING

- A. Deliver, store, and handle all materials to ensure protection from damage.
- B. The Contractor is reminded that unprotected stockpiles of materials may be considered as degraded condition by weathering and rendered unacceptable for use by PWD. In particular, clean washed stone may become contaminated if left unprotected onsite; PWD reserves the right to require stockpile protection and/or replacement of damaged or compromised materials at no additional cost to the City.

PART 2 PRODUCTS

2.01 AGGREGATE

- A. Coarse aggregates shall meet the size and grading requirements as defined in Standard Sizes of Coarse Aggregate, Table 4, AASHTO Specifications, Part I, 19th Ed., 1998, or latest edition, unless otherwise specified.
 - 1. Maximum wash loss of 1% (ASTM C117).
 - 2. Maximum abrasion of 40% for 500 revolutions per ASTM C535 or C131 as appropriate to aggregate size.
 - 3. All aggregate shall be clean and thoroughly washed.
 - 4. Aggregate shall be 100% crushed material.
- B. Unless otherwise approved by PWD, coarse aggregate for the stormwater trenches shall be clean washed and uniformly graded as defined in Standard Sizes of Coarse Aggregate, Table 4, AASHTO Specifications, Part I, 19th Ed., 1998, or latest edition, unless otherwise specified.

1. Grading Requirements for AASHTO No 3

U.S. Standard Sieve Size	Percent Passing
2 ½" (63 mm)	100
2" (50 mm)	90-100
1 ½" (37.5 mm)	35-70
1" (25 mm)	0-15
½" (12.5 mm)	0-5

2. Grading Requirements for AASHTO No. 57

U.S. Standard Sieve Size	Percent Passing
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1 ½”(37.5 mm)	100
1” (25 mm)	95-100
½ “ (12.5 mm)	25-60
No. 4 (4.75 mm)	0-10
No. 8 (2.36 mm)	0-5

3. Any and all other specified coarse aggregates shall conform in gradation and type to the current standards of PennDOT Publication 408, Section 703 Table C.

C. Crushed concrete shall not be an acceptable substitute for coarse aggregate unless specifically authorized in writing by PWD prior to placement.

2.02 SAND

A. Sand used to line the bottom of stormwater trenches shall be AASHTO M-43 No. 9 or 10.

1. Grading Requirements for AASHTO No 9

U.S. Standard Sieve Size	Percent Passing
3/8” (9.5 mm)	100
No. 4 (4.75 mm)	85-100
No. 8 (2.36 mm)	10-40
No. 16 (1.18 mm)	0-10
No. 50 (300 µm)	0-5

2. Grading Requirements for AASHTO No 10

U.S. Standard Sieve Size	Percent Passing
3/8” (9.5 mm)	100
No. 4 (4.75 mm)	85-100
No. 100 (150 µm)	10-30

2.03 BACKFILL MATERIALS

A. See Section 02210 Earthwork for Green Stormwater Infrastructure.

2.04 SPLIT PIPE UTILITY SLEEVE

A. Utility sleeves (i.e., pass-through conduit) on new or relocated utilities shall consist of Schedule 40 PVC pipe of adequate diameter to convey the utility within unless otherwise approved by PWD.

B. Utility sleeves on existing utilities shall be split pipe conduit, Model P6F as manufactured by Conduit Repair Systems or approved equal.

C. Utility sleeves used for prefabricated modular storage systems shall be in accordance with the manufacturer’s instructions.

D. Split pipe utility sleeves shall be watertight and sealed at either ends with non-shrink grout or sealant.

- A. ANTI-SEEP COLLARS Anti-seep collars shall be quarter-inch ($\frac{1}{4}$ ") HDPE sheets cut to the dimensions indicated and installed per the Drawings. All metal fittings or attachments used shall be nylon or stainless steel (Grade 304 or better). Plastic sealant for weld shall be as suggested by manufacturer.

PART 3 EXECUTION

3.01 EXCAVATION, SUBGRADE PREPARATION, AND GRADING

- A. See Section 02210 Earthwork for Green Stormwater Infrastructure.
- B. Subgrade of infiltration beds shall be level: Plus or minus one-half inch ($\pm \frac{1}{2}$ ") is acceptable as level.
- C. Grading shall be performed to the lines and grades shown on the Drawings. All objectionable material encountered within the limits indicated shall be removed and disposed of by the Contractor.
- D. In excavation faces, all loose or protruding rocks shall be barred loose or otherwise removed to line or finished grade of slope. All cut and fill slopes shall be uniformly dressed to the slope, cross-section, and alignment shown on the Drawings or as directed by PWD or authorized representative.
- E. The bottom surface of any excavation for an infiltration system shall be uncompacted yet stable. The top three to six inches (3"-6") of remaining subgrade soils shall be scarified prior to installation of the system, unless otherwise directed by PWD.
- F. Prior to backfill for stone stormwater systems, Double Ring Infiltrometer Testing shall be conducted in one location for each system footprint that is not fully lined with an impermeable (HDPE) liner. Test holes shall be located within the limits of the proposed trench excavation and results of the testing shall be submitted to PWD or an authorized representative. Please see Section 02732 for additional details.

3.02 INSTALLATION OF SAND LAYER

- A. Sand layer, where specified in the Drawings, shall be installed across the bottom of the infiltration bed, immediately after approval of subgrade preparation (to include infiltration testing) by PWD. Sand shall be compacted in a single six-inch (6") lift, maximum, and be finished to a level surface. Geotextiles shall be external to the sand layer; sand is an insufficient material to anchor any geotextile or geomembrane used.

3.03 GEOTEXTILES AND GEOMEMBRANES

- A. See Section 02370 for installation of geotextiles and geomembranes.

3.04 INSTALLATION OF SUBSURFACE STONE STORMWATER TRENCHES

- A. Observation wells shall be installed as indicated in the Drawings prior to placement of aggregates in the trenches. Care shall be taken to avoid compacting the bottom of the bed during the excavation necessary for observation well installation. All well covers shall be level with the finished grade upon surface restoration. Please see Section 02736.
 - 1. When installed within a stormwater basin, such as a rain garden or stormwater bumpout, the PVC cap used in lieu of the well cover shall extend three inches above the maximum ponding depth, as indicated on Drawings. Contractor is strongly encouraged to cut final height of PVC after surface features have been installed at the designed elevations.

- B. Install coarse aggregate in eight inch (8") maximum lifts. Lightly compact each layer with equipment, keeping equipment movement on storage bed subgrades to a minimum. Minimum compaction should be made with a standard walk-behind vibratory compactor; larger equipment may be approved on a case-by-case basis by PWD. Hand compaction and settlement shall not be considered sufficient.
- C. Continue placing and compacting aggregate lifts to the full depth indicated on the Drawings. Once aggregate is backfilled and compacted to grades indicated on the Drawings (and elevations verified for the as-built drawings), geotextile shall be folded over and overlapped on top of the bed to prevent soil intrusion into the aggregate bed.
- D. Install detectable underground utility warning tape at the perimeter on all sides of the subsurface stone storage trench.
- E. Clean washed stone shall be protected from sedimentation at all times. Any stone left exposed (unprotected) during a rainfall event or at the end of any workday shall be considered compromised, and may be required (at the sole discretion of PWD) to be removed and replaced with new material at no additional cost to the City.

3.05 INSTALLATION OF SPLIT PIPE UTILITY SLEEVES

- A. Where an existing utility lateral or branch main intersects the stone stormwater storage system, a pass-through conduit (split pipe utility sleeve) shall be constructed to convey the existing utility where possible.
- B. The Contractor shall coordinate sleeving of all existing and intersecting utility lines with the owners/operators of said utility lines.
- C. PWD shall review and approve any pass-through conduits for utility lines not indicated on the Drawings in advance and any utility laterals that may be reconstructed such that a pass-through conduit is not necessary shall be so reconstructed. If, in the determination of PWD, a pass-through conduit is insufficient, a trench 'break' may be constructed at the direction of PWD, consisting of standard backfill to protect the existing utility. Any pass-through conduits for utilities not indicated on the Drawings found to be necessary upon excavation will be paid at a contingency price.
- D. Pass-through conduits shall be constructed of an adequate diameter to convey the utility lateral within.
- E. Waterstops shall be installed at either end of the pass-through conduit, outside the geotextile wrap of the stone stormwater storage.
- F. The conduit shall be of watertight construction, and shall be sealed at either end around the existing pipe with non-shrink grout or sealant. PWD shall be allowed to inspect the watertight seal to determine its integrity. If deemed inadequate, the Contractor shall make any and all effort needed to ensure compliance with this requirement. Any standpipe, valve, or other vertical feature of the crossing utility shall be sufficiently isolated from the stormwater storage and remain accessible. This may be accomplished by creating a standpipe sleeve, or by excluding a small separation area around the vertical feature from the stormwater storage trench stone.

3.06 INSTALLATION OF ANTI-SEEP COLLARS (WATERSTOPS)

- A. Anti-seep collars shall be employed as indicated on the Drawings. Anti-seep collars are typically used to prevent water from flowing along a pipe trench and impacting existing utilities

- B. Anti-seep collars shall be installed on pipes leading from stormwater storage areas to surrounding substances as depicted on the Drawings, or as directed by PWD. Geotextile liners, if in place at the anti-seep collar shall be minimally cut to allow for the pass-through section and then sealed within the joint between the solid external sheets of the anti-seep collar. All fittings and seals shall be installed to manufacturer's specifications for a watertight seal.

3.07 INSTALLATION OF PIPING

- A. See Section 02707 Thermoplastic Drainage Pipe and Fittings for requirements for thermoplastic pipe installation, inspection, and cleaning.

3.08 BACKFILL

- A. Follow requirements of Section 02210 Earthwork for Green Stormwater Infrastructure.

END OF SECTION

SECTION 02720
STORMWATER SURFACE FEATURES

PART 1 GENERAL

1.01 SCOPE OF WORK

- A. In general, the work to be done under this section consists of construction activities pertaining to stormwater surface features, such as rain gardens, bumpouts, tree pits, and planter boxes. This work may include earthwork and excavation, protection of existing features, preparation of subgrade, concrete and earthen check dam construction, grading, sheeting and shoring, construction of stormwater storage structures, installation of energy dissipators, backfilling, and any incidental and related operations.

1.02 RELATED WORK

- A. Section 02135 Erosion and Sedimentation Control
- B. Section 02210 Earthwork for Green Stormwater Infrastructure.
- C. Section 02370 Geosynthetics
- D. Section 02500 Paving and Surfacing
- E. Section 02700 Sewerage and Drainage
- F. Section 02707 Thermoplastic Drainage Pipe and Fittings
- G. Section 02709 Subsurface Stormwater Storage
- H. Section 02830 Green Stormwater Infrastructure Soils
- I. Section 02925 Landscape Fencing

1.03 REFERENCE STANDARDS

- A. The following apply to work in this section:
 - 1. ASTM: Specifications of the American Society for Testing and Materials latest editions. Modifications specified herein shall govern where conflicts with ASTM standards occur.
 - 2. PennDOT: Publication 408 current edition of the Commonwealth of Pennsylvania Department of Transportation Specifications.
 - 3. AASHTO: American Association of State Highway and Transportation Officials, current published standards.
 - 4. PTM: Pennsylvania Test Methods, current published standards.
 - 5. NRCS Soils Manual: National Resources Conservation Service of the USDA, Soil Survey Manual and/or Soil Survey Laboratory Methods Manual, current editions.
 - 6. Test Methods for the Examination of Composting and Compost (TMECC), U.S. Composting Council / U.S. Department of Agriculture, current edition.
 - 7. Association of Official Analytical Chemists (AOAC), Official Methods of Analysis, current edition.

1.04 SUBMITTALS

- A. Submit a list of materials to be provided for work under this Section including the name and address of the materials producer and the location from which the materials are to be obtained. Include:
 - 1. Aggregate: sieve analysis
 - 2. Drain basin and pipe: product manufacturer, specification sheets, and performance schedule
- B. Submit certificates, signed by the materials producer, stating that materials meet or exceed the specified requirements.
- C. Submit samples
 - 1. Aggregate: Samples of loose material in sealed bag labeled with name of material and manufacturer to be submitted for analysis by PWD. Quantity of sample by weight shall be in accordance with ASTM standards, and may be confirmed by contacting BLS directly at (215) 685-1430. Deliver the sample(s) to the loading dock entrance of the building, and call Jerome David at (215) 685-1430 upon arrival. The sample shall include the "Request for Test" form (Appendix G of the specifications)
 - 2. Samples of any block or stone to be incorporated into the structures shall be approved by PWD (except existing on-site stone to be reused). Samples may be delivered to the worksite or PWD Construction field office at the discretion of PWD.

1.05 QUALITY ASSURANCE

- A. All materials, methods of construction, and workmanship shall conform to applicable requirements of ASTM, PTM, PennDOT Standard Specifications and AASHTO Standards, unless otherwise specified.
- B. Upon completion of relevant excavation work, and prior to placement of any materials under this section, subgrade shall be inspected by PWD or authorized representative. Survey or acceptable measurement by the Contractor shall verify the finished subgrade elevation in accordance with the construction plans.
- C. Soil Testing Laboratory Qualifications (if necessary): The laboratory shall be an independent laboratory, recognized by the State Department of Agriculture, preferably a university or cooperative extension laboratory. The testing laboratory must have experience in performing agronomic testing including physical and chemical properties of soil. Tests shall be made in strict compliance with the standards of the Association of Official Analytical Chemists and follow standards from the NRCS Soils Manual and ASTM testing methods applicable to the specific tests requested. Laboratory shall have staff fully qualified to review test results, and to make recommendations to amend samples based on what is planned to grow in the soil. American Association for Laboratory Accreditation (A2LA) certification is preferred.
- D. Upon completion of placement of surface stormwater features, and prior to backfilling or surface restoration, the structure shall be inspected by PWD or authorized representative. Survey or acceptable measurement by the Contractor shall verify the finished elevation(s) of all features in accordance with the construction plans.

1.06 MEASUREMENT AND PAYMENT

- A. Standalone stormwater trees and tree pits will be paid for at the appropriate unit price bid for each. The price bid shall include any necessary sheeting and shoring, furnishing, geotextiles,

furnishing and placement of any backfill required due to over excavation, and any other appurtenant work as required.

- B. Energy dissipators, rip rap, splash pads, spillways, flared end sections and endwalls shall be paid for at the appropriate unit price bid for each unit. The price bid shall include all work necessary to construct features and may include excavation for foundation, subgrade preparation, delivery, storage and installation of all materials such as stone subbase, concrete or cast-in-place units, reinforcing steel, geotextiles, stone or masonry units for use in splash pad, and any appurtenant work as may be required to construct a functional energy dissipator as seen on Drawings.
- C. Payment for curb extensions and non-standard curbing for green stormwater infrastructure features will be paid for under the price bid per linear foot of concrete curbing. See Section 02500. No additional payment will be made for construction of standard curbing for stormwater structures.

PART 2 PRODUCTS

2.01 CONCRETE FOR CONCRETE SURROUNDS AND NON-STANDARD CURBING

- A. All concrete to be used for precast or cast-in-place surrounds and non-standard curbing shall have a minimum specified compressive strength of 3500 pounds per square inch (psi) per ACI 318 / ASTM C39 unless otherwise specified. All concrete shall conform to PWD's Standard Specifications for Masonry Concrete.
- B. All exposed concrete surfaces shall be finished to a smooth face. Air pockets, exposed lifting points, cracks, or other visible damage shall not be acceptable. All finished edges and corners shall be chamfered or rounded, typically three-quarters of an inch ($\frac{3}{4}$ ") or as specified on the Drawings.
- C. Curbing for stormwater bumpouts shall comply with the requirements in Section 02500 and shall be secure and unmovable without the use of mechanized power equipment.
- D. Coloring agents, stains, or paints to be utilized shall be as specified in color and composition. Any additives to be included prior to placement shall be verified by the concrete mix designer as not compromising the specified strength. All concrete indicated as 'colored' on the Drawings shall be designed and installed with integrally-colored concrete.
 - 1. Integrally-colored concrete shall contain L.M. Scofield Company Colored CHROMIX P Admixture or approved equal. Color shall be as noted on the Drawings.
 - 2. Admixtures shall be colored, water-reducing, admixture containing no calcium chloride with coloring agents that are limeproof and ultraviolet resistant.
 - 3. Admixture shall conform to the requirements of ACI 303, ASTM C979, ASTM C494 and AASHTO M 194.
 - 4. Integrally colored concrete shall use curing compounds that comply with ASTM C309 and are manufactured by the same manufacturer as the admixture for consistency. On exterior surfaces use LITHOCHROME COLORWAX by L.M. SCOFIELD to cure flatwork and Cureseal sealing compound to provide curing and sealing, or approved equals.

2.02 BACKFILL MATERIALS

- A. Ordinary Backfill Material may include all material excavated from the trench and free of objectionable matter, unless rejected by PWD or authorized representative. The Contractor shall furnish any deficiency of Ordinary Backfill Material.

- B. Select Backfill Material shall be furnished where specified in accordance with PennDOT Publication 408 Specifications, Section 703.3, Select Granular Material-2RC (as amended). The use of slag as Select Backfill Material is hereby prohibited.
- C. Backfill placed above any subsurface stormwater trench shall be PennDOT 2A coarse aggregate stone unless otherwise specified on Drawings. Furnish Select Backfill Material in accordance with the most recent revision or amendment to PennDOT Publication 408 Specification, Section 703.2, Coarse Aggregate - 2A.

2.03 EROSION CONTROL BLANKETS

- A. Erosion Control Blanket shall be a 100% jute fiber hand-woven into a one-inch by one-inch (1" x 1") net. Jute netting shall be of a uniform, open, plain weave, undyed and unbleached single jute yarn. Yarn shall be of loosely-twisted construction, and shall not vary in thickness by more than one-half its normal diameter. Blanket shall be one hundred percent (100%) biodegradable.
- B. Minimum width shall be forty-eight inches (48") or plus/minus one inch (+/- 1") from manufacturer rated width. Weight shall average a minimum of 0.9 pounds per square yard.
- C. Netting shall at minimum consist of seventy-eight (78) warp ends per forty-eight-inch (48") width, and forty-one (41) weft ends per linear yard.
- D. Blanket shall be ACF Environmental Woven Jute Mesh Erosion Control Blanket, or approved equal. Furnish attachment devices as recommended by blanket manufacturer.

2.04 ENERGY DISSIPATORS

- A. Energy dissipators shall be constructed as depicted on the Drawings. Any variation from the Drawings shall be approved by PWD prior to construction via an official submission of supplementary drawings with dimensions and materials listed.
- B. Stone for energy dissipators shall be as described on the Drawings in size, color, material, and cut. Samples of any stone to be utilized shall be approved by PWD.
- C. All concrete to be used for concrete splash pads or energy dissipators shall have a minimum specified compressive strength of 3500 pounds per square inch (psi) per ACI 318 / ASTM C39 unless otherwise specified. All concrete shall conform to PWD's Standard Specifications for Masonry Concrete.
- D. All exposed concrete surfaces shall be finished to a smooth face. Air pockets, exposed lifting points, cracks, or other visible damage shall not be acceptable. All finished edges and corners shall be chamfered or rounded, typically three-quarters of an inch (¾") or as specified on the Drawings.

PART 3 EXECUTION

3.01 EXCAVATION, SUBGRADE PREPARATION, AND GRADING

- A. See Section 02210 Earthwork for Green Stormwater Infrastructure.
- B. Subgrade of infiltration beds shall be level: Plus or minus one-half inch (+/- ½") is acceptable as level.
- C. Grading shall be performed to the lines and grades shown on the Drawings. All objectionable material encountered within the limits indicated shall be removed and disposed of by the Contractor.

- D. In excavation faces, all loose or protruding rocks shall be barred loose or otherwise removed to line or finished grade of slope. All cut and fill slopes shall be uniformly dressed to the slope, cross-section, and alignment shown on the Drawings or as directed by PWD or authorized representative.
- E. In locations where subsurface stone storage underlies the stormwater surface feature, all work to prepare the stone storage layer shall be completed prior to installation of surface features (see Section 02709). Subsurface stone storage shall be approved by PWD prior to installation of surface structures. Appropriate stone foundation shall be utilized in all locations for precast and cast-in-place concrete surrounds, concrete check dams and curbing (stone storage may be considered as foundation if compacted stone extends completely under the concrete surrounds).
- F. In locations where the system is not underlain by subsurface stone storage or other feature, double-ring infiltrometer tests shall be performed on the prepared subgrade of the surface feature. Double ring infiltrometer testing shall be conducted in one location for each system footprint that is not fully lined with an impermeable (HDPE) liner, or as specified herein. Tests shall be located within the limits of the proposed surface feature, and results of the testing shall be submitted to PWD or an authorized representative. Please see Section 02732 for additional details.

3.02 BACKFILL

- A. Backfill other than planting soil or aggregate as described elsewhere in the Specifications (such as ordinary or select backfill used to fill over excavation outside installed structures) shall be brought up evenly on all sides in eight inch (8") lifts. Each layer of backfill material shall be compacted by rolling, tamping, or vibrating with mechanical compacting equipment or hand tamping to ninety-five percent (95%) compaction. If rolling is employed, it shall be by use of a suitable roller or tractor, being careful to compact the fill throughout the full width of the trench. Use a pad foot roller for cohesive fill (silts and clay) and a smooth drum roller or vibrating plate for coarse grained fill (sands and gravels). If material is compacted by hand-tamping, there must be at least one laborer tamping for each laborer shoveling material into the trench. All backfilling operation shall be in accordance with the Standard Specifications for Excavation, Refilling, Grading, Landscaping and Repaving.

3.03 GEOTEXTILES AND GEOMEMBRANES

- A. See Section 02370 for installation of geotextiles and geomembranes.

3.04 INSTALLATION OF BUMPOUTS

- A. All concrete structures shall be placed on stone bedding for stability. In the case where a concrete structure is atop a subsurface stone storage area, this may be considered adequate bedding. In all other cases, concrete structures shall be placed on a minimum four-inch (4") thick layer of clean AASHTO#57 stone, to extend a minimum of four inches (4") beyond the structure on all sides.
- B. All curbing and precast or cast-in-place concrete surrounds shall be installed to the dimensions and elevations indicated on the Drawings. Cast-in-place structures shall be allowed to cure prior to further operations. Connections to inlets, piping, and other associated structures shall be completed prior to backfilling operations. Detailed survey shall confirm installed structure elevations prior to additional work such as backfilling or connection to other systems.

- C. Install all supporting and accessory structures within the stormwater surface feature, such as but not limited to riser structures at specified elevations, splash blocks and energy dissipators, inlet covers and lay-by inlets, check dams, and wheel guards.
- D. Install all permanent protective ornamental fencing in locations as shown on the Drawings and in the manner as specified by the manufacturer. Care shall be taken by the Contractor not to scuff or otherwise compromise the finish of the fencing; any damaged pieces may be required by PWD to be replaced at no additional cost to the City.

3.05 INSTALLATION OF TREE PITS

- A. Furnish, install, monitor and maintain excavation support (e.g., shoring, sheeting, bracing, trench boxes, etc.) as required by Federal, State or local laws, ordinances, regulations and safety requirements. Support the sides of excavation, to prevent any movement which could in any way reduce the width of the excavation below that necessary for proper construction and protect adjacent structures from undermining, settlement or other damage. All sheeting and shoring employed in construction must be removed.
- B. Soil shall be placed over approved areas to a depth sufficiently greater than required, so that after compaction, the complete work will conform to the lines, grades and elevations indicated (including mulch). Structural soil shall be compacted to the manufacturer's specifications. Stormwater soil shall be placed in twelve inch (12") lifts. Lightly compact each lift of soil to prevent settlement and consolidate soils. Compaction shall be approximately eighty to eighty-five percent (80-85%) standard Proctor Density (as determined by ASTM D698-12 or ASTM D1556-07). Approved compaction equipment includes a smooth-drum roller or plate compactor, and vibratory compactors are prohibited. Typically one to three (1-3) passes per lift will achieve sufficient compaction; PWD reserves the right to require Proctor testing on any placed materials.
- C. Once placed, eliminate traffic of all vehicles and/or heavy equipment in the areas that will be prepared for planting operations.

3.06 FINE GRADING

- A. After soil has been spread, it shall be carefully prepared by hand scarifying or rototilling, cultivating or hand raking. All large stiff clods, lumps, brush, roots, stumps, litter and other foreign material shall be removed and disposed of in accordance with Federal, State, and local regulations. The areas shall also be free of smaller stones, in excessive quantities, as determined by PWD. Limit finish grading to areas that can be covered with stapled erosion control blanket and planted within two days.
- B. Coordinate construction to limit excessive traffic over installed soils. Once placed, eliminate trafficking of all vehicles and/or equipment in the areas that will be prepared for planting operations.
- C. The Contractor shall make all efforts to not destroy soil structure by excessive traffic, working, or compacting the soil throughout the planting operation. Utilize the smallest practicable piece of low ground pressure mechanical equipment in the adjacent areas.
- D. Prepare soil before installing blankets, including any application of fertilizer, lime, organic matter, and establishment of finished grades. Add any required soil amendments and weed preventer via broadcasting, shallow tilling, or appropriate minimally-destructive method to soil.
- E. Fine-grade placed soil to slopes and elevations indicated on the Drawings. Limit finish grading to areas that can be covered with stapled erosion control blanket or mulched covering within two

days. All areas that will receive surface flows or experience ponding of water shall be covered in erosion control blanket, and no mulch shall be applied to these areas.

- F. Stapled erosion control blankets shall be installed on top of the finished grade inside each area to be covered. Each area shall receive one continuous stapled blanket. Overlaps, seams, or adjacent pieces of blankets are not acceptable, except where necessary to connect two complete rolls of blanket. Connection of dissimilar material is unacceptable. Seams shall conform to manufacturer's specifications.
- G. Along the concrete wall and/or soil edge of each structure, anchor the edge of the blanket in a six inch (6") deep trench between the face of each concrete wall (or existing material) and the planting soil. At inside corners of structures, cut each corner of the blanket to prevent overlaps when blanket is turned down into trench. Secure the blanket over the finished grade soil with a row of staples spaced approximately twelve inches (12") apart, in staggered rows, and parallel to each wall of the structure.
- H. Final soil stabilization is subject to approval by PWD. Final payment for a structure may not be made without PWD's acceptance of the final surface.

END OF SECTION

SECTION 02732
SOIL PROPERTIES INVESTIGATION

PART 1 GENERAL

1.01 SCOPE OF WORK

- A. The work of this Section includes soil investigation tests for proposed stormwater system locations, including:
 - 1. Double-ring infiltrometer test: a field method to determine the infiltration of water into soil at locations as specified on the contract documents.
- B. Tests are to be performed in the actual excavated footprint of any proposed stormwater system that is not fully lined with an impermeable (HDPE) liner, prior to the performance of any associated construction activities (aside from those necessary to secure the site for the soil investigation) for the stormwater system in that location.

1.02 RELATED WORK

- A. Section 02709 Subsurface Stormwater Storage
- B. Section 02720 Stormwater Surface Features

1.03 REFERENCE STANDARDS

- A. American Society for Testing Materials (ASTM)
 - 1. ASTM C294 - Standard Descriptive Nomenclature for Constituents of Concrete Aggregates.
 - 2. ASTM C420 - Standard Practice for Investigating and Sampling Soil and Rock for Engineering Purposes.
 - 3. ASTM D1586 - Standard Test Method for Standard Penetration Test and Split-Barrel Sampling of Soils.
 - 4. ASTM D1587 - Standard Practice for Thin-Walled Tube Sampling of Soils for Geotechnical Purposes.
 - 5. ASTM D2487 - Standard Practice for Classification of Soils for Engineering Purposes.
 - 6. ASTM D2488 - Standard Practice for Description and Identification of Soils (Visual-Manual Procedure).
 - 7. ASTM D2573- Standard Test Method for Field Vane Shear Test in Cohesive Soil.
 - 8. ASTM D3385- Standard Test Method for Infiltration Rate of Soils in Field Using Double-Ring Infiltrometer.
 - 9. ASTM D6913- Standard Test Methods for Particle-Size Distribution (Gradation) of Soils using Sieve Analysis.
- B. American Association of State Highway and Transportation Officials (AASHTO)
 - 1. Not Used.
- C. Other Agencies

1. Pennsylvania Department of Environmental Protection (PADEP), Chapter 73, Standards for on lot sewage treatment facilities, 73.15 Percolation Tests.
2. Pennsylvania Stormwater Best Management Practices Manual; Appendix B, Soil Infiltration Testing Procedures & Appendix C, Soil Evaluation and Soil Infiltration Testing.
3. National Soil Survey Center (NRCS) Field Book for Describing and Sampling Soils.
4. National Soil Survey Center (NRCS) Soils Textural Triangle.
5. U.S. Army Corps of Engineers – Engineer Manual 1110-2-2503

1.04 SUBMITTALS

- A. Field Records shall include all pertinent information developed. Unofficial copies of field records shall be submitted to PWD within 3 working days of testing.
 1. At each assigned site, record the project name and location, and a description of the assigned site. If on Railroad Property, record presence of Railroad Watchmen and other safety personnel.
 2. For each testing location, record the assigned number; location; ground surface elevation; name of driller; name of inspector; day, date, and time work began; method and apparatus used; details of the character of materials encountered, the depths at which encountered, and the thickness of strata; identification of soils in accordance with ASTM D 2488 and of rock materials in accordance with ASTM C 294; all observations pertaining to groundwater; day, date, and time work completed; time of sunset and/or sunrise; times of work interruption, weather conditions including air temperature.
 3. For each Soil Sample or Rock Core Sample, record the boring number; sample number, method and apparatus used; depth below ground surface; identification of soil or rock material; penetration resistance; core recovery.
- B. Final testing logs shall be submitted to PWD as part of the final as-built package.
 1. Logs shall be neatly organized reports, containing all information from the Field Records, plus results of groundwater observations and physical tests on soil samples, and tabulations of data for soil sampling in a vertical scale of one inch to five feet. Logs shall specify the green stormwater infrastructure system number in which the test was located.
 2. Logs shall include a location map indicating the green stormwater infrastructure system number and the actual location of the testing related by dimension to a fixed point (or points) to remain after construction.

1.05 MEASUREMENT AND PAYMENT

- A. Testing of soil properties by double-ring infiltrometer and soil sampling shall be paid at the unit price bid for each location.
 1. The unit price bid for each location shall include the following and all appurtenant work and materials:
 - a. Mobilization; furnishing; transporting; setting up; dismantling; and removing boring equipment at times and locations as specified or as directed by PWD.
 - b. Preparing the test site: Excavating the test pit including the use of a backhoe-excavated trench as necessary to set up the double ring infiltrometer. The test pit shall be installed

with supportive excavation as necessary in accordance with the Occupational Safety & Health Administration (OSHA) Regulations for excavations.

- c. Soils classification testing shall be performed in the same location as the double-ring infiltrometer test. Any samples required for additional testing shall be taken, and all soil profiles shall be recorded and evaluated for classification.
- d. Placing, calibrating and recording the data of the double ring infiltrometer.
- e. Restoring all disturbed paving, curb, grass areas as required, and protecting the site.
- f. Preparation and delivery of final testing logs.

1.06 QUALITY ASSURANCE

- A. Soil sampling and infiltration tests shall be performed by a Contractor with at least 5 years of experience in geotechnical engineering services. The Contractor shall have demonstrated experience with infiltration testing in soils. Field supervision by a Professional Geologist or Engineer is recommended but not required; final testing logs shall be signed and certified by a licensed professional geologist or engineer.

PART 2 PRODUCTS Not Used

PART 3 EXECUTION

3.01 INFILTRATION RATE OF SOIL USING DOUBLE-RING INFILTROMETER

- A. The Double-ring Infiltrator consists of two concentric metal rings. The rings are driven into the ground and filled with water. The outer ring helps to prevent divergent flow. The drop in water level or volume in the inner ring is used to calculate an infiltration rate. The infiltration rate is determined as the amount of water per surface area and time unit that penetrates the soils. The diameter of the inner ring should be approximately 50% to 70% of the diameter of the outer ring, with a minimum inner ring size of 12 inches. Double-ring infiltrometer testing equipment that is designed specifically for this purpose may be purchased.
- B. Double-Ring Infiltrator Field Test shall be conducted as follows:
 - 1. Double-ring infiltrometer field test shall be performed as described in ASTM D3385, except as modified herein.
 - 2. Infiltration testing shall not be performed during any precipitation event or within twenty-four (24) hours after the end of any event equivalent to a half-inch ($\frac{1}{2}$ " or greater. Infiltration testing shall not take place when the temperature is below freezing, or in frozen soils. Tests performed from 1 June to 31 December shall require a twenty-four hour presoaking period prior to testing.
 - 3. The test requires an area sufficient to set up the equipment (typically ten feet square), and should be nearly level. The test shall be set up at the same elevation as the finished bottom of the proposed stormwater feature. (Usually the lowest excavated elevation.) Excavation shall be performed as necessary to reach this desired elevation (concurrent a soil testing is suggested) and to provide a stable and level testing location.
 - a. Prepare level testing area.
 - b. Place outer ring in place; place flat board on ring and drive ring into soil to a minimum depth of two inches.

- c. Place inner ring in place; place flat board on ring and drive ring into soil a minimum of two inches. The bottom rim of both rings should be at the same level.
 - d. The test area should be presoaked immediately prior to testing. Fill both rings with water to water level indicator mark or rim at 30 minute intervals for 1 hour. The minimum water depth should be 4 inches. The drop in the water level during the last 30 minutes of the presoaking period should be applied to the following standard to determine the time interval between readings:
 - 1) If the water level drop is 2 inches or more, use 10-minute measurement intervals.
 - 2) If the water level drop is less than 2 inches, use 30-minute measurement intervals.
 4. Obtain a reading of the drop in water level in the center ring at appropriate time intervals. After each reading, refill both rings to water level indicator mark or rim. Measurement to the water level in the center ring shall be made from a fixed reference point and shall continue at the interval determined until a minimum of eight readings are completed or until a stabilized rate of drop means a difference of $\frac{1}{4}$ inch or less of drop between the highest and lowest readings of four consecutive readings.
 5. The drop that occurs in the center ring during the final period or the average stabilized rate, expressed as inches per hour, shall represent the infiltration rate for that test location.
- C. Submit field records immediately upon completion of tests and final results as specified in Part 1. Contractor shall not proceed with construction until PWD has reviewed the initial field records.

3.02 PAVING RESTORATION

- A. Properly abandon the sampling locations following the tests to prevent contaminant from entering the groundwater and maintain a safe condition for traffic.
- B. The test holes shall be plugged with bentonite or other approved equal plugging material at the bottom or slightly below the groundwater table. Place, up to subgrade elevation, ordinary backfill material (with all stones and other objectionable material removed). Compact the hole plug and ordinary backfill material by tamping.
- C. Place a 6-inch thickness of High Early Strength (H.E.S.) Cement Concrete at the sampling locations and test holes to match existing surrounding grade, unless the Contract Drawings or other Specification Sections detail restoration or protection requirements. No testing location may be left unprotected and/or unrestored.
- D. Restore grass or other surfacing as appropriate to the satisfaction of the abutting property owners as necessary.

END OF SECTION

SECTION 02736
OBSERVATION WELLS

PART 1 GENERAL

1.01 SCOPE OF WORK

- A. The work of this section consists of construction of observation wells to observe and record subsurface hydrology. This may include observation wells, peak gauges, and/or other monitoring methods. Construction may include excavation, PVC or HDPE piping, metal covers, stone fill, geotextile, and any and all incidental work required for the completion of the observation wells as shown on the Drawings.

1.02 RELATED WORK

- A. Section 02370 Geosynthetics
- B. Section 02709 Subsurface Stormwater Storage
- C. Section 02720 Stormwater Surface Features

1.03 REFERENCE STANDARDS

- A. American Society of Testing Materials (ASTM)
 - 1. ASTM A48 – Standard Specification for Gray Iron Castings.
 - 2. ASTM A536 – Standard Specification for Ductile Iron Castings

1.04 SUBMITTALS

- A. Submit a list of materials to be provided for work under this Section including the name and address of the materials producer and the location from which the materials are to be obtained.

1.05 MEASUREMENT AND PAYMENT

- A. Observation wells will be paid for at unit price bid for each. The price shall include all materials and appurtenant work necessary to fully construct wells, including but not limited to hand digging sump for observation well below bottom of excavation, auger excavation of wellholes outside of stormwater structures, furnishing and placing geotextile, furnishing and placing solid and slotted sections of PVC and HDPE well, backfill of sump with aggregate indicated in Drawings, furnishing and placing well frames and covers, and furnishing one additional well cover for each observation well installed.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Observation wells
 - 1. Observation wells shall be four-inch (4") inside diameter rigid Schedule 40 PVC pipe in upper section, with solid cap.
 - 2. Slotted sections shall be four-inch (4") PVC slotted well with 0.01 slots and attached plug, Atlantic Screen and Manufacturing item # OES40400 or approved equivalent.
 - 3. Covers for observation wells shall be lockable ductile iron with gray iron frames, East Jordan Ironworks product #00157026 or approved equivalent. Cover and/or frame shall be stamped

“MONITORING WELL”. Bolts shall be machine head stainless steel with hex key insert as appropriate. Bolts shall be installed clean and free of grit or debris and coated using white lithium grease or equivalent metal-to-metal lubricant and rust protector prior to initial installation

4. Protective casing for observation wells in unpaved areas that experience surface ponding shall be Plastech Plus built-in aluminum mounting casing, or approved equal.
- B. Aggregate fill around observation wells shall be consistent with surrounding aggregate. In the case of a free-standing well which is not located within a given stormwater structure, the aggregate utilized shall be AASHTO #57.
- C. Non-woven geotextile (drainage filter fabric) shall conform to the requirements specified under Section 02730 – Geosynthetics.

PART 3 EXECUTION

3.01 OBSERVATION WELLS

- A. Observation wells are typically placed within a subsurface stormwater structure. The well shall be placed in a location in accordance with the Drawings. Relocation of a well shall require advance approval by PWD.
- B. The well location shall be over-excavated twelve inches (12”) below the depth of the surrounding subsurface stormwater trench. This excavation shall be performed by hand, so as not to disturb the surrounding soils. Observation wells to be installed in geomembrane-lined systems shall be emplaced flush with the bottom of the trench and not over-excavated.
- C. The slotted section of well shall be placed into the over-excavation, with the attached plug at the bottom. A minimum of six inches (6”) separation shall be maintained between the top of the slotted well section and the top of the subsurface stormwater structure. Well section length shall be field-adjusted to maintain this separation.
- D. All well sections shall be installed vertically plumb (as verified by use of a hand level). The Contractor shall make every effort necessary to maintain this plumb condition until backfilling is complete. Wells found to be out of plumb shall be unacceptable and replaced at no additional cost to the City.
- E. The over-excavation and area surrounding the well within the subsurface stormwater structure shall be backfilled with the same material as the stormwater structure (typically AASHTO #57 stone).
- F. The well section from the slotted section ending six inches (6”) below the top of the stormwater structure to the top of the well within the cover shall be four-inch (4”) solid Schedule 40 PVC, attached to the slotted section by a PVC coupling.
- G. The area surrounding the solid well section shall be restored in kind with the adjoining area over the subsurface stormwater structure. Any geotextile wrap separating the stormwater structure from the covering fill shall be cut and wrapped six inches (6”) up the solid well section.
- H. The well cover shall be installed within the surface restoration as required, such that the cover plate is flush with the surrounding surface. Observation wells placed in unpaved areas located within green stormwater infrastructure that will experience surface ponding of water shall extend three (3) inches above the maximum ponding depth.

- I. The well cover shall be stamped with a unique identification number, to be provided by PWD. A hexagonal key locking bolt should be used for the cover. Bolts shall be free of grit and debris and a lubricant listed in Products section above shall be used to coat the entire thread and thread hole prior to initial installation. A spare cover is required.
- J. If the well cover is not installed into a concrete surface, it shall have a concrete ring or frame poured for support. This concrete ring shall be a minimum of six inches (6") wider in any dimension than the cover frame, of equal depth as the cover frame itself, and poured upon a minimum of six inches (6") of AASHTO #57 stone bedding. A frame conforming to these minimum dimensions may be circular or square. For locations in permeable pavement, frames and covers shall be located within the permeable pavement area surrounded by edge curb.
- K. Observation wells that are not flush with the surrounding surface shall have a protective casing set into the concrete ring. The inner diameter of the protection casing shall be at least one inch (1") greater than the outer diameter of the PVC well screen.
- L. The solid well section shall extend into the cover frame enough such that a bentonite seal can be placed around the well within the frame, and a solid slip-on cap can be fitted onto the pipe end.
- M. The contractor shall demonstrate to the PWD inspector that the cap is removable.

END OF SECTION

SECTION 02830

GREEN STORMWATER INFRASTRUCTURE SOILS

PART 1 GENERAL

1.01 SCOPE OF WORK

- A. The scope of work includes all labor, materials, tools, supplies, equipment, facilities, transportation and services necessary for, and incidental to performing all operations in connection with furnishing, delivery, and installation of Planting and Stormwater Soils related to green stormwater infrastructure. Scope of work includes, but is not limited to, sourcing, purchase, delivery and installation of Planting and Stormwater Soil and soil amendments, clean up and disposal of all excess and surplus material, and placement of erosion control matting over all soil surfaces that are not stabilized through planting
- B. The specific soil types in this section include:
 - 1. Planting Soil
 - 2. Stormwater Soil

1.02 RELATED SECTIONS

- A. Section 01535 Construction Tree Protection
- B. Section 02135 Erosion and Sediment Control
- C. Section 02210 Earthwork for Green Stormwater Infrastructure
- D. Section 02370 Geosynthetics
- E. Section 02732 Soils Properties Investigation
- F. Section 02709 Subsurface Stormwater Storage
- G. Section 02720 Stormwater Surface Features
- H. Section 02920 Turf and Grasses

1.03 REFERENCE STANDARDS

- A. In the event that the requirements of any of the referenced standards and specifications herein conflict with each other the more stringent requirement shall prevail. Where reference is made to one of the standards, the revision in effect at the time of bid opening shall apply.
- B. American Society for Testing Materials (ASTM):
 - 1. ASTM C33 – Gradation Requirements for Coarse Aggregates.
 - 2. ASTM C602 Standard Specification for Agricultural Liming Materials.
 - 3. ASTM D422 – Standard Test Method for Particle Size Analysis of Soils.
 - 4. ASTM D698 – Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort.
 - 5. ASTM D3385 – Standard Test Method for Infiltration Rate of Soils in Field Using Double-Ring Infiltrometer.
 - 6. ASTM D4972 – Standard Test Method for pH of Soils.

7. ASTM D5298 – Standard Specification for Topsoil Used for Landscaping Purposes.
8. ASTM D7481 – Standard Test Methods for Determining Loose and Tapped Bulk Densities of Powders using a Graduated Cylinder.
9. ASTM F1632 – Standard Test Method for Particle Size Analysis and Sand Shape Grading of Golf Course Putting Green and Sports Field Rootzone Mixes.
10. ASTM F1647 – Standard Test Methods for Organic Matter Content of Athletic Field Rootzone Mixes.
11. ASTM F1815 – Standard Test Methods for Saturated Hydraulic Conductivity, Water Retention, Porosity, and Bulk Density of Athletic Field Rootzones.

C. Other Standards:

1. U.S. Department of Agriculture (USDA), Natural Resources Conservation Service, Soil Texture Calculator.
2. USDA, Natural Resources Conservation Service, 2003. National Soil Survey Handbook, title 430-VI, current edition.
3. USDA Soil Survey Laboratory Methods Manual, Soil Survey Investigations Report, current edition.
4. Environmental Protection Agency (EPA) Section 503 Regulations.
5. Department of Environmental Protection (DEP), Pennsylvania Bulletin, Management of Fill, Clean Fill Policy, current edition.
6. U.S. Composting Council (USCC), Test Methods for the Examination of Composting and Compost (TMECC), current edition.
7. USCC, Landscape Architecture / *Design Specifications for Compost Use, Planting Bed Establishment with Compost*.
8. Association of Official Analytical Chemists (AOAC), Official Methods of Analysis, current edition.
9. Soil Science Society of America (SSSA), *Methods of Soil Analysis*, current edition.
10. Modified Philip Dunne (MPD) Infiltrometer method for measurement of the saturated hydraulic conductivity of surface soil.
11. Philadelphia Parks and Recreation Contractor Guidelines.

1.04 DEFINITIONS

- A. Amendment: product added topsoil to improve soil's physical qualities. Amendments are classified as general soil amendments, fertilizers, biological, and pH amendments.
- B. Bulk Density: an indicator of soil compaction calculated as the dry weight of soil by its volume typically expressed in g/cm³.
- C. Coarse Sand: sharp natural or manufactured fine aggregate and further defined in this specification.
- D. Compacted soil: soil where the density of the soil is greater than the threshold for root limiting.

- E. Compost: Well-decomposed stable organic material as defined by the US Composting Council and further defined in this specification.
- F. Debris: Elements including, but not limited to, concrete, concrete masonry, wood, excavated rock and rock fragments, rubble, overburden soils, abandoned utility structures, trash, refuse and litter.
- G. Drainage: The process of water moving through the soil, transitioning the soil from dry to saturated to field capacity, the rate of which may be expressed as the saturated hydraulic conductivity rate (Ksat; units are inches per hour).
- H. Existing Soil: Mineral soil existing at the locations of proposed planting after the majority of the construction within and around the planting site is completed and just prior to the start of work to prepare the planting area for soil modification and/or planting, and further defined in this specification.
- I. Fertilizer: amendment used for the purpose of adjusting soil nutrient composition and balance.
- J. Fine grading: The final grading of the soil to achieve exact contours and positive drainage, often accomplished by hand rakes or drag rakes other suitable devices, and further defined in this specification.
- K. Finished grade: surface or elevation of Soil after final grading and 12 months of settlement of the soil, and further defined in this specification.
- L. Planting Soil: Planting soil shall be harvested from fields or development sites or manufactured uniformly mixed individual soil components (topsoil, sand, compost) or existing mineral soil at the locations of proposed planting meeting the criteria specified herein.
- M. Salvaged Topsoil: Stripped native loam removed within the limits of work, but outside of the “Tree Protection Areas”, to its entire natural depth.
- N. Scarify: Loosening and roughening the surface of soil and sub soil prior to adding additional soil on top, and further defined in this specification.
- O. Soil Horizons: as defined in the USDA National Soil Survey Handbook (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/scientists/?cid=nrcs142p2_054242)
- P. Soil Tilling: Loosening the surface of the soil to the depths specified with a rotary tine tilling machine, roto tiller, (or spade tiller), and further defined in this specification.
- Q. Stormwater Soil: Manufactured uniformly mixed individual soil components (topsoil, sand, compost) meeting the criteria specified herein intended to provide water quality management by filtering stormwater runoff and provide sufficient infiltration for management of specified quantities of surface water flows.
- R. Subgrade: Surface or elevation of subsoil remaining after completing excavation or backfill immediately beneath Planting Soil or Stormwater Soil.
- S. Topsoil: Topsoil shall be harvested from fields or development sites and shall be loose, friable mineral particles resulting from natural soil formation from the A, E and upper B horizons, or “solum” where most plant roots grow and as defined further herein.

1.05 MEASUREMENT AND PAYMENT

- A. All soils used for the construction of Green Stormwater Infrastructure (GSI) will be paid for at the price bid per cubic yard of the soil as placed and will be based upon the soil type specified on

the Drawings. The price bid shall include the following and all appurtenant work and materials: compacting; preparing subgrade; forming berms, side slopes, ditches, removal and disposal of spoils and debris; removal, temporary storage and disposal of salvaged material; keeping site clean and free of trash and debris; complying with soil erosion and sedimentation control requirements; preservation of all vegetation and objects to remain from injury or defacement; preparation of foundation for embankment; scarifying existing soil; compaction and percolation testing. The Contractor shall anticipate compaction for the soil volume needed for construction. The soil volume shall be approved by PWD.

- B. No additional payment will be made for transportation and other costs associated with offsite disposal of excess materials, should this be necessary. This offsite disposal cost is considered incidental to the work.
- C. No additional payment will be made for the purchase, delivery, placement, and finish grading of topsoil, amendment of existing soils to meet specified requirements, or scarifying existing soils prior to placement of topsoil and finish grading. No additional payment shall be made for the as-built survey of grades and elevations. The cost to produce this as-built survey shall be included in the lump sum price bid for as-built survey and drafting.

1.06 SUBMITTALS

- A. Submit a list of materials to be provided for work under this Section including the name and address of the materials producer and the location from which the materials are to be obtained.
- B. Submit dated certificates or letters, signed by the materials producer, stating that materials meet or exceed the specified requirements.
- C. Soil(s) and Compost products must be tested by an independent soil testing laboratory, such as A. McNitt & SerenSoil Testing or similar. Laboratory tests must be dated no less than one (1) month and no greater than six (6) months before delivery to the worksite.
- D. Submit a one (1) gallon sample of Stormwater Soil, Planting Soil, or Compost in a resealable plastic bag to PWD GSI Unit, Jefferson Tower, 1101 Market Street, 4th Floor, Philadelphia PA 19107 with a copy of the independent soil test results included. Test reports must address each criteria listed within the Part 2 Products section herein.
 - 1. Test reports must be the same material to be supplied to the worksite. If tests fail to meet the specifications, obtain other sources of material, retest and resubmit until accepted by PWD. No soils or Compost shall be delivered to the worksite until approved by PWD.
 - 2. All soils or Compost being delivered to the worksite not coming from one of the recommended suppliers listed in Part 2.06-“Suppliers” will have a sample collected by PWD and tested at PWD’s Bureau of Laboratory Services (BLS) to confirm material matches the previously approved independent test report(s). While some variation is expected, if the results differ significantly from the independent test report(s), then PWD has the right to reject material and suitable soil meeting the specifications herein must be installed at Contractor’s expense. Soil or compost that is contaminated with debris may also be rejected upon delivery. PWD also reserves the right to sample and test material coming from one of the recommended suppliers if material does not appear to meet previously approved independent reports.

- E. Submit certificates and delivery tickets to PWD for each delivery of soil mixes. The soil supplier company name, date, and soil mix name, and quantity must be indicated on delivery tickets for all soil mix deliveries and the supplier must match the approved submittals.
- F. Submit final soil moisture and compaction testing reports at the completion of soil installation per Part 3.03 and 3.04 of the specifications herein.

1.07 LABORATORY SOIL TESTING REQUIREMENTS

- A. The laboratory shall be an independent laboratory, recognized by the State Department of Agriculture. For soil tests, the laboratory must have experience in performing agronomic testing including all of the following: particle size analysis, sand sieve size analysis, pH, soluble salts, organic matter, hydraulic conductivity, and CEC. Tests shall be made in strict compliance with the standards of the Association of Official Analytical Chemists and follow standards from the NRCS Soils Manual and ASTM testing methods applicable to the specific tests requested. Laboratory shall have staff fully qualified to review test results, and to make recommendations to amend samples based on what is planned to grow in the soil. American Association for Laboratory Accreditation (A2LA) certification is preferred. An example laboratory is A. McNitt & SerenSoil Testing.
- B. Compost that participates in the US Composting Council's Seal of Testing Assurance (STA) Program and tested through an STA program lab, using appropriate test methods from the TMECC (Test Methods for the Examination of Compost and Composting) is preferred. Test data shall be presented on a Compost Technical Data Sheet.
- C. All soil testing will be at the expense of the Contractor.

1.08 QUALITY ASSURANCE

- A. All materials, methods of construction, and workmanship shall conform to applicable requirements of ASTM, PTM, PennDOT Standard Specifications and AASHTO Standards, unless otherwise specified. Any fill or topsoil sources, disposal areas, or temporary offsite storage locations shall be subject to review and approval by PWD.

1.09 DELIVERY, STORAGE AND HANDLING

- A. Preparation, amendment, and mixing of soils shall be performed at the soil supplier location.
- B. Weather: Do not mix, deliver, place or grade soils when frozen or with moisture above field capacity. Soils shall not be handled, hauled, placed, or compacted when wet or frozen. Soil shall only be handled when the moisture content is between the specified ranges in percent water by volume as defined in Part 3.03 of the specifications herein.
- C. Protect soil and soil stockpiles, including the stockpiles at the soil blender's yard, from wind, rain and washing that can erode soil or separate fines and coarse material, and contamination by chemicals, dust and debris that may be detrimental to plants or soil drainage. Once spread, soils shall be protected with staked erosion control blankets.
- D. All manufactured packaged products and material shall be delivered to the site in unopened containers and stored in a dry enclosed space suitable for the material and meeting all environmental regulations. Biological additives shall be protected from extreme cold and heat. All products shall be freshly manufactured and dated for the year in which the products are to be used.

- E. Do not dump or store bulk materials near structures, utilities, walkways and pavements, or on existing turf areas or plants.
- F. Provide erosion-control measures to prevent erosion or displacement of bulk materials, discharge of soil-bearing water runoff, and airborne dust reaching adjacent properties, water conveyance systems, or walkways.
- G. None of the soil materials shall be delivered to the site until independent lab results and other submittals listed herein are approved by PWD. However, final acceptance is contingent on delivery from supplier and samples sent to PWD's BLS lab for material verification at PWD's discretion. Certification submittal shall include recommended soil amendment products if proposed to modify the soils. Any approval of soils made conditional upon utilizing one or more amendments shall be understood to afford to PWD the right for further testing and refusal of materials that do not meet these Specifications.
- H. Soils shall not be stored on-site for longer than one (1) month prior to installation.

PART 2 PRODUCTS

2.01 PROHIBITED ELEMENTS

- A. Soils shall not contain any traces of hydrocarbons, petroleum products, chemically prohibited substances, or any other elements considered to be toxic to any vegetation that is used. The soil shall be free of construction and trash debris, rocks, hydrocarbons, petroleum materials, herbicides, or other harmful contaminants that would impact plant growth.

2.02 COMPOST

- A. Compost is as defined by the "US Composting Council Landscape Architecture / Design Specifications for Compost Use, Planting Bed Establishment with Compost". Compost shall be a well decomposed, stable, weed-free organic matter source. It shall be derived from: agricultural, food, or industrial residuals; leaf litter and yard trimmings; or source-separated waste. The product shall contain no substances toxic to plants and shall be reasonably free (< 1% by dry weight) of man-made foreign matter. The compost will possess no objectionable odors and shall not resemble the raw material from which it was derived.
- B. Compost shall comply with the following parameters:
 1. pH: 6.0 - 8.0.
 2. Soluble salt content (electrical conductivity, 1 soil : 2 water): maximum 5 dS/m (mmhos/cm).
 - 1) Compost derived from stabilized mushroom soil compost may possess a maximum EC of 10 dS/m (1:2), if the maturity testing is a minimum of 95% and ammonia (NH₄) content is a maximum of 250 ppm.
 3. Moisture content %, wet weight basis: 30 – 60.
 4. Organic Matter Content, % dry weight basis: 30 – 65.
 5. Particle size, dry weight basis: 98% pass through 1/2 inch screen.
 6. Stability carbon dioxide evolution rate: mg CO₂-C/ g OM/ day ≤ 3.
 7. Maturity, seed emergence and seedling vigor, % relative to positive control: minimum 80%.
 8. Physical contaminants (inerts), %, dry weight basis: <0.5%.

9. Chemical contaminants, mg/kg (ppm): meet or exceed US EPA Class A standard, 40CFR § 503.13, Tables 3 levels.

10. Biological contaminants select pathogens fecal coliform bacteria, or salmonella, meet or exceed US EPA Class A standard, 40 CFR § 503.32(a) level requirements.

2.03 CHEMICAL AMENDMENTS

A. Lime, ASTM C 602, agricultural limestone containing a minimum 80 percent calcium carbonate equivalent and as follows:

1. Class: Class T, with a minimum 99 percent passing through No. 8 sieve and a minimum 75 percent passing through No. 60 sieve.

2. Provide lime in form of dolomitic limestone.

2.04 PLANTING SOIL

A. Planting soil shall be harvested from fields or development sites or manufactured uniformly mixed individual soil components (Topsoil, Sand, Compost) or existing mineral soil at the locations of proposed planting meeting the criteria specified herein.

B. Provide Planting Soil at the locations indicated on the Drawings complying with the following parameters. Minor variations with supporting independent test results for hydraulic conductivity, cation exchange capacity, pH, soluble salt content and organic matter may be considered for approval at PWD's discretion:

1. Particle analysis must be per USDA classification for loam, sandy loam, sandy clay loam, or silt loam and is within the following parameters using ASTM D422:

Sieve Analysis	mm	Sieve No.	% Volume
Gravel	>2.0	10	≤11
Very Coarse Sand	2.0 – 1.0	18	
Coarse Sand	1.0 – 0.5	35	
Medium Sand	0.5 – 0.25	60	45-68
Fine Sand	0.25 - 0.10	140	
Very Fine Sand	0.10 - 0.07	200	
Silt	0.07 - 0.002		≤30
Clay	<0.002		≤20

2. pH (1 soil : 1 water): 6.0 - 7.2.

3. Organic matter (ASTM F1647, Method A): 3 - 7% (by dry weight).

4. Hydraulic conductivity (ASTM F1815) at 75% Proctor (ASTM D698): 1.0 - 5.0 in/hr

5. Soluble salt content (electrical conductivity, 1 soil : 2 water): maximum 1.60 mmho/cm. Sodium (Na) salinity shall not exceed 700 ppm.

6. Cation Exchange Capacity (CEC): >12 meq/100g.

7. Nutrient analysis including macronutrients and micronutrients (Mehlich-3) with soil fertility interpretation and recommendations relevant to the specified plant species.

8. Compost shall not be added at more than 20% by volume.

2.05 STORMWATER SOIL

A. Stormwater Soil at the locations indicated on the Drawings complying with the following parameters. Minor variations with supporting independent test results for hydraulic conductivity, cation exchange capacity, pH, soluble salt content and organic matter may be considered for approval at PWD’s discretion:

1. Particle analysis must be per USDA classification for loamy sand within the following parameters:

Sieve Analysis	mm	Sieve No.	% Volume
Gravel	>2.0	10	
Very Coarse Sand	2.0 - 1.0	18	≥65
Coarse Sand	1.0 - 0.5	35	
Medium Sand	0.5 - 0.25	60	
Fine Sand	0.25 - 0.10	140	≤17
Very Fine Sand	0.10 - 0.07	200	
Silt	0.07 - 0.002		≤20
Clay	<0.002		5-15

2. pH (1 soil : 1 water): 6.0 - 7.2.

3. Organic matter (ASTM F1647, Method A): 3% - 7% (by dry weight).

4. Hydraulic conductivity (ASTM F1815) at 75% Proctor (ASTM D698): 2.0 - 6.0 in/hr.

5. Soluble salt content (electrical conductivity, 1 soil : 2 water): maximum 1.60 mmho/cm. Sodium (Na) salinity shall not exceed 700 ppm.

6. Cation Exchange Capacity (CEC): not less than 12 meq/100g.

7. Nutrient analysis including macronutrients and micronutrients (Mehlich-3) with soil fertility interpretation and recommendations relevant to the specified plant species.

8. Compost shall not be added at more than 30% by volume.

2.06 SUPPLIERS

A. The suppliers listed below have previously submitted independent soil lab results and received approvals. The Contractor is not bound to purchase landscaping materials from suppliers on this list. Testing requirements are different for soils purchased from suppliers on this list. See Part 1.06-“Submittals” for more details.

1. American Biosoils & Compost, Douglassville PA, 610-222-3580

2. Earth Materials, LLC, Vineland, NJ, 609-548-0445

3. Laurel Valley Soils, Landenberg, PA, 866-587-6457

PART 3 EXECUTION

3.01 SITE EXAMINATION

- A. Prior to installation of soil or compost, examine site to confirm that existing conditions are satisfactory for the work of this section to proceed. PWD shall approve the condition of the subgrade and the previously installed subgrade preparation and the installation of subsurface drainage.
 - 1. Confirm that the subgrade is at the proper elevation and compacted as required.
 - 2. Confirm that all surface areas to be filled with Soil are free of construction debris, refuse, compressible or biodegradable materials, stones greater than 2 inches diameter, soil crusting films of silt or clay that reduces or stops drainage from the Soil into the subsoil; and/or standing water. Remove unsuitable material from the site.
 - 3. Confirm that no adverse drainage conditions are present.
- B. If unsatisfactory conditions are encountered, notify PWD immediately to determine corrective action before proceeding.

3.02 PROTECTION

- A. Identify protection zones according to Section 01535 "Construction Tree Protection."
- B. Protect areas of in-place soil from additional compaction, disturbance, and contamination. Prohibit the following practices within these areas except as required to perform planting operations:
 - 1. Storage of construction materials, debris, or excavated material.
 - 2. Parking vehicles or equipment.
 - 3. Vehicle traffic.
 - 4. Foot traffic.
 - 5. Erection of sheds or structures.
 - 6. Impoundment of water.
 - 7. Excavation or other digging unless otherwise indicated.
- C. If soil or subgrade is overcompacted, disturbed, or contaminated by foreign or deleterious materials or liquids, remove the soil and contamination; restore the subgrade as directed by PWD and replace contaminated soil with new soil.

3.03 SOIL INSTALLATION

- A. As described herein, independent testing report must be approved by PWD prior to soil installation and delivery slip must be presented a time of installation. PWD reserves the right to test the soils(s) delivered to the worksite at PWD's Bureau of Laboratory Services (BLS) to confirm material matches the previously approved independent test report(s) and physical sample submitted. If the results differ significantly from the independent test report(s), then PWD has the right to reject material and suitable soil meeting the specifications herein must be installed at contractors expense.
- B. All equipment utilized to install or grade Soils shall be wide track or balloon tire machines rated with a ground pressure of 4 psi or less. All grading and soil delivery equipment shall have buckets equipped with 6 inch long teeth to scarify any soil that becomes compacted.
- C. In areas of soil installation above existing subsoil, scarify the subgrade material prior to installing Soil.

1. Scarify the subsoil of the subgrade to a depth of 3 – 6 inches with the teeth of the back hoe or loader bucket, tiller or other suitable device.
 2. Immediately install the Stormwater Soil or Planting Soil. Protect the loosened area from traffic. DO NOT allow the loosened subgrade to become compacted.
 3. In the event that the loosened area becomes overly compacted, loosen the area again prior to installing the Stormwater Soil or Planting Soil.
- D. Install the Stormwater Soil or Planting Soil in 12 - 18 inch lifts to the required depths. Apply compacting forces to each lift as required to attain the required compaction. Scarify the top of each lift prior to adding more Stormwater Soil or Planting Soil by dragging the teeth of a loader bucket or backhoe across the soil surface to roughen the surface.
1. Approved compaction equipment includes a smooth drum roller or plate compactor. Typically one to three passes per lift will achieve the desired compaction. Contractor to test desired compaction methodology with actual soil to be installed to confirm installation method and material properties are compatible and will achieve the specified compaction rates.
 2. Provide adequate equipment to achieve consistent and uniform compaction of the Soils. Use the smallest equipment that can reasonably perform the task of spreading and compaction. Use the same equipment and methods of compaction for the entire project area once soil, installation methodology, and compaction criteria have been coordinated and confirmed.
- E. Do not pass motorized equipment over previously installed and compacted soil except as authorized below.
1. Light weight equipment such as trenching machines or motorized wheel barrows is permitted to pass over finished soil work.
 2. If work after the installation and compaction of soil compacts the soil to levels greater than the above requirements, follow the requirements of Over Compaction Reduction herein.
- F. Phase work such that equipment to deliver or grade soil does not have to operate over previously installed Stormwater Soil or Planting Soil. Work in rows of lifts the width of the extension of the bucket on the loader. Install all lifts in one row before proceeding to the next. Work out from the furthest part of each bed from the soil delivery point to the edge of each bed area.
- G. Where travel over installed soil is unavoidable, limit paths of traffic to reduce the impact of compaction in Stormwater Soil or Planting Soil. Each time equipment passes over the installed soil it shall reverse out of the area along the same path with the teeth of the bucket dropped to scarify the soil. Comply with Over Compaction Reduction herein in the event that soil becomes over compacted. Access over finished grade soils shall be restricted. If access is required across placed soils, Contractor shall be required to rework compacted soil areas prior to fine grading to the full depth of the placed soils as directed by PWD.
- H. Maintain moisture conditions within the Soil during installation or modification to allow for satisfactory compaction.
1. Volumetric soil moisture level during installation shall be above permanent wilt point and below field capacity for each type of soil texture within the following ranges.

Soil texture	Permanent wilting point	Field capacity

Sand, Loamy sand, Sandy loam	5-8%	12-18%
Loam, Sandy clay, Sandy clay loam	14-25%	27-36%
Clay loam, Silt loam	11-22%	31-36%
Silty clay, Silty clay loam	22-27%	38-41%

1. The Contractor shall confirm the soil moisture levels with a moisture meter (Digital Soil Moisture Meter, DSMM500 by General Specialty Tools and Instruments, or approved equivalent). Suspend operations if the Soil becomes wet. Apply water if the soil is overly dry.

I. Installing Stormwater Soil or Planting Soil with soil or mulch blowers or soil slingers is not permitted.

3.04 SOIL COMPACTION REQUIREMENTS

A. Maintain at the site at all times a soil cone penetrometer with pressure dial and a soil moisture meter to check soil compaction and soil moisture.

1. Penetrometer shall be AgraTronix Soil Compaction Meter or approved equal.

2. Moisture meter shall be “general digital soil moisture meter”.

B. Perform a minimum of one compaction test every 12-inch lift of soil and every 300 square feet of soil installed. Maintain an up-to-date written report of compaction test results. Report shall include the date and time of test, the SMP number, and value reading from the penetrometer. PWD may review the written report at any time to confirm conformance with the specification. Submit final compaction and soil moisture report at the completion of soil installation.

C. The following are threshold levels of compaction as determined by each method for the subsoil surface and full profile of Stormwater Soil or Planting Soil, testing each lift of Soil with a penetrometer. The same penetrometer and moisture meter shall be used to test installed soil throughout the work.

1. Acceptable Compaction

a. Standard Proctor Method – 65-75%.

b. Penetration Resistance Method – about 75-250 psi.

c. Soil below 75 psi soil becomes increasingly unstable and will settle excessively.

2. Unacceptable Compaction

a. Standard Proctor Method – Above 85%.

b. Penetration Resistance Method – Approximately above 300 psi

3. Prior to testing the soil with the penetrometer check the soil moisture. Penetrometer readings are impacted by soil moisture and excessively wet or dry soils will read significantly lower or higher than soils at optimum moisture.

4. The penetrometer readings shall be within 20% plus or minus of the specified levels.

5. Where the Standard Proctor Method is utilized, the following Bulk Density levels based on 75% minimum and 85% maximum standard Proctor indicate acceptable compaction.

<u>Soil Texture</u>	<u>Bulk Density (g/cm³)</u>	
	<u>Max.</u>	<u>Min.</u>

Loamy Sand	1.80	1.65
Sandy Loam	1.65	1.45
Sandy clay loam	1.55	1.35
Loam	1.50	1.30
Silt Loam	1.45	1.25

3.05 OVER COMPACTION REDUCTION

- A. Any soil that becomes compacted to a density greater than the specified density shall be dug up and reinstalled. This requirement includes compaction caused by other sub-contractors after the Stormwater Soil or Planting Soil is installed and approved.
- B. Surface roto tilling shall not be considered adequate to reduce over compaction at levels 6 inches or greater below finished grade.

3.06 INSTALLATION OF CHEMICAL ADDITIVES

- A. Following the installation of each soil and prior to fine grading and installation of the Compost till layer, apply chemical additives as recommended by the soil test, and appropriate to the soil and specific plants to be installed.
- B. Types, application rates and methods of application shall be approved by PWD prior to any applications.

3.07 FINE GRADING

- A. PWD shall approve all rough grading prior to fine grading.
- B. Grade the finish surface of all planted areas to meet the grades shown on the Drawings.
- C. Utilize hand equipment, small garden tractors with rakes, or small garden tractors with buckets with teeth for fine grading to keep surface rough without further compaction. Do not use the flat bottom of a loader bucket to fine grade, as it will cause the finished grade to become overly smooth and or slightly compressed.
- D. Provide for positive drainage from all areas toward the existing inlets, drainage structures and or the edges of planting beds. Adjust grades as directed to reflect actual constructed field conditions of paving, wall and inlet elevations. Notify PWD in the event that conditions make it impossible to achieve positive drainage.
- E. Provide smooth, rounded transitions between slopes of different gradients and direction. Modify the grade so that the finish grade before adding mulch and after settlement is one or two inches below all paving surfaces or as directed by the Drawings.

3.08 CLEANING

- A. Protect areas adjacent to planting-soil preparation and placement areas from contamination. Keep adjacent paving and construction clean and work area in an orderly condition.
- B. Remove surplus soil and waste material including excess subsoil, unsuitable materials, trash, and debris and legally dispose of them off Owner's property unless otherwise indicated.
- C. See Section 02135 Erosion and Sediment Control for requirements

END OF SECTION

SECTION 02920
TURF AND GRASSES

PART 1 GENERAL

1.01 SCOPE OF WORK

- A. Furnish all labor, materials, equipment and incidentals required to complete all planting and related landscaping work indicated on the Drawings and as specified herein, including but not necessarily limited to the following:
 - 1. Seeding Turf, Meadow Grasses and Wildflowers
 - 2. Hydroseeding Turf
 - 3. Sodding.
 - 4. Turf renovation.
 - 5. Erosion-control material(s).
 - 6. Supplying and application of mulch as specified herein.
 - 7. Final cleanup and all other work required to complete the job in accordance with the Drawings and Specifications.
 - 8. Providing an eight week proposed maintenance program and one year replacement guarantee for all plantings.
 - 9. Monthly status reporting of completed planted and maintenance activities.
 - 10. Provision of "As Planted" record drawings.

1.02 RELATED SECTIONS

- A. Section 01110 Photographic Documentation
- B. Section 01535 Tree Protection
- C. Section 02135 Erosion and Sedimentation Control
- D. Section 02830 Green Stormwater Infrastructure Soils

1.03 REFERENCE STANDARDS

- A. American Society for Testing Materials (ASTM)
 - 1. ASTM D5539-94- Standard Specification for Seed Starter Mix
- B. American Association of State Highway and Transportation Officials (AASHTO)
- C. Turfgrass Producers International "Guideline Specifications to Turfgrass Sodding", sections including:
 - 1. Specifications for Turfgrass Sod Materials
 - 2. Specifications for Turfgrass Sod Transplanting and Installation
- D. Other Agencies
 - 1. Philadelphia Parks and Recreation Department (PP&R) (previously Fairmount Park Commission) Contractor Guidelines.

2. Philadelphia Streets Department, Standard Construction Items.
3. Pennsylvania Department of Transportation, Form 408 Specifications.
4. Association of Official Seed Analysts (AOSA)
5. Turfgrass Producers International (TPI)

E. Where reference is made to one of the above standards, the revision in effect at the time of bid opening shall apply.

1.04 SUBMITTALS

- A. Submit complete product data for all materials furnished under this Section. One set of complete submittals is required per planting season. Any changes to materials require resubmittal.
- B. Submit qualifications of crew, equipment, and suppliers. Qualifications must conform with the requirements detailed in Section 1.06, Contractor Qualifications, below.
- C. Samples, testing and certifications of all materials shall be submitted for inspection and acceptance upon PWD's request. None of the landscaping materials shall be delivered to the site until samples and test results in accordance with the specifications within are approved by PWD; however such approval does not constitute final acceptance.
 1. Certification of Grass Seed: From seed vendor for each grass-seed monostand or mixture, stating the botanical and common name, percentage by weight of each species and variety, and percentage of purity, germination, and weed seed. Include the year of production and date of packaging.
 2. Certification of each seed mixture for turfgrass sod or plugs. Include identification of source and name and telephone number of supplier.
- D. Submit a proposed list of seed mixes, grasses, sedge or turf species with botanical and common names, variety, size, quantity, and source of plant materials in the varieties, sizes, and quantities indicated on the Drawings at least three (3) months prior to the proposed planting date. Sources of planting materials must be confirmed by the Contractor, and written documentation of plant availability in accordance with the submitted planting schedule shall be provided by the supplier(s). Substitutions may be permitted only after substantiated written confirmation and documentation is submitted that a specified plant is not obtainable, and approval of each substitution is approved by PWD.
- E. Submit a schedule for planting of grasses and turf at least three (3) months prior to the start of the upcoming planting season. Planting schedule shall take into account allotted days for completion of the Work in the Contract, and any extensions of the time allotment to be made for accommodation of planting seasons may be made at the sole discretion of PWD. No work shall be performed until these documents are approved by PWD.
- F. Submit Monthly Project Status Reports using the template in Appendix B. Project Status Reports shall list detail all planting, maintenance activities, and upcoming site work. Photographic documentation shall be included with the Monthly Project Status Report in accordance with Section 01110 (Photographic Documentation) of these Specifications. Project Status Reports shall be submitted within one (1) week of the end of each month.
- G. Sketch plans, photographs, and written documentation of all plant installations, including initial planting and any plant replacements during the eight (8)-week maintenance period shall be

submitted for approval within one (1) week of provisional acceptance subsequent to the maintenance period.

1. Sketch plans must include a revised schedule with species (botanical name) and cultivars and final quantities along with a revised planting plan.
2. Landscape sketch plans may be a markup of the original landscaping plan. Changes to the original landscaping plan shall be clearly noted and shown in red.
3. All sketches shall be labeled "As Planted", dated, and shall contain the name or initials of the Designer.

1.05 MEASUREMENT AND PAYMENT

- A. Seeding, hydroseeding, or sodding for areas indicated to be grass on the Drawings or existing turf, ornamental grass or meadow areas disturbed during construction, shall be paid for at the appropriate unit price bid per square yard. The price bid shall include but not be limited to procurement, delivery, and installation of seed or sod as specified, provision of at least six inches (6") of topsoil and amendments as needed fertilizers, and any and all appurtenant work or materials required to provide viable grassed areas.
- B. No payment shall be made for pre-planting maintenance and site preparation including, but not limited to, removal of trash and debris, removal of erosion control matting, site preparation, soil loosening, or establishment of erosion and sedimentation control practices. This is considered a distributed cost.
- C. Watering and Maintenance for the initial eight (8) week period for turf and grasses shall be paid at the appropriate unit price bid per square yard of installed grass and turf. The price bid shall include all appurtenant work and materials to provide watering and maintenance of the turf and grasses, including but not limited to furnishing clean water for plants and maintenance as approved and described in Section 3 herein. Payment shall be made at time of provisional acceptance subsequent to the completion of maintenance activities for each site, which shall include submission of Project Status Reports and photographic documentation as outlined in Sections 01110. Project Status Reports and photographic documentation must be received by PWD before distribution of payment.

1.06 CONTRACTOR QUALIFICATIONS

- A. Crews shall consist of a minimum of two workers. One (1) landscape foreperson shall be present at all times during execution of the work. The foreperson shall direct all work performed under the following sections. Notify the Department of the name and phone number of crew member with credentials outlined below, along with a contact phone number, at least five (5) business days in advance of the first day of the specified activity.
 1. The foreperson shall have experience with at least five (5) landscape installations of similar scope and complexity and shall have a minimum of three (3) years of experience in successful completion of similar landscape installation work. The Vendor must submit a resume of the foreperson(s) who will supervise the work crew(s).
 2. All crew certification documentation should be readily available onsite so PWD can confirm certifications during site inspections.
 3. Multiple certifications can be held by an individual crew member to satisfy the requirements set for in these Specifications.

- B. For turf installation, installers shall be familiar with lawn construction under the supervision of an experienced landscape foreman at all times during the construction. One (1) crew member must be a Certified Turfgrass Professional, designated CTP.
- C. For pesticide applications, one (1) crew member must have certification as a Pest and Disease Applicator, Pennsylvania State licensed, certified commercial applicator, category: Ornamental and Shade Trees, Lawn and Turf. This crew member shall be required to be present during application of pest and disease control practices. The Vendor must submit the Pesticide and Disease Applicator's License IDs for employees performing pest and disease control.

1.07 DEFINITIONS

- A. Hydroseeding: (hydraulic mulch seeding, hydro-mulching, hydraseeding) is a planting process that uses a slurry of seed and mulch
- B. Finish Grade: Elevation of finished surface of stormwater soil.
- C. Manufactured Topsoil: Soil produced off-site by homogeneously blending mineral soils or sand with stabilized organic soil amendments to produce topsoil or planting soil.
- D. Pesticide: A substance or mixture intended for preventing, destroying, repelling, or mitigating a pest. This includes insecticides, miticides, herbicides, fungicides, rodenticides, and molluscicides. It also includes substances or mixtures intended for use as a plant regulator, defoliant, or desiccant.
- E. Pests: Living organisms that occur where they are not desired or that cause damage to plants, animals, or people. These include insects, mites, grubs, mollusks (snails and slugs), rodents (gophers, moles, and mice), unwanted plants (weeds), fungi, bacteria, and viruses.
- F. Planting Soil: Natural surface-soil or prepared planting mix layer containing organic matter and sand, silt and clay particles; friable, pervious, and black or a darker shade of brown, gray, or red than underlying subsoil; reasonably free of subsoil materials including, clay lumps, gravel, and other objects more than 2 inches (50 mm) in diameter; and free of weeds, roots, toxic materials, or other non-soil or non-specified materials.
- G. Salvaged Topsoil: Stripped native loam removed within the limits of work, but outside of the "Tree Protection Areas", to its entire natural depth.
- H. Stormwater Soil: A planting soil mixture intended to provide water quality management by filtering stormwater runoff and provide sufficient infiltration for management of specified quantities of surface water flows.
- I. Subgrade: Surface or elevation of subsoil remaining after completing excavation or backfill immediately beneath planting soil or lightweight fill material, that is integrated with Specified Soil or Growing Media by tilling in a layer of Transition Mix.
- J. Subsoil: All soil beneath the topsoil layer of the soil profile, and typified by the lack of organic matter and soil organisms.
- K. Topsoil: Topsoil shall be harvested from fields or development sites and shall be loose, friable mineral particles resulting from natural soil formation from the A, E and upper B horizons, or "solum" where most plant roots grow and as defined further herein.

1.08 DELIVERY, STORAGE AND HANDLING

- A. The Contractor shall confine the storage of material and equipment to locations as approved by PWD.
- B. The Contractor must provide to PWD each of their plant suppliers' shipping lists for review and approval after ordering, but PRIOR to supplier's shipping any plant material. Only specified grasses, plugs and seed mixes will be accepted.
- C. Sod: Harvest, deliver, store, and handle sod according to requirements in "Specifications for Turfgrass Sod Materials" and "Specifications for Turfgrass Sod Transplanting and Installation" sections in TPI's "Guideline Specifications to Turfgrass Sodding." Deliver sod within 24 hours of harvesting and in time for planting promptly. Protect sod from breakage and drying.
- D. Materials shall not be dropped or dumped from vehicles. Materials shall be reviewed for compliance with specified requirements. Unacceptable materials shall be removed and disposed from the job site. Materials shall be stored in designated areas.
- E. Seed and other packaged materials shall be delivered to the site, mixed as specified, in the original unopened standard size bags showing weight, certified analysis and name and address of manufacturer and indication of conformance with state and federal laws, as applicable. Containers shall bear the manufacturer's certificate of compliance covering analysis and shall be furnished to PWD. Store bagged materials in a weatherproof place and in such a manner that it will be kept dry and its effectiveness will not be impaired.

1.09 INSPECTION OF PLANT MATERIALS

- A. A Project Manager may inspect turf sod, plugs or pots at supplier before delivery to site for compliance with requirements for genus, species, variety, size, and quality.
- B. A Project Manager shall be present at time of delivery to inspect plants delivered to the site. Contractor is responsible for contacting PWD at least seven (7) days prior to site delivery to arrange inspection.
- C. PWD retains the right to inspect or reject substandard plants size and condition root systems, insects, injuries and latent defects and to reject unsatisfactory or defective material at any time during progress of work. Rejected plants must be removed immediately from the project site.
- D. No grasses or turf may be planted without on-site approval by PWD. PWD is responsible for final approval of plant species and delivered plant materials. The Contractor is responsible for coordinating for these approvals with PWD.

1.10 PROJECT CONDITIONS

- A. Restrictions: Perform planting during the periods specified herein and coordinate installation with maintenance periods to provide required maintenance activities for eight (8) weeks until provisional acceptance. Planting for turf and grass species is restricted to the fall planting season.
 - 1. Fall Planting: September 15 – November 15
- B. Weather Limitations: Proceed with planting activities only when existing and forecasted weather conditions permit planting to be performed when beneficial and optimum results may be obtained. Apply products during favorable weather conditions and according to manufacturer's written instructions.
- C. Under no circumstances shall stormwater soil be worked under frozen or saturated conditions as determined by PWD.

1.11 Access over finished grade soils shall be restricted. If access is required across placed soils, Contractor shall be required to rework compacted soil areas prior to fine grading to the full depth of the placed soils as directed by PWD. REQUIREMENTS FOR WORK ON PARK PROPERTY

- A. The Contractor shall obtain a permit from PP&R before starting work under this Contract. The Contractor shall call two weeks in advance of any work to obtain the proper permits from PP&R Facilities and/or Project Managers. The Contractor shall contact PP&R prior to beginning any work in the Park to discuss the Contractor's plans for access to all sites.

Roger S. Tenant Jr. – Park Manager
Philadelphia Parks & Recreation
One Parkway – 10th Floor
1515 Arch Street
Philadelphia PA 19102
Roger.TenantJr@phila.gov
215-200-7571

1.12 SITE ACCESS

- A. For each of the different areas where the Contractor needs to gain access to perform his work, the Contractor shall make arrangements with PWD in advance to access the site. These arrangements may require the construction of temporary roadways or bridges and the removal and replacement of existing structures.

1.13 EXISTING STRUCTURES AND PAVING

- A. It is expected the Contractor will prepare his own preconstruction documentation in addition to the City's own photographs, to verify the original site conditions and the immediate vicinity of the project areas. The Contractor shall provide a set of preconstruction photographs to PWD.
- B. Any disturbed paving or curb, footway or driveway shall be restored according to any instructions provided by the Philadelphia Streets Department. All disturbed surfaces outside of the Streets Department restoration area shall be restored in kind.

1.14 MAINTENANCE SERVICE

- A. Project Maintenance: Provide maintenance of sodded, seeded or planted areas by skilled employees of the landscape installer as defined under quality assurance above. Maintain as required in this Section. Begin maintenance immediately after plantings are installed and continue for an eight (8) week period, which must occur during the normal growing season.

1.15 INSPECTION FOR PLANTING CERTIFICATION

- A. A Project Manager will inspect all work for provisional acceptance upon the written request of the Contractor received at least ten (10) calendar days before the anticipated date of inspection, and after the initial eight-week maintenance period has elapsed. Certification shall verify that the grasses are healthy in condition at the time of inspection, that the planting methodology appears correct, and that the grasses should be expected to survive as installed by the Contractor. Grasses shall not be eligible for certification until (at a minimum) the initial eight (8) week maintenance period has ended. Certification shall be made by a designee of PWD that has experience locally installing native plants of similar types used in the project. Individual plantings or entire areas or

species may be rejected at this time for certification. PWD reserves the right to determine remediation required in the event of non-certified plantings, up to and including full replacement.

- B. At the end of the maintenance period, the Contractor shall be responsible for replacement planting for any grasses that are missing, dead, not true to name or size as specified, or not in satisfactory growth, as determined by PWD. Any determination made by a Project Manager regarding plant replacement shall be final, and the Contractor shall be responsible for replacing the plantings in kind (unless otherwise directed) as soon as weather conditions permit during the next appropriate planting season at no additional cost to the City. The Contractor shall not be responsible for damage or plant mortality due to vandalism.
- C. Contractor shall prepare a list of items to be completed or corrected for review by PWD. Upon completion of the inspection, PWD shall amend the list of items to be completed or corrected. Corrective work shall be completed within two (2) weeks of the requested date for completion.
- D. After all necessary corrective work has been completed and the initial eight (8) week maintenance period has elapsed, PWD shall certify in writing the planting certification and the one year guarantee period will commence.
- E. Should approval of work be delayed after the end of the maintenance period(s) has elapsed, the Contractor shall continue maintenance activities until such approval is granted.

1.16 WARRANTY PERIOD AND REPLACEMENTS

- A. The Contractor shall warranty that plant material is properly handled and installed. The Contractor shall be responsible for any replacement planting or sodding required for a warranty period of twelve (12) months after a planting is certified, as determined by PWD. Any determination made by PWD regarding plant or sod replacement shall be final.
- B. At the end of the warranty period, any grass or sod area that is missing, dead, not true to name or size as specified, or not in satisfactory growth, as determined by PWD, shall be replaced. All replacements shall be plants or sod of the same kind and size as specified. They shall be furnished and planted as specified herein. The cost of replacement shall be borne by the Contractor.
- C. Turf, ornamental grass, or meadow cover is to be eighty-five percent (85%) or more at end of warranty period.
- D. If turf, ornamental grass, or meadow is less than eighty-five percent (85%), the Contractor is to reseed in accordance with the original specifications.

1.17 INSPECTION AND PLANTING CERTIFICATION

- A. A Project Manager will inspect all work for provisional acceptance upon the written request of the Contractor received at least ten (10) calendar days before the anticipated date of inspection, and after the initial eight-week maintenance period has elapsed. Certification shall verify that the grasses are healthy in condition at the time of inspection, that the planting methodology appears correct, and that the grasses should be expected to survive as installed by the Contractor. Grasses shall not be eligible for certification until (at a minimum) the initial eight (8) week maintenance period has ended. Certification shall be made by a designee of PWD that has experience locally installing native plants of similar types used in the project. Individual plantings or entire areas or species may be rejected at this time for certification. PWD reserves the right to determine remediation required in the event of non-certified plantings, up to and including full replacement.

- B. Contractor shall furnish a full and complete written program for the eight-week maintenance program of the planting to PWD at the time of provisional acceptance for approval.
- C. Contractor shall prepare a list of items to be completed or corrected for review by PWD. Upon completion of the inspection, PWD shall amend the list of items to be completed or corrected. Work shall be completed within two (2) weeks of the requested date for completion.
- D. After all necessary corrective work has been completed and the initial eight (8) week maintenance period has elapsed, PWD shall certify in writing the planting certification and the one year guarantee period will commence.

1.18 FINAL INSPECTION AND FINAL ACCEPTANCE

- A. At the end of the warranty period, inspection will be made by PWD upon written request submitted by the landscape contractor at least ten (10) calendar days before the anticipated date.
- B. After all necessary corrective work has been completed, PWD will certify in writing the final acceptance of the planting.

PART 2 PRODUCTS

2.01 TURFGRASS SEED

- A. Grass Seed: Fresh, clean, dry, new-crop seed complying with AOSA's "Rules for Testing Seeds" for purity and germination tolerances.
- B. Seed weights designated are for Pure Live Seed (PLS). PLS is defined as the percentage of a quantity of seed that will germinate, and can be obtained by multiplying the seed purity percentage (percentage of seed by weight that is the labeled species) by the percentage of total viable seed, then dividing by one hundred (100).
- C. Seed shall be labeled in accordance with USDA Rules and Regulations under the Federal Seed Act and applicable State seed laws, including tolerance for purity and germination established by Official Seed Analysts of North America. Seed shall be furnished in sealed bags or containers bearing the date of the last germination, which date shall be within a period of six (6) months prior to commencement of planting operations. Seed shall be from same or previous year's crop and shall have a weed content of not more than 1 percent and contain no noxious weeds. The seed mixture shall be as follows:
 1. Lawn Area Seed Mix shall be a blend of two fescues, for draught tolerance and ability to withstand light foot traffic as manufactured by Pennington Seed, Inc., PO Box 290 Madison, GA 30650 tel no 800 285-7333, or equal, as follows:

50%	Rebel II Tall Fescue	Festuca arundinacea
20%	Creeping Red Fescue	Festuca rubra
20%	Palmer II Perennial Ryegrass	Lolium perenne
10%	Kentucky Bluegrass	Poa pratensis

- D. The seed shall be furnished and delivered premixed in the proportions specified above, and accompanied by an affidavit. No seed may be sown until the certificates have been submitted.
- E. Seed shall be delivered in sealed containers bearing the dealer's guaranteed analysis.
 1. Full Sun: Bermudagrass (Cynodon dactylon).
 2. Full Sun: Kentucky bluegrass (Poa pratensis), a minimum of three cultivars.

3. Sun and Partial Shade: Proportioned by weight as follows:
 - a. 50 percent Kentucky bluegrass (*Poa pratensis*).
 - b. 30 percent chewings red fescue (*Festuca rubra* variety).
 - c. 10 percent perennial ryegrass (*Lolium perenne*).
 - d. 10 percent redtop (*Agrostis alba*).
4. Shade: Proportioned by weight as follows:
 - a. 50 percent chewings red fescue (*Festuca rubra* variety).
 - b. 35 percent rough bluegrass (*Poa trivialis*).
 - c. 15 percent redtop (*Agrostis alba*).

2.02 PennDOT Seed mixes

1. Lawn (PennDOT Formula B, seeding rate 21 pounds per 1,000 square yards):
 - a. 50 percent Kentucky bluegrass (*Poa pratensis*)
 - b. 20 percent perennial ryegrass (*Lolium perenne*)
 - c. 30 percent creeping red fescue (*Festuca rubra*)
2. Slope vegetation and unmown areas after construction (PennDOT Formula C, seeding rate nine pounds per 1,000 square yards)
 - a. 55 percent annual ryegrass (*Lolium perenne* ssp. *multiflorum*)
 - b. 45 percent crownvetch (*Coronilla varia*)
3. Seeded areas that will be mowed (shoulders and medians – PennDOT Formula D, seeding rate 21 pounds per 1,000 square yards)
 - a. 70 percent tall fescue (*Lolium arundinaceum*, variety 'Kentucky 31')
 - b. 30 percent creeping red fescue (*Festuca rubra*)
4. Temporary cover for disturbed soils during construction (PennDOT Formula E, seeding rate 10 pounds per 1,000 square yards)
 - a. 100 percent annual ryegrass (*Lolium perenne* ssp. *multiflorum*)
5. Grass areas that will or will not be mowed (PennDOT Formula L, seeding rate 24 pounds per 1,000 square yards)
 - a. 55 percent hard fescue (*Festuca trachyphylla*)
 - b. 35 percent creeping red fescue (*Festuca rubra*)
 - c. 10 percent annual ryegrass (*Lolium perenne* ssp. *multiflorum*)
6. Non-inundated perimeters of wetlands (PennDOT Formula W)
 - a. 50 percent tall fescue (*Lolium arundinaceum*, variety 'Kentucky 31')
 - b. 30 percent birdsfoot trefoil (*Lotus corniculatus*)
 - c. 10 percent grass redtop (*Agrostis gigantea*)

2.03 TURFGRASS SOD

- A. Turfgrass Sod: Certified, complying with "Specifications for Turfgrass Sod Materials" in TPI's "Guideline Specifications to Turfgrass Sodding." Furnish viable sod of uniform density, color, and texture that is strongly rooted and capable of vigorous growth and development when planted.
- B. Turfgrass Species: Sod of grass species as follows, with not less than 85 percent germination, not less than 95 percent pure seed, and not more than 0.5 percent weed seed:
 - 1. Full Sun: Kentucky bluegrass (*Poa pratensis*), a minimum of three cultivars.
 - 2. Sun and Partial Shade: Proportioned by weight as follows:
 - a. 50 percent Kentucky bluegrass (*Poa pratensis*)
 - b. 30 percent chewings red fescue (*Festuca rubra* variety)
 - c. 10 percent perennial ryegrass (*Lolium perenne*)
 - d. 10 percent redtop (*Agrostis alba*)
 - 3. Shade: Proportioned by weight as follows:
 - a. 50 percent chewings red fescue (*Festuca rubra* variety)
 - b. 35 percent rough bluegrass (*Poa trivialis*)
 - c. 15 percent redtop (*Agrostis alba*)

2.04 MEADOW GRASSES AND WILDFLOWERS SEED

- A. Wildflower Seed: Fresh, clean, and dry new seed, of mixed species will be provided on the site specific drawings.
- B. Native-Grass Seed: Fresh, clean, and dry new seed, of mixed species will be provided on the site specific drawings.
- C. Seed Carrier: Inert material, sharp clean sand or perlite.

2.05 MULCHES

- A. Straw Mulch: Provide air-dry, clean, mildew- and seed-free, salt hay or threshed straw of wheat, rye, oats, or barley.
- B. Organic mulch shall be double-shredded well-composted, hardwood bark, aged six (6) months to one year. Size shall be a maximum width or length of two inches (2") and a minimum of a half inch (1/2") in width or length. Mulch shall be free of wood chips, stones or other undesirable matter. Mulch shall be natural hardwood color. Dyes shall not be permitted.
 - 1. Source: The Contractor is reminded that mulch generally meeting these requirements is available for purchase from the Fairmount Park Organic Recycling Center, 3850 Ford Road, Philadelphia, (215) 685-0108.
 - 2. Other supplier conforming to organic mulch requirements above.
- C. Non-asphaltic Tackifier: Colloidal tackifier recommended by fiber-mulch manufacturer for slurry application; nontoxic and free of plant-growth or germination inhibitors.
 - 1. Tackifier shall be MULCHTACK41™MULTI-PURPOSE TACKIFIER / BINDER as manufactured by GEOchem, Incorporated or approved equal.

2.06 EROSION-CONTROL BLANKETS

- A. Erosion-Control Blankets: Biodegradable wood excelsior, straw, or coconut-fiber mat with a minimum thickness of 0.25 inches (1/4"). Blanket should be designed for use on moderate slope and channel applications requiring erosion control for up to 12 months. Blanket shall meet all requirements established in FHWA FP-03 as a type 2D erosion control blanket. Include manufacturer's recommended steel wire staples, six (6) inches long.

PART 3 EXECUTION

3.01 GENERAL

- A. Installation of grasses and turf shall only be performed during those periods within the seasons which are normal for such work as determined by the weather and locally accepted practice, as approved by PWD and set forth in Section 1.10 herein.
- B. Protect adjacent and adjoining structures, utilities, walks, pavements, fences and other facilities, trees, shrubs, mulched beds, plantings, and mulched areas from damage caused by seeding and turf and grass installation operations. Any damages to infrastructure shall be repaired by the Contractor at no cost to PWD.
- C. Schedules for installing grasses and turf shall be submitted to PWD for approval at least three (3) months prior to the start of the upcoming planting season. In the event of inclement weather, planting should occur when conditions permit. In the event of rain, specifically, planting should occur the following day.

3.02 EXAMINATION

- A. Examine areas to be planted for compliance with requirements and other conditions affecting installation and performance of the Work.
 - 1. Verify that no foreign or deleterious material or liquid such as paint, paint washout, concrete slurry, concrete layers or chunks, cement, plaster, oils, gasoline, diesel fuel, paint thinner, turpentine, tar, roofing compound, or acid has been deposited in soil within a planting area.
 - 2. Verify that area to be planted has at least six inches (6") of topsoil, free of glass, stones, and gravel.
 - 3. Review details of subsurface infrastructure to ensure digging does not interfere with other assets.
 - 4. Suspend planting operations during periods of excessive soil moisture until the moisture content reaches acceptable levels to attain the required results.
 - 5. Uniformly moisten excessively dry soil that is not workable or which is dusty.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.
- C. If contamination by foreign or deleterious material or liquid is present in soil within a planting area, remove the soil and contamination as directed by PWD and replace with new stormwater soil.

3.03 PREPARATION

- A. Protect structures; utilities; sidewalks; pavements; and other facilities, trees, shrubs, and plantings from damage caused by planting operations.
 - 1. Protect adjacent and adjoining areas from hydroseeding and hydromulching overspray.
 - 2. Protect grade stakes set by others until directed to remove them.

- B. Install erosion-control measures to prevent erosion or displacement of soils and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways.

3.04 TURF AREA PREPARATION

- A. General: Prepare planting area. Reduce elevation of top soil to allow for soil thickness of sod.
- B. Moisten prepared area before planting if soil is dry. Water thoroughly and allow surface to dry before planting. Do not create muddy soil.
- C. Before planting, obtain Project Manager's acceptance of finish grading; restore planting areas if eroded or otherwise disturbed after finish grading.
- D. Till and loosen the soil, then firm it to achieve good seed-to-soil contact.

3.05 PREPARATION FOR EROSION-CONTROL MATERIAL

- A. Prepare area as specified in "Turf Area Preparation" above.
- B. For erosion-control mats, install stormwater soil in two lifts, with second lift equal to thickness of erosion-control mats. Install erosion-control mat and fasten as recommended by material manufacturer.
- C. Fill cells of erosion-control mat with stormwater soil and compact before planting.
- D. For erosion-control blanket or mesh, install from top of slope, working downward, and as recommended by material manufacturer for site conditions. Fasten as recommended by material manufacturer.
- E. Moisten prepared area before planting if surface is dry. Water thoroughly and allow surface to dry before planting. Do not create muddy soil.

3.06 SEEDING

- A. Sow seed with spreader or seeding machine. Do not broadcast or drop seed when wind velocity exceeds five (5) mph.
- B. Seeding shall be performed during time period outlined in Site Conditions article above. No seeding shall be performed on frozen ground or when the temperature is 32°F/0°C or below.
 - 1. Evenly distribute seed by sowing equal quantities in two directions at right angles to each other.
 - 2. Do not use wet seed or seed that is moldy or otherwise damaged.
 - 3. Do not seed against existing trees. Limit extent of seed to outside edge of planting saucer.
- C. Sow seed at a total rate of 3 to 4 lb./1000 sq. ft.
- D. Rake seed lightly into top 1/8 inch of soil, roll lightly, and water with fine spray.
- E. Protect seeded areas with slopes exceeding 1:4 with erosion-control blankets and 1:6 with erosion-control fiber mesh installed and stapled according to manufacturer's written instructions.
- F. Protect seeded areas with erosion-control mats where indicated on Drawings; install and anchor according to manufacturer's written instructions.
- G. Protect seeded areas with slopes not exceeding 1:6 by spreading straw mulch. Spread uniformly at a minimum rate of to form a continuous blanket 1-1/2 inches in loose thickness over seeded areas. Spread by hand, blower, or other suitable equipment.

3.07 HYDROSEEDING

- A. Moisten prepared lawn areas before planting if soil is dry. Water thoroughly and allow surface to dry before planting. Do not create muddy soil.
- B. Hydroseeding: Mix specified seed (at rates for seeding new lawns), fertilizer, and fiber mulch in water, using equipment specifically designed for hydroseed application. Continue mixing until uniformly blended into homogeneous slurry suitable for hydraulic application.
 - 1. Mix slurry with nonasphaltic tackifier.
 - 2. Apply slurry uniformly to all areas to be seeded in a one-step process. Apply mulch at a minimum rate of 1500-lb/acre dry weight but not less than the rate required to obtain specified seed-sowing rate.
 - 3. Applicator is to spray hydroseed slurry from two (2) or more directions (whenever possible) to avoid “shadowing effect” and assure coverage of at least 95% of the soil.
- C. Protect hydroseeded areas with slopes exceeding 1:6 with erosion-control fiber mesh and 1:4 with erosion-control blankets installed and stapled according to manufacturer's written instructions.
- D. Protect hydroseeded areas with slopes not exceeding 1:6 by spreading straw mulch. Spread uniformly at a minimum rate of two (2) tons/acre to form a continuous blanket one to one and a half (1-1/2) inches in loose depth over hydroseeded areas. Spread by hand, blower, or other suitable equipment.
- E. Bond straw mulch by spraying with non-asphalt mulch tackifier at the rate of thirty (30) lbs./acre. Take precautions to prevent damage or staining of structures or other plantings adjacent to mulched areas. Immediately clean damaged or stained areas.

3.08 SODDING

- A. Lay sod within twenty four (24) hours of harvesting. Do not lay sod if dormant or if ground is frozen or muddy.
- B. Lay sod to form a solid mass with tightly fitted joints. Butt ends and sides of sod; do not stretch or overlap. Stagger sod strips or pads to offset joints in adjacent courses. Avoid damage to soil or sod during installation. Tamp and roll lightly to ensure contact with soil, eliminate air pockets, and form a smooth surface. Work sifted soil or fine sand into minor cracks between pieces of sod; remove excess to avoid smothering sod and adjacent grass.
 - 1. Lay sod across slopes exceeding 1:3.
 - 2. Anchor sod on slopes exceeding 1:6 with wood pegs or steel staples spaced as recommended by sod manufacturer but not less than two anchors per sod strip to prevent slippage.
- C. Saturate sod with fine water spray within two hours of planting. During first week after planting, water daily or more frequently as necessary to maintain moist soil to a minimum depth of 1-1/2 inches below sod.

3.09 TURF RENOVATION

- A. Renovate existing turf where indicated.
- B. Renovate turf damaged by Contractor's operations, such as storage of materials or equipment and movement of vehicles.

1. Reestablish turf where settlement or washouts occur or where minor regrading is required.
 2. Install new stormwater soil as required.
- C. Remove sod and vegetation from diseased or unsatisfactory turf areas; do not bury in soil.
 - D. Remove topsoil containing foreign materials, such as oil drippings, fuel spills, stones, gravel, and other construction materials resulting from Contractor's operations, and replace with new stormwater soil.
 - E. Mow, dethatch, core aerate, and rake existing turf.
 - F. Remove weeds before seeding. Where weeds are extensive, apply selective herbicides as approved by PWD. Do not use pre-emergence herbicides.
 - G. Remove waste and foreign materials, including weeds, soil cores, grass, vegetation, and turf, and legally dispose of them off Owner's property.
 - H. Till stripped, bare, and compacted areas thoroughly to a soil depth of 6 inches.
 - I. Water newly planted areas and keep moist until new turf is established.

3.10 SATISFACTORY TURF

- A. Turf installations shall meet the following criteria as determined by PWD:
 1. Satisfactory Seeded Turf: At end of maintenance period, a healthy, uniform, close stand of grass has been established, free of weeds and surface irregularities, with coverage exceeding 90 percent over any 10 sq. ft. and bare spots not exceeding 5 by 5 inches
 2. Satisfactory Sodded Turf: At end of maintenance period, a healthy, well-rooted, even-colored, viable turf has been established, free of weeds, open joints, bare areas, and surface irregularities.
 3. Use specified materials to reestablish turf that does not comply with requirements, and continue maintenance until turf is satisfactory.

3.11 MEADOW

- A. Sow seed with spreader or seeding machine. Do not broadcast or drop seed when wind velocity exceeds 5 mph.
 1. Before sowing, mix seed with seed carrier at a ratio of not less than three (3) parts seed carrier to one part seed.
 2. Evenly distribute seed by sowing equal quantities in two directions at right angles to each other.
 3. Do not use wet seed or seed that is moldy or otherwise damaged.
- B. Sow seed at a total rate of 8 oz./1000 sq. ft. .
- C. Brush seed into top 1/16 inch of soil, roll lightly, and water with fine spray.
- D. Protect seeded areas from hot, dry weather or drying winds by applying peat of compost mulch within 24 hours after completing seeding operations. Soak areas, scatter mulch uniformly to a thickness of 3/16 inch, and roll surface smooth.
- E. Water newly planted areas and keep moist until meadow is established.

3.12 SATISFACTORY MEADOW

- A. Meadow installations shall meet the following criteria as determined by PWD:
 1. Satisfactory Seeded Meadow: At end of maintenance period, a healthy, uniform, close stand of grass has been established, free of weeds, with coverage exceeding 85 percent over any ten (10) sq. ft.
 2. Satisfactory Plugged Meadow: At end of maintenance period, the required number of plugs has been established as well-rooted, viable meadow, and areas between plugs are free of weeds and other undesirable vegetation.

3.13 MAINTENANCE

- A. Maintenance for provisional acceptance shall begin immediately after each plant area is installed. Contractor will begin a formalized cyclical maintenance program that will last until the end of the maintenance period of eight (8) weeks.
- B. Proposed maintenance activities and schedule shall be coordinated with PWD and shall be in accordance with the program submitted by the Contractor based on Table of Provisional Maintenance Tasks and Schedules below.
- C. Maintain and establish turf and meadow by watering, weeding, mowing, trimming, replanting, and performing other operations as required to establish healthy, viable turf and meadow. Roll, regrade, and replant bare or eroded areas and mulch to produce a uniformly smooth turf. Provide materials and installation the same as those used in the original installation.
- D. Submit Monthly Project Status Reports using the template in Appendix B detailing the completed maintenance activities.
- E. Site inspection for provisional approval shall take place at the end of the eight (8) week period. The Contractor shall coordinate the site inspection with PWD ten (10) calendar days prior to the anticipated date of inspection. Should approval by PWD be delayed until after the 8-week period has elapsed, the Contractor is responsible for continuing maintenance activities until such approval is granted.
- F. Table of Provisional Maintenance Tasks and Schedules:

Task	Description	Frequency
Water vegetation	Install and maintain temporary piping, hoses, and turf-watering equipment to convey water from sources and to keep turf uniformly moist to a depth of four (4) inches. Schedule watering to prevent wilting, puddling, erosion, and displacement of seed or mulch.	Several times per week as needed during Provisional Maintenance period

Task	Description	Frequency
Water seeds and plugs	Water seeds and plugs - do not allow soil to dry out. Provide a half-inch (0.5") of water at each watering. Install and maintain temporary piping, hoses, and turf-watering equipment to convey water from sources and to keep turf uniformly moist to a depth of four (4) inches. Schedule watering to prevent wilting, puddling, erosion, and displacement of seed or mulch.	Several times per week as needed during Provisional Maintenance period
Apply insecticides or other chemicals	Apply treatments as required to keep turf and soil free of pests and pathogens or disease. Use integrated pest management practices whenever possible to minimize the use of pesticides and reduce hazards	As approved by PWD; as needed during Provisional Maintenance period
Mow	Mow turf as soon as top growth is tall enough to cut. Repeat mowing to maintain specified height without cutting more than one-third of grass height. Remove no more than one-third of grass-leaf growth in initial or subsequent mowings. Do not delay mowing until grass blades bend over and become matted. Do not mow when grass is wet. Schedule initial and subsequent mowings to maintain the following grass height: Mow turfgrass to a height of at least 2 inches. Mow meadow grasses once during the first week of July if this date occurs during the Provisional Maintenance period.	As needed during Provisional Maintenance period
Replace dead or damaged grasses and meadow	Replace turf and mulch that has less than 85% cover	As needed during Provisional Maintenance period; should be completed prior to Final PWD Inspection and Walk-through
	Remove trash, sediment, and organic debris from all SMP surfaces	Weekly

Task	Description	Frequency
Remove trash, sediment and organic debris	Clean pretreatment devices; empty filter bags for inlets, domed rises or other structures. Sweep or vacuum at least five (5) ft. one either side of inlets or curb cuts.	Weekly
Remove non-target vegetation	Remove all non-target or invasive vegetation not part of the original planting. Weeds shall be disposed of offsite in an approved manner. Application of weed retardants may be used as approved by PWD.	Weekly
Mulch	In areas where mulch has been disturbed by wind or maintenance operations, add new mulch and anchor as required to prevent displacement.	As needed during Provisional Maintenance period; should be completed prior to Final PWD Inspection and Walk-through
Reset elevations	Fill in as necessary soil subsidence that may occur because of settling or other processes.	As needed during Provisional Maintenance period; should be completed prior to Final PWD Inspection and Walk-through

3.14 CLEANUP AND PROTECTION

- A. The Contractor shall take all measures necessary to keep the work area in a clean, neat condition. Excavated materials shall be removed from the street, and the area cleaned as directed by PWD. Surfaces shall be sprinkled with water or otherwise treated to keep the dust laid during the work. Accumulations of soil and debris on roadways and recreation paths shall be removed daily. All inlets shall be cleaned at the completion of work and as often as necessary during the course of work. Clean wheels of vehicles before leaving site to avoid tracking soil onto roads, walks, or other paved areas.
- B. Remove surplus soil and waste material, including excess subsoil, unsuitable soil, trash, and debris, and legally dispose of them.
- C. Erect temporary fencing or barricades and warning signs as required to protect newly planted areas from traffic. Maintain fencing and barricades throughout initial maintenance period and remove after plantings are established.
- D. Remove non-degradable erosion-control measures after grass establishment period.

3.15 SITE RESTORATION

- A. Restore all disturbed areas to the satisfaction of PWD.

END OF SECTION

SECTION 02925
LANDSCAPE FENCING

PART 1 GENERAL

1.01 SCOPE OF WORK

- A. Furnish all labor, materials, equipment and incidentals to install fencing and gates as specified herein.

1.02 RELATED SECTIONS

- A. Section 01535 Tree Protection
- B. Section 02720 Stormwater Surface Features
- C. Section 02900 Planting

1.03 REFERENCE STANDARDS

- A. American Society for Testing Materials (ASTM)
 - 1. ASTM C-150 – Standard Specification for Portland Cement
 - 2. ASTM C 33 – Standard Specification for Concrete Aggregates
 - 3. ASTM C 260 - Standard Specification for Air-Entraining Admixtures for Concrete
 - 4. ASTM B 221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles and Tubes.
 - 5. ASTM A 90 - Test Method for Weight of Coating on Zinc-Coated (Galvanized) Iron or Steel Articles.
 - 6. ASTM F 1083 - Specification for Pipe, Steel, Black and Hot Dipped Zinc-Coated (Galvanized) Welded and Seamless, for ordinary uses.
 - 7. ASTM A 392 - Specification for Zinc-Coated Steel Chain-Link Fence Fabric.
 - 8. ASTM A 428 - Test Method for Weight of Coating on Aluminum-Coated Iron or Steel Articles.
 - 9. ASTM A 446 - Specification for Steel Sheet, Zinc-Coated (Galvanized) by the Hot-Dip Process, Structural (Physical) Quality.
 - 10. ASTM A 478 - Chromium-Nickel Stainless and Heat Resisting Steel Weaving Wire.
 - 11. ASTM A 491 - Specification for Aluminum-Coated Steel Chain Link Fence Fabric.
 - 12. ASTM A 569 - Specification for Steel, Sheet and Strip, Carbon (0.15 Maximum Percent), Hot-Rolled, Commercial Quality.
 - 13. ASTM A 585 - Specification for Aluminum-Coated Steel Barbed Wire.
 - 14. ASTM A 817 - Specification for Metallic-Coated Steel Wire for Chain Link Fence Fabric.
 - 15. ASTM A 824 - Specification for Metallic-Coated Steel Marcellled Tension Wire for Use with Chain Link Fence.
 - 16. ASTM B 117 - Method of Salt Spray (Fog) Testing.
 - 17. ASTM C 94 - Ready-Mixed Concrete.

18. ASTM F 567 - Standard Practice for Installation of Chain Link Fence.

19. ASTM F 626 - Specification for Fence Fittings.

1.04 SUBMITTALS

- A. Product Data and Shop Drawings: Submit manufacturer's technical data and installation instructions for metal fencing, fabric, and accessories. Shop drawing shall show layout, fabrication, assembly, color, and erection details in accordance with the supplementary conditions shall be submitted to PWD for approval.

1.05 MEASUREMENT AND PAYMENT

- A. The cost of all work and materials for landscape and permanent tree protection fencing shall be paid at the unit price bid per linear foot of fence installed, repaired, replaced, or removed, measured along the bottom of the lower rail from centerline of post to centerline of post.
- B. Chain link fence will be paid for at the appropriate price bid per linear foot. The price bid shall include the following and all appurtenant work and materials, installation of concrete post foundations, steel pipe posts, steel pipe rails (top and bottom), braces, chain link fabric, chain link gate etc., all galvanized or aluminized as herein specified.
- C. Chain link gate shall be included in the unit price bid per linear foot of chain link fence. The price bid shall include furnishing all labor, materials, and equipment for erection of a new steel chain link gate, where shown on the Sketches and/or specified, including excavation, concrete foundations for posts, gate posts, gate frames, wire fabric, top rails, extension arms, barbed wire strands, braces, fittings, hinges, keepers, steps, latches, padlocks and keys, and appurtenant work, installed complete, in place, as detailed on the Sketches, and as specified.
- D. The work performed and materials furnished in accordance with this item and measured as provided under this section will be paid for at the specified unit price in the bid tab.

1.06 QUALITY ASSURANCE

- A. Provide fences from a single source including necessary erection accessories, fittings, and fastenings.
- B. Perform work in compliance with applicable requirements of governing authorities having jurisdiction.
- C. All material specified herein shall be full weight and first class in every respect. All fittings necessary to produce a complete installation shall be included even though not specifically mentioned.

1.07 DELIVERY, STORAGE AND HANDLING

- A. Store products in manufacturer's unopened packaging until ready for installation.
- B. Identify each package with manufacturer's name.
- C. Store fence material and accessories in secure and dry place.

1.08 PREPARATION OF AREAS

- A. Preparation of areas (where required) for work for new fence installations, shall include clearing the areas along the proposed fence lines of all bushes, rocks, vegetation, stumps, roots, high mounds, debris or any other obstructing materials, and removing the cleared materials from the site.

- B. The Contractor shall also make all necessary adjustments to the grades as indicated on the drawings, for the proper installation of the fence.

1.09 EXCAVATION AND BACKFILL

- A. Excavation and backfill (where required), shall be in accordance with the requirements of the City Standard Specifications for Excavation, Refilling, Grading, etc., and as specified.
- B. Approved excavated material may be used for backfill, after foundations for the fences are set.
- C. The materials used for refill and backfilling shall be free from large stones, perishable matter and refuse, or other objectionable matter that would prevent proper consolidation.
- D. The fill shall be thoroughly compacted.
- E. All excess excavated material shall be removed from the site.

1.10 CONCRETE FOUNDATIONS FOR POSTS

- A. New concrete foundations shall be installed for the fence and gate posts.
- B. The preparation of materials for foundations, conduct of work, construction methods, etc., shall conform to City Standard Specifications for Concrete (1965), and as hereinafter specified.
- C. The concrete shall have 3,000 psi compressive strength at 28 days; use maximum 3/4 inch aggregate and ASTM C-94 Portland cement.
- D. Concrete foundations shall be constructed to the depths and the details as indicated on the Drawings. Concrete shall be thoroughly compacted by the hand-tamp method. Concrete shall be cured a minimum of 72 hours, before further work is done on the posts.
- E. The posts shall be embedded in the foundations approximately 24 inches. Portions of the posts that will be embedded shall first be coated with bituminous paint. Fence posts shall be spaced on 10'-0" centers maximum. Posts shall be plumb and properly aligned.

PART 2 PRODUCTS

2.01 PERMANENT PROTECTIVE SPLIT RAIL FENCING

- A. All fencing to be used to permanently surround stormwater surface features shall be as described and detailed on the Drawings. In the event that no details are provided in the Drawings, the fencing will comply with these Specifications at a minimum.
- B. Posts
 - 1. Posts shall be 4" x 4". Any deviations should be approved by PWD.
 - 2. Two-rail or three-rail shall be used as shown on the Drawings.
 - 3. Two-rail posts shall be approximately three (3) feet and one (1) inch (3'-1") in height above finished grade. Three-rail posts shall be approximately four (4) feet and three (3) inches (4'-3") in height above finished grade. Any deviations shall be approved by PWD.
 - 4. Post Materials
 - a. 4"x4" Locust posts with chamfered tops.
 - b. Posts shall be buried 30" into ground.
- C. For wood materials, furnish treated wood or wood of a natural resistance to decay. Provide materials that are free from loose knots, cracks, and other imperfections.

- D. Rails shall be eleven feet (11') long, cedar with tapered ends. Deck screws shall be used to tie rails together at point of intersection at the post.
- E. Wire mesh shall be installed as part of the 3 split rail fence design.
- F. Wire mesh shall be galvanized iron, vinyl coated iron, stainless steel or approved equivalent. Wire mesh dimensions shall be:
 - 1. Wire diameter of 0.15 inch (0.15").
 - 2. Mesh opening of two inches (2").
- G. Wire mesh shall be secured to fence posts and/or rails using steel u-nails, or approved equivalent.
- H. Gates
 - 1. Single or Double gates shall be used as shown on Drawings.
 - 2. All gates must be constructed with the ability to lock via a pad lock on the latch. Latch materials must consist of a medium-heavy duty hardware.
 - 3. All hinge hardware must be galvanized or zinc coated.
 - 4. Hinges shall consist of J-hook anchor bolts with shoulder eye bolt connections.

2.02 PERMANENT ORNAMENTAL PROTECTIVE FENCING

- A. All ornamental fencing to be used to permanently surround stormwater surface features or trees shall be as shown on the Drawing.
- B. Field measurements must be taken prior to fabrication.
- C. Ornamental fence shall come in either 18" or 36" as shown on Drawings.
- D. Gate shall be installed as part of the 36" ornamental fence as shown on Drawings.
- E. Fence shall be galvanized and powder coated tubular steel fence with lifetime limited warranty, unless otherwise shown on Drawings. Fence product should be Northeast Fence & Iron Works, Inc. Westmoreland II, or approved equal.
- F. All steel shall conform to specification C1015 of the A.I.S.I.

2.03 TEMPORARY STAKE AND ROPE FENCING

- A. All fencing to be used as temporary measure to protect stormwater surface during plant establishments periods as shown in Appendix E. Duration of the fencing period to be determined and directed by the Project Manager.
- B. Fencing shall include stakes and rope at spacing noted on Drawings. Stakes shall be set eighteen to twenty-four inches (18-24") above finished grade. Rope shall be a continuous nylon rope.

2.04 PERMANENT TREE PROTECTION FENCING

- A. All permanent tree protection fencing (non-ornamental) to be used to permanently surround trees shall be as shown on the Drawings.
- B. Wire fencing shall be 14-gauge vinyl galvanized wire fencing with a 2"x3" to 2"x4" mesh size and green vinyl coating.

2.05 PERMANENT CHAIN LINK FENCING

- A. Materials

1. Framework: Type I or Type II Steep Pipe.

- a. Type I - Schedule 40 steel pipe with 1.8 ounces of zinc coating per square foot of surface area conforming to Standard Specification ASTM F-1083.
- b. Type II - Pipe manufactured from steel conforming to ASTM A-569, cold-formed, high frequency welded and having a minimum yield strength of 50,000 psi. External surface triple coated with 1.0 ounces + 0.1 ounce of zinc per square foot, 30 + 15 micrograms of chromate per square inch and 0.5 + 0.2 mils of clear, cross linked polyurethane. Internal surface coated, after welding, with a zinc-rich based organic coating having an 87% zinc powder loading capable of providing galvanic protection.
- c. Pipe shall be straight, true to section and conform to the following weights:

Pipe Size	Type I	Type II
Outside Diameter	Weight Lbs./Ft.	Weight Lbs./Ft.
1-5/8"	2.27	1.84
2"	2.72	2.28
2-1/2"	3.65	3.12
3"	5.79	4.64
3-1/2"	7.58	5.71
4"	9.11	6.56
6-5/8"	18.97	--

2. Fabric: Zinc Coated or Aluminum steel.

- a. Zinc-Coated fabric shall be galvanized after weaving with a minimum 2.0 ounces of zinc per square foot of surface area and conform to ASTM A-392, Class 2.
 - b. Aluminum-coated fabric shall be manufactured in accordance with ASTM A-491 and coated before weaving with a minimum of 0.4 ounces of aluminum per square foot of surface area. The steel wire and coating shall conform to ASTM A-817.
3. Fittings: Pressed steel or cast iron, galvanized with a minimum of 1.2 ounces of zinc per square foot of surface area, or cast aluminum alloy, all conforming to ASTM F-626.

B. Components

1. Corner Posts, End Posts, and Pull Posts:

- a. Size - 3 inches OD Type I or Type II pipe.
- b. All posts shall be plumb within 5 (+1) in two planes.
- c. Deflection - When a force of 70 pounds is applied perpendicular to the fence at the top of the post, it shall not deflect more than 1 inch at that location.
- d. Pull posts shall be used at all abrupt changes in grade, direction, and at intervals no greater than 300 feet.

- e. Posts shall be horizontally braced at mid-point with 1-5/8 inches OD brace rails and diagonally trussed with 3/8 inches OD truss rods and turnbuckles to adjacent post. Corner posts shall be braced in both directions. This paragraph (2.02 A.5) shall also apply to gate posts.
2. Line Posts:
 - a. Size - 2-1/2 inch O.D. Type I or Type II pipe.
 - b. Space posts equidistant in the fence-line, with a maximum of 10 feet on centers.
 - c. All posts to be plumb within 5" (+1) in two planes.
 - d. Deflection - When a force of 38 pounds is applied perpendicular to the fence at the top of the post, it shall not deflect more than 1 inch at that location.
 3. Top Rail:
 - a. Install top rails continuously through post caps or extension arms.
 - b. Size - 1-5/8 inches OD Type I or Type II pipe.
 - c. Each joint where a rail meets a post shall be secured so that no perceivable movement between the two pieces takes place when the fence fabric is flexed.
 4. Bottom and Intermediate Rails:
 - a. Install bottom and intermediate rails in one piece between posts and flush with posts on fabric side.
 - b. Size - 1-5/8 inches OD Type I or Type II pipe.
 - c. Each joint where a rail meets a post shall be secured so that no perceivable movement between the two pieces takes place when fence fabric is flexed.
 5. Fabric: Galvanized or aluminum-coated steel wire, 6 gauge, woven in a 2 inch diamond mesh with top and bottom selvages twisted and barbed. Furnish one piece fabric widths.
 6. Fittings:
 - a. Post Caps - Pressed steel, cast iron or cast aluminum alloy designed to fit snugly over posts to exclude moisture. Supply cone type caps for terminal posts and loop type for line posts. All caps to be equipped with set screws.
 - b. Rail and Brace Ends - Pressed steel, cast iron or cast aluminum alloy, cup-shaped to receive rail and brace ends.
 - c. Top Rail Sleeves - Tubular steel, 0.051 inch thickness by 7 inches long, expansion type.
 - d. Tension Bars - Steel strip 5/8 inches wide by 3/16 inch thick.
 - e. Tension Bands - Pressed steel, 14 gauge thickness by 3/4 inch wide.
 - f. Brace Bands - Pressed steel, 12 gauge thickness by 3/4 inch wide.
 - g. Truss Rods - Steel rod, 3/8 inch diameter merchant quality with turnbuckle.
 7. Tension Wire: Marcellled 7 gauge steel wire with minimum coating of 0.80 ounces of zinc or 0.40 ounces of aluminum per square foot of wire surface and conforming to ASTM A-824.
 8. Tie Wire: Steel, 9 gauge, hot-dip galvanized, or aluminum, 9 gauge, alloy 1100-H4 or equal.

