RESOLUTION NO. 22-43

A RESOLUTION OF THE CITY COMMISSION OF THE CITY OF COOPER CITY, FLORIDA, RATIFYING THE CITY'S MANUAL OF ENGINEERING STANDARDS ("MANUAL"), ATTACHED HERETO AS EXHIBIT "A," IN ACCORDANCE WITH SECTION 19-147 OF THE CITY'S CODE OF ORDINANCES; AMENDING THE MANUAL TO ESTABLISH A REAR YARD SETBACK REQUIREMENT OF FIVE (5) FEET AND A SIDE YARD SETBACK REQUIREMENT OF THREE (3) FEET FOR PAVER AND CONCRETE DECKING, AS SET FORTH IN EXHIBIT "B;" PROVIDING FOR CONFLICTS; PROVIDING FOR SEVERABILITY; AND PROVIDING FOR AN EFFECTIVE DATE.

WHEREAS, Section 19-147 of the City of Cooper City Code of Ordinances provides for the adoption of a standards and specifications manual to govern all development in the City with respect to water and sewer service; and

WHEREAS, the City's Manual of Engineering Standards, attached hereto as Exhibit "A," is a compilation of the minimum accepted design requirements for various types of engineering and construction work, both municipal and private, performed within the City; and

WHEREAS, the Manual provides for amendments, subject to the approval by the City Commission; and

WHEREAS, the City has historically operated in accordance with the Manual; however, the City's professional staff has been unable to locate any prior action of the City Commission formally adopting or approving the Manual; and

WHEREAS, in accordance with Section 19-147 of the City Code, the City Commission seeks to formally ratify and approve the Manual as the engineering standards for the City; and

WHEREAS, the City's professional staff has recommended an amendment to the Manual to establish a rear yard setback of five (5) feet and a side yard setback of three (3)

feet for paver and concrete decking, as more particularly described in Exhibit "B;" and

WHEREAS, notwithstanding the proposed amendment to the Manual, all lot coverage and impervious area requirements must still be satisfied; and

WHEREAS, the intent of this proposed amendment is to help the Utilities Department better address drainage concerns, help prevent flooding issues and prevent decks from being constructed over rear yard utility easements; and

WHEREAS, on July 25, 2022, the City's Planning and Zoning Board considered the proposed amendment and voted unanimously to recommend approval; and

WHEREAS, the City Commission finds that ratifying the Manual and approving the proposed amendment, as set forth herein, is in the best interests of the citizens and residents of the City.

NOW, THEREFORE, BE IT RESOLVED BY THE CITY COMMISSION OF THE CITY OF COOPER CITY, FLORIDA:

Section 1: **Recitals Adopted**. That each of the above stated recitals is hereby adopted and confirmed. All exhibits attached hereto and incorporated herein and made a part hereof.

Section 2: That the City Commission hereby ratifies the City's Manual of Engineering Standards, attached hereto as Exhibit "A," and reconfirms the Manual as the City's engineering standards.

Section 3: That the City Commission hereby approves the amendment to the Manual to establish a rear yard setback of five (5) feet and a side yard setback of three (3) feet for paver and concrete decking, as more particularly described in Exhibit "B."

Section 4: **Conflicts.** All resolutions inconsistent or in conflict herewith shall be and are hereby repealed insofar as there is conflict or inconsistency.

Section 5: **Severability**. If any section, sentence, clause, or phrase of this

Resolution is held to be invalid or unconstitutional by any court of competent jurisdiction, then said holding shall in no way affect the validity of the remaining portions of this resolution.

Section 6: Effective Date. This Resolution shall become effective upon its passage and adoption by the City Commission.

PASSED AND ADOPTED this _____ day of _____, 2022.

_____
GREG ROSS
Mayor

ATTEST:

_____
TEDRA ALLEN
City Clerk

ROLL CALL

Mayor Ross	_____
Commissioner Green	_____
Commissioner Meltzer	_____
Commissioner Pulcini	_____
Commissioner Shrouder	_____

APPROVED AS TO LEGAL FORM:

_____
JACOB G. HOROWITZ
City Attorney

Exhibit A

City of Cooper City

Engineering Standards

Revised October 2022

COOPER CITY

ENGINEERING STANDARDS MANUAL

SECTION 1
DEFINITIONS

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Revised October 2022

ENGINEERING STANDARDS MANUAL

INTRODUCTION

This manual of Engineering Standards is a compilation of the minimum accepted design requirements for engineering and construction work, both municipal and private, performed within the limits of the Cooper City.

The intent of this manual is to act as a guide only to inform and assist the design professional, contractor, developer, government personnel, property owner and the general public in the design, construction and development of infrastructure and real property located within the City's jurisdiction.

All work within the municipal limits or on City property, and in the interest of health, safety and welfare of the general public, must meet the minimum requirement described herein. This manual is not intended to supersede the requirements of the Cooper City Land Development Code or any other source of development regulation with authority that may exceed these minimum standards.

Any questions regarding this manual should be directed to the Engineering and Public Works Department.

The Engineering Standards Manual is subject to amendment by the City Commission, and it is crucial that the applicant relies upon the most current edition.

SECTION 1

DEFINITIONS

SECTION 1 - DEFINITIONS

Whenever the following terms appear in these standards, the intent and meaning shall be construed as follows:

As-built plans / record drawings: Final plans sealed by a professionally Licensed Surveyor amended to include all materials, locations, dimensions, elevations, capacities, capabilities, as actually constructed and installed.

B.C.T.E.D.: Broward County Traffic Engineering Division

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

Bleed down mechanism: A weir with a notch or an orifice through which storm water is discharged.

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.

Central Broward Water Control District (CBWCD): Water Management District for the area encompassing Cooper City.

Certificate of Occupancy (C.O.): A certificate issued by the building official indicating compliance with the provisions of the building regulations and allowing occupancy.

City: Cooper City, Broward County, Florida.

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

Contractor: The person, firm or corporation appropriately licensed by the County or State for the class of work to be performed and responsible for the work to be performed.

County: Broward County, Florida.

Cul-de-sac: Minor street intersecting another street at one end and terminating at the other end with a vehicle turn-around.

Density or gross density: The total number of dwelling units divided by the total site area including one half adjacent public right-of-way.

Detention area: Area designed to delay storm water runoff prior to discharge into receiving waters.

Development Order (D.O.): Any order granting, denying, or granting with conditions an application for a development permit.

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

Driveway: Vehicular areas located on a lot, providing for access to a garage, off-street parking space(s) or vehicle loading space(s).

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.

Engineer of Record (E.O.R.): Engineer for the project under consideration, licensed and registered by the State of Florida.

Equivalent Residential Connections (E.R.C's): Measure of the number of connections capable of being serviced by a water distribution system or water treatment plant.

Exfiltration: Subsurface disposal of storm water. Drainage system designed to treat storm water by allowing it to percolate through the soil.

Fire Lane: A fire rescue emergency access way at least twenty (20) feet in width, having a minimum outside turning radius of fifty (50) feet with a twelve (12) foot clear sweep. Fire lanes must be sufficiently stabilized to support a 32-ton vehicle.

Foot-candle: A unit for measuring illumination.

Industrial uses: Activities within land areas which are predominantly connected with manufacturing, storage, processing, warehousing, wholesaling, and distribution.

Lift station: Sewage pumping system designed to service locations where sanitary sewer gravity flow is not possible without excessive depth or where there is insufficient head for gravity flow through a treatment plant.

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.

Maintenance bond: An approved form of security furnished by the Contractor as a guaranty of good faith that he/she will perform maintenance or repairs in accordance with the terms of the permit. This bond will remain in effect one (1) year after the permitted work has been accepted by the City.

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: An area at least nine (9) feet in width and eighteen (18) feet in length with at least twenty-four (24) feet of back-up and maneuvering area directly behind the space, used exclusively as a parking stall for one vehicle. Please refer to the City of Cooper City Municipal Code of Ordinances for additional information.

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.

Retention area: Area designed to prevent storm water runoff from direct discharge into receiving waters.

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.

Roadway: A public or private thoroughfare twenty-four (24) feet in width (minimum) 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.

Roadway, arterial: A road used primarily for higher volume, higher speed traffic, intended to accommodate moderate to longer length trips. All arterials in Broward County are designated on the Broward County Trafficways Plan.

Roadway, collector: A street which carries traffic from minor streets to the major arterial streets.

Roadway, expressway: A highway intended for higher volume, higher speed traffic traveling considerable distances on which points of ingress and egress are limited and crossings are separated, and constructed according to Florida Department of Transportation and Federal Highway Administration Engineering Standards.

Roadway, local: A minor road typically serving local traffic to individual residential units or businesses.

Roadway, 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 constructed according to Broward County engineering standards.

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.

Sidewalk: A concrete or asphalt path designated primarily for pedestrians and handicapped users usually along the side of a street. Certain sidewalk designs can accommodate pedestrian, bicycle and roller blade users.

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.

Specifications: The directions, provisions, and requirements contained in the plans or in the contract documents, setting out or relating to the materials, method and manner of performing the work.

Storm water: The flow of water which results from, and which occurs during and immediately following a rainfall event.

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.

Surety: The party that agrees to be responsible in accordance with the terms of the bond if the contractor does not perform.

Swale: The land immediately adjacent to the paved road surface and lying between the edge of the road pavement and the front lot line of the paved sidewalk or property line.

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.

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

Walkway: A right-of-way intended specifically for pedestrians and handicapped users.

SECTION 2

GENERAL PROCEDURES

SECTION 2 - GENERAL PROCEDURES

SECTION 2 - GENERAL PROCEDURES

2.01 SITE PLAN REVIEW

A. All drawings submitted to Cooper City for site plan review must be on 24"x 36" sheets and must be folded, or on compatible electronic medium for inclusion in the records management system.

B. Site Development Plans shall be accompanied by an application fee made payable to "City of Cooper City".

C. Ten (10) sets of the following items must be received by Cooper City.

1. Completed application for site development and plat review (if platting is required) with the applicant's signature notarized.
2. Ten (10) copies of the preliminary site development plans (an d ten (10) copies of the preliminary plat plan, if applicable) signed and sealed by a registered Architect or Engineer, or signed by a Land Planner.
3. Proper site plan and plat review fees
4. Schematic Engineering plans
5. A copy of the recorded plat

For additional information regarding Site Development Plan submittals, please refer to Article III of the Land Development Code.

D. Engineering reviews are undertaken to establish that the proposed development has considered the engineering aspects of the project.

E. All Site Development Plans shall be submitted to:

Cooper City
Planning Department

2.02 ENGINEERING PERMITTING PROCEDURES

This document is intended to set minimum criteria to assist developers, contractors and the general public in obtaining an engineering permit. Additional criteria may be required as deemed necessary by staff.
The services of a consulting engineer are usually necessary to assist in the permitting process.

A. Engineering permits will be issued by Cooper City for all engineering construction that occurs within public or private rights-of-way, easements or on private property such as:

1. Water distribution systems

2. Sewerage systems
3. Pump stations
4. Drainage systems
5. Water management facilities
6. Roads
7. Parking areas
8. Earthwork
9. Bulkheads
10. Driveway aprons and sidewalks
11. Landscaping and irrigation within rights of way
12. Other items as determined by the City

B. All items necessary for an engineering permit must be submitted to the City Engineering Department.

C. All engineering plan reviews with a construction value of less than $500,000 will occur within ten (10) working days of the submittal of an acceptable application. Engineering plan reviews with a construction value greater than $500,000 will occur within twenty (20) working days.

D. Items required for City Engineering Plan Review:

1. Five (5) complete sets of engineering drawings (including water, sewer, paving, drainage, landscaping, pavement marking and signing, and signalization, signed and sealed by an Engineer registered in the State of Florida. Original signature must be on the seal. All drawings are to be submitted on 24" x 36" sheets (5 folded sets of prints required).

2. One (1) Cooper City Engineering Permit Application Form with all requested information provided.

3. Drainage calculations acceptable to SFWMD and consistent with the approved site plan. Drainage calculations must be signed, sealed and dated by an Engineer registered in the State of Florida.

4. Certified Engineer's Cost Estimate for construction of all public and private work including quantity take-offs and unit prices, or a Construction Contract.

5. Permit fees must be provided with the application package. The fee must be in the form of a check payable to Cooper City and in accordance with the Schedule of Fees.

E. Requirements Prior to Engineering Permit Issuance

The following items must be provided before an engineering permit will be issued.

1. An insurance certificate naming Cooper City as an additional insured. The name of the project must be listed on the Certificate of Insurance.

2. A copy of a license or certificate of competency on file with the City that qualifies the applicant to perform the work

3. All construction will be performed within an easement, or dedication made to Cooper City. The easement or dedication must encompass all the permitted improvements. An applicant may grant a "blanket easement" for the entire site, exclusive of buildings.

4. Approved engineering drawings.

F. Potential Requirements Prior to Engineering Permit Issuance

The following items may be required before an engineering permit will be issued.

1. Second Order Drainage Calculations signed and sealed by an engineer registered in the State of Florida.

2. Maintenance of Traffic Plan.

3. Broward County Department of Planning and Environmental Protection (DPEP) approval for any wetland or hazardous materials issues and sanitary sewer collection and transmission.

4. Broward County Health Department approval for water distribution.

5. South Florida Water Management District (SFWMD) for drainage and irrigation.

6. Central Broward Water Control District (CBWCD) for drainage and irrigation.

7. Florida Department of Transportation (if applicable).

8. Florida Department of Environmental Protection.

9. Broward County Engineering (if applicable).

10. Broward County Traffic Engineering (if project involves improvements or connections to a Broward County roadway).

11. Broward County Plat Office for final plat (provide the City with final plat approval and a mylar copy of the plat).

12. Broward County Planning

13. BellSouth for telephone service.

14. Florida Power and Light Company for electricity.

15. Local cable provider for cable T.V.

16. Tree removal permit.

17. At the discretion of the City Engineer or his designee, a Performance Bond may be required.

G. Engineering/Utility Construction Plan Requirements:

Plans reviewed for Engineering Permits require information in sufficient detail to assure that the minimum standards of the City will be upheld. A review will be made to insure that the following information is provided and that the standard City details are followed. Additional information will be requested as needed.

1. All drawings are to be submitted on 24" x 36" sheets (5 folded sets of prints required).

2. A location map shall be included on the drawing.

3. Each sheet shall bear a seal and original signature of the Design Engineer and include a title block, north arrow, 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, with easements referenced as to whether by plat or otherwise. All easements shall be shown on design and as-built drawings.

6. Size and type of material shall be shown for all water and sewer mains and service lines. Size and type of valves and other appurtenances to the systems shall be clearly indicated.

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 should 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 and sewer lines. If this is unavoidable, it shall be indicated on the drawings.

10. Profiles are required for gravity sewer mains with the following information: invert elevation, rim elevation, slopes, profile grade (center line or base line), continuous station measurements, service laterals, other conflict features such as drainage pipes and material (PVC or DIP, etc.). Manholes shall not be installed under parking spaces. Manholes shall be continuously numbered.

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. Public and private roadways shall be labeled and 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.

13. The perimeter boundary lines of property to be serviced are to be clearly shown.

14. The outlines of buildings to be serviced are to be shown.

15. Bench mark positions and vertical values are to be shown.

16. The lot and block numbers of the property to be serviced are to be shown. 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.

17. Utilities shall be located within public rights-of-way or in easements and shall be shown on all as-built drawings.

18. Location of water meters and their sizes with service line sizes are to be shown. Meters are to be installed in green areas, at the right-of-way line and in non-traffic areas as approved by the City. One (1) meter per site plan will be permitted unless approved otherwise by the City.

19. All construction plans for work including paving and drainage construction must contain the following:

    a) Paving and drainage construction plans
    b) Paving and drainage details
    c) Paving and drainage specifications
    d) Pavement markings and signage plans
    e) Proposed off-site improvements plans
    f) Elevations of ambient ground along the perimeter of this parcel
    g) As-built information of existing roads, drainage, sidewalks, electric poles, light poles and other facilities
    h) Information for lakes and canals
    i) Recorded and proposed easements and rights-of-way

20. Easement descriptions are to be written clearly with a point of beginning and a point of termination. Easements shall be shown on all plans. 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 should 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.

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

22. 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:

    a) The number and size of water meters (if available)
    b) The use for the building; i.e., commercial, stores, factory, etc.

23. The City reserves the right 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 Cooper City minimum engineering standards, specifications and practices.

24. 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 MUST conform to all City Ordinances, codes, standards and requirements. Plans reviewed for Engineering Permits require information in sufficient detail to assure the minimum standards of the City will be upheld. A review will be made to insure that the information on the checklists shown in Section 6 of these standards is provided and that the standard City details are followed. Additional information will be requested as needed. 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.

25. Plumbing Inspector/Fire Department approval does not constitute approval of water and sewer construction drawings.

26. 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.

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

2.03 REQUIREMENTS FOR DEVELOPMENT ORDER ISSUANCE

Cooper City will issue a Development Order prior to the issuance of an Engineering Permit if certain conditions are satisfied.

A. An Engineering Permit Application accepted by the City.

B. The engineering plans must have sufficient detail to assure the City that adequate services are available for the project.

2.04 REQUIREMENTS DURING CONSTRUCTION

A. PRE CONSTRUCTION MEETING

A preconstruction meeting shall be held at the City prior to the start of all construction within the City limits. This meeting shall be arranged through the Cooper City Engineering Department and shall be attended by all Contractors involved in construction of the proposed utility and roadway improvements, as well as the Engineer of Record.

B. CITY INSPECTIONS

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

2. DRAINAGE:

All joints and drainfields to be inspected prior to backfill. Final inspection at the time of Certificate of Occupancy.

3. SIDEWALKS:

Alignment, depth, width and pedestrian and handicapped ramp details, as indicated in the City code of ordinances, to be inspected prior to concrete and asphalt placing. Final inspection at the time of Certificate of Occupancy.

4. TRAFFIC SIGNS, ROAD SIGNS & PAVEMENT MARKINGS:

To be inspected at final inspection at the time of Certificate of Occupancy. Traffic signals shall be inspected prior to turn on, and a field test, a forty-eight hour test and a 60-day burn-in period shall occur prior to final acceptance.

5. WATER DISTRIBUTION

a) Connection to Existing Systems
b) Filling and Flushing
c) Hydrostatic Pressure Testing
d) Chlorination/Bacteriological Sampling

6. SEWER COLLECTION

a) Structures (prior to installation)
b) Connection to Existing Systems
c) Lamping
d) Structure Application of Protective Coatings (external and internal)
e) Televising of the System, if warranted by the lamping by the System.

7. SEWER TRANSMISSION

a) Connection to Existing Systems
b) Flushing
c) Hydrostatic Pressure Testing
d) Pump Station Start-up

8. NOTIFICATION

Contact the Cooper City Engineering Department for all inspections/appointments 48 hours in advance.

9. 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, the requesting party will be charged a minimum fee to cover up to one (1) hour of the inspector's time.

10. Contractor is responsible for the cost of inspections for any construction activities occurring outside normal working hours (8:00am to 5:00pm), Saturdays, Sundays and holidays excluded. 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 City.

C. REQUIRED CONSTRUCTION REPORTS

The following reports are required before acceptance of the project by the City.

1. Department of Health clearance letter

2. Florida Department of Environmental Protection Certification of Completion form

3. Broward County Department of Planning and Environmental Protection approval letter

4. Letter of certification by the Engineer of Record

2.05 CERTIFICATES OF OCCUPANCY

A Certificate of Occupancy will be issued upon completion of all punch list items generated at the final inspection.

2.06 MAINTENANCE BONDS

A one hundred percent (100%) Maintenance Bond or other form of surety in an acceptable form shall be held for a period of one (1) year from the date of acceptance of the project within rights-of-way, for facilities to be dedicated to the City.

2.07 CLOSEOUT PROCEDURES

At the conclusion of the project, the following items must be submitted as a part of the closeout package 30 days before the performance final inspection:

1. Three (3) complete sets of acceptable "as-built" drawings (Including sheets for all water, sewer, paving, drainage, on 24 x 36 white paper).

2. An itemized Bill of Sale with the actual value of all public improvements to be transferred to the City.

3. A Maintenance Bond as described herein.

4. All release of liens for public improvements to be transferred to the City.

5. Completion of all items on the water distribution section of the final engineering inspection checklist.

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

7. Completion of all items on the pavement section of the final engineering inspection checklist.

8. Completion of all items on the drainage and grading section of the final engineering checklist.

9. The actual itemized construction quantities and cost for all improvements, certified by the Engineer of Record.

10. Submission of Final Inspection Report and all required testing, including the following:
    a) Hydrostatic Pressure Testing Report
    b) Satisfactory Bacteriological Sampling Reports
    c) Sewer Lamping Report
    d) HRS Clearance Letter
    e) DEP Certification of Completion Form
    f) Approval Letter
    g) Sanitary Sewer
    h) Letter of Certification by Engineer of Record

11. Easement dedication form for all facilities to be dedicated to the City.

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.

B. For Maintenance Bond Release:

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 paving, grading and drainage 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 3

GENERAL REQUIREMENTS

SECTION 3 - GENERAL REQUIREMENTS

SECTION 3 - GENERAL REQUIREMENTS

3.01 ROADS

A. Design Standards for Streets

1. Conformity to Broward County Trafficways Plan:
The design, alignment and cross-section of all streets, roads and highways included on the Broward County Trafficways Plan shall conform to the requirements of the Broward County Land Development Code.

2. Relation to existing street system:
The arrangement of streets in new subdivisions shall make provisions for proper extension of existing dedicated streets in existing subdivisions, where such extension is appropriate.

3. Provisions for platting adjoining unplatted areas:
The arrangement of streets in new 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.

4. Protection from through traffic:
Minor and collector residential streets shall be laid out and arranged so as to discourage their use by through traffic. Residential streets shall not connect with industrial areas where avoidable.

5. Arterial street frontage:
Where a residential subdivision or residential property abuts an existing or proposed arterial street, the City may require separate local frontage roads, reverse frontage with screen planting contained in a nonaccess reservation along the rear property line, deep lots with or without rear service alleys, or other such treatments as may be necessary for adequate protection of residential properties and to assure separation of through and local traffic.

6. Plats adjacent to expressway right-of-way:
Where a subdivision borders on or contains a right-of-way for an expressway, drainage canal or waterway, the City 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.

7. Reserve strips:
Reserve strips controlling access to streets shall be prohibited except where their control is placed within the jurisdiction of the City.

8. Private roadway systems:
Private roadway systems may be permissible if the private entity enters into an agreement with the City, acceptable to the City, for construction and maintenance of such facilities. The applicant must also enter into a public safety ingress/egress easement and contract to allow police to enforce traffic laws on private roads.

9. Half streets:
New half or partial streets shall not be permitted.

10. Dead end streets:
Dead end streets shall be prohibited, except where appropriate as a stub to future street extension, or when designed as a cul-de-sac.

11. Cul-de-sac streets:

a) Cul-de-sacs, permanently designed as such, shall not exceed six hundred (600) feet in length, measured from the centerline of the last intersecting street.

b) Cul-de-sacs shall be provided at the closed end with a circular turnaround having a paved area of eighty (80) feet in diameter and right of way not less than one hundred sixteen (116) feet in diameter.

12. Street rights-of-way:

a) Unless otherwise indicated or required by the Broward County Trafficways Plan, or sufficient justification has been provided otherwise, street rights-of-way shall not be less than the following:

Street Type	*R/W (feet)*
Major or Minor arterial Roadway	100
Collector Roadway (Industrial and commercial areas)	80
Collector (Residential)	60
Local Roadway (Business and residential)	60

Frontage roads	60

b) 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.

13. Street alignment:

c) Curved linear streets are recommended for residential collector and local streets in order to discourage excessive vehicular speeds and to provide attractive vistas.

d) 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.

e) To ensure adequate sight distance, minimum centerline radii for horizontal curves shall be as follows:

Minor streets ..... 150 feet
Collector streets ..... 300 feet
Secondary arterial streets and section line roads ..... 500 feet
Major arterial thoroughfares ..... 750 feet

f) 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 minor arterials.

14. Street intersections:

a) 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 ninety (90) degrees.

b) Multiple intersections involving the junction of more than two (2) streets shall be prohibited.

c) "T" intersections of minor and collector streets are to be encouraged.

d) As far as possible, intersections with arterial streets shall be located not less than six hundred sixty (660) feet apart, measured from centerline to centerline.

e) 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.

f) Property line corners at intersections shall have a minimum radii in accordance with the following:

(1) Intersections of minor streets shall have a thirty- eight (38) foot radii.
(2) Intersections of a minor street and a collector road shall have a forty-eight (48) foot radii.
(3) Intersections of two collectors or greater shall have a fifty-five (55) foot radii.

15. Traffic Calming Devices:

a. Speed humps may be considered as a speed reduction/traffic calming device if warranted and installed consistent with the Standard Details. Installation requires 67% (minimum) approval by affected property owners. The "Affected property owners" for installations within a privately maintained community or subdivision shall be defined as the entire membership of the homeowners association. The "Affected property owners" for installations on a public cul-de-sac or no-outlet condition roadway shall be all homeowners with lots having direct access onto the subject roadway. The "Affected property owners" for installations on a public through street shall be defined as all homeowners located within a half mile band width perpendicular to the centerline of the roadway extending a half mile along the roadway in each direction from the proposed installation.

b. Brick paver crosswalks are encouraged for speed reduction and traffic calming in high pedestrian areas or in any area where speed reduction is deemed necessary.

B. The design, construction and maintenance of Traffic Signals within the City of Cooper City has been deferred to the Broward County Engineering Division (BCED) and the Broward County Traffic Engineering Division (BCTED). Any design, construction or maintenance of Traffic Signals within the City of Cooper City limits shall be in accordance with the requirements of the Broward County Engineering Division (BCED) and the Broward County Traffic Engineering Division (BCTED).

3.02 PARKING AREAS

A. Design Standards 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 the following criteria:

1. 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 (six (6") inches for parking stalls). The pavement shall have a cross slope of 2% and a longitudinal slope of 0.3% minimum for normal crown section. The pavement shall have a cross slope of 2.0% minimum and a longitudinal slope of 0.5% minimum for inverted crown section on runs greater than 100 feet. The pavement shall have a cross 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 outside turning radii must be minimum 50 feet.

2. Curbing and Wheel Stops:
   In landscaped areas, Type "D" curbing shall be installed along all curbed sections where vehicular impact can be reasonably anticipated. This includes terminal and interior islands, all turning radii, driveway connections to public rights-of-way or private collector roadway systems, and along all curvilinear curbed sections with a radius of 100 feet or less. Extruded curbing may be utilized on all other curbed areas or any areas protected by fixed wheel stops (wheel stops shall be a maximum height of 5"). All fixed wheel stops shall be constructed of recycled plastic.

3. 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; when parking spaces are provided at 45 degrees angle, the one-way driving lane shall be minimum 15 feet clear; when parking spaces are provided at 30 degrees angle, the one-way driving lane shall be minimum 12 feet clear. A 24 inch wide white stop bar, along with 25 feet of 4" double yellow lines, shall be provided at the end of each driving lane.

4. 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-five (25) feet in length. Continuous type "D" or "F" concrete curbing or individual six feet long recycled plastic wheel stops shall be installed for each space (extruded curbing is permissible if protected). Provide double four inch wide white lines on either side of each space identifying the limits of the space. The number of parking spaces shall conform to the City Land Development Code.

5. 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 double four-inch white lines on either side of a parking space and the double four-inch blue lines for handicapped parking.

6. Lighting:
The light poles shall be made of aluminum or concrete and all wires and cables shall be underground. Alternative aesthetic lighting fixtures may be permissible subject to City approval.

7. 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.

8. Guardrails:
FDOT type guardrails shall be provided where the edge of the parking area pavement is closer than 28 feet from the edge of water of a lake, canal or other waterway. The guardrail shall be installed in conformance with FDOT Standard Index.

9. Enforcement:
The City shall be responsible to review plans, issue construction permits, conduct inspections and approve all parking areas in the City.

B. Property Maintenance for Private Parking Lots

1. 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.

2. 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 S-3 asphaltic concrete course, and maintained in a smooth, well-graded condition without any potholes, pavement deterioration, loose aggregate, surface irregularities, and any traffic/safety hazard.

3. 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. All drainage lines and structures shall be maintained properly at all times to insure full efficiency.

4. All wheel stops, curbing and sidewalks shall be maintained properly to ensure safe and convenient vehicle and pedestrian traffic at all

times. Broken, damaged or loose wheel stops, curbing and sidewalks shall immediately be repaired/replaced.

5. 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".

6. 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.

7. All private commercial parking lots shall be inspected periodically by the City 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 twenty (20) calendar days from the time of notification, correct the discrepancy.

3.03 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 of Federal highway is affected, and with the standards and requirements of the City 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 (minimum) concrete sidewalks shall be installed in public rights-of-way. In a private area where there are no public rights-of-way, five-foot-wide (minimum) concrete sidewalks shall be installed which shall run parallel to all streets in the area.

2. Design specifications shall be in accordance with the City's engineering standards, including required handicapped accessibility.

C. Swales

1. Landscaping and maintenance of swale areas.

a) All swale areas and water bank areas within the corporate limits of Cooper City shall be sodded in species normally grown as permanent lawns in Broward County.

b) All swale areas within the corporate limits of Cooper City shall be free and clear of shrubs, hedges, asphalt, cement or rock substances.

c) All swale and water bank areas within the corporate limits of the Cooper City shall be maintained, kept in good repair, and kept free from obstructions which may be hazardous to the welfare of the general public by the contiguous property owner unless done by a Homeowners' Association.

2. 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 obtains a permit from the City 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) Bottom of swales, measured from top of turf, shall be at least 6" below the edge of road pavement.

d) Paved areas on private property shall not be permitted to drain on the public right-of-way.

e) 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.

f) 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.

3.04 DRAINAGE

A. Design Criteria

1. Site location:
The applicant must indicate the location, zoning, land use and points of discharge.

2. Water Quantity:
Each water management system is to be designed to act as part of the overall basin system. During a design storm event the discharge from each project will be controlled or limited by the available capacity of the receiving City waterbody. Discharge control structures for individual projects (when required for retention/detention) must provide a mechanism for returning the on-site surface elevation to the basin control elevation.

3. Water Quality:
   a) Retention/Detention Criteria
   All projects shall provide on site retention for one inch of runoff from the total project area or two and one-half (2½) times SFWMD percent impervious, whichever is greater. Additionally, commercial or industrial sites shall provide dry retention for one-half inch (1/2") of runoff from the total project area. The designer shall allow for SFWMD criteria as a minimum.

   b) Underground Exfiltration Systems
   If an underground exfiltration system is to be used in meeting retention/detention requirements, refer to SFWMD "Design of Exfiltration Trenches to Meet SFWMD Regulatory Criteria". Percolation tests shall be required as part of the exfiltration system design.

4. Finished Floor:
All Finished Floor Elevations shall be set at or above the greater of the values indicated in the "Regulations, Criteria, and Design Criteria" of the Central Broward Water Control District (CBWCD),

the 100 year flood elevation as published by Broward County, the FEMA flood maps, or 18" above the road crown (6" above road crown for non-residential).

5. Road Crown:
All roadways and parking lots (public and private) shall have a minimum crown elevation (normal or inverted) as indicated in the "Regulations, Criteria, and Design Criteria" of the Central Broward Water Control District (CBWCD).

6. Grading:
Grade slopes shall be away from structures to be protected and toward drainage facilities. A grading plan shall be prepared and submitted to the City; said plan shall clearly indicate that no runoff from the applicant's project shall discharge or flow onto adjacent property. The minimum slope for roadways and roadway swales shall be 0.3%. The maximum run between high points and low points shall be three hundred (300) feet.

7. Discharge Criteria:
The allowable discharge for the project area is outlined in the Central Broward Water Control District (CBWCD) "Regulations, Criteria, and Design Criteria".

8. Runoff:
   a) Ground storage capacity may be taken into account in determining total runoff volume. Storage capacity of soils are described in the SFWMD Permit Volume IV and should be used.

   b) For the purpose of determining soil storage, the wet season water table shall be the control elevations established by the Central Broward Water Control District (CBWCD).

B. Construction of Drainage Facilities

1. Discharge Structures:
All design discharges shall be made through structural discharge facilities. Discharge structures shall include a "baffle" system.

2. Control Devices / Bleed-Down Mechanisms for Detention Systems:

   a) Gravity control devices shall normally be sized based on a design discharge of one-half inch (1/2") of the detention volume in one day.

b) Gravity control devices shall be of a "v" shaped configuration to increase detention time during minor events.

3. Dry Retention/Detention:

Dry retention/detention areas shall have a side slope of 4:1 (horizontal to vertical) and shall be excavated no deeper than 1 foot above the control elevation.

4. Exfiltration Systems:

a) An exfiltration system shall be considered as being a perforated pipe system, fifteen inches (15") minimum diameter, surrounded by three quarter of an inch (3/4") washed rock in a 5-foot wide minimum trench and protected on the top and both sides by a pervious geotextile.

b) Design and length of exfiltration systems shall be in accordance with SFWMD Permit Volume IV.

c) One standard open hole falling head percolation test shall be taken for each five hundred feet (500') or fraction thereof of seepage system designed.

d) No seepage system shall be considered as dry retention unless the invert of the perforated pipe is at or above the control elevations as set forth by the Central Broward Water Control District (CBWCD).

5. Drainage Structures:

a) Catch basins and drainage collection structures shall be designed with a twelve inch (12") diameter open sump.

b) Prior to discharge to any body of water or any exfiltration trench, a pollution retardant baffle (PRB) shall be installed. All pollution retardant baffles shall be sealed and watertight.

6. Water Bodies:

a) Lakes shall have a side slope of four to one (4:1) down to three feet (3') below the control elevation. Minimum water depth shall be twelve feet (12') in the deep cut portion of the water body.

b) The water body must be at least 0.5 acres and one hundred feet (100') in width to be used as a wet detention area.

7. Culverts:

All interconnects between lake systems within a project shall have piping that is a minimum of 48 inches in diameter. A minimum width easement of thirty (30) feet, exclusive of any encumbrances, shall be provided when the culvert is less than sixty (60) inches in diameter. Where the culverts are sixty (60) inches or greater in diameter, then the easement width shall be a minimum of forty (40) feet.

3.05 LAKES AND WATERWAYS

A. Lake Maintenance.

1. All property owners whose property abuts a lake within the City shall be required to remove all trees, shrubs, bushes, structures, docks, fences and/or any other such unpermitted obstruction along the lake maintenance easement.

2. All property owners found to not be in compliance shall receive notice from the City, by regular mail, notifying them that they are not in compliance and notifying them that they must comply with the terms hereof within ninety (90) days from the date of the notice.

3. Failure to comply with the terms hereof shall result in the removal or destruction of all obstruction by the City without liability or responsibility.

B. Waterways

1. Design Standards.

a) Development proposals containing proposed lakes/canals shall supply written conceptual approval from the South Florida Water Management District (if applicable), Florida Department of Environmental Regulation, Department of Natural Resources, and/or Army Corps of Engineers along with the application for development proposal. Should lakes/canals be approved, construction shall be in accordance with the provisions of the applicable regulatory agency.

b) All development shall meet the requirements of the Central Broward Water Control District (CBWCD) and South Florida

Water Management District (SFWMD) 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 three (3) 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 and the Central Broward Water Control District (CBWCD).

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 five (5) 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 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.

3.06 STREET LIGHTS & UNDERGROUND UTILITIES

A. Street Lights

1. 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.

2. 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.

3. All parking areas, walkways, driveways commercial, public, office, industrial, multifamily, residential or other similar uses having off street parking and or loading areas and building complexes requiring lighting shall be illuminated as follows: on half hour after sunset to one half hour before sunrise on a daily basis.

4. Any parking facility that serves a residential use must maintain the minimum levels of illumination established by this section through the use of natural or artificial light twenty four (24) hours per day.

5. In order to minimize the offensiveness to persons on neighboring property and to eliminate distraction to and temporary blinding of drivers of vehicles passing illuminated property, all artificial parking lot or site area lighting shall be either shaded or screened in a manner that will limit spillover of lighting onto adjacent property and public rights of way. Spillover, measured at the property line, shall not exceed one foot candle vertical or horizontal illumination onto adjacent properties, light measured at grade level.

B. Illumination for Streets

Public and Private roads: Public and Private roads in residential zoning districts shall be allowed in accordance with the following criteria:

1. Street Lighting:
   Street lighting along public and private roadways serving new development where inadequate or no lighting exists, developers shall be required to install street lights with a minimum of one-half (0.5) foot-candle of light measured at grade level. The maximum to minimum foot-candle shall not exceed a twelve to one (12:1) ratio and the average to minimum foot-candle level shall not exceed a four to one (4:1) ratio.

2. Standards for light poles:

The poles and lines shall be located outside the roadway width. Light poles shall withstand wind loads as required by South 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.

3. Design style standards for light poles:
The design and style of decorative light poles shall be reviewed by the City.

4. The installation of all underground facilities for the installation of street lighting shall be completed prior to the paving of the roadways within new land development projects.

5. All wiring for street lighting shall be underground except in areas where primary distribution conductors are overhead. Subject to the approval of the City Engineer, the primary poles may be used for street lights and associated wiring.

C. Illumination for Exterior Parking Facilities

Exterior Parking Facilities shall include the parking surface of open parking lots and access thereto, and parking areas and other unenclosed areas at grade level for which the parking facilities are a requirement. Garage parking facilities shall include underground, multilevel parking garages, and enclosed grade level parking facilities.

1. Exterior Parking Facilities:
Lighting for Exterior Parking Facilities shall be provided to deliver an average maintained illumination of not less than one (1) foot candle equal to one (1) lumen per square foot, and shall be well distributed in the pavement areas; however, at no point shall illumination be less than one-half (0.5) foot candle of light measured at grade level. The maximum to minimum foot candle shall not exceed a twelve to one (12:1) ratio and the average to minimum foot candle shall not exceed a four to one (4:1) ratio.

D. Illumination for Garage Parking Facilities

Garage parking facilities shall include underground, multilevel parking garages, and enclosed grade level parking facilities.

1. Garage Parking Facilities:

Lighting for Garage Parking Facilities shall be provided to deliver an average intensity of not less than fifty (50) foot candles at the entrance, ten (10) foot candles in traffic lanes and five (5) foot candles in storage areas.

E. Underground Utilities

Within the City, 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.

1. A permit is required for the construction of all new underground telephone, CATV or other signal lines, or related facilities in public rights-of-way or ingress/egress easements dedicated for the use of pedestrian and vehicular traffic. These facilities must be designed and installed so as to safely sustain any vehicular loads that might be placed upon them.

2. Each underground utility crossing of paved roads shall be made by the "bore and jack" method, as approved by the Engineering Department, unless an alternate method is approved by the Engineering Department. Proposed open cuts shall be shown on the drawings submitted for approval.

3. When a plan is required for maintenance of traffic, the contractor shall adhere to such plans as approved, in strict accordance with the provisions of the Manual Uniform Traffic Control Devices and applicable FDOT indexes throughout the construction period.

4. All permitted work in rights-of way must be done in strict accordance with the provisions of the Occupational Safety and Health Administration (O.S.H.A.) regulations, and all other applicable codes.

5. Edges of permanent type pavement shall be pre-cut straight, clean and square beyond any damaged base area. All existing pavement damaged by utility cuts shall be restored. When the removal of sidewalks, curbs or gutters are necessary for construction, they shall be removed in full sections or a minimum of five feet in length, and all broken edges cut smooth by use of a suitable power saw or other appropriate means.

6. Telephone, television or other signal carrying cable installed in an existing or planned paved area in any public right-of-way, shall be carried in approved steel, concrete or plastic conduit with a minimum cover of thirty (30) inches.

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 fifteen (15) feet in total width (twelve (12) feet for private), or as determined by the Commission to be adequate.

B. Where a subdivision is traversed by a lake, there shall be provided a twenty-five (25) foot (minimum) lake maintenance easement conforming substantially with the lines of such watercourses. 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.

D. Easements shall be provided fifteen (15) feet in width for all water mains, fire hydrants and meters and dedicated to the City.

E. No structures (or gas tanks) shall be placed in easements without approval from the City.

F. Easements shall be provided fifteen (15) feet in width for all sewer force mains, 8" gravity lines and manholes, and dedicated to the City.

3.08 FIRE HYDRANT SPACING & FLOW REQUIREMENTS

Fire hydrant spacing and water flow requirements for all fire hydrants throughout the City shall conform to the requirements set forth below and made a part hereof. Distances shown 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.

A. For single family and duplex residential developments, one hydrant shall be located at each intersection (three way or four way) with intermediate hydrants between intersections so located that spacing does not exceed five hundred (500) feet as measured along roadways or access roads.

B. For all other developed properties, one hydrant shall be located at each intersection or entrance to the project with intermediate hydrants so located that spacing does not exceed three hundred (300) feet as measured along roadways or access roads around any structure on that property.

C. All cul de sacs shall have a fire hydrant installed.

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 calculations of Required fire flows for selected locations or developments in gallons per minute (gpm) considers such factors as the construction occupancy, exposure and communication as outlined in the Insurance Services Office (ISO) Fire Suppression Rating Schedule. Refer to the "Fire Suppression Rating Schedule" for the ISO's current method of calculating required fire flow.

SECTION 4

GENERAL SPECIFICATIONS

SECTION 4: GENERAL SPECIFICATIONS

SECTION 4 - GENERAL SPECIFICATIONS

4.01 APPLICABLE CODES:

A. GENERAL:
All construction and materials shall conform to the Standards and Specifications of Cooper City, Broward County Department of Planning and Environmental Protection (BCDPEP), 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 National Geodetic Vertical Datum of 1929 (NGVD).

4.02 PRECONSTRUCTION RESPONSIBILITIES:

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

B. The Contractor shall obtain a "SUNSHINE One Call" Certification number and notify the Utilities Department 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 Cooper City.

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 Cooper City.

4.03 INSPECTIONS:

The Contractor shall notify the City 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 Cooper City 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.

C. Prior to any equipment order for traffic signals, the Contractor shall submit for approval, equipment specifications or design data for all material proposed.

4.05 TEMPORARY FACILITIES:

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

B. TRAFFIC REGULATION:

1. Maintenance of traffic in the public right-of-way shall be in accordance with the MUTCD and approved by 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 without express permission from the City.

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, 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 and irrigation 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 lakes, 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, and/or lakes, appropriate silt barriers shall be installed as required by the BCDPEP.

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 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.

4.07 EARTHWORK AND COMPACTION

A. All organic and other unsuitable material shall be removed 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 (with bacteriological and pressure tests) 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 Miami Oolite with a minimum of 60% carbonates of calcium and magnesium.

2. Asphalt surfaces for streets shall be 2" thick with 1 ¼" Type S-1 and ¾" Type S-3 modified asphaltic concrete unless otherwise specified on the plans. Asphalt for parking areas shall be 1 ½" thick with two (2) ¾" lifts of Type S-3 modified asphaltic concrete.

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.

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. New sod used for restoration must match existing sod.

C. INSTALLATION

1. Subgrade for roadway shall be compacted to a minimum of 95% 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 residential 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 type 1 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 ¼" 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.

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.

4.09 WATER DISTRIBUTION AND/OR SEWAGE FORCE MAIN SYSTEM:

A. GENERAL

1. The Contractor shall notify the City and the Engineer of Record no later than 48 hours prior to making connections to existing systems. A City 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 and the Broward County Health Department.

3. Cleaning of newly installed piping systems shall be accomplished using pigging methods. Open flushing shall not be allowed without prior approval of the City. All water will be accounted for.

4. All water and force mains shall cross above drainage lines with adequate cover and separation. If this is not possible, it shall be indicated on the plans.

5. A three (3) foot lateral separation shall be maintained between water/sewer lines and all existing and proposed obstructions (i.e., catch basins, concrete poles, etc.).

B. MATERIALS:

1. Pipe:
The water main shall be either polyvinyl chloride (PVC) (when less than ten (10") inches in diameter) or Ductile Iron Pipe (D.I.P.) and shall be designed for a minimum working pressure of 150 psi. The sewage force main shall be Ductile Iron Pipe (D.I.P.) only and shall be designed for a minimum working pressure of 150 psi.

   a) PVC pipe shall be ASTM 1120 pressure pipe with iron O.D., Class 150 (DR 18), conforming to ANSI/AWWA C900-97 or C905-97 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/A21.51-02, or latest revision. Sewage pipe shall be either double cement

conforming to ANSI/AWWA C104/A21.4-95 or latest revision, or polyethylene lined conforming to ANSI/AWWA C105/A21.5-99 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/A21.53-00, or latest revision, and class 250 in sizes 24" and larger, conforming to ANSI/AWWA C110/A21.10-98, or latest revision, complete with megalugs. All fittings shall be cement lined and seal coated with the same as pipe.

3. Valves:

a) Valves shall be gate valves for water and sewer force main (4"-12" in size), or butterfly valves for water and sewer force main (16" and up in size), or plug valves for sewer force main (16" and up in size).

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 C509-01 or latest revision. Exposed valves shall be outside screw and yoke type. Gate valves shall be Mueller, Clow, American Darling, or approved equal.

2) Butterfly valves and operators shall conform to ANSI/AWWA C504-00 or latest revision standard for rubber-seated butterfly valves. Valves shall be class 150 A or B and shall be Mueller, Pratt, Clow, DeZurik, or approved equal.

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 inches. Valves shall be manufactured by Val-Matic Corporation, 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.

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 American, model number B-84-B or approved equal. Hydrants shall meet or exceed ANSI/AWWA C502-94, C503-97 or latest revision, and shall comply with Factory Mutual Research Corporation and Underwriters Laboratories UL246 Standard.

b) Three 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 maintained by the City shall be painted "fire hydrant yellow with white fluorescent caps." Hydrants privately maintained shall be painted yellow.

5. Detector Tape:

Detector tape shall be 3" wide blue tape for water main and green 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.

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 C111/21.11-00 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 Ford or approved equal.
   d) Meter stops shall be inline curb stops 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 (2 ½" and smaller) and meter boxes will be supplied and installed by the City at the Owner's expense. Meters larger than 2 ½ inches will have special installation requirements.

7. Tapping Sleeves:
   Tapping sleeves shall be ductile iron or stainless steel, mechanical joint, Clow, or approved equal.

8. Valve Boxes:

a) Valve boxes for water mains and sewer force mains shall be U.S. Foundry Model 7500, 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/A21.11-00 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, EBAA Iron, or approved equal.

10. Double check valve backflow prevention assembly:

The assembly shall conform to ANSI/AWWA C510-97 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. Pearock or 3/4" washed rock will be used in water or where unsuitable bedding exists at the discretion of the City. All other fill shall not have rock larger than 6" in diameter.

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 C600-99 or latest revision.
   b) D.I.P. shall be installed with a minimum of 30" 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.
   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.

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 have a blue metallic locator and 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 (lowest pressure allowed after drop) in accordance with ANSI/AWWA C600 or latest revision. The pressure test shall not vary more than ± 5 psi during the test. Leakage allowances will not be made for fittings or valves.

3. Allowable leakage shall not exceed the formula of:

$$L \text{ (gallons per hour)} = \frac{SD(P)^{0.5}}{133{,}200}$$

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 City representative 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 1000' maximum for lines greater than 1000' 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 C651-99 or latest revision with approved bacteriological samples and proper documentation by the Broward County Health Department. Collection of samples is the Contractor's responsibility and will be witnessed by a Cooper City representative.

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/A21.4-95 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.

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. Pearock or 3/4" washed rock will be used in water or where unsuitable bedding exists at the discretion of the City. 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.
   e) No sewer shall be in the back yard of a residential lot without City approval.
   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 Kopcoat No. 300 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. If this is unavoidable, proper measures shall be taken to prohibit the parking of vehicles over manholes.
   e) All lids in inverted crown pavements shall be provided with a polyethylene watertight manhole insert, as manufactured by Southwestern packing & Seals, "Rainstopper" model, or approved equal to reduce stormwater inflow.
   f) All City owned manholes shall be set at a maximum spacing of 400 feet.

g) All manholes shall be accessible to a vac truck via an asphaltic road and be encompassed by that asphalt road.

3. Service:
   a) Minimum slope of all service lines shall be as indicated in the South Florida Building Code - Broward County Edition.
   b) Service laterals shall terminate at a depth 30" below finished grade.
   c) Each service connection shall be capped water-tight.
   d) The end of each service connection shall be marked with a 2"x4" treated stake painted green, 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 Broward County Building Department.

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 Cooper City representative.

2. After construction of the sewer system, the City 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. Additionally, a televised inspection of the system may be required by the City prior to final certification of the system.

3. An air test may be substituted for the water exfiltration test, upon approval of the City.

4. Manhole exfiltration leakage shall not exceed 4 gallons per day per unit.

5. 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.

