

**GOVERNMENT OF THE DISTRICT OF COLUMBIA**  
**DEPARTMENT OF TRANSPORTATION**

**INFRASTRUCTURE PROJECT MANAGEMENT ADMINISTRATION**



**SPECIFICATIONS**

**INVITATION NO.: DCKA-2013-B-0142**

**UPGRADE, RECONSTRUCTION, RESURFACING  
AT VARIOUS LOCATIONS  
WARDS 5 & 6**

**F.A.P. NO.: STP-8888(435)**

Bids Will Be Publicly Opened By the:

Office Of Contracting and Procurement  
55 M Street S.E., Suite 400  
Washington, D.C. 20003

Bids Will Be Opened On \_\_\_\_\_ At 2:00 P.M.



**GOVERNMENT OF THE DISTRICT OF COLUMBIA  
DEPARTMENT OF TRANSPORTATION**

**TITLE PAGE - SPECIAL PROVISIONS**

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**ISSUING OFFICE:**

**Office of Contracting and Procurement  
Department of Transportation  
55 M ST, S.E., Suite 400  
Washington, D.C. 20003**

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**Requests for clarification or interpretation of Bid Documents prior to date of Bid  
Opening:**

**ADDRESS TO:**

**Office of Contracting and Procurement  
District Department of Transportation  
55 M ST, S.E., 7<sup>th</sup> Floor  
Washington, D.C. 20003**

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**PROSPECTIVE BIDDER**

To bid this contract, detach the Bid Form package which is bound to the back of this book, fill out all forms along with Bid Guaranty as required, and submit it to the Issuing Office prior to the time of bid opening.



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Upgrade, Reconstruction, Resurfacing

At Various Locations

Wards 5 & 6



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The “STANDARD SPECIFICATIONS FOR HIGHWAYS AND STRUCTURES, 2009” (Revised 2007); THE SUPPLEMENTAL SPECIFICATIONS, 2007 and the “Standard Contract Provisions for use with Specifications for District of Columbia government Construction Projects”, 1973, and amendments thereto are incorporated herein by reference and are made a part of the requirements of this contract.

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## SPECIAL PROVISIONS

This document contains provisions, requirements and instructions pertaining to this contract:

### Upgrade, Reconstruction, Resurfacing At Various Locations (Wards 5 &6)

**F.A.P. No.: STP-8888(435)**

**Invitation No.: DCKA-2013-B-0142**

This document consists of:

- **SPECIAL PROVISIONS:** Pages i thru vii, pages 1 thru 94, and appendices (with number of pages in parentheses) listed on page vi.
  
- **BID FORMS AND PROPOSALS:** Pages ‘a’ thru ‘d’, and pages 1 thru 36, including **PAY ITEM SCHEDULE**.
  
- **CONTRACT PLANS:** Consisting of 214 sheets including Traffic Signal and Street Lighting Plans (40 sheets).

This is a Federal-Aid contract; FHWA 1273, Federal Aid Project Provisions, applies.

Bidders should satisfy that they have a complete document. Missing pages will not constitute the basis for a valid claim.

- **ADDENDA**, issued prior to bid opening, further supplement and modify the proposed contract.

This document supplements and modifies **STANDARD CONTRACT PROVISIONS** for use with specifications for District of Columbia Government Construction Projects, 1973, and District of Columbia, Department of Transportation, **STANDARD SPECIFICATIONS FOR HIGHWAYS AND STRUCTURES, 2009**, and **DC WATER SPECIFICATIONS** incorporated herein by reference.

Reference to Division Numbers, Section Numbers, and Article Numbers refers to the **STANDARD SPECIFICATIONS FOR HIGHWAYS AND STRUCTURES, 2009**.

In **PAY ITEM SCHEDULE**, the first three-digit portion of each pay item refers to the section of the **STANDARD SPECIFICATIONS** in which the item is described. The S.P. number refers to the section of these **SPECIAL PROVISIONS** in which the item is further described.

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Upgrade, Reconstruction, Resurfacing  
At Various Locations  
Wards 5 & 6

## 1. SCOPE:

Work under this contract consists of the roadway resurfacing/reconstruction and Street lighting (upgrade to LED) of:

- 15<sup>th</sup> St, N.E. from Kearney St to Irving St
- Newton St, N.E. from 12<sup>th</sup> St to 13<sup>th</sup> St, N.E
- Central place, N.E from Gallaudet St to Capitol Ave, N.E.,
- C St, N.W. from 6<sup>th</sup> St to 3<sup>rd</sup> St, N.W.,
- Michigan Avenue, N.E. from North Capitol St to 7<sup>th</sup> St, NE,
- Franklin St, N.E. from Michigan Ave to 7<sup>th</sup> St.

The following streets shall also include signal and communication upgrades: Franklin Street, Michigan Avenue, and C St at 3<sup>rd</sup> St as shown on the contract plans.

The specifications in this document and related Contract Plans cover work, which includes, but is not limited to, the following items:

- a. Maintain vehicular and pedestrian traffic per DC Standard Drawing No. 616.06 through 616.16 and per MOT plans or as directed by the Engineer. Maintain access to residential and commercial establishments using appropriate means as approved by the engineer.
- b. Within project limits, the removal and disposal of existing roadway pavement, curb and gutter and sidewalks, full depth reconstruction, milling of existing asphalt pavement to the extents shown in the contract drawings.
- c. Remove all sidewalks and repave with PCC sidewalks as shown on the plan. Build wheelchair ramps or upgrade existing wheelchair ramps to meet ADA requirements as shown on the plans.
- d. Mill existing asphalt surface course (down to the concrete surface, up to 3 inches) and repave with superpave surface as shown on the plans. Repair existing PCC pavements then overlay on top of the PCC pavements with 2" of superpave surface course or as shown on the plan.
- e. Installation of standard double basins, associated drainage work, and adjustment of all utility structures to grade, as shown on plans.
- f. Conversion of existing fire hydrants to traffic-type fire hydrants.
- g. The upgrading of Existing streetlight fixtures to LED fixtures. The removal and transportation to storage yard of existing Traffic Signals and light poles. The installation of street light poles including concrete foundations with arms and

luminaries; relocation of selected street light poles; installation of traffic signal poles with arm and signal heads, controller cabinets and foundations; complete in place for a functional and operational street lighting and traffic signal system.

- h. The installation and replacement of permanent pavement markings and traffic signs, including relocation of selected (existing) signs as shown in the contract drawings.
- i. Mobilization and demobilization, performance of field layout, provision and maintenance of engineer's field facilities, progress photographs, rodent control, and the proper maintenance of vehicular and pedestrian traffic during construction, including provision of all required construction warning and detour signs and traffic control devices.
- j. Tree planting and landscaping at locations identified and shown in the contract plans.

All the above items shall be furnished and installed by the Contractor. Work also includes disposal of all unsalvageable materials and all labor, materials, tools, equipment and all incidentals needed to complete the project as shown on the Contract plans, and described in the Specifications and these Special Provisions or as directed by the Engineer.

**2. CONTRACT TYPE:**

In accordance with Title 27 DCMR, Chapter 24, the contract type shall be a fixed-price.

**3. SPECIFICATIONS AND DRAWINGS:**

The District of Columbia Department of Transportation Standard Specifications for Highways and Structures (2009) and amendments thereto are incorporated by referenced into this contract.

**4. PRE-AWARD APPROVAL:**

Pursuant to Section 2201 of the Fiscal Year 2003 Budget Support Amendment Congressional Review Emergency Act of 2003 D.C. Act 15-27, effective February 24, 2003, the Mayor must submit to the Council for approval any contract action over one million dollars.

**5. COORDINATION WITH OTHERS:**

The Contractor is alerted that other contracts either associated with this project or of different scope either have been, will be, or may be let for work in, or in the vicinity of the project area.

The Contractor shall coordinate his work and cooperate fully with all others in order to eliminate or curtail delays and interference of any kind. Particular attention shall be made with regard to proper maintenance of vehicular and pedestrian traffic through the project areas. The Contractor shall perform his lane closings and openings so as not to cause interference with others or to be in conflict with performance of traffic maintenance by others.

The District assumes no liability, other than authorized time extensions, for contract delays or damages resulting from delays or lack of progress by others.

**6. PAYMENT BONDS:**

Article 12C of the Instructions to Bidders of the STANDARD CONTRACT PROVISIONS, 1973 is amended to incorporate the provisions of Section 504(b) of the District of Columbia Procurement Practices Act of 1985, which requires payment bonds to be in an amount not less than fifty percent (50%) of the total amount payable by the terms of the contract.

**7. VALUE ENGINEERING CHANGE PROPOSALS:**

This S.P. modifies 104.03.

Replace first paragraph of 104.03(A) with the following:

**GENERAL** - This contract allows the use of Value Engineering Change Proposals (VECPs) which are initiated and developed by the Contractor to change the Contract Drawings and Specifications, or other requirements of this Contract for the purpose of reducing the total cost of construction without reducing design capacity or quality of the finished product.

**8. AWARD OF CONTRACT:**

The Department of Transportation intends to award this contract within ninety (90) calendar days. However, if for administrative reasons, the District is unable to make an award within this time period, the Department will request the Contractor and his/her surety to extend the bid bond for an additional thirty (30) days.

9. **CONTRACTOR'S IDENTIFICATION:**

All contractors doing business with the District of Columbia Government shall have a Federal Tax Identification Number.

Please refer any question regarding this matter to Office of the Chief Financial Officer, 202/671-2300, of the DC Department of Transportation.

10. **EQUITABLE ADJUSTMENT OF CONTRACT TERMS:**

Provisions of 103.01, Article 4, Significant Changes In The Character Of Work, paragraph 4(b), replace 125 percent with 200 percent and replace 75 percent with 50 percent.

11. **BID GUARANTY:**

This S.P. supplements Article 12.A of the **INSTRUCTION TO BIDDERS, STANDARD CONTRACT PROVISIONS, 1973.**

The bid guaranty period shall be **ninety (90) calendar days** after bid opening. An Irrevocable Letter of Credit or United States government securities that are assigned to the District which pledge the full faith and credit of the United States are acceptable.

12. **APPLICABLE WAGE DECISION/WAGE RATES:**

In accordance with the applicable provisions of 29 CFR, Part 1 which require that the correct wage determination and the appropriate wage rates therein be incorporated into this contract, **General Wage Decision No. DC 20030001** is bound in the appendix and contains the specific applicable wage rates which are:

- (A) All work commonly recognized in the construction industry as Road or Highway Rehabilitation or Upgrading is to be performed utilizing:

**PAVING AND INCIDENTAL GRADING RATES**

Further, as set forth in 29 CFR, Part 1, Section 1.6(c)(3)(IV), if the intent to award letter is not issued within ninety (90) days of bid opening, the executed contract will include all intervening modifications. The contractor will be reimbursed this added labor cost.

**13. EMPLOYEE TRAINING:**

The requirements of 103.04 apply.

**14. CONTRACT ADMINISTRATION:**

**Contracting Officer:**

Contracts may be entered into and signed on behalf of the District Government only by contracting officers. The Contracting Officer is the only District official authorized to contractually bind the District. The Contracting Officer is the:

Agency Chief Contracting Officer (ACCO)  
Department of Transportation  
55 M Street, S.E., 7th Floor  
Washington, DC 20003,  
Phone: (202) 671-2200.

**Authorized Changes by the Contracting Officer:**

1. The Contracting Officer is the only person authorized to approve changes in any of the requirements of this contract.
2. The Contractor shall not comply with any order, directive or request that changes or modifies the requirements of this contract, unless issued in writing and signed by the Contracting Officer
3. In the event the Contractor effects any change at the discretion of any person other than the Contracting Officer, the change will be considered to have been made without authority and no adjustment will be made in the contract price to cover any cost increase incurred as a result thereof.

**CONTRACTING OFFICERS TECHNICAL REPRESENTATIVE (COTR):**

The term COTR is synonymous with the term District's Engineer. The District's Engineer for this contract is:

Name: Mr. Ali Shakeri, P.E.  
Title: Team 3 Program Manager  
Agency: District Department of Transportation  
Address: 55 M St, S.E., Suite 400  
Washington, DC 20003  
Telephone: (202) 671-4612

The COTR will have the responsibility of ensuring that the work conforms to the

requirements of this contract and such other responsibilities and authorities as may be specified in the contract. The COTR will act as the Contracting Officer's representative for technical matters, providing technical direction and discussion, as necessary with respect to the specifications or statement of work, and monitoring the progress and quality of the Contractor's performance. Other responsibilities include the following:

1. Keeping the CO fully informed of any technical or contractual difficulties encountered during the performance period and advising the ACCO of any potential problem areas under the contact;
2. Coordinating site entry for Contractor personnel, if applicable;
3. Reviewing and approving invoices for fixed-price deliverables to ensure receipt of goods and services. This includes the timely processing of invoices and vouchers in accordance with the District's Payment provisions; and
4. Maintaining a file that includes all contract correspondence, modifications, records of inspections (site, data, and equipment) and invoices/vouchers.

It is understood and agreed, in particular, that the COTR is not a contracting officer and does not have the authority to:

1. Award, agree to, or sign any contract, delivery order or task order. Only the ACCO shall make contractual agreements, commitments, or modifications;
2. Grant deviations from or waive any of the terms and conditions of the contract;
3. Direct the accomplishment of effort, which is beyond the scope of the statement of work in the contract;
4. Increase the dollar limits of the contact or authorize work beyond the dollar limit of the contract, or authorize the expenditure of funds by the Contractor;
5. Change the period of performance; and
6. Authorize the furnishing of District property, except as specified under the contract.

When in the opinion of the Contractor, the COTR requests effort outside the existing scope of the contract, the Contractor shall promptly notify the Contracting Officer in writing. The Contractor under such direction shall take no action until the Contracting Officer has issued a modification to the contract or until the issue has been otherwise resolved.

## **ORDERING AND PAYMENT**

The contractor shall not accept orders for items under this contract unless a purchase order has been issued. The participating agency shall be the District of Columbia Department of Transportation.

Invoices shall be submitted in duplicate to the District Department of Transportation, Office of the Chief Financial Officer, Customer Care Division, 2000 - 14th Street N.W., 6th Floor, Washington, DC 20009, Telephone (202) 671-2300.

Each invoice must provide the following minimum information:

1. Contractor's name, address, invoice number and date;
2. Contract line item number (CLIN) being billed for payment and total amount due;
3. Purchase order and contract number;
4. Addressee's name and address;
5. Period of service;
6. Description of services and deliverables provided;
7. Name, title, signature and phone number of preparer; and
8. Name of the contracting officer's technical representative.

Payment may be delayed for improperly prepared invoices.

### **15. DISPUTES:**

- A.** All disputes arising under or relating to this contract shall be resolved as provided herein.
- B.** Claims by a Contractor against the District.

Claim, as used in Section B of this clause, means a written assertion by the Contractor seeking, as a matter of right, the payment of money in a sum certain, the adjustment or interpretation of contract terms, or other relief arising under or relating to this contract. A claim arising under a contract, unlike a claim relating to that contract, is a claim that can be resolved under a contract clause that provides for the relief sought by the claimant.

1. All claims by a Contractor against the District arising under or relating to a contract shall be in writing and shall be submitted to the Contracting Officer for a decision. The contractor's claim shall contain at least the following:
  - (1) A description of the claim and the amount in dispute;
  - (2) Any data or other information in support of the claim;
  - (3) A brief description of the Contractor's efforts to resolve the dispute prior to filing the claim; and

- (4) The Contractor's request for relief or other action by the contracting officer.
2. The Contracting Officer may meet with the contractor in a further attempt to resolve the claim by agreement.
3. For any claim of \$50,000 or less, the Contracting Officer shall issue a decision within sixty (60) calendar days from receipt of a written request from a Contractor that a decision be rendered within that period.
4. For any claim over \$50,000, the Contracting Officer shall issue a decision within ninety (90) calendar days of receipt of the claim. Whenever possible, the Contracting Officer shall take into account factors such as the size and complexity of the claim and the adequacy of the information in support of the claim provided by the Contractor.
5. The Contracting Officer's written decision shall do the following:
  - (1) Provide a description of the claim or dispute;
  - (2) Refer to the pertinent contract terms;
  - (3) State the factual areas of agreement and disagreement;
  - (4) State the reasons for the decision, including any specific findings of fact, although specific findings of fact are not required and, if made, shall not be binding in any subsequent proceeding;
  - (5) If all or any part of the claim is determined to be valid, determine the amount of monetary settlement, the contract adjustment to be made, or other relief to be granted;
  - (6) Indicate that the written document is the contracting officer's final decision; and
  - (7) Inform the Contractor of the right to seek further redress by appealing the decision to the Contract Appeals Board.
6. Any failure by the Contracting Officer to issue a decision on a contract claim within the required time period will be deemed to be a denial of the claim, and will authorize the commencement of an appeal to the Contract Appeals Board as authorized by D.C. Official Code § 2-309.04.
7.
  - a. If a Contractor is unable to support any part of his or her claim and it is determined that the inability is attributable to a material misrepresentation of fact or fraud on the part of the Contractor, the Contractor shall be liable to the District for an amount equal to the unsupported part of the claim in addition to all costs to the District attributable to the cost of reviewing that part of the Contractor's claim.

- b. Liability under this paragraph (f) shall be determined within six (6) years of the commission of the misrepresentation of fact or fraud.
- 8. The decision of the Contracting Officer shall be final and not subject to review unless an administrative appeal or action for judicial review is timely commenced by the Contractor as authorized by D. C. Official Code § 2-309.04.
- 9. Pending final decision of an appeal, action, or final settlement, a Contractor shall proceed diligently with performance of the contract in accordance with the decision of the Contracting Officer.

**C. Claims by the District against a Contractor**

- 1. Claim as used in Section C of this clause, means a written demand or written assertion by the District seeking, as a matter of right, the payment of money in a sum certain, the adjustment of contract terms, or other relief arising under or relating to this contract. A claim arising under a contract, unlike a claim relating to that contract, is a claim that can be resolved under a contract clause that provides for the relief sought by the claimant.
- 2. All claims by the District against a Contractor arising under or relating to a contract shall be decided by the Contracting Officer.
  - (2) The Contracting Officer shall send written notice of the claim to the Contractor. The Contracting Officer's written decision shall do the following:
    - (a) Provide a description of the claim or dispute;
    - (b) Refer to the pertinent contract terms;
    - (c) State the factual areas of agreement and disagreement;
    - (d) State the reasons for the decision, including any specific findings of fact, although specific findings of fact are not required and, if made, shall not be binding in any subsequent proceeding;
    - (e) If all or any part of the claim is determined to be valid, determine the amount of monetary settlement, the contract adjustment to be made, or other relief to be granted;
    - (f) Indicate that the written document is the Contracting Officer's final decision; and
    - (g) Inform the Contractor of the right to seek further redress by appealing the decision to the Contract Appeals Board.
  - (3) The decision shall be supported by reasons and shall inform the Contractor of his or her rights as provided herein.

- (4) The authority contained in this clause shall not apply to a claim or dispute for penalties or forfeitures prescribed by statute or regulation which another District agency is specifically authorized to administer, settle, or determine.
- (5) This clause shall not authorize the Contracting Officer to settle, compromise, pay, or otherwise adjust any claim involving fraud.
3. The decision of the Contracting Officer shall be final and not subject to review unless an administrative appeal or action for judicial review is timely commenced by the District as authorized by D.C. Official Code §2-309.04.
4. Pending final decision of an appeal, action, or final settlement, the Contractor shall proceed diligently with performance of the contract in accordance with the decision of the Contracting Officer.

**16. PROTESTS:**

Any actual or prospective bidder, offeror or contractor who is aggrieved in connection with the solicitation or awards of a contract, must file with the DC Contract Appeals Board (Board) a protest no later than ten (10) business days after the basis of protest is known or should have known, whichever is earlier. A protest based on alleged improprieties in a solicitation which are apparent prior to bid opening or the time set for receipt of initial proposals shall be filed with the Board prior to bid opening or the time set for receipt of initial proposals.

In procurements in which proposals are requested, alleged improprieties which do not exist in the initial solicitation, but which are subsequently incorporated into this solicitation, must be protested no later than the next closing time for receipt of proposals following the incorporation. The protest shall be filed in writing, with the Contract Appeals Board, 717 14th Street, N.W., Suite 430, Washington, D.C. 20004. The aggrieved person shall also mail a copy of the protest to the Contracting Officer for the solicitation.

**17. CONSTRUCTION COMPLETION TIME:**

This S.P. supplements 108.06 (A).

The Contractor shall start work on the date specified in a written Notice to Proceed issued by the Contracting Officer, and shall complete the work within **Two Hundred Fourty (240)** consecutive calendar days after specified starting date.

**18. CONSTRUCTION SCHEDULING:**

This Special Provision replaces Article 108.03 of the Standard Specifications in its entirety.

**A. DEFINITIONS.**

The following definitions pertaining to construction schedules shall apply with respect to all scheduling provisions set forth in the Contract:

1. Activity: Any task, or portion of a project, that takes time to complete.
2. Baseline Schedule: The initial CPM schedule representing the Contractor's original work plan, as accepted by the Engineer.
3. Controlling Operation: The activity within that series of activities defined as the Critical Path, which, if delayed or prolonged, will delay the time of completion of the Contract.
4. Critical Path: The series of activities that determines the earliest completion of the project (Le., the Forecast Completion Date) in accordance with the terms and conditions of the Contract.
5. Critical Path Method: A mathematical calculation that determines the earliest completion of the project in accordance with the terms and conditions of the Contract and that includes a graphic representation of the sequence of activities showing the interrelationships and interdependencies of the elements composing a project.
6. Current Contract Completion Date: The date for completion of the Contract based on the total number of days, or fixed completion date as specified for full and final completion of the work in the contract documents.
7. Differential Completion Time: The difference in time between the Current Contract Completion Date and the Contractor's scheduled early Forecast Completion Date as shown on the Baseline Schedule, or schedule updates and revisions thereto.
8. Float: The amount of time between the early start date and the late start date, or the early finish date and the late finish date, of any activity or group of activities in the network. See Free Float and Total Float.
9. Forecast Completion Date: The Early Finish date of the last scheduled work activity identified on the Critical Path.

10. Fragment: A section or fragment of the network diagram comprised of a group of activities.
11. Free Float: The amount of time an activity can be delayed without delaying the Early Start of a successor activity.
12. Hammock Activity: A non-critical activity added to the network to span an existing group of activities for summarizing purposes.
13. Milestone: An activity that represents a significant point in time, and may be used to indicate the start or end of a series of related activities and/or contract accomplishment. A milestone has zero original and remaining duration, and does not increase the Contract time.
14. Revision: A change in the schedule that modifies logic, revises the current contract completion date, adds or deletes activities, or alters activities, sequences, descriptions, calendars, actual dates, or durations.
15. Tabular Listing: A report showing schedule activities, their relationships, durations, scheduled and actual dates, float, resources, and all log notes where comments are inserted for an activity.
16. Total Float: The amount of time that an activity may be delayed without affecting the total duration of the project.
17. Update: The modification of the most current Contractor CPM progress schedule through a regular and periodic (at least monthly) review to incorporate actual progress to date by activity. Update shall indicate changes to the activity's percent complete, actual start and actual finish dates.

## **B. PRE-CONSTRUCTION SCHEDULING CONFERENCE.**

The Engineer will schedule and conduct a Pre-Construction Scheduling Conference with the Contractor's Project Manager and Construction Scheduler within fifteen (15) working days after the Bidder has received the Contract for execution.

At this meeting, the requirements of the Special Provisions regarding scheduling will be reviewed with the Contractor. At the Pre-Construction Scheduling Conference, Contractor shall furnish a Preliminary Baseline Schedule as discussed in section C, and be prepared to discuss both its proposed methodologies for fulfilling the scheduling requirements and its sequence of operations.

At the Pre-Construction Scheduling Conference, the Contractor shall be prepared to discuss the requirements for all off-site material testing and submittals applicable to the Contract, discuss their respective preparation, and review durations.

### **C. PRELIMINARY BASELINE SCHEDULE.**

The Preliminary Baseline Schedule shall use the Critical Path Method, and indicate all major activities of work required under the Contract, from commencement of the work to completion of the work. These activities shall be detailed significantly small enough to communicate the Contractor's understanding of the construction sequencing and phasing of the project. For each major activity, the Contractor shall indicate the amount of time necessary to perform the activity and the anticipated beginning and completion date of each activity. In addition, the Preliminary Baseline Schedule shall indicate the sequence of performing each major activity and the logical dependencies and inter-relationships among the activities.

The Preliminary Baseline Schedule shall include all submittals and required offsite material testing required by the Contract. Furthermore, the schedule shall include activities for the Engineer's review, with the corresponding allowable period of days specified in the contract, for each submittal and offsite testing activity.

The Engineer will be allowed 15 working days to review the Preliminary Baseline Schedule and to provide comments regarding it. The Preliminary Baseline Schedule does not require the Engineer's acceptance, but all comments from the Engineer with respect to the Preliminary Baseline Schedule shall be incorporated within the Baseline Schedule. Re-submittal of the Preliminary Baseline Schedule is not required. Further, late review of the Preliminary Baseline Schedule by the Engineer shall not restrain the Contractor's submittal of Baseline Schedule. No site disturbance shall be allowed until the Engineer has reviewed and commented on the Preliminary Baseline Schedule, or the 15-day review period has elapsed.

### **D. BASELINE SCHEDULE.**

Within Twenty (20) working days of the Notice to Proceed, Contractor shall submit to the Engineer a Baseline Schedule, which shall incorporate any and all comments provided by the Engineer regarding the Preliminary Baseline Schedule.

The Baseline Schedule shall have a date of the effective date of the Notice to Proceed and shall not include any work prior to that date. The Baseline Schedule shall be accompanied by a Baseline Schedule Narrative as described in Section H. The Baseline Schedule shall depict how the Contractor plans to complete the work of the Contract and shall show all those activities that defines the Critical Path. The scheduled time for each activity shall be reasonable, depicting a realistic time to perform the activity. The Baseline Schedule shall provide for the adequate planning of the project, as well as the Engineer's monitoring and evaluation of progress and analysis of time impacts. Contractor shall not attribute any negative float to any activity depicted on the Baseline Schedule. The Engineer will be allowed thirty (30) calendar days to review and approve the Contractor's submittal of the Baseline Schedule. Should the Engineer reject

Contractor's submittal of the Baseline Schedule, Contractor shall resubmit a revised schedule within fifteen (15) working days of receipt of Engineer's review comments, at which time a new thirty (30) calendar day review period by the Engineer will begin.

#### **E. GENERAL REQUIREMENTS REGARDING SCHEDULES.**

The Baseline Schedule and all schedules submitted thereafter by the Contractor shall comply with the following requirements.

All schedules shall be created, updated and provided to the owner in print copy and also electronically in the most current version of Primavera and shall comply with (1) any and all interim target dates and/or milestones specified by the Contract; (2) all constraints, restraints or sequences specified by the Contract; and (3) the number of days set forth in the Contract for completion of the work.

All schedules submitted to the Engineer shall be depicted graphically by network diagrams. The Contractor's network diagrams shall be time-scaled to show a continuous flow of information from left to right. The critical path shall be clearly and graphically identified on the network diagrams.

All network diagrams prepared by Contractor shall be organized in a logical fashion. The activities shown on the diagrams shall be sorted and grouped per work structure, with the work covered by each Contract Item separately designated by distinct schedule activities.

All schedules shall identify, at a minimum, the following activities:

1. Identification of utility relocations and interfaces as separate activities, including activity description and responsibility coding that identifies the type of utility and the name of the utility company involved.
2. Identification of all tests, submission of test reports, and approval of test results required under the Contract.
3. Identification of Punch list and final clean up required by Contractor to complete the work. Contractor shall designate not more than thirty (30) days for Contractor's performance of Punch list and final clean-up activities.
4. Identification of any manpower, material, or equipment restrictions, as well as the specific identification of any activity requiring unusual shift work, such as double shifts, 6-day weeks, specified overtime, or work at times other than regular days or hours.

Each activity depicting Contractor's operations at the work site shall have duration of not more than fifteen (15) working days and not less than one (1) day unless permitted otherwise by the Engineer. All activities shown in the schedule, with the exception of the

first and last activities, shall have a minimum of one (1) predecessor and a minimum of one (1) successor activity.

The Schedule shall be resource loaded, indicating resource allocations for each type of labor craft and each equipment class with respect to each and every activity indicated in the schedule. The resource loading shall include sufficient labor and equipment to properly execute the activity with respect to the Original Duration depicted in the Schedule. Contractor shall optimize and level labor to reflect a reasonable plan for accomplishing the work of the Contract and to assure that resources are not duplicated in concurrent activities.

For each activity in the network, the Contractor shall determine the contract value of the work activity. Administrative activities, Owner activities and milestones shall have an assigned cost of zero. The summation of the costs of all activities shall be equal to the cost of the project, or the Contractor's approved bid for the construction of the project. These costs are to be incorporated into the Schedule and the anticipated daily earnings computed for both early and late starts. These earnings are to be graphically displayed in a time-cost chart ("S" curve).

Float shall not be considered as time for the exclusive use of or benefit of either the Owner or the Contractor but shall be considered as a jointly owned, expiring resource available to the project and shall not be used to the financial detriment of either party. Any schedule, including the Baseline Schedule and all updates thereto, showing an early completion date shall show the time between the forecast completion date and the Contract Completion Date as "project float".

In connection with the submittal of the Baseline Schedule and all updates thereto, Contractor shall require all of its subcontractors to submit in writing a statement certifying that the subcontractor has concurred with the schedule and that the subcontractor's related schedule has been incorporated accurately, including the duration of activities and labor and equipment resource loading.

Engineer's acceptance of a Contractor schedule shall not constitute a change of any portion of the Contract. Failure of the Contractor to include any element of work required by the Contract in its schedules shall not relieve the Contractor from completing the work within the time limit specified for completion of the Contract. If the Contractor fails to define any element of work, activity or logic, and the omission or error is discovered by either the Contractor or the Engineer, it shall be corrected by the Contractor in regard to the next monthly update or revision of the schedule.

Should the Baseline Schedule or any update thereto show variances from the scheduling requirements of the Contract, Contractor shall make specific mention of the variations in the letter of transmittal, in order that, if accepted, proper adjustments to the project schedule can be made. Notwithstanding the foregoing, Contractor will not be relieved of the responsibility for completing all work required by the Contract.

In the event that the Baseline Schedule, or any updates or revisions, show completion occurring prior to the Completion Date and/or interim milestones, the Contractor must demonstrate to the Engineer that the schedule is reasonable, practical and achievable. Moreover, it is expressly understood and agreed that (i) Contractor shall have no claim against the Owner for delay, disruption, hindrance, or other impact based on any early completion indicated in Contractor's schedule(s); (ii) a delay is critical if and only if to the extent that the delay extends the completion of the entire work to a date that is beyond the contractually specified date for full completion of the work, regardless of Contractor's planned early completion; and (iii) the contract price includes full compensation for all time-related costs associated with the Contractor working at the project site for the full duration of the time set forth in the Contract, even if Contractor represents that Contractor plans to fully finish the work in less than the time established by the Contract for full completion of the work.

Contractor shall not incorporate any changes or delays to the work in the Baseline Schedule and in all schedules submitted thereafter without the Engineer's approval.

The submittal of all schedules shall also be accompanied by computer-generated mathematical analysis tabular reports for all activities included in the network diagrams. The tabular reports (8 1/2" x 11" size) shall consist of a report detailing the following:

1. Activity number and description;
2. Activity Codes Line
3. Original and remaining durations;
4. Earliest start date (by calendar date);
5. Earliest finish date (by calendar date);
6. Actual start date (by calendar date);
7. Actual finish date (by calendar date);
8. Latest start date (by calendar date);
9. Latest finish date (by calendar date);
10. Identify activity calendar ID;
11. Total Float and Free Float, in calendar days;
12. Percentage of activity complete and remaining duration for incomplete activities;
13. Detailed Predecessor and;
14. Detailed Successor.
15. Resources assigned to each activity
16. Cost associated with each activity.

Unless otherwise specifically noted elsewhere in these Special Provisions, network diagrams and the tabular reports shall be submitted to the Engineer in the following quantities:

1. 4 sets of the network diagrams on "E" size (36" x 48") sheets
2. 4 sets of the network diagrams on reduced-size (11" x 17") sheets;
3. 8 copies of a II tabular reports (8 1/2" x 11" size);

4. 8 copies of the "S" curve; and
5. 2 copies of electronic files of the Primavera data and the schedule narrative report on CD-ROM.

#### **F. WEEKLY PROGRESS MEETINGS.**

Engineer and the Contractor shall hold weekly progress meetings to discuss, among other things, (i) the near-term schedule activities; (ii) the current status of as-Built documentation, RFI's, Contractor Daily Reports, Quality Control, submittals, correspondence, and Contract Change Orders; and (iii) Jobsite safety, cleanup, traffic control, and coordination issues. Furthermore, the meeting shall address any long-term schedule issues discussion of any relevant technical issues. Contractor shall develop a look-ahead schedule identifying the previous week; current week and a 2-week look ahead. Contractor's look-ahead schedules shall provide sufficient detail to address all activities to be performed and to identify issues requiring Owner action or input. Twenty-four hours prior to the weekly progress meetings, the Contractor shall furnish the look-ahead schedule in hard copy and electronic format to the Engineer for review.

No later than 2 days prior to the Weekly Progress Meeting, Contractor shall furnish a list of critical items relating to the look-ahead schedule. During the meeting the parties will jointly determine whether additional items need to be listed, the priority of items, the parties responsible for resolving the critical item and the scheduled resolution date. The updated list will be distributed with the weekly meeting minutes. Nothing herein shall be construed to excuse Contractor's obligation to timely provide either a Notice of Delay or a Notice of Potential Claim.

#### **G. MONTHLY UPDATE SCHEDULES.**

**Monthly Update Schedule.** Contractor shall regularly update the approved Baseline Schedule to reflect the current status of the project. On the day following the estimate cut-off date, the Contractor shall submit a Monthly Update Schedule to the Engineer. The update shall include all information available and status of the project as of the estimate cut-off date, or such other date as established by the Engineer. All Monthly Update Schedules described below shall comply with the requirements indicated in Section F, above.

All Monthly Update Schedules shall incorporate all changes previously approved by the Engineer.

Each Monthly Update Schedule shall reflect all as-built activities performed as of the effective date of the update schedule. The Monthly Update Schedule shall include the period from the last update to the effective date and for the remainder of the project. The

current period's activities shall be reported as they actually took place. In the updated schedule, Contractor shall indicate the actual dates that activities were started, completed, or split. Ongoing activities shall have an indication of the percent complete and the remaining duration to complete such activities.

Portions of the schedule on which activities are complete need not be reprinted and submitted in subsequent updates. However, the electronic file of the submitted Monthly Update Schedule and the related reports shall constitute a clear record of the actual progress of the work from the effective date of the Notice to Proceed to the effective date of the update, as well as the projected future work up to final completion of the project.

The Monthly Update Schedule, and any other relevant information available, will be used to determine the effect of any contemplated or actual changes or delays to the work.

## **H. SCHEDULE NARRATIVE REPORTS.**

**Schedule Narrative Reports.** Contractor shall also prepare Schedule Narrative Reports, which are to be submitted to the Engineer concurrently with each CPM submittal.

**Baseline Narrative Report.** The Baseline Schedule Narrative Report shall describe, in a narrative fashion, the logic of the schedule. It shall identify the critical path and other areas of schedule delay risk. The narrative shall include a listing of all decision/approval points in the schedule.

**Progress Narrative Reports.** The Progress Narrative Report shall describe the physical progress of work performed by Contractor during the report period. In addition, the report shall indicate the Contractor's plans for continuing the work during the forthcoming report period, actions planned to correct any negative float, and any delays or problems and their estimated impact on the contract completion date for the project. In addition, Contractor shall include for consideration by the Engineer alternatives for possible schedule recovery to mitigate any potential delay. The report shall follow the outline set forth below:

1. Contractor's Transmittal Letter.
2. Work completed during the report period, including the labor craft and equipment class resources employed to complete the work identified during the report period.
3. Description of the current critical path of the schedule.
4. List of any and all delayed activities.
5. Status of the Contract Interim Milestone and Contract Completion Dates.
  - a) On schedule
  - b) Ahead of schedule and number of days
  - c) Behind schedule and number of days
6. Listing of any changes to the schedule activities or logic

Narrative reports containing non-factual, subjective statements, judgments or opinions, which appear to assign responsibility or to make conclusions as to excuse ability, responsibility, or compensability for delays shall be cause for rejection of the narrative report.

On a monthly basis, and on a date to be determined by the Engineer, Contractor shall meet with the Engineer to review the Monthly Update Schedule and the Schedule Narrative Report. The Engineer will be allowed fifteen (15) working days after the meeting to review and accept or reject the Monthly Update Schedule and the Schedule Narrative Report. Rejected schedules and/or reports shall be revised and resubmitted to the Engineer within ten (10) working days, at which time a new ten (10) working day review period by the Engineer will begin. All efforts shall be made between the Engineer and the Contractor to complete the review and the approval process prior to the cut-off date for the next update schedule. To expedite the process, a second meeting between the Engineer and the Contractor shall be held, as determined to be necessary by the Engineer.

#### **I. SCHEDULE RELEASABLE TO THE GENERAL PUBLIC.**

Concurrent with all official schedule submission described in the preceding sections, the contractor shall prepare and submit a separate milestones schedule in MS Project format that is consistent with the official Primavera schedule submission. The sole purpose of this separate MS Project schedule will be to provide information to the general public as to the progress and anticipated schedule of work.

#### **J. SCHEDULE REVISIONS.**

**Contractor Proposed Revisions.** Once the Baseline Schedule is accepted, the Contractor shall not make any revisions to the schedule without first obtaining the approval of the Engineer.

Possible revisions to the Baseline Schedule include, but are not limited to, changes to the logic and sequence of the activities depicted in the schedule; changes to the duration of a particular activity; and addition or deletion of activities to be included with the schedule.

Contractor's request to revise the approved Baseline Schedule shall be made in writing. The request shall set forth the reasons for the change and the proposed revisions to the activities, logic and duration of the approved schedule. In addition, Contractor shall submit a schedule analysis showing the effect of the revisions on the entire project. The analysis shall include the following:

1. An updated schedule that does not include the proposed revisions. The schedule shall have a data date just prior to implementing the proposed revisions, and the schedule shall indicate the current contract completion date;

2. A revised schedule that includes the proposed revisions. The schedule shall have the same data date as the updated schedule, and the schedule shall indicate the current contract completion date;
3. A narrative explanation of the revisions and their impact to the schedule, including any revised resource allocations for the activities depicted in the two schedules; and
4. Computer files of the updated and revised schedules, on duplicate sets of CD-ROMS.

The Engineer will be allowed 15 working days to consider Contractor's request for revision to the approved schedule. Should Engineer provide his acceptance of the proposed revision, Contractor shall incorporate the revision into the next monthly update of the schedule. However, if Engineer does not accept the proposed revision, the Contractor shall not make any change to the schedule.

The above provisions shall not be construed as a limitation on Contractor's obligation to accurately reflect the as-built progress of the work with respect to each Monthly Update Schedule. It is expressly understood and agreed that the term "revisions", as used herein shall refer to changes to the schedule with respect to work that will be prospectively performed up to completion of the project.

**Engineer Required Revisions.** Within fifteen (15) working days of Engineer's request, Contractor shall submit a revised schedule whenever the Engineer determines that there is a significant change in the Contractor's operations that affects the Critical Path;

#### **K. MEASURE AND PAYMENT.**

No direct payment will be made. This work is considered incidental to the scope of work being performed, the cost of which shall be considered when preparing bids.

The Owner will retain an amount equal to 25 percent of the total estimated value of all work performed during each period in which the Contractor fails to submit any of the schedules required herein, including Monthly Updates and Schedule Narrative Reports, and/or fails to conform said schedules with the requirements of this section, as determined by the Engineer.

Thereafter, on subsequent successive estimate periods the percentage the Owner will retain will be increased at the rate of 25 percent per estimate period in which the non-conformance with this specification continues. Retention due to this non-conformance shall be in addition to all other retentions provided for under the Contract. The retention for this non-conformance will be released for payment on the next monthly estimate for partial payment following the date the schedule information is brought back into compliance with this specification.

**19. CONSTRUCTION SURVEY:**

This S.P. replaces the first paragraph of Section 108.11 - PRECONSTRUCTION SURVEY with the following:

Prior to starting and after completion of any work, and during the progress of both concrete and asphalt operations, the contractor shall make a detailed inspection of buildings, structures, roadways, sidewalks, retaining walls, landscaping and related surface improvements adjacent to and in the vicinity of the proposed work, wherever located. The inspection shall include notes, measurements and a videocassette tape (VHS format) or DVD recording, or any other approved method by the Engineer with audio soundtrack of all facilities. The audio description of the inspection shall include the date, time, weather conditions, address/stationing/location, brief description of the facility with contract name and number and description of physical conditions encountered.

**20. FAILURE TO COMPLETE ON TIME:**

Replace 108.07 with the following:

For each calendar day that contract work remains incomplete after expiration of the specified construction completion time, or main part thereof, the sum of **\$1,500.00** has been set by the Contracting Officer as liquidated damages from any money due the Contractor. The Contractor's operation after expiration of construction completion time as extended will in no way waive the District's rights under the contract.

**21. UNDERGROUND VAULTS:**

This S.P. supplements Article 16 of the General Provisions.

- (A) The Contractor shall take necessary measures to prevent damage to existing underground vaults within or adjacent to the project. It shall be the Contractor's responsibility to determine exact locations for all underground vaults in the field.
- (B) In case of damage to underground vaults by the Contractor, the Contractor shall restore such underground vaults to a condition equivalent to that which existed prior to the damage by repairing, rebuilding, waterproofing or as may be directed by the Engineer, at the Contractor's sole expense.

**22. CONTRACT PLANS:**

Certain detail drawings for specific items are included in the SPECIAL PROVISIONS; however, no contract plans as such have been prepared.

**23. WORK AND STORAGE SPACE:**

This S.P. modified 103.01, Article 17B of Standard Contract Provisions.

No work and storage space is being designated. The Contractor shall be fully responsible for seeking necessary space and undergoing all required negotiations with the owner of the property to secure its use, and restoring the area to its original condition and to the satisfaction of the Engineer.

The Contractor shall arrange for additional employee parking and storage space, if necessary, at his own expense and responsibility and at no additional cost to the District.

**24. SALVAGED MATERIAL:**

Existing light and traffic signal fixtures and other electrical appurtenances designated to be removed and replaced shall be delivered by the contractor to a designated DCDOT storage yard. Prior to delivery, the contractor shall contact The Bureau of Traffic Services at (202) 671-2700 to make arrangements. Payment for delivery of this salvaged material shall be included in various bid items for electrical work.

**25. D.C. WATER SPECIFICATIONS:**

The D.C. Water Specifications (NOT included as an appendix) are to be used only for the items listed below. These Specifications supersede the District of Columbia Standard Specifications for Highways and Structures, 2009 and the amendments thereto.

<u>Item No.</u>	<u>DC WATER Specification</u>	<u>Description</u>
207 002	02220	Trench Excavation and Backfill
207 004	02220	Trench Undercut Excavation
207 008	02220	Borrow Trench Backfill
302 002	02605	Valve Casing (Water Valve Manhole)
303 004	02642	Remove Fire Hydrant
305 002	02610	Ductile Iron Pipe 4-8 Inch.
306 002	02607	Install Gate-Butterfly Valve 3-12 Inch
307 002	02642	Set Fire Hydrant
307 010	02642	Convert Fire Hydrant
308 012	02653	Replace water services in Public Space
308 014	02645	Furnish and Install Curb Stop

SP  
Upgrade, Reconstruction, Resurfacing  
At Various Locations  
Wards 5 & 6

308 016	02645	/ Curb Stop Box Furnish and Install Water Meter Housing Frame and Cover
308 018	02225	Water Service Test Pit
309 002	02705	Sewer Manhole on Sewer 48 inch and less in Dia.
310 004	02720	Standard Double Basin
310 006	02720	Standard Triple Basin
310 008	02720	Basin Connect PCC Pipe, Class III, 15" dia.
311 002	02705	Adjust Sewer-Water-Utility Manhole Frame
311 025	02720	Remove existing Inlet
311 026	02720	Replace exist. Basin with Double Basin
311 028	02720	Replace exist. Basin with Triple Basin
313 002	02720	Abandon Basin Connecting Pipe
313 006	02720	Abandon Basin
314 006	02730	PCC Pipe. Class III, Gasket, 18 inch
314 010	02730	PCC Pipe, Class III, Gasket, 24 inch
314 002	02732	Pipe Sewer TV Inspection

Items pertaining to PCC pipes shall be considered to include work associated with connections to existing or new manholes or direct connections to sewers.

**26. SPECIALTY ITEMS:**

In accordance with Section VII 1.b of REQUIRED CONTRACT PROVISIONS, FEDERAL-AID CONSTRUCTION CONTRACTS, the following items as listed in the PAY ITEM SCHEDULE are designated SPECIALTY ITEMS.

<u>ITEM NO.</u>	<u>DESCRIPTION</u>
<b>617</b>	<b>Traffic Signal Work</b>
<b>618</b>	<b>Electrical Work – Street Lighting</b>

27. **WORK HOURS:**

This S.P. supplements and modifies 105.10 and 105.11.

Work may be performed outside of the following hours only when required by contract specifications or with the advanced notice to and approval by the Contracting Officer:

Monday through Friday 8:00 AM to 7:00 PM

28. **WEEKEND WORK:**

This S.P. supplements and modifies 105.10.

Most scheduled work will be initiated and completed between the hours of 8:00 a.m. and 7:00 p.m., Monday through Friday. However weekend work may be required as determined by the Engineer in congested areas where serious traffic difficulties would result if the repairs were performed during the normal work week.

29. **NIGHT WORK:**

This S.P. modifies 105.11(A)

Replace table in 105.11(A) with the following:

D.C. MAXIMUM PERMITTED NOISE LEVEL

<u>Zone</u>	<b>Maximum Noise Level, dBA</b>	
	<u>Daytime</u>	<u>Nighttime</u>
Residential, Special Purpose or Waterfront Zone	60	55
Commercial or Light Manufacturing Zone	65	60
Industrial Zone	70	65

**30. PROJECT SECURITY:**

(A) **GENERAL** - Portions of the general project site will be open to the public during construction. The Contractor shall take the necessary measures to prevent vandalism and theft of materials, equipment and tools as well as the completed work on the project site. The D.C. Department of Transportation shall not be held liable for any loss or damage resulting there from.

(B) **MEASURE AND PAYMENT** - No direct measure or payment will be made. The cost of project security shall be reflected, and distributed among the various contract Pay Items.

**31. INSURANCE:**

This S.P. supplements 107.13. The United States of America shall be named as an additional insured on all such policies. All such policies shall specify that the insured shall have no right of subrogation against the United States for payments of any premiums or deductibles there under and such insurance policies shall be assumed by, be for the account of, and be at the sole risk of the insurer.

The insured shall pay the United States the full value for all damages to the lands or other property of the United States caused by him or by his employees, contractors, or employees of the contractors.

32. **UTILITY PROTECTIVE ALERT:**

This S.P. supplements and modifies 107.16.

On top of page 100, delete table above paragraph beginning “\*GSA shall be .... and replace with the following:

<b><u>NAME</u></b>	<b><u>TELEPHONE NO.</u></b>	<b><u>FACILITIES</u></b>
“Miss Utility” □ for Wash, Gas Light Co., Verizon, PEPCO, AT&T	800-257-7777	Gas lines; telephone, electric and communication conduits and cables.
DC Water	202-612-3400	Water mains and Sewers
DC Homeland Security Emergency Management Agency	202- 727-6161	Fire Alarm electrical systems
Antonio Byrd	202-741-5368	Street lighting inspection
	202-671-3368	Traffic Management Center

Traffic Signal System Facilities - The Contractor is forewarned that the utility drawings included in this contract are not guaranteed to be an accurate representation of actual field conditions. This is particularly true in the case of underground electrical conduits and manholes constructed throughout the city between 1985 and 1991 for traffic signal system communication cable. The contract plans for this project may have limited or no information of the placement, quantity or depth beneath the finished grade of such facilities.

The Contractor shall contact the Traffic Signal System Division at (202) 698-3677 before undertaking any excavation within the project limits to review drawings showing the location of these underground conduits and manholes. The Contractor is further forewarned to exercise extreme care when excavating in the vicinity of such facilities, since conduit depth and degree of protection may not be accurately represented on the plans. All direct and indirect damage to these facilities encountered during excavation shall be repaired at the Contractor's expense in accordance with the specifications of the Traffic Signal System Division. Such repairs may include conduit and manhole repairs and replacement of communications cable conduit which may extend far beyond the project limits.

**33. UTILITY STATUS:**

The District of Columbia Department of Transportation maintains coordination with the public utility companies during the preliminary engineering and the construction phases of the project. The Contractor shall be required to maintain and continue this coordination throughout the construction of the project. Construction delays as a result of inadequate coordination shall be the Contractor's responsibility.

No utility company work outside the scope of the project is anticipated. However, it will be necessary for utility companies to perform work during construction related to the contract work being performed. Such work consists of inspection of furnished materials and utility supports installed by the Contractor and being present during any demolition or concrete placement in the vicinity of their facilities.

The Contractor's involvement and coordination with utility companies includes, but is not restricted to, the following:

- (A) Adjustment and resetting of utility manholes and manhole frames respectively to new grades.
- (B) Location and verification of existing utility lines (as shown on the plans).
- (C) Removal or temporary relocation of existing lighting systems, temporary lighting, and permanent lighting. PEPCO will furnish and install power feeders, the distribution cables and lamps for the roadway lighting systems.
- (D) Maintenance, protection and assurance of continuous service for the duration of the project of utility company facilities within the project limits.

The Contractor shall not proceed with work until utility facilities involved have been located, disconnected or otherwise adjusted by utility representatives.

**34. PAVEMENT CORES:**

This S.P. Supplements 401.17 (A)

Supplementing 401.17 (A), the Contractor shall obtain pavement cores at the discretion of the Engineer within twenty-four (24) hours after lay-down.

**35. SUPERPAVE SURFACE SOURCE**

Superpave Surface Course, 12.5 mm, item 402 012

Superpave Base Course, 19mm, item 402 002

This S.P. modifies 402.04.

Modifying 402.04, MEASURE AND PAYMENT, the unit of measure for Hot mixed Asphaltic Concrete of the Superpave mix specified will be the ton. The number of tons will be actual number of tons complete in place as weighed on approved truck scales. The Engineer will deduct the weight of all materials lost, wasted, damaged, rejected or applied in excess of the Engineer's direction or contrary to these specifications. The number of tons of the Superpave mix will be paid for at the contract price per ton, which payment will be full compensation for the work specified complete in place.

**36. ASPHALTIC REFLECTIVE CRACK RELIEF INTERLAYER**

**DESCRIPTION:**

This work shall consist of the placement of an Asphaltic Reflective Crack Relief Interlayer (ARCRI) as specified in the Contract Documents or as directed by the Engineer. The ARCRI is a highly elastic, impermeable hot mix asphalt material that is designed to reduce reflective cracking from underlying Portland cement concrete or asphalt concrete pavement. The ARCRI shall be applied using a conventional paver and roller.

**MATERIALS**

Asphaltic Reflective Crack Relief Interlayer Mix	No 45 of this SP
Tack Coat	403

**CONSTRUCTION**

Before work begins, an ARCRI technical representative shall be on the project site during the first three full work shifts of placement of the ARCRI to ensure that work is being performed properly. The ARCRI technical representative shall be available for consultation and troubleshooting during the entire placement process.

**QUALITY CONTROL**

Technical support for the production and placement of the ARCRI mix, in the form of the ARCRI technical representative, shall be supplied by the Contractor or their agent. The Contractor shall not deviate from the Job Mix Formula (JMF), except as approved by the Engineer. Control samples of the ARCRI mixture shall be randomly taken at a minimum of every 750 tons and collected at a point after the material is placed in the paver. Gradation shall be determined by T 30. Asphalt content shall be determined by T 308. The Contractor shall supply flexural beam fatigue test results on a mix sample collected within the first 2,000 mix tons placed. Thereafter, it shall be tested by the Contractor and data supplied to the Administration at a random sample interval of one every 6,000 tons of material produced. The Contractor shall supply at least one flexural beam fatigue test results on a project with less than a 2,000 ton material quantity.

Control samples of asphalt binder shall be randomly taken at a minimum of every 300 liquid tons, or as specified by MDSHA control plan with 500 tons maximum, at the HMA plant.

**QUALITY ASSURANCE**

Assurance samples of the ARCRI mix shall be randomly collected one out of every 10 production days. Assurance samples shall be tested for material verification by the Administration for gradation, asphalt content and flexural beam fatigue.

**WEATHER RESTRICTIONS**

The ARCRI shall not be placed when the ambient temperature on which the ARCRI will be placed is less than 50 degrees F. The ARCRI shall not be placed on a wet surface. Paving within 24 hours after a rain event shall be closely monitored for blistering.

**FOUNDATION PREPARATION**

Immediately prior to applying the ARCRI, the surface shall be thoroughly cleaned of all vegetation, loose materials, dirt, mud, visible moisture and other objectionable materials.

**TACK COAT**

A hot asphalt cement tack coat shall be applied uniformly at the rates shown below and at a spraying temperature of 325 degrees F. The asphalt cement shall conform to section 403 and shall be capable of applying neat asphalt binder uniformly across the pavement surface at the rates and temperatures specified. The hot tack shall be used for all areas requiring tack coat. The pavement surface shall be clean and dry prior to placing the ARCRI. The spray bar shall be equipped with the appropriate nozzles to apply the material in a triple fanning and overlapping spray pattern. Hand spraying equipment will be permitted only in areas where the distributor spray bar cannot reach.

<b>Tack</b>	<b>Smooth Surfaces</b>	<b>Surfaces with Grinding or Milling</b>
	<b><u>Shot Rate (gal/yd<sup>2</sup>)</u></b>	<b><u>Shot Rate (gal/yd<sup>2</sup>)</u></b>
Tack Coat	(0.02 to 0.05)	(0.03 to 0.06)

The spraying temperature and application rate will be adjusted as required to produce a uniform coating so that every part of the surface is covered, with no excess material. All uncoated or lightly coated areas shall be corrected. The application is not acceptable if the material is streaked or ribboned.

A tack coat shall also be placed on the ARCRI at the smooth surface shot rates shown above prior to placement of the HMA overlay.

**ASPHALTIC REFLECTIVE CRACK RELIEF INTERLAYER PLACEMENT**

The ARCRI mixture shall be placed in a single layer at a thickness of 1 –inch (-1/8-inch and + 1/2 -inch). The ARCRI mix shall overlap the existing PCC or AC longitudinal joints by at least 6 inches.

### **ASPHALTIC REFLECTIVE CRACK RELIEF INTERLAYER TEMPERATURE**

The ARCRI mixture shall never be mixed hotter than 360 degrees F. The ARCRI mixture shall be compacted at temperatures greater than 250 degrees F. The ARCRI binder supplier may supply more specific mixing and compaction temperatures to the Contractor.

### **JOINTS**

Joints in the ARCRI shall not line up with longitudinal and traverse joints in the underlying pavement, or with joints where asphalt pavement abuts concrete or composite pavement. Joints in the ARCRI shall be offset a minimum of 6 inches from the underlying pavement joint. Locations of the joints shall be determined by the Contractor subject to the approval of the Engineer.

### **COMPACTION**

Compaction operations shall start promptly after placement of the ARCRI mixture. Only steel wheel rollers in the static mode shall be used for compaction of the mixture. Density of the in-place ARCRI shall be between 96.0% (minimum) and 98% (maximum) of the maximum specific gravity as determined by T209. At times when any values exceed these limits, the Engineer shall be made aware immediately and those areas shall be closely monitored. Corrective actions shall be taken by the Contractor to bring the ARCRI material within compaction requirements if the results indicate the material has fallen outside the limits specified above. Rolling patterns shall be as per section 402.03 of the Standard Specifications, unless otherwise modified by the Engineer.

### **DENSITY**

Density shall be determined by a thin-lift nuclear density gauge or non-nuclear gauge and verified by coring. Density measurements made with the thin-lift density gauge or non-nuclear gauge shall be calibrated in the test strip. Density measurements shall be taken by the Contractor at random locations at a minimum of two density measurements per day or one per 100 ton, whichever is the greatest frequency. The Administration shall collect density measurements at random locations using a density gauge for verification of Contractor density measurements. Two cores shall be taken by the Contractor at random locations at a minimum of two cores per 1000 tons or two per day, whichever is the greater frequency. Cores shall be used for verification of density measurements from gauge results. It is recommended to place ice over the area to be cored. To prevent damage to the cores they should be handled with care because the interlayer mixture is pliable.

After final rolling, the ARCRI shall be deep black in appearance. The surface texture should be tight. Occasional small flushed areas approximately 2 feet wide are normal. Flushing of the entire width of the mat is an indication that the mixture is out of specification. The control criteria shall be verified in areas of concern, and areas determined out of specification shall be removed and replaced.

Small blisters may in the mat after rolling where moisture or crack filler within the PCC or AC exists. If blisters larger than 1 foot in diameter occur and do not disappear by the time of overlay, they shall be punctured and rolled with 1 pass while the mat is greater than 140 degrees F as determined by the Engineer. If remedial action is required, the ARCRI technical representative shall be contacted for further guidance.

### **CONSTRUCTION AND VEHICLE TRAFFIC**

The ARCRI layer is not a structural layer and is very susceptible to damage and distress from vehicle and construction traffic. The ARCRI layer shall not be opened to traffic until at least 2 inches of HMA has been placed over the ARCRI. Construction traffic should be prevented from using the ARCRI as a pavement surface until the 2 inches of HMA is placed over the ARCRI. Any damage to the ARCRI as a result of construction traffic or maintenance of traffic shall be repaired by the Contractor at no cost to the Administration.

### **CONTROL STRIP**

A full lane width control strip having a minimum length of 500 feet shall be constructed on the finished grade prior to paving start up. The control strip location shall have similar pavement conditions as those at the project site. The control strip will be used by the Engineer to evaluate the application of the tack coat and to determine the compactive effort. If compaction is not obtainable using rollers in static mode; high frequency vibratory rollers may be used for breakdown rolling with the approval of the Engineer. After the control strip is complete, the approved rolling pattern shall not be varied without the construction of a new control strip. Density requirements will not be waived. When the Engineer determines that a control strip is unacceptable, it shall be removed and disposed of at no additional cost to the Administration.

**MEASUREMENT AND PAYMENT.** Asphaltic Reflective Crack Relief Interlayer will be measured and paid for at the Contract unit price per ton. The payment will be full compensation for furnishing, hauling, placing all materials, including antistripping additive, tack coat, control strip, pot hole and spall repairs, setting of lines and grades where specified, and for all material, labor, equipment, tools, ARCRI technical representative, and incidentals necessary to complete the work.

37. **PCC WHEELCHAIR / BICYCLE RAMPS – NEW AND EXISTING CONSTRUCTION, Item 609 204**

This S.P. modifies 609.  
Add the following paragraph after 609.04 (E) 2  
609.04 (E) 3

**DETECTABLE WARNING PAVERS**

**1. DESCRIPTION.** This work shall consist of furnishing and installing detectable warning pavers in construction of new wheelchair ramps in accordance with the details shown on the plans and / or as directed by the Engineer.

**2. DETECTABLE WARNING PAVERS / TRUNCATED DOMES.** Detectable warning pavers / truncated domes for a width of 24” for the entire width of the ramp as indicated on plans, shall be installed on all wheelchair ramps.

**General** – Detectable warning pavers shall consist of a surface of truncated domes aligned in a square grid pattern.

**Dome Size** – Truncated domes in a detectable warning surface shall have a base diameter of 0.9 inches minimum to 1.4 inches maximum, a top diameter of 50% of the base diameter minimum to 65% of the base diameter maximum, and a height of 0.2 inches.

**Dome Spacing** – Truncated domes in a detectable warning surface shall have a center to center spacing of 1.6 inches minimum and 2.35 inches maximum, and a base-to-base spacing of 0.65 inches minimum, measured between the most adjacent domes on the square grid.

**Contrast** – Detectable warning surfaces shall contrast visually with adjacent walking surfaces either light-on-dark, or dark-on-light.

**Size** – Detectable warning surfaces shall extend 24 inches minimum in the direction of travel and the full width of the wheelchair ramp, landing, or blended transition.

**Sidewalk Ramps and Blended Transitions** – The detectable warning surface shall be located so that the edge nearest the curb line is 6 inches minimum and 8 inches maximum from the curb line.

**3. MATERIALS.** Pavers will meet Americans with Disabilities Act (ADA) requirements for detectable warning pavers (truncated domes) either ASTM C 902 Pedestrian and Light Traffic Paving Block, Class SX, Type 1; or ASTM C 936 Solid Concrete Interlocking Paving Units; or ASTM C 1272 Heavy Vehicular Paving Brick, Type R.

Acceptable manufacturers and products for detectable warnings and truncated domes pavers are:

Manufacturers	Products
Whitacre-Greer Fireproofing Company, 1400 S Mahoning Ave., Alliance, OH, 44601	ADA Paver, 4" x 8" x 2 1/4 >> Clear Red (Rustic) #30
Hanover Architectural Products, 240 Bender Rd., Hanover, HA 17331	Detectable Warning Paver, 11 3/4" x 11 3/4" x 2" Red or Quarry Red
Endicott Clay Products PO Box 17, Fairbury, NE, 68352	Handicap detectable Warning Paver, Nominal 4" x 8" x 2 1/4 >> Red Blend

Pavers will be laid on top of a 4" unreinforced concrete base. Setting bed and joints to be mortared in accordance with manufacturers' instructions or with a maximum 1/2" thick setting bed of latex modified cement mortar. Mortar joints to a width not greater than 5/32" and not less than 1/16". Pavers shall not be directly touching each other unless they have spacing bars.

Joints are to be flush with top surface so as to give a smooth surface. Pavers shall be laid such that joints are level with adjoining joints so as to provide a smooth transition from brick to concrete surface. The top surface of any two adjacent units should not differ by more than 1/8" in height for mortared brick paving. Pavers that do not conform to the smoothness requirement shall be removed and replaced at the expense of the contractor as determined by the CO.

Stamping or imprinting systems when used must be capable of uniformly providing the specified texture and patten and provide the minimum dry static coefficient of friction, as defined by ASTM C-1028, shall be 0.80.

**4. CONSTRUCTION.** The Contractor shall submit literature describing the following to the CO at least 30 days prior to the proposed installation:

- The detectable warning paving material
- All associated materials
- Preparation requirements
- In addition, a minimum 12"x12" sample of the detectable warning material shall be submitted.

The manufacturer shall demonstrate in writing and by providing references that the detectable warning paving materials have been satisfactorily used for roadway, path, or flooring applications, in high pedestrian use and under weather conditions similar to those experienced in the District.

In no case shall the Contractor permit the application of any materials by untrained personnel or non-approved installers. The material manufacturer's certification of compliance with this requirement shall be provided to the CO.

Prior to the start of work, the Contractor shall show evidence of successful completion of similar installations and provide a job site sample for approval of the CO. The sample size shall be 4' x 2', minimum, and constructed at a location selected by the CO.

As many test panels will be constructed as are necessary to achieve a sample panel that meets the satisfaction of the CO. All work shall conform to the appearance of the approved sample to the satisfaction of the CO. The sample shall not be incorporated into the work and will be removed when ordered by the CO.

Follow all applicable manufacturers' requirements for environmental conditions, surface preparation, installation procedures, curing procedures, and materials compatibility. The Contractor is responsible for removing any material spatters from areas. The Contractor shall repair any damage that should arise from the installation or the clean-up effort.

Unless otherwise specified, the color of the detectable warning surface shall be yellow and shall be an approximate visual match to Munsell Book Notation 10Y.R 8/14. The color shall be uniform over the entire surface, and homogeneous throughout the thickness of the material.

If a color other than yellow is specified in the Contract documents, the coloring material shall be an approximate visual match to the specified colors. The color shall be uniform over the entire surface and homogenous throughout the thickness of the material.

There shall be a minimum of 70% contrast in light reflectance between the detectable warning and adjoining surface. The detectable warning can optionally be "safety yellow". The material used to provide visual contrast shall be an integral part of the detectable warning surface. Both the domes and the underlying surface must meet the contrast requirement.

The percent in contrast shall be determined by:

$$\text{Contrast} = [(B1 - B2)/B1] \times 100$$

where B1 = light reflectance value (LRV) of the lighter area and B2 = LRV of the darker area. Note that in any application both white and black are never absolute; thus, B1 never equals 100 and B2 is always greater than zero.

When visual contrast other than "safety yellow" is used, provide verification of contrast.

Add the following to 609.04 (E)

(3) Ramps shall be provided with detectable warning pavers, an ADA requirement. These pavers shall be paid under Item No. 609 203 as per specifications contained in S.P. 28.

Delete 609.04 (F) and 609.04 (G) and replace with the following:

**(F) MEASURE.**

Unit of measure for PCC WHEELCHAIR / BICYCLE RAMPS will be each.

**(G) PAYMENT.**

Payment for PCC WHEELCHAIR / BICYCLE RAMPS will be made at the contract unit price per each, which payment will include furnishing and placing all materials and all tools, equipment and incidentals including Detectable Warning Pavers needed to complete the work specified herein.

**38. MAINTENANCE OF HIGHWAY TRAFFIC**

Items 407 002, 614 012, 614 992, 616 001, 616 008, 616 012, 616 014, 616 020, 616 022, 616 024, 616 028, 616 080, 616 090, 616 110, 616 122:

- (A) **Traffic Flow Restrictions** - The actual duration of construction shall be minimized to reduce exposure to potential hazards. The Contractor's operation shall present no interference to traffic during the peak traffic hours of 6:30 A.M. to 9:30 A.M. and 3:30 P.M. to 7:00 P.M., Monday thru Friday, except holidays. The Contractor may occupy one 10-foot lane adjacent to the construction site during the off peak hours and on weekends from 8:00 P.M. Friday to 5:00 A.M. Monday morning. Weekend work requires DDOT approval.
- (B) **Flaggers** - The Contractor shall furnish all necessary flaggers that may be required during the course of construction activities. It is the responsibility of the Contractor, utilities and agencies to ensure that trained personnel administer flagging. Flaggers shall be equipped with safety vests, 24" stop/slow paddles and helmets as per Section 6E of the MUTCD.
- (C) **Traffic Control Devices** - Approved warning signs, channelizing drums, cones, arrow panels, etc. shall be provided to insure motorists of positive guidance in advance of and through the work zone. Erection of regulatory signs such as stop, speed limit and no parking signs must be specifically authorized. Advance Warning signs shall be 48" x 48" in size and the face sheeting shall be Fluorescent Orange High Performance Wide Angle Retroreflective material or equal. All temporary traffic control devices shall meet NCHRP-350 testing requirements. Note: Mesh roll-up signs are not approved. Sign Supports shall be of a spring-loaded type or equivalent. Tripod or A-frame sign stands are not approved.

The temporary signs and markings placed in or adjacent to the work zone shall be consistent and visible at all times. The existing signs and markings may be covered and/or removed temporarily if the intended functions of these signs and markings will not be applicable during construction. However, they shall be replaced promptly when work is completed. All temporary signs no longer applicable to the work zone shall be removed or turned away from traffic. The Contractor shall document all existing pavement markings and signage that is

removed due to their work. The Contractor shall place temporary pavement markings at the end of each workday. The Traffic Services Administration shall approve all temporary and permanent markings.

- (D) **Pedestrian Safety** - The Contractor shall provide pedestrians with a 6' walkway (minimum 4'). This walkway should be safe, convenient and replicate as nearly as possible the most desirable characteristics of sidewalks or footpaths. Pedestrians should not be led into direct conflict with the work site operations or mainline traffic moving through or around the work site. All pedestrians including blind, hearing impaired and physically challenged need protection. All necessary signs and supports for closing sidewalks and detouring pedestrians shall be the contractor responsibility. Temporary ADA compliant handicap ramps and or protective walkways are also the responsibility of the contractor and shall not be paid for separately and cost shall be distributed among the various pay items.
- (E) **Night Work** - During night time hours, the work site shall be made safe for traffic and installing electronically illuminated traffic control devices such as Flashing Arrow Panels and warning lights shall provide warning. These devices shall be used in conjunction with other traffic control devices, and their flashing sequence and light intensity shall meet the requirements cited in the MUTCD. All traffic control devices shall be reflectorized during nighttime hours.
- (F) **Traffic Safety Officer** - The Contractor shall provide a competent, full-time, Traffic Safety Officer in accordance with the requirements of 616.02(B)(1).
- (G) **Traffic Controls** - 104.02(C) applies.
- (H) **Temporary AC, Superpave Surface Course, 12.5 mm, Item 407 002:**

This S. P. supplements 407 as follows:

Work under this item also includes placing temporary asphalt to existing roadways, sidewalks as shown on the plan or as directed by the engineer to maintain pedestrian and vehicular traffic by "feathering down" with the asphalt concrete. Work includes removal and disposal of the asphalt as necessary. Temporary Asphalt shall be per 407.02.

- (I) **Portable Precast PCC Barrier:**

**Install Portable PCC Barrier, Item 614 012**  
**Remove and Reset Portable PCC Barrier, Item 614 992**

The requirements of 614.02 apply

**(J) Sequential Arrow Boards, Item 616 020:**

This S.P. modifies 616.08.

In the first paragraph on page 422, first line, insert the word “between” between “provide” and “25”.

**(K) MEASURE:**

Unit of measure will be that as required for the following pay items, which will constitute the payment for Maintenance of Highway Traffic. Estimated quantities will be as listed in the Pay Item Schedule.

DESCRIPTION	UNIT
Temporary AC, Superpave Surface Course, 12.5 mm, Item 407 002	Tons
Install Portable PCC Barrier, Item 614 012	L.F.
Remove and Reset Portable PCC Barrier, Item 614 992	L.F.
Construction Lane Closing, Item 616 004	Job
Remove Lane Marking, Item 616 006	S.F.
Temporary Construction Sign Supports, Item 616 008	Each
Construction Warning and Detour Signs, Item 616 012	S.F.
Reflectorized Traffic Cones, Item 616 014	Each
Sequential Arrow Boards, Item 616 020	Each
Construction Sign Warning Flags Item 616 022	Each
Type III PVC Barricade, Item 616 024	Each
Traffic Drums, Item 616 028	Each
Truck Mounted Attenuator, Item 616 080	Each
Construction Zone Attenuator, Item 616 090	Each
Portable Changeable Message Sign, Item 616 110	Each
Steel Protection Plate, Item 616 122	Each

**(L) PAYMENT:**

1. Payment for pay items listed in (K) above will be made as specified in the Standard Specifications, as modified elsewhere in these Special Provisions and as follows:

Except as provided in the following paragraph, payment will be made at the contract unit price. When the number of a particular traffic control device required for any single phase of work exceeds the quantity specified in the Pay Item Schedule for that device, the Contractor will be paid for additional devices at the contract unit price.

2. Failure to Maintain Traffic - Failure on the part of the Contractor, at any time, to respond to the provisions of 104.02 and 616, will result in the Engineer immediately notifying the Contractor to comply with required maintenance of traffic provisions. In the event that the Contractor fails to proceed with corrections to Maintenance of Traffic deficiencies so as to conform to the provisions of 104.02 and 616.01 within 4 hours after receipt of such notice, the Engineer may notify the Contractor to suspend all other work on the contract until such time that the Maintenance of Traffic deficiencies are corrected.

In the event that the Contractor fails to respond to a notice of Maintenance of Traffic deficiencies within 4 hours after receipt of such notice, the Engineer will immediately proceed with adequate forces and equipment to maintain the project and the entire cost of this maintenance will be deducted from monies due the Contractor on the next monthly estimate.

An appropriate deduction will be made from the Contractor's next Progress Estimate for each day, or portion thereof, that Maintenance of Traffic deficiencies exist and will continue until the deficiencies are corrected and accepted by the Engineer. Any portion of a day will be considered a full day deduction. The amount prorated will be the per diem amount established by using the Calendar Days (based upon Calendar Dates when required) divided into the total value of the bid item. The amount of monies deducted will be a permanent deduction and will not be recoverable. Upon satisfactory correction of the deficiencies, payment of the Maintenance of Traffic items will resume.

In the event that sufficient funds are not available under the lump sum bid item for Maintenance of Traffic the funds will be deducted from the contract value.

39. **THERMOPLASTIC PAVEMENT MARKING, 4 Inch – Solid Yellow. Item 616 040**  
**THERMOPLASTIC PAVEMENT MARKING, 4 Inch Dash. Item 616 042**  
**THERMOPLASTIC PAVEMENT MARKING, 6 Inch. Item 616 044**  
**THERMOPLASTIC PAVEMENT MARKING, 6 Inch Dash. Item 616 046**  
**THERMOPLASTIC PAVEMENT MARKING, 12 Inch. Item 616 050**  
**THERMOPLASTIC PAVEMENT LETTER, Item 616 052**  
**THERMOPLASTIC PAVEMENT ARROW, Item 616 054:**

This S.P. Supplements 616.12

- (A) GENERAL – Work under these items consists of furnishing all materials for, and installation of, permanent thermoplastic lane markings for the project. Permanent markings shall be placed within 24 hours after placement of final surface, if roadway is opened to traffic.
- (B) CONSTRUCTION METHODS – The newly applied markings shall be protected from intrusion by traffic by means of traffic cones, safety barrels or other approved

means until such time as the material has dried sufficiently to bear traffic.

**40. PLANTS AND PLANTING**

This Special Provision supplements 611.02 of the Standard Specifications

**(A) DESCRIPTION.** Work consists of furnishing, delivering, planting transplanting trees, shrubs, vines and ground cover, plants of types and sizes indicated on the plans and as directed, including all excavation and planting operations, plant establishment operations, disposal of waste and other incidentals needed to complete planting work.

This work shall be performed by a qualified landscape contractor who shall be approved by the Chief Engineer prior to start of work under this item. All work done under this item shall be inspected by the Chief Engineer.

**(B) MATERIALS.** The following apply:

Plants -Plants are defined as trees, shrubs, vines, and plants of all descriptions.

**(1) QUALITY.**

- a. Plant materials that are weak or which have been cut back from larger graded to meet certain specified requirements will be rejected. All plants shall be freely dug; no heeled-in plants from cold storage will be permitted.

Prior to starting work, the Contractor shall submit, in writing to the Chief Engineer, an itemized list of sources of all plant items to be used in the contract.

The Owner reserves the right to inspect the plant material in the nursery prior of transportation to the project site. Trees shall be sealed. Cost for inspection and sealing of plant material shall be borne by the Contractor. The Contractor shall bear all costs associated with meals, lodging and transportation, air fare, auto rental, and tolls. Daily lodging and meal expenses not to exceed per diem limits allowed under DC Government regulations.

Approval of plants at the nursery shall not be construed as final acceptance of the material. The plan material will be inspected again at arrival of the project and after installation.

- b. All plants shall be first-class representatives of their species or varieties unless otherwise specified. Unless otherwise specified, all plants shall be nursery grown stocks that have been transplanted or root-trimmed 2 or more times, according to the kind and size of plants. Furnished plant materials shall be certified by State or Federal Department of Agriculture to be free from disease or infestation.

The branch system shall be normal development and free from disfiguring knots, sun-scald, injuries, abrasions of the bark, dead or dry wood, broken terminal growth, insect eggs and infestations, or other objectionable disfigurements. Trees shall have reasonably straight stems and shall be well branched and symmetrical per their natural habits of growth.

Minimum tree size shall be 2 to 2-1/2 inch caliper, 6 to 8 feet in height. Specimen shall mean an exceptionally heavy, symmetrical tightly knit plant, so trained and favored in its development and appearance, as to be unquestionably superior in form, number of branches, compactness and symmetry.

- (2) **PLANT NAMES.** All scientific and common plant names shall be per "Standardized Plant Names", as adopted by the American joint Committee on Horticultural Nomenclature.

All plants delivered shall be true to name and legibly tagged with the names and sizes of materials.

- (3) **PLANT GRADING STANDARDS.** Grading of plants, including Balled and Burlapped Specifications, Bare Root Specifications, Nursery, Collected, Container Grown and Seedling Stock shall be per "USA Standard for Nursery approved by the American Association of Nursery-men, Inc., latest edition (ANSI 260.1).
- (4) **BALLED AND BURLAPPED PLANTS.** Balled and burlapped plants shall be dug so as to retain as many fibrous roots as practicable, and shall come from soil which will form a firm ball. The soil in the ball shall be the original and undisturbed soil in which the plant has been grown. The plant shall be dug, wrapped, transported, and handled in such manner that the soil in the ball will not be loosened to cause stripping of the small and fine feeding roots, or cause the soil to drop away from such roots.
- (5) **CONTAINER-GROWN STOCK** -Healthy, vigorous, well-rooted exterior plants grown in a container with well-established root system reaching sides of container and maintaining a firm ball when removed from container. Container shall be rigid enough to hold ball shape and protect root mass during shipping and be sized according to ANSI 260.1 for kind, type, and size of exterior plant required.
- (6) **PLANTING SOIL MIX IN LAWN AREAS.** The Contractor shall provide soil free of plants and roots, debris and other extraneous matter in sufficient quantities to meet the design of the Drawings. Ingredients used to meet requirements shall include items listed in Section (14) SOIL CONDITIONERS in this specification.

Soil mix shall meet the following requirements:

Organic Content: 4.0% to 6.0%  
pH Level: 5 to 6.5  
Electrical Conductivity: (EC@) of a 1:2  
USDA Textural Classification: Sandy Loam  
15 -20% clay,  
30 -50% silt,  
50 -70% sand.

- (7) **PLANTING SOIL MIX IN SIDEWALK TREE BOXES.** The Contractor shall provide soil free of plants and roots, debris and other extraneous matter in sufficient quantities to meet the design of the Drawings. Ingredients used to meet requirements shall include items listed in Section (14) SOIL CONDITIONERS in this specification. Soil mix shall meet the following requirements:

Organic Content: 4.0% to 6.0%  
pH Level: 5 to 6.5  
Electrical Conductivity: (EC@) of a 1  
USDA Textural Classification: Loamy Sand  
10 -15% clay,  
20 -30% silt,  
70 -80% sand.

- (8) **STAKES.** If called out in Drawings - Malleable iron, arrow-shaped anchors, or oak stakes, as approved by the Chief Engineer, may be used. Chain must be attached to the top of stakes that have been driven into the ground and will provide protection for the tree.
- (9) **ANTIDESICCANT.** Antidesiccant, for retarding excessive loss of plant moisture and inhibiting wilt, shall be an approved emulsion which will provide a film over plant surfaces permeable enough to permit transpiration. Antidesiccant shall be used only after approval.
- (10) **EXAMINATION OF CONDITIONS** -The Contractor and any Sub-contractor responsible for the execution of the Work of this Section shall review the subgrades and verify that the subgrades have been prepared as required prior to proceeding with the spreading of planting soil.

Carefully review the requirements of percolation testing, compaction, slope, and absence of debris of the subgrade prior to spreading of planting soil.

- (11) **QUALIFICATION OF PERSONNEL** – The work of this section shall be performed by a landscape contracting firm which has successfully installed work

of a similar quality, schedule requirement, and construction detailing with a minimum of five years experience. Submit proof that the landscape contracting firm meets this requirement. Foreman and Crew Leader shall remain on the project on a consistent basis from the beginning of planting through provisional acceptance.

- (12) **FIELD ADJUSTMENT** -Prior to installation of trees, locate trees by flagging or staking in areas as shown in Drawings and request the acceptance from the Chief Engineer. Prior to installation of shrubs and perennials, locate shrubs and perennials in the field as shown in Drawings and request the acceptance from the Chief Engineer.
- (13) **TANBARK, HARDWOOD, AND MULCH.** Mulch shall be medium grade and free of matter injurious to plant growth.
- (14) **SOIL CONDITIONERS**
  - a. **MICROPORE RELEASE PACKETS.** Micropore fertilizer release packets shall be used during the planting in accordance with packet manufacturer's instructions, or as specified. Each packet shall be sealed in a polyethylene laminated envelope and shall contain a minimum soluble fertilizer analysis of 16 percent nitrogen, 8 percent phosphorus and 16 percent potash. Packets shall be 4 ounces, 8 year release packages as approved by the Chief Engineer.
  - b. **PEAT MOSS.** 823.06(A)
  - c. **MANURE.** . Either green manures or animal manures may be used to improve soil composition. Animal manure is feces or excrement of plant-eating mammals and poultry -or plant material which has been used as bedding for animals and thus is heavily contaminated with their feces and urine. Green manures are crops grown for the express purpose of plowing them under or leguminous crops, such as clover.
  - d. **COMPOSTED SLUDGE** -Composted municipal sewage sludge may be mixed to soil mix, one (1) part sludge to five (5) parts topsoil, such that the remaining mix has a pH of not more than 6.5.
  - e. **LEAF MOLD** -Leaf mold shall be decomposed leaves, thoroughly composted, free of plastic and any other trash or debris.
  - f. **GYPSUM** -Shall be agricultural grade gypsum, 23% available calcium and 18% sulfur, mixed into planting soil at a rate of 40 to 120lbs per 1000 sq ft.
  - g. **MYCORRHIZAL FUNGAL INOCULANT FOR NEW PLANTING** -

Mycorrhizal Fungal Inoculant shall be 3 ounce packets or tablets of live spores. Each packet or tablet of inoculants shall be one year old or less. Mycorrhizal fungal inoculant shall be as manufactured by Plant Health Care Inc. (800) 421-9051, JRM 1(800)962-4010, DieHard (800) 628-6373, or approved equal.

- (15) **WATER** -The Contractor shall be responsible for furnish own supply of water to the site at no extra cost. All plant materials or beds injured or damaged due to the lack of water, or the use of too much water, shall be the Contractor's responsibility to correct. Water shall be potable. Contractor shall not assume that any existing irrigation system on site will be available or in working order. Contractor shall obtain any necessary permits and written approvals from the client to use a municipal water source to water the plant material. Provide water schedule, as part of the maintenance plan, upon completion of planting. Notify the Chief Engineer 24 hours before watering plant material if there is any deviation from watering schedule.
- (16) **SOIL TESTING AND RECOMMENDATIONS** -The Contractor shall provide a one cubic foot representative sample per each 500 cubic yard proposed stockpile of planting soil for testing. All stockpile sampling shall be per ASTM D 75 and Appendixes for samples from stockpiles. Stockpiles shall be separated into a maximum 500 cubic yard piles and labeled in the field with a numbering system referenced in all soil samples and test results. Stockpiles shall be manufactured sufficiently in advance of testing so that pH, organic content, and ratio have stabilized. Additionally, the Contractor shall provide one cubic foot representative samples selected from on-site stockpiles of delivered planting soil for testing after it has been amended to that delivered and amended material meets specifications.

Testing: Contractor shall deliver all samples to testing laboratories and shall have the testing report sent directly to the Chief Engineer. Perform all tests for gradation, organic content, soil chemistry, cation exchange capacity, and pH by a qualified Soil Testing Laboratory specializing in the testing of soils for fertilization of turf and plantings. Testing reports shall include the following tests and recommendations. Report shall indicate whether or not the material meets the required specifications and any proposed recommendation for amending the soil to meet specifications.

- a. Sieve analysis shall be by combined hydrometer and wet sieving using sodium hexametaphosphate as a dispersant in compliance with ASTM D 422 after destruction of organic matter by H2O2. To facilitate review and approval of sieve analysis, provide a computer generated gradation curve from the Soil Plant Tissue Laboratory.
- b. Percent of organics shall be determined by the loss on ignition of oven-dried

samples. Test samples minus #10 materials shall be oven-dried to a constant weight at a temperature of 450 degrees Fahrenheit.

- c. Chemical analysis shall be undertaken for Nitrate Nitrogen, Ammonium Nitrogen, Phosphorus, Potassium, Calcium, Magnesium, extractable Aluminum, Lead, Zinc, Cadmium, Copper, Soluble Salts, and pH and buffer pH. A Conductivity Meter shall be used to measure Soluble Salts in 1:2 soil/water (v/v). Except where otherwise noted, nutrient tests shall be for available nutrients.
- d. Soil analysis tests shall show recommendations for soil additives to correct soils deficiencies as necessary, and for additives necessary to accomplish lawn and planting work as specified.
- e. Percolation Tests: Submit results of percolation tests per specification requirements.

**(17) GEOTEXTILE FABRIC.** Contractor shall furnish and install geotextile fabric as shown in drawings. Install geotextile on prepared base free of mud, frost, snow, or ice in planting areas according to manufacturer's written instructions, overlapping sides and ends. Cut fabric with sharp utility knife or scissors but do not tear. Fabric shall not be visible once granular base is placed. A 3.5 nonwoven needle punched geotextile made of 100% polypropylene staple filaments shall meet the following requirements:

PROPERTY	TEST METHOD	ENGLISH	METRIC
Tensile Strength	ASTM D-4632	90 lbs	401 N
Elongation Break	ASTM D-4632	50 %	50 %
Mullen Burst	ASTM D-3786	185 psi	1275
Puncture Strength	ASTM D-4833	55 lbs	245 N
Trapezoidal Tear	ASTM D-4533	40 lbs	178 N
Apparent Opening Size	ASTM D-475 1	70 US Sieve	0.212 mm

Permittivity	ASTM D-4491	2.00 Sec <sup>-1</sup>	2.00 Sec <sup>-1</sup>
UV Resistance, % Retained	ASTM D-4355	70%	70%
Flow Rate	ASTM D-4491	150 gal/min/sf	6110 I/min.m2

(18) **UNDERDRAIN.** 4 inch PVC Perforated Pipe, 4 inch Connect Pipe, 4 inch underdrain pipe riser.

(C) **CONSTRUCTION REQUIREMENTS.**

(1) **PLANTING SEASONS.** Unless otherwise directed in writing, planting shall be done during the following seasons:

Deciduous Plants -October 15 to May 1 and September 1 to November 15

Evergreen Plants -March 15 to June 1 and September 15 to December 1

No planting shall be done in frozen or snow covered ground or when the soil is in an unsatisfactory condition for planting. No planting shall be done during the summer months. If tree planting during the summer is unavoidable, then the contractor, at no additional cost to the District, must use drip irrigation systems (gator bags and/or ooze tubes) on every tree. The contractor must also maintain these systems (make sure the bags and/or ooze tubes are full of water) during the summer months.

(2) **DELIVERY AND INSPECTION.** The Contractor shall notify the Chief Engineer not less than 2 days in advance of plant delivery. All plants shall be available for inspection before being dug. The Contractor shall furnish the Chief Engineer complete information concerning plant source of supply. At the option of the Chief Engineer, a certified will accompany the inspector.

Only trees from the District Department of Transportation's street tree list shall be selected. All trees and a representative sample of shrubs shall be sealed. Transportation for inspection and sealing shall be furnished by the Contractor as part of work. All plants shall comply with state and federal laws controlling inspection for plant diseases and insect infestations, and the Contractor shall deliver to the Chief Engineer all required inspection

certificates. All shipments shall include a plant list giving detailed descriptions of the plants and the date of shipment.

- (3) **SUBSTITUTIONS.** When specified plants are not available at time of planting, the Contractor shall submit written evidence from at least 3 competent sources that specified plants are unavailable. If substitution is approved, plant items in the contract which are similar in size and type and which will perform the intended function shall be used at the respective contract price. If existing plant items are not appropriate and if the Chief Engineer and Contractor can mutually agree on a suitable substitution at the same contract unit price or less, the substitution will be approved.
- (4) **PROTECTION AND TEMPORARY STORAGE.** The Contractor shall keep all plants moist and protected from drying out. Protection shall include the time when plants are in transit, in temporary storage or on the project awaiting planting. Plants will be inspected by the Chief Engineer at the project site and approved prior to planting.

Plants failing to meet specifications, showing signs of improper handling or arriving with broken seals, broken or loose balls, inadequate protection for tops or roots, shriveled, dry or with damaged roots will be rejected. Rejected plants shall be immediately removed from the site and replaced. Care shall be taken in handling plants to prevent injury to branches or roots. The solidity of balled and burlapped plants shall be carefully preserved.

Plants delivered but not scheduled for immediate planting shall be protected as follows:

Bare root plants shall be separated, roots properly spread and puddled in with moist topsoil into a heeling-in trench.

Balled and burlapped (B&B) plants shall have the earth balls covered with sawdust, wood chips or other suitable material and kept in a moist condition.

- (5) **PLANT CARE AND TRANSPORTATION** -Special precautions shall be taken to avoid any unnecessary injury to, or removal of fibrous roots. Each species or variety shall be handled and packed in the approved manner for that plant, with proper regard to the soil and climate conditions and the time that will be consumed in transit or delivery. All precautions that are customary in good trade practice shall be taken to ensure arrival of plants at their destination in good condition for successful growth.

All plants which are required to be balled and bur lapped prior to shipment are designated plants shall be lifted so as to retain as many fibrous roots as possible. The burlap shall be firmly held in place by careful wrapping with stout cord or wire.

Plant material budding into leaf or new soft growth at time of digging shall be sprayed with a wilt preventive, anti-desiccant spray material before delivery and preferably before digging.

All shipments shall be accompanied by an invoice furnished to the Chief Engineer giving detailed descriptions of the plant materials, the date of shipment, a certification that all plants in leaf, including all evergreens, have been sprayed with an approved wilt preventive spray material and any other pertinent information. Upon receipt of nursery stock at the project site, the Contractor shall notify the Chief Engineer.

Plant materials shall not be planted until they have been inspected and approved by the Chief Engineer at the receiving site. Any plant material, which does not meet the specifications for quality herein stated or shows improper handling or arrives on the site in an unsatisfactory condition, will be rejected. Materials arriving with broken seals, broken or loose balls, insufficient protection of roots or tops, shoveled, dry or insufficiently developed roots, or roots which are weak and thin, damaged, defective or which do not comply with specifications will be rejected. All rejected plants shall be immediately removed and disposed of by the Contractor and approved nursery stock of like variety, size, age, etc., shall be furnished by without additional expense to the District. Provisional acceptance of all plant materials will be given only after materials are planted and after meeting all requirements prescribed herein.

All plants heeled-in shall be properly maintained by the Contractor until planted.

The balls of plants shall, if not immediately planted after delivery and inspection, be adequately protected by covering until removed for planting in a manner appropriate to prevailing conditions and in accordance with accepted horticultural practice. Care shall be taken in handling plants to prevent injuries to the branches or roots of plants. The solidity of the ball of B&B plants shall be carefully preserved. Handling of the plant by parts other than the ball shall be cause for rejection of such plant.

- (6) **FIELD LAYOUT** -Plan arrangements on the planting sheets are approximate, Final locations, facing orientation of all trees shall be directed by the Chief Engineer. The Contractor shall make any change in the location of proposed plantings as may be directed, .without additional

expense to the District.

- (7) **PROTECTION OF DELIVERED PLANTING SOIL AND BIOSOILS** -Soil delivered to the site shall be protected from erosion at all times. Materials shall be spread immediately. Otherwise, materials that set on site for more than 24 hours shall be covered with tarpaulin or other soil erosion system acceptable to the Project Engineer and surrounded by silt fence.
- (8) **PLANT PIT AND TREE EXCAVATION** -Tree pits shall be a continuous tree pit as shown in the drawings or directed by the Chief Engineer.

Where trees are to be installed contiguous to underground utility lines, the Contractor shall have a representative from each applicable utility company stake-out in the field the exact location of the utility conduits and appurtenances before tree pits are dug.

The Contractor shall not excavate any than eight (8) inches to the back face of curbs. Excess PC foundation for PCC or granite curb or sidewalk which protrudes into the planting pit shall be carefully chipped and removed by the Contractor to allow proper placement of tree ball. No additional compensation will be allowed.

Plant pits shall be backfilled immediately with the mixed specified soil mix. The soil mix ingredients shall have been previously delivered and mixed at an approved mixing site before use at tree pit locations to amend existing soil and use for backfilling.

Under no circumstances shall any plant pit remain open overnight unless it is properly barricaded. Backfill shall be firmly tamped throughout the entire pit area so that excessive setting will not occur.

If any tree pits are found to be low due to insufficient backfilling setting, the Engineer shall be notified of such locations and shall immediately make each tree pit safe.

Failure to comply with above requests shall be authorization for the District to make each tree pit safe by barricading or placing topsoil in the low areas. The entire cost of such work shall be deducted from any monies due to the Contractor. If monies are not sufficient, the Contractor will be billed the additional amount.

Any damage to existing grass areas shall be acceptably repaired, as required by the Chief Engineer, at no expense to the District.

- (9) **SETTING PLANTS** -Care shall be taken during backfilling, tamping and watering to avoid damage to roots and to prohibit air pockets. Any root bruised or broken before or during planting shall be pruned immediately to sound tissue with a clean cut.

Watering shall mean full and thorough saturation of all backfill in the pits on the date the plants are planted. Water shall be applied only by open-end hose at very low pressure. In no case shall hoses from tank trucks be laid across ramps, roadways or other pavements.

- (10) **FILLING AND COMPACTION** -Confirm that the subgrade is at the proper elevation and that no further earthwork is required to bring the to proper elevations. Subgrade elevations shall slope parallel to the finished grade toward the subsurface drain lines as shown on the Contract Documents. Provide a written report to the Chief Engineer that the has been placed to the required elevations and that the drains water rates specified under the required percolation tests specified before placement of the planting soil is completed. Perform no work of placing and spreading planting soil until elevations have been confirmed and a written report has been accepted by the Chief Engineer.

Clear the subgrade of all construction debris, trash, rubble and any foreign material. In the event that fuels, oils, concrete washout or other material harmful to plants have been spilled into the material, excavate the soil sufficiently to remove the harmful material. Such debris, trash, rubble and foreign material shall be removed from the site and disposed of in a legal manner. Fill any over excavation with approved fill and compact to the required compaction levels.

Do not proceed with the installation of planting soil until all utility work in the area has been installed.

Protect adjacent walls, walks and utilities from damage or staining by the topsoil. Use 0.5-inch plywood and or plastic sheeting as directed to cover existing concrete, metal and masonry work and other items as directed during the progress of the work. Clean up all trash and any soil or spilled on any paved surface at the end of each working day.

- (11) **PERCOLATION TESTING** -Perform percolation tests on existing soils or placed fill prior to placing and spreading planting soil. Perform percolation testing of soil or placed fills to whether or not the will drain

properly. Perform percolation tests as specified below:

Percolation Tests: Compact each lift sufficiently to reduce settling but not enough to prevent the movement of water and feeder roots through the soil. The soil in each lift should feel to the foot in all areas and make only slight heel prints. At completion of soil installation, the soil should offer a firm, even resistance when a soil sampling tube is inserted from lift to lift. After the placement of each lift, perform percolation tests to determine if the soil has been over compacted. Perform the following percolation test procedure:

a. Soil Di or compacted placed to ensure that these underlying soils drain. Likewise, perform sufficient percolation tests after ripping and loosening to ensure that the soils are no longer too compact to drain.

- (12) **SOIL COMPACTION** -During the compaction process, all depressions caused by settlement or rolling shall be filled with additional soil and the surface shall be regraded and rolled until presenting a smooth and even finish corresponding to the required grades.

The Contractor shall install soil in successive horizontal lifts no thicker than 6 inches to the desired compaction as described in this Section. The Contractor shall install the soil at a higher level to anticipate any reduction of soil volume due to settling, erosion, decomposition, and other similar processes during the warranty period. The Chief Engineer may ensure that the full 6 inches of planting soil are obtained by digging holes in the soil at the same frequency as for compaction testing.

Movement of equipment: Select equipment and otherwise phase the installation of the soil and placed fills to ensure that wheeled equipment does not travel over soil, placed fills, ordinary borrow or already installed soil. Movement of tracked equipment over said soils will be reviewed and considered for approval by the Chief Engineer. If it is determined by the Chief Engineer that wheeled equipment must travel over already installed soil, provide a written description of sequencing of work that ensures that compacted soil is loosened and uncompacted as the work progresses or place a one-inch thick steel plate over the length and width of any travel way to cover soils and protect it from compaction.

- (13) **FINE GRADING** -Immediately prior to dumping and spreading the planting soil, shall be cleaned of all stones greater than 1 1/2 inches and all debris or rubbish. Such material shall be removed from the site, not raked to the edges and Any local concentration or piles of spilled stone must be removed from areas or evenly distributed on site. Notify the Chief Engineer that the soil has been cleaned and request attendance on site to

review and approve conditions prior to spreading planting soil.

- (14) **FERTILIZING.** During the next planting season following spring or fall planting, all plants shall be fertilized once at the rate specified by the manufacturer for the size of plant.
- (15) **WATERING.** All plants shall be thoroughly watered during and immediately after planting and at such intervals during the plant establishment period as needed. Water shall not contain elements toxic to plant life. At each watering the soil around the plants shall be thoroughly saturated.
- (16) **UNDERDRAIN** - Installation of the underdrain system in the planting bed as shown in the drawings.
- (17) **STAKING.** No guying of trees will be permitted. must be installed with chain attached to the stakes.
- (18) **PRUNING.** Pruning shall be done before or immediately after planting to remove damaged or broken branches. All pruning shall be done by experienced personnel with properly conditioned equipment and in keeping with accepted horticultural practice. Trees with pruned terminal leaders will be rejected.
- (19) **MULCHING.** Mulch shall be placed over all pit and saucer areas of individual trees, shrubs and over the entire area of plant beds to 2 to 3 inch depth within 3 days after planting. Mulch shall not touch the bark of the tree.
- (20) **RESTORATION AND CLEAN-UP**
  - a. The Contractor shall notify the Chief Engineer where work will be performed on a daily basis, prior to commencing each day's work. Should difficulty arise in excavation of tree pits to necessitate changing tree pit locations, abandoned locations shall be protected from conditions and secured. Such changes will be determined by the Project Engineer and be made at not cost to the District.
  - b. Excess and waste material shall be removed daily. When planting in an area has been completed, the area shall be thoroughly cleaned up. Where existing grass areas have been damaged or scarred during planting operations, the Contractor shall restore disturbed areas to their original condition as directed as part of work. The Contractor shall clean up all debris and leave the project in an acceptable condition.

- (21) **MAINTENANCE** -Maintenance shall begin immediately after each plant is planted. The official maintenance period will commence upon the completion of all planting and shall continue for ninety (90) days minimum. Maintenance period may carry over to the non-growing season depending on the time of planting and weather conditions.

Contractor shall submit a maintenance plan to the Chief Engineer.

Maintenance shall include watering of planted areas, weeding, mulching, removal of dead material, resetting plants to proper grades on upright position, edging, repairs of washouts and gullies, repairs to protecting fences spraying for insect pests and disease and all other necessary works of maintenance.

All plants during the maintenance period shall be watered at least twice each week unless adequate rainfall has been determined by the Chief Engineer. At each watering the soil around each tree or shrub shall be thoroughly saturated. If sufficient moisture is retained in the soil, as determined by the Chief Engineer, the required watering may be reduced. Contractor shall submit a maintenance plan to the Chief Engineer before the completion of maintenance of plant material.

Planting beds and individual plant pits shall be kept free of weeds and mulch shall be replaced as required to maintain the required depth of mulch. Beds and individual pits shall be neat in appearance and maintained to the lines originally laid out.

Plants that die during the maintenance period shall be replaced as directed by the Chief Engineer.

- (22) **PROVISIONAL ACCEPTANCE** -Upon completion of the maintenance the Contractor shall request in writing that the Owner formally inspect the planting work and award Provisional Acceptance. If plant material and workmanship acceptable, written notice will be given by the Owner stating that the work has received provisional acceptance, and that the guarantee period has commenced from the date of provisional acceptance.

If a number of plants are sickly or dead at the time of inspection, or if in the Owner's opinion, workmanship is unacceptable, written notice will be given by the Owner in the form of a punch list, which itemizes necessary planting replacements other deficiencies to be corrected. All dead and unsatisfactory plants shall be removed promptly from the project site and shall be planted in the same numbers. Provisional Acceptance of the

planting work shall be established by the Owner in writing, following the completion of all maintenance work requirements as specified herein and following the correction of all punch list deficiencies.

- (23) **GUARANTEE PERIOD REPLACEMENTS** - The acceptability of plants furnished and planted will be determined at the end of a two (2) year guarantee period during which the Contractor shall employ all practicable means to preserve the plants in a healthy growing condition. Care during this period shall include watering, cultivating, pruning, repair and adjustment of stakes, and other standard proper care as directed. Plants, saucers, and beds shall be kept weed free. Remulch as necessary to maintain mulch depth as shown. The Contractor shall be responsible for removal of stakes and chain locks at the end of the 2 year guarantee period.

Dead and unsatisfactory plants as directed shall be promptly removed from the project. An inspection by the Contractor and the Chief Engineer will be held 30 days before the start of the planting season to determine plant acceptability and number of replacements. During the next planting season following completion of actual spring or fall planting, all dead and unsatisfactory plants shall be replaced in kind and size with live healthy plants installed per specifications at the Contractor's expense.

Alternate or substituted varieties of plants shall be used only if approved. A final inspection of all plants will be held after the replacement planting has been completed.

If the Contractor fails within 10 days to satisfactorily care for and replace plants as needed or ordered, the District may proceed with labor, equipment, and to perform the work, with the cost of such work charged to the Contractor.

The Contractor will not be responsible for theft or damage to plants by vehicles or vandalism following completion and approval of the construction portion of planting.

#### **(D) MEASURE AND PAYMENT**

Measure and payment for plants shall be according to 6111.02(D) as supplemented in this sub section.

Excavation, backfilling with planting soil mix, and mulching will be measured and paid for separately under their respective pay item: 202002 for excavation, 610058 for planting soil mix and 610060 for mulching.

The furnishing and installation of geotextile fabric in plant pits will not be measured separate for payment. This work is considered incidental to the work being performed under Planting Soil Mix, pay item 610058.

**41. STREETLIGHTING:**

This S.P. revises and supplements 617 and 618.

**SCOPE: STREET LIGHTING AND TRAFFIC SIGNAL**

1. Furnish and install traffic signal poles, mast arm pole and traffic signal controller foundations, pendant post, #16 posts, wood pole arms, luminaires, conversion kits, globes, photo controls, feeder cables, cables in poles, and all necessary electrical splices
2. Removal of the existing street lighting system including luminaires, wood pole arms photo controls, poles, transformer bases, cables, foundations, manholes and abandonment of conduit, as directed by the Engineer. **The Contractor shall maintain the level of streetlight illumination within the project limits by the use of the existing and proposed lighting poles.** There will be no direct payment to the Contractor for maintaining the lighting during construction.
3. Removal of all signs on the existing street light poles, storage and permanent reinstallation of the signs on the new street light poles or new u-post.
4. During this contract all the streetlight and traffic signal service conduits will be replaced with new conduits. The existing street light feeder cables will be removed from the conduits.
5. The Streetlight Contractor shall construct, abandon and or remove all below ground traffic signal conduits, foundations manholes and hand boxes
6. Other essentials necessary for the satisfactory installation of the roadway lighting system shown on the plans, whether specifically mentioned or not.

The Potomac Electric Power Company currently supplied power to the existing streetlight system from its manholes. PEPCO will supply the power to the permanent roadway lighting system. The Contractor shall install the new feeder cables into PEPCO's facilities, under PEPCO's supervision and inspection.

The contractor shall cut when required the existing D.C. cables for new connections in PEPCO owned manholes. PEPCO owns the service tap onto their electrical system. D.C. owns the cable after the service tap to the street light(s).

All new service taps onto PEPCO's electrical distribution system will be performed by PEPCO Forces.

## **REQUIREMENTS:**

### **(A) GENERAL**

All work performed under this contract shall conform to the National Electrical Code (NEC), District of Columbia Electrical Code, District of Columbia Standard Specifications (blue book 2009), Streetlight Electrical Specifications and District of Columbia Streetlight Policy and Design Guideline (March 2009).

Before any electrical work is performed, the electrical Contractor must be licensed and bonded in the District of Columbia and must apply for an electrical permit to perform electrical work in public space. An electrical permit may be obtained by contacting the Traffic Services Division located in the rear of 1338 G Street, S.E. on (202) 727-5868. This application must be signed by a Master Electrician or Electrical Engineer who is required to be licensed in the District of Columbia.

The Contractor's employees installing the electrical work must be licensed in the District of Columbia as a Master Electrician, Electrician or Apprentice Electrician. When Apprentice Electricians are working, a Master Electrician or an Electrician must be on the project site for personal supervision.

The Contractor shall have a copy of the drawings, Electrical Permit and all approved Catalog Cuts on the job at all times when electrical work is being performed.

All electrical work must be inspected by the electrical inspectors of the District Department of Transportation. Forty-Eight (48) hour advance notice is required for inspection. The phone number for the electrical inspector's office is (202) 698-3630.

**After obtaining an official electrical permit to perform electrical work in public space, the contractor is to notify IPMA's electrical inspectors 72 hours in advance before all street light electrical construction begins and 24 hours advance notification for electrical inspections to (via e-mail and telephone) Mr. Antonio Byrd at antonio.byrd@dc.gov (202) 741-5368 desk or (202)359-2678 cell or Mr. Joseph Moore at joseph.moore@dc.gov (202) 741- 5367 desk or (202) 439-1458 cell.**

Violation of any electrical code, the Special Provision, Standard Specifications for Highways and Structures (1996) or any other requirements will cause the work to be **STOPPED IMMEDIATELY.**

The Contractor is also put on notice that due to the long lead times required to obtain the streetlight posts from the manufacturers, that the Contractor shall not be given additional time for completion of the project.

The Potomac Electric Power Company (PEPCO) will furnish power for the street lighting systems. All work involved with PEPCO facilities shall be performed in conformance with the PEPCO requirements attached in the Appendices. The Contractor shall install the new feeder cables into PEPCO's facilities, under PEPCO's supervision and inspection.

It shall be the Contractor's responsibility to notify and coordinate with PEPCO throughout the construction of the project in connection with all PEPCO services and facilities in the construction area, such that removal and restoration of services can be done in a timely and orderly manner at all times. Construction delays as a result of inadequate coordination shall be the Contractor's responsibility.

It should be noted that the D.C. electrical system is unfused, unprotected with no disconnecting means other than cutting the cable from the feed source.

The Contractor shall be expected to perform electrical work on D.C. cables with the knowledge that the circuits are energized.

The Contractor is here by notify that there could be remote relays located within the project limits, if one is found the Contractor shall notify the Streetlight Branch (202) 671-2710.

The Contractor is hereby put on notice that he will be responsible for maintaining the streetlights within the limits of the project from the Notice to Proceed until final acceptance by the District. This shall include all streetlight outages and pole knockdowns. all streetlight outages shall be repaired within 24 hours of being notified by the Project Engineer.

Material removed from service, as part of this project shall be returned to the District of Columbia, Department of Transportation Warehouse, located at 1735 15<sup>th</sup> Street, N.E., Washington, D.C. as directed by the Project Engineer. All poles and/or parts returned to the District shall be disassembled and stacked/shelved at the warehouse under DC-DOT warehouse personals direction and supervision. All HPS cut-off type luminaires shall be tested, proved functional, in good reusable condition, then they will be wrapped in bubble wrap, boxed, sealed, the boxes

marked with the date, size, voltage and shelved at the warehouse under DC-DOT warehouse personals direction and supervision. All other material not returned to the District shall become the Contractor's property and be disposed of at no additional cost to the District.

The Contractor upon completion of the project shall submit a complete set of as-built drawings of the streetlight portion of the project to the Streetlight Branch, Department of Transportation.

The as-built drawings shall include Maryland Grid indication to show pole and manhole location. Manhole and pole shall be assigned with a Grid Number, which is consistent with the DC Street Lighting Numbering System. The set of drawings shall bear the signature of an officer of the Contractor's organization, certifying compliance with as-built conditions.

The contractor shall coordinate the installation and removal of streetlights with the Streetlight Branch Telephone No. (202) 671-2710, and must submit a schedule for the removal and installation of street light poles for approval to the commencement of this project. The approval of this schedule will have a direct bearing on the notice to proceed for the contract. The schedule must include where an existing street light pole is replaced in the same location

The above schedule must reflect the dates for each streetlight replaced under this contract. The following information must be supplied by the Contractor before starting to work:

1. Removal date of each street light pole & fixture (putting it out of service)
2. The date of the complete operational installation of the street light pole & fixture
3. The time between the removal date & complete operational installation must not exceed 8 calendar days for any underground or aerial fed light.

**(B) PEPCO SERVICE**

The Contractor shall coordinate with PEPCO for the following:

1. Payment to PEPCO for manhole entry before any entry into their manholes.
2. Payment to PEPCO for any PEPCO forces work (SLF – Work Orders)
3. To have each “PEPCO MANHOLE” inspected by PEPCO forces and the Electrical Contractor on this contract for safety, clearing of the cables racked on the walls, spotting of the wall for new conduit penetrations and the knowledge of the location of each feed manhole for the street lights.

4. Calling PEPCO when it is necessary for PEPCO Forces to make the taps onto their Electrical System to energize the street lighting and signal systems
5. Calling PEPCO for the final inspection of their manholes after all electrical work is complete in the PEPCO manholes as called for in this contract.

**All work performed within PEPCO facilities shall be performed in conformance with all PEPCO requirements. The Contractor shall initiate communication with PEPCO as early as possible after execution of this contract for the purpose of establishing scheduling guidelines and to exchange telephone numbers between the principal points of contract. The power company representative is:**

**Mr. Stephen J. Park  
Senior Supervising Engineer  
Potomac Electric Power Company  
3400 Benning Road, N.E.  
Washington, D.C. 20019  
Telephone Number: (202) 388-2573**

**(C) MATERIAL AND WORK PROCEDURES**

Unless otherwise noted in the plans and this special provision, the Contractor shall be responsible for furnishing all proposed materials associated with the electrical work.

**The Contractor shall be responsible for submitting to the Traffic Services ADMINISTRATION (TSA) catalog cuts and/or samples of all materials to be furnished for street lighting work. Procurement of all such materials by the Contractor may not begin until written approval is obtained from the (TSA).**

**1. PAVEMENT RESTORATION**

As directed by the Engineer for temporary pavement restoration, the trench shall be backfilled to the bottom of the existing pavement surface. The Contractor shall apply a temporary patch over the backfill until such time as final restoration can be completed.

**2. CONCRETE ENCASEMENT**

PCC mix design for encased conduits shall conform 817.03 for Class F General Use, minimum 28-day compressive strength of 3,500 psi on field

test cylinders made in the field and cured in laboratory. All conduit shall be encased to provide a 4 inch minimum cover all around the conduit.

