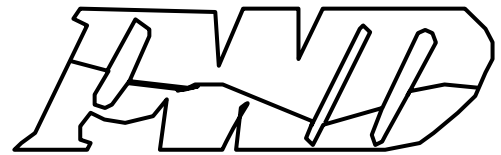


PHILADELPHIA WATER DEPARTMENT
PRIVATE COST CONTRACT
REQUIREMENTS

Philadelphia



Water Department

REVISED 01/13/2010

TABLE OF CONTENTS

	PAGE
1. INTRODUCTION	3
2. STANDARDS	3
3. PRIVATE SERVICE STANDARDS	3
4. DEVELOPMENT REVIEW COMMITTEE	4
5. PLAN SUBMITTAL REQUIREMENTS AND PROCEDURES	4-5
A) GENERAL PLAN SUBMITTAL REQUIREMENTS	
B) SUBMITTAL PROCEDURES	
6. DESIGN PLAN STANDARDS	5-7
A) WATER MAIN DESIGN STANDARDS	
B) SEWER DESIGN PLAN STANDARDS	
7. CONSTRUCTION REQUIREMENTS	7

LIST OF ATTACHMENTS

i. Development Review Committee Chart	9
ii. Private Cost Water Main Notes	10
iii. Private Cost Sewer Notes	11
iv. General Notes	13
v. Water Service and Lateral Detail	14
vi. Resilient Saddle Detail	15
vii. Auger Boring Specifications	16
viii. Corrosion Control for Philadelphia Water Department Water Mains	18
ix. Corrosion Control Consultant List	21
x. Precast Wye-Branch Connection Detail Sample.....	22
xi. Sample plans – Available upon request	

1. INTRODUCTION

A private cost project is a residential, commercial, or industrial development whose funding comes from private or public funds other than the Philadelphia Water Department. These requirements also apply to projects initiated by Federal, State, and Local agencies. However, in these projects existing laws, ordinances, permits, and/or agreements may affect funding.

The Water Department will accept and maintain water and drainage facilities installed by developers or outside agencies if they are designed and constructed in accordance with PWD standards, and inspected and approved by the Water Department and within Public Right-of-Way.

The intent of the Private Cost Project Requirements is to:

- Familiarize the developer and their consultant with the procedures and requirements for the preparation of design plans for the relocation and construction of water and/or drainage facilities that will be dedicated to the City of Philadelphia.
- Streamline and expedite the Private Cost Project design review and approval process.
- Ensure that all new water drainage infrastructure is designed and constructed in conformance with Philadelphia Water Department Standards.
- Insure that the Public and the Philadelphia Water Department receive sewers and water mains of the highest quality with a long and trouble free service life.

2. STANDARDS:

The developer or consulting engineer should be in possession of the following Water Department Standards for the design and construction of public water and drainage facilities:

- Water & Sewer Design Manual 1995
- Standard Details and Specifications for Sewers 1985
- Standard Details and Corrosion Control Specifications for Water Mains 1985

Developers may obtain these standards from:

Brian Mohl, Manager, Capital Projects
Philadelphia Water Department
ARAMARK Tower, 2nd Floor
1101 Market Street
Philadelphia, PA 19107

3. PRIVATE SERVICE STANDARDS

These standards are required for design and construction of private water services and drainage laterals.

- The Philadelphia Plumbing Code (Department of Licenses and Inspection)
- Cross Connection Control Manual (PWD)
- Rules Governing Water Service and Sewer Service 1975 (PWD)
- Meter Pit Installations Standards (PWD)
- Highway Occupancy Permit Regulations (Streets Dept.)

4. DEVELOPMENT REVIEW COMMITTEE

Since the review process requires coordination and the concurrence of several units and branches in the Water Department, the Development Review Committee was established. It is made up of the Capital Projects Unit, Planning Unit, Water and Sewer Design Unit, Office of Watershed, and Water Main and Drainage Records Unit. The committee's responsibility is to insure a unified review and approval. Meetings are coordinated through the Capital Projects office at the request of the developer for the purpose of reviewing specific projects. Several other units and city departments may be contacted as required by the project. (See committee chart attached at the end of these requirements).

5. PLAN SUBMITTAL REQUIREMENTS AND PROCEDURES

A) GENERAL PLAN SUBMITTAL REQUIREMENTS

The developer must initiate the project review process through the Philadelphia Water Department Capital Projects Unit (215-685-6339). Three sets of plans should be sent to: Mr. Brian Mohl, Capital Projects Manager, ARAMARK Tower, 2nd Floor, 1101 Market Street, Philadelphia, PA 19107. At that time, the developer may also request a meeting with the Development Review Committee.

Submissions shall include, but not be limited to the following information:

Plot Plan: On a standard size sewer / water sheet, showing the following:

- Existing and proposed public streets, right-of-ways, property line. If right-of-ways are required, provide City Plan Change Ordinance request letter to Streets Department.
- Existing and proposed buildings with first floor elevations and basement elevations.
- Existing & proposed grading.
- Geologic Data fill areas, boring locations, boring logs, SPT values. (Specifications available upon request)
- All proposed water services and sewer laterals, meter pits, etc.
- All existing and proposed utilities. The location, size, and depth of each utility must be shown. These plans can be obtained from each utility using the Pennsylvania One Call System at 811 or 1-800-242-1776.
- All areas to be maintained by a Homeowners Association or other non-city entity shall be clearly defined on the Plans.

Stormwater Management Report and Plan:

- Submit in accordance with Pennsylvania State Regulations as well as City of Philadelphia Requirements. Projects in the Wissahickon and Pennypack Watersheds must meet the requirements of the Philadelphia Planning Commission. PWD requires pre and post development storm water calculations for 10/25/50/100 year storms)
- Erosion Control Plan and Narrative:

Agreements/ Approvals: Prior to the Philadelphia Water Department Design Branch's final approval of the private cost plans, submit a copy of all approvals, permits, etc. from outside agencies and departments related to the project:

- Philadelphia Streets Department Paving and Restoration Requirements letter
- Stormwater Management Technical Approval letter
- Philadelphia Fire Department Design review and approval letter (Private Cost Water only)

B) SUBMITTAL PROCEDURES

Initial Design Plan Submission: Submit Project scope of work and schedule with (3) sets of plans to:

Mr. Brian Mohl, Manager, Capital Projects
Philadelphia Water Department
ARAMARK Tower, 2nd Floor
1101 Market Street
Philadelphia, PA 19107

The Manager of the Capital Projects Unit shall transmit these documents to the Private Development Review Committee.