6. Visible manhole and sewer pipe infiltration leakage shall not be permitted.

4.11 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 or radius of drive.

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. 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:

DIAMETER	CORRUGATION	GAUGE
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.

3. Corrugated polyethylene pipe shall be manufactured in accordance with ASTM F405 and AASHTO M252 as manufactured by ADS, or approved equal.

4. The rip rap headwalls, which will be provided on an as needed basis, 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 fc = 3500 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 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 at an additional catch basin or a clean-out structure.

4.12 TRAFFIC SIGNALS

Design, construction and maintenance of all Traffic signals within the City limits has been deferred to the Broward County Engineering Division (BCED) and the Broward County Traffic Engineering Division (BCTED). Please refer to the BCED and BCTED standards for the design and construction of these facilities.

4.13 WASTEWATER PUMPING STATION

A. Emergency Generator System

1. All Pumping Stations provided by the Developer shall be furnished with an emergency generator. The generator shall be sized to meet the starting amperage of both pumps simultaneously. The generator shall be trailer mounted with necessary towing equipment including, lights and hitch. The generator shall be supplied with necessary plug and cable for supplying power to the pump station control panel. All generator and trailer specifications must be approved by the City.

2. The Developer shall provide for a load test equal to the start up amperage of both pumps.

SECTION 5

STANDARD DETAILS

STANDARD ROAD DETAILS

SECTION 5: STANDARD DETAILS

5.01 STANDARD ROAD DETAILS

Detail No.	Description
R-1	Residential Street (2-lanes)
R-1A	Residential Street (2-lanes)
R-2	Public Road (4-lanes)
R-3	Cul-De-Sac
R-4	Driveways
R-5	Driveway Spacing, Residential
R-6	Driveway Spacing, Commercial and Industrial
R-7	Typical Parking Area Requirements
R-7A	Parking Stall Striping Detail
R-8	Parking Area, Inverted Crown Section
R-9	Typical Concrete Curb & Gutter Sections
R-10	Sidewalk Joint Details & Typical Construction
R-11	Typical Stop Sign and Street Name Assembly
R-12	Street Sign Location
R-13	Handicapped Sign Detail
R-14	Procedure for Restoration of Flexible Pavement
R-15	Pavement Restoration, Perpendicular Crossing
R-16	Pavement Restoration, Longitudinal
R-17	Pavement Restoration, Local Roads Water Main
R-18	Pavement Restoration, Direct Burial Cable or Conduit
R-19	Speed Hump Detail, Low Speed Application (less than 25 mph)
R-20	Speed Hump Detail, Application for Posted or 85 Percentile Speed (25 mph or greater)
R-21	Speed Hump Detail, Cross Section
R-22	Brick Pavers

STANDARD DRAINAGE DETAILS

SECTION 5: STANDARD DETAILS

5.02 STANDARD DRAINAGE DETAILS

Detail No.	Description
D-1	Storm Sewer Manhole Frame and Cover
D-2	Inlet, Manhole & Junction Box, Type J
D-3	Inlet, Manhole & Junction Box, Type J
D-4	Inlet, Manhole & Junction Box, Type P
D-5	Inlet, Manhole & Junction Box, Types P & J, General Notes
D-6	Junction Box, Manhole Top & Precast Concrete Riser
D-7	Storm Sewer Inlets
D-8	Concrete to Metal Pipe Jacket
D-9	Pollution Retardant Baffle
D-10	Exfiltration Trench

STANDARD WATER SUPPLY DETAILS

SECTION 5: STANDARD DETAILS

5.03 STANDARD WATER SUPPLY DETAILS

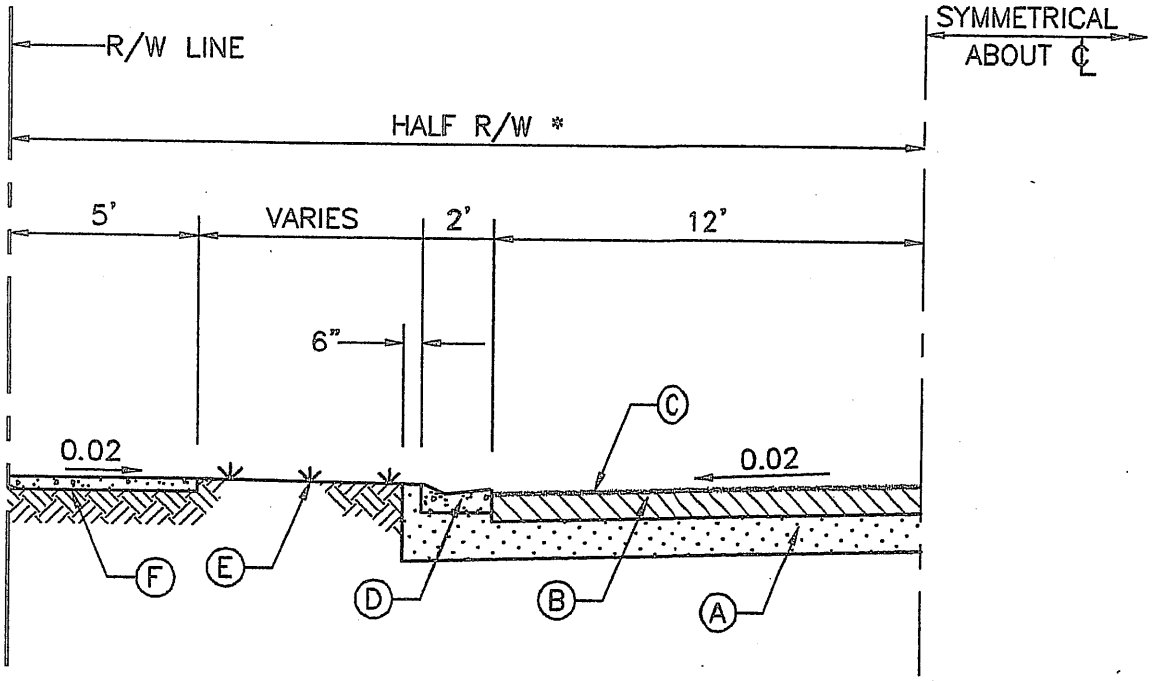
Detail No.	Description
W-1	Typical Valve Setting
W-2	Typical Single & Double Service Connection
W-3	Water Meter Installation for 5/8" and 1" Meters
W-4	Water Meter Installation for 1 1/2" and 2" Meters
W-5	Water Meter Locations
W-6	Fire Hydrant Detail
W-7	Bacteriological Sampling Points
W-8	Utility Crossing, General Requirements
W-9	Utility Crossing, Deflection Type
W-10	Utility Crossing, Fitting Type
W-11	Filling & Flushing
W-11A	Filling & Flushing, Notes
W-12	Restrained Joint Detail
W-13	Double Detector Check Valve for Fire Line
W-14	Backflow Preventer
W-15	2" Terminal Blow Off
W-16	Trench Detail, Unpaved Areas

STANDARD SANITARY SEWER DETAILS

SECTION 5: STANDARD DETAILS

5.04 STANDARD SANITARY SEWER DETAILS

Detail No.	Description
S-1	Wye Branch Connection
S-1A	Residential Wye Branch Connection
S-2	Alternate Riser Connection, (7'-0" or deeper)
S-3	Precast Outside Conflict Manhole
S-4	Shallow Manhole (6'-0" depth and under)
S-5	Precast Outside Drop Manhole
S-6	Eccentric Manhole (6'-0" depth and greater)
S-7	Manhole Flow Channels
S-8	Manhole Frame and Cover Detail
S-9	Manhole Coupling Detail
S-10	Cleanout
S-11	Utility Crossing, General Requirements
S-12	Utility Crossing, Deflection Type
S-13	Utility Crossing, Fitting Type
S-14	Manual Air Release Valve
S-15	Typical Valve Setting
S-16	Trench Detail, Unpaved Areas
S-17	Lift Station Plan View
S-18	Lift Station Sectional Elevation
S-19	Lift Station Site Plan
S-20	Lift Station Emergency Pump Connection
S-21	Lift Station Date Tables and Notes



Ⓐ 12" STABILIZED SUBGRADE, MIN. LBR 40, COMPACTED AT 95% MAXIMUM DENSITY PER AASTHO T-180.

Ⓑ 8" LIMEROCK BASE, MIN. LBR OF 100 WITH 60% OR MORE CARBONATE CONTENT, COMPACTED TO 98% MAXIMUM DENSITY PER AASHTO T-180.

Ⓒ 1½" ASPHALT SURFACE COURSE, TYPE S-III MODIFIED (IN TWO ¾" LIFTS)

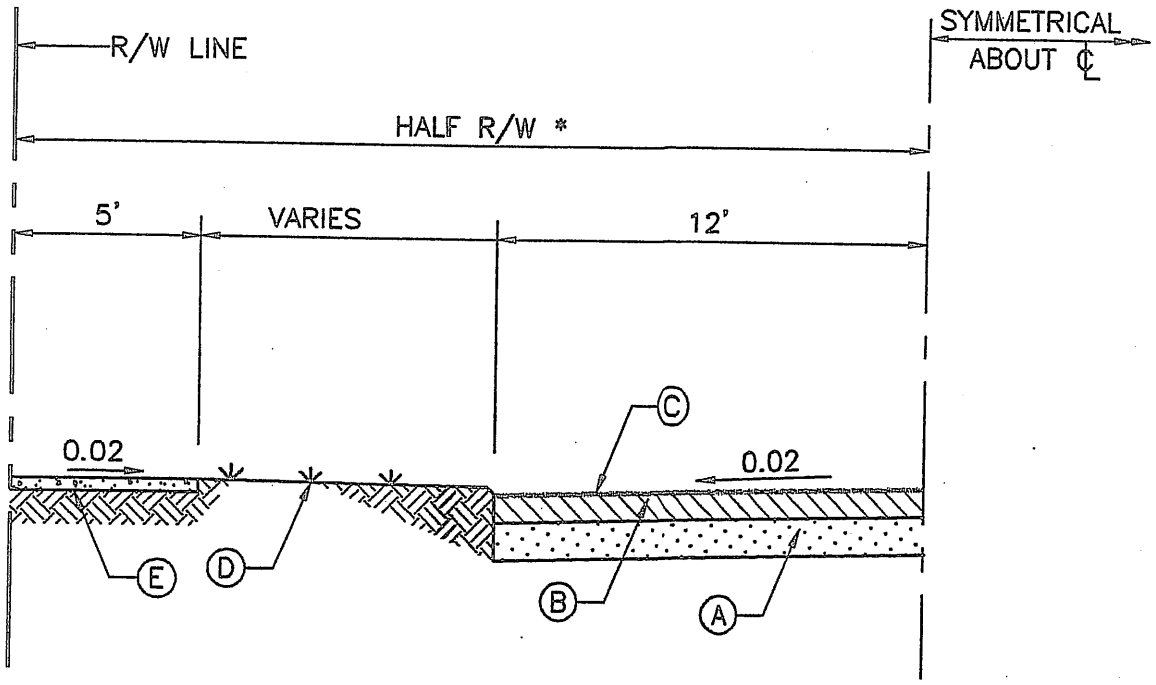
Ⓓ VALLEY GUTTER

Ⓔ SOD OR GRASS MULCH

Ⓕ 4" CONCRETE SIDEWALK

* NO LESS THAN 60' PER CITY OF COOPER CITY DEVELOPMENT STANDARDS.

CITY OF COOPER CITY ENGINEERING STANDARDS COOPER CITY, FLORIDA	SCALE: N.T.S. REVISED:	STANDARD ROAD DETAIL RESIDENTIAL STREET (2-LANES)	R-1



(A) 12" STABILIZED SUBGRADE, MIN. LBR 40, COMPACTED AT 95% MAXIMUM DENSITY PER AASTHO T-180.

(B) 8" LIMEROCK BASE, MIN. LBR OF 100 WITH 60% OR MORE CARBONATE CONTENT, COMPACTED TO 98% MAXIMUM DENSITY PER AASHTO T-180.

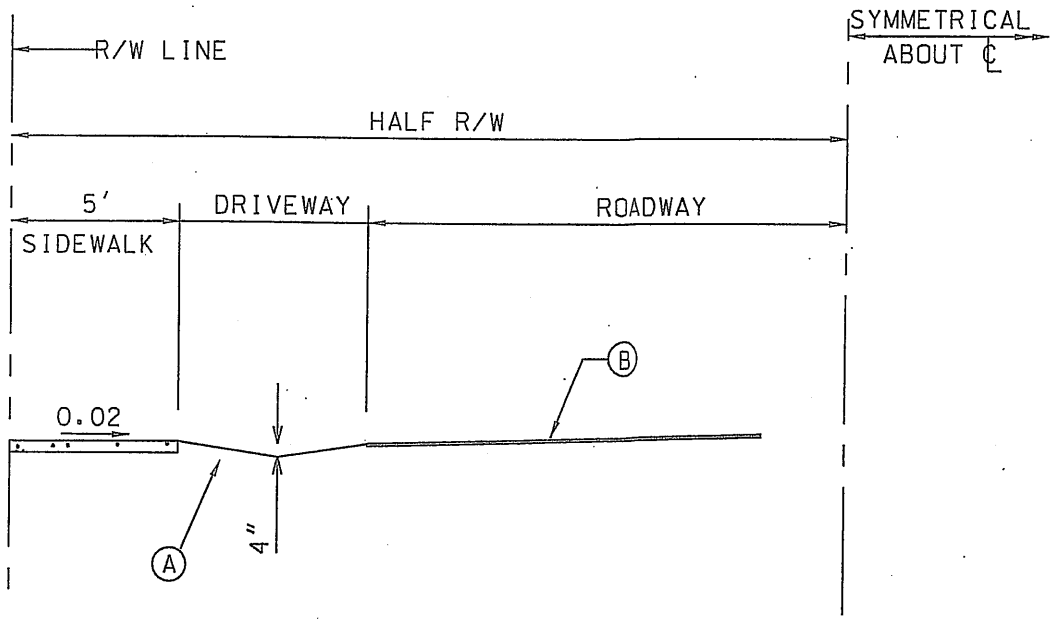
(C) 1½" ASPHALT SURFACE COURSE, TYPE S-III MODIFIED (IN TWO ¾" LIFTS)

(D) SOD OR GRASS MULCH

(E) 4" CONCRETE SIDEWALK

* NO LESS THAN 60' PER CITY OF COOPER CITY DEVELOPMENT STANDARDS.

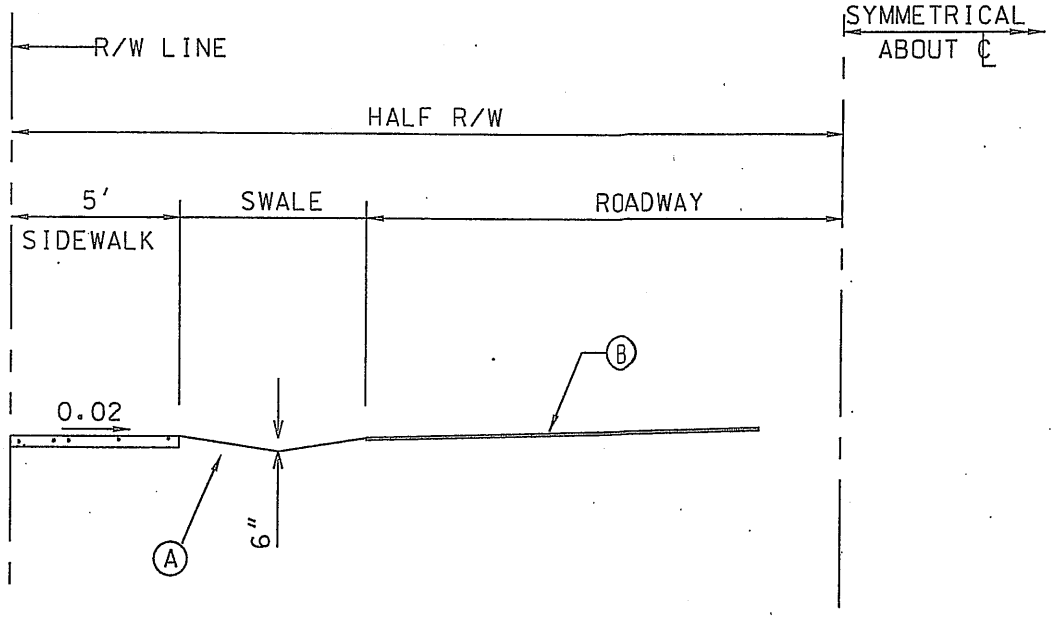
CITY OF COOPER CITY ENGINEERING STANDARDS COOPER CITY, FLORIDA	SCALE: N.T.S. REVISED:	STANDARD ROAD DETAIL RESIDENTIAL STREET (2-LANES)	R-1A



Ⓐ DRIVEWAY WITH 4" MINIMUM DEFLECTION AT CENTER OF SWALE

Ⓑ ROADWAY

CITY OF COOPER CITY ENGINEERING STANDARDS COOPER CITY, FLORIDA	SCALE: N.T.S. REVISED:	STANDARD ROAD DETAIL WITH DRIVEWAY	R-1B



Ⓐ SWALE WITH 6" MINIMUM DEFLECTION AT CENTER OF SWALE

Ⓑ ROADWAY

CITY OF COOPER CITY ENGINEERING STANDARDS COOPER CITY, FLORIDA	SCALE: N.T.S. REVISED:	STANDARD ROAD DETAIL WITH SWALE	R-1C

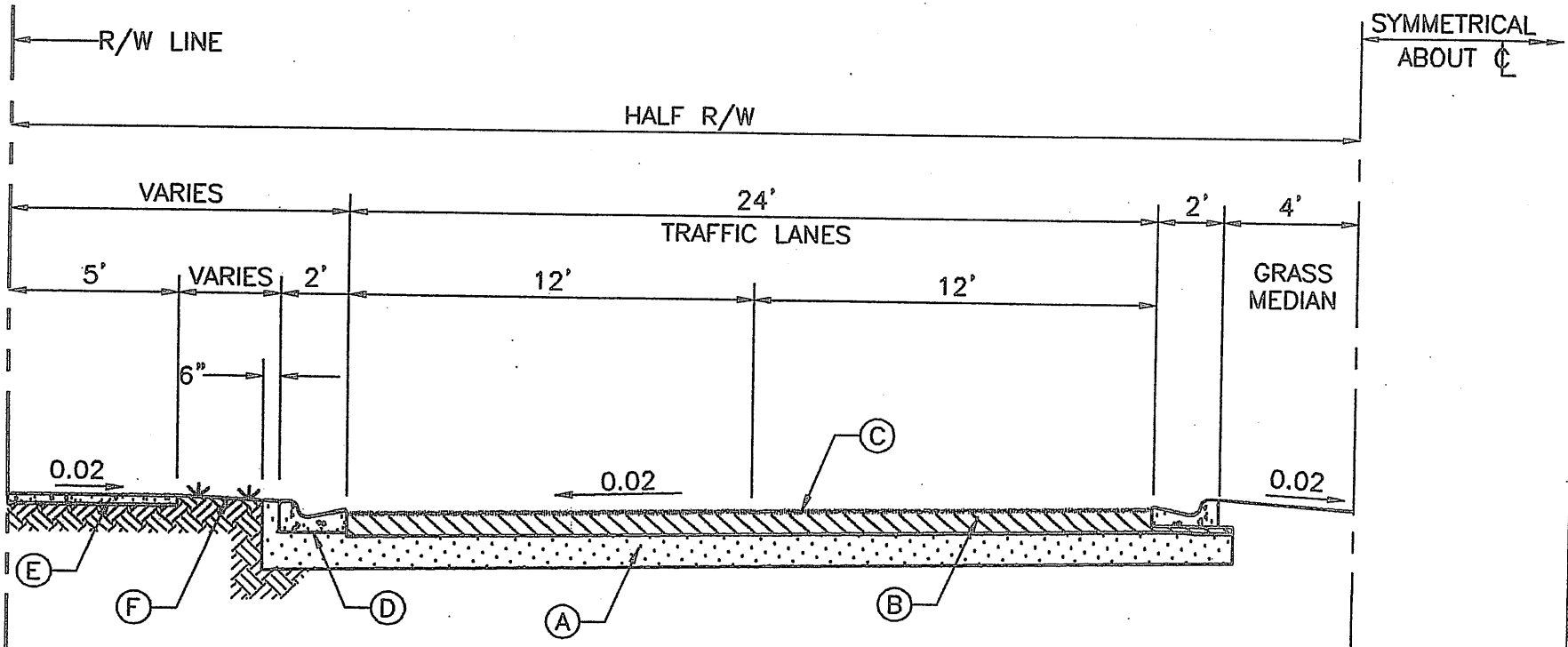
Revised October 2022

CITY OF COOPER CITY
ENGINEERING STANDARDS
COOPER CITY, FLORIDA

SCALE: N.T.S.
REVISED:

STANDARD ROAD DETAIL
PUBLIC ROAD
(4-LANES)

R-2



Ⓐ 12" STABILIZED SUBGRADE, MIN. LBR 40, COMPACTED AT 95% MAXIMUM DENSITY PER AASTHO T-180.

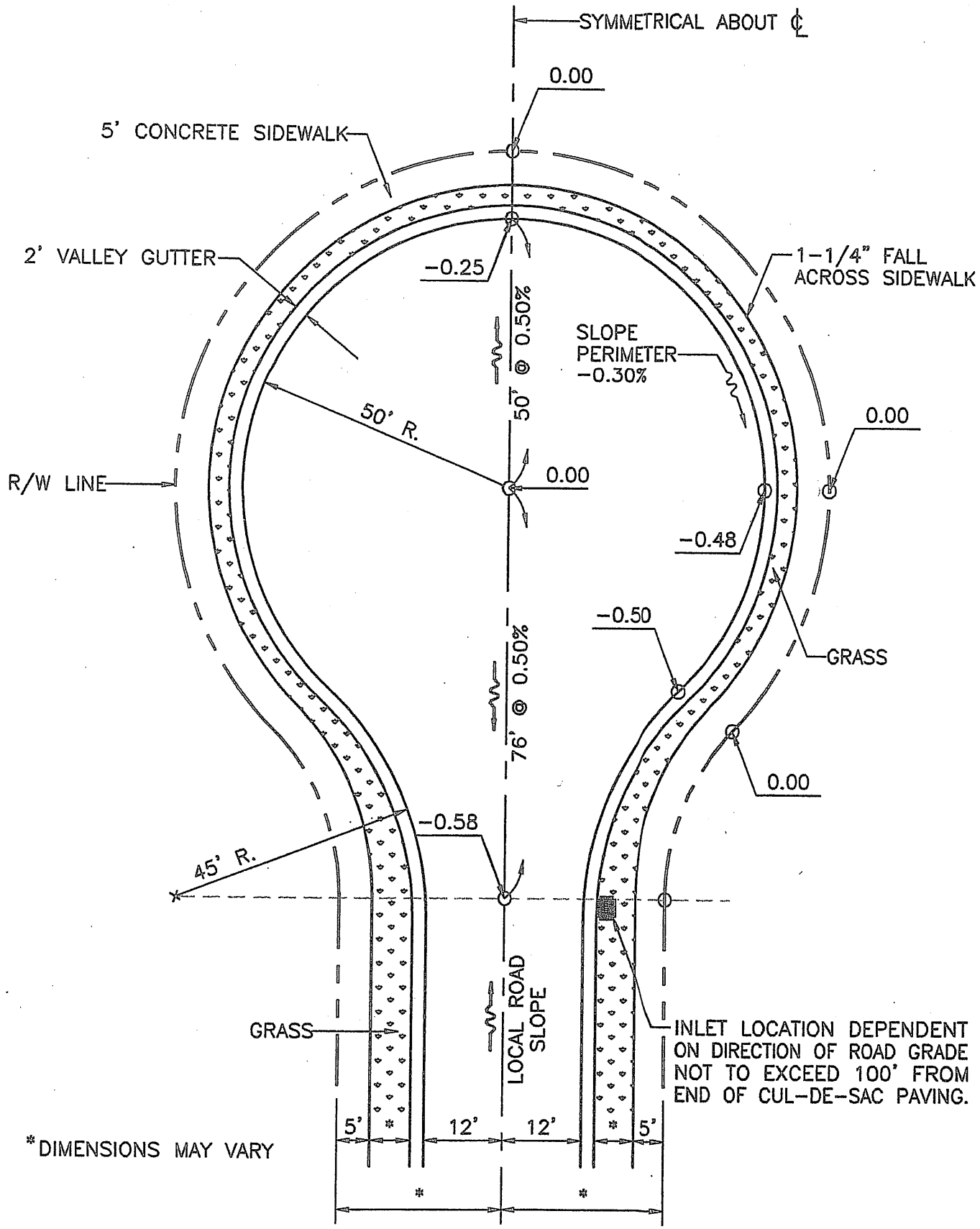
Ⓑ 8" LIMEROCK BASE, MIN. LBR OF 100 WITH 60% OR MORE CARBONATE CONTENT, COMPACTED TO 98% MAXIMUM DENSITY PER AASHTO T-180.

Ⓒ 2" ASPHALT SURFACE COURSE, 1¼" TYPE S-I (BOTTOM), ¾" TYPE S-III (TOP).

Ⓓ TYPE "F" CURB AND GUTTER PER FDOT INDEX NO. 300

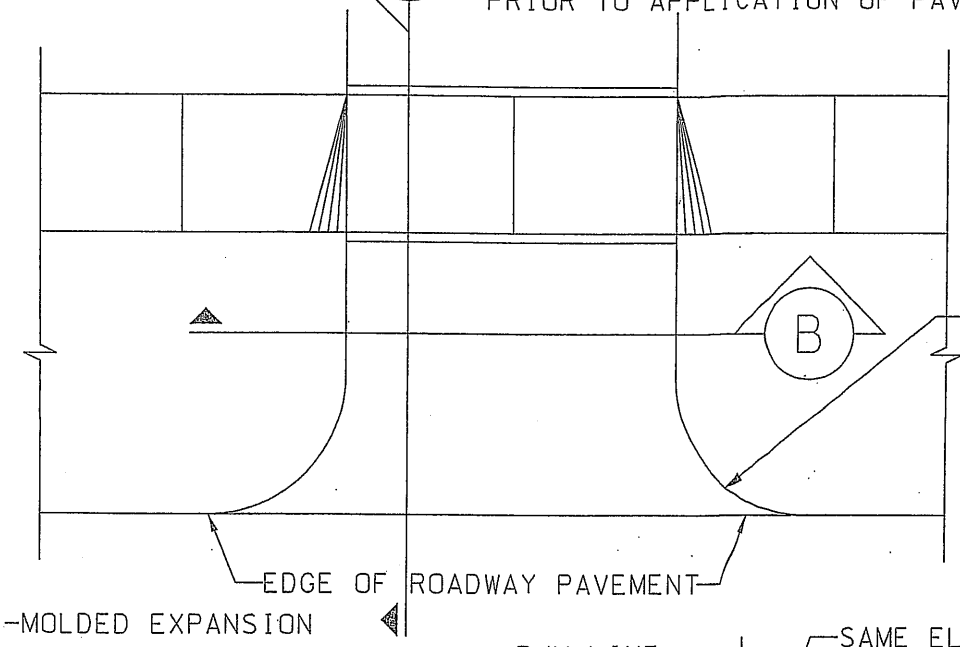
Ⓔ SOD OR GRASS MULCH

Ⓕ 6" CONCRETE SIDEWALK



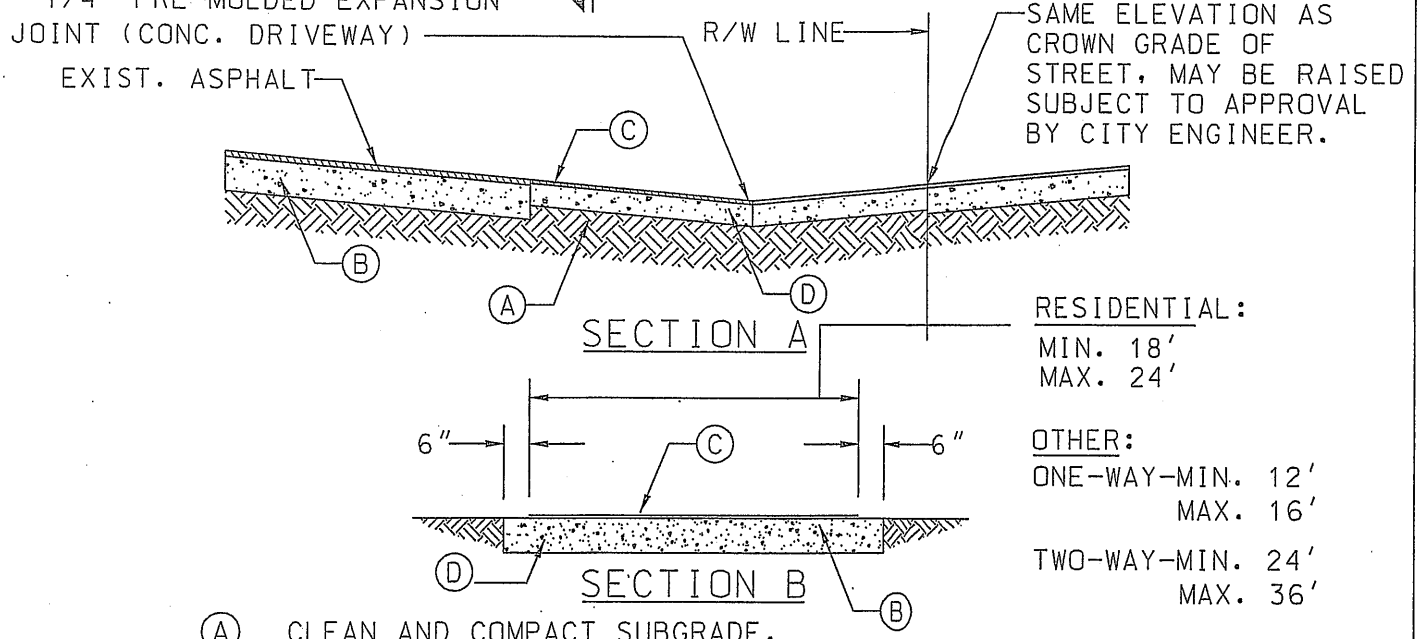
CITY OF COOPER CITY ENGINEERING STANDARDS COOPER CITY, FLORIDA	SCALE: N.T.S. REVISED:	STANDARD ROAD DETAIL CUL-DE-SAC	R-3

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



RESIDENTIAL:
NOT LESS THAN 5' OR MORE THAN 15'

OTHER:
NOT LESS THAN 40' OR MORE THAN 47'



RESIDENTIAL:
MIN. 18'
MAX. 24'

OTHER:
ONE-WAY-MIN. 12'
MAX. 16'

TWO-WAY-MIN. 24'
MAX. 36'

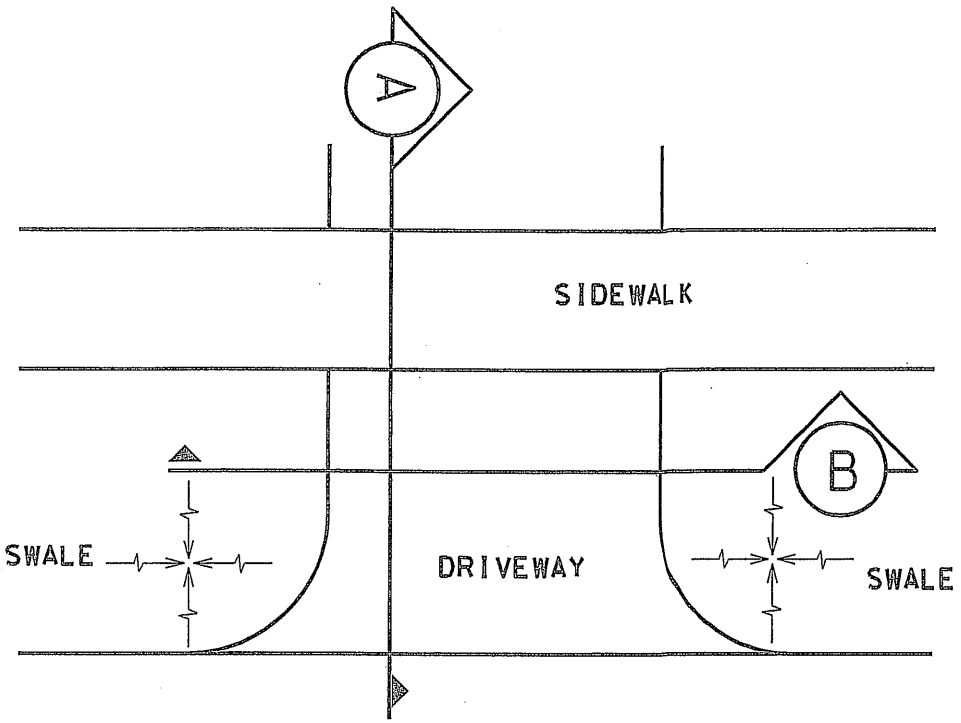
(A) CLEAN AND COMPACT SUBGRADE.

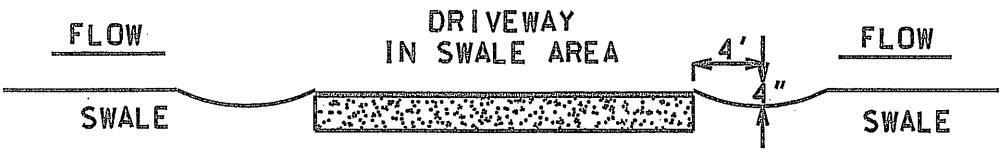
(B) BASE COURSE (6" THICK MIN.)

(C) ASPHALTIC CONCRETE SURFACE COURSE:
1" THICK MIN. COMPACTED (RESIDENTIAL)
1 1/2" THICK MIN. COMPACTED (COMMERCIAL & INDUSTRIAL)
CONCRETE DRIVEWAY SLABS SHALL BE A MIN. 3000 P.S.I.
4"DEPTH WITH10/10 WELDED WIRE MESH RE-INFORCEMENT OR FIBER.
CONCRETE APRONS SHALL BE 6" DEPTH WITHOUT RE-INFORCEMENT.

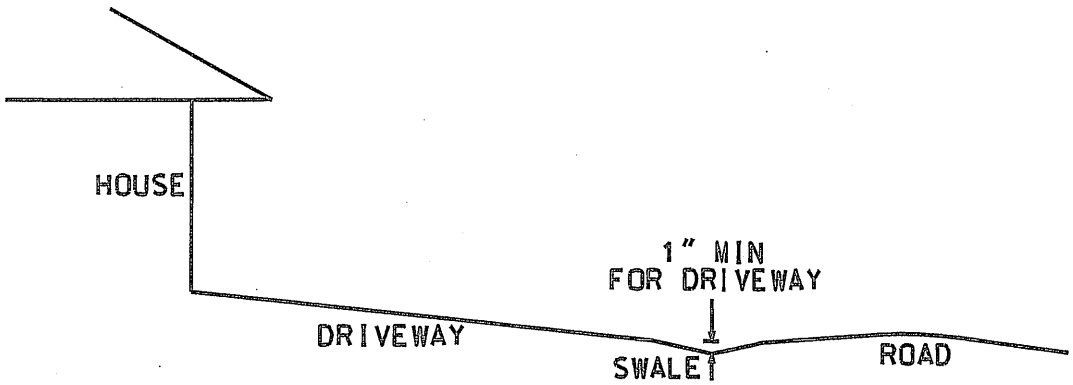
(D) 6" MIN. LIMEROCK BASE COURSE FOR ASPHALT & PAVER DRIVEWAYS.

CITY OF COOPER CITY ENGINEERING STANDARDS COOPER CITY, FLORIDA	SCALE: N.T.S. REVISED: AUG2018	STANDARD ROAD DETAIL DRIVEWAYS	R-4





SECTION B



SECTION A

CITY OF COOPER CITY ENGINEERING STANDARDS COOPER CITY, FLORIDA	SCALE: N.T.S. REVISED: AUG2018	STANDARD ROAD DETAIL DRIVEWAYS	R-4A

Revised October 2022

CITY OF COOPER CITY
ENGINEERING STANDARDS
COOPER CITY, FLORIDA

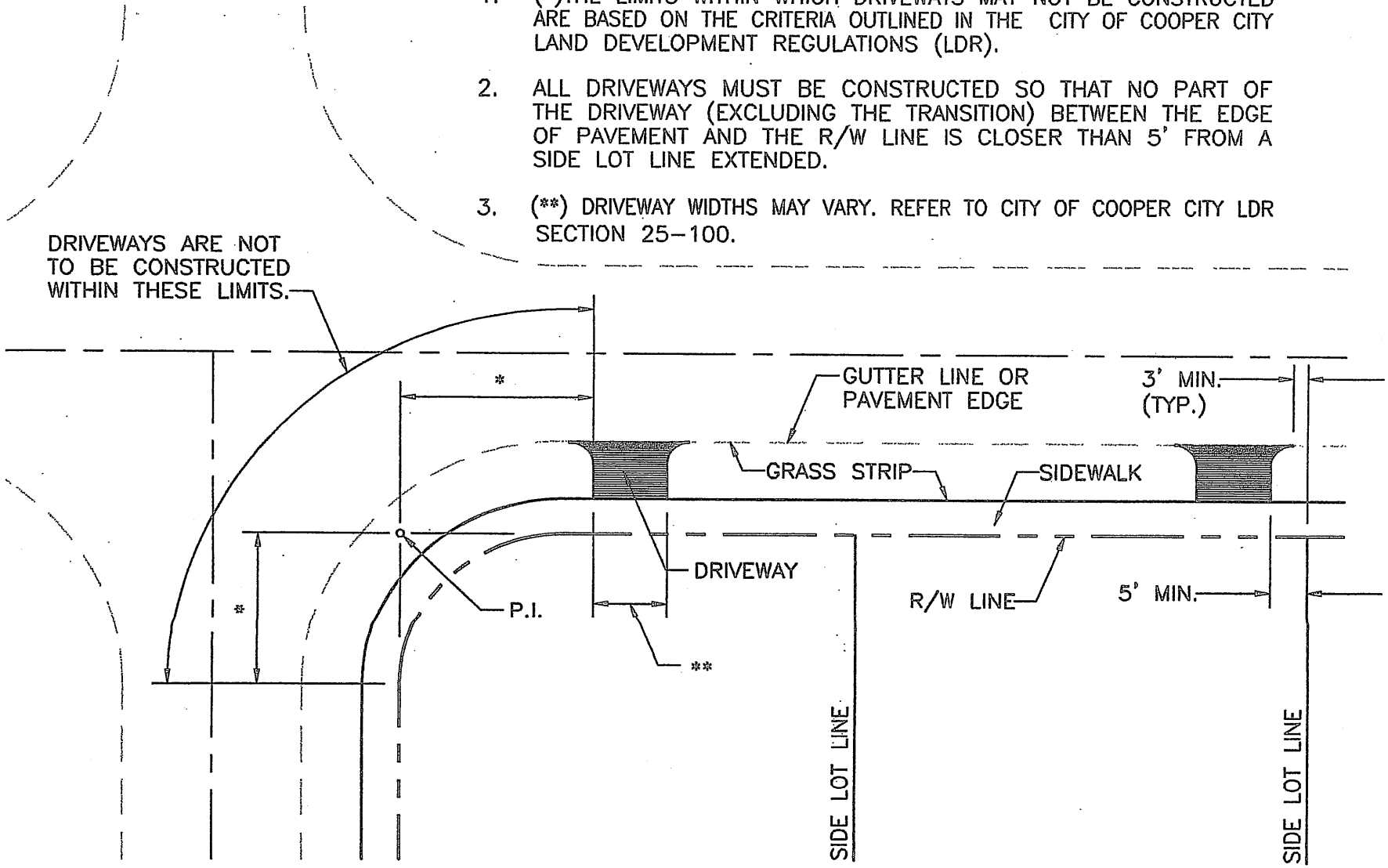
SCALE: N.T.S.
REVISED:

STANDARD ROAD DETAIL
DRIVEWAY SPACING
RESIDENTIAL

R-5

NOTES:

1. (*)THE LIMITS WITHIN WHICH DRIVEWAYS MAY NOT BE CONSTRUCTED ARE BASED ON THE CRITERIA OUTLINED IN THE CITY OF COOPER CITY LAND DEVELOPMENT REGULATIONS (LDR).
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. (**) DRIVEWAY WIDTHS MAY VARY. REFER TO CITY OF COOPER CITY LDR SECTION 25-100.



Revised October 2022

CITY OF COOPER CITY
ENGINEERING STANDARDS
COOPER CITY, FLORIDA

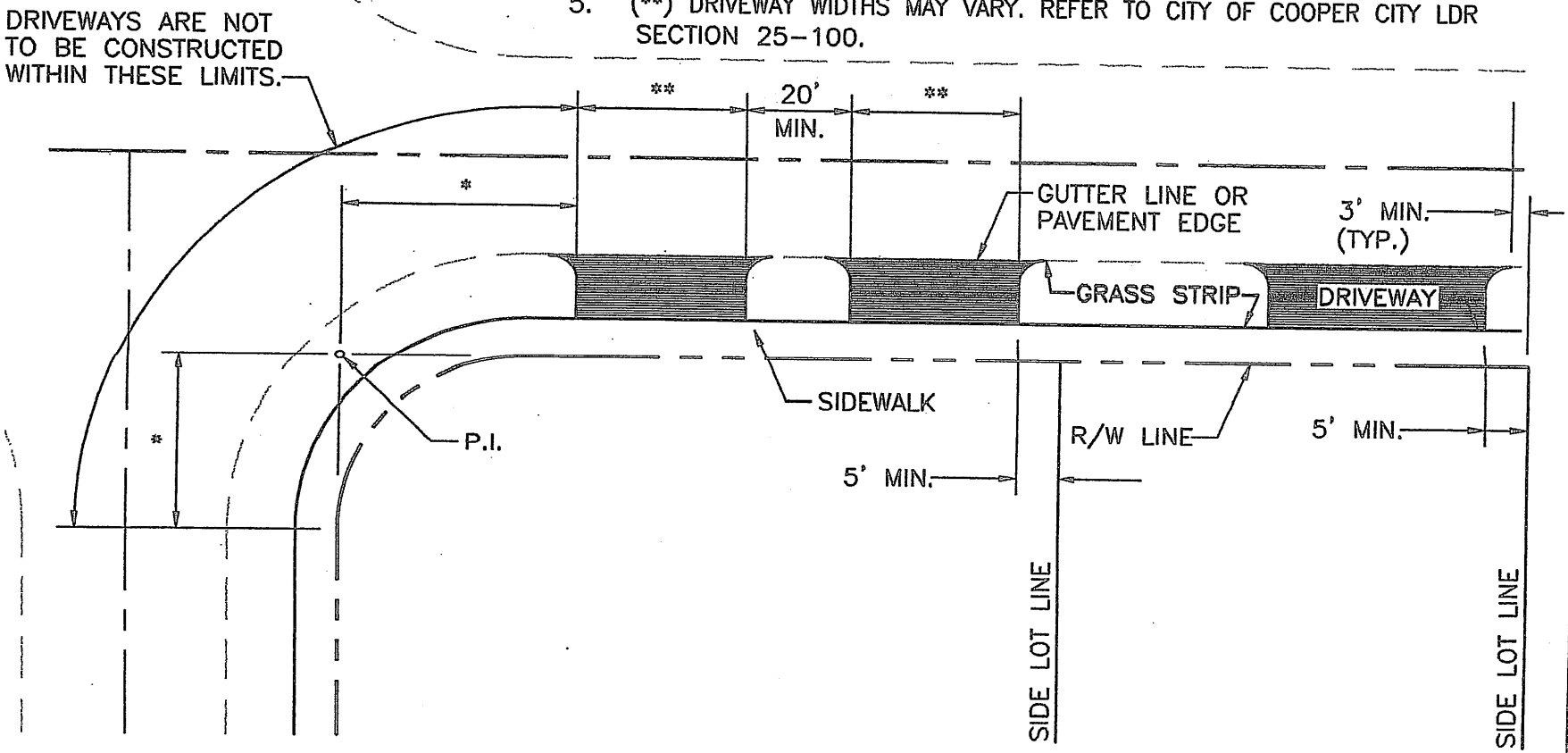
SCALE: N.T.S.
REVISED:

STANDARD ROAD DETAIL
DRIVEWAY SPACING
COMMERCIAL & INDUSTRIAL

R-6

NOTES:

1. (*)THE LIMITS WITHIN WHICH DRIVEWAYS MAY NOT BE CONSTRUCTED ARE BASED ON THE CRITERIA OUTLINED IN THE CITY OF COOPER CITY LAND DEVELOPMENT REGULATIONS (LDR).
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 20' MINIMUM LENGTH SHALL BE PROVIDED BETWEEN THE DRIVEWAYS.
4. SURVEYS MUST BE PROVIDED SHOWING THE ALIGNMENT OF PROPOSED DRIVEWAY WITH EXISTING DRIVEWAYS LOCATED ON THE OPPOSITE SIDE OF THE RIGHT-OF-WAY.
5. (**) DRIVEWAY WIDTHS MAY VARY. REFER TO CITY OF COOPER CITY LDR SECTION 25-100.



