CITY OF DELRAY BEACH

MINIMUM CONSTRUCTION STANDARDS

AND

SPECIFICATIONS

2024

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DEPARTMENT OF PUBLC WORKS

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STANDARD DEDICATION STATEMENT

DEDICATION:

KNOW ALL MEN BY THESE PRESENTS: that owner's name and appropriate identification as/is the owner of the land as shown on this plat, being in the ____ _____of Section ___, Township of____, Range ___, Palm Beach County, Florida described as follows:

(a) insert metes and bounds description or previous subdivision, block, and lot descriptions as it appears on the warranty deeds which have been provided with the basic submission

Note: Any difference between what is shown as the perimeter of the parcel and what is described in the warranty deed(s) must be resolved or noted.

HAVE CAUSED SAID LANDS TO BE SURVEYED AND PLATTED AS SHOWN HEREON AS THE **name of plat** AND FURTHER DEDICATES AS FOLLOWS:

(Following are examples which should be modified, as appropriate, to the plat)

TRACT "A" is hereby dedicated to the (City of Delray Beach) (The County of Palm Beach) as public right-of-way for street and utility purposes.

TRACT "B" is hereby dedicated to the City of Delray Beach for public park purposes and is the perpetual maintenance obligation of the City of Delray Beach.

TRACT "C" is hereby dedicated to_____ Homeowner's Association as a private street to be owned and maintained by said association with the right of the City of Delray Beach to access and or repair water and sewer mains within said tract.

TRACT "D" is hereby dedicated to_____ Homeowner's Association as a Lake Management Tract to be maintained by said Homeowner's Association with a dedicated right-of-access to the South Florida Management District for lake management purposes.

TRACTS "E", "F", AND "G" are dedicated to_____ Homeowner's Association as private parks to be owned and maintained by said Assn.

TRACT "H" is not a part of this plat. (To be used, pursuant to F.S. 177.091(25) when an interior (existing) lot or parcel is not a part of the plat.)

ALONG WITH THE FOLLOWING EASEMENTS:

All Water and Sewer Easements are dedicated exclusively to the City of Delray Beach for the purpose of access, construction, maintenance, and operation activities of water and sewer mains.

Drainage Easements (for City maintained drainage systems only) are dedicated exclusively to the City of Delray Beach for the purpose of access, construction, maintenance, and operation activities of the City's drainage facilities.

Access Easements are made to the public for purpose of access.

The Limited Access Easement (LEA) is made to the City of Delray Beach for the purpose of prohibiting access between abutting lots and the adjacent Right-of-Way.

General Utility (G.U.) Easements are made to any public or private utility, such as but not limited to, storm drainage, electric power, gas service, telephone lines, and cable television; provided however, no such construction, installation, maintenance and operation of cable television services shall interfere with the facility and services of electric, telephone, gas or other public facility.

Drainage Easements (D.E.) all drainage easements are dedicated to the _____ (Homeowner's Association), its successors and/or assigns, and are the perpetual maintenance obligation of the said Homeowner's Association without recourse to the City of Delray Beach.

Mass Transit Easements (M.T.E.) are dedicated in perpetuity to the City of Delay Beach for operation activities of a public transit boarding and a lighting area.

Lift Station Easement is dedicated to the City of Delray Beach for access, construction, improvement, maintenance and operation activities of the lift station.

Landscape Buffer Easement is reserved for _____(Home Owner's Association), it's successors and/or assigns for landscape and buffer purposes and are the perpetual maintenance obligation of said _____(Home Owner's Association), it's successors and/or assigns without recourse to the City of Delray Beach.

Sidewalk Easements are dedicated to the City of Delray Beach for the construction and maintenance of a sidewalk for public access.

Non-Vehicular Access Line is made to the City of Delray Beach for the purpose of prohibiting access between abutting lots and the adjacent Right-of-Way.

IN WITNESS WHEREOF, of the above named _____ has caused these present to be signed this __ day of _____, 20__.

DEDICATION FORMATS

(*CORPORATE*)

KNOW ALL MEN BY THESE PRESENTS that (corporate name) a [Florida corporation] [(State) corporation, licensed to do business in Florida], owner of the land shown hereon, being in Section _____, Township _____ Range _____Palm Beach County, Florida, shown hereon as (plat name) , being more particularly described as follows:

-OR-

(*INDIVIDUAL*)

KNOW ALL MEN BY THESE PRESENTS that (name[s]) owner[s] of the land shown hereon, being in Section _____, Township _____ Range _____, Palm Beach County, Florida, shown hereon as (plat name) ,being more particularly described as follows:

[Legal Description]

have caused the same to be surveyed and platted as shown hereon and do hereby dedicate as follows:

[Dedications/Reservations as applicable]

(*CORPORATE*)

IN WITNESS WHEREOF, the above-named corporation has caused these presents to be signed by its [President] [Vice-President] [and attested by its (other corporate officer,] and its corporate seal to be affixed hereto by and with the authority of its Board of Directors, this _____ day of _____, 20___.

(corporate name) ___,
a [Florida corporation]
[(State) corporation, licensed to do Business in Florida]

WITNESS:_____ BY: (signature of Pres or V. Pres.)
(printed name) - (title)

_____

(CORPORATE SEAL)

- OR -

ATTEST: _____
(printed name) - (title)

-OR-

(*INDIVIDUAL*)

IN WITNESS WHEREOF, [I] [We] _____(names[s])__ do hereunto set [my] [our] hand[s] and seal[s] this _____day of _____, 20 __.

WITNESS _____(1) BY: (1) _____(signature)_____
(printed name)

_____(1)

WITNESS _____(2) BY: (2) _____(signature)_____
(printed name)

_____(2)

MORTGAGEE'S CONSENT

STATE OF _____)

COUNTY OF_____)

The undersigned hereby certifies that it is the holder of [a] mortgage[s], upon the property described hereon and does hereby join in and consent to the dedication of the land described in said dedication by the owner thereof and agrees that its mortgage[s] which [is] [are] recorded in Official Record Book _____ at page [s] _____ of the Public Records of Palm Beach county, Florida, shall be subordinated to the dedication shown hereon.

(*CORPORATE*)

IN WITNESS WHEREOF, the said corporation has caused these presents to be signed by its [President] Vice President] and its corporate seal to be affixed hereon by and with the authority of its Board of Directors this _____ day of _____, 20__.

_____[corporate name]_____
a (State) corporation

WITNESS: _____ BY: (signature of Pres. or V. Pres.)
(printed name) - (title)

_____

(CORPORATE SEAL)

-OR-

(*INDIVIDUAL*)

IN WITNESS WHEREOF, [I] [We] _____(names[s])__ do hereunto set [my] [our] hand[s] and seal[s] this _____day of _____ _____, 20 __.

WITNESS _____ BY:_____(signature)_____
(printed name)

_____

ACKNOWLEDGMENTS

(*CORPORATION*)

STATE OF _____)
COUNTY OF_____)

The foregoing instrument was acknowledged before me by means of ☐ physical presence or ☐ online notarization, this _____ day of _____ _____, 20___ by ___(name of signatory) as ___(type of authority for corporation)of (corporation name), a corporation, on behalf of the corporation, who is ☐ personally known to me or has produced as identification.

My commission expires: _____(signature)_____
Notary Public

(Seal)

-OR-

(*INDIVIDUAL*)

STATE OF _____)
COUNTY OF_____)

The foregoing instrument was acknowledged before me by means of ☐ physical presence or ☐ online notarization, this _____ day of _____ _____, 20___ by _____who [is] [are] personally known to me or [has] [have] produced _____[and _____, respectively] as identification.

My commission expires: _____(signature)_____
Notary Public

(Seal)

STANDARD (APPROVAL) SIGNATURE BLOCK

THIS PLAT OF THE name of plat **AS APPROVED ON**

THE _____ DAY OF _____, A.D. 20 ___ BY THE CITY COMMISSION OF THE CITY OF DELRAY BEACH, FLORIDA.

_____ ATTEST: _____

MAYOR CITY CLERK

AND REVIEWED, ACCEPTED, AND CERTIFIED BY:

_____	_____
Development Services Director	Chairperson, Planning and Zoning
_____	_____
City Engineer	Fire Marshal (1)
_____	_____
Utilities Director (2)	Director, Parks and Recreation(3)

(1) Required only where there is a street name or a change in addressing, not required for boundary plats.
(2) Required only when easements are provided for water and/or sewer services.
(3) Required only when land is dedicated for parks purposes or parkways are provided in or alongside a public street

TITLE CERTIFICATION

STATE OF FLORIDA_____)

COUNTY OF_____)

[I] [We], (printed name of attorney or title company), [a duly licensed attorney in the State of Florida] [a title insurance company, as duly licensed in the State of Florida] do hereby certify that [I] {we} have examined the title to the hereon described property; that [I] {we} find the title to the property is vested to (names[s] of owner[s]); that the current taxes have been paid; that [all mortgages not satisfied or released of record nor otherwise terminated by law are shown hereon] [there are no mortgages of record]; and that [there are no encumbrances of record] [there are encumbrances of record but those encumbrances do not prohibit the creation of the subdivision depicted by this plat].

Dated: _____ (Attorney-at-law licensed in Florida)

-OR-

Dated: _____ (Officer of title insurance company)

(printed name) - (title)

SURVEYOR'S CERTIFICATE

(When "P.C.P.s" are to be installed prior to platting)

This is to certify that the plat shown hereon is a true and correct representation of a survey made under my responsible direction and supervision; that said survey is accurate to the best of my knowledge and belief; that Permanent Reference Monuments ("P.R.M.s") and Permanent Control Points ("P.C.P.s") have been placed as required by law; and, further, that the survey data complies with all the requirements of Chapter 177, Florida Statutes, as amended, and the ordinances of City of Delray Beach, Florida

-OR-

(When "P.C.P.s" are to be installed after platting)

This is to certify that the plat shown hereon is a true and correct representation of a survey made under my responsible direction and supervision; that said survey is accurate to the best of my knowledge and belief; that Permanent Reference Monuments ("P.R.M.s") have been placed as required by law and that Permanent Control Points ("P.C.P.s") will be set under the guarantees posted with the City of Delray Beach for the Required Improvements of Chapter 177, Florida Statutes, as amended, and the ordinances of City of Delray Beach, Florida.

_____ (signature)
(printed name), P.S.M.

License No._____
State of Florida

(Seal)

PREPARING SURVEYOR'S STATEMENT

This instrument was prepared by _____(Surveyor's name)_____,

_____(Surveyor's address)_____.

REVIEWING SURVEYOR'S STATEMENT

This plat has been reviewed in accordance with Chapter 177.081, Florida Statutes.

_____(signature)_____
(printed name), P.S.M.

(Seal)

License No._____
State of Florida

SURVEYOR'S NOTES

Surveyor's notes shall address the following items as a minimum.

1. **Required Notes**

   a. Surveyor to provide bearing reference

   b. There may be additional restrictions that are not recorded on this plat that may be found in the public records of Palm Beach County, Florida.

   c. The City of Delray Beach is hereby granted the right of access for emergency and maintenance purposes.

   d. There shall be no buildings or any kind of construction placed on water, sewer or drainage easements. No structures shall be placed within a horizontal distance of 10 feet from any existing or proposed City of Delray Beach maintained water, sewer or drainage facilities. Construction or landscaping upon maintenance or maintenance access easements must be in conformance with all building and zoning codes and/or ordinances of the City of Delray Beach.

   e. There shall be no trees or shrubs placed on utility easements which are provided for water and sewer use or upon drainage easements. Landscaping on other utility easements shall be allowed only after consent of all the utility companies occupying same.

2. **Legend**

   All symbols and abbreviations used on the plat map shall be identified by a suitable legend.

FINANCIAL GUARANTEES

CITY OF DELRAY BEACH LAND DEVELOPMENT REGULATIONS SECTION 2.2.2

Section 2.2.2 Financial Guarantees: This Section sets forth the parameters and procedure associated with providing a financial guarantee to insure the timely and proper installation of public improvements which are required to support the proposed development.

(A) **Items which require a financial guarantee**: Any improvement for which the City will assume responsibility or which is necessary to adequately provide service to, or on, a site shall have provisions for guaranteeing its installation and that it properly functions. Such improvements include, but are not limited to:

- Water mains and fire hydrants
- Sewer mains and lift stations
- Drainage systems whether publicly or privately maintained
- Street improvements whether on public or private street systems
- Street lighting
- Traffic signal installation
- Any improvement which is to be located in a public right-of-way
- Street trees
- Landscaping pursuant to Subsection (G)

(B) **Required in-lieu of improvements**: A financial guarantee may be provided in-lieu of installation of infrastructure improvements in situations where a developer desires to have a final plat recorded or a site plan certified prior to installation of such improvements. Such financial guarantee must be provided to the City, in a proper form (Subdivision Forms), prior to the City releasing an approved plat for recording or prior to the City releasing a certified site plan to the Building Department pursuant to the building permit approval process.

(C) **Required for warranty**: A financial guarantee shall be required as a part of an agreement between the City and the developer to defray all expenses incurred by the City because of defects in materials or workmanship used in the required improvements. The guarantee shall be for a minimum period of one year after acceptance of the improvement.

(D) **Amount:** The amount of a financial guarantee required in-lieu of improvements shall be equal to 110% of the cost of the improvements as estimated by the developer and concurred with by the City. A financial guarantee for a warranty not associated with an in-lieu situation shall be for 10% of the cost of original installation.

(E) **Forms**: A financial guarantee may take any of the following forms. However, each individual document must be approved by the City Attorney.

(1) **Surety Bond**, or other equivalent security instrument, conditioned to secure the construction of the required improvements in a satisfactory manner within a one year time period. The bond shall be executed by a surety company authorized to do business in Palm Beach County. No such bond shall be acceptable unless it is enforceable by, or payable to, the City. The surety bond shall be in the form provided in the Subdivision Forms.

(2) **Deposit** with the City in the form of cash, cash placed in escrow, a cashier's check, or a certified check.

(3) **Letter of Credit** established with a financial institution wherein the City has access to funds in the event it becomes necessary for the City to complete installation and/or maintenance of the improvements. The letter of credit shall be in the form provided in the Subdivision Forms.

(F) **Release of Funds:** The City shall release all funds at the time of acceptance of improvements with the exception of an amount of 10% which shall be retained for a period of one year after acceptance of all improvements. This amount may be used by the City if it becomes necessary to provide for the repair or maintenance of the improvement within that one year period. Upon request and at the time of acceptance of a specific improvement, the City ~~Engineer~~ may release any funds which are provided by deposit or letter of credit to the extent that they were provided for the improvement being accepted.

(G) Landscaping bond.

(1) If the landscaping requirements of this Section have not been met at the time that a Certificate of Occupancy could be granted and is requested, the owner or his agent must post with the Building Department a bond of 110 percent covering the costs of materials, labor and other costs incidental to the installation of the required landscaping.

(2) A landscape bond will only be accepted in extreme hardships where the landscape plant materials are not available due to

drought or freeze, or similar conditions occur that would warrant acceptance of the bond as determined by the Chief Building Official.

FINANCIAL GUARANTEE & AGREEMENT FOR
COMPLETION OF REQUIRED IMPROVEMENTS
(Performance Bond)

THIS AGREEMENT entered into this _____ day of _____, 20__ between the CITY OF DELRAY BEACH (hereinafter the City) and _____ (hereinafter the Developer), for the purpose of assuring the City that the Developer will complete the improvements in the approved site plan and engineering drawings of _____, and that the Developer provides a guarantee for the improvements as required by City of Delray Beach Land Development Regulations, Section 2.2.2.

W I T N E S E T H

1. The Developer furnishes the City the original Bond No. _____, which is attached hereto as Exhibit "A", issued by _____, in the amount of 110% of the costs of the required improvements, which is $_____, a breakdown of the costs is attached hereto as Exhibit "B".

2. The funds provided under the above referenced Bond are for the construction and installation of all improvements as called for on the approved site plan and engineering drawings of _____ to be completed in accordance with the specifications of the City of Delray Beach. When in the judgment of the City Manager, or designee, satisfactory progress is being made toward completion, and approximately one-half of the required improvements have been completed, the Developer may request periodic reductions in the sum secured by the Bond for work completed to the date of the request. **All requests for Bond reductions must be accompanied by a cost estimate certified by the Project Engineer that shows both the value of work that has been completed and is still to be completed. The minimum Bond amount retained by the City at any time prior to project completion and certification will be the sum of 10% of the initial Bond amount and 110% of the value of all uncompleted required improvements.** The City is not obligated to grant the reduction request, and may deny the reduction request in its sole discretion. If a reduction in the Bond is acceptable to the City, the amount of such reduction shall also be in the sole discretion of the City. Any reduction in the Bond for work completed shall be approved by the City Manager, and upon such approval, the sum secured by the Bond described above shall be reduced. In the event that satisfactory progress towards completion is not being made in the judgment of the City Manager, or designee, to comply with the laws, rules and regulations of the City, the City is authorized to complete the required improvements by making a demand on the above referenced Bond and using the funds obtained therefrom to complete the improvements. However, it is understood that no demand will be made on the above-referenced Bond for the completion of improvements until such time as the Developer has been given a thirty day notice in writing specifying in what regards satisfactory progress towards completion is not being made. In the event that this deficiency is cured within the thirty day period no demand will be made on the Bond.

In the event that the amount remaining under the Bond is insufficient to complete the improvements, the Developer will upon demand furnish such additional funds as are necessary to fully and completely install the improvements. In the event that there is a surplus remaining after the City's completion of installation of the required improvements as may be required as set forth above, the City shall remit or release this amount to the Developer.

3. If upon presentment the above referenced Bond is dishonored, the Developer shall be liable to the City in the full amount which may be due under the Bond for either the completion of improvements or to rectify defects in materials and/or workmanship pursuant to the guarantee requirement of Land Development Regulation Section 2.2.2. In addition, in the event that the City must take steps to collect under the Bond and/or from the Developer because of dishonor of the Bond, the Developer will pay all attorneys' fees, collection costs, court costs and other expenses incurred by the City in its efforts to collect the amount due. Further, it is understood that the Bond

shall secure in addition to the construction costs of the improvements and the guarantee, all of the aforementioned costs which may be incurred by the City.

4. Prior to the granting of a final Certificate of Occupancy (C.O.) by the City for the entire project, not just the portions covered by this Bond but for the completion of all structures and landscaping, whether in phases or not, the Developer agrees to provide a 10% warranty guarantee, acceptable to the City, (10% of the costs of the required improvements), under the same terms and conditions as provided above, which shall remain in effect for the one year period after the granting of the final C.O., or any extensions thereto, if required by the City based upon warranty work performed during the warranty period. The City shall not release all of the funds under the previous bond until the Developer has provided a guarantee for the warranty period that is acceptable to the City. In the event Developer fails to provide the guarantee for the warranty period, the City may, in its sole discretion, keep any portion of the existing bond as provided under this Agreement for the entire warranty period, including any extensions thereto.

5. Any notice to be given hereunder shall be given by personal delivery, by registered mail, or be registered expedited service at the addresses as specified below, or at such other addresses as may be specified in writing by the parties hereto, and any such notice shall be deemed received on the date of delivery.

As to City: City of Delray Beach
City Manager
100 NW 1st Avenue
Delray Beach, Florida 33444

As to Developer: _____
_____
_____
_____

6. This Agreement shall be governed by and construed in accordance with the laws of the State of Florida and venue shall be in Palm Beach County, Florida.

IN WITNESS WHEREOF, the parties hereto have entered into this agreement the day and year first written above.

ATTEST

_____
City Clerk

CITY OF DELRAY BEACH

By:_____
City Manager

Approved as to legal form:

_____
City Attorney

WITNESS:

_____

_____
(Name printed or typed)

_____

_____
(Name printed or typed)

DEVELOPER: _____

By:_____

_____,_____
(Title)

Corporate Seal:

STATE OF _____
COUNTY OF _____

The foregoing instrument was acknowledged before me by means of ☐ physical presence or ☐ online notarization, this ___ day of _____, 20__, by _____ (name of person), as _____ (type of authority) for _____ (name of party on behalf of whom instrument was executed).

Personally known ___ OR Produced Identification
Type of Identification Produced _____

_____
Notary Public – State of _____

INSTRUCTIONS FOR PERFORMANCE BOND SUBMITTAL

1. Performance Bond can be the Subdivision Improvement Performance Bond type.

2. On Bond Company stationary please provide the name, address, and phone number of the agent.

3. The Bond needs to be executed by a Surety Company authorized to do business in Pam Beach County and this must be stated on the bond or documentation provided to demonstrate this.

4. For all other Performance bonds provide term of contract.

5. If changes to the bond format are requested please contact the City Attorney's office at (561) 243-7091.

6. Any other questions please contact Development Services Engineering at (561) 243-7000 ext. 6219.

FINANCIAL GUARANTEE & AGREEMENT FOR
COMPLETION OF REQUIRED IMPROVEMENTS
(Letter of Credit)

THIS AGREEMENT entered into this _____ day of _____, 20__ between the CITY OF DELRAY BEACH (hereinafter the City) and _____ (hereinafter the Developer), for the purpose of assuring the City that the Developer will complete the improvements in the approved site plan and engineering drawings of _____, and that the Developer provides a guarantee for the improvements as required by City of Delray Beach Land Development Regulations, Section 2.2.2.

W I T N E S E T H

1. The Developer furnishes the City the original Letter of Credit No. _____, which is attached hereto as Exhibit "A", issued by _____, in the amount of 110% of the costs of the required improvements, which is $_____, a breakdown of the costs is attached hereto as Exhibit "B".

2. The funds provided under the above referenced Letter of Credit are for the construction and installation of all improvements as called for on the approved site plan and engineering drawings of _____ to be completed in accordance with the specifications of the City of Delray Beach. When in the judgment of the City Manager, or designee, satisfactory progress is being made toward completion, and approximately one-half of the required improvements have been completed, the Developer may request periodic reductions in the sum secured by the Letter of Credit for work completed to the date of the request. **All requests for Letter of Credit reductions must be accompanied by a cost estimate certified by the Project Engineer that shows both the value of work that has been completed and is still to be completed. The minimum Letter of Credit amount retained by the City at any time prior to project completion and certification will be the sum of 10% of the initial Letter of Credit amount and 110% of the value of all uncompleted required improvements**. The City is not obligated to grant the reduction request, and may deny the reduction request in its sole discretion. If a reduction in the Letter of Credit is acceptable to the City, the amount of such reduction shall also be in the sole discretion of the City. Any reduction in the Letter of Credit for work completed shall be approved by the City Manager, and upon such approval, the sum secured by the Letter of Credit described above shall be reduced. In the event that satisfactory progress towards completion is not being made in the judgment of the City Manager, or designee, to comply with the laws, rules and regulations of the City, the City is authorized to complete the required improvements by making a demand on the above referred to Letter of Credit and using the funds obtained therefrom to complete the improvements. However, it is understood that no demand will be made on the above-referenced Letter of Credit for the completion of improvements until such time as the Developer has been given a thirty day notice in writing specifying in what regards satisfactory progress towards completion is not being made. In the event that this deficiency is cured within the thirty day period no demand will be made on the Letter of Credit.

In the event that the amount remaining under the Letter of Credit is insufficient to complete the improvements, the Developer will upon demand furnish such additional funds as are necessary to fully and completely install the improvements. In the event that there is a surplus remaining after the City's completion of installation of the required improvements as may be required as set forth above, the City shall remit or release this amount to the Developer.

3. If upon presentment the above referenced Letter of Credit is dishonored, the Developer shall be liable to the City in the full amount which may be due under the Letter of Credit for either the completion of improvements or to rectify defects in materials and/or workmanship pursuant to the guarantee requirement of Land Development Regulation Section 2.2.2. In addition, in the event that the City must take steps to collect under the Letter of Credit and/or from the Developer because of dishonor of the Letter of Credit, the Developer will pay all attorneys fees, collection costs, court costs and other expenses incurred by the City in its efforts to collect the amount due. Further, it is

understood that the Letter of Credit shall secure in addition to the construction costs of the improvements and the guarantee, all of the aforementioned costs which may be incurred by the City.

4. Prior to the granting of a final Certificate of Occupancy (C.O.) by the City for the entire project, not just the portions covered by this Letter of Credit but for the completion of all structures and landscaping, whether in phases or not, the Developer agrees to provide a 10% warranty guarantee, acceptable to the City, (10% of the costs of the required improvements), under the same terms and conditions as provided above, which shall remain in effect for the one year period after the granting of the final C.O., or any extensions thereto, if required by the City based upon warranty work performed during the warranty period. The City shall not release all of the funds under the previous letter of credit until the Developer has provided a guarantee for the warranty period that is acceptable to the City. In the event Developer fails to provide the guarantee for the warranty period, the City may, in its sole discretion, keep any portion of the existing letter of credit as provided under this Agreement for the entire warranty period, including any extensions thereto.

5. Any notice to be given hereunder shall be given by personal delivery, by registered mail, or be registered expedited service at the addresses as specified below, or at such other addresses as may be specified in writing by the parties hereto, and any such notice shall be deemed received on the date of delivery.

As to City: City of Delray Beach
City Manager
100 NW 1st Avenue
Delray Beach, Florida 33444

As to Developer: _____
_____
_____
_____

6. This Agreement shall be governed by and construed in accordance with the laws of the State of Florida and venue shall be in Palm Beach County, Florida.

IN WITNESS WHEREOF, the parties hereto have entered into this agreement the day and year first written above.

ATTEST

_____
City Clerk

CITY OF DELRAY BEACH

By:_____
City Manager

Approved as to legal form:

_____
City Attorney

WITNESS:

_____

_____
(Name printed or typed)

_____

_____
(Name printed or typed)

DEVELOPER: _____

By:_____

_____,_____
(Title)

Corporate Seal:

STATE OF _____
COUNTY OF _____

The foregoing instrument was acknowledged before me by means of ☐ physical presence or ☐ online notarization, this ___ day of _____, 20__, by _____ (name of person), as _____ (type of authority) for _____ (name of party on behalf of whom instrument was executed).

Personally known ___ OR Produced Identification
Type of Identification Produced _____

_____
Notary Public – State of _____

IRREVOCABLE LETTER OF CREDIT

Date:_____

City of Delray Beach
100 N.W. 1st Avenue
Delray Beach, Florida 33444

Dear Sirs:

We hereby establish our Irrevocable Letter of Credit No. _____ in your favor in the amount of _____, ($_____) for the account of _____ available by your drafts drawn at sight on _____ _____ accompanied by:
(bank)

Written demand signed by the City Manager and Engineer of the City of Delray Beach, Florida.

This credit expires on _____.

We confirm this credit and hereby engage that drafts drawn in conformity with the terms of this credit will be duly honored on presentation.

Sincerely,

_____
Name

_____
Title

FINANCIAL GUARANTEE & AGREEMENT FOR
COMPLETION OF REQUIRED IMPROVEMENTS
(Cash Account)

THIS AGREEMENT entered into this _____ day of _____, 20__ between the CITY OF DELRAY BEACH (hereinafter the City) and _____ (hereinafter the Developer), for the purpose of assuring the City that the Developer will complete the improvements in the approved site plan and engineering drawings of _____, and that the Developer provides a guarantee for the improvements as required by City of Delray Beach Land Development Regulations, Section 2.2.2.

W I T N E S E T H

1. The Developer furnishes the City a check to establish a cash account, in the amount of 110% of the costs of the required improvements, which is $_____, a breakdown of the costs is attached hereto as Exhibit "A".

2. The funds provided under the above referenced cash account are for the construction and installation of all improvements as called for on the approved site plan and engineering drawings of _____ to be completed in accordance with the specifications of the City of Delray Beach. When in the judgment of the City Manager, or designee, satisfactory progress is being made toward completion, and approximately one-half of the required improvements have been completed, the Developer may request periodic reductions in the sum secured by the cash account for work completed to the date of the request. **All requests for cash account reductions must be accompanied by a cost estimate certified by the Project Engineer that shows both the value of work that has been completed and is still to be completed. The minimum cash amount retained by the City at any time prior to project completion and certification will be the sum of 10% of the initial cash amount and 110% of the value of all uncompleted required improvements**. The City is not obligated to grant the reduction request, and may deny the reduction request in its sole discretion. If a reduction in the cash account is acceptable to the City, the amount of such reduction shall also be in the sole discretion of the City. Any reduction in the cash account for work completed shall be approved by the City Manager, and upon such approval, the sum secured by the cash account described above shall be reduced. In the event that satisfactory progress towards completion is not being made in the judgment of the City Manager, or designee, to comply with the laws, rules and regulations of the City, the City is authorized to complete the required improvements by making a demand on the above referenced cash account and using the funds obtained therefrom to complete the improvements. However, it is understood that no demand will be made on the above-referenced cash account for the completion of improvements until such time as the Developer has been given a thirty day notice in writing specifying in what regards satisfactory progress towards completion is not being made. In the event that this deficiency is cured within the thirty day period no demand will be made on the cash account.

In the event that the amount remaining under the cash account is insufficient to complete the improvements, the Developer will upon demand furnish such additional funds as are necessary to fully and completely install the improvements. In the event that there is a surplus remaining after the City's completion of installation of the required improvements as may be required as set forth above, the City shall remit or release this amount to the Developer.

3. The Developer shall be liable to the City in the full amount which may be due under the cash account for either the completion of improvements or to rectify defects in materials and/or workmanship pursuant to the guarantee requirement of Land Development Regulation Section 2.2.2. In addition, the Developer will pay all attorney's fees, collection costs, court costs and other expenses incurred by the City in its efforts to collect the amount due. Further, it is understood that the cash account shall secure in addition to the construction costs of the improvements and the guarantee, all of the aforementioned costs which may be incurred by the City.

4. Prior to the granting of a final Certificate of Occupancy (C.O.) by the City for the entire project, not just the portions covered by this cash account but for the completion of all structures and landscaping, whether in phases or not, the Developer agrees to provide a 10% warranty guarantee, acceptable to the City, (10% of the costs of the required improvements), under the same terms and conditions as provided above, which shall remain in effect for the one year period after the granting of the final C.O., or any extensions thereto, if required by the City ~~Engineer~~ based upon warranty work performed during the warranty period. The City shall not release all of the funds under the previous cash account until the Developer has provided a guarantee for the warranty period that is acceptable to the City. In the event Developer fails to provide the guarantee for the warranty period, the City may, in its sole discretion, keep any portion of the existing cash account as provided under this Agreement for the entire warranty period, including any extensions thereto.

5. Any notice to be given hereunder shall be given by personal delivery, by registered mail, or be registered expedited service at the addresses as specified below, or at such other addresses as may be specified in writing by the parties hereto, and any such notice shall be deemed received on the date of delivery.

As to City: City of Delray Beach
City Manager
100 NW 1st Avenue
Delray Beach, Florida 33444

As to Developer: _____
_____
_____
_____

6. This Agreement shall be governed by and construed in accordance with the laws of the State of Florida and venue shall be in Palm Beach County, Florida.

IN WITNESS WHEREOF, the parties hereto have entered into this agreement the day and year first written above.

ATTEST

_____
City Clerk

CITY OF DELRAY BEACH

By:_____
City Manager

Approved as to legal form:

_____
City Attorney

WITNESS:

_____

_____
(Name printed or typed)

_____

_____
(Name printed or typed)

DEVELOPER: _____

By:_____

_____,_____
(Title)

Corporate Seal:

STATE OF _____
COUNTY OF _____

The foregoing instrument was acknowledged before me by means of ☐ physical presence or ☐ online notarization, this ___ day of _____, 20__, by _____ (name of person), as _____ (type of authority) for _____ (name of party on behalf of whom instrument was executed).

Personally known ___ OR Produced Identification
Type of Identification Produced _____

_____
Notary Public – State of _____

CITY OF DELRAY BEACH
CODE OF ORDINANCES SECTION 52.39

DEVELOPMENT SERVICES ENGINEERING DEPARTMENT

PROJECT INSPECTION FEE
UTILITY STANDARDS FEE
RIGHT OF WAY APPLICATION PERMIT FEE

A. **PROJECT INSPECTION FEE** The inspection fee will be charged to the applicant and will be 2.0% of the construction cost of water and sewer improvements, but in no case less than $25.00. In addition, inspection(s) conducted at times other than normal working times will be billed to the applicant at the overtime rate of $40.00 per hour per inspection. Overtime fees will be billed to the applicant periodically. All fees shall be paid before the permit is issued. Re-inspections will be at the standard hourly rate. Attach a signed and sealed cost estimate in the format provided by Development Services Engineering with accurate quantities for approval and fee determination.

Fee $_____

001-0000-343-64.00

B. **UTILITY STANDARDS BOOK** The charge for the minimum construction standards book is $50.00.

Charge $_____

441-0000-343-65.00

C. **RIGHT OF WAY APPLICATION PERMIT FEE** A charge for working in the City's Right of Way. $15.00

Fee $_____

001-0000-321-30.00

Sales Tax $_____

441-0000-208-11.00

Total Amount Due $_____

_____	_____
Applicant	Address
	_____
	Phone
_____	_____
Project Name	Location
_____	_____
Applicant's Signature	Date
_____	_____
Approved Signature	Date

PROJECT CONSTRUCTION

Drainage Design

Prior to the issuance of a building or site permit, the applicant must provide a signed and sealed drainage report indicating the proposed system's ability to meet storm water requirements in accordance with the South Florida Water Management District regulations per LDR Section 6.1.9. In addition, the surface water management system needs to be designed in accordance with LDR Section 6.1.9 for a minimum of a 10 yr./24 hr. storm event. Please do a Pre-vs-Post analysis on a volume basis utilizing the SCS runoff calculation

$$Q = (P-0.2S)2/(P+0.8S).$$

The system may not discharge more in the Post-development condition than the Pre-development condition. This shall be required for all new projects or retrofits that add more than 25% impervious area or involve modifications to the existing building of more than 50%.

Drainage structures that are connected to exfiltration trench piping must have pollution retardant baffles installed on the inverts connected to the exfiltration trench. City owned exfiltration trenches must be connected to drainage structures on both sides for maintenance purposes. No dead-end trenches will be permitted.

Vibrocompaction

Vibrocompaction will not be approved within City Limits without an approved Vibration Monitoring Plan to determine if the compaction operation is adversely affecting nearby property. The plan shall detail how vibration is to be monitored and what shall be done if readings exceed the design limit.

Preconstruction Meetings

Prior to construction, a preconstruct6.1.9ion meeting is to be scheduled with Development Services Engineering. The meeting shall include a city inspector, the owner, the contractor, and the engineer of record. Preconstruction meetings are to be scheduled with the Development Services Engineering at 561-243-6219. The Engineer of Record shall submit wither one (1) electronic or four (4) paper sets (electronic preferred) of shop drawings to Development Services Engineering before the preconstruction meeting will be scheduled.

STORMWATER POLLUTION PREVENTION PLAN
FOR STORMWATER DISCHARGES ASSOCIATED WITH SMALL CONSTRUCTION ACTIVITIES – ONE TO FIVE ACRES

SITE DESCRIPTION

Project Name and Location: _____

_____

Owner Name and Address: _____

_____

Description: Construction project involving the construction of _____

_____

Soil disturbing activities include: clearing and grubbing; installing stabilized construction entrances; excavation of water management facilities, storm sewer installation; utilities installation; grading; construction of curb and gutters; building pad and foundation placement; and preparation of landscaping and sodding.

Site Area: The site is _____ acres. _____ acres are expected to be disturbed by construction activities.

Site Map: Paving, Grading and Drainage Plans are attached.

Discharge points: Latitude _____ Longitude _____ Drainage Area _____
(www.pbco-npdes.org)

Name of Receiving Waters: _____

CONTROLS

Sequence and Timing of Erosion and Sediment Controls Measures

1. Excavation of water management facilities should occur immediately after clearing and grubbing to serve as a sediment trap or catchment for storm water runoff from exposed soils.

2. Construction of perimeter berm or site grading to prevent off-site discharge of storm water runoff.

3. Placement of silt fences and or hay bales, properly anchored, to contain erosion in areas prone to storm water runoff erosive velocities.

4. Permanent stabilization will be provided to portions of the site where construction activities have ceased by laying sod.

5. Inlet protection will be provided for each inlet either by silt fence/filter fabric staked in place or hay bales.

6. Outlet protection will be provided by turbidity screens within the receiving body.

Other Controls
Material Management Practices

Waste Materials: All waste materials will be collected and stored in a securely covered metal dumpster provided by a licensed solid waste management company in Palm Beach County. The dumpster will meet all Palm Beach County and State solid waste management regulations. All trash and construction debris from the site will be deposited in the dumpster. The dumpster will be emptied as needed so there is no overflow. Trash will be hauled to an authorized/permitted landfill facility. All personnel will be instructed regarding the correct procedure of waste disposal.

Hazardous Waste: All hazardous waste material will be disposed of in a manner specified by local or State regulations. Site personnel will be instructed in these practices.

Sanitary Waste: All sanitary waste will be collected from the portable units a minimum of twice per week by the licensed Sanitary Company, as required by local regulations.

Petroleum Products: All on-site vehicles and tanks will be monitored for leaks and receive regular preventive maintenance to reduce the chance of leakage. Petroleum products will be stored in tightly sealed containers, which are clearly labeled. Any asphalt substances used on-site will be applied accordingly to the manufacturer's recommendations. All above ground tanks for fueling will be secondarily contained.

Pesticides and Herbicides: Any pesticide and herbicide usage will be by State licensed applicators.

Fertilizers: Fertilizers used will be applied only in the minimum amount recommended by the manufacturer. If stored on-site, covered storage will be provided. The contents of any partially used bags of fertilizers will be transferred to a sealable container to avoid spills.

Paints: All containers will be tightly sealed and stored when not required for use. Excess paint will not be discharged to the storm sewer system but will be properly disposed of according to manufacturers' instructions or State or local regulations.

Offsite Vehicle Tracking: A stabilized construction entrance will be provided to reduce vehicle tracking of sediments. Dump trucks hauling material from the construction site will be covered with a tarpaulin, as required by State law.

Storm Water Management

The storm water management system will consist of conveyance system including inlets and culverts directing storm water runoff into the detention facility for treatment and attenuation, prior to discharge to off-site receiving bodies. When all disturbed areas have been stabilized, the accumulated sediment will be removed from in and around all inlets and catch basins.

MAINTENANCE/INSPECTIONS PROCEDURES

Erosion and Sediment Control and Maintenance Practices

These are the inspection and maintenance practices that will be used to maintain erosion and sediment control.

- All control measures will be inspected at least once each week and following any storm event of 0.5 inches or greater. Rainfall amount should be based on an onsite rain gauge.

- All measures will be maintained in good working order; if a repair is necessary, it will be initiated within 24 hours of onsite inspection report.

- Built up sediment will be removed from silt fence when it has reached one-third the height of the fence.

- Silt fence will be inspected for depth of sediment, tears, to see if the fabric is securely attached to the fence posts, and to see that the fence posts are firmly in the ground.

- A maintenance inspection report will be made after each inspection. A copy of the report form to be completed by the inspector is attached.

- The site superintendent will designate a qualified employee who will be responsible for inspections, maintenance and repair activities, and completing the inspection and maintenance reports.

Non-Storm water Discharges

Non-storm water discharges (as provided in Part IV.A.3 DEP Document No. 62-621.300(4)(a)) are permissible provided that discharge does not cause erosion or create turbidity within the receiving body and are in compliance with regulatory requirements. These discharges may include water line flushing, fire fighting activities, fire hydrant flushing, dust control, irrigation drainage and air conditioning condensate and water used to spray off loose solids from vehicles (wastewater from a more thorough cleaning, including the use of detergents or other cleaners is not permitted).

CERTIFICATION OF COMPLIANCE WITH STATE REGULATIONS

The Storm Water Pollution Prevention Plan shall reflect South Florida Department of Environmental Protection Generic Permit for Storm Water Discharge from Large and Small Construction Activities. DEP Document 62-621.300(4)(a) of the Florida Administrative Code (F.A.C.).

POLLUTION PREVENTION PLAN CERTIFICATION

"I certify under penalty of law that I understand, and shall comply with, the terms and conditions of the State of Florida Generic Permit for Storm Water Discharge from Large and Small Construction Activities and this Storm Water Pollution Prevention Plan prepared thereunder."

Contractor/Site Operator

Name: _____ Telephone Number: _____

Signed: _____ Address: _____

Title: _____ Date: _____

STORMWATER POLLUTION PREVENTION PLAN
INSPECTION AND MAINTENANCE REPORT FORM

TO BE COMPLETED EVERY 7 DAYS AND WITHIN 24 HOURS OF A RAINFALL EVENT OF 0.5 INCHES OR MORE

INSPECTOR: _____ **DATE:** _____

DAYS SINCE LAST RAINFALL: _____ **AMOUNT:** _____

SEDIMENT AND EROSION CONTROLS:

Temporary Stabilization: _____

Permanent Stabilization: _____

Note: May be impractical for this construction project. If so, use N/A for response:

Inlet Protection: _____

Outlet Protection: _____

Silt Fences: _____

Stabilized Construction Entrances: _____

Maintenance Required for Sediment and Erosion Controls: _____

_____

To be performed by: _____ **On or before:** _____

MATERIALS MANAGEMENT PRACTICES:

Evidence of Spills: _____

Maintenance Required for Materials Management Areas: _____

To be performed by: _____ **On or before:** _____

CHANGES REQUIRED TO THE POLLUTION PREVENTION PLAN: _____

_____

REASONS FOR CHANGE: _____

_____

I certify that this facility is in compliance or not in compliance (circle one) with the Storm Water Pollution Prevention Plan and the State of Florida Generic Permit for Storm Water Discharge from Small Construction Activities.

Signed: _____

Shop Drawing Submittal

No underground construction shall begin until shop drawings have been reviewed and approved by Development Services Engineering. Each submittal shall be complete in all aspects incorporating the City's Standards Products List (refer to pages SPL-1 through SPL -3). The Engineer of Record shall submit either one (1) electronic or four (4) paper sets (electronic preferred) of shop drawings to Development Services Engineering before the preconstruction meeting will be scheduled. Two (2) sets of shop drawings will be retained by the City and the Engineer of Record will be notified when the reviewed shop drawings can be picked up from Development Services Engineering (allow for a minimum of 14 calendar days for the City review). No more than four (4) sets of shop drawings will be reviewed. Partial or incomplete submissions shall be returned to the Engineer of Record. Shop drawings not reviewed and signed by both the contractor and the Engineer of Record shall be returned.

Maintenance of Traffic Plan

A Maintenance of Traffic (MOT) Plan is to be provided to the City for any work that affects traffic flow within City, County, or State Rights-of-Way. The City shall follow FDOT Standard Plans for MOT. All MOT Plans shall be prepared by a person holding the appropriate certification. Upon review and approval by Development Services Engineering, any request to close lanes or roads will require Variable Message Boards be placed on the roadway for a period of two weeks prior to the closing date.

Site and Paving permit application approval

No building permit application will be approved by Development Services Engineering until ALL of the following conditions are met:

1. Receipt of certified cost estimate from the engineer of record for improvements requiring a financial guarantee in accordance with City of Delray Beach Land Development Regulation Section 2.2.2.

2. A Financial Guarantee and Agreement has been received by Development Services Engineering.

3. Payment of engineering inspection fees.

4. All site plan technical comments have been fully addressed.

5. The plat (if required) is recorded.

6. All Right-of-Way or easement dedications (if required) have been provided for recordation.

7. All other agency permits have been received by the Engineering Department including but not limited to HRS, LWDD, SFWMD, FDOT, PBC, DEP, etc...

Construction Inspections

It is the responsibility of the owner's engineer to provide site observation and inspections in order for the owner's engineer to execute the "Engineers Certification of Completion" Exactly as stated on page C-11. City inspectors shall be required to be present for significant items of construction on City-owned facilities including but not limited to pressure main taps, pressure tests, sewer connections, sewer lining, subgrade string-line, baserock boarding and asphalt paving.

Engineering Project Close-Out Checklist

Project Name: _____

Developer: _____ **Phone:** _____ **Fax:** _____

Engineer of Record: _____ **Phone:** _____ **Fax:** _____

Inspector: _____	**Required**	**Date Received**
1. As-Built Plans for Water, Sewer, Drainage and Paving/Grading Improvements (see page C-8)		
a. Two (2) sets signed, sealed and dated blue/black line prints	☐	_____
b. One (1) set Mylar signed and dated	☐	_____
c. One (1) Removeable Media with AutoCadd DWG or DXF formats only	☐	_____
d. Final Engineer's Opinion of Cost (As-Built Quantities Only)	☐	_____
e. Density Test Results	☐	_____
2. Certified "Engineer's Certificate of Completion" (see page C-11)	☐	_____
3. All PBC Health Department releases		
3a. Water Release	☐	_____
3b. Sewer Release	☐	_____
4. SFWMD Release	☐	_____
5. LWDD Release	☐	_____
6. FDOT Release – Utility, Drainage, Driveway Connection and Landscaping	☐	_____
7. PBC Release – Utility, Drainage, Right-of-Way and Landscaping	☐	_____
8. All drainage pipe(s) lamped and approved by City Inspector	☐	_____
9. All sewer lines video recorded (Removeable Media only), lamped, air tested and approved by City Inspector	☐	_____
10. All water lines pigged, pressure tested and final walk-thru for approved by City Inspector	☐	_____
11. Developer to have final Engineering inspections and have addressed all punch list items	☐	_____
12. Written request from the owner or developer for the release of any funds/bonds	☐	_____
13. Water / Sewer Connection Fees	☐	_____
14. Meter Information provided to Utility Billing	☐	_____
15. Certificate of Occupancy (CO) date One (1) year 10% warranty period for Bonded Improvements begins upon project final CO	☐	_____
15a. One (1) year warranty inspection date		_____
15b. One (1) year warranty actual inspection date		_____
16. Developer requested return of 10% warranty	☐	_____

No C.O. until 10% warranty has been submitted to Engineering

As-Built Drawing Requirements

1. All Final As-Built drawings shall be computer generated and signed and sealed by a professional land surveyor in the State of Florida.

2. All As-Built submittals shall include all original project approved City of Delray Beach facilities with plan and profile view, drawing notes, location map, etc., along with all As-Built data being shown unless otherwise determined by the City of Delray Beach. All elevations should be in State Plane Coordinates with a vertical datum NAVD88 and should be clearly stated on every sheet.

3. Record drawing prints shall be signed and sealed by a Professional Land Surveyor, who witnessed the collection of As-Built data. A “Third Party Disclaimer” will not be accepted (i.e. As-Built data provided by contractor). All As-Built data shall be collected by the same party who is preparing the record drawings. Record drawings signed and sealed by a Land Surveyor shall comply with applicable Florida Statutes.

4. Each record drawing sheet shall contain surveyor notes and legend applicable to that drawing.

5. The As-Built data on submitted drawings (line work, numerical data) shall be clearly legible, accurate and comply with City of Delray Beach standards. An increase in font size and/or the use of a different font style may be required to improve legibility. Separate As-Built drawings for each facility may be required for projects with a high density of data and/or poor legibility (i.e., multi-family complexes, commercial centers, etc.).

6. If As-Built drawings are for only potable water, the drawings shall state “Water Only”, and if the As-Built drawings are for wastewater only, the drawings shall state “Sewer Only”. If As- Built drawings are for only storm drainage and paving, the drawings shall state “Drainage & Paving Only”, and if the As-Built drawings are for roadway only, the drawings shall state “Roadway Only”. If As-Built drawings are for only structural, the drawings shall state “Structural Only”.

7. Add street names and addresses to each lot, building, and unit.

8. All record drawings that contain plan views shall indicate the recording information associated with project such as the plat, Plat Book/Page, along with any City of Delray Beach Easements recorded by ORB/Page.

9. As-Built drawings with plan views shall state the valve manufacturers, the fire hydrant manufacturer, year and model, and the root barrier system and applicator as applicable.

10. Horizontal coordinates shall be rounded off to the nearest tenth of a foot. Elevation data shall be rounded off to the nearest hundredth of a foot (i.e. top of manholes, inverts, top of pipes, etc.). Elevation datum shall be listed on each plan view sheet. Slopes shall be rounded off to the nearest one-ten hundredth.

11. As-Built data for pressure mains shall include GPS coordinates for valves, fittings, hydrants and top of pipe @ 100-foot intervals. As-Built data shall also include elevations for top of nut on valves, fittings, hydrant main nozzle and on top of pipe@ 100-foot intervals.

12. All new hydrants and main valves shall be numbered on As-Built drawings.

13. As-Built data for sewer laterals shall include coordinates for cleanouts (and invert elevations if proposed invert elevation data is shown on the design plan).

14. As-Built data for water services including GPS coordinates shall include taps and corporation valves for meter sizes 2” or less (PVC and HDPE services). As-Built data including GPS coordinates required on all fittings and valves associated with meter sizes 4” or larger.

15. As-Built data and GPS coordinates for “wet tap” or “cut-in” connections into an existing pressure pipe system required on tapping sleeve or tee as applicable, new gate valve(s) associated with the connection and the distance to the nearest existing in-line valve(s). 16. All casings installed require As-Built data on both ends to include both horizontal coordinates and elevation.

17. Lift station As-Built information shall contain all information included in the City of Delray Beach Lift Station Standard Details. As-Built data must be shown in the following charts: “Lift Station Data”, “Pump Data”, and “RTU Wiring Diagram”; as well as on the site plan for each sheet.

18. As-Built drawings associated with phasing of project shall clearly state phase number to applicable sheets with the phase limits being clearly defined on all applicable drawings. Gravity sewer must terminate at a manhole with a temporary plug being shown for future phase(s). Phased As-Built drawings with lift stations shall include in the first phase As-Built data for the lift station and force main up to the point of connection to the existing wastewater system. Phased pressure potable water mains and wastewater force mains shall end at a restrained valve for future pressure main extension.

19. Roadway elevations shall be recorded at all grades changes, 100’ intervals long roadway, and other intervals as needed along all streets. Street centerline and curb invert elevations shall be recorded as noted. The as-built centerline profile of all streets shall also be shown on the plan and

profile so it may be compared to the the design profile grade lines. In the event that the as- built centerline longitudinal grades of the adjacent curbing and similar roadway cross-section surveys to verify the correct cross slope, shall be required to verify that the system will function as originally designed.

20. Pavement and curb widths shall be verified and dimensioned. This information is to be clearly indicated on the as-built.

21. Storm drainage structures shall be located and/or dimensioned from centerlines or lot lines as appropriate.

22. Stormwater drainage pipe invert and inlet elevations shall be recorded and clearly denoted as as-built information. Design elevations shall be crossed out and as-built information written next to it. Pipe material, length, and size shall be measured and/or verified. This information is to be clearly indicated as being as-built information.

23. All applicable topographic information pertinent to the on-site drainage system, such as ditches, swales, lakes, canals, etc. that are deemed necessary by the city to verify the functional performance of the stormwater system, shall be noted. Normally, recording every 100 feet at the top of bank and toe of slope will be required. Measurements shall be taken and recorded to accurately tie down these features to the roadway centerlines and to plat lines whenever possible, contour lines shall be utilized to graphically describe these topographic features.

24. Retention areas shall have their top of bank and bottom elevations recorded. Actual measurements shall be taken, and dimensions recorded of the size of all retention areas. Measurements shall be done from top of bank to top of bank with side slopes indicated. Separate calculations shall be submitted to indicate required and provided retention volumes.

25. Actual materials used, and elevations and dimensions of overflow weir structures and skimmers shall be noted on the as-built.

26. Storm drainage swale centerlines shall be located and elevations of flow line and top of bank shall be recorded every 50 feet. Side slopes shall also be indicated.

27. Once the City of Delray Beach has approved the record drawings, a final record drawing package is required to be submitted for permanent City of Delray Beach records. The final record drawing package shall include the following:
    a. Two (2) surveyor signed & sealed sets of prints (24” x 36”).
    b. Electronic record drawings file submitted on a flash drive, or another electronic format as determined by the City of Delray Beach. The electronic files shall include the As-Built drawings (AutoCAD Release

2018 version or higher with x-references bounded to files) along with PDF files of the AutoCAD drawings saved to 24"x36" in size and an AutoCAD "Strip" file. The strip file only shows the property boundaries and the associated City of Delray Beach facilities with no text being shown. Note the layers cannot just be turned off but removed thus stripped. The electronic files should also include all CAD as-built data exported to .shp files. CDs will not be accepted.

Note: References to water shall mean both potable and reclaimed water.

AS BUILT CHECKLIST

Project Name: _____

Engineer of Record: _____ City Inspector: _____

Date: _____ Date: _____

		Required	Verified
	As-Built Plans Signed, Sealed and Dated*		
	Digital Copy*		
	Base Line**		
	State Plane Coordinates		
	Easement – for new lines		
WATER**	Water Main:		
	Top of Pipe Elevations every 100 Feet		
	Pipe Type, Size, Length		
	Valves – Size and Type		
	Fittings – Size and Type		
	Corporation Stops / Taps – Size and Type		
	Hydrants		
	Pipe Casting – Size and Type		
SEWER**	Manhole Rim(s) and Invert(s)		
	Lateral Type and Size		
	Cleanout		
	Pipe Casing – Size and Type		
	Force Main:		
	Top of Pipe Elevations every 100 Feet		
	Pipe Type, Size, Length		
DRAINAGE**	Pipe Type, Size, Length		
	Structure Rim(s) and Invert(s)		
	Pipe Casing – Size and Type		
	Exfiltration Trench:		
	Top of Rock Elevation		
	Bottom of Rock Elevation		
PAVING	Proposed Elevations – Crown / Edge of Pavement		
	Finished Elevations – Crown / Edge of Pavement		
	Radius – Driveway(s) / Intersection(s)		

* Two (2) sets of signed, sealed and dated blue/black line prints and one (1) digital copy in dwg or dfx format.

** Location of all items shall include station and offset with sufficient dimensions and distances to adequately describe the location of each item from the base line.

ENGINEER'S CERTIFICATE OF COMPLETION

As a registered professional engineer in the State of Florida, to the best of my knowledge, information, and belief, it is my professional opinion that the required improvements for (project name) based on field reviews under my responsible charge, have been constructed in substantial accordance with the approved construction plans and the Land Development Regulations of the City of Delray Beach, Florida, in effect on the date of plan approval. Attached, as itemized below, are copies of measurements, tests and reports made on the work and materials during the progress of construction, along with a Record Drawing copy of each of the construction plans on a high quality, time-stable, reproducible mylar, showing the original design in comparison to the actual finished work with all material deviations noted thereon. In my professional opinion, the deviations, if any, noted will not impair the intended functioning of the required improvement. Attachments to this completion statement are as follows:

(Reports, measurements, test results, reproducible mylars and sealed record drawing prints shall be listed, and submitted with the certification.)

(signature) _____

Dated: _____

(Seal)

Address: _____

_____

Minimum Standards for Sanitary Sewer Plan Review

A. All sewer mains shall have a minimum diameter of 8” (inch) and the material shall be PVC SDR-35.

B. All buildings shall have clean out at the property line. Clean outs for single family homes shall be at a minimum diameter of 4” (inches) and Multi-family/Commercial buildings shall be at a minimum diameter of 6” (inches).

C. All industrial commercial buildings using a hazardous material shall be required to install a standard manhole at the junction of the service (property line), with separate openings for the commercial and domestic wastes for the purpose of observing, measurement and sampling of all wastes. A separate manhole may be installed on the service lateral with a twelve- (12) foot utility easement. The manhole shall be installed in lieu of the clean out.

D. Testing:

   Prior to any testing of sanitary lines under future pavement, rock base should be finished, which includes either prime coat or 1st lift of asphalt.

   All gravity sanitary sewer lines shall be TV inspected and air tested by the contractor prior to acceptance: and TV inspected again just prior to the one-year warranty expiration date.

   Air testing shall be accomplished by plugging the pipe segment and services to be tested. Low-pressure air shall be introduced into the sealed line until the internal pressure reaches 5.0 PSIG. After the 5.0 PSIG pressure is reached the air supply should be throttled for two minutes to maintain the 5.0 PSIG while the air and pipe wall temperature equalize. The 5.0 PSIG pressure shall be held for 15 minutes with no greater than .5 PSIG loss during that period.

   If the pipe segment is below the water table the starting 5.0 PSIG must be adjusted up by add the number obtained by dividing the average vertical height above the invert of the sewer pipe by 2.31 and adding to the 5.0 PSIG in no case shall the starting PSIG be greater than 9.0 PSIG.

All sanitary force mains under pavement shall have rock base finished and primed prior to testing and shall be tested at 150 PSIG for 2 hours prior to acceptance in accordance with AWWA/ANSI C600 latest edition. The leakage test may be accomplished concurrently with the pressure test.

E. Pigging:

All sanitary force mains shall be cleaned with a polypropylene pigging device to clean all dirt, sand and debris from the newly installed force main.

F. Fees:

Inspection fees are collected by the Development Services Engineering Department. The inspection fees will be charged to the project owner and will be 2% of the construction costs of water and sewer improvements, but in no case less than $25.00, per City Code of Ordinances, Section 52.39. In addition, inspection(s) conducted at time other than normal City working hours will be billed to the project owner at the overtime rate of $40.00 per hour per inspector. Overtime fees will be billed to the project owner periodically and all overtime fees are required to be paid prior to the issuance of the Certificate of Occupancy. The Engineer of Record will submit an Engineer's Cost Estimate for approval and fee determination.

Minimum Standards for Water Distribution Plan Review

A. All water mains shall be a minimum of 8" (inch) diameter, pressure Class 350 in accordance including exception for C-900 with AWWA/ANSI C151/A21.51 latest edition.

B. All fire hydrants shall be 5¼" (inch) in accordance with Land Development Regulation 6.1.10 (B) (2).

C. No object, structure, planting or obstruction of any kind shall be permitted to grow or extend within 7.5 feet of any fire hydrant.

D. The Engineer of Record shall submit to the City preliminary water distribution drawings, and two copies of the hydraulic calculations for verifying required fire flow signed and sealed by a registered professional engineer in the State of Florida.

E. No physical connection shall be permitted to the City's public water supply without expressed written agreement.

F. All water meters shall be sized by the number of fixtures per unit or for commercial buildings by determination of required demand. This demand shall be proven by submitting to the Public Utilities a minimum of three (3) like facilities usage for one (1) year. All meters sizes shall be determined by Deputy Director of Public Utilities.

G. The maximum size water meter provided shall be two- (2) inch. Any larger size required shall be installed by the Owner or Contractor and shall be approved by the Public Utilities Division.

H. Testing: use same language as sanitary.

   Under pavement, rock base shall be finished and primed prior to any testing. All water mains shall be tested at 150 PSIG for two hours prior to acceptance in accordance with AWWA/ANSI C600 latest edition. The leakage test may be accomplished concurrently with the pressure test.

I. Pigging:

   All water main installations shall be cleaned with a polypropylene pigging device to clean dirt, sand and debris from the newly installed water main.

J. Connection:

   No water main shall be released for service until approved by the Department of Health and Rehabilitative Services.

K. Fill and Flush:

All new water mains require a Fill and Flush device for the purpose of filling and testing of the main, and to maintain a separation of potable and untreated water.

L. Fees

Inspection fees are collected by the Development Services Engineering Department. The inspection fees will be charged to the project owner and will be 2% of the construction costs of water and sewer improvements, but in no case less than $25.00, per City Code of Ordinances, Section 52.39. In addition, inspection(s) conducted at time other than normal City working hours will be billed to the project owner at the overtime rate of $40.00 per hour per inspector. Overtime fees will be billed to the project owner periodically and all overtime fees are required to be paid prior to the issuance of the Certificate of Occupancy. The Engineer of Record will submit an Engineer's Cost Estimate for approval and fee determination.

GENERAL NOTES

DEFINITIONS

1. CITY: THE CITY OF DELRAY BEACH

2. CONTRACTOR: UTILITY CONTRACTOR AND ALL UTILITY SUBCONTRACTORS

3. ENGINEER: ENGINEER RESPONSIBLE FOR INSPECTION AND CERTIFICATION

PROCEDURE

1. A PRE-CONSTRUCTION MEETING IS TO BE HELD PRIOR TO DELIVERY OF MATERIALS AND INITIATION OF ANY WATER, SEWER OR DRAINAGE CONSTRUCTION. THE MEETING SHALL BE ATTENDED BY THE CITY, CONTRACTOR, SUBCONTRACTORS, ENGINEER AND OTHER INTERESTED PARTIES.

2. ANY REVISIONS TO THE APPROVED PLANS MUST BE APPROVED BY THE CITY PRIOR TO THE PRE-CONSTRUCTION MEETING.

3. A MINIMUM OF THREE (3) COPIES OF THE CURRENT APPROVED PRODUCT LIST AND ALL NECESSARY SHOP DRAWINGS SHALL BE SUBMITTED FOR APPROVAL PRIOR TO SCHEDULING THE PRE-CONSTRUCTION MEETING. ALL PIPE MANUFACTURERS SHALL SUBMIT THREE (3) COPIES OF AN AFFIDAVIT THAT THE PIPE AND COATINGS WERE MANUFACTURED IN ACCORDANCE WITH AWWA C151/A21.51-91.

4. ALL APPLICABLE PERMITS MUST BE OBTAINED WITH COPIES PROVIDED TO THE CITY PRIOR TO COMMENCEMENT OF CONSTRUCTION.

5. THE CONTRACTOR SHALL MAINTAIN A CURRENT APPROVED SET OF CONSTRUCTION DOCUMENTS ON SITE AT ALL TIMES.

6. ALL MATERIALS SUPPLIED SHALL CONFORM TO PRODUCT LIST AND SHOP DRAWINGS AS APPROVED BY THE CITY PRIOR TO CONSTRUCTION. ALL REQUESTS FOR MATERIAL SUBSTITUTION SHALL BE APPROVED PRIOR TO DELIVERY OF THESE MATERIALS TO THE JOB SITE.

7. THE LOCATION OF THE EXISTING UTILITIES AS SHOWN ON THE PLANS ARE APPROXIMATE ONLY. THE EXACT LOCATIONS SHALL BE DETERMINED BY THE CONTRACTOR PRIOR TO CONSTRUCTION. IN ADDITION, THE CONTRACTOR SHALL BE RESPONSIBLE TO VERIFY IF OTHER UTILITIES (NOT SHOWN ON THE PLAN) EXIST WITHIN THE AREA OF CONSTRUCTION. SHOULD THERE BE UTILITY CONFLICTS, THE CONTRACTOR SHALL INFORM THE CITY AND NOTIFY THE RESPECTIVE UTILITY OWNER TO RESOLVE THE UTILITY CONFLICTS AND THE UTILITY ADJUSTMENTS AS REQUIRED.

8. PRIOR TO ANY SANITARY PLOT OR WATER MAIN TESTING, UNDER EXISTING OR FUTURE PAVEMENT, THE ROCK BASE SHALL BE FINISHED AND PRIMED OR FIRST LIFT OF PAVEMENT PLACED.

9. THE CONTRACTOR SHALL BE RESPONSIBLE AT ALL TIMES THROUGHOUT THE DURATION OF CONSTRUCTION FOR THE PROTECTION OF EXISTING AND NEWLY INSTALLED UTILITIES FROM DAMAGE OR DISRUPTION OF SERVICE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR TAKING SUCH MEASURES AS

NECESSARY TO PROTECT THE HEALTH, SAFETY, AND WELFARE OF THOSE PERSONS HAVING ACCESS TO THE WORK SITE.

10. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING LOCATIONS OF ALL OTHER UTILITY FACILITIES.

11. THE CONTRACTOR SHALL SCHEDULE INSPECTIONS AND TESTS WITH THE CITY A MINIMUM OF 24 HOURS IN ADVANCE.

12. CONTRACTOR SHALL NOT DISTURB EXISTING CITY MAINS OR STRUCTURES WITHOUT THE PRESENCE OF A CITY INSPECTOR. CITY UTILITY SYSTEM VALVES AND APPURTENANCES MAY ONLY BE OPERATED BY CITY PERSONNEL.

13. FACILITIES PROPOSED HEREIN SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE APPROVED PLANS. DEVIATIONS FROM THE APPROVED PLANS MUST BE APPROVED IN ADVANCE BY THE CITY.

14. UPON COMPLETION OF CONSTRUCTION AND PRIOR TO FINAL ACCEPTANCE OF THE WORK, A FINAL INSPECTION SHALL VERIFY PROPER ADHERENCE TO ALL FACETS OF THE PLANS AND SPECIFICATIONS.

15. PAVING, DRAINAGE AND TRAFFIC CONSTRUCTION SHALL CONFORM TO FLORIDA DEPARTMENT OF TRANSPORTATION ROADWAY AND DESIGN STANDARDS, STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD) AND PALM BEACH COUNTY TYPICAL T-3-89-004-PS (LATEST REVISION) UNLESS SHOWN OTHERWISE.

16. AS-BUILT DRAWINGS SHALL BE PREPARED BY A REGISTERED LAND SURVEYOR, REGISTERED IN THE STATE OF FLORIDA, AND SUBMITTED BY THE CONTRACTOR TO THE CITY. AS THE WORK PROGRESSES, THE ENGINEER OF RECORD (OR THEIR REPRESENTATIVE) SHALL RECORD ON ONE SET OF DRAWINGS THE LOCATION INCLUDING STATION AND OFFSET WITH SUFFICIENT DIMENSIONS AND DISTANCES TO ADEQUATELY DESCRIBE THE LOCATION OF THE IMPROVEMENT FROM THE BASELINE. ELEVATIONS ARE TO BE PROVIDED AT THE TOP OF PIPE AT INCREMENTS OF EVERY 100 FEET ON ALL WATER AND FORCE MAINS. STATIONING IS REQUIRED ON ALL VALVES, FITTINGS, WATER AND SEWER SERVICES AND FIRE HYDRANTS. THE LENGTHS OF ALL WATER SERVICE LINES AND SEWER LATERALS MUST BE NOTED ON GRAVITY SEWER LINES, ELEVATIONS AND STATIONING ARE TO BE INDICATED ON ALL MANHOLE RIMS AND INVERTS. THE DISTANCE BETWEEN MANHOLES IS TO BE SHOWN ON BOTH THE PLAN AND PROFILE SHEETS UNLESS PLAN VIEW AND PROFILE VIEW ARE ON THE SAME SHEET. THE ENGINEER OF RECORD IS TO SUBMIT TWO SETS OF BLUE PRINT RECORD OR AS-BUILT DRAWINGS AND ONE MYLAR TO THE ENGINEERING DEPARTMENT ALONG WITH THE HEALTH DEPARTMENT APPLICATION FOR RELEASE OF THE SYSTEM. ALL “AS-BUILT DRAWINGS” SHALL BE SIGNED SEALED AND DATED BY THE ENGINEER OF RECORD. CERTIFICATE OF OCCUPANCY WILL BE HELD UNTIL ACCEPTANCE BY HRS AND THE DEVELOPMENT SERVICES ENGINEERING DEPARTMENT. PAVING & DRAINAGE AS-BUILT DRAWINGS SHALL INCLUDE RIM ELEVATIONS, INVERT ELEVATIONS, PIPE SIZES, CONTROL STRUCTURE DIMENSIONS, AS WELL AS, AS-BUILT ELEVATIONS AS EVERY LOCATION A PROPOSED ELEVATION IS INDICATED ON THE CONSTRUCTION PLAN. ADEQUATE AS-BUILT ELEVATIONS SHALL BE PROVIDED ON EMBANKMENTS TO DETERMINE COMPLIANCE WITH MAXIMUM SLOPE REQUIREMENTS.

17. PRIOR TO COMMENCEMENT OF ANY EXCAVATION, THE CONTRACTOR SHALL COMPLY WITH FLORIDA STATUTE 553-851 FOR PROTECTION OF UNDERGROUND GAS PIPE LINES.

18. CONTRACTOR SHALL NOTIFY SUNSHINE STATE ONE (1-800-432-4770) 48 HOURS IN ADVANCE OF CONSTRUCTION.

19. GRADES SHOWN ON PLANS ARE FINISHED GRADES. THE CONTRACTOR SHALL BE REQUIRED TO ADJUST EXISTING SANITARY SEWER MANHOLE TOPS AND VALVE BOX COVERS TO FINISHED GRADE.

20. CONTRACTOR SHALL MAINTAIN LOCAL TRAFFIC AT ALL TIMES DURING CONSTRUCTION AND SHALL BE REQUIRED TO PROVIDE ALL BARRICADES, LIGHTING, SIGNAGE AND FLAGMEN AS NECESSARY TO PROVIDE FOR THE SAFETY OF THE PUBLIC IN THE WORK AREA. THE CONTRACTOR SHALL SUBMIT A DETAILED TRAFFIC MAINTENANCE PLAN PRIOR TO CONSTRUCTION.

21. EXISTING BASE MATERIAL THAT IS REMOVED DURING CONSTRUCTION SHALL NOT BE USED IN THE CONSTRUCTION OF NEW LIMEROCK BASE.

22. ALL VEGETATION, DEBRIS, CONCRETE OR OTHER UNSUITABLE MATERIAL SHALL BE LEGALLY DISPOSED OF OFF-SITE IN AN AREA AT THE CONTRACTORS EXPENSE.

23. CONTRACTOR SHALL UTILIZE CONSTRUCTION METHODS AND DEVICES, SUCH AS TURBIDITY SCREENS, CURTAINS AND FLOATING SILT BARRIERS WHERE NECESSARY IN ORDER TO COMPLY WITH ALL STATE AND LOCAL WATER QUALITY STANDARDS.

24. PRIOR TO AND DURING CONSTRUCTION OF ALL SITES, THE PERMITEE SHALL IMPLEMENT AND MAINTAIN ALL EROSION AND SEDIMENT CONTROL MEASURES INCLUDED IN A POLLUTION PREVENTION PLAN PROVIDED TO THE CITY OF DELRAY BEACH.

25. ALL REINFORCED CONCRETE STORM SEWER PIPE SHALL BE CLASS III, UNLESS OTHERWISE NOTED.

26. ALL PAVED SURFACES SHALL BE PROPERLY MARKED PRIOR TO HOURS OF DARKNESS. PERMANENT PAVEMENT MARKING STALLS SHALL BE LAID OUT USING MARKING CHALK. LAYOUT TO BE REVIEWED BY THE CITY PRIOR TO PLACEMENT OF FINAL MARKING.

27. EMBANKMENT (FILL) AND EXCESS MATERIAL REQUIRED FOR ROADWAY RECONSTRUCTION AND UTILITY INSTALLATIONS SHALL BE SUPPLIED AND/OR DISPOSED OF BY THE CONTRACTOR. ALL COSTS ASSOCIATED WITH EARTHWORK REQUIREMENTS TO COMPLETE THE ROADWAY RECONSTRUCTION AND UTILITY IMPROVEMENTS SHALL BE INCLUDED IN THE COSTS OF OTHER APPROPRIATE PAY ITEMS.

28. CONTINUITY OF WATER AND SEWER SERVICE TO CITY UTILITY CUSTOMERS SHALL BE MAINTAINED THROUGHOUT THE DURATION OF THIS PROJECT. IF A BREAK IN SERVICE IS UNAVOIDABLE TO ACCOMMODATE CONNECTION OF NEW FACILITIES, IT SHALL BE SCHEDULED FOR OFF PEAK HOURS WITH THE CITY. DETERMINATION OF SERVICE BREAK REQUIREMENT WILL BE MADE BY THE CITY.

29. SITE INFORMATION BASED ON A SURVEY PREPARED BY:

30. THE EXTENT OF ROAD CONSTRUCTION WORK TO BE COMPLETED BY THE CONTRACTOR, WITHIN THE RAILROAD RIGHT-OF-WAY SHALL BE DETERMINED BY THE CITY AND COORDINATED WITH THE FLORIDA EAST COAST RAILWAY COMPANY AT THE TIME OF CONSTRUCTION.

31. RELOCATION OF UTILITY POLES AND GAS PIPE LINES SHALL BE COORDINATED BY THE CONTRACTOR WITH FLORIDA POWER AND LIGHT, AND FLORIDA PUBLIC UTILITIES, RESPECTIVELY. EACH UTILITY HAS BEEN NOTIFIED THAT THEY WILL BE REQUIRED TO RELOCATE THEIR UTILITIES.

City of Delray Beach
Utility Department

Standard Products List

August 2021

Project Name:

Concurrence of
Utilities Contractor: _____
Signature

Date

_____
Firm

Concurrence of Engineer: _____
Signature Date

_____
Firm

City Approval: _____
Signature

Date

By signature above, the Utilities contractor for the referenced project agrees to adhere to the following product specifications and procedures. It is understood that the Utilities Department will reject installation of materials that are not in accordance with this document.

Basis:
Be acceptable and/or desirable in their respective groups. All materials and appurtenances shall be approved in advance by the ESD. Such approval requires the submission of shop drawings, four (4) copies to ESD with two (2) returned, one (1) for the Contractor, and one (1) for the Engineer for each product. Shop drawings shall also be required for all non-standard items such as manholes, wet wells, lift stations, other castings, pumps, etc. The Contractor shall not be authorized to install any materials until receipt of approved shop drawings from ESD.

1. Water Services

*All potable water meters, valves and fittings cannot contain more than 0.25% lead. Units will bear one of the markings showing it is low lead and/or lead free…**NL, EB II, FD, or LD**.

Curb Stops

"	MUELLER	FORD	A.Y. McDONALD
3/4”	P24350N	B43-342W	
1”	B25170	B43-444W	76100MW-22
1-1/2”	B25170	B41-666W	6102W-22
2”	B25170	B41-777W	6102W-22

Corporations

	MUELLER	FORD	A.Y. McDONALD
3/4”			
1”		FB1000-4	74701B-22
1-1/2”		FB1000-6	74701B-22
2”	B25008	FB1000-7	74701B-22

Multi-Service Four-way Two-way Wye

	MUELLER	FORD	A.Y. McDONALD
2” x 1”	P15343	Y44-274	708 4S222
1 1/2” x 1”	P15343	Y44-264	708 4422

Service Saddles: (304 Stainless Steel Double Strap)
A. Ford B. Smith-Blair C. Romac D. Mueller
Polyethylene Pipe:

Polyethylene pipe shall be PE-4710 CTS high molecular weight materials as per AWWA C901, ASTM D2737 SDR-9 and submit affidavit from the manufacturer. Blue for water, Green for sewer and Purple for reclaimed water.

Meter Boxes:

	Brooks		CDR
3/4” - 1”	#37 Body		WA03-1118-12 (12” box Straight Wall only) WA03-1118-18 (18” box)
3/4” - 1” (Double Box)			WA03-1517-12 with WC00-1517-2C Cover
1 1/2” - 2”	#38 Body		A00-1324-12 or A02-1324-12 (Heavy Duty) A00-1324-18 or A02-1324-18 (Heavy Duty)

Meter Box Lids:	Traffic:	Touch Read:
1” Box	WC00-1118-2C	WC00-1118-2TR
2” Box	WC00-1324-2C	WC00-1324-2TR

2. Fire Hydrants: (Breakaway-Flange Only)

A. Mueller Super Centurion A423 5-1/4”

3. Valves:
Gate Valves: (Resilient Wedge/Seat AWWA Standard C509)

A. Mueller
B. Clow
C. American
D. Kennedy

Butterfly Valves: (Water mains only (12” and larger)

A. Mueller B3211
B. American Darling
C. Kennedy
D. Clow

Tapping Valves:

A. American #2500
B. Mueller T2361
C. Clow 5093 (Medallion)
D. Kennedy Guardian
E. US Pipe TUSP0

4. Tapping Sleeve:
Stainless Steel

A. Mueller H-304
B. Ford FTSS
C. Clow 5205
D. JCM 432-wideband (304)
E. Tyler (5-149)

5. Water Pipe:

All water pipe shall be minimum 8” diameter DIP or PVC C900. DIP shall be cement mortar lined (Pressure Class 350) and shall comply with AWWA C104, C151 and submit affidavit from Manufacturer. PVC C900 shall comply with AWWA C900 and to be reviewed & approved by City.

6. Force Main:

Force Mains shall be epoxy lined (Pressure Class 350) and shall comply with ANSI/AWWA C210-92 and Submit affidavit from manufacturer.

7. Sanitary Sewer Pipe:

All gravity sewer pipe shall be Polyvinyl Chloride (PVC) ASTM-3034, SDR-35.

8. Standard Sanitary Sewer/Storm Manhole:

Frame & Cover Markings	City of Delray Beach Sanitary Sewer U.S. Foundry 576 BH-ORS coated
	City of Delray Beach Storm Sewer U.S. Foundry 576 BH coated

Manholes shall be precast concrete with eccentric cones and cast in place boot equal to lock joint flexible manhole sleeve ASTM C-923 and shall comply with ASTM C-478. Manholes will require a separate submittal with regular shop drawings.

9. Manhole Adjusting Rings in Conjunction with Road Resurfacing Projects Only:

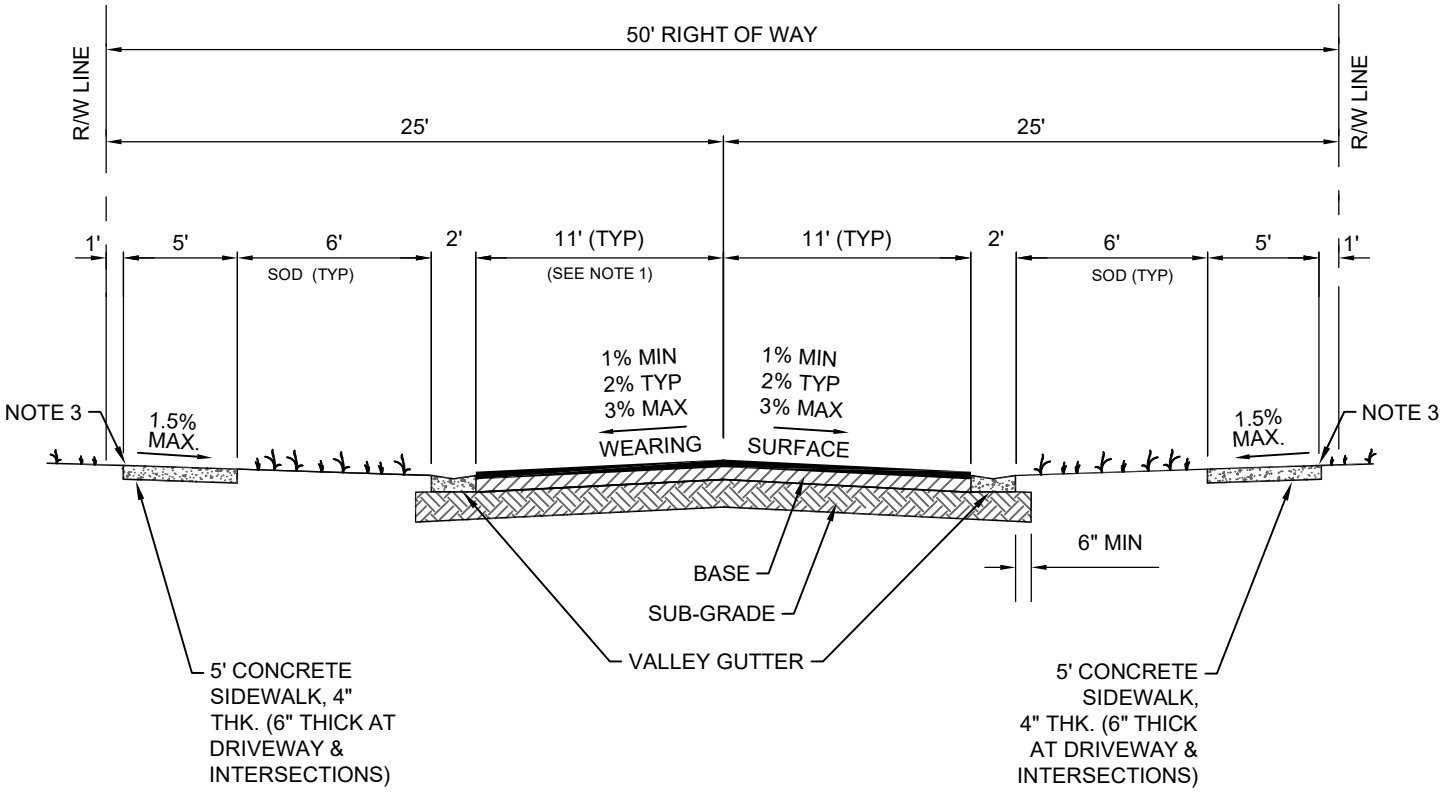
Manhole adjusting rings shall be USF Type B cast iron adjusting rings (or equal). Steel rings are not acceptable.

10. Reinforced Concrete Pipe:

Pipe shall conform with the requirements of Class III ASTM C-76 and the most recent Florida DOT Standard Specifications for Road and Bridge Construction, Section 941.

11. Standard Fixed Inlet Cover or Precast Inlet:

All storm drain structures and appurtenances shall comply with Florida DOT Roadway and Traffic Design Standards latest revisions. (Requires separate submittal with regular shop drawings.)



PAVEMENT SPECIFICATIONS	
WEARING SURFACE	3" TYPE S-III (2 LIFTS) AFTER COMPACTION SEE NOTE 2
BASE	8" LIMEROCK OR 10" CRUSHED CONCRETE COMPACTED TO 98% MAX. DENSITY PER AASHTO T-180. PRIME & TACK COAT PER FDOT SECTION 300.
SUBGRADE	12" STABILIZED (75 P.S.I. FBV) AND COMPACTED TO 98% MAX. DENSITY PER AASHTO T-180.

NOTES:

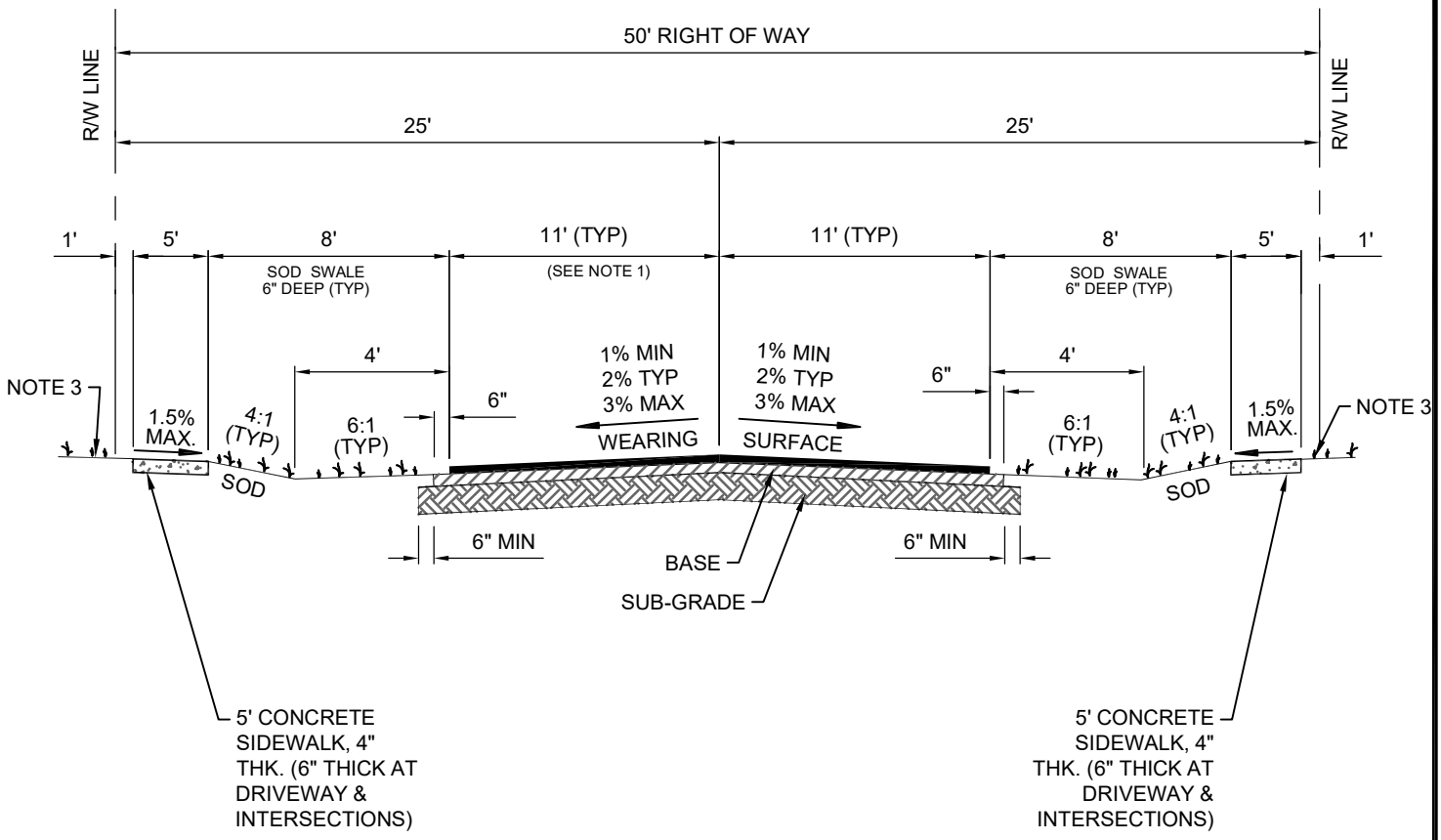
1. VARIATION IN LANE WIDTHS WILL BE CONSIDERED ON A CASE BY CASE BASIS BY THE CITY.
2. 2ND LIFT SHALL NOT BE PAVED UNTIL CONSTRUCTION VEHICLES AND EQUIPMENT HAVE COMPLETED WORK.
3. IN UNDEVELOPED LOCATION, ELEVATION TO BE SET EQUAL TO ROADWAY CROWN. IN PREVIOUSLY DEVELOPED AREAS, MATCH EXISTING GRADES.
4. LANE WIDTHS MUST BE APPROVED BY CITY PRIOR TO DESIGN.

CITY of DELRAY BEACH
PUBLIC WORKS DEPARTMENT
434 SOUTH SWINTON AVENUE, DELRAY BEACH, FLORIDA 33444

TYPICAL 50' R/W SECTION
WITH VALLEY GUTTER

DATE: 10-04-2024

RT 1.0



PAVEMENT SPECIFICATIONS	
WEARING SURFACE	3" TYPE S-III (2 LIFTS) AFTER COMPACTION SEE NOTE 2
BASE	8" LIMEROCK OR 10" CRUSHED CONCRETE COM-PACTED TO 98% MAX. DENSITY PER AASHTO T-180. PRIME & TACK COAT PER FDOT SECTION 300.
SUBGRADE	12" STABILIZED (75 P.S.I. FBV) AND COMPACTED TO 98% MAX. DENSITY PER AASHTO T-180.