Resubmission: all design plan resubmissions must go directly to:

Mr. Michael Lavery
Manager, Design Branch
Philadelphia Water Department
ARAMARK Tower, Second Floor
1101 Market Street
Philadelphia, PA 19107

Note: Return design plans marked up by the Design Unit with all submittals.

Final Design Plan Submission: Final plan approval will require:

- One set of water and sewer design plans
- One set of water and sewer design on mylar, signed and stamped by a registered Professional Engineer in the State of Pennsylvania.
- Water and sewer design AutoCAD format on disc.

Final Approval:

- Final approval will be given when the design review committee's comments and requirements have been satisfied as determined by Design Branch and the Planning Unit.
- The final mylar plans will be transmitted to the PWD Capital Projects Unit with an acceptance memo.
- The Manager of the Capital Projects office will process the plans for signature by the Water Commissioner and prepare a "Developers Agreement".
- The Manager of the Capital Projects office will deliver a copy of the final signed mylar plans with the Developers Agreement to the developer.

The developer, upon receipt of the final approval letter, signed plans, and agreement, may contact the Water Department Construction Division to initiate the construction inspection. Prior to accepting sewers, the Water Department perform a video inspection of the completed sewer.

6. DESIGN PLAN STANDARDS

A) WATER MAIN DESIGN STANDARDS

Consult the Water & Sewer Design Manual 1995, for detailed design and drafting standards. Submissions shall include, but not be limited to, the following information:

Corrosion Control: All new water main design submittals must include corrosion control engineering, performed by an approved corrosion control engineering firm. The developer is responsible to provide the following three items:

- 1) **Field Testing, and Design:** Must include - soil resistivity testing and, stray current measurements, evaluation of field data, statistical probability analysis, report based on field data with design recommendations, and preparation of corrosion control design plans if necessary.
- 2) **Construction:** Must include – All labor, equipment, and materials to perform the work required in accordance with PWD Standard Specifications-W23.
- 3) **Post Construction Testing:** The Developer must provide cathodic protection system testing in accordance with NACE standards and with PWD Standard Specifications-W23.11. A final report of the inspection and testing must be prepared and submitted to the Water Department upon completion of all water main work

Note: All water main designs will require soil resistivity testing. However, stray current may not be a factor in the study depending on the location of the new water mains in relation to areas of stray current. These criteria will be determined by the corrosion control study. In some cases the study will determine that no special corrosion control design will be required.

Water Main Design Plans

Proposed Water Main design and layout – The water main, material, layout, connections, and corrosion control design drawings shall be in accordance with the City of Philadelphia, Water Department's latest “Water and Sewer Design Manual 1995”, and “Water Main Standard Details & Corrosion Control Specifications 1985”.

Plot Plan Information - all information required under “Plot Plan” in the General Submittal Requirements section

Sheet Size - Standard Sheet size 36" X 24" (no other size acceptable)

Plan Scale - 1" = 20'

Cross Section - ¼" = 1'-0" (one per sheet minimum, at most critical location)

Profile – Not required unless directed by PWD

Title block - first water sheet shall have space for three signatures:

1. Engineer for the consultant
2. "General Manager, Planning and Engineering"
3. "Water Commissioner"

Note: Remaining sheets shall only contain the first signature line.

General Notes – The first plan sheet shall contain the standard notes (attached to back of these requirements)

Work No. – Issued by PWD

Approval Disclaimer Note – Supplied by PWD

B) SEWER DESIGN PLAN STANDARDS

Proposed Sewer Design and Layout – The Sewer, material, layout, connections, shall be designed in accordance with the City of Philadelphia, Water Department's latest “Water and Sewer Design Manual 1995”, and “1985 Standard Sewer Details and Standard Specifications for Sewers”. The Planning Unit must approve the sewer size and grade.

Plot Plan Information - all information required under “Plot Plan” in the General Plan Submittal Requirements section

Benchmark information - Indicate the nearest Highway District benchmark location and city datum elevation.

Sheet Size - Standard Sheet size 42" X 30" (note: sewer plans are larger than water plans)

Plan Scale - 1" = 20'

Cross Section - ¼" = 1'-0" (one per sheet minimum, located at most critical location)

Profile – 1" = 20" horizontal, 1" = 5" vertical

Title block - First sewer sheet shall have space for three signatures:

1. Engineer for the consultant
2. "General Manager, Planning and Engineering"
3. "Water Commissioner"

Note: Remaining sheets shall only contain the first signature line.

General Notes – the first plan sheet shall contain the standard sewer notes (attached to the back of these requirements)

Work No. – Issued by PWD

Approval Disclaimer Note – Supplied by PWD

Proposed Sewer Design – Show manhole inverts, pipe size, material, and grade, and all proposed connections greater than 8 inches.

Stormwater Management - Show all stormwater management:

Common Drains - Rear yard common stormwater drains will not be approved without a homeowners association maintenance agreement and easement.

Swales - Must have the approval of The Planning Commission, the Dept. of Licenses and Inspection and the Water Department

Seepage Pits - Must have the approval of The Planning Commission, the Dept. of Licenses and Inspection and the Water Department

Underground Storage Piping - Must have the approval of The Planning Commission, the Dept. of Licenses and Inspection and the Water Department

Retention/ Detention Basins - Must have the approval of The Philadelphia Planning Commission, the Department of Licenses and Inspection, and the Water Department. A separate lot maintained by a homeowners association must be shown. The Water department will maintain the endwall and piping within a designated right-of-way unless it is from a common rear yard stormwater drain.