If existing utilities or conduits are present in the trench, these utilities or conduits shall be surrounded with an encasement of at least 3 inches of sandy fill, free from objects, which might damage the conduit. PCC encasement shall then be placed over the sand encasement to the appropriate level.

### **3. CONDUITS**

Conduits shall conform to the requirements of this Special Provisions, streetlight electrical specification and DDOT Standard Specifications for Highways and Structures (2009). Two (2) sizes of conduits will be used in this project. Four-inch conduit shall be installed between manholes. Two-inch conduit is for the connection from the manhole to each streetlight pole. All conduits shall be rigid, gray Polyvinyl Chloride (PVC) Schedule 40 conforming to the requirements of NEMA TC-2 and WC-1094. Conduits and fittings shall bear Underwriter's Laboratories, Inc. label. Conduit shall be in factory-supplied lengths, and shall be marked with the manufacturer's name, trade name, or trademark, nominal trade size, and type of material. All joints shall be water-tight. Solvent cement used for joining PVC conduit shall conform to the requirements of ASTM D2564.

All bends shall be of long sweep, free kinks and of such easy curvature as to permit cable pulling without undue tension on conductors or damage to insulation.

Conduit runs as shown on the plans may be changed to avoid underground obstructions only with written approval by the Engineer.

Unless otherwise shown, conduits shall be placed a minimum depth of 36 inches below final grade, or at greater depths if required to obtain the necessary utility clearance, and shall slope at a minimum rate of 3 inches per 100 feet of length to a foundation, or manhole.

All conduit fittings shall be free from burrs and rough places and all conduit runs shall be cleaned and swabbed before cables are installed. Cut conduits shall be reamed before fittings and cables are installed.

Standard manufactured elbows, bushings, reducers, bends couplings, etc. of the same materials as the straight conduit pipe shall be used, as required throughout the conduit system. Bends shall meet all the requirements of NEC Article 352-24.

There will be instances throughout this project where the Contractor will be required to build conduit to intercept existing PEPCO manholes. In such instances, the Contractor shall be required to coordinate penetration of existing manholes with the Potomac Electric Power Company so as to avoid disruption to PEPCO facilities. Conduit must be encased with wet concrete of 3,500 PSI.

#### 4. MANHOLES

Manholes shall conform to the requirements the Contract Drawings and these Special Provisions.

Manholes at locations shown in contract plans shall be constructed as detailed in the Contract Drawings. Manholes can be pre-cast or cast-in-place and shall comply with the following requirements:

- (1) PCC Mix Design - Shall conform to 817.03 for Class B, structural, minimum 28-day compressive strength of 4,500 psi on field test cylinders made in the field and cured in the laboratory.
- (2) Curing Material - Shall conform to 814.03 for Membrane Cure.
- (3) Reinforcing Steel - Shall conform to 812.02 of the Standard Specifications, for Grade 60.
- (4) Frame and Covers - Shall be gray iron casting conforming to the requirements of 815.04 of the Standard Specifications. The word "**DCSL- TS**" in 1-inch letters shall be cast in the center depression of the top of cover and shall be flush with the surface of cover.
- (5) Pre-cast Reinforced Concrete - Shall meet the requirements of 822.06 of the Standard Specifications.
- (6) Cable racks shall be galvanized steel with cable insulators.

Manholes shall be installed flush with ground, pavement or sidewalk. The drain hole shall be filled with aggregate conforming to the requirements of 805, Grading No. 67.

Conduit entering manholes shall be terminated flush with the inside wall. Conduits shall be aligned in as nearly a straight line as possible to allow for each of pulling cable. The space remaining between the conduit and the structure wall shall be filled or patched with concrete or acceptable equal so there will be no leakage. Manholes shall be seated on trench fill meeting the requirements of 804.05 in order to prevent settlement.

Cover for manholes shall be clearly marked "**DCSL-TS**" using 1 inch raised letters.

**5. PRECAST POLYMER CONCRETE JUNCTION BOXES**

The polymer concrete manholes shall be as shown in the lighting detail sheet of the contract drawing. The cover shall be held in place with 4 stainless steel screws. The manhole shall meet all of the requirements in size and manufacturing quality as the ones manufactured by Strongwell, Lenoir City Division or approved equal. Junction Boxes shall be installed flush with ground, pavement or sidewalk.

Conduit entering manholes shall be terminated flush with the inside wall. Conduits shall be aligned in as nearly a straight line as possible to allow for each of pulling cable. The space remaining between the conduit and the structure wall shall be filled or patched with concrete or acceptable equal so there will be no leakage. The box shall also contain cable racks and a hole in the bottom of the box for the drainage of water.

Cover for the junction boxes shall be clearly marked "DCSL" using raised letters.

**6. PCC FOUNDATIONS FOR STREETLIGHT AND 20' TRAFFIC SIGNAL POLES**

The item of work shall consist of constructing concrete foundations complete with necessary electrical conduit, anchor bolts, ground rod, and other work as required in the plans. All foundations to be constructed under this contract shall be fifteen- inch (15") bolt circle.

The materials for reinforced Portland cement foundations shall meet the following requirements:

- (1) PCC Mix Design - Shall conform 817.03 for Class B, Structural, minimum 28-day compressive strength of 4,500 PSI on field test cylinders made in the field and cured in the laboratory.
- (2) Curing Materials - Shall conform 814.03 for Membrane Cure.
- (3) Reinforcing Steel - Shall conform 812.02 of the Standard Specifications, for Grade 60.
- (4) Anchor Bolts - Shall conform 822.06 of the Standard Specifications for High-Strength Bolts.
- (5) Conduit - Sleeves shall conform to the Conduit Section of this S.P.
- (6) Galvanizing - Shall conform to 811.07 of the Standard Specifications.
- (7) Ground Rods - Shall be copper-clad rods conforming to the requirements of UL-467. Ground rods shall have a diameter of at least 3/4 inch and a length of at least 15 feet with minimum 8 feet of soil contact.

- (8) Ground Wires - Shall be No. 8 AWG for streetlight conforming to the requirements of ASTM B2.
- (9) Ground Clamps - Shall be heavy-duty bronze or brass or galvanized malleable iron conforming to the requirements of ASTM A220, any grade.

The exposed portions shall be formed to present a neat appearance. The bottom of concrete foundation shall rest on firm undisturbed ground.

Forms shall be true to line and grade. Conduit ends and anchor bolts shall be placed in proper position and to proper height, and shall be held in place by means of a template until the concrete sets.

Conduit ends shall extend a minimum of 2 inches and a maximum of 4 inches above the top of the finished foundation.

It shall be the responsibility of the Contractor to ensure that all anchor bolts, ground rods, conduits, and other appurtenances are properly located before concrete is poured.

**7. PCC FOUNDATIONS FOR MAST ARM TRAFFIC SIGNAL POLES:**

Foundations for mast arm traffic signal poles shall be constructed as shown on the District Standard Drawings that are part of this contract. The foundation shall be allowed to set for 28 days before installation of the poles.

**8. CABLES**

All underground current carrying conductors used for street lighting, shall be copper, stranded type, RHW-2, 90 C, conforming to IPCA Pub. No. S-68-516/NEMA WC8 for ethylene-propylene-rubber insulated cable. The outside jacket shall conform to IPCA Pub. No. S-19-81.

**9. OVERHEAD CABLES**

Between wood poles shall be stranded copper #2 AWG for all phase conductors and #4 stranded copper for the neutral. All conductors shall have polyethylene jacket.

Service tap connection from PEPCO utility point to street light luminaire connection shall be 600V 6AWG triplex cable. Cable shall be minimum XLP insulation, sunlight-resistant, and minimum 40°C ambient temperature rating.

## **10. SPLICES**

Splices in wires and cables shall be accomplished by means of compression pressure connections. The connectors shall be suitable for the size wire used and shall be of one-piece tubular tinned copper or bolted type copper construction. The indenture shall be such as to assure maximum electrical connection and sufficient physical strength. The connection shall be covered with cross-linked polyoltin shrinkable tubing. The tubing shall be heavy wall rated 600 V 90C and conform to UL 486D, CSA C22.2 No. 198.2 and ANSI C119.1 and Western Underground Guides 2.4, 2.5. If shrinkable tubing is not feasible for a particular connection, the connection shall be covered with Super 88 Scotch plastic electric tape manufactured by Minnesota Mining and Manufacturing Company, or type CW as manufactured by Plymouth Manufacturing Company, or other approved equal half-lapped into a thickness not less than 50 percent greater than the conductor insulation. An approved waterproof coating shall be applied on the outer cover. Wires shall be tagged as specified in 621.13

## **11. GROUNDING AND BONDING**

One solid copper ground rod shall be installed in each manhole, streetlight and traffic signal foundation. The grounding electrode conductor shall be sized accordance with the National Electric Code. The ground wire shall be installed with other conductors when they were pulled. Grounding shall be accomplished as soon as materials are in place to which the grounding wires are to be attached.

Material used for installation of grounding systems shall meet the following requirements:

- (1) Ground Rods - Shall be copper-clad rods conforming to the requirements of UL - 467. Ground rods shall have a diameter of at least 3/4 inches and a length of at least 15 feet, (10' for use in grounding manholes) (or minimum soil contact of 8').
- (2) Ground Wires - Shall be at least No. 8 AWG for streetlight grounding and #6 solid bare copper wire for traffic signals
- (3) Ground Clamps - Shall be heavy-duty bronze, brass or galvanized malleable iron conforming to the requirements of ASTM A220, any grade.
- (4) All manhole grounding connections including frame and cover and ground rod connections shall be made using exothermic welding.

The Contractor shall in each District owned manhole bond the neutral conductor and the system ground wire to the manhole grounding

electrode. Each metal streetlight pole shall be grounded to the adjacent manhole with a #8 stranded copper wire, which shall be connected to the post shaft and the manhole grounding buss with a solder less bolted post or lug, with non-corrosive components.

## 12. LIGHT EMITTING DIODE (LED) LUMINAIRE

Provide Luminaires as indicated and complete with LED light source and power supply unit.

Details, shapes, and dimensions are indicative of the general type desired, but are not intended to restrict selection to Luminaires of a particular manufacturer. Luminaires of similar designs, light distribution and brightness characteristics, and of equal finish and quality will be acceptable.

### LED Light Source and Optical Requirements

1. Luminaire shall be full cutoff or fully shielded as defined by IESNA RP-8.
2. Correlated color temperature (CCT)  $\geq 4500^{\circ}$  K.
3. Color rendering index (CRI):  $\geq 70$ .
4. Light Distribution shall be Type II, III or IV. It will be as specified in the contact document.
5. Lumen Depreciation of LED Light Source - Must comply with IESNA LM-80. LED module shall deliver at least 70% of initial lumens, when installed for a minimum of 50,000 hours.
6. Minimum Light Output shall be functionally one-to-one replaceable to up to 150, 250, and 400 watt (threshold may change in future) equivalent HPS Cobrahead producing the equal illuminance (fc) and uniformity ratio on the alleyway.
7. Minimum Luminaire Efficacy - 70 lm/W.
8. LM-79 Test - Provide Independent Testing according to IES LM-79 that provides efficacy, output, color, and photometric distribution of your product. An Integrating Sphere Test will be required to provide color information. A Goniophotometer test by itself is not adequate.
9. Lifetime - Provide written explanation of how L70 Lifetime of Product is determined using the LM-80 and In-situ temperature tests referenced below.
  - a. LM-80 Test - Provide LED Package Manufacturer IES LM-80 Test Report with results showing relative (%) light output over time at 55°C, 85°C and X°C (a third temperature at the manufacturer's choice).
  - b. In-Situ Temperature Test - Provide test report indicating the Temperature of the hottest LED In-Situ in ANSI/UL 1598-04 (hardwired) or ANSI/UL 153-05 (corded) environments. This temperature measurement will be used with LM-

80 data to validate lumen maintenance and useful life of product. Note that this temperature measurement should be specially requested by the manufacturer as they are getting their UL testing.

10. Where LEDs are connected in series and a single LED failure results in greater than 5% light loss of the overall luminaire output, a bypass circuit shall be utilized. This bypass circuit shall allow the remaining LEDs in the series circuit to remain powered.
11. The light must appear to be a single source (regardless of the number of drivers) to the road users.
12. The luminaire for alleyway application shall be equivalent to LSG-LSR1 and LSR2 or approved equal. The luminaire for roadway application shall be equivalent to Philips 135W80LED4K and Philips 270W160LED4K or approved equal.

### **Hardware Requirements**

1. Housing assembly:
  - a. Shall be primarily constructed of metal.
  - b. Finish shall be grey or black in color, polyester powder coated and resists rust.
  - c. Driver must be internally mounted and replaceable.
  - d. Captive screws are needed on any components that require maintenance after installation.
  - e. No parts shall be constructed of polycarbonate unless it is UV stabilized (Lens Discoloration shall be considered a failure under warranty).
  - f. The luminaire must have a self leveling mechanism.
  - g. The luminaire shall be filtered against entry of insects, rain, dust, and other offending foreign matter.
  - h. The luminaire shall be marked, using standard EE-1 NEMA marking, showing the lamp type and wattage. The marking shall be affixed to the underside of the luminaire housing and to the rear of the reflector.
2. Mounting arm connection (for Cobrahead only)
  - a. Luminaire shall mount on 1-1/4-inch to 2-inch arm and shall have not more than 8 inch long nor less than 5 inch horizontal insertion length on the 2 inch bracket arms and shall be adequately equipped with clamping and leveling devices or a similar mechanism to allow proper clamping and positioning of the luminaire on the bracket arms.
  - b. The clamping mechanism shall contain 4 bolts that do not pass through the housing. Clamping with only two bolts is not acceptable. The clamp must be able to accept a 1 1/4 to 2 inch pipe bracket without having to rearrange the clamp.
3. Photoelectric (PE) Cell Receptacle
  - a. Shall have a 3-prong twist locking ANSI C136.10 photocell receptacle (for Cobrahead).

- b. Photocell adapter must be built into the housing and be directionally adjusted without the use of tools.
4. House Shield - Shall provide option for house side light control.
5. Luminaire shall not weigh more than 35 lbs.
6. Dimensions (Approx.) (For Cobrahead) -Luminaire shall not be larger than 30-inch long x 16-inch wide x 6-inch tall.
7. Operating Environment - Luminaire shall be able to operate normally in temperatures from -40°F to 120°F
8. Cooling System - Thermal management shall be passive by design and shall consist of heat sinks with no fans, pumps, or liquids and must be resistant to debris buildup.
9. Luminaires shall be fully assembled and electrically tested prior to shipment from factory.
10. The fixture must not contain any moving parts.
11. The driver must be located inside the housing, but should be easily accessible.
12. For all mast-arm-mounted Luminaires, a wildlife shield shall be included on the fixture to prevent wildlife access.
13. Optical system for roadway Luminaires, including the driver, shall be sealed and rated for IP65 as defined in IEC 60529. Wiring compartments shall be IP20 compliant, but individual internal electronic components must be rated at a minimum of IP54.
14. The coating shall be capable of surviving ASTM B117 salt fog environment for 500 hours minimum without blistering or peeling.
15. The coating shall demonstrate gloss retention of greater than or equal to 90% for 1000 hours' exposure QUV test per ASTM G53 UVB313, 4 hour UV-B 60°C/4 hour condensation 50 °C.
16. The luminaire shall have been certified compliant with ANSI C136.31 having been subjected to 100,000 cycles of 2G at the resonant frequency of the luminaire applied at the center of gravity of the luminaire on three primary axes without damage to the luminaire. The luminaire shall be fully functional upon completing the test.
17. The luminaire shall be fully functional after testing for thermal shock according to IEC 60068-2-14.
18. The luminaire shall be fully functional after testing for damp heat, steady state, high humidity, and high temperatures according to IEC 60068-2-78.
19. If a lens not integral to the luminaire is used, optical enclosure (lens/window) shall be constructed from clear and UV-resistant acrylic or tempered glass.
20. At least 80% of the luminaire material by weight shall be recyclable at manufacturer's stated end of life.
21. Luminaires shall incorporate modular electrical connections and constructed to allow replacement of all or part of the optics, heat sinks, power supply units, and electrical components using only a simple tool, such as a screwdriver.
22. Luminaires shall have a nameplate bearing the manufacturer's name, 125address, model number, date of manufacture, and serial number securely affixed in a conspicuous place; the nameplate of the distributing agent will not be acceptable.

23. The luminaire fixture weight and effective projected area shall not exceed the poles requirements for wind loading.
24. Roadway and area mast-arm-mounted luminaires shall have an integral tilt adjustment of  $\pm 6^\circ$ , ANSI C136.3.
25. Driver shall be protected against damage due to either an open circuit or short circuit fault condition on the driver output. The driver shall resume normal operation when the fault is removed.
26. Over-temperature protection shall be provided and cut-off output power if case temperature limit is exceeded.
27. Reduction of hazardous substances (RoHS) compliant.

### **Power Supply and Driver Requirements**

1. Off State Power Consumption - The power draw of the luminaire including PE devices must be zero watts when in the off state.
2. On State Power Consumption - The luminaire must use at least 40% less energy compared to its commercially available High Pressure Sodium counterpart.
3. Power Factor (PF):  $\geq 90\%$
4. Operating Voltage - 120-240 volts
5. Operating Temperature - Shall operate between  $-40^\circ\text{F}$  and  $120^\circ\text{F}$
6. Frequency - Output operating frequency must be  $\geq 120$  Hz and input operating frequency of 60 Hz.
7. Interference -Shall meet FCC 47 CFR Part 15/18
8. Startup - Must be instant restart
9. The maximum drive current to the LEDs shall not exceed that recommended by the LED manufacturer. Documentation from the LED manufacturer shall be provided showing maximum current allowed and where the current output from the driver is not what is flowing into the LEDs. A schematic with calculations shall be provided to show what driver current does flow to the LEDs.
10. Maximum case temperature and measurement location shall be clearly marked on the driver case.
11. Fluctuations in line voltage up to 15% shall have no visible effect on the luminous output.
12. Operating frequency: 60 Hz  $\pm 5\%$ .
13. Total current harmonic distortion (THD) for current:  $\leq 15\%$ .
14. Drivers shall be UL 8750 compliant.

### **Wiring Requirements**

1. All factory electrical connections shall be made using crimp, locking, or latching style connectors. Twist-style wire nuts and tap-style stripless connectors are not acceptable.
2. Local area network (LAN), wireless, radio, modem, power line carrier, and other communication methods other than hard-wired switches for LED light fixture

control shall be non-proprietary and compatible with control monitoring system available in the market.

### **Surge Protection Requirements**

1. The luminaire manufacturer shall provide surge protection on each luminaire and certify that it has been tested in accordance with ANSI/IEEE C62.41.2 guidelines. Surge rating 10 kV, 10 kA.

### **Warranties**

LED fixture warranties shall be provided in accordance with Specifications and the following:

1. Luminaire must have a minimum five (5) Year warranty due to any failure. The Warranty shall provide for the repair or replacement of defective electrical parts including but not limited to the light source and power supplies and driver for a minimum of eight (8) years. Shipping shall be included.
2. The LED luminaire warranties shall begin on the date of final acceptance of the installation by the DDOT officer or designated representative. The contractor shall install luminaires in accordance with the design engineer's and manufacturer's requirements and shall obtain written concurrence from the luminaire manufacturer that the installation is compliant with their requirements. The signed memo, including post-installation field measurements, shall become part of the warranty package and be included in the final deliverables to the DDOT.
3. The contractor shall provide to the DDOT contracting officer written documentation of its ability to satisfy a worst-case, catastrophic warranty claim. The documentation shall clearly disclose the country in which the factory of fixture origin is located and the name of the company or organization that owns the factory (including all parent companies and/or organizations and their respective countries of corporate citizenship).

### **13. ARMS FOR WOOD POLES**

Wood pole arms shall be either 8 ft arms single guy type or 16 ft. double truss type, as called for on contract drawings. The arm shall be galvanized steel, for mounting on wood poles, pipe size from 1 ¼ to 2 inch. All mounting and grounding hardware shall be supplied with the arm.

### **14. WOOD POLES**

Add the following to the standard specifications:

The pole shall be Southern Yellow Pine, Douglas Fir or Western Larch cut from live trees. All poles shall conform to the requirements of ANSI Standard 05.01. All poles shall be air-seasoned, shed-dried, kiln-dried or seasoned in any manner that conforms to AWPA Standards C, C4 and M1, that will not materially damage the wood. The poles must be seasoned until moisture content of 25% or less is reached. All poles shall be machine-peeled and conform to ANSI Standard O-5.1. All poles must be branded; the brand to be located 15 feet from the butt end. The branding shall identify the supplier, pole length, class, and year of treatment and preservative used, in accordance with AWPA Standard M6. The treatment charge number shall be stamped on the butt of the pole. The preservative used will be Creosote meeting requirements of AWPA P1, Penachlorophenol-in-petroleum meeting requirements of AWPA P8 or water-borne preservative suitable meet the requirements or AWPA P5 or C4. All poles shall be free of evidence of bleeding or blooming regardless of the type of preservative used. There shall be no sludge depositions. Penetration of any preservative shall be a minimum of six (6) inch or 90% of the sapwood depth. Poles with less than six (6) inch or 90% of the sapwood depth shall be 100% penetration of the sapwood. Retention of Creosote will be in accordance with AWPA Standard A1 and C4. Retention of Penachlorophenol-in-petroleum will be in accordance with AWPA Standard A1 and C4. The contractor will supply the Engineer with copies of any test reports that he receives from the pole supplier.

## **15. SPECIFICATION FOR GALVANIZED STEEL TRANSFORMER BASE**

The transformer base will have dimensions as detailed on DC-DOT Standard Drawing No. 618.29. The base will be fabricated from hot rolled carbon steel meeting ASTM-A36. The base shall be 20 inches high, 16 inches square at the base and 13 inches square at the top. The top and bottom plates will be made of  $\frac{3}{4}$ " minimum thick steel plate. The body of the base will be made of 7 gauge steel. The base will be provided with 4 (four) loose steel plate anchor clips to fasten the base to the anchor bolts. Each base will be provided with 1" x 3" bolts with nuts and washers to connect the post shaft to the base. The door opening in the base shall be 8 $\frac{1}{2}$ " x 9" x 13 $\frac{1}{4}$ " and the door shall be secured in place by an approved locking device. The base will be cleaned of all rolled-in mill scale, impurities and nonmetallic foreign materials. The welds will be cleaned of all weld flux. The base is to be degreased by immersion in a heated caustic solution, then pickled in a heated sulfuric acid solution. The base will then be rinsed in a fresh water bath to remove any residual effects of the caustic or acid baths. The base will then be immersed in a concentrated zinc ammonium chloride solution and allowed to air dry

before being galvanized. The base, door and anchor clips are to be hot-dip galvanized to the requirements of either ASTM A123 or ASTM A153.

**16. SPECIFICATION FOR ALUMINUM PENDANT LIGHT POLE**

Aluminum Pendant Light Poles – Light pole shall conform to 820.02 and the plans, and as specified herein.

The pole shall be octaflute, tapered, 6063 Alloy Aluminum, T6 temper. The fluted shaft shall have uniformly spaced Doric flutes, and shall be formed by cold rolled process. The anchor base shall be cast from A356 ally aluminum, T6 temper. The base and shaft shall be joined by continuous circumferential weld at the outside top and inside bottom of the anchor base. The base assembly shall be heat treated to T6 temper. All anchor base mounted poles shall be provided with covered handhole. The base shall be provided with cast aluminum ornamental nut covers.

The pole shall be applied with a finish of TGIC polyester powder coating. The color shall be DC gray meeting Federal Color Chip no. 16099.

Anchor bolts shall be high strength with nuts and washers, all hot dip galvanized.

Pole dimensions and anchor base bolt circles shall be as shown on the plans. The tenon at top of pole for bracket arms shall be as specified on the plans. Top cap shall be cast aluminum.

The pole shall be supplied with factory installed internal damper.

Pole shall be Union Metal 453-1-Y2 1880A-8.5”X5.65”X28’-6” or approve equal.

**17. SPECIFICATION FOR #16 CAST IRON POST**

The post shall be made up of three cast components as shown on drawing numbers 324, 326 and 315. All cast iron components, regardless of the method by which they are produced and assembled, shall be uniform quality and appearance; true to pattern; fine surface texture; free from blow holes, porous spots, hard spots, shrinkage faults, wrap, buckle, cracks, die marks, and all other defects peculiar to the method of production used, which may adversely affect the use, appearance or strength of the component or post.

Each component shall be carefully and thoroughly cleaned of all sand, scale, fins, core anchors, welds, machine markings, projections,

imperfections, etc., injurious to insulated electrical conductors or detrimental to its use or appearance.

Each separable component shall bear as pertinent a lot number, casting number, pattern number, or other identifying number for record purposes so that the production history may be traced and contractor shall make such history available to the District of Columbia on demand. The components shall not bear any other mark, lettering, numbering or identifying device not specifically authorized in writing by the District of Columbia.

All ornamentation and markings shall be sharp and clearly defined. The desired finish for these components shall be the finest surface of hi-grade fabrication with a minimum of grinding, machining, dressing, etc., in accordance with normal foundry practices. Excess dressing shall be cause for rejection. Bolt holes must be clean and true with good alignment in the companion pieces to permit the interchangeability of castings. The shafts shall be straight and true with not more than 3/8" deflection along the length when rotated on the end centers. The base shall be drilled so that it can be installed on a fifteen-inch (15") bolt circle foundation. With each pole supplied the manufacturer shall supply an extra base door.

The castings shall be Heavy Wall Cast Iron per A.S.T.M. A48-83 Class 30. All castings shall be true to pattern and of fine surface texture with a minimum of machining and/or grinding, and shall have a uniform wall thickness +/- 1/8". All components shall receive a coat of iron oxide red both inside and out. The components shall be given two coats of a two-part epoxy paint system. The color shall match Federal Color Chip # 16099. The coats shall be allowed to cure according the paint manufacturers specification before recoating and/or shipping. The components shall be wrapped and crated to protect them during shipping and unloading. Any damage to the finish shall be repaired according to the paint manufacturer specifications at no additional cost to the District.

**18. GLOBE**

The globe will be a one-piece blow molded high-impact strength polycarbonate. The globe will sit in the No. 16 casing. The neck of the globe will be cut to a height of 7/16" +/- .060 in order that the set-screws of the casing will hold the globe in place. The globe will be shatter proof and ultraviolet stable. It will be stippled, clear glass in appearance with initial 90% light transmission. The globe shall match the model FP 118-9-DC manufactured by Formed Plastic Inc. or approved equal.

**19. ELECTRICAL TESTS**

Applicable test shall be performed in accordance with 621.16. Defects in materials or workmanship in the installation as disclosed by the test shall be corrected or replaced by the Contractor without additional compensation. A written report shall be submitted for approval. ALL GROUND RODS WILL BE TESTED AND APPROVED.

**(D) PAY ITEMS**

**1. FURNISH AND INSTALL SCHEDULE 40 PVC RIGID CONDUIT**

ITEMS: 617 030, 617 032, 618 072, 618 154, and 618 160

This S.P. Replaces 618.12

**GENERAL-** The Contractor shall furnish all labor, tools, material and equipment necessary to excavate, shoring, de-watering, steel plating (necessary steel plating of the roadway for moving traffic as directed by the Engineer), installation of conduit(s), concrete encasement P.C.C. Wet Mix 3,500 PSI), back filling, compaction of fill, temporary patch and maintenance of the cuts until the permanent repairs are made as directed by the Engineer. The Contractor shall excavate the trench as called for on the project plans. The trenches shall be braced according to the local and federal regulations. All conduit(s) shall be Schedule 40 PVC and shall be installed to proper line and grade. The trench shall be opened completely between manholes or between the end of the existing conduit to be added to the new location or between manholes and the proposed light before installing any conduit. Conduit(s) shall be installed with a minimum of 36” of cover below final grade and shall be installed in dry trenches. The conduit shall be installed in full lengths using manufactures supplied bends and couplings. When the Contractor must make field cuts the conduits ends shall be reamed to remove any rough edges before joining together. The joints shall be cleaned, cemented and the lengths of the conduits coupled together tightly. Where two or more conduits are being installed in the same trench the Contractor shall use spacers between the conduit runs. All conduit runs shall be complete and points of penetration of the wall of manholes be sealed before any concrete encasement is installed.

The wall penetration of PEPCO manholes will be done under the supervision and direction of PEPCO field personal. The penetration of

D.C. manholes will be done under the supervision and direction of District personal. At the end of each workday the Contractor shall seal the ends of the all conduits to prevent the entrance of dirt and water into the conduit system. After the concrete encasement has been installed and allowed to set a minimum of four (4) hours or as directed by the Project Engineer, all wood forms and trench shoring shall be removed completely during the back filling operations, back fill will be done in layers of six (6) inches and compacted before the next layer is added.

If the Contractor is to add on to (splice on to) existing conduit, the splice will be done with an approved coupling. The Contractor shall in part of this Pay Item clean, proof, install a Poly String and seal all conduits prior to installing cables. The Contractor shall run a mandrel, not smaller than ¼” smaller than the diameter of the conduit thru each conduit in the presents of the Engineer. All conduits that a mandrel can not be pulled thru shall be cleaned and or replaced and shall be reproofed at no additional cost to the District. Each conduit shall be sealed after the copper drag wire has been installed, using approved conduit plugs. Included within this pay item is the temporary patching of the trench and maintenance of the patch until final repairs have been made.

**MEASURE AND PAYMENT** – The unit of measure of **FURNISH AND INSTALL SCHEDULE 40 PVC RIGID CONDUIT** will be per **LINEAR FOOT**. Payment will include all labor, tools, materials, equipment, excavate, shoring, de-watering, steel plating of roadway, concrete encasement, penetration of manholes (both D.C.’S & PEPCO’S), back filling, compaction of fill, temporary patching, maintenance of the cut until the permanent repairs are made, an all incidentals necessary to complete the work specified herein.

**2. FURNISH AND INSTALL PCC FOUNDATION FOR CONTROLLER CABINET:**

ITEM: 617 038

Work under this pay item shall meet the Requirement s of 617.05

**3. FURNISH AND INSTALL STREET LIGHT CABLES:**

ITEM: 618 190, and 618 202

Work under this Pay Item shall meet the requirements of 618.20

**4. FURNISH AND INSTALL COPPER GROUND WIRE:**

ITEM: 618 292

Work under this pay Item shall meet the requirements of 618.22

**5. FURNISH AND INSTALL STREETLIGHT POLE**

ITEMS 618 554

Work under these Pay Items shall meet the requirements of 618.28.

**6. REMOVE PENDANT POST 30 FT. HEIGHT OR LESS:**

ITEM 618 566

Work under this Pay Item shall meet the requirements of 618.29

**7. REMOVE STREETLIGHT, TRAFFIC SIGNAL POLE FOUNDATION AND TRAFFIC SIGNAL CONTROLLER CABINET FOUNDATION:**

ITEMS: 617 006, and 617 126

Work under these Pay Items shall meet the requirements of 617.17 and 618.26

**8. FURNISH AND INSTALL 8 FT. ARM ON WOOD POLE:**

ITEMS 618 676

Work under this Pay Items shall meet the requirements of 618.32

**9. REMOVE ARM FROM WOOD POLE UP TO 8 FOOT IN LENGTH:**

ITEM 618 668

Work under these Pay Items shall meet the requirements of 618.37

**10. FURNISH AND INSTALL OVERHEAD CABLES**

ITEM 618 362

Work under this pay item shall meet the requirements of 618.21

**11. PAYMENT TO PEPCO FOR CONNECTION, DISCONNECT AND INSPECTION FOR STREETLIGHTS AND TRAFFIC SIGNALS**

ITEM 618 999

Work under this Pay Item shall meet the requirements of 618.41.

**42. TRAFFIC SIGNAL WORK:**

This S.P supplements and modifies 617 and 618.

**SCOPE:**

The Traffic Signal Work consists of the construction or modification the traffic signals at six intersections: Franklin Street and Michigan Avenue (N.E), Irving and Michigan and Harewood Rd (N.E), Michigan and Monroe Street (N.E), Michigan and 7<sup>th</sup> Street (N.E), C Street and 3<sup>rd</sup> Street (N.W), and C Street and 6<sup>th</sup> Street, (N.W).

The work shall be performed as specified herein, as shown on the DC-DOT Standard Drawing (Division 617) or as directed by the Engineer. The work, as indicated on the Plans or as directed, includes:

1. Furnishing and installing all above ground signal equipment, including transformer bases, 20 foot traffic poles, LED traffic and pedestrian signal heads, mast arms, vehicle model 170 traffic signal controllers and cabinets. Furnishing and installing of conduit, manholes, foundations, both pole and controller and streetlight poles.
2. Installation of local conductors for traffic signal operation.
3. Installation of traffic signal communication cables as shown on the plans.
4. Removal of existing above-ground traffic signal equipment, traffic signal cabinets and controllers, metal traffic signal poles, temporary signal pole foundations and electrical cables.
5. Furnishing and installing 20-foot traffic signal poles and transformer bases on temporary concrete portable foundations, traffic and pedestrian signal equipment for temporary installations and traffic controller installations on temporary concrete portable foundations for construction operations.

6. Remove and/or install inductive loop detectors and microwave detectors as required by the contract.

Removed traffic signal equipment, metal poles and transformer bases shall be returned to the D.C. Department of Transportation storage yard as directed by the Engineer. Finally, the work includes disposal of all parts, cables and all other work necessary to obtain a complete and final product as shown on the contract plans and as specified herein and/or as directed.

## **REQUIREMENTS:**

### **(A) GENERAL**

All traffic signal work shall conform to these Special Provisions and the DC-DOT Standard Drawing (Division 617). It is the intent that all items furnished and installed by the Contractor shall provide a traffic signal system, which includes traffic signal poles, traffic and pedestrian signal heads, all wire and cable and other essentials necessary for the satisfactory installation, as shown on the plans, disposal of discarded materials.

Before any traffic signal work is performed, the Electrical Contractor must be licensed and bonded in the District of Columbia and apply for an electrical permit to perform work in public space. This application must be signed by a Master Electrician or an Electrical Engineer who is required to be licensed in the District of Columbia.

The Contractor's employees installing the electrical work must be licensed in the District of Columbia as Master Electricians, Electricians or Apprentice Electricians. When Apprentice Electricians are working, a Master Electrician or an Electrician must be on the project for personal supervision.

A minimum of one of the contractor's employees must have demonstrated experience in the installation of traffic signal heads. This employee must be at least Level II IMSA Certified, and have experience working in and around the Type 170 microprocessor based solid state traffic signal controller. Proof of certification shall be a requirement for consideration as a responsive bidder. A copy of the employee's Level II IMSA certification shall be submitted with the contractor's bid. The contractor will be required to retain an employee with these minimum credentials during the entire contract. This is the only contractor employee who will be permitted access to the controller cabinet.

All traffic signal work must be inspected by the Traffic Signal System Division Inspector of the D.C. Department of Transportation. Twenty-four (24) hours advance notice is required for inspection. The Office of the Traffic Signal System Division is located at 2000 14<sup>th</sup> Street, NW, Washington, D.C. 20009, Telephone Number: (202) 671-2100.

The Potomac Electric Power Company will furnish power for the traffic signal system. All work involved with PEPCO facilities shall be performed in conformance with the PEPCO requirements attached in the Appendices.

It shall be the Contractor's responsibility to notify and coordinate with PEPCO throughout the construction of the project in connection with all PEPCO services and facilities in the construction area, such that removal and restoration of services can be done in a timely and orderly manner at all times. Construction delays as a result of inadequate coordination shall be the Contractor's responsibility.

**(B) CONSTRUCTION METHODS**

**1. FURNISH AND INSTALL MAST ARM TRAFFIC SIGNAL POLE**

After receiving the Engineer's approval of the catalog cuts, the contractor shall procure the Mast Arm traffic signal pole and all hardware designated in the STANDARD DRAWINGS.

The contractor shall provide all necessary labor, equipment and materials for the installation of the pole. It is recommended that all holes for cable to enter into signal heads be cut and finished prior to the erection of the mast arm onto the pole. In any event, all holes must be made prior to the installation of any cable through the pole and mast arm.

The contractor shall set the pole on the leveled foundation with the mounting plate for the mast arm facing in the correct position. The contractor shall apply sufficient torque to ensure a secure, stable connection. Grounding the pole shall be completed as soon the post is erected and before the installation of the mast arm, traffic signal equipment or conductors. After the bolts have been secured and tightened, the contractor shall grout the space between the pole base and the concrete foundation using non-shrink grout and install the removable bolt covers where specified on the drawing.

**MEASURE AND PAYMENT**

Each individual pole with all hardware designated in the technical specifications will be paid at the contract unit price. The price will include all labor, equipment and materials required to install the pole.

**2. FURNISH AND INSTALL ELECTRICAL CABLE FOR TRAFFIC SIGNALS**

Pay Item No. 617 050, 617 052

Work under these Pay Items shall meet the requirements of 617.07

**3. FURNISH AND INSTALL 20 FOOT TALL STEEL TRAFFIC SIGNAL POLE:**

Pay Item No. 617 046

Work under this pay item shall meet the requirements of 617.08

**4. FURNISH AND INSTALL 8 FOOT LONG MAST ARM WITH CLAMP AND REMOVABLE END CAP:**

Pay Item.: 617 048

Work under this Pay Item Shall meet the requirements of 617.09

**5. FURNISH LED MODULE:**

Pay Items: 617 068, 617 070, 617 072, 617 074, 617 076, 617 078, 617 084 and 617 086

Work under these Pay items shall meet the requirements of 617.10

**6. FURNISH AND INSTALL VEHICULAR OR PEDESTRIAN TRAFFIC SIGNAL HEAD ON ANY POLE:**

Pay Items: 617 090, 617 092, 617 094, 617 095 and 617 114

Work under these Pay Items shall meet the requirements of 617 11

**7. FURNISH AND INSTALL CONVENTIONAL VEHICULAR TRAFFIC SIGNAL HEAD ON A MAST ARM (ALL 12”):**

Pay Item.: 617 096, 617 098, 617 100 and 617 101

Work under these Pay item shall meet the requirements of 617.12

**8. FURNISH AND INSTALL INDUCTIVE LOOP DETECTOR:**

Pay Item No.: 617 002

Work under this Pay Item shall meet the requirements of 617.14

**9. FURNISH AND INSTALL MICROWAVE VEHICLE DETECTOR:**

Pay Item 617 120

Work under this Pay Item shall meet the requirements of 617.15

**10. FURNISH AND INSTALL TRAFFIC SIGNAL CONTROLLER AND CABINET:**

Pay Item No.: 617 124

Work under this Pay item shall meet the requirements of 617.16

**11. REMOVE TRAFFIC SIGNAL POLES AND TRAFFIC SIGNAL EQUIPMENT:**

Pay Item No.: 617 130

Work under this Pay item shall meet the requirements of 617.18

**12. REMOVE TRAFFIC SIGNAL CONTROLLER AND CABINET:**

Pay Item No.: 617 132

Work under this pay item shall meet the requirements of 617.19

**13. REMOVE MAST ARM TRAFFIC SIGNAL POLE WITH 50 FOOT MAST ARM:**

Pay Item 617 167

**GENERAL**

The Contractor shall supply all labor. Material and equipment to remove existing mast arm pole with 50 ft mast arm. All damaged parts caused by Contractor mishandling will be replaced by the Contractor at no additional cost to the District. All post shall be disassembled and inspected by the Contractor for parts that can be reused at a later time. The Contractor shall supply the district with an inventory of all parts that are removed and reusable. The Contractor will deliver the reusable parts to the district's warehouse at 1735 15<sup>th</sup> Street, N.E., Washington, D.C. All debris ( broken parts, etc.) generated as part of this work will be disposed of by the Contractor at no additional cost to the District.

#### **MEASURE AND PAYMENT**

The unit of measure for **REMOVE MAST ARM TRAFFIC SIGNAL POLE WITH 50 FOOT MAST ARM** will be **EACH**. Payment will include all labor, tools, materials, equipment, disassembled of pole parts, inventory of parts removed and reusable, delivery of parts, stacking in the warehouse and/or pole yard, disposal of broken parts, debris and all incidentals necessary to complete the work specified herein.

- 14. FURNISH AND INSTALL TEMPORARY, PORTABLE, CONCRETE BASE FOR MODEL336-S TRAFFIC SIGNAL CABINET AND FURNISH AND INSTALL TEMPORARY, PORTABLE, CONCRETE BASE FOR 20 FOOT TRAFFIC SIGNAL POLE MOUNTED ON A TRANSFORMER BASE**

ITEMS 617 040 and 617 042

This S.P. modifies 617.22

617.22 (A) are modified by the following:

**DESCRIPTION:** Work consists of furnishing, maintaining and moving and removal at the end of the project portable concrete traffic signal and traffic signal controller bases, where required, for traffic signal operations within the project limits. A 4 foot by 4 foot by 1 foot deep concrete type base shall be provided, unless otherwise approved by the Chief Engineer. The work also includes providing a length of 3" liquid-tight flexible orange non-metallic conduit for each portable concrete base. The Contractor shall also furnish and install including all necessary splices the necessary 7 conductor 14 AWG cable required to operated the traffic signals as shown on the operational TS drawings. Work also includes all required relocations and removal from the site at the end of the project.

**(C) INITIAL ACCEPTANCE, GUARANTEE, AND FINAL ACCEPTANCE**

1. Initial acceptance of the contractors work will be given by the Engineer after inspection and verification that the work as defined in the contract documents, special provisions, technical specifications and project plans has been satisfactorily completed. Initial acceptance can be granted as individual intersections are completed. Initial acceptance shall neither be sought by the contractor nor approved by the engineer at least until all proposed signs and pavement markings are in place, the new controller is communicating with Central Control, all proposed signal hardware is erected, and the signal is properly operating the proposed traffic signal sequence of operation.
  
2. After the Engineer has granted initial acceptance, each signalized intersection shall operate for thirty consecutive calendar days without any type of failure of contractor supplied equipment or software. A failure shall be defined as one that results in the operational loss of one or more components of the traffic signal and communication system including cabling, controller software, cabinet components and all equipment furnished and installed by the contractor.

The purpose of this requirement is to demonstrate that each signalized intersection in properly installed, is free from identified malfunctions, exhibits stable and reliable performance, and complies with all contract specifications and requirements. This thirty day period shall apply to each and all intersections covered under this contract, and shall include emergency on-site maintenance or repair completed within 24 hours of notification by the Engineer. The contractor shall perform on-site diagnosis and trouble-shooting and repair or replacement of failed materials or equipment, as requested by the Engineer.

Manufacturer's standard warranties that extend beyond the contractor's warranty period shall automatically transfer to the District of Columbia government. The contractor shall inform the manufacturer of this requirement prior to the purchase of the equipment, and provide to the Engineer a written agreement of compliance from the manufacturer.

3. Final acceptance of the work will be given at the end of each intersection's thirty day break-in period. All work including completion of all required permanent street cut repairs must be completed to the satisfaction of the Engineer before final acceptance is given and the contractor is relieved from maintenance responsibility.

**MEASURE AND PAYMENT:** Warranties will not be measured, but the cost warranties and incidentals shall be included in the contract unit price to

furnish and install materials and equipment specified in the contract documents. The payment shall be full compensation for all testing, labor, tools, materials, equipment and incidentals.

**(D) BONDING AND GROUNDING**

This item of work consists of furnishing and installing complete bonding and grounding systems to traffic signal poles transformer bases and to traffic signal controllers as shown in the contract drawing – Signal sheets. The grounding system shall conform to latest edition of the National Electric Code, District of Columbia Code and the serving utility.

Controller cabinets, termination cabinets and traffic signal pole transformer bases shall be made mechanically and electrically secure to form a continuous system, and shall be effectively grounded.

Material used for installation of traffic signal grounding systems shall meet the following requirements:

1. Ground Rods - Shall be copper-clad rods conforming to the requirements of UL - 467. Ground rods shall have a diameter of at least 3/4 inches and a length of at least 15 feet, (10' for use in grounding manholes) (or minimum soil contact of 8').
2. Ground Wires - Shall be at least No. 6 AWG bare solid copper with no splices conforming to the requirements of ASTM B2.
3. Ground Clamps - Shall be heavy duty bronze or brass or galvanized malleable iron conforming to the requirements of ASTM A220, any grade.
4. All manhole and alley post ground rod connections shall be made using exothermic welding.

The Contractor shall, in each District owned manhole, bond the neutral conductor and the system ground wire to the manhole grounding electrode.

Any DC Manhole that is worked in under this contract will be checked to affirm the existence of a existing ground rod, if no ground rod is found, a ground rod must be installed through the floor of the manhole in such a way as to have a minimum soil contact of 8 foot, the diameter of the ground rod must be 3/4" in diameter. The Contractor must make the electrical connections between the GROUND ROD-NEUTRAL CONDUCTOR AND ANY GROUND WIRES using exothermic welds in the existing DC manholes.

**(E) ELECTRICAL SERVICE**

SP  
Upgrade, Reconstruction, Resurfacing  
At Various Locations  
Wards 5 & 6

This item consists of the provision of a complete electrical service installation for the purpose of supplying power from the utility power source to traffic signal controllers as indicated on the plans and in conformance with these Special Provisions. This item includes proper grounding of all equipment as specified.

The District will send a written request to the utility company for the provision of the power. Electrical power is to be provided by the Potomac Electric Company (PEPCO). The power company representative is:

**Mr. Steven Park, Manager**  
**Customer Design-DC**  
**Potomac Electric Power Company**  
**701 9<sup>th</sup> Street, N.W., Room 6005**  
**Washington, D.C. 20068**  
**Telephone Number: (202) 872-2844**  
**Facsimile: (202) 331-6234**  
**E-mail: [jdschall@pepco.com](mailto:jdschall@pepco.com)**

Service connection at PEPCO facility by PEPCO will be paid for by DCDOT as described in S.P. \_\_ under street lighting work, Pay Item 618 999.

**(F) TRAFFIC SIGNAL HARDWARE PROCUREMENT AND INSTALLATION**

Unless otherwise noted in the plans, in the traffic signal installation detail drawings, or in these Special Provisions, the Contractor shall be responsible for furnishing all proposed materials associated with the traffic signal work. The Contractor shall be responsible for submitting to the Bureau of Traffic Services, Traffic Signal System Division catalog cuts and/or samples of all materials to be furnished for traffic signal work. Procurement of all such materials by the Contractor may not begin until written approval is obtained from the Traffic Signal System Division.

These Special Provisions contains technical specifications for items to be furnished by the Contractor.

**1. Mast Arm Signal Head Brackets**

The Contractor shall furnish and install Astro-Bracs or approved equivalent for all mast arm pole mounted vehicle signal heads (all lenses 12 inch at locations shown in the plans.

Brackets shall be furnished by the Contractor for 3 section, conventional vehicle signal heads. Back plate shall be affixed to all mast arm mounted vehicle signal heads.

**2. Light Emitting Diode (LED) Traffic Signal Modules**

All Light Emitting Diodes (LED) traffic signal modules shall meet the requirements of 825.02

**3. Conventional Polycarbonate Vehicle Signal Head**

All conventional polycarbonate vehicle signal heads shall meet the requirements of 825.06

**4. Light Emitting Diode (LED) Pedestrian Count Down Signal Modules**

All Light Emitting Diodes (LED) pedestrian count down signal modules shall meet the requirements of 815.041.

**5. Conventional Polycarbonate Pedestrian Traffic Signal Head**

All conventional polycarbonate pedestrian signal heads shall meet the requirements of 825.07

**6. Vehicle and Pedestrian Signal Mounting Hardware**

The Contractor shall furnish all hardware required to mount vehicle and pedestrian signal heads to poles.

Vehicular and pedestrian signal heads, upper and lower mounting brackets, and pole plates will be furnished by the Contractor. The Contractor shall also furnish stainless steel bonding materials to affix the signal head assemblies to the pole. The stainless steel banding material shall be 3/4" wide. "Bandit" brand, or approved equal. This same banding material is also to be used to affix the pedestrian push buttons to the poles.

**7. Steel Traffic Signal Poles**

Shall be of the kind or type shown on the plans. The assembled pole shall be of such design and construction as to be capable of withstanding, when installed with all attachments, a static wind load of 80 MPH. Shop drawings for all fabricated metal poles, mast arms, and transformer bases

shall be submitted to the District for approval before fabrication for each type proposed for use on the project. Drawings shall be submitted in quadruplicate.

*Fabrication* - Steel Poles shall be designed in accordance with latest AASHTO "Standard Specification for Structural Supports for Highway Signs, Luminaires and Traffic Signals". Poles shall be continuous tapered, approximately .014" per foot, and octaflute shaped shaft. The shafts shall be fabricated from one length of basic oxygen or open hearth sheet steel of the approximate gage or thickness shown on the plans. The sheet shall be formed into a continuous tapered tube with one continuous longitudinal, automatically, electrically welded seam; no intermediate or horizontal joints or welds will be permitted. After manufacture, the entire supporting pole shall have minimum yield strength of 55,000 PSI.

A one piece cast steel anchor base of grade 65-35 steel (ASTM A 27 or Equiv.) or a welded steel plate anchor base that is of sufficient strength to develop the yield strength of the pole shall be provided. When the anchor base is attached to the shaft it shall develop the full strength of the shaft section to resist bending action. The base shall be provided with four slotted holes for attachment to the foundation or the transformer base with four anchor bolts. The anchor bolts shall be made from carbon steel meeting the requirements of ASTM A 576 modified to provide a minimum yield strength of 55,000PSI. Threads may be cut or rolled. One end of the anchor bolt shall be provided with at least a 4 inch right angle hook.

Nuts shall meet the requirements of ASTM A 307. All pole hardware shall be galvanized in accordance with ASTM A 153. The anchor bolts holes shall be recessed and covered with ornamental covers, which are provided.

Suitable hand holes with covers shall be provided to facilitate installation and wiring. A suitable grounding connection shall be provided adjoining the base.

Traffic signal poles shall be identical in design, materials, and workmanship to those currently in inventories and in used in the District of Columbia. It shall be the responsibility of the Contractor to survey existing poles and to supply exact duplicates of those currently in use.

*Finish* - Hot dipped galvanized ASTM A-123 and powder coated to D.C. gray color.

**8. Steel Transformer Base**

Shall comply with these special provisions and dimension as shown in the DCDPW Standard Drawings No. 618.29

*Fabrication* - The fabricated steel transformer base shall have dimensions as detailed on DC-DOT Drawing 393. The side of the base shall be fabricated from not less than #7 Manufactures Standard Gauge, best grade, hot rolled basic open hearth steel. The top and bottom plates shall be made of three-quarter inch (3/4") minimum thick steel plate. The door shall be secured in place by an approved locking device. After complete assembly, the base shall be shot blasted to remove all mill scale and weld slag. Each base shall be provided with four (4) loose steel plate anchor clips to fasten the base down to the anchor bolts. The transformer base shall fasten to the shaft anchor base by means of four (4) galvanized hex head machine bolts and nuts.

*Finish* - Hot dipped galvanized ASTM A-123.

**9. 8 Foot Long Mast Arm and Clamp**

*Arm* - Units to be supplied must be identical to those currently in service. The arm shall be made from one (1) length of steel of not less than 12 gauge, and shall conform to the requirements of ASTM A 570 Grade 50. The arm shall be octagonal in cross section with a continuous taper of .17 to .23 inch per foot depending on the length of the arm.

The design of the arm shall fully comply with the latest edition of AASHTO Specifications for loads as specified. The manufacturer shall supply detail shop drawings and calculations for approval prior to fabrication. The arm length shall be as specified, with a removable end cap.

*Clamp* - Shall be made of material conforming the ASTM A216 (WCB). The clamp shall be fabricated so as to provide full contact around the existing fluted pole. The exterior of the clamp shall be smooth and fluted to provide and aesthetically pleasing connection between pole and arm.

The clamp shall be fabricated to allow for arm elevation adjustments of eighteen inches (18") above or below the set mounting height. A two-inch (2"Ø diameter smooth wiring hole shall be provided in the clamp to facilitate the wiring of the signal via the interior of the arm.

Each clamp shall be furnished with high strength galvanized connecting bolts. These bolts are to finished per manufacturer's specification.

*Finish* - Arm, clamp, and associated hardware shall be coated with fusion bonded polyester, or a epoxy polyamide primer followed by and aliphatic polyester polyurethane finish. Total film thickness to be 4.5 to 6.5 mils. Color to be D.C. gray: Manufacturer to supply color chip for approval prior to finishing. A 6oz ml can of “Touch up” paint shall be supplied with each arm assembly.

*Shop Inspection* - All items shall be of domestic manufacture with the manufacturer providing full access to Washington, D.C. inspectors during fabrication and finishing.

## **10. Traffic Signal Controller**

- a. Work relating to the traffic signal controller shall be performed during temporary stage and during the final restoration stage.
- b. During the temporary stage, the contractor shall relocate the existing traffic signal controller from its existing foundation to a temporary, portable concrete base. The Contractor shall furnish and install the temporary, portable concrete base that must conform to the drawing found in DC-DOT Standard Drawing 681.24.
- c. The Contractor shall furnish and install a new Type 170 traffic Signal Controller for the final intersection restoration stage. The Controller/cabinet assembly shall conform to the technical specifications found in the Appendix. The controller shall be installed on the foundations shown on the plans.
- d. The Contractor shall deliver the proposed controller to the office of the Traffic Signal Maintenance Branch where it will be prepared for operating the traffic signal sequence of operation for these intersections. The DC-DOT will notify the Contractor when the controller has been prepared and as ready to be picked up by the Contractor.
- e. The equipment to be furnished shall conform to the technical specifications found in Appendix K of these Special Provisions.

## **11. Controller Cabinets**

This specification applies to all electrical cabinets used for Traffic Control Devices, i.e., traffic signal controller cabinets. The specification for traffic signal controller cabinets is contained in Appendix K within the controller specification.

## **12. Mast arm traffic signal poles**

The poles shall be constructed as shown in the Contract plans

### **(G) TRAFFIC SIGNAL HARDWARE REMOVAL**

As required, traffic signal hardware shall be removed as shown on the plans, as specified herein and as directed by the Engineer.

1. After the Engineer deems the proposed traffic signal to be properly in service, power to the existing traffic signal shall be disconnected. At this time, the existing traffic signal shall be removed.
2. The Contractor shall remove all existing traffic and pedestrian signal heads and return them to the District of Columbia. Care shall be taken to avoid damage to the signal heads, as these shall be reused. The Contractor shall also return to the District of Columbia all mounting hardware.
3. The Contractor shall remove all electrical cable between the old controller foundation and each signal device. The Contractor shall also remove all space wire existing between the mast arm poles. This cable is to be discarded by the Contractor.
4. The Contractor shall remove the existing traffic signal poles and return them to the District of Columbia.
5. The Streetlight Contractor shall demolish and remove all pole foundations and the controller cabinet foundation, as specified in Paragraph E of this Special Provision.
6. Materials to be returned to the District of Columbia shall be delivered to 1725 Fenwick Street, N.E. The Contractor shall contact Mr. Clyde Singleton at (202) 698-3662 to arrange for delivery of the material to this warehouse.
7. Removal of traffic materials mounted on street light poles shall be coordinated with the S.P., Electrical Work.

### **(H) AS-BUILT DRAWINGS**

Upon completion of the project, the Contractor shall submit one (1) reproducible set of as-built drawing showing the traffic signal portion of the project to the Department of Transportation, Traffic Signal System Division, 55 M Street, 6<sup>th</sup> Floor, S.E. Washington,

D.C. 20003. This set of as-built drawing shall bear the signature of an officer of the Contractor's organization certifying compliance with as-built conditions.

**43. METAL SIGN POST, Item 620 015:**

The requirements of 620.02 apply.

**44. ASPHALTIC REFLECTIVE CRACK RELIEF INTERLAYER MIX:**

**DESCRIPTION.** The Asphaltic Reflective Crack Relief Interlayer (ARCRI) mix shall conform to section 802 and the following requirements.

**MATERIAL.**

**Asphalt Binder.** Use asphalt binder as specified by the manufacturer, and the following:

Test	Description	Criteria
<b>T301</b>	<b>RTFO Elastic Recovery</b>	<b>75 percent minimum @ 77 degrees F</b>
<b>D5976</b>	<b>Separation Test</b>	<b>10 degrees F difference max. after 48 hr.</b>

**Aggregates.** The blended aggregate stockpile shall consist of natural sands and crushed fines.

The aggregate blend shall conform to the following limits:

Sieve	Percent Passing
3/8"	100
No.4	75-100
No.8	30-85
No.200	6-14

All aggregates used in the design blend shall conform to 402 except for fine aggregate gradation and as specified by the ARCRI technical representative.

**Mix Design.** The mix design for the ARCRI mix shall be as specified by the manufacturer and in 402 and the following table except that Recycled Asphalt Pavement (RAP), Recycled Concrete Pavement (RCP) and shingles shall not be used.

Test	Description	Specification
T 308	Asphalt Binder Content, %	7.0 min
T 269	Air Voids (Va), %	1.0 – 3.0
R 35	Voids in the Mineral Aggregate (VMA),	16.0 min

	%	
T 246	Hveem Stability	18.0 min
T 321	Flexural Beam Fatigue, cycles	100,000 min

Maintain air voids within +/- 0.5 percent of the JMF.

**Mix Design Approval.** Documentation shall be provided for mix design approval as specified in 818.02. The producer of the asphalt binder used in the ARCRI mix and the ARCRI technical representative shall review and approve the ARCRI mix design.

**Gradation Control.** The maximum deviation from the approved JMF based on an average of five samples shall be as follows:

Sieve	<b>Maximum Tolerance (% Passing by Weight)</b>
(No. 8)	+4.0
(No. 200)	+1.4

**Gradation Adjustment.** Adjustments to the Natural Sand (rounded sand) portion of the gradation shall be limited to  $\pm 5\%$  from the JMF. A new JMF shall be required when changes to the Natural Sand content are greater than  $(\pm)5\%$  from the original JMF.

Strata produced by Sem Materials Corp. and Citgoflex produced by CITGO Corp. are considered approved ARCRI mixes and may be produced and applied as per the recommendations of the respective corporation's ARCRI technical representative. Other ARCRI mixes may be used if they conform to these specifications.

**EMULSIFIED ASPHALTS - 802.04** - Emulsified asphalts shall conform to M 140 or M 208 with the following exceptions:

- (a) Cement mixing tests are waived.
- (b) Grade SS-1 viscosity shall be 50 to 400 seconds at 77 F.
- (c) Maximum of 3.0 percent by volume of oil distillate.
- (d) The sieve test requirement for field samples shall be a maximum of 0.4 percent.

45. **BITUMINOUS CONCRETE MIXTURES**

This S.P. supplements Section 818.

**CERTIFICATION.** The manufacturer and hauler shall furnish certifications as specified in DDOT Standard Specifications.

The manufacturer shall also certify:

- a. Date and time of loading.
- b. Tank or blending system.
- c. Identification of hauling unit.
- d. Binder grade, temperature, and quantity of materials.
- e. Complete certified analysis.
- f. Lot number, if applicable.
- g. Mixing and compaction temperatures when the binder is polymer modified.

The hauler shall also certify

1. Identification of hauling unit
2. Binder grade and source of delivery.
3. The date of the last delivery using this hauling tank and volume of material remaining in the tank at the time of current loading.

**A) Performance Graded Asphalt Binders.** For mixes containing all virgin materials shall conform to AASHTO MP Table 1 and all AASHTO Revisions, for elastomer polymer modified, PG 76-22 binder. The asphalt binder recovered from the final plant mixed material will be considered Rolling Thin Film Oven (RTFO) material and shall conform to AASHTO MP1, Table I for the specified performance grade.

The PG Binder shall be pre-approved by DDOT.

The Contractor shall submit a certificate of analysis showing conformance with the PG Binder Specification AASHTO MPI and the critical cracking temperature as described in the Binder ETO Draft, Standard Practice for Determination of Low-Temperature Performance Grade (PG) of Asphalt Binder, for the binders specified in the Contract Documents.

The PG binder for HMA mixes shall be achieved by the use of Neat Asphalt with elastomer polymer modifications when needed.

#### **46. RODENT CONTROL:**

**(A) GENERAL** - The Contractor shall take the necessary steps to insure that the project site, including all project-related facilities within the site, is free of rodent infestation at all times. Work includes, but is not limited to, the following:

1. Daily removal of and proper disposal of all refuse. In the event that refuse cannot be removed from the project site the same day, the refuse shall be stored in containers designed to prevent infiltration by rodents.

2. Inspections at least once a week throughout the project site for possible rodent infestations. If such infestations are found, the contractor and retain such service until infestation is no longer apparent.

3. Other approved measures that may be required for rodent control.

**(B) MEASURE AND PAYMENT-** No separate measure and payment will be made for **Rodent Control**. Costs for **Rodent Control** will be distributed among the various pay items.

**47. SUBCONTRACTING:**

The subcontractor approval request form included herein should be used to request approval of subcontractors on this project. The form should be completed for each subcontractor requested for approval and submitted to:

**Attention:  
Contracting Officer  
District Department of Transportation**

**Office of Administrative Services  
Construction Contract Branch  
55 M Street S.E., 4<sup>th</sup> Floor  
Washington, D.C. 20003**

Copies of these forms are available upon request.

Copies of subcontracts shall be made available for review at any time by representatives of the Department of Transportation and Federal Highway Administration.



## APPENDICES



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**SUBCONTRACTOR APPROVAL  
REQUEST FORM**

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**SUBCONTRACTOR APPROVAL REQUEST**

(1) Project Name		(2) Invitation No.	
(3) Prime Contractor's Name		(4) Address	
(5) Estimated Starting Date		(6) Estimated Completion Date	(7) F.A.P. #
(8) Subcontractor's Name, Address & Phone No.		(9) Number of Subcontractor Employees in Workforce	(10) Number of DC Residents employed
(11) Pay Item	Item Description	Dollars	Cents
Check Items listed below (13-16) that are included in subcontract agreement		(12) See Attached For Additional Descriptions or Remarks	
(13) (All Projects)		Yes	No
Contract Wage Schedule		<input type="checkbox"/>	<input type="checkbox"/>
DBE/MBE Policy Statement		<input type="checkbox"/>	<input type="checkbox"/>
(14) (Federal-Aid Projects) Form FHWA-1273 (Required Contract Provisions)		<input type="checkbox"/>	<input type="checkbox"/>
(Non-Federal Aid Projects) (Required Contract Provisions)		<input type="checkbox"/>	<input type="checkbox"/>
(15) (Federal-Aid Projects When Subcontractor Will Receive Over \$10,000) On-Site Work Force Affirmative Action Requirements for Women and Minorities-Special Conditions		<input type="checkbox"/>	<input type="checkbox"/>
(16) Subcontractor's Certification of Nondiscrimination in Employment (Form Included in Bid Proposal)		<input type="checkbox"/>	<input type="checkbox"/>
(17) FHWA On-The-Job Training (To Be Provided by Subcontractor)		<input type="checkbox"/>	<input type="checkbox"/>
(18) I Request the Contracting Officer's Approval of this Subcontract and Certify that the Organization which will Perform this Work is Capable, has not been Debarred and that the Work will be Performed in Accordance with the Contract Specifications. I Further Certify that all Required Contract Provisions are Physically Included as Part of the Subcontract Agreement.			
_____ PRIME CONTRACTOR'S REPRESENTATIVE		_____ TITLE	_____ DATE
<b>THE INFORMATION BELOW IS COMPLETED BY THE DEPARTMENT</b>			
<b><u>REVIEW AND DISTRIBUTION AFTER APPROVAL</u></b>		<b><u>APPROVAL OF SUBCONTRACT IS HEREBY GIVEN</u></b>	
_____ CONTRACT COMPLIANCE	_____ DATE	_____ CONTRACTING OFFICER DC DEPARTMENT OF TRANSPORTATION	
_____ PROJECT ENGINEER/MANAGER	_____ DATE		



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**APPENDIX A**

**SPECIFIC EQUAL EMPLOYMENT  
OPPORTUNITY RESPONSIBILITIES**

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## APPENDIX A--SPECIAL PROVISIONS

### SPECIFIC EQUAL EMPLOYMENT OPPORTUNITY RESPONSIBILITIES

#### 1. General

- a. Equal employment opportunity requirements not to discriminate and to take affirmative action to assure equal employment opportunity as required by Executive Order 11246 and Executive Order 11375 are set forth in Required Contract Provisions (Form FHWA -1273 or 1316, as appropriate) and these Special Provisions which are imposed pursuant to Section 140 of Title 23, U.S.C., as established by Section 22 of the Federal-Aid Highway Act of 1968. The requirements set forth in these Special Provisions shall constitute the specific affirmative action requirements for project activities under this contract and supplement the equal employment opportunity requirements set forth in the Required Contract Provisions.
- b. The contractor will work with the State highway agencies and the Federal Government in carrying out equal employment opportunity obligations and in the review of his/her activities under the contract.
- c. The contractor and all his/her subcontractors holding subcontracts not including material suppliers, of \$10,000 or more, will comply with the following minimum specific requirement activities of equal employment opportunity:  
(The equal employment opportunity requirements of Executive Order 11246, as set forth in Volume 6, Chapter 4, Section 1, Subsection 1 of the Federal-Aid Highway Program Manual, are applicable to material suppliers as well as contractors and subcontractors.) The contractor will include these requirements in every subcontract of \$10,000 or more with such modification of language as is necessary to make them binding on the subcontractor.

2. **Equal Employment Opportunity Policy.** The contractor will accept as his/her operating policy the following statement which is designed to further the provision of equal employment opportunity to all persons without regard to their race, color, religion, sex or national origin, and to promote the full realization of equal employment opportunity through a positive continuing program:

It is the policy of this Company to assure that applicants are

employed, and that employees are treated during employment, without regard to their race, religion, sex, color, or national origin. Such action shall include: employment, upgrading, demotion or transfer, recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship, preapprenticeship, and/or on-the-job training.

3. **Equal Employment Opportunity Officer.** The contractor will designate and make known to the State highway agency contracting officers and equal employment opportunity officer (hereinafter referred to as the EEO Officer) who will have the responsibility for and must be capable of effectively administering and promoting an active contractor program of equal employment opportunity and who must be assigned adequate authority and responsibility to do so.

4. **Dissemination of Policy**

a. All members of the contractor's staff who are authorized to hire, supervise, promote, and discharge employees, or who recommend such action, or who are substantially involved in such action, will be made fully cognizant of, and will implement, the contractor's equal employment opportunity policy and contractual responsibilities to provide equal employment in each grade and classification of employment. To ensure that the above agreement will be met, the following actions will be taken as a minimum:

- (1) Periodic meetings of supervisory and personnel office employees will be conducted before the start of work and then not less often than once every six months, at which time the contractor's equal employment opportunity policy and its implementation will be reviewed and explained. The meetings will be conducted by the EEO Officer or other knowledgeable company official.
- (2) All new supervisory or personnel office employees will be given a thorough indoctrination by the EEO Officer or other knowledgeable company official, covering all major aspects of the contractor's equal employment opportunity obligations within thirty days following their reporting for duty with the contractor.
- (3) All personnel who are engaged in direct recruitment for the project will be instructed by the EEO Officer or appropriate company official in the contractor's procedures for locating and hiring minority group employees.

b. In order to make the contractor's equal employment opportunity policy known to all employees, prospective employees and potential sources of employees, i.e., schools, employment agencies, labor unions (where appropriate), college placement officers, etc., the contractor will take the following actions:

(1) Notices and posters setting forth the contractor's equal employment opportunity policy will be placed in areas readily accessible to employees, applicants for employment and potential employees.

(2) The contractor's equal employment opportunity policy and the procedures to implement such policy will be brought to the attention of employees by means of meetings, employee handbooks, other appropriate means.

#### 5. Recruitment

a. When advertising for employees, the contractor will include in all advertisements for employees the notation: "An Equal Opportunity Employer." All such advertisements will be published in newspapers or other publications having a large circulation among minority groups in the area from which the project work force would normally be derived.

b. The contractor will, unless precluded by a valid bargaining agreement, conduct systematic and direct recruitment through public and private employee referral sources likely to yield qualified minority group applicants, including, but not limited to, State employment agencies, schools, colleges and minority group organizations. To meet this requirement, the contractor will, through his EEO Officer, identify sources of potential minority group employees, and establish with such identified sources procedures whereby minority group applicants may be referred to the contractor for employment consideration.

In the event the contractor has a valid bargaining agreement providing for exclusive hiring hall referrals, he is expected to observe the provisions of that agreement to the extent that the system permits the contractor's compliance with equal employment opportunity contract provisions. (The U.S. Department of Labor has held that where implementation of such agreements have the effect of discriminating against minorities or women, or obligates the contractors to do the same, such implementation violates Executive Order 11246, as amended.)

- c. The contractor will encourage his present employees to refer minority group applicants for employment by posting appropriate notices or bulletins in areas accessible to all such employees. In addition, information and procedures with regard to referring minority group applicants will be discussed with employees.
6. **Personnel Actions.** Wages, working conditions, and employee benefits shall be established and administered, and personnel actions of every type, including hiring, upgrading, promotion, transfer, demotion, layoff, and termination, shall be taken without regard to race, color, religion, sex, or national origin. The following procedures shall be followed:
  - a. The contractor will conduct periodic inspections of project sites to ensure that working conditions and employee facilities do not indicate discriminatory treatment of project site personnel.
  - b. The contractor will periodically evaluate the spread of wages paid within each classification to determine any evidence of discriminatory wage practices.
  - c. The contractor will periodically review selected personnel actions in depth to determine whether there is evidence of discrimination. Where evidence is found, the contractor will promptly take corrective action. If the review indicates that the discrimination may extend beyond the actions reviewed, such corrective action shall include all affected persons.
  - d. The contractor will promptly investigate all complaints of alleged discrimination made to the contractor in connection with his obligations under this contract, will attempt to resolve such complaints, and will take appropriate corrective action within a reasonable time. If the investigation indicates that the discrimination may affect persons other than the complainant, such corrective action shall include such other persons. Upon completion of each investigation, the contractor will inform every complainant of all of his avenues of appeal.
7. **Training and Promotion.**
  - a. The contractor will assist in locating, qualifying, and increasing the skills of minority group and women employees, and applicants for employment.
  - b. Consistent with the contractor's work force requirements and as permissible under Federal and State regulations, the contractor shall make full use of training programs,

i.e., apprenticeship, and on-the-job training programs for the geographical area of contract performance. Where feasible, 25 percent of apprentices or trainees in each occupation shall be in their first year of apprenticeship or training. In the event the Training Special Provision is provided under this contract, this subparagraph will be superseded as indicated in Attachment 2.

- c. The contractor will advise employees and applicants for employment of available training programs and entrance requirements for each.
  - d. The contractor will periodically review the training and promotion potential of minority group and women employees and will encourage eligible employees to apply for such training and promotion.
8. Unions. If the contractor relies in whole or in part upon unions as a source of employees, the contractor will use his/her best efforts to obtain the cooperation of such unions to increase opportunities for minority groups and women within the unions, and to effect referrals by such unions of minority and female employees. Actions by the contractor either directly or through a contractor's association acting as agent will include the procedures set forth below:
- a. The contractor will use best efforts to develop, in cooperation with the unions, joint training programs aimed toward qualifying more minority group members and women for membership in the unions and increasing the skills of minority group employees and women so that they may qualify for higher paying employment.
  - b. The contractor will use best efforts to incorporate an equal employment opportunity clause into each union agreement to the end that such union will be contractually bound to refer applicants without regard to their race, color, religion, sex, or national origin.
  - c. The contractor is to obtain information as to the referral practices and policies of the labor union except that to the extent such information is within the exclusive possession of the labor union and such labor union refuses to furnish such information to the contractor, the contractor shall so certify to the State highway department and shall set forth what efforts have been made to obtain such information.
  - d. In the event the union is unable to provide the contractor with a reasonable flow of minority and women referrals within the time limit set forth in the

collective bargaining agreement, the contractor will, through independent recruitment efforts, fill the employment vacancies without regard to race, color, religion, sex, or national origin; making full efforts to obtain qualified and/or qualifiable minority group persons and women. (The U.S. Department of Labor has held that it shall be no excuse that the union with which the contractor has a collective bargaining agreement providing for exclusive referral failed to refer minority employees.) In the event the union referral practice prevents the contractor from meeting the obligations pursuant to Executive Order 11246, as amended, and these special provisions, such contractor shall immediately notify the State highway agency.

9. Subcontracting

- a. The contractor will use his best efforts to solicit bids from and to utilize minority group subcontractors or subcontractors with meaningful minority group and female representation among their employees. Contractors shall obtain lists of minority-owned construction firms from State highway agency personnel.
- b. The contractor will use his best efforts to ensure subcontractor compliance with their equal employment opportunity obligations.

10. Records and receipts

- a. The contractor will keep such records as are necessary to determine compliance with the contractor's equal employment opportunity obligations. The records kept by the contractor will be designed to indicate:
  - (1) The number of minority and non-minority group members and women employed in each work classification on the project.
  - (2) The progress and efforts being made in cooperation with unions to increase employment opportunities for minorities and women (applicable only to contractors who rely in whole or in part on unions as a source of their work force).
  - (3) The progress and efforts being made in locating, hiring, training, qualifying, and upgrading minority and female employees, and
  - (4) The progress and efforts being made in securing the services of minority group subcontractors or

subcontractors with meaningful minority and female representation among their employees.

- b. All such records must be retained for a period of three years following completion of the contract work and shall be available at reasonable times and places for inspection by authorized representatives of the State highway agency and the Federal Highway Administration.
- c. The contractors will submit an annual report to the State highway agency each July for the duration of the project, indicating the number of minority, women, and non-minority group employees currently engaged in each work classification required by the contract work. This information is to be reported on Form PR 1391. If on-the-job training is being required by "Training Special Provision", the contractor will be required to furnish Form FHWA 1409.

(40 FR 28053, July 3, 1975, as amended at 43 FR 19386, May 5, 1978. Correctly redesignated at 46 FR 21156, April 9, 1981.)

Revised 8/88



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**APPENDIX B – TRAINING SPECIAL PROVISIONS**

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## APPENDIX B--TRAINING SPECIAL PROVISIONS

This Training Special Provision supersedes subparagraph 7b of the Special Provision entitled Specific Equal Employment Opportunity Responsibilities, (Appendix A), and is in implementation of 23 U.S.C. 140(a).

As part of the contractors equal employment opportunity affirmative action program training shall be provided as follows:

The contractor shall provide on-the-job training aimed at developing full journeyworkers in the type of trade or job classification involved.

The number of trainees to be trained under the special provision will be *Two(2)*

In the event that a contractor subcontracts a portion of the contract work, he/she shall determine how many, if any, of the trainees are to be trained by the subcontractor, provided, however, that the contractor shall retain the primary responsibility for meeting the training requirements imposed by this special provision. The contractor shall also ensure that this training special provision is made applicable to such subcontract. Where feasible, 25 percent of apprentices or trainees in each occupation shall be in their first year of apprenticeship or training.

The number of trainees shall be distributed among the work classifications on the basis of the contractors needs and the availability of journeyworkers in the various classifications with a reasonable area of recruitment. Prior to commencing construction, the contractor shall submit to the State highway agency for approval the number of trainees to be trained in each selected classification and training program to be used. Furthermore, the contractor shall specify the starting time for training in each of the classifications. The contractor will be credited for each trainee employed by him/her on the contract work who is currently enrolled or becomes enrolled in an approved program and will be reimbursed for such trainees as provided hereinafter.

Training and upgrading of minorities and women toward journeyworker status is a primary objective of this Training Special Provision. Accordingly, the contractor shall make every effort to enroll minority trainees and women (e.g., by conducting systematic and direct recruitment through public and private sources likely to yield minority and women trainees) to the extent that such persons are available within a reasonable area of recruitment. The contractor will be responsible for demonstrating the steps that he/she has taken in pursuance thereof, prior to a determination as to whether the contractor is in compliance with this Training Special Provision. This training commitment is not intended, and shall not be used, to discriminate against any applicant for training, whether a member of a minority group or not.

No employee shall be employed as a trainee in any classification in which he/she has successfully completed a training course leading to journeyworker status or in which he/she has been employed as a journeyworker. The contractors should satisfy this requirement by including appropriate questions in the employee application or by other suitable means. Regardless of the method used, the contractors records should document the findings in each case.

The minimum length and type of training for each classification will be as established in the training program selected by the contractor and approved by the State highway agency and the Federal Highway Administration. The State highway agency and the Federal Highway Administration shall approve a program if it is reasonably calculated to meet the equal employment opportunity obligations of the contractor and to qualify the average trainee for journeyworker status in the classification concerned by the end of the training period. Furthermore, apprenticeship programs registered with the U.S. Department of Labor, Bureau of Apprenticeship and Training, or with a State Apprenticeship Agency recognized by The Bureau and Training programs approved but not necessarily sponsored by the U.S. Department of Labor, Manpower Administration, Bureau of Apprenticeship and Training shall also be considered acceptable provided they are being administered in a manner consistent with the equal employment obligations of Federal-aid highway construction contracts. Approval or acceptance of a training program shall be obtained from the State prior to commencing work on the classification covered by the program. It is the intention of these provisions that training is to be provided in the construction crafts rather than clerk-typists or secretarial-type positions. Training is permissible in lower level management positions such as office engineers, estimators, timekeepers, etc., where the training is oriented toward construction applications. Training in the laborer classification may be permitted provided that significant and meaningful training is provided and approved by the division office. Some off-site training is permissible as long as the training is an integral part of an approved training program and does not comprise a significant part of the overall training.

The Contractor will be reimbursed in the amount indicated in the unit price column of the Pay Item Schedule in the Bid Form and Proposals for each hour of training given an employee on this contract in accordance with an approved training program. As verified by the engineer, reimbursement will be made for training persons in excess of the number specified herein. This reimbursement will be made even though the contractor receives additional training program funds from other sources, provided such other does not specifically prohibit the contractor from receiving other reimbursement. Reimbursement for off-site training indicated above may only be made to the contractor where he/she does one or more of the following and the trainees are concurrently employed on a Federal-aid project; contributes to the cost of the training, provides the instruction to the trainee or pays the trainees wages during the off-site training period.

No payment shall be made to the contractor if either the failure to provide the required training, or the failure to hire the trainee as a journeyworker, is caused by the contractor and evidences a lack of good faith on the part of the contractor in meeting the requirements of this Training Special Provision. It is normally expected that a trainee will begin his/her training on the project as soon as feasible after start of work utilizing the skill involved and remain on the project as long as training

opportunities exist in his/her work classification or until he/she has completed his training program. It is not required that all trainees be on board for the entire length of the contract. A contractor will have fulfilled his/her responsibilities under this Training Special Provision if he/she has provided acceptable training to the number of trainees specified. The number trained shall be determined on the basis of the total number enrolled on the contract for a significant period.

Trainees will be paid at least 60 percent of the appropriate minimum journeyworkers rate specified in the contract for the first half of the training period, 75 percent for the third quarter of the training period, and 90 percent for the last quarter of the training period, unless apprentices or trainees in an approved existing program are enrolled as trainees on this project. In that case, the appropriate rates approved by the Departments of Labor or Transportation in connection with the existing program shall apply to all trainees being trained for the same classification who are covered by this Training Special Provision.

The contractor shall furnish the trainee a copy of the program he/she will follow in providing the training. The contractor shall provide each trainee with a certification showing the type and length of training satisfactorily completed.

The contractor will provide for the maintenance of records and furnish periodic reports documenting his/her performance under this Training Special Provision.

(40 FR 28053, July 3, 1975. Correctly redesignated at 46 FR 21156, April 9, 1981)

Revised 8/88



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**REQUIRED CONTRACT PROVISIONS**

**FEDERAL – AID CONSTRUCTION**

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**REQUIRED CONTRACT PROVISIONS  
FEDERAL-AID CONSTRUCTION CONTRACTS**

- I. General
- II. Nondiscrimination
- III. Nonsegregated Facilities
- IV. Davis-Bacon and Related Act Provisions
- V. Contract Work Hours and Safety Standards Act Provisions
- VI. Subletting or Assigning the Contract
- VII. Safety: Accident Prevention
- VIII. False Statements Concerning Highway Projects
- IX. Implementation of Clean Air Act and Federal Water Pollution Control Act
- X. Compliance with Governmentwide Suspension and Debarment Requirements
- XI. Certification Regarding Use of Contract Funds for Lobbying

**ATTACHMENTS**

A. Employment and Materials Preference for Appalachian Development Highway System or Appalachian Local Access Road Contracts (included in Appalachian contracts only)

**I. GENERAL**

1. Form FHWA-1273 must be physically incorporated in each construction contract funded under Title 23 (excluding emergency contracts solely intended for debris removal). The contractor (or subcontractor) must insert this form in each subcontract and further require its inclusion in all lower tier subcontracts (excluding purchase orders, rental agreements and other agreements for supplies or services).

The applicable requirements of Form FHWA-1273 are incorporated by reference for work done under any purchase order, rental agreement or agreement for other services. The prime contractor shall be responsible for compliance by any subcontractor, lower-tier subcontractor or service provider.

Form FHWA-1273 must be included in all Federal-aid design-build contracts, in all subcontracts and in lower tier subcontracts (excluding subcontracts for design services, purchase orders, rental agreements and other agreements for supplies or services). The design-builder shall be responsible for compliance by any subcontractor, lower-tier subcontractor or service provider.

Contracting agencies may reference Form FHWA-1273 in bid proposal or request for proposal documents, however, the Form FHWA-1273 must be physically incorporated (not referenced) in all contracts, subcontracts and lower-tier subcontracts (excluding purchase orders, rental agreements and other agreements for supplies or services related to a construction contract).

2. Subject to the applicability criteria noted in the following sections, these contract provisions shall apply to all work performed on the contract by the contractor's own organization and with the assistance of workers under the contractor's immediate superintendence and to all work performed on the contract by piecework, station work, or by subcontract.

3. A breach of any of the stipulations contained in these Required Contract Provisions may be sufficient grounds for withholding of progress payments, withholding of final payment, termination of the contract, suspension / debarment or any other action determined to be appropriate by the contracting agency and FHWA.

4. Selection of Labor: During the performance of this contract, the contractor shall not use convict labor for any purpose within the limits of a construction project on a Federal-aid highway unless it is labor performed by convicts who are on parole, supervised release, or probation. The term Federal-aid highway does not include roadways functionally classified as local roads or rural minor collectors.

**II. NONDISCRIMINATION**

The provisions of this section related to 23 CFR Part 230 are applicable to all Federal-aid construction contracts and to all related construction subcontracts of \$10,000 or more. The provisions of 23 CFR Part 230 are not applicable to material supply, engineering, or architectural service contracts.

In addition, the contractor and all subcontractors must comply with the following policies: Executive Order 11246, 41 CFR 60, 29 CFR 1625-1627, Title 23 USC Section 140, the Rehabilitation Act of 1973, as amended (29 USC 794), Title VI of the Civil Rights Act of 1964, as amended, and related regulations including 49 CFR Parts 21, 26 and 27; and 23 CFR Parts 200, 230, and 633.

The contractor and all subcontractors must comply with: the requirements of the Equal Opportunity Clause in 41 CFR 60-1.4(b) and, for all construction contracts exceeding \$10,000, the Standard Federal Equal Employment Opportunity Construction Contract Specifications in 41 CFR 60-4.3.

Note: The U.S. Department of Labor has exclusive authority to determine compliance with Executive Order 11246 and the policies of the Secretary of Labor including 41 CFR 60, and 29 CFR 1625-1627. The contracting agency and the FHWA have the authority and the responsibility to ensure compliance with Title 23 USC Section 140, the Rehabilitation Act of 1973, as amended (29 USC 794), and Title VI of the Civil Rights Act of 1964, as amended, and related regulations including 49 CFR Parts 21, 26 and 27; and 23 CFR Parts 200, 230, and 633.

The following provision is adopted from 23 CFR 230, Appendix A, with appropriate revisions to conform to the U.S. Department of Labor (US DOL) and FHWA requirements.

**1. Equal Employment Opportunity:** Equal employment opportunity (EEO) requirements not to discriminate and to take affirmative action to assure equal opportunity as set forth under laws, executive orders, rules, regulations (28 CFR 35, 29 CFR 1630, 29 CFR 1625-1627, 41 CFR 60 and 49 CFR 27) and orders of the Secretary of Labor as modified by the provisions prescribed herein, and imposed pursuant to 23 U.S.C. 140 shall constitute the EEO and specific affirmative action standards for the contractor's project activities under

this contract. The provisions of the Americans with Disabilities Act of 1990 (42 U.S.C. 12101 et seq.) set forth under 28 CFR 35 and 29 CFR 1630 are incorporated by reference in this contract. In the execution of this contract, the contractor agrees to comply with the following minimum specific requirement activities of EEO:

a. The contractor will work with the contracting agency and the Federal Government to ensure that it has made every good faith effort to provide equal opportunity with respect to all of its terms and conditions of employment and in their review of activities under the contract.

b. The contractor will accept as its operating policy the following statement:

"It is the policy of this Company to assure that applicants are employed, and that employees are treated during employment, without regard to their race, religion, sex, color, national origin, age or disability. Such action shall include: employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship, pre-apprenticeship, and/or on-the-job training."

**2. EEO Officer:** The contractor will designate and make known to the contracting officers an EEO Officer who will have the responsibility for and must be capable of effectively administering and promoting an active EEO program and who must be assigned adequate authority and responsibility to do so.

**3. Dissemination of Policy:** All members of the contractor's staff who are authorized to hire, supervise, promote, and discharge employees, or who recommend such action, or who are substantially involved in such action, will be made fully cognizant of, and will implement, the contractor's EEO policy and contractual responsibilities to provide EEO in each grade and classification of employment. To ensure that the above agreement will be met, the following actions will be taken as a minimum:

a. Periodic meetings of supervisory and personnel office employees will be conducted before the start of work and then not less often than once every six months, at which time the contractor's EEO policy and its implementation will be reviewed and explained. The meetings will be conducted by the EEO Officer.

b. All new supervisory or personnel office employees will be given a thorough indoctrination by the EEO Officer, covering all major aspects of the contractor's EEO obligations within thirty days following their reporting for duty with the contractor.

c. All personnel who are engaged in direct recruitment for the project will be instructed by the EEO Officer in the contractor's procedures for locating and hiring minorities and women.

d. Notices and posters setting forth the contractor's EEO policy will be placed in areas readily accessible to employees, applicants for employment and potential employees.

e. The contractor's EEO policy and the procedures to implement such policy will be brought to the attention of employees by means of meetings, employee handbooks, or other appropriate means.

**4. Recruitment:** When advertising for employees, the contractor will include in all advertisements for employees the notation: "An Equal Opportunity Employer." All such advertisements will be placed in publications having a large circulation among minorities and women in the area from which the project work force would normally be derived.

a. The contractor will, unless precluded by a valid bargaining agreement, conduct systematic and direct recruitment through public and private employee referral sources likely to yield qualified minorities and women. To meet this requirement, the contractor will identify sources of potential minority group employees, and establish with such identified sources procedures whereby minority and women applicants may be referred to the contractor for employment consideration.

b. In the event the contractor has a valid bargaining agreement providing for exclusive hiring hall referrals, the contractor is expected to observe the provisions of that agreement to the extent that the system meets the contractor's compliance with EEO contract provisions. Where implementation of such an agreement has the effect of discriminating against minorities or women, or obligates the contractor to do the same, such implementation violates Federal nondiscrimination provisions.

c. The contractor will encourage its present employees to refer minorities and women as applicants for employment. Information and procedures with regard to referring such applicants will be discussed with employees.

**5. Personnel Actions:** Wages, working conditions, and employee benefits shall be established and administered, and personnel actions of every type, including hiring, upgrading, promotion, transfer, demotion, layoff, and termination, shall be taken without regard to race, color, religion, sex, national origin, age or disability. The following procedures shall be followed:

a. The contractor will conduct periodic inspections of project sites to insure that working conditions and employee facilities do not indicate discriminatory treatment of project site personnel.

b. The contractor will periodically evaluate the spread of wages paid within each classification to determine any evidence of discriminatory wage practices.

c. The contractor will periodically review selected personnel actions in depth to determine whether there is evidence of discrimination. Where evidence is found, the contractor will promptly take corrective action. If the review indicates that the discrimination may extend beyond the actions reviewed, such corrective action shall include all affected persons.

d. The contractor will promptly investigate all complaints of alleged discrimination made to the contractor in connection with its obligations under this contract, will attempt to resolve such complaints, and will take appropriate corrective action within a reasonable time. If the investigation indicates that the discrimination may affect persons other than the complainant, such corrective action shall include such other persons. Upon completion of each investigation, the contractor will inform every complainant of all of their avenues of appeal.

**6. Training and Promotion:**

a. The contractor will assist in locating, qualifying, and increasing the skills of minorities and women who are

applicants for employment or current employees. Such efforts should be aimed at developing full journey level status employees in the type of trade or job classification involved.

b. Consistent with the contractor's work force requirements and as permissible under Federal and State regulations, the contractor shall make full use of training programs, i.e., apprenticeship, and on-the-job training programs for the geographical area of contract performance. In the event a special provision for training is provided under this contract, this subparagraph will be superseded as indicated in the special provision. The contracting agency may reserve training positions for persons who receive welfare assistance in accordance with 23 U.S.C. 140(a).

c. The contractor will advise employees and applicants for employment of available training programs and entrance requirements for each.

d. The contractor will periodically review the training and promotion potential of employees who are minorities and women and will encourage eligible employees to apply for such training and promotion.

**7. Unions:** If the contractor relies in whole or in part upon unions as a source of employees, the contractor will use good faith efforts to obtain the cooperation of such unions to increase opportunities for minorities and women. Actions by the contractor, either directly or through a contractor's association acting as agent, will include the procedures set forth below:

a. The contractor will use good faith efforts to develop, in cooperation with the unions, joint training programs aimed toward qualifying more minorities and women for membership in the unions and increasing the skills of minorities and women so that they may qualify for higher paying employment.

b. The contractor will use good faith efforts to incorporate an EEO clause into each union agreement to the end that such union will be contractually bound to refer applicants without regard to their race, color, religion, sex, national origin, age or disability.

c. The contractor is to obtain information as to the referral practices and policies of the labor union except that to the extent such information is within the exclusive possession of the labor union and such labor union refuses to furnish such information to the contractor, the contractor shall so certify to the contracting agency and shall set forth what efforts have been made to obtain such information.

d. In the event the union is unable to provide the contractor with a reasonable flow of referrals within the time limit set forth in the collective bargaining agreement, the contractor will, through independent recruitment efforts, fill the employment vacancies without regard to race, color, religion, sex, national origin, age or disability; making full efforts to obtain qualified and/or qualifiable minorities and women. The failure of a union to provide sufficient referrals (even though it is obligated to provide exclusive referrals under the terms of a collective bargaining agreement) does not relieve the contractor from the requirements of this paragraph. In the event the union referral practice prevents the contractor from meeting the obligations pursuant to Executive Order 11246, as amended, and these special provisions, such contractor shall immediately notify the contracting agency.

**8. Reasonable Accommodation for Applicants / Employees with Disabilities:** The contractor must be familiar

with the requirements for and comply with the Americans with Disabilities Act and all rules and regulations established there under. Employers must provide reasonable accommodation in all employment activities unless to do so would cause an undue hardship.

**9. Selection of Subcontractors, Procurement of Materials and Leasing of Equipment:** The contractor shall not discriminate on the grounds of race, color, religion, sex, national origin, age or disability in the selection and retention of subcontractors, including procurement of materials and leases of equipment. The contractor shall take all necessary and reasonable steps to ensure nondiscrimination in the administration of this contract.

a. The contractor shall notify all potential subcontractors and suppliers and lessors of their EEO obligations under this contract.

b. The contractor will use good faith efforts to ensure subcontractor compliance with their EEO obligations.

**10. Assurance Required by 49 CFR 26.13(b):**

a. The requirements of 49 CFR Part 26 and the State DOT's U.S. DOT-approved DBE program are incorporated by reference.

b. The contractor or subcontractor shall not discriminate on the basis of race, color, national origin, or sex in the performance of this contract. The contractor shall carry out applicable requirements of 49 CFR Part 26 in the award and administration of DOT-assisted contracts. Failure by the contractor to carry out these requirements is a material breach of this contract, which may result in the termination of this contract or such other remedy as the contracting agency deems appropriate.

**11. Records and Reports:** The contractor shall keep such records as necessary to document compliance with the EEO requirements. Such records shall be retained for a period of three years following the date of the final payment to the contractor for all contract work and shall be available at reasonable times and places for inspection by authorized representatives of the contracting agency and the FHWA.

a. The records kept by the contractor shall document the following:

(1) The number and work hours of minority and non-minority group members and women employed in each work classification on the project;

(2) The progress and efforts being made in cooperation with unions, when applicable, to increase employment opportunities for minorities and women; and

(3) The progress and efforts being made in locating, hiring, training, qualifying, and upgrading minorities and women;

b. The contractors and subcontractors will submit an annual report to the contracting agency each July for the duration of the project, indicating the number of minority, women, and non-minority group employees currently engaged in each work classification required by the contract work. This information is to be reported on [Form FHWA-1391](#). The staffing data should represent the project work force on board in all or any part of the last payroll period preceding the end of July. If on-the-job training is being required by special provision, the contractor

will be required to collect and report training data. The employment data should reflect the work force on board during all or any part of the last payroll period preceding the end of July.

### III. NONSEGREGATED FACILITIES

This provision is applicable to all Federal-aid construction contracts and to all related construction subcontracts of \$10,000 or more.

The contractor must ensure that facilities provided for employees are provided in such a manner that segregation on the basis of race, color, religion, sex, or national origin cannot result. The contractor may neither require such segregated use by written or oral policies nor tolerate such use by employee custom. The contractor's obligation extends further to ensure that its employees are not assigned to perform their services at any location, under the contractor's control, where the facilities are segregated. The term "facilities" includes waiting rooms, work areas, restaurants and other eating areas, time clocks, restrooms, washrooms, locker rooms, and other storage or dressing areas, parking lots, drinking fountains, recreation or entertainment areas, transportation, and housing provided for employees. The contractor shall provide separate or single-user restrooms and necessary dressing or sleeping areas to assure privacy between sexes.

### IV. DAVIS-BACON AND RELATED ACT PROVISIONS

This section is applicable to all Federal-aid construction projects exceeding \$2,000 and to all related subcontracts and lower-tier subcontracts (regardless of subcontract size). The requirements apply to all projects located within the right-of-way of a roadway that is functionally classified as Federal-aid highway. This excludes roadways functionally classified as local roads or rural minor collectors, which are exempt. Contracting agencies may elect to apply these requirements to other projects.

The following provisions are from the U.S. Department of Labor regulations in 29 CFR 5.5 "Contract provisions and related matters" with minor revisions to conform to the FHWA-1273 format and FHWA program requirements.

#### 1. Minimum wages

a. All laborers and mechanics employed or working upon the site of the work, will be paid unconditionally and not less often than once a week, and without subsequent deduction or rebate on any account (except such payroll deductions as are permitted by regulations issued by the Secretary of Labor under the Copeland Act (29 CFR part 3)), the full amount of wages and bona fide fringe benefits (or cash equivalents thereof) due at time of payment computed at rates not less than those contained in the wage determination of the Secretary of Labor which is attached hereto and made a part hereof, regardless of any contractual relationship which may be alleged to exist between the contractor and such laborers and mechanics.

Contributions made or costs reasonably anticipated for bona fide fringe benefits under section 1(b)(2) of the Davis-Bacon Act on behalf of laborers or mechanics are considered wages paid to such laborers or mechanics, subject to the provisions

of paragraph 1.d. of this section; also, regular contributions made or costs incurred for more than a weekly period (but not less often than quarterly) under plans, funds, or programs which cover the particular weekly period, are deemed to be constructively made or incurred during such weekly period. Such laborers and mechanics shall be paid the appropriate wage rate and fringe benefits on the wage determination for the classification of work actually performed, without regard to skill, except as provided in 29 CFR 5.5(a)(4). Laborers or mechanics performing work in more than one classification may be compensated at the rate specified for each classification for the time actually worked therein: Provided, That the employer's payroll records accurately set forth the time spent in each classification in which work is performed. The wage determination (including any additional classification and wage rates conformed under paragraph 1.b. of this section) and the Davis-Bacon poster (WH-1321) shall be posted at all times by the contractor and its subcontractors at the site of the work in a prominent and accessible place where it can be easily seen by the workers.

b.(1) The contracting officer shall require that any class of laborers or mechanics, including helpers, which is not listed in the wage determination and which is to be employed under the contract shall be classified in conformance with the wage determination. The contracting officer shall approve an additional classification and wage rate and fringe benefits therefore only when the following criteria have been met:

(i) The work to be performed by the classification requested is not performed by a classification in the wage determination; and

(ii) The classification is utilized in the area by the construction industry; and

(iii) The proposed wage rate, including any bona fide fringe benefits, bears a reasonable relationship to the wage rates contained in the wage determination.

(2) If the contractor and the laborers and mechanics to be employed in the classification (if known), or their representatives, and the contracting officer agree on the classification and wage rate (including the amount designated for fringe benefits where appropriate), a report of the action taken shall be sent by the contracting officer to the Administrator of the Wage and Hour Division, Employment Standards Administration, U.S. Department of Labor, Washington, DC 20210. The Administrator, or an authorized representative, will approve, modify, or disapprove every additional classification action within 30 days of receipt and so advise the contracting officer or will notify the contracting officer within the 30-day period that additional time is necessary.

(3) In the event the contractor, the laborers or mechanics to be employed in the classification or their representatives, and the contracting officer do not agree on the proposed classification and wage rate (including the amount designated for fringe benefits, where appropriate), the contracting officer shall refer the questions, including the views of all interested parties and the recommendation of the contracting officer, to the Wage and Hour Administrator for determination. The Wage and Hour Administrator, or an authorized representative, will issue a determination within 30 days of receipt and so advise the contracting officer or

will notify the contracting officer within the 30-day period that additional time is necessary.

(4) The wage rate (including fringe benefits where appropriate) determined pursuant to paragraphs 1.b.(2) or 1.b.(3) of this section, shall be paid to all workers performing work in the classification under this contract from the first day on which work is performed in the classification.

c. Whenever the minimum wage rate prescribed in the contract for a class of laborers or mechanics includes a fringe benefit which is not expressed as an hourly rate, the contractor shall either pay the benefit as stated in the wage determination or shall pay another bona fide fringe benefit or an hourly cash equivalent thereof.

d. If the contractor does not make payments to a trustee or other third person, the contractor may consider as part of the wages of any laborer or mechanic the amount of any costs reasonably anticipated in providing bona fide fringe benefits under a plan or program. Provided, That the Secretary of Labor has found, upon the written request of the contractor, that the applicable standards of the Davis-Bacon Act have been met. The Secretary of Labor may require the contractor to set aside in a separate account assets for the meeting of obligations under the plan or program.

## 2. Withholding

The contracting agency shall upon its own action or upon written request of an authorized representative of the Department of Labor, withhold or cause to be withheld from the contractor under this contract, or any other Federal contract with the same prime contractor, or any other federally-assisted contract subject to Davis-Bacon prevailing wage requirements, which is held by the same prime contractor, so much of the accrued payments or advances as may be considered necessary to pay laborers and mechanics, including apprentices, trainees, and helpers, employed by the contractor or any subcontractor the full amount of wages required by the contract. In the event of failure to pay any laborer or mechanic, including any apprentice, trainee, or helper, employed or working on the site of the work, all or part of the wages required by the contract, the contracting agency may, after written notice to the contractor, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds until such violations have ceased.

## 3. Payrolls and basic records

a. Payrolls and basic records relating thereto shall be maintained by the contractor during the course of the work and preserved for a period of three years thereafter for all laborers and mechanics working at the site of the work. Such records shall contain the name, address, and social security number of each such worker, his or her correct classification, hourly rates of wages paid (including rates of contributions or costs anticipated for bona fide fringe benefits or cash equivalents thereof of the types described in section 1(b)(2)(B) of the Davis-Bacon Act), daily and weekly number of hours worked, deductions made and actual wages paid. Whenever the Secretary of Labor has found under 29 CFR 5.5(a)(1)(iv) that the wages of any laborer or mechanic include the amount of any costs reasonably anticipated in providing benefits under a plan or program described in section 1(b)(2)(B) of the Davis-

Bacon Act, the contractor shall maintain records which show that the commitment to provide such benefits is enforceable, that the plan or program is financially responsible, and that the plan or program has been communicated in writing to the laborers or mechanics affected, and records which show the costs anticipated or the actual cost incurred in providing such benefits. Contractors employing apprentices or trainees under approved programs shall maintain written evidence of the registration of apprenticeship programs and certification of trainee programs, the registration of the apprentices and trainees, and the ratios and wage rates prescribed in the applicable programs.

b.(1) The contractor shall submit weekly for each week in which any contract work is performed a copy of all payrolls to the contracting agency. The payrolls submitted shall set out accurately and completely all of the information required to be maintained under 29 CFR 5.5(a)(3)(i), except that full social security numbers and home addresses shall not be included on weekly transmittals. Instead the payrolls shall only need to include an individually identifying number for each employee (e.g., the last four digits of the employee's social security number). The required weekly payroll information may be submitted in any form desired. Optional Form WH-347 is available for this purpose from the Wage and Hour Division Web site at <http://www.dol.gov/esa/whd/forms/wh347instr.htm> or its successor site. The prime contractor is responsible for the submission of copies of payrolls by all subcontractors. Contractors and subcontractors shall maintain the full social security number and current address of each covered worker, and shall provide them upon request to the contracting agency for transmission to the State DOT, the FHWA or the Wage and Hour Division of the Department of Labor for purposes of an investigation or audit of compliance with prevailing wage requirements. It is not a violation of this section for a prime contractor to require a subcontractor to provide addresses and social security numbers to the prime contractor for its own records, without weekly submission to the contracting agency..

(2) Each payroll submitted shall be accompanied by a "Statement of Compliance," signed by the contractor or subcontractor or his or her agent who pays or supervises the payment of the persons employed under the contract and shall certify the following:

(i) That the payroll for the payroll period contains the information required to be provided under §5.5 (a)(3)(ii) of Regulations, 29 CFR part 5, the appropriate information is being maintained under §5.5 (a)(3)(i) of Regulations, 29 CFR part 5, and that such information is correct and complete;

(ii) That each laborer or mechanic (including each helper, apprentice, and trainee) employed on the contract during the payroll period has been paid the full weekly wages earned, without rebate, either directly or indirectly, and that no deductions have been made either directly or indirectly from the full wages earned, other than permissible deductions as set forth in Regulations, 29 CFR part 3;

(iii) That each laborer or mechanic has been paid not less than the applicable wage rates and fringe benefits or cash equivalents for the classification of work performed, as specified in the applicable wage determination incorporated into the contract.

(3) The weekly submission of a properly executed certification set forth on the reverse side of Optional Form WH-347 shall satisfy the requirement for submission of the "Statement of Compliance" required by paragraph 3.b.(2) of this section.

(4) The falsification of any of the above certifications may subject the contractor or subcontractor to civil or criminal prosecution under section 1001 of title 18 and section 231 of title 31 of the United States Code.

c. The contractor or subcontractor shall make the records required under paragraph 3.a. of this section available for inspection, copying, or transcription by authorized representatives of the contracting agency, the State DOT, the FHWA, or the Department of Labor, and shall permit such representatives to interview employees during working hours on the job. If the contractor or subcontractor fails to submit the required records or to make them available, the FHWA may, after written notice to the contractor, the contracting agency or the State DOT, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds. Furthermore, failure to submit the required records upon request or to make such records available may be grounds for debarment action pursuant to 29 CFR 5.12.

#### 4. Apprentices and trainees

##### a. Apprentices (programs of the USDOL).

Apprentices will be permitted to work at less than the predetermined rate for the work they performed when they are employed pursuant to and individually registered in a bona fide apprenticeship program registered with the U.S. Department of Labor, Employment and Training Administration, Office of Apprenticeship Training, Employer and Labor Services, or with a State Apprenticeship Agency recognized by the Office, or if a person is employed in his or her first 90 days of probationary employment as an apprentice in such an apprenticeship program, who is not individually registered in the program, but who has been certified by the Office of Apprenticeship Training, Employer and Labor Services or a State Apprenticeship Agency (where appropriate) to be eligible for probationary employment as an apprentice.

The allowable ratio of apprentices to journeymen on the job site in any craft classification shall not be greater than the ratio permitted to the contractor as to the entire work force under the registered program. Any worker listed on a payroll at an apprentice wage rate, who is not registered or otherwise employed as stated above, shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any apprentice performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. Where a contractor is performing construction on a project in a locality other than that in which its program is registered, the ratios and wage rates (expressed in percentages of the journeyman's hourly rate) specified in the contractor's or subcontractor's registered program shall be observed.

Every apprentice must be paid at not less than the rate specified in the registered program for the apprentice's level of progress, expressed as a percentage of the journeymen hourly

rate specified in the applicable wage determination. Apprentices shall be paid fringe benefits in accordance with the provisions of the apprenticeship program. If the apprenticeship program does not specify fringe benefits, apprentices must be paid the full amount of fringe benefits listed on the wage determination for the applicable classification. If the Administrator determines that a different practice prevails for the applicable apprentice classification, fringes shall be paid in accordance with that determination.

In the event the Office of Apprenticeship Training, Employer and Labor Services, or a State Apprenticeship Agency recognized by the Office, withdraws approval of an apprenticeship program, the contractor will no longer be permitted to utilize apprentices at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

##### b. Trainees (programs of the USDOL).

Except as provided in 29 CFR 5.16, trainees will not be permitted to work at less than the predetermined rate for the work performed unless they are employed pursuant to and individually registered in a program which has received prior approval, evidenced by formal certification by the U.S. Department of Labor, Employment and Training Administration.

The ratio of trainees to journeymen on the job site shall not be greater than permitted under the plan approved by the Employment and Training Administration.

Every trainee must be paid at not less than the rate specified in the approved program for the trainee's level of progress, expressed as a percentage of the journeyman hourly rate specified in the applicable wage determination. Trainees shall be paid fringe benefits in accordance with the provisions of the trainee program. If the trainee program does not mention fringe benefits, trainees shall be paid the full amount of fringe benefits listed on the wage determination unless the Administrator of the Wage and Hour Division determines that there is an apprenticeship program associated with the corresponding journeyman wage rate on the wage determination which provides for less than full fringe benefits for apprentices. Any employee listed on the payroll at a trainee rate who is not registered and participating in a training plan approved by the Employment and Training Administration shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any trainee performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed.

In the event the Employment and Training Administration withdraws approval of a training program, the contractor will no longer be permitted to utilize trainees at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

c. Equal employment opportunity. The utilization of apprentices, trainees and journeymen under this part shall be in conformity with the equal employment opportunity requirements of Executive Order 11246, as amended, and 29 CFR part 30.

d. Apprentices and Trainees (programs of the U.S. DOT).

Apprentices and trainees working under apprenticeship and skill training programs which have been certified by the Secretary of Transportation as promoting EEO in connection with Federal-aid highway construction programs are not subject to the requirements of paragraph 4 of this Section IV. The straight time hourly wage rates for apprentices and trainees under such programs will be established by the particular programs. The ratio of apprentices and trainees to journeymen shall not be greater than permitted by the terms of the particular program.

**5. Compliance with Copeland Act requirements.** The contractor shall comply with the requirements of 29 CFR part 3, which are incorporated by reference in this contract.

**6. Subcontracts.** The contractor or subcontractor shall insert Form FHWA-1273 in any subcontracts and also require the subcontractors to include Form FHWA-1273 in any lower tier subcontracts. The prime contractor shall be responsible for the compliance by any subcontractor or lower tier subcontractor with all the contract clauses in 29 CFR 5.5.

**7. Contract termination: debarment.** A breach of the contract clauses in 29 CFR 5.5 may be grounds for termination of the contract, and for debarment as a contractor and a subcontractor as provided in 29 CFR 5.12.

**8. Compliance with Davis-Bacon and Related Act requirements.** All rulings and interpretations of the Davis-Bacon and Related Acts contained in 29 CFR parts 1, 3, and 5 are herein incorporated by reference in this contract.

**9. Disputes concerning labor standards.** Disputes arising out of the labor standards provisions of this contract shall not be subject to the general disputes clause of this contract. Such disputes shall be resolved in accordance with the procedures of the Department of Labor set forth in 29 CFR parts 5, 6, and 7. Disputes within the meaning of this clause include disputes between the contractor (or any of its subcontractors) and the contracting agency, the U.S. Department of Labor, or the employees or their representatives.

**10. Certification of eligibility.**

a. By entering into this contract, the contractor certifies that neither it (nor he or she) nor any person or firm who has an interest in the contractor's firm is a person or firm ineligible to be awarded Government contracts by virtue of section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1).

b. No part of this contract shall be subcontracted to any person or firm ineligible for award of a Government contract by virtue of section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1).

c. The penalty for making false statements is prescribed in the U.S. Criminal Code, 18 U.S.C. 1001.

**V. CONTRACT WORK HOURS AND SAFETY STANDARDS ACT**

The following clauses apply to any Federal-aid construction contract in an amount in excess of \$100,000 and subject to the overtime provisions of the Contract Work Hours and Safety Standards Act. These clauses shall be inserted in addition to the clauses required by 29 CFR 5.5(a) or 29 CFR 4.6. As used in this paragraph, the terms laborers and mechanics include watchmen and guards.

**1. Overtime requirements.** No contractor or subcontractor contracting for any part of the contract work which may require or involve the employment of laborers or mechanics shall require or permit any such laborer or mechanic in any workweek in which he or she is employed on such work to work in excess of forty hours in such workweek unless such laborer or mechanic receives compensation at a rate not less than one and one-half times the basic rate of pay for all hours worked in excess of forty hours in such workweek.

**2. Violation; liability for unpaid wages; liquidated damages.** In the event of any violation of the clause set forth in paragraph (1.) of this section, the contractor and any subcontractor responsible therefor shall be liable for the unpaid wages. In addition, such contractor and subcontractor shall be liable to the United States (in the case of work done under contract for the District of Columbia or a territory, to such District or to such territory), for liquidated damages. Such liquidated damages shall be computed with respect to each individual laborer or mechanic, including watchmen and guards, employed in violation of the clause set forth in paragraph (1.) of this section, in the sum of \$10 for each calendar day on which such individual was required or permitted to work in excess of the standard workweek of forty hours without payment of the overtime wages required by the clause set forth in paragraph (1.) of this section.

