



# CITY OF LAUDERHILL

## ENGINEERING STANDARDS



*CREATED BY THE DEPARTMENT OF ENVIRONMENTAL & ENGINEERING SERVICES*

# **ENGINEERING STANDARDS MANUAL**

## **INTRODUCTION**

This manual of Engineering Standards and Specifications is the minimum accepted design requirements for engineering-related construction, public and private, performed within the municipal limits of the City of Lauderhill, Florida.

This Manual is a guide to the Engineer, Architect, Contractor, and other persons involved in construction within the City's jurisdiction.

All work within the municipal limits, including all City Property, rights-of-way and easements shall meet the minimum requirements herein described, including the latest revisions adopted by the City of Lauderhill Commission or the City Department of Environmental and Engineering Services.

This Standards Manual incorporates the State of Florida Department Of Transportation, Broward County Engineering Department, South Florida Water Management District, Florida Department of Environmental Protection, and the Corps of U.S. Army Engineers Standards, as applicable.

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**Editor's note**— Section 1 of Ord. No. 98O-11-163, adopted November 23, 1998, repealed Sch. L in its entirety and added a new Sch. L to read as set forth herein. Formerly, Sch. L consisted of §§ 1.00—6.00, which pertained to construction and design standards for streets, drainage, paving, utilities and other required project improvements and derived from the original Land Development Regulations; Ord. No. 95-115, § 9, adopted March 27, 1995; and Ord. No. 97O-130, § 1, adopted July 14, 1997.

## SECTION 1 - GENERAL PROCEDURES

### 1.01 SITE PLAN REVIEW

A. All drawings submitted to the Engineering Division of the Environmental and Engineering Department must be 24" x 36" or 11"x17".

B. All drawings must show linear feet of storm drains and linear footage of roadways.

C. All of the following items must be received by the Planning and Zoning Division at least ten (10) working days prior to the scheduled date of the Department Review Committee (DRC) meeting.

1. Site Plan to be reviewed
2. Copy of recorded plat and/or survey
3. Broward County's conditions for plat approval
4. Schematic engineering plans showing and labeling the following items:
  - a. Circulation
  - b. Parking
  - c. Paving
  - d. Drainage
  - e. Grading
  - f. Traffic Control
  - g. Sidewalks
  - h. Water
  - i. Sewer
  - j. Other required Public Facilities pursuant to proposed use

D. All of the following engineering items must be satisfied prior to site plan approval by the Planning and Zoning Board.

1. Improvement Bond:

Prior to the approval of the site plan, the Developer shall submit to the Engineer, the Improvement Bond in the amount of 100% of the cost of the improvements such as paving, drainage, water, sewer, lakes excavation, pavement marking, traffic and road signs, street lights, sidewalks and the like. The bond shall be accompanied by the estimated costs of improvements certified by a registered professional engineer.

After acceptance of the improvements by the City's Engineering Division the Improvement bond shall be reduced by 95% for a maintenance bond for 1 year after acceptance.

2. Street Lighting:

Prior to approval of the site plan, the Developer shall pay to the City \$1,000 per pole for street lighting on all public roads, poles being a maximum of 180 feet apart. Developer shall provide a plan to be approved by Florida Power and Light Company for the lighting of private roads and parking areas within the development. Lighting shall comply with City of Lauderdale Code of Ordinances.

3. Street Addresses:

The Developer shall provide all street addresses prior to the approval of the site plan. The address plan shall be approved by the Engineering Division

4. Impact Fees:

City recreation, water, sewer, stormwater and road/intersection impact fees shall be paid or a binding letter of credit or other device acceptable to the City shall be provided.

## **1.02 ENGINEERING PERMITTING PROCEDURES**

Once a site plan is approved by the City of Lauderdale, no development may occur without all appropriate development permits. This document sets minimum permitting criteria to assist developers, contractors and the general public in obtaining an engineering permit. Consult with the City Engineer prior to submittal to determine if additional information will be required.

The services of a consulting engineer are usually necessary to the applicant during permitting process.

A. City Engineering Plan Review Requirements:

\_\_\_\_\_1. Submit three (3) complete sets of engineering drawings (including water, sewer, paving, drainage, signalization, geometrics, photometrics, site survey)

signed and legibly sealed by an Engineer registered in the State of Florida. Original signature must be on the seal. All drawings are to be submitted on 11"x17" or 24" x 36" sheets (3 folded sets of prints required). Electronic files (PDFs) shall be submitted for all submissions. Horizontal scale must be between 1"=20' and 1"=60'; vertical scale must be between 1"=2' and 1"=6'.

\_\_\_\_\_2. Submit drainage calculations which are consistent with the approved site plan. A twenty-five year three-day design storm event shall be used for all development discharge, a five year one-day storm event shall be used for private/public roads and a one hundred year three-day storm event shall be used for building finished floor elevations.

\_\_\_\_\_3. Submit fire flow (ISO standard) calculations and results of available fire flows.

\_\_\_\_\_4. Requests for revisions and additional submittals will be made within ten (10) working days from the date of receipt of submittal package by the Engineer of Record. If revisions of the drawings are needed, resubmit three (3) sets of the revised engineering plans signed and sealed by the Engineer of Record.

\_\_\_\_\_5. Submit certified cost estimates which include quantity take-offs and unit prices signed and legibly sealed by the Engineer of Record. Original signature must be on the seal. Increase bond amount if inadequate.

\_\_\_\_\_6. Development Review Committee (DRC) review and approval.

\_\_\_\_\_7. Planning and Zoning Board review and approval.

\_\_\_\_\_8. City Commission review and approval.

-----9. Soil Erosion and Sediment Control Plan.

B. Other City Permits and Approvals Required Prior to Release of Engineering Permit as appropriate.

\_\_\_\_\_1. Tree Removal Permit.

\_\_\_\_\_2. Verification and copy of current valid contractor's license.

\_\_\_\_\_3. Verification and copy of current valid occupational license.

\_\_\_\_\_4. Verification and copy of current and valid liability insurance policy.

\_\_\_\_\_5. Three (3) sets of shop drawings which have been approved by the Engineer of Record.

C. Potential Outside Agency Permits and Approvals Required Prior to Release of Engineering Permit:

- \_\_\_\_\_1. Broward County Department of Environmental Protection and Growth Management Department approval for drainage, soil/water remediation and sanitary sewer collection and transmission.
- \_\_\_\_\_2. Broward County Health Department approval for water distribution.
- \_\_\_\_\_3. South Florida Water Management District (SFWMD) for drainage, dewatering and irrigation.
- \_\_\_\_\_4. Florida Department of Transportation (if project affects State roads).
- \_\_\_\_\_5. Florida Department of Environmental Protection for dredge and fill permit.
- \_\_\_\_\_6. Broward County Engineering (if project affects County infrastructure).
- \_\_\_\_\_7. Broward County Traffic Engineering for traffic engineering permit.
- \_\_\_\_\_8. Broward County Plat Office for final plat (provide the City with final plat approval and a mylar copy of the plat).
- \_\_\_\_\_9. Broward County Planning for County traffic planning issues.
- \_\_\_\_\_10. City of Lauderdale Building Department for building construction issues.
- \_\_\_\_\_11. Local Communications service provider.
- \_\_\_\_\_12. Florida Power and Light Company for electricity.
- \_\_\_\_\_13. Florida Department of Environmental Protection Agency NPDES permit (sites larger than 1 acre).
- 14. Waste Management

D. Fees: Provide the City with engineering permit fees. The engineering fees are calculated as provided for in Section 2.

E. Utilities Construction Plan Requisites:

1. All drawings are to be submitted on 11"x17" or 24" x 36" sheets (3 folded sets of prints required). Electronic files (PDFs) shall be submitted for all submissions. CAD files shall be included for all final submissions.

2. A location map shall be included on the drawing.
3. Each sheet shall bear a legible seal and original signature of the Design Engineer and include a title block, north arrow, Engineer's registration number, scale, date, references as to source of design information and notes.
4. Horizontal scale shall be between 1"=20' and 1"=60'; vertical scale to be between 1"=2' and 1"=6'. Regardless of the scale, an overall layout of the proposed project shall be included on one sheet of the plans submitted, indicating all phases of construction, existing utilities and proposed utilities. Where there is more than one sheet of drawings, a sheet index diagram is required.
5. All rights-of-way and easements shall be clearly defined on design and as-built drawings. The document setting forth the easements shall be referenced (e.g. by plat or otherwise).
6. Size and type of material for all water and sewer mains and service lines shall be shown. Size and type of valves and other appurtenances to the systems shall be clearly indicated on design and as-built drawings.
7. The exact location and size of all mains are to be shown within the right-of-way or within an easement. All service line locations and sizes shall be indicated on plans. Distances from right-of-way lines, property lines and from physical features to the water and sewer mains are required on all drawings.
8. Water distribution systems shall be designed so as to provide a continuous looped system with two (2) independent sources of water during all phases of construction.
9. All line deflection points shall be indicated (horizontal and vertical) on the plans. All water mains shall cross over drainage lines.
10. Profiles are required for gravity sewer mains and they are to have the following information: invert elevation; rim elevation; slopes and profile grade (center line or base line); continuous station measurements; continuous numbering of manholes; service laterals; other conflict features such as drainage pipes, etc.; kind of material, as PVC or DIP, etc. This information shall also appear on site plan. Manholes shall be installed away from wheel paths of the vehicles.
11. Off-set dimensions and detail drawings are required for all appendages, adjunct or auxiliaries from the main, full blown sketches are required for all areas where the details cannot readily be seen.
12. Lift Stations to be owned and operated by the City of Lauderhill, shall be submersible lift stations, manufactured by Utility Department approved vendor.. Lift station drawings and specifications shall include the following:

- a. Plan, profile, detail and electrical schematics
  - b. Flow calculations; description of collection area
  - c. Pressure head calculations
  - d. Pump performance curves indicating efficiencies and horsepower and impeller size
  - e. Model numbers and ratings shall be shown for all pumps and meters.
  - f. Site Plan of the station with full measurements given and properly tied to property lines. Site Plan shall include fencing, vehicle double swing gate, pedestrian gate, control panel, water service, driveways, emergency pump-out connection, generator receptacle, lightning protection, SCADA system, etc. Site plan shall be at a scale of 1"=10'.
  - g. All of the lift station area within fenced limits shall be paved.
  - h. Pressure gages shall be placed on the discharge force main.
  - i. SCADA Controls
13. Public and private roadways shall be labeled; the names and/or numbers of the roadways, streets, avenues, etc. are to be clearly indicated on the plans. If the property is inside a block, then the side streets are to be shown with the names written and distances from the subject property to the side streets are to be written. Indicate lot and block numbers, if applicable.
14. The perimeter boundary lines of property to be serviced are to be clearly shown.
15. The outline of buildings to be serviced are to be shown.
16. Bench mark positions and their vertical values are to be shown.
17. Adjoining lots and block numbers and owners are to be shown. Reference as to plat is to be written, Legal description of the property is to be written and indicated on the drawings. The street or mailing address is to be shown on the design drawing and on the as-built drawing.
18. Utilities shall be located within public rights-of-way or easements as indicated in Section 21-46 of the City of Lauderhill Code of Ordinances and shall be shown on all as-built drawings.
19. Location of water meters and their sizes with service line sizes are to be shown on the design plans and as-builts. Meters are to be installed in green areas and in non-traffic areas as approved by the Utilities Department. Developer shall furnish to the City, at no

expense to the City, a supply of replacement meter heads for each size of meter 3-inch or larger that has been installed. For each size, the number to be furnished shall be equal to ten percent of the number installed, with at least one per size and all numbers greater than one rounded to the nearest whole numbers. All meters shall be manufactured by Neptune Water Meter Company, or approved equal. Proposed meters be equipped with or easily converted to include automatic meter reading technology.

20. Easement descriptions are to be written clearly with a point of beginning and a point of termination. Easements shall be shown on the Record Drawings. The plans shall reflect the description and shall carry additional information to facilitate construction of the worded description. Street corners are to be shown and the description shall relate the property being described to the streets. The scale shall be such to enable the direction of lines to be clearly observed. Where warranted, the plan is to be on more than one sheet with proper match lines shown for each street. The City reserves the right to approve the description and plans (Process for acceptance of easement, LDR Art. IV Sec. 6.19).

21. All pavement or parking areas shall be shown and referenced; all final planned elevations shall be established.

22. At the completion of the construction of the water and sewer systems and prior to a final inspection, Record Drawings are to be drawn and submitted to the Utilities Department for review. All easements are to be clearly shown, all buildings to be serviced are to be shown with their street addresses, postal addresses, etc., written thereon. Record Drawings are to have all the design plan information plus any changes made during construction. Record Drawings are to represent what was constructed, and must be submitted as per Section 4.06 B (7) of these standards.

23. Apart from the showing of all meters, their sizes, locations etc. on the plan sheet, a summary note is to be written on the front sheet stating:

1. The number and size of water meters
2. The calculation for capacity and the ERC/s
3. The use for the building; i.e., commercial, stores, factory, etc.

24. The City has the authority to approve all drawings (preliminary design, final designs, preliminary and final Record Drawings), as to technical representations, engineering consideration/designs, draftsmanship, clarity, scale, precision, confusion, etc., which drawings shall at all times be in conformity with City of Lauderhill minimum specifications and practices.

25. Drawings are reviewed ONLY for general compliance with City requirements. The Design Engineer shall be completely responsible for the Engineering design, technical competency and accuracy. The plans are approved with the condition that they shall conform to all City Ordinances, codes, standards and requirements. In case of conflict, the City Code of Ordinances shall supersede the plans. It shall be the responsibility of

the Engineer of Record to have the plans approved by all other applicable federal, state, county or local agencies.

26. Plumbing Inspectors/Fire Department approval does not constitute approval of water and sewer construction drawings.

F. Paving and Drainage Plans Review

Provide three (3) sets, signed and sealed, showing the following information:

1. Paving and drainage construction plans
2. Paving and drainage details
3. Paving and drainage specifications
4. Pavement markings and signage plans
5. Proposed off-site improvements plans
6. Elevations of ambient ground along the perimeter of this parcel
7. As-built information of existing roads, drainage, sidewalks, electric poles, and other facilities
8. Existing and/or proposed lake and canal locations
9. Recorded and proposed easements and rights-of-way
10. Drainage Calculations
11. Flood Plain Elevation in NAVD.

**1.03 STREET ADDRESSES**

The owner/developer shall be responsible to prepare street address plan using the following guidelines:

A. Drawings shall be of regular size (24" x 36") with all lot, block, unit, building and road numbers and legal description, zip code and location of the development shown clearly.

B. For multi-story buildings, all units on the first floor shall commence with number 101 and all units on subsequent floors shall commence with the number of the floor as 201, 301 and the like.

C. Odd numbers shall be assigned to units on the north and east sides of the road and even number shall be assigned to units on the south and west sides of the road.

D. The addresses shall be reviewed and approved by the Planning and Zoning Division of the City of Lauderhill and the Engineering Division. Their signatures and stamps must appear on the address electronical copy (PDF).

E. One copy of the approved address plan shall be submitted to the following agencies:

CITY OF LAUDERHILL  
5581 W. Oakland Park Blvd.  
Lauderhill, FL 3331

Planning and Zoning Division (3 copies)  
Engineering Division (1 copy)  
Fire Department (5 copies)

**BellSouth** , 8601 West Sunrise Boulevard, Plantation, FL 33322

**Florida Power & Light Co.**, Wingate Service Center, 3020 NW 19<sup>th</sup> Street, Fort Lauderdale, FL 33311

**U.S. Post Office**, SFMPC/Inverrary Branch, 6240 West Oakland Park Blvd.,Lauderhill, FL 33319

**U.S. Post Office**, Tamarac Branch, 7875 N.W. 57 St., Tamarac, FL 33320-9998

**U.S. Post Office**, Lauderhill Crossroad Annex, 5580 W. Oakland Park Blvd.,  
Ft. Lauderdale, FL 33313-9998

**Media One**, 141 NW 16<sup>th</sup> Street, Pompano Beach, FL 33060

**Broward County Traffic Engineering Dept.**, 2300 West Commercial Blvd.,  
Ft. Lauderdale, FL 33309-3090

**SUNSHINE STATE One Call of Florida, 1-800-432-4770**

**911 Project Office**, , 115 South Andrews Avenue, Suite 325, Ft. Lauderdale, FL 33301

**Broward County Elections Dept.**, 115 South Andrews Avenue, Room 102,Ft. Lauderdale, FL 33301

**U.S. Department of Commerce Bureau of the Census, Regional Office**, 101 Marietta St. NW # 300,  
Atlanta, GA 30303-2700,

#### **1.04 UTILITIES CONSTRUCTION**

A. Construction drawings for all water and sewer facilities to be built by the Developer between the service connections of the individual lots and the existing City water and sewer facilities must be submitted with the applications for connection to the City's utility systems. At that time the Developer shall pay a Plan Review Fee as specified in Section 2 of these standards.

B. Submit three (3) sets of drawings (folded) and specifications for proposed additions and/or modifications to all utility systems for review and comment, accompanied by Broward County Health Department, Broward County Environmental Protection and Growth Management Department and/or Florida Department of Environmental Protection completed application(s). All of the above to be originally signed and sealed by the Engineer of Record.

C. Drawings, specifications and applications will be reviewed by the City within ten (10) working days of submittal. The Engineer of Record will receive back two (2) sets of approved plans which have been signed by the Director or Utilities Engineer for appropriate action as noted. Comments may be:

1. **APPROVED AS PROPOSED:** *in this case, one copy of drawings bearing the Utility Division's approval stamp will be returned to the Engineer of Record (E.O.R.).*

2. **APPROVED WITH PROVISIONS NOTED OR CHANGES REQUIRED:** *the plans may be accepted as corrected. In this case, three copies of drawings bearing the U.D. approval stamp will be returned to the E.O.R. indicating revisions to plans.*

3. RETURNED FOR CORRECTIONS: *the U.D. will instruct the E.O.R. in writing to revise drawings as indicated prior to approval. Engineer of Record will be required to alter or change the submittal to conform with the recommended changes and resubmit same for stamped approval and then transmittal to appropriate agencies for permitting.*

4. REJECTION: *in this case, no further action will be taken by the City unless and until a resubmittal is made.*

It is the intent of the City that all submittals made to other reviewing agencies be approved by the City BEFORE presentation to those agencies.

D. The Engineer of record will be responsible for obtaining all other approvals and permits from all other appropriate agencies or City departments. Drawings and applications approved by the City and reviewing agencies and returned to the Developer's Engineer of Record will then be submitted to the City's Engineer for permit to construct.

E. To construct a utility expansion will require the following in addition to approved plans and applications:

1. Utilities Construction Permit with relevant documentation
2. Compliance with all other City Ordinances

F. The City will provide to all applicants:

1. Normal plan review (first submittal)
  2. Dry run (if required) Fees per City Building Division
3. Re-submittal plan review

Normal plan review costs are defined to be all costs associated with: pre-submittal meeting with the City's staff and the Engineer; the first review of the final plans submitted with the application; the preparation of a letter and/or revised drawings to the Developer itemizing any required plan modifications identified in the first review; and the inspection of a first resubmittal to verify that the previously identified modifications have been made.

Abnormal review costs are defined to be any and all review costs that are incurred by the City subsequent to a determination that the first resubmittal has not complied with all requirements identified during the initial plan review. If the City incurs any abnormal plan review costs, the Developer shall be required to pay an additional plan review charge. Said additional charge shall be due and payable at the time a final set of construction plans is approved, prior to the issuance of any permits.

G. Upon completion of a satisfactory final inspection, results will be certified by the City to the several regulating agencies for their use in granting final use permits, according to their requirements.

H. At the City's discretion, acceptance of completed systems will be required.

## **1.05 INSPECTION SERVICES GUIDELINES**

The following requirements are to be followed by all Engineers of Record providing inspection services for private developments.

A. Personnel:

Inspector - Must have at least two years of related engineering experience, or be a certified engineering inspector, and must have 3 years of directly related inspection experience.

Project Manager - Must have a degree in engineering and must have minimum of 3 years of directly related experience.

Engineer - must be registered Professional Engineer in the State of Florida. Must have complete knowledge and control over the project.

B. Reports:

Daily inspection reports shall be prepared by the inspector submitted to the Engineering Division by the Engineer of Record. This report shall reflect the work performed, the work inspected/not inspected, the work approved/not approved, the problems with material, equipment, labor, workmanship, weather, etc., the deviations from approved plans, specifications and schedules, change order recommendations, field decisions, lab and field test reports/results, etc. and any questions for the Engineer or the City. The report shall be signed by the Inspector, and the Project Manager, and shall be forwarded to the Engineering Division. The Utilities Department reserves the right to stop construction activity if this documentation is not provided.

C. Meetings (if necessary):

There shall be weekly (or by weekly) progress meetings at the Engineering Divisions Offices not to exceed one hour duration. This meeting shall be attended by the Project Manager or Inspector, the Contractor and the City Inspector. The minutes of these meetings shall be documented by the inspector and sent to the City. The meetings for all private development shall be held at the jobsite. The meetings for all public developments shall be held at City Facilities.

D. Responsibilities:

The Engineer of Record shall be completely responsible to enforce the approved plans, specifications schedules, and all applicable codes and regulations, and to make sure that all necessary permits and approvals have been obtained for all agencies.

**1.06 UTILITY INSPECTIONS:** The following inspections shall be performed on utility installations by the public and private sectors.

A. WATER DISTRIBUTION

1. Connection to Existing Systems
2. Filling and Flushing
3. Hydrostatic Pressure Testing
4. Chlorination/Bacteriological Sampling
5. Visual Inspection of all Mechanically Restrained Joints
6. Visual Inspection of Pipe Bedding.

B. SEWER COLLECTION

1. Structures (prior to installation)
2. Connection to Existing Systems
3. Lamping
4. Structure Application of Protective Coatings (external and internal)
5. Leakage/Infiltration Testing
6. Visual Inspection of Pipe Bedding.

C. SEWER TRANSMISSION

1. Connection to Existing Systems
2. Flushing
3. Hydrostatic Pressure Testing
4. Pump Station Start-up
5. Visual Inspection of all Mechanically Restrained Joints
6. Visual Inspection of Pipe Bedding.

D. REPORTS/DOCUMENTS REQUIRED

1. Inspection Reports as Outlined in Section IV: Inspection Services Guidelines
2. Hydrostatic Pressure Testing Report
3. Satisfactory Bacteriological Sampling Reports
4. Sewer Lamping Report
5. Leakage/Infiltration Testing Report
6. HRS Clearance Letter
7. DEP Certification of Completion Form
8. D.N.R.P. Approval Letter

9. Sanitary Sewer Televised Inspection Report and Tapes
10. Letter of Certification by Engineer of Record.
11. Fire Flow Test Results

E. NOTIFICATION

Please call 954-730-3060 for all Inspections/Appointments 24 hours in advance. Inspections will not be conducted on the same day requested. Forward all documentation to the Engineering/GIS Department, 5581 W. Oakland Park Blvd., Lauderhill, Florida 333313

F. In the event a test or inspection fails, a required party is not present or the appointment requester fails to cancel within one (1) hour of the scheduled inspection time, the requesting party will be charged a minimum fee as per Section 2 of these standards to cover up to one (1) hour of the inspector's time.

G. Contractor is responsible for the cost of inspections for any construction activities occurring outside normal working hours (8:00am to 5:00pm Monday through Thursday), Fridays, Saturdays, Sundays and holidays are not considered normal working days. Arrangements for inspections outside normal working hours must be made a minimum of FIVE days in advance of construction activity. Additional inspections or documentation may be required as determined by the Engineering Division.

**1.07 ENGINEERING INSPECTIONS:** The following inspections shall be performed on engineering permits.

A. PAVING:

1. Demucking and filling
2. Stabilized subgrade
3. Limerock basecourses
4. Asphalt paving
5. Final inspection at the time of Certificate of Occupancy
6. Reports Needed:
  - a. density test reports (subgrade and basecourse)
  - b. LBR test reports (subgrade and basecourse)
  - c. calcium carbonate reports (basecourse)
  - d. certification of type of asphalt
  - e. inspection reports for all underground utility lines such as: water, sewer, drainage, gas, power, phone, TV, etc.
  - f. certificate that the entire pavement area has been completely demucked and backfilled properly with suitable material.

**B. DRAINAGE:**

All joints, catch basin/manhole connections and drainfields to be inspected prior to backfill. Final inspection prior to Certificate of Occupancy.

**C. SIDEWALKS:**

Alignment, depth and pedestrian ramp details, as indicated in the City code of ordinances, to be inspected prior to concrete pouring. Final inspection prior to Certificate of Occupancy.

**D. TRAFFIC SIGNS, ROAD SIGNS & PAVEMENT MARKINGS:**

To be inspected at final inspection prior to Certificate of Occupancy.

**E. NOTIFICATION:**

Please call (954)730-3060 for all inspections 24 hours in advance. Forward all reports to the Engineering/GIS Department, 5581 W. Oakland Park Blvd., Lauderhill, Florida 33313.

**1.08 FINAL ENGINEERING INSPECTION CHECKLIST**

This document sets minimum City inspection criteria. Additional criteria may be required by the City.

The Contractor shall use this checklist to perform a preliminary inspection prior to scheduling the final engineering inspection with the City. It is the Contractor's responsibility to provide personnel to perform the manual aspects of the inspection (i.e., opening manhole lids, turning gate valves, operating fire hydrants, etc.).

**A. Water Distribution System:**

\_\_\_\_\_ 1. All features shall be installed according to the approved plans.

\_\_\_\_\_ 2. Fire Hydrants:

- \_\_\_\_\_ a. Height (24" +/- 2" from finished grade to nozzle).
- \_\_\_\_\_ b. Direction (5-1/4" nozzle must face accessway).
- \_\_\_\_\_ c. Distance (4' minimum to 7' maximum from curb).
- \_\_\_\_\_ d. Fire hydrant must be plumb.
- \_\_\_\_\_ e. Paint (OSHA reflective traffic yellow bruning 1235 or equal).
- \_\_\_\_\_ f. Reflective pavement markers (place two (2) in the center of the adjacent drive lane).

\_\_\_\_\_g. Fire hydrant and fire hydrant gate valve shall be operational.

\_\_\_\_\_3. Gate Valves:

- \_\_\_\_\_a. Set to grade.
- \_\_\_\_\_b. Concrete collar per City specifications.
- \_\_\_\_\_c. Gate valves shall be operational.
- \_\_\_\_\_d. Paint (paint valve box lid blue).
- \_\_\_\_\_e. Reflective pavement markers (place one (1) in the center of the adjacent drive lane).

**B. Sewage Collection & Transmission System:**

\_\_\_\_\_1. All features shall be installed according to the approved plans.

\_\_\_\_\_2. Collection System:

- \_\_\_\_\_a. Manhole rims shall be visible.
- \_\_\_\_\_b. Manhole rims shall be set to grade.
- \_\_\_\_\_c. Manhole rims shall be attached securely.
- \_\_\_\_\_d. Manhole rims shall be free of asphalt.
- \_\_\_\_\_e. Manhole interiors shall be painted with two coats of approved paint.
- \_\_\_\_\_f. Manhole interiors shall be free of infiltration.
- \_\_\_\_\_g. Detection markers shall be placed at all stub-outs.
- \_\_\_\_\_h. Any stub-out not tied into a building shall have a 6"x6"x5' wooden stake as a marker and shall have the top 12" painted green.
- \_\_\_\_\_i. All pipes shall be free of leaks and infiltration.
- \_\_\_\_\_j. Manholes located in grass areas shall have a concrete collar.
- \_\_\_\_\_k. Clean outs shall be set to grade.
- \_\_\_\_\_l. Rain guards installed in all manholes.

\_\_\_\_\_3. Force Main Transmission System:

- \_\_\_\_\_a. Force main gate valves shall have concrete collars set to grade and painted green.
- \_\_\_\_\_b. Place green reflective pavement markers in the center of the adjacent drive lane.
- \_\_\_\_\_c. Air release valves and manholes shall be free of any defects.
- \_\_\_\_\_d. The lift station shall be in full operational condition.
- \_\_\_\_\_e. Lift station shall be operational.
- \_\_\_\_\_f. Lift station site shall be accessible by truck via paved driveway.
- \_\_\_\_\_g. All lift station fixtures shall be operational.

\_\_\_\_\_h. Lift station site shall be fenced and landscaped.

**C. Drainage System and Grading:**

- \_\_\_\_\_1. All features shall be installed according to the approved plans.
- \_\_\_\_\_2. Drainage structures, sumps, and pipes shall be free of debris.
- \_\_\_\_\_3. Catch basins outside paved areas shall have a concrete apron.
- \_\_\_\_\_4. Outfalls shall be complete and clear of debris.
- \_\_\_\_\_5. Inlets shall be free of filter fabric.
- \_\_\_\_\_6. Lake, canal, or ditch banks shall be to grade and slope as per approved plans.
- \_\_\_\_\_7. Erosion protection measures shall be in effect.
- \_\_\_\_\_8. Pollution retardant device shall be in place as per approved plans.
- \_\_\_\_\_9. Flow lines of swales shall be 6" below edge of pavement
- \_\_\_\_\_10. Grates shall be secure.
- \_\_\_\_\_11. Pollution baffles shall be in place as required.
- \_\_\_\_\_12. Head walls shall be in place.

**D. Pavement:**

- \_\_\_\_\_1. All features shall be installed according to the approved plans.
- \_\_\_\_\_3. Alignments and cross-sections of all paved areas shall conform to the approved plans.
- \_\_\_\_\_3. Pavement:
  - \_\_\_\_\_a. Pavement shall be clean.
  - \_\_\_\_\_b. Pavement shall have second lift placed.
  - \_\_\_\_\_c. Pavement shall be free of potholes, cracks, and divots.
  - \_\_\_\_\_d. Crown and grade of roadway shall conform to approved plans.
  - \_\_\_\_\_e. Pavement markings and signage shall conform to the approved plans.

- \_\_\_\_\_ f. Curbs shall be free of cracks and shall otherwise conform to the approved plans.
- \_\_\_\_\_ g. Expansion joints shall conform to approved plans.
- \_\_\_\_\_ h. Wheelchair ramps shall conform to approved plans.
- \_\_\_\_\_ i. Parking spaces shall conform to approved plans.

**E. Miscellaneous:**

- \_\_\_\_\_ 1. Work of other utilities shall be complete.
- \_\_\_\_\_ 2. Site lighting and street lighting shall be operational.
- \_\_\_\_\_ 3. Street signs and traffic signs shall be in place.
- \_\_\_\_\_ 4. Permanent reference monuments (PRM's) with elevations shall be in place.
- \_\_\_\_\_ 5. All existing facilities disturbed during construction shall be restored.
- \_\_\_\_\_ 6. Site Wall (Screening and Retaining walls) completed and finished.

**1.09 BOND RELEASE PROCEDURES**

This document sets minimum City criteria for performance bond and maintenance release procedures. Additional criteria may be required by the City.

A. For Performance Bond Release:

The Developer/Owner must provide the City Engineer with the following, 30 days before the performance bond release inspection:

- \_\_\_\_\_ 1. One (1) complete set of acceptable "as-built" drawings for water, sewer, paving, drainage, and geometric controls. In electronic format (PDF and CAD)
- \_\_\_\_\_ 2. Five (5) complete sets of acceptable record drawings certified by the Engineer of Record, two (2) of which are to be forwarded to the Planning and Zoning Division, and one (1) complete set of "as-builts" in digital format (i.e., Current AutoCAD version or transportable to a dxf format) including sheets for all water, sewer, paving, drainage, details, and geometric controls, certified by the Engineer of Record.\*
- \_\_\_\_\_ 3. All utility easements, legal descriptions, and sketches, in recordable form.
- \_\_\_\_\_ 4. A bill of sale with the actual value of all public improvements to be transferred to the City.

\* If "record drawings" in digital format are not provided to the City, there will be a two-hundred dollar (\$200.00) per sheet charge to the developer to reimburse the City for making the conversion.

\_\_\_\_\_5. All release of liens for public improvements to be transferred to the City.

\_\_\_\_\_6. Completion of all items on the water distribution section of the final engineering inspection checklist.

\_\_\_\_\_7. Completion of all items on the sewer collection and transmission section of the final engineering inspection checklist.

\_\_\_\_\_8. Completion of all items on the pavement section of the final engineering inspection checklist.

\_\_\_\_\_9. Completion of all items on the drainage and grading section of the final engineering checklist.

\_\_\_\_\_10. The actual construction cost for all improvements.

Within thirty (30) working days, the City will inform the Developer in writing if the public improvements are acceptable. If the public improvements are acceptable, the Developer will submit a maintenance bond to the City. If the maintenance bond is acceptable to the City staff will release the performance bond.

B. For Maintenance Bond Release:

A letter of notification will be mailed to the Developer, approximately ninety (90) days prior to the maintenance bond expiration date, by the City. If fifty (50) percent of the certificates of occupancy have been issued for the buildings in the improved area, the City will request the Developer to arrange for reinspection for the bonded improvements.

\_\_\_\_\_1. Completion of all items on the water distribution section of the final engineering inspection checklist.

\_\_\_\_\_2. Completion of all items on the sewer collection and transmission section of the final engineering inspection checklist.

\_\_\_\_\_3. Completion of all items on the pavement section of the final engineering inspection checklist.

\_\_\_\_\_4. Completion of all items on the drainage and grading section of the final engineering inspection checklist.

Any defects in the water distribution, sewer collection or paving, grading and drainage, must be corrected and completed, and approved by the City twenty-one (21) days prior to the bond expiration date. Otherwise, the maintenance bond shall be extended until all deficiencies are completed and approved.

## **SECTION 2 - ENGINEERING PERMIT FEES**

### **2.01 ENGINEERING PERMIT REQUIREMENTS**

An Engineering Permit is required for any addition, removal or modification within a public right of way, private thoroughfare, ingress or egress easement, utility easement, canal right of way, stormwater easement, or as determined by the City Engineer. An Engineering Permit is required for any existing or proposed structure or altered condition on any land, public or private, which is not solely governed by the Florida Building Code. An Engineering Permit is required for any possible source, storage or conveyance of a pollutant, except when it has been determined not to be a concern. An engineering permit is also required for any trenching, earthwork, directional boring/drilling, clearing and grubbing and any pavement construction within private or public lands.

The owner or adjacent property owner responsible for maintenance may apply for an Engineering Permit and is responsible for the Engineering Permit application and associated fees. The fee for Engineering Permit application is \$25.00 plus the schedule listed under 2.02 for review, inspections.

It is the applicant's responsibility to provide and use all information, data, analysis, drawings, etc. which are needed to submit an engineering permit application based on thorough and sound engineering information and decisions.

An Engineering Permit Application requires an Engineer, surveyor, landscape architect, to sign, date, and seal all submittals as applicable if the submittal requires professional judgment.

The City Engineer shall make the final determination when and if an Engineering Permit is required.

The City Engineer shall make decisions on permit application requirements and approvals based on engineering judgment.

The owner, the party responsible for maintenance, the contractor or alteree or the party that requisitioned them, may be responsible for the removal or modification of a condition that is not in accordance with the Engineering Standards.

## 2.02 SCHEDULE OF PERMIT FEES

	<u>*Based on % of Certified Estimated Construction Price</u>
A. Landscape/Irrigation	4%
B. Lift Stations	4%
C. Pavement & Drainage Systems including markings and signs	4%
D. Sewage Collection Systems	4%
E. Sidewalks, Driveways, Slabs & Curbing	4%
F. Water Distribution Systems	4%
G. Tennis, Hardball & other Recreation Site Features	
H. 4%	
Site Lighting	
J. Demucking & Filling	4%
K. Excavation in Public R/W 4%	
L. Water Service Line per service line (up to 2")	\$2,000
M. Water Service Line (greater than 2")	\$4,000
N. Water Meter Installation	\$100
O. Plan Review Fee	included in 4%
P. Administrative Fees	Single Family \$225 Multi Family/Commercial/Industrial \$560
Q. Processing Fee	\$27.50

### Notes:

1. Permit fees are waived for franchise utilities.
2. Failure to request a final inspection within ninety (90) days after work is completed, results in permit renewal fee at one hundred percent (100%) of original permit FEE plus a \$250.00 minimum penalty.
3. If applicant applies for renewal within ninety (90) days after expiration of a permit, the permit may be renewed at one-half (1/2) of the original fee with a maximum charge of \$1,000.00 after review.

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\* Waived for single-family applications.

4. On October 1<sup>st</sup> of each year, the fees referred to above shall be increased in accordance with the Consumer Price Index for urban consumers in the United States published by the Bureau of Labor Statistics for the twelve (12) months ending April of each year unless otherwise instructed by the City Commission. Notwithstanding the foregoing, any fees quoted as a percentage of either total estimated construction cost or original fee (for reinspections) shall remain unchanged until changed by the City Commission. These adjustments will be effective on the following October 1<sup>st</sup>.
5. Fees above includes three inspections, two plan reviews, issuance of permits and permit closeout documentation.
6. There shall be a \$75 re-inspection fee for all failed inspections.
7. All permits will expire within 90 days of issuance without first inspections request. All permits will expire after 90 days between inspections.
8. All permits and construction cost estimates for proposed work five feet outside of any building.

## SECTION 3 - GENERAL REQUIREMENTS

### 3.01 DEFINITIONS

Definitions for the purpose of this section:

**Alley:** A minor public right-of-way of not more than twenty (20) feet in width providing secondary vehicular access to the side or rear of properties otherwise abutting a street.

**Bicycle and pedestrian ways:** Means any road, path or way which is open to bicycle travel and traffic afoot and from which motor vehicles are excluded.

**Building:** Any structure, either portable or fixed, having a roof, and used or built for the shelter or enclosure of persons, animals, chattels, or property of any kind.

**City:** The City of Lauderhill, Florida.

**Code:** Shall include both the Code of Ordinances of the City of Lauderhill and the Land Development Regulations thereof.

**Collector:** A street which carries traffic from minor streets to the major arterial streets.

**Commercial uses:** Activities within land areas which are predominantly connected with professional services, office use sales and distribution of products and personal services.

**County:** Broward County, Florida.

**Density or gross density:** The total number of dwelling units divided by the total site area less public right-of-way.

**Drainage facilities:** A system of man-made structures designed to collect, convey, hold divert or discharge stormwater.

**Driveway:** Space located on a lot, built for access to a garage, off-street parking or vehicle loading space.

**Easement:** Any strip of land created by a subdivider for public or private utilities, drainage, sanitation, or other specified uses having limitations, the title to which shall remain in the name of the property owner, subject to the right of use designated in the reservation of the servitude.

**Fire Lane:** A fire rescue emergency access road, designated as such in accordance with the Florida Building Code, having a minimum inside turning radius

of forty (40) feet with a twelve (12) foot clear sweep. Overhead clearances of eleven (11) feet shall always be provided for fire lanes designed for Fire Department use.

**Local street:** An arterial.

**Lot:** A designated parcel, tract or area of land established by plat subdivision or as otherwise permitted by law. Two or more contiguous lots in common ownership may be treated as one lot, provided that the combined lots are used as a single lot. Once treated in this fashion, the combined lots may not be later subdivided or treated as separate lots.

**Lot depth:** The mean horizontal distance between the front and rear lines of a lot.

**Lot frontage:** The uninterrupted length of the front lot line.

**Lot line, front:** The property line dividing a lot from a single street right-of-way.

**Lot line, rear:** The lot line most nearly opposite from the front lot line.

**Lot line, side:** Any lot line which is not a front or rear lot line.

**Lot width:** The horizontal distance between the side lot lines at the front setback line, or at the front lot line where no front setback is required.

**Parking:** The temporary, transient storage of private passenger automobiles used for personal transportation, while their operators are engaged in other activities. It shall not include storage of new or used cars for sale, service, rental or any other purpose other than specified above.

**Parking space:** A space at least nine (9) feet in width and eighteen (18) feet in length with at least eighteen (18) feet of back-up and maneuvering area directly behind the space, used exclusively as a parking stall for one vehicle.

**Parking space, off-street:** A clear area, not located in a public street or alley, maintained exclusively for parking of one (1) standard passenger vehicle, and usable without moving another vehicle. Must conform with requirements of parking space.

**Right-of-way:** Land dedicated, deeded, used, or to be used for a street, alley, walkway, boulevard, drainage facility, access or ingress and egress, or other purpose by the public, certain designated individuals, or governing bodies.

**Sanitary sewer facilities:** Structures or systems designed for the collection, transmission, treatment, or disposal of sewage and includes trunk mains, interceptors, treatment plants and disposal systems.

**Setback:** The minimum distance between the street right-of-way outer line closest to the building and the front line of the building or any projection thereof, excluding projections specifically permitted or, the minimum distance between the side and rear property lines and the applicable side and rear building lines or any projection thereof, excluding projections specifically permitted.

**Sign:** Any permanent or temporary structure, or devise, letter, work, model, banner, pennant, insignia, or trade flag which is visible from any public street, alley, waterway or public place. Sign shall not be construed to include any flag, notice, badge, or insignia or any government or governmental agency, or any legal notice posted by and under governmental authority.

**Speed Hump:** Similar to a speed bump except that it is 3 inches in height and is 12 feet long.

**Street:** A public thoroughfare greater than twenty-four (24) feet in width which affords principal means of access to abutting property, including the distance between applicable right-of-way lines. Street shall include land dedicated to or condemned for use as a public thoroughfare for public travel, whether or not utilized, but shall not include an alley as defined herein.

**Street, arterial:** A street used primarily for fast and heavy traffic traveling considerable distances. All arterials in Broward county are designated on the Broward County Trafficways Plan.

**Street, expressway:** A street or highway intended for fast and heavy traffic traveling considerable distances on which points of ingress and egress are limited and crossings are separated, and completed according to Broward County Engineering Standards.

**Street, marginal access:** A minor street parallel to and adjacent to arterial streets, highways or expressways, and which provides access to abutting property and protection from through traffic, and completed according to Broward County engineering standards.

**Street, minor:** A street used primarily for access to abutting properties, and completed according to Broward County engineering standards.

**Structure:** Anything constructed, assembled or erected, installed or portable, the use of which requires a location on a parcel of land. It includes a movable structure while it is located on land and which can be used for housing, business, commercial, industrial, recreational or office purposes, either temporarily or permanently. "Structure" also includes fences, billboards, swimming pools, poles,

pipelines, transmission lines, tracks, and advertising signs and tennis courts, and the like.

**Swale:** That area owned by another which separates private property and waterway, streets, and other common improved areas. It may also be used as a ground collector of water for a designed drainage system. The center of the swale is halfway between the edge of the sidewalk and the edge of the pavement, and the size of the swale depends on the width of the road right-of-way when the swale separates private property and streets.

**Trafficway:** Any one of the expressways, principal arterials, minor arterials or collector streets shown on the Broward County Trafficways Plan, promulgated by the Broward County Planning Council pursuant to Chapter 59-1154, Laws of Florida, as amended, and the Broward County Charter, on the Lauderhill Trafficway Plan.

**Traffic Circle:** A road junction at which traffic moves in one direction around a central island.

**Utility:** Includes any public or private utility, such as, but not limited to, storm drainage, sanitary sewers, electric power, water service, gas service, or telephone line, whether underground or overhead.

**Walkway:** A right-of-way intended primarily for pedestrians, excluding self-propelled vehicles.

**Waterway:** A stream, canal or body of water, dedicated to public use, publicly owned, or used and available for public travel by boats, not including privately-owned bodies of water or drainage ditches.

## 3.02 ROADS

### A. Design Standards

#### 1. Streets and alleys

- a. *Conformity to trafficway plan.* The location, direction and width of all streets, roads and highways shall conform to the official trafficways plan where such a plan is in existence and is applicable.
- b. *Relation to existing street system.* The arrangement of streets in new or replatted subdivisions shall make provisions for proper extension of existing dedicated streets in existing subdivisions, where such extension is appropriate.

- c. *Provisions for platting adjoining unplatted areas.* The arrangement of streets in new or replatted subdivisions shall be such so as to facilitate and coordinate with the desirable future platting of adjoining unplatted property of a similar character, and provide for local circulation and convenient access to neighborhood facilities.
- d. *Protection from through traffic.* Minor and collector residential street shall be laid out and arranged so as to discourage their use by through traffic. Residential streets shall not connect with industrial areas.
- e. *Arterial street frontage.* Where a residential subdivision or residential property abuts an existing or proposed arterial street, the Board may require marginal access streets, reverse frontage with screen planting contained in a nonaccess reservation along the rear property line, deep lots with or without rear service alleys, or such other treatment as may be necessary for adequate protection of residential properties and to assure separation of through and local traffic.
- f. *Plats adjacent to railroad or expressway right-of-way.* Where a subdivision borders on or contains a right-of-way for a railroad, expressway, drainage canal or waterway, the Board may require a street approximately parallel to and on each side of such right-of-way at a distance suitable for the appropriate use of the intervening land. Such distances shall also be determined with due regard for requirements of approach grades for future grade separations.
- g. *Reserve strips.* Reserve strips controlling access to streets shall be prohibited except where their control is definitely placed in the City under conditions approved by the Board.
- h. *Private streets.* There shall be no private streets platted in any subdivision. Every subdivided lot or property shall be served from a publicly dedicated street. This requirement may be waived by the Commission in special situations where the Commission finds public safety, convenience, and welfare can be adequately served. All private streets shall be required to meet all requirements for public streets.
- i. *Half streets.* New half or partial streets shall not be permitted except where essential to reasonable subdivision of a tract in conformance with these regulations or where satisfactory

assurance for dedication of the remaining part of the street is provided. Wherever a tract to be subdivided borders on an existing half or partial street, the other part of the street shall be dedicated within such tract.

j. *Dead end streets.* Dead end streets shall be prohibited, except where appropriate as stub to permit future street extension into adjoining unsubdivided tracts, or when designed as a cul-de-sac.

k. *Cul-de-sac streets.*

- 1) Cul-de-sacs, permanently designed as such, shall not exceed four hundred (400) feet in length, except on finger islands.
- 2) Cul-de-sacs shall be provided at the closed end with a circular dedicated area not less than one hundred (100) feet in diameter for turnaround purposes.

l. *Street rights-of-way.*

- 1) Unless otherwise indicated or required by the trafficways plan, for sufficient reasons shown that exceptions should be made in specific cases, street rights-of-way shall not be less than the following:

<b>Street Type</b>	<b>R/W (feet)</b>
Major arterial thoroughfare or non-through section line road.	106
Secondary arterial thoroughfare or non-through section line road	80
Collector	60
Minor, for apartments, business, industrial	50
Minor for one and two-family dwellings	50
Marginal access	50

- 2) Additional right-of-way width may be required to promote public safety and convenience, or to assure adequate access, circulation and parking in high density residential areas, commercial areas, and industrial areas.
- 3) Less right-of-way may be permitted in cases where there is a quantifiable public benefit and all the criteria for public safety and sanitation vehicles can be met with the approval of the City.

m. *Alleys.*

- 1) Alleys shall be provided to serve multiple dwelling, business, commercial, and industrial areas, except that the Board may waive this requirement where other definite provision is made for service access, off-street loading, unloading and adequate parking, for the uses permissible on the property involved.
- 2) The width of any alley shall be not more than twenty (20) feet. Alleys shall be design to keep runoff within the alley right-of-way.
- 3) Changes in alignment or alleys must provide a centerline radius of at least forty (40) feet.
- 4) Dead-end alleys shall be avoided where possible, but if unavoidable, shall be provided with adequate turnaround facilities for service trucks at the dead-end, with a minimum external diameter of one hundred (100) feet, or as determined to be adequate by the Board.

n. *Street alignment.*

- 1) Curved linear streets are recommended for residential minor and collector streets in order to discourage excessive vehicular speeds and to provide attractive vistas.
- 2) Whenever a street changes direction, or connecting street lines deflect from each other by more than ten (10) degrees, there shall be a horizontal curve.
- 3) To ensure adequate sight distance, minimum centerline radii for horizontal curves shall be in accordance with the design speed of roadway and the minimum requirements in the Florida Greenbooks.:
- 4) A tangent at least one hundred (100) feet long shall be provided between reverse curves on collector streets, and at least two hundred fifty (250) feet long on major and secondary thoroughfares and section line roads.

o. *Street intersections.*

- 1) Streets shall be laid out to intersect as nearly as possible at right angles. No street shall intersect another at an angle of less than sixty (60) degrees, except at a "Y" intersection of two (2) minor streets.

- 2) Multiple intersections involving the junction of more than two (2) streets shall be prohibited except where found to be unavoidable by the Commission.
- 3) "T" intersections of minor and collector streets are to be encouraged.
- 4) As far as possible, intersections with arterial streets shall be located not less than eight hundred (800) feet apart, measured from centerline to centerline.
- 5) Streets entering opposite sides of another street shall be laid out directly opposite each other or with a minimum offset of one hundred twenty-five (125) feet between their centerlines or as required by FDOT intersection design guide.

<u>SPEED LIMIT (mph)</u>	<u>Maximum Deflection Angle Through Intersection</u>
20	16 degrees
25	11 degrees
30	8 degrees
35	6 degrees
40	5 degrees
45	3 degrees

- 6) Minimum property line radii at street intersections shall be twenty-five (25) feet for minor streets and where the angle of intersection is less than sixty (60) degrees, a greater radius may be required by the Commission.
- p. *Excessive street widths.* Streets shall not be platted to a width more than one hundred fifty percent (150%) of the minimum width specified in these regulations for the type of street involved. No street shall be platted for center island development except where such center islands may be desirable or necessary for traffic separation and safety as determined by the Board.
- q. *Traffic Circles:* Traffic circles shall be permitted when all approach right-of-way are a minimum of 60 feet and shall be warranted by a traffic data proving the traffic circle will have a net positive impact on traffic calming for the approach roadways.

## 2. Speed Humps

- a. Speed humps are similar to speed bumps except they are 3 inches in height and are 12 feet long (and 12 ft. wide for one

standard lane width). Geometric requirements for a permissible speed hump are shown in Section 5. Additionally, the following warning devices, hump spacing, and off-set requirements must be met.

- Warning Signs 120 ft. from hump
- Pavement Markings on hump
- Humps must be at least 25 ft. from any road junction
- Humps must be at least 90 ft. from any crosswalk
- Humps shall not be located in the middle of a lot line and shall generally be located near the

<u>SPEED LIMIT (mph)</u>	<u>MINIMUM SPACING (ft)</u>
25	400

B. Circulation

1. Pavement widths and access points to peripheral streets shall be provided which adequately serve the proposed development and which are compatible and functional with circulation systems outside the development.
2. All private driveways going into public roadways shall have stop signs placed at the point of intersection of the private road with the road or right-of-way dedicated or scheduled to be dedicated to the City or the County, said signs to be erected at the expense of property owner. A fifteen-foot visual radius shall be provided at all intersections of private and public roadways.

**3.03 PARKING AREAS**

A. Design Standards for Parking Areas

1. Parking lots for industrial, commercial and recreational subdivisions and for residential subdivisions with multi-family units or single-family attached units shall be constructed in accordance with the following criteria:
  - a. *Parking area.* The term “Parking Area” shall include the driving lanes, parking spaces, curbing, landscaping, lighting signs, pavement markings, guardrails and drainage.
  - b. *Sketches.* The sketches entitled “Standard Parking Area Details” shall be a part of these minimum standards and shall be available in the Engineering Division for inspection.

- c. *Pavement construction.* The parking area pavement shall be constructed of minimum twelve (12") inches compacted and stabilized subgrade (minimum 40 LBR), minimum eight (8") inches compacted limerock basecourse and minimum (1 ½ inches) compacted FDOT organic material shall be allowed under the pavement. The pavement shall have a cross slope of 2% and a longitudinal slope of 0.5 minimum for normal crown section. The pavement shall have a crown slope of 2.0% and a longitudinal slope of 1.0% minimum for inverted crown section on runs greater than 100 feet. The pavement shall have a crown slope of not less than 1.0% with an average slope of not less than 2.0% and a longitudinal slope of not less than 0.5% on runs less than 100 feet. The run is defined as the length of pavement between high and low elevations points. All centerline turning radii must be minimum 50 feet.
- d. *Curbing.* All landscaped areas shall be provided with continuous concrete curbing around them. Either FDOT Type D or Type F curb.
- e. *Driving lanes.* Driving lanes shall have a minimum clear width of 24 feet for two-way traffic, 15 feet for one-way traffic and 12 feet for drive-thru/drop-off traffic. When parking spaces are provided at 60 degrees angle, the one-way driving lane shall be minimum 18 feet clear. A 24 inch wide white stop bar, along with 25 feet of double yellow lines, shall be provided at the end of each driving lane.
- f. *Parking spaces.* Standard parking spaces shall be minimum nine (9) feet wide and eighteen (18) feet long. Angle parking shall be designed to provide a clear 10 feet by 20 feet rectangle for each parking space. Handicapped parking space shall be 12 feet by 18 feet minimum. Parking spaces for parallel parking shall not be less than nine (9) feet in width and twenty-three (23) feet in length. Continuous concrete curbing or individual six feet long concrete car stops shall be installed for each space. Provide four inches wide white lines on either side of each space identifying the limits of the space. The number of parking spaces shall conform to Sch. G Sec. 1.3 of the LDR.
- g. *Pavement markings and signs.* All pavement markings and signs shall conform to "Broward County Traffic Engineering" and "Manual of Uniform Traffic Control Devices" standards. All pavement markings shall be of thermoplastic material,

except the four-inch white lines on either side of a parking space.

- h. *Handicapped sign requirements.* Each parking space for the handicapped shall comply with Florida Statute Sections 316.1955 and 316.1956, as currently existing or as may be amended, and shall be posted and maintained with a permanent, six foot, above grade, unobstructed sign bearing the international symbol of accessibility and the caption "PARKING BY DISABLED PERMIT ONLY". Those signs in existence prior to May 30, 1989, which measure between four and one-half (4 ½) and six (6) feet above grade shall be deemed to be in compliance with this section.
- i. *Landscaping.* All landscaping shall conform to the requirements of Sch. J of the LDR. All landscaped areas shall be provided with automatic lawn irrigation systems.
- j. *Lighting.* The light poles shall be made of concrete, metal or fiberglass and all wires and cables shall be underground. Wooden poles and overhead lines shall not be allowed. All lighting shall comply with City of Lauderhill Code or Ordinances.
- k. *Drainage.* All drainage lines and structures shall be installed in accordance with the "Grading and Drainage Regulations and Standards", Broward County Transportation Department, Water Management Divisions, latest edition. Surface water along inverted crown shall be allowed to travel only in straight lines. Catch basins shall be provided at each change of direction. Drainage shall be designed so the storage depth shall not exceed 6 inches. Drainage from a 25 year-3 day storm event (14 inches) shall be retained on-site. The first inch of runoff shall be treated in swales.
- l. *Guardrails.* FDOT type guardrails shall be provided where the edge of the parking area pavement is closer than 50 feet from the top of the bank of a lake, canal or other waterway. The guardrail shall be installed along the full length of such pavement, in accordance with FDOT standards.
- m. *Enforcement.* The City's Engineering Division shall be responsible to review plans, issue construction permits, conduct inspections and approve all parking areas in the City.

- n. Commercial Drive Thru: All drive thru shall provide a minimum queuing distance for four cars or as required by a queuing analysis.
- o. Guard Houses: All gated guardhouse shall provide a minimum queuing distance for four cars or as required by a queuing analysis.

B. Property Maintenance

1. Minimum standards for private parking lots.

- a. All buildings and structures for private parking shall be maintained in a secure, safe, and attractive condition. Deteriorated or used metal covering on any such existing or subsequently constructed carport structure shall be repaired or replaced so as to render same in a safe and attractive condition that is neither physically nor visually a blighting influence.
- b. The off-street parking facilities shall be identified as to purpose and as to location when not clearly evident from a street or alley. Off-street parking facilities including access aisles and driveways shall be surfaced with Florida Department of Transportation Type SP-9.5 asphaltic concrete course or approved equal, and maintained in a smooth, well-graded condition without any potholes, pavement deterioration, surface irregularities, and any traffic/safety hazard, provided that driveways, access aisles, and parking spaces for churches and public and private schools and churches offering academic courses may be surfaced with grass or lawn.
- c. All off-street parking facilities for the use of public shall be drained so as not to cause any nuisance on adjacent or public property. All surface stormwater shall be drained off the pavement for proper disposal to the designated areas or structures within a reasonable time, not to exceed six hours. All drainage lines and structures shall be maintained properly at all times to insure full efficiency.
- d. The lighting thereon shall be so arranged and designed as to prevent any glare on adjacent property. Such facilities shall be arranged for convenient access and safety of pedestrians and vehicles. All residential parking lots in Group H Occupancy, as defined by the Florida Building Code, shall be

provided with a minimum of one-half foot candle of light on the parking and walking surface from dusk until dawn. A maximum to minimum foot candle level shall not exceed a ratio of twelve to one (12:1). The lighting system shall be designed and installed as not to create spill lighting or glare onto any adjacent property not a part of the site plan. Parking lot lighting must be reflected on site plan.

- e. All car stops, curbing and sidewalks shall be maintained properly to insure safe and convenient vehicle and pedestrian traffic at all times. Broken, damaged or loose car stops and curbing and sidewalks shall immediately be repaired/replaced.
- f. All pavement markings and signage shall be maintained properly at all times to conform to the standards of "Manual of Uniform Traffic Control Devices". All parking spaces, stop bars, directional arrows, centerlines, edge lines and other pavement markings shall be painted properly to be clearly visible and well defined at all times. Stop signs and all other signs shall be maintained properly at all times as to the size, height, material, design, location, visibility, clarity and other features to conform to the "Manual of Uniform Traffic Control Devices". All pavement marking abutting the public right-of-way (stop bars, direction arrows, lane markings, etc.) shall be thermoplastic.
- g. The off-street parking facilities shall conform at all times to the site plan as approved by the City, including, but not limited to the location and size of all regular and handicap parking spaces.
- h. All private commercial parking lots shall be inspected periodically by the Engineering Department to insure proper maintenance and conformity to the approved site plan. The owner, tenant, manager, or their agent shall be notified in writing of any discrepancies and shall, within 30 calendar days from the time of notification, correct the discrepancy.

### **3.04 DRIVEWAYS, SIDEWALKS AND SWALES**

#### **A. *Driveways.***

Wherever vehicular entrances and exits are involved, the number, size and distance apart of entrances and exits and the specific design thereof shall comply with the established standards and requirements of the Florida

Department of Transportation where a State or Federal highway is affected, and with the standards and requirements of the City of Lauderdale Engineer in the case of City roads or local streets. Where both State and City roads are involved, the higher standard shall apply.

B. *Sidewalks.*

1. Five-foot-wide sidewalks shall be installed in public rights-of-way. In a private area where there are no public rights-of-way, five-foot-wide sidewalks shall be installed which shall run parallel to all streets in the area.
  
2. The following requirements shall apply to all sidewalks, whether public or private:
  - a. Construction of sidewalks shall be required as a condition of:
    - 1) New site plan approval;
    - 2) Any modification of an existing site plan;
    - 3) Any renovation of a structure when the renovation exceeds five (5) percent of the assessed value of the structure during any twelve-month period, whether or not a site plan is modified.
  
  - b. Design specifications shall be in accordance with the City's engineering standards, including required handicapped accessibility.
  
  - c. In single-family residential areas:
    - 1) Sidewalks shall be on both sides of all streets.
    - 2) All sidewalks shall intersect with perpendicular streets.
    - 3) Sidewalks shall be constructed along the external street frontage of any integrated residential development.
  
  - d. In multifamily areas:
    - 1) There shall be a sidewalk around the perimeter of each integrated development.
    - 2) Internally, there shall be clearly delineated, safe paved pedestrian pathways at least four (4) feet in width connecting the entrance of each residential building to the building's mailbox, and to all recreational facilities.
  
  - e. In nonresidential areas:
    - 1) There shall be a sidewalk abutting all street frontages.
    - 2) There shall be clearly delineated, safe paved pedestrian pathways at least four (4) feet in width from

major public entrances of buildings to parking lots, and from entrances of buildings to mailbox and dumpster locations.

- 3) Sidewalks shall be constructed at least ten (10) feet from trees and three (3) feet from hedges. In situations where these requirements cannot be met, sidewalks shall be constructed in accordance with Sch. J Sec. 34 (C)(1) of the LDR.

## C. Swales

### 1. *Landscaping and maintenance of swale areas.*

- a. All swale areas and water bank areas within the corporate limits of the City of Lauderhill shall be sodded in species normally grown as permanent lawns in Broward County.
- b. All swale areas within the corporate limits of the City of Lauderhill shall be free and clear of shrubs, hedges, asphalt, cement or rock substances, but concrete buttons shall be permitted if they are round, and not square or pointed at the top, or have no metal or wood protrusions, and are otherwise shaped in any manner so as not to be hazardous to persons or property.
- c. All swale and water bank areas within the corporate limits of the City of Lauderhill shall be maintained, kept in good repair and free from obstructions which may be hazardous to the welfare of the general public and further must be maintained by contiguous property owner.

### 2. Purpose of Swales

The swale area is intended to be utilized for draining surface waters from adjacent roadways and private property by percolation of the water through the soil. The swales lying within the City's boundaries, when properly constructed and maintained, effectively control the drainage of surface waters where there is an absence of other methods of drainage. The interference with the prescribed contours, the planting of trees or plants, and other above grade obstructions shall not be placed within the swale area.

### 3. Construction, Maintenance Requirements

The following shall be minimum standards for construction and maintenance of swale areas:

- a. Paved swales are prohibited except in commercially or industrially zoned areas wherein the property owner may pave the swale area, provided that prior to paving, he/she obtains a permit from the City of Lauderdale Engineering Division and provided for subsurface drainage or other facilities to drain the adjacent land without runoff onto the lands of other property owners or onto the public right-of-way.
  - b. The use and installation of any type of impervious paving, limerock, or stabilizing material to the swale area is prohibited.
  - c. Swales shall be constructed and maintained as shown in the sketch on file in the Engineering Department.
  - d. Paved areas on private property shall not be permitted to drain on the public right-of-way.
  - e. Dome-shaped decorative blocks or markers shall not constitute items which interfere with the drainage of the swale areas and shall specifically be permitted along street rights-of-way, drives, and public walks in the City. These dome-shaped decorative blocks or markers shall have rounded surface areas and no corners which make a right angle projection corner interface. In the event that dome-shaped decorative blocks or markers are placed in the swale area, which shall be expressly permitted, then they shall be painted white or with a white reflective material.
  - f. Concrete catch basin aprons may be installed in the area surrounding the catch basin where, in the judgment of the City Engineer, such installation will not adversely affect the drainage or percolation of the swale in the vicinity. An authorization permit shall be issued by the City Engineer for each instance where a concrete catch basin apron has been requested by the property owner.
  - g. Concrete valley gutters or curb, and gutters shall be required in the roadway swale areas where the longitudinal slopes for the roadway pavement is less than the 0.5% or where the clear width of the roadway swale between the edge of roadway pavement and the sidewalk is less than eight feet.
4. Swale Drainage: The swale drainage system shall be in accordance with the City's roadway section. Exfiltration trenches at the bottom of the swale may be required as directed by the City Engineer.

### **3.05 CANALS AND WATERWAYS**

#### **A. Drainage Canal Maintenance.**

1. All property owners whose property abuts a public drainage canal within the City of Lauderdale, shall be required to remove all trees, shrubs, bushes, structures, docks, fences and/or any other such obstruction which interfere with right-of-way access to the water's edge or the maintenance of the canal property. Any obstruction (fence, sheds, trees, etc.) shall require a permit from the Engineering Division.
2. All property owners found to not be in compliance with subsection (1) hereof shall receive notice from the City Clerk, by regular mail, notifying them that they are not in compliance with this Ordinance and notifying them that they must comply with the terms hereof within ninety (90) days from the date of the notice. Property owners may apply to the Community Development Department within that ninety (90) day compliance period for an additional ninety (90) days to come into compliance.
3. Property owners who fail to comply with the terms hereof shall be subject to the City Code of Ordinances, Chapter 1, General Provisions, Section 1-8.

#### **B. Waterways**

1. Design Standards.
  - a. Development proposals containing proposed canals shall supply written conceptual approval from the South Florida Water Management District, Florida Department of Environmental Regulation, Broward County Environmental Protection and Growth Management Department, and/or Army Corps of Engineers along with the application for development proposal. Should canals be approved, construction shall be in accordance with the provisions of the applicable regulatory agency.
  - b. All development shall meet the requirements of Broward County Environmental Protection and Growth Management Department and South Florida Water Management District to control stormwater runoff, for the purpose of preventing flooding in adjacent areas, or pollution of water bodies.

- c. Where a development proposal includes provisions for deposit of fill, shores resulting from such deposition shall not exceed a slope of four (4) horizontal to one (1) vertical above two (2) feet below the design water elevation.
- d. After construction, natural vegetation shall be retained or replaced on the site in order to minimize and stabilize erosion and decrease pollution of the water body.
- e. For lots or parcels which are cleared adjacent to water bodies, silt screens shall be placed between the construction site and the water body to prevent erosion and siltation.
- f. No waterway or portion thereof shall be created within a public road right-of-way or within reservations dedicated for roadway purposes.

## 2. Permit Required

- a. No waterway, except those which are controlled and maintained by the South Florida Water Management District, shall be created unless a permit for same has been first approved in writing by the City Engineer.
- b. Application for such approval shall be made to the City Engineer, by letter, or upon such form as shall be prescribed, stating the reason for alteration or construction of the waters. This letter shall be accompanied by four (4) sets of plans prepared by an engineer registered and licensed to practice as such by the State of Florida, showing the location proposed cross-sections, structures in or across the waterway, and other details as may be required by the City Engineer.
- c. The City Engineer shall inspect waterways and all structures in or across any waterway during their construction period. As-built drawings shall be submitted to the City Engineer upon completion of all work in or across the waterway with as-built cross-sections of the waterway every one hundred (100) feet, or as often as may be necessary to determine the change in cross-section area.

## 3. Waterway Use

- a. No person, firm or corporation shall obstruct any public waterway within the City of Lauderhill by any means whatever.

- b. No person shall allow or permit any material to wash, run or flow from property owned by or under the control of any such person into any public waterway within the City in such a way that the waterway shall thereby become obstructed or polluted.
- c. All water intakes from any waterway shall be of a type that is easily disconnected for the purpose of cleaning said waterways. All intakes shall protrude no more than 5 feet from normal edge or water.
- d. The limitations on the use of motorboats are set forth in Chapter 5 of the Code of Ordinances.

### **3.06 STREET LIGHTS & UNDERGROUND UTILITIES**

#### **A. Street Lights**

- 1. The City shall provide street lights for all new subdivisions with public streets within the City. The developer shall pay to the City, at the time that his plat is approved by the City Commission, the sum of one thousand dollars (\$1,000) per pole for the street lights. In the case of nonplatted developments, the one thousand dollars (\$1,000) per pole shall be paid by the developer at the time the streets are dedicated to the City.
- 2. All subdivision plats submitted to the City Commission for approval shall provide the necessary easements for installation and maintenance of street lights within the subdivision.
- 3. The street light poles shall be aluminum poles, with underground wiring. The design and spacing of the street lights shall conform to the remainder of the City's overhead street lighting system.

#### **B. Illumination for Streets and Alleys**

- 1. Private roads: Private roads in residential zoning districts shall be allowed in accordance with the following criteria:
  - a. *Street lighting* shall be provided to deliver an illumination equal to that provided for public roads, but not less than an average illumination of one-half foot-candle within the roadway. The street light poles shall be made of concrete, fiberglass, or metal poles which meet the standards set forth below, and all cables and wires shall be underground. The poles and lines shall be located outside the roadway width.

- b. *Standards for light poles.* Light poles shall withstand wind loads as required by Florida Building Code, latest edition. The pole shall be non-conductive, non-corrosive and shall be able to carry a minimum weight of 100 pounds at its top. Installation shall be done by direct burial. The pole material shall meet the following ASTM standards: D635, A153, A356, A319, A307.
- c. *Design style standards for light poles.* The design and style of decorative light poles shall be reviewed by the Development Review Committee (DRC).

C. *Illumination for Parking Areas*

Parking lots for industrial, commercial and recreational, subdivisions and for residential subdivisions with multi-family units or single-family attached units shall be constructed in accordance with Article III, Sec. Schedule P Secs. 7,8 & 9 of the LDR.

D. *Property Maintenance Code*

The lighting thereon shall be so arranged and designed as to prevent any glare or excessive light on adjacent property. Such facilities shall be arranged for convenient access and safety of pedestrians and vehicles. The lighting shall be maintained properly to deliver an average foot candle in accordance with LDR Section 8 and International Dark Sky Association standards.

- E. *Underground utilities.* Within the Planned Unit Development, all utilities including telephone, television, television cable, and electrical systems shall be installed underground. Primary facilities providing service to the site may be exempted from this requirement. Large transformers shall be placed on the ground and contained within pad mounts, enclosures or vaults. The developer shall provide adequate landscaping with shrubs and plants to screen all utility facilities permitted above ground.

### **3.07 EASEMENTS**

- A. Easements across lots or centered on rear or side lot lines shall be provided for public utilities where necessary and shall be at least twelve (12) feet in total width, or as determined by the Commission to be adequate.
- B. Where a subdivision is traversed by a watercourse, drainage way, canal or stream, there shall be provided a stormwater easement or drainage right-of-way conforming substantially with the lines or such watercourses, and

such further width construction, or both, as will be adequate for the purpose. Parallel streets or parkways may be required in connection therewith where necessary for service or maintenance.

- C. Easements may be required for drainage purposes of such size and location as may be determined by the City Engineer. (minimum 12')
- D. Easements shall be provided six (6) feet around all water mains, fire hydrants and meters and dedicated to the City of Lauderhill.
- E. No below or above grade structures (or gas tanks) shall be placed in easements.
- F. Easements shall be provided six (6) feet (plus one foot for each foot in depth below three (3) feet around all sewer force mains, 8" gravity lines, manholes and lift stations, and dedicated to the City of Lauderhill.

### **3.08 FIRE HYDRANT SPACING, FIRE SERVICES LINES & FLOW REQUIREMENTS**

Fire hydrant spacing and water flow requirements for all fire hydrants throughout the City shall conform to the table set forth below and made a part hereof. Distances shown in said table shall be measured only in directions that a fire hose can be laid, and it shall be interpreted herein that a fire hose cannot be laid across any street having a width greater than twenty-four (24) feet of pavement. All fire hydrants shall have a minimum of twenty (20) pounds per square inch residual pressure while flowing the required flow as indicated in the table below. The City Engineer may require additional fire hydrants and/or water flow where he/she deems it necessary.

The table to be used for minimum fire hydrant spacing and flow requirements is as follows:

Zoning District	Maximum Fire Hydrant Spacing (feet)	Minimum Gallons per Minute	Minimum Fire Hydrant Branch Pipe Size
RS-4, RS-5	650 (All portions of each structure to be within a maximum of 325' from the nearest hydrant)	1,000	6"
RM-8, RM-5	500 (All portions of each structure to be within a maximum of 150' from the nearest hydrant)	1,500	8"
RM-18, RM-22, RM-45, RM-50, CO-1, C-2, C-3, CF, CR	300 (All portions of each structure to be within a maximum of 150' from the nearest hydrant)	2,000	8"
S-1	Same as RS-4 above, provided that no permanent structures greater than 500 square feet are constructed, where permanent structures are constructed the spacing and flow requirements shall be determined by the City Engineer.		
I-1, U-1, C-4	300 (All portions of each structure to be within a maximum of 150' from the nearest hydrant)	3,000	8"

Insurance Services Office Method (ISO): The ISO's technique for calculating required fire flow is documented in their publication "Fire Suppression Rating Schedule". The term used in that document to describe the fire flow requirement is needed fire flow (NFF). The calculation for NFF is as follows:

$$NFF_i = (C_i)(O_i)(X+P)_i$$

where

$C_i$  = construction factor

$O_i$  = occupancy factor

$X_i$  = exposure factor

$P_i$  = communication factor

NOTE: The City of Lauderdale Fire Department must be contacted for fire flow tests prior to the calculation of required fire flow.

The point of service of all fire service lines shall be considered to be at the gate valve located at the property line or the gate valve located 6 feet away from the water main.

## **SECTION 4 - GENERAL SPECIFICATIONS**

### **4.01 APPLICABLE CODES:**

#### **A. GENERAL:**

All construction and materials shall conform to the Standards and Specifications of the City of Lauderhill, Broward County Environmental Engineering and Permitting (BCEPD), Broward County Health Department (BCHD), Broward County Traffic Engineering Division (BCTED), South Florida Water Management District (SFWMD), and all other local and national codes where applicable.

#### **B. CONSTRUCTION SAFETY:**

All construction shall be performed in a safe manner, specifically, the rules and regulations of the Occupational Safety and Health Administration (OSHA) and the Manual of Uniform Traffic Control Devices (MUTCD) shall be strictly observed.

#### **C. SURVEY DATA:**

Elevations on the plans or referenced in the specifications are based on North American Vertical Datum of 1988 (NAVD 88).

### **4.02. PRECONSTRUCTION RESPONSIBILITIES:**

A. Upon receipt of Notice of Award, the Contractor shall arrange a Preconstruction Conference to include the City of Lauderhill Utilities Division, the Owner, the City Engineer, the Engineer of Record and after obtaining an engineering construction permit from the Engineering Division.

B. The Contractor shall obtain a "SUNSHINE One Call" Certification number at least 48 hours prior to beginning any excavation.

C. Prior to beginning construction, the Contractor shall verify the size, location, elevation, and material of all existing utilities within the area of construction.