NOTES:

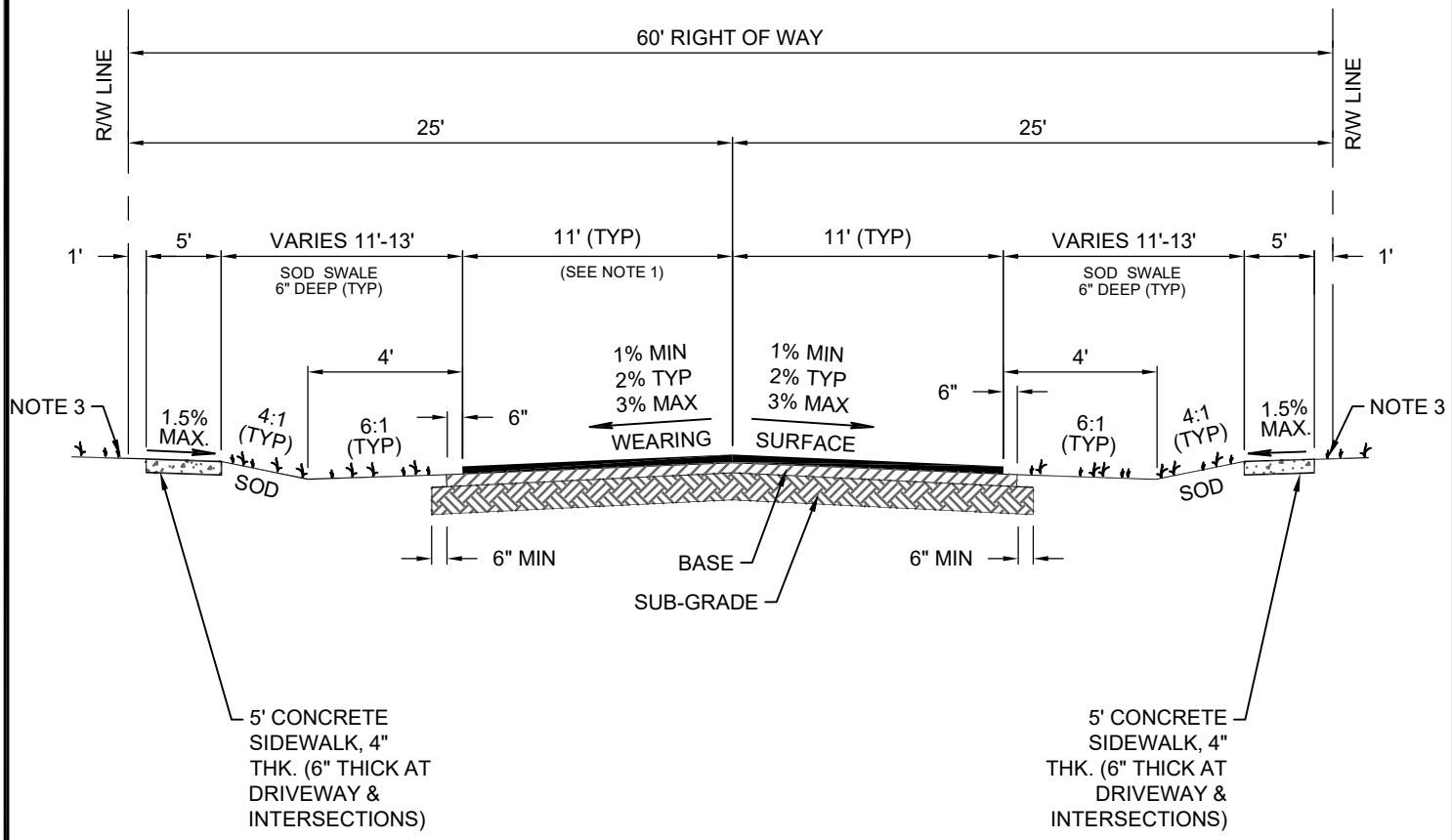
1. VARIATION IN LANE WIDTHS WILL BE CONSIDERED ON A CASE BY CASE BASIS BY THE CITY.
2. 2ND LIFT SHALL NOT BE PAVED UNTIL CONSTRUCTION VEHICLES AND EQUIPMENT HAVE COMPLETED WORK.
3. IN UNDEVELOPED LOCATION, ELEVATION TO BE SET EQUAL TO ROADWAY CROWN. IN PREVIOUSLY DEVELOPED AREAS, MATCH EXISTING GRADES.
4. LANE WIDTHS MUST BE APPROVED BY CITY PRIOR TO DESIGN.

CITY of DELRAY BEACH
PUBLIC WORKS DEPARTMENT
434 SOUTH SWINTON AVENUE, DELRAY BEACH, FLORIDA 33444

TYPICAL 50' R/W SECTION WITH SWALE

DATE: 10-04-2024

RT 2.0



PAVEMENT SPECIFICATIONS	
WEARING SURFACE	3" TYPE S-III (2 LIFTS) AFTER COMPACTION SEE NOTE 2
BASE	8" LIMEROCK OR 10" CRUSHED CONCRETE COMPACTED TO 98% MAX. DENSITY PER AASHTO T-180. PRIME & TACK COAT PER FDOT SECTION 300.
SUBGRADE	12" STABILIZED (75 P.S.I. FBV) AND COMPACTED TO 98% MAX. DENSITY PER AASHTO T-180.

NOTES:

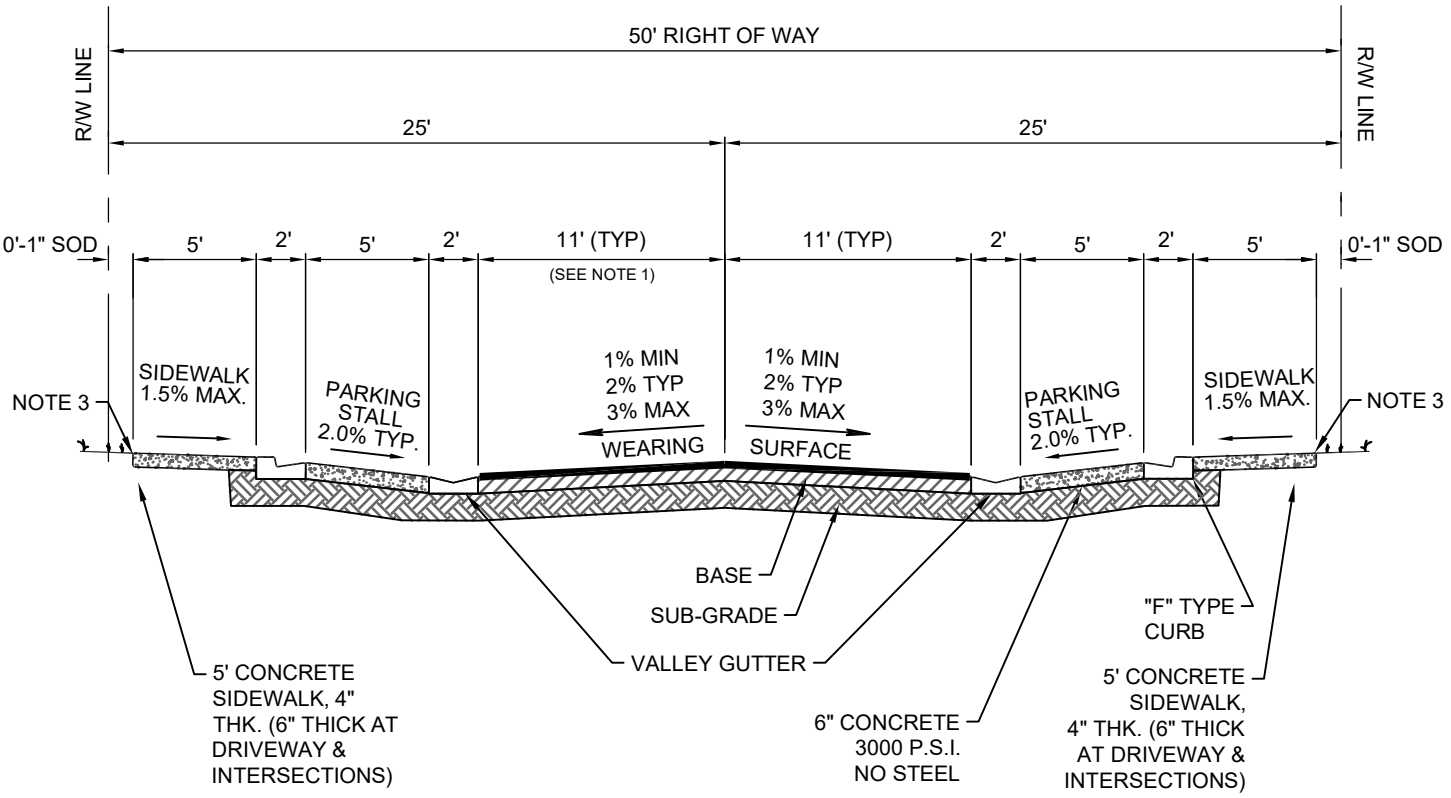
1. VARIATION IN LANE WIDTHS WILL BE CONSIDERED ON A CASE BY CASE BASIS BY THE CITY.
2. 2ND LIFT SHALL NOT BE PAVED UNTIL CONSTRUCTION VEHICLES AND EQUIPMENT HAVE COMPLETED WORK.
3. IN UNDEVELOPED LOCATION, ELEVATION TO BE SET EQUAL TO ROADWAY CROWN. IN PREVIOUSLY DEVELOPED AREAS, MATCH EXISTING GRADES.
4. LANE WIDTHS MUST BE APPROVED BY CITY PRIOR TO DESIGN.

CITY of DELRAY BEACH
PUBLIC WORKS DEPARTMENT
434 SOUTH SWINTON AVENUE, DELRAY BEACH, FLORIDA 33444

TYPICAL 60' RIGHT OF WAY SECTION

DATE: 10-04-2024

RT 3.0



PAVEMENT SPECIFICATIONS	
WEARING SURFACE	3" TYPE S-III (2 LIFTS) AFTER COMPACTION SEE NOTE 2
BASE	8" LIMEROCK OR 10" CRUSHED CONCRETE COMPACTED TO 98% MAX. DENSITY PER AASHTO T-180. PRIME & TACK COAT PER FDOT SECTION 300.
SUBGRADE	12" STABILIZED (75 P.S.I. FBV) AND COMPACTED TO 98% MAX. DENSITY PER AASHTO T-180.
CONCRETE PARKING STALLS	6" THICK - 3000 P.S.I. CONCRETE WITH BROOM FINISH

NOTES:

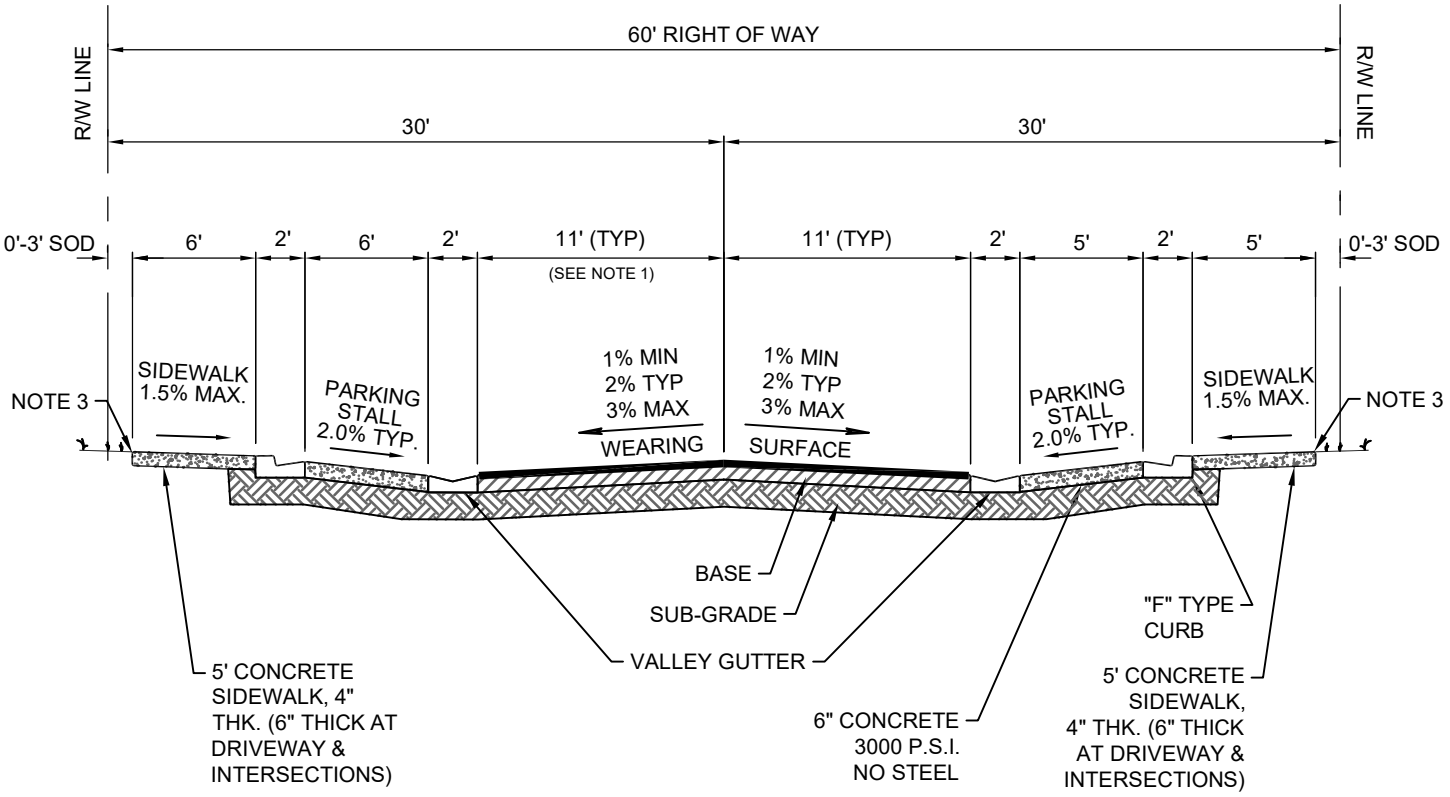
1. VARIATION IN LANE WIDTHS WILL BE CONSIDERED ON A CASE BY CASE BASIS BY THE CITY.
2. 2ND LIFT SHALL NOT BE PAVED UNTIL CONSTRUCTION VEHICLES AND EQUIPMENT HAVE COMPLETED WORK.
3. IN UNDEVELOPED LOCATION, ELEVATION TO BE SET EQUAL TO ROADWAY CROWN. IN PREVIOUSLY DEVELOPED AREAS, MATCH EXISTING GRADES.
4. LANE WIDTHS MUST BE APPROVED BY CITY PRIOR TO DESIGN.

CITY of DELRAY BEACH
PUBLIC WORKS DEPARTMENT
434 SOUTH SWINTON AVENUE, DELRAY BEACH, FLORIDA 33444

TYPICAL 50' R/W WITH PARALLEL PARKING SECTION

DATE: 10-04-2024

RT 4.0



PAVEMENT SPECIFICATIONS	
WEARING SURFACE	3" TYPE S-III (2 LIFTS) AFTER COMPACTION SEE NOTE 2
BASE	8" LIMEROCK OR 10" CRUSHED CONCRETE COMPACTED TO 98% MAX. DENSITY PER AASHTO T-180. PRIME & TACK COAT PER FDOT SECTION 300.
SUBGRADE	12" STABILIZED (75 P.S.I. FBV) AND COMPACTED TO 98% MAX. DENSITY PER AASHTO T-180.
CONCRETE PARKING STALLS	6" THICK - 3000 P.S.I. CONCRETE WITH BROOM FINISH

NOTES:

1. VARIATION IN LANE WIDTHS WILL BE CONSIDERED ON A CASE BY CASE BASIS BY THE CITY.
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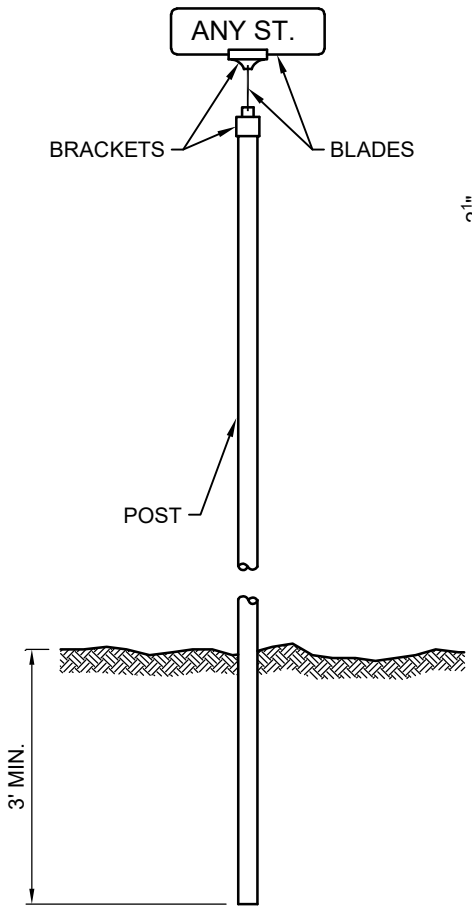
4. LANE WIDTHS MUST BE APPROVED BY CITY PRIOR TO DESIGN.

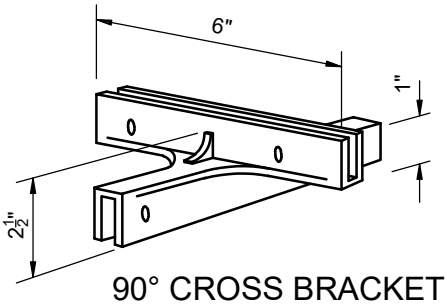
CITY of DELRAY BEACH
PUBLIC WORKS DEPARTMENT
434 SOUTH SWINTON AVENUE, DELRAY BEACH, FLORIDA 33444

TYPICAL 60' R/W WITH PARALLEL PARKING SECTION

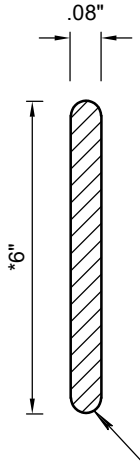
DATE: 10-04-2024

RT 5.0

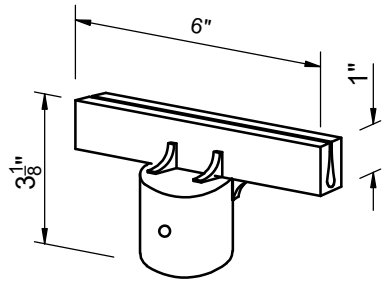




90° CROSS BRACKET
FOR FLAT BLADES.



* FLAT BLADE SECTION
9"ALONG COLLECTORS & ARTERIALS.



POST CAP BRACKET
FOR ROUND POST.

GENERAL SPECIFICATIONS	
BLADE	ALCOA NO.86054,6063-T6 ALLOY, ETCHED, DEGREASED, AND DEBURRED WITH NO.1200 ALDOLINE FINISH WITH HIGH INTENSITY GREEN BACKGROUND DIMENSIONS: 6" OR 9" IN HEIGHT, AND 24", 30", OR 36" IN LENGTH
LETTERS	NAME 4" SERIES "B" HIGH INTENSITY (SILVER) SUFFIX 2" SERIES "B" HIGH INTENSITY (SILVER) ALL LETTERS FOR SIGNS ALONG COLLECTOR OR ARTERIAL ROADWAYS SHALL BE 7" SERIES "B" WITH 4" SERIES "B" SUFFIX ON 9" HIGH BLADES.
POST	STEEL FLANGED GALVANIZED CHANNEL. PER A.S.T.M. A123 WITHOUT ANCHOR PLATES.
BRACKETS	DIE CAST HIGH STRENGTH ALUMINUM ALLOY, MIN. TENSILE STRENGTH 45,000 P.S.I., DEGREASED, TUMBLED, AND POLISHED SIDES OF ALL SLOTS SHALL BE SOLID METAL WITH TWO HOLES PER SLOT (SAME SIDE) DRILLED TO 7/32" AND TAPPED TO 1/4" TO RECEIVE STAINLESS STEEL ALLENHEAD SET SCREWS, SKIRT OF POST CAP BRACKET TO BE DRILLED AND TAPPED FOR 3 SCREWS OF WHICH NO TWO IS TO BE LESS THAN 90° OR MORE THAN 135° APART. (METRO HUSKEY NO.6 OR EQUAL.)

CITY of DELRAY BEACH
PUBLIC WORKS DEPARTMENT
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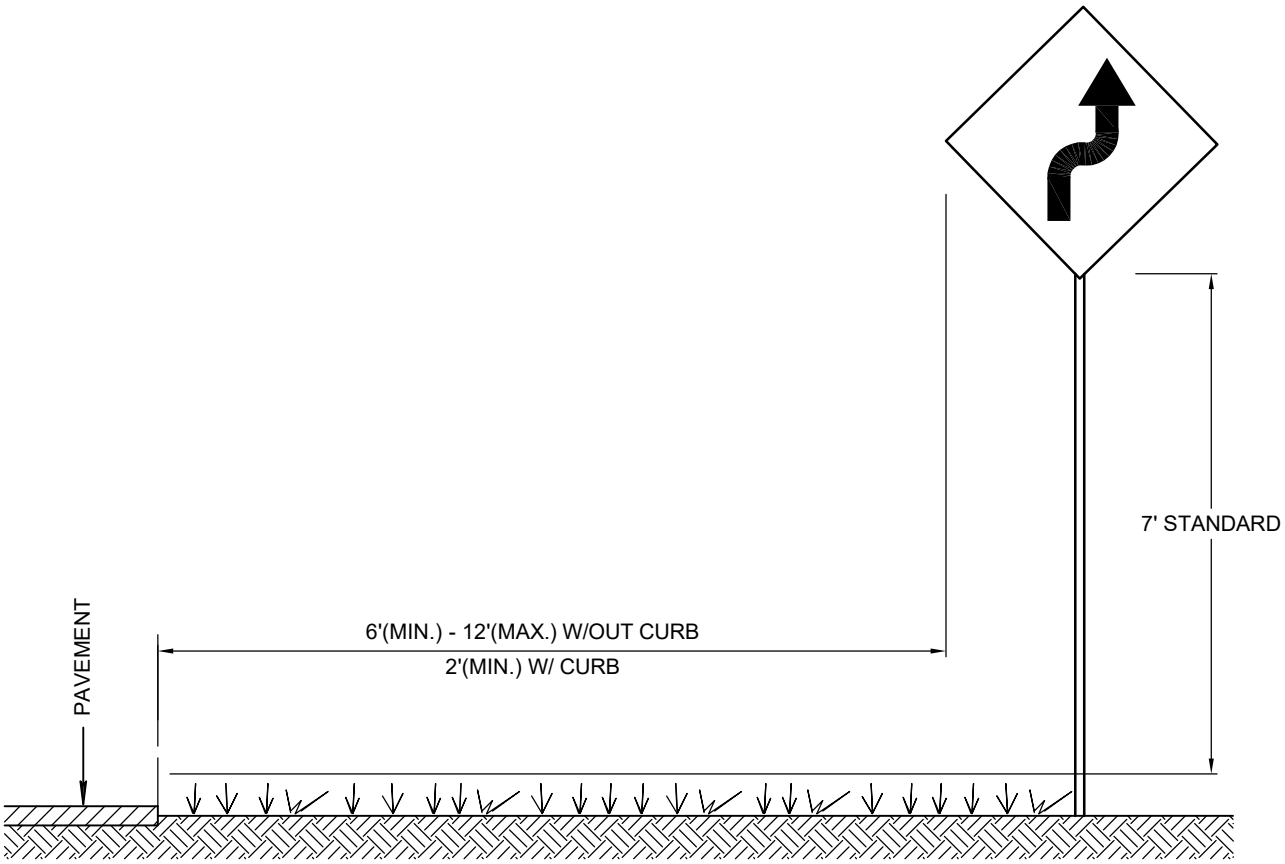
STREET SIGN DETAIL
(SHEET 1 of 2)

DATE: 10-04-2024

RT 6.0

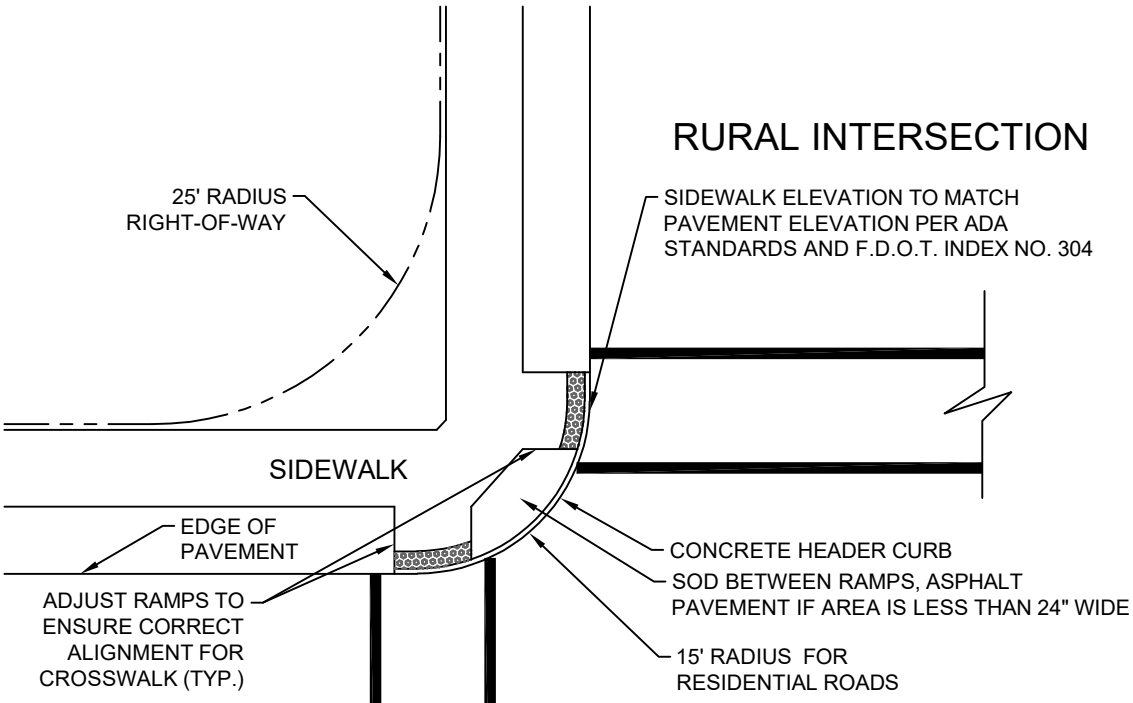
TYPICAL SIGN. PLAN SYMBOL :



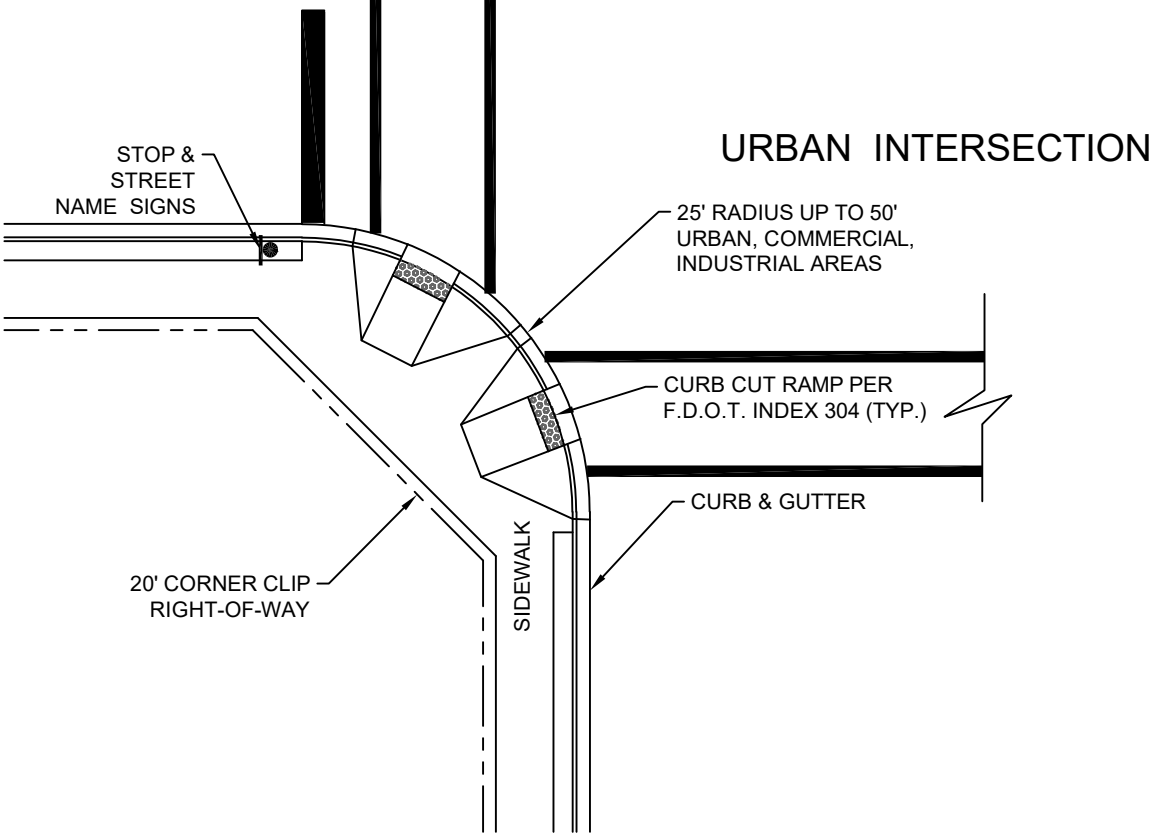
NOTES:

1. ALL SIGNS SHALL BE SPECIFIED USING THE M.U.T.C.D. DESIGNATION.
2. ALL SIGNS SHALL BE FACED WITH HIGH INTENSITY SHEETING MATERIAL OR BETTER.
3. SIGNS SHALL BE MANUFACTURED WITH 0.080" ALUMINUM BLANK.
4. POSTS SHALL BE PER DETAIL RT 6.0.
5. USE SHALL FOLLOW THE M.U.T.C.D. AND F.D.O.T. STANDARD DESIGN SPECIFICATIONS
6. ANY DEVIATION FROM THIS TYPICAL SHALL BE APPROVED BY THE CITY ENGINEER PRIOR TO INSTALLATION.
7. REFLECTIVE POSTS MAY BE USED IF M.U.T.C.D. STANDARD IS FOLLOWED.

RURAL INTERSECTION



URBAN INTERSECTION



NOTES

1. DRIVEWAY DESIGN TO BE PER CITY LAND DEVELOPMENT REGULATIONS, FDOT STANDARD SPECIFICATIONS. ALL DESIGNS SUBJECT TO CITY APPROVAL.
2. ALL WALKS CROSSING A VEHICULAR AREA SHALL HAVE A DETECTABLE WARNING SURFACE (TRUNCATED DOME) IN ACCORDANCE WITH THE FLORIDA BUILDING CODE, CHAPTER II, FL. ACCESSIBILITY CODE FOR BUILDING CONSTRUCTION.

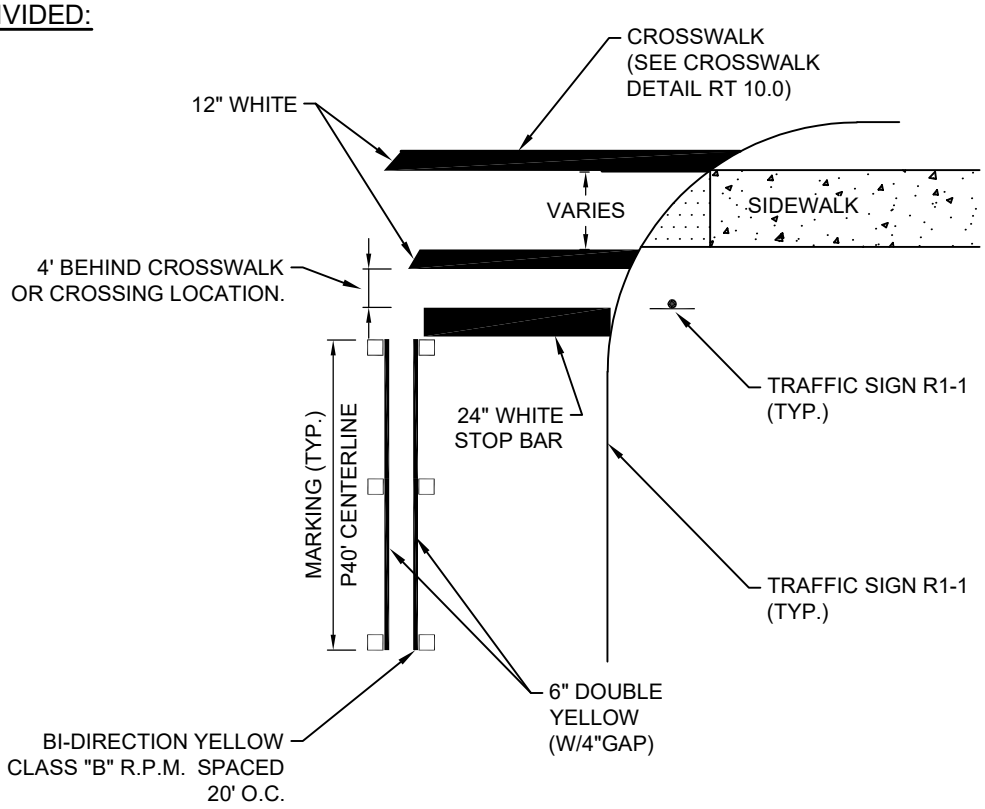
CITY of DELRAY BEACH
PUBLIC WORKS DEPARTMENT
434 SOUTH SWINTON AVENUE, DELRAY BEACH, FLORIDA 33444

INTERSECTION DETAIL

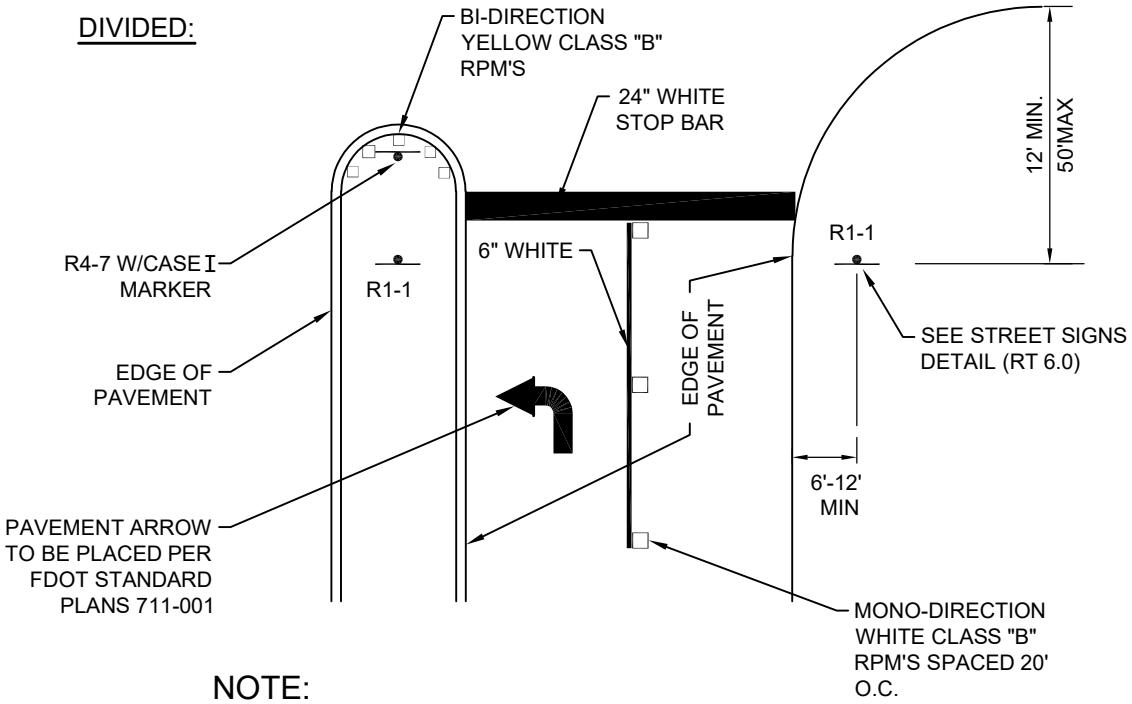
DATE: 10-04-2024

RT 8.0

UNDIVIDED:



DIVIDED:



NOTE:

ALL STRIPING AND DELINEATION TO CONFORM TO THE REQUIREMENTS OF THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, (MUTCD) LATEST EDITION.

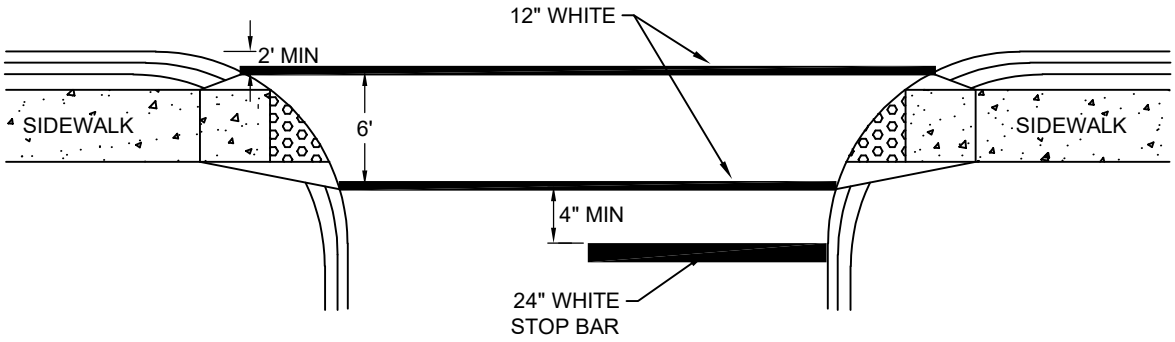
CITY of DELRAY BEACH
PUBLIC WORKS DEPARTMENT
434 SOUTH SWINTON AVENUE, DELRAY BEACH, FLORIDA 33444

INTERSECTION TRAFFIC CONTROL STOP CONDITION

DATE: 10-04-2024

RT 9.0

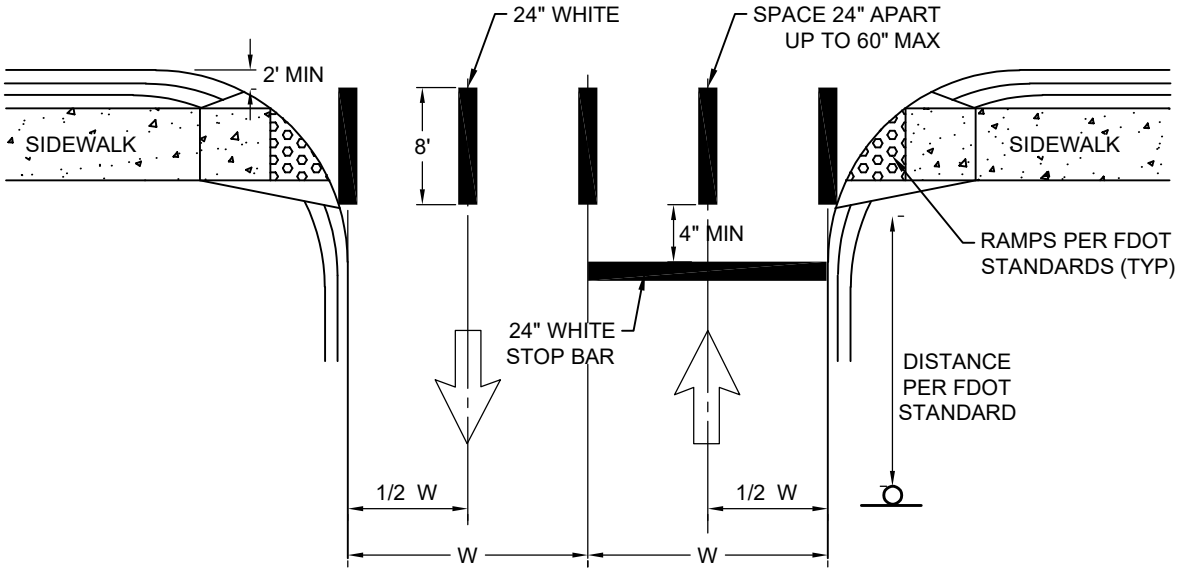
STANDARD CROSSWALK



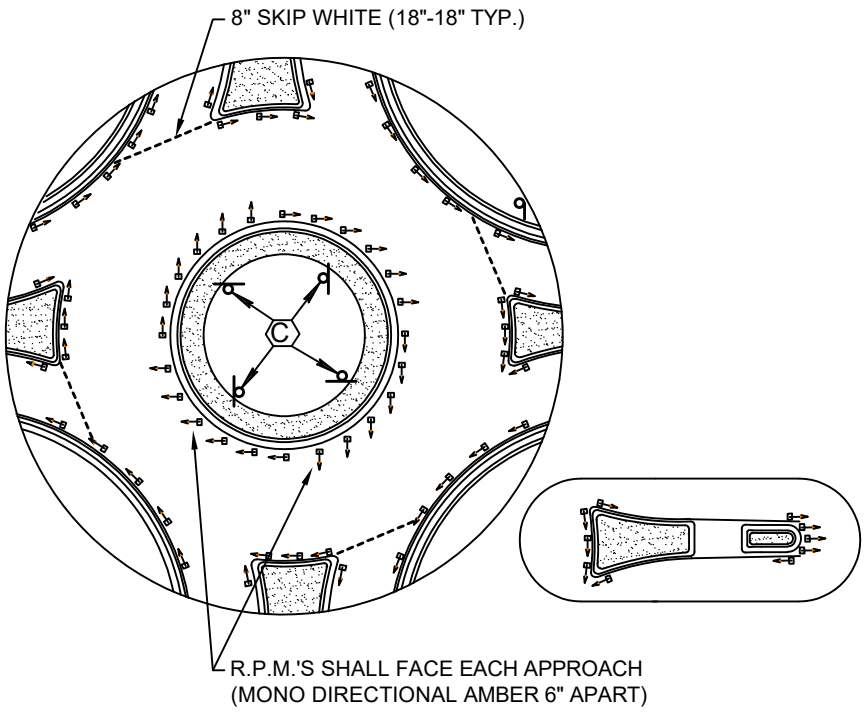
STANDARD CROSSWALK STRIPING TO BE INSTALLED IN THE FOLLOWING LOCATIONS:

- ALONG COLLECTORS OR ARTERIALS
- BIKE PATH CROSSINGS
- CROSS WALKS WITH HIGH EXPECTED PEDESTRIAN VOLUME
- SCHOOL ACCESS ROUTES
- SIGNING REQUIRED AS PER FDOT STANDARD PLAN 711-001

HIGH VISIBILITY CROSSWALK



- HIGH VISIBILITY CROSSWALK STRIPING TO BE USED ONLY AT DESIGNATED SUPERVISED SCHOOL CROSSING OR AT LOCATIONS WHERE IT IS DEEMED APPROPRIATE BY THE CITY.
- SIGNS AND ADVANCED PAVEMENT MESSAGES TO BE DESIGNED AND INSTALLED PER FDOT STANDARD PLAN 711-001
- CROSSWALKS LOCATED MIDBLOCK MINIMUM WIDTH 10' AND ALL CROSSWALK MARKINGS SHALL BE WHITE.
- LONGITUDINAL LINES IN SPECIAL EMPHASIS CROSSWALK SHALL BE 24" WIDE AND SPACED TO AVOID THE WHEEL PATH OF VEHICLES AS SHOWN IN DETAIL. THE SPACE BETWEEN MARKINGS SHALL NOT EXCEED 60". A LONGITUDINAL MARKING SHALL BE CENTERED AT EACH LANE LINE. ADDITIONAL LONGITUDINAL MAKINGS SHALL BE PLACED AT THE CENTER OF EACH LINE.
- WHERE THE CROSSWALK IS SKEWED TO THE LANE LANE LINES, THE SPECIAL EMPHASIS LONGITUDINAL LINES SHOULD BE PARALLEL TO THE LANE LINE.



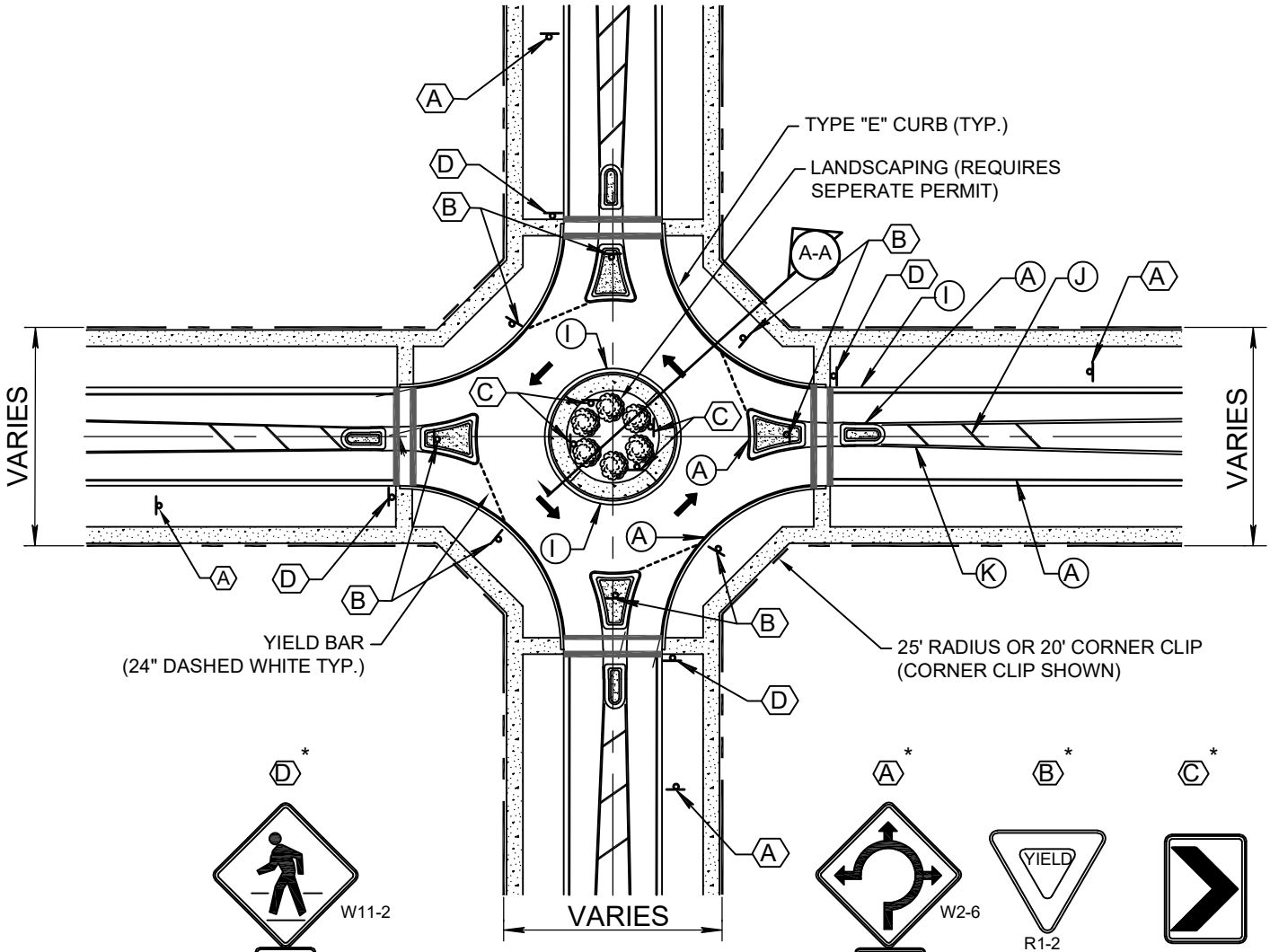
R.P.M. PLACEMENT DETAILS

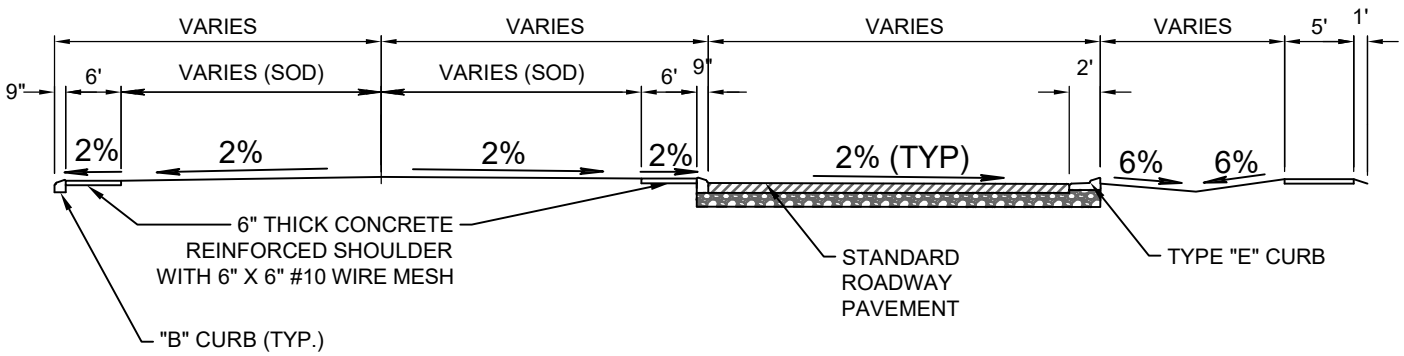
STRIPING KEY:

A = 6" SOLID WHITE
B = 8" SOLID WHITE
C = 12" SOLID WHITE
D = 18" SOLID WHITE
E = 24" SOLID WHITE
F = 6" SKIP WHITE TYP. (10'-30')
G = 6" SKIP WHITE TYP. (6'-10')
H = 6" SKIP WHITE TYP. (2'-4')
I = 6" SOLID YELLOW
J = 18" SOLID YELLOW
K = 6" DOUBLE YELLOW
L = 6" SKIP YELLOW TYP. (10'-30')
M = 6" SKIP YELLOW TYP. (6'-10')
N = 6" SKIP YELLOW TYP. (2'-4')
P = RPM MONO-DIRECTIONAL WHITE/CLEAR
Q = RPM BI-DIRECTIONAL AMBER/AMBER
R = FDP WHITE
S = FDP YELLOW
T = RPM BI-DIRECTIONAL WHITE/RED

NOTE:

ALL PAVEMENT MARKINGS AND REFLECTIVE PAVEMENT MARKERS SHALL BE IN ACCORDANCE WITH PALM BEACH COUNTY TYPICAL DETAILS FOR PAVEMENT MARKING, SIGNAGE & GEOMETRICS (CURRENT EDITION).



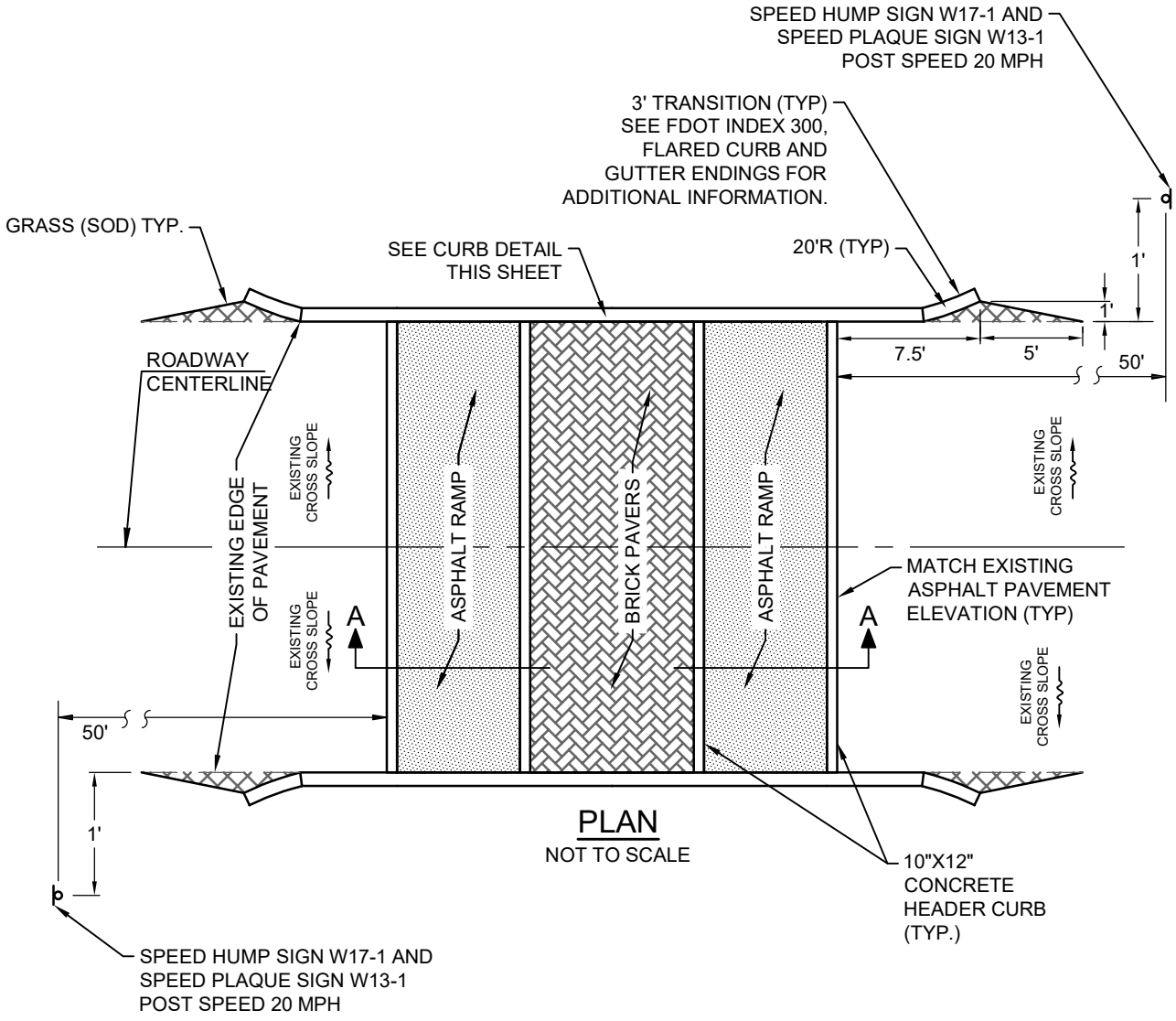


SECTION A-A

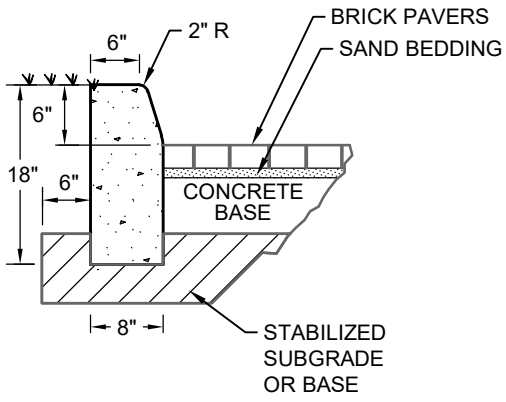
NOT TO SCALE

NOTES:

1. INSCRIBED CIRCLE DIAMETER , ENTRY RADIUS AND EXIT RADIUS VARY WITH SPEEDS. SEE FEDERAL HIGHWAY ADMINISTRATION'S ROUND-A-BOUT INFORMATIONAL GUIDE FOR DESIGN.
2. ALL TRAFFIC CONTROL SIGNS & PAVEMENT MARKINGS TO FOLLOW M.U.T.C.D. SIGN HEIGHT IN SPLITTER ISLANDS AND IN ROUND-A-BOUT MAY BE 4' INSTEAD OF 7.

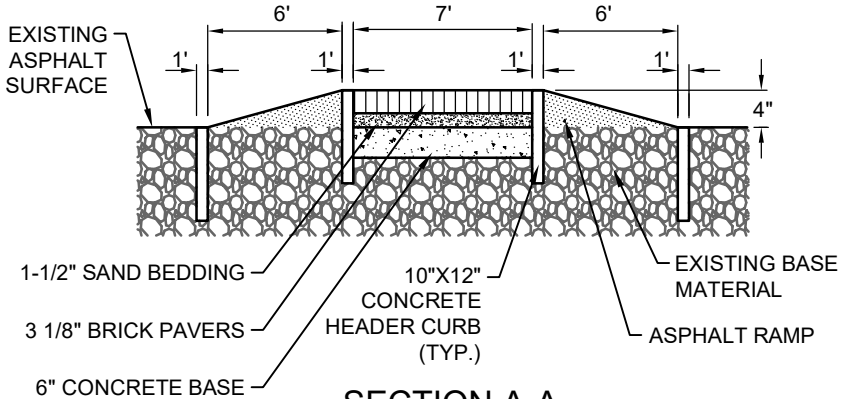


PLAN
NOT TO SCALE



CURB PER CITY DETAIL RT 19.0

CONCRETE CURB
NOT TO SCALE



SECTION A-A
NOT TO SCALE

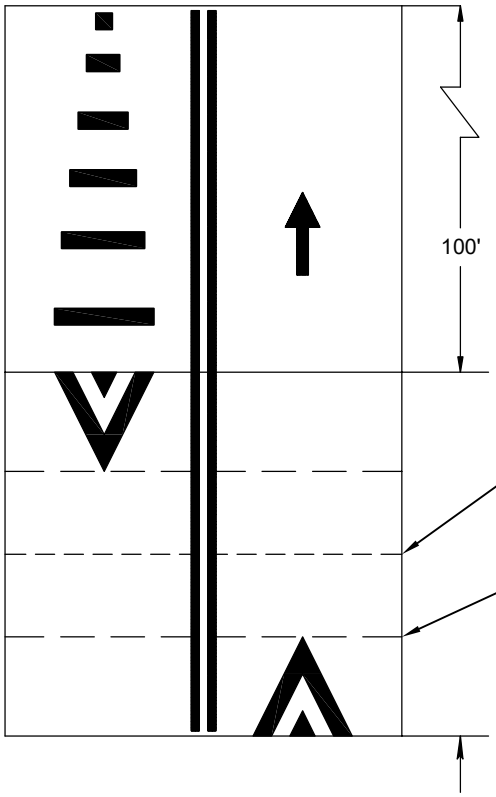
*IF NEW ROADWAY CONSTRUCTION SEE DETAIL RT 26.0
FOR SECTION SPECIFICATIONS

CITY of DELRAY BEACH
PUBLIC WORKS DEPARTMENT
434 SOUTH SWINTON AVENUE, DELRAY BEACH, FLORIDA 33444

SPEED HUMP / TABLE DETAIL

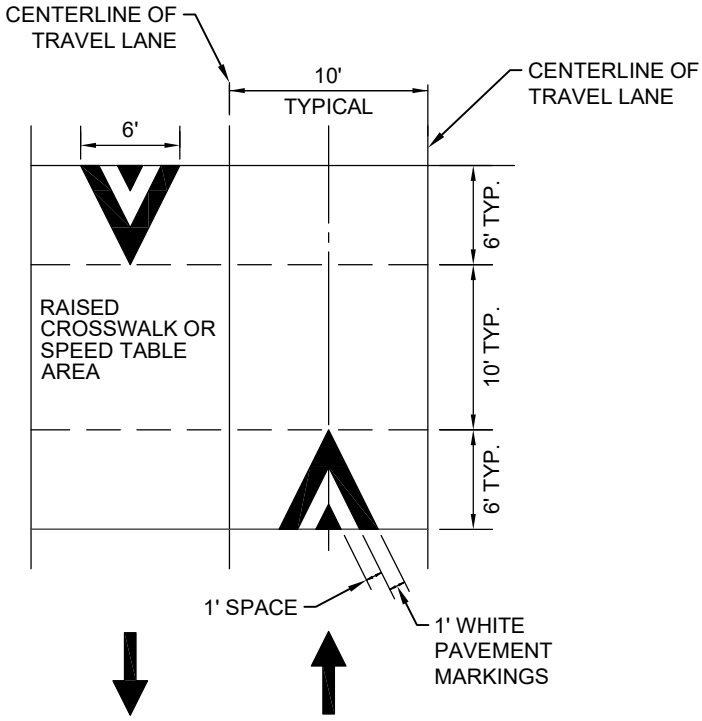
DATE: 10-04-2024

RT 12.0

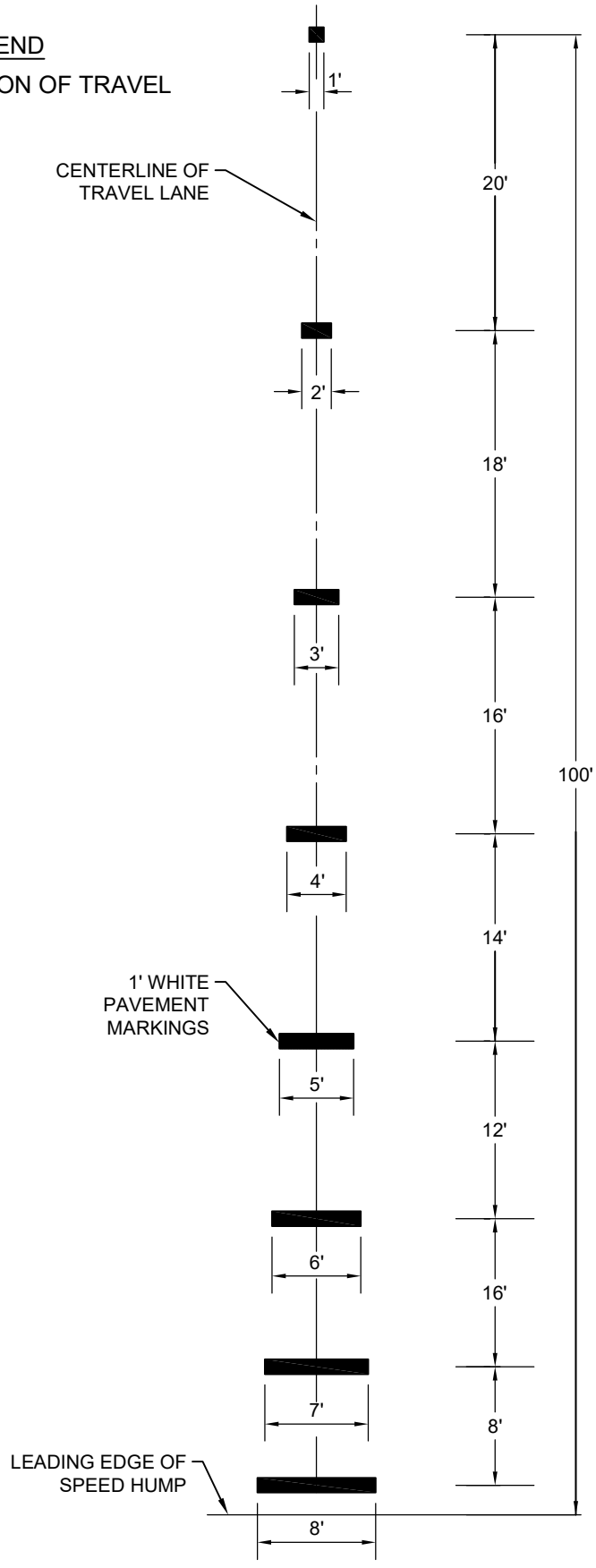


LEGEND

DIRECTION OF TRAVEL



TYPICAL ADVANCE WARNING MARKINGS FOR SPEED HUMPS

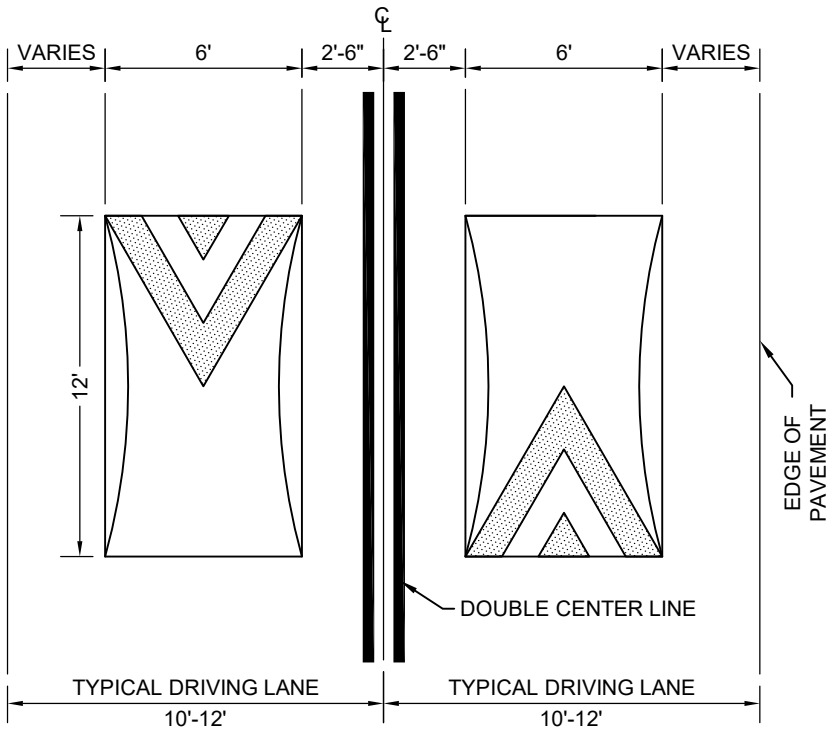


CITY of DELRAY BEACH
PUBLIC WORKS DEPARTMENT
434 SOUTH SWINTON AVENUE, DELRAY BEACH, FLORIDA 33444

SPEED HUMP
PAVEMENT MARKING DETAIL

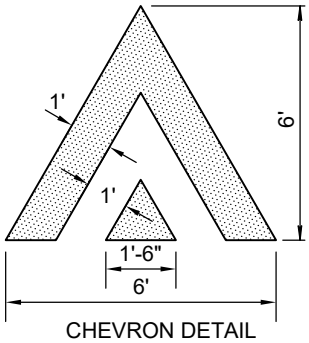
DATE: 10-04-2024

RT 13.0



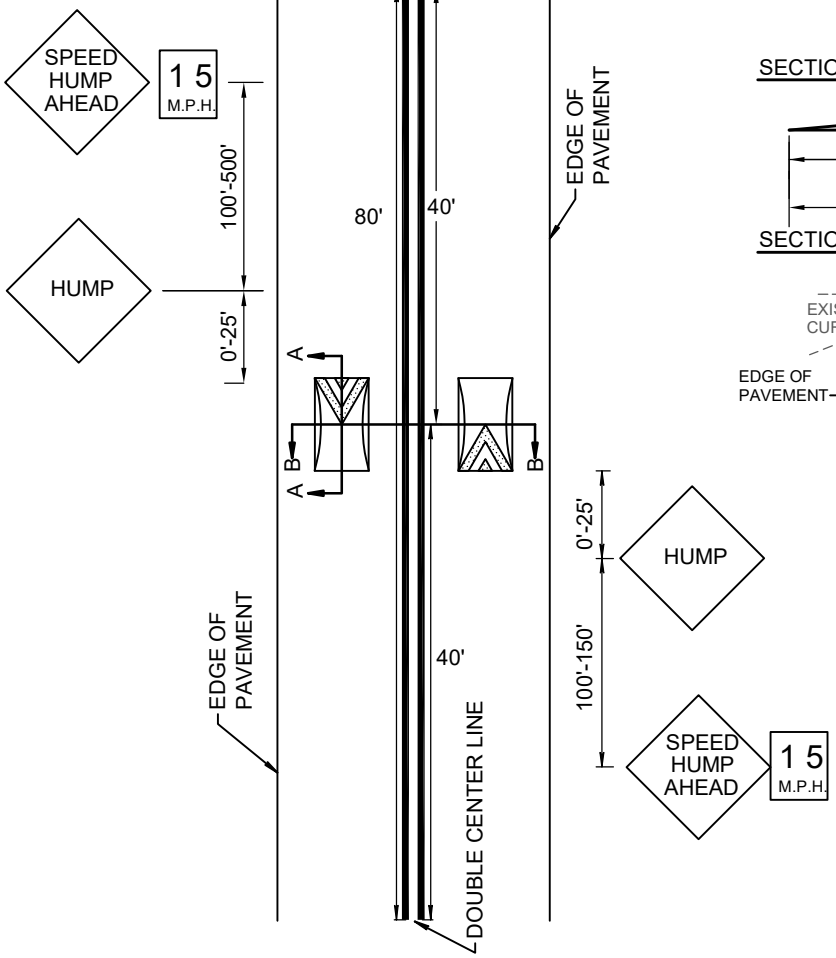
NOTE:

1. SIGN LOCATIONS SHALL BE VERIFED BY THE CITY ENGINEER PRIOR TO INSTALLATION.
2. SPEED CUSHION CHEVRON MARKING SHALL BE THERMOPLASTIC, HEAT FUSED PREFORMED, 90 MIL., OR EQUAL APPROVED BY CITY ENGINEER.
3. SEE RT 3.5B FOR TYPICAL ADVANCE WARNING PAVEMENT MARKINGS

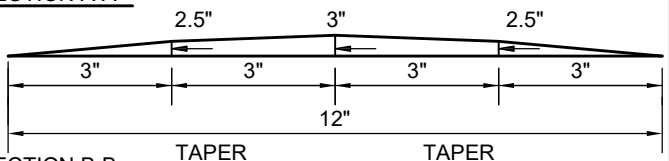


CHEVRON DETAIL

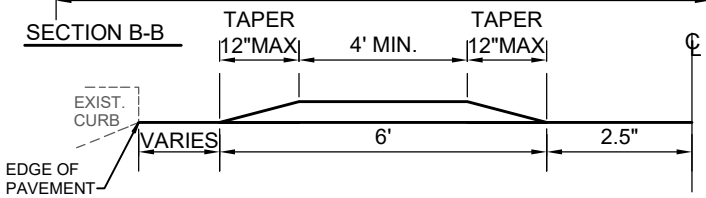
PLACEMENT DETAILS



SECTION A-A



SECTION B-B



SIGNS AND MARKINGS DETAILS

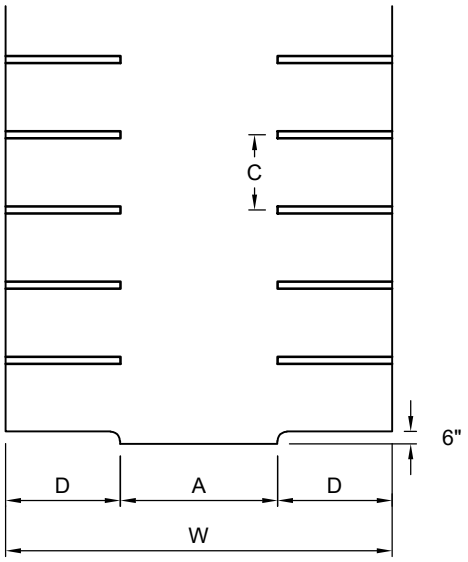
CITY of DELRAY BEACH
PUBLIC WORKS DEPARTMENT
434 SOUTH SWINTON AVENUE, DELRAY BEACH, FLORIDA 33444

ASPHALT SPEED CUSHION DETAIL

DATE: 10-04-2024

RT 14.0

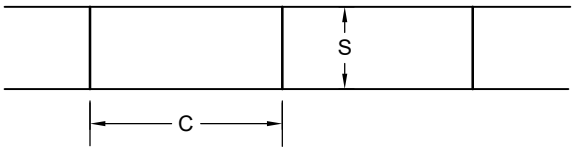
90° PARKING



A	AISLE	24.0'
S	STALL WIDTH	9.0' *
D	STALL DEPTH	18.0'
W	MODULE WIDTH	60.0'

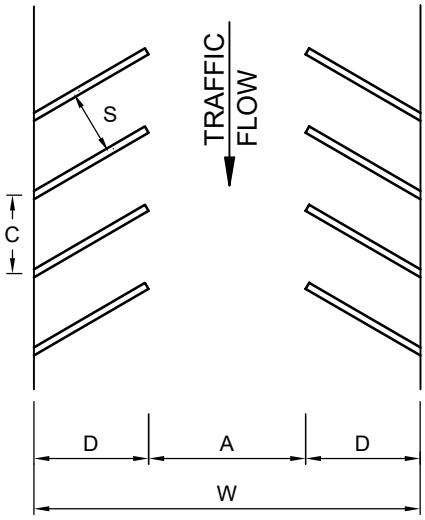
* COMPACT CAR SPACES -8.0'
ACCESSIBLE SPACES -12.O' SEE RT 16 THROUGH RT 16.2

PARALLEL



C	STALL LENTH	22.0'
S	STALL WIDTH	8.0' *

60° AND 45° PARKING



	STANDARD		60°	45°
A	AISLE *		17.0'	15.0'
C	STALL LENGTH		10.5'	12.5'
S	STALL WIDTH		9.0'	9.0'
D	STALL DEPTH		20.0'	19.0'
W	MODULE WIDTH		57.0'	53.0'
ACCESIBLE SPACES		C	14.0'	17.0'
		D	21.5'	21.0'
		S	12.0'	12.0'

* FOR TWO WAY FLOW A=24.0'

NOTE:

REFER TO TYPICAL PARKING SPACE DETAIL RT 16.0 THROUGH RT 16.2 FOR STRIPING INFORMATION AND ACCESSIBLE PARKING DIMENSIONS.

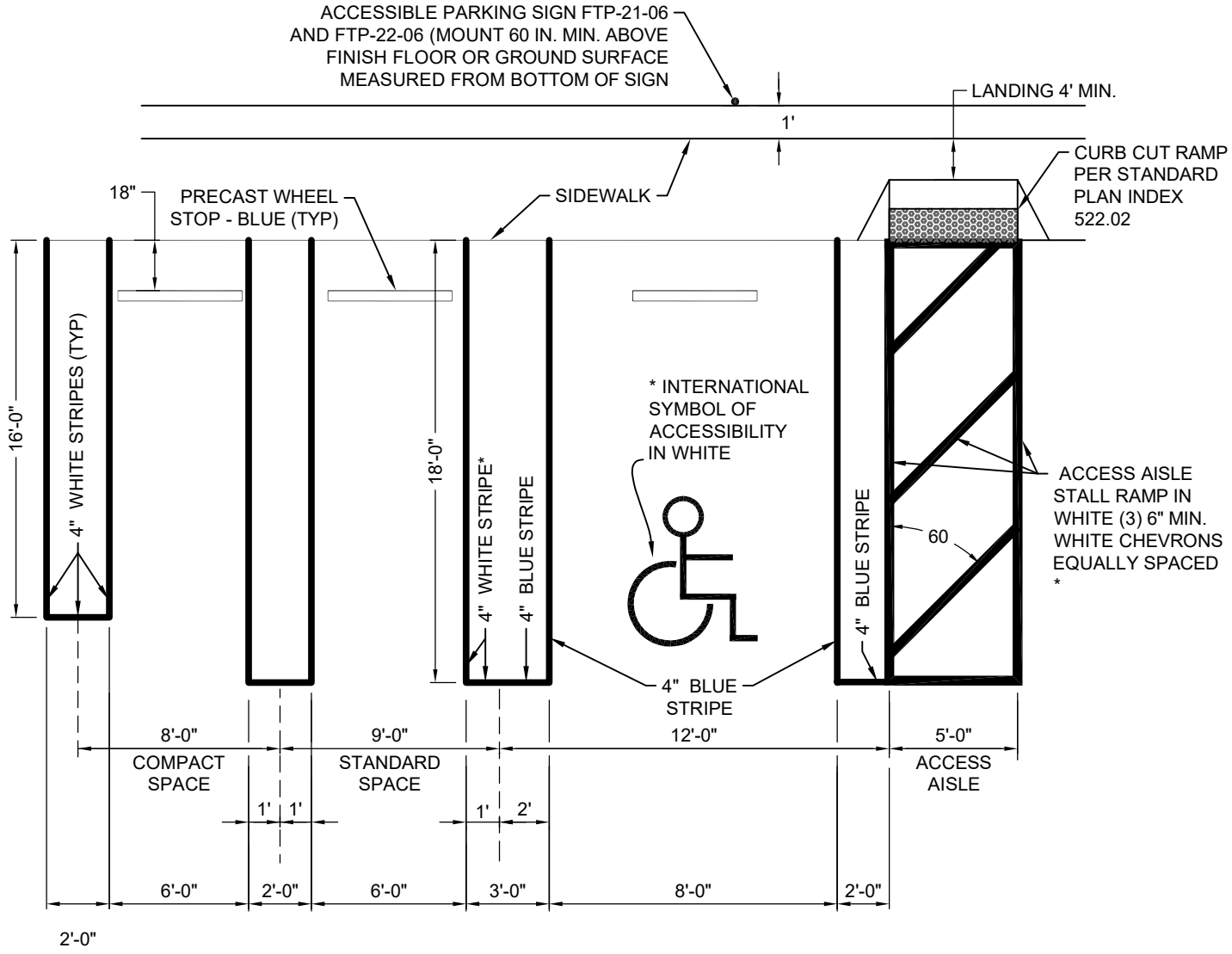
STOP BAR BETWEEN PARKING LOT & PUBLIC R/W MUST BE THERMOPLASTIC.

CITY of DELRAY BEACH
PUBLIC WORKS DEPARTMENT
434 SOUTH SWINTON AVENUE, DELRAY BEACH, FLORIDA 33444

PARKING LOTS

DATE: 10-04-2024

RT 15.0



PARKING STALL DIMENSIONS:

STANDARD 9'x 18'
COMPACT 8'x 16'
ACCESSIBLE 12'x 18' PLUS 5' ACCESS AISLE

* NOTES:

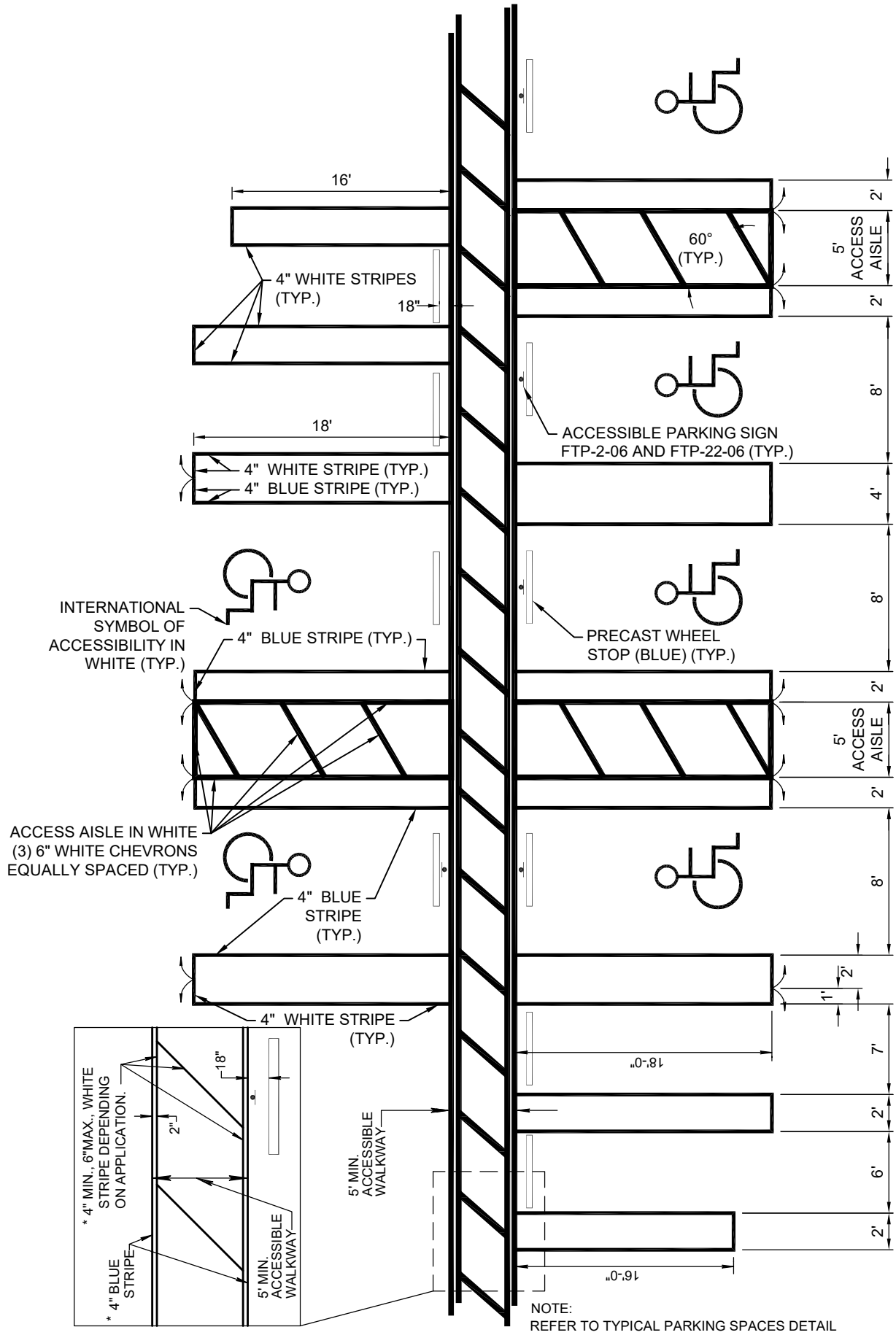
1. ON LIGHT COLORED SURFACE I.E. CONCRETE ALL ACCESSIBLE MARKINGS SHALL BE BLUE AND STANDARD PARKING STRIPING SHALL BE 3" WHITE WITH 1" BLACK BORDER.
2. ALL STRIPING WITHIN PUBLIC RIGHT-OF-WAY SHALL BE 6 INCHES.
3. ALL MEASUREMENTS ARE FROM CENTER LINE.
4. ALL COMPACT SPACES MUST HAVE "COMPACT" STENCILED WITH BLACK PAINT ON WHEEL STOP.
5. BLUE STRIPE & INTERNATIONAL SYMBOL OF ACCESSIBILITY AND WALKWAY ON CONCRETE.
6. 24" STOP BAR BETWEEN ALL PARKING LOTS AND PUBLIC R/W SHALL BE THERMOPLASTIC AND PER FDOT SPECIFICATIONS AND STOP SIGN R1-1 THERMOPLASTIC AND PER FDOT SPECIFICATIONS AND STOP SIGN R1-1
7. CHANGES IN LEVEL ARE NOT PERMITTED IN ACCESSIBLE PARKING STALLS AND ACCESS AISLES SERVING THE STALLS. SLOPES NOT STEEPER THAN 1:48 SHALL BE PERMITTED.

CITY of DELRAY BEACH
PUBLIC WORKS DEPARTMENT
434 SOUTH SWINTON AVENUE, DELRAY BEACH, FLORIDA 33444

TYPICAL PARKING SPACES
(1 OF 3)

DATE: 10-04-2024

RT 16.0



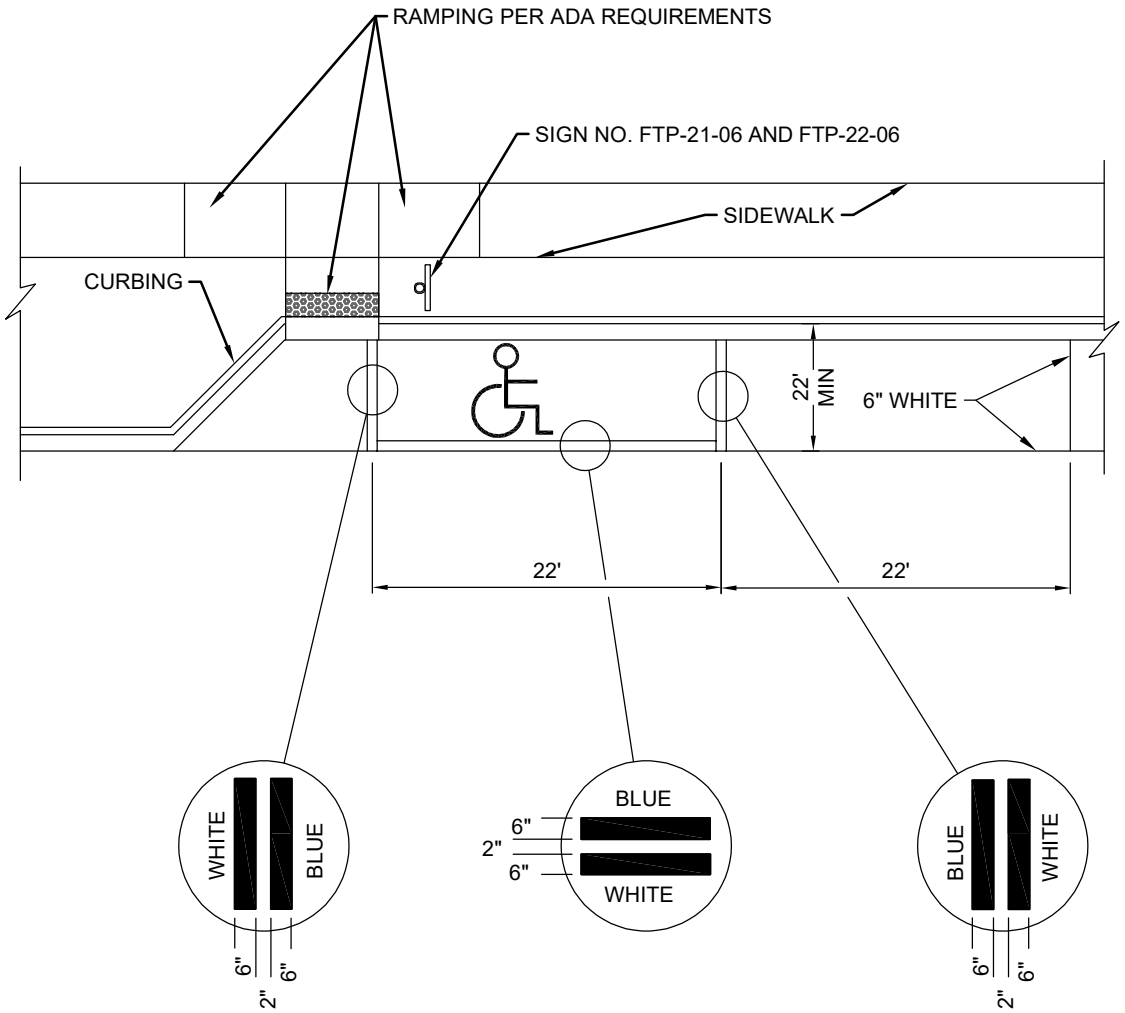
NOTE:
REFER TO TYPICAL PARKING SPACES DETAIL RT 16.0 & 16.2 FOR DIMENSIONS AND NOTES.