Note: All areas to be maintained by a Homeowners Association or other non-city entity shall be clearly defined on the plans. Only sewers in drainage right-of-ways or public streets shall be assumed to be the responsibility of the City of Philadelphia. All piping and/or drainage structures that are to be maintained by the Homeowners Association must be clearly marked as 'PRIVATE'.

Drainage Connections – All connections 12” and less to RC pipe shall be made by core drilling and with a resilient saddle (see detail attached). All other connections shall be made as specified and detailed in the PWD standards. Non standard connections shall be shown in a scaled detail.

Soil Borings - A complete soil investigation shall be performed with borings taken every 150’ and in line with the sewer. See *attachment vii* for boring specifications. Show boring locations in the design plan view. Show profiles and log data on this sheet or a separate boring plan.

7. CONSTRUCTION REQUIREMENTS

A. General

- All construction work is to be performed in accordance with Water Department standards.
- The contractor performing the construction work must be pre-qualified by the Philadelphia Water Department. Contact the Projects Management Unit for a list of approved contractor or for a pre-qualification questionnaire at 215-685-6339.
- The approved work shall be performed in the presence of a Water Department inspector.
- The contractor performing the work must notify the Water Department Construction Division, at 215-685-6345 at least 7 days in advance of starting work, so that an inspector can be assigned to the work.

- The contractor must provide office space for use by the PWD inspector during construction of public water and drainage facilities.
- All materials and list of suppliers must be submitted to the Water Department Construction Division for approval.

B. Construction Inspection Costs.

If the developer elects to work during premium time, such as weekends, holidays, or extended workdays resulting in over 40 hours in one week, the Water Department Construction Division reserves the right to charge developers for this inspection time. The contractor should notify the Construction Division at 215-685-6345 to arrange their work schedule.

LIST OF ATTACHMENTS

- Development Review Committee Chart
- Water Main Notes
- Sewer Notes
- General Notes
- Water service and drainage lateral detail
- Resilient saddle detail
- Auger Boring Specifications
- Private Cost Corrosion Control Design and Inspection Report Specifications
- Corrosion Control Consultant List
- Precast Wye-Branch Connection Detail Sample

DEVELOPMENT REVIEW COMMITTEE



WATER MAIN NOTES

1. ALL WORK TO BE DONE IN ACCORDANCE WITH THE CITY OF PHILADELPHIA WATER DEPARTMENT "WATER MAIN STANDARD DETAILS & CORROSION CONTROL SPECIFICATIONS", 1985 EDITION.
2. THE CONTRACTOR PERFORMING THE WATER & SEWER INSTALLATION MUST BE PREQUALIFIED BY PWD. CONTACT MR. BRIAN MOHL OF THE PROJECTS MANAGEMENT UNIT AT (215) 685-6339.
3. THE APPROVED WORK SHALL BE DONE IN THE PRESENCE OF A PWD INSPECTOR.
4. THE CONTRACTOR PERFORMING THIS WORK IS TO NOTIFY THE PWD CONSTRUCTION DIVISION, 1101 MARKET STREET, 2ND FLOOR, PHONE (215) 685-6341, AT LEAST 7 DAYS IN ADVANCE FOR ASSIGNMENT OF AN INSPECTOR TO THE JOB. WATER SHUT-OFF TO BE REQUESTED BY THE INSPECTOR ONLY.
5. THE CONTRACTOR MUST PROVIDE OFFICE SPACE FOR USE BY THE PWD INSPECTOR DURING CONSTRUCTION OF THE WATER MAIN.
6. A LIST OF ALL MATERIALS AND SUPPLIERS MUST BE SUBMITTED TO THE WATER DEPARTMENT CONSTRUCTION BRANCH FOR APPROVAL.
7. APPROVAL OF THESE PLANS BY THE WATER DEPARTMENT IS STRICTLY LIMITED TO THE DESIGN OF DUCTILE IRON WATER MAINS 8 INCHES IN DIAMETER AND ABOVE SHOWN WITHIN THE LIMITS OF THE CITY OF PHILADELPHIA PUBLIC RIGHT OF WAY.
8. CONTACT MR. RICHARD WILLIAMS, PWD-WATER MAIN RECORDS, 1101 MARKET STREET, 2ND FLOOR, PHONE (215) 685-6270, FOR ADDITIONAL APPROVALS AND PERMITS REQUIRED FOR ALL WATER SERVICES, METERS AND CONNECTIONS TO THE EXISTING AND/OR PROPOSED PWD FACILITIES.
9. THE CONTRACTOR OR ENGINEER IS RESPONSIBLE FOR OBTAINING ALL ADDITIONAL PERMITS AND APPROVALS FROM ALL AFFECTED CITY AGENCIES AND UTILITIES.
10. CORROSION CONTROL STUDY IS NECESSARY FOR ALL DUCTILE IRON PIPES. WHEREVER EXISTING CORROSION CONTROL OF WATER MAINS IS DISTURBED, IT MUST BE RESTORED AND INSPECTED TO THE SATISFACTION OF THE PHILADELPHIA WATER DEPARTMENT. INSPECTION OF NEW CORROSION CONTROL SYSTEMS WILL BE PAID BY THE DEVELOPER.
11. PRIOR TO OBTAINING A BUILDING PERMIT, THE CONTRACTOR IS REQUIRED TO OBTAIN PWD STORMWATER MANAGEMENT APPROVAL, AND SEWAGE FACILITIES PLANNING (ACT 537) APPROVAL.
12. ANY CHANGE TO, OR DEVIATION FROM, THE FINAL APPROVED DESIGN PLANS DURING CONSTRUCTION MUST BE APPROVED BY THE ASSIGNED PWD-CONSTRUCTION DIVISION ENGINEER AND BY THE PWD-DESIGN BRANCH PROJECT ENGINEER.
13. PLACE AND COMPACT BACKFILL IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS FOR EXCAVATION, REFILLING, GRADING, LANDSCAPING AND REPAVING, EXCEPT AS HEREIN MODIFIED.