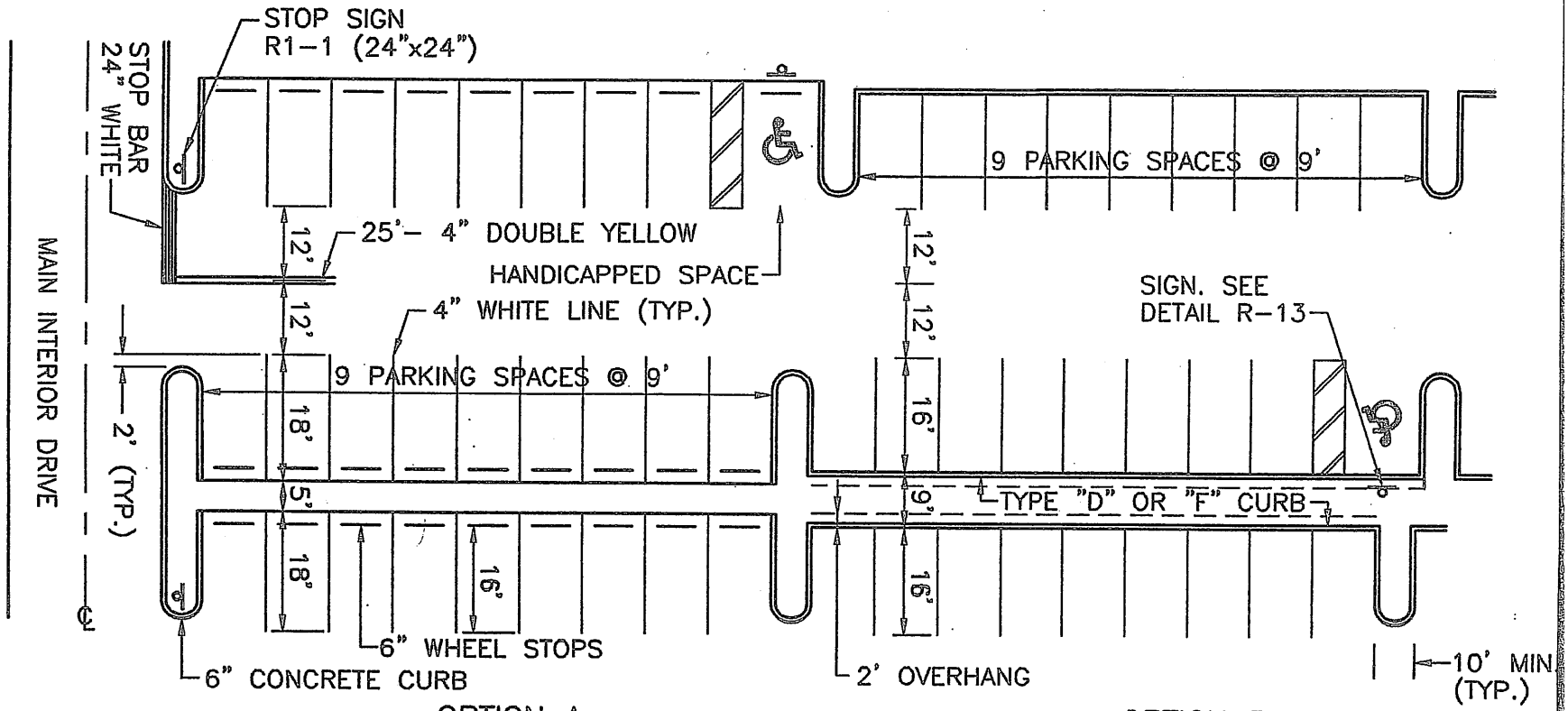
Revised October 2022

CITY OF COOPER CITY
ENGINEERING STANDARDS
COOPER CITY, FLORIDA

SCALE: N.T.S.
REVISED:

STANDARD ROAD DETAIL
TYPICAL PARKING AREA
REQUIREMENTS

R-7



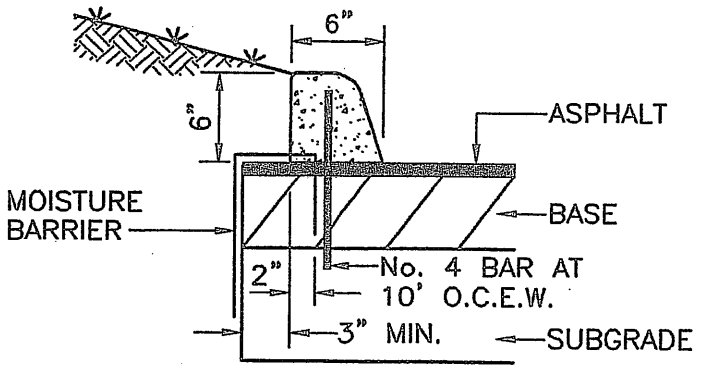
OPTION A
STANDARD PARKING
9' x 18'

OPTION B
MODIFIED PARKING
9' x 16'

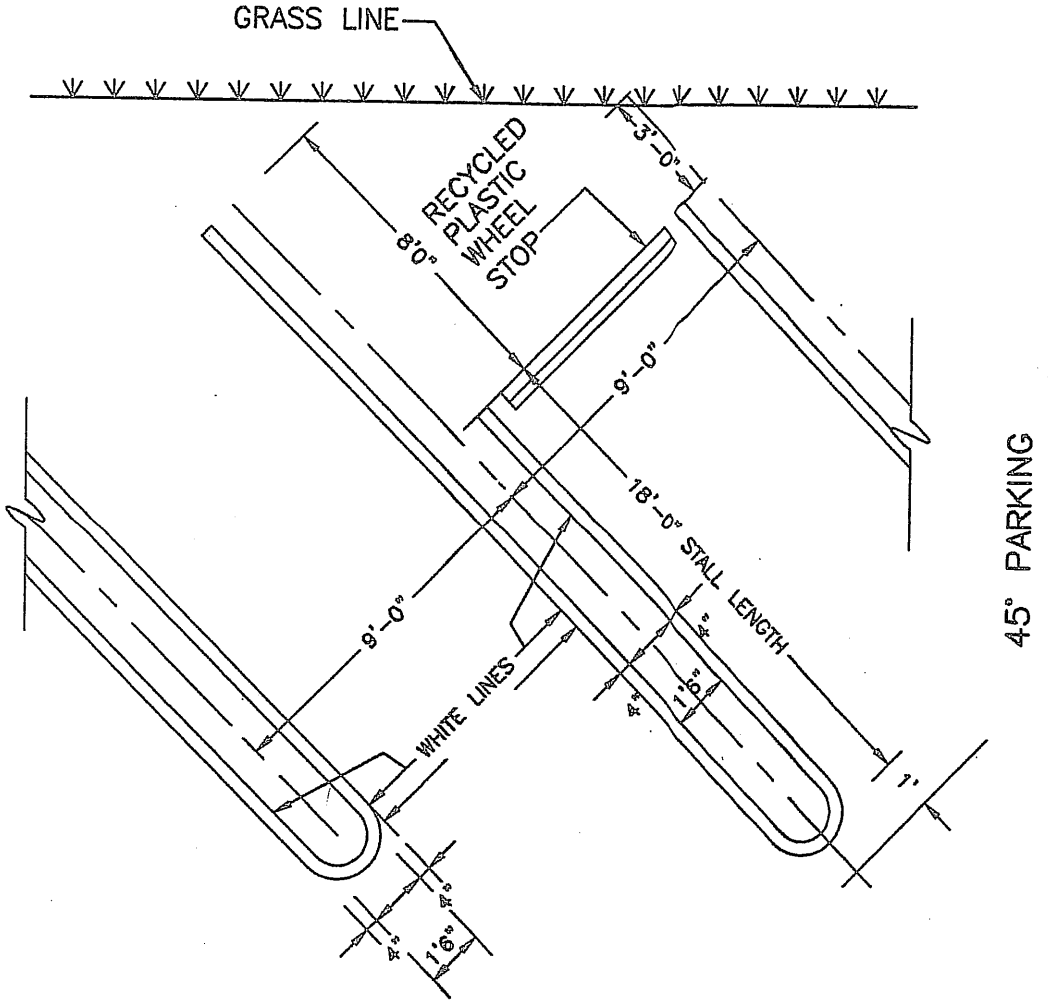
NOTES:

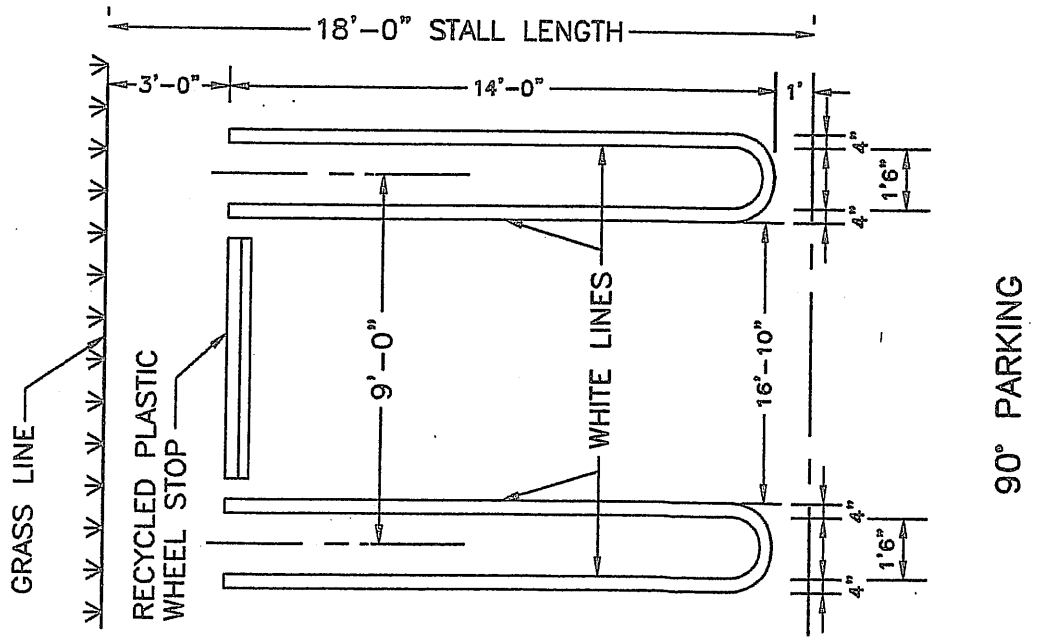
1. ALL PAVEMENT MARKINGS SHALL BE THERMOPLASTIC EXCEPT THE 4 INCH WHITE LINES ON EITHER SIDE OF A PARKING SPACE.

2. COMPACT SIZED PARKING SPACES ARE NOT PERMITTED.



EXTRUDED CURB DETAIL





CITY OF COOPER CITY ENGINEERING STANDARDS COOPER CITY, FLORIDA	SCALE: N.T.S. REVISED:	STANDARD ROAD DETAIL PARKING STALL STRIPING DETAIL	R-7A

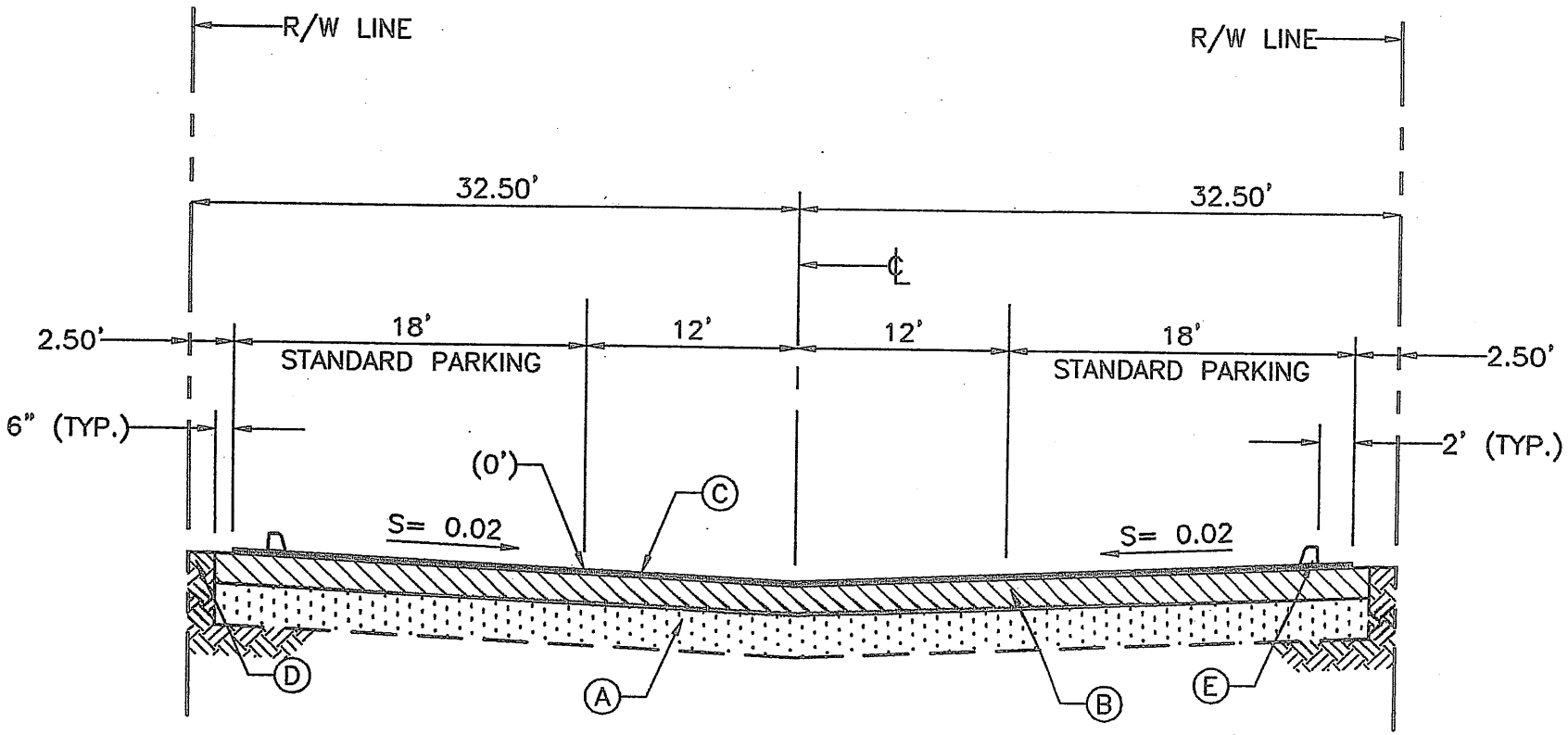
Revised October 2022

CITY OF COOPER CITY
ENGINEERING STANDARDS
COOPER CITY, FLORIDA

SCALE: N.T.S.
REVISED:

STANDARD ROAD DETAIL
PARKING AREA
INVERTED CROWN SECTION

R-8



Ⓐ 12" STABILIZED SUBGRADE, MIN. LBR 40, COMPACTED AT 95% MAXIMUM DENSITY PER AASTHO T-180.

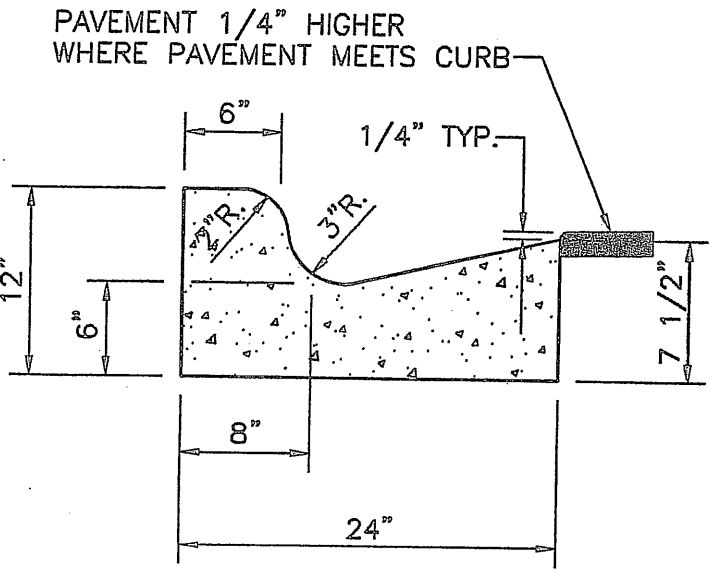
Ⓑ 8" LIMEROCK BASE (6" UNDER PARKING STALLS), MIN. LBR OF 100 WITH 60% OR MORE CARBONATE CONTENT, COMPACTED TO 98% MAX. DENSITY PER AASHTO T-180.

Ⓒ 1-1/2" ASPHALT SURFACE COURSE, TYPE S-III MODIFIED.

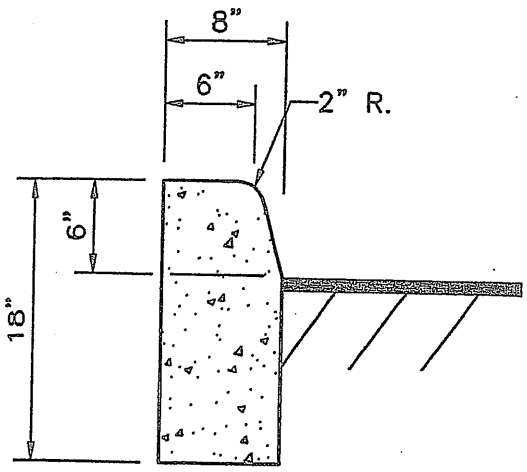
Ⓓ SOD

Ⓔ RECYCLED PLASTIC WHEELSTOP

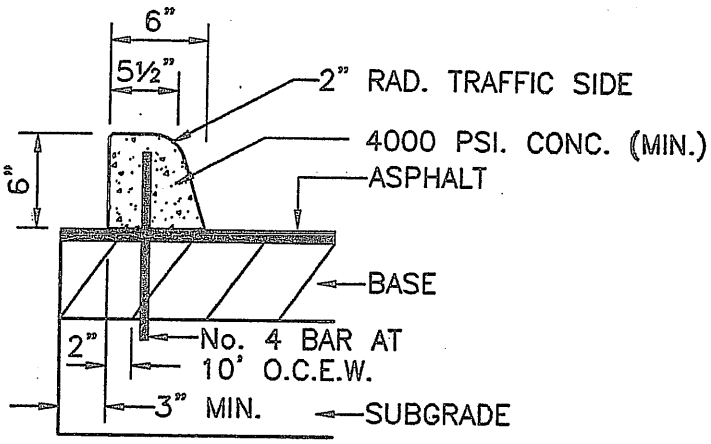
NOTE: MINIMUM PROFILE GRADE TO BE 0.02
INVERTED CROWN TO BE INCORPORATED WITH PROPER DRAINAGE SYSTEM AND TO BE APPROVED BY THE CITY ENGINEER.



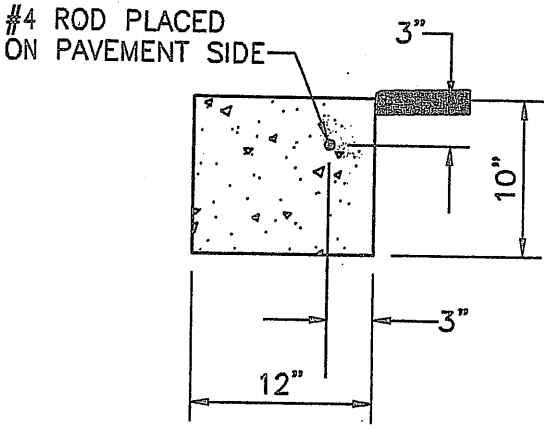
TYPE "F" CURB & GUTTER



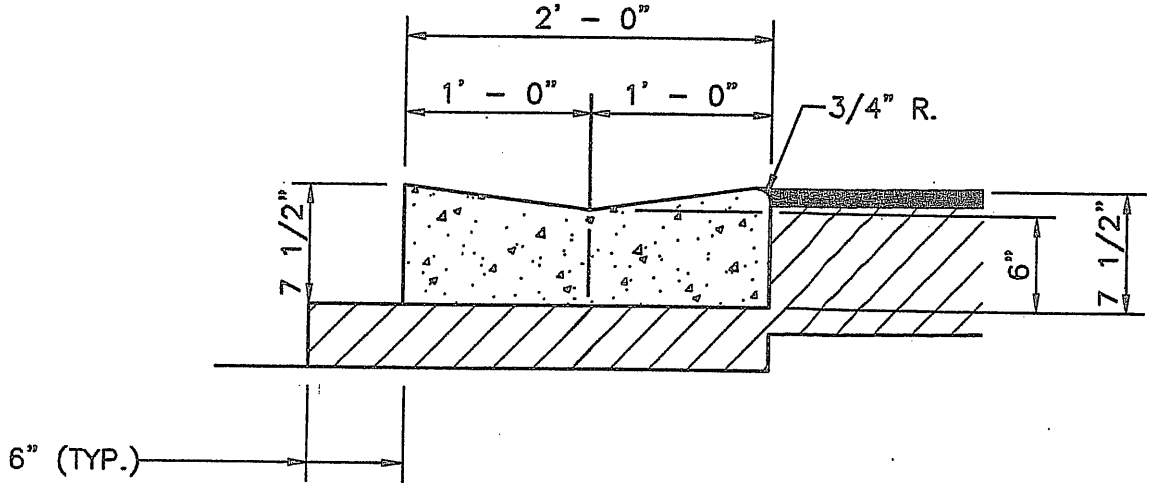
TYPE "D" CONCRETE CURB



EXTRUDED CURB DETAIL



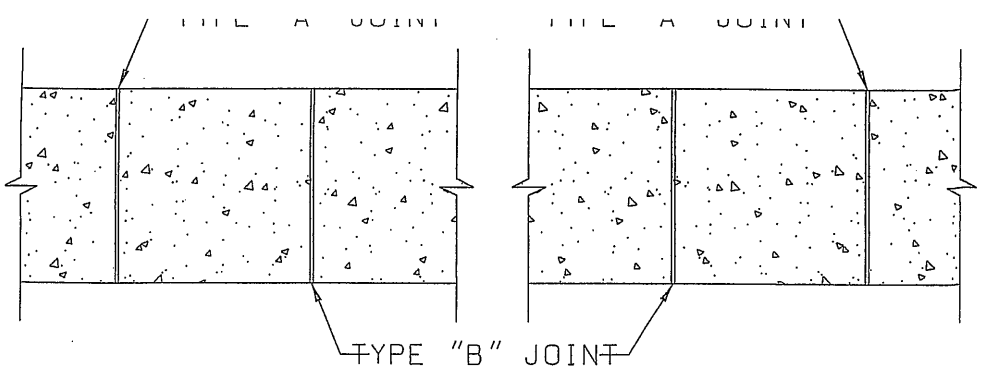
FLUSH HEADER CURB



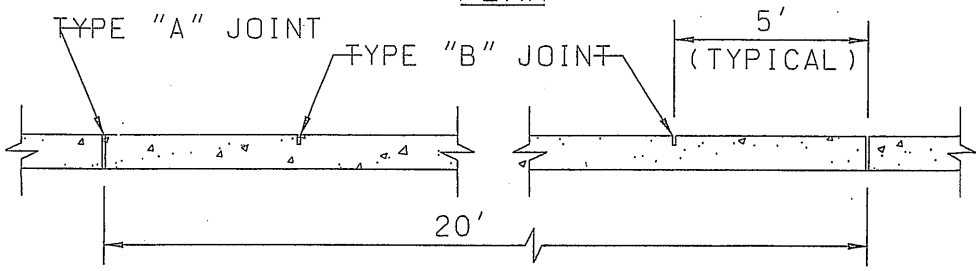
2' VALLEY GUTTER

CITY OF COOPER CITY ENGINEERING STANDARDS COOPER CITY, FLORIDA	SCALE: N.T.S. REVISED:	STANDARD ROAD DETAILS TYPICAL CONCRETE CURB & GUTTER SECTIONS	R-9

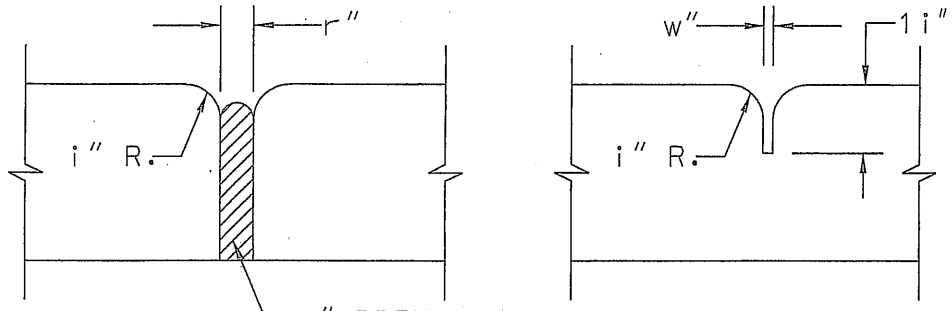
Revised October 2022



PLAN



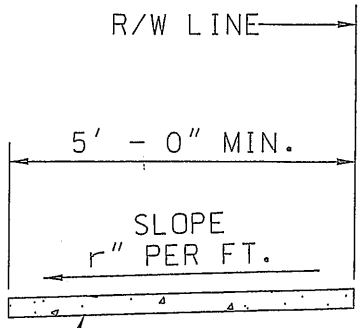
ELEVATION



TYPE ∠A'
(SAWED JOINTS)

TYPE ∠B'
(EXPANSION JOINTS)

SIDEWALK JOINTS



SECTION

NOTE:

SIDEWALK SHALL BE 3000 PSI, 4" THICK (NO WIRE MESH) EXCEPT IN DRIVEWAYS WHERE THE THICKNESS SHALL BE 6" WITH 10/10 WELDED WIRE MESH.

TABLE OF SIDEWALK THICKNESS	
RESIDENTIAL AREAS	4"
AT DRIVEWAYS AND OTHER AREAS	6"

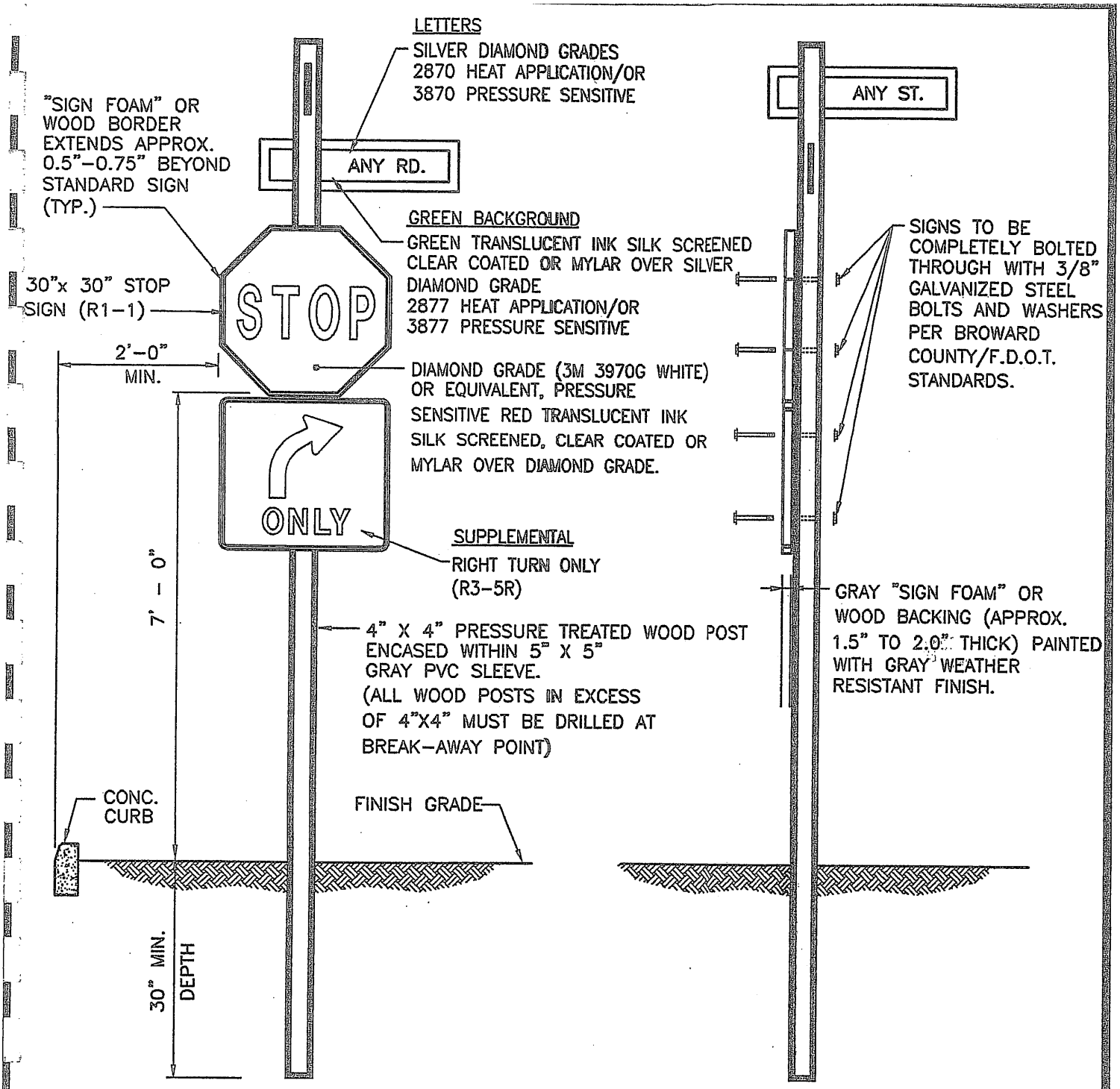
TABLE OF SIDEWALK WIDTHS	
SINGLE - FAMILY AREAS	5'
MULTI - FAMILY AREAS	5'
OTHER AREAS AS SPECIFIED BY THE CITY ENGINEER.	

TABLE OF SIDEWALK JOINTS	
TYPE	LOCATION
∠A'	20'-0" CENTER TO CENTER P.C. AND P.T. OF CURVES. JUNCTION OF EXISTING AND NEW SIDEWALKS. *WHERE SIDEWALK ABUTS CONCRETE CURBS, DRIVEWAYS, AND SIMILAR STRUCTURES.
∠B'	5'-0" CENTER TO CENTER ON SIDEWALKS.

*AT THE DISCRETION OF THE ENGINEER.

CITY OF COOPER CITY ENGINEERING STANDARDS COOPER CITY, FLORIDA	SCALE: N.T.S. REVISED:	STANDARD ROAD DETAIL SIDEWALK JOINT DETAILS & TYPICAL CONSTRUCTION	R-10

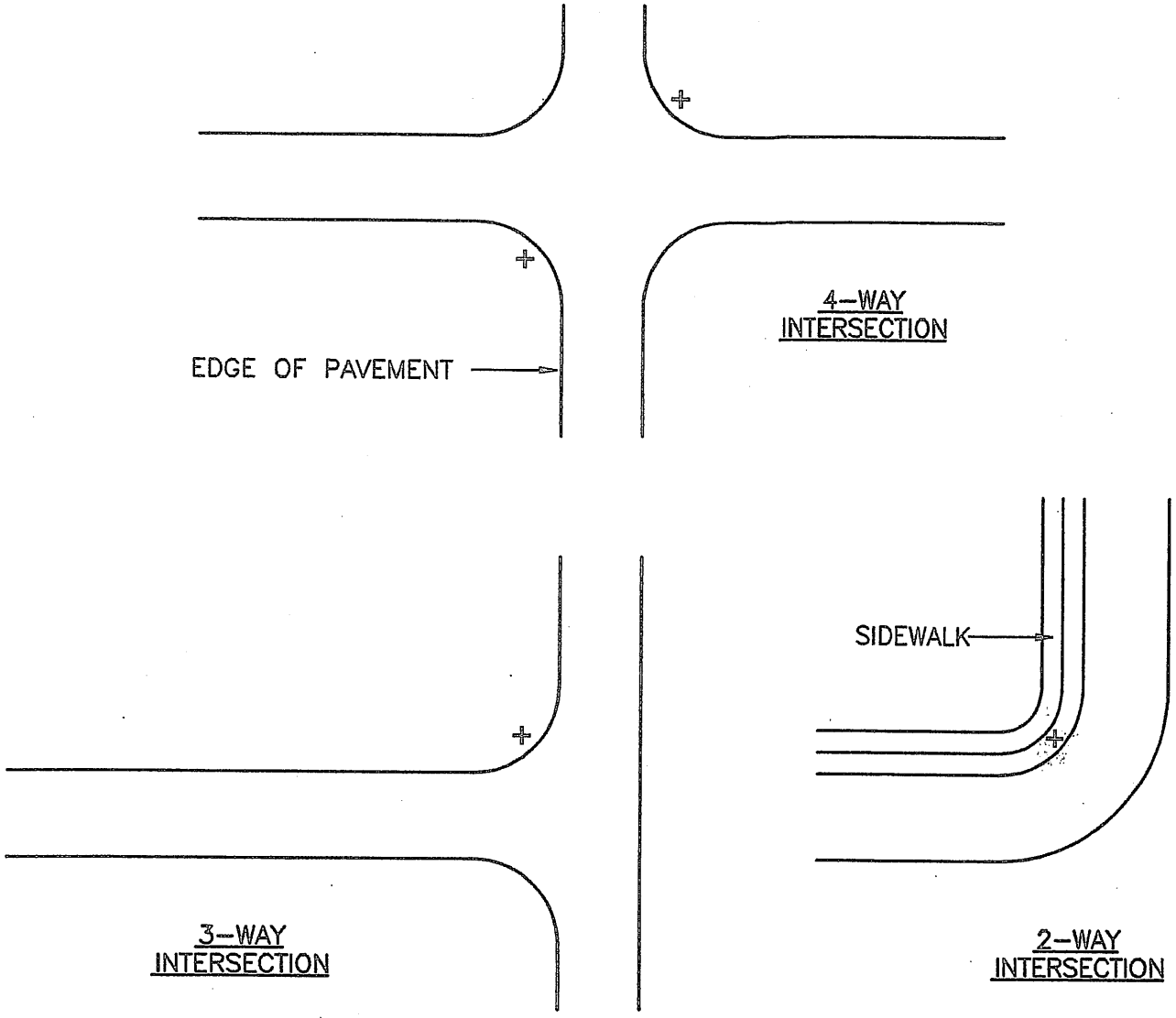
Revised October 2022



NOTES:

1. ALL SIGNS TO CONSIST OF HIGH INTENSITY REFLECTIVE MATERIALS.
2. INSTALLATION MUST MAINTAIN SIZE, SHAPE AND COLOR OF STANDARD M.U.T.C.D. SIGN. ALL SIGNS TO BE INSTALLED IN CONFORMANCE WITH THE M.U.T.C.D. AND ALL APPLICABLE BROWARD COUNTY AND F.D.O.T. STANDARDS.
3. SIMILAR, BUT SOMEWHAT DIFFERENT AESTHETIC INSTALLATIONS MAY BE IMPLEMENTED ON PRIVATE PROPERTY SUBJECT TO CITY APPROVAL.

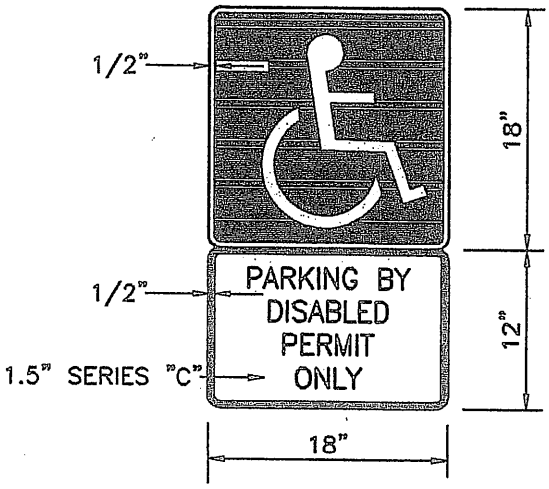
CITY OF COOPER CITY ENGINEERING STANDARDS COOPER CITY, FLORIDA	SCALE: N.T.S. REVISED:	STANDARD ROAD DETAIL TYPICAL STOP SIGN AND STREET NAME ASSEMBLY	R-11



NOTES:

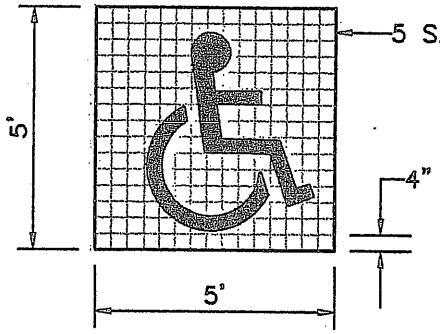
1. WHERE SIDEWALKS EXIST, INSTALL SIGNS ADJACENT TO SIDEWALK EDGE ON STREET SIDE.
2. WHERE SIDEWALKS DO NOT EXIST, INSTALL SIGNS 8" FROM PAVEMENT EDGE.
3. SIGNS ARE TO BE LOCATED AT CENTER OF PAVEMENT ARCS.

CITY OF COOPER CITY ENGINEERING STANDARDS COOPER CITY, FLORIDA	SCALE: N.T.S. REVISED:	STANDARD ROAD DETAIL STREET SIGN LOCATION	R–12



FTP-26

NOTE: ALL LETTERS ARE 1.5" SERIES AT 1.5" SPACING.

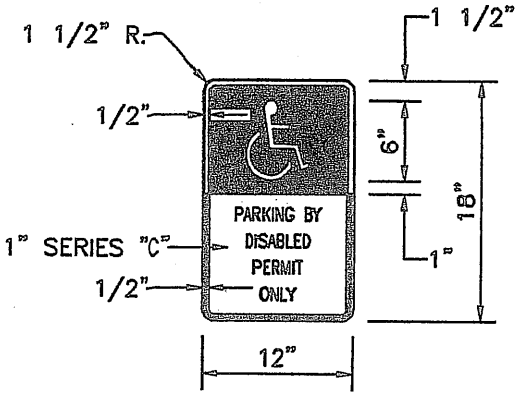


NOTE:

PROVIDE PAVEMENT SYMBOL IN HANDICAPPED PARKING SPACES, THE SYMBOL SHALL BE BLUE IN COLOR.

ALL RAMPS / SPACES TO MEET A.D.A.

RE: F.D.O.T. INDEX 1755.

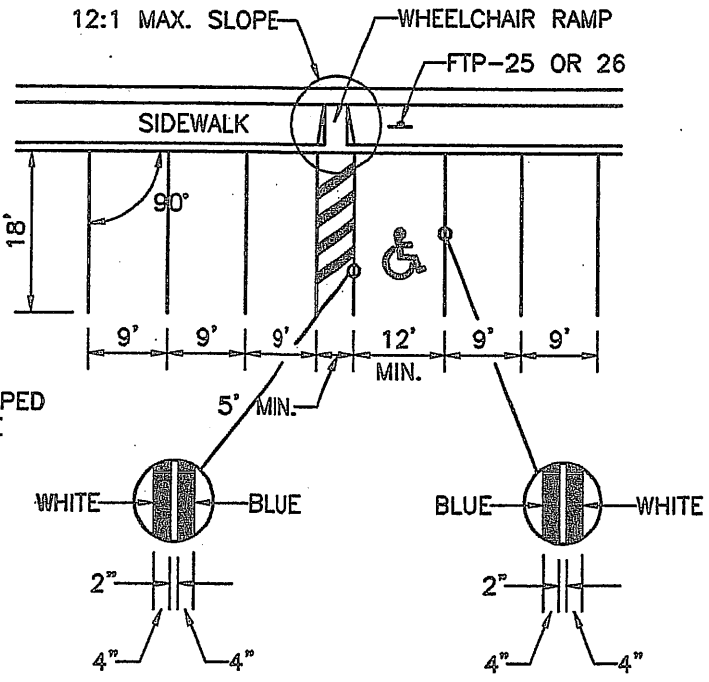


FTP-25

NOTE: ALL LETTERS ARE 1" SERIES AT 1" SPACING.

NOTES:

1. TOP PORTION OF FTP-25 & 26 SHALL HAVE A REFLECTIVE BLUE BACKGROUND WITH WHITE REFLECTIVE SYMBOL AND BORDER.
2. BOTTOM PORTION SHALL HAVE A REFLECTIVE WHITE BACKGROUND WITH BLACK OPAQUE LEGEND AND BORDER.
3. FTP-25 & 26 MAY BE FABRICATED ON ONE PANEL OR TWO.
4. FTP-25 IS FOR USE IN AREAS WHERE SPACE IS LIMITED.



CITY OF COOPER CITY ENGINEERING STANDARDS COOPER CITY, FLORIDA	SCALE: N.T.S. REVISED:	STANDARD ROAD DETAIL HANDICAPPED PARKING SIGN & STRIPING DETAIL	R-13

"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.

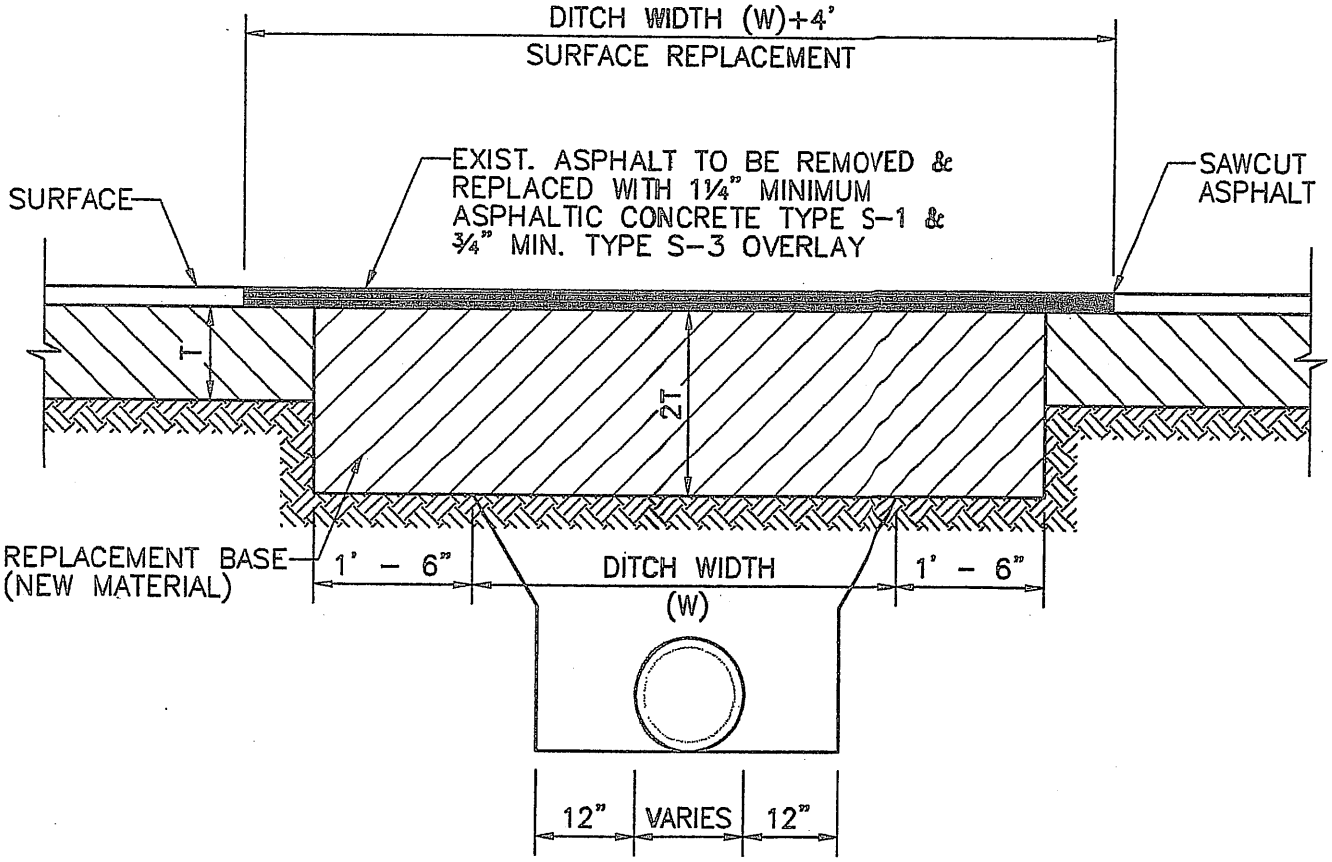
6. ROADWAY BASE MATERIAL SHALL BE COMPACTED TO A MINIMUM OF 98% OF MAXIMUM DRY DENSITY, AS DETERMINED BY A.A.S.H.T.O. T-180 (MODIFIED PROCTOR TEST). SUBGRADE MATERIAL UNDER PAVED AREAS SHALL BE COMPACTED TO A MINIMUM OF 95% OF MAXIMUM DRY DENSITY. SHOULDER AREAS AND SWALE AREAS BEYOND SHOULDERS SHALL 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.

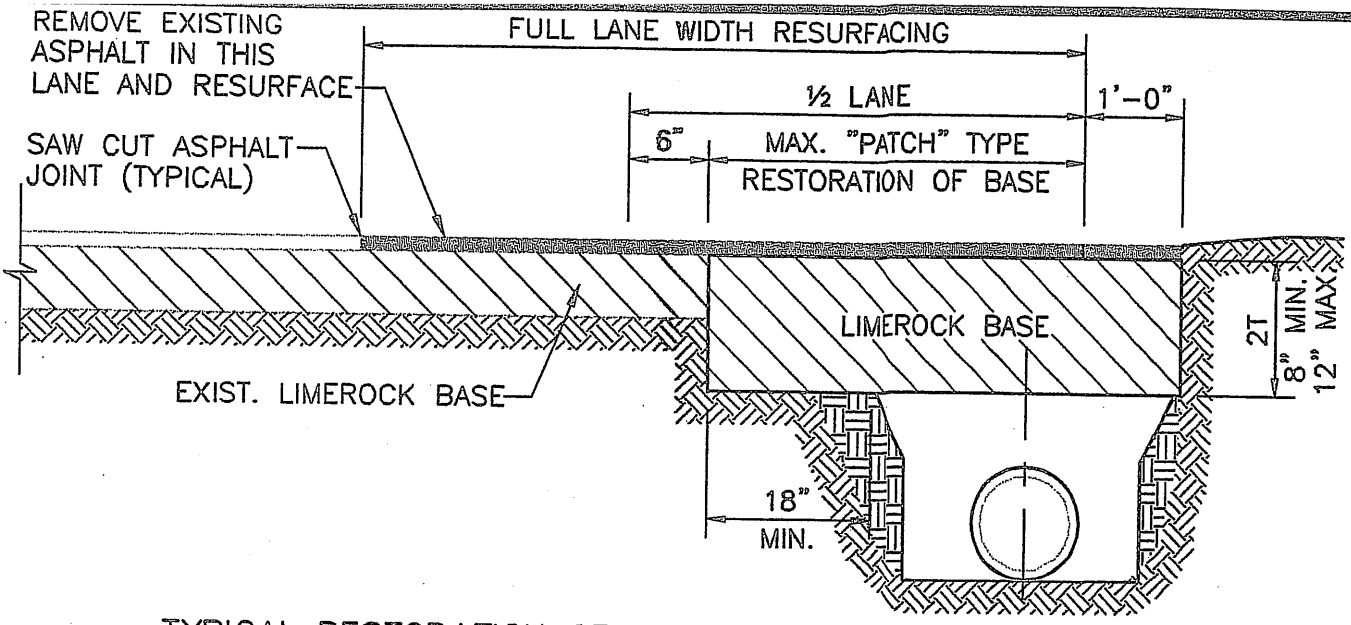
CITY OF COOPER CITY ENGINEERING STANDARDS COOPER CITY, FLORIDA	SCALE: N.T.S. REVISED:	STANDARD ROAD DETAIL PROCEDURE FOR RESTORATION OF FLEXIBLE PAVEMENT	R-14



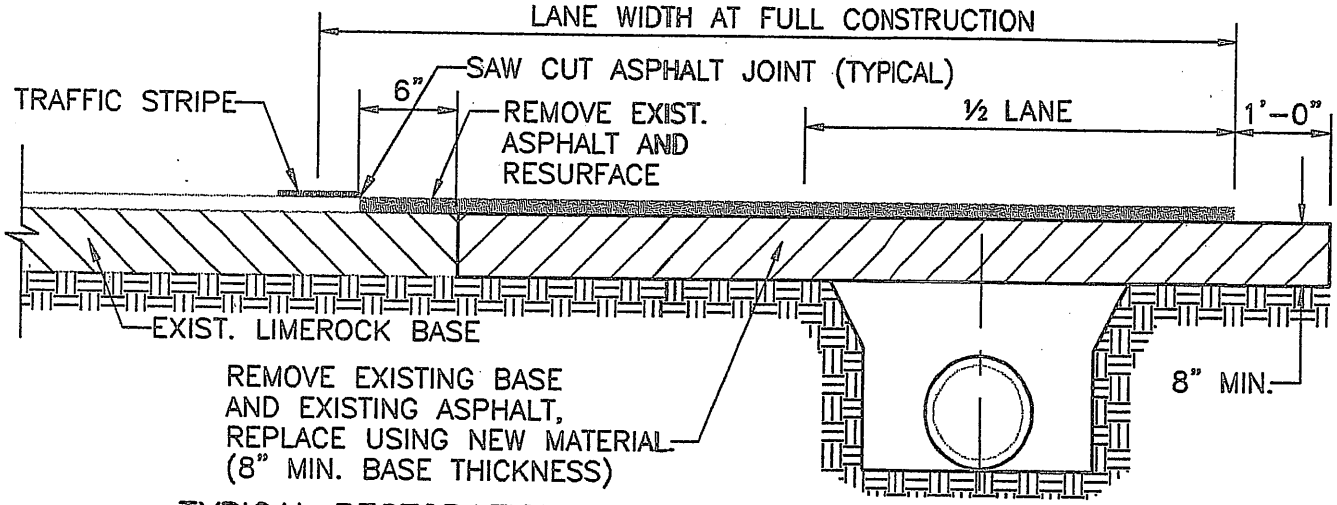
NOTES:

1. REPLACED BASE MATERIAL OVER DITCH SHALL BE TWICE THE THICKNESS OF THE ORIGINAL BASE. (6" MIN. & 18" MAX.)
2. BASE MATERIAL SHALL BE PLACED IN 6" LAYERS AND EACH LAYER COMPACTED TO 98% DENSITY PER A.A.S.H.T.O. T-180.
3. SUBGRADE MATERIAL SHALL BE PLACED IN A 12" LAYER AND COMPACTED TO 95% DENSITY PER A.A.S.H.T.O. T-180.
4. ASPHALT CONCRETE PAVEMENT JOINTS SHALL BE MECHANICALLY SAWED.
5. BASE MATERIAL SHALL HAVE A MINIMUM LBR OF 100 AND A MINIMUM CARBONATE CONTENT OF 70% (60% FOR LOCAL STREETS).
6. IF THE DITCH IS FILLED TEMPORARILY, IT SHALL BE COVERED WITH A 2" THICK ASPHALTIC CONCRETE PATCH TO KEEP THE FILL MATERIAL FROM RAVELING, UNTIL PLACED WITH A PERMANENT PATCH.

CITY OF COOPER CITY ENGINEERING STANDARDS COOPER CITY, FLORIDA	SCALE: N.T.S. REVISED:	STANDARD ROAD DETAIL PAVEMENT RESTORATION PERPENDICULAR CROSSING	R-15



TYPICAL RESTORATION OF LESS THAN ½ LANE OF ROCK BASE



TYPICAL RESTORATION OF ½ 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 98% 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.