CITY of DELRAY BEACH
PUBLIC WORKS DEPARTMENT
434 SOUTH SWINTON AVENUE, DELRAY BEACH, FLORIDA 33444

TYPICAL PARKING SPACES
(2 OF 3)

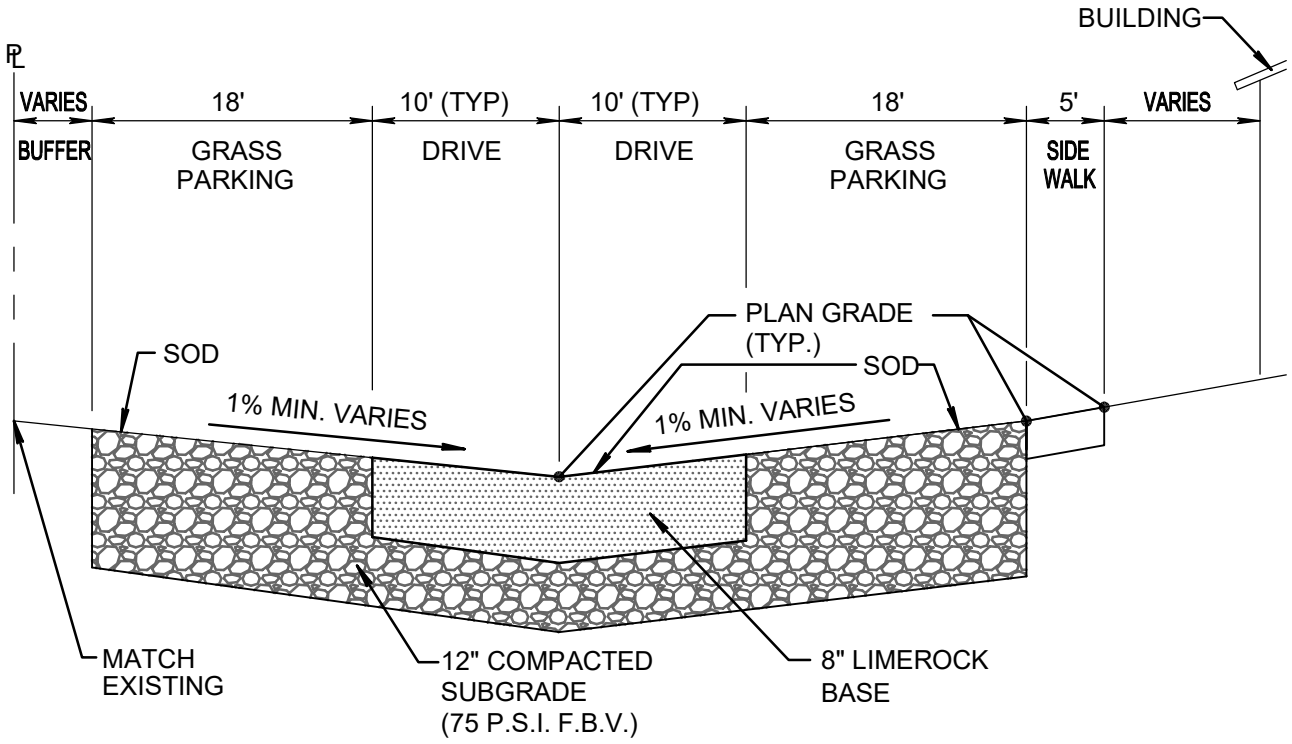
DATE: 10-04-2024

RT 16.1



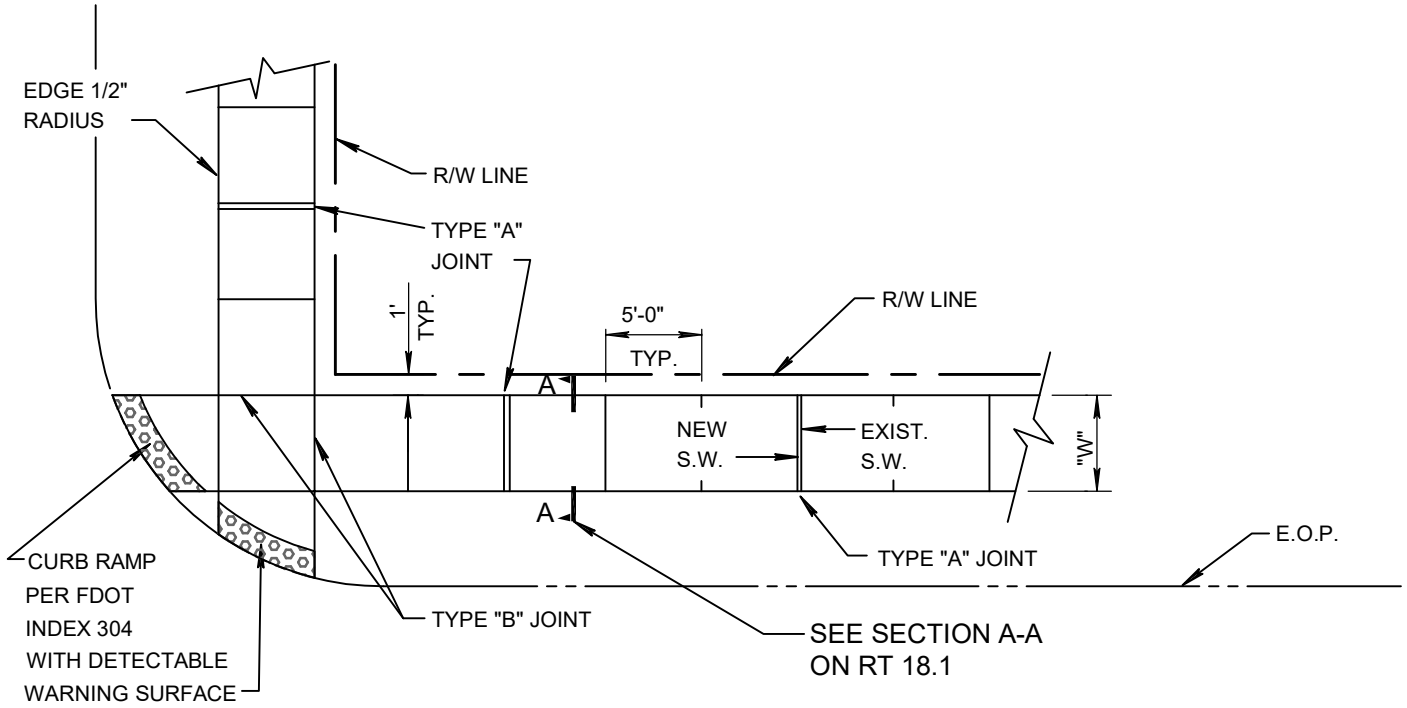
NOTES:

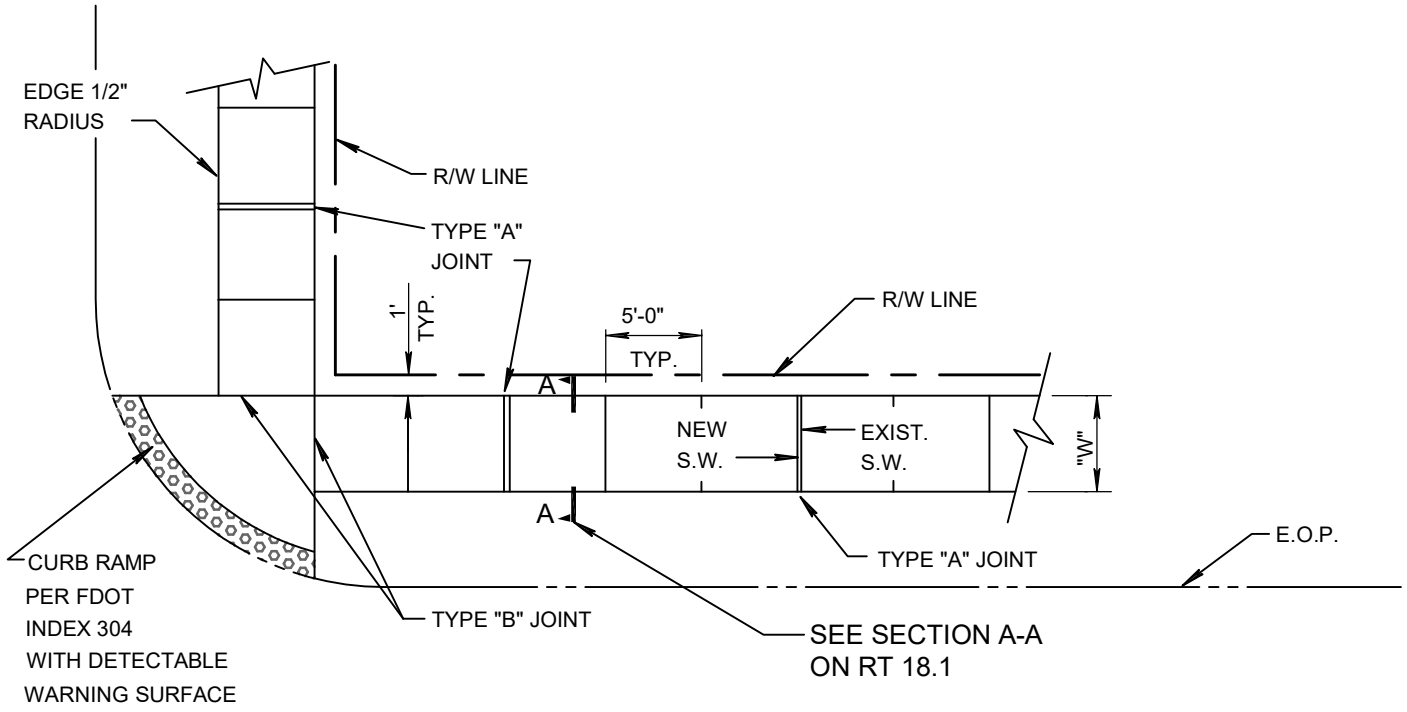
1. WHERE ADJACENT SIDEWALK IS LESS THAN 14' WIDE, PARALLEL PARKING SPACES ARE REQUIRED TO BE LOCATED AT THE END OF THE BLOCK AND SHOULD NOT HAVE AN CURB RAMP TO GET SOMEONE FROM THE ACCESSIBLE PARKING STALL TO THE SIDEWALK.
2. WHEN PARKING SPACE IS ADJACENT TO LANDSCAPE ISLAND, SPACE MAY BE REDUCED TO 20' FROM THE STANDARD 22' LENGTH.



NOTE:

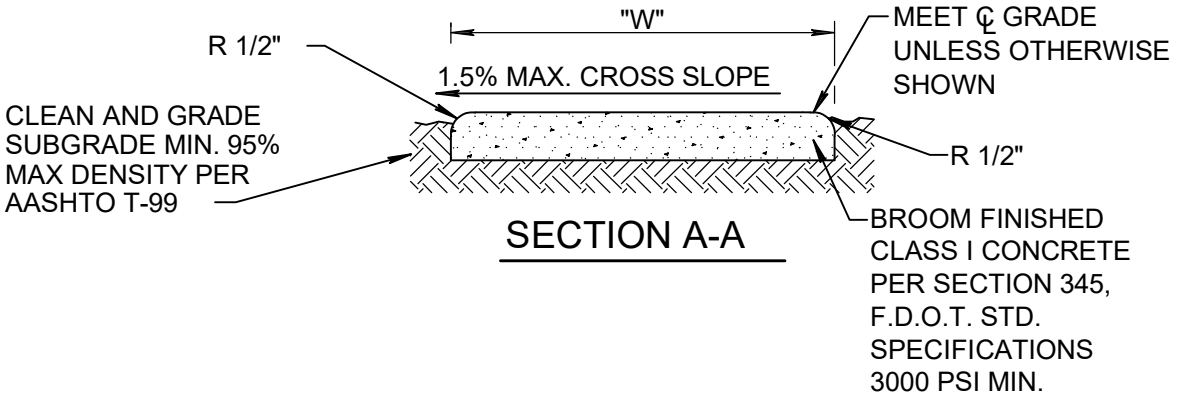
REFER TO CITY DETAILS FOR PARKING SPACE REQUIREMENTS AND PARKING LOT STANDARDS.



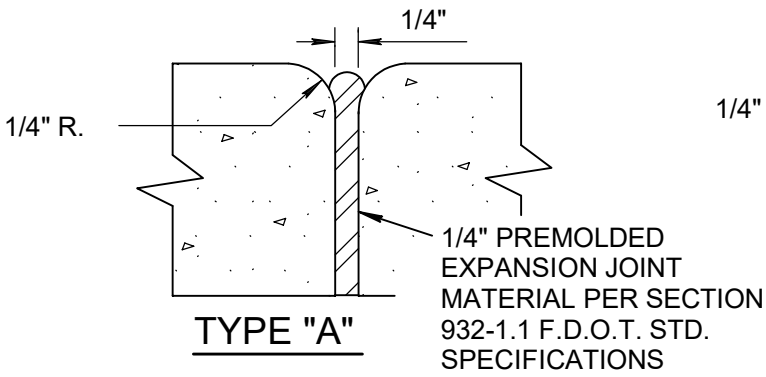


PLAN

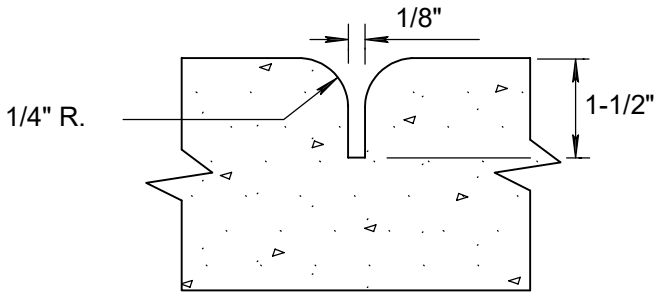
CITY of DELRAY BEACH PUBLIC WORKS DEPARTMENT 434 SOUTH SWINTON AVENUE, DELRAY BEACH, FLORIDA 33444	SIDEWALK CONSTRUCTION DETAIL	DATE: 10-04-2024 RT 18.0



SECTION A-A



TYPE "A"



TYPE "B"

SIDEWALK JOINTS

NOTE:

1. ALL SIDEWALKS SHALL BE CONSTRUCTED THRU DRIVEWAYS.
2. ALL SIDEWALKS SHALL INCLUDE ADA COMPLIANT RAMPS @ INTERSECTIONS.
3. ALL SIDEWALKS SHALL INCLUDE CROSS SLOPE AND RUNNING SLOPE IN ACCORDANCE WITH ADA REQUIREMENTS.
4. CURB RAMP DETECTABLE WARNING SURFACE SHALL EXTEND THE FULL WIDTH OF THE RAMP AND 24" DEEP.
5. SIDEWALK SHALL BE 9" THICK FOR 2' AT THE CONNECTION TO ROADWAYS WITH A 6" TRANSITION TO 6" FOR THE REMAINDER OF THE REQUIRED 10'.

TABLE OF SIDEWALK THICKNESS - "T"	
GENERAL AREAS	4"
WITHIN 10' OF CROSS-STREETS, AT DRIVEWAYS & OTHER AREAS	6"

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

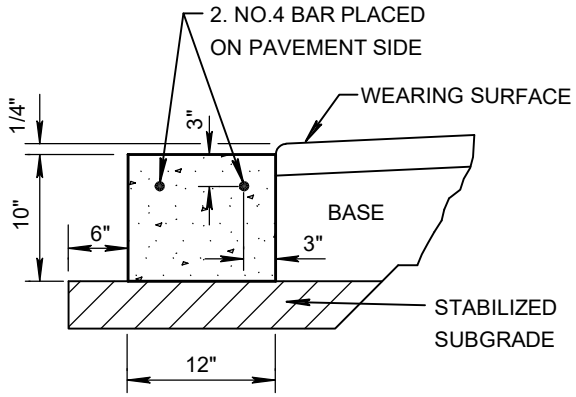
TABLE OF SIDEWALK JOINTS	
TYPE	LOCATION
"A"	P.C. AND P.T. OF CURVES JUNCTION OF EXISTING & NEW SIDEWALKS & EVERY 30'
"B"	5'-0" CENTER TO CENTER ON SIDEWALKS SCORED DURING PLACEMENT OR SAWCUT WITHIN 24 HOURS OF PLACEMENT.
"A"	WHERE SIDEWALK ABUTS CONCRETE CURBS, DRIVEWAYS, AND SIMILAR STRUCTURES.

CITY of DELRAY BEACH
PUBLIC WORKS DEPARTMENT
434 SOUTH SWINTON AVENUE, DELRAY BEACH, FLORIDA 33444

SIDEWALK CONSTRUCTION

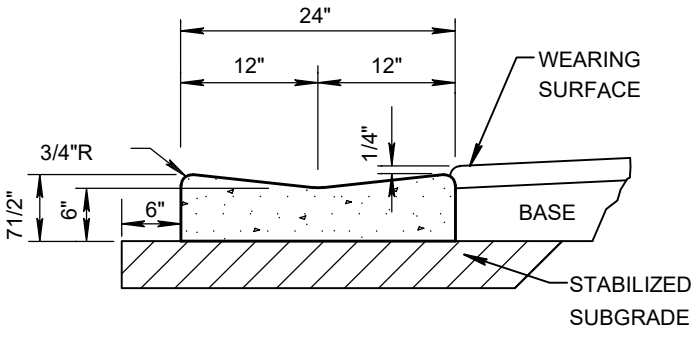
DATE: 10-04-2024

RT 18.1



CONCRETE HEADER CURB

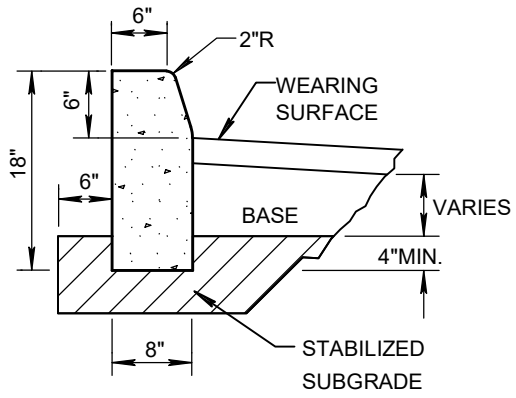
NOT TO SCALE



VALLEY GUTTER

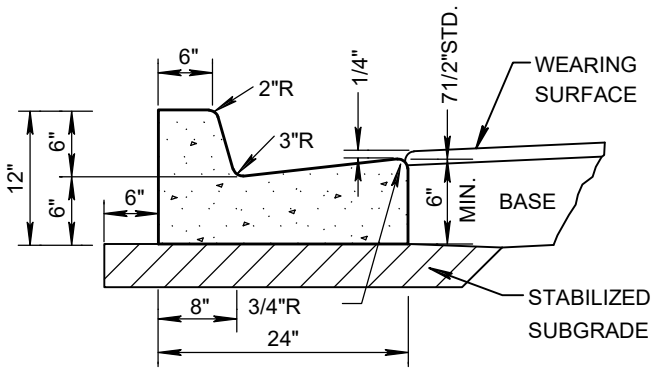
NOT TO SCALE

NOTE: SAWCUTS REQUIRED
AT 10' ON CENTER.



F.D.O.T. TYPE "D" CONCRETE CURB

NOT TO SCALE

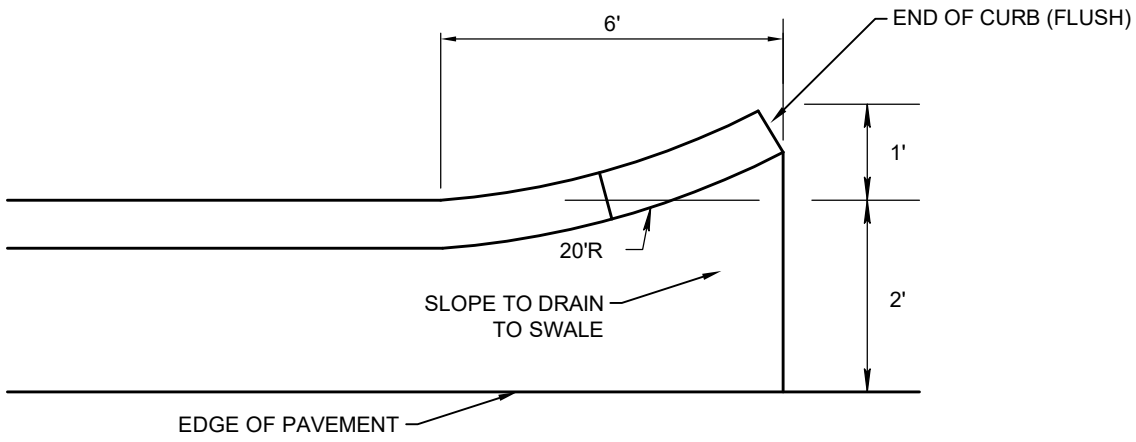


NOTE: WHEN USED ON HIGH SIDE OF ROADWAYS, CROSS SLOPE OF THE GUTTER SHALL MATCH THE CROSS SLOPE OF THE ADJACENT PAVEMENT AND THE THICKNESS OF THE LIP SHALL BE 6" MIN.

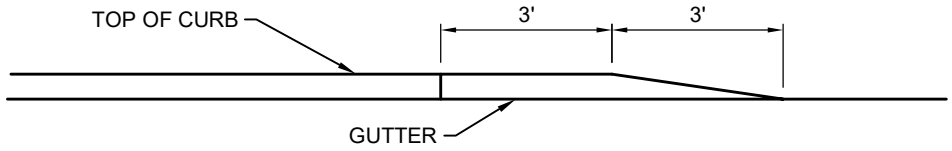
F.D.O.T. TYPE "F" CONCRETE CURB AND GUTTER

NOT TO SCALE

NOTES: 1. ROADWAY SUBGRADE SHALL IN ALL CASES EXTEND BELOW CURBING.
2. SAWCUTS AT 10' ON CENTER SHALL BE MADE WITHIN 24 HOURS OF CONCRETE PLACEMENT.



PLAN



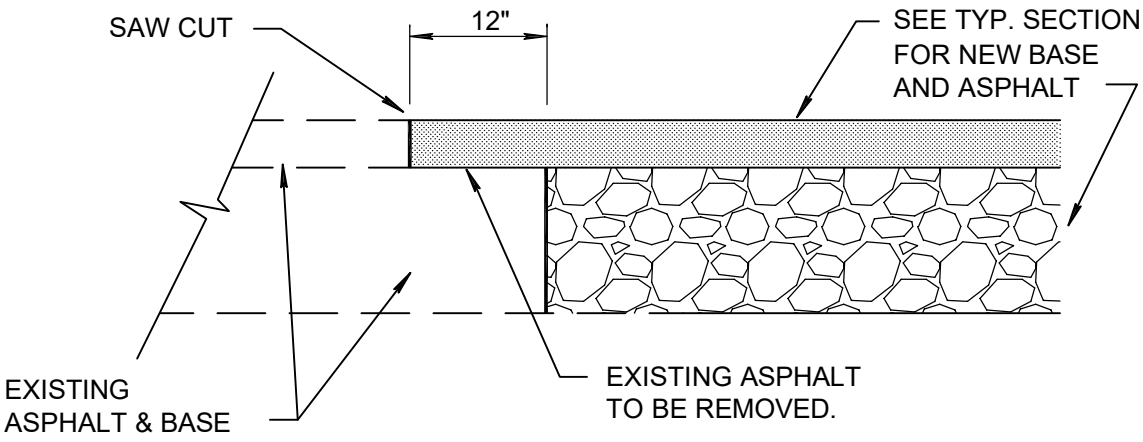
PROFILE

CITY of DELRAY BEACH
PUBLIC WORKS DEPARTMENT
434 SOUTH SWINTON AVENUE, DELRAY BEACH, FLORIDA 33444

FLARED END
FOR CURB
AND GUTTER

DATE: 10-04-2024

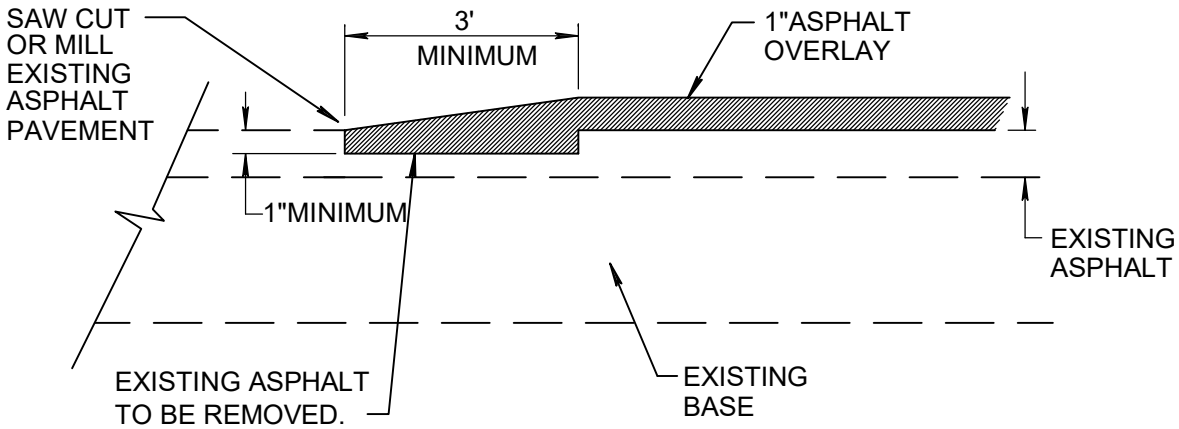
RT 20.0



NEW CONSTRUCTION PAVEMENT JOINT

NOTE:

THIS METHOD OF PAVEMENT JOINT SHALL BE USED FOR ANY APPLICATION OR CONSTRUCTION WHERE PROPOSED PAVEMENT AND BASE WILL BE CONNECTED TO EXISTING PAVEMENT AND BASE.



NEW OVERLAY PAVEMENT JOINT

NOTE:

THIS METHOD OF PAVEMENT JOINT SHALL BE USED FOR ANY APPLICATION OR CONSTRUCTION WHERE PROPOSED PAVEMENT WILL BE CONNECTED TO EXISTING PAVEMENT.

PAVEMENT MARKING SPECIFICATIONS

All Pavement markings to be installed per these typicals, plans and specifications, and as directed by the City and shall conform to the requirements of F.D.O.T. and the manual on uniform traffic control devices, (MUTCD).

PERMANENT MARKINGS

Installation:

- All markings shall be installed by the extruded method.
- Markings shall be free of weaves, bows, drips, drags, and other degrading items.
- Chalk shall be used for all layout markings

Materials:

- All materials shall be alkyd or hydrocarbon thermoplastic meeting all FDOT specifications.

Thickness:

- All markings shall be installed to yield 90 mils of material measured above the pavement surface.

Spheres:

- Reflective glass sheres are to be applied to all stripes and markings per FDOT specifications.

Alternate Material:

- STAYMARK marking tape, or equivalent may be used, as approved or directed by the City.

Layout:

- Layout shall be made using marking chalk.
- It is recommended that marking layout be inspected by the City prior to the placement of final markings.

TEMPORARY MARKINGS

Temporary markings may be used only as specified in this section, or as approved or directed by the City.

Final Pavement Surface:

- Only foil backed marking tape is allowed.
- All tape shall be totally removed concurrent with permanent marking placement.

Other Pavement Surfaces:

- Intermediate pavement surfaces may be marked with FDOT approved materials, designs, and specifications.

ALL PAVEMENT MARKINGS

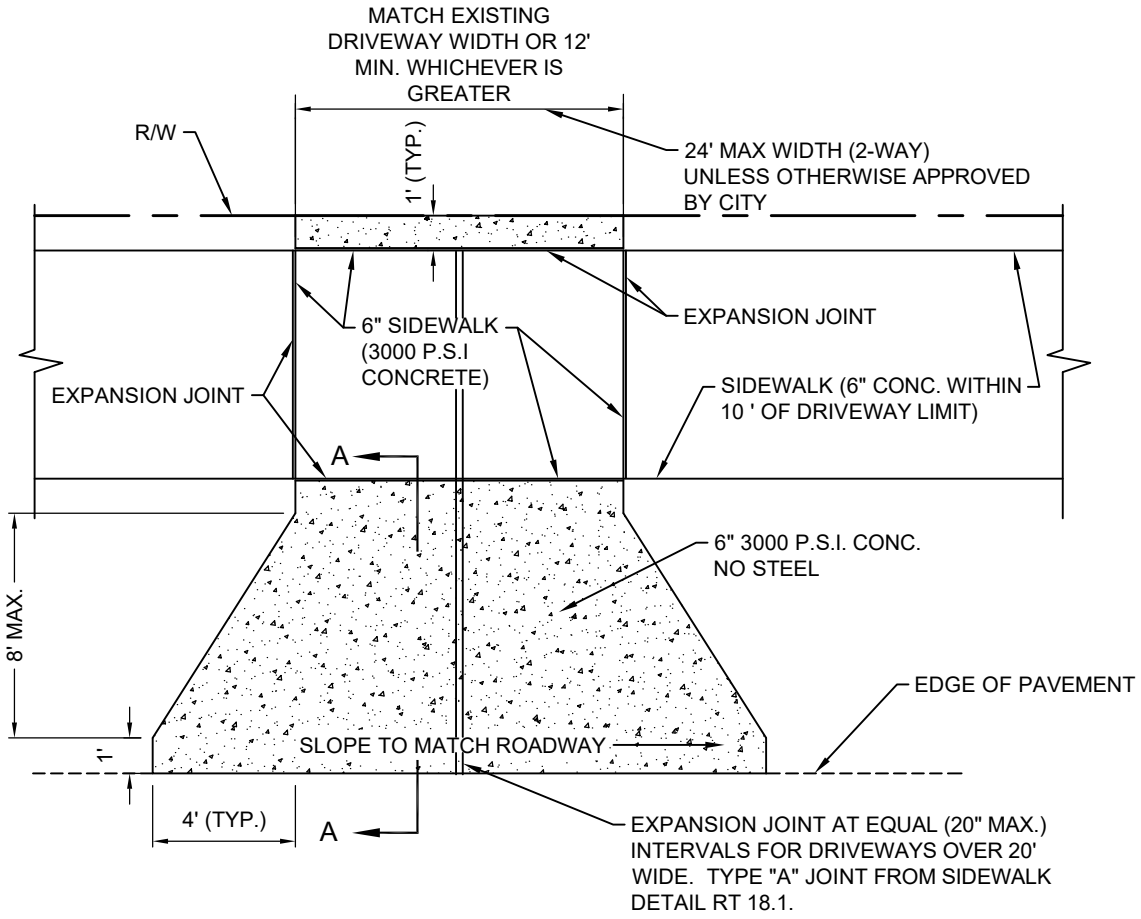
All paved surfaces shall be properly marked prior to the hours of darkness.

RAISED PAVEMENT MARKERS

- R.P.M.s shall be installed on all lane lines and centerlines, spaced at 20' or 40'.
- R.P.M.s shall be a 4 x 4 type class "B" marker meeting F.D.O.T. specifications and shall be approved by the City prior to use.
- R.P.M.'s shall be installed using alkyd thermoplastic on asphalt and epoxy on concrete.

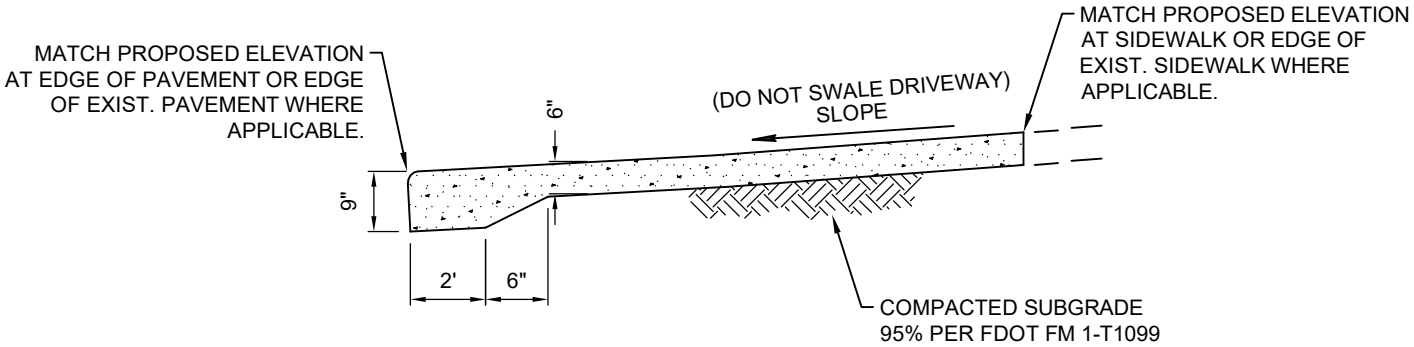
OTHER NOTES

- All Materials within right-of-way shall be thermoplastic and per F.D.O.T. specifications.
- Pavement marking within private parking lots may be painted according to F.D.O.T. specifications, except for all stop bars adjacent to public right-of-way.



PLAN

NOTE: SIDEWALK SHALL BE CONSTRUCTED THROUGH DRIVEWAY PER DETAILS 18.0 AND 18.1.



SECTION A-A

NOTES:

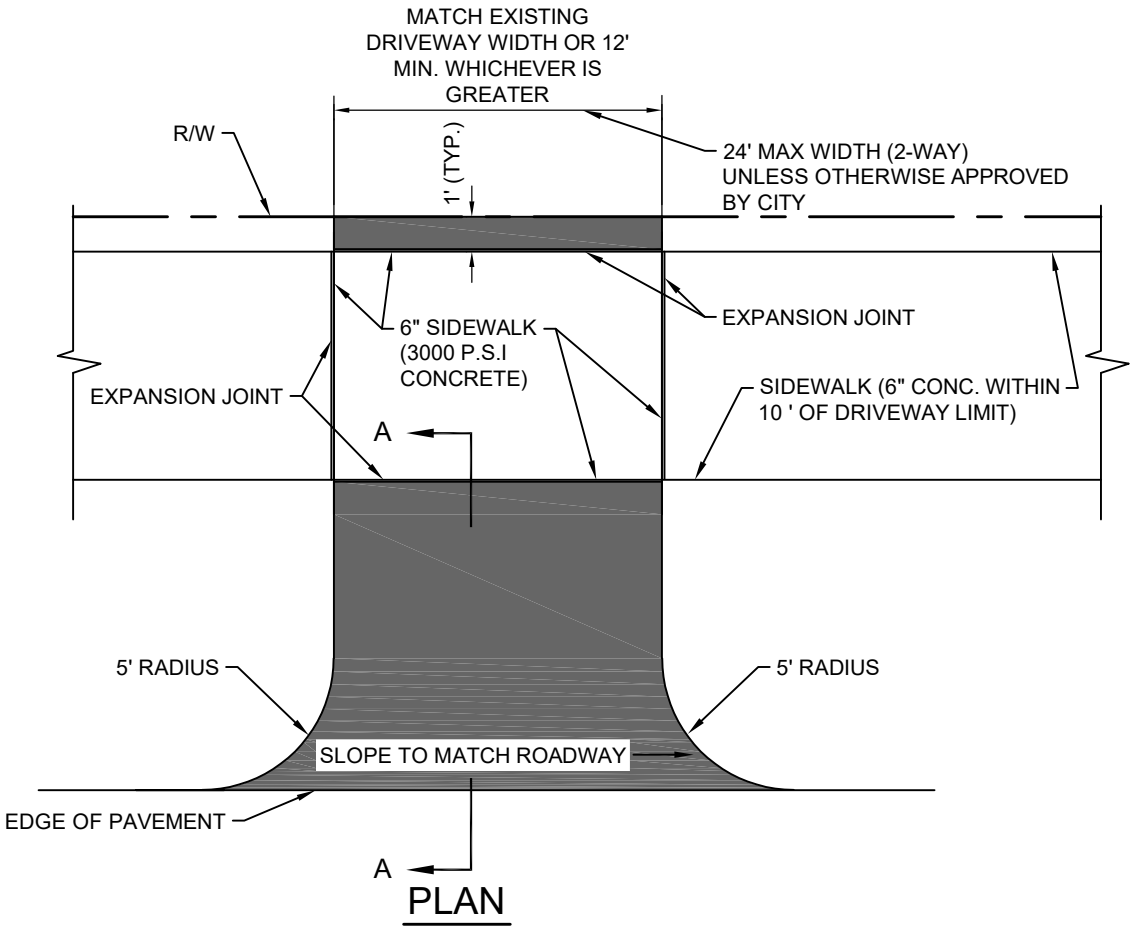
1. THIS DETAIL IS SHOWN WITH PROPOSED SIDEWALK.
2. IF THERE IS AN EXISTING SIDEWALK, THE SIDEWALK SHALL BE EVALUATED FOR THICKNESS AND IF FOUND NOT TO BE 6" THICK IT MUST BE REPLACED WITHIN THE LIMITS OF THE DRIVEWAY AND 10' ON EITHER SIDE.
3. IF THERE IS NO SIDEWALK, EXISTING OR PROPOSED, THE DRIVEWAY APRON SHALL BE CONSTRUCTED WITH THE GEOMETRY SHOWN HEREON UP TO THE PROPERTY LINE.

CITY of DELRAY BEACH
PUBLIC WORKS DEPARTMENT
434 SOUTH SWINTON AVENUE, DELRAY BEACH, FLORIDA 33444

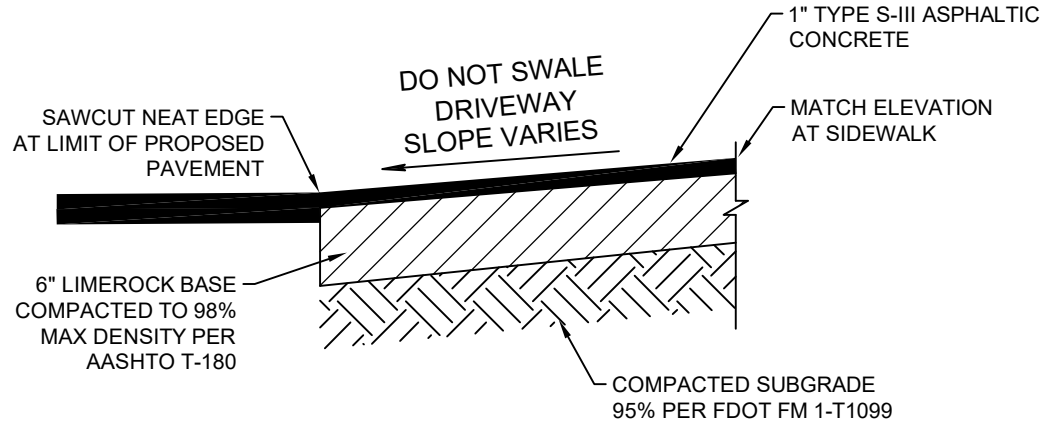
CONCRETE DRIVEWAY APRON

DATE: 10-04-2024

RT 23.0



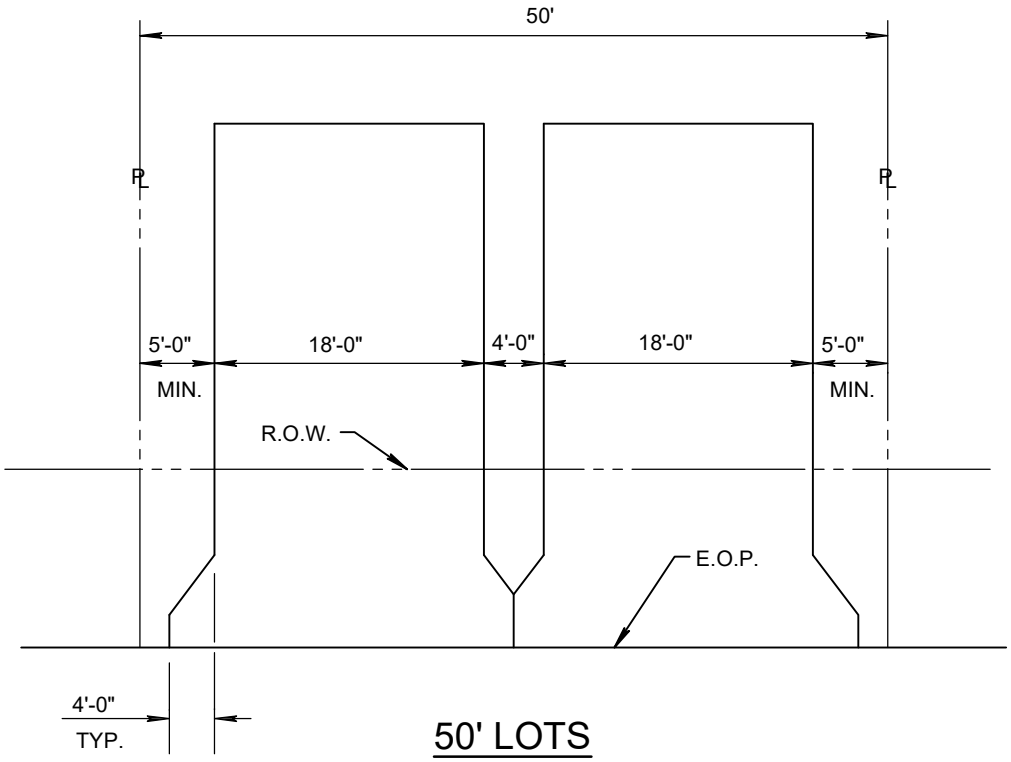
PLAN



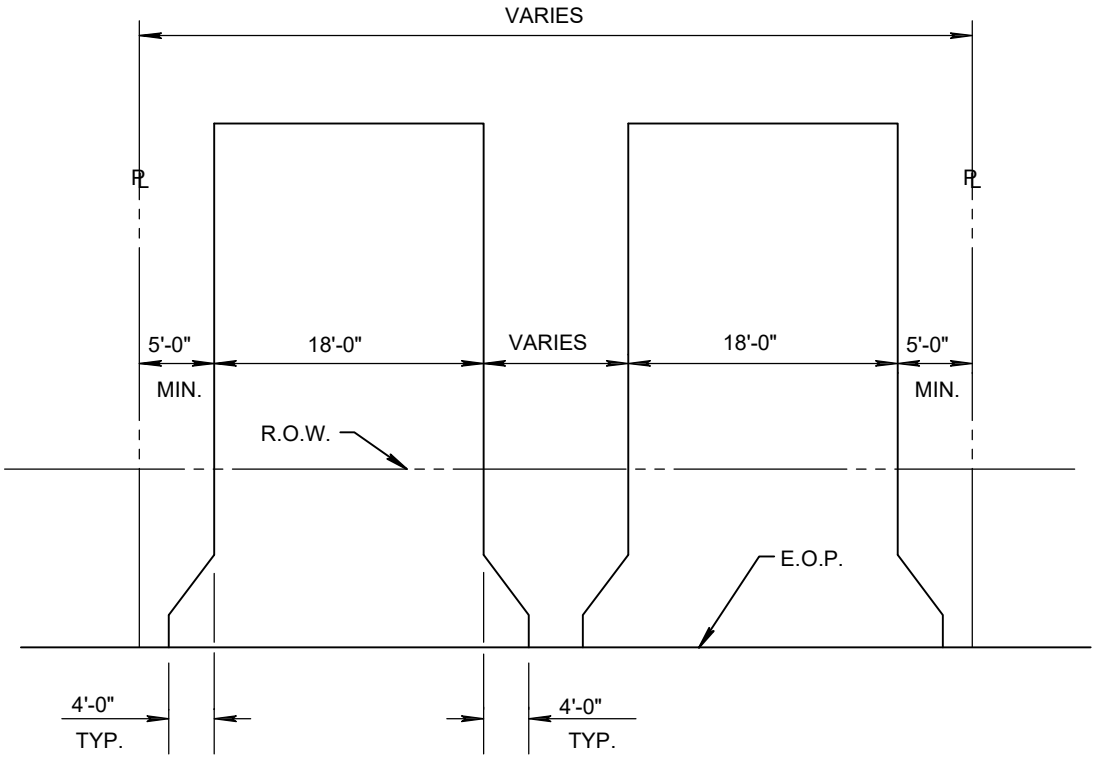
SECTION A-A

NOTES:

1. THIS DETAIL IS SHOWN WITH PROPOSED SIDEWALK.
2. IF THERE IS AN EXISTING SIDEWALK, THE SIDEWALK SHALL BE EVALUATED FOR THICKNESS AND IF FOUND NOT TO BE 6" THICK IT MUST BE REPLACED WITHIN THE LIMITS OF THE DRIVEWAY AND 10' ON EITHER SIDE.
3. IF THERE IS NO SIDEWALK, EXISTING OR PROPOSED, THE DRIVEWAY APRON SHALL BE CONSTRUCTED WITH THE GEOMETRY SHOWN HEREON UP TO THE PROPERTY LINE.



50' LOTS



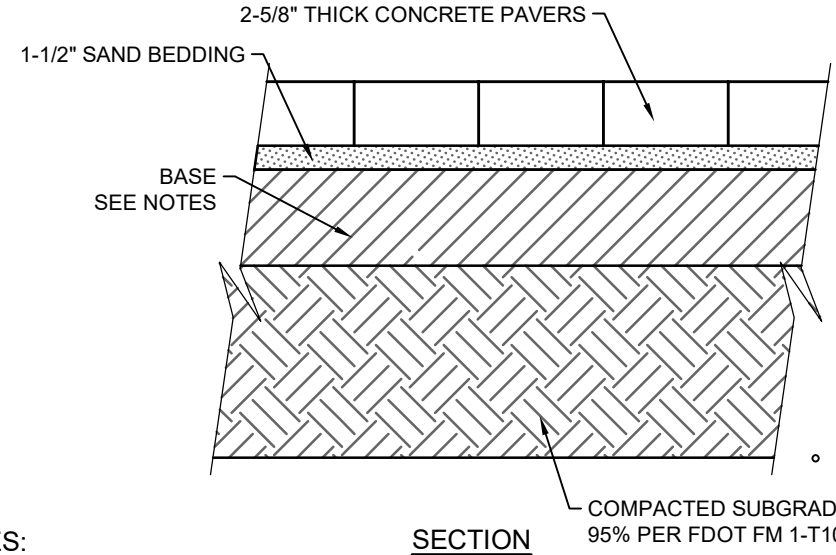
MORE THAN 50' LOTS

CITY of DELRAY BEACH
PUBLIC WORKS DEPARTMENT
434 SOUTH SWINTON AVENUE, DELRAY BEACH, FLORIDA 33444

MINIMUM LAYOUT STANDARDS
FOR DUPLEX PARKING

DATE: 10-04-2024

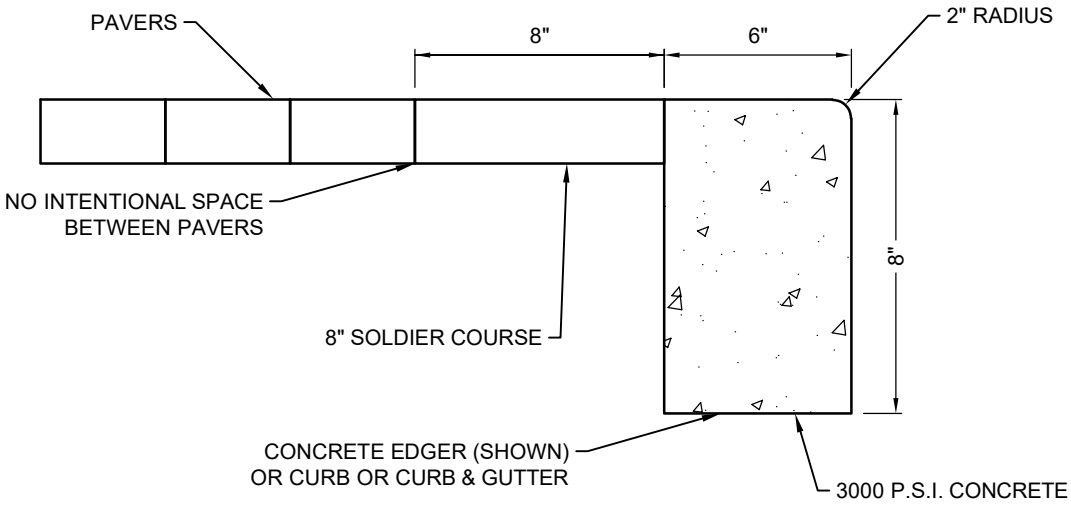
RT 25.0

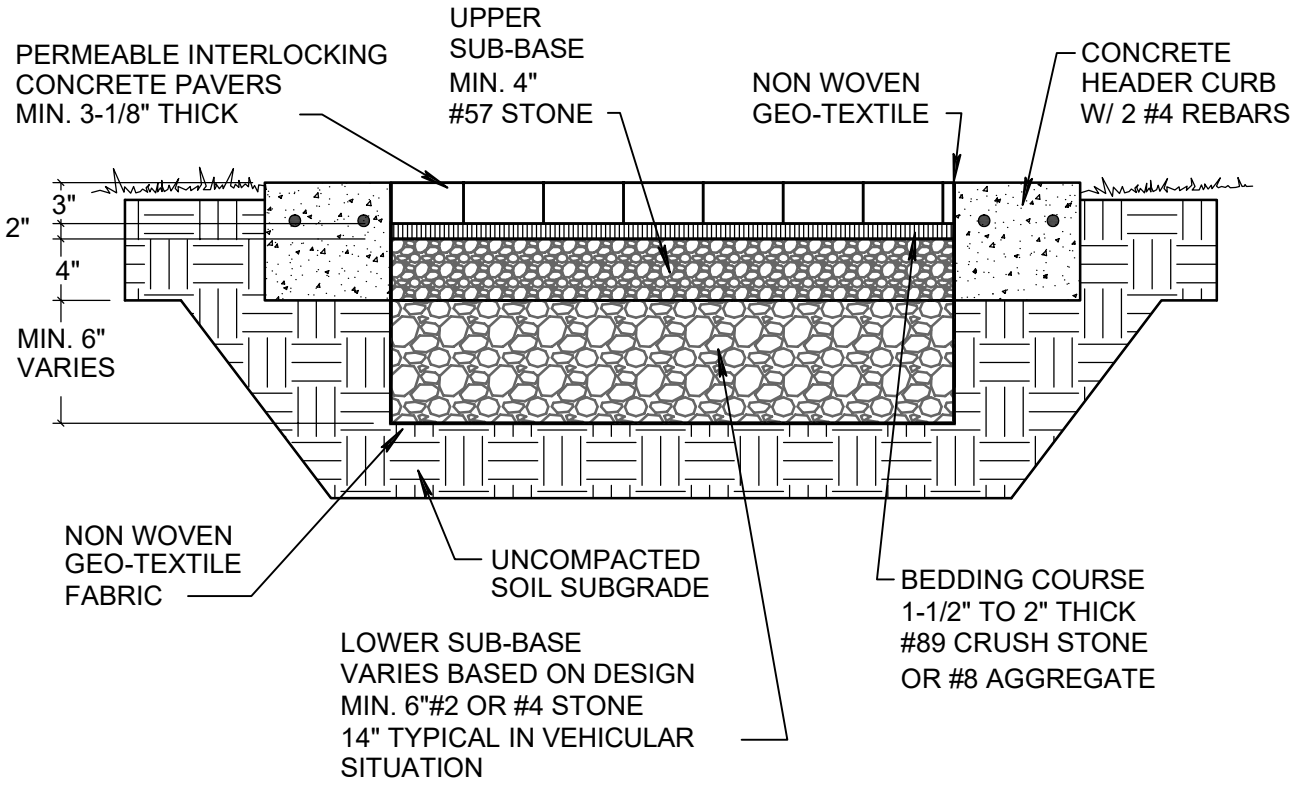


SECTION

NOTES:

1. SIDEWALK BASE OUTSIDE OF THE RIGHT-OF-WAY SHALL BE 4" LIMEROCK COMPACTED TO 98% MAX DENSITY PER AASHTO T-180.
2. SIDEWALK BASE INSIDE THE RIGHT-OF-WAY SHALL BE 6" LIMEROCK COMPACTED TO 98% MAX DENSITY PER AASHTO T-180.
3. IF CITY APPROVES PAVERS TO BE USED IN LIEU OF CONCRETE SIDEWALK, PAVERS SHALL BE HOLLAND-STONE, 45° HERRINGBONE, RED/CHARCOAL, COLOR MIX #2.





NOTE:

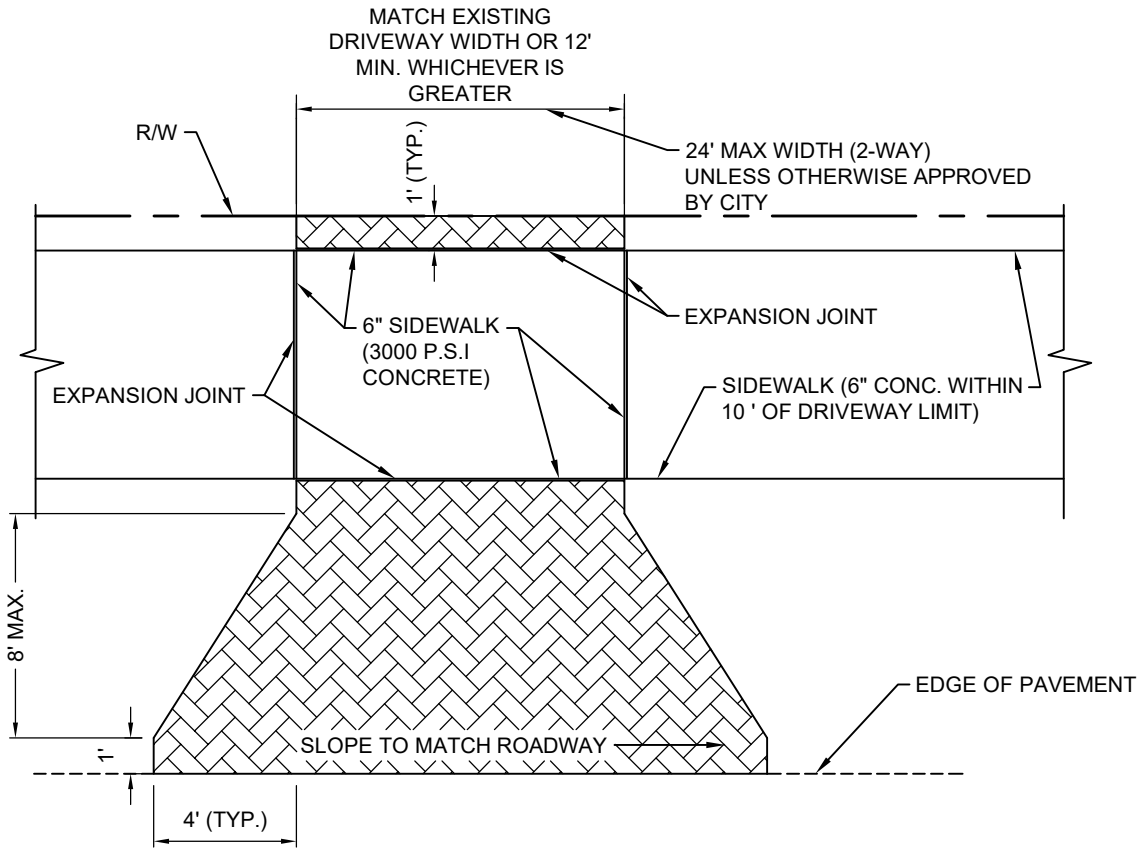
1. CONTRACTOR TO FIELD VERIFY EXACT LOCATION, SIZE AND DEPTH OF ALL EXISTING UTILITIES AT THE TIME OF CONSTRUCTION AND REPORT ANY DISCREPANCIES TO THE CITY.

2. FOR VEHICULAR APPLICATIONS, SUBGRADE WOULD NEED TO BE EVALUATED BY QUALIFIED CIVIL OR GEOTECHNICAL ENGINEER FOR COMPACTION.

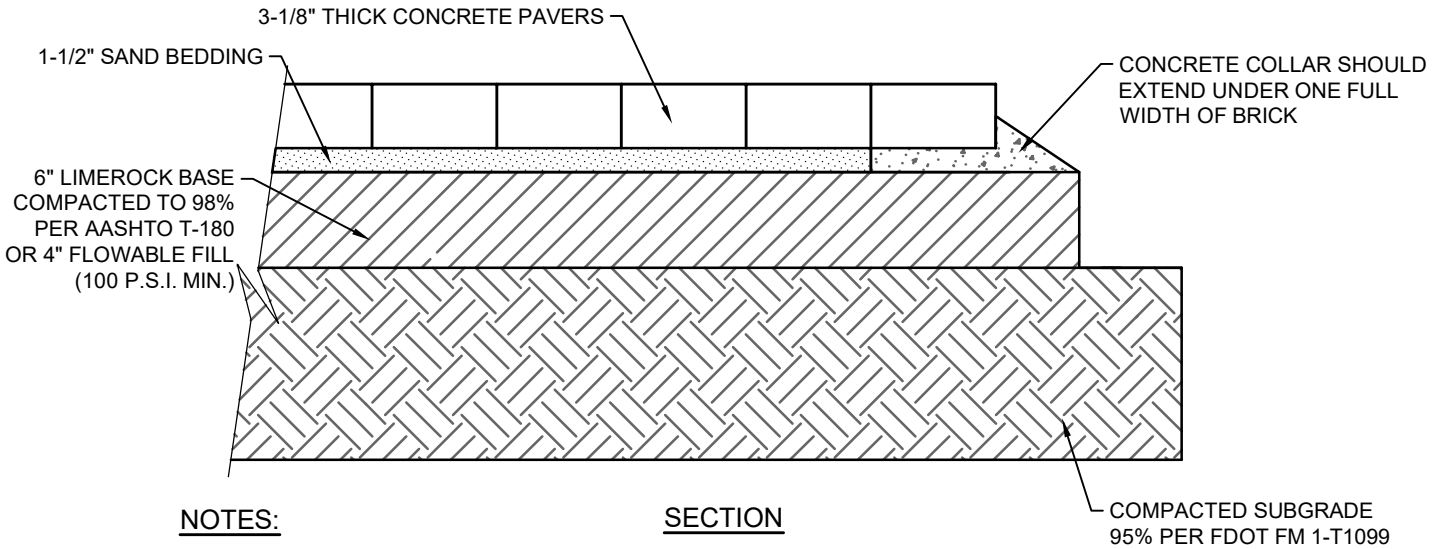
3. PERMEABLE INTERLOCKING CONCRETE PAVERS SHALL BE DESIGNED IN ACCORDANCE WITH THE STANDARDS SET FORTH BY THE INTERLOCKING CONCRETE PAVEMENT INSTITUTE (ICPI).

4. PERMEABLE PAVERS TO BE INSTALLED IN CITY RIGHT-OF-WAY MUST BE INSTALLED BY AN ICPI INSTALLER CERTIFIED.

5. PAVERS SHALL BE 45° HERRING-BONE, RED/CHARCOAL, MIX #2.



PLAN



SECTION

NOTES:

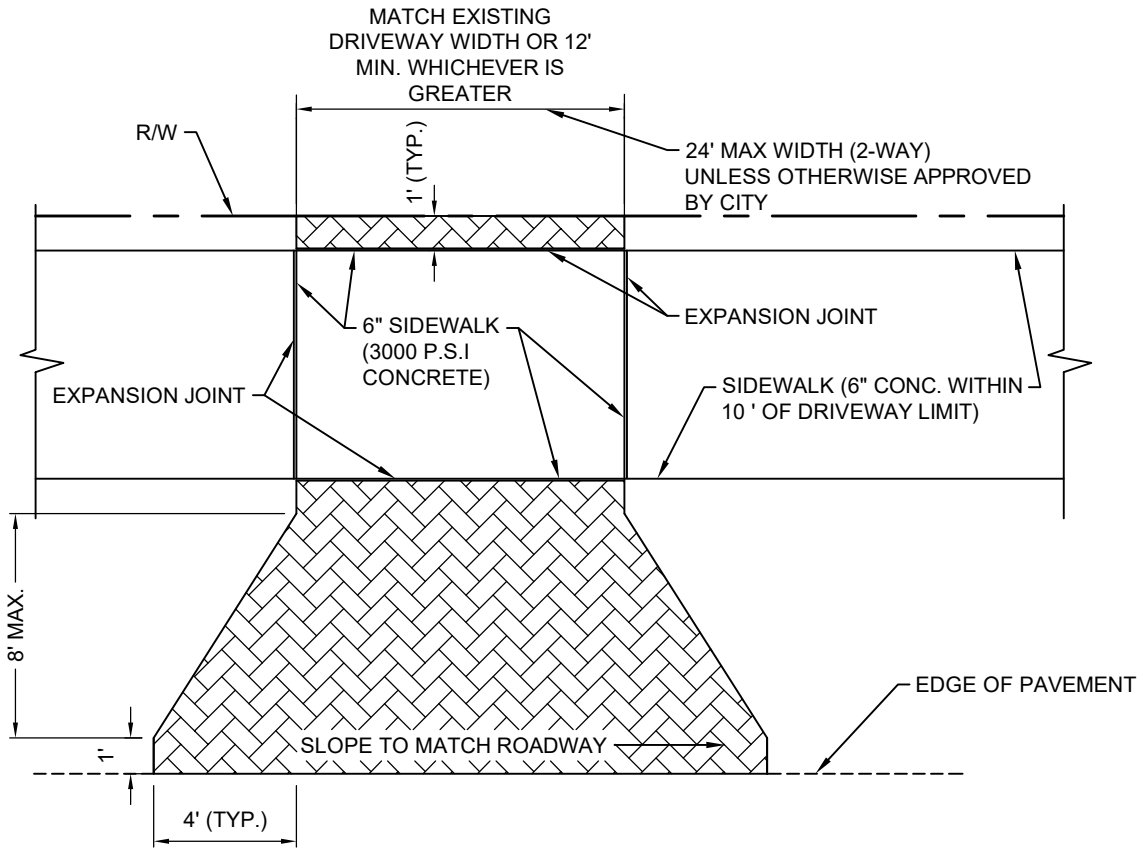
1. THIS DETAIL IS SHOWN WITH PROPOSED SIDEWALK.
2. IF THERE IS AN EXISTING SIDEWALK, THE SIDEWALK SHALL BE EVALUATED FOR THICKNESS AND IF FOUND NOT TO BE 6" THICK IT MUST BE REPLACED WITHIN THE LIMITS OF THE DRIVEWAY AND 10' ON EITHER SIDE.
3. IF THERE IS NO SIDEWALK, EXISTING OR PROPOSED, THE DRIVEWAY APRON SHALL BE CONSTRUCTED WITH THE GEOMETRY SHOWN HEREON UP TO THE PROPERTY LINE.

CITY of DELRAY BEACH
PUBLIC WORKS DEPARTMENT
434 SOUTH SWINTON AVENUE, DELRAY BEACH, FLORIDA 33444

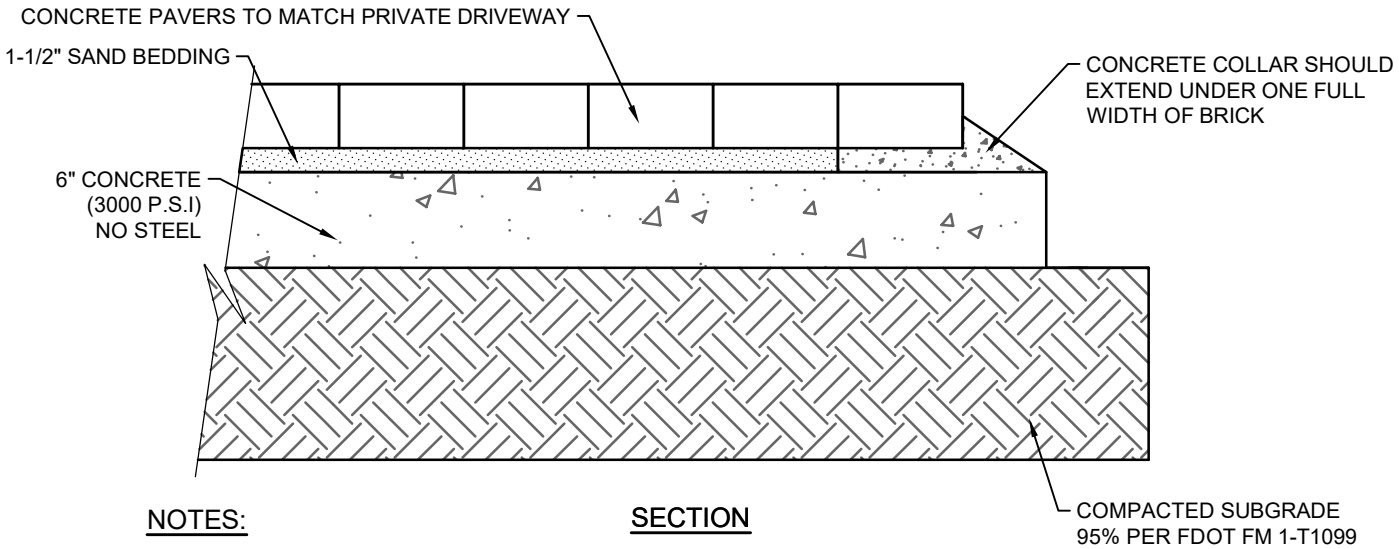
PAVER BRICK DRIVEWAY APRON

DATE: 10-04-2024

RT 28.0



PLAN



SECTION

NOTES:

1. THIS DETAIL IS SHOWN WITH PROPOSED SIDEWALK.
2. IF THERE IS AN EXISTING SIDEWALK, THE SIDEWALK SHALL BE EVALUATED FOR THICKNESS AND IF FOUND NOT TO BE 6" THICK IT MUST BE REPLACED WITHIN THE LIMITS OF THE DRIVEWAY AND 10' ON EITHER SIDE.
3. IF THERE IS NO SIDEWALK, EXISTING OR PROPOSED, THE DRIVEWAY APRON SHALL BE CONSTRUCTED WITH THE GEOMETRY SHOWN HEREON UP TO THE PROPERTY LINE.

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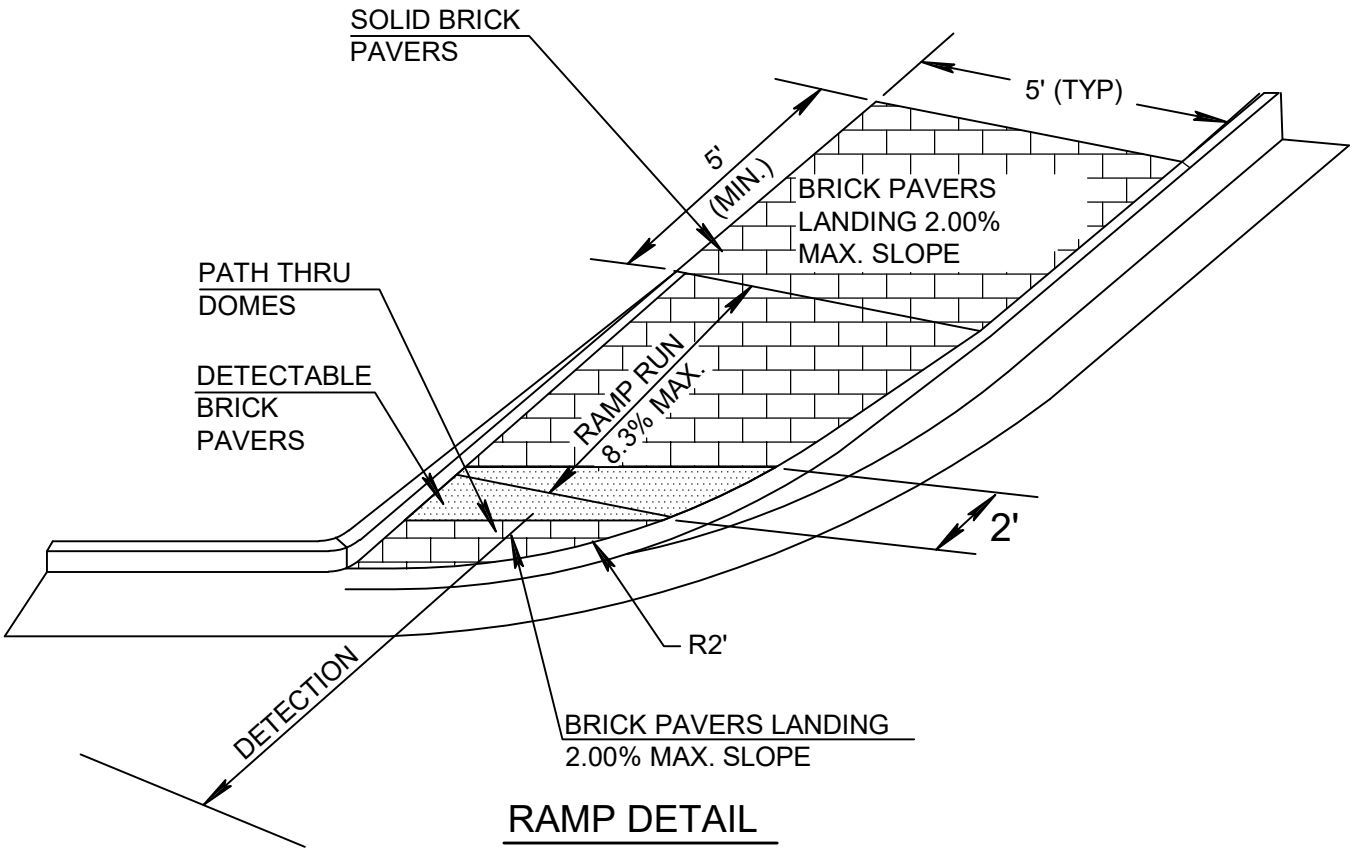
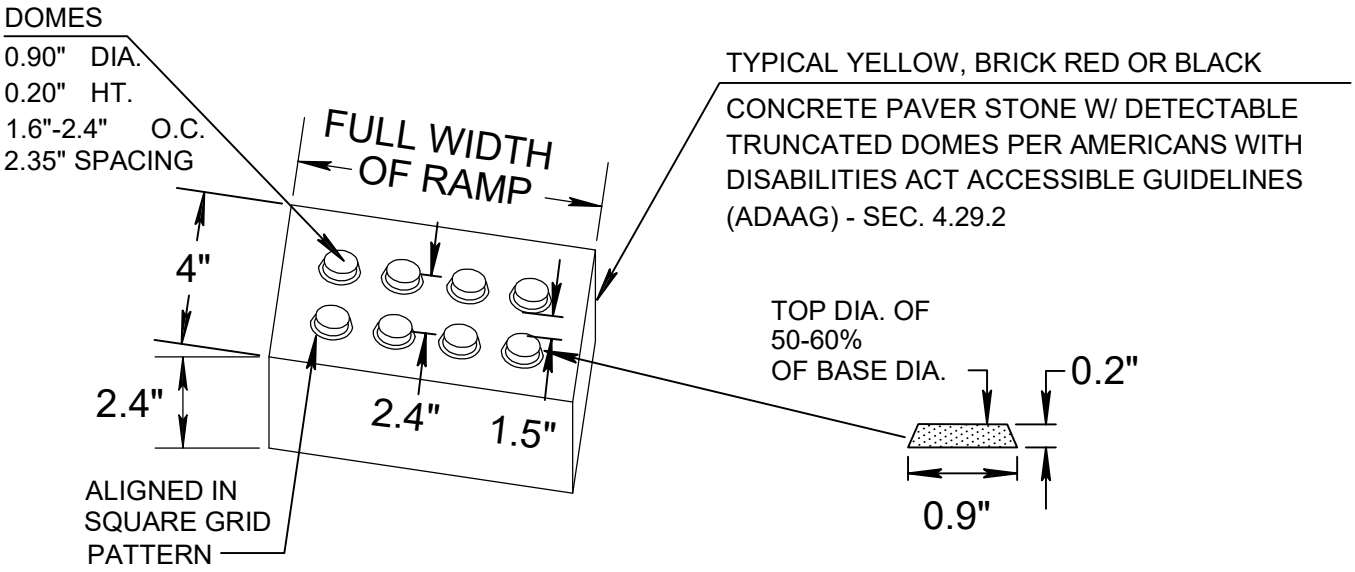
ALTERNATE PAVER
BRICK DRIVEWAY APRON

DATE: 10-04-2024

RT 28.1

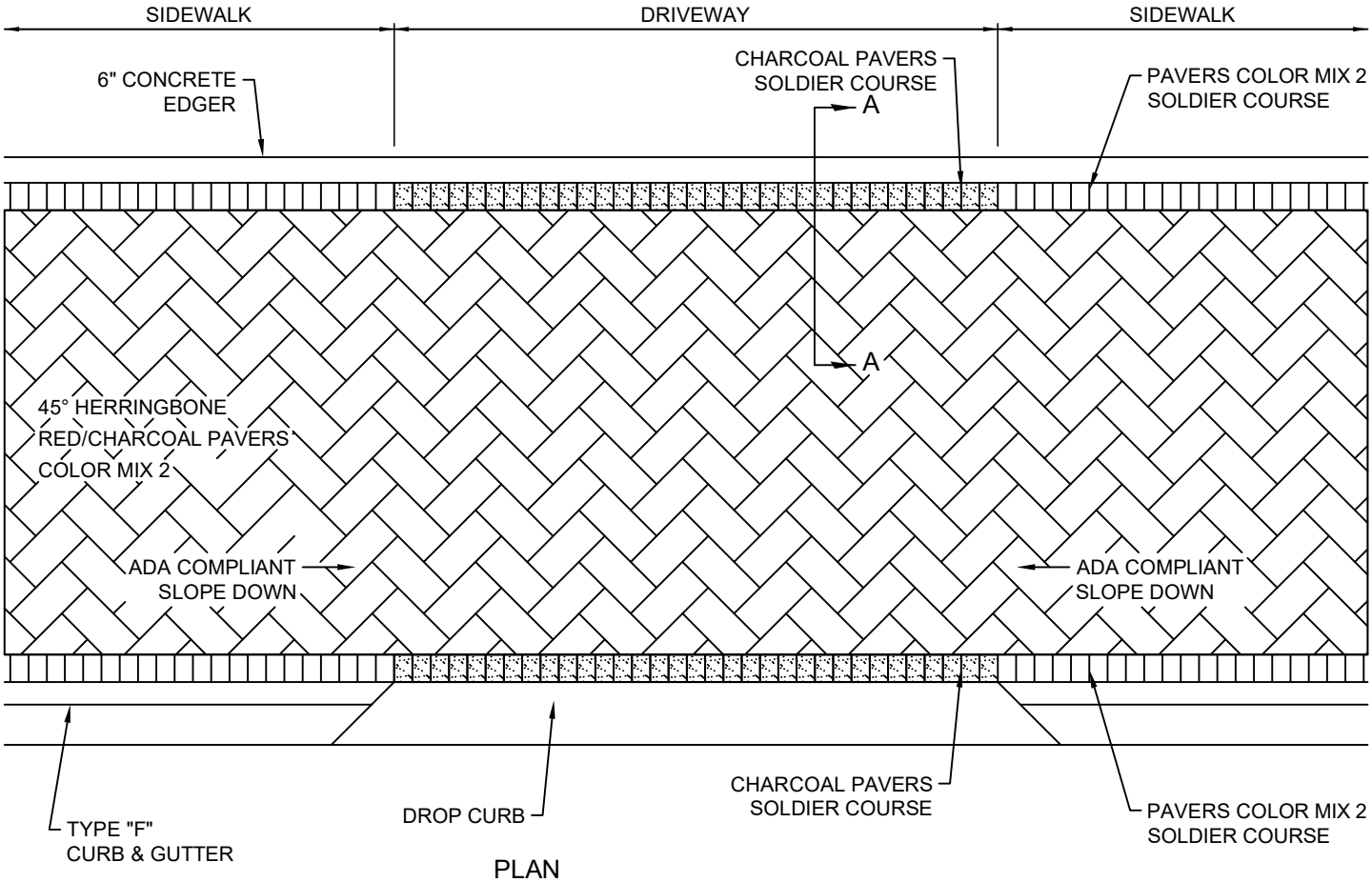


RAMP DETAIL

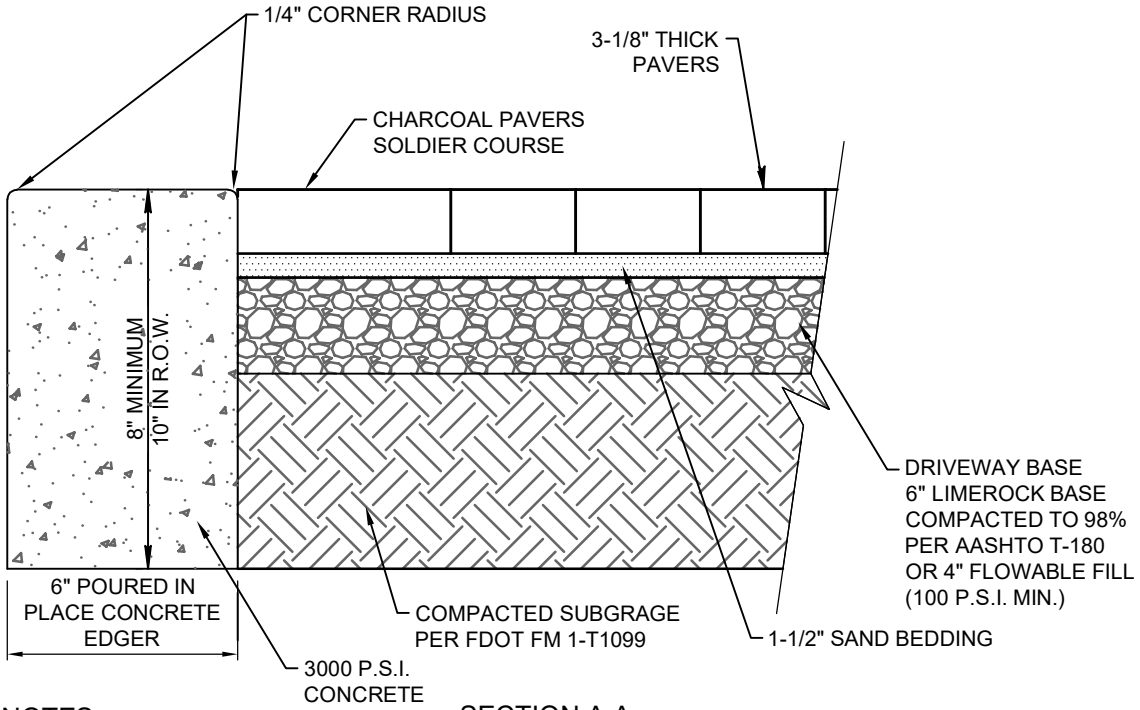


ACCESSIBLE PAVER BRICK DETAIL

1. IN ADDITION TO CURB RAMPS TRUNCATED DOMES ARE REQUIRED AT ALL AREAS OF PERIL. NOT REQUIRED AT RESIDENTIAL DRIVEWAYS CROSSINGS OR CUT-THROUGH REFUGE ISLANDS LESS THAN 6' IN LENGTH.



PLAN



SECTION A-A

NOTES:

1. APPLIES IN AREAS ALLOWED BY LAND DEVELOPMENT REGULATIONS

CITY of DELRAY BEACH
PUBLIC WORKS DEPARTMENT
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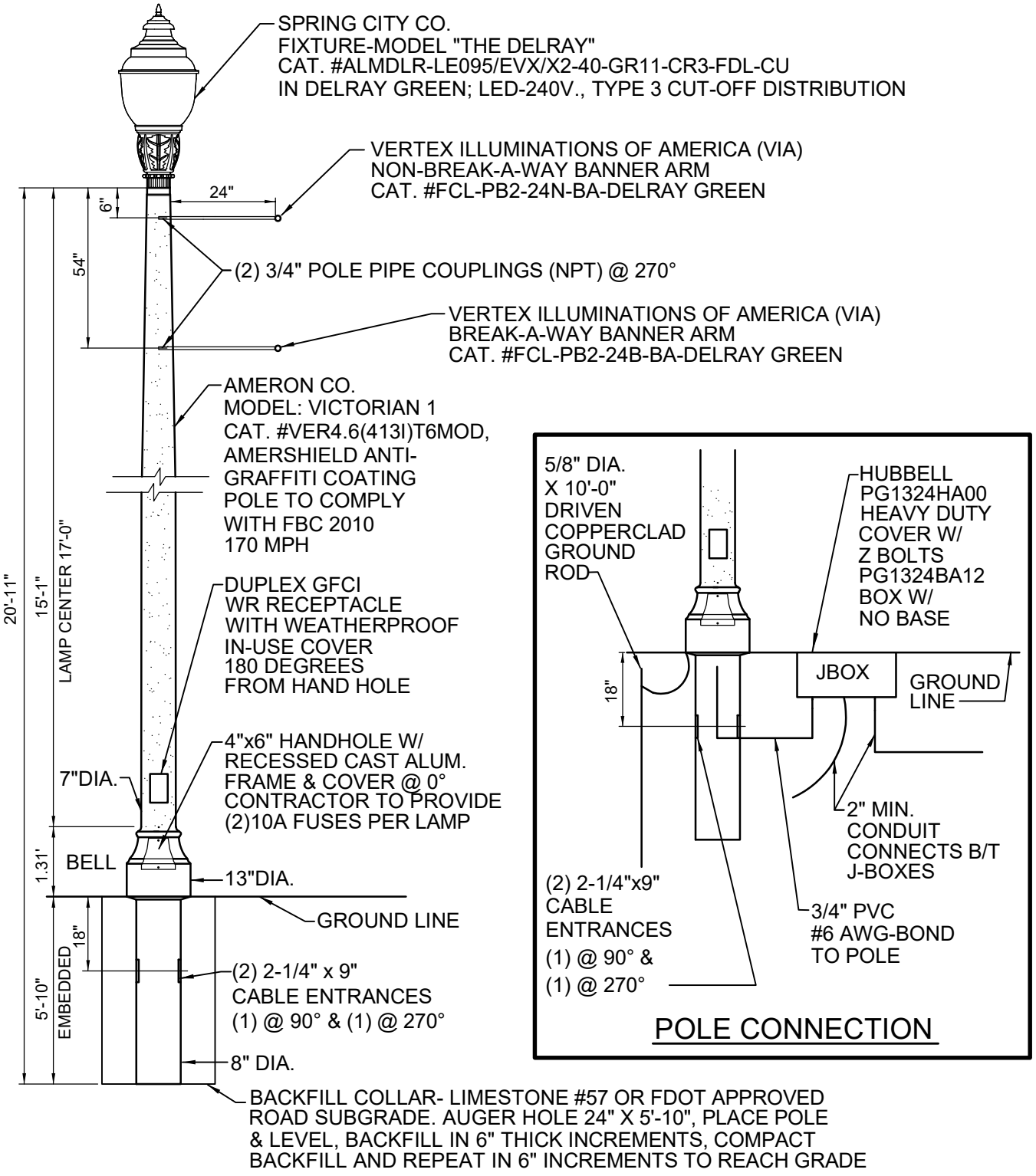
PAVER DRIVEWAY APRON
IN PAVER SIDEWALK DETAIL

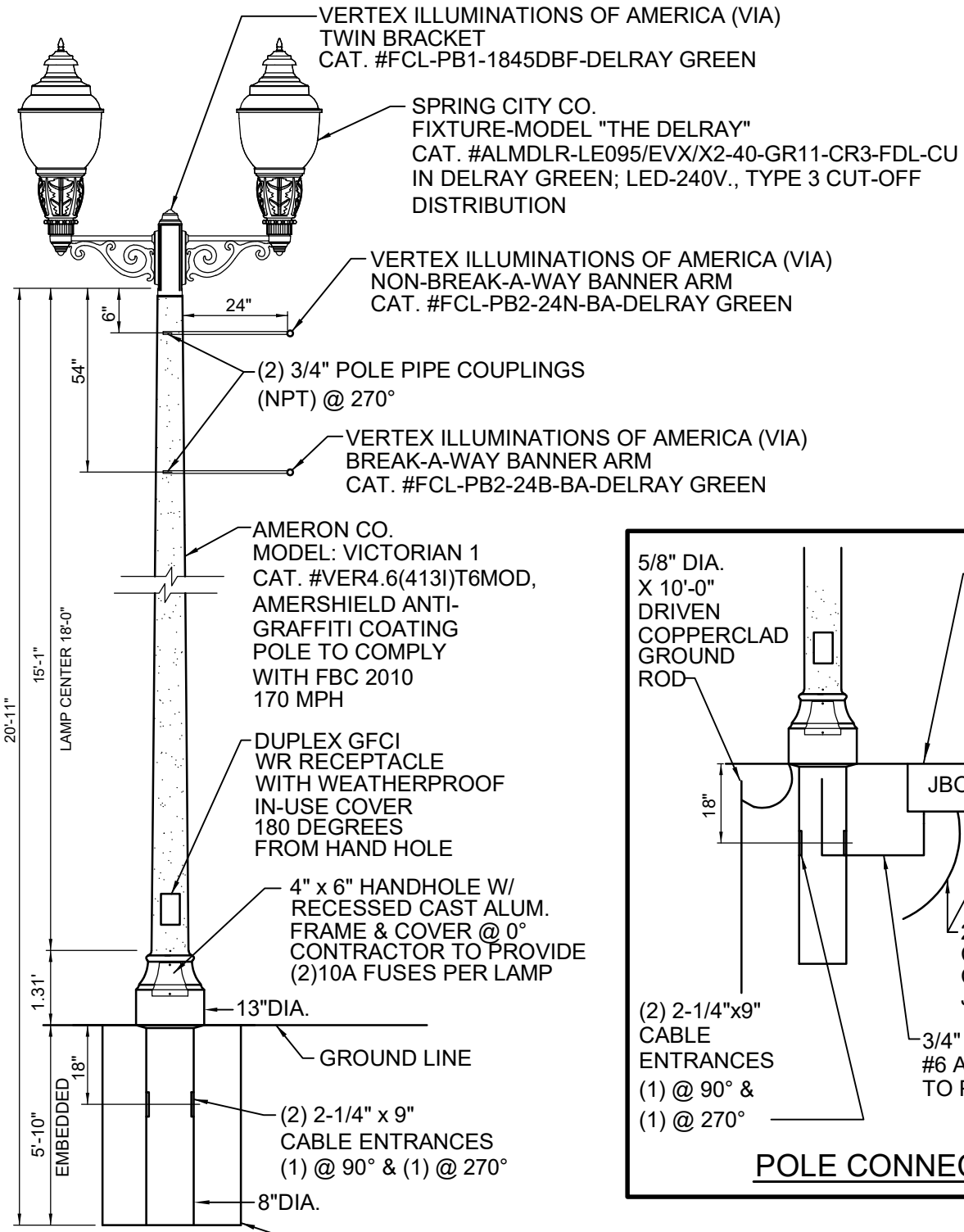
DATE: 10-04-2024

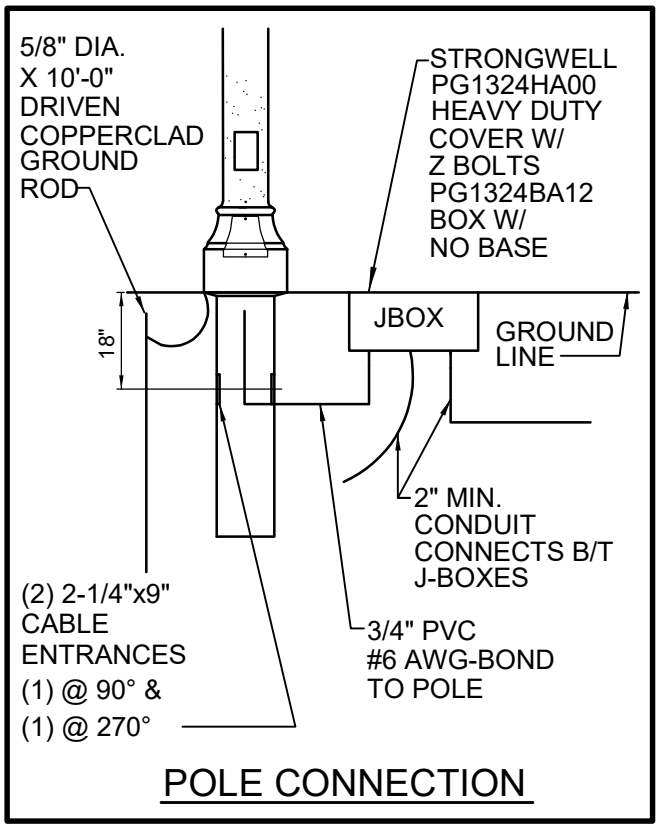
RT 30.0



NOTE:

1. ALL MOUNTING HARDWARE SHALL BE STAINLESS STEEL.
2. STREET LIGHT CIRCUITS SHALL BE WIRED AND METERED SEPARATELY FROM BUILDINGS.