In addition, the following notes may be required if existing water mains are being relocated and/or abandoned:

14. THE ABANDONED WATER MAIN VALVE FRAMES AND FIRE HYDRANTS SHALL BE REMOVED AND DELIVERED INTACT TO PHILADELPHIA WATER DEPARTMENT AT 29TH & CAMBRIA STREETS.
15. FIRE HYDRANTS SHALL NOT BE CONSTRUCTED OR RELOCATED UNTIL SUCH EQUIPMENT AND LOCATIONS HAVE BEEN APPROVED BY THE WATER DEPARTMENT CONSTRUCTION DIVISION IN

THE FIELD. THE CONSTRUCTION OR RELOCATION OF SUCH FACILITIES WITHOUT THE ABOVE APPROVAL WILL BE DONE AT THE RISK OF THE CONTRACTOR.

16. ALL ACTIVE SERVICES ARE TO BE RECONNECTED TO THE NEW MAIN IN ACCORDANCE WITH THE PHILADELPHIA PLUMBING CODE.
17. "D" PERMITS ARE REQUIRED FOR ALL EXISTING CONNECTIONS THAT ARE TO BE ABANDONED.

SEWER NOTES

1. ALL WORK TO BE DONE IN ACCORDANCE WITH THE CITY OF PHILADELPHIA WATER DEPARTMENT "STANDARD DETAILS & STANDARD SPECIFICATIONS FOR SEWERS", 1985 EDITION.
2. THE CONTRACTOR PERFORMING THE WATER & SEWER INSTALLATION MUST BE PREQUALIFIED BY THE PHILADELPHIA WATER DEPARTMENT (PWD). CONTACT MR. BRIAN MOHL OF THE PROJECTS MANAGEMENT UNIT AT (215) 685-6339.
3. THE APPROVED WORK SHALL BE DONE IN THE PRESENCE OF A PWD INSPECTOR.
4. THE CONTRACTOR PERFORMING THIS WORK IS TO NOTIFY THE PWD CONSTRUCTION DIVISION, 1101 MARKET STREET, 2nd FLOOR, PHONE (215) 685-6341, AT LEAST 7 DAYS IN ADVANCE FOR ASSIGNMENT OF AN INSPECTOR TO THE JOB.
5. THE CONTRACTOR MUST PROVIDE OFFICE SPACE FOR USE BY THE PWD INSPECTOR DURING CONSTRUCTION.
6. APPROVAL OF THESE PLANS BY THE WATER DEPARTMENT IS STRICTLY LIMITED TO THE DESIGN OF SEWERS 15-INCHES IN DIAMETER AND LARGER SHOWN WITHIN THE LIMITS OF THE CITY OF PHILADELPHIA PUBLIC RIGHT OF WAY. ADDITIONAL APPROVALS AND PERMITS ARE REQUIRED FOR ALL DRAINAGE CONNECTIONS TO THE EXISTING PWD FACILITIES.
7. THE ELEVATION OF THE EXISTING SEWER AT THE CONNECTION POINT MUST BE FIELD-CHECKED PRIOR TO CONSTRUCTING THE NEW SEWER.
8. FIELD-FABRICATED WYE BRANCHES AND BENDS ARE NOT PERMITTED.
9. A LIST OF ALL MATERIALS AND SUPPLIERS MUST BE SUBMITTED TO THE PWD CONSTRUCTION BRANCH FOR APPROVAL.
10. THE CONTRACTOR OR ENGINEER IS RESPONSIBLE FOR OBTAINING ALL ADDITIONAL PERMITS AND APPROVALS FROM ALL AFFECTED CITY AGENCIES AND UTILITIES.
11. ALL DRAINAGE LATERAL CONNECTION TO EXISTING OR PROPOSED RCP IS TO BE MADE WITH RESILIENT SADDLE CONNECTION.
12. PRIOR TO OBTAINING A BUILDING PERMIT, THE CONTRACTOR IS REQUIRED TO OBTAIN PWD STORMWATER MANAGEMENT APPROVAL, AND SEWAGE FACILITIES PLANNING (ACT 537) APPROVAL.
13. ANY CHANGE TO, OR DEVIATION FROM, THE FINAL APPROVED DESIGN PLANS DURING CONSTRUCTION MUST BE APPROVED BY THE ASSIGNED PWD-CONSTRUCTION DIVISION ENGINEER AND BY THE PWD-DESIGN BRANCH PROJECT ENGINEER.
14. PWD RESERVES THE RIGHT TO REQUEST ADDITIONAL BORINGS DURING CONSTRUCTION SHOULD THE SOIL EXCAVATED IN THAT AREA APPEAR TO BE UNSUITABLE.

15. ALL SEWER WORK MUST BE PERFORMED IN TRENCHES. OPEN CUT OR BENCHING WILL NOT BE PERMITTED. OAK TIMBER SHORING MUST BE USED TO SUPPORT ADJACENT STRUCTURES AND UNDERGROUND UTILITIES, AND IN ACCORDANCE WITH OSHA STANDARDS CFR29, PART 1926-650 SUBPART – P EXCAVATIONS. ANY TRENCH WHERE THE CUT IS DEEPER THAN 10 FEET WILL REQUIRE A DETAILED SHORING PLAN PREPARED BY A REGISTERED PROFESSIONAL ENGINEER TO BE SUBMITTED TO PWD FOR APPROVAL BEFORE WORK CAN BEGIN.
16. PLACE AND COMPACT BACKFILL IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS FOR EXCAVATION, REFILLING, GRADING, LANDSCAPING AND REPAVING, EXCEPT AS HEREIN MODIFIED.