CITY OF COOPER CITY ENGINEERING STANDARDS COOPER CITY, FLORIDA	SCALE: N.T.S. REVISED:	STANDARD ROAD DETAIL PAVEMENT RESTORATION LONGITUDINAL	R-16

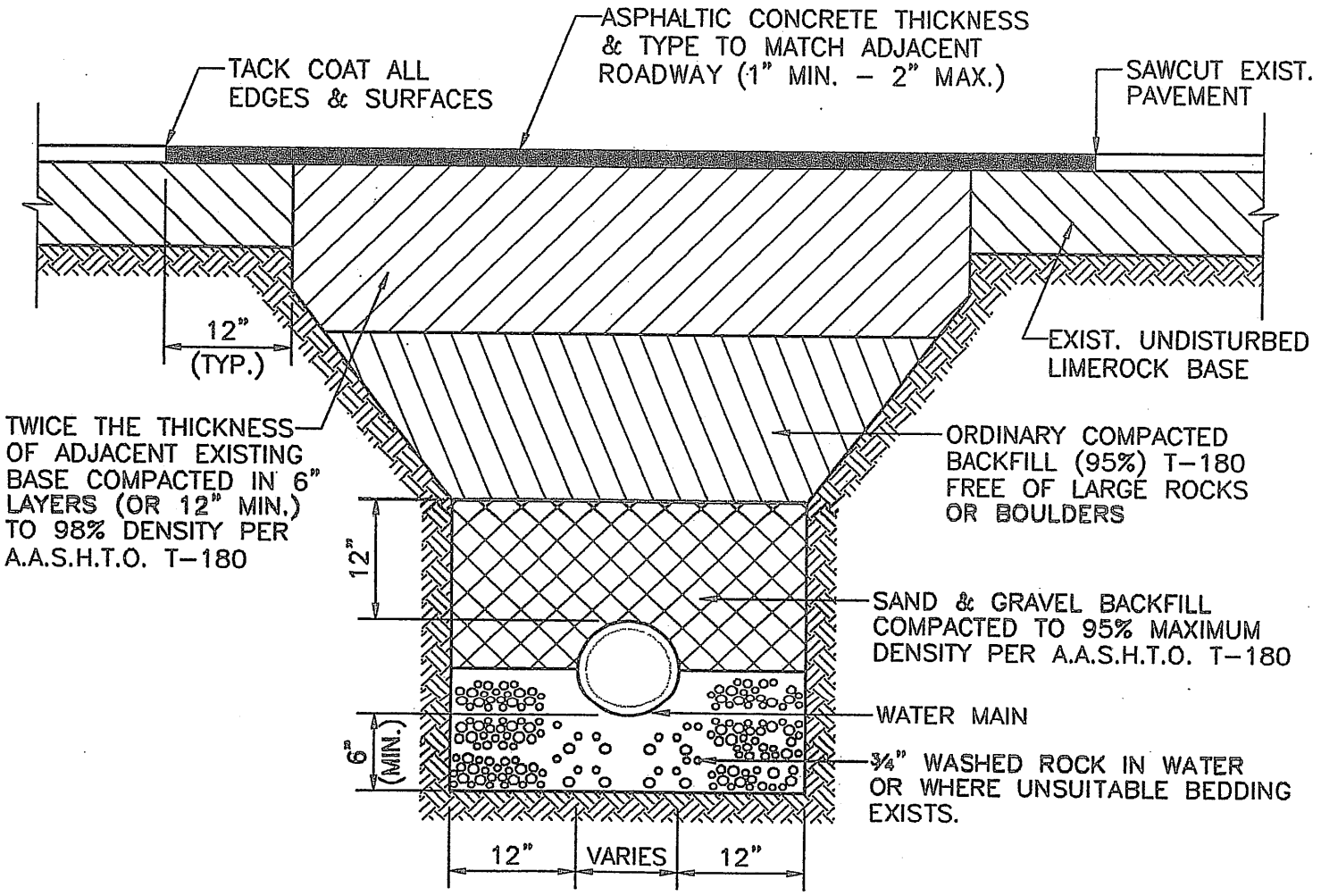
Revised October 2022

CITY OF COOPER CITY
ENGINEERING STANDARDS
COOPER CITY, FLORIDA

SCALE: N.T.S.
REVISED:

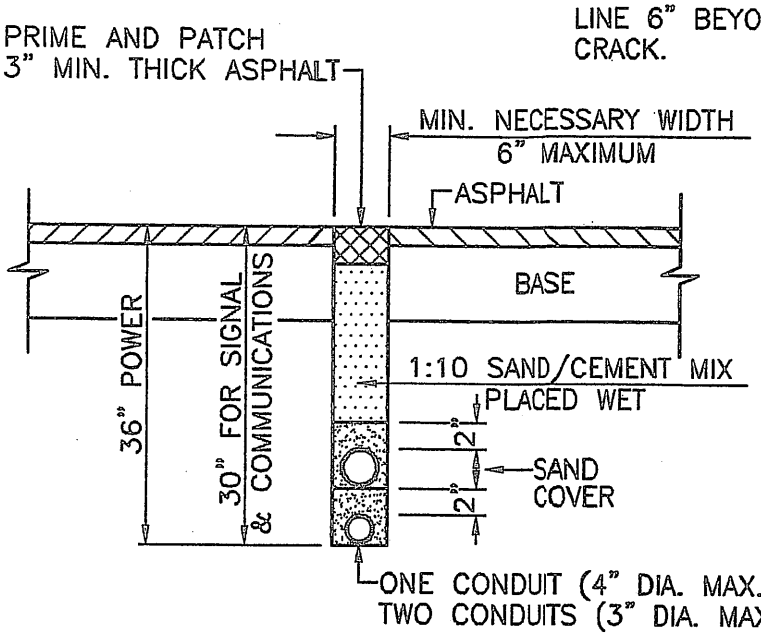
STANDARD ROAD DETAIL
PAVEMENT RESTORATION
LOCAL ROADS–WATER MAIN

R–17



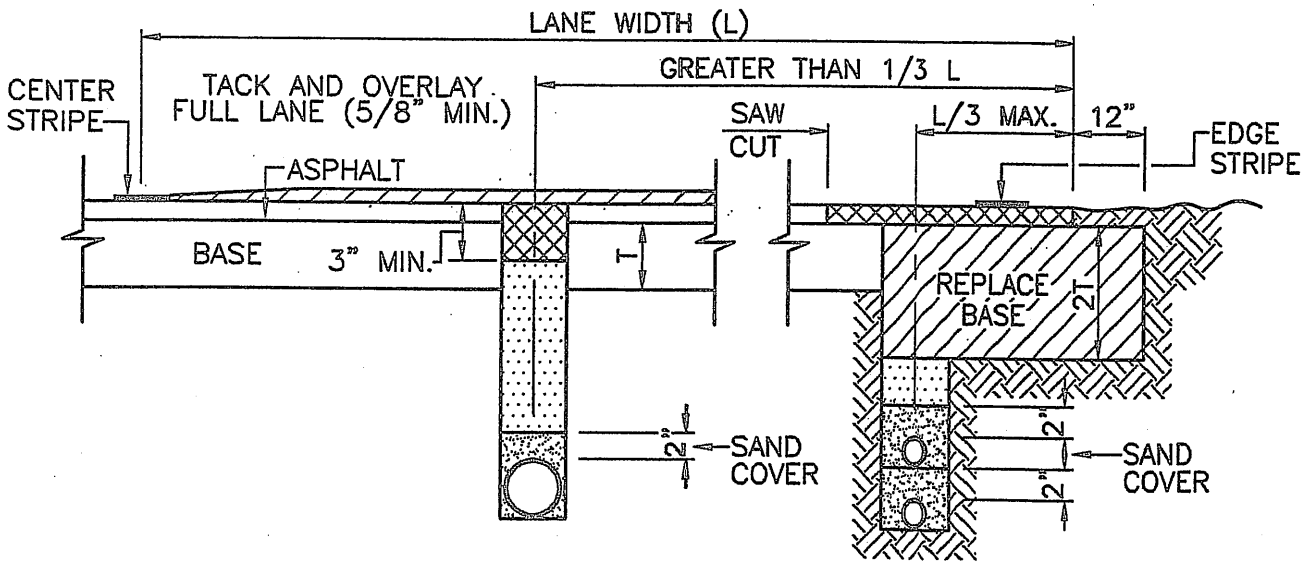
NOTE:

IF CRACKS APPEAR IN ASPHALT ADJACENT TO CUT, EDGES MUST BE SAW CUT TO A STRAIGHT LINE 6" BEYOND THE FURTHEST CRACK.



DETAIL "A"

MINIMUM UTILITY CROSSING OF ROADWAY



DETAIL "B" DETAIL "C"

MINIMUM PARALLEL UTILITY INSTALLATION

CITY OF COOPER CITY ENGINEERING STANDARDS COOPER CITY, FLORIDA	SCALE: N.T.S. REVISED:	STANDARD ROAD DETAIL PAVEMENT RESTORATION FOR DIRECT BURIAL CABLE OR CONDUIT	R-18

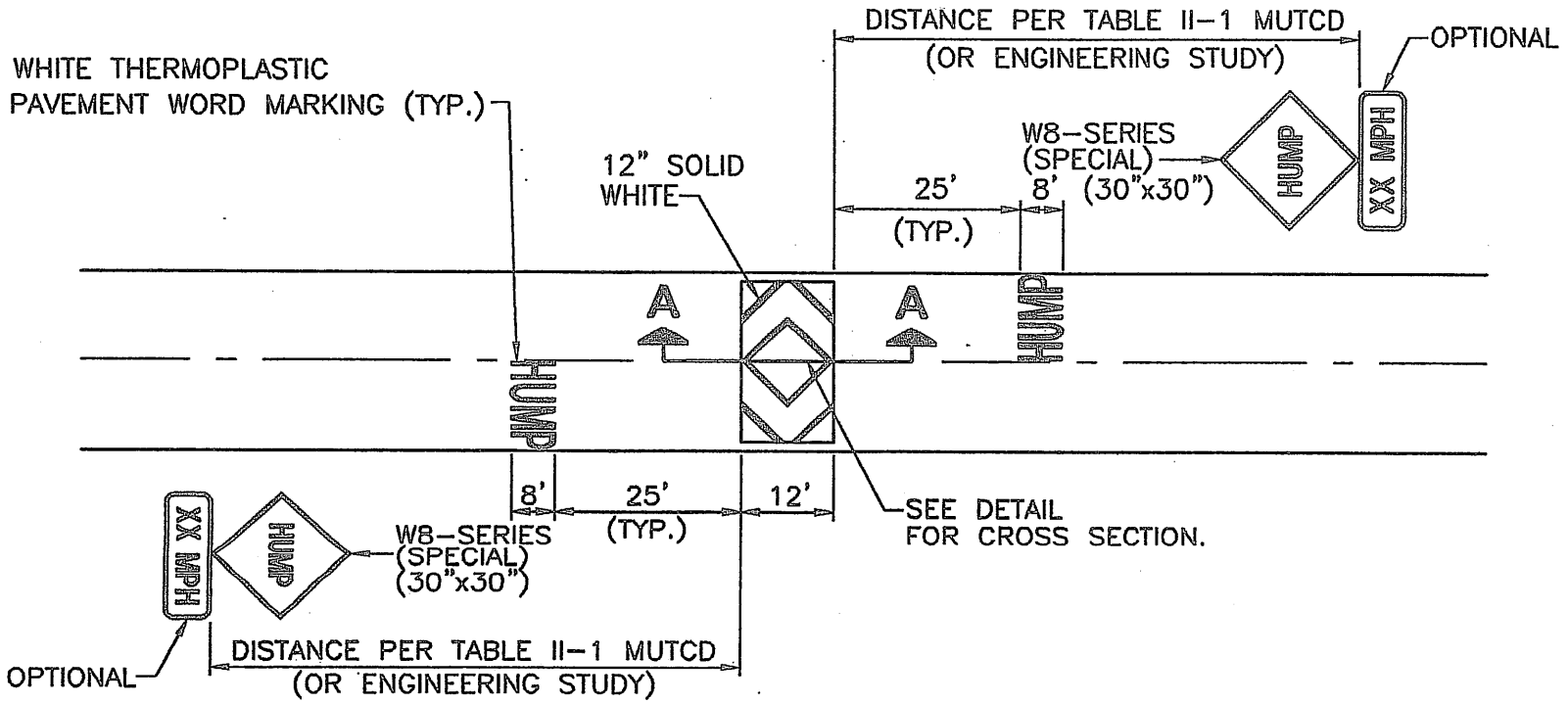
Revised October 2022

CITY OF COOPER CITY
ENGINEERING STANDARDS
COOPER CITY, FLORIDA

SCALE: N.T.S.
REVISED:

SPEED HUMP DETAIL
LOW SPEED APPLICATION
FOR POSTED SPEED LESS
THAN 25 MPH

R-19



NOTE:

ALL SIGNS TO BE CONSTRUCTED OF
3M DIAMOND GRADE BACKING OR EQUIVALENT.

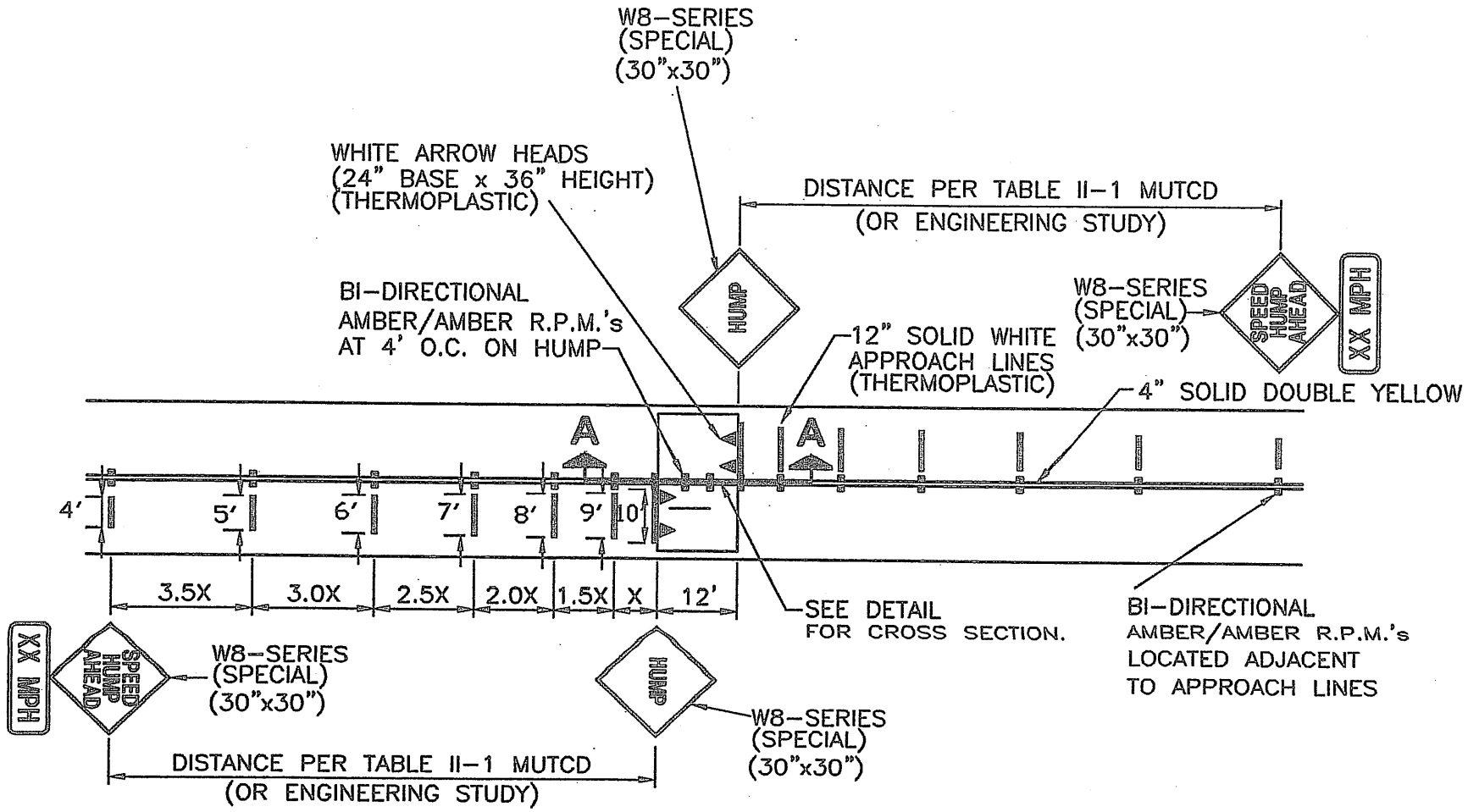
Revised October 2022

CITY OF COOPER CITY
ENGINEERING STANDARDS
COOPER CITY, FLORIDA

SCALE: N.T.S.
REVISED:

SPEED HUMP DETAIL
APPLICATION FOR POSTED OR 85 PERCENTILE SPEED 25 MPH OR GREATER

R-20



NOTE:

SPACING ("X") OF APPROACH LINES AT DISCRETION OF ENGINEER.
ALL SIGNS ARE TO BE CONSTRUCTED OF 3M DIAMOND GRADE BACKING OR EQUIVALENT

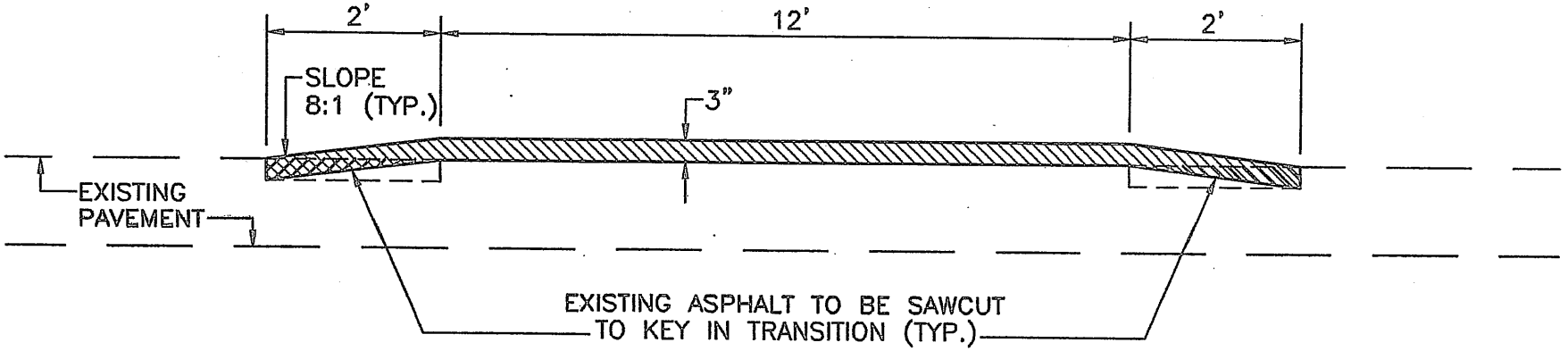
Revised October 2022

CITY OF COOPER CITY
ENGINEERING STANDARDS
COOPER CITY, FLORIDA

SCALE: N.T.S.
REVISED:

STANDARD DETAIL
SPEED HUMPS

R-21



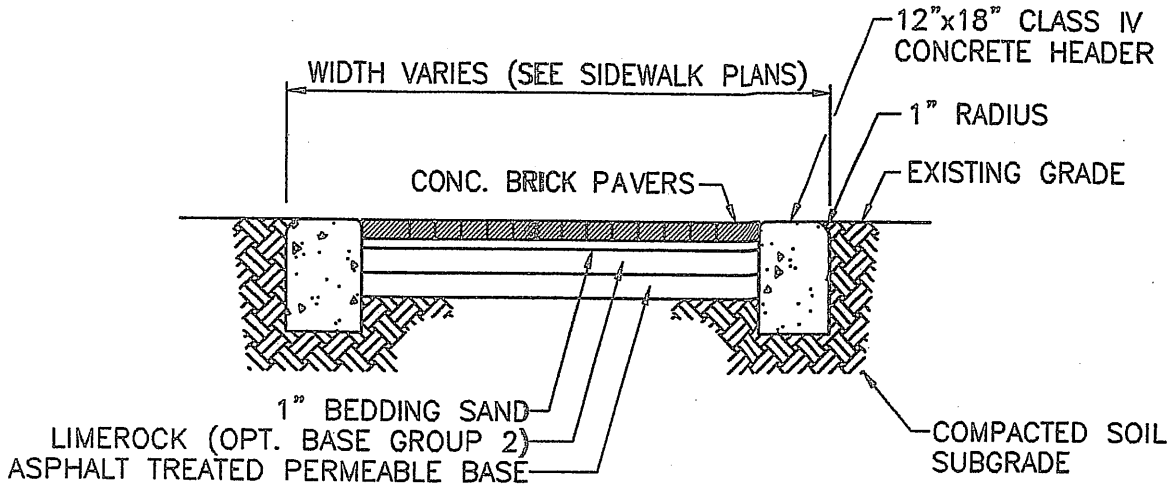
SECTION A-A

NOTE:

CONSIDERATION AND APPROVAL FOR INSTALLATION OF SPEED HUMPS AND OTHER TRAFFIC CALMING DEVICES SHALL BE IN ACCORDANCE WITH THE GENERAL CRITERIA AND PROCEDURES OUTLINED IN THE "BROWARD COUNTY NEIGHBORHOOD TRAFFIC MANAGEMENT MANUAL" AS FINAL APPROVAL IS SUBJECT TO ENGINEERING PERMIT REVIEW AND APPROVAL BY THE CITY ENGINEER, BROWARD SHERIFF'S OFFICE AND FIRE RESCUE DIVISION.

CONSTRUCTION MATERIALS:

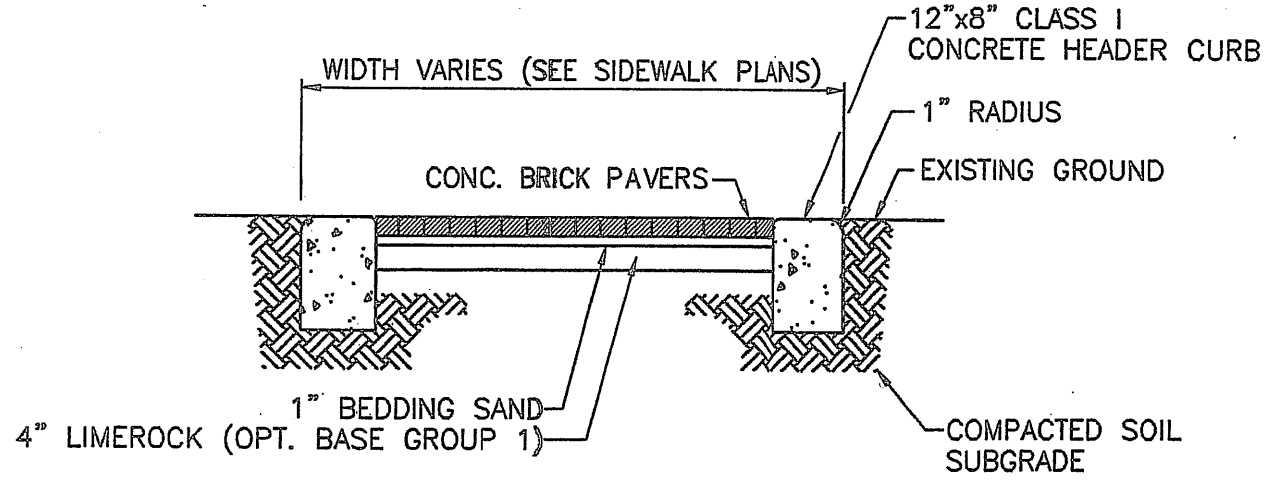
THE CONSTRUCTION OF THE HUMP CAN BE PRECAST CONCRETE SECTIONS, CONCRETE CAST ON SITE, ASPHALT OR BRICK / CONCRETE PAVERS.



BRICK PAVER CROSSWALK SECTION

NOTES:

1. BEDDING SAND TO CONFORM TO ASTM C 33 COMMONLY KNOWN AS MANUFACTURED CONCRETE SAND. DO NOT USE MASONRY SAND.
2. PROVIDE 1/16" WIDE x 1/4" DEEP SAWED CONTRACTION JOINTS AT 10' CENTERS (MAX.) NO LATER THAN 12 HOURS AFTER THE CONCRETE TAKES INITIAL SET. COMPARABLE TOOLED JOINTS MAY BE PROVIDED IN LIEU OF SAWED JOINTS.



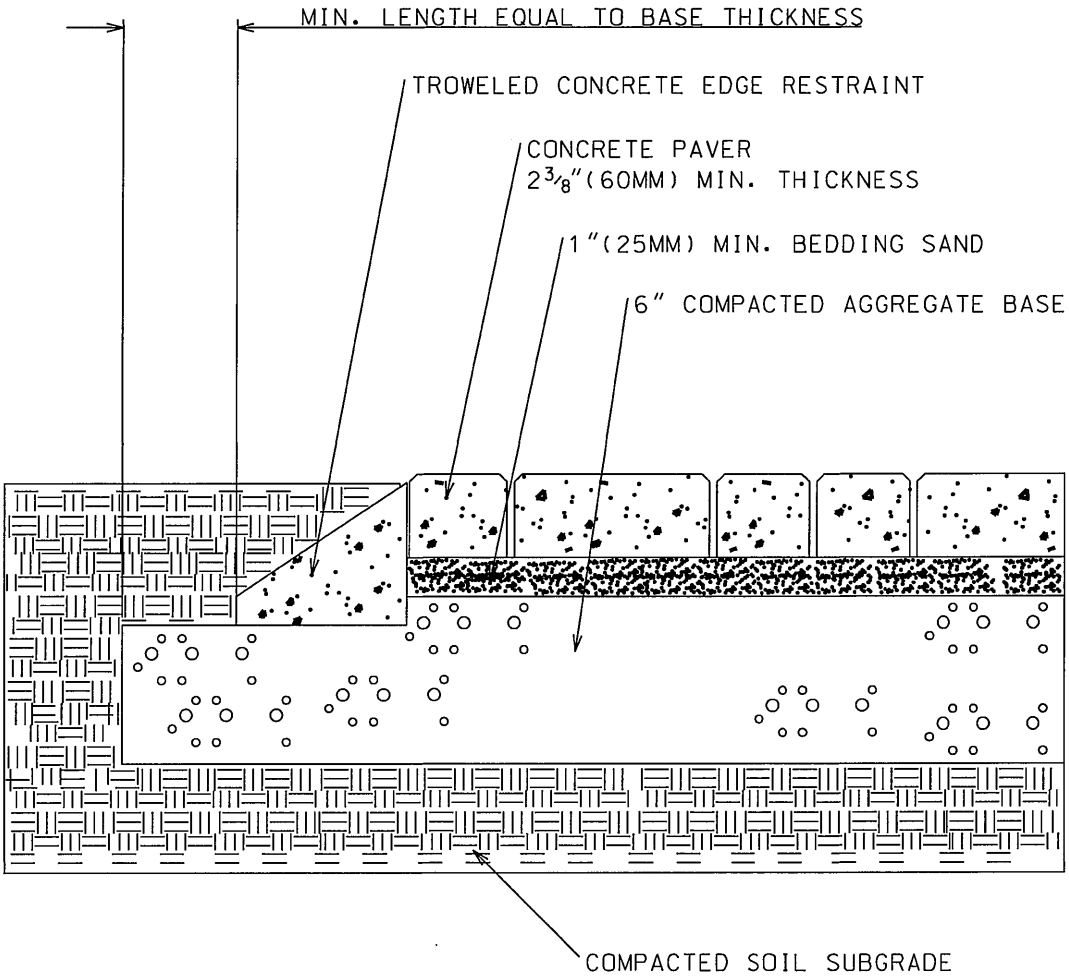
BRICK PAVER SIDEWALK SECTION

NOTES:

1. BEDDING SAND TO CONFORM TO ASTM C 33 COMMONLY KNOWN AS MANUFACTURED CONCRETE SAND. DO NOT USE MASONRY SAND.
2. THIS SIDEWALK SECTION IS FOR THE NON-VEHICULAR SIDEWALK AREAS ONLY.
3. PROVIDE 1/16" WIDE x 1/4" DEEP SAWED CONTRACTION JOINTS IN CONCRETE AT 10' CENTERS (MAX.) NO LATER THAN 12 HOURS AFTER INITIAL SET. COMPARABLE TOOLED JOINTS MAY BE PROVIDED IN LIEU OF SAWED JOINTS.

CITY OF COOPER CITY ENGINEERING STANDARDS COOPER CITY, FLORIDA	SCALE: N.T.S. REVISED:	STANDARD DETAIL BRICK PAVERS	R-22

MINIMUM SETBACK FROM PROPERTY LINE:
DRIVEWAY: 5FT FROM INTERIOR SIDE
-WALKWAY OR DECK: 5FT FROM REAR/3FT SIDE YARD



NOTES:

1. USE 5:1(AGGREGATE:CEMENT)RATIO MIX FOR CONCRETE EDGE RESTRAINT
2. REINFORCING MAY BE REQUIRED IN THE EDGE RESTRAINT

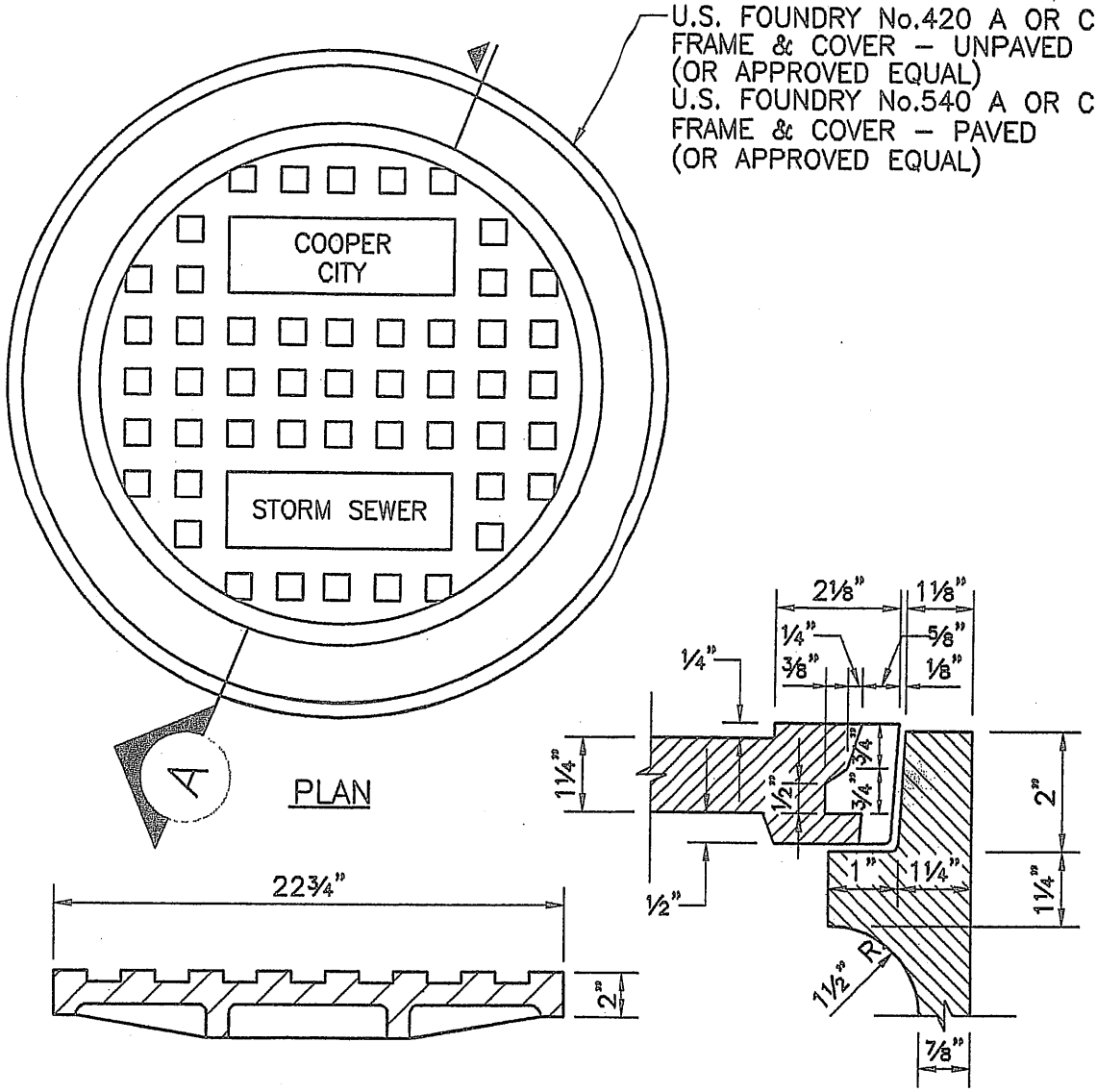
CITY OF COOPER CITY ENGINEERING STANDARDS COOPER CITY, FLORIDA	SCALE: N.T.S. REVISED: AUG2018	RESIDENTIAL PAVER DRIVEWAY OR WALKWAY W/ TROWELED CONCRETE EDGE RESTRAINT	R-23

STANDARD DRAINAGE DETAILS

SECTION 5: STANDARD DETAILS

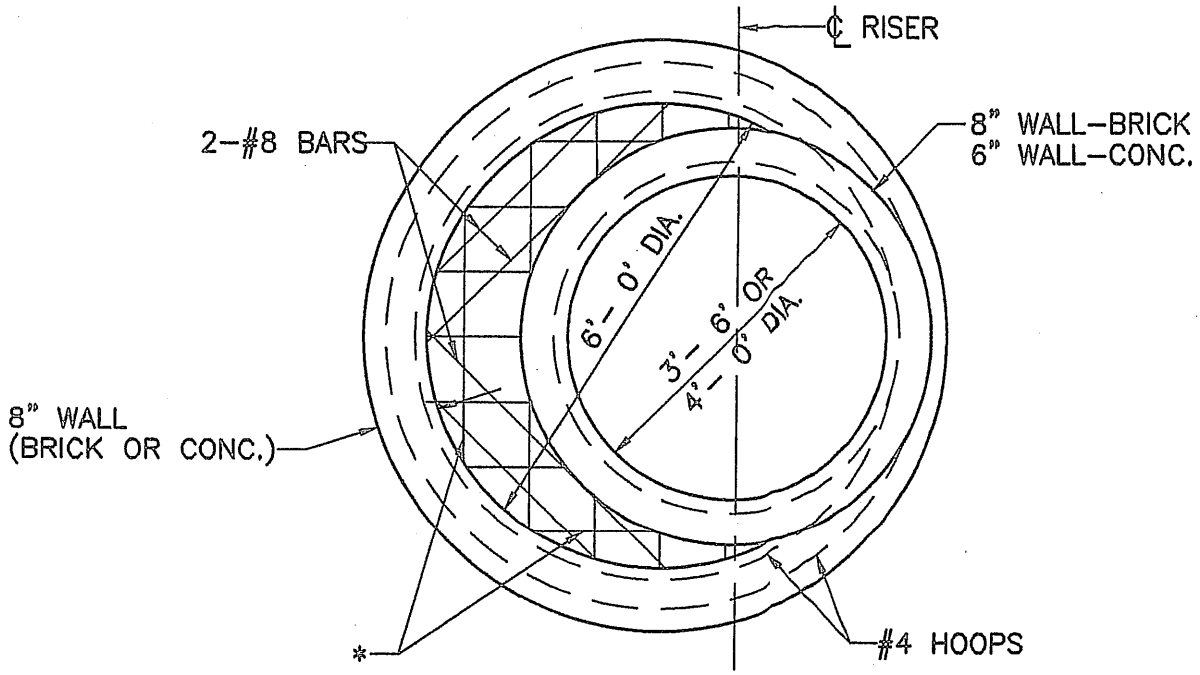
5.02 STANDARD DRAINAGE DETAILS

Detail No.	Description
D-1	Storm Sewer Manhole Frame and Cover
D-2	Inlet, Manhole & Junction Box, Type J
D-3	Inlet, Manhole & Junction Box, Type J
D-4	Inlet, Manhole & Junction Box, Type P
D-5	Inlet, Manhole & Junction Box, Types P & J, General Notes
D-6	Junction Box, Manhole Top & Precast Concrete Riser
D-7	Storm Sewer Inlets
D-8	Concrete to Metal Pipe Jacket
D-9	Pollution Retardant Baffle
D-10	Exfiltration Trench

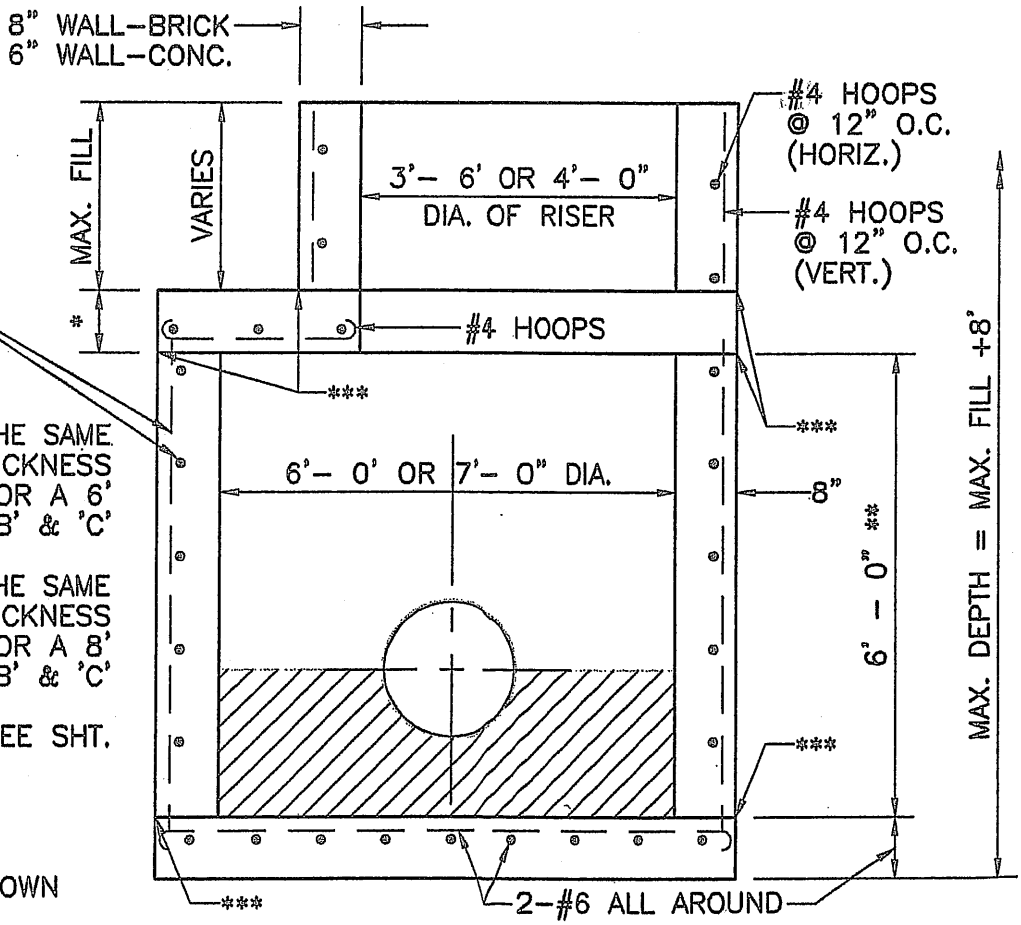


CITY OF COOPER CITY ENGINEERING STANDARDS COOPER CITY, FLORIDA	SCALE: N.T.S. REVISED:	STANDARD STORM DRAINAGE DETAIL STORM SEWER MANHOLE FRAME AND COVER	D–1

Revised October 2022



PLAN



SECTION

ALTERNATE "A"

ONE CAGE

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

NOTES:

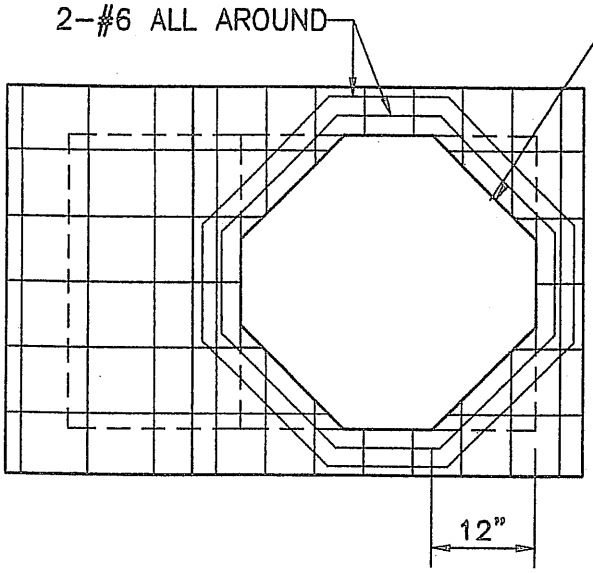
1. FOR 6' DIA. BOX USE THE SAME SLAB REINFORCING, THICKNESS AND FILL HEIGHT AS FOR A 6' WIDTH BOX ALTERNATE 'B' & 'C'
2. FOR 7' DIA. BOX USE THE SAME SLAB REINFORCING, THICKNESS AND FILL HEIGHT AS FOR A 8' WIDTH BOX ALTERNATE 'B' & 'C'
3. FOR GENERAL NOTES SEE SHT. D–7

* SEE SHT. D–6

** UNLESS OTHERWISE SHOWN ON PLANS.

*** CONSTRUCTION JOINT PERMITTED.

CITY OF COOPER CITY ENGINEERING STANDARDS COOPER CITY, FLORIDA	SCALE: N.T.S. REVISED:	STANDARD STORM DRAINAGE DETAIL INLET, MANHOLE & JUNCTION BOX (TYPE J)	D–2



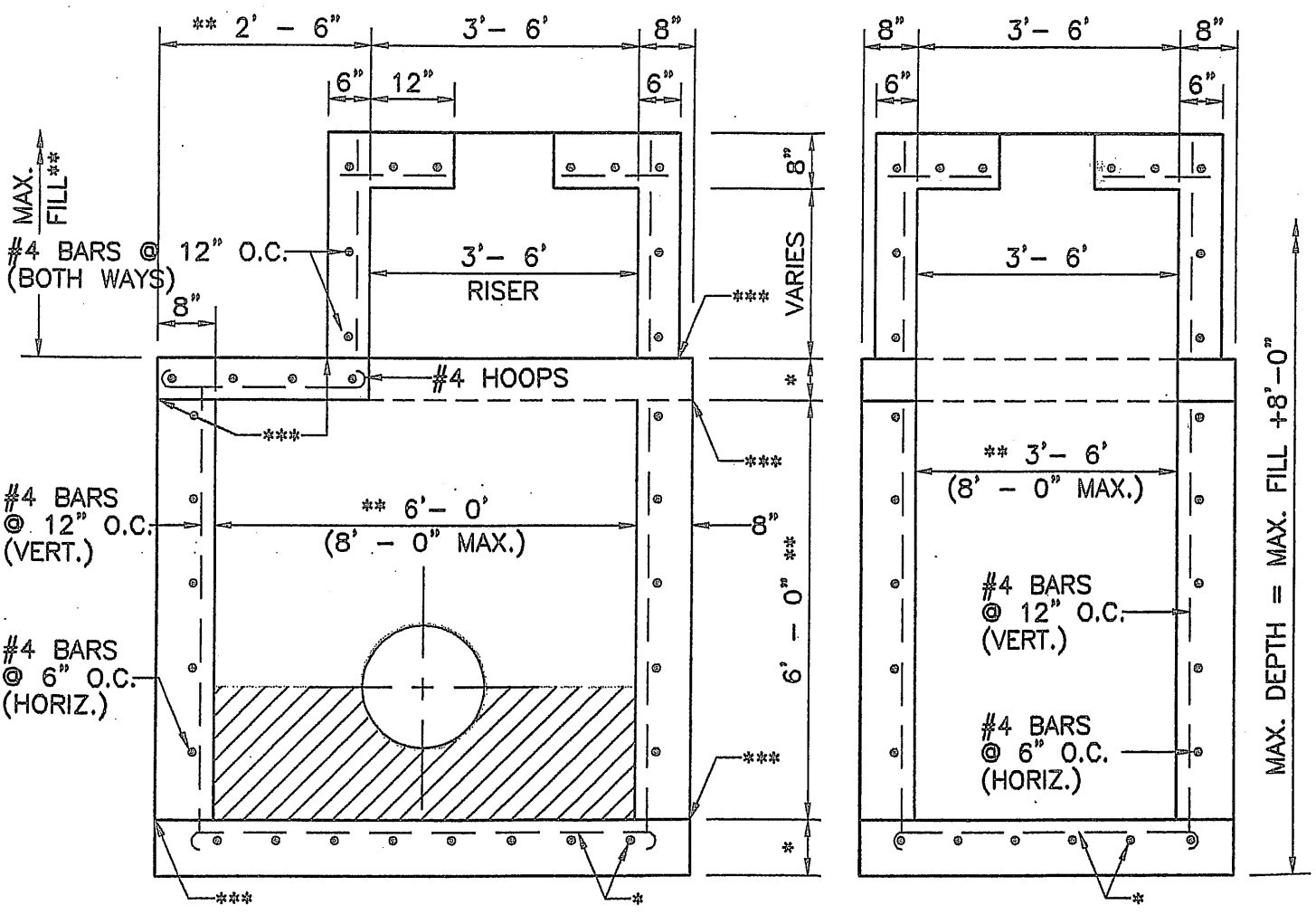
PLAN

* SEE SHT. D-6

** UNLESS OTHERWISE SHOWN ON PLANS.

*** CONSTRUCTION JOINT PERMITTED.

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	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.	8"	MIN. 2' TO MAX. 20'	#6 @6" O.C., B.W.
5'-0"	8"	2' TO 11'	#6 @6" O.C., B.W.	8"	2' TO 25'	#6 @6" O.C., B.W.
5'-0"	10'	2' TO 18'	#6 @6" O.C., B.W.	10'	2' TO 27'	#7 @6" O.C., B.W.
6'-0"	8"	3" TO 7'	#6 @6" O.C., B.W.	8"	8' TO 20'	#6 @6" O.C., B.W.
6'-0"	10"	2' TO 14'	#6 @6" O.C., B.W.	10"	2' TO 25'	#7 @6" O.C., B.W.
8'-0"	10"	2' TO 7'	#6 @6" O.C., B.W.	10"	2' TO 11'	#7 @6" O.C., B.W.