- D. The Contractor shall be responsible for damage to any existing utilities for which he/she fails to request locations from the City of Lauderhill Utilities Division. The Contractor is responsible as well for damage to any existing utilities which are properly located.
- E. If upon excavation, an existing utility is found to be in conflict with the proposed construction or to be of a size or material different from that shown on the plans, the Contractor shall immediately notify the Engineer of Record, who will in turn notify the City of Lauderhill Utilities and Engineering Divisions.

#### **4.03. INSPECTIONS:**

The Contractor shall notify the City of Lauderhill Engineering Divisions and the Engineer of Record at least 48 hours prior to beginning construction and prior to the inspection of the storm drainage, paving, sanitary sewer and water system.

#### **4.04. SHOP DRAWINGS:**

- A. Prior to issuance of an engineering construction permit, shop drawings shall be submitted to and reviewed by the Engineer of Record and the City of Lauderhill Utilities and Engineering Divisions for sanitary manholes, fire hydrants, valves, piping, lift stations and other accessories. Catalogue literature shall be submitted for water and sewer pipes, fittings and appurtenances.
- B. Individual shop drawings for all precast structures are required. Catalogue literature will not be accepted for precast structures.

#### **4.05. TEMPORARY FACILITIES:**

- A. TEMPORARY UTILITIES:
  - 1. It shall be the Contractor's responsibility to arrange for or supply temporary water service, sanitary facilities and electricity to his employees and subcontractors for their use during construction.

2. Obtain construction meter with double CV assembly for all water used on job. All water used for cleaning, testing, etc. will be paid for by the Contractor. If water cannot be metered then it will be calculated.

**B. TRAFFIC REGULATION:**

1. Maintenance of traffic in the public right-of-way shall be in accordance with the MUTCD and BCTED.
2. All open trenches and holes adjacent to roadways or walkways shall be properly marked and barricaded to assure the safety of both vehicular and pedestrian traffic.
3. No trenches or holes near walkways or in roadways or their shoulders are to be left open during nighttime hours.

**4.06. PROJECT CLOSEOUT:**

**A. CLEANING UP:**

1. During construction, the project site and all adjacent areas shall be maintained in a neat and clean manner. Upon final clean up, the project site shall be left clear of all surplus material or trash. The paved areas shall be swept broom clean.
2. The Contractor shall restore or replace, when and as directed by the Engineer or the City of Lauderdale, any public or private property damaged by the work, equipment, employees or subcontractors to a condition at least equal to that existing immediately prior to the beginning of operations. To this end, the Contractor shall do as required, all necessary highway or driveway, sidewalk and landscaping work. Suitable materials and methods shall be used for such restoration.
3. Where material or debris has washed or flowed into or been placed in water courses, gravity sewer, ditches, drains, catch basins, or

elsewhere as a result of the Contractor's operations, such material or debris shall be removed and satisfactorily disposed of during progress of the work, and the area kept in a clean and neat condition.

4. When working in and around existing drainage canals, appropriate silt barriers shall be installed as required by the BCDNRP.

B. PROJECT RECORD DOCUMENTS:

1. The Contractor shall maintain accurate and complete records of work items completed.
2. All "as-built" information submitted to the Engineer of Record and the City Engineer shall be sufficiently accurate, clear and legible to satisfy the Engineer that the information provides a true representation of the improvements constructed.
3. Upon completion of construction, the Contractor shall submit to the Engineer of Record one complete set of "as-built" construction drawings. These drawings shall be marked to show "as-built" construction changes and dimensioned locations and elevations of all improvements and shall be signed by the Contractor.
4. All "as-built" information on elevations of sanitary sewage, paving and drainage shall be certified by a registered land surveyor.
5. As-built information on the water system shall include, but not limited to, locations of all valves, fittings, fire hydrants and water services and top-of-pipe elevation on 100-foot intervals at a minimum.
6. Prior to a final inspection by the City of Lauderhill, the Engineer shall submit two (2) sets of blueprints of "As-Built" construction drawings.
7. Upon a final inspection by the City of Lauderhill, the Engineer shall submit to the City five (5) sets of blue prints of "as-built" construction drawings, two of which are to be forwarded to the Engineering Department, that have been certified by a registered land surveyor

and the Engineer of Record. Electronic files (PDFs) shall be submitted for all submissions. CAD files shall be included for all submissions.

#### **4.07. EARTHWORK AND COMPACTION**

- A. All organic and other unsuitable material shall be removed and properly disposed under those areas to be paved and for the full width of the right-of-way.
- B. Suitable backfill shall be used and compacted as directed by the Engineer of Record.

#### **4.08 PAVING**

##### **A. GENERAL**

- 1. All underground utilities shall be completed prior to construction of limerock base.
- 2. All existing pavement, cut or damaged by construction, shall be properly restored at the Contractor's expense.
- 3. Where any proposed pavement is to be connected to existing pavement, the existing edge of pavement shall be saw cut.

##### **B. MATERIALS**

- 1. Base course shall be crushed limerock with a minimum of 60% carbonates of calcium and magnesium and a minimum Limerock Bearing Ratio (LBR) of 100.
- 2. Asphalt surfaces shall be SP-12.5 modified asphaltic concrete unless otherwise specified on the plans.

3. Reinforced concrete slabs shall be constructed of class 1 concrete with a minimum strength of 3,000 psi and shall be reinforced with a 6 x 6 No. 6 gauge wire mesh for all driveways within the right-of-way.
4. All driveways will be restored from edge of road to edge of sidewalk and graded to prevent standing water.
5. All grass swales shall be regraded to allow stormwater to drain from impervious surface to and stored in center of swale.
6. All sod will be restored from edge of road to edge of sidewalk.

#### C. INSTALLATION

1. Subgrade for roadway shall be compacted to a minimum of 98% of the maximum density (AASHTO T-180-74).
2. Base course material for paved areas shall be a minimum thickness of 8" placed on a single layer for streets (6 inches for driveways, and designated parking areas).
3. Base course shall be compacted to 98% of the maximum density as per AASHTO T-180-74.
4. Installation of the wearing surface shall conform with the requirements of the D.O.T. standard specifications for asphaltic concrete or the latest revision for the approved Broward County mix.

#### D. TESTING

1. The finished surface of the base course and that of the wearing surface shall not vary more than  $\frac{1}{4}$ " from the template. Any irregularities exceeding this limit shall be corrected.
2. Density tests shall be taken by an independent testing laboratory, certified by the State of Florida where directed by the Engineer of Record or City Engineer.

3. All testing costs (paving) shall be paid for by the Owner except those tests failing to meet the specified requirements which are to be paid by the Contractor.
4. LBR test results and Maximum Dry density test results shall be approved by the Engineer of Records prior to installation of the base and subbase material.

#### **4.09 WATER DISTRIBUTION AND/OR SEWAGE FORCE MAIN SYSTEM:**

##### **A. GENERAL**

1. The Contractor shall notify the City of Lauderdale Utilities and Engineering Divisions and the Engineer of Record no later than 24 hours prior to making connections to existing systems. A City of Lauderdale Utility Division representative and the Engineer of record must be present.
2. No connections to the existing lines shall be made until pressure tests, for the water mains and sewer force mains, and bacteriological tests have been performed and the system is acceptable to the City of Lauderdale and the Broward County Public Health Unit.
3. Cleaning of newly installed piping systems shall be accomplished using pipe pigging methods. Open flushing shall not be allowed without prior approval of the Utilities Division. All water will be accounted for.
4. All efforts shall be made so that water and force mains cross above drainage lines with adequate cover and separation. If this is not possible, it shall be indicated on the plans.
5. A minimum of three (3) foot lateral separation (5 feet preferred) shall be maintained between water/sewer lines and below grade obstructions (ie., catch basins, electrical conduits, storm sewers etc.). A minimum of seven feet 6 inches (7.5') lateral separation shall

be maintained between water/sewer lines and above grade obstructions (ie., light poles, concrete poles, street signs, etc.). A minimum vertical clearance of 13 feet 6 inches (13.5') between final grade and any overhead obstruction must be maintained. A minimum one (1) foot vertical clearance shall be maintained between water/sewer lines and all below grade obstructions.

6. No trees will be allowed with 5' of water/sewer lines in public R/W. No trees will be allowed in Broward County Water and Wastewater easements located within private property.
7. Metallic indicator tape shall be placed over all other utilities where crossing City of Lauderdale potable water and sanitary sewer infrastructure.

**B. MATERIALS:**

**1. Pipe:**

The water main and/or sewage force main shall be either polyvinyl chloride (PVC) or Ductile Iron Pipe (D.I.P.) and shall be designed for a minimum working pressure of 150 psi. PVC pipe is only permitted within swale areas.

- a. PVC pipe shall be ASTM 1120 pressure pipe with iron O.D., Class 150 (DR 18), conforming to ANSI/AWWA C900-89 or C905-88 or latest revision and shall have push on rubber gasket joints.
- b. D.I.P. shall be Class 350 wall thickness (up to 12"), Class 300 (14"-18"), Class 250 (20" or greater) with interior cement lining conforming to ANSI/AWWA C151/A21.51-91, or latest revision. Sewage pipe shall be either double cement conforming to ANSI/AWWA C104/A21.4-90 or latest revision, or polyethylene lined conforming to ANSI/AWWA C105/A21.5-88 or latest revision, or approved equal. The pipe shall withstand a working pressure of 350 psi. The joints shall be bell and spigot push on type, mechanical joint or flanged. Flanged pipe shall conform with the physical and

chemical requirements as set forth in the Handbook of Ductile Iron Pipe of the Cast Iron Pipe Research Association.

2. Fittings:

Fittings shall be ductile iron compact mechanical joint type and shall be class 350 through 24" conforming to ANSI/AWWA C153/A21.53-94, or latest revision, and class 250 in sizes 24" and larger, conforming to ANSI/AWWA C110/A21.10-93, or latest revision, complete with glands, gaskets, bolts and nuts. All fittings shall be cement lined and seal coated with the same as pipe.

3. Valves:

a. Valves shall be gate valves for water (4"-12" in size), butterfly valves for water (16" and up in size), or plug or gate valves for sewer (all sizes) as approved by utility. A 6" thick concrete collar with a 12" radius shall be placed around all valves. Concrete collar shall support a minimum design strength of 3,000 psi.

1) Gate valves shall be iron body, fully resilient seat, bronze mounted non-rising stem, double disc, rated at 200 psi and conforming to ANSI/AWWA C509-94 or latest revision. Exposed valves shall be outside screw and yoke type. Gate valves shall be American Flow Control AFC-2500 or approved equal.

2) Butterfly valves and operators shall conform to ANSI/AWWA C504-94 or latest revision standard for rubber-seated butterfly valves. Valves shall be class 150 A or B and shall be Mueller, Pratt or approved equal.

3) Plug valves shall be semi-steel body, non-lubricated, eccentric type, with resilient faced plugs, and capable of drip-tight shut off at the rated pressure if applied at either port. Valves are to be equipped with actuating nuts, cast iron handwheels or chain operators, with galvanized steel chains, as appropriate for the installation and type of operator. Valves shall be

DeZurik Corp. Series 100, Clow Ful-Flow Model F5413 or approved equal.

- 4) Insertion valves can be considered by the utility for valves sizes up to 12". The ductile iron body, bonnet and wedge provide strength and a pressure rating that meets or exceeds the requirements of AWWA C515. Insert Valve shall be ductile iron construction meeting ASTM A536 Grade 65-45-12 and shall meet AWWA material specification of C509-09 for resilient seal valves suitable for potable water. 250 psi maximum working pressure shall be cast into the body of the insert valve.

b. Air Release Valves

- 1) Sewer Force Main Air Release Valves - System shall be a combination of one sewage air release valve and one sewage air/vacuum valve with dual isolation plug valves. Both valve bodies and covers shall be of cast iron construction, ASTM A126-B. All internal parts shall be of stainless steel, ASTM A240 - Type 304 and ASTM A276 - Type 303. The venting orifice shall be 5/16" in diameter with stainless steel seat. The inlet openings shall be a minimum of 2" NPT screwed connection for both valves. The valves shall be fully capable of operation in sewage force main. Both valves shall include a back-flushing feature for periodic cleaning of the internal mechanism. The overall height shall not exceed 22 1/2 inches. Valves shall be manufactured by Val-Matic Corporation, model numbers 48S/301S BW, or approved equal.
- 2) Water Main Air Release Valves - Valve body and cover shall be of cast iron construction, ASTM A126-B. All internal parts shall be of stainless steel, ASTM A240 - Type 304 for the float and ASTM A296 - Type 316 for the linkage. The venting orifice shall be 3/16" in diameter with brass seat. The inlet opening shall be a 2" NPT screwed connection. The overall height shall

not exceed 13 inches. Valves shall be manufactured by Valve and Primer Corporation, model number APCO 200A, or approved equal.

- c. A reflective pavement marker shall be installed in the center of the nearest lane of road pavement adjacent to all valve locations outside the road pavement. Water markers shall be white, sewer markers shall be green.

4. Fire Hydrants:

- a. Fire hydrants shall have a minimum 5 1/4" valve opening and shall open against the pressure and closing with the flow. Hydrants shall be Mueller Centurion, model number A-423 or equal. Hydrants shall meet or exceed ANSI/AWWA C502-85, C503-88 or latest revision, and shall comply with Factory Mutual Research Corporation and Underwriters Laboratories UL246 Standard.
- b. A blue reflective pavement marker shall be provided in the center of the nearest lanes of road pavement adjacent to all fire hydrant locations.
- c. Hydrants shall be painted with a reflective type yellow paint (OSHA Yellow or approved equal). Fire Hydrant tops and caps shall be painted per NFPA 291 to indicate the available GPM.
- d. 6" bollards shall be placed around fire hydrants. The bollards shall be painted OSHA yellow.
- e. A blue reflective pavement marking shall be placed in the center of the outermost adjacent line.

5. Detector Tape:

- a. Detector tape shall be 3" wide blue tape for water main and brown tape for force main with a metallized foil core laminated between 2 layers of plastic film. The words "CAUTION WATER LINE BURIED BELOW" or "CAUTION FORCE MAIN BURIED BELOW" shall be printed at 30" intervals along the tape. Tape shall be placed 18" below grade above all PVC mains and services or as recommended by manufacturer. Non-metallic tape shall be used above ductile iron pipe.

- b. Metallic indicator tape shall be placed over all other utilities where crossing City of Lauderhill potable water and sanitary sewer infrastructure.
6. Service Connections:
- a. Service saddles shall be Ductile Iron epoxy or nylon coated with double STAINLESS steel straps or single wide strap. Saddles shall conform to ANSI/AWWA C111/21.11-90 and ASTM A 588 or latest revision.
  - b. Service lines shall be polyethylene (PE) tubing as described in ANSI/AWWA C901-96, or latest revision with a working pressure of 200 psi (DR 9). Pipe joints shall be of the compression type totally confined grip seal and coupling nut. Polyethylene shall be extruded from PE 3408 high molecular weight materials and must conform to ASTM D2737.
  - c. Corporation stops shall be manufactured of brass alloy in accordance with ASTM B62 with threaded ends and shall be Mueller, Ford or approved equal.
  - d. Meter stops shall be the 90 degree lockwing type and shall be of bronze construction in accordance with ASTM B62. Meter stops shall be closed button design and resilient "O" ring sealed against external leakage at the top. Stops shall be equipped with a meter coupling nut on the outlet sides, as manufactured by Mueller, Ford or approved equal.
  - e. All meters and meter boxes are supplied and installed by the City of Lauderhill at the owner's expense.
7. Tapping Sleeves:
- Tapping sleeves shall be cast iron, mechanical joint, Clow Model F5207, or approved equal.
8. Valve Boxes:
- a. Valve boxes for water mains and sewer force mains shall be U.S. Foundry Model 7630, marked "Water" or "Sewer", or approved equal.
  - b. Valve boxes for blow-off assembly shall be U.S. Foundry Model 7630 (No. 3) or approved equal.

9. Retainer Glands:  
Retainer glands shall conform to ANSI/AWWA C111/A21.11-90 or latest revision. All glands shall be manufactured from ductile iron as listed by Underwriters Laboratories for 250 psi minimum water pressure rating. Clow Corporation, Tyler, EBAA Iron, or approved equal.
  
10. Double check valve backflow prevention assembly:  
The assembly shall conform to ANSI/AWWA C510-92 or latest revision and be capable of withstanding a working pressure of at least 150 psi without damage to working parts or impairment of function. It shall consist of two internally loaded, independently operating check valves, located between two tightly closing resilient-seated shut off valves, with four properly placed resilient-seated test cocks.

C. INSTALLATION:

1. General:  
Connection of all new systems to existing mains shall be done using one of the three following methods:
  - a. Method A per Broward County Health Department Standards, which involves a reduced size temporary connection between the existing main and the new main.
  - b. Method B per Broward County Health Department Standards, which involves a direct connection between the new and existing mains using two gate valves separated by a sleeve with a vent pipe.
  - c. Method C approved by the Broward County Health Department, which involves a tap with one gate valve requiring disinfection of the new system prior to conducting the pressure test.
  
2. Bedding:  
Bedding and initial backfill (12 inches above pipe) for all pipe shall be sand with no rock larger than 1" in diameter. Pearrock or 3/4"

washed rock will be used in water or where unsuitable bedding exists at the discretion of the City of Lauderhill. All other fill shall not have rock larger than 6" in diameter. Refer to typically bedding details for PVC and DIP minimum bedding requirements.

3. PVC Pipe:

- a. PVC pipe, where approved by the City Engineer, shall be installed in accordance with the Uni-Bell Plastic Pipe Association's Guide for Installation of PVC Pressure Pipe for Municipal Water Distribution Systems.
- b. PVC pipe shall be installed with a minimum of 36" cover.
- c. Detector tape shall be installed the full length of all PVC mains approximately 18" below grade, color side up.

4. Ductile Iron Pipe:

- a. D.I.P. shall be installed in accordance with ANSI/AWWA C600 or latest revision.
- b. D.I.P. shall be installed with a minimum of 36" cover.
- c. Identification tape shall be installed the full length of all D.I.P. mains approximately 18" above the main, color side up.

5. Valves:

- a. All valves shall be installed with adjustable cast iron valve boxes with the word "WATER" or "SEWER" cast in the cover.
- b. Main valves shall be located on an extension of the right-of-way line unless dimensioned otherwise.
- c. Main valves shall be installed away from parking areas. If this is unavoidable, proper measures shall be taken to avoid the parking of vehicles over the valves. Hydrant valves shall be installed as close to the main as possible. Valves located in non-paved areas or in parking stalls require a reflective pavement marker on the center of the nearest lane of road pavement. Blue reflectors for water main valves, green reflectors for force main valves.
- d. The distance from the top of the valve actuator nut to final grade shall be a minimum of 12 inches and a maximum of 18 inches.

- e. All valves placed within a landscaped area shall have a 6" thick concrete collar around the valve box. The collar shall extend a minimum 6" outside of the valve box and shall be a minimum 3" above the surrounding grade.
6. Service:
- a. Cover over service lines shall be 18" minimum, 24" maximum below finished grade and 24" under pavement.
  - b. Polyethylene shall be bedded in backfill of sand with no rock greater than 1" in diameter.
  - c. Meter stops shall have 8" to 10" cover or as required for proper meter/box installation.
  - d. Water services under pavement shall be encased in a Schedule 80 PVC sleeve for the full length of the pavement and for 2' beyond the edge.
  - e. The end of each service connection shall be marked with a 2"x4" treated stake, painted blue, extending 18" (minimum) above grade unless indicated otherwise.

D. TESTING:

- 1. The physical connection of the new system to the existing system shall be done in accordance with Section C.1. above which will dictate the order of the pressure testing and disinfection.
- 2. The complete water system shall be pressure tested and disinfected. The pressure test shall be for two hours at 150 psi minimum test pressure in accordance with ANSI/AWWA C600 or latest revision. The pressure test shall not vary more than  $\pm 5$  psi during the test. Leakage allowances will not be made for fittings or valves.
- 3. Allowable leakage shall not exceed the formula of:

$$L \text{ (gallons per hour)} = \frac{SD(P)^{0.5}}{148,000}$$

L = allowable leakage in gals/hr (no allowable leakage for valves)  
 S = length of pipe tested in feet

D = nominal diameter of pipe in inches

P = average test pressure during test in lbs/sq. in.

4. The pressure test shall be witnessed by a representative of the City of Lauderhill Utilities Division and the Engineer of Record.
5. Sampling points shall be provided at the locations shown on the plans or as directed by the Broward County Health Department. If not specified, sampling points shall be provided at intervals of 1500' maximum for lines greater than 1500' in length. Provide a minimum of two sampling points for all other test segments.
6. Before acceptance for operation, the water system shall be disinfected in accordance with ANSI/AWWA C651-92 or latest revision with approved bacteriological samples and proper documentation by the County Health Department. Collection of samples is the Contractor's responsibility and will be witnessed by a City of Lauderhill representative.
7. All fire flow test shall be conducted on all proposed fire hydrants or as directed by the City Engineer in accordance with NFPA requirements. Results of the fire flow test shall be included with the final certification package to the City of Lauderhill.

#### **4.10. GRAVITY SEWAGE COLLECTION SYSTEM:**

##### **A. MATERIALS:**

1. Sewer Pipe and Fittings:
  - a. PVC sewer pipe and fittings shall be non-pressure polyvinyl chloride pipe conforming to ASTM D3034, SDR 35, with push-on rubber gasket joints unless otherwise noted.
  - b. Ductile Iron Pipe (D.I.P.) shall be double cement lined, conforming to ANSI/AWWA C104/A21.4-90 or latest revision, minimum pressure Class 350 (unless otherwise specified).
  - c. All fittings and accessories shall be as manufactured or supplied by the pipe manufacturer.

2. Manholes:
  - a. Manholes shall be precast per ASTM C478 Type 2 with 4000 psi concrete and grade 60 steel. Monolithically poured bases only.
  - b. Manhole openings are to be sealed with anti-hydro cement or approved equal. No molding plaster will be allowed.
  - c. Manhole joints shall be sealed with "Ramnek" gaskets or approved equal and with anti-hydro cement on the inside and outside.
  - d. The rim elevation of all sanitary manholes located in a landscaped area shall be 8" above the surrounding grade elevation.

## B. INSTALLATION

1. Pipe and Fittings:
  - a. Sewer pipe shall be installed in accordance with ASTM D2321.
  - b. D.I.P. shall be installed in accordance with ANSI/AWWA C600 or latest revision.
  - c. Bedding and initial backfill (12 inches) over sewer mains and services shall be sand with no rock larger than 1" in diameter. Pearrock or 3/4" washed rock will be used in water or where unsuitable bedding exists at the discretion of the City of Lauderhill. All other fill shall not have rock larger than 6" in diameter.
  - d. Pipe connection into manhole wall shall be ductile iron pipe grouted in-place or cast-in neoprene rubber boot, or equal as approved by the City of Lauderhill.
  - e. No sewer shall be in the back yard of a residential lot.
  - f. Gravity lines between manholes shall be 8-inch minimum diameter.
2. Manholes:
  - a. Manholes shall be set plumb to line and grade on firm clean subgrade providing uniform bearing under the base.

- b. All openings and joints shall be sealed water-tight.
- c. The entire inside of the manholes shall be painted with two coats (8 mils each, dry) of Bitumastic coating or approved equal; first coat red, second coat black. The outside of each manhole requires only one coat (8 mils, dry) of the same type of coating.
- d. Manholes shall be installed away from parking areas on the centerline of the roadway. If this is unavoidable, proper measures shall be taken to prohibit the parking of vehicles over manholes.
- e. Orange reflective pavement markers shall be provided on the center of the nearest lane of road pavement adjacent to all manhole locations outside the road pavement.
- f. All lids shall be provided with a polyethylene watertight manhole insert, as manufactured by Southwestern packing & Seals, "Rainstopper" model, or approved equal to reduce stormwater inflow.
- g. Manholes shall be set at a maximum spacing of 400 feet.
- h. All manholes shall be accessible to a vac truck via an asphaltic road and be encompassed by that asphalt road.
- i. Certain uses may require a private sanitary manhole immediately upstream of the public gravity sanitary sewer system equipped with a trash basket/strainer. The trash basket shall be maintained by the owner. The City Engineer shall determine which uses may require an upstream trash basket prior to discharge to the into the public gravity sewer system.

3. Service:

- a. Minimum slope of all service lines shall be as indicated in the Florida Building Code.
- b. Service laterals shall terminate at a depth 30" below finished grade.
- c. Each service connection shall be plugged water-tight with an approved plug.
- d. The end of each service connection shall be marked with a 2"x4" treated stake painted red, extending 18" (min.) above grade.

- e. Contractor shall rough in riser to 1 foot above finished grade and plug. At project completion, cut back to finished grade.
- f. Connection of services to building's plumbing shall be coordinated with the City's Building and Zoning Division, Plumbing Section.
- g. When a proposed sanitary lateral connection is made to an existing vitrified clay pipe (VCP) by a proposed development, the entire VCP pipe run (from manhole to manhole) shall be televised to confirm existing conditions of the VCP pipe prior to any excavation for the proposed connection. The inspection report shall be provided the Utilities Department prior to making the proposed connection. If it is determined the existing pipe condition is unsatisfactory the existing pipe segments shall be replaced as directed by the City of Lauderhill. The VCP pipe shall be televised after the connection is made and properly backfilled to ensure no pipe segments were damaged during the back fill operations. The inspection report shall be provided to the Utilities Department prior to final restoration for approval.

C. TESTING:

- 1. After construction of the sewer system, the entire system shall be lamped. Sewer lamping shall be witnessed by the Engineer of Record and a representative from the City of Lauderhill.
- 2. After construction of the sewer system, the City of Lauderhill or the Engineer of Record may require a visual infiltration and/or exfiltration test to be performed on the entire system or any part thereof.
- 3. Manhole exfiltration leakage shall not exceed 4 gallons per day per unit.
- 4. Sewer pipe exfiltration leakage shall not exceed 10 gallons per day per inch diameter per mile in a two hour test period for any section tested. A minimum of 2 feet of positive head shall be maintained on the system during the duration of the test.

5. Visible manhole and sewer pipe infiltration leakage shall not be permitted.
6. Sanitary sewer shall be televised, at Developer's expense, prior to final approval of construction. Video tape and report shall be examined by the City of Lauderhill Utility Division. Owner/Contractor shall be responsible for correcting any deficiencies prior to the City's certification of completion to any agency.

#### **4.11. WASTEWATER PUMPING STATION**

##### **A. GENERAL**

1. **Scope of Work**

Furnish all labor, materials, equipment and incidentals required and install, place in operation, and field test a wet well submersible wastewater pumping station. The station shall be complete with pumps, motors, piping, valves, electrical work (including motor controls), structures, connection and appurtenances, tested and ready for service. Refer to drawings for other site features.
2. **Description of System**
  - a. The Contractor shall furnish and install one factory built, submersible explosion proof pumping station as manufactured by Flygt (Xylem Inc.). The station shall be complete with all needed equipment, factory-installed on a welded steel base with fiberglass cover.
  - b. The principal items of equipment shall include two vertical, motor driven, submersible, non-clog sewage pumps; valves; internal piping; central control panel with circuit breakers; motor starters and automatic pumping level controls; ventilating blower; and all internal wiring.
  - c. Refer to plans for a complete list of operating conditions.
  - d. The pumping station shall pump raw, unscreened, domestic wastewater into a force main which is pumped to a local manhole, or transmission system.

- e. The pumping station shall be include back up power connection during the event of a power outage.
- f. Preferred voltage for any size motor is 480V, 3 phase.
- g. The pumping station shall have a visual and audible alarm at the pump station when the high water float is triggered.
- h. The pumping station shall be equipped with a fully function SCADA communications system.
- i. The pumping station shall be equipped with an odor control device attached to the wet well venting pipe. The odor control device shall consist of a carbon filter or approved equal odor control device.

3. Qualifications

To assure unity of responsibility, the motors and control system shall be furnished and coordinated by the local pump manufacturers' representative. The Contractor and pump manufacturer shall assume responsibility for the satisfactory installation and operation of the entire pumping system including pumps, motors, and controls as specified.

4. Submittals

- a. Copies of all materials required to establish compliance with the specifications shall be submitted in accordance with the provisions of the general conditions. Submittals shall include at least the following:
  - 1) Shop erection drawings showing all important details of construction, dimensions and anchor bolt locations.
  - 2) Descriptive literature, bulletins and catalogs of the equipment.
  - 3) Data on the characteristics and performance of each pump, data shall include a certified performance test, based on actual shop tests of the sale units, which show that they meet the specified requirements for head, capacity, efficiency, and horsepower. Curves shall be submitted on 8 1/2 inch by 11 inch sheets at as large a scale as practical. Curves shall be plotted from no flow at shut off head to pump capacity at

minimum specified total dynamic head. Catalog sheets showing a family of curves will not be acceptable.

- 4) Complete master wiring diagrams, elementary or control schematics, including coordination with other electrical control devices operating in conjunction with the pump control system and suitable outline drawings shall be furnished for approval before proceeding with manufacturer, standard pre-printed sheets or drawings simply marked to indicate applicability to this contract will not be acceptable.
  - 5) A drawing showing the layout of the pump control panel shall be furnished, the layout shall indicate every device mounted on the door with complete identification.
  - 6) The total weight of the equipment including the weight of the single largest item.
  - 7) A complete total bill of materials of all equipment.
  - 8) A list of the manufacturer's recommended spare parts to be supplied in addition to those specified in paragraph 6.a. with the manufacturer's current price for each item. Include gaskets, seals, etc. on the list. List bearing by the bearing manufacturer's numbers only.
  - 9) All submittal dates required by the general conditions.
  - 10) Complete motor data.
- b. In the event that it is impossible to conform with certain details of the specifications due to different manufacturing techniques, describe completely all non-conforming aspects.
  - c. Upon receipt of approval of submitted material, provide five prints.

## 5. Operating Instructions

- a. At least three (3) copies of operating and maintenance manuals shall be furnished which will include parts lists of components and complete service procedures and troubleshooting guide. The manuals shall be prepared specifically for the installation and shall include all required cuts, drawings, equipment lists, description, etc. that are required

to instruct operating and maintenance personnel unfamiliar with such equipment.

- b. A factory trained representative of all major component manufacturers, who has complete knowledge of proper operation and maintenance, shall be provided for one (1) day at the station, to instruct representatives of the City and the Engineer on proper operation and maintenance and to perform initial start-up of the pump station. With permission of the City, this work may be conducted in conjunction with the inspection of the installation and test run. If there are difficulties in operation of the equipment due to the manufacturer's design or fabrication, additional service shall be provided at no cost to the Owner.

6. Spare Parts

- a. A complete replacement pump shaft seal assembly shall be furnished with each pump station. The spare seal shall be packed in a suitable container and shall include complete installation instructions. In addition, a spare seal gasket shall be provided.
- b. Spare parts shall be properly bound and labeled for each identification without opening the packaging and suitably protected for long term storage.

7. Warranty

- a. The manufacturer of the lift station shall warranty the structure and all equipment to be free from defects in materials and workmanship for a period of up to one year from date of acceptance, not to exceed 18 months from the date of shipment.
- b. Warranties by the suppliers of various components in lieu of single-source responsibility by the station manufacturer will not be accepted. The station manufacturer shall be solely responsible for the warranty of the station and all its components.
- c. The repair or replacement of those items normally consumed in service, such as seals, grease, light bulbs, etc., shall be considered as part of routine maintenance and upkeep.

## B. EXECUTION

### 1. Installation

- a. Installation shall be in strict accordance with the manufacturer's instructions and recommendations in the locations shown on the drawings. Installation shall include furnishing the required oil and grease for initial operation. The grades of oil and grease shall be in accordance with the manufacturer's recommendations. Anchor bolts shall be set in accordance with the manufacturer's recommendations.
- b. The Contractor shall submit a certificate from the equipment manufacturer stating that the installation of the equipment is satisfactory, that the equipment is ready for operation, and that the operating personnel have been suitably instructed in the operation, lubrication and care of each unit.
- c. Installation of the wet well shall be done in accordance with the written instructions provided by the manufacturer.

### 2. Shop Painting

- a. Before exposure to weather and prior to shop painting, all surfaces shall be thoroughly cleaned, dry and free from all mill-scale, rust, grease, dirt and other foreign matter.
- b. All pumps and motors shall be shop coated, with manufacturer's standard coating.
- c. All nameplates shall be properly protected during painting.
- d. Gears, bearing surfaces and other similar surfaces obviously not to be painted shall be given a heavy shop coat of grease or other suitable rust-resistant coating. This coating shall be maintained as necessary to prevent corrosion during periods of storage and erection and shall be satisfactory to the engineer up to the time of the final acceptance test.

### 3. Inspection and Testing

- a. General
  - 1) The engineer shall have the right to inspect, test or witness test of all materials or equipment to be

furnished under these specifications, prior to their shipment from the point of manufacture.

- 2) The engineer shall be notified in writing prior to initial shipment, in ample time so that arrangements can be made for inspection by the engineer.
- 3) The engineer or his representative shall be furnished all facilities, including labor, and shall be allowed proper time inspection and testing of material and equipment.
- 4) Materials and equipment shall be tested or inspected as required by the engineer, and the cost of such work shall be included in the cost of the equipment. The Contractor shall anticipate that delays may be caused because of the necessity of inspection, testing and accepting materials and equipment before their use is approved.
- 5) The services of a factory representative shall be furnished for one (1) day, for the station, and shall have complete knowledge of proper operation and maintenance to inspect the final installation and supervise the test run of the equipment.
- 6) Field tests shall not be conducted until such time that the entire installation is complete and ready for testing, including permanent electrical power.
- 7) All components of the pump station shall be given an operational test at the pump station manufacturer's facility to check for excessive vibration, for leaks in the pumping or seals and correct operation of the automatic control and all auxiliary equipment. Installed pumps shall simulate actual service conditions. The control panel shall undergo both a dry logic test and a full operational test with all systems operating.
- 8) Factory test instrumentation must include flow measuring with indicator; ; bourdon tube type discharge pressure gauge; electrical meters to measure amperes, volts, kilowatts and power factor;

speed indicator and a vibrometer capable of measuring both amplitude and frequency.

- 9) An operation and maintenance manual shall be provided to the City of Lauderhill's representative prior to startup testing.
- 10) The as-builts shall be geo-referenced in Florida State Plane.

b. Pumps

- 1) After all pumps have been completely installed, and working under the direction of the manufacturer, conduct in the presence of the engineer of record and a City of Lauderhill representative, such tests as are necessary to indicate that pumps conform to the specifications. Field tests shall include all pumps included under this section. Supply all electrical power, water or wastewater labor, equipment and incidentals required to complete the field tests.
- 2) If the pump performance does not meet the specifications, corrective measures shall be taken or pumps shall be removed and replaced with pumps which satisfy the conditions specified.

c. Motors

- 1) The Contractor shall check all motors for correct clearance and alignment and for correct lubrication in accordance with manufacturer's instructions. The Contractor shall check direction of rotation of all motors and reverse connections if necessary.

## 4.12 STORM DRAINAGE

### A. GENERAL

1. Catch basin grates and rim elevations as shown on plans may be adjusted to conform to new or existing grades after approval from Engineer of Record is obtained.

2. Distances and lengths shown on plans and profile drawings shall be referenced to the center of structures.
3. All catch basin grates shall be oriented to align with centerline of drive.
4. Minimum pipe size shall be 18". A 15" pipe shall only be approved at the upstream most pipe segment serving a completely pervious area.

**B. MATERIALS**

1. Reinforced concrete pipe (RCP) for storm sewer shall conform to ASTM L70-79, Table III, Wall B, or latest revision. All pipes shall have modified tongue and groovejoints, and have rubber gaskets, unless otherwise specified.
2. High Density Polyethylene Pipe (HDPE) for storm sewer shall conform to ASTM F2648. Pipe shall be joined using a bell and spigot meeting ASTM F2648 and the joints shall be watertight according to the requirements of ASTM D3212. Gaskets shall meet the requirements of ASTM F477. All fittings shall conform to ASTM F2306. The installation shall be in accordance with ASTM D2321 or as per manufactures recommendations. The maximum HDPE shall be 60".
3. Corrugated aluminum pipe (CAP) shall be helical type, manufactured in conformance with ASTM B-209 and AASHTO M-193, as manufactured by Kaiser Aluminum, Inc., or approved equal. The corrugation pattern and gauge shall be as follows:

<b>DIAMETER</b>	<b>CORRUGATION</b>	<b>GAUGE</b>
12" x 21"	2 2/3" x 1/2"	16
24" x 27"	2 2/3" x 1/2"	16
30"	2 2/3" x 1 1/2"	14
36" x 54"	3" x 1"	14
60" x 72"	3" x 1"	12

Pipe couplings for CAP shall be 12" wide (minimum), 24" for 60" diameter or larger. Split bands of the same alloy as the pipe, and may be one gauge lighter than the pipe. Polyurethane or other manufacturer supplied sealant shall be used with the couplings.

4. The rip rap headwalls shall be constructed of sand/cement with a minimum 2000 psi compressive strength to meet FDOT standards. The bags shall be permeable burlap, cloth or paper. A concrete cap shall be poured on top of sand/cement rip rap bags with a minimum 3000 psi compression strength.
5. All drainage structures shall be precast concrete as manufactured by U.S. Precast Corporation, or approved equal. Block catch basins will be allowed only with approval of the Engineer. The minimum wall and slab thickness shall be 8 inches and the minimum reinforcing shall be No. 4 bars at 12 inches each way, unless otherwise indicated. Concrete shall be minimum of  $f_c = 3750$  psi at 28 days.

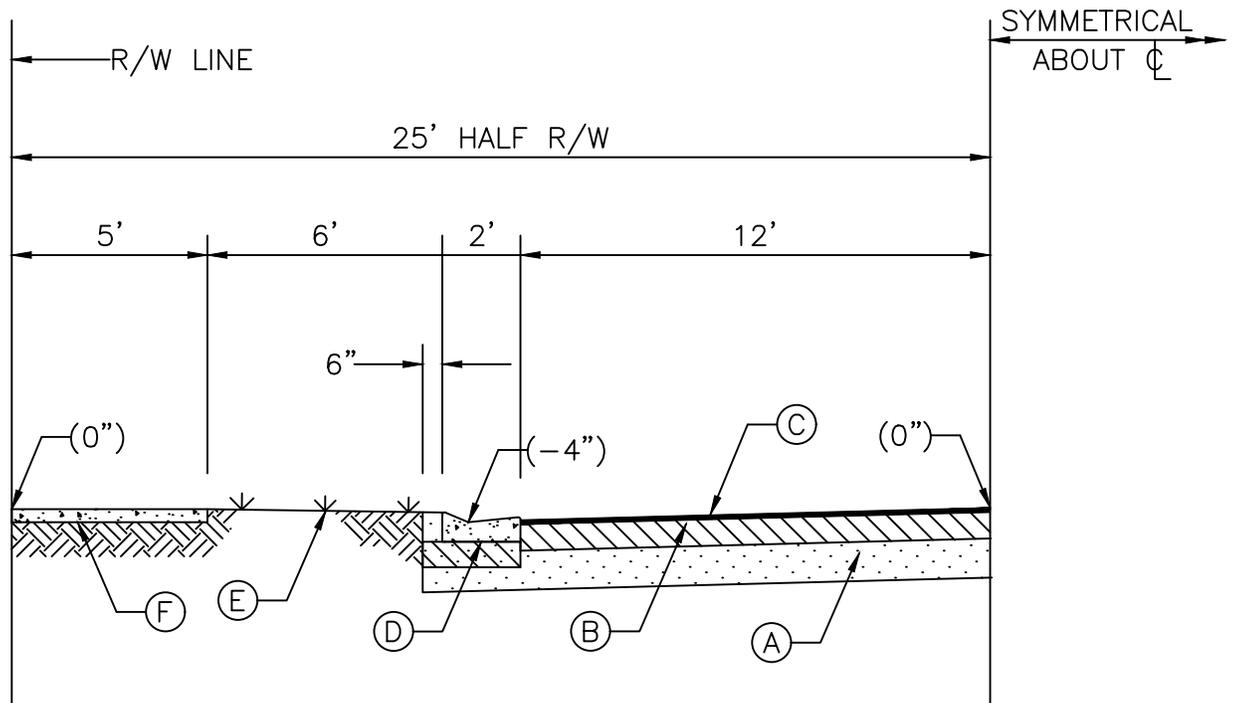
#### C. INSTALLATION:

1. Pipe shall be placed on stable granular material, free of rock formation, other foreign formations, and constructed to uniform grade and line.
2. Backfill material shall be well graded granular material, well tamped in layers, not to exceed six inches (6").
3. Provide a minimum protective cover of 18 inches over storm sewer and avoid unnecessary crossing by heavy construction vehicles during construction.
4. The contractor shall notify the local water control district at least 24 hours prior to the start of the construction and inspection.

D. STORM DRAINAGE PRE-TREATMENT/EXFILTRATION SYSTEM

1. Any conflict with existing or proposed utilities shall immediately be brought to the attention of the Engineer. Any impermeable material encountered in the excavation for the drainfield shall be removed as directed by the Engineer.
2. The trench liner shall be Typar spunbonded Polypropylene filter fabric as manufactured by the Dupont Company, or approved equal. It shall be used on the sides and top of drainfield ditch. The top section of the material shall be lapped a minimum of 24 inches and the Contractor shall take extreme care in backfilling to avoid bunching of the fabric.
3. Perforated pipe within the drainfield shall have 3/8 inch perforations 360° around the pipe with approximately 120 perforations per foot of pipe.
4. Perforated pipe shall terminate five feet (5') from the drainage structure. The remaining five feet (5') shall be non-perforated pipe.
5. Pipes shall terminate two feet (2') from the end of the trench or connect to additional catch basins.

**SECTION 5 - DETAILS**



- Ⓐ STABILIZED SUBGRADE (MIN LBR 40 PER AASHTO T-180)
- Ⓑ BASE COURSE (MIN LBR 100 PER AASHTO T-180)
- Ⓒ 1 1/4" ASPHALT SURFACE COURSE
- Ⓓ MOUNTABLE GUTTER
- Ⓔ SOD OR GRASS MULCH
- Ⓕ CONCRETE SIDEWALK

NOTE: WHERE APPLICABLE, 5' BIKE PATH SHALL BE INSTALLED IN PLACE OF SIDEWALK, ON ONE SIDE.

CITY OF LAUDERHILL  
ENGINEERING DEPARTMENT  
LAUDERHILL, FLORIDA

SCALE:

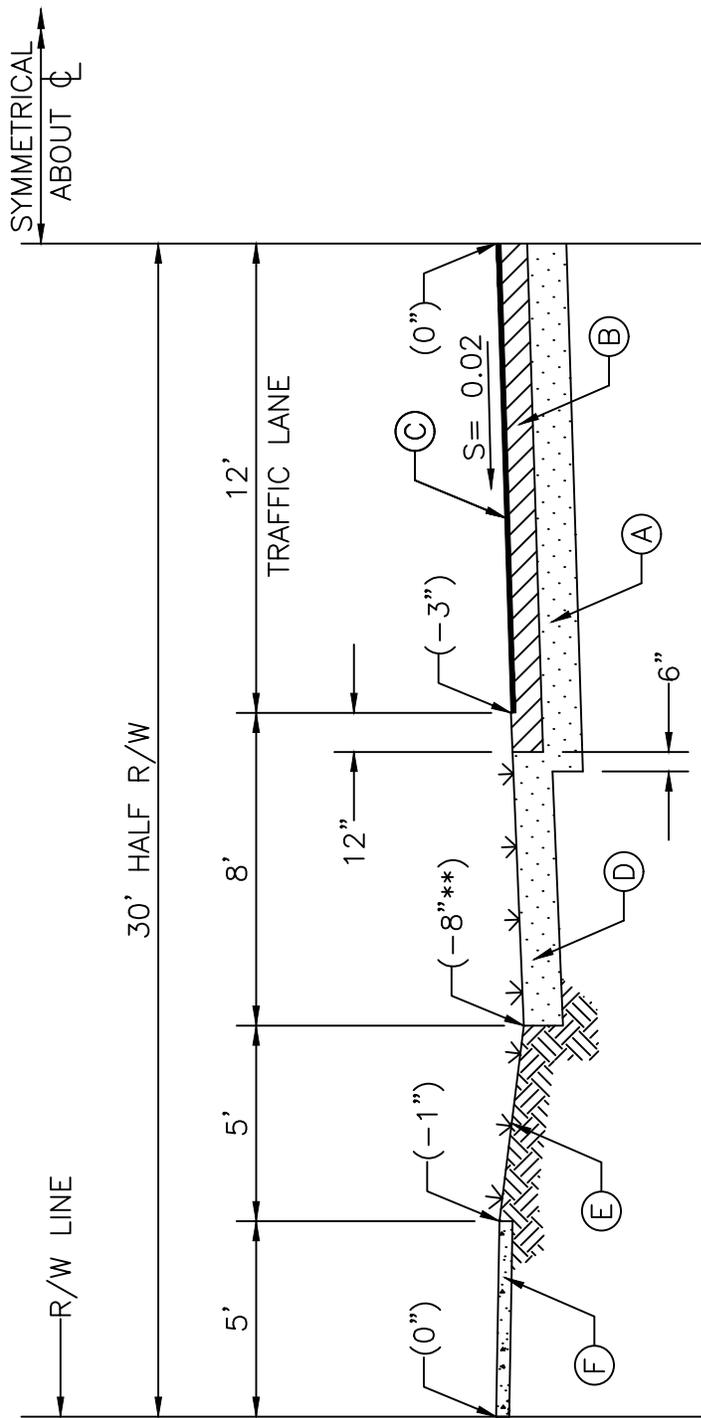
N.T.S.

REVISED:

SEPT. 18

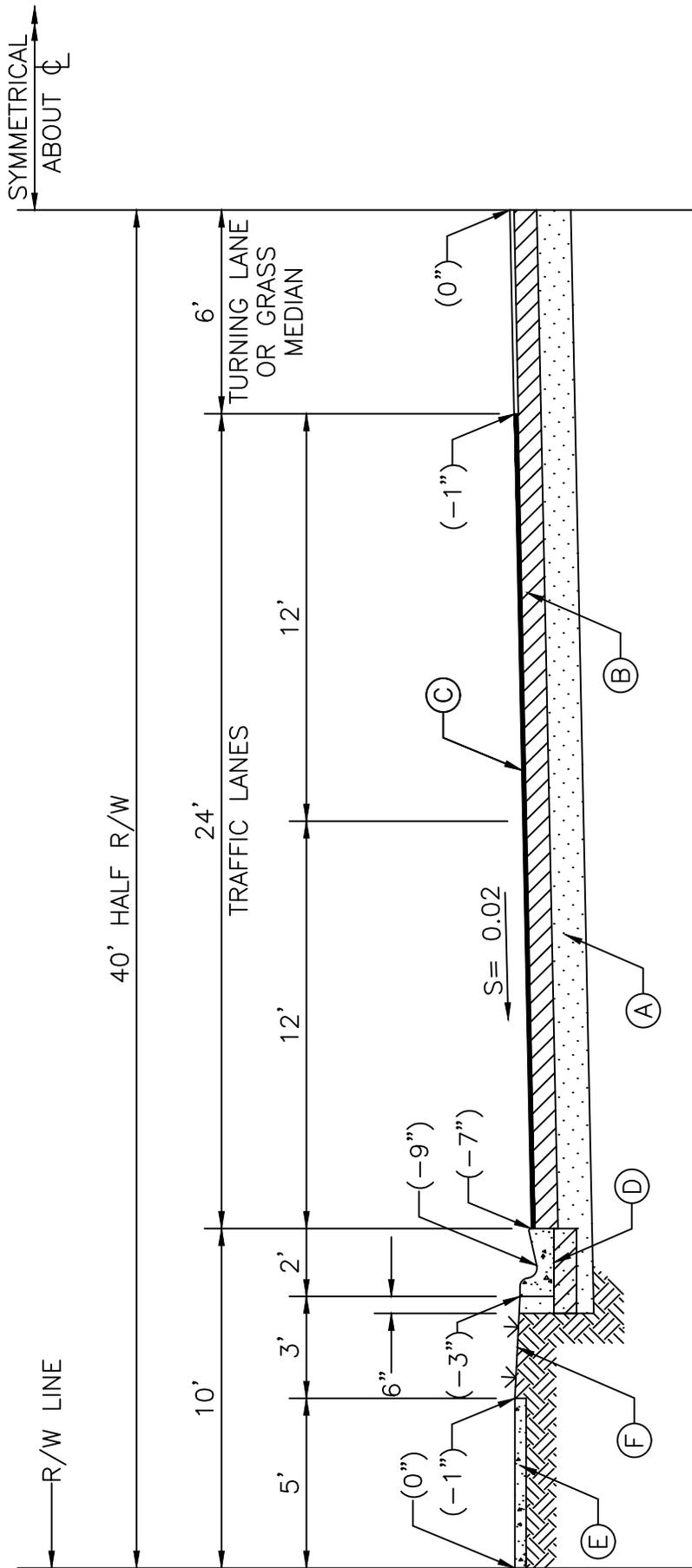
STANDARD ROAD DETAIL  
RESIDENTIAL STREET  
50' R/W (2-LANES)

R-1



- (A) STABILIZED SUBGRADE (MIN LBR 40 PER AASHTO T-180)
- (B) BASE COURSE (MIN LBR 100 PER AASHTO T-180)
- (C) ASPHALT SURFACE COURSE
- (D) STABILIZED SHOULDER
- (E) SOD OR GRASS MULCH
- (F) CONCRETE SIDEWALK

\*\* -8" TO TOP OF SOD. SOIL SHALL BE GRADED TO ACCOUNT FOR THICKNESS OF SOD



- (A) STABILIZED SUBGRADE (MIN LBR 40 PER AASHTO T-180)
- (B) BASE COURSE (MIN LBR 100 PER AASHTO T-180)
- (C) ASPHALT SURFACE COURSE
- (D) CURB & GUTTER
- (E) CONCRETE SIDEWALK
- (F) SOD OR GRASS

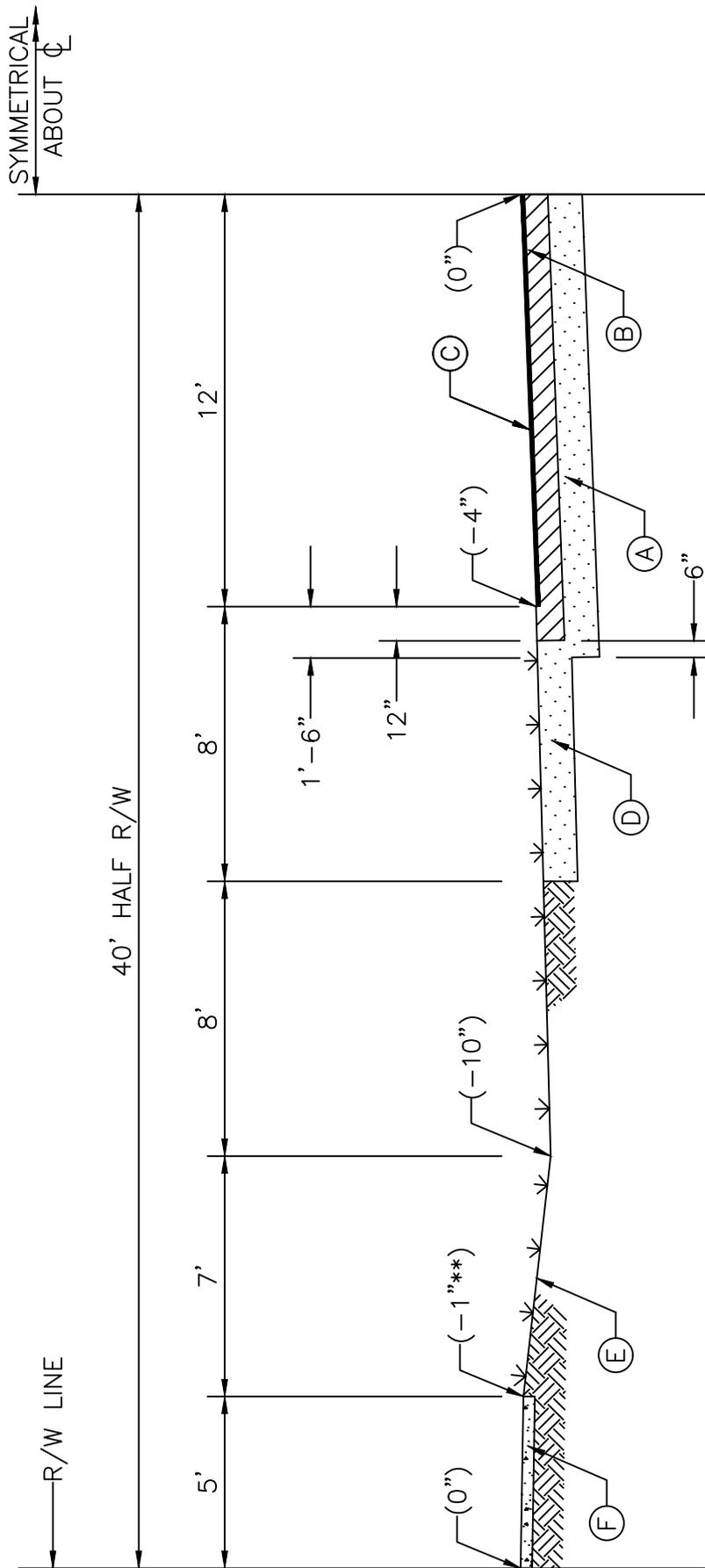
CITY OF LAUDERHILL  
 ENGINEERING DEPARTMENT  
 LAUDERHILL, FLORIDA

SCALE:  
 N.T.S.

REVISED:  
 SEPT. 18

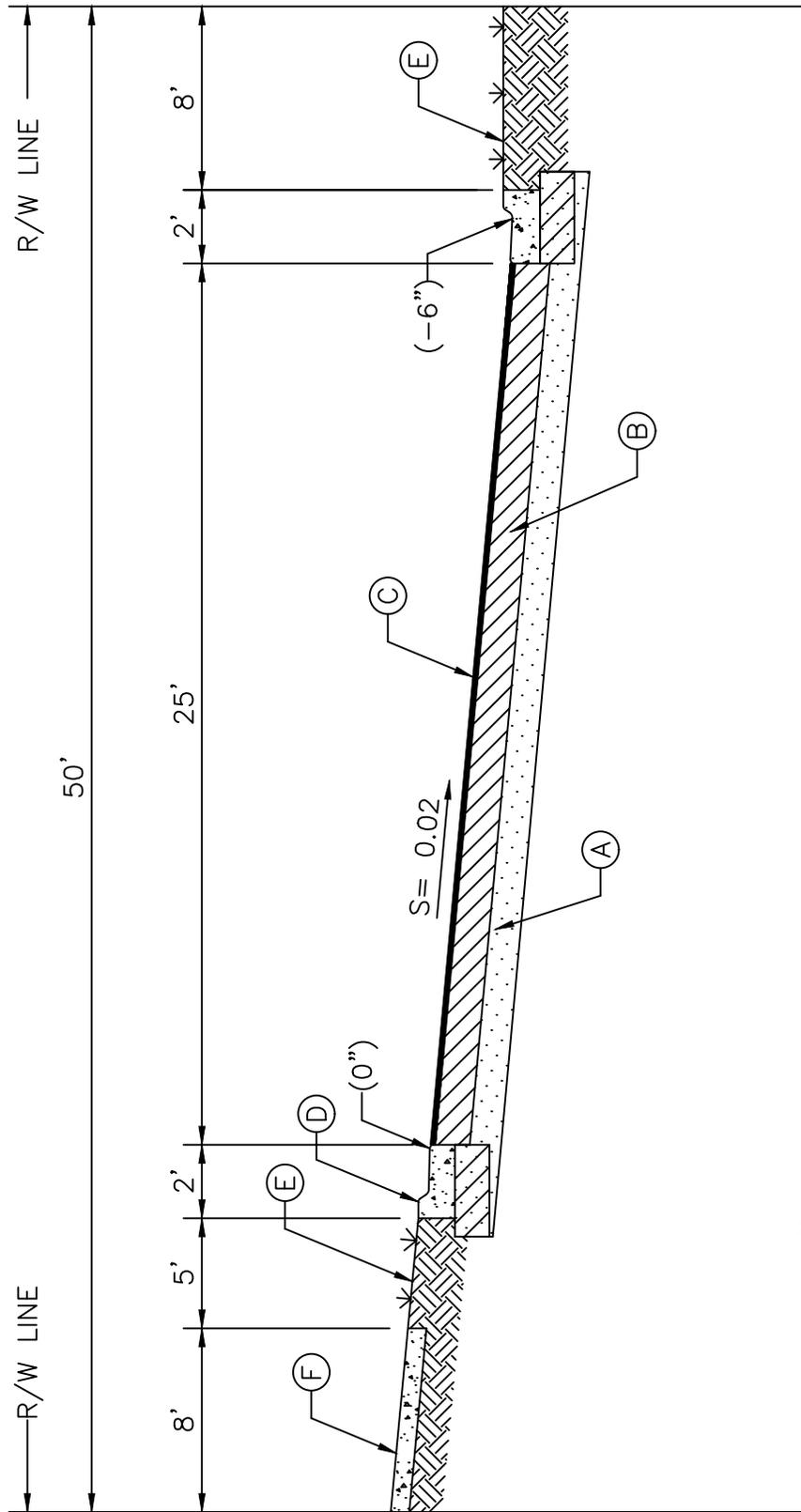
STANDARD ROAD DETAIL  
 COLLECTOR STREET  
 80' R/W (4-LANES)

R-3



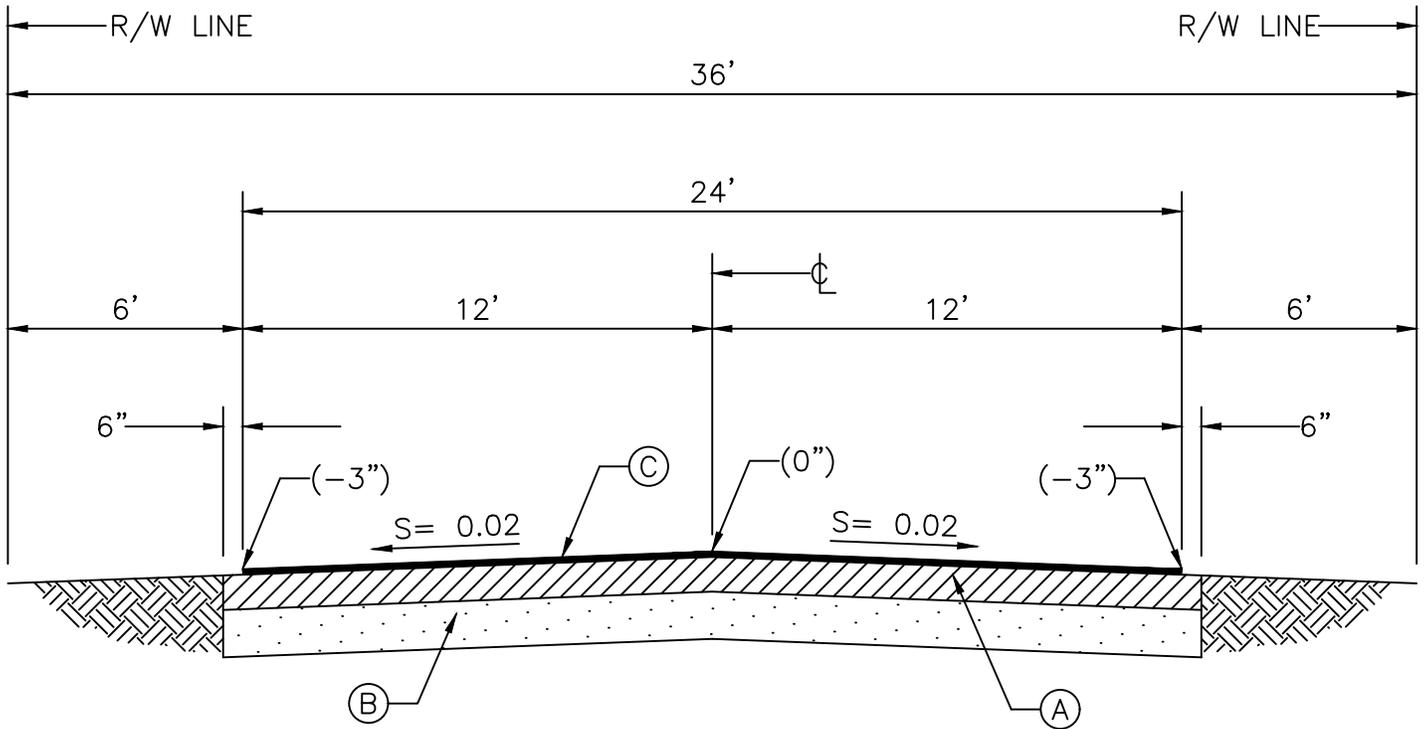
- (A) STABILIZED SUBGRADE (MIN LBR 40 PER AASHTO T-180)
- (B) BASE COURSE (MIN LBR 100 PER AASHTO T-180)
- (C) ASPHALT SURFACE COURSE
- (D) STABILIZED SHOULDER
- (E) SOD OR GRASS MULCH
- (F) CONCRETE SIDEWALK

\*\* -1" TO TOP OF SOD. SOIL SHALL BE GRADED TO ACCOUNT FOR THICKNESS OF SOD



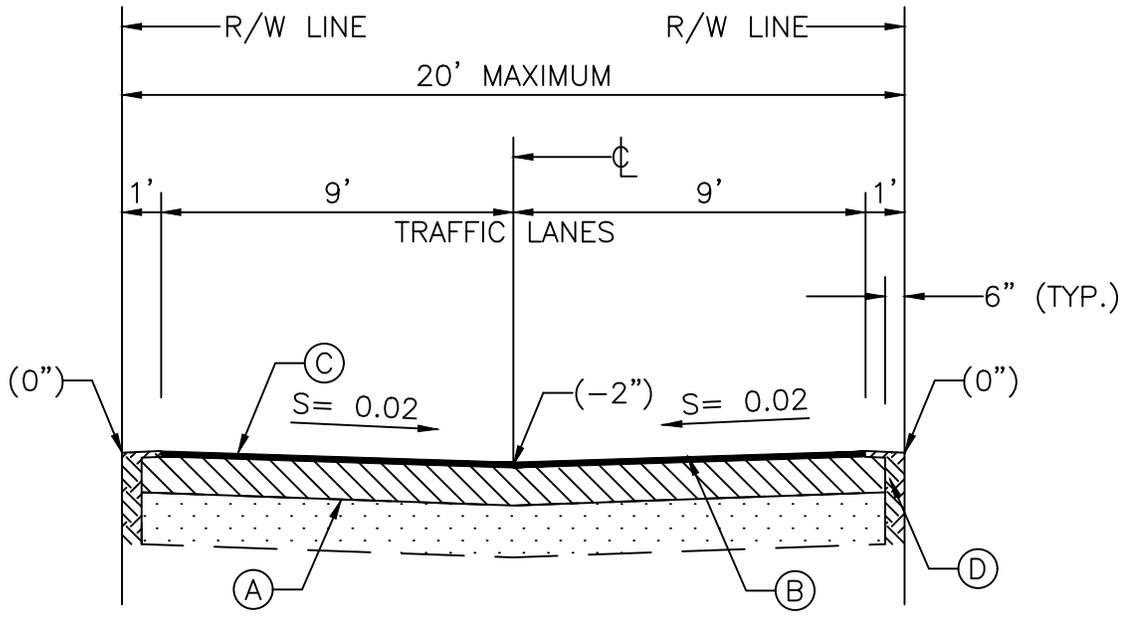
- (A) STABILIZED SUBGRADE (MIN LBR 40 PER AASHTO T-180)
- (B) BASE COURSE (MIN LBR 100 PER AASHTO T-180)
- (C) ASPHALT SURFACE COURSE
- (D) 6" CURB & GUTTER
- (E) SOLID SOD
- (F) CONCRETE SIDEWALK





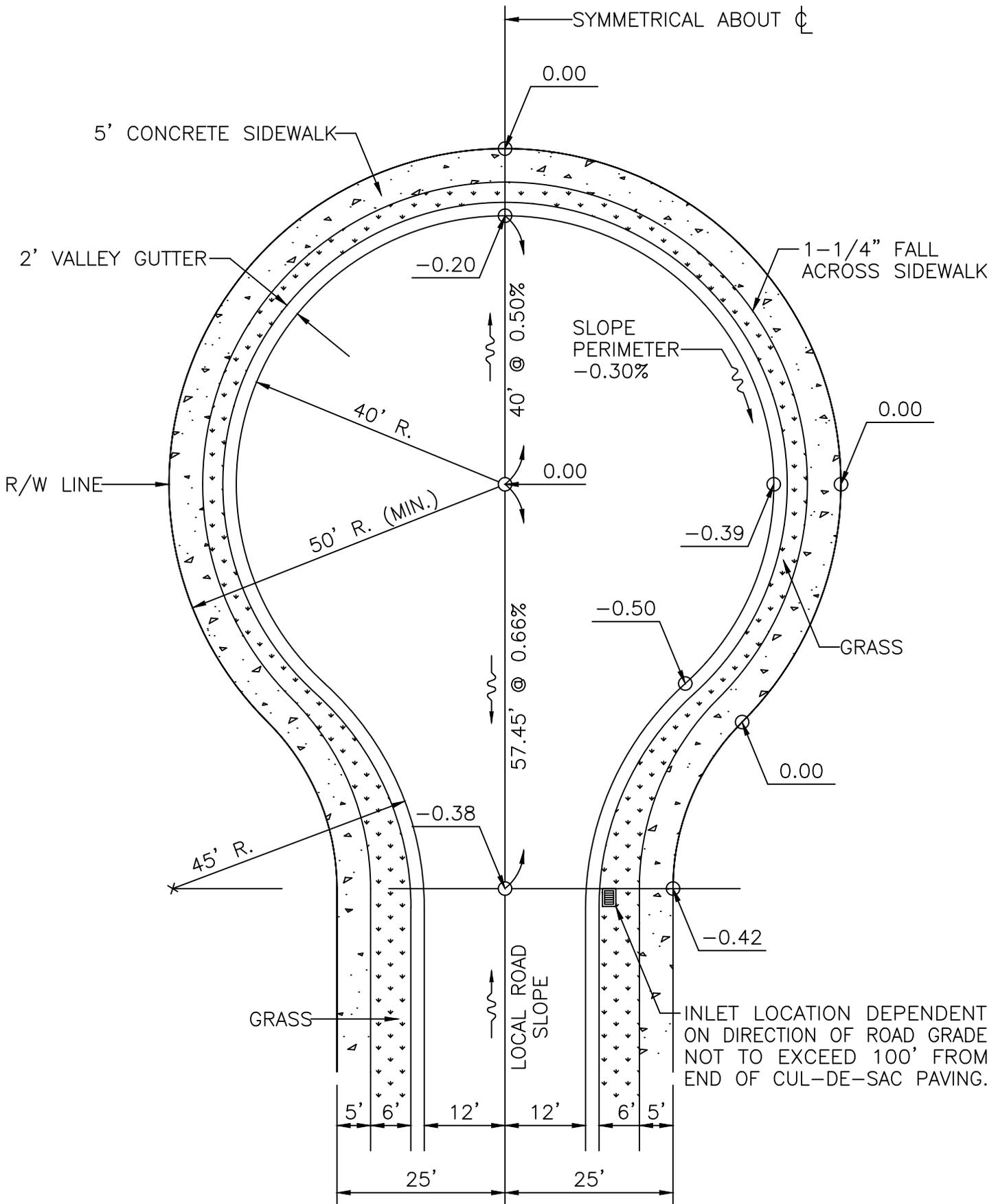
- (A) STABILIZED SUBGRADE (MIN LBR 40 PER AASHTO T-180)
- (B) BASE COURSE (MIN LBR 100 PER AASHTO T-180)
- (C) ASPHALT SURFACE COURSE

NOTE: DRAINAGE TO BE PROVIDED ON PRIVATE PROPERTY,  
DRAINAGE EASEMENT REQUIRED IF WITHIN PUBLIC  
RIGHT OF WAY.



- (A) STABILIZED SUBGRADE (MIN LBR 40 PER AASHTO T-180)
- (B) BASE COURSE (MIN LBR 100 PER AASHTO T-180)
- (C) ASPHALT SURFACE COURSE
- (D) SOLID SOD

NOTE: MINIMUM PROFILE GRADE TO BE 0.02  
 INVERTED CROWN TO BE INCORPORATED WITH  
 PROPER DRAINAGE SYSTEM AND TO BE APPROVED  
 BY THE CITY ENGINEER.