POLE CONNECTION

NOTE:

1. ALL MOUNTING HARDWARE SHALL BE STAINLESS STEEL.
2. STREET LIGHT CIRCUITS SHALL BE WIRED AND METERED SEPARATELY FROM BUILDINGS.
3. STREET LIGHTING ILLUMINATION LEVELS SHALL BE IN ACCORDANCE WITH TABLE 6-1 LEVEL OF ILLUIMNATION FOR STREETS AND HIGHWAYS FROM THE FDOT MANUAL OF UNIFORM MINIMUM STANDARDS FOR DESIGN, CONSTRUCTION AND MAINTENANCE FOR STREETS AND HIGHWAYS (FLORIDA GREENBOOK), LATEST EDITION.

CITY of DELRAY BEACH
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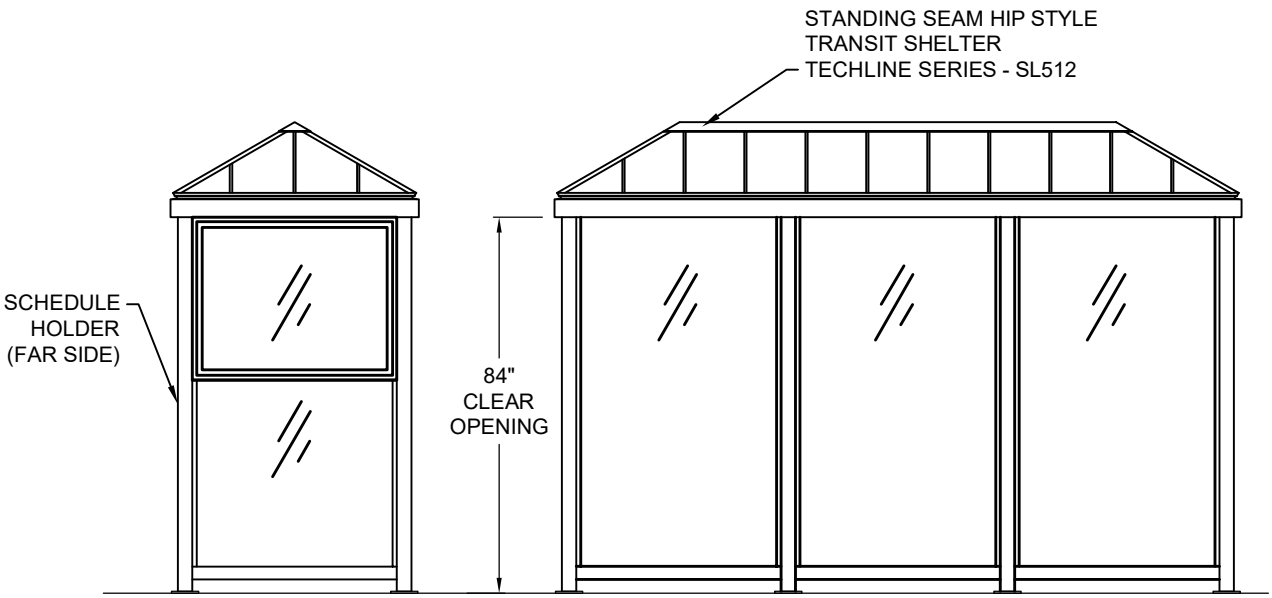
DOUBLE HEAD POLE ASSEMBLY

DATE: 10-04-2024

RT 32.0

SIDE VIEW

FRONT VIEW



SPECIFICATIONS:

- RAL 6019 PASTEL GREEN ALUMINUM STRUCTURE
- 3/8" BRONZE TEMPERED SAFETY GLASS
- STANDING SEAM HIP METAL ROOF - PASTEL GREEN
- 45" x 36" LOCKABLE SCHEDULE HOLDER
- SINGLE OR DUAL 20 GAL. GROUND MOUNTED TRASH RECEPTACLE WITH LINER.
- 3 SEAT BENCH WITH BACK REST AND ANTI-VAGRANT DIVIDERS 20" MINIMUM SEAT DEPTH OR FULLY COMPLIANT WITH THE MINIMUM STANDARDS AS DETAILED IN THE TRANSIT DESIGN MANUAL.
- ROOF MOUNTED SOLAR POWERED LED LIGHTING.
- BRASCO (TECHLINE SERIES 512), DAYTECH (MODEL 4227-1) OR EQUAL.

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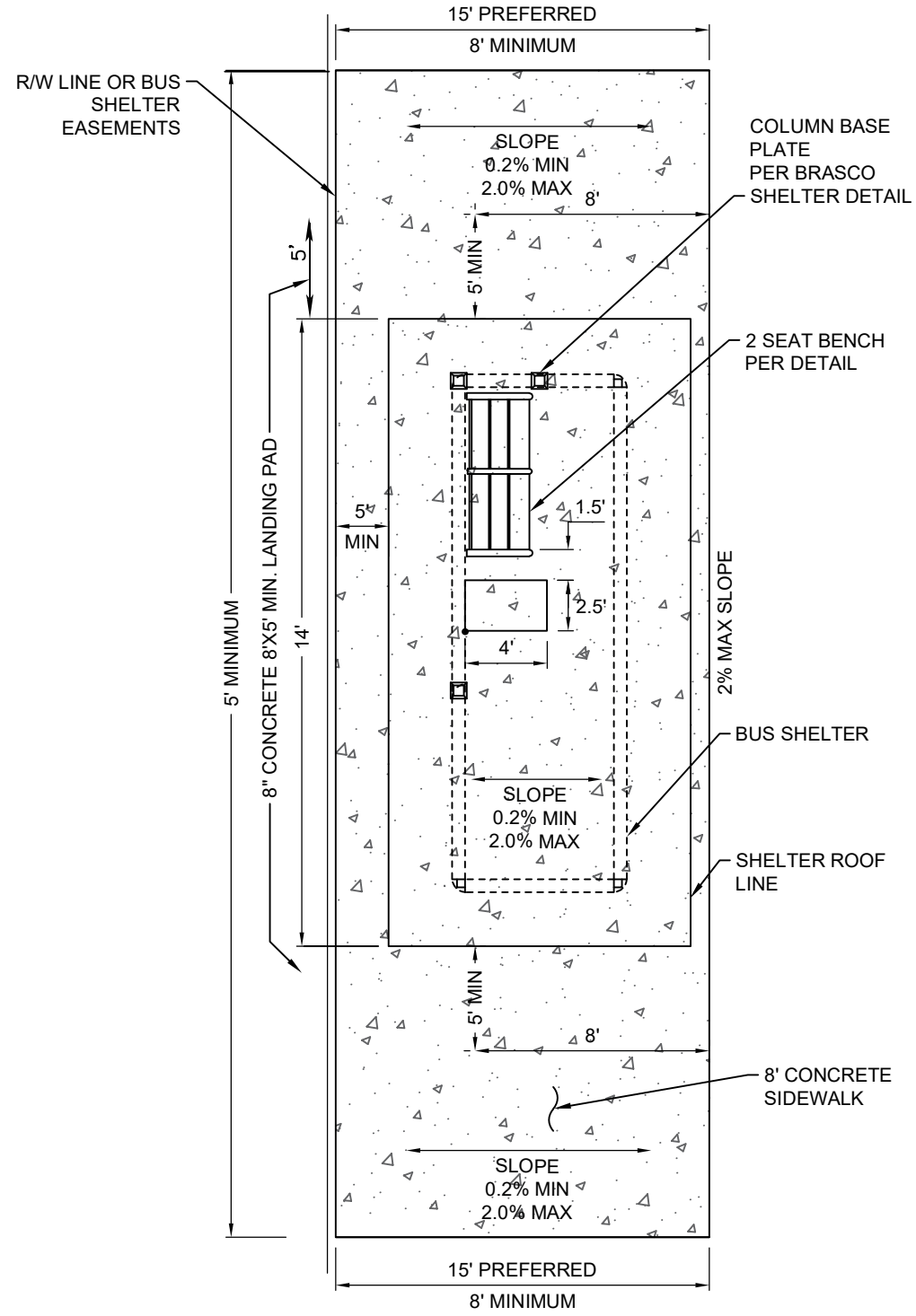
BUS SHELTER DETAIL

DATE: 10-04-2024

RT 33.0



PLAN VIEW
(NTS)

NOTES:

1. BUS STOP PAD MUST BE CLEAR OF UTILITY POLES, FIRE HYDRANTS, STREET FURNITURE OR SIMILAR OBSTACLES.
2. PAD THICKNESS 8", 3000 PSI
3. PROVIDE BICYCLE RACK WHEN THERE IS SUFFICIENT RIGHT OF WAY OR WHEN INDICATED ON THE PLANS
4. BUS SHELTER AND BUS PAD HAVE TO FULLY COMPLAINT WITH THE MINIMUM STANDARDS AS DETAILED IN THE TRANSIT DESIGN MANUAL

CITY of DELRAY BEACH
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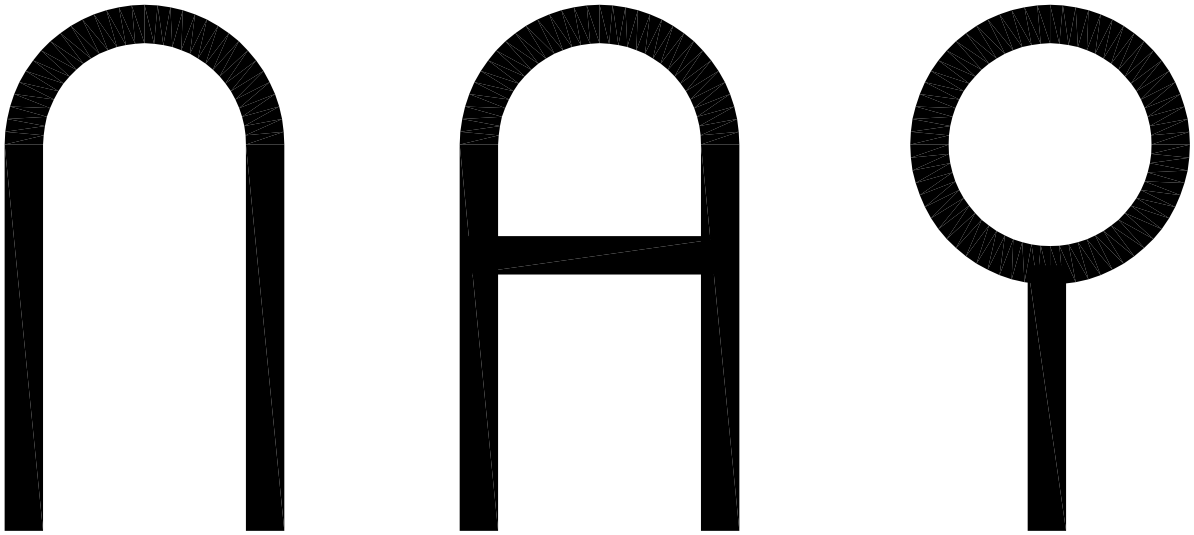
BUS SHELTER PAD DETAIL

DATE: 10-04-2024

RT 34.0

ONE RACK ELEMENT SUPPORTS TWO BIKES



INVERTED "U" **"A"** **POST AND LOOP**

THE LOCATION OF THE BICYCLE RACK SHOULD BE SUCH THAT IT IS VISIBLE AND IS COMPLIANT WITH THE CURRENT VERSION OF THE PROPOSED ACCESSIBILITY, GUIDELINES FOR PEDESTRIAN FACILITIES IN THE PUBLIC RIGHT-OF-WAY (PROWAG) PREFERABLY ON THE APPROACH SIDE OF THE BUILDING OR STRUCTURE PARKING IS EXPECTED, AT LEAST 50% OF THE BICYCLE PARKING SPOTS SHOULD BE COVERED BY AN OVERHANG OR ACTUAL STORAGE FACILITY. UPPER ELEMENTS OF THE BICYCLE RACK SHOULD NOT PROTRUDE, CREATING AN OBSTACLE FOR A BLIND TRAVELER. THE COLOR OF THE BICYCLE RACK IS 3275 ENGINEERING GRADE/COLOR BLUE.

CITY of DELRAY BEACH
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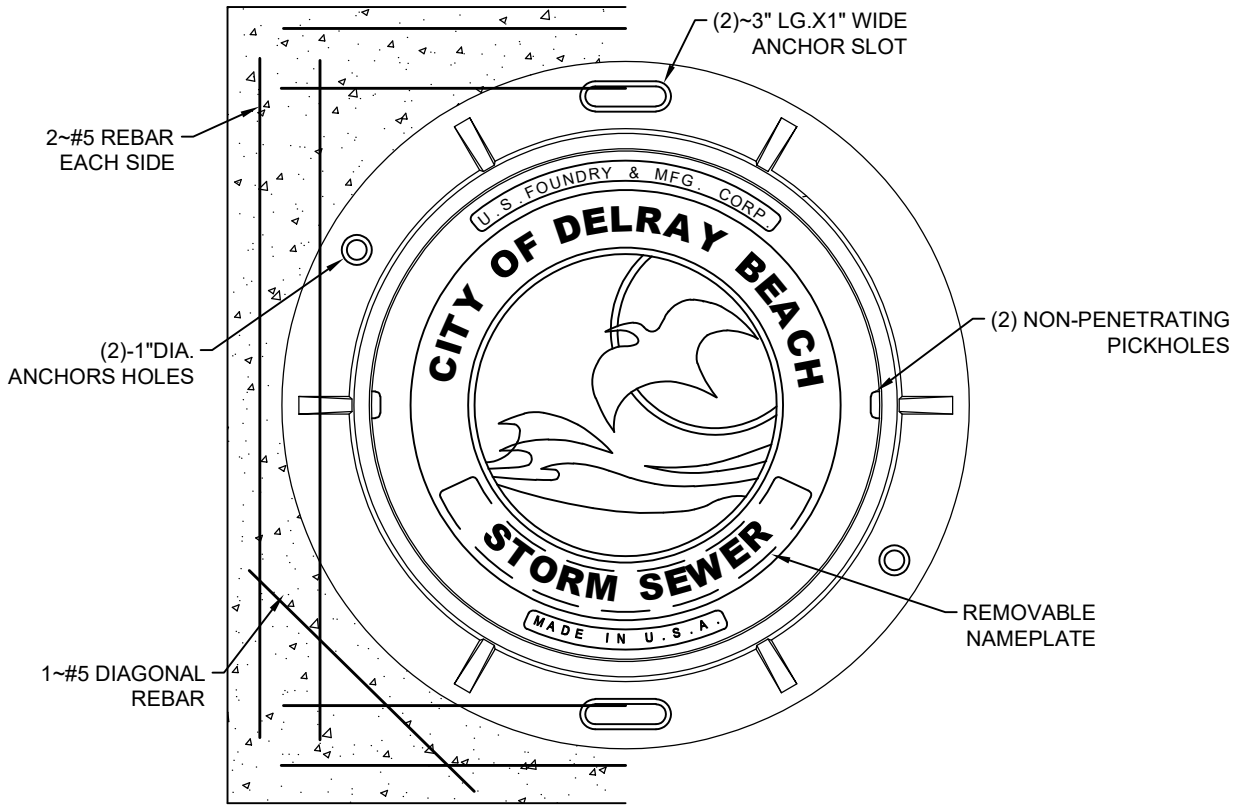
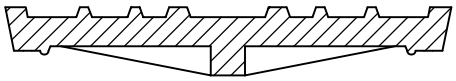
BICYCLE RACK

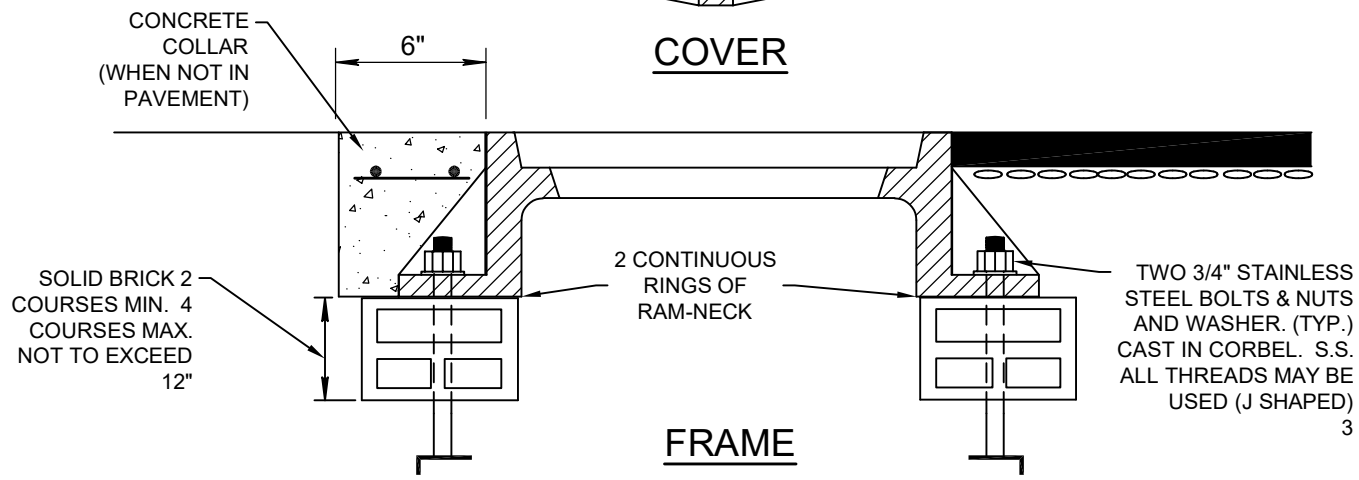
DATE: 10-04-2024

RT 35.0





COVER



FRAME

NOTES:

1. COLLAR IS REQUIRED ONLY WHEN MANHOLE IS OUT OF PAVEMENT.
2. FRAME AND COVER SHALL BE U.S. FOUNDRY MR-ORS AND RING SHALL BE USF 576
3. MANHOLE ADJUSTING RINGS SHALL BE CAST IRON, USF TYPE B.
4. CITY LOGO LID TO BE USED ON CITY MAINTAINED STORM SEWER ONLY. STANDARD NO. 576BH IS TO BE USED ON PRIVATELY MAINTAINED STORM SEWER.

CITY of DELRAY BEACH
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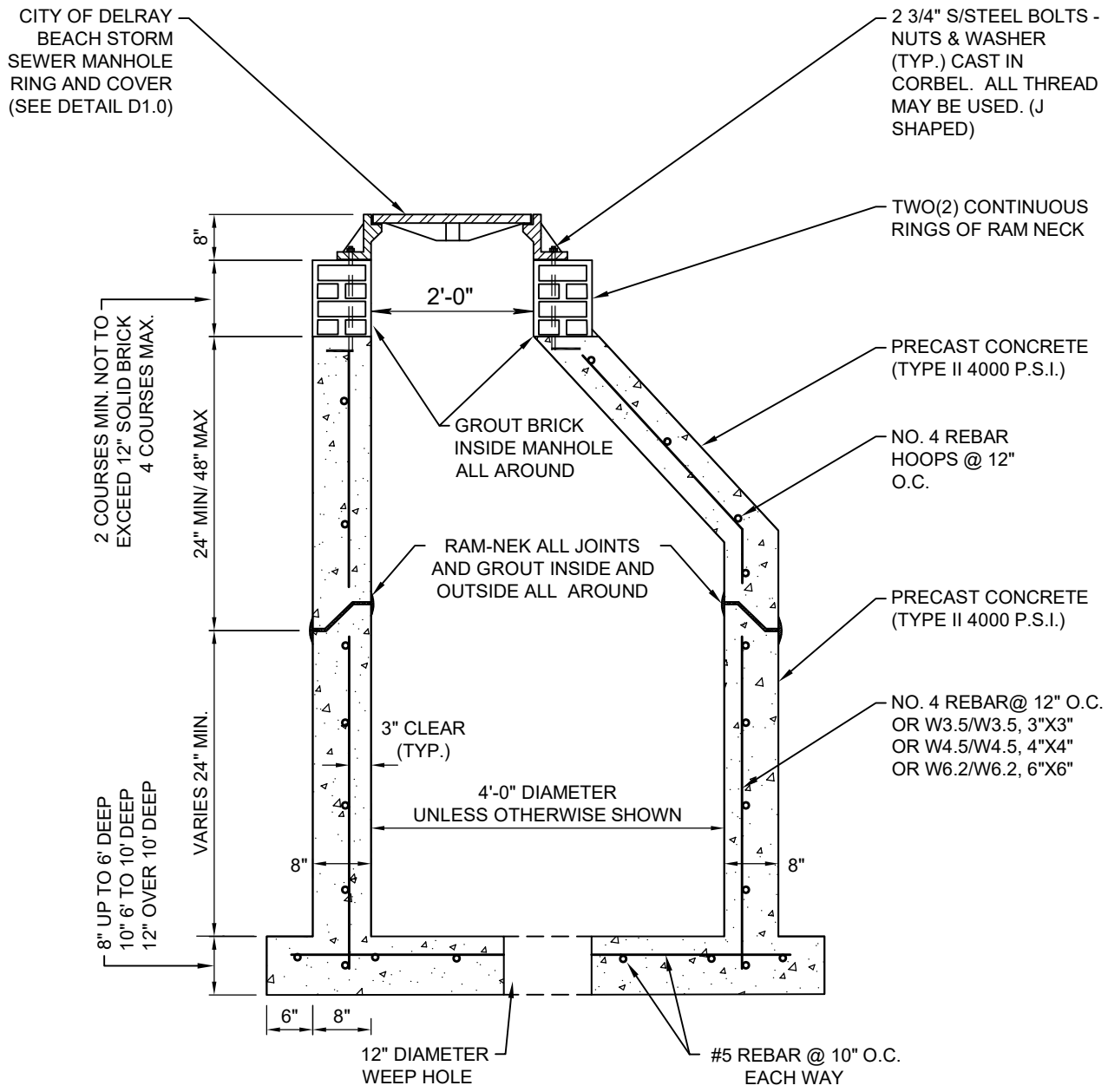
STORM SEWER MANHOLE
FRAME & COVER

DATE: 10-04-2024

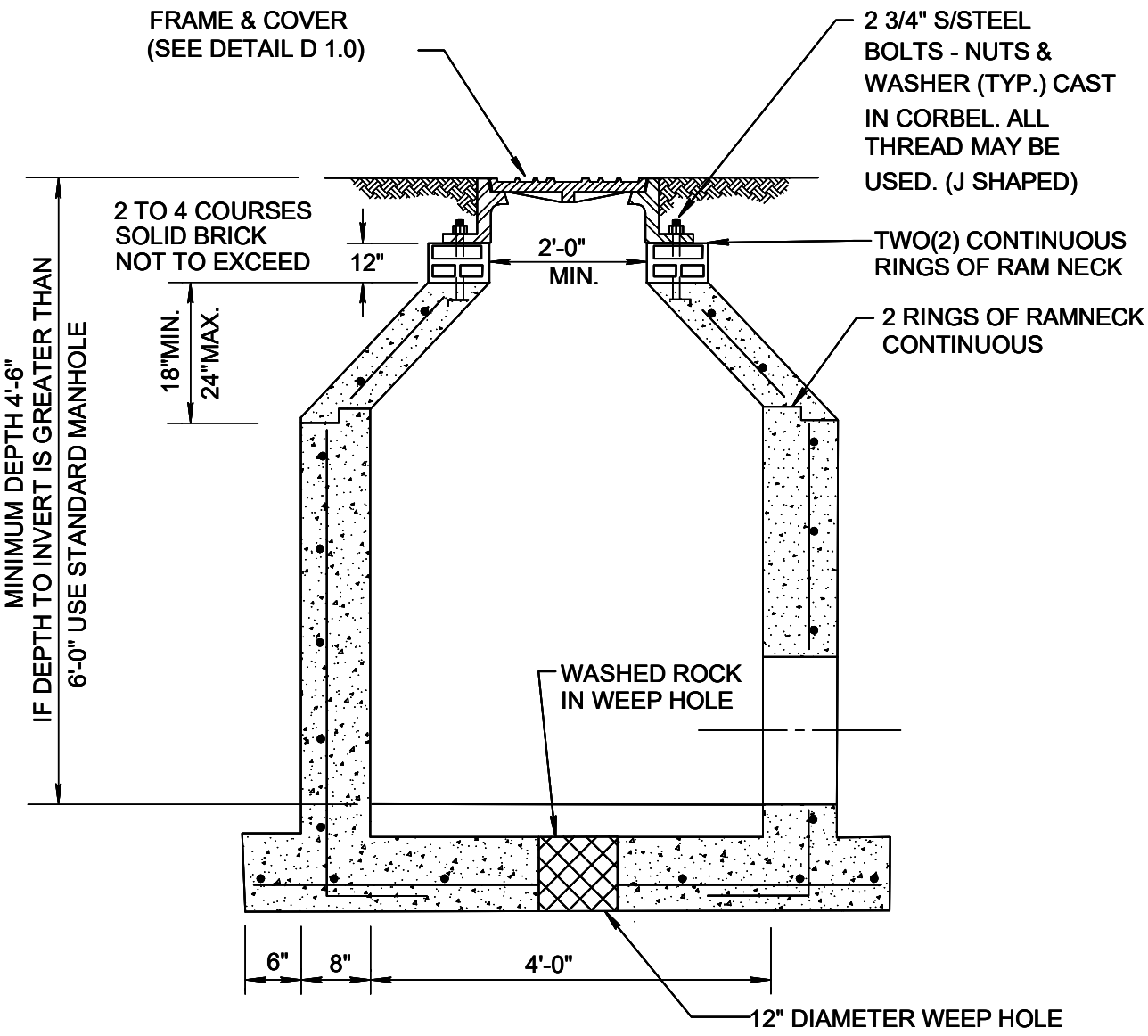
D 1.0



* SEE TYPICAL BACKFILL DETAIL GU 2.0

NOTES:

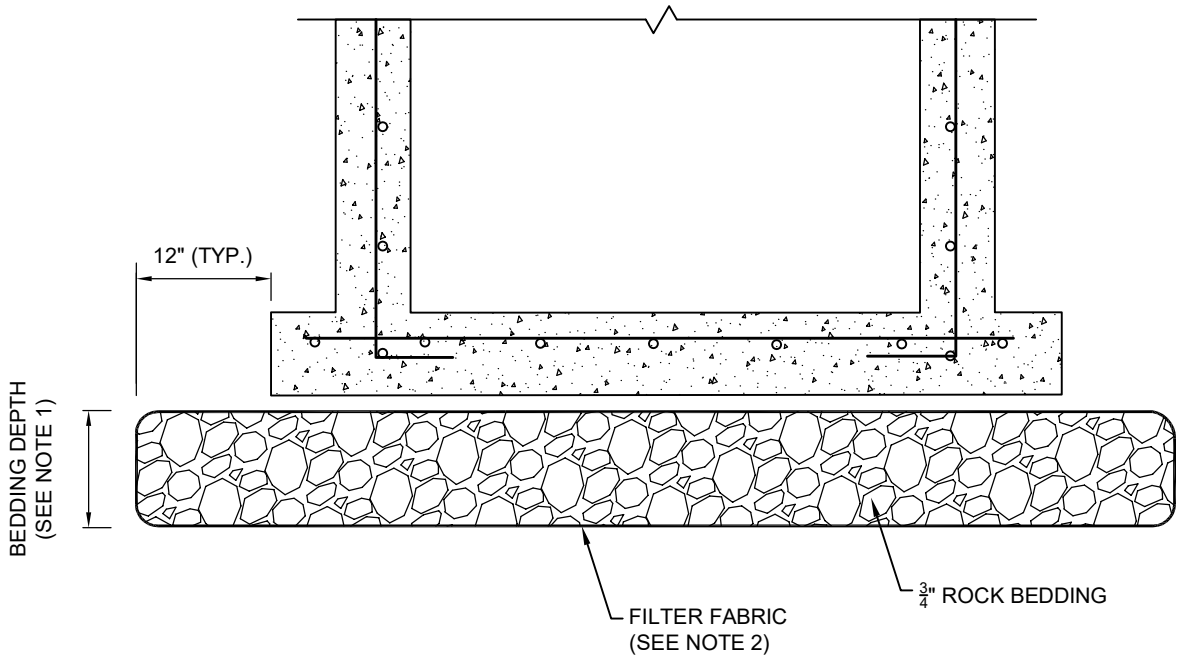
1. FOR PIPES UP TO 36" R.C.P.
2. 12" DIA. WEEP HOLE REQUIRED ON ALL STRUCTURES WHICH HAVE BOTTOM ELEVATIONS ABOVE THE WATER TABLE. HARDWARE CLOTH SHALL BE PROVIDED ABOVE BEDDING ROCK AND UNDER WEEP HOLE. EXCEPT IN WELL FIELDS.
3. 18" SUMP REQUIRED ON ALL STRUCTURES.
4. IF THE STRUCTURE IS INSTALLED IN WATER TABLE MUST HAVE BEDDING. (SEE DETAIL BEDDING D 4.0)



* SEE TYPICAL BACKFILL DETAIL GU 2.0

NOTE:

1. ALL STANDARD MANHOLE NOTES AND DETAILS ARE APPLICABLE. (SEE DETAIL D 2.0)
2. IF THE STRUCTURE IS INSTALLED IN WATER TABLE MUST HAVE BEDDING. (SEE DETAIL BEDDING D 4.0)



NOTES:

1. BEDDING DEPTH SHALL BE 10" UNDER DRAINAGE STRUCTURES AND 18" UNDER SANITARY STRUCTURES.

2. ROCK SHALL BE WRAPPED IN FILTER FABRIC THAT MEETS THE REQUIREMENTS OF F.D.O.T. SPECIFICATION SECTION 985.

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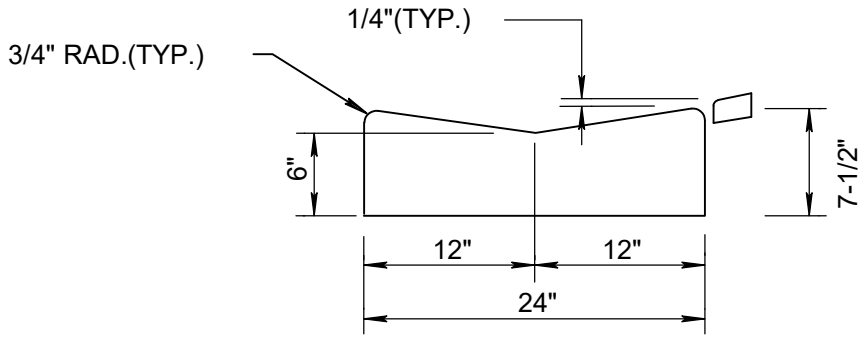
STANDARD BEDDING DETAIL

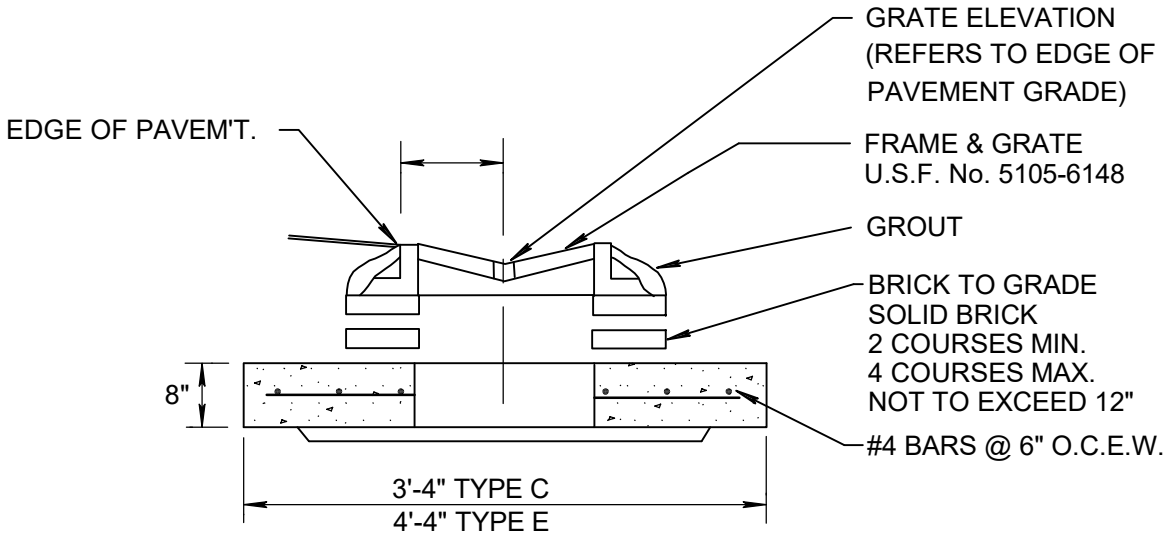
DATE: 10-04-2024

D 4.0



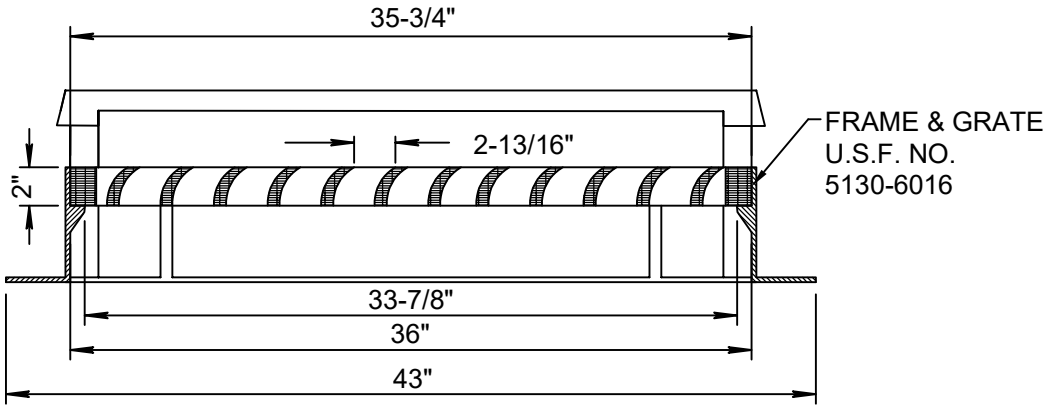
2' VALLEY CURB

NOT TO SCALE



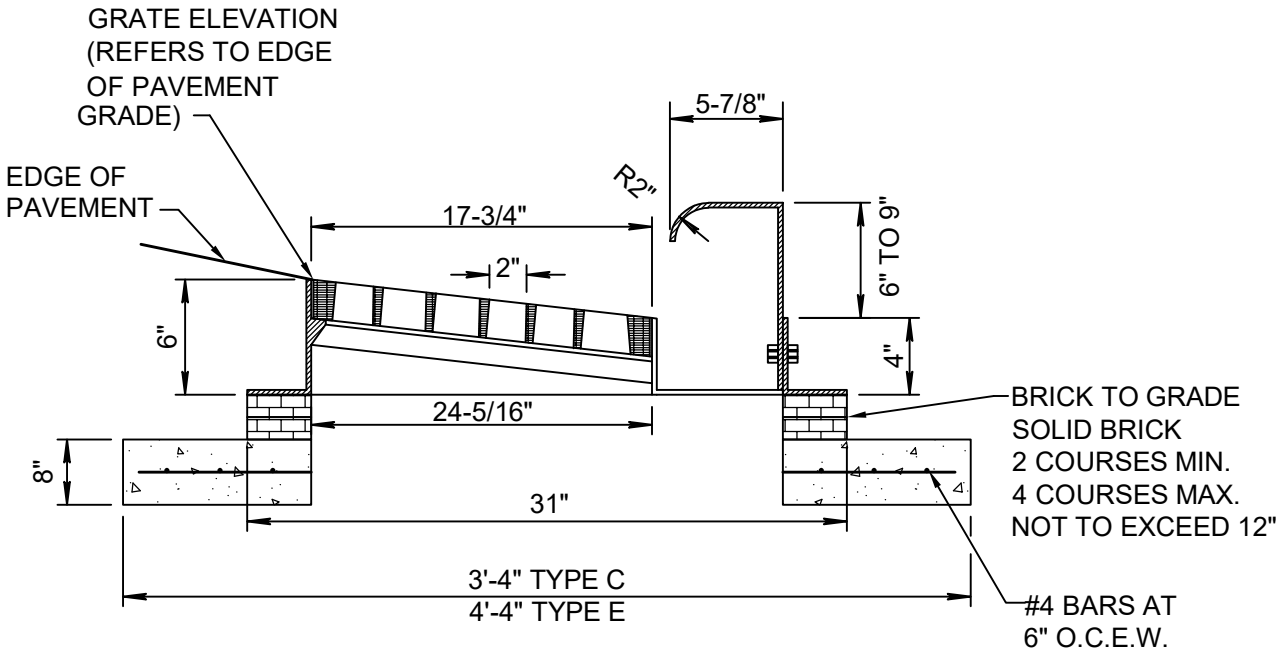
VALLEY GUTTER FRAME & GRATE

NOT TO SCALE



TYPE "F" FRAME & GRATE

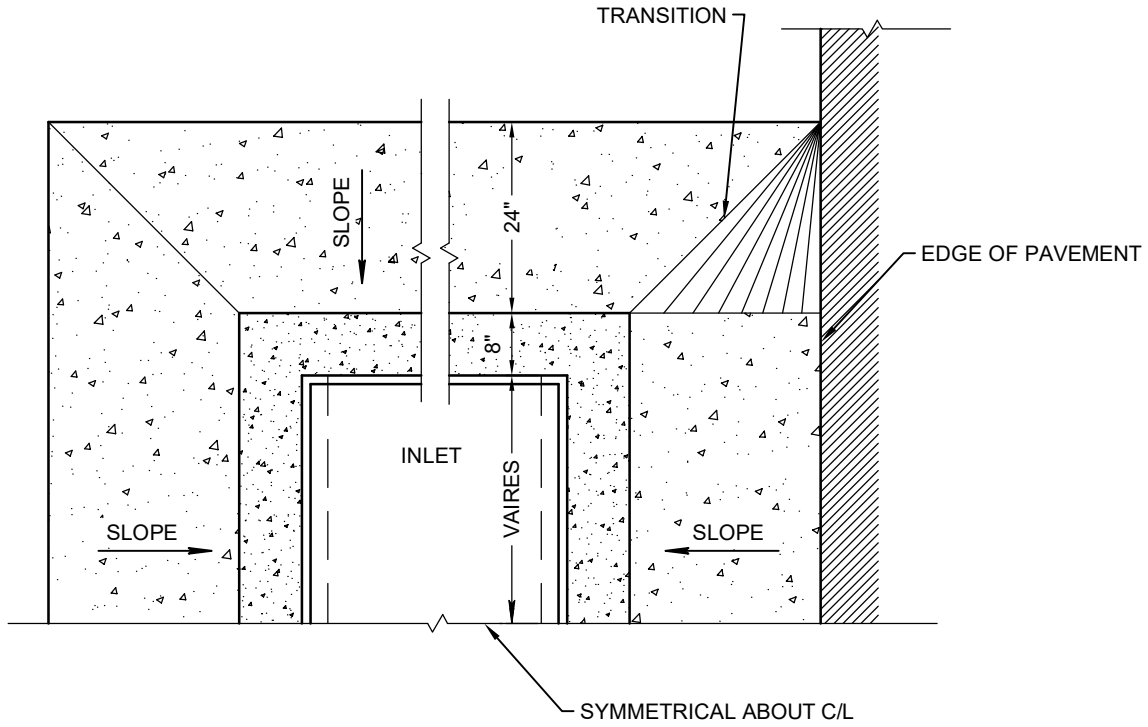
NOT TO SCALE



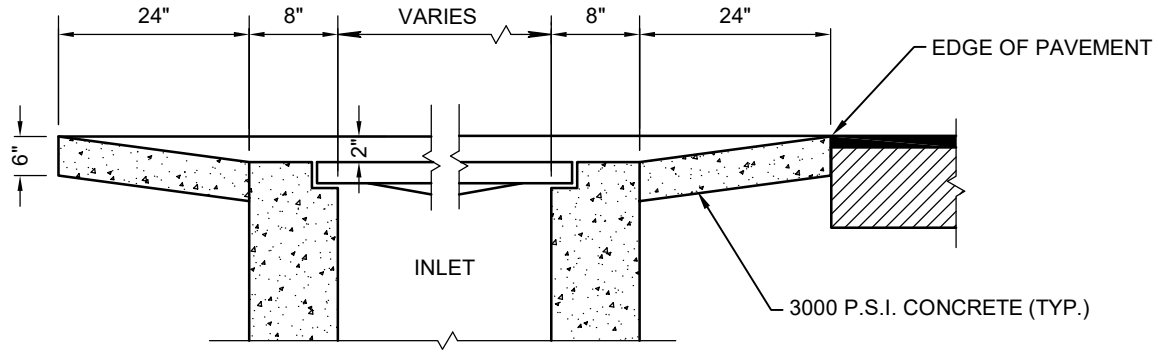
TYPE "F" FRAME & GRATE PROFILE

NOT TO SCALE

1. U.S.F. NO. 6016 GRATE MAY BE INSTALLED WITH VANE SLOTS FOR LEFT OR RIGHT FLOW.

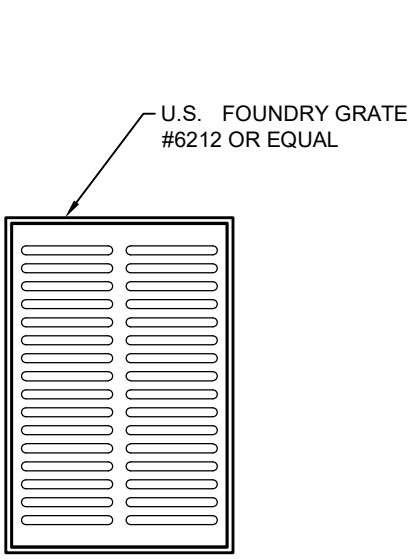


HALF PLAN

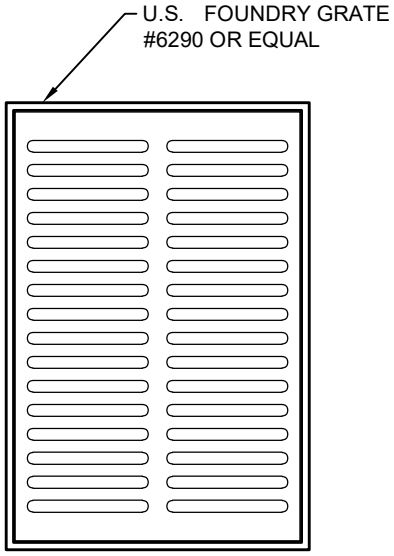


SECTION

INLET TYPE	DIMENSIONS		GRATE TYPE	MAX. PIPE SIZE	
	A	B		WALL A	WALL B
'C'	2'-0"	3'-1"	U.S. FOUNDRY No. 6212	15" R.C.P.	24" R.C.P.
'E'	3'-0"	4'-5"	U.S. FOUNDRY No. 6290	24" R.C.P.	36" R.C.P.



TYPE "C"

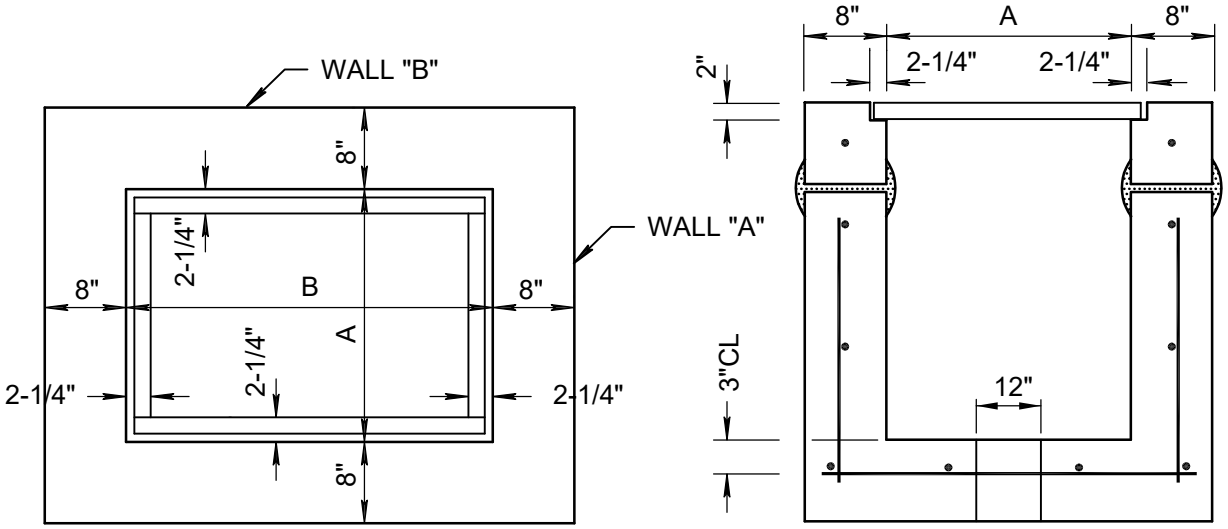


TYPE "E"

NOTES:

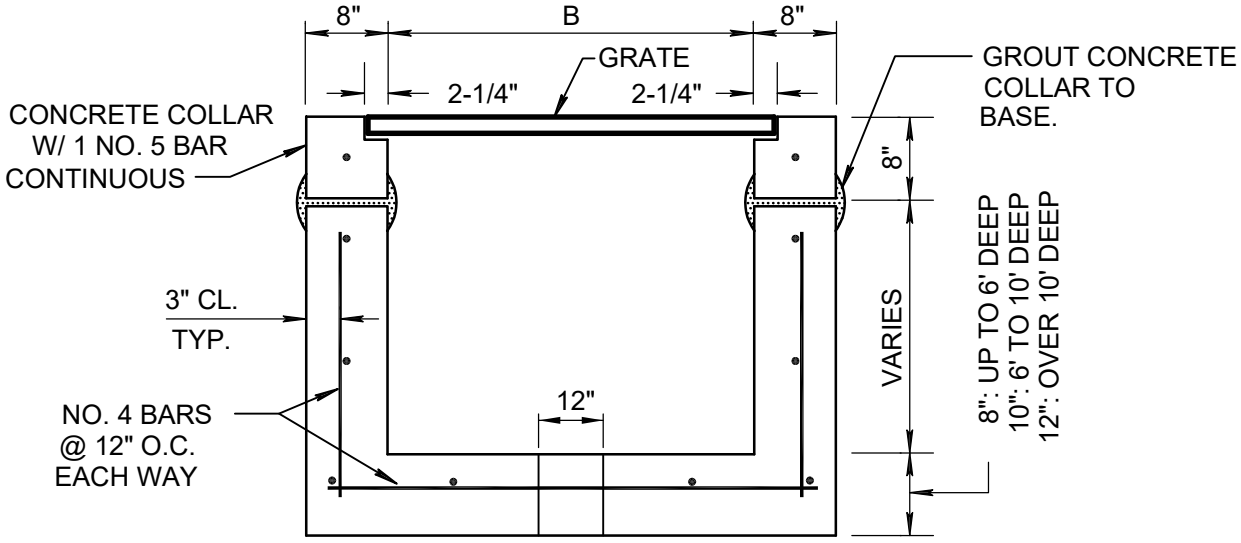
1. ALL GRATES SHALL BE SUITABLE FOR H-20 LOADING (HIGHWAY TRAFFIC LOADS)

2. WHEN INSTALLED IN PAVEMENT OR WITHIN 6' OF PAVEMENT USE U.S.F. 4160-6210



PLAN

SECTION

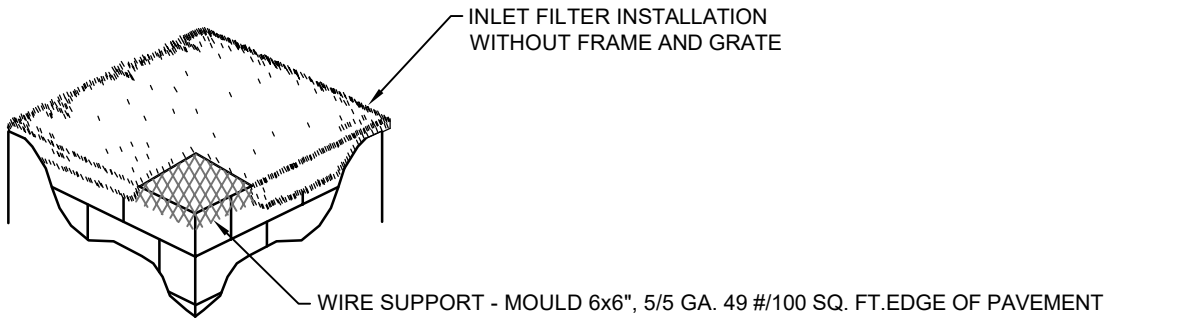


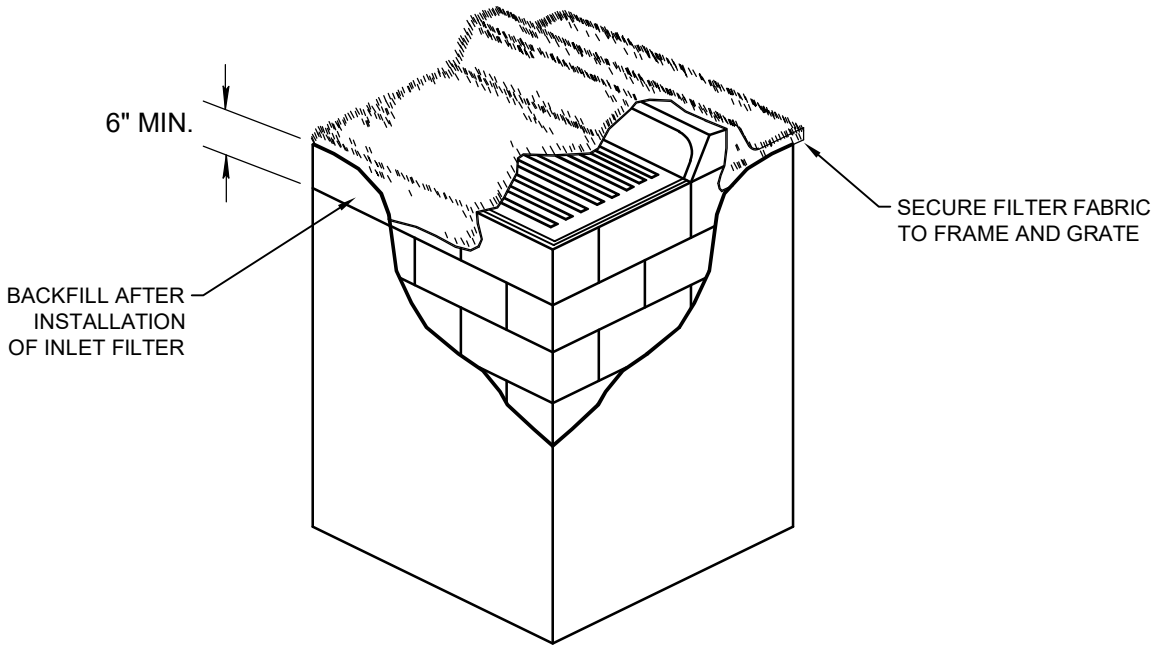
SECTION * SEE TYPICAL BACKFILL DETAIL GU 2.0

INLET TYPE	DIMENSIONS		GRATE TYPE	MAX. PIPE SIZE	
	A	B		WALL A	WALL B
'C'	2'O"	3'1"	U.S. FOUNDRY NO. 6212	15" R.C.P.	24" R.C.P.
'E'	3'O"	4'6"	U.S. FOUNDRY NO. 6290	24" R.C.P.	36" R.C.P.

NOTES:

1. INLET TO BE PRECAST WITH CLASS 'A' 4000 P.S.I. CONCRETE.
2. ALL EXPOSED CORNERS AND EDGES TO BE CHAMFERED 3/4".
3. 12" DIAMETER WEEP HOLE REQUIRED ON ALL STRUCTURES WHICH HAVE A BOTTOM ELEVATION ABOVE THE WATER TABLE EXCEPT IN WELLFIELDS.
4. 18" SUMP REQUIRED IN ALL DRAINAGE STRUCTURES.
5. SEE BEDDING DETAIL D 3.0
6. ALL STRUCTURES TO BE 4 SIDED ANGLE SHOULDERS.





NOT TO SCALE

NOTES:

1. CONTRACTOR IS TO CLEAN INLET FILTER AFTER EVERY STORM.
2. CONTRACTOR TO REMOVE FABRIC JUST PRIOR TO PAVING.

A SEDIMENT TRAP WILL BE EXCAVATED BEHIND THE CURB AT THE INLET. THE BASIN SHALL BE AT LEAST 12 TO 14 INCHES IN DEPTH, APPROXIMATELY 36 INCHES IN WIDTH, AND APPROXIMATELY 7 TO 10 FEET IN LENGTH PARALLEL TO THE CURB.

STORM WATER WILL REACH THE SEDIMENT TRAP VIA CURB CUTS ADJACENT TO EACH SIDE OF THE INLET STRUCTURE. THESE OPENINGS SHALL BE AT LEAST 12 INCHES IN LENGTH. STORM WATER MAY ALSO REACH THE BASIN VIA OVERLAND FLOW LAND AREA BEHIND THE CURB. THE CURB CUTS SHALL BE REPAIRED WHEN THE SEDIMENT TRAP IS REMOVED.

1. THE INTENT OF EROSION CONTROL MEASURES INDICATED GRAPHICALLY ON PLANS IS TO PROVIDE A BARRIER TO CONTAIN SILT AND SEDIMENT ON THE PROJECT SITE. THIS REPRESENTATION IS PROVIDED FOR THE CONVENIENCE OF THE CONTRACTOR. THE TEST OF EROSION CONTROL EFFECTIVENESS IS NOT TO BE DETERMINED BY ADHERENCE TO THE REPRESENT SET FORTH ON THE DRAWINGS AND SPECIFICATIONS, BUT BY MEETING THE REGULATIONS SET FORTH BY THE AUTHORITY HAVING JURISDICTION OVER WATER QUALITY CONTROL AND OTHER SEDIMENTATION RESTRICTION REQUIREMENTS IN THE REGION.

2. APPROVED EROSION AND SEDIMENT CONTROL MEASURES SHALL BE INSTALLED PRIOR TO ANY CLEARING GRADING, EXCAVATION, FILLING, OR OTHER LAND DISTURBANCE ACTIVITIES, EXCEPT THOSE OPERATIONS NEEDED TO INSTALL SUCH MEASURES.

3. INSPECTION OF ALL EROSION CONTROL MEASURES SHALL BE CONDUCTED WEEKLY, OR AFTER EACH RAINFALL EVENT. REPAIR, AND/OR REPLACEMENT OF SUCH MEASURES SHALL BE MADE PROMPTLY, AS NEEDED.

4. KEEP DUST WITHIN TOLERABLE LIMITS BY SPRINKLING OR OTHER ACCEPTABLE MEANS.

5. ADDITIONAL EROSION AND SEDIMENT CONTROL MEASURES MAY BE REQUIRED IF DEEMED NECESSARY BY ONSITE INSPECTION.

6. FAILURE TO PROPERLY INSTALL AND MAINTAIN EROSION CONTROL PRACTICES SHALL RESULT IN CONSTRUCTION BEING HALTED.

7. DRAINAGE INLETS SHALL BE PROTECTED BY FILTER AND GRADED ROCK AS PER INLET PROTECTION DETAIL.

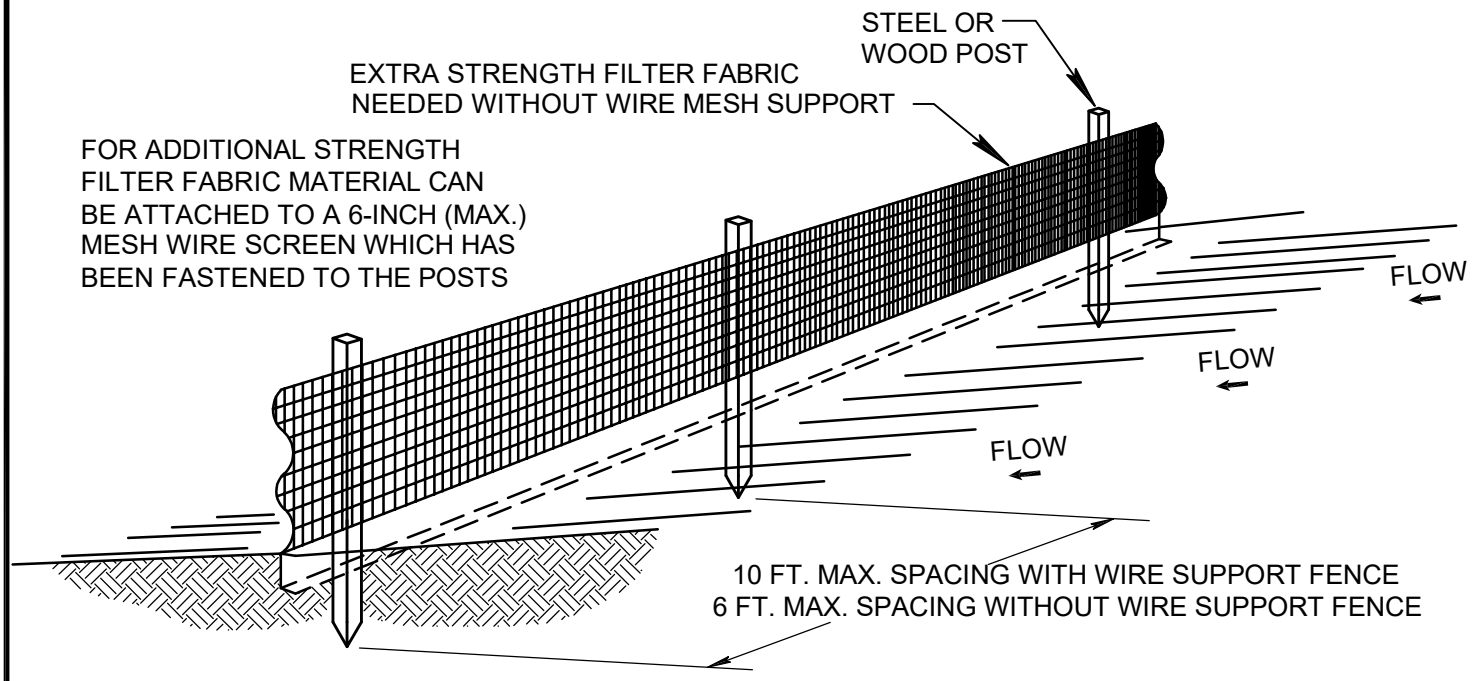
8. ANY ACCESS ROUTES TO SITE SHALL BE BASED WITH CRUSHED STONE, WHERE PRACTICAL.

9. EROSION CONTROL MEASURES ARE TO BE MAINTAINED UNTIL PERMANENT GROUND COVER IS ESTABLISHED.

10. WHENEVER FEASIBLE, NATURAL VEGETATION SHALL BE RETAINED AND PROTECTED.

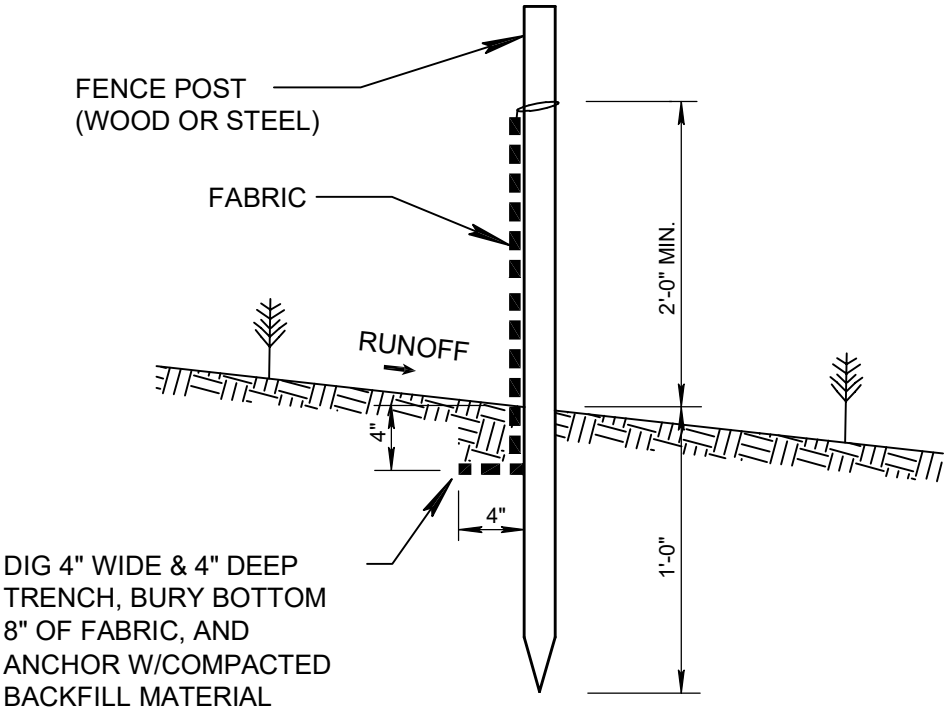
11. ALL WORK IS TO BE IN COMPLIANCE WITH THE RULES AND REGULATIONS SET FORTH BY THE STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION AND THE CITY OF DELRAY BEACH.

12. DISCHARGE FROM DEWATERING OPERATIONS SHALL BE RETAINED ONSITE IN A CONTAINMENT AREA.



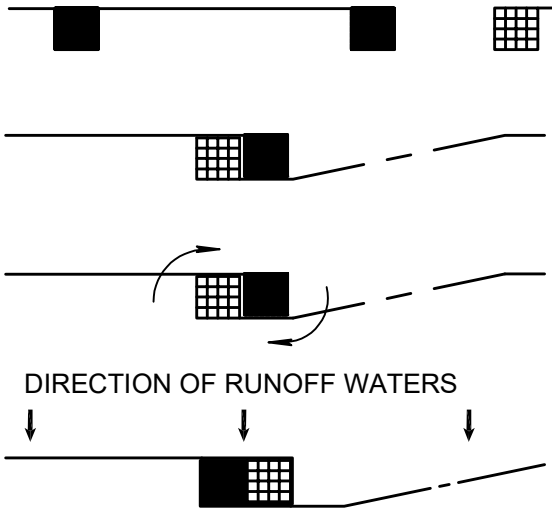
NOTES:

1. THE HEIGHT OF A SILT FENCE SHALL NOT EXCEED 36 INCHES.
2. THE FILTER FABRIC SHALL BE PURCHASED IN A CONTINUOUS ROLL CUT TO THE LENGTH OF THE BARRIER TO AVOID THE USE OF JOINTS.
3. POSTS SHALL BE SPACED A MAXIMUM OF 10 FEET APART AT THE BARRIER LOCATION AND DRIVEN SECURELY INTO THE GROUND A MINIMUM OF 12 INCHES. WHEN EXTRA STRENGTH FABRIC IS USED WITHOUT THE WIRE SUPPORT FENCE, POST SPACING SHALL NOT EXCEED 6 FEET.
4. A TRENCH SHALL BE EXCAVATED APPROXIMATELY 4 INCHES WIDE AND 4 INCHES DEEP ALONG THE LINE OF POSTS AND UPSLOPE FROM THE BARRIER.
5. WHEN STANDARD STRENGTH FILTER FABRIC IS USED, A WIRE MESH SUPPORT FENCE SHALL BE FASTENED SECURELY TO THE UPSLOPE SIDE OF THE POSTS USING HEAVY DUTY WIRE STAPLES AT LEAST 1 INCH LONG, TIE WIRES, OR HOG RINGS. THE WIRE SHALL EXTEND INTO THE TRENCH A MINIMUM OF 2 INCHES AND SHALL NOT EXTEND MORE THAN 36 INCHES ABOVE THE ORIGINAL GROUND SURFACE.
6. THE STANDARD STRENGTH FILTER FABRIC SHALL BE STAPLED OR WIRED TO THE FENCE, AND 8 INCHES OF THE FABRIC SHALL BE EXTENDED INTO THE TRENCH. THE FABRIC SHALL NOT EXTEND MORE THAN 36 INCHES ABOVE THE ORIGINAL GROUND SURFACE.
7. THE TRENCH SHALL BE BACKFILLED AND THE SOIL COMPACTED OVER THE FILTER FABRIC.
8. ALL PROJECTS REQUIRE SUBMITTAL OF POLLUTION PREVENTION PLAN (PPP).
9. ALL PROJECTS 1 AC. OR MORE MUST SUBMIT NOTICE OF INTENT (NOI) TO FDEP.



SILT FENCE SECTION

NOT TO SCALE



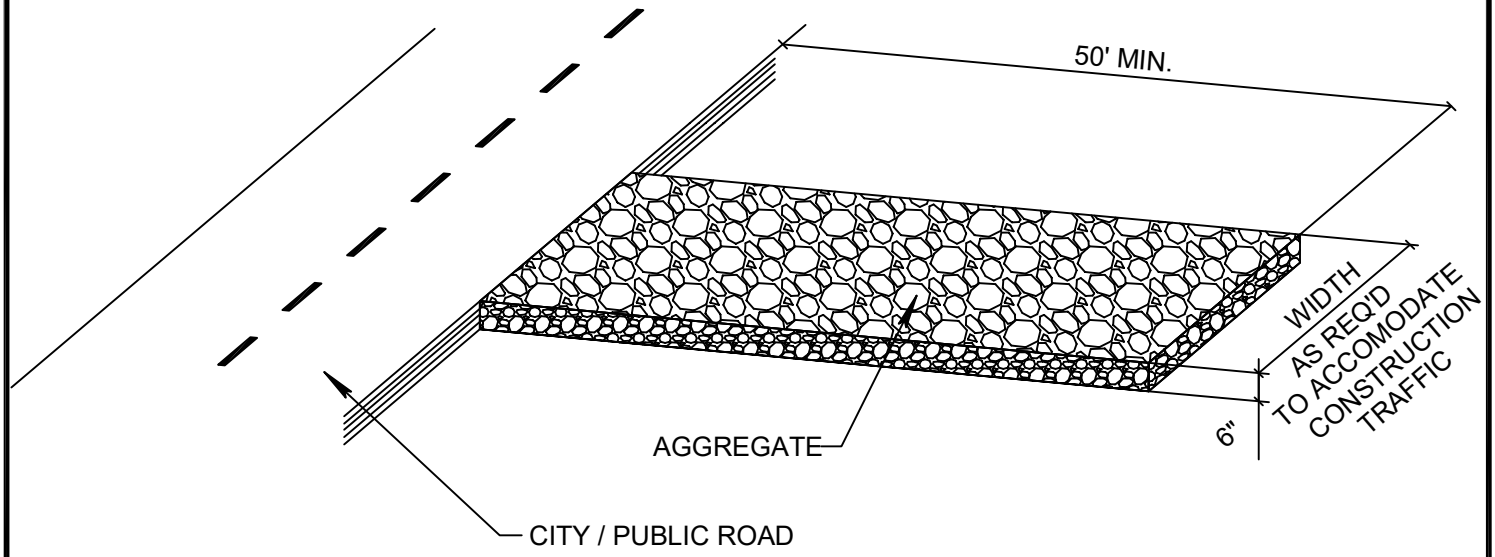
PLACE THE END POST OF THE SECOND FENCE INSIDE THE END POST OF THE FIRST FENCE

ROTATE BOTH POSTS AT LEAST 180 DEGREES IN A CLOCKWISE DIRECTION TO CREATE A TIGHT SEAL WITH THE FABRIC MATERIAL

DRIVE BOTH POSTS ABOUT 18 INCHES INTO THE GROUND AND BURY FLAP

ATTACHING TWO SILT FENCES

NOT TO SCALE



NOTE:

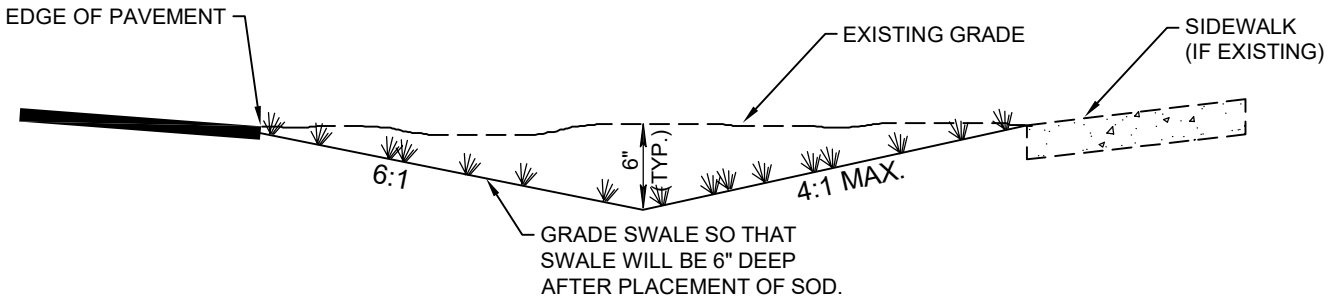
A CONSTRUCTION ENTRANCE SHALL BE CONSTRUCTED AND CONTAIN AN AGGREGATE LAYER (FDOT AGGREGATE NO.1), AT LEAST 6-INCHES THINK. IT MUST EXTEND TO THE WIDTH OF THE VEHICULAR INGRESS AND EGRESS AREA.

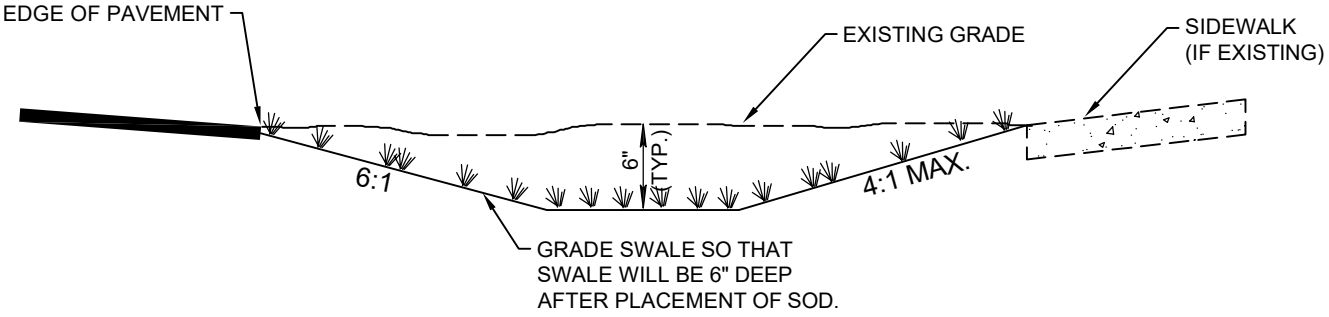
CITY of DELRAY BEACH
PUBLIC WORKS DEPARTMENT
434 SOUTH SWINTON AVENUE, DELRAY BEACH, FLORIDA 33444

STABILIZED CONSTRUCTION ENTRANCE DETAIL

DATE: 10-04-2024

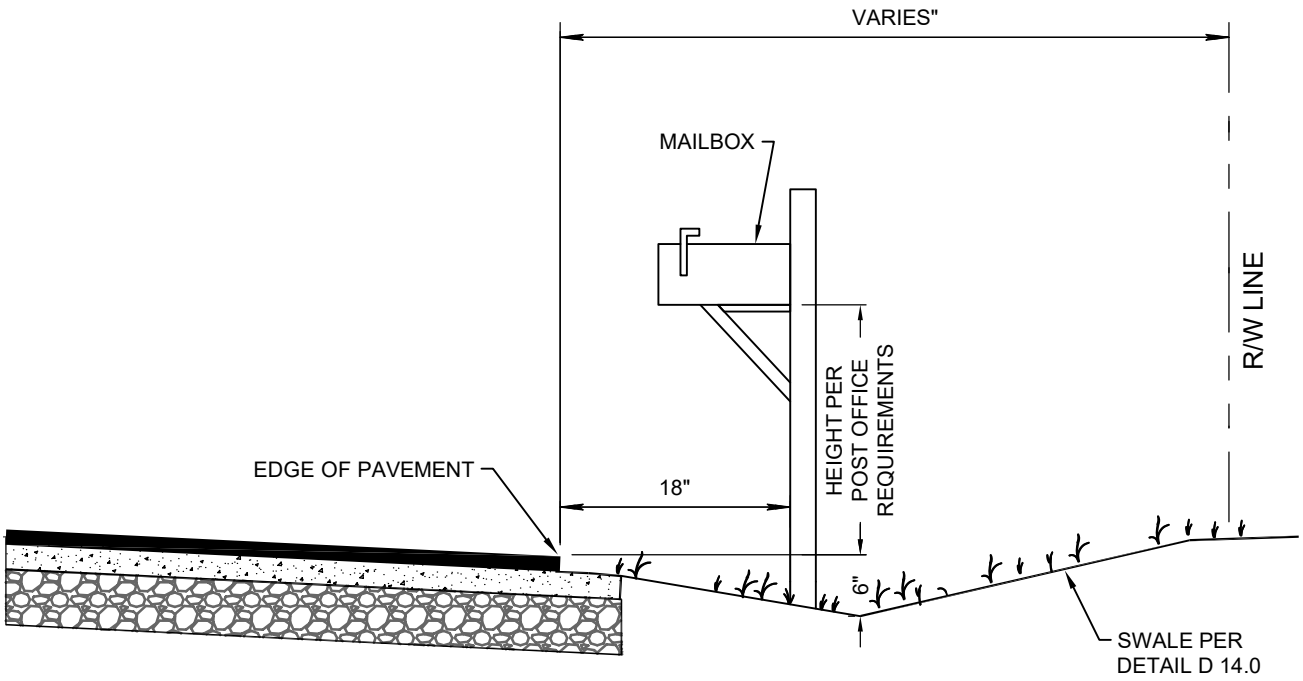
D 13.0





NOTE:

1. CONTRACTOR TO REPLACE ALL IRRIGATION, TREES & SHRUBBERY IN SWALES DAMAGED DURING CONSTRUCTION.



NOTE:

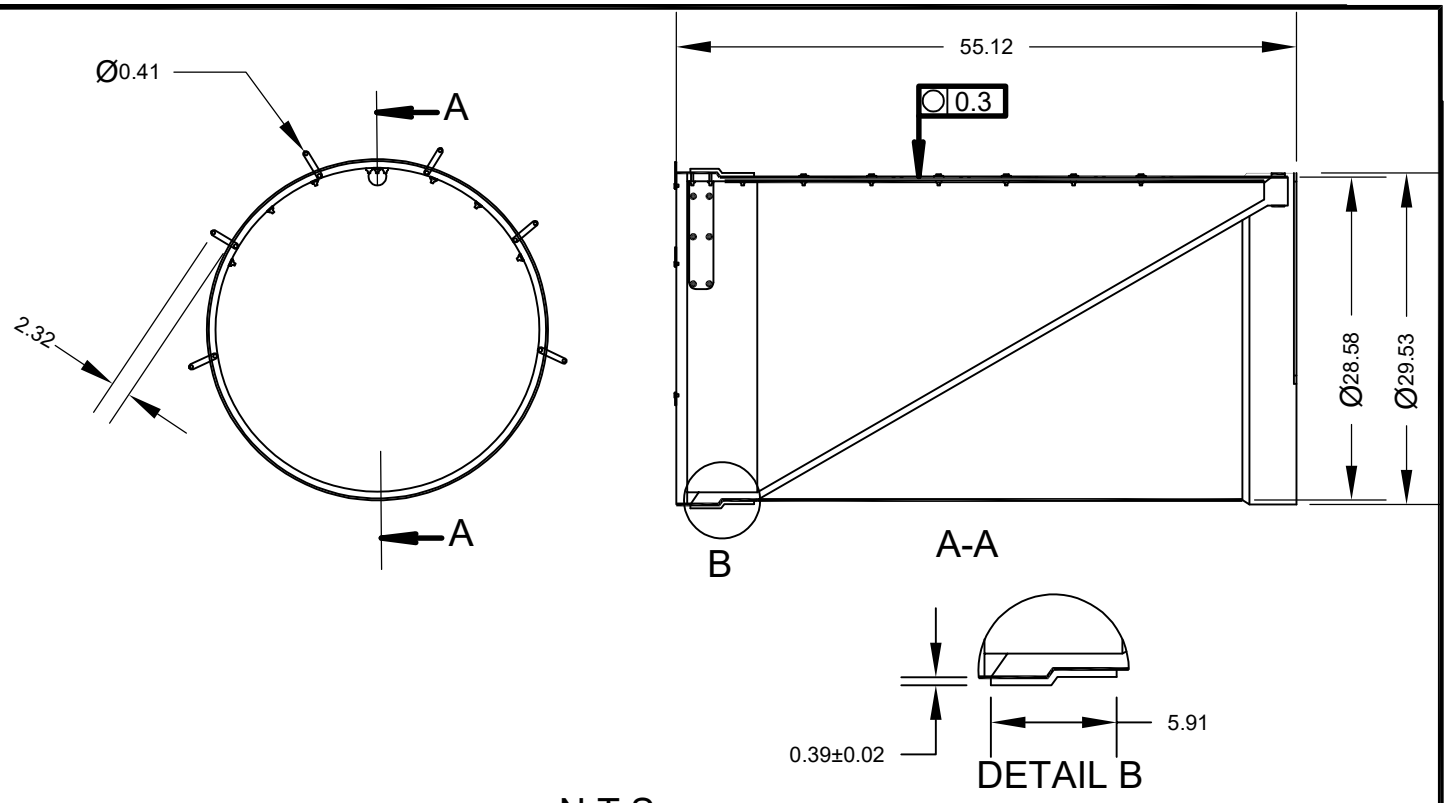
MAILBOX SHALL BE LOCATED NEAR THE DRIVEWAY ON THE WIDEST SIDE OF THE FRONTAGE

CITY of DELRAY BEACH
PUBLIC WORKS DEPARTMENT
434 SOUTH SWINTON AVENUE, DELRAY BEACH, FLORIDA 33444

MAILBOX REPLACEMENT AND
6" SODDED SWALE
DETAIL

DATE: 10-04-2024

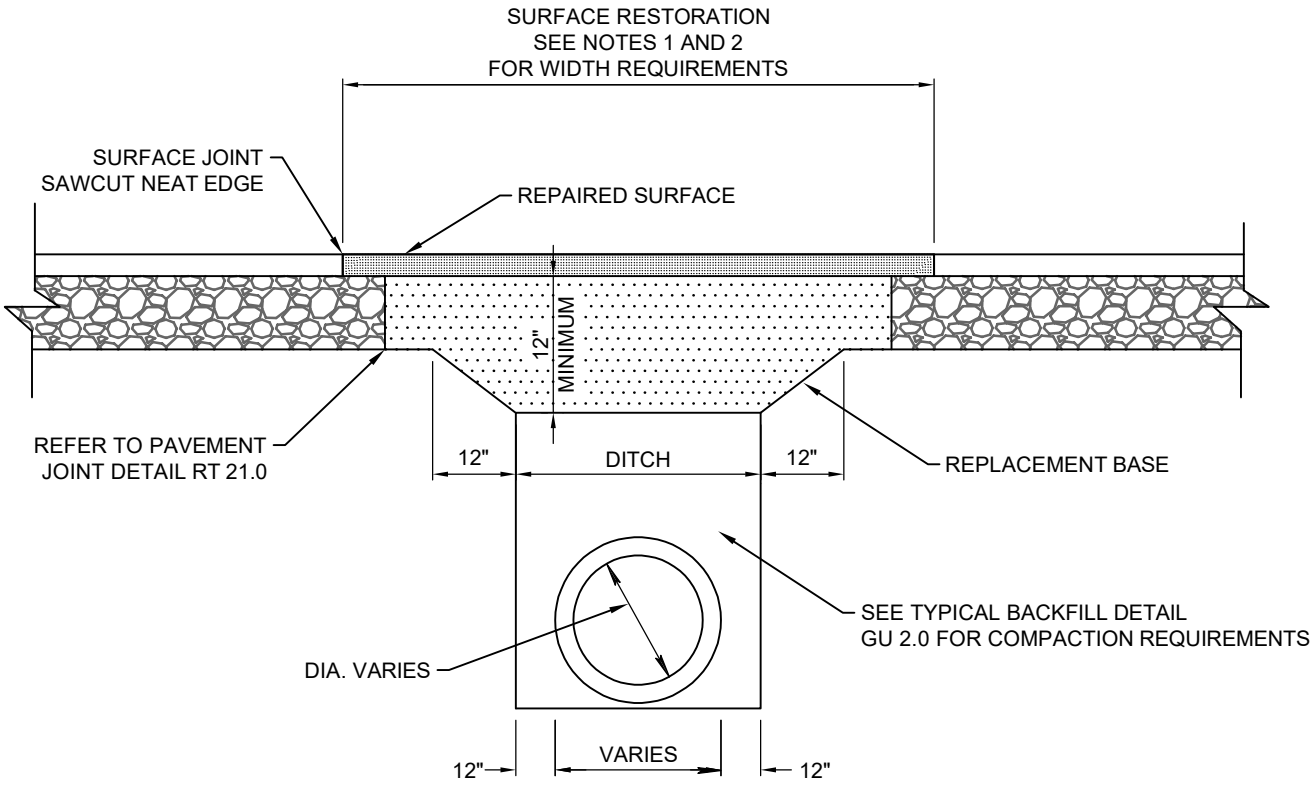
D 15.0



N.T.S.

NOTES:

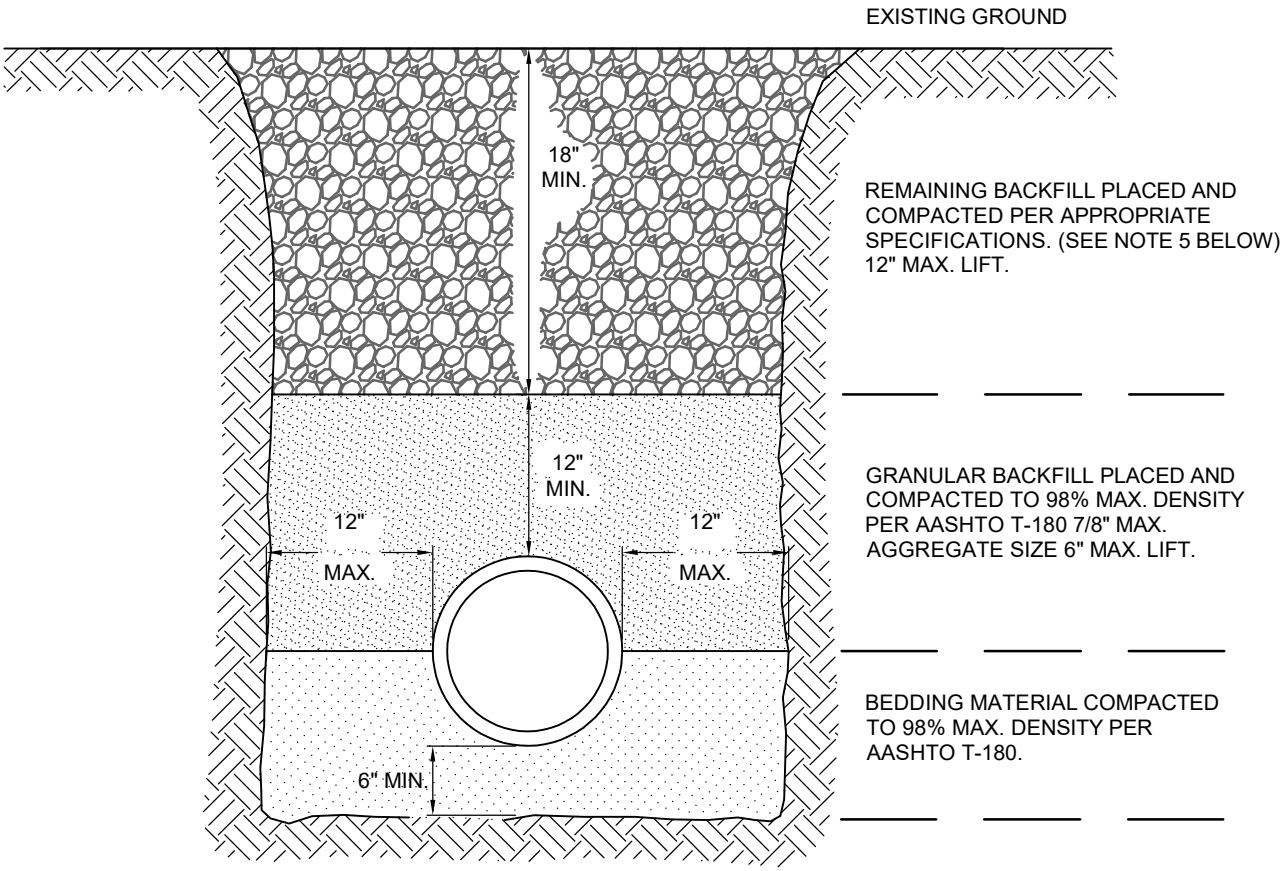
1. INLINE CHECK VALVE SHALL WITHSTAND UP TO 8 METERS / 26' (7.25 PSI) BACK PRESSURE DEPENDING ON THE DIMENSION AND DUROMETER OF THE MEMBRANE.
2. INLINE CHECK VALVE MEMBRANE SHALL BE FULLY CLOSED AND SEALED IN THE NORMAL STATE WHEN NO FLOW OF WATER/LIQUID OCCURS THROUGH THE PIPE.
3. EACH INLINE CHECK VALVE SHALL BE LABELED WITH FLOW DIRECTION AND UNIQUE SERIAL NUMBER.
4. INLINE CHECK VALVE SHALL BE REVERSIBLE ALLOWING INSTALLATION AT INLET OR OUTLET.
5. INLINE CHECK VALVE SHALL NOT ALLOW THE UPSTREAM PIPE TO EMPTY COMPLETELY.
6. THE MEMBRANE SHALL THEORETICALLY ONLY COVER 10% OF THE OPEN AREA OF THE PIPE WHEN FULLY OPEN.
7. INLINE CHECK VALVE SHALL NOT CREATE A STEP INSIDE THE PIPE GREATER THAN 6.35MM (1/4').
8. THE MEMBRANE SHALL WITHSTAND ABRASIVES SUCH AS SAND, DETRITUS AND NORMAL CHEMICALS FOUND IN WASTE WATER AND SHALL BE MADE OF POLYURETHANE (PU) OR SILICONE (MVQ).
9. THE INLINE CHECK VALVE MEMBRANE SHALL CREATE A PULSATING FLOW THROUGH THE VALVE WHICH FLUSHES THE PIPE CLEAN FROM DEBRIS SUCH. AS SAND, MUD, SEDIMENT.