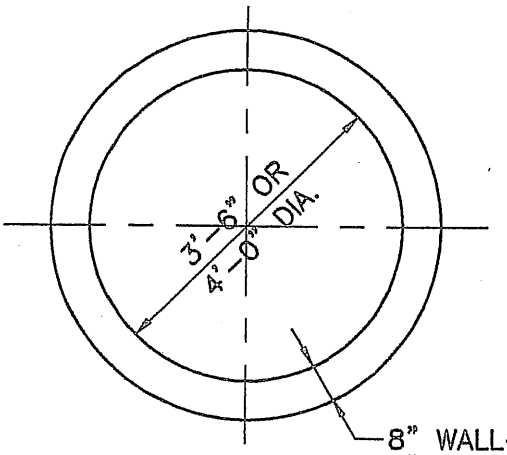
SECTION

END ELEVATION

ALTERNATE 'B' & 'C'

CITY OF COOPER CITY ENGINEERING STANDARDS COOPER CITY, FLORIDA	SCALE: N.T.S.	STANDARD STORM DRAINAGE DETAIL INLET, MANHOLE & JUNCTION BOX (TYPE J)	D-3
	REVISED:		

Revised October 2022



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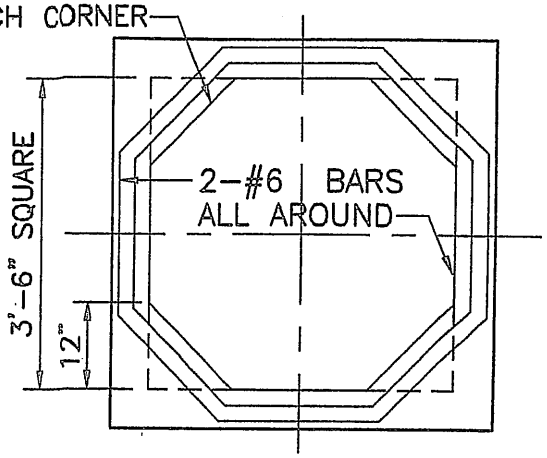

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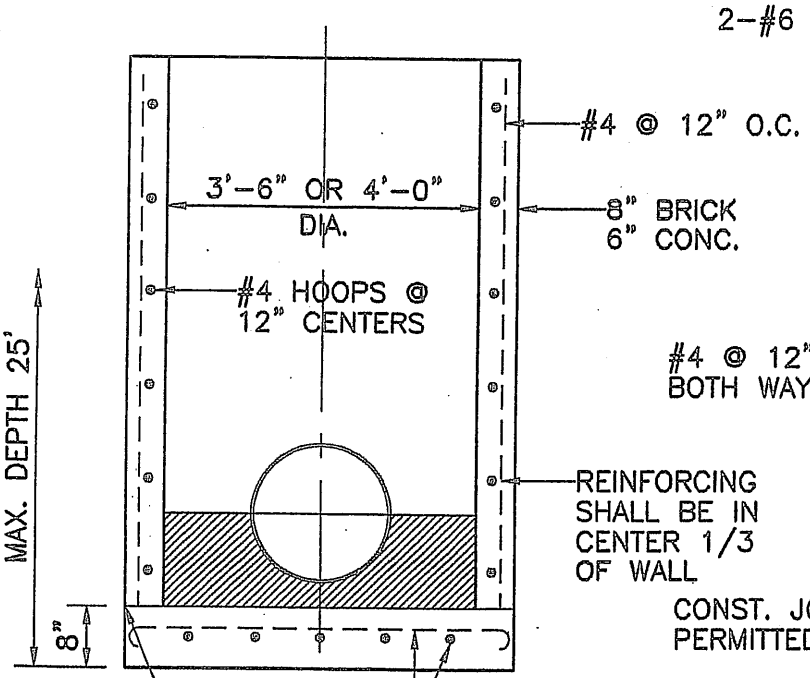
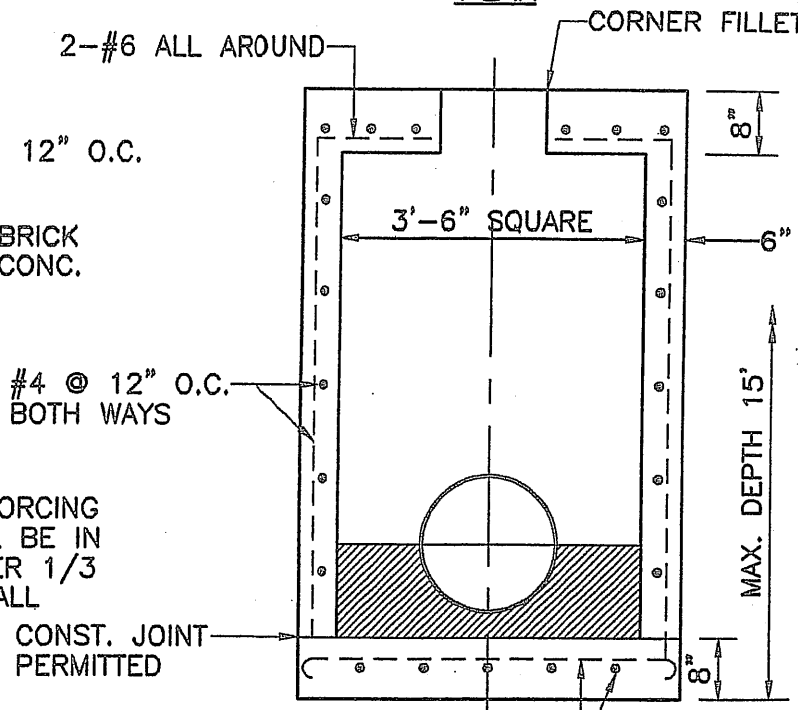
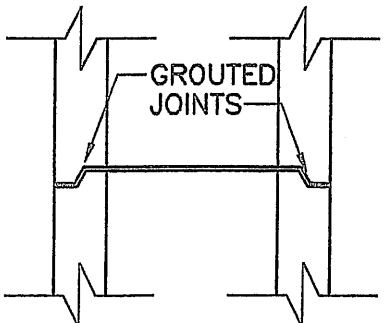


ALTERNATE "A"



ALTERNATE "B"



CONSTRUCTION JOINT
(OPTIONAL)

CITY OF COOPER CITY ENGINEERING STANDARDS COOPER CITY, FLORIDA	SCALE: N.T.S. REVISED:	STANDARD STORM DRAINAGE DETAIL INLET, MANHOLE & JUNCTION BOX (TYPE P)	D-4

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.

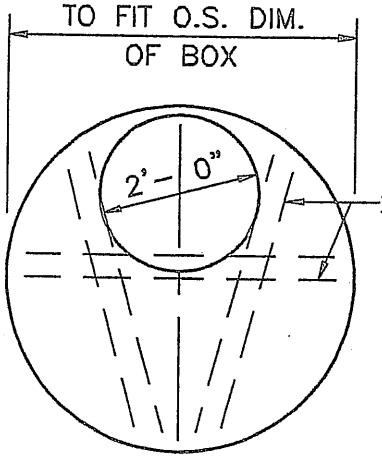
6. STRUCTURES SHALL BE SECURED TO INLET THROATS, RISERS OR MANHOLE TOPS WITH A MINIMUM OF 6-No. 4 BARS 12" LONG.

7. ANY INLET, MANHOLE, OR JUNCTION BOX MAY BE USED IN CONJUNCTION WITH ANY INLET THROAT OR MANHOLE TOP.

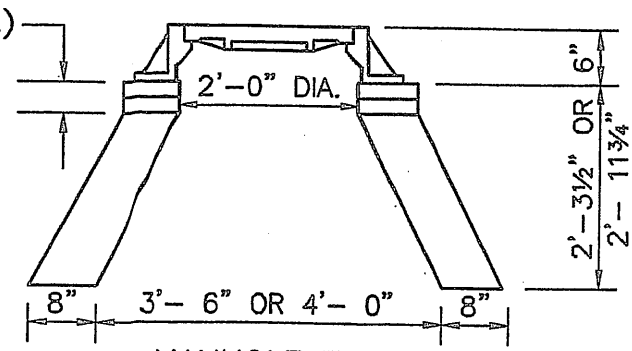
8. MORTAR USED TO SEAL THE PIPE IN THE WALLS OF THE PRECAST UNITS SHALL BE OF SUCH A MIX THAT SHRINKAGE WILL NOT CAUSE LEAKAGE INTO OR OUT OF THE UNITS. MAXIMUM OPENING FOR PIPE SHALL BE MAXIMUM REQUIRED O.D. + 6".

9. THE OUTSIDE OF BRICK WALLS SHALL BE PLASTERED WITH 1:2 CEMENT MORTAR.

CITY OF COOPER CITY ENGINEERING STANDARDS COOPER CITY, FLORIDA	SCALE: N.T.S. REVISED:	STANDARD STORM DRAINAGE DETAIL INLET, MANHOLE, & JUNCT. BOX (TYPES P & J)	D-5

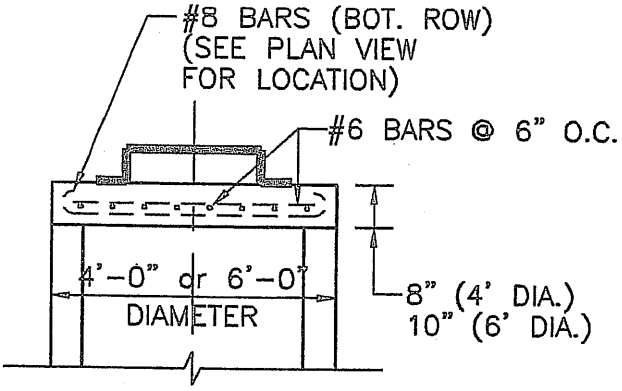


PLAN

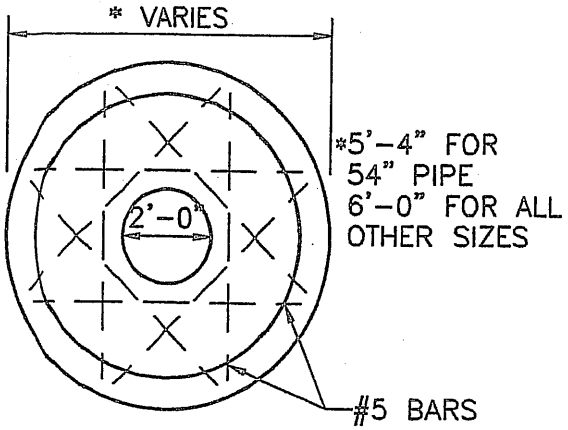


MANHOLE TOP

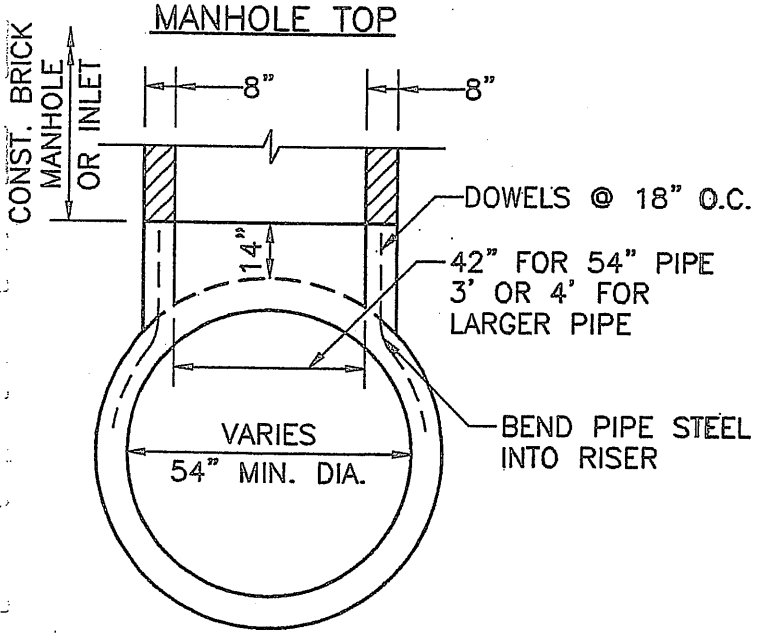
NOTE: UNIT MAY BE PRECAST OR CAST IN PLACE CONCRETE CONSTRUCTION. WALL THICKNESS & STEEL SAME AS USED FOR SUPPORTING UNIT WALL. ECCENTRIC CONE MAY BE USED.



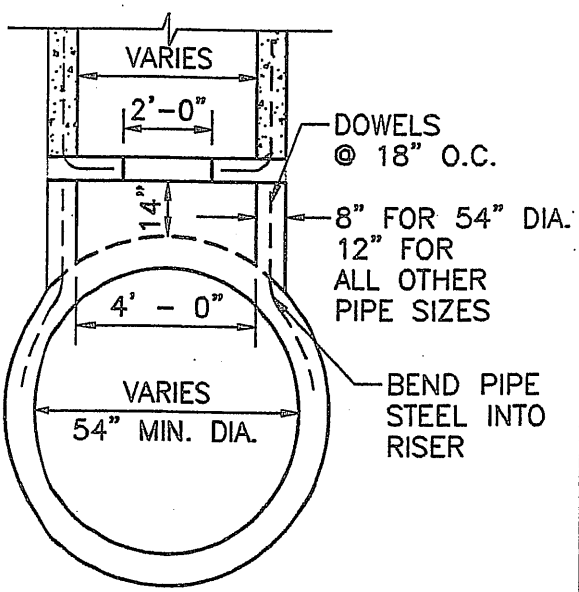
JUNCTION BOX OR MANHOLE TOP



CONCRETE SLAB REINFORCEMENT

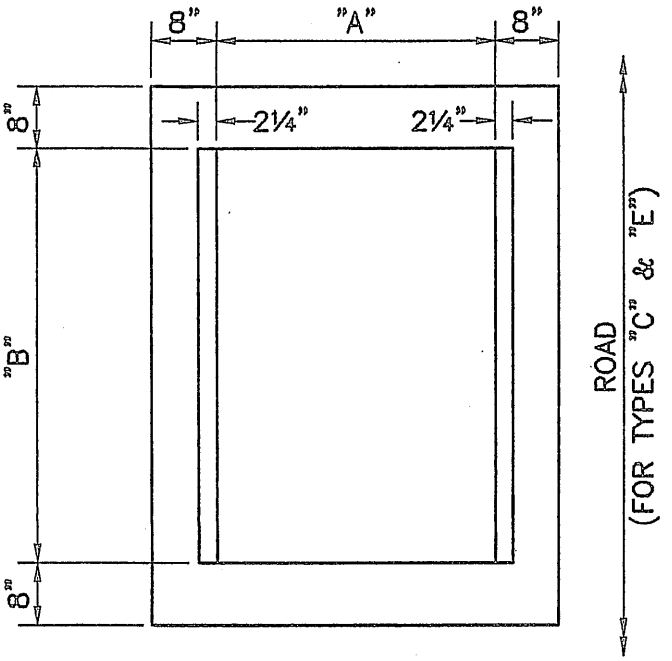


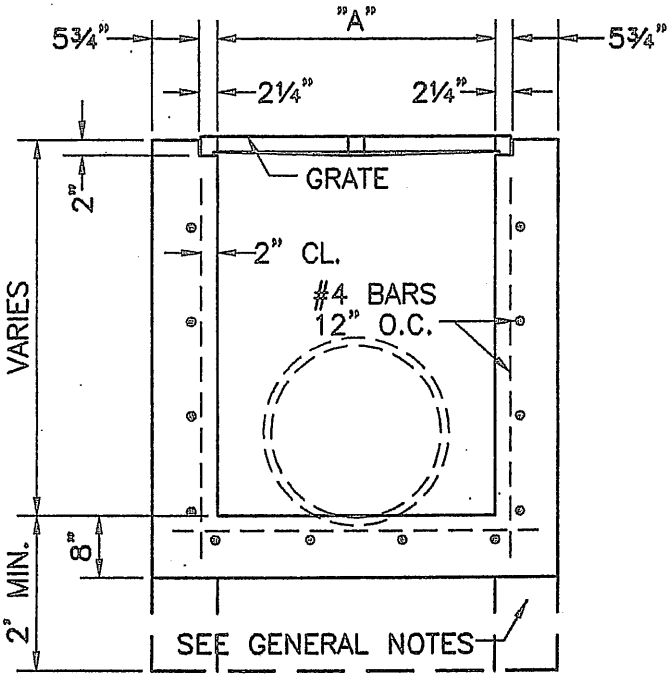
BRICK INLET OR MANHOLE ON PRECAST CONCRETE RISER

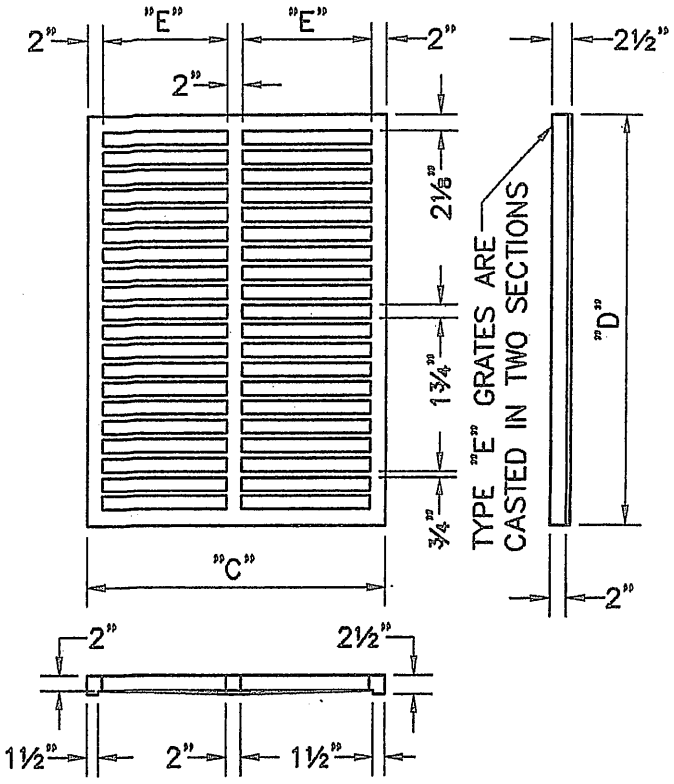


REINF. CONC. INLET OR MANHOLE ON PRECAST CONCRETE RISER

CITY OF COOPER CITY ENGINEERING STANDARDS COOPER CITY, FLORIDA	SCALE: N.T.S. REVISED:	STANDARD STORM DRAINAGE DETAIL JUNCT. BOX, MANHOLE TOP & PRECAST CONC. RISER	D-6







TYPE INLET	DIMENSIONS					MAX. SIZE R.C.P.
	"A"	"B"	"C"	"D"	"E"	
"C"	2'-0"	3'-1"	2'-4"	3'-0"	11"	18"
"E"	3'-0"	4'-6"	3'-4"	4'-4"	1'-5"	30"
"E MOD" *	3'-0"	4'-6"	3'-4"	4'-4"	1'-5"	48"

NOTE: SEE STD. PLAN FOR DETAILS WHEN USING THIS TYPE INLET WITH VALLEY GUTTER ROAD SECTIONS.

BEVELED EDGES:
ALL EXPOSED CORNERS AND EDGES TO BE CHAMFERED ¾".

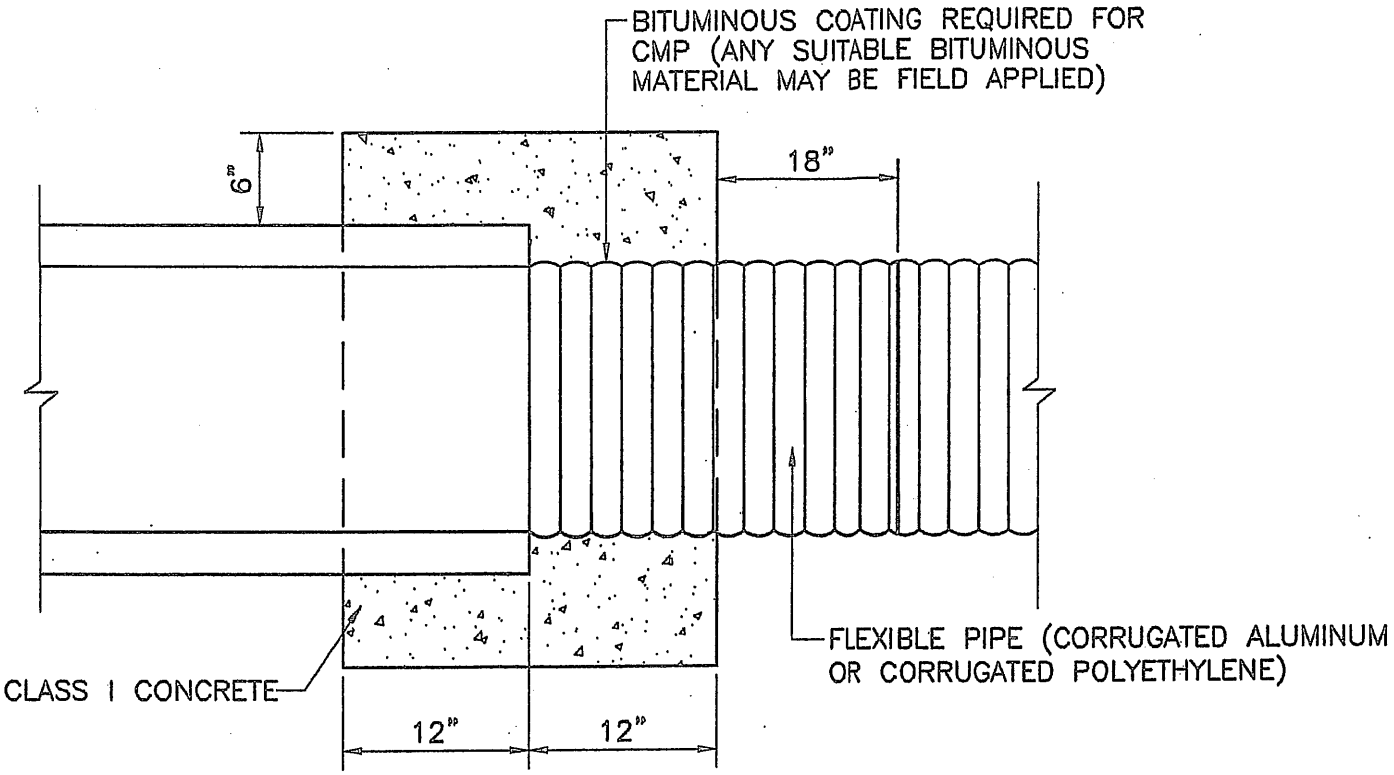
FOUNDATION MATERIAL:
WHERE MATERIAL UNSATISFACTORY FOR FOUNDATION IS ENCOUNTERED AT FLOW LINE, OMIT FLOOR AND CARRY WALLS DOWN TO SATISFACTORY FOUNDATION. BACKFILL TO FLOW LINE WITH CLEAN SAND.

GRATES:
CAST IRON GRATES IN ACCORDANCE WITH FLA. D.O.T. SPECS.

* INLET TYPES:
INLETS ARE TO BE AS SHOWN HEREON. TYPE "E MOD." IS A TYPE "E" TURNED 90° TO RECEIVE R.C.P. UP TO 48" DIA. INLETS RECEIVING R.C.P. LARGER THAN 48" DIA. SHALL BE IN ACCORDANCE WITH FLA. D.O.T. STANDARDS.

MATERIAL:
INLET WALLS AND FOOTING MAY EITHER BE POURED-IN-PLACE 2500 LB. CONC.; OR PRECAST CLASS "A" 3000 L.B. CONC.; OR STANDARD MANHOLE BRICK (NO BLOCK) WITH ½" PLASTER (NO LIME) WITH 8" PRECAST CAP.

CITY OF COOPER CITY ENGINEERING STANDARDS COOPER CITY, FLORIDA	SCALE: N.T.S. REVISED:	STANDARD STORM DRAINAGE DETAIL STORM SEWER INLETS	D-7



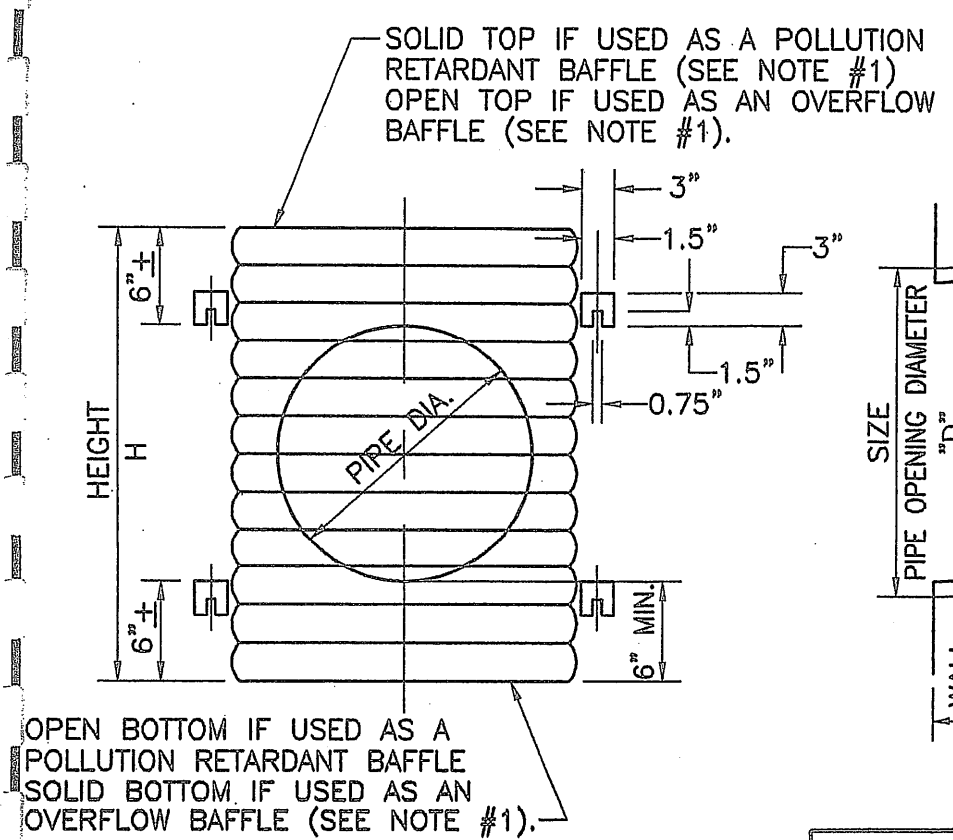
NOTES:

1. A CONCRETE JACKET SHALL NOT BE USED TO JOINT:

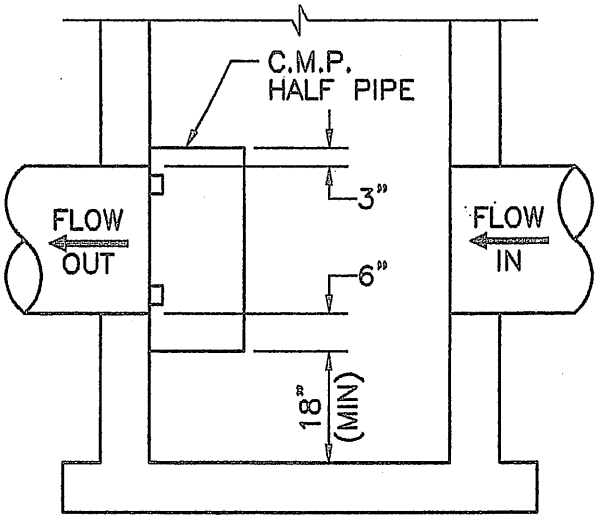
   A) METAL PIPE OF DISSIMILAR MATERIALS.

   B) FLEXIBLE PIPE WHEN THE MAXIMUM COVER REQUIRED IN ACCORDANCE WITH F.D.O.T. INDEX No. 205 CANNOT BE OBTAINED.

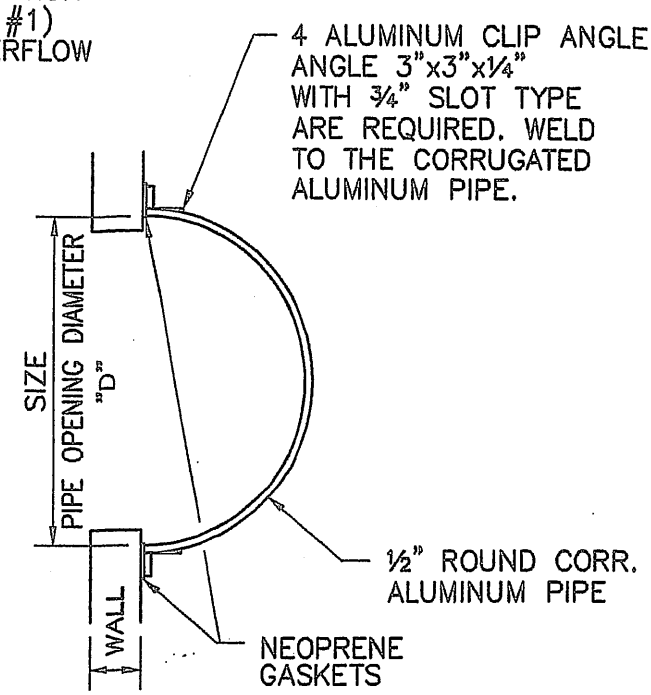
CITY OF COOPER CITY ENGINEERING STANDARDS COOPER CITY, FLORIDA	SCALE: N.T.S. REVISED:	STANDARD STORM DRAINAGE DETAIL CONCRETE TO METAL PIPE JACKET	D-8



FRONT VIEW



SIDE VIEW



TOP VIEW

STANDARD DIMENSIONS			
PIPE DIA.	D (INCHES)	T (GAUGE)	H (INCHES)
15"	27"	16	24"
18"	30"	16	27"
24"	36"	16	33"

NOTES:

1. ALUMINUM SHEET OF SAME THICKNESS (GAUGE) AS PIPE SHALL BE WELDED TO CLOSE OPENING.
2. BAFFLE SHALL BE AS MANUFACTURED BY SOUTHERN CULVERT OR ENGINEER'S APPROVED EQUAL.
3. NEOPRENE GASKET (⅜" X 2") SHALL BE INSTALLED AT ALL BAFFLES.

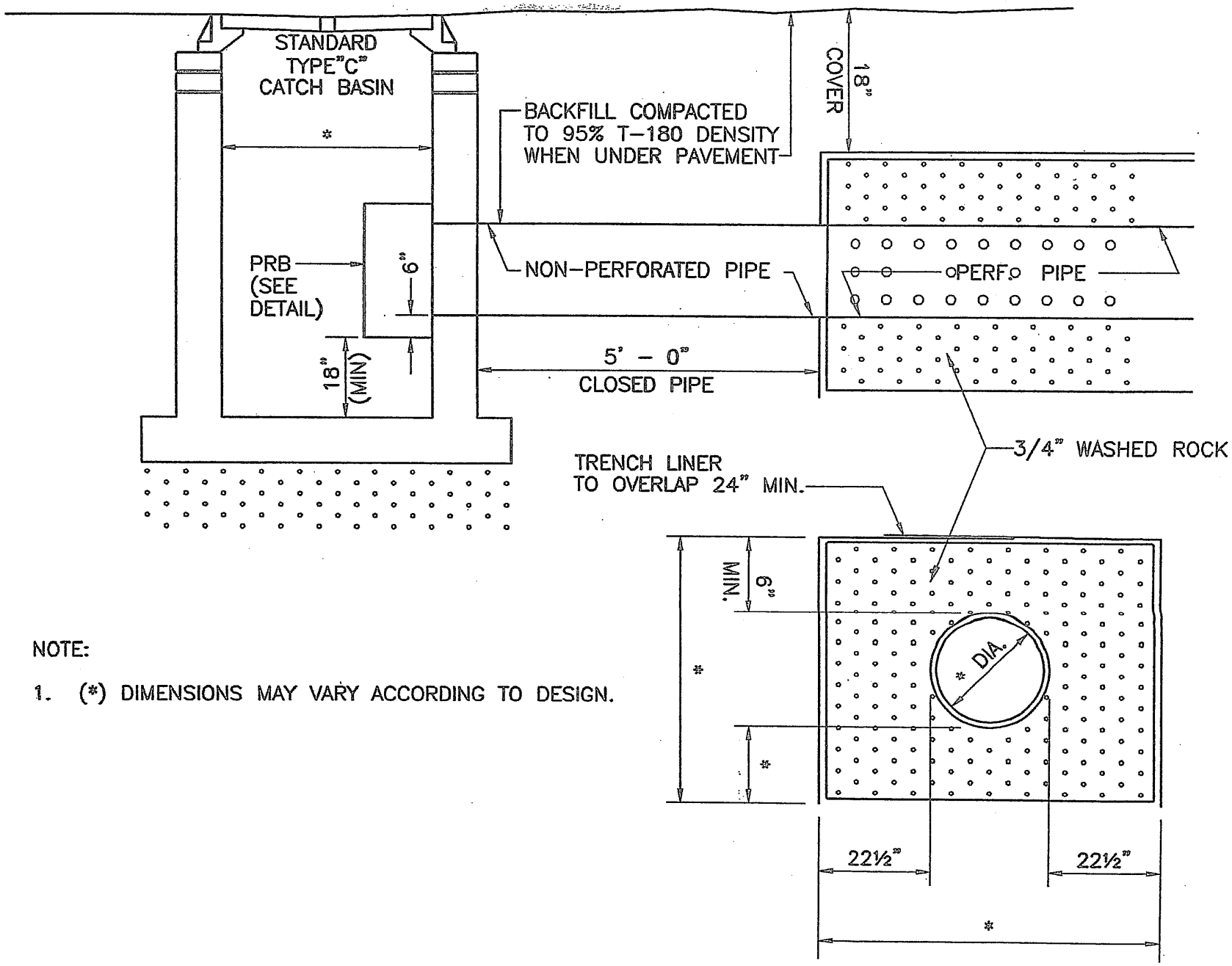
CITY OF COOPER CITY ENGINEERING STANDARDS COOPER CITY, FLORIDA	SCALE: N.T.S.	STANDARD STORM DRAINAGE DETAIL POLLUTION RETARDANT BAFFLE	D-9
	REVISED:		

CITY OF COOPER CITY
ENGINEERING STANDARDS
COOPER CITY, FLORIDA

SCALE: N.T.S.
REVISED:

STANDARD STORM DRAINAGE DETAIL
EXFILTRATION TRENCH

D – 10



NOTE:

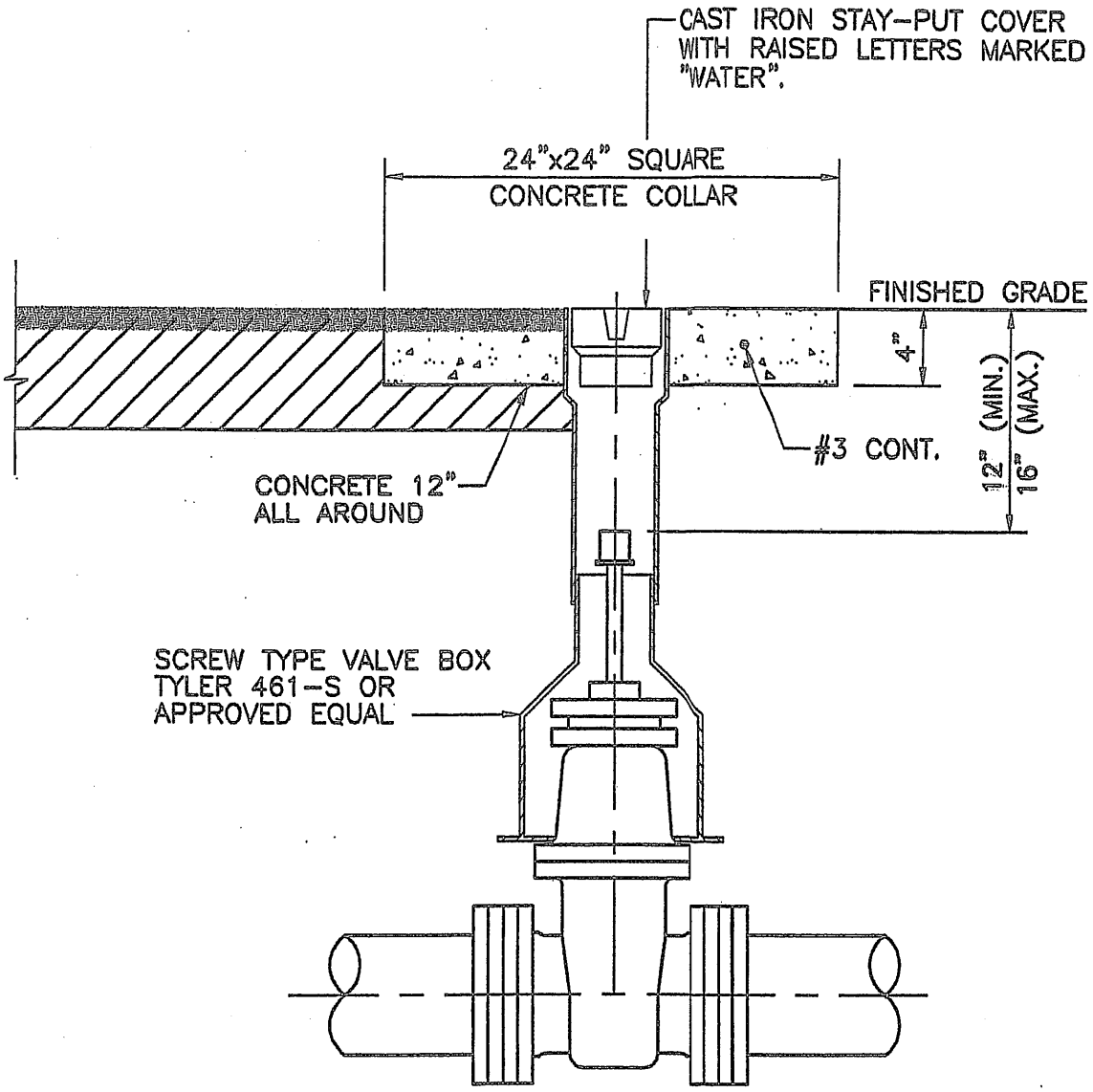
1. (*) DIMENSIONS MAY VARY ACCORDING TO DESIGN.

STANDARD WATER SUPPLY DETAILS

SECTION 5: STANDARD DETAILS

5.03 STANDARD WATER SUPPLY DETAILS

Detail No.	Description
W-1	Typical Valve Setting
W-2	Typical Single & Double Service Connection
W-3	Water Meter Installation for 5/8" and 1" Meters
W-4	Water Meter Installation for 1 1/2" and 2" Meters
W-5	Water Meter Locations
W-6	Fire Hydrant Detail
W-7	Bacteriological Sampling Points
W-8	Utility Crossing, General Requirements
W-9	Utility Crossing, Deflection Type
W-10	Utility Crossing, Fitting Type
W-11	Filling & Flushing
W-11A	Filling & Flushing, Notes
W-12	Restrained Joint Detail
W-13	Double Detector Check Valve for Fire Line
W-14	Backflow Preventer
W-15	2" Terminal Blow Off
W-16	Trench Detail, Unpaved Areas



CITY OF COOPER CITY ENGINEERING STANDARDS COOPER CITY, FLORIDA	SCALE: N.T.S. REVISED:	STANDARD WATER SUPPLY DETAIL TYPICAL VALVE SETTING	W-1

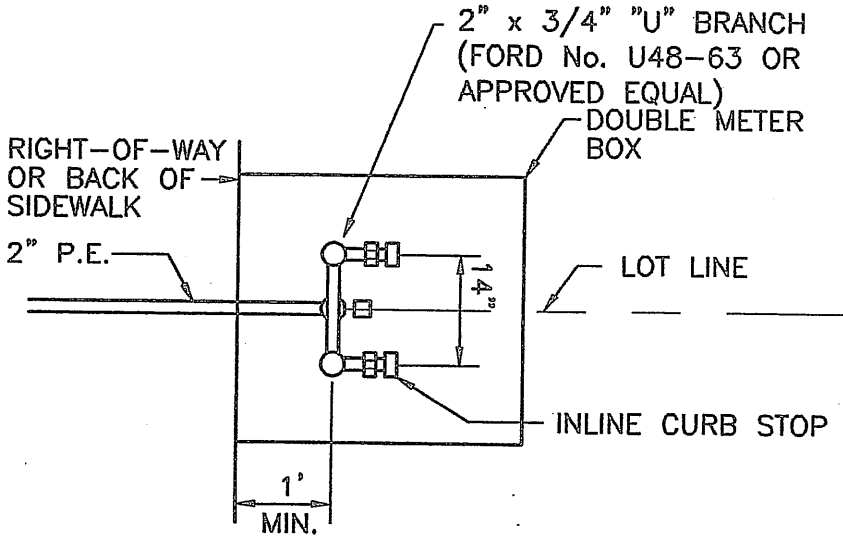
Revised October 2022

CITY OF COOPER CITY
ENGINEERING STANDARDS
COOPER CITY, FLORIDA

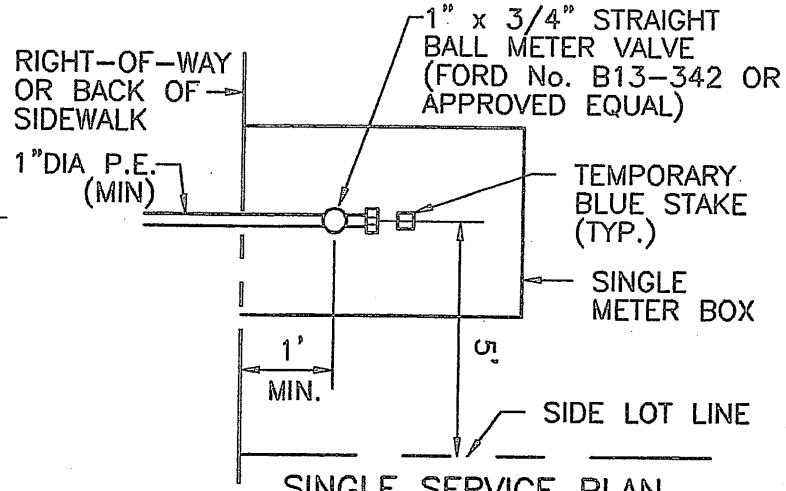
SCALE: N.T.S.
REVISED:

STANDARD WATER SUPPLY DETAIL
TYP. SINGLE & DOUBLE SERVICE CONNECTION

W-2

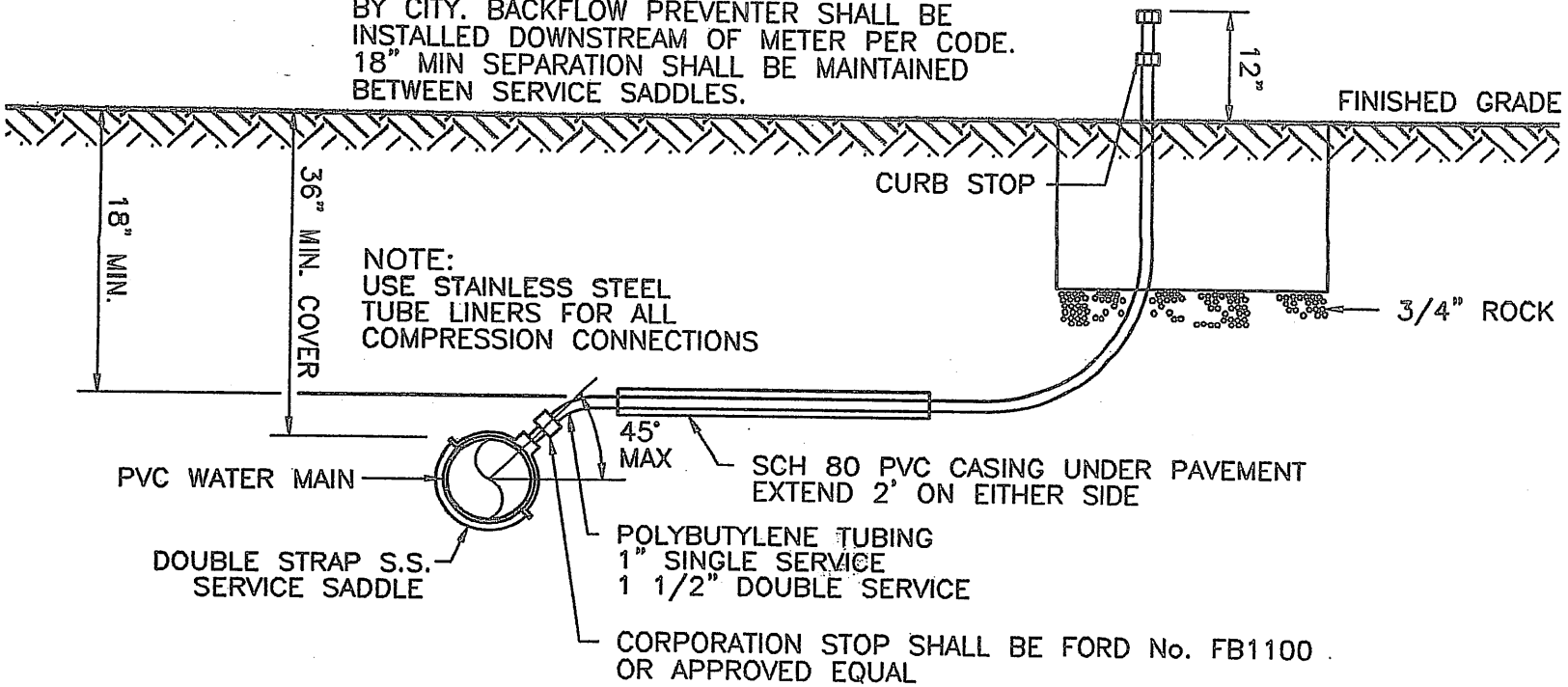


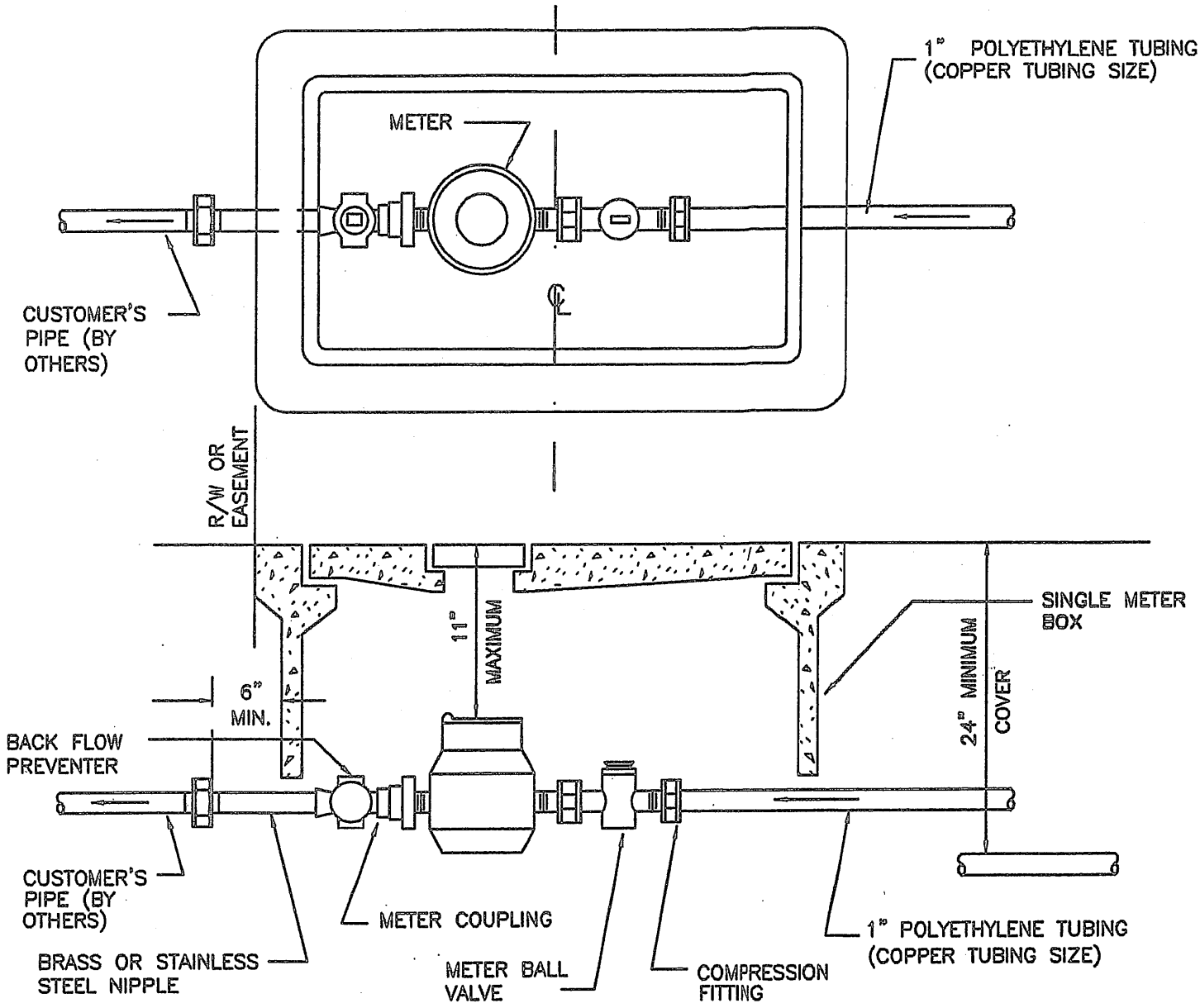
DOUBLE SERVICE PLAN



SINGLE 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.