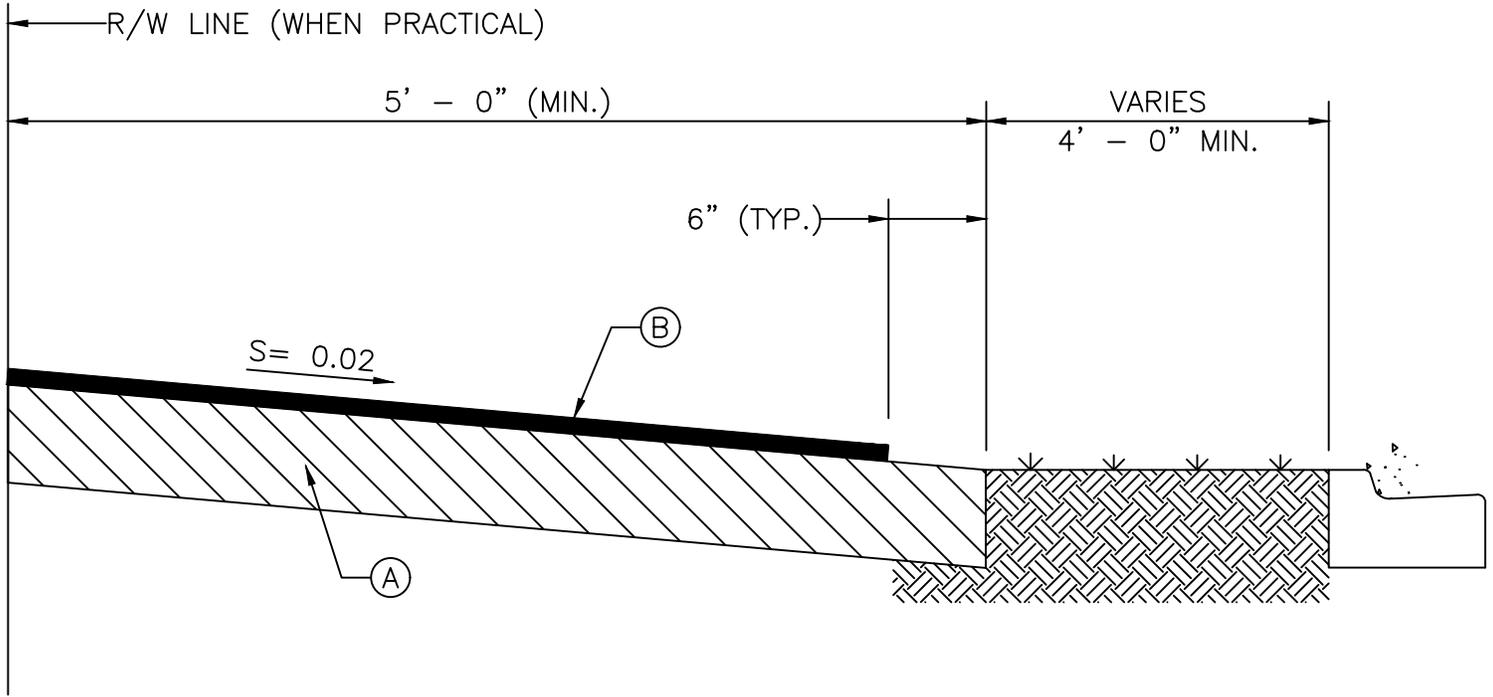


CITY OF LAUDERHILL  
 ENGINEERING DEPARTMENT  
 LAUDERHILL, FLORIDA

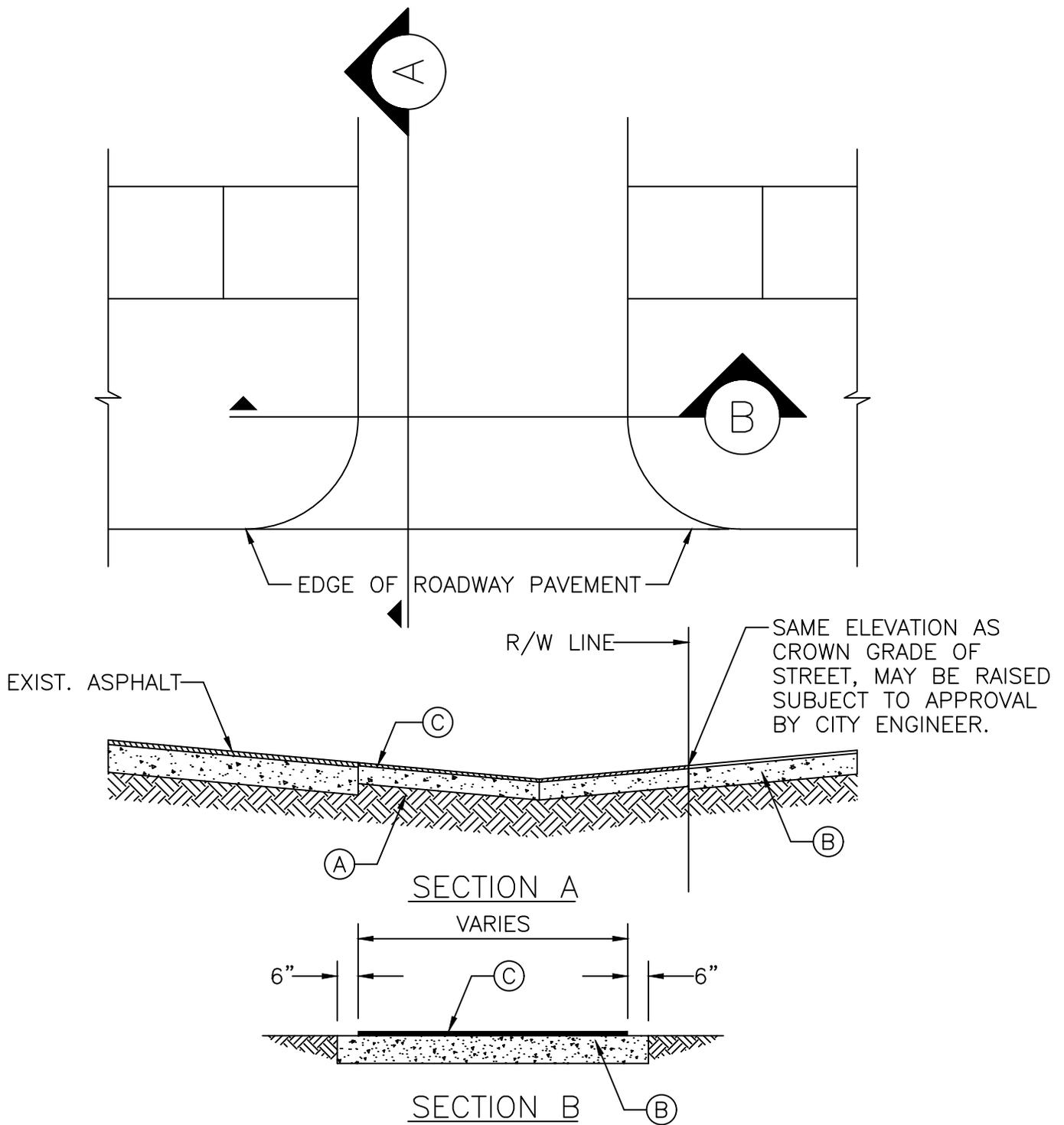
SCALE:  
 N.T.S.  
 REVISED:  
 SEPT. 18

STANDARD ROAD DETAIL  
 CUL-DE-SAC  
 50' RIGHT-OF-WAY

R-9

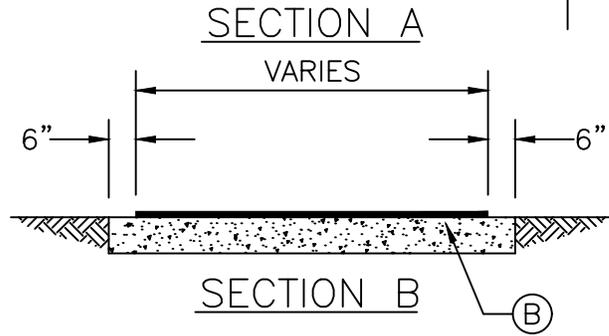
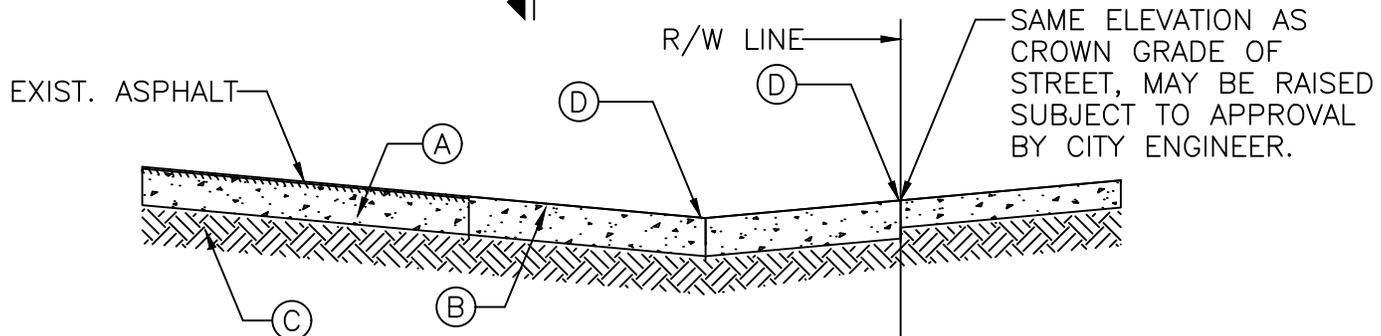
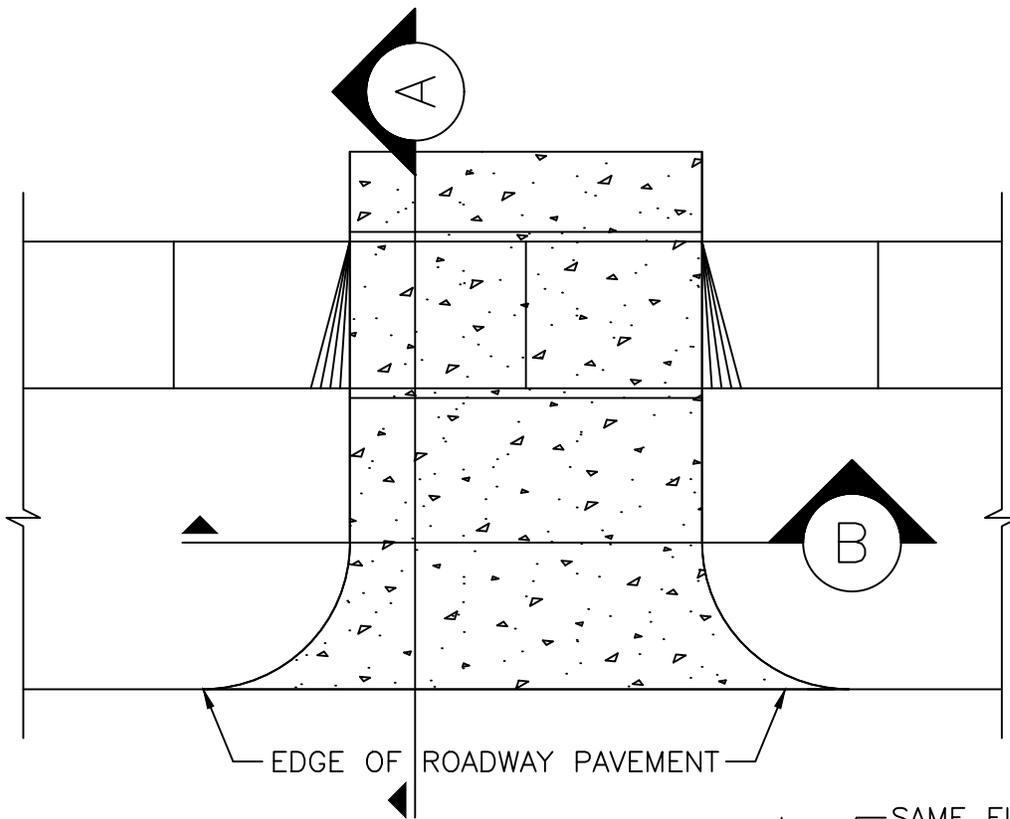


- (A) 6" COMPACTED LIMEROCK BASE COURSE (MIN LBR 100 PER AASHTO T-180)
- (B) 1.5" MIN. COMPACTED ASPHALTIC CONCRETE



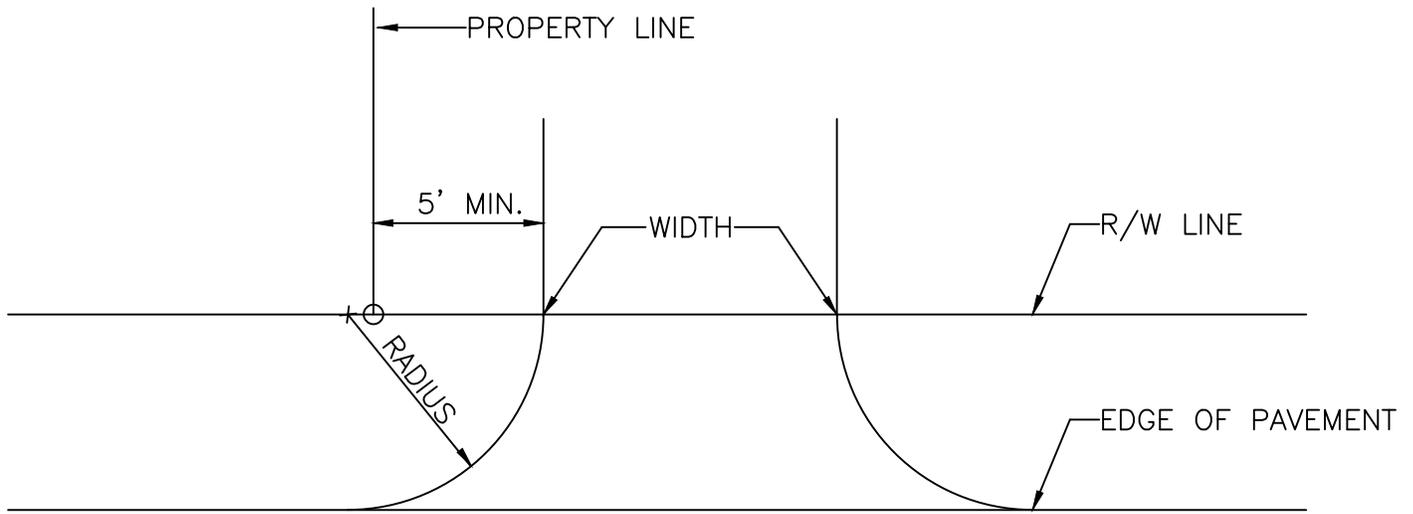
- (A) CLEAN AND COMPACT SUBGRADE.
- (B) BASE COURSE (8" THICK MIN.) (MIN LBR 100 PER AASHTO T-180)
- (C) ASPHALTIC CONCRETE SURFACE COURSE:  
 1" THICK MIN. COMPACTED (RESIDENTIAL)  
 1 1/2" THICK MIN. COMPACTED (COMMERCIAL & INDUSTRIAL)

NOTE: GRADING AND PREPARATION OF SUBGRADE SHALL BE APPROVED BY THE CITY ENGINEER PRIOR TO APPLICATION OF PAVING MATERIALS.



- (A) BASE COURSE (8" THICK MIN.) (MIN LBR 100 PER AASHTO T-180)
- (B) 6" MIN. 3,000 PSI CONCRETE REINFORCED WITH 6"x6" 10/10 WELDED WIRE MESH.
- (C) CLEAN AND COMPACT SUBGRADE
- (D) 1/2 " PREMOLDED EXPANSION JOINT

NOTE: ELEVATION, GRADING AND PREPARATION OF SUBGRADE AND PLACEMENT OF WIRE MESH SHALL BE APPROVED BY THE CITY ENGINEER PRIOR TO POURING CONCRETE.



OFF-STREET PARKING:

PARKING ACCESS AND DRIVEWAYS.

EACH PARKING STALL SHALL HAVE APPROPRIATE ACCESS TO A STREET OR ALLEY AND MANEUVERING AND ACCESS AISLE AREAS SHALL BE SUFFICIENT TO PERMIT VEHICLES TO ENTER AND LEAVE THE PARKING AREA IN A FORWARD MOTION, WITH THE EXCEPTION OF SINGLE FAMILY AND DUPLEX AREAS. DRIVEWAYS SHALL BE PAVED AND MEET THE REQUIREMENTS OUTLINED BELOW UNLESS VERY HIGH VOLUMES OR OTHER SPECIAL CIRCUMSTANCES WARRANT VARIATION BY THE OFFICE OF THE ENGINEER.

ACCESS DIMENSION GUIDELINES.

DIMENSION AT STREET

WIDTH (IN FEET) \*

MINIMUM (ONE-WAY)	15'	MINIMUM (TWO-WAY)	24'
RESIDENTIAL (ONE-WAY)	18'	COMMERCIAL (TWO-WAY)	24'
MAXIMUM	36'		

RIGHT TURN RADIUS (IN FEET) \*\*

MINIMUM	15' - (20' PREFERRED)
MAXIMUM	30'

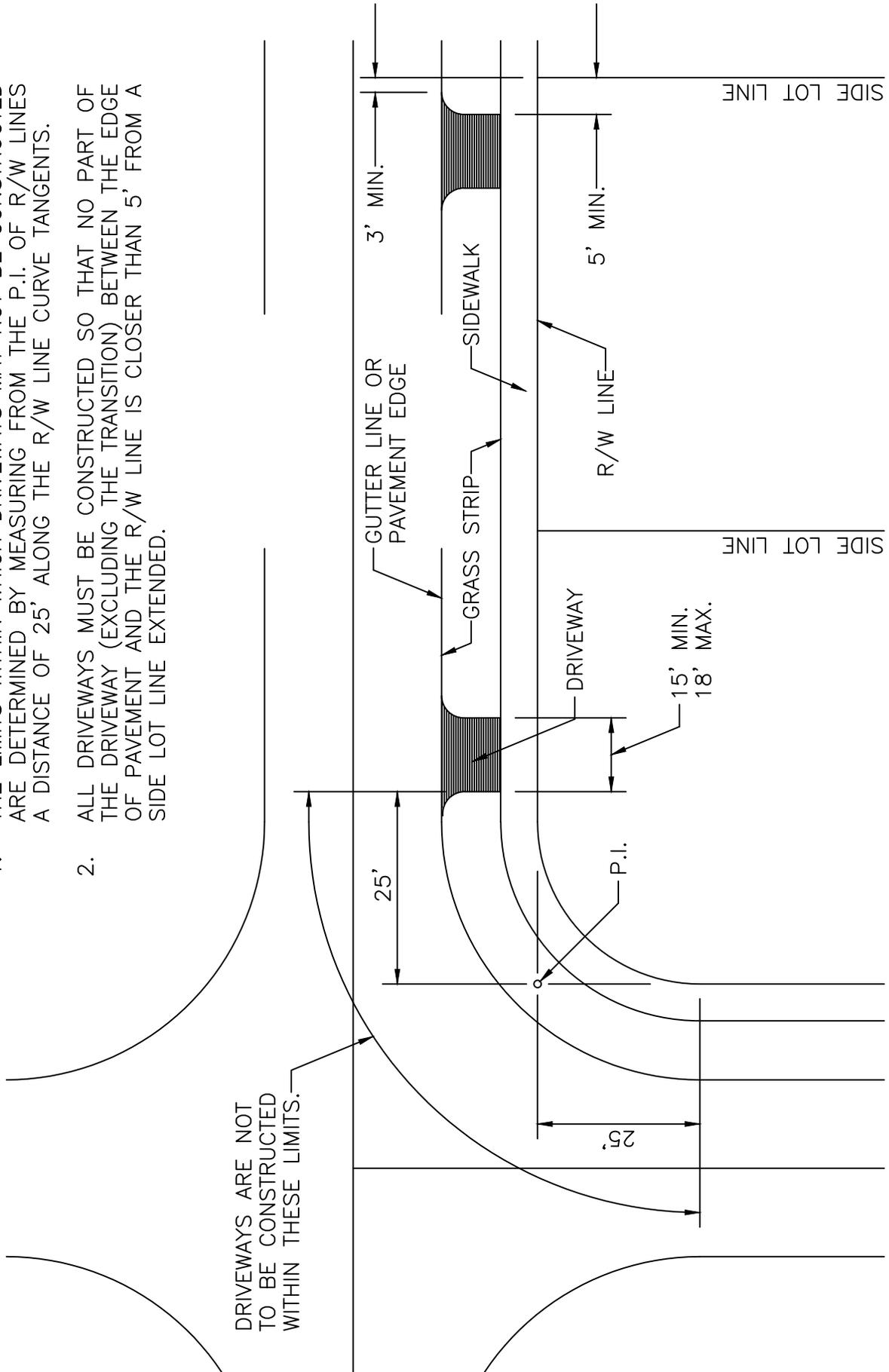
\* MEASURED ALONG RIGHT-OF-WAY LINE AT INNER LIMIT OF CURBED RADIUS SWEEP OR BETWEEN RADIUS AND NEAR EDGE OF CURBED ISLAND AT LEAST FIFTY (50) SQUARE FEET IN AREA. THE MINIMUM WIDTH APPLIES PRINCIPALLY TO ONE-WAY DRIVEWAYS.

\*\* ON SIDE OF DRIVEWAY EXPOSED TO ENTRY OR EXIT BY RIGHT TURNING VEHICLES.

NOTE: WHERE SWALES ARE PAVED OVER MORE THAN THIRTY (30) PERCENT OF LOT FRONTAGE OR EIGHTEEN (18) FEET, WHICHEVER IS GREATER, DRAINS ARE TO BE INSTALLED.

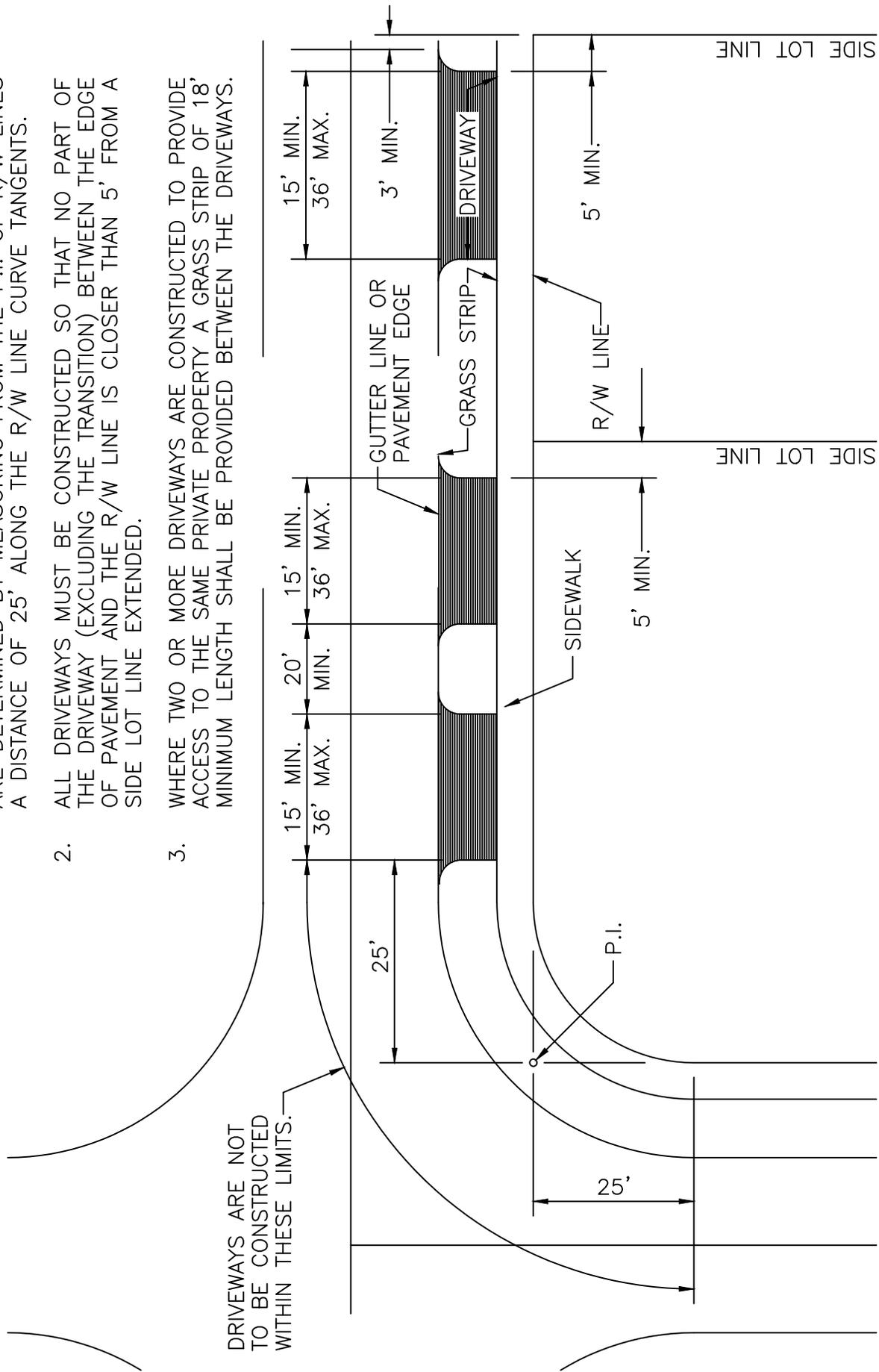
NOTES:

1. THE LIMITS WITHIN WHICH DRIVEWAYS MAY NOT BE CONSTRUCTED ARE DETERMINED BY MEASURING FROM THE P.I. OF R/W LINES A DISTANCE OF 25' ALONG THE R/W LINE CURVE TANGENTS.
2. ALL DRIVEWAYS MUST BE CONSTRUCTED SO THAT NO PART OF THE DRIVEWAY (EXCLUDING THE TRANSITION) BETWEEN THE EDGE OF PAVEMENT AND THE R/W LINE IS CLOSER THAN 5' FROM A SIDE LOT LINE EXTENDED.



NOTES:

1. THE LIMITS WITHIN WHICH DRIVEWAYS MAY NOT BE CONSTRUCTED ARE DETERMINED BY MEASURING FROM THE P.I. OF R/W LINES A DISTANCE OF 25' ALONG THE R/W LINE CURVE TANGENTS.
2. ALL DRIVEWAYS MUST BE CONSTRUCTED SO THAT NO PART OF THE DRIVEWAY (EXCLUDING THE TRANSITION) BETWEEN THE EDGE OF PAVEMENT AND THE R/W LINE IS CLOSER THAN 5' FROM A SIDE LOT LINE EXTENDED.
3. WHERE TWO OR MORE DRIVEWAYS ARE CONSTRUCTED TO PROVIDE ACCESS TO THE SAME PRIVATE PROPERTY A GRASS STRIP OF 18' MINIMUM LENGTH SHALL BE PROVIDED BETWEEN THE DRIVEWAYS.



DRIVEWAYS ARE NOT TO BE CONSTRUCTED WITHIN THESE LIMITS.

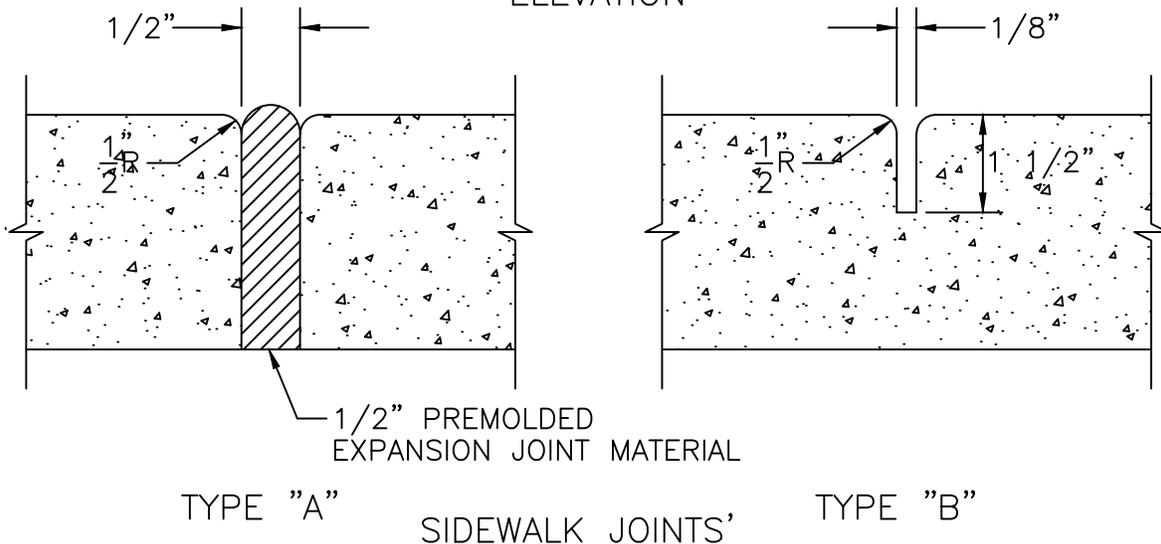
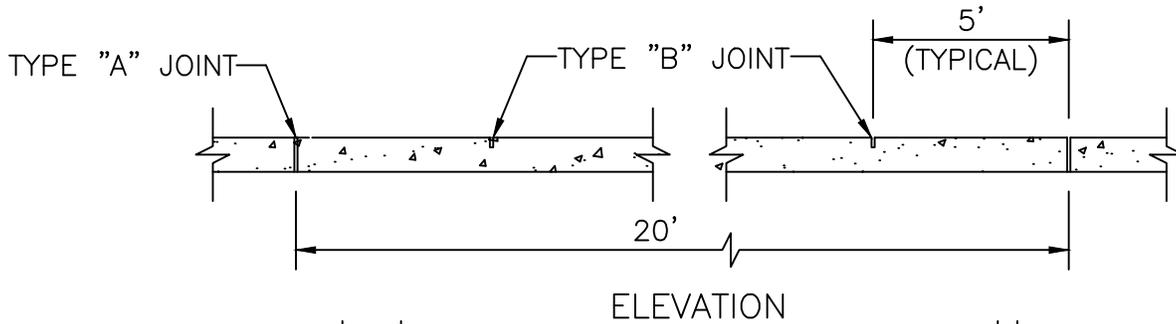
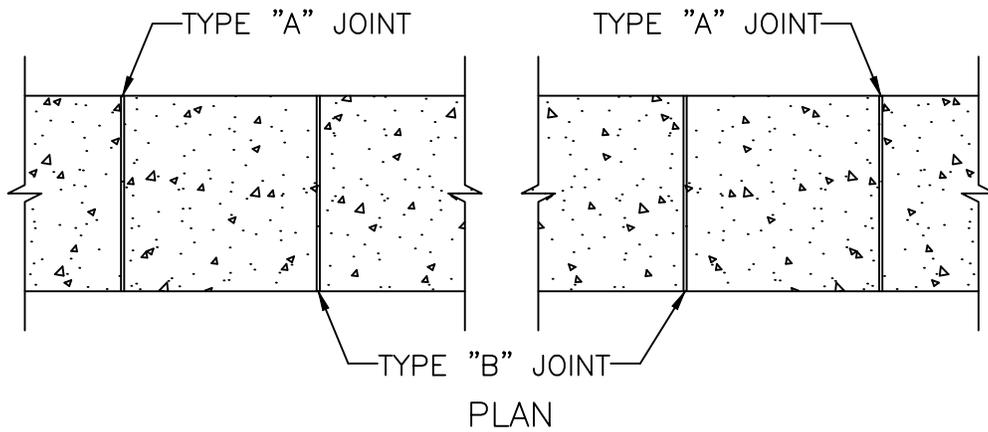
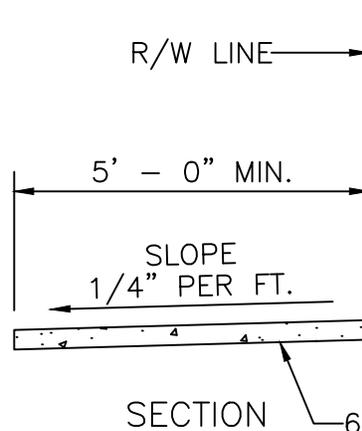
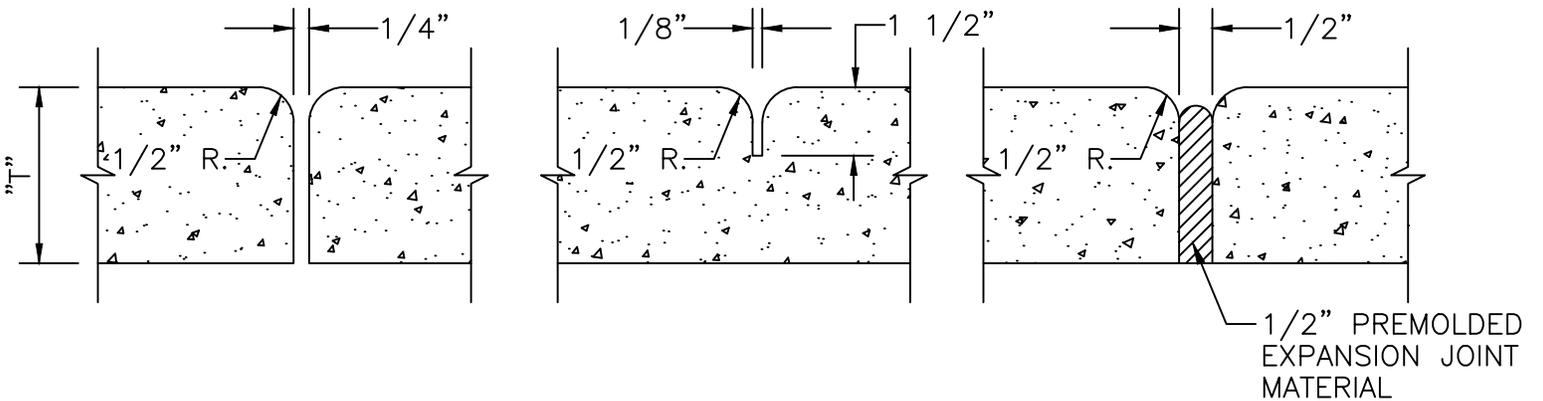
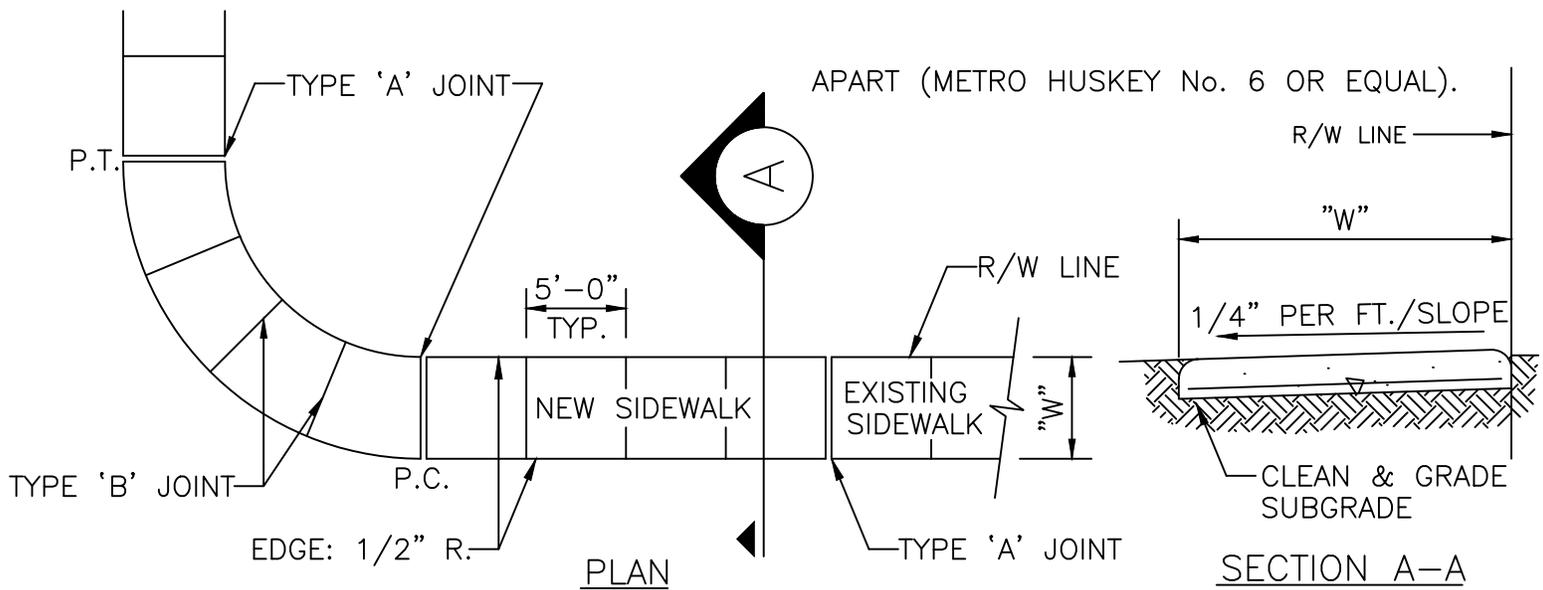


TABLE OF SIDEWALK JOINTS	
TYPE	LOCATION
"A"	P.C. AND P.T. OF CURVES.
"B"	5' CENTER TO CENTER ON SIDEWALKS.



NOTE:  
SIDEWALK SHALL BE 4" THICK (NO WIRE MESH) EXCEPT IN DRIVEWAYS WHERE THE THICKNESS SHALL BE 6" W/ WIRE MESH.

6" COMPACTED SUBGRADE COMPACTED TO 95% PER A.A.S.H.T.O. T-180.



TYPE 'A'  
(OPEN TYPE JOINTS)

TYPE 'B'  
(SAWED JOINTS)

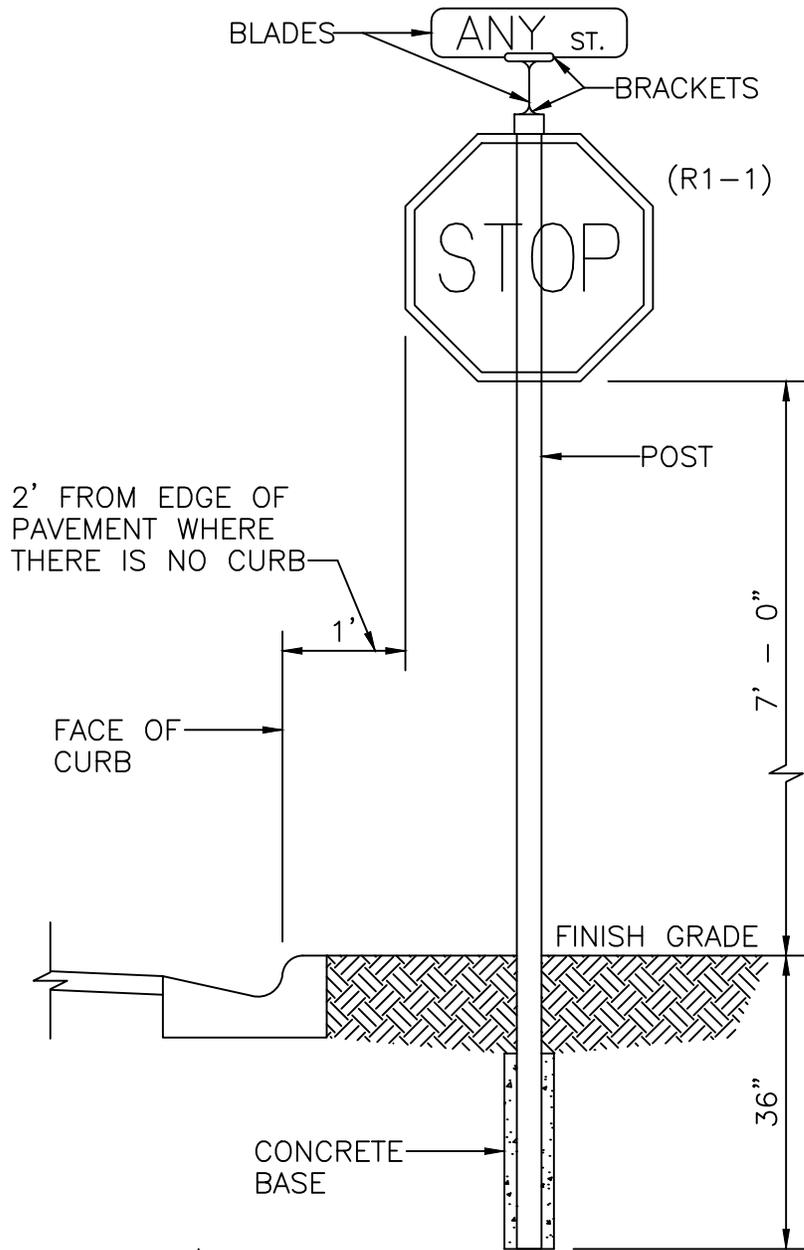
TYPE 'C'  
(EXPANSION JOINTS)

SIDEWALK JOINTS

TABLE OF SIDEWALK THICKNESS - "T"	
RESIDENTIAL AREAS	4"
AT DRIVEWAYS AND OTHER AREAS	6"
TABLE OF SIDEWALK WIDTHS - W	
SINGLE - FAMILY AREAS	5'
MULTI - FAMILY AREAS	5'
OTHER AREAS AS SPECIFIED BY THE CITY ENGINEER.	

TABLE OF SIDEWALK JOINTS	
TYPE	LOCATION
'A'	P.C. AND P.T. OF CURVES. JUNCTION OF EXISTING AND NEW SIDEWALKS.
'B'	5'-0" CENTER TO CENTER ON SIDEWALKS.
'C'	* WHERE SIDEWALK ABUTS CONCRETE CURBS, DRIVEWAYS, AND SIMILAR STRUCTURES.

\* AT THE DISCRETION OF THE ENGINEER.



**BLADE:**  
 ALCOA #86054,6063 - T6 ALLOY, ETCHED DEGREASED, DEBURRED, WITH #1200 ALODINE FINISH, 1.50" RADIUS CORNERS WITH #2277 GREEN SCOTCHLITE BACKGROUND OR EQUAL, DIMENSIONS - 6" HEIGHT, 24", 30", OR 36" LENGTHS (SEE DETAIL).

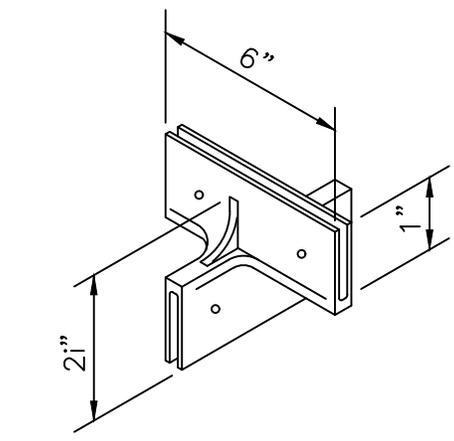
**LETTERS:**  
 NAME - 4" SERIES "B" #2270 SCOTCHLITE (SILVER) OR EQUAL, SUFFIX - 2" SERIES "B" #2277 SCOTCHLITE (SILVER) OR EQUAL

**BRACKETS:**  
 DIE CAST HIGH STRENGTH ALUMINUM ALLOY, MINIMUM TENSILE STRENGTH 45,000 P.S.I., DEGREASED, TUMBLED AND POLISHED, SIDES OF ALL SLOTS SHALL BE SOLID METAL WITH TWO HOLES PER SLOT (SAME SIDE) DRILLED TO 7/32" AND TAPPED TO 1/4" TO RECEIVE STAINLESS STEEL ALLEN-HEAD SET SCREWS, SKIRT OF POST CAP BRACKET TO BE DRILLED AND TAPPED FOR 3 SCREWS OF WHICH NO TWO IS TO BE LESS THAN 90° OR MORE THAN 135° APART (METRO HUSKEY No. 6 OR EQUAL).

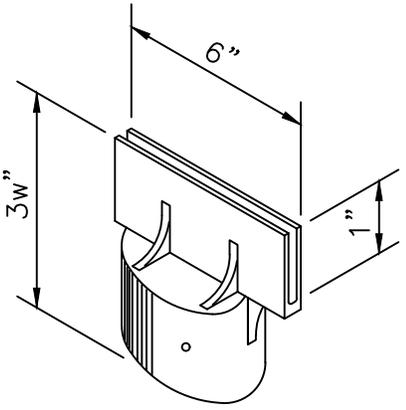
**POST:**  
 12", 3#/FT FLANGED U-CHANNEL TYPE

**CONCRETE BASE:**  
 2,000 P.S.I. AS SHOWN.

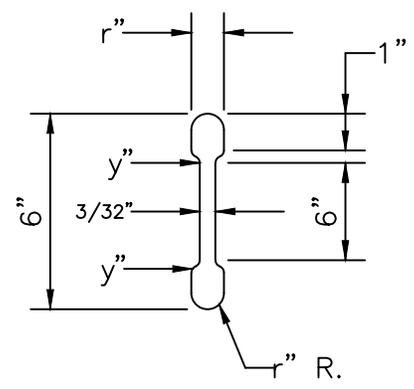
**LOCATION:**  
 ONE PER INTERSECTION.



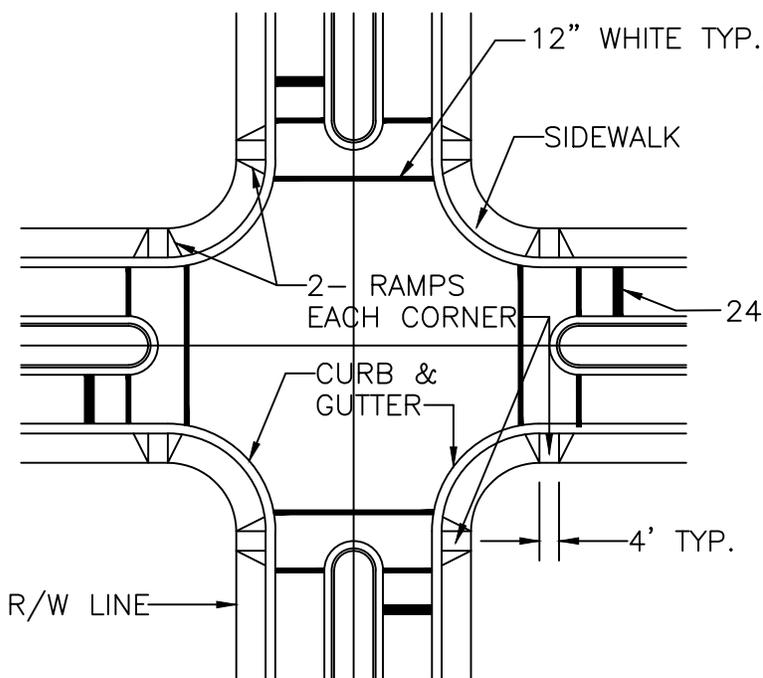
90° CROSS BRACKET FOR EXTRUDED BLADES



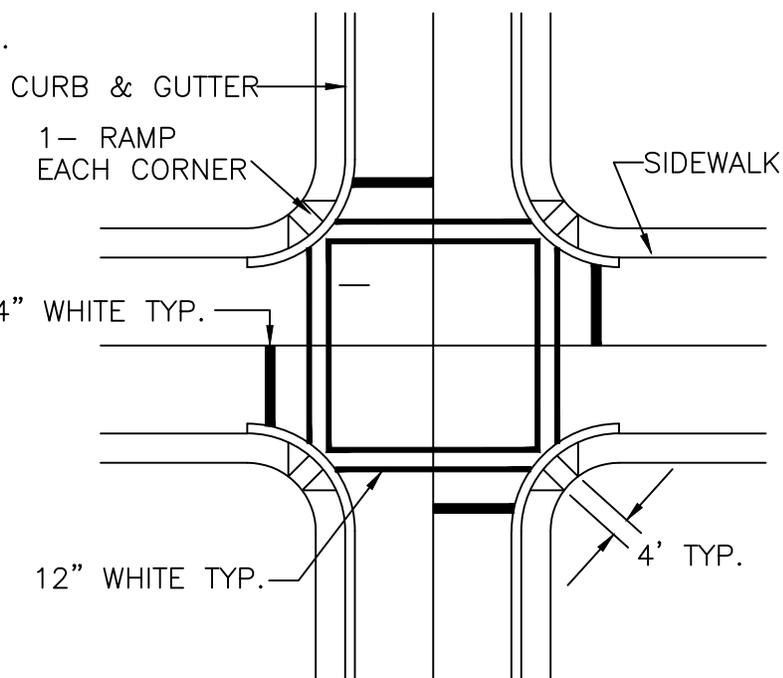
POST CAP BRACKET FOR EXTRUDED BLADES



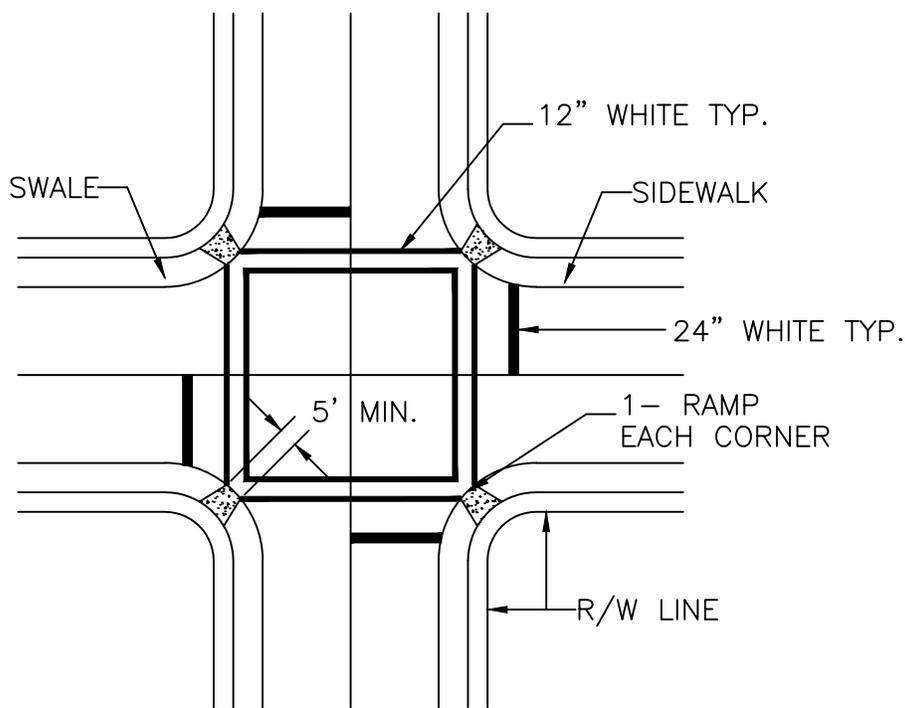
EXTRUDED BLADE SECTION



2 MAJOR ROADS  
(CURB & GUTTER)



LOCAL ROADS OR ENTRANCE  
TO MAJOR SHOPPING CENTER  
(CURB & GUTTER)



(RESIDENTIAL ROADS)

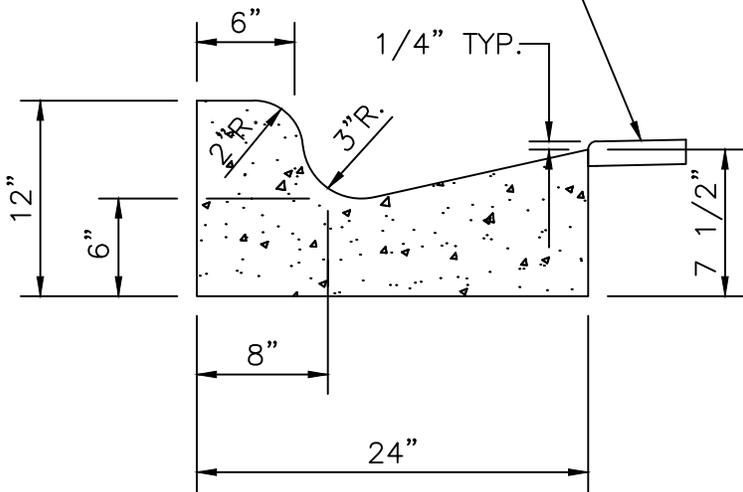
2 MAJOR ROADS, LOCAL & MAJOR  
ROADS & 2 LOCAL ROADS  
(SWALE) \*\*

\*\* ALTERNATE ASPHALT CONCRETE SIDEWALK RAMP (SAME THICKNESS) MAY BE USED AS APPROVED BY CITY ENGINEER.

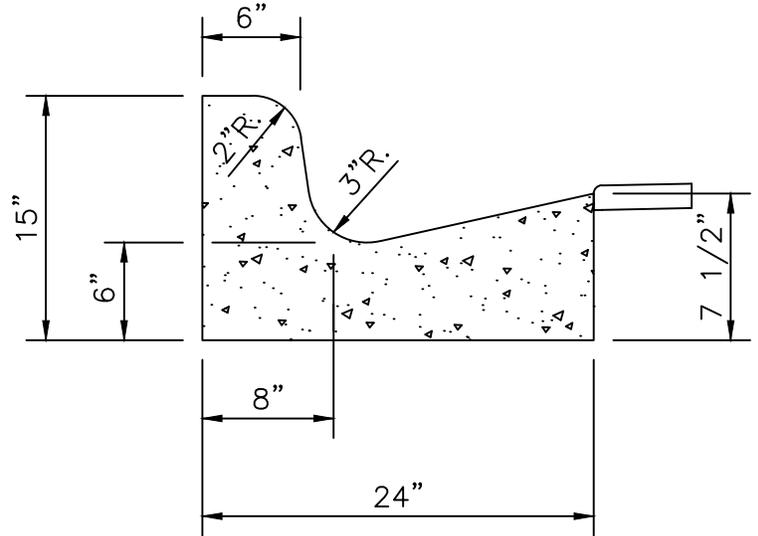
NOTES:

1. MAX. SLOPE OF RAMPS TO BE 12:1.
2. RAMPS MAY BE 4" THICK IN RESIDENTIAL AREAS.
3. STOP BARS MUST BE PLACED 4' FROM ALL CROSSWALKS

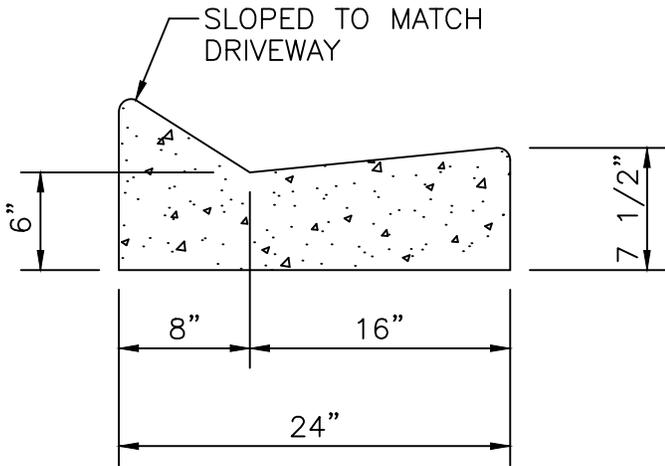
PAVEMENT 1/4" HIGHER  
WHERE PAVEMENT MEETS CURB



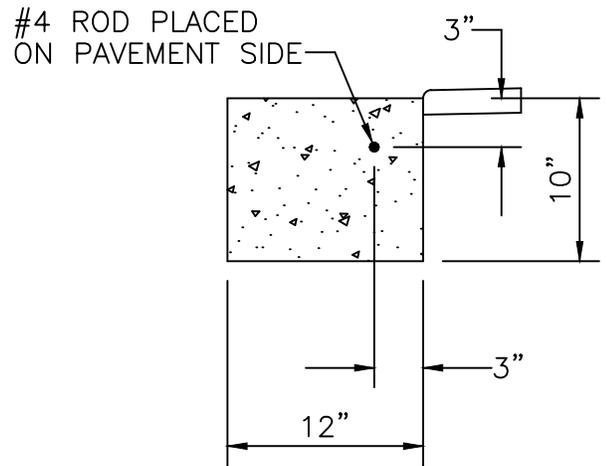
6" CURB & GUTTER



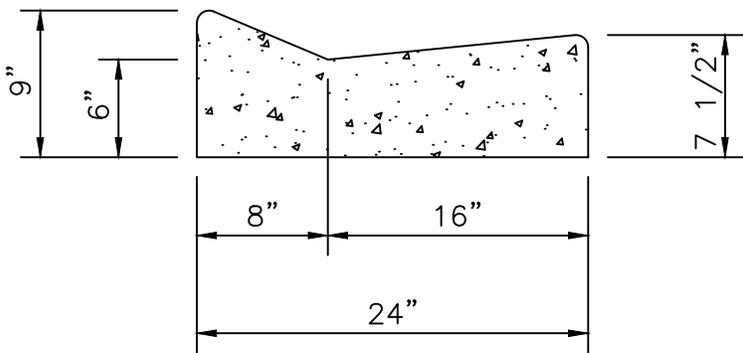
9" CURB & GUTTER



DRIVEWAY CURB



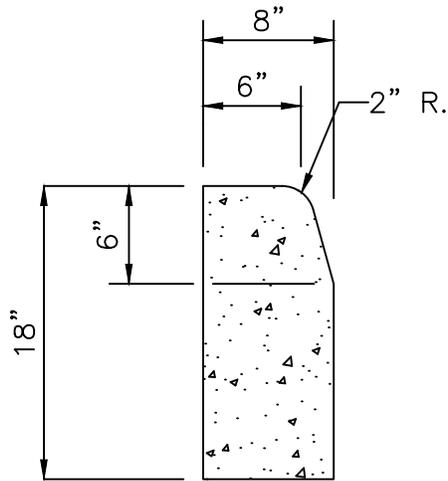
FLUSH HEADER CURB



MOUNTABLE GUTTER

NOTE:

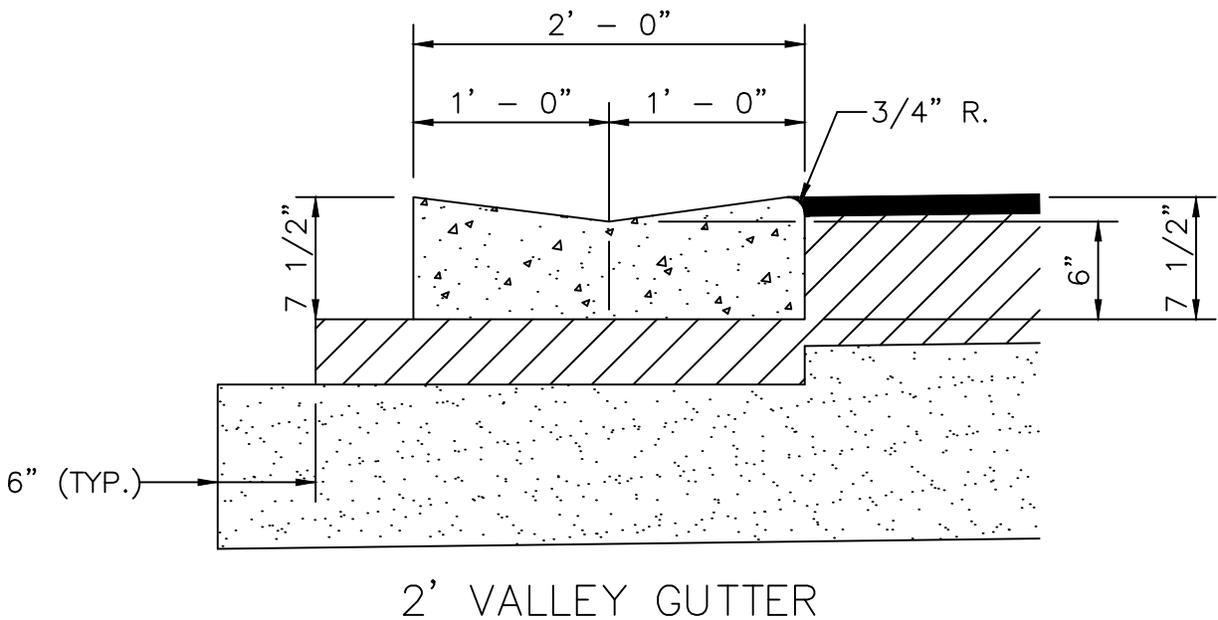
8" THICK BASE WILL  
EXTEND BELOW ALL CURBS



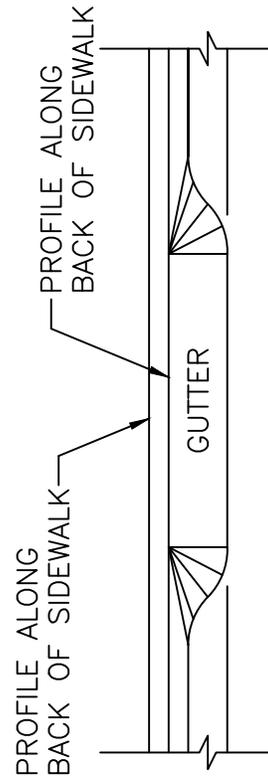
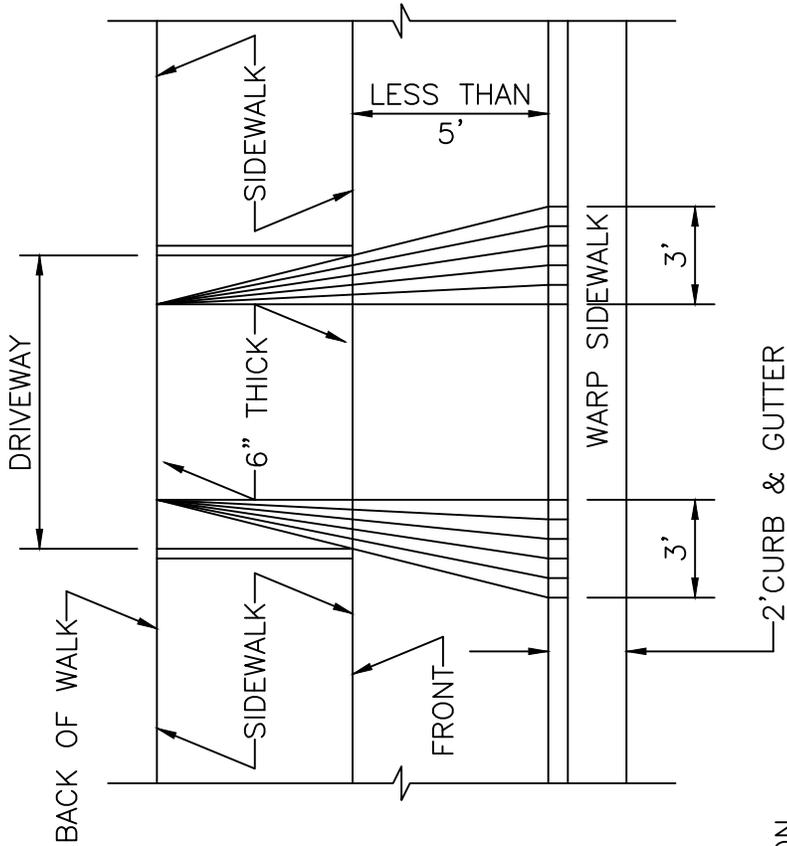
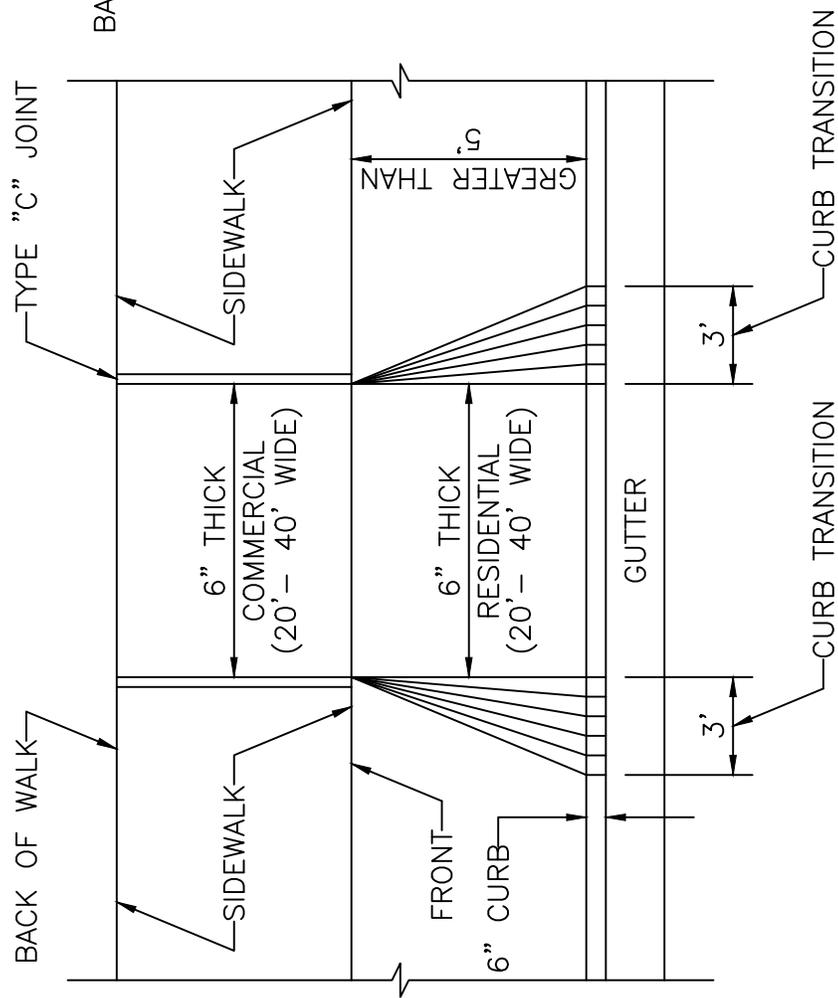
NOTE:

8" THICK BASE WILL  
EXTEND BELOW ALL CURBS

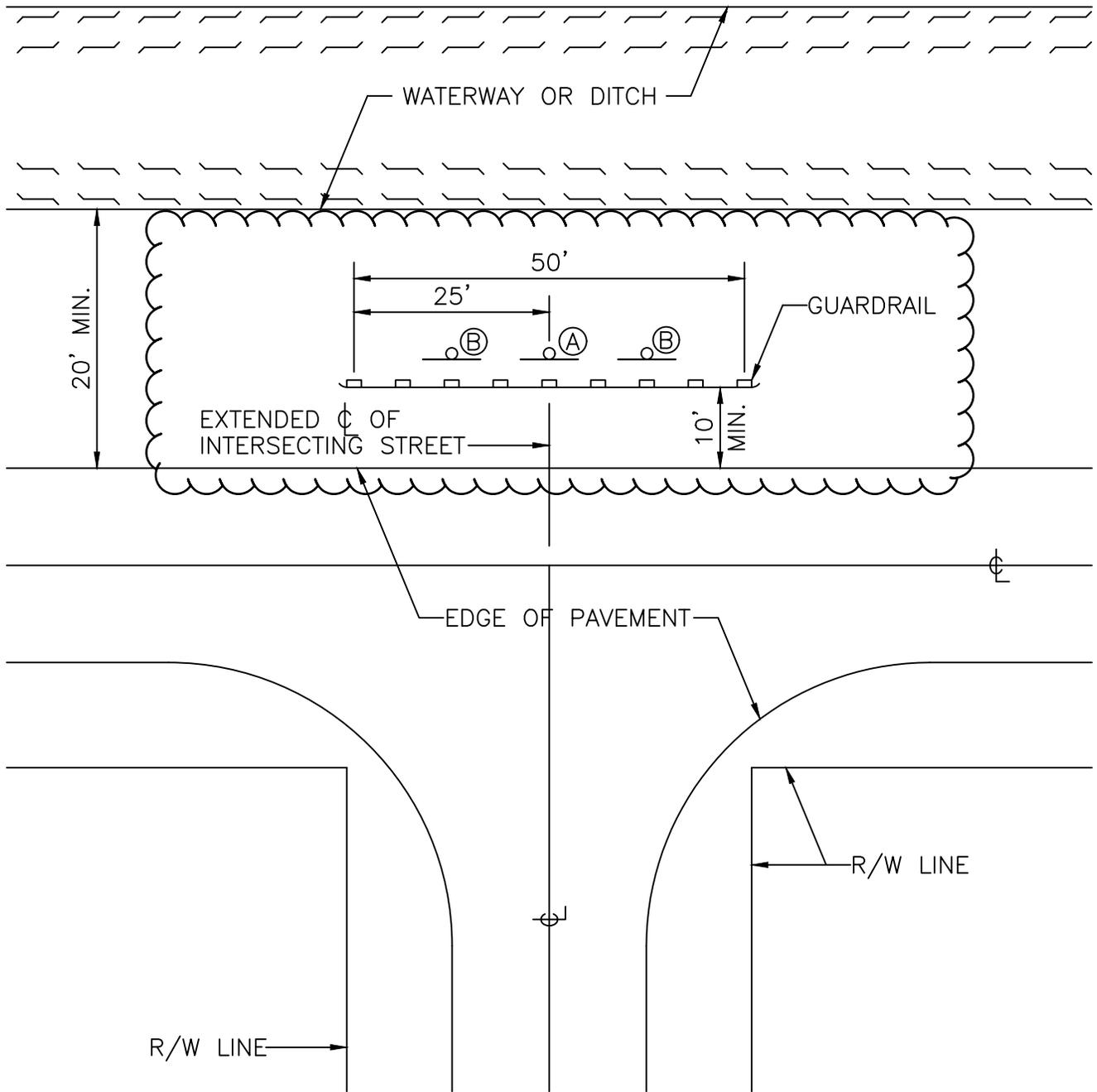
TYPE "D" CONCRETE CURB



2' VALLEY GUTTER



NOTE: CIRCULAR CURVES MAY BE REQUIRED IN LIEU OF ABOVE F.D.O.T. METHODS. COMMERCIAL 10' - 30' RADIUS. RESIDENTIAL 10' - 20' RADIUS.



PLAN

NOTES:

1. GUARDRAIL MINIMUM LENGTH INSTALLATION SHALL BE 50'.
2. GUARDRAIL INSTALLATION SHALL BE PARALLEL WITH EDGE OF PAVEMENT.
3. GUARDRAIL SHALL BE PER F.D.O.T. STANDARDS (REFER TO INDEX 400).

(A). W1-7\*  
 (B). OM4-1\*  
 \*PER MUTCD STANDARDS

## "PROCEDURE FOR RESTORATION OF FLEXIBLE PAVEMENT"

THE PROCEDURE FOR BACKFILL AND PAVEMENT RESTORATION SHALL BE AS FOLLOWS:

"DENSITY TEST OF COMPACTED FILL, BACKFILL AND/OR BASE SHALL BE TAKEN AT EACH LIFT. PRIOR TO PLACEMENT OF THE SUCCEEDING LIFT OF MATERIAL, DENSITY TESTS SHALL BE TAKEN AT EACH 6" LIFT FOR BASE ROCK AND EACH 8" LIFT FOR COMPACTED FILL OR BACKFILL, ACCORDING TO THE FOLLOWING SCHEDULE".

1. FOR ANY ROAD CROSSING IN WHICH THE ROAD IS CUT AND RESTORED ONE LANE AT A TIME, ONE DENSITY TEST SHALL BE TAKEN IN EACH LANE AT EACH LIFT.
2. FOR ANY ROAD CROSSING IN WHICH THE ROAD IS CUT AND RESTORED TWO LANES AT A TIME, DENSITIES SHALL BE TESTED IN ONE LANE PER LIFT, ALTERNATING LANES WITH EACH LIFT.
3. FOR ANY ROAD CROSSING IN WHICH THE ROAD IS CUT AND RESTORED THREE LANES AT A TIME, DENSITIES SHALL BE TESTED IN TWO LOCATIONS PER LIFT, STAGGERING LOCATIONS WITH EACH SUCCESSIVE LIFT.
4. CUTS ACROSS ROADS SHALL NOT BE LEFT OPEN OVER-NIGHT UNLESS ABSOLUTELY NECESSARY. TRENCHES SHALL BE BACKFILLED AND A TEMPORARY ASPHALT APPLIED TO MAKE A SMOOTH LEVEL PATCH. THE TRENCHES SHALL THEN BE EXCAVATED THE NEXT DAY AND PERMANENT BACKFILL AND PAVEMENT INSTALLED IN ACCORDANCE WITH THESE STANDARDS. THE ONLY EXCEPTIONS WILL BE IN CASES WHERE THE FACILITY INSTALLED MUST BE TESTED BEFORE THE ROADS ARE RESTORED. IN THESE CASES, THE PERMANENT RESTORATION MUST BE PERFORMED ON THE DAY OF TESTING OR THE NEXT DAY.
5. IN CASES WHERE THE INSTALLATION PARALLELS THE ROADWAY AND DAMAGES THE PAVEMENT, THE DENSITY TESTS SHALL BE MADE EVERY 100 L.F. AT EACH LIFT, WITH TEST LOCATIONS STAGGERED 25' EACH LIFT.
6. ROADWAY BASE MATERIAL SHALL BE COMPACTED TO A MINIMUM OF 98% OF MAXIMUM DRY DENSITY, AS DETERMINED BY A.A.S.H.T.O. T-180 (MODIFIED PROCTOR TEST). SUBGRADE MATERIAL UNDER PAVED AREAS SHALL BE COMPACTED TO A MINIMUM OF 95% OF MAXIMUM DRY DENSITY. SHOULDER AREAS AND SWALE AREAS BEYOND SHOULDERS SHALL BE COMPACTED TO A MINIMUM OF 98% OF MAXIMUM DRY DENSITY, ALL AS DETERMINED BY A.A.S.H.T.O. T-180-C (STANDARD PROCTOR TEST).
7. RESTORATION OF STRIPING, SIGNING AND SIGNALIZATION DEVICES SHALL BE ACCOMPLISHED IMMEDIATELY AFTER PAVEMENT RESTORATION IS COMPLETED.

A COPY OF ALL PROCTOR AND FIELD DENSITY TESTS SHALL BE FURNISHED TO THE ENGINEERING DIVISION UPON REQUEST.

NOTE: THE ABOVE LISTED REPRESENTS THE MINIMUM PROCEDURE. THE INSPECTOR MAY REQUIRE ADDITIONAL TESTING IF, IN HIS/HER OPINION, CONDITIONS OR PRIOR TEST RESULTS WARRANT THEM.

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SCALE:

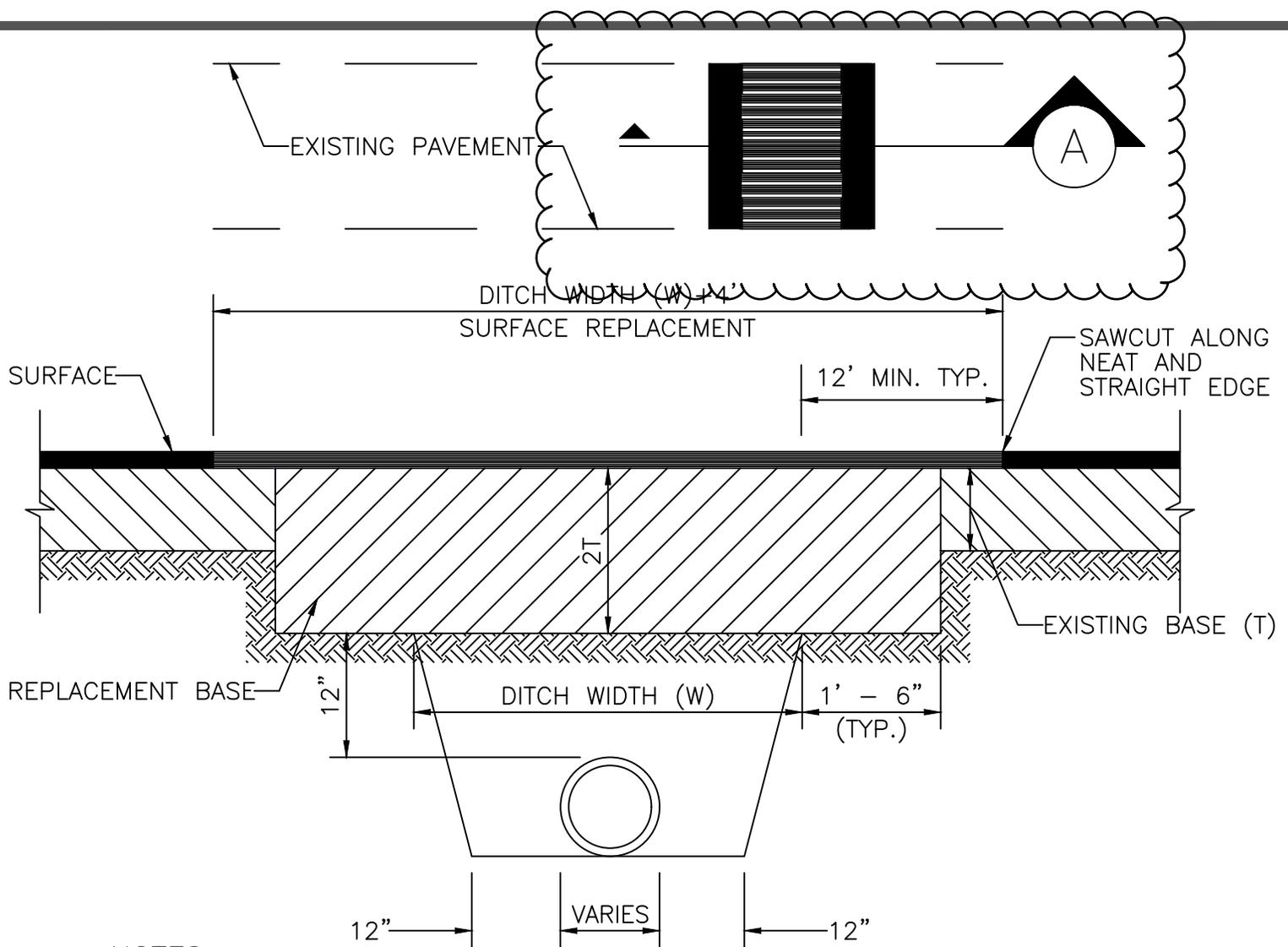
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STANDARD ROAD DETAIL  
JOINT DETAILS &  
TYPICAL CONSTRUCTION

R-24



NOTES:

1. REPLACED BASE MATERIAL OVER DITCH SHALL BE TWICE THE THICKNESS OF THE ORIGINAL BASE. MINIMUM 8", MAXIMUM 18".
2. BASE MATERIAL SHALL BE PLACED IN 6" MAXIMUM (LOOSE MEASUREMENT) LAYERS AND EACH LAYER THOROUGHLY ROLLED OR TAMPED TO 98% OF MAXIMUM DENSITY, PER AASHTO T-180.
3. ASPHALT CONCRETE PAVEMENT JOINTS SHALL BE MECHANICALLY SAWED.
4. SURFACED TREATED PAVEMENT JOINTS SHALL BE LAPPED AND FEATHERED.
5. SURFACE MATERIAL WILL BE CONSISTENT WITH THE EXISTING SURFACE.
6. BASE MATERIAL SHALL HAVE A MINIMUM LBR. OF 100 AND A MINIMUM CARBONATE CONTENT OF 70% (60% FOR LOCAL STREETS).
7. IF THE DITCH IS FILLED TEMPORARILY IT SHALL BE COVERED WITH A 2" ASPHALTIC CONCRETE PATCH TO KEEP THE FILL MATERIAL FROM RAVELING UNTIL PLACED WITH A PERMANENT PATCH.
8. BACKFILL SHALL BE IN ACCORDANCE WITH DETAIL R-24, EXCEPT AS SHOWN ABOVE.