**3. Withholding for unpaid wages and liquidated damages.** The FHWA or the contracting agency shall upon its own action or upon written request of an authorized representative of the Department of Labor withhold or cause to be withheld, from any moneys payable on account of work performed by the contractor or subcontractor under any such contract or any other Federal contract with the same prime contractor, or any other federally-assisted contract subject to the Contract Work Hours and Safety Standards Act, which is held by the same prime contractor, such sums as may be determined to be necessary to satisfy any liabilities of such contractor or subcontractor for unpaid wages and liquidated damages as provided in the clause set forth in paragraph (2.) of this section.

**4. Subcontracts.** The contractor or subcontractor shall insert in any subcontracts the clauses set forth in paragraph (1.) through (4.) of this section and also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime contractor shall be responsible for compliance by any subcontractor or lower tier subcontractor with the clauses set forth in paragraphs (1.) through (4.) of this section.

## VI. SUBLETTING OR ASSIGNING THE CONTRACT

This provision is applicable to all Federal-aid construction contracts on the National Highway System.

1. The contractor shall perform with its own organization contract work amounting to not less than 30 percent (or a greater percentage if specified elsewhere in the contract) of the total original contract price, excluding any specialty items designated by the contracting agency. Specialty items may be performed by subcontract and the amount of any such specialty items performed may be deducted from the total original contract price before computing the amount of work required to be performed by the contractor's own organization (23 CFR 635.116).

a. The term "perform work with its own organization" refers to workers employed or leased by the prime contractor, and equipment owned or rented by the prime contractor, with or without operators. Such term does not include employees or equipment of a subcontractor or lower tier subcontractor, agents of the prime contractor, or any other assignees. The term may include payments for the costs of hiring leased employees from an employee leasing firm meeting all relevant Federal and State regulatory requirements. Leased employees may only be included in this term if the prime contractor meets all of the following conditions:

(1) the prime contractor maintains control over the supervision of the day-to-day activities of the leased employees;

(2) the prime contractor remains responsible for the quality of the work of the leased employees;

(3) the prime contractor retains all power to accept or exclude individual employees from work on the project; and

(4) the prime contractor remains ultimately responsible for the payment of predetermined minimum wages, the submission of payrolls, statements of compliance and all other Federal regulatory requirements.

b. "Specialty Items" shall be construed to be limited to work that requires highly specialized knowledge, abilities, or equipment not ordinarily available in the type of contracting organizations qualified and expected to bid or propose on the contract as a whole and in general are to be limited to minor components of the overall contract.

2. The contract amount upon which the requirements set forth in paragraph (1) of Section VI is computed includes the cost of material and manufactured products which are to be purchased or produced by the contractor under the contract provisions.

3. The contractor shall furnish (a) a competent superintendent or supervisor who is employed by the firm, has full authority to direct performance of the work in accordance with the contract requirements, and is in charge of all construction operations (regardless of who performs the work) and (b) such other of its own organizational resources (supervision, management, and engineering services) as the contracting officer determines is necessary to assure the performance of the contract.

4. No portion of the contract shall be sublet, assigned or otherwise disposed of except with the written consent of the contracting officer, or authorized representative, and such consent when given shall not be construed to relieve the contractor of any responsibility for the fulfillment of the contract. Written consent will be given only after the contracting agency has assured that each subcontract is

evidenced in writing and that it contains all pertinent provisions and requirements of the prime contract.

5. The 30% self-performance requirement of paragraph (1) is not applicable to design-build contracts; however, contracting agencies may establish their own self-performance requirements.

## VII. SAFETY: ACCIDENT PREVENTION

This provision is applicable to all Federal-aid construction contracts and to all related subcontracts.

1. In the performance of this contract the contractor shall comply with all applicable Federal, State, and local laws governing safety, health, and sanitation (23 CFR 635). The contractor shall provide all safeguards, safety devices and protective equipment and take any other needed actions as it determines, or as the contracting officer may determine, to be reasonably necessary to protect the life and health of employees on the job and the safety of the public and to protect property in connection with the performance of the work covered by the contract.

2. It is a condition of this contract, and shall be made a condition of each subcontract, which the contractor enters into pursuant to this contract, that the contractor and any subcontractor shall not permit any employee, in performance of the contract, to work in surroundings or under conditions which are unsanitary, hazardous or dangerous to his/her health or safety, as determined under construction safety and health standards (29 CFR 1926) promulgated by the Secretary of Labor, in accordance with Section 107 of the Contract Work Hours and Safety Standards Act (40 U.S.C. 3704).

3. Pursuant to 29 CFR 1926.3, it is a condition of this contract that the Secretary of Labor or authorized representative thereof, shall have right of entry to any site of contract performance to inspect or investigate the matter of compliance with the construction safety and health standards and to carry out the duties of the Secretary under Section 107 of the Contract Work Hours and Safety Standards Act (40 U.S.C.3704).

## VIII. FALSE STATEMENTS CONCERNING HIGHWAY PROJECTS

This provision is applicable to all Federal-aid construction contracts and to all related subcontracts.

In order to assure high quality and durable construction in conformity with approved plans and specifications and a high degree of reliability on statements and representations made by engineers, contractors, suppliers, and workers on Federal-aid highway projects, it is essential that all persons concerned with the project perform their functions as carefully, thoroughly, and honestly as possible. Willful falsification, distortion, or misrepresentation with respect to any facts related to the project is a violation of Federal law. To prevent any misunderstanding regarding the seriousness of these and similar acts, Form FHWA-1022 shall be posted on each Federal-aid highway project (23 CFR 635) in one or more places where it is readily available to all persons concerned with the project:

18 U.S.C. 1020 reads as follows:

"Whoever, being an officer, agent, or employee of the United States, or of any State or Territory, or whoever, whether a person, association, firm, or corporation, knowingly makes any false statement, false representation, or false report as to the character, quality, quantity, or cost of the material used or to be used, or the quantity or quality of the work performed or to be performed, or the cost thereof in connection with the submission of plans, maps, specifications, contracts, or costs of construction on any highway or related project submitted for approval to the Secretary of Transportation; or

Whoever knowingly makes any false statement, false representation, false report or false claim with respect to the character, quality, quantity, or cost of any work performed or to be performed, or materials furnished or to be furnished, in connection with the construction of any highway or related project approved by the Secretary of Transportation; or

Whoever knowingly makes any false statement or false representation as to material fact in any statement, certificate, or report submitted pursuant to provisions of the Federal-aid Roads Act approved July 1, 1916, (39 Stat. 355), as amended and supplemented;

Shall be fined under this title or imprisoned not more than 5 years or both."

#### **IX. IMPLEMENTATION OF CLEAN AIR ACT AND FEDERAL WATER POLLUTION CONTROL ACT**

This provision is applicable to all Federal-aid construction contracts and to all related subcontracts.

By submission of this bid/proposal or the execution of this contract, or subcontract, as appropriate, the bidder, proposer, Federal-aid construction contractor, or subcontractor, as appropriate, will be deemed to have stipulated as follows:

1. That any person who is or will be utilized in the performance of this contract is not prohibited from receiving an award due to a violation of Section 508 of the Clean Water Act or Section 306 of the Clean Air Act.

2. That the contractor agrees to include or cause to be included the requirements of paragraph (1) of this Section X in every subcontract, and further agrees to take such action as the contracting agency may direct as a means of enforcing such requirements.

#### **X. CERTIFICATION REGARDING DEBARMENT, SUSPENSION, INELIGIBILITY AND VOLUNTARY EXCLUSION**

This provision is applicable to all Federal-aid construction contracts, design-build contracts, subcontracts, lower-tier subcontracts, purchase orders, lease agreements, consultant contracts or any other covered transaction requiring FHWA approval or that is estimated to cost \$25,000 or more – as defined in 2 CFR Parts 180 and 1200.

##### **1. Instructions for Certification – First Tier Participants:**

a. By signing and submitting this proposal, the prospective first tier participant is providing the certification set out below.

b. The inability of a person to provide the certification set out below will not necessarily result in denial of participation in this

covered transaction. The prospective first tier participant shall submit an explanation of why it cannot provide the certification set out below. The certification or explanation will be considered in connection with the department or agency's determination whether to enter into this transaction. However, failure of the prospective first tier participant to furnish a certification or an explanation shall disqualify such a person from participation in this transaction.

c. The certification in this clause is a material representation of fact upon which reliance was placed when the contracting agency determined to enter into this transaction. If it is later determined that the prospective participant knowingly rendered an erroneous certification, in addition to other remedies available to the Federal Government, the contracting agency may terminate this transaction for cause of default.

d. The prospective first tier participant shall provide immediate written notice to the contracting agency to whom this proposal is submitted if any time the prospective first tier participant learns that its certification was erroneous when submitted or has become erroneous by reason of changed circumstances.

e. The terms "covered transaction," "debarred," "suspended," "ineligible," "participant," "person," "principal," and "voluntarily excluded," as used in this clause, are defined in 2 CFR Parts 180 and 1200. "First Tier Covered Transactions" refers to any covered transaction between a grantee or subgrantee of Federal funds and a participant (such as the prime or general contract). "Lower Tier Covered Transactions" refers to any covered transaction under a First Tier Covered Transaction (such as subcontracts). "First Tier Participant" refers to the participant who has entered into a covered transaction with a grantee or subgrantee of Federal funds (such as the prime or general contractor). "Lower Tier Participant" refers any participant who has entered into a covered transaction with a First Tier Participant or other Lower Tier Participants (such as subcontractors and suppliers).

f. The prospective first tier participant agrees by submitting this proposal that, should the proposed covered transaction be entered into, it shall not knowingly enter into any lower tier covered transaction with a person who is debarred, suspended, declared ineligible, or voluntarily excluded from participation in this covered transaction, unless authorized by the department or agency entering into this transaction.

g. The prospective first tier participant further agrees by submitting this proposal that it will include the clause titled "Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion-Lower Tier Covered Transactions," provided by the department or contracting agency, entering into this covered transaction, without modification, in all lower tier covered transactions and in all solicitations for lower tier covered transactions exceeding the \$25,000 threshold.

h. A participant in a covered transaction may rely upon a certification of a prospective participant in a lower tier covered transaction that is not debarred, suspended, ineligible, or voluntarily excluded from the covered transaction, unless it knows that the certification is erroneous. A participant is responsible for ensuring that its principals are not suspended, debarred, or otherwise ineligible to participate in covered transactions. To verify the eligibility of its principals, as well as the eligibility of any lower tier prospective participants, each participant may, but is not required to, check the Excluded Parties List System website (<https://www.epls.gov/>), which is compiled by the General Services Administration.

i. Nothing contained in the foregoing shall be construed to require the establishment of a system of records in order to render in good faith the certification required by this clause. The knowledge and information of the prospective participant is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.

j. Except for transactions authorized under paragraph (f) of these instructions, if a participant in a covered transaction knowingly enters into a lower tier covered transaction with a person who is suspended, debarred, ineligible, or voluntarily excluded from participation in this transaction, in addition to other remedies available to the Federal Government, the department or agency may terminate this transaction for cause or default.

\* \* \* \* \*

## **2. Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion – First Tier Participants:**

a. The prospective first tier participant certifies to the best of its knowledge and belief, that it and its principals:

(1) Are not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participating in covered transactions by any Federal department or agency;

(2) Have not within a three-year period preceding this proposal been convicted of or had a civil judgment rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (Federal, State or local) transaction or contract under a public transaction; violation of Federal or State antitrust statutes or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, or receiving stolen property;

(3) Are not presently indicted for or otherwise criminally or civilly charged by a governmental entity (Federal, State or local) with commission of any of the offenses enumerated in paragraph (a)(2) of this certification; and

(4) Have not within a three-year period preceding this application/proposal had one or more public transactions (Federal, State or local) terminated for cause or default.

b. Where the prospective participant is unable to certify to any of the statements in this certification, such prospective participant shall attach an explanation to this proposal.

### **2. Instructions for Certification - Lower Tier Participants:**

(Applicable to all subcontracts, purchase orders and other lower tier transactions requiring prior FHWA approval or estimated to cost \$25,000 or more - 2 CFR Parts 180 and 1200)

a. By signing and submitting this proposal, the prospective lower tier is providing the certification set out below.

b. The certification in this clause is a material representation of fact upon which reliance was placed when this transaction was entered into. If it is later determined that the prospective lower tier participant knowingly rendered an erroneous certification, in addition to other remedies available to the Federal Government, the department, or agency with which

this transaction originated may pursue available remedies, including suspension and/or debarment.

c. The prospective lower tier participant shall provide immediate written notice to the person to which this proposal is submitted if at any time the prospective lower tier participant learns that its certification was erroneous by reason of changed circumstances.

d. The terms "covered transaction," "debarred," "suspended," "ineligible," "participant," "person," "principal," and "voluntarily excluded," as used in this clause, are defined in 2 CFR Parts 180 and 1200. You may contact the person to which this proposal is submitted for assistance in obtaining a copy of those regulations. "First Tier Covered Transactions" refers to any covered transaction between a grantee or subgrantee of Federal funds and a participant (such as the prime or general contract). "Lower Tier Covered Transactions" refers to any covered transaction under a First Tier Covered Transaction (such as subcontracts). "First Tier Participant" refers to the participant who has entered into a covered transaction with a grantee or subgrantee of Federal funds (such as the prime or general contractor). "Lower Tier Participant" refers any participant who has entered into a covered transaction with a First Tier Participant or other Lower Tier Participants (such as subcontractors and suppliers).

e. The prospective lower tier participant agrees by submitting this proposal that, should the proposed covered transaction be entered into, it shall not knowingly enter into any lower tier covered transaction with a person who is debarred, suspended, declared ineligible, or voluntarily excluded from participation in this covered transaction, unless authorized by the department or agency with which this transaction originated.

f. The prospective lower tier participant further agrees by submitting this proposal that it will include this clause titled "Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion-Lower Tier Covered Transaction," without modification, in all lower tier covered transactions and in all solicitations for lower tier covered transactions exceeding the \$25,000 threshold.

g. A participant in a covered transaction may rely upon a certification of a prospective participant in a lower tier covered transaction that is not debarred, suspended, ineligible, or voluntarily excluded from the covered transaction, unless it knows that the certification is erroneous. A participant is responsible for ensuring that its principals are not suspended, debarred, or otherwise ineligible to participate in covered transactions. To verify the eligibility of its principals, as well as the eligibility of any lower tier prospective participants, each participant may, but is not required to, check the Excluded Parties List System website (<https://www.epls.gov/>), which is compiled by the General Services Administration.

h. Nothing contained in the foregoing shall be construed to require establishment of a system of records in order to render in good faith the certification required by this clause. The knowledge and information of participant is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.

i. Except for transactions authorized under paragraph e of these instructions, if a participant in a covered transaction knowingly enters into a lower tier covered transaction with a person who is suspended, debarred, ineligible, or voluntarily excluded from participation in this transaction, in addition to other remedies available to the Federal Government, the

department or agency with which this transaction originated may pursue available remedies, including suspension and/or debarment.

\* \* \* \* \*

**Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion--Lower Tier Participants:**

1. The prospective lower tier participant certifies, by submission of this proposal, that neither it nor its principals is presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participating in covered transactions by any Federal department or agency.

2. Where the prospective lower tier participant is unable to certify to any of the statements in this certification, such prospective participant shall attach an explanation to this proposal.

\* \* \* \* \*

**XI. CERTIFICATION REGARDING USE OF CONTRACT FUNDS FOR LOBBYING**

This provision is applicable to all Federal-aid construction contracts and to all related subcontracts which exceed \$100,000 (49 CFR 20).

1. The prospective participant certifies, by signing and submitting this bid or proposal, to the best of his or her knowledge and belief, that:

a. No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of any Federal agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.

b. If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any Federal agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form-LLL, "Disclosure Form to Report Lobbying," in accordance with its instructions.

2. This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by 31 U.S.C. 1352. Any person who fails to file the required certification shall be subject to a civil penalty of not less than \$10,000 and not more than \$100,000 for each such failure.

3. The prospective participant also agrees by submitting its bid or proposal that the participant shall require that the language of this certification be included in all lower tier subcontracts, which exceed \$100,000 and that all such recipients shall certify and disclose accordingly.

**ATTACHMENT A - EMPLOYMENT AND MATERIALS  
PREFERENCE FOR APPALACHIAN DEVELOPMENT  
HIGHWAY SYSTEM OR APPALACHIAN LOCAL ACCESS  
ROAD CONTRACTS**

This provision is applicable to all Federal-aid projects funded under the Appalachian Regional Development Act of 1965.

1. During the performance of this contract, the contractor undertaking to do work which is, or reasonably may be, done as on-site work, shall give preference to qualified persons who regularly reside in the labor area as designated by the DOL wherein the contract work is situated, or the subregion, or the Appalachian counties of the State wherein the contract work is situated, except:

a. To the extent that qualified persons regularly residing in the area are not available.

b. For the reasonable needs of the contractor to employ supervisory or specially experienced personnel necessary to assure an efficient execution of the contract work.

c. For the obligation of the contractor to offer employment to present or former employees as the result of a lawful collective bargaining contract, provided that the number of nonresident persons employed under this subparagraph (1c) shall not exceed 20 percent of the total number of employees employed by the contractor on the contract work, except as provided in subparagraph (4) below.

2. The contractor shall place a job order with the State Employment Service indicating (a) the classifications of the laborers, mechanics and other employees required to perform the contract work, (b) the number of employees required in each classification, (c) the date on which the participant estimates such employees will be required, and (d) any other pertinent information required by the State Employment Service to complete the job order form. The job order may be placed with the State Employment Service in writing or by telephone. If during the course of the contract work, the information submitted by the contractor in the original job order is substantially modified, the participant shall promptly notify the State Employment Service.

3. The contractor shall give full consideration to all qualified job applicants referred to him by the State Employment Service. The contractor is not required to grant employment to any job applicants who, in his opinion, are not qualified to perform the classification of work required.

4. If, within one week following the placing of a job order by the contractor with the State Employment Service, the State Employment Service is unable to refer any qualified job applicants to the contractor, or less than the number requested, the State Employment Service will forward a certificate to the contractor indicating the unavailability of applicants. Such certificate shall be made a part of the contractor's permanent project records. Upon receipt of this certificate, the contractor may employ persons who do not normally reside in the labor area to fill positions covered by the certificate, notwithstanding the provisions of subparagraph (1c) above.

5. The provisions of 23 CFR 633.207(e) allow the contracting agency to provide a contractual preference for the use of mineral resource materials native to the Appalachian region.

6. The contractor shall include the provisions of Sections 1 through 4 of this Attachment A in every subcontract for work which is, or reasonably may be, done as on-site work.

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**DISADVANTAGED BUSINESS  
ENTERPRISE PARTICIPATION**

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**PARTICIPATION BY DISADVANTAGED BUSINESS ENTERPRISE AND  
NON-DISADVANTAGED BUSINESS ENTERPRISE FIRMS**

**Policy:** It is the policy of the Department of Transportation (DOT) that Disadvantaged Business Enterprises (DBE's) as defined in 49 CFR Part 26 shall have the maximum opportunity to participate in the performance of contracts financed in whole or in part with Federal funds under this agreement. Consequently, the DBE requirements of 49 CFR Part 26 applies to this agreement.

**DBE Obligation:** The contractor or subcontractor shall not discriminate on the basis of race, color, national origin, or sex in the performance of this contract. The contractor shall carry out applicable requirements of 49 CFR Part 26 in the award and Administration of DOT-assisted contracts. Failure by the contractor to carry out these requirements is a material breach of this contract, which may result in result in the termination of this contract or such other remedy, as the recipient deems appropriate.

**Definitions** - The following definitions apply to this contract:

- A. "Disadvantaged business" means a small business concern, (a) which is at least fifty-one percent (51%) owned by one or more socially and economically disadvantaged individuals or in the case of any publicly owned business, at least fifty-one percent (51%) of the stock of which is owned by one or more socially and economically disadvantaged individuals; and (b) whose management and daily business operations are controlled by one or more of the socially and economically disadvantaged individuals who own it.
- B. "Small business concern" means a small business as defined pursuant to Section (3) of the Small Business Act, as amended, including all applicable and relevant rules and regulations promulgated pursuant thereto.
- C. "Socially and economically disadvantaged individuals" means those individuals who are citizens of the United States (or lawfully admitted permanent residents) and who are:
  - (1) "Black Americans", which includes persons having origins in any of the Black racial groups of Africa;
  - (2) "Hispanic Americans", which includes persons of Mexican, Puerto Rican, Cuban, Central or South American, or other Spanish or Portuguese culture or origin, regardless of race;
  - (3) "Native Americans", which includes persons who are American Indian, Eskimos, Aleuts, or Native Hawaiians;
  - (4) "Asian-Pacific Americans", which includes persons whose origins are from Japan, China, Taiwan, Korea, Vietnam, Laos, Cambodia, Burma, Thailand, the Philippines, Samoa, Guam, the U.S. Trust Territories of the Pacific, and the Northern Marianas;
  - (5) "Asian-Indian Americans", which includes persons, whose origins are from India, Pakistan, and Bangladesh;
  - (6) Women (of all races); and

- (7) "Any other minorities or individuals found to be economically and socially disadvantaged by the Small Business Administration under Section 8(a) and 8(d) of the Small Business Act, as amended, (15 U.S.C. 637(a)).

The Contracting Officer shall make a rebuttable prerogative that individuals in the above groups are socially and economically disadvantaged. This prerogative shall be based on criteria set forth in 49 CFR Part 26. The Contracting Officer also may determine, on a case-by-case basis, that individuals who are not members of one of the above groups are socially and economically disadvantaged.

**Prompt Payment:** The prime contractor agrees to pay each subcontractor under this prime contract for satisfactory performance of its contract within 7 days from the receipt of each payment the prime contractor receives from DDOT. Any delay or postponement of payment from the above referenced time frame may occur only for good cause following written approval of the recipient. This clause applies to both DBE and non-DBE subcontractor.

**Contract Goals:**

The bidder shall subcontract 0% of the dollar value of the total amount of this DOT-assisted contract to qualified DBE subcontractors. A complete DBE plan containing a list of DBE firms to be utilized on this project must be submitted within five (5) working days subsequent to bid opening to DDOT, Construction Contract Branch; 2000 14th Street, N.W., 6th floor Washington, D.C. 20009.

The DBE plan shall include, but it is not limited to:

1. The names, addresses of DBE firms that will participate in the contract;
2. A description of work that each DBE will perform;
3. The dollar amount of the participation of each DBE firm;
4. Written and signed document of commitment to use the DBE subcontractor whose participation it submits to meet a contract goal;
5. Written and signed confirmation from the DBE that it is participating in the contract as provided in the prime contractor's commitment.
6. If the bidder fails to meet the contract goal, evidence of good faith efforts, as described below shall be submitted.

A bidder who fails to meet these requirements and who cannot show good faith effort will be considered non-responsive.

**Good Faith Effort:**

The following actions, by the bidder, are generally considered a sign of good faith effort. This list is not exclusive or exhaustive, but should be used as a guide in determining good faith effort.

1. Attendance at pre-bid meetings scheduled to inform DBE's of the project.

2. Advertisement in general circulation, trade association and minority focus media concerning subcontracting opportunities.
3. Written notice to DBE's allowing sufficient time for reply.
4. Follow up of initial solicitation.
5. Selection of portions of the work likely to be performed by DBE's.
6. Provide interested DBE's adequate information for bidding.
7. Negotiation with interested DBE's.
8. Assist interested DBE's with bonding, insurance or credit.
9. Use of minority contractors' groups and minority business assistance offices.

**DBE Directory:**

Information pertaining to lists of certified DBEs may be obtained by contacting:

Mrs. Glenda Payne, EO Specialist  
DC Department of Transportation  
Civil Rights Division  
55 M Street, SE  
3<sup>rd</sup> Floor  
Washington, DC 20003  
Office: (202) 671-2268  
Email: [glenda.payne@dc.gov](mailto:glenda.payne@dc.gov)

Ms. Tammy Paige-Sterling, DBE Program Assistant  
Washington Metropolitan Area Transit Authority (WMATA)  
600 Fifth Street, NW  
Washington, DC 20001  
Office: (202) 962-2409  
Email: [tpsterling@wmata.com](mailto:tpsterling@wmata.com)



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**EQUAL EMPLOYMENT OPPORTUNITY/  
AFFIRMATIVE ACTION  
REQUIREMENTS**

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## EQUAL EMPLOYMENT OPPORTUNITY/AFFIRMATIVE ACTION REQUIREMENTS

### AFFIRMATIVE ACTION PROGRAM:

Submission by the contractor and all subcontractors of an Affirmative Action Plan, is a requirement of this contract. These Affirmative Action Plans must be received by the Contracting Officer, Construction Contract Branch, 2000 14th Street, N.W., 6th Floor, Washington, DC 20009 within five (5) working days subsequent to the bid opening. Failure to comply in a timely manner may render the bid non-responsible.

### APPLICABILITY OF LAW REGARDING EQUAL EMPLOYMENT OPPORTUNITY

The Equal Employment Opportunity Provision of Section 230, Title 23, United States Code applies to this federally aided contract. Sections 102.04, 103.02(E) and (H) of the Standard Specifications for Highways and Structures dated 1996 do not apply. All references to Mayor's Order 85-85 should be disregarded.

### APPRENTICESHIP PROGRAM

All prime Contractors and subcontractors who contract with the District of Columbia Government to perform construction or renovation work with a single contract or cumulative contracts of a least \$500,000.00 let within a twelve (12) month period, shall be required to register an apprenticeship program with the District of Columbia Apprenticeship Council. (D.C. Code 36-404 (1988)).

### APPRENTICES AND TRAINEES

This S.P. supplements APPRENTICES AND TRAINEES, Article 3 of STANDARD CONTRACT PROVISIONS FOR USE WITH SPECIFICATIONS FOR DISTRICT GOVERNMENT CONSTRUCTION PROJECTS, DATED 1973; as amended by the Transmittal Sheet No. 5.

- (1) In Items A, B and C, except for subparagraph C5, wherever the words "Apprenticeship Council, DC Department of Labor" appear, add immediately after: "and/or U.S. Department of Labor."

The Contractor and all subcontractors shall furnish to the Contracting Officer written evidence of the registration of his/her program and apprentices as well as the appropriate ratios and wage rates for the areas of construction, prior to using any apprentice on the contract.



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**DDOT TITLE IV ASSURANCE**

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## **DDOT Title VI Assurance**

During the performance of this Contract, the contractor, for itself, its assignees and successors in interest (hereinafter referred to as the “contractor”) agrees as follows:

### **(1) COMPLIANCE WITH REGULATIONS**

The contractor shall comply with the Regulations relative to Non-Discrimination in Federally Assisted Programs of the Department of Transportation, Title 49, Code of Federal Regulations, Part 21, (hereinafter referred to as the “Regulations”), as they may be amended from time to time, which are incorporated by reference and made a part of this contract.

### **(2) NON-DISCRIMINATION**

The contractor, with regard to the work performed by it during the contract, shall not discriminate on the grounds of race, color, gender or national origin in the selection and retention of subcontractors, including procurements of materials and leases of equipment. A contractor shall not participate either directly or indirectly in the discrimination prohibited by section 21.5 of the Regulations, including employment practices when the contract covers a program set forth in Appendix B of the Regulations.

### **(3) SOLICITATIONS FOR SUBCONTRACTORS, INCLUDING PROCUREMENTS OF MATERIALS AND EQUIPMENT**

In all solicitations either by competitive bidding or negotiation made by the contractor for work to be performed under a subcontract, including procurements of materials or leases of equipment, each potential subcontractor or supplier shall be notified by the contractor of the contractor’s obligations under this contract and the Regulations relative to nondiscrimination on the grounds of race, color, gender, or national origin.

### **(4) INFORMATION AND REPORTS**

The contractor shall provide all information and reports required by the Regulations or directives issued pursuant thereto, and shall permit access to its books, records, accounts and other sources of information, and its facilities as may be determined by DDOT or the Federal Highway Administration to be pertinent to ascertain compliance with such Regulations, orders and instructions. Where any information required of a contractor is in the exclusive possession of another who fails or refuses to furnish this information, the contractor shall so certify to DDOT, or the Federal Highway Administration, as appropriate, and shall set forth what efforts it has made to obtain the information.

## (5) SANCTIONS FOR NON-COMPLIANCE

In the event of the contractor's non-compliance with non-discrimination provisions of this contract, DDOT shall impose such contract sanctions as it or the Federal Highway Administration may determine to be appropriate, including, but not limited to:

- withholding of payments to the contractor under the contract until the contractor complies, and/or
- cancellation, termination, or suspension of the contract, in whole or in part.

## (6) INCORPORATION OF PROVISIONS

The Contractor shall include the provisions of paragraphs (1) through (6) of this Assurance in every subcontract, including procurements of materials and leases of equipment, unless exempt by the Regulations, or directives issued pursuant thereto.

The contractor shall take such action with respect to any subcontract or procurement as DDOT or FHWA may direct as a means of enforcing such provisions including sanctions for noncompliance provided, however, that in the event a contractor becomes involved in, or is threatened with, litigation with a subcontractor or supplier as a result of this direction, the contractor may request DDOT to enter into such litigation to protect the interests of DDOT, and in addition, the contractor may request the United States to enter into such litigation to protect the interests of the United States.

## **DBE ASSURANCE:**

The contractor, sub-recipient or subcontractor shall not discriminate on the basis of race, color, national origin or sex in the performance of this contract. The contractor shall carry out applicable requirements of 49 CFR, Part 26 in the award and administration of DOT-assisted contracts. Failure by the contractor to carry out these requirements is a material breach of this contract, which may result in the termination of this contract or such other remedy as the recipient deems appropriate.

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**GENERAL WAGE DECISION**

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General Decision Number: DC130001 07/12/2013 DC1

Superseded General Decision Number: DC20120001

State: District of Columbia

Construction Types: Heavy (Heavy and Sewer and Water Line) and Highway

County: District of Columbia Statewide.

HEAVY CONSTRUCTION PROJECTS (Including Sewer and Water Lines); HIGHWAY CONSTRUCTION PROJECTS

Modification Number	Publication Date
0	01/04/2013
1	01/18/2013
2	01/25/2013
3	02/22/2013
4	05/10/2013
5	06/07/2013
6	06/21/2013
7	06/28/2013
8	07/05/2013
9	07/12/2013

ASBE0024-001 10/01/2012

	Rates	Fringes
Asbestos Worker/Heat and Frost Insulator Includes the application of all insulating materials, protective coverings, coatings and finishes to all types of mechanical systems.....	\$ 33.13	13.60

ASBE0024-002 10/01/2012

	Rates	Fringes
HAZARDOUS MATERIAL HANDLER Includes preparation, wetting, stripping, removal, scrapping, vacuuming, bagging and disposing of all insulation materials, whether they contain asbestos or not, from mechanical systems.....	\$ 20.86	5.61

ASBE0024-005 10/01/2012

	Rates	Fringes
Fire Stop Technician.....	\$ 26.06	6.05

Includes the application of materials or devices within or around penetrations and openings in all rated wall or floor assemblies, in order to prevent the passage of fire, smoke of other gases. The application includes all components involved in creating the rated barrier at perimeter slab edges and exterior cavities, the head of gypsum board or concrete walls, joints between rated wall or floor components, sealing of penetrating items and blank openings.

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BOIL0193-001 10/01/2009		
	Rates	Fringes
Boilermakers:.....	\$ 37.66	16.36
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BRDC0001-001 04/30/2013		
	Rates	Fringes
Bricklayer.....	\$ 28.17	8.03
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BRMD0001-004 04/29/2013		
	Rates	Fringes
BRICKLAYER Refractory (Firebrick).....	\$ 35.52	8.24
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CARP0132-001 05/01/2013		
	Rates	Fringes
Carpenter/Lather.....	\$ 26.81	8.13
Piledriver.....	\$ 26.62	8.15
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CARP1831-001 04/01/2012		
	Rates	Fringes
MILLWRIGHT.....	\$ 27.96	12.20
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CARP2311-002 05/01/2013		
	Rates	Fringes
DIVER TENDER.....	\$ 29.00	8.15
DIVER.....	\$ 37.74	8.15
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ELEC0026-001 06/03/2013		
	Rates	Fringes
Electricians.....	\$ 40.65	14.42
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ELEC0026-008 07/01/2003		
	Rates	Fringes
Motor Repairmen Removal and reinstallation of electrical motors.....	\$ 23.69	7.73+3%+a

a. PAID HOLIDAYS:

New Year's Day, Martin Luther King Jr.'s Birthday, Inauguration Day, Memorial Day, Fourth of July, Labor Day, Veterans Day, Thanksgiving Day, the day after Thanksgiving and Christmas Day or days designated as legal holidays by the Federal Government.

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ELEC0070-001 05/06/2013

	Rates	Fringes
Line Construction:		
Cable Splicers.....	\$ 33.00	19%+5.00
Equipment Operators.....	\$ 33.00	19%+5.00
Groundman.....	\$ 15.35	19%+5.00
Linemen.....	\$ 33.00	19%+5.00
Truck Driver.....	\$ 17.45	19%+5.00

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ENGI0077-001 05/01/2012

	Rates	Fringes
Power equipment operators: (HEAVY AND HIGHWAY CONSTRUCTION)		
GROUP 1.....	\$ 32.94	8.23+a+b
GROUP 2.....	\$ 31.91	8.23+a+b
GROUP 3.....	\$ 31.43	8.23+a+b
GROUP 4.....	\$ 30.70	8.23+a+b
GROUP 5.....	\$ 28.61	8.23+a+b
GROUP 6.....	\$ 23.93	8.23+a+b
GROUP 7.....	\$ 33.32	8.23+a+b

POWER EQUIPMENT OPERATORS CLASSIFICATIONS

GROUP 1: Tower Cranes and Cranes 100 ton and over.

GROUP 2: 35 ton cranes & above, tower & climbing cranes, derricks, concrete boom pump, drill rigs (equivalent to L & Double L), mole.

GROUP 3: Backhoes, cableways, cranes, cherry pickers, elevating graders, hoists, paving mixers, power shovels, tunnel shovels. batch plants, shields, tunnel mining machines, gradalls, front end loaders, 3 1/2 cu. yds. and above, power driven wheel scoops and scrapers (50 cu. yds. struck capacity or above), rail tamper, draglines, boomcat, mucking machines, graders in tunnels, pile driving engines.

GROUP 4: Front end loaders below 3 1/2 cu. yds, boom trucks, hydraulic backhoes 1/2 yds. capacity or below rubber or track mounted, tug boats, power driven wheel scoops & scrapers, blade graders, motor graders, bulldozers, trenching machines, concrete mixer, speed swing pettibone, ballast regulator, concrete pump, mechanic, welder, mechanic welder, shotcrete machines, Hoeram, locomotive (standard, narrow gauge), tuggers.

GROUP 5: High lifts above 10 feet, boilers (skelton), asphalt

spreaders, bullfloat finishing machines, concrete finishing machines, concrete spreaders, fine graders, air compressors, welding machines, pumps, generators, well points, deep wells, hydraulic pumps, elevators, freeze uniits, tunnel motorman or dinky operator, roller, conveyors, well drilling machines, grout pump, fireman.

GROUP 6: Fork lifts, ditch witch, bobcat 1/3 cu. yd. and below, space heaters, sweepers, assistant engineers, oilers.

GROUP 7: Master mechanic.

a. PAID HOLIDAYS: New Years Day, Inaugural Day, Decoration Day, Independence Day, Labor Day, Martin Luther King's Birthday, Veterans' Day, Thanksgiving Day, Friday after Thanksgiving and Christmas Day.

b. PREMIUM PAY:

Tower crane and cranes 100-ton and over to receive \$1.00 per hour premium over Group One.

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ENGI0077-002 06/01/2013

	Rates	Fringes
Power equipment operators: (PAVING AND INCIDENTAL GRADING)		
GROUP 1.....	\$ 27.49	7.00
GROUP 2.....	\$ 24.50	7.00
GROUP 3.....	\$ 21.04	7.00
GROUP 4.....	\$ 18.95	7.00
GROUP 5.....	\$ 28.15	6.80

POWER EQUIPMENT OPERATORS CLASSIFICATIONS

GROUP 1: Gradall operator, Crane.

GROUP 2: Boom Truck, Milling Machine, Excavator, Rubber Tire Backhoe, Asphalt Paver, Asphalt Plant Engineer, Motor Grader, Track Loader, Rubber Tire Loader, Track Dozer, Concrete Paver.

GROUP 3: Broom Truck, Asphalt Roller.

GROUP 4: Air Compressor, Grade Rollers.

GROUP 5: Mechanic.

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ENGI0077-003 07/01/2012

	Rates	Fringes
Power equipment operators: (SEWER, GAS AND WATER LINE CONSTRUCTION)		
GROUP 1.....	\$ 23.65	7.05+a
GROUP 2.....	\$ 23.25	7.05+a
GROUP 3.....	\$ 22.74	7.05+a
GROUP 4.....	\$ 22.42	7.05+a
GROUP 5.....	\$ 21.60	7.05+a

POWER EQUIPMENT OPERATORS CLASSIFICATIONS

GROUP 1: Excavators, Cranes, Gradalls.

GROUP 2: Backhoes, Front-end Loaders, Fork alift/Lull, Bulldozers, Motor Graders. Qualified Mechanics, Hydraulic Tamper and Hoe Pack, Paving Mixers, Pile Driving Engines, Batch Plant, Concrete Pumps, Low-Boy Driver, Lube Truck.

GROUP 3: Trenching Machine, Well Drilling Machines, Concrete Mixers, Motor Graders, Truck Driver.

GROUP 4. Roller, Air Compressors, Pumps, Welding Machines, Well Points, Firemen.

GROUP 5: Oiler

a.PAID HOLIDAYS: New Year's Day, Inaugural Day, Washington's Birthday, Decoration Day, Independence Day, Labor Day, Veterans Day, Thanksgiving Day, Christmas Day and Martin Luther King's Birthday.

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\* IRON0005-001 06/01/2013

	Rates	Fringes
Ironworkers:		
Structural, Ornamental and		
Chain Link Fence.....	\$ 30.00	16.04

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IRON0201-001 05/01/2012

	Rates	Fringes
Ironworkers:		
Reinforcing.....	\$ 26.50	16.68

-----  
LABO0657-003 06/01/2012

	Rates	Fringes
Laborers: (HEAVY AND HIGHWAY		
AND SEWER & WATER LINES		
CONSTRUCTION)		
GROUP 1.....	\$ 22.23	6.83
GROUP 2.....	\$ 22.59	6.83
GROUP 3.....	\$ 22.79	6.83
GROUP 4.....	\$ 22.96	6.83
GROUP 5.....	\$ 23.45	6.83
GROUP 6.....	\$ 24.08	6.83
GROUP 7.....	\$ 24.68	6.83
GROUP 8.....	\$ 25.49	6.83

LABORERS CLASSIFICATIONS:

GROUP 1: Carloaders, choker setter, concrete crewman, crushed feeder, demolition laborers, including salvaging all material, loading, cleaning up, wrecking, dumpmen, flagmen, fence erector and installer (other than chain link), including installation and erection of fence, guard rails, medial rails, reference posts, guide posts and right-of-way markers, form strippers, general laborers, railroad track laborers, riprap man, scale man, stake jumper, structure mover, includes foundation, separation, preparation, cribbing, shoring, jacking and unloading of structures, water nozzleman, timber

bucker and faller, truck loader, water boys, tool room men.

GROUP 2: Combined air and water nozzleman, cement handler, dope pot fireman (nonmechanical), form cleaning machine, mechanical railroad equipment (includes spiker, puller, tile cleaner, tamper, pipe wrapper, power driven wheelbarrows, operators of hand derricks, towmasters, scootcretes, buggymobiles and similar equipment), tamper or rammer operator, trestle scaffold builders over one tier high, power tool operator (gas, electric or pneumatic), sandblast or gunnite tailhose man, scaffold erector, (steel or wood), vibrator operator (up to 4 feet), asphalt cutter, mortar men, shorer and lagger, creosote material handler, corrosive enamel or equl, paver breaker and jackhammer operators.

GROUP 3: Multi-section pipe layer, non-metallic clay and concrete pipe layer (including caulker, collarman, jointer, rigger and jacker, thermal welder and corrugated metal culvert pipe layer.

GROUP 4: Asphalt block pneumatic cutter, asphalt roller, walker, chainsaw operator with attachment, concrete saw (walking), high scalers, jackhammer operator (using over 6 feet of steel), vibrator operator (4 feet and over), well point installer, air trac operator.

GROUP 5: Asphalt screeder, big drills, cut of the hole drills (1 1/2 " piston or larger), down the hole drills (3 1/2" piston or larger) gunnite or sandblaster nozzleman, asphalt raker, asphalt tamper, form setter, demolition torch operator, shotcrete nozzlelemen and potman.

GROUP 6: Powderman, master form setters.

GROUP 7: Brick paver (asphalt block paver, asphalt block sawman, asphalt block grinder, hastings block or similar type)

GROUP 8: Licensed powdermen.

-----  
LABO0657-004 06/01/2012

	Rates	Fringes
Laborers: (HAZARDOUS WASTE REMOVAL, EXCEPT ON MECHANICAL SYSTEMS: Preparation for, removing and encapsulation of hazardous materials from non-mechanical systems)		
Skilled Asbestos Abatement Laborers.....	\$ 18.21	6.83
Skilled Toxic and Hazardous Waste Removal Laborers.....	\$ 21.53	6.83

-----  
LABO0657-005 06/01/2012

	Rates	Fringes
Laborers: (TUNNEL, RAISE & SHAFT (FREE AIR)		

FOR HEAVY AND SEWER & WATER  
LINES CONSTRUCTION)

GROUP 1.....	\$ 23.04	6.83
GROUP 2.....	\$ 23.77	6.83
GROUP 3.....	\$ 25.61	6.83
GROUP 4.....	\$ 26.40	6.83

LABORERS CLASSIFICATIONS:

GROUP 1: Brakeman, Bull Gang, Dumper, Trackmen, Concrete Man.

GROUP 2: Chuck Tender, Powdermen in Prime House, Form Setters and Movers, Nippers, Cableman, Houseman, Groutman, Bell or Signalman, Top or Bottom Vibrator Operator.

GROUP 3: Miners, Re-Bar Underground, Concrete or Gunnite Nozzlemen, Powdermen, Timbermen and Re-Timbermen, Wood Steel Including Liner plate or Other Support, Material Motorman, Caulkers, Diamond Drill Operators, Riggers, Cement Finishers-Underground, Welders and Burners, Shield Driver, Air Trac Operator, Shotcrete Nozzlemen and Potman.

GROUP 4: Mucking Machine Operator (Air).

-----  
LABO0657-006 06/01/2012

Rates                      Fringes

Laborers: (TUNNEL, RAISE AND  
SHAFT (COMPRESSED AIR) FOR  
HEAVY CONSTRUCTION ONLY

Gauge Pressure Work Period  
(Pounds)                      (Hours)

1-14	7.....	\$ 30.32	6.83
14-18	6.....	\$ 35.66	6.83

FOOTNOTE: On any requirement for air pressure in excess of 18 PSI, work periods and rates should be negotiated at a pre-bid conference.

-----  
LABO0657-007 06/01/2010

Rates                      Fringes

Laborers: (PAVING AND  
INCIDENTAL GRADING)

Asphalt Raker & Concrete			
Saw Operator.....	\$ 18.42		4.90
Asphalt Shoveler.....	\$ 17.84		4.90
Asphalt Tammer & Concrete			
Shoveler.....	\$ 18.09		4.90
Jack Hammer.....	\$ 18.51		4.90
Laborer.....	\$ 17.70		4.90
Sand Setter & Form Setter...	\$ 19.10		4.90

-----  
LABO0657-008 06/01/2012

Rates                      Fringes

LABORERS (BRICK MASONRY WORK)

Mason Tenders.....	\$ 15.58		6.83
--------------------	----------	--	------

Scaffold Builders,  
Mortarmen.....\$ 16.51 6.83

-----  
MARB0002-003 05/01/2012

Rates Fringes

Marble & Stone Mason  
Includes Pointing,  
Caulking and Cleaning of  
All Types of Masonry,  
Brick, Stone and Cement  
Structures.....\$ 33.08 14.59

-----  
MARB0003-001 05/01/2011

Rates Fringes

Mosaic & Terrazzo Worker,  
Tile Layer  
Marble Mason and Tile Layer.\$ 25.29 9.89  
Terrazzo Worker.....\$ 26.04 9.89

-----  
MARB0003-004 05/01/2011

Rates Fringes

Marble, Tile & Terrazzo  
Finisher.....\$ 20.48 8.74

-----  
PAIN0051-001 06/01/2013

Rates Fringes

Painters:  
All Industrial Work.....\$ 29.18 8.91  
Bridges, Heavy Highway,  
Lead Abatement and  
Flame/Thermal Spray.....\$ 32.66 8.91  
Commercial and Mold  
Remediation, Painters,  
Wallcovers and Drywall  
Finishers.....\$ 24.89 8.91  
Metal Polishing and  
Refinishing.....\$ 25.89 8.91

-----  
PLAS0891-001 05/01/2010

Rates Fringes

Cement Masons:  
HEAVY CONSTRUCTION ONLY.....\$ 27.15 9.58

-----  
PLAS0891-002 06/01/2011

Rates Fringes

Cement Masons: (PAVING &  
INCIDENTAL GRADING)  
Cement Masons.....\$ 19.56 5.68  
Concrete Saw Operators.....\$ 19.56 5.68  
Form Setters.....\$ 19.56 5.68

-----  
PLUM0005-001 08/01/2012

	Rates	Fringes
Plumbers.....	\$ 38.17	15.75+a

a. PAID HOLIDAYS: Labor Day, Veterans' Day, Thanksgiving Day and the day after Thanksgiving, Christmas Day, New Year's Day, Martin Luther King's Birthday, Memorial Day and the Fourth of July.

-----  
PLUM0602-005 08/01/2012

	Rates	Fringes
Steamfitter, Refrigeration & Air Conditioning Mechanic.....	\$ 37.62	18.07+a

a. PAID HOLIDAYS: New Year's Day, Martin Luther King's Birthday, Memorial Day, Independence Day, Labor Day, Veterans Day, Thanksgiving Day and the day after Thanksgiving and Christmas Day.

-----  
SHEE0100-001 07/01/2013

	Rates	Fringes
Sheet Metal Worker.....	\$ 39.93	15.38

-----  
TEAM0639-001 06/01/2012

	Rates	Fringes
Truck drivers: (HEAVY & HIGHWAY CONSTRUCTION)		
Tractor trailer, Low Boy....	\$ 21.50	2.00+a
Truck Drivers.....	\$ 19.50	2.00+a

a. VACATION: Employees will receive one (1) week's paid vacation after one (1) year of service.

-----  
TEAM0639-005 06/01/2012

	Rates	Fringes
Truck drivers: (PAVING & INCIDENTAL GRADING)		
All paving projects where the grading is incidental to the paving.....	\$ 19.50	2.00

-----  
WELDERS - Receive rate prescribed for craft performing operation to which welding is incidental.  
=====

Unlisted classifications needed for work not included within the scope of the classifications listed may be added after award only as provided in the labor standards contract clauses (29CFR 5.5 (a) (1) (ii)).

-----  
The body of each wage determination lists the classification and wage rates that have been found to be prevailing for the cited type(s) of construction in the area covered by the wage determination. The classifications are listed in alphabetical order of "identifiers" that indicate whether the particular rate is union or non-union.

Union Identifiers

An identifier enclosed in dotted lines beginning with characters other than "SU" denotes that the union classification and rate have found to be prevailing for that classification. Example: PLUM0198-005 07/01/2011. The first four letters , PLUM, indicate the international union and the four-digit number, 0198, that follows indicates the local union number or district council number where applicable , i.e., Plumbers Local 0198. The next number, 005 in the example, is an internal number used in processing the wage determination. The date, 07/01/2011, following these characters is the effective date of the most current negotiated rate/collective bargaining agreement which would be July 1, 2011 in the above example.

Union prevailing wage rates will be updated to reflect any changes in the collective bargaining agreements governing the rates.

0000/9999: weighted union wage rates will be published annually each January.

Non-Union Identifiers

Classifications listed under an "SU" identifier were derived from survey data by computing average rates and are not union rates; however, the data used in computing these rates may include both union and non-union data. Example: SULA2004-007 5/13/2010. SU indicates the rates are not union majority rates, LA indicates the State of Louisiana; 2004 is the year of the survey; and 007 is an internal number used in producing the wage determination. A 1993 or later date, 5/13/2010, indicates the classifications and rates under that identifier were issued as a General Wage Determination on that date.

Survey wage rates will remain in effect and will not change until a new survey is conducted.

-----  
WAGE DETERMINATION APPEALS PROCESS

1.) Has there been an initial decision in the matter? This can be:

- \* an existing published wage determination
- \* a survey underlying a wage determination
- \* a Wage and Hour Division letter setting forth a position on a wage determination matter
- \* a conformance (additional classification and rate) ruling

On survey related matters, initial contact, including requests for summaries of surveys, should be with the Wage and Hour Regional Office for the area in which the survey was conducted because those Regional Offices have responsibility for the Davis-Bacon survey program. If the response from this initial contact is not satisfactory, then the process described in 2.) and 3.) should be followed.

With regard to any other matter not yet ripe for the formal process described here, initial contact should be with the Branch of Construction Wage Determinations. Write to:

Branch of Construction Wage Determinations  
 Wage and Hour Division  
 U.S. Department of Labor  
 200 Constitution Avenue, N.W.  
 Washington, DC 20210

2.) If the answer to the question in 1.) is yes, then an interested party (those affected by the action) can request review and reconsideration from the Wage and Hour Administrator (See 29 CFR Part 1.8 and 29 CFR Part 7). Write to:

Wage and Hour Administrator  
 U.S. Department of Labor  
 200 Constitution Avenue, N.W.  
 Washington, DC 20210

The request should be accompanied by a full statement of the interested party's position and by any information (wage payment data, project description, area practice material, etc.) that the requestor considers relevant to the issue.

3.) If the decision of the Administrator is not favorable, an interested party may appeal directly to the Administrative Review Board (formerly the Wage Appeals Board). Write to:

Administrative Review Board  
 U.S. Department of Labor  
 200 Constitution Avenue, N.W.  
 Washington, DC 20210

4.) All decisions by the Administrative Review Board are final.

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END OF GENERAL DECISION



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**MONTHLY EQUAL EMPLOYMENT UTILIZATION REPORT**

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CONTRACT NO.

DISTRICT DEPARTMENT OF TRANSPORTATION  
MONTHLY EQUAL EMPLOYMENT UTILIZATION REPORT

1. REPORTING PERIOD

FROM / / TO: / /

This report is required by the District Department of Transportation pursuant to Equal Employment Opportunity requirements of the referenced contract. Failure to report may result in suspension of payments under this contract.

2. PROJECT NAME, LOCATION AND % COMPLETED \_\_\_\_\_ %

WARD \_\_\_\_\_

3. CONTRACTOR'S NAME:

MINORITY  NON-MIN   
SUB  PRIME

4. CONTRACT AMOUNT

\$ \_\_\_\_\_

5. CONSTRUCTION TRADE	6. WORK-HOUR OF EMPLOYMENT	7. MINORITY PERCENTAGE										8. FEMALE PERCENTAGE		9. TOTAL NUMBER OF EMPLOYEES		10. TOTAL NUMBER OF MINORITY EMPLOYEES		
		6a. TOTAL ALL EMPLOYEE BY TRADE		6b. BLACK (Not of Hispanic Origin)		6c. HISPANIC		6d. ASIAN OR PACIFIC ISLANDERS		6e. AMERICAN INDIAN OR ALASKAN NATIVE		7. MINORITY PERCENTAGE	8. FEMALE PERCENTAGE	M	F			
		M	F	M	F	M	F	M	F	M	F							
Journey Worker																		
APPRENTICE																		
Helper/Laborer																		
SUB-TOTAL																		
Journey Worker																		
APPRENTICE																		
Helper/Laborer																		
SUB-TOTAL																		
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SUB-TOTAL																		
Journey Worker																		
APPRENTICE																		
Helper/Laborer																		
SUB-TOTAL																		
TOTAL JOURNEY WORKERS																		
TOTAL APPRENTICES																		
TOTAL HELPER/LABORERS																		
GRAND TOTAL																		

11. COMPANY OFFICIAL'S SIGNATURE AND TITLE

12. TELEPHONE NUMBER (include area code)

13. DATE SIGNED

14. PAGE 1 OF 2

## INSTRUCTIONS FOR FILING MONTHLY EMPLOYMENT UTILIZATION REPORT (AARU-102)

The Monthly Employment Utilization Report is to be completed by each subject contractor (both prime and sub) and signed by a responsible official of the company. The reports are filed by the 5th day of each month during the term of the contract, and they shall include the total work-hours for each employee classification in each trade in the covered area for the monthly reporting period. The prime contractor shall submit this report for each project work force and collect and submit reports for each subcontractor's project work force to the Contracting Officer, Department of Transportation. Additional copies of this form may be obtained from the Department of Transportation, Telephone No. 202/671-2270.

Compliance Agency	D. C. Government agency assigned responsibility for equal opportunity. (Secure this information from the contracting agency responsible for the construction project.)
Contracting Agency	D. C. Government agency funding project (in whole or in part). If more than one agency, list all.
Contractor	Any contractor who has a construction contract with D. C. Government or a contract funded in whole or in part with D. C. Government funds.
Minority	Includes Blacks, Hispanics, American Indians, Alaskan Natives, and Asian and Pacific Islanders--both men and women.
1. Reporting	Monthly, or as directed by the compliance agency, beginning with the effective date of the contract.
2. Project	Project name, location(s), contract number and percent completed. List ward in which project is located.
3. Contractor	Contractor's name, address, and CCB No. Check appropriate boxes--minority or non-minority, prime or sub.
4. Contracting Agency	Name(s) of contracting agency(s) funding or supervising project. List contract amount for each contract.
5. Construction Trade	Only those construction trades which contractor employs on this project.
6. Work-Hours of Employment(a-e)	<p>a: The total number of male hours and the total number of female hours worked by employees in each classification.</p> <p>b-3: The total number of male hours and the total number of female hours worked by each specified group of minority employees in each classification.</p>
<p>Classification The level of accomplishment or status of the worker in the trade (Journey Worker, Apprentice, Helper/Laborer).</p>	
7. Minority Percentage	The percentage of total minority work-hours of all work-hours (the sum of columns 6b, 6c, 6d, and 6e divided by column 6a; just one figure for each construction trade).
8. Female Percentage	For each trade the number reported in 6a, (F divided by the sum of the number of reported in 6a M and F).
9. Total Number of Employees	Total number of male and total number of female employees working in each classification of each trade in the contractor's project work force during reporting period.
10. Total Number of Minority Employees	Total number of male minority employees and total number of female minority employees working in each classification in each trade in contractor's project work force during reporting period.

**EMPLOYEE TRAINING REQUIREMENTS**

23 CFR, Part 230, Subpart A, Appendix B applies to this contract, except as modified below. Prior to commencing, the contractor shall submit to the DC Department of Transportation Contracting Officer for approval, the number of trainees to be trained in each selected and classification and providing the prospective trainee's home address(es) and social security number(s). The number of trainees to be trained under this contract is two(2) shall be in the following classifications:

<u>CRAFT</u>	<u>NUMBER</u>

The minimum length and type of training for each classification will be as established in the training program selected by the contractor and approved by the Contracting Officer, DC Department of Transportation and the Division Engineer, Federal Highway Administration.

For purposes of this requirement, a trainee is defined as a person who is registered and receiving on-the-job training in a construction or construction management occupation under a program which has been approved and certified in advance by the U.S. Department of Labor, Employment and Training Administration or by the Division Engineer, Federal Highway Administration.

A trainee differs from an apprentice in that an apprentice means (1) a person employed and individually registered in a bona fide apprenticeship program registered with the U.S. Department of Labor, Employment and Training Administration, Bureau of Apprenticeship and Training, or with a State Apprenticeship Agency recognized by the Bureau, or (2) a person in the first 90 days of probationary employment in an apprenticeship program, who is not individually registered in the program, but who has been certified by the Bureau of Apprenticeship and Training or a State Apprenticeship Agency (where applicable) to be eligible for probationary employment as an apprentice.

Contractors are encouraged to utilize the resources of the District of Columbia, Department of Employment Services, Employer Services Center and the District of Columbia, Department of Transportation to recruit and hire prospective trainees. Prospective trainees who are not enrolled in any approved program may be selected from among the contractor's construction workforce, subject to the approval of the Contracting Officer.

The District Department of Transportation-Construction Contract Branch will monitor your training program closely during the life of the project to ensure that the training program is being administered in compliance with the applicable Federal regulations and that the assigned number of trainees are enrolled and receiving

training. Contractors are reimbursed only for training actually given and carefully documented by the Project Engineer and verified by the District Department of Transportation-Construction Contract Branch.

**APPRENTICESHIP PROGRAM:**

All prime Contractors and subcontractors who contract with the District of Columbia Government to perform construction or renovation work with a single contract or cumulative contracts of at least \$500,000.00, let within a twelve (12) month period, shall be required to register and apprenticeship program with the District of Columbia Apprenticeship Council. (D.C. Code 36-409((1981))).

**APPRENTICES AND TRAINEES:**

This S.P. supplements APPRENTICES AND TRAINEES, ARTICLE 3 of STANDARD CONTRACT PROVISIONS FOR USE WITH SPECIFICATIONS FOR DISTRICT GOVERNMENT CONSTRUCTION PROJECTS, DATED 1973; as amended by the Transmittal Sheet No. 5.

- (1) In Items A, B and C, except for subparagraph C5, wherever the words "Apprenticeship Council, D.C. Department of Labor" appear, add immediately after: "and/or U.S. Department of Labor."
- (2) In Item B. Trainees, add the following: "Training programs approved under the requirements of Article IV; Section 4 and 5 of Required Contract Provisions, Federal Aid Construction Contracts (Form FHWA-1273) will satisfy the requirements of this item.

The contractor and all subcontractors shall furnish to the Contracting Officer written evidence of the registration of his/her program and apprentices as well as the appropriate ratios and wage rates for the areas of construction, prior to using any apprentice on the contract.

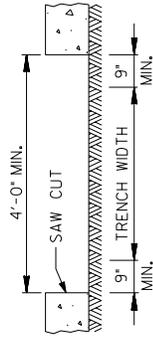
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**DDOT STANDARD DRAWINGS**

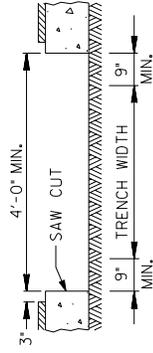
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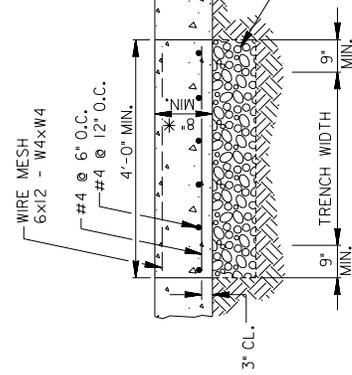
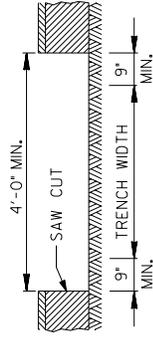
CLEAN AND WET EDGES OF CUTS BEFORE PLACING CONCRETE  
 COMPACT AND DAMPEN SUBGRADE BEFORE PLACING BAR



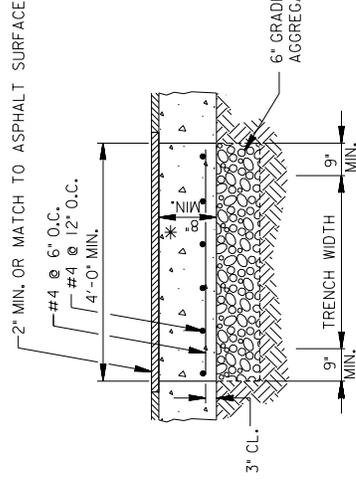
CLEAN AND WET EDGES OF CUTS BEFORE PLACING CONCRETE  
 COMPACT AND DAMPEN SUBGRADE BEFORE PLACING BAR



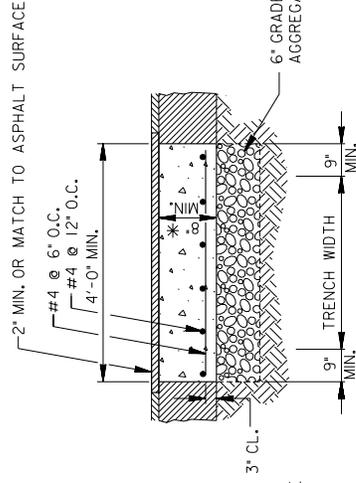
COMPACT AND DAMPEN SUBGRADE BEFORE PLACING BAR



CONCRETE PAVEMENT



CONCRETE PAVEMENT WITH ASPHALT OVERLAY



ASPHALT PAVEMENT

NOTES:

- ALL EXPOSED EDGES OF EXISTING ASPHALT AND SURFACE OF CONCRETE BASE SHALL BE PRIMED BEFORE ASPHALT MIXTURE IS PLACED.
- IF THE TRENCH CUT OCCURS NEAR EXISTING PAVEMENT JOINTS, PERFORM PAVEMENT REPAIR WORK ACCORDING TO DETAILS SHOWN ON DWG. 501.01 THRU 501.10.

\* 8" MIN. OR MATCH TO EXIST. PAVEMENT SECTION

RECOMMENDED:	<i>[Signature]</i> DEPUTY CHIEF ENGINEER
APPROVED:	<i>[Signature]</i> CHIEF TRANSPORTATION ENGINEER
DATE	
APPR. REVISION	
ISSUED:	
REFERENCE	

TRENCH REPAIR DETAIL

**d.** DISTRICT OF COLUMBIA  
 DEPARTMENT OF TRANSPORTATION

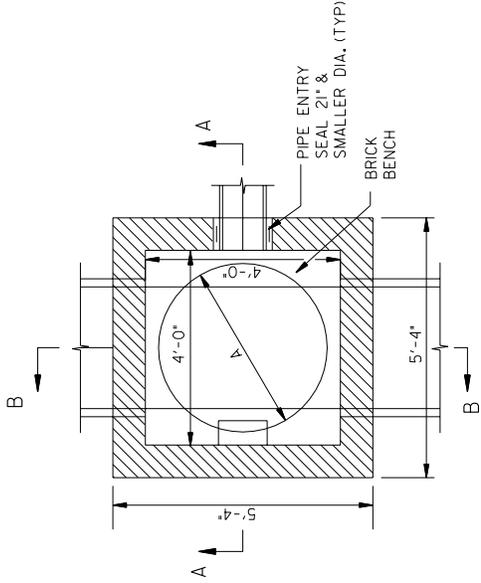
DWG. NO. 207.01

SEWER DIAMETER	FRAME DIAMETER (A)
10" THRU 21"	24"
24" THRU 36"	36"*

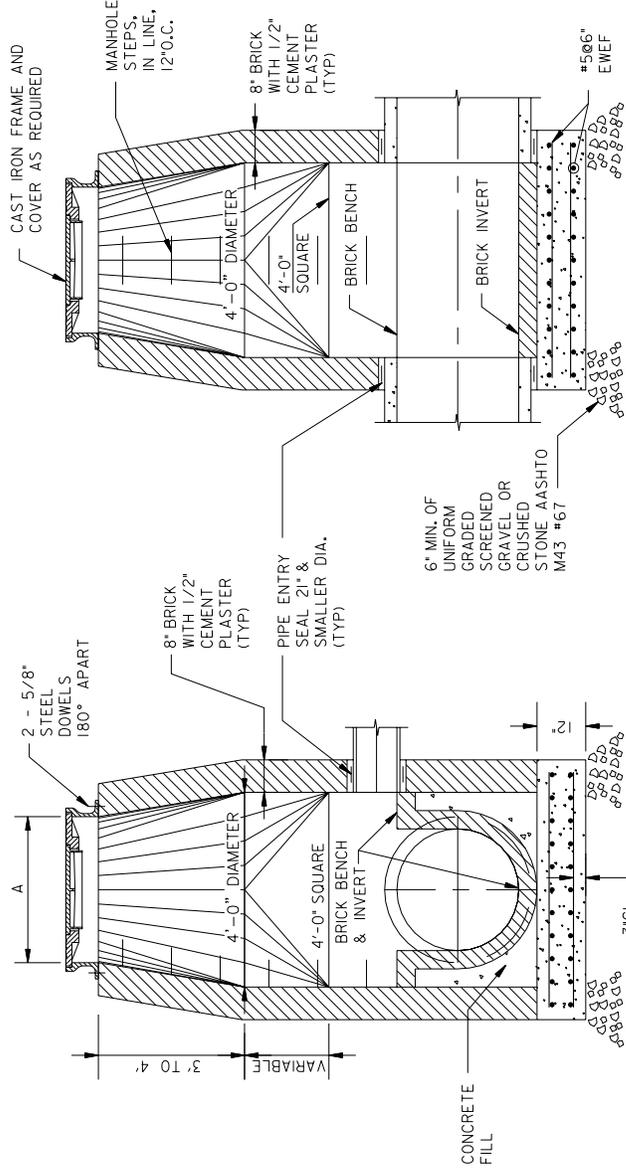
\* IF SURFACE TO INVERT IS LESS THAN 15', A 36"X24" DIA. ADAPTER RING WITH 24" DIA. COVER SHALL BE USED.

NOTES:

1. ALL CONCRETE TO BE CLASS B, AIR ENTRAINED, TYPE II CEMENT.
2. REINFORCING STEEL SHALL CONFORM TO ASSHTO M31, GRADE 60.
3. WHEN THE MANHOLE DEPTH EXCEEDS 15 FEET, THE BRICK WALL THICKNESS SHALL BE INCREASED TO 12 INCHES BELOW THE 15 FOOT DEPTH.



SECTIONAL PLAN



SECTION A - A

SECTION B - B

RECOMMENDED:	<i>[Signature]</i> DEPUTY CHIEF ENGINEER
APPROVED:	<i>[Signature]</i> CHIEF TRANSPORTATION ENGINEER
DATE	APPR.
REVISED	
ISSUED:	
	REFERENCE

**STANDARD BRICK MANHOLE**  
FOR NEW 10" THRU 36" DIAMETER SEWERS  
(CAST IN PLACE CONCRETE BASE)

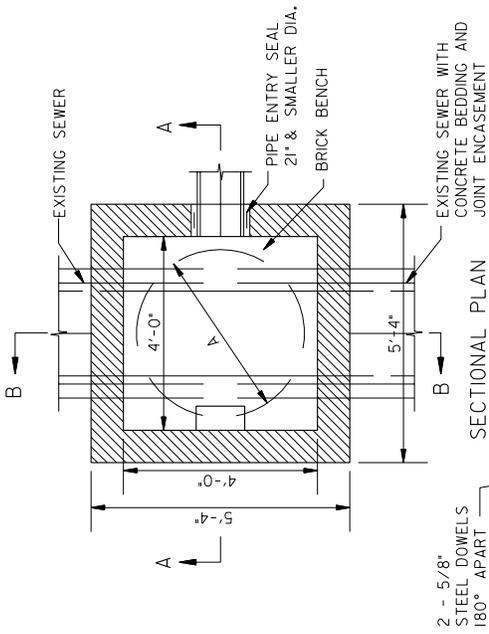


SEWER DIAMETER	FRAME DIAMETER (A)
10" THRU 21"	24"
24" THRU 36"	36" *

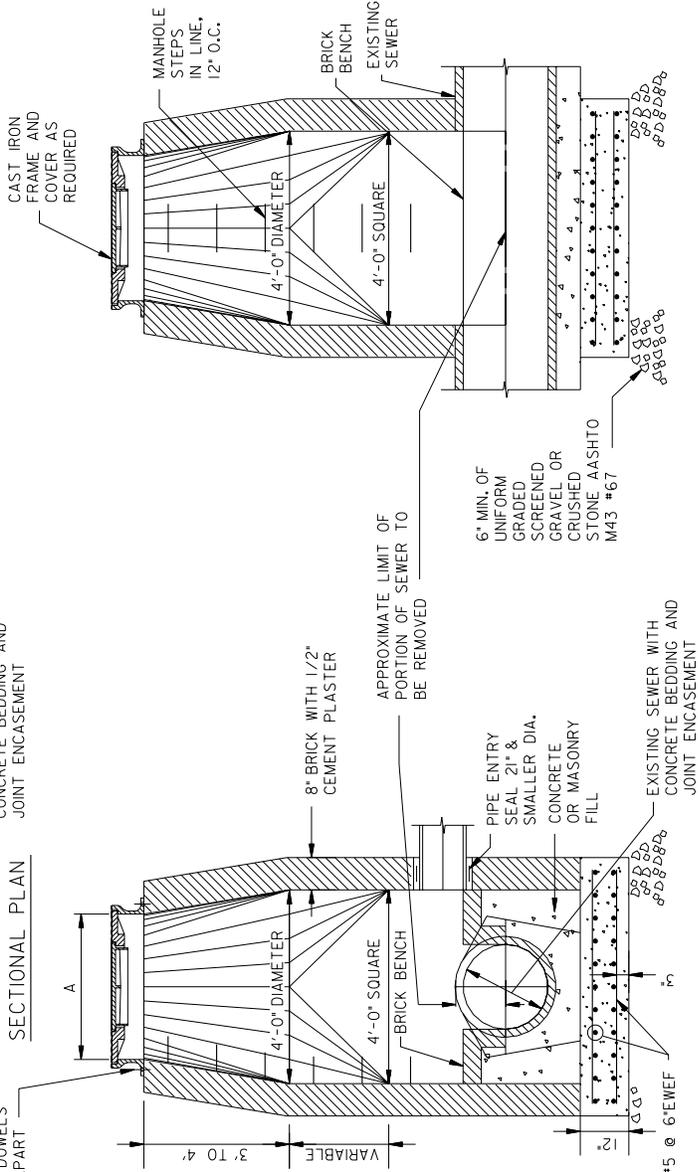
\* IF SURFACE TO INVERT < 15', A 36"X24" DIA. ADAPTER RING WITH 24" DIA. COVER SHALL BE USED.

**NOTES:**

1. ALL CONCRETE TO BE CLASS B AIR ENTRAINED, TYPE II CEMENT.
2. REINFORCING STEEL SHALL CONFORM TO AASHTO M31, GRADE 60.
3. WHEN THE MANHOLE DEPTH EXCEEDS 15 FEET, THE BRICK WALL THICKNESS SHALL BE INCREASED TO 12 INCHES BELOW THE 15 FOOT DEPTH.



2 - 5/8" STEEL DOWELS 180° APART



SECTION A - A

SECTION B - B

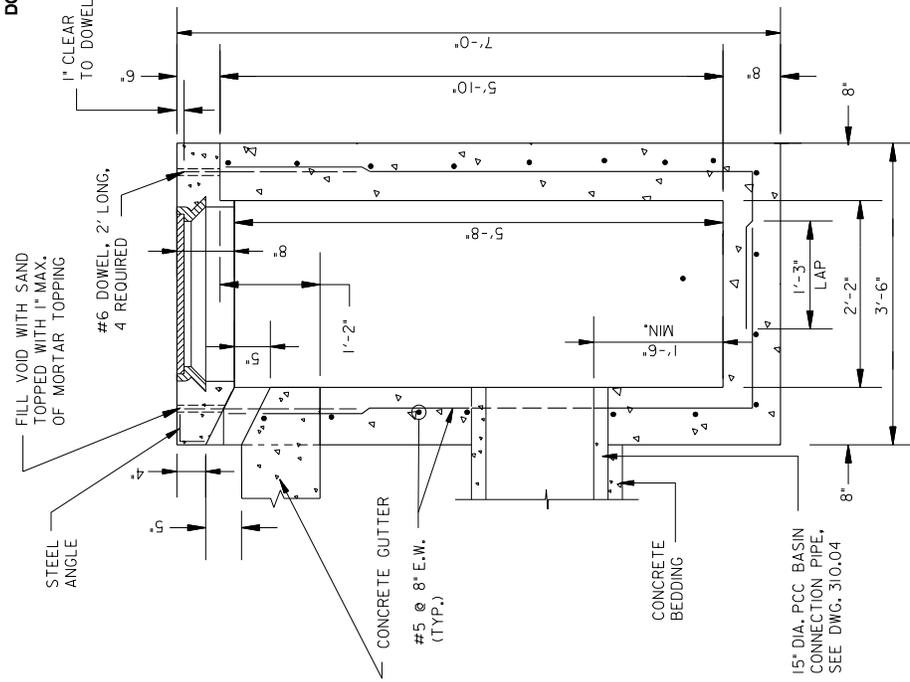
**BRICK MANHOLE**  
FOR EXISTING 10" THRU 36" DIAMETER SEWERS  
WITH CAST IN PLACE CONCRETE BASE

DISTRICT OF COLUMBIA  
DEPARTMENT OF TRANSPORTATION



DWG. NO. 309.20

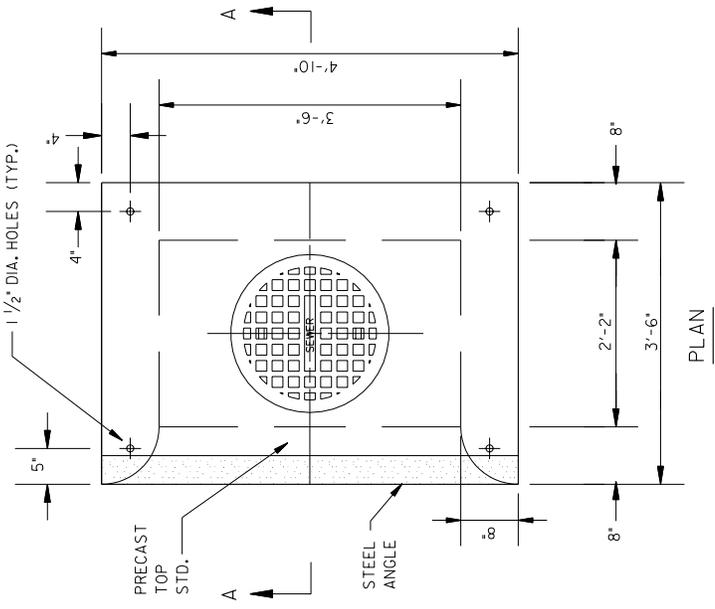
RECOMMENDED:	<i>[Signature]</i> DEPUTY CHIEF ENGINEER
APPROVED:	<i>[Signature]</i> CHIEF TRANSPORTATION ENGINEER
DATE	APPR. REVISED ISSUED:
	REFERENCE



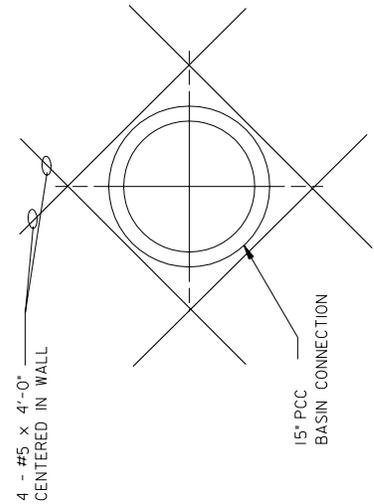
SECTION A - A

NOTES:

1. SEE DDOT STANDARD SPECIFICATIONS, SECTION 310.04.
2. ALL CONCRETE TO BE CLASS B, AIR ENTRAINED, TYPE II CEMENT.
3. REINFORCING SHALL BE CENTERED IN WALLS AND BASE AND SHALL CONFORM TO AASHTO M31, GRADE 60.
4. SEE DDOT STANDARD DRAWING 310.06 FOR 8" PRECAST STANDARD CATCH BASIN TOP.



PLAN



ADDITIONAL REINFORCING  
AT OPENING

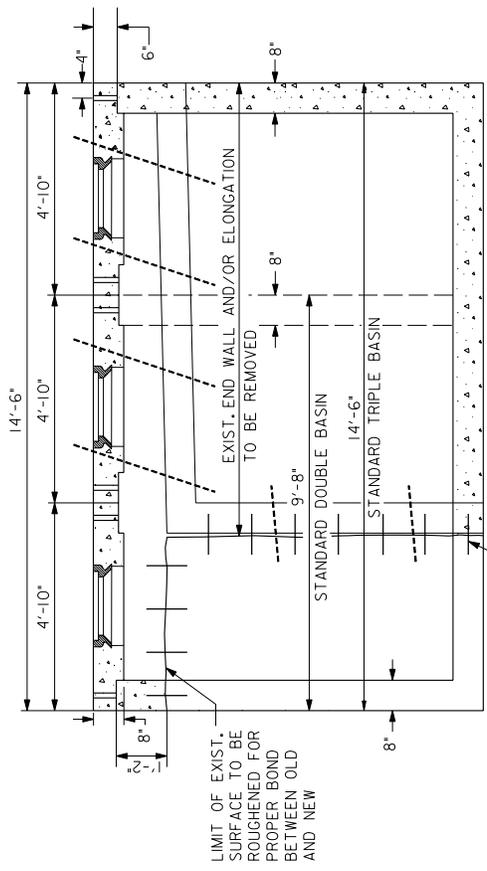
RECOMMENDED:	<i>[Signature]</i> DEPUTY CHIEF ENGINEER
APPROVED:	<i>[Signature]</i> CHIEF TRANSPORTATION ENGINEER
DATE	APPR.
REVISED	
ISSUED:	
REFERENCE	

STANDARD CATCH BASIN









SECTION B-B

#4 DEFORMED BAR 12" LENGTH @ 12" O.C., DRILL HOLES IN REMAINING PORTIONS OF WALLS AND SLAB, FILL ANNULAR SPACE WITH EPOXY GROUT

FILL VOID WITH SAND, TOPPED WITH 1" MAX. OF MORTAR TOPPING

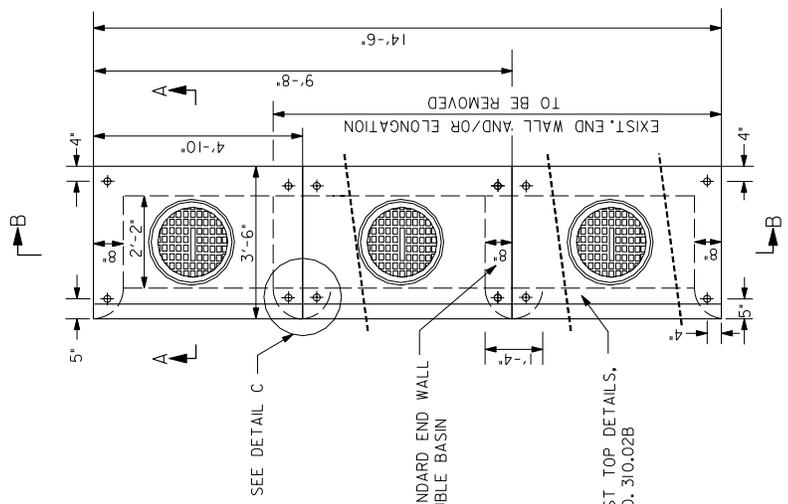
CONCRETE GUTTER BUILT MONOLITHICALLY WITH BASIN WALL

DEPTH OF GUTTER PER CONTRACT PLANS

LIMIT OF EXIST. SURFACE TO BE ROUGHENED FOR PROPER BOND BETWEEN OLD AND NEW

15" OR 18" DIA. RCP BASIN CONN. PIPE.

SECTION A-A

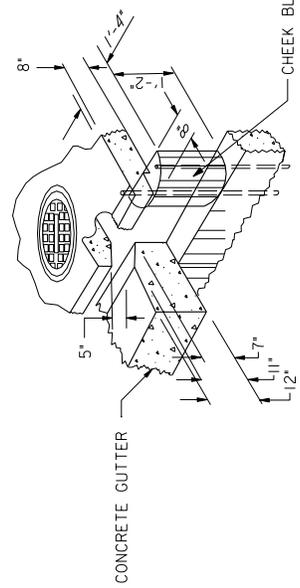


PLAN

SEE DETAIL C

USE STANDARD END WALL FOR DOUBLE BASIN

FOR PRECAST TOP DETAILS, SEE DWG. NO. 310.02B



DETAIL C

NOTE:

1. ALL CONCRETE TO BE CLASS B, AIR ENTRAINED, TYPE II CEMENT.

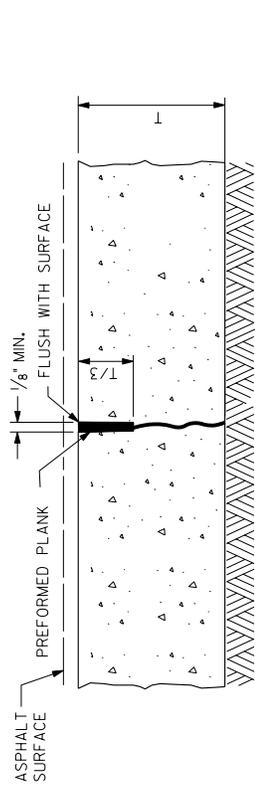
RECOMMENDED:	<i>[Signature]</i> DEPUTY CHIEF ENGINEER
APPROVED:	<i>[Signature]</i> CHIEF TRANSPORTATION ENGINEER
DATE	
REVISED	
ISSUED:	
REFERENCE	

# CONVERSION OF STANDARD CATCH BASIN WITH OR WITHOUT ELONGATION TO STANDARD DOUBLE AND TRIPLE CATCH BASIN

19:4035166 6/16/09 4:20:09 AM 1216.PN Friday, April 03, 2009 4:20:09 AM 1216.PN

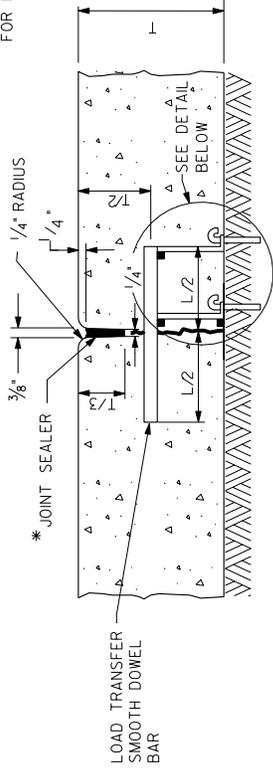




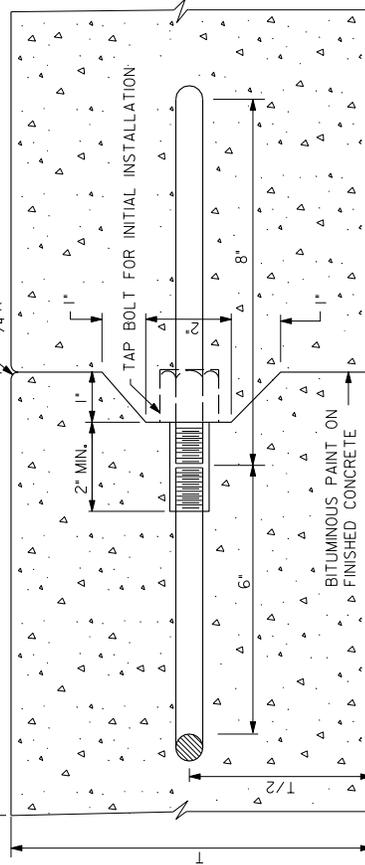


CONTRACTION JOINT FOR PCC BASE

\* JOINT SEALER NOT REQUIRED FOR PCC BASE.



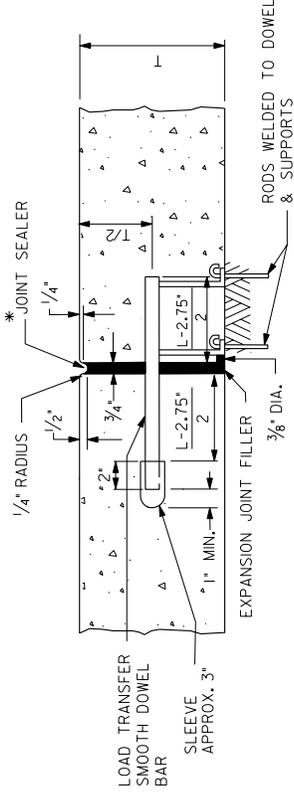
CONTRACTION JOINT FOR PCC PAVEMENT



PLAN

CROSS SECTION

TIE ROD ASSEMBLY (CONSTRUCTION JOINT)



TYPICAL EXPANSION JOINT

(OTHER DESIGNS OF EQUAL STRENGTH MAY BE USED, SUBJECT TO PRIOR APPROVAL)

DIAMETER OF DOWEL BARS

WHEN T = 8' : 1" DIA.

WHEN T = 9' OR 10' : 1 1/4" DIA.

LENGTH OF DOWEL BARS

DOWEL BAR ≥ 1" DIA.; L = 12 DIA. ± 2.5"

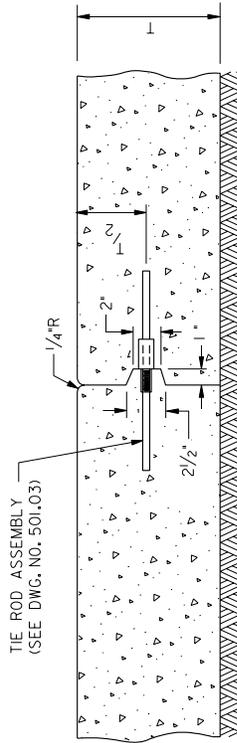
MIN. TOTAL LENGTH OF 1" DOWEL BAR FOR EXPANSION JOINT = 14 1/2"

TRANSVERSE JOINTS

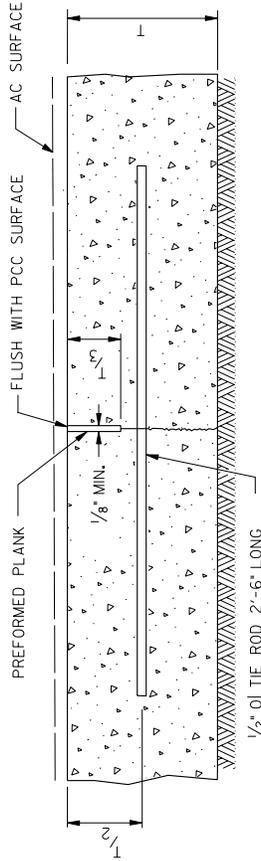
# TIE ROD ASSEMBLY AND JOINTS WITH LOAD TRANSFER

RECOMMENDED:	<i>[Signature]</i> DEPUTY CHIEF ENGINEER
APPROVED:	<i>[Signature]</i> CHIEF TRANSPORTATION ENGINEER
ISSUED:	REFERENCE
DATE	APPR. REVISED

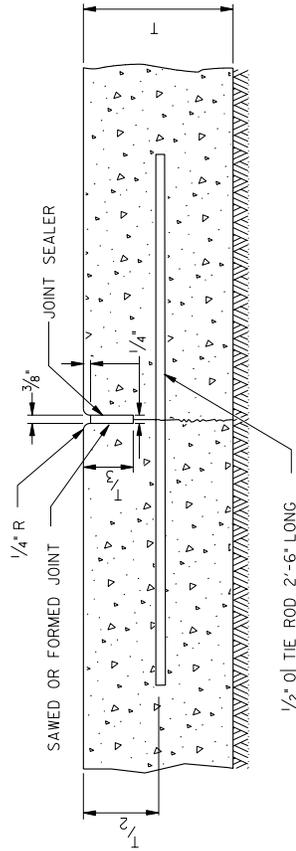
14-0315-00-01-000-01.dwg (14-0315-00-01-000-01.dwg) 14-0315-00-01-000-01.dwg



CONSTRUCTION JOINT



CONTRACTION JOINT FOR PCC BASE

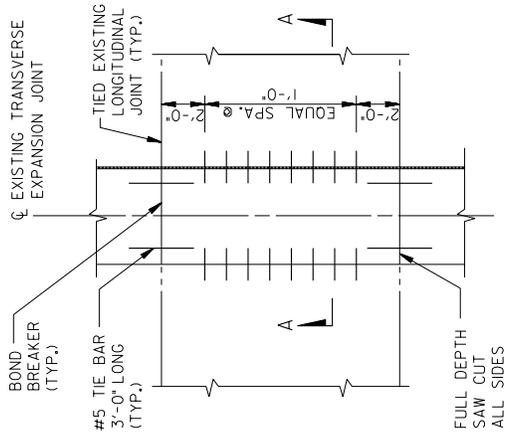


CONTRACTION JOINT FOR PCC PAVEMENT

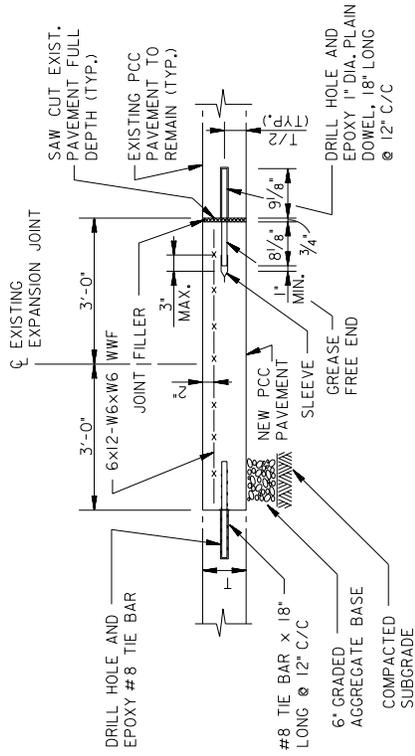
RECOMMENDED:	<i>[Signature]</i> DEPUTY CHIEF ENGINEER
APPROVED:	<i>[Signature]</i> CHIEF TRANSPORTATION ENGINEER
DATE	
ISSUED:	
APPR. REVISIED	
REFERENCE	

LONGITUDINAL CONTRACTION AND  
CONSTRUCTION JOINTS

14-0315-046 - 6/14/09 - 4/12/09 AT 12:16 PM  
14-0315-046 - 6/14/09 - 4/12/09 AT 12:16 PM



JOINT REPAIR PLAN



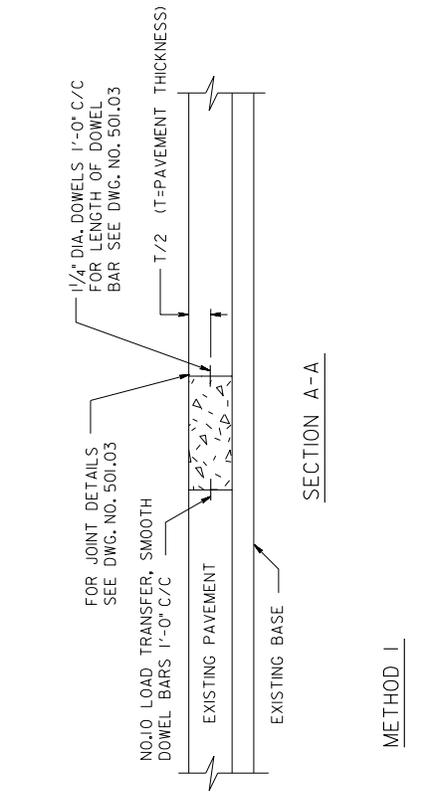
SECTION A-A: EXPANSION JOINT

NOTES:

1. ANCHOR TIE BARS AND DOWELS INTO EXISTING CONCRETE PAVEMENT WITH EPOXY RESIN ADHESIVE.
2. DRILL HOLES FOR THE DOWELS AND TIE BARS TO THE REQUIRED DEPTH USING FRAME MOUNTED DRILLS THAT WILL MAINTAIN THE DRILLS PARALLEL TO PROFILE AND LONGITUDINAL JOINT.
3. FOR DETAILS NOT SHOWN, SEE DRAWING NO. 501.03.

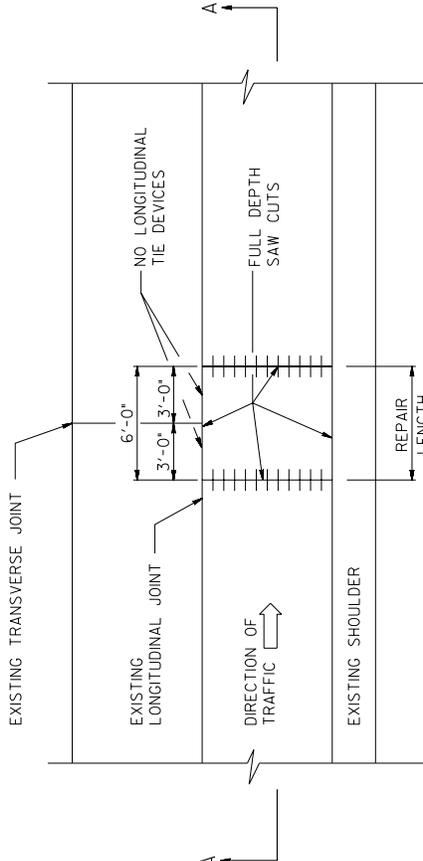
RECOMMENDED:	<i>[Signature]</i> DEPUTY CHIEF ENGINEER
APPROVED:	<i>[Signature]</i> CHIEF TRANSPORTATION ENGINEER
DATE	APPR.
REVISED	
ISSUED:	REFERENCE

JOINT REPAIR  
EXPANSION JOINT



**METHOD 1**

REPAIRS PERFORMED AT AN EXISTING TRANSVERSE JOINT EVEN THOUGH ONLY ONE SIDE NEEDS REPAIR. THE TOTAL REPAIR LENGTH SHALL BE 6' CENTERED ON THE ADJACENT TRANSVERSE JOINT.



**PLAN**

**REPAIR GUIDELINES:**

1. REPAIRS THAT ARE LESS THAN 15 FT. IN LENGTH REQUIRE NO REINFORCEMENT.
2. REPAIR SLABS AND REMAINS OF EXISTING SLABS SHALL NOT BE LESS THAN 6 FT. IN LENGTH.
3. EXISTING DOWELS AND ASSEMBLIES SHALL BE COMPLETELY REMOVED WHEN A REPAIR IS PERFORMED AT A TRANSVERSE JOINT.
4. ALL REPAIRS OFFSET MORE THAN 3 FT. ON EITHER SIDE OF AN EXISTING TRANSVERSE JOINT SHALL BE EXTENDED TO A MINIMUM OF 6 FT., AND DOWEL ASSEMBLIES SHALL BE PLACED ADJACENT TO THE EXISTING TRANSVERSE JOINTS AS SHOWN IN REPAIR METHOD 3 ON DDOT STANDARD DRAWING 501.08.

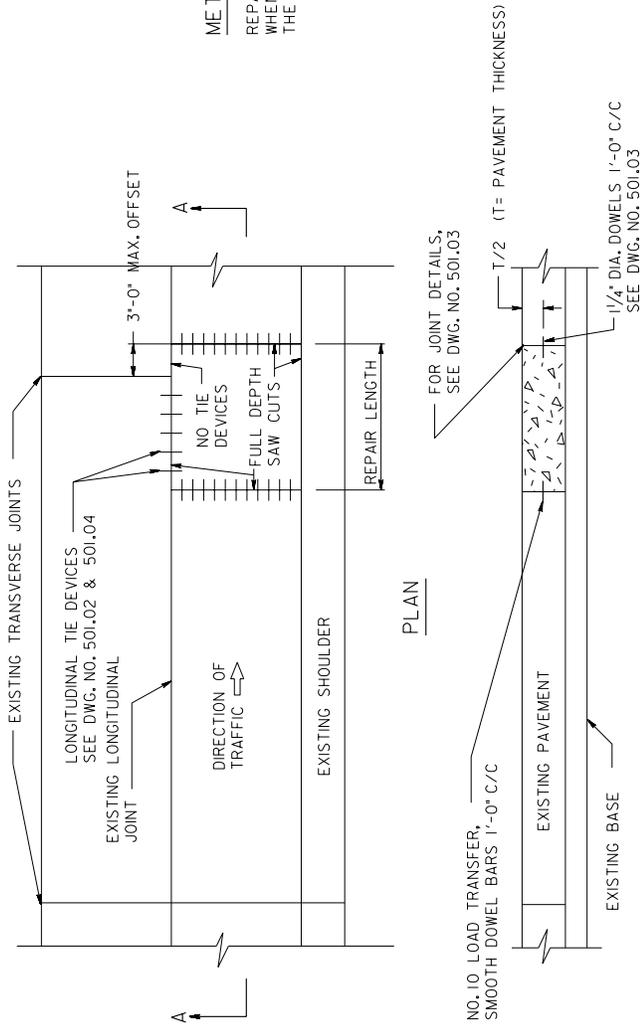
**NOTES:**

1. REPAIRS SHALL BE MADE IN ACCORDANCE WITH SECTION 506 OF THE DDOT STANDARD SPECIFICATIONS.
2. REPAIRS SHALL BE MADE USING CONCRETE MEETING THE REQUIREMENTS OF SECTION 501 OF THE DDOT STANDARD SPECIFICATIONS.
3. SUBGRADE PREPARATION SHALL BE IN ACCORDANCE WITH SECTIONS 209 AND 501 OF THE DDOT STANDARD SPECIFICATIONS AND MAY REQUIRE ADDITIONAL MATERIAL TO FACILITATE PLACEMENT OF LOAD TRANSFER DEVICES.
4. HOLES FOR THE DOWELS AND LOAD TRANSFER TIE DEVICES SHALL BE DRILLED SIMULTANEOUSLY TO THE REQUIRED DEPTH USING FRAME MOUNTED DRILLS THAT WILL MAINTAIN THE DRILLS IN A LONGTUDINALLY PARALLEL POSITION.
5. ALL LOAD TRANSFER TIE BARS AND DOWELS SHALL BE EPOXY COATED.

RECOMMENDED:	<i>[Signature]</i> DEPUTY CHIEF ENGINEER
APPROVED:	<i>[Signature]</i> CHIEF TRANSPORTATION ENGINEER
DATE REVISIONS	
ISSUED:	
REFERENCE	

**PCC PAVEMENT REPAIR  
METHOD 1**

PR140315.dwg 6/14/09 4:12:16 PM 12/16/09 4:03:03 2009 AT 12/16/09



**METHOD 2**

REPAIRS PERFORMED AT AN EXISTING TRANSVERSE JOINT WHEN THE REPAIR EXCEEDS 3 FT. ON ONLY ONE SIDE OF THE JOINT.

**REPAIR GUIDELINES:**

1. REPAIRS THAT ARE LESS THAN 15 FT. IN LENGTH REQUIRE NO REINFORCEMENT.
2. REPAIR SLABS AND REMAINS OF EXISTING SLABS SHALL NOT BE LESS THAN 6 FT. IN LENGTH.
3. EXISTING DOWELS AND ASSEMBLIES SHALL BE COMPLETELY REMOVED WHEN A REPAIR IS PERFORMED AT A TRANSVERSE JOINT.
4. ALL REPAIRS OFFSET MORE THAN 3 FT. ON EITHER SIDE OF AN EXISTING TRANSVERSE JOINT SHALL BE EXTENDED TO A MINIMUM OF 6 FT., AND DOWEL ASSEMBLIES SHALL BE PLACED ADJACENT TO THE EXISTING TRANSVERSE JOINTS AS SHOWN IN REPAIR METHOD 3 ON DDOT STANDARD DRAWING 501.08.

**NOTES:**

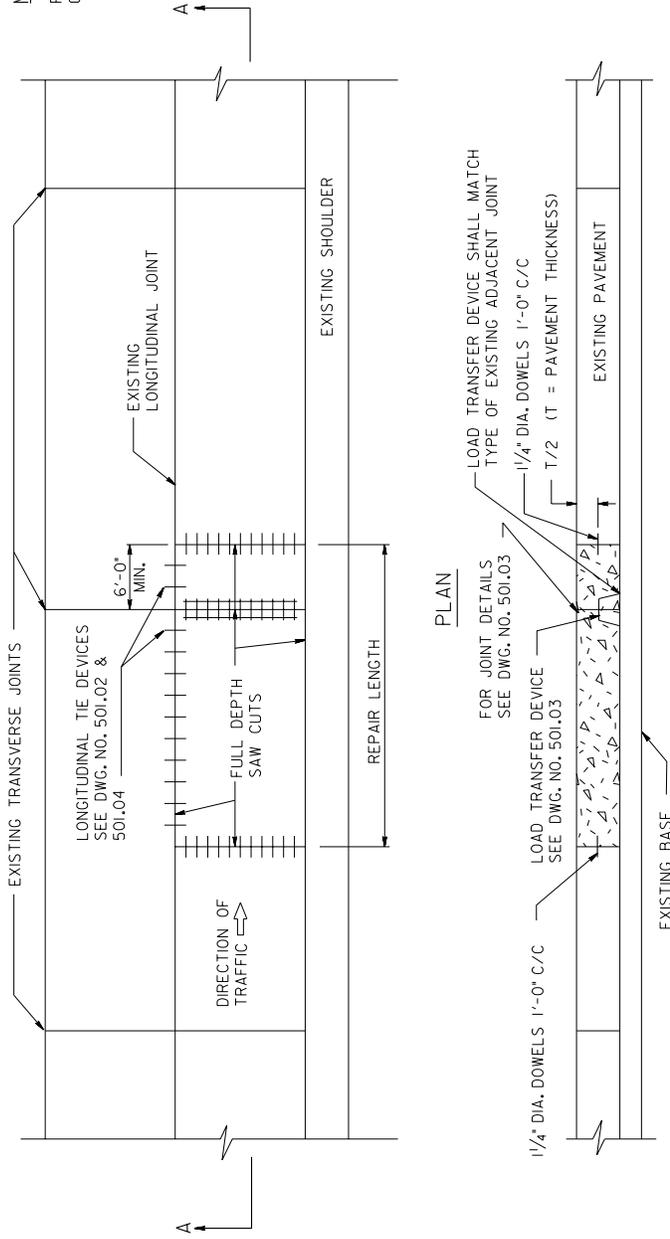
1. REPAIRS SHALL BE MADE IN ACCORDANCE WITH SECTION 506 OF THE DDOT STANDARD SPECIFICATIONS.
2. REPAIRS SHALL BE MADE USING CONCRETE MEETING THE REQUIREMENTS OF SECTION 501 OF THE DDOT STANDARD SPECIFICATIONS.
3. SUBGRADE PREPARATION SHALL BE IN ACCORDANCE WITH SECTIONS 209 AND 501 OF THE DDOT STANDARD SPECIFICATIONS AND MAY REQUIRE ADDITIONAL MATERIAL TO FACILITATE PLACEMENT OF LOAD TRANSFER DEVICES.
4. HOLES FOR THE DOWELS AND LOAD TRANSFER TIE DEVICES SHALL BE DRILLED SIMULTANEOUSLY TO THE REQUIRED DEPTH USING FRAME MOUNTED DRILLS THAT WILL MAINTAIN THE DRILLS IN A LONGITUDINALLY PARALLEL POSITION.
5. ALL LOAD TRANSFER TIE BARS AND DOWELS SHALL BE EPOXY COATED.

RECOMMENDED:	<i>[Signature]</i> DEPUTY CHIEF ENGINEER
APPROVED:	<i>[Signature]</i> CHIEF TRANSPORTATION ENGINEER
ISSUED:	REFERENCE
DATE	APPR.
REVISED	

**PCC PAVEMENT REPAIR  
METHOD 2**

**METHOD 3**

REPAIRS EXCEEDING 3 FT. ON BOTH SIDES OF AN EXISTING TRANSVERSE JOINT.



**REPAIR GUIDELINES:**

1. REPAIRS THAT ARE LESS THAN 15 FT. IN LENGTH REQUIRE NO REINFORCEMENT.
2. REPAIR SLABS AND REMAINS OF EXISTING SLABS SHALL NOT BE LESS THAN 6 FT. IN LENGTH.
3. EXISTING DOWELS AND ASSEMBLIES SHALL BE COMPLETELY REMOVED WHEN A REPAIR IS PERFORMED AT A TRANSVERSE JOINT.
4. ALL REPAIRS OFFSET MORE THAN 3 FT. ON EITHER SIDE OF AN EXISTING TRANSVERSE JOINT SHALL BE EXTENDED TO A MINIMUM OF 6 FT., AND DOWEL ASSEMBLIES SHALL BE PLACED ADJACENT TO THE EXISTING TRANSVERSE JOINTS.

**NOTES:**

1. REPAIRS SHALL BE MADE IN ACCORDANCE WITH SECTION 506 OF THE DDOT STANDARD SPECIFICATIONS.
2. REPAIRS SHALL BE MADE USING CONCRETE MEETING THE REQUIREMENTS OF SECTION 501 OF THE DDOT STANDARD SPECIFICATIONS.
3. SUBGRADE PREPARATION SHALL BE IN ACCORDANCE WITH SECTIONS 209 AND 501 OF THE DDOT STANDARD SPECIFICATIONS AND MAY REQUIRE ADDITIONAL MATERIAL TO FACILITATE PLACEMENT OF LOAD TRANSFER DEVICES.
4. HOLES FOR THE DOWELS AND LOAD TRANSFER TIE DEVICES SHALL BE DRILLED SIMULTANEOUSLY TO THE REQUIRED DEPTH USING FRAME MOUNTED DRILLS THAT WILL MAINTAIN THE DRILLS IN A LONGITUDINALLY PARALLEL POSITION.
5. ALL LOAD TRANSFER TIE BARS AND DOWELS SHALL BE EPOXY COATED.

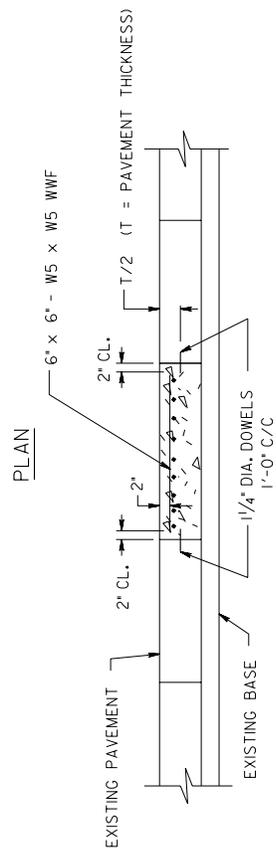
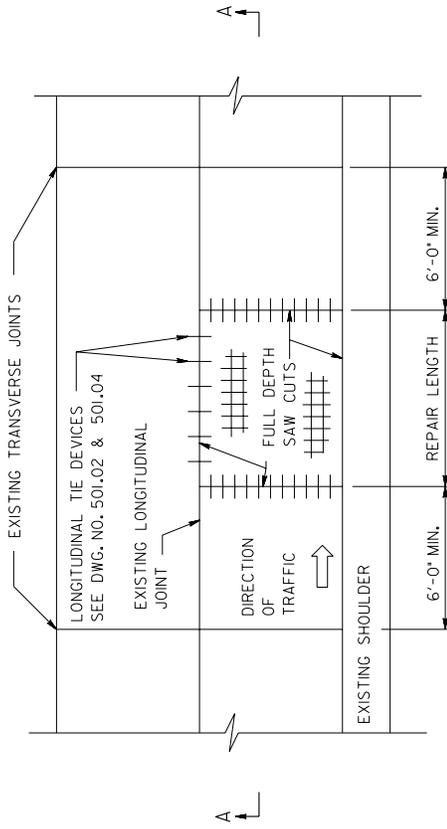
RECOMMENDED:	<i>[Signature]</i> DEPUTY CHIEF ENGINEER
APPROVED:	<i>[Signature]</i> CHIEF TRANSPORTATION ENGINEER
DATE	APPR.
REVISED	
ISSUED:	
REFERENCE	

**PCC PAVEMENT REPAIR  
METHOD 3**

**d.** DISTRICT OF COLUMBIA  
DEPARTMENT OF TRANSPORTATION

DWG. NO. 501.08





**METHOD 5**

REPAIRS PERFORMED AT MID SLAB OR A MINIMUM OF 6 FT. FROM AN EXISTING TRANSVERSE JOINT.

**REPAIR GUIDELINES:**

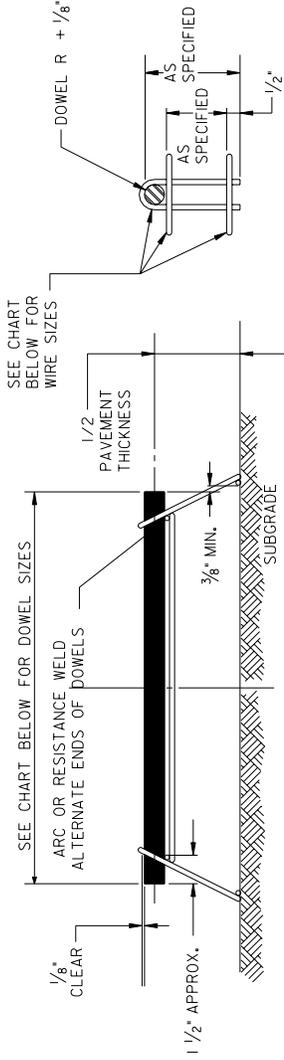
1. REPAIRS THAT ARE LESS THAN 15 FT. IN LENGTH REQUIRE NO REINFORCEMENT.
2. REPAIR SLABS AND REMAINS OF EXISTING SLABS SHALL NOT BE LESS THAN 6 FT. IN LENGTH.
3. EXISTING DOWELS AND ASSEMBLIES SHALL BE COMPLETELY REMOVED WHEN A REPAIR IS PERFORMED AT A TRANSVERSE JOINT.

**NOTES:**

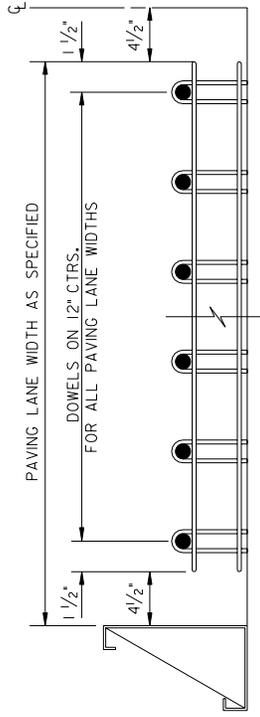
1. THE ABOVE JOINT REPAIR DETAIL MAY BE USED FOR FULL DEPTH CRACKED PAVEMENT. THE EXTENT OF THE REPAIR SHALL BE DETERMINED IN THE FIELD BY THE ENGINEER.
2. REPAIRS SHALL BE MADE IN ACCORDANCE WITH SECTION 506 OF THE DDOT STANDARD SPECIFICATIONS.
3. REPAIRS SHALL BE MADE USING CONCRETE MEETING THE REQUIREMENTS OF SECTION 501 OF THE DDOT STANDARD SPECIFICATIONS.
4. SUBGRADE PREPARATION SHALL BE IN ACCORDANCE WITH SECTIONS 209 AND 501 OF THE DDOT STANDARD SPECIFICATIONS AND MAY REQUIRE ADDITIONAL MATERIAL TO FACILITATE PLACEMENT OF LOAD TRANSFER DEVICES.
5. HOLES FOR THE DOWELS AND LOAD TRANSFER TIE DEVICES SHALL BE DRILLED SIMULTANEOUSLY TO THE REQUIRED DEPTH USING FRAME MOUNTED DRILLS THAT WILL MAINTAIN THE DRILLS IN A LONGITUDINALLY PARALLEL POSITION.
6. ALL LOAD TRANSFER TIE BARS AND DOWELS SHALL BE EPOXY COATED.