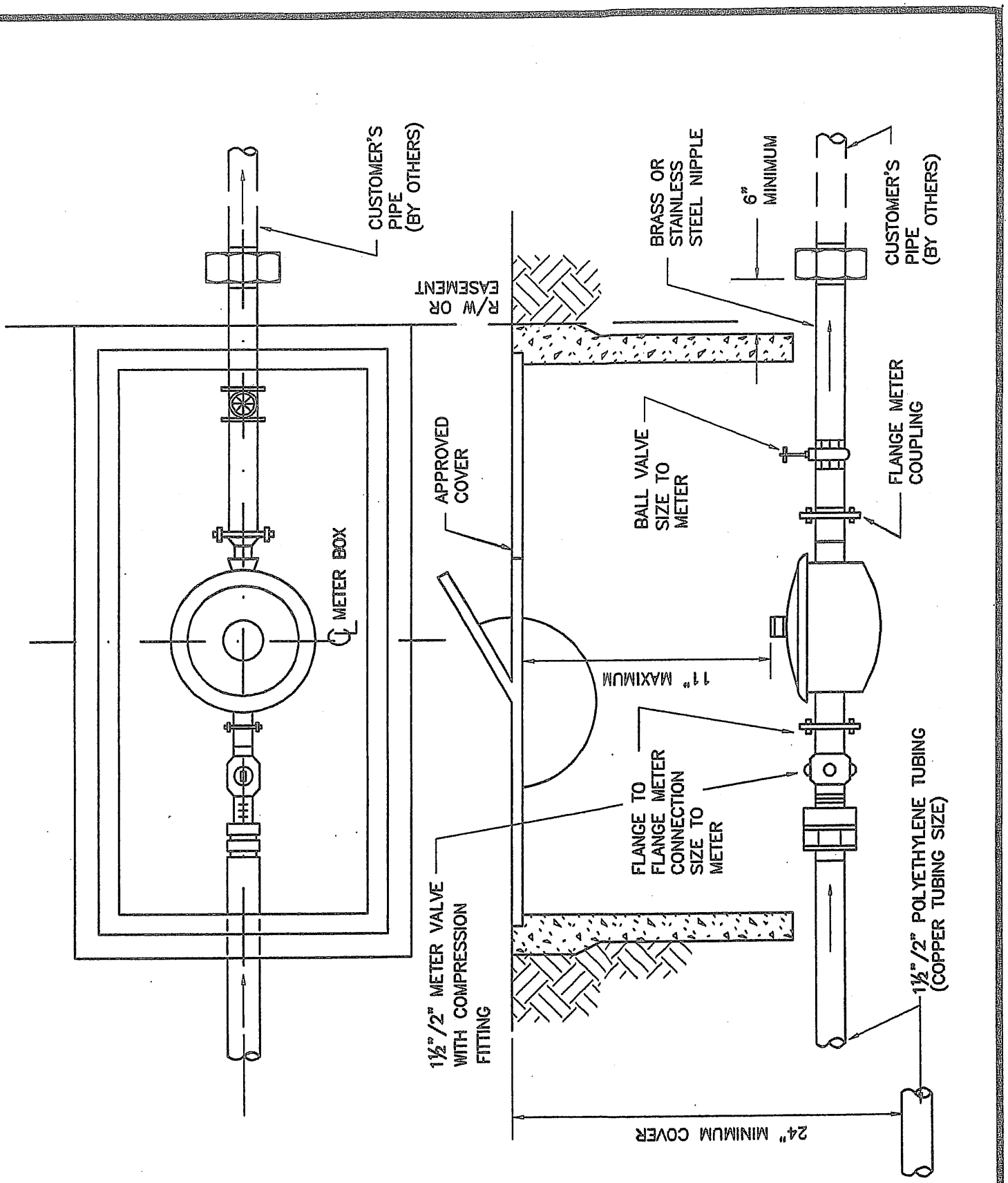




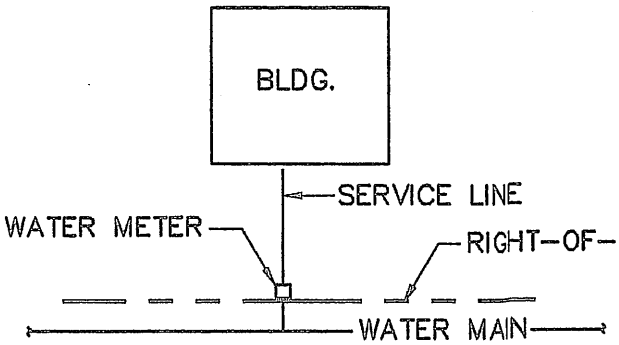
NOTES:

1. R/W LINE OR EASEMENT LINE IS THE CUSTOMERS SIDE OF METER BOX.
2. COOPER CITY RESPONSIBILITY ENDS AT THE CUSTOMERS SIDE OF METER.
3. CURVE IN SERVICE LINE SHALL BE AS CLOSE TO METER BOX AS PRACTICAL AND MINIMUM RADIUS SHALL BE 14" FOR 1" TUBING.
4. ALL METERS WILL BE SUPPLIED AND INSTALLED BY COOPER CITY METER HAS IRON PIPE THREAD MALE CONNECTION ON EACH END.
5. ALL BACKFLOW PREVENTION DEVICES TO BE SUPPLIED BY THE CUSTOMER. FOR RESIDENTIAL CUSTOMERS, A STRAIGHT DUAL CHECK VALVE IS REQUIRED.
6. WHEN SIDEWALKS ARE PRESENT, OR PLANNED FOR IN THE R/W, THE BACK EDGE OF THE METER BOX SHALL LINE UP WITH THE BACK EDGE OF THE SIDEWALK.

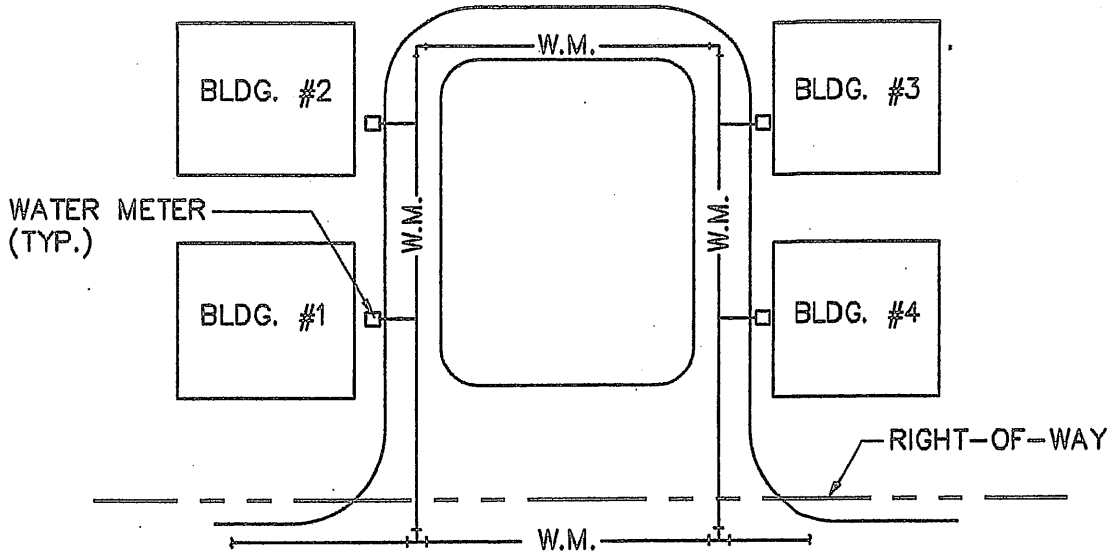
CITY OF COOPER CITY ENGINEERING STANDARDS COOPER CITY, FLORIDA	SCALE: N.T.S. REVISED:	STANDARD WATER SUPPLY DETAIL WATER METER INSTALLATION FOR 5/8" & 1" METERS	W-3



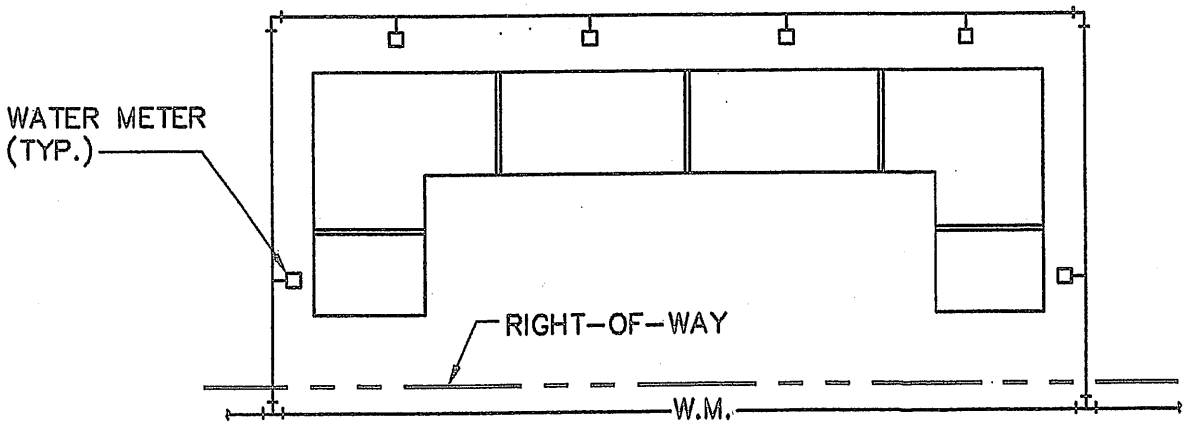
CITY OF COOPER CITY ENGINEERING STANDARDS COOPER CITY, FLORIDA	SCALE: N.T.S. REVISED:	STANDARD WATER SUPPLY DETAIL WATER METER INSTALLATION FOR 1-1/2" & 2" METERS	W-4



SINGLE FAMILY RESIDENTIAL

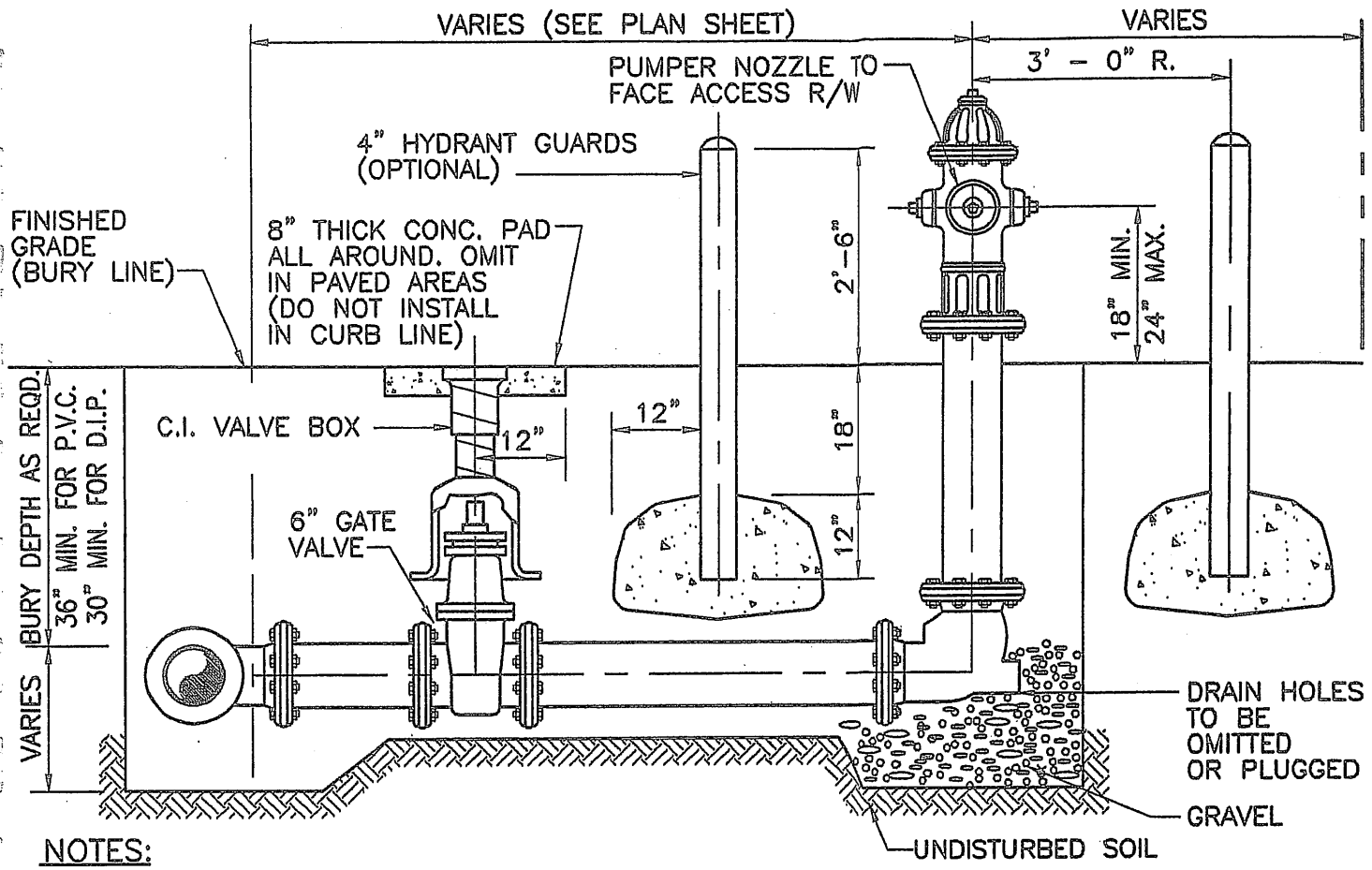


MULTI-FAMILY RESIDENTIAL



INDUSTRIAL/OFFICE/COMMERCIAL

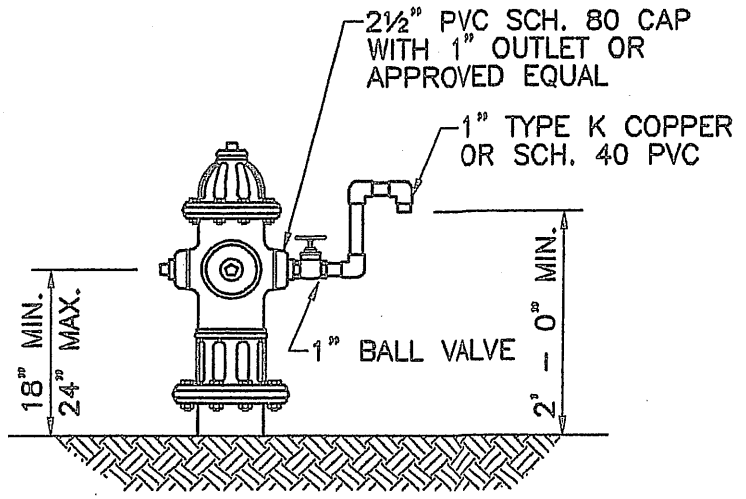
CITY OF COOPER CITY ENGINEERING STANDARDS COOPER CITY, FLORIDA	SCALE: N.T.S. REVISED:	STANDARD WATER SUPPLY DETAIL WATER METER LOCATIONS	W-5



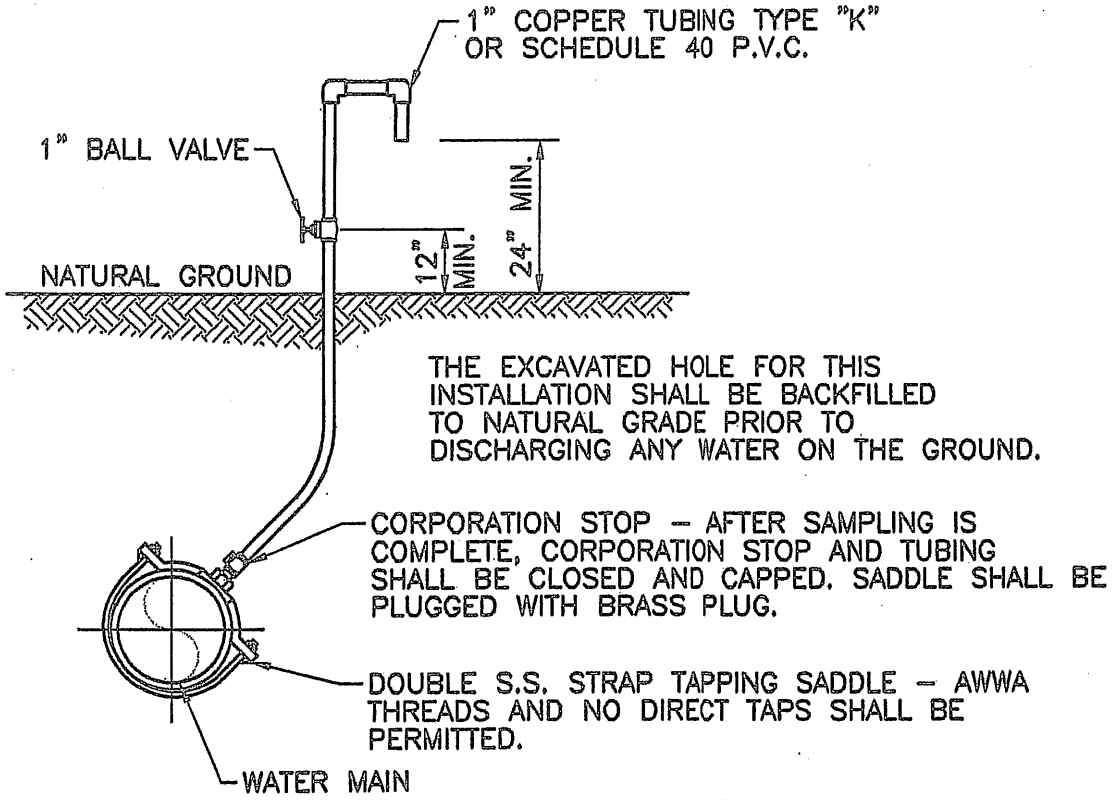
NOTES:

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 5¼" WITH 3'–6" BURY DEPTH. PUMPER NOZZLE TO FACE STREET.
7. HYDRANT VALVE TO BE INSTALLED AS CLOSE TO MAIN AS POSSIBLE.
8. HYDRANT BURY LINE TO MATCH STREET CROWN ELEVATION.
9. A 7.5 FOOT CLEAR RADIUS SHALL BE MAINTAINED AROUND HYDRANT.
10. FIRE HYDRANTS SHALL BE AMERICAN (B–84–B) OR APPROVED EQUAL. HYDRANTS OWNED BY CITY SHALL BE PAINTED "FIRE HYDRANT RED" WITH WHITE FLUORESCENT CAPS. PRIVATELY MAINTAINED HYDRANTS SHALL BE PAINTED YELLOW.
11. ENTIRE FIRE HYDRANT ASSEMBLY TO BE RESTRAINED W/SERIES 1100 "MEGALUG" OR APPROVED EQUAL.
12. THREE BLUE REFLECTIVE PAVEMENT MARKERS SHALL BE PROVIDED IN THE CENTER OF THE NEAREST ROADWAY LANE ADJACENT TO ALL FIRE HYDRANT LOCATIONS.

CITY OF COOPER CITY ENGINEERING STANDARDS COOPER CITY, FLORIDA	SCALE: N.T.S. REVISED:	STANDARD WATER SUPPLY DETAIL FIRE HYDRANT DETAIL	W–6



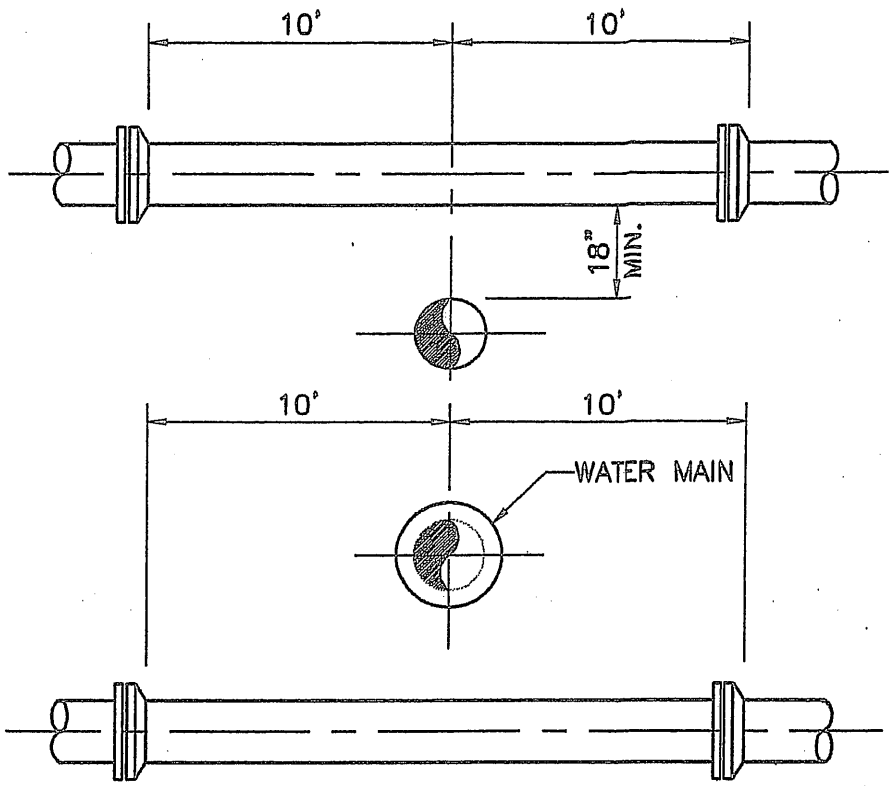
HYDRANT CONNECTION



MAIN CONNECTION

NOTE:
SEE 2" TERMINAL BLOW OFF DETAIL.

CITY OF COOPER CITY ENGINEERING STANDARDS COOPER CITY, FLORIDA	SCALE: N.T.S. REVISED:	STANDARD WATER SUPPLY DETAIL BACTERIOLOGICAL SAMPLING POINTS	W-7



NOTES:

1. A WATER MAIN SHOULD CROSS OVER PIPES WHEREVER POSSIBLE MAINTAINING A 36 INCH COVER FOR P.V.C., 30 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. ALLOWED FOR ANY SEPARATION LESS THAN 18 INCHES.

4. MAINTAIN 10 FEET HORIZONTAL SEPARATION BETWEEN WATER AND SEWER AS A MINIMUM.

5. 3 FOOT HORIZONTAL CLEARANCE SHALL BE PROVIDED BETWEEN WATER MAINS AND UTILITY OBSTRUCTIONS (CATCH BASINS, CONCRETE POLES, ETC.)

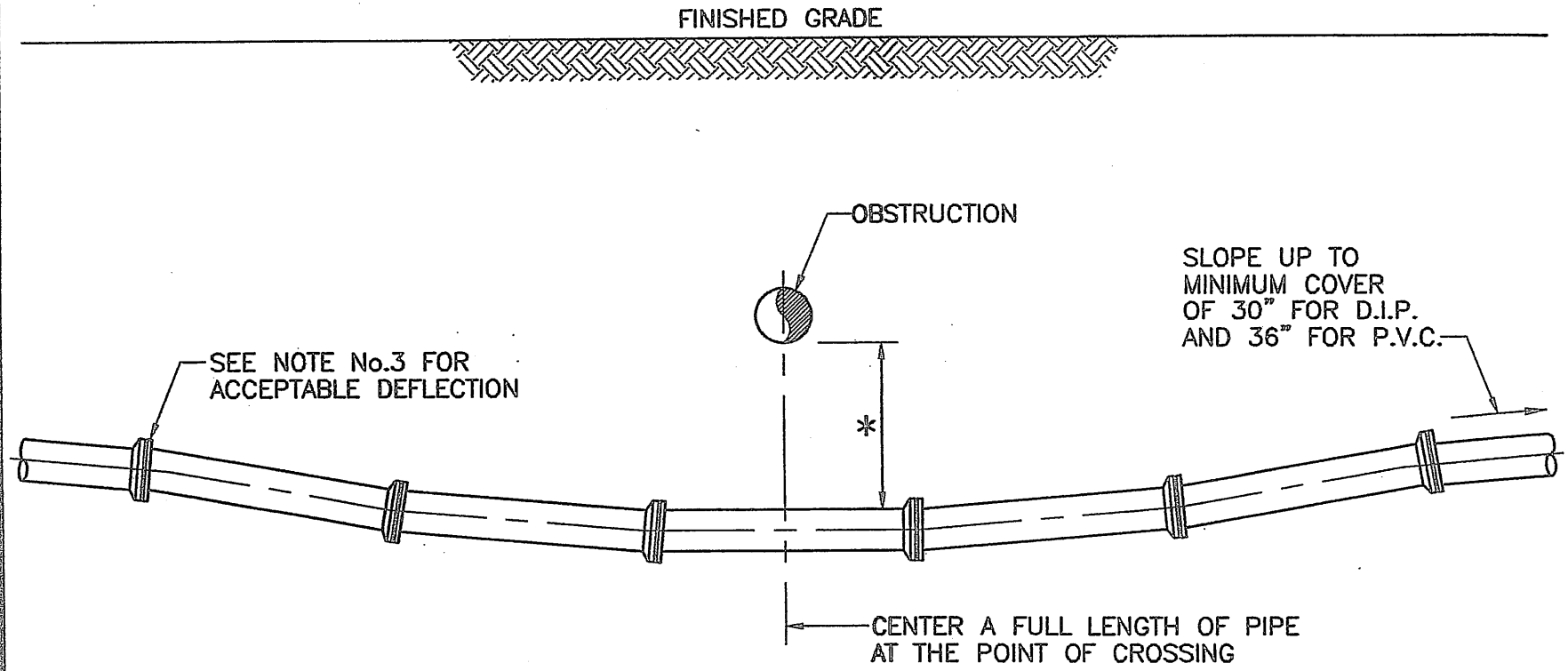
CITY OF COOPER CITY ENGINEERING STANDARDS COOPER CITY, FLORIDA	SCALE: N.T.S. REVISED:	STANDARD WATER SUPPLY DETAIL UTILITY CROSSING GENERAL REQUIREMENTS	W-8

CITY OF COOPER CITY
ENGINEERING STANDARDS
COOPER CITY, FLORIDA

SCALE: N.T.S.
REVISED:

STANDARD WATER SUPPLY DETAIL
UTILITY CROSSING DEFLECTION TYPE

W-9



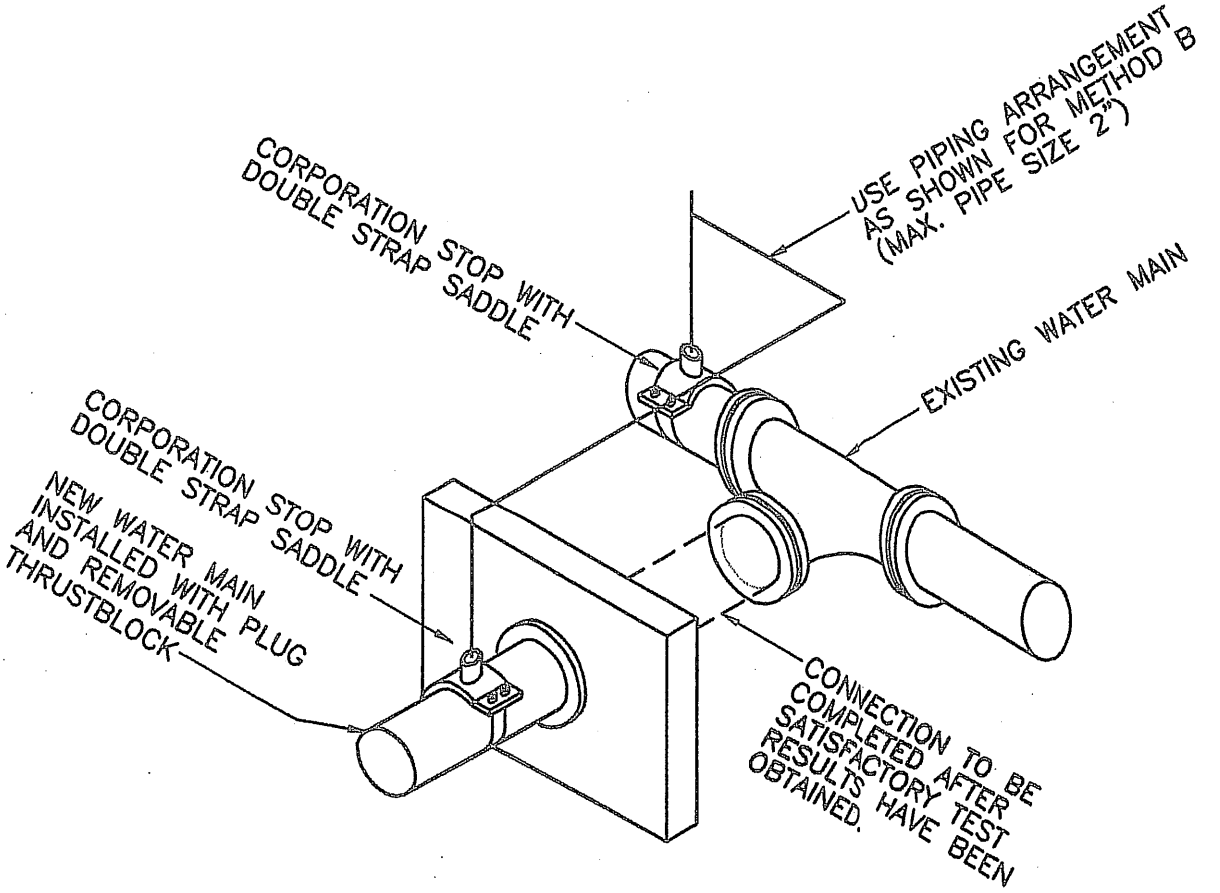
NOTES:

1. (*) 18" MINIMUM CLEARANCE REQUIRED FOR WATER AND SEWER MAIN CROSSINGS, 12" MINIMUM CLEARANCE REQUIRED FOR OTHER UTILITIES 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 MANUFACTURER'S MAXIMUM JOINT DEFLECTION (MAXIMUM).
4. 5' MIN. HORIZ. CLEARANCE SHALL BE PROVIDED BETWEEN WATER MAIN AND TREES. 3' MIN. ALL OTHER OBSTRUCTIONS.

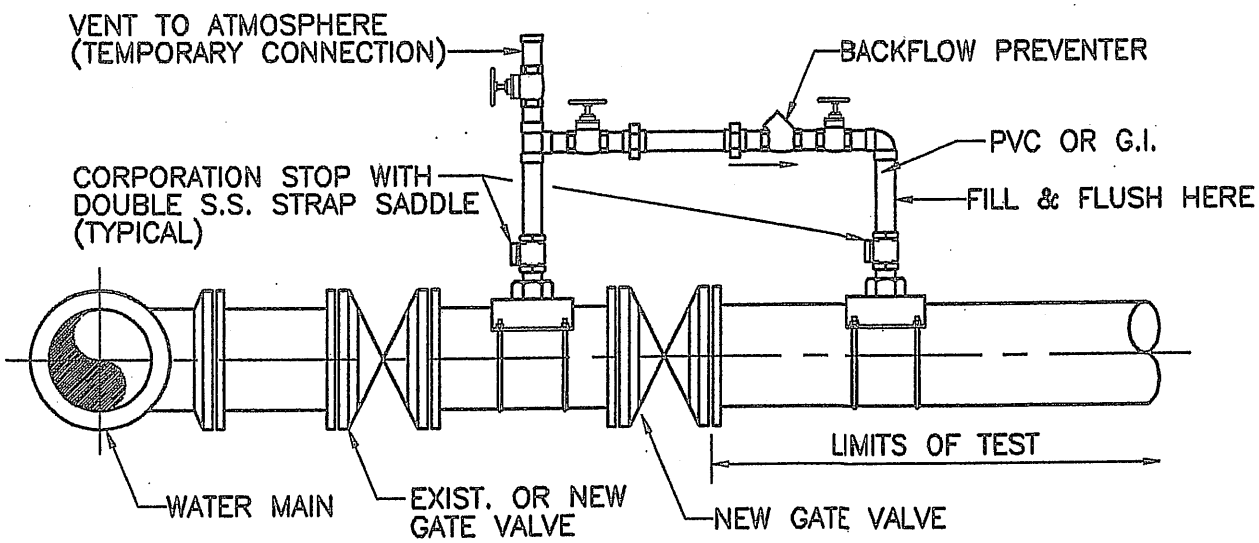
NOTES:

1. (*) 18" MINIMUM CLEARANCE REQUIRED FOR WATER & SEWER MAIN CROSSINGS, 12" MIN. CLEARANCE REQUIRED FOR OTHER UTILITIES CROSSINGS. SEE ENCASEMENT DETAIL IF MIN. CLEARANCE CAN NOT BE OBTAINED.

CITY OF COOPER CITY ENGINEERING STANDARDS COOPER CITY, FLORIDA	SCALE: N.T.S. REVISED:	STANDARD WATER SUPPLY DETAIL UTILITY CROSSING FITTING TYPE	W-10



METHOD A



METHOD B

CITY OF COOPER CITY ENGINEERING STANDARDS COOPER CITY, FLORIDA	SCALE: N.T.S. REVISED:	STANDARD WATER SUPPLY DETAIL FILLING & FLUSHING	W-11

NOTES:

1. WATER MAIN TO BE PRESSURE TESTED AND DISINFECTED ACCORDING TO BROWARD COUNTY HEALTH DEPARTMENT, AWWA, AND MUNICIPAL SPECIFICATIONS IN EFFECT.

2. BACTERIOLOGICAL TESTS ARE TO BE PERFORMED BY THE CONTRACTOR AND AN APPROVED TESTING LABORATORY.

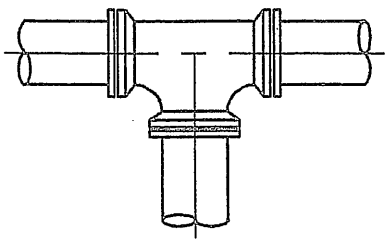
3. REMOVE TEMPORARY CONNECTION AT SADDLE ON NEW MAINS AFTER FILLING AND FLUSHING HAS BEEN COMPLETED AND REPLACE WITH BRASS PLUG.

4. PROVIDE ALL NECESSARY THRUSTBLOCKS OR OTHER RESTRAINTS.

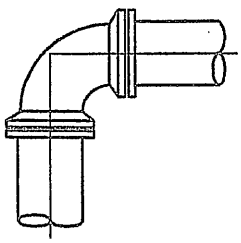
5. FILLING AND FLUSHING LOCATIONS SHALL BE COORDINATED BY THE CONTRACTOR, ENGINEER, AND CITY.

6. VENT TO ATMOSPHERE SHALL REMAIN OPEN DURING ALL PHASES OF PRESSURE TESTING.

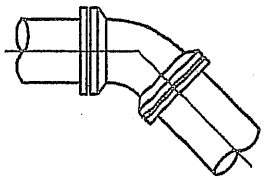
CITY OF COOPER CITY ENGINEERING STANDARDS COOPER CITY, FLORIDA	SCALE: N.T.S. REVISED:	STANDARD WATER SUPPLY DETAIL FILLING & FLUSHING	W-11A



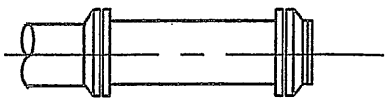
TEE & WYE



90° BEND



45° & 22½° BEND



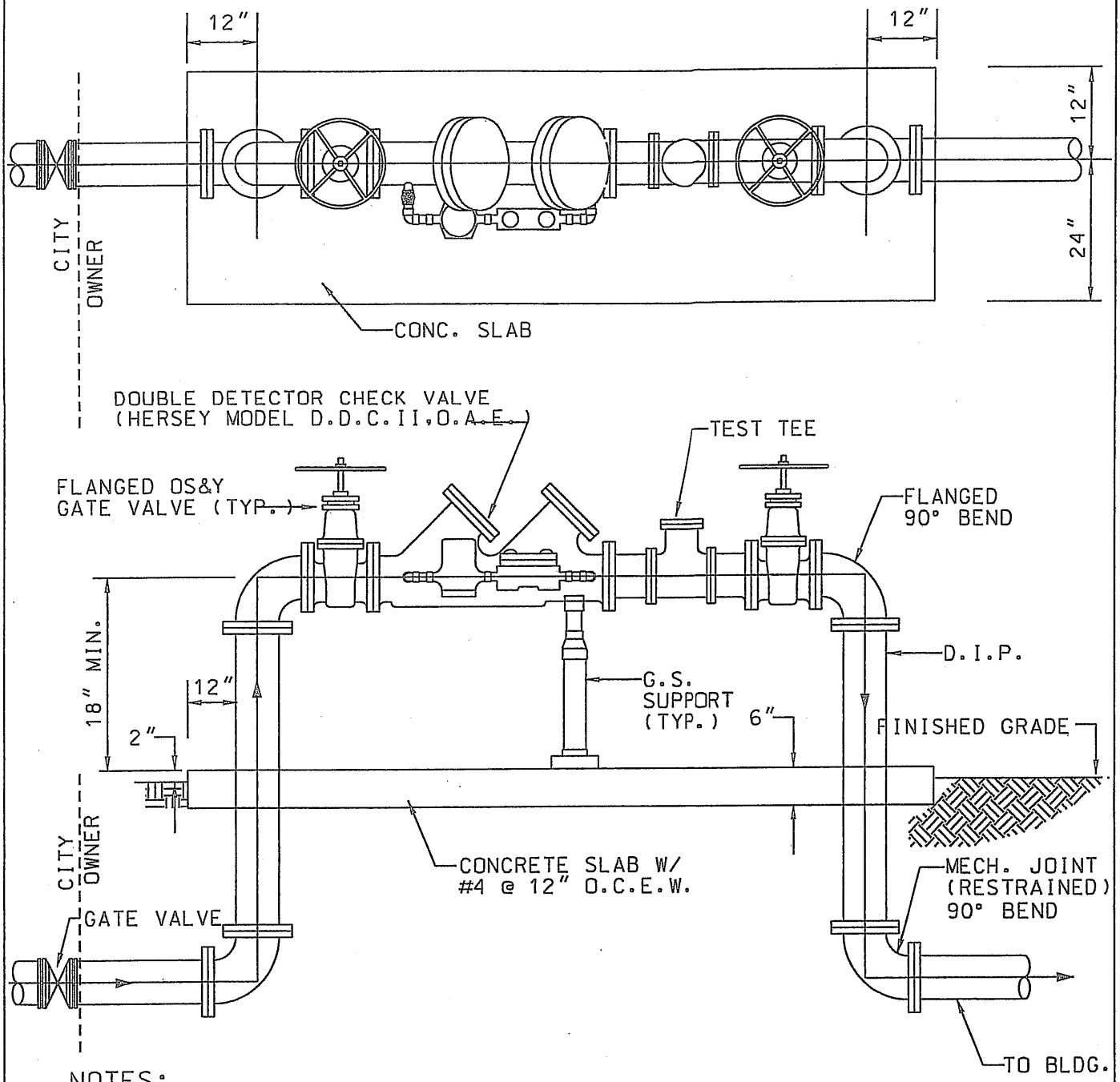
DEAD END

RESTRAINED PIPE LENGTH (LINEAL FEET)						
PIPE SIZE	TEE & WYE	90°BEND	45°BEND	22½° BEND	11¼° BEND	DEAD END
4"	22	22	12	6	2	34
6"	27	27	16	9	5	48
8"	34	34	20	11	6	62
10"	42	41	24	14	7	75
12"	54	48	28	16	8	87

NOTES:

1. THE FIGURES IN THIS TABLE ARE BASED ON 150 PSI TEST PRESSURE WITH 2.5 FEET OF COVER AND SOIL WEIGHT OF 120 POUNDS PER CUBIC FOOT AGAINST UNDISTURBED TRENCH. A 20% SAFETY FACTOR HAS BEEN ADDED.
2. THE LENGTHS SHOWN ARE FOR NON-WRAPPED DUCTILE IRON PIPE ONLY. LENGTHS FOR ALL OTHER PIPE MATERIALS WILL HAVE TO BE CALCULATED.

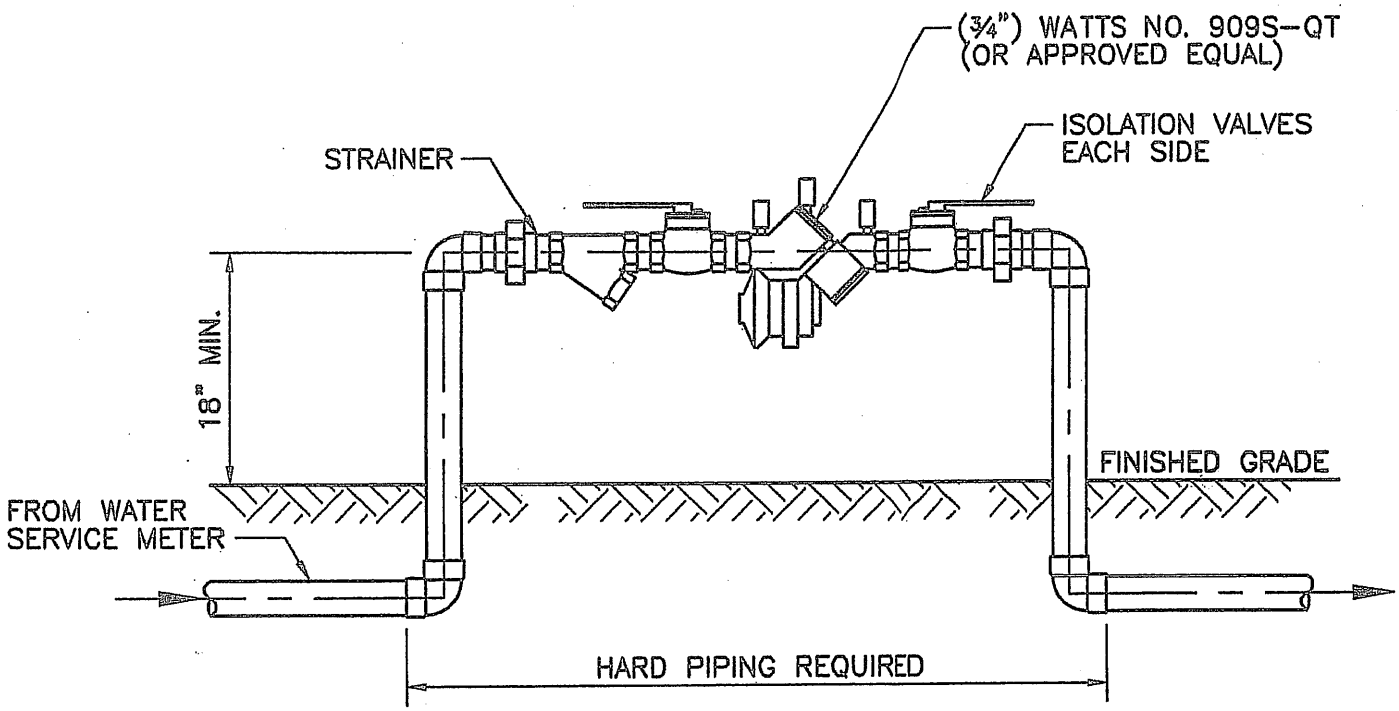
CITY OF COOPER CITY ENGINEERING STANDARDS COOPER CITY, FLORIDA	SCALE: N.T.S. REVISED:	STANDARD WATER SUPPLY DETAIL RESTRAINED JOINT DETAIL	W-12



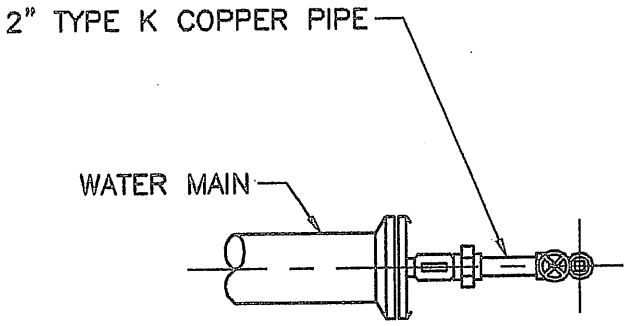
NOTES:

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.