SECTION - WHERE APPLICABLE

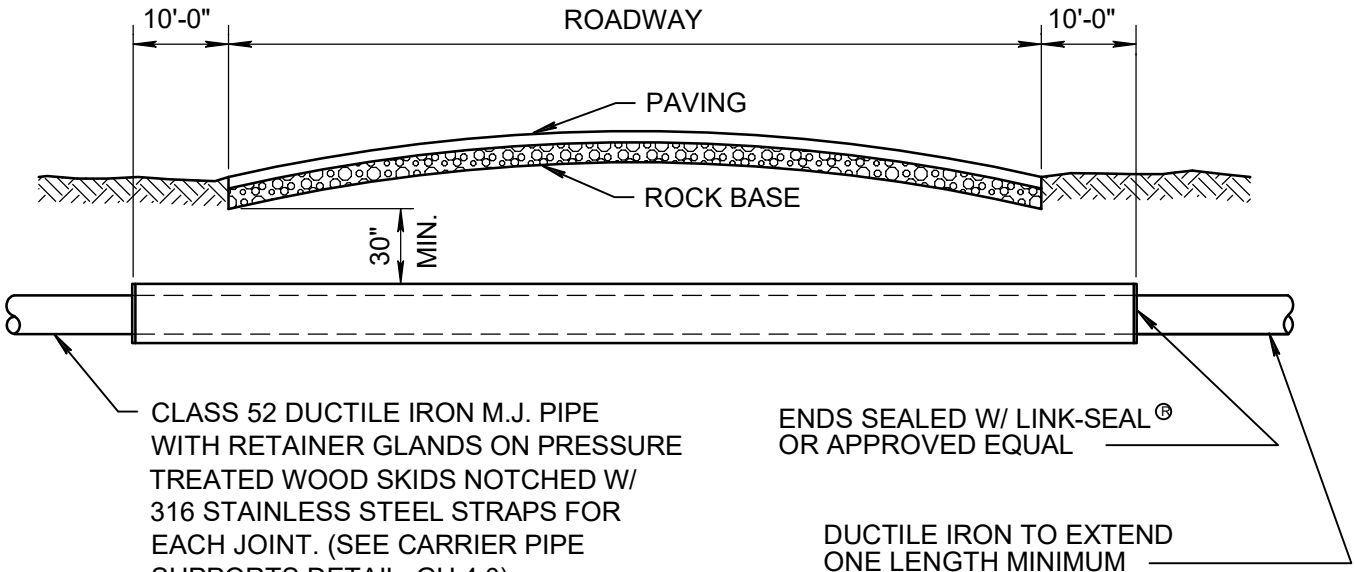
NOTES:

1. FOR COMMERCIAL PROJECTS THAT DAMAGE THE ROADWAY SURFACE THE ROADWAY SHALL BE MILLED AND RESURFACED 50' IN EACH DIRECTION FROM THE DAMAGED AREA. MILLING AND RESURFACING SHALL BE FOR THE FULL LANE WIDTH OF ANY DAMAGED LANE.
2. FOR RESIDENTIAL PROJECTS THAT DAMAGE THE ROADWAY SURFACE THE ROADWAY SHALL BE MILLED AND RESURFACED FOR THE WIDTH OF THE RESIDENTIAL PROPERTY (MIN. 50' REPAIR LENGTH). MILLING AND RESURFACING SHALL BE FOR THE FULL LANE WIDTH OF ANY DAMAGED LANE.
3. MILLING DEPTH SHALL BE 1" AND RESURFACING SHALL BE 1" TYPE S-III ASPHALTIC CONCRETE.
4. BASE MATERIAL SHALL BE PLACED IN TWO LIFTS AND EACH LIFT COMPACTED TO 98% MAXIMUM DENSITY PER AASHTO T-180. MAX LIFT THICKNESS SHALL BE 6".
5. 24" EXCAVATEABLE FLOWABLE FILL MIN. 100 P.S.I. MAY BE USED IN LIEU OF 12" BASE.
6. ASPHALTIC CONCRETE PAVEMENT JOINTS SHALL BE MECHANICALLY SAWED.
7. ALL DISTURBED PAVEMENT MARKINGS SHALL BE RESTORED IN ACCORDANCE WITH CITY STANDARDS.
8. SURFACE MATERIAL SHALL BE S-III ASPHALTIC CONCRETE (FOR TRENCH REPAIR, THICKNESS SHOULD BE TWICE THE THICKNESS OF THE ADJACENT EXISTING ASPHALT).
9. ANY PAVEMENT CUTS SHALL BE COLD PATCHED AT THE END OF EACH WORKING DAY TO FACILITATE UNHINDERED TRAFFIC FLOW.

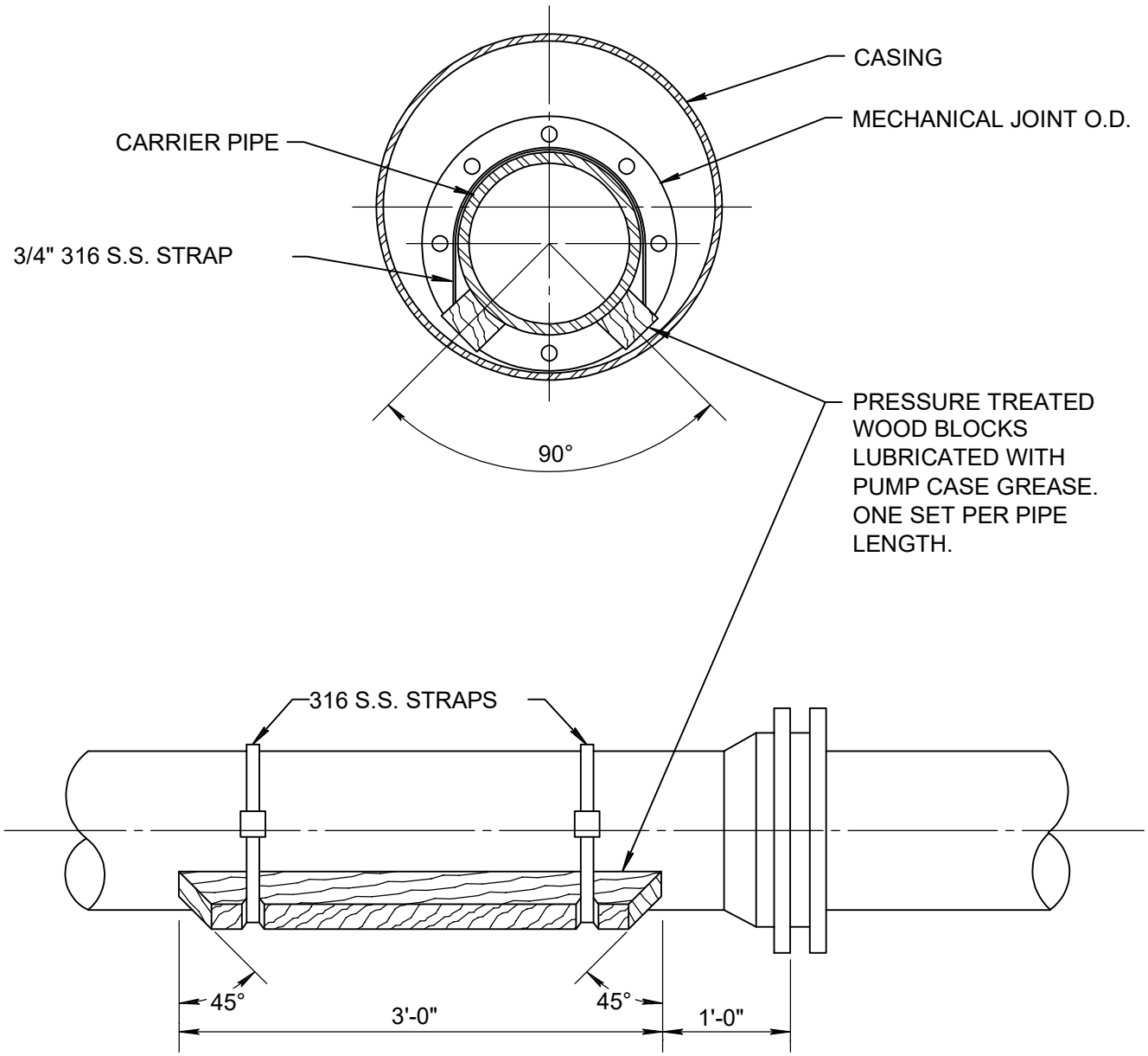


NOTES:

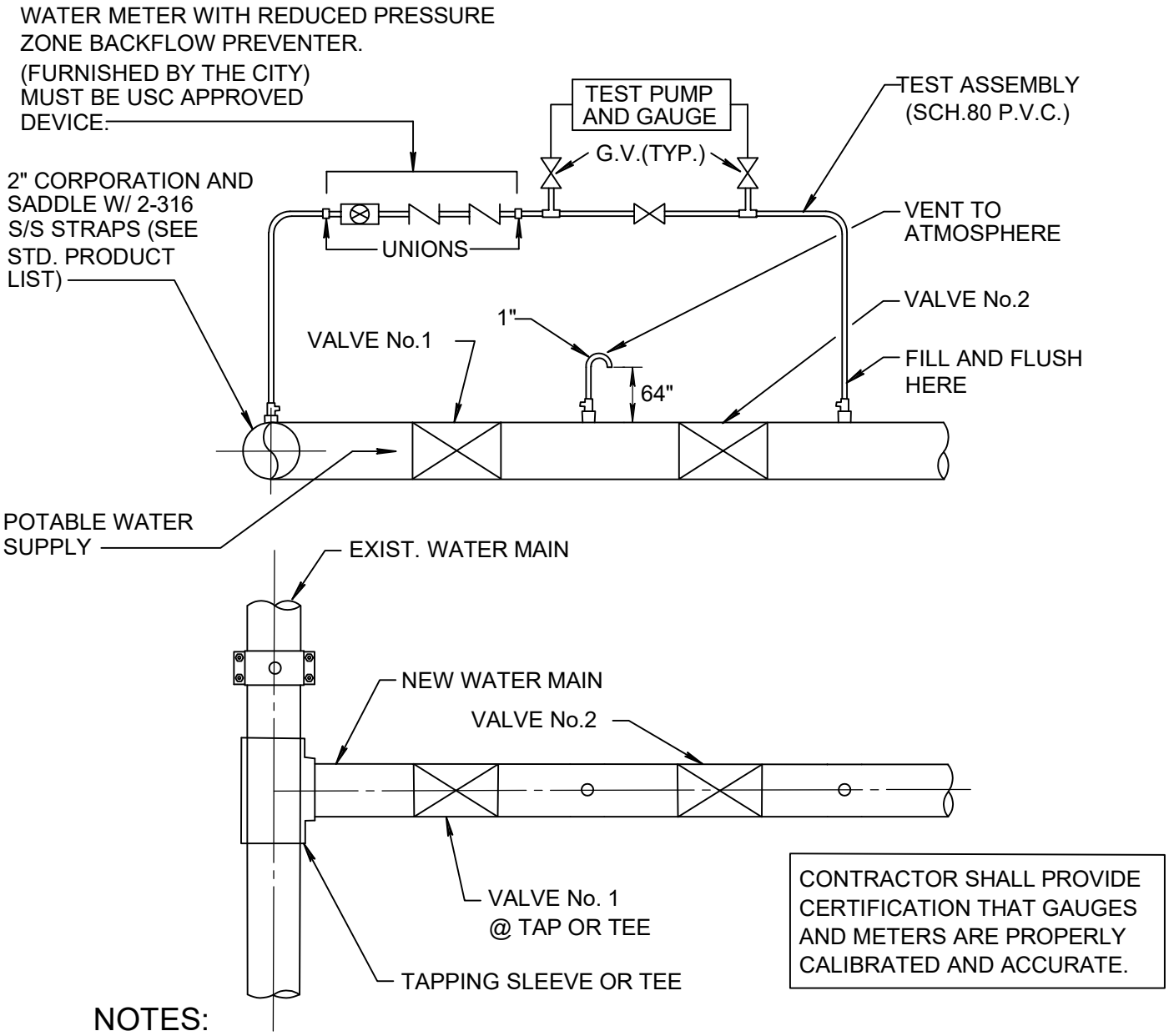
1. UNSUITABLE IN-SITU MATERIALS SUCH AS MUCK, DEBRIS AND LARGE ROCKS SHALL BE REMOVED OFF SITE AND DISPOSED IN A PROPER LANDFILL; BEDDING MATERIAL AND BACKFILL CONSISTING OF WASHED AND GRADED LIMEROCK 3/8" -7/8" SIZING.
2. THE PIPE AND/OR STRUCTURE SHALL BE FULLY SUPPORTED FOR ITS ENTIRE LENGTH WITH
3. APPROPRIATE COMPACTION UNDER THE PIPE HAUNCHES.
4. THE PIPE AND/OR STRUCTURE SHALL BE PLACED IN A DRY TRENCH.
5. BACKFILL SHALL BE FREE OF UNSUITABLE MATERIAL SUCH AS LARGE ROCK, MUCK, AND DEBRIS.
6. COMPACT BACKFILL TO 98% DENSITY UNDER PAVEMENT AND TO 95% DENSITY ELSEWHERE PER (AASHTO T-180)
7. COMPACTION AND DENSITY TESTS SHALL BE COMPLETED DURING BACKFILL OPERATIONS, CONTRACTORS NOT FOLLOWING THIS PROCEDURE, FOR WHATEVER REASONS, SHALL BE REQUIRED TO RE-EXCAVATE THE AREA IN QUESTION, DOWN TO THE BEDDING MATERIAL, THEN BACKFILL FOLLOWING THE ABOVE PROCEDURES.



CARRIER PIPE SIZE	STEEL CASING INSIDE DIAMETER (MIN)	MINIMUM WALL THICKNESS
4"	12"	.188
6"	14"	.250
8"	20"	.250
10"	20"	.250
12"	24"	.250
14"	24"	.250
16"	30"	.250
18"	30"	.250
20"	36"	.250
24"	42"	.312
30"	48"	.375
36"	54"	.450
42"	60"	.500
48"	72"	.500



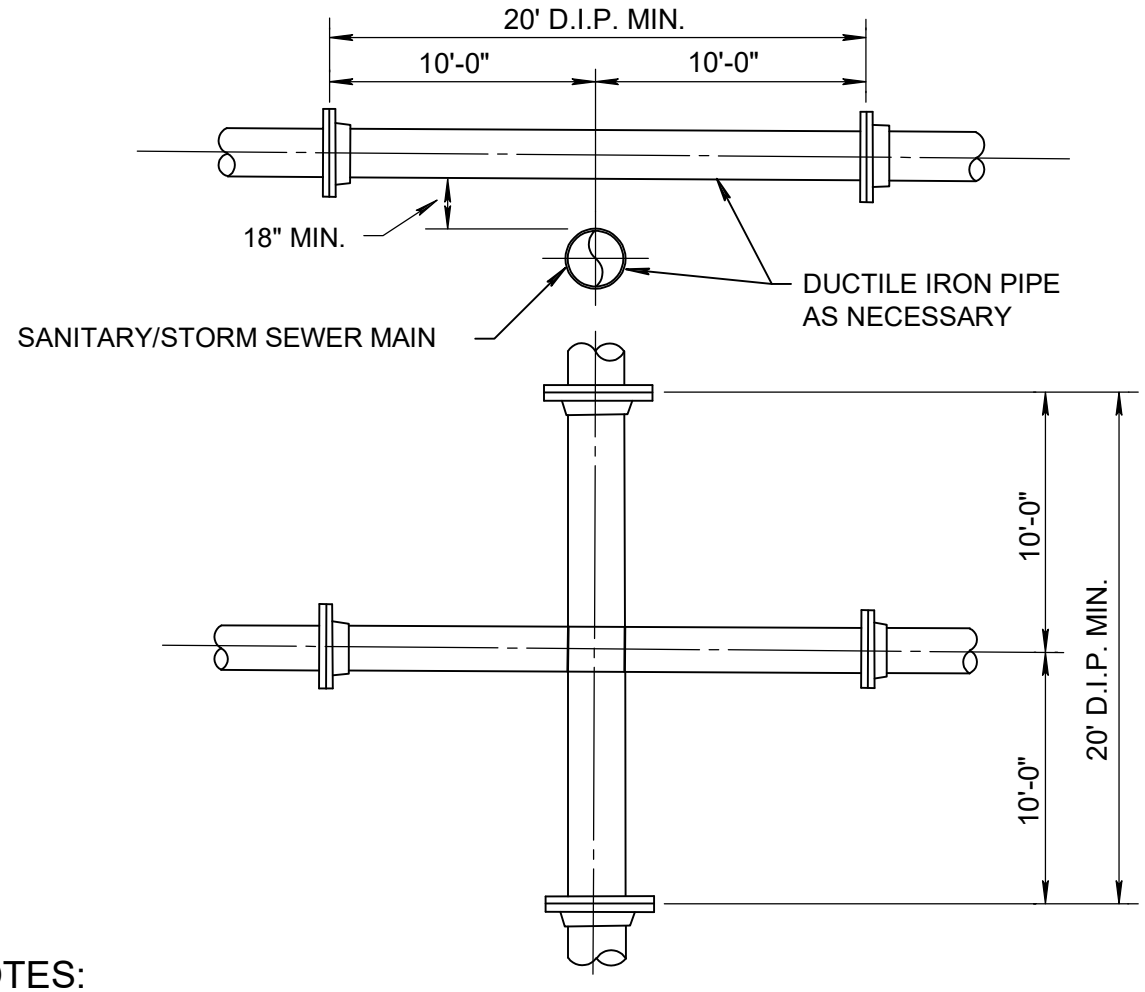
ALTERNATE: MAY USE THE CASCADE CASING SPACER SYSTEM OR EQUAL. SUBMIT SHOP DRAWINGS FOR ENGINEER'S APPROVAL.



CONTRACTOR SHALL PROVIDE CERTIFICATION THAT GAUGES AND METERS ARE PROPERLY CALIBRATED AND ACCURATE.

NOTES:

1. BOTH VALVES SHALL BE KEPT CLOSED UNTIL FILLING, FLUSHING, AND BACTERIOLOGICAL TESTING IS COMPLETED AND APPROVED.
2. GAUGE AND RISER TO BE REMOVED AFTER PRESSURE TEST.
3. CITY SHALL BE NOTIFIED BEFORE FILLING AND FLUSHING.
4. AFTER RELEASE FROM THE HEALTH DEPARTMENT, BOTH VALVES TO BE LEFT OPEN WITH VALVE BOX INSTALLED ON BOTH VALVES.
5. PRESSURE TEST PUMP MAY CONNECT TO SERVICE LINE, FIRE HYDRANTS OR BLOWOFF. NO EXTRA TAPS ARE PERMITTED SOLELY FOR TESTING PURPOSES UNLESS PRECEEDING ARE NOT PRESENT IN TEST SECTION.
6. TAPPING SADDLE OR SLEEVE (PER CURRENT CITY PRODUCT LIST) IS REQUIRED ON EXISTING MAIN.
7. SETUP FOR ALL DOUBLE VALVE CONNECTIONS TO INCLUDE ATMOSPHERE VENTS AS SHOWN ABOVE.
8. OUTLET ON VENT TO ATMOSPHERE A MINIMUM 24" ABOVE EXISTING GRADE.



NOTES:

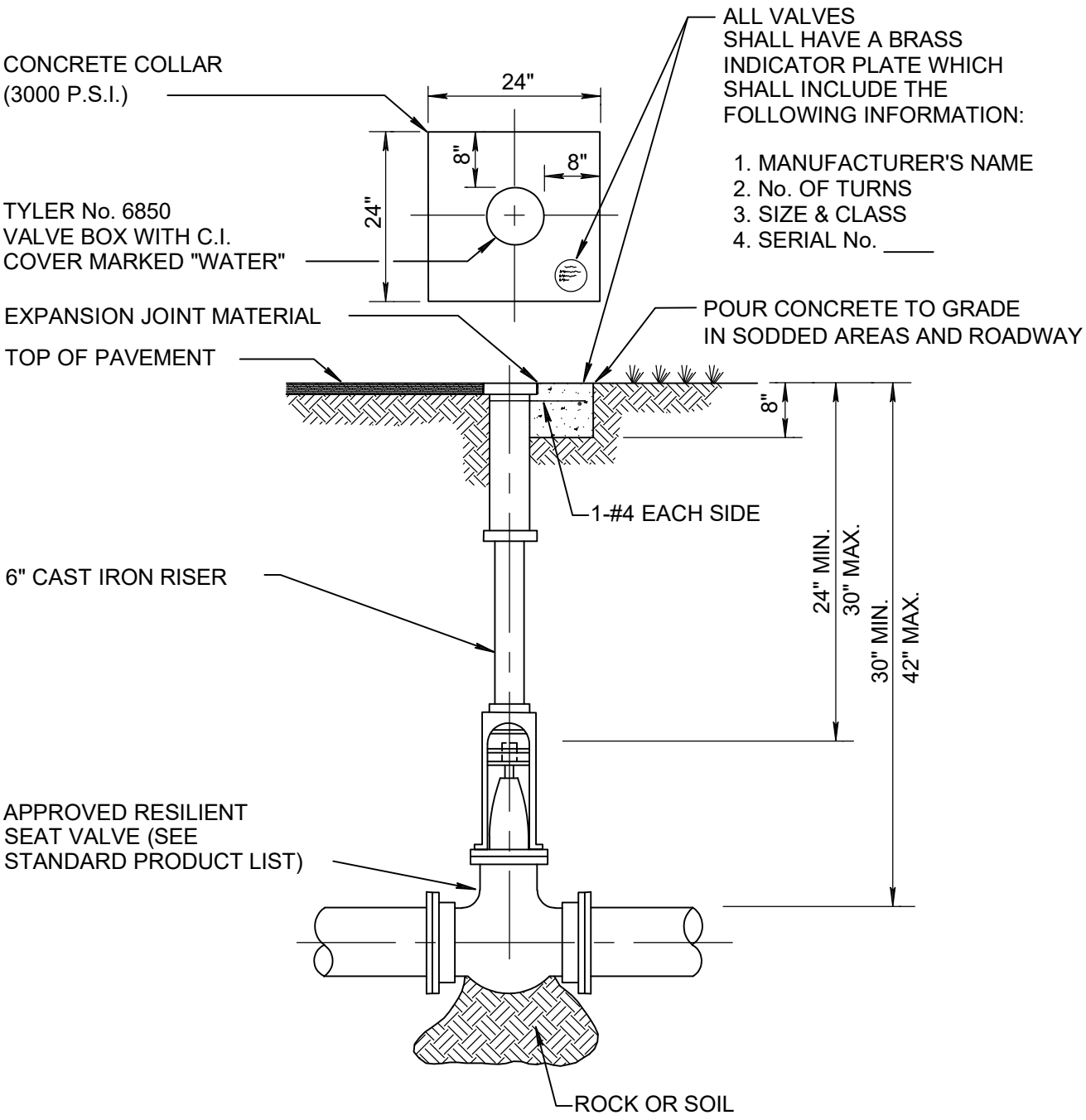
1. STORM AND SANITARY SEWERS CROSSING UNDER WATER MAINS SHALL BE LAID TO PROVIDE A MINIMUM VERTICAL DISTANCE OF 18 INCHES BETWEEN THE INVERT OF THE UPPER PIPE AND THE CROWN OF THE LOWER PIPE. WHERE THIS MINIMUM SEPARATION CANNOT BE MAINTAINED. THE CROSSING SHALL BE ARRANGED SO THAT THE SEWER PIPE JOINTS AND WATER MAIN JOINTS ARE EQUIDISTANT FROM POINT OF CROSSING WITH NO LESS THAN (10) FEET BETWEEN ANY TWO JOINTS AND BOTH PIPES SHALL BE D.I.P., AND THE MINIMUM VERTICAL SEPARATION SHALL BE 6 INCHES. WHERE THERE IS NO ALTERNATIVE TO SEWER PIPES CROSSING OVER A WATER MAIN, THE CRITERIA FOR MINIMUM 18" VERTICAL SEPARATION BETWEEN LINES AND JOINT ARRANGEMENT, AS STARTED ABOVE, SHALL BE REQUIRED AND BOTH PIPES SHALL BE CLASS 350 D.I.P. IRRESPECTIVE OF SEPARATION. D.I.P. IS NOT REQUIRED FOR STORM SEWERS.

2. MAINTAIN (10) FEET HORIZONTAL DISTANCE BETWEEN WATER MAIN AND STORM OR SANITARY SEWER MAIN, AS A MINIMUM.

3. FORCE MAIN CROSSING WATER MAIN SHALL BE LAID TO PROVIDE A MINIMUM VERTICAL DISTANCE OF 18 INCHES BETWEEN THE OUTSIDE OF THE FORCE MAIN AND THE OUTSIDE OF THE WATER MAIN WITH WATER MAIN CROSSING OVER FORCE MAIN.

4. SEWER SERVICE LATERALS SHALL CROSS UNDER WATERMAINS WITH A MINIMUM VERTICAL SEPARATION OF EIGHTEEN (18) INCHES. IF EIGHTEEN (18) INCHES VERTICAL SEPARATION CANNOT BE MAINTAINED, THEN THE WATERMAIN SHALL BE D.I.P. AND THE SANITARY LATERAL C-900 SDR18 OR BETTER AND THE MINIMUM SEPARATION SHALL BE SIX (6) INCHES.

5. WHEN IT IS NOT POSSIBLE FOR THE WATER MAIN TO CROSS OVER THE SEWER SERVICE LATERAL A MINIMUM VERTICAL SEPARATION OF AT LEAST TWELVE (12) INCHES MUST BE MAINTAINED. THE WATERMAIN SHALL BE D.I.P. AND THE SEWER LATERAL SHALL BE C-900 SDR-18 OR BETTER.



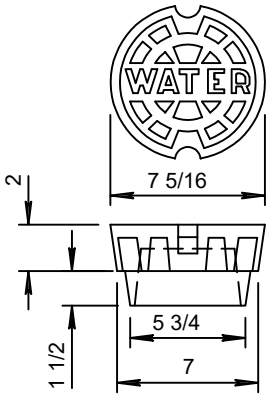
NOTES:

1. WHEN VALVE IS DEEPER THAN 30" AN EXTENSION WITH UNIVERSAL JOINT SHALL BE REQUIRED TO BRING OPERATING NUT 24"-30" BELOW FINISHED GRADE EXTENSION BOLTS & NUTS SHALL BE 316 STAINLESS STEEL. A 316 STAINLESS STEEL CENTERING PLATE SHALL ALSO BE REQUIRED.

2. AT DEAD END OR WHERE MAIN LINES CHANGE DIRECTION, VALVES SHALL BE RESTRAINED USING MECHANICAL JOINT RESTRAINTS, TIE RODS, OR OTHER RESTRAINT APPROVED BY UTILITIES DEPARTMENT (NO THRUST BLOCKS ALLOWED).

ITEM	BOX COMPLETE EXTENSION IN INCHES	WT.	TOP SECTION W/LID LENGTH	WT.	BOTTOM LENGTH	WT.	PIECES PER PKG.
461-S	19-22	60	10	35	15	25	..
462-S	27-32	70	10	35	24	35	..
562-S	27-37	80	16	45	24	35	20
563-S	33-43	85	16	45	30	40	20
564-S	39-50	90	16	45	36	45	20
662-S	36-52	105	26	65	30	40	20
664-S	39-60	110	26	65	36	45	20
666-S	51-71	135	26	65	**48	70	20
668-S	62-82	145	26	65	**60	80	20

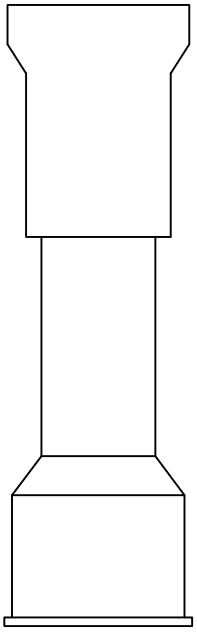
**MAY BE FURNISHED IN TWO PIECES SCREWED TOGETHER TO MAKE THE LENGTH REQUIRED.



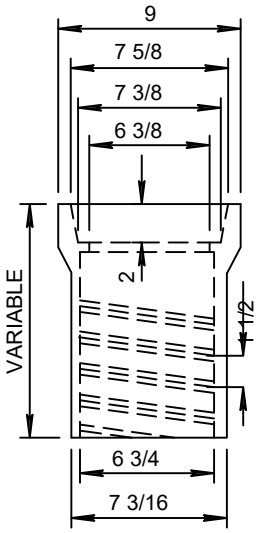
5 1/4 DROP LID

VARIABLE SKIRT DEPTHS

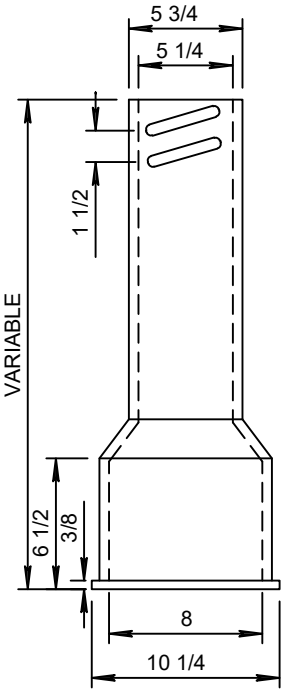
SKIRT	WT.
1/2	13
1	13
2	13



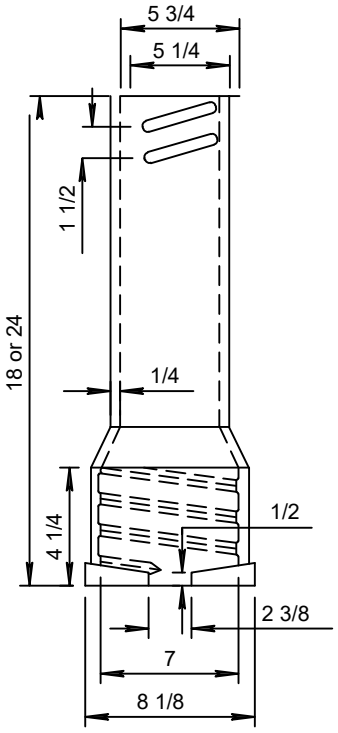
BOX COMPLETE



TOP

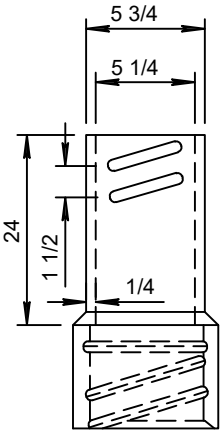


BOTTOM



58 AND 59 EXTENSION

ITEM	HEIGHT INCREASE	WT.
58	14	25
59	18	30



60 EXTENSION

ITEM	HEIGHT INCREASE	WT.
60	24	35

THESE EXTENSIONS ALSO FIT SERIES 6860 THREE-PIECE VALVE BOXES.

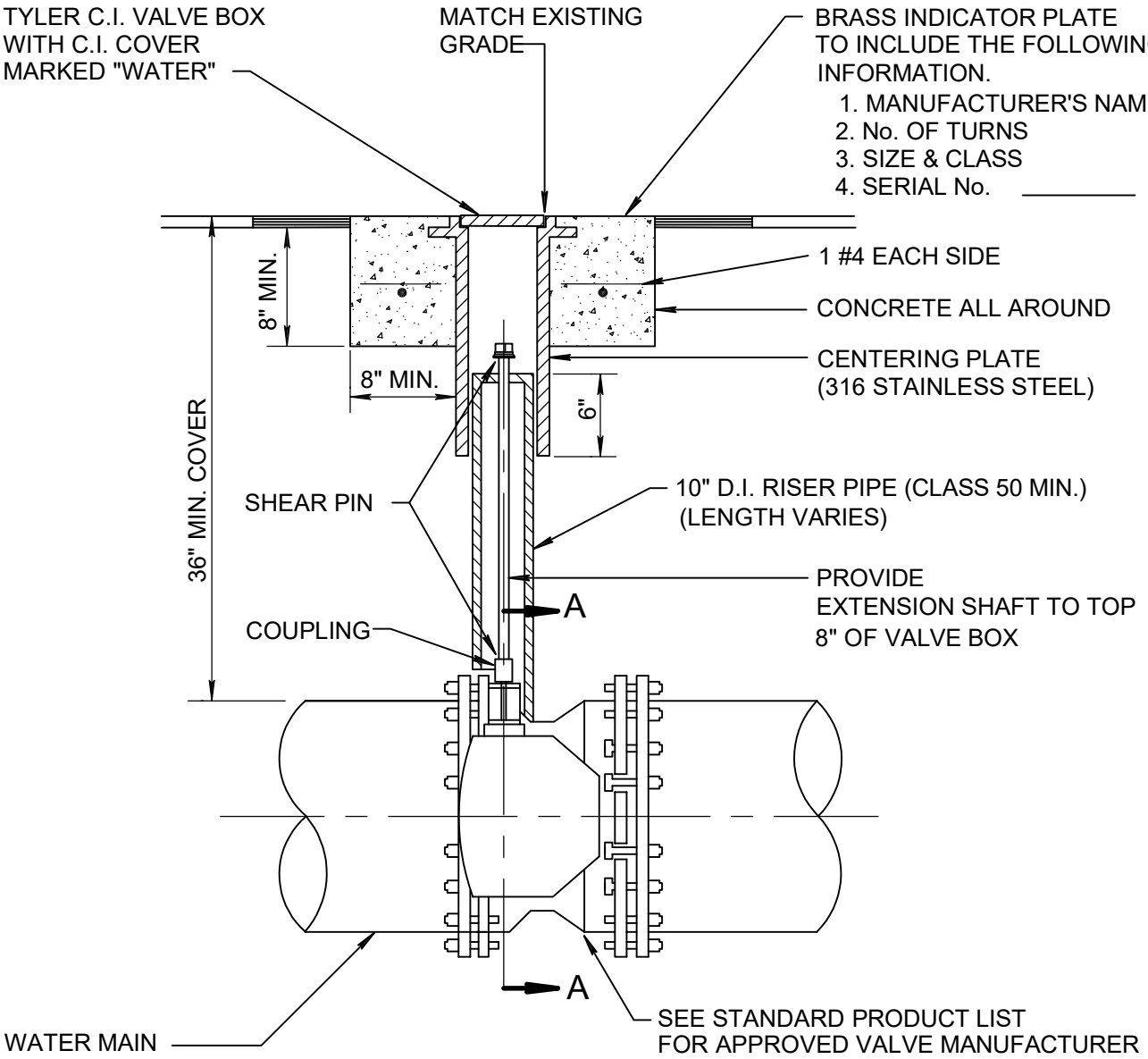
NOTE: LOCKING LIDS WILL NOT BE ACCEPTED.

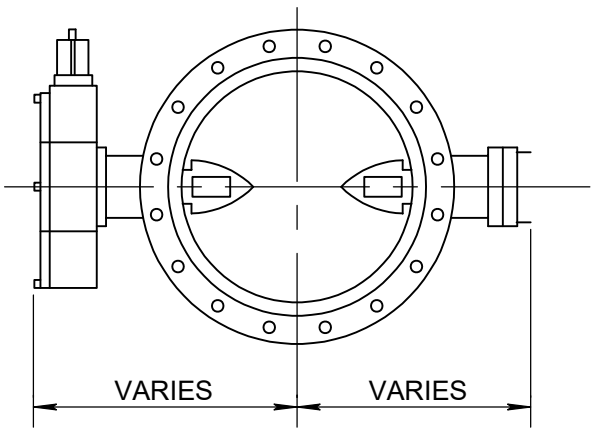
CITY of DELRAY BEACH
PUBLIC WORKS DEPARTMENT
434 SOUTH SWINTON AVENUE, DELRAY BEACH, FLORIDA 33444

CAST IRON VALVE BOXES
TWO PIECE

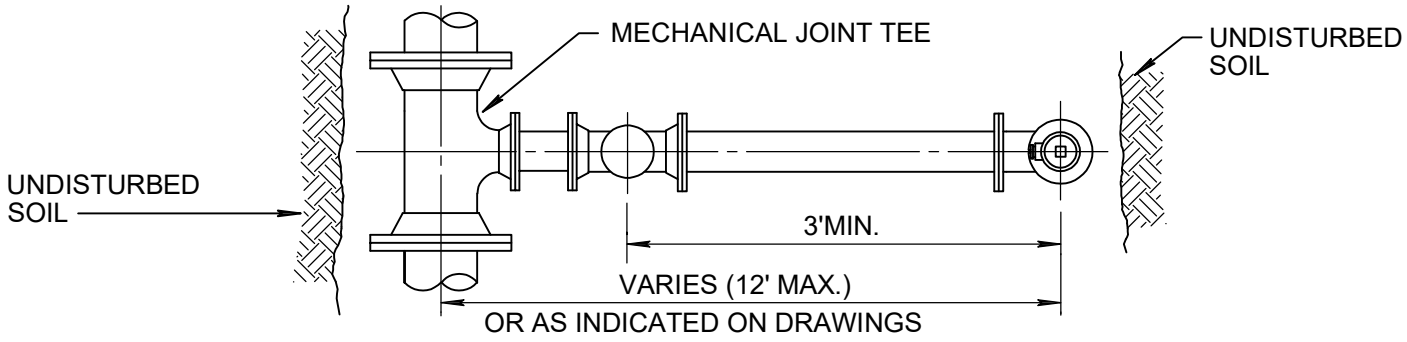
DATE: 10-04-2024

PW 4.0

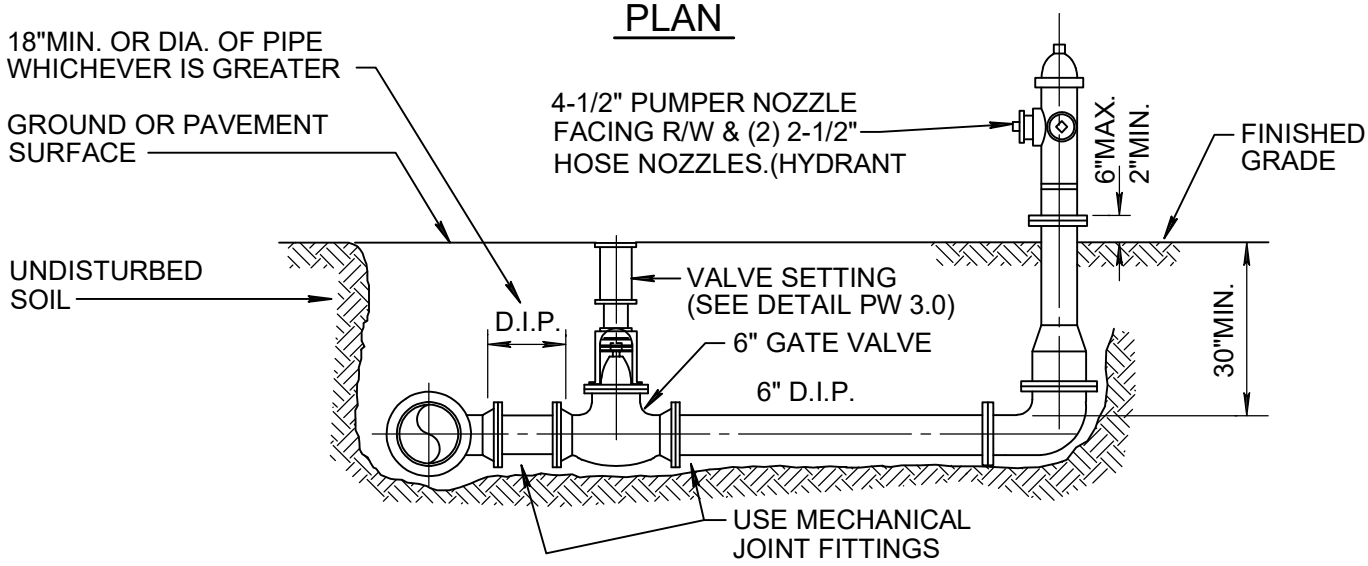

TYLER C.I. VALVE BOX
WITH C.I. COVER
MARKED "WATER"
MATCH EXISTING
GRADE
BRASS INDICATOR PLATE
TO INCLUDE THE FOLLOWING
INFORMATION.
1. MANUFACTURER'S NAME
2. No. OF TURNS
3. SIZE & CLASS
4. SERIAL No. _____
1 #4 EACH SIDE
CONCRETE ALL AROUND
CENTERING PLATE
(316 STAINLESS STEEL)
8" MIN.
8" MIN.
6"
36" MIN. COVER
SHEAR PIN
10" D.I. RISER PIPE (CLASS 50 MIN.)
(LENGTH VARIES)
PROVIDE
EXTENSION SHAFT TO TOP
8" OF VALVE BOX
A
COUPLING
A
WATER MAIN
SEE STANDARD PRODUCT LIST
FOR APPROVED VALVE MANUFACTURER


VARIES
VARIES

SECTION A-A



PLAN



ELEV.

NOTES:

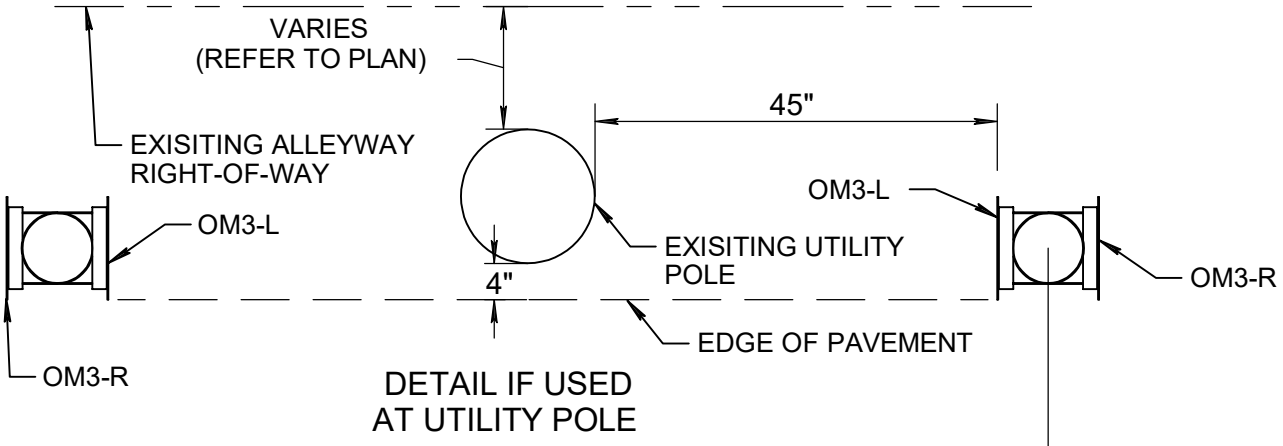
1. HYDRANT SHALL BE INSTALLED PLUMB AND TRUE IN UNOBSTRUCTED LOCATION. (7.5' CLEARANCE ON THREE SIDES, 4' CLEARANCE AT REAR, WITH 3' ACCESS LANE)
2. NO BARREL EXTENSION SHALL BE PERMITTED.
3. VALVE SHALL BE PLACED ADJACENT TO MAIN.
4. ANCHOR TEES AND FITTINGS ARE PERMITTED.
5. HYDRANT SHALL BE MUELLER SUPER CENTURION, AA423 $5\frac{1}{4}$" WITH TRAFFIC BREAKAWAY FLANGE AND $5\frac{1}{4}$" VALVE.
6. HYDRANTS SHALL NOT ENCROACH IN SIDEWALKS, ROADWAYS, OR BIKE PATHS.
7. ON RUNS LONGER THAN 20 FEET A SECOND VALVE IS REQUIRED AT THE HYDRANT.
8. ALL HYDRANT INSTALLATION SHALL BE IN ACCORDANCE WITH CITY OF DELRAY BEACH FIRE PREVENTION CODE SEC. 96.05.
9. IN CERTAIN SITUATIONS, PROTECTIVE BOLLARDS MAY BE REQUIRED AS DIRECTED BY THE ENGINEERING DEPT. (SEE BOLLARD DETAIL PW 7.0)
10. FIRE HYDRANTS INSTALLED BUT NOT YET IN SERVICE SHALL BE COVERED WITH A BURLAP, OR PLASTIC SACK, OR HAVE OUT OF SERVICE RING IN PLACE.
11. ALL HYDRANT LEADS GREATER THAN 20-FEET MUST HAVE AUTOMATIC FLUSHER INSTALLED AT HYDRANT END (KUPFERLE #9400-WC STANDARD).
12. REMOVE CHAINS FROM HYDRANT AND PAINT. COORDINATE WITH UTILITY STAFF FOR CORRECT COLORS.
13. NO THRUST BLOCKS SHALL BE PERMITTED.

CITY of DELRAY BEACH
PUBLIC WORKS DEPARTMENT
434 SOUTH SWINTON AVENUE, DELRAY BEACH, FLORIDA 33444

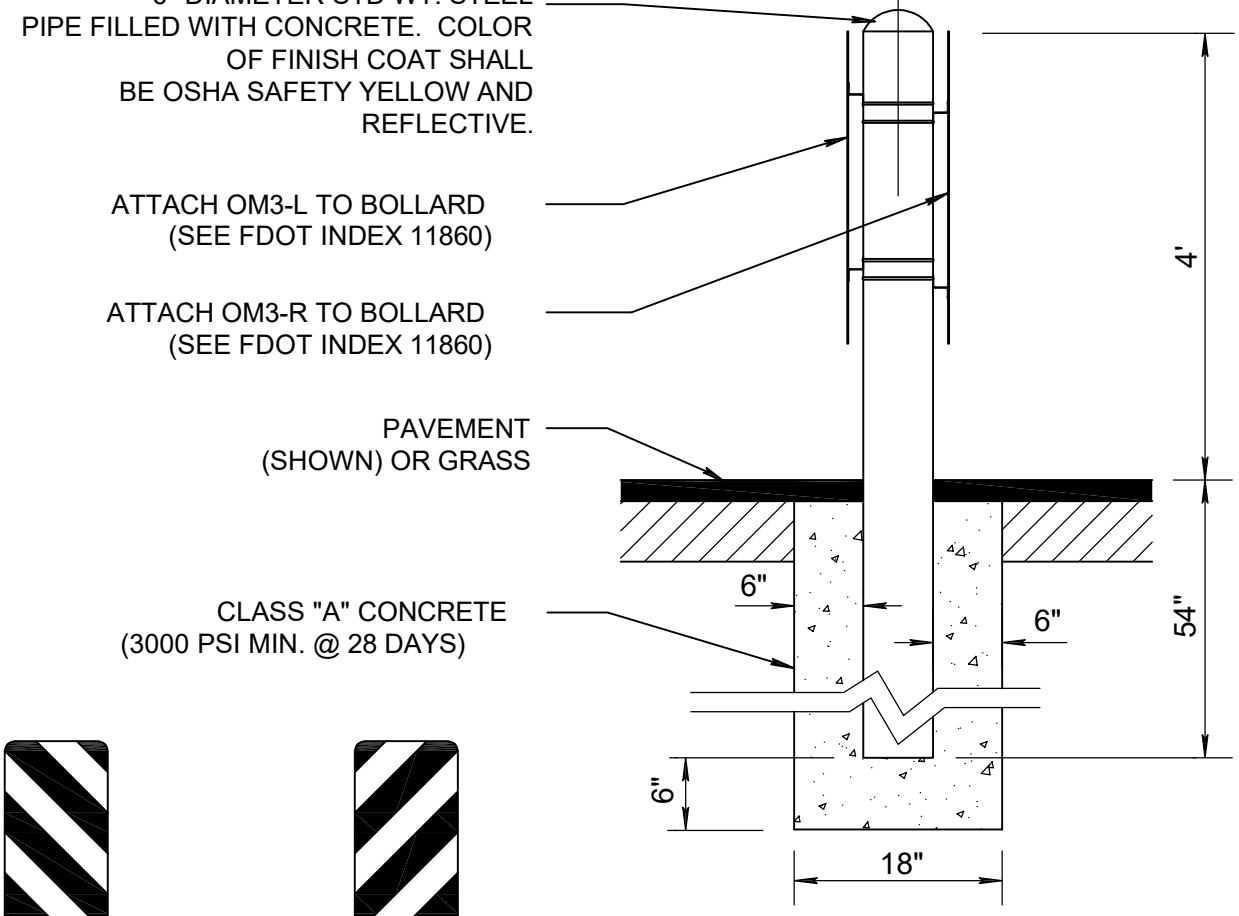
TYPICAL FIRE HYDRANT INSTALLATION

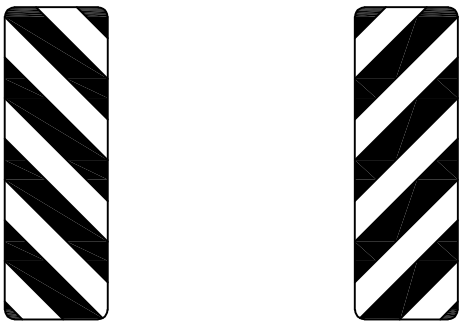
DATE: 10-04-2024

PW 6.0



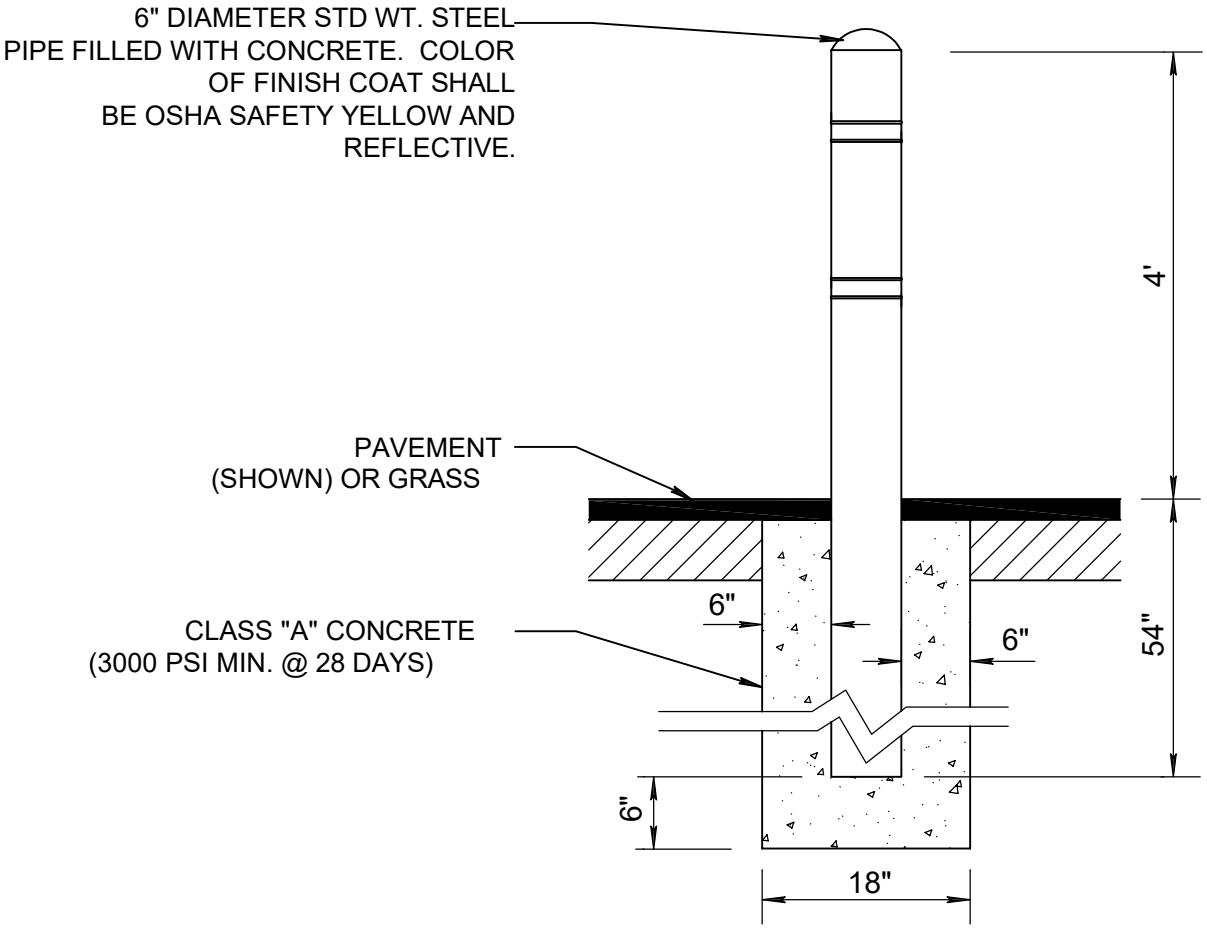
DETAIL IF USED
AT UTILITY POLE





OM3-L
(36"x12")

OM3-R
(36"x12")

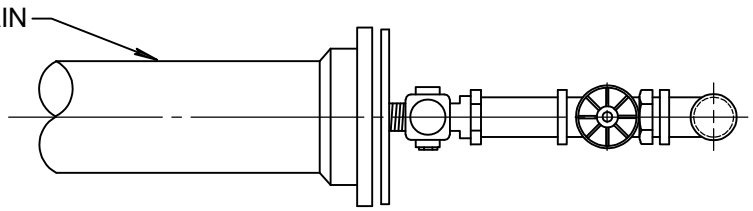


CITY of DELRAY BEACH
PUBLIC WORKS DEPARTMENT
434 SOUTH SWINTON AVENUE, DELRAY BEACH, FLORIDA 33444

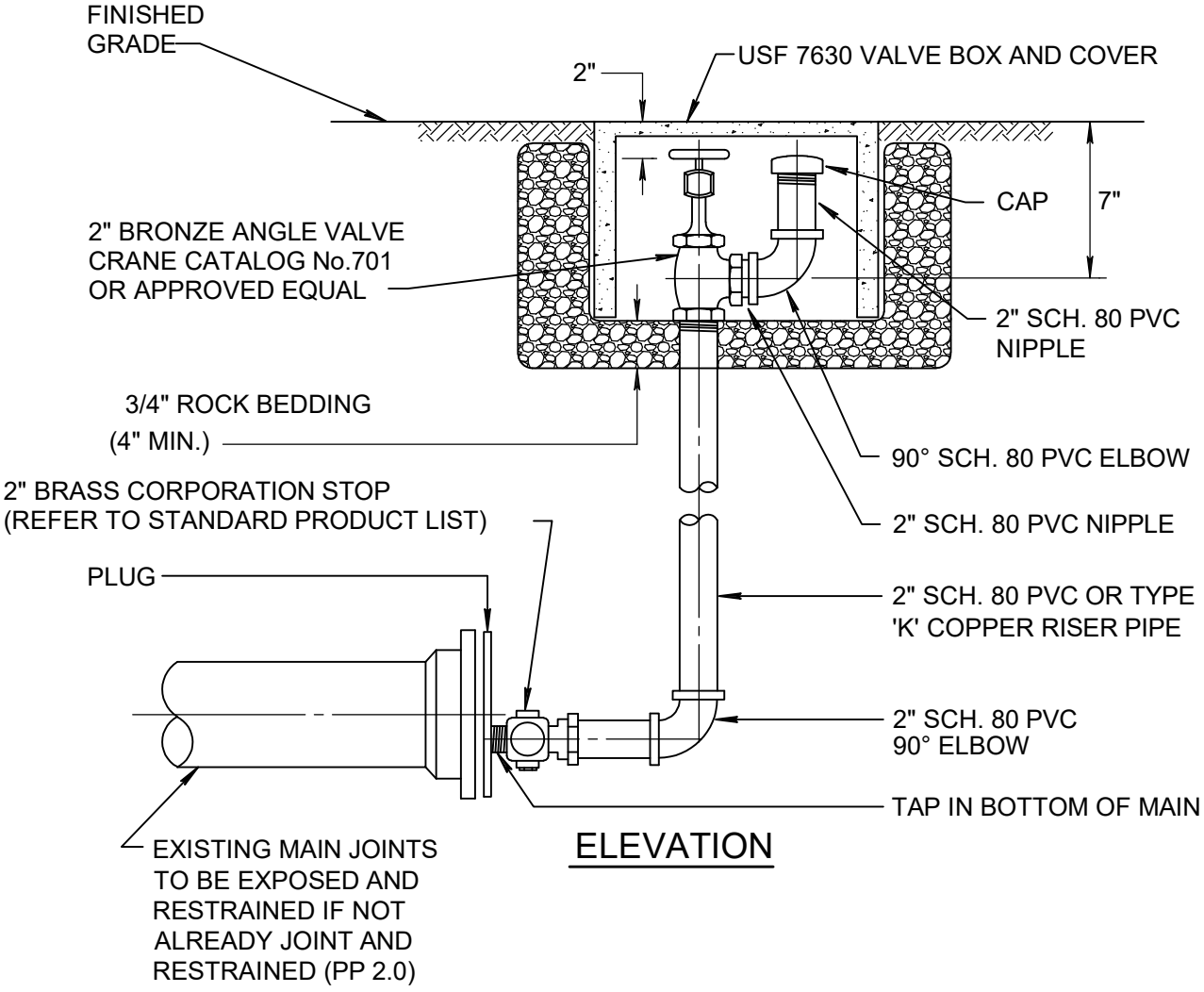
BOLLARD DETAIL

DATE: 10-04-2024

PW 7.1



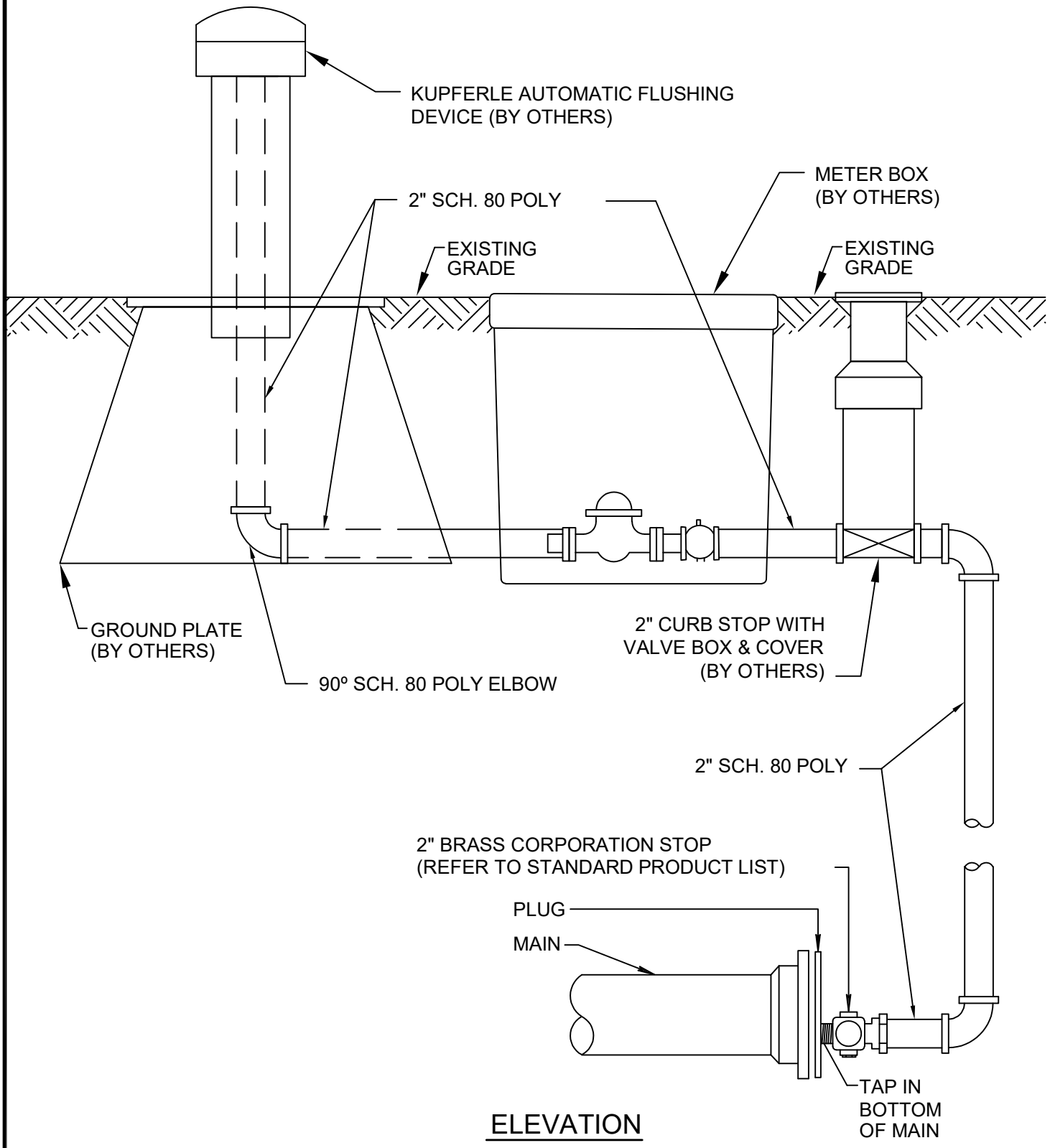
PLAN



ELEVATION

NOTES:

1. GALVANIZED PIPING AND FITTINGS SHALL NOT BE USED.
2. JOINT RESTRAINTS TO BE INSTALLED MIN. TWO JOINTS BEFORE DEAD END.
3. KUPFERLE AUTOMATIC FLUSHING DEVICE IS TO BE USED AT ALL PERMANENT DEAD ENDS. (SEE PW 9.0)



ELEVATION

NOTES:

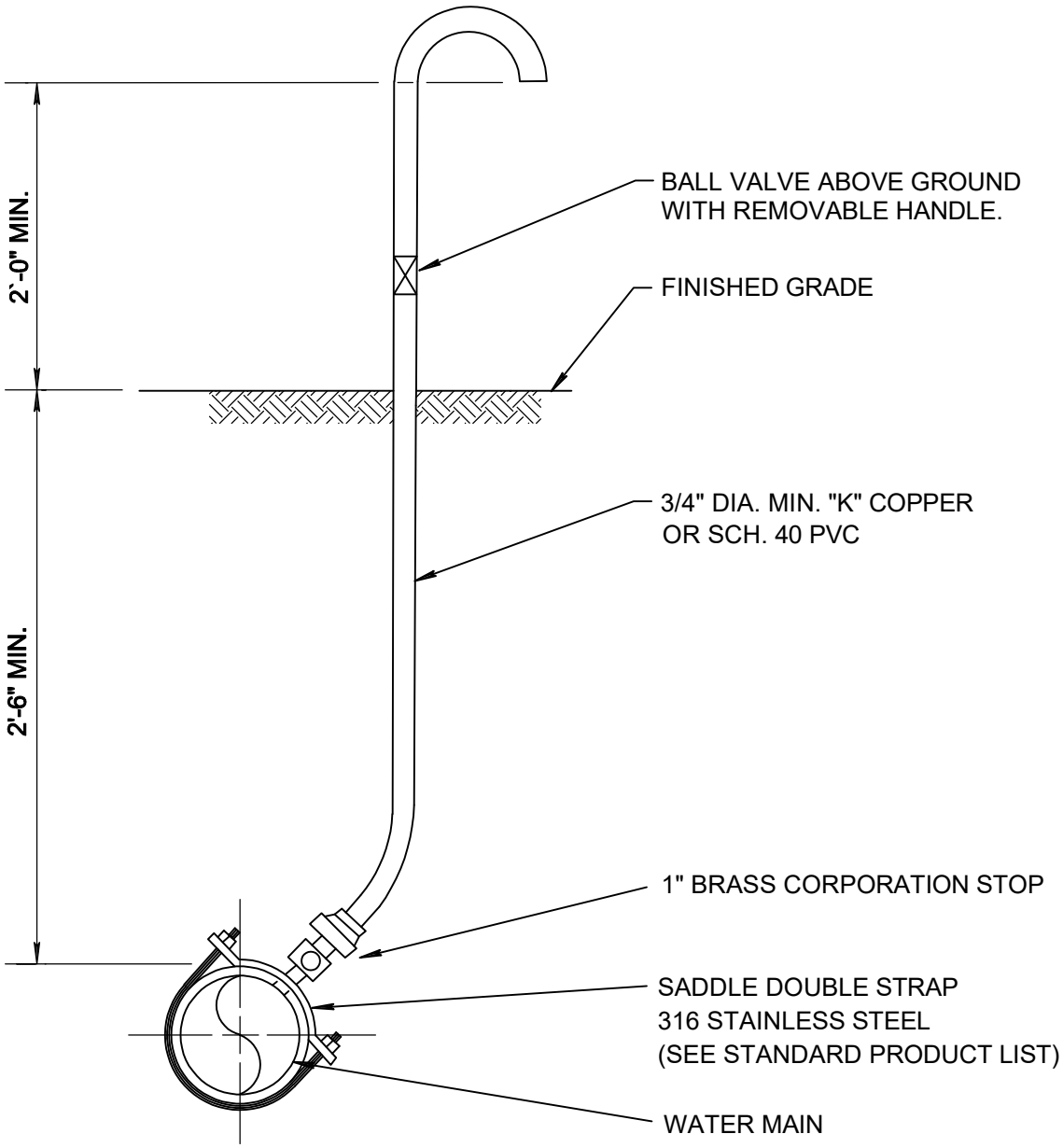
1. GALVANIZED PIPING AND FITTINGS SHALL NOT BE USED.
2. JOINT RESTRAINTS TO BE INSTALLED MINIMUM TWO JOINTS BEFORE DEAD END.
3. KUPERFLE 9400-WC ECLIPSE AUTOMATIC FLUSHING DEVICE IS TO BE USED AT ALL PERMANENT DEAD ENDS.

CITY of DELRAY BEACH
PUBLIC WORKS DEPARTMENT
434 SOUTH SWINTON AVENUE, DELRAY BEACH, FLORIDA 33444

TYPICAL 2" TERMINAL BLOWOFF FOR PERMANENT DEADENDS

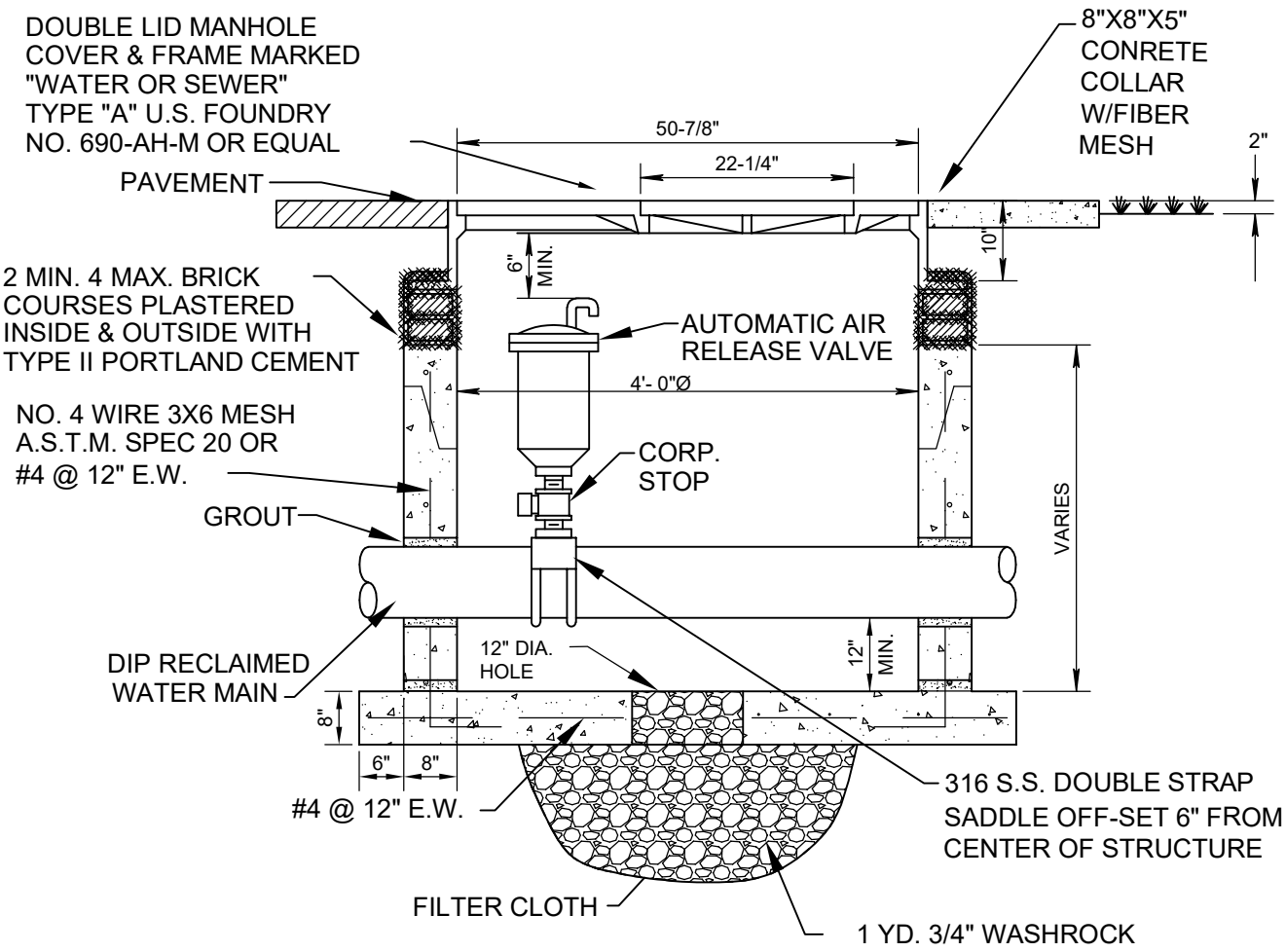
DATE: 10-04-2024

PW 9.0



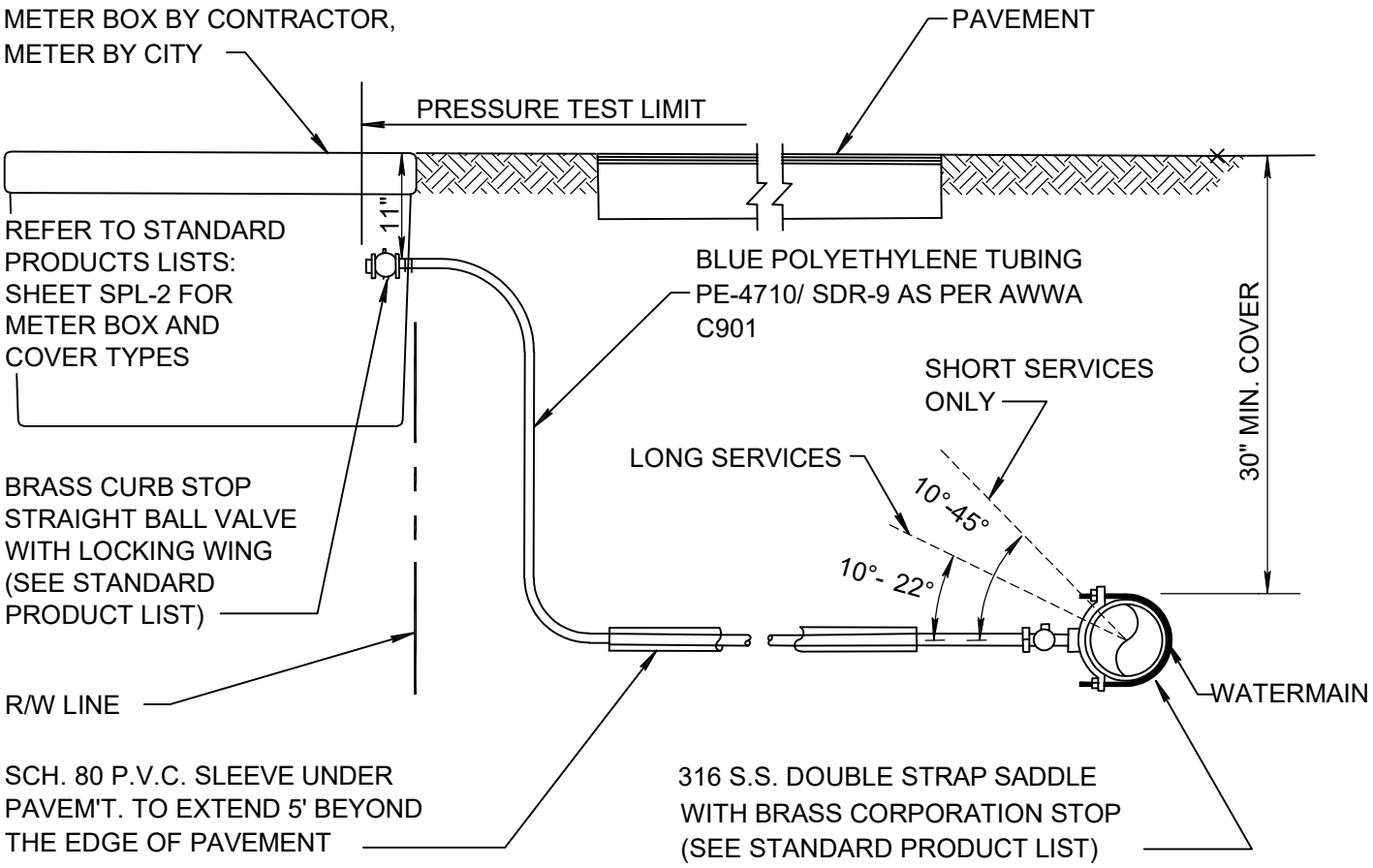
NOTES:

1. SAMPLE POINT SHOULD BE AT SERVICE LINE OR FIRE HYDRANT IF POSSIBLE.
2. IF SAMPLE POINT IS NOT AT SERVICE LINE OR FIRE HYDRANT, CORP. STOP SHALL BE SHUT OFF AT MAIN AND ALL TUBING SHALL BE REMOVED, AND CORP. STOP SHALL HAVE A BRASS PLUG OR CAP INSTALLED AFTER RELEASE OF WATER MAIN BY PALM BEACH COUNTY HEALTH DEPARTMENT.
3. IF AT ALL POSSIBLE SAMPLE POINT SHALL NOT BE LOCATED IN A TRAFFIC AREA.
4. SAMPLE POINTS SHALL KEEP RUNNING UNTIL PALM BEACH COUNTY HEALTH DEPARTMENT RELEASE AND ALL MAIN LINE VALVES ARE OPENED.



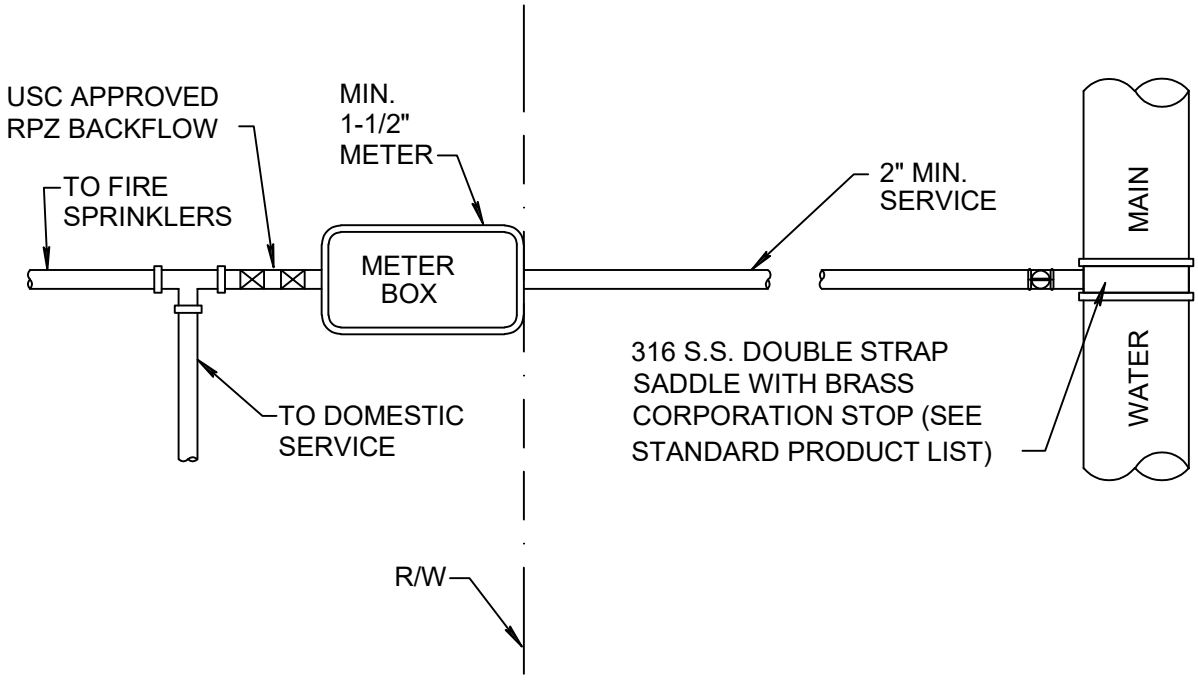
NOTES:

1. PRECAST CONCRETE TYPE # 4000 P.S.I.
2. ALL OPENINGS SHALL BE SEALED WITH A WATERPROOF NON-SHRINKING GROUT.
3. LIFT HOLES ARE PERMITTED.
4. ALL PIPE HOLES SHALL BE PRECAST OR CORE-DRILLED.
5. MANHOLE FABRICATION SHALL BE IN ACCORDANCE WITH A.S.T.M. C-478 LATEST STANDARD.
6. CONCRETE COLLAR REQUIRED WHEN MANHOLE IS OUTSIDE PAVEMENT, SEE DETAIL.
7. AIR RELEASE VALVE SHALL BE TYPE AND SIZE APPROPRIATE FOR SERVICE INTENDED.
8. AIR RELEASE VALVE AND PIPING TO BE IDENTIFIED AS "WATER or SEWER".
9. TWO PIECE MANHOLE WITH JOINT AT BASE IS PERMITTED. NO PIPE JOINTS INSIDE MANHOLE.
10. DUCTILE IRON PIPE IS REQUIRED THROUGH THE VAULT.
11. THREADED AREAS OF CORPORATION STOP SHALL BE COMPLETELY SPIRAL WRAPPED WITH TWO WRAPS OF TEFLON TAPE.
12. CORPORATION STOP REFER TO STANDARD PRODUCT LIST.



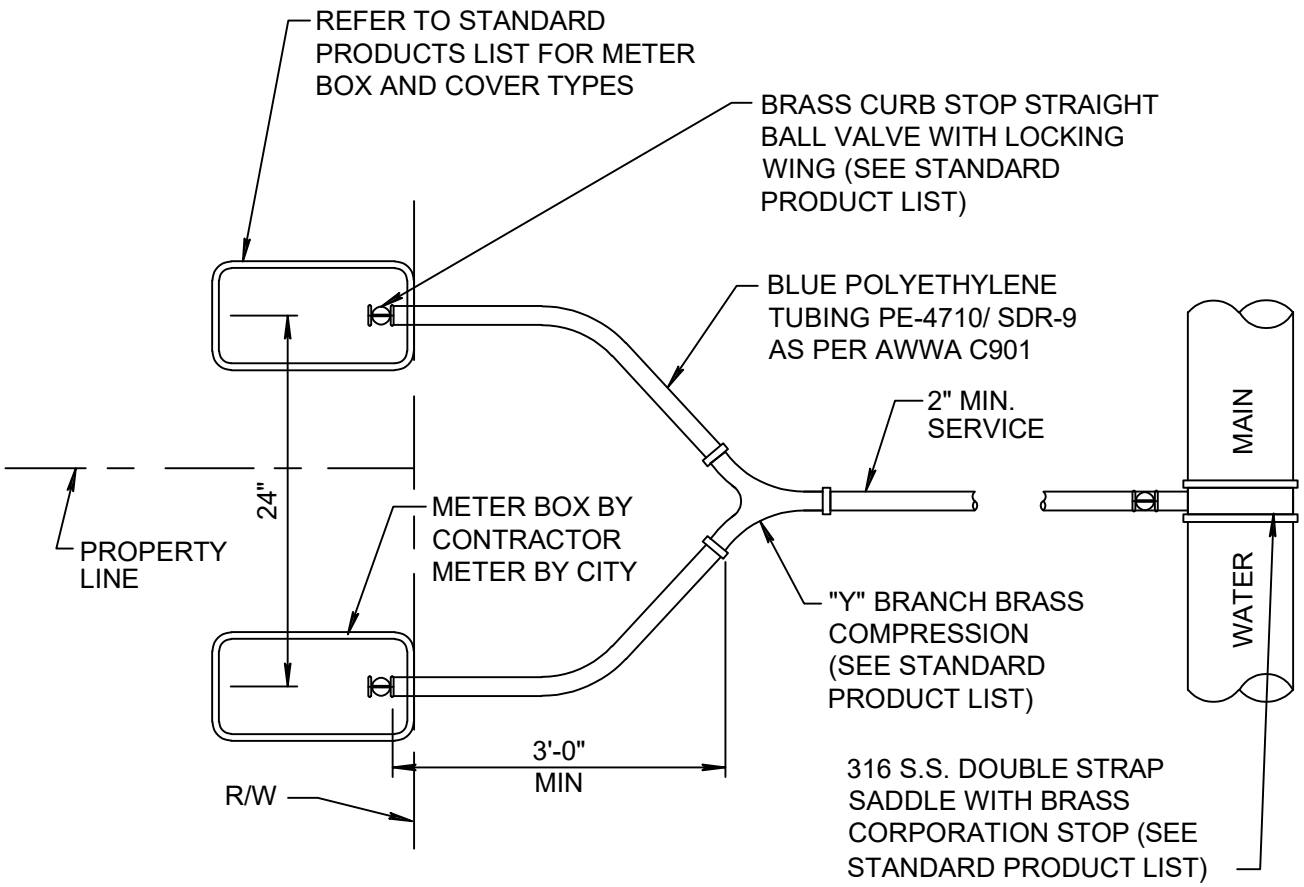
NOTES:

1. SUCCESSIVE TAPS INTO THE WATER MAIN SHALL BE SPACED A MINIMUM OF 18" ON CENTER.
2. SERVICE LINES SHALL NOT BE PLACED UNDER DRIVEWAYS.
3. ALL METERS REQUIRE A LOCKING BRASS CURB STOP WITH LOCK WING (1"MIN.).
4. NO FITTINGS BETWEEN CORPORATION STOP AND BRANCH ASSEMBLY.
5. MAXIMUM SERVICE LENGTH IS 100' TO METER.
6. CASING PIPE I.D. SHALL BE SERVICE O.D. PLUS 1" MINIMUM.
7. MINIMUM BEND RADIUS ON SERVICES SHALL BE 14" ON ALL SERVICES BEHIND METER.
8. METER SIZE WILL BE DETERMINED BY PUBLIC UTILITIES DEPT. UPON APPLICATION FOR SERVICE.
9. ALL VALVES TO BE BALL VALVES.
10. METER BOX SHALL BE PROVIDED AND INSTALLED BY CONTRACTOR.
11. ALL SERVICES UNDER ROADWAYS ARE TO BE INSTALLED BY TRENCHLESS METHOD, UNLESS OTHERWISE APPROVED.
12. ALL EXISTING SERVICES TO BE FIELD VERIFIED BY BUILDER/CONTRACTOR/ DEVELOPER; IF EXISTING SERVICE IS GALVANIZED, BUILDER/CONTRACTOR/ DEVELOPER SHALL REPLACE WITH POLYETHYLENE PIPING FROM MAIN TO THE METER.
13. ALL WATER SERVICE SHALL BE A MINIMUM OF 2".
14. WATER METERS SHALL BE LOCATED OUTSIDE ANY DRIVEWAYS BY 2'



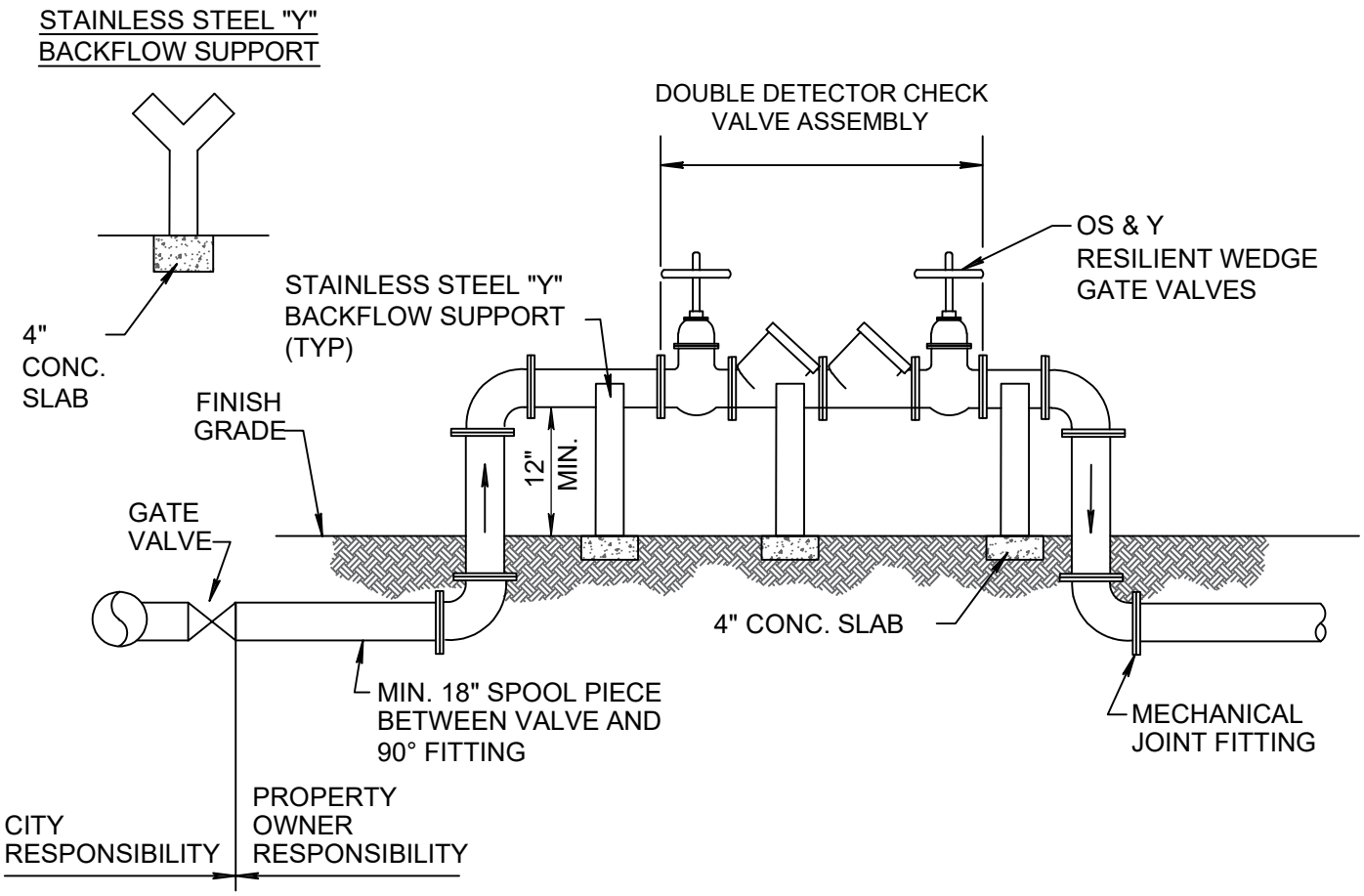
NOTES:

1. SUCCESSIVE TAPS INTO THE WATER MAIN SHALL BE SPACED A MINIMUM OF 18" ON CENTER.
2. SERVICE LINES SHALL NOT BE PLACED UNDER DRIVEWAYS.
3. ALL SERVICE LINES REQUIRE A LOCKING BRASS CURB STOP WITH LOCK WING (1"MIN.).
4. NO FITTINGS BETWEEN CORPORATION STOP AND BRANCH ASSEMBLY.
5. MAXIMUM SERVICE LENGTH IS 100' TO METER.
6. CASING PIPE I.D. SHALL BE SERVICE O.D. PLUS 1" MINIMUM.
7. MINIMUM BEND RADIUS ON SERVICES SHALL BE 14" ON ALL SERVICES BEHIND METER.
8. ALL VALVES TO BE BALL VALVES.
9. METER BOX SHALL BE PROVIDED AND INSTALLED BY CONTRACTOR.
10. ALL EXISTING SERVICES TO BE FIELD VERIFIED BY BUILDER/ CONTRACTOR/DEVELOPER; IF EXISTING SERVICE IS GALVANIZED, BUILDER/CONTRACTOR/DEVELOPER SHALL REPLACE WITH POLYETHYLENE PIPING FROM MAIN TO METER.