9. Hog Rings: Steel wire, 11 gauge, with a minimum zinc coating of 0.80 ounces per square foot of wire surface.

C. Testing

1. Testing of fence materials will be done by the City at the Water Department Materials Testing Laboratory without cost to the Contractor.
2. The Contractor will be required to have sufficient material on hand so that ample test specimens may be taken at random on the site.

2.06 CHAIN LINK GATES

A. Materials

1. Materials for gates shall be as specified under Chain Link Fences, with the following additions/modifications.
2. Gate posts shall conform to the following schedule:

<u>Opening</u>	<u>Post Size</u>
To 6' inclusive	3" OD
Over 6' to 12' inclusive	3" OD
Over 12' to 26' inclusive	4" OD
Over 26' to 36' inclusive	6-5/8" OD

B. Swinging and Man Gates

1. Fabricate swing gate perimeter frames of 2 inch OD pipe, Type I or Type II. Metal and finish to match framework. Provide horizontal and vertical members to ensure proper gate operation and for attachment of fabric, hardware and accessories. Space so that frame members are not more than 8 feet apart.
2. Assemble gate frames by welding, and repair weld areas with zinc-rich coating applied per manufacturer's directions. Install fabric with tension bars at vertical edges. Bars may also be used at top and bottom edges. Attach tension bars to gate frame at not more than 15 inches on centers. Attach hardware to provide security against removal or breakage. Install diagonal cross-bracing consisting of 3/8 inch diameter adjustable length truss rods on gates to ensure frame rigidity without sag or twist.

C. Hinges and Latches

1. Hinges: Size and material to suit gate size, non-lift-off type, offset to permit 180` gate opening. Provide 1-1/2 pair of hinges for each leaf. Hinges to be heavy duty ball and socket, malleable iron, hot-dip galvanized.
2. Latches shall be forged and pressed steel heavily galvanized U-latching devices (for padlocks).
3. Keepers shall be provided at the point of maximum opening.

D. Locks and Keys

1. Each gate shall be provided with a padlock of approved heavy duty solid brass, and six keys.

PART 3 EXECUTION

3.01 General

- A. Coordinate setting posts with construction activities of other trades.
- B. Posts shall be spaced not more than ten feet (10') on centers in line of fence. They shall be plumb with tops properly aligned, and embedded securely in concrete foundations as shown on drawings.
- C. Provide terminal post at each termination and change in horizontal or vertical direction of 30 degrees or more. All posts shall be plumb with tops properly aligned, and embedded securely in concrete foundations as shown on drawings.
- D. The area of installation shall be left neat and free of any debris caused by the erection of the fence.

3.02 INSTALLING PERMANENT PROTECTIVE SPLIT RAIL FENCING

- A. Install all permanent protective split rail fencing in locations as shown on the Drawings and in the manner as specified by the manufacturer. All fencing posts shall be anchored in concrete footer of a minimum twelve inches (12") in diameter and at a minimum three feet (3') in depth. Bottom rails shall have clearance over all finished grades. No bent or otherwise damaged pieces of fencing or hardware shall be installed. Any damaged pieces may be required by PWD to be replaced at no additional cost to the City.

3.03 INSTALLING PERMANENT ORNAMENTAL PROTECTIVE FENCING

- A. Fence post shall be spaced according to the Drawings.

3.04 INSTALLING PERMANENT TREE PROTECTIVE FENCING (NON-ORNAMENTAL)

- A. Fence post shall be spaced according to the Drawings.

3.05 INSTALLING PERMANENT CHAIN LINK FENCING

A. Erection

1. General: Fence installation to conform to requirements of ASTM F-567.
2. Post Setting: Set terminal, gate and line posts plumb in concrete footings as indicated on Contract Drawings. Top of footing to be at grade and sloped to direct water away from posts.
3. Bracing: Brace gate and terminal posts back to adjacent line posts with horizontal brace rails and diagonal truss rods.
4. Top Rail: Install through line post loop caps connecting sections with sleeves to form a continuous rail between terminal posts. Fasten to terminal posts.
5. Top Tension Wire: When top rail is omitted, stretch tension wire through loop caps and fasten securely to terminal posts.
6. Bottom Tension Wire: Stretch between terminal posts 6 inches above grade and fasten to outside of line posts with tie wires.
7. Fabric: Pull fabric taut to provide a smooth uniform appearance, free from sag, with bottom selvage 2 inches above grade. Fasten to terminal posts with tension bars threaded through mesh and secured with tension bands at maximum 15 inch intervals. Tie to line posts and top

rails with tie wires spaced at maximum 12 inches on posts, and 24 inches on rails. Attach to bottom tension wire with hog rings at maximum 24 inch intervals.

8. Fasteners: Install nuts for fittings, bands and hardware bolts on inside of fence. Peen ends of bolts or score threads to prevent removal.
9. Openings: The Contractor shall install chain link fencing as specified herein and shall leave openings at the existing pathways or as determined by PWD.

3.06 INSTALLING PERMANENT CHAIN LINK GATE

A. Erection

1. Gate posts shall be set carefully, to ensure that the gates will work freely and close properly when attached to posts.
2. Gate hinges and diagonal braces shall be adjusted so that the gates hang level.
3. The gates shall work freely and close properly.

END OF SECTION

APPENDIX A - MAINTENANCE OF TRAFFIC REQUIREMENTS

- A. No work will be done in the intersections during peak hours, (6:30 a.m. to 9:00 a.m. and 4:00 p.m. to 6:30 p.m.). To avoid excessive disruption to neighborhoods, the Contractor will not be permitted to start excavation in an additional block unless approved in writing by PWD or until work in the current block has been completed to the extent satisfactory to the Water Department.
- B. During working hours establish and maintain travel lane using steel plates as necessary and during non-working hours deck all excavations with steel plates. Prior placing any steel plate, the contractor shall provide the Right of Way Unit of the Department of Streets inspector with an emergency telephone number in the event any steel plating or decking is dislodged as described in article 3.03, Steel Plate For Decking of Section 01570, Traffic Regulation. The Contractor shall note, however, that the use of steel plates in State Routes is prohibited; temporary pavement restoration shall be required to reopen areas to traffic.

- C. For work in main streets between intersecting streets including the following blocks:

53RD STREET FROM CEDAR AVENUE TO BALTIMORE AVENUE

CEDAR AVENUE FROM 53RD STREET TO 51ST STREET

WALTON AVENUE FROM 53RD STREET TO 51ST STREET

CATHARINE STREET FROM 52ND STREET TO 50TH STREET

51ST STREET FROM CEDAR AVENUE TO BALTIMORE AVENUE

- 1. While working in the above streets, establish and maintain travel lanes using steel plates and flagmen as necessary to allow through traffic. (Traffic control on State Routes shall follow the requirements of PennDOT Pub. 213.) Post temporary no parking signs where necessary to establish the travel lanes, to store equipment and materials, and to maneuver equipment for installation of the proposed sewers and water mains. Maintain access to local properties and driveways at all times. Where the proposed water mains are located in the footway areas, close the footways as required but only to the extent where water main work is actually being performed. Provide a safe, alternate passageway for pedestrians around the work areas. Work with minimum disturbance to the businesses and residences in the area. During non-working hours, backfill or deck with steel plates all excavations, restore parking, and re-open the footways providing the full width use of the roadways and footways to traffic and pedestrians respectively.
- 2. During working hours in the intersecting streets, establish and maintain travel lanes using steel plates and flagmen as necessary to allow through traffic. Where the intersecting streets are too narrow to maintain a travel lane, close that intersecting streets only for a duration of time necessary to complete the sewer and/or water main tie-ins or crossings, and restore the paving. During non-working hours, backfill or deck with steel plates all excavations providing the full width use of the intersections to traffic.

D. PEDESTRIAN TRAFFIC PROTECTION AND MAINTENANCE REQUIREMENTS

Businesses in the vicinity of project are to remain open throughout construction. The Contractor is responsible for maintaining safe access to these locations. SEPTA ROUTING

- E. The following operational service routes require attention:

- 1. BUS ROUTES

- a. Trolley Route 34 runs along Baltimore Avenue
- b. Route 52 runs along 52nd Street
- 2. BUS STOPS
 - a. NEC of 53rd and Baltimore Avenue
 - b. SWC of 53rd and Baltimore Avenue
 - c. NEC of 52nd Street and Cedar Avenue
 - d. NEC of 51st Street and Baltimore Avenue
 - e. SWC of 51st Street and Baltimore Avenue
- 3. TRACKS/CATENARY/TROLLEY POLE
 - a. Tracks, Catenary, and Poles on Baltimore Avenue

END OF REQUIREMENTS

APPENDIX B – PROJECT SIGNAGE

GENERAL NOTES:

THIS WORK CONSISTS OF THE MAINTENANCE OF TRAFFIC AND THE PROTECTION OF THE TRAVELING PUBLIC, PEDESTRIANS, AND BICYCLISTS APPROACHING THE CONSTRUCTION AREA AND WITHIN THE LIMITS OF CONSTRUCTION.

FURNISH, ERECT, PLACE AND MAINTAIN TRAFFIC CONTROL SIGNS AND DEVICES AND MAINTAIN TRAFFIC DURING THE HOURS OF CONSTRUCTION AND AT ALL OTHER TIMES IN ACCORDANCE WITH THE METHODS INDICATED ON THE DRAWINGS AND:

1. THE SPECIAL PROVISIONS OF THE CONTRACT.
2. PENNDOT PUBLICATION NO. 212, OFFICIAL TRAFFIC CONTROL DEVICES.
3. PENNDOT PUB 213, TEMPORARY TRAFFIC CONTROL GUIDELINES.
4. FHWA MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES.
5. PENNDOT PUB 35, APPROVED CONSTRUCTION MATERIALS (BULLETIN 15).
6. PENNDOT PUB 408, SPECIFICATIONS.
7. PENNDOT PUB 111, TRAFFIC CONTROL – PAVEMENT MARKING AND SIGNING STANDARDS.
8. PENNDOT PUB 46, TRAFFIC ENGINEERING MANUAL.
9. PENNDOT PUB 236, HANDBOOK OF APPROVED SIGNS.

ALL SIGNS TO BE IN NEW CONDITION AND MAINTAINED AS SUCH.

ALL SIGNS NOT IN USE ARE TO BE EITHER COVERED OR REMOVED FROM SIGHT. COVER ALL CONFLICTING EXISTING SIGNS.

ALL WORK IS TO BE PERFORMED WITHIN THE LEGAL RIGHT-OF-WAY.

THIS TRAFFIC CONTROL PLAN DOES NOT RELIEVE THE CONTRACTOR OF HIS RESPONSIBILITY AS SPECIFIED IN SECTION 901.3 (A) OF PENNDOT PUBLICATION #408.

THE CONTRACTOR IS REMINDED THAT THIS PLAN IS NOT INTENDED TO RELIEVE HIM OF THE RESPONSIBILITY FOR THE PROTECTION OF THE PUBLIC AND THE CONSTRUCTION PERSONNEL. THE PWD CONSTRUCTION ZONE STANDARDS ARE MINIMUM AND ADDITIONAL PROTECTION MAY BE NEEDED. IF PROBLEMS ARE ENCOUNTERED DURING THE TERM OF THE CONTRACT, CONSTANTLY REVIEW THIS PLAN FOR ADEQUACY AND TO RECOMMEND CHANGES FOR PWD REPRESENTATIVE APPROVAL WHEN INADEQUACIES ARE DISCOVERED.

NOTIFY THE PWD REPRESENTATIVE AT LEAST TWO WEEKS PRIOR TO MODIFYING EXISTING TRAFFIC PATTERNS. ALL MODIFICATIONS MUST BE APPROVED BY THE PWD REPRESENTATIVE.

NOTIFY LOCAL SCHOOL DISTRICTS, PHILADELPHIA STREETS DEPARTMENT, PENNDOT 6-0, SEPTA, AND EMERGENCY SERVICE PROVIDERS A MINIMUM OF TWO WEEKS PRIOR TO IMPLEMENTATION OF A START OF WORK. PROVIDE THE PWD REPRESENTATIVE WITH A LIST OF THE ENTITIES NOTIFIED, INCLUDING: THE CONTRACT PERSON(S) NAME AND POSITION, TELEPHONE NUMBER AND THE DATE THE PERSON(S) WERE NOTIFIED.

ALL LONG-TERM CONSTRUCTION SIGNING TO BE FREE STANDING AND MOUNTED ON TYPE III BARRICADES UNLESS OTHERWISE NOTED.

IMMEDIATELY UPON COMPLETION OF THE WORK, REMOVE TRAFFIC CONTROL SIGNS AND DEVICES. FOR ALL TYPE "B" MOUNTED TRAFFIC CONTROL SIGNS, PULL ANCHOR POSTS AND RESTORE PAVING AND SIDEWALK.

ALL TRAFFIC CONTROL SIGNS AND DEVICES PLACED MUST BE INSPECTED BY THE PWD REPRESENTATIVE OR HIS REPRESENTATIVE BEFORE WORK BEGINS.

INSTALL AND MAINTAIN THE TEMPORARY SIGNS AND TRAFFIC CONTROL DEVICES AS INDICATED ON THE PWD CONSTRUCTION ZONE STANDARDS AND IN ACCORDANCE WITH THE PROVISIONS OF PENNDOT PUBLICATION 213. ALL SIGNS ARE TO BE TYPE VII RETROREFLECTIVE SHEETING CONFORMING TO THE DEPARTMENT'S SPECIFICATION. REFLECTORIZE ALL DRUMS AND BARRICADES USED FOR TRAFFIC CONTROL USING TYPE III OR TYPE IV RETROREFLECTIVE SHEETING.

KEEP DRIVEWAYS ACCESSIBLE AT ALL TIMES. LOCATE ALL SIGNS SO THAT SIGHT DISTANCE IS NOT OBSTRUCTED AT DRIVEWAYS AND SIDE STREETS.

ALL ADVANCE WARNING SIGNS AND CHANNELIZING DEVICES MAY BE ADJUSTED BACK OR FORWARD TO INTERSECTING STREETS, DRIVES, ETC. AND/OR AS FIELD CONDITIONS DICTATE.

REMOVE ALL CONFLICTING PAVEMENT MARKINGS (TEMPORARY AND EXISTING) IN A MANNER APPROVED BY THE PWD REPRESENTATIVE AND REPLACE UPON COMPLETION OF THE PROJECT.

PLACE TEMPORARY PARKING RESTRICTION SIGNS AS NEEDED FOR THE DURATION OF EACH CONSTRUCTION STAGE. CONTACT PHILADELPHIA PARKING AUTHORITY AND PAT O'DONNELL, PHILADELPHIA STREETS DEPARTMENT AT (215)-686-5524 TO COORDINATE PARKING RESTRICTIONS.

COORDINATE THE COVERING OR REMOVAL OF PARKING METERS AND KIOSKS WITH PHILADELPHIA PARKING AUTHORITY.

PLACE TEMPORARY SEPTA STOP RELOCATION SIGNS AS NEEDED FOR THE DURATION OF EACH CONSTRUCTION STAGE. CONTACT SEPTA AND PAT O'DONNELL, PHILADELPHIA STREETS DEPARTMENT AT (215)-686-5524 TO COORDINATE SEPTA STOP RELOCATION.

CONTACT CITY OF PHILADELPHIA STREETS DEPARTMENT TO COORDINATE BIKE LANE RESTRICTIONS.

CONTRACTOR IS RESPONSIBLE FOR COORDINATING CONSTRUCTION ACTIVITIES, CONSTRUCTION SIGNING, AND MAINTENANCE AND PROTECTION OF TRAFFIC WITH ALL CONTRACTORS AND SUBCONTRACTORS OF ADJACENT CONSTRUCTION PROJECTS UNDER CONTRACT WITH PWD, PENNDOT AND / OR CITY OF PHILADELPHIA. ALL COSTS ASSOCIATED WITH COORDINATION WILL BE THE RESPONSIBILITY OF THE CONTRACTOR.

CONTRACTOR MUST COORDINATE TRAFFIC CONTROL SIGNING WITH CURRENT CONSTRUCTION OPERATIONS AND ADJUST SIGNING IF FIELD CONDITIONS WARRANT.

SHORT TERM OPERATIONS NOT INDICATED IN THIS PLAN SHALL BE PERFORMED USING THE APPLICABLE PATA FIGURES OF PENNDOT PUBLICATION 213.

THE CONTRACTOR IS RESPONSIBLE FOR THE COVERING, REMOVAL, AND/OR STORAGE OF ALL CONFLICTING SIGNS WITHIN THE PROJECT LIMITS. THESE SIGNS WILL REMAIN THE PROPERTY OF THE OWNER. THE CONTRACTOR IS RESPONSIBLE FOR REINSTALLING THE APPLICABLE SIGNS AT THE END OF THE PROJECT AS DIRECTED BY THE PWD REPRESENTATIVE. ANY SIGNS THAT ARE DAMAGED WILL BE REPLACED BY THE CONTRACTOR.

MAINTAIN ACCESS TO FIRE HYDRANTS DURING CONSTRUCTION.

WORKING HOURS SUBJECT TO MODIFICATIONS AS DIRECTED BY THE PWD REPRESENTATIVE. DAYTIME TRAVEL LANE CLOSURES AND NIGHT WORK ARE LIMITED TO CITY OF PHILADELPHIA ORDINANCES.

WHENEVER THE ROADWAY IS OPENED TO TRAFFIC PRIOR TO THE COMPLETION OF THE OVERLAY APPLICATION, AS MAY BE ALLOWED OR DIRECTED BY THE PWD REPRESENTATIVE, ACCOMPLISH PROPER TRANSITION BETWEEN THE SURFACE DIFFERENTIALS BEFORE THE TRAFFIC IS ROUTED ONTO THE INCOMPLETE LANE.


PWD CONSTRUCTION ZONE STANDARDS SHOULD BE USED ON ROADS CLASSIFIED AS LOCAL WORK ON STATE ROUTES REQUIRE A PROJECT SPECIFIC MAINTENANCE AND PROTECTION OF TRAFFIC PLAN.

CONFIRM ROADWAY CLASSIFICATION AS DEFINED BY PHILADELPHIA STREETS DEPARTMENT.

CONSTRUCTION DETAILS OTHER THAN THOSE SHOWN ON THESE DRAWINGS TO CONFORM TO THE FOLLOWING STANDARD DRAWINGS:

RC-10M	JUNE 1, 2010	TC-8600	JUNE 13, 2013
RC-13M	JUNE 1, 2010	TC-8700C	JUNE 13, 2013
RC-64M	JUNE 1, 2010	TC-8702B	JUNE 13, 2013
RC-65M	JUNE 1, 2010	TC-8717	JUNE 13, 2013
RC-67M	JUNE 10, 2013	TC-8801	DEC. 12, 2011
RC-70M	JUNE 1, 2010	TC-8802	DEC. 12, 2011
RC-72M	JUNE 1, 2010	TC-8803	DEC. 12, 2011
RC-75M	JUNE 1, 2010	TC-8804	DEC. 12, 2011
		TC-8805	DEC. 12, 2011
		TC-8806	DEC. 12, 2011

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PROJECT NAME:		
STREET/BLOCK:		
PWD CONSTRUCTION ZONE STANDARDS GENERAL NOTES		
DATE: JUNE 2016	1	SHEET 1 OF 15
SCALE: NTS		
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DESIGN BY:		
CHECKED BY:		

PEDESTRIAN FACILITIES:

STAGE CONSTRUCTION TO MAINTAIN PEDESTRIAN WALKWAYS THROUGH WORK ZONES OR PROVIDE PEDESTRIAN DETOURS.

IF SIDEWALKS MUST BE CLOSED, REFER TO PENNDOT PUBLICATION 213 PATA FIGURES 128, 129, AND 130.

MAINTAIN ACCESS TO ALL BUILDING ENTRANCES AND DRIVEWAYS. MAINTAIN ACCESS TO ALL BUS STOPS. COORDINATE WITH SEPTA FOR TEMPORARY BUS STOP RELOCATION.

PEDESTRIAN WALKWAYS MUST BE A MINIMUM OF 4-FT IN WIDTH. PROVIDE MINIMUM 5-FT WIDTH WHEREVER FEASIBLE. EVERY 200-FT A 5-FT WIDE X 5-FT LONG PASSING ZONE MUST BE PROVIDED UNLESS A 5-FT WIDE WALKWAY CAN BE PROVIDED THROUGHOUT THE WHOLE LENGTH.

ADA COMPLIANT WALKWAYS MUST HAVE A MAXIMUM CROSS-SLOPE OF 2% AND A MAXIMUM GRADIENT OF 8.33% (12:1) INCLUDING RAMP AREAS TO ROADWAYS.

WALKWAYS SURFACES MUST BE STABLE AND SLIP RESISTANT. INLET GRATES AND UTILITY CASTING ARE NOT PERMITTED IN THE WALKWAYS AND CROSSWALKS BUT MAY BE COVERED WITH A SUITABLE MATERIAL MEETING AMERICANS WITH DISABILITIES ACT (ADA) REQUIREMENTS.

MAINTAIN IN PLACE PEDESTRIAN FACILITIES UNTIL OPENING MODIFIED PEDESTRIAN PATTERNS.

WHERE PEDESTRIANS ARE ADJACENT TO ONGOING CONSTRUCTION OR WITHIN 4-FT OF A TRAVEL LANE, PROVIDE A 4-FT FENCE BARRIER MADE OF PLASTIC OR METAL. USE METAL FENCE FOR DROP OFFS GREATER THAN 2 FEET OR AS DIRECTED BY THE PWD REPRESENTATIVE.

THE PEDESTRIAN BARRIERS SHALL BE CONTINUOUS, STABLE AND NON-FLEXIBLE WITH A DETECTABLE, CONTINUOUS BOTTOM EDGE 6 INCHES ABOVE THE WALKWAY SURFACE. THE PEDESTRIANS BARRIER SHALL ALSO PROVIDE A CONTINUOUS SURFACE OR UPPER RAIL AT A 36" MINIMUM HEIGHT ABOVE THE WALKWAY SURFACE. THE PWD REPRESENTATIVE MUST APPROVE THE FENCE BARRIER DESIGN PRIOR TO INSTALLATION.

IF CONSTRUCTION MATERIALS ARE LIFTED OVER ACTIVE PEDESTRIAN FACILITIES THEN OVERHEAD PROTECTION APPROVED BY THE PWD REPRESENTATIVE MUST BE IN PLACE.

NOTHING SHALL BE PERMITTED TO PROTRUDE INTO THE PEDESTRIAN WALKWAY.

CONTRACTOR SHALL COORDINATE ALL ACTIVITIES WITH PWD, THE CITY OF PHILADELPHIA AND PENNDOT DISTRICT 6 ON STATE ROUTES.

DISTANCE QUICK REFERENCE CHART

SPEED (MPH)	W	L	L/2
25	10	105'	55'
	11	115'	60'
	12	125'	65'
30	10	150'	75'
	11	165'	85'
	12	180'	90'
35	10	205'	105'
	11	225'	115'
	12	245'	125'
40	10	270'	135'
	11	295'	150'
	12	320'	160'
45	10	450'	225'
	11	495'	250'
	12	540'	270'

TAPER CALCULATIONS

L = W*S*S/60 (FOR SPEED LIMIT = 40 MPH OR LESS)

W = WIDTH

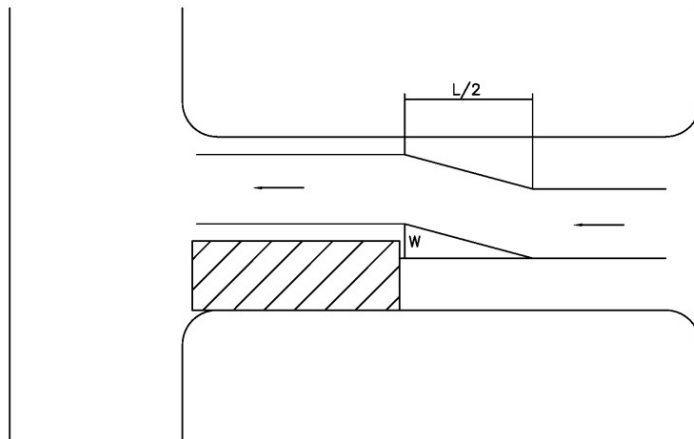
S = SPEED LIMIT

L = W*S (FOR SPEED LIMIT = 45 MPH OR MORE)

W = WIDTH

S = SPEED LIMIT

TAPER LENGTH



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PROJECT NAME:

STREET/BLOCK:

PWD CONSTRUCTION ZONE STANDARDS
GENERAL NOTES - PEDESTRIANS

DATE: JUNE 2016
SCALE: NTS
DRAWN BY:
DESIGN BY:
CHECKED BY:

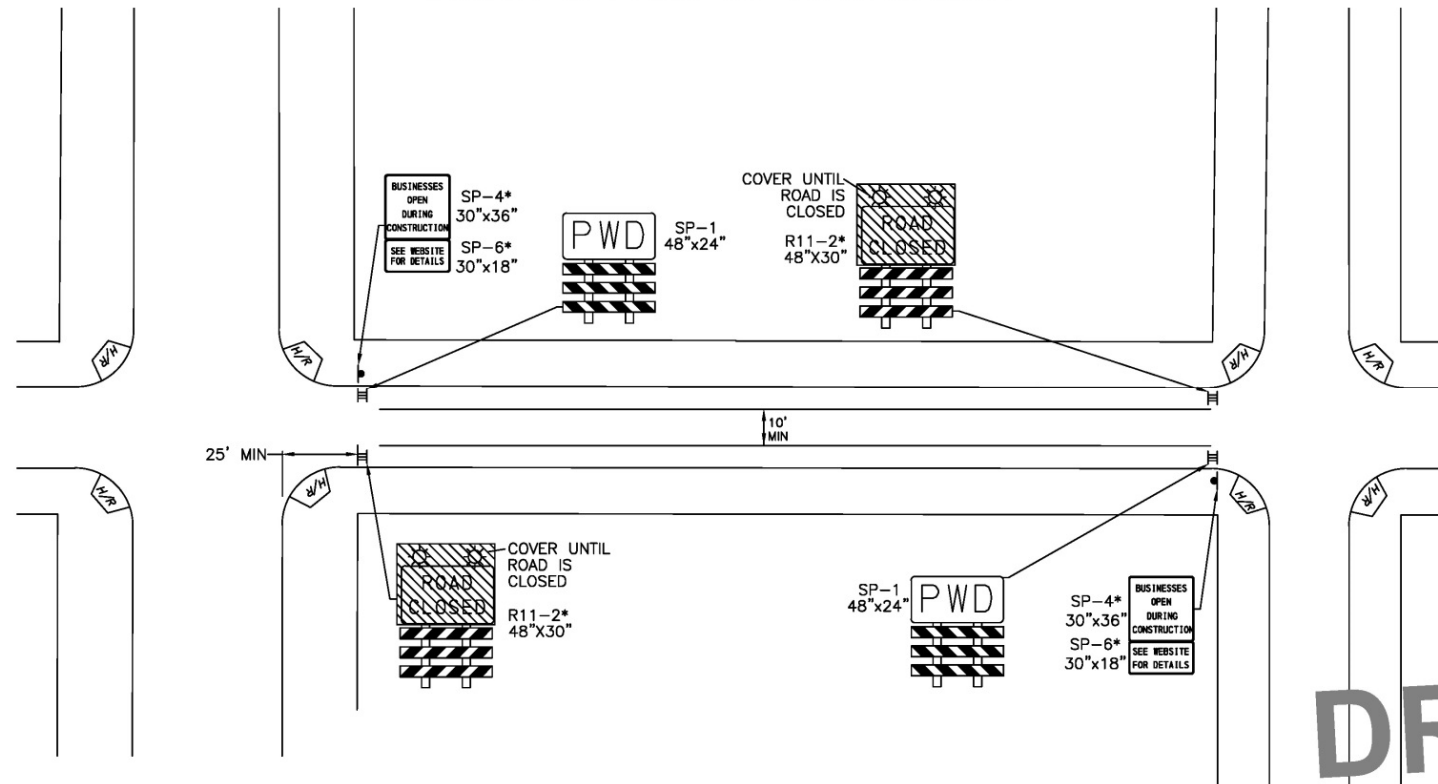
2
SHEET 2 OF 15

FIGURE 1: PRIOR TO CONSTRUCTION

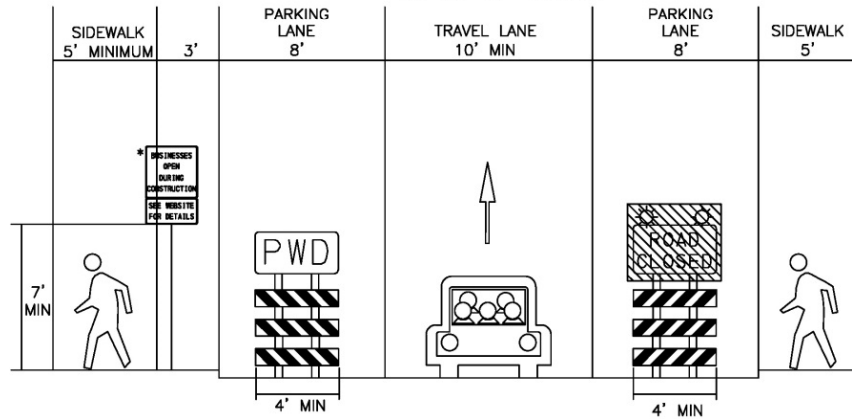
NOTES:

1. PLACE SIGNS AT START OF EXISTING PARKING LANES WITH MINIMUM IMPACT TO PARKING LANE.
2. PLACE BUSINESSES OPEN DURING CONSTRUCTION SIGNS ON SIDEWALK OUT OF THE PEDESTRIAN PATH.
3. INSTALL SIGN SP-4 WHEN BUSINESSES ARE PRESENT ON THE BLOCK UNDER CONSTRUCTION.
4. STATE ROUTES REQUIRE PROJECT SPECIFIC MPT PLAN.

*AS NEEDED



TYPICAL SECTION START OF BLOCK



LEGEND:

- III TYPE III BARRICADE
- SIGN POST

PROJECT NAME:	
STREET/BLOCK:	
PWD CONSTRUCTION ZONE STANDARDS FIGURE 1: PRIOR TO CONSTRUCTION	
DATE: JUNE 2016	3
SCALE: NTS	
DRAWN BY:	
DESIGN BY:	
CHECKED BY:	
SHEET 3 OF 15	

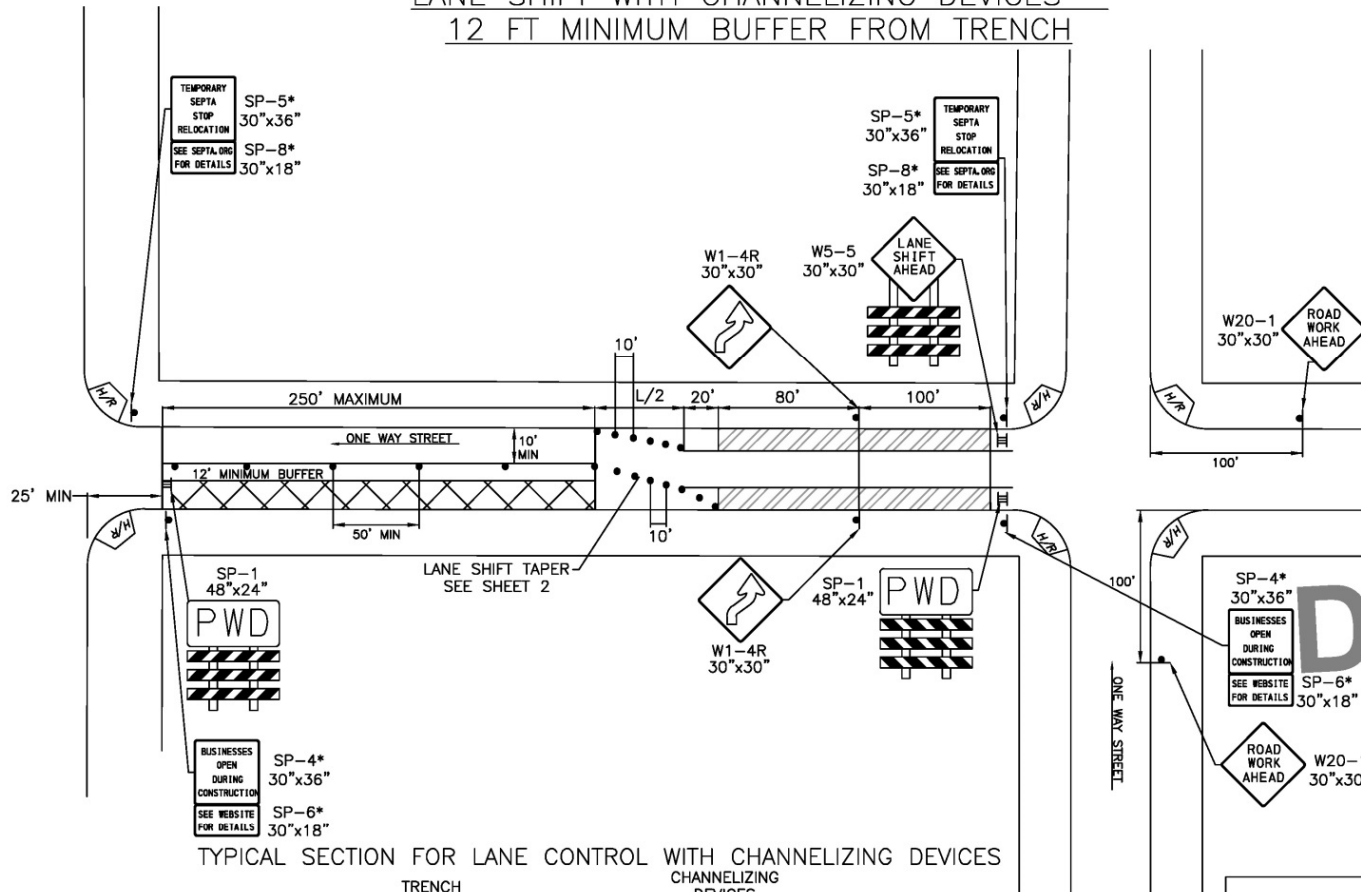
NOT TO SCALE

**FIGURE 2A: CONSTRUCTION ZONE SIGNS
ONE-WAY STREET
LANE SHIFT WITH CHANNELIZING DEVICES –
12 FT MINIMUM BUFFER FROM TRENCH**

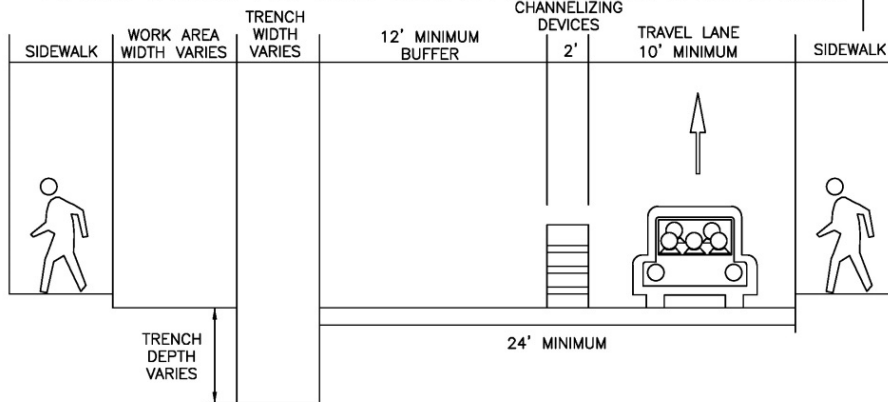
NOTES:

1. PLACE SIGNS AT START OF EXISTING PARKING LANES WITH MINIMUM IMPACT TO PARKING LANE.
2. PLACE SIGNS ON SIDEWALK OUT OF THE PEDESTRIAN PATH.
3. INSTALL SIGN SP-4 WHEN BUSINESSES ARE PRESENT ON THE BLOCK UNDER CONSTRUCTION.
4. INSTALL SIGN SP-5 WHEN SEPTA STOP RELOCATION IS ON THIS BLOCK.
5. TYPICAL WORKING HOURS 7AM-4PM.
6. COORDINATE TEMPORARY NO PARKING SIGNS WITH PHILADELPHIA PARKING AUTHORITY AS NEEDED.
7. COORDINATE SEPTA STOP RELOCATION WITH SEPTA AS NEEDED.
8. CHANNELIZING DEVICES MAY BE USED IF 24 FEET ARE AVAILABLE BETWEEN THE EDGE OF CURB AND THE EDGE OF TRENCH.
9. GUIDANCE DEPENDS ON SITE CONDITIONS.
10. STATE ROUTES REQUIRE PROJECT SPECIFIC MPT PLAN.

*AS NEEDED



TYPICAL SECTION FOR LANE CONTROL WITH CHANNELIZING DEVICES



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LEGEND:

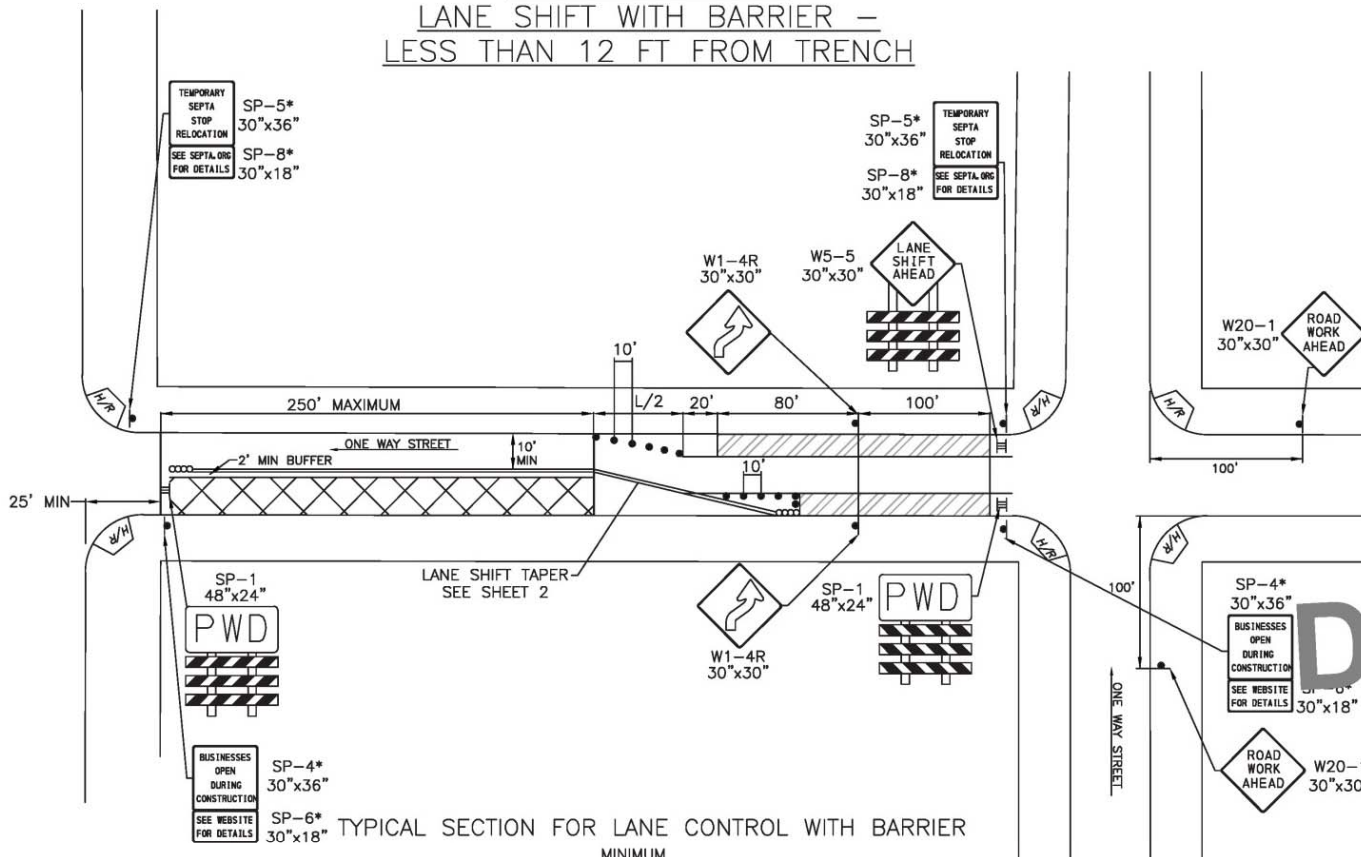
- ROAD WORK AREA
- PARKING AREA
- TYPE III BARRICADE
- SIGN POST
- CHANNELIZING DEVICE

 PHILADELPHIA WATER <small>EST. 1801</small>	
PROJECT NAME:	
STREET/BLOCK:	
PWD CONSTRUCTION ZONE STANDARDS FIGURE 2A: ONE-WAY STREET LANE SHIFT WITH CHANNELIZING DEVICES – 12 FT MINIMUM BUFFER FROM TRENCH	
DATE: JUNE 2016	4
SCALE: NTS	
DRAWN BY:	
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SHEET 4 OF 15	

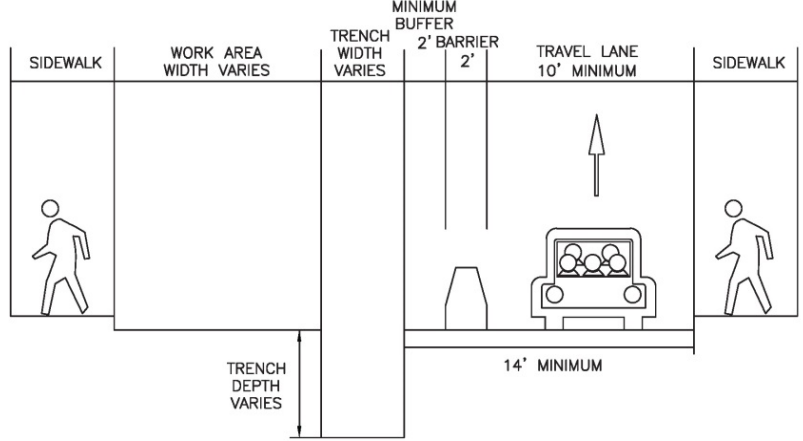
FIGURE 2B: CONSTRUCTION ZONE SIGNS
 ONE-WAY STREET
 LANE SHIFT WITH BARRIER –
 LESS THAN 12 FT FROM TRENCH

NOTES:

1. PLACE SIGNS AT START OF EXISTING PARKING LANES WITH MINIMUM IMPACT TO PARKING LANE.
2. PLACE SIGNS ON SIDEWALK OUT OF THE PEDESTRIAN PATH.
3. INSTALL SIGN SP-4 WHEN BUSINESSES ARE PRESENT ON THE BLOCK UNDER CONSTRUCTION.
4. INSTALL SIGN SP-5 WHEN SEPTA STOP RELOCATION IS ON THIS BLOCK.
5. TYPICAL WORKING HOURS 7AM-4PM.
6. COORDINATE TEMPORARY NO PARKING SIGNS WITH PHILADELPHIA PARKING AUTHORITY AS NEEDED.
7. COORDINATE SEPTA STOP RELOCATION WITH SEPTA AS NEEDED.
8. BARRIER MAY BE USED IF 14 FEET ARE AVAILABLE BETWEEN THE EDGE OF CURB AND THE EDGE OF TRENCH.
9. GUIDANCE DEPENDS ON SITE CONDITIONS.
10. STATE ROUTES REQUIRE PROJECT SPECIFIC MPT PLAN.



TYPICAL SECTION FOR LANE CONTROL WITH BARRIER



*AS NEEDED

DRAFT

LEGEND:

- ⊠ ROAD WORK AREA
- ▨ PARKING AREA
- III TYPE III BARRICADE
- ▲ SIGN POST
- BARRIER
- ∞ ATTENUATOR
- CHANNELIZING DEVICE

PHILADELPHIA WATER
EST. 1801

PROJECT NAME: _____

STREET/BLOCK: _____

PWD CONSTRUCTION ZONE STANDARDS
 FIGURE 2B: ONE-WAY STREET
 LANE SHIFT WITH BARRIER –
 LESS THAN 12 FT FROM TRENCH

DATE: JUNE 2016
 SCALE: NTS
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 DESIGN BY:
 CHECKED BY:

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SHEET 5 OF 15

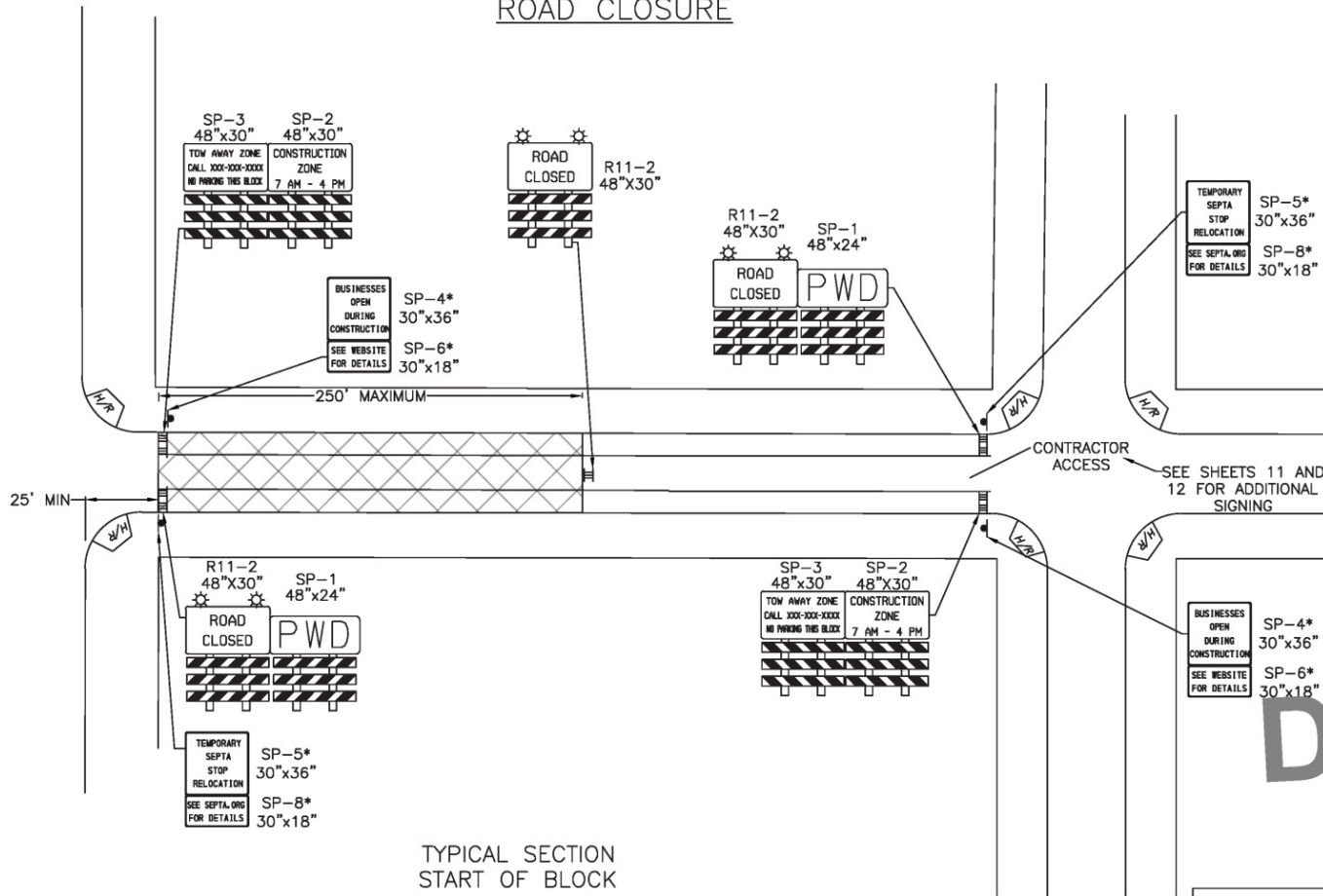
NOT TO SCALE

FIGURE 3: CONSTRUCTION ZONE SIGNS
ROAD CLOSURE

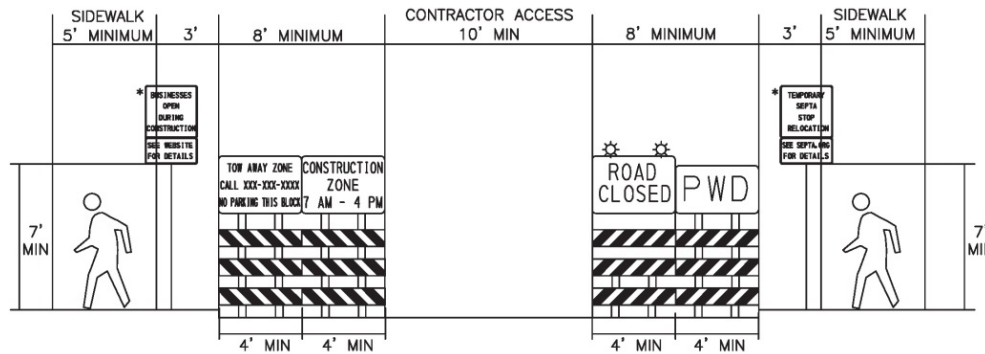
NOTES:

1. PLACE SIGNS ON SIDEWALK OUT OF THE PEDESTRIAN PATH.
2. INSTALL SIGN SP-4 WHEN BUSINESSES ARE PRESENT ON THE BLOCK UNDER CONSTRUCTION.
3. INSTALL SIGN SP-5 WHEN SEPTA STOP RELOCATION IS ON THIS BLOCK.
4. TYPICAL WORKING HOURS 7AM-4PM.
5. COORDINATE TEMPORARY NO PARKING SIGNS WITH PHILADELPHIA PARKING AUTHORITY AS NEEDED.
6. COORDINATE SEPTA STOP RELOCATION WITH SEPTA AS NEEDED.
7. SEE SHEETS 11 AND 12 FOR ADDITIONAL SIGNAGE.
8. STATE ROUTES REQUIRE PROJECT SPECIFIC MPT PLAN.

*AS NEEDED



TYPICAL SECTION
START OF BLOCK



DRAFT

LEGEND:

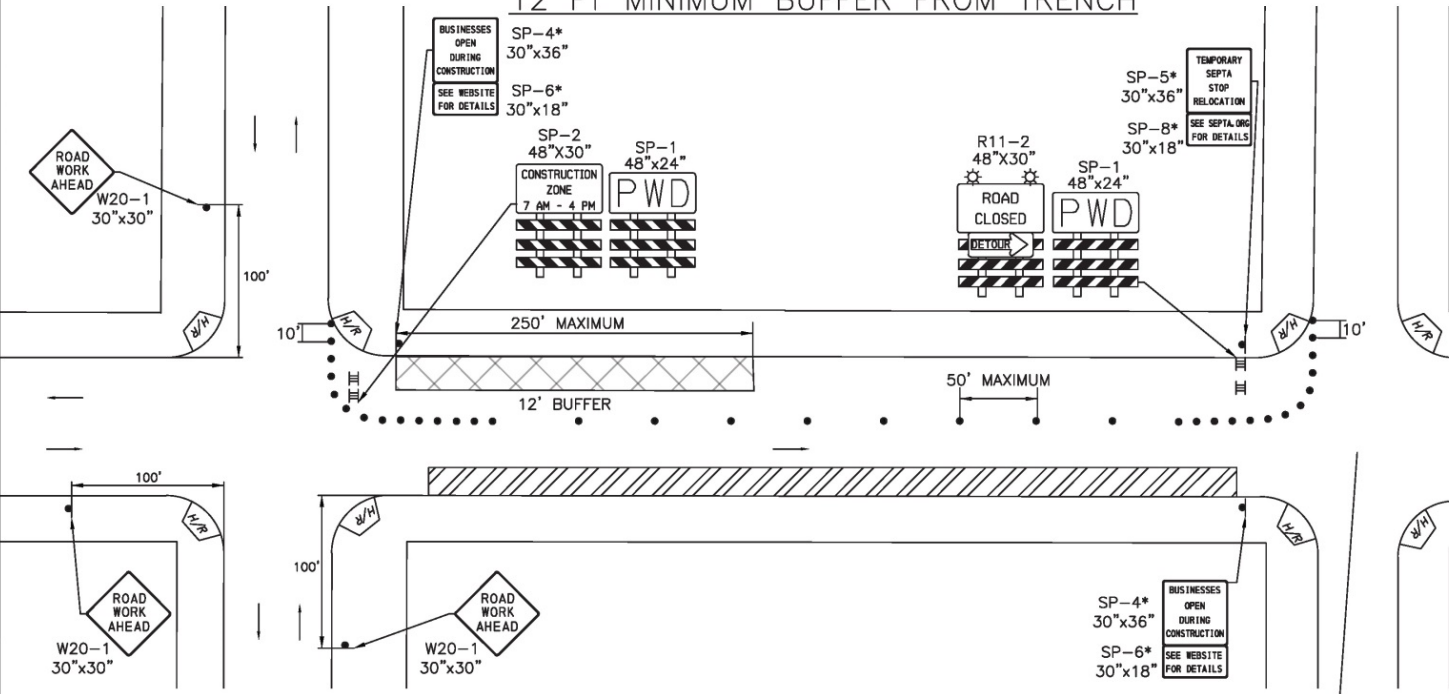
- ACTIVE ROAD WORK AREA
- TYPE III BARRICADE
- SIGN POST

PHILADELPHIA WATER EST. 1801	
PROJECT NAME:	
STREET/BLOCK:	
P.W.D. CONSTRUCTION ZONE STANDARDS FIGURE 3: ROAD CLOSURE	
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SCALE: NTS	
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SHEET 6 OF 15	

NOT TO SCALE

FIGURE 4A: CONSTRUCTION ZONE SIGNS
TWO-WAY STREET
ONE WAY CLOSURE WITH CHANNELIZING DEVICES –
12 FT MINIMUM BUFFER FROM TRENCH

- NOTES:**
1. PLACE SIGNS AT START OF EXISTING PARKING LANES WITH MINIMUM IMPACT TO PARKING LANE.
 2. PLACE SIGNS ON SIDEWALK OUT OF THE PEDESTRIAN PATH.
 3. INSTALL SIGN SP-4 WHEN BUSINESSES ARE PRESENT ON THE BLOCK UNDER CONSTRUCTION.
 4. INSTALL SIGN SP-5 WHEN SEPTA STOP RELOCATION IS ON THIS BLOCK.
 5. TYPICAL WORKING HOURS 7AM-4PM.
 6. COORDINATE TEMPORARY NO PARKING SIGNS WITH PHILADELPHIA PARKING AUTHORITY AS NEEDED.
 7. COORDINATE SEPTA STOP RELOCATION WITH SEPTA AS NEEDED.
 8. SEE SHEETS 11 AND 12 FOR ADDITIONAL DETOUR SIGNAGE.
 9. CHANNELIZING DEVICES MAY BE USED IF 31 FEET ARE AVAILABLE BETWEEN THE EDGE OF CURB AND THE EDGE OF TRENCH.
 10. GUIDANCE DEPENDS ON SITE CONDITIONS.
 11. STATE ROUTES REQUIRE PROJECT SPECIFIC MPT

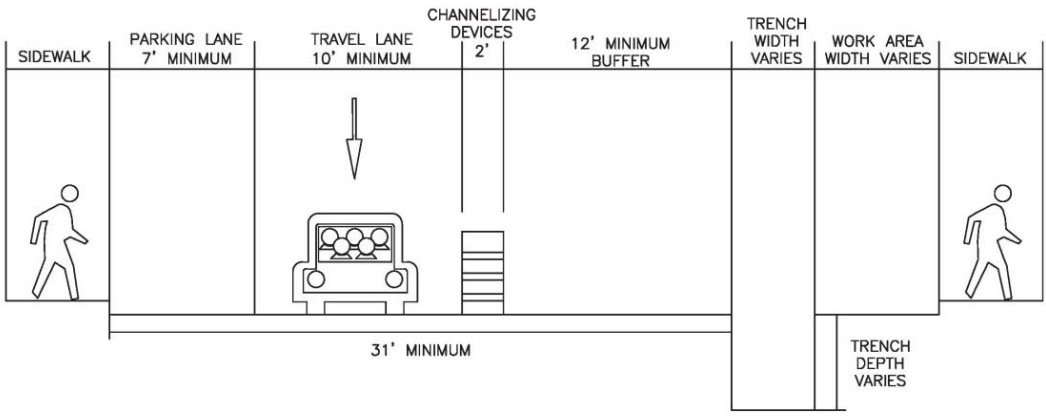


- PLANS LEGEND:**
- ROAD WORK AREA
 - PARKING AREA
 - TYPE III BARRICADE
 - SIGN POST
 - CHANNELIZING DEVICE

SEE SHEETS 11 AND 12 FOR ADDITIONAL DETOUR SIGNAGE.

DRAFT

TYPICAL SECTION FOR LANE CONTROL WITH CHANNELIZING DEVICES



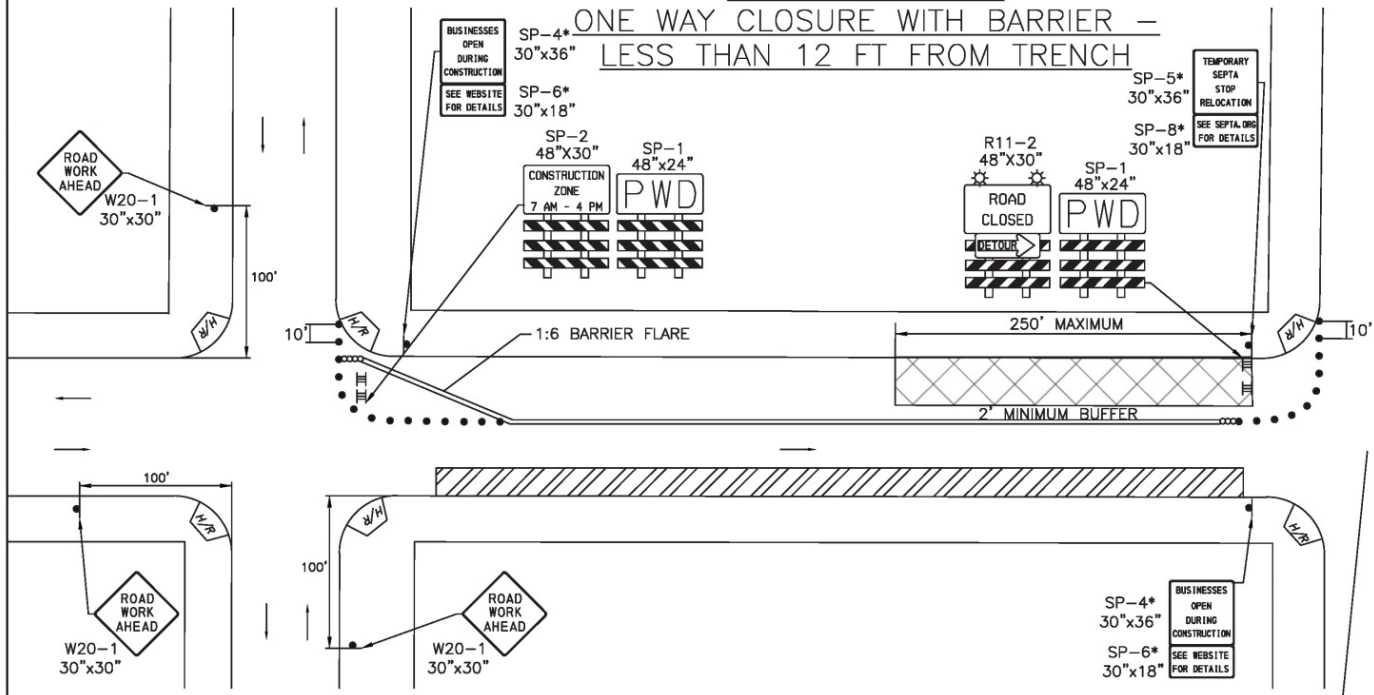
*AS NEEDED

PROJECT NAME:	
STREET/BLOCK:	
PWD CONSTRUCTION ZONE STANDARDS FIGURE 4A: TWO-WAY STREET ONE WAY CLOSURE WITH CHANNELIZING DEVICES – 12 FT MINIMUM BUFFER FROM TRENCH	
DATE: JUNE 2016	7
SCALE: NTS	
DRAWN BY:	
DESIGN BY:	
CHECKED BY:	
SHEET 7 OF 15	

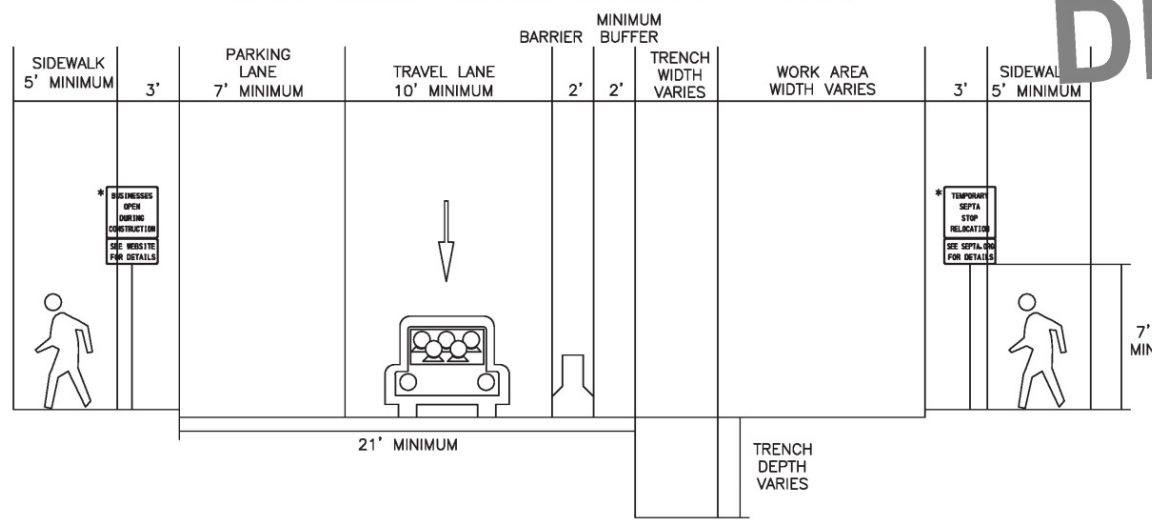
NOT TO SCALE

FIGURE 4B: CONSTRUCTION ZONE SIGNS
TWO-WAY STREET

- NOTES:
1. PLACE SIGNS AT START OF EXISTING PARKING LANES WITH MINIMUM IMPACT TO PARKING LANE.
 2. PLACE SIGNS ON SIDEWALK OUT OF THE PEDESTRIAN PATH.
 3. INSTALL SIGN SP-4 WHEN BUSINESSES ARE PRESENT ON THE BLOCK UNDER CONSTRUCTION.
 4. INSTALL SIGN SP-5 WHEN SEPTA STOP RELOCATION IS ON THIS BLOCK.
 5. TYPICAL WORKING HOURS 7AM-4PM.
 6. COORDINATE TEMPORARY NO PARKING SIGNS WITH PHILADELPHIA PARKING AUTHORITY AS NEEDED.
 7. COORDINATE SEPTA STOP RELOCATION WITH SEPTA AS NEEDED.
 8. SEE SHEETS 11 AND 12 FOR ADDITIONAL DETOUR SIGNAGE.
 9. BARRIER MAY BE USED IF 21 FEET ARE AVAILABLE BETWEEN THE EDGE OF CURB AND THE EDGE OF TRENCH.
 10. GUIDANCE DEPEND ON SITE CONDITIONS.
 11. STATE ROUTES REQUIRE PROJECT SPECIFIC MPT PLANS.



TYPICAL SECTION FOR LANE CONTROL WITH BARRIER



SEE SHEETS 11 AND 12 FOR ADDITIONAL DETOUR SIGNAGE.

DRAFT

- LEGEND:
- ROAD WORK AREA
 - PARKING AREA
 - TYPE III BARRICADE
 - SIGN POST
 - BARRIER
 - ATTENUATOR
 - CHANNELIZING DEVICE

*AS NEEDED

PHILADELPHIA WATER
EST. 1801

PROJECT NAME: _____

STREET/BLOCK: _____

PWD CONSTRUCTION ZONE STANDARDS
FIGURE 4B: TWO-WAY STREET
ONE WAY CLOSURE WITH BARRIER -
LESS THAN 12 FT FROM TRENCH

DATE: JUNE 2016

SCALE: NTS

DRAWN BY: _____

DESIGN BY: _____

CHECKED BY: _____

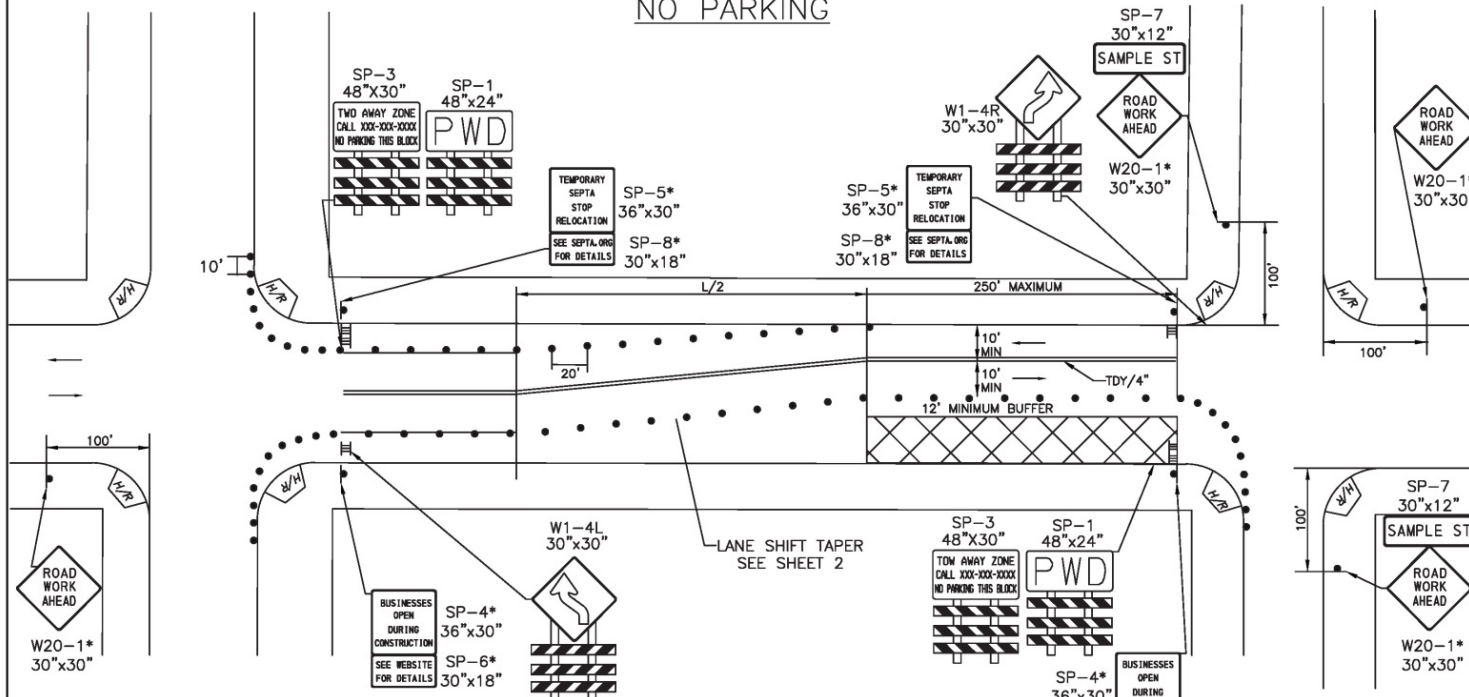
8

SHEET 8 OF 15

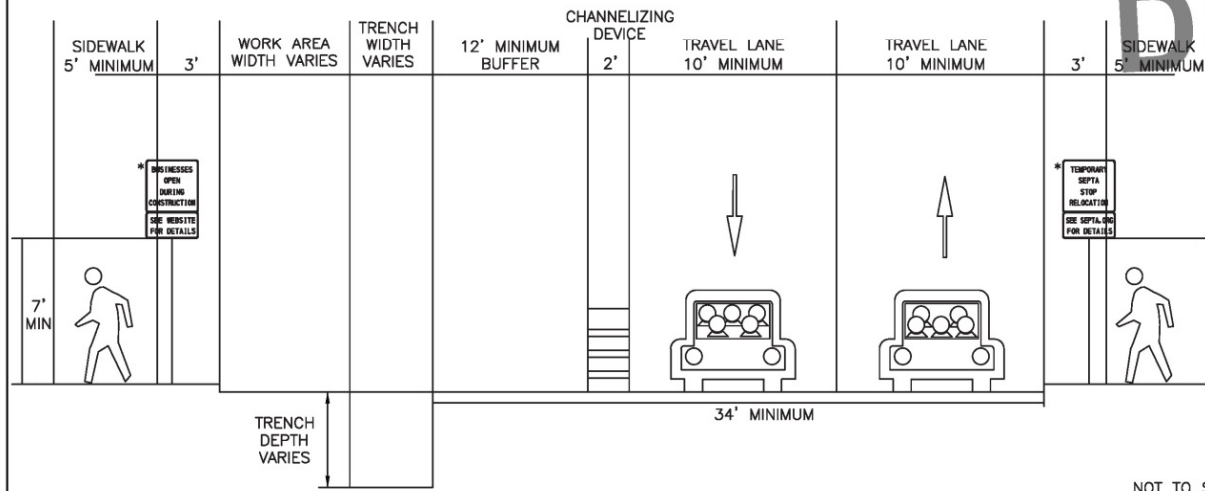
NOT TO SCALE

FIGURE 5A: CONSTRUCTION ZONE SIGNS
TWO-WAY STREET
LANE SHIFT WITH CHANNELIZING DEVICES
NO PARKING

- NOTES:
1. PLACE SIGNS AT START OF EXISTING PARKING LANES WITH MINIMUM IMPACT TO PARKING LANE.
 2. PLACE SIGNS ON SIDEWALK OUT OF THE PEDESTRIAN PATH.
 3. INSTALL SIGN SP-4 WHEN BUSINESSES ARE PRESENT ON THE BLOCK UNDER CONSTRUCTION.
 4. INSTALL SIGN SP-5 WHEN SEPTA STOP RELOCATION IS ON THIS BLOCK.
 5. TYPICAL WORKING HOURS 7AM-4PM.
 6. COORDINATE TEMPORARY NO PARKING SIGNS WITH PHILADELPHIA PARKING AUTHORITY AS NEEDED.
 7. COORDINATE SEPTA STOP RELOCATION WITH SEPTA AS NEEDED.
 8. CHANNELIZING DEVICES MAY BE USED IF 34 FEET ARE AVAILABLE BETWEEN THE EDGE OF CURB AND THE EDGE OF TRENCH.
 9. GUIDANCE DEPENDS ON SITE CONDITIONS.
 10. STATE ROUTES REQUIRE PROJECT SPECIFIC MPT PLANS.



TYPICAL SECTION FOR LANE CONTROL WITH CHANNELIZING DEVICES



- LEGEND:
- ROAD WORK AREA
 - PARKING AREA
 - TYPE III BARRICADE
 - SIGN POST
 - BARRIER
 - ATTENUATOR
 - CHANNELIZING DEVICE
 - TDY/4" TEMPORARY DOUBLE YELLOW / WIDTH
- *AS NEEDED

PHILADELPHIA WATER
EST. 1801

PROJECT NAME: _____

STREET/BLOCK: _____

PWD CONSTRUCTION ZONE STANDARDS
FIGURE 5A: TWO-WAY STREET
LANE SHIFT WITH CHANNELIZING DEVICES
NO PARKING

DATE: JUNE 2016

SCALE: NTS

DRAWN BY: _____

DESIGN BY: _____

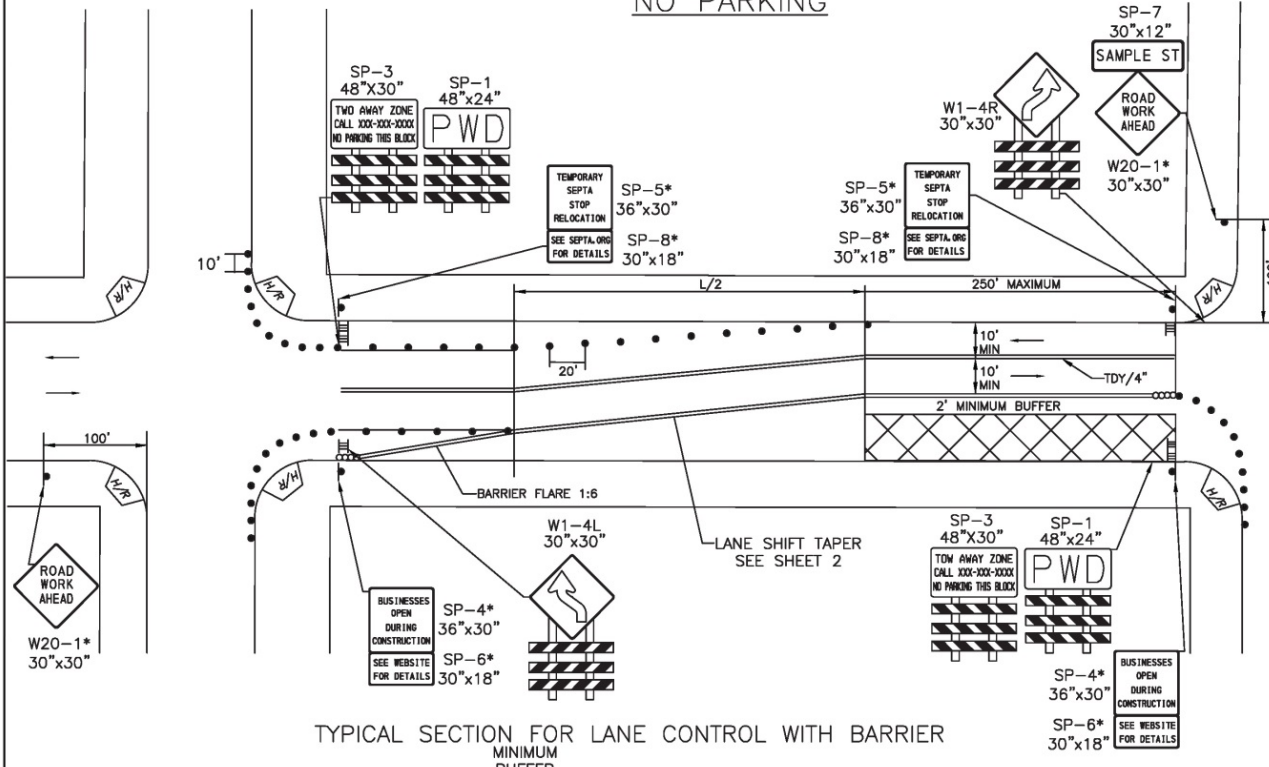
CHECKED BY: _____

9

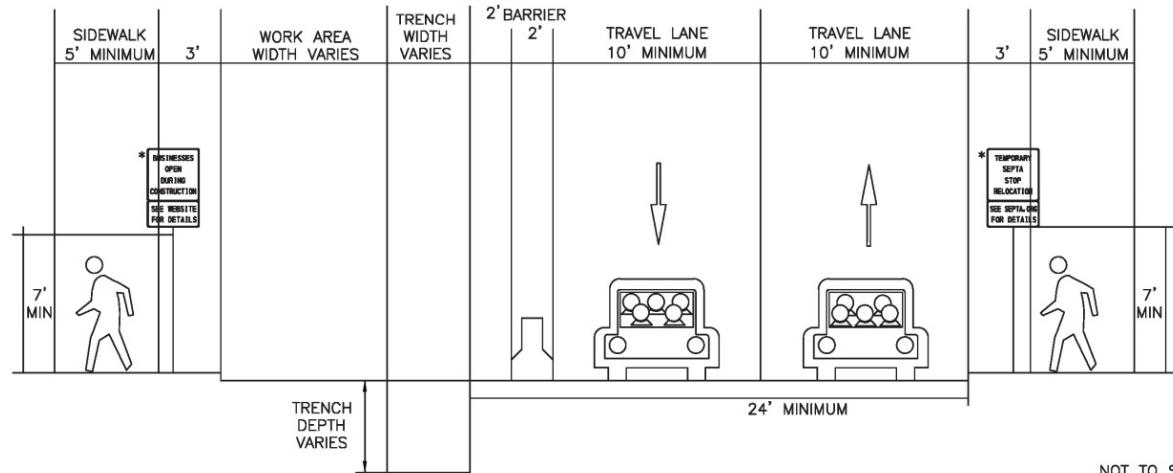
SHEET 9 OF 15

NOT TO SCALE

FIGURE 5B: CONSTRUCTION ZONE SIGNS
TWO-WAY STREET
LANE SHIFT WITH BARRIER
NO PARKING



TYPICAL SECTION FOR LANE CONTROL WITH BARRIER
MINIMUM BUFFER



- NOTES:**
1. PLACE SIGNS AT START OF EXISTING PARKING LANES WITH MINIMUM IMPACT TO PARKING LANE.
 2. PLACE SIGNS ON SIDEWALK OUT OF THE PEDESTRIAN PATH.
 3. INSTALL SIGN SP-4 WHEN BUSINESSES ARE PRESENT ON THE BLOCK UNDER CONSTRUCTION.
 4. INSTALL SIGN SP-5 WHEN SEPTA STOP RELOCATION IS ON THIS BLOCK.
 5. TYPICAL WORKING HOURS 7AM-4PM.
 6. COORDINATE TEMPORARY NO PARKING SIGNS WITH PHILADELPHIA PARKING AUTHORITY AS NEEDED.
 7. COORDINATE SEPTA STOP RELOCATION WITH SEPTA AS NEEDED.
 8. BARRIER MAY BE USED IF 24 FEET ARE AVAILABLE BETWEEN THE EDGE OF CURB AND EDGE OF TRENCH.
 9. GUIDANCE DEPENDS ON SITE CONDITIONS.
 10. STATE ROUTES REQUIRE PROJECT SPECIFIC MPT PLANS.

- LEGEND:**
- ROAD WORK AREA
 - PARKING AREA
 - TYPE III BARRICADE
 - SIGN POST
 - BARRIER
 - ATTENUATOR
 - CHANNELIZING DEVICE
- TDY/4" TEMPORARY DOUBLE YELLOW / WIDTH

DRAFT

*AS NEEDED

PHILADELPHIA WATER
EST. 1801

PROJECT NAME: _____

STREET/BLOCK: _____

PWD CONSTRUCTION ZONE STANDARDS
FIGURE 5B: TWO-WAY STREET
LANE SHIFT WITH BARRIER
NO PARKING

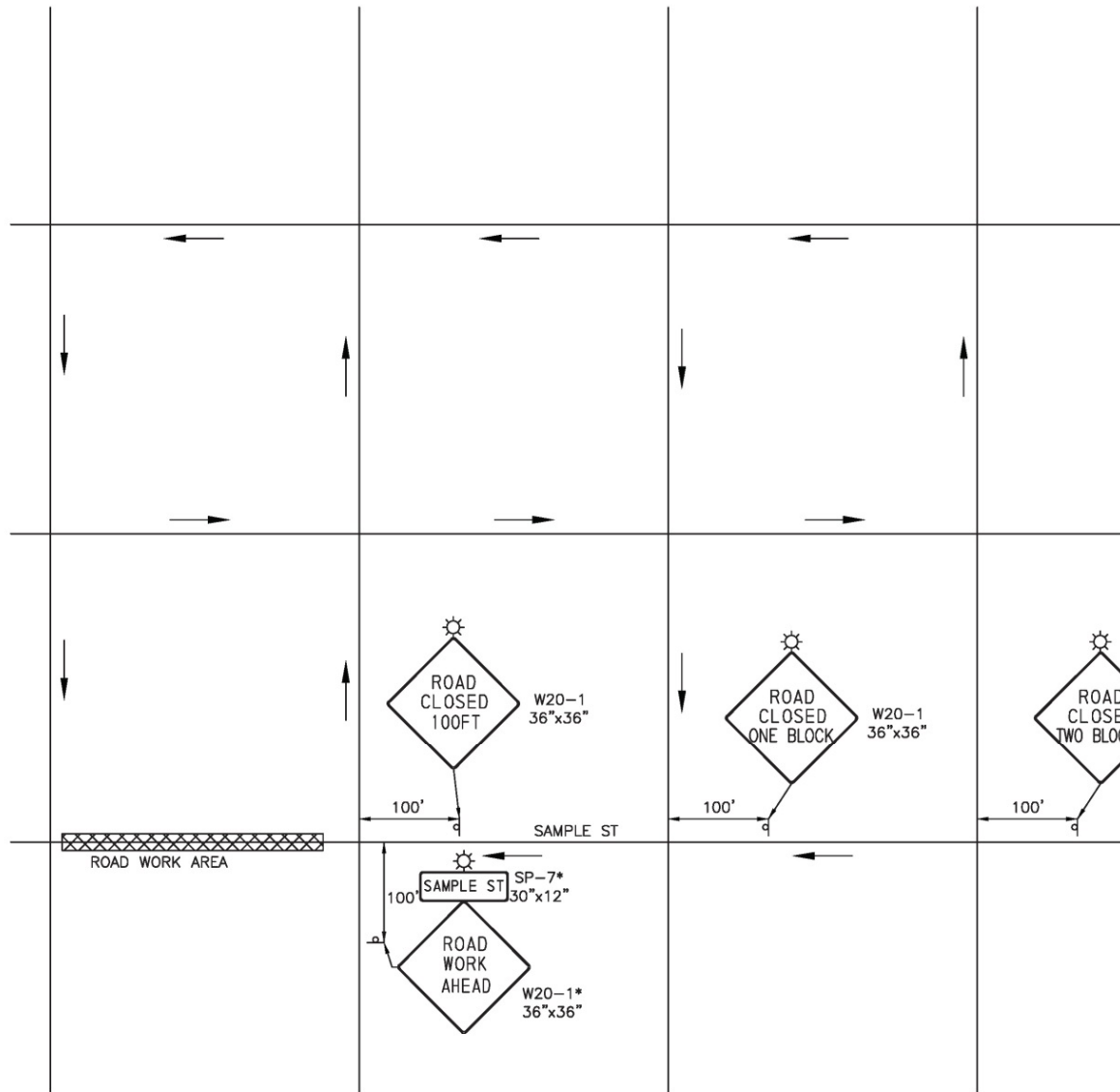
DATE: JUNE 2016	10	SHEET 10 OF 15
SCALE: NTS		
DRAWN BY:		
DESIGN BY:		
CHECKED BY:		

NOT TO SCALE

FIGURE 6: ADVANCED WARNING SIGNS
 STREET TYPE: LOCAL ONE-WAY
 ROAD CLOSURE




NOTES:

1. ADDITIONAL SIGNS MAY BE NEEDED DEPENDING ON SITE CONDITIONS.
 2. SEE FIGURES 1-5 FOR ADDITIONAL SIGNAGE.
 3. IF ROAD IS TWO-WAY, PROVIDE SIGNS IN BOTH DIRECTIONS.
 4. PWD CONSTRUCTION ZONE STANDARDS TO BE USED ON LOCAL ROADS ONLY.
- *SIGN NOT REQUIRED IF INTERSECTION IS STOP CONTROLLED



DRAFT

LEGEND:

-  ROAD WORK AREA
-  TEMPORARY SIGN POST
-  LIGHT

FOR TWO-WAY STREET SEE NOTE 3



PROJECT NAME:

STREET/BLOCK:

PWD CONSTRUCTION ZONE STANDARDS
 FIGURE 6: ADVANCED WARNING SIGNS
 STREET TYPE: LOCAL ONE-WAY
 ROAD CLOSURE

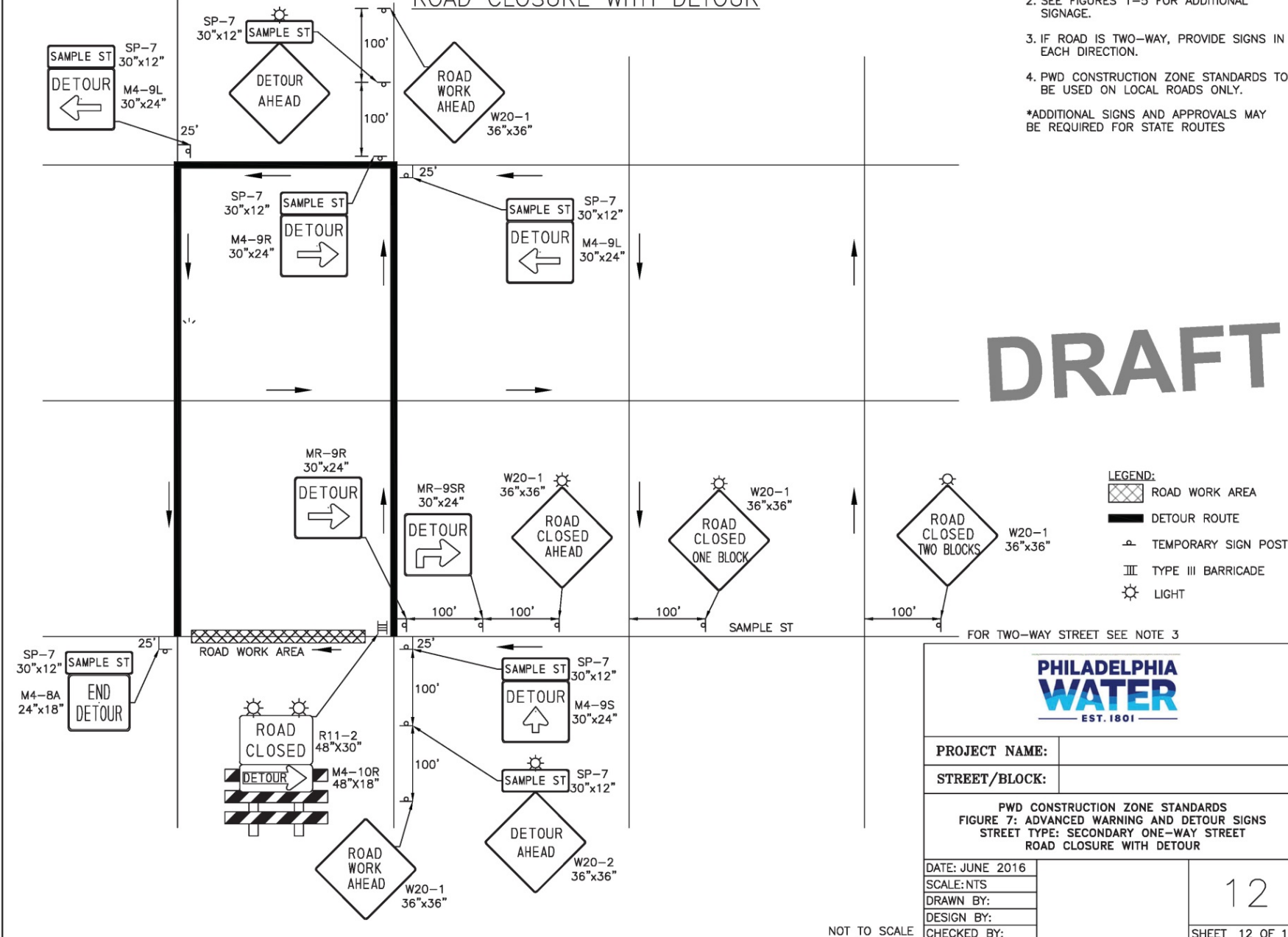
DATE: JUNE 2016
 SCALE: NTS
 DRAWN BY:
 DESIGN BY:
 CHECKED BY:

11

NOT TO SCALE

SHEET 11 OF 15

FIGURE 7: ADVANCED WARNING AND DETOUR SIGNS
 STREET TYPE: SECONDARY, ONE-WAY
 ROAD CLOSURE WITH DETOUR



- NOTES:
1. ADDITIONAL SIGNS MAY BE NEEDED DEPENDING ON SITE CONDITIONS.
 2. SEE FIGURES 1-5 FOR ADDITIONAL SIGNAGE.
 3. IF ROAD IS TWO-WAY, PROVIDE SIGNS IN EACH DIRECTION.
 4. PWD CONSTRUCTION ZONE STANDARDS TO BE USED ON LOCAL ROADS ONLY.
- *ADDITIONAL SIGNS AND APPROVALS MAY BE REQUIRED FOR STATE ROUTES

DRAFT

- LEGEND:
- ROAD WORK AREA
 - DETOUR ROUTE
 - TEMPORARY SIGN POST
 - TYPE III BARRICADE
 - LIGHT

FOR TWO-WAY STREET SEE NOTE 3

PHILADELPHIA WATER
EST. 1801

PROJECT NAME: _____

STREET/BLOCK: _____

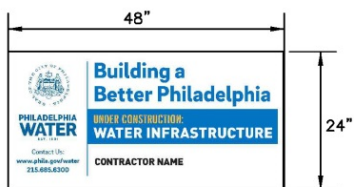
PWD CONSTRUCTION ZONE STANDARDS
 FIGURE 7: ADVANCED WARNING AND DETOUR SIGNS
 STREET TYPE: SECONDARY ONE-WAY STREET
 ROAD CLOSURE WITH DETOUR

DATE: JUNE 2016	12
SCALE: NTS	
DRAWN BY: _____	
DESIGN BY: _____	
CHECKED BY: _____	

SHEET 12 OF 15

NOT TO SCALE

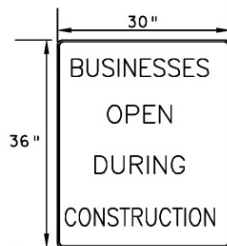
SIGN DETAILS



SIGN SP-1

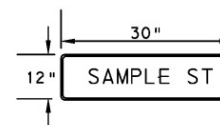
PWD CONSTRUCTION ENTRANCE SIGN
PWD TO PROVIDE PDF. SEE PDF FOR SIGN DETAILS

SIGN TO BE MOUNTED ON PWD CONCRETE SIGN BASE, SEE SHEETS 15 AND 16 FOR DETAILS



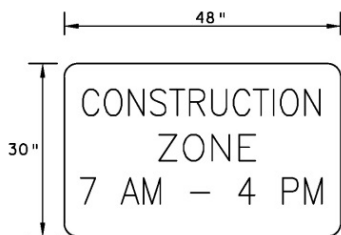
SIGN SP-4

BACKGROUND: ORANGE (REFLECTIVE)
LEGEND: BLACK (NON-REFLECTIVE)
NOTE: ASSUME 5 INCH CAPS SERIES "C" LETTERS.



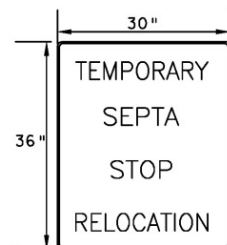
SIGN SP-7

BACKGROUND: ORANGE (REFLECTIVE)
LEGEND: BLACK (NON-REFLECTIVE)
NOTE: ASSUME 4 INCH CAPS SERIES "C" LETTERS. SIGN MAY NEED TO BE WIDER BASED ON ROAD NAME WHEN DESIGNED.



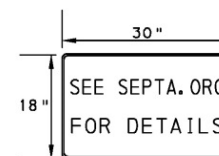
SIGN SP-2

BACKGROUND: ORANGE (REFLECTIVE)
LEGEND: BLACK (NON-REFLECTIVE)
NOTE: ASSUME 6 INCH CAPS SERIES "C" LETTERS.



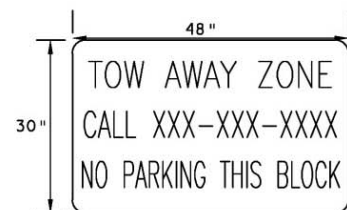
SIGN SP-5

BACKGROUND: ORANGE (REFLECTIVE)
LEGEND: BLACK (NON-REFLECTIVE)
NOTE: ASSUME 5 INCH CAPS SERIES "C" LETTERS.



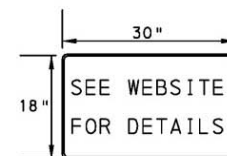
SIGN SP-8

BACKGROUND: ORANGE (REFLECTIVE)
LEGEND: BLACK (NON-REFLECTIVE)
NOTE: ASSUME 5 INCH CAPS SERIES "C" LETTERS.



SIGN SP-3


BACKGROUND: WHITE (NON-REFLECTIVE)
LEGEND: RED (NON-REFLECTIVE)
NOTE: ASSUME 6 INCH CAPS SERIES "C" LETTERS.



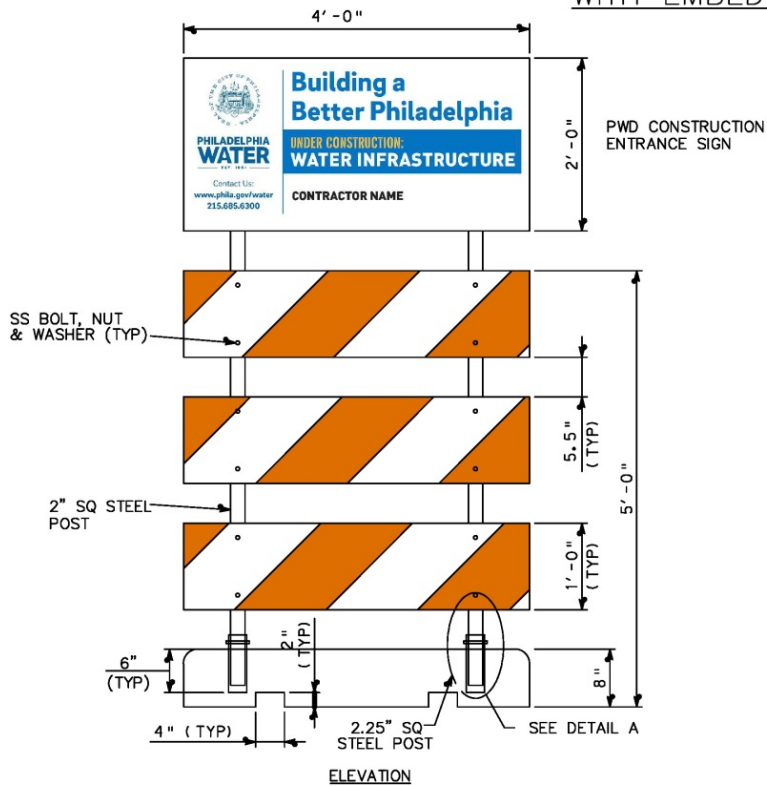
SIGN SP-6

BACKGROUND: ORANGE (REFLECTIVE)
LEGEND: BLACK (NON-REFLECTIVE)
NOTE: ASSUME 5 INCH CAPS SERIES "C" LETTERS.

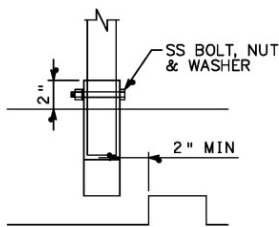
DRAFT

	
PROJECT NAME:	
STREET/BLOCK:	
PWD CONSTRUCTION ZONE STANDARDS SIGN DETAILS	
DATE: JUNE 2016	13
SCALE: NTS	
DRAWN BY:	
DESIGN BY:	
CHECKED BY:	SHEET 13 OF 15

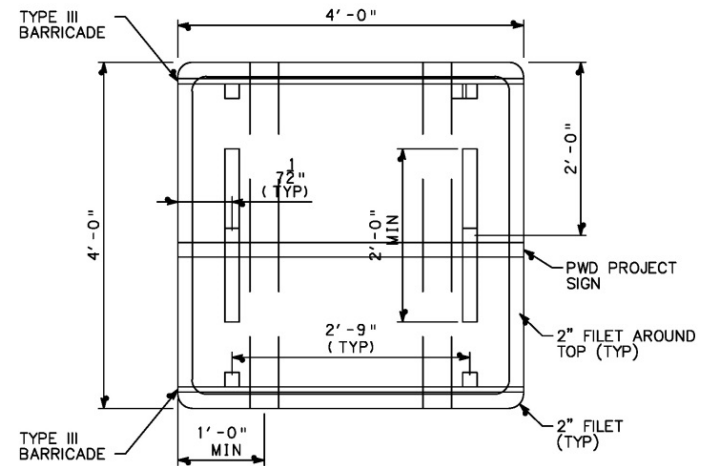
**PWD CONCRETE SIGN BASE
WITH EMBEDDED T-STEEL STAND**



ELEVATION



**DETAIL A
N.T.S.**



PLAN



DRAFT

GENERAL NOTES

1. DESIGN WIND PRESSURE OF 14 PSF BASED ON EQUATIONS IN ASCE 7-10, THIRD PRINTING.
2. SIGN IS DESIGNED FOR A THREE SECOND WIND GUST OF 85 MPH. WHEN WIND GUSTS ARE EXPECTED TO EXCEED THIS LIMIT, REMOVE SIGN.
3. PROVIDE STRUCTURAL STEEL WITH A MINIMUM YIELD STRENGTH OF 46 KSI FOR STEEL POST.
4. PROVIDE GRADE 60 REINFORCING STEEL THAT MEETS ASTM A615, A996, OR A706 REQUIREMENTS.
5. PROVIDE PENNDOT CLASS A CONCRETE WITH 28 DAY COMPRESSIVE STRENGTH OF 3,000 PSI.
6. GALVANIZE ALL STEEL COMPONENTS.
7. DESIGN IN ACCORDANCE WITH LFRD METHOD FOR STEEL POSTS.
8. SEE SHEET 3 FOR SIGN ATTACHMENT DETAILS AND CONCRETE BASE REINFORCEMENT LAYOUT.
9. ALL SS (STAINLESS STEEL) BOLTS ARE TO BE ..." MINIMUM UNLESS SPECIFIED.



PROJECT NAME:

STREET/BLOCK:

**PWD CONSTRUCTION ZONE STANDARDS
PWD CONCRETE SIGN BASE
DETAIL**

DATE: JUNE 2016

SCALE: NTS

DRAWN BY:

DESIGN BY:

CHECKED BY:

14

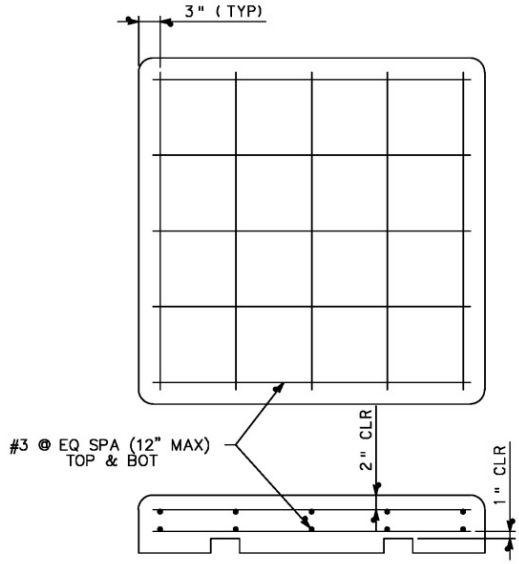
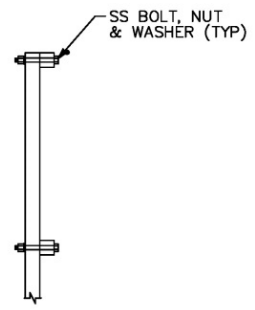
SHEET 14 OF 15

PWD SIGN BASE
MISCELLANEOUS SIGN DETAILS



- NOTES:
1. ATTACH PLIABLE PWD PROJECT SIGN BANNER TO STEEL FRAME, ATTACH SS CLAMPS TO BRASS GROMMETS IN SIGN TO SECURE BANNER TO FRAME.
 2. OTHER ALLOWABLE ALTERNATIVES TO SECURE PWD PROJECT SIGN TO STEEL FRAME INCLUDE BUNGEE STRAPS OR PLASTIC TIES.

PLIABLE SIGN WITH STEEL FRAME ATTACHMENT

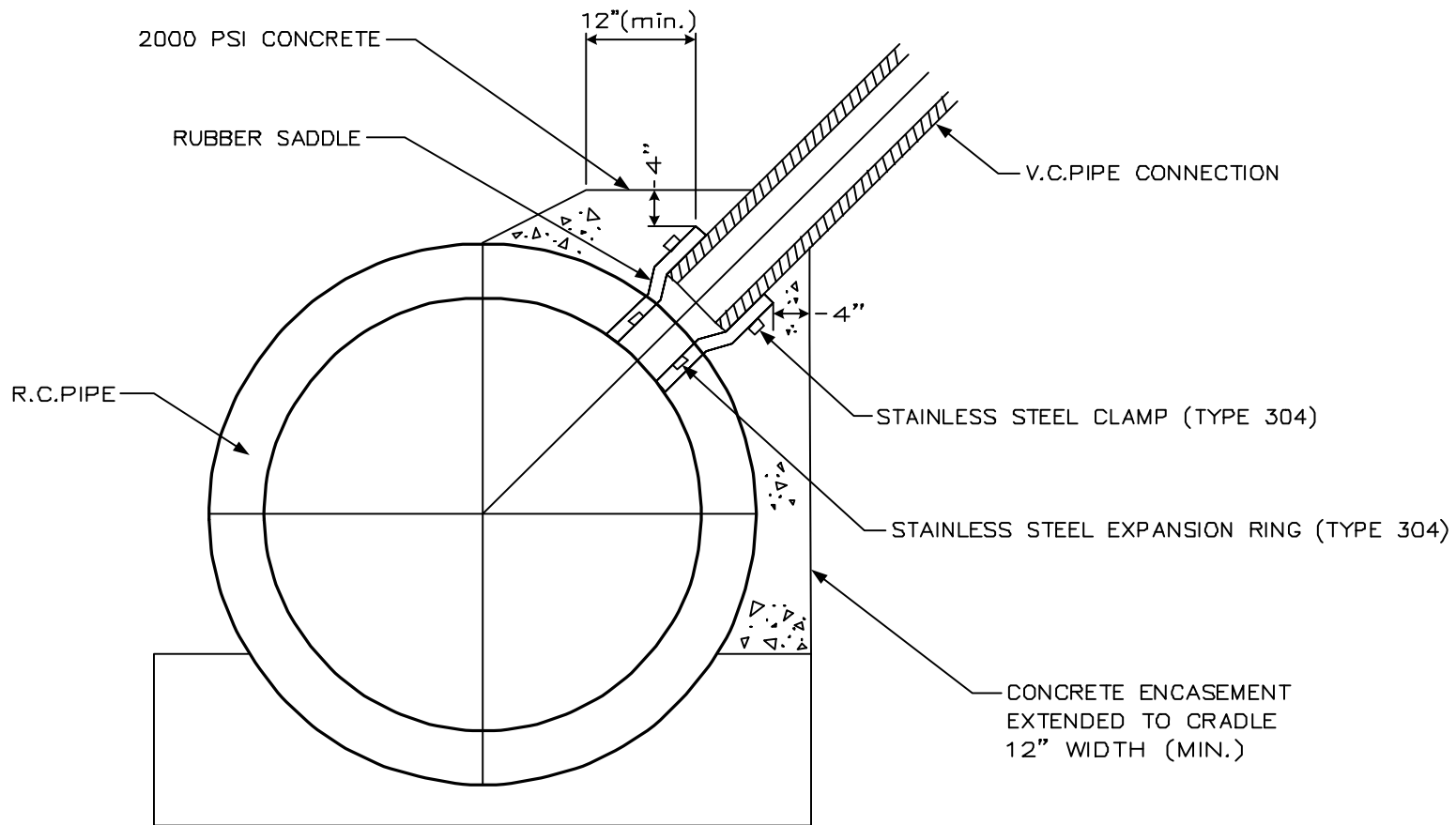


REINFORCEMENT LAYOUT



DRAFT

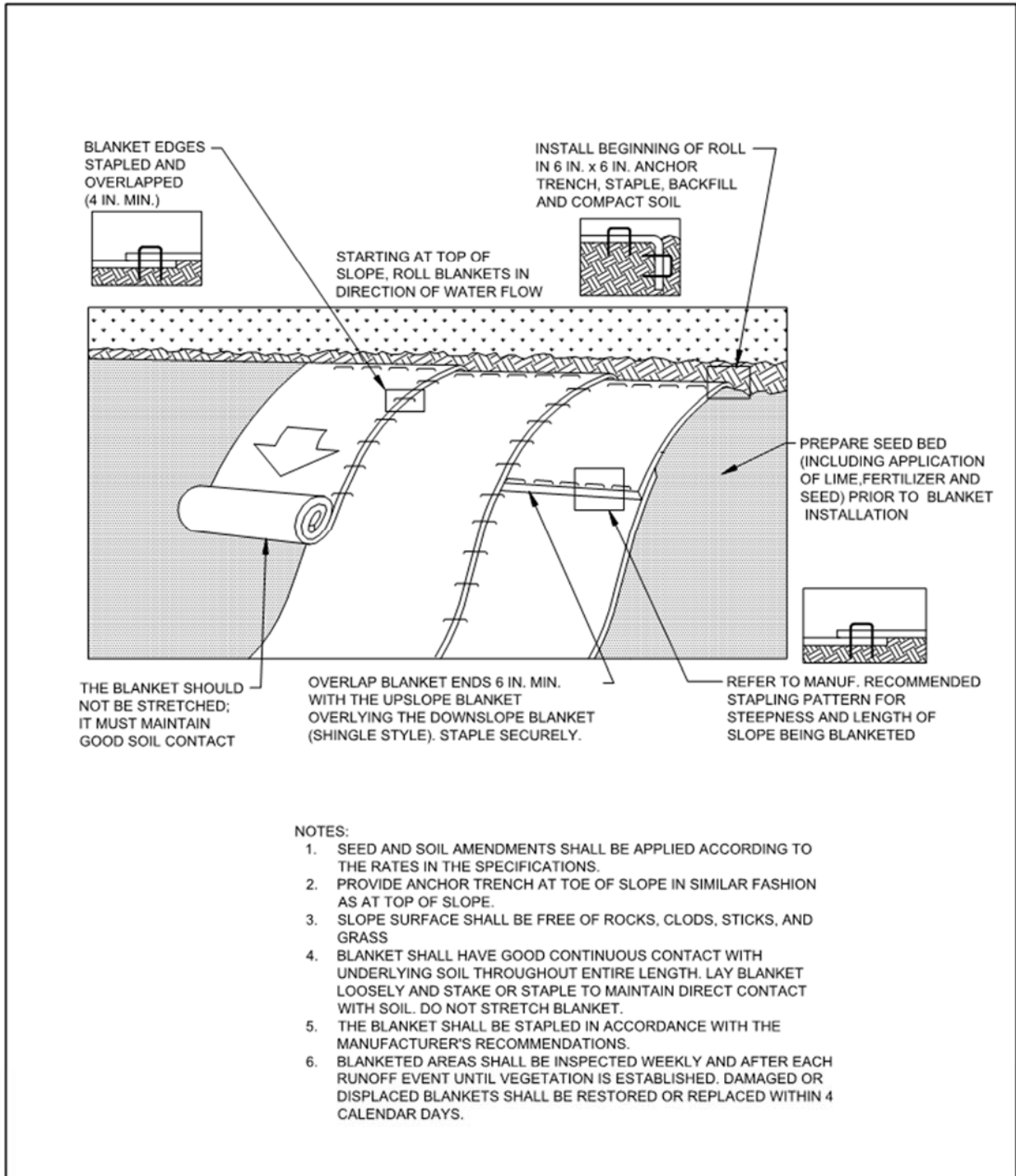
PROJECT NAME:	
STREET/BLOCK:	
PWD CONSTRUCTION ZONE STANDARDS PWD SIGN BASE MISCELLANEOUS SIGN DETAILS	
DATE: JUNE 2016	15
SCALE: NTS	
DRAWN BY:	
DESIGN BY:	
CHECKED BY:	SHEET 15 OF 15




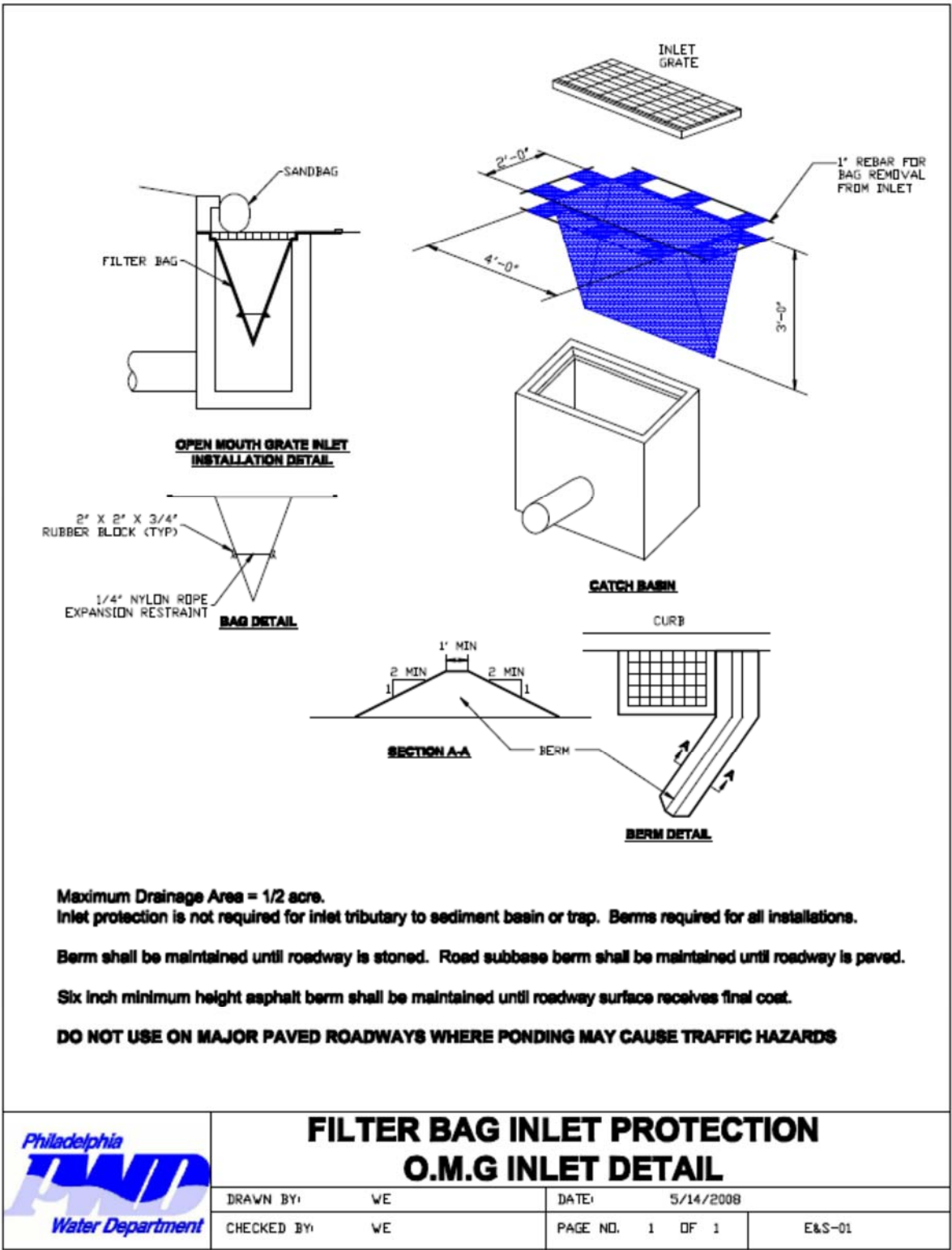
RESILIENT SADDLE CONNECTION TO R.C. PIPE SEWERS

DRAWN BY: MJW	DATE: 1/6/98
CHECKED BY: SJN	PAGE NO. 1 of 1

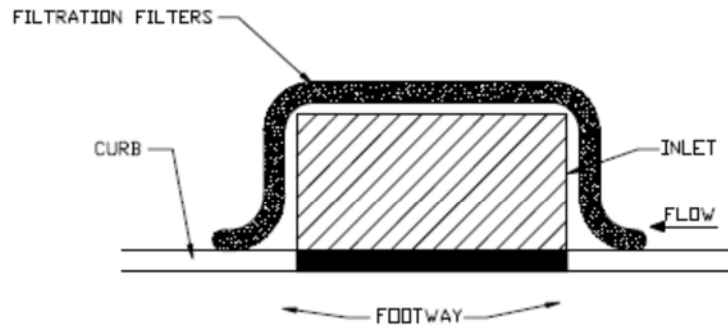
APPENDIX D – EROSION AND SEDIMENT CONTROL DETAILS



	EROSION CONTROL BLANKET INSTALLATION		
	DRAWN BY: C.LEWELLYN	DATE: 07/28/15	
CHECKED BY: C.LEWELLYN	PAGE NO.: 1 OF 1	APPENDIX D	

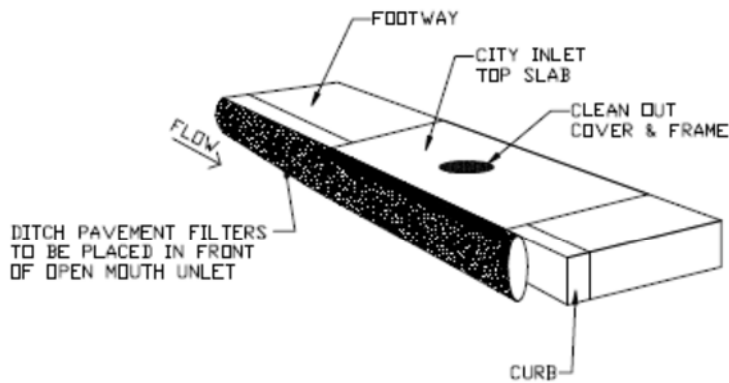


	FILTER BAG INLET PROTECTION O.M.G INLET DETAIL			
	DRAWN BY:	WE	DATE:	5/14/2008
	CHECKED BY:	WE	PAGE NO.	1 OF 1
			E&S-01	




OPEN MOUTH GRATE INLET APPLICATION
N.T.S.

NOTE:
TO BE PLACED AROUND THE INLET

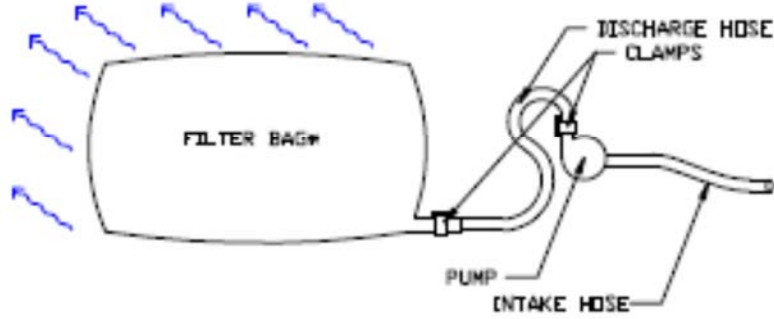


CITY INLET APPLICATION
N.T.S.

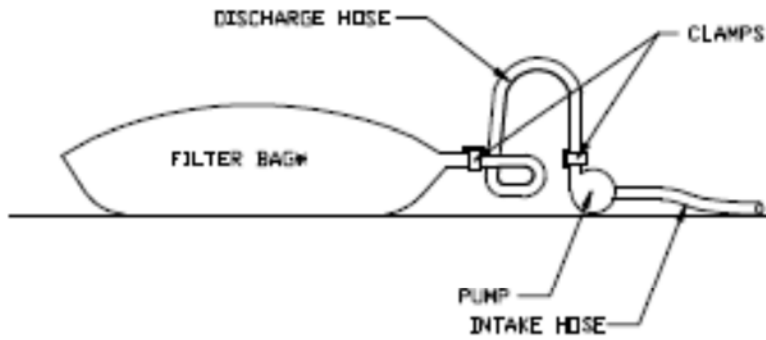
NOTE:
TO BE PLACED IN FRONT OF THE INLET

	FILTRATION FIBER TUBE DETAIL			
	DRAWN BY:	WE	DATE:	5/14/2008
	CHECKED BY:	WE	PAGE NO.	1 OF 1

DRAIN TOWARDS APPROVED INLET STRUCTURE



PLAN VIEW

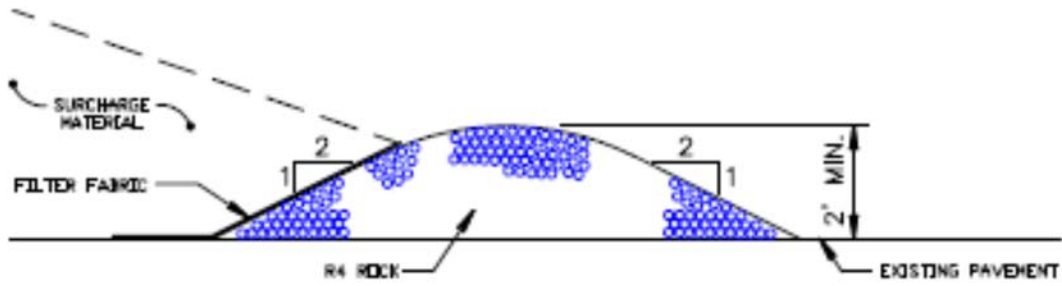


ELEVATION VIEW



PUMPED WATER FILTER BAG DETAIL

DRAWN BY:	WE	DATE:	5/14/2008
CHECKED BY:	WE	PAGE NO. 1 OF 1	EAS-03



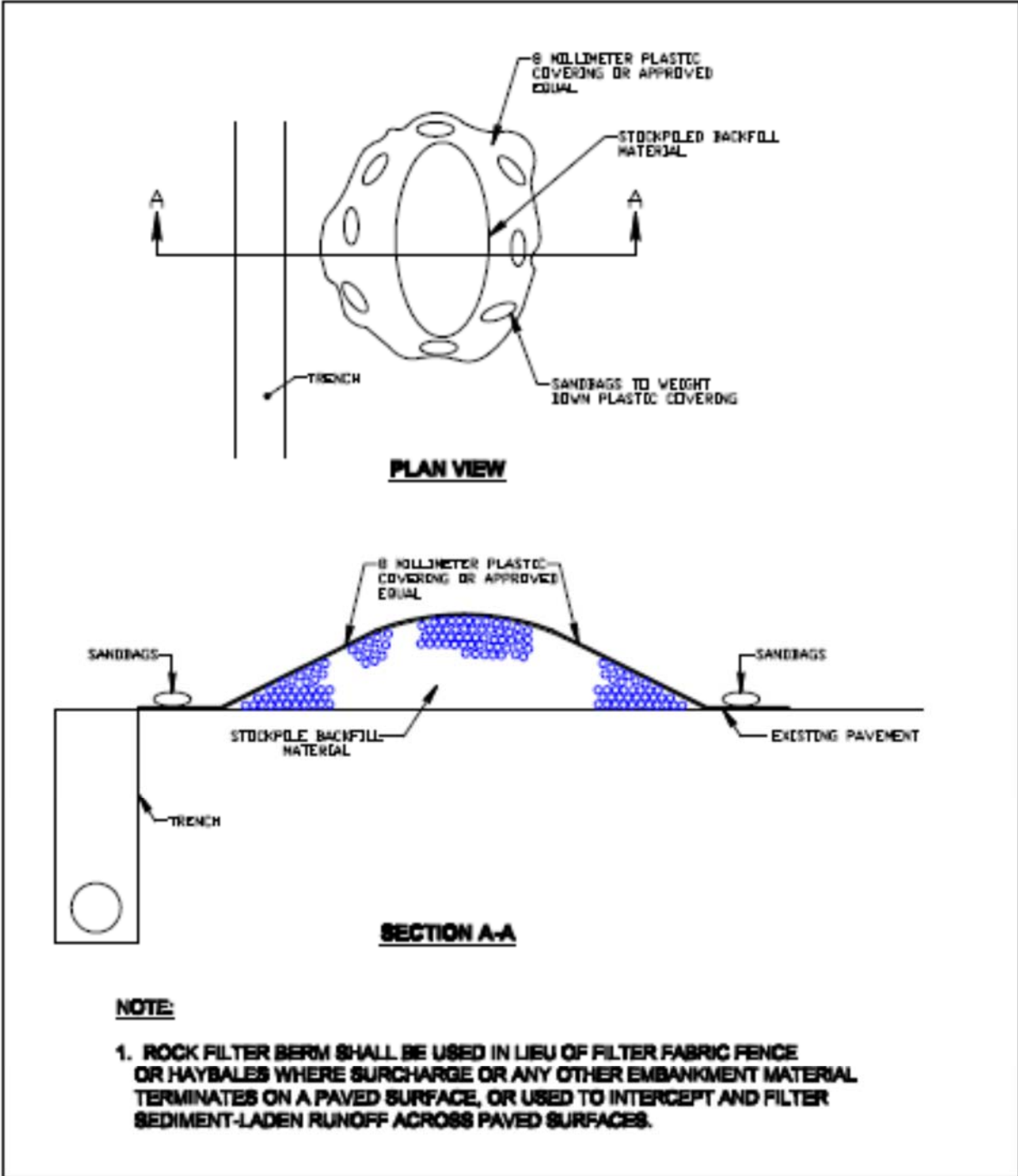
NOTE

1. ROCK FILTER BERM SHALL BE USED IN LIEU OF FILTER FABRIC FENCE OR HAYBALES WHERE SURCHARGE OR ANY OTHER EMBANKMENT MATERIAL TERMINATES ON A PAVED SURFACE, OR USED TO INTERCEPT AND FILTER SEDIMENT-LADEN RUNOFF ACROSS PAVED SURFACES.