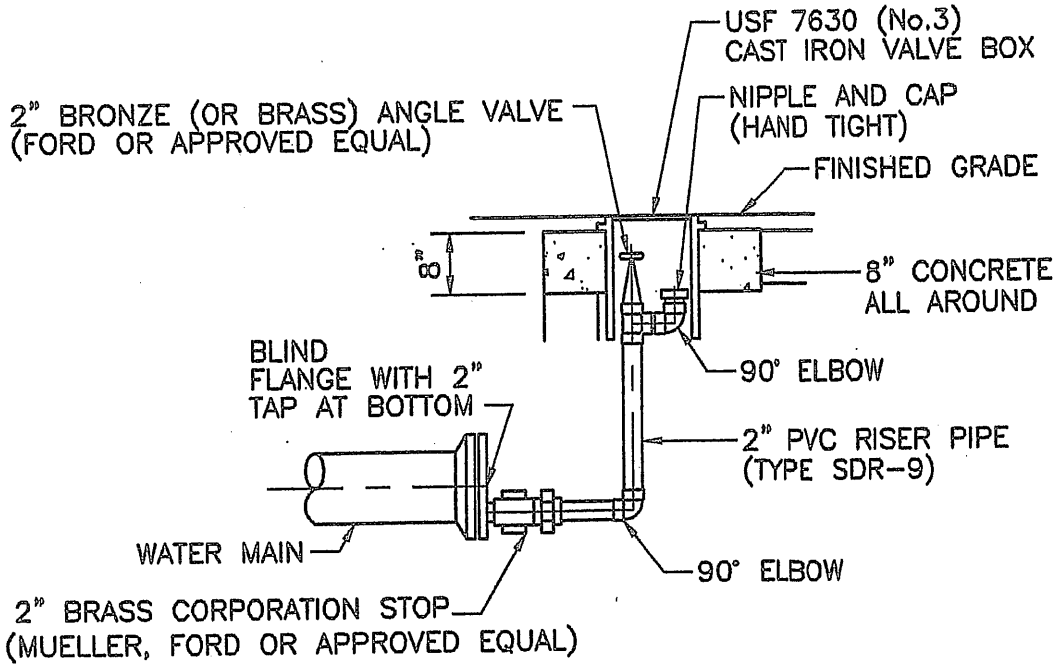
CITY OF COOPER CITY ENGINEERING STANDARDS COOPER CITY, FLORIDA	SCALE: N.T.S. REVISED: 11/02/09	STANDARD WATER DETAIL DOUBLE DETECTOR CHECK VALVE FOR FIRE LINE	W-13



CITY OF COOPER CITY ENGINEERING STANDARDS COOPER CITY, FLORIDA	SCALE: N.T.S. REVISED:	STANDARD WATER SUPPLY DETAIL BACKFLOW PREVENTER	W-14

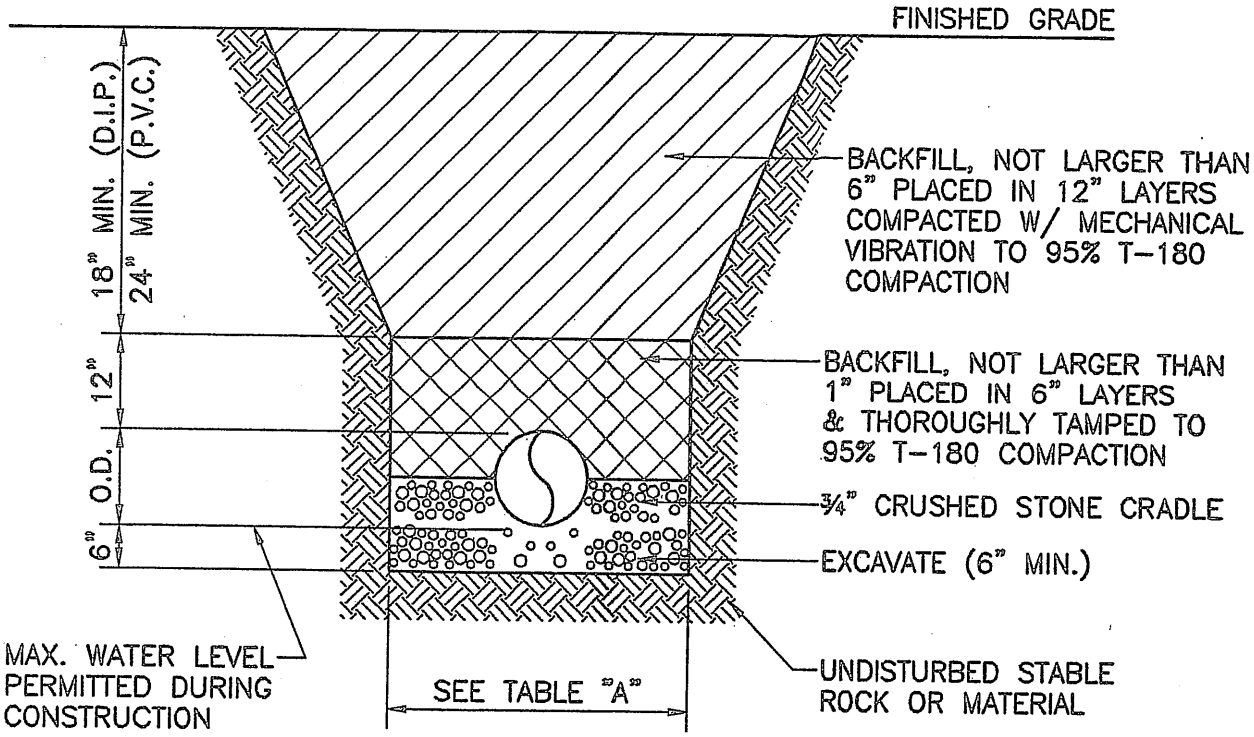


PLAN



ELEVATION

CITY OF COOPER CITY ENGINEERING STANDARDS COOPER CITY, FLORIDA	SCALE: N.T.S. REVISED:	STANDARD WATER SUPPLY DETAIL 2" TERMINAL BLOW OFF	W-15



NOTE:

1. MAXIMUM DENSITY AS DETERMINED BY A.A.S.H.T.O. T-180.

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"

DIMENSIONS SHOWN APPLY TO ALL FOUNDATIONS

CITY OF COOPER CITY ENGINEERING STANDARDS COOPER CITY, FLORIDA	SCALE: N.T.S. REVISED:	STANDARD WATER SUPPLY DETAIL TRENCH DETAIL UNPAVED AREAS	W-16

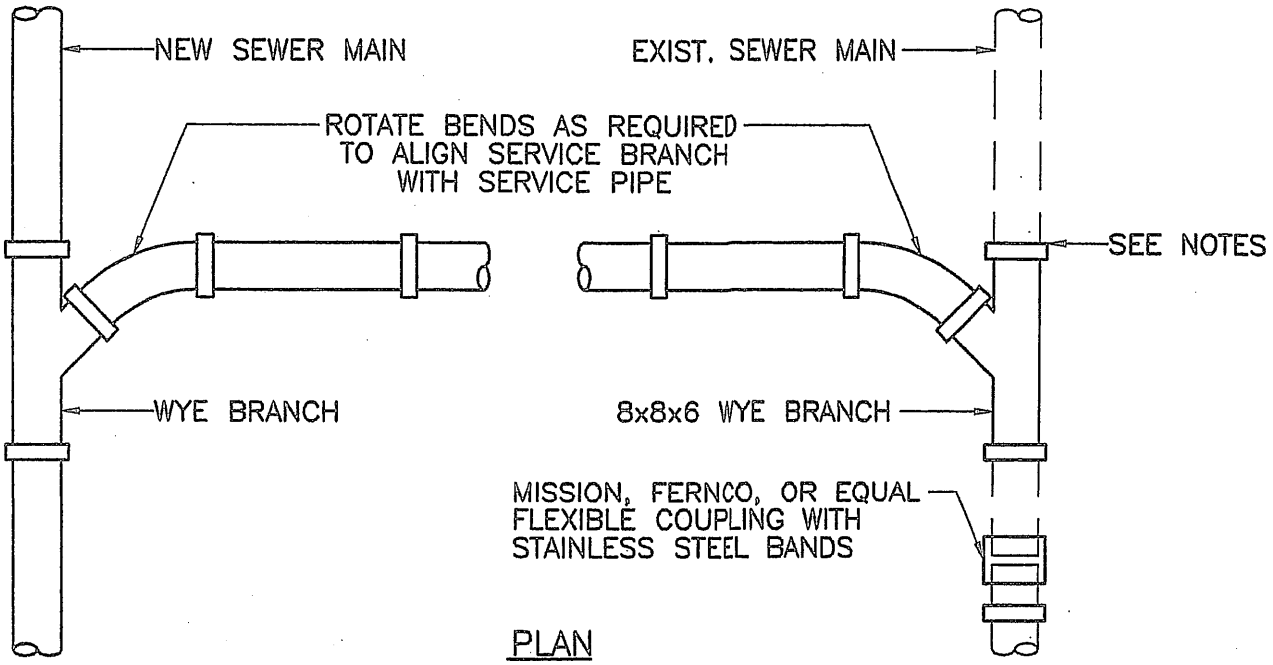
STANDARD SANITARY SEWER DETAILS

Revised October 2022

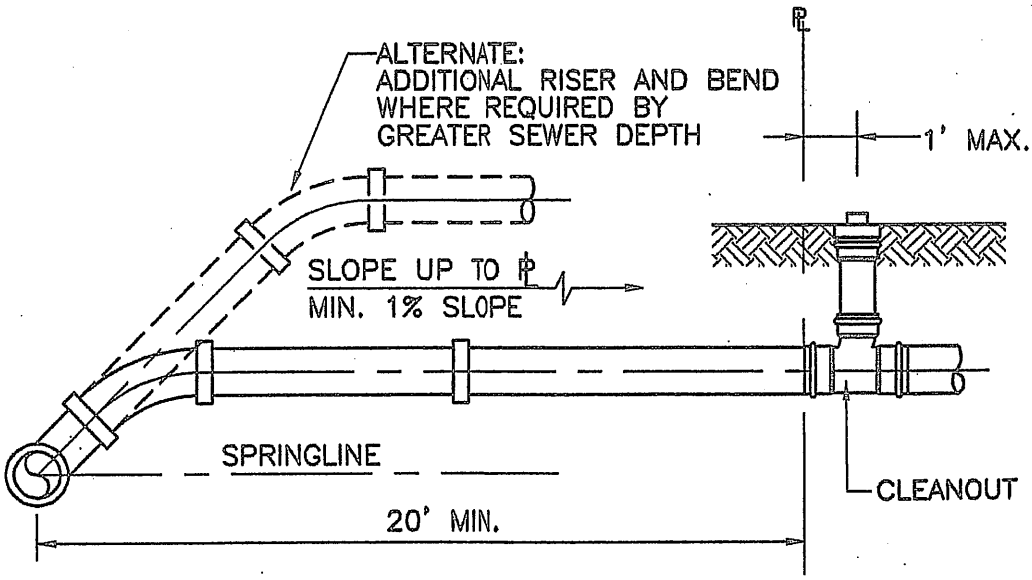
SECTION 5: STANDARD DETAILS

5.04 STANDARD SANITARY SEWER DETAILS

Detail No.	Description
S-1	Wye Branch Connection
S-1A	Residential Wye Branch Connection
S-2	Alternate Riser Connection, (7'-0" or deeper)
S-3	Precast Outside Conflict Manhole
S-4	Shallow Manhole (6'-0" depth and under)
S-5	Precast Outside Drop Manhole
S-6	Eccentric Manhole (6'-0" depth and greater)
S-7	Manhole Flow Channels
S-8	Manhole Frame and Cover Detail
S-9	Manhole Coupling Detail
S-10	Cleanout
S-11	Utility Crossing, General Requirements
S-12	Utility Crossing, Deflection Type
S-13	Utility Crossing, Fitting Type
S-14	Manual Air Release Valve
S-15	Typical Valve Setting
S-16	Trench Detail, Unpaved Areas
S-17	Lift Station Plan View
S-18	Lift Station Sectional Elevation
S-19	Lift Station Site Plan
S-20	Lift Station Emergency Pump Connection
S-21	Lift Station Date Tables and Notes



PLAN



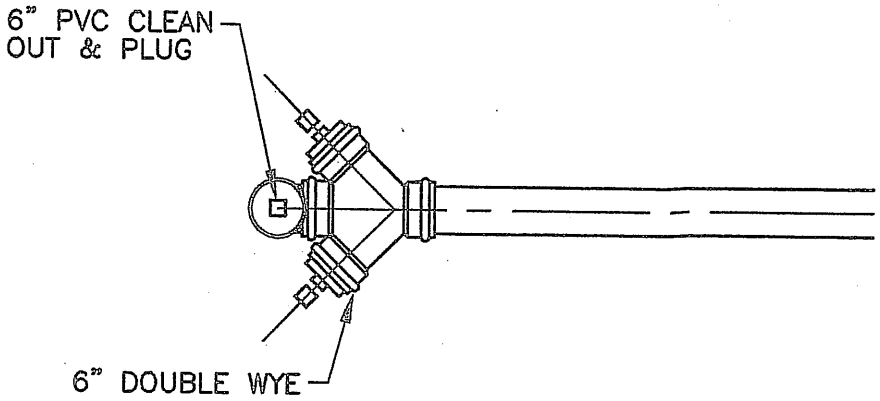
SECTION

NOTES:

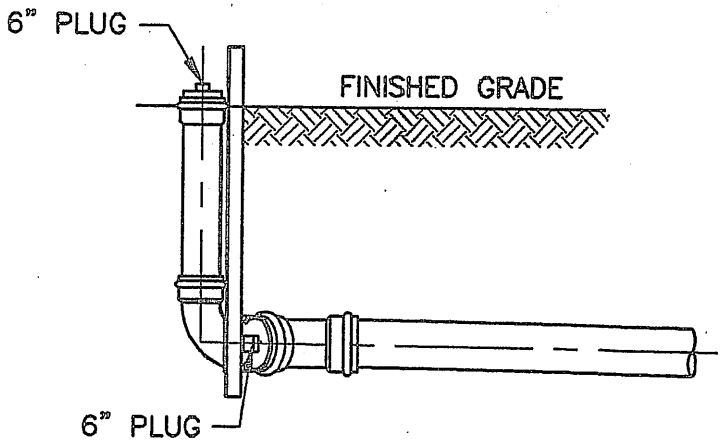
1. SINGLE SERVICE CONNECTIONS SHALL USE 6" PIPE AND FITTINGS.
2. USE RISER CONNECTIONS WHERE INVERT OF SEWER IS MORE THAN 7'–0" DEEP.
3. WHERE BELL WYE AND SPIGOT OF EXISTING MAIN ARE NOT COMPATIBLE, USE A SECOND FLEXIBLE COUPLING.
4. RIGID COUPLINGS ARE ALSO ACCEPTABLE.
5. CONNECTION SHALL NOT BE MADE BELOW SPRINGLINE OF MAIN.

CITY OF COOPER CITY ENGINEERING STANDARDS COOPER CITY, FLORIDA	SCALE: N.T.S. REVISED:	STANDARD SANITARY SEWER DETAIL WYE BRANCH CONNECTION	S-1

Revised October 2022



PLAN

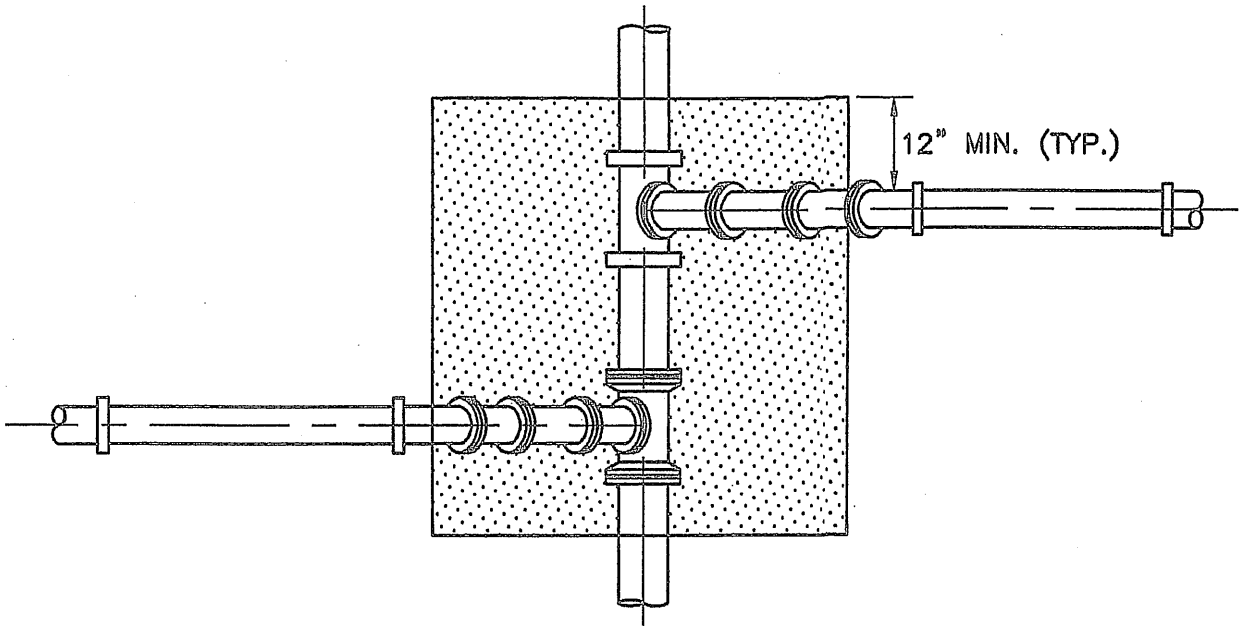


SECTION

NOTES:

1. SINGLE SERVICE CONNECTIONS SHALL USE 6" PIPE AND FITTINGS.
2. USE RISER CONNECTIONS WHERE INVERT OF SEWER IS MORE THAN 7'-0" DEEP.
3. WHERE BELL WYE AND SPIGOT OF EXISTING MAIN ARE NOT COMPATIBLE, USE A SECOND FLEXIBLE COUPLING.
4. RIGID COUPLINGS ARE ALSO ACCEPTABLE.
5. CONNECTION SHALL NOT BE MADE BELOW SPRINGLINE OF MAIN.

CITY OF COOPER CITY ENGINEERING STANDARDS COOPER CITY, FLORIDA	SCALE: N.T.S. REVISED:	STANDARD SANITARY SEWER DETAIL RESIDENTIAL WYE BRANCH CONNECTION	S-1A



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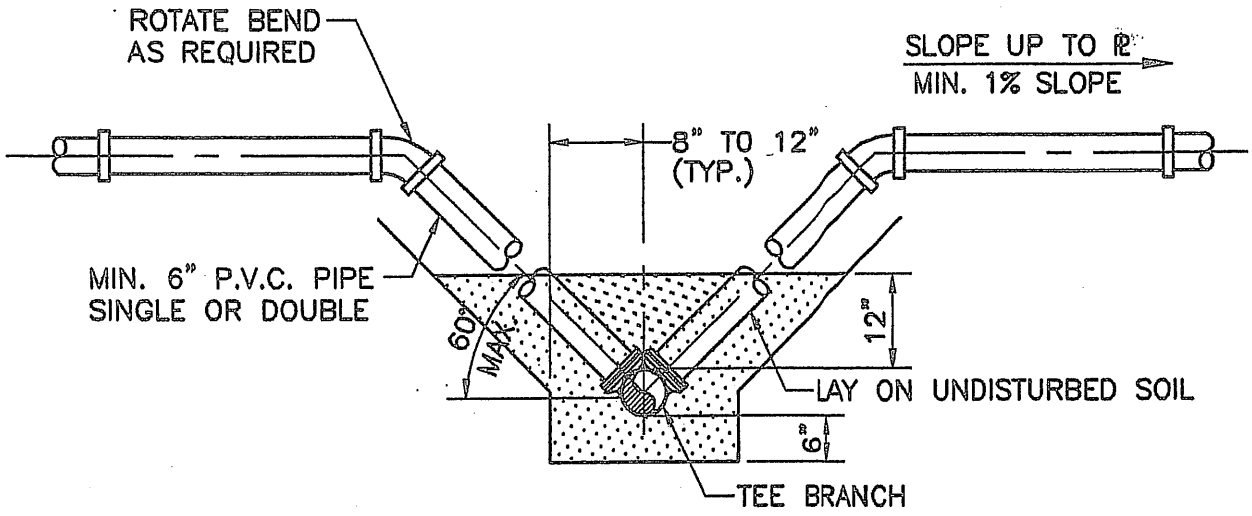


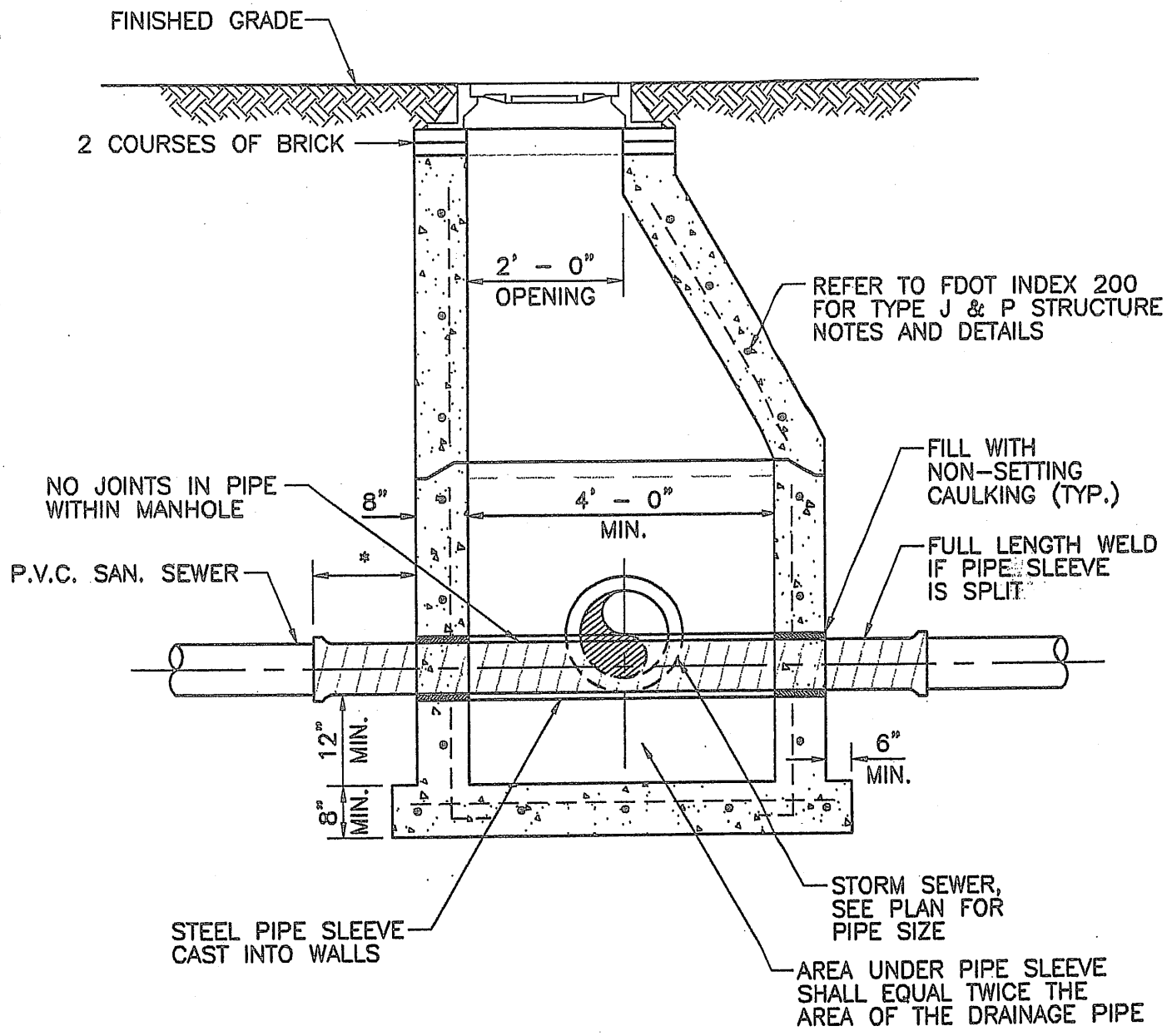
SECTION

NOTES:

1. MODIFIED RISER CONNECTION TO BE USED ONLY WHEN DIRECTED BY ENGINEER.

2. ¼" DRAINFIELD LIMEROCK SHALL BE USED AS BEDDING OVER UNDISTURBED SOIL, FOR P.V.C. PIPE, AT WYE CONNECTION TO MAIN.

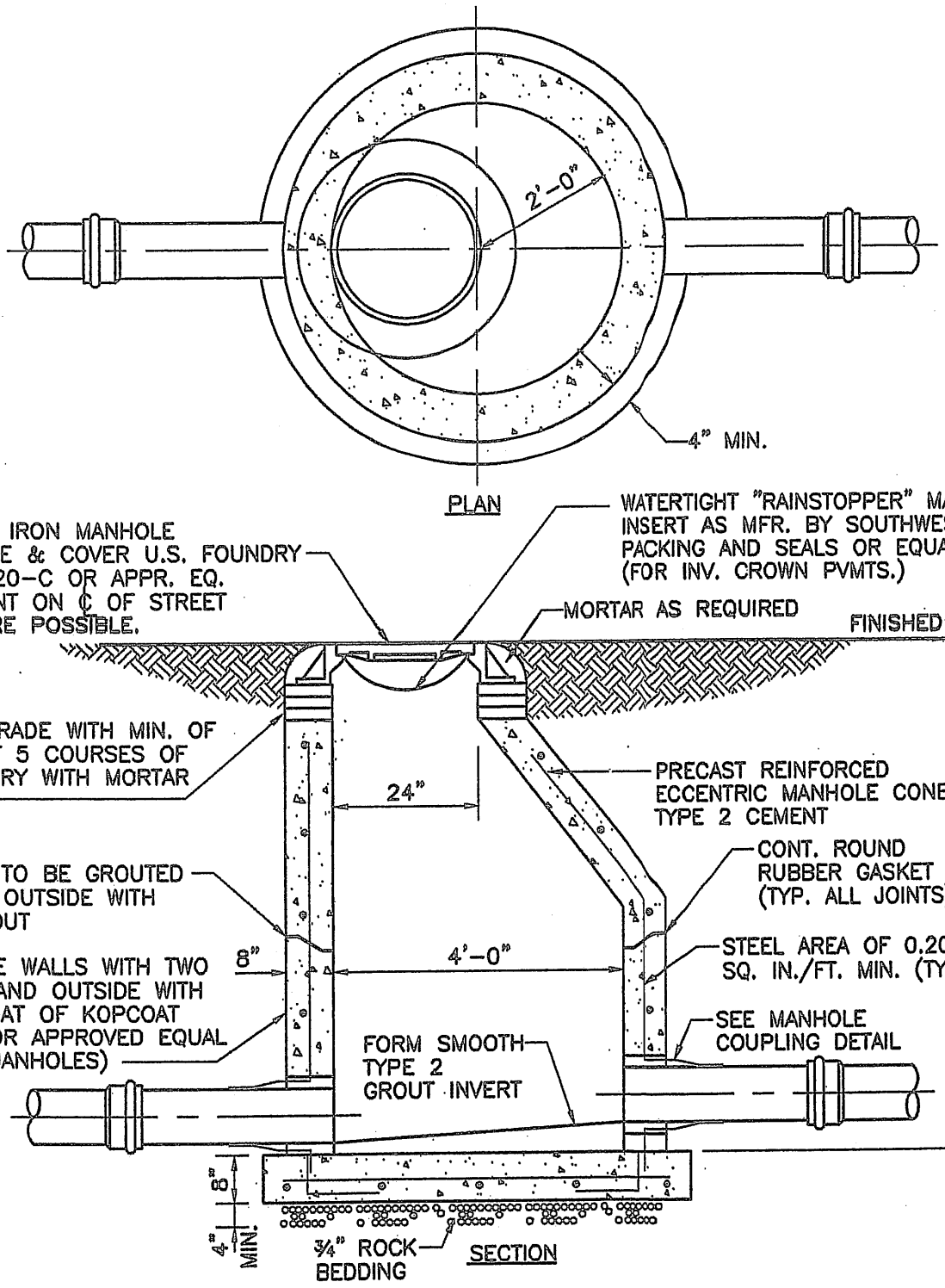
CITY OF COOPER CITY ENGINEERING STANDARDS COOPER CITY, FLORIDA	SCALE: N.T.S. REVISED:	STANDARD SANITARY SEWER DETAIL ALT. RISER CONNECTION (7' OR DEEPER)	S-2



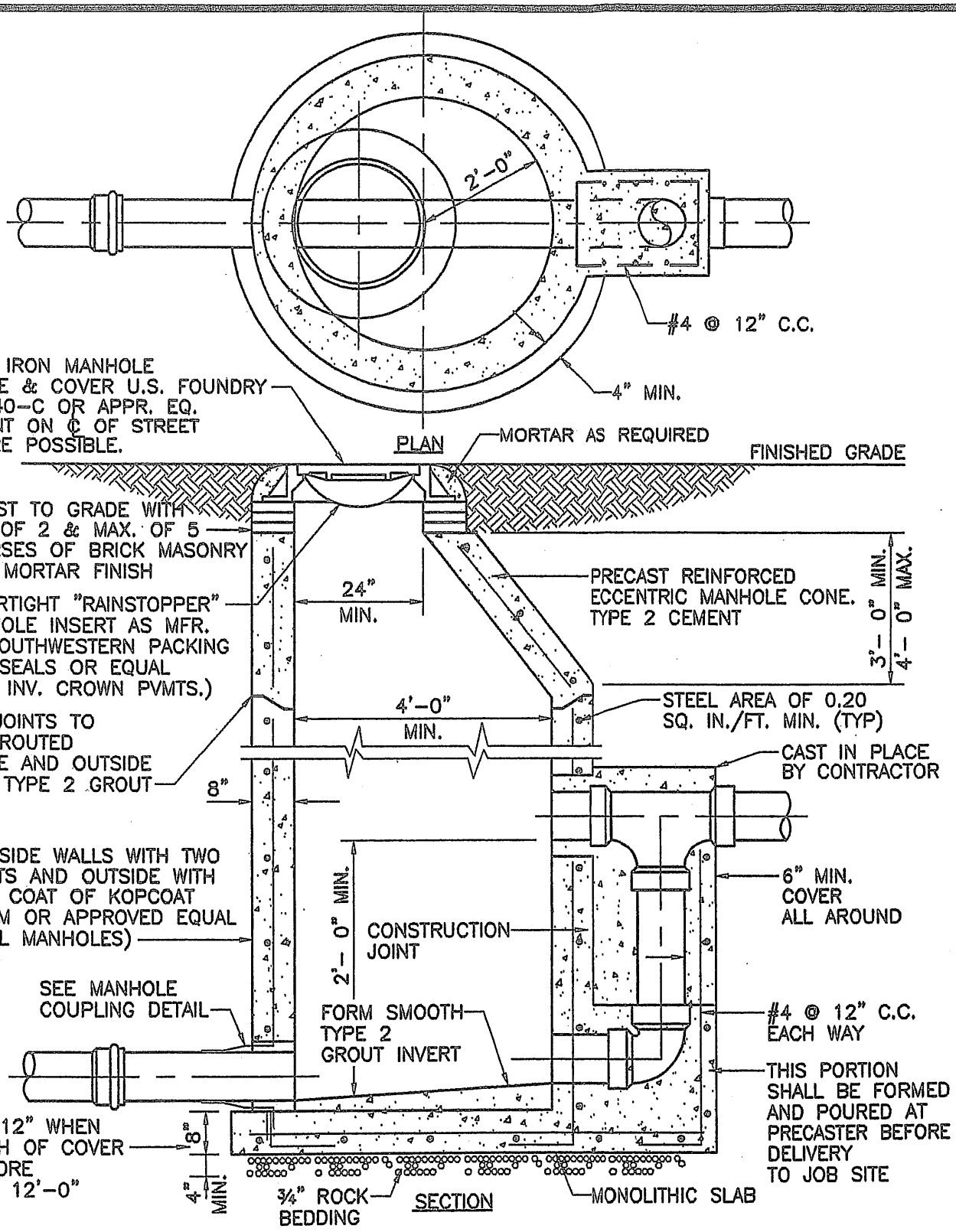
NOTES:

1. ALL CONFLICT MANHOLES SHALL CONFORM TO THE DETAILS ON THIS DRAWING, AND TO THE REQUIREMENTS OF ASTM C-478.
2. POTABLE WATER PIPE SHALL NOT PASS THROUGH OR CONTACT SANITARY SEWER MANHOLE.
3. (*) 12" MINIMUM – 18" MAXIMUM
4. PAINT INSIDE WALLS WITH TWO (2) COATS OF KOPCOAT No. 300M OR APPROVED EQUAL AND ONE COAT OUTSIDE WITH SAME MATERIAL.

CITY OF COOPER CITY ENGINEERING STANDARDS COOPER CITY, FLORIDA	SCALE: N.T.S. REVISED:	STANDARD SANITARY SEWER DETAIL PRECAST OUTSIDE CONFLICT MANHOLE	S-3



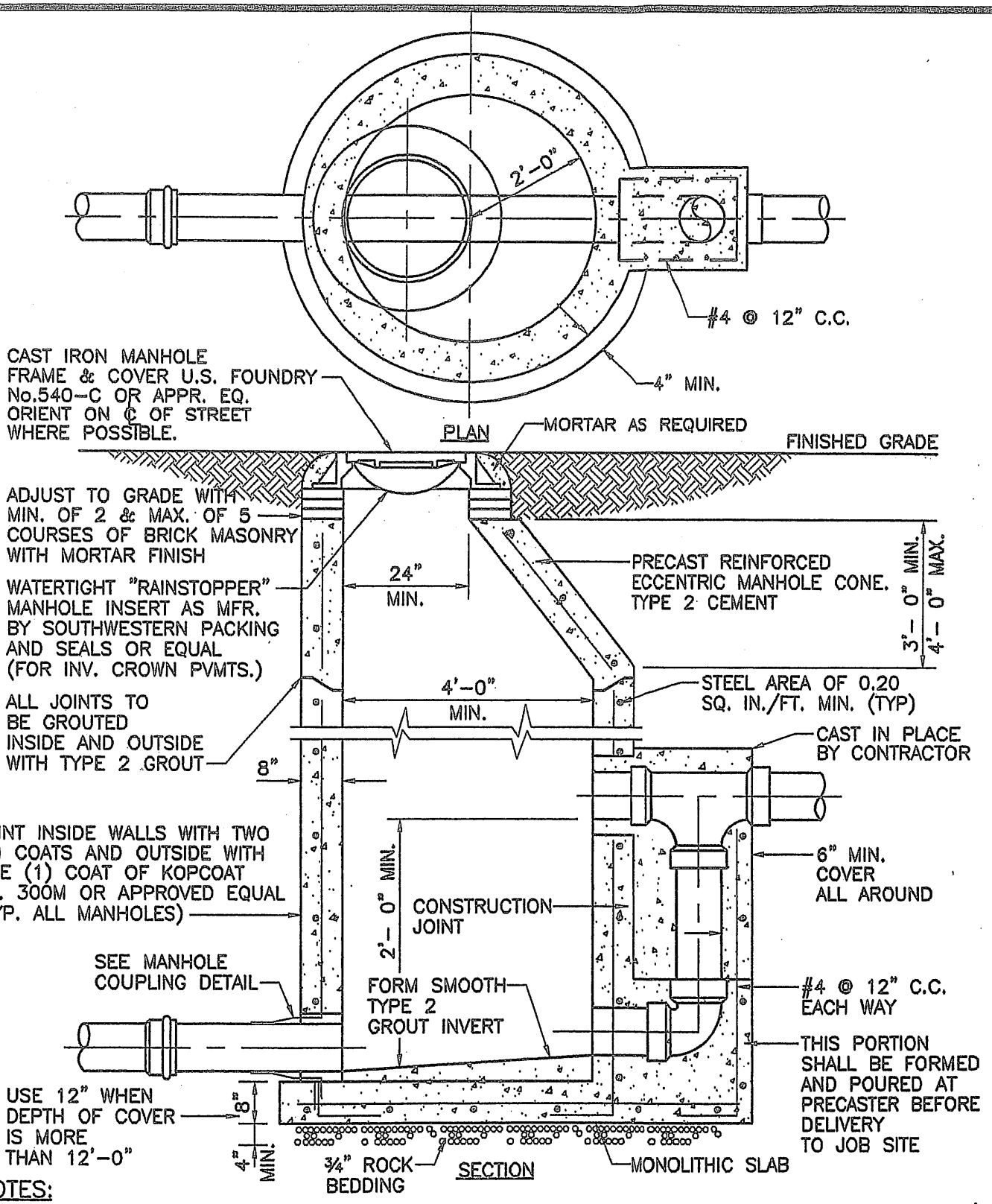
CITY OF COOPER CITY ENGINEERING STANDARDS COOPER CITY, FLORIDA	SCALE: N.T.S. REVISED:	STANDARD SANITARY SEWER DETAIL SHALLOW MANHOLE (6'-0" DEPTH & UNDER)	S-4



NOTES:

1. SPECIAL DESIGN CONSIDERATION SHOULD BE GIVEN WHEN DEPTH OF COVER EXCEEDS 12'-0" AND/OR THE SIZE AND NUMBER OF PIPES ENTERING THE MANHOLE RESULTS IN UNUSUAL CONDITIONS. MANHOLE SHALL BE 5'-0" DIA. WHEN DEPTH EXCEEDS 12'-0".
2. ALL REQUIREMENTS FOR ECCENTRIC PRECAST MANHOLES APPLY TO PRECAST OUTSIDE DROP MANHOLES.

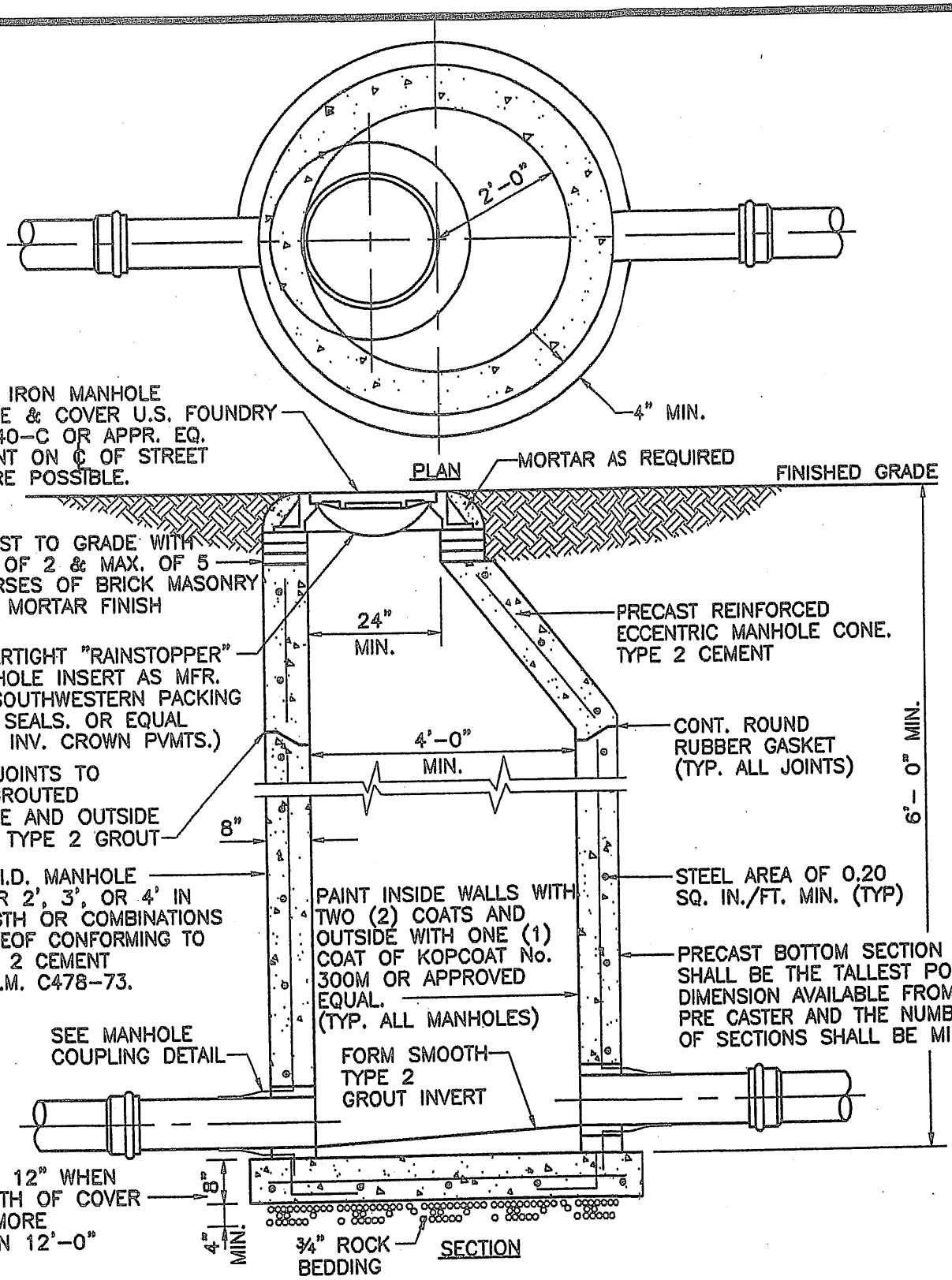
CITY OF COOPER CITY ENGINEERING STANDARDS COOPER CITY, FLORIDA	SCALE: N.T.S. REVISED:	STANDARD SANITARY SEWER DETAIL PRECAST OUTSIDE DROP MANHOLE	S-5



NOTES:

1. SPECIAL DESIGN CONSIDERATION SHOULD BE GIVEN WHEN DEPTH OF COVER EXCEEDS 12'-0" AND/OR THE SIZE AND NUMBER OF PIPES ENTERING THE MANHOLE RESULTS IN UNUSUAL CONDITIONS. MANHOLE SHALL BE 5'-0" DIA. WHEN DEPTH EXCEEDS 12'-0".
2. ALL REQUIREMENTS FOR ECCENTRIC PRECAST MANHOLES APPLY TO PRECAST OUTSIDE DROP MANHOLES.

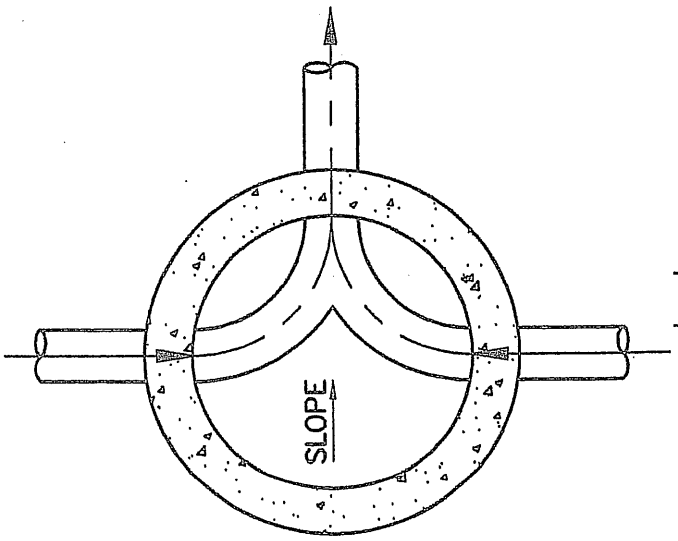
CITY OF COOPER CITY ENGINEERING STANDARDS COOPER CITY, FLORIDA	SCALE: N.T.S. REVISED:	STANDARD SANITARY SEWER DETAIL PRECAST OUTSIDE DROP MANHOLE	S-5

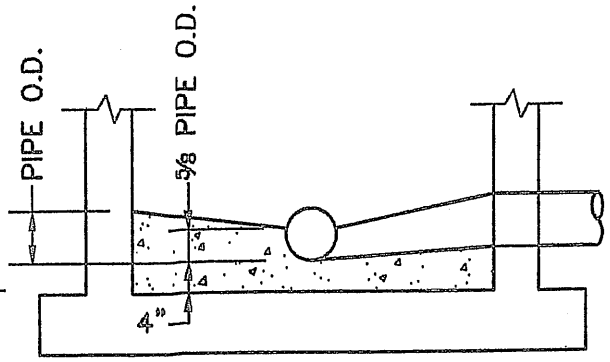


NOTE:

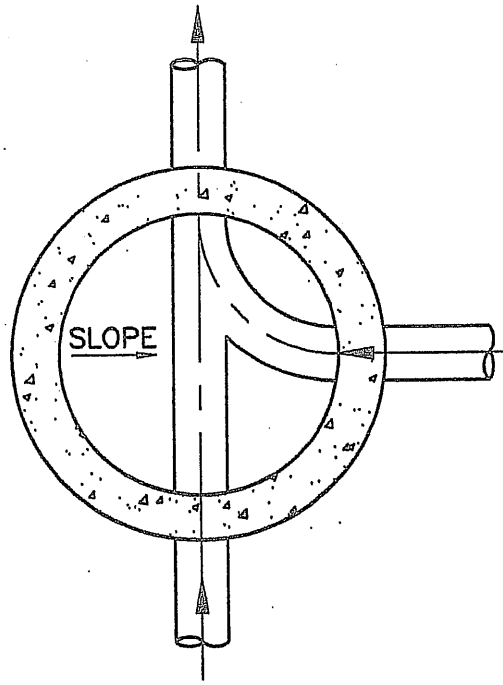
1. SPECIAL DESIGN CONSIDERATION SHOULD BE GIVEN WHEN DEPTH OF COVER EXCEEDS 12'-0" AND/OR THE SIZE AND NUMBER OF PIPES ENTERING THE MANHOLE RESULTS IN UNUSUAL CONDITIONS. MANHOLE SHALL BE 5'-0" DIA. WHEN DEPTH EXCEEDS 12'-0".

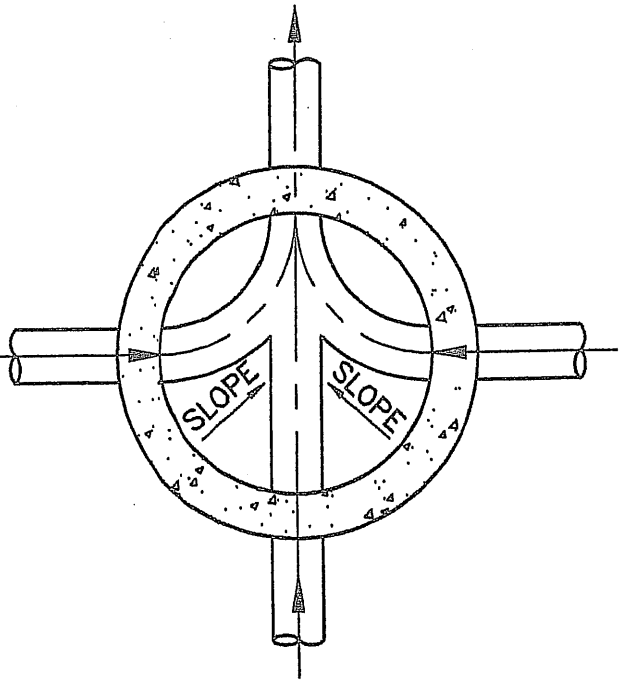
CITY OF COOPER CITY ENGINEERING STANDARDS COOPER CITY, FLORIDA	SCALE: N.T.S. REVISED:	STANDARD SANITARY SEWER DETAIL ECCENTRIC MANHOLE (6'-0" DEPTH & GREATER)	S-6





TYPICAL SECTION

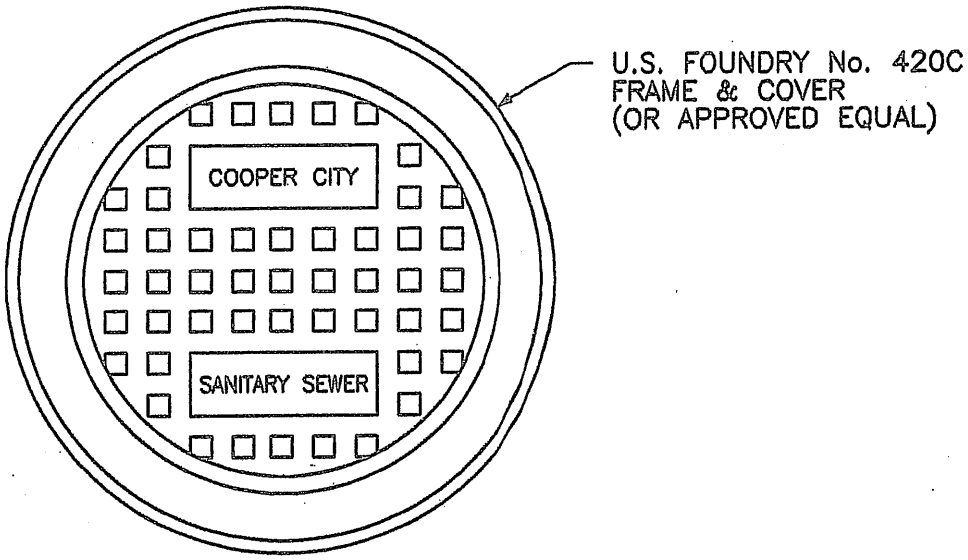


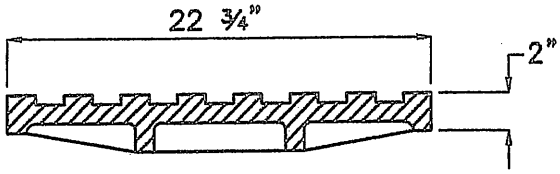


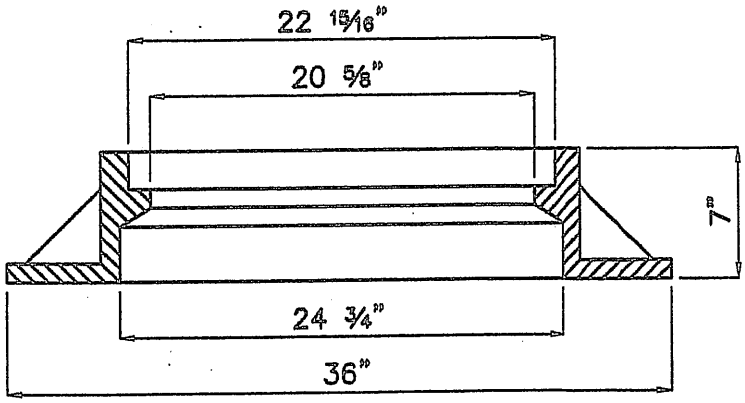
NOTES:

1. INVERT CHANNELS TO BE CONSTRUCTED FOR SMOOTH FLOW WITH NO OBSTRUCTIONS.
2. SPILLWAYS SHALL BE CONSTRUCTED BETWEEN PIPES WITH DIFFERENT INVERT ELEVATIONS PROVIDING FOR SMOOTH FLOWS.
3. CHANNELS TO BE FORMED IN ALL MANHOLES TO ACCEPT T.V. CAMERA.
4. WHEN DIRECTIONAL CHANNELS EXCEEDING 45° OCCUR, AN EXTRA FLOW LINE ELEVATION DROP OF 0.05' ACROSS MANHOLE SHALL BE PROVIDED.