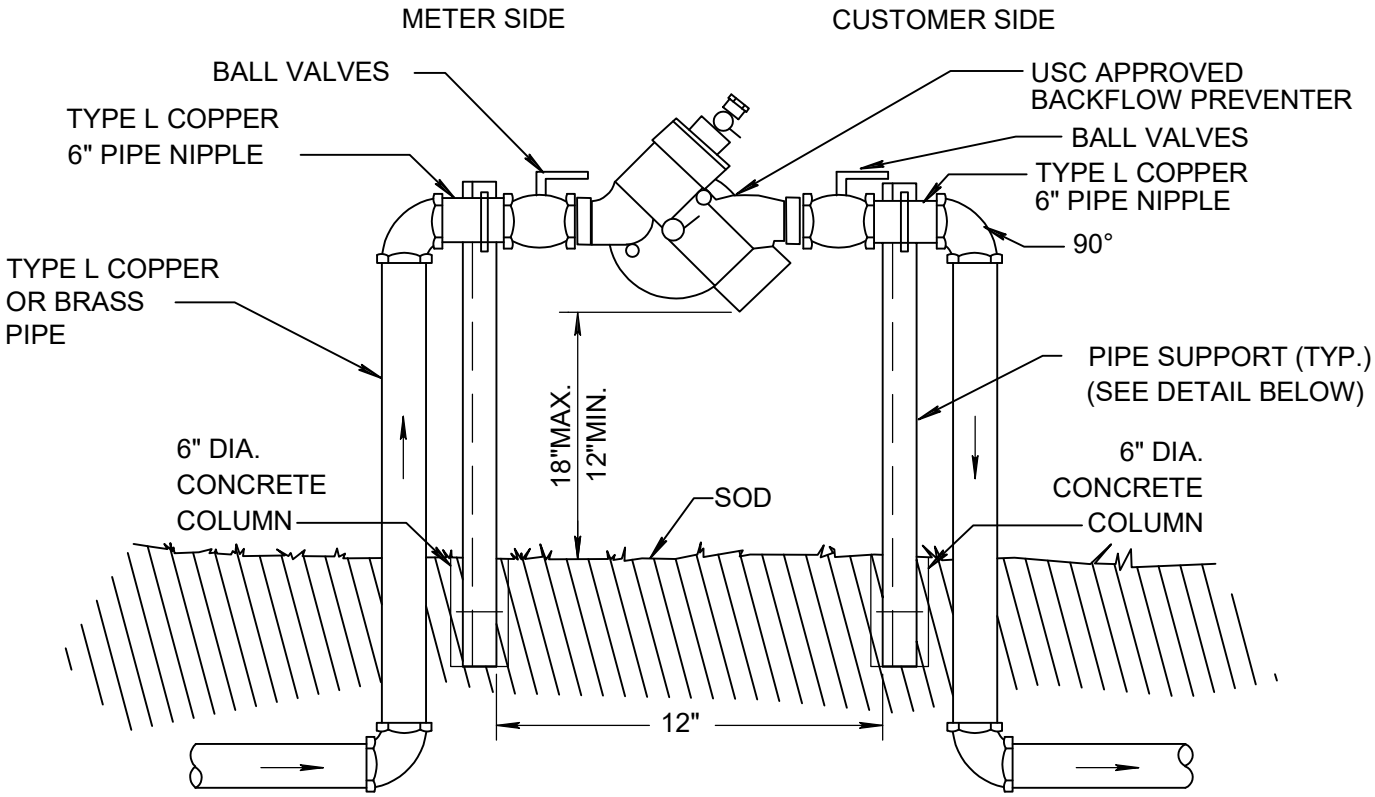
NOTES:

1. SUCCESSIVE TAPS INTO THE WATER MAIN SHALL BE SPACED A MINIMUM OF 18" ON CENTER.
2. SERVICE LINES SHALL NOT BE PLACED UNDER DRIVEWAYS.
3. ALL METERS REQUIRE A LOCKING BRASS CU RB STOP WITH LOCK WING (1" MIN.).
4. NO FITTINGS BETWEEN CORPORATION STOP AND BRANCH ASSEMBLY.
5. MAXIMUM SERVICE LENGTH IS 100' TO METER.
6. CASING PIPE I.D. SHALL BE SERVICE O.D. PLUS 1" MINIMUM.
7. MINIMUM BEND RADIUS ON SERVICES SHALL BE 14" ON ALL SERVICES BEHIND METER.
8. METER SIZE WILL BE DETERMINED BY PUBLIC UTILITIES DEPT. UPON APPLICATION FOR SERVICE.
9. ALL VALVES TO BE BALL VALVES.
10. METER BOX SHALL BE PROVIDED AND INSTALLED BY CONTRACTOR.
11. ABOVE CONFIGURATION APPLIES TO PLACEMENT AT SINGLE FAMILY RESIDENCES. FOR DOUBLE SERVICES PLACED AT MULTI-FAMILY RESIDENCES THE TWO SERVICES SHALL BE PLACED WITHIN A DOUBLE METER BOX.
12. ALL EXISTING SERVICES TO BE FIELD VERIFIED BY BUILDER/CONTRACTOR/DEVELOPER; IF EXISTING SERVICE IS GALVANIZED, BUILDER/CONTRACTOR/DEVELOPER SHALL REPLACE WITH POLYETHYLENE PIPING FROM MAIN TO METER.

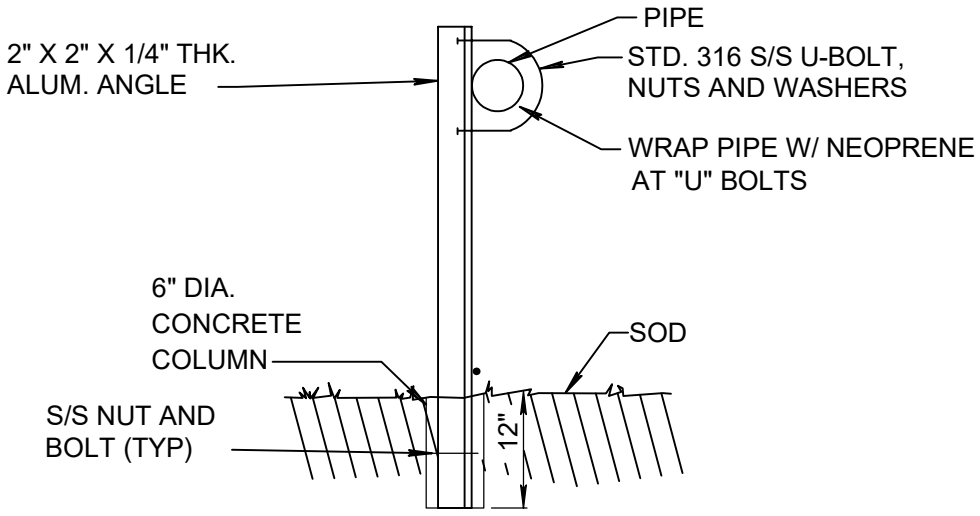


NOTES:

1. FOR ALL SERVICES GREATER THAN 2" DIA.
2. ALL PIPE AND FITTINGS SHALL BE CLASS 350 DUCTILE IRON CEMENT LINED WITH CEMENT LINED DUCTILE IRON FLANGE FITTINGS FOR ABOVE GROUND USE. MECHANICAL JOINT SHALL BE USED UNDERGROUND IN ACCORDANCE WITH AWWA STANDARDS.
3. THE DOUBLE DETECTOR CHECK VALVE ASSEMBLY SHALL MEET AWWA M14 AND AWWA C510, AND APPROVAL OF UTILITIES DEPARTMENT.
4. CERTIFICATION OF PROPER INSTALLATION AND OPERATION WILL BE REQUIRED FROM A CERTIFIED BACKFLOW PREVENTION TECHNICIAN PRIOR TO WATER MAIN ACCEPTANCE BY THE CITY OF DELRAY BEACH.
5. THE PROPERTY OWNER SHALL BE RESPONSIBLE FOR THE PROPER OPERATION, MAINTENANCE AND ANNUAL TESTING OF THE DOUBLE DETECTOR CHECK VALVE ASSEMBLY.
6. BOLLARDS TO BE USED IF THE ASSEMBLY IS WITHIN 5' OF THE PAVEMENT, REFER TO BOLLARD DETAIL PW 7.0.
7. CITY OF DELRAY BEACH WILL MAINTAIN TILL THE FIRST GATE VALVE.
8. WATER MAIN WILL BE PLACED IN A UTILITY EASEMENT UP UNTIL THE FIRST GATE VALVE. DOUBLE DETECTOR ASSEMBLY WILL NOT BE WITHIN THE EASEMENT.



ELEVATION



PIPE SUPPORT DETAIL

NOTES:

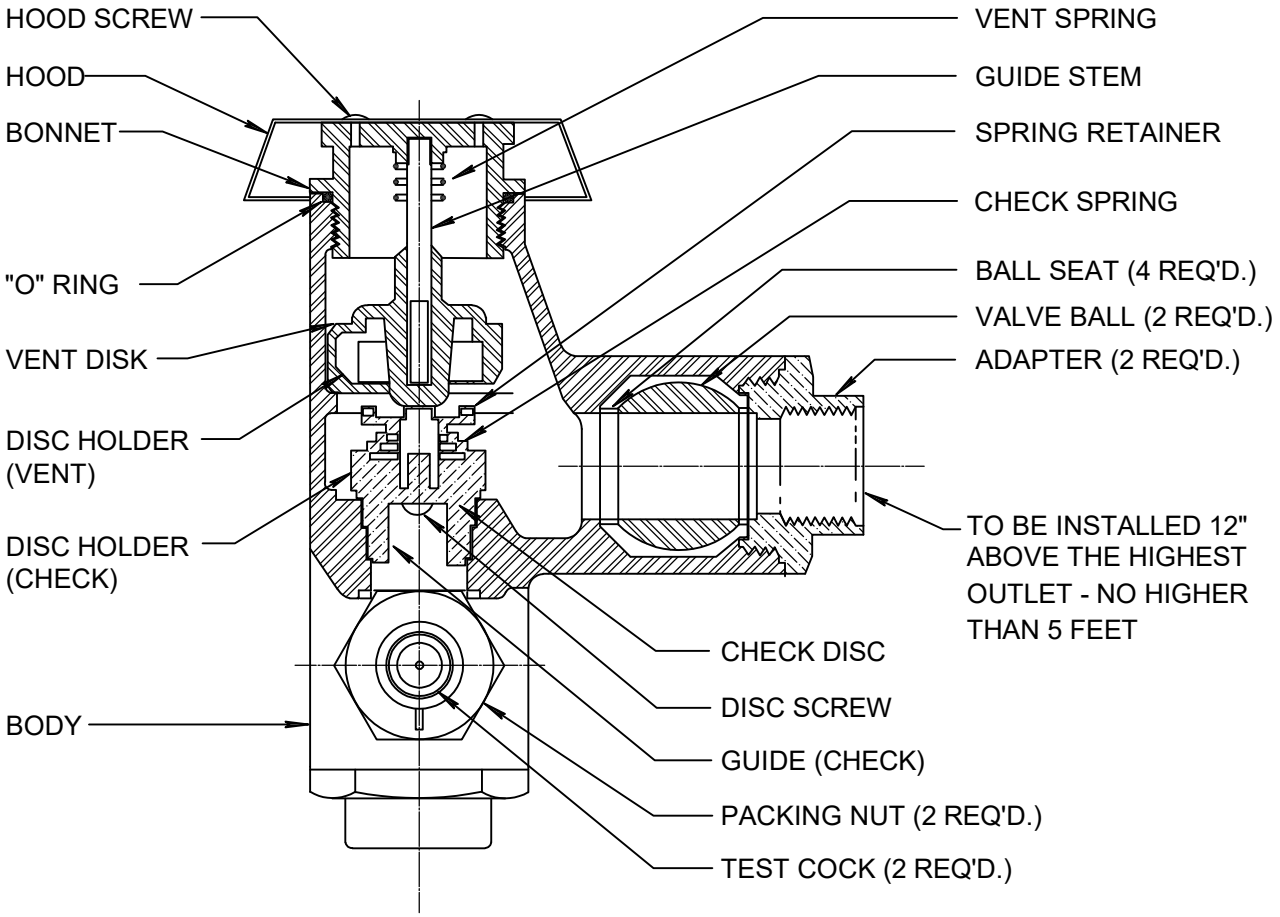
1. FOR ALL SERVICES LESS THAN OR EQUAL TO 2" DIA.
2. ABOVE GRADE PIPING SHALL BE BRASS OR TYPE "L" COPPER OR BRASS TUBING.
3. ALL COPPER JOINTS SHALL BE MADE WITH 95/5 SOLDER.
4. USC APPROVED RPZ BACKFLOW PREVENTER IS REQUIRED IN ACCORDANCE WITH CITY OF DELRAY BEACH CODE OF ORDINANCES TITLE V, CHAPTER 52.83.
5. USC APPROVED RPZ BACKFLOW PREVENTER IS REQUIRED FOR ALL COMMERCIAL PROPERTIES AND ALL RESIDENTIAL PROPERTIES WITH FIRE SPRINKLER SYSTEMS.

CITY of DELRAY BEACH
PUBLIC WORKS DEPARTMENT
434 SOUTH SWINTON AVENUE, DELRAY BEACH, FLORIDA 33444

REDUCED PRESSURE ZONE
BACKFLOW PREVENTER

DATE: 10-04-2024

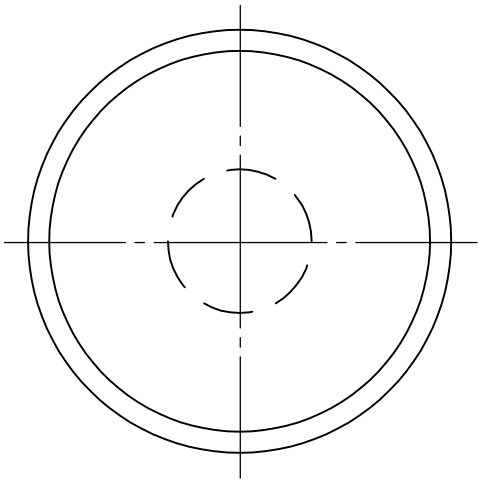
PW 16.0



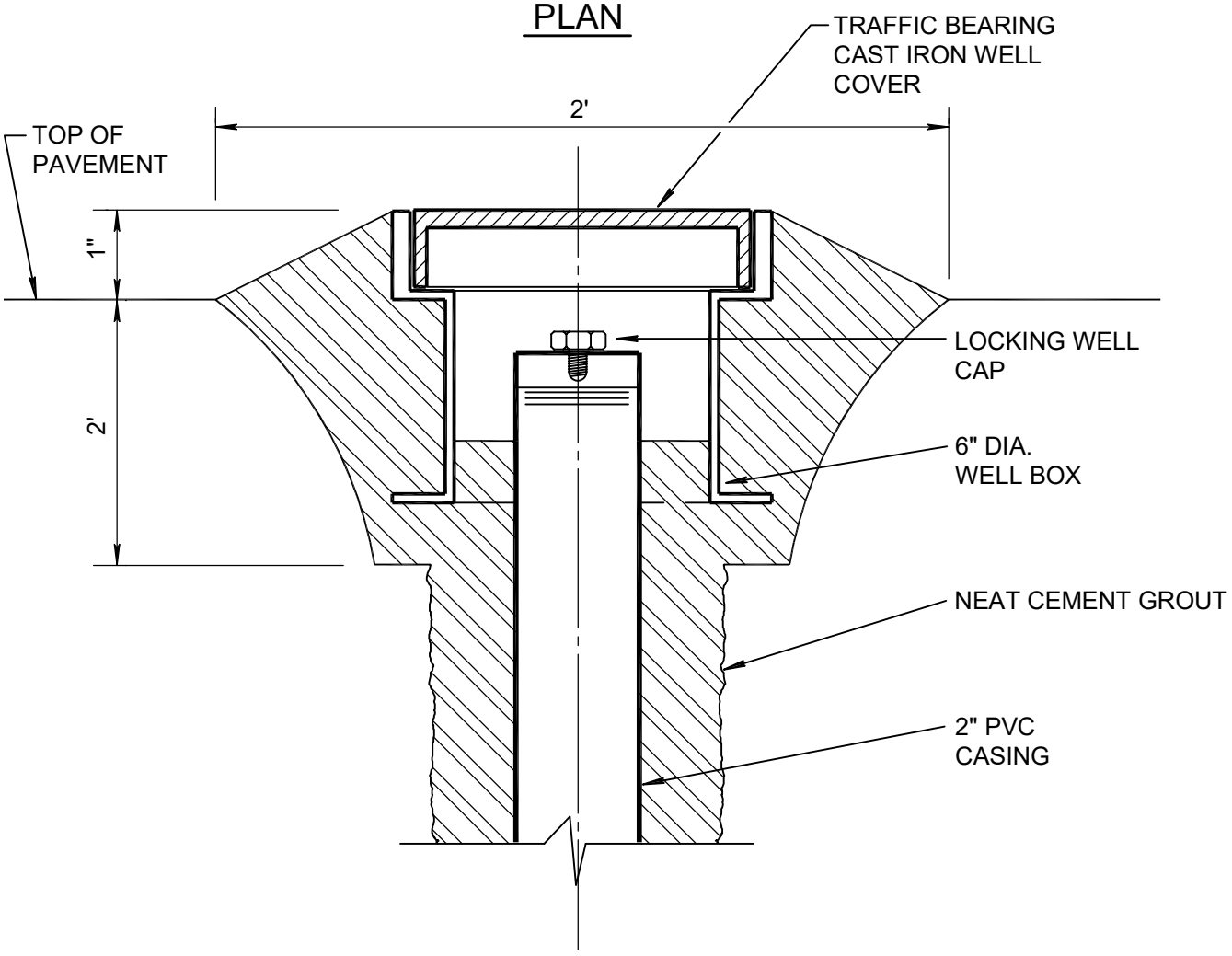
TYPICAL IRRIGATION SYSTEM
ANTI-SIPHON PRESSURE TYPE
VACUUM BREAKER

NOTES:

1. WATTS REGULATOR COMPANY OR EQUIVALENT.
2. VALVE SHALL MEET OR EXCEED THE A.S.S.E., BS&A AND U.S.C.F. REQUIREMENTS.
3. SHALL ALSO BE LISTED BY IAPMO (UPC).
4. ABOVE GRADE PIPING SHALL BE BRASS OR TYPE "L" COPPER.



PLAN



SECTION

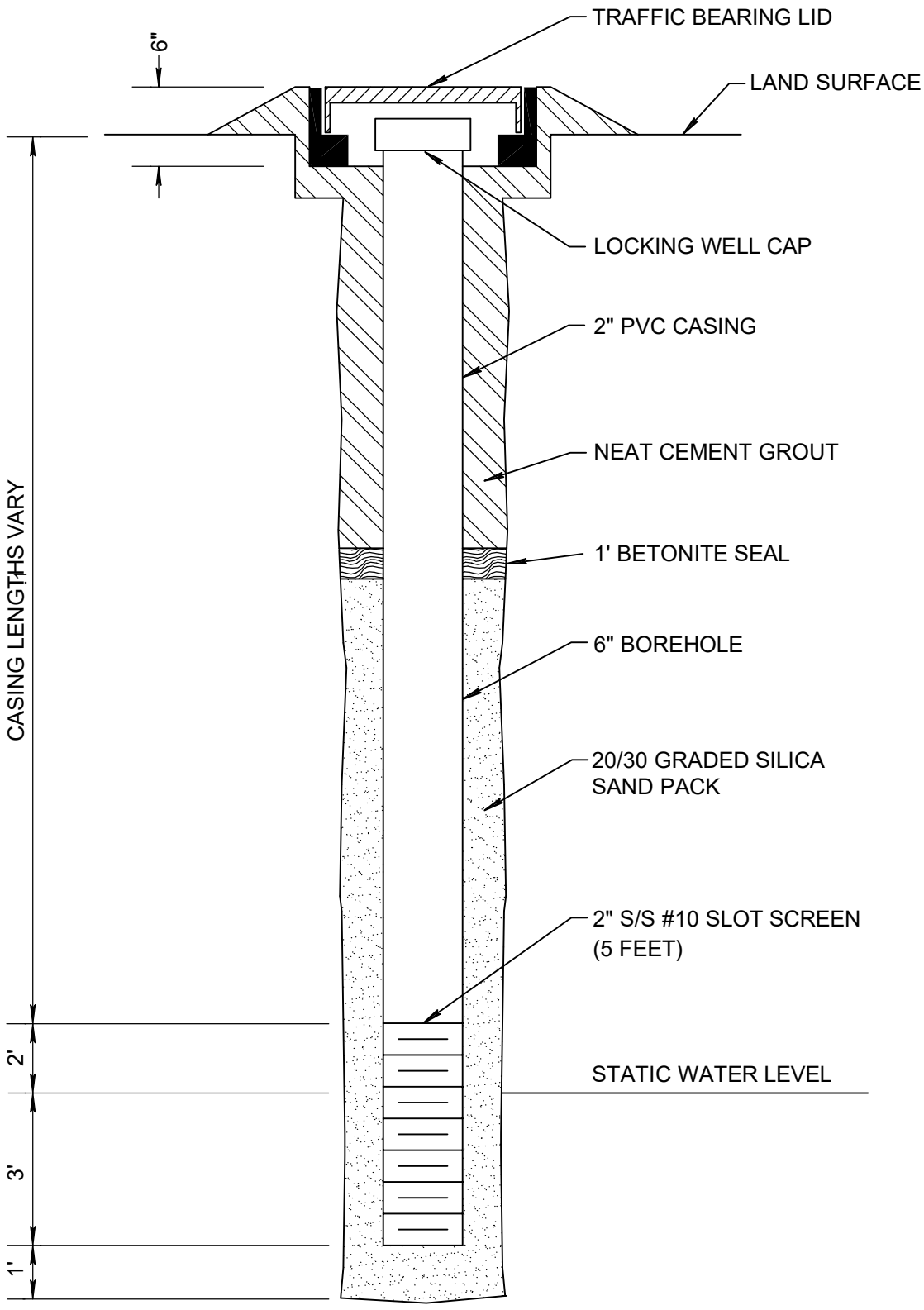
NOT TO SCALE

CITY of DELRAY BEACH
PUBLIC WORKS DEPARTMENT
434 SOUTH SWINTON AVENUE, DELRAY BEACH, FLORIDA 33444

MONITOR WELLHEAD
CONSTRUCTION DETAIL

DATE: 10-04-2024

PW 18.0



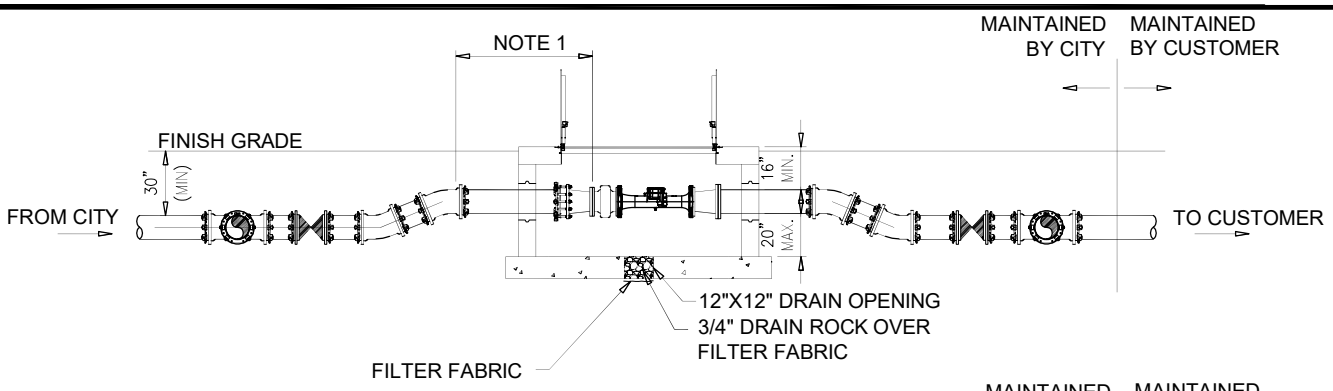
NOT TO SCALE

CITY of DELRAY BEACH
PUBLIC WORKS DEPARTMENT
434 SOUTH SWINTON AVENUE, DELRAY BEACH, FLORIDA 33444

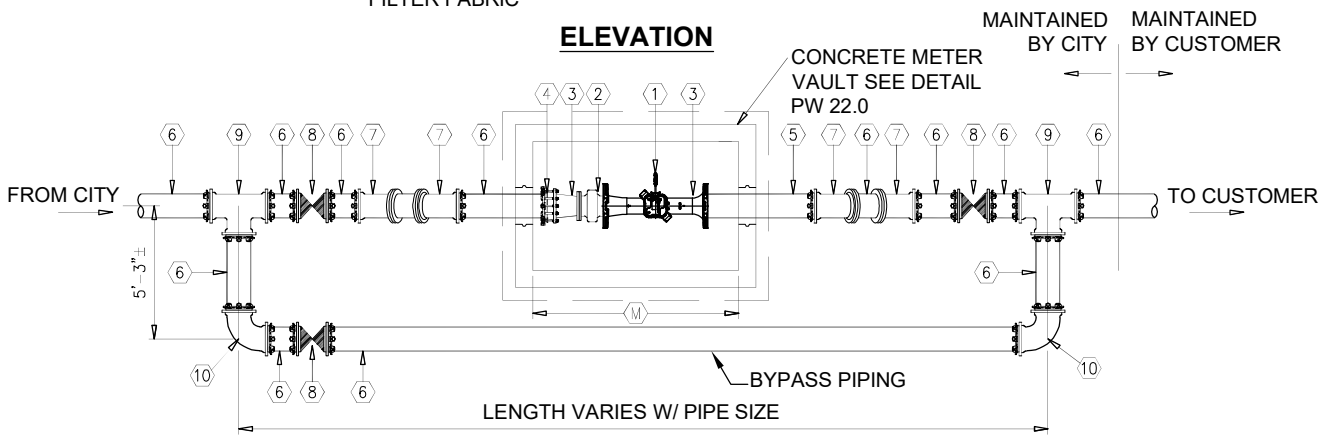
MONITOR WELL
CONSTRUCTION DIAGRAM

DATE: 10-04-2024

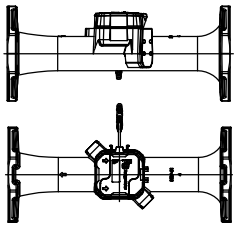
PW 19.0



ELEVATION



PLAN



BADGER METER

1. ALL 3 INCH & LARGER METERS SHALL BE E-SERIES ULTRASONIC BADGER METERS.
2. ALL 3 INCH & LARGER METER SPECIFICATIONS AND DATA SHEETS SHALL BE SUBMITTED TO THE UTILITIES DEPARTMENT FOR APPROVAL PRIOR TO INSTALLATION.

	MATERIALS AND SIZES (PER METER SIZE)				
1	METER ASSEMBLY	3	4	6	8
2	STRAINER ASSEMBLY	3	4	6	6
3	DI FLGXFLG CONC RED	4X3	6X4	8X6	-
4	FLANGE ADAPTER	3	4	6	8
5	DI PIPE, FLG X PE	4	6	8	8
6	DI PIPE, PE X PE	4	6	8	8
7	DI MJ 22-½"ELL (REST)	4	6	8	8
8	RESILENT SEAT MJ GATE VALVE (REST)	4	6	8	8
9	DI MJ TEE (REST)	4	6	8	8
10	DI MJ 90° ELL (REST)	4	6	8	8

NOTES:

1. PROVIDE FOUR (4) PIPE DIAMETERS OF STRAIGHT RUN PIPE UPSTREAM OF METER/STRAINER ASSEMBLY.
2. (REST) = RESTRAINED JOINT MEGALUG OR EQUAL
3. BACKFLOW PREVENTER SHALL BE INSTALLED DOWNSTREAM OF METER.

CITY of DELRAY BEACH
PUBLIC WORKS DEPARTMENT
434 SOUTH SWINTON AVENUE, DELRAY BEACH, FLORIDA 33444

LARGE USER WATER METER

DATE: 10-04-2024

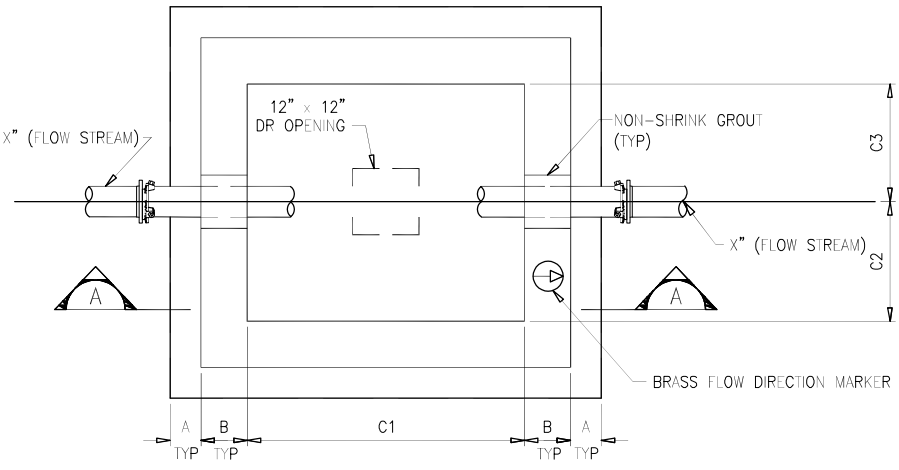
PW 20.0

DIMENSIONS SCHEDULE

METER SIZE/DETAIL #	PIPING DIMENSIONS	VAULT DIMENSIONS							
	X	A	B	C1	C2	C3	D	E	F
4" / WM-11	4"	4"	8"	6'-0"	30"	30"	8"	36" MAX.	16" MIN.
6" / WM-11	6"	4"	8"	7'-6"	30"	30"	8"	36" MAX.	16" MIN.
8" / WM-11	8"	4"	8"	8'-0"	30"	30"	8"	36" MAX.	16" MIN.
10" / WM-11	10"	4"	8"	9'-6"	30"	30"	8"	36" MAX.	16" MIN.
3" / WM-12	4"	4"	8"	5'-0"	18"	30"	8"	36" MAX.	16" MIN.
4" / WM-12	4"	4"	8"	5'-6"	18"	30"	8"	36" MAX.	16" MIN.
6" / WM-12	8"	4"	8"	6'-6"	18"	30"	8"	36" MAX.	16" MIN.
6"x8" / WM-12	8"	4"	8"	8'-6"	18"	30"	8"	36" MAX.	16" MIN.

NOTES:

1. CONFIRM VAULT DIMENSIONS WITH CITY AND ENGINEER.
2. COMPRESSIVE STRENGTH OF PRECAST CONCRETE SHALL BE 4000 PSI AT 28 DAYS.
3. HATCH SHALL BE CENTERED OVER METER. HATCH SPECS SHALL BE AS FOLLOWS:
   TRAFFIC RATED = U.S.F. ADH (H-20)
   NON TRAFFIC = U.S.F. APD (300)
   HATCH DIMENSIONS PER METER REMOVAL REQUIREMENTS.
4. EXTERIOR OF VAULT SHALL BE COATED WITH TWO (2) COATS OF COAL TAR EPOXY, 16 MILS PER COAT.
5. METER NOT SHOWN FOR CLARITY. SEE DETAILS
6. VAULT SHALL BE CONSTRUCTED PER ASTM C-478.



PLAN

NOTES:

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2. COMPRESSIVE STRENGH OF PRECAST CONCRETE SHALL BE 4000 PSI AT 28 DAYS
3. HATCH SHALL BE CENTERED OVER METER. HATCH SPECS SHALL BE AS FOLLOWS:
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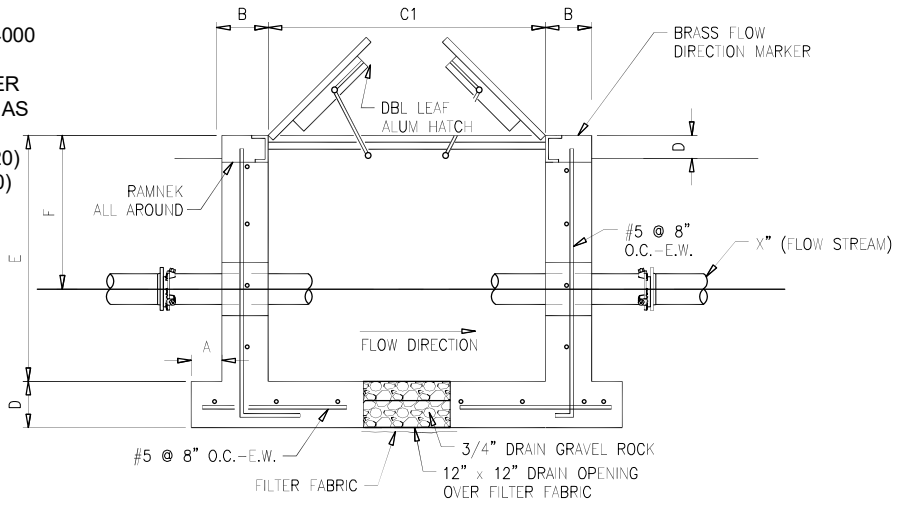
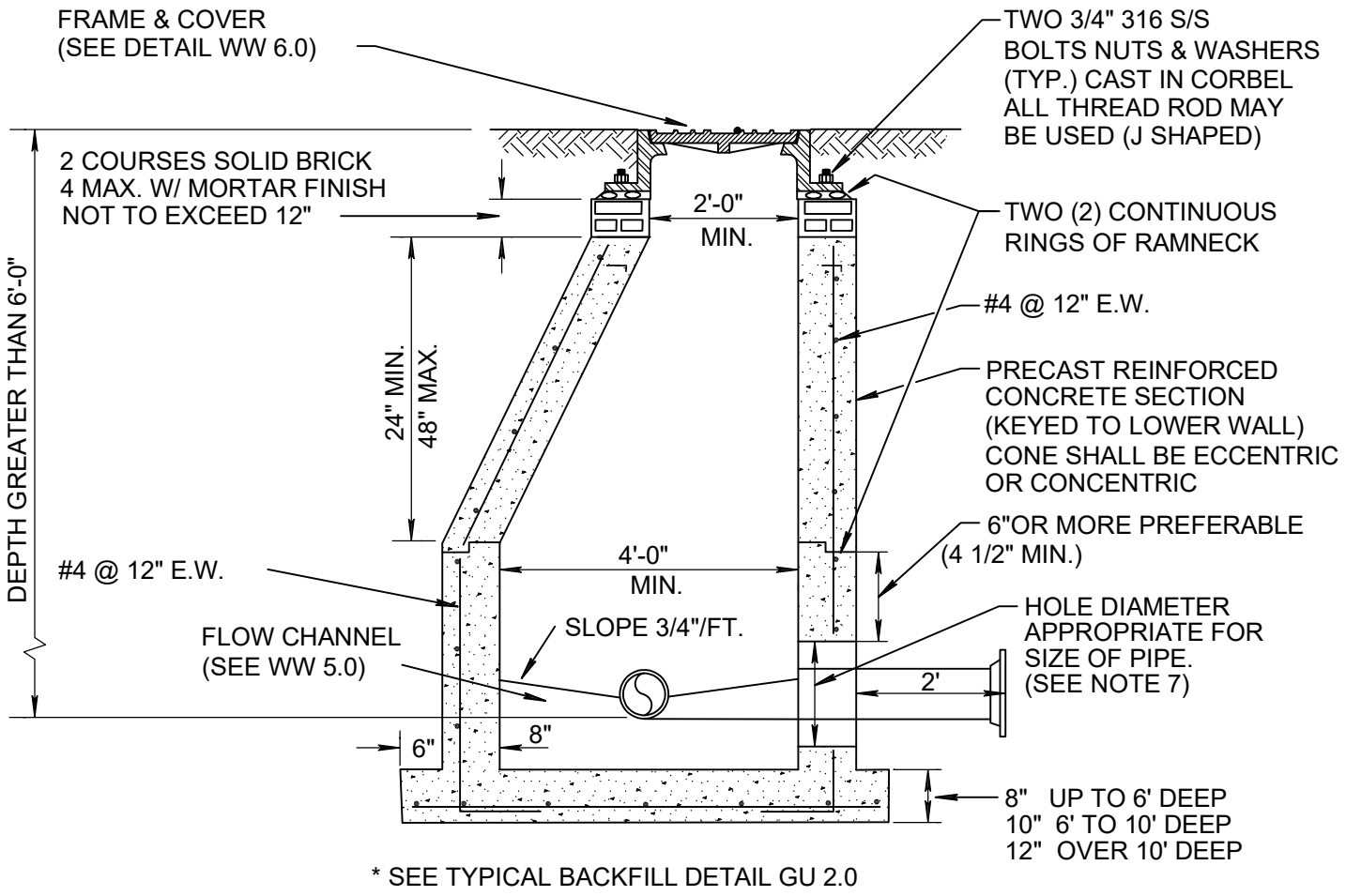


SECTION A

GRAVITY SEWER NOTES

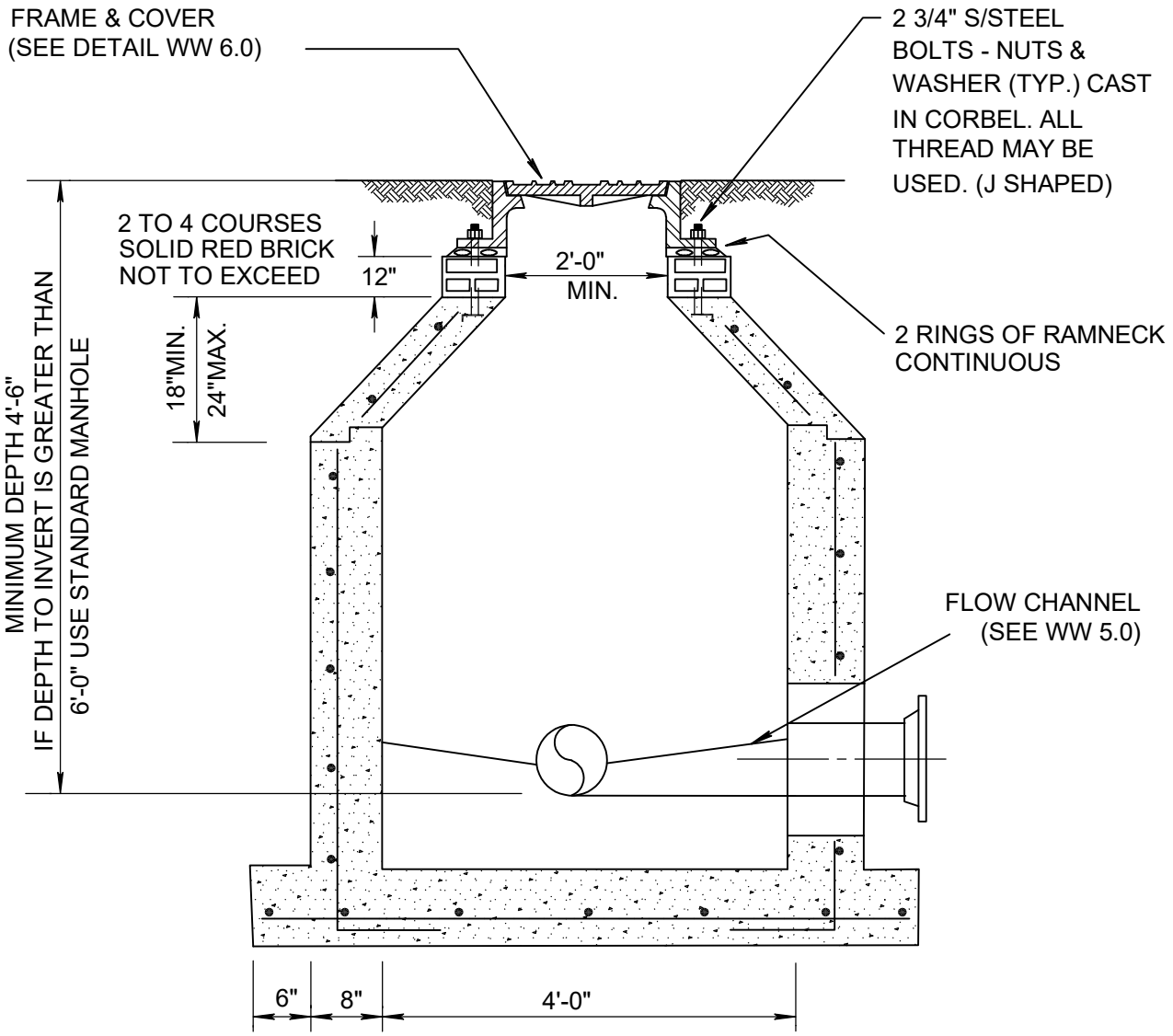
1. MANHOLES SHALL BE INSPECTED BY THE ENGINEER BEFORE PLACEMENT AND SURFACE TREATMENT.
2. ALL OPENINGS IN PRECAST MANHOLES SHALL BE CAST AT TIME OF MANUFACTURE. CONNECTIONS TO EXISTING MANHOLES SHALL BE CORE ENTRY ONLY.
3. ALL MANHOLES SHALL BE SET PLUMB TO LINE AND GRADE.
4. (PVC) GRAVITY SEWER PIPE SHALL CONFORM TO ASTM D 3034, SDR 26, LATEST REVISIONS, WITH PUSH ON RUBBER GASKET JOINTS.
5. (DIP) GRAVITY SEWER PIPE SHALL BE CLASS 350, 401 EPOXY LINED OR AS OTHERWISE APPROVED BY UTILITIES DEPARTMENT.
6. NO SERVICE CONNECTIONS, WYES, SERVICES OR VALVES WILL BE PERMITTED IN RESIDENTIAL DRIVEWAYS.
7. MANHOLE FRAMES SHALL BE ATTACHED TO THE PRECAST STRUCTURE WITH A MINIMUM OF TWO 3/4" 316 STAINLESS STEEL BOLTS, NUTS AND WASHERS. FRAMES SHALL BE SEALED WITH A MINIMUM OF TWO 1/2" BEADS OF RAM-NEK CAULKING.
8. TRENCHES SHALL BE DE-WATERED TO ENABLE PIPE AND APPURTENANCES TO BE INSTALLED FREE OF WATER ON UNDISTURBED SOIL. IF UNSUITABLE SUBSURFACE MATERIAL IS ENCOUNTERED, EXCAVATE EXTRA 6" AND BACKFILL WITH 3/4" GRAVEL.
9. PVC SHALL BE LAID IN STRICT CONFORMANCE TO MANUFACTURER'S SPEC (JOHNS MANVILLE RING TITE PVC PIPE INSTALLATION GUIDE OR EQUAL). BACKFILLING OF UTILITY TRENCHES WILL NOT BE ALLOWED UNTIL INSPECTED BY THE ENGINEER.
10. BACKFILL MATERIAL FOR SEWER MAIN AND LINES SHALL BE NON-COHESIVE, NON PLASTIC MATERIAL FREE OF ALL DEBRIS , LUMPS AND ORGANIC MATTER. BACKFILL MATERIAL PLACED WITHIN ONE (1) FOOT OF PIPING AND APPURTENANCES SHALL NOT CONTAIN ANY STONES LARGER THAN TWO (2) INCHES IN DIAMETER (1" FOR PVC PIPE) AND NO STONES LARGER THAN SIX (6) INCHES IN DIAMETER WILL BE PERMITTED IN ANY BACKFILL.
11. ALL EXCAVATION IN EXISTING RIGHT OF WAY SHALL BE BACKFILLED AND STABILIZED AT THE END OF EACH DAY TO PERMIT PEDESTRIAN AND VEHICULAR TRAFFIC PRIOR TO THE CONTRACTOR LEAVING THE SITE.
12. WHERE SEWER IS NOT WITHIN PUBLIC R/W, IT IS TO BE LOCATED IN A 12' UTILITY EASEMENT. CITY MAINTENANCE RESPONSIBILITY IS MANHOLE TO MANHOLE ONLY.
13. UPON COMPLETION OF THE WORK AND PRIOR TO PLACEMENT OF ASPHALT A VISUAL INSPECTION BY THE ENGINEER SHALL BE MADE OF THE COMPLETED SYSTEM ALONG WITH A LOW PRESSURE AIR TEST, AFTER ROCK BASE FINISHED & PRIMED, OR 1ST LIFT OF ASPHALT PLACED. AFTER ALL OTHER TESTING HAS BEEN COMPLETED, A CD VIDEO RECORDING SHALL BE MADE BY THE CONTRACTOR AND APPROVED BY THE ENGINEER, BEFORE THE LENGTHS ARE ACCEPTED FOR MAINTENANCE.
14. EACH LINE SEGMENT SHALL BE LAMPED TO DETERMINE PROPER ROUNDNESS.
15. COMPLETE "AS BUILT" INFORMATION RELATIVE TO MANHOLES, VALVES, SERVICES FITTINGS, PIPE LENGTHS, INVERTS AND SLOPES SHALL BE ACCURATELY RECORDED & SUBMITTED TO THE ENGINEER CITY SIGNED AND SEALED BY A REGISTERED LAND SURVEYOR.
16. AT THE END OF THE ONE (1) YEAR WARRANTY PERIOD THE DEVELOPER/CONTRACTOR WILL T.V. INSPECT, AIR TEST EVERY JOINT, AND CHECK MANHOLE JOINTS AND CONNECTIONS TO DETERMINE IF REPAIRS ARE NECESSARY BEFORE THE WARRANTY BOND IS RELEASED.
17. NO PROPOSED STRUCTURES SHALL BE INSTALLED WITHIN A HORIZONTAL DISTANCE OF 10-FEET FROM ANY EXISTING OR PROPOSED SANITARY SEWER FACILITY.
18. ANY PIPE INTRODUCED INTO AN EXISTING MANHOLE MUST HAVE CARBOLINE BITUMASTIC 300M OR APPROVED EQUAL APPLIED EXTERNALLY WITHIN A MINIMUM 2-FOOT RADIUS OF OPENING AND THE ENTIRE MANHOLE MUST HAVE SEWPER COAT OR APPROVED EQUAL APPLIED INTERNALLY.
19. ANY REHABILITATION TO AN EXISTING MANHOLE MUST BE INTERNALLY STRIPPED AND LINED WITH SEWPER COAT OR APPROVED EQUAL.



* SEE TYPICAL BACKFILL DETAIL GU 2.0

NOTES:

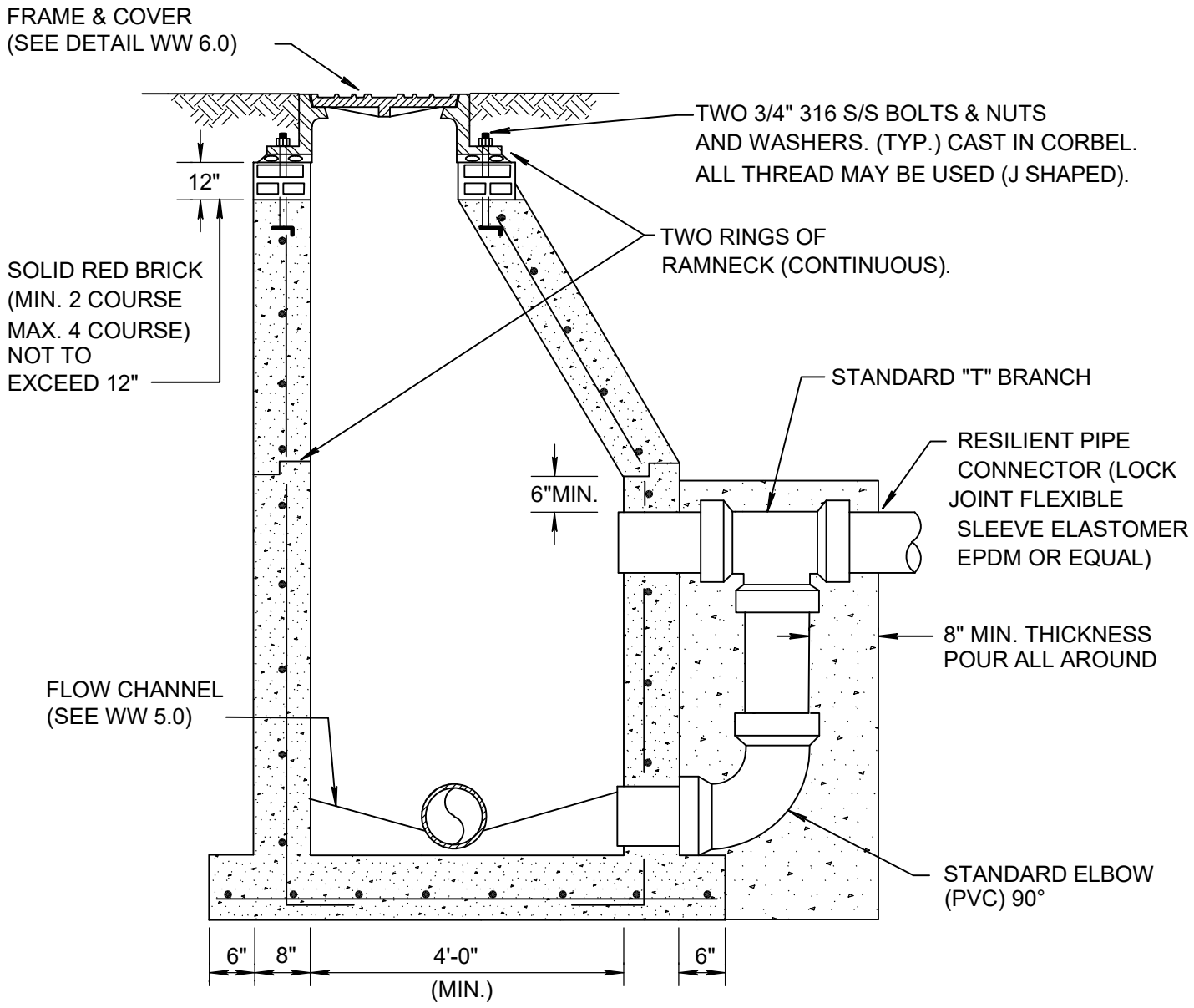
1. PRECAST CONCRETE TYPE II 4000 P.S.I.
2. RAMNECK AT ALL RISER JOINTS WITH GROUT ON INSIDE AND OUTSIDE AT ALL RISER JOINTS.
3. ALL OPENINGS SHALL BE SEALED WITH A WATERPROOF NON-SHRINKING GROUT.
4. FLOW CHANNELS SHALL BE CONSTRUCTED TO DIRECT INFLUENT INTO FLOW STREAM.
5. LIFT HOLES SHALL BE FILLED WITH EXPANDABLE GROUT.
6. ALL PIPE HOLES SHALL BE PRECAST.
7. CAST IN PLACE FLEXIBLE PIPE-TO MANHOLE CONNECTOR (LOCK JOINT FLEXIBLE SLEEVE ELASTOMER EPDM OR RUBBER GASKET WITH GLASS FIBER REINFORCED NYLON 6/6 INTERNAL EXPANSION RING) INSTALLED PER MANUFACTURER.
8. PAINT MANHOLE INSIDE AND OUTSIDE WITH ONE (1) COAT RED CARBOLINE BITUMASTIC 300M THEN ONE (1) COAT BLACK OR APPROVED EQUAL, to 8-10 MILS D.F.T/COAT, FIRST COAT RED THEN BLACK.
9. MANHOLE FABRICATION SHALL BE IN ACCORDANCE W/ ASTM C-478, LATEST STANDARD.
10. IF THE STRUCTURE IS INSTALLED IN WATER TABLE MUST HAVE BEDDING. (SEE DETAIL BEDDING WW 11.0)



* SEE TYPICAL BACKFILL DETAIL GU 2.0

NOTE:

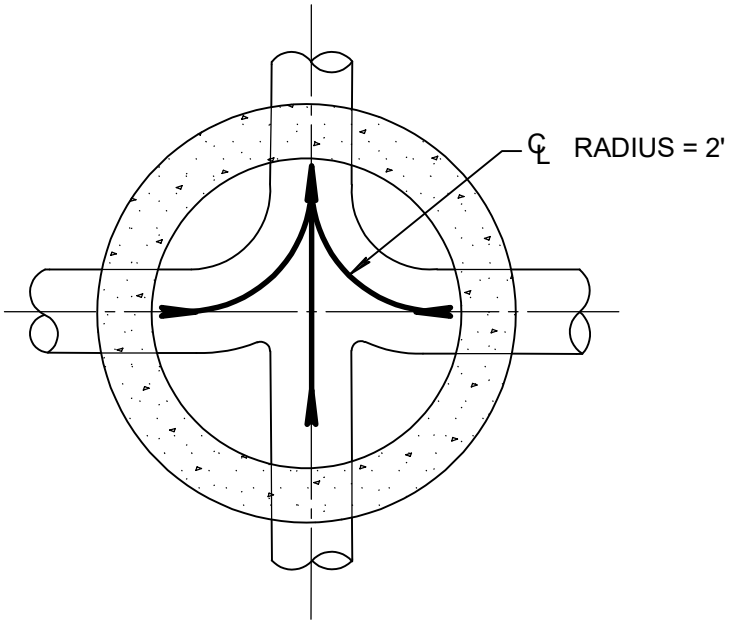
ALL STANDARD MANHOLE NOTES AND DETAILS ARE APPLICABLE (DETAIL WW 2.0).

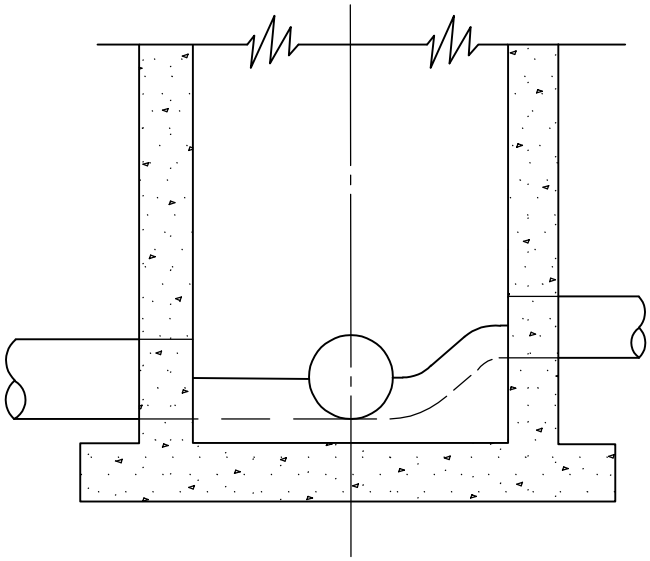


* SEE TYPICAL BACKFILL DETAIL GU 2.0

NOTES:

1. ALL DETAILS AND SPECIFICATIONS FOR STANDARD MANHOLES ARE APPLICABLE EXCEPT FOR REFERENCES TO DROP ASSEMBLY.
2. DROP CONNECTIONS SHALL BE REQUIRED WHENEVER AN INFLUENT INVERT IS LOCATED 2.0 FEET OR MORE ABOVE THE MAIN INVERT CHANNEL.
3. NO INSIDE DROP SHALL BE ALLOWED.





NOTES:

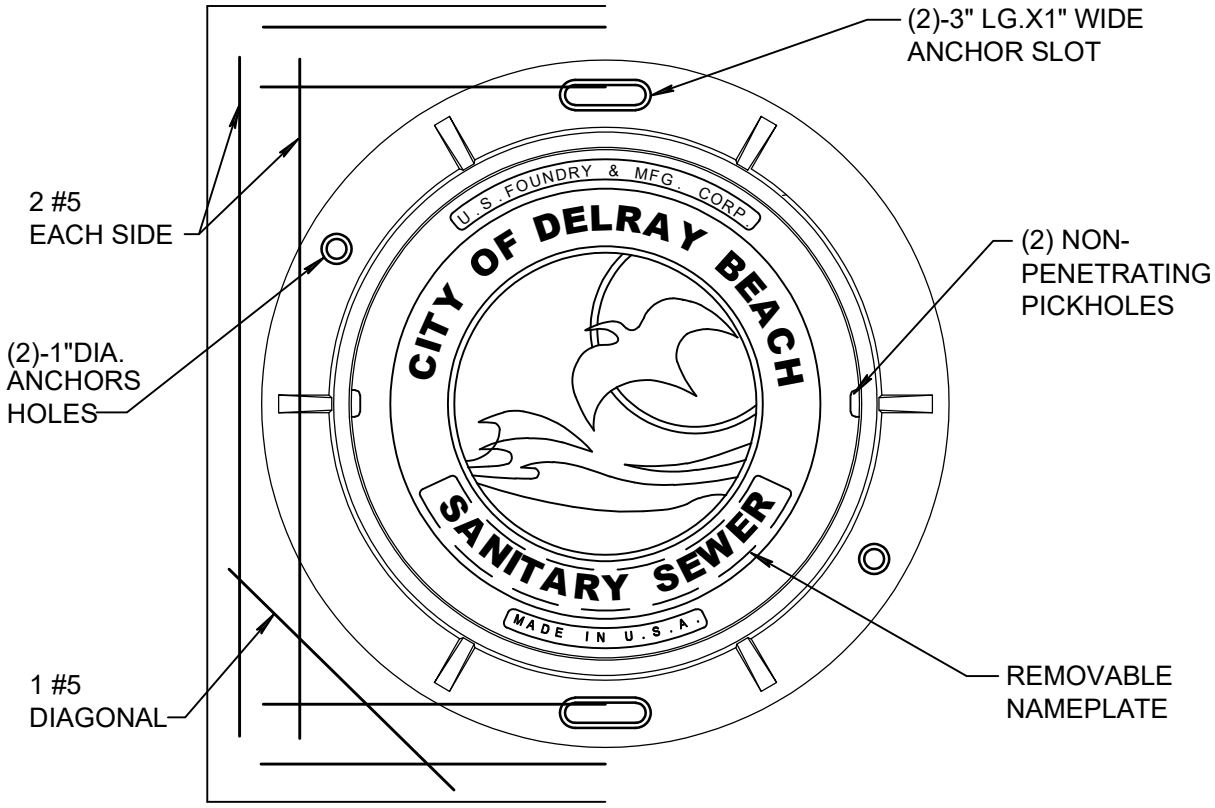
1. ALL INVERT CHANNELS ARE TO BE CONSTRUCTED FOR SMOOTH FLOW WITHOUT OBSTRUCTION OR TURBULENCE.

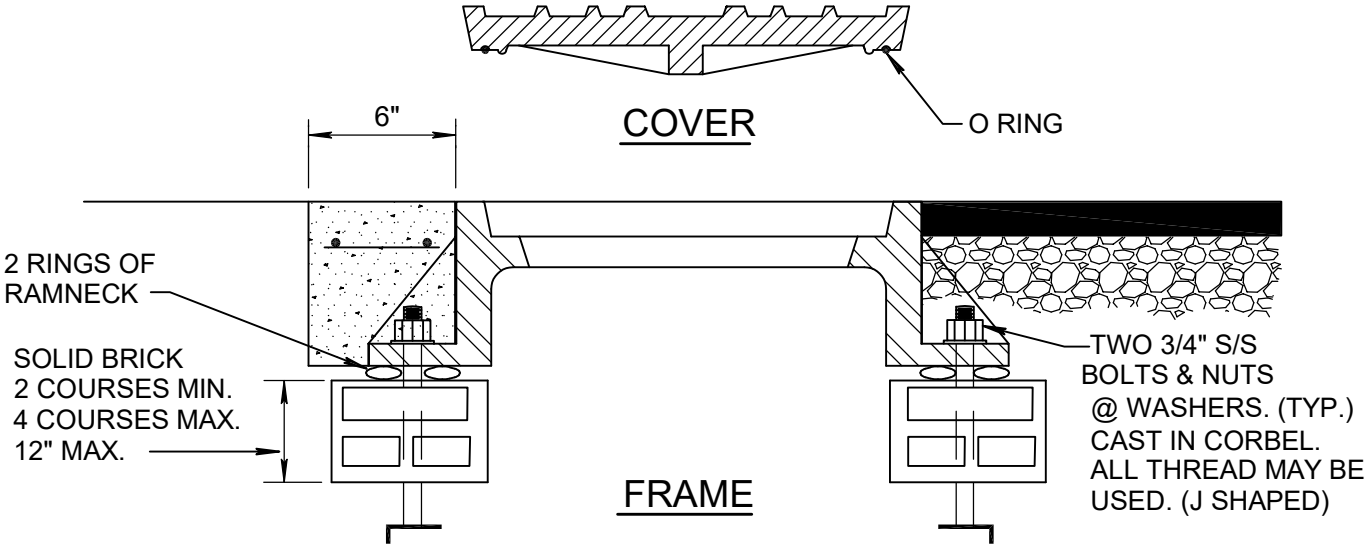
2. PROPERLY SHAPED SPILLWAYS SHALL BE CONSTRUCTED BETWEEN PIPES WITH DIFFERENT INVERT ELEVATIONS TO PROVIDE FOR SMOOTH FLOWS.

3. SERVICE LATERALS SHALL NOT ENTER MANHOLES.

4. 2500 PSI CONCRETE ONLY PERMITTED AS FLOW CHANNEL BUILDUP.

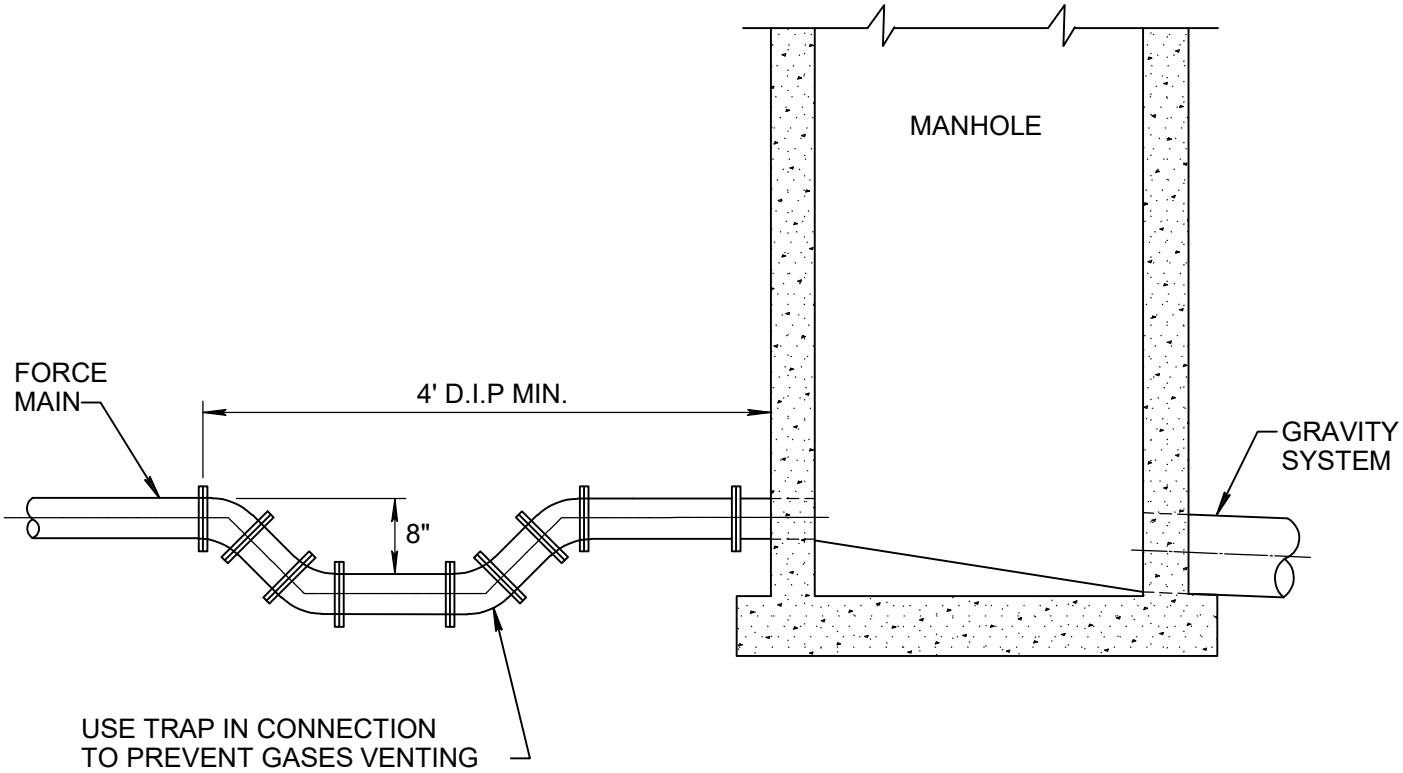
5. NO DOG HOUSE MANHOLE ALLOWED.





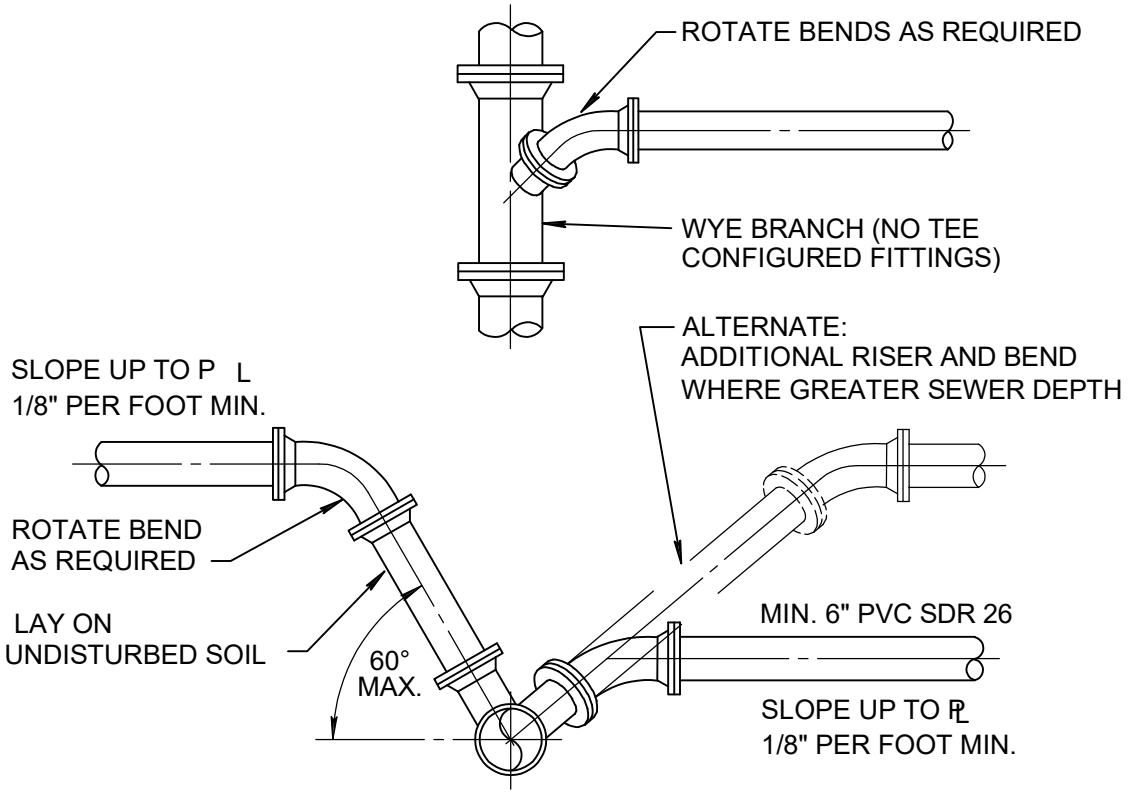
NOTES:

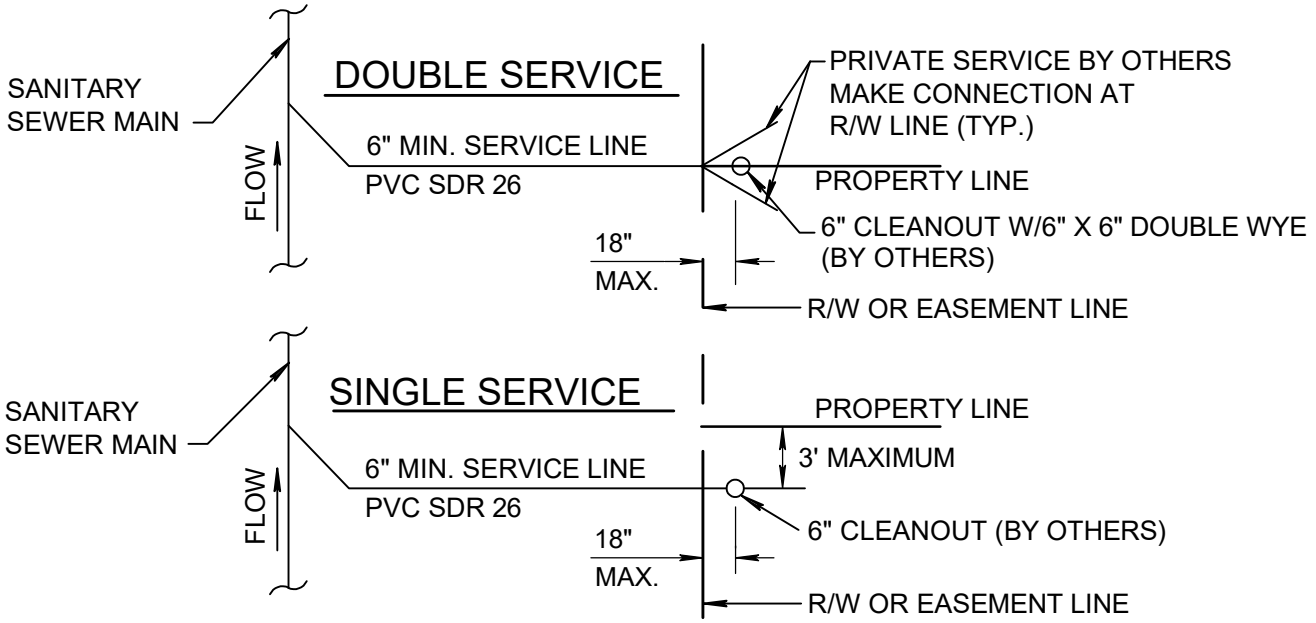
1. COLLAR IS REQUIRED ONLY WHEN MANHOLE IS OUT OF PAVEMENT.
2. COVER SHALL BE U.S. MR-ORS AND RING SHALL BE USF 576 RING WITH BITUMASTIC COAL TAR.
3. MANHOLE ADJUSTING RINGS SHALL BE CAST IRON, USF TYPE MR.



NOTES:

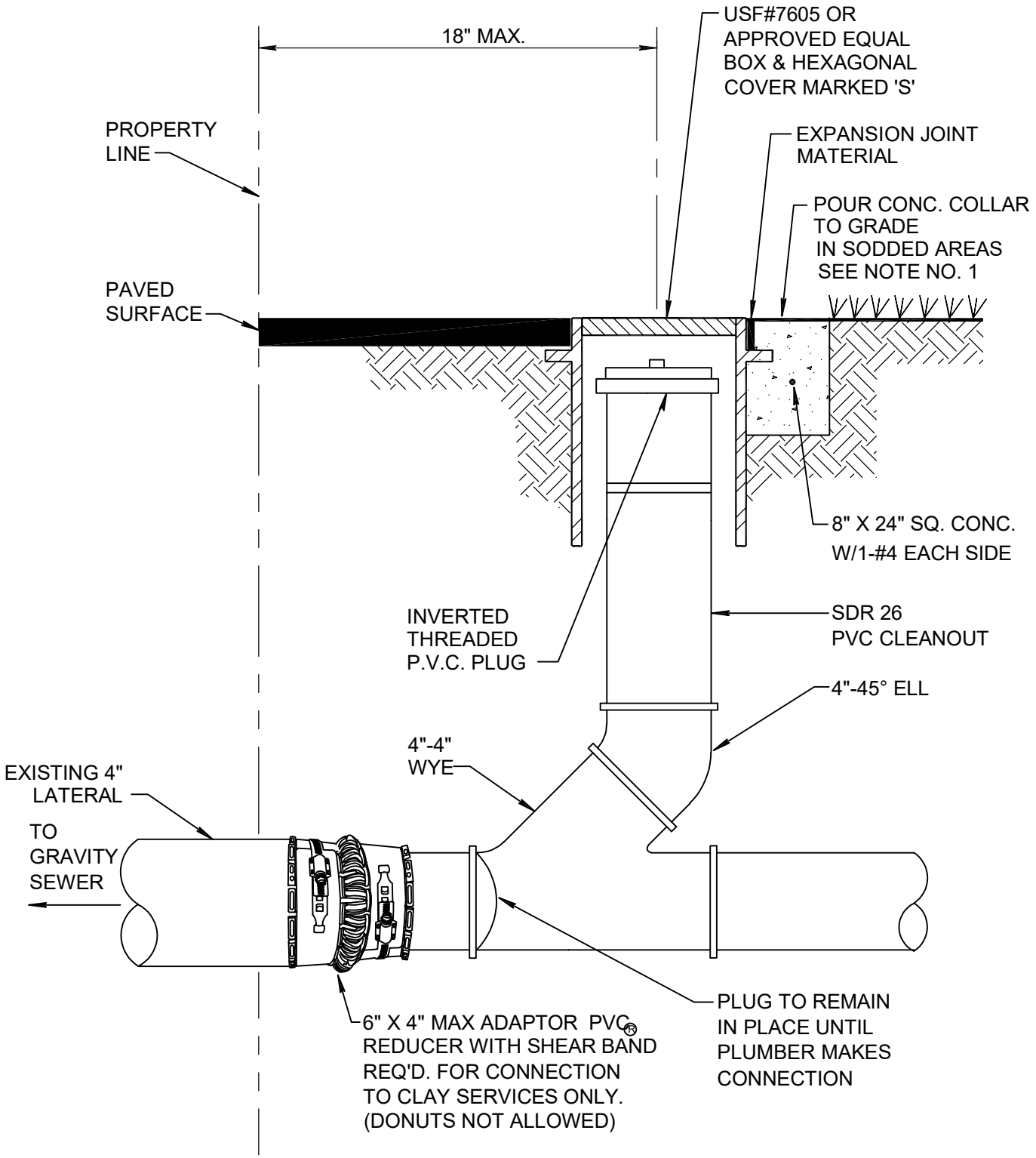
1. FORCE MAIN TO ENTER MANHOLE AS CLOSE AS POSSIBLE TO 180° TO GRAVITY OUTLET.
2. THE INVERT LEVEL OF FORCE MAIN AT POINT OF ENTRY SHALL BE 6" ABOVE HIGHEST INVERT OF MANHOLE.
3. CORE ENTRY ONLY INTO EXISTING MANHOLES.
4. IF ELEVATION DROP IS REQUIRED TO ENTER MANHOLE, APPROVAL SHALL BE OBTAINED FROM ENGINEER.
5. FLOW CHANNEL REQUIRED (SEE DETAIL WW 5.0).
6. PAINT MANHOLE OUTSIDE WITH ONE (1) COAT RED CARBOLINE BITUMASTIC 300M, THEN ONE (1) COAT BLACK 300M OR APPROVED EQUAL, 8-10 MILS D.F.T./COAT, FIRST COAT RED THEN BLACK.
7. INSIDE SHALL BE LINED WITH SEWPER COAT OR EQUAL SYSTEM AFTER PRESSURE WASHING.





NOTE:

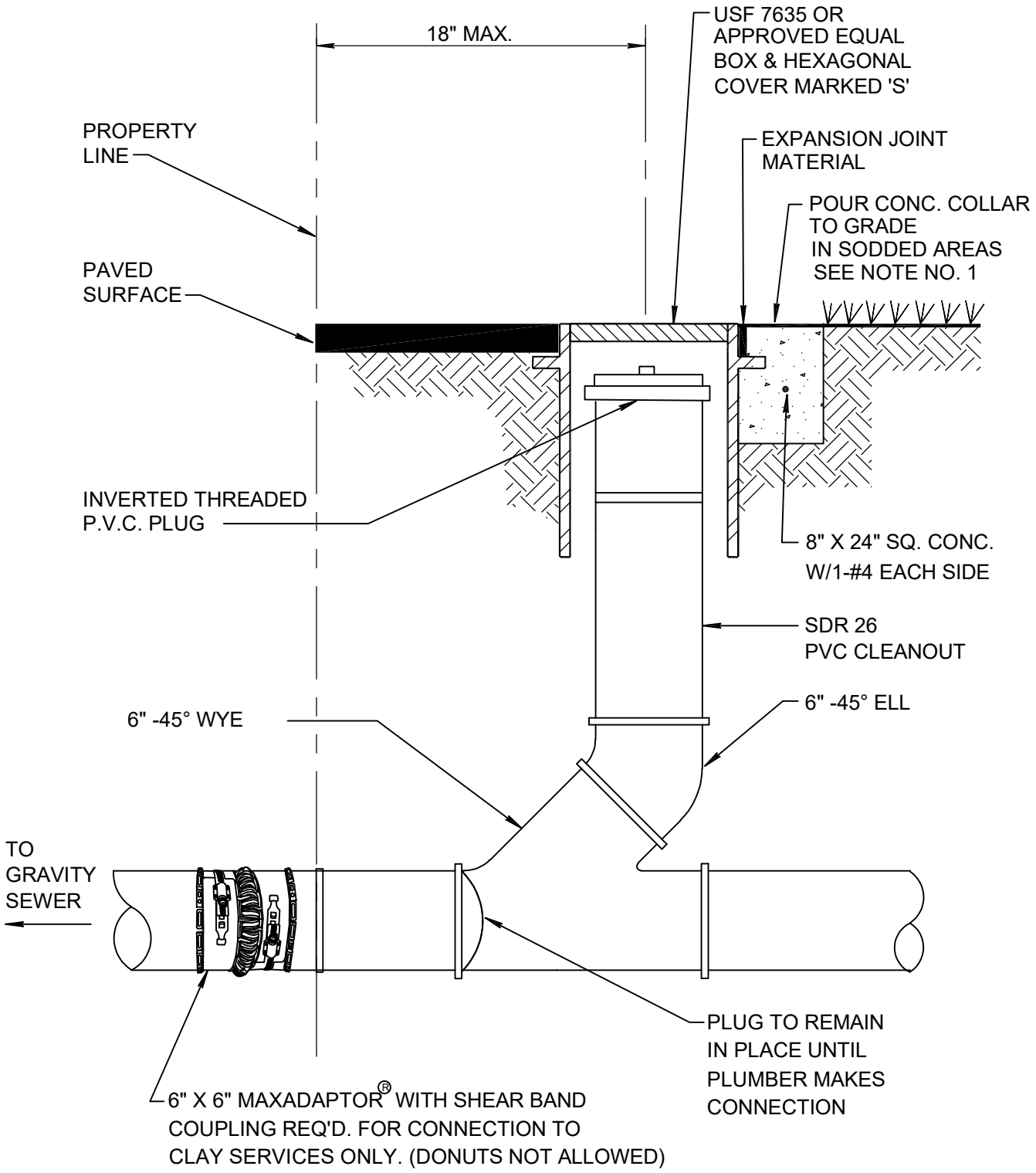
1. SERVICE LATERALS SHALL TERMINATE INSIDE PROPERTY LINE A DEPTH OF 3 FEET AND MARKED WITH A 2"X 4" TREATED STAKE.
2. CLEANOUT INSTALLATION SHALL BE PROPERTY OWNERS RESPONSIBILITY AND SHALL BE INSTALLED BY LICENSED PLUMBER.
3. SEE DETAIL PW 2.0 FOR SEPARATION REQUIREMENTS.



NOTE:

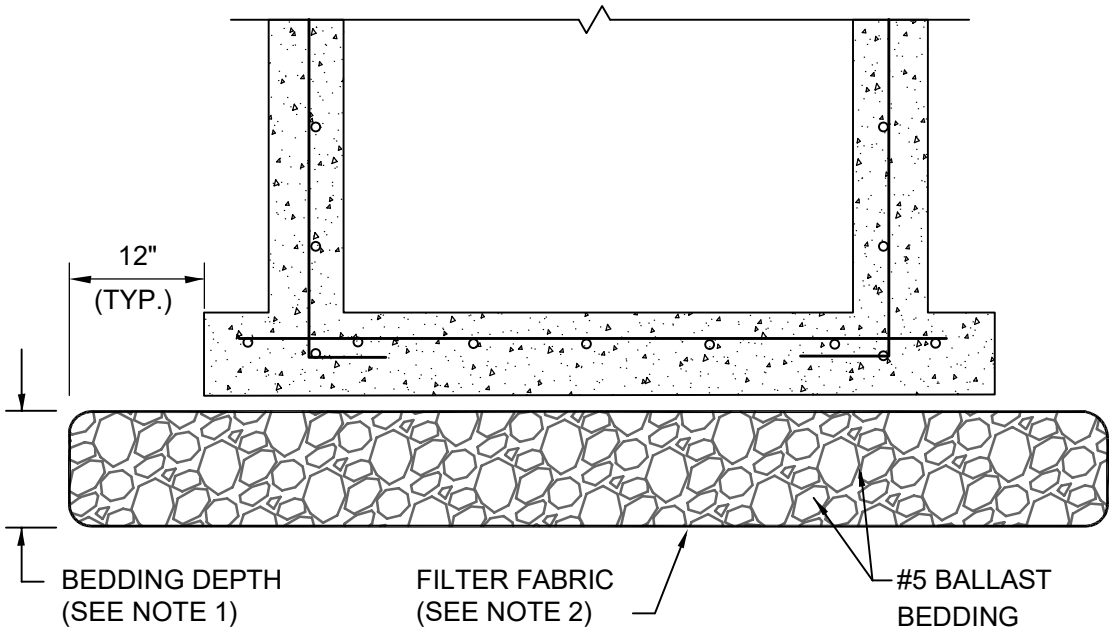
1. PRIOR DEPARTMENT APPROVAL WILL BE REQUIRED FOR RE-CONNECTING TO EXISTING 4" LATERAL.
2. MINIMUM DEPTH OF SERVICE LATERAL SHALL BE 3 FEET.

CITY of DELRAY BEACH PUBLIC WORKS DEPARTMENT 434 SOUTH SWINTON AVENUE, DELRAY BEACH, FLORIDA 33444	CONNECTION TO EXISTING 4" LATERAL	DATE: 10-04-2024	WW 9.0



NOTE:

1. ALL SANITARY SEWER LATERALS AND CLEANOUT TO BE MINIMUM 6" DIAMETER IN SIZE UNLESS OTHERWISE PREVIOUSLY APPROVED BY THE DEPARTMENT.
2. MINIMUM DEPTH OF SERVICE LATERAL SHALL BE 3 FEET.



NOTES:

1. BEDDING DEPTH SHALL BE 10" UNDER DRAINAGE STRUCTURES AND 18" UNDER SANITARY STRUCTURES.

2. ROCK SHALL BE WRAPPED IN FILTER FABRIC THAT MEETS THE REQUIREMENTS OF F.D.O.T. SPECIFICATION SECTION 985.

PRESSURE PIPE NOTES:

1. FOR PIPE SIZES 4"-8" THERE SHALL BE 30" MINIMUM COVER FROM FINISHED GRADE TO TOP OF PIPE. FOR PIPE SIZE 10" AND LARGER THERE SHALL BE 36" MINIMUM COVER.

2.a. DUCTILE IRON PIPE (DIP) FOR FORCE MAINS SHALL BE CLASS 350 WITH 401 EPOXY LINED IN ACCORDANCE WITH AWWA C550.

2.b. DUCTILE IRON PIPE (DIP) FOR WATER MAINS SHALL BE CLASS 350 IN ACCORDANCE WITH AWWA C151 (ANSI A21.51), AND SHALL HAVE AN INTERNAL LINING OF CEMENT MORTAR IN ACCORDANCE WITH AWWA C104/ A21.4.

3. C-900 PVC PRESSURE PIPE MAY BE USED IN LIEU OF DIP WATER MAIN WITH METAL TAPE AND WIRE ABOVE THE PIPE.

4. ALL FITTINGS FOR FORCE MAIN SHALL BE CLASS 350 DUCTILE IRON WITH MECHANICAL JOINTS AND 401 EPOXY LINING.

5. WATER MAIN VALVES 12 INCHES AND SMALLER SHALL BE RESILIENT-SEAL WEDGE GATE VALVES IN ACCORDANCE WITH AWWA C509. WATER MAIN VALVES LARGER THAN 12 INCHES SHALL BE BUTTERFLY VALVES IN ACCORDANCE WITH AWWA C504. SEWAGE FORCE MAIN VALVES SHALL BE RESILIENT-SEAL PLUG VALVES IN ACCORDANCE WITH AWWA C517.

6. ALL TRENCHING, PIPE-LAYING, BACKFILL, PRESSURE TESTING, AND DISINFECTION MUST COMPLY WITH CITY AND LOCAL GOVERNMENTAL REGULATIONS AND STANDARDS.

7. WATER AND FORCE MAINS SHALL BE PIGGED A MINIMUM OF TWO TIMES, AND ADDITIONALLY, IF REQUIRED BY ENGINEER OF RECORD, AS WELL AS, PRESSURE TESTED FOR A PERIOD OF NOT LESS THAN TWO HOURS AT 150 PSI IN ACCORDANCE WITH ANSI/AWWA C600 LATEST STANDARDS. ALLOWABLE LEAKAGE SHALL BE DETERMINED AS FOLLOWS:

$$L = \frac{SD\sqrt{P}}{148{,}000}$$

WHERE:

L = ALLOWABLE LEAKAGE (GALLONS PER HOUR)
S = PIPE LENGTH (FEET)
D = NOMINAL DIAMETER OF PIPE (INCHES)
P = AVERAGE TEST PRESSURE (PSI)

8. RESTRAINTS SHALL BE PROVIDED AT ALL FITTINGS AS SHOWN ON PP 2.0 AND 2.1

9. PRIOR TO ANY TESTING UNDER FUTURE PAVEMENT, ROCK SHALL BE FINISHED & PRIMED OR 1ST LIFT OF ASPHALT PLACED.

10. PIG SIZE SHALL BE PIPE DIAMETER PLUS 2" OR NEXT LARGER DIAMETER.

11. NO PROPOSED STRUCTURES SHALL BE INSTALLED WITHIN A HORIZONTAL DISTANCE OF 10-FEET FROM ANY EXISTING OR PROPOSED WATER OR FORCE MAINS.

12. LINE STOPS SHALL BE INSTALLED A MINIMUM OF 3 PIPE LENGTHS FROM LOCATION OF PIPE REMOVED AND PROVIDE NECESSARY JOINT RESTRAINTS.