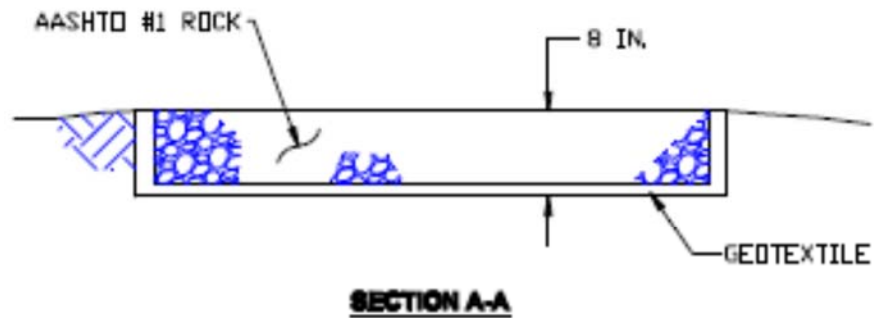
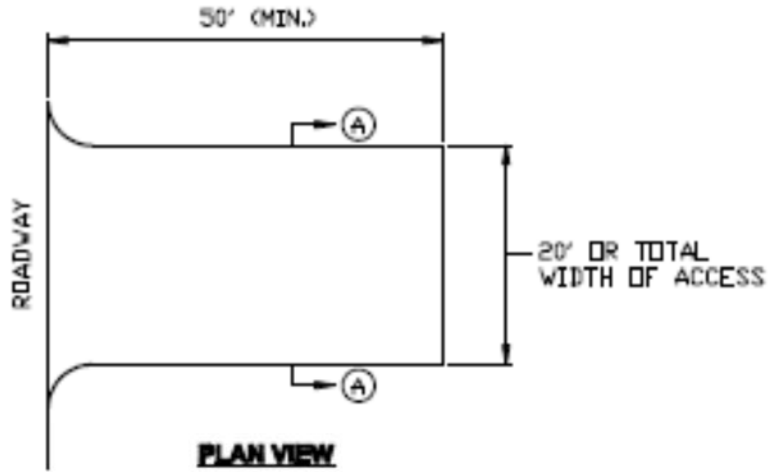


ROCK FILTER BERM DETAIL


DRAWN BY	VE	DATE	5/14/2008
CHECKED BY	VE	PAGE NO.	1 OF 1
		E&S-04	

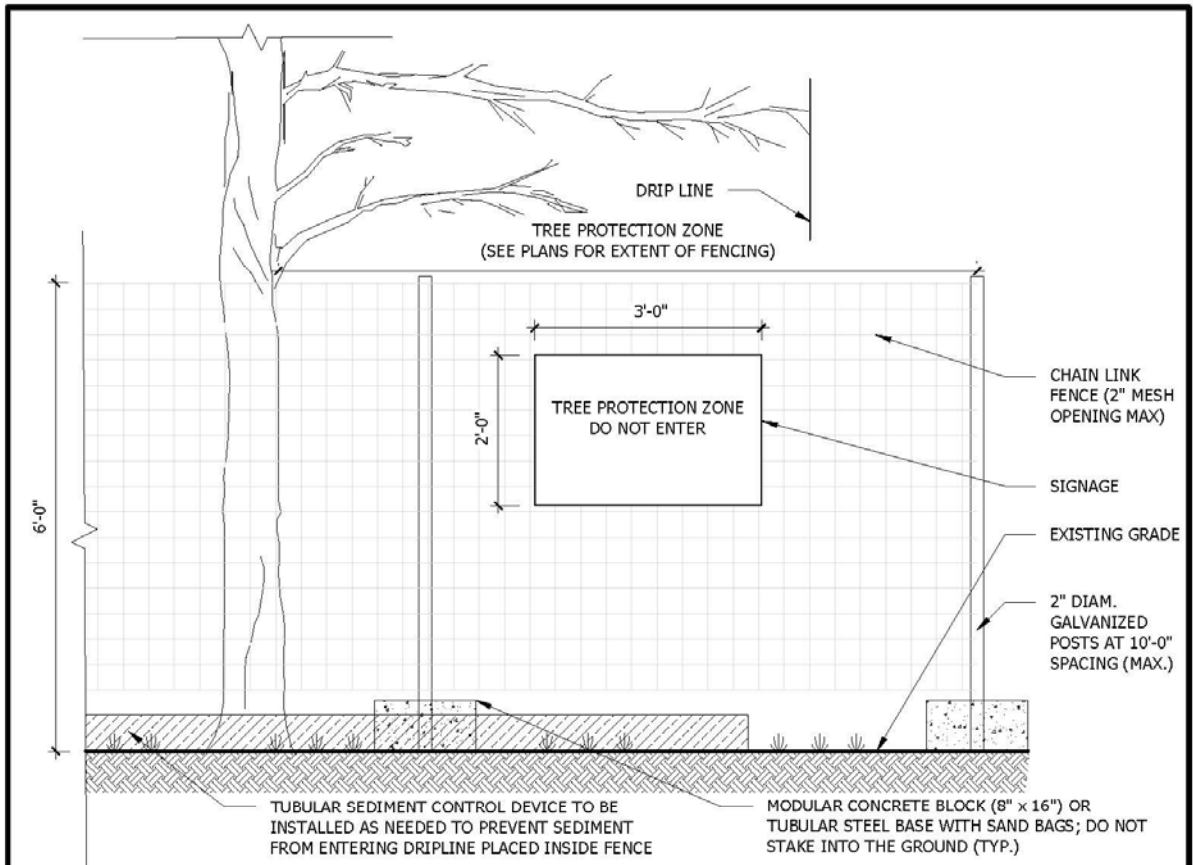


	STOCKPILE CONTAINMENT DETAIL			
	DRAWN BY	VE	DATE	5/14/2008
	CHECKED BY	VE	PAGE NO.	1 OF 1
			E&S-04	



MAINTENANCE: Rock Construction Entrance thickness shall be constantly maintained to the specified dimensions by adding rock. A stockpile shall be maintained on site for this purpose. At the end of each construction day, all sediment deposited on paved roadways shall be removed and returned to the construction site.

	ROCK CONSTRUCTION ENTRANCE DETAIL		
	DRAWN BY: VE CHECKED BY: VE	DATE: 5/14/2008 PAGE NO. 1 OF 1	ELS-09



TREE NO.	DBH (IN.)	TPZ DIAMETER (FT.) SEE NOTE 6	FENCE PANELS REQUIRED

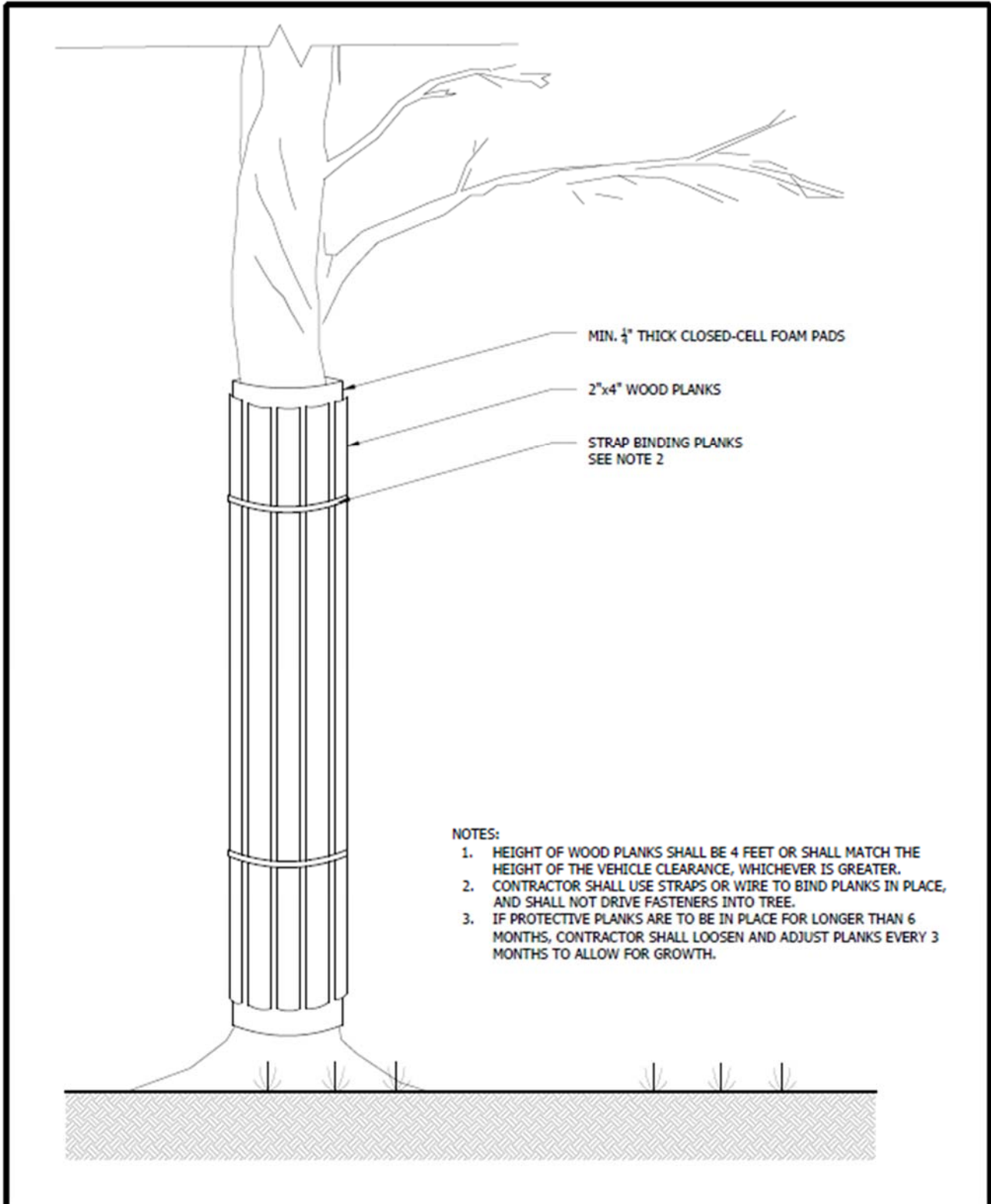
NOTES:

1. THE TREE PROTECTION FENCING IS TO BE INSTALLED AND REMAIN IN PLACE THROUGHOUT THE CONSTRUCTION PERIOD TO PROTECT THE CRITICAL ROOT ZONES (CRZs) AND PROHIBITIVE ROOT ZONES (PRZs), IN ACCORDANCE WITH SPECIFICATION SECTION 01535. REFER TO EROSION & SEDIMENT CONTROL SHEETS FOR TREE PROTECTION ZONE. ONE HEAVY DUTY WARNING SIGN SHALL BE PROMINENTLY DISPLAYED ON EACH TREE PROTECTION FENCE ENCLOSURE.
2. NO WORK IS TO OCCUR WITHIN THE TPZ, UNLESS OTHERWISE APPROVED BY THE PROJECT MANAGER. IF WORK IS TO OCCUR WITHIN THE TPZ, EXERCISE EXTREME CAUTION AND CARE UNDER THE SUPERVISION OF AN ISA CERTIFIED ARBORIST. HAND TOOLS SHOULD ONLY BE USED IF WORKING WITHIN THE TPZ. NOTIFY OWNER PRIOR TO COMMENCEMENT OF WORK WITHIN THE TPZ.
3. AVOID DAMAGING EXISTING TREES. DAMAGE INCLUDES BUT IS NOT LIMITED TO: CUTTING, BREAKING, SKINNING, OR COMPACTING SOIL AROUND ROOTS, SKINNING AND BRUISING OF BARK AND BREAKING OF BRANCHES AND LIMBS.
4. ACTIVITIES PROHIBITED WITHIN THE TPZ INCLUDE BUT ARE NOT LIMITED TO: EXCAVATION, DUMPING OF CONSTRUCTION WASTE, STORAGE OF MATERIALS, STORAGE OF VEHICLES AND EQUIPMENT, TRENCHING, CHANGING SOIL GRADE, COMPACTING SOIL WITH VEHICLE OR EQUIPMENT TRAFFIC, INSTALLING PAVEMENT OF ANY KIND, ATTACHING ANYTHING TO TREES USING NAILS, SCREWS, AND/OR SPIKES, OR CAUSING INJURY BY FIRE OR EXCESSIVE HEAT.
5. ANY REMOVAL OR PRUNING OF TREE BRANCHES, LIMBS, OR ROOTS MUST BE CONDUCTED BY AN ISA CERTIFIED ARBORIST. IF ANY TREE IS DAMAGED WITHIN THE TPZ, CONTACT THE PROJECT ARBORIST AND PROJECT MANAGER IMMEDIATELY.
6. THE TPZ SHALL BE DELINEATED BY ASSUMING 1 FOOT OF TPZ RADIUS FOR EACH INCH OF DIAMETER AT BREAST HEIGHT (DBH). THEREFORE A 10-INCH DBH TREE SHALL HAVE A TPZ DIAMETER OF 20 FEET.

PHILADELPHIA WATER
1101 MARKET ST, 4TH FLOOR
PHILADELPHIA, PA, 19107


CONSTRUCTION TREE PROTECTION - FENCING			
VS.	DATE	INITIALS	REASON
2	02.15.2017	TJL-MT	REVISED NOTATIONS & LANGUAGE

SCALE: N.T.S.
DRAWING NUMBER:
C-43



NOTES:

1. HEIGHT OF WOOD PLANKS SHALL BE 4 FEET OR SHALL MATCH THE HEIGHT OF THE VEHICLE CLEARANCE, WHICHEVER IS GREATER.
2. CONTRACTOR SHALL USE STRAPS OR WIRE TO BIND PLANKS IN PLACE, AND SHALL NOT DRIVE FASTENERS INTO TREE.
3. IF PROTECTIVE PLANKS ARE TO BE IN PLACE FOR LONGER THAN 6 MONTHS, CONTRACTOR SHALL LOOSEN AND ADJUST PLANKS EVERY 3 MONTHS TO ALLOW FOR GROWTH.

 PHILADELPHIA WATER 1101 MARKET ST, 4TH FLOOR PHILADELPHIA, PA, 19107	CONSTRUCTION TREE PROTECTION - PLANKING			SCALE: N.T.S.
	VS.	DATE	INITIALS	REASON
				DRAWING NUMBER: C-44

Maintenance Schedule for Erosion and Sediment Control Best Management Practices

E&S BMP	Inspection Requirements	Maintenance Requirements
Silt Fence	Should be inspected weekly and after each runoff event. Needed repairs should be initiated immediately after inspection.	Sediment shall be removed where accumulation reach half the above ground height of the fence. Any fence section which has been undermined or topped shall be immediately replaced with a rock filter outlet (PADEP Standard Construction Detail #4-6). The silt fence shall be removed and properly disposed of when the tributary area is permanently stabilized.
Compost Filter Sock	Socks shall be inspected weekly and after each runoff event. Damaged socks shall be repaired according to manufacturer's specifications or replaced within 24 hours of inspection.	Accumulated sediment shall be removed when it reaches half the aboveground height of the sock and disposed in the manner described elsewhere in the PADEP Erosion and Sediment Pollution Control Program Manual. Biodegradable filter socks shall be replaced after 6 months; photodegradable socks shall be replaced after 1 year. Polypropylene socks shall be replaced according to manufacturer's recommendations.
Rock Construction Entrance	Inspection should take place on a weekly basis and after each stormwater event.	Rock construction entrance thickness shall be constantly maintained to the specified dimensions by adding rock. A stockpile shall be maintained on site for this purpose. All sediment deposited on paved roadways shall be removed and returned to the construction site immediately. If excessive amount of sediment are being deposited on roadway, extend length of rock construction entrance by 50 foot increments until condition is alleviated or install a wash rack. Washing the roadway or sweeping the deposits into roadway ditches, sewers, culverts, or other drainage courses is not acceptable.
Inlet Filter Bag	Inlet filter bags should be inspected on a weekly basis and after each runoff event. All needed repairs shall be initiated immediately after inspection.	Bags shall be emptied and rinsed or replaced when half full or when flow capacity has been reduced so as to cause flooding or bypassing of the inlet. Damaged or clogged bags shall be replaced. A supply shall be maintained on site for replacement of bags. Dispose accumulated sediment as well as all used bags according to plan notes.
Soil Stock Piles	Soil stock piles should be inspected on a weekly basis, prior to forecasted rain events, and after each rain event.	Repair and replace barrier controls and covers as needed to keep them functioning properly. Sediment shall be removed when it reaches one third of the barrier height.
Check Dams	Inspect after each storm event to ensure structural integrity. Remove large debris, trash, and leaves during inspection.	Additional material should be added when necessary to maintain check dam height. Sediment shall be removed when it has reached half the height of the check dam material.
Stone Inlet Protection	Inspection should take place on a weekly basis and after each stormwater event.	Sediment shall be removed when it reached half the height of the stone. Damaged or clogged installations shall be repaired or replaced immediately.
Temporary Tree Protection Fencing	Fencing should be checked periodically and all staff involved in a project should be informed that moving a fence is not acceptable.	Fencing should remain in its original location throughout its use on the site. Debris should be cleared from the fence when necessary.
Erosion Control Matting	Matted areas should be inspected weekly and after each runoff event until perennial vegetation is established to a minimum uniform 70% coverage throughout the matted area.	Matting should have continuous contact with underlying soil throughout. Damaged or displaced matting shall be restored or replaced within for calendar days of inspection.



2.5 Cut Diameter

Color: C: 100 M: 0 Y: 94 K: 24

APPENDIX F – MONTHLY PLANTING PROJECT STATUS REPORT

Monthly Project Status Report		
Insert Company Logo	[COMPANY NAME] [Address] [City, State, and zip] [Phone #]	
Reporting Period Start Date: _____ [mm/dd/yyyy]	Reporting Period End Date: _____ [mm/dd/yyyy]	
Attn:		
Rachel Streit, Ashley M. Willis Philadelphia Water Department Office of Watersheds 1101 Market Street - 4th floor Philadelphia, PA 19107		
Work Number: _____ [XXXXXX]		
Site Name: _____		
Brief Description of Project: _____ _____		
Schedule of Activities		
Task (planting, maintenance activities, other)	Photo Reference	Date
		[mm/dd/yyyy]
<i>*insert more lines if needed</i>		
Work Number: _____ [XXXXXX]		
Site Name: _____		
Brief Description of Project: _____ _____		
Schedule of Activities		
Task (planting, maintenance activities, other)	Photo Reference	Date
		[mm/dd/yyyy]

APPENDIX G - BLS Materials Engineering Lab Request for Test

REQUEST FOR TEST		TO: MATERIALS ENGINEERING LABORATORY 1500 E. HUNTING PARK AVE., PHILA., PA 19124 (215) 685-1430		LAB. NO.
		SAMPLE NO.	MANUFACTURER	DATE
CONTRACT NO. OR JOB		LOCATION		
DESCRIPTION OF SAMPLE				
INTENDED USE				
SPECIFICATION				
<input type="checkbox"/> MATERIALS NOW IN USE <input type="checkbox"/> MATERIAL SUBMITTED PRIOR TO USE				
REMARKS				
SUBMITTING DEPT. AND UNIT		PHONE NO.	ENGINEER OR INSPECTOR (Signature)	

79-414 (Rev. 10/99) FI.04

APPENDIX H – Spare Parts Delivery Slip
 PHILADELPHIA WATER DEPT.

WORK NO.: XXXXX
 PROJECT: X
 CONTRACTOR:
 CONST. ENGINEER:
 INSPECTOR:

**INSTRUCTIONS: One signed copy is for the GSI Maintenance Yard and one signed copy is for the Contractor.
 Please scan and email a signed copy to the Construction Branch Project Manager.**

Spare parts listed below shall be delivered to the following address per specifications:

Attn: Gerald Bright
 Cell: 215-300-9079
 GSI Maintenance Garage
 7800 Penrose Ferry Road
 Philadelphia, PA 19153
 (Drop-off location is near containers, not BRC)

SPARE PARTS	SPEC SECTION	PROJECT QTY	QTY DELIVERED
Permanent inlet protection sediment bag	02700	#	
Extra hardware kit for permanent inlet protection sediment bag	02700	#	
Trash/debris screen for green city inlet	02700	#	
Extra hardware kit for trash/debris screen	02700	#	
Permanent protection sediment filter bag for domed riser	02707	#	

This signature confirms delivery and receipt of the items listed above:

CONTRACTOR SIGNATURE:

RECEIVED BY:

DATE:

CITY OF PHILADELPHIA



**STANDARD CONTRACT REQUIREMENTS
FOR PUBLIC WORKS CONTRACTS**

PROCUREMENT DEPARTMENT

January 1, 2019

CITY OF PHILADELPHIA
STANDARD CONTRACT REQUIREMENTS

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STANDARD CONTRACT REQUIREMENTS

A. DEFINITIONS

1. **Definitions.** The terms used in the Contract Documents shall have the following meanings:
 - a. "ADA" has the meaning set forth in Paragraph 113 below.
 - b. "Amendment" means a written modification or change to any Contract Document signed by both Parties.
 - c. "Applicable Law" means all applicable present and future federal, state or local laws, ordinances, executive orders, rules, regulations and all court orders, injunctions, decrees and other official interpretations thereof of any federal, state or local court, administrative agency or governmental body, including the City of Philadelphia ("City"), the Commonwealth of Pennsylvania ("Commonwealth") and the United States of America ("USA"). Applicable Law includes, without limitation, laws, etc. relating to the environment, the Philadelphia Home Rule Charter ("HRC"), as amended from time to time, The Philadelphia Code ("Code"), as amended from time to time, and the specific laws set forth in Paragraphs 107–116 below, each as amended from time to time. Sellers submit quotes, and the parties execute, deliver and perform their respective obligations under the Contract, under and pursuant to the applicable provisions of all Acts of the General Assembly of the Commonwealth and applicable ordinances of the City, as such enactments may hereafter be supplemented or amended.
 - d. "Application for Final Estimate" has the meaning set forth in Paragraph 56 below.
 - e. "Application for Payment" has the meaning set forth in Paragraph 52 below.
 - f. "Application for Semi-Final Estimate" has the meaning set forth in Paragraph 55 below.
 - g. "Bid Solicitation" means a public invitation to submit competitive Quotes for a specific City contract or City contracts that is or are issued by the Procurement Department in accordance with Sections 8-200(1), 2(a) and 2(b) of the Philadelphia Home Rule Charter. A Bid Solicitation includes all addenda thereto issued by the Procurement Department.
 - h. "Change Order" means an instrument altering the scope of the work under the Contract issued under Paragraph 48 below.
 - i. The "City" means The City of Philadelphia, a corporation and body politic existing under the laws of the Commonwealth, and includes its various executive and administrative departments, agencies, boards and commissions, including the Department, and its legislature, City Council. The City is a City of the First Class under the laws of the Commonwealth.
 - j. "City Work" has the meaning specified in Paragraph 107(d) below.
 - k. "Contingent Price" means a price for a unit or component of work specified on the "Contingent Price List" published from time to time by the City.
 - l. "Commonwealth" means the Commonwealth of Pennsylvania.
 - m. "Contract" means the agreement of the Parties evidenced by the Contract Documents.
 - n. "Contract Documents" means the Standard Contract Requirements; the Department's Standard Details and Specifications, as they apply; the Department's General Bidding and Contract Requirements; the Technical Specifications; the Quote; the Plans with all of the notes thereon (excluding any records or reports of test borings, underground structures, and test piles); the Notice to Proceed ("NTP"), the Notice of Contract Award

("NCA"), the performance bond and the payment bond, as prepared by the Department and issued with the Bid Solicitation, and includes all exhibits, schedules and addenda, if any, to any of the foregoing documents, and any and all Amendments and Change Orders.

o. "Contractor" means the Person that has entered into the Contract with the City, has had its authorized individual(s) sign the Contract Documents on behalf of the Person but does not include, without the City's written consent, any subsidiary, affiliate, agent, etc., or parent company, if any, of the Contractor.

p. "Current Estimate" has the meaning set forth in Paragraph 53 below.

q. "Department" means the department, board, commission, or agency of the City for which the Contractor carries out the work under the Contract, except when the Department of Public Property ("DPP") supervises the Contract, in which case "Department" means the Department of Public Property.

r. "Disputed Change Order" means a Change Order issued by the City under Paragraph 49 below.

s. "Event of Insolvency" means (a) the filing of a voluntary petition by the Contractor under the Federal Bankruptcy Code or any similar state or federal law; or (b) the filing of an involuntary petition against The Contractor under the Federal Bankruptcy Code or any similar state or federal law which remains undismissed for a period of forty-five (45) days; or (c) the Contractor's making of an assignment for the benefit of creditors; or (d) the appointment of a receiver for the Contractor or for the property or assets of the Contractor, if such appointment is not vacated within forty-five (45) days thereafter; or (e) any other proceeding under any bankruptcy or insolvency law or liquidation law, voluntary or otherwise; or (f) the Contractor proves unable to pay its obligations as they mature; or (g) the Contractor is insolvent as otherwise defined under any Applicable Law.

t. "General Bidding and Contract Requirements" means the additional bidding and contract conditions and requirements specifically prepared by the Department for a specific Bid Solicitation (which may accompany the Technical Specifications) and may from time to time include, but not be limited to, Quote proposal forms, special or additional or supplementary instructions to Sellers, minimum wage rate schedules, prevailing wage rate schedules, contingent price lists, requirements of the City's Office of Economic Opportunity ("OEO"), and general tax requirements.

u. "Inspector" means the representative of the City's Project Manager assigned to inspect work and the delivery of services under the Contract.

v. "Lump Sum Bid Breakdown" has the meaning set forth in Paragraph 52 below.

w. "Notice of Contract Award" (NCA) means a notice from the City to the Seller informing the Seller of the City's determination to award the Contract to the Seller.

x. "Notice to Proceed" (NTP) means a notice from the City to the Contractor authorizing the Contractor to commence work under the Contract.

y. "Operating Commissioner" means the director, commissioner, or other head of the Department issuing the work to the Contractor pursuant to the Contract.

z. "Parties" means the City and the Contractor, and a "Party" means either the City or the Contractor.

aa. "Person" means any individual, sole proprietorship, association, company, firm, partnership, limited partnership, joint venture, corporation, limited liability company or other form of entity or association recognized at law.

bb. "PGW" means the Philadelphia Gas Works.

cc. "Plans" means the general plans and design drawings which accompany the Technical Specifications, the Standard Details and Specifications, and such detail and supplementary drawings as may be furnished from time to time.

dd. "Procurement Commissioner" means the head of the City's Procurement Department, or his or her designee.

ee. "Procurement Department" means the Procurement Department of the City.

ff. "Project" means all of the work which the City seeks to complete at the Project site, including, but not limited to, the work which the Contractor has agreed to perform under the Contract. The Project includes other work at the Project site by the City and by other contractors pursuant to other City contracts.

gg. "Project Manager" means the designated representative of the City officer in charge of the construction branch, division or unit of the Department, or the individual specifically designated as "Project Manager" in the Technical Specifications, and any other individual who may be designated in writing by the Project Manager as his or her representative. The City may delegate or provide for the performance of certain of the duties and functions of the Project Manager by architectural or engineering firms under contract with the City.

hh. "Proposal" means a Seller's price and other specific terms and conditions included in a Quote.

ii. "Public Works Contract(s)" means any contract awarded by the Procurement Department for the construction, reconstruction, alteration, or repair of any public building or other public work or public improvement within the City and County of Philadelphia.

jj. "Quote" means a Seller's signed response, including a Proposal, submitted to the Procurement Department pursuant to a Bid Solicitation.

kk. "Responsibility" or "Responsible" means the capacity to perform a City contract in accordance with its terms and conditions. Elements of Responsibility include the following, among others: judgment, skill, promptness, faithfulness, skillful workers, honesty of the Contractor, financial standing, reputation, experience, resources, facilities, past history of adherence to plans and specifications, capacity and ability to do the work according to the plans and specifications, availability and efficiency, and such other factors as may be determined by law and the City.

ll. "Seller" means a Person submitting a Quote, signed by the Person, to the Procurement Department pursuant to a Bid Solicitation. Seller includes only the Person who signs the Contract. Seller does not include, without the written consent of the City, any subsidiary, affiliate, agent, etc., or parent company, if any, of the Person.

mm. "Semi-Final Estimate" has the meaning set forth in Paragraph 55.

nn. "Shop Drawings" means all drawings, diagrams, illustrations, brochures, schedules, performance charts, instructions, and other data which are prepared by the Contractor, its Subcontractors, suppliers, or distributors, or equipment fabricators or manufacturers, and which illustrate the manufacture or fabrication of the product or equipment or any part thereof, and which are submitted to the Department to establish that the materials, articles and components of equipment Contractor proposes to supply will, when installed, meet all requirements of the Contract Documents.

oo. "Standard Contract Requirements" or "SCR" means these Standard Contract Requirements of the City in connection with the Bid Solicitations for, and the award, execution, and performance of Public Works Contracts, except as modified by the Department's General Bidding and Contract Requirements, the Technical Specifications and Plans and any other special requirements for the Contract. These Standard Contract Requirements are attached to and form an integral part of the Contract Documents.

pp. "Standard Details and Specifications" means the standard details and specifications for specific,

recurring types of work or components thereof, as may be issued by the Department from time to time, *e.g.*, the Standard Details and Standard Specifications for Sewers, as issued by the Philadelphia Water Department, or the Standard Construction Items, as issued by the Department of Streets.

qq. "Structures" has the meaning set forth in Paragraph 83 below.

rr. "Subcontract" means a contract made between the Contractor and a Subcontractor, or between a Subcontractor and a sub-subcontractor at any tier, providing for the completion of one or more portions of the work which the Contractor has agreed to perform under the Contract, including agreements for the manufacture or supply of equipment, systems or components forming part of such work.

ss. "Subcontractor" means a Person performing at any tier under a contract with the Contractor or another Subcontractor one or more portions of the work which the Contractor has agreed to perform under the Contract. Subcontractors shall include, without limitation, vendors, manufacturers, suppliers, or other Persons contracting with a Subcontractor or the Contractor for the manufacture or supply of equipment, systems or components forming part of the work under the Contract. There is no contractual relationship (privity of contract) between the Contractor's Subcontractor, or a Subcontractor's subcontractor, and the City.

tt. "Substantial Completion" or "Substantially Complete" or "Substantially Completed" means that construction is sufficiently complete in accordance with Contract Documents and certified by the Project Manager, as modified by Change Orders or amendments, so that (a) the work under this Contract can be used, occupied or operated for its intended use, and (b) all applicable permits and licenses, including, if applicable, a statement or certificate of occupancy, shall have been duly issued by all government offices, including those of the City. In no event shall the Contract be certified as substantially complete until the Contractor has completed at least ninety percent (90%) of the work under the Contract.

uu. "Technical Specifications" means the written and detailed requirements, prepared by the Department, or its consultants or representatives, for materials, equipment, systems, standards and workmanship for the work under this Contract and related services to be performed under the Contract.

vv. "Unbalanced Quote" means an offer by the Contractor which (1) contains extremely low prices on items or types of work which are, as determined by the City in its sole discretion, unimportant or infrequently ordered or performed, and extremely high prices on items or types of work which are frequently ordered or performed, resulting in an effort to qualify as the low Seller while charging disproportionately high prices for certain items or types of work; or (2) contains prices for phases of the work to be performed early in the course of the work under this Contract that are, as determined by the City in its sole discretion, disproportionately high relative to prices for later phases of the work, resulting in payment of a disproportionately high percentage of the total Contract price early in the Contract period.

ww. "Working Days" means calendar days, less allowances for days or parts of days, in increments of one-quarter (1/4) day, for conditions entirely beyond the control of the Contractor as defined in Paragraph 25(c)(2); and also excludes New Year's Day, Memorial Day, July 4th, Labor Day, Thanksgiving Day and Christmas Day, or the Monday thereafter when these days occur on Sunday, and Saturdays and Sundays shall not be considered as Working Days.

xx. "Working Drawings" means those drawings prepared by the Contractor to supplement the Plans and Shop Drawings to accurately and clearly depict all working and installation dimensions, arrangement and sectional views, units of equipment in the proposed positions for installation, details of required attachments and connections, and dimensioned locations between units and in relation to the existing and proposed structures. Working Drawings shall show all necessary details and information for making connections between the various trades including, but not limited to, power supplies and interconnecting wiring between units, accessories, and appurtenances.

2. Interpretation; number, gender. The words "herein" "hereof" and "hereunder" and other words of similar import refer to the Contract as a whole, including all of the Contract Documents, and not to any particular article, paragraph, subparagraph or clause contained in the Contract Documents. Whenever the

context requires, words used in the singular shall be construed to include the plural and vice versa, and pronouns of any gender shall be deemed to include the masculine, feminine and neuter genders.

B. QUOTE SUBMISSION REQUIREMENTS

3. Qualifications of Seller.

a. Each Seller must demonstrate to the satisfaction of the City that it is Responsible, capable of performing the work under the Contract, and has successfully completed contracts equivalent in scope and nature, and comparable in magnitude. Seller must further demonstrate that: 1) it has the necessary financial resources, equipment, and workforce to perform the work under the Contract in a proper and satisfactory manner, in accordance with the Contract Documents, and within the time specified, and 2) that the possible award of this Contract to the Seller will not, in the City's sole discretion, overextend the Seller because it is already performing another City contract or other contract(s) or project(s).

b. As required by Section 17-101, as amended, of The Philadelphia Code, entitled "Prequalification of Prospective Bidders for Contracts for Construction of Public Works", all Sellers shall submit to the Procurement Department through PHLContracts, by the date specified in the Quote advertisement(s), a "City of Philadelphia Prequalification Questionnaire," for the purpose of determining the Seller's Responsibility. Should the Seller omit any required information, or refuse to give any required information, or should the information submitted by Seller, in the judgment of the Procurement Commissioner, taking into consideration the recommendations of the Operating Commissioner, reveal that the Seller is not sufficiently equipped or qualified to enter into or perform the Contract, the City shall not accept any Quote from such Seller(s), and the Procurement Commissioner shall notify the Seller to that effect. In such case, Section 17-101 of The Philadelphia Code shall govern any appeal to which the Seller may be entitled.

4. Examination of Contract Documents and Site.

a. Sellers shall thoroughly acquaint themselves with the Contract Documents, including, without limitation, a careful study and review of the Plans and Technical Specifications. Sellers shall examine in detail the Project site and shall acquaint themselves with conditions affecting the work under the Contract and the overall Project, and, when applicable, the condition of walls and foundations of overlying and adjacent structures, the character of the paving, and the soil and subsurface soil. The Quote shall be prepared with due regard to the provisions of the Contract Documents and to the conditions existing or to be anticipated at the Project site.

b. Where test borings, test piles, and existing underground and above-ground structure locations are reported on, or included with, the Contract Plans or Technical Specifications, or where they are provided as separate Plans or Technical Specifications, they are for the information of the City only and are not provided to Sellers to show the conditions to be encountered by the Seller; the correctness, accuracy, or interpretation of the information is not guaranteed or warranted in any fashion by the City; and in no event is any boring or underground or above-ground structure information to be considered as a part of the Contract, notwithstanding any provision to the contrary that may appear in the Technical Specifications. If a Seller uses any of this information in preparing its Quote, Seller shall assume any and all risks resulting from conditions that differ from the conditions or approximation shown on the Plans or Shop Drawings.

1. If Seller desires to obtain similar data or information, or to conduct an independent subsurface investigation of the Project site, the Seller must notify the Department in writing at least ten (10) days prior to the date for opening of Quotes, or not later than five (5) days after the date on which Quotes are first advertised by the City, whichever date is earlier. Upon written notice from Seller, the City shall afford Seller the opportunity, at Seller's sole expense, to make test borings or soundings, to drive test piles, or to dig test pits on that portion of the Project site in which the work under this Contract will take place. Seller shall be responsible for complying with all Applicable Law relating to such activity. The foregoing notwithstanding, the City reserves the right to reject such investigations by any Seller when the City deems such rejection to be in the City's best interest. If the City permits such investigations by any Seller, then (a) each such Seller, prior to its entry onto the Project site, shall deliver to the City a certificate of insurance conforming to the

requirements of Paragraph 30 below, and a License Agreement in the form provided by the City; (b) each such Seller shall indemnify, defend and hold the City harmless from and against any and all claims, causes of action, suits, damages, losses, costs and expenses, whether for personal injury or property damage or for any other reason, arising out of such Seller's entry on the Project site; (c) such Seller covenants and agrees that it shall restore the Project site to the same condition as existed prior to such Seller's entry onto the Project site; (d) the City reserves the right to require the delivery of payment and performance bonds prior to any entry onto the Project site by such Seller; (e) in the event more than one Seller seeks to conduct such investigations, the City reserves the right to coordinate and schedule such investigations so as to minimize interference with the use of the Project site and other adjacent sites and any interference with other work at the Project site or adjacent to the Project site.

2. Failure of a Seller to notify the Department in writing of a Seller's desire to obtain such information shall operate as an absolute bar to any claim by a Seller that it had no reasonable means of making an independent subsurface investigation of the site.

c. If a Seller discovers or encounters any ambiguity or discrepancy in the Contract Documents in the course of preparing its Quote, the Seller shall promptly notify the Department of the ambiguity or discrepancy prior to the date and time for receipt and opening of Quotes. The City, so advised, may, at its sole discretion determine whether such ambiguity or discrepancy exists and whether any corrective action is necessary.

5. **Antibid-Rigging Act.** All Sellers, by submitting a Quote, certify that they have not committed or engaged in, or attempted to commit or engage in, a prohibited activity under the Antibid-Rigging Act, 62 Pa. C.S.A. § 4501, et seq., as amended, in connection with their Quote. In addition, all Sellers by submitting a Quote certify that the Seller has not been convicted or found liable for any act prohibited by any federal or state law in any jurisdiction involving conspiracy or collusion with respect to bidding on any public contract within the five (5) years prior to the date of the Quote; that the Seller acknowledges that a conviction or finding of liability for any act prohibited by federal or state law in any jurisdiction involving conspiracy or collusion with respect to submitting a Quote on any public contract within the three (3) years prior to the date of the Quote shall not prohibit the City from accepting a Quote from the Seller or awarding a Contract to the Seller, but may nonetheless serve as grounds for Seller's suspension or debarment at the sole discretion of the Procurement Commissioner, or may serve as grounds for a non-award of a Contract to the Seller on the basis of the Seller's lack of Responsibility.

6. **Multiple Quote Restriction.** No Seller shall be a party to more than one (1) Quote for the same Bid Solicitation. A violation of this condition may in the sole discretion of the Procurement Commissioner, result in rejection of any or all such Quotes in which the Seller is interested.

7. **Quote Submission.**

a. By submitting a Quote, the Seller certifies that it is familiar with the Project site and the conditions affecting the Project site, that it has thoroughly reviewed the Contract Documents, and that all work can be completed for the amount stated in the Quote and within the Contract time specified. No Quote may be considered if received after the date and time for opening of Quotes established by the Bid Solicitation, nor may any Quote be modified after that date and time, except as provided herein or by Applicable Law. The time of Quote opening shall be the time displayed in PHLContracts. In the event of any discrepancy between actual time and the time displayed in PHLContracts, the latter shall determine the time of Quote opening.

b. It is the sole responsibility of the Seller to ensure that it has received any and all addenda and the Procurement Commissioner may, in his or her discretion, reject any Quote for which all addenda have not been executed and returned in accordance with the instructions provided therein.

c. For purposes of determining the basis of a contract award, in the event of a discrepancy between a unit price and an extended price for a work or line item, the unit price shall govern, and the extended price shall be re-computed by the City. If the amount set forth as a unit price is ambiguous, unintelligible, or uncertain for any cause, or is omitted entirely, or is the same amount as the extended price for a work or line item, then the amount set forth as the extended price shall govern for purposes of determining the basis of a contract award. In such event, the extended price shall be divided by the estimated quantity for the work or line item to

arrive at a re-computed unit price which shall thereafter govern for purposes of payment under Paragraph 45.

d. Where a unit or other price (including a unit price extension or the aggregate or total price) contained in the Quote contains a mistake or error in computation, or is otherwise ambiguous as to computation, or there is a discrepancy between a unit price and an extended price for a work or line item, and where the mistake, ambiguity, or discrepancy is not discovered prior to contract award and results in the award of a contract to the Seller, which award is later determined to be mistaken or erroneous, or the Contract Amount is determined to be erroneous, based upon a re-computation of the unit prices and the total price, the Contractor shall bear the sole financial risk of such mistake or ambiguity, and such mistake or ambiguity shall be construed solely against the Contractor and in favor of the City. In all such cases of price mistake, ambiguity, or discrepancy, if work under the Contract has not yet commenced, the City shall have the discretion, at its sole option, to formally rescind the Contract, if the Contractor is deemed not to be the low Seller in accordance with the rule set forth in Paragraph 7(c) above, or to unilaterally reform the Contract and the prices therein in accordance with the rule set forth in Paragraph 7(c), if the Contractor would still be deemed to be the low Seller notwithstanding any mistake, ambiguity, or discrepancy. If work under the Contract has already commenced, the City shall have the discretion, at its sole option, to make payment at the unit price as recomputed in accordance with Paragraph 7(c) above or at the mistaken or ambiguous unit price, or to dispute payment at the mistaken or ambiguous price. In the event of a rescission or reformation of the contract under this Paragraph, the Contractor agrees and acknowledges that it shall have no claim against the City, including any claim for breach of contract or breach of any other legal duty, or for lost profits, costs, damages, or expenses of any kind, arising out of the rescission or reformation. In the event that the City disputes payment to the Contractor at a mistaken or ambiguous unit price, and the parties cannot mutually agree upon a price to be paid to the Contractor for the item of work in question, the payment to the Contractor for the item of work shall not exceed the payment which would be made pursuant to Paragraph 51, and the City's liability to the Contractor for such item of work shall not in any event exceed the Contract Amount as specified in Paragraph 44.

8. Quote Withdrawal. P.L. 9, No. 4, Act of January 23, 1974, 73 P.S. § 1601, et seq., as amended, shall govern the withdrawal of Quotes for clerical mistakes. A Seller must provide the Procurement Department written notice of a right to withdraw a Quote under 73 P.S. § 1601, et seq., within two (2) business days after the opening of Quotes.

9. Quote Responsiveness. Subject to the right of the Procurement Commissioner to waive irregularities and non-responsiveness as set forth below in this Paragraph 9, the Contract Documents are mandatory and must be strictly followed by all Sellers in the preparation and submission of their Quotes. After Quotes are opened, the Procurement Department, and other City departments or agencies where appropriate or specified, shall review all Quotes for responsiveness. Any Quote which is incomplete, obscure, conditional, unbalanced, which contains additions not called for, or irregularities of any kind, including alterations or erasures, or which fails to conform in any respect to the Contract Documents shall be deemed to be non-responsive and shall be rejected, except where the Procurement Commissioner, in his or her sole discretion, determines that the irregularity or non-responsiveness is not material or that a waiver of the irregularity or non-responsiveness is otherwise permitted by the Contract Documents or by Applicable Law. The Procurement Commissioner reserves the right to waive such irregularities or non-responsive matters in a Quote. The Procurement Department's determination of non-responsiveness shall be final and any Quote rejected as non-responsive shall not be eligible for Contract award. The Procurement Commissioner's determination of non-responsiveness is not appealable to the Court of Common Pleas.

10. Security for Execution of Contract. The Seller shall include with its Quote a bid bond in the amount of ten percent (10%) of the gross amount of the Quote. The gross amount of the Quote shall mean the sum of all items enumerated in the Quote, without reduction for "deduct" alternates. All Sellers must use the City's standard bid bond form, which is included in the Bid Solicitation or otherwise available at the City's Procurement Information Center (Rm. 170 Municipal Services Bldg.), in fulfilling the requirement of this Paragraph 10. The City shall not accept any other bid bond form. The Seller may not submit cash. Upon return of the duly executed Contract Documents by the lowest responsible Seller to the City's Law Department, the bid bonds of all Sellers shall be deemed released.

11. Bid Processing Fee.

a. In addition to bid security and any other fee or monies required, the Quote shall be accompanied by a non-refundable processing fee in the form of a separate check payable to the City or electronic payment as specified in the bid solicitation. The processing fee is based on the advertised cost estimate for the bid in accordance with the formula below. Cash is not acceptable.

\$0	when the advertised cost estimate does not exceed \$10,000
\$10	when the advertised cost estimate is or exceeds \$10,000 but does not exceed \$100,000
\$30	when the advertised cost estimate is or exceeds \$100,000 but does not exceed \$300,000
\$50	when the advertised cost estimate is or exceeds \$300,000 but does not exceed \$500,000
\$100	when the advertised cost estimate is or exceeds \$500,000 but does not exceed \$1,000,000
\$200	when the advertised cost estimate is or exceeds \$1,000,000 but does not exceed \$2,000,000
\$300	when the advertised cost estimate is or exceeds \$2,000,000 but does not exceed \$3,000,000
\$400	when the advertised cost estimate is or exceeds \$3,000,000 but does not exceed \$4,000,000
\$500	when the advertised cost estimate is or exceeds \$4,000,000 but does not exceed \$5,000,000
\$600	when the advertised cost estimate is or exceeds \$5,000,000.

b. For the purpose of estimating the amount of the bid processing fee the amount of work and labor or the quantities of materials or supplies to be furnished will be in accordance with the estimated quantities, but the City will not be bound by such estimates in regard to the actual quantities of work and labor or materials or supplies required to be furnished under the Contract.

c. Failure to submit the bid processing fee may result in the Seller's disqualification from submitting a Quote. In addition, if an award is made pursuant to the Bid Solicitation and Quote, any unpaid processing fees owed by the Seller to the City must be paid prior to the City's release of any payments to the Contractor under the Contract.

12. Business Tax Requirements. Any Contractor, or vendor of goods, wares and merchandise, or purveyor of services, who submits a Quote and is awarded a contract by the City or the School District of Philadelphia ("School District" or "SDP"), is subject to Philadelphia's business tax and applicable ordinances and regulations. Anyone who is awarded a contract by the City or the School District of Philadelphia pursuant to a formal bid solicitation, including a Bid Solicitation, shall be deemed to have entered into a contract within the City, and the subsequent delivery of goods into the City, or performance of services within the City constitutes "doing business" in the City and subjects the successful Seller to one or more of the following taxes: (a) Business Privilege Tax; (b) Net Profits Tax; and (c) City Wage Tax. The successful Seller, if not already paying the aforesaid taxes, is required to apply to the Department of Revenue for a tax identification number and to file appropriate business tax returns as provided by law.

13. Tax Indebtedness. The successful Seller shall represent, warrant and covenant that the Contractor and any entities controlling the Contractor, under common control with the Contractor, or controlled by the Contractor are not currently indebted to the City, and will not at any time during the term of the Contract be indebted to the City, and will not at any time during the term of this Contract (including any extensions or renewals thereof) be indebted to the City, for or on account of any delinquent taxes (including, but not limited to, taxes collected by the City on behalf of the School District of Philadelphia), liens, judgments, fees or other debts for which no written agreement or payment plan satisfactory to the City has been established. In addition to any other rights or remedies available to the City at law or in equity, the Contractor acknowledges that any breach or failure to conform to this representation, warranty and covenant may, at the option of the City, result in the withholding of payments otherwise due to the Contractor and, if such breach or failure is not resolved to the City's satisfaction within a reasonable time period specified by the City in writing, may result in the offset of any such indebtedness against said payments or the termination of this Contract for default (in which case the Contractor shall be liable for all excess costs and other damages resulting from the termination), or both.

14. Commercial Activity License. A Commercial Activity License ("CAL") is required for every Person desiring to engage in any business within the City, whether or not such Person maintains a place of business in the City. The successful Seller will be required to furnish a CAL number at the time of Contract

award, but no later than before the "Notice to Proceed" is issued. In the event the successful Seller has applied for, but not been issued, a CAL, a photocopy of the application will be acceptable. The CAL is a one-time license with no expiration date. Only one (1) license is needed for multiple locations or for multiple businesses for the same Person. If the Seller has never had a CAL assigned, the Seller may request one by filing a "Miscellaneous License Application". In order to be assigned a CAL, it is necessary to have a "Philadelphia Business Tax Account Number". This is a number assigned by the City's Department of Revenue to identify City tax accounts. If the Seller has never had a number assigned, the Seller may request one by filing an "Application for Philadelphia Business Tax Account Number". Any tax account previously opened for the Seller which is unsettled or delinquent will cause delay and may preclude the issuance of a new license. Applications may be obtained from the Department of Licenses and Inspection, License Issuance Unit.

15. Comparison of Quotes. Quotes will be compared on the basis of the aggregate of all the items of the Quote, unless otherwise specified in the General Bidding and Contract Requirements.

16. Award of Contract. The City shall make the Contract award to the lowest responsive, Responsible Seller. In the event of an absolute tie, the Procurement Commissioner shall make the Contract award in accordance with the best interests of the City. The Procurement Commissioner, in his or her sole discretion, may reject all Quotes, if deemed in the best interests of the City. The award of the Contract shall be governed in all respects by 62 Pa.C.S. §3911, as amended. However, the failure of the City to comply with the statutory requirement set forth in 62 Pa.C.S. §3911 shall not operate as a release of the Seller, unless the Seller shall first notify the City in writing, prior to the end of the deadline set forth in 62 Pa.C.S. §3911, of the Seller's intent to demand compliance of the City with such requirement.

17. Binding Contract and Execution of the Contract.

a. The award shall not become a contract binding upon the City until after written Notice of Contract Award is made by the Procurement Department to the lowest responsive, Responsible Seller and until after all of the following conditions have been satisfied:

1. Successful Seller posts a proper performance bond and a proper payment bond, as provided for in Paragraph 18 below, on the City's current bond forms, within the time set forth in the Notice of Contract Award;
2. Successful Seller provides proof of the requisite insurance;
3. The Contract is approved as to form by the City's Law Department;
4. The Director of Finance and the City Controller's Office certify the availability of funds for the Contract; and
5. The Procurement Commissioner executes the Contract.

The Procurement Commissioner may, in his or her sole discretion, cancel any contract award if any of the above conditions are not satisfied, or if the Procurement Commissioner, in his or her sole discretion, determines cancellation of the contract award to be in the best interests of the City. In the event of such cancellation, the successful Seller agrees and acknowledges that it shall have no claim against the City, including any claim for breach of contract or breach of any other legal duty, or for lost profits, costs, damages, or expenses of any kind.

b. The execution of the Contract shall be made within sixty (60) days of the date of the award of the Contract and shall in any event be governed in all respects by 62 Pa.C.S. §3912, as amended. Any Seller who is not lawfully released from its Quote and who fails, refuses, or is unable to furnish the required performance and payment bonds or insurance, shall be liable to the City for the actual loss or damage sustained by the City as a result of the failure of the Seller to enter into the Contract. This remedy against the Seller shall be in addition to, and not in lieu of, any remedy or claim which the City may have under the bid bond posted by the Seller.

c. In no event shall the Contract awarded to the Contractor be construed or deemed to include, as a term, covenant or condition, any exception, addition or other term which the Seller may have included or as part of its Quote, except as may be expressly approved by the Procurement Commissioner pursuant to Paragraph 9 above.

18. Contract Surety. As provided by the Act of 1967, December 20, P.L. 869 (8 P.S. § 193.1, *et seq.*, as amended), the successful Seller will be required at the time of execution of the Contract to give security for the faithful performance of the work and for compliance with the Contract in the form of a performance bond, with a surety company approved by the City, in a sum equal to 100% of the amount of the Contract (equal to the Quote amount plus any contingency amount). In addition, as provided by the Act of 1967, December 20, P.L. 869 (8 P.S. § 193.1, as amended), the Contractor will be required at the time of execution of the Contract to give a payment bond, with a surety company approved by the City, in a sum one hundred percent (100%) of the amount of the Contract (equal to the Quote amount plus any contingency amount), conditioned for the full payment of Subcontractors and others furnishing labor and materials in the performance of the Contract. Both the performance and payment bonds must be submitted by the Seller to the City on bond forms provided by the City.

C. GENERAL REQUIREMENTS OF THE CONTRACT

19. Unauthorized Acts. Any act of any City representative, official, agent, or employee, which is not within the scope of his or her authority as set forth in the Contract Documents or pursuant to the Philadelphia Home Rule Charter, shall not be binding on the City and shall not be deemed as a defense to the Contractor for the breach of any of the terms and conditions of the Contract.

20. Cancellation of the Contract. The Contractor will not be required to proceed with the work of the Contract, if:

- a. for any reason for which the Contractor it is not responsible, the Contractor cannot commence work within three (3) months from the date of execution of the Contract, except in the case of Contracts for street improvements, when six (6) months shall be the limiting period; or
- b. at any time prior to the issuance of the Notice to Proceed, the City, in its sole discretion, determines that it must reduce the scope of the work in an amount equal to or greater than twenty-five percent (25%) of the amount of the Quote. In such event, the City shall give notice thereof the Contractor.

In the event the Contractor cannot commence work, the Contractor shall give notice of cancellation within five (5) days after the date which is three (3) months from the date of execution of the Contract by the Contractor, except in the case of Contracts for street improvements, when the Contractor shall give such notice six (6) months from the date of execution of the Contract by the Contractor. In the event the City gives notice to the Contractor that the City has determined to reduce the scope of the work as provided in Paragraph 20(b) above, then the Contractor shall give notice of cancellation within five (5) days after the date the Contractor receives such notice from the City, otherwise the Contract shall remain valid.

This Paragraph 20 shall not apply to Contracts entered into for work the commencement of which is dependent upon progress of other contracts where this condition is plainly indicated by the character and location of such work at the time the City issues the Bid Solicitation and where Departmental constraints limit construction activities as described in the Technical Specifications. The City shall have no liability, by way of any penalty or otherwise, arising out of the cancellation of the Contract pursuant to this Paragraph 20.

21. Termination for the Convenience of the City. The City may terminate this Contract at any time during the term of the Contract, for any reason, including, without limitation, the City's own convenience. Written notice of termination shall be sent to the Contractor by the Procurement Commissioner and said notice shall set forth the effective date of the termination. Upon receipt of such notice of termination, the Contractor shall stop all work under the Contract. Upon termination under this Paragraph, the City shall be liable to the Contractor only for the cost and profit on the physical work then completed on the job site by the Contractor

and in place. The City shall have no additional liability or cost for termination of the Contract, including, but not limited to, any penalty, the Contractor's anticipated profits, the Contractor's estimating costs, or any loss on the work terminated. If termination of the Contract occurs prior to the issuance of the Notice to Proceed, the City shall not be liable to the Contractor for any cost or lost profits of the Contractor, regardless of whether the Contractor may have performed some physical work, except where the Project Manager has otherwise authorized in writing the commencement of work by the Contractor, in which case the City's liability to the Contractor shall be governed by the prior terms of this Paragraph. Termination of the Contract shall not affect any obligation or liabilities of either Party accruing prior to termination.

22. Contractor's Obligations. The work to be done under the Contract is set forth in detail in the Contract Documents. The Contractor shall furnish all labor, materials, plant, tools and appliances, and shall complete the work to the satisfaction of the Project Manager in the manner and within the time required in the Contract Documents at the prices set forth in the Contract. If at any time the Contractor's methods, workforce, or equipment appear to the Project Manager to be unsafe, insufficient, or inadequate for the proper performance of the provisions of the Contract, the Project Manager may order the Contractor to make such changes as the Project Manager may deem necessary, and the Contractor shall comply with such orders, but the failure of the Project Manager to make such demands shall not relieve the Contractor of its obligations under the Contract. The Contractor shall maintain an office on the Project site where orders and instructions may be delivered, and shall give personal attention to the faithful performance of the work of the Contract. The Contractor shall employ a competent representative or superintendent on the Project site who shall have full authority to receive and execute orders, and to supply such labor, tools, and materials as may be required for the proper performance of the work.

23. Performance of Work by the Contractor. The Contractor is required to perform, on the site and with its own work force, work with a value of at least twenty percent (20%) of the original total contract price, exclusive of profit, overhead and the costs of procuring insurance and bonds. The Contractor shall submit with its Quote a complete description of the work it will perform (e.g., earthwork, paving, brickwork, roofing, etc.), the percentage of the total work this represents, and the estimated dollar value thereof.

24. Materials and Equipment Loaned or Rented by the City. Any materials, or equipment loaned or rented by the City to the Contractor for use on the particular job must be returned by the Contractor in kind or in cash, or as a credit to the Contract as determined by the Department or the Contractor will be considered in default of the Contract. The use or operation of such material or equipment shall be at the Contractor's own risk. The material or equipment shall be taken in its "AS IS" condition and the Contractor shall maintain the material or equipment in the same condition as when received, less normal wear and tear. Should damage occur, repair or replacement shall be made by the Contractor at its own expense, at the election and to the satisfaction of the City, in accordance with specifications approved in writing by the City.

25. Contract Time.

a. Times set forth in the Contract Documents for the performance of the work or any portions thereof are essential elements of the Contract. The Contractor shall begin work within ten (10) days from the date of issuance of the Notice to Proceed from the Department directing the Contractor to proceed with the work, and shall complete all work covered by the Contract Documents within the time specified in the General Bidding and Contract Requirements. The Contract completion date shall be determined by reference to the date of the issuance to the Contractor of the Notice to Proceed. In submitting a Quote, the Contractor acknowledges and agrees that the Contract time, as specified in the General Bidding and Contract Requirements, is a reasonable period for performing the work.

b. Except as may otherwise be required by the General Bidding and Contract Requirements or the Technical Specifications, the Contractor shall prepare and submit to the Project Manager, before starting work, a written and detailed construction schedule which shall, at a minimum, indicate the milestone dates on which the Contractor intends to start and end each of the principal items of work under the Contract and which shall indicate generally how the Contractor intends to complete the work under the Contract within the Contract time specified. The Contractor's construction schedule shall include a schedule or timeline for submission of Shop Drawings or other submittals to the Department, which shall be coordinated with the overall construction schedule and which allows for a reasonable time for the Department or the Project Manager to review the

submittals or such time as the Department or the Project Manager may otherwise require pursuant to any of the Contract Documents. The Contractor's construction schedule shall in no event exceed the time allotted for completion of the Contract. From time to time, the Contractor shall revise and update its construction schedule to show changes to the schedule and any agreed revisions to the Contract time. The Contractor acknowledges that its failure to submit a written schedule to the Project Manager, as herein provided, shall preclude the assertion of any claims for delay or interference to Contractor's schedule or prosecution of the work and shall further preclude the assertion of any claim or request for an extension of the Contract time.

c. The Contractor shall be entitled to a reasonable extension of time for unavoidable delays or interference in completion of the Contract caused by:

1. Any acts or omissions of the City (but not PGW, or its contractors, or any other non-City utilities or authorities) which occur subsequent to the issuance of the Notice to Proceed and which cause delay in the completion of the Contract, by failure to give possession of the Project site, by changes in the Plans and Technical Specifications, or by requiring for any cause the suspension of the work under the Contract, except where such suspension is the result of a default or other act or omission by the Contractor. Any delay or postponement in the issuance of the Notice to Proceed shall not entitle the Contractor to an extension of the Contract time and shall not give rise to any claim for delay, disruption, or interference by the Contractor. The Contractor's remedies in the event of a delay or postponement in the issuance of the Notice to Proceed shall be governed solely by 62 Pa.C.S. §3913, as amended.

2. Causes not reasonably foreseeable by the Parties at the time of the complete execution of the Contract and which are entirely beyond the control and without the fault or negligence of the Contractor, including, but not limited to, acts of God, acts of the public enemy, acts of governmental authorities, quarantine restrictions, general strikes throughout the trade or freight embargoes not caused or participated in by the Contractor, fire, floods, pandemics and weather of unusual severity, such as hurricanes or tornadoes.

d. Delays caused by the Contractor's Subcontractors or materialmen shall not, in themselves, be cause for an extension of time by the City. To warrant an extension of time, such delays must be occasioned by the same causes specified in Paragraphs 25(c)(1) and (2) above.

e. Time extensions shall be handled as follows:

1. The Contractor, within five (5) days after the beginning of any delay or interference to its construction schedule, shall notify the Project Manager in writing of the occurrence of the delay or interference, stating with reasonable particularity the cause or causes of the delay or interference and the Contractor's intention to seek an extension of time.

2. Any claim by the Contractor for a time extension must be made in writing to the Project Manager within ten (10) days after the conclusion of the delay or interference for which a time extension is requested or the City will not consider such claim. The City shall not in any event grant a time extension for any delay or interference which was incurred more than five (5) days before the Contractor gave written notice as required in subparagraph (1) above.

3. Before the Project Manager reviews a claim for a time extension, the Contractor shall demonstrate in writing the effect of the delay or interference on the Contractor's construction schedule, including plotting such effect on the Contractor's critical path documents, showing graphically therein the effect on the Contract completion date, both in calendar days and Working Days. This depiction of the delay or interference must accompany the written claim for a time extension submitted in accordance with subparagraph (2) above. If the Contractor believes that it has been impacted beyond a mere time delay, the Contractor shall also provide the Project Manager with an estimate of the costs incurred by the Contractor as a result of the delay or interference. The failure of the Contractor to provide the Project Manager with this contemporaneous cost estimate shall bar any later claim by the Contractor for any costs incurred as a result of the delay or interference.

4. If the Project Manager determines that an extension of time is in order, the time allowed for any delay will be added to and will correspondingly extend the Contract time for completion and

adjust any Contract completion milestones set forth in the General Bidding and Contract Requirements or the Technical Specifications. The Contractor agrees that a time extension granted by the Project Manager shall be its sole remedy for a delay or interference and shall operate as a full and complete release of any claim by Contractor for any and all costs and expenses related to or arising out of the event giving rise to the delay or interference.

f. NOTWITHSTANDING ANYTHING TO THE CONTRARY CONTAINED HEREIN, THE CONTRACTOR AGREES AND ACKNOWLEDGES THAT THERE SHALL BE NO PAYMENT OR COMPENSATION OF ANY KIND TO THE CONTRACTOR FOR DAMAGES OR COSTS ARISING FROM ANY DELAY OR INTERFERENCE WHETHER SUCH DELAY IS AVOIDABLE OR UNAVOIDABLE. CONTRACTOR FURTHER AGREES AND ACKNOWLEDGES THAT ITS SOLE REMEDY IN THE CASE OF DELAYS OR INTERFERENCES TO ITS CONSTRUCTION SCHEDULE WHICH ARE ATTRIBUTABLE TO THE CITY, SHALL BE A REASONABLE EXTENSION OF THE CONTRACT TIME.

g. On contracts on a calendar day basis (a specified number of days), no allowance will be made for Saturdays, Sundays or holidays. On contracts on a Working Day basis, allowances will be made for days or parts of days, in increments of one-quarter (1/4) day, for conditions entirely beyond the control of the Contractor; New Year's Day, Memorial Day, July 4th, Labor Day, Thanksgiving Day and Christmas Day, or the Monday thereafter when these days occur on Sunday, and Saturdays and Sundays shall not be considered as Working Days. The Department shall keep a record of the Working Days and the Department shall make this record available to the Contractor on request. The Contract time shall start with the first Working Day after the date of the Notice to Proceed and the scheduled date of completion shall be that established by the specified number of Working Days plus the allowance.

h. If, for reasons other than those stated above, any portion of the work remains uncompleted after the Contract date specified for its completion, notwithstanding Substantial Completion of the work, the Project Manager shall deduct from payments due the Contractor, as liquidated damages an amount per diem, according to the following schedule:

<u>Contract Value</u>	<u>Agreed Delay Damages Per Diem</u>
\$0-\$100,000	\$ 250
\$100,001-\$500,000	\$ 500
\$500,001-\$1,000,000	\$ 750
Over \$1,000,000	\$1,000

These per diem delay damages are assessed as agreed liquidated damages because the Parties have considered the difficulty of determining the City's actual damages and agreed that computation of the City's actual damages is impossible. If a delay is due to causes which the Contractor considers extraordinary or beyond its control, the Contractor must give timely notice thereof in writing as specified in Paragraph 25(e) above. In the event that the General Bidding and Contract Requirements or the Technical Specifications contain a provision allowing for the imposition of liquidated damages for delays to the completion of the work, such provision shall take precedence over this subparagraph (h).

This subparagraph (h) shall not be construed to apply to claims, offsets, credit change orders, and/or chargebacks which the City may assert or assess against any Contractor for the reimbursement or recovery of any costs incurred by a different Contractor on the Project due to the fault or delay of the Contractor. In all such cases, the City shall not be limited to the per diem amounts listed above and shall be permitted to seek recovery or reimbursement of the full amounts incurred by any non-delaying Contractor.

26. Independent Contractor. The Contractor is an independent contractor and shall not in any way or for any purpose be deemed or intended to be an employee or agent of the City. Neither the Contractor nor its employees or Subcontractors shall in any way represent that they are acting as employees, officials or agents of the City.

27. Risk of Loss. The Contractor shall assume all risk and responsibility for casualties of every description in connection with its work. The Contractor shall have charge of the entire work until completion and acceptance, and shall alone be liable and responsible for any injuries to persons and any loss or damage to property, buildings, or adjacent work that may occur as a consequence of or during the progress of the work under this Contract, whether such damage or accident be due to the Contractor's own negligence or that of its servants, agents, employees, or whether such damage or accident be due to the inherent nature of the work, or whether such damage or accident be due to other causes.

28. Indemnification. The Contractor shall indemnify, defend and hold harmless the City, its officers, employees, and agents, from and against any and all losses, costs and expenses, including but not limited to litigation costs, settlement fees and expenses, and counsel fees and expenses, claims, suits, actions, damages, liability and expenses, arising out of or resulting in whole or in part from the performance of the work under the Contract, including, but not limited to, those in connection with loss of life, bodily injury, personal injury, damage to property, contamination or adverse effects on the environment, intentional acts, failure to maintain a drug-free work site and workforce and any other breach of the Contract, regardless of the inherent nature of the work and regardless of whether or not such loss, cost, claim, suit, action, damage, liability, or expense is caused in whole or in part by the negligent act or omission of a party indemnified hereunder. Such obligation shall not be construed to negate, abridge or reduce other rights or obligations of indemnity which would otherwise exist as to a Party or Person described in this Paragraph. The Contractor shall further indemnify, defend and hold harmless the City from and against any and all claims, demands, liens, causes of action, liabilities and judgments of any kind asserted against the City by any Subcontractor or suppliers on account of or relating to the furnishing of services, work, labor, materials or equipment under the Contract for the Contractor.

In claims against any Person indemnified under this Paragraph 28 by an employee of the Contractor, a Subcontractor, anyone directly or indirectly employed by them or anyone for whose acts they may be liable, the indemnification obligation under this Paragraph 28 shall not be limited by a limitation on the amount or type of damages, compensation or benefits payable by or for the Contractor or a Subcontractor under workers compensation acts, disability benefit acts or other employee benefit acts.

29. Assignment. Except through a Subcontract, the Contractor shall not assign the Contract, or any part of the Contract, or delegate performance of the Contract (other than to its own work forces), without obtaining the prior written consent of the Procurement Commissioner and Operating Commissioner. The decision whether to consent to an assignment, the timing of consent (if any), and conditions to such consent, if any, shall each be at the City's sole discretion. Any consent to the assignment of any monies to be paid under the Contract shall not relieve the Contractor from the faithful performance of any of its obligations under the Contract or change any of the terms and conditions of the Contract. Any purported assignment in violation of this provision shall be void and of no effect. The City's consent to an assignment shall not release the assignor from any liability accrued or thereafter accruing under the Contract. Any assignment or purported assignment shall be in writing and shall contain an express assumption by the assignee of all liability accrued or thereafter accruing under the Contract. Consent by the City to any assignment shall not be deemed a course of conduct, dealing or performance with respect to any other assignment or proposed assignment. For purposes of this Paragraph 29, an assignment includes the transfer or acquisition of the Seller or the Contractor, or a controlling interest therein, through a corporate or other merger, and the appointment of a receiver or bankruptcy trustee, and the transfer of the Contract or the Contractor in any bankruptcy or other insolvency proceeding.

30. Insurance. Unless otherwise approved by the City's Risk Manager in writing, the Contractor shall, at its sole cost and expense, procure and maintain, or cause to be procured and maintained, in full force and effect until the Contractor completes the work under the Contract, the types and minimum limits of insurance specified below, covering the Contractor's performance of the work required under the Contract. The Contractor shall procure, or cause to be procured, all insurance from reputable insurers admitted to do business on a direct basis in the Commonwealth or otherwise acceptable to the City. All insurance herein, except Professional Liability insurance, shall be written on an "occurrence" basis and not a "claims-made" basis. In no event shall the Contractor perform any work under the Contract until the Contractor has delivered or caused to be delivered to the City's Office of Risk Management the required evidence of insurance coverages. If the Contractor fails to obtain or maintain the required insurance, the City shall have the right to treat such failure as a default under

the Contract and to exercise all appropriate rights and remedies. All insurance coverages shall provide for at least thirty (30) days prior written notice to be given to the City in the event coverage is materially changed, cancelled, or non-renewed. The City, its officers, employees, and agents, shall be named as additional insureds on the General Liability Insurance policy and, where applicable, the Builders Risk Insurance Policy. The Contractor shall also deliver or cause to be delivered to the City an endorsement stating that the coverage afforded the City and its officers, employees and agents, as additional insureds, will be primary to any other coverage available to them and that no act or omission of the City, its officers, employees or agents shall invalidate the coverage.

a. Workers' Compensation and Employers' Liability.

1. Workers' Compensation: Statutory limits
2. Employers' Liability: \$100,000 Each Accident – Bodily Injury by Accident; \$100,000 Each Employee – Bodily Injury by Disease; and \$500,000 Policy Limit – Bodily Injury by Disease.
3. Other states insurance including Pennsylvania.

b. Commercial General Liability Insurance.

1. Limit of liability: \$1,000,000 per occurrence combined single limit for bodily injury (including death) and property damage liability; \$1,000,000 advertising injury; \$2,000,000 general aggregate, and \$1,000,000 aggregate for products and completed operations. The City may require higher limits of liability if, in the City's sole discretion, the potential risk warrants.
2. Coverage: Premises operations; Blanket Contractual liability; Personal injury liability; Products and completed operations; Independent Contractors; Employees and volunteers as additional insureds; Cross liability; Broad form property damage (including completed operations); Explosion, collapse and underground hazards; and asbestos abatement liability Coverage (Note: Required for asbestos abatement projects only).

c. Automobile Liability.

1. Limit of Liability: \$1,000,000 per occurrence combined single limit for bodily injury (including death) and property damage liability.
2. Coverage: Owned, non-owned and hired vehicles.

d. Builders' Risk/Installation Floater Insurance.

1. When required: This insurance is required only when the total Contract price is \$500,000 or greater (Note: not for road and street work, unless required in the Supplementary Conditions, Technical Specifications, Standard Details and Specifications, and/or General Bidding and Contract Requirements).
2. Coverage: "All risks" in an amount equal to not less than the full replacement cost of the work under the Contract (meaning work in replacement which is of like kind and quality).
3. Period of Coverage: Anything herein to the contrary notwithstanding, the Builders' Risk Insurance shall be procured and maintained during the entire period of performance of the Contract until final acceptance of the work by the City.

Certificates of insurance evidencing the required coverages and additional insured endorsements must specifically reference the City contract Number for which they are being submitted. The original certificates of insurance shall be submitted to the Department and the Office of Risk Management at least ten (10) days before work is to commence and at least ten (10) days before each renewal date. The ten (10) day requirement for advance documentation of insurance coverage may be waived in situations where such waiver will benefit the City, but under no circumstances shall the Contractor actually begin work (or continue work, in the case of renewal) without providing the required proof of insurance and required endorsements. The City reserves the right to require the Contractor to furnish certified copies of the original policies of all insurance required under this Contract, including certified copies of all required endorsements, at any time upon ten (10) days prior written notice to the Contractor.

31. Proprietary Rights Indemnity. The Contractor shall indemnify, defend and hold harmless the City, and its officers, employees, and agents, from and against any and all losses, costs and expenses, including, but not limited to, litigation costs, settlement fees and expenses, and counsel fees and expenses, claims, suits, actions, damages, liability and expenses for or on account of the use of patented appliances, products, processes, constructions, designs, or methods, or the infringement of any patent, trademark, service mark, copyright, or trade secret rights of any third party, and the Contractor shall pay all royalties, charges and penalties which may become due or payable by reason of such use or infringement. Before the issuance of the Final Estimate, upon request by the Project Manager, the Operating Commissioner, or the Procurement Commissioner, the Contractor shall submit evidence of the full payment of such royalties, charges and penalties, or in lieu thereof, Contractor shall give such security, approved by the City Solicitor, as may in the opinion of the Project Manager, the Operating Commissioner, or the Procurement Commissioner, be necessary to indemnify, defend and hold harmless the City, its officers, employees, and agents, as aforesaid.

32. Default and Remedies.

a. It shall be a violation of the Contract for the Contractor to abandon the work under the Contract; to fail or refuse to prosecute the work with promptness and diligence; to unreasonably delay the work so that it may not be completed within the contract time; to fail or refuse to proceed with work under a Disputed Change Order; to fail or refuse to furnish suitable materials in place of any which may be rejected by the Project Manager as unsuitable as not being in accordance with the Contract Documents, or to refuse or neglect to furnish and supply a sufficient number of properly skilled workers and necessary equipment or either of them; to execute any of the work improperly, carelessly, or in bad faith; to fail or refuse to remove any of the work which, in the opinion of the Project Manager, is defective and unsuitable and not in accordance with the Contract Documents, and to replace it with work that is in accordance with the Contract Documents; to cause or permit to occur an Event of Insolvency with respect to the Contractor; or to otherwise violate any of the terms, conditions, and provisions of the Contract. In the event of a violation of Contract, the Operating Commissioner may notify the Contractor and its surety in writing to require that each remedy the Contractor's violation of the Contract and require the Contractor to comply with the terms, conditions, and provisions of the Contract which it has violated or is violating. The failure of the City to promptly notify the Contractor of a violation of Contract shall not constitute an acceptance by the City of work which is performed or installed in violation of the Contract.

b. If the Contractor shall fail to cure or remedy, or diligently commence to cure or remedy, the violation of the Contract, as described in the notice specified above, within five (5) days after the receipt of said notice, or within twenty four (24) hours after receipt of said notice when, in the opinion of the Operating Commissioner, immediate action is necessary to safeguard life or property, or within some other period of time specified in the notice, the Operating Commissioner shall thereupon notify the Procurement Commissioner, who shall have the right to declare the Contractor in default of the Contract, and to notify the Contractor to discontinue the work or any part thereof under the Contract, and to call upon the surety to carry out its obligations under the performance bond posted for the Contract.

c. If the surety fails to abide by the terms of the performance bond or if the surety shall deny liability to the City under the performance bond, the Procurement Commissioner shall have the right to declare the surety in default under the performance bond and, at his or her sole option, shall also have the right:

1. To terminate the work under the Contract, to maintain conditions, to obtain Quotes (if circumstances will allow) for all or any portion of the work, and to enter into a new contract to complete the work of the original Contract; or

2. In case of an emergency, including, but not limited to, danger to life or property, or serious interference with traffic, to terminate any and all of the work under the Contract, and to then and there secure in the open market, from any Person, at the then current market prices the materials of the quality and quantity required, the necessary workers and mechanics, and the required equipment to complete the Contract.

d. Upon default by the Contractor as herein set forth, all moneys due and owing to the Contractor upon estimates, retainage, or otherwise, materials delivered, materials built into the work, and the Contractor's plant (including tools, appliances, and equipment on the premises intended for use in the performance of the Contract), shall become the property of the City for use in the completion of the work under the Contract, and the City shall have resort thereto to the extent necessary to maintain and complete the work and reimburse the City for its outlays and expenditures.

e. In case of such default by the Contractor the remedies herein provided shall be in addition to and not in substitution of the rights and remedies which would otherwise be vested in the City by statute, at law or in equity, all of which rights and remedies are specifically reserved to the City. In addition, upon default by the Contractor, the Procurement Commissioner shall have the right to secure from any Person the materials, equipment, and labor necessary and required for the proper completion of the Contract. In such event, the Contractor shall pay the City, upon demand, the difference between the cost paid by the City for such materials, equipment and labor and the price or prices set forth in the Contract, together with all costs and expenses incident to the same and incurred by the City. Upon default by the Contractor, the Procurement Commissioner, in his or her sole discretion, shall also have the right, to terminate the Contract and to secure from any Person the materials, equipment, and labor necessary and required for the proper completion of the work. In such event, the Contractor shall pay the City, upon demand, the difference between the price or prices set forth in the Contract and the price or prices which may be paid upon such termination and completion of the work, together with all costs and expenses incident to such re-advertisement. In the exercise of either of these remedies, the City shall further have the right to a set-off against any monies which may be due or may thereafter become due the Contractor under the Contract or any other contract between the City and the Contractor. If the Procurement Commissioner shall secure materials, equipment, and labor to complete the work under the Contract, or if the Procurement Commissioner shall terminate this Contract, the Procurement Commissioner shall have the right to take possession, for the purpose of completing the work under the Contract, of all materials, tools, appliances, and equipment on the Project site, intended for use in the performance of the Contract. The Contractor hereby assigns to the City (and each Subcontract shall require each Subcontractor to assign) all right, title, and interest of the Contractor in and to such materials, tools, appliances, and equipment. The failure of the City to exercise any of the remedies herein provided shall not preclude the resort by the City to any other remedy available to the City arising out of the Contractor's default.

f. The use of any specific remedy herein provided shall not bar subsequent or concurrent resort to any other remedy available to the City at law or in equity, for the recovery of damages or otherwise, on account of such default, or in the event of any other default by the Contractor.

g. The Contractor and its surety shall pay to the City on demand, all loss, expense, cost or damage suffered or incurred by the City by reason of any default.

33. Subcontracts. Within fifteen (15) days after execution of the Contract, the Contractor shall submit in writing to the Project Manager the names of all Subcontractors who will perform any work on the Contract or who will supply any materials or equipment for the Contract. All proposed Subcontractors who have not been pre-approved by the Department may be approved by the Project Manager if in his or her opinion such proposed Subcontractor is reliable, Responsible and competent to perform the work in compliance with the Contract Documents. The City, acting in its sole discretion, reserves the right to reject any Subcontractor. The City shall have no liability to the Contractor for additional compensation under the Contract, or otherwise, in connection with the substitution of a Subcontractor for any proposed subcontractor rejected by the City pursuant to this Paragraph 33. The Contractor shall be as fully responsible to the City for the acts and omissions of its

Subcontractors and Persons either directly or indirectly employed by them, as it is for the acts and omissions of the Contractor and Persons directly or indirectly employed by the Contractor. The City and the Contractor specifically understand and intend, and acknowledge and agree that no Subcontractor utilized by the Contractor shall have any right or claim against the City or the Department to any monies due and owing to the Contractor for the performance of work under the Contract. Each Subcontract for any portion of the work is hereby assigned to the City provided that (a) such assignment is effective only after termination of the Contract by the City and only for a Subcontract which the City, acting in its sole discretion, accepts by issuing notice to such Subcontractor and to the Contractor; and (b) such assignment, if exercised, is subject to the prior rights of the surety, if any, obligated under a bond relating to this Contract. The exercise of the foregoing option for an assignment shall be in the City's sole discretion, the City having no duty or obligation to the Contractor, such Subcontractor or any surety, to exercise or decline to exercise the foregoing option for an assignment. The Contractor shall incorporate the foregoing option for an assignment into each Subcontract for any portion of the work.

34. Permits and Licenses. Unless otherwise noted elsewhere, the Contractor shall obtain all permits and licenses required by the City or pursuant to Applicable Law in connection with the performance of all or any part of the work under the Contract, unless otherwise specifically directed. The Contractor will be required to pay the current fee for such permits and licenses required in connection with all or any portion of the work under the Contract, including any permits and licenses required in connection with any equipment, system or component forming part of the work.

35. Co-operation and Coordination with other Contractors.

a. The Contractor shall have the duty to co-operate and coordinate with any other contractors on other work which is being performed concurrently on or adjacent to the Project site, including specifically PGW, or its contractors or any other non-City utilities or authorities, and shall afford reasonable facilities and access to them. The Project Manager will decide any matters in dispute as to the performance of the work, including access to the Project site and priority of performance on either side of any division line between contiguous sections of the Project site where the Contractor and another contractor each work.

b. Where the work or any portion thereof is performed by the Contractor as part of a "multiple-prime" project, or in conjunction or combination with other "prime" contractors, the Contractor shall have the duty to cooperate and coordinate its work with the work of each of the other prime contractors. The Contractor shall further have a duty not to delay, disrupt, interfere with, or otherwise retard the progress of the work of any of the other prime contractors.

c. It is expressly understood by the Contractor that, on "multiple-prime" projects, the City relies primarily, but not exclusively, upon the organization, management, skill, cooperation and efficiency of the "Contractor for general construction" (unless a different Contractor is otherwise designated in the General Bidding and Contract Requirements or the Technical Specifications) to oversee, coordinate, and plan the work of all the other prime contractors, including, but not limited to, the prime contractors for electrical, mechanical, HVAC, and plumbing work, so as to complete the work under all of the prime contracts in a timely and efficient manner. The Contractor therefore expressly recognizes that the "Contractor for general construction" shall be the coordinating Contractor for all aspects of the multiple-prime contract work, including the scheduling of all such work. The Contractor shall have an explicit duty on "multiple-prime" projects to rely primarily upon the organization, management, skill, cooperation and efficiency of the "Contractor for general construction" to oversee, coordinate, and plan its work with the work of all of the other prime contractors, so as to ensure completion of the work under all of the contracts, including the Contract, in a timely and efficient manner and without disruption and interference. It is expressly understood by the Contractor, however, that the City is also relying upon the organization, management, skill, cooperation and efficiency of the Contractor so as to ensure completion of the work under the Contract in a timely and efficient manner and without disruption and interference.

d. It is expressly understood by the Contractor that time is of the essence of this Contract. The Contractor agrees to diligently prosecute its work in coordination and cooperation with the work of the other prime contractors and under the coordination of the "Contractor for general construction," without delay,

interference, or disruption, so as to ensure the completion of the Contract work in a timely and efficient manner and in conformity with the schedule approved by the City under the Contract. In the event that the Contractor shall unnecessarily delay, disrupt, or interfere with the work of any of the other prime contractors, the Contractor shall be liable for the payment of all costs and expenses incurred by such prime contractor or prime contractors on account of such delay, disruption, or interference. The Contractor accordingly authorizes the City to deduct the amount of such costs and expenses from any monies due and owing to the Contractor under the Contract. The Contractor shall further assume all liability, financial or otherwise, in connection with its Contract and shall protect, defend, and hold harmless the City from and against any and all damages or claims that may arise because of inconvenience, delay, interference, disruption, or loss experienced by the Contractor because of the presence and operations of other prime contractors working within the limits of the same multiple-prime project.

e. The provisions of this Paragraph 35 shall be read in conjunction with any provisions in the Technical Specifications, the Proposal, and the Plans, and, notwithstanding Paragraph 95 of these Standard Contract Requirements, the provisions of this Paragraph 35 shall take precedence over any other provisions in the Technical Specifications respecting the "coordination and cooperation" among prime contractors on a "multiple-prime" project, except where such other provisions shall impose greater duties upon the Contractor for coordination and cooperation.

36. Clean-up of Project Site. The Contractor and its Subcontractors shall remove all rubbish or refuse and all unused materials and tools from the Project site daily, if required by the Project Manager, and as the work progresses the Contractor shall carefully clean and keep the Project site clean from such rubbish and refuse. The Contractor shall furnish to the Project Manager upon request all documentation regarding the proper disposal of all rubbish, soil, refuse, and other debris. Before the City will approve the completion of the work under the Contract, the Project site and any other place or places affected by the work shall be thoroughly cleared of all construction and other debris and dust, and left clean, free from debris, construction plant, buildings, and materials; fit for travel or other proper use; and in as good condition as existed before the work was begun. The Contractor shall resod or plant anew any grass plot or plots disturbed, and replace any shrubbery destroyed. Structures shall be broom clean, free from stains, spots or other blemishes, and ready for use, and all glass shall be washed. The clean-up work shall be governed by the record of existing conditions made and filed with the Department prior to the commencement of work.

37. Maintenance after Completion and Contractor's Guarantee.

a. The Contractor shall guarantee the work of the Contract against defects in materials and workmanship for a period of one (1) year from the date of completion and acceptance of the work by the City, unless a longer period is specified, and shall guarantee and warrant that all equipment shall perform in accordance with the specifications of the manufacturer and in accordance with the Technical Specifications. When individual items of the Contract, including equipment, are formally accepted in writing by the Project Manager and used or operated by the City prior to the completion of the total work under the Contract, the period of guarantee for such items shall be calculated from the date of final written acceptance of such items, provided, however, that the item of work and equipment is used or operated by the City for a period of ninety (90) consecutive days following the date of acceptance without the occurrence of any defects, breakdowns, or faulty operation. Paving, including curbs and footway, shall be similarly guaranteed for a period of five (5) years from the date of completion and acceptance of the work by the City.

b. If, within such one (1) year or five (5) year period of guarantee, any of the work shall prove to be defective either in materials or workmanship, or if damage occurs by settlement of the backfill placed under this Contract, or if any part or parts of any equipment furnished shall prove to be inadequate, insufficient, or defective, either in design, materials, or workmanship, the Contractor shall immediately, upon demand of the Project Manager (whose decision as to such inadequacy, insufficiency, or defectiveness shall be binding and conclusive upon the Parties hereto), repair and replace the same in accordance with the Plans and Technical Specifications, and shall repair and replace any damage to other parts or structures at the Contractor's sole cost and expense, without cost or expense to the City, to the approval and satisfaction of the Project Manager.

c. Should the Contractor or its sureties fail to comply with the orders of the Project Manager to replace or repair defective materials, workmanship, or equipment as aforesaid within the time specified in

subparagraph (a) above, the Operating Commissioner shall notify the Procurement Commissioner, who shall have the right to declare the Contractor or its surety, or both, in default and to proceed with the correction of the defect in accordance with the methods provided herein.

38. Access to Accounting Records. The Contractor shall certify that all materials, equipment, and labor charged to the City are accounted for and shall keep such full and detailed accounts as may be necessary for proper financial management under this Contract. The Contractor shall retain, and shall provide the City and its representatives access to, all records, books of account, correspondence, instructions, Shop Drawings, receipts, vouchers, memoranda, and similar data and documentation pertaining to the Contract for a period of five (5) years following final payment, or earlier termination of the Contract, or for such longer period as may be required by law; however, if any litigation, claim or audit is commenced prior to expiration of said five (5) year period, then the records shall be retained until all litigation, claims or audit findings have been completely terminated or resolved, without right of further appeal, or if Applicable Law requires a longer period, then the records shall be retained for such longer period. From time to time during the performance of the work under the Contract, and for a period of five (5) years after the completion of the work under the Contract, the City may audit any and all aspects of the Contractor's performance under the Contract, including but not limited to its billings and invoices. Representatives, agents or contractors of the City, including the Department, or other authorized City representatives including, without limitation, the City Controller may conduct audits. If requested by the City, the Contractor shall submit to the City all vouchers or invoices presented for payment pursuant to the Contract, all cancelled checks, work papers, books, records and accounts upon which the vouchers or invoices are based, and any and all documentation and justification in support of expenditures or fees incurred pursuant to the Contract. All books, invoices, vouchers, records, reports, cancelled checks and other materials shall be subject to periodic review or audit by the City. All work, equipment, materials, systems, subassemblies, tools appliances and plant shall be subject to inspection and review by City, federal and state representatives, as may be applicable, or their designees, at the offices of the Contractor in the City, or in another location with the City's consent. The Contractor shall cooperate with all City, state and federal inspections and reviews conducted in accordance with the provisions of the Contract. Such inspection and review of the Contractor's work hereunder shall be in the sole discretion of the inspecting or reviewing entity. Such inspection or review may include, without limitation, review of staffing ratios and job descriptions, and meetings with any of the Contractor's staff who are either directly or indirectly involved in providing all or any portion of the work hereunder. The Contractor shall make available, within the City at reasonable times during the performance of the work hereunder and for the period set forth above in this Paragraph 38, all records pertaining to the Contract for the purpose of inspection, audit or reproduction by any authorized representative (including any agent or contractor and the City Controller) of the City, the Commonwealth Auditor General, and any other federal or state auditors, as may be applicable, at no additional cost to the City.

39. Sales and Use Tax; Federal Excise Tax.

a. The City is not subject to federal, state or local sales or use tax or federal excise tax. Contractor hereby assigns to City all of its right, title and interest in any sales or use tax which may be refunded as a result or the purchase of any materials in connection with the Contract, and the Contractor, unless directed by the City, shall not file a claim for any sales or use tax refund subject to this assignment. The Contractor authorizes the City, or its agent, in its own name or in the name of the Contractor, to file a claim for a refund of any sales or use tax subject to this assignment. To the extent it may be applicable to the work under this Contract, the Contractor covenants and agrees that it shall not bill the City for or otherwise pass-through to the City for payment any Federal Excise Tax paid in connection with the work under this Contract; in consideration of the Contractor's foregoing covenant, the City hereby consents to any filing by the Contractor for a refund of any Federal Excise Tax paid in connection with the work under this Contract.

b. The Contractor agrees to include the above referenced Paragraph in any Subcontracts with Subcontractors.

D. ADMINISTRATION, MEASUREMENT, AND PAYMENT

40. Status and Authority of the Project Manager. The Project Manager shall be responsible for the general direction of the work to be performed under the Contract, the interpretation of the Plans and General Bidding and Contract Requirements, and the Technical Specifications, the ordering of additions to or deductions from the work, and the determination of procedure. The Project Manager shall give all orders and directions contemplated under the Contract. The Project Manager shall in all cases determine the amount, quality, acceptability, and fitness of the several kinds of work and materials which are to be paid for under the Contract, and shall have authority and sole discretion to reject all work and materials which in his or her opinion do not conform to the requirements of the Contract. The Project Manager shall determine all other questions that may arise in relation to the execution of the work and shall have the authority to halt the work whenever such action may be necessary to secure the safe and proper execution of the Contract. The Project Manager shall adjust and decide any differences or conflicts that may arise between the Contractor and other prime contractors for the performance of concurrent work. The provisions of this Paragraph are not intended to supersede or limit the provisions of Paragraph 35.

41. Plans and Technical Specifications. The Plans, with all notes thereon, and the Technical Specifications are intended to be consistent with one another and of equal force and effect, and in the event the Contractor should believe that an apparent discrepancy may exist between the Plans and the Technical Specifications, the Contractor shall bring such apparent discrepancy to the attention of the Project Manager, who will interpret their meaning. The Plans give general dimensions and sizes, and such details as are required to cover special features. Figures shall have preference over scale in reading dimensions. The Contractor shall maintain at the site of the work for use of the Project Manager or Inspector one record copy of the Plans and Technical Specifications, and Change Orders and other Contract modifications, and one record copy of all approved Shop Drawings and other submittals, including the construction schedule.

42. Shop Drawings and Working Drawings. The Contractor shall prepare and submit to the Department or the Project Manager, as specified in the Technical Specifications or as required by the Project Manager, all Shop Drawings and Working Drawings, which shall include all details required to carry out the City's Plans and Technical Specifications. By approving and preparing Shop Drawings and other similar submittals, the Contractor represents that it has determined and verified materials, field measurements, and field construction criteria related thereto and has checked and coordinated the information contained within such Shop Drawings and submittals with the requirements of the Contract Documents. The Contractor shall not proceed with any portion of the work until the Shop Drawings or other submittal which governs the work has been approved. The Shop or Working Drawings shall conform to standards specified by the Department. Upon correction, if found necessary, and after approval, the Contractor shall furnish three (3) or more prints of the Shop Drawings or Working Drawings for construction purposes. After the completion of the work, the documents shall be delivered to and become the sole property of the City for its unrestricted use. The approval of Shop Drawings shall not relieve the Contractor of responsibility for the proper fit of the work, nor for its completion pursuant the Contract.

43. Lines and Grades – City Datum. Vertical dimensions are given in United States standard feet and fractions thereof. Unless otherwise stated, elevations preceded by a plus (+) or a minus (-) sign refer respectively to distances above or below the established City Datum, which is two and one quarter (2.25) feet above mean high water in the Delaware River at Chestnut Street, Philadelphia. Dimensions locating buildings and structures shall be verified and checked in the field by the Contractor before proceeding with construction details affected thereby. Curb line and paving stakes giving the requisite basic data will be set by the City. The price for the setting of these lines shall be at the predetermined rate as set by the Board of Surveyors and made part of the public record or as stated in the Contract Documents. The Contractor will be held responsible for the proper and correct extensions of measurements from such data, and the correctness of work based thereon. The Contractor will be held responsible for the preservation of stakes, benchmarks, and survey monuments, until authorized to remove them. Should any stakes be disturbed, the cost of replacing them will be charged against the Contractor at the then current fee as determined by the City's district surveyor and regulator, to be deducted from the Final Estimate. All survey monuments or benchmarks moved, covered or uprooted in the course of performance of the work of this Contract will be reset by the City at the expense of the Contractor, at the then current fee per monument or benchmark, as determined by the City's district surveyor and regulator. Said cost shall be deducted

from the Final Estimate. The Contractor shall provide reasonable and necessary opportunities and facilities for setting points and taking measurements. The Contractor shall not proceed until it has made timely demand upon the District surveyor and regulator for, and has received from him or her, such points and from the resident engineer such instructions as may be necessary for the progress of the work. Any work improperly done without lines or levels or instructions shall be removed and replaced by the Contractor at its own expense. Failure to do so may be considered a default under the Contract.

44. Contract Amount. The total amount which is to be paid by the City to the Contractor for the work performed and materials supplied under the Contract shall in no event exceed the sum of the Contractor's Quote price, plus a contingency fund of approximately ten percent (10%) of the Contractor's Quote price (to be specified by the Procurement Department upon the award of the Contract), which fund is intended to cover additional compensation which may be due to the Contractor as a result of Change Orders issued pursuant to Paragraphs 48 and 49 below, as such sum may be increased or reduced pursuant to a Change Order or Change Orders, or pursuant to an Amendment. The City shall specify the contract amount in the Notice of Contract Award. The Contractor acknowledges that the City's liability under the Contract shall be limited by the amounts which shall have been or may be from time to time appropriated by City Council. The City reserves the right to authorize the Contractor to commence work prior to appropriation of the total amount of the Contract, in which case the City shall give the Contractor notice thereof, and the City shall not be liable hereunder in any amount greater than that appropriated therefor by City Council. Payments will only be made payable to the Contractor as shown on the purchase order; the invoice must reflect this same Contractor name as the entity to "pay to". For any bids awarded for work to begin on or after July 1, 2019, the City has instituted a policy of making all of its payments through electronic deposits into the awarded Contractor's designated bank account. Before any City payments are made, the Contractor will be required to supply the City with the information necessary for the City to initiate electronic payments by completing one of the electronic payment processing enrollment forms available on the City's vendor portal at <https://secure.phila.gov/finance/vendorpayments>. Applicants awarded a contract before July 1, 2019 are encouraged to complete one of the electronic payment processing enrollment forms before the conversion to electronic payments becomes mandatory. The City intends to stop issuing paper checks. The foregoing notwithstanding, nothing herein shall be construed to limit the City's ability to make payments by assessment bills as provided in paragraph 57, below.

45. Scope of Payments. Payment for the cost of all work, labor, materials, and services required to complete the work of the Contract as shown in the Plans, Technical Specifications, Standard Details and Specifications, or as otherwise specified (except where payment is otherwise specifically provided), will be made at the unit prices or lump sum prices contained in the Quote. The prices contained in the Quote shall each cover the supply and installation, in a good, sound, substantial and workmanlike manner, of everything required for and incidental to the full completion of the work of that item as called for by the Plans, Technical Specifications, Standard Details and Specifications, or as otherwise specified, including its proportionate share of the expense of all plants, tools, and equipment required; the cost of all bonds, fees, and permits; of all administration, superintendence, and insurance; and of any loss or damages arising out of the nature of the work, from the action of the elements, from any unforeseen difficulties encountered in the prosecution of the work, and from risks of all kinds connected with the work, except as otherwise specifically provided in the Contract Documents.

46. Quantities are Approximate. When quantities of the various classes or components of work and materials required under the Contract are stated in the Bid Solicitation or elsewhere, such quantities are estimated and approximate, except where otherwise stated to the contrary. When stated in the Bid Solicitation or a Seller's Proposal, they are given only for the purpose of comparing the Quotes on a uniform basis. The City does not guarantee that such estimated quantities will correspond to the actual quantities ultimately required to complete the work, and the City will not allow any claim for damages, for anticipated profit, or for loss of profit of the Contractor in the event that actual quantities used to complete the work under the Contract vary from the estimates in the Bid Solicitation. The Department reserves the right to increase or decrease the quantities or to entirely omit any of the items as contained in the Bid Solicitation to the extent found necessary by the Project Manager, provided that the aggregate cost of the work performed is within the limit of funds fixed in the Contract.

47. Changes.

a. If changes to any portion of the work or the requirements of the Plans, Technical Specifications or Standard Details and Specifications are deemed necessary by the Project Manager, in order to carry out and complete the work covered by the Contract Documents, the Project Manager may by notice to the Contractor order alterations to or changes in the work covered by the Contract Documents, and the Contractor shall promptly comply with such orders. No changes or alterations to the work shall be made or performed by the Contractor except upon prior written orders from the Project Manager authorizing the change and a Change Order fixing the additional compensation or deduction therefor, except where the order authorizing the change states that the method of compensation or deduction shall be determined at a later date.

b. Where the Project Manager pursuant to Paragraph 47(a) orders additions to or deductions from the amount of work called for by the Plans or Technical Specifications, or where changes are ordered in writing in the design of the work or the requirements of the Plans or Technical Specifications which increase or reduce the cost of the work to the Contractor, adjustment in compensation therefor shall be made to cover the additional work required or the work reduced, in accordance with a written order of the Project Manager, as follows:

1. For work for which applicable unit prices are bid in the Bid Solicitation, payment or deduction shall be made in accordance with the prices bid. When the final quantity of work performed on a unit price bid item differs substantially (twenty-five percent (25%) or more) from the Bid Solicitation quantity, the Project Manager will review the price contained in the Quote and the actual work performed by the Contractor and may, in his or her sole discretion, determine if an adjustment is appropriate. Where the Project Manager deems an adjustment appropriate, the Contractor shall:

i. substantiate that the Quote unit price remains fair and reasonable despite the substantial change in quantity; or

ii. in the case of substantial underrun compared to the previously estimated quantity, negotiate a revised unit price for all the work actually completed; or

iii. in the case of substantial overage compared to the previously estimated quantity, negotiate a revised unit price for that portion of the actual work completed in excess of one hundred twenty-five (125%) of the Quote quantity.

This provision shall not be deemed, however, to vest in the Contractor any rights to any adjustment.

2. For work not covered by the unit prices contained in the Quote, payment or deduction shall be made at the applicable contingent prices named for work.

3. For work for which neither the unit prices bid nor the prices for contingent work are applicable, payment or deduction shall be made in accordance with Paragraphs 48 and 49 below.

48. Change Orders by Agreement.

a. If alterations or changes increase the cost of the work to the Contractor, additional compensation will be allowed by the City, based upon unit prices, contingent prices, or by a detailed cost proposal submitted by the Contractor to the Project Manager, negotiated by the Department and agreed to by the Contractor, or by Force Account, in accordance with Paragraph 51 below. The cost proposal shall detail the costs of materials, labor, overhead and profit, as well as any proposed changes to the Contract time. If such alterations or changes reduce the cost of the work to the Contractor, the amount of such reduction may be deducted by the City, and any such reduction may be based upon unit prices contained in the Quote for the performance of the deleted items of work, upon any Subcontract already entered into by the Contractor for the performance of the deleted item of work, or upon a detailed cost proposal submitted by the Contractor to the Project Manager and negotiated by the Department. Credit Change Orders will include the same mark-ups as chargeable Change Orders. The Contractor shall submit its cost proposal for the change or alteration within twenty (20) days after the Project Manager gives notification to the Contractor of the intended change or

alteration. Thereafter, a formal Change Order will be executed and signed by the Department reflecting the change or alteration and the additional cost or reduction negotiated by both Parties.

b. A Change Order negotiated and agreed to by the Contractor and the City and then executed as a Change Order by the City and the Contractor shall be deemed to cover all of the Contractor's costs associated with the change or alteration to the work, as reflected in the Change Order, including all costs and expenses incurred by the Contractor for time, material, labor, and extended or field office or home office overhead. Any Contract time extension granted by the City for the Change Order shall be the sole time extension granted for the change or alteration and for which Contractor is entitled, and no other time extension shall be granted by the City in connection with the work reflected in such Change Order. No loss of profit on account of any changes or alterations to the work or on account of work not executed or performed by the Contractor will be allowed, except that the Contractor may be entitled to an extension of time on account of changes or alterations to the work, provided that the Contractor satisfies the requirements of Paragraph 25 above.

c. The Contractor agrees and acknowledges that after a Change Order is negotiated and agreed to by the Parties and then executed by the City, the Change Order shall operate as a full and complete waiver and release of any and all claims of the Contractor related to or arising out of such change or alteration, whether such change or alteration is considered individually or cumulatively, including, but not limited to, any claim by the Contractor for extended home office overhead, extended field office overhead, time-impact costs, schedule delay costs, acceleration costs, compression costs, loss of productivity costs, extra work, additional work, and interference costs, or any combination of such costs.

49. Disputed Change Orders. If, after submission of a cost proposal, the Department and the Contractor cannot agree upon a price within a reasonable amount of time, or if the Contractor disputes the applicability of unit prices or contingent prices, the Project Manager may direct the Contractor to perform or complete the extra or additional work notwithstanding that there is no agreement between the Parties as to price, and the Contractor shall proceed to perform the work so as to avoid any delay or interference to the progress of its work. In all such cases, the Contractor shall promptly comply and maintain proper force account time sheets and records, in accordance with Paragraph 51 below. The Project Manager shall also process a Change Order in an amount that he or she determines to be reasonable, necessary and appropriate. If the Contractor does not agree with the amount processed by this Disputed Change Order, the Contractor must notify the Project Manager within ten (10) days of issuance of the Disputed Change Order that it is proceeding under protest and that it reserves the right to a claim for the cost of the disputed work. In all cases of Disputed Change Orders which are protested by the Contractor, the Contractor shall submit to the Project Manager, within five (5) days after completion of the work, a detailed cost proposal which shall detail the costs of materials, labor, overhead and profit, actually expended by the Contractor for the work, as well as any changes to the Contract time.

50. Disputed Work. If the Contractor is of the opinion that any work required or ordered by the Project Manager violates the terms and provisions of the Contract or is not called for under the Contract Documents, the Contractor shall promptly notify the Project Manager, in writing, of its contentions with respect thereto and shall request a final determination thereof. If the Project Manager determines that the work in question is work required under the Contract Documents and is not "extra" work, or that the order complained of is proper, the Project Manager will direct the Contractor to proceed with the work in question. In all such cases, the Contractor shall promptly comply and maintain proper force account time sheets and records, in accordance with Paragraph 51 below. In order to preserve its right to claim compensation for such disputed work or damages resulting from compliance with such an order, the Contractor must notify the Project Manager in writing, within five (5) days of receiving notice from the Project Manager of this final determination, that the work is being performed or that the determination and direction is being complied with under protest. Furthermore, in order to claim an adjustment in the Contract price for work performed under protest, the Contractor must submit in writing to the Project Manager, within five (5) days after completion of the work in question, the nature and precise amount of compensation sought for the work, as well as copies of all force account time sheets and records compiled by the Contractor for the work. Failure of the Contractor to so notify the Project Manager of both its protest and its claim for compensation shall be deemed as a full and final release and waiver of any claim for extra compensation or damages therefor.

51. Force Account.

a. Payment under Force Account will be for the reasonable, actual and necessary direct cost of the work in accordance with the orders of the Project Manager, and in addition thereto the percentage of such cost hereafter stated. "Reasonable, actual and necessary direct cost" shall be deemed to include the following:

1. Wages of forepersons, equipment operators and skilled and semi-skilled and common laborers directly assigned to the specific operation at actual payroll rate of wages per hour and actual fringe benefits paid, labor taxes as established by law, and workers compensation and employers liability insurance, for each hour that such employees are actually engaged in the performance of the authorized work and, if directed, overtime, as provided by existing laws and regulations, as well as other insurance premium expenses, including but not limited to premiums for general liability insurance, where the such insurance premium expenses are a direct function of the foregoing wages, but only to the extent such insurance premium expenses derive solely from the foregoing wages.

2. The reasonable actual expenditure for materials (including sales tax paid, if applicable, and except as provided to the contrary in Paragraph 39 above), used up or incorporated in the work.

3. For any equipment, including machinery and trucks, mutually deemed as necessary for the performance of the work, the Project Manager shall allow the Contractor reasonable rental rates, computed as follows: (i) for all equipment rented, the Contractor will be reimbursed the reasonable actual costs based upon the receipts provided, plus an allowance for operating cost as provided in subparagraph (ii) of this subparagraph 51(a)(3).; (ii) for all equipment owned, including pumps and compressors, a reasonable hourly rate will be determined by using the reasonable monthly rental rates taken from the current edition (with updated supplements) of the Rental Rate Blue Book for Construction Equipment and dividing it by one hundred seventy-six (176); an allowance may be made for operating costs for each and every hour the machinery or equipment is actually operated in accordance with the rates listed in the aforesaid rental book; if the machinery or equipment is required to be at the work site, but is not operated, the Contractor may be compensated at the reasonable hourly rental rate, exclusive of operating costs. The Contractor will be allowed to add to the above rates the reasonable predominate areas adjustment percentage for the state as shown on the area adjustment map contained in the Rental Rate Blue Book for Construction equipment. In the case of any machinery or equipment not referred to in the Rental Rate Blue Book for Construction Equipment, a monthly rental rate shall be computed on the basis of an amount that is the equivalent of six percent (6%) of the manufacturer's list price for the sale (new) of such equipment; the hourly rate in such cases will be determined by dividing the monthly rate by one hundred sixty (160) when actually operating, and by one hundred seventy-six (176) when at the Project site, but not operating, to which no percentage shall be added. The above rates shall be for the time such equipment is required on the Project site for the performance of force account work exclusively.

b. To the reasonable, actual and necessary direct cost of the work done under Force Account as noted above, twenty percent (20%) will be added to the expenditure for labor and fifteen percent (15%) will be added to the expenditure for materials, excluding sales tax. No additions will be allowed for equipment costs, whether such equipment is rental or Contractor-owned. These percentages shall be deemed to cover the cost of heat, light, bond or bonds, use and up keep of small hand tools, administration, engineering, field and office superintendence, home office and site overhead, extended general conditions, non-payroll taxes, insurance (including general liability and non-payroll insurance), all loss, damage, risk and expenses incidental to the work and profit. The Contractor shall have no claim in excess of the above, such payments being in full compensation for the performance of such work and the furnishing of such materials and for all expense in connection therewith and incidental thereto.

c. Should the Contractor subcontract any portion of the work, with the prior written approval of the Project Manager, payment for that portion will be computed as the reasonable, actual and necessary costs defined above (exclusive of any profit to the Subcontractors), plus the percentages allowed, plus eight percent (8%) mark-up of the total paid to the Subcontractor. No additional percentage mark-up by or for any additional tiers of Subcontractors will be allowed.

d. The Contractor shall submit daily a statement in duplicate of work done on a Force Account

basis within twenty-four (24) hours of the time the work is done, and representatives of the Project Manager and the Contractor shall make daily comparison of the time and rates of labor, material used, etc., as shown therein. After correction, if necessary, this comparison shall be signed by each and filed with the Project Manager and the Contractor. The Contractor shall submit to the Project Manager monthly, prior to each Current Estimate, four (4) copies of an itemized statement of the amount and value of labor and materials furnished, accompanied by the original invoices for work performed under a Subcontract, and by an affidavit certifying the correctness of such statement. The Project Manager shall have access to any books, vouchers, time sheets, records, and memoranda showing the labor employed and the materials actually used on the specific operation and the actual net cost thereof, for the Contractor and any Subcontractor(s). Daily force account time sheets must include the name and job titles of employees, actual starting and quitting times, and the total number of hours worked each day by each employee.

e. Work done under Force Account shall be subject to all of the requirements of the Contract. It shall be prosecuted in an orderly, reasonable and economical way, and the prices paid for labor and material and the method of prosecuting the work shall be subject to the approval of the Project Manager. Neither work nor material will be paid for under Force Account unless it is ordered as such in writing.

52. Lump Sum Bid Breakdown; Applications for Payment. In order to assist the Project Manager in estimating approximate quantities and the value of the work performed, the Contractor shall furnish in writing to the Project Manager within thirty (30) days after the issuance of the Notice to Proceed, an apportionment of any lump sum Quote (the "Lump Sum Bid Breakdown") showing in detail its component parts. The Lump Sum Bid Breakdown shall be subject to the approval of the Project Manager. In addition, the Contractor shall furnish within sixty (60) days of the commencement of the work, and thereafter every thirty (30) days until Substantial Completion of the work, an application for payment (the "Application for Payment") which shall set forth in detail the approximate quantities and value of the work performed as of the date of the Application for Payment in conformity with the approved Lump Sum Bid Breakdown. The Contractor shall certify that the information set forth in the Application for Payment is true, correct and complete, and accurately and fairly represents the work performed to date by the Contractor in accordance with the Contract Documents.

53. Current Estimates.

a. The Project Manager, after receipt of an Application for Payment, shall prepare a current estimate (the "Current Estimate") of the approximate quantities and value of the work performed at intervals of about one (1) month during the progress of the work, except that the first Current Estimate may be prepared within sixty (60) days of the commencement of work under the Contract, provided at all times, however, that the Contractor is in compliance with all of the requirements of the Contract and the value of the work done during the time covered by the Current Estimate exceeds the amount of fifteen hundred dollars (\$1,500). The City shall make payments to the Contractor on the basis of the Current Estimates, when approved by the Project Manager. The City shall have no obligation to pay interest on the amount due under any Current Estimate, any provision of Applicable Law to the contrary notwithstanding. Payments on uncompleted items will be for the value of work done and materials furnished, as apportioned by the Project Manager. The Current Estimates are approximate only, and subject to correction in the Final Estimate. The payment of a Current Estimate shall not bind the City to the acceptance of any materials furnished or work performed by the Contractor. The City shall not be precluded from later contesting a Current Estimate and shall enjoy every legal defense, or other claim or counterclaim, in recoupment or otherwise, by reason of the character, quality, and quantity of the work and materials covered by a Current Estimate, notwithstanding payment of a Current Estimate.

b. The City may withhold payment for deficient items according to the terms of the Contract. The City shall pay the Contractor according to the provisions of 62 Pa. C.S.A. §§ 3931 et seq., as amended, Subchapter D, Prompt Payment Schedules, for all other items which appear on the Application for Payment and have been satisfactorily completed. If the City withholds payment from the Contractor for a deficient item, it shall notify the Contractor of the deficient item within sixty (60) calendar days of the date that the City received the Application for Payment.

c. Subject to the provisions of subparagraph (e) below, Current Estimates on Contracts which include the furnishing or installing of electrical, mechanical, plumbing, heating, and other equipment, systems or

components especially fabricated as part of the work under the Contract, which are subject to mechanical or electrical test, will include payment of invoice or invoices previously paid by the Contractor, not to exceed ninety percent (90%) of the amount shown on the Lump Sum Bid Breakdown approved by the Project Manager for such equipment, systems or components, when such equipment is delivered to the site, City property, or a bonded warehouse approved by the Project Manager. The City shall pay the balance of ten percent (10%) upon completion of successful testing of such equipment, systems or components, and acceptance thereof by the City. If no invoice is available, the City will pay the Contractor fifty percent (50%) of the cost of such specially fabricated equipment, systems or components, in conformity with the Lump Sum Bid Breakdown when delivered to the site, City property, or a bonded warehouse approved by the Project Manager, and an additional forty percent (40%) when such equipment, systems or components are installed and ready for test. The City shall pay the balance of ten percent (10%) upon completion of successful testing of such equipment, systems or components, and acceptance thereof by the City. The Current Estimates described in this subparagraph shall be reduced by the retainage required under Paragraph 54 below.

d. Subject to the provisions of subparagraph (e) below, Current Estimates may also include, when authorized by the Project Manager, an amount equal to the actual cost of specially fabricated materials and equipment not subject to electrical or mechanical test, furnished but not incorporated into the work, provided that the quantity allowed does not exceed the corresponding quantity estimated in the Contract Documents. The Current Estimates described in this subparagraph shall be reduced by the retainage called for in Paragraph 54 below.

e. Before including payments for equipment and materials described in subparagraphs (c) and (d) above in a Current Estimate, the Project Manager must be satisfied that:

1. the equipment and materials are properly stored, insured and protected through appropriate security measures;

2. paid invoices of suppliers support the Contractor's actual net cost for the equipment and materials;

3. the equipment and materials will be incorporated in the work under this Contract within a reasonable period; and

4. the Contractor assumes full responsibility for the safe storage and protection of the equipment and materials. If the equipment and materials paid for hereunder are damaged, stolen or prove to be unacceptable, the payment made therefor shall be deducted from subsequent estimates and payments unless the equipment and materials are promptly replaced to the satisfaction of the Project Manager and in conformity with the requirements of the Contract Documents. Equipment and materials shall be available for inspection and inventory at the storage site by the Project Manager or his or her authorized representative at all times. Upon payment, title to all such equipment and materials shall be vested in the City, free and clear of any and all debts, claims, liens, mortgages, taxes and encumbrances. The Contractor, at its own expense, shall execute such documents and take such other steps as reasonably required by the City to vest the aforesaid title in the City.

f. The Contractor for itself and any and all Subcontractors acknowledges and agrees that neither the Contractor nor any Subcontractor has any right to file a mechanics', materialman's or other lien against the Project site under the Pennsylvania Mechanics' Lien Law of 1963, Act of August 24, 1963, P.L. 1175, 49 P.S. § 1101 *et seq.*, as amended, or under any other law.

54. Retainage. Act 57 of 1998, 62 Pa.C.S. §3921, as amended, shall govern the withholding of retainage on the Contract. Provided that the Contractor is making satisfactory progress and is in compliance with all of the requirements of the Contract and there is no specific legal or other basis for the withholding of greater amounts, retainage under the Contract shall be ten percent (10%) of the amounts due the Contractor until fifty percent (50%) of the work under the Contract is completed, at which time one-half (½) of the amount then retained shall be returned to the Contractor, and thereafter five percent (5%) of the amounts due the Contractor until substantial completion of the Contract.

55. Semi-Final Estimate and Punchlist.

a. Upon substantial completion of the Contract, the Contractor shall submit an Application for Semi-Final Estimate (the "Application for Semi-Final Estimate"), which shall include a request for a semi-final inspection of the work under the Contract. The Project Manager shall make a semi-final inspection within thirty (30) days of the City's receipt of the Application for Semi-Final Estimate and request for inspection. If, based on said inspection, the City determines that the Contractor has Substantially Completed the work under the Contract, the Project Manager shall issue a certificate of Substantial Completion, which shall include the punchlist items required under subparagraph 55(b) below, and the Project Manager shall process the Semi-Final Estimate. The City shall, upon receipt of said Application for Semi-Final Estimate and upon receipt by the City of any guarantee bonds and other written warranties which may be required in accordance with the contract to ensure proper workmanship for a designated period of time, make payment on the Semi-Final Estimate within forty-five (45) days after issuance of the Certificate of Substantial Completion, except as provided in Paragraph 54 above, and less such additional sums as the City may withhold pursuant to this Paragraph 55. The City shall have the same right to withhold payment from the Semi-Final Estimate as is set forth in subparagraph 53(b) above with respect to Current Estimates. The City shall pay interest on the amount due under the Semi-Final Estimate to the extent provided by Applicable Law. Except as provided in Paragraph 54 above, the Semi-Final Estimate shall reduce the retainage withheld by the City to one and one-half (1½) times the amount required to complete any remaining uncompleted items of work, provided that the Contractor has made satisfactory progress towards completion of the Contract and is in compliance with all of the requirements of the Contract and provided there is no legal or other basis for the withholding of a greater amount. The City reserves the right to withhold additional retainage to the extent the same as is permitted under 62 Pa.C.S. § 3921, as amended.

b. Upon preparation of the Semi-Final Estimate, the Project Manager, with the assistance of the Contractor, shall list in detail and in comprehensive fashion the remaining uncompleted items of work, and a reasonable cost of completion for each item on said list, or such other basis for payment thereof as may be provided in the Contract (which ever method may apply pursuant to the Contract), in an official punchlist which shall thereafter be issued in writing to the Contractor. If the Contractor disputes any of the items on the official punchlist, the Contractor must notify the Project Manager in writing, detailing the items in dispute and the nature of its dispute, with all supporting documentation, within five (5) days after receipt of the official punchlist. The Contractor must commence work on the official punchlist within ten (10) Working Days after receipt of the official written punchlist. The Contractor shall thereafter proceed promptly and expeditiously to complete the official punchlist items, and shall give notice to the Project Manager in writing of the date on which the Contractor completes the official punchlist items. The Contractor shall perform and complete all work on the official punchlist at its sole cost and expense and at no additional cost or expense to the City, subject to payment of the Final Estimate under Paragraph 56 below. The Contractor's work in completion of the official punchlist items shall in all respects be governed by the requirements of the Contract Documents.

56. Final Estimate and Inspection. The Project Manager shall conduct final inspection of the work, including the completion of all punchlist items, after completion of all punchlist items to the Project Manager's satisfaction and within thirty days (30) of receipt of the Contractor's formal written request for such final inspection and application for Final Estimate (the "Application for Final Estimate") (which request the Contractor shall not make until completion of the punchlist items). After the punchlist inspection, and provided that all the requirements of the Contract Documents have been complied with to the satisfaction of the Project Manager, including completion of all official punchlist items, the Project Manager will prepare a final payment (the "Final Estimate") and, based upon the Final Estimate, the City will pay the balance due to the Contractor, after all allowable additions and deductions have been made, by checks drawn by the City Treasurer or assessment bills as provided in Paragraph 57 below, or a combination of these two methods of payment. The foregoing to the contrary notwithstanding, the City shall have the same right to withhold payment from the Final Estimate as is set forth in subparagraph 53(b) above with respect to Current Estimates.

57. Assessment Bills. Where required by ordinance of the City Council of the City, the Contractor shall receive, and accept as payment, assessment bills against abutting property, as compensation for furnishing materials, labor, tools, and equipment, and for doing the work set forth in the Contract Documents. The Contractor shall collect such assessment bills at its own cost, and employ all legal remedies or proceedings, whether by lien, civil action, or otherwise, including recourse to the appellate courts, to which the City may be entitled. The

Contractor acknowledges and understands that the City does not in any way guarantee either the value, or the collection, of any assessment bill or bills, and that in the event of neglect to properly file and collect the assessment bill or bills, no recourse shall be had to the City by reason thereof. The Contractor hereby accepts and assumes all risk of failure to collect any such assessment bill or bills.

58. Contractor Claims.

a. Except as otherwise provided in these Standard Contract Requirements, the Contractor must notify the Project Manager in writing of any and all claims whatsoever relating to or arising out of Contractor's performance of the work under the Contract within ten (10) days of the event or occurrence giving rise to the claim, except where a shorter time is specified by the Contract Documents. The written notice of claim to the Project Manager shall provide a detailed statement of and basis for the claim, with supporting documentation attached. For purposes of this Paragraph 58, a "claim" shall mean a demand or assertion by the Contractor seeking, as a matter of right, an adjustment or interpretation of the Contract, payment of money, extension of time or other specific relief with respect to the terms and conditions of the Contract. The Project Manager will review all claims submitted by the Contractor and shall approve or reject each claim in whole or part, or shall request additional documentation in support of the claim from the Contractor.

b. The City and the Contractor hereby release and waive any and all claims against each other for consequential damages arising out of or related to the Contract and the work performed thereunder. This mutual release and waiver includes damages incurred by the Contractor for principal home office expenses, including home office overhead and the compensation of personnel stationed there, for losses of financing, business, and reputation, and for loss of profit associated with any other work, except anticipated profit arising directly from the Contract and the work thereunder. Nothing hereunder shall preclude, however, the assessment by the City of liquidated direct damages, when applicable in accordance with the Technical Specifications, General Bidding and Contract Requirements, and other applicable locations in the Contract Documents, or damages pursuant to Paragraph 25(h) above.

c. After Substantial Completion of the work under the Contract, but prior to the Contractor's acceptance of the Final Estimate, the Contractor shall notify the Project Manager in writing of any and all unresolved and previously asserted claims relating to or arising out of the work. The Contractor's written notice of claims to the Project Manager shall list the claims by number, assign a dollar value to each claim, and provide a detailed statement of each claim, with supporting documentation attached, including a copy of the notice by which the Contractor first brought the claim to the attention of the Project Manager.

d. Failure of the Contractor to notify the Project Manager of any claims in accordance with subparagraphs (a) and (c) above, and the Contractor's acceptance of and negotiation of payment under the Final Estimate under Paragraph 55 above, shall constitute and operate as a full and final release and a waiver of all such claims by the Contractor.