RECOMMENDED:	<i>[Signature]</i> DEPUTY CHIEF ENGINEER
APPROVED:	<i>[Signature]</i> CHIEF TRANSPORTATION ENGINEER
DATE	APPR.
REVISED	
ISSUED:	
REFERENCE	

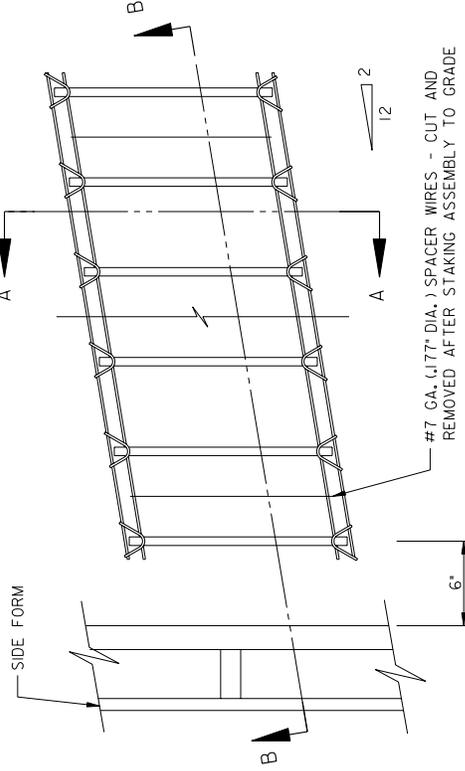
**PCC PAVEMENT REPAIR  
METHOD 5**



SECTION A-A



SECTION B-B

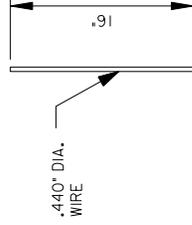


PLAN VIEW

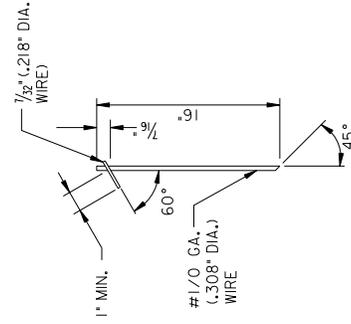
NOTES:

1. DOWELS TO BE BILLET STEEL BARS PER AASHTO M 31, GRADE 60.
2. DOWELS ARE TO BE FUSION-BONDED PER AASHTO M 254.
3. DOWELS ARE TO BE SAW CUT AND DEBURRED.
4. BONDBREAKER - TECTYL 506 SHOP APPLIED FULL DIP.
5. WIRE SIZES SHOWN ARE MINIMUM REQUIRED.
6. WIRE - CARBON STEEL PER ASTM A 510 GR. 1008 SIZES SHOWN ARE MINIMUM REQUIRED.
7. STAKES ARE TO BE APPLIED AT THE WORKING END OF DOWELS ONLY.
8. TOLERANCES  $\pm 1/8"$  UNLESS OTHERWISE SPECIFIED.
9. CENTERLINE OF INDIVIDUAL DOWELS SHALL BE PARALLEL TO SUBGRADE AND ALL OTHER DOWELS IN ASSEMBLY WITHIN  $\pm 1/4"$  IN 18".
10. MATERIALS AND CONSTRUCTION SHALL MEET THE REQUIREMENTS OF DOT STANDARD SPECIFICATIONS.
11. DEVICE SHALL BE COATED WITH A WAXLIKE OR TECTYL 506 COATING PRIOR TO SHIPPING TO ENSURE APPROPRIATE FUNCTION OF THE DEVICE IN PLACE.

U-LEG DETAIL



PIN DETAIL



ALTERNATE STAKE DETAIL

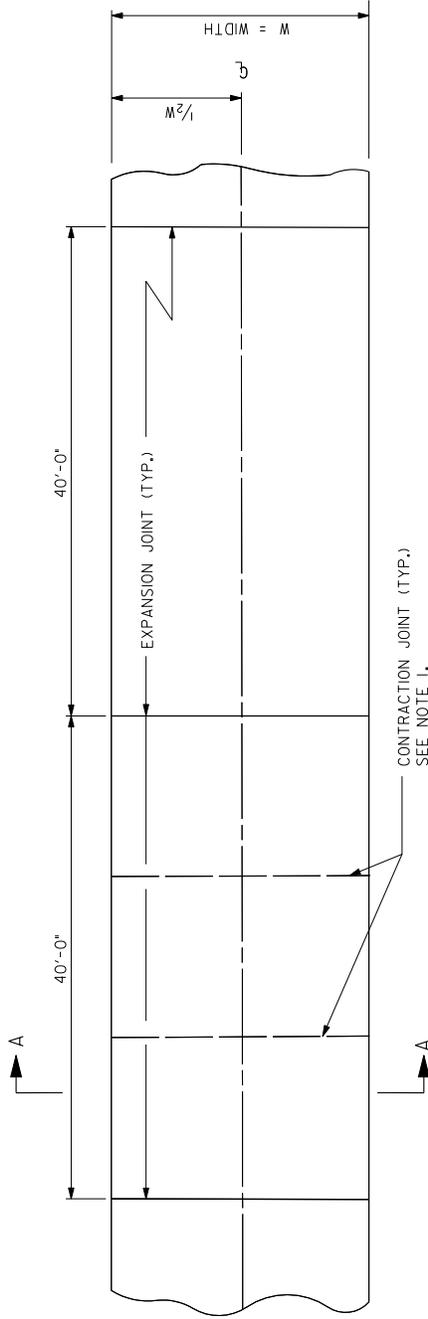
LANE WIDTH	OVERALL UNIT LENGTH	NUMBER OF DOWELS
10'	9'-3"	10
11'	10'-3"	11
12'	11'-3"	12
13'	12'-3"	13
14'	13'-3"	14
15'	14'-3"	15

PAVEMENT THICKNESS	DOWEL DIAMETER	WIRE DIA.	
		TOP & BOTTOM	LEG
10" OR <	1 1/4"	.331"	.331"
>10"	1 1/2"	.362"	.362"

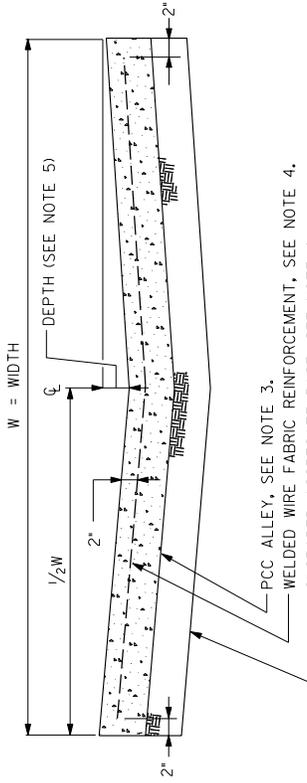
RECOMMENDED:	<i>[Signature]</i> DEPUTY CHIEF ENGINEER
APPROVED:	<i>[Signature]</i> CHIEF TRANSPORTATION ENGINEER
DATE	APPR. / REVISED / ISSUED:
REFERENCE	

ALTERNATE LOAD TRANSFER ASSEMBLY EXPANSION JOINT

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PLAN



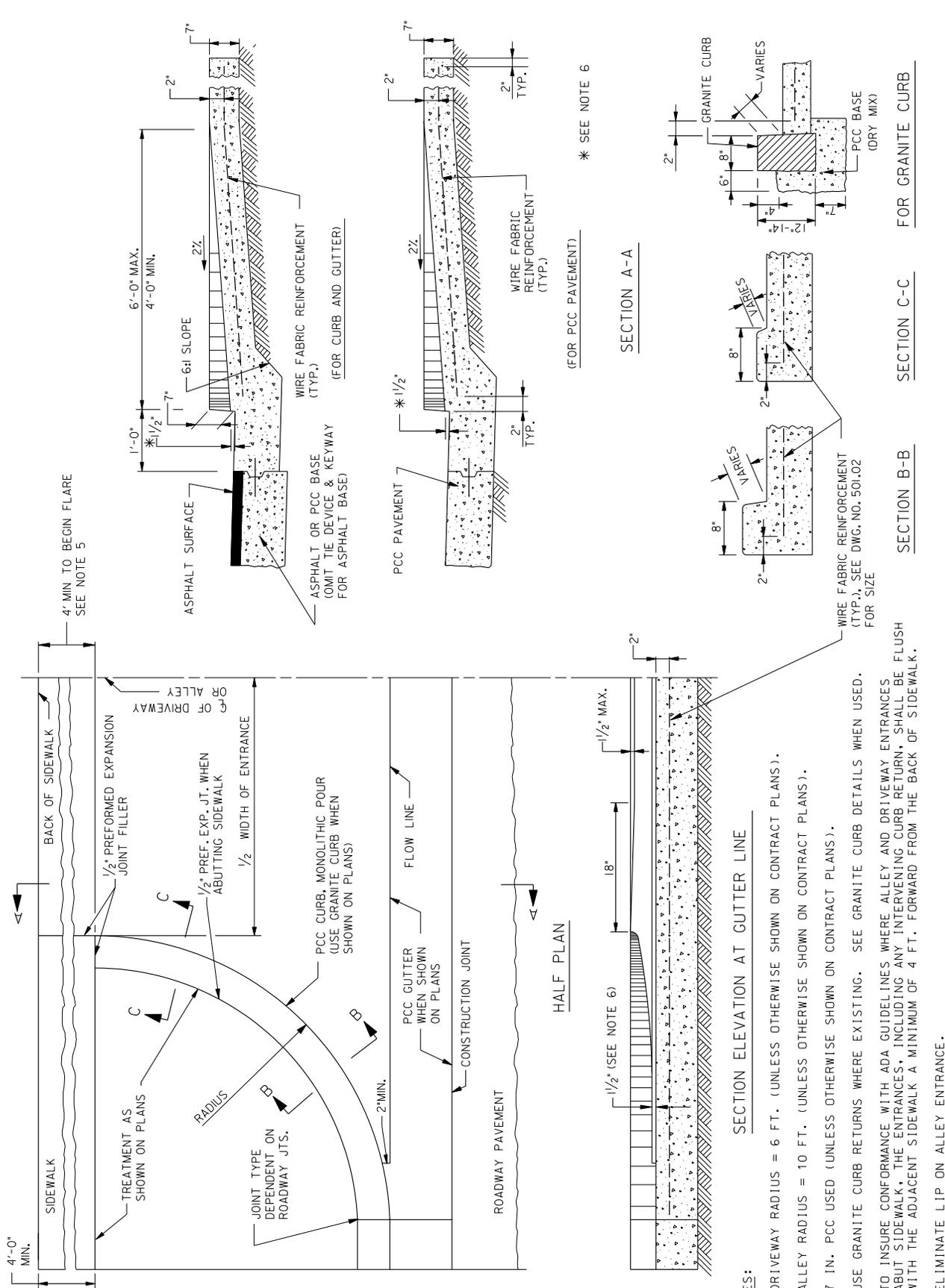
NOTES:

1. PLACE TRANSVERSE EXPANSION JOINTS AT APPROX. 40 FT. INTERVALS AND AT END OF ALLEY WHICH ABUTS CONCRETE PAVING. PLACE CONTRACTION JOINTS AT APPROX. 13 FT. INTERVALS. THESE CONTRACTION JOINTS SHALL CONSIST OF A GROOVE FORMED WITH A JOINTING TOOL WITH A BLADE PROJECTION 1/3 THE DEPTH OF PAVING. AS AN ALTERNATE METHOD, SAWN JOINTS WILL BE PERMITTED AND WILL BE DONE IN ACCORDANCE WITH SECTION 501.14(D) OF THE DDOT STANDARD SPECIFICATIONS.
2. PLACE LONGITUDINAL EXPANSION JOINTS BETWEEN THE ALLEY SLAB AND PERMANENT STRUCTURES ALONG THE SIDES OF ALLEY.
3. DEPTH OF ALLEY PAVING IS 7"-8" IN COMMERCIAL AREAS AND 6" IN RESIDENTIAL AREAS.
4. WIRE FABRIC REINFORCEMENT AND GRADED AGGREGATE BASE SHALL BE AS REQUIRED BY THE CONTRACT DOCUMENTS. WIRE FABRIC SHALL NOT EXTEND ACROSS EXPANSION JOINTS.
5. STANDARD DEPTH (DISH) FOR ALLEY IS 4" - 6". MAX. DEPTH IS 11". MIN. DEPTH IS 1". DEPTHS LESS THAN 4" OR GREATER THAN 6" MUST BE APPROVED BY THE ENGINEER.
6. ALLEY TO BE BUILT TO APPROVED ALLEY GRADE.

SECTION A-A

RECOMMENDED:	<i>[Signature]</i> DEPUTY CHIEF ENGINEER
APPROVED:	<i>[Signature]</i> CHIEF TRANSPORTATION ENGINEER
DATE	ISSUED:
APPR.	REVIS
REVISED	REFERENCE

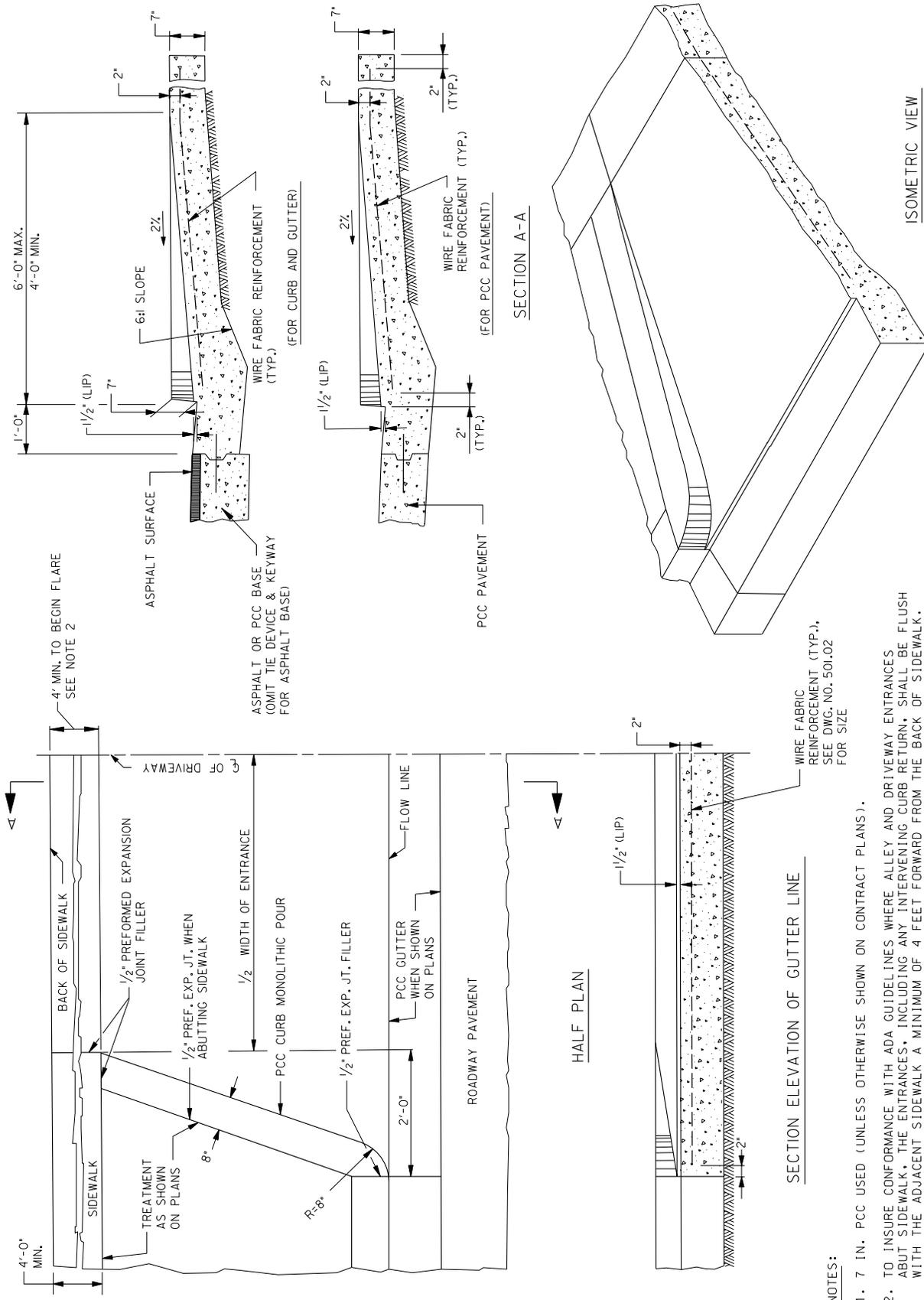
PCC ALLEY



**NOTES:**

1. DRIVEWAY RADIUS = 6 FT. (UNLESS OTHERWISE SHOWN ON CONTRACT PLANS).
2. ALLEY RADIUS = 10 FT. (UNLESS OTHERWISE SHOWN ON CONTRACT PLANS).
3. 7 IN. PCC USED (UNLESS OTHERWISE SHOWN ON CONTRACT PLANS).
4. USE GRANITE CURB RETURNS WHERE EXISTING. SEE GRANITE CURB DETAILS WHEN USED.
5. TO INSURE CONFORMANCE WITH ADA GUIDELINES WHERE ALLEY AND DRIVEWAY ENTRANCES ABUT SIDEWALK, THE ENTRANCES, INCLUDING ANY INTERVENING CURB RETURN, SHALL BE FLUSH WITH THE ADJACENT SIDEWALK A MINIMUM OF 4 FT. FORWARD FROM THE BACK OF SIDEWALK.
6. ELIMINATE LIP ON ALLEY ENTRANCE.

<p><b>ALLEY-DRIVEWAY ENTRANCE WITH CURB RETURNS TYPE "A"</b></p>		<p><b>d.</b> DISTRICT OF COLUMBIA DEPARTMENT OF TRANSPORTATION</p>	
<p>RECOMMENDED: <i>[Signature]</i> DEPUTY CHIEF ENGINEER</p>		<p>DWG. NO. 504.01</p>	
<p>DATE APPR. _____</p> <p>REVISED _____</p> <p>ISSUED: _____</p>		<p>APPROVED: <i>[Signature]</i> CHIEF TRANSPORTATION ENGINEER</p>	
<p>REFERENCE</p>		<p>SECTION B-B FOR GRANITE CURB</p> <p>SECTION C-C FOR GRANITE CURB</p>	



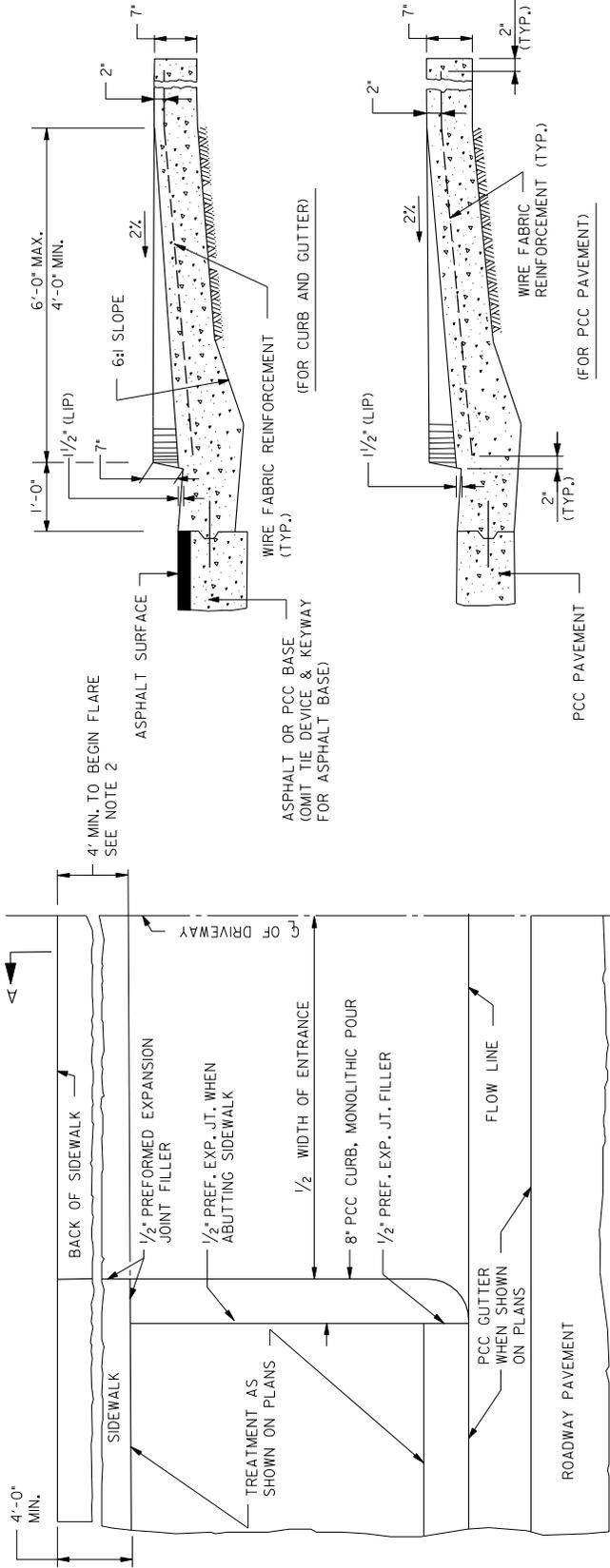
- NOTES:
1. 7 IN. PCC USED (UNLESS OTHERWISE SHOWN ON CONTRACT PLANS).
  2. TO INSURE CONFORMANCE WITH ADA GUIDELINES WHERE ALLEY AND DRIVEWAY ENTRANCES ABUT SIDEWALK, THE ENTRANCES, INCLUDING ANY INTERVENING CURB RETURN, SHALL BE FLUSH WITH THE ADJACENT SIDEWALK A MINIMUM OF 4 FEET FORWARD FROM THE BACK OF SIDEWALK.

RECOMMENDED:	<i>[Signature]</i> DEPUTY CHIEF ENGINEER
APPROVED:	<i>[Signature]</i> CHIEF TRANSPORTATION ENGINEER
DATE REVISION	
ISSUED:	
REFERENCE	

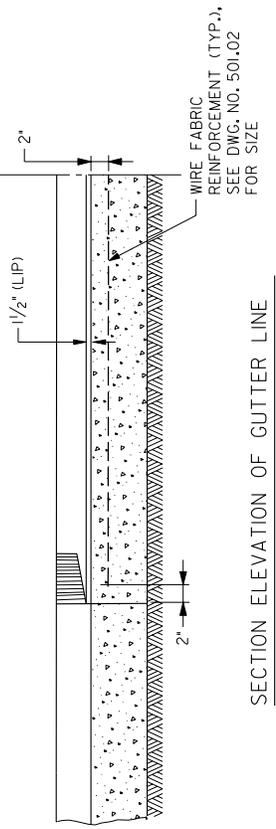
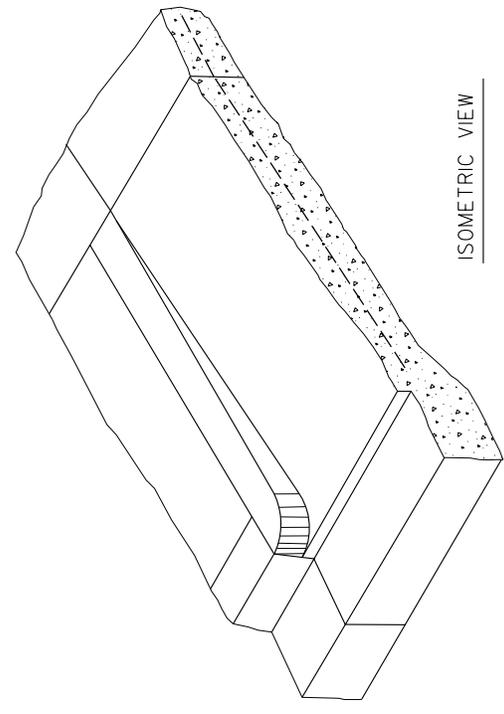
## DRIVEWAY ENTRANCE TYPE "B"

**d.**  
DISTRICT OF COLUMBIA  
DEPARTMENT OF TRANSPORTATION

DWG. NO. 504.02



SECTION A-A



**NOTES:**

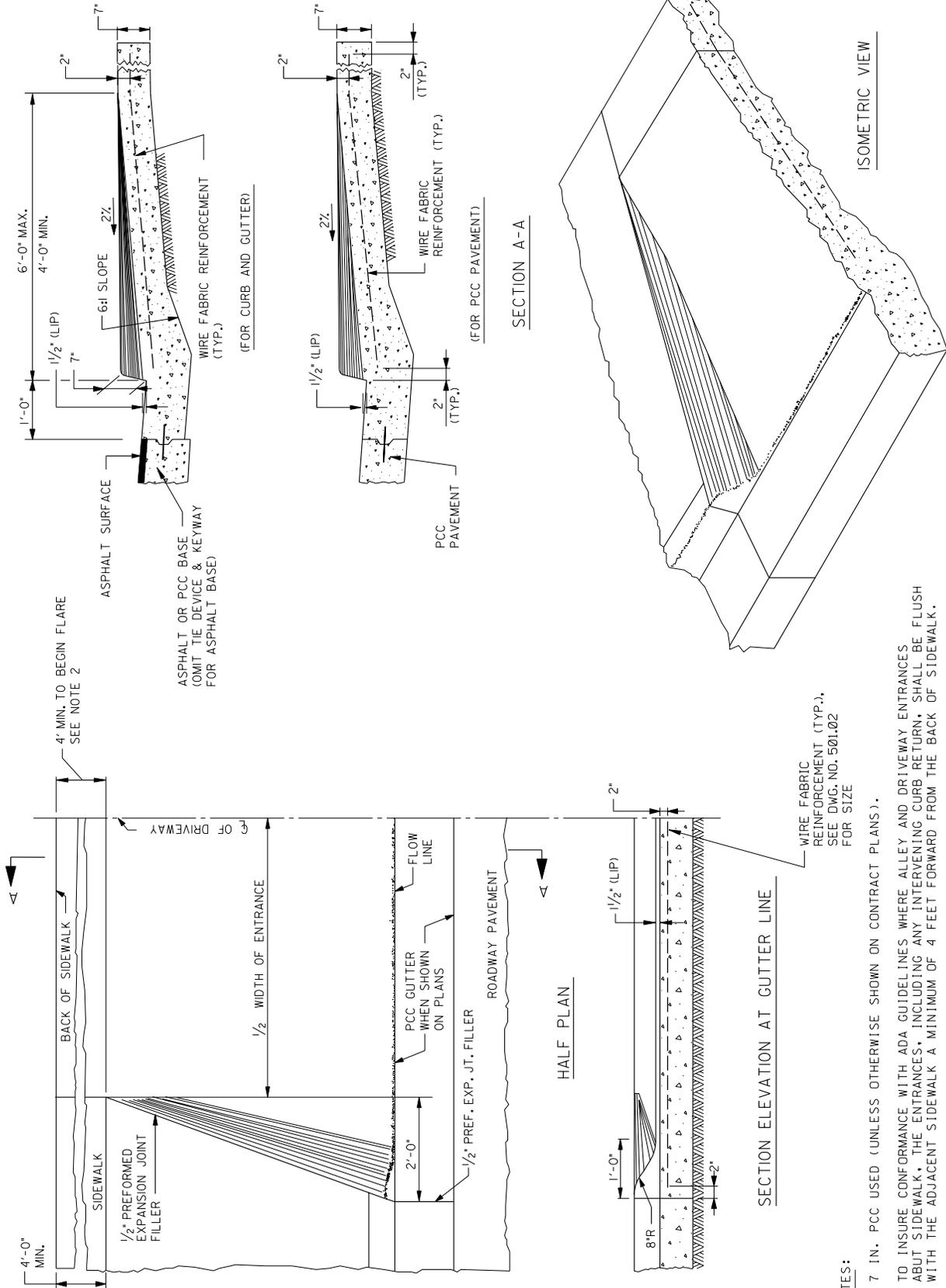
- 7 IN. PCC USED (UNLESS OTHERWISE SHOWN ON CONTRACT PLANS).
- TO INSURE CONFORMANCE WITH ADA GUIDELINES WHERE ALLEY AND DRIVEWAY ENTRANCES ABUT SIDEWALK, THE ENTRANCES, INCLUDING ANY INTERVENING CURB RETURN, SHALL BE FLUSH WITH THE ADJACENT SIDEWALK A MINIMUM OF 4 FEET FORWARD FROM THE BACK OF SIDEWALK.

RECOMMENDED:	<i>[Signature]</i> DEPUTY CHIEF ENGINEER
APPROVED:	<i>[Signature]</i> CHIEF TRANSPORTATION ENGINEER
DATE	
APPR. REVISED	
ISSUED:	
REFERENCE	

**DRIVEWAY ENTRANCE  
TYPE "C"**

**d.** DISTRICT OF COLUMBIA  
DEPARTMENT OF TRANSPORTATION

DWG. NO. 504.03



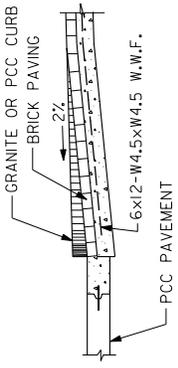
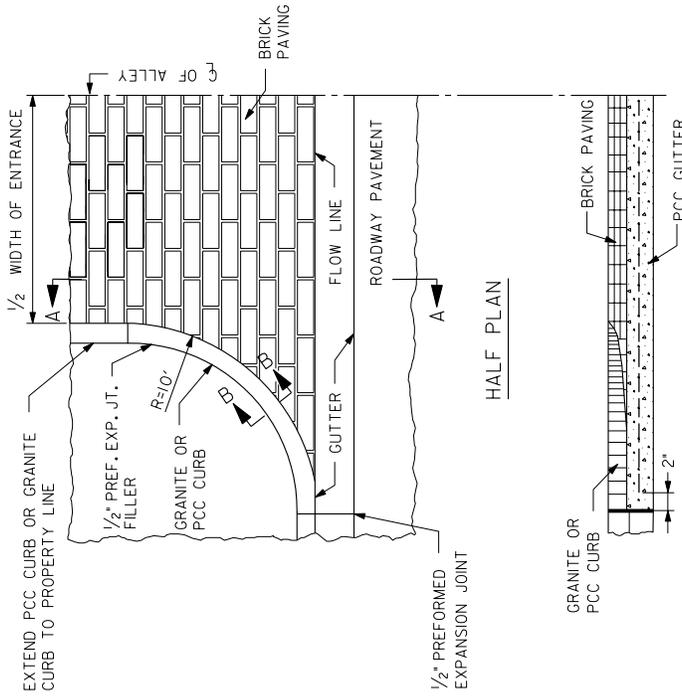
- NOTES:**
- 7 IN. PCC USED (UNLESS OTHERWISE SHOWN ON CONTRACT PLANS).
  - TO INSURE CONFORMANCE WITH ADA GUIDELINES WHERE ALLEY AND DRIVEWAY ENTRANCES ABUT SIDEWALK, THE ENTRANCES, INCLUDING ANY INTERVENING CURB RETURN, SHALL BE FLUSH WITH THE ADJACENT SIDEWALK A MINIMUM OF 4 FEET FORWARD FROM THE BACK OF SIDEWALK.

**DRIVEWAY ENTRANCE  
 TYPE "D"**

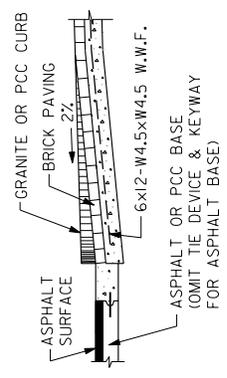
**RECOMMENDED:**  
*[Signature]*  
 DEPUTY CHIEF ENGINEER

**APPROVED:**  
*[Signature]*  
 CHIEF TRANSPORTATION ENGINEER

DATE	APPR.	REVISION	ISSUED:	REFERENCE

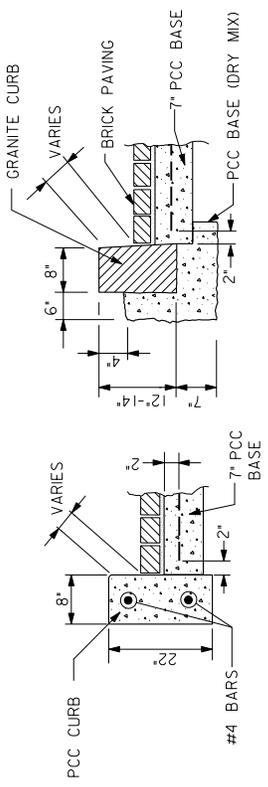


FOR PCC PAVEMENT



FOR AC SURFACE

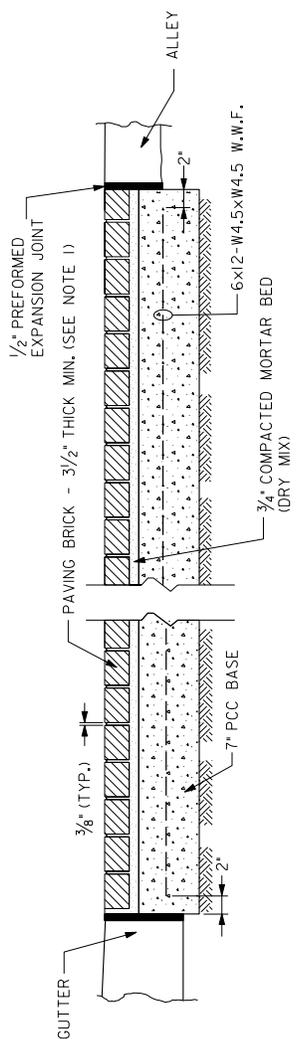
SECTION A-A



FOR GRANITE CURB

FOR PCC CURB

SECTION B-B



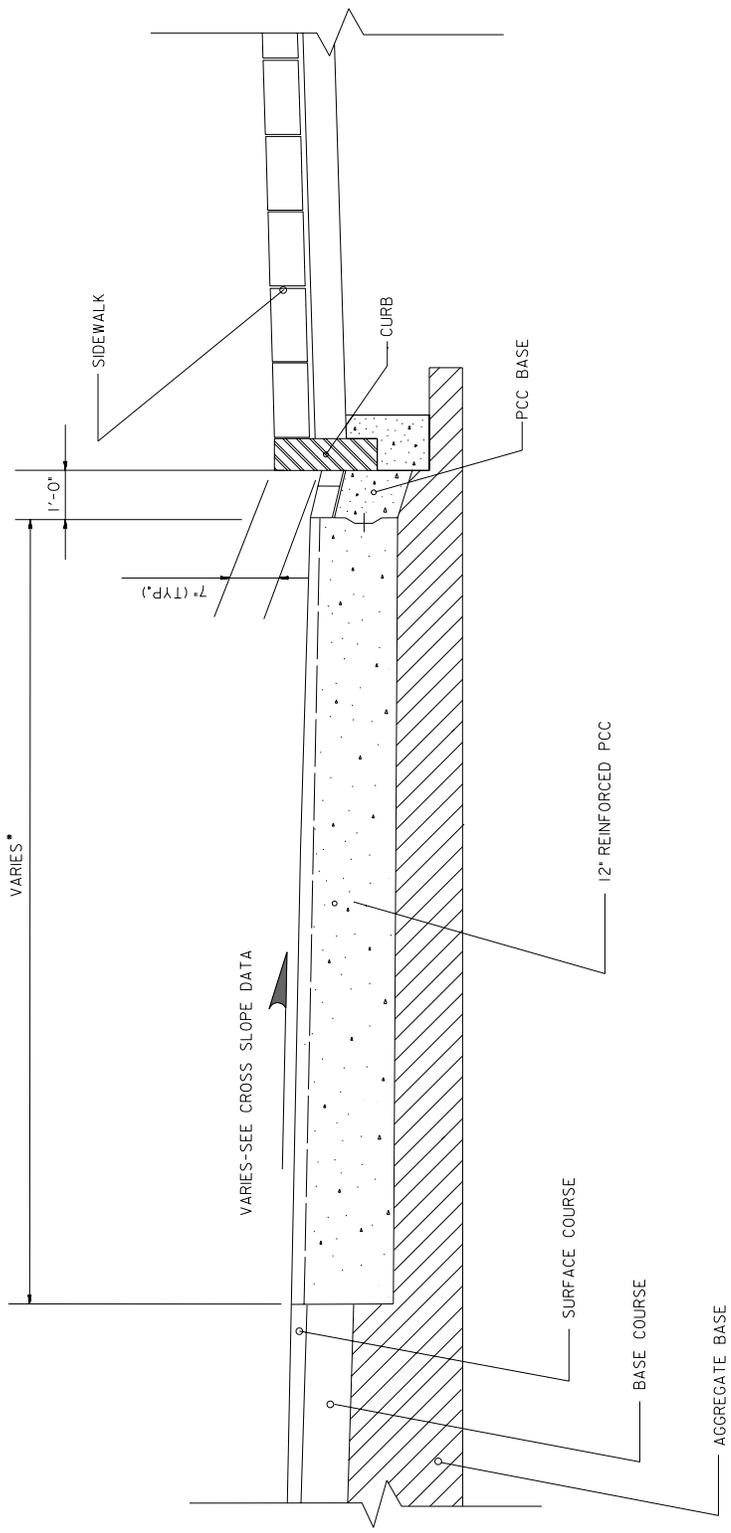
NOTE:  
1. PAVING BRICK SHALL MEET THE REQUIREMENTS OF AASHTO M114 GRADE SW.

RECOMMENDED:	<i>[Signature]</i> DEPUTY CHIEF ENGINEER
APPROVED:	<i>[Signature]</i> CHIEF TRANSPORTATION ENGINEER
DATE	APPR.
REVISED	
ISSUED:	
REFERENCE	

BRICK PAVING ALLEY ENTRANCE

d. DISTRICT OF COLUMBIA  
DEPARTMENT OF TRANSPORTATION

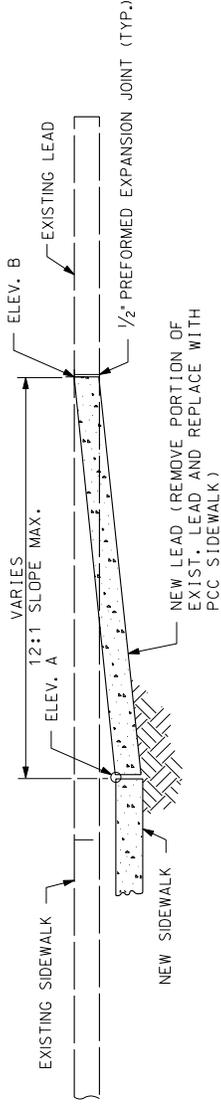
DWG. NO. 504.05



\* WIDTH DEPENDS ON ROADWAY CONFIGURATION.  
CONSULT WITH DDOT OFFICE OF MASS TRANSIT.

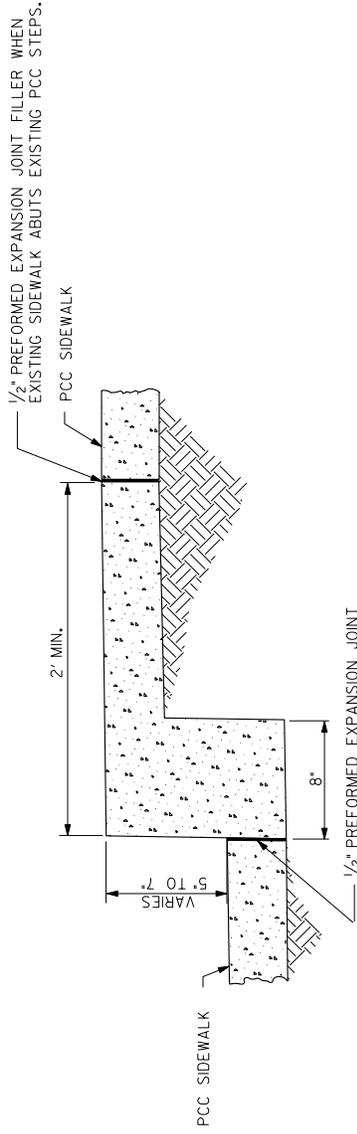
**12" PCC BUS PAD  
TYPICAL SECTION**

RECOMMENDED:	<i>[Signature]</i> DEPUTY CHIEF ENGINEER
APPROVED:	<i>[Signature]</i> CHIEF TRANSPORTATION ENGINEER
ISSUED:	REFERENCE
DATE	APPR.
REVISED	REVISED



NOTE:  
ELEVATIONS "A" AND "B" ARE SHOWN ON THE CONTRACT PLANS.

TYPE 1 STEP (LEAD)



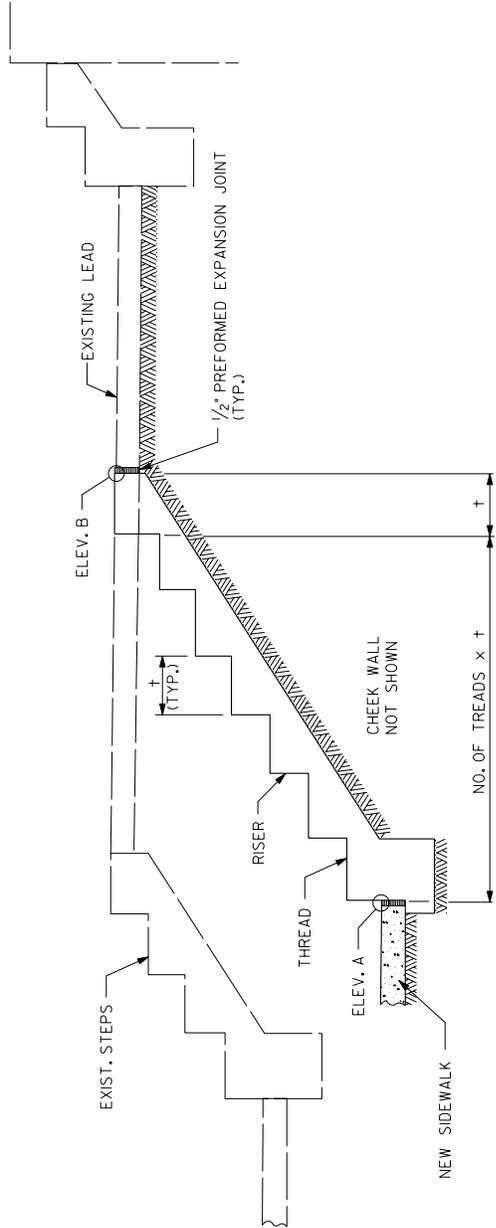
TYPE 2 STEP

RECOMMENDED:	<i>[Signature]</i> DEPUTY CHIEF ENGINEER
APPROVED:	<i>[Signature]</i> CHIEF TRANSPORTATION ENGINEER
DATE	
ISSUED:	
APPR. REVIS	
ISSUED:	
REFERENCE	

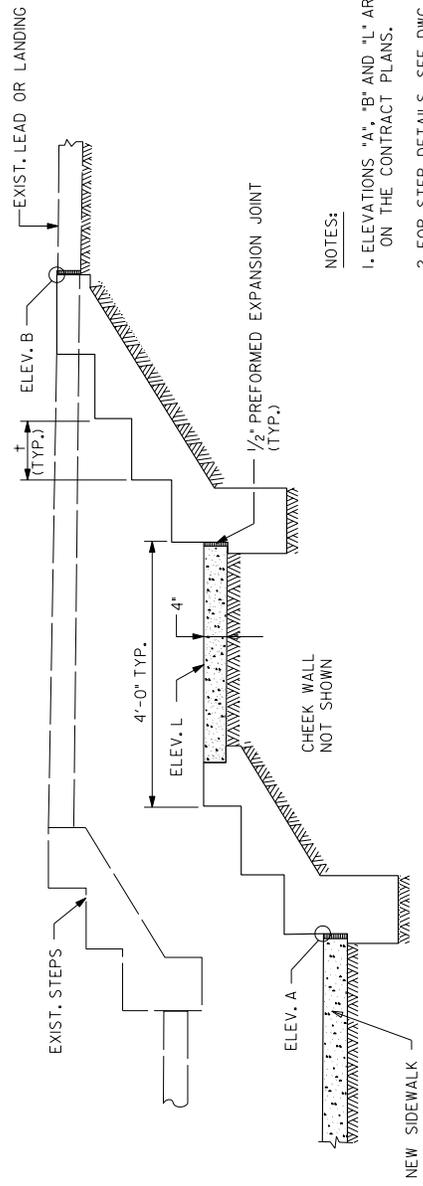
## STEPS AND LEADS

**d.** DISTRICT OF COLUMBIA  
DEPARTMENT OF TRANSPORTATION

DWG. NO. 602.02



TYPE 3 STEP



TYPE 4 STEP

NOTES:

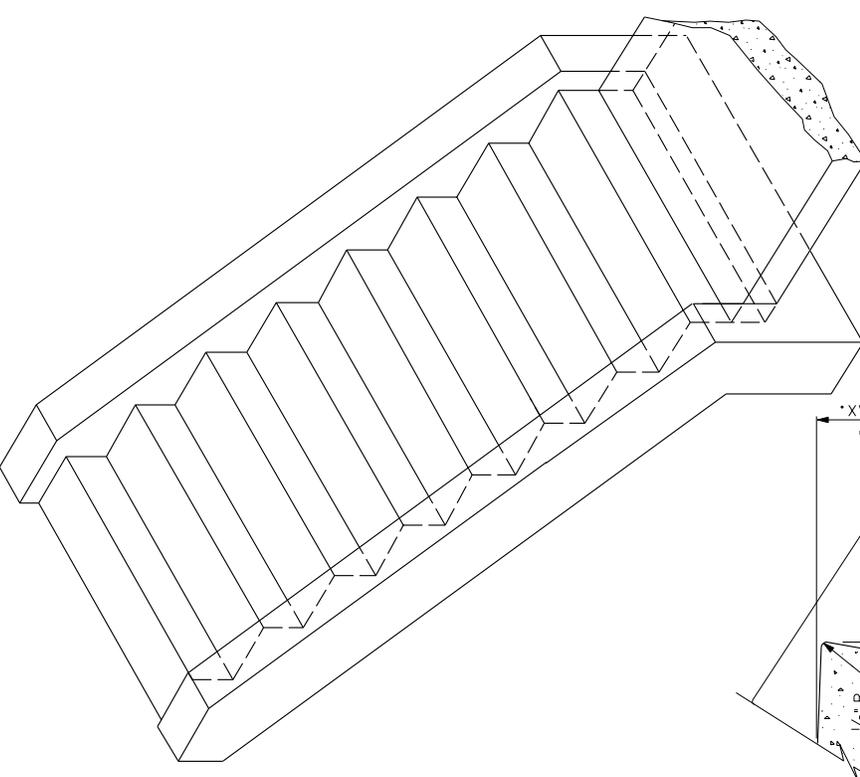
1. ELEVATIONS "A", "B" AND "L" ARE SHOWN ON THE CONTRACT PLANS.
2. FOR STEP DETAILS, SEE DWG NO. 602.04.
3. t=11" MINIMUM.

RECOMMENDED:	<i>[Signature]</i> DEPUTY CHIEF ENGINEER
APPROVED:	<i>[Signature]</i> CHIEF TRANSPORTATION ENGINEER
DATE	
ISSUED:	
APPR. REVISSED	
REFERENCE	

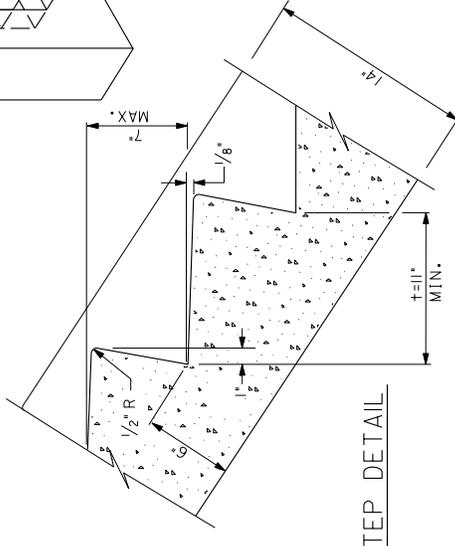
**d.** DISTRICT OF COLUMBIA  
DEPARTMENT OF TRANSPORTATION

TYPES OF STEPS

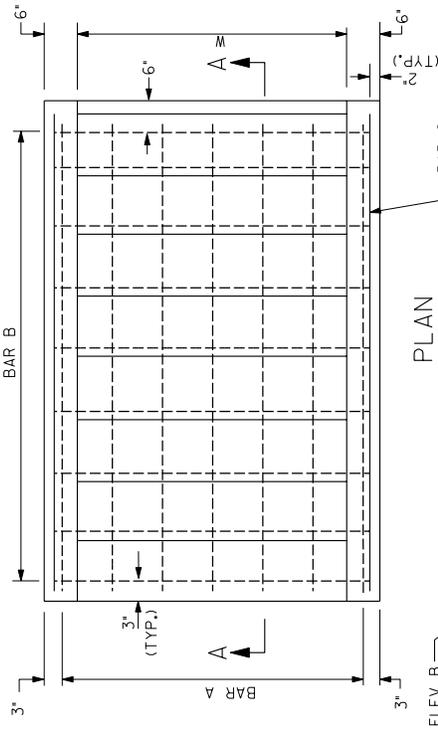
DWG. NO. 602.03



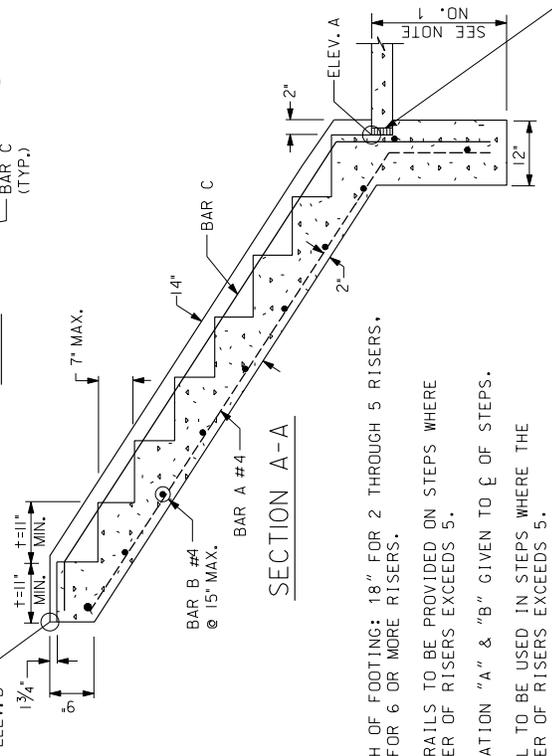
ISOMETRIC VIEW



STEP DETAIL



PLAN



SECTION A-A

NOTES:

1. DEPTH OF FOOTING: 18" FOR 2 THROUGH 5 RISERS, 24" FOR 6 OR MORE RISERS.
2. HANDRAILS TO BE PROVIDED ON STEPS WHERE NUMBER OF RISERS EXCEEDS 5.
3. ELEVATION "A" & "B" GIVEN TO  $\zeta$  OF STEPS.
4. STEEL TO BE USED IN STEPS WHERE THE NUMBER OF RISERS EXCEEDS 5.

NUMBER OF BARS A											
N=1-5	N=6	N=7	N=8	N=9	N=10	N=11	N=12	N=13-25			
W=3'	4	5	5	6	6	7	7	8			
W=4'	5	6	7	7	8	8	9	10			
W=5'	6	7	8	9	9	10	11	12			

N = NUMBER OF RISERS EXCLUSIVE OF LANDING.  
 FOR OTHER WIDTH, THE APPROXIMATE SPACING OF BARS A ( IN INCHES )  
 IS EQUAL TO  $80 \div N$  WITH A MIN. SPACING OF 6".

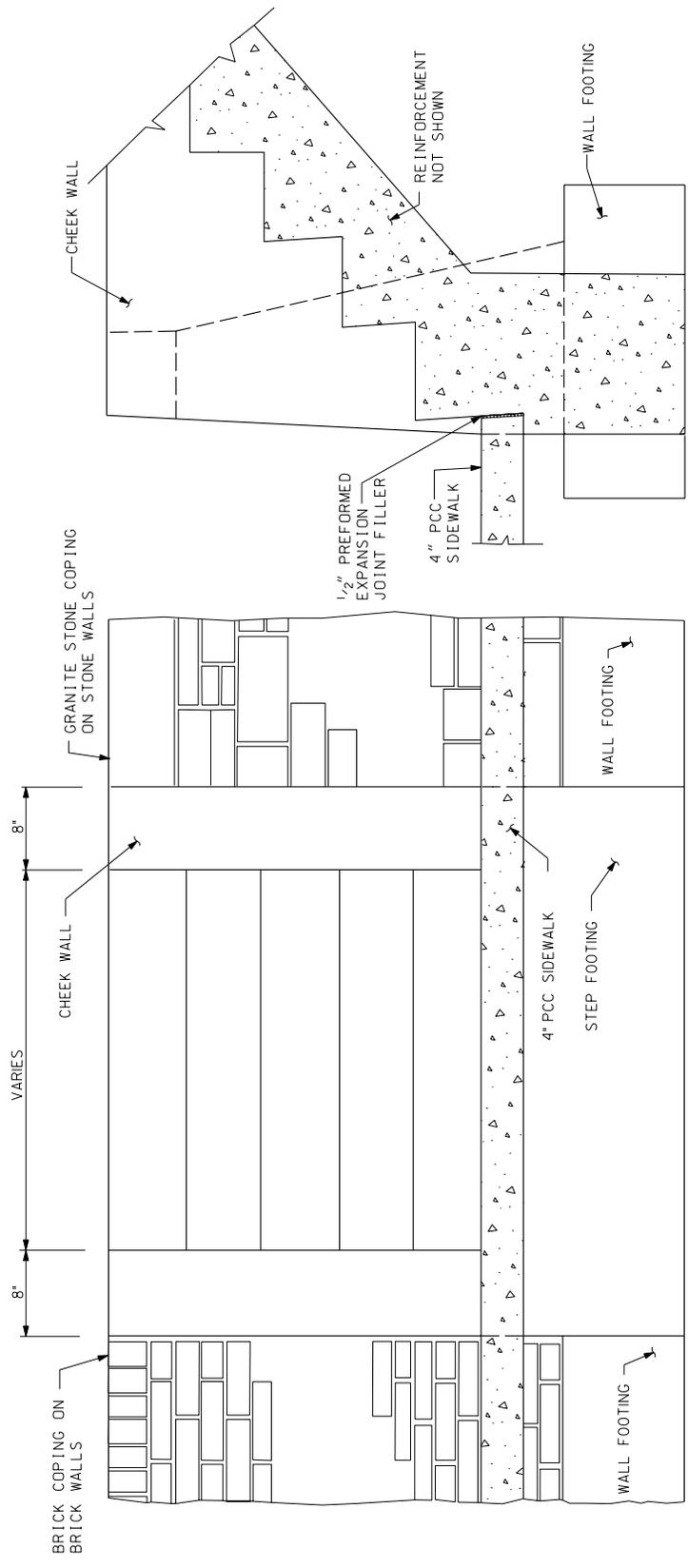
1/2" PERFORMED EXPANSION JOINT



STEP DETAILS  
 (FOR TYPES 3 & 4)

DWG. NO. 602.04

RECOMMENDED:	DEPUTY CHIEF ENGINEER
APPROVED:	CHIEF TRANSPORTATION ENGINEER
DATE REVISION	REFERENCE
ISSUED:	



ELEVATION

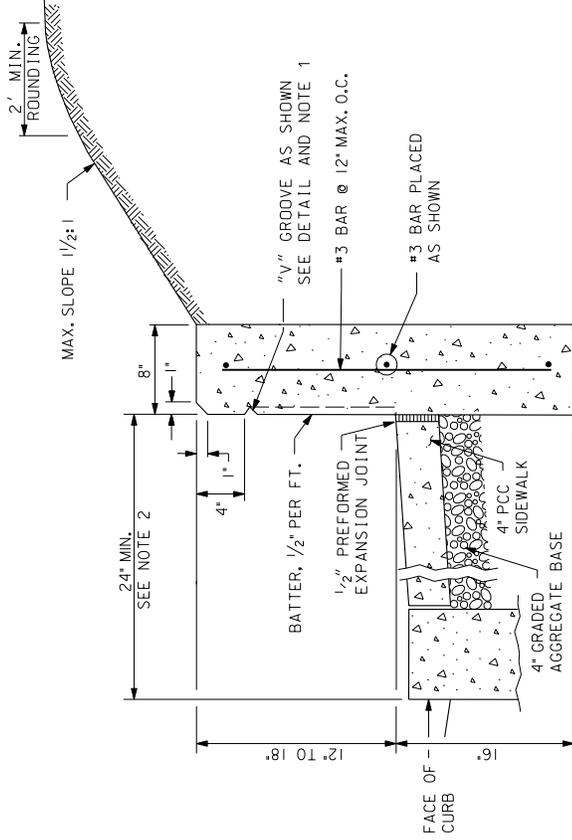
SECTION

**CHEEK WALL FOR STEPS WITH RETAINING WALL**

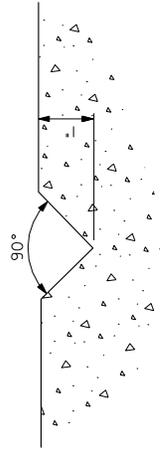
**d.** DISTRICT OF COLUMBIA  
DEPARTMENT OF TRANSPORTATION

DWG. NO. 602.05

RECOMMENDED:	<i>[Signature]</i> DEPUTY CHIEF ENGINEER
APPROVED:	<i>[Signature]</i> CHIEF TRANSPORTATION ENGINEER
DATE	APPR.
REVISED	REVISED
ISSUED:	ISSUED
REFERENCE	REFERENCE



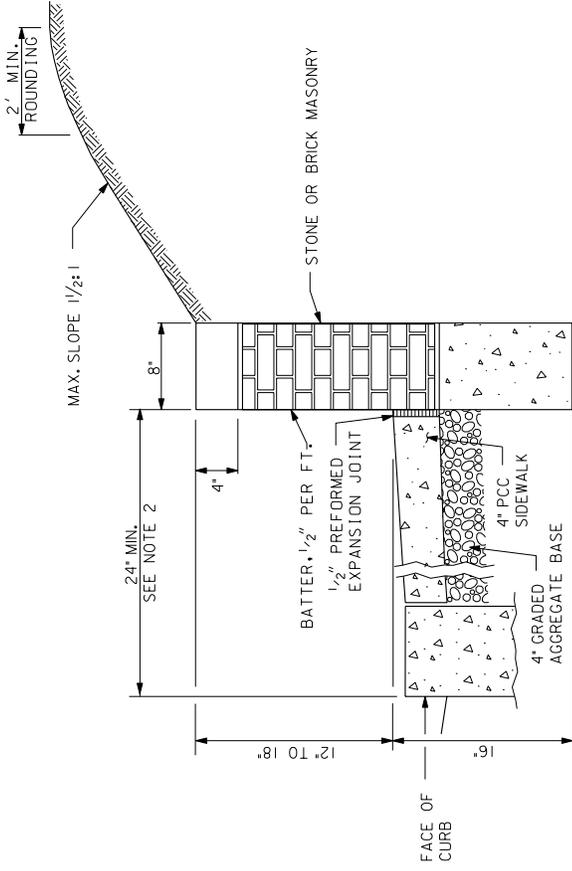
SPECIAL CONCRETE COPING



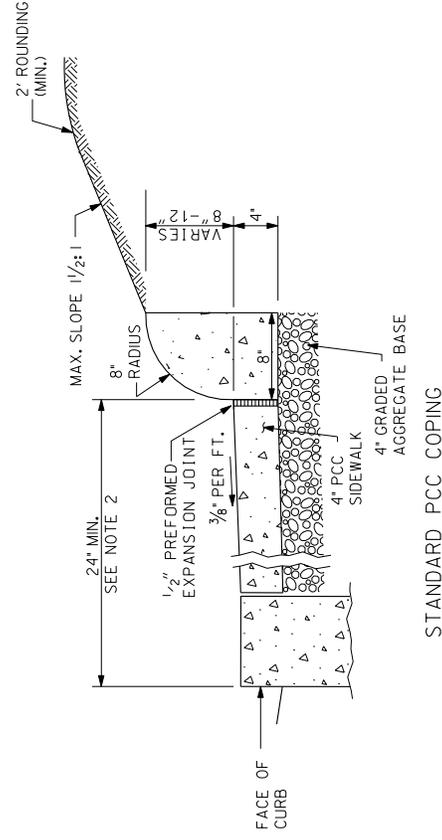
VERTICAL AND HORIZONTAL "V" GROOVE DETAIL

NOTES:

1. VERTICAL "V" GROOVES SHALL BE LOCATED TO MATCH SIDEWALK JOINTS, TYPICALLY EVERY 9 FT., AND SHALL RUN FROM THE TOP OF SIDEWALK TO THE HORIZONTAL "V" GROOVE. IF MATCHING SIDEWALK JOINTS IS NOT PRACTICAL, VERTICAL "V" GROOVES SHALL BE SPACED EVERY 10 FEET.
2. FACE OF COPING SHALL BE 2 FT. MIN. FROM FACE OF CURB, UNLESS SHOWN OTHERWISE ON THE CONTRACT PLANS, OR AS DIRECTED BY THE ENGINEER.



SPECIAL MASONRY COPING



STANDARD PCC COPING

COPINGS

d. DISTRICT OF COLUMBIA  
DEPARTMENT OF TRANSPORTATION

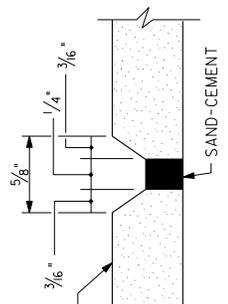
DWG. NO. 602.06

RECOMMENDED: *[Signature]*  
DEPUTY CHIEF ENGINEER

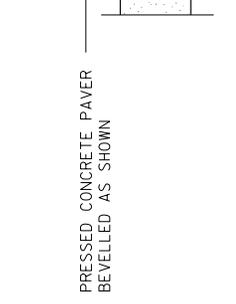
APPROVED: *[Signature]*  
CHIEF TRANSPORTATION ENGINEER

DATE	APPR.	REVISED	ISSUED:	REFERENCE

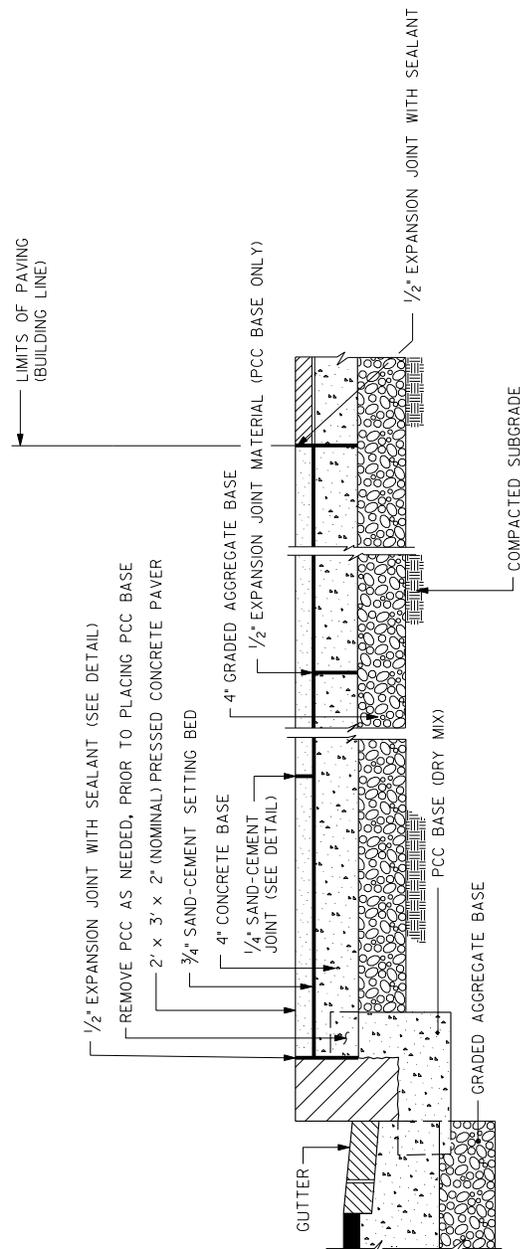




PAVER-JOINT



EXPANSION JOINT



TYPICAL CROSS-SECTION

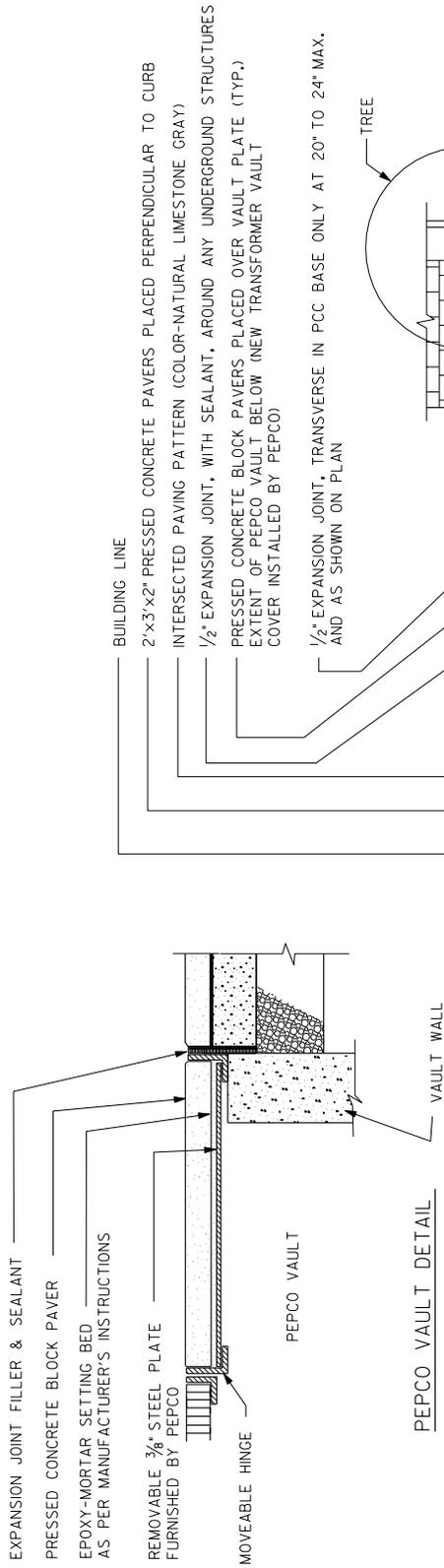
PRESSED CONCRETE BLOCK PAVER SIDEWALK

NOTES:

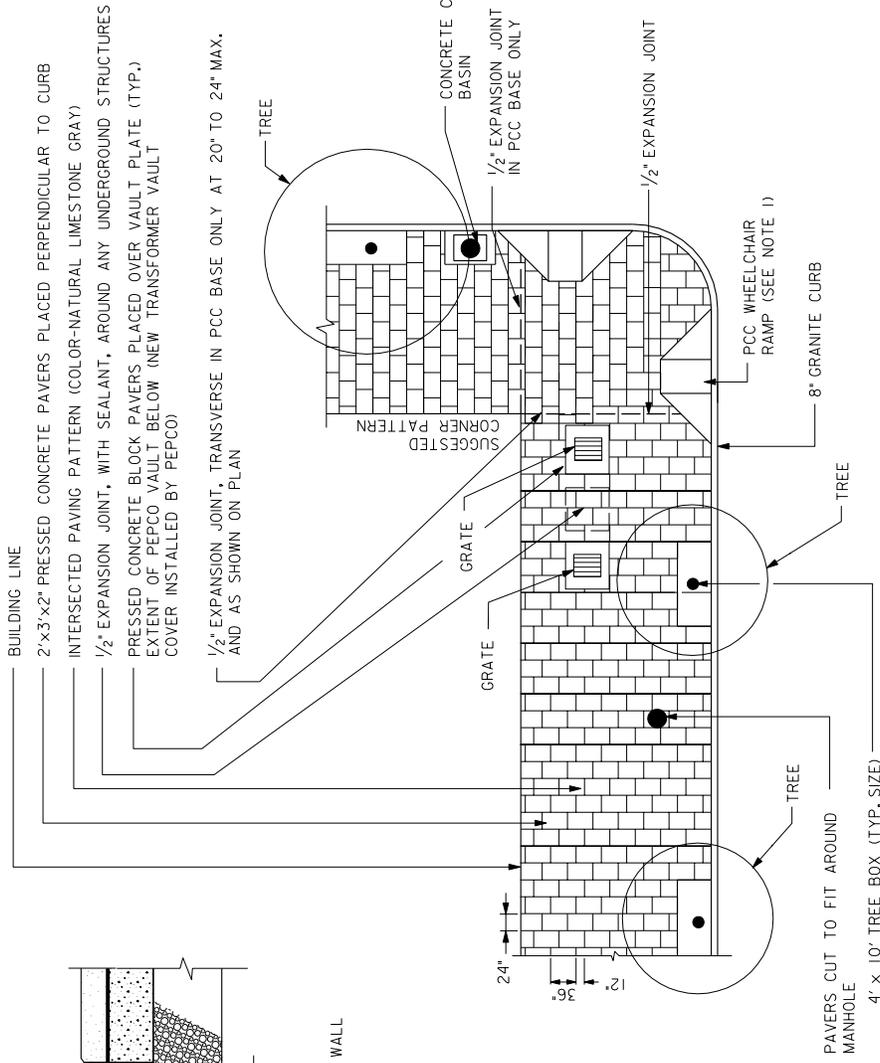
1. ALL PRESSED CONCRETE PAVING BLOCKS SHALL HAVE A NON-SLIP SURFACE.
2. USE TRI-SECTED PATTERN, STARTING PERPENDICULAR AT CURB AND WORKING TOWARD BUILDING LINE.
3. SETTING BED SHALL BE SAND-CEMENT MIX, 2:1 BY VOLUME.
4. JOINTS SHALL BE SWEEPED WITH DRY SAND-CEMENT MIX, 2:1 BY VOLUME.
5. PAVING BLOCKS SHALL BE CUT TO FIT AROUND MANHOLES, VAULTS CATCH BASINS, CURBS, RAMPS, LIGHT POLES, KIOSKS AND FLAG POLES.
6. POURED CONCRETE SQUARE OR RECTANGULAR COLLARS AROUND SIDEWALK INTERRUPTIONS, USING AGGREGATE SIZE AND COLOR PER THE MANUFACTURER OF THE PRESSED CONCRETE PAVING BLOCKS, MAY BE USED SUBJECT TO APPROVAL BY THE ENGINEER.
7. USE PERPENDICULAR INTERSECTING PAVING PATTERN AT CORNERS.
8. PEPCO WILL FURNISH NEW STEEL VAULT COVERS IN LIEU OF THE EXISTING COVERS FILLED WITH CONCRETE. ONLY REMOVABLE TYPE VAULT COVERS WILL BE REPLACED. CONTRACTOR WILL INLAY PRESSED CONCRETE BLOCK PAVERS ON EPOXY MORTAR BED. JOINTS SHALL BE CONTINUOUS WITH SURROUNDING SIDEWALK PAVERS AS MUCH AS PRACTICABLE. LEVEL OF PAVERS SHALL BE FLUSH WITH ADJACENT GRADE.
9. CONTRACTOR SHALL NOTIFY PEPCO 3 WEEKS IN ADVANCE BEFORE PEPCO VAULT COVERS ARE READY TO BE REPLACED AND PAVED. ONLY PEPCO WILL REMOVE AND INSTALL THE STEEL VAULT COVERS.

RECOMMENDED:	<i>[Signature]</i> DEPUTY CHIEF ENGINEER
APPROVED:	<i>[Signature]</i> CHIEF TRANSPORTATION ENGINEER
DATE	
REVISED	
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REFERENCE	

PRESSED CONCRETE BLOCK PAVER SIDEWALK



PEPCO VAULT DETAIL



TYPICAL PAVING PATTERN

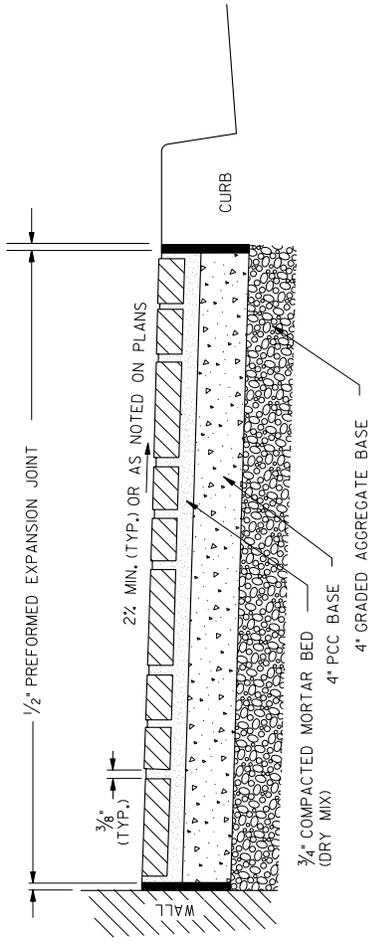
NOTE:  
 1. SEE CONTRACT PLANS FOR EXACT LOCATION OF WHEELCHAIR RAMPS.

RECOMMENDED:	<i>[Signature]</i> DEPUTY CHIEF ENGINEER
APPROVED:	<i>[Signature]</i> CHIEF TRANSPORTATION ENGINEER
DATE	APPR.
REVISED	REVISED
ISSUED:	ISSUED
REFERENCE	REFERENCE

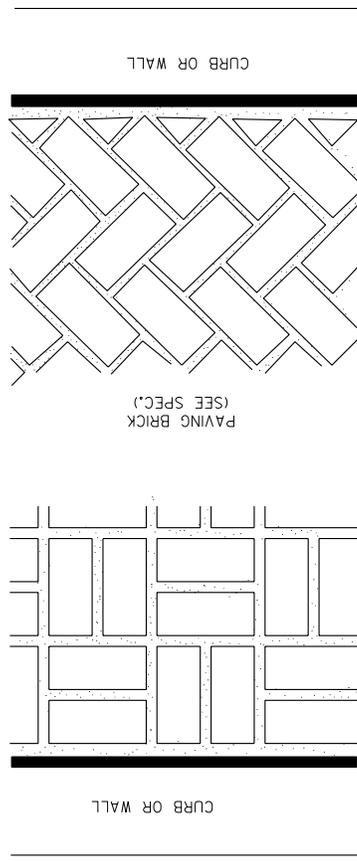
**PRESSED CONCRETE BLOCK  
 PAVER PATTERN**

**d.** DISTRICT OF COLUMBIA  
 DEPARTMENT OF TRANSPORTATION

DWG. NO. 608.03



SECTION



PATTERN A  
(BASKET WEAVE)

PATTERN B  
(HERRINGBONE)

PATTERNS FOR BRICK PAVING

NOTE:

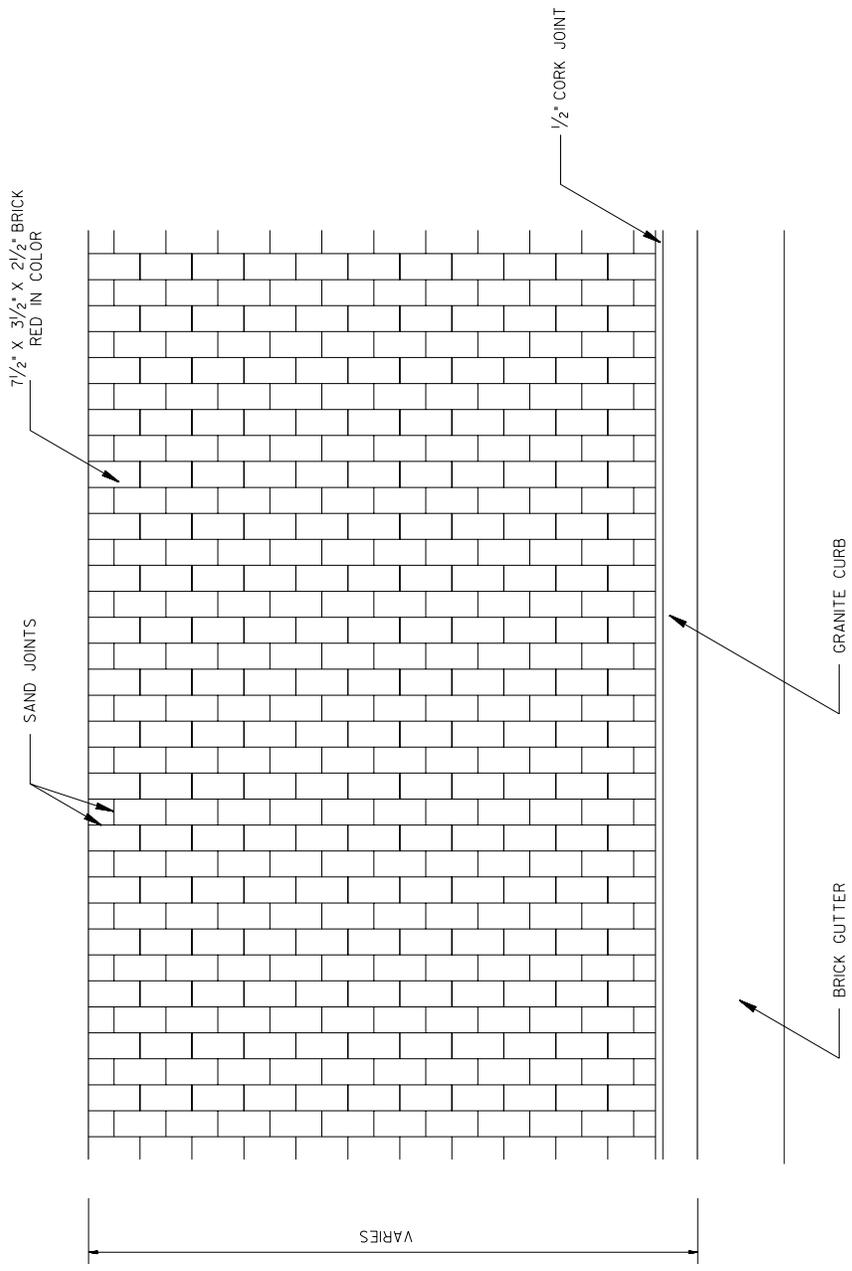
- BRICK PATTERN SHALL BE AS SHOWN ON THE CONTRACT PLANS OR AS STIPULATED IN THE SPECIAL PROVISIONS.

RECOMMENDED:	<i>[Signature]</i> DEPUTY CHIEF ENGINEER
APPROVED:	<i>[Signature]</i> CHIEF TRANSPORTATION ENGINEER
DATE	
APPR.	
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ISSUED:	
REFERENCE	

**BRICK ON 4" PCC BASE**

**d.** DISTRICT OF COLUMBIA  
DEPARTMENT OF TRANSPORTATION

DWG. NO. 608.04

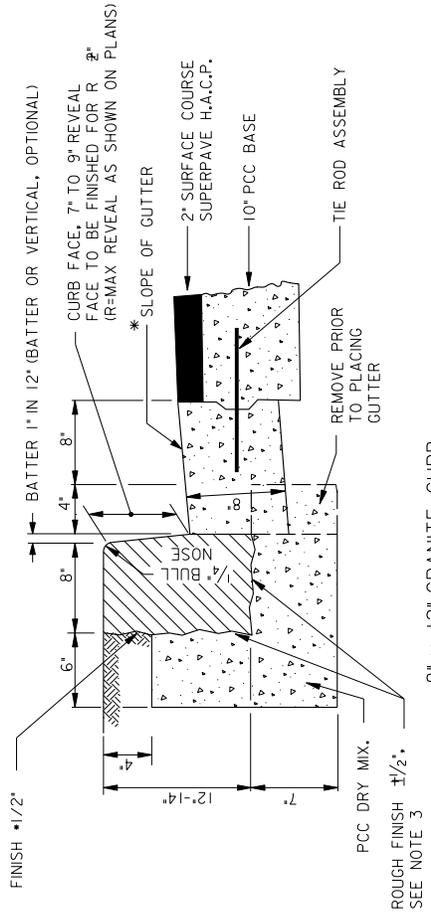


NOTE:  
 1. NEW SIDEWALKS SHOULD BE BRICK ON CONCRETE IN RESIDENTIAL AND SPECIAL PURPOSE ZONED DISTRICTS, WITH A MINIMUM CONCRETE BASE OF 4 INCHES.  
 2. REFER TO CHAPTER 31 IN DESIGN AND ENGINEERING MANUAL FOR MORE INFORMATION.

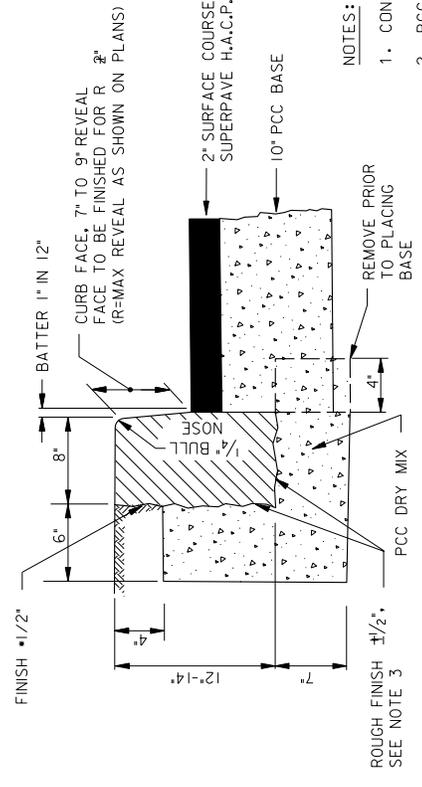
**PATTERNS FOR BRICK SIDEWALKS**

RECOMMENDED:	<i>[Signature]</i> DEPUTY CHIEF ENGINEER
APPROVED:	<i>[Signature]</i> CHIEF TRANSPORTATION ENGINEER
DATE	ISSUED:
APPR.	REFERENCE
REVISED	





8" x 12" GRANITE CURB  
(WITH PCC GUTTER)



8" x 12" GRANITE CURB  
(WITHOUT PCC GUTTER)

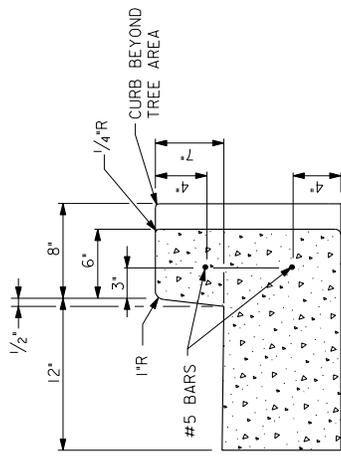
NOTES:

1. CONDITIONS AT BACK OF CURB VARY AND ARE AS SHOWN ON THE CONTRACT PLANS.
2. PCC DRY MIX SHALL BE PER DDOT STANDARD SPECIFICATIONS, SECTION 801. IT SHALL MAINTAIN THE SAME TIME LIMITS AS PCC AND SHALL BE WATERED DOWN AFTER SETTING OF GRANITE CURB.
3. THE MINIMUM DEPTH TO CONCAVE SURFACE ON ROUGH FINISH SHALL BE 10 IN.
4. GRANITE CURBS ARE SHOWN WITH A COMPOSITE PAVEMENT SECTION.
5. \* LOW SIDE - 1 IN. PER FT. TOWARD CURB
6. \* HIGH SIDE -  $\frac{5}{8}$  IN. PER FT. AWAY FROM CURB
7. A 6 IN. MIN. LAYER OF GRADED AGGREGATE BASE SHALL BE PLACED BENEATH THE ROADWAY AND CURB AND GUTTER AND IS NOT SHOWN FOR CLARITY.

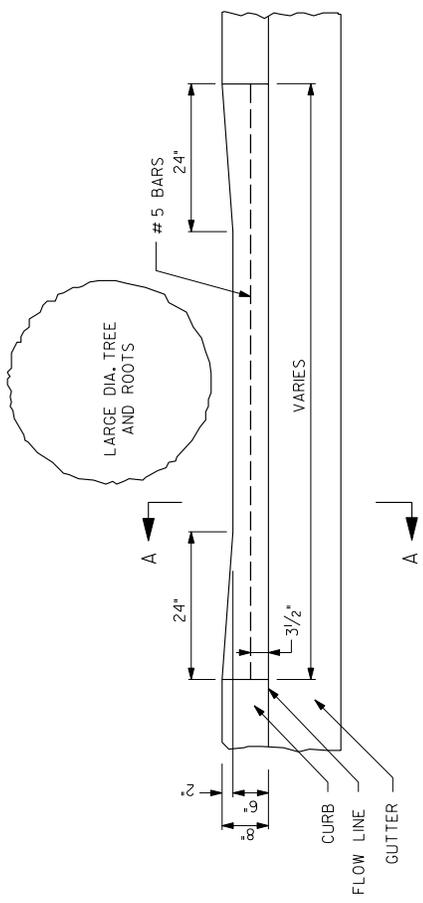
RECOMMENDED:	DEPUTY CHIEF ENGINEER
APPROVED:	CHIEF TRANSPORTATION ENGINEER
DATE	APPR.
REVISED	
ISSUED:	
	REFERENCE

# TYPES OF GRANITE CURBS

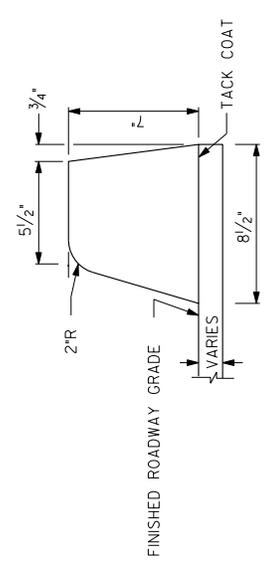
14-0315-000 - 6/14/2014 - 09:14:39 AM - 12/18/14  
Friday, April 03, 2009 11:12:18 PM  
C:\Users\jchambers\Documents\609-02.dwg



SECTION A-A



STRAIGHT REINFORCED CONCRETE CURB - PLAN  
(WITH REDUCED WIDTH)



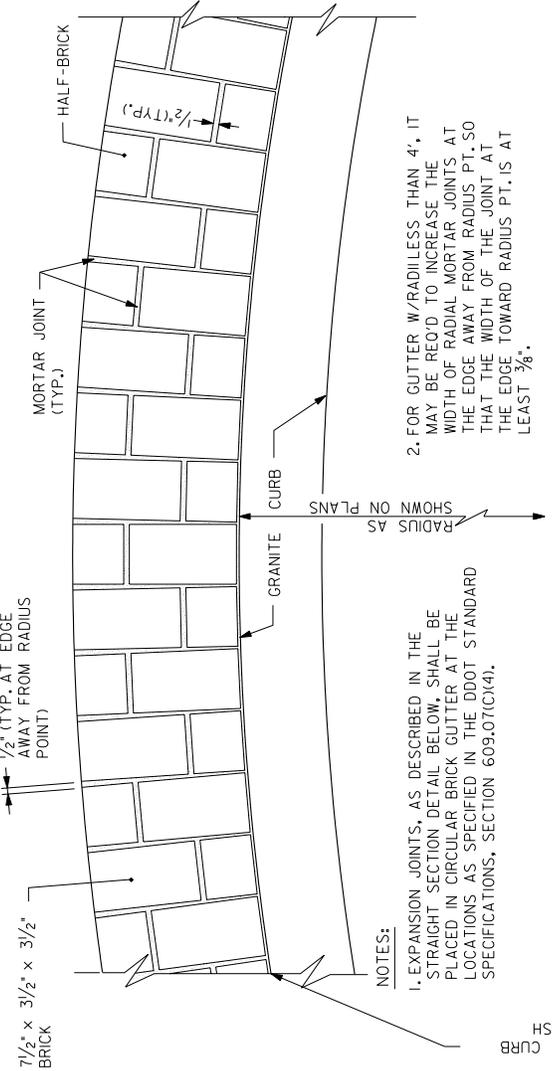
ASPHALT CURB

**d.** DISTRICT OF COLUMBIA  
DEPARTMENT OF TRANSPORTATION

**TYPES OF CURBS  
MISCELLANEOUS**

DWG. NO. **609.03**

RECOMMENDED:	<i>[Signature]</i> DEPUTY CHIEF ENGINEER
APPROVED:	<i>[Signature]</i> CHIEF TRANSPORTATION ENGINEER
DATE	APPR.
REVISED	REVISED
ISSUED:	ISSUED
REFERENCE	REFERENCE

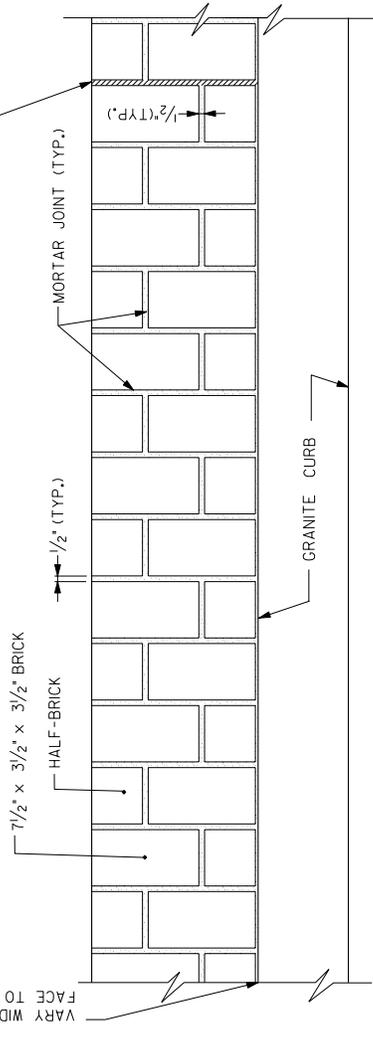


NOTES:  
 1. EXPANSION JOINTS, AS DESCRIBED IN THE STRAIGHT SECTION DETAIL BELOW, SHALL BE PLACED IN CIRCULAR BRICK GUTTER AT THE LOCATIONS AS SPECIFIED IN THE DDOT STANDARD SPECIFICATIONS, SECTION 609.07(C)(4).

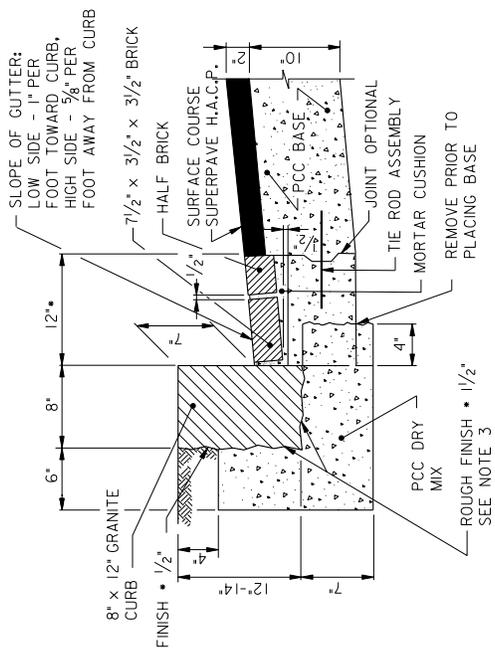
2. FOR GUTTER W/RADII LESS THAN 4', IT MAY BE REQ'D TO INCREASE THE WIDTH OF RADIAL MORTAR JOINTS AT THE EDGE AWAY FROM RADIUS PT, SO THAT THE WIDTH OF THE JOINT AT THE EDGE TOWARD RADIUS PT, IS AT LEAST 3/8\".

**CIRCULAR SECTION**

1/2\" PREFORMED EXPANSION JOINT FOR FULL DEPTH OF BRICK GUTTER, INCLUDING PCC BASE, AT THE LOCATIONS AS SPECIFIED IN THE DDOT STANDARD SPECIFICATIONS, SECTION 609.07(C)(4).



**STRAIGHT SECTION**



**8\" x 12\" GRANITE CURB WITH BRICK GUTTER**

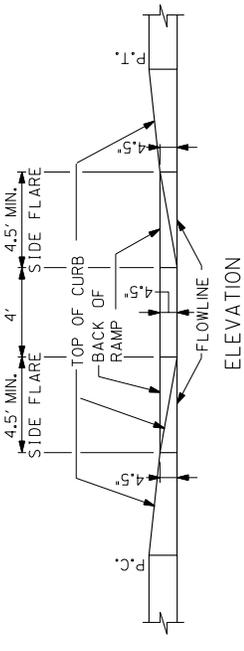
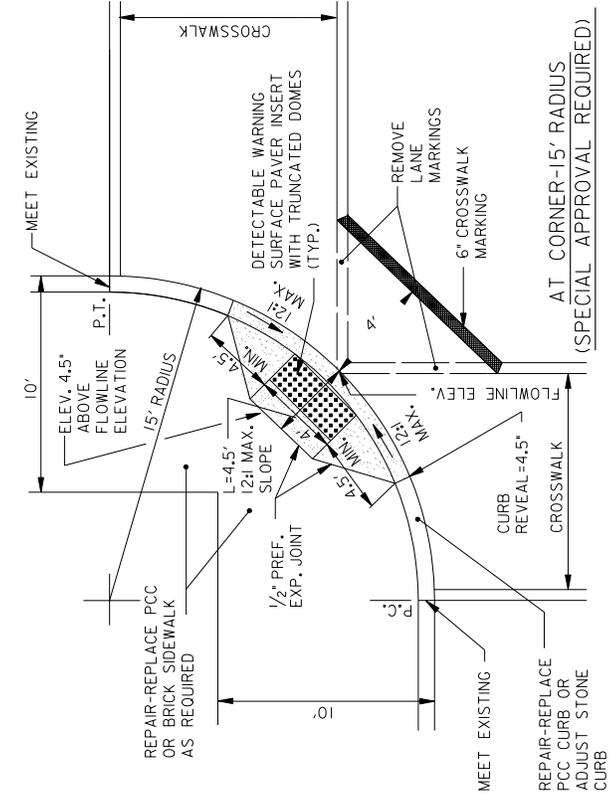
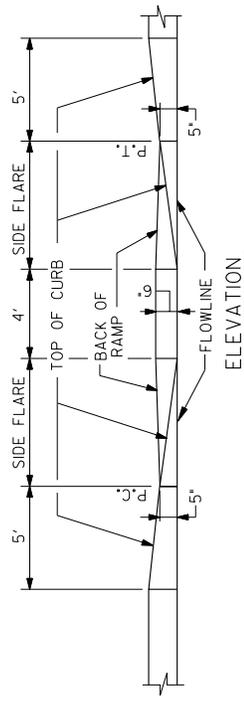
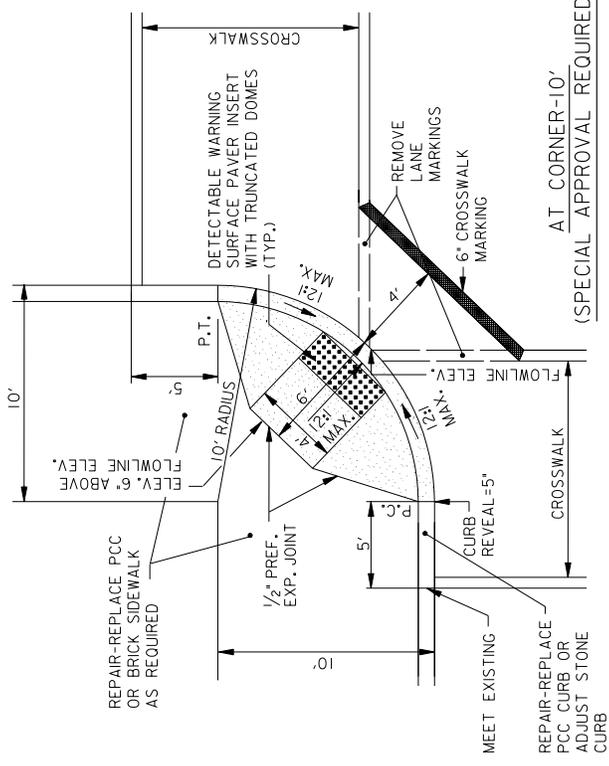
**NOTES:**

1. CONDITIONS AT BACK OF CURB VARY AND ARE AS SHOWN ON THE CONTRACT PLANS.
2. PCC DRY MIX SHALL BE PER DDOT STANDARD SPECIFICATIONS, SECTION 801. IT SHALL MAINTAIN THE SAME TIME LIMITS AS PCC AND SHALL BE WATERED DOWN AFTER SETTING OF GRANITE CURB.
3. THE MINIMUM DEPTH TO CONCAVE SURFACE ON ROUGH FINISH SHALL BE 10 IN.
4. GRANITE CURB IS SHOWN WITH A COMPOSITE PAVEMENT SECTION.
5. A 6 IN. MIN. LAYER OF GRADED AGGREGATE BASE SHALL BE PLACED BENEATH THE ROADWAY AND CURB AND GUTTER AND IS NOT SHOWN FOR CLARITY.

**PATTERNS FOR BRICK GUTTER**

RECOMMENDED:	<i>[Signature]</i> DEPUTY CHIEF ENGINEER
APPROVED:	<i>[Signature]</i> CHIEF TRANSPORTATION ENGINEER
ISSUED:	REFERENCE
DATE REVISION	APPR.

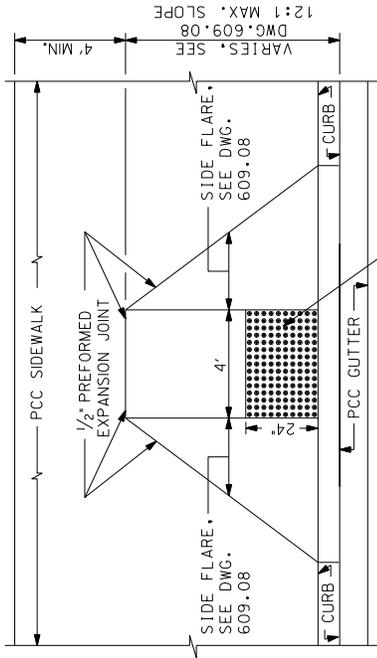




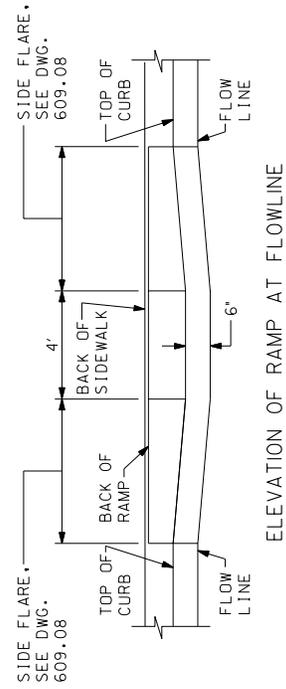
**NOTES:**

1. FOR SKEWED INTERSECTION, ACUTE CORNER SHALL DETERMINE THE LOCATION OF LIGHT POLES, RAMPS AND CROSSWALKS.
2. ALL RAMPS SHALL CONFORM TO THE LATEST AMERICANS WITH DISABILITIES ACT ACCESSIBILITY GUIDELINES (ADAAG) CRITERIA.
3. INSTALL DETECTABLE WARNING SURFACE PAVERS WITH TRUNCATED DOMES FOR A DISTANCE OF 24" FROM THE BACK OF THE CURB AS SHOWN.
4. THE SURFACE OF THE RAMP SHALL BE BROOM FINISHED (STEEL BRISTLE).
5. RAMP SHALL BE CONSTRUCTED WITH PCC SIDEWALK CONCRETE (NO DARKENING AGENTS).
6. ANY LIGHT POLE FOUNDATION SHALL BE CONSTRUCTED INDEPENDENTLY OF RAMP.
7. DESIGN STORM DRAIN SYSTEMS TO SHED WATER AWAY FROM RAMPS.
8. FOR WIDTHS OF SIDEWALK & ANGLES OF INTERSECTION DIFFERENT FROM THAT SHOWN, THE ENGINEER WILL MODIFY RAMP DESIGN ACCORDINGLY SO THAT SLOPE REQUIREMENTS ARE MET.
9. DETAILS SHOWN FOR INSTALLATION OF RAMPS IN EXISTING CONSTRUCTION TO BE USED ONLY WHEN 2 RAMPS AT CORNER CANNOT BE CONSTRUCTED IN ACCORDANCE WITH ADAAG CRITERIA.
10. GUTTER, IF ANY, NOT SHOWN. REPAIR OF GUTTER, IF REQUIRED, SHALL BE DONE UNDER THE APPROPRIATE PAY ITEM.
11. THE FINAL LOCATION OF RAMP WILL BE DECIDED BY THE ENGINEER ON SITE.

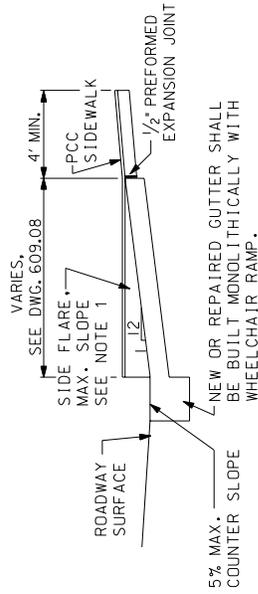
RECOMMENDED:	<i>[Signature]</i> DEPUTY CHIEF ENGINEER
APPROVED:	<i>[Signature]</i> CHIEF TRANSPORTATION ENGINEER
DATE APPR. REVISED	
ISSUED:	
REFERENCE	



DETECTABLE WARNING SURFACE PAVER INSERT WITH TRUNCATED DOMES (TYP.)



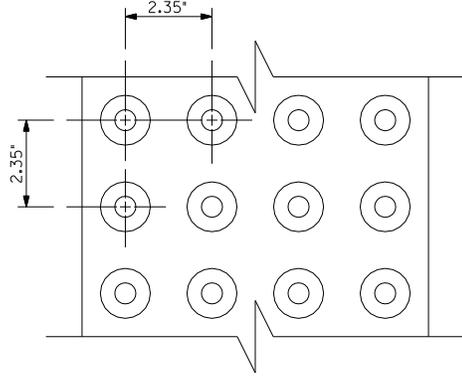
ELEVATION OF RAMP AT FLOWLINE



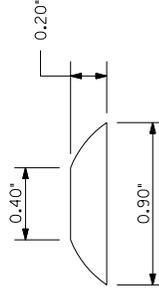
SECTION AT CENTERLINE OF RAMP

NOTES:

1. EITHER (1) SIDEWALK SLOPE BEHIND RAMP SHALL BE REDUCED, BUT NOT LESS THAN 0.5%, OR (2) IF RIGHT-OF-WAY AND PHYSICAL CONDITIONS PERMIT, SIDEWALK SHALL BE EXTENDED, SO THAT MAXIMUM SLOPE OF 12:1 ALONG CENTERLINE OF RAMP IS ACHIEVED. IF 12:1 SLOPE CANNOT BE ACHIEVED BY (1) OR (2) ABOVE, THEN MAXIMUM SLOPE IN AT LEAST ONE SIDE FLARE SHALL BE 12:1.



DOMES SPACING



DOME SECTION

DETECTABLE WARNING SURFACE PAVER/TRUNCATED DOME NOTES:

1. DETECTABLE WARNING SURFACE PAVER/TRUNCATED DOME INSERT SHALL BE INSTALLED 24" FROM THE BACK OF THE CURB AS SHOWN.
2. DETECTABLE WARNING SURFACE PAVER SHALL CONSIST OF A SURFACE OF TRUNCATED DOMES ALIGNED ON A SQUARE GRID IN THE PREDOMINANT DIRECTION OF TRAVEL TO PERMIT WHEELS TO ROLL BETWEEN DOMES.
3. DETECTABLE WARNING SURFACE PAVER/TRUNCATED DOME INSERT SHALL CONTRAST VISUALLY WITH ADJACENT WALKING SURFACES.

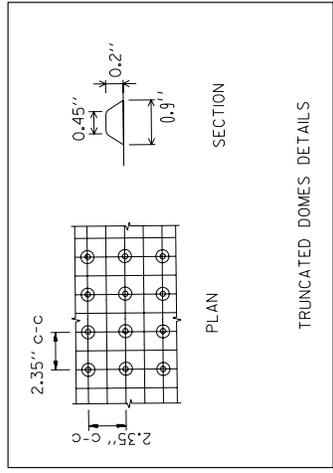
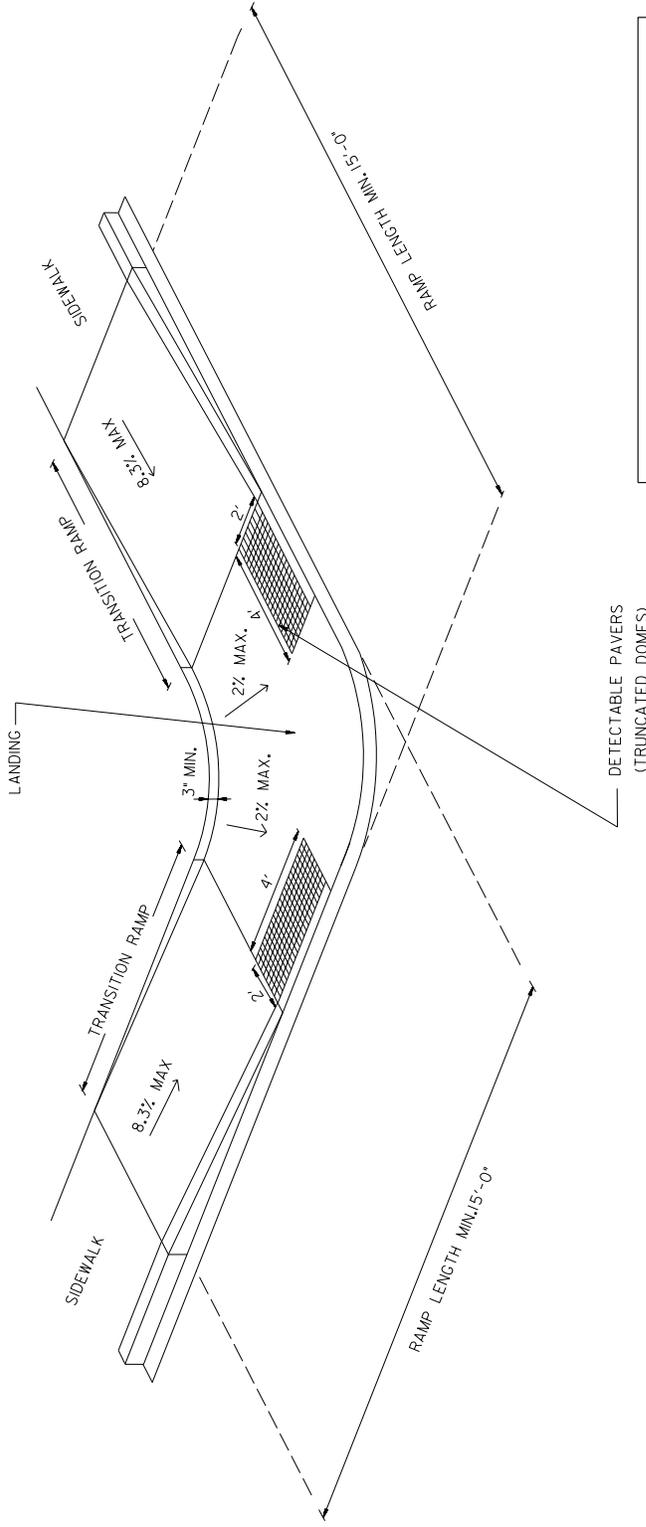
RECOMMENDED:	DEPUTY CHIEF ENGINEER
APPROVED:	CHIEF TRANSPORTATION ENGINEER
DATE REVISION	
ISSUED:	
	REFERENCE

# WHEELCHAIR-BICYCLE RAMPS DETAILS

**d.** DISTRICT OF COLUMBIA  
DEPARTMENT OF TRANSPORTATION

DWG. NO. 609.07





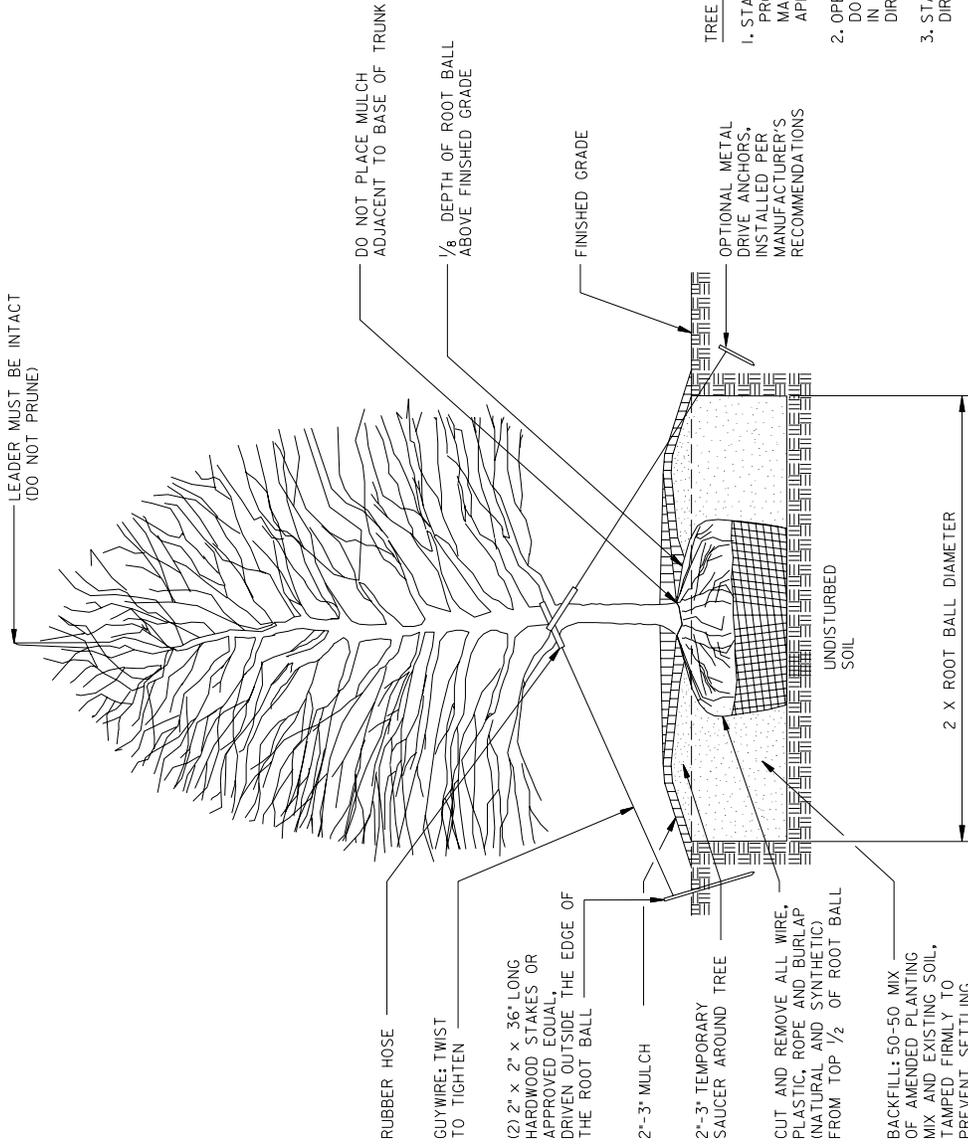
**NOTE:**

1. TO BE USED ONLY AT LOCATIONS WHERE THERE IS NOT ENOUGH SIDEWALK WIDTH AND WITH THE APPROVAL OF THE PROJECT ENGINEER.
2. RAMP LENGTH MIN DISTANCE = 15'-0" FROM PJ TO START OF TRANSITION RAMP.