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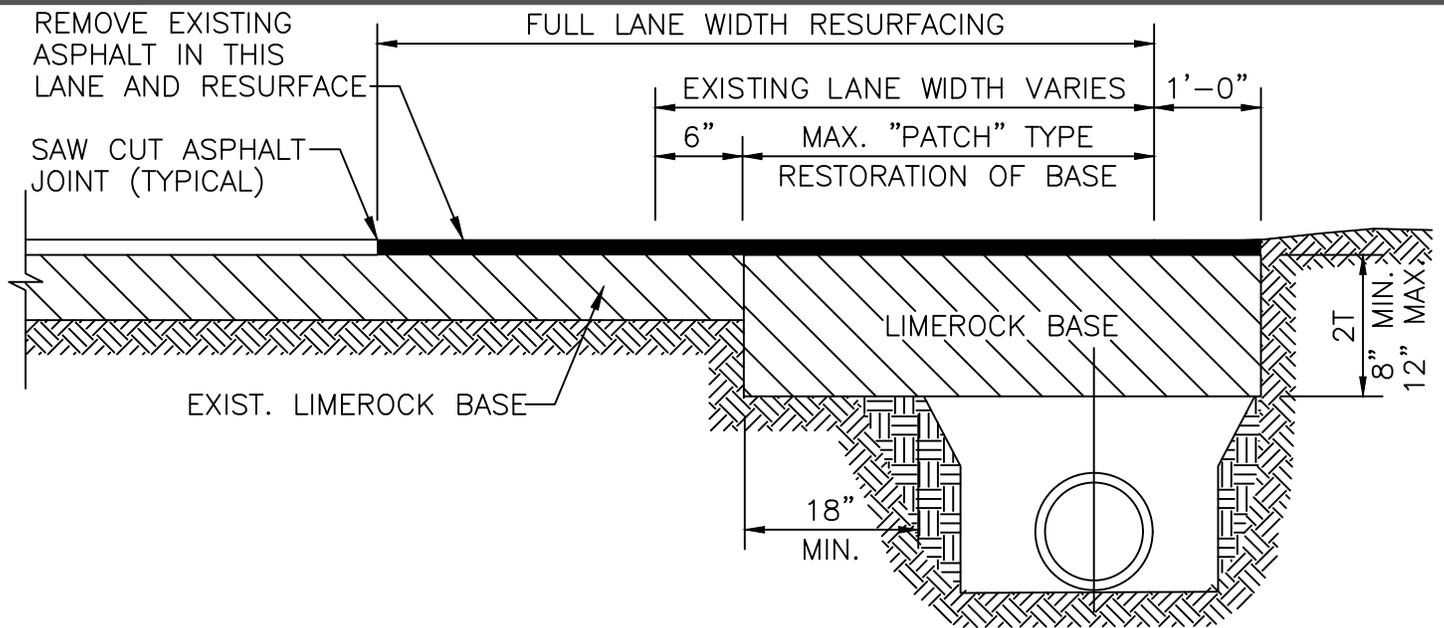
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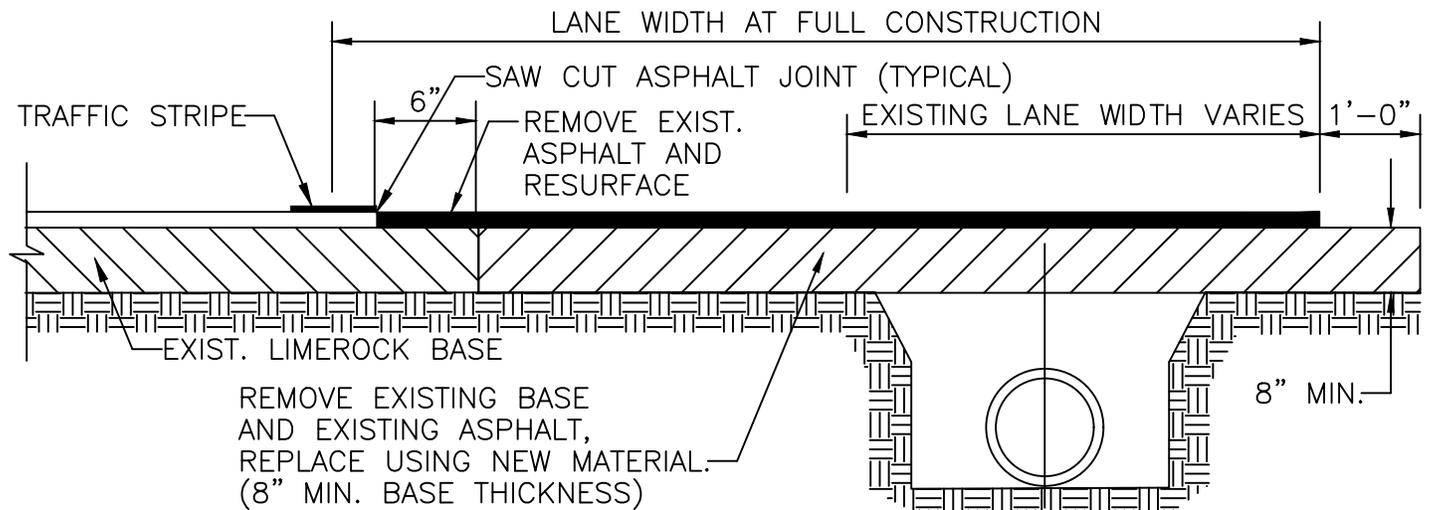
SEPT. 18

STANDARD ROAD DETAIL  
PAVEMENT RESTORATION  
PERPENDICULAR  
UTILITY INSTALLATION

R-25



TYPICAL RESTORATION OF LESS THAN EXISTING LANE OF ROCK BASE



TYPICAL RESTORATION OF EXISTING LANE OR MORE OF ROCK BASE

NOTES:

1. BASE MATERIAL SHALL HAVE A MINIMUM LBR OF 100 AND A MINIMUM CARBONATE CONTENT OF 70% (60% FOR LOCAL STREETS).
2. BASE SHALL BE PLACED IN 6" MAXIMUM THICK LAYERS WITH EACH LAYER COMPACTED TO 95% DENSITY PER A.A.S.H.T.O. T-180 AND TESTED PRIOR TO PLACEMENT OF SUCCEEDING LAYERS.
3. SUBGRADE MATERIAL SHALL BE GRANULAR AND ANGULAR AND SHALL HAVE A MINIMUM LBR. OF 40 AND COMPACTED TO 95% DENSITY PER A.A.S.H.T.O. T-180.
4. BACKFILL SHALL BE PLACED AND COMPACTED IN 12" LAYERS; TESTING WILL BEGIN 12" ABOVE THE INSTALLED FACILITY.
5. ALL EDGES OF EXISTING ASPHALT PAVEMENT WHERE RESURFACING WILL ABUT SHALL BE SAWCUT IN STRAIGHT LINES PARALLEL TO OR PERPENDICULAR TO THE ROADWAY, PRIOR TO RESURFACING.
6. RESURFACING MATERIAL SHALL BE CONSISTENT WITH EXISTING SURFACE, AND SHALL BE APPLIED A MINIMUM OF ONE INCH AND A MAXIMUM OF TWO INCHES IN THICKNESS.

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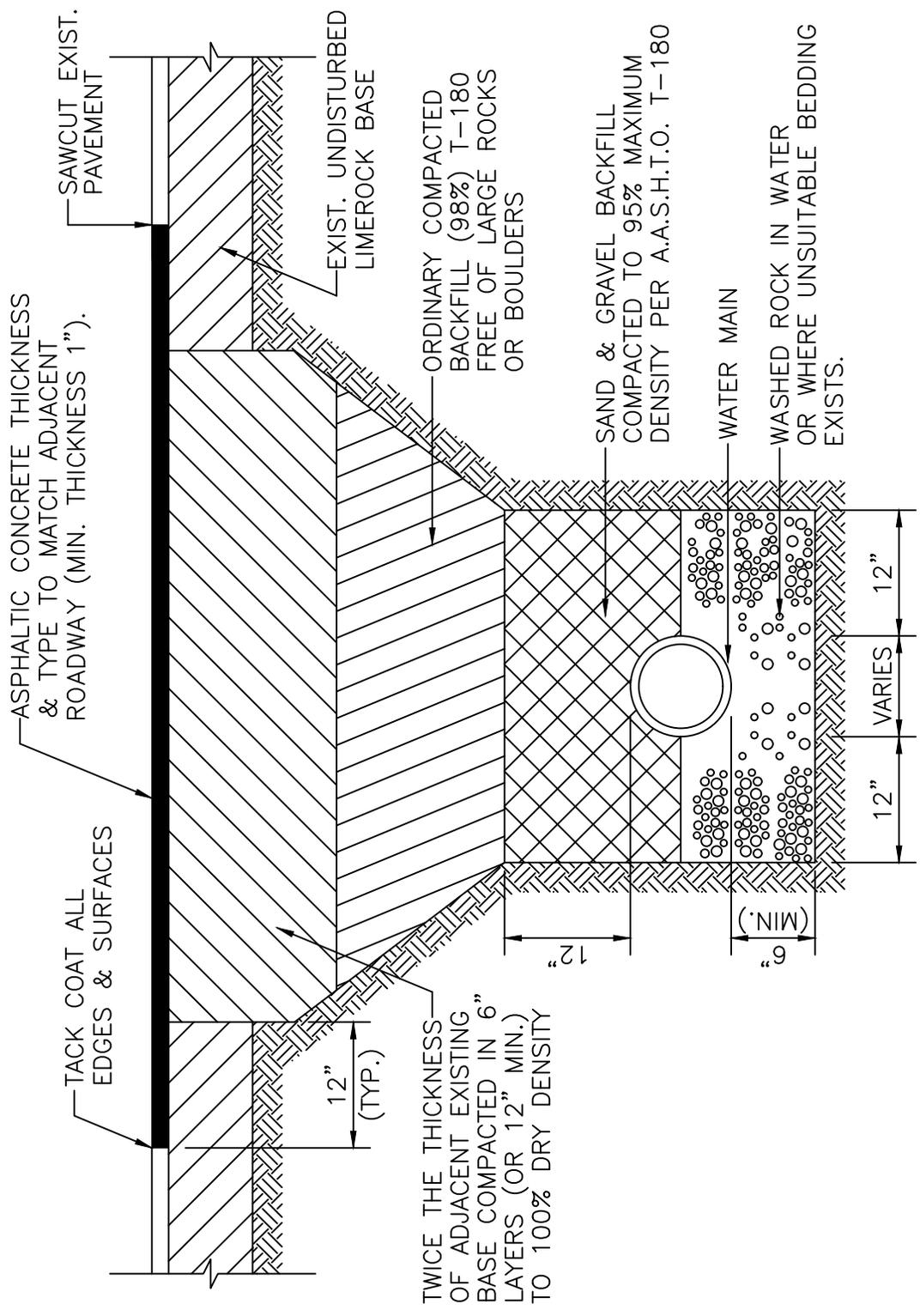
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STANDARD ROAD DETAIL  
PAVEMENT RESTORATION  
LONGITUDINAL

R-26

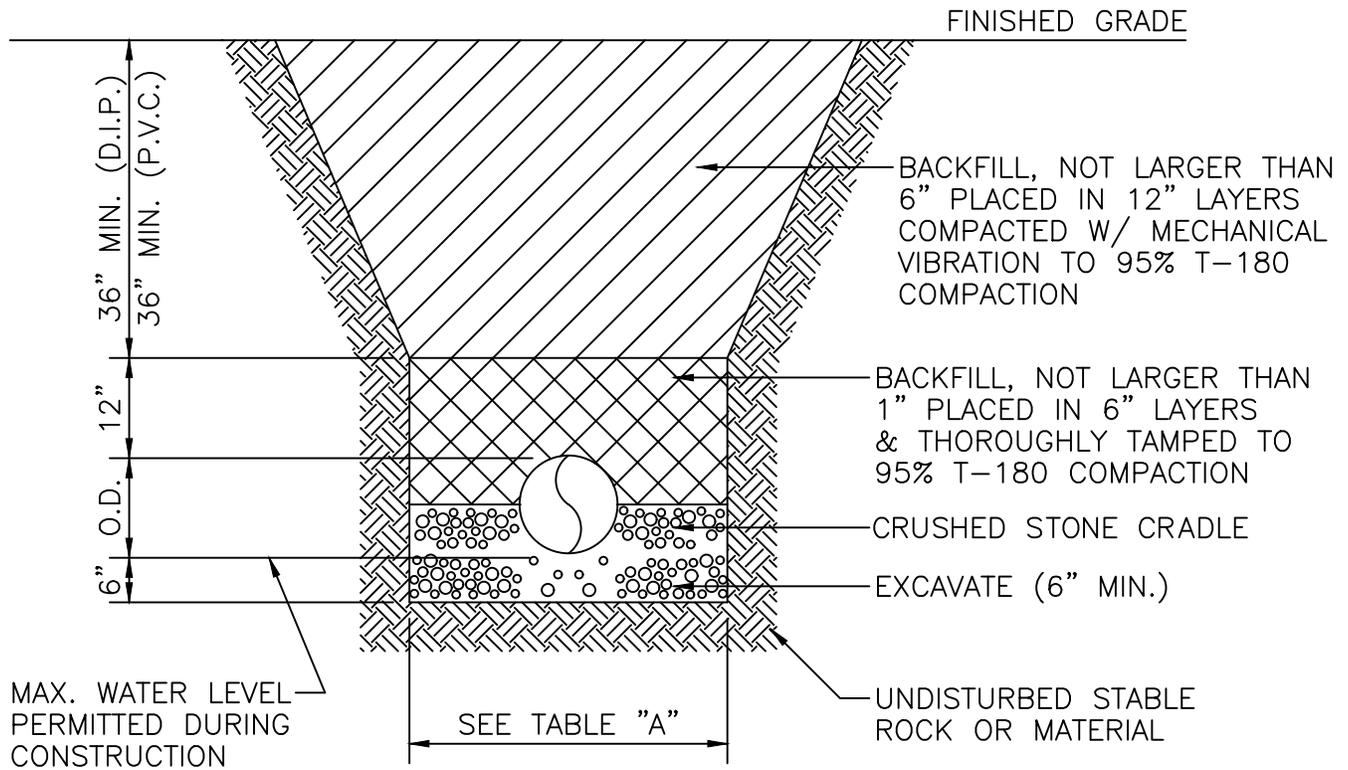


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STANDARD ROAD DETAIL  
 PAVEMENT RESTORATION  
 LOCAL ROADS—WATER MAIN

R-27



NOTE:

1. MAXIMUM DENSITY AS DETERMINED BY A.A.S.H.T.O.
2. MAXIMUM DEPTH TO BOTTOM OF PRESSURE MAINS SHALL NOT EXCEED SIX (6) FEET UNLESS OTHERWISE APPROVED BY THE CITY OF LAUDERHILL UTILITY DEPARTMENT.

TABLE "A"		
PIPE SIZE	DEPTH OF BACKFILL AT WHICH TRENCH WIDTH IS TO BE LIMITED	MAXIMUM TRENCH WIDTH
6"	15"	2'-6"
8"	15"	3'-0"
10"	12"	3'-0"
12"	12"	3'-3"
15"	12"	3'-6"
18"	12"	3'-9"
24"	12"	4'-3"
30"	12"	4'-9"

DIMENSIONS SHOWN APPLY TO ALL FOUNDATIONS

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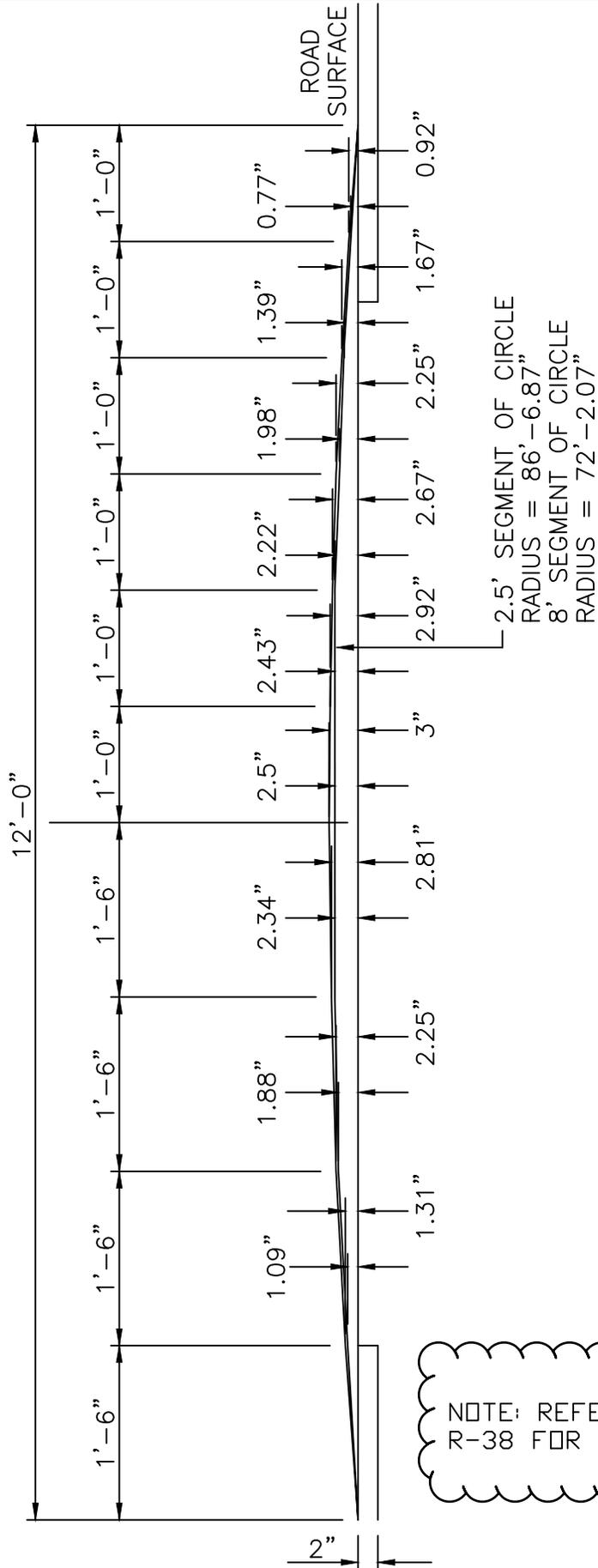
STANDARD ROAD DETAIL

TRENCH DETAIL

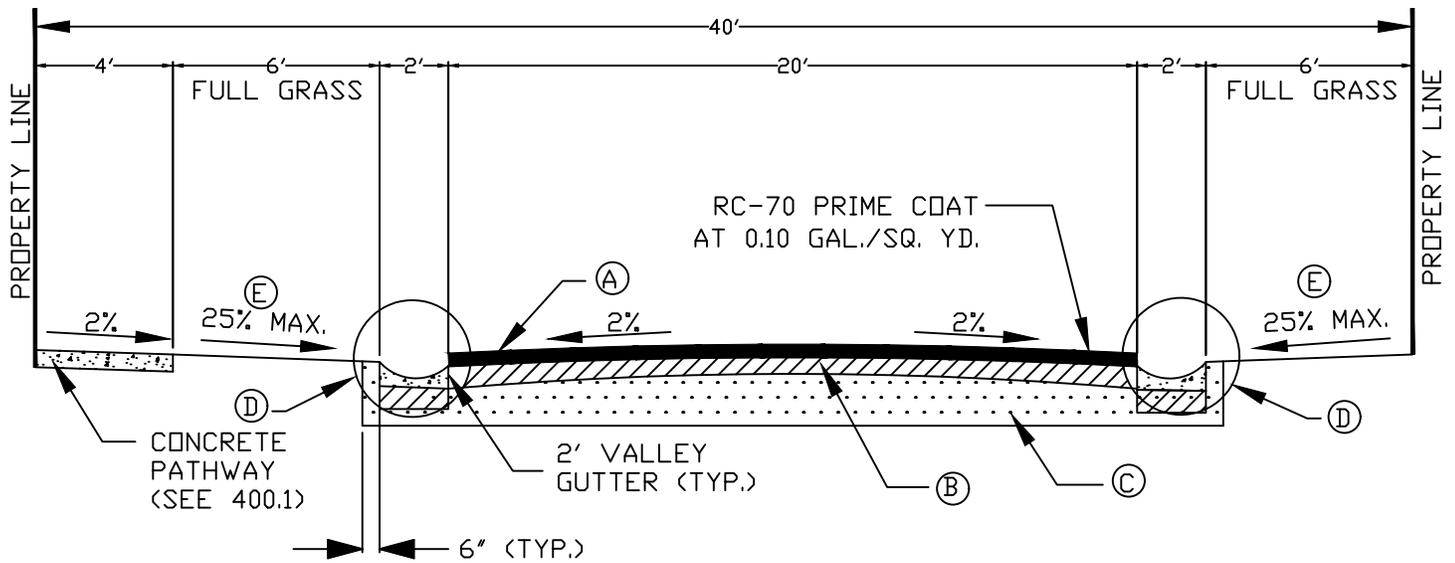
UNPAVED AREAS

R-28

DIRECTION OF TRAFFIC



NOTE: REFER TO DETAIL R-38 FOR TOP VIEW.



- Ⓐ WEARING SURFACE: SEE DETAIL R-31
- Ⓑ BASE: SEE DETAIL R-31
- Ⓒ SUBGRADE: SEE DETAIL R-31
- Ⓓ PAVEMENT EDGE: SEE DETAIL R-21
- Ⓔ NOT TO EXCEED 10% IN LOT ACCESS & DRIVEWAY AREAS.

NOTE: THIS SECTION TO BE USED FOR PRIVATE STREETS ONLY.

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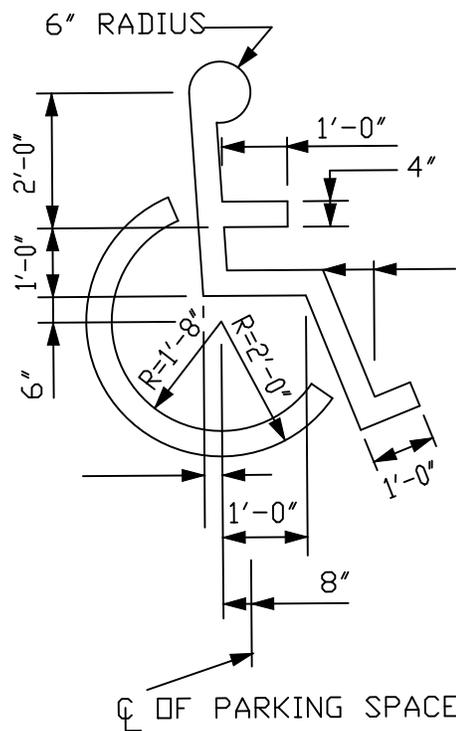
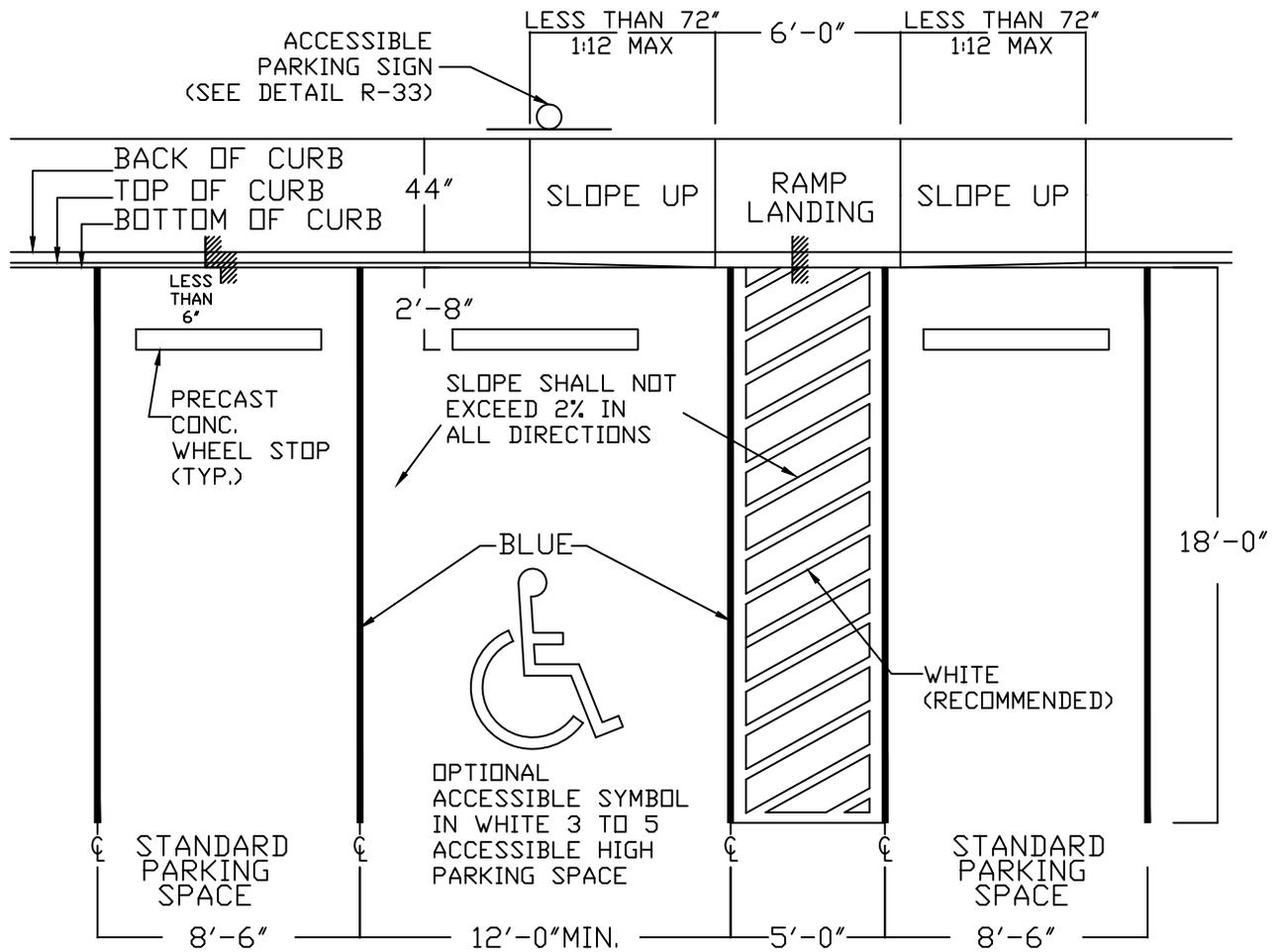
STANDARD ROAD DETAIL  
RESIDENTIAL ACCESS ST.  
CROWN SECTION WITH  
40' RIGHT-OF-WAY

R-30

TABLE OF MATERIALS AND CONSTRUCTION STANDARDS:  
RESIDENTIAL ACCESS AND LOCAL STREETS

COMPONENT (1)	DESCRIPTION OF MATERIALS	CONSTRUCTION STANDARDS MINIMUM IN PLACE		NOTES
		THICKNESS (2)	METHOD (3)	
A	TYPE SP-12.5 ASPHALTIC CONCRETE	1 - ¼"	ONE (1) LIFT	
	TYPE SP-9.5 ASPHALTIC CONCRETE	1 - ½"	TWO (2) EQUAL LIFTS	TACK COAT REQUIRED WITH MULTIPLE LIFTS
B	LIMEROCK	8"	COMPACTED	SEE DETAIL DRAWINGS FOR PRIME COAT NOTATION, MIN LBR 100
	SHELL	8"	COMPACTED	MIN LBR 100
	CRUSHED CONCRETE	8"	COMPACTED	MIN LBR 100
C	SUBGRADE	12"	COMPACTED	MIN LBR 40

(1) A = PAVEMENT  
B = BASE  
C = SUBGRADE  
(2) ALL DIMENSIONS REFER TO FINISHED THICKNESS.  
(3) COMPACTED TO AT LEAST 98% MAXIMUM DENSITY PER A.A.S.H.T.O. T-180.



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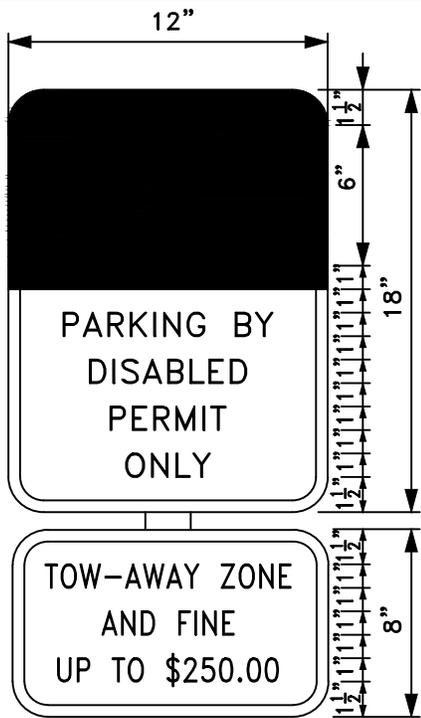
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STANDARD ROAD DETAIL  
 ACCESIBLE PARKING  
 DETAIL

R-32



FTP-20-06

2" RADII 3/8" BORDER

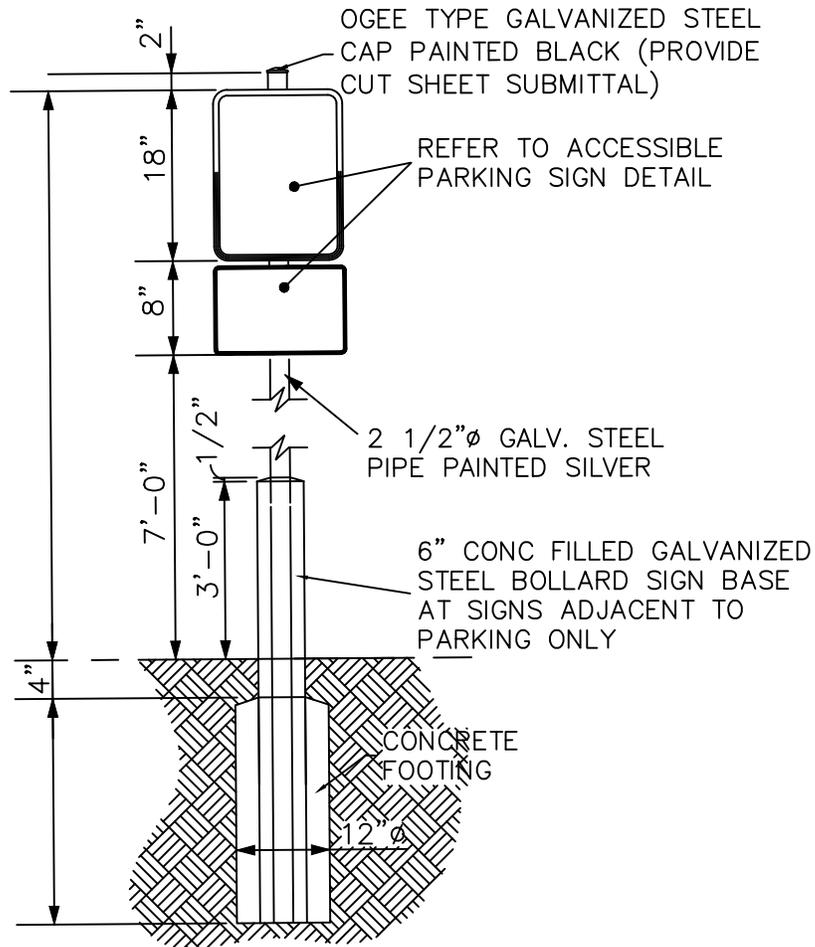
1" SERIES C LEGEND

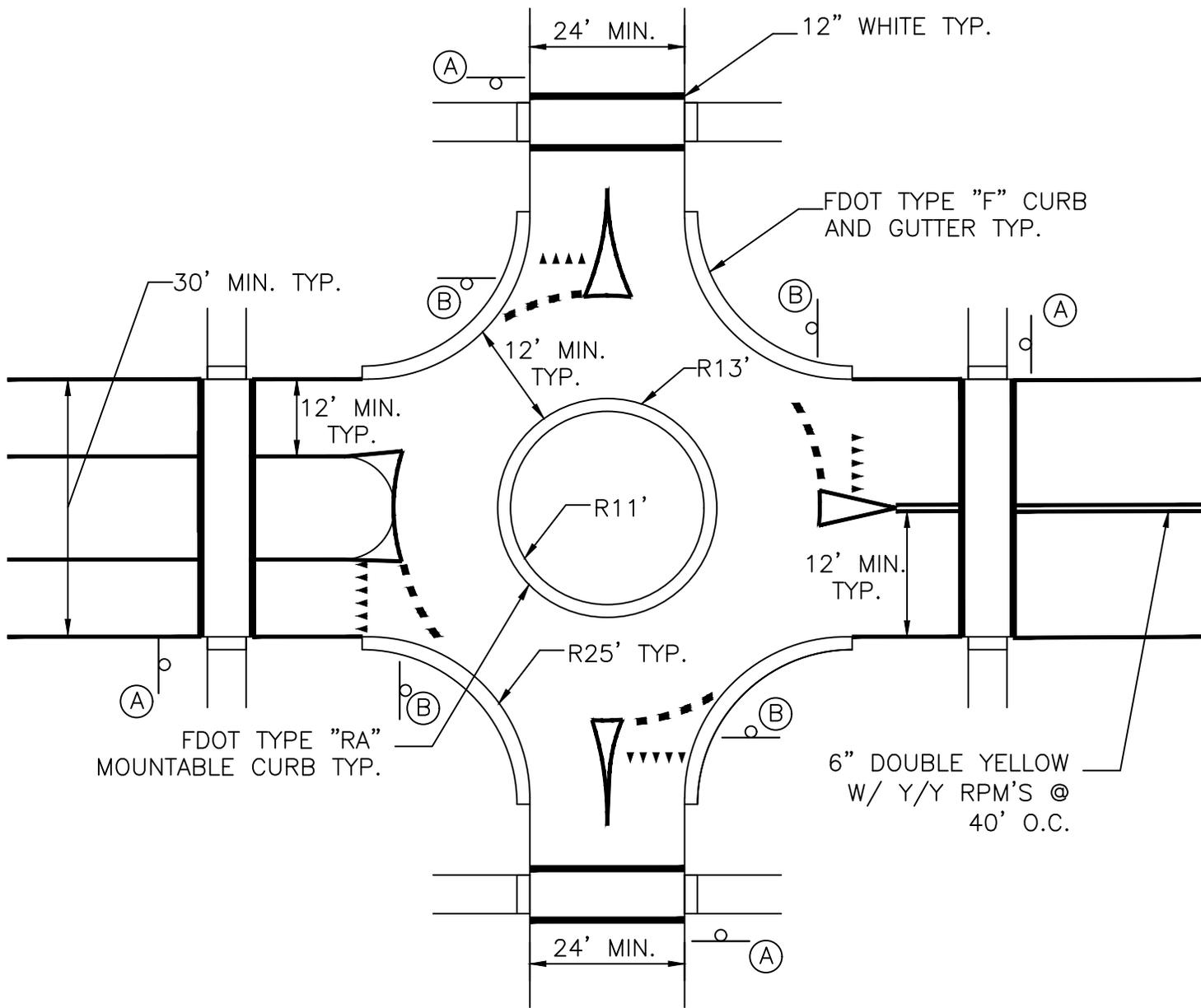
COLOR	TOP	BOTTOM
BACKGROUND	BLUE	WHITE
LEGEND AND BORDER	WHITE	BLACK

1" RADII 3/8" BORDER

1" SERIES C LEGEND

COLOR	TOP	BOTTOM
BACKGROUND	WHITE	WHITE
LEGEND AND BORDER	BLACK	BLACK





- (1) ALL PAVEMENT MARKINGS SHALL BE ALKYD BASED THERMOPLASTIC AND FULLY RETROREFLECTORIZED.
- (2) ALL PAVEMENT MARKINGS ON PAVER SYSTEMS SHALL BE 3M 5730/31 TAPE AND APPLIED WITH AN E44 CONTACT CEMENT AS PER MANUFACTURER'S SPECIFICATIONS.
- (3) ALL PAVEMENT MARKINGS AND SIGNING SHALL BE IN ACCORDANCE WITH THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES", LATEST EDITION.
- (4) SEE FDOT INDEX NO. 17352 FOR PLACEMENT OF RPM'S.
- (5) RPM'S SHALL BE CLASS "B" 911 OR EQUIVALENT, APPLIED WITH EPOXY OR BITUMINOUS ADHESIVE.
- (6) FDOT APPROVED SEALER SHALL BE USED WHEN APPLYING MARKINGS ON CONCRETE.

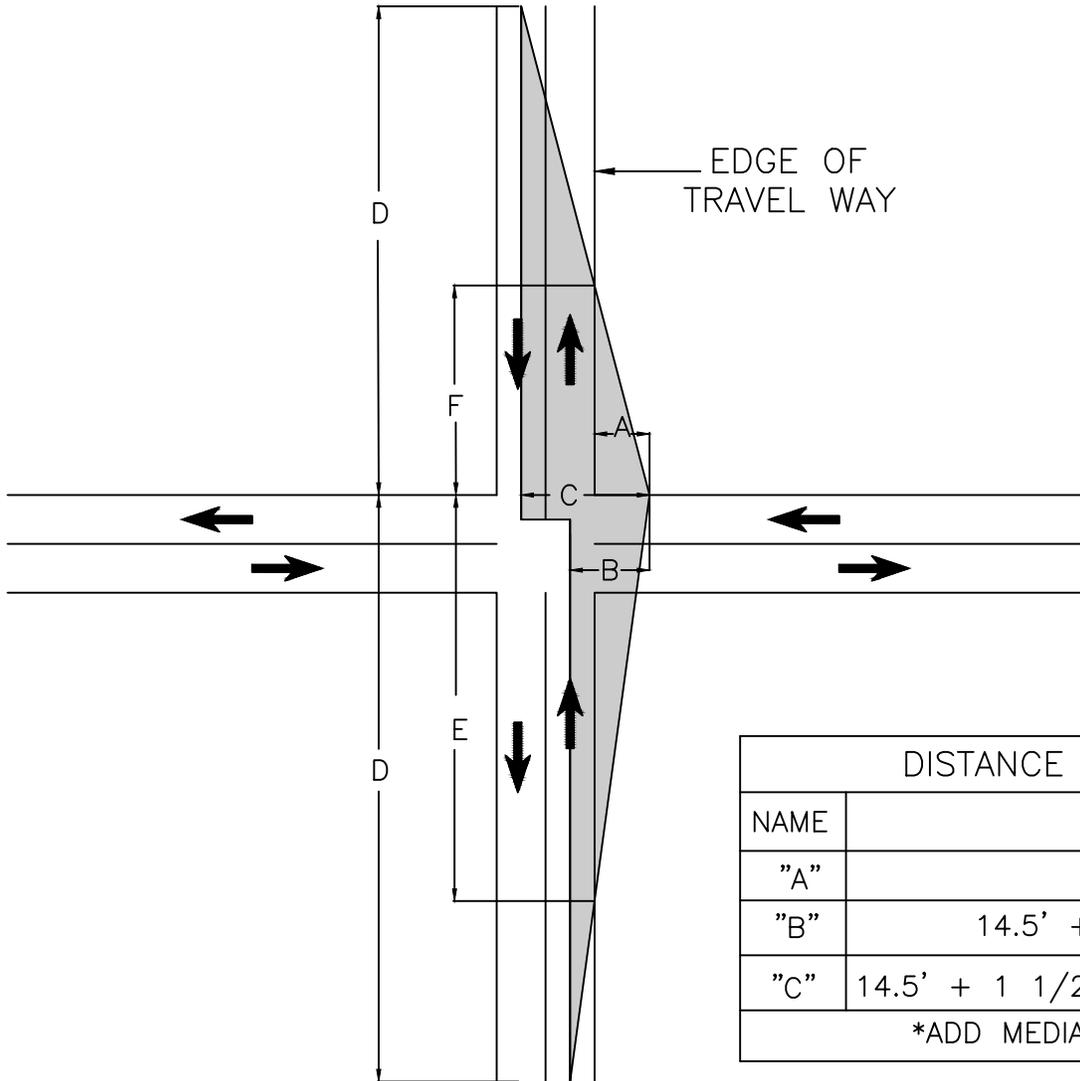
(7) EXISTING MARKINGS SHALL BE REMOVED BY WATER BLASTING OR SANDBLASTING ONLY.

(8) PAVEMENT MARKING REFLECTIVITY SHALL BE 250 MILLICANDELLAS FOR WHITE AND 175 MILLICANDELLAS FOR YELLOW

(9) MINIMUM 50' R/W PER DETAIL R-1

(A) PEDESTRIAN CROSSING SIGN PER MUTCD

(B) YIELD TO TRAFFIC IN CIRCLE SIGN PER MUTCD



DISTANCE TABULATION	
NAME	DISTANCE
"A"	14.5'
"B"	14.5' + 1/2 LANE WIDTH
"C"	14.5' + 1 1/2 LANE WIDTH + MEDIAN*
*ADD MEDIAN WIDTH IF PRESENT	

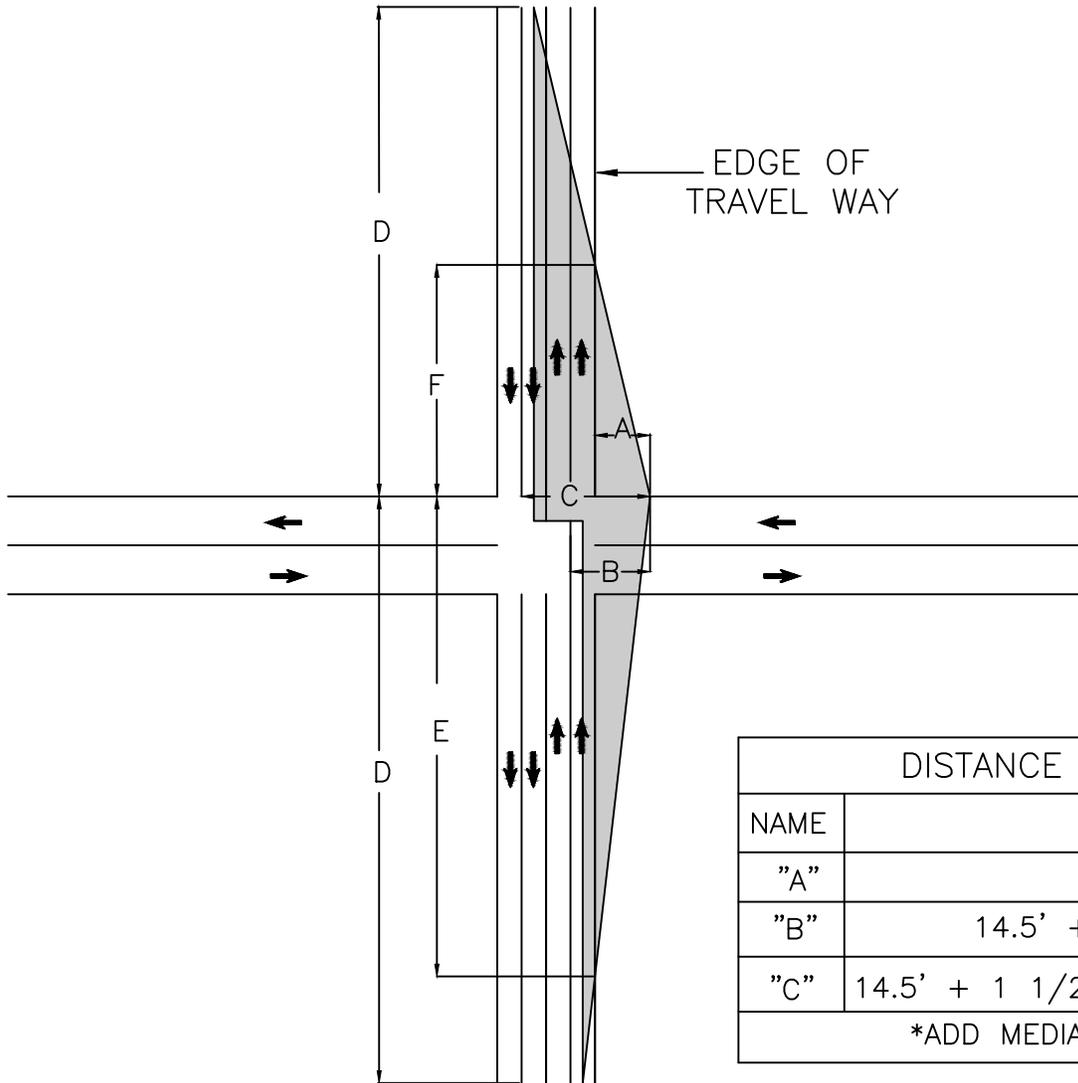
DESIGN VEHICLE	PASSENGER			SU			COMBINATION		
	"D"	"E"	"F"	"D"	"E"	"F"	"D"	"E"	"F"
30 MPH	335'	240'	150'	420'	295'	190'	510'	360'	225'
35 MPH	390'	275'	175'	490'	345'	220'	595'	420'	265'
40 MPH	445'	315'	200'	560'	395'	250'	680'	480'	305'
45 MPH	500'	350'	225'	630'	445'	280'	765'	540'	340'
50 MPH	555'	390'	250'	700'	495'	310'	845'	600'	375'
55 MPH	610'	430'	275'	770'	545'	345'	930'	660'	415'
60 MPH	665'	470'	300'	840'	595'	375'	1015'	720'	450'
65 MPH	720'	510'	325'	910'	645'	405'	1100'	780'	490'

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STANDARD ROAD DETAIL  
 APPROACH SITE TRIANGLES  
 (2 LANES)

R-35



DISTANCE TABULATION	
NAME	DISTANCE
"A"	14.5'
"B"	14.5' + 1/2 LANE WIDTH
"C"	14.5' + 1 1/2 LANE WIDTH + MEDIAN*
*ADD MEDIAN WIDTH IF PRESENT	

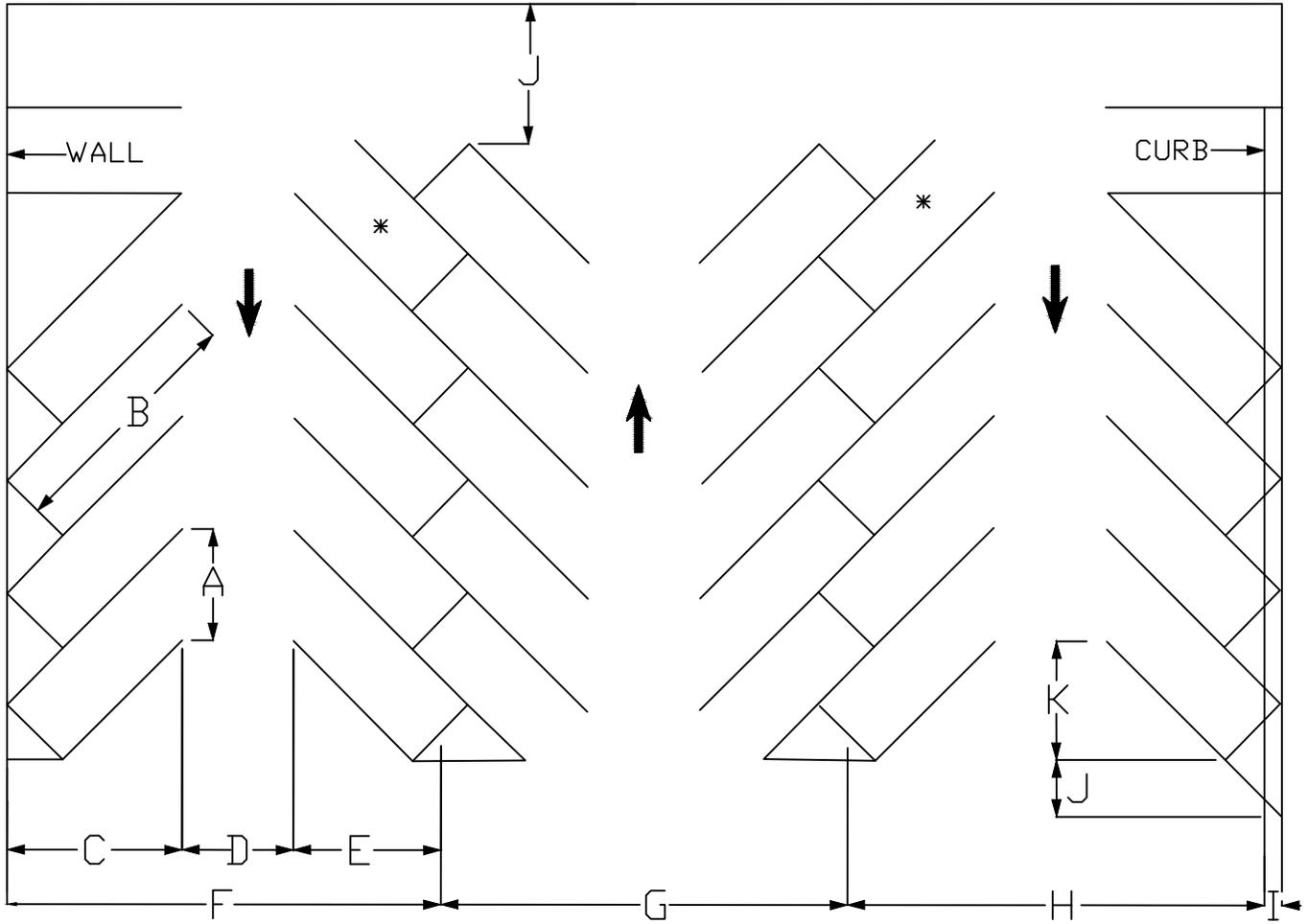
DESIGN VEHICLE	PASSENGER			SU			COMBINATION		
	"D"	"E"	"F"	"D"	"E"	"F"	"D"	"E"	"F"
30 MPH	355'	250'	115'	450'	320'	150'	540'	380'	175'
35 MPH	415'	295'	135'	525'	370'	170'	640'	445'	205'
40 MPH	475'	335'	155'	600'	425'	195'	720'	510'	235'
45 MPH	530'	375'	175'	675'	475'	220'	810'	570'	265'
50 MPH	590'	415'	195'	750'	530'	245'	900'	635'	295'
55 MPH	650'	460'	210'	825'	585'	270'	990'	700'	320'
60 MPH	705'	500'	230'	900'	635'	295'	1080'	765'	350'
65 MPH	765'	540'	250'	975'	690'	320'	1170'	825'	380'

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STANDARD ROAD DETAIL  
APPROACH SITE TRIANGLES  
(4 LANES)

R-36



\* = STALL NOT ACCESSIBLE IN CERTAIN LAYOUTS

DIMENSION		ANGLE			
		45°	60°	75°	90°
STALL WIDTH, PARALLEL TO SIDE	"A"	12.0'	9.8'	8.8'	8.5'
STALL LENGTH OF LINE	"B"	26.5'	22.9'	20.3'	18.0'
STALL DEPTH TO WALL	"C"	18.7'	19.8'	19.6'	18.0'
AISLE WIDTH BETWEEN STALLS	"D"	12.0'	17.0'	21.0'	22.0'
STALL DEPTH, INTERLOCK	"E"	15.7'	17.7'	18.5'	18.0'
MODULE, WALL TO INTERLOCK	"F"	46.5'	54.6'	59.1'	58.0'
MODULE, INTERLOCKING	"G"	43.5'	52.4'	58.0'	58.0'
MODULE, INTERLOCK TO CURB	"H"	44.7'	52.4'	56.7'	55.5'
BUMBER OVERHANG (TYP.)	"I"	1.8'	2.2'	2.4'	2.5'
OFFSET	"J"	6.0'	2.5'	0.6'	0.0'
SETBACK	"K"	12.7'	9.0'	4.7'	0.0'

CITY OF LAUDERHILL  
ENGINEERING DEPARTMENT  
LAUDERHILL, FLORIDA

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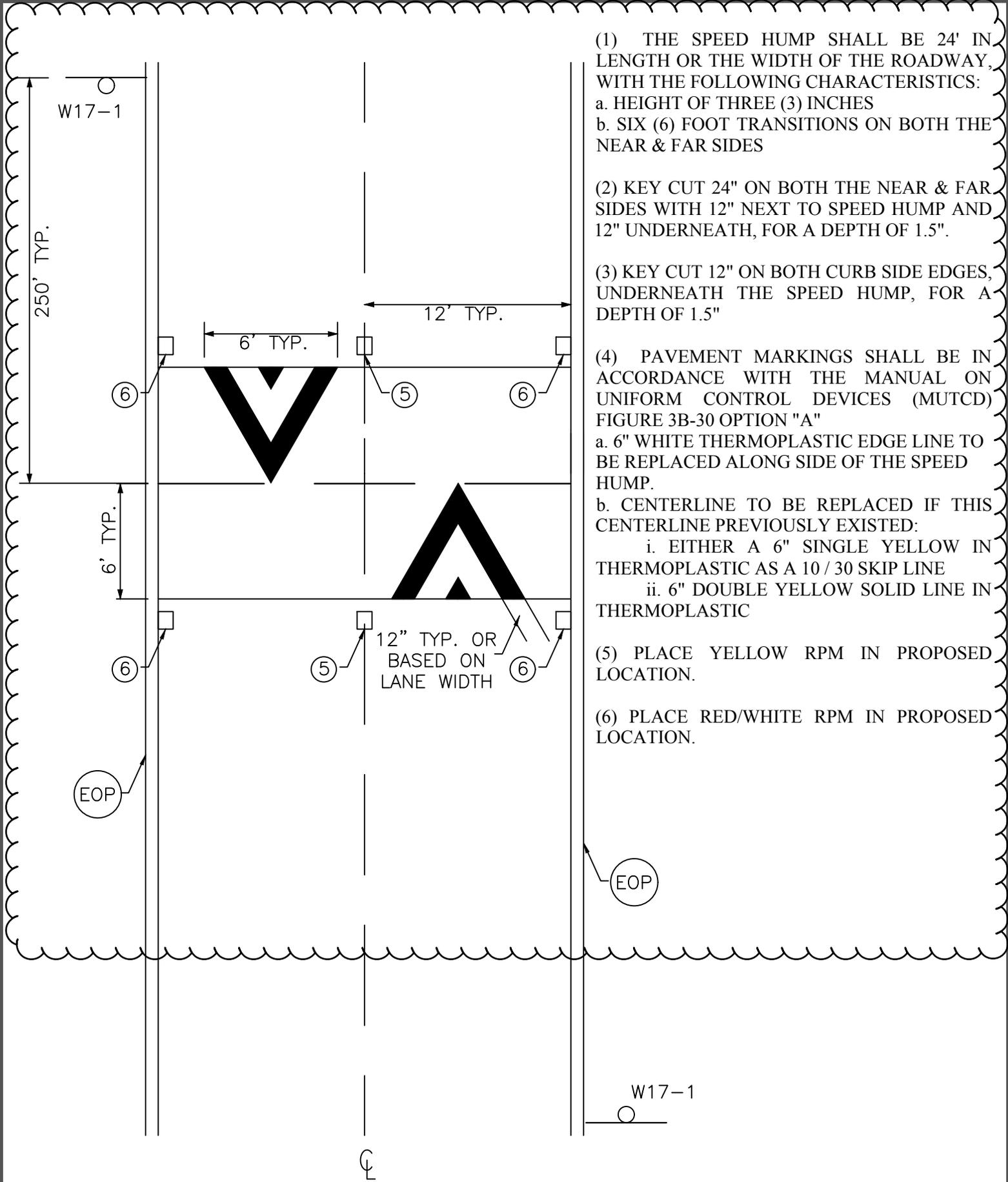
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STANDARD ROAD DETAIL  
MINIMUM  
PARKING STALL  
DIMENSIONS

R-37



(1) THE SPEED HUMP SHALL BE 24' IN LENGTH OR THE WIDTH OF THE ROADWAY, WITH THE FOLLOWING CHARACTERISTICS:  
 a. HEIGHT OF THREE (3) INCHES  
 b. SIX (6) FOOT TRANSITIONS ON BOTH THE NEAR & FAR SIDES

(2) KEY CUT 24" ON BOTH THE NEAR & FAR SIDES WITH 12" NEXT TO SPEED HUMP AND 12" UNDERNEATH, FOR A DEPTH OF 1.5".

(3) KEY CUT 12" ON BOTH CURB SIDE EDGES, UNDERNEATH THE SPEED HUMP, FOR A DEPTH OF 1.5"

(4) PAVEMENT MARKINGS SHALL BE IN ACCORDANCE WITH THE MANUAL ON UNIFORM CONTROL DEVICES (MUTCD) FIGURE 3B-30 OPTION "A"

a. 6" WHITE THERMOPLASTIC EDGE LINE TO BE REPLACED ALONG SIDE OF THE SPEED HUMP.

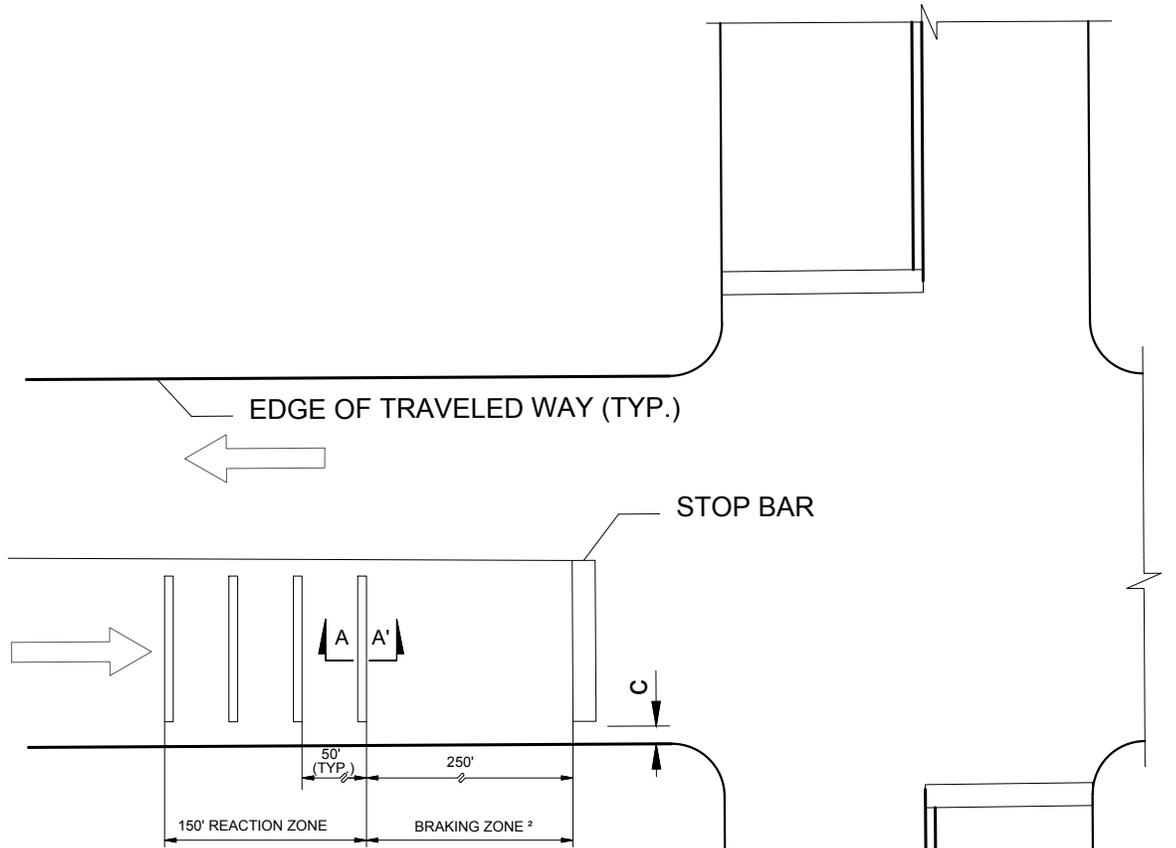
b. CENTERLINE TO BE REPLACED IF THIS CENTERLINE PREVIOUSLY EXISTED:

i. EITHER A 6" SINGLE YELLOW IN THERMOPLASTIC AS A 10 / 30 SKIP LINE

ii. 6" DOUBLE YELLOW SOLID LINE IN THERMOPLASTIC

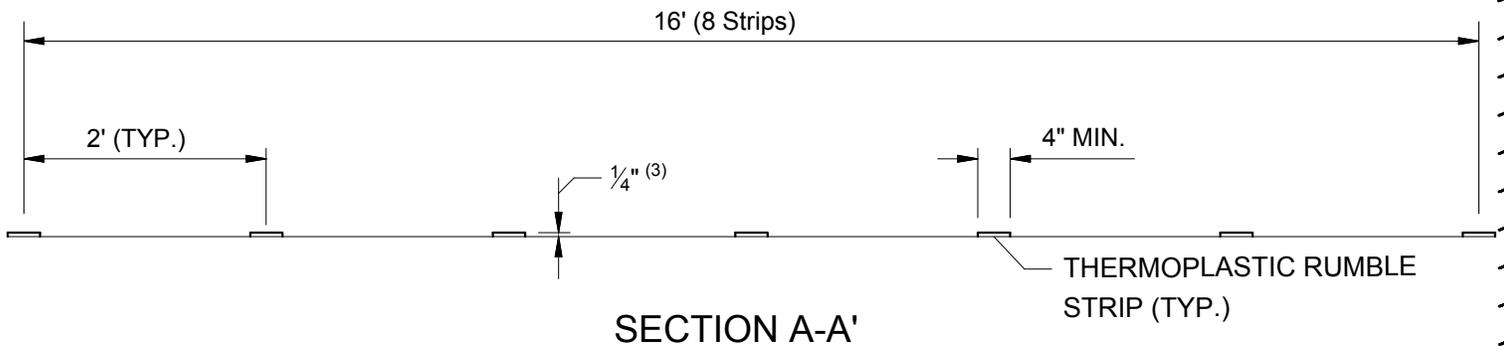
(5) PLACE YELLOW RPM IN PROPOSED LOCATION.

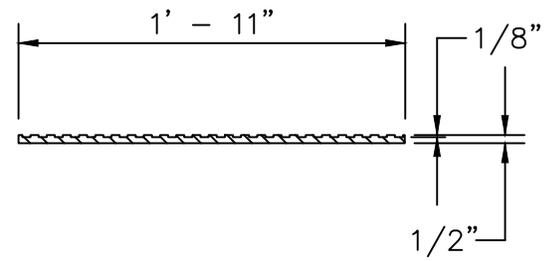
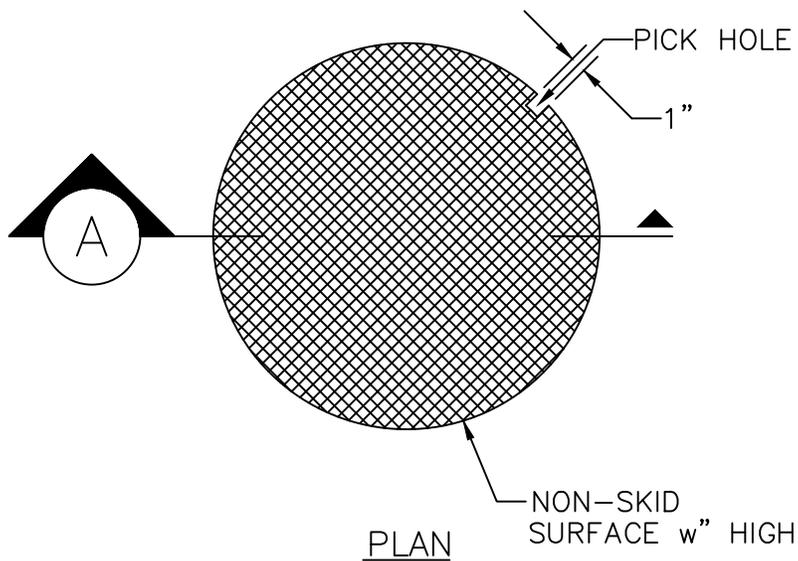
(6) PLACE RED/WHITE RPM IN PROPOSED LOCATION.



NOTES:

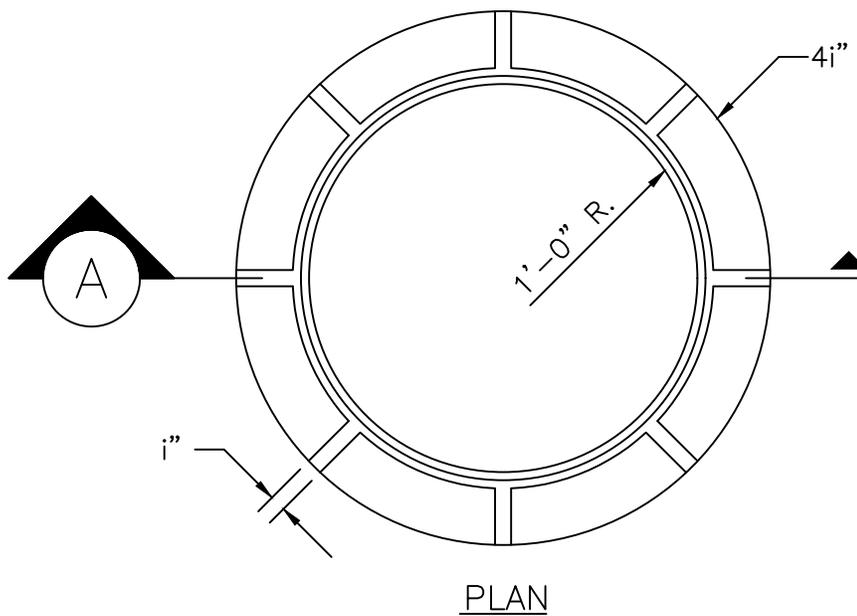
- 1) C = 0' FOR ROADWAYS WITH PAVED SHOULDERS  
C = 1.5' FOR ROADWAYS WITHOUT PAVED SHOULDERS
- 2) BRAKING ZONE DISTANCE MAY BE DECREASED IN URBAN AREAS WITH LOW OPERATING SPEEDS.
- 3) USE MULTIPLE APPLICATION TO ACHIEVE DESIRED  $\frac{1}{4}$ " THICKNESS
- 4) ALL RUMBLE STRIPS SHALL BE THERMOPLASTIC WHITE.



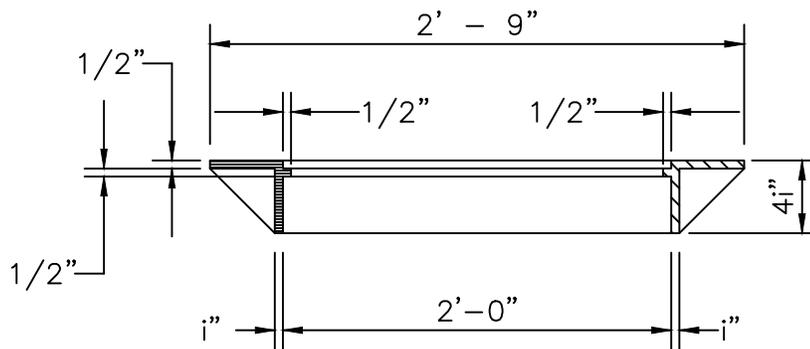


SECTION A-A

COVER DETAIL



PLAN



SECTION A-A

FRAME DETAIL

NOTE:

1. USE IN SIDEWALK ONLY.

MIN. WEIGHTS

FRAME: 118 LBS.  
COVER: 70 LBS

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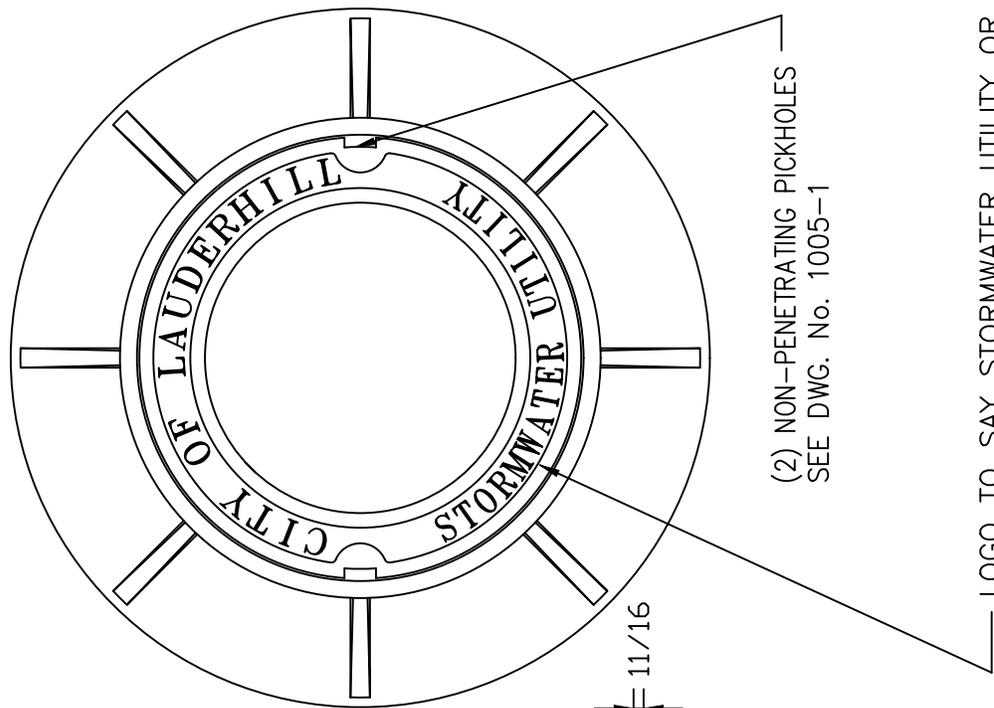
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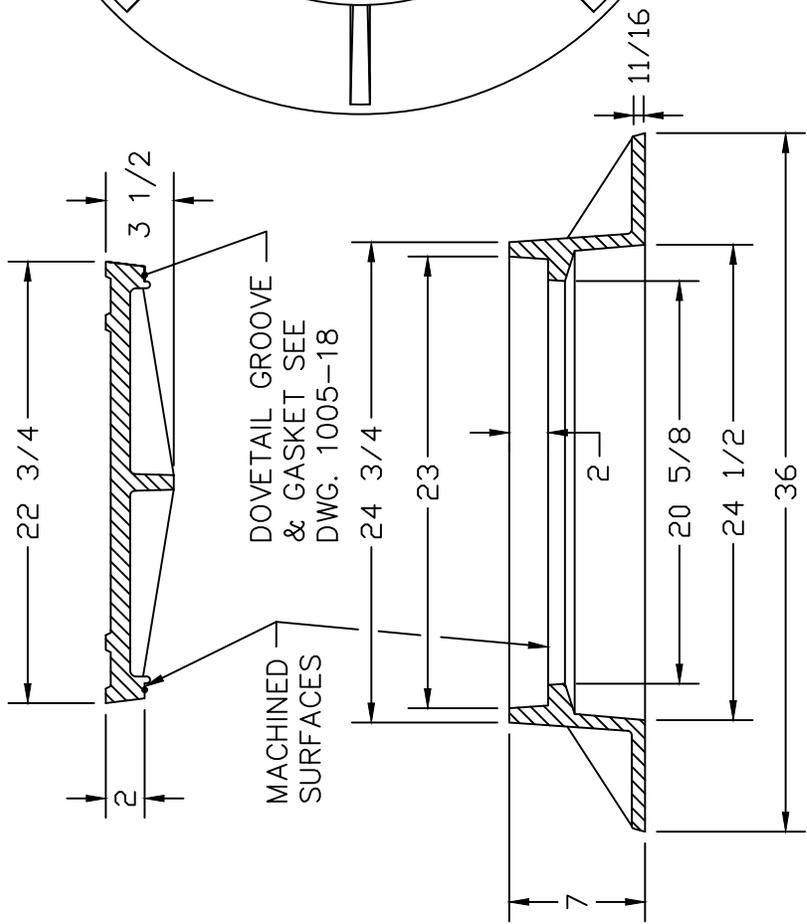
STANDARD STORM  
DRAINAGE DETAIL  
CURB INLET  
FRAME AND COVER

D-1



(2) NON-PENETRATING PICKHOLES  
SEE DWG. No. 1005-1

LOGO TO SAY STORMWATER UTILITY OR  
SANITARY SEWER AS APPROPRIATE.