MINIMUM LENGTHS OF PIPE (FT) TO BE RESTRAINED

FITTING TYPE		PIPE SIZE							
		4"	6"	8"	10"	12"	16"	20"	24"
90° HORIZ. BEND		14	20	25	30	35	45	54	62
45° HORIZ. BEND		6	8	11	13	15	19	22	26
22.5° HORIZ. BEND		3	4	5	6	7	9	11	12
11.25° HORIZ. BEND		1	2	3	3	4	4	5	6
90° VERT. OFFSET	UPPER BEND	55	79	103	125	147	189	228	266
	LOWER BEND	22	38	49	59	69	88	106	123
45° VERT. OFFSET	UPPER BEND	22	32	42	51	60	77	93	109
	LOWER BEND	10	14	19	23	28	35	43	50
22.5° VERT. OFFSET	UPPER BEND	7	12	17	21	26	34	42	49
	LOWER BEND	2	4	6	8	10	14	17	21
11.25° VERT. OFFSET	UPPER BEND	3	4	6	9	11	15	19	22
	LOWER BEND	1	1	1	2	3	5	7	8
PLUG (DEAD END)		32	45	59	70	83	107	129	151
INLINE VALVE		32	45	59	70	83	107	129	151
TEE (BRANCH RESTRAINT)	4" X Ø"	23							
	6" X Ø"	21	35						
	8" X Ø"	18	34	47					
	10" X Ø"	16	32	46	58				
	12" X Ø"	13	30	44	57	69			
	16" X Ø"	7	26	41	55	67	90		
	20" X Ø"	1	21	38	52	65	88	109	
	24" X Ø"	1	16	34	49	62	86	108	129
REDUCER (LARGER PIPE RESTRAINT)	6" X Ø"	23							
	8" X Ø"	38	25						
	10" X Ø"	57	43	24					
	12" X Ø"	72	60	44	41				
	16" X Ø"	99	90	78	75	45			
	20" X Ø"	123	116	107	105	81	45		
	24" X Ø"	146	140	132	131	111	82	45	

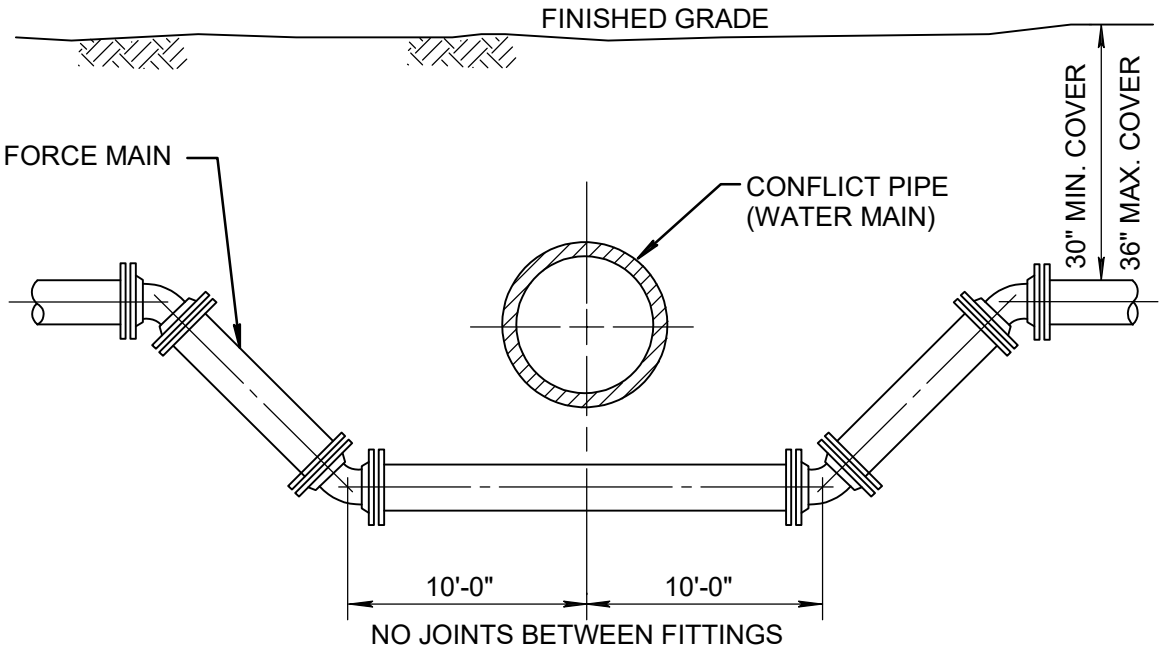
RESTRAIN PIPE ONE BELL PAST MINIMUM DISTANCE

NOTES:

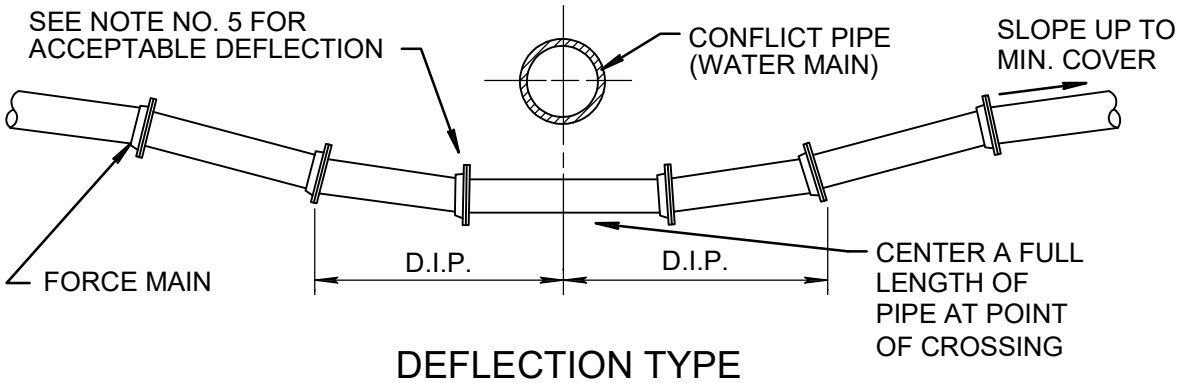
1. THE DATA IN THE PREVIOUS TABLE IS BASED UPON THE FOLLOWING INSTALLATION CONDITIONS:

   SOIL TYPE .....SAND
   TEST PRESSURE .....150 PSI, 200 PSI FOR PIPES LARGER THAN 24"
   DEPTH OF BURY .....3'
   TRENCH TYPE 3
   SAFETY FACTOR 1.5
   VERTICAL OFF-SET .....3'
   MINIMUM PIPE LENGTHS
   ALONG TEE RUN .....5'

2. THE RESTRAINED PIPE LENGTHS APPLY TO DUCTILE IRON PIPE AND PVC PIPE.
3. ALL JOINTS BETWEEN UPPER AND LOWER BENDS SHALL BE RESTRAINED.
4. RESTRAINED PIPE LENGTHS FOR VALVES APPLY TO PIPE ON BOTH SIDES OF VALVES
5. THE PREVIOUS TABLE SHALL SERVE AS A GENERAL DESIGN GUIDE ONLY. IT IS THE ENGINEER OF RECORD'S RESPONSIBILITY TO JUSTIFY AND DOCUMENT ANY DEVIATIONS FROM THE PIPE LENGTHS SPECIFIED IN THE PREVIOUS TABLE.
6. SOURCES: EBAA IRON RESTRAINT LENGTH CALCULATION PROGRAM FOR PVC PIPE, RELEASE 3.1 (LATEST EDITION) AND DIPRA RESTRAINT FOR DUCTILE IRON PIPE, RELEASE 3.2 (LATEST EDITION).
7. RESTRAINED JOINTS SHALL EXTEND ONE JOINT BEYOND MINIMUM LENGTH REQUIRED.



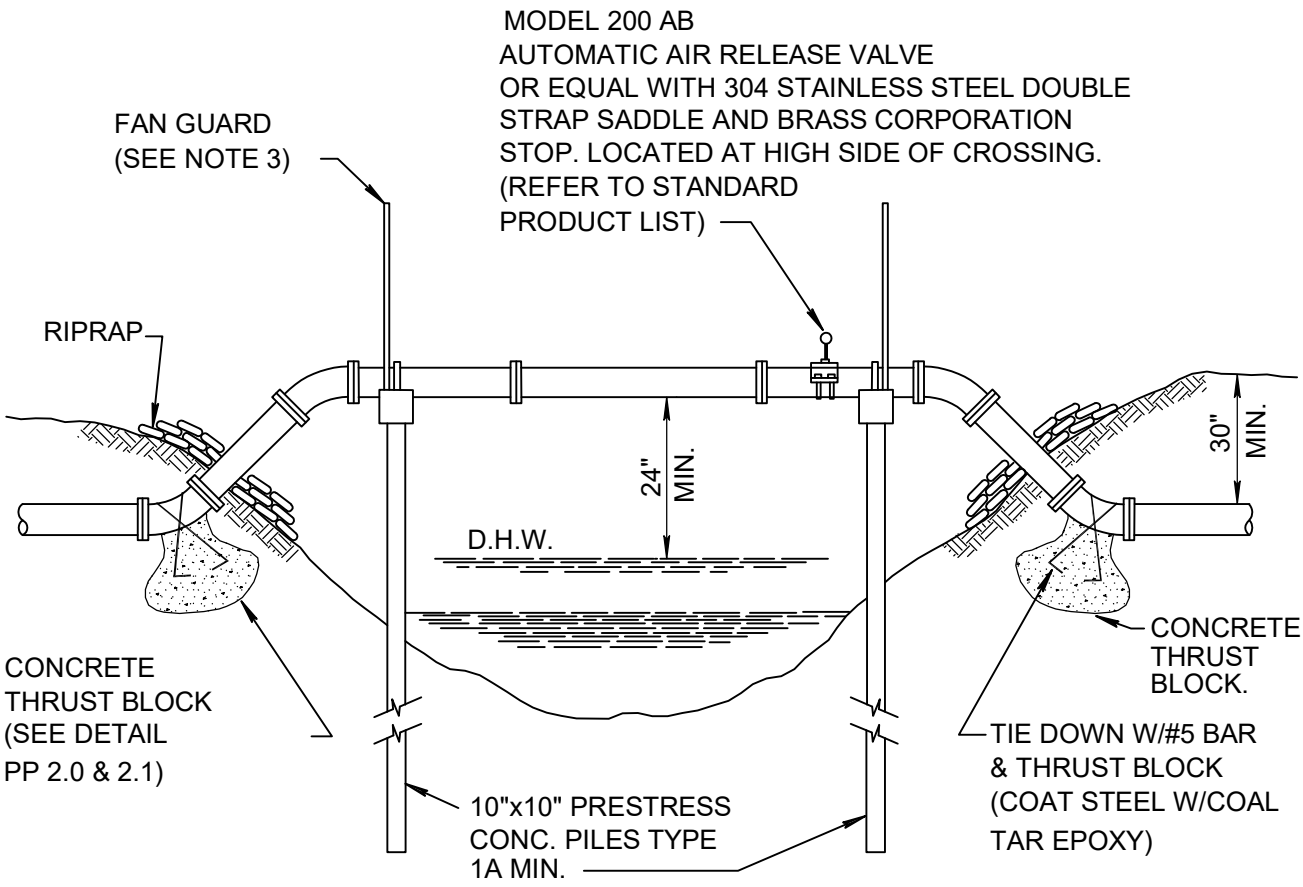
FITTING TYPE



DEFLECTION TYPE

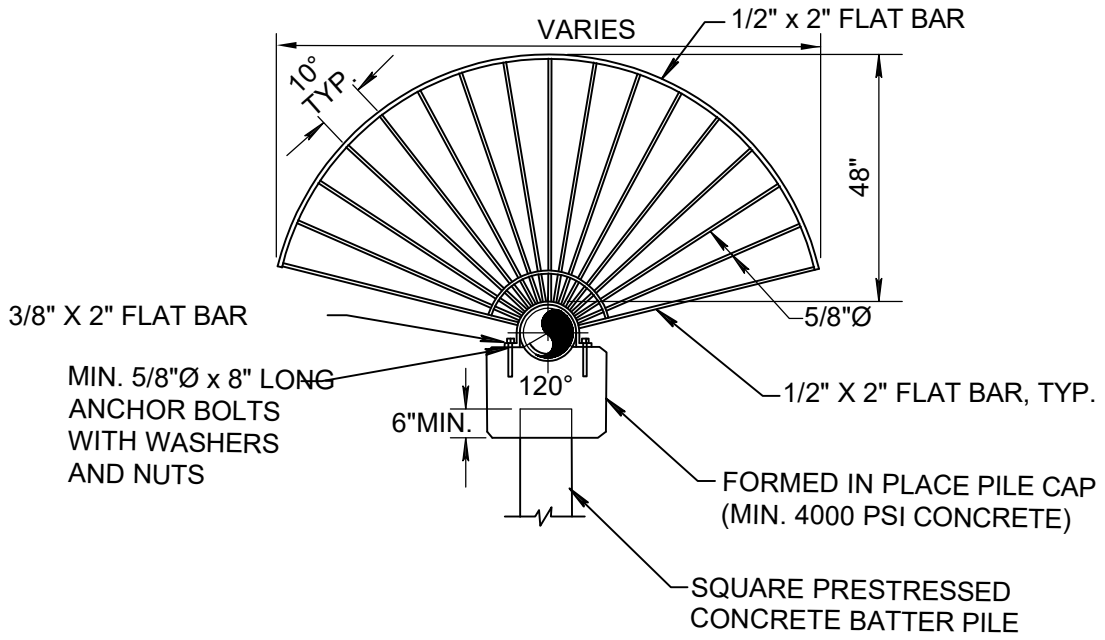
NOTES:

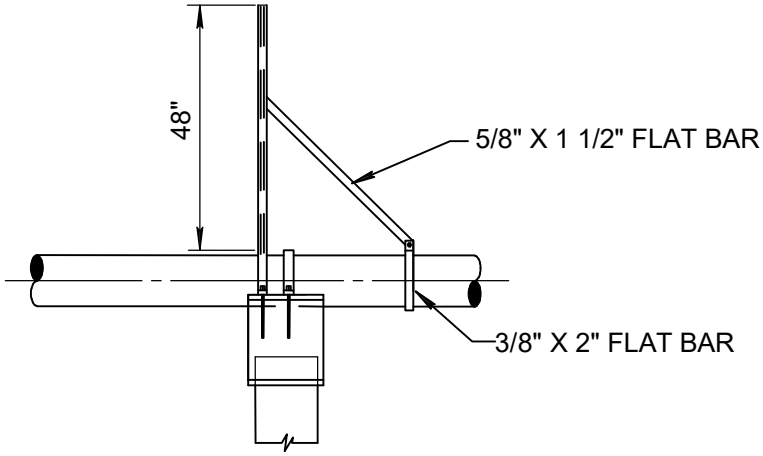
1. THERE SHALL BE IN ALL CASES A MINIMUM OF 18" VERTICAL SEPARATION BETWEEN WATER MAINS AND FORCE MAINS.
2. WHEREVER POSSIBLE WATER MAINS SHALL PASS OVER FORCE MAINS OR STORM SEWERS.
3. FITTINGS SHALL BE RESTRAINED WITH MECHANICAL JOINT RESTRAINTS.
4. THE DEFLECTION TYPE CROSSING IS PREFERRED.
5. DO NOT EXCEED 75% OF MANUFACTURERS RECOMMENDED MAXIMUM JOINT DEFLECTION.
6. REFER TO TYPICAL RESTRAINING DETAIL PP 2.0 AND 2.1



NOTES:

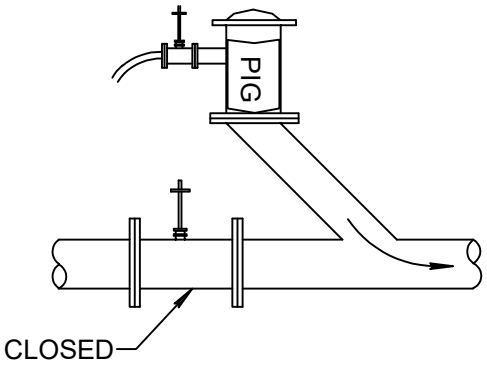
1. ALL EXPOSED PIPE SHALL BE CLASS 350 DUCTILE IRON WITH FLANGED FITTINGS. RETAINER GLANDS AND UNIFLANGE TYPE FITTINGS ARE NOT TO BE SUBSTITUTED FOR FLANGED FITTINGS.
2. SPAN LENGTHS AS REQUIRED BY PERMITTING AGENCY
3. FAN GUARDS ARE REQUIRED. (SEE DETAIL PP 5.0)
4. ALL EXPOSED PIPING, GUARDS AND FITTINGS SHALL BE PAINTED, WITH EPOXY COATING IN ACCORDANCE WITH AWWA C210.
5. PIPE SHALL BE CRADLED ON FELT (80 LB MIN.) OR 1/4" 60-1100 NEOPRENE.
6. TIE-DOWN STRAPS MUST PROPERLY FIT AND SECURE PIPE IN CRADLE AND SHALL BE MINIMUM 5/16"x 1" 316 STAINLESS STEEL.
7. PIPE CRADLE IN CAP SHALL CONTACT 1/2 CIRCUMFERENCE OF PIPE. (SEE FAN GUARD DETAIL)
8. PILE LIFT CABLE SHALL BE REMOVED BELOW SURFACE; HOLE SHALL BE FILLED WITH EPOXY CEMENT.
9. ALL FASTENERS SHALL BE 316 STAINLESS STEEL, INCLUDING ANCHORS, BOLTS, NUTS AND WASHERS.
10. D.H.W. = DESIGN HIGH WATER
11. THE LOWEST MEMBER SHALL BE NO LOWER THAN FORTY (40) INCHES ABOVE THE MAINTAINED ELEVATION OR TWENTY-FOUR (24) INCHES ABOVE THE DESIGN HIGH WATER ELEVATION, WHICHEVER IS THE HIGHER.



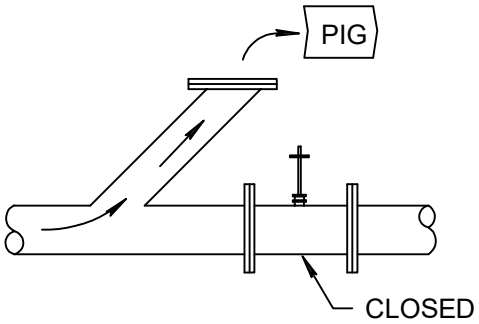


NOTES:

1. FAN GUARDS SHALL BE PLACED AT EACH END OF CANAL CROSSING.
2. FANGUARD AND HARDWARE SHALL BE FABRICATED FROM DOUBLE HOT DIPPED GALVANIZED STEEL.
3. FAN GUARD AND HARDWARE SHALL BE PAINTED WITH EPOXY.
4. CUT PILE, EXTEND PRESTRESSING STRANDS INTO PILE CAP AND TIE WITH CAP STEEL.
5. REINFORCING STEEL SHALL CONFORM TO ASTM A-615, GRADE 60. MINIMUM 3" COVER OVER ALL STEEL. SEE "TYPICAL CANAL CROSSING DETAIL" FOR ADDITIONAL REQUIREMENTS.



WYE ENTRY

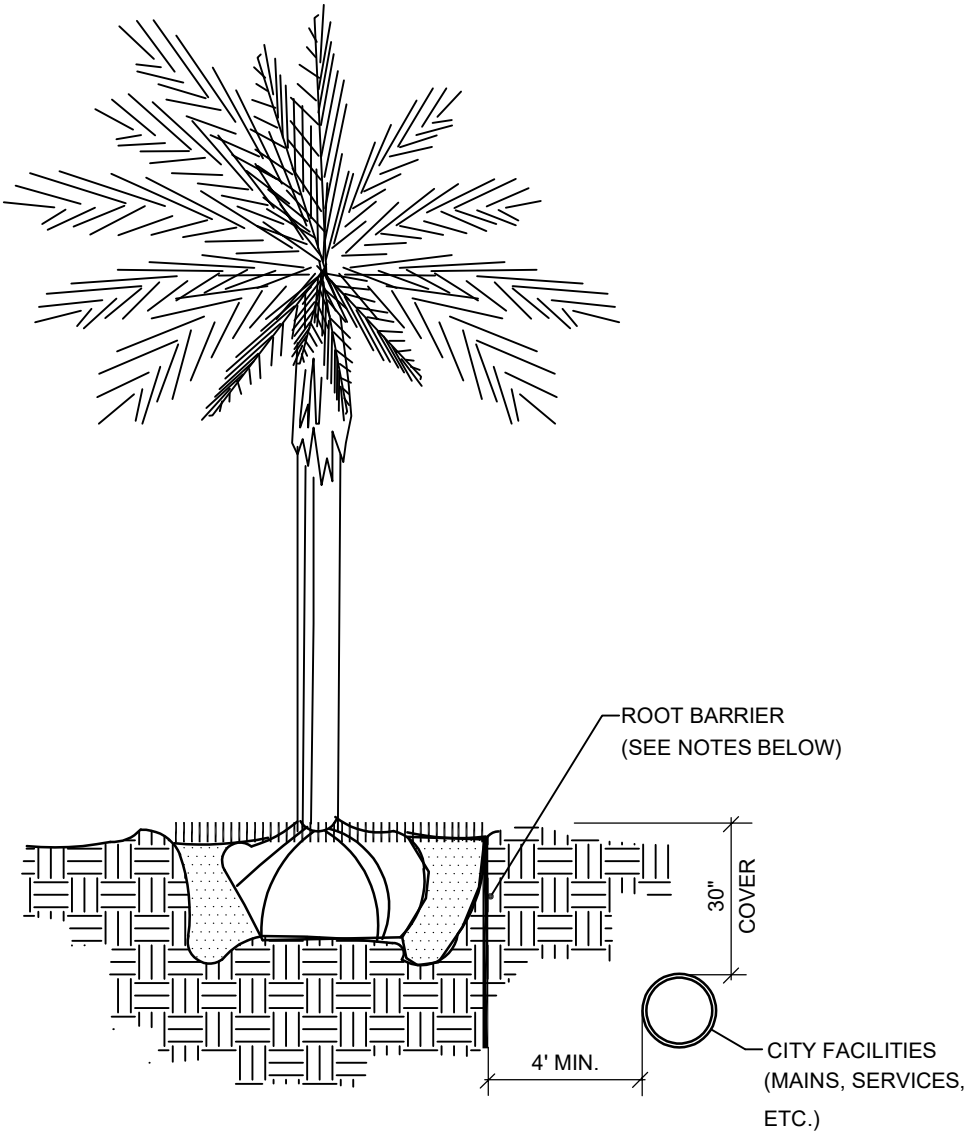


WYE EXIT

HINGED CLOSURE

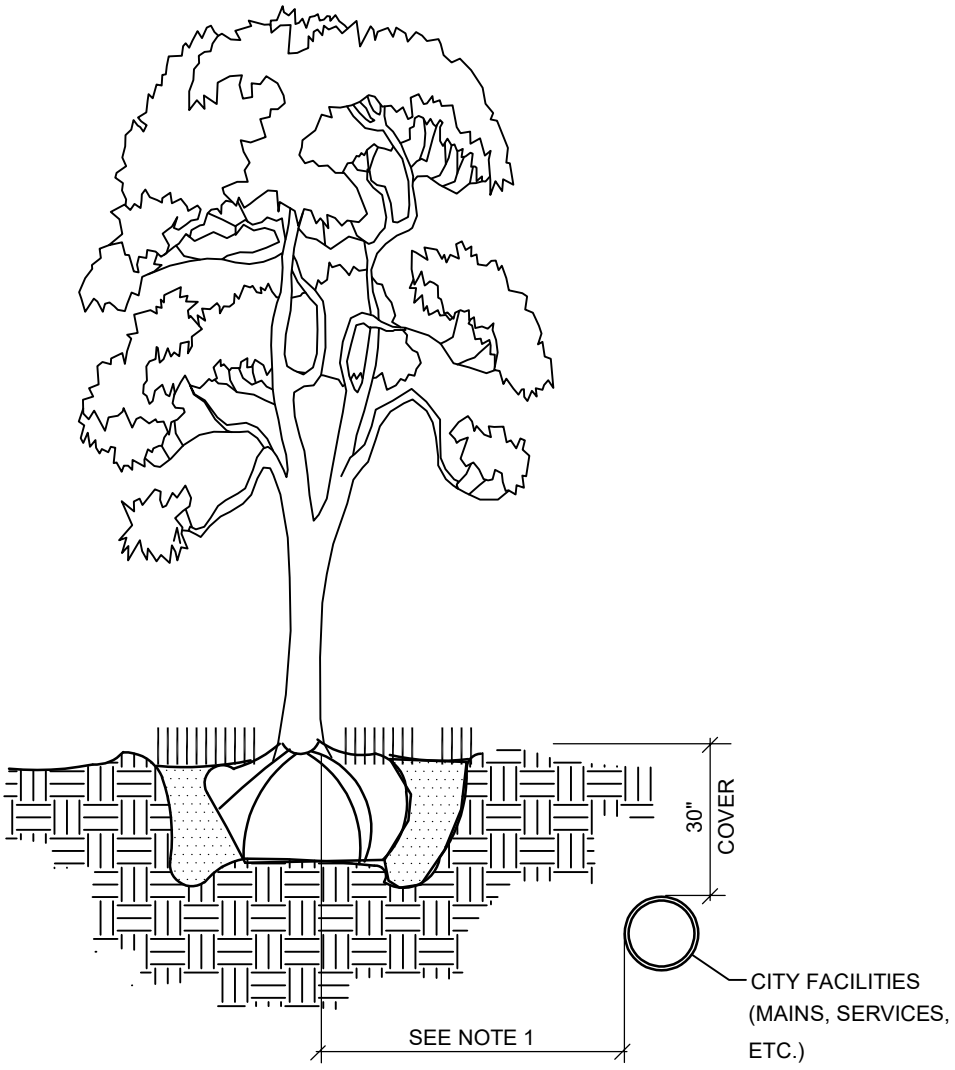
NOTE:

ALL NEWLY INSTALLED PRESSURE PIPE SHALL BE "PIGGED" UNTIL CLEAN AND APPROVED BY ENGINEER DURING THE FILLING AND FLUSHING OPERATION. PIG SIZE SHALL BE PIPE DIAMETER PLUS 2" OR NEXT LARGER DIAMETER.



NOTES:

1. ALL ROOT BARRIERS SHALL BE 4' MINIMUM FROM ALL CITY FACILITIES.
2. THE INSTALLATION OF ROOT BARRIERS SHALL BE COORDINATED WITH CITY AND INSPECTED BY CITY PRIOR TO BACKFILLING. ALL ROOT BARRIERS SHALL EXTEND UP TO FINISHED GRADE.
3. ROOT BARRIERS SHALL BE MINIMUM 36" DEEP. APPROVED PRODUCTS INCLUDE "DEEP ROOT" AND "ROOT SOLUTIONS". FLEXIBLE BARRIERS SHALL BE 36" PANELS MANUFACTURED BY BIOBARRIER.
4. ALL ROOT BARRIERS SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURERS WRITTEN INSTRUCTIONS.



NOTES:

1. THIS DISTANCE SHALL BE 10' MINIMUM FROM ALL CITY FACILITIES IF NO ROOT BARRIER IS USED.

GENERAL LIFT STATION REQUIREMENTS

VALVE VAULT

PRECAST CONCRETE OF ADEQUATE SIZE TO ACCOMMODATE ALL VALVES, FITTINGS, AND PUMP CONNECTION WITH A MINIMUM 4-INCH CLEARANCE BETWEEN INSIDE WALLS AND ALL VALVES/FITTINGS. VAULT TO BE DRAINED TO WET WELL USING A GRAVITY LINE OF SCH. 80 PVC INCORPORATING A FLAPPER STYLE CHECK VALVE TO PREVENT SEWER GASES FROM ENTERING THE VAULT FROM THE WET WELL W/ RUBBER SEAL & GASKET. COAT W/ SEWPER COAT® OR APPROVED EQUAL.

VALVES

CUT-OFF VALVES TO BE DEZURIK (NO SUBSTITUTIONS ALLOWED) ANTI-FREEZE TYPE PLUG VALVES MOUNTED IN SEPARATE VAULT OUTSIDE OF WET WELL. VALVES MUST BE FLANGED AND ADEQUATELY SUPPORTED.

CHECK VALVES SHALL BE KENNEDY (NO SUBSTITUTIONS ALLOWED) SWING CHECK WITH WEIGHTED ARMS, FLANGED ON BOTH ENDS AND ADEQUATELY SUPPORTED.

PIPING

DUCTILE IRON CLASS 350 FLANGED, MINIMUM 4-INCH DIAMETER FROM EACH PUMP, AND MINIMUM 6-INCH DIAMETER WHERE TWO ARE MANIFOLDED TOGETHER FOR SINGLE DISCHARGE.

WET WELL

CONSTRUCTION SHALL BE OF REINFORCED CONCRETE MADE OF TYPE 2 CEMENT. INSIDE OF WET WELL SHALL BE LINED WITH SEWPER COAT® OR APPROVED EQUAL COATING TO RESIST CORROSION FROM SEWER GASES AND SHALL HAVE A MINIMUM 6 FEET INSIDE DIAMETER WITH ONE 8-INCH MINIMUM INFLUENT LINE ARRANGED TO AVOID AIR ENTRAINMENT AS FLOW ENTERS. SUMP AREA BELOW INFLUENT LINE INVERT SHALL BE A MINIMUM 4-FEET DEEP WITH TAPERED BOTTOM TO AVOID SLUDGE DEPOSITS. INFLUENT PIPE CONNECTION AND WET WELL JOINTS SHALL BE O-RING GASKET OR FLEXIBLE WATER TIGHT JOINTS. A 12-FEET WIDE STABILIZED ROAD SHALL BE PROVIDED FOR MAINTENANCE TRUCK ACCESS. MINIMUM WALL THICKNESS SHALL BE 8-INCHES, MINIMUM FOUNDATION THICKNESS SHALL BE 18-INCHES, FOUNDATION SLAB TO BE SET ON A 18-INCH LAYER OF WASHED ROCK WRAPPED IN FILTER FABRIC. (SEE STANDARD BEDDING DETAIL D 4.0).

SPARE PARTS

ALL TELEMETRY ITEMS LISTED ON LS 11.0 UNDER SPARE PARTS.

GENERAL LIFT STATION REQUIREMENTS (CON'T.)

HATCH COVERS

HATCH COVERS TO BE ALUMINUM WITH 316 STAINLESS STEEL HARDWARE, AND WITH AN ARRANGEMENT FOR PADLOCK. HEAVY DUTY TRAFFIC BEARING H-20 LOADING ALUMINUM SHALL BE USED AT ALL LOCATIONS. EACH HATCH SHALL BE SPRING LOADED AND LOCK UPON CLOSING, AND SHALL BE EQUIPPED WITH A SAFETY ARM. ALL HATCH COVERS ARE TO HAVE A GASKET SEAL. WET WELL HATCH COVERS SHALL HAVE THE LID SPLIT INTO TWO (2) OR THREE (3) SECTIONS DETERMINED BY THE STATION CONFIGURATION. THE SECTIONS SHALL BE SIZED AND SET UP TO ALLOW ALL SINGLE PUMP TO BE REMOVED AT TIME. EACH SECTION SHALL BE ABLE TO OPEN WITHOUT OPENING ANOTHER SECTION, AND EACH LID REQUIRES A PAD LOCK POST.

GUIDE/SLIDE RAILS

IN ORDER TO STANDARDIZE INSTALLATION AND SERVICE PRACTICES, THE FOLLOWING "BREAK-AWAY-FITTING" (BAF) IS TO BE PROVIDED FOR EACH PUMP PUT INTO SERVICE. EACH BAF SHALL INCLUDE THE STATIONARY BASE ELBOW, UPPER GUIDE RAIL SUPPORT BRACKET AND MOVEABLE FITTING AS SPECIFIED. THE 4" X 4" SHALL BE BARNES OR APPROVED EQUAL PART NO. 087315. THE 6" X 6" SHALL BE BARNES OR APPROVED EQUAL PART NO. 091550. NO SUBSTITUTIONS ALLOWED. ALL COMPONENTS SHALL BE CAST IRON OR STAINLESS STEEL (INCLUDING HARDWARE). MATING CONTACT BETWEEN MOVEABLE AND STATIONARY FITTINGS SHALL BE OFF-VERTICAL, UTILIZING THE PUMP WEIGHT TO ASSURE A LEAK-FREE CONNECTION EVEN AT HIGH DISCHARGE PRESSURES. MATING FACE SHALL UTILIZE O-RING DESIGN CAPTURED IN DOVE-TAIL GROOVE OF MOVEABLE FITTING. GUIDE RAILS SHALL BE 1-1/2-INCH SCHEDULE 40, 316 STAINLESS STEEL AND SECURED TO BOTTOM AND/OR SIDE OF WET WELL. THE BAF'S SHALL BE MOUNTED SECURELY WITH APPROVED ANCHORS, 316 STAINLESS STEEL HARDWARE.

WATER CONNECTION

MINIMUM 1-1/2-INCH WATER SERVICE WITH RPZ BACKFLOW PREVENTER, CUT OFF VALVE W/ BOX, AND METER APPROVED BY THE CITY OF DELRAY BEACH UTILITIES MAINTENANCE SHALL BE PROVIDED AND POSITIONED NEAR THE CONTROL STAND.PROVIDE A 1-1/2-INCH TEE.

PUMPS

THE MINIMUM 4.5 HP, 3-INCH SOLIDS HANDLING, 4-INCH DISCHARGE DIAMETER PUMPS SHALL BE MANUFACTURED BY PEABODY BARNES, OR APPROVED EQUAL, AND SHALL BE DESIGNED TO OPERATE NEAR OPTIMUM EFFICIENCY. MINIMUM TWO PUMPS SHALL BE INSTALLED IN ONE LIFT STATION WITH DEVICES TO PREVENT MOTORS FROM DRAWING MORE THAN FULL LOAD RATED AMPERAGE. VIBRATION MUST NOT BE EXCESSIVE ON ANY PART OF THE PUMP CURVE.

PUMP RATE

PUMPS TO OPERATE AT _____ GPM, TDH= _____ FT.

FLOOD CRITIERA

3 DAY, 25 YEAR STORM EL.=_____, TOP OF STRUCTURE EL.=_____.
3 DAY, 100 YEAR STORM EL.=_____, BOTTOM OF CONTROL PANEL EL.=_____.

GENERAL LIFT STATION REQUIREMENTS (CON'T.)

1. WET WELLS TO BE LINED WITH SEWPER COAT OR APPROVED EQUAL SPECIALLY DESIGNED FOR THE PROTECTION OF SANITARY MANHOLES, WET WELLS AND VALVE VAULTS. LINING SHALL BE AS MANUFACTURED BY SEWPER COAT® OR APPROVED EQUAL.

2. VALVES AND VALVE BOX TO BE COATED WITH SEWPER COAT® OR APPROVED EQUAL.

3. HATCH COVERS TO BE SPRING LOADED AND GASKETED, WET WELL COVER TO BE SPLIT.

4. WATER CONNECTIONS TO HAVE 1-1/2-INCH SERVICE WITH REDUCING BUSHINGS FOR CITY PRESSURE MONITORING AND 3/4-INCH SERVICE INTO WET WELL (CAPPED).

5. FUSED VINYL COATED, GREEN IN CHAIN LINK FENCE TO MATCH EXISTING AREA. (TROPICAL FENCE).

6. R.T.U. SHOULD REMAIN OUTSIDE OF CONTROL CABINET AT EXISTING STATIONS DUE TO HIGH AMBIENT TEMP.

7. GENERATOR PLUG (1044FR-100A MALE) OR (2044FR-200A MALE) REVERSE SERVICE. (MFR. RUSSELL STOLL)

8. CONDUITS TO BE SEALED IN CONTROL CABINET WITH NYLON STRAIN RELIEF CONNECTORS AND "DUCT SEAL" OR EQUAL.

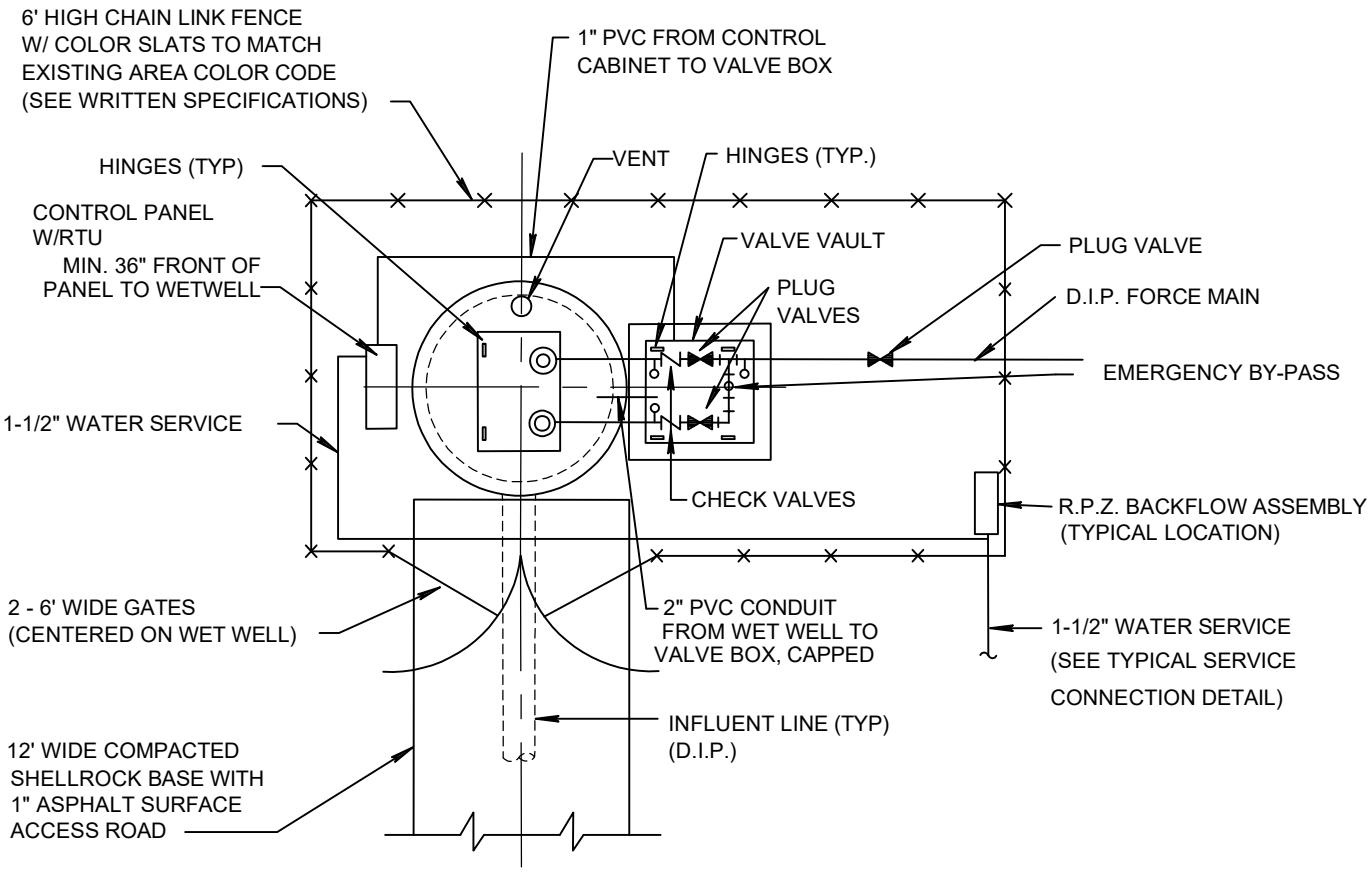
9. SEE PUMP BY-PASS DRAWING.

10. ALL CONTROLS SHALL BE TESTED BY THE CONTRACTOR AND VERIFIED BY UTILITIES MAINTENANCE PRIOR TO BEING ACCEPTED BY THE CITY.

11. SUBMERSIBLE PRESSURE TRANSDUCERS SHALL BE USED. (KELLER LEVEL GAGE P/N 0407.01302.020109 RANGE 0-10 PSIG)

INSTALLATION NOTES

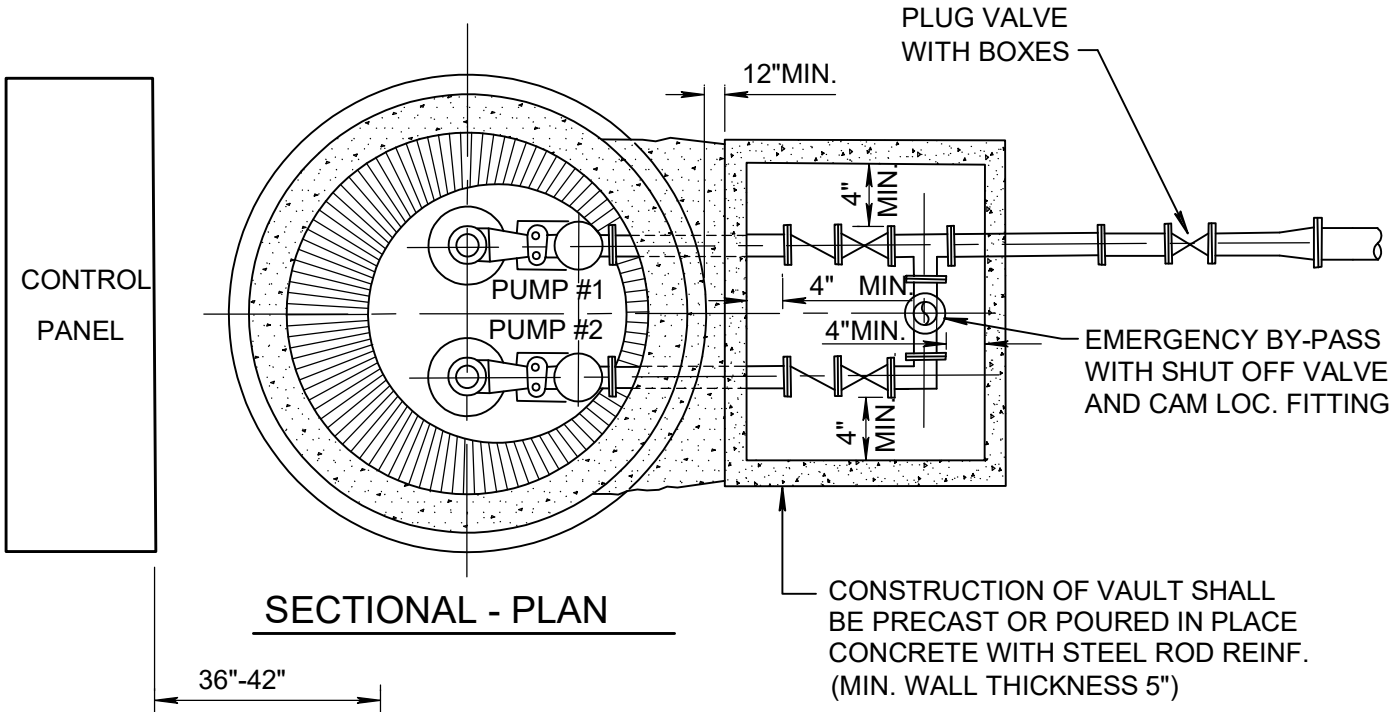
1. SEAL ALL CONDUITS IN THE CABINET WITH ELECTRICAL DUCT SEAL TO KEEP OUT FUMES AND MOISTURE. SUPPORT CABLES ENTERING THE CABINET WITH PVC STRAIN RELIEF CONNECTORS.
2. CONDUIT TO FPL SERVICE POINT SHALL BE RIGID GALVANIZED PVC COATED. CONDUITS TO WET WELL SHALL BE ON SCHEDULE 80 PVC, 2" FOR ALL.
3. TEST BY MEGGERING ALL WIRES AND MOTORS. READINGS SHOULD BE 20 MEGOHMS OR MORE TO GROUND. (DO NOT MEGGER LOW VOLTAGE CONTROLS).
4. OPERATE PUMPS. CHECK DIRECTION, RECORD VOLTAGE AND AMPERAGE WITH EACH AND BOTH RUNNING. ALL WORK TO BE COMPLETED WITH SUPPLIER'S FIELD REPRESENTATIVE PRESENT.
5. CHECK OPERATION WITH OWNER'S PORTABLE GENERATOR. CHANGE DIRECTIONS IF NECESSARY TO PROVIDE CORRECT ROTATION.
6. PANEL MUST NOT BE CLOSER TO WET WELL OPENING THAN 36 INCHES AS MEASURED FROM FRONT OF PANEL. (NEC LATEST EDITION.)
7. PROVIDE SEPARATE 2" CONDUIT FOR EACH PUMP CABLE AND ONE 2" CONDUIT FOR FLOAT SWITCHES.
8. POWER SERVICE SHALL BE ROUTED THROUGH BOTTOM OF PANEL.
9. ALL HARDWARE IN WET WELL SHALL BE 316 STAINLESS STEEL INCLUDING ANCHORS.
10. ALL CABLES TO WET WELL SHALL BE CONTINUOUS WITH NO SPLICES.
11. CABLE FOR PUMP MOTORS SHALL BE OF SUFFICIENT LENGTH TO ALLOW PUMP MOTORS TO BE REMOVED FOR SERVICING
12. SERVICE TO MAIN BREAKER IN CONTROL PANEL SHALL HAVE HI LEG CENTER AND IDENTIFIED BY ORANGE PHASING TAPE FOR 240V DELTA.



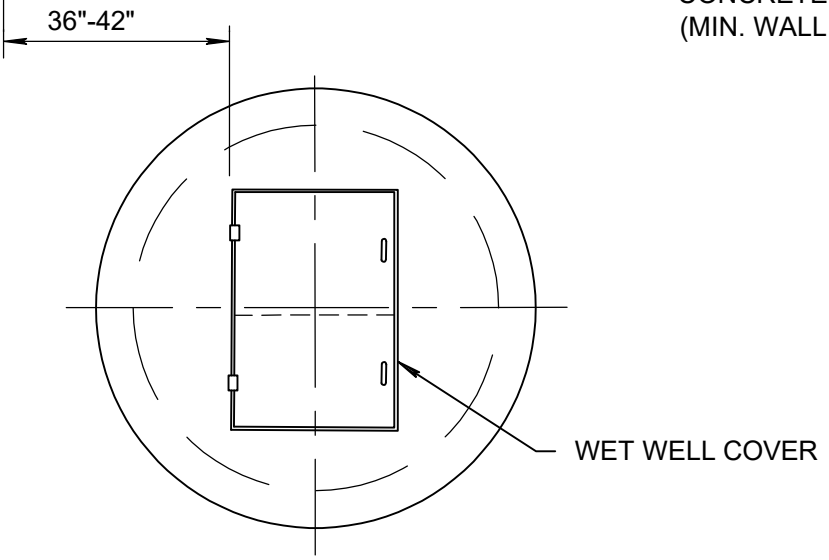
NOTES:

ENGINEER TO DESIGN SITE PLAN USING THE ABOVE EXAMPLE. DESIGN CRITERIA "SITE PLAN LOCATION" DETAIL SHALL BE DRAWN TO SCALE WITH:

1. NORTH ARROW.
2. FENCE WITH 2-6' WIDE GATES.
3. INFLUENT LINE ENTRY LOCATION.
4. HINGE LOCATION.
5. SHOW POWER SERVICE FEED (WITH "AS BUILTS").
6. 36"-42" FROM PANEL TO WET WELL OPENING.
7. EMERGENCY PUMP OUT LOCATION SHALL BE INSIDE OF THE VALVE BOX (SHALL BE SAME SIZE AS PUMP DISCHARGE).
8. DESIGN TO BE COORDINATED WITH DETAIL SHEET LS 4.0.
9. FENCED AREA TO BE COVERED WITH 2 PLY 40 VISQUEEN AND A MINIMUM OF 2" OF 3/4" WASHROCK.
10. INFLUENT MAIN SHALL BE CLEAR OF PANEL AND VAULT.
11. MIN. LOT SIZE TO BE 30' X 30'.
12. MOUNT 0-100 PSI TRANSMITTER IN A PVC - J - BOX (4"X4") & FLEX TO RTU.



SECTIONAL - PLAN



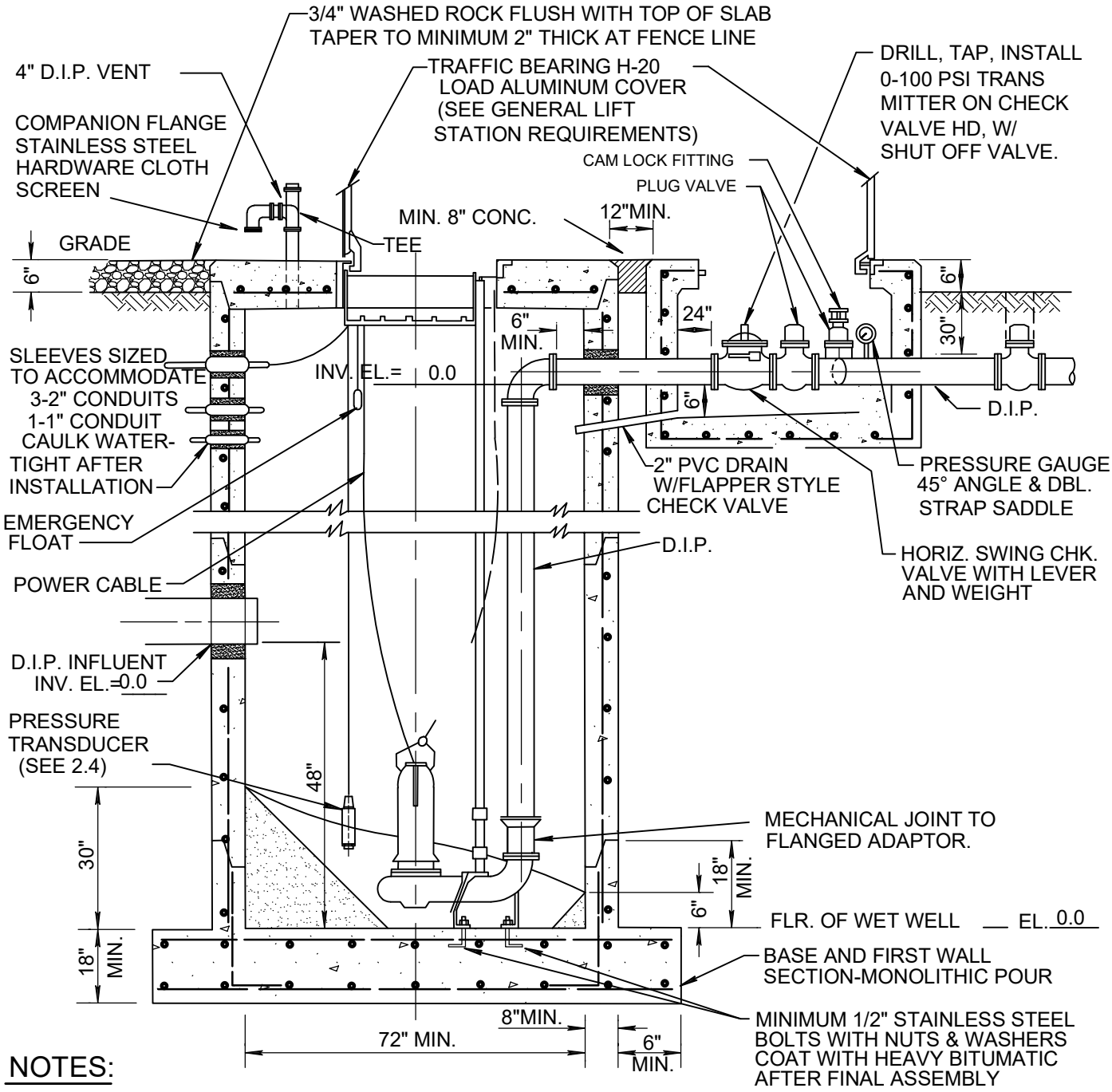
TOP SLAB - PLAN

CITY of DELRAY BEACH
PUBLIC WORKS DEPARTMENT
434 SOUTH SWINTON AVENUE, DELRAY BEACH, FLORIDA 33444

TYPICAL LIFT STATION PLAN

DATE:10-04-2024

LS 4.0



NOTES:

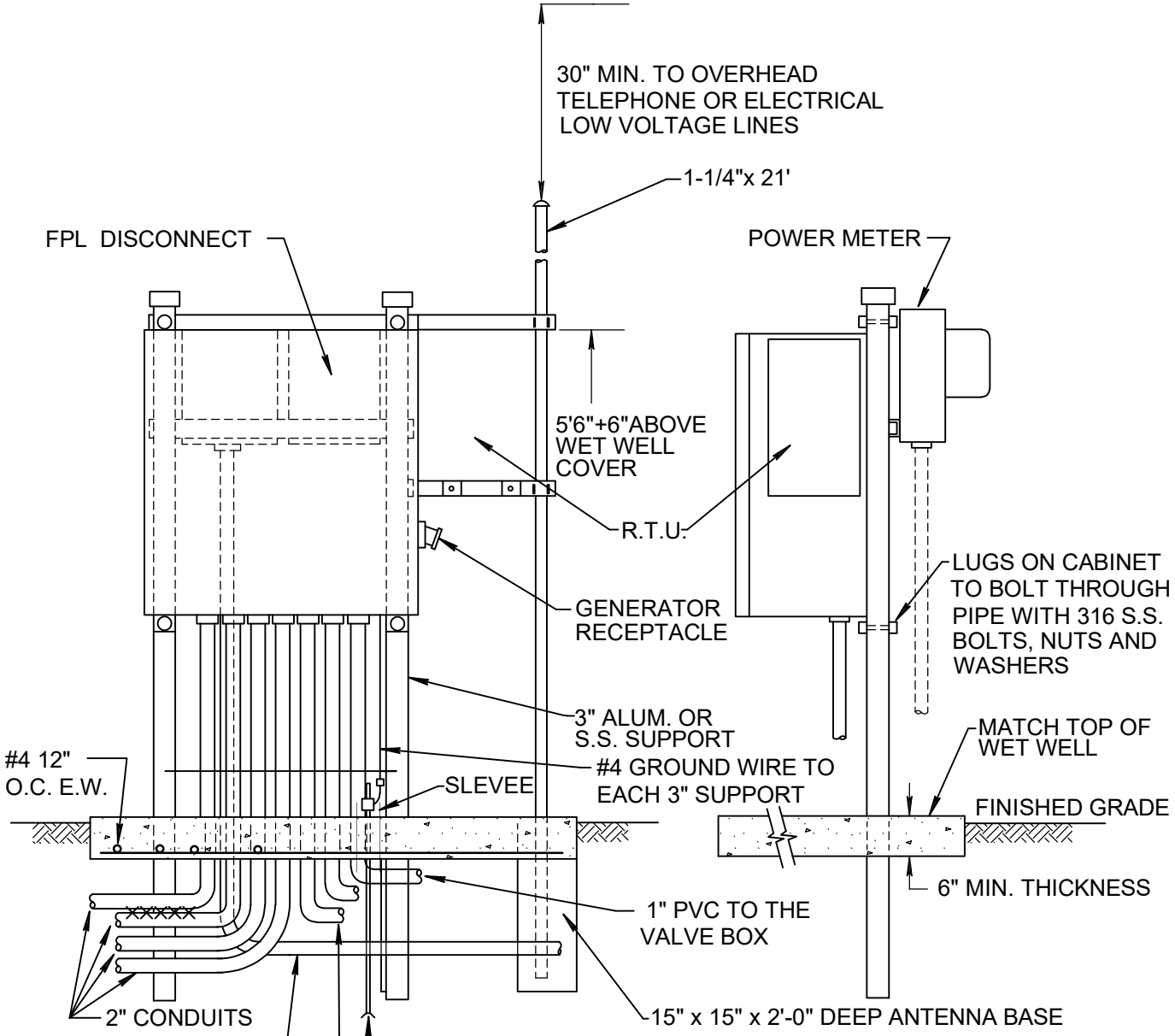
1. RAMNECK & NON-SHRINKING GROUT IN ACCORDANCE WITH STANDARD MANHOLE SPECIFICATIONS.
2. INTERIOR OF WET WELL TO BE COATED W/ SEWPER COAT® OR APPROVED EQUAL AS DESCRIBED IN THE LIFT STATION GENERAL REQUIREMENTS.
3. WET WELL PIPING AND VALVE VAULT AND VALVE VAULT PIPING TO RECEIVE TWO COATS OF KOPPERS BITUMASTIC 300M, 8-10 MILS D.F.T./COAT OR EQUAL. FIRST COAT RED, SECOND COAT BLACK.
4. ALL STEEL IN WET WELL SHALL BE 316 STAINLESS STEEL INCLUDING GUIDE BARS, CABLE SUPPORTS,CABLE HOLDER & GUIDE BAR BRACKET. (TYPE 316)
5. TYPE II REINFORCED CONCRETE (# 4 BARS @ 12" OC THROUGHOUT)., 4000 p.s.i.
6. SEE PLAN FOR CORRECT ORIENTATION OF PIPES, VENT AND OTHER FIXTURES.

CITY of DELRAY BEACH
PUBLIC WORKS DEPARTMENT
434 SOUTH SWINTON AVENUE, DELRAY BEACH, FLORIDA 33444

TYPICAL LIFT STATION (SECTION)

DATE:10-04-2024

LS 5.0



NOTES:

1. RTU MOUNTED ON FRONT OF RACK.
2. SERVICE WIRE SIZE- #3 COPPER, 100A MAIN BREAKER, 100A EMERGENCY BREAKER, STARTER MOTOR- NEMA SIZE 1, 20A MOTOR CIRCUIT PROTECTOR TRIP RATING.
3. BOTTOM OF CONTROL PANEL TO BE SET ABOVE 100 YEAR FLOOD ELEVATION.
4. DO NOT KNOCK OUT OR USE ANTENNAE MOUNTING HOLE (RTU)
5. SLEEVE GROUND ROD, DO NOT POUR CONCRETE AROUND ROD

GENERAL LIFT STATION PANEL REQUIREMENTS

1. ENCLOSURE TO BE 316 STAINLESS STEEL WEATHER PROOF. PANEL TO FINISH. PANEL TO BE LOCKABLE AND EQUIPPED WITH DEAD FRONT AND FLUORESCENT LIGHT INSIDE.

2. NEMA RATED CLASS 8536 STARTERS TO BE SQUARE D.

3. STARTERS/CONTROL CIRCUITS SHALL BE 120 VAC.

4. GENERATOR PLUGS TO BE 1044FR-100A, 2044FR-200A.

5. CABLES/WIRES FOR EACH PUMP MOTOR SHALL BE UNSPLICED, INSTALLED IN A SEPARATE 2" CONDUIT (SCH. 80 PVC).

6. GFI TO BE INSTALLED IN ENCLOSURE ON A SEPARATE BREAKER. (SQ. D QOU).

7. RTU SHALL BE ON A DEDICATED BREAKER. (SQ. D QOU).

8. CONTROL VOLTAGE SHALL BE ON A DEDICATED BREAKER. (SQ. D QOU).

9. CONDUITS BETWEEN WET WELL AND ENCLOSURE SHALL BE SEALED TO PREVENT GASES FROM ENTERING ENCLOSURE. (NYLON THOMAS & BETTS STRAIN RELIEFS AND "DUCT SEAL").

10. POWER DISTRIBUTION BLOCKS TO BE USED, WITH COVERS.

11. TERMINAL STRIPS SHALL BE USED FOR INTERFACE BETWEEN RTU AND CONTROL CABINET. (30 POINTS MINIMUM).

12. AN INTERLOCK SHALL BE INSTALLED BETWEEN MAIN/EMERGENCY BREAKER.

13. EACH MOTOR SHALL HAVE A SEPARATE BREAKER. (SQ D).

14. INTRUSION ALARM MONITORS THE OUTSIDE DOOR ON THE PANEL.

15. ALL PANDUIT SHALL BE 1.5" BY 1.5" MINIMUM.

GENERAL LIFT STATION PANEL REQUIREMENTS (CON'T)

16. PANEL TO INCLUDE HOA SWITCHES FOR MANUAL OVERRIDE OF SYSTEM IF TELEMETRY FAILS.

17. SUPPORT STAND SHALL CONSIST OF STAINLESS STEEL COMPONENTS AND SHALL BE SECURED IN A CONCRETE BASE.

18. PUMP BREAKERS MUST PROVIDE THE ABILITY TO BE LOCKED AND TAGGED OUT.

19. A FUSED ELECTRICAL DISCONNECT SHALL BE PROVIDED BETWEEN THE FLORIDA POWER & LIGHT METER AND THE CONTROL BOX.

20. LIGHTNING AND SURGE ARRESTER SHALL BE PROVIDED.

21. THERE SHALL BE A RUN INDICATOR LIGHT ON THE DEAD FRONT PANEL FOR EACH PUMP/MOTOR.

22. INSTALLATION MUST MEET ALL NEC AND CITY CODES.

23. CONTROL CABINET SHALL BE GROUNDED TO A SEPARATE 5/8" X 8' COPPER GROUND ROD.

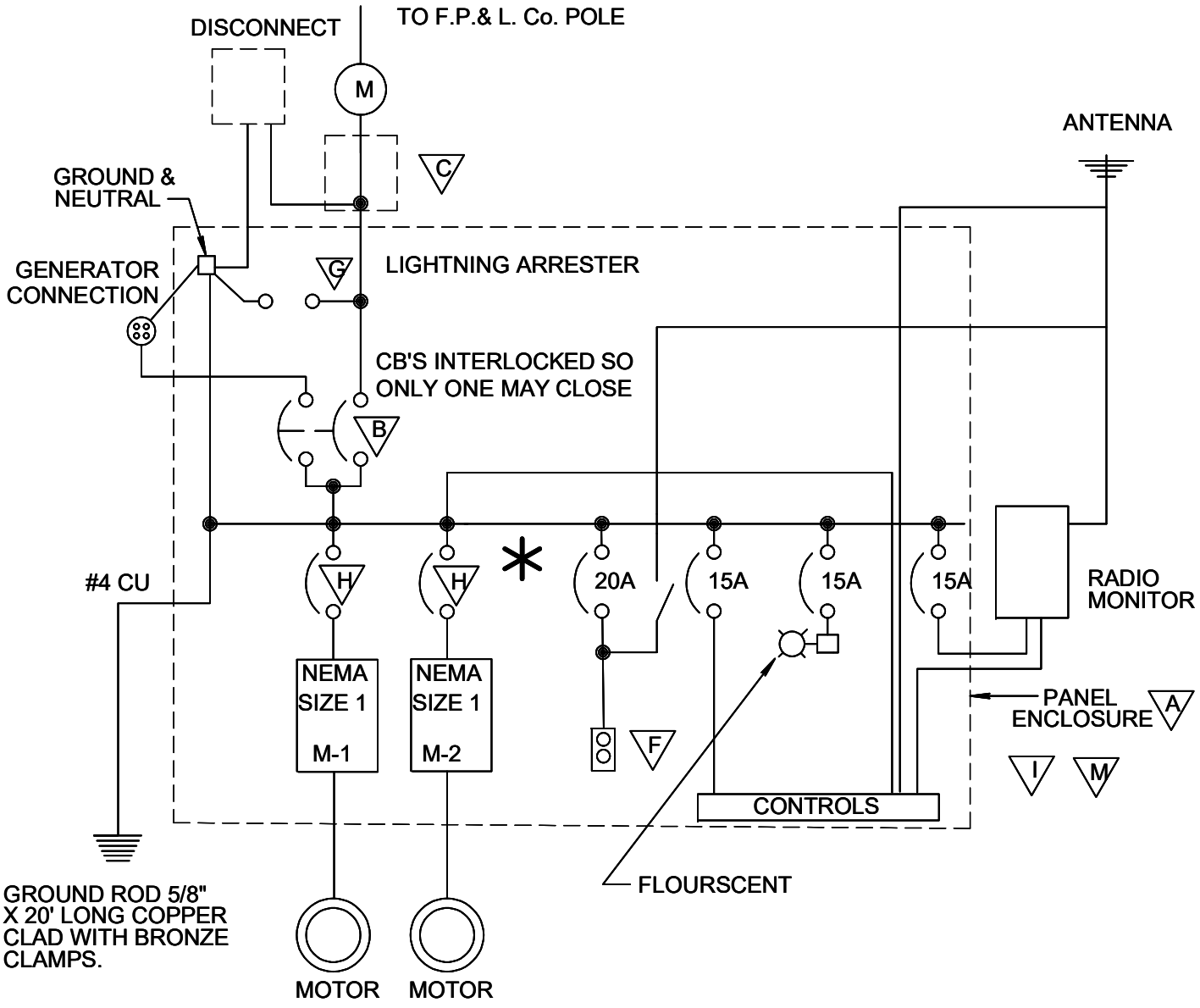
23. BREAKERS ARE TO BE SQUARE D; MOTOR BREAKERS TO BE MAGUARD; CONTROL BREAKERS TO BE SQUARE D QOU

24. OVER LOAD RESETS THROUGH DEAD FRONT.

25. NEUTRAL BLOCK TO BE ISOLATED FROM CABINET AND SIZED PER CABINET WITH MINIMUM OF 8 LUGS. (NO DOUBLE LUGGING ON NEUTRAL BLOCK).

26. ALL WIRING CONNECTIONS (INCLUDING TERMINALS) SHALL BE COATED WITH AN ANTI-OXIDANT JOINT COMPOUND (i.e., NOALOX).

27. PANEL VENDER SHALL INCLUDE THE FOLLOWING IN THE PANEL: A) FLOWLINE DIGITAL METER MODEL NUMBER LI15-1001, B) WIKA LS-10 SUBMERSIBLE LEVEL TRANSMITTER, 0-10 PSI.



* TRANSFORMER IS NOT REQUIRED ON 240V SYSTEMS (ONLY 0N 480 V)

SEE ELECTRICAL NOTES: ▽

CITY of DELRAY BEACH PUBLIC WORKS DEPARTMENT 434 SOUTH SWINTON AVENUE, DELRAY BEACH, FLORIDA 33444	POWER LINE DIAGRAM	DATE:10-04-2024 LS 8.0

ELECTRICAL NOTES

1. ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE AND APPLICABLE LOCAL CODES. COMPONENTS SHALL BE APPROVED AND LISTED BY UNDERWRITER'S LABS, AND SHALL BE SO LABELED FOR THE SERVICE INTENDED.

   A. ALL PANELS ARE TO BE MANUFACTURED PER DRAWING AND WRITTEN SPECIFICATIONS.

2. THE PUMP CONTROL PANEL SHALL BE FURNISHED COMPLETELY ASSEMBLED AND WIRED, WITH THE FOLLOWING MINIMUM FEATURES:

   A. STAINLESS STEEL ENCLOSURE, 14 GAUGE, TYPE 316, WELDED SEAM. ALL HARDWARE 316 STAINLESS STEEL, WITH PIANO HINGE, NEOPRENE GASKET, 3-POINT LATCH WITH PADLOCK HARDWARE AND DRIP SHIELD FOR MODIFIED NEMA 12 CONSTRUCTION. OUTSIDE DOOR SHALL BE BLANK WITH ALL CONTROL COMPONENTS MOUNTED ON OR PROJECTING THROUGH DEAD FRONT HINGED INNER PANEL. HEAVY COMPONENTS SHALL BE MOUNTED ON AN ALUMINUM BACK MOUNTING PANEL. INNER PANELS SHALL BE ALUMINUM. OUTER DOOR SHALL HAVE 9" X 11" STAINLESS STEEL POCKET FOR LOG BOOK, AND LATCH TO SECURE THE OUTER DOOR AND DEAD FRONT IN AN OPEN POSITION. THE TOP OF PANEL SHALL BE 5'6" TO 6' ABOVE THE WET WELL COVER. ALL PANELS, METER BOXES AND TELEMETRY BOXES ARE TO BE MOUNTED ON 316 STAINLESS STEEL STRUTS WITH 316 STAINLESS STEEL FASTENING DEVICES AND SHALL BE SUPPORTED BY AT LEAST 3" 316 STAINLESS STEEL PIPE CAPPED AT THE TOP.

   B. MAIN AND EMERGENCY CIRCUIT BREAKERS SHALL BE 3-POLE MECHANICALLY INTERLOCKED SUCH THAT BOTH CANNOT BE ENGAGED AT THE SAME TIME, AND SHALL BE THE SAME SIZE SQUARE D COMPONENTS.

   C. SERVICE RATED OUTSIDE FUSED DISCONNECT SWITCH ON REAR OF PANEL, NEMA 4. STAINLESS STEEL, WITH AIC RATING EQUAL TO THE INCOMING SERVICE.

   D. GENERATOR RECEPTACLE TO BE 1044FR FOR 100A. SERVICE ONLY 2044FR FOR 200A.

   E. TWO (2) SEPARATE SINGLE POLE CIRCUIT BREAKER FOR CONTROL CIRCUIT AND TELEMETRY.

   F. 20A DUPLEX RECEPTACLE GROUND FAULT INTERRUPTER TYPE WITH CIRCUIT BREAKER.

   G. SURGE/LIGHTNING ARRESTOR ON INCOMING LINE TO BE ONE JOSLYN 9200-9A FOR 3 PHASE.

   H. CONTROLLER WITH OVERCURRENT PROTECTION, SHORT CIRCUIT PROTECTION AND DISCONNECT FOR EACH MOTOR, SQUARE D, OR "MAG GUARD".

   I. HAND, OFF, AUTOMATIC (HOA) SWITCH AND PUMP RUN LIGHT.

ELECTRICAL NOTES (CON'T)

J. 120/24V CONTROL TRANSFORMER FOR OPERATION OF FLOWLINE METER OUTPUTS.

K. PUMP CABLES TO BE SEALED AT PANEL WITH A PVC STRAIN RELIEF CONNECTOR. ALL ENTRIES INTO THE PANEL FROM THE WET WELL SHALL BE SEALED W/DUCT SEAL ONLY.

L. WEIGHTED NON-MERCURY FLOAT SWITCH, POLYPROPYLENE COVER INTEGRAL CORD.

M. MINIMUM 8 1/2" X 11" SCHEMATIC AND PUMP DATA SHEET SHALL BE PERMANENTLY AFFIXED TO THE INTERIOR OF THE ENCLOSURE DOOR. THE DATA SHEET SHALL BE EXTRUDED VINYL HOMOPOLYMER LAMINATE.

N. ALL CONDUITS TO WET WELL SHALL BE SCHEDULE 80 PVC WITH 90 DEGREE ELECTRICAL SWEEP BENDS.

O. ALL PANEL WIRING SHALL BE COLOR CODED AND NUMBERED TO CORRESPOND TO DRAWINGS. STANDARD COLORS SHALL BE BLACK FOR 120V SUPPLY, WHITE FOR NEUTRAL, GREEN FOR GROUND, AND RED FOR CONTROL USING 120V WITH BLUE FOR 24V CONTROL WIRING OR APPROVED EQUAL. MINIMUM SIZE #14 AWG COPPER. ALL EXTERNAL WIRING SHALL BE BROUGHT TO NUMBERED TERMINALS. ALL WIRING SHALL BE FRONT ACCESSIBLE. ALL RELAY BASES TO BE FRONT MOUNTED AND WIRED WITH SCREW TERMINALS. NO SOLDERED CONNECTIONS PERMITTED. A VINYL PLASTIC LAMINATED 11" X 17" SCHEMATIC DRAWING SHALL BE PERMANENTLY FIXED INSIDE THE OUTER DOOR. A SEPARATE STICK ON PLASTIC LABEL SHALL SHOW THE MOTOR DATA ; HP; RPM; FULL LOAD AMPS; SERIAL NUMBERS; PUMP SIZE; IMPELLER NUMBER AND SIZE; DESIGN GPM AND TDH.

P. ALL SERVICE ENTRANCE CONDUCTORS TO BE COPPER.

Q. RTU BREAKER AND CONTROL BREAKER SHALL BE ON THE SAME PHASE (A) TO AVOID A POSSIBLE DEAD SHORT CONDITION.

R. ALL WIRE TERMINATIONS SHALL BE COATED WITH A CORROSION INHIBITOR, "NO-LOX" OR EQUIVALENT.

REMOTE TERMINAL UNIT (RTU) SPECIFICATIONS

1.0 REMOTE TERMINAL UNIT

THE REMOTE TERMINAL UNIT (RTU) SHALL BE A MICROCOMPUTER-BASED DATA COLLECTION AND DISSEMINATION SUBSYSTEM. THE RTU MUST BE FULLY COMPATIBLE WITH THE EXISTING TAC II TELEMETRY SYSTEM MANUFACTURED BY DATA FLOW SYSTEMS, INC. OF MELBOURNE, FLORIDA, AND MUST NOT REQUIRE ANY CHANGES IN THE TAC II SOFTWARE. THE RTU SHALL COMMUNICATE WITH THE CENTRAL SITE VIA A TWO-WAY RADIO LINK. THE RTU SHALL BE DESIGNED TO ACCOMMODATE PLUG-IN FUNCTION MODULES. THE SYSTEM SHALL BE CAPABLE OF BEING OUTFITTED, AT ANY TIME, WITH RTU'S CAPABLE OF BEING CONFIGURED WITH UP TO FIFTEEN (15) FUNCTION MODULES PER RTU, WITH NO SOFTWARE OR FIRMWARE CHANGES TO THE SYSTEM. ALL SHEET METAL UTILIZED INSIDE THE ENCLOSURE MUST BE ANODIZED.

1.1 FUNCTION MODULES

THE FUNCTION MODULES SHALL BE DESIGNED SO THEY DO NOT HAVE CONFIGURATION SWITCHES OR STRAPS AND MAY BE EASILY ADDED IN THE FUTURE. THE FUNCTION MODULES MUST BE DESIGNED WITH SURGE SUPPRESSION ON ALL INPUTS AND OUTPUTS. REPLACEMENT OF A FUNCTION MODULE SHALL NOT REQUIRE THE USE OF TOOLS OR THE REMOVAL OF ANY INTERFACE WIRES. THERE SHALL BE NO COMPONENTS ASSOCIATED WITH THE FUNCTION MODULE MOUNTED TO THE MOTHERBOARD (PASSIVE BACKPLANE). AN INTERLOCK SYSTEM SHALL BE PROVIDED TO PREVENT THE REMOVAL OF FUNCTION MODULES WITH THE POWER APPLIED. THE REMOTE TERMINAL UNIT SHALL SUPPORT A LOCAL SERIAL INTERFACE. THE LOCAL SERIAL INTERFACE SHALL PROVIDE LOCAL ACCESS TO ALL FUNCTIONS OF THE REMOTE TERMINAL UNIT. THE LOCAL SERIAL INTERFACE SHALL SUPPORT THE MONITORING OF THE RADIO COMMUNICATIONS LINK. THE RTUS SHALL BE ENCLOSED IN A NEMA 4X STAINLESS STEEL ENCLOSURE PAINTED WHITE. THE RTUS SHALL MEET OR EXCEED THE QUALITY, RELIABILITY, PERFORMANCE AND VERSATILITY OF THOSE MANUFACTURED BY DATA FLOW SYSTEMS, INC. OF MELBOURNE, FLORIDA.

REMOTE TERMINAL UNIT (RTU) SPECIFICATIONS (CONT'D)

1.1.1 RADIO INTERFACE MODULE

EACH REMOTE TERMINAL UNIT SHALL REQUIRE ONE RADIO INTERFACE MODULE. THIS MODULE SHALL CONTROL THE TERMINAL RADIO DURING THE POLLING SEQUENCE. IN THE EVENT OF TRANSMISSIONS OF MORE THAN TEN SECONDS THIS MODULE SHALL SHUT DOWN THE TRANSMITTER. THIS PROTECTION FUNCTION SHALL BE IMPLEMENTED IN HARDWARE. FIRMWARE IMPLEMENTATION WILL NOT BE ACCEPTABLE. THE RADIO INTERFACE MODULE SHALL HAVE A SERVICE PORT TO PROVIDE COMMUNICATIONS LINK MONITORING. THE SERVICE PORT SHALL ALSO PROVIDE THE CAPABILITY TO DIRECTLY MONITOR AND/OR CONTROL EACH MODULE IN THE REMOTE TERMINAL UNIT. THE RADIO INTERFACE MODULE UTILIZED AT THE REMOTE TERMINAL UNITS SHALL BE INTERCHANGEABLE WITH THE RADIO INTERFACE MODULE AT THE CENTRAL SITE. THE SYSTEM SHALL BE CAPABLE OF UTILIZING UP TO 250 RADIO INTERFACE MODULES PER COMMUNICATIONS LINK AND UP TO 15 FUNCTIONS PER RADIO INTERFACE MODULE. ALL COMMUNICATIONS SHALL BE IN ASCII AND UTILIZE AN ERROR DETECTING AND CORRECTION DATA TRANSFER PROTOCOL. COMMUNICATIONS BETWEEN THE CENTRAL SITE AND THE REMOTE TERMINAL UNITS SHALL HAVE A MINIMUM SPEED OF 1200 BITS/SECOND. EACH RADIO INTERFACE MODULE SHALL HAVE A RADIO TRANSCEIVER MOUNTED TO IT. THE RADIO SHALL BE AN FM TRANSCEIVER WHICH OPERATES IN THE 450 MHZ TO 475 MHZ FREQUENCY RANGE.

1.1.1.1 TRANSMITTER SPECIFICATIONS

RF POWER OUTPUT:	ADJUSTABLE FROM 1.0 TO 2.0 W
SPURIOUS OUTPUT:	-50 DBC MAX
HARMONIC OUTPUT:	-50 DBC MAX
FREQ. STABILITY:	+/- 5 PPM
MODULAR DEVIATION:	ADJUSTABLE TO 5 KHZ
FREQUENCY RESPONSE:	FLAT +/- 2.0 DB FROM 50 HZ TO 10 KHZ
TOTAL HARMONIC DISTORTION:	5% MAX
FM HUM AND NOISE:	-50 DB MAX
CARRIER ATTACK TIME:	5 MS
TX FREQUENCY:	458.3125 MHZ

1.1.1.2 RECEIVER SPECIFICATIONS

SENSITIVITY:	.25 UV MAX FOR 10 DB S+N/N
QUIETING:	1.5 UV MAX FOR 20 DB QUIETING
SIGNAL PRESENT THRESHOLD:	.4 UV +/-3 DB
INTERMODULATION:	-18 DBM TYPICAL THIRD ORDER INTERCEPT
IF SELECTIVITY:	6 DB BW = +/- 7.5 KHZ MIN 60 DB BW = +/- 25 KHZ MAX
TOTAL HARMONIC DISTORTION:	5% MAX
FREQUENCY STABILITY:	+/- 10 PPM
RX FREQUENCY:	458.3125 MHZ

REMOTE TERMINAL UNIT (RTU) SPECIFICATIONS (CONT'D)

1.1.2 DIGITAL MONITOR MODULE (IF REQUIRED)

THE DIGITAL MONITOR MODULE SHALL ACCEPT 12 ON/OFF INPUTS OF 12 TO 30 VOLTS AC OR DC. VOLTAGES FROM 100 TO 300 VOLTS AC OR DC SHALL BE ACCOMMODATED WITH THE USE OF AN INLINE VOLTAGE CONVERTER DEVICE. STATUS REPORTING OF THESE INPUTS SHALL HAVE AN ACCURACY OF +/- 2 SECONDS, THE ACCURACY BEING DEFINED AS TIME OF AN OCCURRENCE TO ACTUAL TIME RECORDED BY THE CENTRAL SITE COMPUTER. THE DIGITAL MONITOR MODULE SHALL NOT REQUIRE INTERFACING RELAYS TO MONITOR 24 VDC, 115 VAC, 220 VAC OR 480 VAC. THE DIGITAL MONITOR MODULE SHALL HAVE LEDS TO INDICATE: THE STATUS OF EACH INPUT POINT; RECEIVE COMMUNICATIONS; TRANSMIT COMMUNICATIONS; CPU FAULT; AND POWER STATUS. THE CONFIGURATION OF THE MONITOR POINTS AS ALARM POINTS OR MONITOR POINTS (PUMP RUN TIME MONITORS) SHALL BE OPERATOR CHANGEABLE. THE CONFIGURATION SHALL NOT REQUIRE ANY SOFTWARE OR FIRMWARE CHANGES IN THE SYSTEM.

1.1.3 DIGITAL CONTROL MODULE (IF REQUIRED)

THE DIGITAL CONTROL MODULE SHALL PROVIDE FOR REMOTE CONTROL OF 8 INDEPENDENT 60 TO 280 VOLT AC DEVICES. THE CONTROL RELAYS SHALL BE SOLID STATE DEVICES WITH ZERO CROSSOVER DETECTION. EACH CONTROL POINT SHALL BE CAPABLE OF DRIVING A .5 AMP LOAD @ 280 VOLTS AC (140 VA), WITH INRUSH CURRENT OF 5 AMPS. THE CONTROL MODULE SHALL HAVE THE CONFIGURABLE CAPABILITY TO AUTOMATICALLY SHUT DOWN ALL OUTPUTS IN THE CASE OF A POWER LOSS ON ANY ONE OF THE THREE PHASES. OPERATION INTERVENTION SHALL BE REQUIRED TO RESTART A CONTROL POINT AFTER A PHASE LOSS SHUTDOWN. ANY DISCRETE CONTROL POINT SHALL HAVE THE CAPABILITY OF BEING AUTOMATICALLY CONTROLLED BY ANY DISCRETE MONITOR POINT, AT THE SAME RTU OR AT ANY OTHER RTU. THIS SHALL BE ACCOMPLISHED DURING CONFIGURATION AT THE CENTRAL SITE COMPUTER SYSTEM AND SHALL BE AVAILABLE FOR AN UNLIMITED NUMBER OF CONTROL POINTS. THE DIGITAL CONTROL MODULE SHALL HAVE LEDS TO INDICATE: THE STATUS OF EACH OUTPUT POINT; RECEIVE COMMUNICATIONS; TRANSMIT COMMUNICATIONS; CPU FAULT; AND POWER STATUS.

1.1.4 PUMP CONTROL MODULE (IF REQUIRED)

THE PUMP CONTROL MODULE SHALL BE A MICROPROCESSOR-BASED MULTI-PUMP CONTROLLER MODULE DESIGNED FOR USE WITH THE TELEMETRY SYSTEM. AS A MINIMUM THE PUMP CONTROL MODULE SHALL HAVE THE FOLLOWING

FEATURES:

1. LOCAL AUTOMATIC CONTROL FROM FLOAT OR BUBBLER INPUTS.
2. LOCAL MANUAL CONTROL PROVIDED BY HOA SWITCHES. THE HOA SWITCHES SHALL FUNCTION WITH THE FLOATS TO PROVIDE EXTRA OPERATIONAL FLEXIBILITY (I.E, ONE PUMP CAN BE TAKEN OUT OF SERVICE FOR REPAIR BY THE HOA SWITCH AND THE FLOATS WILL CONTROL THE REMAINING PUMP[S]).
3. REMOTE CONTROL FROM THE CENTRAL SITE COMPUTER SHALL PROVIDE INDIVIDUAL PUMP OVERRIDES, STATION AND ALARM DISABLES.

REMOTE TERMINAL UNIT (RTU) SPECIFICATIONS (CONT'D)

4. TRIPLEX/DUPLEX/SIMPLEX CONFIGURABLE. THE MODULE SHALL AUTOMATICALLY SENSE THE STATION TYPE AND CONFIGURE ITSELF.

5. TRIPLEX CONFIGURATION SHALL USE EMERGENCY HIGH, LAG 2, LAG 1, OFF AND EMERGENCY LOW FLOAT OR BUBBLER INPUTS.

6. DUPLEX CONFIGURATION SHALL USE EMERGENCY HIGH, LEAD, OFF AND EMERGENCY LOW FLOATS.

7. SIMPLEX CONFIGURATION SHALL USE EMERGENCY HIGH, LEAD, OFF AND EMERGENCY LOW FLOATS.

8. THE ALTERNATOR FUNCTION SHALL ALTERNATE AROUND PUMPS THAT DON'T ALTERNATE WHEN CALLED. THE ALTERNATOR SHALL ALLOW THE OPERATOR TO OVERRIDE A PUMP ON OR OFF WITH THE HOA SWITCHES AND THE ALTERNATOR WILL STILL PROVIDE ALTERNATOR CONTROL OVER THE REMAINING PUMP(S).

9. THE PHASE MONITOR FUNCTIONS SHALL: A) PROVIDE TRANSFORMER ISOLATION; B) DETECT LOSS OF PHASE, PHASE REVERSAL, AND LOW LEG PHASE PROBLEMS; C) PROVIDE AUTOMATIC CALIBRATION FOR 220 OR 440 VAC THREE PHASE POWER INPUTS.

10. ALARM LIGHT AND BELL OUTPUTS CAPABLE OF DRIVING 120 VAC LOADS TO 1 AMP.

11. LOCAL INPUT FOR ALARM SILENCE SWITCH.

12. REMOTE ALARM BELL DISABLE FROM CENTRAL SITE COMPUTER.

13. FLOAT ALARM REPORTING BACK TO CENTRAL SITE COMPUTER WHEN FLOATS ARE OPERATING OUT OF SEQUENCE.

14. EMERGENCY LOW FLOAT PROVIDES SHUT DOWN CONTROL WHEN FLOATS ARE OPERATING OUT OF SEQUENCE.

15. PUMPS/STARTER/BREAKER FAULT ALARMS SHALL BE REPORTED BACK TO THE CENTRAL SITE COMPUTER. THE ALARMS SHALL BE ACTIVATED WHEN A PUMP IS CALLED TO RUN, BUT FAILS TO RUN, OR IF THE PUMP IS TURNED OFF BY THE PCM, BUT CONTINUES TO RUN.

16. HOA SWITCH ALARMS SHALL BE REPORTED BACK TO THE CENTRAL SITE COMPUTER. ALARMS SHALL INDICATE THAT AN HOA SWITCH HAS BEEN LEFT IN THE HAND OR OFF POSITION.

17. PUMP RUN STATUS SHALL BE REPORTED BACK TO THE CENTRAL SITE COMPUTER. PUMP RUN TIMES RECORDED WITH 2 SECOND ACCURACY.

18. RTU POWER STATUS SHALL BE REPORTED BACK TO THE CENTRAL SITE COMPUTER.

REMOTE TERMINAL UNIT (RTU) SPECIFICATIONS (CONT'D):

19. LED INDICATORS FOR: A) RTU POWER; B) ALARM BELL; C) USER DEFINED INPUT; D) MODULE POWER; E) TRANSMIT AND RECEIVE DATA; F) PHASE ALARM/CALIBRATION; G) PROCESSOR FAULT; H) SIX FLOAT INPUTS; I) PUMPS ON.OFF.

ALL INPUTS AND OUTPUTS SHALL BE OPTICALLY OR MAGNETICALLY ISOLATED AND SURGE SUPPRESSED WITHOUT ADDITIONAL RELAYS.

1.2 POWER SUPPLY

ALL FUNCTION MODULES IN THE REMOTE TERMINAL UNIT SHALL RUN OFF DC VOLTAGE FROM +7.5 VOLTS TO +13 VOLTS. THE POWER SUPPLY MODULE SHALL SUPPLY +12 VOLTS. A BATTERY BACKUP SHALL BE PROVIDED TO OPERATE THE SYSTEM FOR A MINIMUM OF 120 MINUTES IN THE EVENT OF POWER FAILURE. THE POWER SUPPLY SHALL BE SURGE PROTECTED. THE POWER SUPPLY SHALL BE SHORT CIRCUIT PROTECTED BY CURRENT LIMITING. NORMAL OPERATION SHALL AUTOMATICALLY RESUME WHEN THE SHORT CIRCUIT OVERLOAD IS REMOVED. THE POWER SUPPLY SHALL BE SIZED TO OPERATE THE SYSTEM WITH THE BATTERY REMOVED. THE POWER SUPPLY MODULE SHALL PROVIDE A BATTERY BACKED, ISOLATED BIAS VOLTAGE SOURCE. THE CIRCUIT BREAKER FOR THE POWER SUPPLY MODULE SHALL BE PART OF THE POWER SUPPLY MODULE. NEITHER THE USE OF TOOLS NOR THE DISCONNECTION OF ANY WIRES SHALL BE REQUIRED TO REMOVE THE POWER SUPPLY MODULE.