**PARALLEL WHEELCHAIR RAMPS**

RECOMMENDED:	<i>[Signature]</i> DEPUTY CHIEF ENGINEER
APPROVED:	<i>[Signature]</i> CHIEF TRANSPORTATION ENGINEER
DATE	APPR.
REVISED	REVISED
ISSUED:	ISSUED
	REFERENCE





**DECIDUOUS TREE PLANTING W/ STAKES**

(TREES LARGER THAN 3 IN. CALIPER)

METALLIC GROUND ANCHOR SCHEDULE	ANCHOR SIZE
3"-6"	4"
6"-8"	6"
8"-10"	8"
10"-12"	10"

BURIAL DEPTH OF ANCHOR IS 30" MIN.

**TREE STAKING NOTES:**

1. STAKING MATERIALS AND PROCEDURES PER DRAWING 611.10 MAY BE USED IF RECOMMENDED AND APPROVED BY THE ENGINEER.
2. OPEN AREAS, SUCH AS PARKS, DO NOT REQUIRE STAKING UNLESS IN A HIGH WIND AREA OR AS DIRECTED BY THE ENGINEER.
3. STAKES SHALL BE ALIGNED IN THE DIRECTION OF THE PREVAILING WIND.
4. PLACE 2 GUYS PER TREE.
5. ALL STAKING MATERIALS TO BE REMOVED AT THE END OF THE PLANT ESTABLISHMENT PERIOD.
6. GUYWIRE SHALL ONLY BE TIGHTENED TO PREVENT SLIPPING, ALLOW FOR TRUNK MOVEMENT.
7. PROVIDE TURNBUCKLES FOR TREES OVER 6" CALIPER.

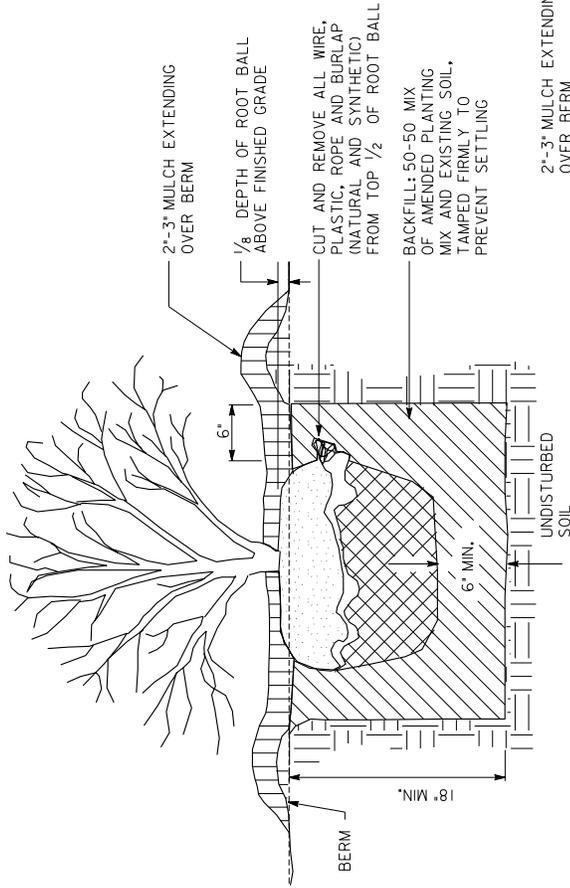


DISTRICT OF COLUMBIA  
DEPARTMENT OF TRANSPORTATION

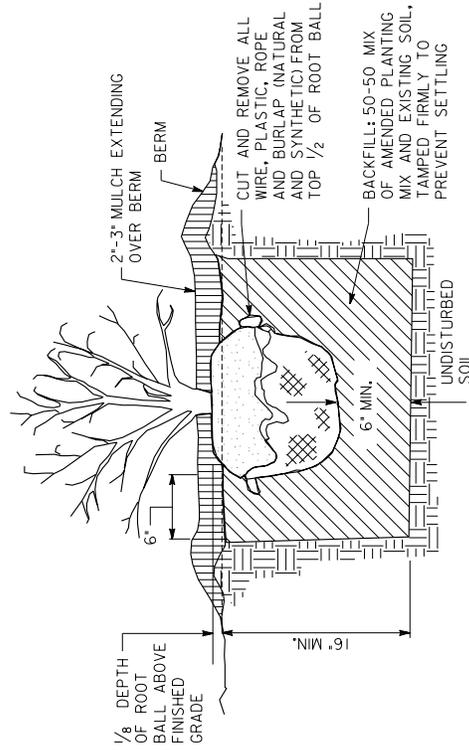
**STANDARD PLANTING DETAILS  
TREES - 2**

DWG. NO. 611.11

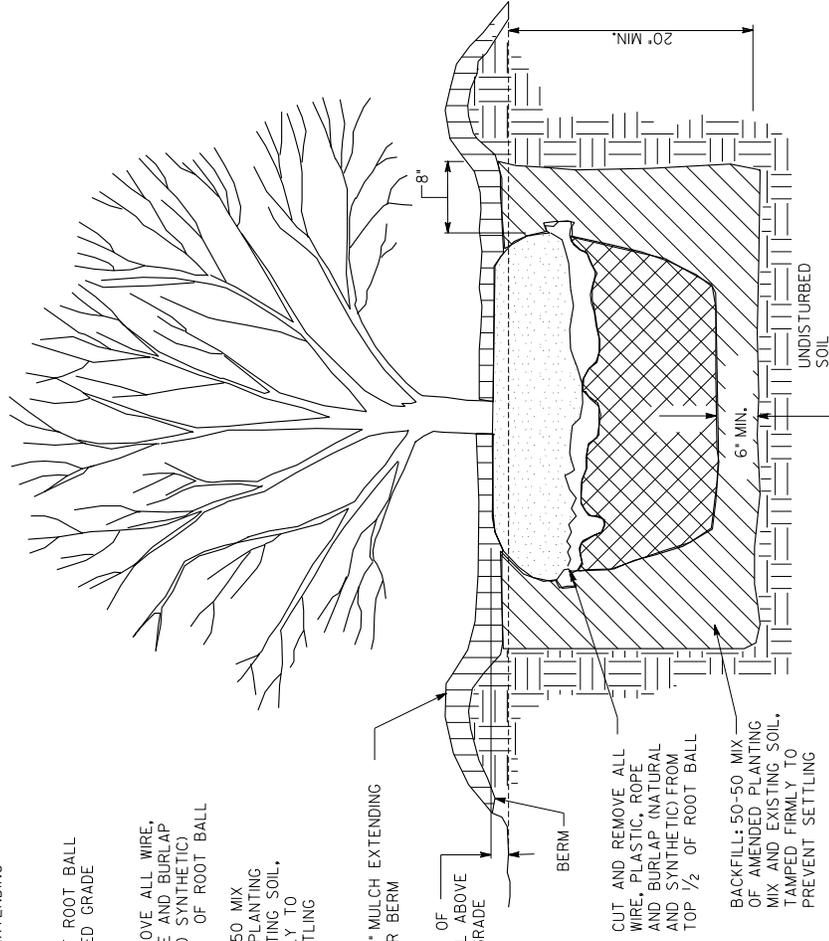
RECOMMENDED:	<i>[Signature]</i> DEPUTY CHIEF ENGINEER
APPROVED:	<i>[Signature]</i> CHIEF TRANSPORTATION ENGINEER
DATE	
ISSUED:	
APPR. REVISION	
REFERENCE	



FOR SHRUBS 2' TO 4' IN HEIGHT



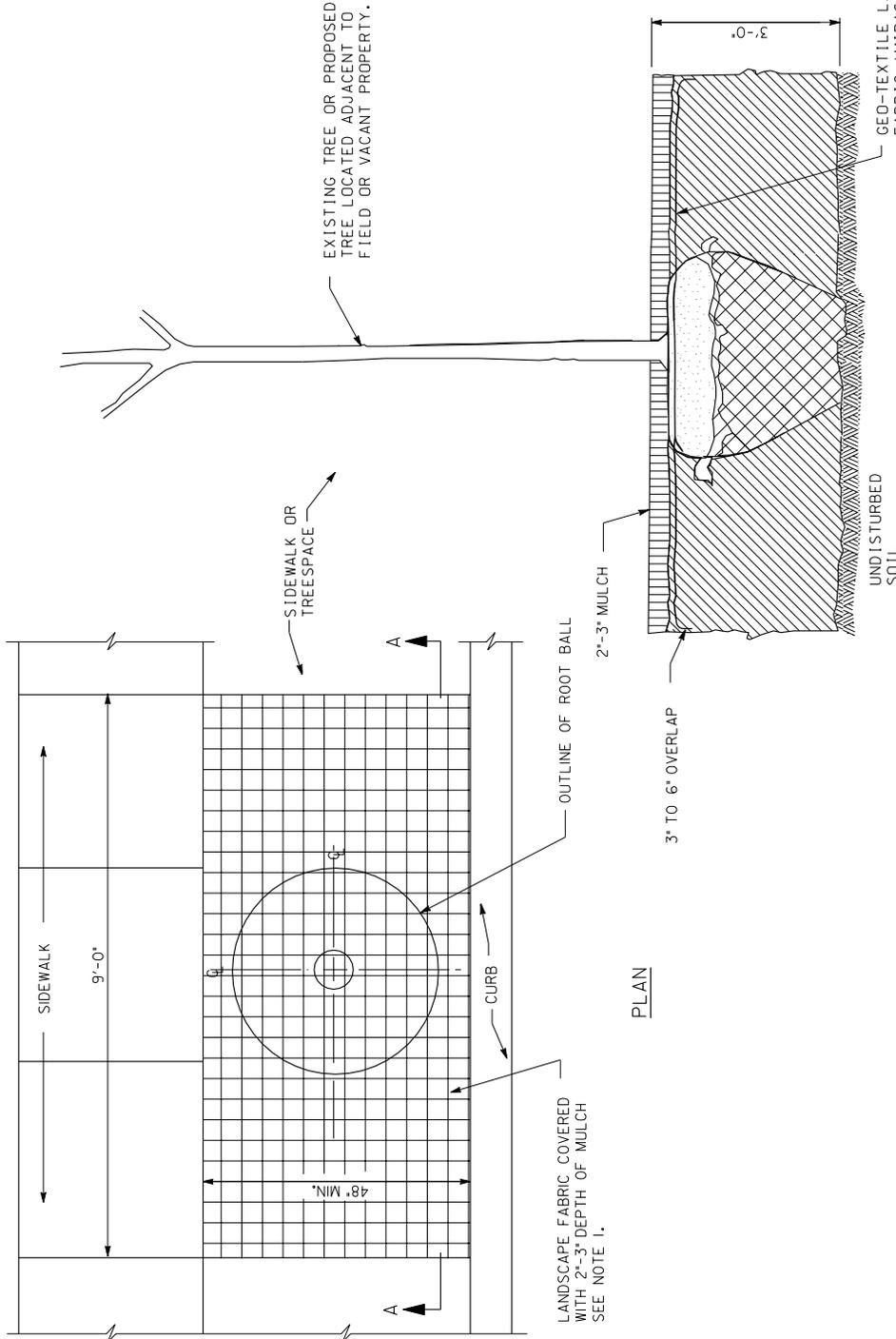
FOR SHRUBS UNDER 2' IN HEIGHT



FOR SHRUBS 4' IN HEIGHT AND OVER

RECOMMENDED:	DEPUTY CHIEF ENGINEER
APPROVED:	CHIEF TRANSPORTATION ENGINEER
DATE	APPR.
REVISED	
ISSUED:	
	REFERENCE

STANDARD PLANTING DETAILS  
SHRUBS

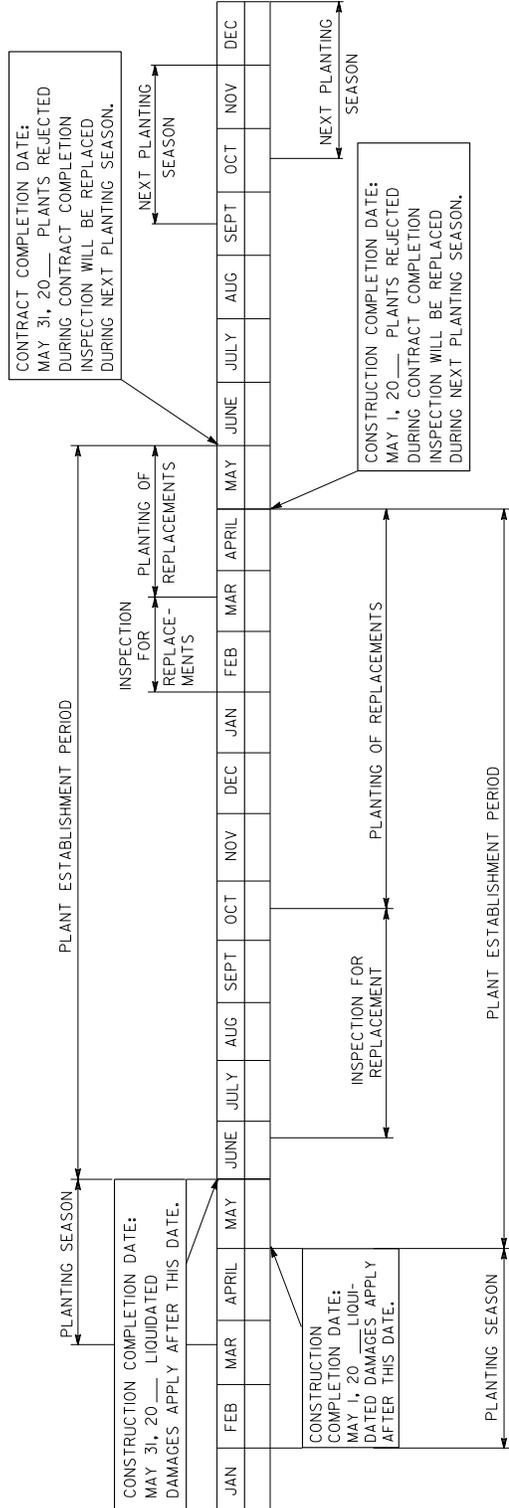


NOTE:  
 1. LANDSCAPE FABRIC IS NOT RECOMMENDED AND SHOULD BE USED/APPROVED BY THE ENGINEER ONLY UNDER SPECIAL CIRCUMSTANCES.

SECTION A-A

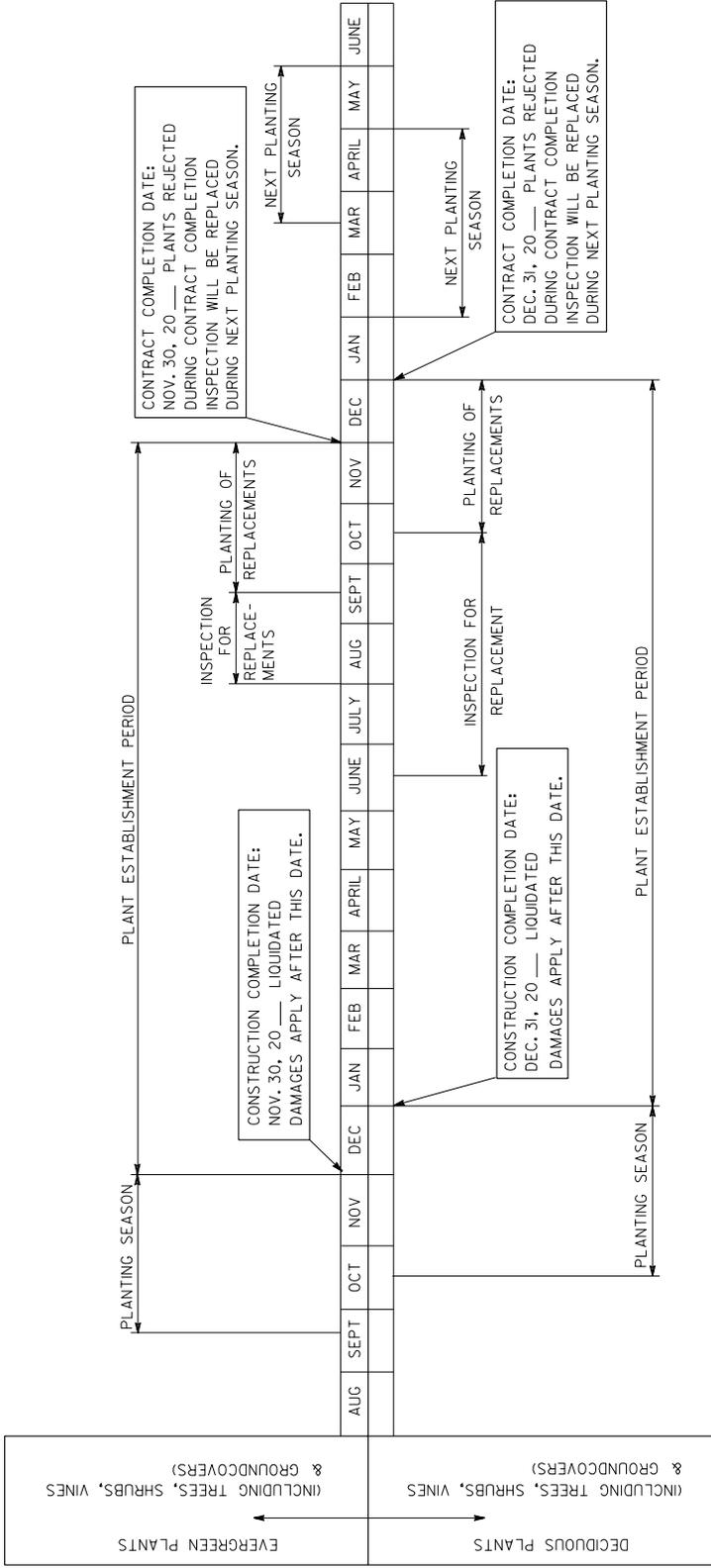
LANDSCAPE FABRIC DETAILS

RECOMMENDED:	<i>[Signature]</i> DEPUTY CHIEF ENGINEER
APPROVED:	<i>[Signature]</i> CHIEF TRANSPORTATION ENGINEER
DATE	APPR.
REVISED	REVISED
ISSUED:	ISSUED
REFERENCE	REFERENCE



NOTE:  
 1. FOR DURATION OF CONTRACTOR'S LIABILITY, SEE DDOT STANDARD SPECIFICATION, 611.02.

DISTRICT OF COLUMBIA DEPARTMENT OF TRANSPORTATION	
<b>PLANTING &amp; PLANT ESTABLISHMENT PERIODS          SPRING PLANTING SEASON</b>	
RECOMMENDED: <i>[Signature]</i> DEPUTY CHIEF ENGINEER	APPROVED: <i>[Signature]</i> CHIEF TRANSPORTATION ENGINEER
DATE ISSUED: _____ APPR. REVISD: _____	REFERENCE: _____

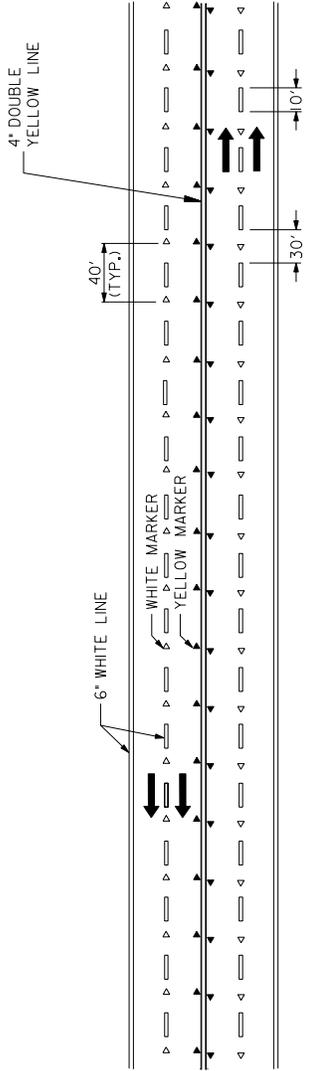


NOTE:  
I. FOR DURATION OF CONTRACTOR'S LIABILITY, SEE DDOT STANDARD SPECIFICATION, 611.02.

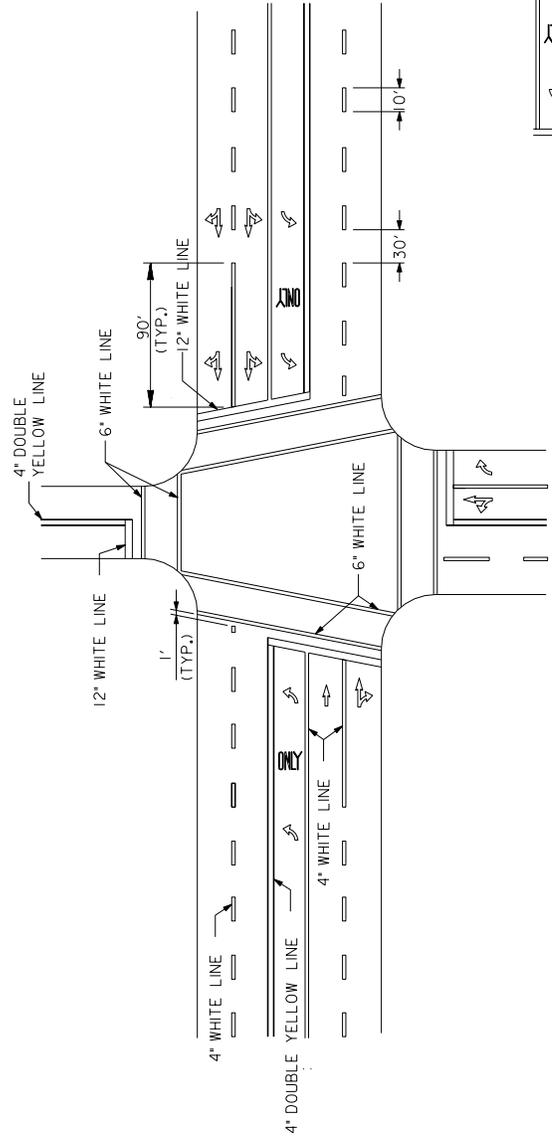
**PLANTING & PLANT ESTABLISHMENT PERIODS  
FALL PLANTING SEASON**

RECOMMENDED:	<i>[Signature]</i> DEPUTY CHIEF ENGINEER
APPROVED:	<i>[Signature]</i> CHIEF TRANSPORTATION ENGINEER
DATE REVISIONS	
ISSUED:	
REFERENCE	

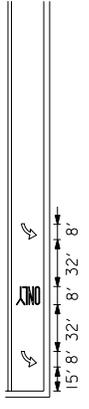




MULTIPLE LANE MAJOR ROADWAY



CITY STREET



LEFT-TURN-ONLY "ARROW+LETTER"

DATE	APPR.	REFERENCE
REVISED		
ISSUED:		

RECOMMENDED: *[Signature]*  
DEPUTY CHIEF ENGINEER

APPROVED: *[Signature]*  
CHIEF TRANSPORTATION ENGINEER

RAISED REFLECTIVE PAVEMENT MARKERS AND PAVEMENT MARKINGS

**d.** DISTRICT OF COLUMBIA  
DEPARTMENT OF TRANSPORTATION

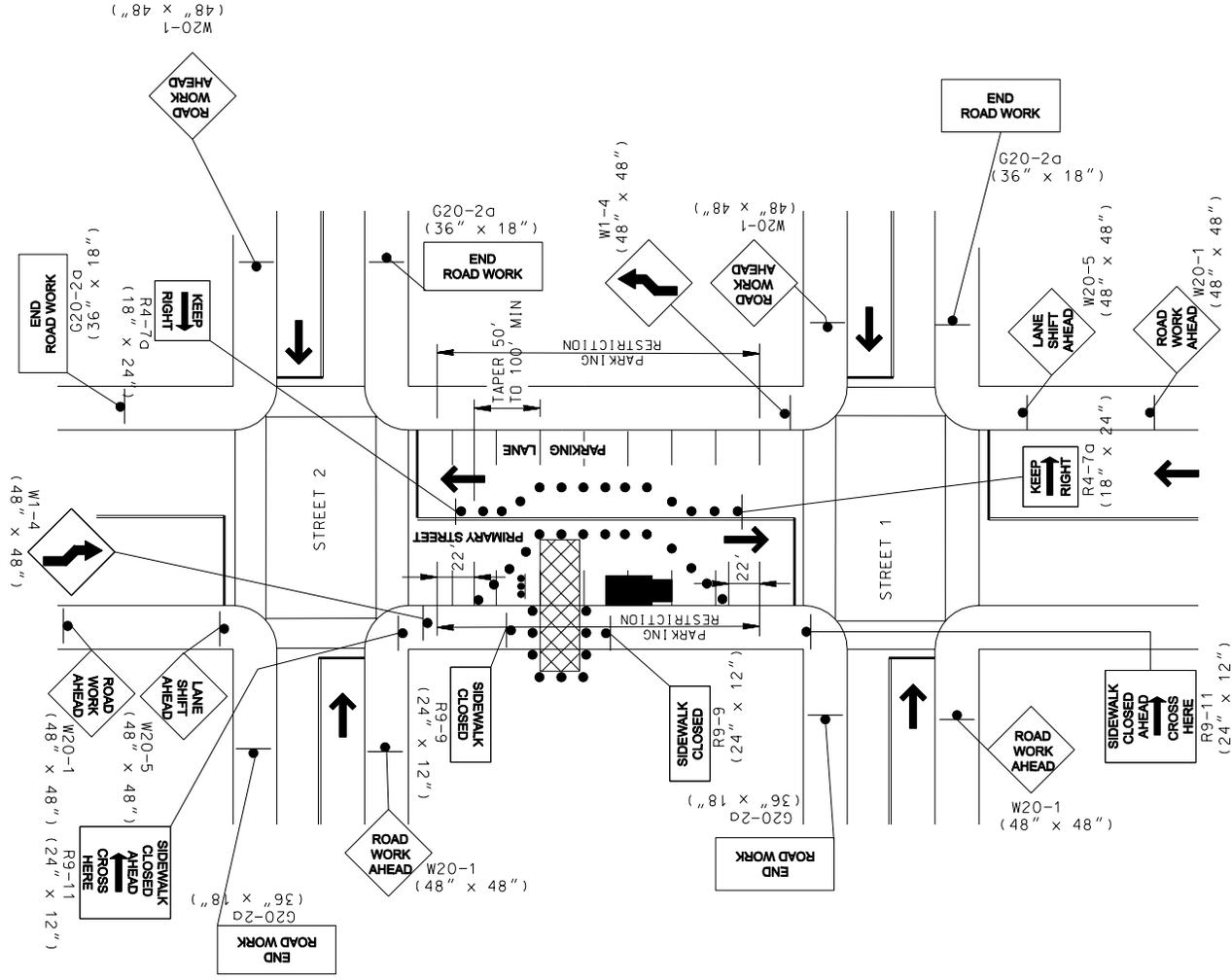
DWG. NO. 616.04







SEE THE GENERAL NOTES  
ON PAGE DWG. 616.00



- LEGEND:**
- \*\*\* ARROW PANEL
  - TRAFFIC DRUMS / CONES
  - ⊗ WORK SITE
  - ↓ SIGN DIRECTION OF TRAFFIC
  - TRUCK MOUNTED ATTENUATOR

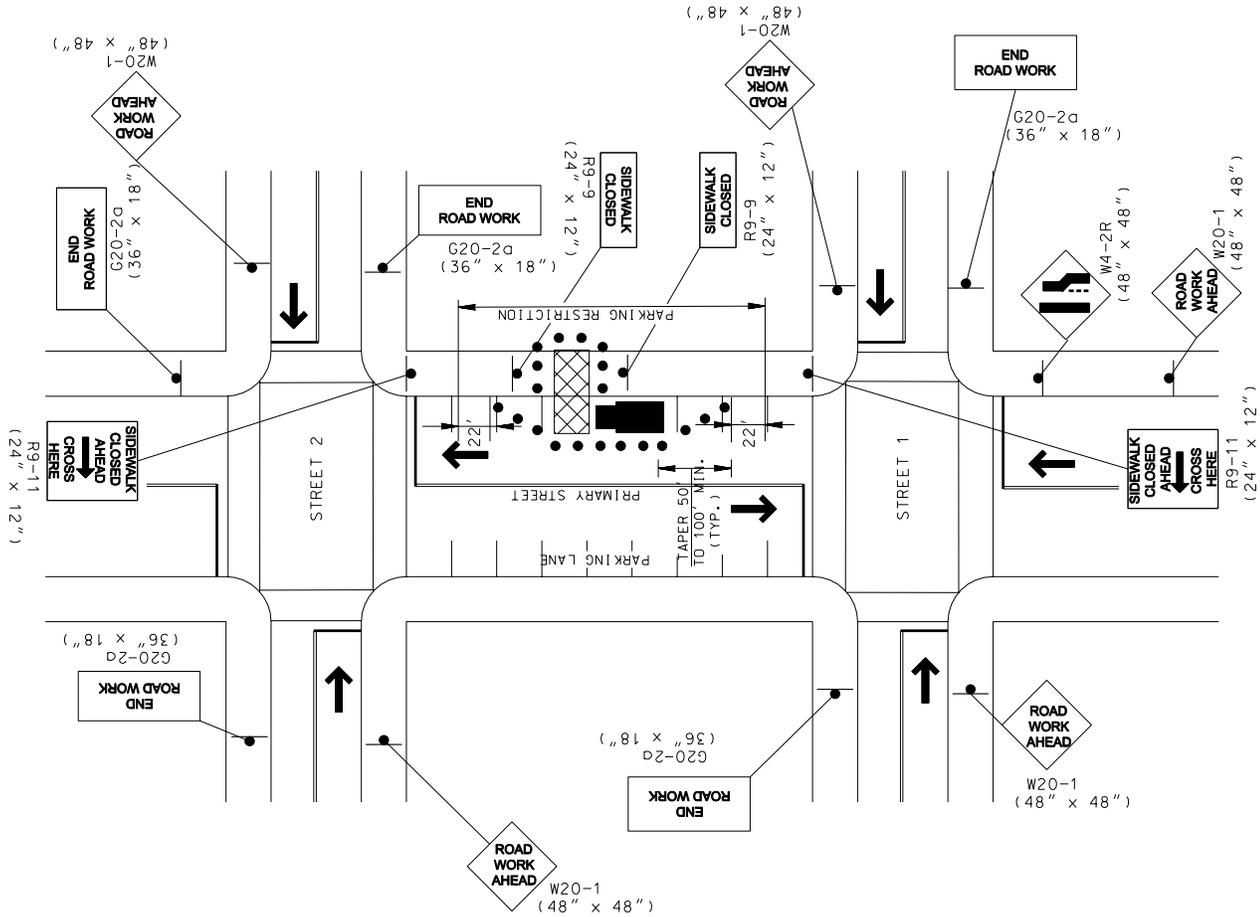
**TYPICAL TCP FOR TRAVEL LANE,  
PARKING LANE AND  
SIDEWALK CLOSURE**

DWG. NO. **616.08**

RECOMMENDED:	DEPUTY CHIEF ENGINEER
APPROVED:	CHIEF TRANSPORTATION ENGINEER
ISSUED:	REFERENCE
DATE	APPR. REVISED

1/14/05/146 616.08.dwg AT 12:19 PM Friday, April 03, 2009 AT 12:19 PM

SEE THE GENERAL NOTES  
ON PAGE DWG. 616.00



LEGEND:

- TRAFFIC DRUMS / CONES
- ⊠ WORK SITE
- ↓ SIGN DIRECTION OF TRAFFIC
- TRUCK MOUNTED ATTENUATOR

**d.** DISTRICT OF COLUMBIA  
DEPARTMENT OF TRANSPORTATION

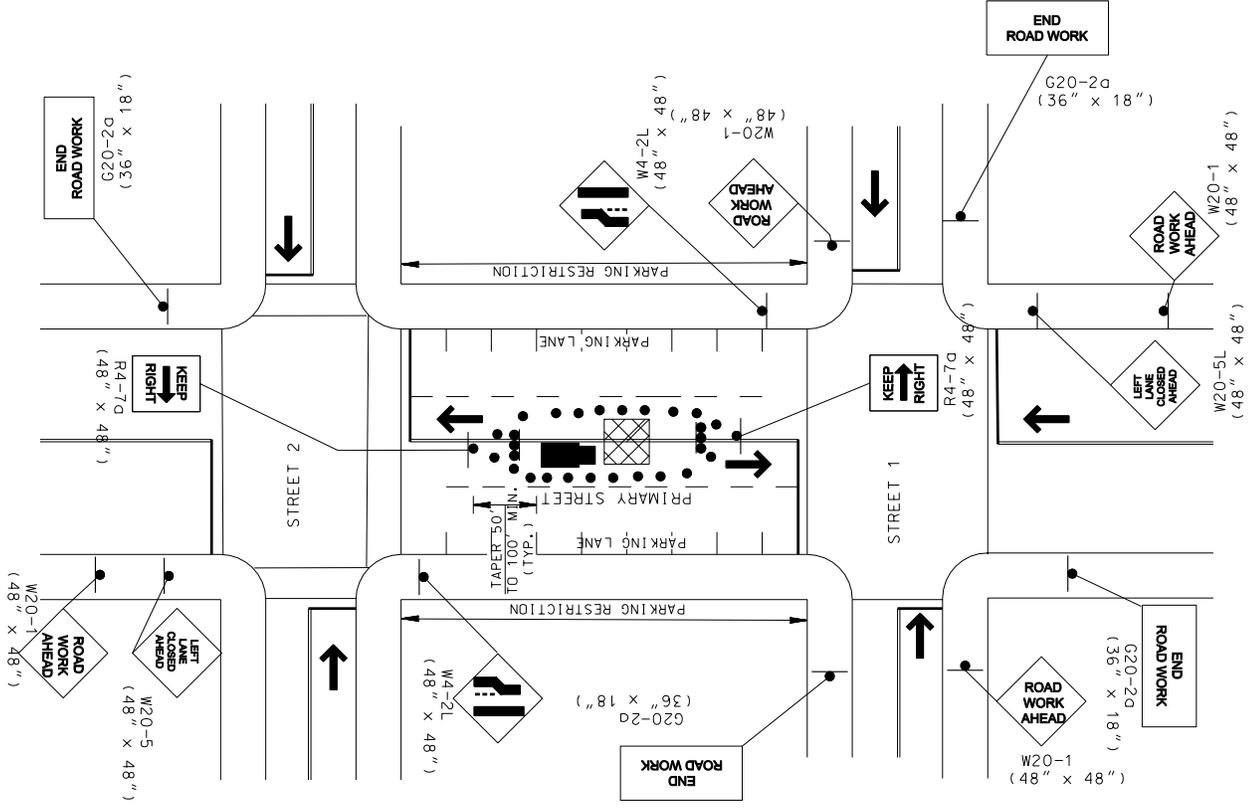
TYPICAL TCP FOR PARKING  
LANE/SIDEWALK CLOSURE

DWG. NO. 616.09

RECOMMENDED:	DEPUTY CHIEF ENGINEER
APPROVED:	CHIEF TRANSPORTATION ENGINEER
ISSUED:	REFERENCE
DATE	APPR. REVISED

14-0315-00-01-000-01.dwg (1/16/16) 12:19 PM, 14-0315-00-01-000-01.dwg (1/16/16) 12:19 PM

SEE THE GENERAL NOTES  
ON PAGE DWG. 616.00



LEGEND:

- ARROW PANEL
- TRAFFIC DRUMS / CONES
- WORK SITE
- SIGN
- DIRECTION OF TRAFFIC
- TRUCK MOUNTED ATTENUATOR

**d.** DISTRICT OF COLUMBIA  
DEPARTMENT OF TRANSPORTATION

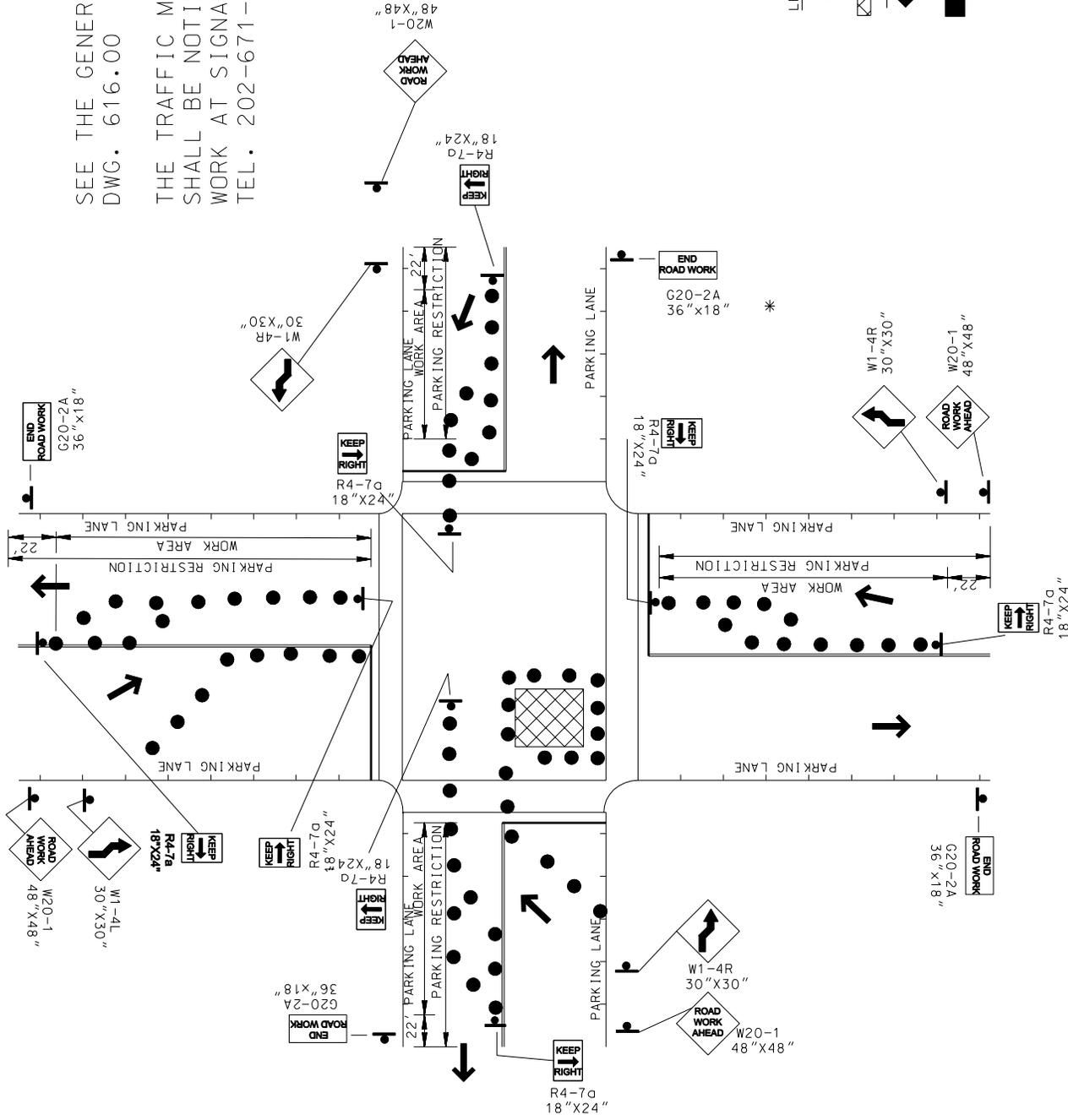
TCP FOR INTERIOR LANE  
CLOSURE ON MULTI-LANE  
TWO WAY STREET

DWG. NO. 616.10

RECOMMENDED:	<i>[Signature]</i> DEPUTY CHIEF ENGINEER
APPROVED:	<i>[Signature]</i> CHIEF TRANSPORTATION ENGINEER
ISSUED:	REFERENCE
DATE	APPR.
REVISED	

SEE THE GENERAL NOTES ON PAGE  
DWG. 616.00

THE TRAFFIC MANAGEMENT CENTER (TMC)  
SHALL BE NOTIFIED 48 HRS. PRIOR TO  
WORK AT SIGNALIZED INTERSECTIONS.  
TEL. 202-671-DDOT (3368)



- LEGEND:
- TRAFFIC DRUMS / CONES
  - ▣ WORK SITE
  - SIGN
  - ⇄ DIRECTION OF TRAFFIC
  - ▬ TRUCK MOUNTED ATTENUATOR

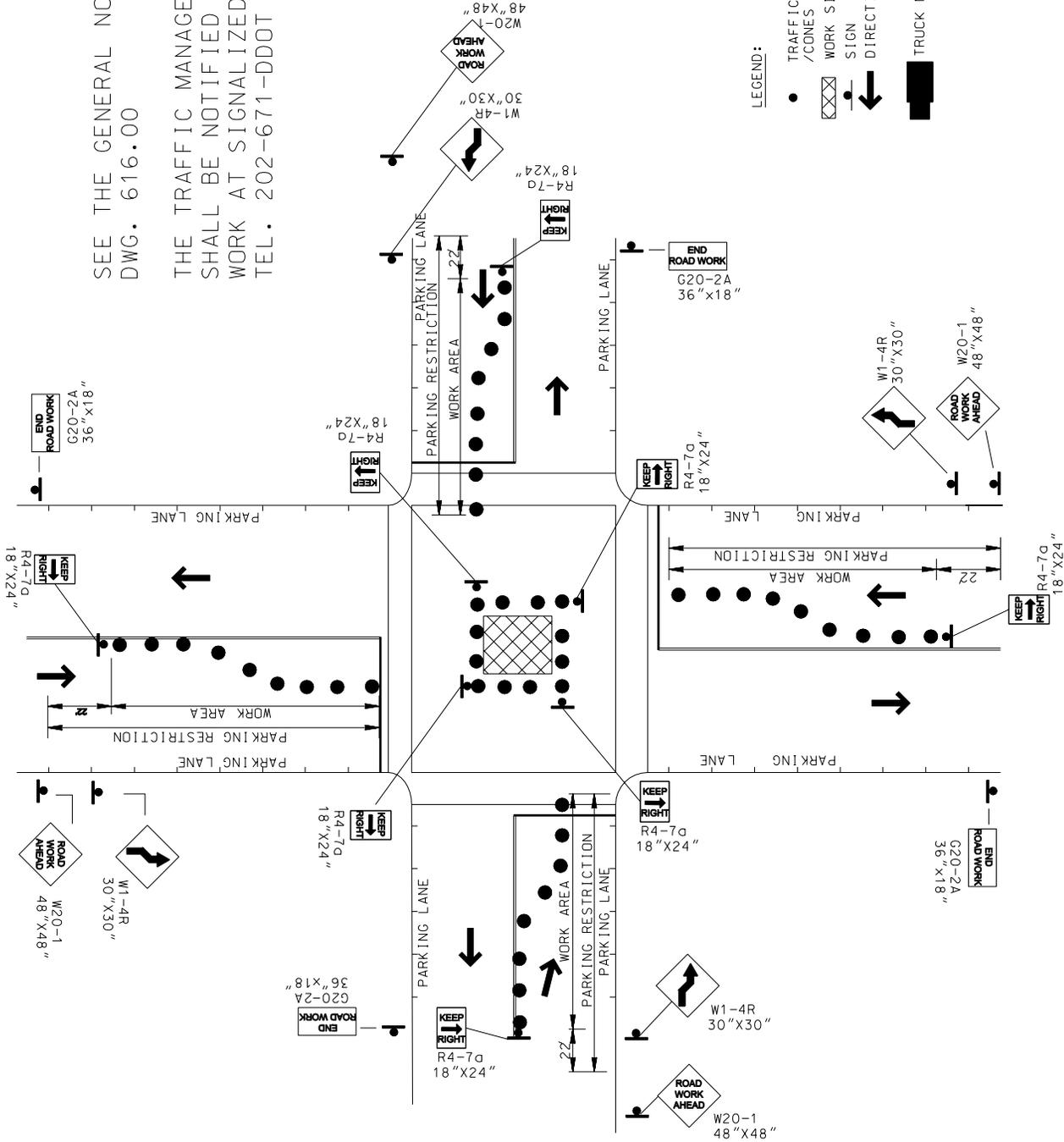
TCP FOR CLOSURE AT  
SIDE OF INTERSECTION

DWG. NO. 616.11

RECOMMENDED:	<i>[Signature]</i> DEPUTY CHIEF ENGINEER
APPROVED:	<i>[Signature]</i> CHIEF TRANSPORTATION ENGINEER
ISSUED:	REFERENCE
DATE REVISD:	
DATE APPR:	

SEE THE GENERAL NOTES ON PAGE  
DWG. 616.00

THE TRAFFIC MANAGEMENT CENTER (TMC)  
SHALL BE NOTIFIED 48 HRS. PRIOR TO  
WORK AT SIGNALIZED INTERSECTIONS.  
TEL. 202-671-DDOT (3368)



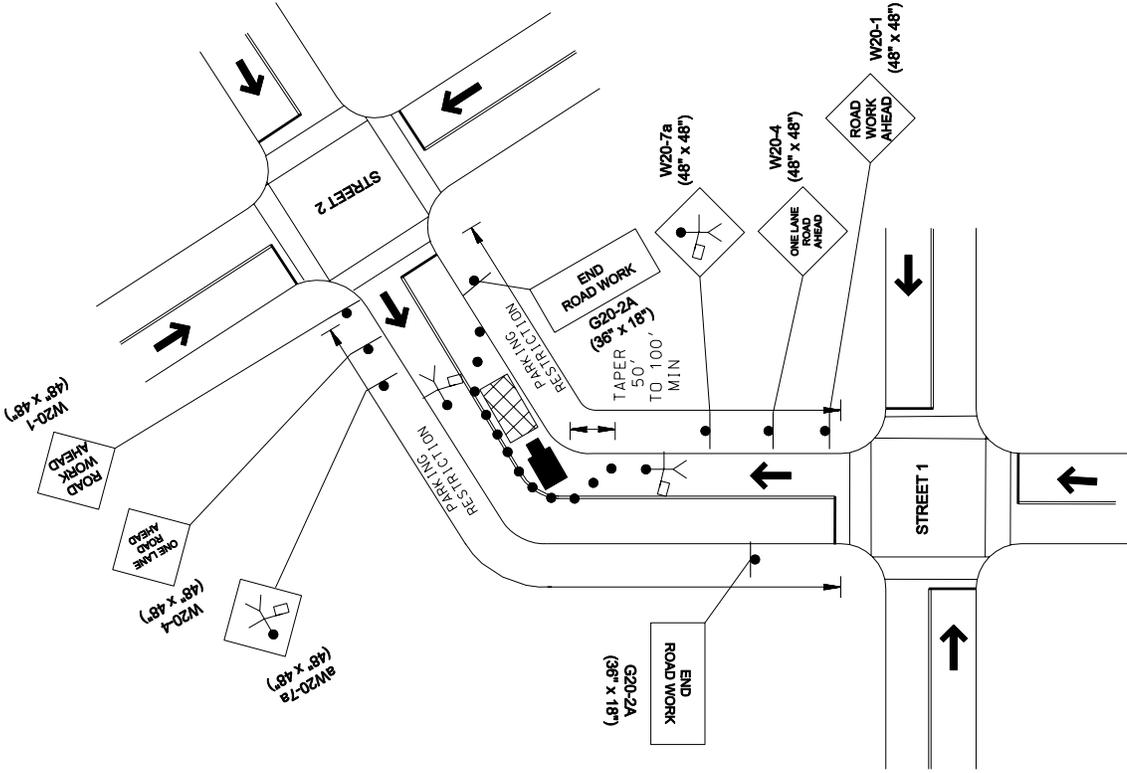
- LEGEND:**
- TRAFFIC DRUMS / CONES
  - ▨ WORK SITE
  - ⬇ SIGN
  - ➔ DIRECTION OF TRAFFIC
  - ▬ TRUCK MOUNTED ATTENUATOR

**TCP FOR CLOSURE IN  
CENTER OF INTERSECTION**

RECOMMENDED:	DEPUTY CHIEF ENGINEER
APPROVED:	CHIEF TRANSPORTATION ENGINEER
ISSUED:	REFERENCE
DATE	APPR. REVISED

1/14/05/146 6:48:07 AM 2009 AT 12:20 PM

SEE THE GENERAL NOTES  
ON PAGE DWG. 616.00



LEGEND:

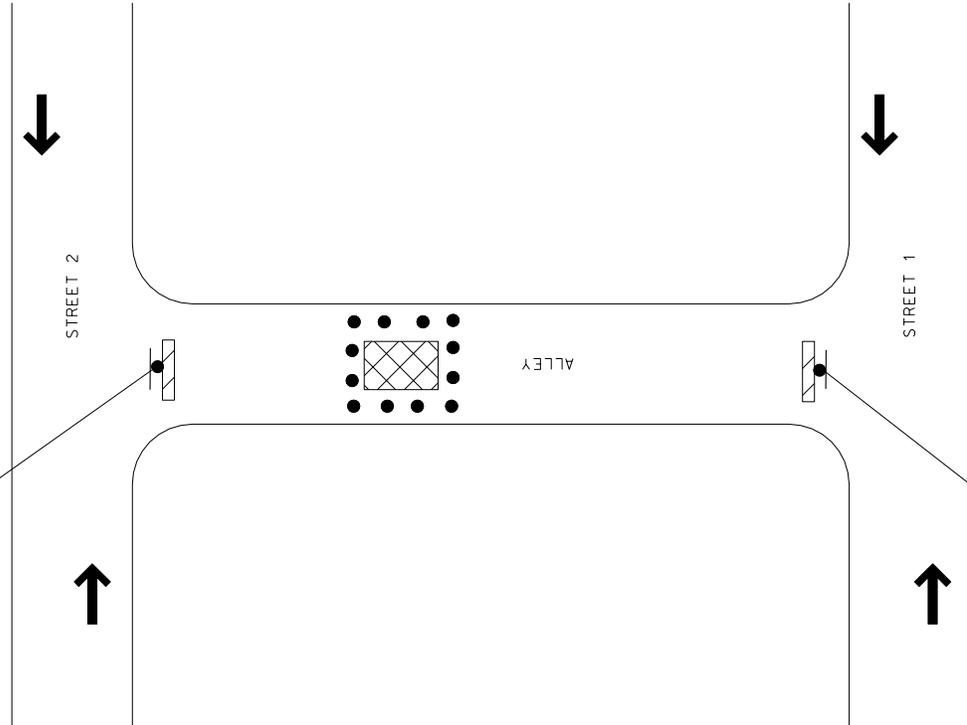
- TRAFFIC DRUMS / CONES
- ⊠ WORK SITE
- SIGN
- ➔ DIRECTION OF TRAFFIC
- ▬ TRUCK MOUNTED ATTENUATOR
- 🚧 FLAGGER

TCP FOR LANE CLOSURE ON TWO-WAY  
ROAD AND NO EXISTING  
PARKING, WITH FLAGGERS

RECOMMENDED:	<i>[Signature]</i> DEPUTY CHIEF ENGINEER
APPROVED:	<i>[Signature]</i> CHIEF TRANSPORTATION ENGINEER
ISSUED:	REFERENCE
DATE	APPR.
REVISED	

R11-2a  
(48" X 30")

ALLEY  
CLOSED



SEE THE GENERAL NOTES ON PAGE DWG. 616.00

MUST NOTIFY DPW 48 HOURS IN ADVANCE BY CALLING 311 OR (202)645-4301 / (202)645-7160 REGARDING TRASH PICKUP.

LEGEND:

- TRAFFIC DRUMS / CONES
- ▣ WORK SITE
- SIGN
- ➔ DIRECTION OF TRAFFIC
- ▨ TYPE 3 BARRICADE

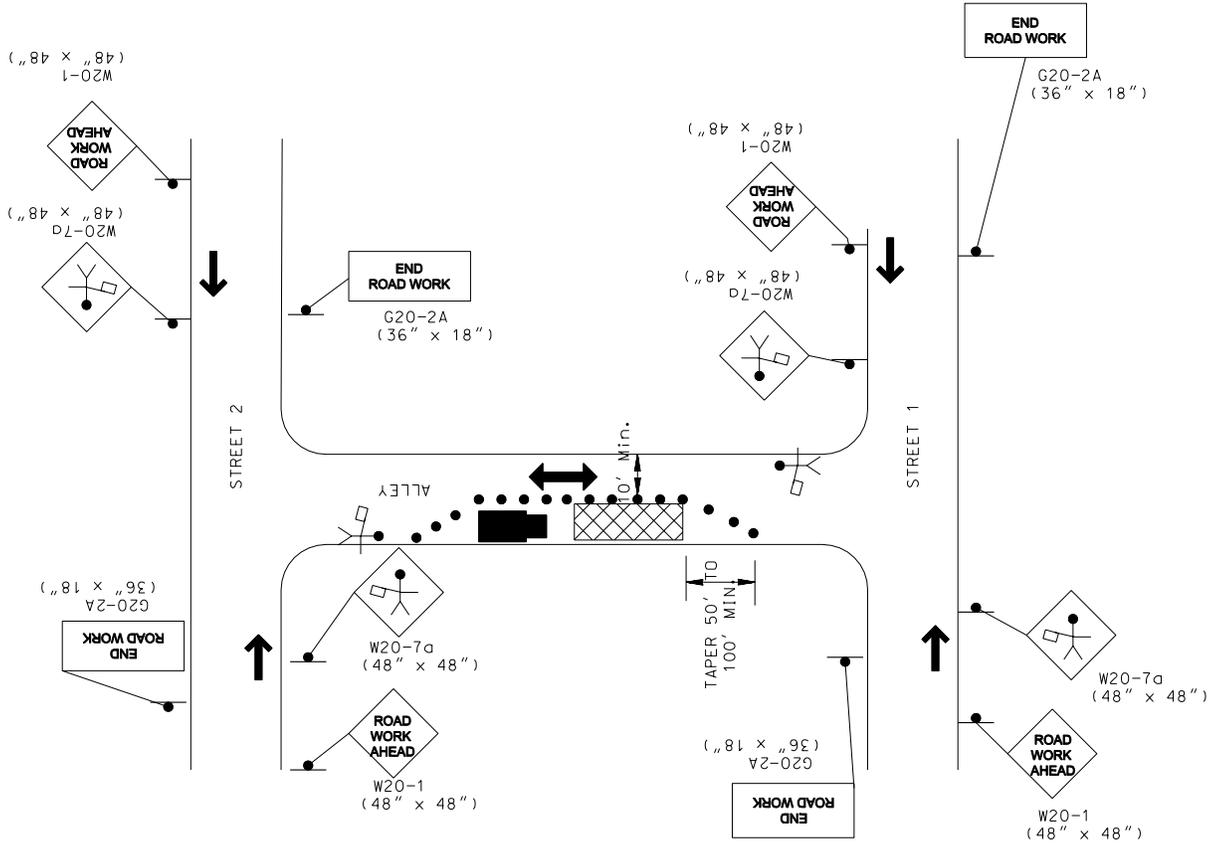
ISSUED:	REFERENCE
DATE	APPR.
REVISED	REVIS
RECOMMENDED: <i>[Signature]</i> DEPUTY CHIEF ENGINEER	
APPROVED: <i>[Signature]</i> CHIEF TRANSPORTATION ENGINEER	

TCP FOR  
ALLEY CLOSURE

**d.** DISTRICT OF COLUMBIA  
DEPARTMENT OF TRANSPORTATION

DWG. NO. 616.14

SEE THE GENERAL NOTES  
ON PAGE DWG. 616.00



- LEGEND:**
- TRAFFIC DRUMS / CONES
  - ▣ WORK SITE
  - ⊙ SIGN
  - ➔ DIRECTION OF TRAFFIC
  - TRUCK MOUNTED ATTENUATOR
  - ⚠ FLAGGER

**TYPICAL TCP FOR  
PARTIAL ALLEY CLOSURE**

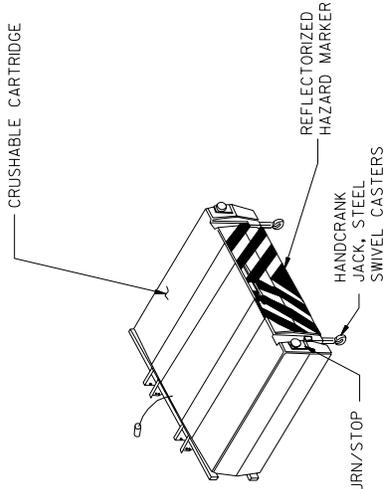
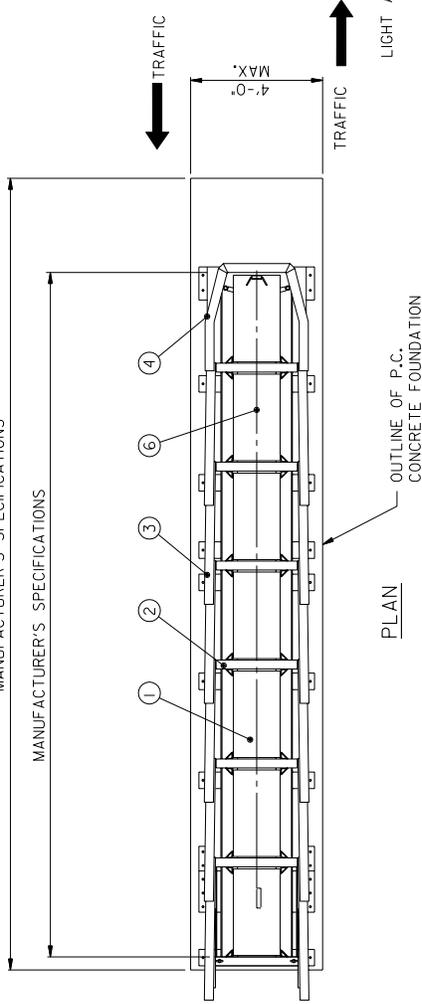
RECOMMENDED:	<i>[Signature]</i> DEPUTY CHIEF ENGINEER
APPROVED:	<i>[Signature]</i> CHIEF TRANSPORTATION ENGINEER
ISSUED:	REFERENCE
DATE	APPR. REVISED

14-0315-06 - Standard of Drawings - TYPICALS - 616-15-00M  
Friday, April 03, 2009 AT 12:20 PM



MANUFACTURER'S SPECIFICATIONS

MANUFACTURER'S SPECIFICATIONS



AS REQUIRED BY THE FEDERAL MOTOR VEHICLES SAFETY STANDARDS (FMVSS) 108.

WIDTH: 95" MAX.

APPROXIMATE WEIGHT 1,400 LBS. (TYP.)

ROAD CLEARANCE: 11-13 INCHES (TYP.)

NOTES:

1. THE TMA SHALL BE DESIGNED FOR INSTALLATION AT THE BACK OF TRUCKS WITH A 10,000 TO 35,000 LB. GROSS VEHICLE WEIGHT RATING.
2. ROLL DISTANCE OF THE TRUCK AND TMA COMBINED SHALL BE DESIGNED IN ACCORDANCE WITH TEST VEHICLE WEIGHTS AND SPEEDS AS SPECIFIED IN NCHRP #350, TL-3.

NOTES:

1. CRASH CUSHION SHALL BE INSTALLED ACCORDING TO MANUFACTURER'S SPECIFICATIONS.
2. NUMBER OF CARTRIDGES (BAYS) SHALL BE DETERMINED BY THE DESIGN SPEED (6 BAY SHOWN).
3. TRANSITION PANELS FOR THE SPECIFIC SITE BACKUP WALL SHALL BE SUPPLIED WITH THE CRASH CUSHION.
4. REFLECTORIZED TAPE ON NOSE OF CRASH CUSHION TO BE SPECIFIED IN THE SPECIAL PROVISIONS.
5. CROSS SLOPE OF UNIT NOT TO EXCEED 5%.

ELEVATION LEFT SIDE

CONSTRUCTION CRASH CUSHION

KEY

- ① CRUSHABLE CARTRIDGE
- ② DIAPHRAGM
- ③ FENDER PANEL
- ④ NOSE COVER
- ⑤ RAIL
- ⑥ BASE PLATE

TYPICAL TRUCK MOUNTED ATTENUATOR (TMA)

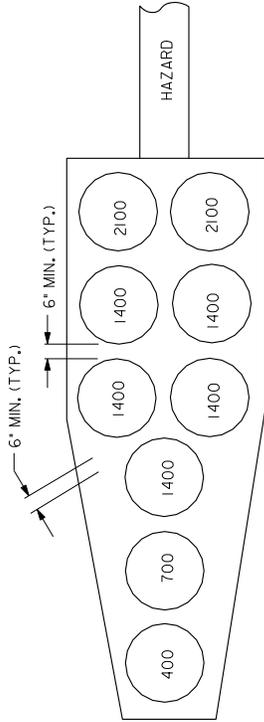
RECOMMENDED:	DEPUTY CHIEF ENGINEER
APPROVED:	CHIEF TRANSPORTATION ENGINEER
DATE	APPR.
REVISED	
ISSUED:	REFERENCE

CONSTRUCTION ZONE CRASH CUSHION AND TRUCK MOUNTED ATTENUATOR (TMA)

d. DISTRICT OF COLUMBIA DEPARTMENT OF TRANSPORTATION

DWG. NO. 616.20

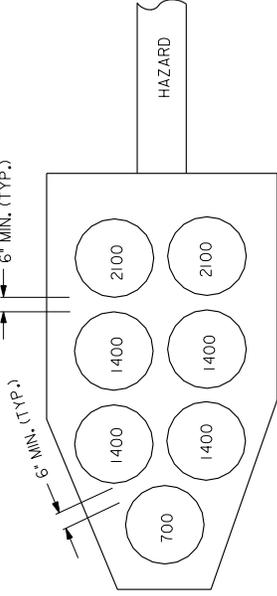
TRAFFIC ↑



DESIGN SPEED = 40 M.P.H.

TRAFFIC ↑

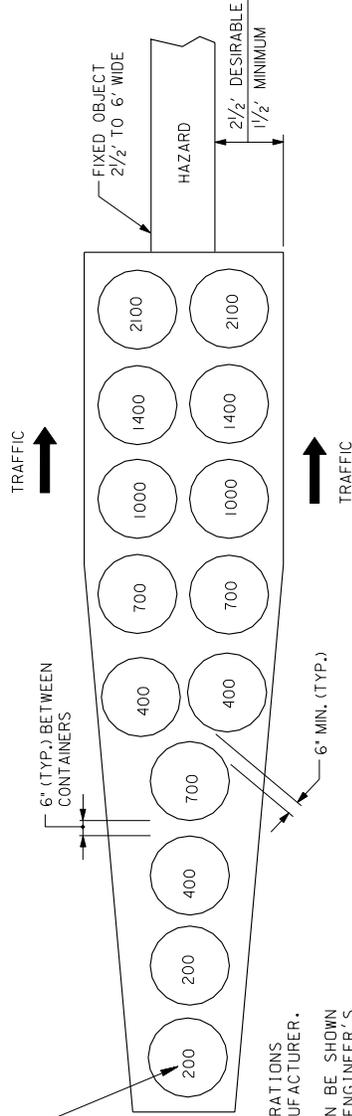
TRAFFIC ↑



DESIGN SPEED = 30 M.P.H.

TRAFFIC ↑

WEIGHT IN POUNDS



DESIGN SPEED = 50 M.P.H.

NOTES:

1. THE SAND FILLED BARREL WEIGHTS AND CONFIGURATIONS SHALL BE DESIGNED AND CERTIFIED BY THE MANUFACTURER.
2. ANY PORTABLE CRASH CUSHION DEVICE WHICH CAN BE SHOWN TO BE EQUAL OR SAFER MAY BE USED WITH THE ENGINEER'S APPROVAL.
3. REFLECTORIZED TAPE ON FIRST BARREL MAY BE SPECIFIED IN THE SPECIAL PROVISIONS.
4. SAND SHALL BE LOOSE IN COLD WEATHER. ADDITIVE MUST BE USED TO KEEP SAND FROM FREEZING.
5. CRASH CUSHION SHALL CONFORM TO THE REQUIREMENTS OF NCHRP REPORT 350, TL-2 AND TL-3.

DATE	APPR.	REFERENCE
REVISED		
ISSUED:		

RECOMMENDED: *[Signature]*  
DEPUTY CHIEF ENGINEER

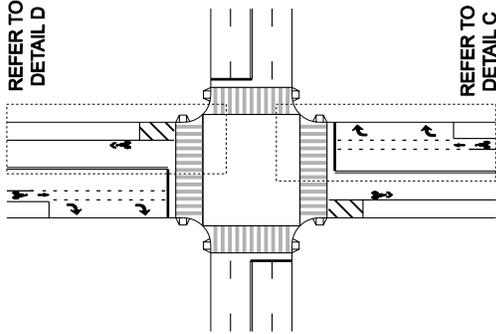
APPROVED: *[Signature]*  
CHIEF TRANSPORTATION ENGINEER

**CRASH CUSHION  
INERTIAL SYSTEM  
UNIDIRECTIONAL**

**d.** DISTRICT OF COLUMBIA  
DEPARTMENT OF TRANSPORTATION

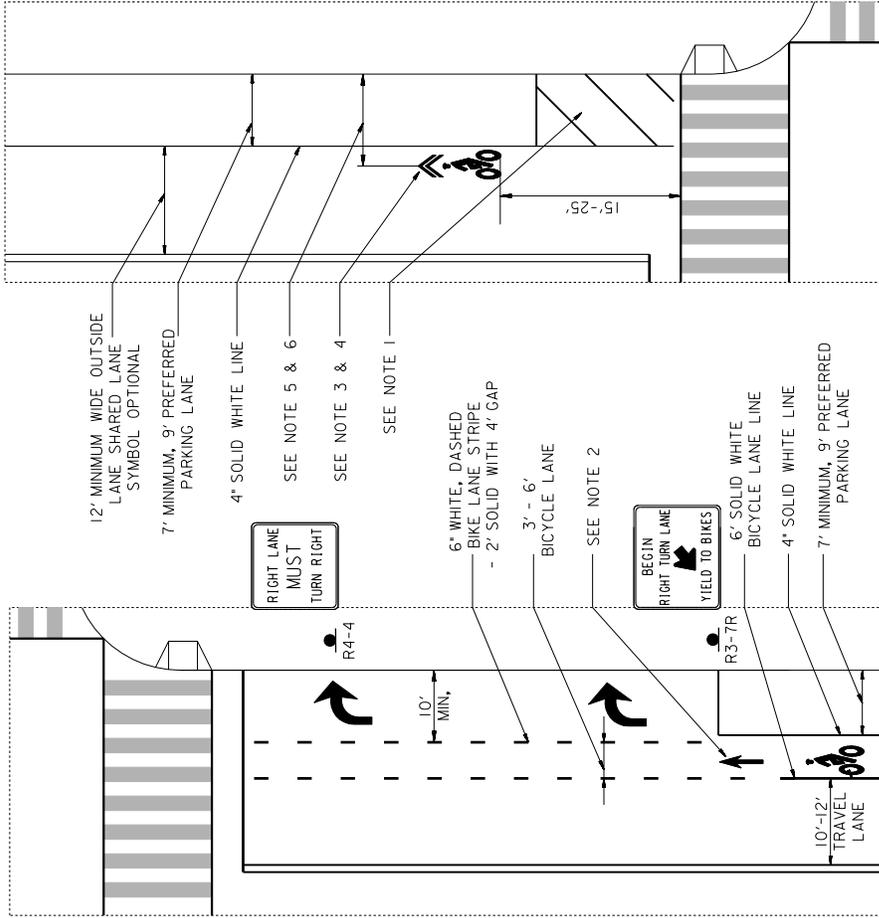
DWG. NO. 616.21





**NOTES:**

1. TRANSVERSE LINE SHALL MATCH NO. PARKING SIGN IF PROVIDED. SEE CHAPTER 46. IN DESIGN AND ENGINEERING MANUAL FOR PARKING DESIGN CRITERIA.
2. SEE DETAIL 616-25. LOCATE SYMBOL ADJACENT TO BEGINNING OF RIGHT TURN LANE.
3. SEE DETAIL 616-25. PLACE NEAR BEGINNING OF PARKING ZONE OUTSIDE OF TURNING VEHICLE WHEEL TRACK.
4. SYMBOLS SHALL BE PLACED AFTER EACH INTERSECTION. SYMBOLS MAY BE PLACED EVERY 250' THEREAFTER.
5. IF USED ON ROADWAYS WITH ON-STREET PARKING, SYMBOLS SHALL BE PLACED SO THAT THEIR CENTERS ARE A MINIMUM OF 11' FROM THE ADJACENT CURBFACE.
6. SYMBOLS PLACED IN A SHARED LANE WITHOUT PARKING SHALL BE PLACED SO THAT THEIR CENTERS ARE A MINIMUM OF 4' FROM THE ADJACENT CURBFACE.



**DETAIL C**

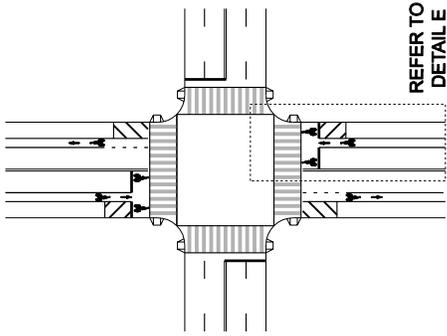
BICYCLE LANE STRIPING ADJACENT TO SEPARATE RIGHT TURN LANE

**DETAIL D**

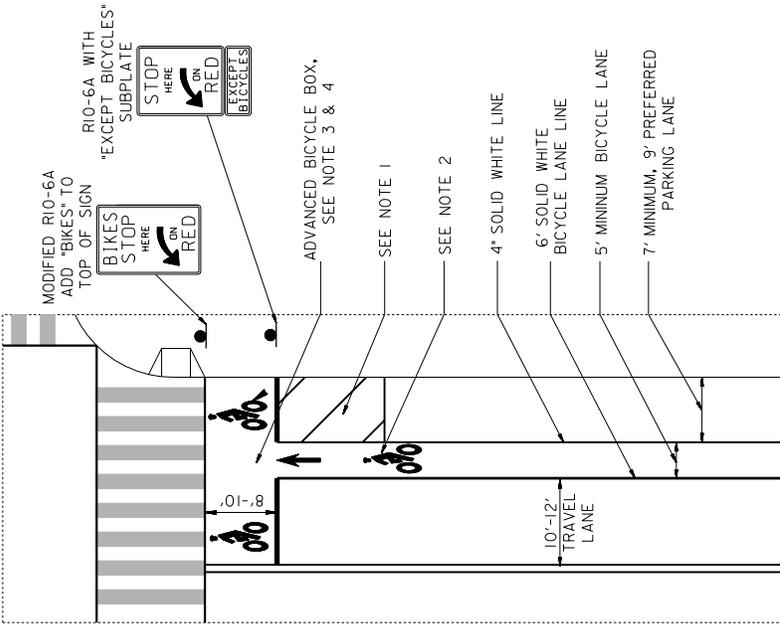
BICYCLE LANE STRIPING SHARED LANE SYMBOL PLACEMENT

**BICYCLE TREATMENT AT INTERSECTION DETAIL C & D**

RECOMMENDED:	<i>[Signature]</i> DEPUTY CHIEF ENGINEER
APPROVED:	<i>[Signature]</i> CHIEF TRANSPORTATION ENGINEER
ISSUED:	REFERENCE
DATE REVISION	APPR. REVISED



REFER TO  
DETAIL E

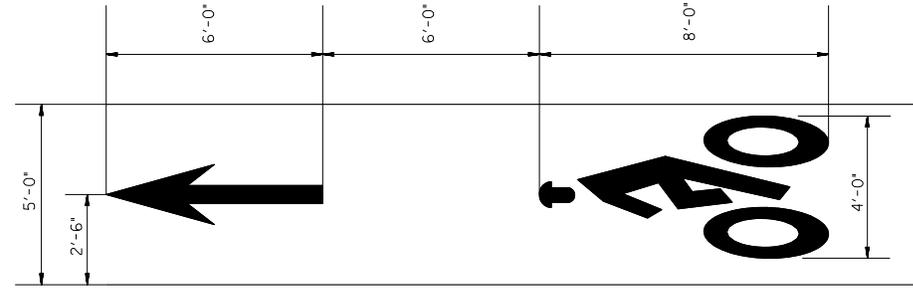


DETAIL E  
EXPERIMENTAL ADVANCED BICYCLE BOX  
AT SIGNALIZED INTERSECTIONS

- NOTES:
1. TRANSVERSE LINE SHALL MATCH NO PARKING SIGN IF PROVIDE. SEE CHAPTER 46 IN DESIGN AND ENGINEERING MANUAL FOR PARKING DESIGN CRITERIA.
  2. SEE DETAIL 616-25. SYMBOLS SHALL BE PLACED AFTER EACH INTERSECTION. SYMBOLS MAY BE PLACED EVERY 250' THEREAFTER.
  3. PLACE MULTIPLE SYMBOLS WITHOUT ARROW TO IDENTIFY BICYCLE BOX. UTILIZE WHERE BICYCLISTS ARE EXPERIENCING CONFLICTS WITH VEHICULAR TURNING MOVEMENTS.
  4. PLACE 8' - 10' IN ADVANCE OF CROSSWALK WITH R10-6A SIGN. BREAK STOP LINE AT BICYCLE LANE.

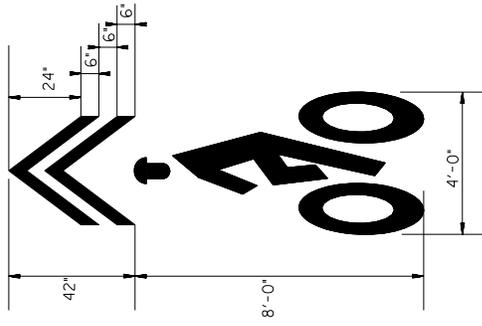
BICYCLE TREATMENT  
AT INTERSECTION  
DETAIL E

RECOMMENDED:	<i>[Signature]</i> DEPUTY CHIEF ENGINEER
APPROVED:	<i>[Signature]</i> CHIEF TRANSPORTATION ENGINEER
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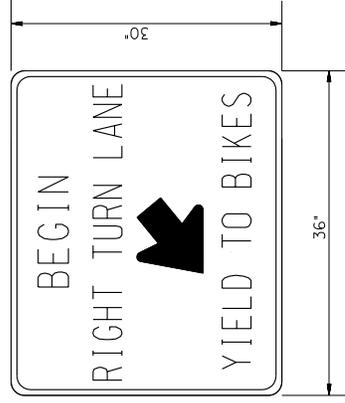
**BIKE LANE SYMBOL**

BIKE LANE SYMBOL SHALL HAVE A BIKER FACING LEFT OR CENTER OF ROAD

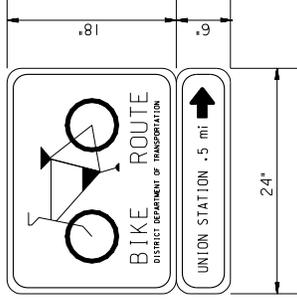


**SHARED LANE SYMBOL**

**R4-4**



**D11-1 & D1-1A**



**R4-4 GUIDANCE:**  
 IF USED, BEGIN RIGHT TURN LANE - YIELD TO BIKES (R4-4) SIGNS SHOULD BE PROVIDED AT THE BEGINNING OF A RIGHT TURN LANE TO INFORM BICYCLISTS AND MOTORISTS OF THE MERGING AREA. THESE SIGNS SHOULD ONLY BE INSTALLED AT LOCATIONS WHERE THERE IS A DEDICATED RIGHT TURN AREA (BUSES MAY BE EXCEPTED). THEY SHOULD ALWAYS BE INSTALLED WHERE THERE IS A DEDICATED BICYCLE FACILITY MARKED AS A BICYCLE LANE OR SHARED ROADWAY.

**R4-4 SIGN DESIGN:**  
 SOURCE: STANDARD MUTCD  
 SIZE: 36" X 30"  
 COLOR: BLACK LETTERS ON WHITE REFLECTIVE BACKGROUND

**D11-1 GUIDANCE:**  
 BICYCLE ROUTE GUIDE (D11-1) SIGNS SHOULD BE PROVIDED AT DECISION POINTS ALONG DESIGNATED BICYCLE ROUTES, INCLUDING SIGNS TO INFORM BICYCLISTS OF BICYCLE ROUTE DIRECTION CHANGES AND CONFIRMATION SIGNS FOR ROUTE DIRECTION, DISTANCE, AND DESTINATION.

**D11-1 SIGN DESIGN:**  
 SOURCE: MODIFIED MUTCD  
 SIZE: 18" X 24"  
 COLOR: WHITE LETTERS ON GREEN REFLECTIVE BACKGROUND

**D1-1A GUIDANCE:**  
 DESTINATION (D1-1 AND D1-1A) SIGNS SHALL BE MOUNTED BELOW BICYCLE ROUTE GUIDE SIGNS TO FURNISH ADDITIONAL INFORMATION SUCH AS DIRECTIONAL CHANGES IN ROUTE, OR INTERMITTENT DISTANCE AND DESTINATION INFORMATION.

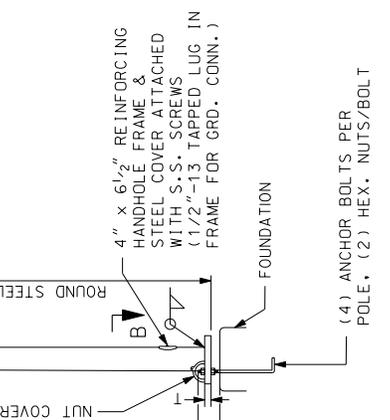
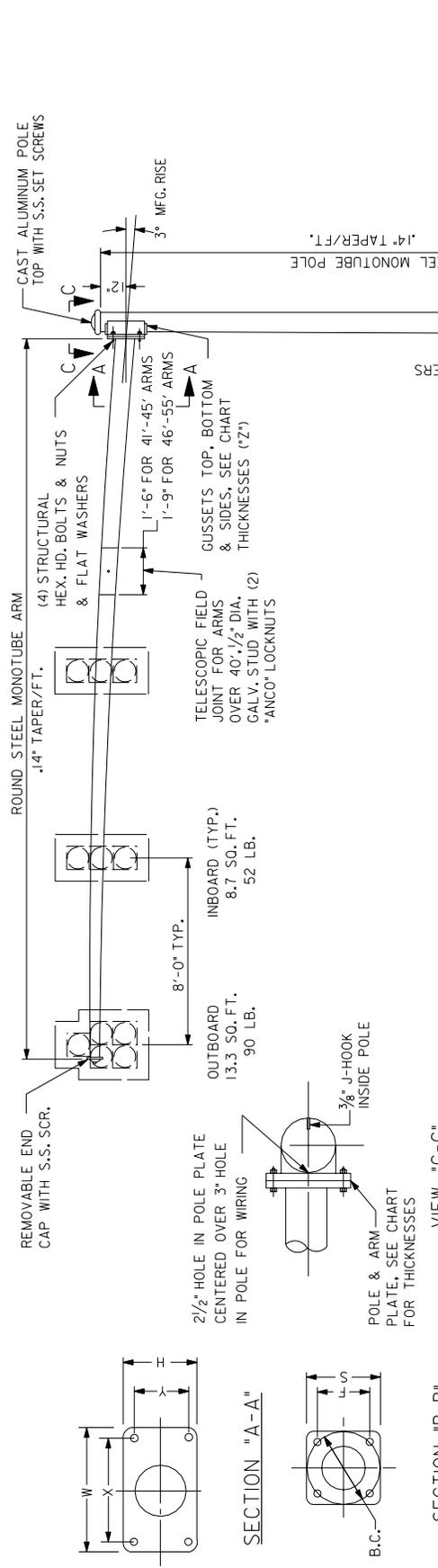
**D1-1A SIGN DESIGN:**  
 SOURCE: STANDARD MUTCD  
 SIZE: 6" X 24"  
 COLOR: WHITE LETTERS ON GREEN REFLECTIVE BACKGROUND

**DETAILS OF BICYCLE SYMBOLS AND SIGNS**

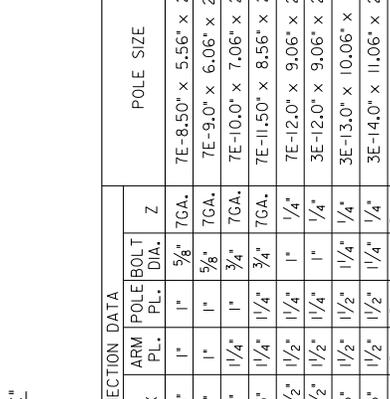
**d.** DISTRICT OF COLUMBIA  
 DEPARTMENT OF TRANSPORTATION

DWG. NO. **616.25**

RECOMMENDED:	<i>[Signature]</i> DEPUTY CHIEF ENGINEER
APPROVED:	<i>[Signature]</i> CHIEF TRANSPORTATION ENGINEER
DATE	ISSUED:
APPR. REVISED	REFERENCE



ARM SPREAD (FT.)	INBOARD SIGNAL MAX. QTY.	ARM SIZE	ARM CONNECTION DATA				POLE CONNECTION DATA				POLE BASE DATA							
			H	W	Y	X	ARM PL.	POLE PL.	BOLT DIA.	Z	B.C.	F	S	P	T	ANCHOR BOLT SIZE		
15	1	11E-6.0"	11-15	9"	11"	7"	9"	1"	5/8"	1"	5/8"	7GA.	11/2"	8 1/8"	12"	5 1/4"	1 1/4"	1 1/4" x 48"
20	1	11E-6.50"	16-20	9"	11"	7"	9"	1"	5/8"	1"	5/8"	7GA.	12 1/2"	8 7/8"	12 3/4"	6 1/4"	1 1/2"	1 1/2" x 60"
25	2	11E-7.50"	21-25	11"	13 1/2"	8"	11"	1 1/4"	1"	3/4"	3/4"	7GA.	13 1/2"	9 9/16"	14 1/4"	6 1/4"	1 1/2"	1 1/2" x 60"
30	2	11E-9.0"	26-30	13"	16"	10"	13"	1 1/4"	1 1/4"	3/4"	3/4"	7GA.	15 1/2"	10 5/16"	16 1/2"	6 1/4"	1 1/2"	1 1/2" x 60"
35	3	7E-8.50"	31-35	13"	16 1/2"	10"	13 1/2"	1 1/2"	1 1/4"	1"	1"	1/4"	16"	11 5/16"	17"	6 1/4"	1 1/2"	1 1/2" x 60"
40	3	7E-9.50"	36-40	13"	16 1/2"	10"	13 1/2"	1 1/2"	1 1/4"	1"	1"	1/4"	16"	11 5/16"	17"	7 1/4"	1 3/4"	3/4" x 90"
45	4	SEE BELOW	41-45	16"	20"	12"	16"	1 1/2"	1 1/4"	1 1/4"	1 1/4"	1/4"	18"	12 3/4"	18 1/2"	7 1/4"	1 3/4"	3/4" x 90"
50	4	SEE BELOW	46-50	16"	20"	12"	16"	1 1/2"	1 1/4"	1 1/4"	1 1/4"	1/4"	20"	14 1/8"	20 1/2"	7 1/4"	1 3/4"	3/4" x 90"
55	4	SEE BELOW	51-55	18"	21 1/2"	14"	17 1/2"	1 3/4"	1 1/4"	1 1/4"	1 1/4"	5/16"	22"	15 5/16"	23"	8 1/4"	2"	2" x 90"



DESIGN CRITERIA

DESIGNED IN ACCORDANCE WITH THE CURRENT REVISION OF AASHTO STANDARD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES AND TRAFFIC SIGNALS "FOR 80 M.P.H. WIND ZONE TO SUPPORT FIXED SIGNALS WITH BACK PLATES. ACTUAL AREAS AS SHOWN.

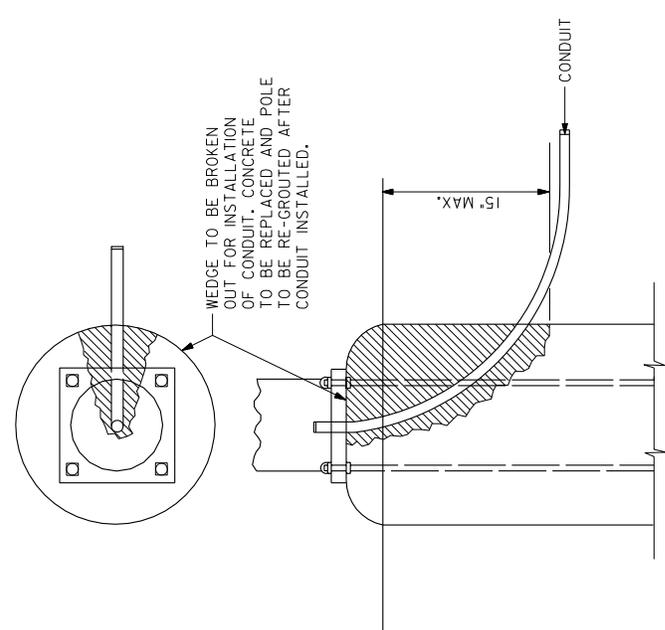
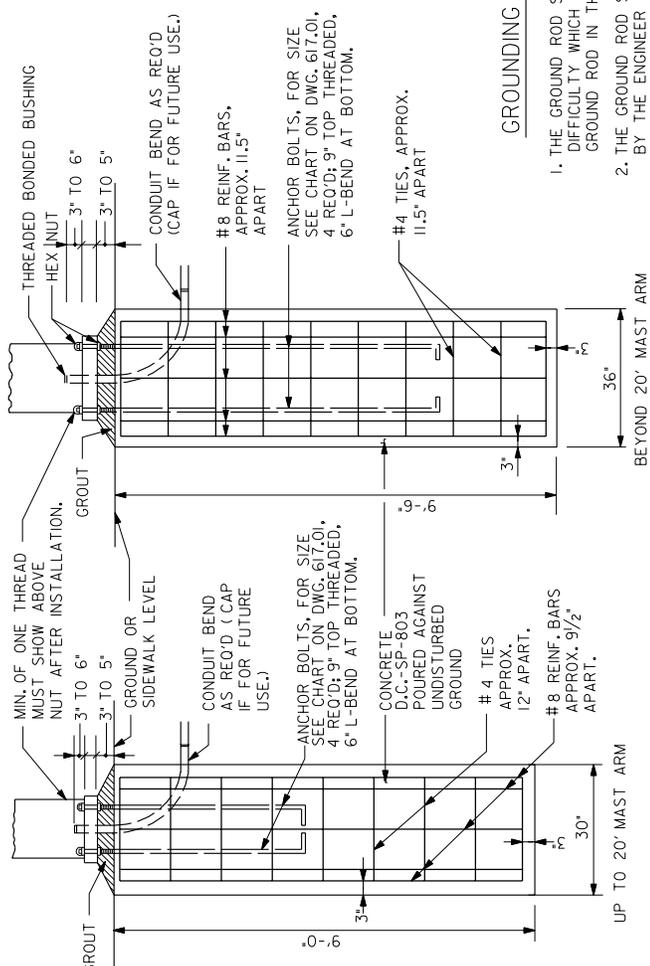
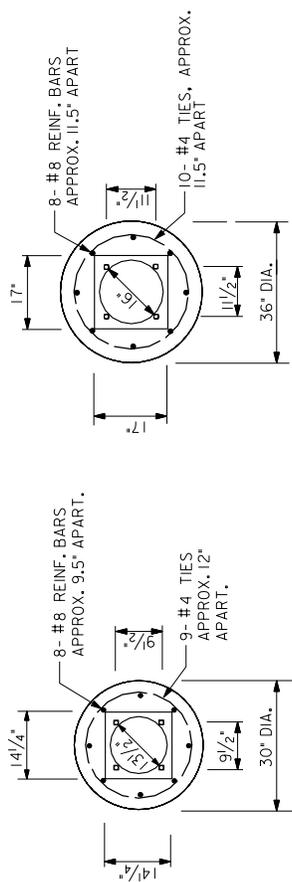
DISTRICT OF COLUMBIA  
DEPARTMENT OF TRANSPORTATION

# TRAFFIC SIGNAL POLE MAST ARM

RECOMMENDED: *[Signature]* DEPUTY CHIEF ENGINEER

APPROVED: *[Signature]* CHIEF TRANSPORTATION ENGINEER

DATE	APPR.	ISSUED:	REFERENCE



METHOD OF CONDUIT ENTRANCE INTO EXISTING POLE FOUNDATION

GROUNDING NOTES FOR MAST ARM POLE FOUNDATIONS

1. THE GROUND ROD SHALL NOT BE INCLUDED WITHIN THE ACTUAL FOUNDATION GIVEN THE DIFFICULTY WHICH WOULD BE ENCOUNTERED IN EMBEDDING AN 8 FOOT LONG SECTION OF GROUND ROD IN THE SOIL.
2. THE GROUND ROD SHALL BE DRIVEN IN THE CLOSEST PULL BOX OR MANHOLE AS DIRECTED BY THE ENGINEER IN THE FIELD.
3. THE GROUND ROD SHALL BE 3/4\"/>

MAST ARM POLE FOUNDATION

NOTE:  
 THE PCC CONCRETE FOR THE FOUNDATIONS SHALL BE RATED AT 3500 PSI AND CONFORM WITH THE PROVISIONS OF D.C. SPECIFICATION 803.01. FOUNDATION DESIGNS SPECIFIED BY POLE MANUFACTURERS SUPERSEDE THESE DESIGNS.

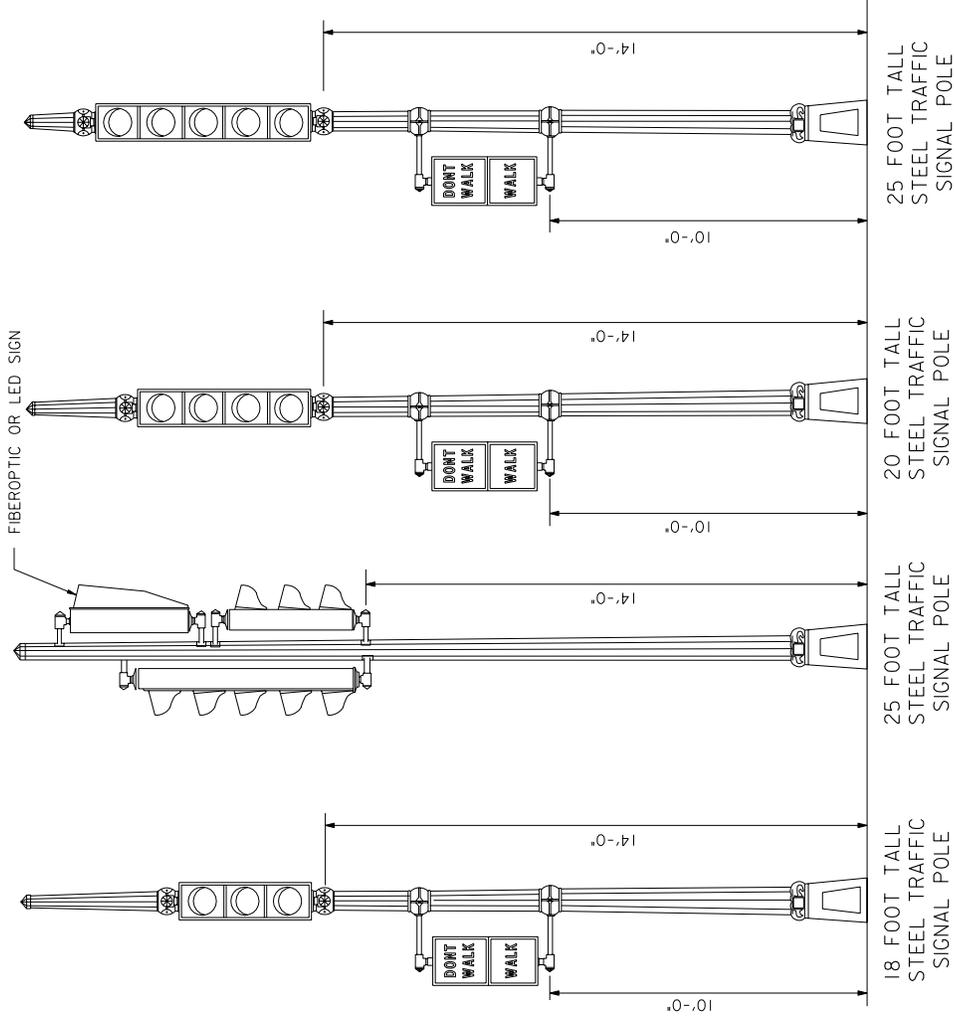
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APPROVED:	CHIEF TRANSPORTATION ENGINEER
DATE REVISIONS	
ISSUED:	REFERENCE

TRAFFIC SIGNAL POLE MAST ARM POLE FOUNDATION AND CABLE ENTRANCE

14-0315-06 6/10/09 4:03 PM 14-0315-06-17-02.DWG

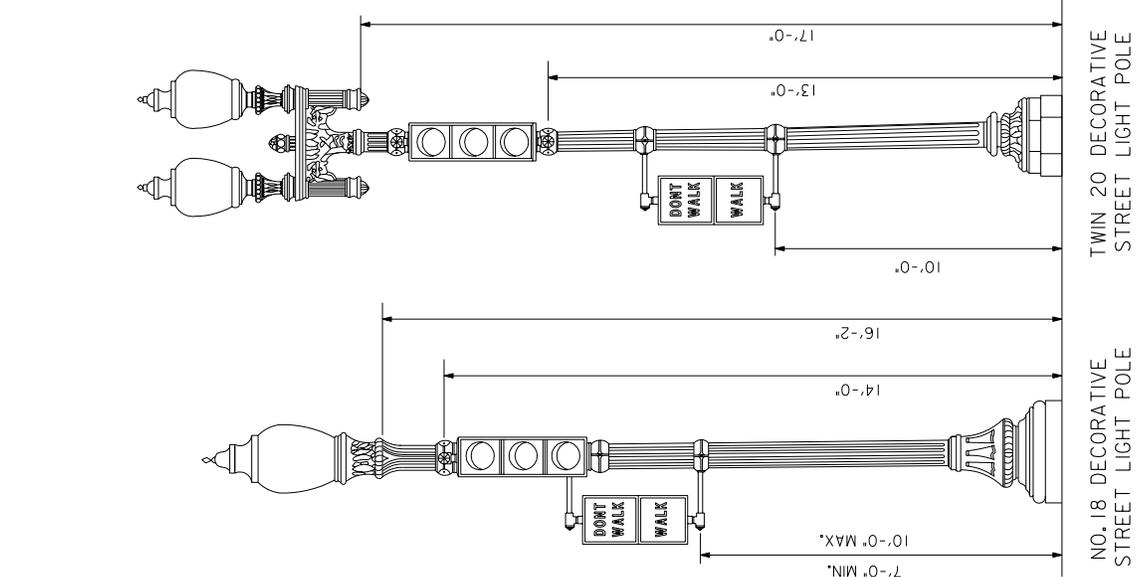






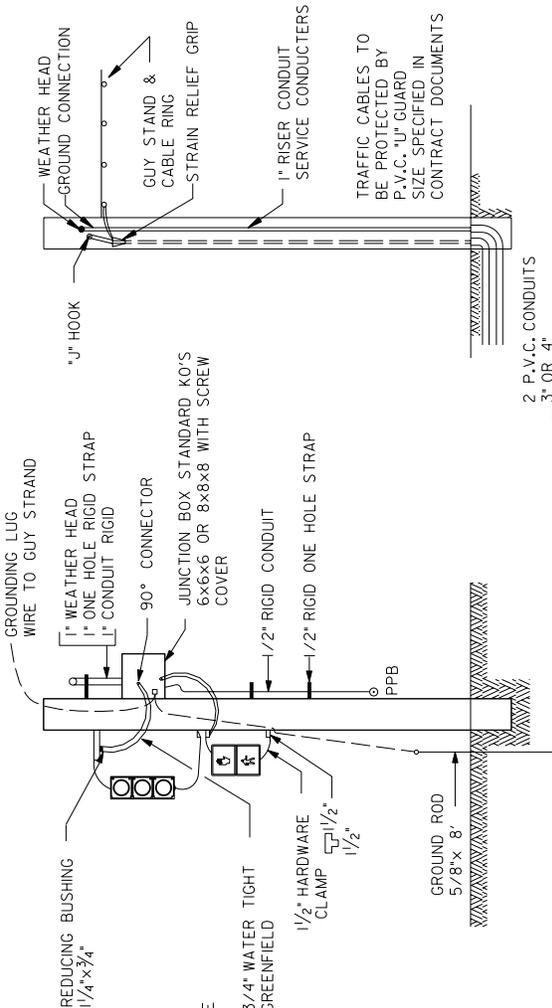
**NOTES:**

1. 25 FOOT TALL STEEL TRAFFIC SIGNAL POLE IS SIMILAR TO A TYPICAL DC PENDANT POST STREET LIGHT POLE.
2. ALL STEEL TRAFFIC SIGNAL POLES SHALL BE MOUNTED ON A TRANSFORMER EXCEPT WHEN A TEMPORARY PORTABLE CONCRETE BASE IS SPECIFIED IN THE PROJECT PLANS. SEE DWG. NO. 617.08 FOR TRANSFORMER BASE DETAILS. SEE DWG. NO. 617.24 FOR TEMPORARY CONCRETE BASE DETAILS.
3. DECORATIVE STREET LIGHT POLES MAY EXIST IN THE FIELD WITH OR WITHOUT LUMINAIRE.
4. NO. 16 DECORATIVE TRAFFIC SIGNAL POLE IS NOT SHOWN ON THIS DETAIL. MOUNTING TRAFFIC SIGNALS ON THIS POLE IS LIMITED TO SPECIAL APPLICATIONS.
5. UNLESS OTHERWISE SPECIFIED, STAINLESS STEEL STRAPPING SHALL BE USED TO AFFIX HARDWARE TO POLES.

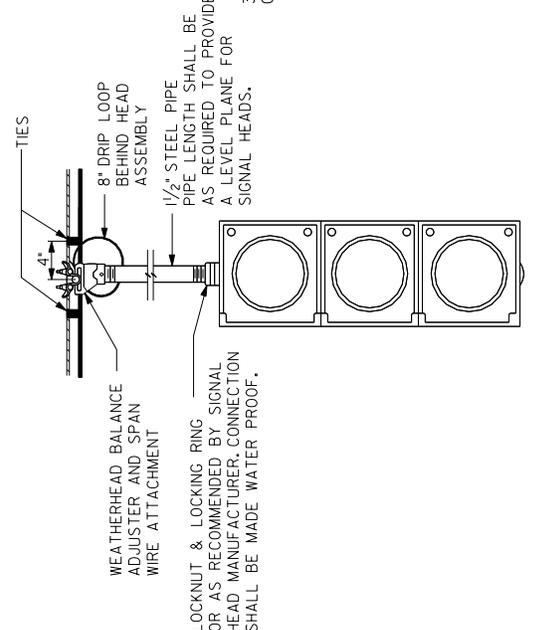


**TRAFFIC SIGNAL HARDWARE  
ARRANGEMENT ON METAL POLES**

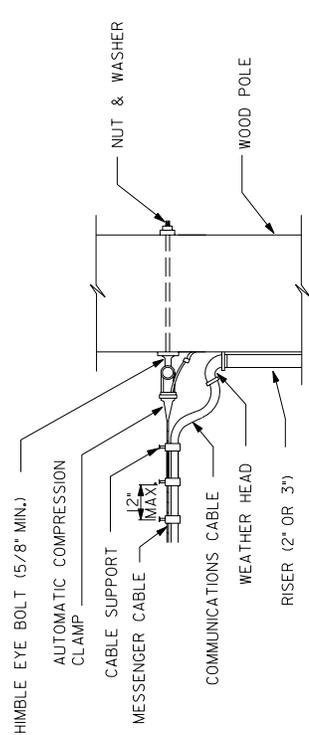
RECOMMENDED:	<i>[Signature]</i> DEPUTY CHIEF ENGINEER
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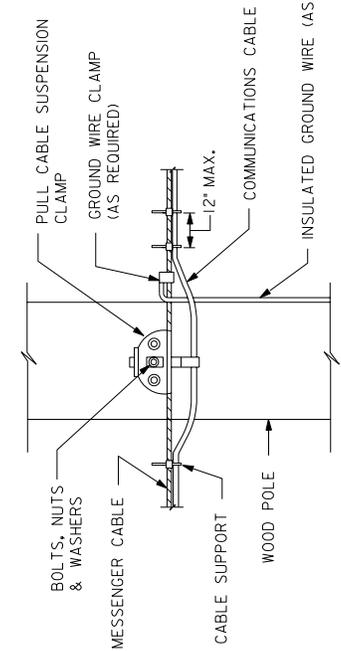
TYPICAL WOOD POLE INSTALLATION



SIGNAL HEAD MOUNTING DETAILS FOR SPAN WIRE



TYPICAL COMMUNICATIONS CABLE INSTALLATION ON WOOD POLE



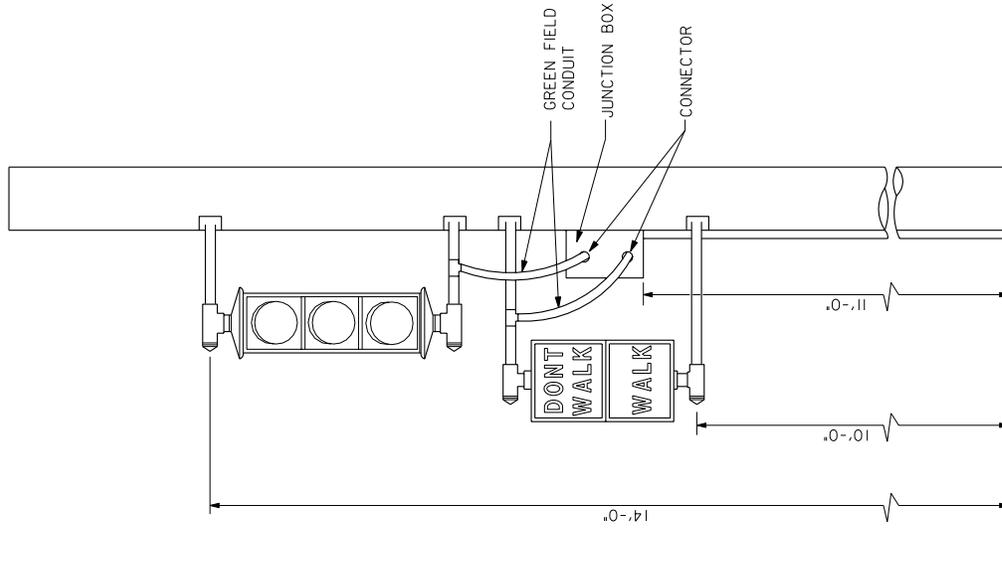
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				<p style="text-align: right;">DWG. NO. <b>617.07</b></p>	
<p>RECOMMENDED:</p> <p style="text-align: right;"><i>[Signature]</i> DEPUTY CHIEF ENGINEER</p>		<p>APPROVED:</p> <p style="text-align: right;"><i>[Signature]</i> CHIEF TRANSPORTATION ENGINEER</p>		<p>REFERENCE</p>	
<p>DATE</p>	<p>APPR.</p>	<p>ISSUED:</p>			
<p>REVISED</p>	<p>REFERENCE</p>				

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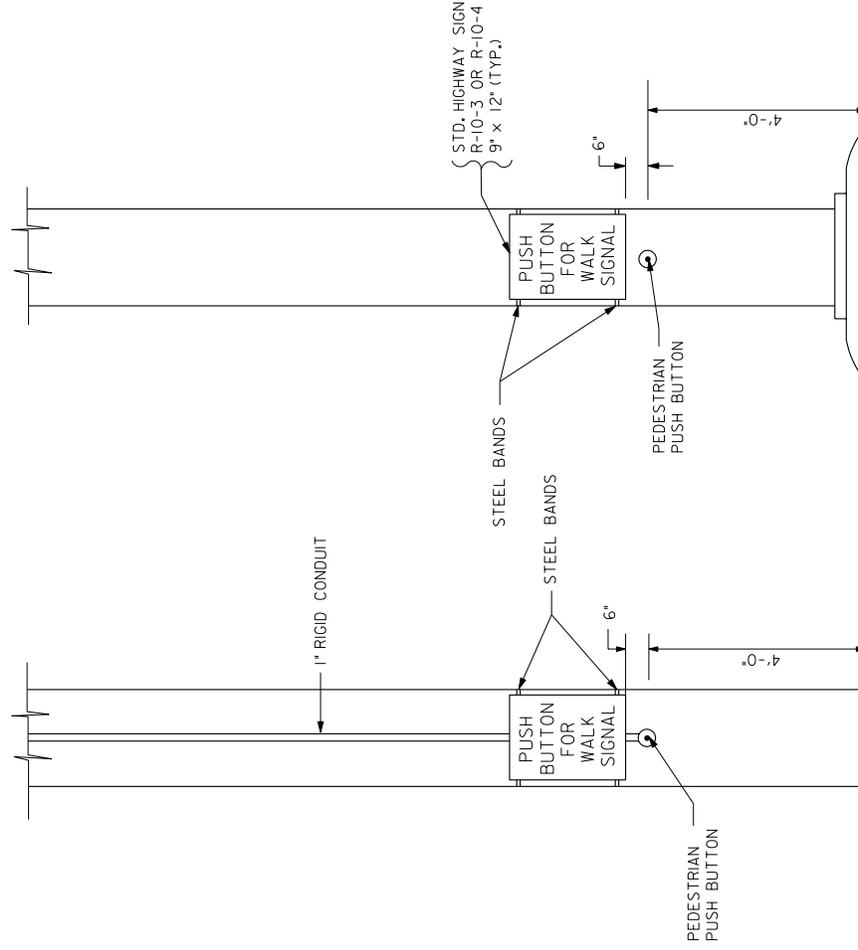


**NOTE:**

1. PUSH BUTTON AND SIGN TO FACE IN SAME DIRECTION AS THE PEDESTRIAN SIGNAL ALL ON SAME POLE.



TYPICAL WOOD POLE SIGNAL INSTALLATION



TYPICAL PEDESTRIAN PUSH BUTTON INSTALLATION ON WOOD POLE

TYPICAL PEDESTRIAN PUSH BUTTON INSTALLATION ON METAL POLE

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DATE	APPR.
REVISED	REVISED
ISSUED:	ISSUED
REFERENCE	REFERENCE

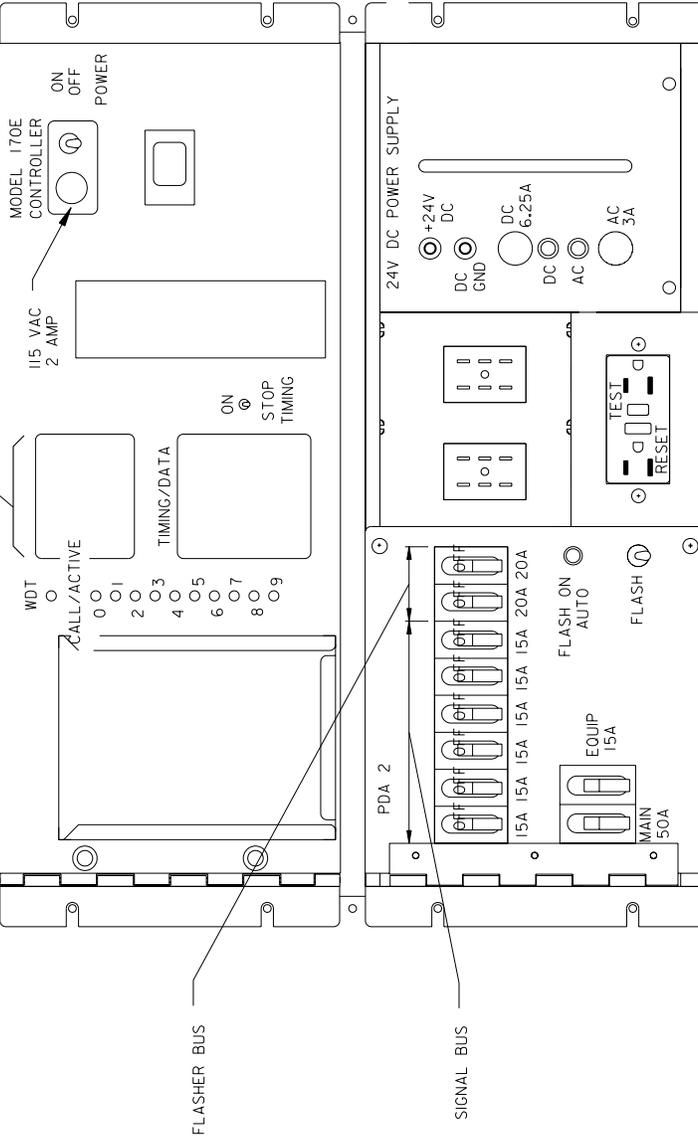
**TRAFFIC SIGNAL HARDWARE  
WOOD POLES AND PEDESTRIAN  
PUSH BUTTON INSTALLATION**

**d.** DISTRICT OF COLUMBIA  
DEPARTMENT OF TRANSPORTATION

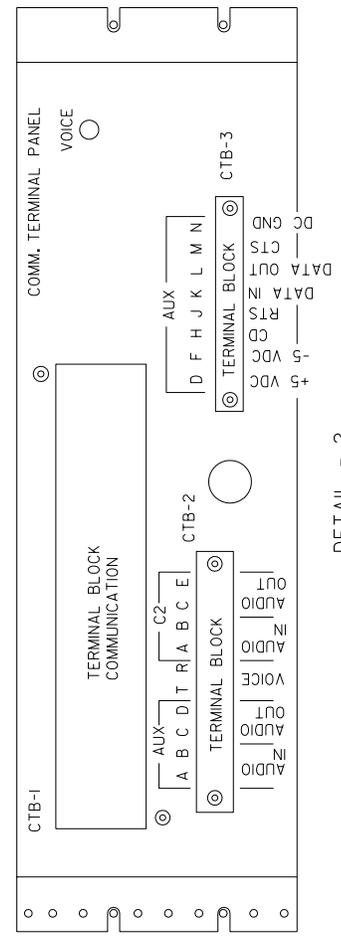
DWG. NO. 617.09







DETAIL - 1  
DWG. 617.11

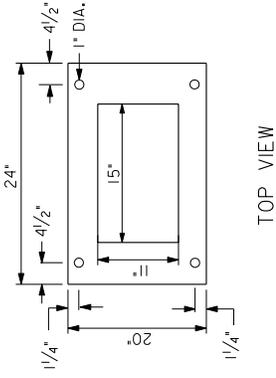


DETAIL - 2  
DWG. 617.11

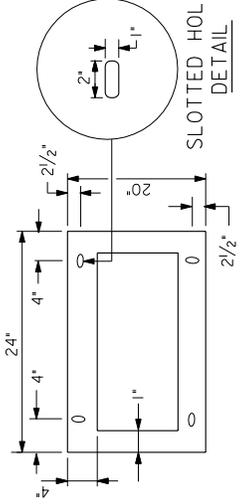
RECOMMENDED:	<i>[Signature]</i> DEPUTY CHIEF ENGINEER
APPROVED:	<i>[Signature]</i> CHIEF TRANSPORTATION ENGINEER
DATE	APPR.
REVISED	REVISED
ISSUED:	ISSUED
REFERENCE	REFERENCE

### 336SS TRAFFIC SIGNAL CABINET DETAILS

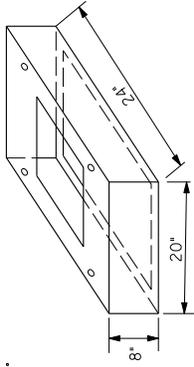
**d.**  
DISTRICT OF COLUMBIA  
DEPARTMENT OF TRANSPORTATION



TOP VIEW

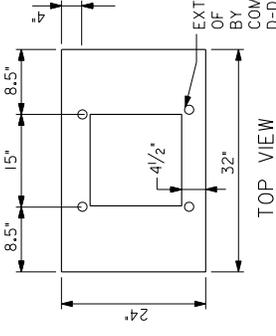


BOTTOM VIEW

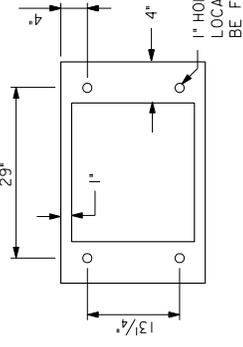


ADAPTOR BASE NO. 1

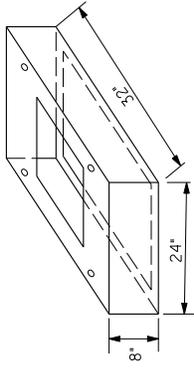
USE WITH STANDARD 336SS FOUNDATIONS



TOP VIEW

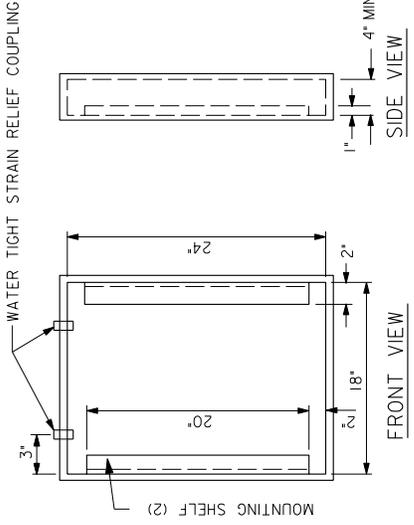


BOTTOM VIEW



ADAPTOR BASE NO. 2

USE WITH FOUNDATIONS FOR 332 AND 336SS CABINETS ON EXISTING TYPE N FOUNDATIONS



AERIAL TERMINATION CABINET

NOTES:

1. CABINET TYPE 3R ELECTRICAL ENCLOSURE.
2. THE SIZE OF THE WATER TIGHT STRAIN RELIEF COUPLINGS WILL BE SPECIFIED BY THE ENGINEER.
3. THE DOOR SHALL BE HINGED, AND LATCHED.
4. REAR OF THE CABINET SHALL HAVE TWO (2) WOOD POLE MOUNTING BRACKETS TO BE USED WITH METAL STRAPPING.
5. THE CABINET SHALL BE MADE OF ALUMINUM SHEET WITH A MIN. OF 0.125" THICKNESS.