NOTE:

- 1- MATERIAL; ASTM-A48 CLASS 30B GRAY IRON.
- 2- COVER WEIGHT IS 135 LBS. APP.
- 3- RING WEIGHT IS 240 LBS. APP.
- 4- MANHOLE COVER IS USF TYPE XC-B

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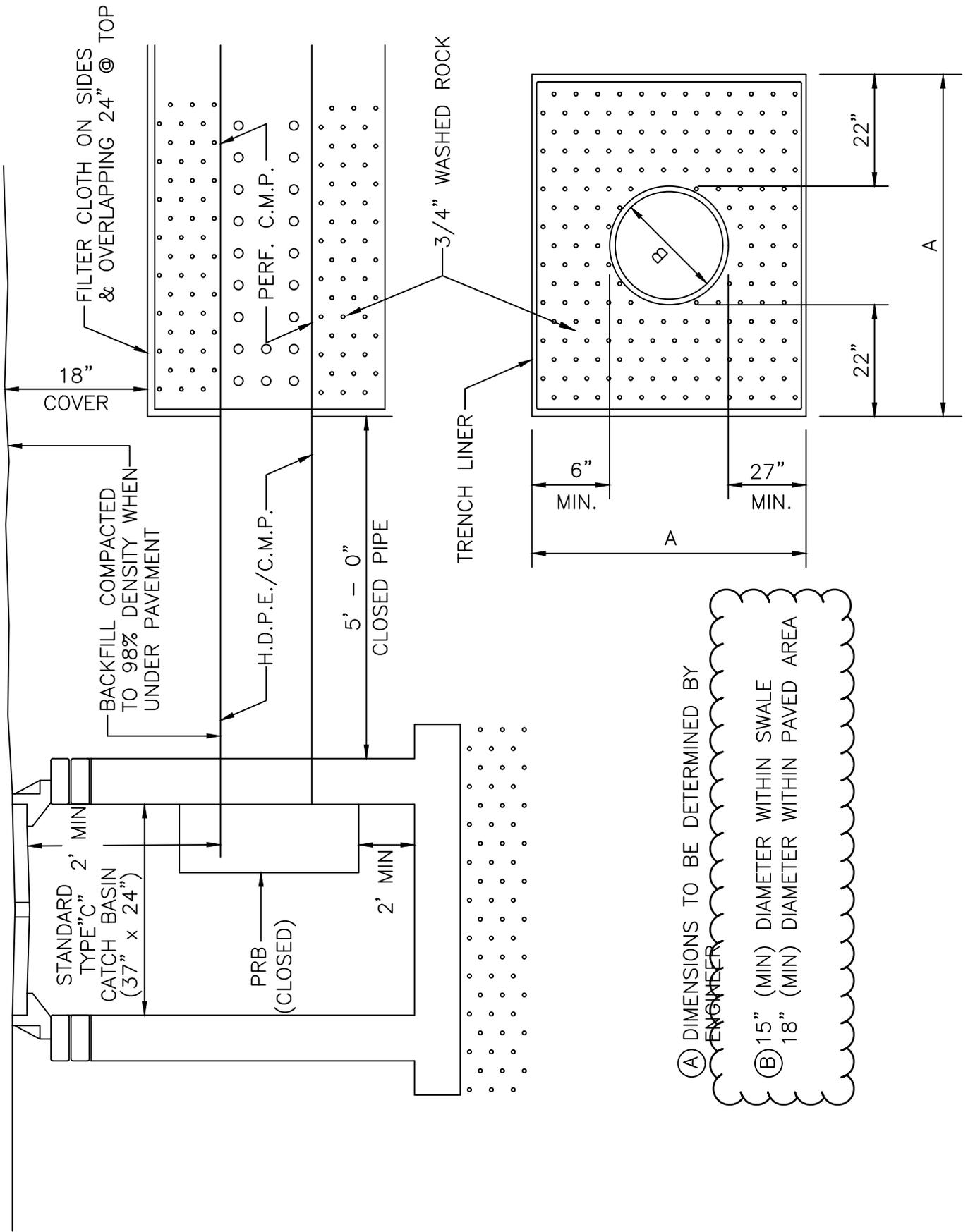
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STANDARD STORM  
DRAINAGE DETAIL  
STORM SEWER MANHOLE  
FRAME AND COVER

D-2



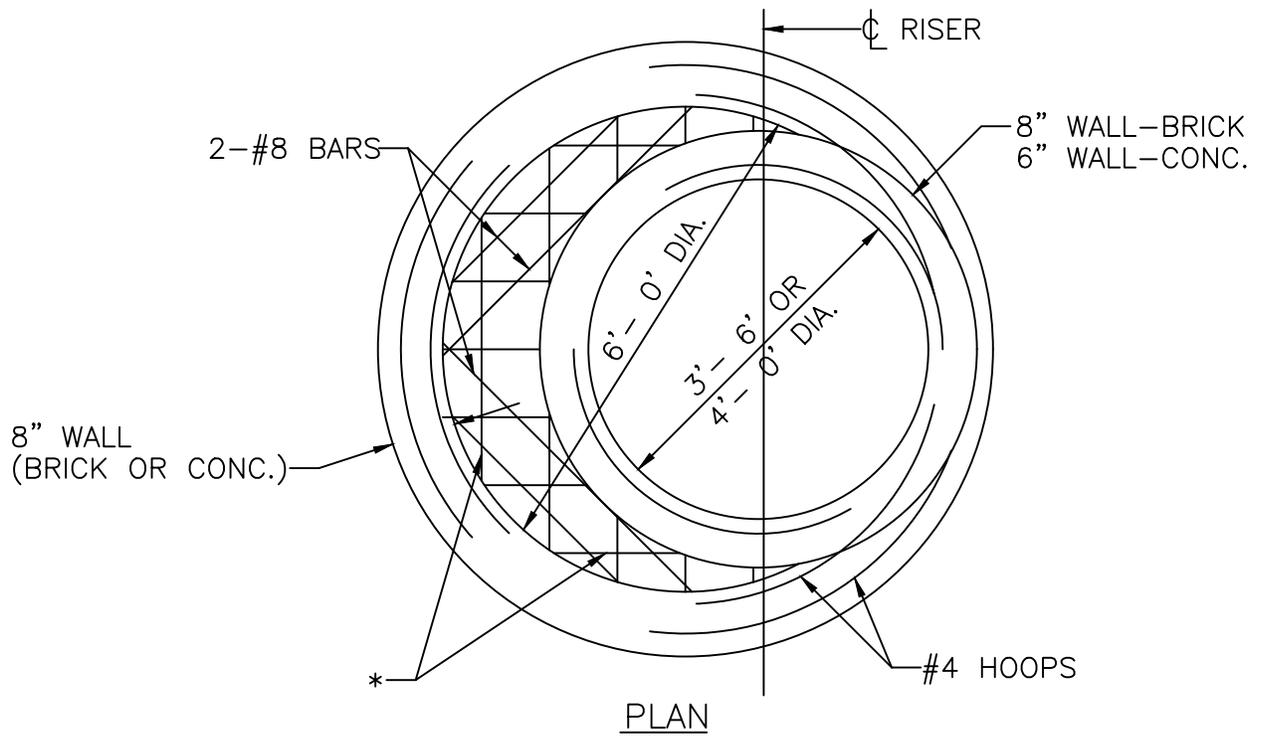
(A) DIMENSIONS TO BE DETERMINED BY ENGINEER  
 (B) 15" (MIN) DIAMETER WITHIN SWALE  
 18" (MIN) DIAMETER WITHIN PAVED AREA

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 LAUDERHILL, FLORIDA

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STANDARD STORM  
 DRAINAGE DETAIL  
 FRENCH DRAIN

D-3

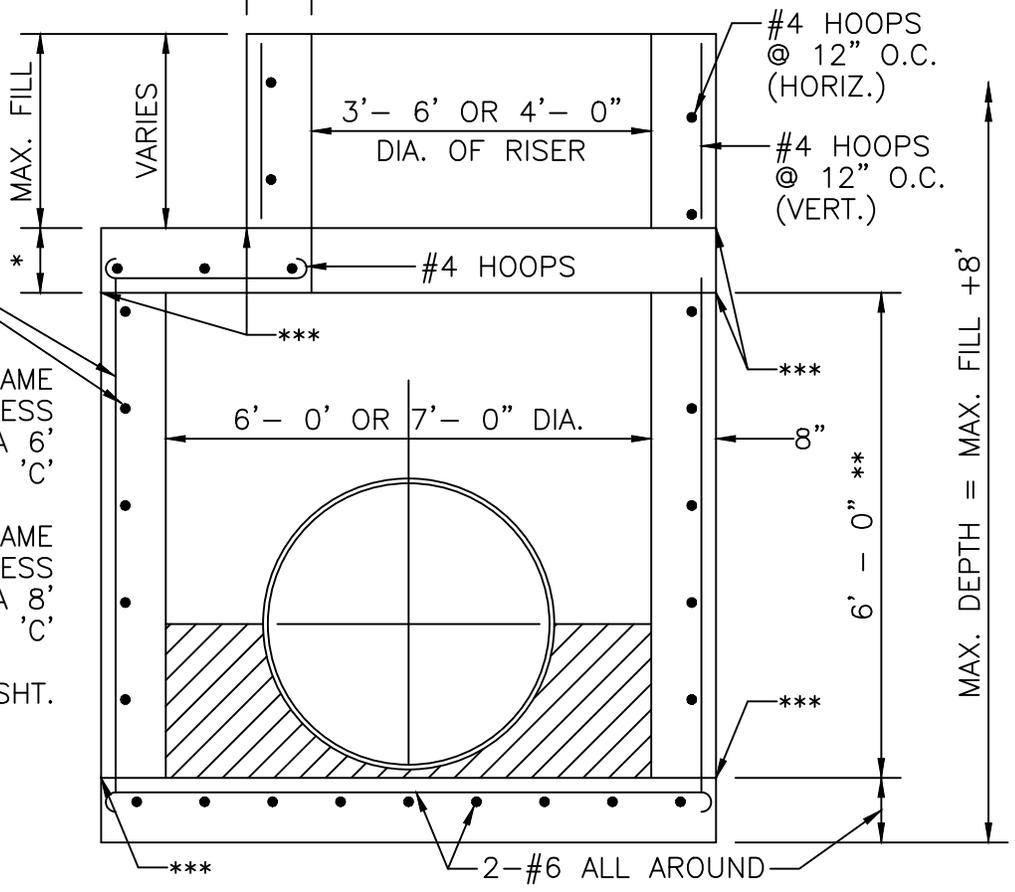


PLAN



ONE CAGE

#5 BARS, @ 12" O.C. (BOTH WAYS) IN CENTER 1/3 OF WALL



SECTION

ALTERNATE "A"

NOTES:

1. FOR 6' DIA. BOX USE THE SAME SLAB REINFORCING, THICKNESS AND FILL HEIGHT AS FOR A 6' WIDTH BOX ALTERNATE 'B' & 'C'
2. FOR 7' DIA. BOX USE THE SAME SLAB REINFORCING, THICKNESS AND FILL HEIGHT AS FOR A 8' WIDTH BOX ALTERNATE 'B' & 'C'
3. FOR GENERAL NOTES SEE SHT. D-7

\* SEE NOTES (SHT. D-7)

\*\* UNLESS OTHERWISE SHOWN ON PLANS.

\*\*\* CONSTRUCTION JOINT PERMITTED.

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SCALE:  
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STANDARD STORM  
DRAINAGE DETAIL  
INLET, MANHOLE &  
JUNCTION BOX (TYPE J)

D-4

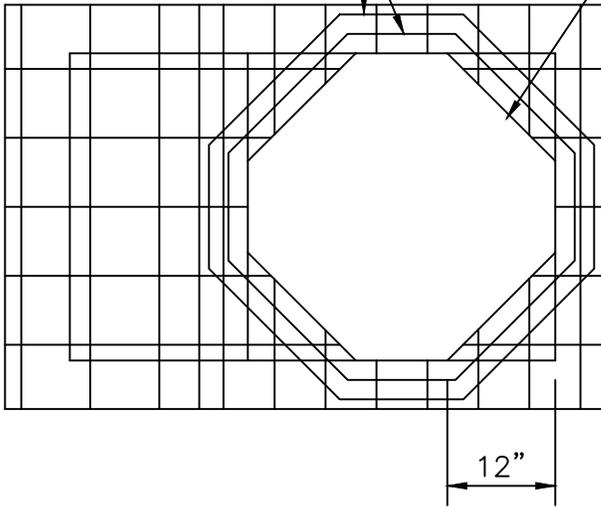
2-#6 ALL AROUND

FILLET CORNERS  
(SEE GENERAL NOTE 5,  
SHEET D-7).

\* SEE NOTES (SHT. D-7)

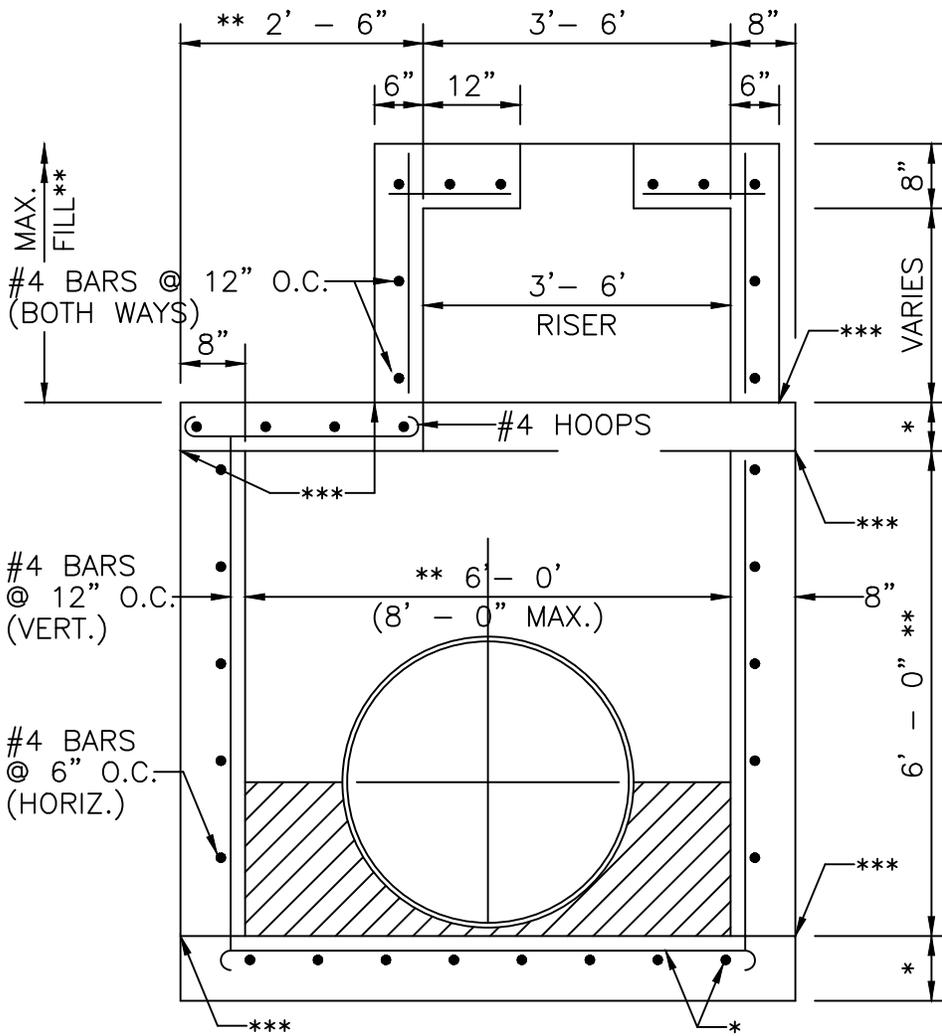
\*\* UNLESS OTHERWISE SHOWN  
ON PLANS.

\*\*\* CONSTRUCTION JOINT  
PERMITTED.

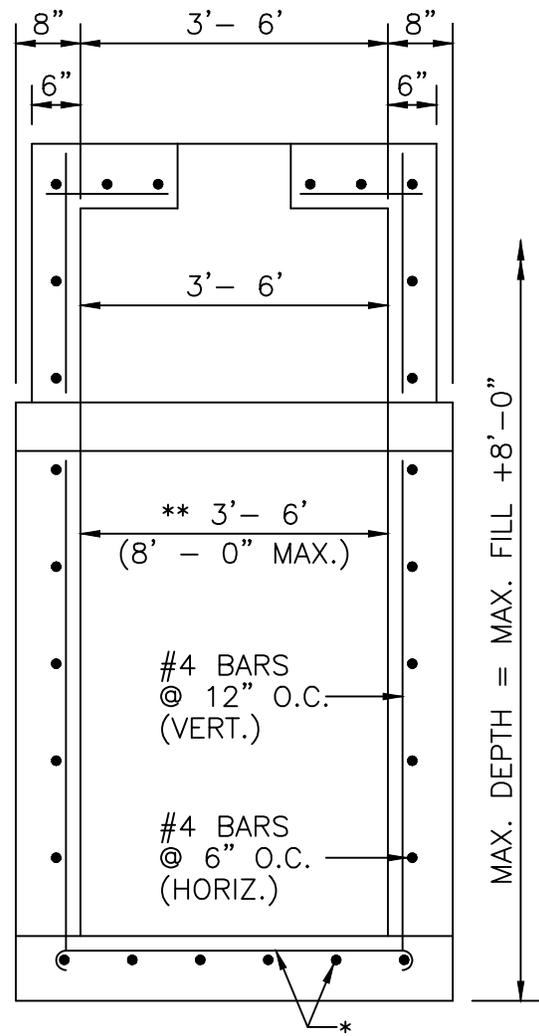


PLAN

TOP AND BOTTOM SLAB TABLE TYPE "J"			
TYPE J, ALT. 'B' (M.S. CONC.)			TYPE J, ALT. 'C' (3000 P.S.I. CONC.)
BOX WIDTH	SLAB THICK-NESS	ALLOWABLE FILL OVER TOP SLAB	REINF. ON TOP & BOTTOM SLAB
3'-6"	8"	MIN. 2' TO MAX. 20'	#6 @6" O.C., B.W.
5'-0"	8"	2' TO 11'	#6 @6" O.C., B.W.
5'-0"	10'	2' TO 18'	#6 @6" O.C., B.W.
6'-0"	8"	3' TO 7'	#6 @6" O.C., B.W.
6'-0"	10"	2' TO 14'	#6 @6" O.C., B.W.
8'-0"	10"	2' TO 7'	#6 @6" O.C., B.W.



SECTION



END ELEVATION

ALTERNATE 'B' & 'C'

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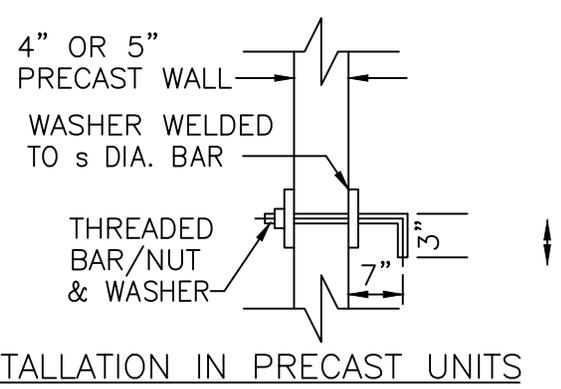
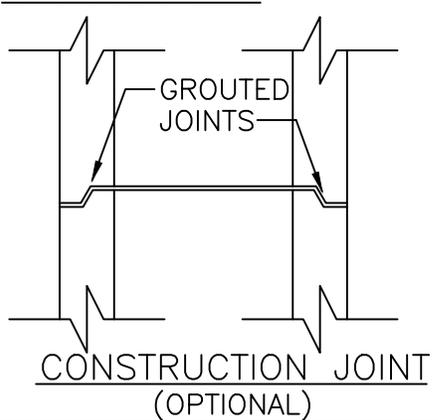
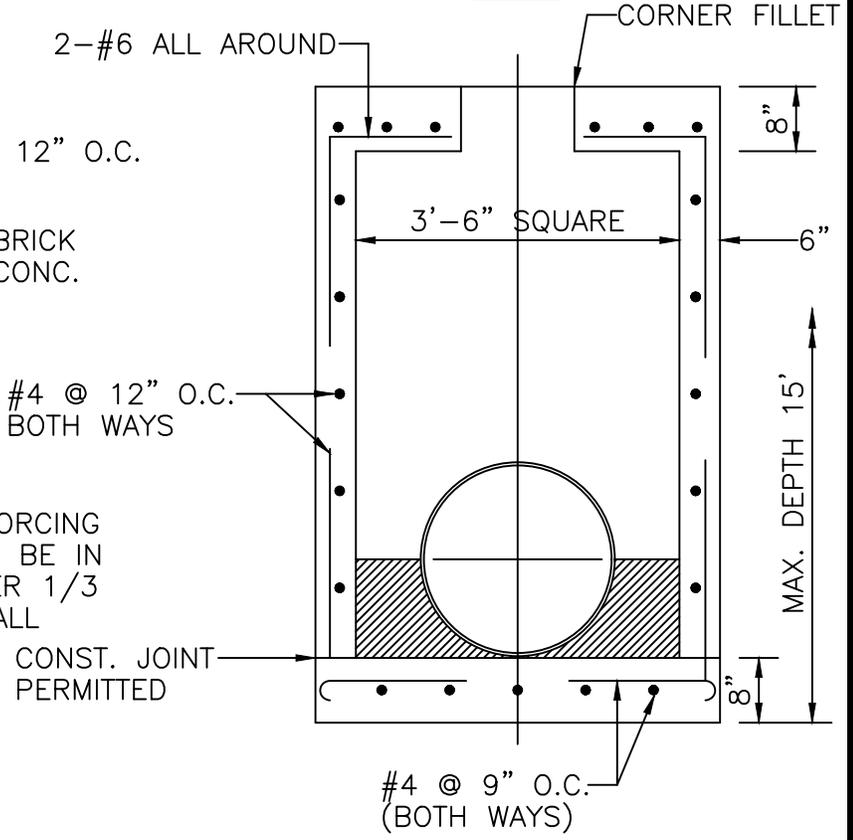
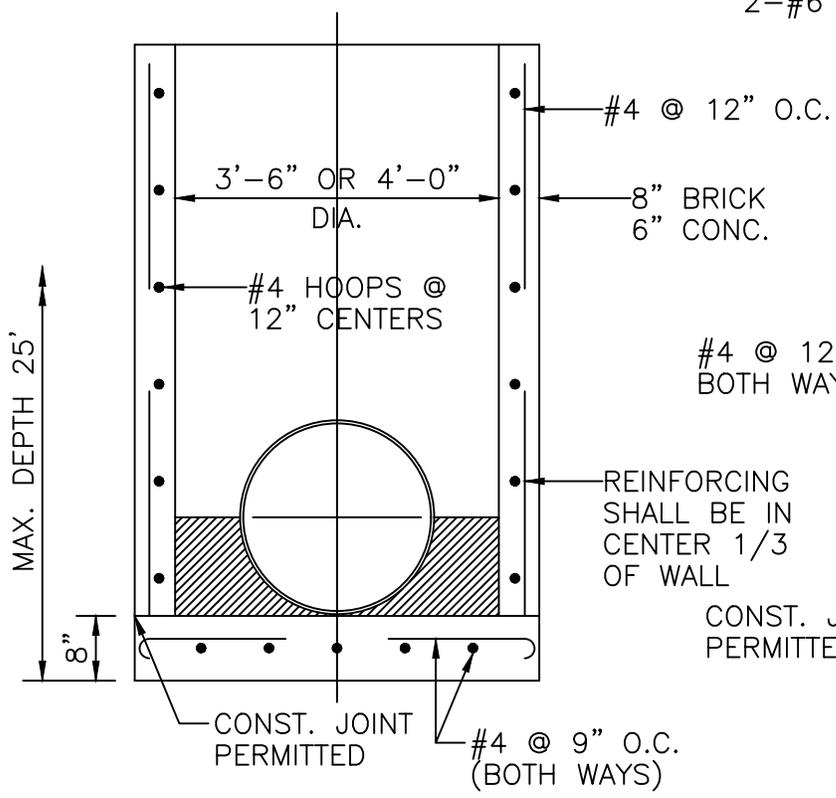
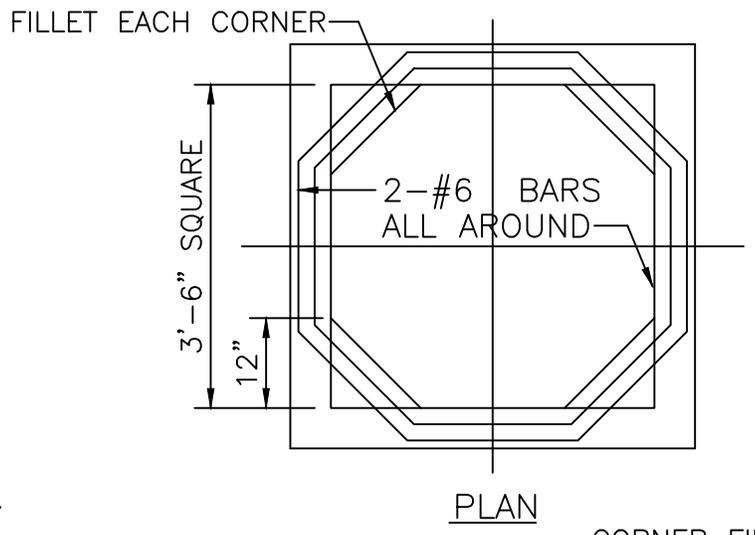
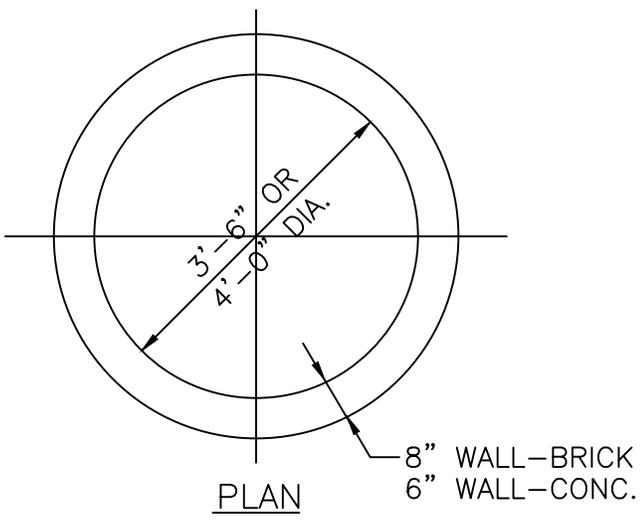
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STANDARD STORM  
DRAINAGE DETAIL  
INLET, MANHOLE &  
JUNCTION BOX (TYPE J)

D-5



CITY OF LAUDERHILL  
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LAUDERHILL, FLORIDA

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STANDARD STORM  
DRAINAGE DETAIL  
INLET, MANHOLE &  
JUNCTION BOX (TYPE P)

D-6

GENERAL NOTES:

1. CIRCULAR STRUCTURES (ALTERNATES 'A') MAY BE CONSTRUCTED OF CONCRETE OR BRICK, BUT RECTANGULAR STRUCTURES (ALTERNATES 'B' & 'C') SHALL BE CONSTRUCTED OF CONCRETE ONLY. THE CONCRETE MAY BE CAST-IN-PLACE OR PRECAST.
2. WALL REINFORCEMENT AND THICKNESS ARE FOR EITHER CAST-IN-PLACE OR PRECAST CONCRETE EXCEPT THAT FOR PRECAST CIRCULAR UNITS A.S.T.M. SPECIFICATIONS C-76, TABLE III, FOR B WALL REINFORCED CONCRETE PIPE OR PRECAST CIRCULAR UNITS IN ACCORDANCE WITH ASTM SPECIFICATION C-478 WILL BE ACCEPTABLE. TOP AND FLOOR SLAB THICKNESS AND REINFORCEMENT ARE FOR ALL TYPES OF CONSTRUCTION.
3. PRECAST TOP AND/OR FLOOR SLABS MAY BE OF THE SAME CONCRETE AS SPECIFIED IN ASTM SPECIFICATIONS C-478 FOR PRECAST CIRCULAR UNITS.
4. SMOOTH FLOW CHANNELS COMPOSED OF CONCRETE, OR BRICK AND MORTAR, SHALL BE CONSTRUCTED IN THE BOTTOMS OF ALL STRUCTURES TO A DEPTH EQUAL TO HALF THE DIAMETER OF THE LARGEST PIPE.
5. CORNER FILLETS SHOWN FOR RECTANGULAR STRUCTURES ARE NECESSARY ONLY WHEN STRUCTURES ARE USED IN CONJUNCTION WITH CIRCULAR TOPS.
6. STRUCTURES SHALL BE SECURED TO INLET THROATS, RISERS OR MANHOLE TOPS WITH A MINIMUM OF 6-No. 4 BARS 12" LONG, OR AS SHOWN ON SHEET 2.
7. ANY INLET, MANHOLE, OR JUNCTION BOX MAY BE USED IN CONJUNCTION WITH ANY INLET THROAT OR MANHOLE TOP.
8. MORTAR USED TO SEAL THE PIPE IN THE WALLS OF THE PRECAST UNITS SHALL BE OF SUCH A MIX THAT SHRINKAGE WILL NOT CAUSE LEAKAGE INTO OR OUT OF THE UNITS. MAXIMUM OPENING FOR PIPE SHALL BE MAXIMUM REQUIRED O.D. + 6".
9. THE OUTSIDE OF BRICK WALLS SHALL BE PLASTERED WITH 1:2 CEMENT MORTAR.

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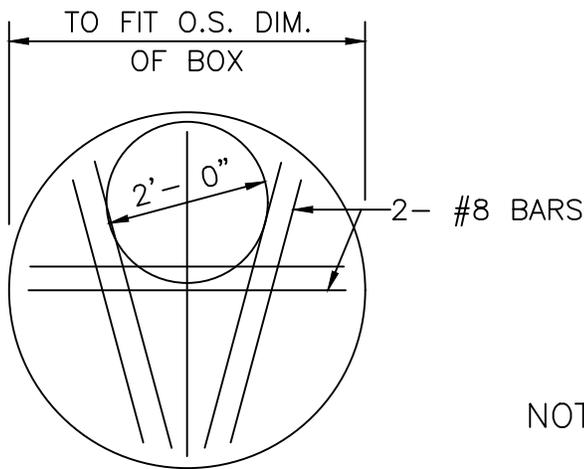
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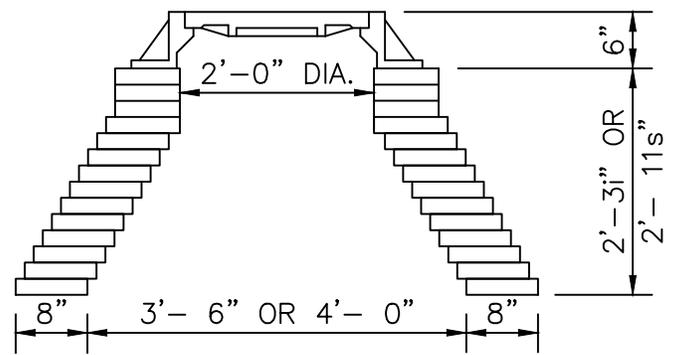
SEPT. 18

STANDARD STORM  
DRAINAGE DETAIL  
INLET, MANHOLE, & JUNCTION  
BOX (TYPES P & J)

D-7

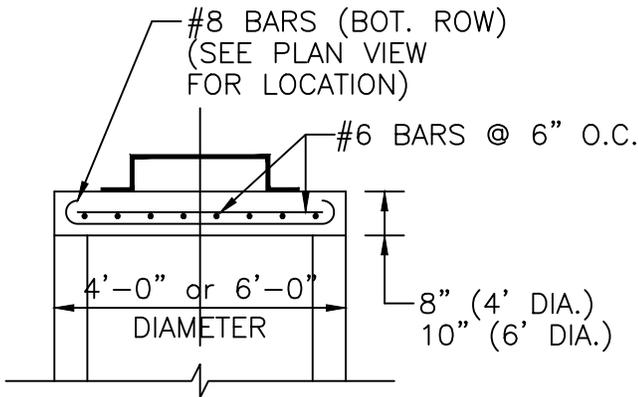


PLAN

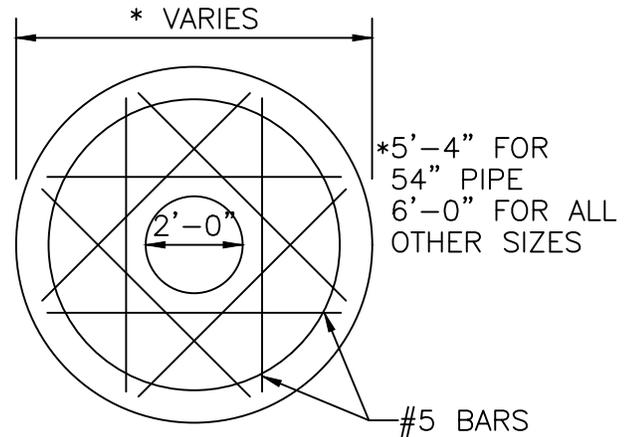


MANHOLE TOP

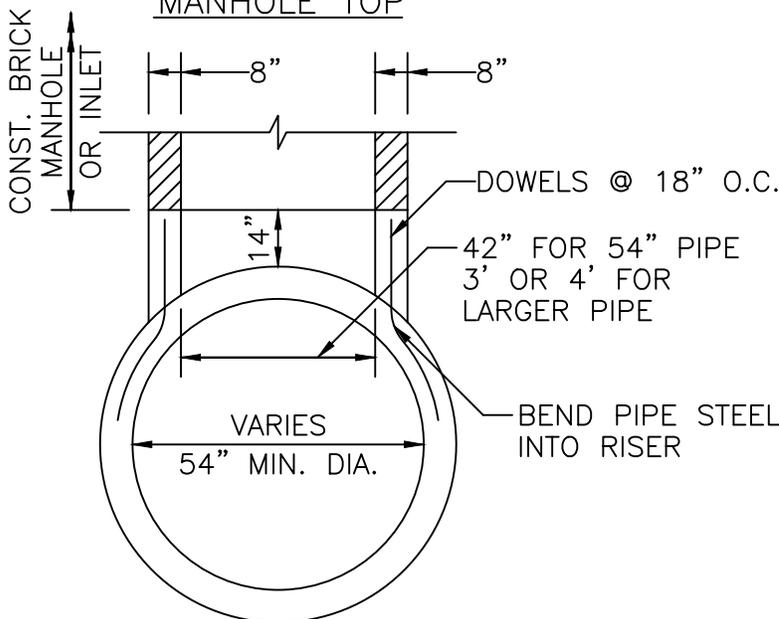
NOTE: UNIT MAY BE PRECAST OR CAST IN PLACE CONCRETE CONSTRUCTION. WALL THICKNESS & STEEL SAME AS USED FOR SUPPORTING UNIT WALL. ECCENTRIC CONE MAY BE USED.



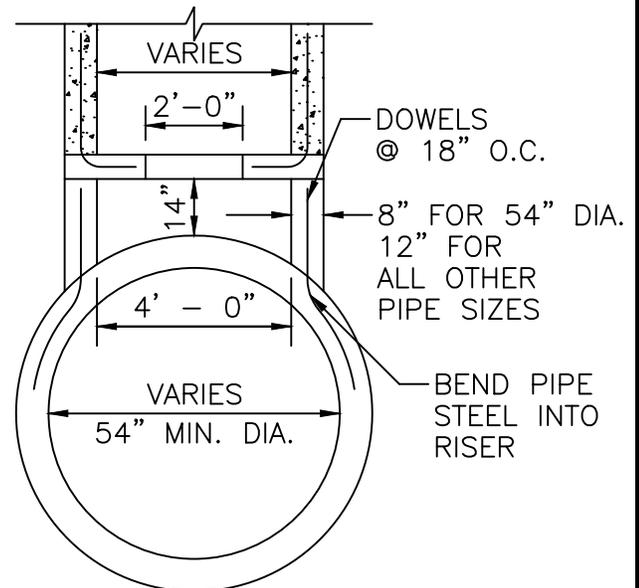
JUNCTION BOX OR MANHOLE TOP



CONCRETE SLAB REINFORCEMENT



BRICK INLET OR MANHOLE ON PRECAST CONCRETE RISER



REINF. CONC. INLET OR MANHOLE ON PRECAST CONCRETE RISER

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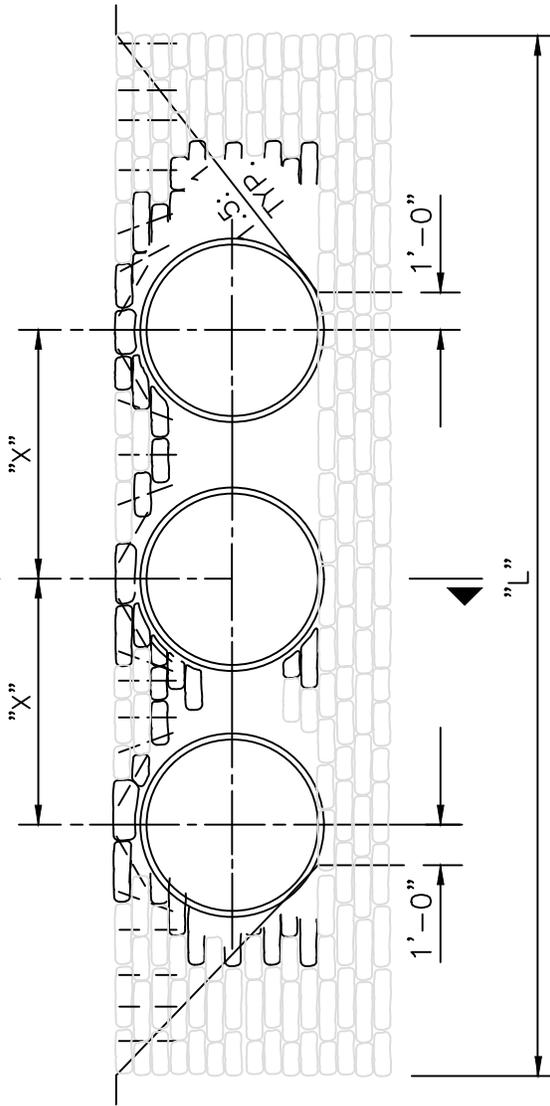
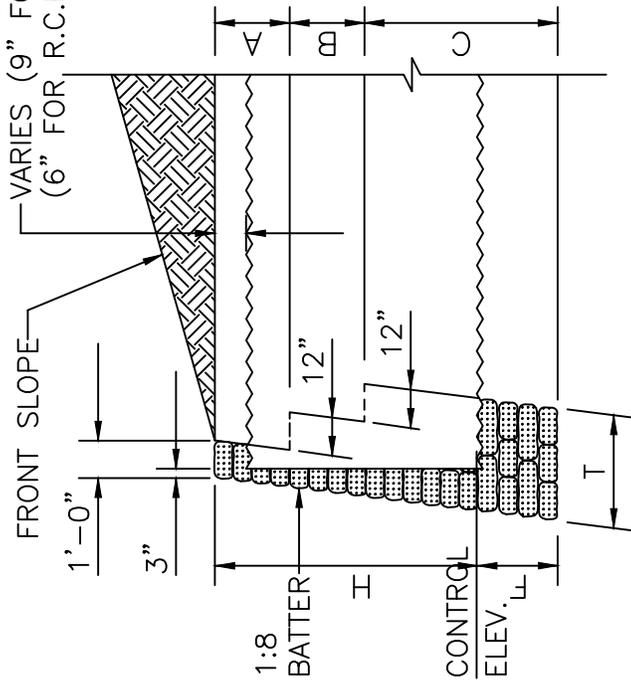
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STANDARD STORM  
DRAINAGE DETAIL  
JUNCTION BOX, MANHOLE TOP  
& PRECAST CONCRETE RISER

D-8



FRONT SLOPE  
VARIES (9" FOR C.M.P.)  
(6" FOR R.C.P.)



FRONT ELEVATION

TABLE OF DIMENSIONS AND QUANTITIES FOR ONE ENDWALL

SIZE OF PIPE	H	T	A	B	C	F	X	ONE CULVERT		TWO CULVERTS		THREE CULVERTS		FOUR CULVERTS					
								L	RIPRAP C.Y. C.P. C.M.P.	L	RIPRAP C.Y. C.P. C.M.P.	L	RIPRAP C.Y. C.P. C.M.P.	L	RIPRAP C.Y. C.P. C.M.P.				
18"	2'-3"	1'-0"	4'-0"	0'-0"	0'-0"	1'-9"	2'-10"	8'-9"	1.2	1.2	11'-7"	1.5	1.6	14'-5"	1.8	1.9	17'-3"	2.1	2.3
24"	2'-9"	2'-0"	2'-0"	2'-6"	0'-0"	1'-9"	3'-5"	10'-3"	2.4	2.5	13'-8"	3.0	3.2	17'-1"	3.7	4.0	20'-6"	4.3	4.7
30"	3'-4"	2'-0"	2'-0"	3'-2"	0'-0"	1'-10"	4'-3"	12'-0"	3.3	3.4	16'-3"	4.2	4.5	20'-6"	5.1	5.5	24'-9"	6.0	6.5
36"	3'-10"	2'-0"	2'-0"	3'-8"	0'-0"	1'-10"	5'-1"	13'-6"	4.0	4.2	18'-7"	5.2	5.7	23'-8"	6.3	6.9	28'-9"	7.4	8.2
42"	4'-5"	3'-0"	2'-0"	2'-0"	2'-4"	1'-11"	6'-0"	15'-3"	6.4	6.7	21'-3"	8.3	8.9	27'-3"	10.2	11.2	33'-3"	12.3	13.4
48"	4'-11"	3'-0"	2'-0"	2'-0"	2'-10"	1'-11"	6'-9"	16'-9"	7.7	8.1	23'-6"	10.0	10.8	30'-3"	12.3	13.5	37'-0"	14.5	16.2
54"	5'-6"	3'-0"	2'-0"	2'-0"	3'-6"	2'-0"	7'-8"	18'-6"	9.5	10.1	26'-2"	12.4	13.5	33'-10"	15.3	17.0	41'-6"	18.2	20.4
60"	6'-0"	3'-0"	2'-0"	2'-0"	4'-0"	2'-0"	8'-6"	20'-0"	11.0	11.7	28'-6"	14.4	15.8	37'-0"	17.8	19.8	45'-6"	21.1	23.8
66"	6'-7"	3'-0"	2'-0"	2'-0"	4'-8"	2'-1"	9'-3"	21'-9"	13.2	14.1	31'-0"	17.2	18.9	40'-3"	21.2	23.7	49'-6"	25.1	28.5
72"	7'-1"	3'-0"	2'-0"	2'-0"	5'-2"	2'-1"	10'-0"	23'-3"	15.0	16.0	33'-3"	19.4	21.4	43'-3"	23.9	26.8	53'-3"	28.3	32.3
78"	7'-8"	3'-0"	2'-0"	2'-0"	5'-10"	2'-2"	10'-9"	25'-0"	17.5	18.7	35'-9"	22.6	25.0	46'-6"	27.8	31.3	57'-3"	32.9	37.6
84"	8'-2"	3'-0"	2'-0"	2'-0"	6'-4"	2'-2"	11'-8"	26'-6"	19.5	20.9	38'-2"	25.3	28.1	49'-10"	31.1	35.2	61'-6"	36.9	42.4

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SCALE:

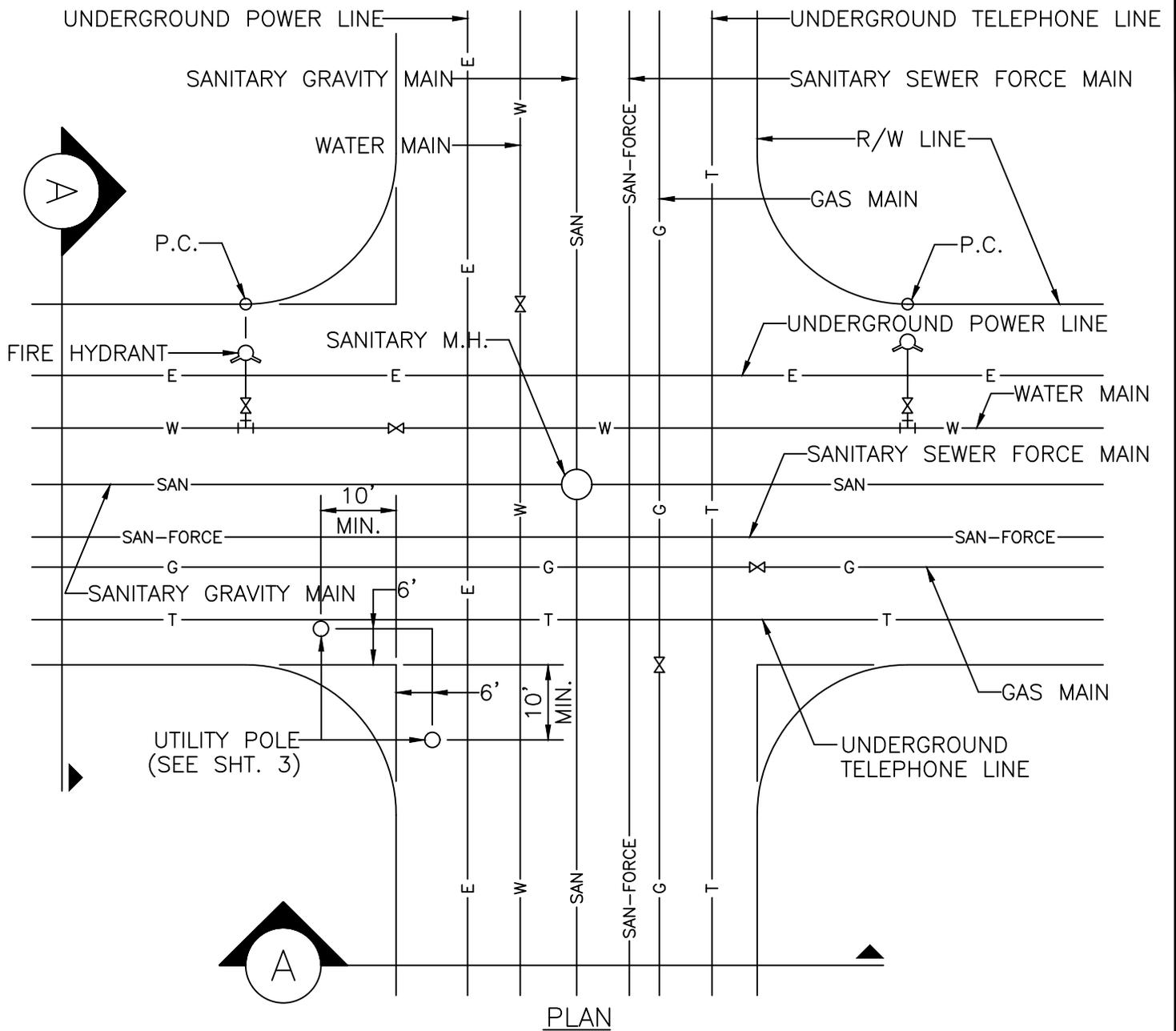
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SEPT. 18

STANDARD STORM  
DRAINAGE DETAIL  
STRAIGHT SAND  
CEMENT ENDWALLS

D-10



PLAN

NOTES:

1. ALL MAIN VALVES AT INTERSECTIONS SHALL BE LOCATED AT THE INTERSECTION OF THE MAIN WITH THE PROJECTION OF THE R/W LINE.
2. FIRE HYDRANTS AT INTERSECTIONS SHALL BE LOCATED AT THE P.C. OF THE RIGHT-OF-WAY LINE.
3. ALL UNDERGROUND UTILITIES SHALL BE PLACED PARALLEL OR PERPENDICULAR TO THE CENTERLINE OF THE RIGHT-OF-WAY.
4. ALL SANITARY SEWER MANHOLES AT INTERSECTION SHALL BE LOCATED AT THE CENTERLINE OF THE INTERSECTING STREETS.

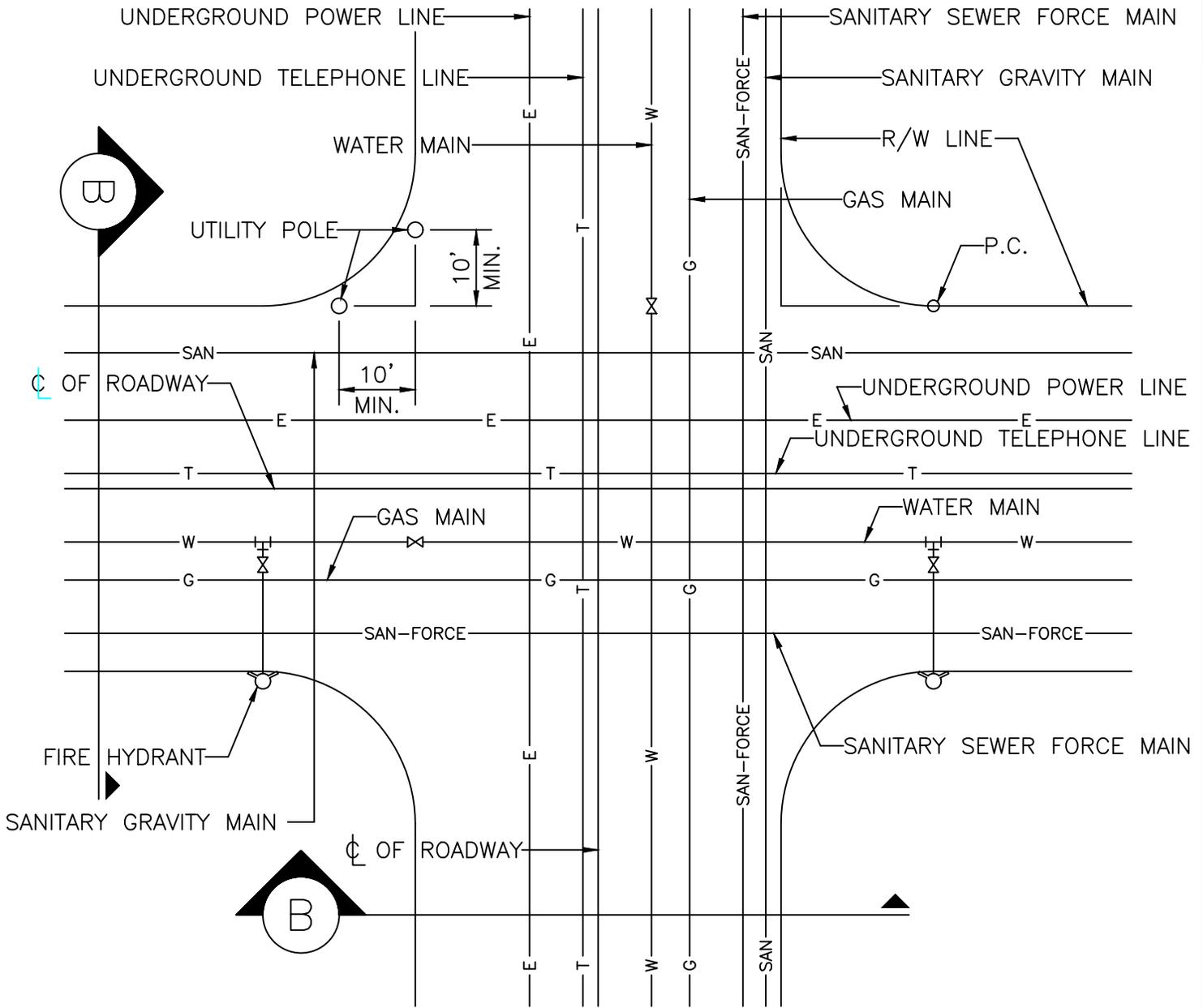
CITY OF LAUDERHILL  
ENGINEERING DEPARTMENT  
LAUDERHILL, FLORIDA

SCALE:  
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REVISED:  
SEPT. 18

GENERAL DETAIL  
UTILITY PLACEMENT WITHIN  
PUBLIC RIGHTS-OF-WAY  
FOR RESIDENTIAL STREETS

G-1





PLAN

NOTES:

1. ALL MAIN VALVES AT INTERSECTIONS SHALL BE LOCATED AT THE INTERSECTION OF THE MAIN WITH THE PROJECTION OF THE R/W LINE.
2. FIRE HYDRANTS AT INTERSECTIONS SHALL BE LOCATED AT THE P.C. OF THE RIGHT-OF-WAY LINE.
3. ALL UNDERGROUND UTILITIES SHALL BE PLACED PARALLEL OR PERPENDICULAR TO THE CENTERLINE OF THE RIGHT-OF-WAY.
4. ACCESS MANHOLES SHALL NOT BE PLACED IN TRAFFIC LANES UNLESS SPECIAL APPROVAL IS OBTAINED. MEDIAN AND SIDEWALK AREAS SHALL BE USED.

CITY OF LAUDERHILL  
 ENGINEERING DEPARTMENT  
 LAUDERHILL, FLORIDA

SCALE:

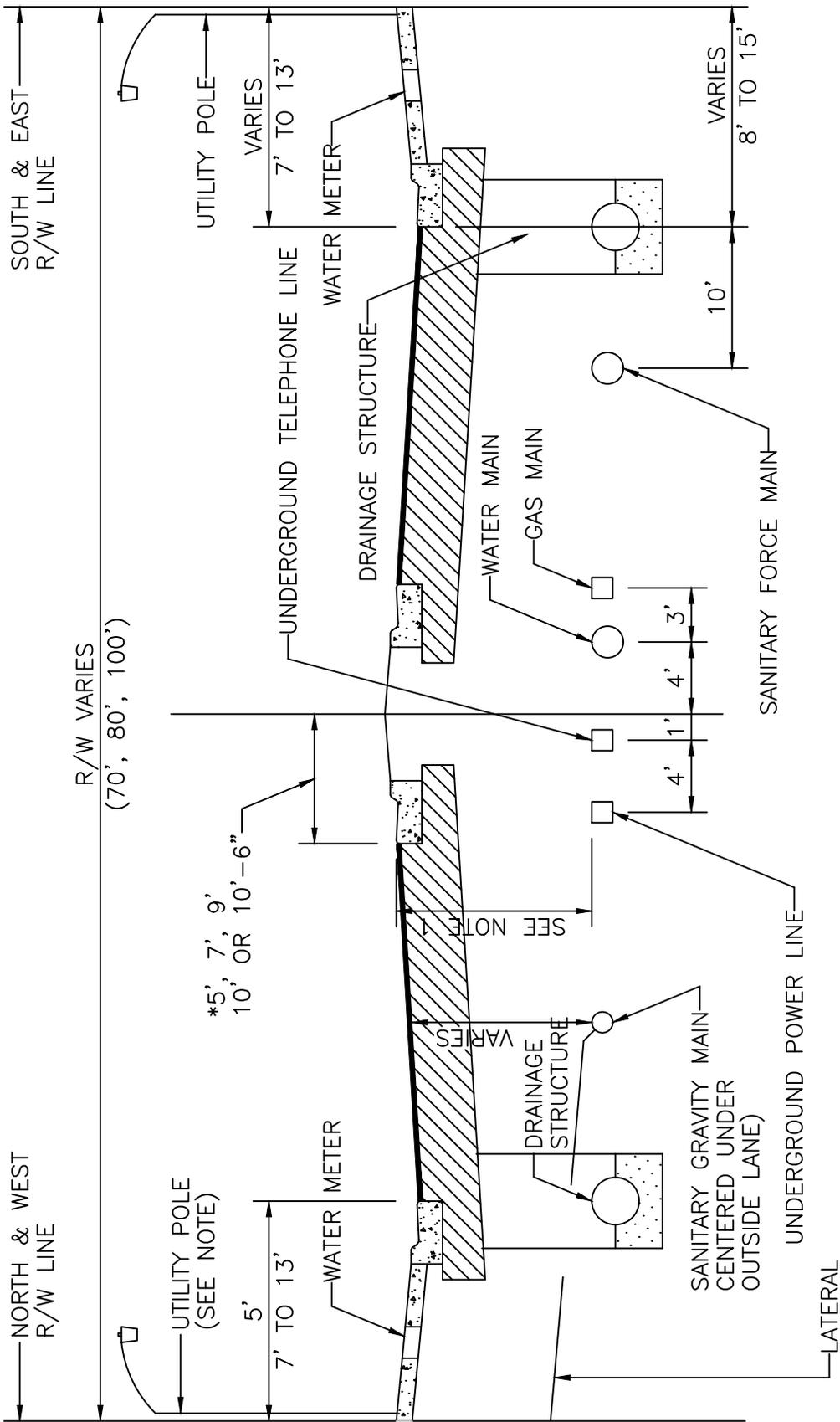
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GENERAL DETAIL  
 UTILITY PLACEMENT WITHIN  
 PUBLIC RIGHTS-OF-WAY  
 FOR ARTERIAL STREETS

G-3



SECTION B-B

NOTES:

1. PROVIDE MINIMUM OF 36" COVER ON ALL UTILITIES GREATER COVER MAY BE REQUIRED ON UTILITIES LARGER THAN 24" AT INTERSECTING ARTERIALS.
2. NO UTILITY POLES TO BE PLACED ON ARTERIALS EXCEPT BY SPECIAL APPROVAL.
3. FIRE HYDRANTS TO BE PLACED AT BACK OF SIDEWALK, UNLESS APPROVED OTHERWISE.

\* PAINTED MEDIAN  
10' TOTAL WIDTH

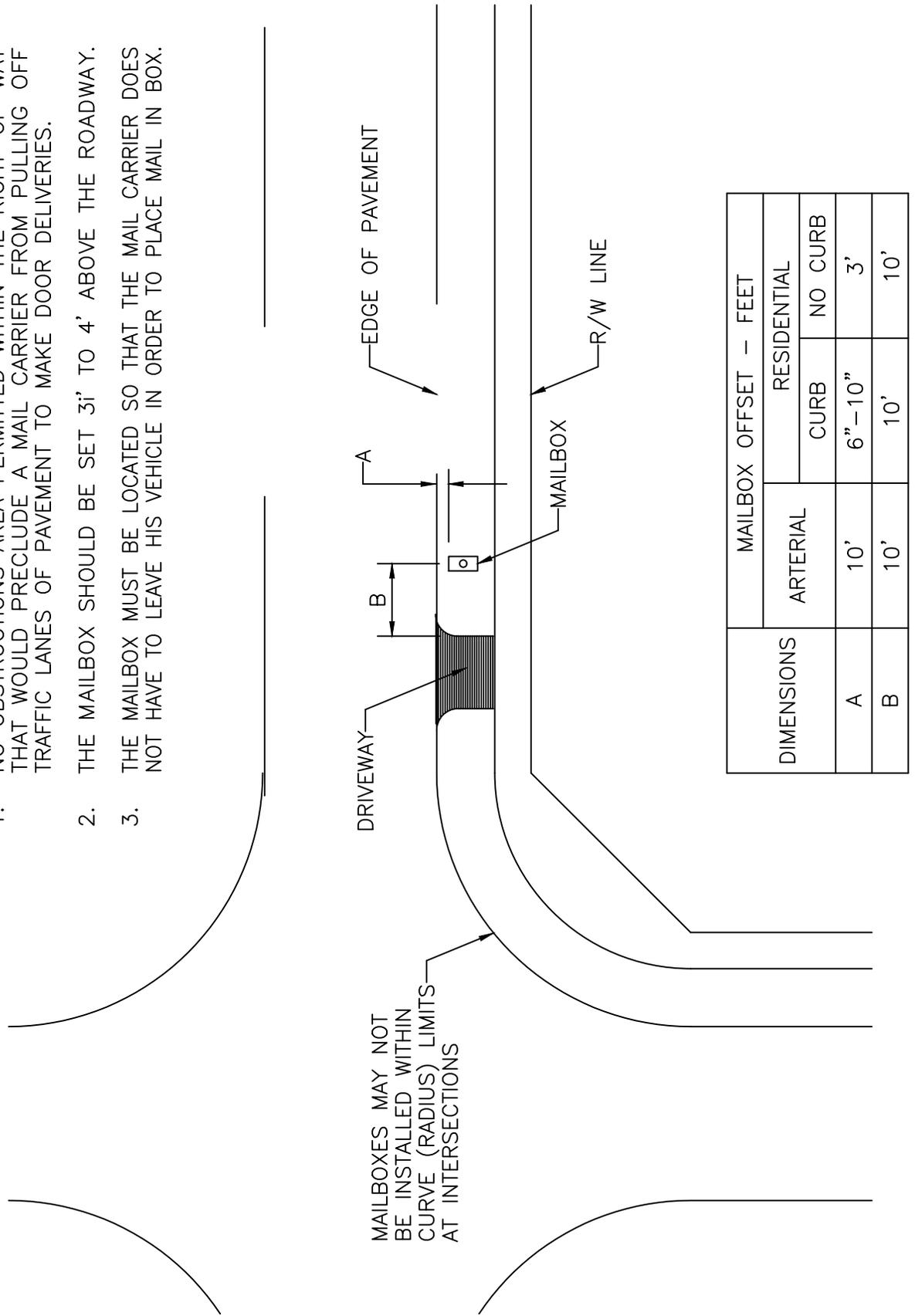
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LAUDERHILL, FLORIDA

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SEPT. 18

GENERAL DETAIL  
UTILITY PLACEMENT WITHIN  
PUBLIC RIGHTS-OF-WAY  
FOR ARTERIAL STREETS

NOTES:

1. NO OBSTRUCTIONS AREA PERMITTED WITHIN THE RIGHT-OF-WAY THAT WOULD PRECLUDE A MAIL CARRIER FROM PULLING OFF TRAFFIC LANES OF PAVEMENT TO MAKE DOOR DELIVERIES.
2. THE MAILBOX SHOULD BE SET 3' TO 4' ABOVE THE ROADWAY.
3. THE MAILBOX MUST BE LOCATED SO THAT THE MAIL CARRIER DOES NOT HAVE TO LEAVE HIS VEHICLE IN ORDER TO PLACE MAIL IN BOX.

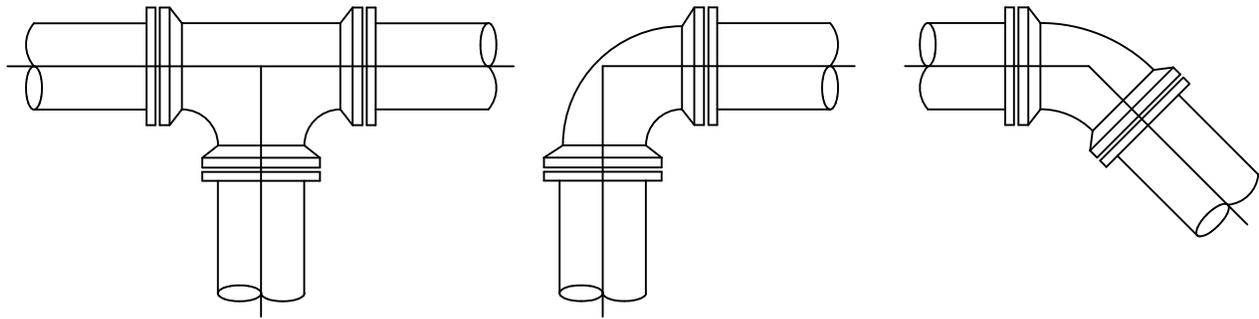


CITY OF LAUDERHILL  
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LAUDERHILL, FLORIDA

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GENERAL DETAIL  
MAILBOX LOCATION WITHIN  
PUBLIC RIGHTS-OF-WAY

G-5



TEE & WYE

90° BEND

45° & 22 1/2° BEND

RESTRAINED PIPE LENGTH (LINEAL FEET)						
PIPE SIZE	TEE & WYE	90°BEND	45°BEND	22 1/2°BEND	11 1/4°BEND	
6"	27	27	16	9	5	
8"	34	34	20	11	6	
10"	41	41	24	14	7	
12"	48	48	28	16	8	
14"	55	55	32	18	10	
16"	62	62	35	20	11	
18"	69	69	39	22	12	
20"	75	75	42	24	13	
24"	87	87	49	27	14	
30"	104	104	57	31	17	
36"	120	120	65	35	19	
42"	134	134	72	39	21	
48"	147	147	79	42	22	
54"	160	160	85	45	24	

NOTE: THE FIGURES IN THIS TABLE ARE BASED ON 150 PSI TEST PRESSURE WITH 2.5 FEET OF COVER AND 2000 POUNDS PER SQUARE FOOT SOIL BEARING AGAINST UNDISTURBED TRENCH. A 20% SAFETY FACTOR HAS BEEN ADDED.

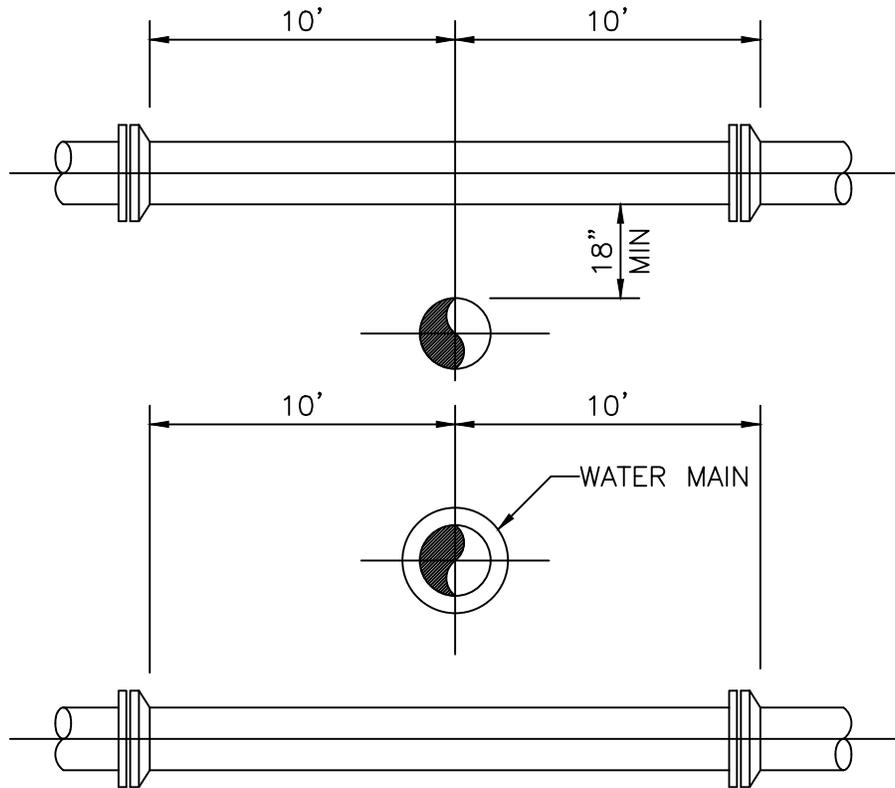
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LAUDERHILL, FLORIDA

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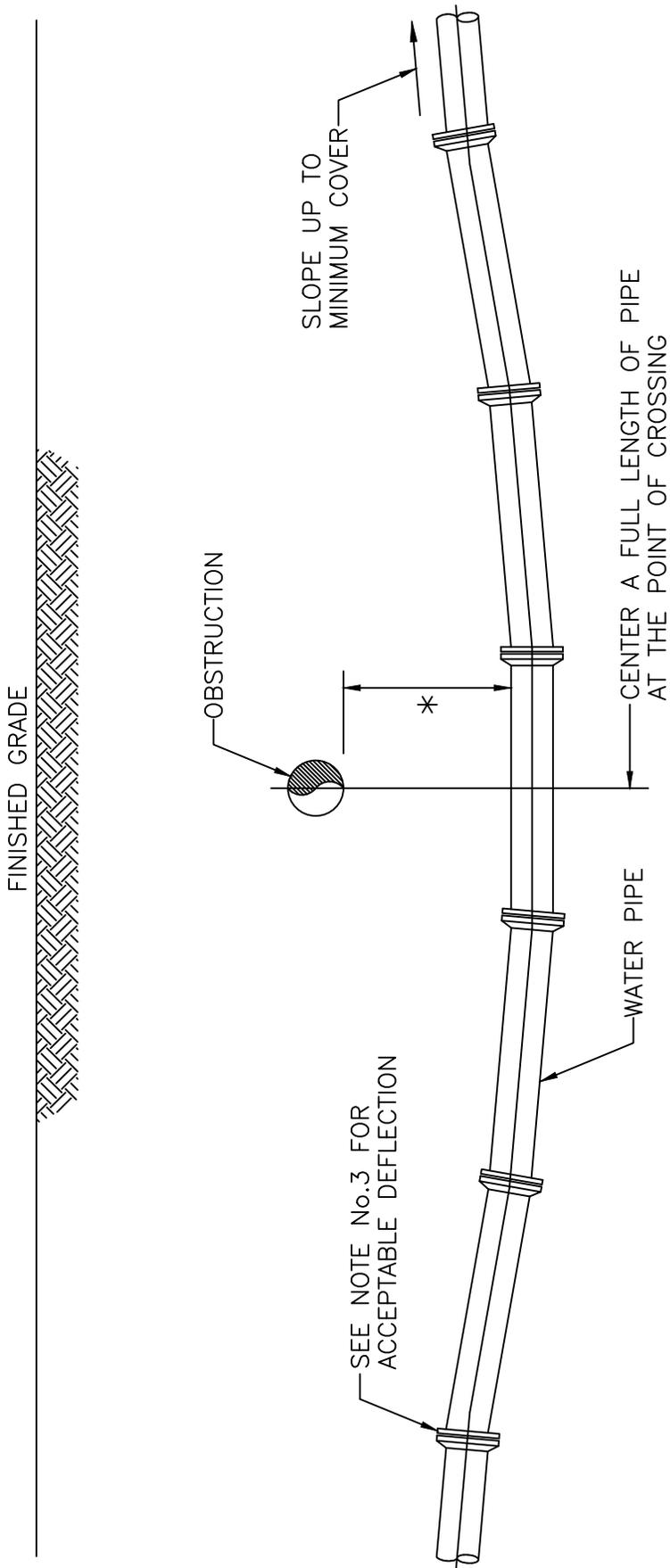
GENERAL DETAIL  
RESTRAINED JOINT DETAIL

G-6



NOTES:

1. A WATER MAIN SHOULD CROSS OVER PIPES WHEREVER POSSIBLE MAINTAINING A 36 INCH COVER FOR P.V.C., 36 INCH COVER FOR D.I.P. AND 18 INCH SEPARATION AS MINIMUMS.
2. WHEREVER A WATER MAIN CROSSES UNDER A SEWER MAIN, OR CROSSES OVER WITH LESS THAN 18 INCHES VERTICAL SEPARATION, THEN D.I.P. SHALL BE USED FOR BOTH PIPES FOR A DISTANCE OF 20 FEET CENTERED ON CROSSING WITH NO JOINTS WITHIN 10 FEET OF THE CROSSING.
3. 18 INCH SEPARATION SHOULD BE MAINTAINED BETWEEN ALL PIPES (STORM, SEWER, WATER) WHENEVER POSSIBLE. 12 INCHES IS THE ABSOLUTE MINIMUM SEPARATION WITH D.I.P. REQUIRED FOR ANY SEPARATION LESS THAN 18 INCHES.
4. MAINTAIN 6 FEET HORIZONTAL SEPARATION BETWEEN WATER AND SEWER AS A MINIMUM.
5. 5 FOOT HORIZONTAL CLEARANCE SHALL BE PROVIDED BETWEEN UTILITIES AND ANY OBSTRUCTIONS (CATCH BASINS, CONCRETE POLES, ETC.)
6. 5 FOOT HORIZONTAL CLEARANCE SHALL BE PROVIDED BETWEEN UTILITIES AND TREES.



SEE NOTE No.3 FOR ACCEPTABLE DEFLECTION

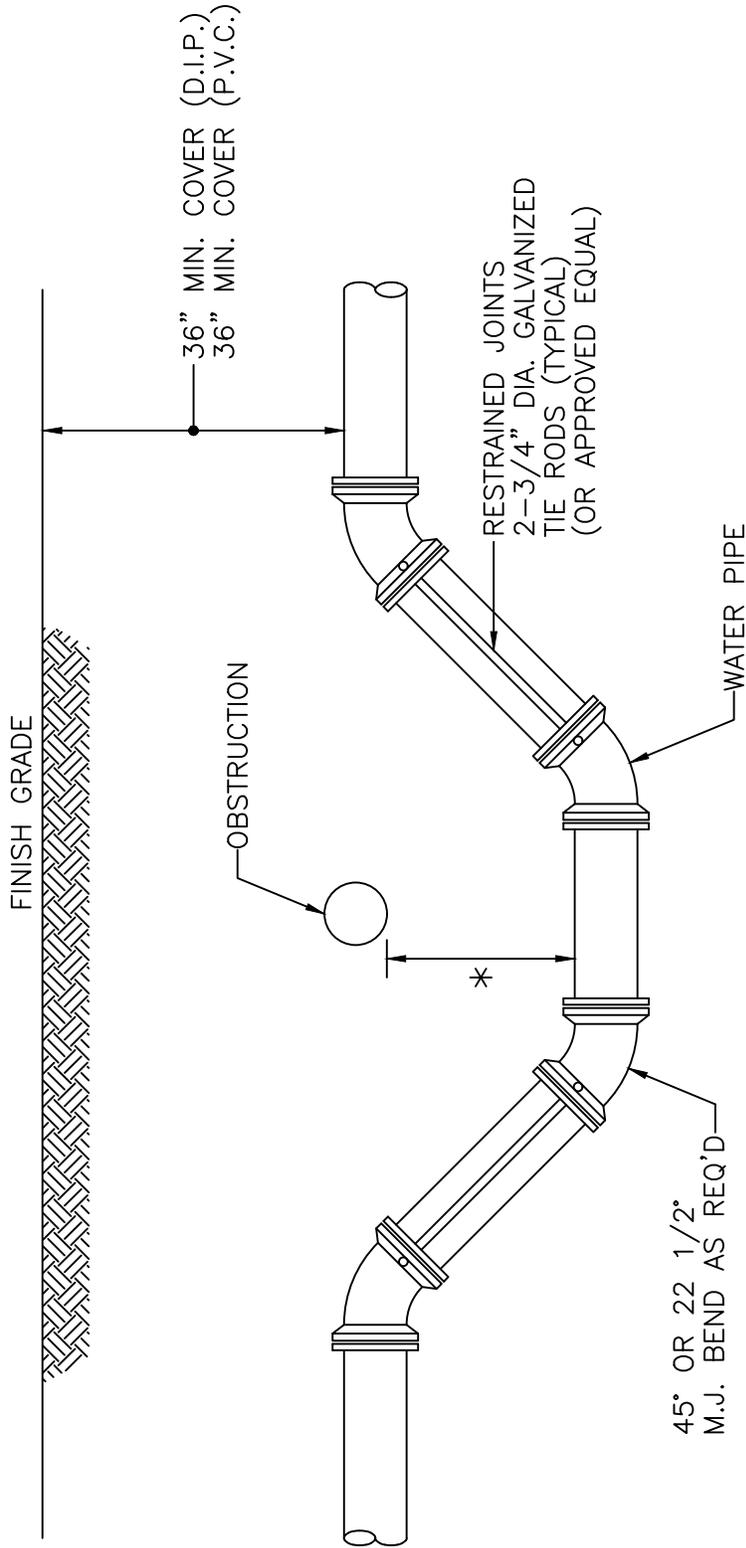
NOTES:

1. (\*) 18" MINIMUM CLEARANCE REQUIRED FOR WATER AND SEWER MAIN CROSSINGS, 12" MINIMUM CLEARANCE REQUIRED FOR OTHER UTILITY CROSSINGS.
2. THE DEFLECTION TYPE CROSSING SHALL BE USED WHENEVER POSSIBLE. ONLY UNDER SPECIFIC ORDERS BY THE ENGINEER SHALL THE FITTING TYPE CROSSING BE ALLOWED.
3. CONSTRUCT CROSSING USING 75% OF MANUFACTURES MAXIMUM JOINT DEFLECTION (MAXIMUM).