In addition, the following notes may be required if existing sewers are being relocated and/or abandoned:

17. THE ABANDONED SEWER MANHOLE FRAMES AND COVERS, INLET GRATES, AND TRAPS SHALL BE REMOVED AND DELIVERED INTACT TO THE PWD SEWER MAINTENANCE YARD AT FOX STREET AND ABBOTTSFORD AVENUE.
18. ALL ACTIVE DRAINAGE LATERALS TO BE RECONNECTED TO THE NEW SEWER.
19. THE ABANDONED INLET LATERAL SHALL BE SEALED AT THE INLET AND AT THE SEWER WITH A DOUBLE RING OF BRICK MASONRY, AND THE INLET VOID BACKFILLED WITH SELECTED EARTH MATERIAL, TAMPED TO GRADE AND PAVED.
20. THE THICKNESS OF THE EXISTING SEWER PIPE AND THE CHARACTERISTICS AND EXTENT OF THE PIPE CRADLES ARE UNKNOWN.
21. ALL PIPES LARGER THAN 16-INCHES IN DIAMETER TO BE ABANDONED MUST BE FILLED WITH CONTROLLED DENSITY FILL (FLOWABLE FILL – CLASS F FLY ASH SLURRY BACKFILL) WITH A COMPRESSIVE STRENGTH OF 75 PSI MAXIMUM, IN ACCORDANCE WITH THE PENNDOT SPECIFICATION PUBLICATION 408, 2001 OR LATEST REVISION FOR FLOWABLE BACKFILL, NON-STRUCTURAL.
22. SEAL ENDS OF SEWERS TO BE ABANDONED WITH VITRIFIED PIPE STOPPERS AND OPEN ENDS OF STORM WATER CONDUITS WITH A 9" THICK BRICK BULKHEAD.

If applicable, the following notes may be used:

23. IN AREAS WHERE PROPOSED SEWER IS SHALLOW, INLET TRAP INVERT MAY REQUIRE ADJUSTMENT. CONTRACTOR TO PERFORM CALCULATIONS PRIOR TO MANUFACTURING PRECAST CATCH BASINS. SUBMIT SHOP DRAWINGS TO PWD.
24. SUBMIT SHOP DRAWINGS OF THE DOGHOUSE MANHOLE PRECAST SECTIONS TO PWD.

GENERAL NOTES

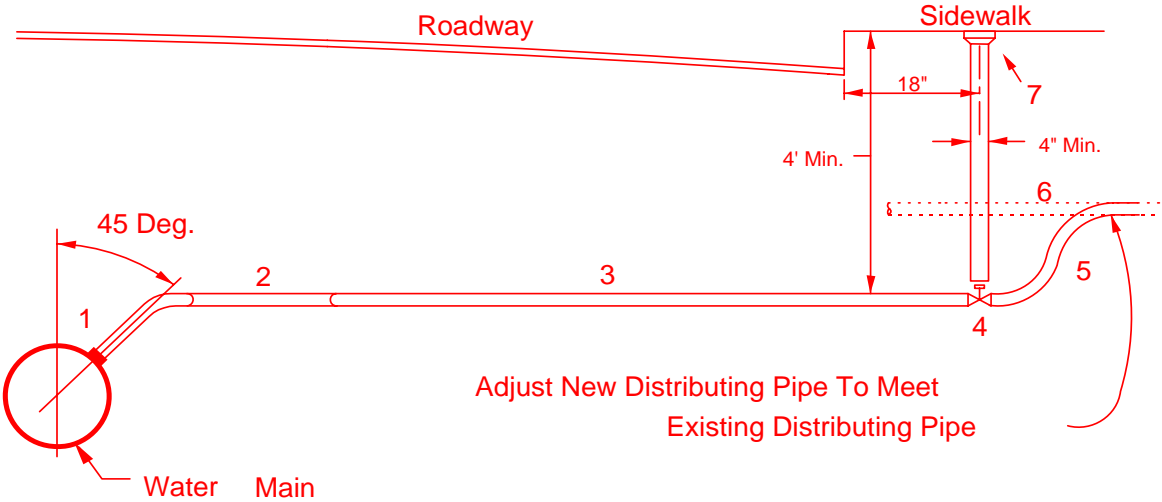
1. CONTACT THE STREETS DEPARTMENT, AT LEAST TWO WEEKS PRIOR TO CONSTRUCTION, FOR THE FOLLOWING:

HIGHWAY OCCUPANCY PERMIT	JOSEPH KISIEL RIGHT-OF-WAY UNIT 1401 JFK BLVD, MSB-940, PHILADELPHIA, PA 19102-1685 (215) 686-5097 FAX (215) 686-5062
PAVING & TRENCH RESTORATION PROCEDURE	NANCY SEN PROJ. & PROGRAMMING DIRECTOR (215) 686-5507
LANE CLOSURE PERMIT	DWAYNE BOWENS STREETS TECHNICAL SERVICES OFFICER TRAFFIC ENGINEERING 1401 JFK BLVD, MSB-980 PHILADELPHIA, PA 19102-1685 (215) 686-5525 FAX (215) 686-5067

(THE PHILADELPHIA WATER DEPARTMENT WILL NOT APPROVE ANY PRIVATE COST PLANS UNTIL PAVING RESTORATION HAS BEEN APPROVED. SUBMIT TO PWD A COPY OF THE PAVING RESTORATION REQUIREMENTS AND APPROVAL LETTER. IN ADDITION, SUBMIT A COPY OF THE HIGHWAY OCCUPANCY PERMIT).

2. 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 DEPT. 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 OF ANY STEEL PLATE REMAINING IN THE PUBLIC RIGHT OF WAY FOR MORE THAN 72 HOURS MUST BE REPORTED TO THE STREETS DEPARTMENT DURING BUSINESS HOURS AT (215) 686-5501.