NOTES:

1. WHEN ADAPTOR BASE NO. 2 IS USED FOR A TYPE 332 CABINET, NEW HOLES MUST BE DRILLED IN THE TOP PLATE. THE HOLES SHALL BE 29" APART ON THE LONG SIDE AND 13 1/4" APART ON THE SHORT SIDE (29" x 13 1/4").
2. TYPE N FOUNDATIONS WILL NOT BE CONSTRUCTED.

DATE	APPR.	ISSUED:

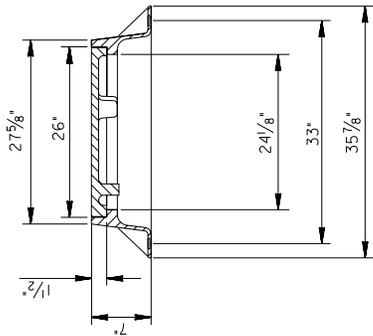
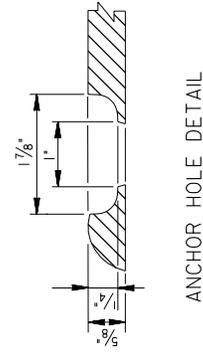
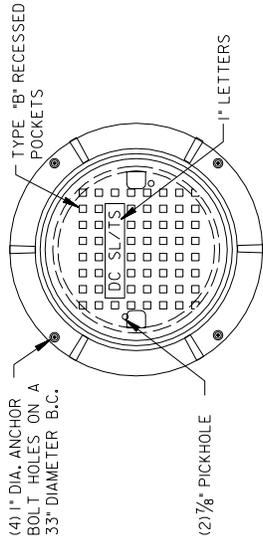
RECOMMENDED:	DEPUTY CHIEF ENGINEER
APPROVED:	CHIEF TRANSPORTATION ENGINEER

TRAFFIC SIGNAL AERIAL TERMINATION CABINETS AND CONTROLLER CABINET ADAPTER BASES



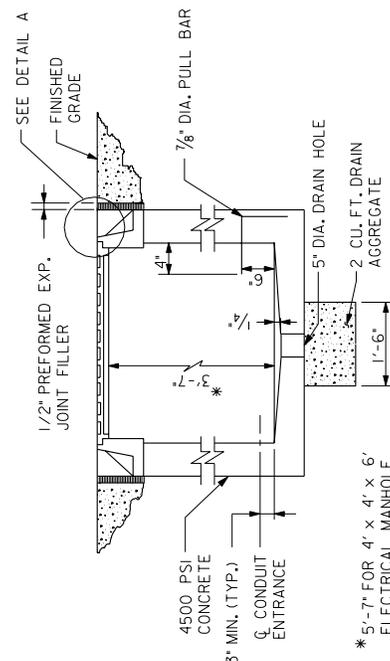






MANHOLE FRAME AND COVER NOTES:

1. WHERE MANHOLE IS IN SIDEWALK, THE DEPTH OF THE FRAME SHALL BE 5 IN., AND THE COVER SHALL CONFORM TO THE SIDEWALK SLOPE. IT SHALL BE LEVEL AT ALL OTHER LOCATIONS.
2. CASTINGS ARE HEAVY DUTY AND MEET AASHTO M20 LOADING REQUIREMENTS.
3. MATERIAL: CAST GRAY IRON ASTM A-48, CLASS 35B, AASHTO M306.
4. FINISH: NOT PAINTED
5. THE MANUFACTURER'S NAME OR LOGO SHALL NOT BE CAST INTO THE RING OR COVER.

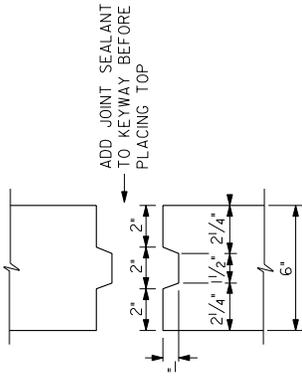


TRAFFIC SIGNAL DISTRICT  
ELECTRICAL MANHOLE DETAILS - 1

**d.** DISTRICT OF COLUMBIA  
DEPARTMENT OF TRANSPORTATION

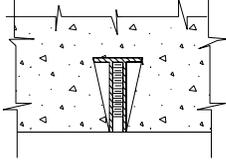
DWG. NO. 617.17

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ISSUED:	REFERENCE
DATE	APPR.
REVISED	



**ELECTRICAL MANHOLE - KEYWAY DETAIL**

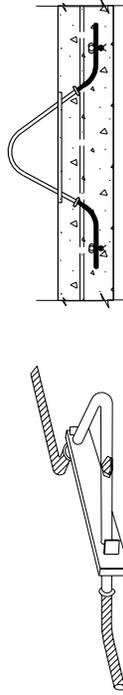
(FOR MANHOLES LARGER THAN 3' x 3' x 3')



- 1/2" I.D. x 2 3/4" DEEP FLARED TO 1/4" AT BASE
- THERMOPLASTIC MATERIAL NON-CORROSIVE, CHEMICAL RESISTANT, NON-CONDUCTIVE
- ULTIMATE STRENGTH BY TEST TO BE AT LEAST 12,600 LBS.

**BOLTING INSERT**

(FOR ATTACHING CABLE RACKS, ETC. TO SIDEWALLS)



**PULLING IRON - TYPE C**

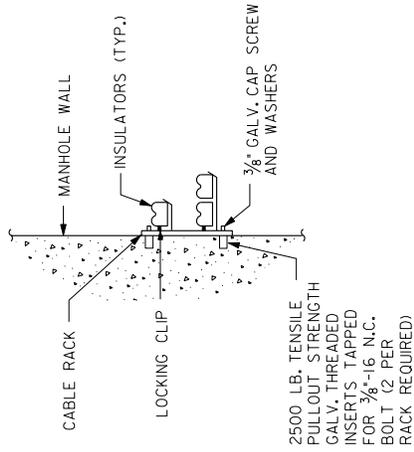
- SEVEN (7) STRAND, 1/2" DIA. CARBON STEEL ROPE, STRESS RELIEVED WITH YIELD STRENGTH OF 270 KIPS.
- 8" HIGH x 22" WIDE AT BASE, FASTENED TO REBAR
- EXPOSED PORTION TOTALLY ENCAPSULATED IN DURABLE, NON-HYDROSCOPIC PLASTIC MATERIAL.

RECOMMENDED:	<i>[Signature]</i> DEPUTY CHIEF ENGINEER
APPROVED:	<i>[Signature]</i> CHIEF TRANSPORTATION ENGINEER
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REVISED	
ISSUED:	REFERENCE

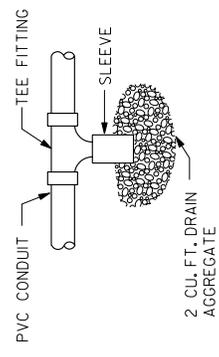
**TRAFFIC SIGNAL DISTRICT  
ELECTRICAL MANHOLE DETAILS - 2**

**d.** DISTRICT OF COLUMBIA  
DEPARTMENT OF TRANSPORTATION

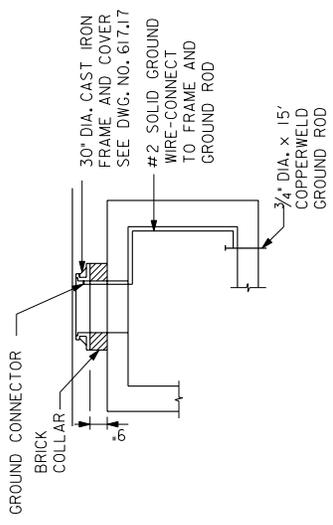
DWG. NO. 617.18



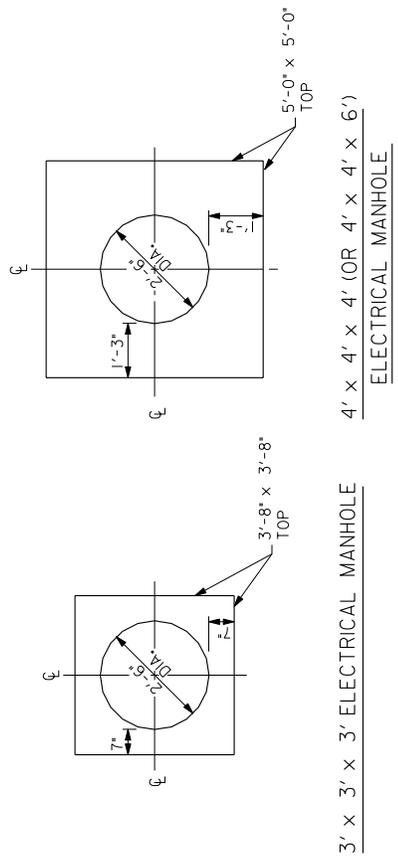
CABLE RACK ASSEMBLY



CONDUIT DRAIN DETAIL



GROUNDING DETAIL

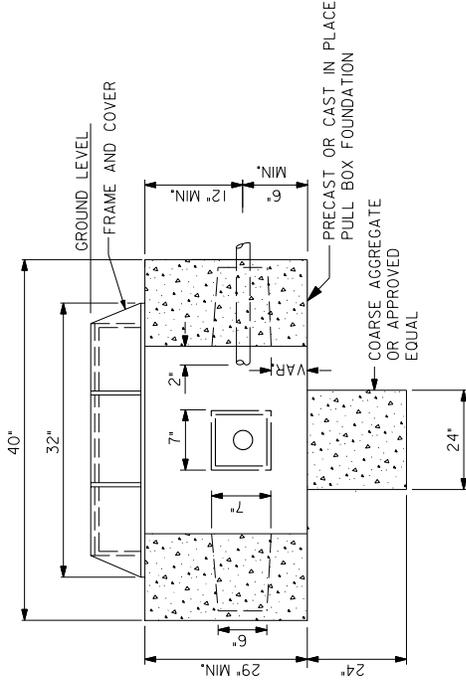
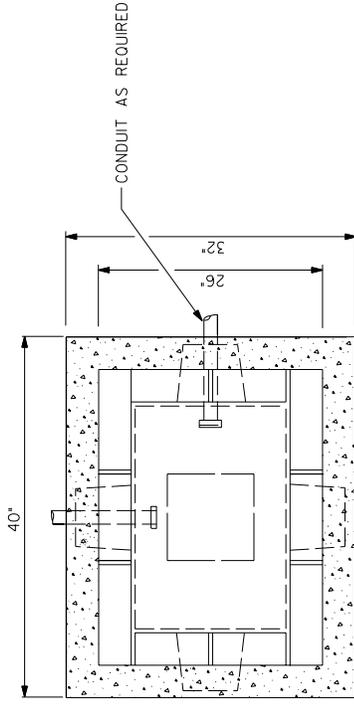


ACCESS HOLE LAYOUT

**TRAFFIC SIGNAL DISTRICT  
ELECTRICAL MANHOLE DETAILS - 3**

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APPROVED:	<i>[Signature]</i> CHIEF TRANSPORTATION ENGINEER
DATE	APPR.
REVISED	REVISED
ISSUED:	ISSUED
REFERENCE	REFERENCE

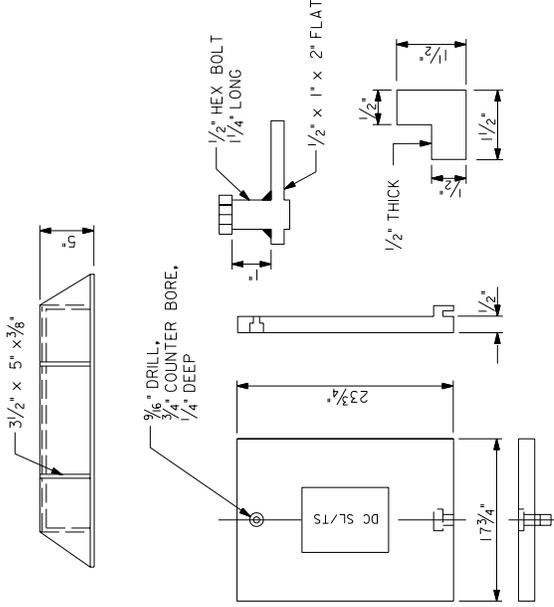
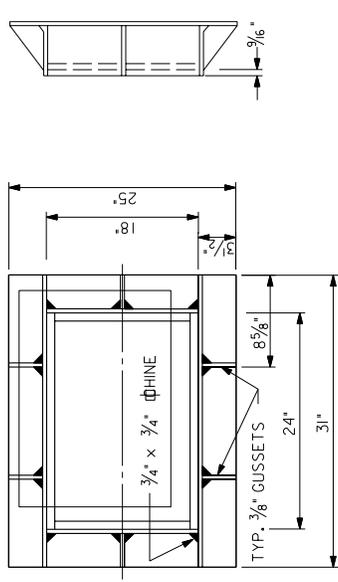
14-10315-006 617.009 A 12/21 PM  
14-10315-006 617.009 A 12/21 PM



PULL BOX INSTALLATION

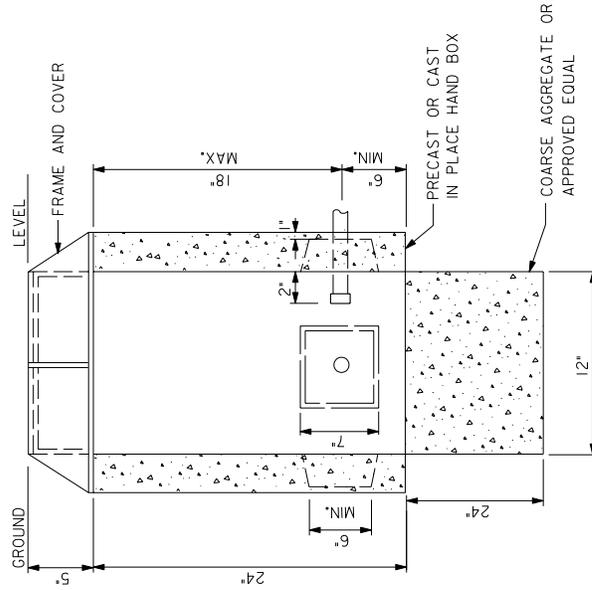
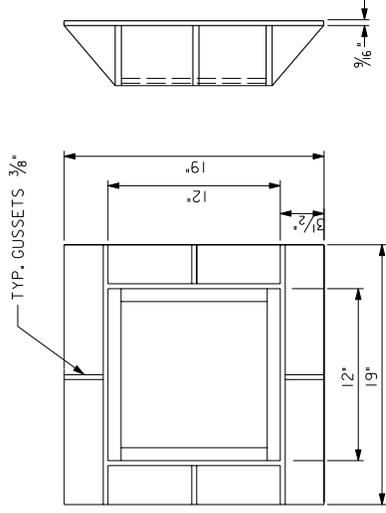
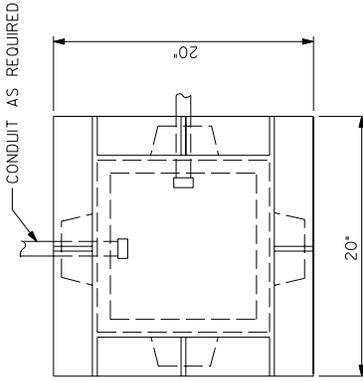
NOTES:

- PULL BOX AND HANDBOX CONCRETE TO SATISFY D.C. SPECIFICATION 803.01 (3500 PSI).
- SEE DWG. NO. 617.14 : GROUND ROD MAY BE REQUIRED IF MAST ARM POLE FOUNDATION IS CONNECTED TO THE PULL BOX.

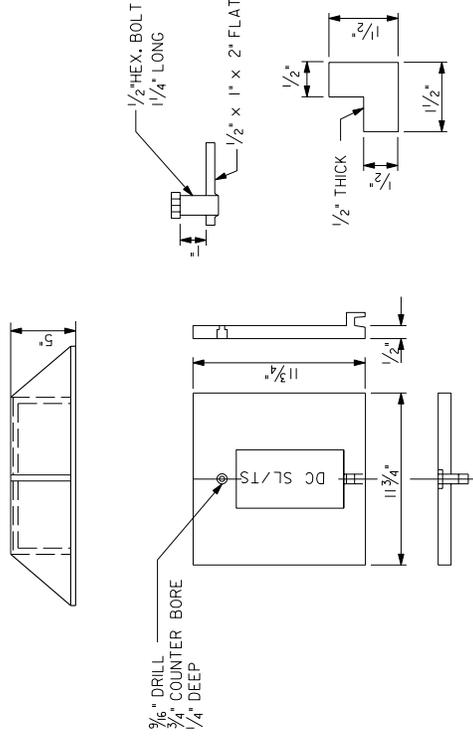


FRAME AND COVER

RECOMMENDED:	<i>[Signature]</i> DEPUTY CHIEF ENGINEER
APPROVED:	<i>[Signature]</i> CHIEF TRANSPORTATION ENGINEER
DATE	APPR.
REVISED	
ISSUED:	
REFERENCE	



**HAND BOX INSTALLATION**



**HAND BOX FRAME AND COVER**

**NOTES:**

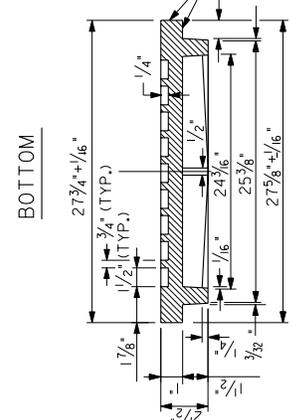
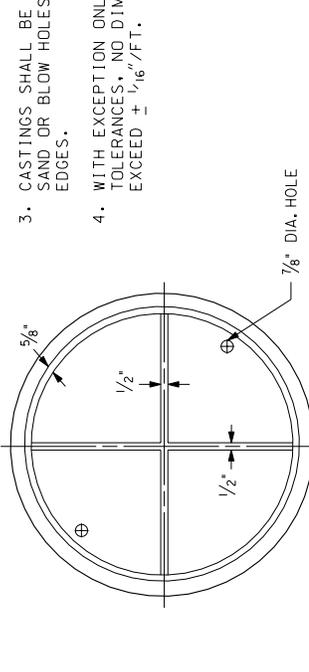
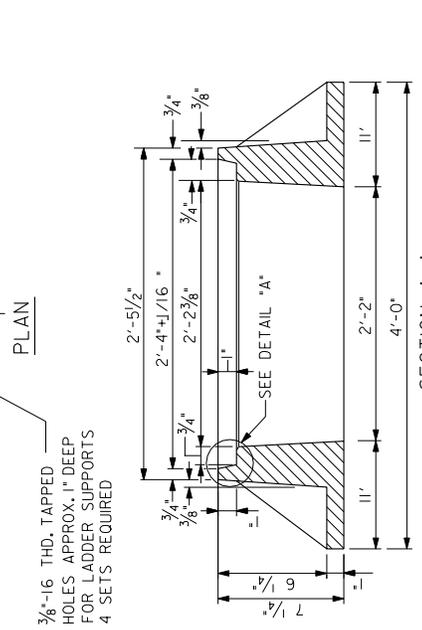
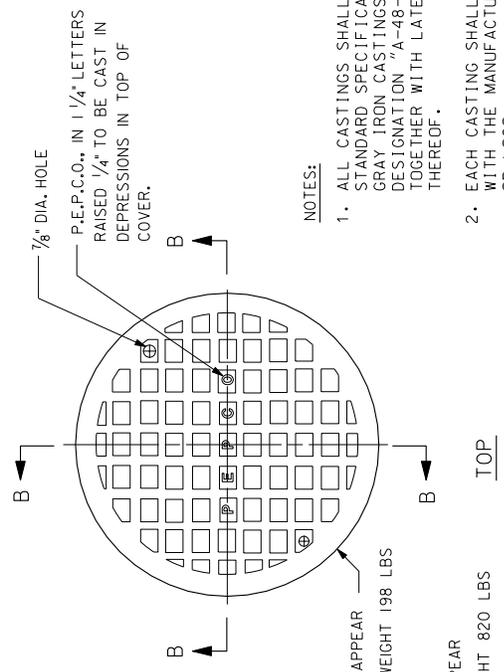
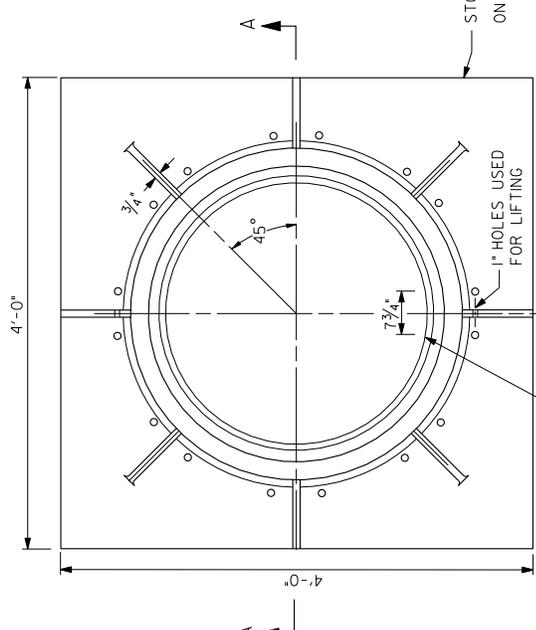
1. FOR PULL BOX AND HANDBOX CONCRETE, SEE DWG. NO. 617.20.

RECOMMENDED:	<i>[Signature]</i> DEPUTY CHIEF ENGINEER
APPROVED:	<i>[Signature]</i> CHIEF TRANSPORTATION ENGINEER
DATE ISSUED:	
APPR. REVISED:	
REFERENCE:	

**TRAFFIC SIGNAL DISTRICT  
HAND BOX DETAILS**

**d.** DISTRICT OF COLUMBIA  
DEPARTMENT OF TRANSPORTATION

DWG. NO. 617.21



- NOTES:**
- ALL CASTINGS SHALL CONFORM TO STANDARD SPECIFICATIONS FOR GRAY IRON CASTINGS, A.S.T.M. DESIGNATION A-48-83 CLASS 25 TOGETHER WITH LATEST REVISIONS THEREOF.
  - EACH CASTING SHALL BE IDENTIFIED WITH THE MANUFACTURERS NAME OR LOGO.
  - CASTINGS SHALL BE FREE FROM SAND OR BLOW HOLES AND SHARP EDGES.
  - WITH EXCEPTION ONLY TO NOTED TOLERANCES, NO DIMENSION SHALL EXCEED  $\pm 1/16$ "/FT.

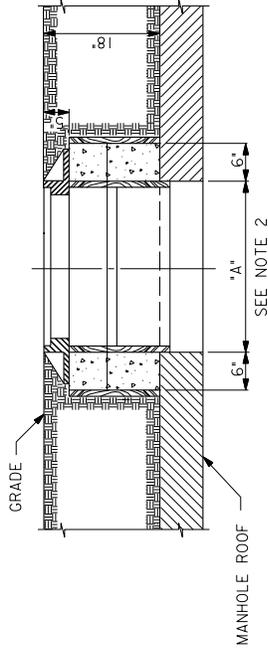
STOCK NO 2106-37 SHALL APPEAR ON THE CASTING, APPROX. WEIGHT 198 LBS

STOCK NO 2106-24 SHALL APPEAR ON THE CASTING, APPROX. WEIGHT 820 LBS

# TRAFFIC SIGNAL 28" MANHOLE FRAME AND COVER - PEPCO

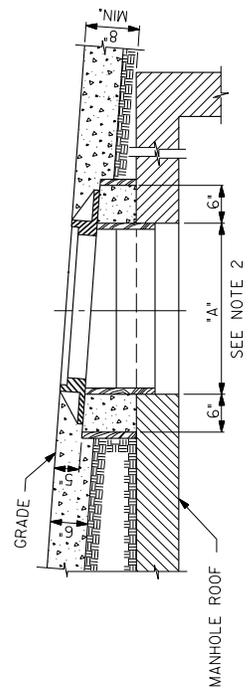
RECOMMENDED:	DEPUTY CHIEF ENGINEER
APPROVED:	CHIEF TRANSPORTATION ENGINEER
DATE REVISION	ISSUED:
APPR. REVISED	REFERENCE

1414035.DWG - Standard.dwg - 04/11/2009 AT 12:21 PM



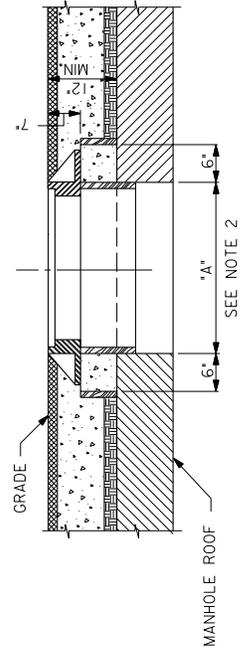
SECTION A-A

SIDEWALK FRAME IN LAWNS



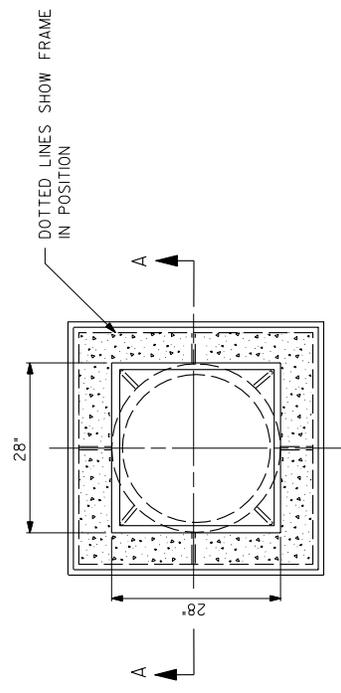
SECTION A-A

SIDEWALK FRAME-INCLINED GRADE



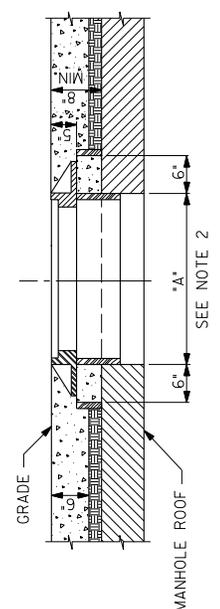
SECTION A-A

ROADWAY FRAME-LEVEL GRADE



PLAN SHOWING FRAME REMOVED

PLAN



SECTION A-A

SIDEWALK FRAME-LEVEL GRADE

NOTES:

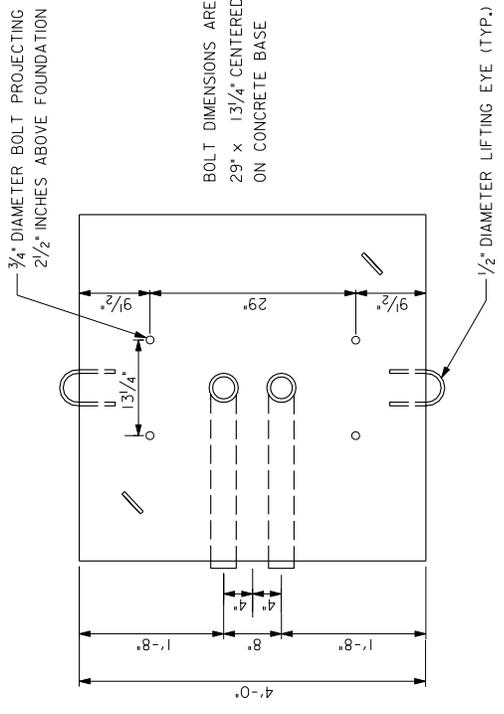
1. FOR ROADWAY FRAME IN INCLINED GRADES USE DIMENSIONS SHOWN FOR ROADWAY FRAME, LEVEL GRADES, AND CONSTRUCTION AS SHOWN FOR SIDEWALK FRAME, INCLINED GRADE.
2. DIMENSION "A" 28" FOR SINGLE COVER & FRAME 40" FOR DOUBLE COVER & FRAME
3. REMOVE FORMS AFTER SETTING FRAME AND GRATINGS.

RECOMMENDED:	<i>[Signature]</i> DEPUTY CHIEF ENGINEER
APPROVED:	<i>[Signature]</i> CHIEF TRANSPORTATION ENGINEER
DATE	APPR.
REVISED	
ISSUED:	
REFERENCE	

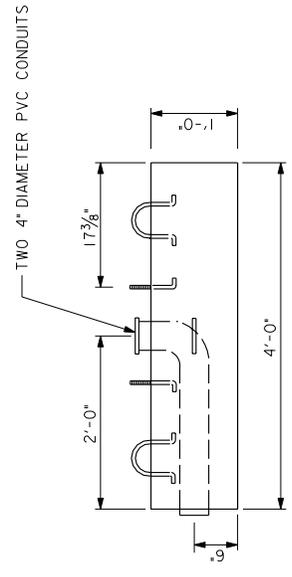
TRAFFIC SIGNAL DISTRICT  
MANHOLE FRAME AND COVER  
INSTALLATION - PEPCO

**d.** DISTRICT OF COLUMBIA  
DEPARTMENT OF TRANSPORTATION

DWG. NO. 617.23



TOP VIEW

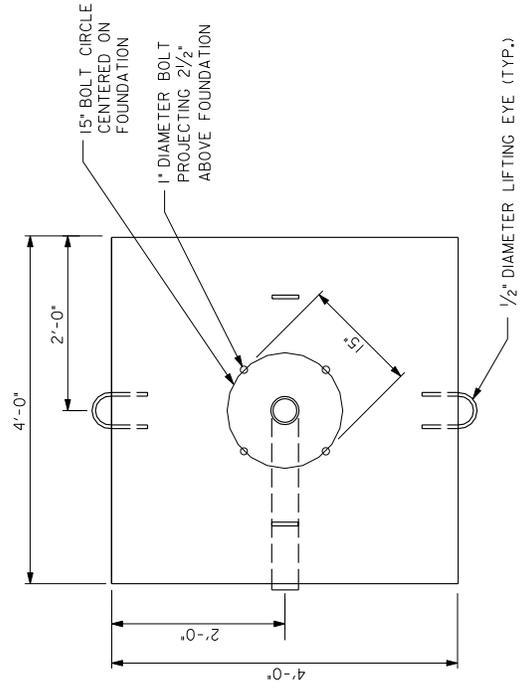


FRONT VIEW

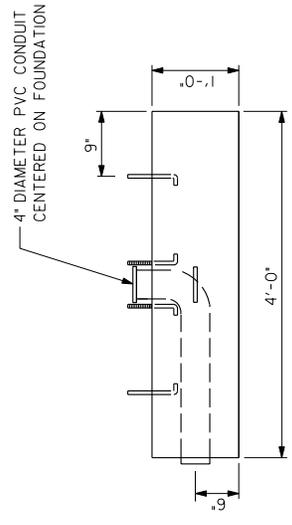
TEMPORARY PORTABLE CONCRETE  
BASE FOR TRAFFIC SIGNAL CONTROLLER

NOTES:

1. THE PCC CONCRETE COMPRISING BOTH TEMPORARY PORTABLE CONCRETE BASES SHALL BE CLASS F AND CONFORM WITH THE PROVISIONS OF DDOT STD. SPECIFICATION 817.
2. AN ADAPTOR BASE SHALL BE USED WHEN IT IS NECESSARY TO PLACE A CONTROLLER OR A COMMUNICATIONS TERMINATION CABINET ON A TEMPORARY PORTABLE CONCRETE BASE.



TOP VIEW

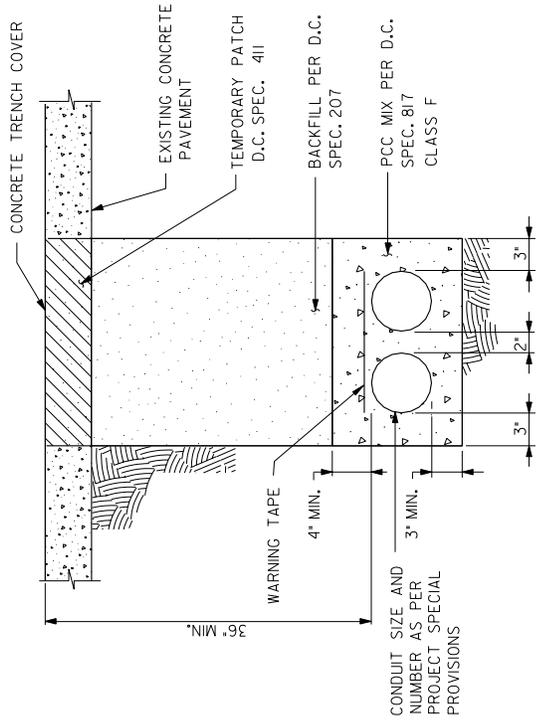


FRONT VIEW

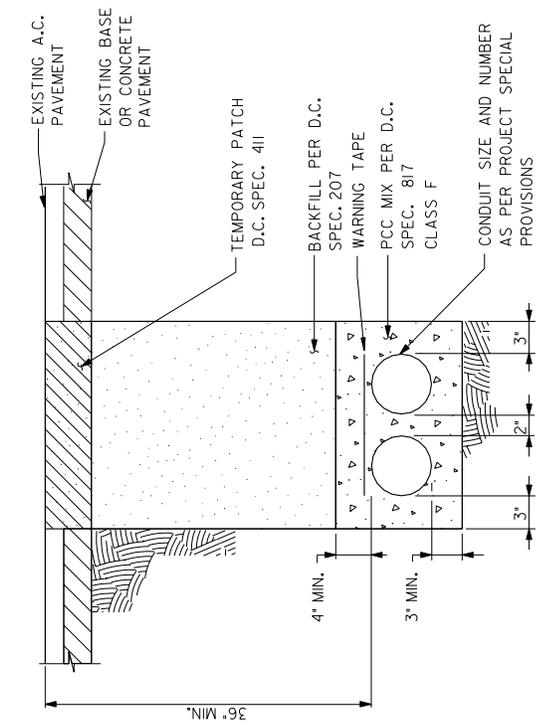
TEMPORARY PORTABLE CONCRETE  
BASE FOR STEEL TRAFFIC SIGNAL POLE

RECOMMENDED:	<i>[Signature]</i> DEPUTY CHIEF ENGINEER
APPROVED:	<i>[Signature]</i> CHIEF TRANSPORTATION ENGINEER
DATE	APPR.
REVISED	REVISED
ISSUED:	ISSUED
REFERENCE	REFERENCE

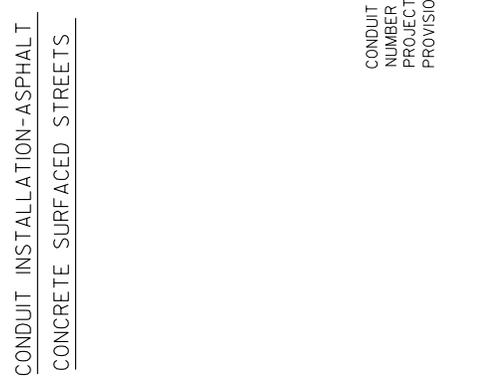
TRAFFIC SIGNAL  
PORTABLE CONCRETE BASE



CONDUIT INSTALLATION-ASPHALT  
CONCRETE SURFACED STREETS



CONDUIT INSTALLATION-PCC  
SURFACED STREETS

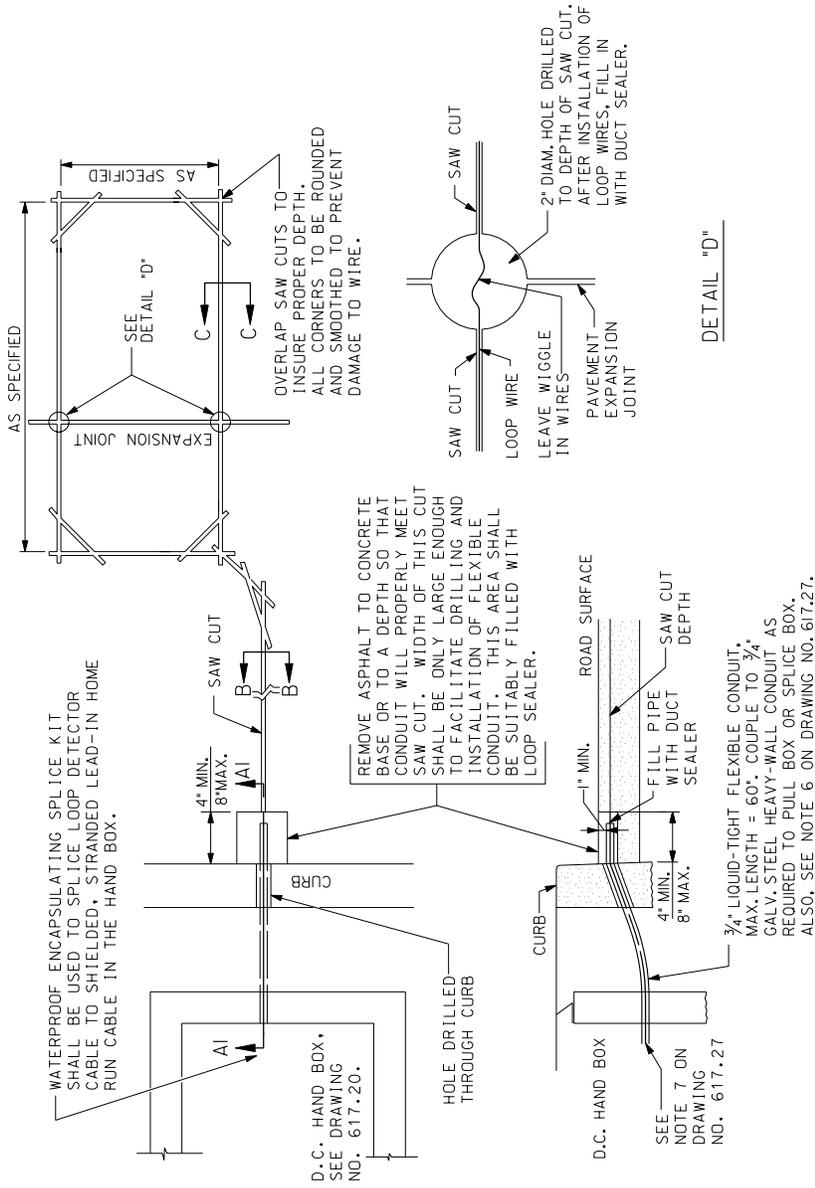


CONDUIT INSTALLATION  
UNDER SIDEWALK

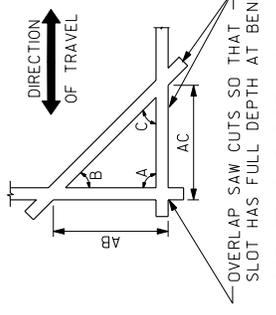
NOTES:

1. ALL CONDUIT SHALL BE COMPOSED OF POLYVINYLCHLORIDE (PVC) MATERIAL, UNLESS OTHERWISE SPECIFIED IN PROJECT PLANS.
2. ALL CONDUIT SHALL CONFORM WITH THE PROVISIONS IN DDOT STD. SPECIFICATION 617.14 AND 617.15.
3. THIS DRAWING SUPPLEMENTS SPECIFIC PROJECT PLANS AND SPECIAL PROVISIONS, AS APPLICABLE.
4. ALL CONDUIT SHALL BE PVC TYPE 40 UNLESS OTHERWISE SPECIFIED.
5. TRENCH SURFACE REPAIR DETAIL, SEE STD. DWG. 207.01.

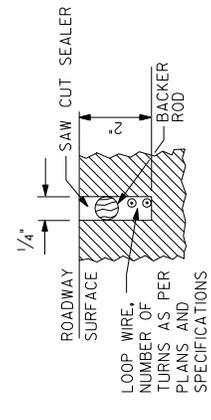
RECOMMENDED:	<i>[Signature]</i> DEPUTY CHIEF ENGINEER
APPROVED:	<i>[Signature]</i> CHIEF TRANSPORTATION ENGINEER
ISSUED:	REFERENCE
DATE REVISION:	



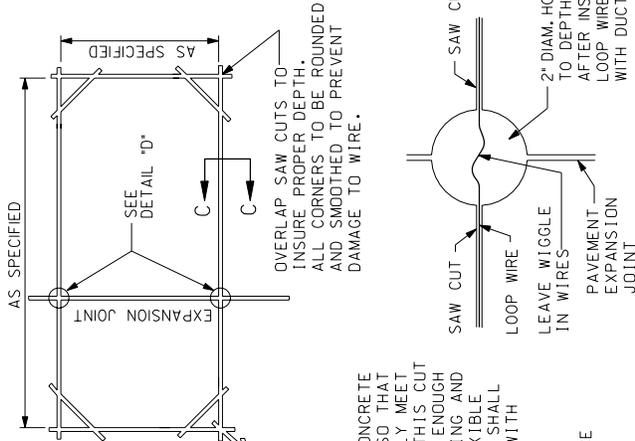
SECTION AI-AI



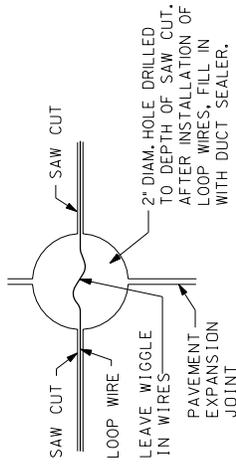
SECTION B-B



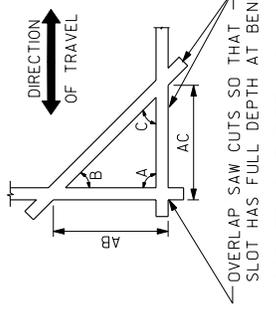
SECTION C-C



DETAIL "D"



SECTION AI-AI



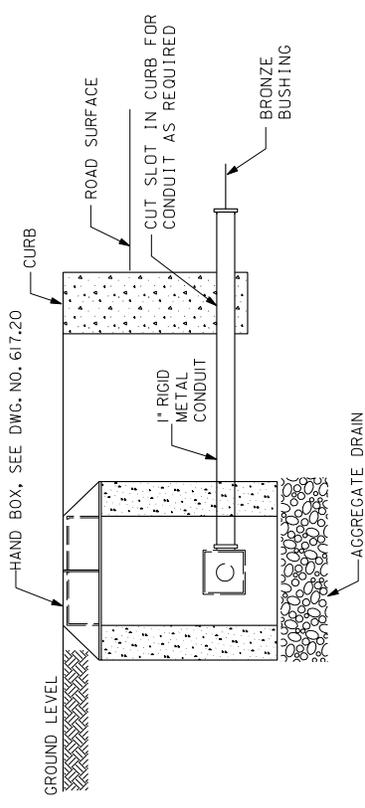
- NOTES:
- FOR ANY ANGLE A, ANGLE B SHALL ALWAYS BE EQUAL TO ANGLE C. THIS IS DONE BY ENSURING THAT DISTANCE AB ALWAYS EQUALS DISTANCE AC.
  - AB & AC ARE TYPICALLY 1'-6".
  - (X-Y)/2=Z - APPLIES TO ALL LANES.

TRAFFIC SIGNAL LOOP DETECTOR  
INSTALLATION DETAILS - 1

**d.** DISTRICT OF COLUMBIA  
DEPARTMENT OF TRANSPORTATION

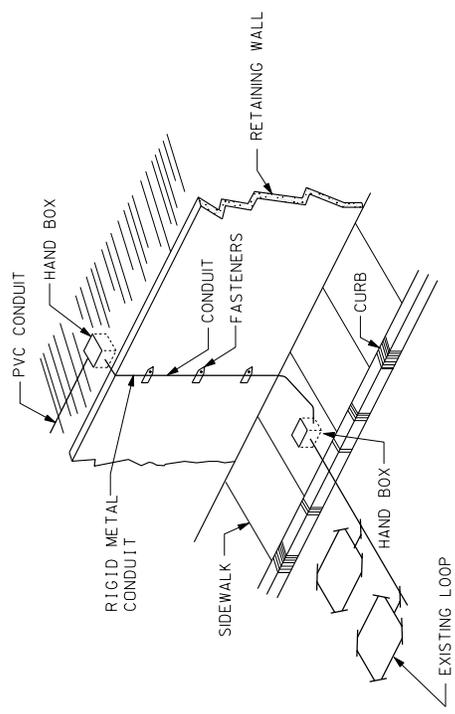
DWG. NO. 617.26

RECOMMENDED:	DEPUTY CHIEF ENGINEER
APPROVED:	CHIEF TRANSPORTATION ENGINEER
ISSUED:	REFERENCE
DATE REVISION	APPR. REVISED



SECTION A2-A2  
SEE DWG. 617.26

NOTE:  
CONSULT PROJECT PLANS AND PROJECT SPECIAL PROVISIONS. FOR ADDITIONAL DETAILS SEE DWG. NO. 617.20



DETAIL - CONDUIT ON RETAINING WALL

NOTES:

1. FLEXIBLE CONDUIT SHALL BE INSTALLED SO THAT IT RECEIVES THE LOOP WIRES ON A STRAIGHT ANGLE (LOOP WIRES SHALL BE INSTALLED IN BOTTOM OF SAW CUT.)
2. THE HOLE TO RECEIVE THE FLEXIBLE CONDUIT SHALL BE SUFFICIENTLY BELOW THE ROADWAY SURFACE SO THAT THERE IS A MIN. OF ONE-INCH COVER ON TOP OF THE FLEXIBLE CONDUIT WHEN INSTALLED.
3. IF THERE IS INSUFFICIENT ASPHALT COVER TO ACCOMPLISH THE ABOVE, A PORTION OF THE CONCRETE BASE SHALL BE REMOVED BEFORE DRILLING.
4. WHEN THERE IS A CONCRETE ROAD AT THE CURB, A SUFFICIENT AMOUNT OF THE ROADWAY SHALL BE REMOVED BEFORE DRILLING THROUGH CURB.
5. IN NO CASE SHALL A LARGE PORTION OF THE ROADWAY SURFACE BE REMOVED. THIS REMOVED PORTION OF ROADWAY SHALL BE FILLED WITH LOOP SEALER.
6. WHENEVER GRANITE CURB IS ENCOUNTERED, NO DRILLING WILL BE PERMITTED; INSTEAD USE CURB JOINTS, AS DIRECTED BY ENGINEER.
7. THE START OF THE WIRE LOOP SHALL BE MARKED WITH COLORED TAPE IN THE HAND BOX AND SHALL BE CONNECTED TO THE BLACK WIRE OF THE SHIELDED HOME RUN CABLE TO THE CONTROLLER.
8. LOOP DETECTOR CABLE SLOT SEALANT AND AMPLIFIERS (IF REQUIRED) SHALL CONFORM WITH DDOT STD. SPECIFICATION, SECTION 819.
9. LOOP DETECTOR CONTINUITY SHALL BE ASCERTAINED AFTER INSTALLATION. LOOPS FAILING THE MEGGAR TEST WILL BE RECUT UNTIL THEY PASS THE TEST.
10. WHEN APPLICABLE, LOOP DETECTORS SHALL BE CUT IN THE PCC BASE BEFORE ASPHALT IS LAID. NOTE 9 SHALL BE SATISFIED BEFORE AND AFTER THE SURFACE COURSE IS APPLIED. LOOPS FAILING MEGGAR TEST SHALL BE RECUT PREFERABLY IN THE PCC BASE OR IN THE SURFACE COURSE ONLY WHEN NECESSARY.

TRAFFIC SIGNAL LOOP DETECTOR  
INSTALLATION DETAILS - 2

**d.** DISTRICT OF COLUMBIA  
DEPARTMENT OF TRANSPORTATION

DWG. NO. 617.27

RECOMMENDED:	<i>[Signature]</i> DEPUTY CHIEF ENGINEER
APPROVED:	<i>[Signature]</i> CHIEF TRANSPORTATION ENGINEER
ISSUED:	REFERENCE
DATE	APPR.
REVISED	

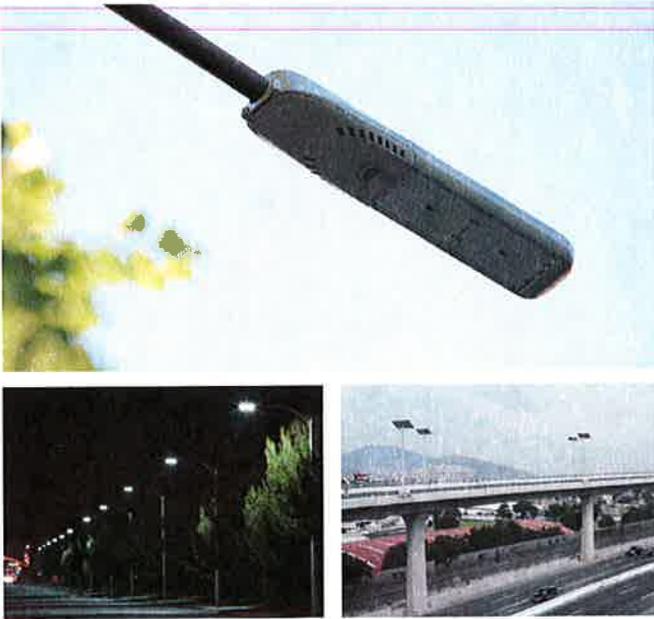
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## **LED LUMINAIRE SPECIFICATION**

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Prepared By	Catalog #
Project	Comments
	Date



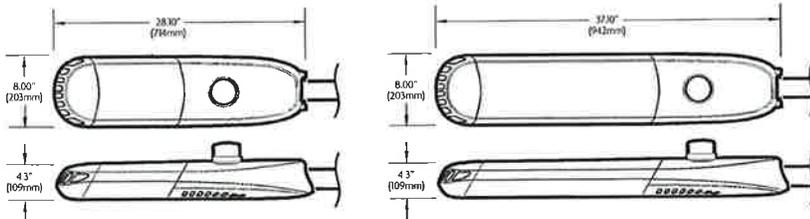
### Benefits

- Sustainable Design:
- Custom arrayed optics to reduce the use of plastics.
- No tertiary optical losses.
- Use of recycled and recyclable corrosion resistant materials.
- Full cutoff optics meet Dark Sky requirements
- Holistic Thermal Design:
- Underdriving LEDs to improve efficiency and system life.
- Use of premium grade alloys for enhanced thermal conduction.
- Electronics are isolated and sealed from the optical chamber.
- Fits standard 1 1/4" to 2" mast arm.

#### Typical Applications Include:

- Roadways
- City Streets
- Campuses
- Residential Streets
- Parking Lots

### Dimensions



## PROLIFIC™ Roadway

Features <sup>1</sup>	LSR1	LSR2	<del>LSR3</del>	<del>LSR4</del>
Lumen Output (at operating temperature)	4354	5890	<del>9365</del>	<del>11716</del>
Input Power (Watts)	50	75	<del>100</del>	<del>150</del>
Efficacy (lm/w)	87	79	<del>92</del>	<del>87</del>
Color Temperature (CCT)	4000K, 5000K			
Color Rendering Index (CRI)	70 (4000k) and 65 (5000k)			
Rated Life L70	60,000			
Housing	Die Cast and Extruded Aluminum			
Finish	Grey, Black, Bronze			
Optical Distribution	Type II, Type III, Type II Streetside Optimized, Type III Streetside Optimized, Type V			
Mounting Options	Fits standard 1 1/4" to 2" Mast Arm; 4-Bolt Internal			

EPA	LSR1, LSR2	.77
	<del>LSR3, LSR4</del>	<del>1.0</del>
Dimensions	LSR1, LSR2	28.10" x 8.0" x 4.3" 714mm x 203mm x 109mm
	<del>LSR3, LSR4</del>	<del>37.10" x 8.0" x 4.3" 942mm x 203mm x 109mm</del>
Operating Temperature Range <sup>4</sup>	-40°C to +50°C (-40°F to +122°F)	
Voltage	120-277 VAC @ 50-60 Hz, DCV <sup>2</sup>	
Weight	LSR1, LSR2	22lbs
	<del>LSR3, LSR4</del>	<del>25lbs</del>
Warranty	5 Year Limited	
Certification		
Environment	IP66 Optics	

<sup>1</sup> All values are nominal. Values based on 5000CCT at 25°C unless noted. Consult website for complete IES & LM-79 data.

<sup>2</sup> DCV available with LSR1 & LSR2 only

<sup>3</sup> 4-Bolt mounting required for 3G vibration rating

<sup>4</sup> Outdoor Applications Only

# LSR

## PRODUCT ORDERING INFORMATION

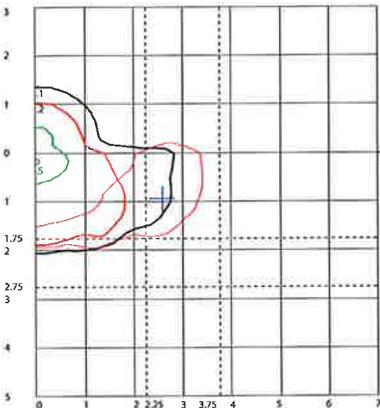
EXAMPLE: LSR1 CW R2 2B PCR PC HS BK

Product	Color Temp.		Optical Distribution		Voltage	Mounting		Receptacle		Options		Accessories		Finish	
								PCR	Photocontrol Receptacle (standard)	PC	Twist-lock Photocontrol	HS	House Side Shield	GR	Gray (standard)
LSR1 (50W)	CW	White 5000K	R2	Type II	MVOLT	2B	2-Bolt (standard)	PCR	Photocontrol Receptacle (standard)	PC	Twist-lock Photocontrol	HS	House Side Shield	GR	Gray (standard)
LSR2 (75W)	NW	White 4000K	R3	Type III		4B	4-Bolt Internal	NR	No Photocontrol Receptacle	SH	Shorting Cap			BK	Black
<del>LSR3 (100W)</del>			<del>R355</del>	<del>Type II Streetside Optimized</del>										<del>BZ</del>	<del>Bronze</del>
<del>LSR4 (150W)</del>			<del>R355</del>	<del>Type III Streetside Optimized</del>											
			<del>R4</del>	<del>Type IV</del>											
			<del>R5</del>	<del>Type V</del>											

<sup>1</sup> Required for 3G Vibration Rating  
All mounting hardware included with each unit.

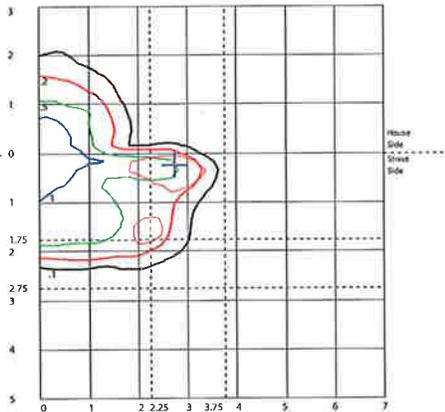
## POLAR GRAPH

TYPE II



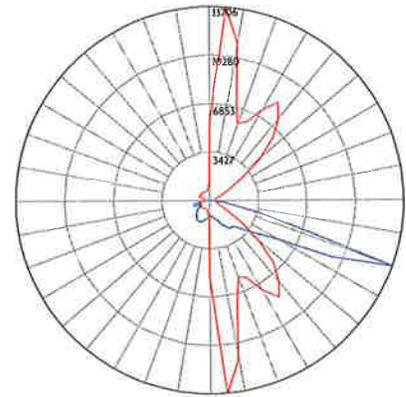
Distance In Units Of Mounting Height  
Values Based On 30 Foot Mounting Height  
1/2 Maximum Candela Trace Shown As Dashed Curve  
(+) = Maximum Candela Point

TYPE III



Distance In Units Of Mounting Height  
Values Based On 30 Foot Mounting Height  
1/2 Maximum Candela Trace Shown As Dashed Curve  
(+) = Maximum Candela Point

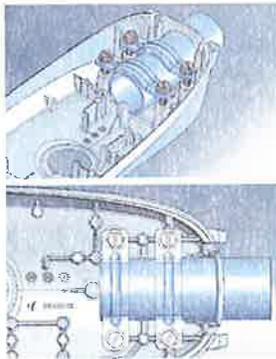
TYPE III



Maximum candela = 13706.34 Located at Horizontal Angle = 85, Vertical Angle = 70  
Vertical Plane Through Horizontal Angles (85=265) (Through Max. Cd) : BLUE  
Horizontal Cone Through Vertical Angle (70) (Through Max. Cd) : RED

## ZONAL LUMEN SUMMARY

Zone	Lumens	% Luminaire
FL 0-30	634	5.9
FM 30-60	3,100	28.7
FH 60-80	3,585	33.1
FVH 80-90	110	1.0
BL 0-30	655	6.1
BM 30-60	1,771	16.4
BH 60-80	844	7.8
BVH 80-90	115	1.0
UL 90-100	0	0
UH 100-180	0	0



Toolless swing down access door.



US LSR\_5111

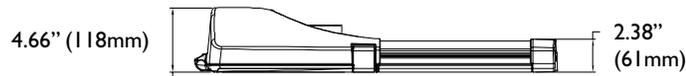
North America • Australia • Asia • Europe  
Preliminary. Specifications are typical values and may change without notification.  
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877-999-5742 | www.lsgc.com  
1227 South Patrick Drive Building 2A | Satellite Beach, FL 32937

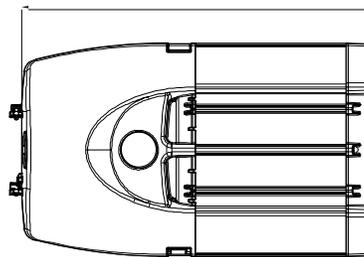
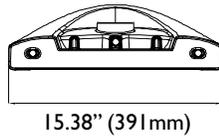
Project name	Washington DC	Type	135 Watt Equivalent - R Version		
Date	1-8-13	Prepared by	David Baum		
<b>RVS</b>	<b>110W64LED4K-R</b>	<b>LE2 or LE3</b>	<b>UNIV</b>	<b>RC-API</b>	<b>GY3</b>
Luminaire	Lamp	Optical system	Voltage	Options	Finish

# RoadView LED R Series

RVS



21.38" (543mm) min. – 25.25" (641mm) max.



RVS  
Weight: 23.0 to 26.0 lbs  
(10.4 to 11.8 kg)

Lamps

LUMINAIRE PERFORMANCE DATA (Nominal 4000K CCT)												
Lamp	LEDs	Drive Current	Luminaire Lumens*	System Watts	Max. system current (amps)	Weight		Length		EPA		
						lb.	kg.	in.	mm.	sq. ft.	sq. m.	
35W32LED4KR	32	350	3670	37	0.36	23	10.4	21.38	543	0.53	0.049	
55W32LED4KR	32	530	5303	56	0.54	23	10.4	21.38	543	0.53	0.049	
72W32LED4KR	32	700	6507	73	0.72	23	10.4	21.38	543	0.53	0.049	
55W48LED4KR	48	350	5469	53	0.54	23	10.4	21.38	543	0.53	0.049	
80W48LED4KR	48	530	7903	81	0.82	23	10.4	21.38	543	0.53	0.049	
108W48LED4KR	48	700	9694	105	1.08	23	10.4	21.38	543	0.53	0.049	
70W64LED4KR	64	350	6947	68	0.72	26	11.8	25.25	641	0.60	0.056	
<b>110W64LED4KR</b>	<b>64</b>	<b>530</b>	<b>10039</b>	<b>104</b>	<b>1.09</b>	<b>26</b>	<b>11.8</b>	<b>25.25</b>	<b>641</b>	<b>0.60</b>	<b>0.056</b>	
90W80LED4KR	80	350	8409	85	0.90	26	11.8	25.25	641	0.60	0.056	
135W80LED4KR	80	530	12152	129	1.36	26	11.8	25.25	641	0.60	0.056	

\*For Type II distribution. See photometric files for other distributions plus updated information



# PHILIPS

# Optical systems / LED **To Be Specified** Voltage

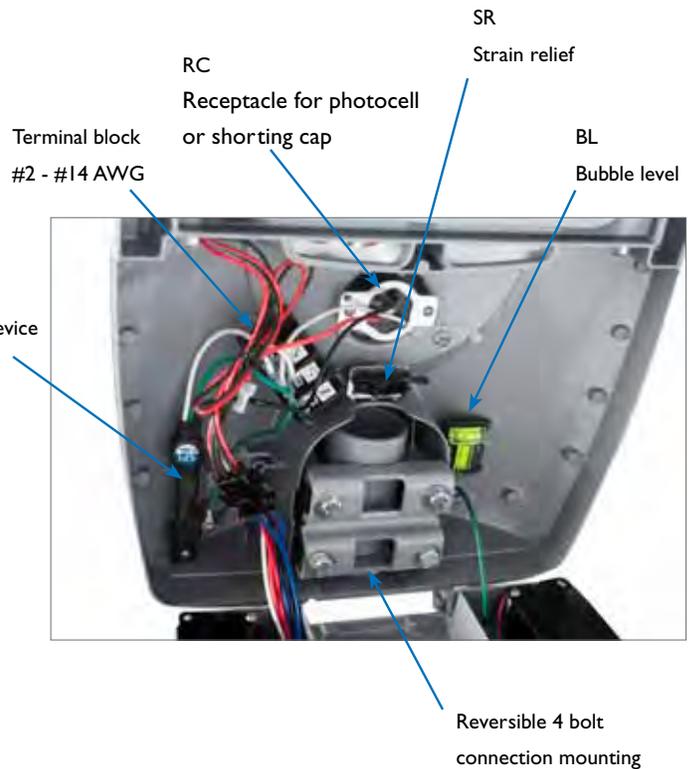
LE2	TYPE II / Asymmetrical distribution	<b>UNIV (120-277)</b>	347	480
LE3	TYPE III / Asymmetrical distribution			
LE4	TYPE IV / Asymmetrical distribution			

## Driver options\*\*

AST	Driver pre-programmed with progressive lamp starting*
CDMG	Dynadimmer standard dimming program*
CDMGP	Dynadimmer custom dimming program*
CLO	Constant Light Output, driver pre-programmed to achieve the same light intensity for the duration of the lifespan of the lamp*
DALI	Driver compatible with DALI control systems*
DMG	Dimmable driver 0-10 volt
OTL	Over The Life, driver pre-programmed to signal the end of lamp life*
OVR	Dynadimmer override function for use with motion detector or other switching device

\*Only available with 120 - 277 volts.

\*\* For all programmable options please consult the factory for details



## Luminaire options

<b>API</b>	ANSI/NEMA wattage label	<b>Customer to verify if needed</b>
BL	Bubble level	
OSL3W	Motion detector (requires DMG or CDMG)	
PH8	Photoelectric cell, twistlock type includes receptacle	
PH9	Shorting cap for single phase (120, 240, 277, 347v) with receptacle	
<b>RC</b>	Receptacle for a twist-lock photocell or shorting cap	
SR	Strain relief	

Specifications subject to change without notice.

Consult factory for full details.

## Finish options

<b>GY3</b>	Gray	BR	Bronze
WH	White	BK	Black

EXP Extrusion painted to match cast housing color selected above (standard extrusion color is anodized aluminum).

Additional colors are available. Consult factory for complete specifications.



#### Lamp

Composed of high performance white LEDs. Color temperature of 4000 Kelvin +/- 300 nominal, 73 CRI. Ambient operating temperature range -40°C (-40°F) to +40°C (104°F). L70 lifetime of 100000 hours minimum at 25C ambient (75000 hours for 700mA model with 96 LEDs).

#### Optical system

Composed of high performance lenses, protected by a flat tempered glass lens. System is rated IP66. Photometric performance is tested according to IES LM-79.

#### Surge protector

Surge protective device provides all phases protection for line-ground, line-neutral, and neutral-ground in accordance with IEEE / ANSI C62.41.2 C High. Surge rating 10 kV, 10 kA and DOE Model Specification for Roadway Luminaires Elevated requirements per Appendix D. Surge protection is standard for all product models 120-480v.

#### Driver

Electronic driver, operating range 50-60 Hz. Auto-adjusting to input voltage between 120-277 volt AC, or 347-480 volt AC. Minimum power factor 0.90, max THD 20%. UL recognized component. IP66 rated. Optional dimming (0-10v) and digital driver features available.

#### Housing

The upper and lower parts of the housing are made of die cast A360 aluminum alloy. The 4-bolt mounting system includes a reversible bracket made of zinc plated steel. Fits on a 1.66" to 2.375" OD by 5" long tenon, fixed by 3/8-16 UNC steel zinc plated bolts. An integral part of the housing permits an adjustment of +/- 5° by steps of 2.5°.

#### Power door

The housing is complete with a tool-less removable power door including quick disconnects for ease of service. A tool free latch assembly on the power door allows for easy access to the electrical compartment.

#### Heat sink

The extruded heat sink is made of A6063 aluminum alloy, and is shaped to draw heat away from the LEDs. Product does not use any cooling device with moving parts (has passive cooling device).

#### LED platform

The LEDGINE LED platform consist of two LED boards with 48, 64, or 80 LUXEON R LEDs each, as required to provide total LEDs from 96 - 160. The LED boards are removable and replaceable.

#### Wiring

Luminaire wiring is done using a terminal block located inside the housing. Terminal block accepts three wires (#2-14 AWG).

#### Hardware and seals

All hardware shall be stainless steel or corrosion resistant. All seals and sealing devices are lined with silicone.

#### Finish

Application of a polyester powder coat paint. (4 mils/100 microns). The chemical composition provides a highly durable UV and salt spray resistant finish in accordance with the ASTM-B117 standard and humidity proof in accordance with the ASTM-D2247 standard. The specially formulated Lumital powder coat finish is available in standard gray. Additional colors are available. Consult factory for complete specifications.

#### Vibration resistance

Meets the ANSI C136.31-2001 table 2, American National Standard for Roadway Luminaire Vibration specifications for Bridge/overpass applications (3G).

#### **Certifications and Compliance**

CSA, UL or cUL. ISO 9001-2008. All electrical components are RoHS compliant. Listed on Design Lights Consortium (DLC) Qualified Products List (QPL).



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Document order number: RVSTS100R02A

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A Division of Genlyte Thomas Group LLC

Project name	Washington DC	Type	270 Watt Equivalent - R Version
Date	1-8-13	Prepared by	David Baum

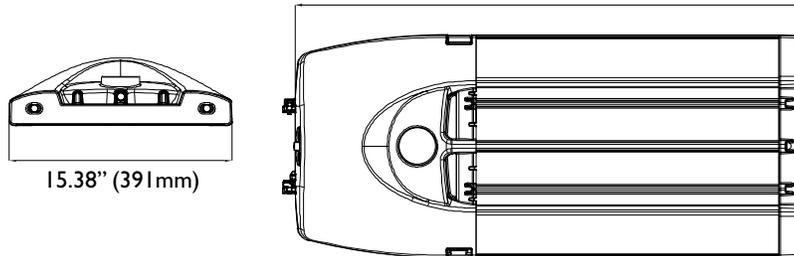
<b>RVM</b>	<b>215W128LED4K-R</b>	<b>LE2 or LE3</b>	<b>UNIV</b>	<b>RC-API</b>	<b>GY3</b>
Luminaire	Lamp	Optical system	Voltage	Options	Finish

# RoadView LED R Series

RVM



31.25" (794mm) min. – 35.25" (895mm) max.



RVM  
Weight: 34 to 37 lbs  
(15.4 to 16.8 kg)

Lamps

LUMINAIRE PERFORMANCE DATA (Nominal 4000K CCT)												
Lamp	Drive LEDs	Current	Luminaire Lumens*	System Watts	Max. system current (amps)	Weight		Length		EPA		
						lb.	kg.	in.	mm.	sq. ft.	sq. m.	
110W96LED4KR	96	350	10532	105	1.08	34	15.4	31.25	794	0.71	0.066	
160W96LED4KR	96	530	15219	160	1.63	34	15.4	31.25	794	0.71	0.066	
215W96LED4KR	96	700	18673	208	2.16	34	15.4	31.25	794	0.71	0.066	
125W112LED4KR	112	350	12520	120	1.26	34	15.4	31.25	794	0.71	0.066	
190W112LED4KR	112	530	18092	183	1.90	34	15.4	31.25	794	0.71	0.066	
145W128LED4KR	128	350	14089	137	1.44	34	15.4	31.25	794	0.71	0.066	
215W128LED4KR	128	530	20360	209	2.18	34	15.4	31.25	794	0.71	0.066	
160W144LED4KR	144	350	15063	154	1.62	37	16.8	35.25	895	0.78	0.072	
245W144LED4KR	144	530	21768	235	2.45	37	16.8	35.25	895	0.78	0.072	
180W160LED4KR	160	350	15798	170	1.80	37	16.8	35.25	895	0.78	0.072	
270W160LED4KR	160	530	22829	260	2.72	37	16.8	35.25	895	0.78	0.072	

\*For Type II distribution. See photometric files for other distributions plus updated information



# PHILIPS

# Optical systems / LED To Be Specified Voltage

LE2	TYPE II / Asymmetrical distribution	UNIV (120-277)	347	480
LE3	TYPE III / Asymmetrical distribution			
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## Driver options\*\*

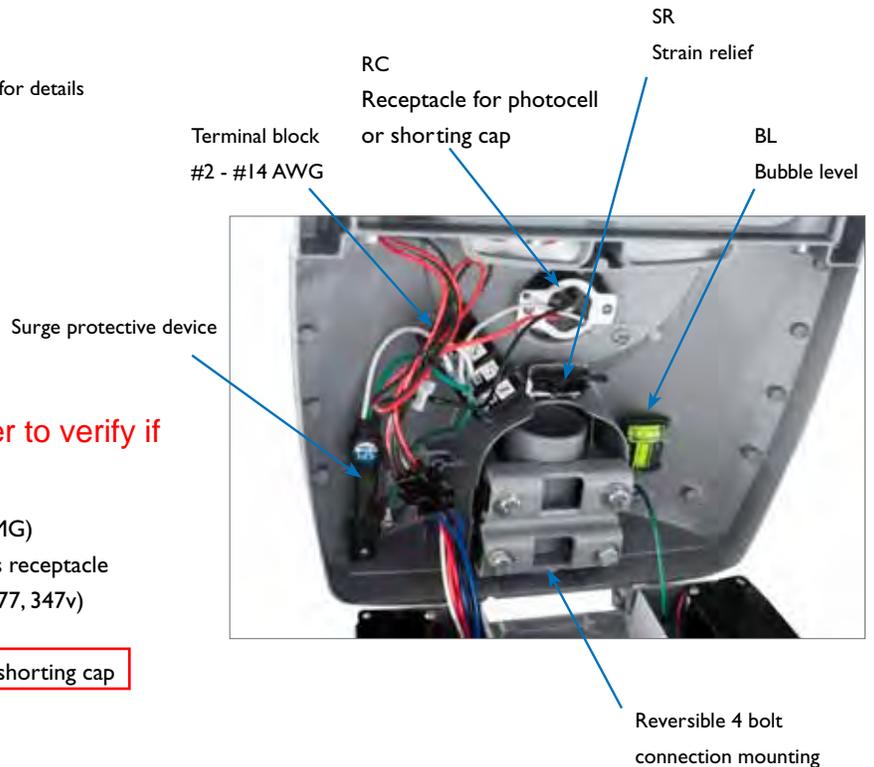
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#### Vibration resistance

Meets the ANSI C136.31-2001 table 2, American National Standard for Roadway Luminaire Vibration specifications for Bridge/overpass applications (3G).

#### **Certifications and Compliance**

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## **DC WATER STANDARD SPECIFICATIONS**

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DISTRICT OF COLUMBIA  
WATER AND SEWER AUTHORITY

---

5000 OVERLOOK AVENUE, SW  
WASHINGTON, DC 20032

DC WATER AND SEWER AUTHORITY DEPARTMENT OF ENGINEERING AND  
TECHNICAL SERVICES

STANDARD SPECIFICATIONS



## **SECTION 21 11 10**

### **FIRE HYDRANTS**

#### **PART 1 GENERAL**

##### 1.1 SCOPE

- A. Work consists of furnishing and setting fire hydrants, (boot with ductile iron retainer gland, standpipe and hydrant complete) plus constructing dry wells complete, at locations indicated in the Contract documents or as directed. Work includes restoration of landscape features and sod. Trench excavation and backfill for hydrant connecting pipe, restraint, water valve and water valve casing are not part of work.

##### 1.2 RELATED SECTIONS: Specified Elsewhere May Include But Is Not Limited To:

- A. Section 01 33 00: Submittals
- B. Section 31 23 10: Trench Excavation and Backfill
- C. Section 33 06 20: Valve Casings
- D. Section 33 14 00: Gate Valves
- E. Section 33 14 05: Butterfly Valves
- F. Section 33 15 02: Pipe Water Main - Ductile-Iron

##### 1.3 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specifications Sections, apply to this Section.
- B. Specifications throughout all Divisions of the Project Manual are directly applicable to this Section, and this Section is directly applicable to them.

##### 1.4 QUALITY ASSURANCE

- A. Reference Codes and Specifications:
  - 1. AWWA C502: "AWWA Standard for Dry-Barrel Fire Hydrants".
  - 2. ASTM D1682: "Test Methods for Breaking Load and Elongation of Textile Fabric".

##### 1.5 SUBMITTALS

- A. Shop drawings shall be submitted for hydrants and joint details.
- B. Affidavits, certifications, catalog and maintenance data shall be submitted per this section.

#### **PART 2 PRODUCTS**

##### 2.1 MATERIALS

- A. Hydrants:
  - 1. Fire hydrants shall be compression type, hand operated, for fire protection service under operating pressure of 200 psig manufactured per AWWA C502.
  - 2. All fire hydrants furnished shall be tested to 300 psig operating pressure.
  - 3. The manufacturer shall be regularly engaged in the design, manufacture and maintenance of fire hydrants. The manufacturer must furnish satisfactory evidence of adequate facilities for furnishing repair parts for hydrants furnished.

4. Hydrant Models – Mueller Super Centurion 250 - Model No. A-423, (made by Mueller Company, Decatur, Illinois), Kennedy Guardian - Model No. K-81-D (made by Kennedy Valve, Elmira, New York). No other hydrant models or 'or-equals' will be used.
5. AWWA C502 is modified or supplemented as follows:
  - a. When required the manufacturer shall furnish catalog and maintenance data.
  - b. Certified drawings showing the principal dimensions, construction details, and materials shall be submitted for approval per "Shop and Working Drawings".
  - c. Affidavit of compliance required.
  - d. Size - 5-1/4 inch minimum, nominal I.D. main valve opening.
  - e. Bury Length - 4-1/2 feet or as directed by the Engineer
  - f. Barrel Sections - Hydrants shall be "traffic" type fire hydrants complete with breakable safety flange and 8 bolts and nuts, located near the ground line and designed to break on vehicle impact. Design shall allow top section to rotate a full 360°.
  - g. Hydrant Top - Hydrants shall be permanently lubricated and require one man maintenance, no special tools.
  - h. Outlet Nozzles - Two 2-1/2 inch nominal I.D. hose nozzles; one 4-1/2 inch nominal I.D. pumper connection.
    - 1) Threads for 2-1/2-inch nozzles per National Fire Standard Hose Coupling Screw Threads; threads for 4-1/2 inch pumper connection will be per National Standard Threaded Connections.
  - i. Operating Stem and Mechanism - Operating and outlet nozzle cap nuts shall be pentagonal in shape.
    - 1) The pentagon shall measure 1-51/64 inch from point to flat at the base of the nut and 1-47/64 inch at the top. The height of the nut shall not be less than 1-inch.
    - 2) Direction of operating nut rotation to open:
      - a) Left (counterclockwise).
  - j. O-Ring Seals - O-ring seals shall be used in lieu of stuffing box.
  - k. Gaskets - Material shall be rubber composition; asbestos prohibited.
  - l. Hydrant Inlet - Boot side inlet shall be 6-inch diameter with retainer gland mechanical joint per Section 33 05 02.
  - m. Cap chains - hose cap chains and steamer cap chains are required with all hydrants; chain links (zinc plated steel) shall be fabricated not less than 1/8-inch in diameter and with S hook device (zinc plated steel) attached.
  - n. Painting - Above grade line, outside of hydrant shall be painted with two coats of zinc chromate primer and two finish coats of No. 209 medium green enamel manufactured by Purity Paint Products Corp., Brooklyn, New York; or approved equal.

B. Gravel for Dry Well

1. Washed gravel

C. Filter Fabric

1. Woven filter fabric shall be composed of polypropylene monofilament yarns woven into sheets of approximately sixteen-(16) mil thickness. The tensile strength of the fabric shall be per ASTM D1682. The weave of the fabric shall be dense and tight so the openings are barely visible.

2. Test results shall indicate the filter fabric can effectively retain particles coarser per opening of U.S. 140-sieve mesh for all conditions.
3. Tests shall also demonstrate that the filter permeability is between  $3.3$  and  $3.8 \times 10^2$  centimeters per second.
4. Filter fabric shall be manufactured by Mirafi Company, P.O. Box 240967, Charlotte N.C. or approved equal.

### **PART 3 EXECUTION**

#### **3.1 CONSTRUCTION REQUIREMENTS**

- A. Fire hydrant and dry well material, excavation, installation and backfill shall be included in this Section. Fire hydrant connection pipe excavation and backfill shall be included as part of trench excavation.
- B. All related work on hydrant water line including tests and chlorination shall be per applicable provisions of Section 31 23 10 Hydrants shall be set plumb with 4-1/2 inch nozzle normal to the curb line.
  1. When a hydrant delivered with the nozzle facing in the improper direction, the hydrant shall be rotated to the correct orientation prior to placing the hydrant into service.
- C. Joint and joint restraint between boot and the connection pipe to the main shall be per Section 33 15 03 02.
- D. Dry wells shall be excavated to dimensions indicated on Standard Detail W-50.01. Filter fabric shall be placed in the excavated dry wells' interior bottom, interior side walls and placed on the top of the excavation and secured around the hydrant's fittings before completing backfill.
- E. Restoration:
  1. Any items disturbed during construction, including shrubs and lawns, shall be restored by the Contractor upon completion of work. Grassed areas shall be resodded as part of work.

### **PART 4 MEASURE AND PAYMENT**

#### **4.1 MEASUREMENT**

- A. Unit of measure will be each.

#### **4.2 PAYMENT**

- A. Payment for Fire Hydrants will be made at the Contract unit price per each, which price and payment will include property restoration and sodding, and all labor, materials, tools, equipment and incidentals needed to excavate, backfill and complete work specified.
- B. The installation of a hydrant connection pipe, a gate valve and a water valve casing will be paid under other pay items.

~ END OF SECTION 21 11 101 ~

**SECTION 31 23 10**  
**TRENCH EXCAVATION AND BACKFILL**

**PART 1 GENERAL**

1.1 SCOPE:

- A. Work consists of excavation, shoring, supporting utilities and backfilling of open trenches for the construction of pipe sewer and water main systems, including disposal of unsuitable and excess materials.
- B. When water service and/or building sewer connections are part of Contract, payment for excavation and backfill for water service and/or building sewer connections will be made under Section 33 12 13 and/or 33 01 34, respectively.

1.2 RELATED SECTIONS: Specified Elsewhere May Include But Is Not Limited To:

- 1. Section 01 78 42: As-Built Drawings
- 2. Section 01 77 00: Project Closeout Procedures
- 3. Section 31 23 16: Structural Excavation, Backfill and Grading
- 4. Section 33 01 34: Building Sewer Connection
- 5. Section 33 06 20: Valve Casings
- 6. Section 33 05 02: Water Utility Distribution Piping - DIP
- 7. Section 33 12 13: Water Service Connections
- 8. Section 33 19 00: Sanitary Utility Sewerage Piping
- 9. Section 33 19 10: Sewer Manholes
- 10. Section 33 01 34: Building Sewer Connections and Cleanouts

1.3 REFERENCES

A. Reference Codes and Specifications:

- 1. American Association of State Highway and Transportation
  - a. AASHTO T2: "Sampling Aggregates".
  - b. AASHTO T27: "Sieve Analysis of Fine and Coarse Aggregates".
  - c. AASHTO T87: "Dry Preparation of Disturbed Soil and Soil Aggregate Samples for Test".
  - d. AASHTO T88: "Particle Size Analysis of Soils".
  - e. AASHTO T89: "Determining the Liquid Limit of Soils".
  - f. AASHTO T90: "Determining the Plastic Limit and Plasticity Index of Soils".
  - g. AASHTO T96: "Resistance to Abrasion of Small Size Coarse Aggregate by Use of the Los Angeles Machine".
  - h. AASHTO T180: "Moisture-Density Relations of Soils Using a 4.54-kg (10 Lb) Rammer and a 457-mm (18 in) Drop".
  - i. AASHTO T191: "Density of Soil In-Place by the Sand-Cone Method".
  - j. AASHTO T193: "The California Bearing Ratio".
  - k. AASHTO T238: "Density of Soil and Soil-Aggregate in Place by Nuclear Methods".

- I. AASHTO T239: "Moisture Content of Soil and Soil-Aggregate in Place by Nuclear Methods".
2. American National Standards Institute:
  - a. ANSI A10.16: "Safety Requirements for Construction of Tunnels, Shafts, and Caissons".
3. American Society for Testing and Materials:
  - a. ASTM C33: "Concrete Aggregates".
  - b. ASTM D2940: "Specification for Graded Aggregate Material for Bases or Sub-bases for Highways or Airports".
  - c. ASTM D4318: "Liquid Limit, Plastic Limit, and Plastic Limit, and Plasticity Index of Soils".

#### 1.4 SAFETY PRECAUTIONS

- A. Observe safety precautions in all phases of the work. Including but not limited to trench shoring, bracing, lighting, and barricades as dictated by reason and by the District of Columbia.

#### 1.5 OBSTRUCTIONS

- A. The Contractor's attention is directed to the possible existence of pipe and other underground improvements which may or may not be shown on the Drawings. Preserve and protect any such improvements whether shown on the Drawings or not. Expose such improvements in advance of the pipeline construction to allow for changes in the alignment as necessary. Where it is necessary to remove and replace or to relocate such improvements in order to prosecute the work, they shall be removed, maintained, and permanently replaced by the Contractor at his expense.

#### 1.6 TESTING FOR COMPACTION

- A. Determine the density of soil in place by the sand cone method, ASTM D 1556, or by nuclear methods, ASTM D 2922 and D 3017.
- B. Determine laboratory moisture-density relations of soils by ASTM D 1557.
- C. Determine the relative density of cohesion less soils by ASTM D 4253 and D 4254.
- D. Sample backfill materials by ASTM D 75.

#### 1.7 SUBMITTALS

- A. Sampling and Tests:
  1. Soil samples shall be submitted for trench backfill, soils base, borrow trench fill, and subgrade gravel.

## **PART 2 PRODUCTS**

### 2.1 GENERAL:

- A. All backfill shall meet requirements of this subsection.
  1. Payment for pipe bedding gravel for pipe sewers will be made under Section 33 19 00.
  2. Stone or graded aggregate gravel supplied from a quarry producing aggregates of asbestos bearing content or having asbestos present at the quarry is prohibited.
    - a. Should such aggregates be utilized, both the Contractor and stone supplier will be directed to remove all asbestos bearing aggregates and replace them with non-asbestos bearing aggregates. The Contractor and supplier shall further be liable for

any and all consequential damages, which may result as a violation of this requirement.

## 2.2 MATERIALS

### A. Trench Backfill:

1. Material used in trench backfill shall be a well-graded soil-aggregate mixture with ten-percent maximum, by weight, passing the No. 200 sieve. The soil shall have a liquid limit not greater than 40 and a maximum plasticity index of 10, both per ASTM D4318.
2. Within one foot of the pipe, no gravel or stone shall be larger than 1-1/2 inches in any dimension.
3. For remainder of trench, no gravel or stone shall be larger than 4 inches in any dimension, and not larger than one inch within one foot of finish grade.
4. Backfill shall be free from snow, ice, frozen materials, trash, brick, clay lumps, broken concrete, tree roots, sod, ashes, cinders, glass, plaster, organic matter and any other foreign matter.
5. Backfill shall have a minimum dry weight density of 100 pounds per cubic foot.
6. Backfill shall have uniform moisture content suitable for compaction to the specified density. The Contractor shall moisten or dry soils materials to obtain suitable, uniform moisture content.
7. If the materials are of such nature that heaving, pumping, rutting, or shearing occurs in the compacted backfill under the action of construction equipment, even though soil meets density requirements, affected material shall be replaced to limits as directed.

### B. Trench Subgrade Gravel:

1. Gravel to backfill trench undercut areas shall be per ASTM C33, Grading Size No. 57.

### C. Soils Base:

1. Soils base course material shall consist of either Bank Run Gravel Base or Crushed Stone Base and have a minimum CBR of 25 in accordance with AASHTO T193.
  - a. Bank Run Gravel Base:
    - 1) Coarse aggregate retained on the No. 10 (2.00 mm) sieve shall consist of hard, durable particles or fragments of stone, gravel or slag; materials that break up when subjected to freeze-thaw or wetting-drying action are prohibited.
    - 2) Coarse aggregate shall have a maximum percentage of wear of 50 per the Los Angeles test.
    - 3) Fine aggregate passing the No. 10 (2.00 mm) sieve shall consist of natural and crushed sand and finer mineral particles. The fraction passing the No. 200 (0.075 mm.) sieve shall not exceed one-third (1/3) of the fraction passing the No. 40 (0.425 mm) sieve. The fraction passing the No. 40 sieve shall have a maximum liquid limit of 25 and a maximum plasticity index of 6. The composite material shall conform to the following gradation requirements:

<u>Sieve Designation</u>	<u>Percent Passing By Weight</u>
2-in.	100
1-in.	70-100
3/4-in.	60-95
No. 4	40-75

No. 10	25-65
No. 40	10-45
No. 200	2-10

b. Crushed Stone Base:

- 1) Crushed aggregate shall consist of crushed stone having hard, strong, durable particles per applicable requirements of ASTM D2940.
- 2) Additional fine aggregate shall consist of material of the same type and quality as specified above for coarse aggregate.
- 3) Use of soil fines or natural sands is prohibited.
- 4) The coarse aggregate and additional fine aggregate shall be so proportioned as to produce a final mixture meeting the following gradation requirements:

Sieve Designation	Percent Passing by Weight	Job Mix Tolerance Weight Percent Passing
2 inch	100	-2
1-1/2 inch	95-100	+5
3/4 inch	70-92	+8
3/8 inch	50-70	+8
No. 4	35-55	+8
No. 30	12-25	+5
No. 200	0-8	+3

**PART 3 EXECUTION**

3.1 SAMPLING/TESTS

A. General

1. The Contractor shall take five (5) soil samples from areas directed by the Engineer.
  - a. The soil samples shall be representative of the soil encountered during excavation. They shall be free from snow, ice, frozen materials, organic matter and foreign matter.
2. The Contractor shall also submit a sample of trench borrow fill material from any supplier which the Contractor purposes to supply backfill material during the Contract.
3. The Contractor shall at no cost to DC Water, have a testing laboratory which is approved by the Engineer, prepare each sample per AASHTO T-87, perform sieve analysis per AASHTO T-27 and T-88, determine percentage of wear per ASSHTO T-96, determine the liquid limit per AASHTO T-89, determine the plasticity index per AASHTO T-90, provide a modified Proctor test per AASHTO T-180/D and field density test at the ends of each trench and at two hundred (200) foot intervals.
  - a. The Contractor shall have the testing laboratory provide the Engineer with copies of the testing laboratory's reports within seven (7) days of when the samples were taken. The Contractor shall not install permanent fill using material which has not been tested and approved by the Engineer.

3.2 TRENCH EXCAVATION

A. General:

1. Trench excavation shall include removal of all materials and objects of whatever nature encountered in excavation, excluding rock and existing steel sheeting left in place.

2. Sewer and water main trench operations shall be coordinated with other utility work and scheduled to meet maintenance of traffic provisions. Utility service connections and appurtenances to individual premises may not be shown in the Contract documents and the Contractor shall determine the exact location of, and maintain these services.
3. When trenching through lawn, park or other tillable areas, sod and topsoil shall be removed with care as directed and salvaged if suitable for reuse in restoring disturbed surfaces.
4. Blasting will not be allowed unless approved in writing by the Engineer and permit is obtained by the Contractor.
5. All excavation within trench limits shall be classified as trench excavation unless otherwise stated in the Contract.
6. Surface materials of whatever nature shall be removed, including pavement, base, curb and gutter, sidewalk, and topsoil within trench limits. The Contractor shall properly separate and store materials the Engineer deems suitable for use in backfilling or restoring original conditions.
7. Operations shall be conducted so as to avoid injury to tree trunks, branches and roots. Excavations within limits of tree limb spread shall proceed with extreme care either by use of hand tools or with equipment that will not cause tree damage.
  - a. Exposed roots two inches and larger in diameter shall be wrapped in burlap or other approved material and kept moist at all times.
  - b. Roots two inches and larger in diameter outside the actual space occupied by the sewer or structure shall not be cut; excavation shall be tunneled under these roots.
  - c. When approved, tree branches that interfere with construction may be trimmed in advance of excavation.
  - d. Root cutting and branch trimming shall be performed per accepted horticultural practice.
8. When approaching existing underground construction which may be in proximity to work under this Contract, the trench shall be opened a sufficient distance ahead of the work, test pits made, or other approved exploratory methods employed to allow for authorized changes in line and grade.
  - a. Changes in line and grade plus excavation and pipe removal caused by failure to take such precautions shall be made at no additional cost to the DC Water.
9. The Contractor shall adequately support underground pipes or conduits exposed as a result of excavations; adequate support shall be provided along their entire exposed length by using timber or steel in such manner that backfilling may be performed without dislodging such pipes or conduits. No additional payment will be made for support material left in place nor for installing and maintaining supports.
10. When work requires excavation to an elevation below, and to a width wider than trench width required for, a proposed pipe utility, proper backfill and its compaction shall be first completed to a point at least one foot above outside top of proposed utility; utility trench in the backfill may then be excavated. Pipe utilities shall not be placed in such backfill as the fill is brought to utility subgrade.
11. With prior approval, portions of trench may be excavated as tunnel at the Contract price for Trench Excavation measured from surface as if open cut; tunnel bracing and all repair shall be included as part of work.
  - a. Tunnel excavation shall meet requirements of ANSI A10.16.

- b. Tunnel excavation includes backfilling the void between pipe structure and tunnel roof with concrete of approved mix design.
  - c. Whenever there is any sign of settlement or loose material in tunnel roof or walls, appropriate remedial measures shall be taken, or the excavation shall be made as in open trench as directed.
  - d. Tunneling is prohibited when outside of tunnel roof is within such proximity of the bottom of concrete base or asphaltic concrete base to create danger of collapse, settlement or other damage.
12. Trench bottom shall be excavated approximately flat and square with trench walls.
- a. When material at trench grade elevation is suitable, trench bottom shall be protected and maintained free from standing water.
  - b. If not maintained, extra excavation and disposal, furnishing and placing undercut gravel to trench grade elevation shall be at no District expense.
13. If material found at trench grade is unsuitable for a foundation for pipe bedding, it shall be removed by the Contractor to the depth and width directed by the Engineer.
14. Except in downtown and other congested areas, trench excavation shall be completed at least 25 feet in advance of pipe laying; at end of a work day or at the discontinuance of work, the pipe laying may be completed to within five feet of the end of the open trench.
15. All trench excavation material suitable for backfill shall be stockpiled, protected, and maintained either on-site or off-site as available space will permit.
- a. Excavated materials shall be neither deposited nor stockpiled so as to endanger in any manner the project, new or existing structures or utilities, nor interfere with project construction sequence and work by others.
16. The Contractor shall remove and dispose of all excess and unsuitable materials, and shall furnish his own disposal areas.
- a. The Contractor must use sealed trucks or containers when hauling wet materials.
  - b. The Contractor must obtain written permission from owner or operator of disposal areas before disposing of waste material or surplus debris.
17. Provide ingress and egress to buildings and property at all times.
- B. Cuts Through Paving and Sidewalk:
- 1. Cuts through asphalt wearing surfaces and flexible pavements (full depth asphalt paving) shall be made using pneumatic tools, with asphalt blade, along the trench limit line to make even, neat edges (see Standard Detail CV/50.01).
  - 2. Cuts through concrete roadway surfaces and concrete base (after removal of asphalt overlays) and cuts through concrete sidewalks, shall be made by concrete saw of sufficient size to saw cut the full depth of the concrete to make even, neat edges; types of paving materials to be cut are indicated in the Contract documents but not guaranteed.
  - 3. Use of impact type breakers for concrete and asphaltic concrete removal over trenches shall be restricted to the "Hoe Ram" type or approved equivalent; this type equipment shall not be used near saw cut edges of existing paving limits to remain; this equipment may be restricted or prohibited when in the public interest.
  - 4. Any pavement, sidewalk, curb and gutter, or other highway structure outside the pay limits prescribed for trenches which may be marred, altered, damaged, or destroyed by the Contractor (due, but not limited, to his methods of construction, mobility of equipment, and handling and storage of materials) will be replaced by the District with Department of

Public Works' standard type of new pavement, sidewalk, curb, gutter, or other highway structure.

5. The entire cost of any such replacement will be the Contractor's responsibility and at no additional expense to the DC Water.

C. Trench Shoring:

1. The Contractor shall furnish, place, maintain, and remove such bracing, trench shields, sheeting or other supporting material to properly support trench side walls and side walls of cuts, and to prevent movement which might in any way injure persons, the project, or other structures near the project, or reduce trench dimensions below those needed for proper construction.
  - a. When excavation depth exceeds five feet, adequate shoring is required. For deep trench cuts, adequate trench shields, braced or unbraced sheeting may be necessary.
  - b. Working drawings for the proposed method for trench support, maintenance, and shoring removal shall be prepared under the direction, and bear the seal, of a Registered Professional Engineer with a valid license.
    - 1) Working drawing submittals will be for information only, and shall be submitted in advance of work.
    - 2) The Engineer shall be notified in advance of any change in method of trench support and maintenance.
  - c. If the Contractor elects to use sheeting, the sheeting shall be removed in conjunction with trench backfilling.
    - 1) If approved in writing, sheeting may be cut off and left in place below a line one foot above the top of the installed pipe.
  - d. Voids that may develop outside the bracing, shield, sheeting and shoring shall be promptly filled with appropriate material such as gravel, sand or other approved material.
  - e. If at any point sufficient or proper supports have not been provided, the Engineer may order additional supports installed at no additional District cost.

D. Trench Width Design:

1. Trench width may be less than, but shall not exceed, trench pay width for the trench section from trench subgrade to a point one-foot above top of pipe.
2. At the Contractor's option, actual trench width more than one foot above the top of the pipe may exceed trench pay width if conditions will permit and are approved.
  - a. No additional payment will be allowed for additional excavation, backfill and temporary paving or for support or additional support of underground pipes or conduits which may be required as a result of the Contractor exceeding trench pay width.
  - b. Should the Contractor elect this option, the Engineer shall be notified prior to work so that he may estimate the additional cost of permanent paving. Monies due the Contractor shall be retained to cover temporary and permanent paving repair beyond trench pay widths.
3. Water or sewer trench width shall be as shown on applicable Standard Drawings bound in the specifications or as shown on the Contract drawings.
  - a. If the value of  $W_s$  or  $W_u$  is exceeded below a horizontal plane 1'-0" above top of pipe, the Contractor shall submit to the Engineer pipe design reevaluation computations certified by a professional engineer to assure that the allowable load on the pipe will not be exceeded.

- b. Computations shall reflect any additional work required such as concrete bedding, concrete encasement of pipe, higher class of pipe or any other proposed work to solve the problem.
- c. The Contractor shall perform all necessary work at no extra cost to the DCWATER.

E. Abandoned Utilities:

1. Work includes removal of utilities to be abandoned within limits of trench excavation or infringing on trench limits.
2. Open ends of abandoned utilities or those scheduled for abandonment shall be bulkheaded by 9-inch thick brick masonry or concrete of approved mix design, or cast-iron plugs or caps in small diameter abandoned in-place water mains.
3. All abandoned in-place sewers with a 36-inch or larger diameter shall be filled with fly ash, sand or other suitable material prior to bulkheading.
4. Water mains and water appurtenances shall be abandoned in place as directed.
  - a. Frames and covers of manholes and valve casings to be abandoned shall be salvaged and returned to the WASA's property yard.
  - b. Abandoned manholes and water valve casings shall be backfilled to grade with approved trench fill.
  - c. Abandoned fire hydrants shall be removed including standpipe and boot and delivered to the Department of Water Services Property Yard.
  - d. Hydrant drain lateral shall be plugged, if necessary plug drain lateral inside the sewer manhole.
  - e. Water mains to be salvaged shall be severed as directed with a smooth cut at a joint or at an intermediate point if approved.
5. Whenever manholes or water valve casings to be abandoned are isolated from trench excavation limits, they shall be abandoned in place as indicated above and payment made on a per each basis.
6. Breakage will not be permitted. Mains 24-inch diameter and larger must normally be cut. Any loss of value resulting from damage to usable and surplus water main materials resulting from Contractor operations will be charged to the Contractor.

F. Dewatering:

1. Trench dewatering and drainage, including pumping and well points, when needed, shall be included as part of trench excavation.
2. Upon entering the premises, the Contractor shall assume responsibility for site surface and subsurface drainage and shall maintain such drainage in an acceptable manner during the life of the Contract.
3. The Contractor shall provide, maintain and operate pumps and related equipment, including stand by equipment, of sufficient capacity to keep all excavation and trenches free of all water at all times and under any and all contingencies that may arise until all foundations, structures, and pipe installations have been completed and backfilled, and are safe from damage, flotation, settlement, or displacement.
4. The Contractor shall supply all supervision, labor, material and equipment necessary to build and maintain all drains, ditching, sluiceways, pumping, bailing, wicking, sumps, wells, well points, cut off trenches, curtains, sheeting, and other appurtenances and structures required to obtain and maintain a dry excavation and as may be necessary to construct the project.

5. The Contractor shall perform all work necessary to keep excavations and areas to be filled free of all groundwaters, surface waters, all supply water, and all wastewater.

G. Temporary Plating Over Trenches:

1. To maintain traffic and safety, steel plates shall be used to temporarily bridge trench excavations at no cost to the DC Water.
  - a. Plates shall be of size and positioned to provide adequate bearing at plate edges, shall be securely anchored, and shall be fitted in place in a manner to minimize noise when crossed by traffic.
  - b. Plates shall be of sufficient thickness to safely carry heavy traffic without detrimental deflection; however, unless otherwise specified, the minimum thickness of plates shall be one inch.
  - c. Plate edges exposed to traffic shall be feathered with asphalt mix as part of trench excavation work.
  - d. Work includes surveillance and adjustment of plating over trenches which shall be provided by the Contractor during non-work hours, weekends, and holidays.
  - e. Plating and asphalt around plates shall be removed when directed.
2. Notify the Director of Transportation or his designee prior to the use of plates in public space.
3. When work is not actively being performed in or around an open excavation, the Contractor shall temporarily cover all open excavations. Where vehicular or pedestrian traffic is possible use steel plating. Cover the remaining open excavations with ¾-inch plywood.

### 3.3 TRENCH BACKFILL

A. General:

1. When pipes, connections and bedding are complete and approved, trenches shall be backfilled using excavated materials meeting backfill requirements and as shown on applicable Standard Detail(s).
2. All soil materials removed from trench excavations that fall within the Unified Soil Classification System type ML, CL, OL, MH, CH, OH, PT, as well as material containing organic matter, ashes, cinders, refuse, frozen or other unsuitable materials are prohibited for use as backfill and shall be removed from the site.
3. When the required quantity of trench backfill exceeds quantity of approved on-site material, borrow trench fill shall be used. Borrow soils base shall be used in that portion of the trench projecting through soils base layer.

B. Density Requirements:

1. Standard Density requirements for soils, graded stone and recycled materials are defined as the Maximum Dry (Laboratory) Density obtained by AASHTO T180, Method D. The in-place or required density shall be determined per AASHTO T191, or nuclear methods AASHTO T238 and T239, and is expressed as a percentage of the Standard Density.
2. If the in-place density sample contains material larger than three-fourths (3/4) inch, the field density shall be adjusted for the material retained on the three-fourths (3/4)-inch sieve before direct comparison with the Standard Density.
3. The minimum in-place density for trench fill in road-bed areas shall be as specified in Table 31 23 10-1.

TABLE 31 23 10-1 DENSITY REQUIREMENTS

Description	Min. Density Required; % of Max. Dry Density
Trench Backfill and Backfill for Pipe Sewers and Undercut Areas	93 percent for each layer up to six inches below roadway subgrade. 95 percent for top six inch layer below road-way subgrade.
Trench Backfill for D.I. Pipe Water Mains - Laying Condition Type 2A (See Standard Detail W-10.01)	70 percent between trench bottom and 12 inches over top of pipe.  93 percent for each layer above the 12-inch layer over top of pipe, up to six inches below roadway subgrade.
Trench Backfill for D.I. Pipe Water Mains - Laying Condition Type 3A (See Standard Detail W-10.02)	95 percent for top six inch layer below roadway subgrade. Uncompacted for four inch trench bottom layer.  70 percent between four inch uncompacted layer and 12 inches above top of pipe. 93 percent for each layer above the 12-inch layer over top of pipe, up to six inches below roadway subgrade.
Soils Base Course (New and Existing)	95 percent for top six inch layer below roadway subgrade. 95 percent for Portland cement concrete roadway and sidewalk areas.  100 percent for bituminous concrete roadway areas.

C. Construction Requirements:

1. Trench fill material shall be dumped outside the trench excavation and not end-dumped directly into trench.
  - a. Fill shall be placed in uniform horizontal layers of not more than 12 inches loose depth and for full trench width. Any fill placed on frozen trench soils shall be removed at no DC Water cost.
2. Backfilling shall proceed without displacement of the grade and alignment of the pipeline and its appurtenances.
  - a. Displacement of the pipeline and settlement of backfill shall be considered evidence of improper workmanship or inclusion of unsuitable backfill materials, or both, and will require regrading and realigning the pipeline and removing and recompacting settled material at no DC Water cost.
  - b. Puddling and jetting are prohibited.

3. Each lift shall be compacted to density requirements herein before next lift is placed.
  - a. In trenches outside of roadbed areas, all layers shall be compacted to at least 93 percent of standard density.
  - b. The use of "Hydra-Hammer" for compacting backfill in trenches is not permitted.
  - c. Compaction by hand will be required where necessary.
4. All trench shoring and supports shall be so removed that trench cave-in and settlement are minimized and no voids remain.
  - a. Voids caused and left by sheeting and shoring removal shall be backfilled with pervious fill or other approved material and compacted at no additional DC Water cost.
  - b. All material displaced by slides, settlement, and trench cave-in shall be removed and replaced with specified soils at no additional cost to the DC Water.
5. The Engineer may require trench backfilling over completed pipelines if traffic conditions warrant such action.
  - a. Extra compensation will not be allowed for such trench backfilling.
6. The Engineer reserves the right to limit the amount of pipe laid in advance of backfilling, but in no case shall these amounts exceed 100 feet for sewer work and 50 feet for water main work.

#### 3.4 MATERIAL REPLACEMENT

- A. Remove and replace any trenching and backfilling material which does not meet the specification requirements, at the Contractor's expense.

### **PART 4 MEASURE AND PAYMENT**

#### 4.1 TRENCH EXCAVATION AND BACKFILL

- A. Unit of measure for Trench Excavation and Backfill will be the cubic yard. Space occupied by abandoned utilities will not be deducted except measure will exclude the external cross section area of any existing water main to be removed multiplied by its length.
- B. Volumes will be computed from the following dimensions:
  1. Width:
    - a. Width for payment at all sewer trench cross sections will be based on trench pay widths tabulated on Standard Details S-15.01, S-12.01 and S-12.02 as applicable.
    - b. Width for payment at all water main trench cross sections will be based on trench pay widths on Standard Details W-10.01, W-10.02, or W-10.03, as applicable.
    - c. Actual trench width more than one foot above top of pipe may exceed trench pay width if approved and at no additional cost to the DC Water.
  2. Depth:
    - a. Depth at any cross section will be based on mean depth from surface where trench excavation started to trench subgrade elevation.
  3. Length:
    - a. Length will be based on the horizontal projection of the completed sewer or water main without deduction for manholes, valves, and fittings. Other types of sewer or water main structures will be deducted from length measure.
- C. Payment for Trench Excavation and Backfill will be made at Contract unit price per cubic yard, which price and payment will include disposal of unsuitable excavated material, backfill and

compaction with suitable excavated material as well as placement and compaction of Borrow Trench Fill, shoring, trench plating as needed, barricades, maintaining and supporting utilities and structures, and all labor, materials, tools, equipment and incidentals necessary to complete work specified. Payment also includes removal and disposal of existing water main sections as indicated.

- D. Payment will not be made for sheeting and shoring left in place at the Contractor's option.
- E. Payment for Abandon Isolated Manhole or Water Valve Casing, or Remove Fire Hydrant, isolated from trench excavation limits, will be made at Contract unit price per each, which price and payment will include excavation as needed, salvaging manhole frame and cover, backfill and compaction to approved grade, and all labor, materials, tools, equipment and incidentals needed to complete work specified.
- F. Payment for pipe bedding gravel for pipe sewers will be included in Section 33 19 00. Payment for excavation for valve casings will be included in Section 33 06 20. Payment for excavation for sewer manholes will be included in Section 33 19 10. Payment for excavation for water service connections will be included in Section 33 12 13.