CITY OF LAUDERHILL  
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GENERAL DETAIL  
 UTILITY CROSSING  
 DEFLECTION TYPE



NOTES:

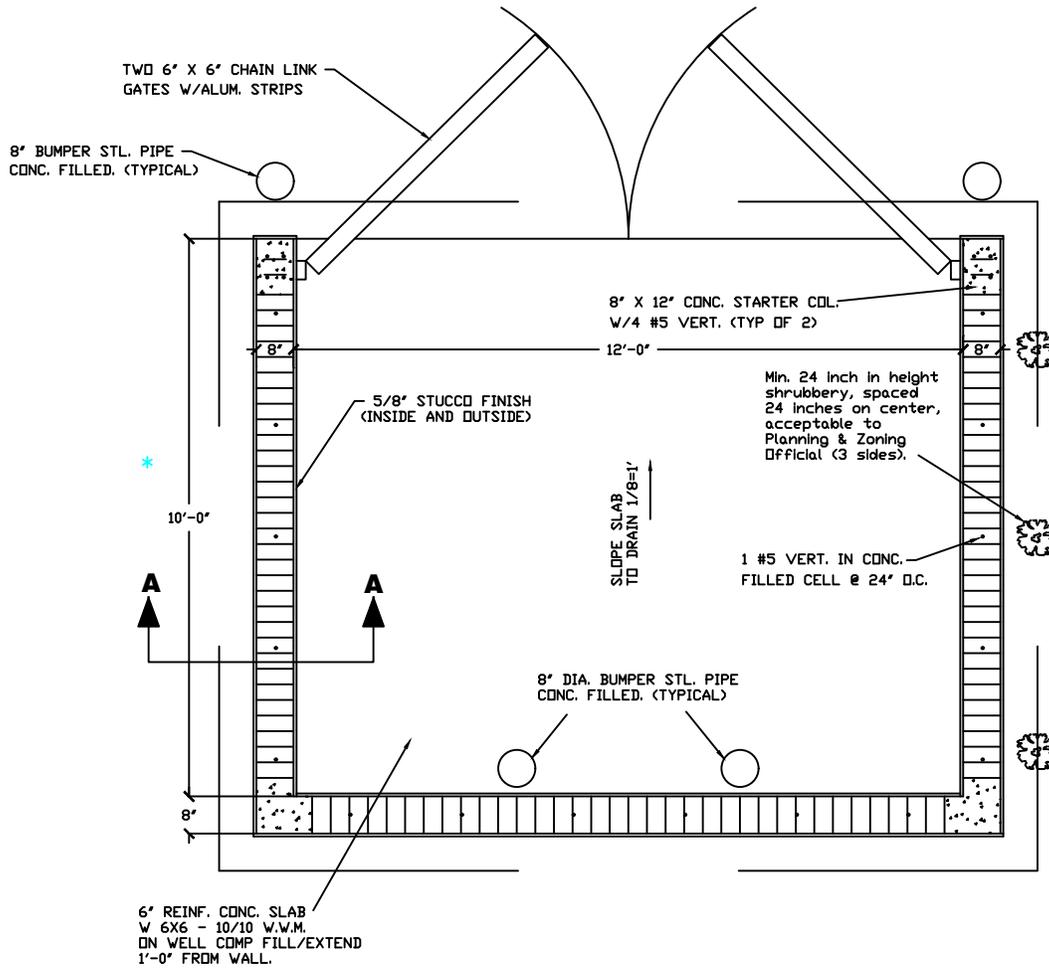
1. (\*) 18" MINIMUM CLEARANCE REQUIRED FOR WATER & SEWER MAIN CROSSINGS, 12" MIN. CLEARANCE REQUIRED FOR OTHER UTILITIES CROSSINGS.
2. COAT TIE RODS WITH A COAL TAR ENAMEL AFTER ASSEMBLY (2 COATS MINIMUM).
3. TIE RODS MAY BE OMITTED WHEN OTHER APPROVED METHODS OF RESTRAINING ARE UTILIZED.

CITY OF LAUDERHILL  
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GENERAL DETAIL  
UTILITY CROSSING  
FITTING TYPE

G-9

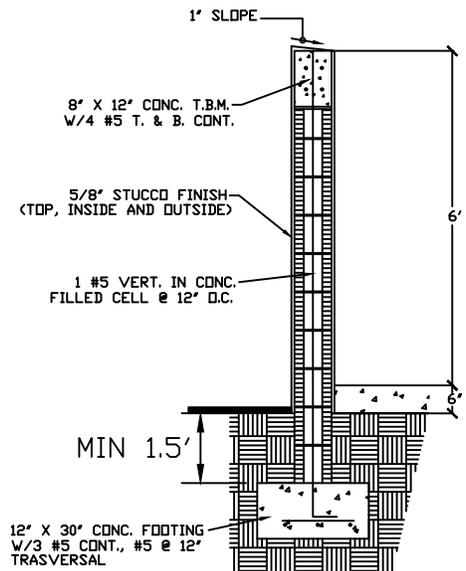


GARBAGE DUMPSTER ENCLOSURE DETAIL  
SCALE 3/8" = 1'-0"

**NOTES**

1. Concrete min. 4,000 p.s.i. Reinforcement shown min.
2. Locate per site plan for adequate truck access.
3. Min. 25 feet setback from residential property.
4. Dumpsters for restaurants and food processing establishments require sanitary sewer connection and hose bib as specified in FAC 64E-11.007(6).

\*6'-0" Dimension for Optional  
2 Cubic Yard Dumpster

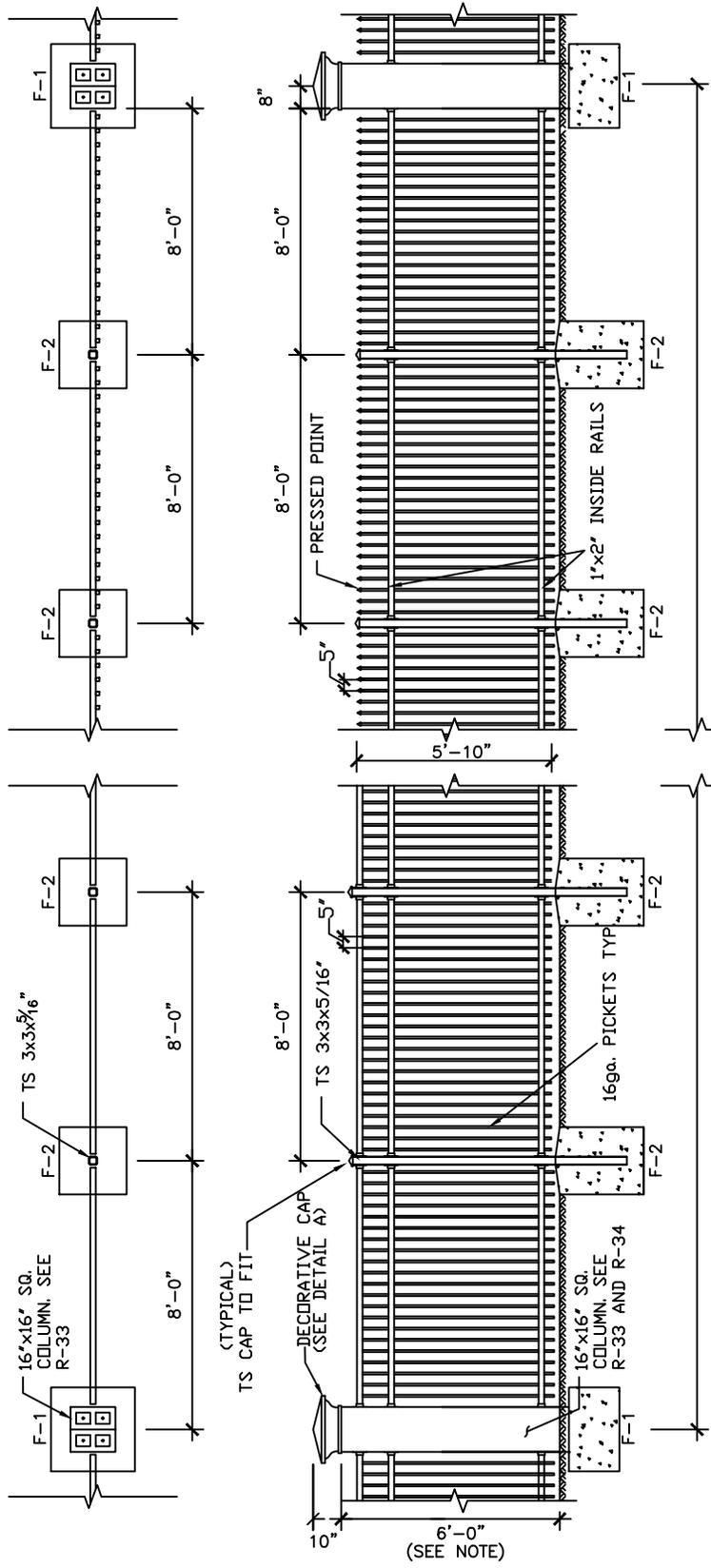


SECTION A-A  
SCALE 3/8" = 1'-0"

PICKET FENCE

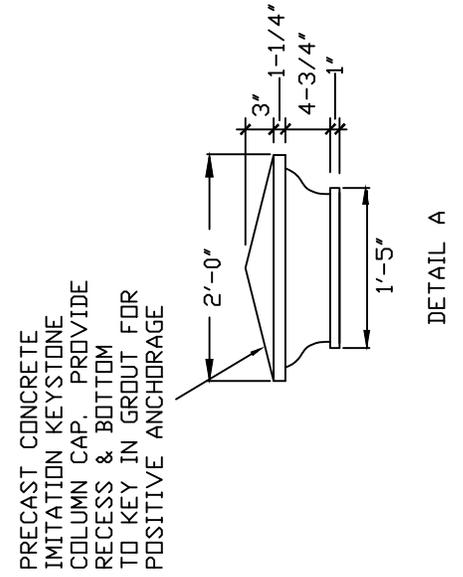
OR

TOP RAIL FENCE



SPECIFICATIONS		
COMPONENT	DIMENSIONS	STEEL TYPE
PICKETS*	1" X 1"	16 GAGE
PICKET SPACE	5"	
RAILS (2)	1" X 2"	16 GAGE
POSTS*	3" X 3" X 5/16"	16 GAGE
COLOR	BLACK POWDER COAT	
OTHER	PANELS TO ATTACH TO POSTS WITH BRACKETS	

FOOTING SCHEDULE			
MARK	SIZE	REINFORCEMENT	REMARKS
F-1	2'-6" x 2'-6" x 18" DEEP	(4)-#5 E.W. TOP & BOTTOM	-
F-2	2'-0" x 2'-0" x 30" DEEP	(2)-#4 U-BARS E.W.	-

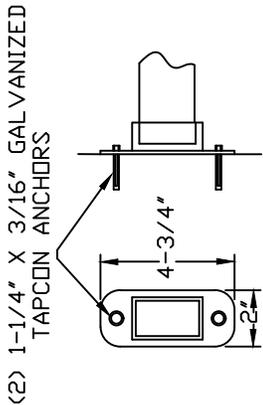


CITY OF LAUDERHILL  
ENGINEERING DEPARTMENT  
LAUDERHILL, FLORIDA

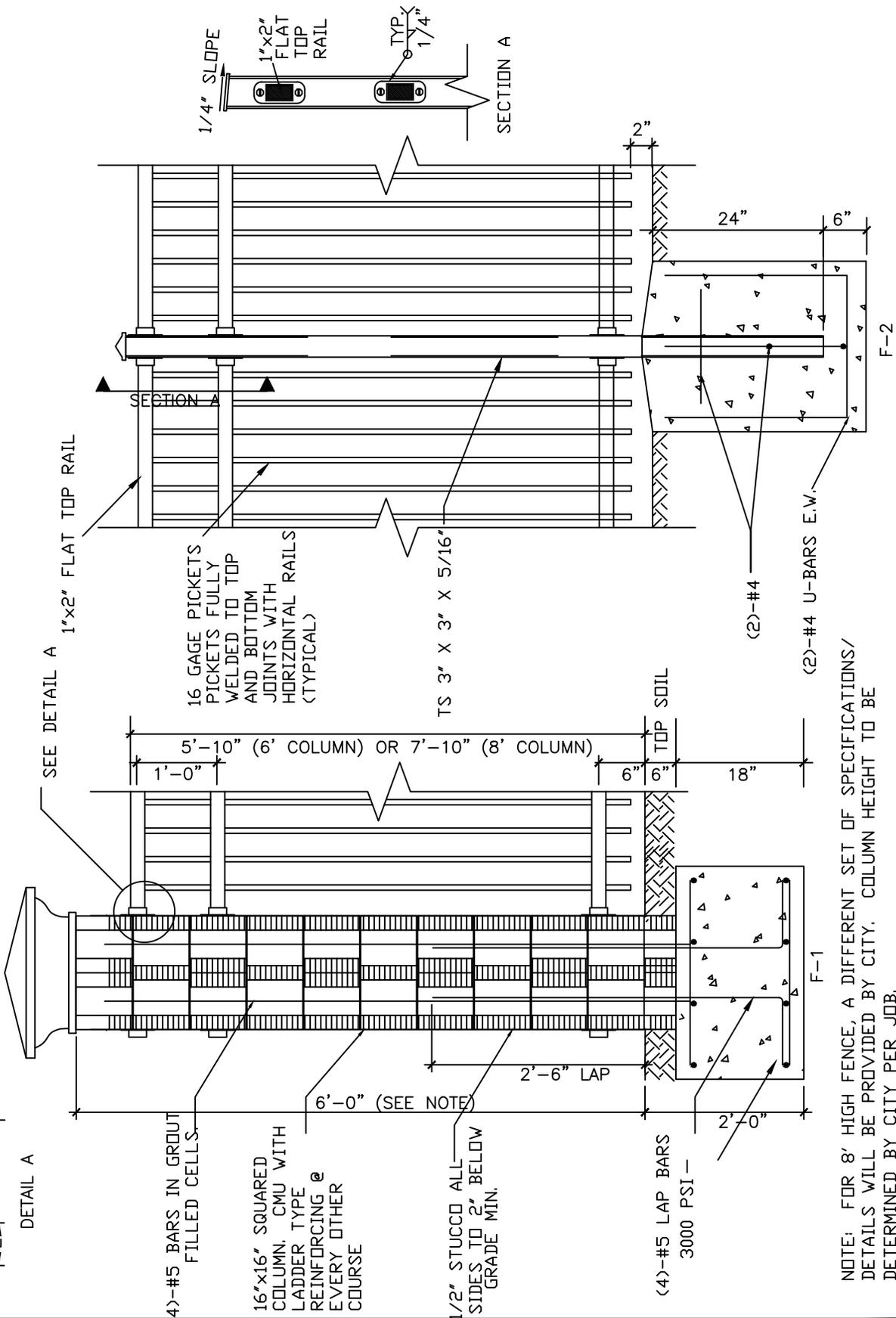
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STANDARD FENCE DETAIL  
FENCE PLAN, DETAILS  
AND ELEVATION

G-11



DETAIL A



SEE DETAIL A

NOTE: FOR 8' HIGH FENCE, A DIFFERENT SET OF SPECIFICATIONS/DETAILS WILL BE PROVIDED BY CITY. COLUMN HEIGHT TO BE DETERMINED BY CITY PER JOB.

CITY OF LAUDERHILL  
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STANDARD FENCE DETAIL  
SECTION AND DETAILS

G-12

CONCRETE

1. CONCRETE ELEMENTS TO HAVE THE FOLLOWING STRENGTHS:

A. FOUNDATIONS 3000 PSI

2. ALL CONCRETE SHALL BE READY MIX, HAVE A MINIMUM COMPRESSIVE STRENGTH OF :

A. 3000 PSI @ 28 DAYS AND HAVE A MINIMUM OF 517 LBS. OF CEMENT PER CUBIC YARD.

B. SLUMPS SHALL BE 3 MINIMUM AND 5 MAXIMUM.

C. CONCRETE SHALL HAVE 3 +/- 1.5 PERCENT AIR ENTRAINMENT.

3. ALL CONCRETE WORK SHALL COMPLY WITH THE REQUIREMENTS OF THE ACI BUILDING CODE (ACI 318 / LATEST EDITION), THE ACI DETAILING MANUAL (ACI 315 / LATEST EDITION), AND THE SPECIFICATIONS FOR STRUCTURAL CONCRETE FOR BUILDINGS (ACI 301 / LATEST EDITION).

4. SUBMIT ALL REINFORCING STEEL SHOP DRAWINGS FOR APPROVAL PRIOR TO ANY FABRICATION.

5. CONCRETE COVER FOR REINFORCING STEEL SHALL BE AS REQUIRED BY THE ACI SPECIFICATIONS.

6. LAP ALL BARS MINIMUM 48 DIAMETERS UNLESS OTHERWISE NOTED ON DRAWINGS. LAP ALL W.W.F. A MINIMUM OF 6" UNLESS OTHERWISE NOTED.

DESIGN LOADS:

WIND LOAD =

SPEED = 150 MPH  
IMPORTANCE FACTOR = 1.0  
EXPOSURE = C

GENERAL NOTES:

MASONRY

1. MASONRY UNITS SHALL BE ASTM C90 GRADE N WITH MINIMUM COMPRESSIVE STRENGTH OF 2,500 PSI ON NET OF INDIVIDUAL UNITS. ALL CMU SHALL BE LAID IN A FULL BED OF MORTAR IN RUNNING BOND (U.N.O.)

2. ALL MORTAR SHALL BE TYPE S OR TYPE M, IN ACCORDANCE WITH ASTM SPECIFICATION C270 WITH A MINIMUM COMPRESSIVE STRENGTH OF 1,800 PSI AT 28 DAYS, (2,500 WITH TYPE M), FROM FIELD OBTAINED TEST CUBES. (MIN. OF TWO)

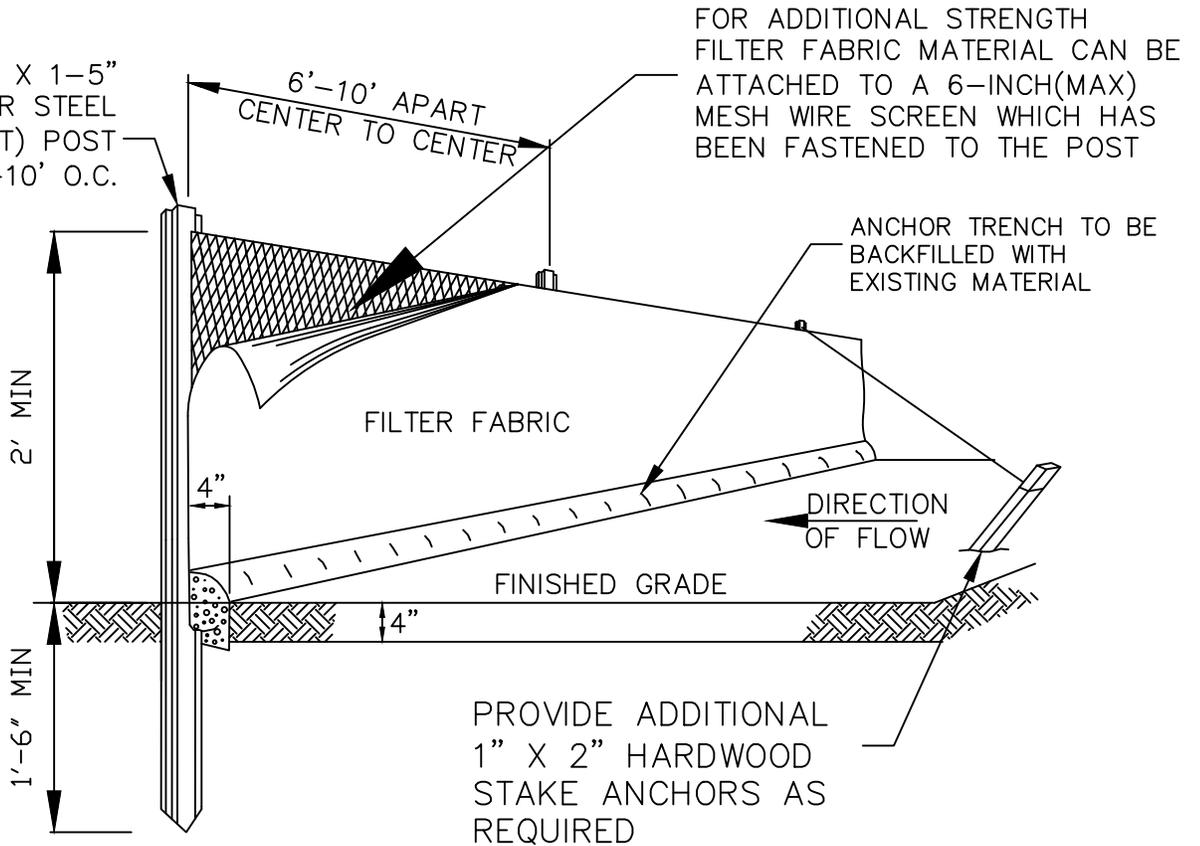
3. GROUT SHALL BE A HIGH SLUMP MIX IN ACCORDANCE WITH ASTM SPECIFICATION C476 HAVING A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI FROM FIELD OBTAINED TEST CUBES, (MIN. OF TWO).

FENCE FINISH

1. ALL STEEL TO BE HOT DIPPED GALVANIZED & POWDER COATED PAINT (COLOR TO BE PROVIDED BY OWNER)

2. 16 GAGE PICKETS

1-5" X 1-5"  
HARDWOOD OR STEEL  
(1.33 LBS/FT) POST  
@ 6-10' O.C.

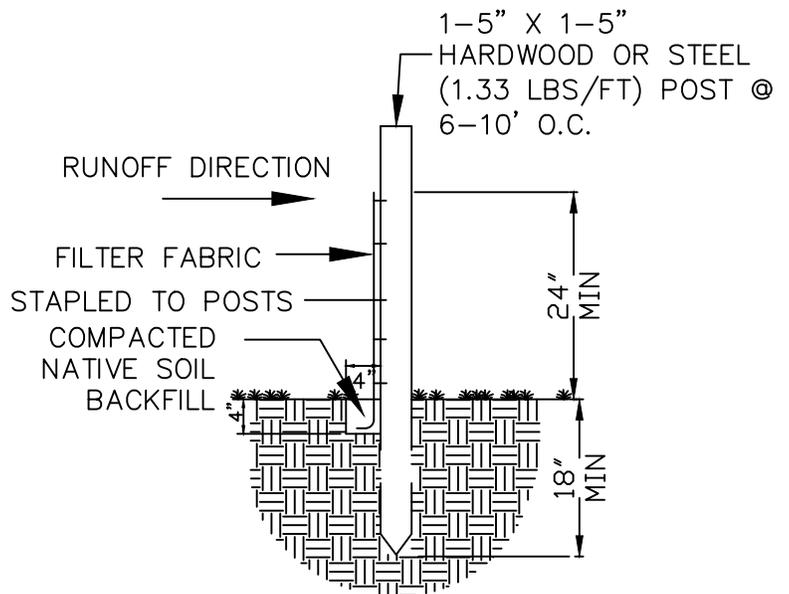


NOTES:

1. IN AREAS WHERE ANCHOR TRENCH CANNOT BE DUG, FABRIC WILL BE LAID ON SURFACE AND COVERED WITH MINIMUM 4" DEPTH OF SOIL.

2. WHEN ATTACHING 2 SILT FENCES TOGETHER, PLACE THE END POST OF THE SECOND FENCE INSIDE THE END POST OF THE FIRST FENCE. ROTATE BOTH POSTS AT LEAST 180 DEGREES IN A CLOCKWISE DIRECTION TO CREATE A TIGHT SEAL WITH THE FILTER FABRIC. DRIVE BOTH POSTS INTO THE GROUND AND BURY THE FLAP.

3. SEDIMENT DEPOSITS SHOULD BE REMOVED WHEN DEPOSITS REACH APPROXIMATELY ONE-HALF THE HEIGHT OF THE BARRIER.

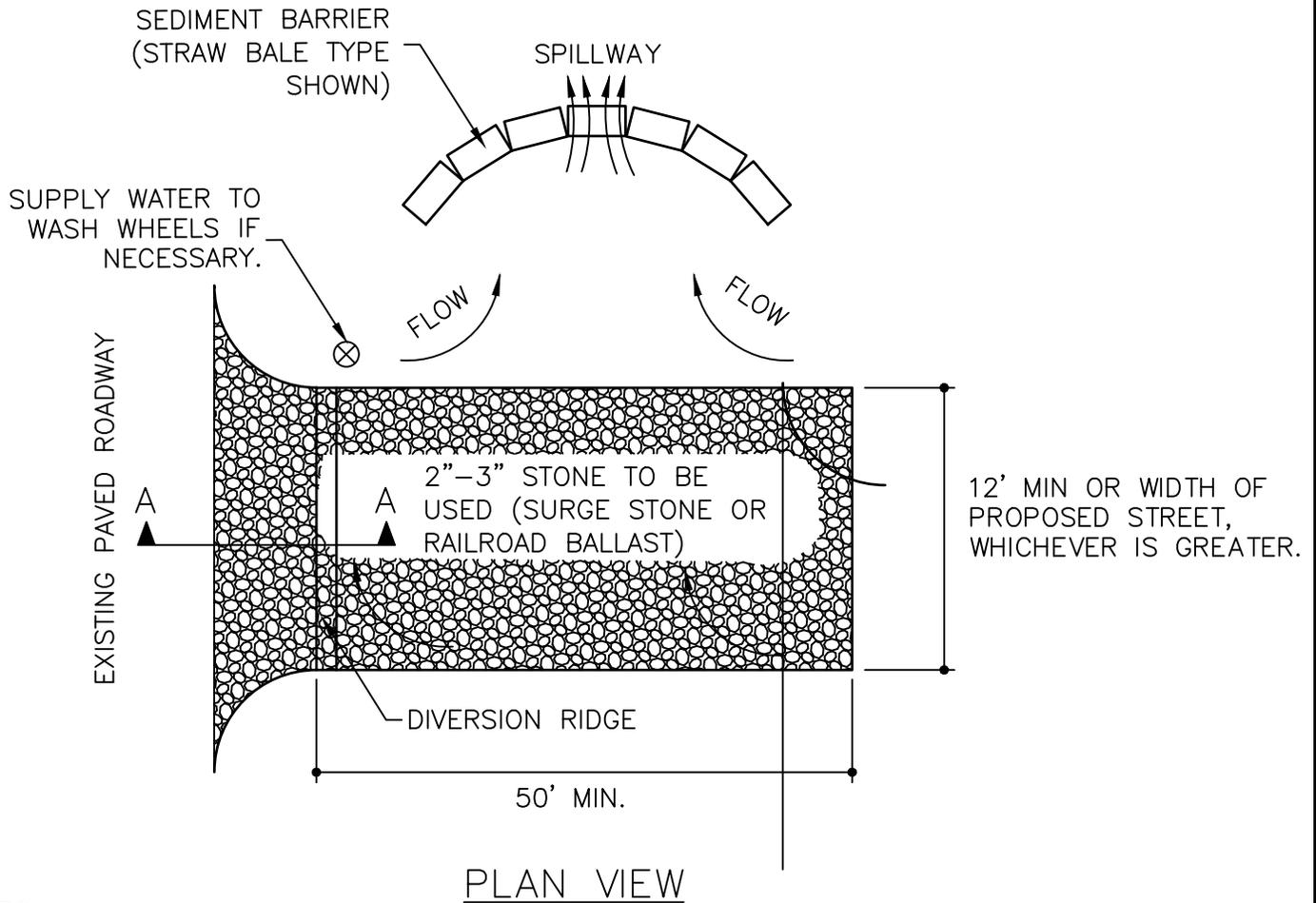
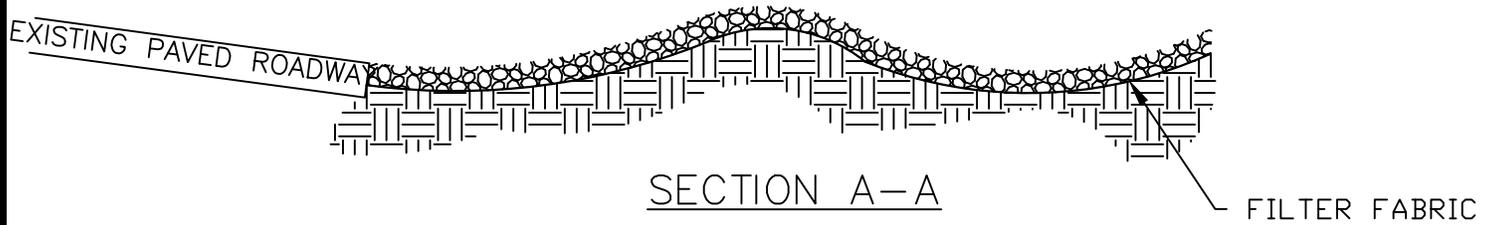


CITY OF LAUDERHILL  
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STANDARD  
SILT FENCE DETAIL

G-14



NOTES:

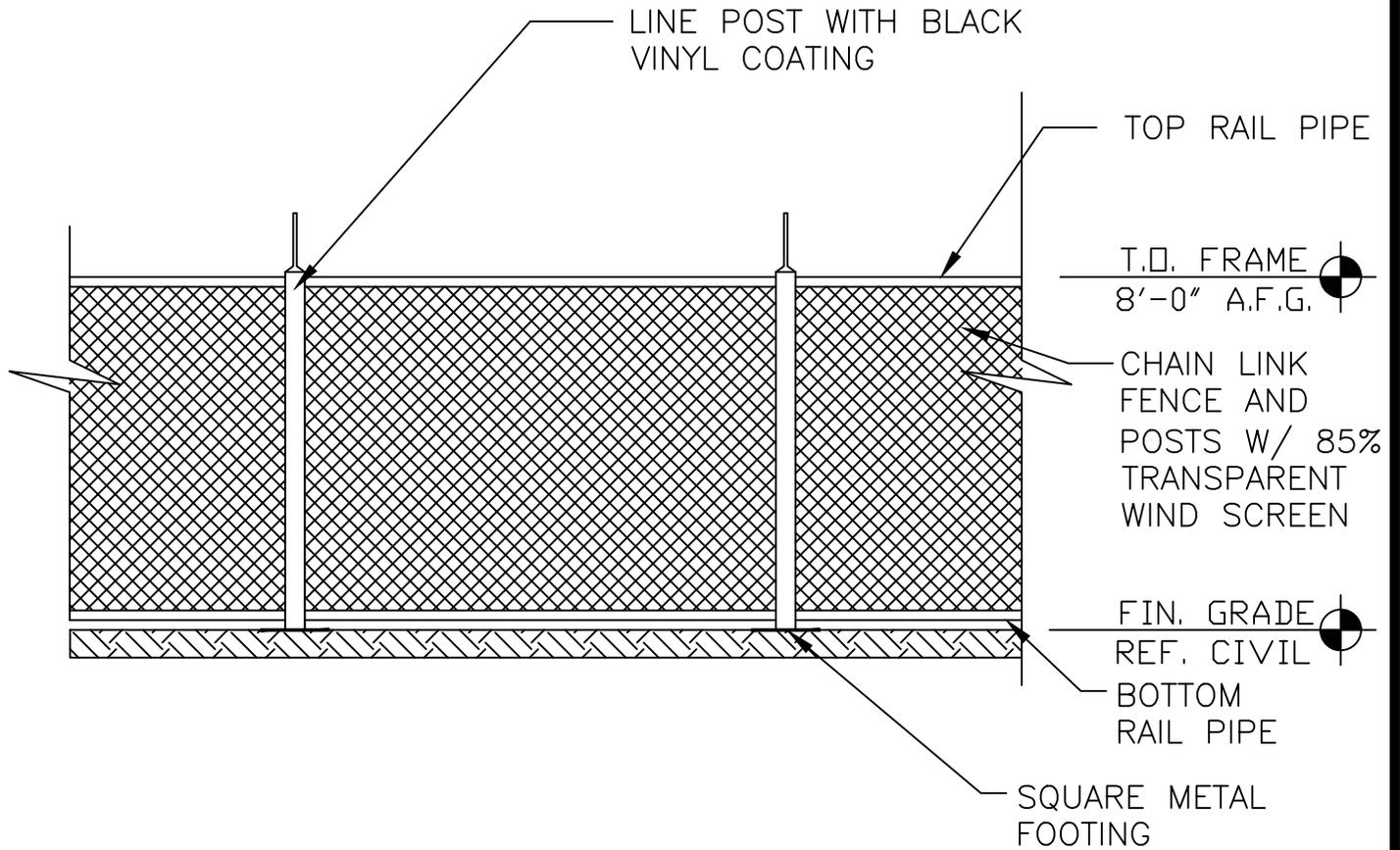
1. THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION THAT WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS-OF-WAY. THIS MAY REQUIRE TOP DRESSING, REPAIR AND/OR CLEANOUT OF ANY MEASURES USED TO TRAP SEDIMENT.
2. WHEN NECESSARY, WHEELS SHALL BE CLEANED PRIOR TO ENTRANCE ONTO PUBLIC RIGHT-OF-WAY.
3. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON A AREA STABILIZED WITH CRUSHED STONE THAT DRAINS INTO AN APPROVED SEDIMENT TRAP OR SEDIMENT BASIN.

CITY OF LAUDERHILL  
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STANDARD  
CONSTRUCTION  
ENTRANCE DETAIL

G-15

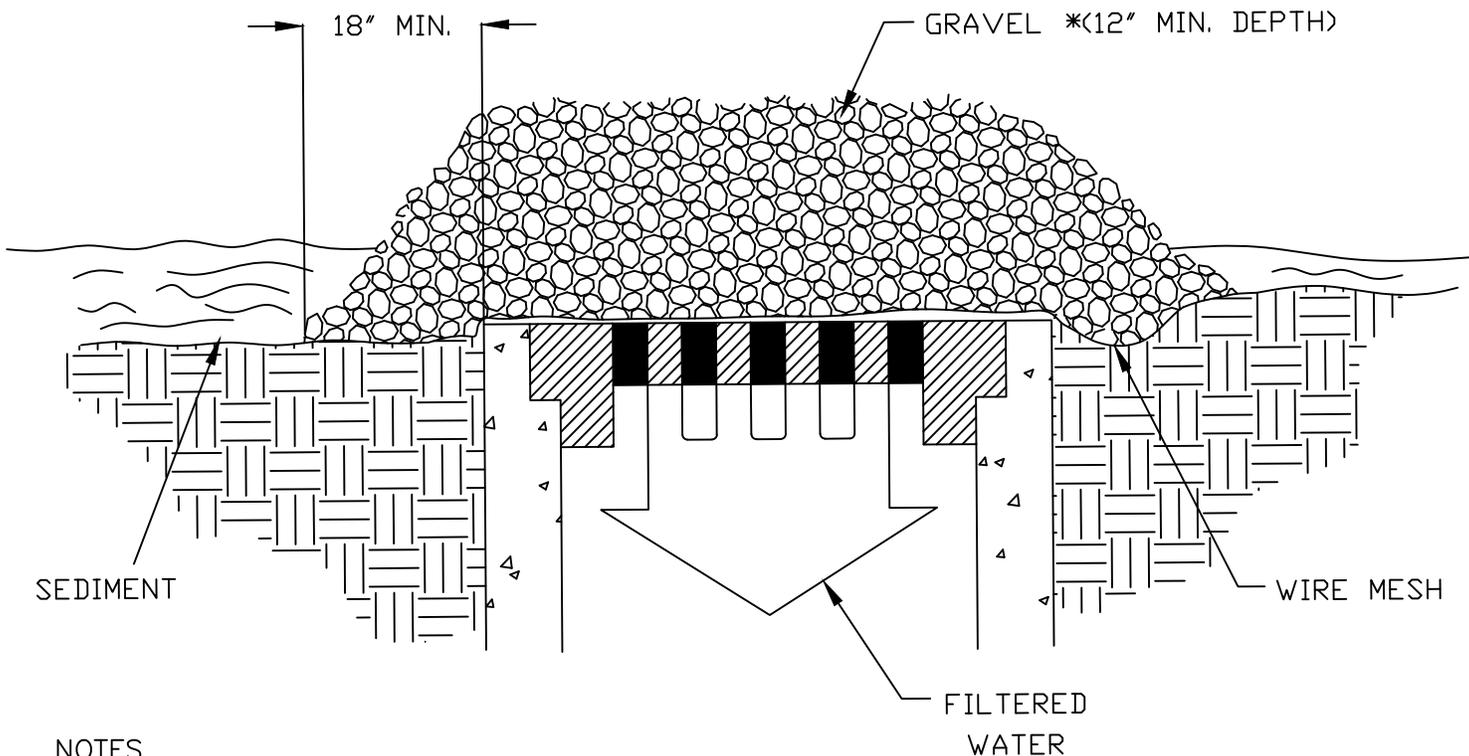


CITY OF LAUDERHILL  
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LAUDERHILL, FLORIDA

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STANDARD  
WIND FENCE DETAIL

G-16



**NOTES**

1. WIRE MESH SHALL BE LAID OVER THE DROP INLET SO THAT THE WIRE EXTENDS A MINIMUM OF ONE FOOT (30 CM) BEYOND EACH SIDE OF THE INLET STRUCTURE. HARDWARE CLOTH OR COMPARABLE WIRE MESH WITH ½ INCH (13 MM) OPENINGS SHALL BE USED. IF MORE THAN ONE STRIP OF MESH IS NECESSARY, THE STRIPS SHALL BE OVERLAPPED AT LEAST 1 FT. (30 CM).
2. FDOT NO. 1 COARSE AGGREGATE (1.5" TO 3.5" STONE)(4-9CM) SHALL BE PLACED OVER THE WIRE MESH AS SHOWN. THE DEPTH OF STONE SHALL BE AT LEAST 12 INCHES. OVER THE ENTIRE INLET OPENING. THE STONE SHALL EXTEND BEYOND THE INLET OPENING AT LEAST 18 INCHES ON ALL SIDES.
3. IF THE STONE FILTER BECOMES CLOGGED WITH SEDIMENT SO THAT IT NO LONGER ADEQUATELY
4. AN ALTERNATIVE FILTER FABRIC OR SEDIMENT FILTER SACK MAY BE USED FOR INLET IN PAVED AREAS

**SPECIFIC APPLICATION**

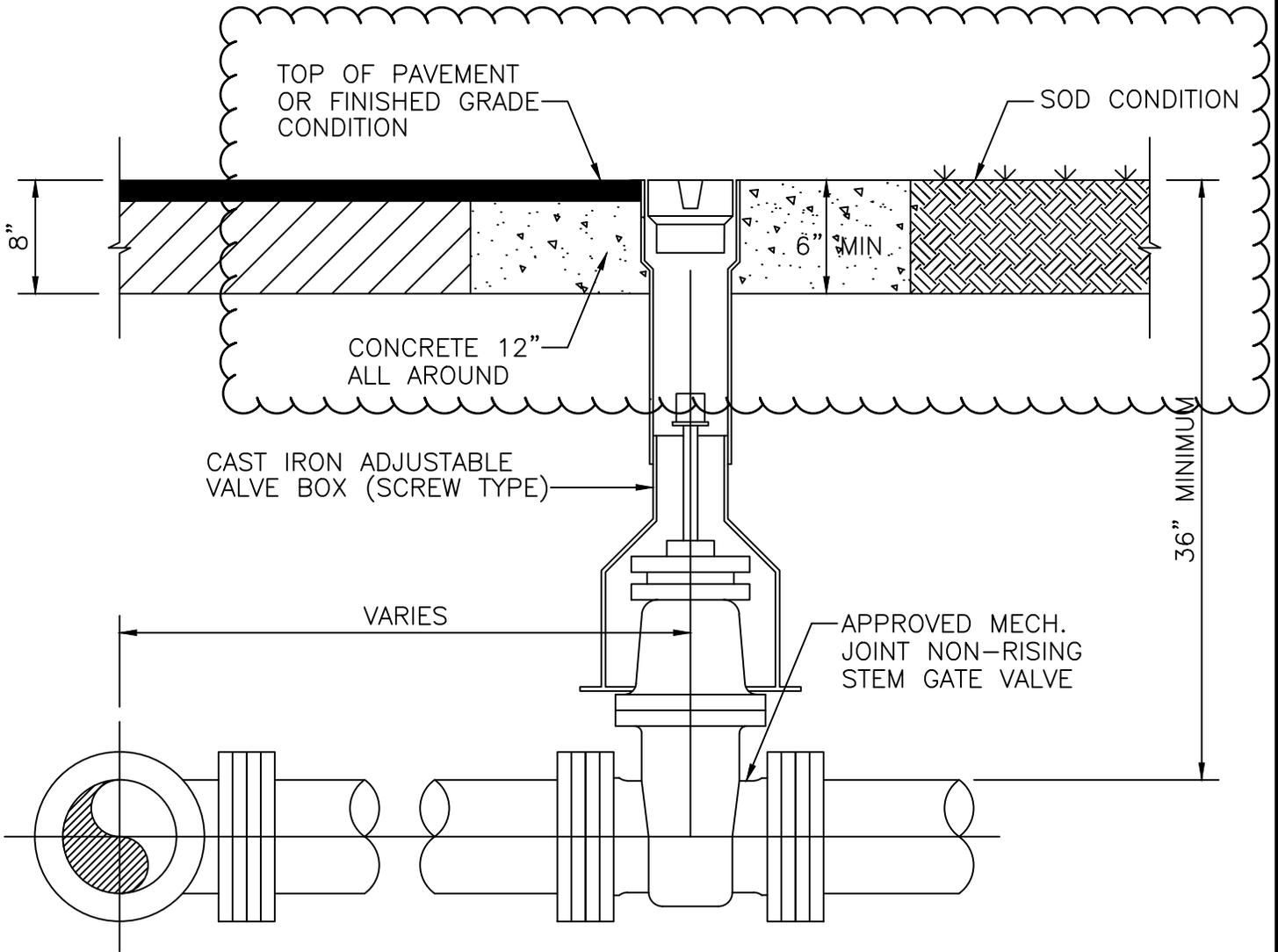
THIS METHOD OF INLET PROTECTION IS APPLICABLE WHERE HEAVY CONCENTRATED FLOWS ARE EXPECTED, BUT NOT WHERE PONDING AROUND THE STRUCTURE MIGHT CAUSE EXCESSIVE INCONVENIENCE OR DAMAGE TO ADJACENT STRUCTURES AND UNPROTECTED AREAS.

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STANDARD STORM  
DRAINAGE DETAIL  
INLET PROTECTION  
DEVICE

G-17

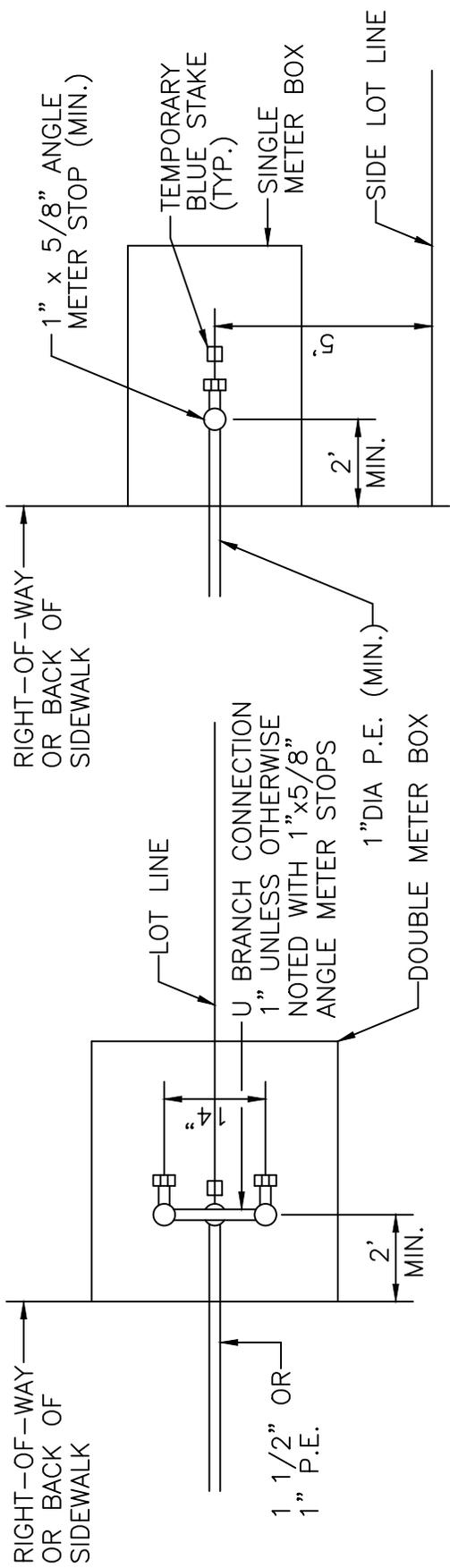


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STANDARD WATER  
 SUPPLY DETAIL  
 TYPICAL VALVE SETTING

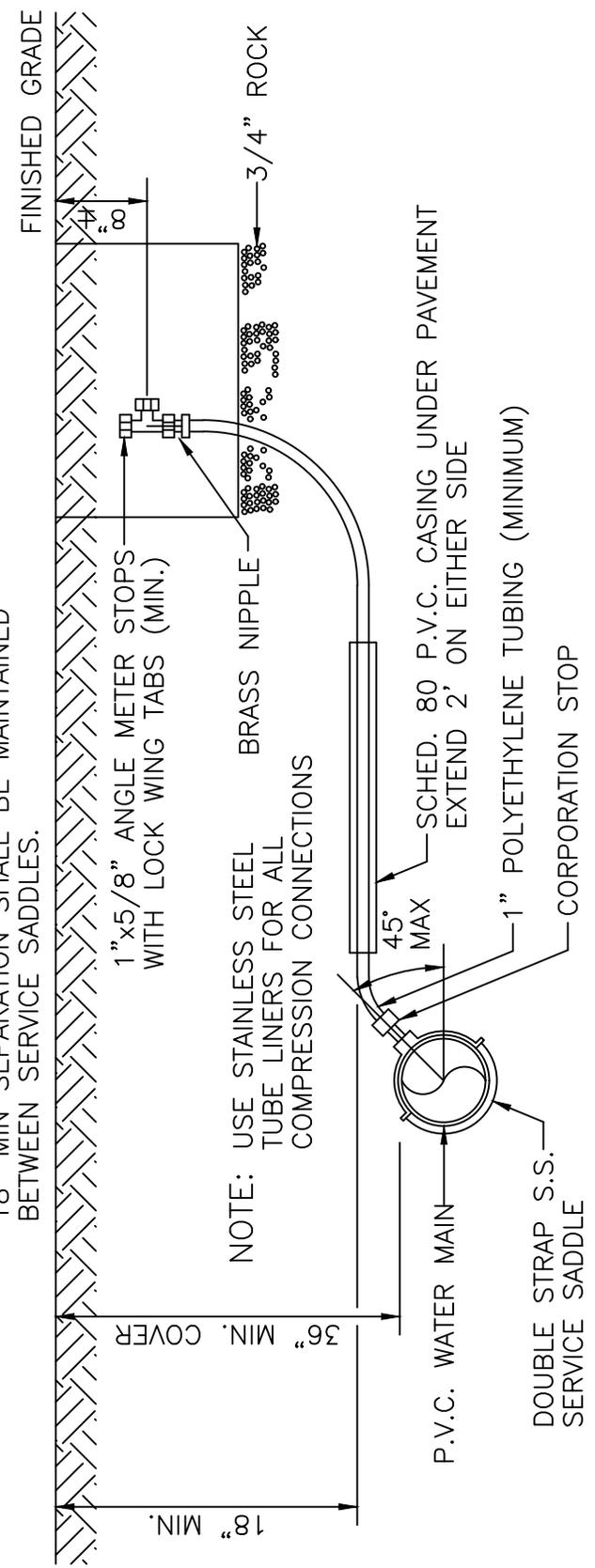
W-1



SINGLE SERVICE PLAN

DOUBLE SERVICE PLAN

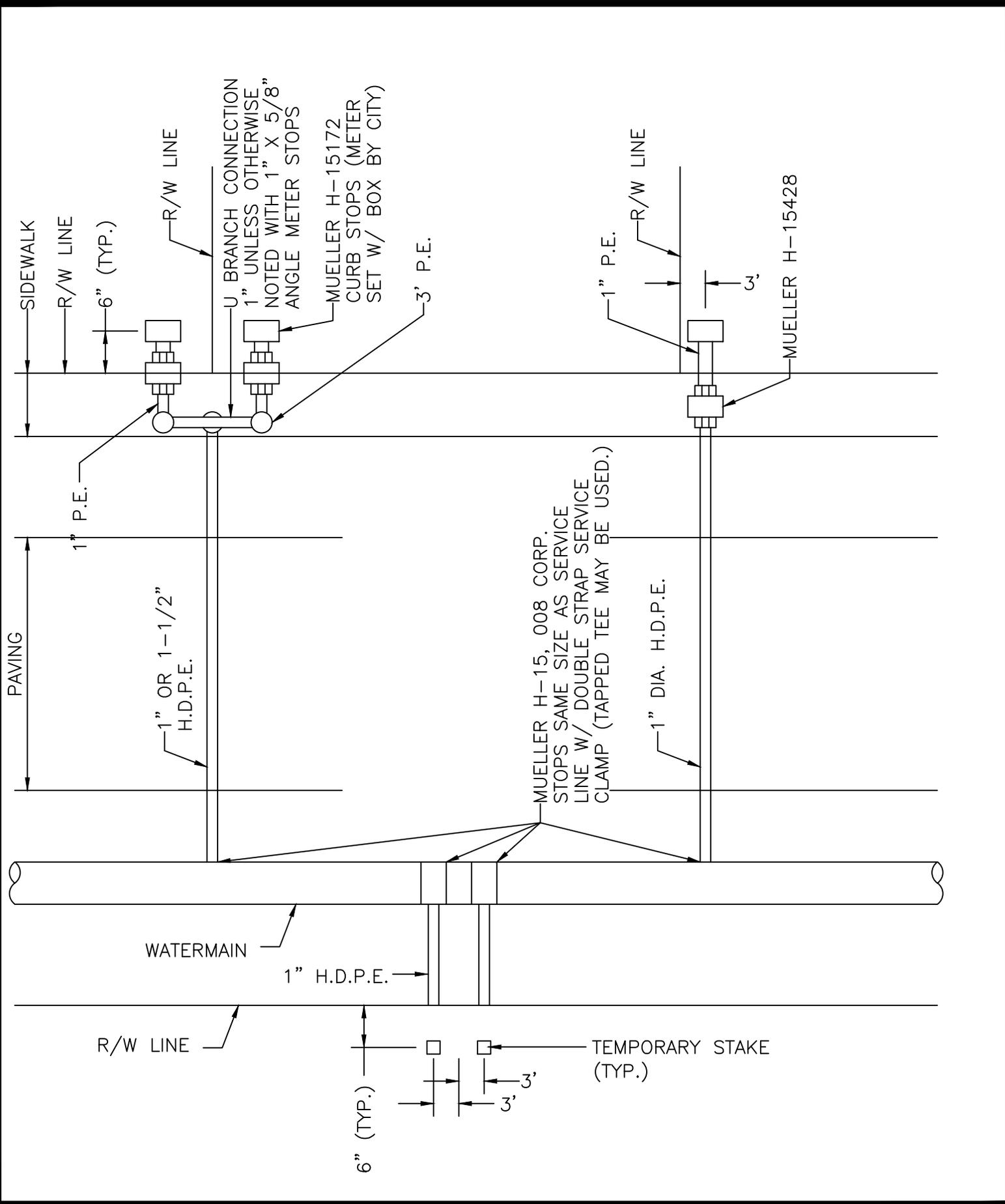
NOTE: METER AND METER BOX SUPPLIED & INSTALLED BY CITY. BACKFLOW PREVENTER SHALL BE INSTALLED DOWNSTREAM OF METER PER CODE. 18" MIN SEPARATION SHALL BE MAINTAINED BETWEEN SERVICE SADDLES.



NOTE: USE STAINLESS STEEL TUBE LINERS FOR ALL COMPRESSION CONNECTIONS

SCHED. 80 P.V.C. CASING UNDER PAVEMENT EXTEND 2' ON EITHER SIDE

1" POLYETHYLENE TUBING (MINIMUM) CORPORATION STOP

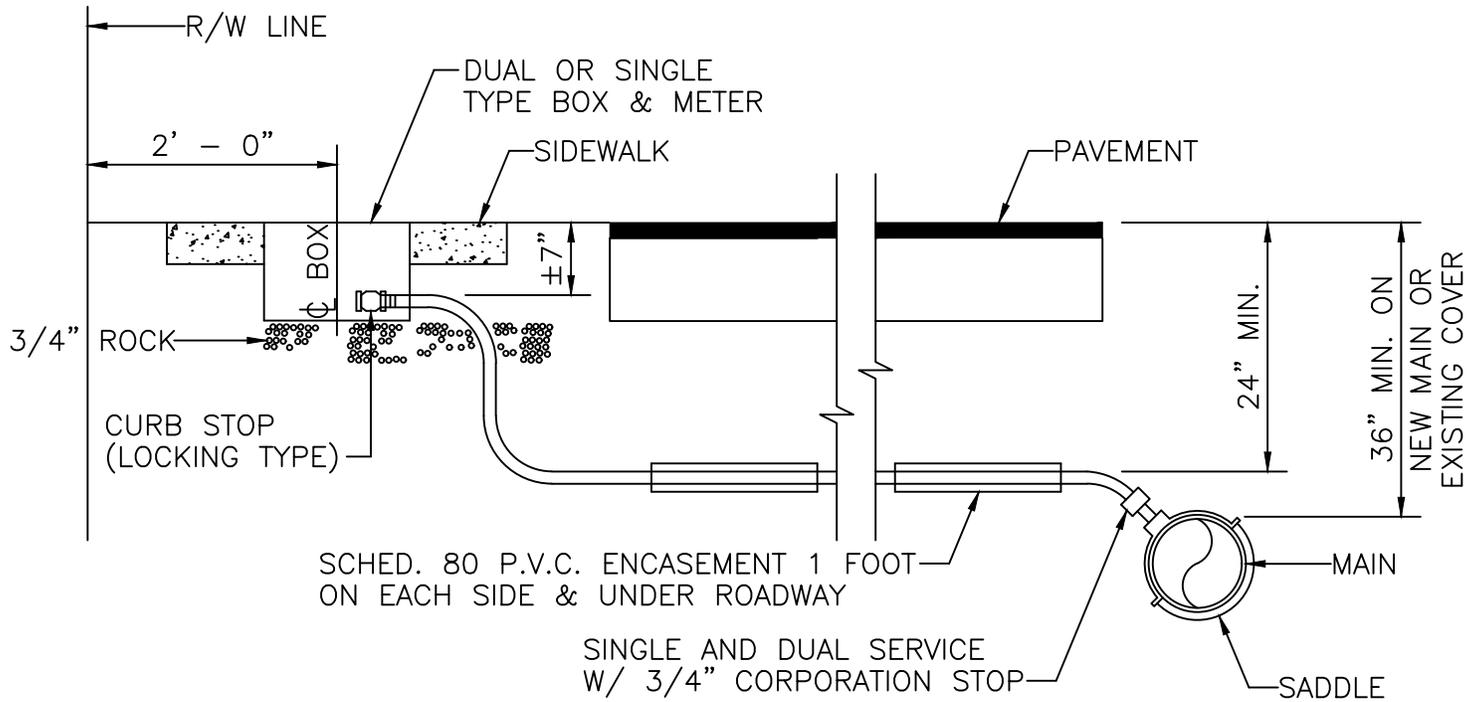


CITY OF LAUDERHILL  
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STANDARD WATER  
 SUPPLY DETAIL  
 SERVICE CONNECTION

W-3



FOR SERVICE LINES LARGER THAN  
1" H.D.P.E.

NOTES:

1. SUCCESSIVE TAPS INTO WATER MAIN SHALL BE SPACED A MINIMUM OF 18" OFFSET.
2. WHERE NO SIDEWALK EXISTS, METER BOXES TO BE PLACED ON INSIDE OF SIDEWALK OR AT PROPERTY LINE.
3. H.D.P.E. SERVICE LINE SHALL BE CONTINUOUS FROM CORPORATION STOP TO CURB STOP WITH NO FITTINGS IN BETWEEN.
4. ALL 3/4" METERS REQUIRE A 3/4" CURB STOP.
5. ALL 1" METERS REQUIRE A 1" CURB STOP, LARGER SERVICES REQUIRE APPROVED GATE VALVE.
6. ALL DUAL METER INSTALLATIONS REQUIRE A "U-BRANCH" ASSEMBLY.

CITY OF LAUDERHILL  
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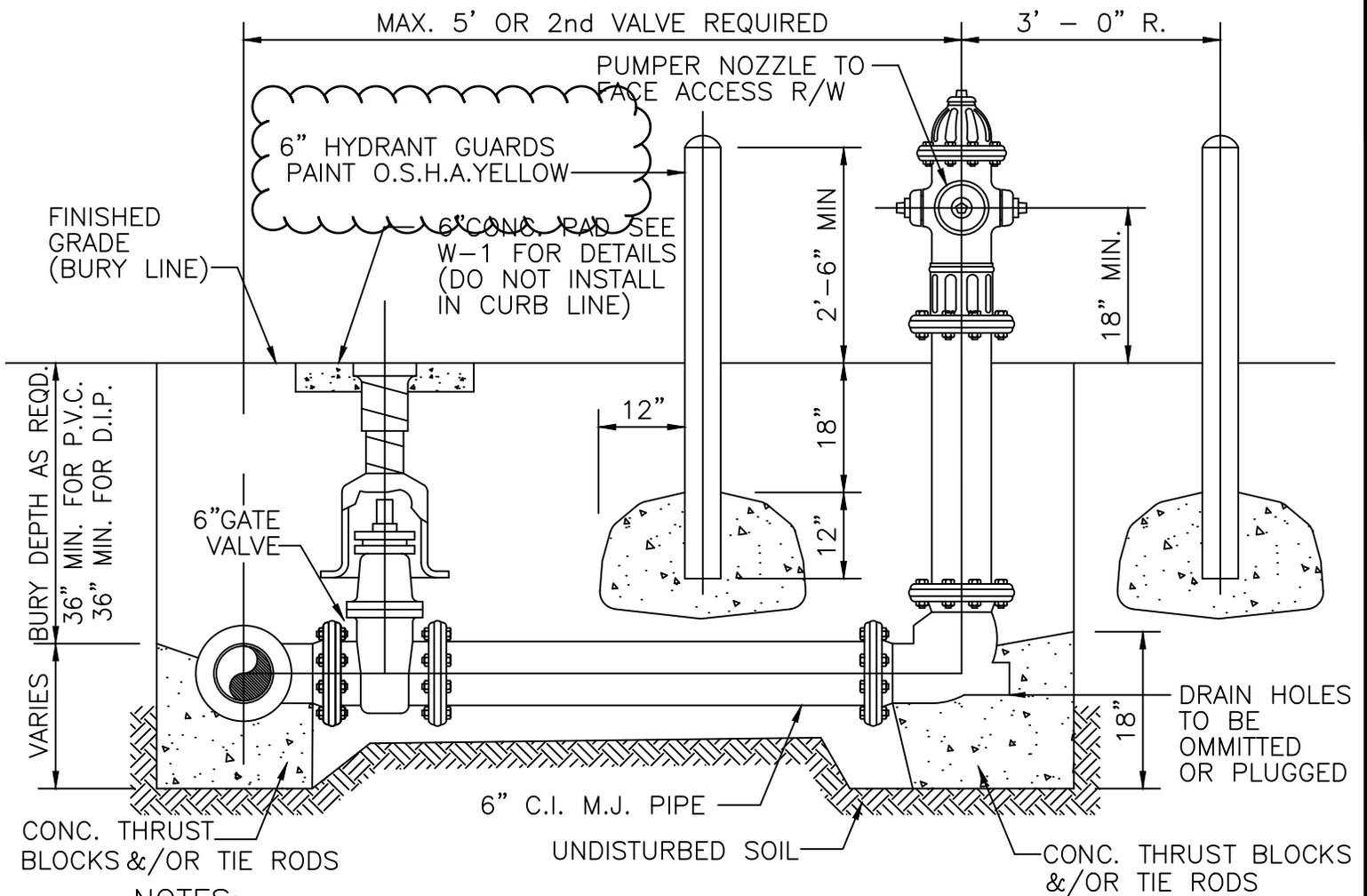
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STANDARD WATER  
SUPPLY DETAIL  
NEW SERVICE UNDER  
EXISTING ROADWAY

W-4



**NOTES:**

1. HYDRANT GUARDS TO BE SCH.40 G.S.P. FILLED WITH CONCRETE, AS REQUIRED BY THE UTILITY DEPARTMENT.
2. OMIT REAR GUARDS IN LOCATIONS WHERE SIDEWALKS EXIST.
3. TIE RODS MAY BE OMITTED WHEN OTHER APPROVED ANCHORS ARE USED.
4. HYDRANT SET BACK SHALL CONFORM TO D.O.T. REQUIREMENTS WHERE APPLICABLE.

5. HYDRANT CENTERLINE TO BE LOCATED AT P.C. OF BLOCK CORNER RADIUS OR AT COMMON PROPERTY LINE BETWEEN ADJACENT LOTS.

6. HYDRANT SHALL BE 3 WAY 5 1/4" WITH 3'-6" BURY DEPTH. PUMPER NOZZLE TO FACE STREET. PAINT OSHA YELLOW. HYDRANT TOP TO BE PAINTED PER NFPA 291.

7. HYDRANT VALVE TO BE INSTALLED AS CLOSE TO MAIN AS POSSIBLE.

8. HYDRANT BURY LINE TO MATCH STREET CROWN ELEVATION.

9. TIE RODS SHALL BE 2 EA. 5/8" GALV. AND COATED WITH KOPPERS 300M OR APPROVED EQUAL.

10. A 7.5 FOOT CLEAR RADIUS SHALL BE MAINTAINED AROUND HYDRANT.

11. A BLUE RPM MARKER WILL BE PLACED ON CENTERLINE OF STREET

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ENGINEERING DEPARTMENT  
LAUDERHILL, FLORIDA

SCALE:

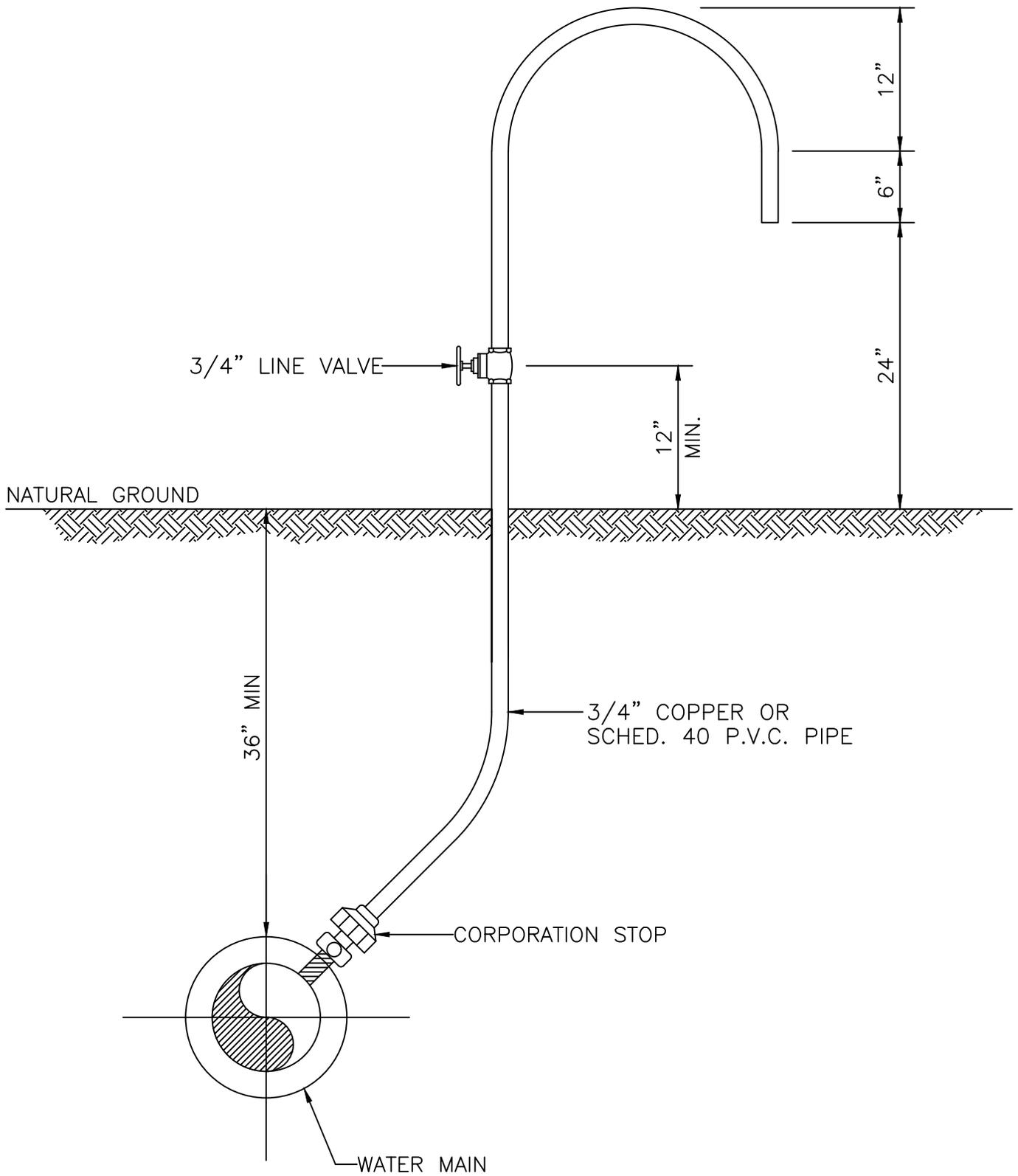
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STANDARD WATER  
SUPPLY DETAIL  
FIRE HYDRANT DETAIL

W-5

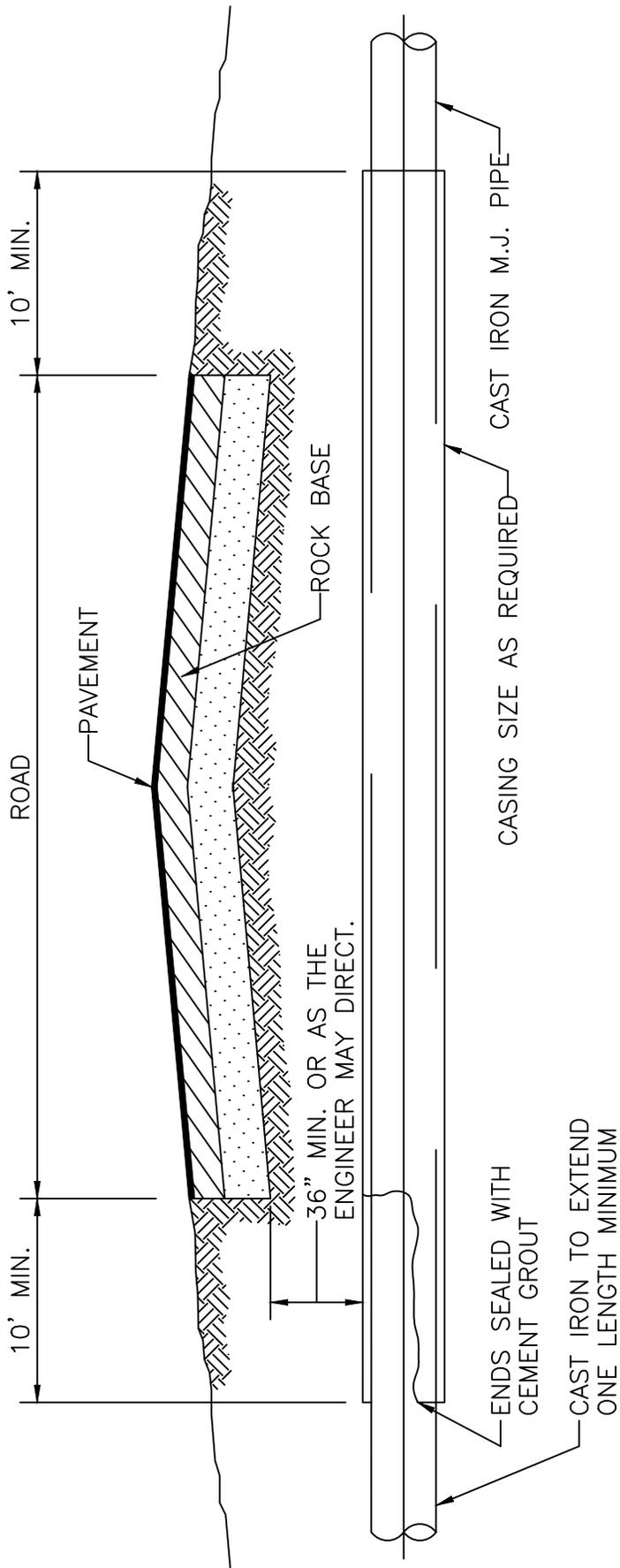


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 ENGINEERING DEPARTMENT  
 LAUDERHILL, FLORIDA

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STANDARD WATER  
 SUPPLY DETAIL  
 BACTERIOLOGICAL  
 SAMPLING POINT

W-6



PIPE SIZE	OUTSIDE DIA. SPIGOT JOINT	OUTSIDE DIA. MECH. JOINT	SCHEDULE 60 STEEL CASING
8"	12.75	13.37"	16"
10"	14.38	15.62"	18"
12"	17.25	17.88"	20"
14"	19.62	20.25"	24"
16"	22.00	22.50"	24"
18"	23.75	24.75"	30"
20"	26.30	27.00"	30"
24"	30.50	31.50"	36"
30"	37.50	39.12"	42"
36"	43.75	46.00"	48"
42"	49.00	53.12"	54"
48"	55.50	60.00"	72"

NOTE:

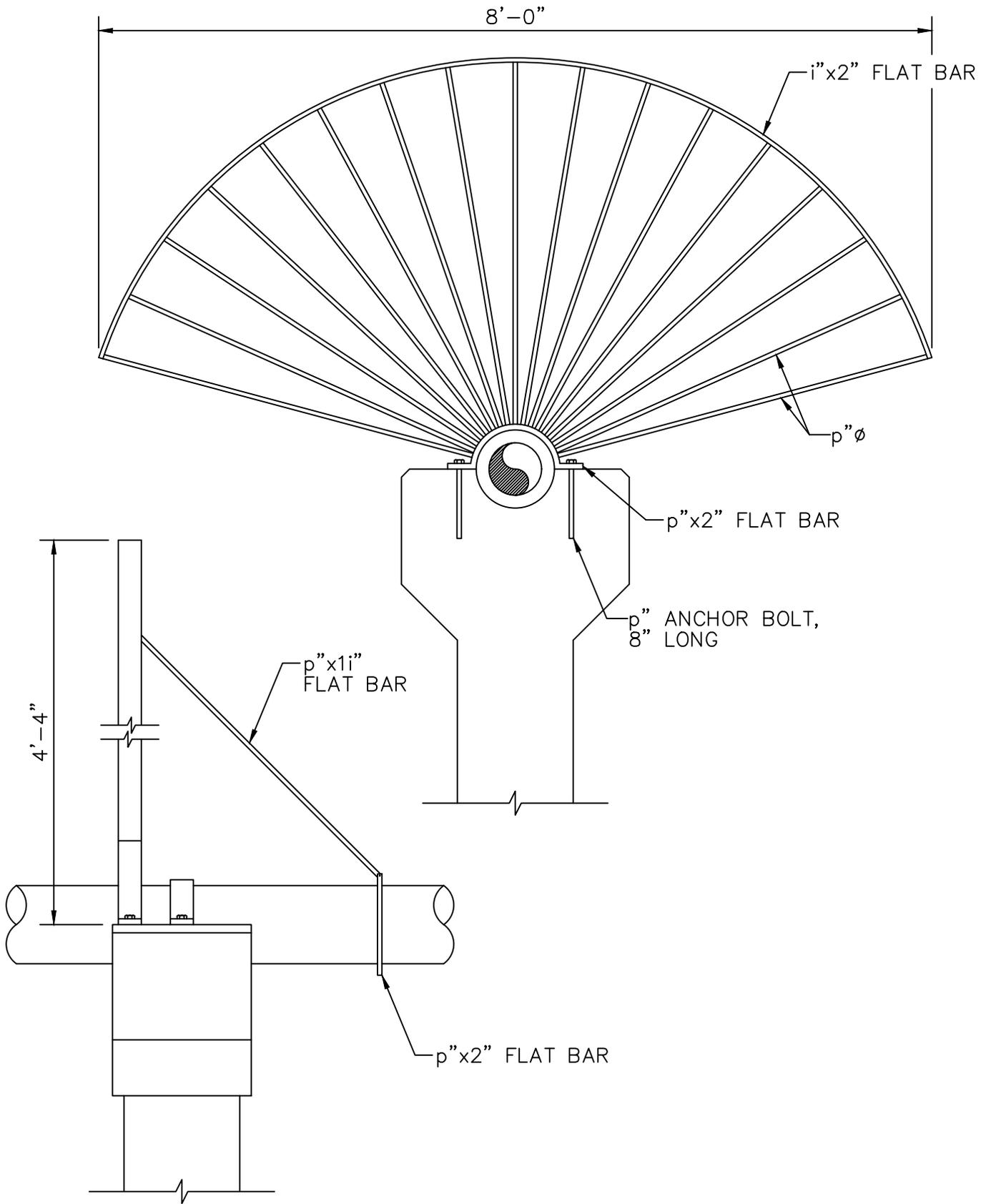
1. NORMALLY CASING PIPE IS 6" LARGER THAN O.D. OF BELL OF C.I. PIPE.