59. Review by Project Manager of Contractor Claims and Compulsory Non-Binding Mediation of Contractor Claims.

a. Within thirty (30) days after receipt of the Contractor's notice to the Project Manager under Paragraph 58(c) above, the Project Manager shall review all identified claims of the Contractor and shall notify the Contractor whether the claims are approved or rejected, in whole or in part.

b. Any claim of the Contractor which shall have been rejected by the Project Manager, in whole or in part, shall be subject to non-binding mediation. Mediation of the claim shall be an irrevocable condition precedent to institution of legal proceedings by the Contractor against the City with respect to such claim.

c. The Contractor must submit its demand for mediation to the Project Manager and the City of Philadelphia Law Department, c/o Chief Deputy City Solicitor, Affirmative and General Litigation Unit not later than 30 days after the Project Manager's notice of rejection. Failure of the Contractor to submit such claim to mediation within this time period shall be an absolute bar to institution of legal proceedings by the Contractor.

d. The Contractor shall submit a written timely request for mediation to the Project Manager and the City of Philadelphia Law Department, c/o Chief Deputy City Solicitor, Affirmative and General Litigation Unit. Upon submission of the claim to mediation, the City and the Contractor shall endeavor to resolve the claim by mediation in accordance with such rules as may be mutually agreed upon by the City and the Contractor.

e. The fee of the mediator, who shall be selected jointly by the parties, and the common expenses and costs incurred in connection with conduct of the mediation, shall be borne equally by the City and the Contractor. The mediation shall be conducted in the City of Philadelphia. Agreements reached in mediation shall be enforceable as settlement agreements in any court having jurisdiction thereof.

60. Contractor's Liability for Services and Materials.

a. Notwithstanding the acceptance and approval by the City of any work the Contractor shall continue to be responsible for the professional quality, technical accuracy and the coordination of all work under the Contract. The Contractor shall, without additional compensation, correct any defects, deficiencies or omissions in the work.

b. The City's review, approval, or acceptance of, or payment for, any of the work performed under the Contract shall not constitute any representation, warranty, or guaranty by the City as to the substance or quality of the work reviewed, approved, or accepted, and shall not be construed to operate as a waiver or estoppel of any of the City's rights or privileges under the Contract, nor of any cause of action arising out of the performance of the Contract. No Person shall rely in any way on such review, approval or acceptance by the City. The Contractor shall be and remain liable in accordance with the Contract and Applicable Law for all damages to the City caused by the Contractor or the work under the Contract. Review, approval or acceptance by the City or the Project Manager under the Contract shall not constitute approval otherwise required by any City department, board, commission, or other regulatory agency in the exercise of such department's, board's, commission's or agency's independent regulatory authority of police powers under applicable law.

61. False Claims. The Contractor covenants and agrees that it shall promptly reimburse the City for (a) all sums paid to the Contractor by the City as a result of any false, fictitious or fraudulent billings, invoices, contract overcharges, and the like, and (b) all other costs which are incurred by the City as a result of the false fictitious or fraudulent billings, invoices, contract overcharges and the like. The Contractor further covenants and agrees that it shall promptly reimburse the City for all expenses and costs, including but not limited to attorneys' fees and expenses, incurred by the City in recovering any such sums from the Contractor. This Paragraph shall survive termination of the Contract and completion of the work under the Contract.

E. MATERIALS, WORKMANSHIP, AND INSPECTION

62. Materials and Workmanship. The materials used in the work under the Contract shall conform to the requirements of the Plans, Technical Specifications and Standard Details and Specifications, as the same may be applicable. The workmanship shall be equal to the best standard practices. Work of reconstruction and restoration of privately-owned structures adjacent to the Project site shall be as set forth in the Plans and Technical Specifications or otherwise by written agreement with the owner or owners of such structures. Where no requirements are specified for materials or for the methods of testing materials or equipment, such materials or methods shall at least equal the latest standard or tentative specifications of nationally recognized standardizing agencies, such as the American Society of Mechanical Engineers, the latest codes of the National Board of Fire Underwriters or, as they apply, any regulations of the City.

63. Inspection. All of the work of the Contract shall be subject to general direction and inspection of the Project Manager or the Project Manager's designated representatives, and the Contractor shall afford every opportunity for the inspection of materials and workmanship. Authorized representatives of the City shall be permitted access at all reasonable times to all portions of the work, and to such portions of the place of manufacture of fabricated materials as may be necessary for complete inspection. Before beginning work the Contractor shall notify the Project Manager of the type and source of supply of the principal materials which the Contractor proposes to furnish, and, as soon as possible thereafter, shall furnish samples of materials, fixtures, and appliances for approval by the Project Manager. Before removal of any excess excavated material, waste, refuse,

or rubble, etc., from the site, the Contractor shall furnish to the Project Manager a list of certified dump site or landfill locations that are to be utilized for disposal of such waste materials and written verification that permission for the disposal of the waste materials has been obtained. Before beginning the fabrication of materials, equipment or systems, and before shipping materials, equipment or systems of a specified type, the Contractor shall notify the Project Manager in ample time to permit inspection at the place of manufacture or shipping, should the Project Manager so desire. Such materials, equipment or systems shall be delivered to the Project site properly marked for identification, and shall be subject to re-inspection and final acceptance or rejection at the Project site by the City. The Contractor shall deliver materials, equipment and systems to be inspected at the Project site in ample time for such inspection and testing. No materials, equipment or systems shall be incorporated into or used in connection with the work until accepted by the Project Manager, and all materials, equipment or systems rejected by the Project Manager as unsuitable or not in conformity with the Plans or Technical Specifications shall be immediately removed from the work. Unless otherwise specifically provided for, the City shall bear the cost of inspection and testing. All work shall be prosecuted in the presence of the City's Inspector ("Inspector"), and conformity with the requirements of the Contract Documents. The Contractor shall provide for inspection and testing to be carried out during regular working hours unless specifically authorized or directed otherwise by the Project Manager. The presence of the Inspector shall not affect in any way the duty of the Contractor to complete the work in accordance with the Contract Documents, nor be deemed a defense on the part of the Contractor for default or violation of the Contract. The Inspector is not authorized to waive, amend, revoke, alter, enlarge, relax, or release any of the requirements of the Contract Documents.

64. Investigation of Work. If the Project Manager at any time has reason to suspect that the Contractor may have delivered any unsuitable, unfit or otherwise defective work, the Project Manager may order an investigation thereof, and the Contractor shall furnish the necessary labor and equipment for such investigation. If the City finds that any part of the work is defective, the Contractor shall repair, replace or reconstruct such work to the satisfaction of the Project Manager, and the cost thereof and of such investigation shall be the sole responsibility of the Contractor. If the work is found to be in accordance with the Contract Documents, the City will reimburse the Contractor, in accordance with Paragraph 51 above, for the expense of the examination.

65. Defective Work or Material. The Contractor shall remove, at its own expense, any work or material rejected by the Project Manager as unsuitable, unfit, or otherwise defective and not in accordance with the Contract Documents, and shall repair, replace or reconstruct the same without additional compensation. Failure to do so shall be deemed a violation of Contract and shall be subject to the provisions of the Contract concerning violations and defaults. Any omission or failure on the part of the Project Manager to disapprove or reject any work or material shall not be construed to be an approval or acceptance of any such defective work or material. For any work or material that is determined to be defective and not in accordance with the Contract Documents, but which in the sole determination of the Project Manager cannot be remedied or does not require total replacement, the Project Manager shall determine an appropriate credit due the City from the Contractor.

F. CONSTRUCTION REQUIREMENTS

66. Prosecution and Performance of Work. The Contractor's methods for the performance of the work must be those best adapted for the safe, efficient, and expeditious prosecution of the work, with a minimum of interference to adjoining work sites, to adjoining properties, and to public traffic and convenience. The Contractor shall prosecute the work vigorously, without delay, and with such workforces and equipment as shall be satisfactory to the Project Manager. The Contractor shall furnish and supply all labor and materials, in the quantity and of the quality required for the proper and timely performance of the work under the Contract; all such materials shall be of the best kind and quality and subject to the inspection and approval of the Project Manager. The Contractor shall strictly conform to the orders, instructions and directions given by the Project Manager, it being expressly understood and agreed that the decision of the Project Manager on any questions arising in connection with the performance of the work under Contract shall be binding and conclusive upon the Contractor. The Contractor shall supervise and direct the work, and Contractor shall be solely responsible for and have control over construction means, methods, techniques, sequences and procedures and for coordinating all portions of its work under the Contract. Before commencing the work, the Contractor, when required by the Project Manager, shall submit for approval its proposed methods of prosecution of the work, including the maintenance

of both vehicular and pedestrian traffic; underpinning, bulk heading, shoring; sinking foundations; handling spoil; lighting; fencing; street surfaces; drainage; and all other branches of its work operation. Such approval is intended to safeguard the City's interest, but such approval will not be deemed to relieve the Contractor of its obligation or responsibility for the safe and proper conduct of the work. The Contractor shall at all times ensure that its work site, and its Subcontractors' personnel, while performing any part of the work under this Contract, are and remain free of the influence of alcohol or illegal drugs. The Contractor shall at all times enforce good discipline and order among its employees, and shall not employ any unfit Person or anyone not skilled in the task assigned. Any contact by the Contractor or its employees with adjacent property owners, passing motorists or pedestrians, and the general public shall at all times be professional, courteous, and respectful.

67. Right of Way. Where work is constructed on private property in the lines of an unopened street, the City guarantees the Contractor, for access and construction purposes, the area only within the lines of said street. Where work is constructed over private property, not within the lines of any street upon the City plan, the City guarantees the Contractor right-of-way between lines not more than twenty-five (25) feet, each side, beyond the outside lines of the structure to be built, unless otherwise provided for, with right of access only within the lines of this strip and subject to the limitations of existing structures. Where work is constructed within the lines of an open street, the City guarantees the Contractor use of the area only within the lines of the street, and subject to the requirements of the Standard Contract Requirements and Technical Specifications for maintenance of travel, existing structures, and access to abutting properties.

68. Maintenance of Traffic and Access to Property. Traffic of all kinds shall be maintained continuously and access to buildings shall be provided for at all times, except where otherwise specifically permitted by the Contract Documents, or where temporary interference is authorized by the Project Manager, in which case it shall be interrupted only for such time as is necessary to provide temporary substitutes for surfaces disturbed by the construction and to restore street and sidewalk surfaces after the completion of the work. Suitable bridges or other means of access shall be built and maintained to permit owners and occupants to reach their premises. Where necessary, the Contractor shall maintain proper and easy means for passengers to enter or exit public transportation. Where partial occupation of the street is allowed, materials and equipment shall be so placed as to ensure a minimum of interference with traffic; no materials shall be placed on the sidewalk within one foot of the curb line, and a clear sidewalk passage not less than four (4) feet in width shall be maintained at all times. The work shall be so conducted that annoyance to residents and interference with the normal use of the properties will be reduced to a minimum. The flow in gutters and inlets shall be maintained. When access to any adjacent property is temporarily cut off, owing to occupancy of the street by the Contractor, the Contractor shall render every assistance to the owner or occupant in handling materials of every description that must be delivered to or removed from such property, including recyclables, rubbish, and garbage, and such materials shall be taken to or from the nearest accessible point that, in the opinion of the Project Manager, is convenient for handling. No additional compensation will be allowed for the various items of expense noted above in this Paragraph 68.

69. Maintenance of Waterways. In navigable streams all work shall be carried on in full compliance with the requirements of the United States Department of the Army, the Commonwealth, the City and any other governmental or quasi-governmental agency, authority or commission having jurisdiction under Applicable Law. Movement of boats and vessels of all kinds shall be maintained unless the United States Department of the Army or any other governmental or quasi-governmental agency, authority or commission having jurisdiction under Applicable Law shall permit interference, and then only within the limits and times specified. Should the Contractor, during the progress of the work, sink, lose, or throw overboard any material, plant, equipment, machinery, etc., which may be dangerous to or obstruct navigation, the Contractor shall forthwith recover and remove the same. The Contractor shall give immediate notice to the proper authorities of such obstruction, and, if required, the Contractor shall, under the direction of such authorities mark or buoy such obstructions until the same are removed. Upon the completion of any work affecting waterways of any character, all equipment and materials deposited in such waterways shall be removed unless otherwise ordered or permitted, so as to leave an unobstructed channel of the same width and depth and with the banks, retaining structures, or wharves in a condition equal to that existing before the beginning of work.

70. Access to Fire Hydrants and Fire Alarm Boxes. Fire hydrants shall be left at all times clear of obstructions and readily accessible to fire apparatus. No material or other obstructions shall be placed within ten

(10) feet of a fire hydrant. Fire alarm boxes shall be supported and protected and maintained so as to be readily accessible and open to view. Excavation shall be decked or bridged, where necessary, to permit the safe passage of fire apparatus and to give access to fire hydrants and to adjacent buildings for the extinguishing of fires. Where necessary, branch pipes shall be extended from the nozzles of the fire hydrants to the mains. Fire hydrants and any branch pipes shall be protected from freezing, and the fire hydrants (particularly the high pressure type) shall, where necessary, be braced or tied to the connecting pipes to prevent movement under water pressure.

71. Temporary Buildings. Buildings, fences, trailers, and equipment erected or provided by the Contractor shall be neat in appearance. Except as provided in Paragraph 74 below, no advertising matter, other than Project information and the name and address of the Contractor, shall be displayed on the work or any such buildings, fences, trailer or equipment.

72. Danger Signals. The Contractor, at Contractor's own expense, shall erect and maintain all necessary barricades, and danger signs and signals. The Contractor shall keep adequate lights burning from sunset until sunrise, and shall provide security personnel as necessary for the safety of the public. The Contractor shall observe such rules relative to signals and safeguards as the police regulations, harbor regulations, and other Applicable Laws require.

73. Street Closings and Detour Signs. In the event that the work requires the closing of a street or roadway, the Contractor shall first obtain a permit from the City's Department of Streets. When the Department of Streets gives permission to close a street or roadway during Contract operations and to divert the traffic therefrom, the Contractor, at the Contractor's sole expense, shall erect and maintain appropriate traffic and highway barricades, detour signs, and any other necessary traffic signs in order to safely protect vehicular and pedestrian traffic. The Contractor shall notify the Department seven (7) days prior to the date of starting work and one (1) day prior to the date of completion. Copies of these notices shall be sent to the Traffic Engineer of the Department of Streets.

74. Contract Identification Signs. The Contractor shall, unless specified otherwise in the Technical Specifications, at Contractor's own expense, erect and maintain in a prominent position upon the Project site at a location approved by the Project Manager, a suitable sign, plainly lettered with the name and address of the Contractor, the character of the work and the name of the Department under which the Contract is being carried out. No advertising matter other than the signs above noted shall be displayed on the work.

75. Safety and Sanitary Provisions. The Contractor shall provide means and appliances and shall enforce suitable rules for the safe prosecution of the work and for the safety and health of the work force employed on it. The completed portions of the work shall be kept clean and in a sanitary condition. The Contractor shall provide and maintain properly secluded sanitary conveniences, in accordance with existing regulations of the Department of Public Health, for the use of Contractor's work force, and the Contractor shall strictly enforce the exclusive use of them by its work force.

76. Storage Space. Buildings, yards, or sidings that may be required for the delivery or storage of materials shall be provided by and at the cost of the Contractor. The Contractor may not use streets for storing materials unless otherwise specifically authorized in writing by a permit issued by the City's Department of Streets. Upon request of the Project Manager, the Contractor shall furnish a copy of any agreement for the use of a property or building for construction purposes, except where owned by the Contractor.

77. Night Work. Work during the night shall be carried on with due regard to the comfort of, and so as to minimize any disturbance to, nearby residents, and the methods to carry out such work shall be subject to the approval of the Project Manager, who may, if conditions so require, order that no night work be done in specific localities. The Contractor's work force shall refrain from loud noises, calls, whistles, and the operation of air compressors, rock drills, riveting machinery, and blasting between the hours of 7:00 p.m. and 7:00 a.m. unless specifically permitted by the Project Manager.

78. Power and Light. In developed portions of the City, and elsewhere when ordered by the Project Manager, the Contractor shall use either electric, compressed air or internal combustion engine power. When compressed internal combustion engines are used the exhaust shall be muffled. None but electric lights

shall be used in or under buildings or anywhere on the work below the surface of the street.

79. Use of Water. Permission for the use of City water shall be obtained directly from the Philadelphia Water Department. Water may be obtained through a hydrant attachment or as otherwise specified in the Technical Specifications. In all cases, the Contractor shall obtain and use such water in accordance with regulations of the Water Department. If the Contractor shall, at any time, waste water (as determined by the Project Manager) obtained from the Water Department, the Project Manager shall revoke permission for such use. No charge will be made for the use of water actually used for the construction work, unless specifically set forth elsewhere in the Technical Specifications.

80. Prevention of Dust and Smoke.

a. The Contractor shall keep the surface of the sidewalks and streets affected by its work, including decking and temporary paving, in a clean, neat condition. The Contractor shall sprinkle with water or otherwise treat the surface sufficiently to keep down any dust generated during the progress of work. Piles of dirt or other material shall not be left on the surface. The aforementioned requirements are not intended to take the place of the usual duties of the Department of Streets but to supplement them. No fires of any kind or burning of debris on the site or adjacent to it will be permitted; the debris shall be disposed of off the Project site.

b. The Contractor shall comply strictly with the provisions of the Air Pollution Code (Title 3 of The Philadelphia Code, as amended).

81. Explosives. If any blasting is involved in the performance of the Contract, the Contractor must obtain a blasting permit from the Department of Licenses and Inspections. Such permits will be issued only upon approval of the Fire Marshal and posting of bond or Certificate of Insurance covering personal injuries and property damage. Blasting may be done only by blasters duly licensed by the City. Storage of explosives and transportation of explosives to the site also require permits, which are issued by the Department of Licenses and Inspections, subject to prior approval of the Fire Marshal.

82. Work in Freezing Weather. Masonry of all kinds, pointing, grouting, plastering, and other work subject to the action of frost shall not be done when exposed to freezing weather, except under conditions where the Project Manager may specifically direct or permit such work, subject to the heating of materials, the protection of finished work and such other measures as may be deemed necessary. If operations are suspended on account of freezing weather, the entire work shall be properly protected until the resumption of work is permitted. If a suspension of the work on account of freezing weather or from any other cause is necessary, the site shall be cleaned up, left in good order, and continuously maintained by the Contractor during the period of such suspension.

G. SURFACE, SUBSURFACE, AND OVERHEAD STRUCTURES

83. Completeness of Data. The term "structures" used in these Standard Contract Requirements shall apply to all surface, underground, and above-ground structures of whatever character within the Project site or immediately adjacent thereto, including buildings situated in or adjacent to the excavation. Where these structures are shown or indicated on the Plans, the information provided is in accordance with the information in the possession of the Department, but is approximate only. Such data are not warranted or guaranteed by the Department to be either complete or correct, and the Contractor shall and must assume, and adjust its Quote to account for, all risks resulting from conditions in the field that differ from the approximation shown.

84. Support and Protection. All structures, unless specifically designated by the Project Manager to be abandoned or relocated, shall be supported and protected at all times from destruction or injury, including damage from freezing, and maintained continuously in service. Should any injury occur while the work is in progress and the structures are under the protection of the Contractor, the Contractor shall fully restore such structures to as good condition as existed before the injury was done. All such support and protection work, and also such alterations of any structures as the Contractor may carry out for the Contractor's own convenience in executing the work, shall be done without additional compensation, unless otherwise specifically provided for in the Contract Documents. The City makes no covenant, representation or warranty as to the right of the

City or the Contractor to carry out any such support or protection work, or any alterations of any structures for the Contractor's own convenience; all such work being in any and all events subject to the consent and approval of the owner or owners of such structures.

85. Structures Interfering with Construction. If, in the course of the work, the Contractor determines that any of the existing structures occupy space required by the structure or its appurtenances to be constructed under the Contract, or that such structures are so situated as to render it impracticable, in the opinion of the Project Manager, to do the work called for under the Contract in the manner specified, the Contractor shall excavate and uncover the portions of such structures in service and shall notify the Project Manager, who will, if reasonably practicable, arrange for the alteration, relocation or removal of the interfering structures or appurtenances within a reasonable time. The Contractor shall not move nor disturb such structures in any way without prior approval by the owners thereof, and the approval of the Project Manager. Any such action by the Contractor shall be at the Contractor's sole cost, risk and expense. Structures belonging to the public utility companies, which are ordered by the Project Manager to be removed or relocated, will be so removed or relocated and permanent supports placed, in general by their owners without cost to the Contractor. The Contractor, however, shall support and protect them up to the time of their removal, shall co-operate with such owners during the process of relocation, and shall maintain and protect such structures if and when such structures are relocated within the Project site or immediately adjacent thereto. Such work shall be done without additional compensation. Sewers, water pipes, electrical conduits, and other City-owned structures shall be altered, relocated, or reconstructed as shown on the Plans or as may be ordered in the course of the work. Payment for this work will be made at the applicable prices in the Contract unless otherwise specifically provided for. If the Project Manager approves a request by the Contractor to effect a temporary or permanent relocation of structures for Contractor's own convenience, and satisfactory arrangements can be made with the owners thereof, the Contractor may carry out such work at its own expense.

86. Abandonment of Structures. In the case of structures the service of which is permanently abandoned, the Project Manager will designate which such structures or portions of such structures the Contractor may salvage and which the Contractor may abandon in place on the Project site, including in the trench. The Contractor shall remove and deliver to a designated point of storage materials salvaged, and payment therefor will be made at the appropriate prices of the Contract, unless otherwise specifically provided. The Contractor shall allow owners of privately owned structures reasonable facilities for salvaging their property. Structures designated as abandoned shall become the property of the Contractor, and shall be removed from the work, unless the Project Manager has approved abandonment of such structures in place on the Project site.

87. Co-operating with Public Utility Companies and City Departments.

a. The Contractor shall at all times during the performance of the work fully comply with the Underground Utility Line Protection Law (Act 287 of 1974, as amended by Act 121 of 2008), 73 P.S. § 176 et seq., otherwise known as the PA One Call System.

b. The Contractor shall co-operate with other contractors and with the employees, officers, and agents of the City Departments or the various public utility companies which own, operate, or have supervision over the underground or above-ground structures encountered by the Contractor, and shall conform to the requirements of the owners of such structures in regard to their safe maintenance. The Contractor shall give to authorized representatives of the City Departments and public utility companies unrestricted access at all times to the excavation and site to inspect the condition and support of their structures at no additional cost to the City. Suitable arrangements shall be provided to facilitate access to valves and manholes if necessary. Ventilation openings shall be provided where gas is likely to accumulate. Where structures are to be constructed by the Contractor under the facilities of any public utility, the Contractor shall make suitable arrangements with the public utility company for the removal or support and maintenance of such facilities at no additional cost to the City.

88. Gas Pipes. Philadelphia Gas Works ("PGW") will make any necessary alterations to the gas mains or gas service pipes, without expense to the Contractor, unless specifically indicated elsewhere in the Contract Documents. PGW will by-pass the gas service in temporary pipes laid outside such excavation, in advance of the construction work. The mains and services that have been removed may be replaced in their permanent position

after the backfilling has been sufficiently compacted.

89. Traffic Control Apparatus. The Contractor acknowledges that the underground location of conduit and cables for traffic signals at intersecting streets is not ordinarily shown on the Plans for the work. Where traffic signals are indicated on the Plans, but the location of connecting conduit or cables for the signals is not shown, the Contractor shall nonetheless assume that there are underground conduits and cables that may affect or interfere with the performance of its work and the Contractor shall adjust its Quote accordingly. The Contractor shall support and maintain in their present locations, or in approved temporary locations, any existing traffic control masts, signals, apparatus, and their connecting underground or above-ground conduits and cables, in such condition as to permit the uninterrupted functioning of the signals during the progress of the work, on temporary poles if necessary, and in a manner satisfactory to the Department of Streets. If the existing signal apparatus is supported on poles and these poles are moved to a temporary location during the progress of the work, the Contractor shall either erect temporary signal poles in the approximate locations of the original poles and erect the signals thereon, or shall extend the electrical connection to the poles as relocated as may be ordered by the Project Manager. Upon the restoration of surface conditions, the Contractor shall restore the equipment, including underground or above-ground conduits and cables and electrical connections, to its original position and condition. This work, except new masonry, shall be done without additional compensation to the Contractor. Masonry piers will be paid for at the applicable unit prices.

90. Vaults. The City will secure the vacating of vaults interfering with the work without expense to the Contractor; but reasonable time shall be allowed the owners for the removal of materials and of any mechanical or other equipment that may be installed therein. These vaults will be vacated to the extent necessary, in the opinion of the Project Manager, to do the work called for under this Contract, including underpinning. The Contractor shall make arrangements with the owners of such vaults in regard to its occupation thereof and shall give the owners at least two (2) weeks' notice of Contractor's intention to remove or break into the walls.

91. Street Lighting Units. Whenever it is necessary to remove, relocate, or adjust street lighting units, or poles, the work shall be reviewed and approved by the City's Department of Streets – Street Lighting Division. All such street lighting work shall be performed at the sole expense of the Contractor and at no additional cost to the City, unless otherwise pre-approved in writing by the Project Manager and the Street Lighting Division.

H. MISCELLANEOUS PROVISIONS

92. Governing Law. The Contract shall be deemed to have been made in Philadelphia, Pennsylvania. The Contract and all disputes arising under the Contract shall be governed, interpreted, construed and determined in accordance with the laws of the Commonwealth, without giving effect to principles of Commonwealth law concerning conflicts of laws.

93. Binding Upon Contractor's Successors, etc. The Contract shall be binding upon the Contractor's heirs, executors, administrators, and successors and assigns and such successors and assigns shall be responsible for the faithful performance and completion of the Contract work.

94. Amendments; Waiver. The Contract may not be amended, supplemented, altered, modified or waived, in whole or in part, except by a written Amendment, or other writing, signed by the Parties, or as provided in Paragraphs 20 and 21 above concerning cancellation of the Contract by the Contractor and termination for convenience by the City, or as provided in Paragraphs 48 and 49 concerning Change Orders and Disputed Change Orders, respectively. Except to the extent that the Parties may have otherwise agreed in writing in an Amendment, or other writing, no waiver, whether express or implied, by either Party of any provision of the Contract shall be deemed: (a) to be a waiver by that Party of any other provision in the Contract; or (b) to be a waiver by that Party of any breach by the other Party of its obligations under the Contract. Any forbearance by a Party in seeking a remedy for any noncompliance or breach by the other Party shall not be deemed to be a waiver of rights and remedies with respect to such noncompliance or breach.

95. Interpretation and Order of Precedence. If the Technical Specifications, the Proposal, or the

Plans expressly modify any of the terms, conditions, or requirements of these Standard Contract Requirements, or of the Department's Standard Details and Specifications, such Technical Specifications, Proposal or Plans shall supersede the portions of these Standard Contract Requirements or the Department's Standard Details and Specifications with which they conflict. The foregoing to the contrary notwithstanding, the City and the Contractor expressly understand that in no event shall the provisions of Paragraph 4 of these Standard Contract Requirements (with respect to test borings, test piles, and existing underground and above-ground structure locations) be superseded by the Technical Specifications, the Proposal, or the Plans.

96. Integration. The Contract Documents, including these Standard Contract Requirements and the exhibits incorporated by reference therein, contain all the terms and conditions agreed upon by the Parties, constitute the entire agreement between the Parties pertaining to the subject matter of the Contract, and supersede all prior agreements, understandings, negotiations and discussions, whether oral or written, of the Parties (except to the extent specifically set forth therein). No other prior or contemporaneous agreements, covenants, representations or warranties, oral or otherwise, regarding the subject matter of the Contract shall be deemed to exist or to bind any Party or vary any of the terms contained in the Contract.

97. No Joint Venture. The Parties do not intend to create, and nothing contained in the Contract shall be construed as creating, a joint venture arrangement or partnership between the City and the Contractor with respect to the work performed by the Contractor under the Contract.

98. No Third Party Beneficiaries. Nothing in the Contract, express or implied, is intended or shall be construed to confer upon or give to any Person, other than the Parties, any rights, remedies, or other benefits, including, but not limited to, third-party beneficiary rights, under or by reason of the Contract. The Contract shall not provide any third party with any remedy, claim, liability, reimbursement, cause of action or other right other than any such remedy, claim, etc. existing without reference to the term of or the existence of the Contract.

99. Severability and Partial Invalidity. The provisions of the Contract shall be severable. If any provision of the Contract or the application thereof for any reason or in any circumstance shall to any extent be held to be invalid or unenforceable, the remaining provisions of the Contract and the application of such provision to Persons, or in circumstances, other than those to which it is held invalid or unenforceable, shall not be affected thereby, and each provision of the Contract shall be valid and enforceable to the fullest extent permitted by law.

100. Survival. Any and all provisions set forth in the Contract which, by its or their nature, would reasonably be expected to be performed after the termination of the Contract or after full performance of the work under the Contract shall survive and be enforceable after such termination. Any and all liabilities, actual or contingent, which shall have arisen in connection with the Contract shall survive the expiration or earlier termination of the Contract, along with the following: the Contractor's warranty of its work, the Contractor's obligation to indemnify, defend and hold harmless the City, its officers, employees and agents; and the Parties' rights and obligations set forth in Paragraph 31 (Proprietary Rights Indemnity).

101. Controlling and Pertinent Statutes. All statutory citations in the Contract shall refer to the pertinent statute as it may be amended hereafter from time to time.

102. Forum Selection Clause; Consent to Jurisdiction. The Parties irrevocably consent and agree that any lawsuit, action, claim, or legal proceeding involving, directly or indirectly, any matter arising out of or related to the Contract shall be brought exclusively in the United States District Court for the Eastern District of Pennsylvania or the Court of Common Pleas of Philadelphia County. It is the express intent of the Parties that jurisdiction over any lawsuit, action, claim, or legal proceeding shall lie exclusively in either of these two (2) forums. The Parties further irrevocably consent and agree not to raise any objection to any lawsuit, action, claim, or legal proceeding which is brought in either of these two (2) forums on grounds of venue or *forum non conveniens*, and the Parties expressly consent to the jurisdiction and venue of these two (2) forums. The Parties further agree that service of original process in any such lawsuit, action, claim or legal proceeding may be duly effected by mailing a copy thereof, by certified mail, postage prepaid, in the case of the Contractor, to the address specified in the Quote, and in the case of the City, to The City of Philadelphia Law Department, Attention:

City Solicitor at the then-current address of the Law Department.

103. Waiver of Jury Trial. The Contractor hereby waives trial by jury in any legal proceeding in which the City is a party and which involves, directly or indirectly, any matter (whether sounding in tort, Contract or otherwise) in any way arising out of or related to the Contract or the relationship created or evidenced thereby. This provision is a material consideration upon which the City relied in entering into the Contract.

104. Headings. The titles, captions or headings of Paragraphs, sections, exhibits or schedules in or to the Contract are inserted for convenience of reference only, and do not in any way define, limit, describe or amplify the provisions of the Contract or the scope or intent of the provisions, and are not a part of the Contract.

105. Days. Any references to a number of days in the Contract shall mean calendar days, unless the Contract specifies Working Days or business days.

106. Notice. All notices, demands, requests, waivers, consents, approvals or other communications which are required or may be given under the Contract shall be in writing and shall be deemed to have been duly made (a) when received or refused if delivered by hand with receipt given or refused; (b) on the next business day if delivered by a nationally recognized overnight courier service (e.g., Federal Express or United Parcel Service); (c) on the date confirmed for receipt by facsimile if delivered by facsimile; and (d) upon receipt or refusal of delivery if sent by certified or registered United States mail, return receipt requested. In each case notices shall be sent, in the case of notices to the Contractor, to the address or addresses set forth in the Contractor's Quote, and in the case of the City, to the address set forth in the City's Notice to Proceed, to the attention of the Project Manager, or to such other address as either Party may specify to the other by a notice complying with the terms of this Paragraph 106.

I. SPECIFIC LAWS

The following provisions are not intended to limit the applicability of any of the other provisions of the Contract:

107. Labor-Management Relationships; Prevailing Wages. The Contract is subject to Section 17-107, as amended, of The Philadelphia Code, "Contractors: Labor-Management Relationships", and all regulations and procedures adopted thereunder.

a. As required by Section 17-107 of The Philadelphia Code all employees performing work under the Contract shall be paid at least the applicable prevailing wages for the respective occupational classifications designated, as set forth in the minimum wage schedule attached as part of the General Bidding and Contract Requirements, and shall be given at least the applicable presently prevailing working conditions during the entire period of work under the Contract. Such working conditions are those which are given to employees pursuant to a bona fide collective bargaining agreement for the applicable craft, trade or industry in the Philadelphia area on the date the General Bidding and Contract Requirements are issued. The occupational classifications for all employees under the Contract shall be only the specific categories of jobs within a given craft, trade or industry for which a separate hourly wage rate for the Philadelphia area is determined by the Secretary of Labor of the United States, in accordance with the provisions of the Davis-Bacon Act, and which are set forth in the applicable schedule attached to the General Bidding and Contract Requirements. In the event that any Contractor believes that work under the Contract should be performed by employees in occupational classifications omitted from the schedule attached to the General Bidding and Contract Requirements, it shall so advise the Managing Director's Office (the "MDO"), Labor Standards Division, which shall remedy the omission if it agrees.

b. The City may withhold from any sums due to the Contractor under the Contract so much as may be necessary to pay the employees the difference between the wages required to be paid under this Paragraph 107 and the wages actually paid to such employees, and the City may make such payments directly to the appropriate employees.

c. Each Contractor shall require all Subcontractors to comply with and be bound by all of the

provisions of this Paragraph of the Contract and of Section 17-107 of The Philadelphia Code, and the Contractor shall insert the requirements of Section 17-107 in all Subcontracts.

d. Every Contractor and Subcontractor shall keep an accurate record preserved on employee time sheets or time cards showing the name, address, social security number, occupational classification, wages and other benefits paid or provided and number of hours worked for each employee assigned to city-work (as "city work" is defined in Section 17-107(1)(b) of The Philadelphia Code), and such record shall be preserved at the current place of business of the employing Contractor or Subcontractor for two (2) years from the date of the Final Estimate on the Contract. The Contractor shall maintain and make his or her accounting and employment records and records relating thereto available for inspection by authorized representatives of the City, at all reasonable hours, and shall permit such representatives to interview employees during the hours on the job, all without prior notice. Neither the Contractor nor any Subcontractor shall allow any employee or other person to interfere with any such inspection or interview.

e. All Contractors and Subcontractors performing city-work shall, upon request of the City, file with the MDO, Labor Standards Division a certified statement setting forth the name, address, occupational classification, wages and other benefits paid or provided and number of hours worked with respect to each employee performing city work. Such statement shall be made weekly for each preceding weekly period. The certification shall affirm that the statement is correct and complete, that the wages set forth therein are not less than those required by the Contract for city-work and that the occupational classification set forth for each employee conforms with the work performed.

f. Nothing herein shall preclude the payment by the Contractor of wages at rates higher than those specified as the minimum in the applicable schedule attached to the General Bidding and Contract Requirements. However, no increase in any Contract price shall be allowed or authorized on account of the payment of wages in excess of those so specified, or on account of wage increases granted hereafter. No increases above the amounts specified in the applicable schedule attached to the General Bidding and Contract Requirements will be required by any Contract during the term thereof except in the case of an error or omission in such schedule. Such an error or omission shall be called to the attention of the MDO, Labor Standards Division as promptly as possible; but the remedying thereof by the Department shall not constitute grounds for withdrawal of a Quote or cancellation of a Contract, nor for an increase in the Contract price or other claim or recovery against the City, nor a ground for failure or refusal to pay the applicable proper minimum to all employees.

g. The minimum wages required hereby shall be paid unconditionally without any subsequent deduction or rebate of any kind except in accordance with Applicable Law governing payroll deductions for taxes, benefits and collective bargaining charges. Any assignment of wages by an employee for the direct or indirect benefit of the Contractor shall constitute a violation of this Paragraph; and any purported release of rights under Section 17-107 of The Philadelphia Code by an employee shall be void and of no effect.

h. The Parties shall refer to Section 17-107 of The Philadelphia Code, and to the regulations to be issued from time to time by the MDO, Labor Standards Division, for further information concerning the administration of the foregoing requirements of this Paragraph 107. In addition, it shall be the responsibility of all Sellers and Contractors to inform themselves as to all prevailing working conditions, including, without limitation, length of work day and work week, overtime compensation, and holiday and vacation rights.

108. Non-Discrimination; Fair Practices.

a. The Parties acknowledge that they have entered into and perform the Contract under the terms of the Philadelphia Home Rule Charter, as it may be amended from time to time, and in performing the Contract, the Contractor shall not discriminate or permit discrimination against any individual because of race, color, religion or national origin. In addition, the Contractor shall, in performing the Contract, comply with the provisions of the Fair Practices Ordinance of The Philadelphia Code (Chapter 9-1100, as amended) and the Mayor's Executive Order No. 4-86, as each may be amended from time to time, both of which prohibit, among other things, discrimination against individuals because of race, color, sex, sexual orientation, religion, national origin, ancestry, age, handicap (including but not limited to Human Immunodeficiency Virus infection), marital

status, presence of children or source of income, in employment, housing and services in places of public accommodation. In the event of any breach of this Paragraph 108, the City may, in addition to any other rights or remedies available under the Contract, at law or in equity, suspend or terminate the Contract forthwith.

b. In accordance with Act 57 of 1998, 62 Pa.C.S. §3701, as amended, in the hiring of employees for the performance of work under the Contract or any Subcontract, neither the Contractor, nor any of its Subcontractors, nor any Person acting in their behalf shall discriminate, by reason of gender, race, creed, or color, against any citizen of the Commonwealth who is qualified and available to perform the work to which the employment relates. In addition, neither the Contractor, nor any of its Subcontractors, nor any Person acting in their behalf shall in any manner discriminate against or intimidate any employee hired for the performance of work under the Contract on account of gender, race, creed, or color. In addition to any other remedies available to the City, the Contract may be cancelled or terminated by the City and all money due on or to become due under the Contract may be forfeited for a violation of the terms or conditions of this Paragraph 108(b).

109. Employment of Low - and Moderate - Income Persons. The Contract is subject to Section 17-1000, as amended, of The Philadelphia Code, "Employment of Low- and Moderate-Income Persons by City Contractors", and all regulations and procedures adopted thereunder.

a. As required by Section 17-1000 of The Philadelphia Code, for all construction and demolition contracts entered into by the City with a total value in excess of \$150,000 (a "Covered Construction Contract"), the Contractor must certify to the Procurement Department that at least forty percent (40%) of the workers who work on a Covered Construction Contract are low- or moderate-income persons. Apprentices and those working in on-the-job training positions shall be considered workers for the purpose of meeting the requirements of Section 17-1000.

b. A low- or moderate-income person is defined under Section 17-1000 as a person whose income does not exceed more than eighty percent (80%) of the median income for the Philadelphia metropolitan area, as determined or adjusted by the Secretary of Housing and Urban Development pursuant to 42 U.S.C. §5302(a)(20), as amended. A person who no longer meets the income eligibility criteria set forth in Section 17-1000 because of employment by a party to a Covered Construction Contract, but who met the criteria on his or her date of hire, shall be deemed a low- or moderate-income person for three years from the date of hire.

c. Each Contractor shall require all Subcontractors to comply with and be bound by all of the provisions of this Paragraph of the Contract and of Section 17-1000 of The Philadelphia Code, and the Contractor shall insert the requirements of Section 17-1000 in all Subcontracts.

110. Ethics Requirements. To preserve the integrity of City employees and maintain public confidence in the competitive bidding system, the City intends to vigorously enforce the various ethics laws as they relate to City employees in the bidding and execution of contracts to which the City is a party. Such laws are in three categories:

a. Executive Order No. 02-04, which prohibits City employees from soliciting or accepting anything of value from any Person seeking to initiate or maintain a business relationship with the City, including but not limited to any of its departments, boards, commissions or agencies. All City employees presented with gifts or gratuities as indicated in Executive Order 02-04 have been instructed to report these actions to the appropriate authorities. All Sellers, agents or intermediaries who are solicited for gifts or gratuities by City employees are urged to report these actions to the appropriate authorities, including but not limited to the Inspector General.

b. Section 10-102, as amended, of the Philadelphia Home Rule Charter, which prohibits any Quote from being accepted from, or contract awarded to any City employee or official, or any firm in which a City employee or official has a direct or indirect financial interest. All Sellers are required to disclose any current City employees or officials who are employees or officials of the Seller's firm, or who otherwise would have a financial interest in the Contract.

c. The State Ethics Act and the City Ethics Code, which prohibit a public employee from using

his or her public office or any confidential information gained thereby to obtain financial gain for himself or herself, a member of his or her immediate family, or a business with which he or she or a member of his or her immediate family is associated. "Use of public office" is avoided by the employee or official publicly disclosing the conflict and disqualifying himself or herself from official action in the matter, as provided in The Philadelphia Code §20-608, as amended.

111. The Philadelphia Code, Chapter 17-400.

a. In accordance with Chapter 17-400 of The Philadelphia Code, as it may be amended from time to time, Contractor agrees that its payment or reimbursement of membership fees or other expenses associated with participation by its employees in an exclusionary private organization, insofar as such participation confers an employment advantage or constitutes or results in discrimination with regard to hiring, tenure of employment, promotions, terms, privileges or conditions of employment on the basis of race, color, sex, sexual orientation, religion, national origin or ancestry, constitutes, without limiting the generality of Paragraph 32 (Default and Remedies), a substantial breach of the Contract entitling the City to all rights and remedies provided herein or otherwise available at law or in equity.

b. The Contractor agrees to include the immediately preceding subparagraph, with appropriate adjustments for the identity of the parties, in all Subcontracts which are entered into for work to be performed pursuant to the Contract.

c. The Contractor agrees to cooperate with the City's Commission on Human Relations in any manner which the Commission deems reasonable and necessary for the Commission to carry out its responsibilities under Chapter 17-400 of The Philadelphia Code. The Contractor's failure to so cooperate shall constitute, without limiting the applicability of Paragraph 32 (default and remedies), a substantial breach of the Contract entitling the City to all rights and remedies provided herein or otherwise available at law or in equity.

112. Federal Laws. The Contractor shall comply with the provisions of Title VI of the Civil Rights Act of 1964 (42 U.S.C. §§ 2000d – 2000d7), section 504 of the Federal Rehabilitation Act of 1973 (29 U.S.C. § 794), The Age Discrimination Act of 1975, (42 U.S.C. §§ 6101 – 6107), Title IX of the Education Amendments of 1972 (20 U.S.C. § 1681), and 45 C.F.R. Part 92, as they may be amended from time to time, which together prohibit discrimination on the basis of race, color, national origin, sex, handicap, age and religion.

113. Americans With Disabilities Act. Contractor understands and agrees that no individual with a disability shall, on the basis of the disability, be excluded from participation in the Contract or from activities or services provided under the Contract. As a condition of accepting and executing the Contract, Contractor shall comply with all provisions of the Americans With Disabilities Act (the "ADA"), 42 U.S.C. §§ 12101 – 12213, as amended, and all regulations promulgated thereunder, as the ADA and regulations may be amended from time to time, which are applicable (a) to Contractor, (b) to the benefits, services, activities, facilities and programs provided in connection with the Contract, (c) to the City, or the Commonwealth, and (d) to the benefits, services, activities, facilities and programs of the City or of the Commonwealth, and, if any funds for payments by the City or otherwise under the Contract are provided by the federal government, which are applicable to the federal government and its benefits, services, activities, facilities and programs. Without limiting the applicability of the preceding sentence, Contractor shall comply with the "General Prohibitions Against Discrimination," 28 C.F.R. Part 35.130, and all other regulations promulgated under Title II of the ADA, as they may be amended from time to time, which are applicable to the benefits, services, programs and activities provided by the City through Contracts with outside contractors.

114. The Philadelphia Code, Section 17-104. In accordance with Section 17-104, as amended, of The Philadelphia Code, the Contractor, by execution of this Contract, certifies and represents that (1) the Contractor (including any parent company, subsidiary, exclusive distributor or company affiliated with Contractor) does not have, and will not have at any time during the term of the Contract (including any extensions thereof), any investments, licenses, franchises, management agreements or operations in Northern Ireland and (2) no product to be provided to the City under the Contract will originate in Northern Ireland, unless the Contractor has implemented the fair employment principles embodied in the MacBride Principles.

a. In the performance of the Contract, the Contractor agrees that it will not utilize any suppliers, Subcontractors or subconsultants at any tier (1) who have (or whose parent, subsidiary, exclusive distributor or company affiliate have) any investments, licenses, franchises, management agreements or operations in Northern Ireland or (2) who will provide products originating in Northern Ireland unless said supplier, subconsultant or Subcontractor has implemented the fair employment principles embodied in the MacBride Principles.

b. The Contractor agrees to cooperate with the City's Director of Finance in any manner which the said Director deems reasonable and necessary to carry out the Director's responsibilities under Section 17-104 of The Philadelphia Code. The Contractor expressly understands and agrees that any false certification or representation in connection with this Paragraph and any failure to comply with the provisions of this Paragraph shall constitute a substantial breach of the Contract entitling the City to all rights and remedies provided in the Contract or otherwise available at law (including, but not limited to, Section 17-104 of The Philadelphia Code) or in equity. In addition, the Contractor acknowledges and understands that false certification or representation is subject to prosecution under Title 18 Pa.C.S. §4904, as amended, concerning unsworn falsification to authorities.

115. Steel Products Procurement Act. The Steel Products Procurement Act, 73 P.S. § 1881, et seq., as amended, shall govern payments to the Contractor under the Contract. In seeking payment under the Contract, the Contractor represents, warrants and covenants that only steel products made in the United States as defined by the Steel Products Procurement Act have been used or supplied in the performance of the Contract and all Subcontracts thereunder. Where unidentified steel products are supplied or used under the Contract, the City will not authorize, provide for, or make any payments to the Contractor for such steel products, unless and until the Contractor shall first provide to the Project Manager documentation, including, but not limited to, invoices, bills of lading, and mill certification, attesting that the steel was melted and manufactured in the United States. Where a steel product is identifiable from its face, the City will authorize, provide for, and make payments to the Contractor for such steel products, only after the Contractor shall have submitted a certification, in a form satisfactory to the Project Manager, that the Contractor has fully complied with the requirements of the Steel Products Procurement Act. Where the Project Manager has determined, in writing that a particular steel product is not produced in the United States in sufficient quantities to satisfy the requirements of the Contract, then this Paragraph shall not apply to payments for that steel product. Failure of the Contractor to comply with the Steel Products Procurement Act shall constitute a violation of the Contract which shall entitle the City to exercise all rights and remedies provided to it by the Steel Products Procurement Act and provided to it under the Contract, either at law or in equity.

116. Business, Corporate and Slavery Era Insurance Disclosure. In accordance with Section 17-104, as amended, of The Philadelphia Code, the Seller, after execution of the Contract, will complete an affidavit certifying and representing that the Seller (including any parent company, subsidiary, exclusive distributor or company affiliated with Seller) has searched any and all records of the Seller or any predecessor business entity regarding records of investments or profits from slavery or slaveholder insurance policies during the slavery era. The names of any slaves or slaveholders described in those records must be disclosed in the affidavit.

The Seller expressly understands and agrees that any false certification or representation in connection with this Paragraph and/or any failure to comply with the provisions of this Paragraph shall constitute a substantial breach of this Contract entitling the City to all rights and remedies provided in this Contract or otherwise available in law (including, but not limited to, Section 17-104 of The Philadelphia Code) or equity and the contract will be deemed voidable. In addition, it is understood that false certification or representation is subject to prosecution under Title 18 Pa.C.S.A. Section 4904, as amended, concerning unsworn falsification to authorities.

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CITY OF PHILADELPHIA

DEPARTMENT OF STREETS
HIGHWAY DIVISION
940 Municipal Services Building
1401 John F. Kennedy Blvd
Philadelphia, PA 19102-1676

CARLTON WILLIAMS
Streets Commissioner

Date: 6/5/2019

**TO: Ted Mullen, Stantec Consulting
Ben Clements, Philadelphia Water Department**

SUBJECT: Curb Ramp Design Approval

**CITY ADA LOG: W-431
Project Name: PWD S-50162-G
Cityworks Work Order: 674957**

LOCATION: Intersection at 51st St & Baltimore Ave (SR 0013) (NWC 2), 51st & Catherine Sts (SEC 2 & SWC 2), 51st St & Cedar Ave (SWC 2), 51st & Walton Sts (NEC 1, NWC 1 & SWC 1), 52nd & Walton Sts (SEC 1 & NWC 1), 53rd & Catherine Sts (NWC 2 & SWC 2), 53rd St & Cedar Ave (SEC 2)

We have completed design review for the proposed curb ramps (**19 ramps**) for the subject job submitted by their designer. Construction can proceed according to the final plans approved, provided the applicant complies with the following additional requirements.

- Separate approval is needed from PennDOT if ramps are located in a State Route (SR).
- ADA curb cut ramp construction must comply with PennDOT RC-67M and PennDOT Publication 13M (DM-2) and all current City standards in effect during construction.
- For every ADA curb ramp constructed, the Contractor & Engineer must jointly perform an inspection to ensure ADA compliancy to the approved design standards.
- **An as-built construction submission should be submitted to Streets Department and PennDOT (only when on an SR), no later than 30 days after ramp construction is completed. Please see City's ADA Curb Ramp submission requirements for more details.**
- If after inspection of the as-built ramps, it is discovered that the ramp does NOT meet or exceed the approved design/ADA requirements, the ramp must be repaired/reconstructed at the risk and cost of the contractor/owner.
- **Field Change** : During construction, if any ramp does not meet approved design standards due to unforeseen site constraints, the same shall be brought to the notice of the City & State to obtain revised approval or resolved at the risk and cost of the contractor. (For details, see PennDOT's Field Change Process)
- **Please note: This approval is NOT a Permit. Obtain appropriate Permit for the construction and street/sidewalk closure. Be advised that Temporary Traffic Control (TTC) Plans and Temporary Pedestrian Access Routes (TPAR) Plans are required to be submitted to ROW Unit (Streets Department) for obtaining any closure Permit. TTC & TPAR should comply with City & State Standards. More guidance can be found in MUTCD.**

Please contact Nidhi Mehra (Tel-215-686-5511) to obtain approved ramp design copies and for any questions.

Regards,

Taiseer Kamal
ADA Coordinator, Room # 940 - MSB,
1401 JFK Blvd. Philadelphia, PA 19102.
CC: file



Baltimore Ave (SR 0013) and 51st Street- Ramp A

*Date of Design (yyyy mm dd)	2018	09	11
Designer 1	Edward Mullen		
Designer 2	Bernadette Callahan		
*Engineering District Code	06 - District 6-0		
*County Name	Philadelphia		
*County Code (auto)	101		
*Municipality Name	Philadelphia City		
*Municipality Code (auto)	60000		
Construction Phase	Constructed		
Ramp Crosses	Both		
Photo Log Number	2		
Number of Photos	2		
Ramp Surface	Concrete		
Surface Stable, Firm, and Slip Resistant	Yes		
Elevation Differences > 1/4"	No		(X/16")
Grate Openings or Gaps > 1/2"	No		(X/16")
Utilities in Path of Travel	No		
Water Ponding in Path of Travel	No		
Detectable Warning Surface (DWS)	Yes		
DWS type	Poly Comp		
Pedestrian Crossing and Type	Yes	Single Ramp with Single Cross Walk	
Ramp Leads to Accessible Path	Yes	Crossing Control Type	Uncontrolled
Longitudinal / Cross slope in Front of Ramp	1.00	%	1.00 %
Turning Maneuver in Street	No	Ramp Angle with Crosswalk	18 degrees
Turning Maneuver at Top of Ramp (Smax)	Yes	Comments:	
ECMS #	Alg D Grade (%)	8.9	
Intersection Ramp # of #	1	2	
*Ramp Location (Use Figure Below)	02		
*Curb Ramp Type	Type 1		
*North Leg	51st	(segment)	(offset)
*North Leg Desc.	St		
*East Leg	0013	(segment)	(offset)
*East Leg Desc.	SR	0030	1930
*South Leg	51st	(segment)	(offset)
*South Leg Desc.	St		
*West Leg	0013	(segment)	(offset)
*West Leg Desc.	SR	0030	1930
Ramp Coordinates	Latitude		
	Longitude		

Z° = Ramp Angle w/Crosswalk

Algebraic Difference = X% - (-Y%)

Northbound

Algebraic Difference = X% - Y%

Minimum 4'-0" Pedestrian Access Route (PAR) Maintained within the Limit of Work	Yes
Push Button Turning Area - Max Slope (%)	Comments:
Accessible Push Buttons	N/A
Sketch Used To Collect Field Information	No
Asset # (auto)	C-06-101-60000-51stSt-0013SR-51stSt-0013SR-2018-09-11-2-Type1
Status	Current
Archive Ramp at location #:	N/A
Level of Service	Meets RC-67M



Baltimore Ave (SR 0013) and 51st Street- Ramp A

<p><input type="checkbox"/> TYPE 1</p> <p>MAX ALG. CHANGE IN GRADE _____ % TOP TURNING AREA <input type="checkbox"/> IF YES, MAX SLOPE "S" _____ %</p>	<p><input type="checkbox"/> TYPE 1A</p> <p>MAX ALG. CHANGE IN GRADE _____ %</p>	<p><input type="checkbox"/> TYPE 2</p> <p>MAX ALG. CHANGE IN GRADE _____ %</p>																																																																																																													
<p><input type="checkbox"/> TYPE 3</p> <p>MAX ALG. CHANGE IN GRADE _____ % TOP TURNING AREA <input type="checkbox"/> IF YES, MAX SLOPE "S" _____ %</p>	<p><input type="checkbox"/> TYPE 4</p> <p>MAX ALG. CHANGE IN GRADE _____ % TOP TURNING AREA <input type="checkbox"/> IF YES, MAX SLOPE "S" _____ %</p>	<p><input type="checkbox"/> TYPE 4A</p> <p>MAX ALG. CHANGE IN GRADE _____ % TOP TURNING AREA <input type="checkbox"/> IF YES, MAX SLOPE "S" _____ %</p>																																																																																																													
<p><input type="checkbox"/> TYPE 5</p> <p>MAX ALG. CHANGE IN GRADE _____ % RAILING <input type="checkbox"/> NO <input type="checkbox"/> YES "CC" RAIL HEIGHT _____ INCHES</p>	<p><input type="checkbox"/> TYPE 6</p> <p>MAX ALG. CHANGE IN GRADE _____ %</p>	<table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr> <th colspan="2" style="background-color: #e0e0e0;">"0.00" inches or %</th> <th></th> </tr> </thead> <tbody> <tr><td>*</td><td>A</td><td>48 (IN)</td></tr> <tr><td>*</td><td>B</td><td>80 (IN)</td></tr> <tr><td>*</td><td>C</td><td>7.90 (%)</td></tr> <tr><td>*</td><td>D</td><td>6.60 (%)</td></tr> <tr><td>*</td><td>E</td><td>7.05 (%)</td></tr> <tr><td>*</td><td>F</td><td>7.90 (%)</td></tr> <tr><td>*</td><td>G</td><td>7.90 (%)</td></tr> <tr><td>*</td><td>H</td><td>6.75 (%)</td></tr> <tr><td>*</td><td>I</td><td>5.30 (%)</td></tr> <tr><td>*</td><td>J</td><td>144 (IN)</td></tr> <tr><td>*</td><td>K</td><td>4 (IN)</td></tr> <tr><td>*</td><td>L</td><td>51 (IN)</td></tr> <tr><td>*</td><td>M</td><td>155 (IN)</td></tr> <tr><td>*</td><td>N</td><td>4 (IN)</td></tr> <tr><td>*</td><td>O</td><td>88 (IN)</td></tr> <tr><td>*</td><td>P</td><td>78 (IN)</td></tr> <tr><td>*</td><td>Q</td><td>2.00 (%)</td></tr> <tr><td>*</td><td>R</td><td>1.80 (%)</td></tr> <tr><td>*</td><td>S</td><td>2.00 (%)</td></tr> <tr><td>*</td><td>T</td><td>0 (IN)</td></tr> <tr><td>*</td><td>U</td><td>0 (IN)</td></tr> <tr><td>*</td><td>V</td><td>0 (%)</td></tr> <tr><td>*</td><td>W</td><td>1.00 (%)</td></tr> <tr><td>*</td><td>X</td><td>0 (IN)</td></tr> <tr><td>*</td><td>Y</td><td>0 (IN)</td></tr> <tr><td>*</td><td>YY</td><td>123 (IN)</td></tr> <tr><td>*</td><td>Z</td><td>0 (IN)</td></tr> <tr><td>*</td><td>ZZ</td><td>120 (IN)</td></tr> <tr><td>*</td><td>AA</td><td>0 (IN)</td></tr> <tr><td>*</td><td>BB</td><td>0 (IN)</td></tr> <tr><td>*</td><td>CC</td><td>0 (IN)</td></tr> <tr><td>*</td><td>DD</td><td>4.80 (%)</td></tr> <tr><td>*</td><td>EE</td><td>3.00 (%)</td></tr> <tr style="background-color: #e0e0e0;"><td colspan="2" style="text-align: center;">DWS Transition Strip</td><td style="text-align: center;">No</td></tr> <tr><td colspan="2" style="text-align: center;">DWS Transition Strip Slope (FF)</td><td style="text-align: center;">(%)</td></tr> </tbody> </table>		"0.00" inches or %			*	A	48 (IN)	*	B	80 (IN)	*	C	7.90 (%)	*	D	6.60 (%)	*	E	7.05 (%)	*	F	7.90 (%)	*	G	7.90 (%)	*	H	6.75 (%)	*	I	5.30 (%)	*	J	144 (IN)	*	K	4 (IN)	*	L	51 (IN)	*	M	155 (IN)	*	N	4 (IN)	*	O	88 (IN)	*	P	78 (IN)	*	Q	2.00 (%)	*	R	1.80 (%)	*	S	2.00 (%)	*	T	0 (IN)	*	U	0 (IN)	*	V	0 (%)	*	W	1.00 (%)	*	X	0 (IN)	*	Y	0 (IN)	*	YY	123 (IN)	*	Z	0 (IN)	*	ZZ	120 (IN)	*	AA	0 (IN)	*	BB	0 (IN)	*	CC	0 (IN)	*	DD	4.80 (%)	*	EE	3.00 (%)	DWS Transition Strip		No	DWS Transition Strip Slope (FF)		(%)
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<p><input type="checkbox"/> BLENDED TRANSITION</p> <p>MAX ALG. CHANGE IN GRADE _____ %</p>	<p><input type="checkbox"/> NON-TYPICAL</p> <p>"A" RAMP WIDTH "B" RAMP LENGTH "C" RAMP SLOPE "D" LT FLARE SLOPE "I" RT FLARE SLOPE "J" LT SIDEWALK WIDTH "M" RT SIDEWALK WIDTH "P" SIDEWALK LANDING DEPTH "Q" LT SIDEWALK CROSS SLOPE "R" RT SIDEWALK CROSS SLOPE "S" SIDEWALK LANDING MAX SLOPE "W" RAMP MAX CROSS SLOPE</p> <p>MAX ALG. CHANGE IN GRADE _____ % SIDEWALK TURNING AREA <input type="checkbox"/> IF YES, DESIGNATE MAX SLOPE "S"</p>																																																																																																														
<p><input type="checkbox"/> TYPE A MEDIAN</p> <p><input type="checkbox"/> TYPE B MEDIAN</p>																																																																																																															

Comments ▲



Baltimore Ave (SR 0013) and 51st Street- Ramp A



Insert Picture 1



Insert Picture 4



Insert Picture 2



Insert Picture 5



Insert Picture 3



Insert Picture 6



Baltimore Ave (SR 0013) and 51st Street- Ramp A

Additional Explanation #1

Additional Explanation #2

Additional Explanation #3

Additional Explanation #4



Instructions

The District 6 Curb Ramp Design Form (CS-4401 Design, District 6) will be used for the design of all curb ramps in District 6 to ensure compliance with PENNDOT standards. The use of this form is required for to be constructed curb ramps. A thorough and rigorous review of the design for each curb ramp will be completed to ensure compliance with PENNDOT Standard RC-67M. The slopes indicated in RC-67M are absolute maximum slopes. Only slopes that are equal to or less than the indicated slopes are acceptable. When fully meeting the RC-67M standards is "Technically Infeasible", the curb ramp must be designed to the maximum extent feasible to provide handicap access. See Publication 13M - Design Manual 2, Chapter 6 for additional information on Technically Infeasible.

When used in the design phase, this form and corresponding plans will document all pertinent values and serve as a record that PENNDOT has reviewed the design. Based on the information provided in the CS-4401 and corresponding plans, the ramp will be classified as EITHER Meeting RC-67M or Technically Infeasible. If a ramp is Technically Infeasible then the Technically Infeasible Form (TIF) must be submitted with the CS-4401 and corresponding plans. PENNDOT will then review the TIF to determine if the ramp has been designed to provide access to the maximum extent feasible within the scope of the work for project. PENNDOT will review the investigated alternatives as submitted in the TIF and determine that the best possible solution was chosen and that no other design alternatives, as noted in the TIF or otherwise, within the scope of work for the project exists. Approval for all Technically Infeasible ramps will come from both the District ADA Coordinator and Assistant District Engineer by signing the Technically Infeasible Form (TIF).

INSTRUCTIONS

Before you Begin:

The electronic file is delivered in Excel 97-2003 Workbook *.xls format. When saving the file, use Excel format with a *.xls extension. Do not use a different file format. This file is compatible with Microsoft Excel 2007 and later. It is compatible with 32 bit and 64 bit computers.

The following tabs are included in the form:

- Tab 1. Inspection Form
- Tab 2. Inspection Form Continued
- Tab 3. Pictures
- Tab 4. Additional Explanation
- Tab 5. Instructions

TAB 1 – INSPECTION FORM

All "blue filled" cells require information to be entered. Many cells have a drop down selection with a header. The header is used for filling out a printed version. The header must be changed to the appropriate selection. For example: " No Yes" would be the header. Either "No" or "Yes" must be selected.

Date of Design

Enter the year, month, and day of the investigation (format yyyy dd mm).

Designer 1 & 2

Insert the name(s) of the individuals responsible for the design.

Engineering District Code

Insert the engineering district code.

County Name

Insert the appropriate county. (The county code will automatically fill in once the appropriate county is selected).

Municipality Name

Insert the appropriate municipality name.
(The municipality code will automatically fill in once the appropriate municipality name is entered).



Instructions

Construction Phase

Select the appropriate status of the curb ramp being investigated.

- Constructed. Select this phase for ramps that are to be newly constructed curb ramps.
- Existing-Survey. Select this phase for documenting existing curb ramps.
- Missing. Select this phase for documenting missing curb ramps.

Ramp Crosses

Select what type of roadway the ramp crosses and or services.

Photo Log Number

Manually insert a photo log number with approximate time the photo was taken.

Number of Photos

Enter the number of photos.

Ramp Surface

Select ramp surface type (brick, concrete or other). If "other", manually insert the surface type in the cell immediately to the right of the surface type.

Surface Stable, Firm, and Slip Resistant

Indicate if the curb ramp surface is stable, firm, and slip resistant.

Elevation Differences > 1/4"

Indicate if any vertical elevation differences between sections of sidewalk found anywhere on the curb ramp that are greater than 1/4" exist. If vertical elevation differences exist, measure to the nearest 1/16 of an inch. For example, if measured 1/2" enter "8" (8/16) on the form, or if measured 2" enter 32 (32/16) in the form.

Grate Openings or Gaps > 1/2"

Indicate if any grate openings or gaps greater than 1/2" are located within the immediate pedestrian path. If horizontal gaps exist, measure to the nearest 1/16 of an inch. For example, if measured 1/2" enter "8" (8/16) on the form, or if measured 2" enter 32 (32/16) on the form.

Utilities in Path of Travel

Indicate if there are any utilities that obstruct the path of travel.

Water Ponding in Path of Travel

Indicate if any water ponding exists within the travel path of the curb ramp.

Detectable Warning Surface (DWS)

Indicate if a detectable warning surface is to be used.

DWS Type

If "Yes" is answered in previous question, indicate what type of DWS will be used. If "Other", fill in cell to the right to indicate what type of DWS is being used.

Pedestrian Crossings

Indicate if a pedestrian crossing exists. If a pedestrian crossing does not exist, a curb ramp is not needed. The crossing may be marked or unmarked. If "Yes", the cell to the right will become highlighted with blue fill, requiring it to be completed.

- single ramp with a single cross walk.
- single ramp with a double cross walk.

Ramp Leads to Accessible Path

Indicate if the ramp leads to an accessible path, such as a sidewalk or a pedestrian pushbutton.

Crossing Control Type

Indicate the type of vehicular traffic control device/measure at the pedestrian crossing.

STOP/YIELD - If a stop or yield sign is installed or traffic is controlled by a stop or yield condition (i.e. Driveway).

UNCONTROLLED - If vehicular traffic is not controlled by a traffic control device at the pedestrian crossing.

TRAFFIC SIGNAL - If vehicular traffic is controlled by a Traffic Signal at the pedestrian crossing.

MIDBLOCK - If the pedestrian crossing is at a mid block crossing.



Instructions

Longitudinal/Cross slope in Front of Ramp

Manually insert the longitudinal and cross slope values (as a percentage) in the appropriate cells. The longitudinal slope is equal to the slope parallel to the direction of the ramp (in the street); the cross slope is equal to the slope perpendicular to the direction of the ramp (in the street).

For a pedestrian crossing where vehicles operate without a yield or stop condition (**UNCONTROLLED** and **TRAFFIC SIGNAL**) and at midblock pedestrian street crossings (**MIDBLOCK**), the cross slope in front of the ramp shall be permitted to equal the street or highway profile grade. For pedestrian crossings where vehicles operate with a yield or stop condition (**STOP/YIELD**), the maximum cross slope in front of the ramp is 2% for a compliant design. If a compliant cross slope cannot be provided in front of the ramp, for crossings with a stop or yield condition, a TIF will need to be submitted.

Ramp Angle with Crosswalk

Manually insert the angle of the ramp to the crosswalk (in degrees). It is preferred that the angle is 20 degrees or less. If the angle is greater than 20 but less than 45, provide a brief explanation in the box below justifying the angle. If the angle is greater than or equal to 45 degrees then it is considered that a turning maneuver is being made in the street. A turning maneuver in the street requires a minimum 4' x 4', 2% max slope(longitudinally and the cross slope) turning area. If the turning area does not meet all of the requirements listed above, then the ramp does not meet RC-67M and is considered Technically Infeasible. A Technically Infeasible Form(TIF) is required. Submit the TIF form with proper justification why this cannot be achieved to meet RC-67M. Show on the plan the turning area at the bottom of the ramp in the street.

Turning Maneuver in Street

Indicate if pedestrians must perform turning maneuvers in the street. If "Yes", a landing is required in the street.

Turning Maneuver at Top of Ramp (Smax)

Indicate if pedestrians must perform turning maneuvers at the top of the ramp. If "Yes", Smax is required.

ECMS # (if applicable)

Manually insert the ECMS # for the project that altered the curb ramp.

Algebraic Δ Grade (Algebraic Change in Grade)

Manually insert the maximum algebraic change between the ramp slope and roadway slope (as a percentage). See the diagram on Sheet 01 - Inspection Form.

Intersection Ramp # of

Manually enter the number for the ramp being investigated followed by the total number of ramps being investigated at the intersection. For example, if the ramp at the intersection of Ramp "X" of "Y" is being investigated, "Y" is the total number of the ramps at the intersection and "X" is the number assigned to the specific ramp being investigated.

Ramp Location

Using the intersection figure shown, select the appropriate button for which the investigated curb ramp is located.

North Leg/North Leg Description

Include the name of the roadway (if applicable) for the northbound roadway. Then directly below that cell, indicate the type of roadway (state route, boulevard, road, street, etc.). If the roadway is a state route number (format: 0000), also include the Segment # (format: 0000) and Offset # (format: 0000) of the intersection. If the roadway is a local road, include the name of the local road and description. Complete this for all legs of the intersection.

	North Leg	Description	Segment	Offset
Example 1:	00016	SR	0010	0020
Example 2:	Oak	ST	n/a	n/a

Ramp Type

Indicate the type of ramp being investigated. Depending on curb ramp type, complete all of the required dimensions on Tab 2 – Inspection Form Continued. Each cell is color-coded to indicate whether the information entered meets RC-67M. If data is entered and the cell becomes highlighted with green fill, the data meets RC-67M. If the cell becomes highlighted with red fill, the data does not meet RC-67M. If the cell becomes highlighted with yellow fill, the data does not match RC-67M but may be due to tie-ins with the existing site. The chart located to the right of the data entry form indicates the minimum measurement requirements (compliance check).

Insert the Latitude and Longitude for each Curb Ramp. Convert to Degrees. Provide a minimum of 5 decimal places for accuracy.

For Example - N40° 06' 16.08" = 40.10447° and W 75° 23' 58.11" = -75.39948°. The program will not allow you to enter a value outside of the geographical area of District 6.

Minimum 4'-0" Pedestrian Access Route(PAR) Maintained within the Limit of Work

A minimum 4'-0" Pedestrian Access Route(PAR) must be maintained within the limit of work. If this requirement is not met then a Technically Infeasible Form (TIF) must be submitted with the CS4401 and the ramps leading to and from the constrained PAR are considered non-compliant and are Technically Infeasible.

The width of the PAR is defined as the width of walkway between two obstructions. This would include flares with slopes greater than 8.3%, utility/street light poles, traffic signal poles and equipment, signs, buildings, street furniture and other unwalkable areas.

A PAR less than 4' but not less than 3' is acceptable if it is not within the slope of work for the project to relocate the obstructions. If the PAR is less than 3' and it is not within the scope of work for the project to relocate the obstruction then the ramp is considered not accessible from that approach. Select NO for Ramp Leads to Accessible Path. See Ramp Leads to Accessible Path above.



Instructions

Pedestrian Push Buttons Accessibility and Compliance

Indicate if pedestrian push buttons are accessible and compliant as defined below.

1. A push button is considered accessible if it is:
 - (a) Adjacent to and can be activated from a firm and stable surface.
2. A push button is considered compliant if it is:
 - (a) Adjacent to a level, non-slip surface to provide access from a wheelchair, and where there is a non-slip wheelchair accessible route to the ramp.
 - (b) A MIN 4' x 4' area in front of the push button is provided and
 - (i) If a turning movement is required in order to activate the push button and then get to the ramp, the max slope (longitudinal and cross slope) in the 4' x 4' area in front of the push button is 2%
 - (ii) If a turning movement is NOT required and the pedestrian/wheelchair is only expected to move forward or parallel from button (not turning), the 2% max slope is preferred but not required. Entire 999 and complete in the Comment Cell the reason why a turning movement is not required.
 - (c) Within 5'-0" of the crosswalk extended
 - (d) Between 1'-6" and 10'-0" of the edge of the curb, shoulder or pavement
 - (e) Parallel to the crosswalk to be used
 - (f) Mounted 42" above the sidewalk or finished grade to the center of the pushbutton and 10" MAX laterally from landing

- Not Accessible** - The existing or proposed push button is not accessible. Submit a technically infeasible form (TIF)
- Accessible and Non-Compliant** - The existing or proposed push button is accessible. However, it does not meet all of the requirements for compliance as noted above. Submit a technically infeasible form (TIF)
- Accessible and Compliant** - The existing or proposed push button is accessible and meets all of the requirements for compliance as noted above.
- N/A** - There are no existing or proposed push buttons for this crossing.

Sketch

Not used in Design.

Asset

The Asset number will be automatically completed as information is entered into the data entry form.

Status

Not used in Design.

Archive Ramp at location

Not used in Design.

Level of Service

Indicate the level of service, as designed:

- Meets RC-67M
- Technically Infeasible; Provides Maximum Access (TIF)

TAB 2 – INSPECTION FORM CONTINUED

Indicate the type of ramp being investigated using the curb ramp diagrams. Depending on curb ramp type, complete all of the required dimensions "A" through "EE" and the DWS transition strip values. Each cell is color-coded to indicate whether the information entered meets RC-67M. Use "999" for measurements that are not applicable.

TAB 3 - PICTURES TAB

Click on the "insert button #" button to insert the appropriate picture.

TAB 4 - ADDITIONAL EXPLANATION TAB (IF APPLICABLE)

If additional space is needed to further explain the reasoning behind a certain element but completing a Technically Infeasible Form (TIF) is not required use this area to explain the methodology behind the design as submitted.

Examples -

- (a) Additional room is need to explain why the ramp angle exceeds 20 degrees.
- (b) The longitudinal (running) slope of the sidewalk transition exceeds the 5% maximum allowed per DM2 Chapter 6 but is less than 8.33% maximum for a ramp slope.
- (c) The form is filled out for a Type 1 ramp but there is a greenstrip or other unwalkable surface in which the flare slope can exceed 10% and a 2' rolled concrete flare will be used.



Instructions

TAB 5 - INSTRUCTIONS

Use this tab as a quick reference to the instructions.

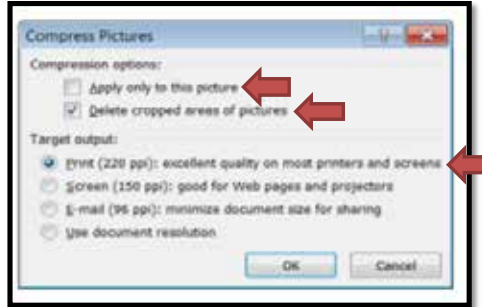
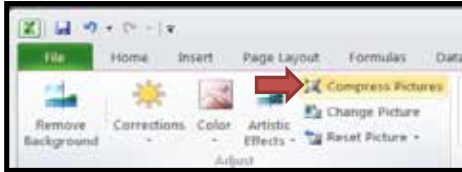
SUBMISSION

Perform the following for submission.

Reduce Image Size

To keep file size to a minimum, select a picture:

1. Click on one of the images that were inserted on Tab 03 - Pictures.
2. Click "Format" under the "Picture Tools" Ribbon.
3. In the Ribbon, click "Compress Pictures"
4. In the "Compress Pictures" Window select the options as noted below and click "OK".



Save File

When saving the file, use Excel 2007 and later format with a *.xls extension. Do not use a different file format. If all the cells are not completed, a warning message will appear. The work has been saved, but the file is not complete. Fill in remaining cells and resave.

Send file to District ADA Coordinator

Upon approval of the curb ramp designs, submit files including the approved plans of the ADA designs, in PDF format, the CS-4401 Design, District 6 Form in Excel 2007 and later format and the Technically Infeasible Form (TIF) in Excel 2007 and later format to District 6 ADA Coordinator on a compact disc. Incomplete submissions will be returned.





Baltimore Ave (SR 0013) and 51st Street- Ramp B

*Date of Design (yyyy mm dd)	2018	09	11
Designer 1	Edward Mullen		
Designer 2	Bernadette Callahan		
*Engineering District Code	06 - District 6-0		
*County Name	Philadelphia		
*County Code (auto)	101		
*Municipality Name	Philadelphia City		
*Municipality Code (auto)	60000		
Construction Phase	Constructed		
Ramp Crosses	Both		
Photo Log Number	2		
Number of Photos	2		
Ramp Surface	Concrete		
Surface Stable, Firm, and Slip Resistant	Yes		
Elevation Differences > 1/4"	No		(X/16")
Grate Openings or Gaps > 1/2"	No		(X/16")
Utilities in Path of Travel	No		
Water Ponding in Path of Travel	No		
Detectable Warning Surface (DWS)	Yes		
DWS type	Poly Comp		
Pedestrian Crossing and Type	Yes	Single Ramp with Single Cross Walk	
Ramp Leads to Accessible Path	Yes	Crossing Control Type	Stop/Yield
Longitudinal / Cross slope in Front of Ramp	1.14	%	1.20 %
Turning Maneuver in Street	No	Ramp Angle with Crosswalk	2 degrees
Turning Maneuver at Top of Ramp (Smax)	Yes	Comments:	
ECMS #	Alg D Grade (%)	8.3	
Intersection Ramp # of #	2	2	
*Ramp Location (Use Figure Below)	04		
*Curb Ramp Type	Type 1		
*North Leg	51st	(segment)	(offset)
*North Leg Desc.	St		
*East Leg	0013	(segment)	(offset)
*East Leg Desc.	SR	0030	1930
*South Leg	51st	(segment)	(offset)
*South Leg Desc.	St		
*West Leg	0013	(segment)	(offset)
*West Leg Desc.	SR	0030	1930
Ramp Coordinates	Latitude	39.94780	
	Longitude	-75.22541	

Z° = Ramp Angle w/ Crosswalk

N
M

Northbound

Algebraic Difference

Algebraic Difference = X% - (-Y%)

Algebraic Difference = X% - Y%

Minimum 4'-0" Pedestrian Access Route (PAR) Maintained within the Limit of Work	Yes	
Push Button Turning Area - Max Slope (%)		Comments:
Accessible Push Buttons	N/A	
Sketch Used To Collect Field Information	No	
Asset # (auto)	C-06-101-60000-51stSt-0013SR-51stSt-0013SR-2018-09-11-4-Type1	
Status	Current	
Archive Ramp at location #:	N/A	
Level of Service	Meets RC-67M	



Baltimore Ave (SR 0013) and 51st Street- Ramp B

TYPE 1

MAX ALG. CHANGE IN GRADE _____ %
TOP TURNING AREA
IF YES, MAX SLOPE "S" _____ %

TYPE 1A

MAX ALG. CHANGE IN GRADE _____ %

TYPE 2

MAX ALG. CHANGE IN GRADE _____ %

TYPE 3

MAX ALG. CHANGE IN GRADE _____ %
TOP TURNING AREA
IF YES, MAX SLOPE "S" _____ %

TYPE 4

MAX ALG. CHANGE IN GRADE _____ %
TOP TURNING AREA
IF YES, MAX SLOPE "S" _____ %

TYPE 4A

MAX ALG. CHANGE IN GRADE _____ %
TOP TURNING AREA
IF YES, MAX SLOPE "S" _____ %

TYPE 5

MAX ALG. CHANGE IN GRADE _____ %
RAILING NO YES
"CC" RAIL HEIGHT _____ INCHES

TYPE 6

MAX ALG. CHANGE IN GRADE _____ %

BLENDED TRANSITION

MAX ALG. CHANGE IN GRADE _____ %

NON-TYPICAL

"A" RAMP WIDTH
"B" RAMP LENGTH
"C" RAMP SLOPE
"D" LT FLARE SLOPE
"I" RT FLARE SLOPE
"J" LT SIDEWALK WIDTH
"M" RT SIDEWALK WIDTH
"P" SIDEWALK LANDING DEPTH
"Q" LT SIDEWALK CROSS SLOPE
"R" RT SIDEWALK CROSS SLOPE
"S" SIDEWALK LANDING MAX SLOPE
"W" RAMP MAX CROSS SLOPE

MAX ALG. CHANGE IN GRADE _____ %
SIDEWALK TURNING AREA
IF YES, DESIGNATE MAX SLOPE "S"

TYPE A MEDIAN

TYPE B MEDIAN

"0.00" inches or %	
* A	48 (IN)
* B	72 (IN)
* C	7.20 (%)
* D	3.60 (%)
* E	5.55 (%)
* F	7.20 (%)
* G	7.20 (%)
* H	7.90 (%)
* I	8.50 (%)
* J	156 (IN)
* K	4 (IN)
* L	88 (IN)
* M	138 (IN)
* N	4 (IN)
* O	55 (IN)
* P	78 (IN)
* Q	1.80 (%)
* R	1.80 (%)
* S	2.00 (%)
* T	0 (IN)
* U	0 (IN)
* V	0 (IN)
* W	1.50 (%)
* X	0 (IN)
* Y	0 (IN)
* YY	120 (IN)
* Z	0 (IN)
* ZZ	999 (IN)
* AA	0 (IN)
* BB	0 (IN)
* CC	0 (IN)
* DD	4.80 (%)
* EE	3.00 (%)
DWS Transition Strip	
No	
DWS Transition Strip Slope (FF)	
0.00 (%)	

Comments ▲



Baltimore Ave (SR 0013) and 51st Street- Ramp B



Insert Picture 1



Insert Picture 4



Insert Picture 2



Insert Picture 5



Insert Picture 3



Insert Picture 6



Baltimore Ave (SR 0013) and 51st Street- Ramp B

Additional Explanation #1

Additional Explanation #2

Additional Explanation #3

Additional Explanation #4



Instructions

The District 6 Curb Ramp Design Form (CS-4401 Design, District 6) will be used for the design of all curb ramps in District 6 to ensure compliance with PENNDOT standards. The use of this form is required for to be constructed curb ramps. A thorough and rigorous review of the design for each curb ramp will be completed to ensure compliance with PENNDOT Standard RC-67M. The slopes indicated in RC-67M are absolute maximum slopes. Only slopes that are equal to or less than the indicated slopes are acceptable. When fully meeting the RC-67M standards is "Technically Infeasible", the curb ramp must be designed to the maximum extent feasible to provide handicap access. See Publication 13M - Design Manual 2, Chapter 6 for additional information on Technically Infeasible.

When used in the design phase, this form and corresponding plans will document all pertinent values and serve as a record that PENNDOT has reviewed the design. Based on the information provided in the CS-4401 and corresponding plans, the ramp will be classified as EITHER Meeting RC-67M or Technically Infeasible. If a ramp is Technically Infeasible then the Technically Infeasible Form (TIF) must be submitted with the CS-4401 and corresponding plans. PENNDOT will then review the TIF to determine if the ramp has been designed to provide access to the maximum extent feasible within the scope of the work for project. PENNDOT will review the investigated alternatives as submitted in the TIF and determine that the best possible solution was chosen and that no other design alternatives, as noted in the TIF or otherwise, within the scope of work for the project exists. Approval for all Technically Infeasible ramps will come from both the District ADA Coordinator and Assistant District Engineer by signing the Technically Infeasible Form (TIF).

INSTRUCTIONS

Before you Begin:

The electronic file is delivered in Excel 97-2003 Workbook *.xls format. When saving the file, use Excel format with a *.xls extension. Do not use a different file format. This file is compatible with Microsoft Excel 2007 and later. It is compatible with 32 bit and 64 bit computers.

The following tabs are included in the form:

- Tab 1. Inspection Form
- Tab 2. Inspection Form Continued
- Tab 3. Pictures
- Tab 4. Additional Explanation
- Tab 5. Instructions

TAB 1 – INSPECTION FORM

All "blue filled" cells require information to be entered. Many cells have a drop down selection with a header. The header is used for filling out a printed version. The header must be changed to the appropriate selection. For example: " No Yes" would be the header. Either "No" or "Yes" must be selected.

Date of Design

Enter the year, month, and day of the investigation (format yyyy dd mm).

Designer 1 & 2

Insert the name(s) of the individuals responsible for the design.

Engineering District Code

Insert the engineering district code.

County Name

Insert the appropriate county. (The county code will automatically fill in once the appropriate county is selected).

Municipality Name

Insert the appropriate municipality name.
(The municipality code will automatically fill in once the appropriate municipality name is entered).



Instructions

Construction Phase

Select the appropriate status of the curb ramp being investigated.

- Constructed. Select this phase for ramps that are to be newly constructed curb ramps.
- Existing-Survey. Select this phase for documenting existing curb ramps.
- Missing. Select this phase for documenting missing curb ramps.

Ramp Crosses

Select what type of roadway the ramp crosses and or services.

Photo Log Number

Manually insert a photo log number with approximate time the photo was taken.

Number of Photos

Enter the number of photos.

Ramp Surface

Select ramp surface type (brick, concrete or other). If "other", manually insert the surface type in the cell immediately to the right of the surface type.

Surface Stable, Firm, and Slip Resistant

Indicate if the curb ramp surface is stable, firm, and slip resistant.

Elevation Differences > 1/4"

Indicate if any vertical elevation differences between sections of sidewalk found anywhere on the curb ramp that are greater than 1/4" exist. If vertical elevation differences exist, measure to the nearest 1/16 of an inch. For example, if measured 1/2" enter "8" (8/16) on the form, or if measured 2" enter 32 (32/16) in the form.

Grate Openings or Gaps > 1/2"

Indicate if any grate openings or gaps greater than 1/2" are located within the immediate pedestrian path. If horizontal gaps exist, measure to the nearest 1/16 of an inch. For example, if measured 1/2" enter "8" (8/16) on the form, or if measured 2" enter 32 (32/16) on the form.

Utilities in Path of Travel

Indicate if there are any utilities that obstruct the path of travel.

Water Ponding in Path of Travel

Indicate if any water ponding exists within the travel path of the curb ramp.

Detectable Warning Surface (DWS)

Indicate if a detectable warning surface is to be used.

DWS Type

If "Yes" is answered in previous question, indicate what type of DWS will be used. If "Other", fill in cell to the right to indicate what type of DWS is being used.

Pedestrian Crossings

Indicate if a pedestrian crossing exists. If a pedestrian crossing does not exist, a curb ramp is not needed. The crossing may be marked or unmarked. If "Yes", the cell to the right will become highlighted with blue fill, requiring it to be completed.

- single ramp with a single cross walk.
- single ramp with a double cross walk.

Ramp Leads to Accessible Path

Indicate if the ramp leads to an accessible path, such as a sidewalk or a pedestrian pushbutton.

Crossing Control Type

Indicate the type of vehicular traffic control device/measure at the pedestrian crossing.

STOP/YIELD - If a stop or yield sign is installed or traffic is controlled by a stop or yield condition (i.e. Driveway).

UNCONTROLLED - If vehicular traffic is not controlled by a traffic control device at the pedestrian crossing.

TRAFFIC SIGNAL - If vehicular traffic is controlled by a Traffic Signal at the pedestrian crossing.

MIDBLOCK - If the pedestrian crossing is at a mid block crossing.



Instructions

Longitudinal/Cross slope in Front of Ramp

Manually insert the longitudinal and cross slope values (as a percentage) in the appropriate cells. The longitudinal slope is equal to the slope parallel to the direction of the ramp (in the street); the cross slope is equal to the slope perpendicular to the direction of the ramp (in the street).

For a pedestrian crossing where vehicles operate without a yield or stop condition (**UNCONTROLLED** and **TRAFFIC SIGNAL**) and at midblock pedestrian street crossings (**MIDBLOCK**), the cross slope in front of the ramp shall be permitted to equal the street or highway profile grade. For pedestrian crossings where vehicles operate with a yield or stop condition (**STOP/YIELD**), the maximum cross slope in front of the ramp is 2% for a compliant design. If a compliant cross slope cannot be provided in front of the ramp, for crossings with a stop or yield condition, a TIF will need to be submitted.

Ramp Angle with Crosswalk

Manually insert the angle of the ramp to the crosswalk (in degrees). It is preferred that the angle is 20 degrees or less. If the angle is greater than 20 but less than 45, provide a brief explanation in the box below justifying the angle. If the angle is greater than or equal to 45 degrees then it is considered that a turning maneuver is being made in the street. A turning maneuver in the street requires a minimum 4' x 4', 2% max slope(longitudinally and the cross slope) turning area. If the turning area does not meet all of the requirements listed above, then the ramp does not meet RC-67M and is considered Technically Infeasible. A Technically Infeasible Form(TIF) is required. Submit the TIF form with proper justification why this cannot be achieved to meet RC-67M. Show on the plan the turning area at the bottom of the ramp in the street.

Turning Maneuver in Street

Indicate if pedestrians must perform turning maneuvers in the street. If "Yes", a landing is required in the street.

Turning Maneuver at Top of Ramp (Smax)

Indicate if pedestrians must perform turning maneuvers at the top of the ramp. If "Yes", Smax is required.

ECMS # (if applicable)

Manually insert the ECMS # for the project that altered the curb ramp.

Algebraic Δ Grade (Algebraic Change in Grade)

Manually insert the maximum algebraic change between the ramp slope and roadway slope (as a percentage). See the diagram on Sheet 01 - Inspection Form.

Intersection Ramp # of #

Manually enter the number for the ramp being investigated followed by the total number of ramps being investigated at the intersection. For example, if the ramp at the intersection of Ramp "X" of "Y" is being investigated, "Y" is the total number of the ramps at the intersection and "X" is the number assigned to the specific ramp being investigated.

Ramp Location

Using the intersection figure shown, select the appropriate button for which the investigated curb ramp is located.

North Leg/North Leg Description

Include the name of the roadway (if applicable) for the northbound roadway. Then directly below that cell, indicate the type of roadway (state route, boulevard, road, street, etc.). If the roadway is a state route number (format: 0000), also include the Segment # (format: 0000) and Offset # (format: 0000) of the intersection. If the roadway is a local road, include the name of the local road and description. Complete this for all legs of the intersection.

	North Leg	Description	Segment	Offset
Example 1:	00016	SR	0010	0020
Example 2:	Oak	ST	n/a	n/a

Ramp Type

Indicate the type of ramp being investigated. Depending on curb ramp type, complete all of the required dimensions on Tab 2 – Inspection Form Continued. Each cell is color-coded to indicate whether the information entered meets RC-67M. If data is entered and the cell becomes highlighted with green fill, the data meets RC-67M. If the cell becomes highlighted with red fill, the data does not meet RC-67M. If the cell becomes highlighted with yellow fill, the data does not match RC-67M but may be due to tie-ins with the existing site. The chart located to the right of the data entry form indicates the minimum measurement requirements (compliance check).

Insert the Latitude and Longitude for each Curb Ramp. Convert to Degrees. Provide a minimum of 5 decimal places for accuracy.

For Example - N40° 06' 16.08" = 40.10447° and W 75° 23' 58.11" = -75.39948°. The program will not allow you to enter a value outside of the geographical area of District 6.

Minimum 4'-0" Pedestrian Access Route(PAR) Maintained within the Limit of Work

A minimum 4'-0" Pedestrian Access Route(PAR) must be maintained within the limit of work. If this requirement is not met then a Technically Infeasible Form (TIF) must be submitted with the CS4401 and the ramps leading to and from the constrained PAR are considered non-compliant and are Technically Infeasible.

The width of the PAR is defined as the width of walkway between two obstructions. This would include flares with slopes greater than 8.3%, utility/street light poles, traffic signal poles and equipment, signs, buildings, street furniture and other unwalkable areas.

A PAR less than 4' but not less than 3' is acceptable if it is not within the slope of work for the project to relocate the obstructions. If the PAR is less than 3' and it is not within the scope of work for the project to relocate the obstruction then the ramp is considered not accessible from that approach. Select NO for Ramp Leads to Accessible Path. See Ramp Leads to Accessible Path above.



Instructions

Pedestrian Push Buttons Accessibility and Compliance

Indicate if pedestrian push buttons are accessible and compliant as defined below.

1. A push button is considered accessible if it is:
 - (a) Adjacent to and can be activated from a firm and stable surface.
2. A push button is considered compliant if it is:
 - (a) Adjacent to a level, non-slip surface to provide access from a wheelchair, and where there is a non-slip wheelchair accessible route to the ramp.
 - (b) A MIN 4' x 4' area in front of the push button is provided and
 - (i) If a turning movement is required in order to activate the push button and then get to the ramp, the max slope (longitudinal and cross slope) in the 4' x 4' area in front of the push button is 2%
 - (ii) If a turning movement is NOT required and the pedestrian/wheelchair is only expected to move forward or parallel from button (not turning), the 2% max slope is preferred but not required. Entire 999 and complete in the Comment Cell the reason why a turning movement is not required.
 - (c) Within 5'-0" of the crosswalk extended
 - (d) Between 1'-6" and 10'-0" of the edge of the curb, shoulder or pavement
 - (e) Parallel to the crosswalk to be used
 - (f) Mounted 42" above the sidewalk or finished grade to the center of the pushbutton and 10" MAX laterally from landing

Not Accessible - The existing or proposed push button is not accessible. Submit a technically infeasible form (TIF)

Accessible and Non-Compliant - The existing or proposed push button is accessible. However, it does not meet all of the requirements for compliance as noted above. Submit a technically infeasible form (TIF)

Accessible and Compliant - The existing or proposed push button is accessible and meets all of the requirements for compliance as noted above.

N/A - There are no existing or proposed push buttons for this crossing.

Sketch

Not used in Design.

Asset

The Asset number will be automatically completed as information is entered into the data entry form.

Status

Not used in Design.

Archive Ramp at location

Not used in Design.

Level of Service

Indicate the level of service, as designed:

Meets RC-67M

Technically Infeasible; Provides Maximum Access (TIF)

TAB 2 – INSPECTION FORM CONTINUED

Indicate the type of ramp being investigated using the curb ramp diagrams. Depending on curb ramp type, complete all of the required dimensions "A" through "EE" and the DWS transition strip values. Each cell is color-coded to indicate whether the information entered meets RC-67M. Use "999" for measurements that are not applicable.

TAB 3 - PICTURES TAB

Click on the "insert button #" button to insert the appropriate picture.

TAB 4 - ADDITIONAL EXPLANATION TAB (IF APPLICABLE)

If additional space is needed to further explain the reasoning behind a certain element but completing a Technically Infeasible Form (TIF) is not required use this area to explain the methodology behind the design as submitted.

Examples -

- (a) Additional room is need to explain why the ramp angle exceeds 20 degrees.
- (b) The longitudinal (running) slope of the sidewalk transition exceeds the 5% maximum allowed per DM2 Chapter 6 but is less than 8.33% maximum for a ramp slope.
- (c) The form is filled out for a Type 1 ramp but there is a greenstrip or other unwalkable surface in which the flare slope can exceed 10% and a 2' rolled concrete flare will be used.



Instructions

TAB 5 - INSTRUCTIONS

Use this tab as a quick reference to the instructions.

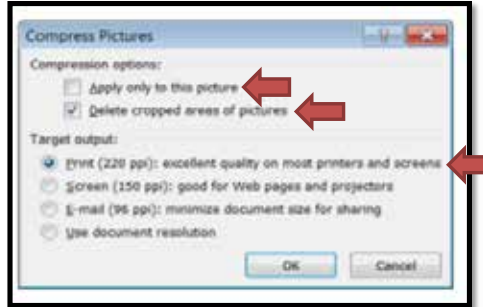
SUBMISSION

Perform the following for submission.

Reduce Image Size

To keep file size to a minimum, select a picture:

1. Click on one of the images that were inserted on Tab 03 - Pictures.
2. Click "Format" under the "Picture Tools" Ribbon.
3. In the Ribbon, click "Compress Pictures"
4. In the "Compress Pictures" Window select the options as noted below and click "OK".

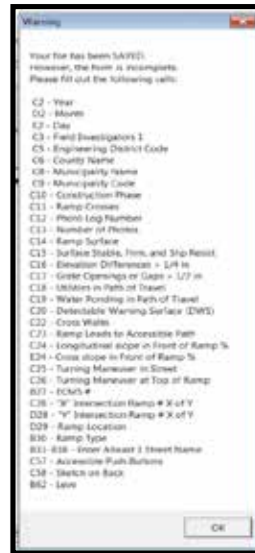


Save File

When saving the file, use Excel 2007 and later format with a *.xls extension. Do not use a different file format. If all the cells are not completed, a warning message will appear. The work has been saved, but the file is not complete. Fill in remaining cells and resave.

Send file to District ADA Coordinator

Upon approval of the curb ramp designs, submit files including the approved plans of the ADA designs, in PDF format, the CS-4401 Design, District 6 Form in Excel 2007 and later format and the Technically Infeasible Form (TIF) in Excel 2007 and later format to District 6 ADA Coordinator on a compact disc. Incomplete submissions will be returned.





51st Street and Catharine Street- Ramp C

*Date of Design (yyyy mm dd)	2018	09	11
Designer 1	Edward Mullen		
Designer 2	Bernadette Callahan		
*Engineering District Code	06 - District 6-0		
*County Name	Philadelphia		
*County Code (auto)	101		
*Municipality Name	Philadelphia City		
*Municipality Code (auto)	60000		
Construction Phase	Constructed		
Ramp Crosses	Both		
Photo Log Number	2		
Number of Photos	2		
Ramp Surface	Concrete		
Surface Stable, Firm, and Slip Resistant	Yes		
Elevation Differences > 1/4"	No		(X/16")
Grate Openings or Gaps > 1/2"	No		(X/16")
Utilities in Path of Travel	No		
Water Ponding in Path of Travel	No		
Detectable Warning Surface (DWS)	Yes		
DWS type	Poly Comp		
Pedestrian Crossing and Type	Yes	Single Ramp with Single Cross Walk	
Ramp Leads to Accessible Path	Yes	Crossing Control Type	Stop/Yield
Longitudinal / Cross slope in Front of Ramp	4.80	%	1.00 %
Turning Maneuver in Street	No	Ramp Angle with Crosswalk	15 degrees
Turning Maneuver at Top of Ramp (Smax)	Yes	Comments:	
ECMS #	Alg D Grade (%)	11.1	
Intersection Ramp # of #	1	4	
*Ramp Location (Use Figure Below)	19		
*Curb Ramp Type	Type 1		
*North Leg	51st	(segment)	(offset)
*North Leg Desc.	St		
*East Leg	Catherine	(segment)	(offset)
*East Leg Desc.	St		
*South Leg	51st	(segment)	(offset)
*South Leg Desc.	St		
*West Leg	Catherine	(segment)	(offset)
*West Leg Desc.	St		
Ramp Coordinates	Latitude	39.94876	
	Longitude	-75.22524	

Minimum 4'-0" Pedestrian Access Route(PAR) Maintained within the Limit of Work	Yes
Push Button Turning Area - Max Slope (%)	Comments:
Accessible Push Buttons	N/A
Sketch Used To Collect Field Information	No
Asset # (auto)	C-06-101-60000-51stSt-CatherineSt-51stSt-CatherineSt-2018-09-11-19-Type1
Status	Current
Archive Ramp at location #:	N/A
Level of Service	Meets RC-67M



51st Street and Catharine Street- Ramp C

<p><input type="checkbox"/> TYPE 1</p> <p>MAX ALG. CHANGE IN GRADE _____ % TOP TURNING AREA <input type="checkbox"/> IF YES, MAX SLOPE "S" _____ %</p>	<p><input type="checkbox"/> TYPE 1A</p> <p>MAX ALG. CHANGE IN GRADE _____ %</p>	<p><input type="checkbox"/> TYPE 2</p> <p>MAX ALG. CHANGE IN GRADE _____ %</p>	
<p><input type="checkbox"/> TYPE 3</p> <p>MAX ALG. CHANGE IN GRADE _____ % TOP TURNING AREA <input type="checkbox"/> IF YES, MAX SLOPE "S" _____ %</p>	<p><input type="checkbox"/> TYPE 4</p> <p>MAX ALG. CHANGE IN GRADE _____ % TOP TURNING AREA <input type="checkbox"/> IF YES, MAX SLOPE "S" _____ %</p>	<p><input type="checkbox"/> TYPE 4A</p> <p>MAX ALG. CHANGE IN GRADE _____ % TOP TURNING AREA <input type="checkbox"/> IF YES, MAX SLOPE "S" _____ %</p>	
<p><input type="checkbox"/> TYPE 5</p> <p>MAX ALG. CHANGE IN GRADE _____ % RAILING <input type="checkbox"/> NO <input type="checkbox"/> YES "CC" RAIL HEIGHT _____ INCHES</p>	<p><input type="checkbox"/> TYPE 6</p> <p>MAX ALG. CHANGE IN GRADE _____ %</p>		
<p><input type="checkbox"/> BLENDED TRANSITION</p> <p>MAX ALG. CHANGE IN GRADE _____ %</p>	<p><input type="checkbox"/> NON-TYPICAL</p> <p>"A" RAMP WIDTH "B" RAMP LENGTH "C" RAMP SLOPE "D" LT FLARE SLOPE "I" RT FLARE SLOPE "J" LT SIDEWALK WIDTH "M" RT SIDEWALK WIDTH "P" SIDEWALK LANDING DEPTH "Q" LT SIDEWALK CROSS SLOPE "R" RT SIDEWALK CROSS SLOPE "S" SIDEWALK LANDING MAX SLOPE "W" RAMP MAX CROSS SLOPE</p> <p>MAX ALG. CHANGE IN GRADE _____ % SIDEWALK TURNING AREA <input type="checkbox"/> IF YES, DESIGNATE MAX SLOPE "S"</p>		
<p><input type="checkbox"/> TYPE A MEDIAN</p> <p><input type="checkbox"/> TYPE B MEDIAN</p>			

Comments ▲

"0.00" inches or %	
* A	48 (IN)
* B	68 (IN)
* C	6.30 (%)
* D	8.40 (%)
* E	6.95 (%)
* F	6.30 (%)
* G	6.30 (%)
* H	9.55 (%)
* I	6.40 (%)
* J	118 (IN)
* K	3 (IN)
* L	39 (IN)
* M	94 (IN)
* N	4 (IN)
* O	51 (IN)
* P	48 (IN)
* Q	1.00 (%)
* R	4.40 (%)
* S	1.70 (%)
* T	0 (IN)
* U	0 (IN)
* V	0 (%)
* W	1.00 (%)
* X	0 (IN)
* Y	0 (IN)
* YY	120 (IN)
* Z	0 (IN)
* ZZ	48 (IN)
* AA	0 (IN)
* BB	0 (IN)
* CC	0 (IN)
* DD	1.90 (%)
* EE	4.60 (%)
DWS Transition Strip	
DWS Transition Strip Slope (FF)	
	0.00 (%)



51st Street and Catharine Street- Ramp C



Insert Picture 1



Insert Picture 4



Insert Picture 2



Insert Picture 5



Insert Picture 3



Insert Picture 6



51st Street and Catharine Street- Ramp C

Additional Explanation #1

Additional Explanation #2

Additional Explanation #3

Additional Explanation #4



Instructions

The District 6 Curb Ramp Design Form (CS-4401 Design, District 6) will be used for the design of all curb ramps in District 6 to ensure compliance with PENNDOT standards. The use of this form is required for to be constructed curb ramps. A thorough and rigorous review of the design for each curb ramp will be completed to ensure compliance with PENNDOT Standard RC-67M. The slopes indicated in RC-67M are absolute maximum slopes. Only slopes that are equal to or less than the indicated slopes are acceptable. When fully meeting the RC-67M standards is "Technically Infeasible", the curb ramp must be designed to the maximum extent feasible to provide handicap access. See Publication 13M - Design Manual 2, Chapter 6 for additional information on Technically Infeasible.

When used in the design phase, this form and corresponding plans will document all pertinent values and serve as a record that PENNDOT has reviewed the design. Based on the information provided in the CS-4401 and corresponding plans, the ramp will be classified as EITHER Meeting RC-67M or Technically Infeasible. If a ramp is Technically Infeasible then the Technically Infeasible Form (TIF) must be submitted with the CS-4401 and corresponding plans. PENNDOT will then review the TIF to determine if the ramp has been designed to provide access to the maximum extent feasible within the scope of the work for project. PENNDOT will review the investigated alternatives as submitted in the TIF and determine that the best possible solution was chosen and that no other design alternatives, as noted in the TIF or otherwise, within the scope of work for the project exists. Approval for all Technically Infeasible ramps will come from both the District ADA Coordinator and Assistant District Engineer by signing the Technically Infeasible Form (TIF).

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Date of Design

Enter the year, month, and day of the investigation (format yyyy dd mm).

Designer 1 & 2

Insert the name(s) of the individuals responsible for the design.

Engineering District Code

Insert the engineering district code.

County Name

Insert the appropriate county. (The county code will automatically fill in once the appropriate county is selected).

Municipality Name

Insert the appropriate municipality name.
(The municipality code will automatically fill in once the appropriate municipality name is entered).



Instructions

Construction Phase

Select the appropriate status of the curb ramp being investigated.

- Constructed. Select this phase for ramps that are to be newly constructed curb ramps.
- Existing-Survey. Select this phase for documenting existing curb ramps.
- Missing. Select this phase for documenting missing curb ramps.

Ramp Crosses

Select what type of roadway the ramp crosses and or services.

Photo Log Number

Manually insert a photo log number with approximate time the photo was taken.

Number of Photos

Enter the number of photos.

Ramp Surface

Select ramp surface type (brick, concrete or other). If "other", manually insert the surface type in the cell immediately to the right of the surface type.

Surface Stable, Firm, and Slip Resistant

Indicate if the curb ramp surface is stable, firm, and slip resistant.

Elevation Differences > 1/4"

Indicate if any vertical elevation differences between sections of sidewalk found anywhere on the curb ramp that are greater than 1/4" exist. If vertical elevation differences exist, measure to the nearest 1/16 of an inch. For example, if measured 1/2" enter "8" (8/16) on the form, or if measured 2" enter 32 (32/16) in the form.

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Indicate if there are any utilities that obstruct the path of travel.

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Indicate if any water ponding exists within the travel path of the curb ramp.

Detectable Warning Surface (DWS)

Indicate if a detectable warning surface is to be used.

DWS Type

If "Yes" is answered in previous question, indicate what type of DWS will be used. If "Other", fill in cell to the right to indicate what type of DWS is being used.

Pedestrian Crossings

Indicate if a pedestrian crossing exists. If a pedestrian crossing does not exist, a curb ramp is not needed. The crossing may be marked or unmarked. If "Yes", the cell to the right will become highlighted with blue fill, requiring it to be completed.

- single ramp with a single cross walk.
- single ramp with a double cross walk.

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Indicate if the ramp leads to an accessible path, such as a sidewalk or a pedestrian pushbutton.

Crossing Control Type

Indicate the type of vehicular traffic control device/measure at the pedestrian crossing.

STOP/YIELD - If a stop or yield sign is installed or traffic is controlled by a stop or yield condition (i.e. Driveway).

UNCONTROLLED - If vehicular traffic is not controlled by a traffic control device at the pedestrian crossing.

TRAFFIC SIGNAL - If vehicular traffic is controlled by a Traffic Signal at the pedestrian crossing.

MIDBLOCK - If the pedestrian crossing is at a mid block crossing.



Instructions

Longitudinal/Cross slope in Front of Ramp

Manually insert the longitudinal and cross slope values (as a percentage) in the appropriate cells. The longitudinal slope is equal to the slope parallel to the direction of the ramp (in the street); the cross slope is equal to the slope perpendicular to the direction of the ramp (in the street).

For a pedestrian crossing where vehicles operate without a yield or stop condition (**UNCONTROLLED** and **TRAFFIC SIGNAL**) and at midblock pedestrian street crossings (**MIDBLOCK**), the cross slope in front of the ramp shall be permitted to equal the street or highway profile grade. For pedestrian crossings where vehicles operate with a yield or stop condition (**STOP/YIELD**), the maximum cross slope in front of the ramp is 2% for a compliant design. If a compliant cross slope cannot be provided in front of the ramp, for crossings with a stop or yield condition, a TIF will need to be submitted.

Ramp Angle with Crosswalk

Manually insert the angle of the ramp to the crosswalk (in degrees). It is preferred that the angle is 20 degrees or less. If the angle is greater than 20 but less than 45, provide a brief explanation in the box below justifying the angle. If the angle is greater than or equal to 45 degrees then it is considered that a turning maneuver is being made in the street. A turning maneuver in the street requires a minimum 4' x 4', 2% max slope(longitudinally and the cross slope) turning area. If the turning area does not meet all of the requirements listed above, then the ramp does not meet RC-67M and is considered Technically Infeasible. A Technically Infeasible Form(TIF) is required. Submit the TIF form with proper justification why this cannot be achieved to meet RC-67M. Show on the plan the turning area at the bottom of the ramp in the street.

Turning Maneuver in Street

Indicate if pedestrians must perform turning maneuvers in the street. If "Yes", a landing is required in the street.

Turning Maneuver at Top of Ramp (Smax)

Indicate if pedestrians must perform turning maneuvers at the top of the ramp. If "Yes", Smax is required.

ECMS # (if applicable)

Manually insert the ECMS # for the project that altered the curb ramp.

Algebraic Δ Grade (Algebraic Change in Grade)

Manually insert the maximum algebraic change between the ramp slope and roadway slope (as a percentage). See the diagram on Sheet 01 - Inspection Form.

Intersection Ramp # of #

Manually enter the number for the ramp being investigated followed by the total number of ramps being investigated at the intersection. For example, if the ramp at the intersection of Ramp "X" of "Y" is being investigated, "Y" is the total number of the ramps at the intersection and "X" is the number assigned to the specific ramp being investigated.

Ramp Location

Using the intersection figure shown, select the appropriate button for which the investigated curb ramp is located.

North Leg/North Leg Description

Include the name of the roadway (if applicable) for the northbound roadway. Then directly below that cell, indicate the type of roadway (state route, boulevard, road, street, etc.). If the roadway is a state route number (format: 0000), also include the Segment # (format: 0000) and Offset # (format: 0000) of the intersection. If the roadway is a local road, include the name of the local road and description. Complete this for all legs of the intersection.

	North Leg	Description	Segment	Offset
Example 1:	00016	SR	0010	0020
Example 2:	Oak	ST	n/a	n/a

Ramp Type

Indicate the type of ramp being investigated. Depending on curb ramp type, complete all of the required dimensions on Tab 2 – Inspection Form Continued. Each cell is color-coded to indicate whether the information entered meets RC-67M. If data is entered and the cell becomes highlighted with green fill, the data meets RC-67M. If the cell becomes highlighted with red fill, the data does not meet RC-67M. If the cell becomes highlighted with yellow fill, the data does not match RC-67M but may be due to tie-ins with the existing site. The chart located to the right of the data entry form indicates the minimum measurement requirements (compliance check).

Insert the Latitude and Longitude for each Curb Ramp. Convert to Degrees. Provide a minimum of 5 decimal places for accuracy.

For Example - N40° 06' 16.08" = 40.10447° and W 75° 23' 58.11" = -75.39948°. The program will not allow you to enter a value outside of the geographical area of District 6.

Minimum 4'-0" Pedestrian Access Route(PAR) Maintained within the Limit of Work

A minimum 4'-0" Pedestrian Access Route(PAR) must be maintained within the limit of work. If this requirement is not met then a Technically Infeasible Form (TIF) must be submitted with the CS4401 and the ramps leading to and from the constrained PAR are considered non-compliant and are Technically Infeasible.

The width of the PAR is defined as the width of walkway between two obstructions. This would include flares with slopes greater than 8.3%, utility/street light poles, traffic signal poles and equipment, signs, buildings, street furniture and other unwalkable areas.

A PAR less than 4' but not less than 3' is acceptable if it is not within the slope of work for the project to relocate the obstructions. If the PAR is less than 3' and it is not within the scope of work for the project to relocate the obstruction then the ramp is considered not accessible from that approach. Select NO for Ramp Leads to Accessible Path. See Ramp Leads to Accessible Path above.



Instructions

Pedestrian Push Buttons Accessibility and Compliance

Indicate if pedestrian push buttons are accessible and compliant as defined below.

1. A push button is considered accessible if it is:
 - (a) Adjacent to and can be activated from a firm and stable surface.
2. A push button is considered compliant if it is:
 - (a) Adjacent to a level, non-slip surface to provide access from a wheelchair, and where there is a non-slip wheelchair accessible route to the ramp.
 - (b) A MIN 4' x 4' area in front of the push button is provided and
 - (i) If a turning movement is required in order to activate the push button and then get to the ramp, the max slope (longitudinal and cross slope) in the 4' x 4' area in front of the push button is 2%
 - (ii) If a turning movement is NOT required and the pedestrian/wheelchair is only expected to move forward or parallel from button (not turning), the 2% max slope is preferred but not required. Entire 999 and complete in the Comment Cell the reason why a turning movement is not required.
 - (c) Within 5'-0" of the crosswalk extended
 - (d) Between 1'-6" and 10'-0" of the edge of the curb, shoulder or pavement
 - (e) Parallel to the crosswalk to be used
 - (f) Mounted 42" above the sidewalk or finished grade to the center of the pushbutton and 10" MAX laterally from landing

Not Accessible - The existing or proposed push button is not accessible. Submit a technically infeasible form (TIF)

Accessible and Non-Compliant - The existing or proposed push button is accessible. However, it does not meet all of the requirements for compliance as noted above. Submit a technically infeasible form (TIF)

Accessible and Compliant - The existing or proposed push button is accessible and meets all of the requirements for compliance as noted above.

N/A - There are no existing or proposed push buttons for this crossing.

Sketch

Not used in Design.

Asset

The Asset number will be automatically completed as information is entered into the data entry form.

Status

Not used in Design.

Archive Ramp at location

Not used in Design.

Level of Service

Indicate the level of service, as designed:

Meets RC-67M

Technically Infeasible; Provides Maximum Access (TIF)

TAB 2 – INSPECTION FORM CONTINUED

Indicate the type of ramp being investigated using the curb ramp diagrams. Depending on curb ramp type, complete all of the required dimensions "A" through "EE" and the DWS transition strip values. Each cell is color-coded to indicate whether the information entered meets RC-67M. Use "999" for measurements that are not applicable.

TAB 3 - PICTURES TAB

Click on the "insert button #" button to insert the appropriate picture.

TAB 4 - ADDITIONAL EXPLANATION TAB (IF APPLICABLE)

If additional space is needed to further explain the reasoning behind a certain element but completing a Technically Infeasible Form (TIF) is not required use this area to explain the methodology behind the design as submitted.

Examples -

- (a) Additional room is need to explain why the ramp angle exceeds 20 degrees.
- (b) The longitudinal (running) slope of the sidewalk transition exceeds the 5% maximum allowed per DM2 Chapter 6 but is less than 8.33% maximum for a ramp slope.
- (c) The form is filled out for a Type 1 ramp but there is a greenstrip or other unwalkable surface in which the flare slope can exceed 10% and a 2' rolled concrete flare will be used.



Instructions

TAB 5 - INSTRUCTIONS

Use this tab as a quick reference to the instructions.

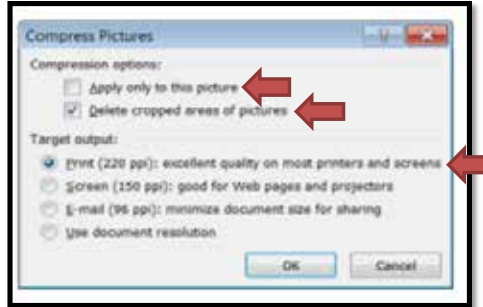
SUBMISSION

Perform the following for submission.

Reduce Image Size

To keep file size to a minimum, select a picture:

1. Click on one of the images that were inserted on Tab 03 - Pictures.
2. Click "Format" under the "Picture Tools" Ribbon.
3. In the Ribbon, click "Compress Pictures"
4. In the "Compress Pictures" Window select the options as noted below and click "OK".

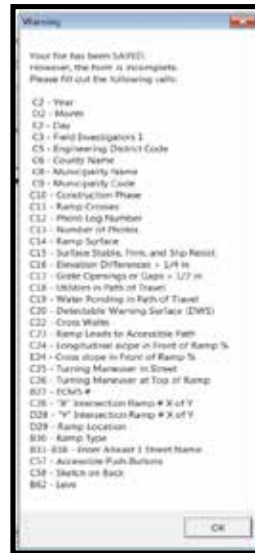


Save File

When saving the file, use Excel 2007 and later format with a *.xls extension. Do not use a different file format. If all the cells are not completed, a warning message will appear. The work has been saved, but the file is not complete. Fill in remaining cells and resave.

Send file to District ADA Coordinator

Upon approval of the curb ramp designs, submit files including the approved plans of the ADA designs, in PDF format, the CS-4401 Design, District 6 Form in Excel 2007 and later format and the Technically Infeasible Form (TIF) in Excel 2007 and later format to District 6 ADA Coordinator on a compact disc. Incomplete submissions will be returned.





51st Street and Catharine Street- Ramp D

*Date of Design (yyyy mm dd)	2018	09	11
Designer 1	Edward Mullen		
Designer 2	Bernadette Callahan		
*Engineering District Code	06 - District 6-0		
*County Name	Philadelphia		
*County Code (auto)	101		
*Municipality Name	Philadelphia City		
*Municipality Code (auto)	60000		
Construction Phase	Constructed		
Ramp Crosses	Both		
Photo Log Number	2		
Number of Photos	2		
Ramp Surface	Concrete		
Surface Stable, Firm, and Slip Resistant	Yes		
Elevation Differences > 1/4"	No		(X/16")
Grate Openings or Gaps > 1/2"	No		(X/16")
Utilities in Path of Travel	No		
Water Ponding in Path of Travel	No		
Detectable Warning Surface (DWS)	Yes		
DWS type	Poly Comp		
Pedestrian Crossing and Type	Yes	Single Ramp with Single Cross Walk	
Ramp Leads to Accessible Path	Yes	Crossing Control Type	(select)
Longitudinal / Cross slope in Front of Ramp	1.70	%	1.00 %
Turning Maneuver in Street	No	Ramp Angle with Crosswalk	18 degrees
Turning Maneuver at Top of Ramp (Smax)	Yes	Comments:	
ECMS #	Alg D Grade (%)	8.2	
Intersection Ramp # of #	2	4	
*Ramp Location (Use Figure Below)	17		
*Curb Ramp Type	Type 1		
*North Leg	51st	(segment)	(offset)
*North Leg Desc.	St		
*East Leg	Catherine	(segment)	(offset)
*East Leg Desc.	St		
*South Leg	51st	(segment)	(offset)
*South Leg Desc.	St		
*West Leg	Catherine	(segment)	(offset)
*West Leg Desc.	St		
Ramp Coordinates	Latitude	39.94876	
	Longitude	-75.22524	

Z° = Ramp Angle w\Crosswalk

Algebraic Difference = X% - (-Y%)

Algebraic Difference = X% - Y%

Minimum 4'-0" Pedestrian Access Route (PAR) Maintained within the Limit of Work	Yes
Push Button Turning Area - Max Slope (%)	Comments:
Accessible Push Buttons	N/A
Sketch Used To Collect Field Information	No
Asset # (auto)	C-06-101-60000-51stSt-CatherineSt-51stSt-CatherineSt-2018-09-11-17-Type1
Status	Current
Archive Ramp at location #:	N/A
Level of Service	Meets RC-67M



51st Street and Catharine Street- Ramp D

<p><input type="checkbox"/> TYPE 1</p> <p>MAX ALG. CHANGE IN GRADE _____ % TOP TURNING AREA <input type="checkbox"/> IF YES, MAX SLOPE "S" _____ %</p>	<p><input type="checkbox"/> TYPE 1A</p> <p>MAX ALG. CHANGE IN GRADE _____ %</p>	<p><input type="checkbox"/> TYPE 2</p> <p>MAX ALG. CHANGE IN GRADE _____ %</p>	
<p><input type="checkbox"/> TYPE 3</p> <p>MAX ALG. CHANGE IN GRADE _____ % TOP TURNING AREA <input type="checkbox"/> IF YES, MAX SLOPE "S" _____ %</p>	<p><input type="checkbox"/> TYPE 4</p> <p>MAX ALG. CHANGE IN GRADE _____ % TOP TURNING AREA <input type="checkbox"/> IF YES, MAX SLOPE "S" _____ %</p>	<p><input type="checkbox"/> TYPE 4A</p> <p>MAX ALG. CHANGE IN GRADE _____ % TOP TURNING AREA <input type="checkbox"/> IF YES, MAX SLOPE "S" _____ %</p>	
<p><input type="checkbox"/> TYPE 5</p> <p>MAX ALG. CHANGE IN GRADE _____ % RAILING <input type="checkbox"/> NO <input type="checkbox"/> YES "CC" RAIL HEIGHT _____ INCHES</p>	<p><input type="checkbox"/> TYPE 6</p> <p>MAX ALG. CHANGE IN GRADE _____ %</p>		
<p><input type="checkbox"/> BLENDED TRANSITION</p> <p>MAX ALG. CHANGE IN GRADE _____ %</p>	<p><input type="checkbox"/> NON-TYPICAL</p> <p>"A" RAMP WIDTH "B" RAMP LENGTH "C" RAMP SLOPE "D" LT FLARE SLOPE "I" RT FLARE SLOPE "J" LT SIDEWALK WIDTH "M" RT SIDEWALK WIDTH "P" SIDEWALK LANDING DEPTH "Q" LT SIDEWALK CROSS SLOPE "R" RT SIDEWALK CROSS SLOPE "S" SIDEWALK LANDING MAX SLOPE "W" RAMP MAX CROSS SLOPE</p> <p>MAX ALG. CHANGE IN GRADE _____ % SIDEWALK TURNING AREA <input type="checkbox"/> IF YES, DESIGNATE MAX SLOPE "S"</p>		
<p><input type="checkbox"/> TYPE A MEDIAN</p>			
<p><input type="checkbox"/> TYPE B MEDIAN</p>			

"0.00" inches or %	
* A	48 (IN)
* B	68 (IN)
* C	6.50 (%)
* D	7.60 (%)
* E	7.70 (%)
* F	6.50 (%)
* G	6.50 (%)
* H	9.70 (%)
* I	8.40 (%)
* J	94 (IN)
* K	4 (IN)
* L	51 (IN)
* M	118 (IN)
* N	3 (IN)
* O	38 (IN)
* P	48 (IN)
* Q	4.40 (%)
* R	1.00 (%)
* S	1.90 (%)
* T	0 (IN)
* U	0 (IN)
* V	0 (%)
* W	1.00 (%)
* X	0 (IN)
* Y	0 (IN)
* YY	120 (IN)
* Z	0 (IN)
* ZZ	999 (IN)
* AA	0 (IN)
* BB	0 (IN)
* CC	0 (IN)
* DD	1.90 (%)
* EE	4.60 (%)
DWS Transition Strip No	
DWS Transition Strip Slope (FF) 0.00 (%)	

Comments ▲



51st Street and Catharine Street- Ramp D



Insert Picture 1



Insert Picture 4



Insert Picture 2



Insert Picture 5



Insert Picture 3



Insert Picture 6



51st Street and Catharine Street- Ramp D

Additional Explanation #1

Additional Explanation #2

Additional Explanation #3

Additional Explanation #4



Instructions

The District 6 Curb Ramp Design Form (CS-4401 Design, District 6) will be used for the design of all curb ramps in District 6 to ensure compliance with PENNDOT standards. The use of this form is required for to be constructed curb ramps. A thorough and rigorous review of the design for each curb ramp will be completed to ensure compliance with PENNDOT Standard RC-67M. The slopes indicated in RC-67M are absolute maximum slopes. Only slopes that are equal to or less than the indicated slopes are acceptable. When fully meeting the RC-67M standards is "Technically Infeasible", the curb ramp must be designed to the maximum extent feasible to provide handicap access. See Publication 13M - Design Manual 2, Chapter 6 for additional information on Technically Infeasible.