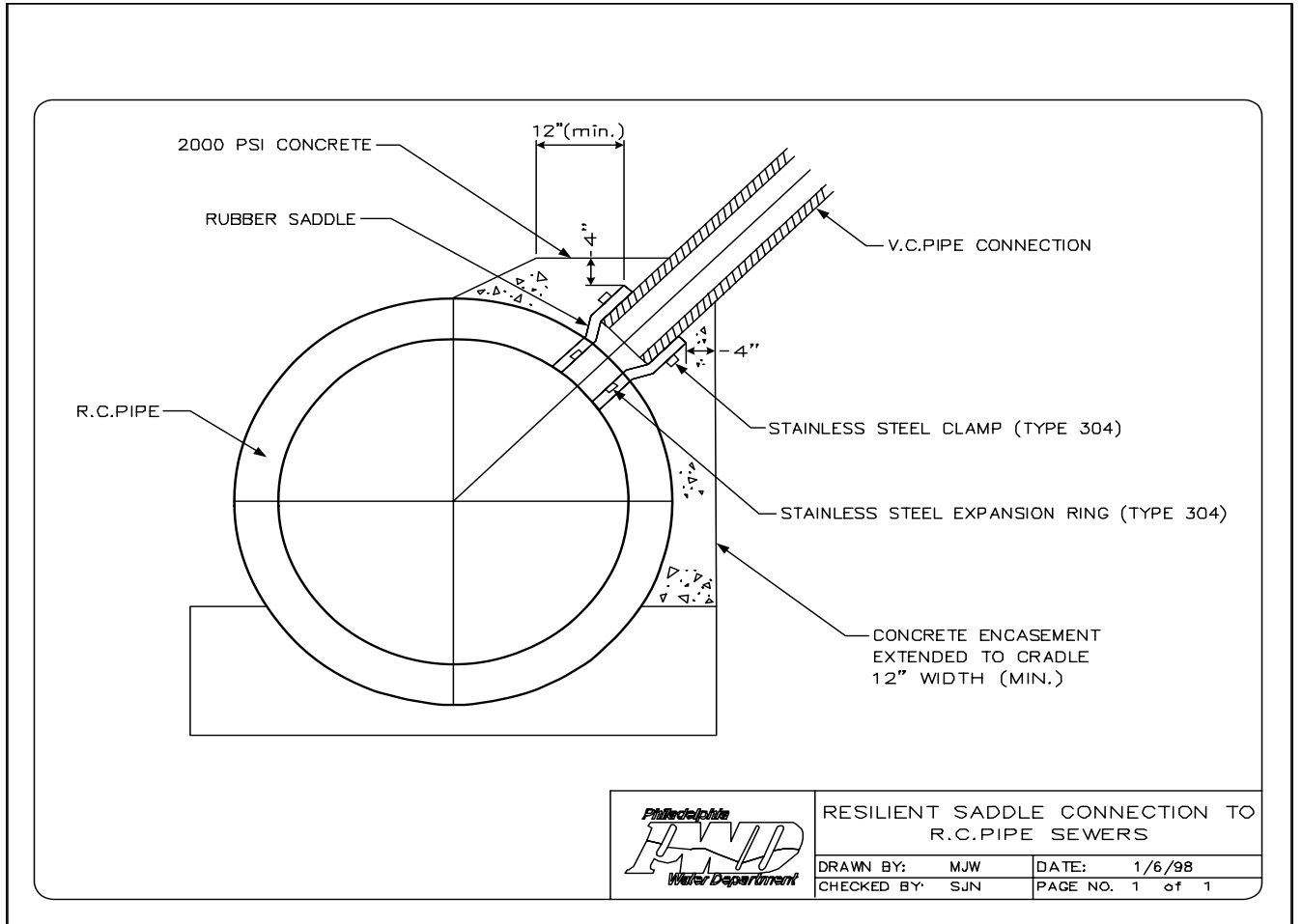
WATER SERVICE INSTALLATION (TYPICAL)



WATER SUPPLY

- | | |
|--|---|
| <p>1. Std. Corporation
Stop Ferrule, Size
Same As Meter 3/4" Min.</p> <p>2. Expansion Loop</p> | <p>3. Water Service Pipe</p> <p>4. Curb Stop</p> <p>5. New Distributing Pipe</p> <p>6. Existing Distributing Pipe</p> <p>7. Curb Stop Box</p> |
|--|---|

	WATER SERVICE INSTALLATION SKETCH		
	DRAWN BY: JP	DATE: 3/16/94	
	CHECKED BY: SF	PAGE NO. 1 of 1	



NOTE: 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 2,000 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.

AUGER BORING SPECIFICATIONS

1.01 AUGER BORING

- A. Perform test borings using the Hollow Stem Auger method and as follows:
 - 1. Use a machine-driven, continuous flight, helical, hollow-stem auger, with an inside diameter not less than 3 ¼ inches. Use truck-mounted equipment unless otherwise directed by the Engineer.
 - 2. At all times maintain within the stem a water level above the ground water level.
 - 3. Drive casing pipe when required.
- B. Take split spoon samples in accordance with ASTM D 1586 and the following:
 - 1. Use a two-inch split spoon sampler with inside diameter not less than 1 3/8 inches.
 - 2. Drive sampler into undisturbed material below bottom of auger to secure sample.
 - 3. Drive sampler with 140-pound hammer dropping 30 inches.
 - 4. Take samples at five foot intervals, beginning three feet below ground surface, and at any noticeable change in the soil structure.
- C. When the boring reaches a depth within five feet of the final depth requested, advance as follows:
 - 1. Take a split spoon sample. If the standard penetration resistance is 20 or greater, go to Step 2. Otherwise advance the auger five feet and repeat Step 1.
 - 2. Take two more consecutive split spoon samples, advancing the auger only by the depth of each previous sample. If the standard penetration resistance of both of these samples is 20 greater, the test boring is complete. Otherwise, advance the auger five feet and repeat Step 1.
- D. Advance the boring by auger whenever possible. If at any time the boring cannot be advanced by auger, begin core borings with diamond bits as specified.
- E. Record the elevation at which groundwater is first encountered. Measure and record groundwater elevation at completion of boring. Measure and record groundwater elevation 30 minutes after completion of boring in permeable material, or 24 hours after completion of boring in non-permeable material, as directed by Inspector.

1.02 SHELBY TUBE SAMPLES

- A. Take soil samples, when so directed by the Engineer, in accordance with ASTM D 1587 and the following.
- B. Use a thin-walled Shelby Tube sampler with a two-inch outside diameter.

1.03 CORE BORINGS IN ROCK

- A. When borings cannot be further advanced by hollow-stem auger, proceed with diamond core drilling to take core samples in accordance with ASTM D 2113 and the following.
 - 1. Drilling Machine shall have gear shift transmission allowing variable rate of rotation of drill rod between 110 RPM and 1200 RPM, and shall be capable of drilling at any angle from vertical.
 - 2. Core Barrel shall be Double Tube, Swivel-Type with ball bearings, producing a core 60 inches long and at least 2 1/8 inches in diameter.
 - 3. Core Bits shall have waterways, and shall be set with diamonds. Core Bits set with tungsten carbide or boron carbide shall not be used.