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 ENGINEERING DEPARTMENT  
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STANDARD DETAIL  
 WATER SUPPLY  
 SYSTEM  
 CASING INSTALLATION

W-7



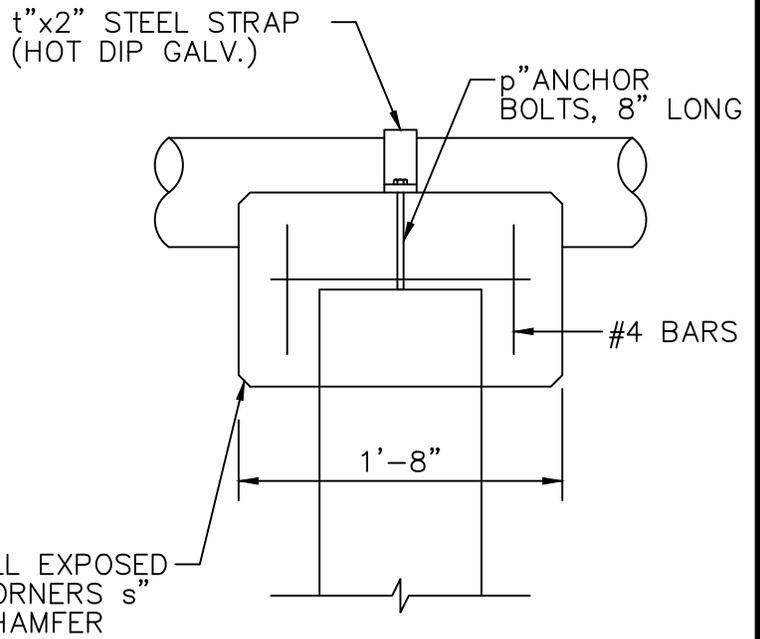
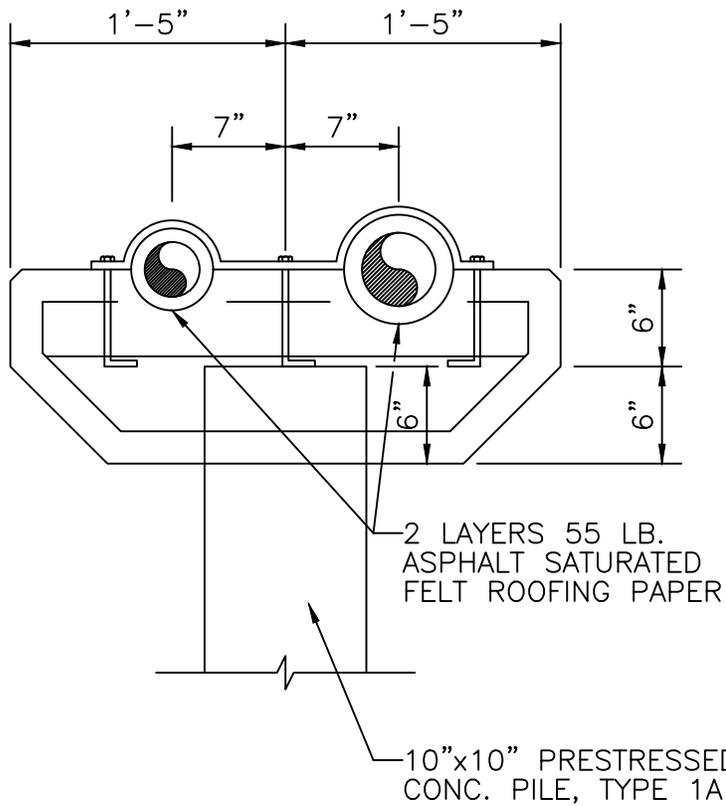
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 ENGINEERING DEPARTMENT  
 LAUDERHILL, FLORIDA

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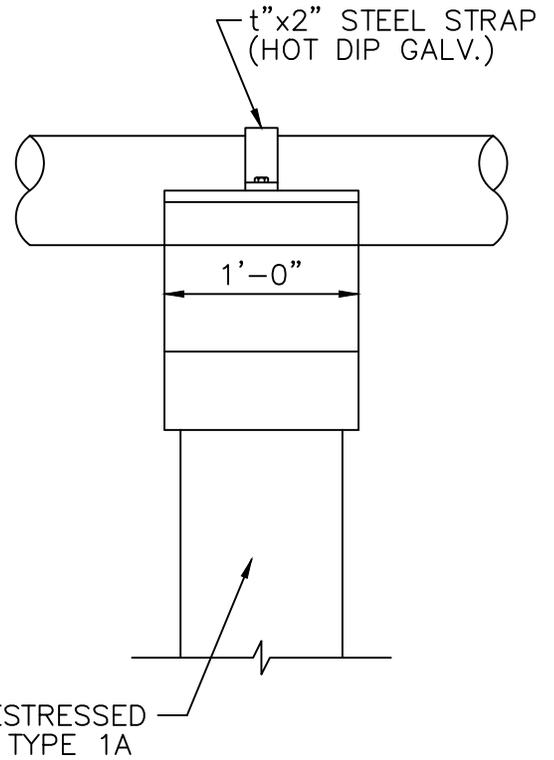
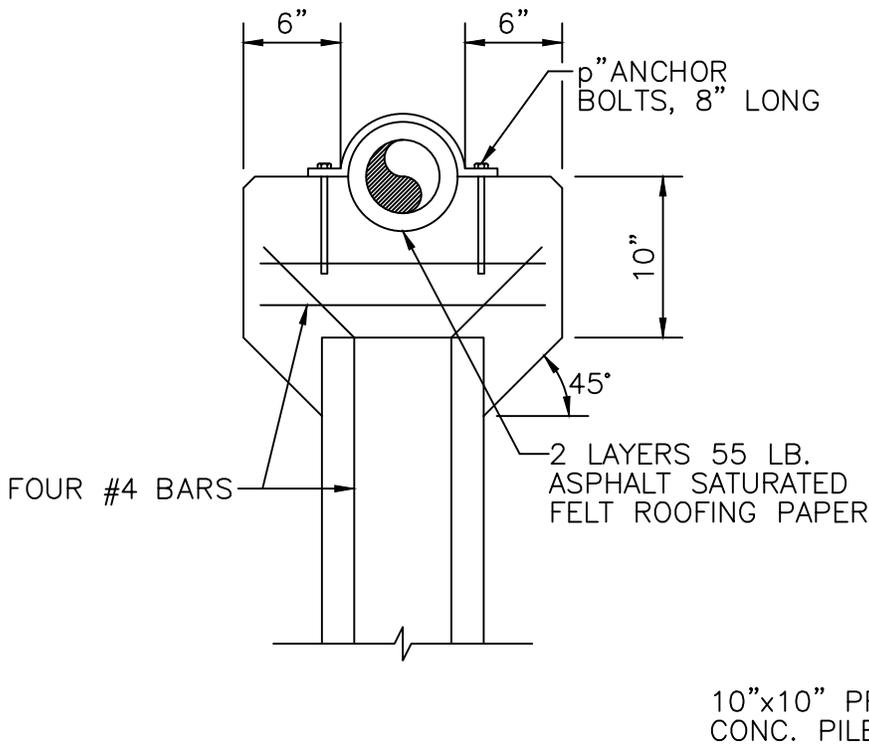
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STANDARD WATER  
 SUPPLY DETAIL  
 FAN GUARD

W-8



DUAL CROSSING SUPPORT



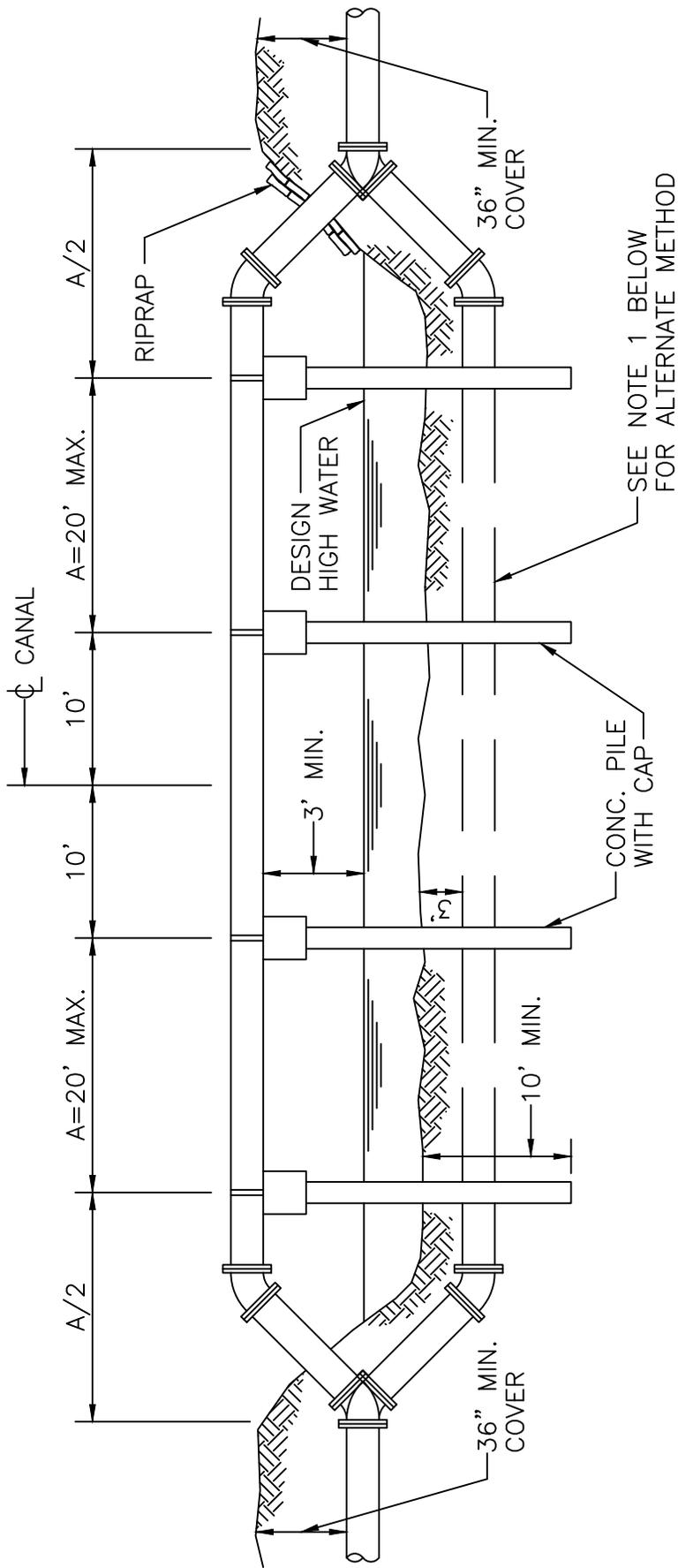
SINGLE CROSSING SUPPORT

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ENGINEERING DEPARTMENT  
LAUDERHILL, FLORIDA

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STANDARD WATER  
SUPPLY DETAIL  
CANAL CROSSING SUPPORT

W-9



NOTE: PIPE LINE MUST BE 3'-0" UNDER THE DESIGN DEPTH OR EXISTING DEPTH WHICHEVER IS THE LOWEST AND REQUIRES APPROVAL OF "THE FLOOD CONTROL DISTRICT" IN WHICH CANAL IS LOCATED.

NOTES:

1. ALL PIPE SHALL BE CAST IRON, DUCTILE IRON, OR PREFABRICATED STEEL WITH FLANGED FITTINGS.
2. SPAN LENGTHS AS REQUIRED BY PERMITTING AGENCY.
3. FAN GUARDS ARE REQUIRED. SEE W-8. LOCATIONS VARY WITH FIELD CONDITIONS.
4. MINIMUM CLEARANCE BETWEEN WATER LEVEL & MAIN AS REQUIRED BY PERMITTING AGENCY.

CITY OF LAUDERHILL  
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LAUDERHILL, FLORIDA

SCALE:

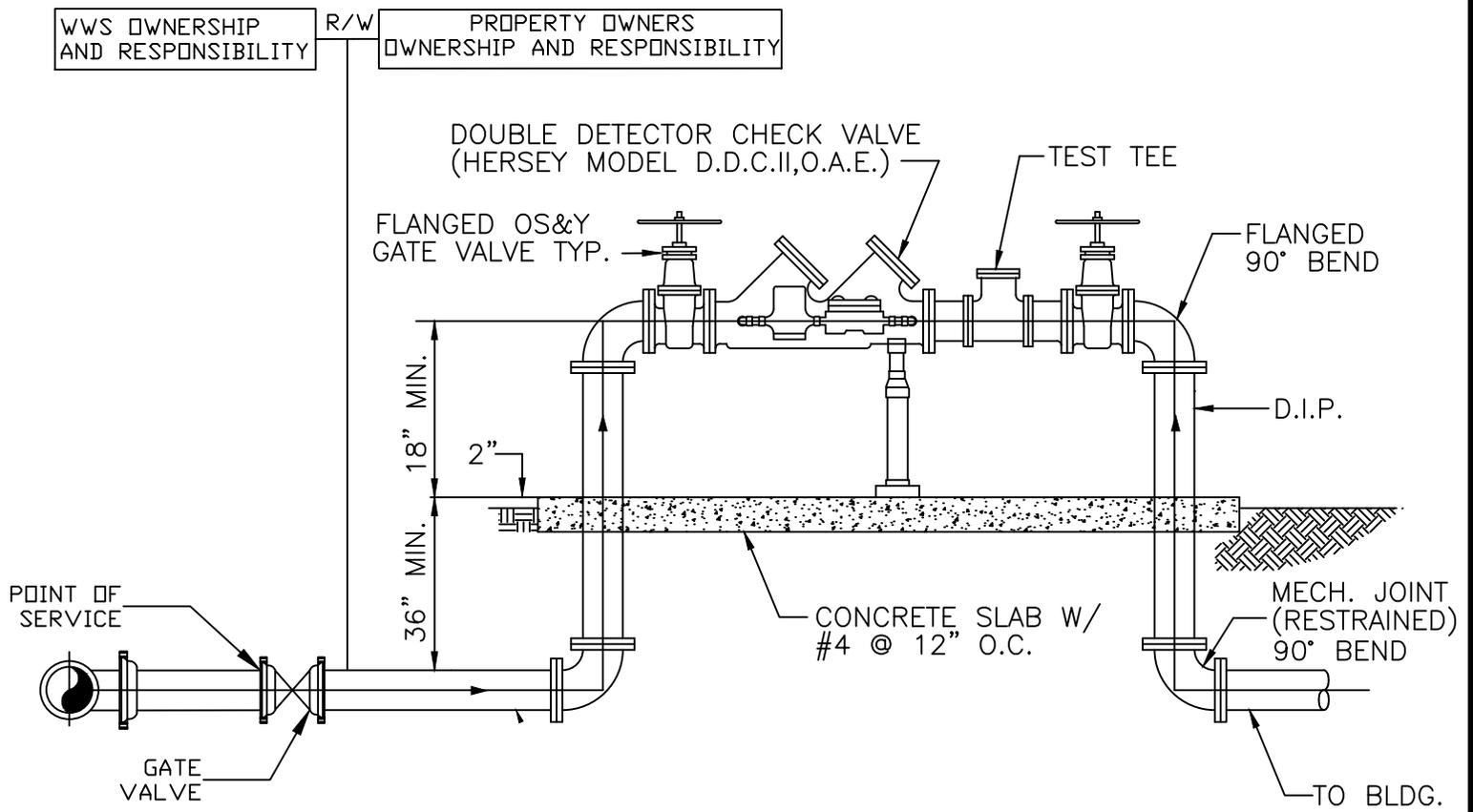
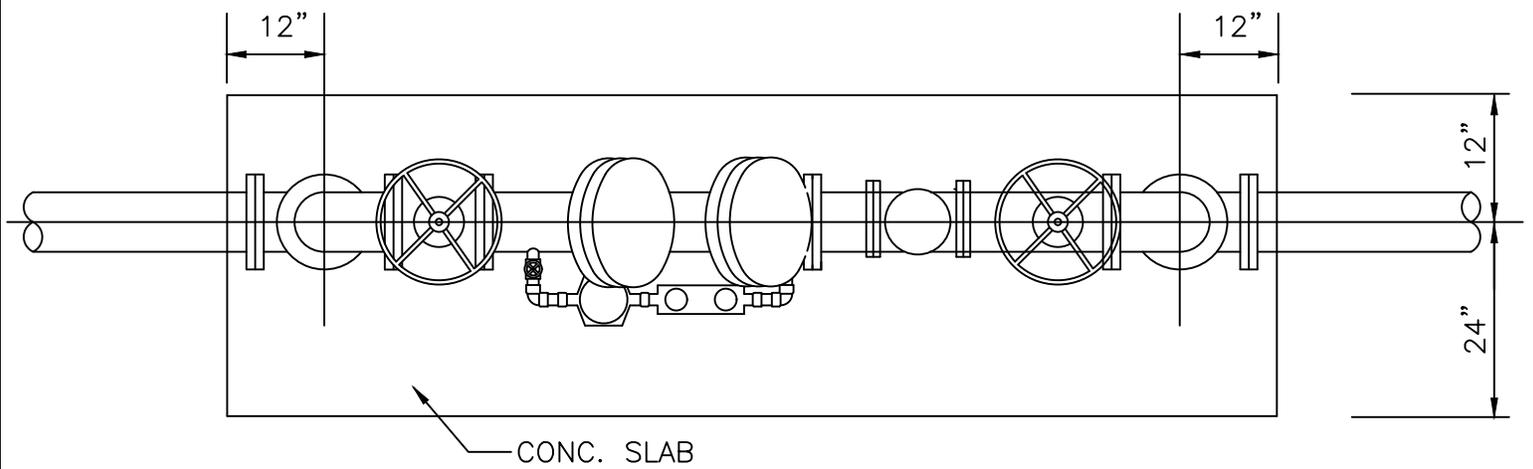
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STANDARD WATER  
SUPPLY DETAIL  
CANAL OR DITCH  
PIPE CROSSING

W-10



**NOTES:**

1. ALL PIPING SHALL BE D.I.P. CL 350 AS APPLICABLE TO MINIMUM STANDARDS.
2. ALL LOW FLOW METER PIPING SHALL BE BRASS OR COPPER.
3. PIPING & ASSEMBLY SHALL BE PAINTED WITH POLYURETHANE SYSTEM.

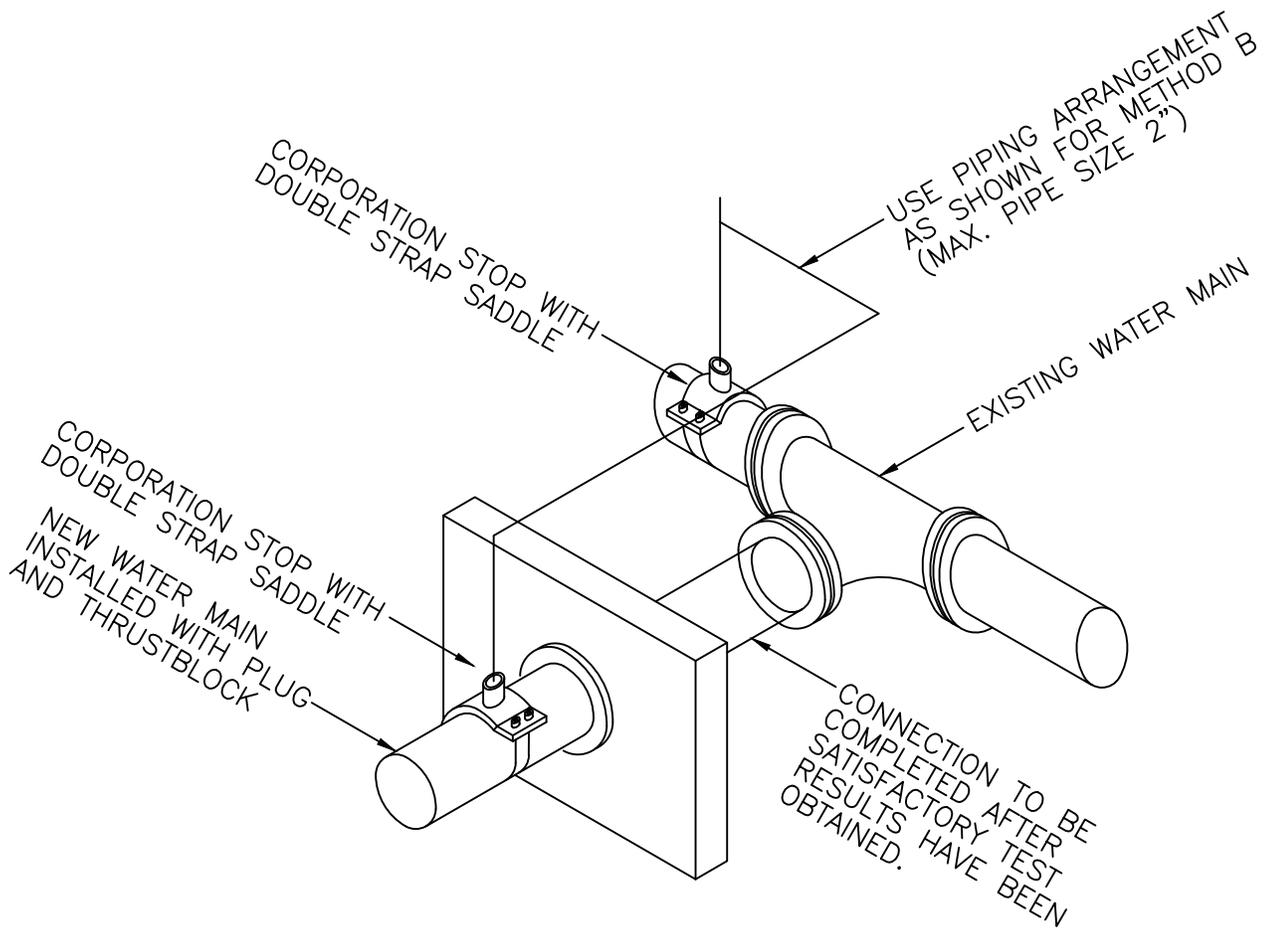
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 ENGINEERING DEPARTMENT  
 LAUDERHILL, FLORIDA

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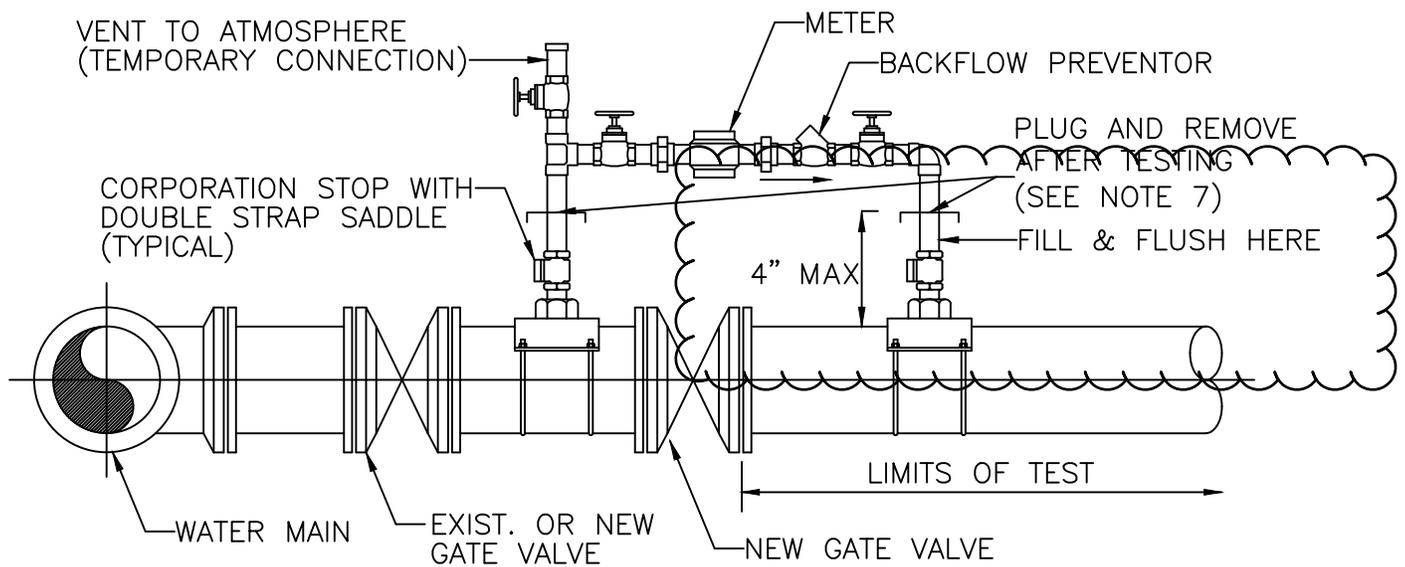
STANDARD WATER  
 SUPPLY DETAIL  
 DOUBLE DETECTOR CHECK  
 VALVE FOR FIRE LINE

W-11





METHOD A



METHOD B

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ENGINEERING DEPARTMENT  
LAUDERHILL, FLORIDA

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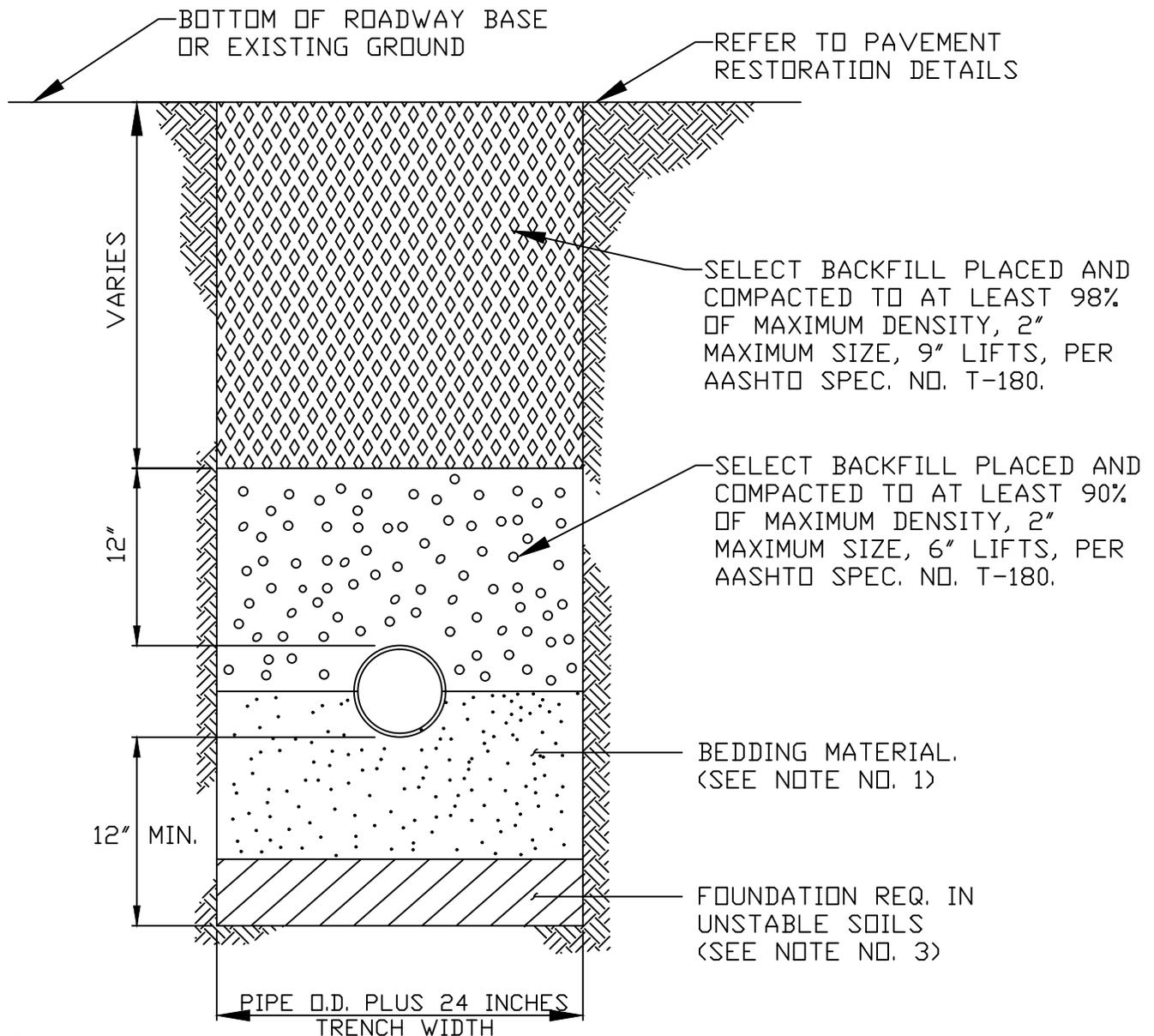
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STANDARD WATER  
SUPPLY DETAIL  
FILLING & FLUSHING

W-13

NOTES:

1. WATER MAIN TO BE PRESSURE TESTED AND DISINFECTED ACCORDING TO BROWARD COUNTY PUBLIC HEALTH UNIT REGULATIONS, AWWA, AND MUNICIPAL SPECIFICATIONS IN EFFECT.
2. BACTERIOLOGICAL TESTS ARE TO BE PERFORMED BY THE CONTRACTOR AND AN APPROVED TESTING LABORATORY.
3. REMOVE TEMPORARY CONNECTION AT SADDLE ON NEW MAINS AFTER FILLING AND FLUSHING HAS BEEN COMPLETED AND MAIN CERTIFIED BY HEALTH DEPARTMENT, REPLACE WITH BRASS PLUG.
4. PROVIDE ALL NECESSARY THRUST BLOCKS OR OTHER RESTRAINTS.
5. FILLING AND FLUSHING LOCATIONS SHALL BE COORDINATED BY THE CONTRACTOR, ENGINEER, AND CITY.
6. VENT TO ATMOSPHERE SHALL REMAIN OPEN DURING ALL PHASES OF PRESSURE TESTING.
7. REMOVAL AND PLUG OF FILLING AND FLUSHING SHALL BE WITNESSED BY THE CITY OF LAUDERHILL PRIOR TO BACKFILLING. MAXIMUM OF 4" SHALL BE ETRUDING FROM TOP OF WATER MAIN AFTER PLUG IS PLACED.



**NOTES:**

- BEDDING MATERIAL SHALL CONSIST OF SELECT BACKFILL MATERIAL 2" MAX SIZE, OR WASHED AND GRADED LIMEROCK  $\frac{3}{8}$ " -  $\frac{7}{8}$ " IN DIAMETER, COMPACTED TO AT LEAST 90% OF MAXIMUM DENSITY, 6" LIFTS, PER ASASHTO SPEC. NO. T-180.
- WHERE REQUIRED, SHEETING AND SHORING SHALL BE IN ACCORDANCE WITH OSHA REQUIREMENTS.
- WHERE UNSTABLE SOILS ARE ENCOUNTERED, INCLUDING PEAT, MUCK OR OTHER ORGANIC SOILS, ELASTIC SILT, CLAYS, AND FINE SANDS BELOW THE WATER TABLE, A FOUNDATION IS REQUIRED, AS DETERMINED BY THE ENGINEER OF RECORD.
- POLYETHYLENE ENCASEMENT OF CAST IRON VALVES, PIPE AND FITTING, IF REQUIRED, SHALL BE PER ANSI/AWWA C105/A21.5. METHOD A,B, OR C FOR TYPE 1 CLASS C TUBE, MIN. 8 MILS

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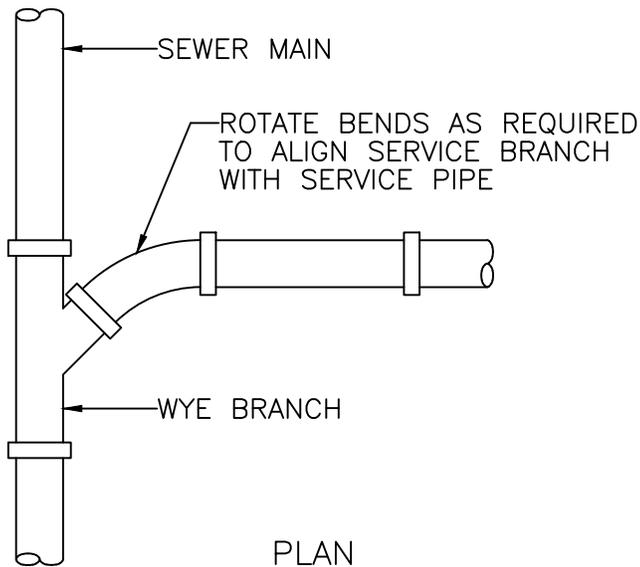
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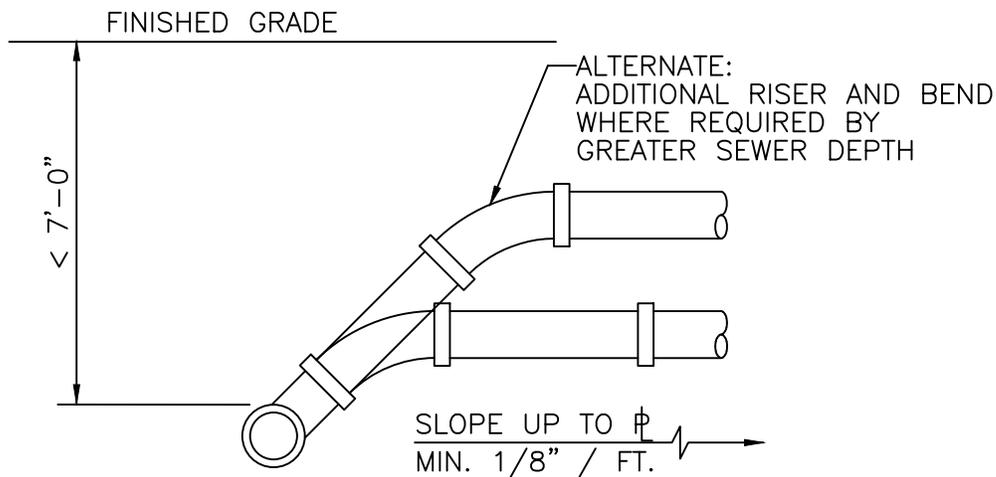
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STANDARD WATER  
SUPPLY DETAIL  
TYPICAL TRENCH  
CONSTRUCTION

W-15



PLAN



SECTION

NOTE: SHALLOW CONNECTION WHERE TOP OF MAIN IS LESS THAN 7'-0" DEEP.

NOTES:

1. UNLESS OTHERWISE REQUIRED, SERVICE LATERALS SHALL TERMINATE AT PROPERTY LINE AT A DEPTH OF 3 FEET TO THE INVERT.
2. THE END OF EACH SERVICE CONNECTION SHALL BE MARKED WITH A 2" x 2" TREATED STAKE.
3. EACH SERVICE CONNECTION SHALL BE PLUGGED WATERTIGHT WITH AN APPROVED PLUG.

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LAUDERHILL, FLORIDA

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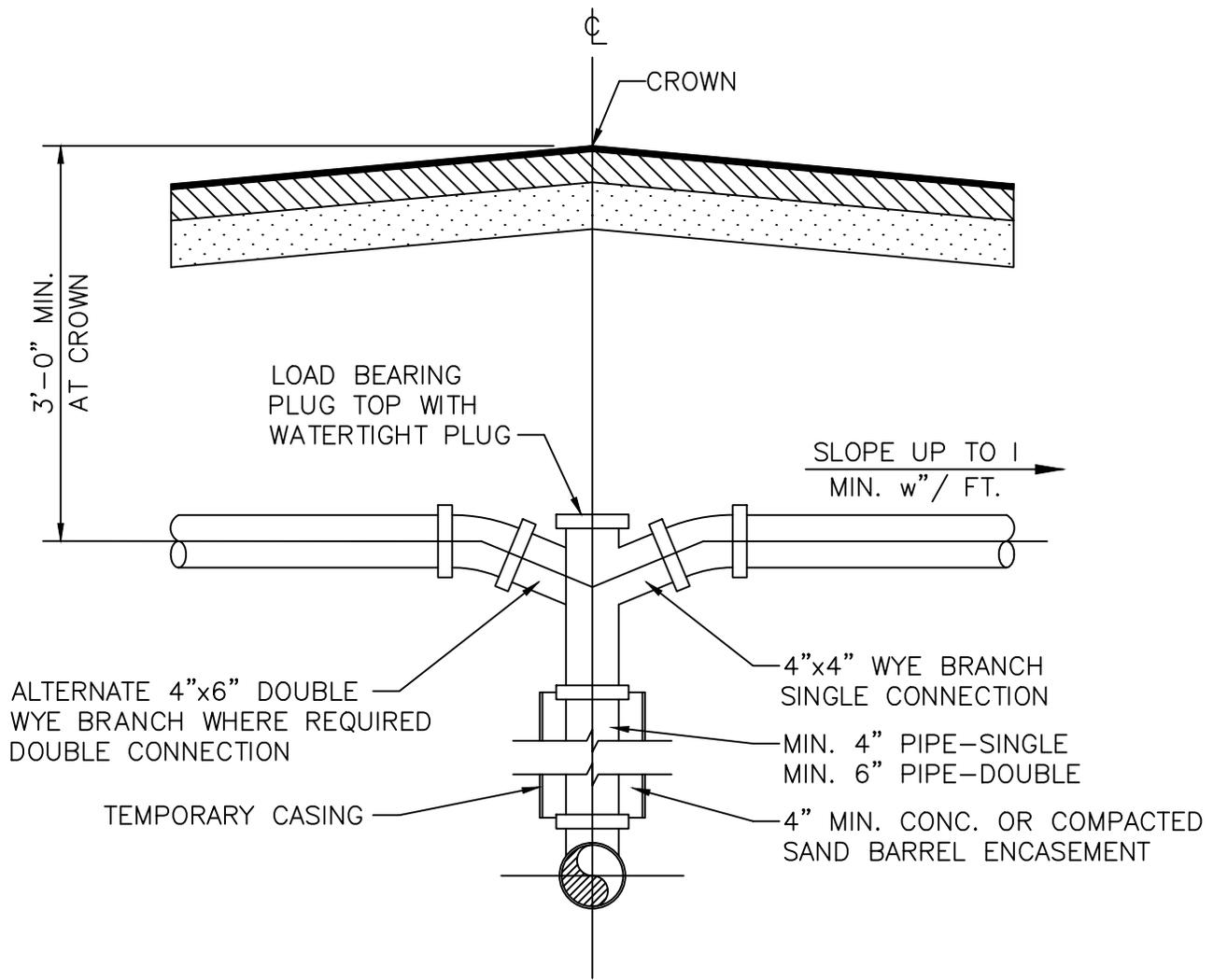
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STANDARD SANITARY

SEWER DETAIL

WYE BRANCH CONNECTION

S-1



SECTION  
WHERE TOP OF SEWER IS  
7'-0" OR DEEPER

NOTES:

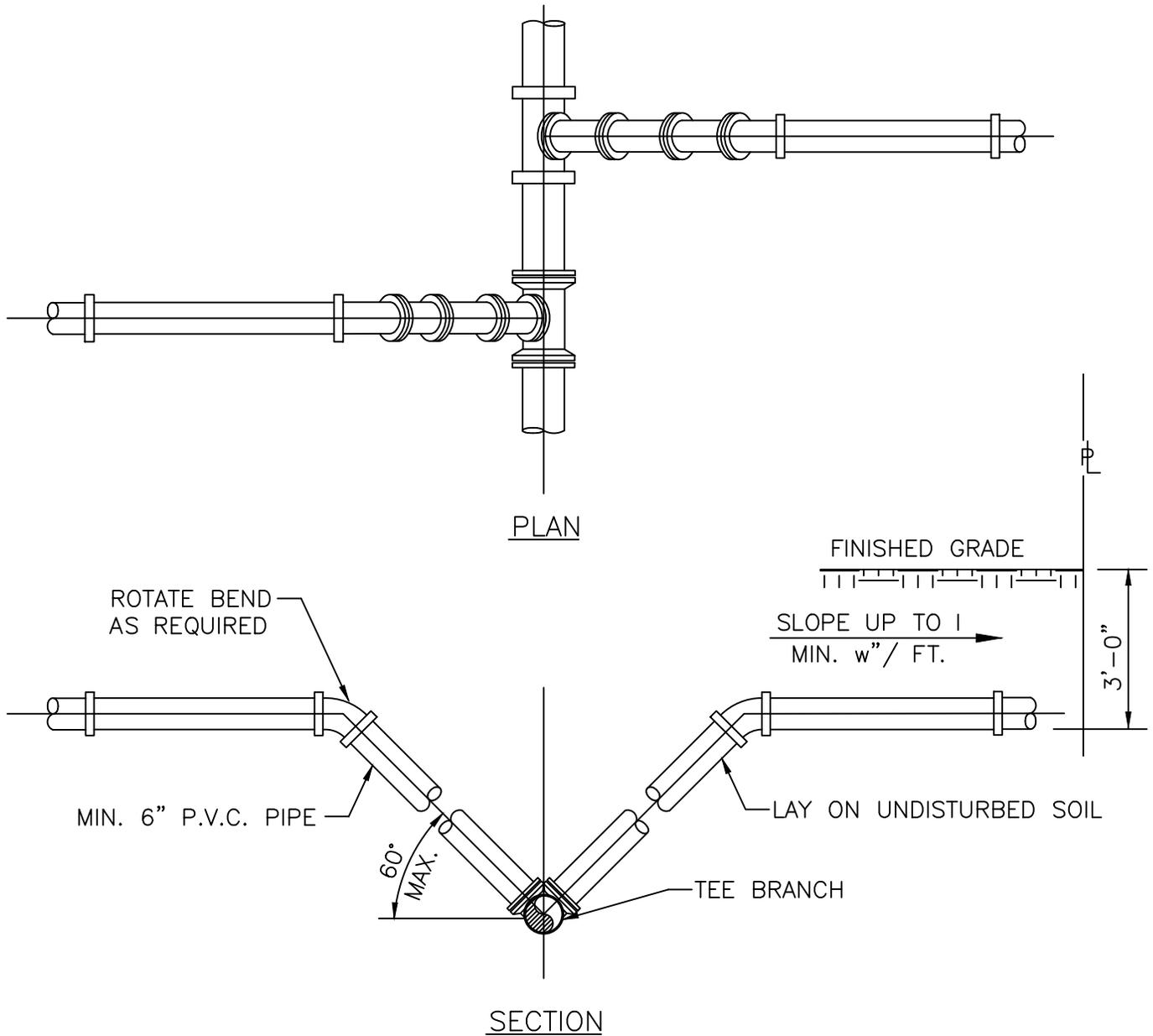
1. UNLESS OTHERWISE REQUIRED, SERVICE LATERALS SHALL TERMINATE AT 1 AT A DEPTH OF (3) FEET TO THE INVERT.
2. THE END OF EACH SERVICE CONNECTION SHALL BE MARKED WITH A 2"x2" TREATED STAKE.
3. EACH SERVICE CONNECTION SHALL BE PLUGGED WATERTIGHT WITH AN APPROVED PLUG.

CITY OF LAUDERHILL  
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LAUDERHILL, FLORIDA

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STANDARD SANITARY  
SEWER DETAIL  
RISER CONNECTION

S-2



NOTES:

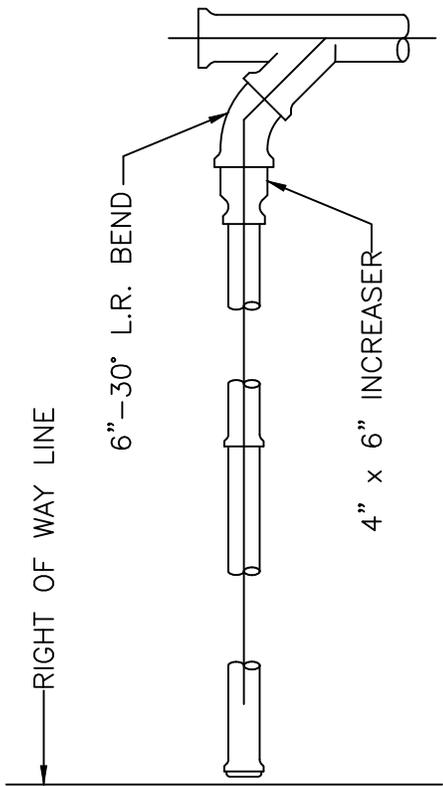
1. UNLESS OTHERWISE REQUIRED, SERVICE LATERALS SHALL TERMINATE AT 1' AT A DEPTH OF (3) FEET TO THE INVERT.
2. THE END OF EACH SERVICE CONNECTION SHALL BE MARKED WITH A 2"x2" TREATED STAKE, OR OTHER APPROVED MARKER.
3. EACH SERVICE CONNECTION SHALL BE PLUGGED WATERTIGHT WITH AN APPROVED PLUG.

CITY OF LAUDERHILL  
 ENGINEERING DEPARTMENT  
 LAUDERHILL, FLORIDA

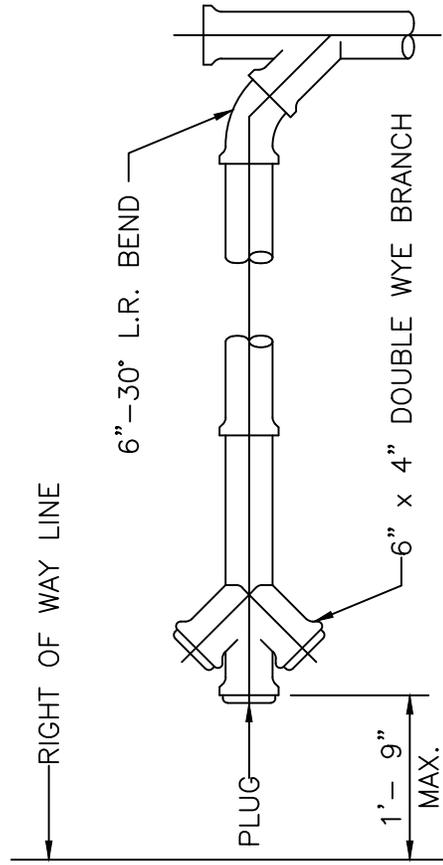
SCALE:  
 N.T.S.  
 REVISED:  
 SEPT.18

STANDARD SANITARY  
 SEWER DETAIL  
 ALTERNATE RISER CONNECTION  
 TOP OF SEWER, 7' OR DEEPER

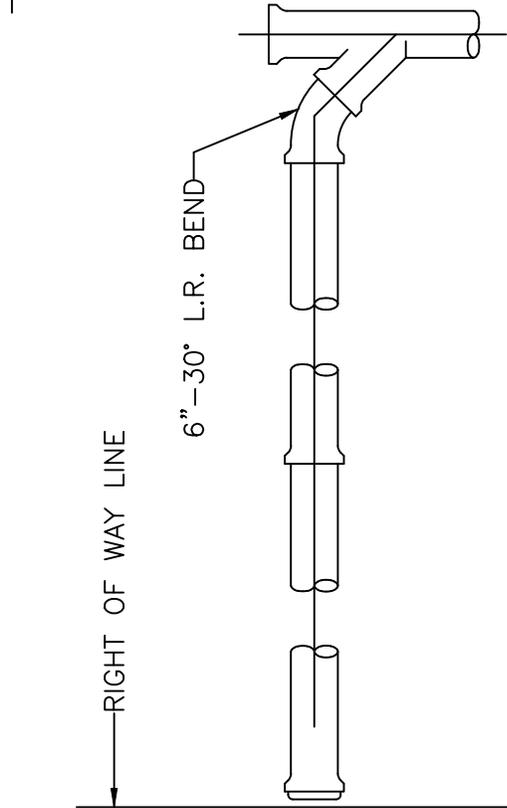
S-3



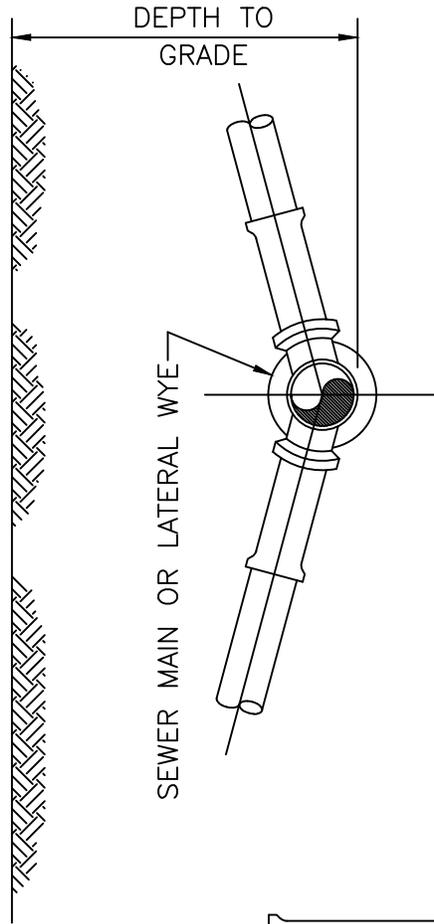
SINGLE SERVICE CONNECTION  
(RESIDENTIAL ONLY)



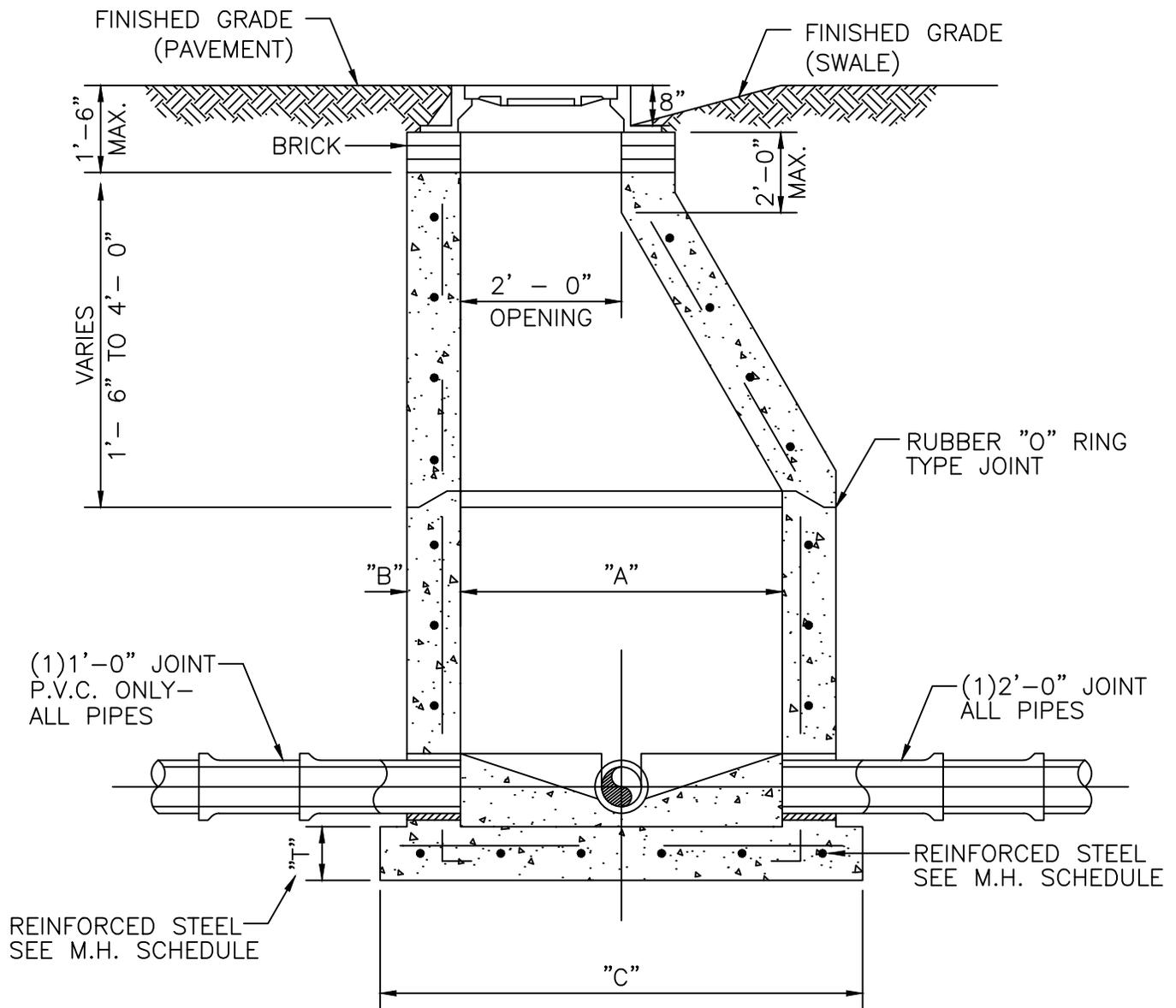
DOUBLE SERVICE CONNECTION  
(AT PROPERTY LINE)



SINGLE SERVICE CONNECTION  
(OTHER THAN RESIDENTIAL)



SERVICE CONNECTION



STANDARD MANHOLE  
DEPTH 5'-0" & GREATER

TYPICAL MANHOLE DIMENSIONS					
PIPE DIA.	"A"	"B"	"C"	BOTT. SLAB "T"	REINF. STEEL
8" - 24"	4'-0"	8"	70"	8"	#4@12" E.W.
30" - 36"	5'-0"	8"	84"	10"	#5@12" E.W.
48"	6'-0"	8"	96"	12"	#5@12" E.W.

CITY OF LAUDERHILL  
ENGINEERING DEPARTMENT  
LAUDERHILL, FLORIDA

SCALE:

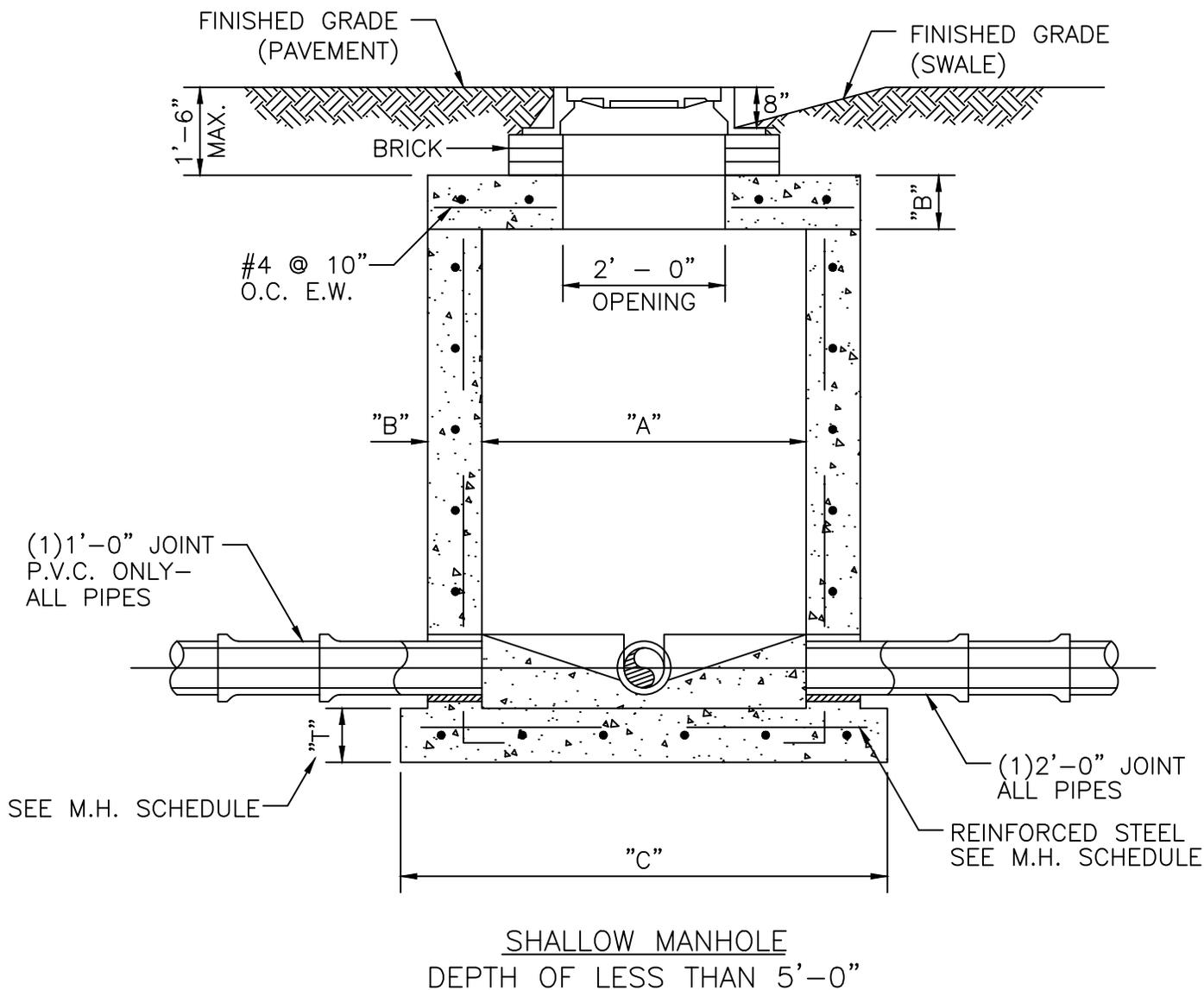
N.T.S.

REVISED:

SEPT.18

STANDARD SANITARY  
SEWER DETAIL  
SANITARY SEWER MANHOLE

S-5



TYPICAL MANHOLE DIMENSIONS					
PIPE DIA.	"A"	"B"	"C"	BOTT. SLAB "T"	REINF. STEEL
8" - 24"	4'-0"	8"	70"	8"	#4@12" E.W.
30" - 36"	5'-0"	8"	84"	10"	#5@12" E.W.
48"	6'-0"	8"	96"	12"	#5@12" E.W.

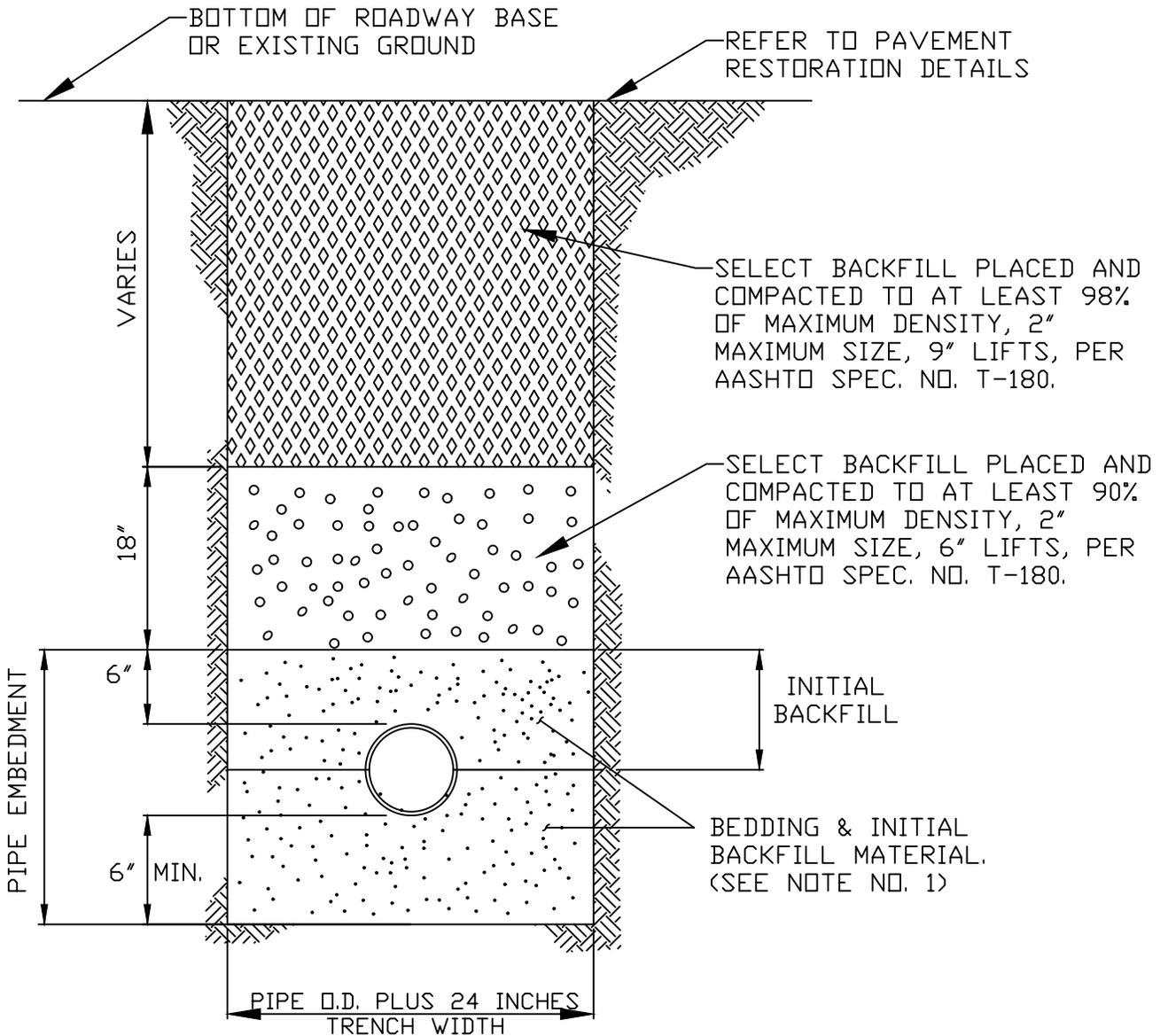
CITY OF LAUDERHILL  
ENGINEERING DEPARTMENT  
LAUDERHILL, FLORIDA

SCALE:  
N.T.S.

REVISED:  
SEPT. 18

STANDARD SANITARY  
SEWER DETAIL  
SANITARY SEWER MANHOLE

S-6



NOTES:

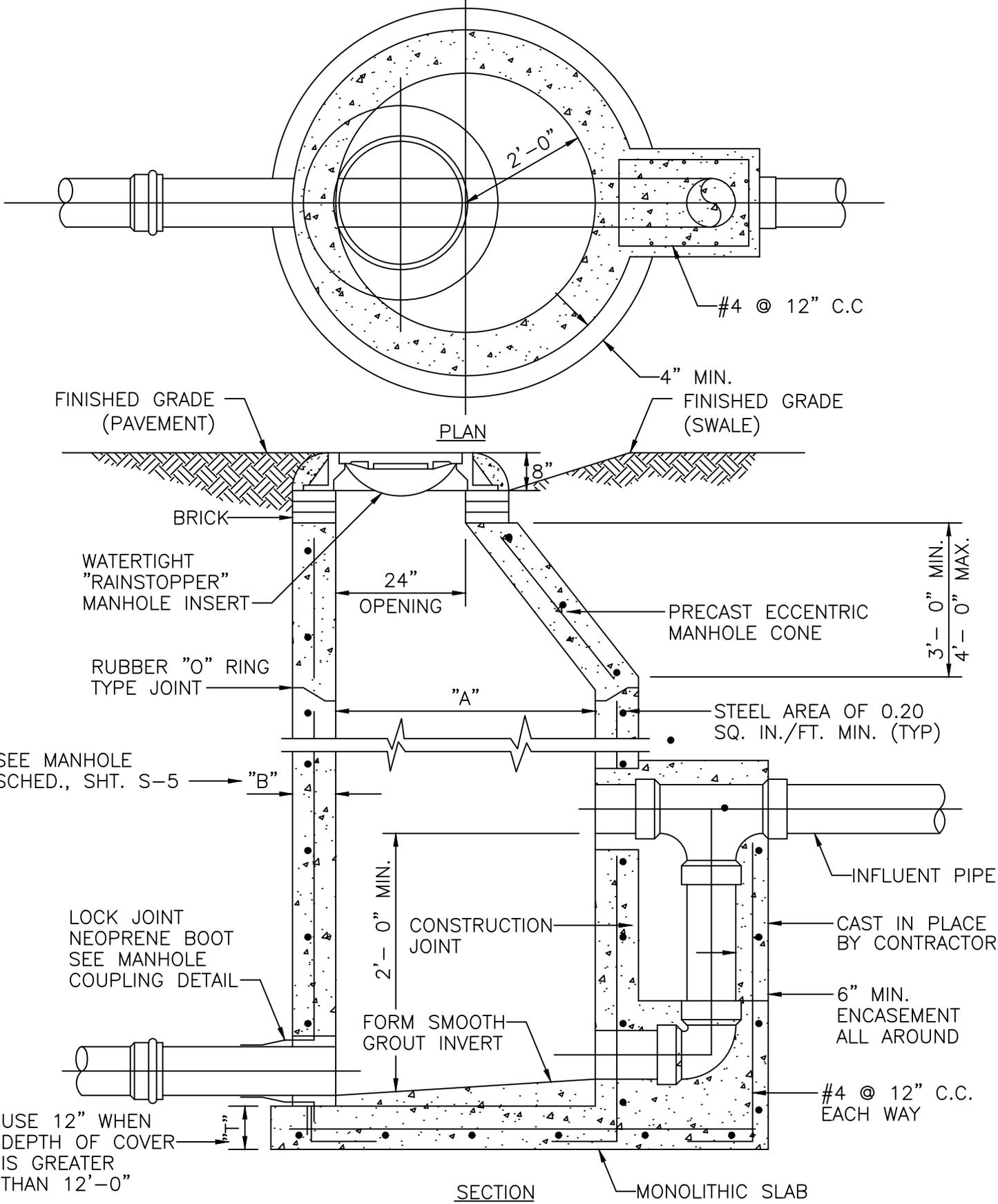
1. BEDDING & INITIAL BACKFILL MATERIAL SHALL CONSIST OF CAREFULLY PLACED AND HAND COMPACTED CLASS 1 MATERIAL. CLASS 1 MATERIALS CONSIST OF ANGULAR,  $\frac{1}{4}$  TO  $\frac{3}{4}$  INCH WELL GRADED STONE. WELL GRADED STONE CAN INCLUDE WASHED AND GRADED LIMEROCK.
2. WHERE REQUIRED, SHEETING AND SHORING SHALL BE IN ACCORDANCE WITH OSHA REQUIREMENTS.
3. WHERE UNSTABLE SOILS ARE ENCOUNTERED, INCLUDING PEAT, MUCK OR OTHER ORGANIC SOILS, ELASTIC SILT AND CLAYS BELOW THE WATER TABLE, AND FINE SANDS BELOW THE WATER TABLE, A FOUNDATION IS REQUIRED AS DETERMINED BY THE ENGINEER OF RECORD.

CITY OF LAUDERHILL  
ENGINEERING DEPARTMENT  
LAUDERHILL, FLORIDA

SCALE:  
N.T.S.  
REVISED:  
SEPT.18

STANDARD SANITARY  
SEWER DETAIL  
TYPICAL TRENCH  
CONSTRUCTION

S-7

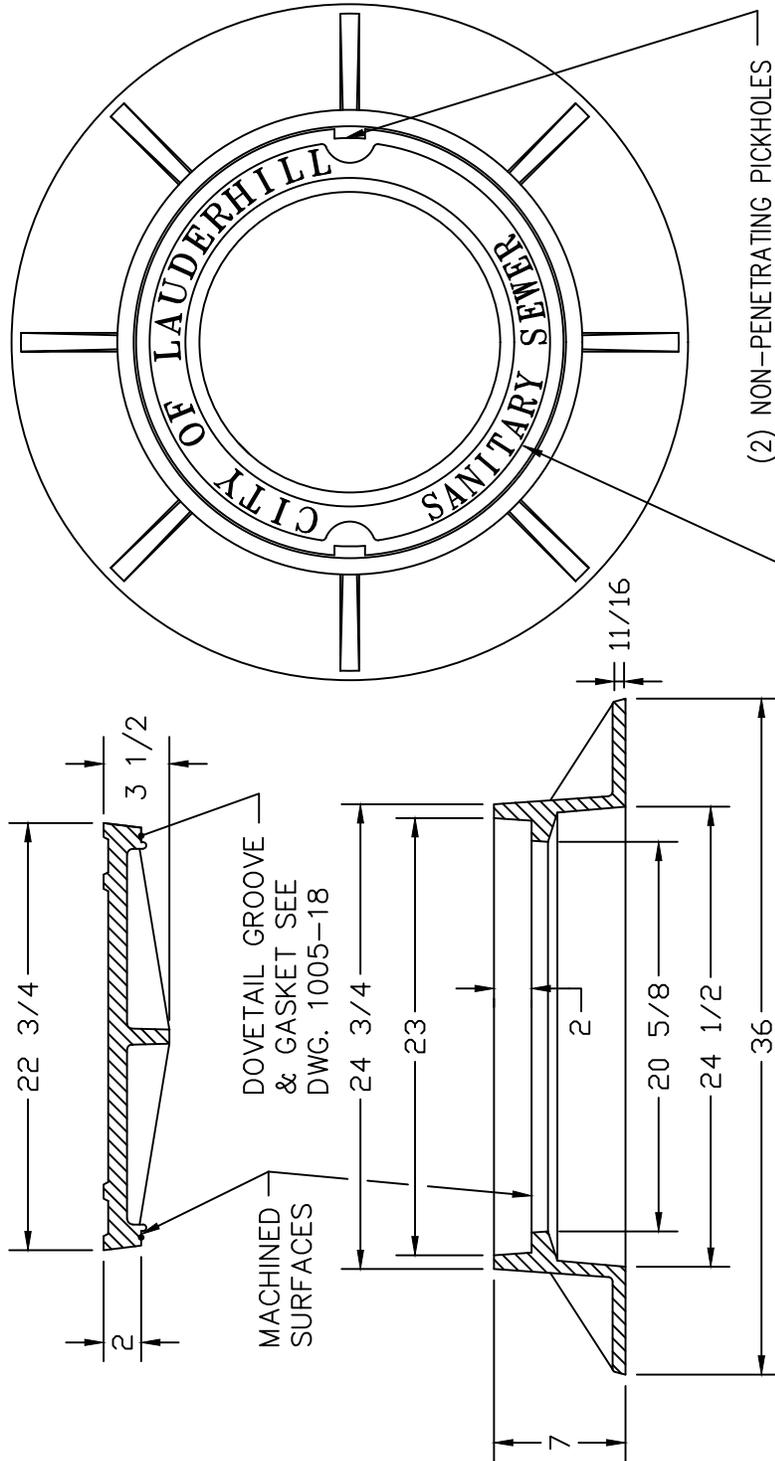


CITY OF LAUDERHILL  
 ENGINEERING DEPARTMENT  
 LAUDERHILL, FLORIDA

SCALE:  
 N.T.S.  
 REVISED:  
 SEPT. 18

STANDARD SEWER DETAIL  
 PRECAST OUTSIDE  
 DROP MANHOLE

S-8



NOTE:

- 1- MATERIAL; ASTM-A48 CLASS 30B GRAY IRON.
- 2- COVER WEIGHT IS 135 LBS. APP.
- 3- RING WEIGHT IS 240 LBS. APP.
- 4- MANHOLE COVER IS USF TYPE XC-B

LOGO TO SAY STORMWATER UTILITY OR SANITARY SEWER AS APPROPRIATE.