When used in the design phase, this form and corresponding plans will document all pertinent values and serve as a record that PENNDOT has reviewed the design. Based on the information provided in the CS-4401 and corresponding plans, the ramp will be classified as EITHER Meeting RC-67M or Technically Infeasible. If a ramp is Technically Infeasible then the Technically Infeasible Form (TIF) must be submitted with the CS-4401 and corresponding plans. PENNDOT will then review the TIF to determine if the ramp has been designed to provide access to the maximum extent feasible within the scope of the work for project. PENNDOT will review the investigated alternatives as submitted in the TIF and determine that the best possible solution was chosen and that no other design alternatives, as noted in the TIF or otherwise, within the scope of work for the project exists. Approval for all Technically Infeasible ramps will come from both the District ADA Coordinator and Assistant District Engineer by signing the Technically Infeasible Form (TIF).

INSTRUCTIONS

Before you Begin:

The electronic file is delivered in Excel 97-2003 Workbook *.xls format. When saving the file, use Excel format with a *.xls extension. Do not use a different file format. This file is compatible with Microsoft Excel 2007 and later. It is compatible with 32 bit and 64 bit computers.

The following tabs are included in the form:

- Tab 1. Inspection Form
- Tab 2. Inspection Form Continued
- Tab 3. Pictures
- Tab 4. Additional Explanation
- Tab 5. Instructions

TAB 1 – INSPECTION FORM

All "blue filled" cells require information to be entered. Many cells have a drop down selection with a header. The header is used for filling out a printed version. The header must be changed to the appropriate selection. For example: " No Yes" would be the header. Either "No" or "Yes" must be selected.

Date of Design

Enter the year, month, and day of the investigation (format yyyy dd mm).

Designer 1 & 2

Insert the name(s) of the individuals responsible for the design.

Engineering District Code

Insert the engineering district code.

County Name

Insert the appropriate county. (The county code will automatically fill in once the appropriate county is selected).

Municipality Name

Insert the appropriate municipality name.
(The municipality code will automatically fill in once the appropriate municipality name is entered).



Instructions

Construction Phase

Select the appropriate status of the curb ramp being investigated.

- Constructed. Select this phase for ramps that are to be newly constructed curb ramps.
- Existing-Survey. Select this phase for documenting existing curb ramps.
- Missing. Select this phase for documenting missing curb ramps.

Ramp Crosses

Select what type of roadway the ramp crosses and or services.

Photo Log Number

Manually insert a photo log number with approximate time the photo was taken.

Number of Photos

Enter the number of photos.

Ramp Surface

Select ramp surface type (brick, concrete or other). If "other", manually insert the surface type in the cell immediately to the right of the surface type.

Surface Stable, Firm, and Slip Resistant

Indicate if the curb ramp surface is stable, firm, and slip resistant.

Elevation Differences > 1/4"

Indicate if any vertical elevation differences between sections of sidewalk found anywhere on the curb ramp that are greater than 1/4" exist. If vertical elevation differences exist, measure to the nearest 1/16 of an inch. For example, if measured 1/2" enter "8" (8/16) on the form, or if measured 2" enter 32 (32/16) in the form.

Grate Openings or Gaps > 1/2"

Indicate if any grate openings or gaps greater than 1/2" are located within the immediate pedestrian path. If horizontal gaps exist, measure to the nearest 1/16 of an inch. For example, if measured 1/2" enter "8" (8/16) on the form, or if measured 2" enter 32 (32/16) on the form.

Utilities in Path of Travel

Indicate if there are any utilities that obstruct the path of travel.

Water Ponding in Path of Travel

Indicate if any water ponding exists within the travel path of the curb ramp.

Detectable Warning Surface (DWS)

Indicate if a detectable warning surface is to be used.

DWS Type

If "Yes" is answered in previous question, indicate what type of DWS will be used. If "Other", fill in cell to the right to indicate what type of DWS is being used.

Pedestrian Crossings

Indicate if a pedestrian crossing exists. If a pedestrian crossing does not exist, a curb ramp is not needed. The crossing may be marked or unmarked. If "Yes", the cell to the right will become highlighted with blue fill, requiring it to be completed.

- single ramp with a single cross walk.
- single ramp with a double cross walk.

Ramp Leads to Accessible Path

Indicate if the ramp leads to an accessible path, such as a sidewalk or a pedestrian pushbutton.

Crossing Control Type

Indicate the type of vehicular traffic control device/measure at the pedestrian crossing.

STOP/YIELD - If a stop or yield sign is installed or traffic is controlled by a stop or yield condition (i.e. Driveway).

UNCONTROLLED - If vehicular traffic is not controlled by a traffic control device at the pedestrian crossing.

TRAFFIC SIGNAL - If vehicular traffic is controlled by a Traffic Signal at the pedestrian crossing.

MIDBLOCK - If the pedestrian crossing is at a mid block crossing.



Instructions

Longitudinal/Cross slope in Front of Ramp

Manually insert the longitudinal and cross slope values (as a percentage) in the appropriate cells. The longitudinal slope is equal to the slope parallel to the direction of the ramp (in the street); the cross slope is equal to the slope perpendicular to the direction of the ramp (in the street).

For a pedestrian crossing where vehicles operate without a yield or stop condition (**UNCONTROLLED** and **TRAFFIC SIGNAL**) and at midblock pedestrian street crossings (**MIDBLOCK**), the cross slope in front of the ramp shall be permitted to equal the street or highway profile grade. For pedestrian crossings where vehicles operate with a yield or stop condition (**STOP/YIELD**), the maximum cross slope in front of the ramp is 2% for a compliant design. If a compliant cross slope cannot be provided in front of the ramp, for crossings with a stop or yield condition, a TIF will need to be submitted.

Ramp Angle with Crosswalk

Manually insert the angle of the ramp to the crosswalk (in degrees). It is preferred that the angle is 20 degrees or less. If the angle is greater than 20 but less than 45, provide a brief explanation in the box below justifying the angle. If the angle is greater than or equal to 45 degrees then it is considered that a turning maneuver is being made in the street. A turning maneuver in the street requires a minimum 4' x 4', 2% max slope(longitudinally and the cross slope) turning area. If the turning area does not meet all of the requirements listed above, then the ramp does not meet RC-67M and is considered Technically Infeasible. A Technically Infeasible Form(TIF) is required. Submit the TIF form with proper justification why this cannot be achieved to meet RC-67M. Show on the plan the turning area at the bottom of the ramp in the street.

Turning Maneuver in Street

Indicate if pedestrians must perform turning maneuvers in the street. If "Yes", a landing is required in the street.

Turning Maneuver at Top of Ramp (Smax)

Indicate if pedestrians must perform turning maneuvers at the top of the ramp. If "Yes", Smax is required.

ECMS # (if applicable)

Manually insert the ECMS # for the project that altered the curb ramp.

Algebraic Δ Grade (Algebraic Change in Grade)

Manually insert the maximum algebraic change between the ramp slope and roadway slope (as a percentage). See the diagram on Sheet 01 - Inspection Form.

Intersection Ramp # of

Manually enter the number for the ramp being investigated followed by the total number of ramps being investigated at the intersection. For example, if the ramp at the intersection of Ramp "X" of "Y" is being investigated, "Y" is the total number of the ramps at the intersection and "X" is the number assigned to the specific ramp being investigated.

Ramp Location

Using the intersection figure shown, select the appropriate button for which the investigated curb ramp is located.

North Leg/North Leg Description

Include the name of the roadway (if applicable) for the northbound roadway. Then directly below that cell, indicate the type of roadway (state route, boulevard, road, street, etc.). If the roadway is a state route number (format: 0000), also include the Segment # (format: 0000) and Offset # (format: 0000) of the intersection. If the roadway is a local road, include the name of the local road and description. Complete this for all legs of the intersection.

	North Leg	Description	Segment	Offset
Example 1:	00016	SR	0010	0020
Example 2:	Oak	ST	n/a	n/a

Ramp Type

Indicate the type of ramp being investigated. Depending on curb ramp type, complete all of the required dimensions on Tab 2 – Inspection Form Continued. Each cell is color-coded to indicate whether the information entered meets RC-67M. If data is entered and the cell becomes highlighted with green fill, the data meets RC-67M. If the cell becomes highlighted with red fill, the data does not meet RC-67M. If the cell becomes highlighted with yellow fill, the data does not match RC-67M but may be due to tie-ins with the existing site. The chart located to the right of the data entry form indicates the minimum measurement requirements (compliance check).

Insert the Latitude and Longitude for each Curb Ramp. Convert to Degrees. Provide a minimum of 5 decimal places for accuracy.

For Example - N40° 06' 16.08" = 40.10447° and W 75° 23' 58.11" = -75.39948°. The program will not allow you to enter a value outside of the geographical area of District 6.

Minimum 4'-0" Pedestrian Access Route(PAR) Maintained within the Limit of Work

A minimum 4'-0" Pedestrian Access Route(PAR) must be maintained within the limit of work. If this requirement is not met then a Technically Infeasible Form (TIF) must be submitted with the CS4401 and the ramps leading to and from the constrained PAR are considered non-compliant and are Technically Infeasible.

The width of the PAR is defined as the width of walkway between two obstructions. This would include flares with slopes greater than 8.3%, utility/street light poles, traffic signal poles and equipment, signs, buildings, street furniture and other unwalkable areas.

A PAR less than 4' but not less than 3' is acceptable if it is not within the slope of work for the project to relocate the obstructions. If the PAR is less than 3' and it is not within the scope of work for the project to relocate the obstruction then the ramp is considered not accessible from that approach. Select NO for Ramp Leads to Accessible Path. See Ramp Leads to Accessible Path above.



Instructions

Pedestrian Push Buttons Accessibility and Compliance

Indicate if pedestrian push buttons are accessible and compliant as defined below.

1. A push button is considered accessible if it is:
 - (a) Adjacent to and can be activated from a firm and stable surface.
2. A push button is considered compliant if it is:
 - (a) Adjacent to a level, non-slip surface to provide access from a wheelchair, and where there is a non-slip wheelchair accessible route to the ramp.
 - (b) A MIN 4' x 4' area in front of the push button is provided and
 - (i) If a turning movement is required in order to activate the push button and then get to the ramp, the max slope (longitudinal and cross slope) in the 4' x 4' area in front of the push button is 2%
 - (ii) If a turning movement is NOT required and the pedestrian/wheelchair is only expected to move forward or parallel from button (not turning), the 2% max slope is preferred but not required. Entire 999 and complete in the Comment Cell the reason why a turning movement is not required.
 - (c) Within 5'-0" of the crosswalk extended
 - (d) Between 1'-6" and 10'-0" of the edge of the curb, shoulder or pavement
 - (e) Parallel to the crosswalk to be used
 - (f) Mounted 42" above the sidewalk or finished grade to the center of the pushbutton and 10" MAX laterally from landing

Not Accessible - The existing or proposed push button is not accessible. Submit a technically infeasible form (TIF)

Accessible and Non-Compliant - The existing or proposed push button is accessible. However, it does not meet all of the requirements for compliance as noted above. Submit a technically infeasible form (TIF)

Accessible and Compliant - The existing or proposed push button is accessible and meets all of the requirements for compliance as noted above.

N/A - There are no existing or proposed push buttons for this crossing.

Sketch

Not used in Design.

Asset

The Asset number will be automatically completed as information is entered into the data entry form.

Status

Not used in Design.

Archive Ramp at location

Not used in Design.

Level of Service

Indicate the level of service, as designed:

Meets RC-67M

Technically Infeasible; Provides Maximum Access (TIF)

TAB 2 – INSPECTION FORM CONTINUED

Indicate the type of ramp being investigated using the curb ramp diagrams. Depending on curb ramp type, complete all of the required dimensions "A" through "EE" and the DWS transition strip values. Each cell is color-coded to indicate whether the information entered meets RC-67M. Use "999" for measurements that are not applicable.

TAB 3 - PICTURES TAB

Click on the "insert button #" button to insert the appropriate picture.

TAB 4 - ADDITIONAL EXPLANATION TAB (IF APPLICABLE)

If additional space is needed to further explain the reasoning behind a certain element but completing a Technically Infeasible Form (TIF) is not required use this area to explain the methodology behind the design as submitted.

Examples -

- (a) Additional room is need to explain why the ramp angle exceeds 20 degrees.
- (b) The longitudinal (running) slope of the sidewalk transition exceeds the 5% maximum allowed per DM2 Chapter 6 but is less than 8.33% maximum for a ramp slope.
- (c) The form is filled out for a Type 1 ramp but there is a greenstrip or other unwalkable surface in which the flare slope can exceed 10% and a 2' rolled concrete flare will be used.



Instructions

TAB 5 - INSTRUCTIONS

Use this tab as a quick reference to the instructions.

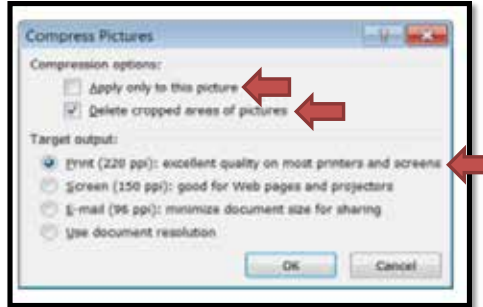
SUBMISSION

Perform the following for submission.

Reduce Image Size

To keep file size to a minimum, select a picture:

1. Click on one of the images that were inserted on Tab 03 - Pictures.
2. Click "Format" under the "Picture Tools" Ribbon.
3. In the Ribbon, click "Compress Pictures"
4. In the "Compress Pictures" Window select the options as noted below and click "OK".

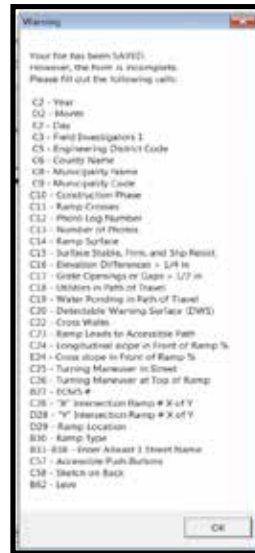


Save File

When saving the file, use Excel 2007 and later format with a *.xls extension. Do not use a different file format. If all the cells are not completed, a warning message will appear. The work has been saved, but the file is not complete. Fill in remaining cells and resave.

Send file to District ADA Coordinator

Upon approval of the curb ramp designs, submit files including the approved plans of the ADA designs, in PDF format, the CS-4401 Design, District 6 Form in Excel 2007 and later format and the Technically Infeasible Form (TIF) in Excel 2007 and later format to District 6 ADA Coordinator on a compact disc. Incomplete submissions will be returned.





51st Street and Catharine Street- Ramp E

*Date of Design (yyyy mm dd)	2018	09	11
Designer 1	Edward Mullen		
Designer 2	Bernadette Callahan		
*Engineering District Code	06 - District 6-0		
*County Name	Philadelphia		
*County Code (auto)	101		
*Municipality Name	Philadelphia City		
*Municipality Code (auto)	60000		
Construction Phase	Constructed		
Ramp Crosses	Both		
Photo Log Number	2		
Number of Photos	2		
Ramp Surface	Concrete		
Surface Stable, Firm, and Slip Resistant	Yes		
Elevation Differences > 1/4"	No		(X/16")
Grate Openings or Gaps > 1/2"	No		(X/16")
Utilities in Path of Travel	No		
Water Ponding in Path of Travel	No		
Detectable Warning Surface (DWS)	Yes		
DWS type	Poly Comp		
Pedestrian Crossing and Type	Yes	Single Ramp with Single Cross Walk	
Ramp Leads to Accessible Path	Yes	Crossing Control Type	Stop/Yield
Longitudinal / Cross slope in Front of Ramp	1.70	%	1.00 %
Turning Maneuver in Street	No	Ramp Angle with Crosswalk	20 degrees
Turning Maneuver at Top of Ramp (Smax)	Yes	Comments:	
ECMS #	Alg D Grade (%)	8.9	
Intersection Ramp # of #	3	4	
*Ramp Location (Use Figure Below)	14		
*Curb Ramp Type	Type 1		
*North Leg	51ST	(segment)	(offset)
*North Leg Desc.	ST		
*East Leg	CATHARINE	(segment)	(offset)
*East Leg Desc.	ST		
*South Leg	51ST	(segment)	(offset)
*South Leg Desc.	St		
*West Leg	CATHARINE	(segment)	(offset)
*West Leg Desc.	St		
Ramp Coordinates	Latitude		
	Longitude		

Z° = Ramp Angle w/ Crosswalk

Algebraic Difference = X% - (-Y%)
Algebraic Difference = X% - Y%

Northbound

ACCESSIBLE PUSH BUTTONS

120" MIN 120" MAX 60" MAX

DIMENSIONS ARE ABSOLUTE FOR NEW INSTALLATIONS

Minimum 4'-0" Pedestrian Access Route (PAR) Maintained within the Limit of Work	Yes
Push Button Turning Area - Max Slope (%)	Comments:
Accessible Push Buttons	N/A
Sketch Used To Collect Field Information	No
Asset # (auto)	C-06-101-60000-51STST-CATHARINESt-51STSt-CATHARINESt-2018-09-11-14-Type1
Status	Current
Archive Ramp at location #:	N/A
Level of Service	Meets RC-67M



51st Street and Catharine Street- Ramp E

<p><input type="checkbox"/> TYPE 1</p> <p>MAX ALG. CHANGE IN GRADE _____ % TOP TURNING AREA <input type="checkbox"/> IF YES, MAX SLOPE "S" _____ %</p>	<p><input type="checkbox"/> TYPE 1A</p> <p>MAX ALG. CHANGE IN GRADE _____ %</p>	<p><input type="checkbox"/> TYPE 2</p> <p>MAX ALG. CHANGE IN GRADE _____ %</p>																																																																																																												
<p><input type="checkbox"/> TYPE 3</p> <p>MAX ALG. CHANGE IN GRADE _____ % TOP TURNING AREA <input type="checkbox"/> IF YES, MAX SLOPE "S" _____ %</p>	<p><input type="checkbox"/> TYPE 4</p> <p>MAX ALG. CHANGE IN GRADE _____ % TOP TURNING AREA <input type="checkbox"/> IF YES, MAX SLOPE "S" _____ %</p>	<p><input type="checkbox"/> TYPE 4A</p> <p>MAX ALG. CHANGE IN GRADE _____ % TOP TURNING AREA <input type="checkbox"/> IF YES, MAX SLOPE "S" _____ %</p>																																																																																																												
<p><input type="checkbox"/> TYPE 5</p> <p>MAX ALG. CHANGE IN GRADE _____ % RAILING <input type="checkbox"/> NO <input type="checkbox"/> YES "CC" RAIL HEIGHT _____ INCHES</p>	<p><input type="checkbox"/> TYPE 6</p> <p>MAX ALG. CHANGE IN GRADE _____ %</p>	<table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr> <th colspan="3" style="text-align: center;">"0.00" inches or %</th> </tr> </thead> <tbody> <tr><td>*</td><td>A</td><td>48 (IN)</td></tr> <tr><td>*</td><td>B</td><td>75 (IN)</td></tr> <tr><td>*</td><td>C</td><td>7.20 (%)</td></tr> <tr><td>*</td><td>D</td><td>8.70 (%)</td></tr> <tr><td>*</td><td>E</td><td>10.25 (%)</td></tr> <tr><td>*</td><td>F</td><td>7.20 (%)</td></tr> <tr><td>*</td><td>G</td><td>7.20 (%)</td></tr> <tr><td>*</td><td>H</td><td>7.60 (%)</td></tr> <tr><td>*</td><td>I</td><td>7.10 (%)</td></tr> <tr><td>*</td><td>J</td><td>149 (IN)</td></tr> <tr><td>*</td><td>K</td><td>3 (IN)</td></tr> <tr><td>*</td><td>L</td><td>37 (IN)</td></tr> <tr><td>*</td><td>M</td><td>138 (IN)</td></tr> <tr><td>*</td><td>N</td><td>4 (IN)</td></tr> <tr><td>*</td><td>O</td><td>51 (IN)</td></tr> <tr><td>*</td><td>P</td><td>79 (IN)</td></tr> <tr><td>*</td><td>Q</td><td>1.60 (%)</td></tr> <tr><td>*</td><td>R</td><td>1.80 (%)</td></tr> <tr><td>*</td><td>S</td><td>1.90 (%)</td></tr> <tr><td>*</td><td>T</td><td>(IN)</td></tr> <tr><td>*</td><td>U</td><td>(IN)</td></tr> <tr><td>*</td><td>V</td><td>(IN)</td></tr> <tr><td>*</td><td>W</td><td>1.00 (%)</td></tr> <tr><td>*</td><td>X</td><td>(IN)</td></tr> <tr><td>*</td><td>Y</td><td>(IN)</td></tr> <tr><td>*</td><td>YY</td><td>120 (IN)</td></tr> <tr><td>*</td><td>Z</td><td>(IN)</td></tr> <tr><td>*</td><td>ZZ</td><td>60 (IN)</td></tr> <tr><td>*</td><td>AA</td><td>(IN)</td></tr> <tr><td>*</td><td>BB</td><td>(IN)</td></tr> <tr><td>*</td><td>CC</td><td>(IN)</td></tr> <tr><td>*</td><td>DD</td><td>4.80 (%)</td></tr> <tr><td>*</td><td>EE</td><td>3.80 (%)</td></tr> <tr><td colspan="2" style="text-align: center;">DWS Transition Strip</td><td>No</td></tr> <tr><td colspan="2" style="text-align: center;">DWS Transition Strip Slope (FF)</td><td>(%)</td></tr> </tbody> </table>	"0.00" inches or %			*	A	48 (IN)	*	B	75 (IN)	*	C	7.20 (%)	*	D	8.70 (%)	*	E	10.25 (%)	*	F	7.20 (%)	*	G	7.20 (%)	*	H	7.60 (%)	*	I	7.10 (%)	*	J	149 (IN)	*	K	3 (IN)	*	L	37 (IN)	*	M	138 (IN)	*	N	4 (IN)	*	O	51 (IN)	*	P	79 (IN)	*	Q	1.60 (%)	*	R	1.80 (%)	*	S	1.90 (%)	*	T	(IN)	*	U	(IN)	*	V	(IN)	*	W	1.00 (%)	*	X	(IN)	*	Y	(IN)	*	YY	120 (IN)	*	Z	(IN)	*	ZZ	60 (IN)	*	AA	(IN)	*	BB	(IN)	*	CC	(IN)	*	DD	4.80 (%)	*	EE	3.80 (%)	DWS Transition Strip		No	DWS Transition Strip Slope (FF)		(%)
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<p><input type="checkbox"/> BLENDED TRANSITION</p> <p>MAX ALG. CHANGE IN GRADE _____ %</p>	<p><input type="checkbox"/> NON-TYPICAL</p> <p>"A" RAMP WIDTH "B" RAMP LENGTH "C" RAMP SLOPE "D" LT FLARE SLOPE "I" RT FLARE SLOPE "J" LT SIDEWALK WIDTH "M" RT SIDEWALK WIDTH "P" SIDEWALK LANDING DEPTH "Q" LT SIDEWALK CROSS SLOPE "R" RT SIDEWALK CROSS SLOPE "S" SIDEWALK LANDING MAX SLOPE "W" RAMP MAX CROSS SLOPE</p> <p>MAX ALG. CHANGE IN GRADE _____ % SIDEWALK TURNING AREA <input type="checkbox"/> IF YES, DESIGNATE MAX SLOPE "S"</p>																																																																																																													
<p><input type="checkbox"/> TYPE A MEDIAN</p>	<p><input type="checkbox"/> TYPE B MEDIAN</p>																																																																																																													

Comments ▲



51st Street and Catharine Street- Ramp E



Insert Picture 1



Insert Picture 4



Insert Picture 2



Insert Picture 5



Insert Picture 3



Insert Picture 6



51st Street and Catharine Street- Ramp E

Additional Explanation #1

Additional Explanation #2

Additional Explanation #3

Additional Explanation #4



Instructions

The District 6 Curb Ramp Design Form (CS-4401 Design, District 6) will be used for the design of all curb ramps in District 6 to ensure compliance with PENNDOT standards. The use of this form is required for to be constructed curb ramps. A thorough and rigorous review of the design for each curb ramp will be completed to ensure compliance with PENNDOT Standard RC-67M. The slopes indicated in RC-67M are absolute maximum slopes. Only slopes that are equal to or less than the indicated slopes are acceptable. When fully meeting the RC-67M standards is "Technically Infeasible", the curb ramp must be designed to the maximum extent feasible to provide handicap access. See Publication 13M - Design Manual 2, Chapter 6 for additional information on Technically Infeasible.

When used in the design phase, this form and corresponding plans will document all pertinent values and serve as a record that PENNDOT has reviewed the design. Based on the information provided in the CS-4401 and corresponding plans, the ramp will be classified as EITHER Meeting RC-67M or Technically Infeasible. If a ramp is Technically Infeasible then the Technically Infeasible Form (TIF) must be submitted with the CS-4401 and corresponding plans. PENNDOT will then review the TIF to determine if the ramp has been designed to provide access to the maximum extent feasible within the scope of the work for project. PENNDOT will review the investigated alternatives as submitted in the TIF and determine that the best possible solution was chosen and that no other design alternatives, as noted in the TIF or otherwise, within the scope of work for the project exists. Approval for all Technically Infeasible ramps will come from both the District ADA Coordinator and Assistant District Engineer by signing the Technically Infeasible Form (TIF).

INSTRUCTIONS

Before you Begin:

The electronic file is delivered in Excel 97-2003 Workbook *.xls format. When saving the file, use Excel format with a *.xls extension. Do not use a different file format. This file is compatible with Microsoft Excel 2007 and later. It is compatible with 32 bit and 64 bit computers.

The following tabs are included in the form:

- Tab 1. Inspection Form
- Tab 2. Inspection Form Continued
- Tab 3. Pictures
- Tab 4. Additional Explanation
- Tab 5. Instructions

TAB 1 – INSPECTION FORM

All "blue filled" cells require information to be entered. Many cells have a drop down selection with a header. The header is used for filling out a printed version. The header must be changed to the appropriate selection. For example: " No Yes" would be the header. Either "No" or "Yes" must be selected.

Date of Design

Enter the year, month, and day of the investigation (format yyyy dd mm).

Designer 1 & 2

Insert the name(s) of the individuals responsible for the design.

Engineering District Code

Insert the engineering district code.

County Name

Insert the appropriate county. (The county code will automatically fill in once the appropriate county is selected).

Municipality Name

Insert the appropriate municipality name.
(The municipality code will automatically fill in once the appropriate municipality name is entered).



Instructions

Construction Phase

Select the appropriate status of the curb ramp being investigated.

- Constructed. Select this phase for ramps that are to be newly constructed curb ramps.
- Existing-Survey. Select this phase for documenting existing curb ramps.
- Missing. Select this phase for documenting missing curb ramps.

Ramp Crosses

Select what type of roadway the ramp crosses and or services.

Photo Log Number

Manually insert a photo log number with approximate time the photo was taken.

Number of Photos

Enter the number of photos.

Ramp Surface

Select ramp surface type (brick, concrete or other). If "other", manually insert the surface type in the cell immediately to the right of the surface type.

Surface Stable, Firm, and Slip Resistant

Indicate if the curb ramp surface is stable, firm, and slip resistant.

Elevation Differences > 1/4"

Indicate if any vertical elevation differences between sections of sidewalk found anywhere on the curb ramp that are greater than 1/4" exist. If vertical elevation differences exist, measure to the nearest 1/16 of an inch. For example, if measured 1/2" enter "8" (8/16) on the form, or if measured 2" enter 32 (32/16) in the form.

Grate Openings or Gaps > 1/2"

Indicate if any grate openings or gaps greater than 1/2" are located within the immediate pedestrian path. If horizontal gaps exist, measure to the nearest 1/16 of an inch. For example, if measured 1/2" enter "8" (8/16) on the form, or if measured 2" enter 32 (32/16) on the form.

Utilities in Path of Travel

Indicate if there are any utilities that obstruct the path of travel.

Water Ponding in Path of Travel

Indicate if any water ponding exists within the travel path of the curb ramp.

Detectable Warning Surface (DWS)

Indicate if a detectable warning surface is to be used.

DWS Type

If "Yes" is answered in previous question, indicate what type of DWS will be used. If "Other", fill in cell to the right to indicate what type of DWS is being used.

Pedestrian Crossings

Indicate if a pedestrian crossing exists. If a pedestrian crossing does not exist, a curb ramp is not needed. The crossing may be marked or unmarked. If "Yes", the cell to the right will become highlighted with blue fill, requiring it to be completed.

- single ramp with a single cross walk.
- single ramp with a double cross walk.

Ramp Leads to Accessible Path

Indicate if the ramp leads to an accessible path, such as a sidewalk or a pedestrian pushbutton.

Crossing Control Type

Indicate the type of vehicular traffic control device/measure at the pedestrian crossing.

STOP/YIELD - If a stop or yield sign is installed or traffic is controlled by a stop or yield condition (i.e. Driveway).

UNCONTROLLED - If vehicular traffic is not controlled by a traffic control device at the pedestrian crossing.

TRAFFIC SIGNAL - If vehicular traffic is controlled by a Traffic Signal at the pedestrian crossing.

MIDBLOCK - If the pedestrian crossing is at a mid block crossing.



Instructions

Longitudinal/Cross slope in Front of Ramp

Manually insert the longitudinal and cross slope values (as a percentage) in the appropriate cells. The longitudinal slope is equal to the slope parallel to the direction of the ramp (in the street); the cross slope is equal to the slope perpendicular to the direction of the ramp (in the street).

For a pedestrian crossing where vehicles operate without a yield or stop condition (**UNCONTROLLED** and **TRAFFIC SIGNAL**) and at midblock pedestrian street crossings (**MIDBLOCK**), the cross slope in front of the ramp shall be permitted to equal the street or highway profile grade. For pedestrian crossings where vehicles operate with a yield or stop condition (**STOP/YIELD**), the maximum cross slope in front of the ramp is 2% for a compliant design. If a compliant cross slope cannot be provided in front of the ramp, for crossings with a stop or yield condition, a TIF will need to be submitted.

Ramp Angle with Crosswalk

Manually insert the angle of the ramp to the crosswalk (in degrees). It is preferred that the angle is 20 degrees or less. If the angle is greater than 20 but less than 45, provide a brief explanation in the box below justifying the angle. If the angle is greater than or equal to 45 degrees then it is considered that a turning maneuver is being made in the street. A turning maneuver in the street requires a minimum 4' x 4', 2% max slope(longitudinally and the cross slope) turning area. If the turning area does not meet all of the requirements listed above, then the ramp does not meet RC-67M and is considered Technically Infeasible. A Technically Infeasible Form(TIF) is required. Submit the TIF form with proper justification why this cannot be achieved to meet RC-67M. Show on the plan the turning area at the bottom of the ramp in the street.

Turning Maneuver in Street

Indicate if pedestrians must perform turning maneuvers in the street. If "Yes", a landing is required in the street.

Turning Maneuver at Top of Ramp (Smax)

Indicate if pedestrians must perform turning maneuvers at the top of the ramp. If "Yes", Smax is required.

ECMS # (if applicable)

Manually insert the ECMS # for the project that altered the curb ramp.

Algebraic Δ Grade (Algebraic Change in Grade)

Manually insert the maximum algebraic change between the ramp slope and roadway slope (as a percentage). See the diagram on Sheet 01 - Inspection Form.

Intersection Ramp # of #

Manually enter the number for the ramp being investigated followed by the total number of ramps being investigated at the intersection. For example, if the ramp at the intersection of Ramp "X" of "Y" is being investigated, "Y" is the total number of the ramps at the intersection and "X" is the number assigned to the specific ramp being investigated.

Ramp Location

Using the intersection figure shown, select the appropriate button for which the investigated curb ramp is located.

North Leg/North Leg Description

Include the name of the roadway (if applicable) for the northbound roadway. Then directly below that cell, indicate the type of roadway (state route, boulevard, road, street, etc.). If the roadway is a state route number (format: 0000), also include the Segment # (format: 0000) and Offset # (format: 0000) of the intersection. If the roadway is a local road, include the name of the local road and description. Complete this for all legs of the intersection.

	North Leg	Description	Segment	Offset
Example 1:	00016	SR	0010	0020
Example 2:	Oak	ST	n/a	n/a

Ramp Type

Indicate the type of ramp being investigated. Depending on curb ramp type, complete all of the required dimensions on Tab 2 – Inspection Form Continued. Each cell is color-coded to indicate whether the information entered meets RC-67M. If data is entered and the cell becomes highlighted with green fill, the data meets RC-67M. If the cell becomes highlighted with red fill, the data does not meet RC-67M. If the cell becomes highlighted with yellow fill, the data does not match RC-67M but may be due to tie-ins with the existing site. The chart located to the right of the data entry form indicates the minimum measurement requirements (compliance check).

Insert the Latitude and Longitude for each Curb Ramp. Convert to Degrees. Provide a minimum of 5 decimal places for accuracy.

For Example - N40° 06' 16.08" = 40.10447° and W 75° 23' 58.11" = -75.39948°. The program will not allow you to enter a value outside of the geographical area of District 6.

Minimum 4'-0" Pedestrian Access Route(PAR) Maintained within the Limit of Work

A minimum 4'-0" Pedestrian Access Route(PAR) must be maintained within the limit of work. If this requirement is not met then a Technically Infeasible Form (TIF) must be submitted with the CS4401 and the ramps leading to and from the constrained PAR are considered non-compliant and are Technically Infeasible.

The width of the PAR is defined as the width of walkway between two obstructions. This would include flares with slopes greater than 8.3%, utility/street light poles, traffic signal poles and equipment, signs, buildings, street furniture and other unwalkable areas.

A PAR less than 4' but not less than 3' is acceptable if it is not within the slope of work for the project to relocate the obstructions. If the PAR is less than 3' and it is not within the scope of work for the project to relocate the obstruction then the ramp is considered not accessible from that approach. Select NO for Ramp Leads to Accessible Path. See Ramp Leads to Accessible Path above.



Instructions

Pedestrian Push Buttons Accessibility and Compliance

Indicate if pedestrian push buttons are accessible and compliant as defined below.

1. A push button is considered accessible if it is:
 - (a) Adjacent to and can be activated from a firm and stable surface.
2. A push button is considered compliant if it is:
 - (a) Adjacent to a level, non-slip surface to provide access from a wheelchair, and where there is a non-slip wheelchair accessible route to the ramp.
 - (b) A MIN 4' x 4' area in front of the push button is provided and
 - (i) If a turning movement is required in order to activate the push button and then get to the ramp, the max slope (longitudinal and cross slope) in the 4' x 4' area in front of the push button is 2%
 - (ii) If a turning movement is NOT required and the pedestrian/wheelchair is only expected to move forward or parallel from button (not turning), the 2% max slope is preferred but not required. Entire 999 and complete in the Comment Cell the reason why a turning movement is not required.
 - (c) Within 5'-0" of the crosswalk extended
 - (d) Between 1'-6" and 10'-0" of the edge of the curb, shoulder or pavement
 - (e) Parallel to the crosswalk to be used
 - (f) Mounted 42" above the sidewalk or finished grade to the center of the pushbutton and 10" MAX laterally from landing

- Not Accessible** - The existing or proposed push button is not accessible. Submit a technically infeasible form (TIF)
- Accessible and Non-Compliant** - The existing or proposed push button is accessible. However, it does not meet all of the requirements for compliance as noted above. Submit a technically infeasible form (TIF)
- Accessible and Compliant** - The existing or proposed push button is accessible and meets all of the requirements for compliance as noted above.
- N/A** - There are no existing or proposed push buttons for this crossing.

Sketch

Not used in Design.

Asset

The Asset number will be automatically completed as information is entered into the data entry form.

Status

Not used in Design.

Archive Ramp at location

Not used in Design.

Level of Service

Indicate the level of service, as designed:

- Meets RC-67M
- Technically Infeasible; Provides Maximum Access (TIF)

TAB 2 – INSPECTION FORM CONTINUED

Indicate the type of ramp being investigated using the curb ramp diagrams. Depending on curb ramp type, complete all of the required dimensions "A" through "EE" and the DWS transition strip values. Each cell is color-coded to indicate whether the information entered meets RC-67M. Use "999" for measurements that are not applicable.

TAB 3 - PICTURES TAB

Click on the "insert button #" button to insert the appropriate picture.

TAB 4 - ADDITIONAL EXPLANATION TAB (IF APPLICABLE)

If additional space is needed to further explain the reasoning behind a certain element but completing a Technically Infeasible Form (TIF) is not required use this area to explain the methodology behind the design as submitted.

Examples -

- (a) Additional room is need to explain why the ramp angle exceeds 20 degrees.
- (b) The longitudinal (running) slope of the sidewalk transition exceeds the 5% maximum allowed per DM2 Chapter 6 but is less than 8.33% maximum for a ramp slope.
- (c) The form is filled out for a Type 1 ramp but there is a greenstrip or other unwalkable surface in which the flare slope can exceed 10% and a 2' rolled concrete flare will be used.



Instructions

TAB 5 - INSTRUCTIONS

Use this tab as a quick reference to the instructions.

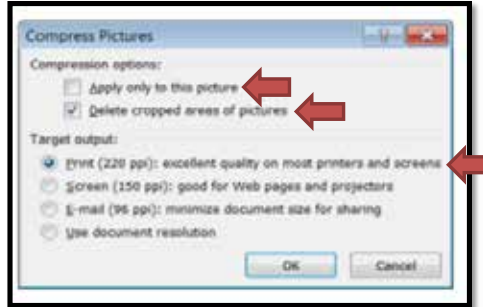
SUBMISSION

Perform the following for submission.

Reduce Image Size

To keep file size to a minimum, select a picture:

1. Click on one of the images that were inserted on Tab 03 - Pictures.
2. Click "Format" under the "Picture Tools" Ribbon.
3. In the Ribbon, click "Compress Pictures"
4. In the "Compress Pictures" Window select the options as noted below and click "OK".

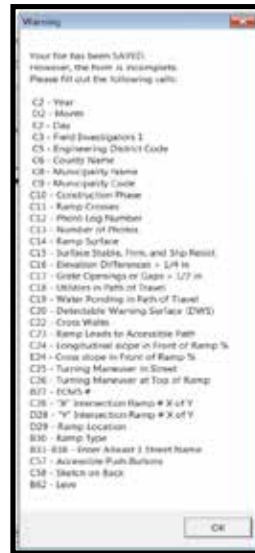


Save File

When saving the file, use Excel 2007 and later format with a *.xls extension. Do not use a different file format. If all the cells are not completed, a warning message will appear. The work has been saved, but the file is not complete. Fill in remaining cells and resave.

Send file to District ADA Coordinator

Upon approval of the curb ramp designs, submit files including the approved plans of the ADA designs, in PDF format, the CS-4401 Design, District 6 Form in Excel 2007 and later format and the Technically Infeasible Form (TIF) in Excel 2007 and later format to District 6 ADA Coordinator on a compact disc. Incomplete submissions will be returned.





Catharine Street and 51st Street- Ramp F

*Date of Design (yyyy mm dd)	2018	09	11
Designer 1	Edward Mullen		
Designer 2	Bernadette Callahan		
*Engineering District Code	06 - District 6-0		
*County Name	Philadelphia		
*County Code (auto)	101		
*Municipality Name	Philadelphia City		
*Municipality Code (auto)	60000		
Construction Phase	Constructed		
Ramp Crosses	Both		
Photo Log Number	2		
Number of Photos	2		
Ramp Surface	Concrete		
Surface Stable, Firm, and Slip Resistant	Yes		
Elevation Differences > 1/4"	No		(X/16")
Grate Openings or Gaps > 1/2"	No		(X/16")
Utilities in Path of Travel	No		
Water Ponding in Path of Travel	No		
Detectable Warning Surface (DWS)	Yes		
DWS type	Poly Comp		
Pedestrian Crossing and Type	Yes	Single Ramp with Single Cross Walk	
Ramp Leads to Accessible Path	Yes	Crossing Control Type	Stop/Yield
Longitudinal / Cross slope in Front of Ramp	1.90	%	1.00 %
Turning Maneuver in Street	No	Ramp Angle with Crosswalk	19 degrees
Turning Maneuver at Top of Ramp (Smax)	Yes	Comments:	
ECMS #	Alg D Grade (%)	8.4	
Intersection Ramp # of #	1	2	
*Ramp Location (Use Figure Below)	12		
*Curb Ramp Type	Type 1		
*North Leg	51st	(segment)	(offset)
*North Leg Desc.	St		
*East Leg	Catharine	(segment)	(offset)
*East Leg Desc.	St		
*South Leg	51st	(segment)	(offset)
*South Leg Desc.	St		
*West Leg	Catharine	(segment)	(offset)
*West Leg Desc.	St		
Ramp Coordinates	Latitude		
	Longitude		

Minimum 4'-0" Pedestrian Access Route (PAR) Maintained within the Limit of Work	Yes
Push Button Turning Area - Max Slope (%)	Comments:
Accessible Push Buttons	N/A
Sketch Used To Collect Field Information	No
Asset # (auto)	C-06-101-60000-51stSt-CatharineSt-51stSt-CatharineSt-2018-09-11-12-Type1
Status	Current
Archive Ramp at location #:	N/A
Level of Service	Meets RC-67M



Catharine Street and 51st Street- Ramp F

<p><input type="checkbox"/> TYPE 1</p> <p>MAX ALG. CHANGE IN GRADE _____ % TOP TURNING AREA <input type="checkbox"/> IF YES, MAX SLOPE "S" _____ %</p>	<p><input type="checkbox"/> TYPE 1A</p> <p>MAX ALG. CHANGE IN GRADE _____ %</p>	<p><input type="checkbox"/> TYPE 2</p> <p>MAX ALG. CHANGE IN GRADE _____ %</p>	<p style="text-align: center;">"0.00" inches or %</p> <table border="1" style="width:100%; border-collapse: collapse;"> <tr><td>* A</td><td>48</td><td>(IN)</td></tr> <tr><td>* B</td><td>77</td><td>(IN)</td></tr> <tr><td>* C</td><td>6.50</td><td>(%)</td></tr> <tr><td>* D</td><td>8.50</td><td>(%)</td></tr> <tr><td>* E</td><td>8.05</td><td>(%)</td></tr> <tr><td>* F</td><td>6.50</td><td>(%)</td></tr> <tr><td>* G</td><td>6.50</td><td>(%)</td></tr> <tr><td>* H</td><td>9.05</td><td>(%)</td></tr> <tr><td>* I</td><td>7.40</td><td>(%)</td></tr> <tr><td>* J</td><td>149</td><td>(IN)</td></tr> <tr><td>* K</td><td>4</td><td>(IN)</td></tr> <tr><td>* L</td><td>51</td><td>(IN)</td></tr> <tr><td>* M</td><td>138</td><td>(IN)</td></tr> <tr><td>* N</td><td>3</td><td>(IN)</td></tr> <tr><td>* O</td><td>37</td><td>(IN)</td></tr> <tr><td>* P</td><td>80</td><td>(IN)</td></tr> <tr><td>* Q</td><td>1.50</td><td>(%)</td></tr> <tr><td>* R</td><td>1.80</td><td>(%)</td></tr> <tr><td>* S</td><td>1.80</td><td>(%)</td></tr> <tr><td>* T</td><td>0</td><td>(IN)</td></tr> <tr><td>* U</td><td>0</td><td>(IN)</td></tr> <tr><td>* V</td><td></td><td>(%)</td></tr> <tr><td>* W</td><td>1.00</td><td>(%)</td></tr> <tr><td>* X</td><td>0</td><td>(IN)</td></tr> <tr><td>* Y</td><td>0</td><td>(IN)</td></tr> <tr><td>* YY</td><td>120</td><td>(IN)</td></tr> <tr><td>* Z</td><td>0</td><td>(IN)</td></tr> <tr><td>* ZZ</td><td>48</td><td>(IN)</td></tr> <tr><td>* AA</td><td>0</td><td>(IN)</td></tr> <tr><td>* BB</td><td>0</td><td>(IN)</td></tr> <tr><td>* CC</td><td>0</td><td>(IN)</td></tr> <tr><td>* DD</td><td>3.00</td><td>(%)</td></tr> <tr><td>* EE</td><td>2.50</td><td>(%)</td></tr> <tr><td colspan="2" style="background-color: #00FFFF;">DWS Transition Strip</td><td>No</td></tr> <tr><td colspan="2" style="background-color: #00FFFF;">DWS Transition Strip Slope (FF)</td><td>(%)</td></tr> </table>	* A	48	(IN)	* B	77	(IN)	* C	6.50	(%)	* D	8.50	(%)	* E	8.05	(%)	* F	6.50	(%)	* G	6.50	(%)	* H	9.05	(%)	* I	7.40	(%)	* J	149	(IN)	* K	4	(IN)	* L	51	(IN)	* M	138	(IN)	* N	3	(IN)	* O	37	(IN)	* P	80	(IN)	* Q	1.50	(%)	* R	1.80	(%)	* S	1.80	(%)	* T	0	(IN)	* U	0	(IN)	* V		(%)	* W	1.00	(%)	* X	0	(IN)	* Y	0	(IN)	* YY	120	(IN)	* Z	0	(IN)	* ZZ	48	(IN)	* AA	0	(IN)	* BB	0	(IN)	* CC	0	(IN)	* DD	3.00	(%)	* EE	2.50	(%)	DWS Transition Strip		No	DWS Transition Strip Slope (FF)		(%)
* A	48	(IN)																																																																																																										
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<p><input type="checkbox"/> TYPE 3</p> <p>MAX ALG. CHANGE IN GRADE _____ % TOP TURNING AREA <input type="checkbox"/> IF YES, MAX SLOPE "S" _____ %</p>	<p><input type="checkbox"/> TYPE 4</p> <p>MAX ALG. CHANGE IN GRADE _____ % TOP TURNING AREA <input type="checkbox"/> IF YES, MAX SLOPE "S" _____ %</p>	<p><input type="checkbox"/> TYPE 4A</p> <p>MAX ALG. CHANGE IN GRADE _____ % TOP TURNING AREA <input type="checkbox"/> IF YES, MAX SLOPE "S" _____ %</p>																																																																																																										
<p><input type="checkbox"/> TYPE 5</p> <p>MAX ALG. CHANGE IN GRADE _____ % RAILING <input type="checkbox"/> NO <input type="checkbox"/> YES "CC" RAIL HEIGHT _____ INCHES</p>	<p><input type="checkbox"/> TYPE 6</p> <p>MAX ALG. CHANGE IN GRADE _____ %</p>																																																																																																											
<p><input type="checkbox"/> BLENDED TRANSITION</p> <p>MAX ALG. CHANGE IN GRADE _____ %</p>	<p><input type="checkbox"/> NON-TYPICAL</p> <p>"A" RAMP WIDTH "B" RAMP LENGTH "C" RAMP SLOPE "D" LT FLARE SLOPE "I" RT FLARE SLOPE "J" LT SIDEWALK WIDTH "M" RT SIDEWALK WIDTH "P" SIDEWALK LANDING DEPTH "Q" LT SIDEWALK CROSS SLOPE "R" RT SIDEWALK CROSS SLOPE "S" SIDEWALK LANDING MAX SLOPE "W" RAMP MAX CROSS SLOPE</p> <p>MAX ALG. CHANGE IN GRADE _____ % SIDEWALK TURNING AREA <input type="checkbox"/> IF YES, DESIGNATE MAX SLOPE "S"</p>																																																																																																											
<p><input type="checkbox"/> TYPE A MEDIAN</p>																																																																																																												
<p><input type="checkbox"/> TYPE B MEDIAN</p>																																																																																																												

Comments ▲



Catharine Street and 51st Street- Ramp F



Insert Picture 1



Insert Picture 4



Insert Picture 2



Insert Picture 5



Insert Picture 3



Insert Picture 6



Catharine Street and 51st Street- Ramp F

Additional Explanation #1

Additional Explanation #2

Additional Explanation #3

Additional Explanation #4



Instructions

The District 6 Curb Ramp Design Form (CS-4401 Design, District 6) will be used for the design of all curb ramps in District 6 to ensure compliance with PENNDOT standards. The use of this form is required for to be constructed curb ramps. A thorough and rigorous review of the design for each curb ramp will be completed to ensure compliance with PENNDOT Standard RC-67M. The slopes indicated in RC-67M are absolute maximum slopes. Only slopes that are equal to or less than the indicated slopes are acceptable. When fully meeting the RC-67M standards is "Technically Infeasible", the curb ramp must be designed to the maximum extent feasible to provide handicap access. See Publication 13M - Design Manual 2, Chapter 6 for additional information on Technically Infeasible.

When used in the design phase, this form and corresponding plans will document all pertinent values and serve as a record that PENNDOT has reviewed the design. Based on the information provided in the CS-4401 and corresponding plans, the ramp will be classified as EITHER Meeting RC-67M or Technically Infeasible. If a ramp is Technically Infeasible then the Technically Infeasible Form (TIF) must be submitted with the CS-4401 and corresponding plans. PENNDOT will then review the TIF to determine if the ramp has been designed to provide access to the maximum extent feasible within the scope of the work for project. PENNDOT will review the investigated alternatives as submitted in the TIF and determine that the best possible solution was chosen and that no other design alternatives, as noted in the TIF or otherwise, within the scope of work for the project exists. Approval for all Technically Infeasible ramps will come from both the District ADA Coordinator and Assistant District Engineer by signing the Technically Infeasible Form (TIF).

INSTRUCTIONS

Before you Begin:

The electronic file is delivered in Excel 97-2003 Workbook *.xls format. When saving the file, use Excel format with a *.xls extension. Do not use a different file format. This file is compatible with Microsoft Excel 2007 and later. It is compatible with 32 bit and 64 bit computers.

The following tabs are included in the form:

- Tab 1. Inspection Form
- Tab 2. Inspection Form Continued
- Tab 3. Pictures
- Tab 4. Additional Explanation
- Tab 5. Instructions

TAB 1 – INSPECTION FORM

All "blue filled" cells require information to be entered. Many cells have a drop down selection with a header. The header is used for filling out a printed version. The header must be changed to the appropriate selection. For example: " No Yes" would be the header. Either "No" or "Yes" must be selected.

Date of Design

Enter the year, month, and day of the investigation (format yyyy dd mm).

Designer 1 & 2

Insert the name(s) of the individuals responsible for the design.

Engineering District Code

Insert the engineering district code.

County Name

Insert the appropriate county. (The county code will automatically fill in once the appropriate county is selected).

Municipality Name

Insert the appropriate municipality name.
(The municipality code will automatically fill in once the appropriate municipality name is entered).



Instructions

Construction Phase

Select the appropriate status of the curb ramp being investigated.

- Constructed. Select this phase for ramps that are to be newly constructed curb ramps.
- Existing-Survey. Select this phase for documenting existing curb ramps.
- Missing. Select this phase for documenting missing curb ramps.

Ramp Crosses

Select what type of roadway the ramp crosses and or services.

Photo Log Number

Manually insert a photo log number with approximate time the photo was taken.

Number of Photos

Enter the number of photos.

Ramp Surface

Select ramp surface type (brick, concrete or other). If "other", manually insert the surface type in the cell immediately to the right of the surface type.

Surface Stable, Firm, and Slip Resistant

Indicate if the curb ramp surface is stable, firm, and slip resistant.

Elevation Differences > 1/4"

Indicate if any vertical elevation differences between sections of sidewalk found anywhere on the curb ramp that are greater than 1/4" exist. If vertical elevation differences exist, measure to the nearest 1/16 of an inch. For example, if measured 1/2" enter "8" (8/16) on the form, or if measured 2" enter 32 (32/16) in the form.

Grate Openings or Gaps > 1/2"

Indicate if any grate openings or gaps greater than 1/2" are located within the immediate pedestrian path. If horizontal gaps exist, measure to the nearest 1/16 of an inch. For example, if measured 1/2" enter "8" (8/16) on the form, or if measured 2" enter 32 (32/16) on the form.

Utilities in Path of Travel

Indicate if there are any utilities that obstruct the path of travel.

Water Ponding in Path of Travel

Indicate if any water ponding exists within the travel path of the curb ramp.

Detectable Warning Surface (DWS)

Indicate if a detectable warning surface is to be used.

DWS Type

If "Yes" is answered in previous question, indicate what type of DWS will be used. If "Other", fill in cell to the right to indicate what type of DWS is being used.

Pedestrian Crossings

Indicate if a pedestrian crossing exists. If a pedestrian crossing does not exist, a curb ramp is not needed. The crossing may be marked or unmarked. If "Yes", the cell to the right will become highlighted with blue fill, requiring it to be completed.

- single ramp with a single cross walk.
- single ramp with a double cross walk.

Ramp Leads to Accessible Path

Indicate if the ramp leads to an accessible path, such as a sidewalk or a pedestrian pushbutton.

Crossing Control Type

Indicate the type of vehicular traffic control device/measure at the pedestrian crossing.

STOP/YIELD - If a stop or yield sign is installed or traffic is controlled by a stop or yield condition (i.e. Driveway).

UNCONTROLLED - If vehicular traffic is not controlled by a traffic control device at the pedestrian crossing.

TRAFFIC SIGNAL - If vehicular traffic is controlled by a Traffic Signal at the pedestrian crossing.

MIDBLOCK - If the pedestrian crossing is at a mid block crossing.



Instructions

Longitudinal/Cross slope in Front of Ramp

Manually insert the longitudinal and cross slope values (as a percentage) in the appropriate cells. The longitudinal slope is equal to the slope parallel to the direction of the ramp (in the street); the cross slope is equal to the slope perpendicular to the direction of the ramp (in the street).

For a pedestrian crossing where vehicles operate without a yield or stop condition (**UNCONTROLLED** and **TRAFFIC SIGNAL**) and at midblock pedestrian street crossings (**MIDBLOCK**), the cross slope in front of the ramp shall be permitted to equal the street or highway profile grade. For pedestrian crossings where vehicles operate with a yield or stop condition (**STOP/YIELD**), the maximum cross slope in front of the ramp is 2% for a compliant design. If a compliant cross slope cannot be provided in front of the ramp, for crossings with a stop or yield condition, a TIF will need to be submitted.

Ramp Angle with Crosswalk

Manually insert the angle of the ramp to the crosswalk (in degrees). It is preferred that the angle is 20 degrees or less. If the angle is greater than 20 but less than 45, provide a brief explanation in the box below justifying the angle. If the angle is greater than or equal to 45 degrees then it is considered that a turning maneuver is being made in the street. A turning maneuver in the street requires a minimum 4' x 4', 2% max slope(longitudinally and the cross slope) turning area. If the turning area does not meet all of the requirements listed above, then the ramp does not meet RC-67M and is considered Technically Infeasible. A Technically Infeasible Form(TIF) is required. Submit the TIF form with proper justification why this cannot be achieved to meet RC-67M. Show on the plan the turning area at the bottom of the ramp in the street.

Turning Maneuver in Street

Indicate if pedestrians must perform turning maneuvers in the street. If "Yes", a landing is required in the street.

Turning Maneuver at Top of Ramp (Smax)

Indicate if pedestrians must perform turning maneuvers at the top of the ramp. If "Yes", Smax is required.

ECMS # (if applicable)

Manually insert the ECMS # for the project that altered the curb ramp.

Algebraic Δ Grade (Algebraic Change in Grade)

Manually insert the maximum algebraic change between the ramp slope and roadway slope (as a percentage). See the diagram on Sheet 01 - Inspection Form.

Intersection Ramp # of

Manually enter the number for the ramp being investigated followed by the total number of ramps being investigated at the intersection. For example, if the ramp at the intersection of Ramp "X" of "Y" is being investigated, "Y" is the total number of the ramps at the intersection and "X" is the number assigned to the specific ramp being investigated.

Ramp Location

Using the intersection figure shown, select the appropriate button for which the investigated curb ramp is located.

North Leg/North Leg Description

Include the name of the roadway (if applicable) for the northbound roadway. Then directly below that cell, indicate the type of roadway (state route, boulevard, road, street, etc.). If the roadway is a state route number (format: 0000), also include the Segment # (format: 0000) and Offset # (format: 0000) of the intersection. If the roadway is a local road, include the name of the local road and description. Complete this for all legs of the intersection.

	North Leg	Description	Segment	Offset
Example 1:	00016	SR	0010	0020
Example 2:	Oak	ST	n/a	n/a

Ramp Type

Indicate the type of ramp being investigated. Depending on curb ramp type, complete all of the required dimensions on Tab 2 – Inspection Form Continued. Each cell is color-coded to indicate whether the information entered meets RC-67M. If data is entered and the cell becomes highlighted with green fill, the data meets RC-67M. If the cell becomes highlighted with red fill, the data does not meet RC-67M. If the cell becomes highlighted with yellow fill, the data does not match RC-67M but may be due to tie-ins with the existing site. The chart located to the right of the data entry form indicates the minimum measurement requirements (compliance check).

Insert the Latitude and Longitude for each Curb Ramp. Convert to Degrees. Provide a minimum of 5 decimal places for accuracy.

For Example - N40° 06' 16.08" = 40.10447° and W 75° 23' 58.11" = -75.39948°. The program will not allow you to enter a value outside of the geographical area of District 6.

Minimum 4'-0" Pedestrian Access Route(PAR) Maintained within the Limit of Work

A minimum 4'-0" Pedestrian Access Route(PAR) must be maintained within the limit of work. If this requirement is not met then a Technically Infeasible Form (TIF) must be submitted with the CS4401 and the ramps leading to and from the constrained PAR are considered non-compliant and are Technically Infeasible.

The width of the PAR is defined as the width of walkway between two obstructions. This would include flares with slopes greater than 8.3%, utility/street light poles, traffic signal poles and equipment, signs, buildings, street furniture and other unwalkable areas.

A PAR less than 4' but not less than 3' is acceptable if it is not within the slope of work for the project to relocate the obstructions. If the PAR is less than 3' and it is not within the scope of work for the project to relocate the obstruction then the ramp is considered not accessible from that approach. Select NO for Ramp Leads to Accessible Path. See Ramp Leads to Accessible Path above.



Instructions

Pedestrian Push Buttons Accessibility and Compliance

Indicate if pedestrian push buttons are accessible and compliant as defined below.

1. A push button is considered accessible if it is:
 - (a) Adjacent to and can be activated from a firm and stable surface.
2. A push button is considered compliant if it is:
 - (a) Adjacent to a level, non-slip surface to provide access from a wheelchair, and where there is a non-slip wheelchair accessible route to the ramp.
 - (b) A MIN 4' x 4' area in front of the push button is provided and
 - (i) If a turning movement is required in order to activate the push button and then get to the ramp, the max slope (longitudinal and cross slope) in the 4' x 4' area in front of the push button is 2%
 - (ii) If a turning movement is NOT required and the pedestrian/wheelchair is only expected to move forward or parallel from button (not turning), the 2% max slope is preferred but not required. Entire 999 and complete in the Comment Cell the reason why a turning movement is not required.
 - (c) Within 5'-0" of the crosswalk extended
 - (d) Between 1'-6" and 10'-0" of the edge of the curb, shoulder or pavement
 - (e) Parallel to the crosswalk to be used
 - (f) Mounted 42" above the sidewalk or finished grade to the center of the pushbutton and 10" MAX laterally from landing

- Not Accessible** - The existing or proposed push button is not accessible. Submit a technically infeasible form (TIF)
- Accessible and Non-Compliant** - The existing or proposed push button is accessible. However, it does not meet all of the requirements for compliance as noted above. Submit a technically infeasible form (TIF)
- Accessible and Compliant** - The existing or proposed push button is accessible and meets all of the requirements for compliance as noted above.
- N/A** - There are no existing or proposed push buttons for this crossing.

Sketch

Not used in Design.

Asset

The Asset number will be automatically completed as information is entered into the data entry form.

Status

Not used in Design.

Archive Ramp at location

Not used in Design.

Level of Service

Indicate the level of service, as designed:

- Meets RC-67M
- Technically Infeasible; Provides Maximum Access (TIF)

TAB 2 – INSPECTION FORM CONTINUED

Indicate the type of ramp being investigated using the curb ramp diagrams. Depending on curb ramp type, complete all of the required dimensions "A" through "EE" and the DWS transition strip values. Each cell is color-coded to indicate whether the information entered meets RC-67M. Use "999" for measurements that are not applicable.

TAB 3 - PICTURES TAB

Click on the "insert button #" button to insert the appropriate picture.

TAB 4 - ADDITIONAL EXPLANATION TAB (IF APPLICABLE)

If additional space is needed to further explain the reasoning behind a certain element but completing a Technically Infeasible Form (TIF) is not required use this area to explain the methodology behind the design as submitted.

Examples -

- (a) Additional room is need to explain why the ramp angle exceeds 20 degrees.
- (b) The longitudinal (running) slope of the sidewalk transition exceeds the 5% maximum allowed per DM2 Chapter 6 but is less than 8.33% maximum for a ramp slope.
- (c) The form is filled out for a Type 1 ramp but there is a greenstrip or other unwalkable surface in which the flare slope can exceed 10% and a 2' rolled concrete flare will be used.



Instructions

TAB 5 - INSTRUCTIONS

Use this tab as a quick reference to the instructions.

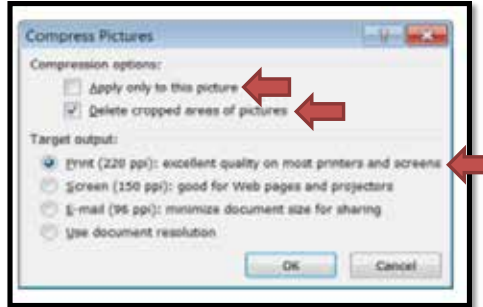
SUBMISSION

Perform the following for submission.

Reduce Image Size

To keep file size to a minimum, select a picture:

1. Click on one of the images that were inserted on Tab 03 - Pictures.
2. Click "Format" under the "Picture Tools" Ribbon.
3. In the Ribbon, click "Compress Pictures"
4. In the "Compress Pictures" Window select the options as noted below and click "OK".

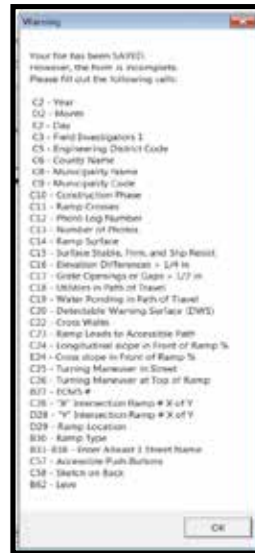


Save File

When saving the file, use Excel 2007 and later format with a *.xls extension. Do not use a different file format. If all the cells are not completed, a warning message will appear. The work has been saved, but the file is not complete. Fill in remaining cells and resave.

Send file to District ADA Coordinator

Upon approval of the curb ramp designs, submit files including the approved plans of the ADA designs, in PDF format, the CS-4401 Design, District 6 Form in Excel 2007 and later format and the Technically Infeasible Form (TIF) in Excel 2007 and later format to District 6 ADA Coordinator on a compact disc. Incomplete submissions will be returned.





Walton Avenue and 51st Street- Ramp G

*Date of Design (yyyy mm dd)	2018	09	11
Designer 1	Edward Mullen		
Designer 2	Bernadette Callahan		
*Engineering District Code	06 - District 6-0		
*County Name	Philadelphia		
*County Code (auto)	101		
*Municipality Name	Philadelphia City		
*Municipality Code (auto)	60000		
Construction Phase	Constructed		
Ramp Crosses	Both		
Photo Log Number	2		
Number of Photos	2		
Ramp Surface	Concrete		
Surface Stable, Firm, and Slip Resistant	Yes		
Elevation Differences > 1/4"	No		(X/16")
Grate Openings or Gaps > 1/2"	No		(X/16")
Utilities in Path of Travel	No		
Water Ponding in Path of Travel	No		
Detectable Warning Surface (DWS)	Yes		
DWS type	Poly Comp		
Pedestrian Crossing and Type	Yes	Single Ramp with Single Cross Walk	
Ramp Leads to Accessible Path	Yes	Crossing Control Type	(select)
Longitudinal / Cross slope in Front of Ramp	3.00	%	1.30 %
Turning Maneuver in Street	No	Ramp Angle with Crosswalk	5 degrees
Turning Maneuver at Top of Ramp (Smax)	Yes	Comments:	
ECMS #	Alg D Grade (%)	6.5	
Intersection Ramp # of #	1	3	
*Ramp Location (Use Figure Below)	19		
*Curb Ramp Type	Type 1		
*North Leg	51st	(segment)	(offset)
*North Leg Desc.	St		
*East Leg	Walton	(segment)	(offset)
*East Leg Desc.	Ave		
*South Leg	51st	(segment)	(offset)
*South Leg Desc.	St		
*West Leg	Walton	(segment)	(offset)
*West Leg Desc.	Ave		
Ramp Coordinates	Latitude		
	Longitude		

Z° = Ramp Angle w/Crosswalk

Algebraic Difference = X% - (-Y%)

DIMENSIONS ARE ABSOLUTE FOR NEW INSTALLATIONS

Minimum 4'-0" Pedestrian Access Route (PAR) Maintained within the Limit of Work	Yes
Push Button Turning Area - Max Slope (%)	Comments:
Accessible Push Buttons	N/A
Sketch Used To Collect Field Information	No
Asset # (auto)	C-06-101-60000-51stSt-WaltonAve-51stSt-WaltonAve-2018-09-11-19-Type1
Status	Current
Archive Ramp at location #:	N/A
Level of Service	Meets RC-67M



Walton Avenue and 51st Street- Ramp G

<p><input type="checkbox"/> TYPE 1</p> <p>MAX ALG. CHANGE IN GRADE _____ % TOP TURNING AREA <input type="checkbox"/> IF YES, MAX SLOPE "S" _____ %</p>	<p><input type="checkbox"/> TYPE 1A</p> <p>MAX ALG. CHANGE IN GRADE _____ %</p>	<p><input type="checkbox"/> TYPE 2</p> <p>MAX ALG. CHANGE IN GRADE _____ %</p>																																																																																																												
<p><input type="checkbox"/> TYPE 3</p> <p>MAX ALG. CHANGE IN GRADE _____ % TOP TURNING AREA <input type="checkbox"/> IF YES, MAX SLOPE "S" _____ %</p>	<p><input type="checkbox"/> TYPE 4</p> <p>MAX ALG. CHANGE IN GRADE _____ % TOP TURNING AREA <input type="checkbox"/> IF YES, MAX SLOPE "S" _____ %</p>	<p><input type="checkbox"/> TYPE 4A</p> <p>MAX ALG. CHANGE IN GRADE _____ % TOP TURNING AREA <input type="checkbox"/> IF YES, MAX SLOPE "S" _____ %</p>																																																																																																												
<p><input type="checkbox"/> TYPE 5</p> <p>MAX ALG. CHANGE IN GRADE _____ % RAILING <input type="checkbox"/> NO <input type="checkbox"/> YES "CC" RAIL HEIGHT _____ INCHES</p>	<p><input type="checkbox"/> TYPE 6</p> <p>MAX ALG. CHANGE IN GRADE _____ %</p>	<table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr> <th colspan="3" style="text-align: center;">".00" inches or %</th> </tr> </thead> <tbody> <tr><td>*</td><td>A</td><td>48 (IN)</td></tr> <tr><td>*</td><td>B</td><td>73 (IN)</td></tr> <tr><td>*</td><td>C</td><td>3.50 (%)</td></tr> <tr><td>*</td><td>D</td><td>2.80 (%)</td></tr> <tr><td>*</td><td>E</td><td>3.30 (%)</td></tr> <tr><td>*</td><td>F</td><td>3.50 (%)</td></tr> <tr><td>*</td><td>G</td><td>3.50 (%)</td></tr> <tr><td>*</td><td>H</td><td>2.35 (%)</td></tr> <tr><td>*</td><td>I</td><td>9.70 (%)</td></tr> <tr><td>*</td><td>J</td><td>106 (IN)</td></tr> <tr><td>*</td><td>K</td><td>4 (IN)</td></tr> <tr><td>*</td><td>L</td><td>61 (IN)</td></tr> <tr><td>*</td><td>M</td><td>178 (IN)</td></tr> <tr><td>*</td><td>N</td><td>4 (IN)</td></tr> <tr><td>*</td><td>O</td><td>46 (IN)</td></tr> <tr><td>*</td><td>P</td><td>60 (IN)</td></tr> <tr><td>*</td><td>Q</td><td>1.90 (%)</td></tr> <tr><td>*</td><td>R</td><td>1.00 (%)</td></tr> <tr><td>*</td><td>S</td><td>2.00 (%)</td></tr> <tr><td>*</td><td>T</td><td>0 (IN)</td></tr> <tr><td>*</td><td>U</td><td>0 (IN)</td></tr> <tr><td>*</td><td>V</td><td>0 (%)</td></tr> <tr><td>*</td><td>W</td><td>2.00 (%)</td></tr> <tr><td>*</td><td>X</td><td>0 (IN)</td></tr> <tr><td>*</td><td>Y</td><td>0 (IN)</td></tr> <tr><td>*</td><td>YY</td><td>120 (IN)</td></tr> <tr><td>*</td><td>Z</td><td>0 (IN)</td></tr> <tr><td>*</td><td>ZZ</td><td>48 (IN)</td></tr> <tr><td>*</td><td>AA</td><td>0 (IN)</td></tr> <tr><td>*</td><td>BB</td><td>0 (IN)</td></tr> <tr><td>*</td><td>CC</td><td>0 (IN)</td></tr> <tr><td>*</td><td>DD</td><td>4.90 (%)</td></tr> <tr><td>*</td><td>EE</td><td>1.00 (%)</td></tr> <tr style="background-color: #00FFFF;"><td></td><td>DWS Transition Strip</td><td>Yes</td></tr> <tr style="background-color: #00FF00;"><td></td><td>DWS Transition Strip Slope (FF)</td><td>1.80 (%)</td></tr> </tbody> </table>	".00" inches or %			*	A	48 (IN)	*	B	73 (IN)	*	C	3.50 (%)	*	D	2.80 (%)	*	E	3.30 (%)	*	F	3.50 (%)	*	G	3.50 (%)	*	H	2.35 (%)	*	I	9.70 (%)	*	J	106 (IN)	*	K	4 (IN)	*	L	61 (IN)	*	M	178 (IN)	*	N	4 (IN)	*	O	46 (IN)	*	P	60 (IN)	*	Q	1.90 (%)	*	R	1.00 (%)	*	S	2.00 (%)	*	T	0 (IN)	*	U	0 (IN)	*	V	0 (%)	*	W	2.00 (%)	*	X	0 (IN)	*	Y	0 (IN)	*	YY	120 (IN)	*	Z	0 (IN)	*	ZZ	48 (IN)	*	AA	0 (IN)	*	BB	0 (IN)	*	CC	0 (IN)	*	DD	4.90 (%)	*	EE	1.00 (%)		DWS Transition Strip	Yes		DWS Transition Strip Slope (FF)	1.80 (%)
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<p><input type="checkbox"/> BLENDED TRANSITION</p> <p>MAX ALG. CHANGE IN GRADE _____ %</p>	<p><input type="checkbox"/> NON-TYPICAL</p> <p>"A" RAMP WIDTH "B" RAMP LENGTH "C" RAMP SLOPE "D" LT FLARE SLOPE "I" RT FLARE SLOPE "J" LT SIDEWALK WIDTH "M" RT SIDEWALK WIDTH "P" SIDEWALK LANDING DEPTH "Q" LT SIDEWALK CROSS SLOPE "R" RT SIDEWALK CROSS SLOPE "S" SIDEWALK LANDING MAX SLOPE "W" RAMP MAX CROSS SLOPE</p> <p>MAX ALG. CHANGE IN GRADE _____ % SIDEWALK TURNING AREA <input type="checkbox"/> IF YES, DESIGNATE MAX SLOPE "S"</p>																																																																																																													
<p><input type="checkbox"/> TYPE A MEDIAN</p> <p><input type="checkbox"/> TYPE B MEDIAN</p>																																																																																																														

Comments ▲



Walton Avenue and 51st Street- Ramp G



Insert Picture 1



Insert Picture 4



Insert Picture 2



Insert Picture 5



Insert Picture 3



Insert Picture 6



Walton Avenue and 51st Street- Ramp G

Additional Explanation #1

Additional Explanation #2

Additional Explanation #3

Additional Explanation #4



Instructions

The District 6 Curb Ramp Design Form (CS-4401 Design, District 6) will be used for the design of all curb ramps in District 6 to ensure compliance with PENNDOT standards. The use of this form is required for to be constructed curb ramps. A thorough and rigorous review of the design for each curb ramp will be completed to ensure compliance with PENNDOT Standard RC-67M. The slopes indicated in RC-67M are absolute maximum slopes. Only slopes that are equal to or less than the indicated slopes are acceptable. When fully meeting the RC-67M standards is "Technically Infeasible", the curb ramp must be designed to the maximum extent feasible to provide handicap access. See Publication 13M - Design Manual 2, Chapter 6 for additional information on Technically Infeasible.

When used in the design phase, this form and corresponding plans will document all pertinent values and serve as a record that PENNDOT has reviewed the design. Based on the information provided in the CS-4401 and corresponding plans, the ramp will be classified as EITHER Meeting RC-67M or Technically Infeasible. If a ramp is Technically Infeasible then the Technically Infeasible Form (TIF) must be submitted with the CS-4401 and corresponding plans. PENNDOT will then review the TIF to determine if the ramp has been designed to provide access to the maximum extent feasible within the scope of the work for project. PENNDOT will review the investigated alternatives as submitted in the TIF and determine that the best possible solution was chosen and that no other design alternatives, as noted in the TIF or otherwise, within the scope of work for the project exists. Approval for all Technically Infeasible ramps will come from both the District ADA Coordinator and Assistant District Engineer by signing the Technically Infeasible Form (TIF).

INSTRUCTIONS

Before you Begin:

The electronic file is delivered in Excel 97-2003 Workbook *.xls format. When saving the file, use Excel format with a *.xls extension. Do not use a different file format. This file is compatible with Microsoft Excel 2007 and later. It is compatible with 32 bit and 64 bit computers.

The following tabs are included in the form:

- Tab 1. Inspection Form
- Tab 2. Inspection Form Continued
- Tab 3. Pictures
- Tab 4. Additional Explanation
- Tab 5. Instructions

TAB 1 – INSPECTION FORM

All "blue filled" cells require information to be entered. Many cells have a drop down selection with a header. The header is used for filling out a printed version. The header must be changed to the appropriate selection. For example: " No Yes" would be the header. Either "No" or "Yes" must be selected.

Date of Design

Enter the year, month, and day of the investigation (format yyyy dd mm).

Designer 1 & 2

Insert the name(s) of the individuals responsible for the design.

Engineering District Code

Insert the engineering district code.

County Name

Insert the appropriate county. (The county code will automatically fill in once the appropriate county is selected).

Municipality Name

Insert the appropriate municipality name.
(The municipality code will automatically fill in once the appropriate municipality name is entered).



Instructions

Construction Phase

Select the appropriate status of the curb ramp being investigated.

- Constructed. Select this phase for ramps that are to be newly constructed curb ramps.
- Existing-Survey. Select this phase for documenting existing curb ramps.
- Missing. Select this phase for documenting missing curb ramps.

Ramp Crosses

Select what type of roadway the ramp crosses and or services.

Photo Log Number

Manually insert a photo log number with approximate time the photo was taken.

Number of Photos

Enter the number of photos.

Ramp Surface

Select ramp surface type (brick, concrete or other). If "other", manually insert the surface type in the cell immediately to the right of the surface type.

Surface Stable, Firm, and Slip Resistant

Indicate if the curb ramp surface is stable, firm, and slip resistant.

Elevation Differences > 1/4"

Indicate if any vertical elevation differences between sections of sidewalk found anywhere on the curb ramp that are greater than 1/4" exist. If vertical elevation differences exist, measure to the nearest 1/16 of an inch. For example, if measured 1/2" enter "8" (8/16) on the form, or if measured 2" enter 32 (32/16) in the form.

Grate Openings or Gaps > 1/2"

Indicate if any grate openings or gaps greater than 1/2" are located within the immediate pedestrian path. If horizontal gaps exist, measure to the nearest 1/16 of an inch. For example, if measured 1/2" enter "8" (8/16) on the form, or if measured 2" enter 32 (32/16) on the form.

Utilities in Path of Travel

Indicate if there are any utilities that obstruct the path of travel.

Water Ponding in Path of Travel

Indicate if any water ponding exists within the travel path of the curb ramp.

Detectable Warning Surface (DWS)

Indicate if a detectable warning surface is to be used.

DWS Type

If "Yes" is answered in previous question, indicate what type of DWS will be used. If "Other", fill in cell to the right to indicate what type of DWS is being used.

Pedestrian Crossings

Indicate if a pedestrian crossing exists. If a pedestrian crossing does not exist, a curb ramp is not needed. The crossing may be marked or unmarked. If "Yes", the cell to the right will become highlighted with blue fill, requiring it to be completed.

- single ramp with a single cross walk.
- single ramp with a double cross walk.

Ramp Leads to Accessible Path

Indicate if the ramp leads to an accessible path, such as a sidewalk or a pedestrian pushbutton.

Crossing Control Type

Indicate the type of vehicular traffic control device/measure at the pedestrian crossing.

STOP/YIELD - If a stop or yield sign is installed or traffic is controlled by a stop or yield condition (i.e. Driveway).

UNCONTROLLED - If vehicular traffic is not controlled by a traffic control device at the pedestrian crossing.

TRAFFIC SIGNAL - If vehicular traffic is controlled by a Traffic Signal at the pedestrian crossing.

MIDBLOCK - If the pedestrian crossing is at a mid block crossing.



Instructions

Longitudinal/Cross slope in Front of Ramp

Manually insert the longitudinal and cross slope values (as a percentage) in the appropriate cells. The longitudinal slope is equal to the slope parallel to the direction of the ramp (in the street); the cross slope is equal to the slope perpendicular to the direction of the ramp (in the street).

For a pedestrian crossing where vehicles operate without a yield or stop condition (**UNCONTROLLED** and **TRAFFIC SIGNAL**) and at midblock pedestrian street crossings (**MIDBLOCK**), the cross slope in front of the ramp shall be permitted to equal the street or highway profile grade. For pedestrian crossings where vehicles operate with a yield or stop condition (**STOP/YIELD**), the maximum cross slope in front of the ramp is 2% for a compliant design. If a compliant cross slope cannot be provided in front of the ramp, for crossings with a stop or yield condition, a TIF will need to be submitted.

Ramp Angle with Crosswalk

Manually insert the angle of the ramp to the crosswalk (in degrees). It is preferred that the angle is 20 degrees or less. If the angle is greater than 20 but less than 45, provide a brief explanation in the box below justifying the angle. If the angle is greater than or equal to 45 degrees then it is considered that a turning maneuver is being made in the street. A turning maneuver in the street requires a minimum 4' x 4', 2% max slope(longitudinally and the cross slope) turning area. If the turning area does not meet all of the requirements listed above, then the ramp does not meet RC-67M and is considered Technically Infeasible. A Technically Infeasible Form(TIF) is required. Submit the TIF form with proper justification why this cannot be achieved to meet RC-67M. Show on the plan the turning area at the bottom of the ramp in the street.

Turning Maneuver in Street

Indicate if pedestrians must perform turning maneuvers in the street. If "Yes", a landing is required in the street.

Turning Maneuver at Top of Ramp (Smax)

Indicate if pedestrians must perform turning maneuvers at the top of the ramp. If "Yes", Smax is required.

ECMS # (if applicable)

Manually insert the ECMS # for the project that altered the curb ramp.

Algebraic Δ Grade (Algebraic Change in Grade)

Manually insert the maximum algebraic change between the ramp slope and roadway slope (as a percentage). See the diagram on Sheet 01 - Inspection Form.

Intersection Ramp # of

Manually enter the number for the ramp being investigated followed by the total number of ramps being investigated at the intersection. For example, if the ramp at the intersection of Ramp "X" of "Y" is being investigated, "Y" is the total number of the ramps at the intersection and "X" is the number assigned to the specific ramp being investigated.

Ramp Location

Using the intersection figure shown, select the appropriate button for which the investigated curb ramp is located.

North Leg/North Leg Description

Include the name of the roadway (if applicable) for the northbound roadway. Then directly below that cell, indicate the type of roadway (state route, boulevard, road, street, etc.). If the roadway is a state route number (format: 0000), also include the Segment # (format: 0000) and Offset # (format: 0000) of the intersection. If the roadway is a local road, include the name of the local road and description. Complete this for all legs of the intersection.

	North Leg	Description	Segment	Offset
Example 1:	00016	SR	0010	0020
Example 2:	Oak	ST	n/a	n/a

Ramp Type

Indicate the type of ramp being investigated. Depending on curb ramp type, complete all of the required dimensions on Tab 2 – Inspection Form Continued. Each cell is color-coded to indicate whether the information entered meets RC-67M. If data is entered and the cell becomes highlighted with green fill, the data meets RC-67M. If the cell becomes highlighted with red fill, the data does not meet RC-67M. If the cell becomes highlighted with yellow fill, the data does not match RC-67M but may be due to tie-ins with the existing site. The chart located to the right of the data entry form indicates the minimum measurement requirements (compliance check).

Insert the Latitude and Longitude for each Curb Ramp. Convert to Degrees. Provide a minimum of 5 decimal places for accuracy.

For Example - N40° 06' 16.08" = 40.10447° and W 75° 23' 58.11" = -75.39948°. The program will not allow you to enter a value outside of the geographical area of District 6.

Minimum 4'-0" Pedestrian Access Route(PAR) Maintained within the Limit of Work

A minimum 4'-0" Pedestrian Access Route(PAR) must be maintained within the limit of work. If this requirement is not met then a Technically Infeasible Form (TIF) must be submitted with the CS4401 and the ramps leading to and from the constrained PAR are considered non-compliant and are Technically Infeasible.

The width of the PAR is defined as the width of walkway between two obstructions. This would include flares with slopes greater than 8.3%, utility/street light poles, traffic signal poles and equipment, signs, buildings, street furniture and other unwalkable areas.

A PAR less than 4' but not less than 3' is acceptable if it is not within the slope of work for the project to relocate the obstructions. If the PAR is less than 3' and it is not within the scope of work for the project to relocate the obstruction then the ramp is considered not accessible from that approach. Select NO for Ramp Leads to Accessible Path. See Ramp Leads to Accessible Path above.



Instructions

Pedestrian Push Buttons Accessibility and Compliance

Indicate if pedestrian push buttons are accessible and compliant as defined below.

1. A push button is considered accessible if it is:
 - (a) Adjacent to and can be activated from a firm and stable surface.
2. A push button is considered compliant if it is:
 - (a) Adjacent to a level, non-slip surface to provide access from a wheelchair, and where there is a non-slip wheelchair accessible route to the ramp.
 - (b) A MIN 4' x 4' area in front of the push button is provided and
 - (i) If a turning movement is required in order to activate the push button and then get to the ramp, the max slope (longitudinal and cross slope) in the 4' x 4' area in front of the push button is 2%
 - (ii) If a turning movement is NOT required and the pedestrian/wheelchair is only expected to move forward or parallel from button (not turning), the 2% max slope is preferred but not required. Entire 999 and complete in the Comment Cell the reason why a turning movement is not required.
 - (c) Within 5'-0" of the crosswalk extended
 - (d) Between 1'-6" and 10'-0" of the edge of the curb, shoulder or pavement
 - (e) Parallel to the crosswalk to be used
 - (f) Mounted 42" above the sidewalk or finished grade to the center of the pushbutton and 10" MAX laterally from landing

Not Accessible - The existing or proposed push button is not accessible. Submit a technically infeasible form (TIF)

Accessible and Non-Compliant - The existing or proposed push button is accessible. However, it does not meet all of the requirements for compliance as noted above. Submit a technically infeasible form (TIF)

Accessible and Compliant - The existing or proposed push button is accessible and meets all of the requirements for compliance as noted above.

N/A - There are no existing or proposed push buttons for this crossing.

Sketch

Not used in Design.

Asset

The Asset number will be automatically completed as information is entered into the data entry form.

Status

Not used in Design.

Archive Ramp at location

Not used in Design.

Level of Service

Indicate the level of service, as designed:

Meets RC-67M

Technically Infeasible; Provides Maximum Access (TIF)

TAB 2 – INSPECTION FORM CONTINUED

Indicate the type of ramp being investigated using the curb ramp diagrams. Depending on curb ramp type, complete all of the required dimensions "A" through "EE" and the DWS transition strip values. Each cell is color-coded to indicate whether the information entered meets RC-67M. Use "999" for measurements that are not applicable.

TAB 3 - PICTURES TAB

Click on the "insert button #" button to insert the appropriate picture.

TAB 4 - ADDITIONAL EXPLANATION TAB (IF APPLICABLE)

If additional space is needed to further explain the reasoning behind a certain element but completing a Technically Infeasible Form (TIF) is not required use this area to explain the methodology behind the design as submitted.

Examples -

- (a) Additional room is need to explain why the ramp angle exceeds 20 degrees.
- (b) The longitudinal (running) slope of the sidewalk transition exceeds the 5% maximum allowed per DM2 Chapter 6 but is less than 8.33% maximum for a ramp slope.
- (c) The form is filled out for a Type 1 ramp but there is a greenstrip or other unwalkable surface in which the flare slope can exceed 10% and a 2' rolled concrete flare will be used.



Instructions

TAB 5 - INSTRUCTIONS

Use this tab as a quick reference to the instructions.

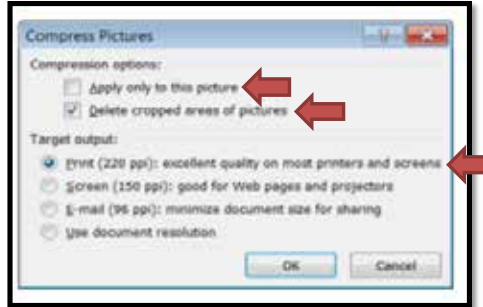
SUBMISSION

Perform the following for submission.

Reduce Image Size

To keep file size to a minimum, select a picture:

1. Click on one of the images that were inserted on Tab 03 - Pictures.
2. Click "Format" under the "Picture Tools" Ribbon.
3. In the Ribbon, click "Compress Pictures"
4. In the "Compress Pictures" Window select the options as noted below and click "OK".

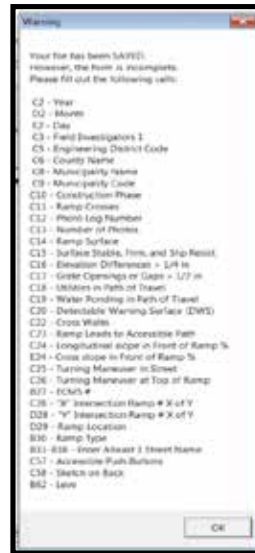


Save File

When saving the file, use Excel 2007 and later format with a *.xls extension. Do not use a different file format. If all the cells are not completed, a warning message will appear. The work has been saved, but the file is not complete. Fill in remaining cells and resave.

Send file to District ADA Coordinator

Upon approval of the curb ramp designs, submit files including the approved plans of the ADA designs, in PDF format, the CS-4401 Design, District 6 Form in Excel 2007 and later format and the Technically Infeasible Form (TIF) in Excel 2007 and later format to District 6 ADA Coordinator on a compact disc. Incomplete submissions will be returned.





Walton Avenue and 51st Street- Ramp H

*Date of Design (yyyy mm dd)	2018	09	11
Designer 1	Edward Mullen		
Designer 2	Bernadette Callahan		
*Engineering District Code	06 - District 6-0		
*County Name	Philadelphia		
*County Code (auto)	101		
*Municipality Name	Philadelphia City		
*Municipality Code (auto)	60000		
Construction Phase	Constructed		
Ramp Crosses	Both		
Photo Log Number	3		
Number of Photos	3		
Ramp Surface	Concrete		
Surface Stable, Firm, and Slip Resistant	Yes		
Elevation Differences > 1/4"	No		(X/16")
Grate Openings or Gaps > 1/2"	No		(X/16")
Utilities in Path of Travel	No		
Water Ponding in Path of Travel	No		
Detectable Warning Surface (DWS)	Yes		
DWS type	Poly Comp		
Pedestrian Crossing and Type	Yes	Single Ramp with Single Cross Walk	
Ramp Leads to Accessible Path	Yes	Crossing Control Type	Stop/Yield
Longitudinal / Cross slope in Front of Ramp	0.60	%	1.50 %
Turning Maneuver in Street	No	Ramp Angle with Crosswalk	7 degrees
Turning Maneuver at Top of Ramp (Smax)	Yes	Comments:	
ECMS #	Alg D Grade (%)	7.7	
Intersection Ramp # of #	2	4	
*Ramp Location (Use Figure Below)	02		
*Curb Ramp Type	Type 1		
*North Leg	51st	(segment)	(offset)
*North Leg Desc.	St		
*East Leg	Walton	(segment)	(offset)
*East Leg Desc.	Ave		
*South Leg	51st	(segment)	(offset)
*South Leg Desc.	St		
*West Leg	Walton	(segment)	(offset)
*West Leg Desc.	Ave		
Ramp Coordinates	Latitude		
	Longitude		

Z° = Ramp Angle w/Crosswalk

Algebraic Difference = X% - (-Y%)

Northbound

Minimum 4'-0" Pedestrian Access Route (PAR) Maintained within the Limit of Work	Yes
Push Button Turning Area - Max Slope (%)	Comments:
Accessible Push Buttons	N/A
Sketch Used To Collect Field Information	No
Asset # (auto)	C-06-101-60000-51stSt-WaltonAve-51stSt-WaltonAve-2018-09-11-2-Type1
Status	Current
Archive Ramp at location #:	N/A
Level of Service	Meets RC-67M



Walton Avenue and 51st Street- Ramp H

<p><input type="checkbox"/> TYPE 1</p> <p>MAX ALG. CHANGE IN GRADE _____ % TOP TURNING AREA <input type="checkbox"/> IF YES, MAX SLOPE "S" _____ %</p>	<p><input type="checkbox"/> TYPE 1A</p> <p>MAX ALG. CHANGE IN GRADE _____ %</p>	<p><input type="checkbox"/> TYPE 2</p> <p>MAX ALG. CHANGE IN GRADE _____ %</p>																																																																																																													
<p><input type="checkbox"/> TYPE 3</p> <p>MAX ALG. CHANGE IN GRADE _____ % TOP TURNING AREA <input type="checkbox"/> IF YES, MAX SLOPE "S" _____ %</p>	<p><input type="checkbox"/> TYPE 4</p> <p>MAX ALG. CHANGE IN GRADE _____ % TOP TURNING AREA <input type="checkbox"/> IF YES, MAX SLOPE "S" _____ %</p>	<p><input type="checkbox"/> TYPE 4A</p> <p>MAX ALG. CHANGE IN GRADE _____ % TOP TURNING AREA <input type="checkbox"/> IF YES, MAX SLOPE "S" _____ %</p>																																																																																																													
<p><input type="checkbox"/> TYPE 5</p> <p>MAX ALG. CHANGE IN GRADE _____ % RAILING <input type="checkbox"/> NO <input type="checkbox"/> YES "CC" RAIL HEIGHT _____ INCHES</p>	<p><input type="checkbox"/> TYPE 6</p> <p>MAX ALG. CHANGE IN GRADE _____ %</p>	<table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr> <th colspan="2" style="background-color: #e0e0e0;">"0.00" inches or %</th> <th></th> </tr> </thead> <tbody> <tr><td>*</td><td>A</td><td>48 (IN)</td></tr> <tr><td>*</td><td>B</td><td>72 (IN)</td></tr> <tr><td>*</td><td>C</td><td>7.10 (%)</td></tr> <tr><td>*</td><td>D</td><td>3.00 (%)</td></tr> <tr><td>*</td><td>E</td><td>6.55 (%)</td></tr> <tr><td>*</td><td>F</td><td>7.10 (%)</td></tr> <tr><td>*</td><td>G</td><td>7.10 (%)</td></tr> <tr><td>*</td><td>H</td><td>8.50 (%)</td></tr> <tr><td>*</td><td>I</td><td>8.40 (%)</td></tr> <tr><td>*</td><td>J</td><td>132 (IN)</td></tr> <tr><td>*</td><td>K</td><td>4 (IN)</td></tr> <tr><td>*</td><td>L</td><td>99 (IN)</td></tr> <tr><td>*</td><td>M</td><td>60 (IN)</td></tr> <tr><td>*</td><td>N</td><td>4 (IN)</td></tr> <tr><td>*</td><td>O</td><td>45 (IN)</td></tr> <tr><td>*</td><td>P</td><td>48 (IN)</td></tr> <tr><td>*</td><td>Q</td><td>1.80 (%)</td></tr> <tr><td>*</td><td>R</td><td>1.80 (%)</td></tr> <tr><td>*</td><td>S</td><td>2.00 (%)</td></tr> <tr><td>*</td><td>T</td><td>0 (IN)</td></tr> <tr><td>*</td><td>U</td><td>0 (IN)</td></tr> <tr><td>*</td><td>V</td><td>0 (%)</td></tr> <tr><td>*</td><td>W</td><td>1.50 (%)</td></tr> <tr><td>*</td><td>X</td><td>0 (IN)</td></tr> <tr><td>*</td><td>Y</td><td>0 (IN)</td></tr> <tr><td>*</td><td>YY</td><td>120 (IN)</td></tr> <tr><td>*</td><td>Z</td><td>0 (IN)</td></tr> <tr><td>*</td><td>ZZ</td><td>48 (IN)</td></tr> <tr><td>*</td><td>AA</td><td>0 (IN)</td></tr> <tr><td>*</td><td>BB</td><td>0 (IN)</td></tr> <tr><td>*</td><td>CC</td><td>0 (IN)</td></tr> <tr><td>*</td><td>DD</td><td>2.50 (%)</td></tr> <tr><td>*</td><td>EE</td><td>1.80 (%)</td></tr> <tr style="background-color: #e0e0e0;"><td colspan="2" style="text-align: center;">DWS Transition Strip</td><td style="text-align: center;">No</td></tr> <tr><td colspan="2" style="text-align: center;">DWS Transition Strip Slope (FF)</td><td style="text-align: center;">(%)</td></tr> </tbody> </table>		"0.00" inches or %			*	A	48 (IN)	*	B	72 (IN)	*	C	7.10 (%)	*	D	3.00 (%)	*	E	6.55 (%)	*	F	7.10 (%)	*	G	7.10 (%)	*	H	8.50 (%)	*	I	8.40 (%)	*	J	132 (IN)	*	K	4 (IN)	*	L	99 (IN)	*	M	60 (IN)	*	N	4 (IN)	*	O	45 (IN)	*	P	48 (IN)	*	Q	1.80 (%)	*	R	1.80 (%)	*	S	2.00 (%)	*	T	0 (IN)	*	U	0 (IN)	*	V	0 (%)	*	W	1.50 (%)	*	X	0 (IN)	*	Y	0 (IN)	*	YY	120 (IN)	*	Z	0 (IN)	*	ZZ	48 (IN)	*	AA	0 (IN)	*	BB	0 (IN)	*	CC	0 (IN)	*	DD	2.50 (%)	*	EE	1.80 (%)	DWS Transition Strip		No	DWS Transition Strip Slope (FF)		(%)
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<p><input type="checkbox"/> BLENDED TRANSITION</p> <p>MAX ALG. CHANGE IN GRADE _____ %</p>	<p><input type="checkbox"/> NON-TYPICAL</p> <p>"A" RAMP WIDTH "B" RAMP LENGTH "C" RAMP SLOPE "D" LT FLARE SLOPE "I" RT FLARE SLOPE "J" LT SIDEWALK WIDTH "M" RT SIDEWALK WIDTH "P" SIDEWALK LANDING DEPTH "Q" LT SIDEWALK CROSS SLOPE "R" RT SIDEWALK CROSS SLOPE "S" SIDEWALK LANDING MAX SLOPE "W" RAMP MAX CROSS SLOPE</p> <p>MAX ALG. CHANGE IN GRADE _____ % SIDEWALK TURNING AREA <input type="checkbox"/> IF YES, DESIGNATE MAX SLOPE "S"</p>																																																																																																														
<p><input type="checkbox"/> TYPE A MEDIAN</p> <p><input type="checkbox"/> TYPE B MEDIAN</p>																																																																																																															

Comments ▲



Walton Avenue and 51st Street- Ramp H



Insert Picture 1



Insert Picture 4



Insert Picture 2



Insert Picture 5



Insert Picture 3



Insert Picture 6



Walton Avenue and 51st Street- Ramp H

Additional Explanation #1

Additional Explanation #2

Additional Explanation #3

Additional Explanation #4



Instructions

The District 6 Curb Ramp Design Form (CS-4401 Design, District 6) will be used for the design of all curb ramps in District 6 to ensure compliance with PENNDOT standards. The use of this form is required for to be constructed curb ramps. A thorough and rigorous review of the design for each curb ramp will be completed to ensure compliance with PENNDOT Standard RC-67M. The slopes indicated in RC-67M are absolute maximum slopes. Only slopes that are equal to or less than the indicated slopes are acceptable. When fully meeting the RC-67M standards is "Technically Infeasible", the curb ramp must be designed to the maximum extent feasible to provide handicap access. See Publication 13M - Design Manual 2, Chapter 6 for additional information on Technically Infeasible.

When used in the design phase, this form and corresponding plans will document all pertinent values and serve as a record that PENNDOT has reviewed the design. Based on the information provided in the CS-4401 and corresponding plans, the ramp will be classified as EITHER Meeting RC-67M or Technically Infeasible. If a ramp is Technically Infeasible then the Technically Infeasible Form (TIF) must be submitted with the CS-4401 and corresponding plans. PENNDOT will then review the TIF to determine if the ramp has been designed to provide access to the maximum extent feasible within the scope of the work for project. PENNDOT will review the investigated alternatives as submitted in the TIF and determine that the best possible solution was chosen and that no other design alternatives, as noted in the TIF or otherwise, within the scope of work for the project exists. Approval for all Technically Infeasible ramps will come from both the District ADA Coordinator and Assistant District Engineer by signing the Technically Infeasible Form (TIF).

INSTRUCTIONS

Before you Begin:

The electronic file is delivered in Excel 97-2003 Workbook *.xls format. When saving the file, use Excel format with a *.xls extension. Do not use a different file format. This file is compatible with Microsoft Excel 2007 and later. It is compatible with 32 bit and 64 bit computers.

The following tabs are included in the form:

- Tab 1. Inspection Form
- Tab 2. Inspection Form Continued
- Tab 3. Pictures
- Tab 4. Additional Explanation
- Tab 5. Instructions

TAB 1 – INSPECTION FORM

All "blue filled" cells require information to be entered. Many cells have a drop down selection with a header. The header is used for filling out a printed version. The header must be changed to the appropriate selection. For example: " No Yes" would be the header. Either "No" or "Yes" must be selected.

Date of Design

Enter the year, month, and day of the investigation (format yyyy dd mm).

Designer 1 & 2

Insert the name(s) of the individuals responsible for the design.

Engineering District Code

Insert the engineering district code.

County Name

Insert the appropriate county. (The county code will automatically fill in once the appropriate county is selected).

Municipality Name

Insert the appropriate municipality name.
(The municipality code will automatically fill in once the appropriate municipality name is entered).



Instructions

Construction Phase

Select the appropriate status of the curb ramp being investigated.

- Constructed. Select this phase for ramps that are to be newly constructed curb ramps.
- Existing-Survey. Select this phase for documenting existing curb ramps.
- Missing. Select this phase for documenting missing curb ramps.

Ramp Crosses

Select what type of roadway the ramp crosses and or services.

Photo Log Number

Manually insert a photo log number with approximate time the photo was taken.

Number of Photos

Enter the number of photos.

Ramp Surface

Select ramp surface type (brick, concrete or other). If "other", manually insert the surface type in the cell immediately to the right of the surface type.

Surface Stable, Firm, and Slip Resistant

Indicate if the curb ramp surface is stable, firm, and slip resistant.

Elevation Differences > 1/4"

Indicate if any vertical elevation differences between sections of sidewalk found anywhere on the curb ramp that are greater than 1/4" exist. If vertical elevation differences exist, measure to the nearest 1/16 of an inch. For example, if measured 1/2" enter "8" (8/16) on the form, or if measured 2" enter 32 (32/16) in the form.

Grate Openings or Gaps > 1/2"

Indicate if any grate openings or gaps greater than 1/2" are located within the immediate pedestrian path. If horizontal gaps exist, measure to the nearest 1/16 of an inch. For example, if measured 1/2" enter "8" (8/16) on the form, or if measured 2" enter 32 (32/16) on the form.

Utilities in Path of Travel

Indicate if there are any utilities that obstruct the path of travel.

Water Ponding in Path of Travel

Indicate if any water ponding exists within the travel path of the curb ramp.

Detectable Warning Surface (DWS)

Indicate if a detectable warning surface is to be used.

DWS Type

If "Yes" is answered in previous question, indicate what type of DWS will be used. If "Other", fill in cell to the right to indicate what type of DWS is being used.

Pedestrian Crossings

Indicate if a pedestrian crossing exists. If a pedestrian crossing does not exist, a curb ramp is not needed. The crossing may be marked or unmarked. If "Yes", the cell to the right will become highlighted with blue fill, requiring it to be completed.

- single ramp with a single cross walk.
- single ramp with a double cross walk.

Ramp Leads to Accessible Path

Indicate if the ramp leads to an accessible path, such as a sidewalk or a pedestrian pushbutton.

Crossing Control Type

Indicate the type of vehicular traffic control device/measure at the pedestrian crossing.

STOP/YIELD - If a stop or yield sign is installed or traffic is controlled by a stop or yield condition (i.e. Driveway).

UNCONTROLLED - If vehicular traffic is not controlled by a traffic control device at the pedestrian crossing.

TRAFFIC SIGNAL - If vehicular traffic is controlled by a Traffic Signal at the pedestrian crossing.

MIDBLOCK - If the pedestrian crossing is at a mid block crossing.



Instructions

Longitudinal/Cross slope in Front of Ramp

Manually insert the longitudinal and cross slope values (as a percentage) in the appropriate cells. The longitudinal slope is equal to the slope parallel to the direction of the ramp (in the street); the cross slope is equal to the slope perpendicular to the direction of the ramp (in the street).

For a pedestrian crossing where vehicles operate without a yield or stop condition (**UNCONTROLLED** and **TRAFFIC SIGNAL**) and at midblock pedestrian street crossings (**MIDBLOCK**), the cross slope in front of the ramp shall be permitted to equal the street or highway profile grade. For pedestrian crossings where vehicles operate with a yield or stop condition (**STOP/YIELD**), the maximum cross slope in front of the ramp is 2% for a compliant design. If a compliant cross slope cannot be provided in front of the ramp, for crossings with a stop or yield condition, a TIF will need to be submitted.

Ramp Angle with Crosswalk

Manually insert the angle of the ramp to the crosswalk (in degrees). It is preferred that the angle is 20 degrees or less. If the angle is greater than 20 but less than 45, provide a brief explanation in the box below justifying the angle. If the angle is greater than or equal to 45 degrees then it is considered that a turning maneuver is being made in the street. A turning maneuver in the street requires a minimum 4' x 4', 2% max slope(longitudinally and the cross slope) turning area. If the turning area does not meet all of the requirements listed above, then the ramp does not meet RC-67M and is considered Technically Infeasible. A Technically Infeasible Form(TIF) is required. Submit the TIF form with proper justification why this cannot be achieved to meet RC-67M. Show on the plan the turning area at the bottom of the ramp in the street.

Turning Maneuver in Street

Indicate if pedestrians must perform turning maneuvers in the street. If "Yes", a landing is required in the street.

Turning Maneuver at Top of Ramp (Smax)

Indicate if pedestrians must perform turning maneuvers at the top of the ramp. If "Yes", Smax is required.

ECMS # (if applicable)

Manually insert the ECMS # for the project that altered the curb ramp.

Algebraic Δ Grade (Algebraic Change in Grade)

Manually insert the maximum algebraic change between the ramp slope and roadway slope (as a percentage). See the diagram on Sheet 01 - Inspection Form.

Intersection Ramp # of

Manually enter the number for the ramp being investigated followed by the total number of ramps being investigated at the intersection. For example, if the ramp at the intersection of Ramp "X" of "Y" is being investigated, "Y" is the total number of the ramps at the intersection and "X" is the number assigned to the specific ramp being investigated.

Ramp Location

Using the intersection figure shown, select the appropriate button for which the investigated curb ramp is located.

North Leg/North Leg Description

Include the name of the roadway (if applicable) for the northbound roadway. Then directly below that cell, indicate the type of roadway (state route, boulevard, road, street, etc.). If the roadway is a state route number (format: 0000), also include the Segment # (format: 0000) and Offset # (format: 0000) of the intersection. If the roadway is a local road, include the name of the local road and description. Complete this for all legs of the intersection.

	North Leg	Description	Segment	Offset
Example 1:	00016	SR	0010	0020
Example 2:	Oak	ST	n/a	n/a

Ramp Type

Indicate the type of ramp being investigated. Depending on curb ramp type, complete all of the required dimensions on Tab 2 – Inspection Form Continued. Each cell is color-coded to indicate whether the information entered meets RC-67M. If data is entered and the cell becomes highlighted with green fill, the data meets RC-67M. If the cell becomes highlighted with red fill, the data does not meet RC-67M. If the cell becomes highlighted with yellow fill, the data does not match RC-67M but may be due to tie-ins with the existing site. The chart located to the right of the data entry form indicates the minimum measurement requirements (compliance check).

Insert the Latitude and Longitude for each Curb Ramp. Convert to Degrees. Provide a minimum of 5 decimal places for accuracy.

For Example - N40° 06' 16.08" = 40.10447° and W 75° 23' 58.11" = -75.39948°. The program will not allow you to enter a value outside of the geographical area of District 6.

Minimum 4'-0" Pedestrian Access Route(PAR) Maintained within the Limit of Work

A minimum 4'-0" Pedestrian Access Route(PAR) must be maintained within the limit of work. If this requirement is not met then a Technically Infeasible Form (TIF) must be submitted with the CS4401 and the ramps leading to and from the constrained PAR are considered non-compliant and are Technically Infeasible.

The width of the PAR is defined as the width of walkway between two obstructions. This would include flares with slopes greater than 8.3%, utility/street light poles, traffic signal poles and equipment, signs, buildings, street furniture and other unwalkable areas.

A PAR less than 4' but not less than 3' is acceptable if it is not within the slope of work for the project to relocate the obstructions. If the PAR is less than 3' and it is not within the scope of work for the project to relocate the obstruction then the ramp is considered not accessible from that approach. Select NO for Ramp Leads to Accessible Path. See Ramp Leads to Accessible Path above.



Instructions

Pedestrian Push Buttons Accessibility and Compliance

Indicate if pedestrian push buttons are accessible and compliant as defined below.

1. A push button is considered accessible if it is:
 - (a) Adjacent to and can be activated from a firm and stable surface.
2. A push button is considered compliant if it is:
 - (a) Adjacent to a level, non-slip surface to provide access from a wheelchair, and where there is a non-slip wheelchair accessible route to the ramp.
 - (b) A MIN 4' x 4' area in front of the push button is provided and
 - (i) If a turning movement is required in order to activate the push button and then get to the ramp, the max slope (longitudinal and cross slope) in the 4' x 4' area in front of the push button is 2%
 - (ii) If a turning movement is NOT required and the pedestrian/wheelchair is only expected to move forward or parallel from button (not turning), the 2% max slope is preferred but not required. Entire 999 and complete in the Comment Cell the reason why a turning movement is not required.
 - (c) Within 5'-0" of the crosswalk extended
 - (d) Between 1'-6" and 10'-0" of the edge of the curb, shoulder or pavement
 - (e) Parallel to the crosswalk to be used
 - (f) Mounted 42" above the sidewalk or finished grade to the center of the pushbutton and 10" MAX laterally from landing

Not Accessible - The existing or proposed push button is not accessible. Submit a technically infeasible form (TIF)

Accessible and Non-Compliant - The existing or proposed push button is accessible. However, it does not meet all of the requirements for compliance as noted above. Submit a technically infeasible form (TIF)

Accessible and Compliant - The existing or proposed push button is accessible and meets all of the requirements for compliance as noted above.

N/A - There are no existing or proposed push buttons for this crossing.

Sketch

Not used in Design.

Asset

The Asset number will be automatically completed as information is entered into the data entry form.

Status

Not used in Design.

Archive Ramp at location

Not used in Design.

Level of Service

Indicate the level of service, as designed:

Meets RC-67M

Technically Infeasible; Provides Maximum Access (TIF)

TAB 2 – INSPECTION FORM CONTINUED

Indicate the type of ramp being investigated using the curb ramp diagrams. Depending on curb ramp type, complete all of the required dimensions "A" through "EE" and the DWS transition strip values. Each cell is color-coded to indicate whether the information entered meets RC-67M. Use "999" for measurements that are not applicable.

TAB 3 - PICTURES TAB

Click on the "insert button #" button to insert the appropriate picture.

TAB 4 - ADDITIONAL EXPLANATION TAB (IF APPLICABLE)

If additional space is needed to further explain the reasoning behind a certain element but completing a Technically Infeasible Form (TIF) is not required use this area to explain the methodology behind the design as submitted.

Examples -

- (a) Additional room is need to explain why the ramp angle exceeds 20 degrees.
- (b) The longitudinal (running) slope of the sidewalk transition exceeds the 5% maximum allowed per DM2 Chapter 6 but is less than 8.33% maximum for a ramp slope.
- (c) The form is filled out for a Type 1 ramp but there is a greenstrip or other unwalkable surface in which the flare slope can exceed 10% and a 2' rolled concrete flare will be used.



Instructions

TAB 5 - INSTRUCTIONS

Use this tab as a quick reference to the instructions.

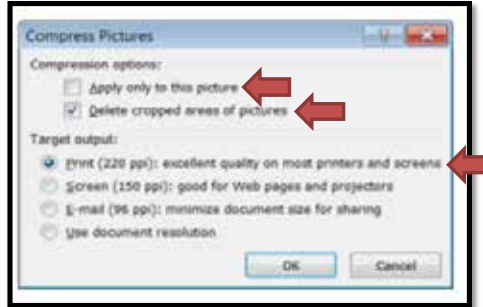
SUBMISSION

Perform the following for submission.

Reduce Image Size

To keep file size to a minimum, select a picture:

1. Click on one of the images that were inserted on Tab 03 - Pictures.
2. Click "Format" under the "Picture Tools" Ribbon.
3. In the Ribbon, click "Compress Pictures"
4. In the "Compress Pictures" Window select the options as noted below and click "OK".

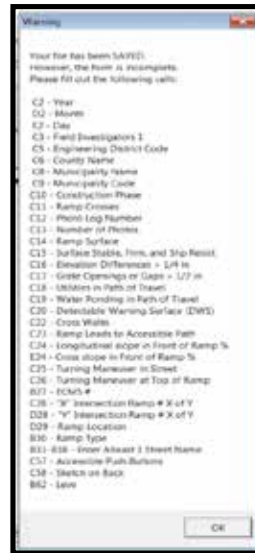


Save File

When saving the file, use Excel 2007 and later format with a *.xls extension. Do not use a different file format. If all the cells are not completed, a warning message will appear. The work has been saved, but the file is not complete. Fill in remaining cells and resave.

Send file to District ADA Coordinator

Upon approval of the curb ramp designs, submit files including the approved plans of the ADA designs, in PDF format, the CS-4401 Design, District 6 Form in Excel 2007 and later format and the Technically Infeasible Form (TIF) in Excel 2007 and later format to District 6 ADA Coordinator on a compact disc. Incomplete submissions will be returned.





Walton Avenue and 51st Street- Ramp I

*Date of Design (yyyy mm dd)	2019	09	11
Designer 1	Edward Mullen		
Designer 2	Bernadette Callahan		
*Engineering District Code	06 - District 6-0		
*County Name	Philadelphia		
*County Code (auto)	101		
*Municipality Name	Philadelphia City		
*Municipality Code (auto)	60000		
Construction Phase	Constructed		
Ramp Crosses	Both		
Photo Log Number	1		
Number of Photos	1		
Ramp Surface	Concrete		
Surface Stable, Firm, and Slip Resistant	Yes		
Elevation Differences > 1/4"	No		(X/16")
Grate Openings or Gaps > 1/2"	No		(X/16")
Utilities in Path of Travel	No		
Water Ponding in Path of Travel	No		
Detectable Warning Surface (DWS)	Yes		
DWS type	Poly Comp		
Pedestrian Crossing and Type	Yes	Single Ramp with Single Cross Walk	
Ramp Leads to Accessible Path	Yes	Crossing Control Type	Stop/Yield
Longitudinal / Cross slope in Front of Ramp	2.90	%	0.50 %
Turning Maneuver in Street	No	Ramp Angle with Crosswalk	5 degrees
Turning Maneuver at Top of Ramp (Smax)	Yes	Comments:	
ECMS #	Alg D Grade (%)	9.4	
Intersection Ramp # of #	3	3	
*Ramp Location (Use Figure Below)	09		
*Curb Ramp Type	Type 1		
*North Leg	51st	(segment)	(offset)
*North Leg Desc.	St		
*East Leg	Walton	(segment)	(offset)
*East Leg Desc.	Ave		
*South Leg	51st	(segment)	(offset)
*South Leg Desc.	St		
*West Leg	Walton	(segment)	(offset)
*West Leg Desc.	Ave		
Ramp Coordinates	Latitude		
	Longitude		

Northbound

Ramp Angle w\Crosswalk

Z° = Ramp Angle w\Crosswalk

DIMENSIONS ARE ABSOLUTE FOR NEW INSTALLATIONS

Algebraic Difference

ACCESSIBLE PUSH BUTTONS

X%

Ramp Slope

-Y%

Longitudinal Slope of Crosswalk

Depressed Curb

Algebraic Difference = X% - (-Y%)

X%

Ramp Slope

Y%

Longitudinal Slope of Crosswalk

Depressed Curb

Algebraic Difference = X% - Y%



Walton Avenue and 51st Street- Ramp I

<p><input type="checkbox"/> TYPE 1</p> <p>MAX ALG. CHANGE IN GRADE _____ % TOP TURNING AREA <input type="checkbox"/> IF YES, MAX SLOPE "S" _____ %</p>	<p><input type="checkbox"/> TYPE 1A</p> <p>MAX ALG. CHANGE IN GRADE _____ %</p>	<p><input type="checkbox"/> TYPE 2</p> <p>MAX ALG. CHANGE IN GRADE _____ %</p>	<p style="text-align: center;">"0.00" inches or %</p> <table border="1" style="width:100%; border-collapse: collapse;"> <tr><td>* A</td><td>48</td><td>(IN)</td></tr> <tr><td>* B</td><td>42</td><td>(IN)</td></tr> <tr><td>* C</td><td>6.50</td><td>(%)</td></tr> <tr><td>* D</td><td>3.20</td><td>(%)</td></tr> <tr><td>* E</td><td>4.85</td><td>(%)</td></tr> <tr><td>* F</td><td>6.50</td><td>(%)</td></tr> <tr><td>* G</td><td>6.50</td><td>(%)</td></tr> <tr><td>* H</td><td>5.80</td><td>(%)</td></tr> <tr><td>* I</td><td>5.10</td><td>(%)</td></tr> <tr><td>* J</td><td>145</td><td>(IN)</td></tr> <tr><td>* K</td><td>3</td><td>(IN)</td></tr> <tr><td>* L</td><td>76</td><td>(IN)</td></tr> <tr><td>* M</td><td>94</td><td>(IN)</td></tr> <tr><td>* N</td><td>4</td><td>(IN)</td></tr> <tr><td>* O</td><td>83</td><td>(IN)</td></tr> <tr><td>* P</td><td>59</td><td>(IN)</td></tr> <tr><td>* Q</td><td>1.00</td><td>(%)</td></tr> <tr><td>* R</td><td>0.20</td><td>(%)</td></tr> <tr><td>* S</td><td>2.00</td><td>(%)</td></tr> <tr><td>* T</td><td>0</td><td>(IN)</td></tr> <tr><td>* U</td><td>0</td><td>(IN)</td></tr> <tr><td>* V</td><td></td><td>(%)</td></tr> <tr><td>* W</td><td>0.80</td><td>(%)</td></tr> <tr><td>* X</td><td></td><td>(IN)</td></tr> <tr><td>* Y</td><td></td><td>(IN)</td></tr> <tr><td>* YY</td><td>120</td><td>(IN)</td></tr> <tr><td>* Z</td><td>0</td><td>(IN)</td></tr> <tr><td>* ZZ</td><td>48</td><td>(IN)</td></tr> <tr><td>* AA</td><td>0</td><td>(IN)</td></tr> <tr><td>* BB</td><td>0</td><td>(IN)</td></tr> <tr><td>* CC</td><td>0</td><td>(IN)</td></tr> <tr><td>* DD</td><td>4.30</td><td>(%)</td></tr> <tr><td>* EE</td><td>4.00</td><td>(%)</td></tr> <tr><td colspan="2" style="background-color: #00FFFF;">DWS Transition Strip</td><td>No</td></tr> <tr><td colspan="2" style="background-color: #00FFFF;">DWS Transition Strip Slope (FF)</td><td>(%)</td></tr> </table>	* A	48	(IN)	* B	42	(IN)	* C	6.50	(%)	* D	3.20	(%)	* E	4.85	(%)	* F	6.50	(%)	* G	6.50	(%)	* H	5.80	(%)	* I	5.10	(%)	* J	145	(IN)	* K	3	(IN)	* L	76	(IN)	* M	94	(IN)	* N	4	(IN)	* O	83	(IN)	* P	59	(IN)	* Q	1.00	(%)	* R	0.20	(%)	* S	2.00	(%)	* T	0	(IN)	* U	0	(IN)	* V		(%)	* W	0.80	(%)	* X		(IN)	* Y		(IN)	* YY	120	(IN)	* Z	0	(IN)	* ZZ	48	(IN)	* AA	0	(IN)	* BB	0	(IN)	* CC	0	(IN)	* DD	4.30	(%)	* EE	4.00	(%)	DWS Transition Strip		No	DWS Transition Strip Slope (FF)		(%)
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<p><input type="checkbox"/> TYPE 3</p> <p>MAX ALG. CHANGE IN GRADE _____ % TOP TURNING AREA <input type="checkbox"/> IF YES, MAX SLOPE "S" _____ %</p>	<p><input type="checkbox"/> TYPE 4</p> <p>MAX ALG. CHANGE IN GRADE _____ % TOP TURNING AREA <input type="checkbox"/> IF YES, MAX SLOPE "S" _____ %</p>	<p><input type="checkbox"/> TYPE 4A</p> <p>MAX ALG. CHANGE IN GRADE _____ % TOP TURNING AREA <input type="checkbox"/> IF YES, MAX SLOPE "S" _____ %</p>																																																																																																										
<p><input type="checkbox"/> TYPE 5</p> <p>MAX ALG. CHANGE IN GRADE _____ % RAILING <input type="checkbox"/> NO <input type="checkbox"/> YES "CC" RAIL HEIGHT _____ INCHES</p>	<p><input type="checkbox"/> TYPE 6</p> <p>MAX ALG. CHANGE IN GRADE _____ %</p>																																																																																																											
<p><input type="checkbox"/> BLENDED TRANSITION</p> <p>MAX ALG. CHANGE IN GRADE _____ %</p>	<p><input type="checkbox"/> NON-TYPICAL</p> <p>"A" RAMP WIDTH "B" RAMP LENGTH "C" RAMP SLOPE "D" LT FLARE SLOPE "I" RT FLARE SLOPE "J" LT SIDEWALK WIDTH "M" RT SIDEWALK WIDTH "P" SIDEWALK LANDING DEPTH "Q" LT SIDEWALK CROSS SLOPE "R" RT SIDEWALK CROSS SLOPE "S" SIDEWALK LANDING MAX SLOPE "W" RAMP MAX CROSS SLOPE</p> <p>MAX ALG. CHANGE IN GRADE _____ % SIDEWALK TURNING AREA <input type="checkbox"/> IF YES, DESIGNATE MAX SLOPE "S"</p>																																																																																																											
<p><input type="checkbox"/> TYPE A MEDIAN</p>																																																																																																												
<p><input type="checkbox"/> TYPE B MEDIAN</p>																																																																																																												

Comments ▲



Walton Avenue and 51st Street- Ramp I



Insert Picture 1



Insert Picture 4



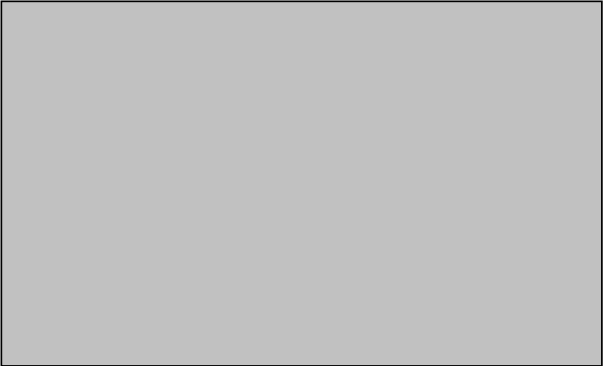
Insert Picture 2



Insert Picture 5



Insert Picture 3



Insert Picture 6



Walton Avenue and 51st Street- Ramp I

Additional Explanation #1

Additional Explanation #2

Additional Explanation #3

Additional Explanation #4



Instructions

The District 6 Curb Ramp Design Form (CS-4401 Design, District 6) will be used for the design of all curb ramps in District 6 to ensure compliance with PENNDOT standards. The use of this form is required for to be constructed curb ramps. A thorough and rigorous review of the design for each curb ramp will be completed to ensure compliance with PENNDOT Standard RC-67M. The slopes indicated in RC-67M are absolute maximum slopes. Only slopes that are equal to or less than the indicated slopes are acceptable. When fully meeting the RC-67M standards is "Technically Infeasible", the curb ramp must be designed to the maximum extent feasible to provide handicap access. See Publication 13M - Design Manual 2, Chapter 6 for additional information on Technically Infeasible.