#### 4.2 TRENCH UNDERCUT EXCAVATION AND BACKFILL

- A. When material at trench grade is unsuitable, trench bottom shall be undercut to depth, length and width as directed. Undercut volume shall be backfilled to trench grade with subgrade gravel compacted with a vibratory compactor, protected and maintained. Work includes any required additional shoring and disposal of excavated material.

#### 4.3 MEASURE AND PAYMENT FOR TRENCH UNDERCUT EXCAVATION AND BACKFILL

- A. Unit of measure for Trench Undercut Excavation And Backfill will be the cubic yard, with volumes computed from volume of trench subgrade gravel to fill undercut.
- B. Payment for Trench Undercut Excavation And Backfill will be made at contract unit price per cubic yard of trench subgrade gravel complete in place, which price and payment will include labor, materials, tools, equipment, and incidentals needed to complete work specified, including excavation and shoring as needed, furnishing, hauling and compaction of gravel, and disposal of unsuitable materials.

#### 4.4 BORROW TRENCH FILL

- A. When trench excavation soils fail to meet requirements and when the quantity of approved trench excavation soils is insufficient, approved borrow trench backfill shall be used and payment made under Borrow Trench Fill.
- B. Furnishing approved borrow soils to replace approved trench excavation soils that become unsuitable shall be at no DC Water cost. Delivery tickets for each load of borrow material shipped to the project site shall have an inspection certification affixed at the source by the inspector. Any material delivered which has not been inspected prior to delivery may be rejected. The Contractor shall give prior notification of at least 12 hours as to source and quantity to be shipped, but acceptance of the material from any location shall not be construed as approval of the entire location, but only insofar as the material continues to meet specifications.
- C. Material may be rejected on visual examination pending tests of representative samples.
- D. Work includes Borrow Soils Base to the same depth as, and to replace, soils base removed during trench excavation.

#### 4.5 MEASURE AND PAYMENT FOR BORROW TRENCH FILL

- A. Unit of measure for Borrow Trench Fill will be the cubic yard, with volumes computed by the average end area method; however, the Engineer may substitute other methods to determine the exact quantity. Measurement shall be limited to the trench pay width although trench

width beyond these limits may be required to properly backfill the trench as excavated. Maximum depth measure shall be limited to distance between top of pipe bedding material and roadway elevation at bottom of asphalt patching material.

- B. Payment for Borrow Trench Fill will be made at the Contract unit price per cubic yard for furnishing material as measured complete in place, which price and payment will include soils base layer and all labor, tools, materials, equipment and incidentals necessary for hauling and furnishing the material to the work site.
- C. Placement and compaction of Borrow Trench Fill will be included in the cost of Trench Excavation and Backfill.

#### 4.6 MEASURE AND PAYMENT FOR SAMPLING/TESTING

- A. Work associated with the Sampling/Testing will not be measured separately for payment.
- B. The cost of the Sampling/Testing, including incidental work and materials, will be included in the remaining lump-sum and Contract unit price item for Excavation and Backfill.

**~ END OF SECTION 31 23 10 ~**

## **SECTION 31 23 37**

### **TEST PITS**

#### **PART 1 GENERAL**

##### 1.1 SUMMARY:

- A. Work consists of excavation, backfill, compaction and restoration as required to excavate test pits necessary to locate or determine type and/or condition of materials of construction of underground utilities.

##### 1.2 RELATED SECTIONS: Specified elsewhere may Include but is not limited to:

- 1. Section 31 23 10: Trench Excavation and Backfill.
- 2. Section 31 23 35: Point Excavation and Backfill.
- 3. Section 32 92 23: Sodding.

##### 1.3 SUBMITTALS

- A. Each test pit location and estimated size shall be submitted to the Engineer for approval.

#### **PART 2 PRODUCTS**

- A. Test Pit Excavated Material.

#### **PART 3 EXECUTION**

##### 3.1 CONSTRUCTION REQUIREMENTS

- A. When water service work is included in proposed pipe sewer projects, trench excavation under Section 31 23 10 will uncover those water service connections crossing the trench when proposed sewer will run between the water main and the curb line. For the opposite side of the street, with the water main running between the proposed sewer and opposite curb line, test pits will be required to determine the condition and material of the water service piping.
- B. Pit size: Approximately 2 ft. x 4 ft. or as directed by the Engineer.
- C. Pit depth: Generally 4 ft. minimum; approximately 5 ft. maximum.
- D. Test pits shall be scheduled as directed so that pit backfilling can be completed within the workday.
- E. Test pits shall generally be located within the tree space. Test pits may be required on both sides of a water meter to identify water service line materials.
- F. Salvage all sod, bushes, etc., and reinstall to restore area to acceptable condition. Where salvaged items will be inadequate for restoration, provide new sodding and other features.
- G. It may be necessary to hand excavate portions of test pits in order to protect utilities.
- H. Excavated material shall be stored and used for backfill. Borrow fill shall be used only if quantity of excavated material is insufficient, and shall be included as part of work.
- I. When pit is outside roadway and sidewalk areas, backfill shall be thoroughly compacted in 12-inch layers with pneumatic tampers. When pit is within roadway or sidewalk area, compaction shall be per Section 31 23 10.

#### **PART 4 MEASURE AND PAYMENT**

##### 4.1 MEASUREMENT

- A. Unit of measure for Test Pits will be each.

## 4.2 PAYMENT

- A. Payment for Test Pits will be made at Contract unit price per each, which price and payment will include hand excavation as needed, backfill including borrow fill as needed, restoration including sod as needed, and all labor, materials, tools equipment and incidentals needed to complete work specified.

**~ END OF SECTION 31 23 37 ~**

**SECTION 33 01 30**  
**PIPE SEWER TV INSPECTION**

**PART 1 GENERAL**

1.1 SCOPE:

- A. Work consists of furnishing all materials, labor, supervision, and equipment for the television inspection of new pipe sewers.

1.2 RELATED SECTIONS: Specified Elsewhere May Include But Is Not Limited To:

1. Section 33 19 00: Pipe Sewer
2. Section 33 19 10: Sewer Manholes.

1.3 QUALITY ASSURANCE

A. Experience:

1. Television inspection work shall be performed by a Contractor who is regularly engaged in work of the character required.

B. Equipment:

1. All equipment, devices and tools required for the Contract shall be owned (or leased) and operated by the TV inspection contractor.

1.4 SUBMITTALS

A. Before commencing work, the Contractor shall submit to the DC Water for approval:

1. Specific documentation, information, and references that the TV inspection contractor and the on-site supervisor for the work have had successful experience in similar work under similar conditions.
2. Detailed written descriptions, including pertinent supplemental drawings, literature, tables and other material, of equipment, methods, procedures and scheduling proposed for the work.

B. A television inspection log shall be maintained during the television inspection work. This log shall be on a printed form and shall include the following:

1. Job/work assignment number;
2. Date of inspection;
3. Location and identification of sewer section televised;
4. Size and type of pipe;
5. Length of sewer section televised;
6. Locations of all service connections;
7. Locations of all structural problems encountered such as cracked or broken pipe; offset or open joints; protruding service connections;
8. Sags (including length and estimated depth);
9. Incidence of root intrusion;
10. Areas where further cleaning is required;
11. Recommendation of lining requirement.
12. Locations of service connections shall be referenced by horizontal distance from identified manhole and circumferential position with respect to pipe axes.

- C. A summary report shall be submitted to DC Water within ten days of the conclusion of TV inspection work including copies of all television inspection logs. The report shall be neatly bound in a protective cover.

- 1. Cassettes shall be submitted to DC Water within ten days of the conclusion of fieldwork.

## **PART 2 EQUIPMENT**

### **2.1 TELEVISION INSPECTION EQUIPMENT:**

- A. Television inspection equipment shall include at least the following minimum items:
  - 1. A color, sewer television camera, specifically designed for operation through a minimum of 2,000 feet of single conductor cable in sanitary and storm sewers.
    - a. Camera outside diameter no greater than 3-inches to allow for inspection in small size pipes. Camera operating temperature range of 0 to 50 degrees C.
    - b. Capable of providing 320 lines of horizontal resolution and 350 lines of vertical resolution.
    - c. Solid-state image pickup device containing in excess of 250,000 picture elements (pixels).
    - d. 525 scanning lines, 60 fields, 30 frames, interlaces 2:1 - NTSC Color Standard, with geometrical image distortion not exceeding two percent (picture transmission systems requiring use of R.F. suppressors and subject to local transmitter interference not acceptable).
    - e. Full, true color, sharp image video bandwidths with no sacrifice or visible streaking of low frequency response; also no visible streaking of the low frequency test bars when viewing a standard EIA Test Chart.
    - f. 1.0V (140 IRE units) composite camera video signal at the monitor after transmission through 2,000 feet of single conductor cable.
    - g. Equipped with an f/1.4 wide angle lens with optical viewing angle to 70 degrees, auto iris type to control the illumination range for an acceptable picture between 10 and 100,000 Lux, with manual override remotely controlled from the viewing station.
    - h. A minimum of 1,000 linear feet of cable to transmit picture from camera to recording and viewing unit.
  - 2. A video cassette recorder capable of slow motion playback without noise bars.
  - 3. Video cassettes documenting all the television inspection with 1/2 inch tape width, ninety (90) minutes duration maximum, with "data view" indicating project address identification, date, along with voice description of sewer inspected during video recording.
  - 4. An on-board television viewing monitor consisting of high quality, industrial grade color unit providing in excess of 500 lines of resolution.
    - a. High-resolution "trinitron" type picture tube or approved equivalent, measuring a minimum of 12 inches diagonally.
    - b. Include voltage compensation circuits to reduce picture distortion to less than one percent under voltage conditions varying from 105V to 120V.
    - c. Housed in a steel cabinet which acts as shield to minimize effects of local magnetic fields such as transformers, coils, wraps of cable, etc. (monitors having inadequate or no protection from local magnetic fields, thereby contributing to loss of color picture purity, not acceptable).
    - d. Equipped with a speaker to allow for audio playback from video tape recording.

5. Lighting Equipment:

- a. The halogen lighting system shall be comprised of controlled-beam, reflector-sealed lamps with an automatic light compensator. The lighting system shall be capable of supplying variable light of high intensity.

B. Camera Transport:

1. Portable, manual winches or motorized mechanical equipment of indirect drive type shall be provided complete with sufficient cable or rods to permit inspection of all sewer sections specified and capable of moving camera through the sewer pipe in either direction at a uniform, slow rate.

C. Metering Device:

1. A remote reading, footage metering device(s) shall be provided such that camera location at ground level is visually displayed at all times on the television screen. Footage metering device shall be designed so that the distance recorder can be set at zero when camera is at entrance of pipe. Metering device shall have accuracy of one percent  $\pm$  of actual distance between manholes. Marking of cable or similar means that require interpolation of depth of sewer, will not be permitted.
2. A measuring target in front of the television camera shall be an exact measurement reference point, and the meter reading shall show the exact location of the reference point.

D. Monitor Trailer:

1. A lighted trailer or other suitable shelter, complete with table and chairs, shall be provided for observation of the television monitor and record keeping. Trailer shall be large enough to accommodate at least three people at any time for the purpose of viewing the monitor while TV inspection is in progress.

E. Accessories:

1. Accessory items shall include barricades, ladders, pulleys, safety equipment, etc.

### **PART 3 EXECUTION**

#### **3.1 TV INSPECTION:**

A. General

1. The interior of new pipe sewers and the interior of existing pipe sewers and building sewers shall be visually inspected as directed by means of closed circuit television in the presence of the Engineer.
2. Inspection for all sewers up through 36-inches diameter shall be performed by moving the camera through the line along the axis of the pipe in either direction at a uniform slow rate by remote means, stopping at each joint or defect to allow adequate evaluation by DC Water. For sewers 42-inches diameter and larger, camera movement shall be on a "hand held" basis.
3. DC Water shall have access to the television monitor and all other operations at all times. The Contractor shall provide space for two DC Water personnel at the same time in the trailer.
4. Picture quality and definition shall be as approved by DC Water. If unsatisfactory, Contractor shall remove equipment, replace it with satisfactory equipment and repeat the inspection at no additional cost to the DC Water.
5. The Contractor shall make visual (with audio) tape recordings of each sewer inspection. Date, station (distance from manhole) and manhole identification shall be visually displayed on the videotape at all times.

6. All points of interest including all obstructions, broken pipe and other problems shall be indicated via audio during inspection.
7. Throughout the television inspection activities, the DC Water reserves the right to alter the speed at which the camera is moved through the sewer. Should the quality of the television picture fail to provide a clear view of the entire sewer, the Contractor shall make appropriate adjustments in his monitoring equipment or discontinue work until DC Water agrees an acceptable picture has been obtained. Telephones or other suitable means of communication shall be set up between the two winches and the control monitor to coordinate the work.
8. Should the camera become stuck in the sewer, the Contractor will be responsible for its removal at no additional cost to the DC Water.

B. Safety:

1. Contractor is responsible for safety of personnel and the public during Contract period. The Contractor shall provide all devices, material and equipment necessary to assure the safety and health of personnel and the public.

**PART 4 MEASURE AND PAYMENT**

4.1 MEASURE

- A. Unit of measure will be the job with no direct measure taken, or per linear foot as provided in the Schedule of Prices and the Contract.

4.2 PAYMENT

- A. Payment for Pipe Sewer TV Inspection will be made at Contract price, as specified, which price and payment will include preparation of logs for all sections inspected, television equipment, and a complete video tape cassette of each section, and all labor, materials, tools, equipment, and incidentals needed to perform television inspection as specified.

~ END OF SECTION 33 01 30 ~

**SECTION 33 11 20**  
**CONCRETE THRUST BLOCK**

**PART 1 GENERAL**

1.1 SCOPE:

- A. Work consists of excavation; backfill and compaction beyond trench excavation limits, disposal of excess material, furnishing and constructing reinforced concrete thrust block(s) complete. Thrust block(s) shall be constructed as shown on Standard Details or per the details as indicated on Contract Drawings.

1.2 RELATED SECTIONS: Specified Elsewhere May Include but Is Not Limited To:

- 1. Section 01 33 00: Submittals
- 2. Section 03 10 00: Concrete Formwork
- 3. Section 03 20 00: Reinforcing Steel
- 4. Section 03 30 00: Cast-In-Place Concrete
- 5. Section 31 23 10: Trench Excavation and Backfill.
- 6. Section 33 05 02: Ductile-Iron Pipe Water Main.

1.3 SUBMITTALS

- A. Shop Drawings:
  - 1. Drawings shall be submitted for reinforcing steel layout.

**PART 2 PRODUCTS**

NOT APPLICABLE

**PART 3 EXECUTION**

3.1 CONSTRUCTION REQUIREMENTS

- A. Thrust block(s) shall be constructed per Thrust block(s) shall be constructed as shown on Standard Details W/40.01, W/40.02 or per the details as indicated on Contract Drawings. Concrete shall cure for a minimum of four days prior to backfilling. Backfill shall be per Section 31 23 10.

**PART 4 MEASURE AND PAYMENT**

1.1 MEASURE

- A. Measurement of thrust blocks shall not be made.

1.2 PAYMENT

- A. Payment for thrust blocks shall be included in the price of the details where they are shown.

~ END OF SECTION 33 11 20 ~



**SECTION 33 11 22**  
**CONCRETE-IN-LINE THRUST BLOCK**

**PART 1 GENERAL**

1.1 SUMMARY:

- A. Work consists of excavation, backfill and compaction beyond trench excavation limits, disposal of excess material, furnishing and constructing reinforced in-line concrete thrust block(s) complete.
- B. In-line thrust block(s) for water mains 12-inch and larger shall be constructed as shown on the plans.

1.2 RELATED SECTIONS: Specified elsewhere may include but is not limited to:

- 1. Section 01 33 00: Submittals
- 2. Section 03 10 00: Concrete Formwork
- 3. Section 03 20 00: Reinforcing Steel
- 4. Section 03 30 00: Cast-In-Place Concrete
- 5. Section 31 23 10: Trench Excavation and Backfill.
- 6. Section 33 05 02: Water Utility Distribution Piping – D.I.P.

1.3 SUBMITTALS

- A. Shop Drawings:
  - 1. Drawings shall be submitted for reinforcing steel layout.

**PART 2 PRODUCTS**

(NOT APPLICABLE)

**PART 3 EXECUTION**

3.1 CONSTRUCTION REQUIREMENTS

- A. In-line thrust block(s) shall be constructed per Standard Detail W-40.02 as indicated on Contract Drawings.
- B. Concrete shall cure for a minimum of four days prior to backfilling. Backfill shall be per Section 31 23 10.

**PART 4 MEASUREMENT AND PAYMENT**

4.1 MEASURE

- A. Unit of measure will be each.

4.2 PAYMENT

- A. Payment for Concrete In-Line Thrust Block will be made at Contract unit price per each, which price and payment will include excavation beyond the trench excavation limits; forming, furnishing and placing reinforcing steel, complete in place; furnishing and placing follower glands to anchor in-line thrust block; furnishing, placing and curing concrete, backfilling and all labor, materials, tools, equipment and incidentals needed to complete work specified.

~ END OF SECTION 33 11 22 ~



**SECTION 33 12 13**  
**WATER SERVICE CONNECTIONS**

**PART 1 GENERAL**

1.1 SCOPE:

- A. Where indicated in the Contract, water service components to abutting properties shall be adjusted, replaced and/or maintained for water service connection piping 2-inch diameter and smaller, as needed to adapt water service connections to project requirements. Work includes water service trench excavation and fill, restoration of landscape features to original condition and sodding.
- B. Work shall be per this Section and the D.C. Plumbing Code and shall be performed by plumbers licensed in the District.

1.2 RELATED SECTIONS: Specified Elsewhere May Include But Is Not Limited To:

- A. Section 01 33 00: Submittals
- B. Section 31 23 10: Trench Excavation and Backfill.
- C. Section 33 05 02: Pipe Water Main.
- D. Section 32 92 23: Sodding.

1.3 QUALITY ASSURANCE

- A. Reference Codes and Specifications:
  - 1. American Society for Testing and Materials:
    - a. ASTM B88 - 96: "Seamless Copper Water Tube".
    - b. ASTM D2146 - "Specification for Propylene Plastic Molding and Extrusion Materials".
    - c. ASTM D2853 - "Standard Specification for Reinforced Olefin Injection Molding and Extrusion Materials".
  - 2. D.C. Plumbing Code.
- B. Permits:
  - 1. The Contractor shall obtain a Water Excavation Permit from the Department of Consumer and Regulatory Affairs for each water service connection to be adjusted or replaced; permits will be issued at the Contractor expense.

**PART 2 PRODUCTS**

2.1 MATERIALS

- A. Size No. 57 or 67 Gravel: ASTM C33.
- B. Seamless Copper Water Tube: ASTM B88, Type K wall.
- C. Copper-to-Copper Couplings per D.C. Plumbing Code.
- D. Copper-to-Non-Copper Couplings per D.C. Plumbing Code.
- E. Meter Yokes per D.C. Plumbing Code.
- F. Reducers per D.C. Plumbing Code.
- G. Angle Meter Stops per D.C. Plumbing Code.
- H. Meter Valves per D.C. Plumbing Code.

- I. Curb Stops: Bronze alloy with body and key precision fitted and lapped as a pair for a precision seal, inverted key or solid tee-head style. Mueller Inverted Key or Tee-Head curb stops are acceptable or approved equivalent.
- J. Curb Stop Boxes: Curb stop boxes shall be of telescoping, two piece, screw style; lower section shall consist of full externally threaded shaft over a Buffalo style bell that is arched and flanged. Upper section shall consist of full internally threaded shaft that fits over lower section with cast iron rim on top of shaft accommodating a cast iron cover (lid) with "Water" imprint as specified.
- K. Both the lower section and the upper section of the curb stop box shall be rigid acrylonitrile-butadiene-styrene (A.B.S) plastic, either injection molded or extruded, per ASTM D1788, with test specimens molded by the injection process in accordance with Recommended Practice D1897.
- L. The cast iron lid and rim shall be of standard Buffalo new style design with standard pentagon head bolt and shall be interchangeable with the cast iron Buffalo old style boxes already in use.
- M. The Series 250 - Screw Type curb stop box made by Bingham & Taylor, Culpeper, Virginia is acceptable or approved equivalent.
- N. Meter Boxes: Meter boxes shall be of durable, high-density polyethylene, molded with solid walls (containing no foam or corrugations) and shall have flanged bottom not only for added strength but also to retard settling or sinking into the ground. The nominal wall thickness of the box shall not be less than 0.3 inch and the box shall have nominal dimensions of 20-inch diameter by 30-inch depth. Other sizes may be used, if needed, for larger settings.
  - 1. The polyethylene (PE) plastic material specified for the box shall be Type III or Type IV High Density polyethylene per ASTM D1248, with densities of 0.95 g/c.c. and above, as determined by ASTM D1505 test method. The interior color of the box shall be white (natural) to aid in meter reading, but the exterior shall be black, compounded to improve strength and to protect against deterioration below ground. The low temperature brittleness shall be a maximum of (-76 degrees Fahrenheit) per ASTM D746. The vertical crushing strength, which is a measure of the magnitude of static vertical pressure a freestanding meter box can withstand, shall be 3000-lbs. minimum.
  - 2. A meter box such as MS 2030B manufactured by the Mid-States Plastics, Inc., Lexington, Kentucky is acceptable or approved equivalent.
  - 3. Meter box frames and covers to be used in conjunction with the meter boxes, above, shall be cast iron, Type A made by Meter Box Covers, or approved equal, having 11-1/2 inches clear openings with a bronze pentagon nut (standard size) swadged to an iron locking worm gear.
  - 4. The meter box frames and covers shall be made of gray cast iron treated with coal tar epoxy coating and the covers shall be labeled with "Water METER" imprint as specified.

### **PART 3 EXECUTION**

#### **3.1 CONSTRUCTION REQUIREMENTS**

- A. Notifications:
  - 1. Property owners/tenants shall be notified at least 48 hours in advance of the Contractor's intent to work in their front yards in public space and the Contractor shall assure owners that disturbed property will be restored to its original condition, as shown in pre-construction photographs, upon completion of work.
- B. Work on Private Property:

1. In general, most water service building connection work is in public space. The Contractor shall locate all existing water service piping and may be required to conduct some work on private property. The Contractor shall obtain written approval from property owners before disturbing any private property, and shall submit a copy of the approval to the Engineer. The Contractor shall make no claim for any time delay associated with obtaining permission to work on private property.

2. The DC Water assumes no responsibility for any work or trespass on private property.

C. Maintaining Water Service:

1. Existing water service shall, in general, be kept in service until transfer connections are made. Existing water service will then be discontinued from the old water main, service pipe disconnected from the corporation cock on the old main by the Contractor or abandoned in place as directed, service pipe adjusted or replaced as specified herein and connected to the new main by the Contractor within time limits specified herein.
2. The Contractor shall contact the Manager, Distribution Division, and (202)-612-3410 two (2) weeks prior to proposed scheduling of water service work. The Contractor shall coordinate his water service work with water main tap and any required meter relocation or new meter installation by the DC Water.
3. No more than three separate shutoffs will be permitted for any single water service connection, and the duration of each shutoff shall not exceed two (2) hours, except in emergency when the Engineer will grant a time extension. The Contractor shall give sufficient, advance written notice to the Engineer of the starting time and duration of proposed shutoff, in order to provide for emergency water supply.
4. If proposed shutoff time conflicts with essential consumer use, it shall be rescheduled to alleviate interference. The Engineer will determine action to be taken for essential consumer use requests.
5. Overtime, weekend and holiday work may be ordered by the Engineer to promptly complete temporary and/or permanent water service.

D. Work By DC Water:

1. The DC Water, (Department of Water Measurements and Billing) will furnish and install D.C. meters at no cost to the Contractor. For privately owned meters (2-inch and smaller diameter water service installed and owned by private parties), the DC Water will either make the necessary adjustment or will make arrangements for the owner to do so. DC Water work includes connecting meter at couplings to existing meter yoke or new meter yoke furnished and installed by Contractor.
  - a. The Contractor shall furnish and install pipe, couplings, meter housing, frame and cover and meter housing gravel foundation.
2. The DC Water will make all new water service connection taps at the water main, and will make tap removals from old main where indicated at no cost to the Contractor.
3. Where any unmetered water service is encountered, meters will be installed in public space by the DC Water.
4. Wherever an existing meter is located on private property or inside the building, the DC Water will relocate said meter in public space.

E. Preconstruction Photos:

1. A minimum of two (2) preconstruction photographs shall be taken of each property where water service will be adjusted or replaced. Views shall be taken as directed to show preconstruction existing conditions at each property within the area associated with the work.

F. Adjust Water Service Pipe:

1. Work consists of adjusting water service connection pipe due to new water main work that affects water service.
  - a. If existing water service piping is copper, is not less than 1-inch diameter and enough slack exists in the piping, the existing piping shall be connected to the new main without replacing any piping.
  - b. However, if the Engineer determines that slack is insufficient or pipe cannot be bent by approved means to meet new corporation cock, adjustment under this subsection will not be feasible and a section of pipe shall be replaced per subsection G. herein.
2. Work consists of trench excavation as needed within the street including excavation, backfill and compaction for DC Water work to abandon old tap and install new tap, adjusting existing 1-inch through 2-inch diameter copper service pipe to bring pipe to the connection point at new corporation stop in main, making connection at tap, backfilling and compaction.
3. The backfilled street area shall receive Temporary Asphalt Patching.

G. Replace Water Service Pipe:

1. Work consists of replacing water service connection pipe in the vicinity of and/or due to new water main work and/or new sewer work. Work shall meet requirements of Standard Detail W/80.01.
  - a. If existing water service piping is copper, is not less than 1-inch diameter, and slack in the existing piping is insufficient to connect it directly to the new main, or pipe cannot be bent by approved means to meet new corporation stop, the Contractor shall cut the pipe at a point behind the curblines as directed, install a new single section of same size copper pipe between the corporation stop (tap) and existing pipe, and connect new-to-existing water service pipe with a compression coupling.
    - 1) However, if the point where existing pipe is to be cut is within five feet of the meter, unless otherwise directed by the Customer Service Manager, Meter Operations, (202) 612-3495, the entire length between the new main and the meter shall be replaced with copper pipe not less than 1-inch diameter; pipe shall be continuous with no joints, couplings or fittings. Existing copper piping, if 1-inch minimum, between meter and property line shall remain. No curb stop will be required.
  - b. If existing water service piping is not copper, or is copper pipe less than 1-inch diameter, the Contractor shall replace the water service piping (with a single section of copper pipe not less than 1-inch diameter with no joints, couplings or fittings) from the new main to the new meter housing and from the meter to:
    - 1) The property line, along with a curb stop and curb stop box at the property line, if there is no building projection (areaways, steps, porches, bay windows, etc.) into public space.
    - 2) The face of building projection, along with a curb stop and curb stop box close to the face of projection, when projection occupies public space.
      - a) Replacement piping shall be the same size as piping replaced except that all existing 3/4-inch or smaller non-copper piping shall be replaced with 1-inch copper piping.
      - b) In such case where the new copper pipe between main and meter will be 1-inch diameter but existing service between meter and dwelling is lead or galvanized pipe, the DC Water will provide a new 1-inch meter and the Contractor shall install 1-inch copper pipe between meter and property line

(or building projection) along with a curb stop, curb stop box and compression coupling and reducer at the property line.

2. Work consists of trench excavation of dimensions as directed to allow sufficient space for meter and meter box replacement, per Section 312310 and preparation of new meter pit subgrade and gravel foundation, tunneling where feasible under curb/gutter, copings, walks, etc., removal and disposal of old service pipe and fittings if needed and, otherwise, abandonment of existing pipe in-place, removal of top section of curb stop and box if present and abandonment of lower portion, installing new pipe and new riser pipe, providing new meter yoke with meter stop or meter valves and couplings, new meter box, and new frame and cover, connections at meter and meter yoke, making connections at tap, curb stop and property line, backfilling and compaction, restoration of surface features including sodding and incidental work to restore water service.
  - a. A curb stop box shall be set plumb over the curb stop so that the stop is centered within box. Top section of box shall be rotated so that box cover will be flush with finished ground surface. Backfill shall be carefully placed to avoid disturbance of curb stop or curb stop box.
  - b. Work includes any excavation, backfill and compaction for DC Water work at tap.
3. If the DC Water determines that a meter requires relocation or a new meter is needed, the Contractor shall cut service pipe at a location as directed, provide new pipe, meter yoke and couplings, meter box, and frame and cover, and coordinate work with meter installation by the DC Water. If meter and housing adjustment in-place is needed, the Contractor shall furnish and install new pipe and couplings.
  - a. Work consists of trench excavation and preparation of new meter pit subgrade and gravel foundation, new pipe and couplings as needed to meter yoke and to reconnect service in old meter location, providing new meter yoke with meter stop or meter valves and couplings, connecting meter yoke to service piping, backfill and compaction, restoration of surface features including sodding and incidental work to restore water service, after DC Water installation of meter and meter housing.

H. Restoration:

1. Any items disturbed during construction including walls, fences, shrubs and lawns shall be restored by the Contractor upon completion of work. Grassed areas shall be resodded as part of work.
2. Any paved areas removed within water service trench limits shall be patched with asphalt.

## **PART 4 MEASUREMENT AND PAYMENT**

### **4.1 MEASUREMENT**

- A. Unit of measure for Adjust Water Service Pipe will be each.
- B. Unit of measure for Replace Water Service Pipe will be the linear foot.
- C. Unit of measure for Curb Stop/Curb Stop Box will be each.
- D. Unit of measure for Furnishing and Installing Water Meter Boxes, Frames and Covers will be per each.

### **4.2 PAYMENT**

- A. Payment for Adjust Water Service Pipe will be made at Contract unit price per each, which price and payment will include excavation or tunneling as needed, including excavation to abandon old tap, adjusting service piping and connecting to new corporation stop in new main, backfill and compaction (excluding Temporary Asphalt Patching which will be measured and paid separately), and all labor, materials, tools, equipment and incidentals needed to complete work specified.

- B. Payment for Replace Water Service Pipe will be made at Contract unit price per linear foot of pipe in place complete, which price and payment will include photographs, excavation, allowance of two linear feet for meter yoke, couplings and riser pipe when needed, backfill and compaction including backfill for meter pits and curb stop boxes (excluding Temporary Asphalt Patching, which will be measured and paid separately), replacing service piping, connections at corporation stop in new main, at water meter, at curb stop and at connection and reducer as needed to connect to existing service pipe at property line, and all labor, materials, tools, equipment and incidentals needed to complete work specified. Property restoration and sodding shall also be included. Payment will be based on pipe in place, whether in open cut or in tunnel.
- C. Payment for Furnishing and Installing Water Meter Boxes, Frames and Covers will be per each, which price and payment will include furnishing and placing meter pit foundation gravel, furnishing and installing water meter boxes, frames and covers, coordination with DC Water installation of meters, and all labor, materials, tools, equipment and incidentals needed to complete work specified. Property restoration and sodding shall also be included if required and there is no Adjust or Replace Water Service Pipe pay item.
- D. Payment for Curb Stop/Curb Stop Box will be made at Contract unit price per each combined unit complete in place, which price and payment will include curb stop, curb stop box and its adjustment, securing cover, leakage test, and all labor, materials, tools, equipment and incidentals needed to complete work specified. Trench excavation and backfill will be included in Replace Water Service Pipe work.

~ END OF SECTION 33 12 33 ~

## **SECTION 33 12 33**

### **WATER METERS**

#### **PART 1 GENERAL**

##### 1.1 SCOPE:

A. Work consists of furnishing and placing water meters and appurtenant piping.

##### 1.2 RELATED SECTIONS: Specified Elsewhere May Include But Is Not Limited To:

1. Section 31 23 10: Trench Excavation and Backfill.
2. Section 33 05 02: Pipe Water Main – Ductile-Iron
3. Section 33 12 13: Water Service Connections.
4. Section 33 48 00: Concrete Valve Vaults

##### 1.3 QUALITY ASSURANCE

A. ANSI/AWWA C 700-77: "AWWA Standard for Cold Water Meters-Displacement Type".

##### 1.4 SUBMITTALS

A. Shop Drawings:

1. Affidavits, certifications and manufacturer's test results shall be submitted per this Section.

#### **PART 2 PRODUCTS**

##### 2.1 MATERIALS

A. Water Meter. Water meters shall conform to AWWA C-700-77, modified or supplemented as follows:

1. Meters shall be magnetic drive, positive displacement oscillating piston or rotating disc type sealed register cold water meters.
2. An affidavit of compliance and a certificate of testing for accuracy are required for water meters.
3. Size and number of meters shall be as shown on the Drawings.
4. Corrosion protection for cast-iron frost protection covers may be by an inner liner or coating.
5. Modifications of test specifications for operating at higher temperatures are not required.
6. Markings. The manufacturer's meter serial number shall be imprinted permanently on the outer case as well as on the register box lid.
7. Cases. Cast iron frost bottoms shall be provided on 5/8", 3/4" and 1" meters. 1-1/2" and 2" meters shall be split case type with bronze lower and upper shell assemblies.
8. Water meter sizes 5/8" x 3/4" and 1-1/4" shall not be supplied.
9. Water meter sizes 1-1/2" and 2" are to be furnished with flanges on both ends.
10. Companion flanges, gaskets, bolts and nuts shall be provided. Nuts and bolts shall be stainless steel.
11. Registers. Registers shall be straight reading, hermetically sealed and shall read in cubic feet. In piston type meters all reduction gearing shall be contained in a permanently hermetically sealed, tamperproof enclosure made from a corrosion resistant material and will be secured to the upper maincase by means of a locking device. In disc type meters,

the register is to be located in a bronze register box mounted to the meter case by use of a tamperproof-locking device.

12. Neither a remote register nor an encoder type register is required.

13. Magnetic coupled drive is required.

## 2.2 QUALIFIED PRODUCTS:

A. With respect to water meters described in this specification, only meters which have, prior to the time set for opening of bids, been tested and approved for inclusion in the qualified list below. Manufacturers who wish to have a water meter tested for qualification are urged to communicate with the Chief, Department of Water Measurement and Billing, DC Water and Sewer Authority on A.C. 202-727-2044. Manufacturers having products not yet listed, but which have been qualified, are requested to submit evidence of such qualification with their bids, so that they may be given consideration.

B. The following meters are included on the qualified list:

1. Rockwell Sealed Register,
2. Trident Model 8 Frost Proof,
3. Hersey Model M.H.T.,
4. Badger A Easy Read

## PART 3 EXECUTION

### 3.1 GENERAL:

A. Prior to purchase of the meter, the Contractor shall submit to DC Water, for approval, catalog data, net weight and assembly drawings. No meter shall be furnished and installed unless approved by DC Water.

B. An affidavit of compliance shall be furnished by the manufacturer that specifies tests have been performed and that all components and the product comply in all respects with requirements of the Specifications.

C. Record of Tests:

1. Record of physical and chemical properties, operating and hydrostatic tests shall be furnished.

D. Existing water service shall be maintained at all times. Existing water mains shall be kept in service until new water mains are completed, temporarily capped as needed, tested, chlorinated and charged.

E. Work by Contractor:

1. The Contractor shall furnish, install, and connect meters, meter housings, frames and other items as being furnished and installed by the DC Water.
2. The Contractor shall make all new water service connection taps at the water main, and will make tap removals from old main where indicated.
3. The Contractor shall furnish and install New Water Service Pipe in accordance specifications as supplemented herein.
  - a. Work consists of trench excavation and preparation of meter pit subgrade and gravel foundation, tunneling where feasible under curb/gutter, copings, walks, etc., removal and disposal of unsuitable material, furnishing and installing pipe, riser pipe, meter yoke with meter stop or meter valves and couplings, connections at meter yoke, making connection at tap, back-filling and compaction, restoration of surface features including sodding and incidental work.

- b. Curb Stop/Curb Stop Box (es), if required, shall be constructed per Contract Specifications.
- c. Work includes any excavation, backfill and compaction for DC Water work at tap.
- d. Restoration: Any items disturbed during construction including walls, fences, shrubs and lawns shall be restored by the Contractor upon completion of work.

#### **PART 4 MEASURE AND PAYMENT**

##### **4.1 GENERAL**

- A. Payment for Water Meters - Furnish and Install will be made at Contract unit price per each, which price and payment will include excavation and backfill, if needed, installation of meters and meter housing, and all labor, materials, tools, equipment and incidentals needed to complete work specified.
- B. Payment for New Water Service Pipe will be made at Contract unit price per linear foot of pipe in place complete, which price and payment will include photographs, excavation, allowance of four linear feet for meter yoke when needed, backfill and compaction including backfill for meter pits and service valve boxes, connections at corporation stop in main and at water meter, meter pit foundation gravel, and, after installation of meters and meter housings, property restoration and sodding (excluding temporary asphalt patching, which will be measured and paid separately), and all labor, materials, tools, equipment and incidentals needed to complete work specified. Payment will be based on pipe in place, whether in open cut or in tunnel.
- C. Payment for Curb Stop/Curb Stop Box will be made at Contract unit price per each combined unit complete in place, which price and payment will include connections and reducer as needed to connect to existing service at property line, adjustment of curb stop box, securing cover, leakage test, and all labor, materials, tools, equipment and incidentals needed to complete work specified. Trench excavation and backfill will be included in New Water Service Pipe work.

~ END OF SECTION 33 12 33 ~



**SECTION 33 19 10**  
**SEWER MANHOLES**

**PART 1 GENERAL**

1.1 SUMMARY:

1. Work consists of excavation, backfill and compaction beyond trench pay limits, furnishing and placing manholes complete, either over existing or new sewers, including concrete base and manhole frames and covers. Manhole risers shall, in general, be constructed of precast concrete elements unless otherwise specified. Brick masonry may be used in lieu of precast riser units for conditions as approved by DC Water.

1.2 RELATED SECTIONS: Specified Elsewhere May Include But Is Not Limited To:

1. Section 01 33 00: Submittals
2. Section 03 10 00: Concrete Formwork
3. Section 03 20 00: Reinforcing Steel
4. Section 03 30 00: Cast-In-Place Concrete
5. Section 03 40 00: Precast Concrete Products
6. Section 31 23 10: Trench Excavation and Backfill

1.3 QUALITY ASSURANCE

A. Reference Codes and Specifications:

1. ASTM A48: "Standard Specification for Gray Iron Castings".
2. ASTM C32: "Standard Specification for Sewer and Manhole Brick (Made from Clay or Shale)".
3. ASTM C443: "Specification for Joints for Circular Concrete Sewer and Culvert Pipe, Using Rubber Gaskets".
4. ASTM C478: "Standard Specification for Precast Reinforced Concrete Manhole Sections".

**PART 2 PRODUCTS**

2.1 MATERIALS

- A. Unless otherwise specified, manhole bases shall be precast or cast-in-place reinforced concrete, set on a minimum six-inch depth of compacted gravel on undisturbed material. An acceptable steel ring form shall be used to form a groove for the tongue of the bottom precast riser section.
- B. Invert channels shall be formed of brickwork and/or Class 4000 concrete conforming to the adjoining pipe sizes. Invert sides shall be smooth curves with longest possible radius tangent to adjoining pipe centerlines. Depths of smaller pipes shall match 0.8 depth of the main pipe. A one-inch wash shall be provided from the inside edge of the manhole base to the edges of the shaped channels.
- C. Precast Concrete Risers:
  1. Precast manhole risers shall be per ASTM C478 modified as follows:
  2. Basis of Acceptance - Development of concrete mix proportions shall be determined per Section 03 30 00 prior to production.
  3. Manufacture - Concrete shall contain a minimum of 564-lbs. cement per cubic yard per the Table in Section 03 30 00.

4. Risers shall be cast with joint groove to receive "O" ring compression seal.

D. Manhole Brick:

1. Brick shall meet the physical requirements of ASTM C32, Grade MS for manholes and Grade SS for sewer invert surfaces, and shall be 2-1/4 x 3-3/4 x 8 inches in size.

E. Manhole Steps:

1. Manhole steps shall be reinforced plastic steps composed of ASTM A615, Grade 60 reinforcing bar (#4) completely encapsulated in copolymer polypropylene per ASTM D2146, Type II, Grade 43758, as made by M. A. Industries, Inc., Peachtree City, Georgia:
2. Model PS1-PF for new manholes for concrete bases and riser sections and replacement steps on existing manholes, where width of steps equals 12"; and Model PS1-B for brick masonry manholes.

F. Compression Seals:

1. "O" ring compression seals for precast sewer manhole risers shall be per ASTM C443.

G. Manhole Entry Seals:

1. Manhole pipe entry seals shall be equivalent to "Press Wedge II" gaskets manufactured by Press-Seal Gaskets Corp., Fort Wayne, Ind.; "A-Lok" gaskets manufactured by A-Lok Products Corp., Trenton, NJ; or "Kor-n-Seal", manufactured by National Pollution Control Systems, Inc., Nashua, N. H.

H. Mortar:

1. Joint and parging mortar for manhole brickwork shall consist of one part Type II Portland cement and 2-1/4 parts fine aggregate per Specification by volume and sufficient water to make a stiff mix. Lime in mortar is prohibited.

I. Manhole Frames and Covers:

1. Gray iron castings shall be per ASTM A48, Class 30A. Iron castings shall be true to pattern in form and dimensions, free from pouring faults, sponginess, cracks, blowholes and other defects.
2. Castings shall be boldly filleted at the angles and the arrises shall be sharp and perfect.
3. All castings shall be sandblasted or otherwise effectively cleaned of scale and sand so as to present a smooth, clean and uniform surface.
4. Manhole frame and cover bearing surfaces between cover and frame shall be machine finished to ANSI roughness symbol 250, tolerance -0 + 1/16 inch.
5. The word SEWER shall be cast in one-inch high letters flush with surface of cover.
6. Manholes designated in Contract documents to be fitted with "lock type" frame and cover, ventilating or pressure type shall be furnished with heavy-duty cast-iron frames, 36-inch I.D. at bottom flange, and corresponding covers with a minimum of four counter-sunk bronze hexagonal-head cap screws and concealed pickholes.
7. Ventilating type shall have a rubber gasket seal. Lock type frame and cover, Type R-1916-H as manufactured by Neenah Foundry Company, Neenah, Wisconsin or approved equivalent is acceptable.

## **PART 3 EXECUTION**

### **3.1 SUBMITTALS**

A. Shop drawings shall be submitted for precast risers, cast-iron frames and covers.

### 3.2 CONSTRUCTION REQUIREMENTS

#### A. Maintaining Sewer Service:

1. Existing sewer service shall be maintained at all times. The Contractor shall conduct his operations so as to maintain flows in existing sewers through the project area. This will require proper coordination between construction replacement and abandonment so as not to block existing sewers that are to remain in service.
2. When necessary to pump sewage while replacing and installing manholes, the material pumped shall be carried by means of approved hose or other closed, watertight conveyor to the downstream sewer or manhole designated by DC Water. Sewage shall not be allowed to flow onto or over the street surface. Overtime, weekend, and holiday work may be required at no additional DC Water cost to promptly complete temporary and/ or permanent sewer service.

#### B. Excavation/Backfill:

1. Excavation for manholes over all sewers shall be extended as needed beyond trench limits, and the excavation shall be maintained and shored as necessary for proper construction. After the manhole is complete and concrete and parging have cured, the remaining excavation shall be backfilled per Project Manual Specifications; the portion of backfill beyond trench limits shall be included as part of Sewer Manhole work. For manholes over existing sewers, all excavation shall be included as part of Sewer Manhole work.

#### C. Concrete Manhole Sections:

1. Manhole bases shall be precast or cast-in-place reinforced concrete, set on firm foundation. Flow channels and benches shall be shaped with brick; or concrete may be used as needed, with brick facing.
2. Bases for new manholes shall be precast with base riser cast integral with base slab.
3. Manhole steps shall be built into walls of manhole base as indicated on the Drawings, with step legs embedded 3-3/8 inches into the concrete.
4. Before press fitting steps into inserts or drilled holes, concrete must have attained 2,500-psi minimum field strength.
5. When constructing a new manhole over an existing sewer, the manhole base shall be constructed around the existing sewer before cutting the sewer. Precast concrete riser with doghouse openings cast in lower end shall be used as base riser and fitted over existing pipe, except over PVC pipe.
6. Riser and base sections shall have cast or augured cutouts of the required diameter for connections and outlet pipes; maximum size of cutouts shall be equal to the outside pipe diameter plus four-inches. A clearance of at least nine inches of concrete shall remain between adjacent connection and outlet pipe holes and between riser joints and holes in precast risers and bases.
7. Lesser clearance will be considered only if additional reinforcing steel is provided and details are submitted for approval.
8. For manholes on sanitary and combined flow sewer 24-inches and smaller diameter, the Contractor shall install a lubricated, rubber gasket entry seal into the manhole wall to effect a watertight connection between the connecting sewer pipe and the manhole.
9. Entry pipes shall be cut flush with the inside wall of the manhole.
10. Two-inch diameter lifting holes spaced 180 degrees apart are permitted provided PVC or rubber plugs are installed to make manhole watertight after installation.

11. Manhole risers shall be constructed of precast concrete elements where feasible, otherwise of brick masonry. Risers and cone tops shall be furnished with manhole steps 12 inches on center.
12. After the precast concrete riser joints have been joined, the annular joint space remaining on the inside and outside of the precast concrete riser joints shall be filled with mortar and the inside joint trowelled smooth.
13. Manhole steps shall be aligned on vertical section of sidewall having no pipe entry, with step legs embedded 3-3/8 inches into the concrete.
14. Manholes shall have a precast slab or eccentric cone top with proper size access hole to accommodate the required frame and cover. Brick masonry shall be used to adjust the frame and cover to approved grade.
15. Not more than 18 inches of brick shall be used unless approved by the Engineer.

D. Brick Manhole Sections:

1. Manhole brickwork shall be plumb except for eccentric top section, true to line with level and accurately spaced courses, with each course breaking joint with the course below. Joints shall not be less than 3/8-inch nor more than 1/2 inch with a minimum of one header course to every six-stretcher courses. Each brick shall be placed with a full joint in a full bed of mortar, shoved up against adjacent brick so that the mortar rises between and completely fills vertical joint. Exterior surfaces of brick manholes shall be completely coated with a 1/2-inch mortar parging and made watertight. Brick masonry walls shall be nine inches thick for standard manhole depth; when the manhole depth exceeds 15 feet brick wall thickness shall be increased to 13-inches below 15 feet elevation.
2. Brick masonry shall not be placed when ambient air temperature is below 40 deg. F when it appears probable that temperature below 40 deg. F will be encountered before mortar can set, unless adequate approved means are provided for protecting the work from freezing. Work shall be protected by heating and maintaining the temperature of the masonry materials at not less than 40 deg. F on both sides of the masonry for not less than 72 hours. Work with, or on, frozen materials are prohibited.
3. During hot weather, masonry shall be protected from direct rays of the sun. All finished work shall be covered and kept damp for a period of seven (7) days after placement.
4. Mortar shall be freshly mixed for prompt use; no mortar shall be used after setting or beyond one hour after the addition of water. Retempered mortar and freeze preventive chemical additives are prohibited. The mixing machine, batch size, and mixing time shall be approved by the Engineer. When hand mixing is done, mixing shall be accomplished in a clean, leakproof, nonporous mortar box constructed for the purpose.
5. Proper size manhole steps shall be aligned on section of sidewall that is vertical to frame and cover, with step legs embedded 7-3/8-inches into the brickwork.
6. The Contractor shall furnish manhole frames drilled with two 3/4-inch diameter holes, 180 degrees opposed in frame flange. With frame in proper position at required grade, corresponding holes shall be drilled with a minimum of two inches into the brick masonry upon which the frame sits. Steel dowels shall be inserted through these holes to prevent lateral movement of frames during backfill and paving operations.
7. Dowels shall be No. 5 rebars, three inches minimum length, or approved equivalent. A mortar bed shall be constructed around the frame flange.
8. Excavation shall be backfilled per Project Manual Specification.

E. Combined Concrete/Brick Sections:

1. Where approved by the Engineer, manholes may be constructed from a combination of precast sections, brick masonry, and cast-in-place reinforced concrete. At the point where the different materials join, a watertight joint shall be provided that leaves interior walls straight and smooth.

F. Field Cut Pipe Entry Openings:

1. Field cuts in concrete sections of manholes shall be accomplished with proper tools. Unless otherwise approved, the outline of the proposed hole shall be clearly marked and shall be line drilled not more than five inches apart. The hole shall be made smooth to receive the pipe entry seal and the pipe. Pipe entry seals shall be used when connecting a proposed sanitary or combined sewer of 24-inches and smaller diameter to an existing manhole. Nonshrink mortar shall be used to fill void between entry seal and pipe. For storm sewer connections made in the field, the annular space around the connection pipe shall be filled with nonshrink mortar. Field cut entry holes will not be permitted in proposed manholes unless approved.
2. When precast manhole bases are used for sanitary or combined sewer applications, an approved resilient entry seal shall be cast in the base during manufacture.
3. Pipe entry holes in brick sections of existing manholes shall be made by carefully removing sections of brickwork.

G. Replace Manhole Invert:

1. Remove and replace invert in existing manhole to redirect sewage flow. New invert shall be per this specification.

## **PART 4 MEASUREMENT AND PAYMENT**

### **4.1 MEASURE**

- A. Unit of measure for manholes on sewers 48-inches diameter or less will be the vertical linear foot, with measure taken from sewer outlet invert to top of frame for manholes over existing or new sewers.
- B. Unit of measure for manholes on sewers larger than 48-inches diameter will be the vertical linear foot, with measure taken from sewer outlet invert to the top of frame. The unit of measure for the complete reinforced concrete base for manholes on sewers larger than 48-inches diameter will be each.
- C. The unit of measure for replacing manhole invert will be each.

### **4.2 PAYMENT**

- A. Payment for Precast Sewer Manhole and Brick Sewer Manhole will be made at Contract unit price per vertical linear foot, which price and payment will include excavation, shoring and backfill beyond trench pay width for manholes over new sewers; excavation, shoring and backfill for manholes over existing sewers; furnishing and placing precast or cast-in-place reinforced concrete manhole base on all sewers 48-inches diameter or less, precast or brick manhole risers, precast reinforced concrete slab or eccentric cone top, brick masonry to adjust manhole frames and covers to correct grades; furnishing and placing manhole frames and covers, furnishing and placing manhole steps, maintaining sewer service, and all labor, materials, tools, equipment and incidentals needed to complete work specified.
- B. Payment for Complete Reinforced Concrete Base for sewer manholes on sewers larger than 48-inches diameter will be made at the Contract unit price per each, which price and payment will include excavation, shoring and backfill beyond trench pay width for manholes over new sewers; excavation, shoring and backfill for manholes over existing sewers; furnishing and placing reinforced concrete manhole base; furnishing and placing pipe that protrudes into the manhole base; furnishing and placing manhole steps; maintaining sewer service, and all labor, materials, tools, equipment and incidentals needed to complete work specified.

- C. Payment for Replace Manhole Invert will be made at the Contract unit price per each, which price and payment will include removal of existing invert, reshaping new invert, disposal of unusable materials, and all labor, materials, tools, equipment and incidentals needed to complete work specified.

**~ END OF SECTION 33 19 10 ~**

## **SECTION 33 44 00**

### **CATCH BASINS**

#### **PART 1 GENERAL**

##### 1.1 SUMMARY:

- A. Work consists of excavation and backfill, disposal of excess material, furnishing and constructing various types and sizes of reinforced concrete catch basins and connecting pipe to manholes complete as shown on Drawings or as directed.

##### 1.2 RELATED SECTIONS: Specified Elsewhere May Include But Is Not Limited To:

- 1. Section 01 33 00: Submittals
- 2. Section 03 40 00: Precast Concrete Products
- 3. Section 31 23 10: Trench Excavation and Backfill
- 4. Section 33 19 00: Sanitary Utility Sewerage Piping
- 5. Section 33 19 10: Sewer Manholes.

##### 1.3 QUALITY ASSURANCE

###### A. Reference Codes and Specifications:

- 1. ASTM A36: "Specification for Structural Steel".
- 2. ASTM A48: "Standard Specification for Gray-Iron Castings".
- 3. ASTM A123: "Specification for Zinc (Hot-Galvanized) Coatings on Products Fabricated from Rolled, Pressed and Forged Steel Shapes, Plates, Bars and Strip".
- 4. ASTM C33: "Specification for Concrete Aggregates".
- 5. ASTM C76: "Standard Specification for Reinforced Concrete Culvert, Storm Drain, and Sewer Pipe".
- 6. ASTM C443: "Standard Specification for Joints for Circular Concrete Sewer and Culvert Pipe, Using Rubber Gaskets".
- 7. ASTM C478: "Standard Specification for Precast Reinforced Concrete Manhole Sections".

##### 1.4 SUBMITTALS

- A. Shop drawings shall be submitted for reinforcing steel layout, reinforced concrete pipe, water seal castings, catch basin tops and catch basin frames and covers.

#### **PART 2 PRODUCTS**

##### 2.1 MATERIALS

- A. Section 33 19 10: Sewer Pipe
- B. Section 03 20 00: Reinforcing Steel.
- C. Section 03 30 00: Cast-In-Place Concrete.
- D. Precast Basin Tops: ASTM C478 modified as follows:
  - 1. Basis of Acceptance – Section 03 30 00, Production Facility Test Data Proportioning subsection.
  - 2. Manufacture - Concrete shall contain a minimum of 564-lbs. cement per cubic yard per Table in Section 03 30 00.

- E. Joint Mortar:
  - 1. Joint mortar for sewer pipe shall consist of one part Portland cement, 2-1/4 parts fine aggregate by volume, and sufficient water to make a stiff mix.
- F. Water Seal Castings/Basin Frames and Covers:
  - 1. Gray-iron castings for water seals and basin frames and covers shall be per ASTM A48, Class 30A.
  - 2. Iron castings shall be true to pattern in form and dimensions, free from pouring faults, sponginess, cracks, blow-holes and other defects affecting their strength and value for the service intended.
  - 3. Castings shall be boldly filleted at the angles, and the arrises shall be sharp and perfect.
  - 4. All castings must be sandblasted or otherwise effectively cleaned of scale and sand so as to present a smooth, clean and uniform surface.
  - 5. Basin manhole frame and cover bearing surfaces between cover and frame shall be machine finished to ANSI roughness symbol 250, tolerance -0 + 1/16-inch.
  - 6. The word SEWER shall be cast in one-inch high letters flush with surface of cover.
- G. Steel angles and channels shall be per ASTM A36 and galvanized per ASTM A123.
- H. Foundation gravel shall be per ASTM C33.

### **PART 3 EXECUTION**

#### **3.1 CONSTRUCTION REQUIREMENTS**

- A. Excavation for catch basins and connecting pipe shall include removal of all materials and objects of whatever nature encountered in excavation; disposal of excavated materials as specified; construction, maintenance and subsequent removal of any sheeting, shoring and bracing; dewatering and precautions, and work necessary to prevent damage to adjacent properties resulting from this excavation.
- B. No excavated material shall be deposited at any time so as to endanger portions of the new or an adjacent structure, either by direct pressure or indirectly by overloading banks contiguous to the operation, or in any other manner. Material, if stockpiled, shall be stored so as not to interfere with the established sequence of construction. If the area within project limits is insufficient for stockpiling, the Contractor shall arrange for his own stockpiling area.
- C. When the catch basin is to rest on an excavated surface other than rock, care shall be taken not to disturb the bottom of the excavation; final removal of foundation material to subgrade shall be accomplished after forms are set.
- D. If the foundation becomes wet and spongy or otherwise unsatisfactory prior to placing concrete, the Contractor shall, at no additional cost to the DC Water, remove the unsuitable material and replace it with ASTM C33, size No. 57 gravel to secure an adequate foundation.
- E. In case of underground obstruction at planned locations, proposed basins or connecting pipe shall be relocated as directed. Excavations at obstructed locations shall be backfilled per Specification requirements.
- F. Inlets may be either cast-in-place or precast; precast basins require advance approval. Outlet pipe shall project from the inlet sufficiently to permit junction with connection pipe, and shall be cut flush with inlet wall inside face; void between outlet pipe and wall shall be completely sealed on both sides of wall with non-shrink mortar.
- G. If a catch basin is to connect to a combined system sewer, an approved water seal casting shall be installed in the basin wall, aligned on same centerline as outlet pipe, and be connected to the inlet connection pipe.

- H. Trench excavation and backfill for basin connecting pipe shall be included as part of work. If trench subgrade material is unsuitable, trench bottom shall be undercut.
- I. All connecting pipe shall be included as part of work and shall be constructed per Standard Detail S/12.02. All connecting pipes shall be furnished with rubber gaskets and the required concrete cradle with saddle blocks and mortar joints. Field leakage test is not required for storm drainpipe.
- J. Concrete cradle shall be Class 3000. Concrete shall cure for at least four (4) days prior to backfilling.
- K. Where concrete pipe connects to existing clay pipe or to a water seal, a Class 3000 (minimum) concrete collar shall be constructed around the connection joint such that there is at least three inches collar thickness around the entire circumference of the joint. The collar shall overlap each side of joint by six-inches. Collar shall cure for at least four days prior to backfilling.
- L. Connecting pipe trench shall be backfilled per Project Manual Specification.
- M. Basin tops shall be precast with cast-iron frames and covers as shown on Standard Details S/30.11 and S/30.12.
- N. The basin top shall have four holes drilled or cast therein per Standard Details S/30.11, S/30.12 and S/30.13. Corresponding holes shall be drilled into the basin walls. Steel dowels shall be inserted through and into these holes and grouted to prevent lateral movement of top.

#### **PART 4 MEASURE AND PAYMENT**

##### **4.1 MEASURE**

- A. Unit of measure for Catch Basins will be each.

- 1. Unit of measure for Basin Connecting Pipe will be the linear foot measured from the inside face of catch basin or water seal to inside face of manhole, or to connection to existing connecting pipe.

- B. **PAYMENT**

- 1. Payment for Catch Basins will be made at Contract unit price per each, which payment will include water seal castings, frames and covers, excavation and backfill, and all labor, materials, tools, equipment and incidentals needed to complete work specified.
  - 2. Payment for 15-Inch and 18-Inch Basin Connecting Pipe will be made at Contract unit price per linear foot, which payment will include pipe excavation and backfill, saddle blocks and concrete cradle, concrete collars at connection to existing clay pipe, and all labor, materials, tools, equipment and incidentals needed to complete work specified.

**~ END OF SECTION 33 44 00 ~**



**SECTION 01 78 42**  
**AS-BUILT DRAWINGS**

**PART 1 – GENERAL**

1.1 SUMMARY

- A. This Section covers the requirements for drawings containing information on infrastructure in the constructed or “as-built” state.
- B. As-built Drawings are an official record of the project at the time of construction completion. The original “as-designed” contract drawings are modified to show all additions, deletions and substantial deviations made during construction.
- C. Location and elevation information is field verified and drawings are corrected to match as-built conditions to the accuracy identified in item C. 31 below.
- D. As-built Drawings shall be prepared and certified by an authorized officer of the construction firm.

1.2 RELATED DOCUMENTS

- A. Drawings and Special Provisions and General Requirements of the Contract and other Division 1 Specifications Sections, apply to this section.
- B. DC Water CADD Manual.

1.3 RELATED SECTIONS: Specified elsewhere but not limited to:

- 1. Submittals: Section 01 33 00.
- 2. Project Close Out: Section 01 77 00.

1.4 MAINTENANCE OF DOCUMENTS AND SAMPLES

- A. Contractor shall maintain at the site, for t DC Water, one (1) record copy of prints of drawings including delineated "As-built" modifications
- B. Store Contract Documents and samples in Contractor's field office apart from documents used for construction.
  - 1. Provide files and racks for storage of documents.
  - 2. Provide secure storage space for storage of samples.
- C. Maintain documents in a clean, dry, legible condition and in good order. Do not use record documents for construction purposes.
- D. Within 1 day's notice, during the course of the work, current as-builts shall be made available for inspection by DC Water.

1.5 RECORDING "AS-BUILT" MODIFICATIONS

- A. Label each document "AS-BUILT" in neat, large printed letters.

- B. Record information concurrently with construction progress.
1. Do not conceal any work until required information is recorded.
  2. Accurately record information in an understandable drawing technique.
  3. Mark Record Prints to show the actual installation where installation varies from that shown originally.
- C. Drawings shall be: .
1. Legibly marked to record all deviations to current Contract Documents showing actual construction.
  2. Accurately record information in an acceptable drawing technique as stated in DC Water CADD Manual.
  3. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.
  4. Depths of various elements of foundation in relation to finish first floor datum.
  5. Dimensional changes to Drawings.
  6. The location and dimensions of any major changes within a building structure.
  7. Correct grade, elevations, cross section, or alignment of roads, earthwork, structures or utilities if any changes were made from contract plans.
  8. The topography, invert elevations and grades of drainage installed or affected by the project.
  9. Actual location of anchors, construction and control joints, etc. in concrete.
  10. Unusual or uncharted obstructions that are encountered in the contract work area during construction.
  11. Horizontal and vertical location, kinds and sizes of all existing and new underground utilities and appurtenances, referenced to permanent surface improvements.
  12. Measurements shall be shown for all underground utilities change of direction points and all surface or underground components such as valves, bends, manholes, drop inlets, clean outs, wyes, corporation stops, curb stops, inlets, thrust blocks, hydrants, PRV, pipe slope and distances, pressure relief valves, air release valves, fittings, etc.
  13. Location of internal utilities and appurtenances concealed in the construction, referenced to visible and accessible features of the structure.
  14. Data required for casing pipes: Location, type, material and size
  15. Data station on each water tap and sewer tap: : Location, type (Corp. stop if water wye branch, thimble, z-strap insertion, etc. if sewer) material, diameter, installation

date, DC Water standard tap cards should be used to report this data where applicable.

16. Data required for valves: date set, valve type, size, material, position (open-closed) depth to top of operating nut, manufacturer, number of turns to open, direction of opening, main stem position (horizontal-vertical), operator type if offset or gear reducer, purpose/function (side stop, isolation, blow off, etc) and joint types.
17. Data required for hydrants: date set, manufacturer, depth of bury, distances between main and valve, distance between valve and hydrant and face of curb.
18. Data on manholes, inlets, etc.: rim and invert in and out elevations, diameter of manhole and inlet dimensions, materials of construction (poured in place conc. pre-cast conc., brick, other).
19. Data on gravity pipeline: date installed, slope (determined from end of pipe to end of pipe), size of pipe, pipe material, nominal diameter, pipe class, type of joints, manufacturer. The manhole at the lowest elevation will be station 0+00.
20. Location of underground utilities and appurtenances shall be shown by dimensioning along the utility run from a reference point and by offset dimensions to two permanently fixed surface features, the end of each run including each change in direction.
21. Mark important additional information that was either shown schematically or omitted from original Drawings.
22. Show the proprietary name and model number of products, materials, and equipment furnished, including substitutions and product options selected.
23. Changes made by addenda. Addenda number shall be noted.
24. Field changes of dimension and detail. Field Order Number shall be noted.
25. Changes made by field order or by change order. Change Order Number shall be noted.
26. Correct dimensions and details transferred from shop drawings.
27. Changes in details of design or additional information obtained from working drawings specified to be prepared and/or furnished by the Contractor; including but not limited to fabrication, erection, installation plans and placing details, pipe sizes, insulation material, dimensions of equipment foundations, etc.
28. Record information on the Work that is shown only schematically.
29. Datum: All plans shall be accurately located in Maryland state plane coordinates. And with datum reference:
  - a. NAD 83 Horizontal
  - b. NAVD 88 Vertical corrected to District Datum or show local conversion to District Datum.

30. Details not on original Contract Drawings.
- a. Record the name of manufacturer, supplier, installer, and other information necessary to provide a record of selections made.
  - b. For each principal product, indicate whether Record Product Data has been submitted in operation and maintenance manuals instead of submitted as Record Product Data.
  - c. Layout and schematic drawings of electrical circuits and piping.

31. As-Built Survey Construction Tolerances:

- a. Contractor shall provide measurements and elevations of the following construction elements to within the stated tolerance. Note: All tolerance are plus or minus.

(1)	Manhole Rim	0.10	ft
(2)	Manhole Inverts	0.05	ft
(3)	Inlet-catch basin Rim	0.10	ft
(4)	Inlet-catch basin Invert	0.05	ft
(5)	Gravity Sewer Slope	0.02	%
(6)	Gravity Pipe Location	1.00	ft
(7)	Manhole Location	0.50	ft
(8)	Inlet Location	1.00	ft
(9)	Fire Hydrant Location	1.00	ft
(10)	Valve Location	1.00	ft
(11)	Valve Depth	0.10	ft
(12)	Fitting Locations	0.50	ft
(13)	Fitting Depths	0.10	ft
(14)	Offsets	0.50	ft
(15)	Wye Location	1.00	ft
(16)	Wye Depth	0.50	ft
(17)	Corporation Stop Location	1.00	ft
(18)	Corporation Stop Depth	0.50	ft
(19)	Meter location	1.00	ft
(20)	Blow Off Assembly location	1.00	ft
(21)	PRV location	1.00	ft

(22)	Air Release Pit location	1.00	ft
(23)	Pressure Pipe Location	1.00	ft
(24)	Pressure Pipe Depth	0.50	ft
(25)	Structure – Elevations	0.10	ft
(26)	Structure – Dimensions	0.10	ft

#### 1.6 ELECTRICAL AS BUILT DRAWINGS

- A. “As Built” wiring and interconnection drawings shall be provided for all field installed and applied wiring as part of the Contract for all electrically powered devices.
- B. These drawings shall be supplied in addition to the wiring and interconnection diagrams specified and required in the individual sections of the technical sections.
- C. The drawings shall illustrate electrical control devices, instruments and systems, and all instrumentation and/or control system.
- D. Information on the drawings shall contain sufficient data and be presented in a format, which permits tracing of wires and trouble shooting on all electrically powered and controlled equipment, independent o any other document or drawing.
- E. Information shall be provided for any pneumatically or hydraulically controlled systems, and shall include interconnection drawings serving functions similar to that of electrical equipment and devices.
- F. Information presented, such as connections, terminations, conduit or wire-way members, junction box numbers, terminal block identification, terminal numbers, wire numbers, reference to manuals, etc. shall be verified in the field prior to submission of the drawings.
- G. In addition, references shall be made to the internal wiring of on-field wired devices such as the termination at prefabricated panels, control devices, control stations for electrical and electronic equipment.
- H. These references shall include the terminal block number and/or the device identification, the drawing number of the referenced item and the service or Operation & Maintenance Manual identification in which the drawing is contained. If the connection of a conductor is shown on more than one drawing, the reference shall include all drawing numbers.

#### 1.7 RECORD PRODUCT DATA

- A. Mark Product Data to indicate the actual product installation where installation varies substantially from that indicated in Product Data submittal.
- B. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.
- C. Include significant changes in the product delivered to Project site and changes in manufacturer’s written instructions for installation.

#### 1.8 CERTIFICATION

- A. Certify as a part of each application for payment that project as-built are current at time application is submitted.
- B. Certification Statement: The following certification shall be placed on the cover sheet of the project drawing set and signed by a District of Columbia registered Professional Civil Engineer or Professional Land Surveyor:

“I certify that these as-builts are accurate and that all information provided is field-verified as-built information and are correct to with the tolerances specified and substantial conformity with the Project Manual.

Date: \_\_\_\_\_ Name: \_\_\_\_\_  
(Seal) Signed: \_\_\_\_\_”

## **PART 2 – PRODUCTS**

(Not Applicable)

## **PART 3 – EXECUTION**

### **3.1 RECORDING AND MAINTENANCE**

- A. Recording:
  - 1. Maintain one (1) copy of each submittal during the construction period for Project As-built (Redlined) purposes.
  - 2. Post changes and modifications to Project As-built (Redlined Drawings) as they occur; do not wait until the end of the Project.
- B. Maintenance:
  - 1. Store As-built apart from the Contract Documents used for construction.
  - 2. Do not use As-built for construction purposes.
  - 3. Maintain As-built in good order and in a clean, dry, legible condition, protected from deterioration and loss.
  - 4. Provide access to Project As-built for DC Water’s reference during normal working hours.

### **3.2 FINAL “AS-BUILTS”**

- A. Contractor will transfer the changes on the redlined drawings to the original electronic CADD files.
- B. DC Water shall provide a CD in AutoCAD DWG format for the Contractor’s use for DC Water construction projects. However, if as-built drawings are being prepared for non-DC Water funded work (i.e. developer projects, DDOT projects, etc.) DC Water will not be able to provide the base information.

- C. Contractor shall use standard professional engineering drafting practices in correcting the original electronic CADD drawings to show the as-built information.
- D. All changes shall be made in model space at 1:1 scale.
- E. In general, the letter styles, line thickness, and scale will be the same as the original drawings unless stated otherwise.
- F. When changes are required on small-scale drawings and in restricted areas; large-scale inserts to be drawn with leaders to the location where applicable.
- G. Add and denote in legend, any additional equipment or material facilities, service lines, utilities lines, etc. incorporated under As-built if not already shown in legend.
- H. Use written explanations on As-built to describe changes. Do not rely totally on graphic means to convey the revision.
- I. Whenever a revision is made, make changes to affect related section views, details, legends, profiles, plans and elevation views, schedules, notes and call-out designations to avoid conflicting data on all other sheets.
- J. Legibility of lettering and digit values shall be precise and clear when making changes and clarify ambiguities concerning the nature and application of change involved.
- K. CADD Standards: File Naming Convention, layer, etc. shall be to DC Water CADD Manual Standards unless otherwise noted.
- L. All As-built "Triangle" changes shall be on a separate single layer as stated in DC Water CADD Manual.
- M. Revision Block:
  - 1. Those sheets, which have no changes, will only be labeled "AS-BUILTS" as described above.
  - 2. Those sheets which have changes shown on them will have the label "AS-BUILTS" as described above and will have "REVISED AS-BUILTS" entered in the first available space in the Revision Block. This will be revision one and a number 1 will be entered in the triangle as described. In the event the sheet has already been revised and a number and revision appear in the revision line; the next sequential number will be used.
- N. Place an equilateral triangle (3/8" per side) near the area revised for all changes with the revision number inserted in the center of the triangle. One triangle may be placed near the table or detail title where several items in a table or detail are changed or completely redrawn.

### 3.3 SUBMITTAL: "AS-BUILTS" DOCUMENTS

- A. At "Beneficial Occupancy" or with the Substantial Completion Inspection request, the Contractor shall submit marked-up Record Prints to the DC Water. Certify to their accuracy and completion. All modifications clearly marked for identification
- B. Within ten (10) days of the Substantial Completion Inspection; Contract shall submit the electronic As-built CDs to DC Water.

- C. Contractor to provide two (2) sets of security protected format digital media (CD or DVD disk); one full set in .pdf format and one full set in .dwg CAD format.
- D. As-built must be submitted and approved by DC Water prior to acceptance of the improvement and prior to final payment to the Contractor,

#### **PART 4 – MEASUREMENT AND PAYMENT**

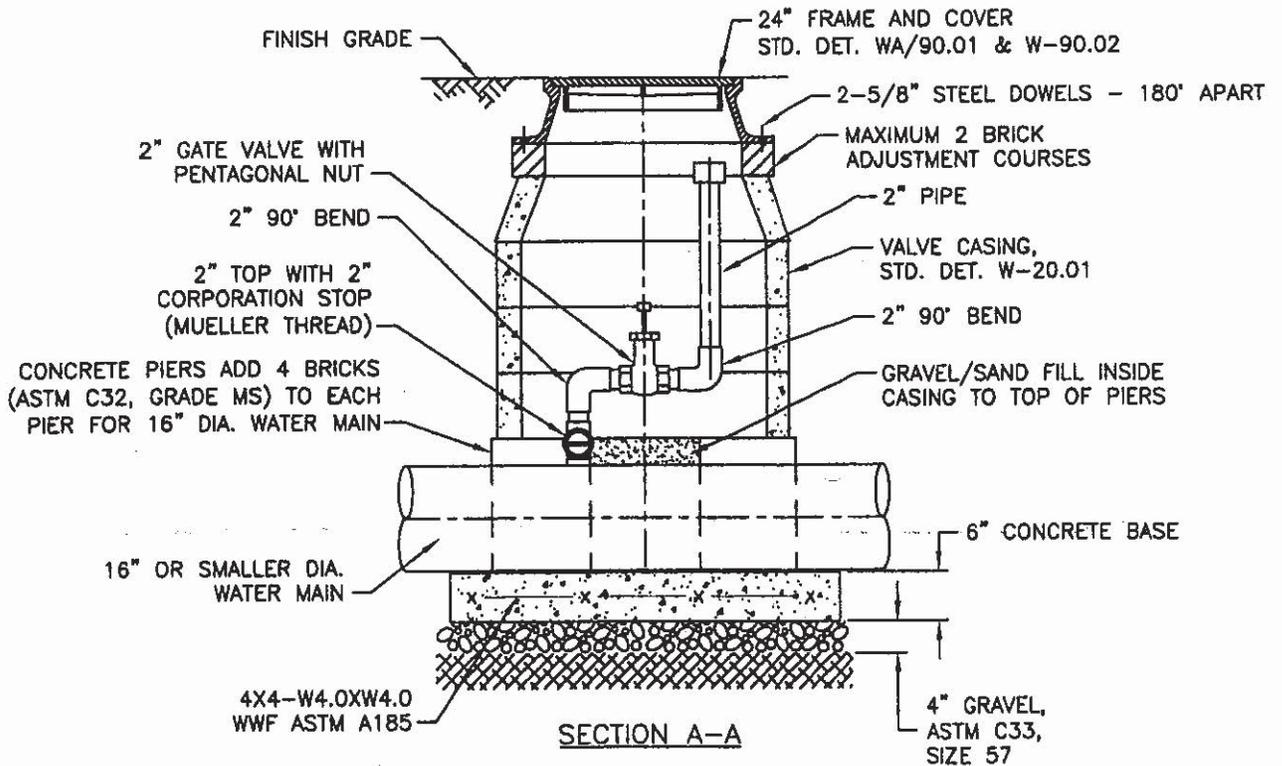
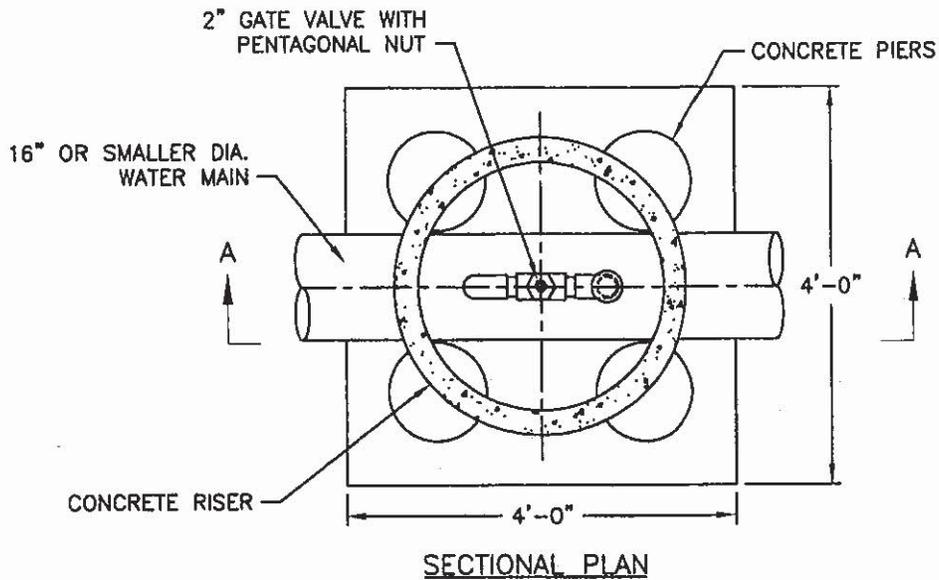
##### 4.01 MEASUREMENT

- A. Work will not be measured separately for payment.

##### 4.02 PAYMENT

- A. The cost thereof, including incidental work and materials, will be included as part of the lump sum of the project.

**~ END OF SECTION 01 78 42 ~**



**NOTES:**

1. ALL CONCRETE CLASS 4000, AIR ENTRAINED, TYPE II CEMENT.
2. FITTINGS AND 2" PIPE TO BE BRASS.

APPROVED DATE: June 20, 2003  
Leonard Benson

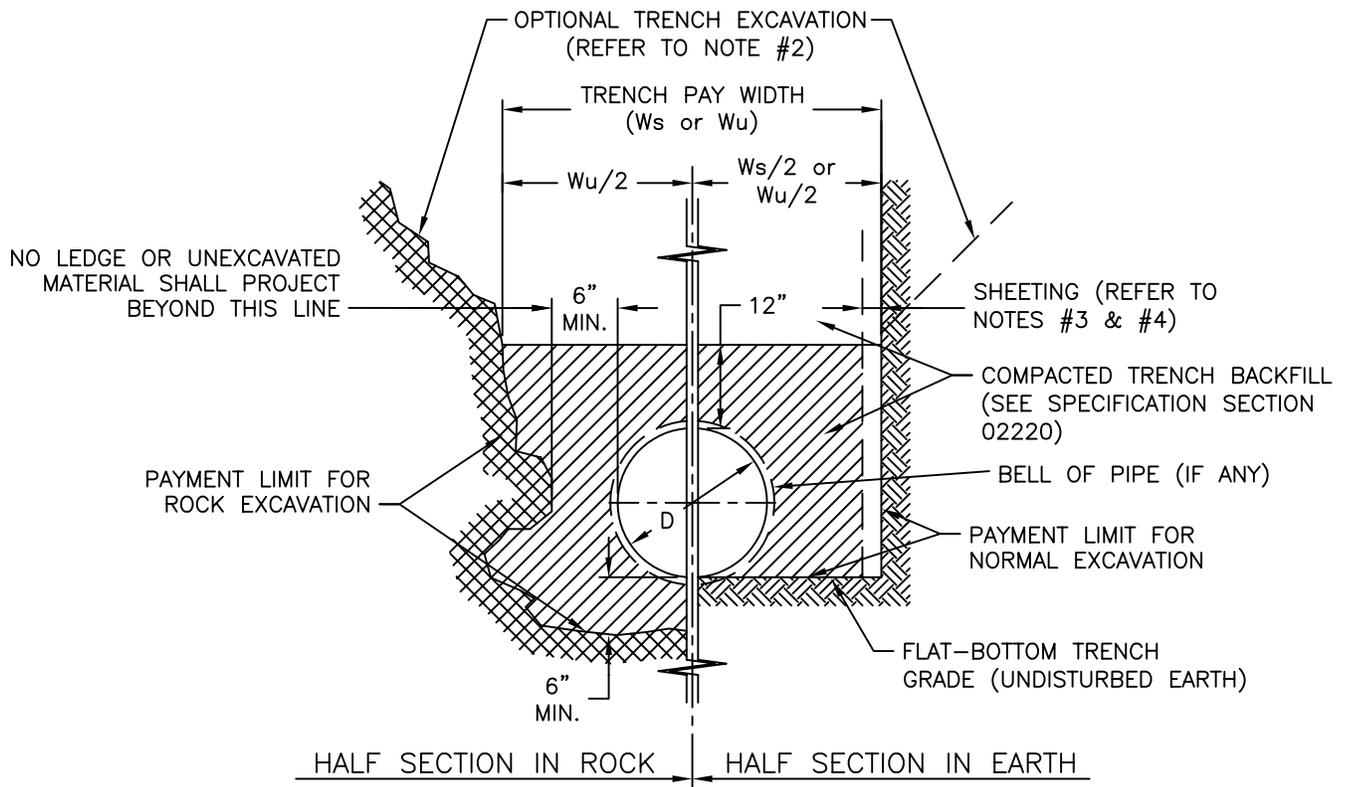
DIRECTOR, DEPARTMENT OF ENGINEERING  
AND TECHNICAL SERVICES

REVISION NO.: 0  
DATE: 6/20/03  
PREPARED BY: OBG/BKJV  
CHECKED BY: W.DARROW

STANDARD DETAIL

2" AIR/DRAIN BLOWOFF





APPROVED DATE: June 20, 2003

DIRECTOR, DEPARTMENT OF ENGINEERING  
 AND TECHNICAL SERVICES

REVISION NO.: 0  
 DATE: 6/20/03  
 PREPARED BY: OBG/BKJV  
 CHECKED BY: W.DARROW

STANDARD DETAIL  
 DUCTILE IRON WATER MAIN  
 PIPE LAYING CONDITION TYPE 2A  
 (TRENCH INSTALLATION)

TRENCH PAY WIDTH (Ws OR Wu)		
PIPE DIAMETER D	SHEETED EXCAVATION Ws	UNSHEETED EXCAVATION Wu
8"	2' - 10"	2' - 4"
12"	3' - 2"	2' - 8"
16"	3' - 6"	3' - 0"
20"	3' - 10"	3' - 4"
24"	4' - 2"	3' - 8"
30"	4' - 8"	4' - 2"
36"	6' - 1"	5' - 7"
42"	6' - 7"	6' - 1"
48"	7' - 1"	6' - 7"

**NOTES:**

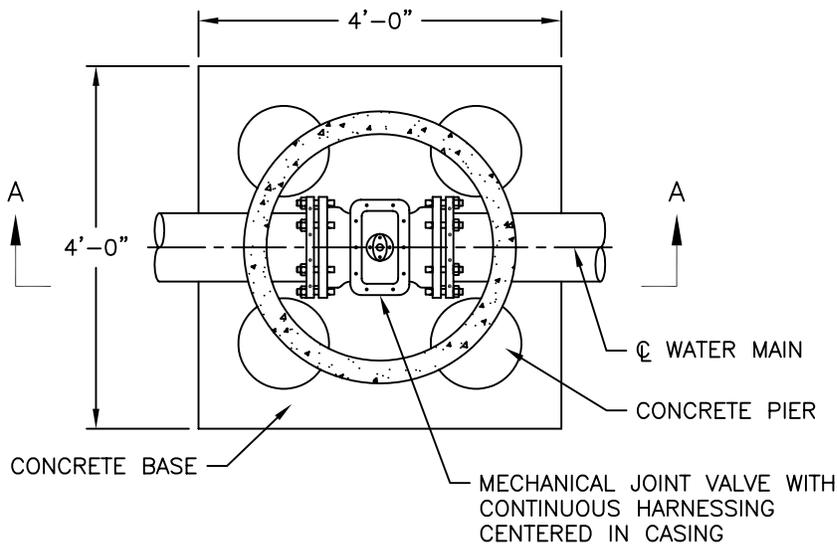
1. PIPE LAYING CONDITION TYPE 2A (TRENCH INSTALLATION) SHALL BE USED FOR ALL WATER MAIN CONSTRUCTION UNLESS OTHERWISE SPECIFIED OR SHOWN ON DRAWINGS.
2. TRENCHES MAY BE EXCAVATED WIDER THAN THE TRENCH PAY WIDTH (Ws OR Wu) ABOVE A LINE 1' - 0" FROM TOP OF PIPE, AT CONTRACTOR'S OPTION AND AT NO ADDITIONAL COST TO THE AUTHORITY.
3. IF EXCAVATION BELOW NORMAL DEPTH OF WATER MAIN INSTALLATION (DEPTHS GREATER THAN 4.5 FEET) IS REQUIRED, EXCAVATION SUPPORT SHEETING MAY BE ORDERED OR TRENCH SHIELDS UTILIZED AT CONTRACTORS OPTION. COSTS UNDER THIS OPTION SHALL BE PART OF THE UNIT PRICE BID FOR EXCAVATION.
4. SHEETING, IF USED, SHALL BE REMOVED IN CONJUNCTION WITH THE BACKFILLING OPERATION UNLESS OTHERWISE SPECIFIED OR SHOWN ON DRAWINGS. HOWEVER, IF APPROVED IN WRITING, SHEETING MAY BE CUT-OFF AND LEFT IN PLACE BELOW A LINE 1' - 0" ABOVE THE TOP OF PIPE OR AS DIRECTED BY THE ENGINEER.

APPROVED DATE: June 20, 2003

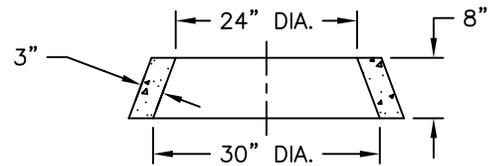
DIRECTOR, DEPARTMENT OF ENGINEERING  
AND TECHNICAL SERVICES

REVISION NO.: 0  
DATE: 6/20/03  
PREPARED BY: OBG/BKJV  
CHECKED BY: W.DARROW

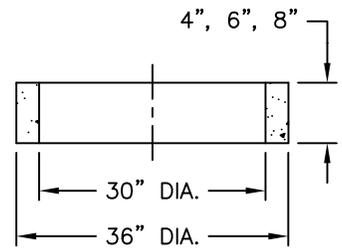
STANDARD DETAIL  
DUCTILE IRON WATER MAIN  
PIPE LAYING CONDITION TYPE 2A  
(TRENCH INSTALLATION)



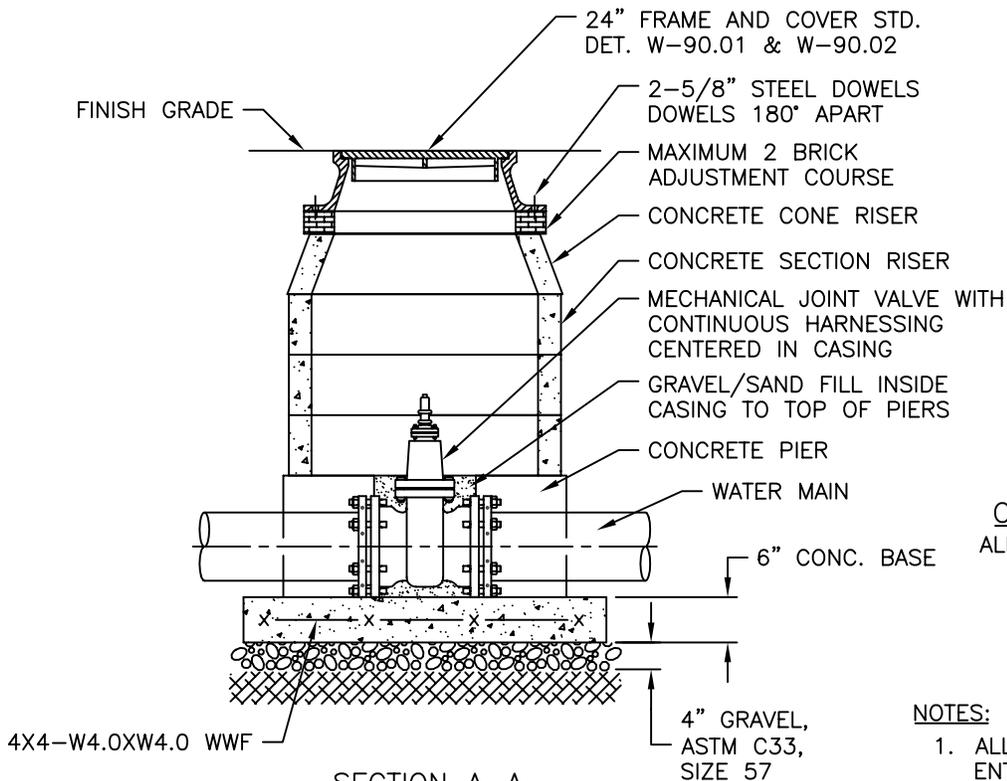
SECTIONAL PLAN



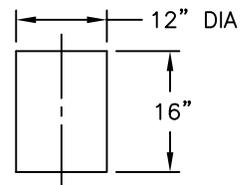
SECTION CONE RISER  
ALL BEARING SURFACES TRUE,  
FLAT, PARALLEL PLANES



SECTION RISER  
ALL BEARING SURFACES TRUE,  
FLAT, PARALLEL PLANES



SECTION A-A



CONCRETE PIER DETAIL  
ALL BEARING SURFACES TRUE,  
FLAT, PARALLEL PLANES

NOTES:

1. ALL CONCRETE CLASS 4000, AIR ENTRAINED, TYPE II CEMENT
2. PRECAST ELEMENTS INCLUDING REINFORCING TO BE PER ASTM C478.
3. WWF PER ASTM A185

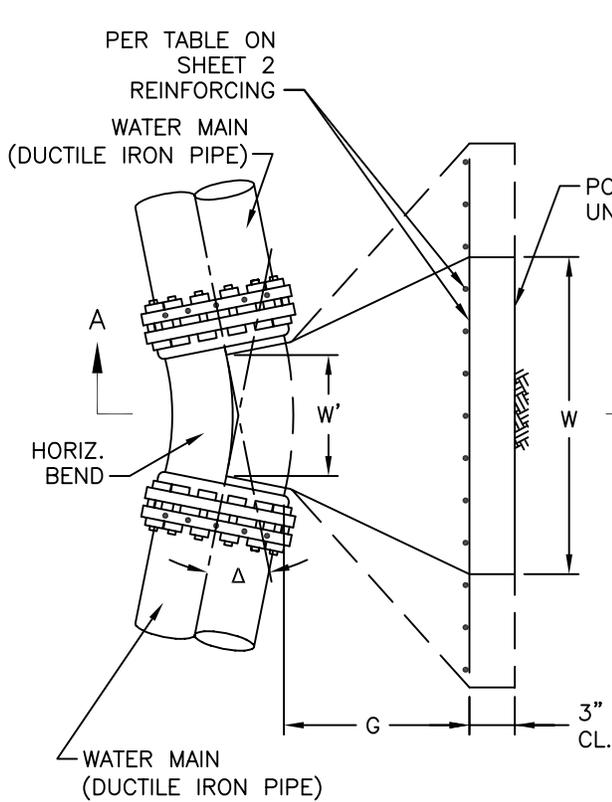
APPROVED DATE: June 20, 2003

DIRECTOR, DEPARTMENT OF ENGINEERING  
AND TECHNICAL SERVICES

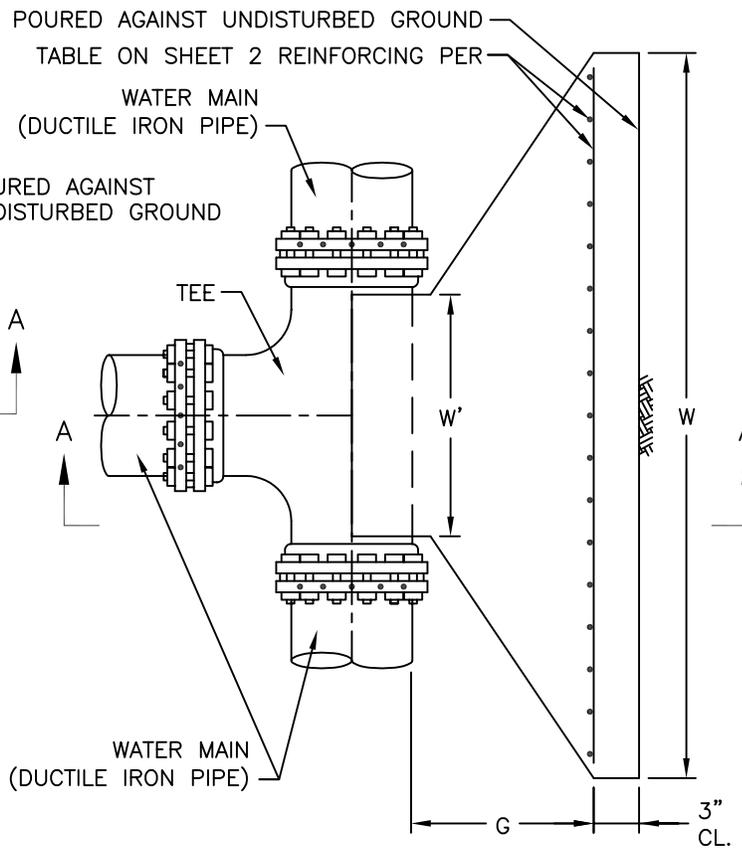
REVISION NO.: 0  
DATE: 6/20/03  
PREPARED BY: OBG/BKJV  
CHECKED BY: W.DARROW

STANDARD DETAIL

VALVE CASING  
FOR 12" AND SMALLER GATE VALVE



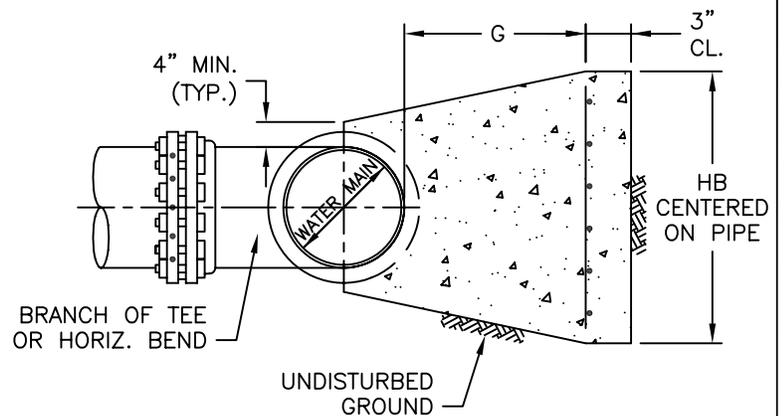
SECTIONAL PLAN - BENDS



SECTIONAL PLAN - TEES

**LEGEND**

- Δ - ANGLE OF BEND
- HB - HEIGHT OF BLOCK
- W - WIDTH AGAINST UNDISTURBED GROUND
- W' - WIDTH AT FITTING
- G - DEPTH OF BLOCK



SECTION A-A

APPROVED DATE: June 20, 2003

DIRECTOR, DEPARTMENT OF ENGINEERING  
AND TECHNICAL SERVICES

REVISION NO.: 0  
DATE: 6/20/03  
PREPARED BY: OBG/BKJV  
CHECKED BY: W.DARROW

STANDARD DETAIL  
CONCRETE THRUST BLOCK  
FOR HORIZONTAL PIPE BEND & TEE  
12" DIAMETER & SMALLER WATER MAINS

BRANCH OF TEE OR PIPE DIA	BEND TYPE	W	HB	W'	G	REINF. (E.W.)
6"	11.25°	1'-6"	1'-6"	0'-8"	1'-0"	#4 @12"
	22.5°	1'-9"	1'-6"	0'-8"	1'-0"	#4 @12"
	45°	2'-8"	2'-0"	0'-8"	1'-0"	#4 @12"
	90°	4'-6"	2'-3"	0'-10"	1'-0"	#5 @12"
	TEE	3'-0"	3'-0"	0'-10"	1'-0"	#5 @12"
8"	11.25°	1'-6"	1'-6"	0'-8"	1'-0"	#4 @12"
	22.5°	1'-9"	1'-6"	0'-8"	1'-0"	#4 @12"
	45°	2'-8"	2'-0"	0'-8"	1'-0"	#4 @12"
	90°	5'-0"	3'-9"	1'-0"	1'-6"	#6 @12"
	TEE	4'-0"	3'-6"	1'-4"	1'-0"	#5 @12"
12"	11.25°	2'-6"	2'-6"	1'-0"	1'-0"	#4 @12"
	22.5°	3'-6"	2'-6"	1'-0"	1'-3"	#4 @12"
	45°	7'-0"	4'-6"	1'-4"	1'-6"	#6 @12"
	90°	10'-0"	4'-6"	1'-4"	1'-6"	#6 @12"
	TEE	8'-6"	5'-0"	1'-4"	1'-6"	#6 @12"

**NOTES:**

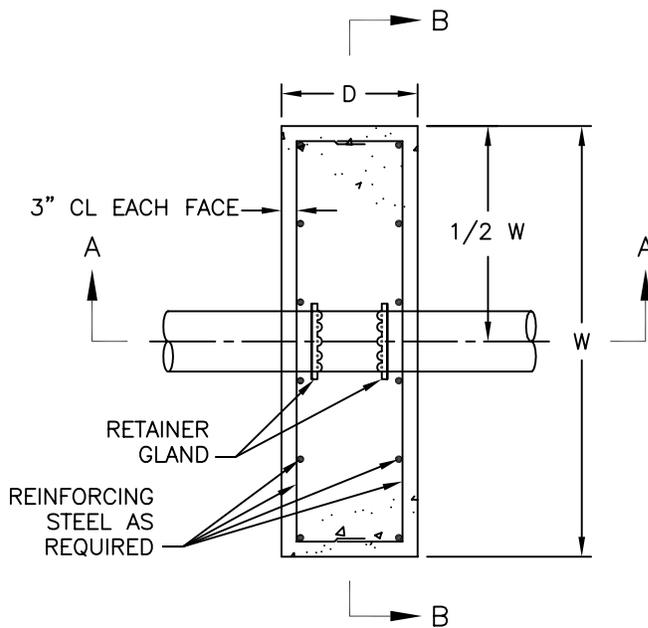
1. ALL CONCRETE TO BE CLASS 4000, AIR ENTRAINED, TYPE II CEMENT
2. REINFORCING STEEL SHALL CONFORM TO ASTM A615, GRADE 60
3. NOMINAL DEPTH OF COVER ON WATER MAIN IS FOUR FEET
4. UNIT WEIGHT OF SOIL, 120 PCF
5. DESIGN BASED ON  $\phi = 30^\circ$  AND TEST PRESSURE = 195 PSI
6. HB - HEIGHT OF BLOCK, W'-WIDTH AT FITTING AND W-WIDTH AGAINST UNDISTURBED GROUND SHOULD BE CENTERED ON PIPE AND FITTING.
7. FOR PIPE SIZE GREATER THAN 12", BLOCKS BEDDED IN SOILS WEAKER THAN  $\phi = 30^\circ$ , OR FOR MAINS WITH A TEST PRESSURE GREATER THAN 195 PSI, THE THRUST BLOCK MUST BE SPECIFICALLY DESIGNED FOR EACH APPLICATION.

APPROVED DATE: June 20, 2003

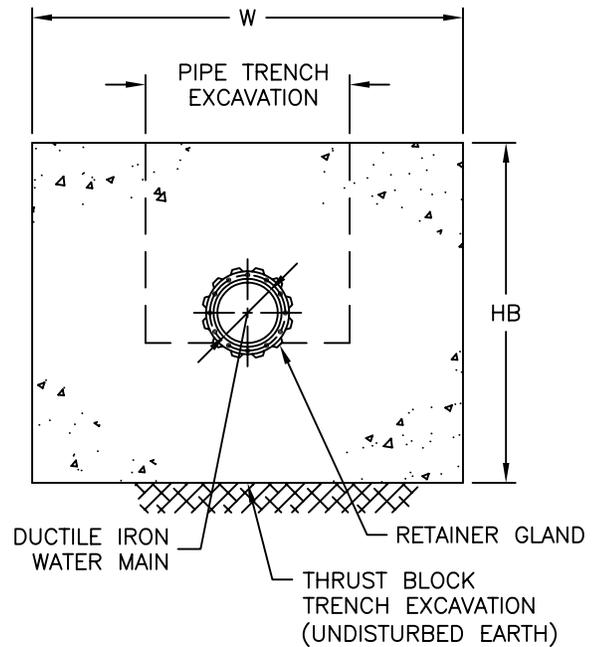
DIRECTOR, DEPARTMENT OF ENGINEERING  
AND TECHNICAL SERVICES

REVISION NO.: 0  
DATE: 6/20/03  
PREPARED BY: OBG/BKJV  
CHECKED BY: W.DARROW

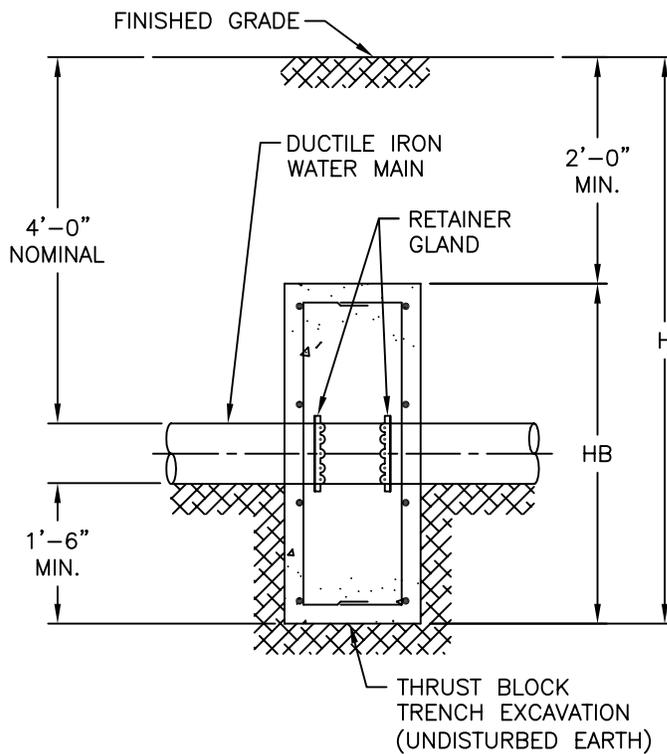
STANDARD DETAIL  
CONCRETE THRUST BLOCK  
FOR HORIZONTAL PIPE BEND & TEE  
12" DIAMETER & SMALLER WATER MAINS



SECTIONAL PLAN



SECTION B-B  
REINFORCING STEEL  
NOT SHOWN FOR  
CLARITY



SECTION A-A

LEGEND

- W - WIDTH OF BLOCK
- HB - HEIGHT OF BLOCK
- D - DEPTH OF BLOCK
- H - HEIGHT FROM FINISHED GRADE TO BOTTOM OF BLOCK

APPROVED DATE: June 20, 2003

DIRECTOR, DEPARTMENT OF ENGINEERING  
AND TECHNICAL SERVICES

REVISION NO.: 0  
DATE: 6/20/03  
PREPARED BY: OBG/BKJV  
CHECKED BY: W.DARROW

STANDARD DETAIL  
IN-LINE THRUST BLOCK  
12" DIAMETER & SMALLER  
DUCTILE IRON WATER MAINS

PIPE SIZE		W	D	HB	H	REINF. (E.W.E.F.)
PIPE	6"	4' - 7"	1' - 0"	3' - 7"	6' - 1"	#4 @12"
	8"	4' - 9"	1' - 6"	3' - 9"	6' - 3"	#4 @10"
	12"	5' - 0"	2' - 0"	5' - 0"	7' - 0"	#4 @8"
REDUCER	8" X 6"	3' - 8"	1' - 0"	3' - 2"	6' - 2"	#4 @12"
	12" X 8"	4' - 9"	1' - 6"	3' - 9"	6' - 6"	#4 @10"
	12" X 6"	4' - 9"	1' - 6"	3' - 9"	6' - 6"	#4 @10"

**NOTES:**

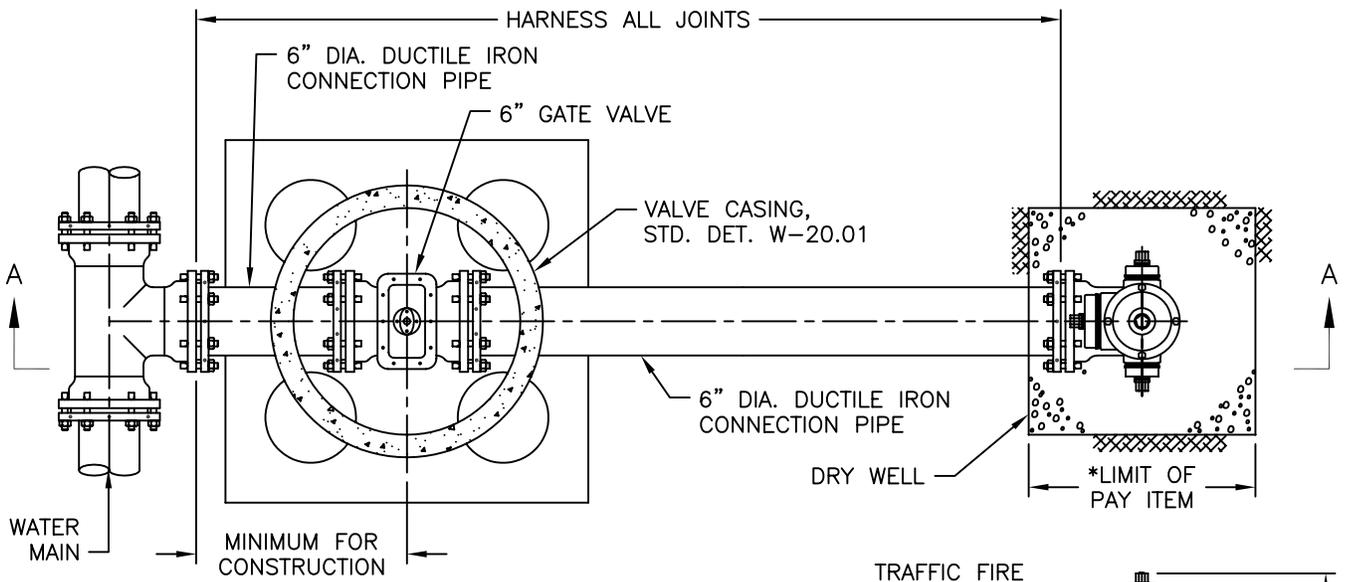
1. RETAINER GLANDS WITH DUCTILE IRON WEDGES IN COMBINATION WITH SPECIAL HEAT TREATED SET SCREWS. TORQUE PER MANUFACTURER INSTRUCTIONS.
2. ALL CONCRETE TO BE CLASS 4000, AIR ENTRAINED, TYPE II CEMENT.
3. REINFORCING STEEL SHALL CONFORM TO ASTM A615, GRADE 60.
4. EXCAVATION BACKFILL, PER SPECIFICATIONS 02220.
5. UNIT WEIGHT OF SOIL, 120 PCF.
6. NOMINAL DEPTH OF COVER ON WATER MAIN IS FOUR FEET.
7. DESIGN BASED ON  $\phi=30^\circ$ , AND TEST PRESSURE = 195 PSI.
8. FOR PIPE SIZE LARGER THAN 12", BLOCKS BEDDED IN SOILS WEAKER THAN  $\phi30^\circ$ , OR FOR MAINS WITH A TEST PRESSURE GREATER THAN 195 PSI, THE THRUST BLOCK MUST BE SPECIFICALLY DESIGNED FOR EACH APPLICATION.

APPROVED DATE: June 20, 2003

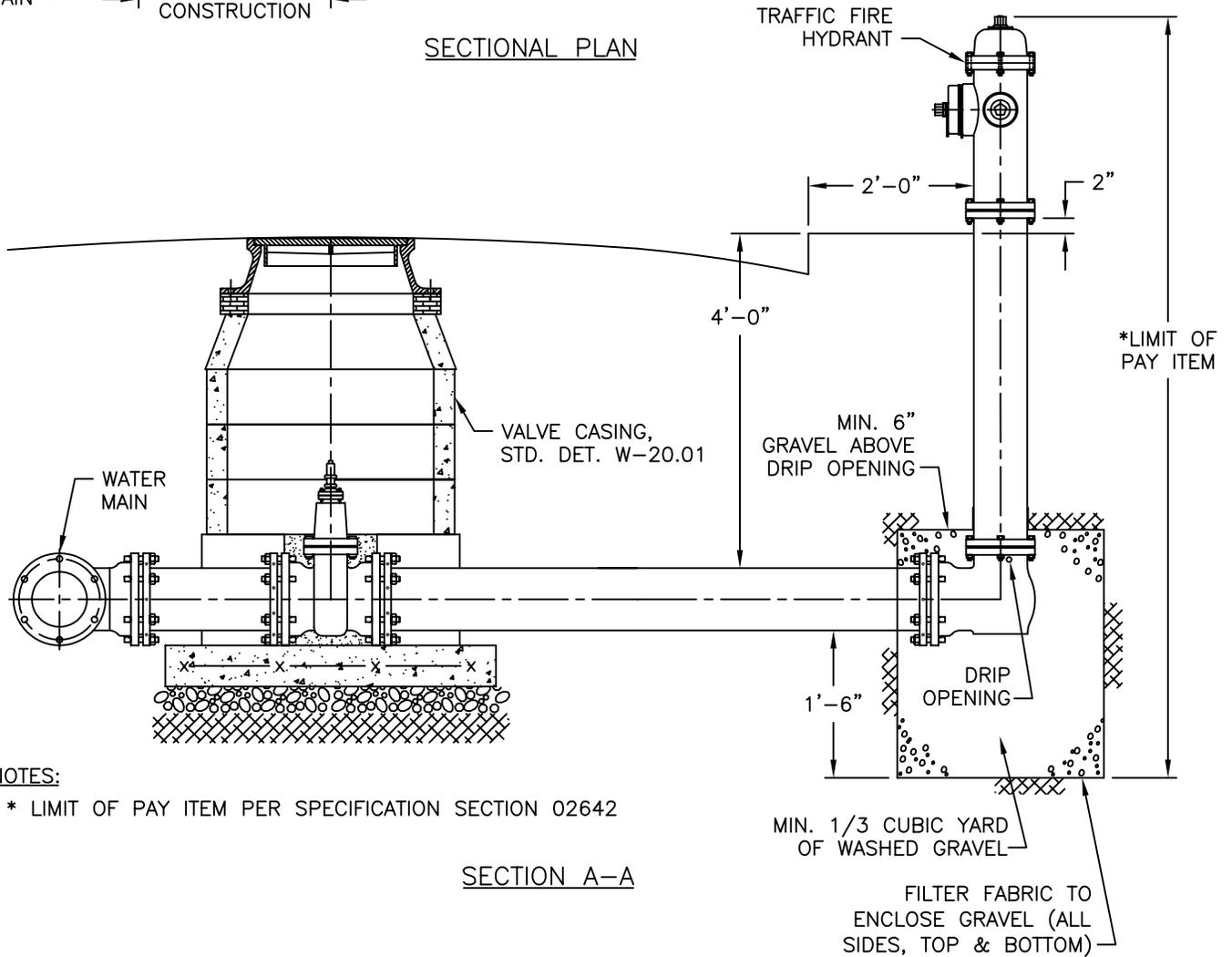
DIRECTOR, DEPARTMENT OF ENGINEERING  
AND TECHNICAL SERVICES

REVISION NO.: 0  
DATE: 6/20/03  
PREPARED BY: OBG/BKJV  
CHECKED BY: W.DARROW

STANDARD DETAIL  
IN-LINE THRUST BLOCK  
12" DIAMETER & SMALLER  
DUCTILE IRON WATER MAINS



SECTIONAL PLAN



SECTION A-A

NOTES:

\* LIMIT OF PAY ITEM PER SPECIFICATION SECTION 02642

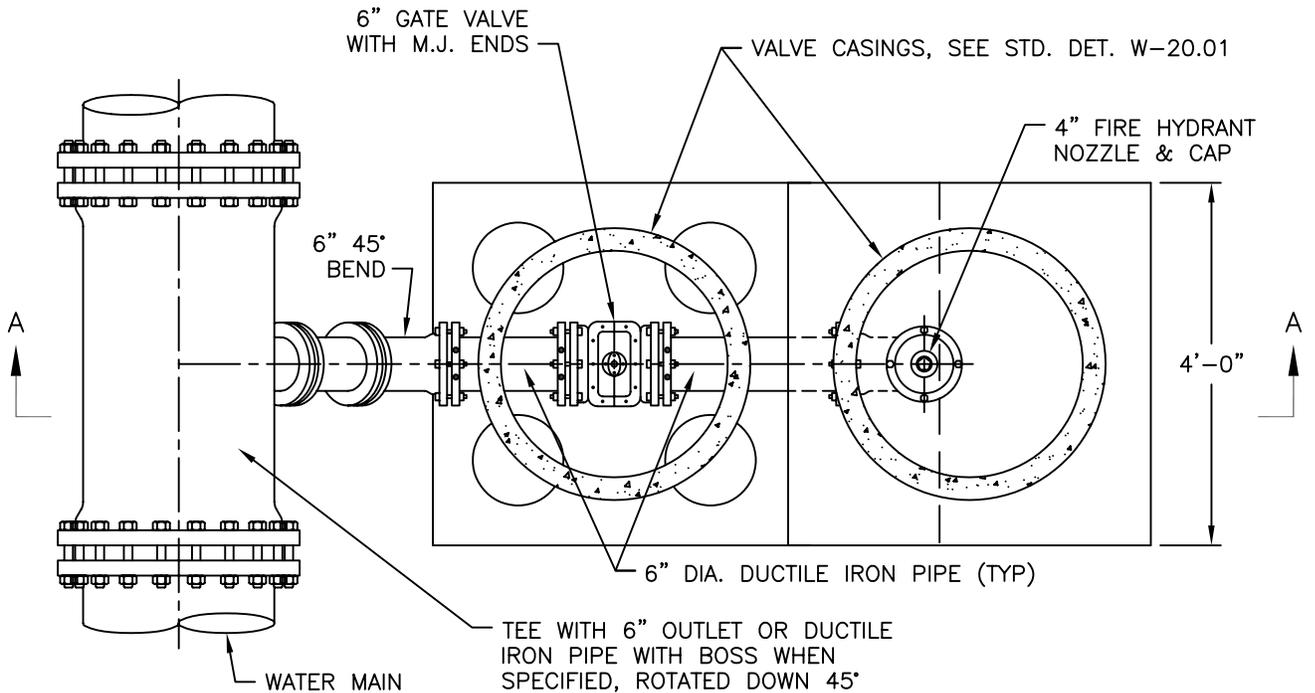
APPROVED DATE: June 20, 2003

DIRECTOR, DEPARTMENT OF ENGINEERING  
AND TECHNICAL SERVICES

REVISION NO.: 0  
DATE: 6/20/03  
PREPARED BY: OBG/BKJV  
CHECKED BY: W.DARROW

STANDARD DETAIL

TRAFFIC FIRE HYDRANT INSTALLATION



SECTIONAL PLAN

NOTES:

1. ALL CONCRETE TO BE CLASS 4000, AIR ENTRAINED, TYPE II CEMENT.
2. ALL PIPE AND FITTINGS SHALL BE MECHANICAL JOINT WITH RETAINER GLANDS UTILIZED IN PLACE OF STANDARD GLANDS FOR RESTRAINT.
3. FOR 36", 42" AND 48" DIAMETER WATER MAINS USE MECHANICAL JOINT TEE AS FOLLOWS:
  - 36" x 8" TEE WITH 8" x 6" REDUCER
  - 42" x 12" TEE WITH 12" x 6" REDUCER
  - 48" x 12" TEE WITH 12" x 6" REDUCER
4. DUCTILE IRON PIPE WITH A 6" BOSS'ED OUTLET MAY BE USED ONLY WHEN APPROVED BY WASA.