4. The initial core taken after auger refused (excluding street paving) shall be advanced a full five feet. While core recovery is at least 50 percent, and the core sample shows no evidence of having broken through rock into soil, and the planned depth has not been reached, continue core boring.
5. Whenever core recovery drops below 50 percent, or the core sample shows evidence of having broken through rock into soil, take a split-spoon sample. Mark any such sample to indicate that a portion of rock core is available for correlation to the sample.

1.04 PIPE CASING LEFT IN PLACE

- A. When so directed by the Engineer, pull the casing pipe up from the bottom of the hole to the depth directed, remove top sections down to the ground surface, and cap with standard screw-pipe cap.

1.05 PRESSURE TESTING IN ROCK BORE HOLES

- A. When so directed by the Engineer, conduct hydrostatic pressure tests as follows.
 1. The initial test on a bore hole shall cover the entire depth of the bore hole from the rock line to the bottom of the hole. If the initial test pressure is lost, then a series of tests shall be made covering the entire depth of the bore hole, using packing rubbers to isolate successive five foot segments of the bore hole.
 2. Test pressure shall be one pound per square inch per foot of depth (measured from greater of ground surface or water surface) but not more than fifty pounds per square inch. Test pressure shall be held for at least five minutes. Record test pressure five minutes after start of each test.

1.06 GROUNDWATER OBSERVATION ASSEMBLIES

- A. When so directed by the Engineer, install Groundwater Observation Assemblies in coordination with removal of auger or casing pipe and as follows.
 1. Install in the full depth of the bore hole a 2 ¼ inch perforated polyvinyl chloride pipe. Place suitable permeable material in the annular space around the observation pipe to prevent collapse of the bore hole, and to facilitate entry of groundwater.

END OF SECTION

CORROSION CONTROL FOR PHILADELPHIA WATER DEPARTMENT WATER MAINS

PART 1 - GENERAL

1.01 DESCRIPTION

- A. This item is the preparation of a corrosion control study and report for new water mains in the City of Philadelphia. This item also includes inspection and approval of the corrosion control features or system.
- B. The study shall consist of: Stray current (if necessary), and soil resistivity measurements, testing, evaluation of field data, preparation of a report based on field data, preparation of design plans (if necessary), installation of corrosion control measures outlined in the design and in accordance with PWD Standard Specifications-W23, and final construction inspection, and testing, supervision, labor, equipment, and materials to perform the required work.

PART 2 – PRODUCTS

2.01 MATERIALS

- A. All materials shall be new and specifically manufactured for their intended purpose by a manufacturer regularly engaged in the production of these materials. Like items of materials provided hereunder shall be the end product of one manufacturer in order to achieve standardization for appearance, maintenance, and replacement. The use of a manufacturer's name and model number is for the purpose of establishing the standard of quality and general configuration desired only.
- B. Manufacturer information shall be submitted on all materials and equipment to be installed. The contractor shall obtain approval from the Philadelphia Water Department Engineer or his Corrosion Consultant before any material is installed.

2.02 BACKFILL

- A. Furnish Sand Backfill in accordance with ASTM C 33 (fine aggregate) and the following:
 - 1. Gradation:

a. Sieve Number	200	100	50	16	4
b. Percent Passing	0-5	0-8	5-30	50-98	98-100
 - 2. pH: between 5.5 and 8.5.
 - 3. Electrical Resistivity: 10,000 ohm-centimeters, minimum.
 - 4. Character: clean, free from lumps of clay or other deleterious substances.
- B. Ordinary Backfill Material may include all material excavated from the trench and free of objectionable matter, unless rejected by the Engineer. The Contractor shall furnish any deficiency of Ordinary Backfill Material.

- C. Furnish Select Backfill Material in accordance with the most recent revision or amendment to PennDOT Form 408 Specifications, Section 703.3, Select Granular Material-2RC. The use of slag as Select Backfill Material is hereby prohibited.

PART 3 – EXECUTION

3.01 GENERAL

- A. The cathodic protection installation shall also comply with the applicable requirements, codes, laws and ordinances of Federal, State, and local bodies having jurisdiction; the local Electrical Code; the National Electric Code (NEC); the standards of the National Electrical Manufacturers Association (NEMA); and the National Association of Corrosion Engineers (NACE) Recommended Practices.
- B. Submit all corrosion control reports and design plans to the Philadelphia Water Department Design Branch, Michael Lavery, Manager Design Branch at 1101 Market Street, 2nd Floor, Phila., PA 19107, prior to performing any water main relocation work.

3.02 CONTRACTOR QUALIFICATIONS

- A. The installation contractor shall have had prior experience in the installation of cathodic protection systems. The contractor shall provide a list of not less than five cathodic protection system installations at least five years old, which have been tested and found satisfactory.
- B. The installation contractor shall notify the Water Department prior to the commencement of the contracted work.

3.03 CORROSION ENGINEERING SERVICE QUALIFICATION

- A. The corrosion control-engineering firm used to perform the studies, report, design, and inspection must be familiar with existing cathodic protection systems on water distribution systems in and around Philadelphia. Submit information on the firm for review by the Philadelphia Water Department. The engineer preparing the final report shall be certified as a Corrosion Specialist through the National Association of Corrosion Engineers (NACE) or hold a current Professional Engineering license in the State of Pennsylvania.

3.04 FIELD STUDIES AND DATA ACQUISITION

- A. Perform a detailed field study along the route of the proposed water main. The field study shall consist of soil resistivity measurements, electrical characteristics of the existing piping and stray current / potential measurements. Use existing available data and information available from the Philadelphia Electrolysis Committee and the Philadelphia Water Department.

3.05 DATA ANALYSIS AND RECORD REVIEW

- A. Prepare an engineering and statistical analysis of data obtained from the field studies.