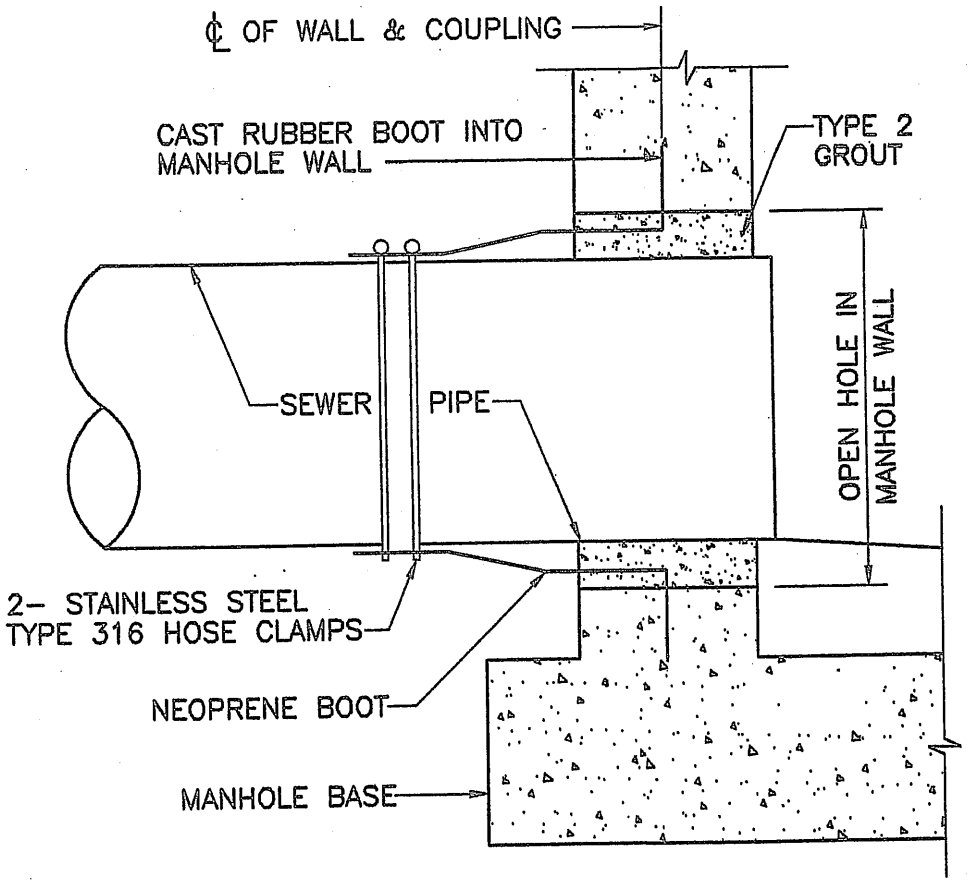
CITY OF COOPER CITY ENGINEERING STANDARDS COOPER CITY, FLORIDA	SCALE: N.T.S. REVISED:	STANDARD SANITARY SEWER DETAIL MANHOLE FLOW CHANNELS	S-7



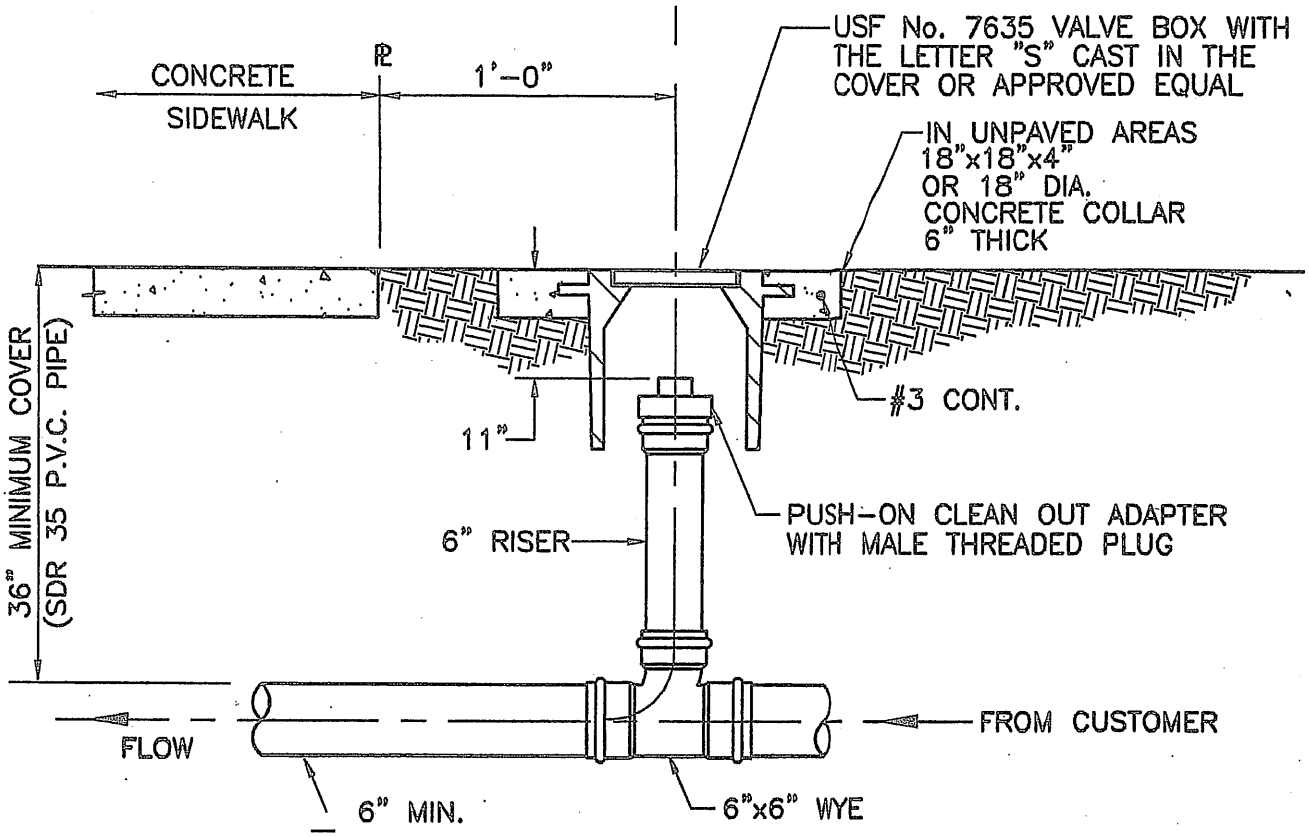




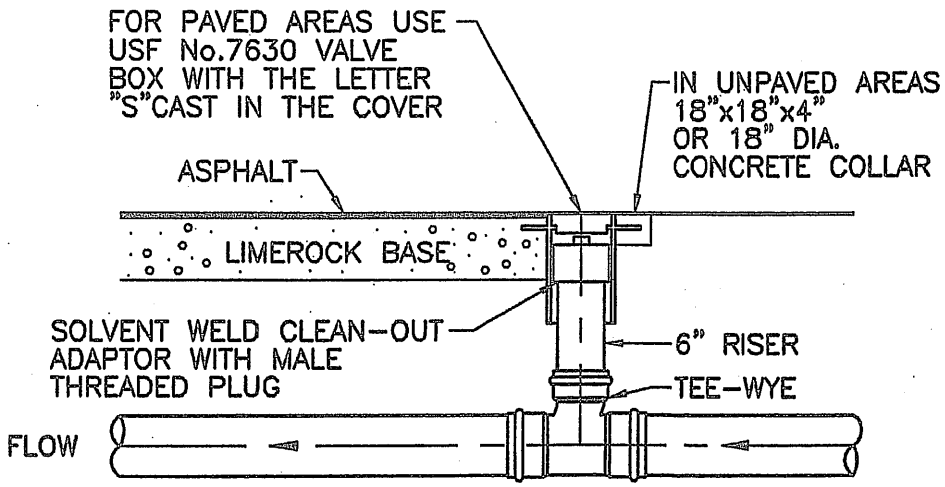
CITY OF COOPER CITY ENGINEERING STANDARDS COOPER CITY, FLORIDA	SCALE: N.T.S. REVISED:	STANDARD SANITARY SEWER DETAIL FRAME & COVER DETAIL	S-8



CITY OF COOPER CITY ENGINEERING STANDARDS COOPER CITY, FLORIDA	SCALE: N.T.S. REVISED:	STANDARD SANITARY SEWER DETAIL MANHOLE COUPLING DETAIL	S-9



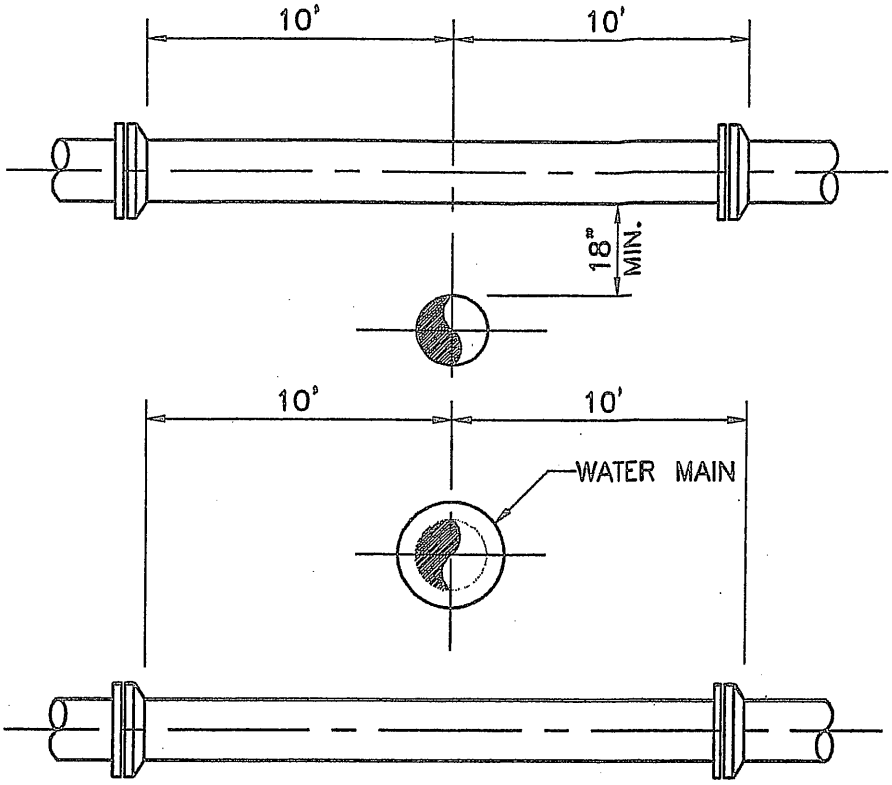
COMMERCIAL INSTALLATION



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

RESIDENTIAL INSTALLATION

CITY OF COOPER CITY ENGINEERING STANDARDS COOPER CITY, FLORIDA	SCALE: N.T.S. REVISED:	STANDARD SANITARY SEWER DETAIL CLEANOUT	S-10



NOTES:

1. A WATER MAIN SHOULD CROSS OVER A SEWER MAIN WHEREVER POSSIBLE MAINTAINING A 36 INCH COVER FOR P.V.C., 30 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. ALLOWED FOR ANY SEPARATION LESS THAN 18 INCHES.

4. MAINTAIN 10 FEET HORIZONTAL SEPARATION BETWEEN WATER AND SEWER AS A MINIMUM.

5. 3 FOOT HORIZONTAL CLEARANCE SHALL BE PROVIDED BETWEEN SEWER MAINS AND UTILITY OBSTRUCTIONS (CATCH BASINS, CONCRETE POLES, ETC.)

CITY OF COOPER CITY ENGINEERING STANDARDS COOPER CITY, FLORIDA	SCALE: N.T.S. REVISED:	STANDARD SANITARY SEWER DETAIL UTILITY CROSSING GENERAL REQUIREMENTS	S-11

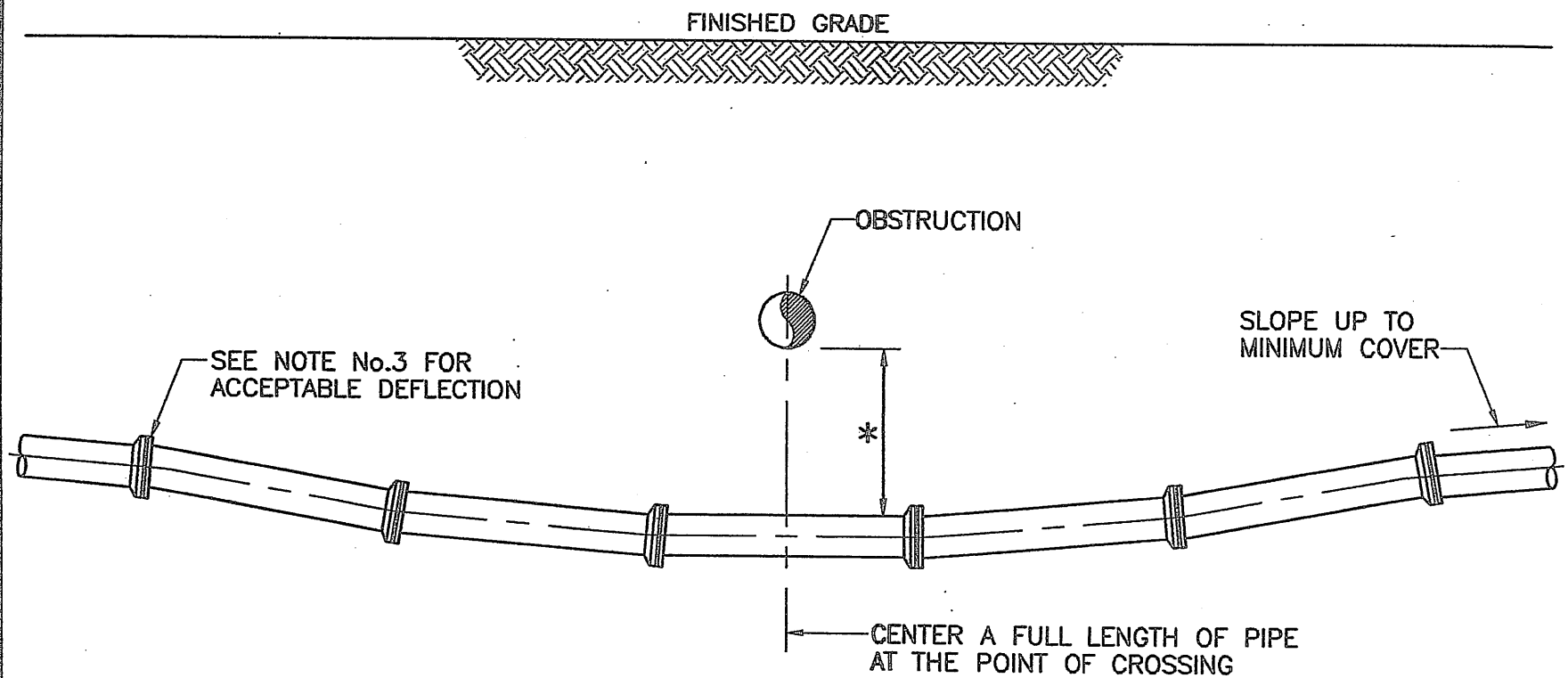
Revised October 2022

CITY OF COOPER CITY
ENGINEERING STANDARDS
COOPER CITY, FLORIDA

SCALE: N.T.S.
REVISED:

STANDARD SANITARY SEWER DETAIL
UTILITY CROSSING
DEFLECTION TYPE

S-12



NOTES:

1. (*) 18" MINIMUM CLEARANCE REQUIRED FOR WATER AND SEWER MAIN CROSSINGS, 12" MINIMUM CLEARANCE REQUIRED FOR OTHER UTILITIES 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 MANUFACTURER'S MAXIMUM JOINT DEFLECTION (MAXIMUM).

NOTES:

1. (*) 18" MINIMUM CLEARANCE REQUIRED FOR WATER & SEWER MAIN CROSSINGS, 12" MIN. CLEARANCE REQUIRED FOR OTHER UTILITIES CROSSINGS. SEE ENCASEMENT DETAIL IF MIN. CLEARANCE CAN NOT BE OBTAINED.

CITY OF COOPER CITY ENGINEERING STANDARDS COOPER CITY, FLORIDA	SCALE: N.T.S. REVISED:	STANDARD SANITARY SEWER DETAIL UTILITY CROSSING FITTING TYPE	S-13

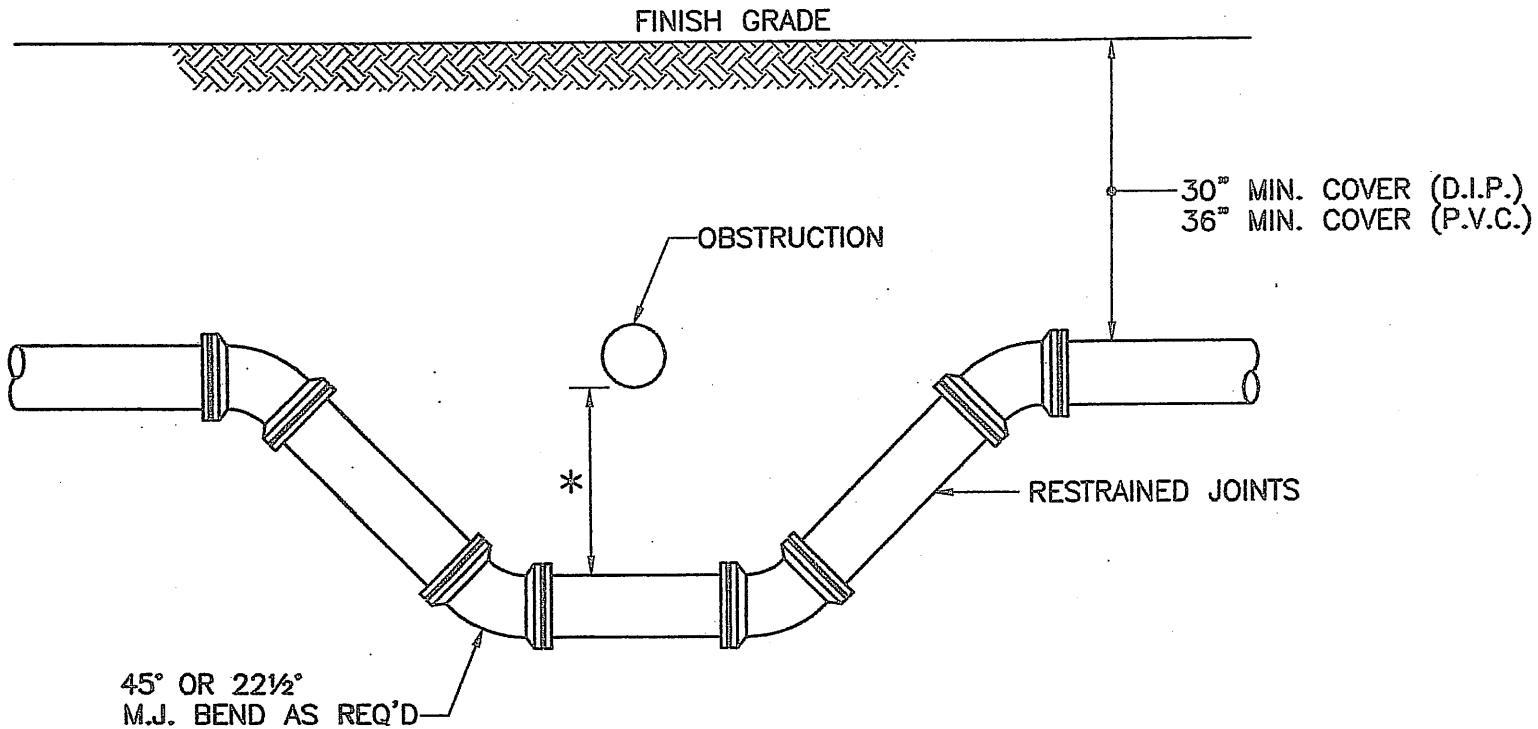
Revised October 2022

CITY OF COOPER CITY
ENGINEERING STANDARDS
COOPER CITY, FLORIDA

SCALE: N.T.S.
REVISED:

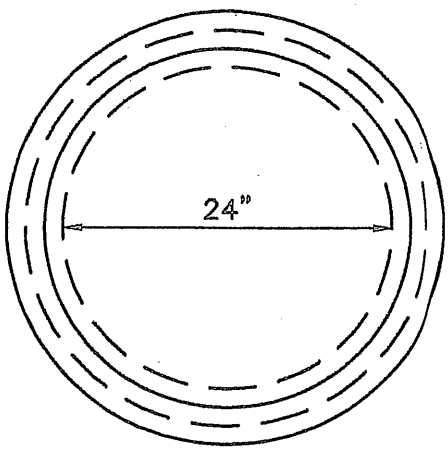
STANDARD SANITARY SEWER DETAIL
UTILITY CROSSING FITTING TYPE

S-13

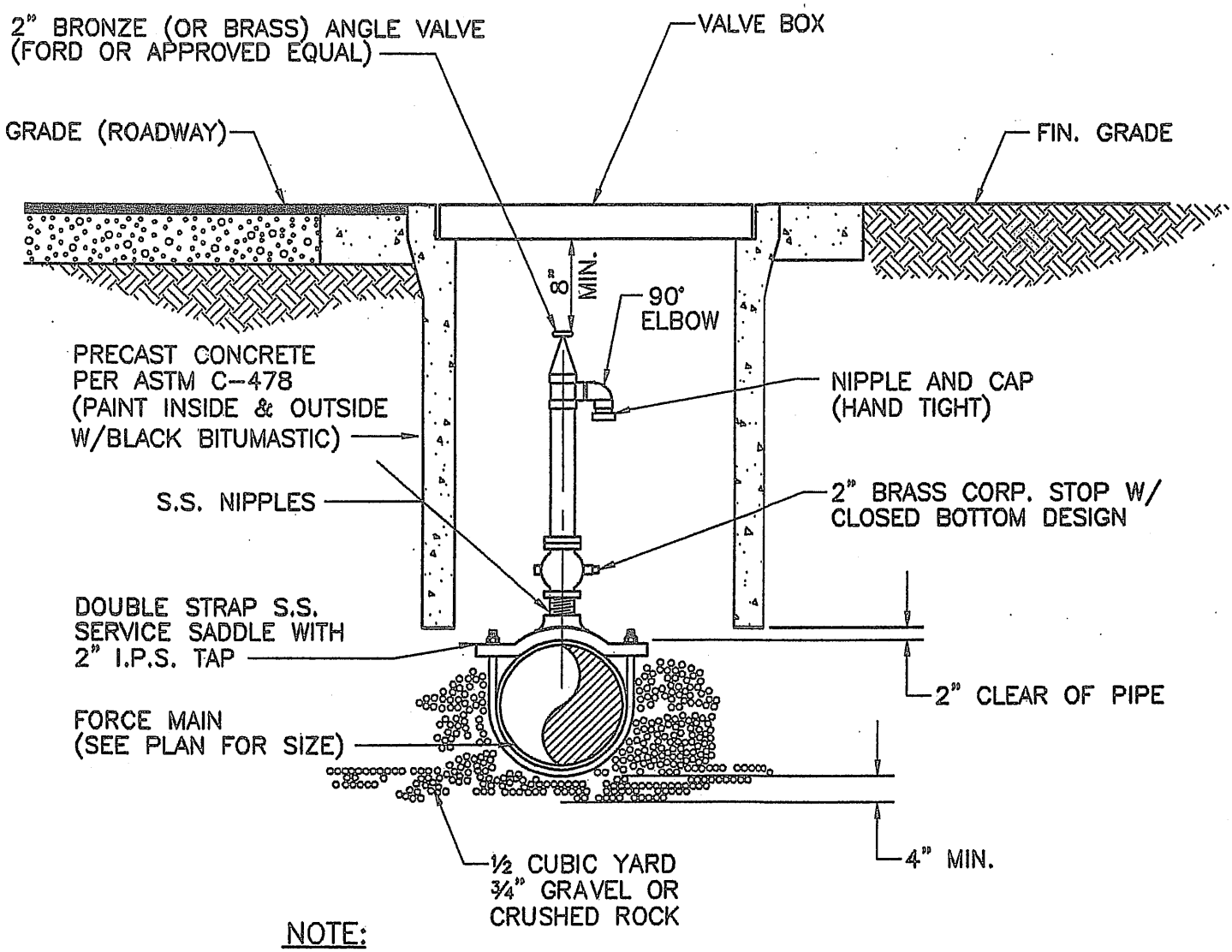


NOTES:

1. (*) 18" MINIMUM CLEARANCE REQUIRED FOR WATER & SEWER MAIN CROSSINGS, 12" MIN. CLEARANCE REQUIRED FOR OTHER UTILITIES CROSSINGS. SEE ENCASEMENT DETAIL IF MIN. CLEARANCE CAN NOT BE OBTAINED.



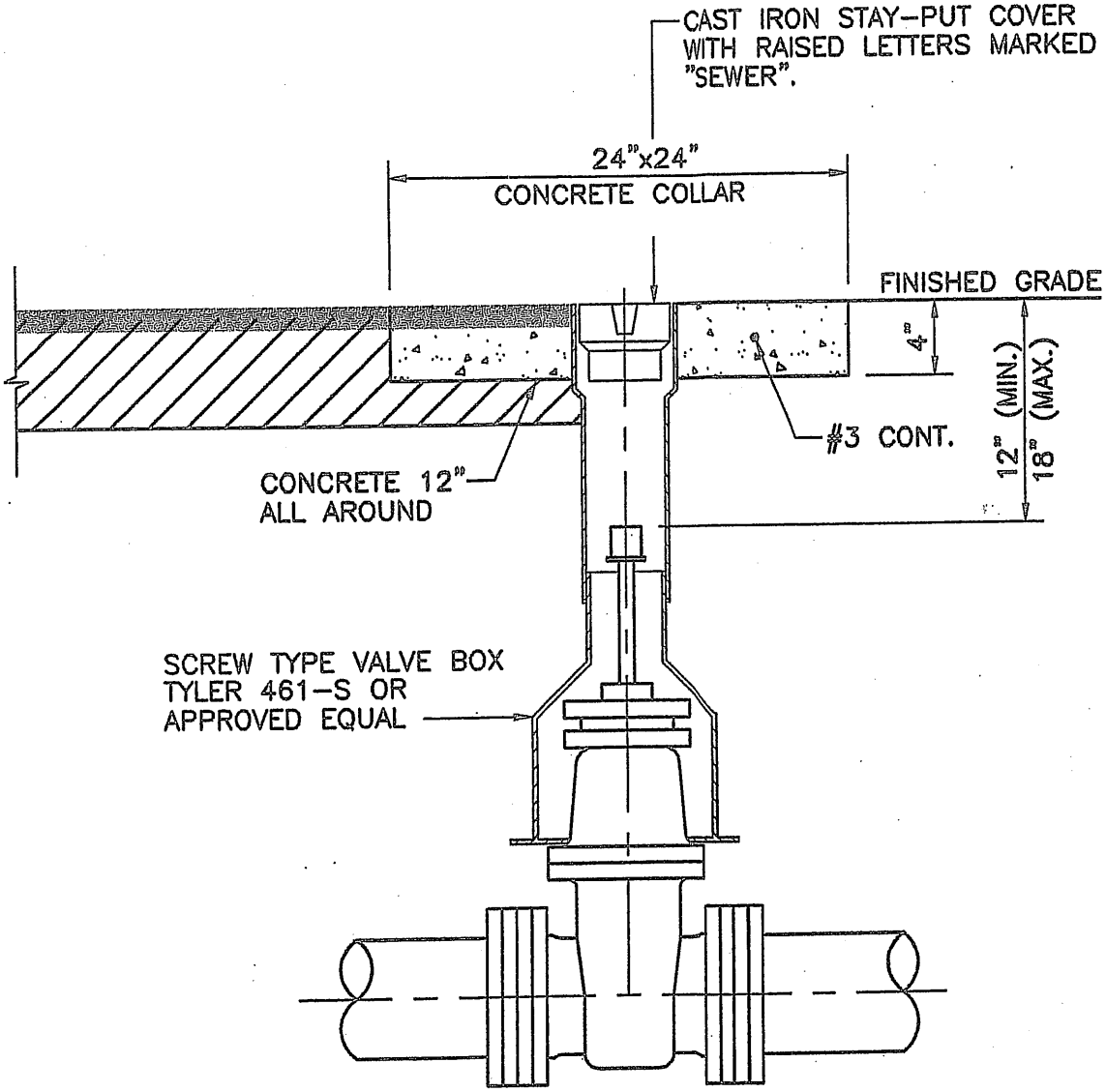
PLAN



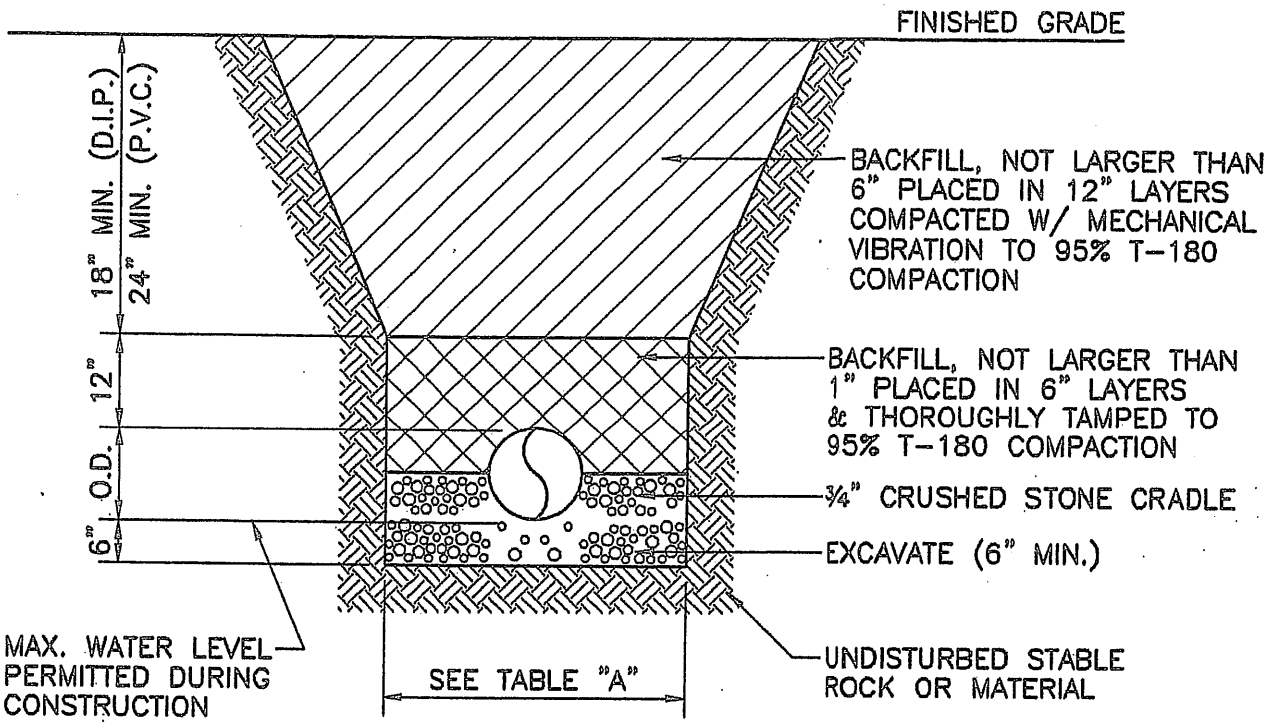
NOTE:

1. LOCATION TO BE DETERMINED BY ENGINEER.

CITY OF COOPER CITY ENGINEERING STANDARDS COOPER CITY, FLORIDA	SCALE: N.T.S. REVISED:	STANDARD SANITARY SEWER DETAIL MANUAL AIR RELEASE VALVE	S-14



CITY OF COOPER CITY ENGINEERING STANDARDS COOPER CITY, FLORIDA	SCALE: N.T.S. REVISED:	STANDARD SANITARY SEWER DETAIL TYPICAL VALVE SETTING	S-15



NOTE:

1. MAXIMUM DENSITY AS DETERMINED BY A.A.S.H.T.O.

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"

DIMENSIONS SHOWN APPLY TO ALL FOUNDATIONS

CITY OF COOPER CITY ENGINEERING STANDARDS COOPER CITY, FLORIDA	SCALE: N.T.S. REVISED:	STANDARD SANITARY SEWER DETAIL TRENCH DETAIL UNPAVED AREAS	S-16

CITY OF COOPER CITY ENGINEERING STANDARDS COOPER CITY, FLORIDA	SCALE: N.T.S. REVISED:	STANDARD SANITARY SEWER DETAIL LIFT STATION PLAN VIEW	S-17

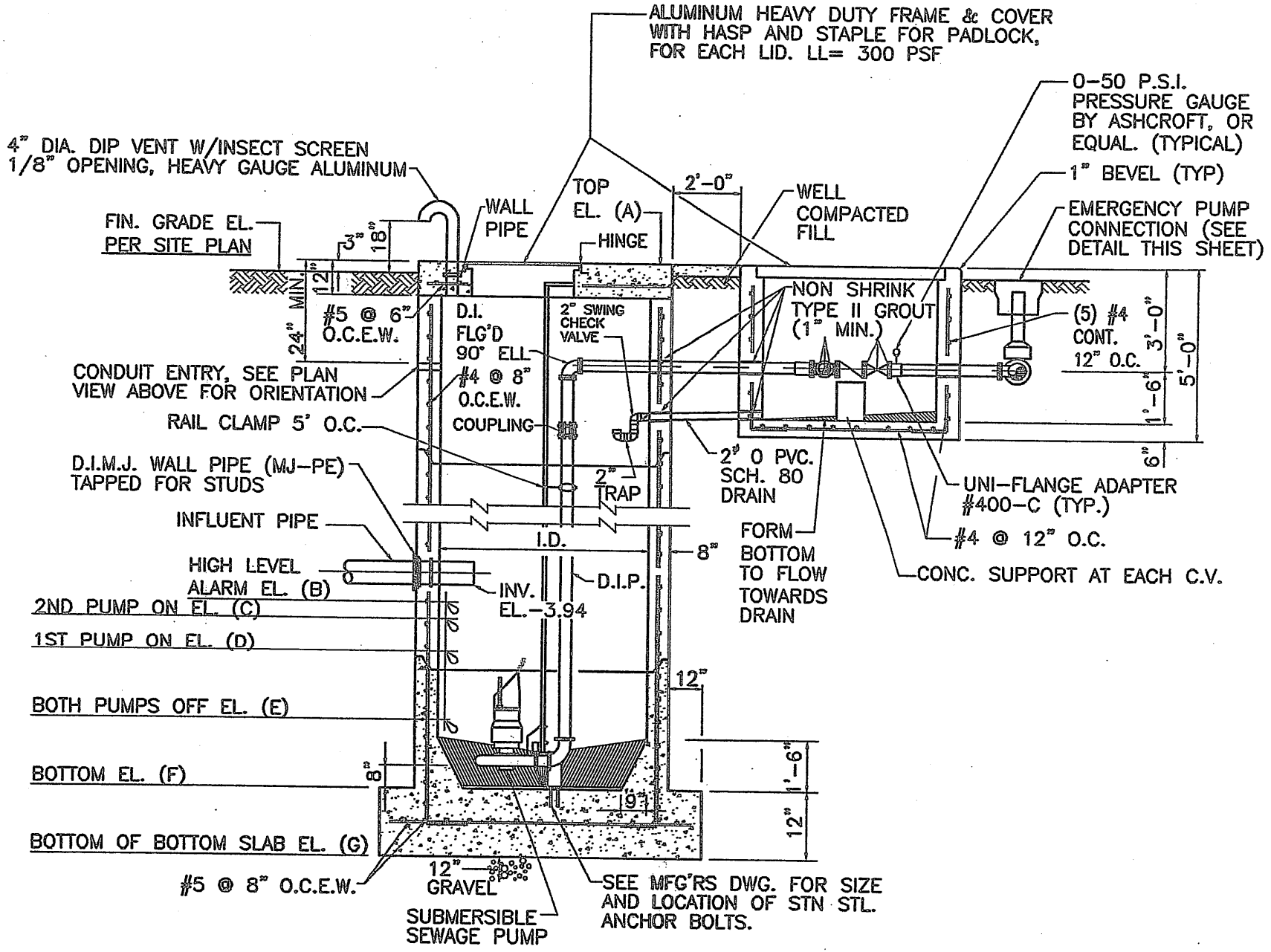
Revised October 2022

CITY OF COOPER CITY
ENGINEERING STANDARDS
COOPER CITY, FLORIDA

SCALE: N.T.S.
REVISED:

STANDARD SANITARY SEWER DETAIL
LIFT STATION
SECTIONAL ELEVATION

S-18



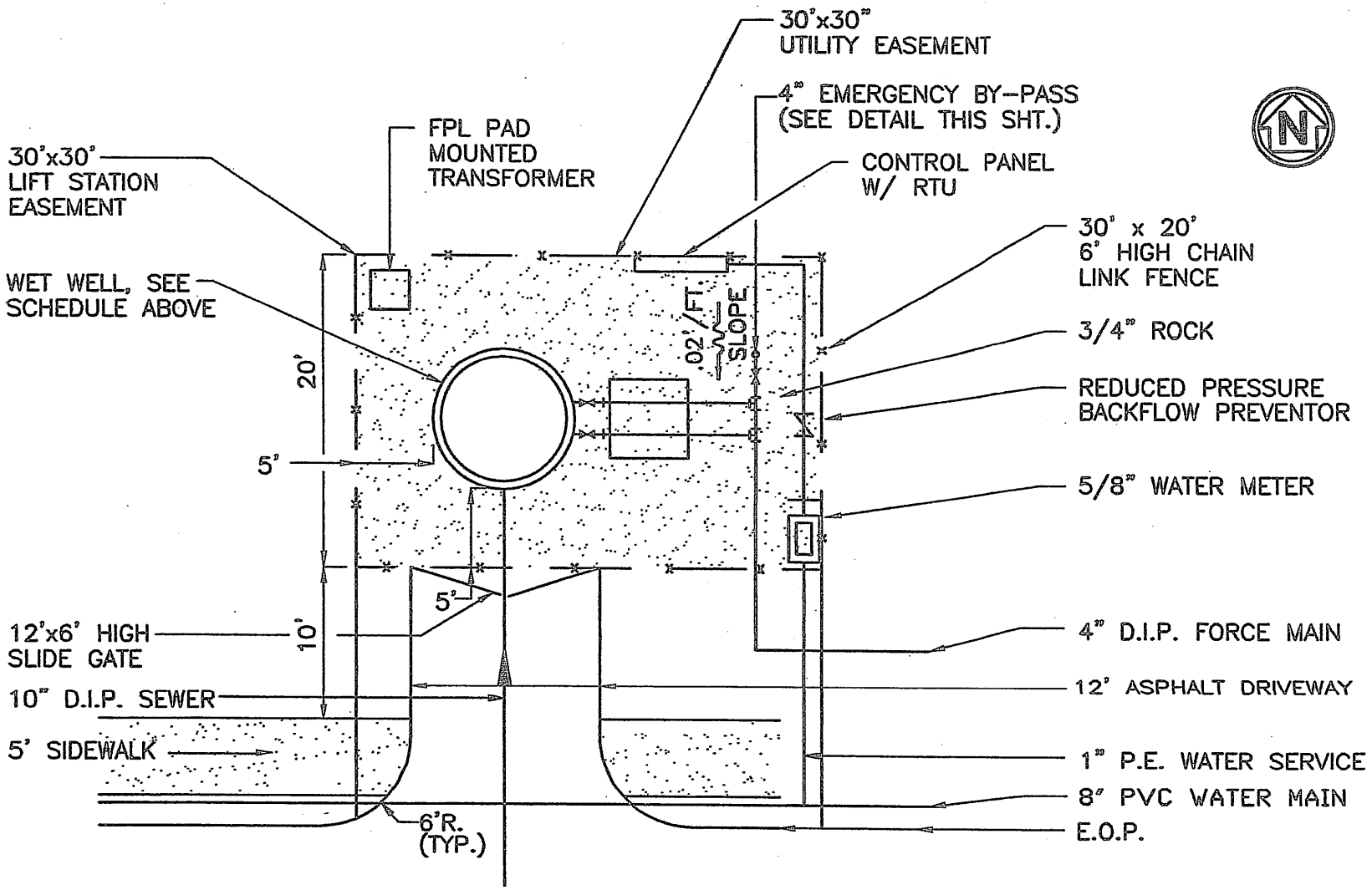
Revised October 2022

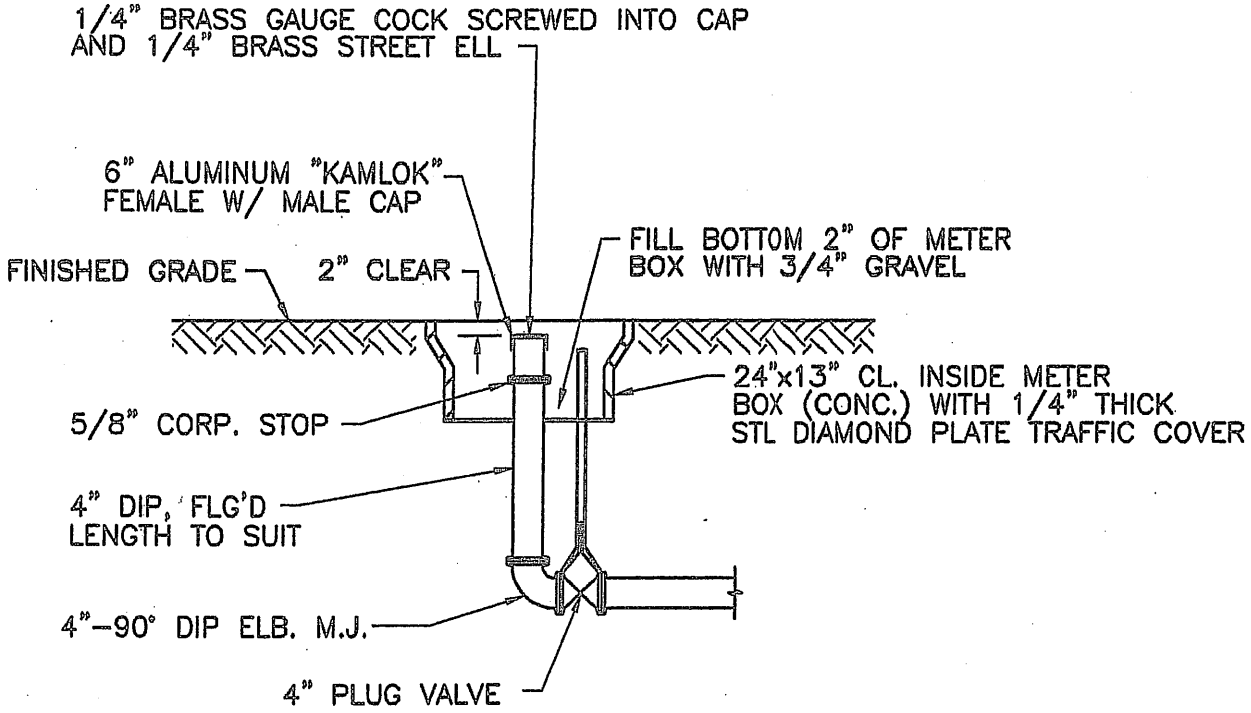
CITY OF COOPER CITY
ENGINEERING STANDARDS
COOPER CITY, FLORIDA

SCALE: N.T.S.
REVISED:

STANDARD SANITARY SEWER DETAIL
LIFT STATION SITE PLAN

S-19





NOTE: LOCATE PER SITE PLAN

CITY OF COOPER CITY ENGINEERING STANDARDS COOPER CITY, FLORIDA	SCALE: N.T.S. REVISED:	STANDARD SANITARY SEWER DETAIL LIFT STATION EMERGENCY PUMP CONN.	S-20

PUMP STATION DATA TABLE		
PUMP NO. 1	PUMPING CAPACITY	GPM
	TOTAL DYNAMIC HEAD	FEET
PUMP NO. 2	PUMPING CAPACITY	GPM
	TOTAL DYNAMIC HEAD	FEET
PUMP MODEL – E.M.U.		
IMPELLER NUMBER		
BRAKE HORSEPOWER (EACH MOTOR)		
RPM REQUIRED		
CAPABLE OF PASSING		
ELECTRICAL SERVICE		
INSIDE DIAMETER		
INFLUENT PIPE DIAMETER		
DISCHARGE PIPE DIAMETER		

ELEV A	TOP SLAB ELEV	
ELEV B	HIGH WATER ALARM	
ELEV C	LAG PUMP ON	
ELEV D	LEAD PUMP ON	
ELEV E	ALL PUMPS OFF	
ELEV F	BOT ELEV	
ELEV G	BOT OF BOT SLAB	

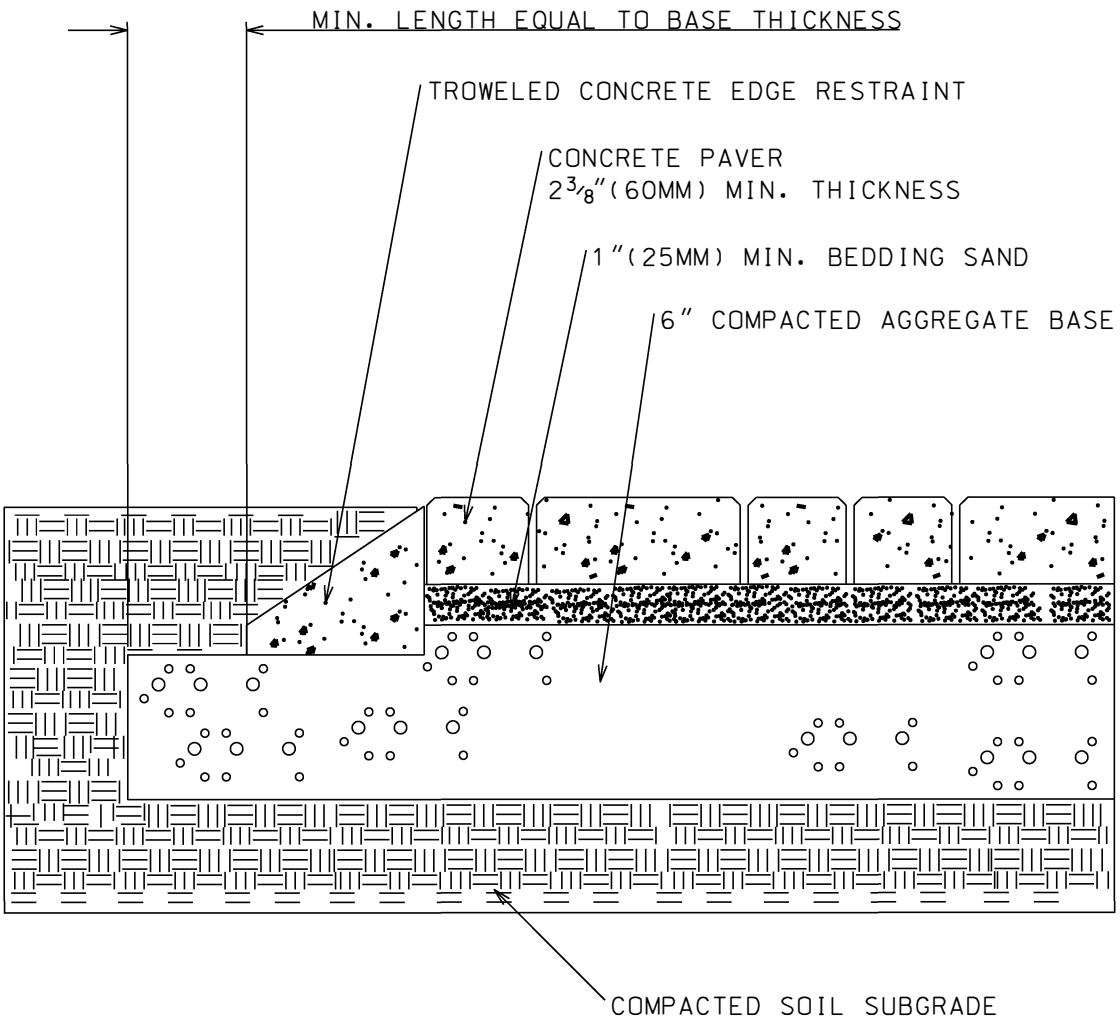
NOTES:

1. ALL PUMPING STATIONS SHALL BE MANUFACTURED BY E.M.U. AND SHALL BE IN ACCORDANCE WITH COOPER CITY SPECIFICATIONS.
2. THE CONTRACTOR SHALL CONTACT F.P.&L. BEFORE BIDDING AND INCLUDE ALL COSTS RELATED TO THE SERVICE IN HIS BID PRICE.
3. ALL CONDUITS SHALL BE P.V.C. SCHEDULE 80, BURIED 2'–0" BELOW GRADE. ALL CABLES SHALL BE STRANDED COPPER RATED THW/THHN 600 V INSULATION.
4. FOR R.T.U. INFORMATION PLEASE CONTACT JOHN FISCHRUPP AT BUTLER NATIONAL, PHONE 954–733–7511. ALL REQUIREMENTS SHALL MEET COOPER CITY SPECIFICATIONS.
5. MAIN BREAKER WITH ENCLOSURE SHALL BE U.L. SERVICE ENTRANCE RATED WITH SOLID NEUTRAL ASSEMBLY AND GROUND BAR. CONTRACTOR SHALL VERIFY F.P.&L. SYMMETRICAL FAULT CURRENT AND ADJUST INTERRUPTING CAPACITY OF MAIN BREAKER AS NECESSARY. MINIMUM MAIN BREAKER INTERRUPTING CAPACITY SHALL BE 25,000 A AT 240 VAC. LIGHTNING PROTECTOR SHALL BE PROVIDED UPSTREAM OF THE MAIN BREAKER. SURGE CAPACITOR SHALL BE PROVIDED DOWNSTREAM OF THE MAIN BREAKER.
6. ALL D.I. PIPING, FITTINGS, NUTS & BOLTS TO BE WIRE BRUSHED AND FREE OF DEBRIS BEFORE INSTALLATION, AFTER INSTALLATION THEY SHALL BE COATED AS PER SPECIFICATIONS.
7. TYPE II CEMENT WITH A MIN. COMPRESSIVE STRENGTH OF 4,000 PSI AT 28 DAYS SHALL BE USED FOR WET WELL CONSTRUCTION AND ALL MORTAR JOINTS.
8. ALL BRACKETS AND HOLDERS TO BE STAINLESS STEEL (TYPE 304).

CITY OF COOPER CITY ENGINEERING STANDARDS COOPER CITY, FLORIDA	SCALE: N.T.S. REVISED:	STANDARD SANITARY SEWER DETAIL LIFT STATION DATA TABLE & NOTES	S-21

Exhibit B

MINIMUM SETBACK FROM PROPERTY LINE:
DRIVEWAY: 5FT FROM INTERIOR SIDE
-WALKWAY OR DECK: 5FT FROM REAR/3FT SIDE YARD



NOTES:

1. USE 5:1(AGGREGATE:CEMENT)RATIO MIX FOR CONCRETE EDGE RESTRAINT
2. REINFORCING MAY BE REQUIRED IN THE EDGE RESTRAINT

CITY OF COOPER CITY ENGINEERING STANDARDS COOPER CITY, FLORIDA	SCALE: N.T.S. REVISED: AUG2018	RESIDENTIAL PAVER DRIVEWAY OR WALKWAY W/ TROWELED CONCRETE EDGE RESTRAINT	R-23