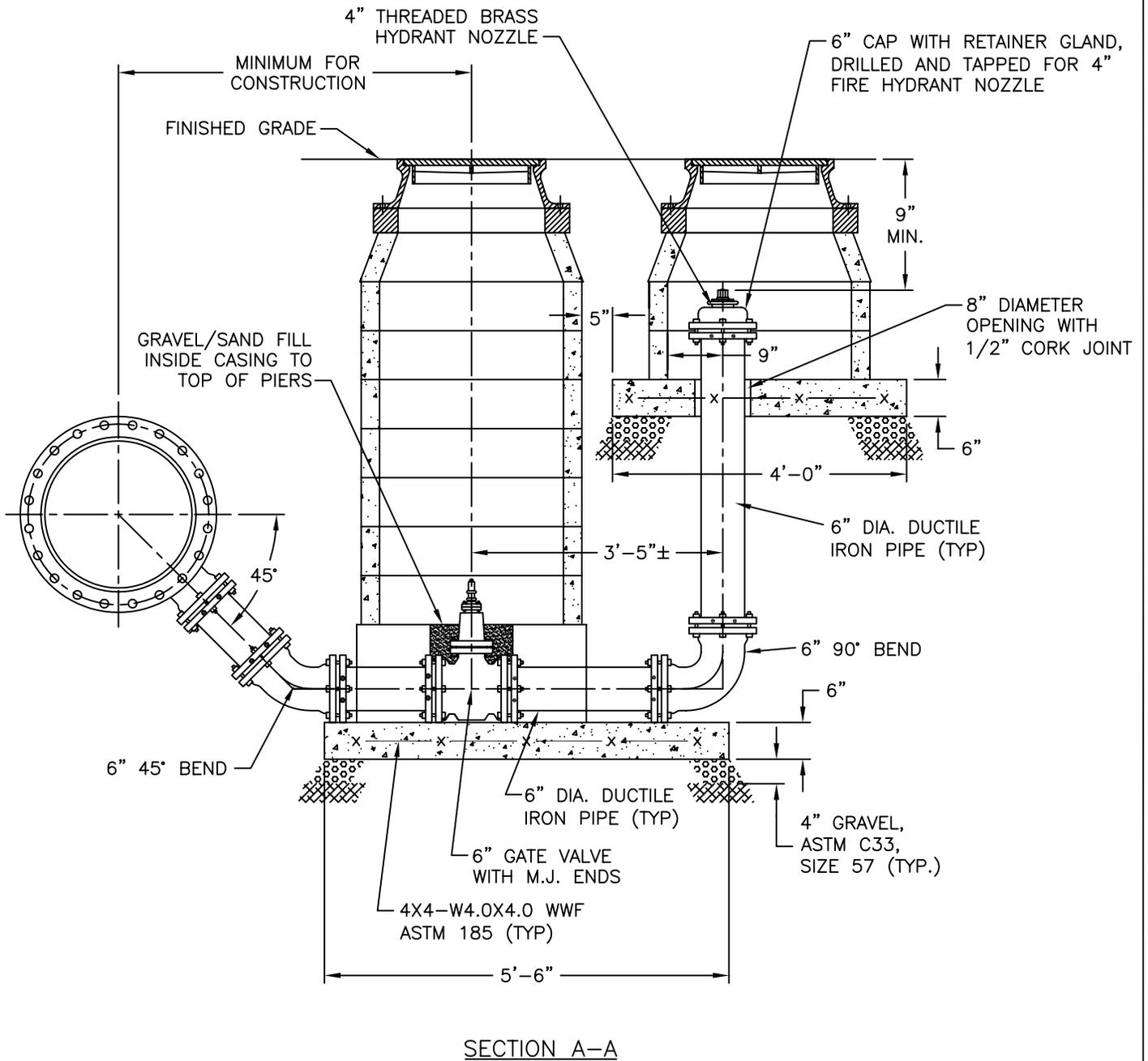
APPROVED DATE: June 20, 2003

DIRECTOR, DEPARTMENT OF ENGINEERING  
AND TECHNICAL SERVICES

REVISION NO.: 0  
DATE: 6/20/03  
PREPARED BY: OBG/BKJV  
CHECKED BY: W.DARROW

STANDARD DETAIL

6" DRAIN BLOWOFF

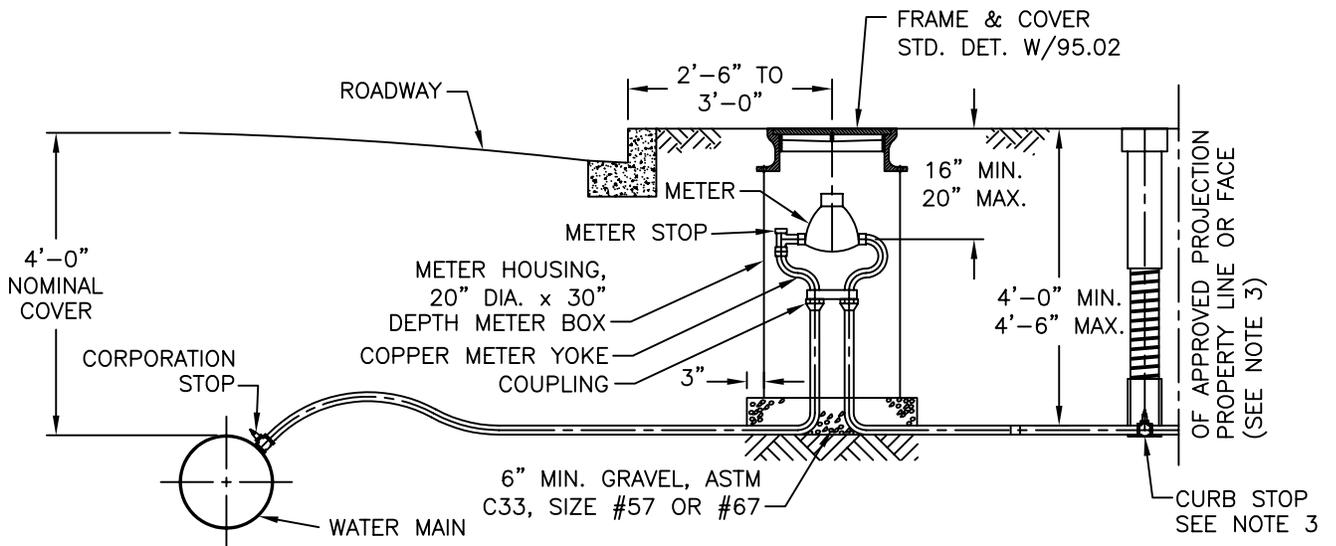
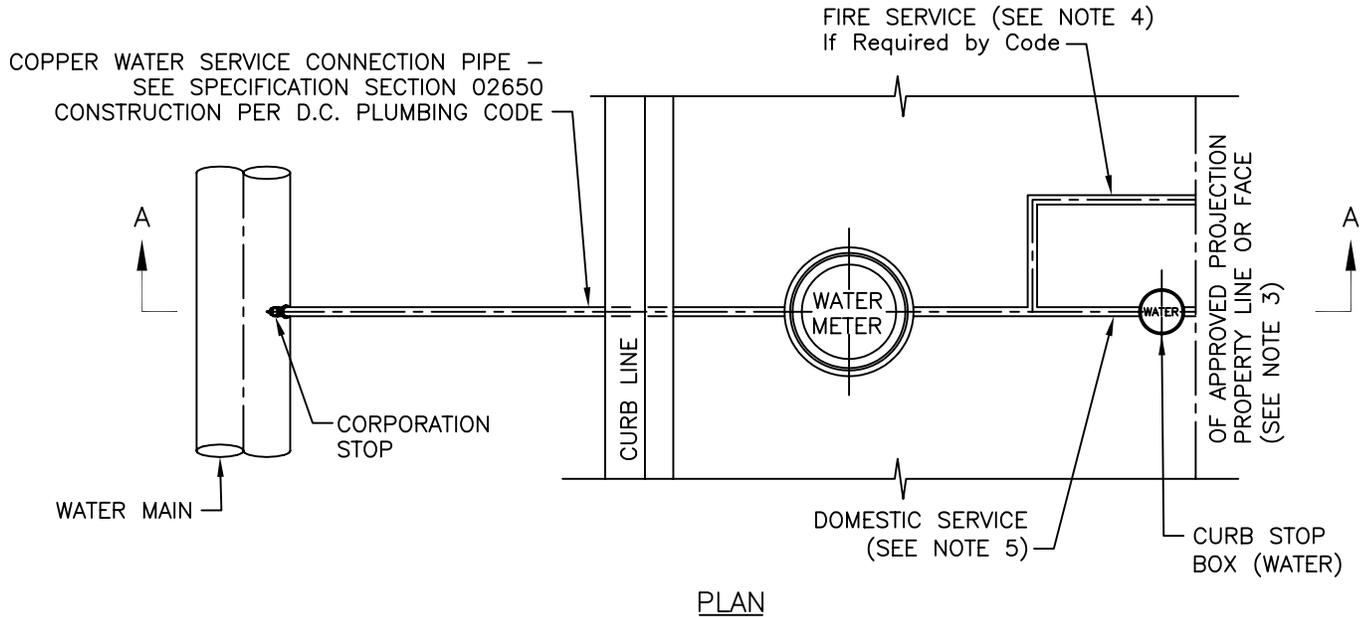


APPROVED DATE: June 20, 2003

DIRECTOR, DEPARTMENT OF ENGINEERING  
AND TECHNICAL SERVICES

REVISION NO.: 0  
DATE: 6/20/03  
PREPARED BY: OBG/BKJV  
CHECKED BY: W.DARROW

STANDARD DETAIL  
6" DRAIN BLOWOFF



NOTES:

1. 1" DOMESTIC METER SETTER AS SHOWN.
2. 1 1/2" - 2" METER SETTER REQUIRES A METER VALVE ON EACH SIDE (NOT SHOWN ON DETAIL)
3. IF THE BUILDING OR APPROVED PROJECTION IS AT OR EXTENDS BEYOND THE PROPERTY LINE, THE CURB STOP SHALL BE PLACED 18 INCHES FROM FACE OF BUILDING OR APPROVED PROJECTION.
4. FOR NEW BUILDING CONSTRUCTION ONLY (IF REQUIRED): THE FIRE SERVICE LINE SHALL INCLUDE A SHUT-OFF VALVE INSTALLED INSIDE THE BUILDING.
5. FOR NEW BUILDING CONSTRUCTION ONLY (IF REQUIRED): THE DOMESTIC SERVICE LINE SHALL INCLUDE A PRESSURE REDUCING VALVE AND SHUT-OFF VALVE INSTALLED INSIDE THE BUILDING.

APPROVED DATE: January 2, 2004

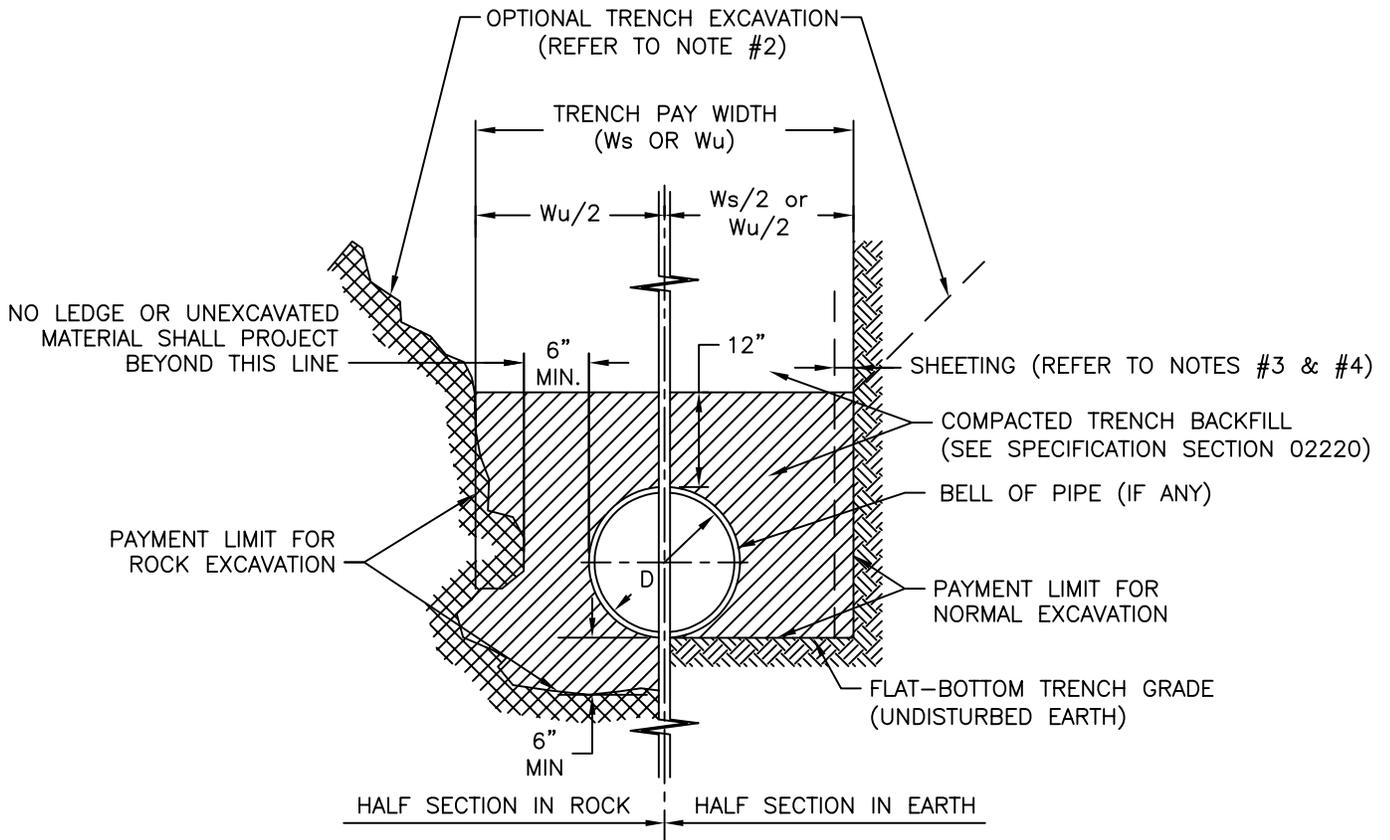
DIRECTOR, DEPARTMENT OF ENGINEERING  
AND TECHNICAL SERVICES

REVISION NO.: 1  
DATE: 6/20/03  
PREPARED BY: J. Shabelski  
CHECKED BY: W.DARROW

STANDARD DETAIL

WATER SERVICE CONNECTIONS  
1" THRU 2" DIAMETER





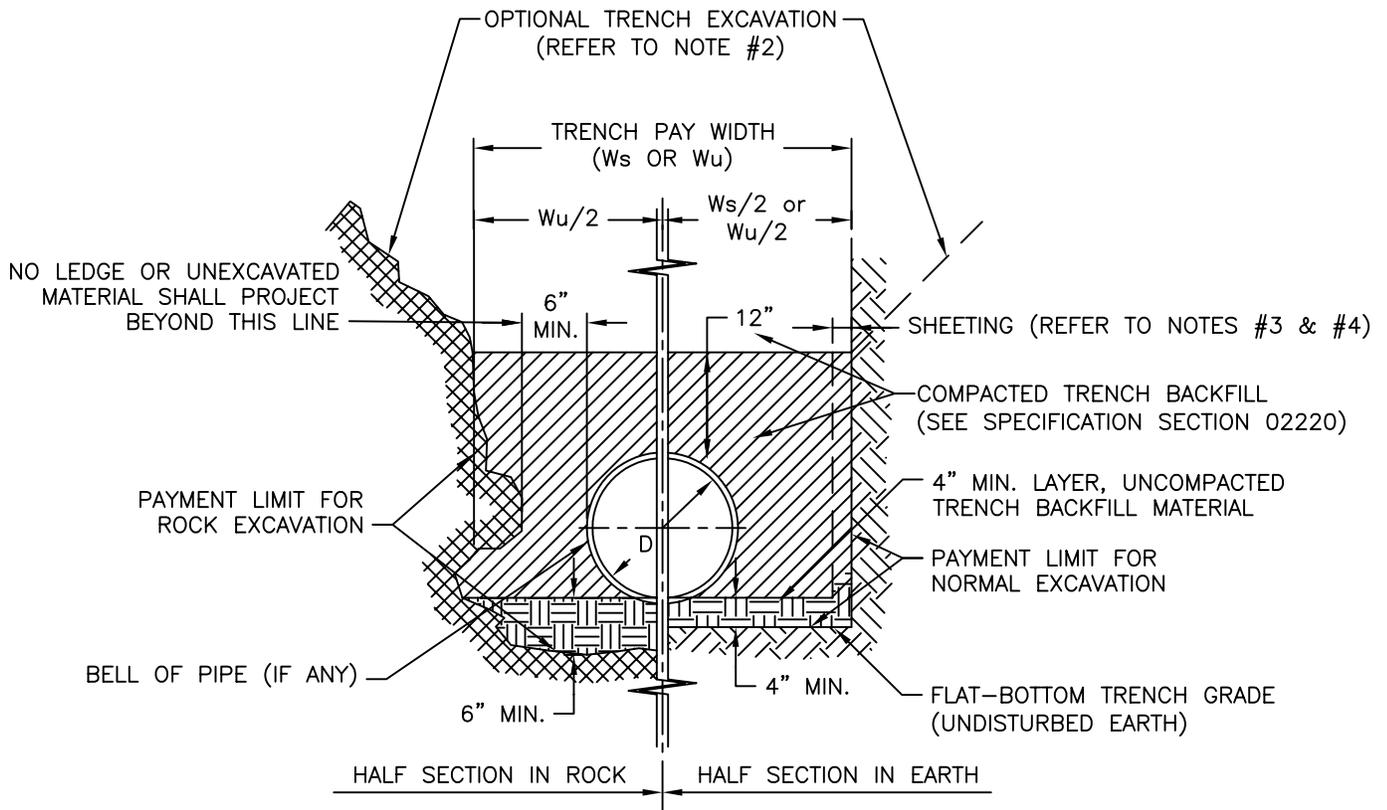
APPROVED DATE: June 20, 2003

DIRECTOR, DEPARTMENT OF ENGINEERING  
AND TECHNICAL SERVICES

REVISION NO.: 0  
DATE: 6/20/03  
PREPARED BY: OBG/BKJV  
CHECKED BY: W.DARROW

STANDARD DETAIL  
DUCTILE IRON SEWER  
PIPE LAYING CONDITION TYPE 2A  
(TRENCH INSTALLATION)





APPROVED DATE: June 20, 2003

DIRECTOR, DEPARTMENT OF ENGINEERING  
AND TECHNICAL SERVICES

REVISION NO.: 0  
DATE: 6/20/03  
PREPARED BY: OBG/BKJV  
CHECKED BY: W.DARROW

STANDARD DETAIL  
DUCTILE IRON SEWER  
PIPE LAYING CONDITION TYPE 3A  
(TRENCH INSTALLATION)

PIPE DIAMETER D	TRENCH PAY WIDTH (Ws or Wu)	
	UNSHEETED (Wu)	SHEETED (Ws)
8"	2' - 4"	2' - 10"
12"	2' - 8"	3' - 2"
16"	3' - 0"	3' - 6"
20"	3' - 4"	3' - 10"
24"	3' - 8"	4' - 2"
30"	4' - 2"	4' - 8"
36"	5' - 7"	6' - 1"
42"	6' - 1"	6' - 7"
48"	6' - 7"	7' - 1"

**NOTES:**

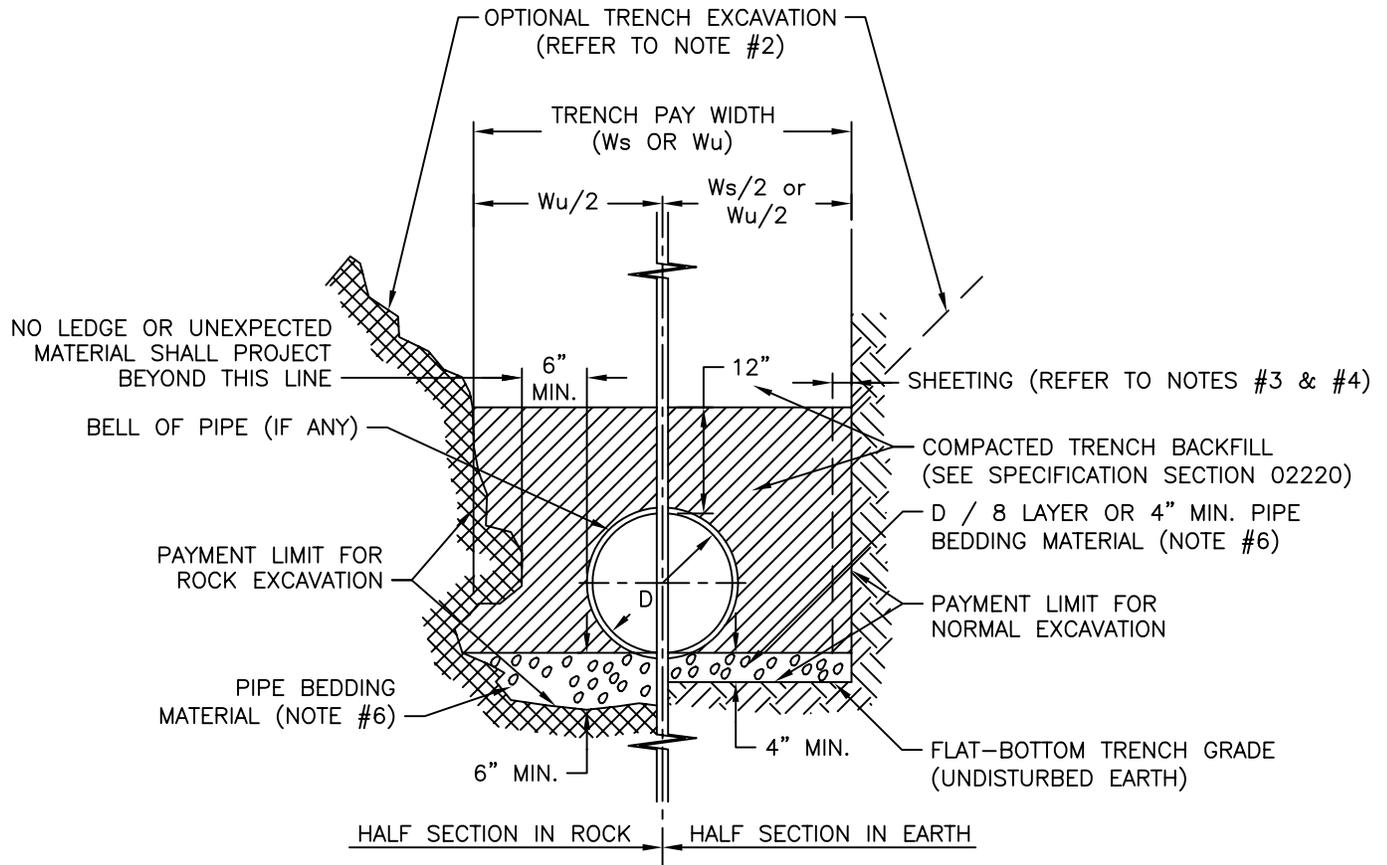
1. PIPE LAYING CONDITION TYPE 3A (TRENCH INSTALLATION) SHALL BE USED FOR DUCTILE IRON PIPE SEWER CONSTRUCTION ONLY WHEN SPECIFIED OR SHOWN ON DRAWINGS.
2. TRENCHES MAY BE EXCAVATED WIDER THAN THE TRENCH PAY WIDTH (Ws OR Wu) ABOVE A LINE 1'-0" FROM TOP OF PIPE, AT CONTRACTOR'S OPTION AND AT NO ADDITIONAL COST TO THE AUTHORITY.
3. IF EXCAVATION TO A DEPTH GREATER THAN 4.5 FEET IS REQUIRED, EXCAVATION SUPPORT SHEETING MAY BE ORDERED OR TRENCH SHIELDS UTILIZED AT CONTRACTORS OPTION. COSTS UNDER THIS OPTION SHALL BE PART OF THE UNIT PRICE BID FOR EXCAVATION.
4. SHEETING, IF USED, SHALL BE REMOVED IN CONJUNCTION WITH THE BACKFILLING OPERATION UNLESS OTHERWISE SPECIFIED OR SHOWN ON DRAWINGS. HOWEVER, IF APPROVED IN WRITING, SHEETING MAY BE CUT-OFF AND LEFT IN PLACE BELOW A LINE 1'-0" ABOVE THE TOP OF PIPE OR AS DIRECTED BY THE ENGINEER.

APPROVED DATE: June 20, 2003

DIRECTOR, DEPARTMENT OF ENGINEERING  
AND TECHNICAL SERVICES

REVISION NO.: 0  
DATE: 6/20/03  
PREPARED BY: OBG/BKJV  
CHECKED BY: W.DARROW

STANDARD DETAIL  
DUCTILE IRON SEWER  
PIPE LAYING CONDITION TYPE 3A  
(TRENCH INSTALLATION)



APPROVED DATE: June 20, 2003

DIRECTOR, DEPARTMENT OF ENGINEERING  
AND TECHNICAL SERVICES

REVISION NO.: 0  
DATE: 6/20/03  
PREPARED BY: OBG/BKJV  
CHECKED BY: W.DARROW

STANDARD DETAIL  
DUCTILE IRON SEWER  
PIPE LAYING CONDITION TYPE 4A  
(TRENCH INSTALLATION)

PIPE DIAMETER D	TRENCH PAY WIDTH (Ws or Wu)	
	UNSHEETED (Wu)	SHEETED (Ws)
8"	2' - 4"	2' - 10"
12"	2' - 8"	3' - 2"
16"	3' - 0"	3' - 6"
20"	3' - 4"	3' - 10"
24"	3' - 8"	4' - 2"
30"	4' - 2"	4' - 8"
36"	5' - 7"	6' - 1"
42"	6' - 1"	6' - 7"
48"	6' - 7"	7' - 1"

**NOTES:**

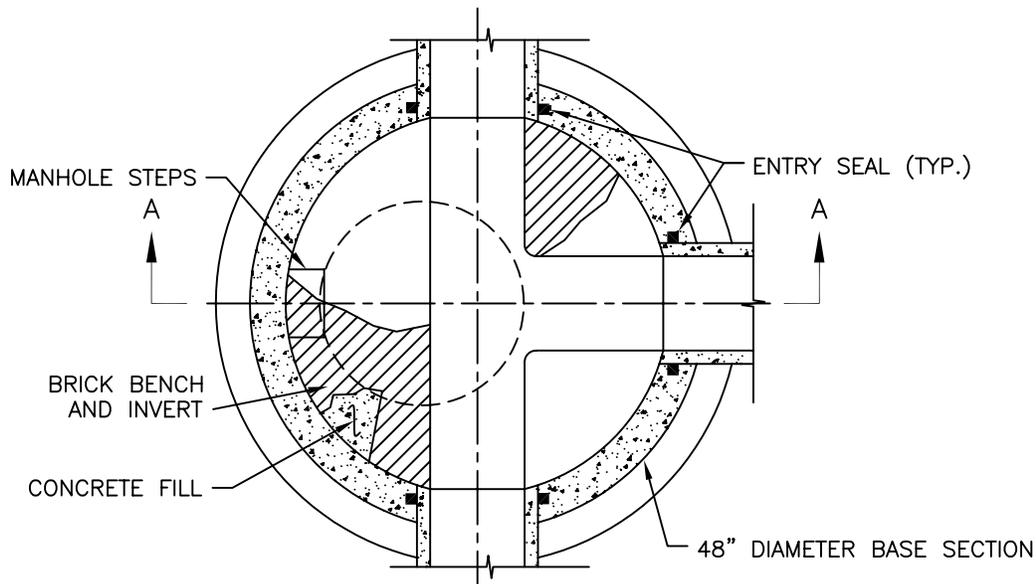
1. PIPE LAYING CONDITION TYPE 4A (TRENCH INSTALLATION) SHALL BE USED FOR DUCTILE IRON PIPE SEWER CONSTRUCTION ONLY WHEN SPECIFIED OR SHOWN ON DRAWINGS.
2. TRENCHES MAY BE EXCAVATED WIDER THAN THE TRENCH PAY WIDTH (Ws OR Wu) ABOVE A LINE 1'-0" FROM TOP OF PIPE, AT CONTRACTOR'S OPTION AND AT NO ADDITIONAL COST TO THE AUTHORITY.
3. IF EXCAVATION TO A DEPTH GREATER THAN 4.5 FEET IS REQUIRED, EXCAVATION SUPPORT SHEETING MAY BE ORDERED OR TRENCH SHIELDS UTILIZED AT CONTRACTORS OPTION. COSTS UNDER THIS OPTION SHALL BE PART OF THE UNIT PRICE BID FOR EXCAVATION.
4. SHEETING, IF USED, SHALL BE REMOVED IN CONJUNCTION WITH THE BACKFILLING OPERATION UNLESS OTHERWISE SPECIFIED OR SHOWN ON DRAWINGS. HOWEVER, IF APPROVED IN WRITING, SHEETING MAY BE CUT-OFF AND LEFT IN PLACE BELOW A LINE 1'-0" ABOVE THE TOP OF PIPE OR AS DIRECTED BY THE ENGINEER.
5. COMPACTED TRENCH BACKFILL, 80 % BETWEEN PIPE BEDDING AND 12 INCHES ABOVE TOP OF PIPE.
6. PIPE BEDDING MATERIAL SHALL BE GRAVEL OR CRUSHED STONE CONFORMING TO ASTM C-33, GRADING SIZE NO. 67 OR NO. 57.

APPROVED DATE: June 20, 2003

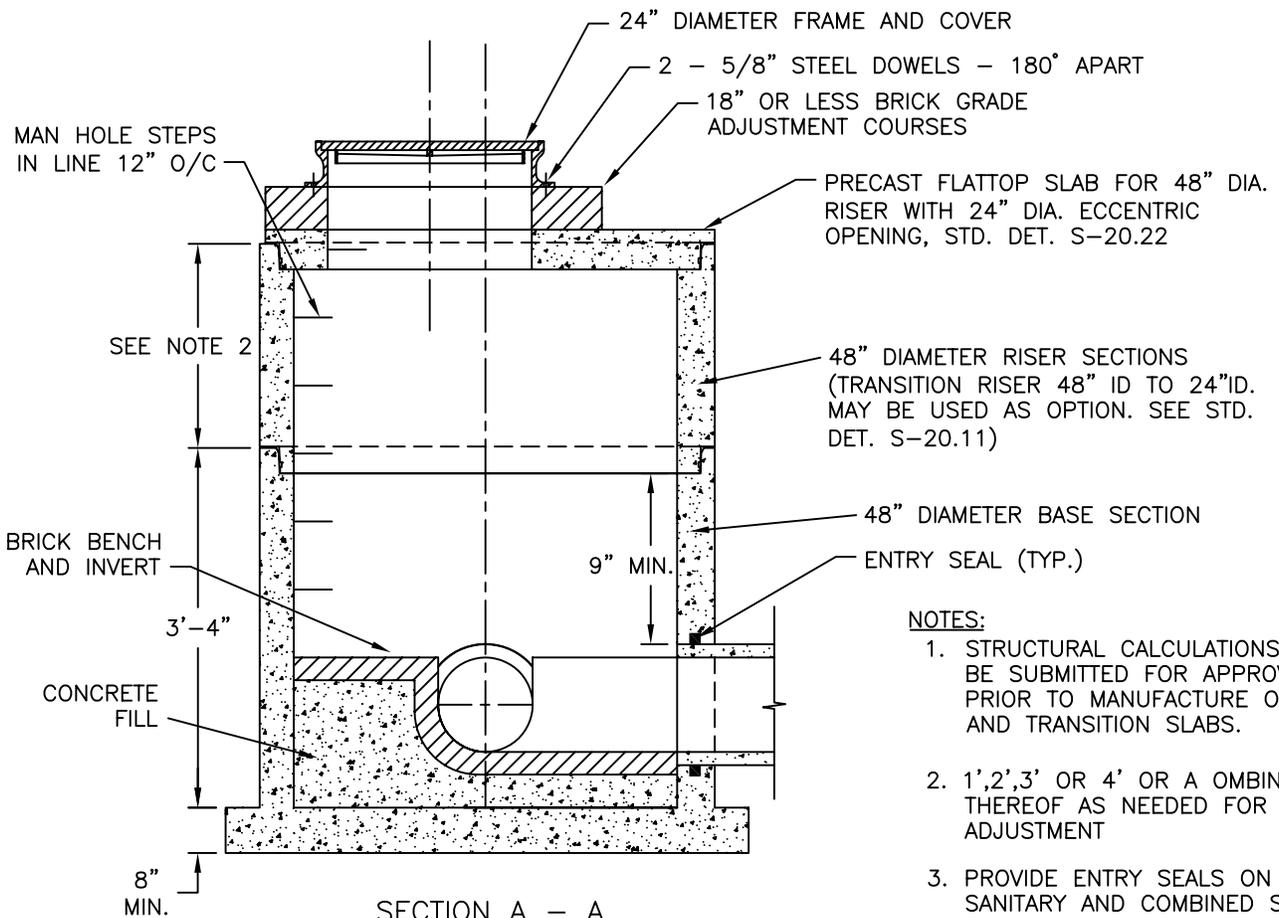
DIRECTOR, DEPARTMENT OF ENGINEERING  
AND TECHNICAL SERVICES

REVISION NO.: 0  
DATE: 6/20/03  
PREPARED BY: OBG/BKJV  
CHECKED BY: W.DARROW

STANDARD DETAIL  
DUCTILE IRON SEWER  
PIPE LAYING CONDITION TYPE 4A  
(TRENCH INSTALLATION)



SECTIONAL PLAN



SECTION A - A

NOTES:

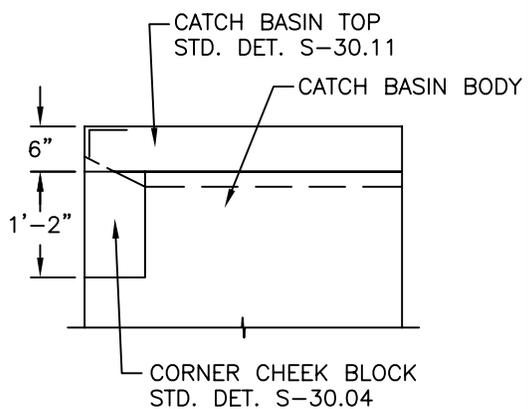
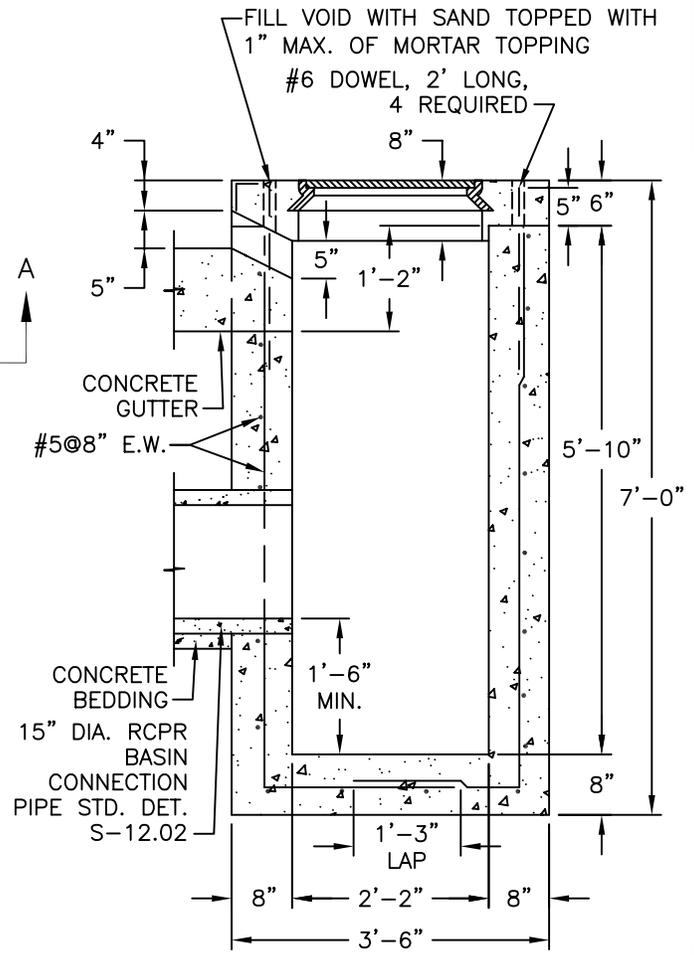
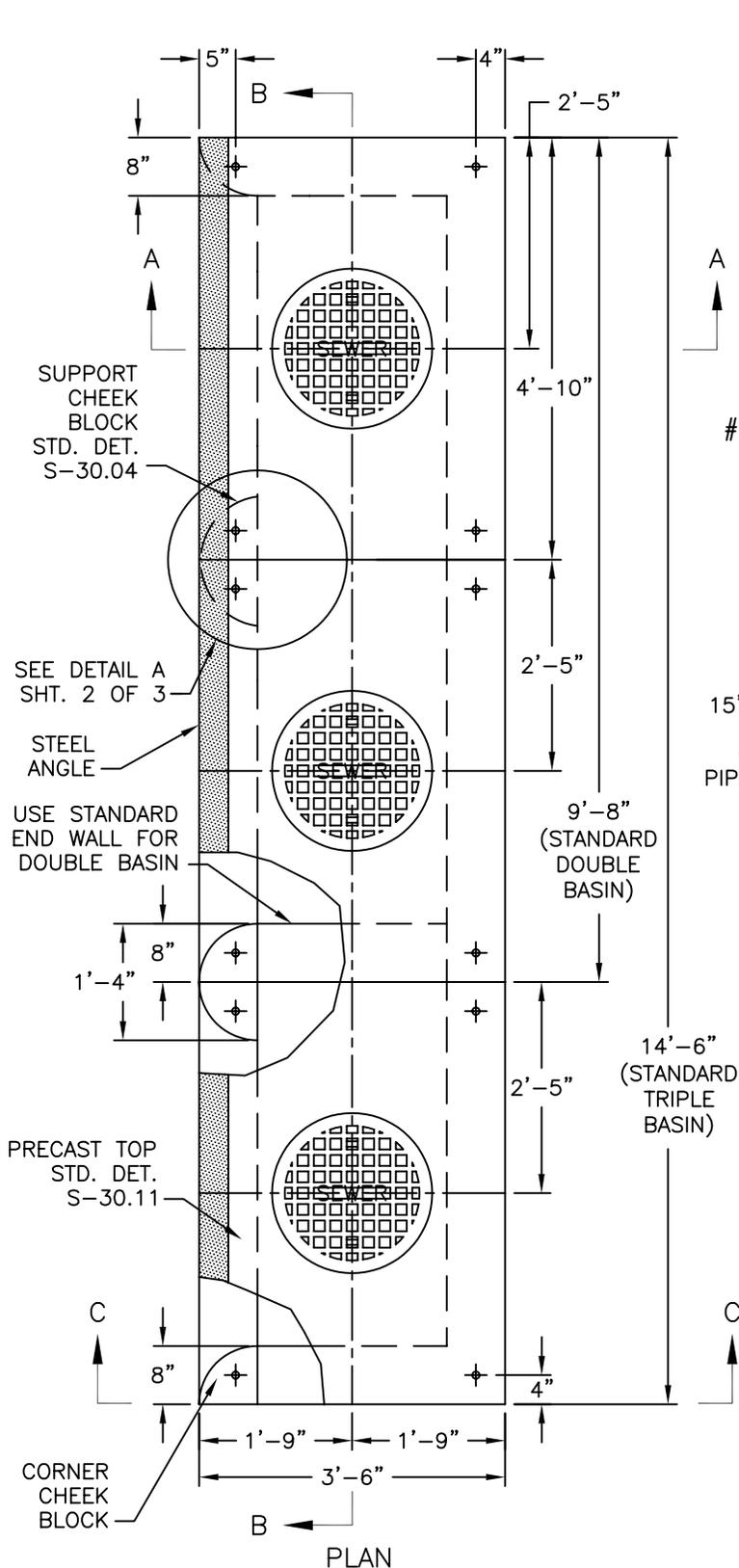
1. STRUCTURAL CALCULATIONS MUST BE SUBMITTED FOR APPROVAL PRIOR TO MANUFACTURE OF BASE AND TRANSITION SLABS.
2. 1', 2', 3' OR 4' OR A COMBINATION THEREOF AS NEEDED FOR GRADE ADJUSTMENT
3. PROVIDE ENTRY SEALS ON SANITARY AND COMBINED SEWER CONNECTIONS 24" AND SMALLER.

APPROVED DATE: June 20, 2003

DIRECTOR, DEPARTMENT OF ENGINEERING  
AND TECHNICAL SERVICES

REVISION NO.: 0  
DATE: 6/20/03  
PREPARED BY: OBG/BKJV  
CHECKED BY: W.DARROW

STANDARD DETAIL  
PRECAST CONCRETE MANHOLE  
FOR NEW 10" THRU 21" DIAMETER SEWERS  
(48" DIAMETER PRECAST BASE)



- NOTES:
1. ALL CONCRETE TO BE CLASS 4000, AIR ENTRAINED, TYPE II CEMENT.
  2. REINFORCING STEEL SHALL CONFORM TO ASTM A615, GRADE 60.

APPROVED DATE: June 20, 2003

DIRECTOR, DEPARTMENT OF ENGINEERING AND TECHNICAL SERVICES

REVISION NO.: 0

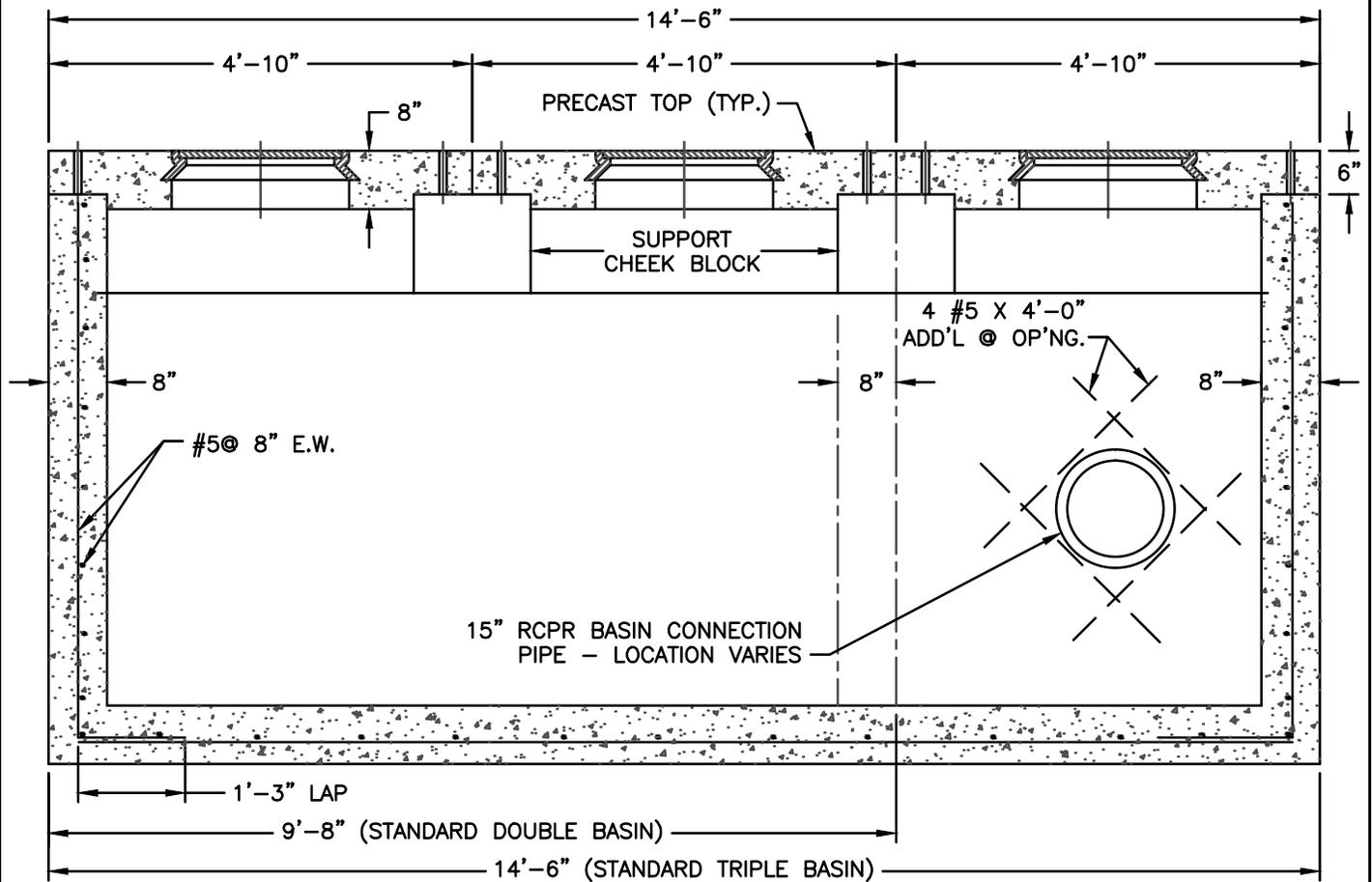
DATE: 6/20/03

PREPARED BY: OBG/BKJV

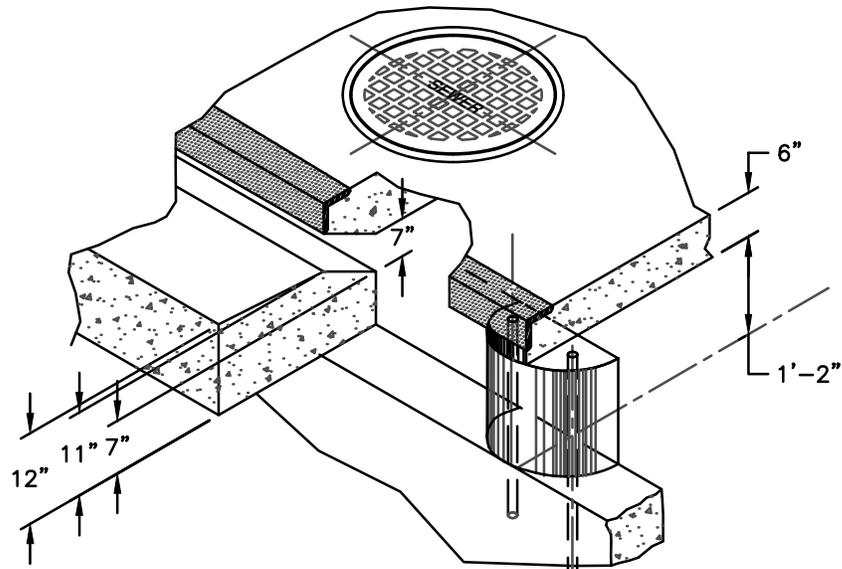
CHECKED BY: W.DARROW

STANDARD DETAIL

STANDARD DOUBLE AND  
STANDARD TRIPLE BASINS



SECTION B-B



DETAIL A

APPROVED DATE: June 20, 2003

REVISION NO.: 0

DATE: 6/20/03

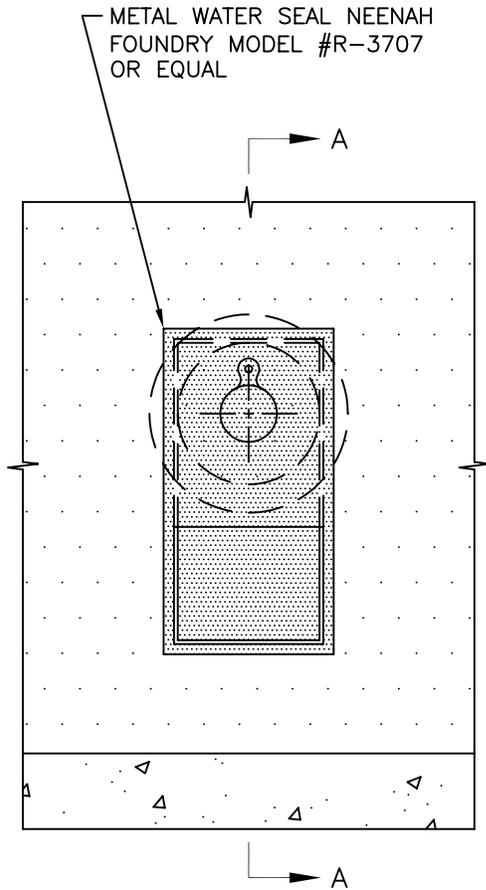
PREPARED BY: OBG/BKJV

CHECKED BY: W.DARROW

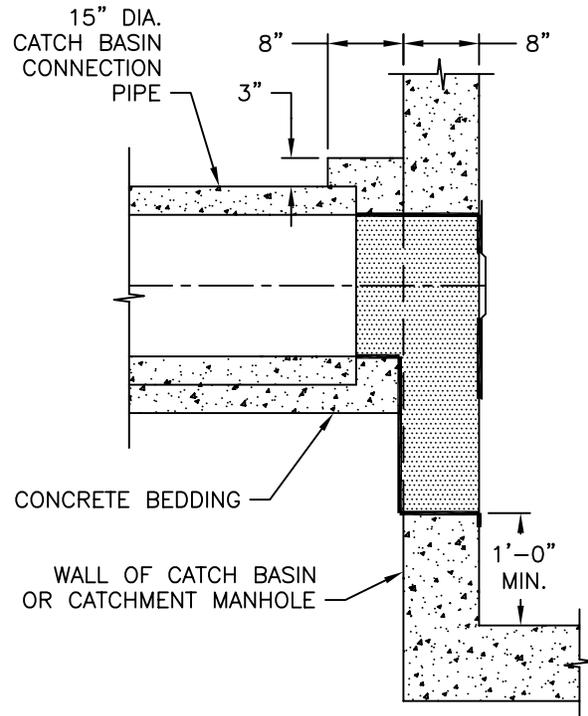
DIRECTOR, DEPARTMENT OF ENGINEERING  
AND TECHNICAL SERVICES

STANDARD DETAIL

STANDARD DOUBLE AND  
STANDARD TRIPLE BASINS



FRONT ELEVATION



SECTION A-A

NOTES:

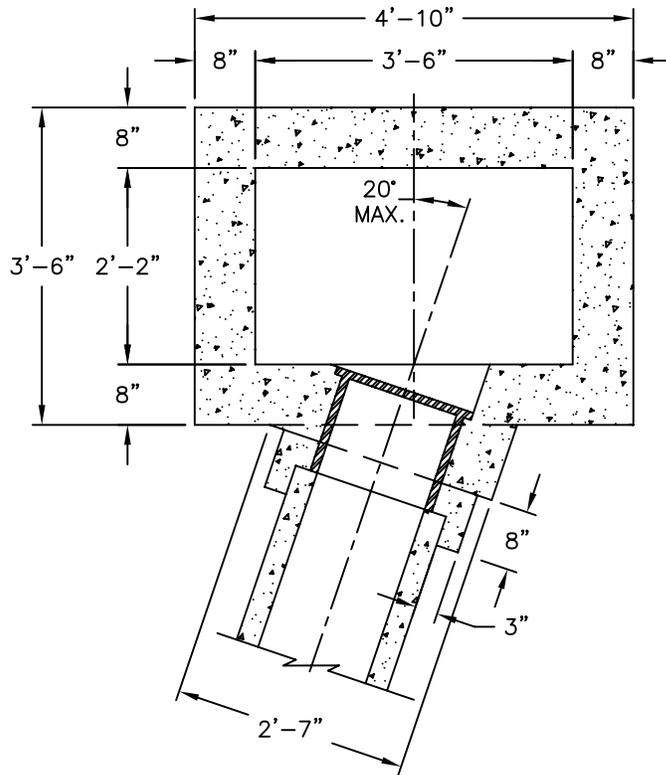
1. GRAY IRON CASTINGS PER ASTM A-48, CLASS 30A.
2. ALL MACHINE FINISH TO BE A.S.A. SPECIFICATION, ROUGHNESS SYMBOL 250, TOLERANCE  $-0" +1/16"$ .
3. WHEN THE CATCH BASIN CONNECTION PIPE IS NOT PERPENDICULAR TO THE CATCH BASIN WALL, THE WALL SHALL BE MODIFIED TO INSTALL WATER SEAL ON SAME ALIGNMENT AS THE CATCH BASIN PIPE, SEE SECTIONAL PLAN, SHEET 2 OF 2 FOR TYPICAL DETAIL.

APPROVED DATE: June 20, 2003

DIRECTOR, DEPARTMENT OF ENGINEERING  
 AND TECHNICAL SERVICES

REVISION NO.: 0  
 DATE: 6/20/03  
 PREPARED BY: OBG/BKJV  
 CHECKED BY: W.DARROW

STANDARD DETAIL  
 WATER SEAL FOR 15" DIAMETER  
 CATCH BASIN CONNECTION  
 (COMBINED AREA ONLY)



SECTIONAL PLAN

APPROVED DATE: June 20, 2003

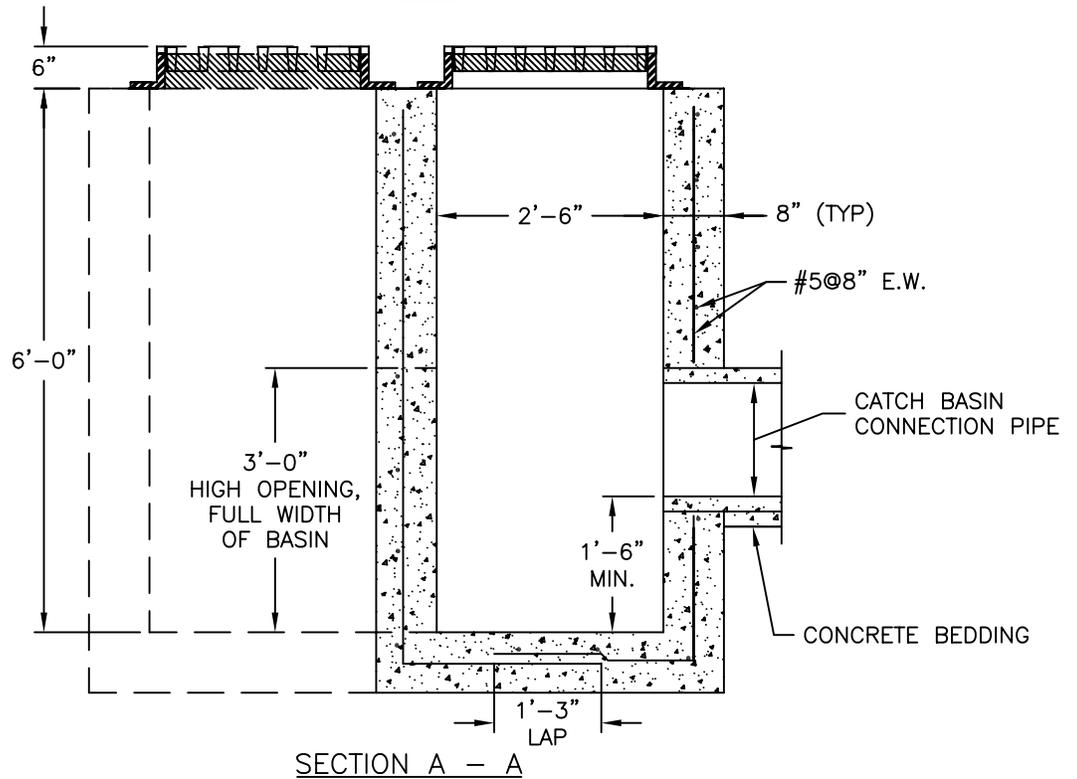
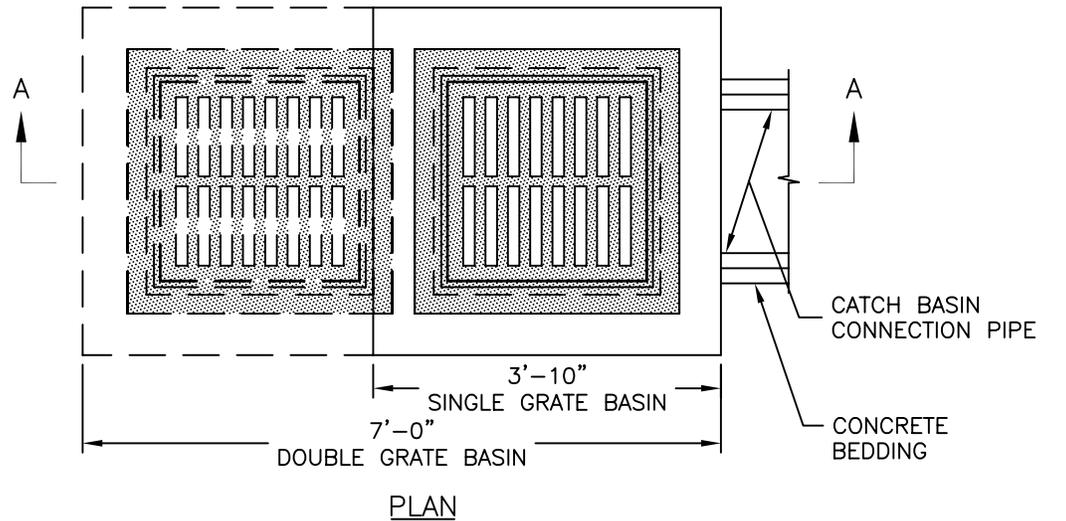
DIRECTOR, DEPARTMENT OF ENGINEERING  
 AND TECHNICAL SERVICES

REVISION NO.: 0  
 DATE: 6/20/03  
 PREPARED BY: OBG/BKJV  
 CHECKED BY: W.DARROW

STANDARD DETAIL

TYPICAL FOR NON-PERPENDICULAR  
 CATCH BASIN CONNECTION PIPE

C.I. FRAME AND GRATE  
NEENAH FOUNDRY R-3350



**NOTES:**

1. GRAY IRON CASTING PER ASTM A-48, CLASS 30A.
2. ALL MACHINE FINISH TO BE A.S.A. SPECIFICATION, ROUGHNESS SYMBOL 250, TOLERANCE  $-0 + 1/16"$ .
3. ALL CONCRETE TO BE CLASS 4000, AIR ENTRAINED TYPE II CEMENT.
4. BASIN TO BE USED IN UNPAVED AREAS ONLY.
5. REINFORCING SHALL BE CENTERED IN WALL AND BASE AND SHALL CONFORM TO ASTM A615 GRADE 60.

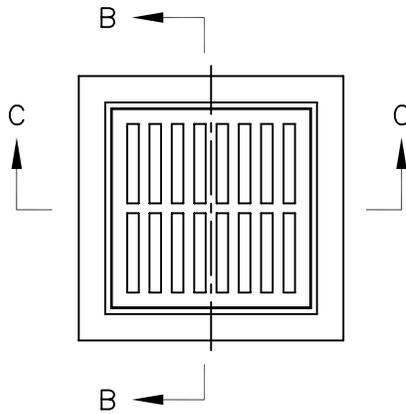
APPROVED DATE: June 20, 2003

DIRECTOR, DEPARTMENT OF ENGINEERING  
AND TECHNICAL SERVICES

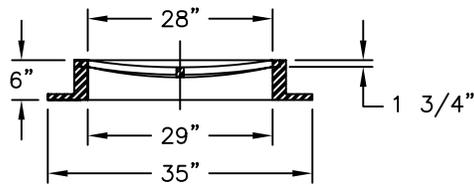
REVISION NO.: 0  
DATE: 6/20/03  
PREPARED BY: OBG/BKJV  
CHECKED BY: W.DARROW

STANDARD DETAIL

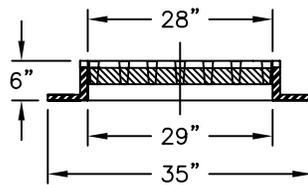
FIELD INLET  
GRATE TYPE CATCH BASIN



PLAN



SECTION B - B



SECTION C - C

APPROVED DATE: June 20, 2003

DIRECTOR, DEPARTMENT OF ENGINEERING  
 AND TECHNICAL SERVICES

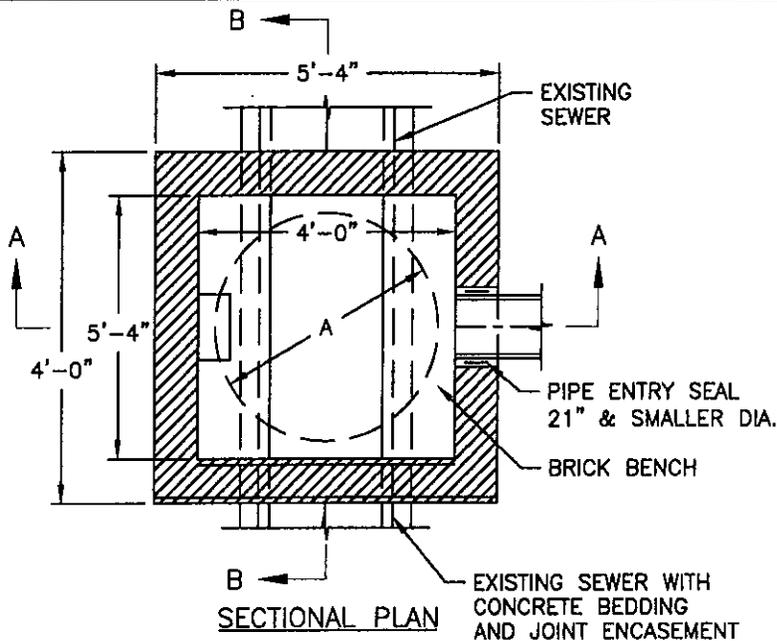
REVISION NO.: 0  
 DATE: 6/20/03  
 PREPARED BY: OBG/BKJV  
 CHECKED BY: W.DARROW

STANDARD DETAIL

FIELD INLET  
 GRATE TYPE CATCH BASIN

DISTRICT OF COLUMBIA  
WATER AND SEWER AUTHORITY

S-21.11  
1 OF 1

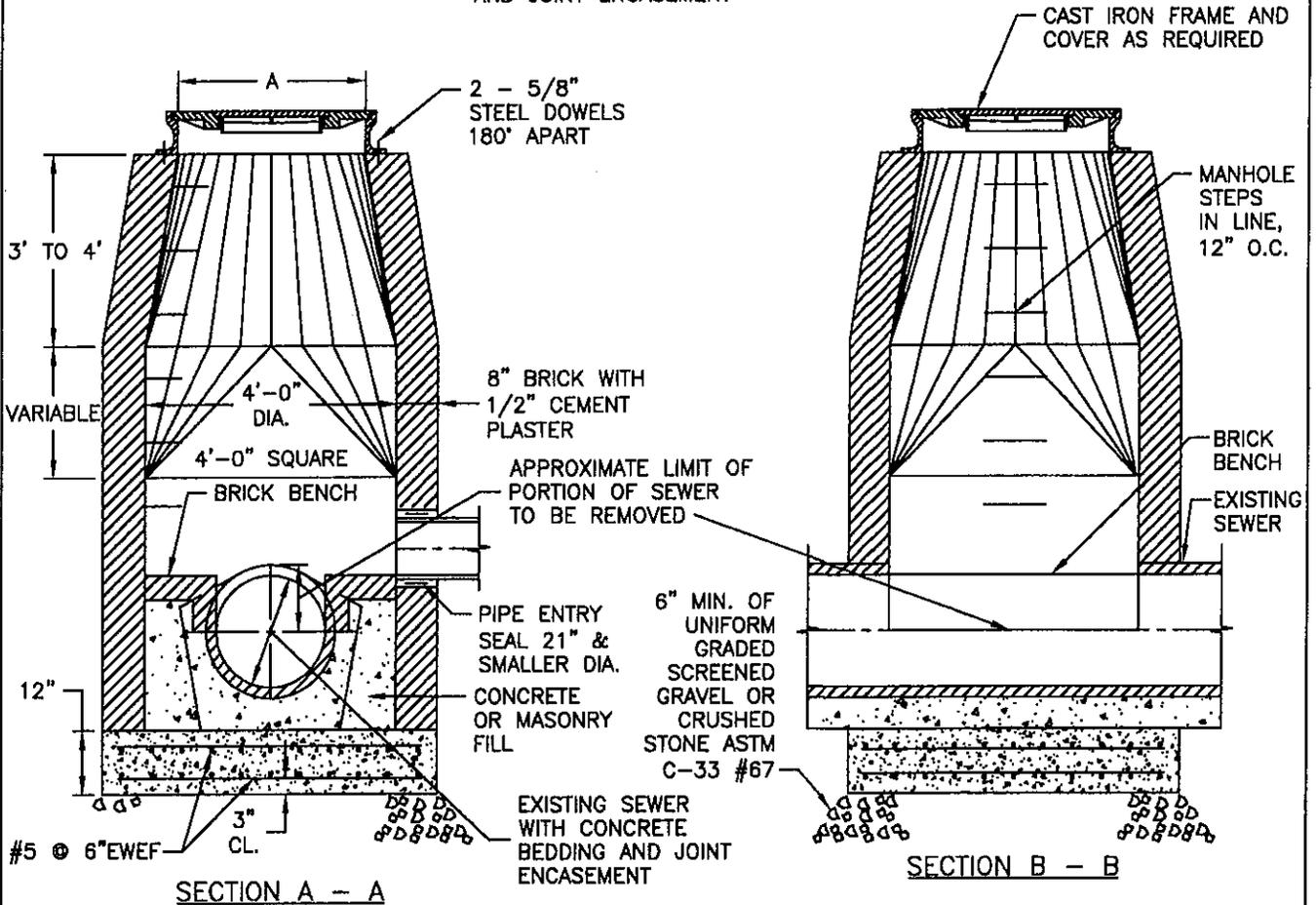


SEWER DIAMETER	FRAME DIAMETER (A)
10" THRU 21"	24"
24" THRU 36"	36" *

\* IF SURFACE TO INVERT < 15', A 36"X24" DIA. ADAPTER RING WITH 24" DIA. COVER SHALL BE USED.

NOTES:

1. ALL CONCRETE TO BE CLASS 4000 AIR ENTRAINED, TYPE II CEMENT.
2. REINFORCING STEEL SHALL CONFORM TO ASTM A-615, GRADE 60.
3. WHEN THE MANHOLE DEPTH EXCEEDS 15 FEET, THE BRICK WALL THICKNESS SHALL BE INCREASED TO 12 INCHES BELOW THE 15 FOOT DEPTH.



APPROVED DATE: June 20, 2003  
Digitally signed by Leonard Benson  
Date: 2004.11.28 15:43:37 -0500  
*LRBenson*  
 DIRECTOR, DEPARTMENT OF ENGINEERING  
 AND TECHNICAL SERVICES

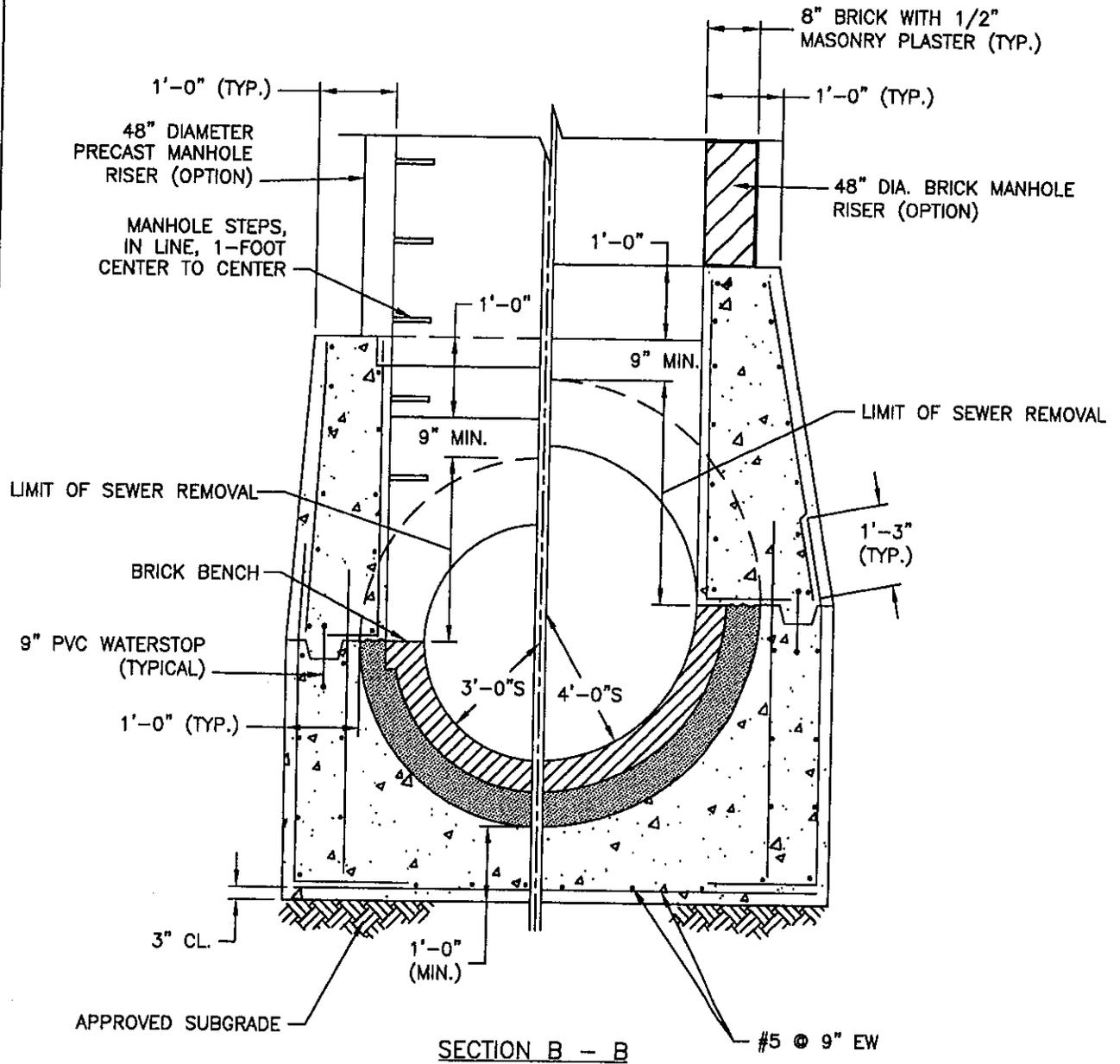
REVISION NO.: 0  
 DATE: 5/20/03  
 PREPARED BY: OBG/BKJV  
 CHECKED BY: W.DARROW

STANDARD DETAIL  
 BRICK MANHOLE  
 OVER EXISTING 10" THRU 36" DIAMETER  
 SEWERS WITH CAST IN PLACE CONCRETE BASE

DISTRICT OF COLUMBIA  
WATER AND SEWER AUTHORITY

S-22.13

3 OF 3



APPROVED DATE: June 20, 2003  
Digitally signed by Leonard  
Binson  
Date: 2004.11.26 15:45:30 -0500

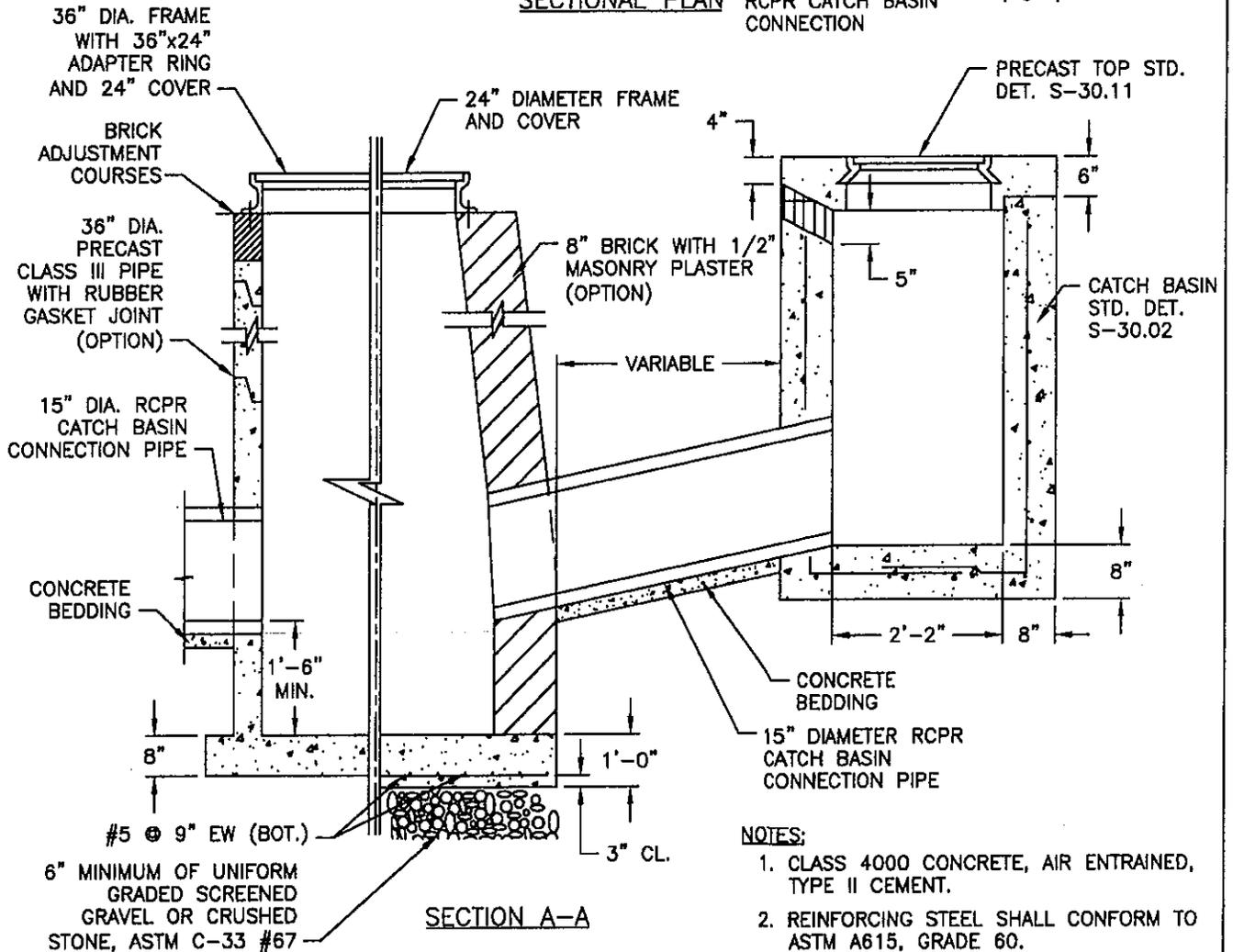
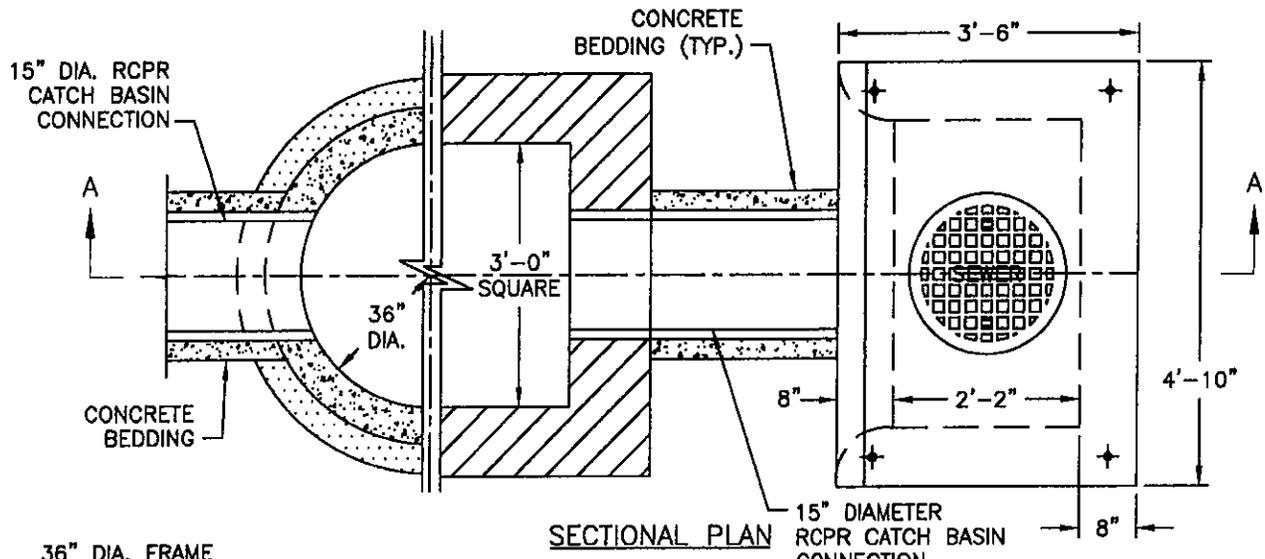
DIRECTOR, DEPARTMENT OF ENGINEERING  
AND TECHNICAL SERVICES

REVISION NO.: 0  
DATE: 6/20/03  
PREPARED BY: OBG/BKJV  
CHECKED BY: W.DARROW

STANDARD DETAIL  
CAST IN PLACE CONCRETE MANHOLE BASE  
ON EXISTING 3-FOOT TO 4-FOOT DIAMETER  
CONCRETE MASONRY SEWERS

DISTRICT OF COLUMBIA  
WATER AND SEWER AUTHORITY

S-30.05  
1 OF 1



NOTES:

1. CLASS 4000 CONCRETE, AIR ENTRAINED, TYPE II CEMENT.
2. REINFORCING STEEL SHALL CONFORM TO ASTM A615, GRADE 60.

APPROVED DATE: June 20, 2003

*LRB*  
Digitally signed by Leonard Benson  
Date: 2004.11.26 15:49:31 -0500

DIRECTOR, DEPARTMENT OF ENGINEERING AND TECHNICAL SERVICES

REVISION NO.: 0

DATE: 8/20/03

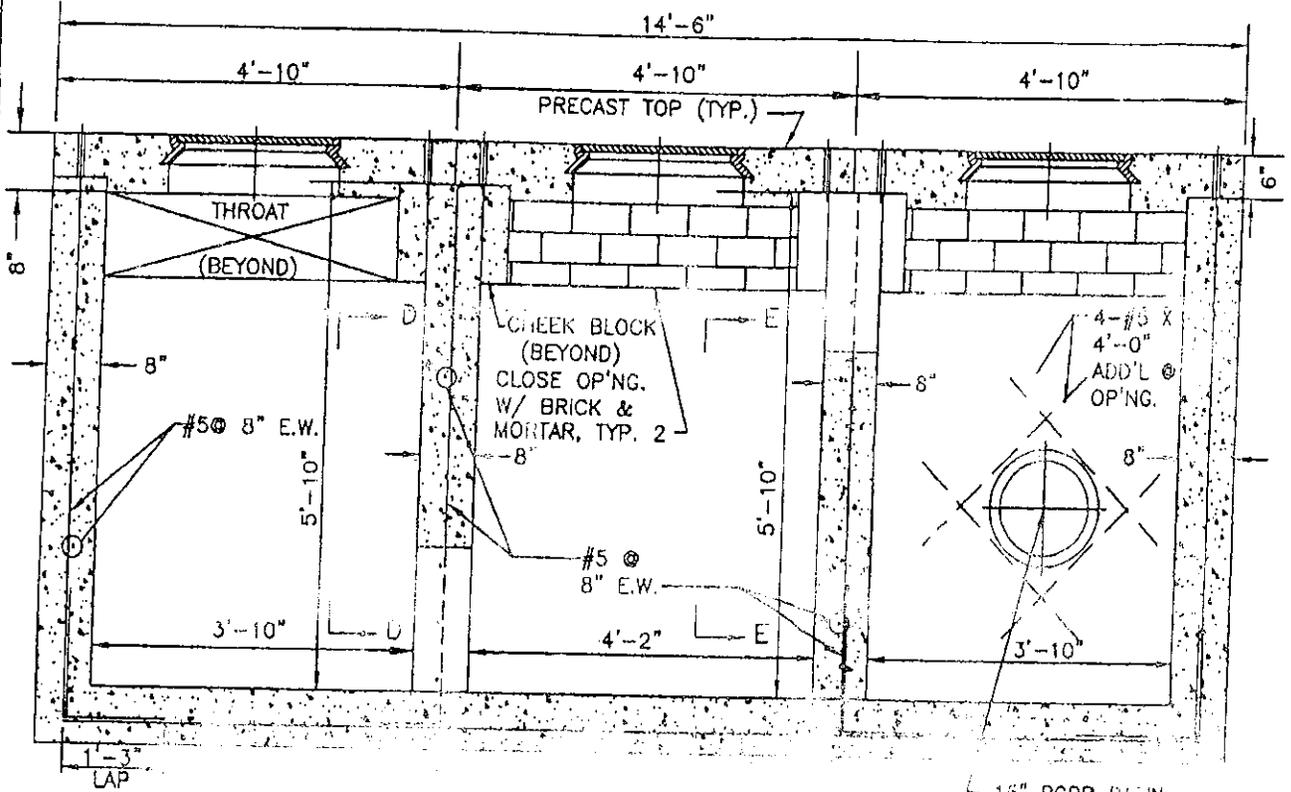
PREPARED BY: OBG/BKJV

CHECKED BY: W.DARROW

STANDARD DETAIL

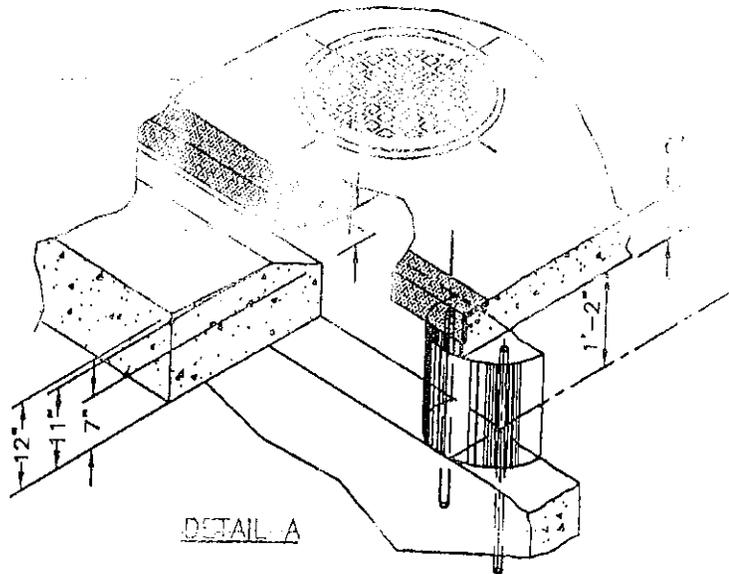
SHALLOW TYPE CATCH BASIN  
WITH CATCHMENT MANHOLE





SECTION B - B

15" RCPR BASIN  
 CONNECTION  
 PIPE-LOCATION VARIES



DETAIL A

APPROVED DATE: MAY 00, 200X

REVISION NO.: 0

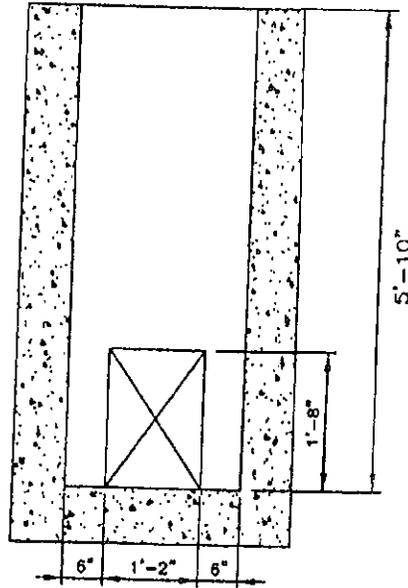
DATE: 5/00/200X

PREPARED BY: I. SMITH

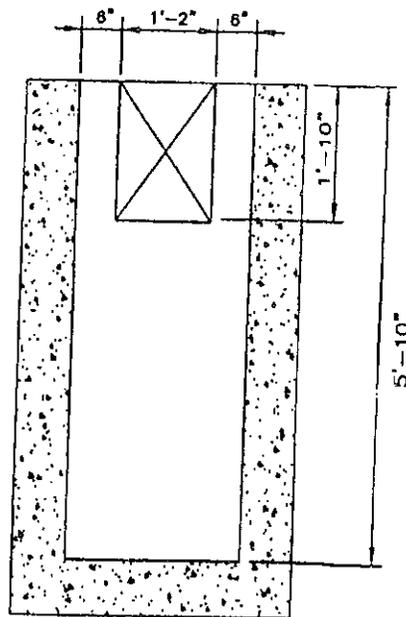
CHECKED BY: W. DARROW

DIRECTOR, DEPARTMENT OF ENGINEERING  
 AND TECHNICAL SERVICES

STANDARD DETAIL  
 SINGLE THROAT  
 WATER QUALITY BASIN



VIEW D-D



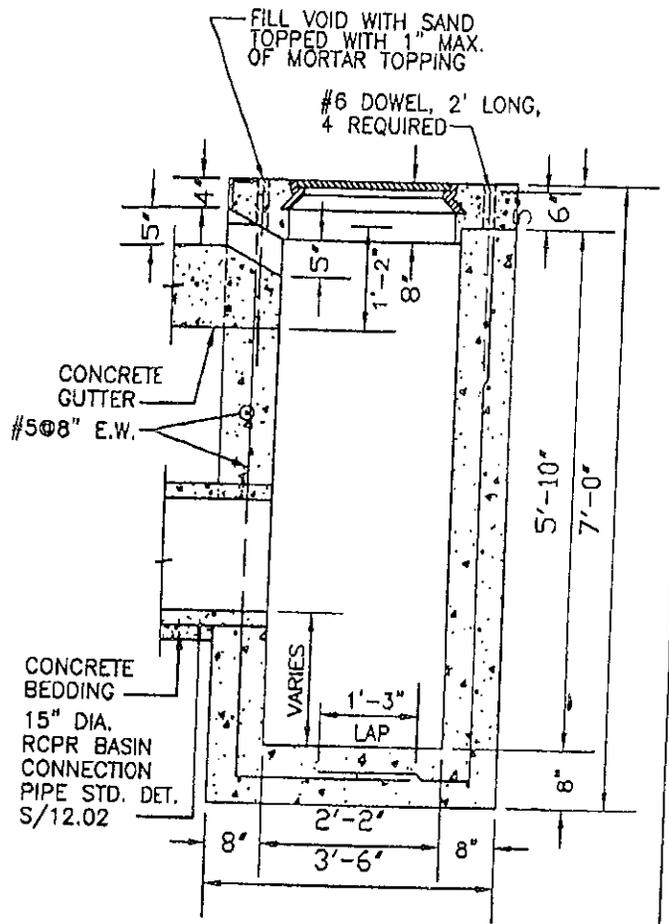
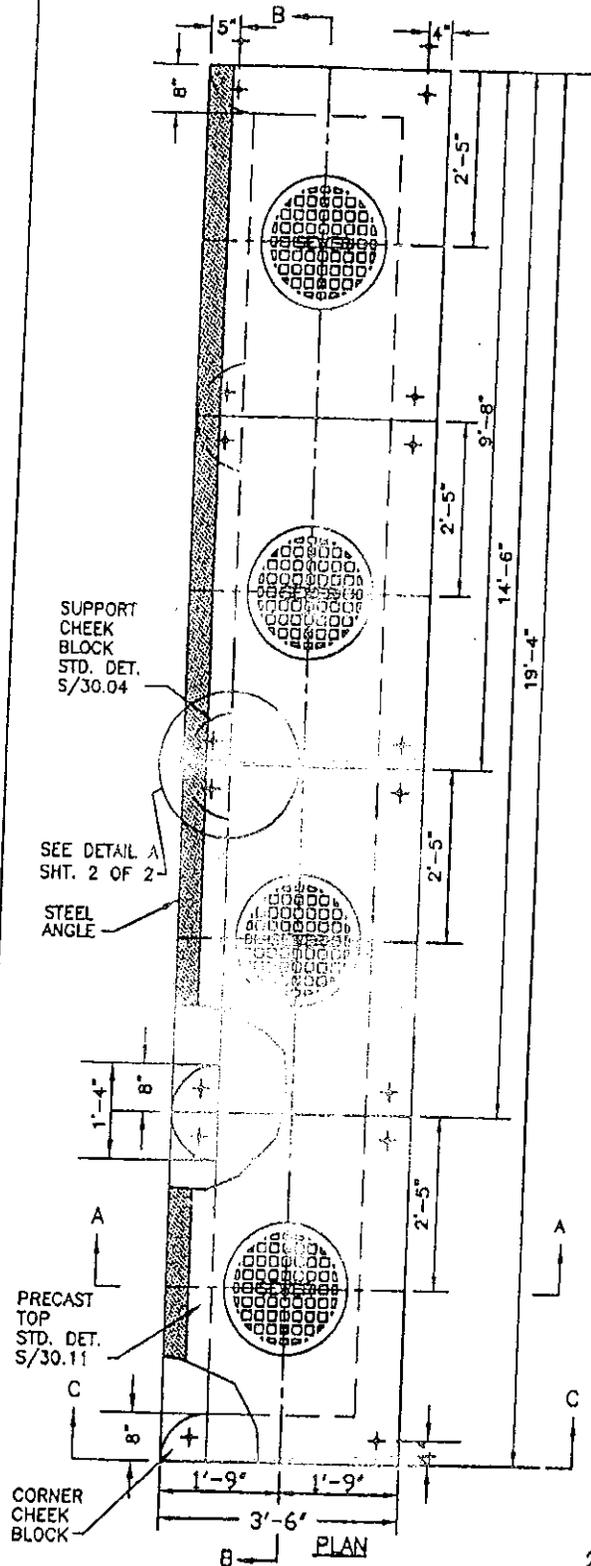
VIEW E-E

APPROVED DATE: MAY 00, 200X

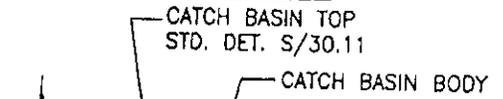
DIRECTOR, DEPARTMENT OF ENGINEERING  
 AND TECHNICAL SERVICES

REVISION NO.: 0  
 DATE: 5/00/200X  
 PREPARED BY: I. SMITH  
 CHECKED BY: W. DARROW

STANDARD DETAIL  
 SINGLE THROAT  
 WATER QUALITY BASIN



SECTION A - A



CORNER CHEEK BLOCK  
STD. DET. S/30.04

VIEW C-C

- NOTES:
1. ALL CONCRETE TO BE CLASS 4000, AIR ENTRAINED, TYPE II CEMENT.
  2. REINFORCING STEEL SHALL CONFORM TO ASTM A615, GRADE 60.

APPROVED DATE: \_\_\_\_\_

REVISION NO.: \_\_\_\_\_

DATE: 8-18-07

DIRECTOR, DEPARTMENT OF ENGINEERING  
AND TECHNICAL SERVICES

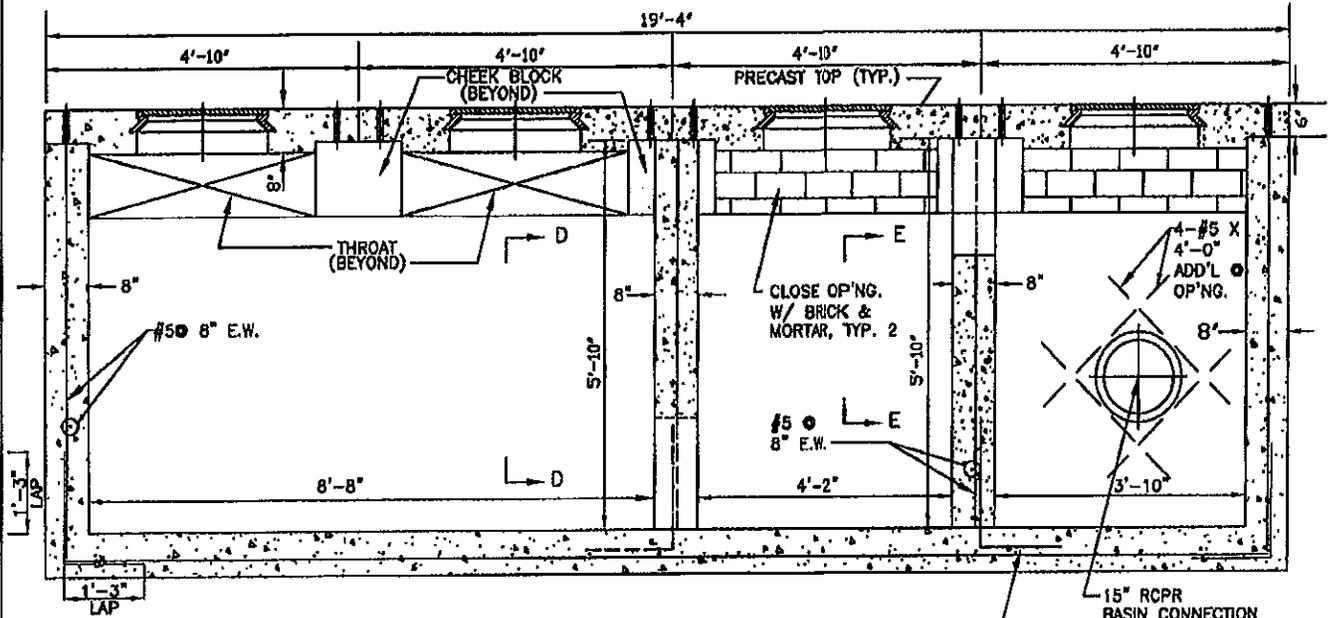
PREPARED BY: W. DEVAUGHN

CHECKED BY: \_\_\_\_\_

STANDARD DETAIL  
DUAL THROAT  
WATER QUALITY BASIN

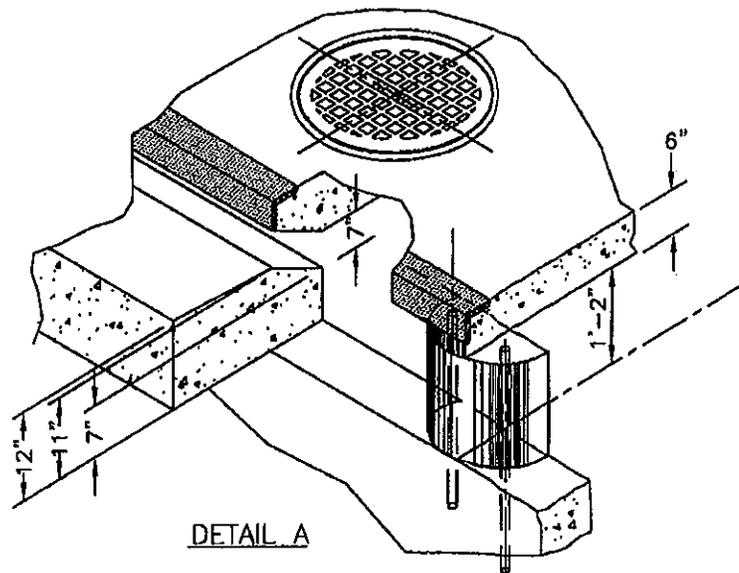
DISTRICT OF COLUMBIA  
WATER AND SEWER AUTHORITY

S-31.02  
2 OF 3



SECTION B - B

15" RCPR  
BASIN CONNECTION  
PIPE-LOCATION VARIES  
DOWELS TO MATCH  
VERT. REINF.



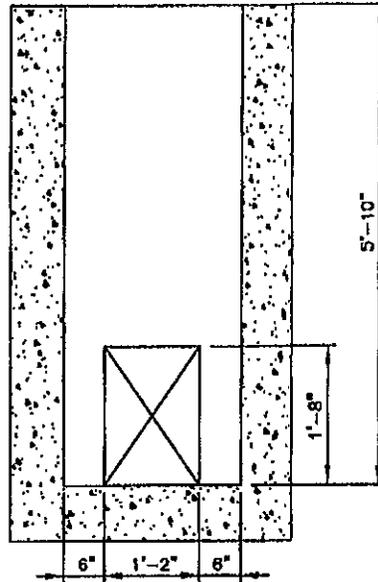
DETAIL A

APPROVED DATE: \_\_\_\_\_

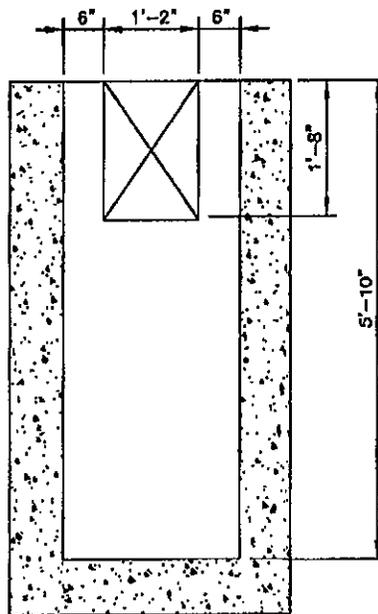
DIRECTOR, DEPARTMENT OF ENGINEERING  
AND TECHNICAL SERVICES

REVISION NO.: \_\_\_\_\_  
DATE: 8-16-07  
PREPARED BY: W. DEVAUGHN  
CHECKED BY: \_\_\_\_\_

STANDARD DETAIL  
DUAL THROAT  
WATER QUALITY BASIN



VIEW D-D

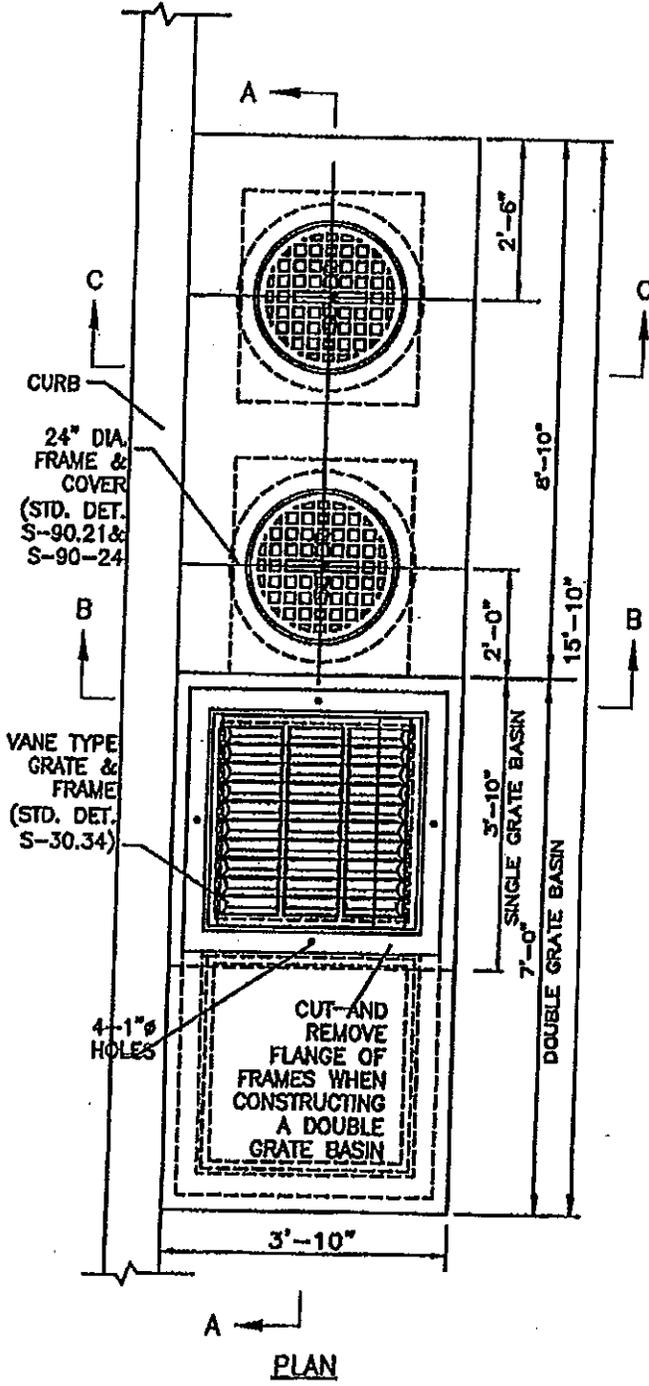


VIEW E-E

APPROVED DATE: \_\_\_\_\_  
\_\_\_\_\_  
DIRECTOR, DEPARTMENT OF ENGINEERING  
AND TECHNICAL SERVICES

REVISION NO.: \_\_\_\_\_  
DATE: 8-16-07  
PREPARED BY: W. DEVAUGHN  
CHECKED BY: \_\_\_\_\_

STANDARD DETAIL  
DUAL THROAT  
WATER QUALITY BASIN



**NOTES:**

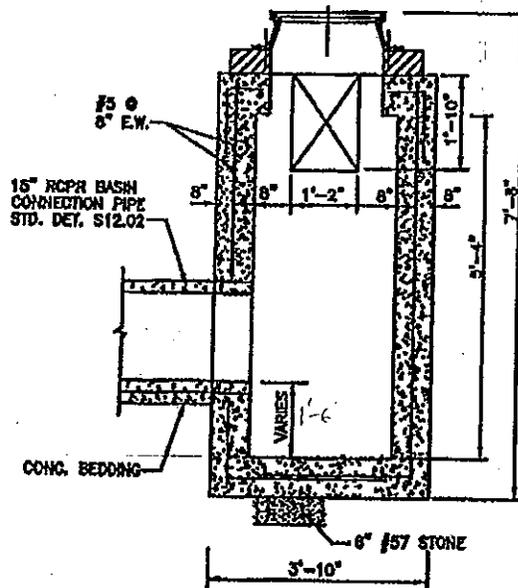
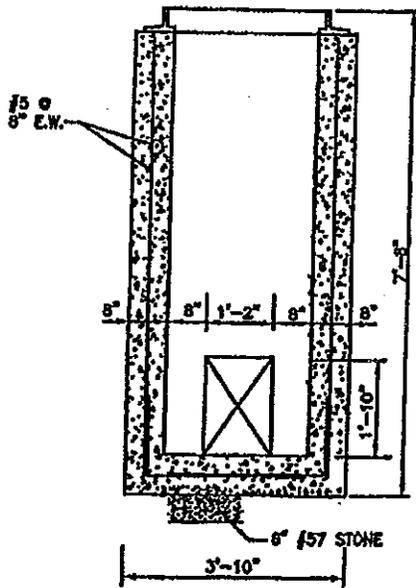
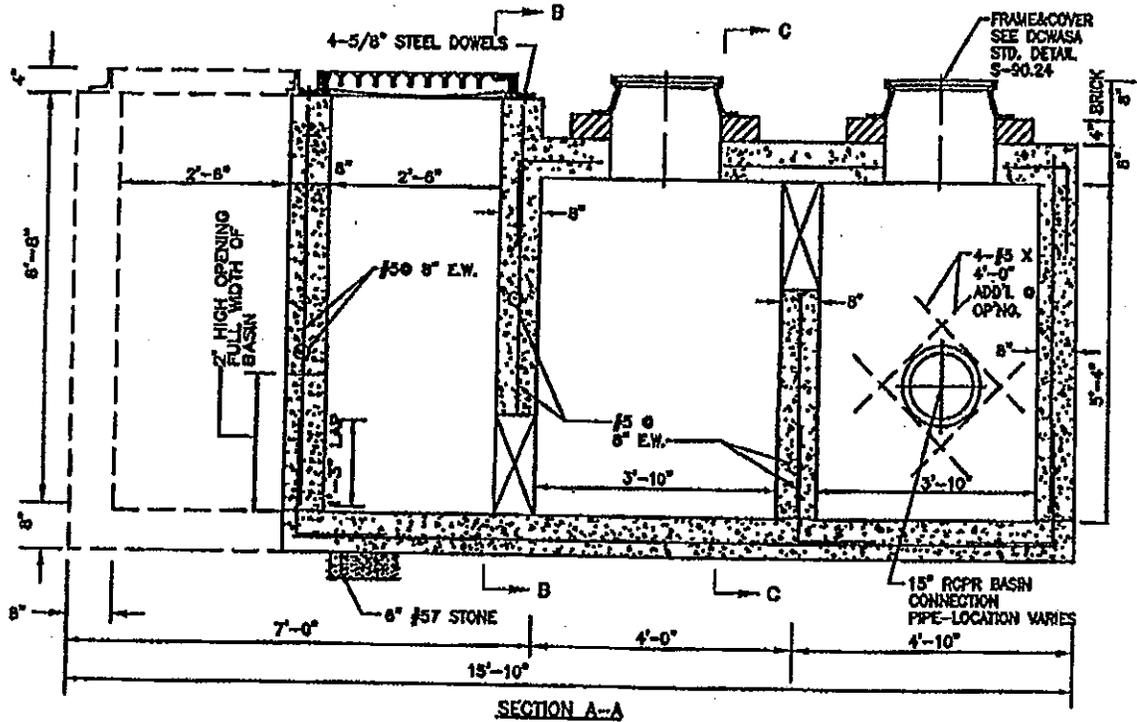
1. ALL CONCRETE TO BE CLASS 4000, AIR ENTRAINED, TYPE II CEMENT.
2. REINFORCING STEEL SHALL CONFORM TO ASTM A615, GRADE 60, CENTERED IN WALL.
3. GRAY IRON CASTINGS PER ASTM A-48, CALSS 30A OR 35.
4. ALL MACHINE FINISH TO BE A.S.A SPECIFICATION, ROUGHNESS SYMBOL 250, TOLERANCE  $-0", +1/16"$ .

PLAN

APPROVED DATE: _____	REVISION NO.: <u>0</u>	STANDARD DETAIL
DIRECTOR, DEPARTMENT OF ENGINEERING AND TECHNICAL SERVICES	DATE: <u>09/29/2007</u> PREPARED BY: <u>S. BIAN</u> CHECKED BY: <u>W. DARROW</u>	

DISTRICT OF COLUMBIA  
WATER AND SEWER AUTHORITY

S-31.03  
2 OF 2



APPROVED DATE: \_\_\_\_\_

REVISION NO.: 0  
DATE: 8/28/2007  
PREPARED BY: S. BIAN  
CHECKED BY: W. DARROW

DIRECTOR, DEPARTMENT OF ENGINEERING  
AND TECHNICAL SERVICES

STANDARD DETAIL

GRATE TYPE  
WATER QUALITY BASIN