3.06 REPORT AND RECOMMENDATIONS

- A. Submit an engineering report presenting the data obtained and the results of the analysis. Recommend corrosion control measures based on the results and prepare engineering drawings and specifications in accordance with City of Philadelphia Water Department corrosion control specifications and details W-23.

3.07 FIELD TESTING

- A. Provide test equipment and field personnel to conduct electrical tests on the newly installed corrosion control measures in accordance with Corrosion Control Test Guidelines and Acceptance criteria for Ductile Iron Water Mains Installed in Accordance with Standard Specification W-23. Compare the test data to theoretical acceptance criteria and evaluate the ability of the installed corrosion control; measures to protect the pipe.

3.08 POST-CONSTRUCTION INSPECTION REPORT PREPARATION

- A. Prepare a report stating whether corrosion control measures are acceptable and if not, identify the deficiencies found, the location of the problems, and the corrective action required. The piping will not be accepted until the inspection report has been reviewed and approved by both the corrosion engineer and the Water Department.

END OF SECTION

CORROSION CONTROL CONSULTANT LIST

- 1) **Corrpro Companies, Inc.**
610 Brandywine Parkway
West Chester, PA 19380

James Jameson, P.E.
Phone: 610-344-7002
Fax: 610-344-7092

- 2) **CorTrol Services, Ltd.**
47 General Warren Blvd.
Malvern, PA 19355

George Gehring
Phone: 484-786-9414

- 3) **Henkels & McCoy Inc.**
506 A Stump Road
Montgomery, PA 18936

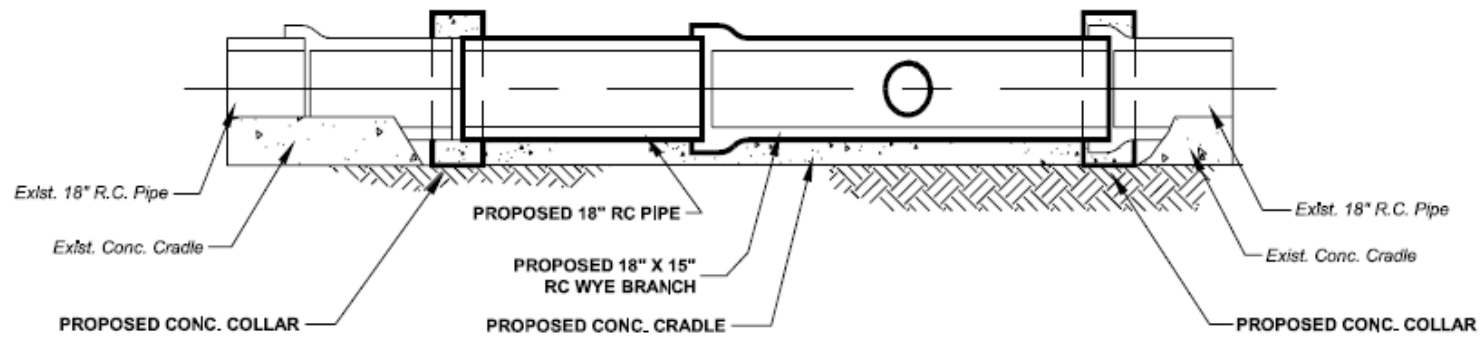
Mark Shook, P.E.
Phone: 215-367-1070
Fax: 215-367-1857

- 4) **LTK Engineering Associates**
100 West Butler Avenue
Ambler, PA 19002

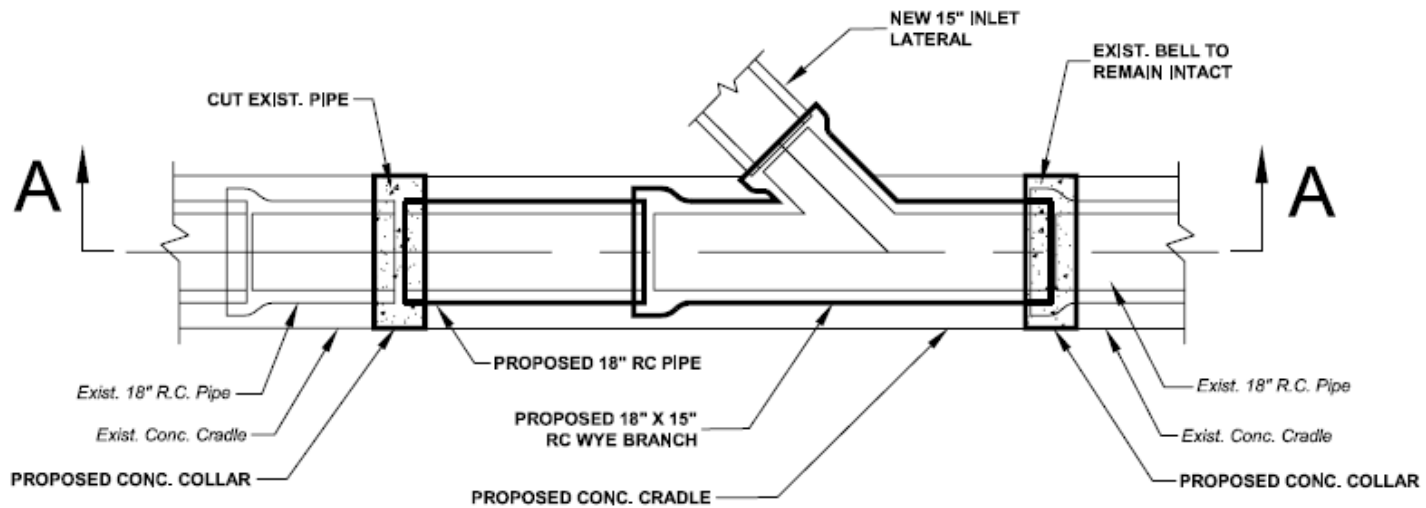
Edward Wetzel P.E.
Phone: 215-641-8816
Fax: 215-540-8627

- 5) **Jupiter P.C.C.**
1500 River Road
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SECTION A-A
N.T.S.



PRECAST WYE BRANCH CONNECTION DETAIL
N.T.S.