When used in the design phase, this form and corresponding plans will document all pertinent values and serve as a record that PENNDOT has reviewed the design. Based on the information provided in the CS-4401 and corresponding plans, the ramp will be classified as EITHER Meeting RC-67M or Technically Infeasible. If a ramp is Technically Infeasible then the Technically Infeasible Form (TIF) must be submitted with the CS-4401 and corresponding plans. PENNDOT will then review the TIF to determine if the ramp has been designed to provide access to the maximum extent feasible within the scope of the work for project. PENNDOT will review the investigated alternatives as submitted in the TIF and determine that the best possible solution was chosen and that no other design alternatives, as noted in the TIF or otherwise, within the scope of work for the project exists. Approval for all Technically Infeasible ramps will come from both the District ADA Coordinator and Assistant District Engineer by signing the Technically Infeasible Form (TIF).

INSTRUCTIONS

Before you Begin:

The electronic file is delivered in Excel 97-2003 Workbook *.xls format. When saving the file, use Excel format with a *.xls extension. Do not use a different file format. This file is compatible with Microsoft Excel 2007 and later. It is compatible with 32 bit and 64 bit computers.

The following tabs are included in the form:

- Tab 1. Inspection Form
- Tab 2. Inspection Form Continued
- Tab 3. Pictures
- Tab 4. Additional Explanation
- Tab 5. Instructions

TAB 1 – INSPECTION FORM

All "blue filled" cells require information to be entered. Many cells have a drop down selection with a header. The header is used for filling out a printed version. The header must be changed to the appropriate selection. For example: " No Yes" would be the header. Either "No" or "Yes" must be selected.

Date of Design

Enter the year, month, and day of the investigation (format yyyy dd mm).

Designer 1 & 2

Insert the name(s) of the individuals responsible for the design.

Engineering District Code

Insert the engineering district code.

County Name

Insert the appropriate county. (The county code will automatically fill in once the appropriate county is selected).

Municipality Name

Insert the appropriate municipality name.
(The municipality code will automatically fill in once the appropriate municipality name is entered).



Instructions

Construction Phase

Select the appropriate status of the curb ramp being investigated.

- Constructed. Select this phase for ramps that are to be newly constructed curb ramps.
- Existing-Survey. Select this phase for documenting existing curb ramps.
- Missing. Select this phase for documenting missing curb ramps.

Ramp Crosses

Select what type of roadway the ramp crosses and or services.

Photo Log Number

Manually insert a photo log number with approximate time the photo was taken.

Number of Photos

Enter the number of photos.

Ramp Surface

Select ramp surface type (brick, concrete or other). If "other", manually insert the surface type in the cell immediately to the right of the surface type.

Surface Stable, Firm, and Slip Resistant

Indicate if the curb ramp surface is stable, firm, and slip resistant.

Elevation Differences > 1/4"

Indicate if any vertical elevation differences between sections of sidewalk found anywhere on the curb ramp that are greater than 1/4" exist. If vertical elevation differences exist, measure to the nearest 1/16 of an inch. For example, if measured 1/2" enter "8" (8/16) on the form, or if measured 2" enter 32 (32/16) in the form.

Grate Openings or Gaps > 1/2"

Indicate if any grate openings or gaps greater than 1/2" are located within the immediate pedestrian path. If horizontal gaps exist, measure to the nearest 1/16 of an inch. For example, if measured 1/2" enter "8" (8/16) on the form, or if measured 2" enter 32 (32/16) on the form.

Utilities in Path of Travel

Indicate if there are any utilities that obstruct the path of travel.

Water Ponding in Path of Travel

Indicate if any water ponding exists within the travel path of the curb ramp.

Detectable Warning Surface (DWS)

Indicate if a detectable warning surface is to be used.

DWS Type

If "Yes" is answered in previous question, indicate what type of DWS will be used. If "Other", fill in cell to the right to indicate what type of DWS is being used.

Pedestrian Crossings

Indicate if a pedestrian crossing exists. If a pedestrian crossing does not exist, a curb ramp is not needed. The crossing may be marked or unmarked. If "Yes", the cell to the right will become highlighted with blue fill, requiring it to be completed.

- single ramp with a single cross walk.
- single ramp with a double cross walk.

Ramp Leads to Accessible Path

Indicate if the ramp leads to an accessible path, such as a sidewalk or a pedestrian pushbutton.

Crossing Control Type

Indicate the type of vehicular traffic control device/measure at the pedestrian crossing.

STOP/YIELD - If a stop or yield sign is installed or traffic is controlled by a stop or yield condition (i.e. Driveway).

UNCONTROLLED - If vehicular traffic is not controlled by a traffic control device at the pedestrian crossing.

TRAFFIC SIGNAL - If vehicular traffic is controlled by a Traffic Signal at the pedestrian crossing.

MIDBLOCK - If the pedestrian crossing is at a mid block crossing.



Instructions

Longitudinal/Cross slope in Front of Ramp

Manually insert the longitudinal and cross slope values (as a percentage) in the appropriate cells. The longitudinal slope is equal to the slope parallel to the direction of the ramp (in the street); the cross slope is equal to the slope perpendicular to the direction of the ramp (in the street).

For a pedestrian crossing where vehicles operate without a yield or stop condition (**UNCONTROLLED** and **TRAFFIC SIGNAL**) and at midblock pedestrian street crossings (**MIDBLOCK**), the cross slope in front of the ramp shall be permitted to equal the street or highway profile grade. For pedestrian crossings where vehicles operate with a yield or stop condition (**STOP/YIELD**), the maximum cross slope in front of the ramp is 2% for a compliant design. If a compliant cross slope cannot be provided in front of the ramp, for crossings with a stop or yield condition, a TIF will need to be submitted.

Ramp Angle with Crosswalk

Manually insert the angle of the ramp to the crosswalk (in degrees). It is preferred that the angle is 20 degrees or less. If the angle is greater than 20 but less than 45, provide a brief explanation in the box below justifying the angle. If the angle is greater than or equal to 45 degrees then it is considered that a turning maneuver is being made in the street. A turning maneuver in the street requires a minimum 4' x 4', 2% max slope(longitudinally and the cross slope) turning area. If the turning area does not meet all of the requirements listed above, then the ramp does not meet RC-67M and is considered Technically Infeasible. A Technically Infeasible Form(TIF) is required. Submit the TIF form with proper justification why this cannot be achieved to meet RC-67M. Show on the plan the turning area at the bottom of the ramp in the street.

Turning Maneuver in Street

Indicate if pedestrians must perform turning maneuvers in the street. If "Yes", a landing is required in the street.

Turning Maneuver at Top of Ramp (Smax)

Indicate if pedestrians must perform turning maneuvers at the top of the ramp. If "Yes", Smax is required.

ECMS # (if applicable)

Manually insert the ECMS # for the project that altered the curb ramp.

Algebraic Δ Grade (Algebraic Change in Grade)

Manually insert the maximum algebraic change between the ramp slope and roadway slope (as a percentage). See the diagram on Sheet 01 - Inspection Form.

Intersection Ramp # of

Manually enter the number for the ramp being investigated followed by the total number of ramps being investigated at the intersection. For example, if the ramp at the intersection of Ramp "X" of "Y" is being investigated, "Y" is the total number of the ramps at the intersection and "X" is the number assigned to the specific ramp being investigated.

Ramp Location

Using the intersection figure shown, select the appropriate button for which the investigated curb ramp is located.

North Leg/North Leg Description

Include the name of the roadway (if applicable) for the northbound roadway. Then directly below that cell, indicate the type of roadway (state route, boulevard, road, street, etc.). If the roadway is a state route number (format: 0000), also include the Segment # (format: 0000) and Offset # (format: 0000) of the intersection. If the roadway is a local road, include the name of the local road and description. Complete this for all legs of the intersection.

	North Leg	Description	Segment	Offset
Example 1:	00016	SR	0010	0020
Example 2:	Oak	ST	n/a	n/a

Ramp Type

Indicate the type of ramp being investigated. Depending on curb ramp type, complete all of the required dimensions on Tab 2 – Inspection Form Continued. Each cell is color-coded to indicate whether the information entered meets RC-67M. If data is entered and the cell becomes highlighted with green fill, the data meets RC-67M. If the cell becomes highlighted with red fill, the data does not meet RC-67M. If the cell becomes highlighted with yellow fill, the data does not match RC-67M but may be due to tie-ins with the existing site. The chart located to the right of the data entry form indicates the minimum measurement requirements (compliance check).

Insert the Latitude and Longitude for each Curb Ramp. Convert to Degrees. Provide a minimum of 5 decimal places for accuracy.

For Example - N40° 06' 16.08" = 40.10447° and W 75° 23' 58.11" = -75.39948°. The program will not allow you to enter a value outside of the geographical area of District 6.

Minimum 4'-0" Pedestrian Access Route(PAR) Maintained within the Limit of Work

A minimum 4'-0" Pedestrian Access Route(PAR) must be maintained within the limit of work. If this requirement is not met then a Technically Infeasible Form (TIF) must be submitted with the CS4401 and the ramps leading to and from the constrained PAR are considered non-compliant and are Technically Infeasible.

The width of the PAR is defined as the width of walkway between two obstructions. This would include flares with slopes greater than 8.3%, utility/street light poles, traffic signal poles and equipment, signs, buildings, street furniture and other unwalkable areas.

A PAR less than 4' but not less than 3' is acceptable if it is not within the slope of work for the project to relocate the obstructions. If the PAR is less than 3' and it is not within the scope of work for the project to relocate the obstruction then the ramp is considered not accessible from that approach. Select NO for Ramp Leads to Accessible Path. See Ramp Leads to Accessible Path above.



Instructions

Pedestrian Push Buttons Accessibility and Compliance

Indicate if pedestrian push buttons are accessible and compliant as defined below.

1. A push button is considered accessible if it is:
 - (a) Adjacent to and can be activated from a firm and stable surface.
2. A push button is considered compliant if it is:
 - (a) Adjacent to a level, non-slip surface to provide access from a wheelchair, and where there is a non-slip wheelchair accessible route to the ramp.
 - (b) A MIN 4' x 4' area in front of the push button is provided and
 - (i) If a turning movement is required in order to activate the push button and then get to the ramp, the max slope (longitudinal and cross slope) in the 4' x 4' area in front of the push button is 2%
 - (ii) If a turning movement is NOT required and the pedestrian/wheelchair is only expected to move forward or parallel from button (not turning), the 2% max slope is preferred but not required. Entire 999 and complete in the Comment Cell the reason why a turning movement is not required.
 - (c) Within 5'-0" of the crosswalk extended
 - (d) Between 1'-6" and 10'-0" of the edge of the curb, shoulder or pavement
 - (e) Parallel to the crosswalk to be used
 - (f) Mounted 42" above the sidewalk or finished grade to the center of the pushbutton and 10" MAX laterally from landing

Not Accessible - The existing or proposed push button is not accessible. Submit a technically infeasible form (TIF)

Accessible and Non-Compliant - The existing or proposed push button is accessible. However, it does not meet all of the requirements for compliance as noted above. Submit a technically infeasible form (TIF)

Accessible and Compliant - The existing or proposed push button is accessible and meets all of the requirements for compliance as noted above.

N/A - There are no existing or proposed push buttons for this crossing.

Sketch

Not used in Design.

Asset

The Asset number will be automatically completed as information is entered into the data entry form.

Status

Not used in Design.

Archive Ramp at location

Not used in Design.

Level of Service

Indicate the level of service, as designed:

Meets RC-67M

Technically Infeasible; Provides Maximum Access (TIF)

TAB 2 – INSPECTION FORM CONTINUED

Indicate the type of ramp being investigated using the curb ramp diagrams. Depending on curb ramp type, complete all of the required dimensions "A" through "EE" and the DWS transition strip values. Each cell is color-coded to indicate whether the information entered meets RC-67M. Use "999" for measurements that are not applicable.

TAB 3 - PICTURES TAB

Click on the "insert button #" button to insert the appropriate picture.

TAB 4 - ADDITIONAL EXPLANATION TAB (IF APPLICABLE)

If additional space is needed to further explain the reasoning behind a certain element but completing a Technically Infeasible Form (TIF) is not required use this area to explain the methodology behind the design as submitted.

Examples -

- (a) Additional room is need to explain why the ramp angle exceeds 20 degrees.
- (b) The longitudinal (running) slope of the sidewalk transition exceeds the 5% maximum allowed per DM2 Chapter 6 but is less than 8.33% maximum for a ramp slope.
- (c) The form is filled out for a Type 1 ramp but there is a greenstrip or other unwalkable surface in which the flare slope can exceed 10% and a 2' rolled concrete flare will be used.



Instructions

TAB 5 - INSTRUCTIONS

Use this tab as a quick reference to the instructions.

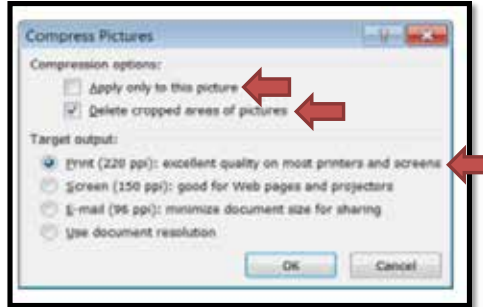
SUBMISSION

Perform the following for submission.

Reduce Image Size

To keep file size to a minimum, select a picture:

1. Click on one of the images that were inserted on Tab 03 - Pictures.
2. Click "Format" under the "Picture Tools" Ribbon.
3. In the Ribbon, click "Compress Pictures"
4. In the "Compress Pictures" Window select the options as noted below and click "OK".

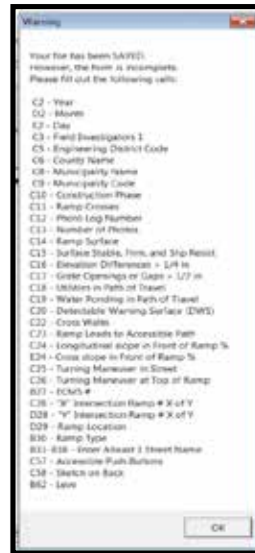


Save File

When saving the file, use Excel 2007 and later format with a *.xls extension. Do not use a different file format. If all the cells are not completed, a warning message will appear. The work has been saved, but the file is not complete. Fill in remaining cells and resave.

Send file to District ADA Coordinator

Upon approval of the curb ramp designs, submit files including the approved plans of the ADA designs, in PDF format, the CS-4401 Design, District 6 Form in Excel 2007 and later format and the Technically Infeasible Form (TIF) in Excel 2007 and later format to District 6 ADA Coordinator on a compact disc. Incomplete submissions will be returned.





Cedar Avenue and 51st Street- Ramp J

*Date of Design (yyyy mm dd)	2018	09	11
Designer 1	Edward Mullen		
Designer 2	Bernadette Callahan		
*Engineering District Code	06 - District 6-0		
*County Name	Philadelphia		
*County Code (auto)	101		
*Municipality Name	Philadelphia City		
*Municipality Code (auto)	60000		
Construction Phase	Constructed		
Ramp Crosses	Both		
Photo Log Number	1		
Number of Photos	1		
Ramp Surface	Concrete		
Surface Stable, Firm, and Slip Resistant	Yes		
Elevation Differences > 1/4"	No		(X/16")
Grate Openings or Gaps > 1/2"	No		(X/16")
Utilities in Path of Travel	No		
Water Ponding in Path of Travel	No		
Detectable Warning Surface (DWS)	Yes		
DWS type	Poly Comp		
Pedestrian Crossing and Type	Yes	Single Ramp with Single Cross Walk	
Ramp Leads to Accessible Path	Yes	Crossing Control Type	(select)
Longitudinal / Cross slope in Front of Ramp	4.00	%	1.00 %
Turning Maneuver in Street	No	Ramp Angle with Crosswalk	7 degrees
Turning Maneuver at Top of Ramp (Smax)	Yes	Comments:	
ECMS #	Alg D Grade (%)	10.9	
Intersection Ramp # of #	1	4	
*Ramp Location (Use Figure Below)	19		
*Curb Ramp Type	Type 1		
*North Leg	51st	(segment)	(offset)
*North Leg Desc.	St		
*East Leg	Cedar	(segment)	(offset)
*East Leg Desc.	Ave		
*South Leg	51st	(segment)	(offset)
*South Leg Desc.	St		
*West Leg	Cedar	(segment)	(offset)
*West Leg Desc.	Ave		
Ramp Coordinates	Latitude	39.95018	
	Longitude	-75.22503	

Z° = Ramp Angle w/Crosswalk

Algebraic Difference

ACCESSIBLE PUSH BUTTONS

120" MIN 120" MAX 60" MAX

DIMENSIONS ARE ABSOLUTE FOR NEW INSTALLATIONS

Algebraic Difference = X% - (-Y%)

Algebraic Difference = X% - Y%

Minimum 4'-0" Pedestrian Access Route (PAR) Maintained within the Limit of Work	Yes
Push Button Turning Area - Max Slope (%)	Comments:
Accessible Push Buttons	N/A
Sketch Used To Collect Field Information	No
Asset # (auto)	C-06-101-60000-51stSt-CedarAve-51stSt-CedarAve-2018-09-11-19-Type1
Status	Current
Archive Ramp at location #:	N/A
Level of Service	Meets RC-67M



Cedar Avenue and 51st Street- Ramp J

<p><input type="checkbox"/> TYPE 1</p> <p>MAX ALG. CHANGE IN GRADE _____ % TOP TURNING AREA <input type="checkbox"/> IF YES, MAX SLOPE "S" _____ %</p>	<p><input type="checkbox"/> TYPE 1A</p> <p>MAX ALG. CHANGE IN GRADE _____ %</p>	<p><input type="checkbox"/> TYPE 2</p> <p>MAX ALG. CHANGE IN GRADE _____ %</p>																																																																																																													
<p><input type="checkbox"/> TYPE 3</p> <p>MAX ALG. CHANGE IN GRADE _____ % TOP TURNING AREA <input type="checkbox"/> IF YES, MAX SLOPE "S" _____ %</p>	<p><input type="checkbox"/> TYPE 4</p> <p>MAX ALG. CHANGE IN GRADE _____ % TOP TURNING AREA <input type="checkbox"/> IF YES, MAX SLOPE "S" _____ %</p>	<p><input type="checkbox"/> TYPE 4A</p> <p>MAX ALG. CHANGE IN GRADE _____ % TOP TURNING AREA <input type="checkbox"/> IF YES, MAX SLOPE "S" _____ %</p>																																																																																																													
<p><input type="checkbox"/> TYPE 5</p> <p>MAX ALG. CHANGE IN GRADE _____ % RAILING <input type="checkbox"/> NO <input type="checkbox"/> YES "CC" RAIL HEIGHT _____ INCHES</p>	<p><input type="checkbox"/> TYPE 6</p> <p>MAX ALG. CHANGE IN GRADE _____ %</p>	<table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr> <th colspan="2" style="background-color: #e0e0e0;">"0.00" inches or %</th> <th></th> </tr> </thead> <tbody> <tr><td>*</td><td>A</td><td>48 (IN)</td></tr> <tr><td>*</td><td>B</td><td>70 (IN)</td></tr> <tr><td>*</td><td>C</td><td>6.90 (%)</td></tr> <tr><td>*</td><td>D</td><td>9.30 (%)</td></tr> <tr><td>*</td><td>E</td><td>8.65 (%)</td></tr> <tr><td>*</td><td>F</td><td>6.90 (%)</td></tr> <tr><td>*</td><td>G</td><td>6.90 (%)</td></tr> <tr><td>*</td><td>H</td><td>7.40 (%)</td></tr> <tr><td>*</td><td>I</td><td>7.20 (%)</td></tr> <tr><td>*</td><td>J</td><td>129 (IN)</td></tr> <tr><td>*</td><td>K</td><td>4 (IN)</td></tr> <tr><td>*</td><td>L</td><td>41 (IN)</td></tr> <tr><td>*</td><td>M</td><td>124 (IN)</td></tr> <tr><td>*</td><td>N</td><td>4 (IN)</td></tr> <tr><td>*</td><td>O</td><td>60 (IN)</td></tr> <tr><td>*</td><td>P</td><td>58 (IN)</td></tr> <tr><td>*</td><td>Q</td><td>2.00 (%)</td></tr> <tr><td>*</td><td>R</td><td>1.90 (%)</td></tr> <tr><td>*</td><td>S</td><td>1.90 (%)</td></tr> <tr><td>*</td><td>T</td><td>0 (IN)</td></tr> <tr><td>*</td><td>U</td><td>0 (IN)</td></tr> <tr><td>*</td><td>V</td><td>0 (%)</td></tr> <tr><td>*</td><td>W</td><td>1.00 (%)</td></tr> <tr><td>*</td><td>X</td><td>0 (IN)</td></tr> <tr><td>*</td><td>Y</td><td>0 (IN)</td></tr> <tr><td>*</td><td>YY</td><td>120 (IN)</td></tr> <tr><td>*</td><td>Z</td><td>0 (IN)</td></tr> <tr><td>*</td><td>ZZ</td><td>48 (IN)</td></tr> <tr><td>*</td><td>AA</td><td>0 (IN)</td></tr> <tr><td>*</td><td>BB</td><td>0 (IN)</td></tr> <tr><td>*</td><td>CC</td><td>0 (IN)</td></tr> <tr><td>*</td><td>DD</td><td>1.30 (%)</td></tr> <tr><td>*</td><td>EE</td><td>1.00 (%)</td></tr> <tr style="background-color: #e0e0e0;"><td colspan="2" style="text-align: center;">DWS Transition Strip</td><td style="text-align: center;">No</td></tr> <tr><td colspan="2" style="text-align: center;">DWS Transition Strip Slope (FF)</td><td style="text-align: center;">(%)</td></tr> </tbody> </table>		"0.00" inches or %			*	A	48 (IN)	*	B	70 (IN)	*	C	6.90 (%)	*	D	9.30 (%)	*	E	8.65 (%)	*	F	6.90 (%)	*	G	6.90 (%)	*	H	7.40 (%)	*	I	7.20 (%)	*	J	129 (IN)	*	K	4 (IN)	*	L	41 (IN)	*	M	124 (IN)	*	N	4 (IN)	*	O	60 (IN)	*	P	58 (IN)	*	Q	2.00 (%)	*	R	1.90 (%)	*	S	1.90 (%)	*	T	0 (IN)	*	U	0 (IN)	*	V	0 (%)	*	W	1.00 (%)	*	X	0 (IN)	*	Y	0 (IN)	*	YY	120 (IN)	*	Z	0 (IN)	*	ZZ	48 (IN)	*	AA	0 (IN)	*	BB	0 (IN)	*	CC	0 (IN)	*	DD	1.30 (%)	*	EE	1.00 (%)	DWS Transition Strip		No	DWS Transition Strip Slope (FF)		(%)
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<p><input type="checkbox"/> BLENDED TRANSITION</p> <p>MAX ALG. CHANGE IN GRADE _____ %</p>	<p><input type="checkbox"/> NON-TYPICAL</p> <p>"A" RAMP WIDTH "B" RAMP LENGTH "C" RAMP SLOPE "D" LT FLARE SLOPE "I" RT FLARE SLOPE "J" LT SIDEWALK WIDTH "M" RT SIDEWALK WIDTH "P" SIDEWALK LANDING DEPTH "Q" LT SIDEWALK CROSS SLOPE "R" RT SIDEWALK CROSS SLOPE "S" SIDEWALK LANDING MAX SLOPE "W" RAMP MAX CROSS SLOPE</p> <p>MAX ALG. CHANGE IN GRADE _____ % SIDEWALK TURNING AREA <input type="checkbox"/> IF YES, DESIGNATE MAX SLOPE "S"</p>																																																																																																														
<p><input type="checkbox"/> TYPE A MEDIAN</p> <p><input type="checkbox"/> TYPE B MEDIAN</p>																																																																																																															

Comments ▲



Cedar Avenue and 51st Street- Ramp J



Insert Picture 1



Insert Picture 4



Insert Picture 2



Insert Picture 5



Insert Picture 3



Insert Picture 6



Cedar Avenue and 51st Street- Ramp J

Additional Explanation #1

Additional Explanation #2

Additional Explanation #3

Additional Explanation #4



Instructions

The District 6 Curb Ramp Design Form (CS-4401 Design, District 6) will be used for the design of all curb ramps in District 6 to ensure compliance with PENNDOT standards. The use of this form is required for to be constructed curb ramps. A thorough and rigorous review of the design for each curb ramp will be completed to ensure compliance with PENNDOT Standard RC-67M. The slopes indicated in RC-67M are absolute maximum slopes. Only slopes that are equal to or less than the indicated slopes are acceptable. When fully meeting the RC-67M standards is "Technically Infeasible", the curb ramp must be designed to the maximum extent feasible to provide handicap access. See Publication 13M - Design Manual 2, Chapter 6 for additional information on Technically Infeasible.

When used in the design phase, this form and corresponding plans will document all pertinent values and serve as a record that PENNDOT has reviewed the design. Based on the information provided in the CS-4401 and corresponding plans, the ramp will be classified as EITHER Meeting RC-67M or Technically Infeasible. If a ramp is Technically Infeasible then the Technically Infeasible Form (TIF) must be submitted with the CS-4401 and corresponding plans. PENNDOT will then review the TIF to determine if the ramp has been designed to provide access to the maximum extent feasible within the scope of the work for project. PENNDOT will review the investigated alternatives as submitted in the TIF and determine that the best possible solution was chosen and that no other design alternatives, as noted in the TIF or otherwise, within the scope of work for the project exists. Approval for all Technically Infeasible ramps will come from both the District ADA Coordinator and Assistant District Engineer by signing the Technically Infeasible Form (TIF).

INSTRUCTIONS

Before you Begin:

The electronic file is delivered in Excel 97-2003 Workbook *.xls format. When saving the file, use Excel format with a *.xls extension. Do not use a different file format. This file is compatible with Microsoft Excel 2007 and later. It is compatible with 32 bit and 64 bit computers.

The following tabs are included in the form:

- Tab 1. Inspection Form
- Tab 2. Inspection Form Continued
- Tab 3. Pictures
- Tab 4. Additional Explanation
- Tab 5. Instructions

TAB 1 – INSPECTION FORM

All "blue filled" cells require information to be entered. Many cells have a drop down selection with a header. The header is used for filling out a printed version. The header must be changed to the appropriate selection. For example: " No Yes" would be the header. Either "No" or "Yes" must be selected.

Date of Design

Enter the year, month, and day of the investigation (format yyyy dd mm).

Designer 1 & 2

Insert the name(s) of the individuals responsible for the design.

Engineering District Code

Insert the engineering district code.

County Name

Insert the appropriate county. (The county code will automatically fill in once the appropriate county is selected).

Municipality Name

Insert the appropriate municipality name.
(The municipality code will automatically fill in once the appropriate municipality name is entered).



Instructions

Construction Phase

Select the appropriate status of the curb ramp being investigated.

- Constructed. Select this phase for ramps that are to be newly constructed curb ramps.
- Existing-Survey. Select this phase for documenting existing curb ramps.
- Missing. Select this phase for documenting missing curb ramps.

Ramp Crosses

Select what type of roadway the ramp crosses and or services.

Photo Log Number

Manually insert a photo log number with approximate time the photo was taken.

Number of Photos

Enter the number of photos.

Ramp Surface

Select ramp surface type (brick, concrete or other). If "other", manually insert the surface type in the cell immediately to the right of the surface type.

Surface Stable, Firm, and Slip Resistant

Indicate if the curb ramp surface is stable, firm, and slip resistant.

Elevation Differences > 1/4"

Indicate if any vertical elevation differences between sections of sidewalk found anywhere on the curb ramp that are greater than 1/4" exist. If vertical elevation differences exist, measure to the nearest 1/16 of an inch. For example, if measured 1/2" enter "8" (8/16) on the form, or if measured 2" enter 32 (32/16) in the form.

Grate Openings or Gaps > 1/2"

Indicate if any grate openings or gaps greater than 1/2" are located within the immediate pedestrian path. If horizontal gaps exist, measure to the nearest 1/16 of an inch. For example, if measured 1/2" enter "8" (8/16) on the form, or if measured 2" enter 32 (32/16) on the form.

Utilities in Path of Travel

Indicate if there are any utilities that obstruct the path of travel.

Water Ponding in Path of Travel

Indicate if any water ponding exists within the travel path of the curb ramp.

Detectable Warning Surface (DWS)

Indicate if a detectable warning surface is to be used.

DWS Type

If "Yes" is answered in previous question, indicate what type of DWS will be used. If "Other", fill in cell to the right to indicate what type of DWS is being used.

Pedestrian Crossings

Indicate if a pedestrian crossing exists. If a pedestrian crossing does not exist, a curb ramp is not needed. The crossing may be marked or unmarked. If "Yes", the cell to the right will become highlighted with blue fill, requiring it to be completed.

- single ramp with a single cross walk.
- single ramp with a double cross walk.

Ramp Leads to Accessible Path

Indicate if the ramp leads to an accessible path, such as a sidewalk or a pedestrian pushbutton.

Crossing Control Type

Indicate the type of vehicular traffic control device/measure at the pedestrian crossing.

STOP/YIELD - If a stop or yield sign is installed or traffic is controlled by a stop or yield condition (i.e. Driveway).

UNCONTROLLED - If vehicular traffic is not controlled by a traffic control device at the pedestrian crossing.

TRAFFIC SIGNAL - If vehicular traffic is controlled by a Traffic Signal at the pedestrian crossing.

MIDBLOCK - If the pedestrian crossing is at a mid block crossing.



Instructions

Longitudinal/Cross slope in Front of Ramp

Manually insert the longitudinal and cross slope values (as a percentage) in the appropriate cells. The longitudinal slope is equal to the slope parallel to the direction of the ramp (in the street); the cross slope is equal to the slope perpendicular to the direction of the ramp (in the street).

For a pedestrian crossing where vehicles operate without a yield or stop condition (**UNCONTROLLED** and **TRAFFIC SIGNAL**) and at midblock pedestrian street crossings (**MIDBLOCK**), the cross slope in front of the ramp shall be permitted to equal the street or highway profile grade. For pedestrian crossings where vehicles operate with a yield or stop condition (**STOP/YIELD**), the maximum cross slope in front of the ramp is 2% for a compliant design. If a compliant cross slope cannot be provided in front of the ramp, for crossings with a stop or yield condition, a TIF will need to be submitted.

Ramp Angle with Crosswalk

Manually insert the angle of the ramp to the crosswalk (in degrees). It is preferred that the angle is 20 degrees or less. If the angle is greater than 20 but less than 45, provide a brief explanation in the box below justifying the angle. If the angle is greater than or equal to 45 degrees then it is considered that a turning maneuver is being made in the street. A turning maneuver in the street requires a minimum 4' x 4', 2% max slope(longitudinally and the cross slope) turning area. If the turning area does not meet all of the requirements listed above, then the ramp does not meet RC-67M and is considered Technically Infeasible. A Technically Infeasible Form(TIF) is required. Submit the TIF form with proper justification why this cannot be achieved to meet RC-67M. Show on the plan the turning area at the bottom of the ramp in the street.

Turning Maneuver in Street

Indicate if pedestrians must perform turning maneuvers in the street. If "Yes", a landing is required in the street.

Turning Maneuver at Top of Ramp (Smax)

Indicate if pedestrians must perform turning maneuvers at the top of the ramp. If "Yes", Smax is required.

ECMS # (if applicable)

Manually insert the ECMS # for the project that altered the curb ramp.

Algebraic Δ Grade (Algebraic Change in Grade)

Manually insert the maximum algebraic change between the ramp slope and roadway slope (as a percentage). See the diagram on Sheet 01 - Inspection Form.

Intersection Ramp # of

Manually enter the number for the ramp being investigated followed by the total number of ramps being investigated at the intersection. For example, if the ramp at the intersection of Ramp "X" of "Y" is being investigated, "Y" is the total number of the ramps at the intersection and "X" is the number assigned to the specific ramp being investigated.

Ramp Location

Using the intersection figure shown, select the appropriate button for which the investigated curb ramp is located.

North Leg/North Leg Description

Include the name of the roadway (if applicable) for the northbound roadway. Then directly below that cell, indicate the type of roadway (state route, boulevard, road, street, etc.). If the roadway is a state route number (format: 0000), also include the Segment # (format: 0000) and Offset # (format: 0000) of the intersection. If the roadway is a local road, include the name of the local road and description. Complete this for all legs of the intersection.

	North Leg	Description	Segment	Offset
Example 1:	00016	SR	0010	0020
Example 2:	Oak	ST	n/a	n/a

Ramp Type

Indicate the type of ramp being investigated. Depending on curb ramp type, complete all of the required dimensions on Tab 2 – Inspection Form Continued. Each cell is color-coded to indicate whether the information entered meets RC-67M. If data is entered and the cell becomes highlighted with green fill, the data meets RC-67M. If the cell becomes highlighted with red fill, the data does not meet RC-67M. If the cell becomes highlighted with yellow fill, the data does not match RC-67M but may be due to tie-ins with the existing site. The chart located to the right of the data entry form indicates the minimum measurement requirements (compliance check).

Insert the Latitude and Longitude for each Curb Ramp. Convert to Degrees. Provide a minimum of 5 decimal places for accuracy.

For Example - N40° 06' 16.08" = 40.10447° and W 75° 23' 58.11" = -75.39948°. The program will not allow you to enter a value outside of the geographical area of District 6.

Minimum 4'-0" Pedestrian Access Route(PAR) Maintained within the Limit of Work

A minimum 4'-0" Pedestrian Access Route(PAR) must be maintained within the limit of work. If this requirement is not met then a Technically Infeasible Form (TIF) must be submitted with the CS4401 and the ramps leading to and from the constrained PAR are considered non-compliant and are Technically Infeasible.

The width of the PAR is defined as the width of walkway between two obstructions. This would include flares with slopes greater than 8.3%, utility/street light poles, traffic signal poles and equipment, signs, buildings, street furniture and other unwalkable areas.

A PAR less than 4' but not less than 3' is acceptable if it is not within the slope of work for the project to relocate the obstructions. If the PAR is less than 3' and it is not within the scope of work for the project to relocate the obstruction then the ramp is considered not accessible from that approach. Select NO for Ramp Leads to Accessible Path. See Ramp Leads to Accessible Path above.



Instructions

Pedestrian Push Buttons Accessibility and Compliance

Indicate if pedestrian push buttons are accessible and compliant as defined below.

1. A push button is considered accessible if it is:
 - (a) Adjacent to and can be activated from a firm and stable surface.
2. A push button is considered compliant if it is:
 - (a) Adjacent to a level, non-slip surface to provide access from a wheelchair, and where there is a non-slip wheelchair accessible route to the ramp.
 - (b) A MIN 4' x 4' area in front of the push button is provided and
 - (i) If a turning movement is required in order to activate the push button and then get to the ramp, the max slope (longitudinal and cross slope) in the 4' x 4' area in front of the push button is 2%
 - (ii) If a turning movement is NOT required and the pedestrian/wheelchair is only expected to move forward or parallel from button (not turning), the 2% max slope is preferred but not required. Entire 999 and complete in the Comment Cell the reason why a turning movement is not required.
 - (c) Within 5'-0" of the crosswalk extended
 - (d) Between 1'-6" and 10'-0" of the edge of the curb, shoulder or pavement
 - (e) Parallel to the crosswalk to be used
 - (f) Mounted 42" above the sidewalk or finished grade to the center of the pushbutton and 10" MAX laterally from landing

Not Accessible - The existing or proposed push button is not accessible. Submit a technically infeasible form (TIF)

Accessible and Non-Compliant - The existing or proposed push button is accessible. However, it does not meet all of the requirements for compliance as noted above. Submit a technically infeasible form (TIF)

Accessible and Compliant - The existing or proposed push button is accessible and meets all of the requirements for compliance as noted above.

N/A - There are no existing or proposed push buttons for this crossing.

Sketch

Not used in Design.

Asset

The Asset number will be automatically completed as information is entered into the data entry form.

Status

Not used in Design.

Archive Ramp at location

Not used in Design.

Level of Service

Indicate the level of service, as designed:

Meets RC-67M

Technically Infeasible; Provides Maximum Access (TIF)

TAB 2 – INSPECTION FORM CONTINUED

Indicate the type of ramp being investigated using the curb ramp diagrams. Depending on curb ramp type, complete all of the required dimensions "A" through "EE" and the DWS transition strip values. Each cell is color-coded to indicate whether the information entered meets RC-67M. Use "999" for measurements that are not applicable.

TAB 3 - PICTURES TAB

Click on the "insert button #" button to insert the appropriate picture.

TAB 4 - ADDITIONAL EXPLANATION TAB (IF APPLICABLE)

If additional space is needed to further explain the reasoning behind a certain element but completing a Technically Infeasible Form (TIF) is not required use this area to explain the methodology behind the design as submitted.

Examples -

- (a) Additional room is need to explain why the ramp angle exceeds 20 degrees.
- (b) The longitudinal (running) slope of the sidewalk transition exceeds the 5% maximum allowed per DM2 Chapter 6 but is less than 8.33% maximum for a ramp slope.
- (c) The form is filled out for a Type 1 ramp but there is a greenstrip or other unwalkable surface in which the flare slope can exceed 10% and a 2' rolled concrete flare will be used.



Instructions

TAB 5 - INSTRUCTIONS

Use this tab as a quick reference to the instructions.

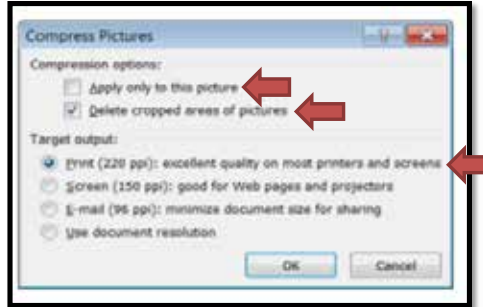
SUBMISSION

Perform the following for submission.

Reduce Image Size

To keep file size to a minimum, select a picture:

1. Click on one of the images that were inserted on Tab 03 - Pictures.
2. Click "Format" under the "Picture Tools" Ribbon.
3. In the Ribbon, click "Compress Pictures"
4. In the "Compress Pictures" Window select the options as noted below and click "OK".

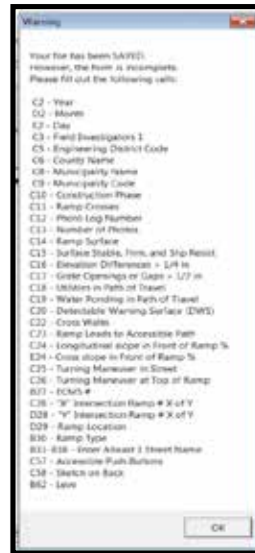


Save File

When saving the file, use Excel 2007 and later format with a *.xls extension. Do not use a different file format. If all the cells are not completed, a warning message will appear. The work has been saved, but the file is not complete. Fill in remaining cells and resave.

Send file to District ADA Coordinator

Upon approval of the curb ramp designs, submit files including the approved plans of the ADA designs, in PDF format, the CS-4401 Design, District 6 Form in Excel 2007 and later format and the Technically Infeasible Form (TIF) in Excel 2007 and later format to District 6 ADA Coordinator on a compact disc. Incomplete submissions will be returned.





Cedar Avenue and 51st Street- Ramp K

*Date of Design (yyyy mm dd)	2018	09	11
Designer 1	Edward Mullen		
Designer 2	Bernadette Callahan		
*Engineering District Code	06 - District 6-0		
*County Name	Philadelphia		
*County Code (auto)	101		
*Municipality Name	Philadelphia City		
*Municipality Code (auto)	60000		
Construction Phase	Constructed		
Ramp Crosses	Both		
Photo Log Number	1		
Number of Photos	1		
Ramp Surface	Concrete		
Surface Stable, Firm, and Slip Resistant	Yes		
Elevation Differences > 1/4"	No		(X/16")
Grate Openings or Gaps > 1/2"	No		(X/16")
Utilities in Path of Travel	No		
Water Ponding in Path of Travel	No		
Detectable Warning Surface (DWS)	Yes		
DWS type	Poly Comp		
Pedestrian Crossing and Type	Yes	Single Ramp with Single Cross Walk	
Ramp Leads to Accessible Path	Yes	Crossing Control Type	(select)
Longitudinal / Cross slope in Front of Ramp	2.70	%	1.00 %
Turning Maneuver in Street	No	Ramp Angle with Crosswalk	13 degrees
Turning Maneuver at Top of Ramp (Smax)	Yes	Comments:	
ECMS #	Alg D Grade (%)	9.8	
Intersection Ramp # of #	1	4	
*Ramp Location (Use Figure Below)	17		
*Curb Ramp Type	Type 1		
*North Leg	51st	(segment)	(offset)
*North Leg Desc.	St		
*East Leg	Cedar	(segment)	(offset)
*East Leg Desc.	Ave		
*South Leg	51st	(segment)	(offset)
*South Leg Desc.	St		
*West Leg	Cedar	(segment)	(offset)
*West Leg Desc.	Ave		
Ramp Coordinates	Latitude	39.95016	
	Longitude	-75.22499	

Minimum 4'-0" Pedestrian Access Route (PAR) Maintained within the Limit of Work	Yes
Push Button Turning Area - Max Slope (%)	Comments:
Accessible Push Buttons	N/A
Sketch Used To Collect Field Information	No
Asset # (auto)	C-06-101-60000-51stSt-CedarAve-51stSt-CedarAve-2018-09-11-17-Type1
Status	Current
Archive Ramp at location #:	N/A
Level of Service	Meets RC-67M



Cedar Avenue and 51st Street- Ramp K

<p><input type="checkbox"/> TYPE 1</p> <p>MAX ALG. CHANGE IN GRADE _____ % TOP TURNING AREA <input type="checkbox"/> IF YES, MAX SLOPE "S" _____ %</p>	<p><input type="checkbox"/> TYPE 1A</p> <p>MAX ALG. CHANGE IN GRADE _____ %</p>	<p><input type="checkbox"/> TYPE 2</p> <p>MAX ALG. CHANGE IN GRADE _____ %</p>																																																																												
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<p><input type="checkbox"/> TYPE 5</p> <p>MAX ALG. CHANGE IN GRADE _____ % RAILING <input type="checkbox"/> NO <input type="checkbox"/> YES "CC" RAIL HEIGHT _____ INCHES</p>	<p><input type="checkbox"/> TYPE 6</p> <p>MAX ALG. CHANGE IN GRADE _____ %</p>	<table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr> <th colspan="2" style="background-color: #e0e0e0;">"0.00" inches or %</th> </tr> </thead> <tbody> <tr><td>* A</td><td>48 (IN)</td></tr> <tr><td>* B</td><td>72 (IN)</td></tr> <tr><td>* C</td><td>7.10 (%)</td></tr> <tr><td>* D</td><td>7.60 (%)</td></tr> <tr><td>* E</td><td>8.00 (%)</td></tr> <tr><td>* F</td><td>7.10 (%)</td></tr> <tr><td>* G</td><td>7.10 (%)</td></tr> <tr><td>* H</td><td>8.25 (%)</td></tr> <tr><td>* I</td><td>7.30 (%)</td></tr> <tr><td>* J</td><td>129 (IN)</td></tr> <tr><td>* K</td><td>4 (IN)</td></tr> <tr><td>* L</td><td>48 (IN)</td></tr> <tr><td>* M</td><td>124 (IN)</td></tr> <tr><td>* N</td><td>4 (IN)</td></tr> <tr><td>* O</td><td>57 (IN)</td></tr> <tr><td>* P</td><td>66 (IN)</td></tr> <tr><td>* Q</td><td>2.00 (%)</td></tr> <tr><td>* R</td><td>1.90 (%)</td></tr> <tr><td>* S</td><td>2.00 (%)</td></tr> <tr><td>* T</td><td>0 (IN)</td></tr> <tr><td>* U</td><td>0 (IN)</td></tr> <tr><td>* V</td><td>0 (%)</td></tr> <tr><td>* W</td><td>1.00 (%)</td></tr> <tr><td>* X</td><td>0 (IN)</td></tr> <tr><td>* Y</td><td>0 (IN)</td></tr> <tr><td>* YY</td><td>120 (IN)</td></tr> <tr><td>* Z</td><td>0 (IN)</td></tr> <tr><td>* ZZ</td><td>48 (IN)</td></tr> <tr><td>* AA</td><td>0 (IN)</td></tr> <tr><td>* BB</td><td>0 (IN)</td></tr> <tr><td>* CC</td><td>0 (IN)</td></tr> <tr><td>* DD</td><td>1.30 (%)</td></tr> <tr><td>* EE</td><td>1.00 (%)</td></tr> <tr style="background-color: #e0e0e0;"><td colspan="2" style="text-align: center;">DWS Transition Strip</td></tr> <tr><td colspan="2" style="text-align: center;">No</td></tr> <tr style="background-color: #e0e0e0;"><td colspan="2" style="text-align: center;">DWS Transition Strip Slope (FF)</td></tr> <tr><td colspan="2" style="text-align: center;">(%)</td></tr> </tbody> </table>	"0.00" inches or %		* A	48 (IN)	* B	72 (IN)	* C	7.10 (%)	* D	7.60 (%)	* E	8.00 (%)	* F	7.10 (%)	* G	7.10 (%)	* H	8.25 (%)	* I	7.30 (%)	* J	129 (IN)	* K	4 (IN)	* L	48 (IN)	* M	124 (IN)	* N	4 (IN)	* O	57 (IN)	* P	66 (IN)	* Q	2.00 (%)	* R	1.90 (%)	* S	2.00 (%)	* T	0 (IN)	* U	0 (IN)	* V	0 (%)	* W	1.00 (%)	* X	0 (IN)	* Y	0 (IN)	* YY	120 (IN)	* Z	0 (IN)	* ZZ	48 (IN)	* AA	0 (IN)	* BB	0 (IN)	* CC	0 (IN)	* DD	1.30 (%)	* EE	1.00 (%)	DWS Transition Strip		No		DWS Transition Strip Slope (FF)		(%)	
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<p><input type="checkbox"/> BLENDED TRANSITION</p> <p>MAX ALG. CHANGE IN GRADE _____ %</p>	<p><input type="checkbox"/> NON-TYPICAL</p> <p>"A" RAMP WIDTH "B" RAMP LENGTH "C" RAMP SLOPE "D" LT FLARE SLOPE "I" RT FLARE SLOPE "J" LT SIDEWALK WIDTH "M" RT SIDEWALK WIDTH "P" SIDEWALK LANDING DEPTH "Q" LT SIDEWALK CROSS SLOPE "R" RT SIDEWALK CROSS SLOPE "S" SIDEWALK LANDING MAX SLOPE "W" RAMP MAX CROSS SLOPE</p> <p>MAX ALG. CHANGE IN GRADE _____ % SIDEWALK TURNING AREA <input type="checkbox"/> IF YES, DESIGNATE MAX SLOPE "S"</p>																																																																													
<p><input type="checkbox"/> TYPE A MEDIAN</p> <p><input type="checkbox"/> TYPE B MEDIAN</p>																																																																														

Comments ▲



Cedar Avenue and 51st Street- Ramp K



Insert Picture 1



Insert Picture 4



Insert Picture 2



Insert Picture 5



Insert Picture 3



Insert Picture 6



Cedar Avenue and 51st Street- Ramp K

Additional Explanation #1

Additional Explanation #2

Additional Explanation #3

Additional Explanation #4



Instructions

The District 6 Curb Ramp Design Form (CS-4401 Design, District 6) will be used for the design of all curb ramps in District 6 to ensure compliance with PENNDOT standards. The use of this form is required for to be constructed curb ramps. A thorough and rigorous review of the design for each curb ramp will be completed to ensure compliance with PENNDOT Standard RC-67M. The slopes indicated in RC-67M are absolute maximum slopes. Only slopes that are equal to or less than the indicated slopes are acceptable. When fully meeting the RC-67M standards is "Technically Infeasible", the curb ramp must be designed to the maximum extent feasible to provide handicap access. See Publication 13M - Design Manual 2, Chapter 6 for additional information on Technically Infeasible.

When used in the design phase, this form and corresponding plans will document all pertinent values and serve as a record that PENNDOT has reviewed the design. Based on the information provided in the CS-4401 and corresponding plans, the ramp will be classified as EITHER Meeting RC-67M or Technically Infeasible. If a ramp is Technically Infeasible then the Technically Infeasible Form (TIF) must be submitted with the CS-4401 and corresponding plans. PENNDOT will then review the TIF to determine if the ramp has been designed to provide access to the maximum extent feasible within the scope of the work for project. PENNDOT will review the investigated alternatives as submitted in the TIF and determine that the best possible solution was chosen and that no other design alternatives, as noted in the TIF or otherwise, within the scope of work for the project exists. Approval for all Technically Infeasible ramps will come from both the District ADA Coordinator and Assistant District Engineer by signing the Technically Infeasible Form (TIF).

INSTRUCTIONS

Before you Begin:

The electronic file is delivered in Excel 97-2003 Workbook *.xls format. When saving the file, use Excel format with a *.xls extension. Do not use a different file format. This file is compatible with Microsoft Excel 2007 and later. It is compatible with 32 bit and 64 bit computers.

The following tabs are included in the form:

- Tab 1. Inspection Form
- Tab 2. Inspection Form Continued
- Tab 3. Pictures
- Tab 4. Additional Explanation
- Tab 5. Instructions

TAB 1 – INSPECTION FORM

All "blue filled" cells require information to be entered. Many cells have a drop down selection with a header. The header is used for filling out a printed version. The header must be changed to the appropriate selection. For example: " No Yes" would be the header. Either "No" or "Yes" must be selected.

Date of Design

Enter the year, month, and day of the investigation (format yyyy dd mm).

Designer 1 & 2

Insert the name(s) of the individuals responsible for the design.

Engineering District Code

Insert the engineering district code.

County Name

Insert the appropriate county. (The county code will automatically fill in once the appropriate county is selected).

Municipality Name

Insert the appropriate municipality name.
(The municipality code will automatically fill in once the appropriate municipality name is entered).



Instructions

Construction Phase

Select the appropriate status of the curb ramp being investigated.

- Constructed. Select this phase for ramps that are to be newly constructed curb ramps.
- Existing-Survey. Select this phase for documenting existing curb ramps.
- Missing. Select this phase for documenting missing curb ramps.

Ramp Crosses

Select what type of roadway the ramp crosses and or services.

Photo Log Number

Manually insert a photo log number with approximate time the photo was taken.

Number of Photos

Enter the number of photos.

Ramp Surface

Select ramp surface type (brick, concrete or other). If "other", manually insert the surface type in the cell immediately to the right of the surface type.

Surface Stable, Firm, and Slip Resistant

Indicate if the curb ramp surface is stable, firm, and slip resistant.

Elevation Differences > 1/4"

Indicate if any vertical elevation differences between sections of sidewalk found anywhere on the curb ramp that are greater than 1/4" exist. If vertical elevation differences exist, measure to the nearest 1/16 of an inch. For example, if measured 1/2" enter "8" (8/16) on the form, or if measured 2" enter 32 (32/16) in the form.

Grate Openings or Gaps > 1/2"

Indicate if any grate openings or gaps greater than 1/2" are located within the immediate pedestrian path. If horizontal gaps exist, measure to the nearest 1/16 of an inch. For example, if measured 1/2" enter "8" (8/16) on the form, or if measured 2" enter 32 (32/16) on the form.

Utilities in Path of Travel

Indicate if there are any utilities that obstruct the path of travel.

Water Ponding in Path of Travel

Indicate if any water ponding exists within the travel path of the curb ramp.

Detectable Warning Surface (DWS)

Indicate if a detectable warning surface is to be used.

DWS Type

If "Yes" is answered in previous question, indicate what type of DWS will be used. If "Other", fill in cell to the right to indicate what type of DWS is being used.

Pedestrian Crossings

Indicate if a pedestrian crossing exists. If a pedestrian crossing does not exist, a curb ramp is not needed. The crossing may be marked or unmarked. If "Yes", the cell to the right will become highlighted with blue fill, requiring it to be completed.

- single ramp with a single cross walk.
- single ramp with a double cross walk.

Ramp Leads to Accessible Path

Indicate if the ramp leads to an accessible path, such as a sidewalk or a pedestrian pushbutton.

Crossing Control Type

Indicate the type of vehicular traffic control device/measure at the pedestrian crossing.

STOP/YIELD - If a stop or yield sign is installed or traffic is controlled by a stop or yield condition (i.e. Driveway).

UNCONTROLLED - If vehicular traffic is not controlled by a traffic control device at the pedestrian crossing.

TRAFFIC SIGNAL - If vehicular traffic is controlled by a Traffic Signal at the pedestrian crossing.

MIDBLOCK - If the pedestrian crossing is at a mid block crossing.



Instructions

Longitudinal/Cross slope in Front of Ramp

Manually insert the longitudinal and cross slope values (as a percentage) in the appropriate cells. The longitudinal slope is equal to the slope parallel to the direction of the ramp (in the street); the cross slope is equal to the slope perpendicular to the direction of the ramp (in the street).

For a pedestrian crossing where vehicles operate without a yield or stop condition (**UNCONTROLLED** and **TRAFFIC SIGNAL**) and at midblock pedestrian street crossings (**MIDBLOCK**), the cross slope in front of the ramp shall be permitted to equal the street or highway profile grade. For pedestrian crossings where vehicles operate with a yield or stop condition (**STOP/YIELD**), the maximum cross slope in front of the ramp is 2% for a compliant design. If a compliant cross slope cannot be provided in front of the ramp, for crossings with a stop or yield condition, a TIF will need to be submitted.

Ramp Angle with Crosswalk

Manually insert the angle of the ramp to the crosswalk (in degrees). It is preferred that the angle is 20 degrees or less. If the angle is greater than 20 but less than 45, provide a brief explanation in the box below justifying the angle. If the angle is greater than or equal to 45 degrees then it is considered that a turning maneuver is being made in the street. A turning maneuver in the street requires a minimum 4' x 4', 2% max slope(longitudinally and the cross slope) turning area. If the turning area does not meet all of the requirements listed above, then the ramp does not meet RC-67M and is considered Technically Infeasible. A Technically Infeasible Form(TIF) is required. Submit the TIF form with proper justification why this cannot be achieved to meet RC-67M. Show on the plan the turning area at the bottom of the ramp in the street.

Turning Maneuver in Street

Indicate if pedestrians must perform turning maneuvers in the street. If "Yes", a landing is required in the street.

Turning Maneuver at Top of Ramp (Smax)

Indicate if pedestrians must perform turning maneuvers at the top of the ramp. If "Yes", Smax is required.

ECMS # (if applicable)

Manually insert the ECMS # for the project that altered the curb ramp.

Algebraic Δ Grade (Algebraic Change in Grade)

Manually insert the maximum algebraic change between the ramp slope and roadway slope (as a percentage). See the diagram on Sheet 01 - Inspection Form.

Intersection Ramp # of #

Manually enter the number for the ramp being investigated followed by the total number of ramps being investigated at the intersection. For example, if the ramp at the intersection of Ramp "X" of "Y" is being investigated, "Y" is the total number of the ramps at the intersection and "X" is the number assigned to the specific ramp being investigated.

Ramp Location

Using the intersection figure shown, select the appropriate button for which the investigated curb ramp is located.

North Leg/North Leg Description

Include the name of the roadway (if applicable) for the northbound roadway. Then directly below that cell, indicate the type of roadway (state route, boulevard, road, street, etc.). If the roadway is a state route number (format: 0000), also include the Segment # (format: 0000) and Offset # (format: 0000) of the intersection. If the roadway is a local road, include the name of the local road and description. Complete this for all legs of the intersection.

	North Leg	Description	Segment	Offset
Example 1:	00016	SR	0010	0020
Example 2:	Oak	ST	n/a	n/a

Ramp Type

Indicate the type of ramp being investigated. Depending on curb ramp type, complete all of the required dimensions on Tab 2 – Inspection Form Continued. Each cell is color-coded to indicate whether the information entered meets RC-67M. If data is entered and the cell becomes highlighted with green fill, the data meets RC-67M. If the cell becomes highlighted with red fill, the data does not meet RC-67M. If the cell becomes highlighted with yellow fill, the data does not match RC-67M but may be due to tie-ins with the existing site. The chart located to the right of the data entry form indicates the minimum measurement requirements (compliance check).

Insert the Latitude and Longitude for each Curb Ramp. Convert to Degrees. Provide a minimum of 5 decimal places for accuracy.

For Example - N40° 06' 16.08" = 40.10447° and W 75° 23' 58.11" = -75.39948°. The program will not allow you to enter a value outside of the geographical area of District 6.

Minimum 4'-0" Pedestrian Access Route(PAR) Maintained within the Limit of Work

A minimum 4'-0" Pedestrian Access Route(PAR) must be maintained within the limit of work. If this requirement is not met then a Technically Infeasible Form (TIF) must be submitted with the CS4401 and the ramps leading to and from the constrained PAR are considered non-compliant and are Technically Infeasible.

The width of the PAR is defined as the width of walkway between two obstructions. This would include flares with slopes greater than 8.3%, utility/street light poles, traffic signal poles and equipment, signs, buildings, street furniture and other unwalkable areas.

A PAR less than 4' but not less than 3' is acceptable if it is not within the slope of work for the project to relocate the obstructions. If the PAR is less than 3' and it is not within the scope of work for the project to relocate the obstruction then the ramp is considered not accessible from that approach. Select NO for Ramp Leads to Accessible Path. See Ramp Leads to Accessible Path above.



Instructions

Pedestrian Push Buttons Accessibility and Compliance

Indicate if pedestrian push buttons are accessible and compliant as defined below.

1. A push button is considered accessible if it is:
 - (a) Adjacent to and can be activated from a firm and stable surface.
2. A push button is considered compliant if it is:
 - (a) Adjacent to a level, non-slip surface to provide access from a wheelchair, and where there is a non-slip wheelchair accessible route to the ramp.
 - (b) A MIN 4' x 4' area in front of the push button is provided and
 - (i) If a turning movement is required in order to activate the push button and then get to the ramp, the max slope (longitudinal and cross slope) in the 4' x 4' area in front of the push button is 2%
 - (ii) If a turning movement is NOT required and the pedestrian/wheelchair is only expected to move forward or parallel from button (not turning), the 2% max slope is preferred but not required. Entire 999 and complete in the Comment Cell the reason why a turning movement is not required.
 - (c) Within 5'-0" of the crosswalk extended
 - (d) Between 1'-6" and 10'-0" of the edge of the curb, shoulder or pavement
 - (e) Parallel to the crosswalk to be used
 - (f) Mounted 42" above the sidewalk or finished grade to the center of the pushbutton and 10" MAX laterally from landing

Not Accessible - The existing or proposed push button is not accessible. Submit a technically infeasible form (TIF)

Accessible and Non-Compliant - The existing or proposed push button is accessible. However, it does not meet all of the requirements for compliance as noted above. Submit a technically infeasible form (TIF)

Accessible and Compliant - The existing or proposed push button is accessible and meets all of the requirements for compliance as noted above.

N/A - There are no existing or proposed push buttons for this crossing.

Sketch

Not used in Design.

Asset

The Asset number will be automatically completed as information is entered into the data entry form.

Status

Not used in Design.

Archive Ramp at location

Not used in Design.

Level of Service

Indicate the level of service, as designed:

Meets RC-67M

Technically Infeasible; Provides Maximum Access (TIF)

TAB 2 – INSPECTION FORM CONTINUED

Indicate the type of ramp being investigated using the curb ramp diagrams. Depending on curb ramp type, complete all of the required dimensions "A" through "EE" and the DWS transition strip values. Each cell is color-coded to indicate whether the information entered meets RC-67M. Use "999" for measurements that are not applicable.

TAB 3 - PICTURES TAB

Click on the "insert button #" button to insert the appropriate picture.

TAB 4 - ADDITIONAL EXPLANATION TAB (IF APPLICABLE)

If additional space is needed to further explain the reasoning behind a certain element but completing a Technically Infeasible Form (TIF) is not required use this area to explain the methodology behind the design as submitted.

Examples -

- (a) Additional room is need to explain why the ramp angle exceeds 20 degrees.
- (b) The longitudinal (running) slope of the sidewalk transition exceeds the 5% maximum allowed per DM2 Chapter 6 but is less than 8.33% maximum for a ramp slope.
- (c) The form is filled out for a Type 1 ramp but there is a greenstrip or other unwalkable surface in which the flare slope can exceed 10% and a 2' rolled concrete flare will be used.



Instructions

TAB 5 - INSTRUCTIONS

Use this tab as a quick reference to the instructions.

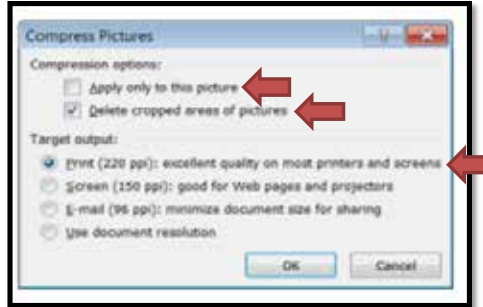
SUBMISSION

Perform the following for submission.

Reduce Image Size

To keep file size to a minimum, select a picture:

1. Click on one of the images that were inserted on Tab 03 - Pictures.
2. Click "Format" under the "Picture Tools" Ribbon.
3. In the Ribbon, click "Compress Pictures"
4. In the "Compress Pictures" Window select the options as noted below and click "OK".

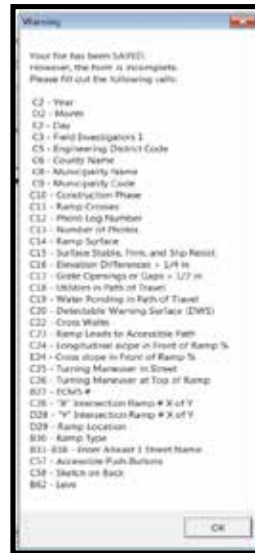


Save File

When saving the file, use Excel 2007 and later format with a *.xls extension. Do not use a different file format. If all the cells are not completed, a warning message will appear. The work has been saved, but the file is not complete. Fill in remaining cells and resave.

Send file to District ADA Coordinator

Upon approval of the curb ramp designs, submit files including the approved plans of the ADA designs, in PDF format, the CS-4401 Design, District 6 Form in Excel 2007 and later format and the Technically Infeasible Form (TIF) in Excel 2007 and later format to District 6 ADA Coordinator on a compact disc. Incomplete submissions will be returned.





Walton Avenue and 52nd Street- Ramp N

*Date of Design (yyyy mm dd)	2018	09	11
Designer 1	Edward Mullen		
Designer 2	Bernadette Callahan		
*Engineering District Code	06 - District 6-0		
*County Name	Philadelphia		
*County Code (auto)	101		
*Municipality Name	Philadelphia City		
*Municipality Code (auto)	60000		
Construction Phase	Constructed		
Ramp Crosses	Both		
Photo Log Number	1		
Number of Photos	1		
Ramp Surface	Concrete		
Surface Stable, Firm, and Slip Resistant	Yes		
Elevation Differences > 1/4"	No		(X/16")
Grate Openings or Gaps > 1/2"	No		(X/16")
Utilities in Path of Travel	No		
Water Ponding in Path of Travel	No		
Detectable Warning Surface (DWS)	Yes		
DWS type	Poly Comp		
Pedestrian Crossing and Type	Yes	Single Ramp with Single Cross Walk	
Ramp Leads to Accessible Path	Yes	Crossing Control Type	Stop/Yield
Longitudinal / Cross slope in Front of Ramp	0.60	%	1.50 %
Turning Maneuver in Street	No	Ramp Angle with Crosswalk	5 degrees
Turning Maneuver at Top of Ramp (Smax)	Yes	Comments:	
ECMS #	Alg D Grade (%)	8.2	
Intersection Ramp # of #	1	4	
*Ramp Location (Use Figure Below)	02		
*Curb Ramp Type	Type 1		
*North Leg	52nd	(segment)	(offset)
*North Leg Desc.	St		
*East Leg	Walton	(segment)	(offset)
*East Leg Desc.	Ave		
*South Leg	52nd	(segment)	(offset)
*South Leg Desc.	St		
*West Leg	Walton	(segment)	(offset)
*West Leg Desc.	Ave		
Ramp Coordinates	Latitude	39.94978	
	Longitude	-75.22718	

Northbound

Ramp Angle w\Crosswalk

Z° = Ramp Angle w\Crosswalk

DIMENSIONS ARE ABSOLUTE FOR NEW INSTALLATIONS

Algebraic Difference

ACCESSIBLE PUSH BUTTONS

X% Ramp Slope -Y% Longitudinal Slope of Crosswalk

Depressed Curb

Algebraic Difference = X% - (-Y%)

X% Ramp Slope Y% Longitudinal Slope of Crosswalk

Depressed Curb

Algebraic Difference = X% - Y%

Minimum 4'-0" Pedestrian Access Route(PAR) Maintained within the Limit of Work	Yes
Push Button Turning Area - Max Slope (%)	Comments:
Accessible Push Buttons	N/A
Sketch Used To Collect Field Information	No
Asset # (auto)	C-06-101-60000-52ndSt-WaltonAve-52ndSt-WaltonAve-2018-09-11-2-Type1
Status	Current
Archive Ramp at location #:	N/A
Level of Service	Meets RC-67M



Walton Avenue and 52nd Street- Ramp N

<p><input type="checkbox"/> TYPE 1</p> <p>MAX ALG. CHANGE IN GRADE _____ % TOP TURNING AREA <input type="checkbox"/> IF YES, MAX SLOPE "S" _____ %</p>	<p><input type="checkbox"/> TYPE 1A</p> <p>MAX ALG. CHANGE IN GRADE _____ %</p>	<p><input type="checkbox"/> TYPE 2</p> <p>MAX ALG. CHANGE IN GRADE _____ %</p>	
<p><input type="checkbox"/> TYPE 3</p> <p>MAX ALG. CHANGE IN GRADE _____ % TOP TURNING AREA <input type="checkbox"/> IF YES, MAX SLOPE "S" _____ %</p>	<p><input type="checkbox"/> TYPE 4</p> <p>MAX ALG. CHANGE IN GRADE _____ % TOP TURNING AREA <input type="checkbox"/> IF YES, MAX SLOPE "S" _____ %</p>	<p><input type="checkbox"/> TYPE 4A</p> <p>MAX ALG. CHANGE IN GRADE _____ % TOP TURNING AREA <input type="checkbox"/> IF YES, MAX SLOPE "S" _____ %</p>	
<p><input type="checkbox"/> TYPE 5</p> <p>MAX ALG. CHANGE IN GRADE _____ % RAILING <input type="checkbox"/> NO <input type="checkbox"/> YES "CC" RAIL HEIGHT _____ INCHES</p>	<p><input type="checkbox"/> TYPE 6</p> <p>MAX ALG. CHANGE IN GRADE _____ %</p>		
<p><input type="checkbox"/> BLENDED TRANSITION</p> <p>MAX ALG. CHANGE IN GRADE _____ %</p>	<p><input type="checkbox"/> NON-TYPICAL</p> <p>"A" RAMP WIDTH "B" RAMP LENGTH "C" RAMP SLOPE "D" LT FLARE SLOPE "I" RT FLARE SLOPE "J" LT SIDEWALK WIDTH "M" RT SIDEWALK WIDTH "P" SIDEWALK LANDING DEPTH "Q" LT SIDEWALK CROSS SLOPE "R" RT SIDEWALK CROSS SLOPE "S" SIDEWALK LANDING MAX SLOPE "W" RAMP MAX CROSS SLOPE</p> <p>MAX ALG. CHANGE IN GRADE _____ % SIDEWALK TURNING AREA <input type="checkbox"/> IF YES, DESIGNATE MAX SLOPE "S"</p>		
<p><input type="checkbox"/> TYPE A MEDIAN</p> <p><input type="checkbox"/> TYPE B MEDIAN</p>			

"0.00" inches or %	
* A	48 (IN)
* B	82 (IN)
* C	7.60 (%)
* D	8.60 (%)
* E	8.40 (%)
* F	7.60 (%)
* G	7.60 (%)
* H	8.25 (%)
* I	7.60 (%)
* J	144 (IN)
* K	6 (IN)
* L	86 (IN)
* M	180 (IN)
* N	6 (IN)
* O	55 (IN)
* P	60 (IN)
* Q	1.20 (%)
* R	1.70 (%)
* S	1.80 (%)
* T	0 (IN)
* U	0 (IN)
* V	0 (%)
* W	1.80 (%)
* X	0 (IN)
* Y	0 (IN)
* YY	120 (IN)
* Z	0 (IN)
* ZZ	999 (IN)
* AA	0 (IN)
* BB	0 (IN)
* CC	0 (IN)
* DD	2.70 (%)
* EE	4.20 (%)
DWS Transition Strip No	
DWS Transition Strip Slope (FF) _____ (%)	

Comments ▲



Walton Avenue and 52nd Street- Ramp N



Insert Picture 1



Insert Picture 4



Insert Picture 2



Insert Picture 5



Insert Picture 3



Insert Picture 6



Walton Avenue and 52nd Street- Ramp N

Additional Explanation #1

Additional Explanation #2

Additional Explanation #3

Additional Explanation #4



Instructions

The District 6 Curb Ramp Design Form (CS-4401 Design, District 6) will be used for the design of all curb ramps in District 6 to ensure compliance with PENNDOT standards. The use of this form is required for to be constructed curb ramps. A thorough and rigorous review of the design for each curb ramp will be completed to ensure compliance with PENNDOT Standard RC-67M. The slopes indicated in RC-67M are absolute maximum slopes. Only slopes that are equal to or less than the indicated slopes are acceptable. When fully meeting the RC-67M standards is "Technically Infeasible", the curb ramp must be designed to the maximum extent feasible to provide handicap access. See Publication 13M - Design Manual 2, Chapter 6 for additional information on Technically Infeasible.

When used in the design phase, this form and corresponding plans will document all pertinent values and serve as a record that PENNDOT has reviewed the design. Based on the information provided in the CS-4401 and corresponding plans, the ramp will be classified as EITHER Meeting RC-67M or Technically Infeasible. If a ramp is Technically Infeasible then the Technically Infeasible Form (TIF) must be submitted with the CS-4401 and corresponding plans. PENNDOT will then review the TIF to determine if the ramp has been designed to provide access to the maximum extent feasible within the scope of the work for project. PENNDOT will review the investigated alternatives as submitted in the TIF and determine that the best possible solution was chosen and that no other design alternatives, as noted in the TIF or otherwise, within the scope of work for the project exists. Approval for all Technically Infeasible ramps will come from both the District ADA Coordinator and Assistant District Engineer by signing the Technically Infeasible Form (TIF).

INSTRUCTIONS

Before you Begin:

The electronic file is delivered in Excel 97-2003 Workbook *.xls format. When saving the file, use Excel format with a *.xls extension. Do not use a different file format. This file is compatible with Microsoft Excel 2007 and later. It is compatible with 32 bit and 64 bit computers.

The following tabs are included in the form:

- Tab 1. Inspection Form
- Tab 2. Inspection Form Continued
- Tab 3. Pictures
- Tab 4. Additional Explanation
- Tab 5. Instructions

TAB 1 – INSPECTION FORM

All "blue filled" cells require information to be entered. Many cells have a drop down selection with a header. The header is used for filling out a printed version. The header must be changed to the appropriate selection. For example: " No Yes" would be the header. Either "No" or "Yes" must be selected.

Date of Design

Enter the year, month, and day of the investigation (format yyyy dd mm).

Designer 1 & 2

Insert the name(s) of the individuals responsible for the design.

Engineering District Code

Insert the engineering district code.

County Name

Insert the appropriate county. (The county code will automatically fill in once the appropriate county is selected).

Municipality Name

Insert the appropriate municipality name.
(The municipality code will automatically fill in once the appropriate municipality name is entered).



Instructions

Construction Phase

Select the appropriate status of the curb ramp being investigated.

- Constructed. Select this phase for ramps that are to be newly constructed curb ramps.
- Existing-Survey. Select this phase for documenting existing curb ramps.
- Missing. Select this phase for documenting missing curb ramps.

Ramp Crosses

Select what type of roadway the ramp crosses and or services.

Photo Log Number

Manually insert a photo log number with approximate time the photo was taken.

Number of Photos

Enter the number of photos.

Ramp Surface

Select ramp surface type (brick, concrete or other). If "other", manually insert the surface type in the cell immediately to the right of the surface type.

Surface Stable, Firm, and Slip Resistant

Indicate if the curb ramp surface is stable, firm, and slip resistant.

Elevation Differences > 1/4"

Indicate if any vertical elevation differences between sections of sidewalk found anywhere on the curb ramp that are greater than 1/4" exist. If vertical elevation differences exist, measure to the nearest 1/16 of an inch. For example, if measured 1/2" enter "8" (8/16) on the form, or if measured 2" enter 32 (32/16) in the form.

Grate Openings or Gaps > 1/2"

Indicate if any grate openings or gaps greater than 1/2" are located within the immediate pedestrian path. If horizontal gaps exist, measure to the nearest 1/16 of an inch. For example, if measured 1/2" enter "8" (8/16) on the form, or if measured 2" enter 32 (32/16) on the form.

Utilities in Path of Travel

Indicate if there are any utilities that obstruct the path of travel.

Water Ponding in Path of Travel

Indicate if any water ponding exists within the travel path of the curb ramp.

Detectable Warning Surface (DWS)

Indicate if a detectable warning surface is to be used.

DWS Type

If "Yes" is answered in previous question, indicate what type of DWS will be used. If "Other", fill in cell to the right to indicate what type of DWS is being used.

Pedestrian Crossings

Indicate if a pedestrian crossing exists. If a pedestrian crossing does not exist, a curb ramp is not needed. The crossing may be marked or unmarked. If "Yes", the cell to the right will become highlighted with blue fill, requiring it to be completed.

- single ramp with a single cross walk.
- single ramp with a double cross walk.

Ramp Leads to Accessible Path

Indicate if the ramp leads to an accessible path, such as a sidewalk or a pedestrian pushbutton.

Crossing Control Type

Indicate the type of vehicular traffic control device/measure at the pedestrian crossing.

STOP/YIELD - If a stop or yield sign is installed or traffic is controlled by a stop or yield condition (i.e. Driveway).

UNCONTROLLED - If vehicular traffic is not controlled by a traffic control device at the pedestrian crossing.

TRAFFIC SIGNAL - If vehicular traffic is controlled by a Traffic Signal at the pedestrian crossing.

MIDBLOCK - If the pedestrian crossing is at a mid block crossing.



Instructions

Longitudinal/Cross slope in Front of Ramp

Manually insert the longitudinal and cross slope values (as a percentage) in the appropriate cells. The longitudinal slope is equal to the slope parallel to the direction of the ramp (in the street); the cross slope is equal to the slope perpendicular to the direction of the ramp (in the street).

For a pedestrian crossing where vehicles operate without a yield or stop condition (**UNCONTROLLED** and **TRAFFIC SIGNAL**) and at midblock pedestrian street crossings (**MIDBLOCK**), the cross slope in front of the ramp shall be permitted to equal the street or highway profile grade. For pedestrian crossings where vehicles operate with a yield or stop condition (**STOP/YIELD**), the maximum cross slope in front of the ramp is 2% for a compliant design. If a compliant cross slope cannot be provided in front of the ramp, for crossings with a stop or yield condition, a TIF will need to be submitted.

Ramp Angle with Crosswalk

Manually insert the angle of the ramp to the crosswalk (in degrees). It is preferred that the angle is 20 degrees or less. If the angle is greater than 20 but less than 45, provide a brief explanation in the box below justifying the angle. If the angle is greater than or equal to 45 degrees then it is considered that a turning maneuver is being made in the street. A turning maneuver in the street requires a minimum 4' x 4', 2% max slope(longitudinally and the cross slope) turning area. If the turning area does not meet all of the requirements listed above, then the ramp does not meet RC-67M and is considered Technically Infeasible. A Technically Infeasible Form(TIF) is required. Submit the TIF form with proper justification why this cannot be achieved to meet RC-67M. Show on the plan the turning area at the bottom of the ramp in the street.

Turning Maneuver in Street

Indicate if pedestrians must perform turning maneuvers in the street. If "Yes", a landing is required in the street.

Turning Maneuver at Top of Ramp (Smax)

Indicate if pedestrians must perform turning maneuvers at the top of the ramp. If "Yes", Smax is required.

ECMS # (if applicable)

Manually insert the ECMS # for the project that altered the curb ramp.

Algebraic Δ Grade (Algebraic Change in Grade)

Manually insert the maximum algebraic change between the ramp slope and roadway slope (as a percentage). See the diagram on Sheet 01 - Inspection Form.

Intersection Ramp # of #

Manually enter the number for the ramp being investigated followed by the total number of ramps being investigated at the intersection. For example, if the ramp at the intersection of Ramp "X" of "Y" is being investigated, "Y" is the total number of the ramps at the intersection and "X" is the number assigned to the specific ramp being investigated.

Ramp Location

Using the intersection figure shown, select the appropriate button for which the investigated curb ramp is located.

North Leg/North Leg Description

Include the name of the roadway (if applicable) for the northbound roadway. Then directly below that cell, indicate the type of roadway (state route, boulevard, road, street, etc.). If the roadway is a state route number (format: 0000), also include the Segment # (format: 0000) and Offset # (format: 0000) of the intersection. If the roadway is a local road, include the name of the local road and description. Complete this for all legs of the intersection.

	North Leg	Description	Segment	Offset
Example 1:	00016	SR	0010	0020
Example 2:	Oak	ST	n/a	n/a

Ramp Type

Indicate the type of ramp being investigated. Depending on curb ramp type, complete all of the required dimensions on Tab 2 – Inspection Form Continued. Each cell is color-coded to indicate whether the information entered meets RC-67M. If data is entered and the cell becomes highlighted with green fill, the data meets RC-67M. If the cell becomes highlighted with red fill, the data does not meet RC-67M. If the cell becomes highlighted with yellow fill, the data does not match RC-67M but may be due to tie-ins with the existing site. The chart located to the right of the data entry form indicates the minimum measurement requirements (compliance check).

Insert the Latitude and Longitude for each Curb Ramp. Convert to Degrees. Provide a minimum of 5 decimal places for accuracy.

For Example - N40° 06' 16.08" = 40.10447° and W 75° 23' 58.11" = -75.39948°. The program will not allow you to enter a value outside of the geographical area of District 6.

Minimum 4'-0" Pedestrian Access Route(PAR) Maintained within the Limit of Work

A minimum 4'-0" Pedestrian Access Route(PAR) must be maintained within the limit of work. If this requirement is not met then a Technically Infeasible Form (TIF) must be submitted with the CS4401 and the ramps leading to and from the constrained PAR are considered non-compliant and are Technically Infeasible.

The width of the PAR is defined as the width of walkway between two obstructions. This would include flares with slopes greater than 8.3%, utility/street light poles, traffic signal poles and equipment, signs, buildings, street furniture and other unwalkable areas.

A PAR less than 4' but not less than 3' is acceptable if it is not within the slope of work for the project to relocate the obstructions. If the PAR is less than 3' and it is not within the scope of work for the project to relocate the obstruction then the ramp is considered not accessible from that approach. Select NO for Ramp Leads to Accessible Path. See Ramp Leads to Accessible Path above.



Instructions

Pedestrian Push Buttons Accessibility and Compliance

Indicate if pedestrian push buttons are accessible and compliant as defined below.

1. A push button is considered accessible if it is:
 - (a) Adjacent to and can be activated from a firm and stable surface.
2. A push button is considered compliant if it is:
 - (a) Adjacent to a level, non-slip surface to provide access from a wheelchair, and where there is a non-slip wheelchair accessible route to the ramp.
 - (b) A MIN 4' x 4' area in front of the push button is provided and
 - (i) If a turning movement is required in order to activate the push button and then get to the ramp, the max slope (longitudinal and cross slope) in the 4' x 4' area in front of the push button is 2%
 - (ii) If a turning movement is NOT required and the pedestrian/wheelchair is only expected to move forward or parallel from button (not turning), the 2% max slope is preferred but not required. Entire 999 and complete in the Comment Cell the reason why a turning movement is not required.
 - (c) Within 5'-0" of the crosswalk extended
 - (d) Between 1'-6" and 10'-0" of the edge of the curb, shoulder or pavement
 - (e) Parallel to the crosswalk to be used
 - (f) Mounted 42" above the sidewalk or finished grade to the center of the pushbutton and 10" MAX laterally from landing

Not Accessible - The existing or proposed push button is not accessible. Submit a technically infeasible form (TIF)

Accessible and Non-Compliant - The existing or proposed push button is accessible. However, it does not meet all of the requirements for compliance as noted above. Submit a technically infeasible form (TIF)

Accessible and Compliant - The existing or proposed push button is accessible and meets all of the requirements for compliance as noted above.

N/A - There are no existing or proposed push buttons for this crossing.

Sketch

Not used in Design.

Asset

The Asset number will be automatically completed as information is entered into the data entry form.

Status

Not used in Design.

Archive Ramp at location

Not used in Design.

Level of Service

Indicate the level of service, as designed:

Meets RC-67M

Technically Infeasible; Provides Maximum Access (TIF)

TAB 2 – INSPECTION FORM CONTINUED

Indicate the type of ramp being investigated using the curb ramp diagrams. Depending on curb ramp type, complete all of the required dimensions "A" through "EE" and the DWS transition strip values. Each cell is color-coded to indicate whether the information entered meets RC-67M. Use "999" for measurements that are not applicable.

TAB 3 - PICTURES TAB

Click on the "insert button #" button to insert the appropriate picture.

TAB 4 - ADDITIONAL EXPLANATION TAB (IF APPLICABLE)

If additional space is needed to further explain the reasoning behind a certain element but completing a Technically Infeasible Form (TIF) is not required use this area to explain the methodology behind the design as submitted.

Examples -

- (a) Additional room is need to explain why the ramp angle exceeds 20 degrees.
- (b) The longitudinal (running) slope of the sidewalk transition exceeds the 5% maximum allowed per DM2 Chapter 6 but is less than 8.33% maximum for a ramp slope.
- (c) The form is filled out for a Type 1 ramp but there is a greenstrip or other unwalkable surface in which the flare slope can exceed 10% and a 2' rolled concrete flare will be used.



Instructions

TAB 5 - INSTRUCTIONS

Use this tab as a quick reference to the instructions.

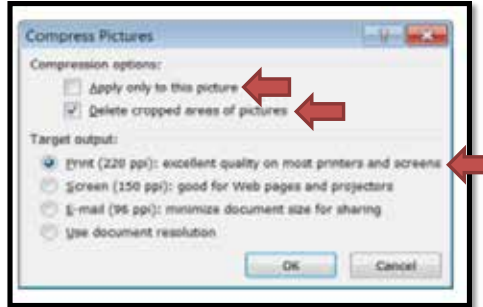
SUBMISSION

Perform the following for submission.

Reduce Image Size

To keep file size to a minimum, select a picture:

1. Click on one of the images that were inserted on Tab 03 - Pictures.
2. Click "Format" under the "Picture Tools" Ribbon.
3. In the Ribbon, click "Compress Pictures"
4. In the "Compress Pictures" Window select the options as noted below and click "OK".

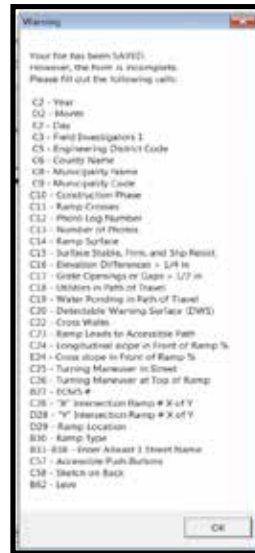


Save File

When saving the file, use Excel 2007 and later format with a *.xls extension. Do not use a different file format. If all the cells are not completed, a warning message will appear. The work has been saved, but the file is not complete. Fill in remaining cells and resave.

Send file to District ADA Coordinator

Upon approval of the curb ramp designs, submit files including the approved plans of the ADA designs, in PDF format, the CS-4401 Design, District 6 Form in Excel 2007 and later format and the Technically Infeasible Form (TIF) in Excel 2007 and later format to District 6 ADA Coordinator on a compact disc. Incomplete submissions will be returned.





Walton Avenue and 52nd Street- Ramp O

*Date of Design (yyyy mm dd)	2018	09	11
Designer 1	Edward Mullen		
Designer 2	Bernadette Callahan		
*Engineering District Code	06 - District 6-0		
*County Name	Philadelphia		
*County Code (auto)	101		
*Municipality Name	Philadelphia City		
*Municipality Code (auto)	60000		
Construction Phase	Constructed		
Ramp Crosses	Both		
Photo Log Number	1		
Number of Photos	1		
Ramp Surface	Concrete		
Surface Stable, Firm, and Slip Resistant	Yes		
Elevation Differences > 1/4"	No		(X/16")
Grate Openings or Gaps > 1/2"	No		(X/16")
Utilities in Path of Travel	No		
Water Ponding in Path of Travel	No		
Detectable Warning Surface (DWS)	Yes		
DWS type	Poly Comp		
Pedestrian Crossing and Type	Yes	Single Ramp with Single Cross Walk	
Ramp Leads to Accessible Path	Yes	Crossing Control Type	Stop/Yield
Longitudinal / Cross slope in Front of Ramp	3.20	%	1.80 %
Turning Maneuver in Street	No	Ramp Angle with Crosswalk	20 degrees
Turning Maneuver at Top of Ramp (Smax)	Yes	Comments:	
ECMS #	Alg D Grade (%)	7.2	
Intersection Ramp # of #	2	2	
*Ramp Location (Use Figure Below)	12		
*Curb Ramp Type	Type 1		
*North Leg	52nd	(segment)	(offset)
*North Leg Desc.	St		
*East Leg	Walton	(segment)	(offset)
*East Leg Desc.	Ave		
*South Leg	52nd	(segment)	(offset)
*South Leg Desc.	St		
*West Leg	Walton	(segment)	(offset)
*West Leg Desc.	Ave		
Ramp Coordinates	Latitude	39.94966	
	Longitude	-75.22692	

Northbound

Ramp Angle w\Crosswalk

Z° = Ramp Angle w\Crosswalk

DIMENSIONS ARE ABSOLUTE FOR NEW INSTALLATIONS

Algebraic Difference

ACCESSIBLE PUSH BUTTONS

X% Ramp Slope -Y% Longitudinal Slope of Crosswalk

Depressed Curb

Algebraic Difference = X% - (-Y%)

X% Ramp Slope Y% Longitudinal Slope of Crosswalk

Depressed Curb

Algebraic Difference = X% - Y%

Minimum 4'-0" Pedestrian Access Route(PAR) Maintained within the Limit of Work	Yes
Push Button Turning Area - Max Slope (%)	Comments:
Accessible Push Buttons	N/A
Sketch Used To Collect Field Information	No
Asset # (auto)	C-06-101-60000-52ndSt-WaltonAve-52ndSt-WaltonAve-2018-09-11-12-Type1
Status	Current
Archive Ramp at location #:	N/A
Level of Service	Meets RC-67M



Walton Avenue and 52nd Street- Ramp O

<p><input type="checkbox"/> TYPE 1</p> <p>MAX ALG. CHANGE IN GRADE _____ % TOP TURNING AREA <input type="checkbox"/> IF YES, MAX SLOPE "S" _____ %</p>	<p><input type="checkbox"/> TYPE 1A</p> <p>MAX ALG. CHANGE IN GRADE _____ %</p>	<p><input type="checkbox"/> TYPE 2</p> <p>MAX ALG. CHANGE IN GRADE _____ %</p>																																																																																																												
<p><input type="checkbox"/> TYPE 3</p> <p>MAX ALG. CHANGE IN GRADE _____ % TOP TURNING AREA <input type="checkbox"/> IF YES, MAX SLOPE "S" _____ %</p>	<p><input type="checkbox"/> TYPE 4</p> <p>MAX ALG. CHANGE IN GRADE _____ % TOP TURNING AREA <input type="checkbox"/> IF YES, MAX SLOPE "S" _____ %</p>	<p><input type="checkbox"/> TYPE 4A</p> <p>MAX ALG. CHANGE IN GRADE _____ % TOP TURNING AREA <input type="checkbox"/> IF YES, MAX SLOPE "S" _____ %</p>																																																																																																												
<p><input type="checkbox"/> TYPE 5</p> <p>MAX ALG. CHANGE IN GRADE _____ % RAILING <input type="checkbox"/> NO <input type="checkbox"/> YES "CC" RAIL HEIGHT _____ INCHES</p>	<p><input type="checkbox"/> TYPE 6</p> <p>MAX ALG. CHANGE IN GRADE _____ %</p>	<table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr> <th colspan="2" style="background-color: #e0e0e0;">"0.00" inches or %</th> <th></th> </tr> </thead> <tbody> <tr><td>* A</td><td style="background-color: #00ffcc;">48</td><td>(IN)</td></tr> <tr><td>* B</td><td style="background-color: #00ffcc;">101</td><td>(IN)</td></tr> <tr><td>* C</td><td style="background-color: #00ffcc;">4.00</td><td>(%)</td></tr> <tr><td>* D</td><td style="background-color: #00ffcc;">7.20</td><td>(%)</td></tr> <tr><td>* E</td><td style="background-color: #00ffcc;">5.75</td><td>(%)</td></tr> <tr><td>* F</td><td style="background-color: #00ffcc;">4.00</td><td>(%)</td></tr> <tr><td>* G</td><td style="background-color: #00ffcc;">4.00</td><td>(%)</td></tr> <tr><td>* H</td><td style="background-color: #00ffcc;">3.95</td><td>(%)</td></tr> <tr><td>* I</td><td style="background-color: #00ffcc;">7.20</td><td>(%)</td></tr> <tr><td>* J</td><td style="background-color: #00ffcc;">208</td><td>(IN)</td></tr> <tr><td>* K</td><td style="background-color: #00ffcc;">4</td><td>(IN)</td></tr> <tr><td>* L</td><td style="background-color: #00ffcc;">60</td><td>(IN)</td></tr> <tr><td>* M</td><td style="background-color: #00ffcc;">208</td><td>(IN)</td></tr> <tr><td>* N</td><td style="background-color: #00ffcc;">4</td><td>(IN)</td></tr> <tr><td>* O</td><td style="background-color: #00ffcc;">52</td><td>(IN)</td></tr> <tr><td>* P</td><td style="background-color: #00ffcc;">60</td><td>(IN)</td></tr> <tr><td>* Q</td><td style="background-color: #00ffcc;">1.20</td><td>(%)</td></tr> <tr><td>* R</td><td style="background-color: #00ffcc;">1.60</td><td>(%)</td></tr> <tr><td>* S</td><td style="background-color: #00ffcc;">1.80</td><td>(%)</td></tr> <tr><td>* T</td><td style="background-color: #00ffcc;">0</td><td>(IN)</td></tr> <tr><td>* U</td><td style="background-color: #00ffcc;">0</td><td>(IN)</td></tr> <tr><td>* V</td><td style="background-color: #00ffcc;"></td><td>(%)</td></tr> <tr><td>* W</td><td style="background-color: #00ffcc;">1.80</td><td>(%)</td></tr> <tr><td>* X</td><td style="background-color: #00ffcc;">0</td><td>(IN)</td></tr> <tr><td>* Y</td><td style="background-color: #00ffcc;">0</td><td>(IN)</td></tr> <tr><td>* YY</td><td style="background-color: #00ffcc;">120</td><td>(IN)</td></tr> <tr><td>* Z</td><td style="background-color: #00ffcc;">0</td><td>(IN)</td></tr> <tr><td>* ZZ</td><td style="background-color: #00ffcc;">999</td><td>(IN) one way/ no stop bar</td></tr> <tr><td>* AA</td><td style="background-color: #00ffcc;">0</td><td>(IN)</td></tr> <tr><td>* BB</td><td style="background-color: #00ffcc;">0</td><td>(IN)</td></tr> <tr><td>* CC</td><td style="background-color: #00ffcc;">0</td><td>(IN)</td></tr> <tr><td>* DD</td><td style="background-color: #00ffcc;">1.80</td><td>(%)</td></tr> <tr><td>* EE</td><td style="background-color: #00ffcc;">3.80</td><td>(%)</td></tr> <tr style="background-color: #00ffcc;"> <td colspan="2" style="text-align: center;">DWS Transition Strip</td> <td style="text-align: center;">No</td> </tr> <tr> <td colspan="2" style="text-align: center;">DWS Transition Strip Slope (FF)</td> <td style="text-align: center;">(%)</td> </tr> </tbody> </table>	"0.00" inches or %			* A	48	(IN)	* B	101	(IN)	* C	4.00	(%)	* D	7.20	(%)	* E	5.75	(%)	* F	4.00	(%)	* G	4.00	(%)	* H	3.95	(%)	* I	7.20	(%)	* J	208	(IN)	* K	4	(IN)	* L	60	(IN)	* M	208	(IN)	* N	4	(IN)	* O	52	(IN)	* P	60	(IN)	* Q	1.20	(%)	* R	1.60	(%)	* S	1.80	(%)	* T	0	(IN)	* U	0	(IN)	* V		(%)	* W	1.80	(%)	* X	0	(IN)	* Y	0	(IN)	* YY	120	(IN)	* Z	0	(IN)	* ZZ	999	(IN) one way/ no stop bar	* AA	0	(IN)	* BB	0	(IN)	* CC	0	(IN)	* DD	1.80	(%)	* EE	3.80	(%)	DWS Transition Strip		No	DWS Transition Strip Slope (FF)		(%)
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* AA	0	(IN)																																																																																																												
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DWS Transition Strip Slope (FF)		(%)																																																																																																												
<p><input type="checkbox"/> BLENDED TRANSITION</p> <p>MAX ALG. CHANGE IN GRADE _____ %</p>	<p><input type="checkbox"/> NON-TYPICAL</p> <p>"A" RAMP WIDTH "B" RAMP LENGTH "C" RAMP SLOPE "D" LT FLARE SLOPE "I" RT FLARE SLOPE "J" LT SIDEWALK WIDTH "M" RT SIDEWALK WIDTH "P" SIDEWALK LANDING DEPTH "Q" LT SIDEWALK CROSS SLOPE "R" RT SIDEWALK CROSS SLOPE "S" SIDEWALK LANDING MAX SLOPE "W" RAMP MAX CROSS SLOPE</p> <p>MAX ALG. CHANGE IN GRADE _____ % SIDEWALK TURNING AREA <input type="checkbox"/> IF YES, DESIGNATE MAX SLOPE "S"</p>																																																																																																													
<p><input type="checkbox"/> TYPE A MEDIAN</p> <p><input type="checkbox"/> TYPE B MEDIAN</p>																																																																																																														

Comments ▲



Walton Avenue and 52nd Street- Ramp O



Insert Picture 1



Insert Picture 4



Insert Picture 2



Insert Picture 5



Insert Picture 3



Insert Picture 6



Walton Avenue and 52nd Street- Ramp O

Additional Explanation #1

Additional Explanation #2

Additional Explanation #3

Additional Explanation #4



Instructions

The District 6 Curb Ramp Design Form (CS-4401 Design, District 6) will be used for the design of all curb ramps in District 6 to ensure compliance with PENNDOT standards. The use of this form is required for to be constructed curb ramps. A thorough and rigorous review of the design for each curb ramp will be completed to ensure compliance with PENNDOT Standard RC-67M. The slopes indicated in RC-67M are absolute maximum slopes. Only slopes that are equal to or less than the indicated slopes are acceptable. When fully meeting the RC-67M standards is "Technically Infeasible", the curb ramp must be designed to the maximum extent feasible to provide handicap access. See Publication 13M - Design Manual 2, Chapter 6 for additional information on Technically Infeasible.

When used in the design phase, this form and corresponding plans will document all pertinent values and serve as a record that PENNDOT has reviewed the design. Based on the information provided in the CS-4401 and corresponding plans, the ramp will be classified as EITHER Meeting RC-67M or Technically Infeasible. If a ramp is Technically Infeasible then the Technically Infeasible Form (TIF) must be submitted with the CS-4401 and corresponding plans. PENNDOT will then review the TIF to determine if the ramp has been designed to provide access to the maximum extent feasible within the scope of the work for project. PENNDOT will review the investigated alternatives as submitted in the TIF and determine that the best possible solution was chosen and that no other design alternatives, as noted in the TIF or otherwise, within the scope of work for the project exists. Approval for all Technically Infeasible ramps will come from both the District ADA Coordinator and Assistant District Engineer by signing the Technically Infeasible Form (TIF).

INSTRUCTIONS

Before you Begin:

The electronic file is delivered in Excel 97-2003 Workbook *.xls format. When saving the file, use Excel format with a *.xls extension. Do not use a different file format. This file is compatible with Microsoft Excel 2007 and later. It is compatible with 32 bit and 64 bit computers.

The following tabs are included in the form:

- Tab 1. Inspection Form
- Tab 2. Inspection Form Continued
- Tab 3. Pictures
- Tab 4. Additional Explanation
- Tab 5. Instructions

TAB 1 – INSPECTION FORM

All "blue filled" cells require information to be entered. Many cells have a drop down selection with a header. The header is used for filling out a printed version. The header must be changed to the appropriate selection. For example: " No Yes" would be the header. Either "No" or "Yes" must be selected.

Date of Design

Enter the year, month, and day of the investigation (format yyyy dd mm).

Designer 1 & 2

Insert the name(s) of the individuals responsible for the design.

Engineering District Code

Insert the engineering district code.

County Name

Insert the appropriate county. (The county code will automatically fill in once the appropriate county is selected).

Municipality Name

Insert the appropriate municipality name.
(The municipality code will automatically fill in once the appropriate municipality name is entered).



Instructions

Construction Phase

Select the appropriate status of the curb ramp being investigated.

- Constructed. Select this phase for ramps that are to be newly constructed curb ramps.
- Existing-Survey. Select this phase for documenting existing curb ramps.
- Missing. Select this phase for documenting missing curb ramps.

Ramp Crosses

Select what type of roadway the ramp crosses and or services.

Photo Log Number

Manually insert a photo log number with approximate time the photo was taken.

Number of Photos

Enter the number of photos.

Ramp Surface

Select ramp surface type (brick, concrete or other). If "other", manually insert the surface type in the cell immediately to the right of the surface type.

Surface Stable, Firm, and Slip Resistant

Indicate if the curb ramp surface is stable, firm, and slip resistant.

Elevation Differences > 1/4"

Indicate if any vertical elevation differences between sections of sidewalk found anywhere on the curb ramp that are greater than 1/4" exist. If vertical elevation differences exist, measure to the nearest 1/16 of an inch. For example, if measured 1/2" enter "8" (8/16) on the form, or if measured 2" enter 32 (32/16) in the form.

Grate Openings or Gaps > 1/2"

Indicate if any grate openings or gaps greater than 1/2" are located within the immediate pedestrian path. If horizontal gaps exist, measure to the nearest 1/16 of an inch. For example, if measured 1/2" enter "8" (8/16) on the form, or if measured 2" enter 32 (32/16) on the form.

Utilities in Path of Travel

Indicate if there are any utilities that obstruct the path of travel.

Water Ponding in Path of Travel

Indicate if any water ponding exists within the travel path of the curb ramp.

Detectable Warning Surface (DWS)

Indicate if a detectable warning surface is to be used.

DWS Type

If "Yes" is answered in previous question, indicate what type of DWS will be used. If "Other", fill in cell to the right to indicate what type of DWS is being used.

Pedestrian Crossings

Indicate if a pedestrian crossing exists. If a pedestrian crossing does not exist, a curb ramp is not needed. The crossing may be marked or unmarked. If "Yes", the cell to the right will become highlighted with blue fill, requiring it to be completed.

- single ramp with a single cross walk.
- single ramp with a double cross walk.

Ramp Leads to Accessible Path

Indicate if the ramp leads to an accessible path, such as a sidewalk or a pedestrian pushbutton.

Crossing Control Type

Indicate the type of vehicular traffic control device/measure at the pedestrian crossing.

STOP/YIELD - If a stop or yield sign is installed or traffic is controlled by a stop or yield condition (i.e. Driveway).

UNCONTROLLED - If vehicular traffic is not controlled by a traffic control device at the pedestrian crossing.

TRAFFIC SIGNAL - If vehicular traffic is controlled by a Traffic Signal at the pedestrian crossing.

MIDBLOCK - If the pedestrian crossing is at a mid block crossing.



Instructions

Longitudinal/Cross slope in Front of Ramp

Manually insert the longitudinal and cross slope values (as a percentage) in the appropriate cells. The longitudinal slope is equal to the slope parallel to the direction of the ramp (in the street); the cross slope is equal to the slope perpendicular to the direction of the ramp (in the street).

For a pedestrian crossing where vehicles operate without a yield or stop condition (**UNCONTROLLED** and **TRAFFIC SIGNAL**) and at midblock pedestrian street crossings (**MIDBLOCK**), the cross slope in front of the ramp shall be permitted to equal the street or highway profile grade. For pedestrian crossings where vehicles operate with a yield or stop condition (**STOP/YIELD**), the maximum cross slope in front of the ramp is 2% for a compliant design. If a compliant cross slope cannot be provided in front of the ramp, for crossings with a stop or yield condition, a TIF will need to be submitted.

Ramp Angle with Crosswalk

Manually insert the angle of the ramp to the crosswalk (in degrees). It is preferred that the angle is 20 degrees or less. If the angle is greater than 20 but less than 45, provide a brief explanation in the box below justifying the angle. If the angle is greater than or equal to 45 degrees then it is considered that a turning maneuver is being made in the street. A turning maneuver in the street requires a minimum 4' x 4', 2% max slope(longitudinally and the cross slope) turning area. If the turning area does not meet all of the requirements listed above, then the ramp does not meet RC-67M and is considered Technically Infeasible. A Technically Infeasible Form(TIF) is required. Submit the TIF form with proper justification why this cannot be achieved to meet RC-67M. Show on the plan the turning area at the bottom of the ramp in the street.

Turning Maneuver in Street

Indicate if pedestrians must perform turning maneuvers in the street. If "Yes", a landing is required in the street.

Turning Maneuver at Top of Ramp (Smax)

Indicate if pedestrians must perform turning maneuvers at the top of the ramp. If "Yes", Smax is required.

ECMS # (if applicable)

Manually insert the ECMS # for the project that altered the curb ramp.

Algebraic Δ Grade (Algebraic Change in Grade)

Manually insert the maximum algebraic change between the ramp slope and roadway slope (as a percentage). See the diagram on Sheet 01 - Inspection Form.

Intersection Ramp # of

Manually enter the number for the ramp being investigated followed by the total number of ramps being investigated at the intersection. For example, if the ramp at the intersection of Ramp "X" of "Y" is being investigated, "Y" is the total number of the ramps at the intersection and "X" is the number assigned to the specific ramp being investigated.

Ramp Location

Using the intersection figure shown, select the appropriate button for which the investigated curb ramp is located.

North Leg/North Leg Description

Include the name of the roadway (if applicable) for the northbound roadway. Then directly below that cell, indicate the type of roadway (state route, boulevard, road, street, etc.). If the roadway is a state route number (format: 0000), also include the Segment # (format: 0000) and Offset # (format: 0000) of the intersection. If the roadway is a local road, include the name of the local road and description. Complete this for all legs of the intersection.

	North Leg	Description	Segment	Offset
Example 1:	00016	SR	0010	0020
Example 2:	Oak	ST	n/a	n/a

Ramp Type

Indicate the type of ramp being investigated. Depending on curb ramp type, complete all of the required dimensions on Tab 2 – Inspection Form Continued. Each cell is color-coded to indicate whether the information entered meets RC-67M. If data is entered and the cell becomes highlighted with green fill, the data meets RC-67M. If the cell becomes highlighted with red fill, the data does not meet RC-67M. If the cell becomes highlighted with yellow fill, the data does not match RC-67M but may be due to tie-ins with the existing site. The chart located to the right of the data entry form indicates the minimum measurement requirements (compliance check).

Insert the Latitude and Longitude for each Curb Ramp. Convert to Degrees. Provide a minimum of 5 decimal places for accuracy.

For Example - N40° 06' 16.08" = 40.10447° and W 75° 23' 58.11" = -75.39948°. The program will not allow you to enter a value outside of the geographical area of District 6.

Minimum 4'-0" Pedestrian Access Route(PAR) Maintained within the Limit of Work

A minimum 4'-0" Pedestrian Access Route(PAR) must be maintained within the limit of work. If this requirement is not met then a Technically Infeasible Form (TIF) must be submitted with the CS4401 and the ramps leading to and from the constrained PAR are considered non-compliant and are Technically Infeasible.

The width of the PAR is defined as the width of walkway between two obstructions. This would include flares with slopes greater than 8.3%, utility/street light poles, traffic signal poles and equipment, signs, buildings, street furniture and other unwalkable areas.

A PAR less than 4' but not less than 3' is acceptable if it is not within the slope of work for the project to relocate the obstructions. If the PAR is less than 3' and it is not within the scope of work for the project to relocate the obstruction then the ramp is considered not accessible from that approach. Select NO for Ramp Leads to Accessible Path. See Ramp Leads to Accessible Path above.



Instructions

Pedestrian Push Buttons Accessibility and Compliance

Indicate if pedestrian push buttons are accessible and compliant as defined below.

1. A push button is considered accessible if it is:
 - (a) Adjacent to and can be activated from a firm and stable surface.
2. A push button is considered compliant if it is:
 - (a) Adjacent to a level, non-slip surface to provide access from a wheelchair, and where there is a non-slip wheelchair accessible route to the ramp.
 - (b) A MIN 4' x 4' area in front of the push button is provided and
 - (i) If a turning movement is required in order to activate the push button and then get to the ramp, the max slope (longitudinal and cross slope) in the 4' x 4' area in front of the push button is 2%
 - (ii) If a turning movement is NOT required and the pedestrian/wheelchair is only expected to move forward or parallel from button (not turning), the 2% max slope is preferred but not required. Entire 999 and complete in the Comment Cell the reason why a turning movement is not required.
 - (c) Within 5'-0" of the crosswalk extended
 - (d) Between 1'-6" and 10'-0" of the edge of the curb, shoulder or pavement
 - (e) Parallel to the crosswalk to be used
 - (f) Mounted 42" above the sidewalk or finished grade to the center of the pushbutton and 10" MAX laterally from landing

- Not Accessible** - The existing or proposed push button is not accessible. Submit a technically infeasible form (TIF)
- Accessible and Non-Compliant** - The existing or proposed push button is accessible. However, it does not meet all of the requirements for compliance as noted above. Submit a technically infeasible form (TIF)
- Accessible and Compliant** - The existing or proposed push button is accessible and meets all of the requirements for compliance as noted above.
- N/A** - There are no existing or proposed push buttons for this crossing.

Sketch

Not used in Design.

Asset

The Asset number will be automatically completed as information is entered into the data entry form.

Status

Not used in Design.

Archive Ramp at location

Not used in Design.

Level of Service

Indicate the level of service, as designed:

- Meets RC-67M
- Technically Infeasible; Provides Maximum Access (TIF)

TAB 2 – INSPECTION FORM CONTINUED

Indicate the type of ramp being investigated using the curb ramp diagrams. Depending on curb ramp type, complete all of the required dimensions "A" through "EE" and the DWS transition strip values. Each cell is color-coded to indicate whether the information entered meets RC-67M. Use "999" for measurements that are not applicable.

TAB 3 - PICTURES TAB

Click on the "insert button #" button to insert the appropriate picture.

TAB 4 - ADDITIONAL EXPLANATION TAB (IF APPLICABLE)

If additional space is needed to further explain the reasoning behind a certain element but completing a Technically Infeasible Form (TIF) is not required use this area to explain the methodology behind the design as submitted.

Examples -

- (a) Additional room is need to explain why the ramp angle exceeds 20 degrees.
- (b) The longitudinal (running) slope of the sidewalk transition exceeds the 5% maximum allowed per DM2 Chapter 6 but is less than 8.33% maximum for a ramp slope.
- (c) The form is filled out for a Type 1 ramp but there is a greenstrip or other unwalkable surface in which the flare slope can exceed 10% and a 2' rolled concrete flare will be used.



Instructions

TAB 5 - INSTRUCTIONS

Use this tab as a quick reference to the instructions.

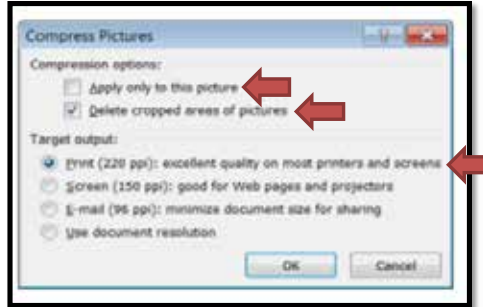
SUBMISSION

Perform the following for submission.

Reduce Image Size

To keep file size to a minimum, select a picture:

1. Click on one of the images that were inserted on Tab 03 - Pictures.
2. Click "Format" under the "Picture Tools" Ribbon.
3. In the Ribbon, click "Compress Pictures"
4. In the "Compress Pictures" Window select the options as noted below and click "OK".

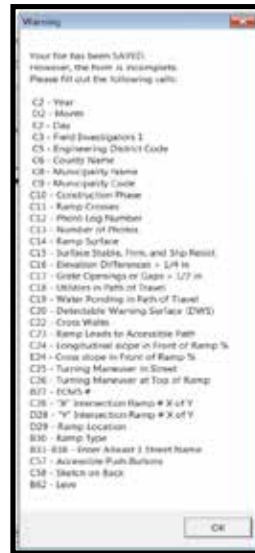


Save File

When saving the file, use Excel 2007 and later format with a *.xls extension. Do not use a different file format. If all the cells are not completed, a warning message will appear. The work has been saved, but the file is not complete. Fill in remaining cells and resave.

Send file to District ADA Coordinator

Upon approval of the curb ramp designs, submit files including the approved plans of the ADA designs, in PDF format, the CS-4401 Design, District 6 Form in Excel 2007 and later format and the Technically Infeasible Form (TIF) in Excel 2007 and later format to District 6 ADA Coordinator on a compact disc. Incomplete submissions will be returned.





Catharine Avenue and 53rd Street- Ramp P

*Date of Design (yyyy mm dd)	2018	09	11
Designer 1	Edward Mullen		
Designer 2	Bernadette Callahan		
*Engineering District Code	06 - District 6-0		
*County Name	Philadelphia		
*County Code (auto)	101		
*Municipality Name	Philadelphia City		
*Municipality Code (auto)	60000		
Construction Phase	Constructed		
Ramp Crosses	Both		
Photo Log Number	1		
Number of Photos	1		
Ramp Surface	Concrete		
Surface Stable, Firm, and Slip Resistant	Yes		
Elevation Differences > 1/4"	No		(X/16")
Grate Openings or Gaps > 1/2"	No		(X/16")
Utilities in Path of Travel	No		
Water Ponding in Path of Travel	No		
Detectable Warning Surface (DWS)	Yes		
DWS type	Poly Comp		
Pedestrian Crossing and Type	Yes	Single Ramp with Single Cross Walk	
Ramp Leads to Accessible Path	Yes	Crossing Control Type	Stop/Yield
Longitudinal / Cross slope in Front of Ramp	0.10	%	1.70 %
Turning Maneuver in Street	No	Ramp Angle with Crosswalk	0 degrees
Turning Maneuver at Top of Ramp (Smax)	Yes	Comments:	
ECMS #	Alg D Grade (%)	6.7	
Intersection Ramp # of #	1	4	
*Ramp Location (Use Figure Below)	19		
*Curb Ramp Type	Type 1		
*North Leg	53rd	(segment)	(offset)
*North Leg Desc.	St		
*East Leg	Catharine	(segment)	(offset)
*East Leg Desc.	Ave		
*South Leg	53rd	(segment)	(offset)
*South Leg Desc.	St		
*West Leg	Catharine	(segment)	(offset)
*West Leg Desc.	Ave		
Ramp Coordinates	Latitude		
	Longitude		

Minimum 4'-0" Pedestrian Access Route(PAR) Maintained within the Limit of Work	Yes
Push Button Turning Area - Max Slope (%)	Comments:
Accessible Push Buttons	N/A
Sketch Used To Collect Field Information	No
Asset # (auto)	C-06-101-60000-53rdSt-CatharineAve-53rdSt-CatharineAve-2018-09-11-19-Type1
Status	Current
Archive Ramp at location #:	N/A
Level of Service	Meets RC-67M



Catharine Avenue and 53rd Street- Ramp P

<p><input type="checkbox"/> TYPE 1</p> <p>MAX ALG. CHANGE IN GRADE _____ % TOP TURNING AREA <input type="checkbox"/> IF YES, MAX SLOPE "S" _____ %</p>	<p><input type="checkbox"/> TYPE 1A</p> <p>MAX ALG. CHANGE IN GRADE _____ %</p>	<p><input type="checkbox"/> TYPE 2</p> <p>MAX ALG. CHANGE IN GRADE _____ %</p>																																																																												
<p><input type="checkbox"/> TYPE 3</p> <p>MAX ALG. CHANGE IN GRADE _____ % TOP TURNING AREA <input type="checkbox"/> IF YES, MAX SLOPE "S" _____ %</p>	<p><input type="checkbox"/> TYPE 4</p> <p>MAX ALG. CHANGE IN GRADE _____ % TOP TURNING AREA <input type="checkbox"/> IF YES, MAX SLOPE "S" _____ %</p>	<p><input type="checkbox"/> TYPE 4A</p> <p>MAX ALG. CHANGE IN GRADE _____ % TOP TURNING AREA <input type="checkbox"/> IF YES, MAX SLOPE "S" _____ %</p>																																																																												
<p><input type="checkbox"/> TYPE 5</p> <p>MAX ALG. CHANGE IN GRADE _____ % RAILING <input type="checkbox"/> NO <input type="checkbox"/> YES "CC" RAIL HEIGHT _____ INCHES</p>	<p><input type="checkbox"/> TYPE 6</p> <p>MAX ALG. CHANGE IN GRADE _____ %</p>	<table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr> <th colspan="2" style="background-color: #e0e0e0;">".000" inches or %</th> </tr> </thead> <tbody> <tr><td>* A</td><td>48 (IN)</td></tr> <tr><td>* B</td><td>52 (IN)</td></tr> <tr><td>* C</td><td>6.60 (%)</td></tr> <tr><td>* D</td><td>9.00 (%)</td></tr> <tr><td>* E</td><td>9.80 (%)</td></tr> <tr><td>* F</td><td>6.60 (%)</td></tr> <tr><td>* G</td><td>6.60 (%)</td></tr> <tr><td>* H</td><td>6.85 (%)</td></tr> <tr><td>* I</td><td>3.60 (%)</td></tr> <tr><td>* J</td><td>170 (IN)</td></tr> <tr><td>* K</td><td>4 (IN)</td></tr> <tr><td>* L</td><td>52 (IN)</td></tr> <tr><td>* M</td><td>49 (IN)</td></tr> <tr><td>* N</td><td>4 (IN)</td></tr> <tr><td>* O</td><td>63 (IN)</td></tr> <tr><td>* P</td><td>51 (IN)</td></tr> <tr><td>* Q</td><td>0.90 (%)</td></tr> <tr><td>* R</td><td>1.60 (%)</td></tr> <tr><td>* S</td><td>1.90 (%)</td></tr> <tr><td>* T</td><td>0 (IN)</td></tr> <tr><td>* U</td><td>0 (IN)</td></tr> <tr><td>* V</td><td>0 (%)</td></tr> <tr><td>* W</td><td>1.10 (%)</td></tr> <tr><td>* X</td><td>0 (IN)</td></tr> <tr><td>* Y</td><td>0 (IN)</td></tr> <tr><td>* YY</td><td>120 (IN)</td></tr> <tr><td>* Z</td><td>0 (IN)</td></tr> <tr><td>* ZZ</td><td>54 (IN)</td></tr> <tr><td>* AA</td><td>0 (IN)</td></tr> <tr><td>* BB</td><td>0 (IN)</td></tr> <tr><td>* CC</td><td>0 (IN)</td></tr> <tr><td>* DD</td><td>2.10 (%)</td></tr> <tr><td>* EE</td><td>3.10 (%)</td></tr> <tr style="background-color: #e0e0e0;"><td colspan="2" style="text-align: center;">DWS Transition Strip</td></tr> <tr><td colspan="2" style="text-align: center;">No</td></tr> <tr style="background-color: #e0e0e0;"><td colspan="2" style="text-align: center;">DWS Transition Strip Slope (FF)</td></tr> <tr><td colspan="2" style="text-align: center;">(%)</td></tr> </tbody> </table>	".000" inches or %		* A	48 (IN)	* B	52 (IN)	* C	6.60 (%)	* D	9.00 (%)	* E	9.80 (%)	* F	6.60 (%)	* G	6.60 (%)	* H	6.85 (%)	* I	3.60 (%)	* J	170 (IN)	* K	4 (IN)	* L	52 (IN)	* M	49 (IN)	* N	4 (IN)	* O	63 (IN)	* P	51 (IN)	* Q	0.90 (%)	* R	1.60 (%)	* S	1.90 (%)	* T	0 (IN)	* U	0 (IN)	* V	0 (%)	* W	1.10 (%)	* X	0 (IN)	* Y	0 (IN)	* YY	120 (IN)	* Z	0 (IN)	* ZZ	54 (IN)	* AA	0 (IN)	* BB	0 (IN)	* CC	0 (IN)	* DD	2.10 (%)	* EE	3.10 (%)	DWS Transition Strip		No		DWS Transition Strip Slope (FF)		(%)	
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<p><input type="checkbox"/> BLENDED TRANSITION</p> <p>MAX ALG. CHANGE IN GRADE _____ %</p>	<p><input type="checkbox"/> NON-TYPICAL</p> <p>"A" RAMP WIDTH "B" RAMP LENGTH "C" RAMP SLOPE "D" LT FLARE SLOPE "I" RT FLARE SLOPE "J" LT SIDEWALK WIDTH "M" RT SIDEWALK WIDTH "P" SIDEWALK LANDING DEPTH "Q" LT SIDEWALK CROSS SLOPE "R" RT SIDEWALK CROSS SLOPE "S" SIDEWALK LANDING MAX SLOPE "W" RAMP MAX CROSS SLOPE</p> <p>MAX ALG. CHANGE IN GRADE _____ % SIDEWALK TURNING AREA <input type="checkbox"/> IF YES, DESIGNATE MAX SLOPE "S"</p>																																																																													
<p><input type="checkbox"/> TYPE A MEDIAN</p> <p><input type="checkbox"/> TYPE B MEDIAN</p>																																																																														

Comments ▲



Catharine Avenue and 53rd Street- Ramp P



Insert Picture 1



Insert Picture 4



Insert Picture 2



Insert Picture 5



Insert Picture 3



Insert Picture 6



Catharine Avenue and 53rd Street- Ramp P

Additional Explanation #1

Additional Explanation #2

Additional Explanation #3

Additional Explanation #4



Instructions

The District 6 Curb Ramp Design Form (CS-4401 Design, District 6) will be used for the design of all curb ramps in District 6 to ensure compliance with PENNDOT standards. The use of this form is required for to be constructed curb ramps. A thorough and rigorous review of the design for each curb ramp will be completed to ensure compliance with PENNDOT Standard RC-67M. The slopes indicated in RC-67M are absolute maximum slopes. Only slopes that are equal to or less than the indicated slopes are acceptable. When fully meeting the RC-67M standards is "Technically Infeasible", the curb ramp must be designed to the maximum extent feasible to provide handicap access. See Publication 13M - Design Manual 2, Chapter 6 for additional information on Technically Infeasible.

When used in the design phase, this form and corresponding plans will document all pertinent values and serve as a record that PENNDOT has reviewed the design. Based on the information provided in the CS-4401 and corresponding plans, the ramp will be classified as EITHER Meeting RC-67M or Technically Infeasible. If a ramp is Technically Infeasible then the Technically Infeasible Form (TIF) must be submitted with the CS-4401 and corresponding plans. PENNDOT will then review the TIF to determine if the ramp has been designed to provide access to the maximum extent feasible within the scope of the work for project. PENNDOT will review the investigated alternatives as submitted in the TIF and determine that the best possible solution was chosen and that no other design alternatives, as noted in the TIF or otherwise, within the scope of work for the project exists. Approval for all Technically Infeasible ramps will come from both the District ADA Coordinator and Assistant District Engineer by signing the Technically Infeasible Form (TIF).

INSTRUCTIONS

Before you Begin:

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The following tabs are included in the form:

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- Tab 2. Inspection Form Continued
- Tab 3. Pictures
- Tab 4. Additional Explanation
- Tab 5. Instructions

TAB 1 – INSPECTION FORM

All "blue filled" cells require information to be entered. Many cells have a drop down selection with a header. The header is used for filling out a printed version. The header must be changed to the appropriate selection. For example: " No Yes" would be the header. Either "No" or "Yes" must be selected.

Date of Design

Enter the year, month, and day of the investigation (format yyyy dd mm).

Designer 1 & 2

Insert the name(s) of the individuals responsible for the design.

Engineering District Code

Insert the engineering district code.

County Name

Insert the appropriate county. (The county code will automatically fill in once the appropriate county is selected).

Municipality Name

Insert the appropriate municipality name.
(The municipality code will automatically fill in once the appropriate municipality name is entered).



Instructions

Construction Phase

Select the appropriate status of the curb ramp being investigated.

- Constructed. Select this phase for ramps that are to be newly constructed curb ramps.
- Existing-Survey. Select this phase for documenting existing curb ramps.
- Missing. Select this phase for documenting missing curb ramps.

Ramp Crosses

Select what type of roadway the ramp crosses and or services.

Photo Log Number

Manually insert a photo log number with approximate time the photo was taken.