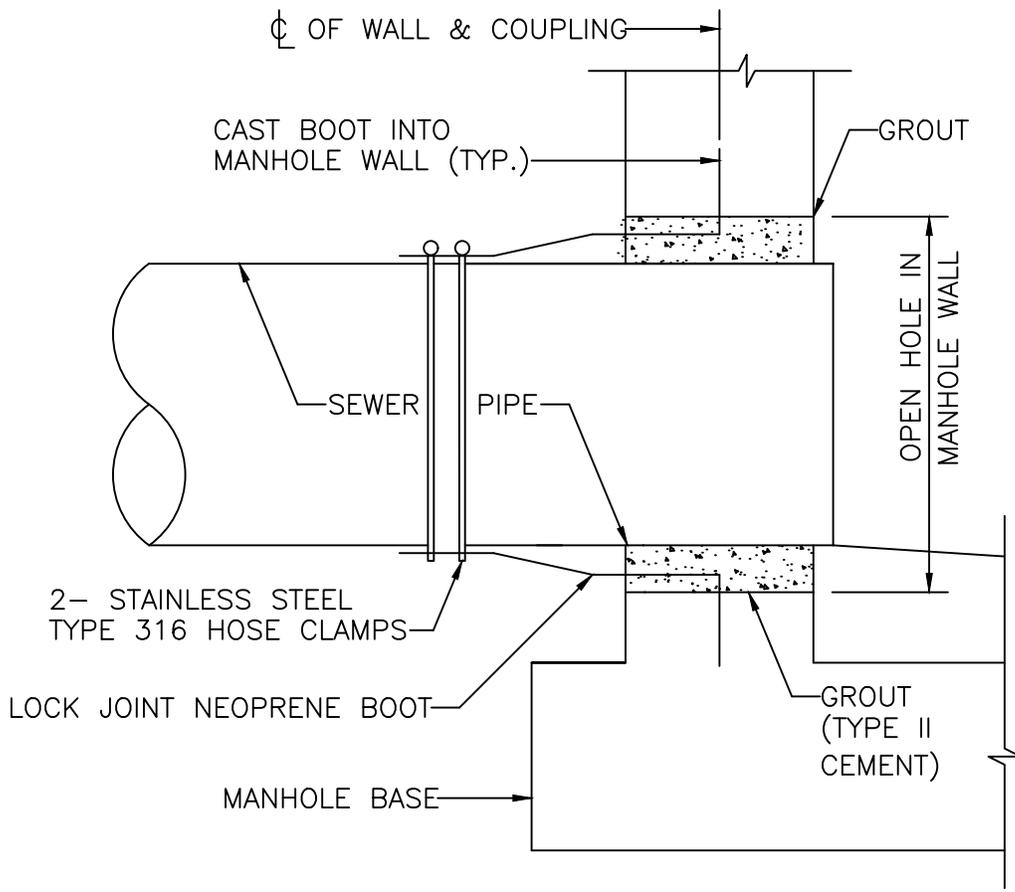
(2) NON-PENETRATING PICKHOLES SEE DWG. No. 1005-1

CITY OF LAUDERHILL  
ENGINEERING DEPARTMENT  
LAUDERHILL, FLORIDA

SCALE:  
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REVISED:  
SEPT.18

STANDARD SANITARY  
SEWER DETAIL  
MANHOLE  
FRAME AND COVER

S-9



CITY OF LAUDERHILL  
 ENGINEERING DEPARTMENT  
 LAUDERHILL, FLORIDA

SCALE:

N.T.S.

REVISED:

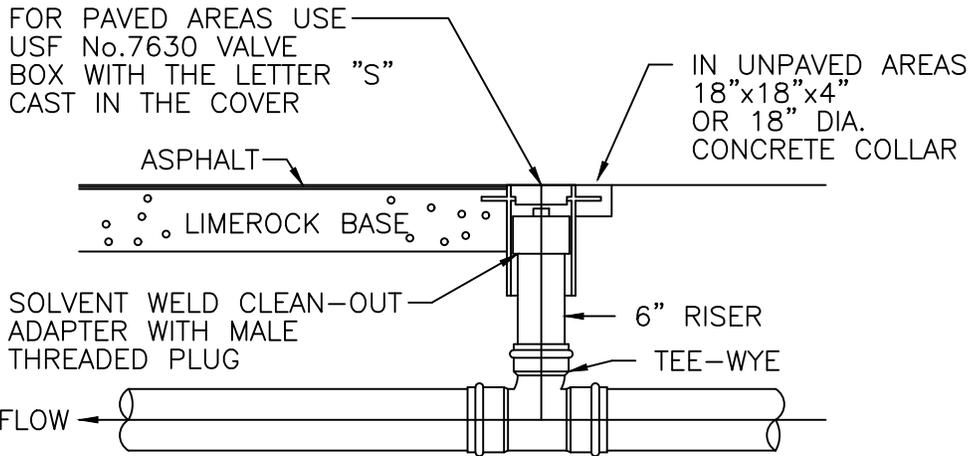
SEPT. 18

STANDARD SANITARY

SEWER DETAIL

MANHOLE COUPLING DETAIL

S-10



FOR PAVED AREAS USE  
 USF No.7630 VALVE  
 BOX WITH THE LETTER "S"  
 CAST IN THE COVER

IN UNPAVED AREAS  
 18"x18"x4"  
 OR 18" DIA.  
 CONCRETE COLLAR

ASPHALT

LIMEROCK BASE

SOLVENT WELD CLEAN-OUT  
 ADAPTER WITH MALE  
 THREADED PLUG

6" RISER

TEE-WYE

FLOW

NOTE:

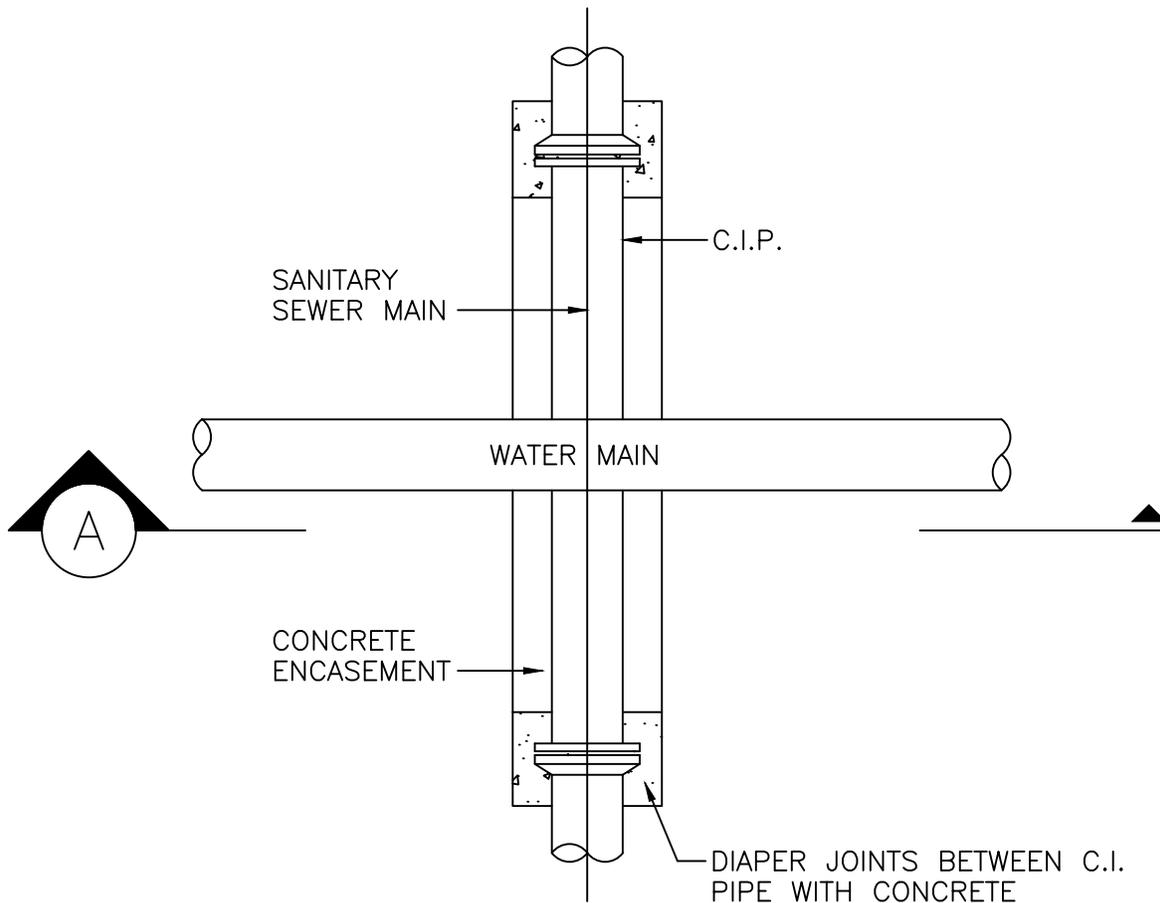
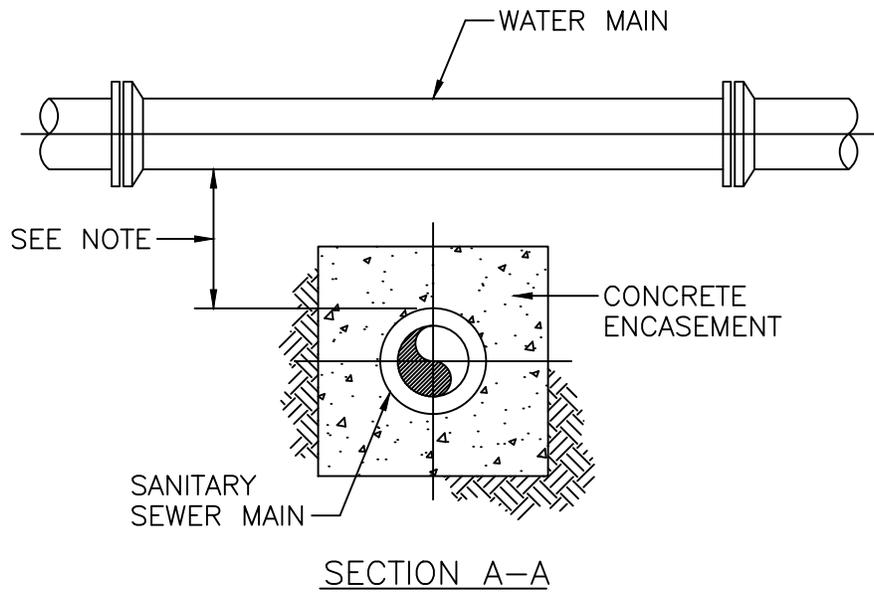
ROUGH IN RISER TO 1 FOOT ABOVE FINISHED  
 GRADE, AND CAP. CUT BACK TO FINISHED  
 GRADE AFTER PROJECT CLOSE-OUT.

CITY OF LAUDERHILL  
 ENGINEERING DEPARTMENT  
 LAUDERHILL, FLORIDA

SCALE:  
 N.T.S.  
 REVISED:  
 SEPT.18

STANDARD SANITARY  
 SEWER DETAIL  
 CLEANOUT

S-11



NOTE:

CONCRETE ENCASEMENT OF PIPE REQUIRED WHERE VERTICAL CLEARANCE BETWEEN SEWER MAIN AND WATER MAIN IS LESS THAN 18 INCHES.

CITY OF LAUDERHILL  
ENGINEERING DEPARTMENT  
LAUDERHILL, FLORIDA

SCALE:

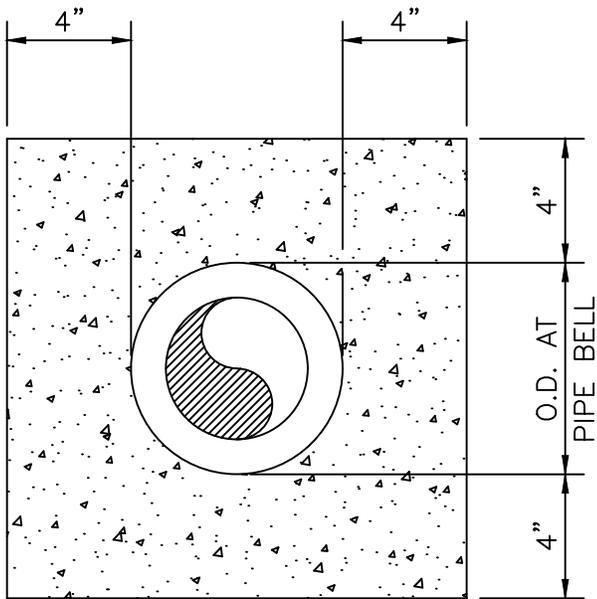
N.T.S.

REVISED:

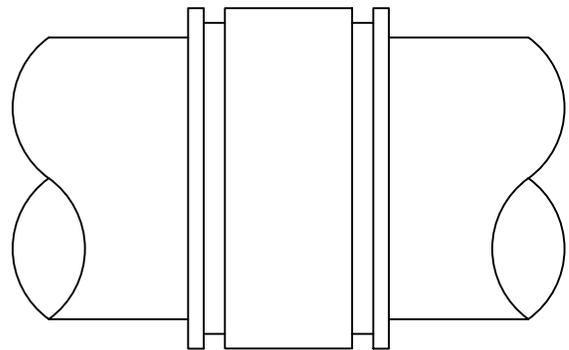
SEPT. 18

STANDARD SANITARY  
SEWER DETAIL  
ENCASEMENT DETAIL

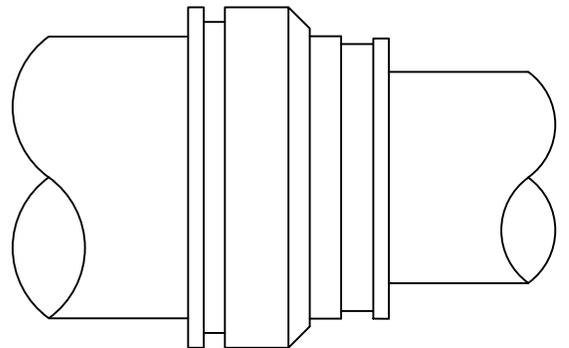
S-12



TYPICAL SEWER PIPE ENCASEMENT  
 CONCRETE



FELXIBLE COUPLINGS



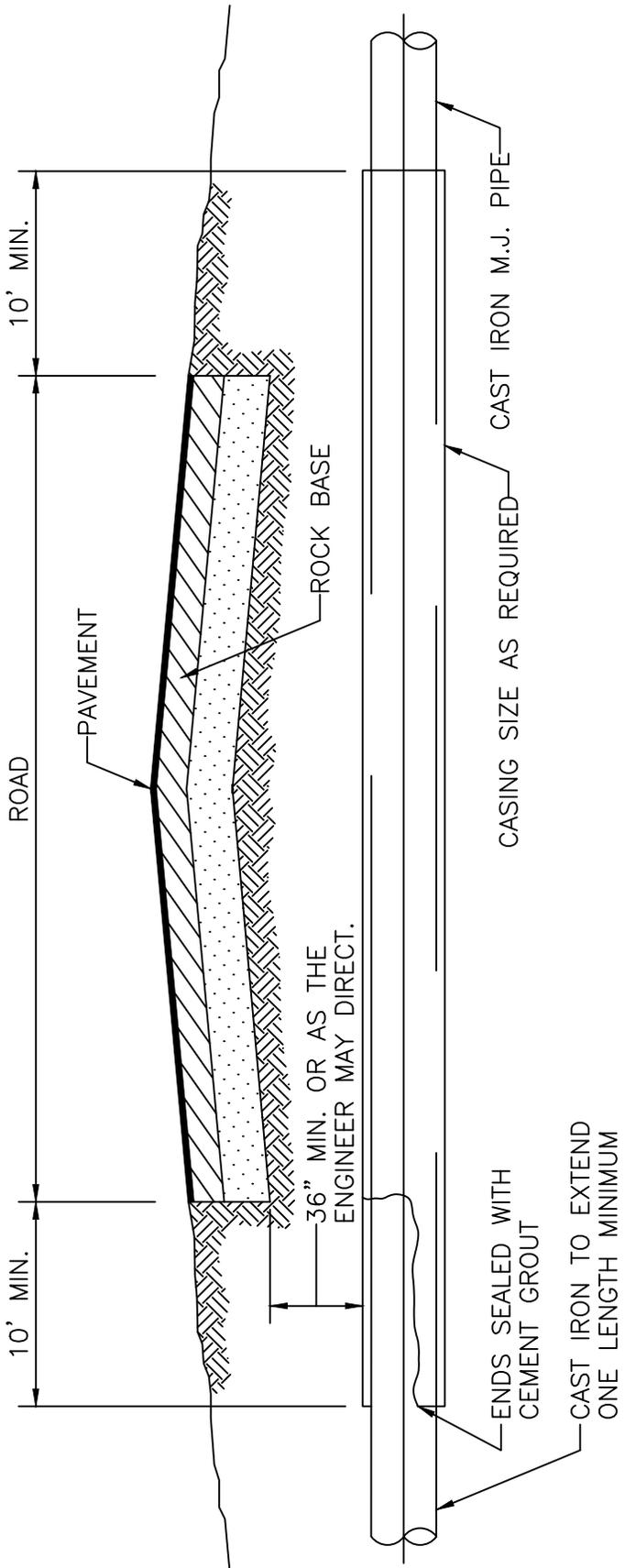
FERNCO FLEXIBLE REDUCER COUPLING

CITY OF LAUDERHILL  
 ENGINEERING DEPARTMENT  
 LAUDERHILL, FLORIDA

SCALE:  
 N.T.S.  
 REVISED:  
 SEPT.18

STANDARD SANITARY  
 SEWER DETAIL  
 PIPE ENCASEMENT

S-13



PIPE SIZE	OUTSIDE DIA. SPIGOT JOINT	OUTSIDE DIA. MECH. JOINT	SCHEDULE 60 STEEL CASING
8"	12.75	13.37"	16"
10"	14.38	15.62"	18"
12"	17.25	17.88"	20"
14"	19.62	20.25"	24"
16"	22.00	22.50"	24"
18"	23.75	24.75"	30"
20"	26.30	27.00"	30"
24"	30.50	31.50"	36"
30"	37.50	39.12"	42"
36"	43.75	46.00"	48"
42"	49.00	53.12"	54"
48"	55.50	60.00"	72"

NOTE:

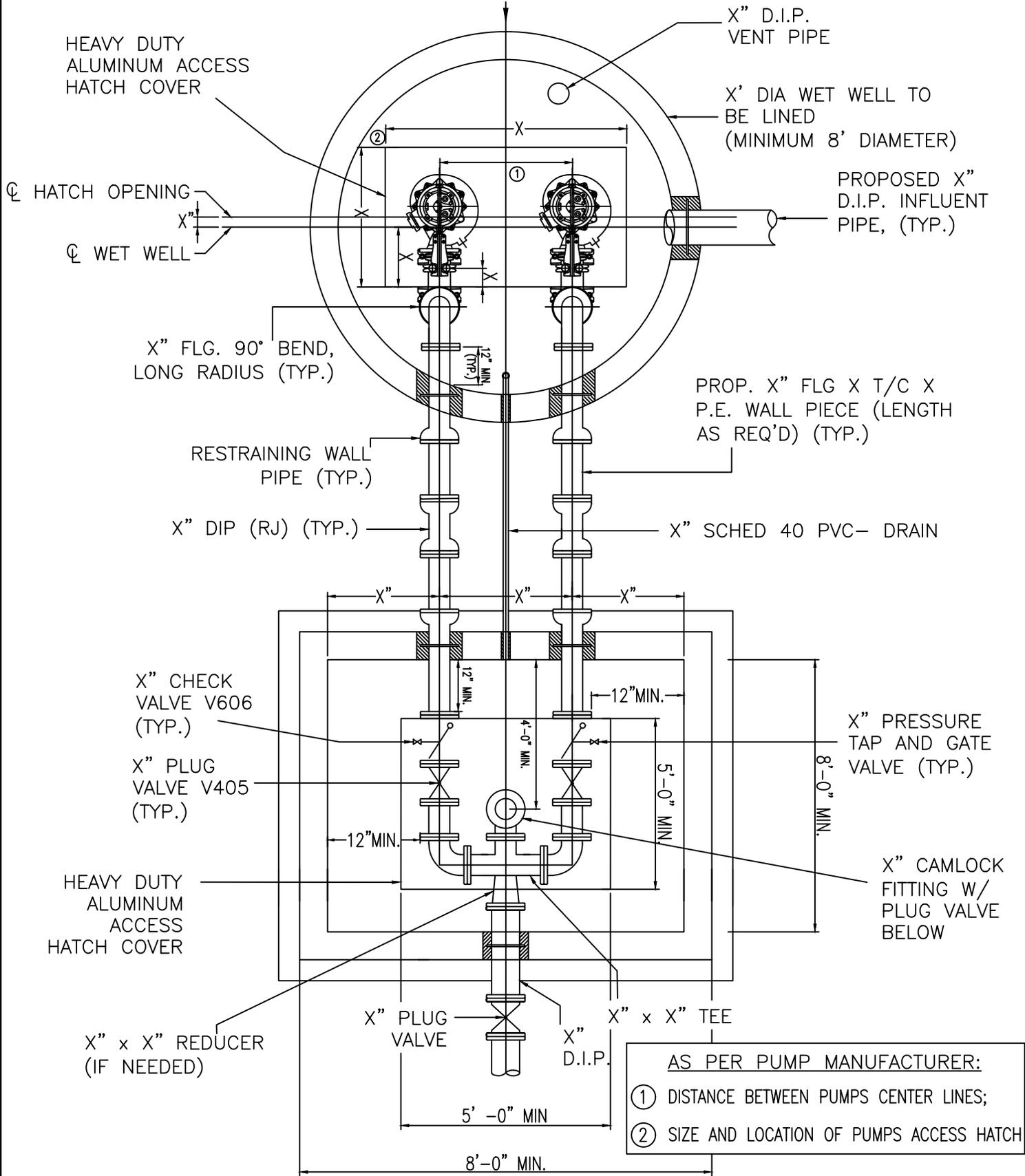
1. NORMALLY CASING PIPE IS 6" LARGER THAN O.D. OF BELL OF C.I. PIPE.

CITY OF LAUDERHILL  
 ENGINEERING DEPARTMENT  
 LAUDERHILL, FLORIDA

SCALE:  
 N.T.S.  
 REVISED:  
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STANDARD DETAIL  
 SANITARY SEWER  
 SYSTEM  
 CASING INSTALLATION

S-14

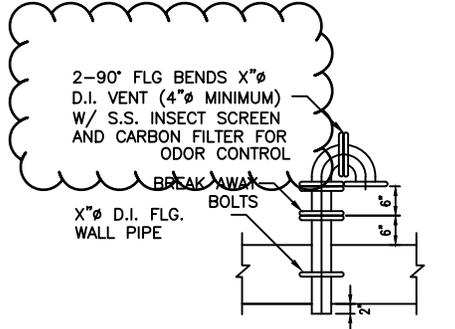
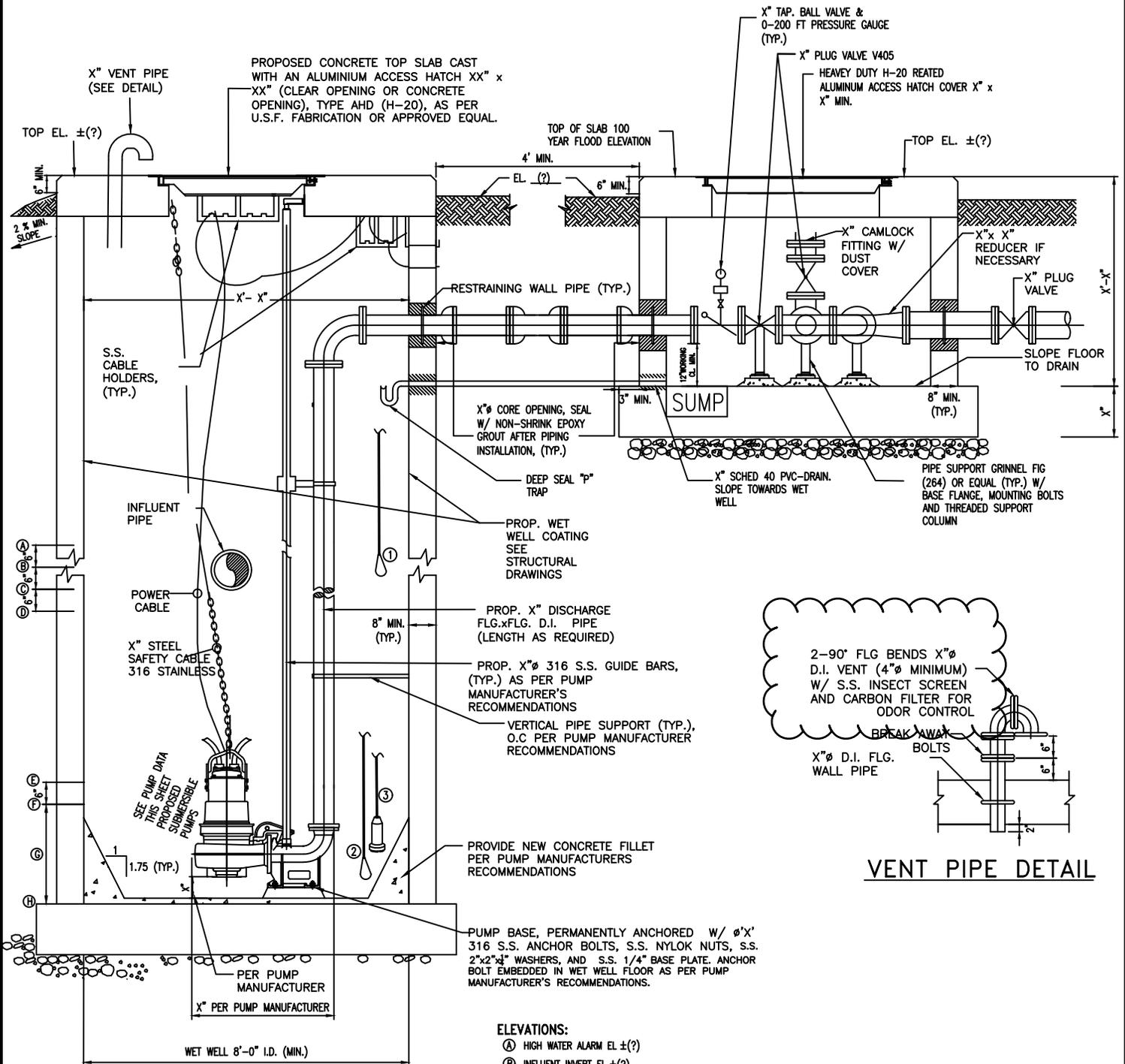


CITY OF LAUDERHILL  
 ENGINEERING DEPARTMENT  
 LAUDERHILL, FLORIDA

SCALE:  
 N.T.S.  
 REVISED:  
 SEPT. 18

STANDARD SANITARY  
 SEWER DETAIL  
 WET WELL PLAN

S-15



**VENT PIPE DETAIL**

- PUMP CONTROLS:**
- ① HIGH-HIGH FLOAT SWITCH
  - ② LOW-LOW FLOAT SWITCH
  - ③ TRANSDUCER

- ELEVATIONS:**
- Ⓐ HIGH WATER ALARM EL ±(?)
  - Ⓑ INFLUENT INVERT EL ±(?)
  - Ⓒ LAG PUMP "ON" EL ±(?)
  - Ⓓ LEAD PUMP "ON" EL ±(?)
  - Ⓔ ALL PUMPS "OFF" EL ±(?)
  - Ⓕ LOW WATER ALARM EL ±(?)
  - Ⓖ MINIMUM LEVEL AS PER PUMP MANUFACTURER
  - Ⓗ BOTTOM ELEVATION EL ±(?)

CITY OF LAUDERHILL  
 ENGINEERING DEPARTMENT  
 LAUDERHILL, FLORIDA

SCALE:  
 N.T.S.  
 REVISED:  
 SEPT. 18

STANDARD SANITARY  
 SEWER DETAIL  
 WET WELL SECTION

S-16

NOTES:

- 1). ALL PUMPS SHALL BE EXPLOSION PROOF
- 2). CONTRACTOR SHALL VERIFY EXISTING UNDERGROUND UTILITIES IN APPLICATIONS, ELEVATIONS, AND QUALITIES PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL VERIFY EXISTING PIPING TO REMAIN BEFORE ORDERING NEW PIPE AND FITTINGS FOR CONNECTIONS. THE CONTRACTOR SHALL INSPECT AND VERIFY ALL SITE CONDITIONS, DIMENSIONS, ELEVATIONS ETC. AND COORDINATE WITH OTHER TRADES PRIOR TO CONSTRUCTION. WORK SHALL BE SCHEDULED ACCORDING TO SPECIFIED CONSTRUCTION SEQUENCE.
- 3). PAY ATTENTION TO AVOID DISTURBING EXISTING ELECTRICAL SERVICE IN THE AREA UNDER CONSTRUCTION (FOR EXISTING FACILITIES ONLY).
- 4). ALL ELEVATIONS FOR UNDERGROUND UTILITIES SHOWN ARE T.O.P. ELEVATIONS UNLESS OTHERWISE SPECIFIED.
- 5). ALL PIPING, UNLESS SPECIFIED, TO USE DUCTILE IRON WITH LINING OF SEWER APPLICATION. FITTINGS AND CONNECTIONS UNDERGROUND TO USE MECHANICAL JOINT WITH RESTRAINTS; FITTINGS ABOVE GROUND OR IN VAULT TO USE FLANGE JOINT.
- 6). PROTECT ALL UNDERGROUND FITTING WITH BOLT CONNECTIONS IN DIRECT CONTACT WITH SOIL WITH TWO COATS OF BITUMASTIC MATERIAL OR APPROVED EQUAL. PROVIDE DIELECTRIC FITTINGS BETWEEN TWO DIFFERENT PIPING MATERIALS.
- 7). PIPE SUPPORTS SHALL BE HOT-DIP GALVANIZED AFTER FABRICATION.
- 8). PROPOSED WET WELL SHALL BE CYLINDRICAL TYPE MADE OF REINFORCED CONCRETE WITH DEPTH NO GREATER THAN 24 FEET.
- 9). PROVIDE SPARK-PROOF CONTACT BETWEEN PUMPS AND GUIDE RAIL SYSTEM.
- 10). ALL PUMP CONTROLS SHALL BE SET AS PER DESIGN REQUIREMENTS.

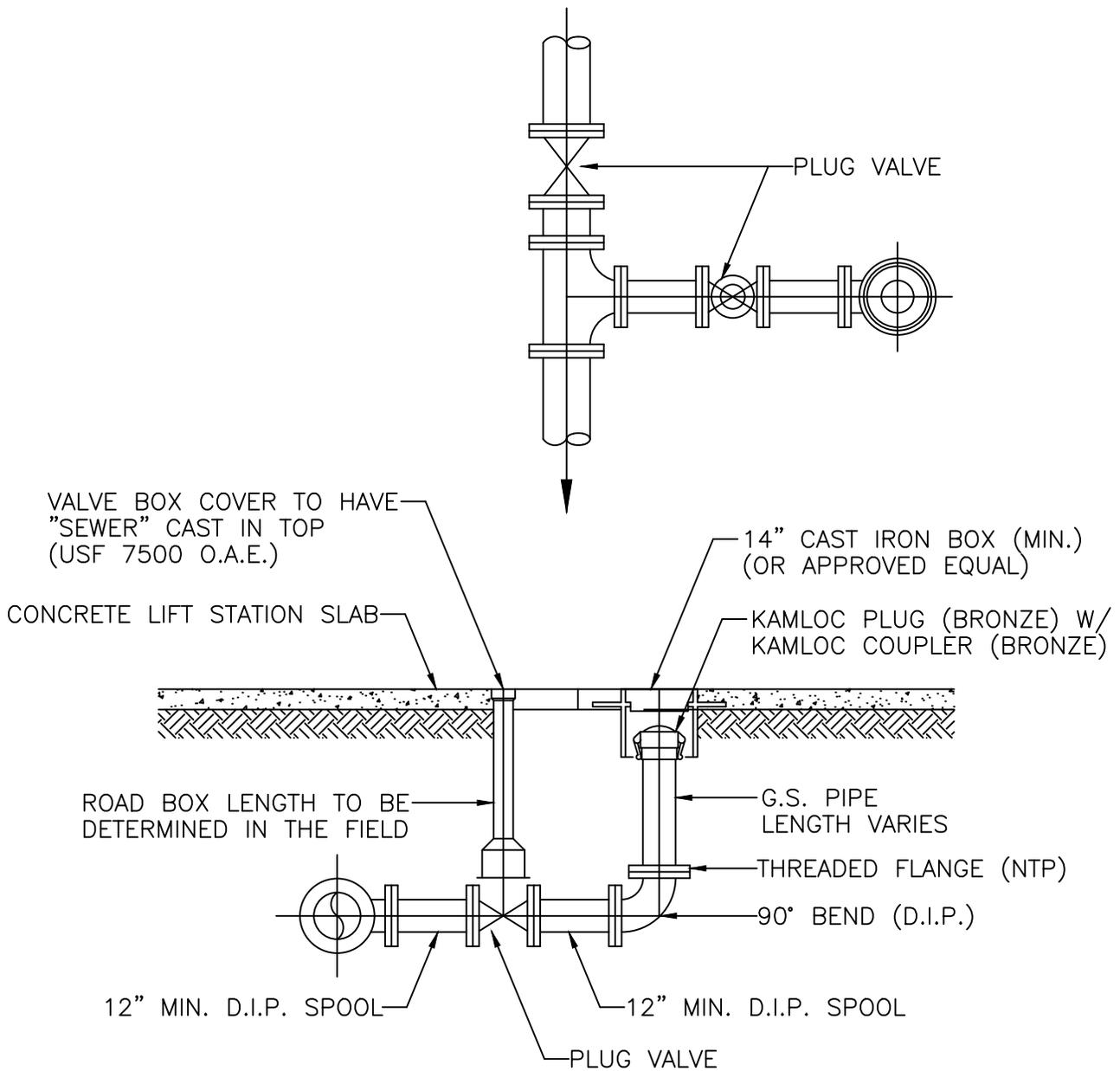
PUMP DATA:		
FLUID		RAW SEWAGE
INSTALLATION LOCATION		ADDRESS:
PUMP TYPE	SUBMERSIBLE PUMP	
RATED POINT	CAPACITY, GPM	???
	TDH, FEET	???
SHUT OFF HEAD, FT		???
CONTINUOUS OPERATING RANGE	MAXIMUM TDH, FT	???
	CAPACITY, GPM	???
	MINIMUM TDH, FT	???
	CAPACITY, GPM	???
	NPSHR, FT	???
	PUMP EFFICIENCY	AT B.E.P., %
MIN. @ RUNOUT, %		???
PUMP CONSTRUCTION	CASING	CAST IRON CLASS 35B
	IMPELLER	CAST IRON CLASS 35B
	SHAFT	AISI 420 S.S.
	BEARINGS L-10 LIFE, HRS.	???
	MAX. SHAFT DEFLECTION IN OPERATING RANGE, MILS	2
	MAX. VEL. OF VIBRATIONS IN OP. RANGE, INCH/SEC	0.15
	SUCTION, INCHES	-
	DISCHARGE, INCHES	???
ELECTRIC MOTOR	RATED HP	???
	RPM	???
	VOLTS/PHASE/Hz/S.F.	???
	AMBIENT TEMP. FOR MOTOR RATING, °C	40
	MAXIMUM TEMP. RISE, °C	40
	BEARINGS L-10 LIFE, HRS.	???
	MAX. VIBRATION AMP., MILS	0.1
	NOISE LEVEL, dB@1 METER	-
	NEMA DESIGN CODE LETTER	B
	START. CURR. LETTER CODE	G
	INSULATION CLASS	H
	MOTOR RATED HP NOT OVERLOADED AT ANY POINT IN THE PUMPS PERFORMANCE CURVE	
	MANUFACTURERS & MODELS	PUMP
MOTOR		???

CITY OF LAUDERHILL  
ENGINEERING DEPARTMENT  
LAUDERHILL, FLORIDA

SCALE:  
N.T.S.  
REVISED:  
SEPT.18

STANDARD SANITARY  
SEWER DETAIL  
WET WELL NOTES

S-17



NOTES:

1. MECHANICAL JOINT PIPE WITH TIE RODS OR RESTRAINED JOINTS MAY BE USED WITH THE APPROVAL OF THE UTILITY ENGINEER.
2. EMERGENCY BY-PASS PIPING SHALL BE 6" (MINIMUM).

CITY OF LAUDERHILL  
 ENGINEERING DEPARTMENT  
 LAUDERHILL, FLORIDA

SCALE:  
 N.T.S.  
 REVISED:  
 SEPT.18

STANDARD SANITARY  
 SEWER DETAIL  
 LIFT STATION  
 EMERGENCY BY-PASS

S-18



## SECTION 6 - FORMS

**Editor's note**— It should be noted that the forms designated as § 6 of Schedule L have not been set out at length but are incorporated into the Engineering Standards Manual which is on file and available for inspection in the office of the city clerk.

**SECTION 2. Conflict.** All ordinances or parts of ordinances, all resolutions or parts of resolutions in conflict herewith be and the same are hereby repealed as to the extent of such conflict.

**SECTION 3. Codification.** The provisions of this Ordinance shall become and be made a part of the City of Lauderhill, Florida Land Development Regulations; sections of this Ordinance may be renumbered or re-lettered to accomplish such intention; and the word “ordinance” may be changed to “article,” “part,” “section,” or other appropriate word.

6.01 DRC ENGINEERING/UTILITY DEPARTMENT CHECKLIST

DEVELOPMENT REVIEW COMMITTEE (DRC)  
ENGINEERING / UTILITY DEPARTMENT COMMENTS

MEETING DATE: \_\_\_\_\_

SITE PLAN NUMBER: \_\_\_\_\_

SITE PLAN NAME: \_\_\_\_\_

LOCATION: \_\_\_\_\_

**SITE PLAN**

- \_\_\_\_\_ Existing Water IS shown on the Site Plan.
- \_\_\_\_\_ Proposed Water IS shown on the Site Plan.
- \_\_\_\_\_ Easements for existing and/or proposed facilities ARE shown on the Site Plan.
- \_\_\_\_\_ Existing Sewer IS shown on the Site Plan.
- \_\_\_\_\_ Proposed Sewer IS shown on the Site Plan.
- \_\_\_\_\_ Existing Drainage IS shown on the Site Plan.
- \_\_\_\_\_ Proposed Drainage IS shown on the Site Plan.
- \_\_\_\_\_ Zoning classification IS shown on the Site Plan; Zoning District = \_\_\_\_\_
- \_\_\_\_\_ Impervious Area percentage calculation IS provided on the Site Plan.
- \_\_\_\_\_ Pavement markings and signs ARE shown on the Site Plan.
- \_\_\_\_\_ Survey WAS provided with the submittal package.
- \_\_\_\_\_ Schedule meeting with City Engineer; call 730-2970 for appointment (may take 1 week).

Additional site plan comments: \_\_\_\_\_

Site Plan Recommendation:

\_\_\_\_\_ A

\_\_\_\_\_ ACUEPA

\_\_\_\_\_ SPTCO

**WATER**

- \_\_\_\_\_ Water Distribution System IS ADEQUATE.
- \_\_\_\_\_ Pipe diameters are too small; Minimum looped diameter required is \_\_\_\_\_ in.
- \_\_\_\_\_ System IS looped.
- \_\_\_\_\_ Adequate fire flow exists; Required fire flow = \_\_\_\_\_ gpm.
- \_\_\_\_\_ A 25% reduction HAS been approved by the Fire Department at q = \_\_\_\_\_ gpm.
- \_\_\_\_\_ Adequate fire hydrant spacing has been provided. Maximum fire hydrant spacing is \_\_\_\_\_ ft. All portions of each structure to be within a maximum of \_\_\_\_\_ ft. from the nearest hydrant (as the hose lays).
- \_\_\_\_\_ Existing fire flow is determined; fire flow = \_\_\_\_\_
- \_\_\_\_\_ Fire hydrant is protected by Std. FDOT curbs and/or bollards.
- \_\_\_\_\_ Fire flows based on proposed plan must be evaluated.
- \_\_\_\_\_ Easements are adequate.
- \_\_\_\_\_ Survey adequately indicates locations of valves, fire hydrants, meters, etc.
- \_\_\_\_\_ Backflow preventers are on RPZ / DDCV (fire dept.) / PVB / AG
- \_\_\_\_\_ Tie-ins and valving are adequately shown or provided.
- \_\_\_\_\_ Additional impacts off-site - Evaluation / Improvements and/or Impact Fees probable.

Additional water comments/clarifications \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Water Recommendations:

\_\_\_\_\_A      \_\_\_\_\_ACAA      \_\_\_\_\_ACAAEP      \_\_\_\_\_SPTCO

Note: Construction details and specifications, i.e. meter sizes, service and water main connections, valving, materials, etc. will be handled at a later date in the Engineering Permit Application / Review process.

**SEWER**

\_\_\_\_\_ Wastewater System IS adequate.

\_\_\_\_\_ Additional flow is unknown (Applicant must indicate quantity); q - \_\_\_\_\_ADF

\_\_\_\_\_ Existing lift station must be evaluated to determine adequacy.

\_\_\_\_\_ Easements are inadequate or are not shown.

\_\_\_\_\_ Cleanouts are inadequate or not shown (4" minimum diameter; at all bends).

\_\_\_\_\_ Gravity system or tie-ins are inadequate or not shown.

\_\_\_\_\_ Gravity system must be TV'ed and VCR tape submitted to the Engineering Division

\_\_\_\_\_ Lift Station must be inspected and data provided on existing/proposed Equipment.

\_\_\_\_\_ Force main system is inadequate or not shown.

\_\_\_\_\_ Additional impact to off-site Sewer systems - Evaluation / Improvement and/or Impact Fees probable.

Additional sewer comments / clarifications \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Sewer Recommendation:

\_\_\_\_\_A      \_\_\_\_\_ACUEPA      \_\_\_\_\_SPTCO

Note: Improvements to lift stations and gravity sewer lines may be required as a result of Engineering Permit inspections and/or permit submittal requirements which will occur at a later date - after an approved Application has been submitted.

**DRAINAGE**

Storm water System IS / IS NOT adequate.

- Total impervious area exceeds 40 percent limit.
- Pervious area of parking lot does not meet the 15 percent minimum requirement.
- Runoff must be retained on-site; provide spot elevations and indicate flow.
- Spot elevations indicate minimum grade of impervious areas of 3% is not met.
- Catch basin maximum spacing of 300 feet is exceeded.
- Imperious area is increasing - submit drainage calculations.
- Additional Impact to off-site Drainage Evaluation / Improvements and/or Impact Feet probable.

Additional drainage comments / clarifications: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Drainage Recommendation:

A                       ACUEPA                       SPTCO

Note: Stormwater facilities must be designed for both quality and quantity; however, quantity usually governs. Various simulations may be required as a result of the Engineering Permit review process.

**TRANSPORTATION**

Transportation System IS / IS NOT adequate.

- Sidewalks and/or pedestrian walkways are inadequate or not provided.
- Inadequate clear zone exists.
- Inadequate sight distance exists.
- ADA accessibility is inadequate or not provided.
- Roadway markings are inadequate or not shown as follows:
  - stop bars                       traffic dividers                       directional arrows
  - fire lane                       pedestrian crosswalks                       other
- Signs and/or their locations re inadequate or not shown as follows:
  - stop signs                       do not enter                       speed limit
  - other:
- Road (or drive aisles) widths are inadequate.
- Turning radius of 52 feet minimum diameter is not shown or maintained.
- Driveway openings do not meet current standards.
- Need ingress / egress easement.
- Off-site impacts possible - need TRIPS run from Broward County.
- Possible traffic concerns on or off-site - need Traffic Study.
- Additional impact to off-site roadways and/or intersections - Transportation Evaluation / Improvements and/or Impact Fees probable.

Additional transportation comments / clarifications: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Transportation Recommendation: \_\_\_\_\_  
\_\_\_\_\_A \_\_\_\_\_ACUEPA \_\_\_\_\_SPTCO

Recommendation Codes:

A = Approved

ACUAEP = Approved contingent upon an approved engineering permit, information, data, studies, inspection reports, etc. which may become available or are required in the engineering permitting process MAY / WILL require a modification of your site plan and a resubmittal.

SPTCO = Additional submittals must be made and approved by the appropriate staff AND / OR City Commission or other agency prior to a Certificate of Occupancy being issued.

The Engineering Permit Application / Review process may take up to 30 days after an approved application has been submitted at the Building Division and internally delivered and logged into the Engineering Division. Engineering Permits must be approved (at least contingent upon contractor's licensing, insurances, fees, etc. being submitted and approved by the Building Division) prior to application for a Building Permit.

COMMENTS PROVIDED BY: \_\_\_\_\_  
DATE: \_\_\_\_\_

**THIS INSTRUMENT PREPARED BY:**  
Earl Hall, Esq.  
Hall & Rosenberg, P.L.  
8850 W. Oakland Park Blvd., Ste. 101  
Sunrise, Florida 33351

**AFTER RECORDING, RETURN TO :**  
Earl Hall, Esq.  
Hall & Rosenberg, P.L.  
8850 W. Oakland Park Blvd., Ste. 101  
Sunrise, Florida 33351

**6.02 CITY OF LAUDERHILL**

**UTILITIES EASEMENT DEDICATION**

THIS INDENTURE made this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_, between

\_\_\_\_\_ having an address at \_\_\_\_\_

\_\_\_\_\_ ("GRANTOR"), expressly grants an easement for the purposes described herein to THE CITY OF LAUDERHILL, FLORIDA, having an address at 5581 W. Oakland Park Blvd., Lauderhill, Florida 33313, ("GRANTEE"), subject to the following provisions and in consideration of the sum of Ten Dollars (\$10.00) and other good and valuable considerations paid by GRANTEE to GRANTOR, receipt of which is hereby acknowledged by both parties.

GRANTOR is the fee simple owner of that parcel of real property, a legal description of which is attached hereto as Exhibit "A" and incorporated by reference herein, ("Property").

GRANTOR hereby grants, bargains and sells to GRANTEE, its successors and assigns, a perpetual easement in, under, over, through, across and upon all of the Property exclusive of those areas inside of the perimeter of any existing or future building or structure to be located on the Property for the purposes described herein ("Easement Area").

GRANTOR hereby grants unto GRANTEE, its successors and assigns, full and free right and authority to construct, maintain, repair, install, and rebuild water and sanitary sewage facilities in, over, under, through, upon or across the Easement Area.

The City agrees to own, maintain and repair the Lines at the City's sole cost and expense. The City shall not be responsible for any damage to improvements now or hereafter existing on the Project, including, but not limited to sidewalks, pavement, shrubbery landscaping, signage or irrigation equipment and machinery, which may result from the City's access to or repair or maintenance of the Lines and if it is necessary to excavate within the area of such Lines in order to repair or maintain same. The City's only obligation after repairing or maintaining the Lines

shall be to adequately fill and compact any such excavation and return the ground to pre-development natural grade. Developer hereby waives any rights it may now or hereafter have to require the City to repair, replace, restore or improve the affected area beyond that described in this paragraph. Furthermore, Developer agrees not to install any permanent improvements, except asphalt, concrete curbing, irrigation lines or sidewalks within a 5' strip on either side of the City Lines.

GRANTOR may for its own purposes utilize the Easement Area and shall retain the right of free ingress and egress on and over the Easement Area; provided, that in no event shall any of the rights herein reserved to GRANTOR impede the easement herein granted or the exercise of the rights of use herein granted to GRANTEE.

The provisions of this easement shall be binding on the parties hereto and their respective successors and assigns as a covenant running with and binding upon the property.

This easement shall not be released or amended without consent of the GRANTEE as evidenced by a document signed with the same formalities as this document.

GRANTEE shall record this document in the Public Records of Broward County, Florida.

**[TEXT AND SIGNATURES FOLLOW]**

IN WITNESS WHEREOF, GRANTOR has hereunto set his hand and seal on the day and year first above written.

Signed, Sealed and delivered  
in the presence of:

GRANTOR

\_\_\_\_\_

\_\_\_\_\_

Print Name

Print Name

\_\_\_\_\_

Print Name

STATE OF FLORIDA )

) SS:

COUNTY OF BROWARD )

The foregoing instrument was acknowledged before me this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_\_.

by \_\_\_\_\_ as \_\_\_\_\_

for \_\_\_\_\_

\_\_\_\_\_  
NOTARY PUBLIC, STATE OF FLORIDA

My Commission Expires: \_\_\_\_\_

Personally Known \_\_\_\_\_ or Produced Identification \_\_\_\_\_

Type of Identification Produced \_\_\_\_\_

**6.03 CONTRACTOR'S FINAL WAIVER  
AND RELEASE OF LIEN**

---

KNOW ALL MEN BY THESE PRESENTS, that the undersigned, \_\_\_\_\_, a Florida corporation, in consideration of payment in the sum of \_\_\_\_\_ (\_\_\_\_\_) ("Payment"), receipt whereof is hereby acknowledged, does hereby (if there was a claim of lien filed), release its lien and right to claim a lien against \_\_\_\_\_ ("Owner") and City of Lauderhill ("City"), and against that certain real property and improvements thereon ("Property") situated in Broward County, Florida and more particularly described as follows:

Project: \_\_\_\_\_  
Location/Description: \_\_\_\_\_  
\_\_\_\_\_

for the amount of said Payment, on account of work and labor performed and/or materials furnished in, to, or about the construction of any building or buildings situated thereon, or in improving the Property, or any part thereof.

The undersigned represents and warrants that no other entities may claim a lien upon the property or against the Owner, and Engineer or work done or materials supplied through or to the undersigned, and that all such have been fully paid.

It is understood that this Final Waiver and Release of Lien is expressly conditioned upon clearance of the above-referenced Payment if such Payment was made by check.

IN WITNESS WHEREOF, I have hereunto set my hand and seal this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_.

Signed and delivered in the presence of:

\_\_\_\_\_  
(witness)

\_\_\_\_\_  
(witness)

By: \_\_\_\_\_

Title: \_\_\_\_\_

6.04 CITY OF LAUDERHILL  
UTILITIES ACCEPTANCE PACKAGE CHECKLIST

DATE OF CITY COMMISSION ACCEPTANCE:

(minutes attached)

PROJECT:

---

Please be advised that for the conveyance to the City of water and/or sewer improvements made within the above referenced project, we need submitted one completed copy of this checklist and the following items:

- \_\_\_ 1. Letter of Certification of Completion for Water and Sewer from Engineer of Record
- \_\_\_ 2. One (1) complete set of "As-built" mylars showing the original design and the "As-built" data.
- \_\_\_ 3. Five (5) sets of "As-built" prints, signed and sealed, two (2) of which are to be forwarded to the Community Development Department.
- \_\_\_ 4. Copy of all test results and Final Inspection Report (to include hydrant make, model, size, inspection details, and flow test data).
- \_\_\_ 5. Letter of acceptance of other utilities and/or DER/DNRP and HRS forms.
- \_\_\_ 6. Computer "As-built" construction drawing files on CD/DVD (AUTOCAD version 14.0 or later/DXF format)
- \_\_\_ 7. Certified "As-built" quantities and cost document (itemized) certified by the engineer of record.
- \_\_\_ 8. Copies of Releases of Liens and No-Lien Affidavits.
- \_\_\_ 9. Final Subdivision Approval Form
- \_\_\_ 10. Acceptable lamping/TV report or letter of sanitary sewer system inspection.
- \_\_\_ 11. Bill of Sale.
- \_\_\_ 12. Maintenance Bond.
- \_\_\_ 13. Easement dedication.
- \_\_\_ 14. Evidence that the Performance Bond or equivalent has been released or reduced.
- \_\_\_ 15. Elevation certificate.

**6.05 Final Approval  
of  
Water Lines/Services/Fire Hydrants  
for the  
City of Lauderhill**

**Telephone: (954) 730-2973**

**Fax: (954) 730-3075**

1. Area to be considered for approval.

Description: \_\_\_\_\_

\_\_\_\_\_  
(attach sketch or overall maps)

2. I agree that the **water lines/services/fire hydrants** for the above project have been inspected by the City personnel and are acceptable to the District at this time.

Signature \_\_\_\_\_ Date: \_\_\_\_\_

District Inspector

3. Approved \_\_\_\_\_ Not Approved \_\_\_\_\_

Comments/Stipulations: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

4. Final Release: \_\_\_\_\_ Date: \_\_\_\_\_

Field Manager

City Engineer: \_\_\_\_\_ Date: \_\_\_\_\_

**6.06 Final Approval  
of  
Gravity Sewer and Lateral Lines  
for the  
City of Lauderdale**

**Telephone: (954) 730-2973  
Fax: (954) 730-3075**

1. Area to be considered for approval.

Description: \_\_\_\_\_

\_\_\_\_\_  
(attach sketch or overall maps)

2. I agree that the **gravity sewer and lateral lines** for the above project have been inspected by the City personnel and are acceptable to the District at this time.

Signature \_\_\_\_\_ Date: \_\_\_\_\_  
District Inspector

3. Approved \_\_\_\_\_ Not Approved \_\_\_\_\_

Comments/Stipulations: \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

4. Final Release: \_\_\_\_\_ Date: \_\_\_\_\_  
Field Manager

City Engineer: \_\_\_\_\_ Date: \_\_\_\_\_

**THIS INSTRUMENT PREPARED BY:**

Earl Hall, Esq.  
Hall & Rosenberg, P.L.  
8850 W. Oakland Park Blvd., Ste. 101  
Sunrise, Florida 33351

**AFTER RECORDING, RETURN TO :**

Earl Hall, Esq.  
Hall & Rosenberg, P.L.  
8850 W. Oakland Park Blvd., Ste. 101  
Sunrise, Florida 33351

**6.07 City of Lauderhill**

**Construction Performance Bond**

Any singular reference to Contractor, Surety, Owner or other party shall be considered plural where applicable.

CONTRACTOR (Name and Address):

SURETY (Name and Principal Place of Business):

OWNER (Name and Address):

City of Lauderhill  
5581 W. Oakland Park Blvd.  
Lauderhill, FL 33313

**CONSTRUCTION CONTRACT**

Date:  
Amount: \$  
Description (Name and Location):

**BOND**

Date (Not earlier than Construction Contract Date):  
Amount: \$  
Modifications to this Bond Form:

**CONTRACTOR AS PRINCIPAL**

Company \_\_\_\_\_ (Corp. Seal)

Signature: \_\_\_\_\_  
Name and Title:

**SURETY**

Company \_\_\_\_\_ (Corp. Seal)

Signature: \_\_\_\_\_  
Name and Title:

**CONTRACTOR AS PRINCIPAL**

Company \_\_\_\_\_ (Corp. Seal)

Signature: \_\_\_\_\_  
Name and Title:

**SURETY**

Company \_\_\_\_\_ (Corp. Seal)

Signature: \_\_\_\_\_  
Name and Title:

1. The Contractor and the Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors and assigns to the Owner for the performance of the Construction Contract, which is incorporated herein by reference.
2. If the Contractor performs the Construction Contract, the Surety and the Contractor shall have no obligation under this Bond, except to participate in conferences as provided in Subparagraph 3.1.
3. If there is no Owner Default, the Surety's obligation under this Bond shall arise after:
  - 3.1. The Owner has notified the Contractor and the Surety at its address described in Paragraph 10 below, that the Owner is considering declaring a Contractor Default and has requested and attempted to arrange a conference with the Contractor and the Surety to be held not later than fifteen days after receipt of such notice to discuss methods of performing the Construction Contract. If the Owner, the Contractor and the Surety agree, the Contractor shall be allowed a reasonable time to perform the Construction Contract, but such an agreement shall not waive the Owner's right, if any, subsequently to declare a Contractor Default: and
  - 3.2. The Owner has declared a Contractor Default and formally terminated the Contractor's right to complete the contract. Such Contractor Default shall not be declared earlier than twenty days after the Contractor and the Surety have received notice as provided in Subparagraph 3.1: and
  - 3.3. The Owner has agreed to pay the Balance of the Contract Price to the Surety in accordance with the terms of the Construction Contract or to a contractor selected to perform the Construction Contract in accordance with the terms of the contract with the Owner.
4. When the Owner has satisfied the conditions of Paragraph 3, the Surety shall promptly and at the Surety's expense take one of the following actions:
  - 4.1. Arrange for the Contractor, with consent of the Owner, to perform and complete the Construction Contract: or
  - 4.2. Undertake to perform and complete the Construction Contract itself, through its agents or through independent contractors: or
  - 4.3. Obtain bids or negotiated proposals from qualified contractors acceptable to the Owner for a contract for performance and completion of the Construction Contract, arrange for a contract to be prepared for execution by the Owner and the contractor selected with the Owner's concurrence, to be secured with performance and payment bonds executed by a qualified surety equivalent to the bonds issued on the Construction Contract, and pay to the Owner the amount of damages as described in Paragraph 6 in excess of the Balance of the Contract Price incurred by the Owner resulting from the Contractor's default: or
  - 4.4. Waive its right to perform and complete, arrange for completion, or obtain a new contractor and with reasonable promptness under the circumstances:
    1. After investigation, determine the amount for which it may be liable to the Owner and, as soon as practicable after the amount is determined, tender payment therefor to the Owner: or
    2. Deny liability in whole or in part and notify the Owner citing reasons therefor.
5. If the Surety does not proceed as provided in Paragraph 4 with reasonable promptness, the Surety shall be deemed to be in default on this Bond fifteen days after receipt of an additional written notice from the Owner to the Surety demanding that the Surety perform its obligations under this Bond, and the Owner shall be entitled to enforce any remedy available to the Owner. If the Surety proceeds as provided in Subparagraph 4.4, and the Owner refuses the payment tendered or the Surety has denied liability, in whole or in part, without further notice the Owner shall be entitled to enforce any remedy available to the Owner.
6. After the Owner has terminated the Contractor's right to complete the Construction Contract, and if the Surety elects to act under Subparagraph 4.1, 4.2, or 4.3 above, then the responsibilities of the Surety to the Owner shall not be greater than those of the Contractor under the Construction Contract, and the responsibilities of the Owner to the Surety shall not be greater than those of the Owner under the Construction Contract. To the limit of the amount of this Bond, but subject to commitment by the Owner of the Balance of the Contract Price to mitigation of costs and damages on the Construction Contract, the Surety is obligated without duplication for:
  - 6.1. The responsibilities of the Contractor for correction of defective work and completion of the Construction Contract:
  - 6.2. Additional legal, design professional and delay costs resulting from the Contractor's Default, and resulting from the actions or failure to act of the Surety under Paragraph 4: and
  - 6.3. Liquidated damages, or if no liquidated damages are specified in the Construction Contract, actual damages caused by delayed performance or non-performance of the Contractor.
7. The Surety shall not be liable to the Owner or others for obligations of the Contractor that are unrelated to the Construction Contract, and the Balance of the Contract Price shall not be reduced or set off on account of any such unrelated obligations. No right of action shall accrue on this Bond to any person or entity other than the Owner or its heirs, executors, administrators, or successors.
8. The Surety hereby waives notice of any change, including changes of time, to the Construction Contract or to related subcontracts, purchase orders and other obligations.
9. Any proceeding, legal or equitable, under this Bond may be instituted in any court of competent jurisdiction in the location in which the work or part of the work is located and shall be instituted within two years after Contractor Default or within two years after the Contractor ceased working or within two years after the Surety refuses or fails to perform its obligations under this Bond, whichever occurs first. If the provisions of limitation available to sureties as a defense in the jurisdiction of the suit shall be applicable.
10. Notice to the Surety, the Owner or the Contractor shall be mailed or delivered to the address shown on the signature page.
11. When this Bond has been furnished to comply with a statutory or other legal requirement in the location where the construction was to be performed, any provision in this Bond conflicting with said statutory or legal requirement shall be deemed deleted herefrom and provisions conforming to such statutory or other legal requirement shall be deemed incorporated herein. The intent is that this Bond shall be construed as a statutory bond and not as a common law bond.
12. Definitions.
  - 12.1. Balance of the Contract Price: The total amount payable by the Owner to the Contractor under the Construction Contract after all proper adjustments have been made, including allowance to the Contractor of any amounts received or to be received by the Owner in settlement of insurance or other claims for damages to which the Contractor is entitled, reduced by all valid and proper payments made to or on behalf of the Contractor under the Construction Contract.
  - 12.2. Construction Contract: The agreement between the Owner and the Contractor identified on the signature page, including all Contract Documents and changes thereto.
  - 12.3. Contractor Default: Failure of the Contractor, which has neither been remedied nor waived, to perform or otherwise to comply with the terms of the Construction Contract.
  - 12.4. Owner Default: Failure of the Owner, which has neither been remedied nor waived, to pay the Contractor as required by the Construction Contract or to perform and complete or comply with the other terms thereof.

(FOR INFORMATION ONLY—Name, Address and Telephone)

AGENT or BROKER:

OWNER'S REPRESENTATIVE (Architect, Engineer or other party):

**THIS INSTRUMENT PREPARED BY:**

Earl Hall, Esq.  
Hall & Rosenberg, P.L.  
8850 W. Oakland Park Blvd., Ste. 101  
Sunrise, Florida 33351

**AFTER RECORDING, RETURN TO :**

Earl Hall, Esq.  
Hall & Rosenberg, P.L.  
8850 W. Oakland Park Blvd., Ste. 101  
Sunrise, Florida 33351

**6.08 City of Lauderhill**

**Construction Payment Bond**

Any singular reference to Contractor, Surety, Owner or other party shall be considered plural where applicable.

CONTRACTOR (Name and Address):

SURETY (Name and Principal Place of Business):

OWNER (Name and Address):

City of Lauderhill  
5581 W. Oakland Park Blvd.  
Lauderhill, FL 33313

**CONSTRUCTION CONTRACT**

Date:  
Amount: \$  
Description (Name and Location):

**BOND**

Date (Not earlier than Construction Contract Date):  
Amount: \$  
Modifications to this Bond Form:

CONTRACTOR AS PRINCIPAL

Company (Corp. Seal)

Signature: \_\_\_\_\_  
Name and Title:

SURETY

Company (Corp. Seal)

Signature: \_\_\_\_\_  
Name and Title:

CONTRACTOR AS PRINCIPAL

Company (Corp. Seal)

Signature: \_\_\_\_\_  
Name and Title:

SURETY

Company (Corp. Seal)

Signature: \_\_\_\_\_  
Name and Title:

1. The Contractor and the Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors and assigns to the Owner for the performance of the Construction Contract, which is incorporated herein by reference.
2. With respect to the Owner, this obligation shall be null and void if the Contractor:
  - 2.1. Promptly makes payment, directly or indirectly, for all sums due Claimants, and
  - 2.2. Defends, indemnifies and holds harmless the Owner from all claims, demands, liens or suits by any person or entity who furnished labor, materials or equipment for use in the performance of the Construction Contract, provided the Owner has promptly notified the Contractor and the Surety (at the address described in Paragraph 12) of any claims, demands, liens or suits and tendered defense of such claims, demands, liens or suits to the Contractor and the Surety, and provided there is no Owner Default.
3. With respect to Claimants, this obligation shall be null and void if the Contractor promptly makes payment, directly or indirectly, for all sums due.
4. The Surety shall have no obligation to Claimants under this Bond until:
  - 4.1. Claimants who are employed by or have a direct contract with the Contractor have given notice to the Surety (at the address described in Paragraph 12) and sent a copy, or notice thereof, to the Owner, stating that a claim is being made under this Bond and, with substantial accuracy, the amount of the claim.
  - 4.2. Claimants who do not have a direct contract with the Contractor:
    1. Have furnished written notice to the Contractor and sent a copy, or notice thereof, to the Owner, within 90 days after having last performed labor or last furnished materials or equipment included in the claim stating, with substantial accuracy, the amount of the claim and the name of the party to whom the materials were furnished or supplied or for whom the labor was done or performed: and
    2. Have either received a rejection in whole or in part from the Contractor, or not received within 30 days of furnishing the above notice any communication from the Contractor by which the Contractor has indicated the claim will be paid directly or indirectly: and
    3. Not having been paid within the above 30 days, have sent a written notice to the Surety (at the address described in paragraph 12) and sent a copy, or notice thereof, to the Owner, stating that a claim is being made under this Bond and enclosing a copy of the previous written notice furnished to the Contractor.
5. If a notice required by Paragraph 4 is given by the Owner to the Contractor or to the Surety, that is sufficient compliance.
6. When the Claimant has satisfied the conditions of Paragraph 4, the Surety shall promptly and at the Surety's expense take the following actions:
  - 6.1. Send an answer to the Claimant, with a copy to the Owner, within 45 days after receipt of the claim, stating the amounts that are undisputed and the basis for challenging any amounts that are disputed.
  - 6.2. Pay or arrange for payment of any undisputed amounts.
7. The Surety's total obligation shall not exceed the amount of this Bond, and the amount of this Bond shall be credited for any payments made in good faith by the Surety.
8. Amounts owned by the Owner to the Contractor under the Construction Contract shall be used for the performance of the Construction Contract and to satisfy claims, if any, under any Construction Performance Bond. By the

Contractor furnishing and the Owner accepting this Bond, they agree that all funds earned by the Contractor in the performance of the Construction Contract are dedicated to satisfy obligations of the Contractor and the Surety under this Bond, subject to the Owner's priority to use the funds for the completion of the work.

9. The Surety shall not be liable to the Owner, Claimants or others for obligations of the Contractor that are unrelated to the Construction Contract. The Owner shall not be liable for payment of any costs or expenses of any Claimant under this Bond, and shall have under this Bond no obligations to make payments to, give notices on behalf of, or otherwise have obligations to Claimants under this Bond.

10. The Surety hereby waives notice of any change, including changes of time, to the Construction Contract or to relate subcontracts, purchase orders and other obligations.

11. No suit or action shall be commenced by a Claimant under this Bond other than in a court of competent jurisdiction in the location in which the work or part of the work is located or after the expiration of one year from the date (1) on which the Claimant gave the notice required by Subparagraph 4.1 or Clause 4.2 (iii), or (2) on which the last labor or service was performed by anyone or the last materials or equipment were furnished by anyone under the construction Contract, whichever of (1) or (2) first occurs. If the provisions of this Paragraph are void or prohibited by law, the minimum period of limitation available to sureties as a defense in the jurisdiction of the suit shall be acceptable.

12. Notice to the Surety, the Owner or the Contractor shall be mailed or delivered to the address shown on the signature page. Actual receipt of notice by Surety, the Owner or the Contractor, however accomplished, shall be sufficient compliance as of the date received at the address shown on the signature page.

13. When this Bond has been furnished to comply with a statutory or other legal requirement in the location where the construction was to be performed, any provision in this Bond conflicting with said statutory or legal requirement shall be deemed deleted herefrom and provisions conforming to such statutory or other legal requirement shall be deemed incorporated herein. The intent is, that this Bond shall be construed as a statutory bond and not as a common law bond.

14. Upon request by any person or entity appearing to be a potential beneficiary of this Bond, the Contractor shall promptly furnish a copy of this Bond or shall permit a copy to be made.

#### 15. DEFINITIONS

15.1. Claimant: An individual or entity having a direct contract with the Contractor or with a subcontractor of the Contractor to furnish labor, materials or equipment for use in the performance of the Contract. The intent of this Bond shall be to include without limitation in the terms "labor, materials or equipment" that part of water, gas, power, light, heat, oil, gasoline, telephone service or rental equipment used in the Construction Contract, architectural and engineering services required for performance of the work of the Contractor and the Contractor's subcontractors, and all other items for which a mechanic's lien may be asserted in the jurisdiction where the labor, materials or equipment were furnished.

15.2. Construction Contract: The agreement between the Owner and the Contractor identified on the signature page, including all Contract Documents and changes thereto.

15.3. Owner Default: Failure of the Owner, which has neither been remedied nor waived, to pay the Contractor as required by the Construction Contract or to perform and complete or comply with the other terms thereof.

(FOR INFORMATION ONLY—Name, Address and Telephone)

AGENT or BROKER:

OWNER'S REPRESENTATIVE (Architect, Engineer or other party):

**THIS INSTRUMENT PREPARED BY:**  
Earl Hall, Esq.  
Hall & Rosenberg, P.L.  
8850 W. Oakland Park Blvd., Ste. 101  
Sunrise, Florida 33351

**AFTER RECORDING, RETURN TO :**  
Earl Hall, Esq.  
Hall & Rosenberg, P.L.  
8850 W. Oakland Park Blvd., Ste. 101  
Sunrise, Florida 33351

**6.09 City of Lauderhill**

**MAINTENANCE BOND**

KNOW ALL MEN BY THESE PRESENT: That \_\_\_\_\_

Address \_\_\_\_\_

As Principals, and \_\_\_\_\_

a corporation existing under the laws of the State of \_\_\_\_\_, and having heretofore complied with all of the requirements of the laws of the State of Florida regulating the admission of such corporation to transact business in this State, as Surety, are held and firmly bound unto the City of Lauderhill of Broward County, a political subdivision of the State of Florida, in the full and just sum of \_\_\_\_\_ Dollars

(\$ \_\_\_\_\_), lawful money of the United States of America, for which sum well and truly to be paid to said City of Lauderhill the said Principal and the said Surety do hereby bind themselves, their heirs, executors, administrators, successors, or assigns respectively, as the case may be, jointly and severally, firmly by these presents.

WHEREAS, the Lauderhill City Code requires a bond in the amount of 20 percent of the actual cost of the Subdivision Improvements be posted upon approval of said Subdivision Improvements by the Utility Director and

WHEREAS, in compliance with said Maintenance Bond requirements, said Principal is required to furnish a good and sufficient bond in a surety company licensed to do business in the State of Florida conditioned upon the correction of all insufficiencies in design, workmanship and/or materials which are found within one year of the date of the approval of the Subdivision Improvements by the Utility Director of the City of Lauderhill, Florida. The date of approval being \_\_\_\_\_, 19\_\_\_\_.

NOW THEREFORE, the condition of this obligation is such that if the said Principal, its successors, legal representatives or assigns shall have paid all claims for the cost of correcting all insufficiencies in design, workmanship and/or materials discovered within one year of the date of approval of the Subdivision Improvements by the Utility Director of the City of Lauderhill, Florida then this obligation shall be void; else to continue in full force and effect.

Prior to the end of 365 calendar days following said Utility Director's approval of the Subdivision Improvements warranted by this bond, the City Utilities Engineer shall inspect them for final release. If his investigation reveals any insufficiencies, than he shall notify the Principal, in writing, that the work is unacceptable.

The Principal and the Surety, jointly and severally, agree that said City of Lauderhill shall have the right to correct insufficiencies in design, workmanship and/or materials in the event the said Principal should fail or refuse so to do within ninety (90) days after said written notice by the City Utilities Engineer, and, pursuant to public advertisement and receipt and acceptance of bids, as may be required by law cause said insufficiencies in design, workmanship and/or materials to be corrected. In such case, the Principal and Surety shall be jointly and severally liable hereunder to pay to and indemnify said City upon the correction of said insufficiencies in design, workmanship and/or materials, the final total cost thereof including but no limited to engineering, legal and contingent cost together with any damage, direct or consequential, which said City of Lauderhill may sustain on account of the failure of the Principal to comply with all of the requirements hereof.

Upon recommendation by the City Utilities Engineer for final acceptance and upon compliance by Principal with applicable conditions, as hereinabove stated, the City Utilities Director will then recommend to the City Commission the release of this reduced bond.

IN WITNESS WHEREOF the above bounded parties have executed this instrument by affixing their corporate names and seals hereto and causing their authorized representatives to sign these presents, pursuant to the authority of their governing bodies on this \_\_\_\_ day of \_\_\_\_\_ A.D. 19\_\_.

Signed and Sealed and delivered in presence of us:

\_\_\_\_\_ (Seal)

\_\_\_\_\_

\_\_\_\_\_ (Seal)

\_\_\_\_\_

STATE OF FLORIDA        )  
                                  )    SS:  
COUNTY OF BROWARD    )

The foregoing instrument was acknowledged before me this \_\_\_\_\_ day of \_\_\_\_\_ ,  
19\_\_, by \_\_\_\_\_ as \_\_\_\_\_  
for \_\_\_\_\_.

\_\_\_\_\_  
NOTARY PUBLIC, STATE OF FLORIDA

My Commission Expires: \_\_\_\_\_

Personally Known \_\_\_\_\_ or Produced Identification \_\_\_\_\_

Type of Identification Produced \_\_\_\_\_

**THIS INSTRUMENT PREPARED BY:**

Earl Hall, Esq.  
Hall & Rosenberg, P.L.  
8850 W. Oakland Park Blvd., Ste. 101  
Sunrise, Florida 33351

**AFTER RECORDING, RETURN TO :**

Earl Hall, Esq.  
Hall & Rosenberg, P.L.  
8850 W. Oakland Park Blvd., Ste. 101  
Sunrise, Florida 33351

6.10 CITY OF LAUDERHILL

**BILL OF SALE**

KNOW ALL MEN BY THESE PRESENT, that \_\_\_\_\_  
of the \_\_\_\_\_ of \_\_\_\_\_ in the county of  
\_\_\_\_\_ and State of Florida, Party of the first part, for and in consideration of the sum of Ten  
Dollars, lawful money of the United States, to be paid by the CITY OF LAUDERHILL, a municipal corporation of  
the State of Florida, 5581 W. Oakland Park Blvd., Lauderhill, Florida, Party of the second part, the receipt whereof  
is hereby acknowledged, has granted, bargained, sold, transferred, and delivered and by these presents does grant,  
bargain, sell, transfer, and deliver unto the said Party of the second part, its successors and assigns, the following  
goods and chattels:

All of the Water and Sewer System Improvements; together with all appurtenances attached  
thereto, which lie within the Public Rights-of-Way or within easements provided for same, in the  
subdivision

of \_\_\_\_\_

Plat Name

Subdivision

All of the above described as \_\_\_\_\_ in "As-Built" Plans which are and  
have been submitted to and recorded by the City and certified as-built quantities and costs  
breakdown which are attached hereto as exhibit "A".

TO HAVE AND TO HOLD the same unto the said party of the second part, its successors and assigns forever.  
The Party of the First part does covenant to and with the Party of the second part, its successors and assigns, that it is