Number of Photos

Enter the number of photos.

Ramp Surface

Select ramp surface type (brick, concrete or other). If "other", manually insert the surface type in the cell immediately to the right of the surface type.

Surface Stable, Firm, and Slip Resistant

Indicate if the curb ramp surface is stable, firm, and slip resistant.

Elevation Differences > 1/4"

Indicate if any vertical elevation differences between sections of sidewalk found anywhere on the curb ramp that are greater than 1/4" exist. If vertical elevation differences exist, measure to the nearest 1/16 of an inch. For example, if measured 1/2" enter "8" (8/16) on the form, or if measured 2" enter 32 (32/16) in the form.

Grate Openings or Gaps > 1/2"

Indicate if any grate openings or gaps greater than 1/2" are located within the immediate pedestrian path. If horizontal gaps exist, measure to the nearest 1/16 of an inch. For example, if measured 1/2" enter "8" (8/16) on the form, or if measured 2" enter 32 (32/16) on the form.

Utilities in Path of Travel

Indicate if there are any utilities that obstruct the path of travel.

Water Ponding in Path of Travel

Indicate if any water ponding exists within the travel path of the curb ramp.

Detectable Warning Surface (DWS)

Indicate if a detectable warning surface is to be used.

DWS Type

If "Yes" is answered in previous question, indicate what type of DWS will be used. If "Other", fill in cell to the right to indicate what type of DWS is being used.

Pedestrian Crossings

Indicate if a pedestrian crossing exists. If a pedestrian crossing does not exist, a curb ramp is not needed. The crossing may be marked or unmarked. If "Yes", the cell to the right will become highlighted with blue fill, requiring it to be completed.

- single ramp with a single cross walk.
- single ramp with a double cross walk.

Ramp Leads to Accessible Path

Indicate if the ramp leads to an accessible path, such as a sidewalk or a pedestrian pushbutton.

Crossing Control Type

Indicate the type of vehicular traffic control device/measure at the pedestrian crossing.

STOP/YIELD - If a stop or yield sign is installed or traffic is controlled by a stop or yield condition (i.e. Driveway).

UNCONTROLLED - If vehicular traffic is not controlled by a traffic control device at the pedestrian crossing.

TRAFFIC SIGNAL - If vehicular traffic is controlled by a Traffic Signal at the pedestrian crossing.

MIDBLOCK - If the pedestrian crossing is at a mid block crossing.



Instructions

Longitudinal/Cross slope in Front of Ramp

Manually insert the longitudinal and cross slope values (as a percentage) in the appropriate cells. The longitudinal slope is equal to the slope parallel to the direction of the ramp (in the street); the cross slope is equal to the slope perpendicular to the direction of the ramp (in the street).

For a pedestrian crossing where vehicles operate without a yield or stop condition (**UNCONTROLLED** and **TRAFFIC SIGNAL**) and at midblock pedestrian street crossings (**MIDBLOCK**), the cross slope in front of the ramp shall be permitted to equal the street or highway profile grade. For pedestrian crossings where vehicles operate with a yield or stop condition (**STOP/YIELD**), the maximum cross slope in front of the ramp is 2% for a compliant design. If a compliant cross slope cannot be provided in front of the ramp, for crossings with a stop or yield condition, a TIF will need to be submitted.

Ramp Angle with Crosswalk

Manually insert the angle of the ramp to the crosswalk (in degrees). It is preferred that the angle is 20 degrees or less. If the angle is greater than 20 but less than 45, provide a brief explanation in the box below justifying the angle. If the angle is greater than or equal to 45 degrees then it is considered that a turning maneuver is being made in the street. A turning maneuver in the street requires a minimum 4' x 4', 2% max slope(longitudinally and the cross slope) turning area. If the turning area does not meet all of the requirements listed above, then the ramp does not meet RC-67M and is considered Technically Infeasible. A Technically Infeasible Form(TIF) is required. Submit the TIF form with proper justification why this cannot be achieved to meet RC-67M. Show on the plan the turning area at the bottom of the ramp in the street.

Turning Maneuver in Street

Indicate if pedestrians must perform turning maneuvers in the street. If "Yes", a landing is required in the street.

Turning Maneuver at Top of Ramp (Smax)

Indicate if pedestrians must perform turning maneuvers at the top of the ramp. If "Yes", Smax is required.

ECMS # (if applicable)

Manually insert the ECMS # for the project that altered the curb ramp.

Algebraic Δ Grade (Algebraic Change in Grade)

Manually insert the maximum algebraic change between the ramp slope and roadway slope (as a percentage). See the diagram on Sheet 01 - Inspection Form.

Intersection Ramp # of

Manually enter the number for the ramp being investigated followed by the total number of ramps being investigated at the intersection. For example, if the ramp at the intersection of Ramp "X" of "Y" is being investigated, "Y" is the total number of the ramps at the intersection and "X" is the number assigned to the specific ramp being investigated.

Ramp Location

Using the intersection figure shown, select the appropriate button for which the investigated curb ramp is located.

North Leg/North Leg Description

Include the name of the roadway (if applicable) for the northbound roadway. Then directly below that cell, indicate the type of roadway (state route, boulevard, road, street, etc.). If the roadway is a state route number (format: 0000), also include the Segment # (format: 0000) and Offset # (format: 0000) of the intersection. If the roadway is a local road, include the name of the local road and description. Complete this for all legs of the intersection.

	North Leg	Description	Segment	Offset
Example 1:	00016	SR	0010	0020
Example 2:	Oak	ST	n/a	n/a

Ramp Type

Indicate the type of ramp being investigated. Depending on curb ramp type, complete all of the required dimensions on Tab 2 – Inspection Form Continued. Each cell is color-coded to indicate whether the information entered meets RC-67M. If data is entered and the cell becomes highlighted with green fill, the data meets RC-67M. If the cell becomes highlighted with red fill, the data does not meet RC-67M. If the cell becomes highlighted with yellow fill, the data does not match RC-67M but may be due to tie-ins with the existing site. The chart located to the right of the data entry form indicates the minimum measurement requirements (compliance check).

Insert the Latitude and Longitude for each Curb Ramp. Convert to Degrees. Provide a minimum of 5 decimal places for accuracy.

For Example - N40° 06' 16.08" = 40.10447° and W 75° 23' 58.11" = -75.39948°. The program will not allow you to enter a value outside of the geographical area of District 6.

Minimum 4'-0" Pedestrian Access Route(PAR) Maintained within the Limit of Work

A minimum 4'-0" Pedestrian Access Route(PAR) must be maintained within the limit of work. If this requirement is not met then a Technically Infeasible Form (TIF) must be submitted with the CS4401 and the ramps leading to and from the constrained PAR are considered non-compliant and are Technically Infeasible.

The width of the PAR is defined as the width of walkway between two obstructions. This would include flares with slopes greater than 8.3%, utility/street light poles, traffic signal poles and equipment, signs, buildings, street furniture and other unwalkable areas.

A PAR less than 4' but not less than 3' is acceptable if it is not within the slope of work for the project to relocate the obstructions. If the PAR is less than 3' and it is not within the scope of work for the project to relocate the obstruction then the ramp is considered not accessible from that approach. Select NO for Ramp Leads to Accessible Path. See Ramp Leads to Accessible Path above.



Instructions

Pedestrian Push Buttons Accessibility and Compliance

Indicate if pedestrian push buttons are accessible and compliant as defined below.

1. A push button is considered accessible if it is:
 - (a) Adjacent to and can be activated from a firm and stable surface.
2. A push button is considered compliant if it is:
 - (a) Adjacent to a level, non-slip surface to provide access from a wheelchair, and where there is a non-slip wheelchair accessible route to the ramp.
 - (b) A MIN 4' x 4' area in front of the push button is provided and
 - (i) If a turning movement is required in order to activate the push button and then get to the ramp, the max slope (longitudinal and cross slope) in the 4' x 4' area in front of the push button is 2%
 - (ii) If a turning movement is NOT required and the pedestrian/wheelchair is only expected to move forward or parallel from button (not turning), the 2% max slope is preferred but not required. Entire 999 and complete in the Comment Cell the reason why a turning movement is not required.
 - (c) Within 5'-0" of the crosswalk extended
 - (d) Between 1'-6" and 10'-0" of the edge of the curb, shoulder or pavement
 - (e) Parallel to the crosswalk to be used
 - (f) Mounted 42" above the sidewalk or finished grade to the center of the pushbutton and 10" MAX laterally from landing

- Not Accessible** - The existing or proposed push button is not accessible. Submit a technically infeasible form (TIF)
- Accessible and Non-Compliant** - The existing or proposed push button is accessible. However, it does not meet all of the requirements for compliance as noted above. Submit a technically infeasible form (TIF)
- Accessible and Compliant** - The existing or proposed push button is accessible and meets all of the requirements for compliance as noted above.
- N/A** - There are no existing or proposed push buttons for this crossing.

Sketch

Not used in Design.

Asset

The Asset number will be automatically completed as information is entered into the data entry form.

Status

Not used in Design.

Archive Ramp at location

Not used in Design.

Level of Service

Indicate the level of service, as designed:

- Meets RC-67M
- Technically Infeasible; Provides Maximum Access (TIF)

TAB 2 – INSPECTION FORM CONTINUED

Indicate the type of ramp being investigated using the curb ramp diagrams. Depending on curb ramp type, complete all of the required dimensions "A" through "EE" and the DWS transition strip values. Each cell is color-coded to indicate whether the information entered meets RC-67M. Use "999" for measurements that are not applicable.

TAB 3 - PICTURES TAB

Click on the "insert button #" button to insert the appropriate picture.

TAB 4 - ADDITIONAL EXPLANATION TAB (IF APPLICABLE)

If additional space is needed to further explain the reasoning behind a certain element but completing a Technically Infeasible Form (TIF) is not required use this area to explain the methodology behind the design as submitted.

Examples -

- (a) Additional room is need to explain why the ramp angle exceeds 20 degrees.
- (b) The longitudinal (running) slope of the sidewalk transition exceeds the 5% maximum allowed per DM2 Chapter 6 but is less than 8.33% maximum for a ramp slope.
- (c) The form is filled out for a Type 1 ramp but there is a greenstrip or other unwalkable surface in which the flare slope can exceed 10% and a 2' rolled concrete flare will be used.



Instructions

TAB 5 - INSTRUCTIONS

Use this tab as a quick reference to the instructions.

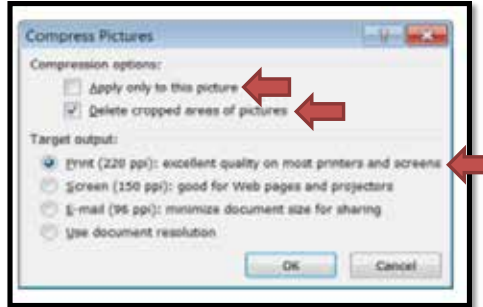
SUBMISSION

Perform the following for submission.

Reduce Image Size

To keep file size to a minimum, select a picture:

1. Click on one of the images that were inserted on Tab 03 - Pictures.
2. Click "Format" under the "Picture Tools" Ribbon.
3. In the Ribbon, click "Compress Pictures"
4. In the "Compress Pictures" Window select the options as noted below and click "OK".

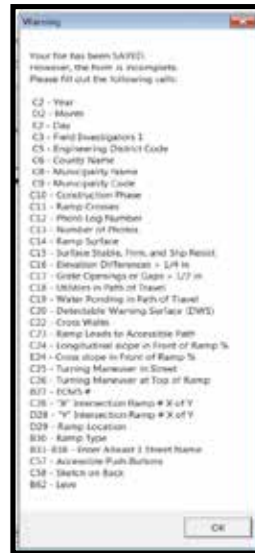


Save File

When saving the file, use Excel 2007 and later format with a *.xls extension. Do not use a different file format. If all the cells are not completed, a warning message will appear. The work has been saved, but the file is not complete. Fill in remaining cells and resave.

Send file to District ADA Coordinator

Upon approval of the curb ramp designs, submit files including the approved plans of the ADA designs, in PDF format, the CS-4401 Design, District 6 Form in Excel 2007 and later format and the Technically Infeasible Form (TIF) in Excel 2007 and later format to District 6 ADA Coordinator on a compact disc. Incomplete submissions will be returned.





Catharine and 53rd Street- Ramp Q

*Date of Design (yyyy mm dd)	2018	09	11
Designer 1	Edward Mullen		
Designer 2	Bernadette Callahan		
*Engineering District Code	06 - District 6-0		
*County Name	Philadelphia		
*County Code (auto)	101		
*Municipality Name	Philadelphia City		
*Municipality Code (auto)	60000		
Construction Phase	Constructed		
Ramp Crosses	Both		
Photo Log Number	1		
Number of Photos	1		
Ramp Surface	Concrete		
Surface Stable, Firm, and Slip Resistant	Yes		
Elevation Differences > 1/4"	No		(X/16")
Grate Openings or Gaps > 1/2"	No		(X/16")
Utilities in Path of Travel	No		
Water Ponding in Path of Travel	No		
Detectable Warning Surface (DWS)	Yes		
DWS type	Poly Comp		
Pedestrian Crossing and Type	Yes	Single Ramp with Single Cross Walk	
Ramp Leads to Accessible Path	Yes	Crossing Control Type	Stop/Yield
Longitudinal / Cross slope in Front of Ramp	1.90	%	1.00 %
Turning Maneuver in Street	No	Ramp Angle with Crosswalk	20 degrees
Turning Maneuver at Top of Ramp (Smax)	Yes	Comments:	
ECMS #	Alg D Grade (%)	5.8	
Intersection Ramp # of #	2	4	
*Ramp Location (Use Figure Below)	17		
*Curb Ramp Type	Type 1		
*North Leg	53rd	(segment)	(offset)
*North Leg Desc.	St		
*East Leg	Catharine	(segment)	(offset)
*East Leg Desc.	Ave		
*South Leg	53rd	(segment)	(offset)
*South Leg Desc.	St		
*West Leg	Catharine	(segment)	(offset)
*West Leg Desc.	Ave		
Ramp Coordinates	Latitude	39.94929	
	Longitude	-75.22925	

Northbound

Ramp Angle w\Crosswalk

Z° = Ramp Angle w\Crosswalk

DIMENSIONS ARE ABSOLUTE FOR NEW INSTALLATIONS

Algebraic Difference

X%

Ramp Slope

-Y%

Longitudinal Slope of Crosswalk

Depressed Curb

Algebraic Difference = X% - (-Y%)

X%

Ramp Slope

Y%

Longitudinal Slope of Crosswalk

Depressed Curb

Algebraic Difference = X% - Y%



Catharine and 53rd Street- Ramp Q

<p><input type="checkbox"/> TYPE 1</p> <p>MAX ALG. CHANGE IN GRADE _____ % TOP TURNING AREA <input type="checkbox"/> IF YES, MAX SLOPE "S" _____ %</p>	<p><input type="checkbox"/> TYPE 1A</p> <p>MAX ALG. CHANGE IN GRADE _____ %</p>	<p><input type="checkbox"/> TYPE 2</p> <p>MAX ALG. CHANGE IN GRADE _____ %</p>	
<p><input type="checkbox"/> TYPE 3</p> <p>MAX ALG. CHANGE IN GRADE _____ % TOP TURNING AREA <input type="checkbox"/> IF YES, MAX SLOPE "S" _____ %</p>	<p><input type="checkbox"/> TYPE 4</p> <p>MAX ALG. CHANGE IN GRADE _____ % TOP TURNING AREA <input type="checkbox"/> IF YES, MAX SLOPE "S" _____ %</p>	<p><input type="checkbox"/> TYPE 4A</p> <p>MAX ALG. CHANGE IN GRADE _____ % TOP TURNING AREA <input type="checkbox"/> IF YES, MAX SLOPE "S" _____ %</p>	
<p><input type="checkbox"/> TYPE 5</p> <p>MAX ALG. CHANGE IN GRADE _____ % RAILING <input type="checkbox"/> NO <input type="checkbox"/> YES "CC" RAIL HEIGHT _____ INCHES</p>	<p><input type="checkbox"/> TYPE 6</p> <p>MAX ALG. CHANGE IN GRADE _____ %</p>		
<p><input type="checkbox"/> BLENDED TRANSITION</p> <p>MAX ALG. CHANGE IN GRADE _____ %</p>	<p><input type="checkbox"/> NON-TYPICAL</p> <p>"A" RAMP WIDTH "B" RAMP LENGTH "C" RAMP SLOPE "D" LT FLARE SLOPE "I" RT FLARE SLOPE "J" LT SIDEWALK WIDTH "M" RT SIDEWALK WIDTH "P" SIDEWALK LANDING DEPTH "Q" LT SIDEWALK CROSS SLOPE "R" RT SIDEWALK CROSS SLOPE "S" SIDEWALK LANDING MAX SLOPE "W" RAMP MAX CROSS SLOPE</p> <p>MAX ALG. CHANGE IN GRADE _____ % SIDEWALK TURNING AREA <input type="checkbox"/> IF YES, DESIGNATE MAX SLOPE "S"</p>		
<p><input type="checkbox"/> TYPE A MEDIAN</p> <p><input type="checkbox"/> TYPE B MEDIAN</p>			

Comments ▲

"0.00" inches or %	
* A	48 (IN)
* B	68 (IN)
* C	3.90 (%)
* D	7.10 (%)
* E	4.65 (%)
* F	3.90 (%)
* G	3.90 (%)
* H	6.50 (%)
* I	7.50 (%)
* J	171 (IN)
* K	4 (IN)
* L	61 (IN)
* M	97 (IN)
* N	4 (IN)
* O	51 (IN)
* P	48 (IN)
* Q	0.90 (%)
* R	1.70 (%)
* S	2.00 (%)
* T	0 (IN)
* U	0 (IN)
* V	0 (%)
* W	1.20 (%)
* X	0 (IN)
* Y	0 (IN)
* YY	120 (IN)
* Z	0 (IN)
* ZZ	999 (IN)
* AA	0 (IN)
* BB	0 (IN)
* CC	0 (IN)
* DD	2.10 (%)
* EE	3.10 (%)
DWS Transition Strip No	
DWS Transition Strip Slope (FF) _____ (%)	

Catharine and 53rd Street- Ramp Q



Insert Picture 1



Insert Picture 4



Insert Picture 2



Insert Picture 5



Insert Picture 3



Insert Picture 6



Catharine and 53rd Street- Ramp Q

Additional Explanation #1

Additional Explanation #2

Additional Explanation #3

Additional Explanation #4



Instructions

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Insert the name(s) of the individuals responsible for the design.

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Insert the engineering district code.

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Select what type of roadway the ramp crosses and or services.

Photo Log Number

Manually insert a photo log number with approximate time the photo was taken.

Number of Photos

Enter the number of photos.

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Select ramp surface type (brick, concrete or other). If "other", manually insert the surface type in the cell immediately to the right of the surface type.

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Indicate the type of vehicular traffic control device/measure at the pedestrian crossing.

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Instructions

Longitudinal/Cross slope in Front of Ramp

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Ramp Angle with Crosswalk

Manually insert the angle of the ramp to the crosswalk (in degrees). It is preferred that the angle is 20 degrees or less. If the angle is greater than 20 but less than 45, provide a brief explanation in the box below justifying the angle. If the angle is greater than or equal to 45 degrees then it is considered that a turning maneuver is being made in the street. A turning maneuver in the street requires a minimum 4' x 4', 2% max slope(longitudinally and the cross slope) turning area. If the turning area does not meet all of the requirements listed above, then the ramp does not meet RC-67M and is considered Technically Infeasible. A Technically Infeasible Form(TIF) is required. Submit the TIF form with proper justification why this cannot be achieved to meet RC-67M. Show on the plan the turning area at the bottom of the ramp in the street.

Turning Maneuver in Street

Indicate if pedestrians must perform turning maneuvers in the street. If "Yes", a landing is required in the street.

Turning Maneuver at Top of Ramp (Smax)

Indicate if pedestrians must perform turning maneuvers at the top of the ramp. If "Yes", Smax is required.

ECMS # (if applicable)

Manually insert the ECMS # for the project that altered the curb ramp.

Algebraic Δ Grade (Algebraic Change in Grade)

Manually insert the maximum algebraic change between the ramp slope and roadway slope (as a percentage). See the diagram on Sheet 01 - Inspection Form.

Intersection Ramp # of

Manually enter the number for the ramp being investigated followed by the total number of ramps being investigated at the intersection. For example, if the ramp at the intersection of Ramp "X" of "Y" is being investigated, "Y" is the total number of the ramps at the intersection and "X" is the number assigned to the specific ramp being investigated.

Ramp Location

Using the intersection figure shown, select the appropriate button for which the investigated curb ramp is located.

North Leg/North Leg Description

Include the name of the roadway (if applicable) for the northbound roadway. Then directly below that cell, indicate the type of roadway (state route, boulevard, road, street, etc.). If the roadway is a state route number (format: 0000), also include the Segment # (format: 0000) and Offset # (format: 0000) of the intersection. If the roadway is a local road, include the name of the local road and description. Complete this for all legs of the intersection.

	North Leg	Description	Segment	Offset
Example 1:	00016	SR	0010	0020
Example 2:	Oak	ST	n/a	n/a

Ramp Type

Indicate the type of ramp being investigated. Depending on curb ramp type, complete all of the required dimensions on Tab 2 – Inspection Form Continued. Each cell is color-coded to indicate whether the information entered meets RC-67M. If data is entered and the cell becomes highlighted with green fill, the data meets RC-67M. If the cell becomes highlighted with red fill, the data does not meet RC-67M. If the cell becomes highlighted with yellow fill, the data does not match RC-67M but may be due to tie-ins with the existing site. The chart located to the right of the data entry form indicates the minimum measurement requirements (compliance check).

Insert the Latitude and Longitude for each Curb Ramp. Convert to Degrees. Provide a minimum of 5 decimal places for accuracy.

For Example - N40° 06' 16.08" = 40.10447° and W 75° 23' 58.11" = -75.39948°. The program will not allow you to enter a value outside of the geographical area of District 6.

Minimum 4'-0" Pedestrian Access Route(PAR) Maintained within the Limit of Work

A minimum 4'-0" Pedestrian Access Route(PAR) must be maintained within the limit of work. If this requirement is not met then a Technically Infeasible Form (TIF) must be submitted with the CS4401 and the ramps leading to and from the constrained PAR are considered non-compliant and are Technically Infeasible.

The width of the PAR is defined as the width of walkway between two obstructions. This would include flares with slopes greater than 8.3%, utility/street light poles, traffic signal poles and equipment, signs, buildings, street furniture and other unwalkable areas.

A PAR less than 4' but not less than 3' is acceptable if it is not within the slope of work for the project to relocate the obstructions. If the PAR is less than 3' and it is not within the scope of work for the project to relocate the obstruction then the ramp is considered not accessible from that approach. Select NO for Ramp Leads to Accessible Path. See Ramp Leads to Accessible Path above.



Instructions

Pedestrian Push Buttons Accessibility and Compliance

Indicate if pedestrian push buttons are accessible and compliant as defined below.

1. A push button is considered accessible if it is:
 - (a) Adjacent to and can be activated from a firm and stable surface.
2. A push button is considered compliant if it is:
 - (a) Adjacent to a level, non-slip surface to provide access from a wheelchair, and where there is a non-slip wheelchair accessible route to the ramp.
 - (b) A MIN 4' x 4' area in front of the push button is provided and
 - (i) If a turning movement is required in order to activate the push button and then get to the ramp, the max slope (longitudinal and cross slope) in the 4' x 4' area in front of the push button is 2%
 - (ii) If a turning movement is NOT required and the pedestrian/wheelchair is only expected to move forward or parallel from button (not turning), the 2% max slope is preferred but not required. Entire 999 and complete in the Comment Cell the reason why a turning movement is not required.
 - (c) Within 5'-0" of the crosswalk extended
 - (d) Between 1'-6" and 10'-0" of the edge of the curb, shoulder or pavement
 - (e) Parallel to the crosswalk to be used
 - (f) Mounted 42" above the sidewalk or finished grade to the center of the pushbutton and 10" MAX laterally from landing

- Not Accessible** - The existing or proposed push button is not accessible. Submit a technically infeasible form (TIF)
- Accessible and Non-Compliant** - The existing or proposed push button is accessible. However, it does not meet all of the requirements for compliance as noted above. Submit a technically infeasible form (TIF)
- Accessible and Compliant** - The existing or proposed push button is accessible and meets all of the requirements for compliance as noted above.
- N/A** - There are no existing or proposed push buttons for this crossing.

Sketch

Not used in Design.

Asset

The Asset number will be automatically completed as information is entered into the data entry form.

Status

Not used in Design.

Archive Ramp at location

Not used in Design.

Level of Service

Indicate the level of service, as designed:

- Meets RC-67M
- Technically Infeasible; Provides Maximum Access (TIF)

TAB 2 – INSPECTION FORM CONTINUED

Indicate the type of ramp being investigated using the curb ramp diagrams. Depending on curb ramp type, complete all of the required dimensions "A" through "EE" and the DWS transition strip values. Each cell is color-coded to indicate whether the information entered meets RC-67M. Use "999" for measurements that are not applicable.

TAB 3 - PICTURES TAB

Click on the "insert button #" button to insert the appropriate picture.

TAB 4 - ADDITIONAL EXPLANATION TAB (IF APPLICABLE)

If additional space is needed to further explain the reasoning behind a certain element but completing a Technically Infeasible Form (TIF) is not required use this area to explain the methodology behind the design as submitted.

Examples -

- (a) Additional room is need to explain why the ramp angle exceeds 20 degrees.
- (b) The longitudinal (running) slope of the sidewalk transition exceeds the 5% maximum allowed per DM2 Chapter 6 but is less than 8.33% maximum for a ramp slope.
- (c) The form is filled out for a Type 1 ramp but there is a greenstrip or other unwalkable surface in which the flare slope can exceed 10% and a 2' rolled concrete flare will be used.



Instructions

TAB 5 - INSTRUCTIONS

Use this tab as a quick reference to the instructions.

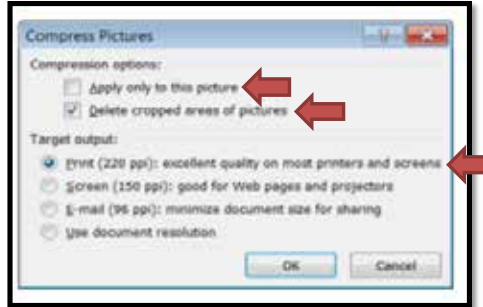
SUBMISSION

Perform the following for submission.

Reduce Image Size

To keep file size to a minimum, select a picture:

1. Click on one of the images that were inserted on Tab 03 - Pictures.
2. Click "Format" under the "Picture Tools" Ribbon.
3. In the Ribbon, click "Compress Pictures"
4. In the "Compress Pictures" Window select the options as noted below and click "OK".

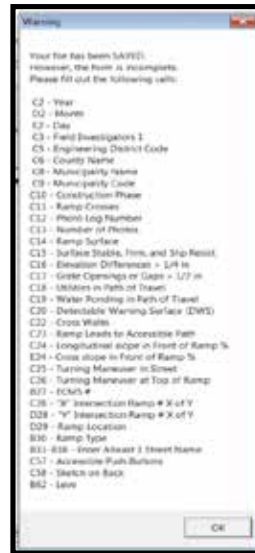


Save File

When saving the file, use Excel 2007 and later format with a *.xls extension. Do not use a different file format. If all the cells are not completed, a warning message will appear. The work has been saved, but the file is not complete. Fill in remaining cells and resave.

Send file to District ADA Coordinator

Upon approval of the curb ramp designs, submit files including the approved plans of the ADA designs, in PDF format, the CS-4401 Design, District 6 Form in Excel 2007 and later format and the Technically Infeasible Form (TIF) in Excel 2007 and later format to District 6 ADA Coordinator on a compact disc. Incomplete submissions will be returned.





Catharine and 53rd Street- Ramp R

*Date of Design (yyyy mm dd)	2018	09	11
Designer 1	Edward Mullen		
Designer 2	Bernadette Callahan		
*Engineering District Code	06 - District 6-0		
*County Name	Philadelphia		
*County Code (auto)	101		
*Municipality Name	Philadelphia City		
*Municipality Code (auto)	60000		
Construction Phase	Constructed		
Ramp Crosses	Both		
Photo Log Number	1		
Number of Photos	1		
Ramp Surface	Concrete		
Surface Stable, Firm, and Slip Resistant	Yes		
Elevation Differences > 1/4"	No		(X/16")
Grate Openings or Gaps > 1/2"	No		(X/16")
Utilities in Path of Travel	No		
Water Ponding in Path of Travel	No		
Detectable Warning Surface (DWS)	Yes		
DWS type	Poly Comp		
Pedestrian Crossing and Type	Yes	Single Ramp with Single Cross Walk	
Ramp Leads to Accessible Path	Yes	Crossing Control Type	(select)
Longitudinal / Cross slope in Front of Ramp	1.00	%	1.00 %
Turning Maneuver in Street	No	Ramp Angle with Crosswalk	8 degrees
Turning Maneuver at Top of Ramp (Smax)	Yes	Comments:	
ECMS #	Alg D Grade (%)	8.0	
Intersection Ramp # of #	1	4	
*Ramp Location (Use Figure Below)	02		
*Curb Ramp Type	Type 1		
*North Leg	53rd	(segment)	(offset)
*North Leg Desc.	St		
*East Leg	Catharine	(segment)	(offset)
*East Leg Desc.	Ave		
*South Leg	53rd	(segment)	(offset)
*South Leg Desc.	St		
*West Leg	Catharine	(segment)	(offset)
*West Leg Desc.	Ave		
Ramp Coordinates	Latitude	39.94930	
	Longitude	-75.22908	

Northbound

Z° = Ramp Angle w/ Crosswalk

DIMENSIONS ARE ABSOLUTE FOR NEW INSTALLATIONS

Algebraic Difference

ACCESSIBLE PUSH BUTTONS

X% Ramp Slope -Y% Longitudinal Slope of Crosswalk

Depressed Curb

Algebraic Difference = X% - (-Y%)

X% Ramp Slope Y% Longitudinal Slope of Crosswalk

Depressed Curb

Algebraic Difference = X% - Y%

Minimum 4'-0" Pedestrian Access Route (PAR) Maintained within the Limit of Work	Yes
Push Button Turning Area - Max Slope (%)	Comments:
Accessible Push Buttons	N/A
Sketch Used To Collect Field Information	No
Asset # (auto)	C-06-101-60000-53rdSt-CatharineAve-53rdSt-CatharineAve-2018-09-11-2-Type1
Status	Current
Archive Ramp at location #:	N/A
Level of Service	Meets RC-67M



Catharine and 53rd Street- Ramp R

<p><input type="checkbox"/> TYPE 1</p> <p>MAX ALG. CHANGE IN GRADE _____ % TOP TURNING AREA <input type="checkbox"/> IF YES, MAX SLOPE "S" _____ %</p>	<p><input type="checkbox"/> TYPE 1A</p> <p>MAX ALG. CHANGE IN GRADE _____ %</p>	<p><input type="checkbox"/> TYPE 2</p> <p>MAX ALG. CHANGE IN GRADE _____ %</p>	<p style="text-align: center;">"0.00" inches or %</p> <table border="1" style="width:100%; border-collapse: collapse;"> <tr><td>* A</td><td>48</td><td>(IN)</td></tr> <tr><td>* B</td><td>57</td><td>(IN)</td></tr> <tr><td>* C</td><td>7.00</td><td>(%)</td></tr> <tr><td>* D</td><td>2.40</td><td>(%)</td></tr> <tr><td>* E</td><td>5.75</td><td>(%)</td></tr> <tr><td>* F</td><td>7.00</td><td>(%)</td></tr> <tr><td>* G</td><td>7.00</td><td>(%)</td></tr> <tr><td>* H</td><td>7.10</td><td>(%)</td></tr> <tr><td>* I</td><td>5.10</td><td>(%)</td></tr> <tr><td>* J</td><td>94</td><td>(IN)</td></tr> <tr><td>* K</td><td>2</td><td>(IN)</td></tr> <tr><td>* L</td><td>69</td><td>(IN)</td></tr> <tr><td>* M</td><td>161</td><td>(IN)</td></tr> <tr><td>* N</td><td>4</td><td>(IN)</td></tr> <tr><td>* O</td><td>52</td><td>(IN)</td></tr> <tr><td>* P</td><td>48</td><td>(IN)</td></tr> <tr><td>* Q</td><td>5.90</td><td>(%)</td></tr> <tr><td>* R</td><td>0.50</td><td>(%)</td></tr> <tr><td>* S</td><td>2.00</td><td>(%)</td></tr> <tr><td>* T</td><td>0</td><td>(IN)</td></tr> <tr><td>* U</td><td>0</td><td>(IN)</td></tr> <tr><td>* V</td><td></td><td>(%)</td></tr> <tr><td>* W</td><td>1.00</td><td>(%)</td></tr> <tr><td>* X</td><td>0</td><td>(IN)</td></tr> <tr><td>* Y</td><td>0</td><td>(IN)</td></tr> <tr><td>* YY</td><td>120</td><td>(IN)</td></tr> <tr><td>* Z</td><td>0</td><td>(IN)</td></tr> <tr><td>* ZZ</td><td>999</td><td>(IN)</td></tr> <tr><td>* AA</td><td>0</td><td>(IN)</td></tr> <tr><td>* BB</td><td>0</td><td>(IN)</td></tr> <tr><td>* CC</td><td>0</td><td>(IN)</td></tr> <tr><td>* DD</td><td>6.20</td><td>(%)</td></tr> <tr><td>* EE</td><td>1.20</td><td>(%)</td></tr> <tr><td colspan="2" style="background-color: #00FFFF;">DWS Transition Strip</td><td>No</td></tr> <tr><td colspan="2" style="background-color: #00FFFF;">DWS Transition Strip Slope (FF)</td><td>(%)</td></tr> </table>	* A	48	(IN)	* B	57	(IN)	* C	7.00	(%)	* D	2.40	(%)	* E	5.75	(%)	* F	7.00	(%)	* G	7.00	(%)	* H	7.10	(%)	* I	5.10	(%)	* J	94	(IN)	* K	2	(IN)	* L	69	(IN)	* M	161	(IN)	* N	4	(IN)	* O	52	(IN)	* P	48	(IN)	* Q	5.90	(%)	* R	0.50	(%)	* S	2.00	(%)	* T	0	(IN)	* U	0	(IN)	* V		(%)	* W	1.00	(%)	* X	0	(IN)	* Y	0	(IN)	* YY	120	(IN)	* Z	0	(IN)	* ZZ	999	(IN)	* AA	0	(IN)	* BB	0	(IN)	* CC	0	(IN)	* DD	6.20	(%)	* EE	1.20	(%)	DWS Transition Strip		No	DWS Transition Strip Slope (FF)		(%)
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<p><input type="checkbox"/> TYPE 3</p> <p>MAX ALG. CHANGE IN GRADE _____ % TOP TURNING AREA <input type="checkbox"/> IF YES, MAX SLOPE "S" _____ %</p>	<p><input type="checkbox"/> TYPE 4</p> <p>MAX ALG. CHANGE IN GRADE _____ % TOP TURNING AREA <input type="checkbox"/> IF YES, MAX SLOPE "S" _____ %</p>	<p><input type="checkbox"/> TYPE 4A</p> <p>MAX ALG. CHANGE IN GRADE _____ % TOP TURNING AREA <input type="checkbox"/> IF YES, MAX SLOPE "S" _____ %</p>																																																																																																										
<p><input type="checkbox"/> TYPE 5</p> <p>MAX ALG. CHANGE IN GRADE _____ % RAILING <input type="checkbox"/> NO <input type="checkbox"/> YES "CC" RAIL HEIGHT _____ INCHES</p>	<p><input type="checkbox"/> TYPE 6</p> <p>MAX ALG. CHANGE IN GRADE _____ %</p>																																																																																																											
<p><input type="checkbox"/> BLENDED TRANSITION</p> <p>MAX ALG. CHANGE IN GRADE _____ %</p>	<p><input type="checkbox"/> NON-TYPICAL</p> <p>"A" RAMP WIDTH "B" RAMP LENGTH "C" RAMP SLOPE "D" LT FLARE SLOPE "I" RT FLARE SLOPE "J" LT SIDEWALK WIDTH "M" RT SIDEWALK WIDTH "P" SIDEWALK LANDING DEPTH "Q" LT SIDEWALK CROSS SLOPE "R" RT SIDEWALK CROSS SLOPE "S" SIDEWALK LANDING MAX SLOPE "W" RAMP MAX CROSS SLOPE</p> <p>MAX ALG. CHANGE IN GRADE _____ % SIDEWALK TURNING AREA <input type="checkbox"/> IF YES, DESIGNATE MAX SLOPE "S"</p>																																																																																																											
<p><input type="checkbox"/> TYPE A MEDIAN</p>																																																																																																												
<p><input type="checkbox"/> TYPE B MEDIAN</p>																																																																																																												

Comments ▲

Catharine and 53rd Street- Ramp R



Insert Picture 1



Insert Picture 4



Insert Picture 2



Insert Picture 5



Insert Picture 3



Insert Picture 6



Catharine and 53rd Street- Ramp R

Additional Explanation #1

Additional Explanation #2

Additional Explanation #3

Additional Explanation #4



Instructions

The District 6 Curb Ramp Design Form (CS-4401 Design, District 6) will be used for the design of all curb ramps in District 6 to ensure compliance with PENNDOT standards. The use of this form is required for to be constructed curb ramps. A thorough and rigorous review of the design for each curb ramp will be completed to ensure compliance with PENNDOT Standard RC-67M. The slopes indicated in RC-67M are absolute maximum slopes. Only slopes that are equal to or less than the indicated slopes are acceptable. When fully meeting the RC-67M standards is "Technically Infeasible", the curb ramp must be designed to the maximum extent feasible to provide handicap access. See Publication 13M - Design Manual 2, Chapter 6 for additional information on Technically Infeasible.

When used in the design phase, this form and corresponding plans will document all pertinent values and serve as a record that PENNDOT has reviewed the design. Based on the information provided in the CS-4401 and corresponding plans, the ramp will be classified as EITHER Meeting RC-67M or Technically Infeasible. If a ramp is Technically Infeasible then the Technically Infeasible Form (TIF) must be submitted with the CS-4401 and corresponding plans. PENNDOT will then review the TIF to determine if the ramp has been designed to provide access to the maximum extent feasible within the scope of the work for project. PENNDOT will review the investigated alternatives as submitted in the TIF and determine that the best possible solution was chosen and that no other design alternatives, as noted in the TIF or otherwise, within the scope of work for the project exists. Approval for all Technically Infeasible ramps will come from both the District ADA Coordinator and Assistant District Engineer by signing the Technically Infeasible Form (TIF).

INSTRUCTIONS

Before you Begin:

The electronic file is delivered in Excel 97-2003 Workbook *.xls format. When saving the file, use Excel format with a *.xls extension. Do not use a different file format. This file is compatible with Microsoft Excel 2007 and later. It is compatible with 32 bit and 64 bit computers.

The following tabs are included in the form:

- Tab 1. Inspection Form
- Tab 2. Inspection Form Continued
- Tab 3. Pictures
- Tab 4. Additional Explanation
- Tab 5. Instructions

TAB 1 – INSPECTION FORM

All "blue filled" cells require information to be entered. Many cells have a drop down selection with a header. The header is used for filling out a printed version. The header must be changed to the appropriate selection. For example: " No Yes" would be the header. Either "No" or "Yes" must be selected.

Date of Design

Enter the year, month, and day of the investigation (format yyyy dd mm).

Designer 1 & 2

Insert the name(s) of the individuals responsible for the design.

Engineering District Code

Insert the engineering district code.

County Name

Insert the appropriate county. (The county code will automatically fill in once the appropriate county is selected).

Municipality Name

Insert the appropriate municipality name.
(The municipality code will automatically fill in once the appropriate municipality name is entered).



Instructions

Construction Phase

Select the appropriate status of the curb ramp being investigated.

- Constructed. Select this phase for ramps that are to be newly constructed curb ramps.
- Existing-Survey. Select this phase for documenting existing curb ramps.
- Missing. Select this phase for documenting missing curb ramps.

Ramp Crosses

Select what type of roadway the ramp crosses and or services.

Photo Log Number

Manually insert a photo log number with approximate time the photo was taken.

Number of Photos

Enter the number of photos.

Ramp Surface

Select ramp surface type (brick, concrete or other). If "other", manually insert the surface type in the cell immediately to the right of the surface type.

Surface Stable, Firm, and Slip Resistant

Indicate if the curb ramp surface is stable, firm, and slip resistant.

Elevation Differences > 1/4"

Indicate if any vertical elevation differences between sections of sidewalk found anywhere on the curb ramp that are greater than 1/4" exist. If vertical elevation differences exist, measure to the nearest 1/16 of an inch. For example, if measured 1/2" enter "8" (8/16) on the form, or if measured 2" enter 32 (32/16) in the form.

Grate Openings or Gaps > 1/2"

Indicate if any grate openings or gaps greater than 1/2" are located within the immediate pedestrian path. If horizontal gaps exist, measure to the nearest 1/16 of an inch. For example, if measured 1/2" enter "8" (8/16) on the form, or if measured 2" enter 32 (32/16) on the form.

Utilities in Path of Travel

Indicate if there are any utilities that obstruct the path of travel.

Water Ponding in Path of Travel

Indicate if any water ponding exists within the travel path of the curb ramp.

Detectable Warning Surface (DWS)

Indicate if a detectable warning surface is to be used.

DWS Type

If "Yes" is answered in previous question, indicate what type of DWS will be used. If "Other", fill in cell to the right to indicate what type of DWS is being used.

Pedestrian Crossings

Indicate if a pedestrian crossing exists. If a pedestrian crossing does not exist, a curb ramp is not needed. The crossing may be marked or unmarked. If "Yes", the cell to the right will become highlighted with blue fill, requiring it to be completed.

- single ramp with a single cross walk.
- single ramp with a double cross walk.

Ramp Leads to Accessible Path

Indicate if the ramp leads to an accessible path, such as a sidewalk or a pedestrian pushbutton.

Crossing Control Type

Indicate the type of vehicular traffic control device/measure at the pedestrian crossing.

STOP/YIELD - If a stop or yield sign is installed or traffic is controlled by a stop or yield condition (i.e. Driveway).

UNCONTROLLED - If vehicular traffic is not controlled by a traffic control device at the pedestrian crossing.

TRAFFIC SIGNAL - If vehicular traffic is controlled by a Traffic Signal at the pedestrian crossing.

MIDBLOCK - If the pedestrian crossing is at a mid block crossing.



Instructions

Longitudinal/Cross slope in Front of Ramp

Manually insert the longitudinal and cross slope values (as a percentage) in the appropriate cells. The longitudinal slope is equal to the slope parallel to the direction of the ramp (in the street); the cross slope is equal to the slope perpendicular to the direction of the ramp (in the street).

For a pedestrian crossing where vehicles operate without a yield or stop condition (**UNCONTROLLED** and **TRAFFIC SIGNAL**) and at midblock pedestrian street crossings (**MIDBLOCK**), the cross slope in front of the ramp shall be permitted to equal the street or highway profile grade. For pedestrian crossings where vehicles operate with a yield or stop condition (**STOP/YIELD**), the maximum cross slope in front of the ramp is 2% for a compliant design. If a compliant cross slope cannot be provided in front of the ramp, for crossings with a stop or yield condition, a TIF will need to be submitted.

Ramp Angle with Crosswalk

Manually insert the angle of the ramp to the crosswalk (in degrees). It is preferred that the angle is 20 degrees or less. If the angle is greater than 20 but less than 45, provide a brief explanation in the box below justifying the angle. If the angle is greater than or equal to 45 degrees then it is considered that a turning maneuver is being made in the street. A turning maneuver in the street requires a minimum 4' x 4', 2% max slope(longitudinally and the cross slope) turning area. If the turning area does not meet all of the requirements listed above, then the ramp does not meet RC-67M and is considered Technically Infeasible. A Technically Infeasible Form(TIF) is required. Submit the TIF form with proper justification why this cannot be achieved to meet RC-67M. Show on the plan the turning area at the bottom of the ramp in the street.

Turning Maneuver in Street

Indicate if pedestrians must perform turning maneuvers in the street. If "Yes", a landing is required in the street.

Turning Maneuver at Top of Ramp (Smax)

Indicate if pedestrians must perform turning maneuvers at the top of the ramp. If "Yes", Smax is required.

ECMS # (if applicable)

Manually insert the ECMS # for the project that altered the curb ramp.

Algebraic Δ Grade (Algebraic Change in Grade)

Manually insert the maximum algebraic change between the ramp slope and roadway slope (as a percentage). See the diagram on Sheet 01 - Inspection Form.

Intersection Ramp # of

Manually enter the number for the ramp being investigated followed by the total number of ramps being investigated at the intersection. For example, if the ramp at the intersection of Ramp "X" of "Y" is being investigated, "Y" is the total number of the ramps at the intersection and "X" is the number assigned to the specific ramp being investigated.

Ramp Location

Using the intersection figure shown, select the appropriate button for which the investigated curb ramp is located.

North Leg/North Leg Description

Include the name of the roadway (if applicable) for the northbound roadway. Then directly below that cell, indicate the type of roadway (state route, boulevard, road, street, etc.). If the roadway is a state route number (format: 0000), also include the Segment # (format: 0000) and Offset # (format: 0000) of the intersection. If the roadway is a local road, include the name of the local road and description. Complete this for all legs of the intersection.

	North Leg	Description	Segment	Offset
Example 1:	00016	SR	0010	0020
Example 2:	Oak	ST	n/a	n/a

Ramp Type

Indicate the type of ramp being investigated. Depending on curb ramp type, complete all of the required dimensions on Tab 2 – Inspection Form Continued. Each cell is color-coded to indicate whether the information entered meets RC-67M. If data is entered and the cell becomes highlighted with green fill, the data meets RC-67M. If the cell becomes highlighted with red fill, the data does not meet RC-67M. If the cell becomes highlighted with yellow fill, the data does not match RC-67M but may be due to tie-ins with the existing site. The chart located to the right of the data entry form indicates the minimum measurement requirements (compliance check).

Insert the Latitude and Longitude for each Curb Ramp. Convert to Degrees. Provide a minimum of 5 decimal places for accuracy.

For Example - N40° 06' 16.08" = 40.10447° and W 75° 23' 58.11" = -75.39948°. The program will not allow you to enter a value outside of the geographical area of District 6.

Minimum 4'-0" Pedestrian Access Route(PAR) Maintained within the Limit of Work

A minimum 4'-0" Pedestrian Access Route(PAR) must be maintained within the limit of work. If this requirement is not met then a Technically Infeasible Form (TIF) must be submitted with the CS4401 and the ramps leading to and from the constrained PAR are considered non-compliant and are Technically Infeasible.

The width of the PAR is defined as the width of walkway between two obstructions. This would include flares with slopes greater than 8.3%, utility/street light poles, traffic signal poles and equipment, signs, buildings, street furniture and other unwalkable areas.

A PAR less than 4' but not less than 3' is acceptable if it is not within the slope of work for the project to relocate the obstructions. If the PAR is less than 3' and it is not within the scope of work for the project to relocate the obstruction then the ramp is considered not accessible from that approach. Select NO for Ramp Leads to Accessible Path. See Ramp Leads to Accessible Path above.



Instructions

Pedestrian Push Buttons Accessibility and Compliance

Indicate if pedestrian push buttons are accessible and compliant as defined below.

1. A push button is considered accessible if it is:
 - (a) Adjacent to and can be activated from a firm and stable surface.
2. A push button is considered compliant if it is:
 - (a) Adjacent to a level, non-slip surface to provide access from a wheelchair, and where there is a non-slip wheelchair accessible route to the ramp.
 - (b) A MIN 4' x 4' area in front of the push button is provided and
 - (i) If a turning movement is required in order to activate the push button and then get to the ramp, the max slope (longitudinal and cross slope) in the 4' x 4' area in front of the push button is 2%
 - (ii) If a turning movement is NOT required and the pedestrian/wheelchair is only expected to move forward or parallel from button (not turning), the 2% max slope is preferred but not required. Entire 999 and complete in the Comment Cell the reason why a turning movement is not required.
 - (c) Within 5'-0" of the crosswalk extended
 - (d) Between 1'-6" and 10'-0" of the edge of the curb, shoulder or pavement
 - (e) Parallel to the crosswalk to be used
 - (f) Mounted 42" above the sidewalk or finished grade to the center of the pushbutton and 10" MAX laterally from landing

Not Accessible - The existing or proposed push button is not accessible. Submit a technically infeasible form (TIF)

Accessible and Non-Compliant - The existing or proposed push button is accessible. However, it does not meet all of the requirements for compliance as noted above. Submit a technically infeasible form (TIF)

Accessible and Compliant - The existing or proposed push button is accessible and meets all of the requirements for compliance as noted above.

N/A - There are no existing or proposed push buttons for this crossing.

Sketch

Not used in Design.

Asset

The Asset number will be automatically completed as information is entered into the data entry form.

Status

Not used in Design.

Archive Ramp at location

Not used in Design.

Level of Service

Indicate the level of service, as designed:

Meets RC-67M

Technically Infeasible; Provides Maximum Access (TIF)

TAB 2 – INSPECTION FORM CONTINUED

Indicate the type of ramp being investigated using the curb ramp diagrams. Depending on curb ramp type, complete all of the required dimensions "A" through "EE" and the DWS transition strip values. Each cell is color-coded to indicate whether the information entered meets RC-67M. Use "999" for measurements that are not applicable.

TAB 3 - PICTURES TAB

Click on the "insert button #" button to insert the appropriate picture.

TAB 4 - ADDITIONAL EXPLANATION TAB (IF APPLICABLE)

If additional space is needed to further explain the reasoning behind a certain element but completing a Technically Infeasible Form (TIF) is not required use this area to explain the methodology behind the design as submitted.

Examples -

- (a) Additional room is need to explain why the ramp angle exceeds 20 degrees.
- (b) The longitudinal (running) slope of the sidewalk transition exceeds the 5% maximum allowed per DM2 Chapter 6 but is less than 8.33% maximum for a ramp slope.
- (c) The form is filled out for a Type 1 ramp but there is a greenstrip or other unwalkable surface in which the flare slope can exceed 10% and a 2' rolled concrete flare will be used.



Instructions

TAB 5 - INSTRUCTIONS

Use this tab as a quick reference to the instructions.

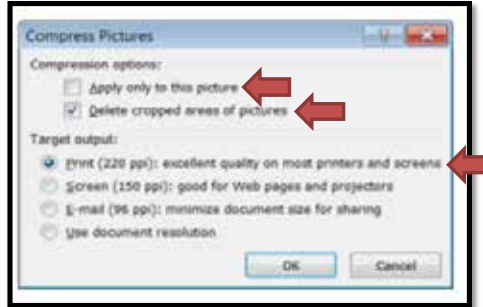
SUBMISSION

Perform the following for submission.

Reduce Image Size

To keep file size to a minimum, select a picture:

1. Click on one of the images that were inserted on Tab 03 - Pictures.
2. Click "Format" under the "Picture Tools" Ribbon.
3. In the Ribbon, click "Compress Pictures"
4. In the "Compress Pictures" Window select the options as noted below and click "OK".

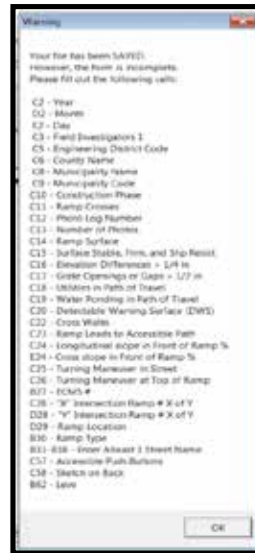


Save File

When saving the file, use Excel 2007 and later format with a *.xls extension. Do not use a different file format. If all the cells are not completed, a warning message will appear. The work has been saved, but the file is not complete. Fill in remaining cells and resave.

Send file to District ADA Coordinator

Upon approval of the curb ramp designs, submit files including the approved plans of the ADA designs, in PDF format, the CS-4401 Design, District 6 Form in Excel 2007 and later format and the Technically Infeasible Form (TIF) in Excel 2007 and later format to District 6 ADA Coordinator on a compact disc. Incomplete submissions will be returned.





Catharine and 53rd Street- Ramp S

*Date of Design (yyyy mm dd)	2018	09	11
Designer 1	Edward Mullen		
Designer 2	Bernadette Callahan		
*Engineering District Code	06 - District 6-0		
*County Name	Philadelphia		
*County Code (auto)	101		
*Municipality Name	Philadelphia City		
*Municipality Code (auto)	60000		
Construction Phase	Constructed		
Ramp Crosses	Both		
Photo Log Number	1		
Number of Photos	1		
Ramp Surface	Concrete		
Surface Stable, Firm, and Slip Resistant	Yes		
Elevation Differences > 1/4"	No		(X/16")
Grate Openings or Gaps > 1/2"	No		(X/16")
Utilities in Path of Travel	No		
Water Ponding in Path of Travel	No		
Detectable Warning Surface (DWS)	Yes		
DWS type	Poly Comp		
Pedestrian Crossing and Type	Yes	Single Ramp with Single Cross Walk	
Ramp Leads to Accessible Path	Yes	Crossing Control Type	(select)
Longitudinal / Cross slope in Front of Ramp	1.90	%	1.00 %
Turning Maneuver in Street	No	Ramp Angle with Crosswalk	20 degrees
Turning Maneuver at Top of Ramp (Smax)	Yes	Comments:	
ECMS #	Alg D Grade (%)	8.9	
Intersection Ramp # of #	1	4	
*Ramp Location (Use Figure Below)	04		
*Curb Ramp Type	Type 1		
*North Leg	53rd	(segment)	(offset)
*North Leg Desc.	St		
*East Leg	Catharine	(segment)	(offset)
*East Leg Desc.	Ave		
*South Leg	53rd	(segment)	(offset)
*South Leg Desc.	St		
*West Leg	Catharine	(segment)	(offset)
*West Leg Desc.	Ave		
Ramp Coordinates	Latitude	39.94931	
	Longitude	-75.22922	

Northbound

Z° = Ramp Angle w/Crosswalk

DIMENSIONS ARE ABSOLUTE FOR NEW INSTALLATIONS

Algebraic Difference

ACCESSIBLE PUSH BUTTONS

X% Ramp Slope -Y% Longitudinal Slope of Crosswalk

Depressed Curb

Algebraic Difference = X% - (-Y%)

X% Ramp Slope Y% Longitudinal Slope of Crosswalk

Depressed Curb

Algebraic Difference = X% - Y%

Minimum 4'-0" Pedestrian Access Route (PAR) Maintained within the Limit of Work	Yes
Push Button Turning Area - Max Slope (%)	Comments:
Accessible Push Buttons	N/A
Sketch Used To Collect Field Information	No
Asset # (auto)	C-06-101-60000-53rdSt-CatharineAve-53rdSt-CatharineAve-2018-09-11-4-Type1
Status	Current
Archive Ramp at location #:	N/A
Level of Service	Meets RC-67M



Catharine and 53rd Street- Ramp S

<p><input type="checkbox"/> TYPE 1</p> <p>MAX ALG. CHANGE IN GRADE _____ % TOP TURNING AREA <input type="checkbox"/> IF YES, MAX SLOPE "S" _____ %</p>	<p><input type="checkbox"/> TYPE 1A</p> <p>MAX ALG. CHANGE IN GRADE _____ %</p>	<p><input type="checkbox"/> TYPE 2</p> <p>MAX ALG. CHANGE IN GRADE _____ %</p>	
<p><input type="checkbox"/> TYPE 3</p> <p>MAX ALG. CHANGE IN GRADE _____ % TOP TURNING AREA <input type="checkbox"/> IF YES, MAX SLOPE "S" _____ %</p>	<p><input type="checkbox"/> TYPE 4</p> <p>MAX ALG. CHANGE IN GRADE _____ % TOP TURNING AREA <input type="checkbox"/> IF YES, MAX SLOPE "S" _____ %</p>	<p><input type="checkbox"/> TYPE 4A</p> <p>MAX ALG. CHANGE IN GRADE _____ % TOP TURNING AREA <input type="checkbox"/> IF YES, MAX SLOPE "S" _____ %</p>	
<p><input type="checkbox"/> TYPE 5</p> <p>MAX ALG. CHANGE IN GRADE _____ % RAILING <input type="checkbox"/> NO <input type="checkbox"/> YES "CC" RAIL HEIGHT _____ INCHES</p>	<p><input type="checkbox"/> TYPE 6</p> <p>MAX ALG. CHANGE IN GRADE _____ %</p>		
<p><input type="checkbox"/> BLENDED TRANSITION</p> <p>MAX ALG. CHANGE IN GRADE _____ %</p>	<p><input type="checkbox"/> NON-TYPICAL</p> <p>"A" RAMP WIDTH "B" RAMP LENGTH "C" RAMP SLOPE "D" LT FLARE SLOPE "I" RT FLARE SLOPE "J" LT SIDEWALK WIDTH "M" RT SIDEWALK WIDTH "P" SIDEWALK LANDING DEPTH "Q" LT SIDEWALK CROSS SLOPE "R" RT SIDEWALK CROSS SLOPE "S" SIDEWALK LANDING MAX SLOPE "W" RAMP MAX CROSS SLOPE</p> <p>MAX ALG. CHANGE IN GRADE _____ % SIDEWALK TURNING AREA <input type="checkbox"/> IF YES, DESIGNATE MAX SLOPE "S"</p>		
<p><input type="checkbox"/> TYPE A MEDIAN</p> <p><input type="checkbox"/> TYPE B MEDIAN</p>			

"0.00" inches or %	
* A	48 (IN)
* B	84 (IN)
* C	7.00 (%)
* D	7.30 (%)
* E	7.70 (%)
* F	7.00 (%)
* G	7.00 (%)
* H	8.35 (%)
* I	8.20 (%)
* J	94 (IN)
* K	4 (IN)
* L	51 (IN)
* M	161 (IN)
* N	4 (IN)
* O	51 (IN)
* P	92 (IN)
* Q	5.90 (%)
* R	0.60 (%)
* S	1.30 (%)
* T	0 (IN)
* U	0 (IN)
* V	0 (%)
* W	1.00 (%)
* X	0 (IN)
* Y	0 (IN)
* YY	120 (IN)
* Z	0 (IN)
* ZZ	999 (IN)
* AA	0 (IN)
* BB	0 (IN)
* CC	0 (IN)
* DD	5.20 (%)
* EE	1.50 (%)
DWS Transition Strip No	
DWS Transition Strip Slope (FF) _____ (%)	

Comments ▲



Catharine and 53rd Street- Ramp S



Insert Picture 1



Insert Picture 4



Insert Picture 2



Insert Picture 5



Insert Picture 3



Insert Picture 6



Catharine and 53rd Street- Ramp S

Additional Explanation #1

Additional Explanation #2

Additional Explanation #3

Additional Explanation #4



Instructions

The District 6 Curb Ramp Design Form (CS-4401 Design, District 6) will be used for the design of all curb ramps in District 6 to ensure compliance with PENNDOT standards. The use of this form is required for to be constructed curb ramps. A thorough and rigorous review of the design for each curb ramp will be completed to ensure compliance with PENNDOT Standard RC-67M. The slopes indicated in RC-67M are absolute maximum slopes. Only slopes that are equal to or less than the indicated slopes are acceptable. When fully meeting the RC-67M standards is "Technically Infeasible", the curb ramp must be designed to the maximum extent feasible to provide handicap access. See Publication 13M - Design Manual 2, Chapter 6 for additional information on Technically Infeasible.

When used in the design phase, this form and corresponding plans will document all pertinent values and serve as a record that PENNDOT has reviewed the design. Based on the information provided in the CS-4401 and corresponding plans, the ramp will be classified as EITHER Meeting RC-67M or Technically Infeasible. If a ramp is Technically Infeasible then the Technically Infeasible Form (TIF) must be submitted with the CS-4401 and corresponding plans. PENNDOT will then review the TIF to determine if the ramp has been designed to provide access to the maximum extent feasible within the scope of the work for project. PENNDOT will review the investigated alternatives as submitted in the TIF and determine that the best possible solution was chosen and that no other design alternatives, as noted in the TIF or otherwise, within the scope of work for the project exists. Approval for all Technically Infeasible ramps will come from both the District ADA Coordinator and Assistant District Engineer by signing the Technically Infeasible Form (TIF).

INSTRUCTIONS

Before you Begin:

The electronic file is delivered in Excel 97-2003 Workbook *.xls format. When saving the file, use Excel format with a *.xls extension. Do not use a different file format. This file is compatible with Microsoft Excel 2007 and later. It is compatible with 32 bit and 64 bit computers.

The following tabs are included in the form:

- Tab 1. Inspection Form
- Tab 2. Inspection Form Continued
- Tab 3. Pictures
- Tab 4. Additional Explanation
- Tab 5. Instructions

TAB 1 – INSPECTION FORM

All "blue filled" cells require information to be entered. Many cells have a drop down selection with a header. The header is used for filling out a printed version. The header must be changed to the appropriate selection. For example: " No Yes" would be the header. Either "No" or "Yes" must be selected.

Date of Design

Enter the year, month, and day of the investigation (format yyyy dd mm).

Designer 1 & 2

Insert the name(s) of the individuals responsible for the design.

Engineering District Code

Insert the engineering district code.

County Name

Insert the appropriate county. (The county code will automatically fill in once the appropriate county is selected).

Municipality Name

Insert the appropriate municipality name.
(The municipality code will automatically fill in once the appropriate municipality name is entered).



Instructions

Construction Phase

Select the appropriate status of the curb ramp being investigated.

- Constructed. Select this phase for ramps that are to be newly constructed curb ramps.
- Existing-Survey. Select this phase for documenting existing curb ramps.
- Missing. Select this phase for documenting missing curb ramps.

Ramp Crosses

Select what type of roadway the ramp crosses and or services.

Photo Log Number

Manually insert a photo log number with approximate time the photo was taken.

Number of Photos

Enter the number of photos.

Ramp Surface

Select ramp surface type (brick, concrete or other). If "other", manually insert the surface type in the cell immediately to the right of the surface type.

Surface Stable, Firm, and Slip Resistant

Indicate if the curb ramp surface is stable, firm, and slip resistant.

Elevation Differences > 1/4"

Indicate if any vertical elevation differences between sections of sidewalk found anywhere on the curb ramp that are greater than 1/4" exist. If vertical elevation differences exist, measure to the nearest 1/16 of an inch. For example, if measured 1/2" enter "8" (8/16) on the form, or if measured 2" enter 32 (32/16) in the form.

Grate Openings or Gaps > 1/2"

Indicate if any grate openings or gaps greater than 1/2" are located within the immediate pedestrian path. If horizontal gaps exist, measure to the nearest 1/16 of an inch. For example, if measured 1/2" enter "8" (8/16) on the form, or if measured 2" enter 32 (32/16) on the form.

Utilities in Path of Travel

Indicate if there are any utilities that obstruct the path of travel.

Water Ponding in Path of Travel

Indicate if any water ponding exists within the travel path of the curb ramp.

Detectable Warning Surface (DWS)

Indicate if a detectable warning surface is to be used.

DWS Type

If "Yes" is answered in previous question, indicate what type of DWS will be used. If "Other", fill in cell to the right to indicate what type of DWS is being used.

Pedestrian Crossings

Indicate if a pedestrian crossing exists. If a pedestrian crossing does not exist, a curb ramp is not needed. The crossing may be marked or unmarked. If "Yes", the cell to the right will become highlighted with blue fill, requiring it to be completed.

- single ramp with a single cross walk.
- single ramp with a double cross walk.

Ramp Leads to Accessible Path

Indicate if the ramp leads to an accessible path, such as a sidewalk or a pedestrian pushbutton.

Crossing Control Type

Indicate the type of vehicular traffic control device/measure at the pedestrian crossing.

STOP/YIELD - If a stop or yield sign is installed or traffic is controlled by a stop or yield condition (i.e. Driveway).

UNCONTROLLED - If vehicular traffic is not controlled by a traffic control device at the pedestrian crossing.

TRAFFIC SIGNAL - If vehicular traffic is controlled by a Traffic Signal at the pedestrian crossing.

MIDBLOCK - If the pedestrian crossing is at a mid block crossing.



Instructions

Longitudinal/Cross slope in Front of Ramp

Manually insert the longitudinal and cross slope values (as a percentage) in the appropriate cells. The longitudinal slope is equal to the slope parallel to the direction of the ramp (in the street); the cross slope is equal to the slope perpendicular to the direction of the ramp (in the street).

For a pedestrian crossing where vehicles operate without a yield or stop condition (**UNCONTROLLED** and **TRAFFIC SIGNAL**) and at midblock pedestrian street crossings (**MIDBLOCK**), the cross slope in front of the ramp shall be permitted to equal the street or highway profile grade. For pedestrian crossings where vehicles operate with a yield or stop condition (**STOP/YIELD**), the maximum cross slope in front of the ramp is 2% for a compliant design. If a compliant cross slope cannot be provided in front of the ramp, for crossings with a stop or yield condition, a TIF will need to be submitted.

Ramp Angle with Crosswalk

Manually insert the angle of the ramp to the crosswalk (in degrees). It is preferred that the angle is 20 degrees or less. If the angle is greater than 20 but less than 45, provide a brief explanation in the box below justifying the angle. If the angle is greater than or equal to 45 degrees then it is considered that a turning maneuver is being made in the street. A turning maneuver in the street requires a minimum 4' x 4', 2% max slope(longitudinally and the cross slope) turning area. If the turning area does not meet all of the requirements listed above, then the ramp does not meet RC-67M and is considered Technically Infeasible. A Technically Infeasible Form(TIF) is required. Submit the TIF form with proper justification why this cannot be achieved to meet RC-67M. Show on the plan the turning area at the bottom of the ramp in the street.

Turning Maneuver in Street

Indicate if pedestrians must perform turning maneuvers in the street. If "Yes", a landing is required in the street.

Turning Maneuver at Top of Ramp (Smax)

Indicate if pedestrians must perform turning maneuvers at the top of the ramp. If "Yes", Smax is required.

ECMS # (if applicable)

Manually insert the ECMS # for the project that altered the curb ramp.

Algebraic Δ Grade (Algebraic Change in Grade)

Manually insert the maximum algebraic change between the ramp slope and roadway slope (as a percentage). See the diagram on Sheet 01 - Inspection Form.

Intersection Ramp # of

Manually enter the number for the ramp being investigated followed by the total number of ramps being investigated at the intersection. For example, if the ramp at the intersection of Ramp "X" of "Y" is being investigated, "Y" is the total number of the ramps at the intersection and "X" is the number assigned to the specific ramp being investigated.

Ramp Location

Using the intersection figure shown, select the appropriate button for which the investigated curb ramp is located.

North Leg/North Leg Description

Include the name of the roadway (if applicable) for the northbound roadway. Then directly below that cell, indicate the type of roadway (state route, boulevard, road, street, etc.). If the roadway is a state route number (format: 0000), also include the Segment # (format: 0000) and Offset # (format: 0000) of the intersection. If the roadway is a local road, include the name of the local road and description. Complete this for all legs of the intersection.

	North Leg	Description	Segment	Offset
Example 1:	00016	SR	0010	0020
Example 2:	Oak	ST	n/a	n/a

Ramp Type

Indicate the type of ramp being investigated. Depending on curb ramp type, complete all of the required dimensions on Tab 2 – Inspection Form Continued. Each cell is color-coded to indicate whether the information entered meets RC-67M. If data is entered and the cell becomes highlighted with green fill, the data meets RC-67M. If the cell becomes highlighted with red fill, the data does not meet RC-67M. If the cell becomes highlighted with yellow fill, the data does not match RC-67M but may be due to tie-ins with the existing site. The chart located to the right of the data entry form indicates the minimum measurement requirements (compliance check).

Insert the Latitude and Longitude for each Curb Ramp. Convert to Degrees. Provide a minimum of 5 decimal places for accuracy.

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Minimum 4'-0" Pedestrian Access Route(PAR) Maintained within the Limit of Work

A minimum 4'-0" Pedestrian Access Route(PAR) must be maintained within the limit of work. If this requirement is not met then a Technically Infeasible Form (TIF) must be submitted with the CS4401 and the ramps leading to and from the constrained PAR are considered non-compliant and are Technically Infeasible.

The width of the PAR is defined as the width of walkway between two obstructions. This would include flares with slopes greater than 8.3%, utility/street light poles, traffic signal poles and equipment, signs, buildings, street furniture and other unwalkable areas.

A PAR less than 4' but not less than 3' is acceptable if it is not within the slope of work for the project to relocate the obstructions. If the PAR is less than 3' and it is not within the scope of work for the project to relocate the obstruction then the ramp is considered not accessible from that approach. Select NO for Ramp Leads to Accessible Path. See Ramp Leads to Accessible Path above.



Instructions

Pedestrian Push Buttons Accessibility and Compliance

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2. A push button is considered compliant if it is:
 - (a) Adjacent to a level, non-slip surface to provide access from a wheelchair, and where there is a non-slip wheelchair accessible route to the ramp.
 - (b) A MIN 4' x 4' area in front of the push button is provided and
 - (i) If a turning movement is required in order to activate the push button and then get to the ramp, the max slope (longitudinal and cross slope) in the 4' x 4' area in front of the push button is 2%
 - (ii) If a turning movement is NOT required and the pedestrian/wheelchair is only expected to move forward or parallel from button (not turning), the 2% max slope is preferred but not required. Entire 999 and complete in the Comment Cell the reason why a turning movement is not required.
 - (c) Within 5'-0" of the crosswalk extended
 - (d) Between 1'-6" and 10'-0" of the edge of the curb, shoulder or pavement
 - (e) Parallel to the crosswalk to be used
 - (f) Mounted 42" above the sidewalk or finished grade to the center of the pushbutton and 10" MAX laterally from landing

- Not Accessible** - The existing or proposed push button is not accessible. Submit a technically infeasible form (TIF)
- Accessible and Non-Compliant** - The existing or proposed push button is accessible. However, it does not meet all of the requirements for compliance as noted above. Submit a technically infeasible form (TIF)
- Accessible and Compliant** - The existing or proposed push button is accessible and meets all of the requirements for compliance as noted above.
- N/A** - There are no existing or proposed push buttons for this crossing.

Sketch

Not used in Design.

Asset

The Asset number will be automatically completed as information is entered into the data entry form.

Status

Not used in Design.

Archive Ramp at location

Not used in Design.

Level of Service

Indicate the level of service, as designed:

- Meets RC-67M
- Technically Infeasible; Provides Maximum Access (TIF)

TAB 2 – INSPECTION FORM CONTINUED

Indicate the type of ramp being investigated using the curb ramp diagrams. Depending on curb ramp type, complete all of the required dimensions "A" through "EE" and the DWS transition strip values. Each cell is color-coded to indicate whether the information entered meets RC-67M. Use "999" for measurements that are not applicable.

TAB 3 - PICTURES TAB

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Examples -

- (a) Additional room is need to explain why the ramp angle exceeds 20 degrees.
- (b) The longitudinal (running) slope of the sidewalk transition exceeds the 5% maximum allowed per DM2 Chapter 6 but is less than 8.33% maximum for a ramp slope.
- (c) The form is filled out for a Type 1 ramp but there is a greenstrip or other unwalkable surface in which the flare slope can exceed 10% and a 2' rolled concrete flare will be used.



Instructions

TAB 5 - INSTRUCTIONS

Use this tab as a quick reference to the instructions.

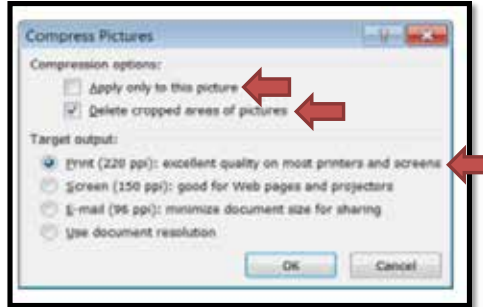
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To keep file size to a minimum, select a picture:

1. Click on one of the images that were inserted on Tab 03 - Pictures.
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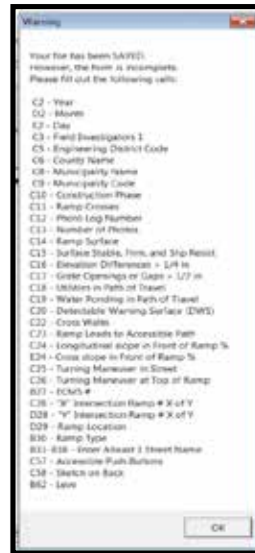


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Cedar Avenue and 53rd Street- Ramp T

*Date of Design (yyyy mm dd)	2018	09	11
Designer 1	Edward Mullen		
Designer 2	Bernadette Callahan		
*Engineering District Code	06 - District 6-0		
*County Name	Philadelphia		
*County Code (auto)	101		
*Municipality Name	Philadelphia City		
*Municipality Code (auto)	60000		
Construction Phase	Constructed		
Ramp Crosses	Both		
Photo Log Number	1		
Number of Photos	1		
Ramp Surface	Concrete		
Surface Stable, Firm, and Slip Resistant	Yes		
Elevation Differences > 1/4"	No		(X/16")
Grate Openings or Gaps > 1/2"	No		(X/16")
Utilities in Path of Travel	No		
Water Ponding in Path of Travel	No		
Detectable Warning Surface (DWS)	Yes		
DWS type	Poly Comp		
Pedestrian Crossing and Type	Yes	Single Ramp with Single Cross Walk	
Ramp Leads to Accessible Path	Yes	Crossing Control Type	(select)
Longitudinal / Cross slope in Front of Ramp	1.50	%	1.00 %
Turning Maneuver in Street	No	Ramp Angle with Crosswalk	0 degrees
Turning Maneuver at Top of Ramp (Smax)	Yes	Comments:	
ECMS #	Alg D Grade (%)	8.2	
Intersection Ramp # of #	1	2	
*Ramp Location (Use Figure Below)	14		
*Curb Ramp Type	Type 1		
*North Leg	53rd	(segment)	(offset)
*North Leg Desc.	St		
*East Leg	Cedar	(segment)	(offset)
*East Leg Desc.	Ave		
*South Leg	53rd	(segment)	(offset)
*South Leg Desc.	St		
*West Leg	Cedar	(segment)	(offset)
*West Leg Desc.	Ave		
Ramp Coordinates	Latitude	39.95063	
	Longitude	-75.22880	

Z° = Ramp Angle w/Crosswalk

DIMENSIONS ARE ABSOLUTE FOR NEW INSTALLATIONS

Algebraic Difference = X% - (-Y%)

Minimum 4'-0" Pedestrian Access Route(PAR) Maintained within the Limit of Work	Yes	
Push Button Turning Area - Max Slope (%)		Comments:
Accessible Push Buttons	N/A	
Sketch Used To Collect Field Information	No	
Asset # (auto)	C-06-101-60000-53rdSt-CedarAve-53rdSt-CedarAve-2018-09-11-14-Type1	
Status	Current	
Archive Ramp at location #:	N/A	
Level of Service	Meets RC-67M	



Cedar Avenue and 53rd Street- Ramp T

<p><input type="checkbox"/> TYPE 1</p> <p>MAX ALG. CHANGE IN GRADE _____ % TOP TURNING AREA <input type="checkbox"/> IF YES, MAX SLOPE "S" _____ %</p>	<p><input type="checkbox"/> TYPE 1A</p> <p>MAX ALG. CHANGE IN GRADE _____ %</p>	<p><input type="checkbox"/> TYPE 2</p> <p>MAX ALG. CHANGE IN GRADE _____ %</p>																																																																																																												
<p><input type="checkbox"/> TYPE 3</p> <p>MAX ALG. CHANGE IN GRADE _____ % TOP TURNING AREA <input type="checkbox"/> IF YES, MAX SLOPE "S" _____ %</p>	<p><input type="checkbox"/> TYPE 4</p> <p>MAX ALG. CHANGE IN GRADE _____ % TOP TURNING AREA <input type="checkbox"/> IF YES, MAX SLOPE "S" _____ %</p>	<p><input type="checkbox"/> TYPE 4A</p> <p>MAX ALG. CHANGE IN GRADE _____ % TOP TURNING AREA <input type="checkbox"/> IF YES, MAX SLOPE "S" _____ %</p>																																																																																																												
<p><input type="checkbox"/> TYPE 5</p> <p>MAX ALG. CHANGE IN GRADE _____ % RAILING <input type="checkbox"/> NO <input type="checkbox"/> YES "CC" RAIL HEIGHT _____ INCHES</p>	<p><input type="checkbox"/> TYPE 6</p> <p>MAX ALG. CHANGE IN GRADE _____ %</p>	<table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr> <th colspan="2" style="background-color: #e0e0e0;">"0.00" inches or %</th> <th></th> </tr> </thead> <tbody> <tr><td>* A</td><td style="background-color: #00ffff;">48</td><td>(IN)</td></tr> <tr><td>* B</td><td style="background-color: #00ffff;">53</td><td>(IN)</td></tr> <tr><td>* C</td><td style="background-color: #00ffff;">6.70</td><td>(%)</td></tr> <tr><td>* D</td><td style="background-color: #00ffff;">5.80</td><td>(%)</td></tr> <tr><td>* E</td><td style="background-color: #00ffff;">7.35</td><td>(%)</td></tr> <tr><td>* F</td><td style="background-color: #00ffff;">6.70</td><td>(%)</td></tr> <tr><td>* G</td><td style="background-color: #00ffff;">6.70</td><td>(%)</td></tr> <tr><td>* H</td><td style="background-color: #00ffff;">7.70</td><td>(%)</td></tr> <tr><td>* I</td><td style="background-color: #00ffff;">8.40</td><td>(%)</td></tr> <tr><td>* J</td><td style="background-color: #00ffff;">113</td><td>(IN)</td></tr> <tr><td>* K</td><td style="background-color: #00ffff;">4</td><td>(IN)</td></tr> <tr><td>* L</td><td style="background-color: #00ffff;">45</td><td>(IN)</td></tr> <tr><td>* M</td><td style="background-color: #00ffff;">115</td><td>(IN)</td></tr> <tr><td>* N</td><td style="background-color: #00ffff;">4</td><td>(IN)</td></tr> <tr><td>* O</td><td style="background-color: #00ffff;">60</td><td>(IN)</td></tr> <tr><td>* P</td><td style="background-color: #00ffff;">48</td><td>(IN)</td></tr> <tr><td>* Q</td><td style="background-color: #ffff00;">4.30</td><td>(%)</td></tr> <tr><td>* R</td><td style="background-color: #ffff00;">3.80</td><td>(%)</td></tr> <tr><td>* S</td><td style="background-color: #00ffff;">1.80</td><td>(%)</td></tr> <tr><td>* T</td><td style="background-color: #00ffff;">0</td><td>(IN)</td></tr> <tr><td>* U</td><td style="background-color: #00ffff;">0</td><td>(IN)</td></tr> <tr><td>* V</td><td></td><td>(%)</td></tr> <tr><td>* W</td><td style="background-color: #00ffff;">1.00</td><td>(%)</td></tr> <tr><td>* X</td><td style="background-color: #00ffff;">0</td><td>(IN)</td></tr> <tr><td>* Y</td><td style="background-color: #00ffff;">0</td><td>(IN)</td></tr> <tr><td>* YY</td><td style="background-color: #00ffff;">120</td><td>(IN)</td></tr> <tr><td>* Z</td><td style="background-color: #00ffff;">0</td><td>(IN)</td></tr> <tr><td>* ZZ</td><td style="background-color: #00ffff;">999</td><td>(IN)</td></tr> <tr><td>* AA</td><td style="background-color: #00ffff;">0</td><td>(IN)</td></tr> <tr><td>* BB</td><td style="background-color: #00ffff;">0</td><td>(IN)</td></tr> <tr><td>* CC</td><td style="background-color: #00ffff;">0</td><td>(IN)</td></tr> <tr><td>* DD</td><td style="background-color: #00ffff;">2.00</td><td>(%)</td></tr> <tr><td>* EE</td><td style="background-color: #00ffff;">3.80</td><td>(%)</td></tr> <tr style="background-color: #00ffff;"> <td colspan="2" style="text-align: center;">DWS Transition Strip</td> <td style="text-align: center;">No</td> </tr> <tr style="background-color: #e0e0e0;"> <td colspan="2" style="text-align: center;">DWS Transition Strip Slope (FF)</td> <td style="text-align: center;">(%)</td> </tr> </tbody> </table>	"0.00" inches or %			* A	48	(IN)	* B	53	(IN)	* C	6.70	(%)	* D	5.80	(%)	* E	7.35	(%)	* F	6.70	(%)	* G	6.70	(%)	* H	7.70	(%)	* I	8.40	(%)	* J	113	(IN)	* K	4	(IN)	* L	45	(IN)	* M	115	(IN)	* N	4	(IN)	* O	60	(IN)	* P	48	(IN)	* Q	4.30	(%)	* R	3.80	(%)	* S	1.80	(%)	* T	0	(IN)	* U	0	(IN)	* V		(%)	* W	1.00	(%)	* X	0	(IN)	* Y	0	(IN)	* YY	120	(IN)	* Z	0	(IN)	* ZZ	999	(IN)	* AA	0	(IN)	* BB	0	(IN)	* CC	0	(IN)	* DD	2.00	(%)	* EE	3.80	(%)	DWS Transition Strip		No	DWS Transition Strip Slope (FF)		(%)
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DWS Transition Strip Slope (FF)		(%)																																																																																																												
<p><input type="checkbox"/> BLENDED TRANSITION</p> <p>MAX ALG. CHANGE IN GRADE _____ %</p>	<p><input type="checkbox"/> NON-TYPICAL</p> <p>"A" RAMP WIDTH "B" RAMP LENGTH "C" RAMP SLOPE "D" LT FLARE SLOPE "I" RT FLARE SLOPE "J" LT SIDEWALK WIDTH "M" RT SIDEWALK WIDTH "P" SIDEWALK LANDING DEPTH "Q" LT SIDEWALK CROSS SLOPE "R" RT SIDEWALK CROSS SLOPE "S" SIDEWALK LANDING MAX SLOPE "W" RAMP MAX CROSS SLOPE</p> <p>MAX ALG. CHANGE IN GRADE _____ % SIDEWALK TURNING AREA <input type="checkbox"/> IF YES, DESIGNATE MAX SLOPE "S"</p>																																																																																																													
<p><input type="checkbox"/> TYPE A MEDIAN</p> <p><input type="checkbox"/> TYPE B MEDIAN</p>																																																																																																														

Comments ▲



Cedar Avenue and 53rd Street- Ramp T



Insert Picture 1



Insert Picture 4



Insert Picture 2



Insert Picture 5



Insert Picture 3



Insert Picture 6



Cedar Avenue and 53rd Street- Ramp T

Additional Explanation #1

Additional Explanation #2

Additional Explanation #3

Additional Explanation #4



Instructions

The District 6 Curb Ramp Design Form (CS-4401 Design, District 6) will be used for the design of all curb ramps in District 6 to ensure compliance with PENNDOT standards. The use of this form is required for to be constructed curb ramps. A thorough and rigorous review of the design for each curb ramp will be completed to ensure compliance with PENNDOT Standard RC-67M. The slopes indicated in RC-67M are absolute maximum slopes. Only slopes that are equal to or less than the indicated slopes are acceptable. When fully meeting the RC-67M standards is "Technically Infeasible", the curb ramp must be designed to the maximum extent feasible to provide handicap access. See Publication 13M - Design Manual 2, Chapter 6 for additional information on Technically Infeasible.

When used in the design phase, this form and corresponding plans will document all pertinent values and serve as a record that PENNDOT has reviewed the design. Based on the information provided in the CS-4401 and corresponding plans, the ramp will be classified as EITHER Meeting RC-67M or Technically Infeasible. If a ramp is Technically Infeasible then the Technically Infeasible Form (TIF) must be submitted with the CS-4401 and corresponding plans. PENNDOT will then review the TIF to determine if the ramp has been designed to provide access to the maximum extent feasible within the scope of the work for project. PENNDOT will review the investigated alternatives as submitted in the TIF and determine that the best possible solution was chosen and that no other design alternatives, as noted in the TIF or otherwise, within the scope of work for the project exists. Approval for all Technically Infeasible ramps will come from both the District ADA Coordinator and Assistant District Engineer by signing the Technically Infeasible Form (TIF).

INSTRUCTIONS

Before you Begin:

The electronic file is delivered in Excel 97-2003 Workbook *.xls format. When saving the file, use Excel format with a *.xls extension. Do not use a different file format. This file is compatible with Microsoft Excel 2007 and later. It is compatible with 32 bit and 64 bit computers.

The following tabs are included in the form:

- Tab 1. Inspection Form
- Tab 2. Inspection Form Continued
- Tab 3. Pictures
- Tab 4. Additional Explanation
- Tab 5. Instructions

TAB 1 – INSPECTION FORM

All "blue filled" cells require information to be entered. Many cells have a drop down selection with a header. The header is used for filling out a printed version. The header must be changed to the appropriate selection. For example: " No Yes" would be the header. Either "No" or "Yes" must be selected.

Date of Design

Enter the year, month, and day of the investigation (format yyyy dd mm).

Designer 1 & 2

Insert the name(s) of the individuals responsible for the design.

Engineering District Code

Insert the engineering district code.

County Name

Insert the appropriate county. (The county code will automatically fill in once the appropriate county is selected).

Municipality Name

Insert the appropriate municipality name.
(The municipality code will automatically fill in once the appropriate municipality name is entered).



Instructions

Construction Phase

Select the appropriate status of the curb ramp being investigated.

- Constructed. Select this phase for ramps that are to be newly constructed curb ramps.
- Existing-Survey. Select this phase for documenting existing curb ramps.
- Missing. Select this phase for documenting missing curb ramps.

Ramp Crosses

Select what type of roadway the ramp crosses and or services.

Photo Log Number

Manually insert a photo log number with approximate time the photo was taken.

Number of Photos

Enter the number of photos.

Ramp Surface

Select ramp surface type (brick, concrete or other). If "other", manually insert the surface type in the cell immediately to the right of the surface type.

Surface Stable, Firm, and Slip Resistant

Indicate if the curb ramp surface is stable, firm, and slip resistant.

Elevation Differences > 1/4"

Indicate if any vertical elevation differences between sections of sidewalk found anywhere on the curb ramp that are greater than 1/4" exist. If vertical elevation differences exist, measure to the nearest 1/16 of an inch. For example, if measured 1/2" enter "8" (8/16) on the form, or if measured 2" enter 32 (32/16) in the form.

Grate Openings or Gaps > 1/2"

Indicate if any grate openings or gaps greater than 1/2" are located within the immediate pedestrian path. If horizontal gaps exist, measure to the nearest 1/16 of an inch. For example, if measured 1/2" enter "8" (8/16) on the form, or if measured 2" enter 32 (32/16) on the form.

Utilities in Path of Travel

Indicate if there are any utilities that obstruct the path of travel.

Water Ponding in Path of Travel

Indicate if any water ponding exists within the travel path of the curb ramp.

Detectable Warning Surface (DWS)

Indicate if a detectable warning surface is to be used.

DWS Type

If "Yes" is answered in previous question, indicate what type of DWS will be used. If "Other", fill in cell to the right to indicate what type of DWS is being used.

Pedestrian Crossings

Indicate if a pedestrian crossing exists. If a pedestrian crossing does not exist, a curb ramp is not needed. The crossing may be marked or unmarked. If "Yes", the cell to the right will become highlighted with blue fill, requiring it to be completed.

- single ramp with a single cross walk.
- single ramp with a double cross walk.

Ramp Leads to Accessible Path

Indicate if the ramp leads to an accessible path, such as a sidewalk or a pedestrian pushbutton.

Crossing Control Type

Indicate the type of vehicular traffic control device/measure at the pedestrian crossing.

STOP/YIELD - If a stop or yield sign is installed or traffic is controlled by a stop or yield condition (i.e. Driveway).

UNCONTROLLED - If vehicular traffic is not controlled by a traffic control device at the pedestrian crossing.

TRAFFIC SIGNAL - If vehicular traffic is controlled by a Traffic Signal at the pedestrian crossing.

MIDBLOCK - If the pedestrian crossing is at a mid block crossing.



Instructions

Longitudinal/Cross slope in Front of Ramp

Manually insert the longitudinal and cross slope values (as a percentage) in the appropriate cells. The longitudinal slope is equal to the slope parallel to the direction of the ramp (in the street); the cross slope is equal to the slope perpendicular to the direction of the ramp (in the street).

For a pedestrian crossing where vehicles operate without a yield or stop condition (**UNCONTROLLED** and **TRAFFIC SIGNAL**) and at midblock pedestrian street crossings (**MIDBLOCK**), the cross slope in front of the ramp shall be permitted to equal the street or highway profile grade. For pedestrian crossings where vehicles operate with a yield or stop condition (**STOP/YIELD**), the maximum cross slope in front of the ramp is 2% for a compliant design. If a compliant cross slope cannot be provided in front of the ramp, for crossings with a stop or yield condition, a TIF will need to be submitted.

Ramp Angle with Crosswalk

Manually insert the angle of the ramp to the crosswalk (in degrees). It is preferred that the angle is 20 degrees or less. If the angle is greater than 20 but less than 45, provide a brief explanation in the box below justifying the angle. If the angle is greater than or equal to 45 degrees then it is considered that a turning maneuver is being made in the street. A turning maneuver in the street requires a minimum 4' x 4', 2% max slope(longitudinally and the cross slope) turning area. If the turning area does not meet all of the requirements listed above, then the ramp does not meet RC-67M and is considered Technically Infeasible. A Technically Infeasible Form(TIF) is required. Submit the TIF form with proper justification why this cannot be achieved to meet RC-67M. Show on the plan the turning area at the bottom of the ramp in the street.

Turning Maneuver in Street

Indicate if pedestrians must perform turning maneuvers in the street. If "Yes", a landing is required in the street.

Turning Maneuver at Top of Ramp (Smax)

Indicate if pedestrians must perform turning maneuvers at the top of the ramp. If "Yes", Smax is required.

ECMS # (if applicable)

Manually insert the ECMS # for the project that altered the curb ramp.

Algebraic Δ Grade (Algebraic Change in Grade)

Manually insert the maximum algebraic change between the ramp slope and roadway slope (as a percentage). See the diagram on Sheet 01 - Inspection Form.

Intersection Ramp # of

Manually enter the number for the ramp being investigated followed by the total number of ramps being investigated at the intersection. For example, if the ramp at the intersection of Ramp "X" of "Y" is being investigated, "Y" is the total number of the ramps at the intersection and "X" is the number assigned to the specific ramp being investigated.

Ramp Location

Using the intersection figure shown, select the appropriate button for which the investigated curb ramp is located.

North Leg/North Leg Description

Include the name of the roadway (if applicable) for the northbound roadway. Then directly below that cell, indicate the type of roadway (state route, boulevard, road, street, etc.). If the roadway is a state route number (format: 0000), also include the Segment # (format: 0000) and Offset # (format: 0000) of the intersection. If the roadway is a local road, include the name of the local road and description. Complete this for all legs of the intersection.

	North Leg	Description	Segment	Offset
Example 1:	00016	SR	0010	0020
Example 2:	Oak	ST	n/a	n/a

Ramp Type

Indicate the type of ramp being investigated. Depending on curb ramp type, complete all of the required dimensions on Tab 2 – Inspection Form Continued. Each cell is color-coded to indicate whether the information entered meets RC-67M. If data is entered and the cell becomes highlighted with green fill, the data meets RC-67M. If the cell becomes highlighted with red fill, the data does not meet RC-67M. If the cell becomes highlighted with yellow fill, the data does not match RC-67M but may be due to tie-ins with the existing site. The chart located to the right of the data entry form indicates the minimum measurement requirements (compliance check).

Insert the Latitude and Longitude for each Curb Ramp. Convert to Degrees. Provide a minimum of 5 decimal places for accuracy.

For Example - N40° 06' 16.08" = 40.10447° and W 75° 23' 58.11" = -75.39948°. The program will not allow you to enter a value outside of the geographical area of District 6.

Minimum 4'-0" Pedestrian Access Route(PAR) Maintained within the Limit of Work

A minimum 4'-0" Pedestrian Access Route(PAR) must be maintained within the limit of work. If this requirement is not met then a Technically Infeasible Form (TIF) must be submitted with the CS4401 and the ramps leading to and from the constrained PAR are considered non-compliant and are Technically Infeasible.

The width of the PAR is defined as the width of walkway between two obstructions. This would include flares with slopes greater than 8.3%, utility/street light poles, traffic signal poles and equipment, signs, buildings, street furniture and other unwalkable areas.

A PAR less than 4' but not less than 3' is acceptable if it is not within the slope of work for the project to relocate the obstructions. If the PAR is less than 3' and it is not within the scope of work for the project to relocate the obstruction then the ramp is considered not accessible from that approach. Select NO for Ramp Leads to Accessible Path. See Ramp Leads to Accessible Path above.



Instructions

Pedestrian Push Buttons Accessibility and Compliance

Indicate if pedestrian push buttons are accessible and compliant as defined below.

1. A push button is considered accessible if it is:
 - (a) Adjacent to and can be activated from a firm and stable surface.
2. A push button is considered compliant if it is:
 - (a) Adjacent to a level, non-slip surface to provide access from a wheelchair, and where there is a non-slip wheelchair accessible route to the ramp.
 - (b) A MIN 4' x 4' area in front of the push button is provided and
 - (i) If a turning movement is required in order to activate the push button and then get to the ramp, the max slope (longitudinal and cross slope) in the 4' x 4' area in front of the push button is 2%
 - (ii) If a turning movement is NOT required and the pedestrian/wheelchair is only expected to move forward or parallel from button (not turning), the 2% max slope is preferred but not required. Entire 999 and complete in the Comment Cell the reason why a turning movement is not required.
 - (c) Within 5'-0" of the crosswalk extended
 - (d) Between 1'-6" and 10'-0" of the edge of the curb, shoulder or pavement
 - (e) Parallel to the crosswalk to be used
 - (f) Mounted 42" above the sidewalk or finished grade to the center of the pushbutton and 10" MAX laterally from landing

Not Accessible - The existing or proposed push button is not accessible. Submit a technically infeasible form (TIF)

Accessible and Non-Compliant - The existing or proposed push button is accessible. However, it does not meet all of the requirements for compliance as noted above. Submit a technically infeasible form (TIF)

Accessible and Compliant - The existing or proposed push button is accessible and meets all of the requirements for compliance as noted above.

N/A - There are no existing or proposed push buttons for this crossing.

Sketch

Not used in Design.

Asset

The Asset number will be automatically completed as information is entered into the data entry form.

Status

Not used in Design.

Archive Ramp at location

Not used in Design.

Level of Service

Indicate the level of service, as designed:

Meets RC-67M

Technically Infeasible; Provides Maximum Access (TIF)

TAB 2 – INSPECTION FORM CONTINUED

Indicate the type of ramp being investigated using the curb ramp diagrams. Depending on curb ramp type, complete all of the required dimensions "A" through "EE" and the DWS transition strip values. Each cell is color-coded to indicate whether the information entered meets RC-67M. Use "999" for measurements that are not applicable.

TAB 3 - PICTURES TAB

Click on the "insert button #" button to insert the appropriate picture.

TAB 4 - ADDITIONAL EXPLANATION TAB (IF APPLICABLE)

If additional space is needed to further explain the reasoning behind a certain element but completing a Technically Infeasible Form (TIF) is not required use this area to explain the methodology behind the design as submitted.

Examples -

- (a) Additional room is need to explain why the ramp angle exceeds 20 degrees.
- (b) The longitudinal (running) slope of the sidewalk transition exceeds the 5% maximum allowed per DM2 Chapter 6 but is less than 8.33% maximum for a ramp slope.
- (c) The form is filled out for a Type 1 ramp but there is a greenstrip or other unwalkable surface in which the flare slope can exceed 10% and a 2' rolled concrete flare will be used.



Instructions

TAB 5 - INSTRUCTIONS

Use this tab as a quick reference to the instructions.

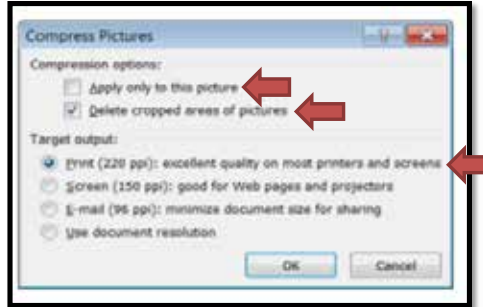
SUBMISSION

Perform the following for submission.

Reduce Image Size

To keep file size to a minimum, select a picture:

1. Click on one of the images that were inserted on Tab 03 - Pictures.
2. Click "Format" under the "Picture Tools" Ribbon.
3. In the Ribbon, click "Compress Pictures"
4. In the "Compress Pictures" Window select the options as noted below and click "OK".

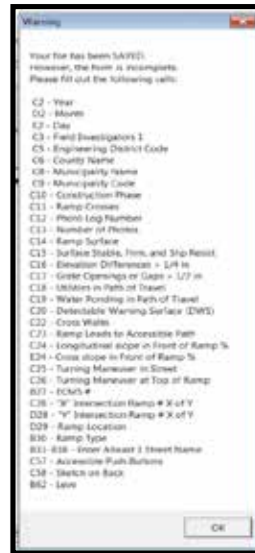


Save File

When saving the file, use Excel 2007 and later format with a *.xls extension. Do not use a different file format. If all the cells are not completed, a warning message will appear. The work has been saved, but the file is not complete. Fill in remaining cells and resave.

Send file to District ADA Coordinator

Upon approval of the curb ramp designs, submit files including the approved plans of the ADA designs, in PDF format, the CS-4401 Design, District 6 Form in Excel 2007 and later format and the Technically Infeasible Form (TIF) in Excel 2007 and later format to District 6 ADA Coordinator on a compact disc. Incomplete submissions will be returned.





Cedar Avenue and 53rd Street- Ramp U

*Date of Design (yyyy mm dd)	2018	09	11
Designer 1	Edward Mullen		
Designer 2	Bernadette Callahan		
*Engineering District Code	06 - District 6-0		
*County Name	Philadelphia		
*County Code (auto)	101		
*Municipality Name	Philadelphia City		
*Municipality Code (auto)	60000		
Construction Phase	Constructed		
Ramp Crosses	Both		
Photo Log Number	1		
Number of Photos	1		
Ramp Surface	Concrete		
Surface Stable, Firm, and Slip Resistant	Yes		
Elevation Differences > 1/4"	No		(X/16")
Grate Openings or Gaps > 1/2"	No		(X/16")
Utilities in Path of Travel	No		
Water Ponding in Path of Travel	No		
Detectable Warning Surface (DWS)	Yes		
DWS type	Poly Comp		
Pedestrian Crossing and Type	Yes	Single Ramp with Single Cross Walk	
Ramp Leads to Accessible Path	Yes	Crossing Control Type	Stop/Yield
Longitudinal / Cross slope in Front of Ramp	5.10	%	1.50 %
Turning Maneuver in Street	No	Ramp Angle with Crosswalk	12 degrees
Turning Maneuver at Top of Ramp (Smax)	Yes	Comments:	
ECMS #	Alg D Grade (%)	10.1	
Intersection Ramp # of #	2	2	
*Ramp Location (Use Figure Below)	12		
*Curb Ramp Type	Type 1		
*North Leg	53rd	(segment)	(offset)
*North Leg Desc.	St		
*East Leg	Cedar	(segment)	(offset)
*East Leg Desc.	Ave		
*South Leg	53rd	(segment)	(offset)
*South Leg Desc.	St		
*West Leg	Cedar	(segment)	(offset)
*West Leg Desc.	Ave		
Ramp Coordinates	Latitude	39.95065	
	Longitude	-75.22877	

Z° = Ramp Angle w/Crosswalk

Algebraic Difference

X% Ramp Slope -Y% Longitudinal Slope of Crosswalk

Depressed Curb

Algebraic Difference = X% - (-Y%)

X% Ramp Slope Y% Longitudinal Slope of Crosswalk

Depressed Curb

Algebraic Difference = X% - Y%

Minimum 4'-0" Pedestrian Access Route (PAR) Maintained within the Limit of Work	Yes
Push Button Turning Area - Max Slope (%)	Comments:
Accessible Push Buttons	N/A
Sketch Used To Collect Field Information	No
Asset # (auto)	C-06-101-60000-53rdSt-CedarAve-53rdSt-CedarAve-2018-09-11-12-Type1
Status	Current
Archive Ramp at location #:	N/A
Level of Service	Technically Infeasible; Provides Maximum Access (TIF)



Cedar Avenue and 53rd Street- Ramp U

<p><input type="checkbox"/> TYPE 1</p> <p>MAX ALG. CHANGE IN GRADE _____ % TOP TURNING AREA <input type="checkbox"/> IF YES, MAX SLOPE "S" _____ %</p>	<p><input type="checkbox"/> TYPE 1A</p> <p>MAX ALG. CHANGE IN GRADE _____ %</p>	<p><input type="checkbox"/> TYPE 2</p> <p>MAX ALG. CHANGE IN GRADE _____ %</p>																																																																												
<p><input type="checkbox"/> TYPE 3</p> <p>MAX ALG. CHANGE IN GRADE _____ % TOP TURNING AREA <input type="checkbox"/> IF YES, MAX SLOPE "S" _____ %</p>	<p><input type="checkbox"/> TYPE 4</p> <p>MAX ALG. CHANGE IN GRADE _____ % TOP TURNING AREA <input type="checkbox"/> IF YES, MAX SLOPE "S" _____ %</p>	<p><input type="checkbox"/> TYPE 4A</p> <p>MAX ALG. CHANGE IN GRADE _____ % TOP TURNING AREA <input type="checkbox"/> IF YES, MAX SLOPE "S" _____ %</p>																																																																												
<p><input type="checkbox"/> TYPE 5</p> <p>MAX ALG. CHANGE IN GRADE _____ % RAILING <input type="checkbox"/> NO <input type="checkbox"/> YES "CC" RAIL HEIGHT _____ INCHES</p>	<p><input type="checkbox"/> TYPE 6</p> <p>MAX ALG. CHANGE IN GRADE _____ %</p>	<table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr> <th colspan="2" style="background-color: #e0e0e0;">"0.00" inches or %</th> </tr> </thead> <tbody> <tr><td>* A</td><td>48 (IN)</td></tr> <tr><td>* B</td><td>54 (IN)</td></tr> <tr><td>* C</td><td>5.00 (%)</td></tr> <tr><td>* D</td><td>2.20 (%)</td></tr> <tr><td>* E</td><td>4.45 (%)</td></tr> <tr><td>* F</td><td>5.00 (%)</td></tr> <tr><td>* G</td><td>5.00 (%)</td></tr> <tr><td>* H</td><td>5.45 (%)</td></tr> <tr><td>* I</td><td>3.30 (%)</td></tr> <tr><td>* J</td><td>115 (IN)</td></tr> <tr><td>* K</td><td>2 (IN)</td></tr> <tr><td>* L</td><td>84 (IN)</td></tr> <tr><td>* M</td><td>101 (IN)</td></tr> <tr><td>* N</td><td>4 (IN)</td></tr> <tr><td>* O</td><td>48 (IN)</td></tr> <tr><td>* P</td><td>48 (IN)</td></tr> <tr><td>* Q</td><td>4.30 (%)</td></tr> <tr><td>* R</td><td>3.80 (%)</td></tr> <tr><td>* S</td><td>2.00 (%)</td></tr> <tr><td>* T</td><td>0 (IN)</td></tr> <tr><td>* U</td><td>0 (IN)</td></tr> <tr><td>* V</td><td>0 (%)</td></tr> <tr><td>* W</td><td>1.50 (%)</td></tr> <tr><td>* X</td><td>0 (IN)</td></tr> <tr><td>* Y</td><td>0 (IN)</td></tr> <tr><td>* YY</td><td>120 (IN)</td></tr> <tr><td>* Z</td><td>0 (IN)</td></tr> <tr><td>* ZZ</td><td>999 (IN)</td></tr> <tr><td>* AA</td><td>0 (IN)</td></tr> <tr><td>* BB</td><td>0 (IN)</td></tr> <tr><td>* CC</td><td>0 (IN)</td></tr> <tr><td>* DD</td><td>2.80 (%)</td></tr> <tr><td>* EE</td><td>3.80 (%)</td></tr> <tr style="background-color: #e0e0e0;"><td colspan="2" style="text-align: center;">DWS Transition Strip</td></tr> <tr><td colspan="2" style="text-align: center;">No</td></tr> <tr style="background-color: #e0e0e0;"><td colspan="2" style="text-align: center;">DWS Transition Strip Slope (FF)</td></tr> <tr><td colspan="2" style="text-align: center;">(%)</td></tr> </tbody> </table>	"0.00" inches or %		* A	48 (IN)	* B	54 (IN)	* C	5.00 (%)	* D	2.20 (%)	* E	4.45 (%)	* F	5.00 (%)	* G	5.00 (%)	* H	5.45 (%)	* I	3.30 (%)	* J	115 (IN)	* K	2 (IN)	* L	84 (IN)	* M	101 (IN)	* N	4 (IN)	* O	48 (IN)	* P	48 (IN)	* Q	4.30 (%)	* R	3.80 (%)	* S	2.00 (%)	* T	0 (IN)	* U	0 (IN)	* V	0 (%)	* W	1.50 (%)	* X	0 (IN)	* Y	0 (IN)	* YY	120 (IN)	* Z	0 (IN)	* ZZ	999 (IN)	* AA	0 (IN)	* BB	0 (IN)	* CC	0 (IN)	* DD	2.80 (%)	* EE	3.80 (%)	DWS Transition Strip		No		DWS Transition Strip Slope (FF)		(%)	
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<p><input type="checkbox"/> BLENDED TRANSITION</p> <p>MAX ALG. CHANGE IN GRADE _____ %</p>	<p><input type="checkbox"/> NON-TYPICAL</p> <p>"A" RAMP WIDTH "B" RAMP LENGTH "C" RAMP SLOPE "D" LT FLARE SLOPE "I" RT FLARE SLOPE "J" LT SIDEWALK WIDTH "M" RT SIDEWALK WIDTH "P" SIDEWALK LANDING DEPTH "Q" LT SIDEWALK CROSS SLOPE "R" RT SIDEWALK CROSS SLOPE "S" SIDEWALK LANDING MAX SLOPE "W" RAMP MAX CROSS SLOPE</p> <p>MAX ALG. CHANGE IN GRADE _____ % SIDEWALK TURNING AREA <input type="checkbox"/> IF YES, DESIGNATE MAX SLOPE "S"</p>																																																																													
<p><input type="checkbox"/> TYPE A MEDIAN</p> <p><input type="checkbox"/> TYPE B MEDIAN</p>																																																																														

Comments ▲



Cedar Avenue and 53rd Street- Ramp U



Insert Picture 1



Insert Picture 4



Insert Picture 2



Insert Picture 5



Insert Picture 3



Insert Picture 6



Cedar Avenue and 53rd Street- Ramp U

Additional Explanation #1

Additional Explanation #2

Additional Explanation #3

Additional Explanation #4



Instructions

The District 6 Curb Ramp Design Form (CS-4401 Design, District 6) will be used for the design of all curb ramps in District 6 to ensure compliance with PENNDOT standards. The use of this form is required for to be constructed curb ramps. A thorough and rigorous review of the design for each curb ramp will be completed to ensure compliance with PENNDOT Standard RC-67M. The slopes indicated in RC-67M are absolute maximum slopes. Only slopes that are equal to or less than the indicated slopes are acceptable. When fully meeting the RC-67M standards is "Technically Infeasible", the curb ramp must be designed to the maximum extent feasible to provide handicap access. See Publication 13M - Design Manual 2, Chapter 6 for additional information on Technically Infeasible.

When used in the design phase, this form and corresponding plans will document all pertinent values and serve as a record that PENNDOT has reviewed the design. Based on the information provided in the CS-4401 and corresponding plans, the ramp will be classified as EITHER Meeting RC-67M or Technically Infeasible. If a ramp is Technically Infeasible then the Technically Infeasible Form (TIF) must be submitted with the CS-4401 and corresponding plans. PENNDOT will then review the TIF to determine if the ramp has been designed to provide access to the maximum extent feasible within the scope of the work for project. PENNDOT will review the investigated alternatives as submitted in the TIF and determine that the best possible solution was chosen and that no other design alternatives, as noted in the TIF or otherwise, within the scope of work for the project exists. Approval for all Technically Infeasible ramps will come from both the District ADA Coordinator and Assistant District Engineer by signing the Technically Infeasible Form (TIF).

INSTRUCTIONS

Before you Begin:

The electronic file is delivered in Excel 97-2003 Workbook *.xls format. When saving the file, use Excel format with a *.xls extension. Do not use a different file format. This file is compatible with Microsoft Excel 2007 and later. It is compatible with 32 bit and 64 bit computers.

The following tabs are included in the form:

- Tab 1. Inspection Form
- Tab 2. Inspection Form Continued
- Tab 3. Pictures
- Tab 4. Additional Explanation
- Tab 5. Instructions

TAB 1 – INSPECTION FORM

All "blue filled" cells require information to be entered. Many cells have a drop down selection with a header. The header is used for filling out a printed version. The header must be changed to the appropriate selection. For example: " No Yes" would be the header. Either "No" or "Yes" must be selected.

Date of Design

Enter the year, month, and day of the investigation (format yyyy dd mm).

Designer 1 & 2

Insert the name(s) of the individuals responsible for the design.

Engineering District Code

Insert the engineering district code.

County Name

Insert the appropriate county. (The county code will automatically fill in once the appropriate county is selected).

Municipality Name

Insert the appropriate municipality name.
(The municipality code will automatically fill in once the appropriate municipality name is entered).



Instructions

Construction Phase

Select the appropriate status of the curb ramp being investigated.

- Constructed. Select this phase for ramps that are to be newly constructed curb ramps.
- Existing-Survey. Select this phase for documenting existing curb ramps.
- Missing. Select this phase for documenting missing curb ramps.

Ramp Crosses

Select what type of roadway the ramp crosses and or services.

Photo Log Number

Manually insert a photo log number with approximate time the photo was taken.

Number of Photos

Enter the number of photos.

Ramp Surface

Select ramp surface type (brick, concrete or other). If "other", manually insert the surface type in the cell immediately to the right of the surface type.

Surface Stable, Firm, and Slip Resistant

Indicate if the curb ramp surface is stable, firm, and slip resistant.

Elevation Differences > 1/4"

Indicate if any vertical elevation differences between sections of sidewalk found anywhere on the curb ramp that are greater than 1/4" exist. If vertical elevation differences exist, measure to the nearest 1/16 of an inch. For example, if measured 1/2" enter "8" (8/16) on the form, or if measured 2" enter 32 (32/16) in the form.

Grate Openings or Gaps > 1/2"

Indicate if any grate openings or gaps greater than 1/2" are located within the immediate pedestrian path. If horizontal gaps exist, measure to the nearest 1/16 of an inch. For example, if measured 1/2" enter "8" (8/16) on the form, or if measured 2" enter 32 (32/16) on the form.

Utilities in Path of Travel

Indicate if there are any utilities that obstruct the path of travel.

Water Ponding in Path of Travel

Indicate if any water ponding exists within the travel path of the curb ramp.

Detectable Warning Surface (DWS)

Indicate if a detectable warning surface is to be used.

DWS Type

If "Yes" is answered in previous question, indicate what type of DWS will be used. If "Other", fill in cell to the right to indicate what type of DWS is being used.

Pedestrian Crossings

Indicate if a pedestrian crossing exists. If a pedestrian crossing does not exist, a curb ramp is not needed. The crossing may be marked or unmarked. If "Yes", the cell to the right will become highlighted with blue fill, requiring it to be completed.

- single ramp with a single cross walk.
- single ramp with a double cross walk.

Ramp Leads to Accessible Path

Indicate if the ramp leads to an accessible path, such as a sidewalk or a pedestrian pushbutton.

Crossing Control Type

Indicate the type of vehicular traffic control device/measure at the pedestrian crossing.

STOP/YIELD - If a stop or yield sign is installed or traffic is controlled by a stop or yield condition (i.e. Driveway).

UNCONTROLLED - If vehicular traffic is not controlled by a traffic control device at the pedestrian crossing.

TRAFFIC SIGNAL - If vehicular traffic is controlled by a Traffic Signal at the pedestrian crossing.

MIDBLOCK - If the pedestrian crossing is at a mid block crossing.



Instructions

Longitudinal/Cross slope in Front of Ramp

Manually insert the longitudinal and cross slope values (as a percentage) in the appropriate cells. The longitudinal slope is equal to the slope parallel to the direction of the ramp (in the street); the cross slope is equal to the slope perpendicular to the direction of the ramp (in the street).

For a pedestrian crossing where vehicles operate without a yield or stop condition (**UNCONTROLLED** and **TRAFFIC SIGNAL**) and at midblock pedestrian street crossings (**MIDBLOCK**), the cross slope in front of the ramp shall be permitted to equal the street or highway profile grade. For pedestrian crossings where vehicles operate with a yield or stop condition (**STOP/YIELD**), the maximum cross slope in front of the ramp is 2% for a compliant design. If a compliant cross slope cannot be provided in front of the ramp, for crossings with a stop or yield condition, a TIF will need to be submitted.

Ramp Angle with Crosswalk

Manually insert the angle of the ramp to the crosswalk (in degrees). It is preferred that the angle is 20 degrees or less. If the angle is greater than 20 but less than 45, provide a brief explanation in the box below justifying the angle. If the angle is greater than or equal to 45 degrees then it is considered that a turning maneuver is being made in the street. A turning maneuver in the street requires a minimum 4' x 4', 2% max slope (longitudinally and the cross slope) turning area. If the turning area does not meet all of the requirements listed above, then the ramp does not meet RC-67M and is considered Technically Infeasible. A Technically Infeasible Form (TIF) is required. Submit the TIF form with proper justification why this cannot be achieved to meet RC-67M. Show on the plan the turning area at the bottom of the ramp in the street.

Turning Maneuver in Street

Indicate if pedestrians must perform turning maneuvers in the street. If "Yes", a landing is required in the street.

Turning Maneuver at Top of Ramp (Smax)

Indicate if pedestrians must perform turning maneuvers at the top of the ramp. If "Yes", Smax is required.

ECMS # (if applicable)

Manually insert the ECMS # for the project that altered the curb ramp.

Algebraic Δ Grade (Algebraic Change in Grade)

Manually insert the maximum algebraic change between the ramp slope and roadway slope (as a percentage). See the diagram on Sheet 01 - Inspection Form.

Intersection Ramp # of

Manually enter the number for the ramp being investigated followed by the total number of ramps being investigated at the intersection. For example, if the ramp at the intersection of Ramp "X" of "Y" is being investigated, "Y" is the total number of the ramps at the intersection and "X" is the number assigned to the specific ramp being investigated.

Ramp Location

Using the intersection figure shown, select the appropriate button for which the investigated curb ramp is located.

North Leg/North Leg Description

Include the name of the roadway (if applicable) for the northbound roadway. Then directly below that cell, indicate the type of roadway (state route, boulevard, road, street, etc.). If the roadway is a state route number (format: 0000), also include the Segment # (format: 0000) and Offset # (format: 0000) of the intersection. If the roadway is a local road, include the name of the local road and description. Complete this for all legs of the intersection.

	North Leg	Description	Segment	Offset
Example 1:	00016	SR	0010	0020
Example 2:	Oak	ST	n/a	n/a

Ramp Type

Indicate the type of ramp being investigated. Depending on curb ramp type, complete all of the required dimensions on Tab 2 – Inspection Form Continued. Each cell is color-coded to indicate whether the information entered meets RC-67M. If data is entered and the cell becomes highlighted with green fill, the data meets RC-67M. If the cell becomes highlighted with red fill, the data does not meet RC-67M. If the cell becomes highlighted with yellow fill, the data does not match RC-67M but may be due to tie-ins with the existing site. The chart located to the right of the data entry form indicates the minimum measurement requirements (compliance check).

Insert the Latitude and Longitude for each Curb Ramp. Convert to Degrees. Provide a minimum of 5 decimal places for accuracy.

For Example - N40° 06' 16.08" = 40.10447° and W 75° 23' 58.11" = -75.39948°. The program will not allow you to enter a value outside of the geographical area of District 6.

Minimum 4'-0" Pedestrian Access Route(PAR) Maintained within the Limit of Work

A minimum 4'-0" Pedestrian Access Route(PAR) must be maintained within the limit of work. If this requirement is not met then a Technically Infeasible Form (TIF) must be submitted with the CS4401 and the ramps leading to and from the constrained PAR are considered non-compliant and are Technically Infeasible.

The width of the PAR is defined as the width of walkway between two obstructions. This would include flares with slopes greater than 8.3%, utility/street light poles, traffic signal poles and equipment, signs, buildings, street furniture and other unwalkable areas.

A PAR less than 4' but not less than 3' is acceptable if it is not within the slope of work for the project to relocate the obstructions. If the PAR is less than 3' and it is not within the scope of work for the project to relocate the obstruction then the ramp is considered not accessible from that approach. Select NO for Ramp Leads to Accessible Path. See Ramp Leads to Accessible Path above.



Instructions

Pedestrian Push Buttons Accessibility and Compliance

Indicate if pedestrian push buttons are accessible and compliant as defined below.

1. A push button is considered accessible if it is:
 - (a) Adjacent to and can be activated from a firm and stable surface.
2. A push button is considered compliant if it is:
 - (a) Adjacent to a level, non-slip surface to provide access from a wheelchair, and where there is a non-slip wheelchair accessible route to the ramp.
 - (b) A MIN 4' x 4' area in front of the push button is provided and
 - (i) If a turning movement is required in order to activate the push button and then get to the ramp, the max slope (longitudinal and cross slope) in the 4' x 4' area in front of the push button is 2%
 - (ii) If a turning movement is NOT required and the pedestrian/wheelchair is only expected to move forward or parallel from button (not turning), the 2% max slope is preferred but not required. Entire 999 and complete in the Comment Cell the reason why a turning movement is not required.
 - (c) Within 5'-0" of the crosswalk extended
 - (d) Between 1'-6" and 10'-0" of the edge of the curb, shoulder or pavement
 - (e) Parallel to the crosswalk to be used
 - (f) Mounted 42" above the sidewalk or finished grade to the center of the pushbutton and 10" MAX laterally from landing

- Not Accessible** - The existing or proposed push button is not accessible. Submit a technically infeasible form (TIF)
- Accessible and Non-Compliant** - The existing or proposed push button is accessible. However, it does not meet all of the requirements for compliance as noted above. Submit a technically infeasible form (TIF)
- Accessible and Compliant** - The existing or proposed push button is accessible and meets all of the requirements for compliance as noted above.
- N/A** - There are no existing or proposed push buttons for this crossing.

Sketch

Not used in Design.

Asset

The Asset number will be automatically completed as information is entered into the data entry form.

Status

Not used in Design.

Archive Ramp at location

Not used in Design.

Level of Service

Indicate the level of service, as designed:

- Meets RC-67M
- Technically Infeasible; Provides Maximum Access (TIF)

TAB 2 – INSPECTION FORM CONTINUED

Indicate the type of ramp being investigated using the curb ramp diagrams. Depending on curb ramp type, complete all of the required dimensions "A" through "EE" and the DWS transition strip values. Each cell is color-coded to indicate whether the information entered meets RC-67M. Use "999" for measurements that are not applicable.

TAB 3 - PICTURES TAB

Click on the "insert button #" button to insert the appropriate picture.

TAB 4 - ADDITIONAL EXPLANATION TAB (IF APPLICABLE)

If additional space is needed to further explain the reasoning behind a certain element but completing a Technically Infeasible Form (TIF) is not required use this area to explain the methodology behind the design as submitted.

Examples -

- (a) Additional room is need to explain why the ramp angle exceeds 20 degrees.
- (b) The longitudinal (running) slope of the sidewalk transition exceeds the 5% maximum allowed per DM2 Chapter 6 but is less than 8.33% maximum for a ramp slope.
- (c) The form is filled out for a Type 1 ramp but there is a greenstrip or other unwalkable surface in which the flare slope can exceed 10% and a 2' rolled concrete flare will be used.



Instructions

TAB 5 - INSTRUCTIONS

Use this tab as a quick reference to the instructions.

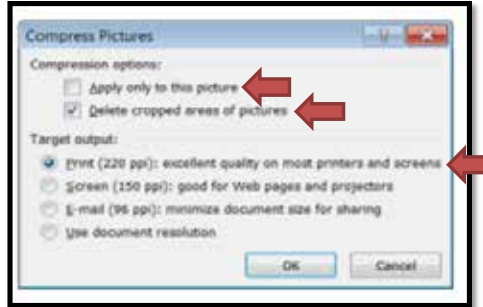
SUBMISSION

Perform the following for submission.

Reduce Image Size

To keep file size to a minimum, select a picture:

1. Click on one of the images that were inserted on Tab 03 - Pictures.
2. Click "Format" under the "Picture Tools" Ribbon.
3. In the Ribbon, click "Compress Pictures"
4. In the "Compress Pictures" Window select the options as noted below and click "OK".

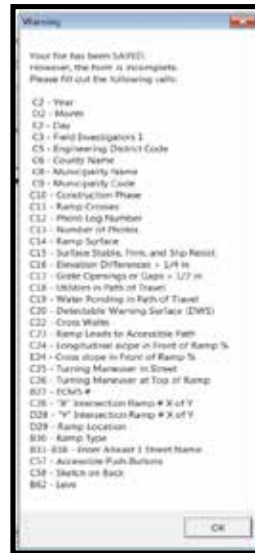


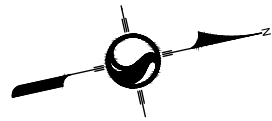
Save File

When saving the file, use Excel 2007 and later format with a *.xls extension. Do not use a different file format. If all the cells are not completed, a warning message will appear. The work has been saved, but the file is not complete. Fill in remaining cells and resave.

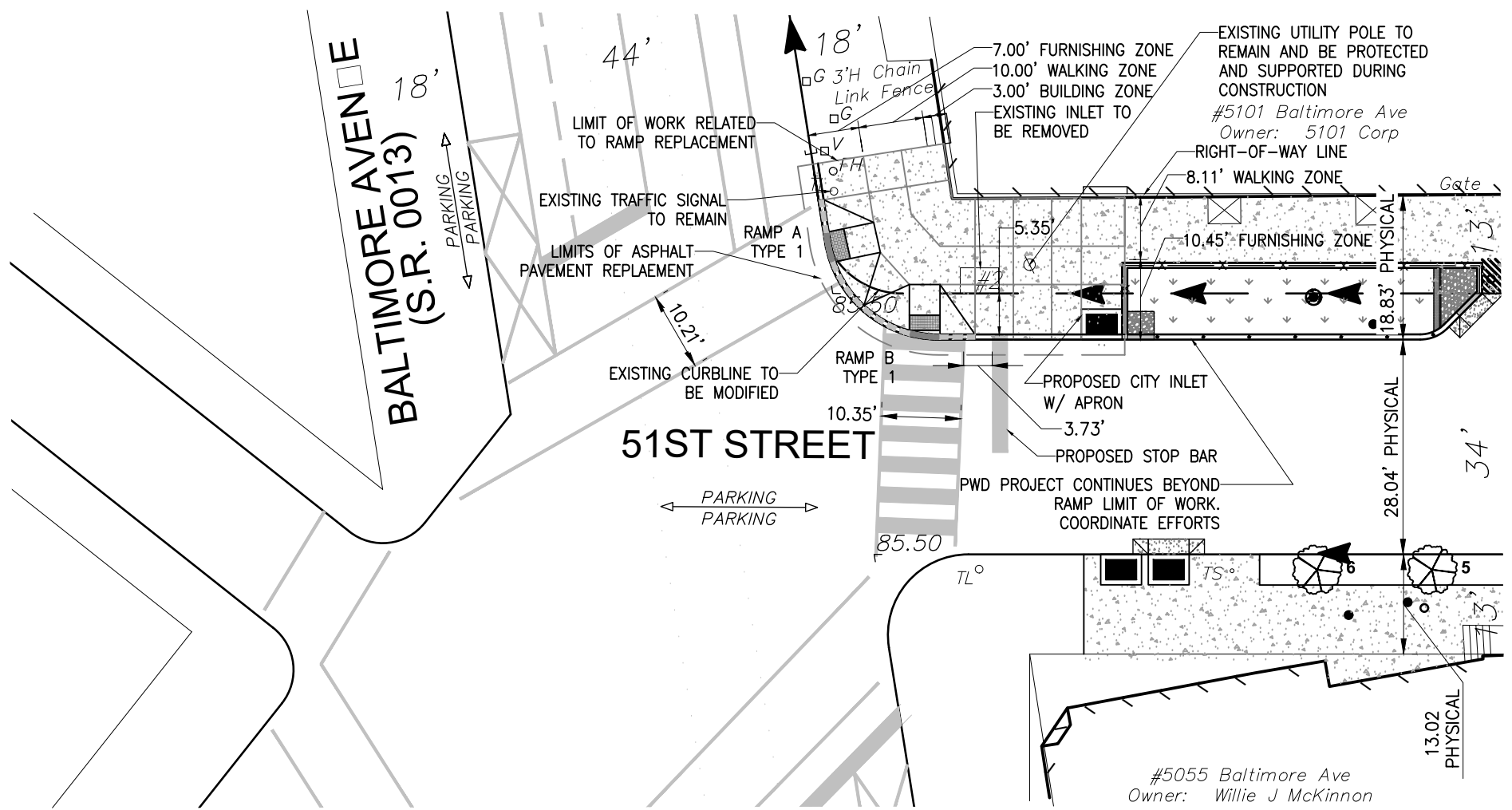
Send file to District ADA Coordinator

Upon approval of the curb ramp designs, submit files including the approved plans of the ADA designs, in PDF format, the CS-4401 Design, District 6 Form in Excel 2007 and later format and the Technically Infeasible Form (TIF) in Excel 2007 and later format to District 6 ADA Coordinator on a compact disc. Incomplete submissions will be returned.





U:\174811336\Civil\Drawings\ADA Ramps\Sheets\G-1 51st & Baltimore.dwg
2019/05/16 4:30 PM By: Yoder, Noah



PROPOSED CONDITIONS LEGEND

- TAPERED CURB
- DEPRESSED CURB
- PROPOSED CURB
- DETECTABLE WARNING SURFACE (2'x4')
- CONCRETE PAVING
- PROPOSED HIGHWAY GRATE INLET
- PROPOSED OPEN MOUTH INLET
- CITY INLET
- CITY INLET WITH APRON
- CURB CUT WITH RIPRAP
- OBSERVATION WELL
- CLEANOUT

EXISTING CONDITIONS LEGEND

- CITY INLET
- UTILITY MANHOLE
- WATER MAIN VALVE
- FIRE HYDRANT
- EXISTING CURBLINE TO BE REPLACED
- EXISTING FENCE
- LIGHT POLE
- SCHOOL ZONE SIGN
- GAS VALVE
- TRAFFIC SIGN

May 16, 2019
174811336

Client/Project
PHILADELPHIA WATER DEPARTMENT
WORK ORDER S-50162-G
STREETS DEPARTMENT #W-431

Figure No.
1 OF 31

Title
**INTERSECTION PLAN-
RAMPS A AND B**

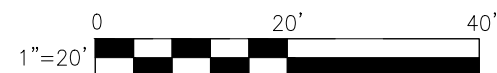
GENERAL NOTES:

1. PENNDOT LOG # P2760 FOR APPLICABLE PLAN SHEETS.
2. REFER TO APPROVED RIGHT-OF-WAY PLANS FOR PROPOSED ROADWAY STRIPING.

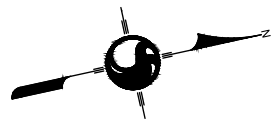


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2019/05/16 4:31 PM By: Yoder, Noah



BALTIMORE AVENUE

S.R. 0013

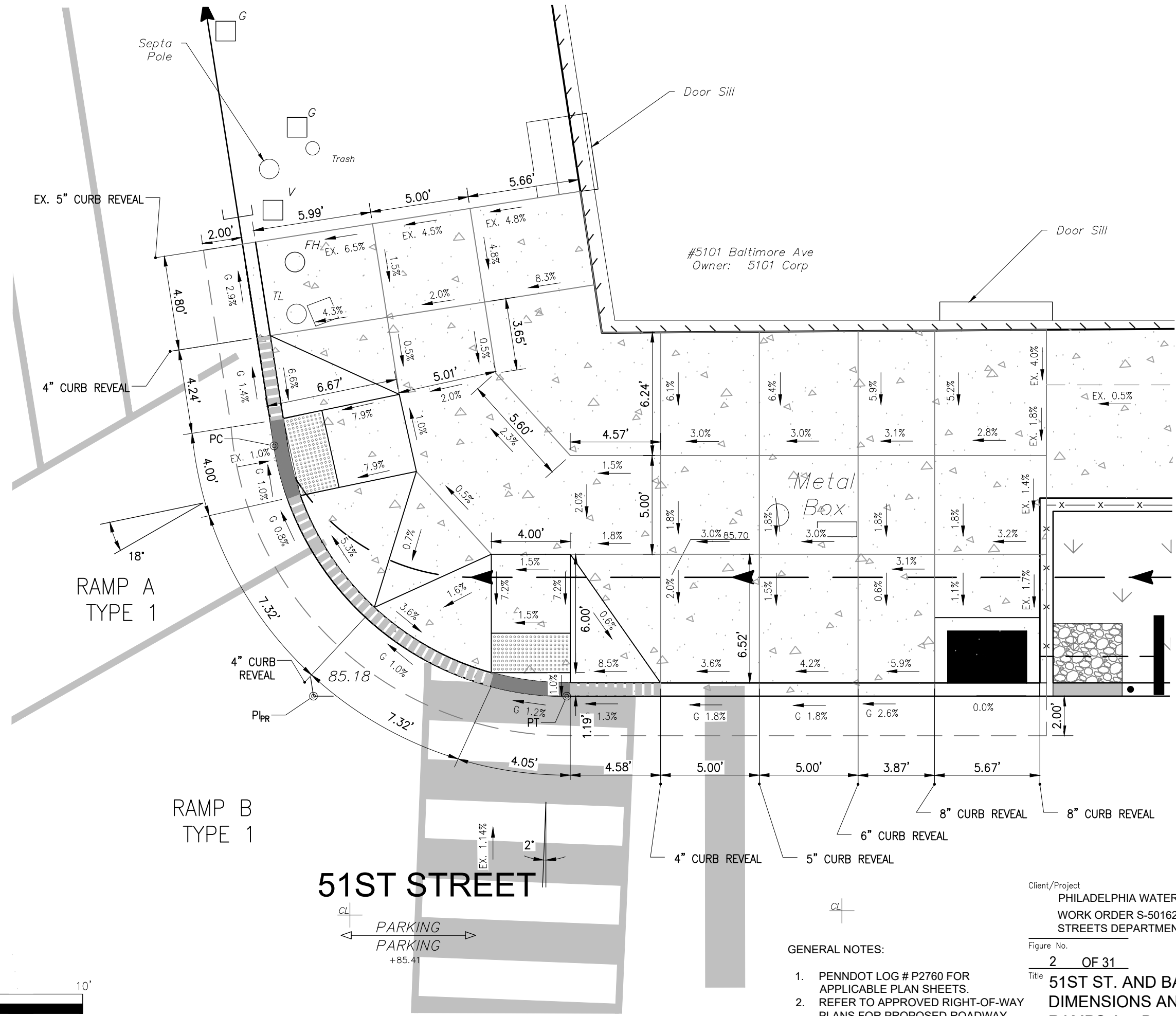
PARKING
PARKING

RAMP A
TYPE 1

RAMP B
TYPE 1

51ST STREET

PARKING
PARKING
+85.41



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GENERAL NOTES:

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Client/Project
PHILADELPHIA WATER DEPARTMENT
WORK ORDER S-50162-G
STREETS DEPARTMENT #W-431

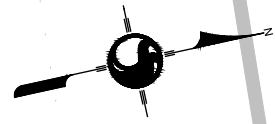
Figure No.

2 OF 31

Title
**51ST ST. AND BALTIMORE AVE.
DIMENSIONS AND SLOPES
RAMPS A B**

May 16, 2019
174811336

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 2019/05/16 4:32 PM By: Yoder, Noah



BALTIMORE AVENUE

S.R. 0013

PARKING
PARKING

CL 85.30

x85.11

Septa Pole
 TC 85.20
 BC 84.81

EX. TC 85.24
 EX. G 84.83

TC 85.24
 BC 84.83

TC 85.30
 G 84.97

TC 85.29
 BC 84.95

RAMP A
 TYPE 1

PC

TC 85.43
 BC 85.11

TC 85.45
 G 85.12

x85.25

P_{PR} 85.18

TC 85.46
 BC 85.27

51ST STREET

PARKING
PARKING

xCL 85.41

RAMP B
 TYPE 1

85.61 (EX.)

#5101 Baltimore Ave
 Owner: 5101 Corp

Door Sill

86.66

EX. 86.63

EX. 86.48

EX. 86.43

TC/BC 86.40

Metal Box

#2

TC 85.91
 BC 85.55

TC 85.82
 BC 85.46

TC 86.17
 BC 85.78

PT

TC 85.63
 G 85.30

x85.77

TC 85.81
 G 85.39

TC 86.25
 G 85.58

TC 86.02
 G 85.48

TC 86.25
 G 85.58

GENERAL NOTES:

- PENNDOT LOG # P2760 FOR APPLICABLE PLAN SHEETS.
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Client/Project
 PHILADELPHIA WATER DEPARTMENT
 WORK ORDER S-50162-G
 STREETS DEPARTMENT #W-431

Figure No.
3 OF 31

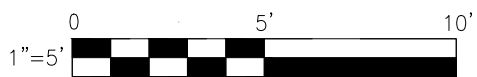
Title
**51ST ST. AND BALTIMORE AVE.
 GRADE ELEVATIONS
 RAMPS A B**

May 16, 2019
 174811336



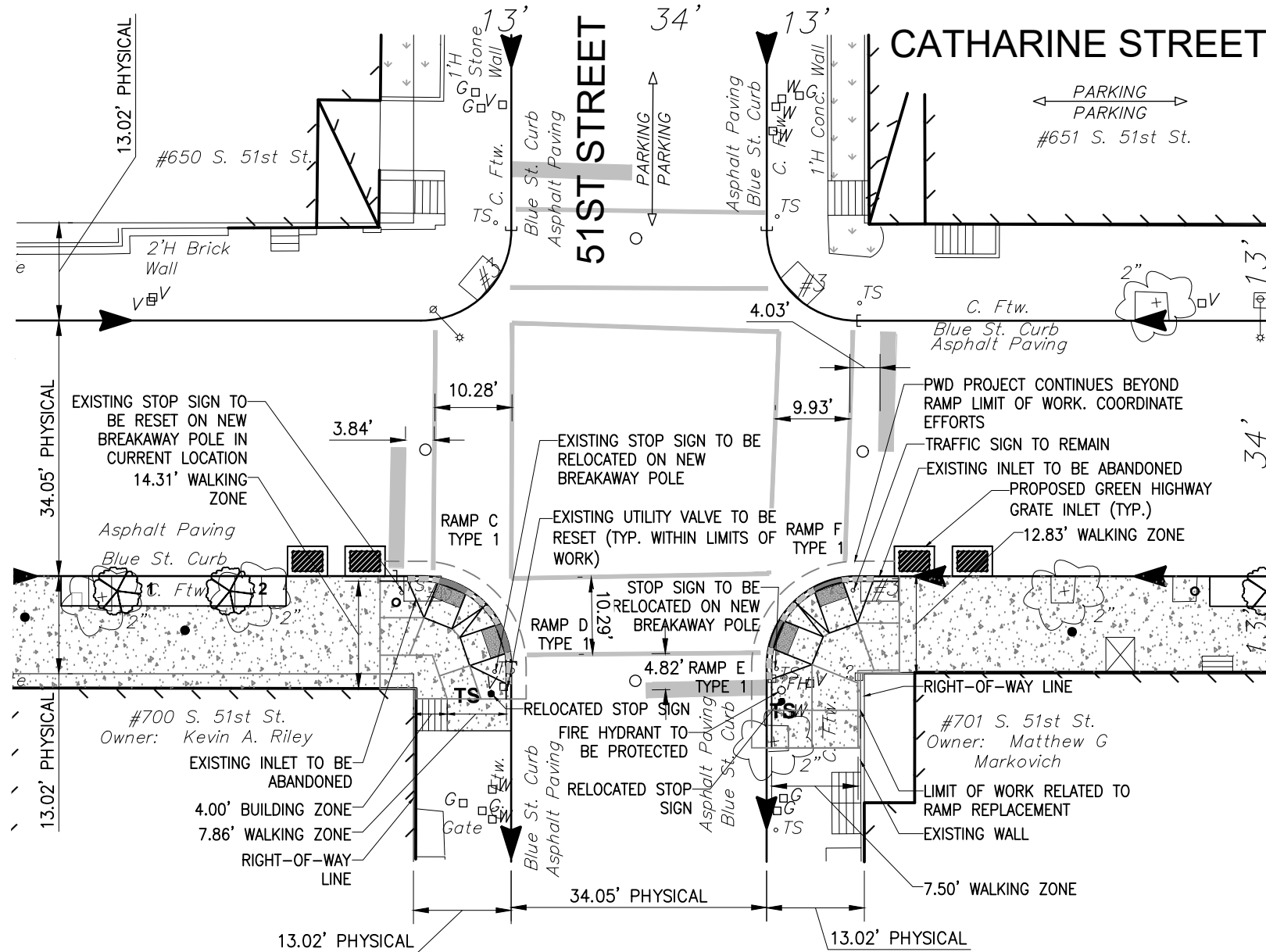
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PROPOSED CONDITIONS LEGEND

- TAPERED CURB
- DEPRESSED CURB
- PROPOSED CURB
- DETECTABLE WARNING SURFACE (2'x4')
- CONCRETE PAVING
- PROPOSED HIGHWAY GRATE INLET
- PROPOSED OPEN MOUTH INLET
- CITY INLET
- CITY INLET WITH APRON
- CURB CUT WITH RIPRAP
- OBSERVATION WELL
- CLEANOUT
- DOMED RISER

EXISTING CONDITIONS LEGEND

- CITY INLET
- LP LIGHT POLE
- UTILITY MANHOLE
- SZ SCHOOL ZONE SIGN
- WATER MAIN VALVE
- G GAS VALVE
- FH FIRE HYDRANT
- TS TRAFFIC SIGN

EXISTING CURBLINE TO BE REPLACED

EXISTING FENCE

May 16, 2019
174811336

Client/Project
**PHILADELPHIA WATER DEPARTMENT
WORK ORDER S-50162-G
STREETS DEPARTMENT #W-431**

Figure No.

4 OF 31

Title
**CATHARINE ST AND 51ST ST
INTERSECTION PLAN
RAMPS C D E F**

GENERAL NOTES:

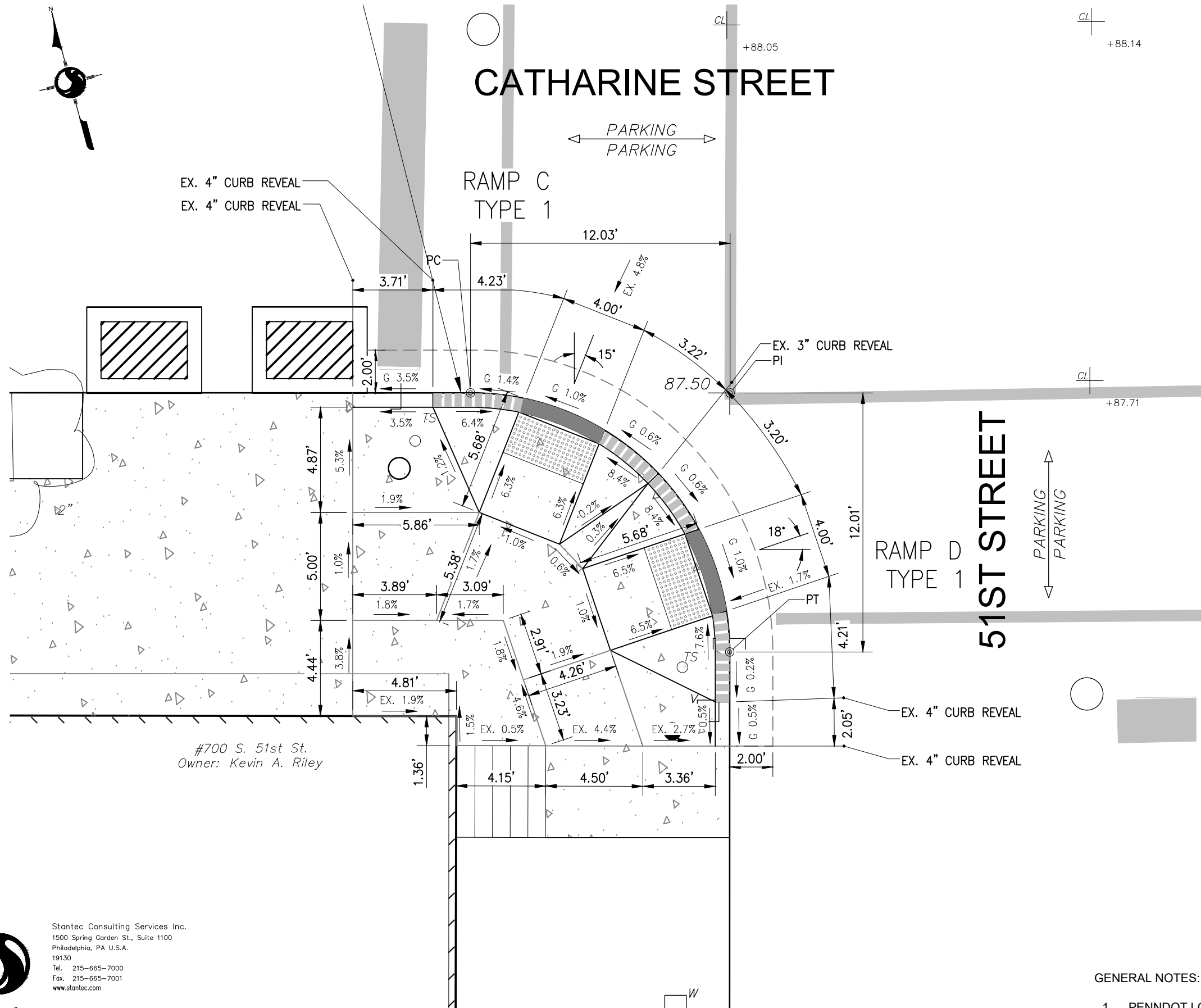
1. PENNDOT LOG # P2760 FOR APPLICABLE PLAN SHEETS.
2. REFER TO APPROVED RIGHT-OF-WAY PLANS FOR PROPOSED ROADWAY STRIPING.



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 2019/05/16 4:33 PM By: Yoder, Noah



#700 S. 51st St.
 Owner: Kevin A. Riley



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 WORK ORDER S-50162-G
 STREETS DEPARTMENT #W-431

Figure No.

5 OF 31

Title
 CATHARINE ST AND 51ST ST
 DIMENSIONS AND SLOPES
 RAMPS C □ D

GENERAL NOTES:

1. PENNDOT LOG # P2760 FOR APPLICABLE PLAN SHEETS.
2. REFER TO APPROVED RIGHT-OF-WAY PLANS FOR PROPOSED ROADWAY STRIPING.

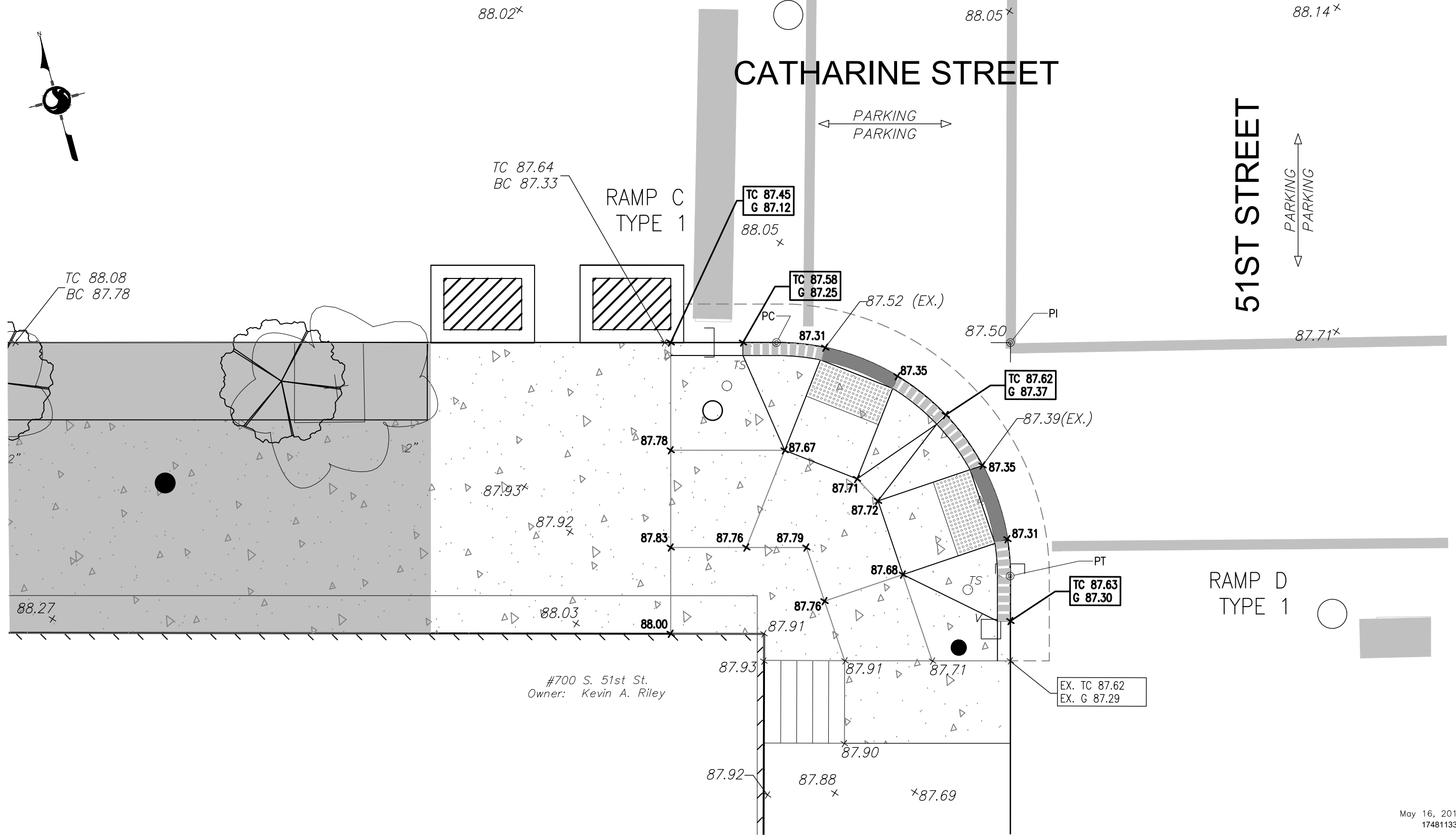
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CATHARINE STREET

51ST STREET



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 Owner: Kevin A. Riley



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 PHILADELPHIA WATER DEPARTMENT
 WORK ORDER S-50162-G
 STREETS DEPARTMENT #W-431

Figure No.

6 OF 31

Title
 CATHARINE ST AND 51ST ST
 GRADE ELEVATIONS
 RAMPS C □ D

May 16, 2019
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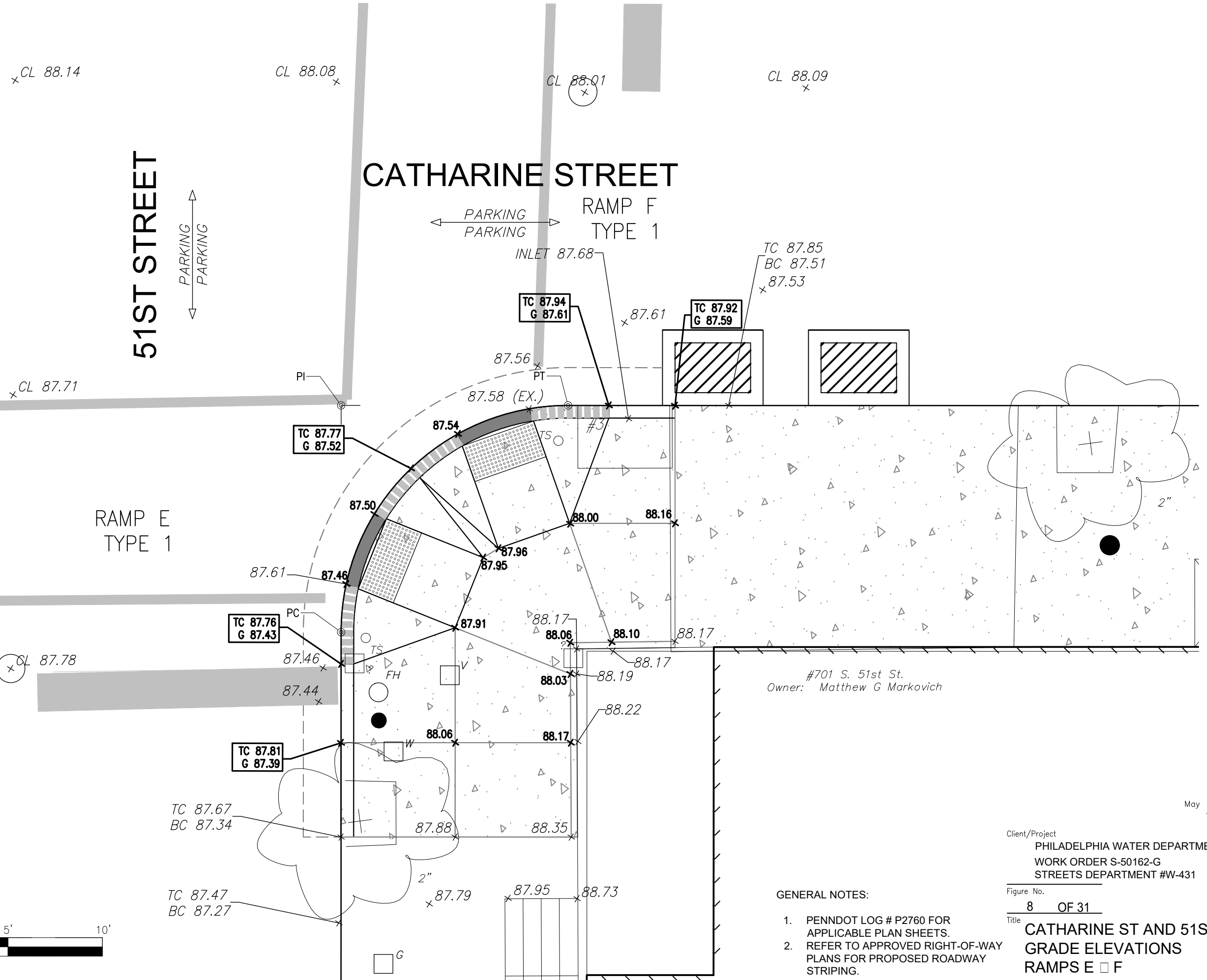
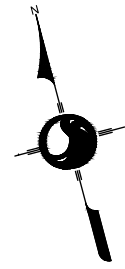
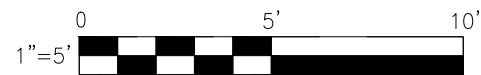
GENERAL NOTES:

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2. REFER TO APPROVED RIGHT-OF-WAY PLANS FOR PROPOSED ROADWAY STRIPING.

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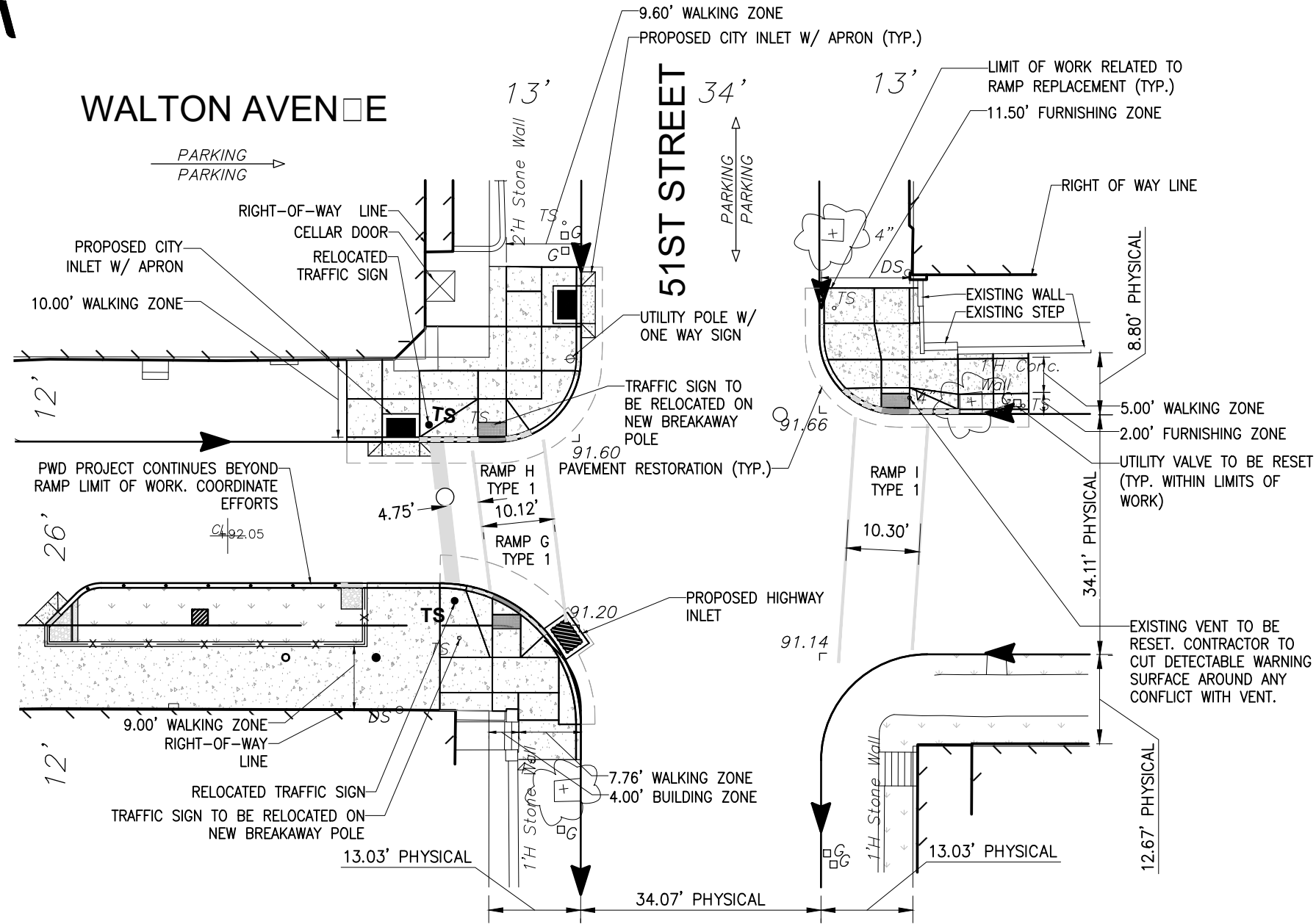
Client/Project
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WORK ORDER S-50162-G
STREETS DEPARTMENT #W-431

Figure No.
8 OF 31

Title
**CATHARINE ST AND 51ST ST
GRADE ELEVATIONS
RAMPS E □ F**



WALTON AVENUE



PROPOSED CONDITIONS LEGEND

	TAPERED CURB
	DEPRESSED CURB
	PROPOSED CURB
	DETECTABLE WARNING SURFACE (2'x4')
	CONCRETE PAVING
	PROPOSED HIGHWAY GRATE INLET
	PROPOSED OPEN MOUTH INLET
	CITY INLET
	CITY INLET WITH APRON
	CURB CUT WITH RIPRAP
	OBSERVATION WELL
	CLEANOUT
	DOMED RISER

EXISTING CONDITIONS LEGEND

	CITY INLET		LIGHT POLE
	UTILITY MANHOLE		SCHOOL ZONE SIGN
	WATER MAIN VALVE		GAS VALVE
	FIRE HYDRANT		TRAFFIC SIGN
	EXISTING CURBLINE TO BE REPLACED		
	EXISTING FENCE		

GENERAL NOTES:

- PENNDOT LOG # P2760 FOR APPLICABLE PLAN SHEETS.
- REFER TO APPROVED RIGHT-OF-WAY PLANS FOR PROPOSED ROADWAY STRIPING.

Client/Project

PHILADELPHIA WATER DEPARTMENT
WORK ORDER S-50162-G
STREETS DEPARTMENT #W-431

Figure No.

9 OF 31

Title

WALTON AVE. AND 51ST ST.
INTERSECTION PLAN
RAMPS G H I

May 31, 2019
174811336

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2019/05/31 9:52 AM By: Mullen, Ted

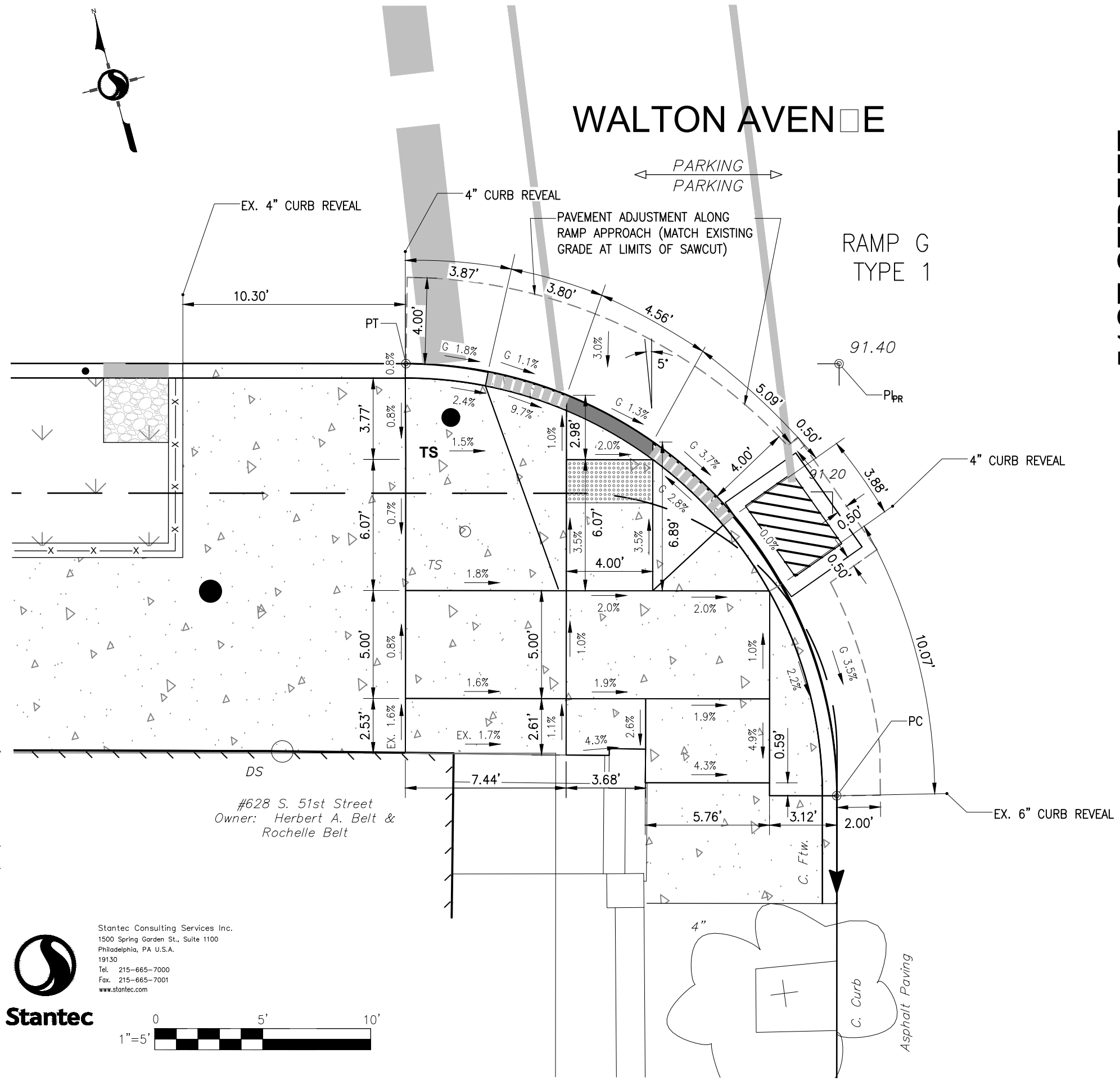


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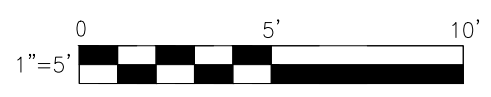
WALTON AVENUE

51ST STREET

DS
 #628 S. 51st Street
 Owner: Herbert A. Belt & Rochelle Belt



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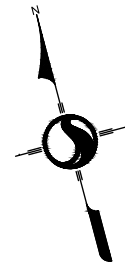
- PENNDOT LOG # P2760 FOR APPLICABLE PLAN SHEETS.
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 WORK ORDER S-50162-G
 STREETS DEPARTMENT #W-431

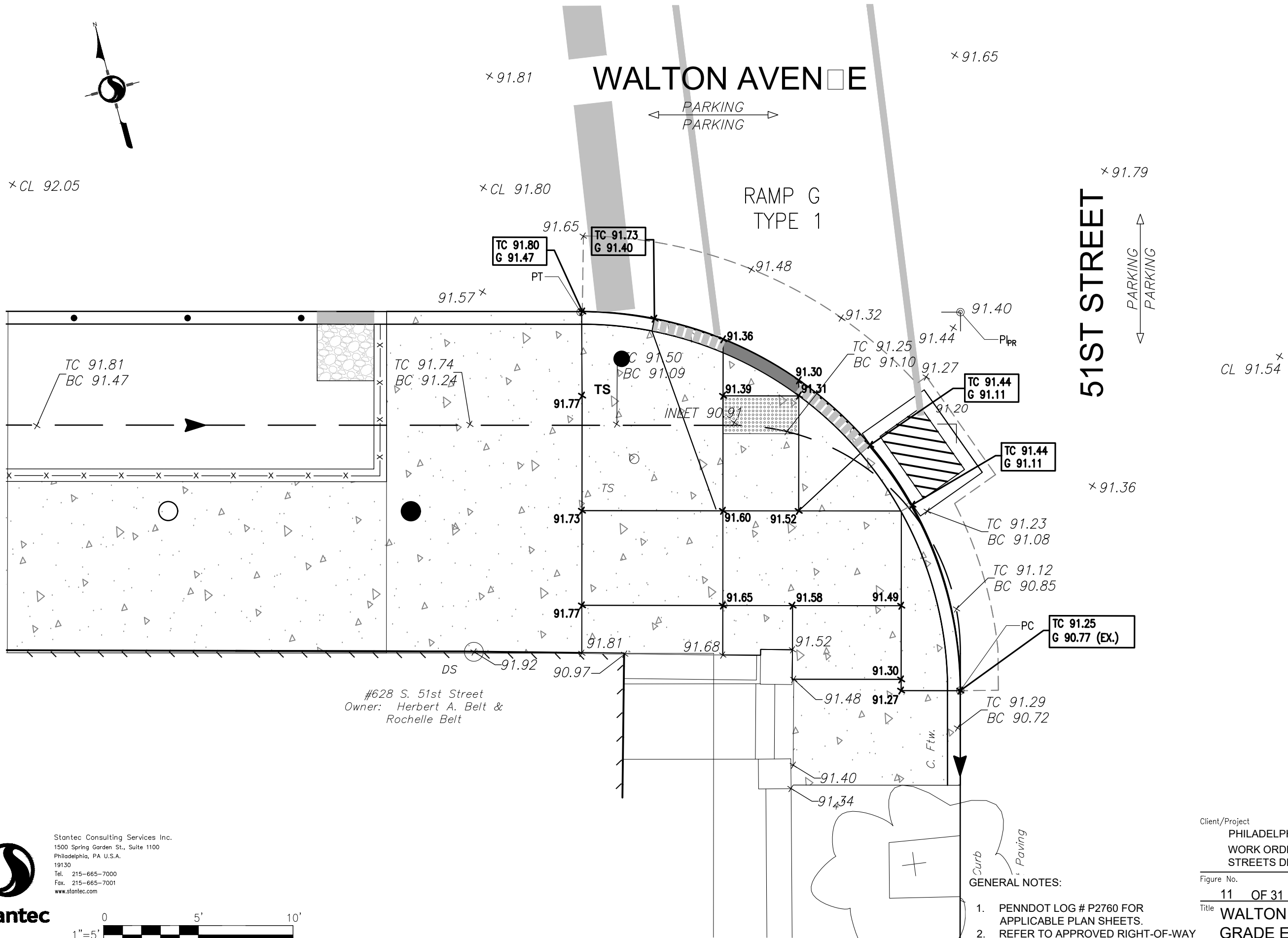
Figure No.
 10 OF 31

Title
 WALTON AVE AND 51ST ST
 DIMENSIONS AND SLOPES
 RAMP G

May 16, 2019
 174811336



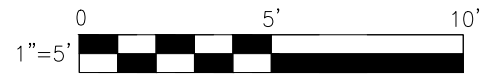
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2019/05/16 4:36 PM By: Yoder, Noah



#628 S. 51st Street
Owner: Herbert A. Belt &
Rochelle Belt



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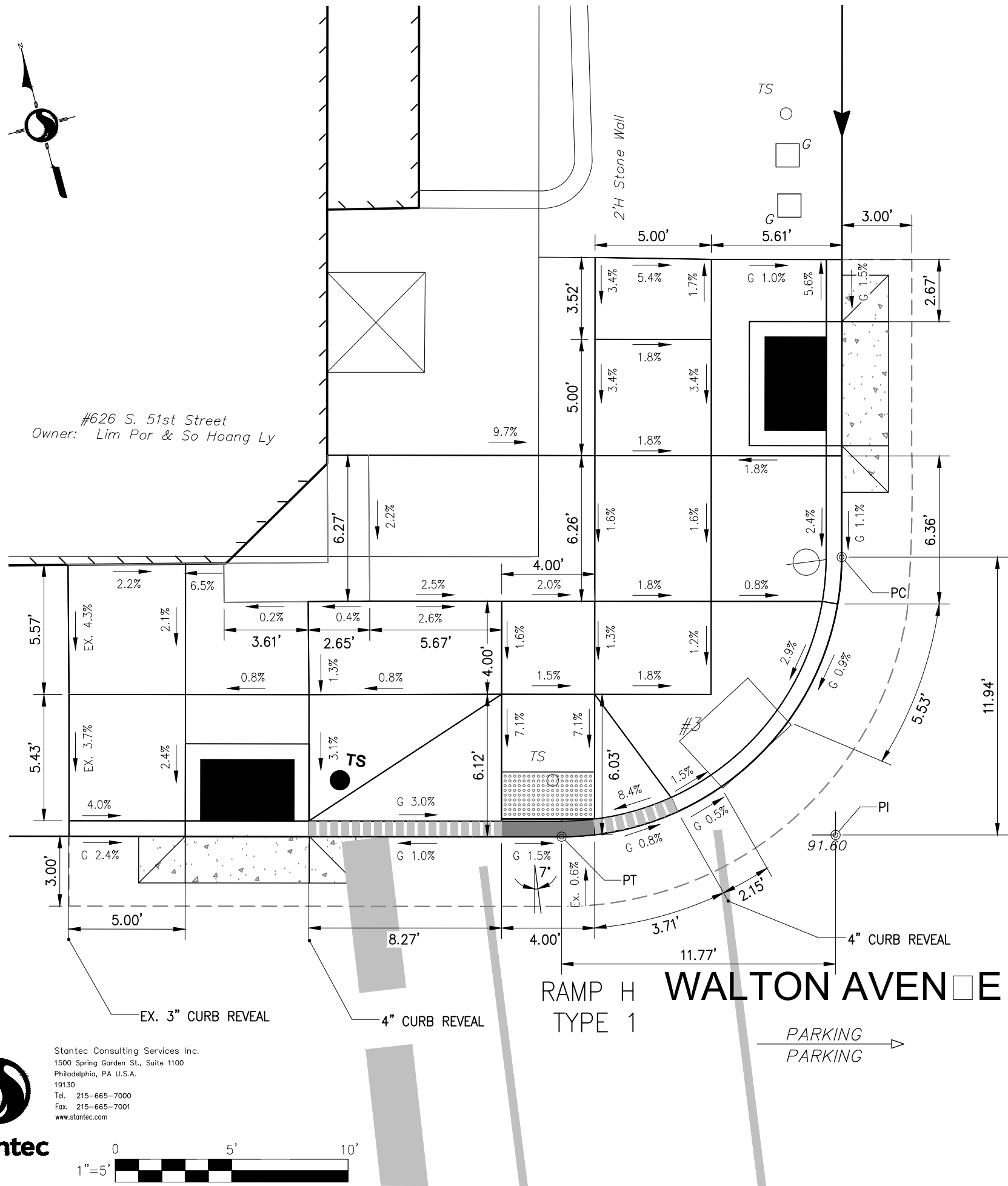
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PHILADELPHIA WATER DEPARTMENT
WORK ORDER S-50162-G
STREETS DEPARTMENT #W-431

Figure No.
11 OF 31

Title
**WALTON AVE AND 51ST
GRADE ELEVATIONS
RAMP G**

May 16, 2019
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U:\174811336\Civil\Drawings\ADA Ramps\Sheets\G-12 NWC 51st & Walton - S.dwg
 2019/05/16 4:36 PM By: Yoder, Noah



#626 S. 51st Street
 Owner: Lim Por & So Hoang Ly



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51ST STREET

PARKING
 PARKING

PARKING
 PARKING

GENERAL NOTES:

1. PENNDOT LOG # P2760 FOR APPLICABLE PLAN SHEETS.
2. REFER TO APPROVED RIGHT-OF-WAY PLANS FOR PROPOSED ROADWAY STRIPING.

Client/Project

PHILADELPHIA WATER DEPARTMENT
 WORK ORDER S-50162-G
 STREETS DEPARTMENT #W-431

Figure No.

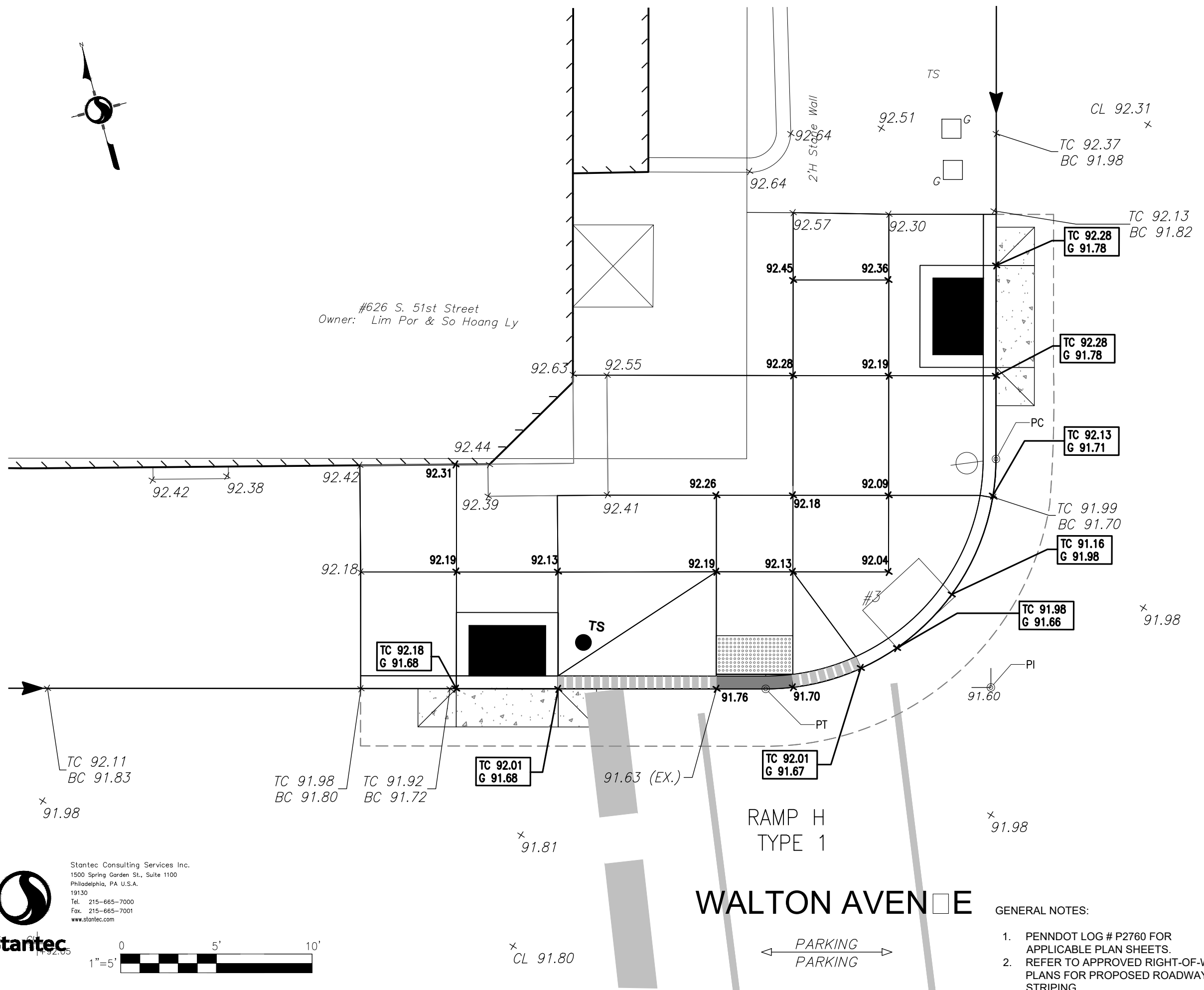
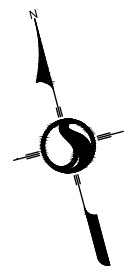
12 OF 31

Title

WALTON AVE AND 51ST ST.
 DIMENSIONS AND SLOPES
 RAMP H

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 2019/05/16 4:36 PM By: Yoder, Noah



#626 S. 51st Street
 Owner: Lim Por & So Hoang Ly

51ST STREET

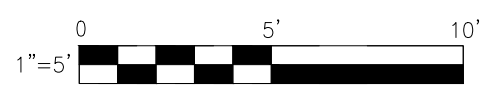
PARKING

WALTON AVENUE

RAMP H
 TYPE 1



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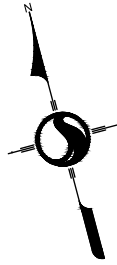
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2. REFER TO APPROVED RIGHT-OF-WAY PLANS FOR PROPOSED ROADWAY STRIPING.

Client/Project
 PHILADELPHIA WATER DEPARTMENT
 WORK ORDER S-50162-G
 STREETS DEPARTMENT #W-431

Figure No.
 13 OF 31

Title
 WALTON AVE AND 51ST ST
 GRADE ELEVATIONS
 RAMP H

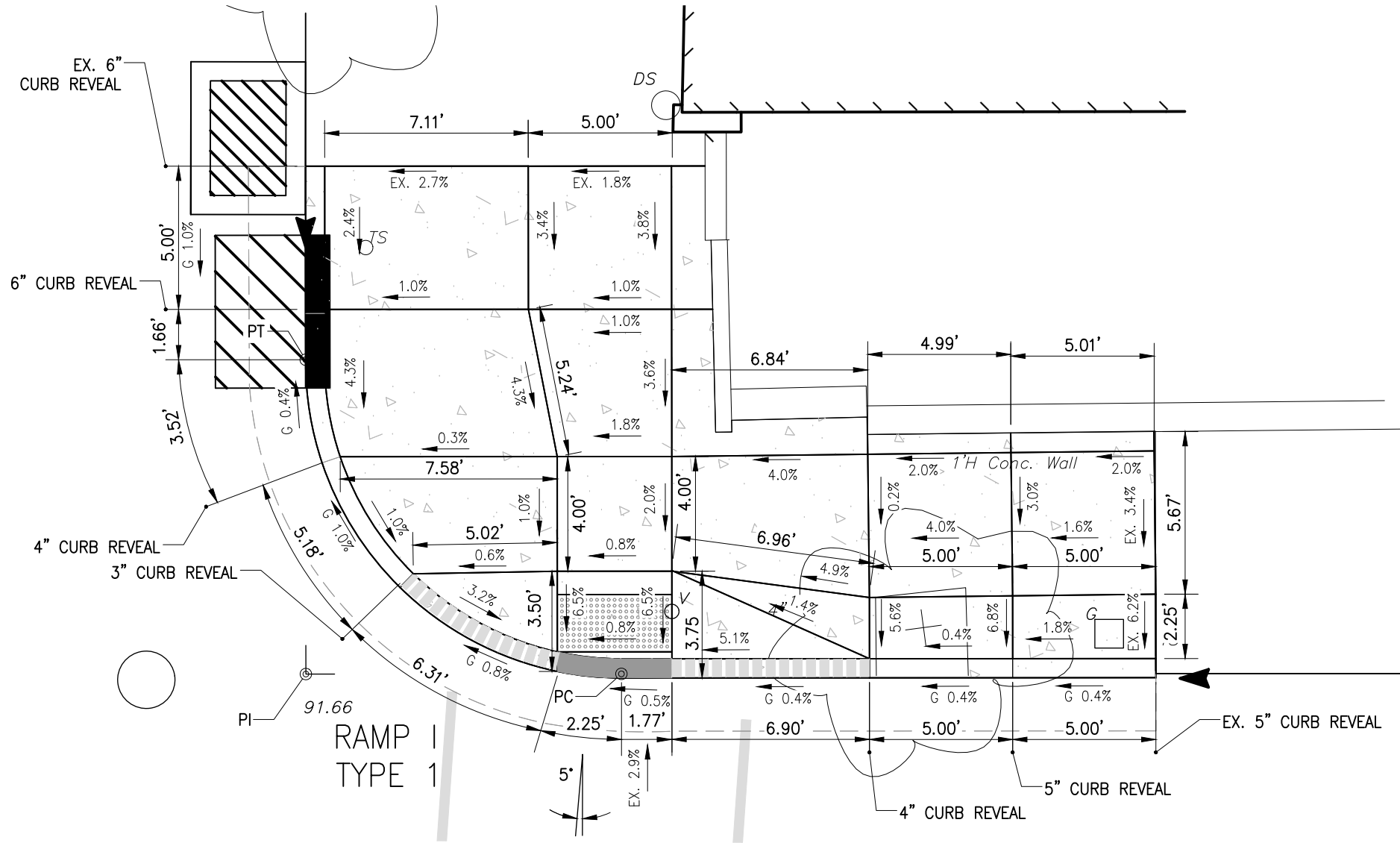
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51ST STREET

PARKING
PARKING



WALTON AVENUE

PARKING
PARKING



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GENERAL NOTES:

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PHILADELPHIA WATER DEPARTMENT
WORK ORDER S-50162-G
STREETS DEPARTMENT #W-431

Figure No.

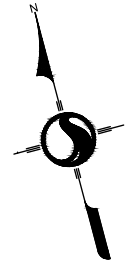
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Title

**WALTON AVE. AND 51ST ST.
DIMENSIONS AND SLOPES
RAMP I**

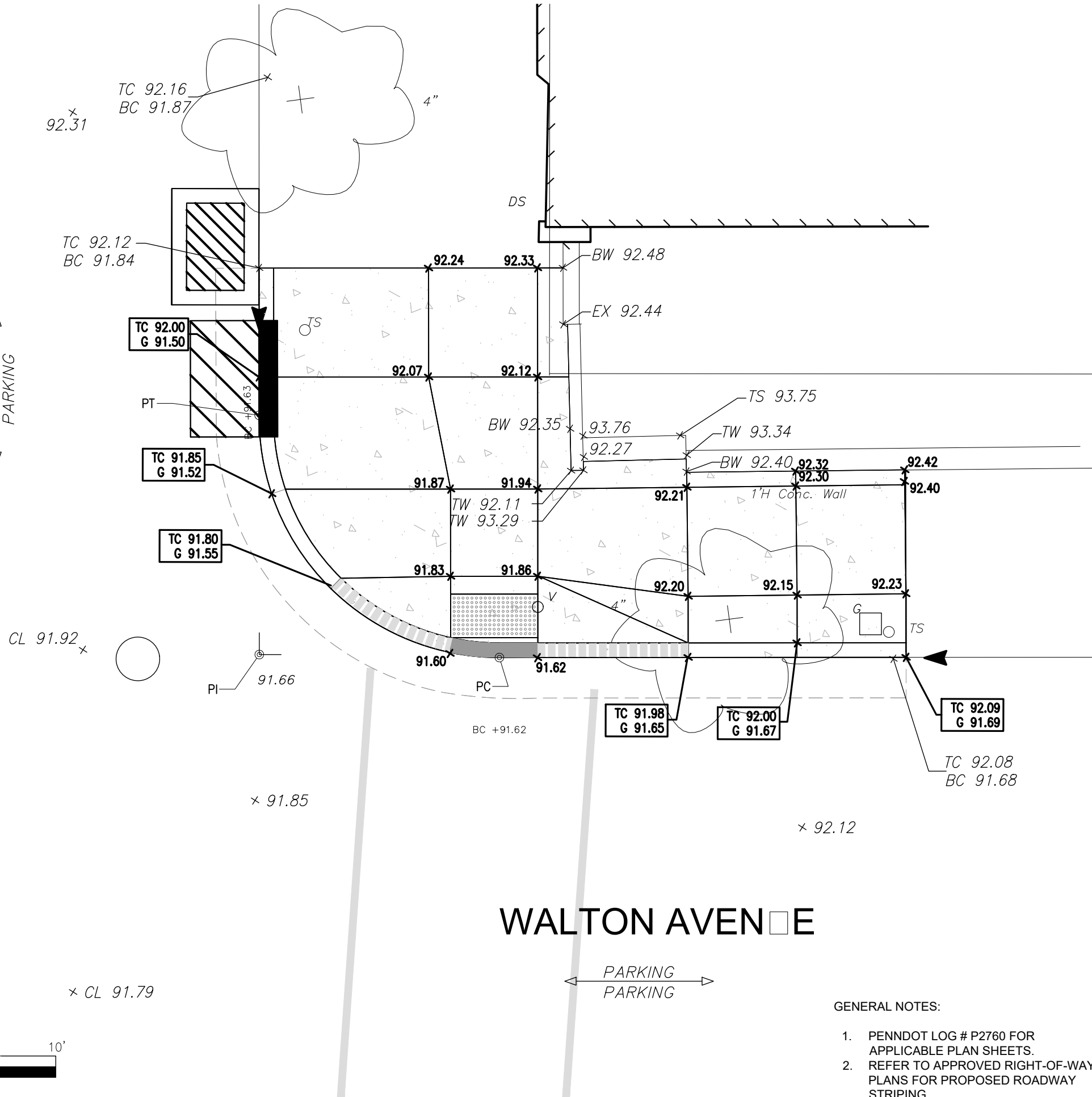
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51ST STREET

PARKING
PARKING



WALTON AVENUE

PARKING
PARKING



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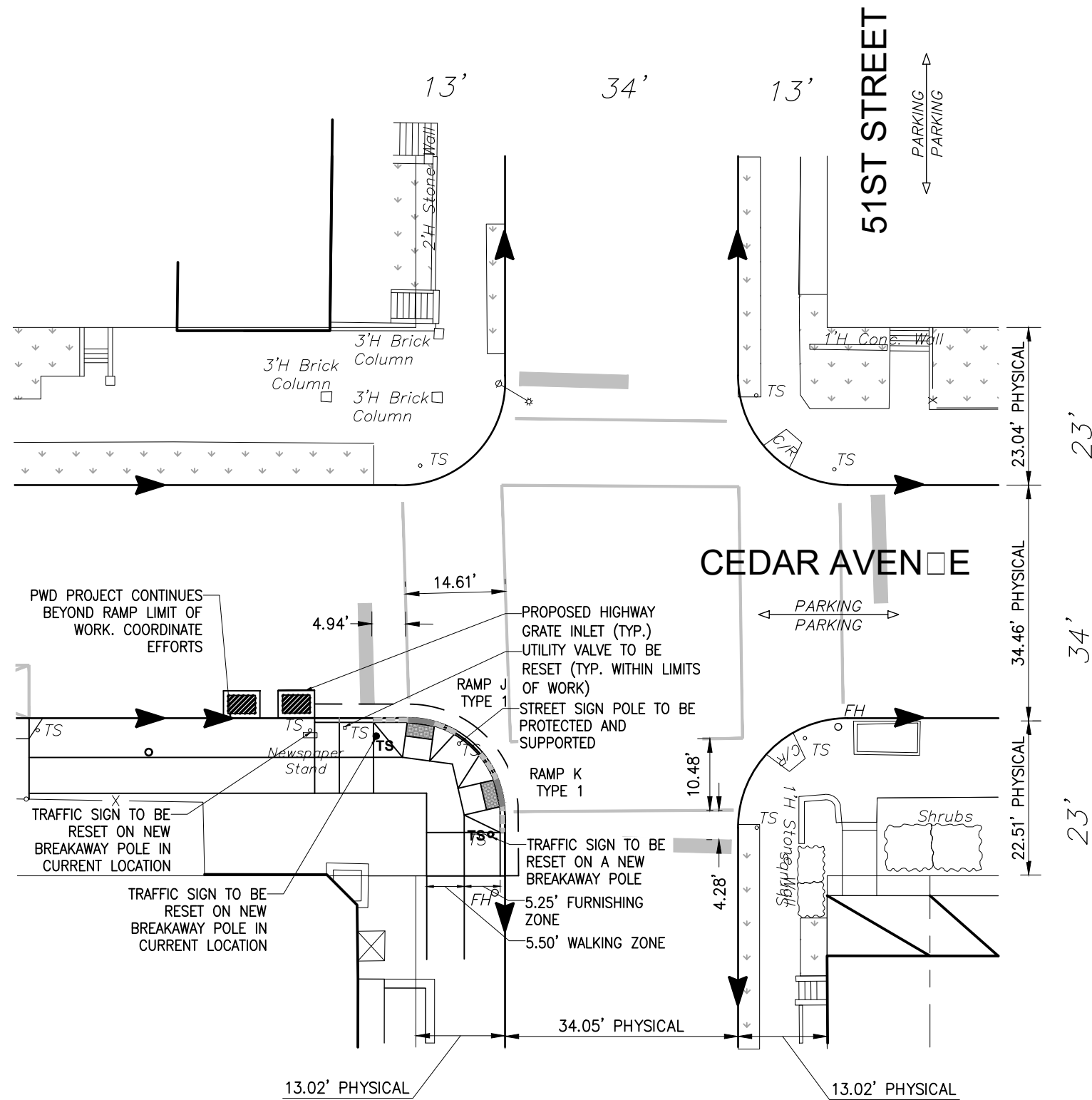
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WORK ORDER S-50162-G
STREETS DEPARTMENT #W-431

Figure No.
15 OF 31

Title
WALTON AVE. AND 51ST ST.
GRADE ELEVATIONS
RAMP I



U:\174811336\Civil\Drawings\ADA Ramps\Sheets\G-16 51st & Cedar.dwg
2019/05/16 4:38 PM By: Yoder, Noah



PROPOSED CONDITIONS LEGEND

- TAPERED CURB
- DEPRESSED CURB
- PROPOSED CURB
- DETECTABLE WARNING SURFACE (2'x4')
- CONCRETE PAVING
- PROPOSED HIGHWAY GRATE INLET
- PROPOSED OPEN MOUTH INLET
- CITY INLET
- CITY INLET WITH APRON
- CURB CUT WITH RIPRAP
- OBSERVATION WELL
- CLEANOUT
- DOMED RISER

EXISTING CONDITIONS LEGEND

- CITY INLET
- LIGHT POLE
- UTILITY MANHOLE
- SCHOOL ZONE SIGN
- WATER MAIN VALVE
- GAS VALVE
- FIRE HYDRANT
- TRAFFIC SIGN
- EXISTING CURBLINE TO BE REPLACED
- EXISTING FENCE

May 16, 2019
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Client/Project
PHILADELPHIA WATER DEPARTMENT
WORK ORDER S-50162-G
STREETS DEPARTMENT #W-431

Figure No.
16 OF 31

Title
**CEDAR AVE AND 51ST ST
INTERSECTION PLAN
RAMPS K, L AND M**

GENERAL NOTES:

1. PENNDOT LOG # P2760 FOR APPLICABLE PLAN SHEETS.
2. REFER TO APPROVED RIGHT-OF-WAY PLANS FOR PROPOSED ROADWAY STRIPING.



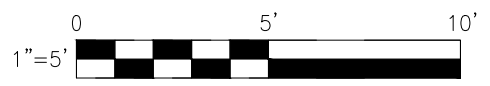
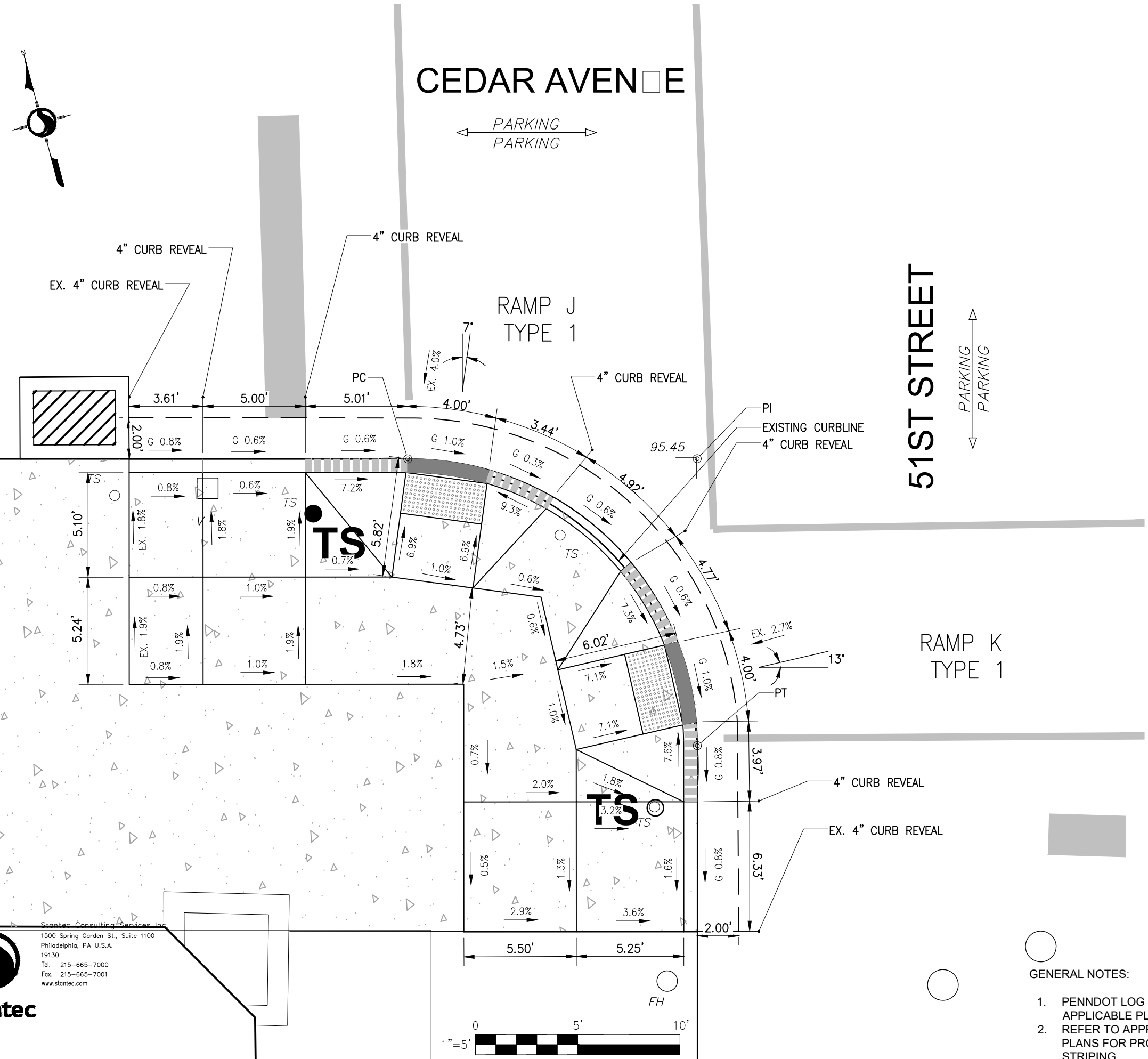
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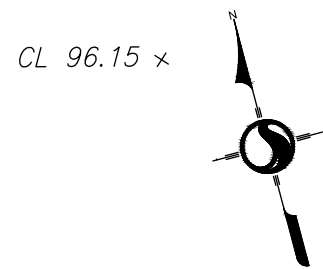
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2. REFER TO APPROVED RIGHT-OF-WAY PLANS FOR PROPOSED ROADWAY STRIPING.

Client/Project
 PHILADELPHIA WATER DEPARTMENT
 WORK ORDER S-50162-G
 STREETS DEPARTMENT #W-431

Figure No.
 17 OF 31

Title
 CEDAR AVE AND 51ST STREET
 DIMENSIONS AND SLOPES
 RAMPS J AND K

May 16, 2019
 174811336



CL 96.15 x

CL 95.90 x

CL 95.94 x

CL 95.98 x

CL 95.99 x

CEDAR AVENUE

PARKING
PARKING

51ST STREET

PARKING
PARKING

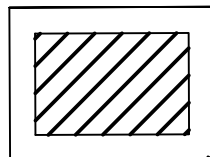
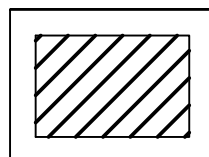
x95.93

x95.67

95.78 x

CL 95.91 x

TC 95.81
BC 95.65



TC 95.60
G 95.27

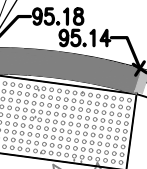
TC 95.56
BC 95.37

TC 95.54
G 95.21

PC 95.33(EX)

RAMP J
TYPE 1

PI



TS

TC 95.46
G 95.13

TC 95.42
G 95.10

CL 95.70 x

RAMP K
TYPE 1

U:\174811336\Civil\Drawings\ADA Ramps\Sheets\G-18 SWC 51st & Cedar - G.dwg
2019/05/16 4:39 PM By: Yoder, Noah

Newspaper Stand

x96.19

95.66

95.61

95.58

95.54

95.52

95.07

95.03

95.18(EX)
PT

95.50

95.46

TC 95.33
G 95.00

95.50

TC 95.23
G 94.95

95.61

FH

TC 95.18
BC 94.87

96:41

96.02

95.90

95.85

May 16, 2019
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Client/Project
PHILADELPHIA WATER DEPARTMENT
WORK ORDER S-50162-G
STREETS DEPARTMENT #W-431

Figure No.
18 OF 31

Title
CEDAR AVE AND 51ST ST
GRADE ELEVATIONS
RAMPS J AND K

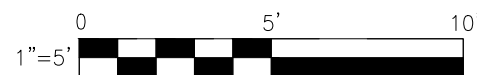
GENERAL NOTES:

1. PENNDOT LOG # P2760 FOR APPLICABLE PLAN SHEETS.
2. REFER TO APPROVED RIGHT-OF-WAY PLANS FOR PROPOSED ROADWAY STRIPING.

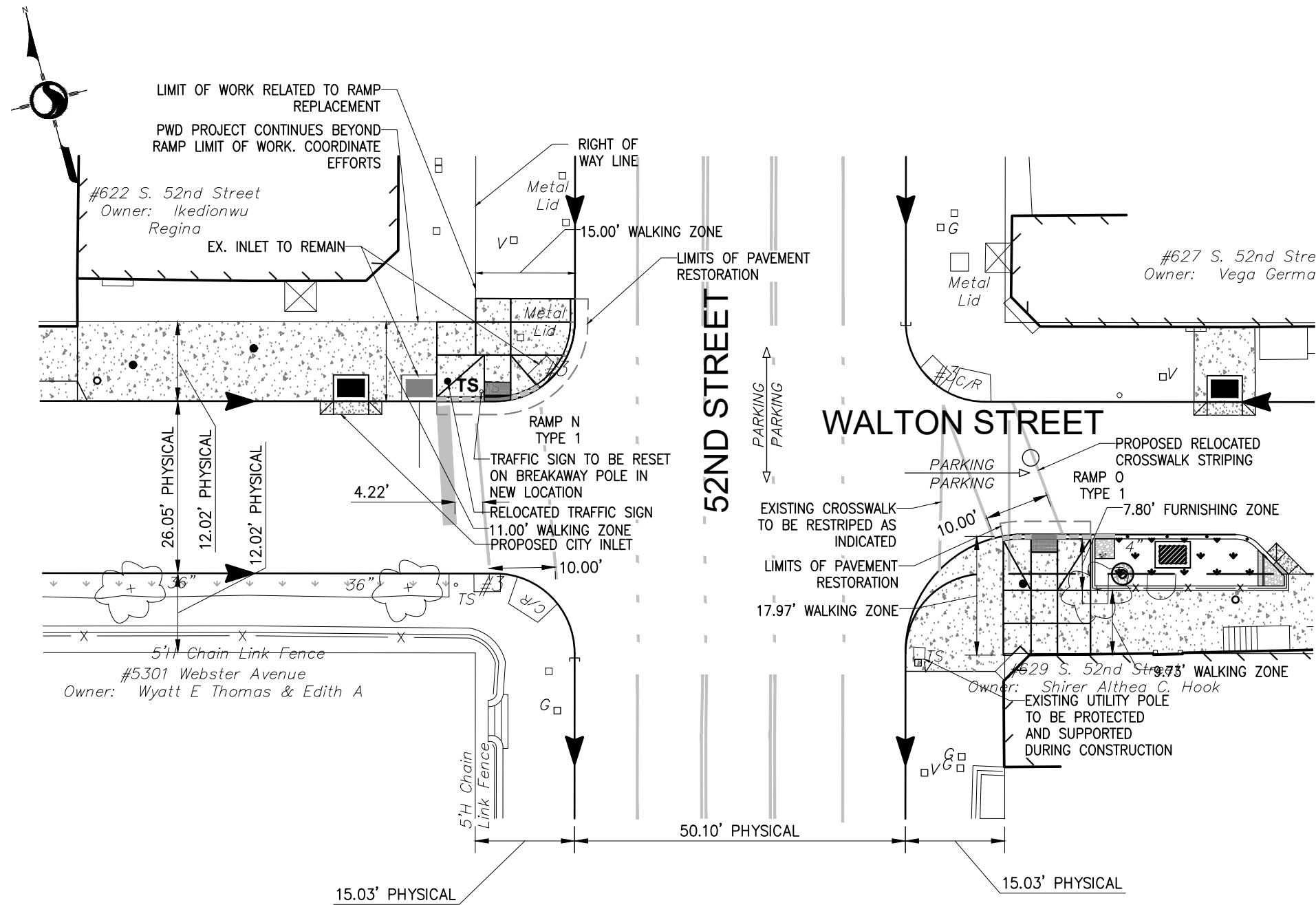


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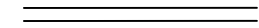

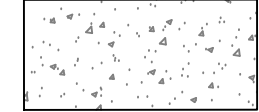
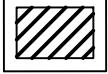



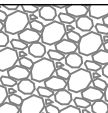



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


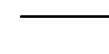

U:\174811336\Civil\Drawings\ADA Ramps\Sheets\G-19 52nd & Walton.dwg
2019/05/16 4:40 PM By: Yoder, Noah



PROPOSED CONDITIONS LEGEND

-  TAPERED CURB
-  DEPRESSED CURB
-  PROPOSED CURB
-  DETECTABLE WARNING SURFACE (2'x4')
-  CONCRETE PAVING
-  PROPOSED HIGHWAY GRATE INLET
-  PROPOSED OPEN MOUTH INLET
-  CITY INLET
-  CITY INLET WITH APRON
-  CURB CUT WITH RIPRAP
-  OBSERVATION WELL
-  CLEANOUT
-  DOMED RISER

EXISTING CONDITIONS LEGEND

-  CITY INLET
-  UTILITY MANHOLE
-  WATER MAIN VALVE
-  FIRE HYDRANT
-  LP LIGHT POLE
-  SZ SCHOOL ZONE SIGN
-  G GAS VALVE
-  TS TRAFFIC SIGN
-  EXISTING CURBLINE TO BE REPLACED
-  X EXISTING FENCE

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174811336

Client/Project
PHILADELPHIA WATER DEPARTMENT
WORK ORDER S-50162-G
STREETS DEPARTMENT #W-431

Figure No.

19 OF 31

Title
**WALTON AVE AND 52ND ST
INTERSECTION PLAN
RAMPS N AND O**

GENERAL NOTES:

1. PENNDOT LOG # P2760 FOR APPLICABLE PLAN SHEETS.
2. REFER TO APPROVED RIGHT-OF-WAY PLANS FOR PROPOSED ROADWAY STRIPING.

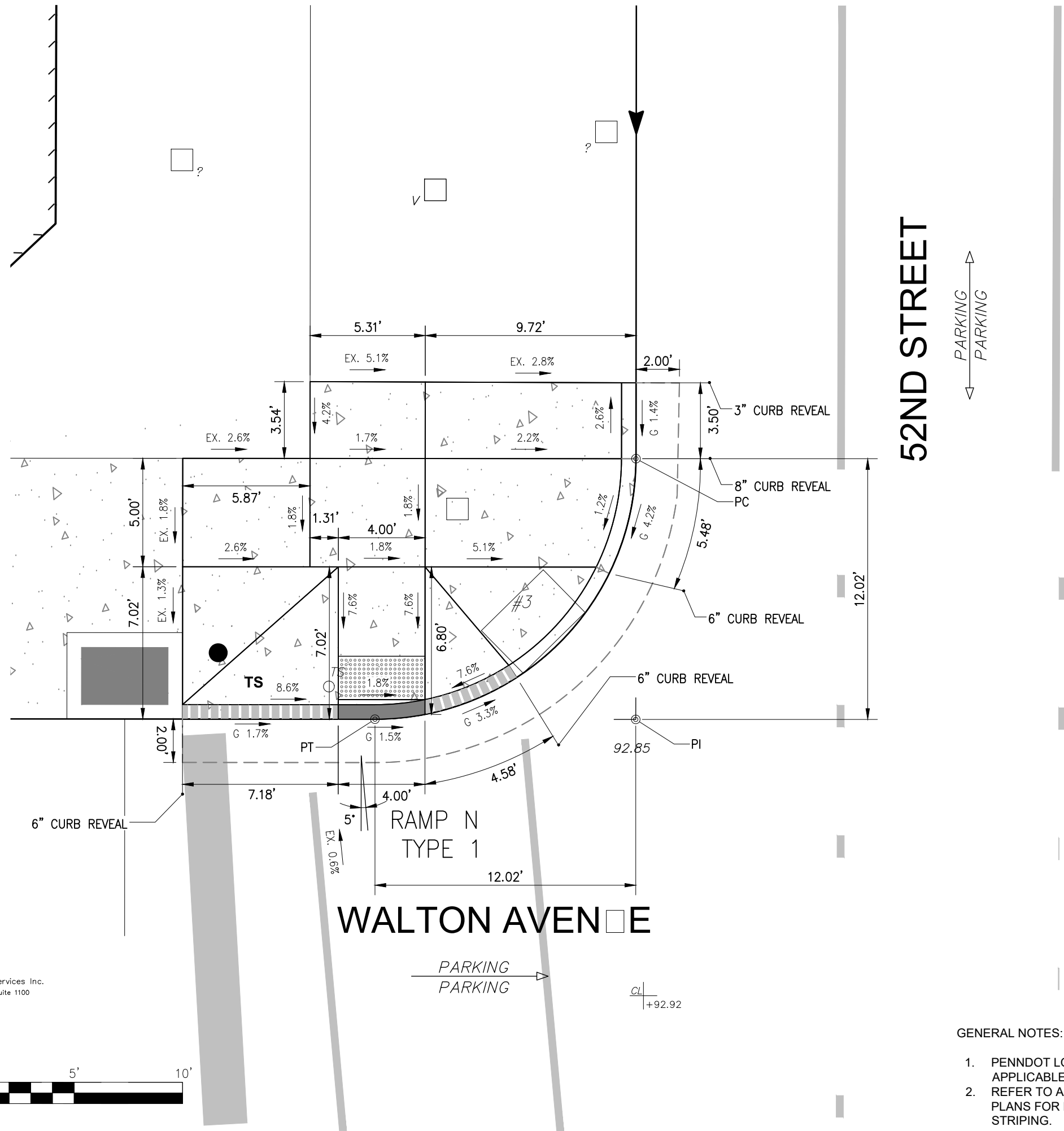
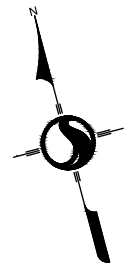


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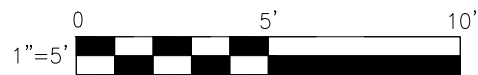
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GENERAL NOTES:

1. PENNDOT LOG # P2760 FOR APPLICABLE PLAN SHEETS.
2. REFER TO APPROVED RIGHT-OF-WAY PLANS FOR PROPOSED ROADWAY STRIPING.

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PHILADELPHIA WATER DEPARTMENT
 WORK ORDER S-50162-G
 STREETS DEPARTMENT #W-431

Figure No.

20 OF 31

Title

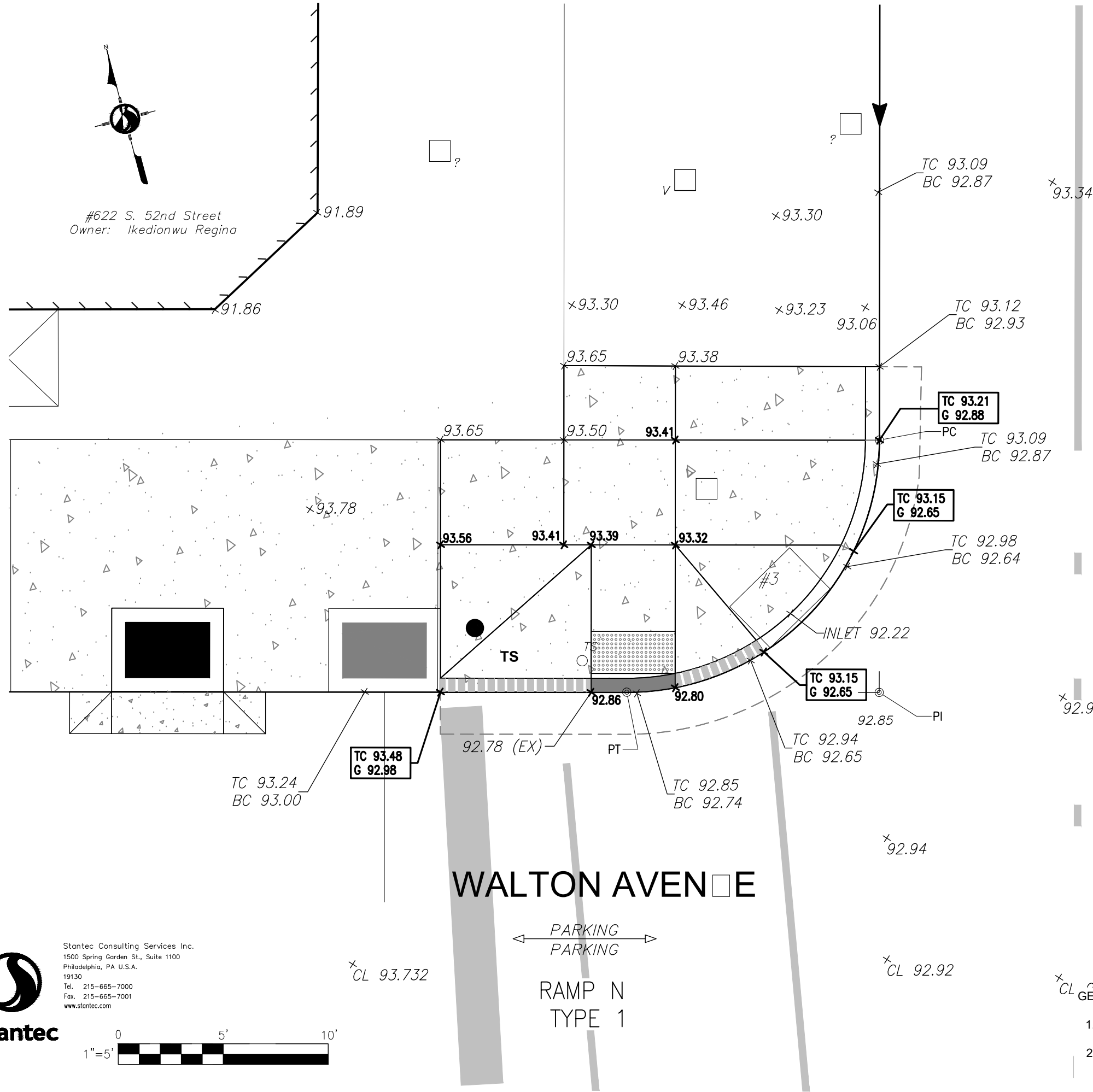
WALTON AVE AND 52ND ST
 DIMENSIONS AND SLOPES
 RAMP N

May 16, 2019
 174811336

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 2019/05/16 4:40 PM By: Yoder, Noah



#622 S. 52nd Street
 Owner: Ikedionwu Regina



52ND STREET

PARKING
 ↓
 ↑
 PARKING

WALTON AVENUE

PARKING
 ←
 →
 PARKING

RAMP N
 TYPE 1



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CL 92.17
 GENERAL NOTES:

1. PENNDOT LOG # P2760 FOR APPLICABLE PLAN SHEETS.
2. REFER TO APPROVED RIGHT-OF-WAY PLANS FOR PROPOSED ROADWAY STRIPING.

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Client/Project
 PHILADELPHIA WATER DEPARTMENT
 WORK ORDER S-50162-G
 STREETS DEPARTMENT #W-431

Figure No.
 21 OF 31

Title
**WALTON AVE AND 52ND ST
 GRADE ELEVATIONS
 RAMP N**

U:\174811336\Civil\Drawings\ADA Ramps\Sheets\G-22 SEC 52nd & Walton - S.dwg
 2019/05/16 4:41 PM By: Yoder, Noah



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52ND STREET

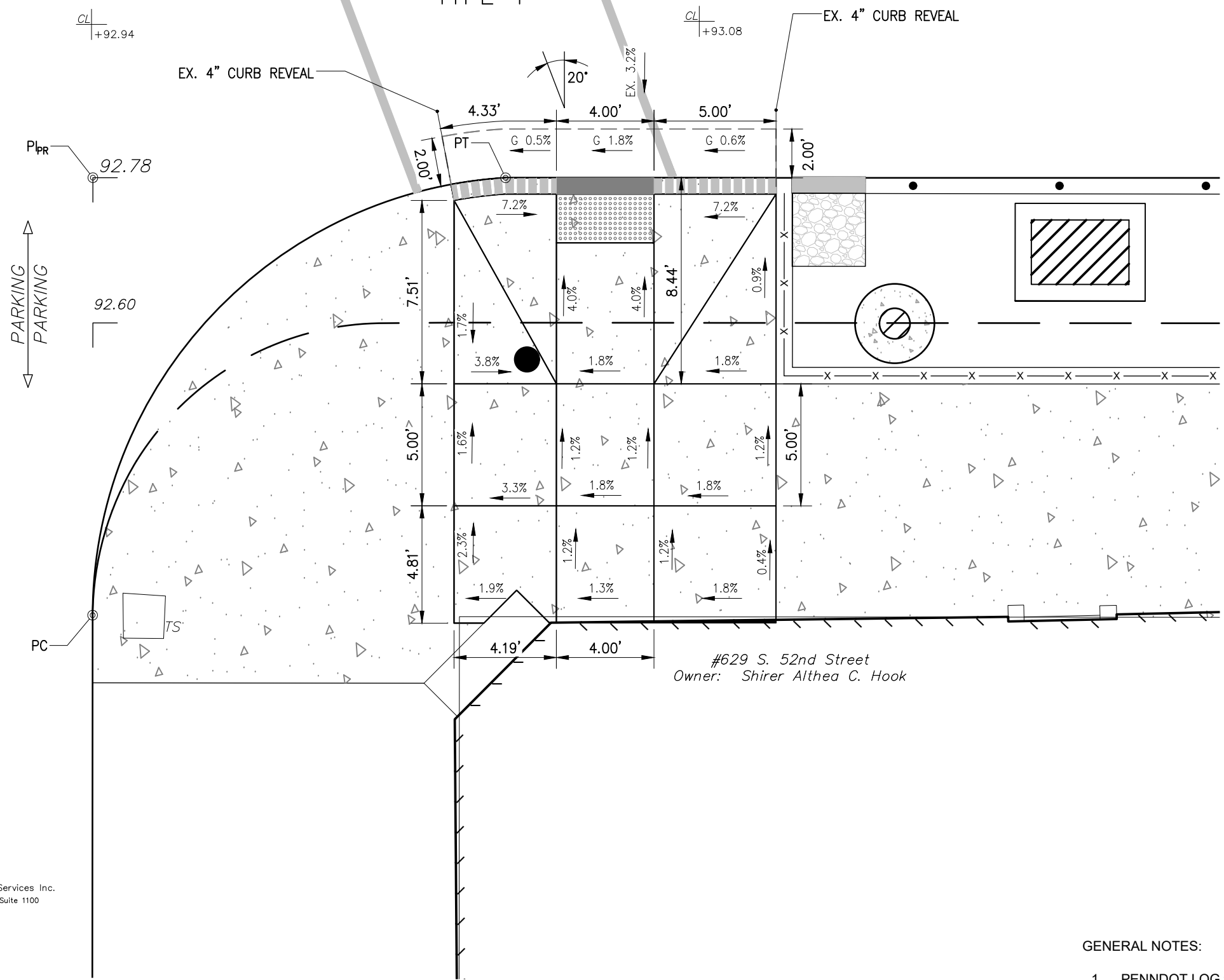
PARKING
 PARKING

PC
 92.60
 92.78
 P_{PR}

WALTON AVENUE

PARKING
 PARKING

RAMP 0
 TYPE 1



#629 S. 52nd Street
 Owner: Shirer Althea C. Hook

GENERAL NOTES:

1. PENNDOT LOG # P2760 FOR APPLICABLE PLAN SHEETS.
2. REFER TO APPROVED RIGHT-OF-WAY PLANS FOR PROPOSED ROADWAY STRIPING.

Client/Project
 PHILADELPHIA WATER DEPARTMENT
 WORK ORDER S-50162-G
 STREETS DEPARTMENT #W-431

Figure No.
22 OF 31

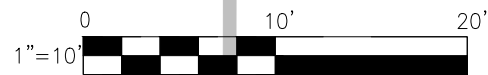
Title
**WALTON AVE AND 52ND
 DIMENSIONS AND SLOPES
 RAMP 0**

May 16, 2019
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2019/05/16 4:41 PM By: Yoder, Noah



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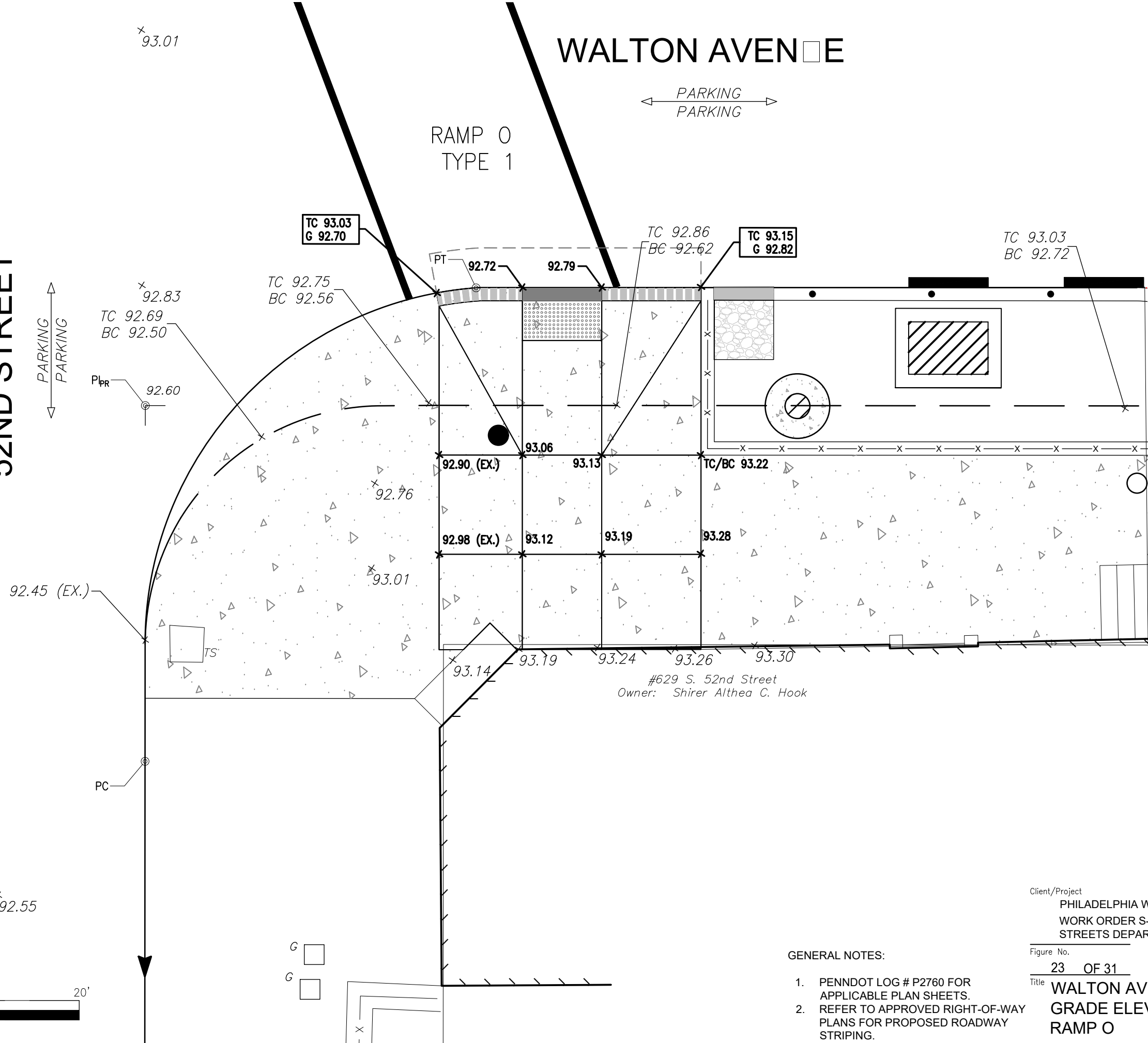
52ND STREET

PARKING
PARKING

WALTON AVENUE

PARKING
PARKING

RAMP 0
TYPE 1



#629 S. 52nd Street
Owner: Shirer Althea C. Hook

G □
G □

GENERAL NOTES:

- 1. PENNDOT LOG # P2760 FOR APPLICABLE PLAN SHEETS.
- 2. REFER TO APPROVED RIGHT-OF-WAY PLANS FOR PROPOSED ROADWAY STRIPING.



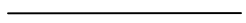

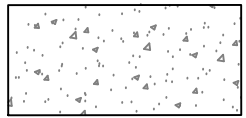



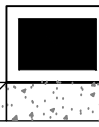
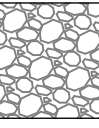



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PHILADELPHIA WATER DEPARTMENT
WORK ORDER S-50162-G
STREETS DEPARTMENT #W-431

Figure No.
23 OF 31






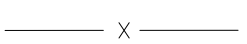




Title
WALTON AVE AND 52ND ST
GRADE ELEVATIONS
RAMP 0

May 16, 2019
174811336

PROPOSED CONDITIONS LEGEND

-  TAPERED CURB
-  DEPRESSED CURB
-  PROPOSED CURB
-  DETECTABLE WARNING SURFACE (2'x4')
-  CONCRETE PAVING
-  PROPOSED HIGHWAY GRATE INLET
-  PROPOSED OPEN MOUTH INLET
-  CITY INLET
-  CITY INLET WITH APRON
-  CURB CUT WITH RIPRAP
-  OBSERVATION WELL
-  CLEANOUT
-  DOMED RISER

EXISTING CONDITIONS LEGEND

-  CITY INLET
-  UTILITY MANHOLE
-  WATER MAIN VALVE
-  FIRE HYDRANT
-  EXISTING CURBLINE TO BE REPLACED
-  EXISTING FENCE
-  LP LIGHT POLE
-  SZ SCHOOL ZONE SIGN
-  G GAS VALVE
-  TS TRAFFIC SIGN

May 16, 2019
174811336

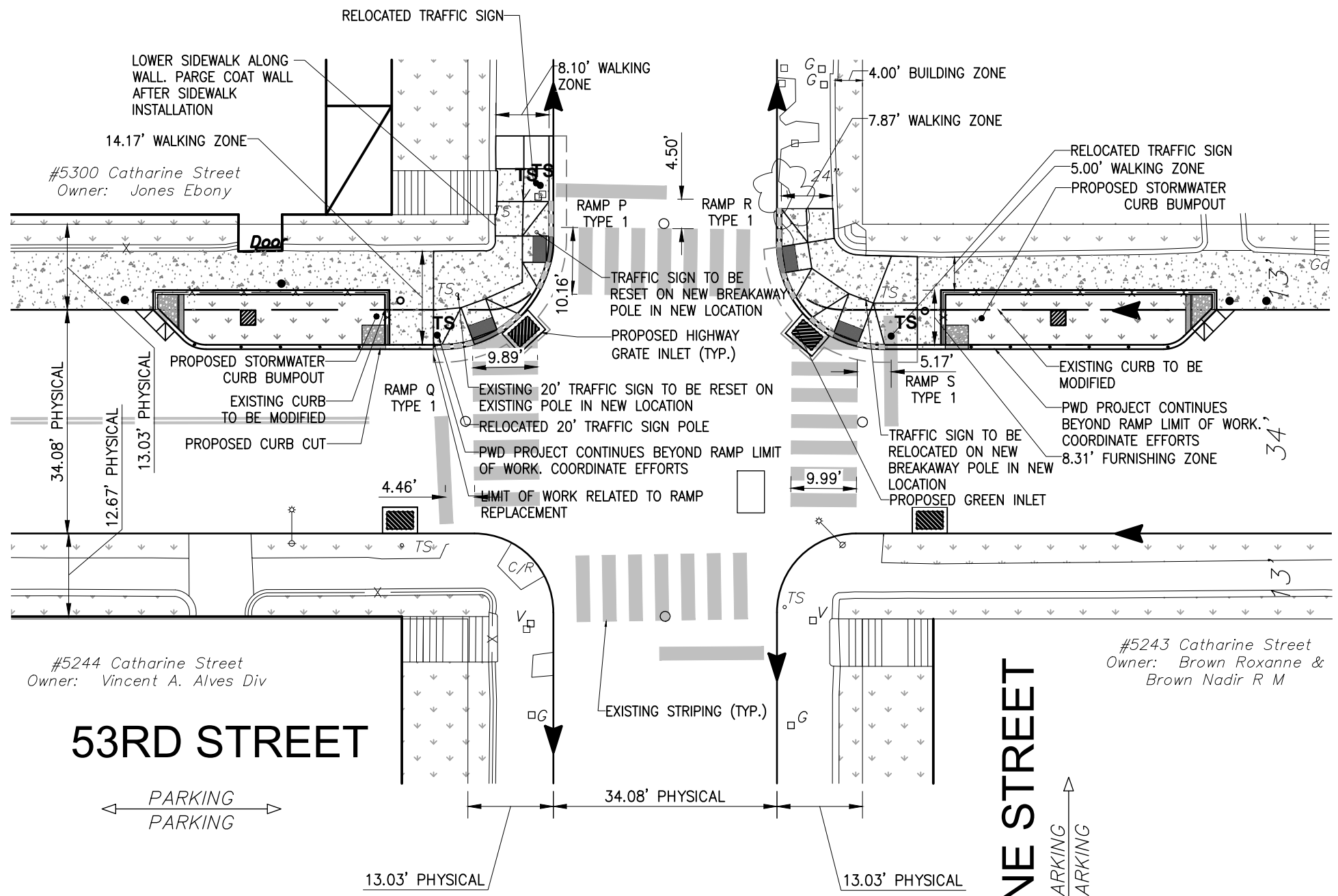
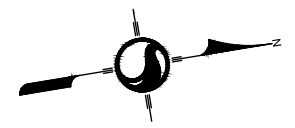
Client/Project
PHILADELPHIA WATER DEPARTMENT
WORK ORDER S-50162-G
STREETS DEPARTMENT #W-431

Figure No.
24 OF 31

Title
**53RD ST AND CATHARINE AVE
INTERSECTION PLAN
RAMPS P, R AND S**

GENERAL NOTES:

- PENNDOT LOG # P2760 FOR APPLICABLE PLAN SHEETS.
- REFER TO APPROVED RIGHT-OF-WAY PLANS FOR PROPOSED ROADWAY STRIPING.



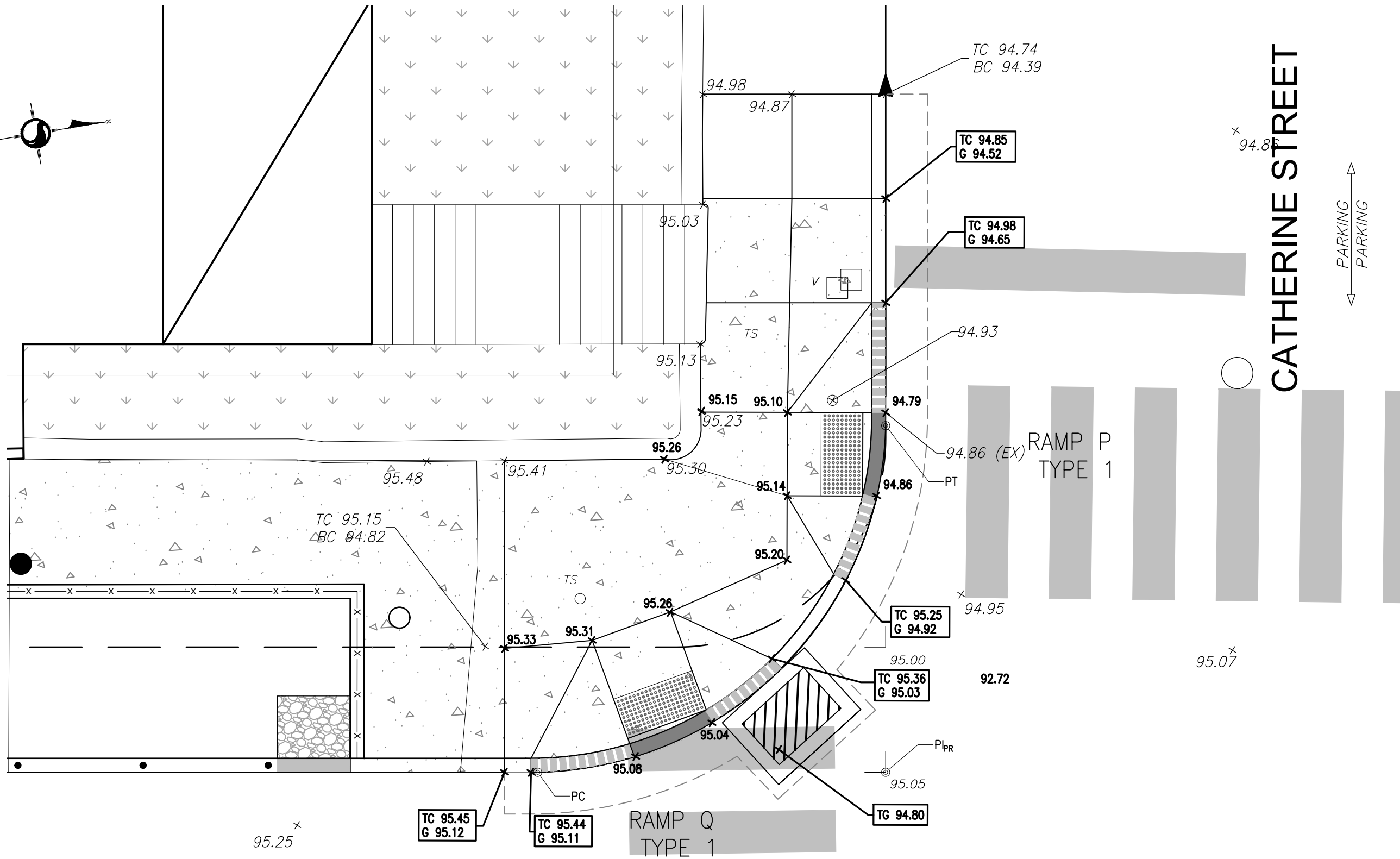
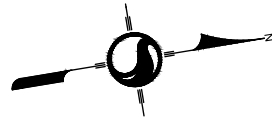
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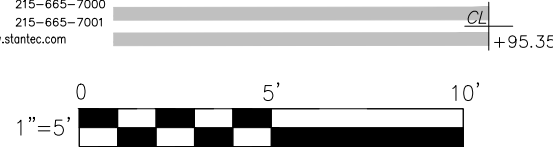
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53RD STREET

CATHERINE STREET

Client/Project
 PHILADELPHIA WATER DEPARTMENT
 WORK ORDER S-50162-G
 STREETS DEPARTMENT #W-431

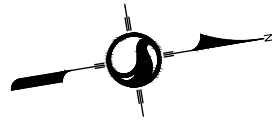
Figure No.
26 OF 31

Title
**53RD ST AND CATHARINE AVE
 GRADE ELEVATIONS
 RAMPS P AND Q**

May 16, 2019
 174811336

GENERAL NOTES:

1. PENNDOT LOG # P2760 FOR APPLICABLE PLAN SHEETS.
2. REFER TO APPROVED RIGHT-OF-WAY PLANS FOR PROPOSED ROADWAY STRIPING.



U:\174811336\Civil\Drawings\ADA Ramps\Sheets\G-27 NWC 53rd & Catharine - S.dwg
2019/05/31 12:48 PM By: Mullen, Ted

CATHARINE STREET

PARKING
PARKING

RAMP R
TYPE 1

2" CURB

#5301 Catharine Street
Owner: Duncan Leroy

4" CURB

4" CURB

P_{PR}

RAMP S
TYPE 1

53RD STREET

PARKING
PARKING

GENERAL NOTES:

1. PENNDOT LOG # P2760 FOR APPLICABLE PLAN SHEETS.
2. REFER TO APPROVED RIGHT-OF-WAY PLANS FOR PROPOSED ROADWAY STRIPING.

Client/Project

PHILADELPHIA WATER DEPARTMENT
WORK ORDER S-50162-G
STREETS DEPARTMENT #W-431

Figure No.

27 OF 31

Title

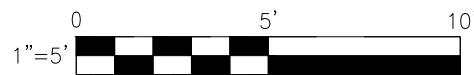
53RD ST AND CATHARINE AVE
DIMENSIONS AND SLOPES
RAMPS R AND S

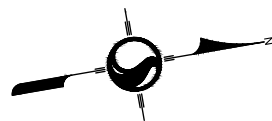
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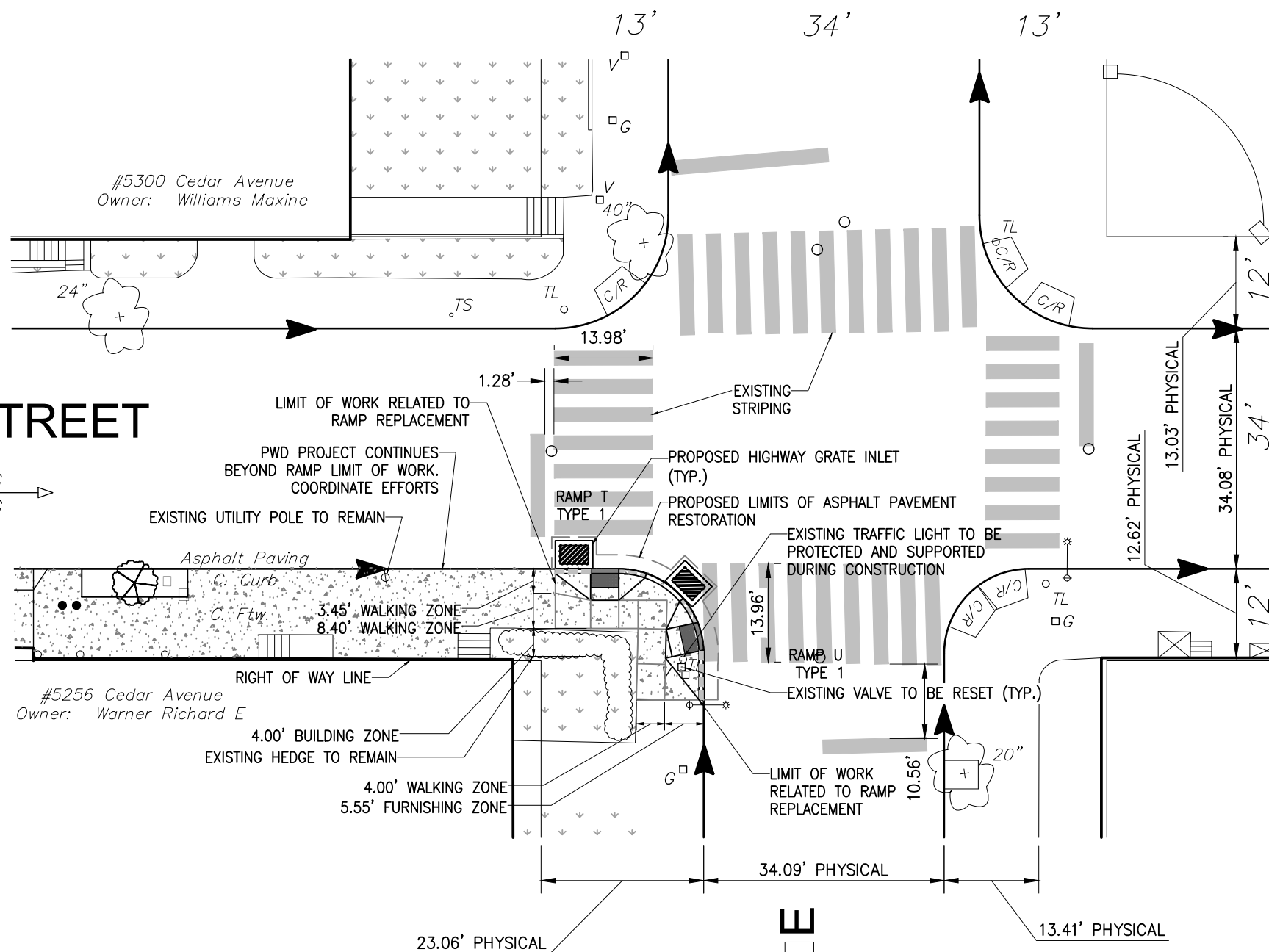




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53RD STREET

PARKING
PARKING





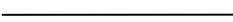

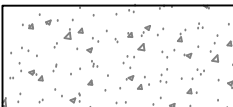
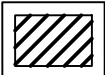



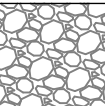



#5256 Cedar Avenue
Owner: Warner Richard E

4.00' BUILDING ZONE
EXISTING HEDGE TO REMAIN
4.00' WALKING ZONE
5.55' FURNISHING ZONE










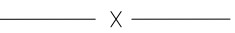
CEDAR AVENUE

PARKING
PARKING

PROPOSED CONDITIONS LEGEND

-  TAPERED CURB
-  DEPRESSED CURB
-  PROPOSED CURB
-  DETECTABLE WARNING SURFACE (2'x4')
-  CONCRETE PAVING
-  PROPOSED HIGHWAY GRATE INLET
-  PROPOSED OPEN MOUTH INLET
-  CITY INLET
-  CITY INLET WITH APRON
-  CURB CUT WITH RIPRAP
-  OBSERVATION WELL
-  CLEANOUT
-  DOMED RISER

EXISTING CONDITIONS LEGEND

-  CITY INLET
-  UTILITY MANHOLE
-  WATER MAIN VALVE
-  FIRE HYDRANT
-  LP LIGHT POLE
-  SZ SCHOOL ZONE SIGN
-  G GAS VALVE
-  TS TRAFFIC SIGN
-  EXISTING CURBLINE TO BE REPLACED
-  EXISTING FENCE

GENERAL NOTES:

1. PENNDOT LOG # P2760 FOR APPLICABLE PLAN SHEETS.
2. REFER TO APPROVED RIGHT-OF-WAY PLANS FOR PROPOSED ROADWAY STRIPING.

Client/Project

PHILADELPHIA WATER DEPARTMENT
WORK ORDER S-50162-G
STREETS DEPARTMENT #W-431

Figure No.

29 OF 31

Title

53rd ST AND CEDAR AVE KEY
INTERSECTION PLAN
RAMPS T AND U

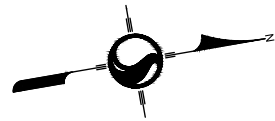
May 16, 2019
174811336



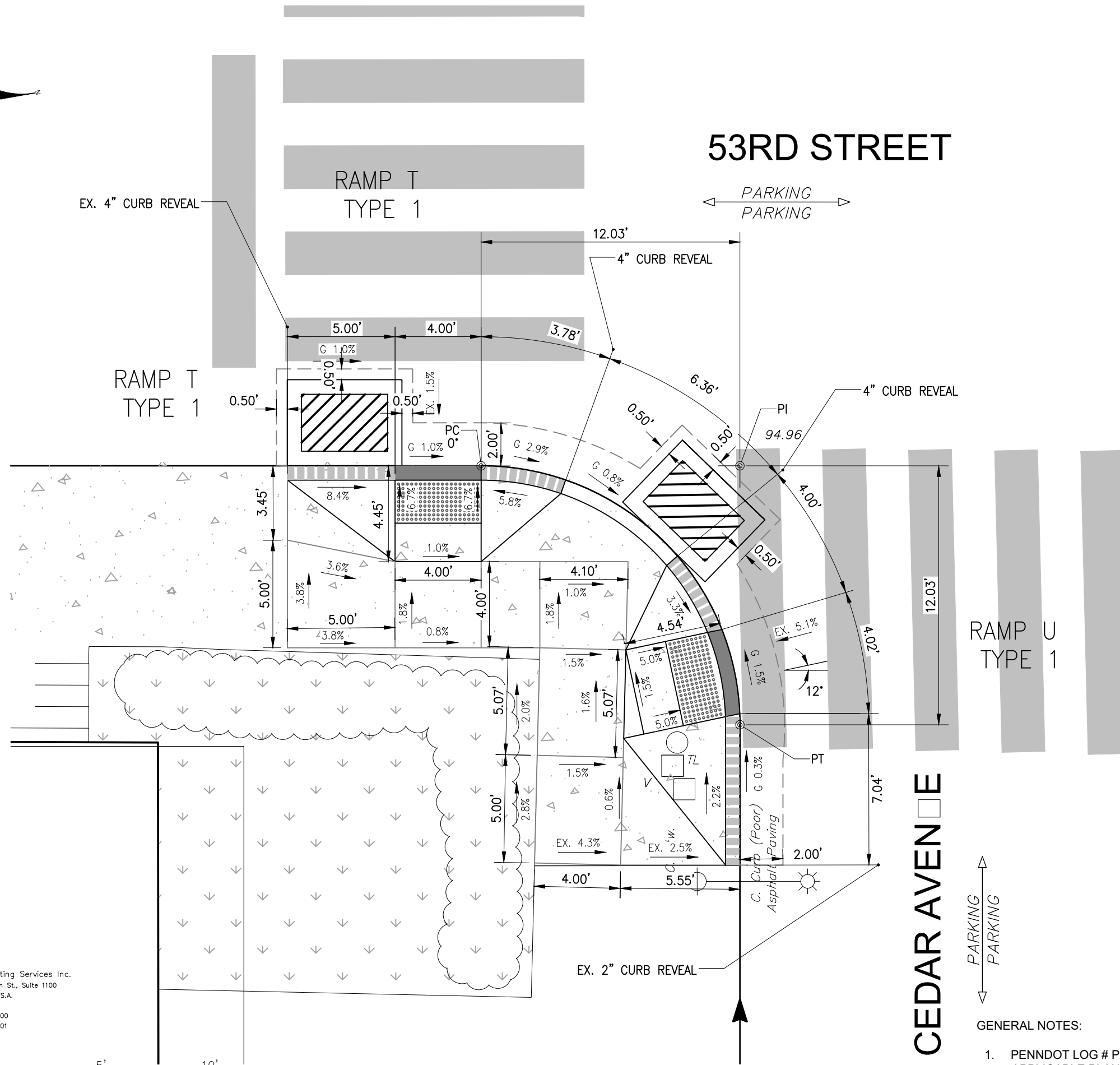
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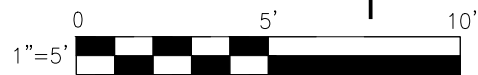
53RD STREET



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 2019/05/16 4:45 PM By: Yoder, Noah



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CEDAR AVENUE

PARKING
 PARKING

GENERAL NOTES:

- PENNDOT LOG # P2760 FOR APPLICABLE PLAN SHEETS.
- REFER TO APPROVED RIGHT-OF-WAY PLANS FOR PROPOSED ROADWAY STRIPING.

Client/Project

PHILADELPHIA WATER DEPARTMENT
 WORK ORDER S-50162-G
 STREETS DEPARTMENT #W-431

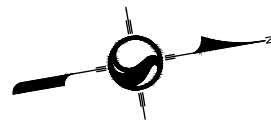
Figure No.

30 OF 31

Title

53RD ST AND CEDAR AVE
 DIMENSION AND GRADES
 RAMPS T AND U

May 16, 2019
 174811336



95.35 x

53RD STREET

PARKING
PARKING

95.48^x

CEDAR AVE

PARKING
PARKING

RAMP T
TYPE 1

TG 94.85

95.220^x

TC 95.18
G 94.85

TC 95.37
BC 95.05

TC 95.42
BC 95.05

95.00^x

94.96

PI
94.96

95.46^x

RAMP U
TYPE 1

95.48

95.30

95.26

95.27

95.23

95.23

TC 95.18
G 94.85

95.05^x

95.54^x

95.56

95.37

95.34

95.34

95.28

95.11

95.55^x

95.56

96.04

95.44

95.36

95.34

PT

TC 95.27
BC 95.13

95.58

95.41

TC 95.33
BC 95.14

G

U:\174811336\Civil\Drawings\ADA Ramps\Sheets\G-31 SEC 53rd & Cedar - G.dwg
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PHILADELPHIA WATER DEPARTMENT
WORK ORDER S-50162-G
STREETS DEPARTMENT #W-431

Figure No.
31 OF 31

Title
**53RD STREET AND
CEDAR AVENUE GRADE
ELEVATIONS**

GENERAL NOTES:

1. PENNDOT LOG # P2760 FOR APPLICABLE PLAN SHEETS.
2. REFER TO APPROVED RIGHT-OF-WAY PLANS FOR PROPOSED ROADWAY STRIPING.