1.3 BATTERIES

THE REMOTE TERMINAL SHALL HAVE THE UNINTERRUPTIBLE POWER SOURCE FUNCTION BUILT IN. THE POWER SUPPLY WILL KEEP THE BATTERIES AT A FLOAT CHARGE. THE BATTERIES SHALL NOT BE DAMAGED BY DEEP DISCHARGE.

1.3.1 ANTENNA SUBSYSTEM

A 11.2 DB GAIN DIRECTIONAL ANTENNA SHALL BE USED TO TRANSMIT AND RECEIVE DATA AT THE REMOTE TERMINAL UNIT. IT SHALL BE SUPPORTED ON A MAST/POLE AND HAVE DC GROUNDING FOR LIGHTNING PROTECTION. THE ANTENNA MAST/POLE SHALL BE HOT DIPPED GALVANIZED FOR CORROSION PROTECTION. ALL HARDWARE SHALL BE GALVANIZED OR MADE OF STAINLESS STEEL. THE MAST SHALL MEET OR EXCEED THE QUALITY AND RELIABILITY OF THE AG20 MANUFACTURED BY ROHN. THE COAX CABLE UTILIZED SHALL BE THE TYPE THAT UTILIZES AN INSERT SEMI-LIQUID COMPOUND TO FLOOD THE COPPER BRAID. THE COAX CABLE SHALL MEET OR EXCEED THE QUALITY, RELIABILITY AND PERFORMANCE OF THAT MANUFACTURED BY DB PRODUCTS, INC. OF DALLAS, TEXAS.

1.4 ENCLOSURES

RTUS SHALL BE HOUSED IN NEMA 4X 316 STAINLESS STEEL ENCLOSURES, ACID-DIPPED AND PAINTED WHITE. ENCLOSURE SHALL ACCOMMODATE THE PLUG-IN MODULES TO MEET THE REQUIREMENTS PLUS AT LEAST ONE ADDITIONAL MODULE FOR EXPANSION. ENCLOSURE SHALL BE CAPABLE OF BEING LOCKED.

RTU TELEMETRY REQUIREMENTS

1. RTU 204 W/BACKPLANE, BATTERY, CO-AXIAL CABLE, MAST, ANTENNAE, MISC. HARDWARE.

2. RAINFALL TIPPING BUCKET (0.01" PER PULSE).

3. (2) 0-100 P.S.I. TRANSMITTER (4-20 MA OUTPUT). POTABLE WATER & WASTE WATER

4. PUMP CONTROL MODULE. (PCM001)

5. DIGITAL MONITOR MODULE WITH PULSE ACCUMULATOR FEATURE. (DMM002)

6. ANALOG MONITOR MODULE (AMM002).

7. RADIO INTERFACE MODULE. (FREQUENCY OF 458.3125)

8. POWER SUPPLY MODULE (100W).

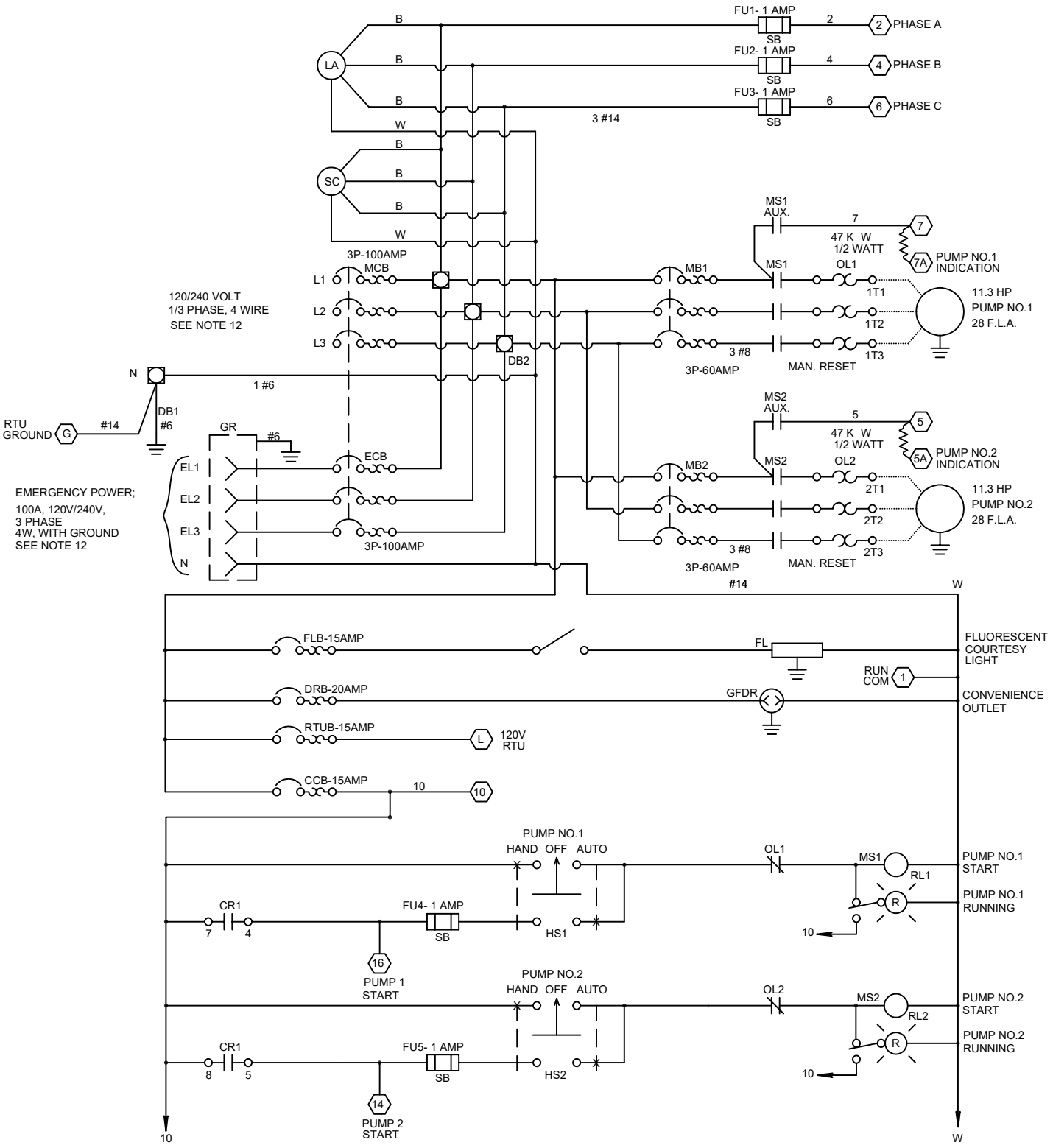
NOTES:

1. RAINFALL GAUGE & 0-100 P.S.I. TRANSMITTER MUST BE THE SAME AS THE CITY'S EXISTING UNITS.

2. ALL OF THE ABOVE ITEMS ARE SUPPLIED BY DATA FLOW SYSTEMS OF MELBOURNE, FL.

SPARE PARTS:

1. PUMP CONTROL MODULE
2. RADIO INTERFACE MODULE
3. 7-1/2 AMP BATTERY
4. LOCAL AREA ANTENNAE & CONNECTOR
5. PUMP BREAKER
6. DIGITAL CONTROL MODULE (DC)
7. POWER SUPPLY MODULE (100 W)
6. DIGITAL CONTROL MODULE (AC) (DCM003-2)
7. POWER SUPPLY MODULE (100 W)
8. COMPLETE SPARE MOTOR AND PUMP
9. MOTOR STARTER W/OL BLOCK
10. MAIN BREAKER
11. ANALOG CONTROL MODULE
12. ANALOG MONITOR MODULE (AMM002)
13. (2) 0-100 PSI TRANSMITTER (ECO-1)
14. (1) 0-10 PSI SUB. TRANSMITTER (LS10)



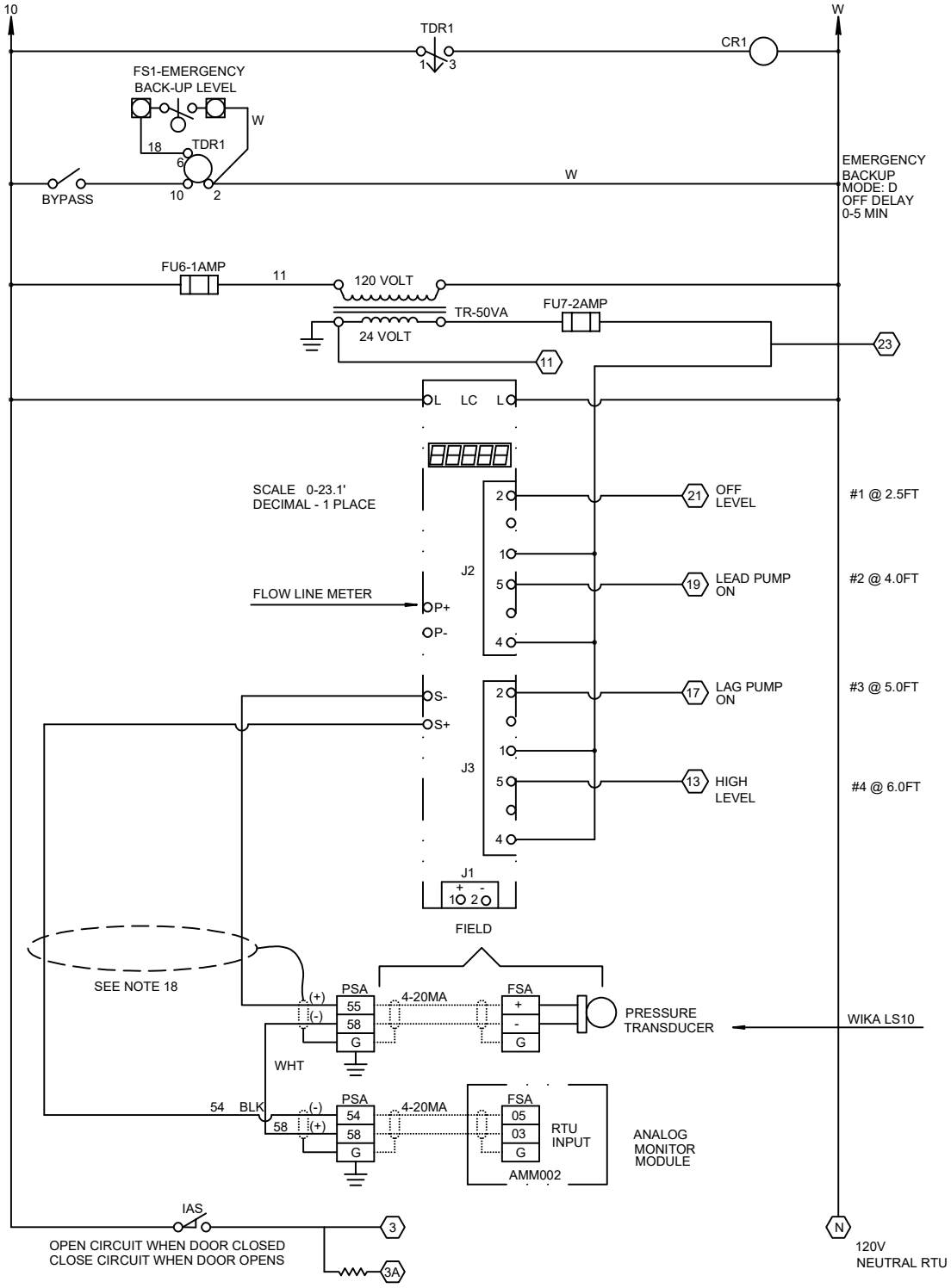
HIGH VOLTAGE CONTROL

CITY of DELRAY BEACH
PUBLIC WORKS DEPARTMENT
434 SOUTH SWINTON AVENUE, DELRAY BEACH, FLORIDA 33444

PANEL REQUIREMENTS DIAGRAM
(SHEET 1 OF 5)

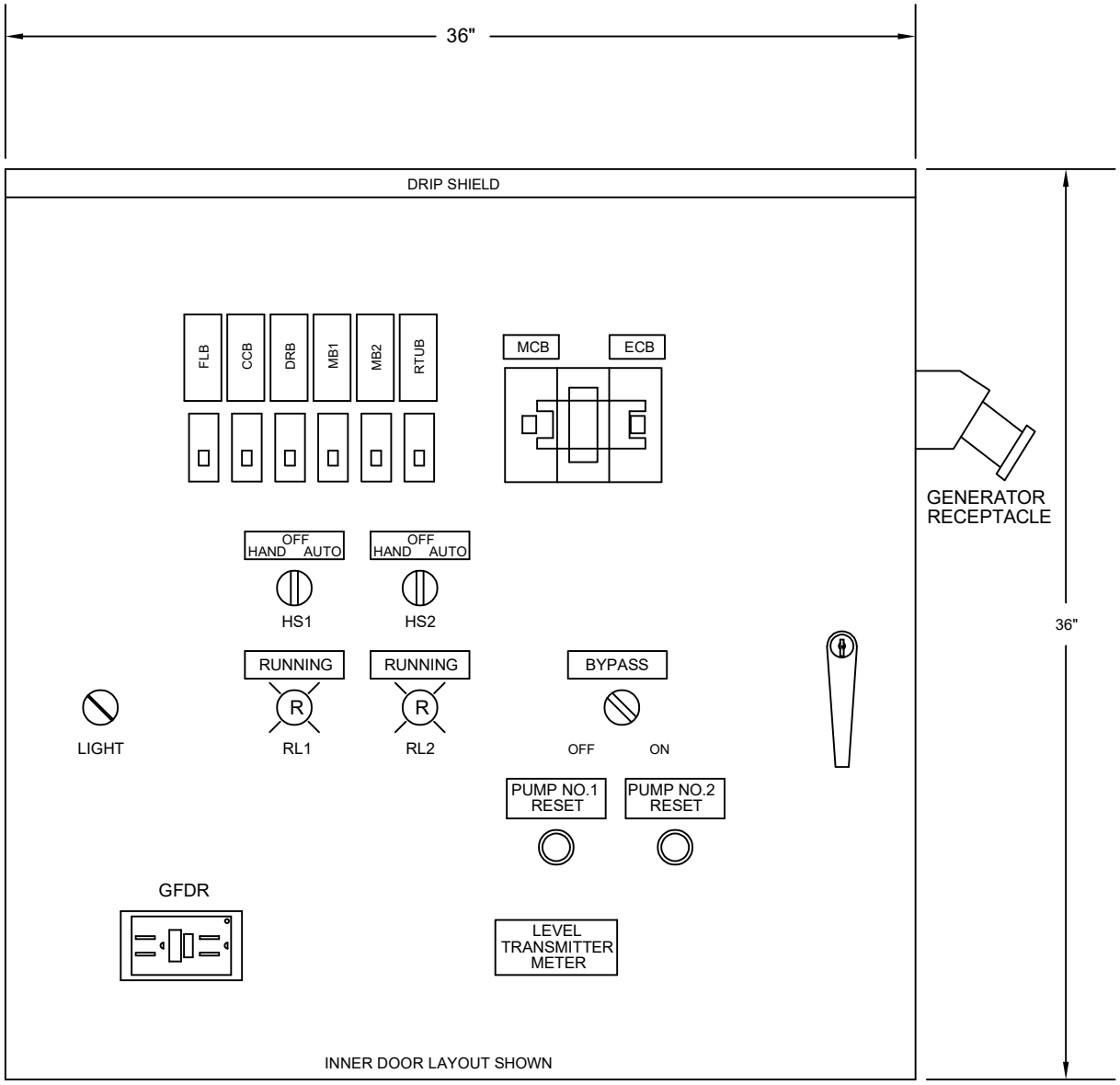
DATE: 10-04-2024

LS 12.0



* INTRUSION ALARM NEEDS TO MONITOR THE OUTSIDE DOOR.

LOW VOLTAGE CONTROL



NEMA 3R 316 STAINLESS STEEL ENCLOSURE WITH DEAD FRONT OUTER DOOR INCLUDES DOOR STOPS AND INTRUSION SWITCH 10" DEEP

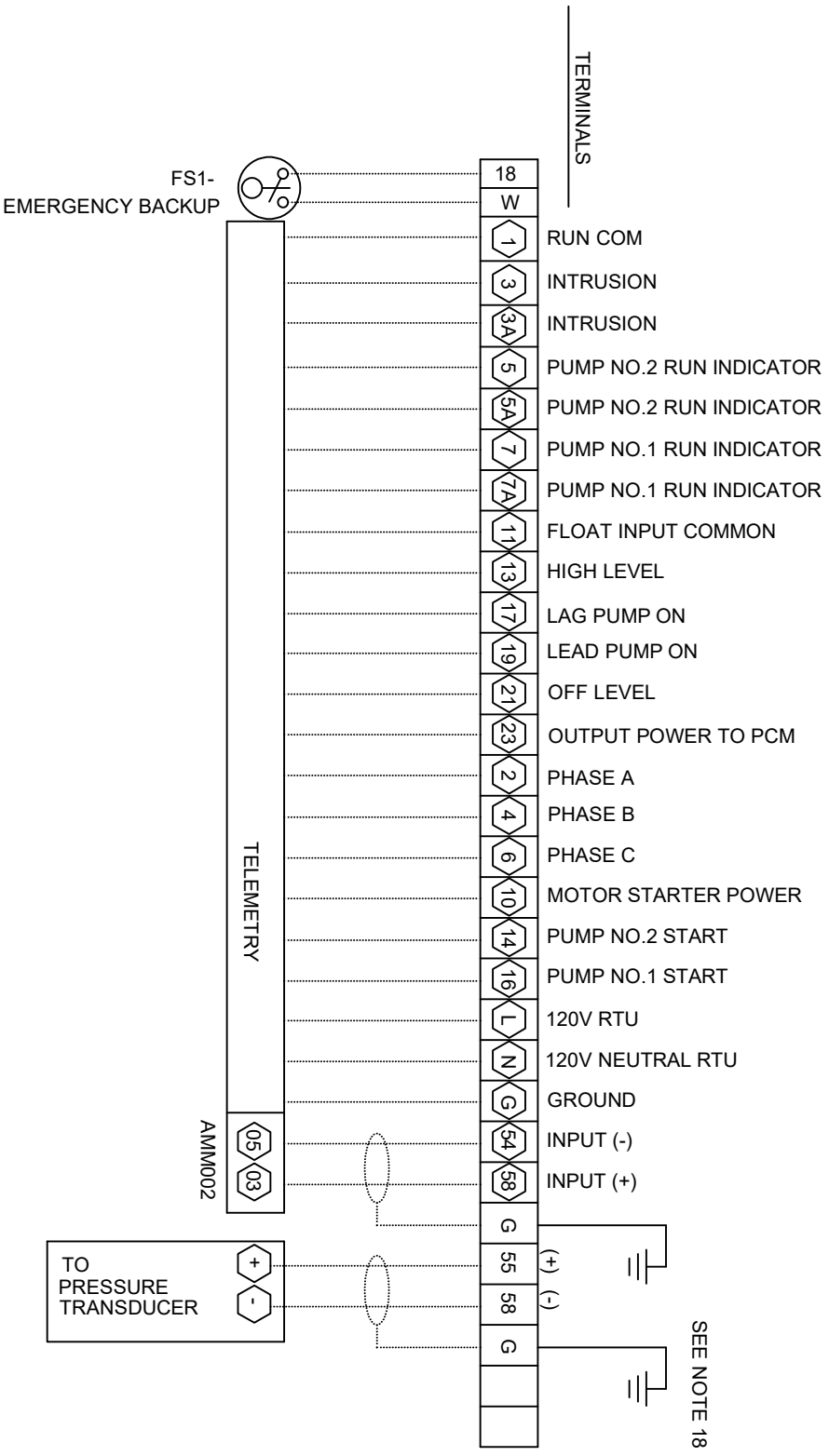
VERIFY WIRING CONFIGURATION WITH CITY TO MATCH GENERATOR PLUG.

PADLOCK SHALL BE PROVIDED BY OWNER.

A PLACARD CONTAINING THE CIRCUIT DIAGRAM IS TO BE PLACED ON INSIDE OF THE OUTER DOOR.

WARNING LABEL TO BE YELLOW BACKGROUND WITH BLACK LETTERS. "WARNING - LOCK OUT ELECTRICAL SERVICE TO THIS ENCLOSURE BEFORE OPENING DOOR OR SERVICING EQUIPMENT".

PANEL LAYOUT



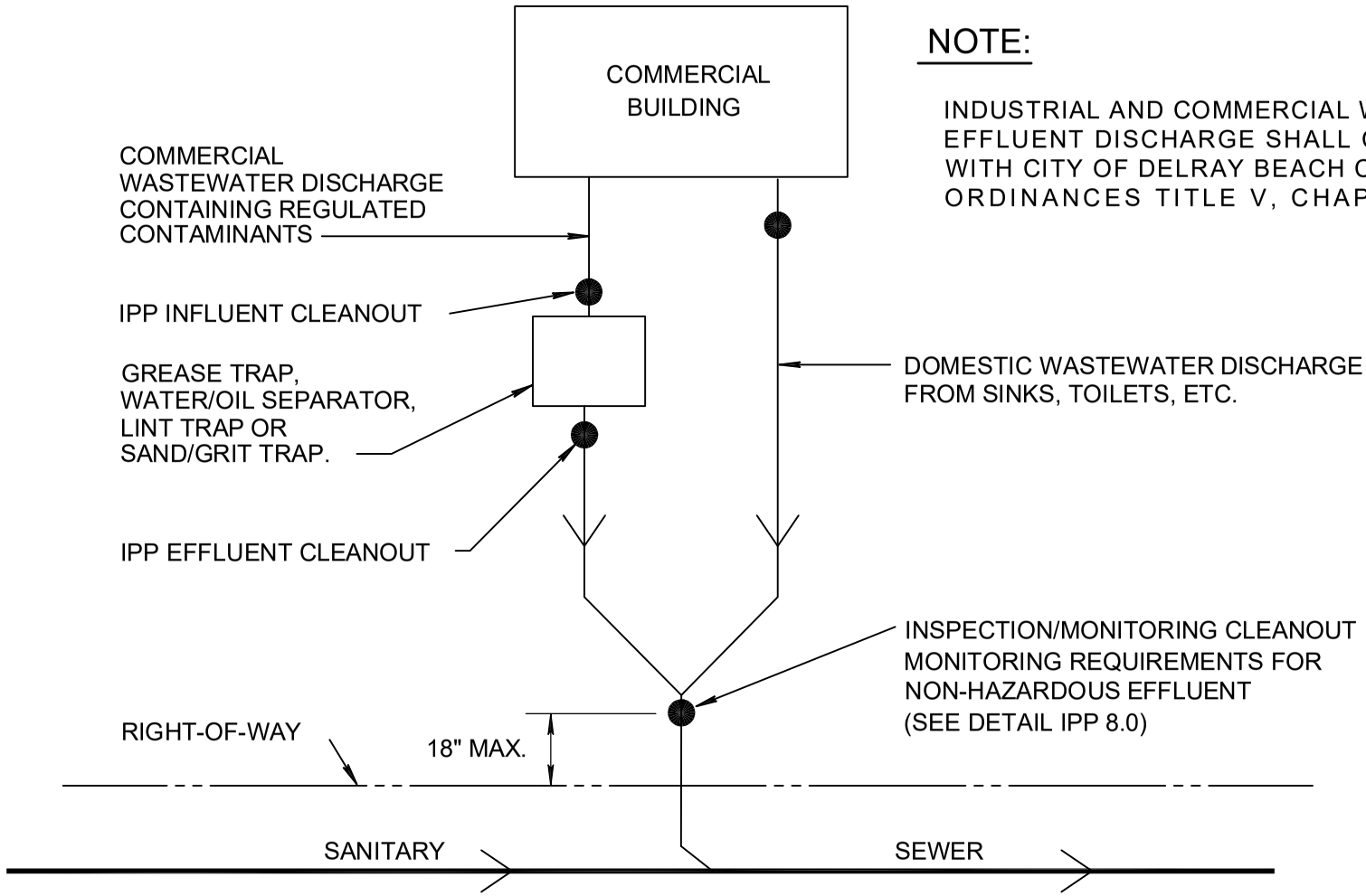
PUMP CONTROL PANEL

NOTES:

1. CONTRACTOR SHALL VERIFY POWER AVAILABILITY WITH FLORIDA POWER AND LIGHT COMPANY FOR PUMP STATION LOCATION PRIOR TO ORDERING EQUIPMENT.
2. NOTIFY ENGINEER OF ANY DISCREPANCIES.
3. ⎔ DENOTES TELEMETRY CONNECTION TERMINAL (TERMINAL NOS. AS PER TELEMETRY SYSTEM MFR)
4. VERIFY WIRING CONFIGURATION WITH CITY TO MATCH GENERATOR PLUG.
5. PADLOCK SHALL BE PROVIDED BY OWNER.
6. REQUIRED TELEMETRY ACCESSORIES SHALL BE AS SPECIFIED AND APPROVED BY OWNER.
7. ALL CONTROL OUTLET AND RTU BREAKERS SHALL BE "A" Ø.
8. NOALOX ON ALL CONNECTORS.
9. PANEL GROUND TERMINAL MUST BE CONNECTED TO EARTH GROUND.
10. FACTORY WIRING IS SHOWN ————————
    FIELD WIRING IS SHOWN .....
11. INSTALLER MUST PROVIDE SHORT CIRCUIT PROTECTION FOR THE CONDUCTORS FEEDING TO THIS ELECTRICAL ASSEMBLY.
12. INSTALLER MUST VERIFY THAT PHASE TO NEUTRAL IS 120 VOLTS BEFORE CONNECTING CONTROL & RECEPTACLE CIRCUITS. (AØ ONLY) VOLTAGE LEG (L2(B)- 208 VOLTS TO NEUTRAL) IS MARKED WITH ORANGE TAPE IN THIS ENCLOSURE.
13. RECOMMENDED TIGHTENING TORQUES FOR TERMINALS; 230 VOLT POWER - SEE CIRCUIT BREAKER 115 VOLT POWER, CONTROL & LOW VOLTAGE - 20 POUND INCHES
14. A PLACARD CONTAINING THE CIRCUIT DIAGRAM IS TO BE PLACED ON INSIDE OF THE OUTER DOOR.
15. THIS CIRCUIT DIAGRAM IS DRAWN WITH NO ELECTRICAL POWER, THAT IS, WITH ALL COMPONENTS IN DE-ENERGIZED STATE.
16. ALL LEVEL SENSING SWITCHES ARE SHOWN WITH NO LIQUID IN TANK OR WELL.
17. WARNING LABEL TO BE YELLOW BACKGROUND WITH BLACK LETTERS. "WARNING - LOCK OUT ELECTRICAL SERVICE TO THIS ENCLOSURE BEFORE OPENING DOOR OR SERVICING EQUIPMENT".
18. SHIELDED WIRE TO BE GROUNDED AT ONLY ONE POINT.
19. RED WARNING LABEL: ``DO NOT OVERRIDE INTERLOCK NEVER ENERGIZE BOTH BREAKERS SIMULTANEOUSLY"

INDUSTRIAL PRETREATMENT PROGRAM
INSPECTION/MONITORING REQUIREMENTS

COMMERCIAL FACILITIES REQUIRING AN INTERCEPTOR



NOTE:

INDUSTRIAL AND COMMERCIAL WASTES. EFFLUENT DISCHARGE SHALL COMPLY WITH CITY OF DELRAY BEACH CODE OF ORDINANCES TITLE V, CHAPTER 53

CITY of DELRAY BEACH
PUBLIC WORKS DEPARTMENT
434 SOUTH SWINTON AVENUE, DELRAY BEACH, FLORIDA 33444

INDUSTRIAL PRETREATMENT PROGRAM INSPECTION/MONITORING REQUIREMENTS (OPTION 1)

IPP 1.0

DATE: 10-04-2024

CITY of DELRAY BEACH
PUBLIC WORKS DEPARTMENT
434 SOUTH SWINTON AVENUE, DELRAY BEACH, FLORIDA 33444

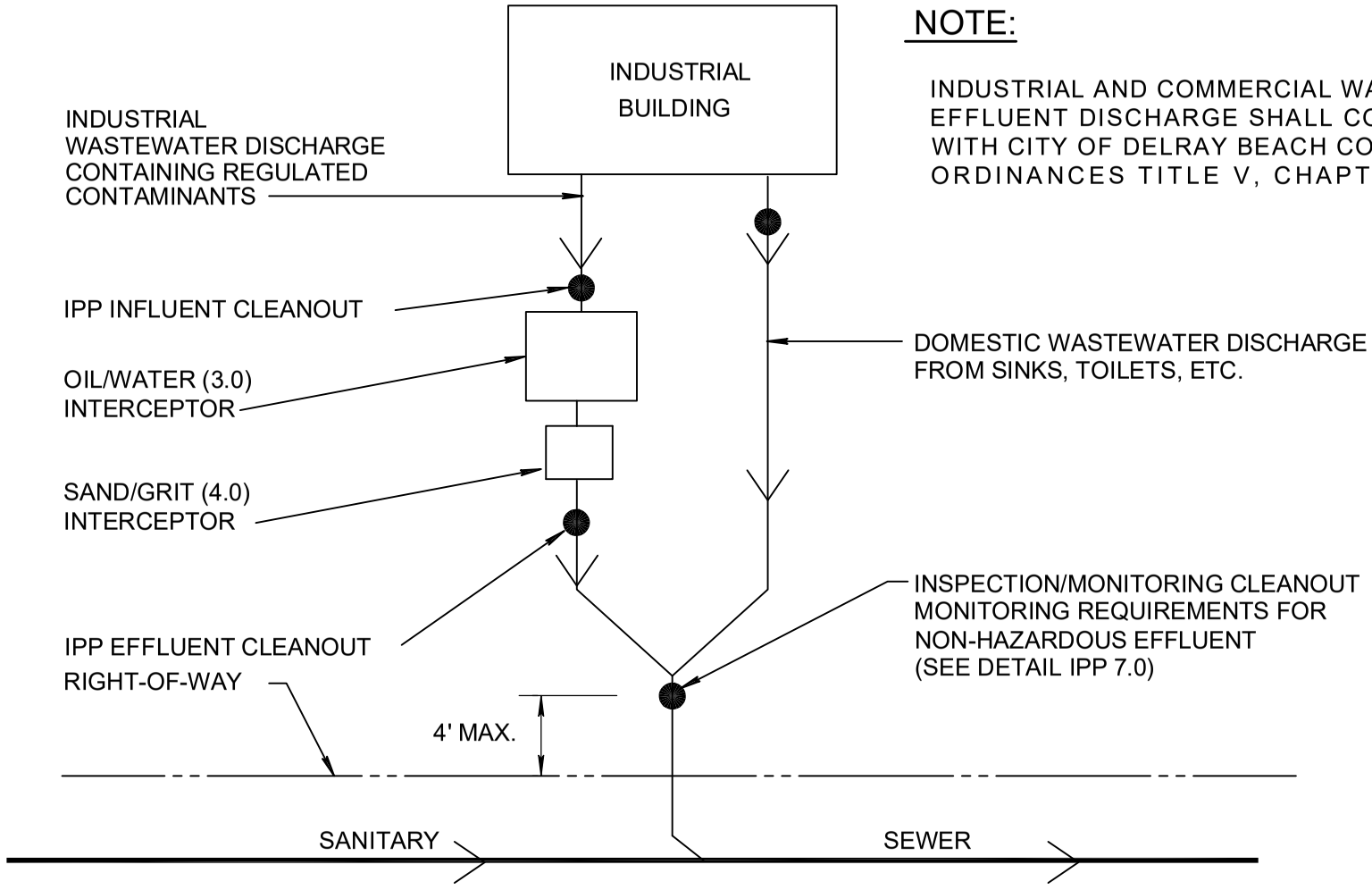
INDUSTRIAL PRETREATMENT PROGRAM INSPECTION/MONITORING REQUIREMENTS (OPTION 2)

IPP 2.0

DATE: 10-04-2024

INDUSTRIAL PRETREATMENT PROGRAM INSPECTION/MONITORING REQUIREMENTS

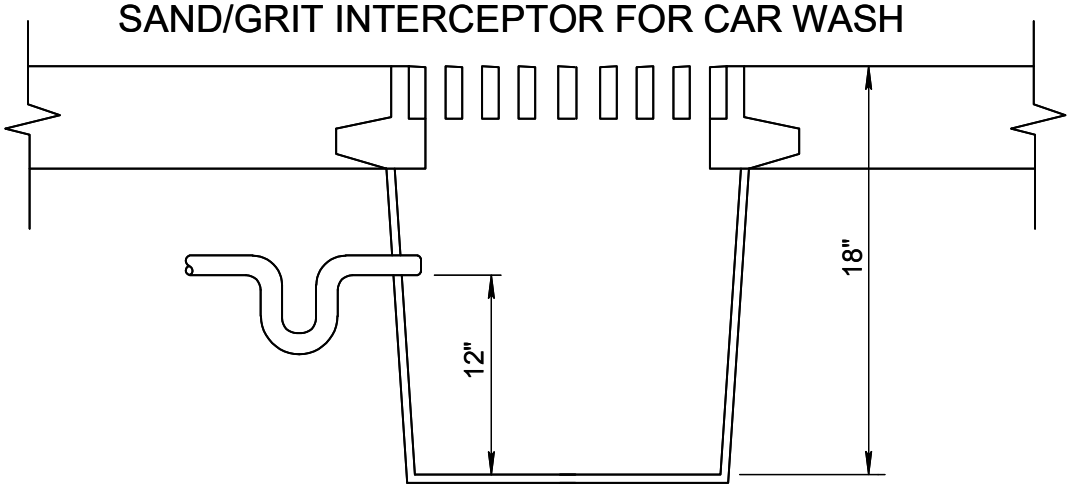
INDUSTRIAL FACILITIES REQUIRING A INTERCEPTOR



NOTE:

INDUSTRIAL AND COMMERCIAL WASTES. EFFLUENT DISCHARGE SHALL COMPLY WITH CITY OF DELRAY BEACH CODE OF ORDINANCES TITLE V, CHAPTER 53

CITY OF DELRAY BEACH
INDUSTRIAL PRETREATMENT PROGRAM
INTERCEPTOR SIZING GUIDELINES
SAND/GRIT INTERCEPTOR FOR CAR WASH



FLOOR DRAINS ARE PRIMARILY USED FOR INSIDE LOCATIONS WHERE THE FLOW RATE INTO THE DRAIN CAN BE ANTICIPATED. DRAINS SHOULD BE SELECTED WITH SUFFICIENT TOP SIZE AND GRATE FREE AREA TO PASS THE ANTICIPATED FLOW. GRATE FREE AREA IS DEFINED AS "THE TOTAL AREA OF THE DRAINAGE OPENINGS IN THE GRATE." THE DRAIN OUTLET SHOULD BE SIZED LARGE ENOUGH SO THAT IT WILL SAFELY PASS THE MAXIMUM FLOW THROUGH THE GRATE, WITHOUT CREATING WATER BUILDUP.

SIZING AND LOCATION:

THE GRATE FREE AREA SHOULD EQUAL THE TRANSVERSE AREA OF THE CONNECTING PIPE. THE NUMBER AND LOCATIONS OF DRAINS ARE BASED ON THE CONFIGURATION OF THE FLOOR PLAN, TYPE OF OPERATION AND LOCATION OF EQUIPMENT. LOCATION AND NUMBER REQUIRED OF FLOOR DRAINS CAN BE DETERMINED ONLY AFTER CAREFUL REVIEW OF THE PLAN AND ANTICIPATED BUILDING USE.

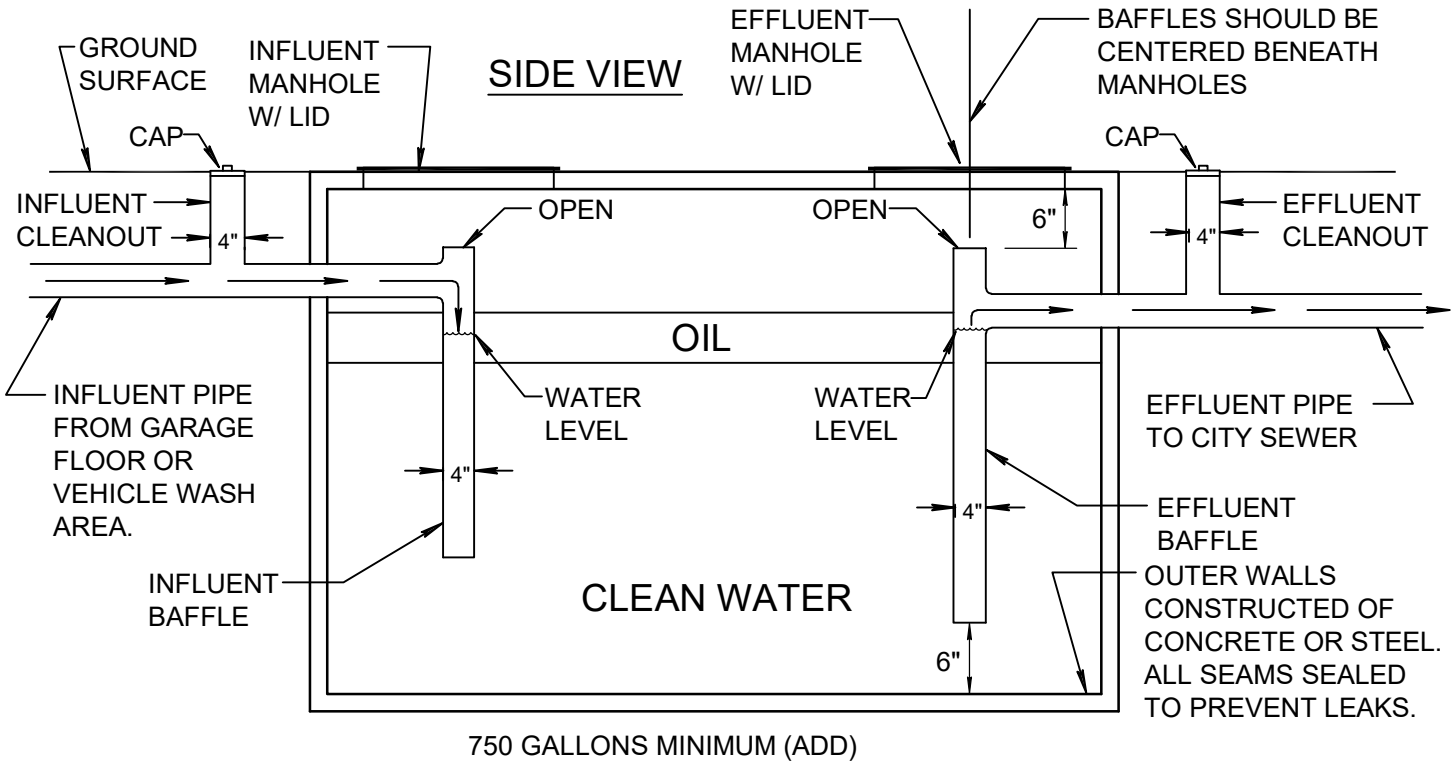
NOTE:

IN ACCORDANCE WITH THE CITY OF DELRAY BEACH CODE OF ORDINANCES TITLE V, CHAPTER 53.054. MUST BE IMPROVED BY UTILITIES DEPARTMENT (WATER / SEWER MGR) BEFORE INSTALLATION.

NOMINAL PIPE SIZE, IN.	TRANSVERSE AREA OF PIPE, SQ. IN.	MINIMUM FLOW REQUIREMENTS (INTERIOR AREAS), SQ. IN.
1-1/2"	2.04	3.06
2	3.14	4.71
3	7.06	10.59
4	12.60	18.90
5	19.60	29.40
6	28.30	42.45
8	50.25	75.38

USE THE FOLLOWING FORMULA TO DETERMINE G.P.M.:

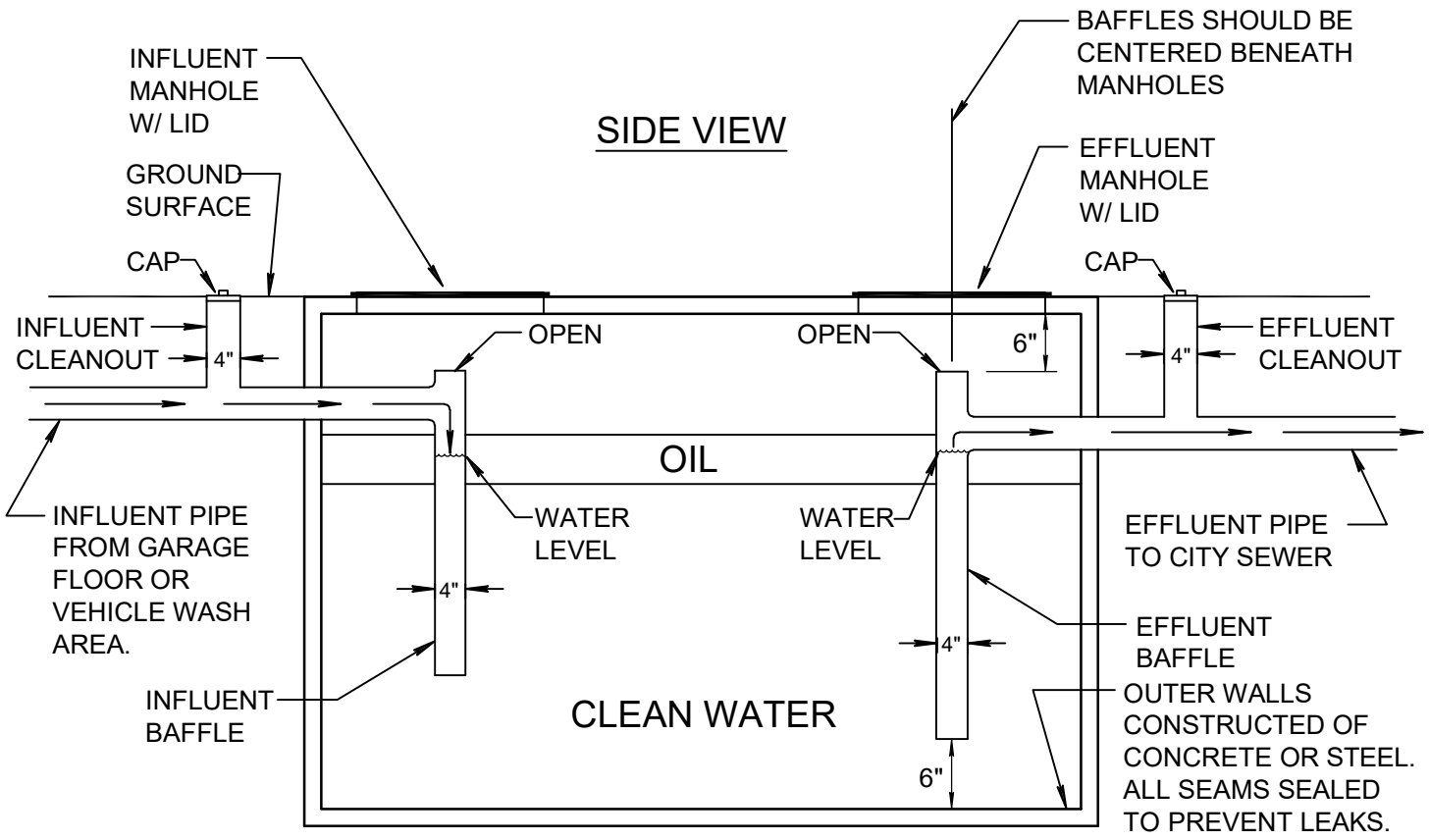
G.P.M.= .0104 x R x A G.P.M.=
GALLONS PER MINUTE
R= INTENSITY (INCHES/HOUR)
A= AREA (SQUARE FEET) .0104 =
CONVERSION FACTOR



750 GALLONS MINIMUM (ADD)

NOTES:

- ALL NEW AND EXISTING BUSINESSES OR INDUSTRIES THAT WASH CARS WILL BE REQUIRED TO INSTALL AN OIL/WATER SEPARATOR.
- IF YOU CHOOSE TO WASH CARS OUTSIDE, THE WASH PAD WILL HAVE TO BE SHELTERED SO RAIN WATER WILL NOT BE DISCHARGED TO SANITARY SEWER SYSTEM.
- TO PREVENT WASH WATER FROM RUNNING OUTSIDE OF WASH AREA, A SPEED BUMP WILL NEED TO BE INSTALLED ALONG THE ENTRANCE TO THE BAYS OF YOUR BUSINESS AND/OR ALONG THE OUTSIDE EDGES OF THE WASH PAD.
- ALL NEW AND EXISTING BUSINESSES OR INDUSTRIES THAT USE PETROLEUM BASE PRODUCTS IN THEIR DAY TO DAY ACTIVITIES WILL BE REQUIRED TO INSTALL AN OIL/WATER SEPARATOR IF THEY CHOOSE TO OPERATE WITH OPEN FLOOR DRAINS.
- OIL/WATER SEPARATOR MODELS AND WATER RECYCLE UNITS MANUFACTURED BY COMPANIES SUCH AS ZURN, SMITH, LANDA INC. OR RGF ENVIRONMENTAL SYSTEMS INC. AND OTHERS CAN BE SUBSTITUTED FOR THE ABOVE DESIGN WITH THE CITY'S APPROVAL.
- ALL SIDES OF IN-GROUND OIL/WATER SEPARATOR UNITS (EXCEPT ACCESS DOORS AND MANHOLES) ARE REQUIRED TO COMPLY WITH FLORIDA PLUMBING CODE, EFFECTIVE MARCH 1, 2009.
- IF INSTALLED, ACCESS DOOR TO IN-GROUND OIL/WATER SEPARATOR UNITS SHALL BE CONSTRUCTED OF ALUMINUM WITH H-20 LOADING CAPACITY PER SPECIFICATIONS BY U.S. FOUNDRY, CORP. OR EQUIVALENT.



NOTES:

- ALL NEW AND EXISTING BUSINESSES OR INDUSTRIES THAT USE PETROLEUM BASE PRODUCTS IN THEIR DAY TO DAY ACTIVITIES WILL BE REQUIRED TO INSTALL AN OIL/WATER SEPARATOR IF THEY CHOOSE TO OPERATE WITH OPEN FLOOR DRAINS.
- OIL/WATER SEPARATOR MODELS AND WATER RECYCLE UNITS MANUFACTURED BY COMPANIES SUCH AS ZURN, SMITH, LANDA INC. OR RGF ENVIRONMENTAL SYSTEMS INC. AND OTHERS CAN BE SUBSTITUTED FOR THE ABOVE DESIGN WITH THE CITY'S APPROVAL.
- ALL SIDES OF IN-GROUND OIL/WATER SEPARATOR UNITS (EXCEPT ACCESS DOORS AND MANHOLES) ARE REQUIRED TO COMPLY WITH FLORIDA PLUMBING CODE, EFFECTIVE MARCH 1, 2009.
- IF INSTALLED, ACCESS DOOR TO IN-GROUND OIL/WATER SEPARATOR UNITS SHALL BE CONSTRUCTED OF ALUMINUM WITH H-20 LOADING CAPACITY PER SPECIFICATIONS BY U.S. FOUNDRY, CORP. OR EQUIVALENT.
- OIL INTERCEPTORS SHALL BE PUMPED OUT COMPLETELY AT A MINIMUM OF ONCE EVERY NINETY (90) DAYS, OR MORE FREQUENTLY AS NEEDED TO PREVENT CARRY OVER OF OIL OIL INTO COLLECTION SYSTEM. SECTION 53.057 OIL & A GREASE MANAGEMENT.

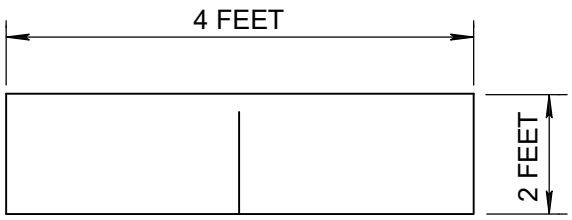
CITY OF DELRAY BEACH
INDUSTRIAL PRETREATMENT PROGRAM
INTERCEPTOR SIZING GUIDELINES
SAND INTERCEPTOR

ALL NEW OR EXISTING BUSINESSES OR INDUSTRIES THAT USE OR DEAL WITH METALS, SAND, OR DIRT IN THEIR DAY TO DAY ACTIVITIES WILL BE REQUIRED TO INSTALL SAND INTERCEPTORS.

THE FOLLOWING GUIDE LINES SHALL BE FOLLOWED WHEN SIZING SAND INTERCEPTORS.

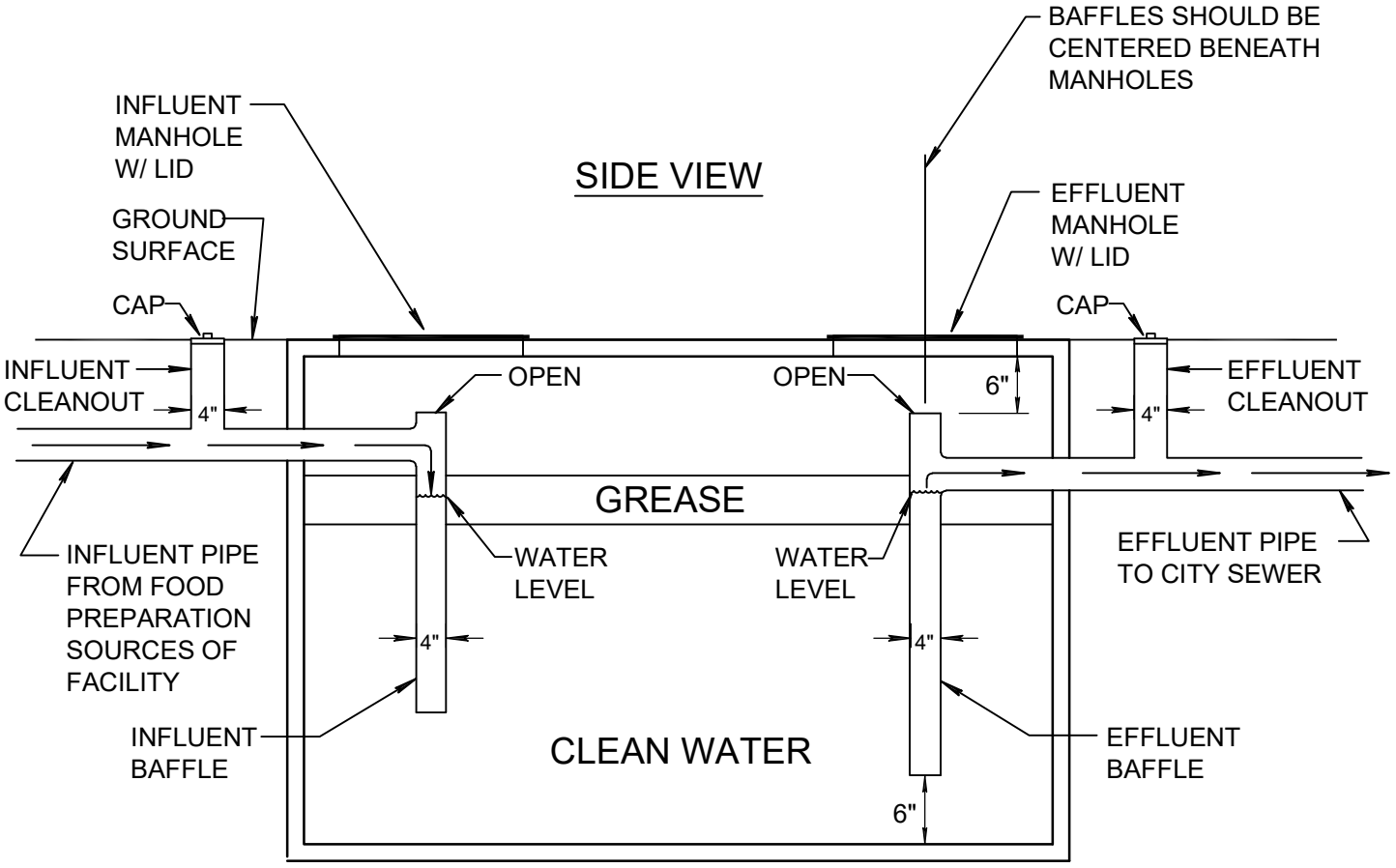
ALL SAND INTERCEPTORS WILL BE A MINIMUM OF 50 GALLONS, BAFFLED AND SET IN SUCH A WAY THAT THE LENGTH IS GREATER THEN THE DEPTH.

EXAMPLE:



NOTES:

1. NO DOMESTIC EFFLUENT SHALL BE ALLOWED TO DISCHARGE THROUGH THE SAND INTERCEPTORS.
2. IN ACCORDANCE WITH THE CITY OF DELRAY BEACH CODE OF ORDINANCES TITLE V, CHAPTER 53.054.



NOTES:

1. ALL SIDES OF IN-GROUND OIL/GREASE SEPARATOR UNITS (EXCEPT ACCESS DOORS AND MANHOLES) ARE REQUIRED TO COMPLY WITH FLORIDA PLUMBING CODE, EFFECTIVE MARCH 1, 2009.

2. GREASE INTERCEPTORS SHALL BE PUMPED OUT COMPLETELY AT A MINIMUM FREQUENCY ONCE EVERY NINETY 90 (DAYS), OR MORE FREQUENCY AS NEEDED TO PREVENT CARRY OVER OF GREASE INTO COLLECTION SYSTEM. SECTION 53.057 OIL & GREASE MANAGEMENT.

GREASE TRAP GUIDELINE

THE FOLLOWING GUIDELINES SHALL BE USED WHEN SIZING GREASE TRAPS FOR RESTAURANTS. MINIMUM GREASE TRAP SIZE TO BE ALLOWED IS 750 GAL.

SIZING FORMULAS FOR GREASE INTERCEPTORS PRIVATE SEWAGE DISPOSAL SYSTEM

SIZING FORMULA FOR RESTAURANTS

(S) X (GS) X (HR/12) X (LF) = EFFECTIVE CAPACITY OF GREASE INTERCEPTOR IN GALLONS

WHERE:

S = NUMBER OF SEATS IN DINING AREA

GS = GALLONS OF WASTE WATER PER SEAT (USE 25 GALLONS FOR RESTAURANTS WITH CHINA DISHES AND/OR AUTOMATIC DISHWASHER)(USE 10 GALLONS FOR RESTAURANTS WITH PAPER OR BASKETS AND NO DISHWASHERS)

HR = NUMBER OF HOURS RESTAURANTS IS OPEN

LF = LOADING FACTOR (USE 2 INTERSTATE HIGHWAY; 1.50 OTHER FREEWAYS; 1.25 RECREATIONAL AREA; 1.00 MAIN HIGHWAY; 0.75 OTHER HIGHWAY)

OTHER ESTABLISHMENTS WITH COMMERCIAL KITCHENS

(M) X (GM) X (LF) = EFFECTIVE CAPACITY OF GREASE INTERCEPTOR IN GALLONS

WHERE:

M = MEALS PREPARED PER DAY

GM = GALLONS OF WASTE WATER PER MEAL (USE 5 GALLONS)

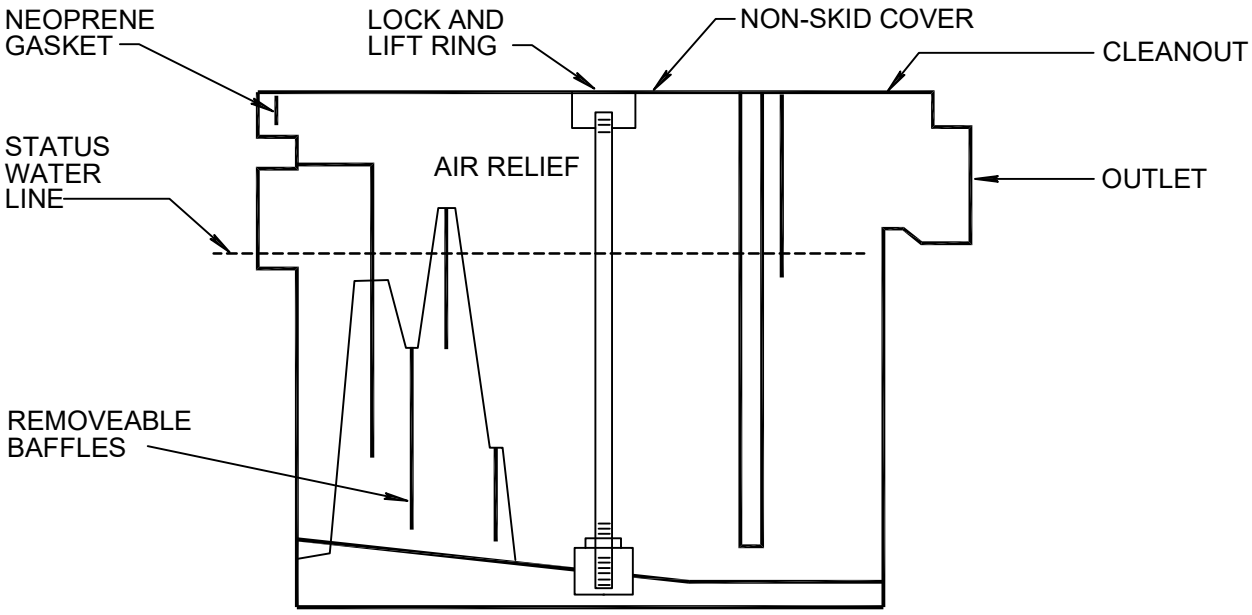
LF = LOADING FACTOR (USE 1.00 WITH DISHWASHING MACHINE AND 0.75 WITHOUT DISHWASHING MACHINE)

Note: For other than private sewage disposal systems, reduce gallon valves by 25 percent.

SPECIAL NOTES:

1. MIN. 750 GAL.
   MAX. 1250 GAL.
   INTERCEPTOR CAN BE INSTALLED IN SERIES.
2. ALL GREASE TRAPS MUST HAVE A SUITABLE CLEAN OUT ON BOTH THE ENTRY AND EXIT LINES AND INSPECTION COVERS ON TOP OF THE GREASE TRAP DIRECTLY ABOVE THE OVER FLOW PIPES INSIDE OF THE GREASE TRAP.
3. NO DOMESTIC WASTE SHALL BE DISCHARGED THROUGH THE GREASE TRAP.
4. IN ACCORDANCE WITH THE CITY OF DELRAY BEACH CODE OF ORDINANCES TITLE V, CHAPTER 53.054.

CITY OF DELRAY BEACH
INDUSTRIAL PRETREATMENT PROGRAM
INDOOR GREASE TRAP



SIZE AND CAPACITY GUIDELINES:

TO ARRIVE AT THE MINIMUM SIZE INTERCEPTOR, USE THE FOLLOWING RULES:

CAPACITY OF THE SINK OR SINKS. MULTIPLY WIDTH IN INCHES BY LENGTH IN INCHES BY HEIGHT IN INCHES AND DIVIDE BY 500. THIS WILL GIVE ITS CAPACITY REQUIRING TREATMENT. 0.6 OF THIS CAPACITY PLUS DISHWATER FLOW WILL BE THE MINIMUM REQUIRED FLOW PER MINUTE IN GALLONS PER MINUTE FOR THE GREASE INTERCEPTOR.

EXAMPLE:

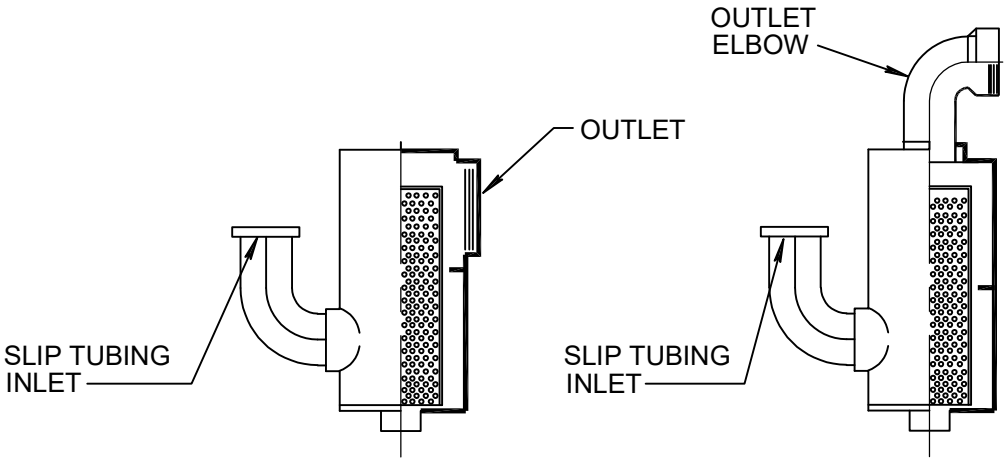
$$\frac{L \times W \times H}{500} \times 0.6 + \text{DISHWASHER FLOW} = \text{TOTAL FLOW (GPM)}$$

NOTES:

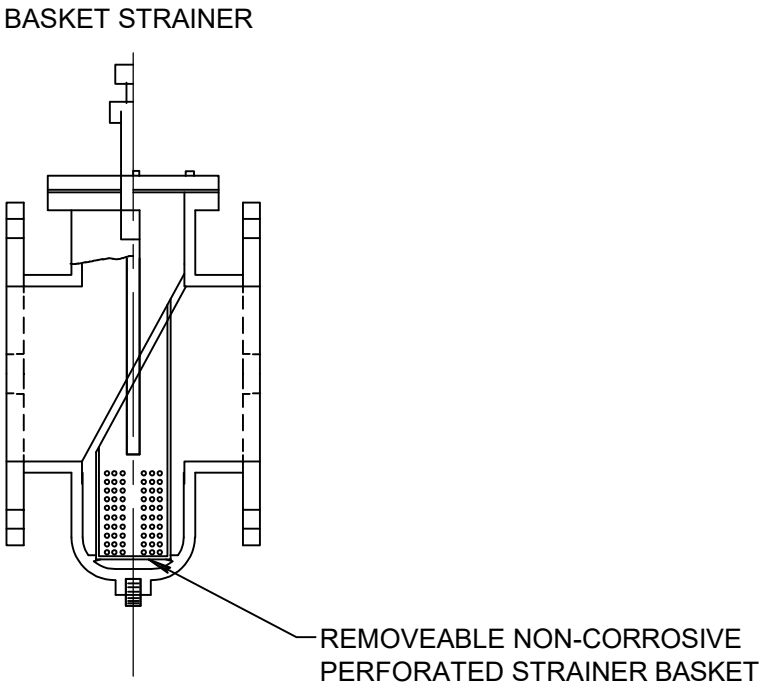
1. NO DOMESTIC EFFLUENT SHALL BE ALLOWED TO DISCHARGE THROUGH THE INDOOR GREASE INTERCEPTORS.
2. IN ACCORDANCE WITH THE CITY OF DELRAY BEACH CODE OF ORDINANCES TITLE V, CHAPTER 53.054.
3. MUST BE APPROVED BY ENVIRONMENTAL SERVICES (WATER/SEWER MGR) BEFORE INSTALLATION.
4. SHALL BE CLEANED AT MINIMUM OF ONCE PER WEEK. SECTION 53.057 OIL & GREASE MANAGEMENT.

CITY OF DELRAY BEACH
INDUSTRIAL PRETREATMENT PROGRAM
HAIR/LINT INTERCEPTOR

Ⓐ UNDER SINKS (MOTELS, BEAUTY PARLORS)

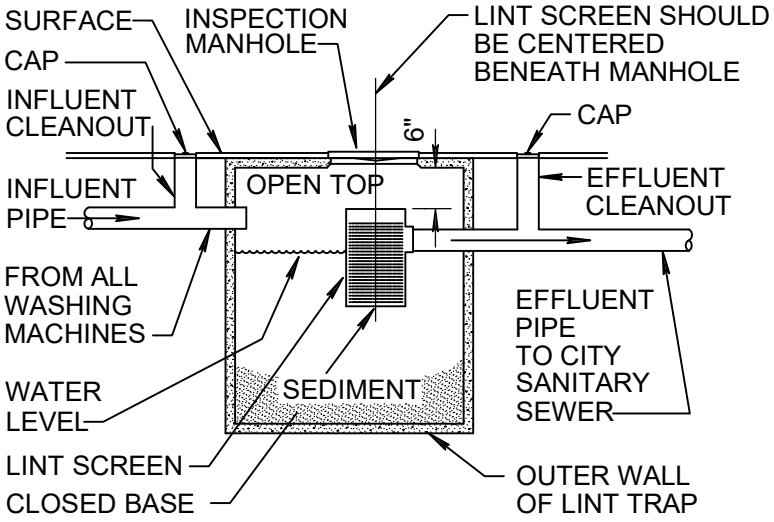


Ⓑ LAUNDRIES:

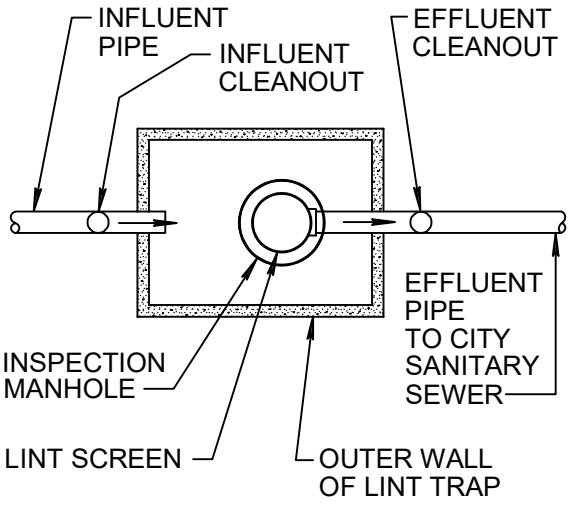


NOTES:

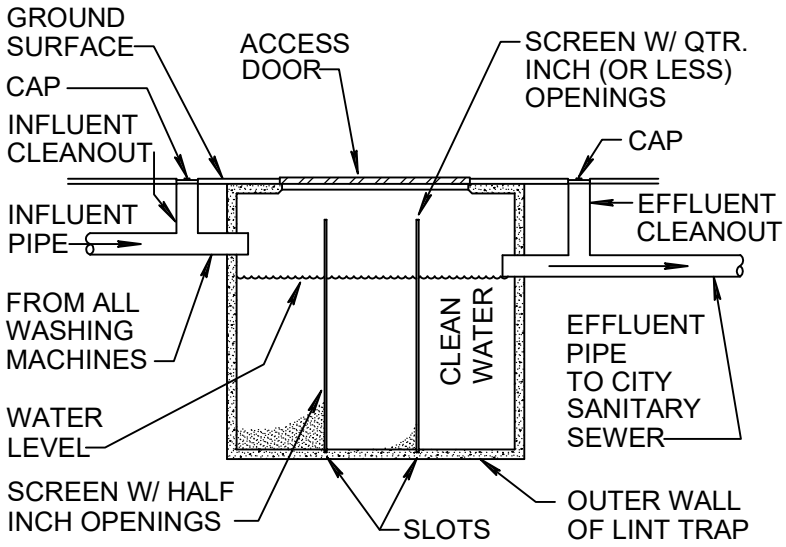
1. NO DOMESTIC EFFLUENT SHALL BE ALLOWED TO DISCHARGE THROUGH THE HAIR/LINT INTERCEPTORS.
2. IN ACCORDANCE WITH THE CITY OF DELRAY BEACH CODE OF ORDINANCES TITLE V, CHAPTER 53.054.



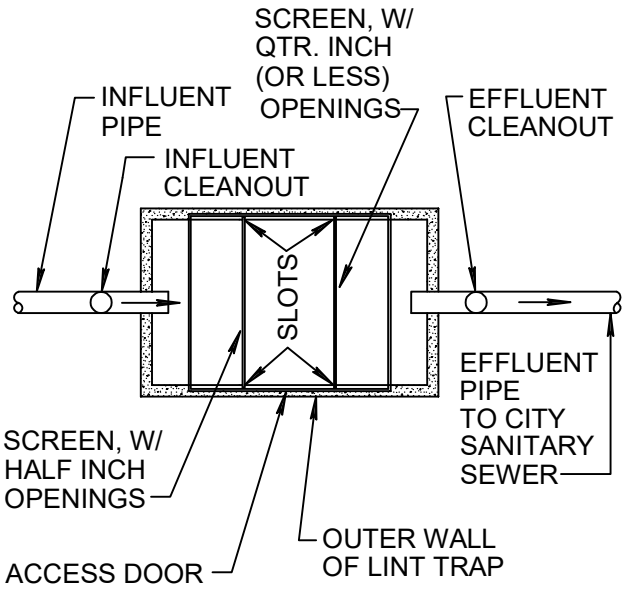
SIDE VIEW



TOP VIEW



SIDE VIEW



TOP VIEW

NOTES:

1. NO DOMESTIC EFFLUENT SHALL BE ALLOWED TO DISCHARGE THROUGH THE LINT INTERCEPTOR AS STATED IN THE STANDARD PLUMBING CODE OF THE SOUTHERN BUILDING CODE CONGRESS INTERNATIONAL (SBCCI), CHAPTER 8, SECTION 801.3 "TYPES OF WASTE" WHICH IS ADOPTED BY THE CITY OF DRLRAY BEACH.
2. ACCESS DOOR TO LINT TRAP SHALL BE CONSTRUCTED OF ALUMINUM WITH H-20 LOADING CAPACITY PER SPECIFICATIONS BY U.S. FOUNDRY, CORP. OR EQUIVALENT.

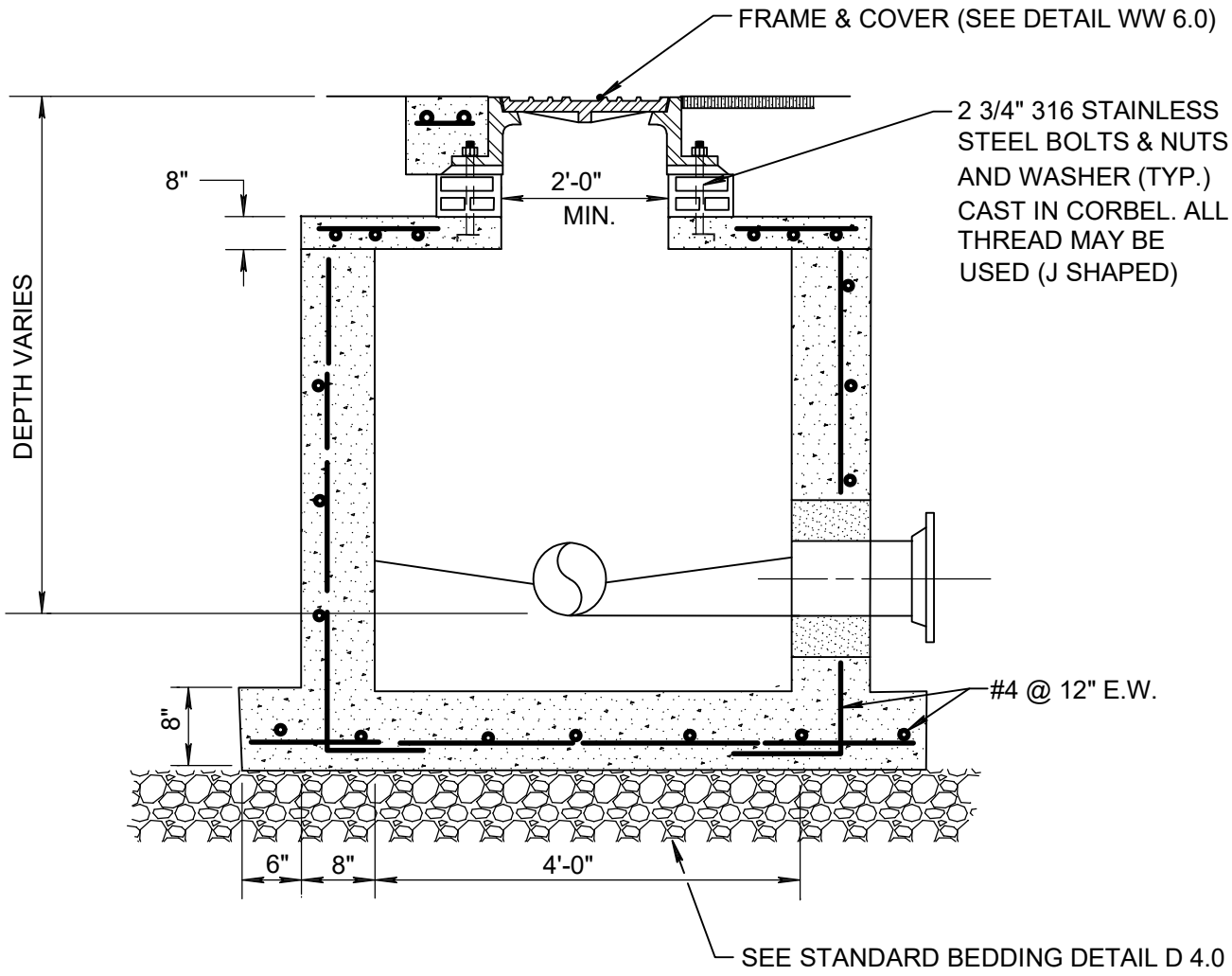
CITY of DELRAY BEACH
PUBLIC WORKS DEPARTMENT
434 SOUTH SWINTON AVENUE, DELRAY BEACH, FLORIDA 33444

VARIOUS APPROVED LINT INTERCEPTOR DESIGNS FOR COMMERCIAL LAUNDRIES

DATE: 10-04-2024

IPP 11.0

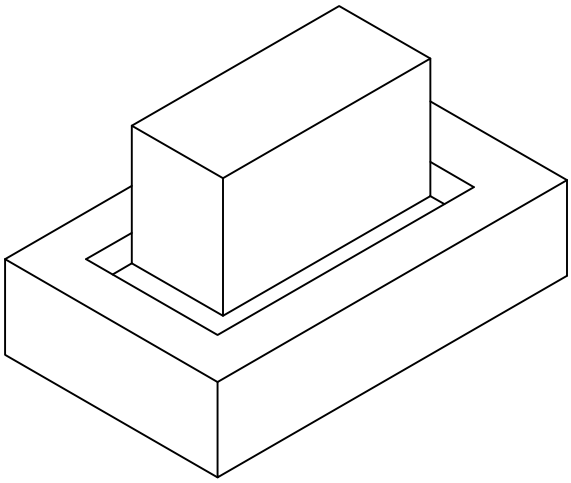
CITY OF DELRAY BEACH
INDUSTRIAL PRETREATMENT PROGRAM
INSPECTION/MONITORING MANHOLE



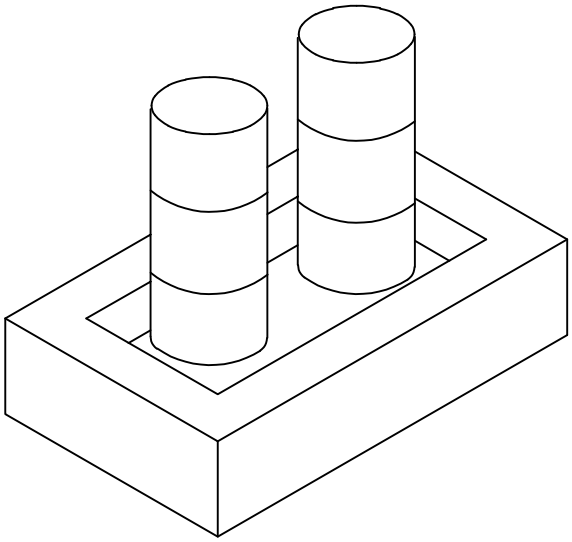
NOTES:

1. ALL STANDARD MANHOLE NOTES AND DETAILS ARE APPLICABLE (SEE DETAIL SHEET WW 2.0).
2. IN ACCORDANCE WITH CITY OF DELRAY BEACH CODE OF ORDINANCES TITLE V, CHAPTER 53.056.

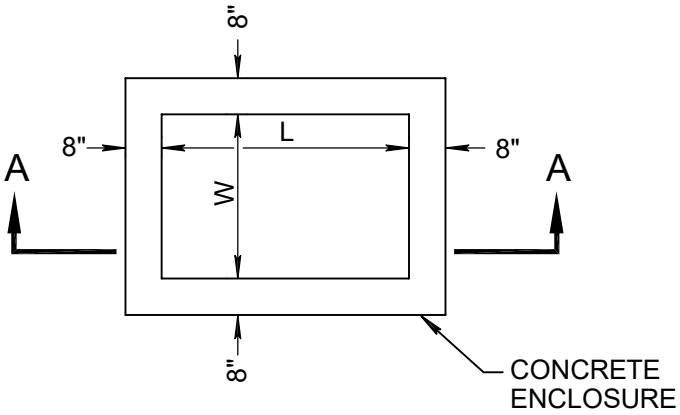
CITY OF DELRAY BEACH
INDUSTRIAL PRETREATMENT PROGRAM
SECONDARY CONTAINMENT STRUCTURE



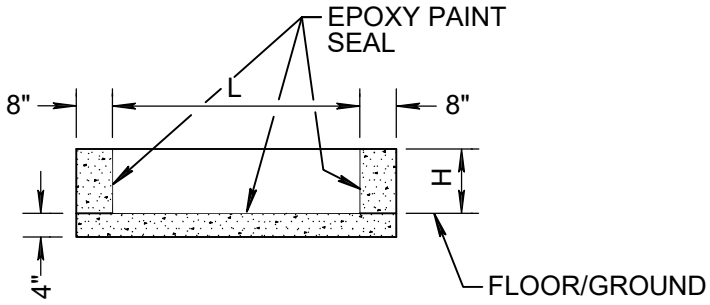
TYPICAL GREASE BOX



TYPICAL DRUM BOX



PLAN



SECTION A-A

NOTES:

1. VOLUME = V_{GAL} = L x W x H x 7.5 $_{GAL}$ x 150%
2. OUTDOOR LOCATION REQUIRES SHELTER.
3. INSIDE TO BE SEALED W/MIN. 2 COATS EPOXY PAINT.
4. L.W. & H. EXPRESSED IN FEET.
5. CONCRETE SHALL BE TYPE 1 FLORIDA DOT 921-1 REINFORCE WITH 6x6 WIRE MESH.
6. IN ACCORDANCE WITH CITY OF DELRAY BEACH CODE OF ORDINANCES TITLE V, CHAPTER 53.064.

TYPICAL SECONDARY

FOR HAZARDOUS MATERIAL STORAGE APPLICATIONS

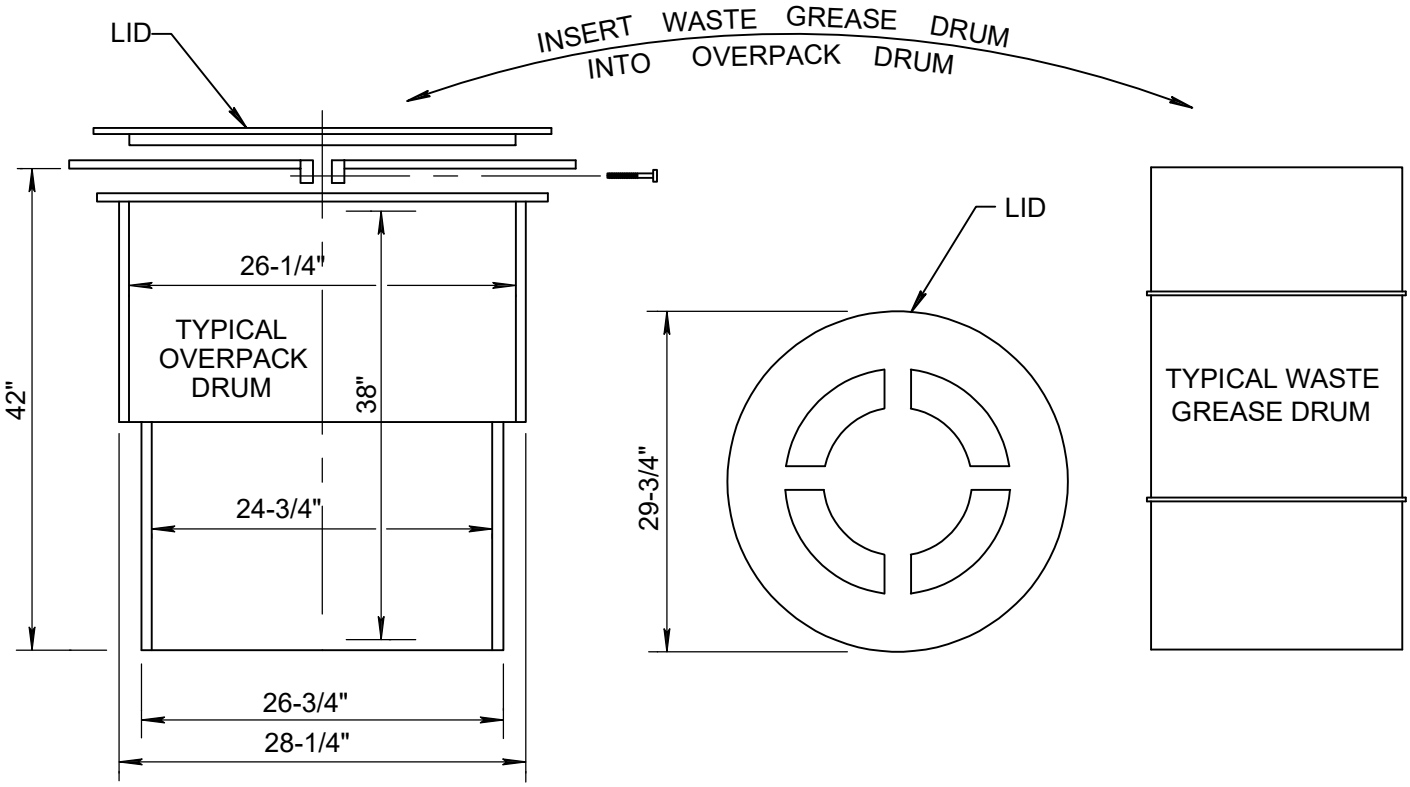
CITY of DELRAY BEACH
PUBLIC WORKS DEPARTMENT
434 SOUTH SWINTON AVENUE, DELRAY BEACH, FLORIDA 33444

INDUSTRIAL PRETREATMENT PROGRAM SECONDARY CONTAINMENT STRUCTURE

DATE: 10-04-2024

IPP 13.0

CITY OF DELRAY BEACH
INDUSTRIAL PRETREATMENT PROGRAM
SECONDARY CONTAINMENT STRUCTURE



NOTE:

TO USE AN OVERPACK DRUM AS A SECONDARY CONTAINMENT, IT SHALL BE CONSTRUCTED OF 100% POLYETHYLENE IN COMPLIANCE WITH D.O.T. E-9775 AND 49 C.F.R. 173.3 (C) AND U.N. MARKING: 1H2/Y454/S, HAVE A LID TO KEEP OUT RAIN WATER, ACCEPT STANDARD WASTE DRUMS 55 GALLONS OR SMALLER AND HOLD 150% OF THE MAXIMUM AMOUNT OF LIQUID THAT WILL ACCUMULATE IN THE WASTE DRUM AT ANY ONE TIME.

DEPARTMENT OF ENVIRONMENTAL SERVICES
PUBLIC UTILITIES DIVISION

Minimum Standards for Reclaimed Water System Plan Review

COMPREHENSIVE PLAN: RECLAIMED WATER

Objective_____ Policy _____

_____

_____

_____

LAND DEVELOPMENT REGULATIONS: RECLAIMED WATER

SECTION _____

DEFINITIONS:

1. City - The City of Delray Beach
2. Contractor – Utility Contractor and all Utility Subcontractors
3. Engineer - Engineer of Record responsible for inspections and certification

DESIGN STANDARDS: RECLAIMED WATER

A. There shall be no physical connection between a reclaimed water distribution system and any other utility system including Potable Water supply, Wastewater or storm sewage system, which would allow unsafe water to enter or backflow into the reclaimed water system by direct pressure, vacuum, gravity or any other means.

B. Potable Water services for properties with proposed or existing reclaimed water supply shall have a reduced pressure principle backflow prevention assembly installed at the discharge side of the Potable Water meter.

C. Identification for Reclaimed Water System components:

a. The reclaimed water system shall be appropriately tagged or labeled to warn the public and employees that the water is not intended for drinking. All new piping, pipelines, valves, and outlets shall be color coded, or otherwise marked, to

differentiate reclaimed water system components from potable or other water. All new PVC pipe and fittings are to be infused during manufacture with a permanent purple color. If color infused Schedule 40 PVC is not available, PVC service lines and fittings (3/4", 1", 1-1/2", 2") shall be coated with approved paint prior to installation (1 coat, 8-10 mils thickness required). PVC pipe must be scarified prior to painting. Ductile iron piping, casings and fittings shall be painted prior to installation with two (2) min. 4" wide stripes of purple paint along the full length at approximately 2 and 10 o'clock considering pipe diameter.

b. Signs are required for areas irrigated with reclaimed water.

c. Meter boxes with infused permanent purple color are required.

d. The acceptable color is Pantone 522 C or approved equal. Additionally, reclaimed water mains shall be marked with one continuous strip of 6" wide detectable purple tape imprinted with two (2) inch high lettering reading "Caution - Reclaimed Water Buried Below", and located approximately 12" above the crown of pipe. The wording shall occur once every three (3) feet. Service line valves, meter box lids, valve boxes and vault covers shall be permanently identified (cast in letters) as "Reclaimed Water" system components. Meter box covers shall be permanently identified as "Reclaimed Water -- Do Not Drink." All valves and hydrants require identification tags. A private pressure-reducing valve located on the Customer's side of the meter is recommended.

e. Newly installed components of a privately owned reclaimed water irrigation system shall be color coded as stated above. The conversion to a reclaimed water irrigation system is the responsibility of the owner, and the system must be inspected by the City prior to Service Activation. The upgrade must be completed prior to Service Activation.

D. Minimum Cover: Minimum cover to finished grade over Reclaimed Water Mains shall be 30". Mains installed at depths more than 5 feet without justification will not be accepted. All transmission mains within major thoroughfare rights of way shall have full plan and profiles shown. Pipe depth shall be designed to be as level as possible and to avoid high points.

E. Horizontal Separation: Minimum 6' separation of reclaimed water lines and other utility lines is required unless otherwise approved by the City. A minimum horizontal separation of three feet (outside to outside) shall be maintained between reclaimed water lines and either Potable Water Mains or (Wastewater or storm water lines, and minimum 5 feet from storm structures, power poles and light poles, and minimum 6 feet from the edge of drainage fabric in exfiltration trenches.

F. Vertical Separation:

a. Reclaimed water pipes shall cross under Potable Water mains and over other piping, unless otherwise approved. All conflicts shall be identified on plans with elevations.

b. A minimum of 12" separation between all pipes shall be maintained. A minimum of 6" vertical separation may be acceptable, however, if it is not possible to maintain 12" and the conflict is designed in accordance with the "Pipe Separation Standard" details.

G. Layout:

a. The reclaimed water system distribution mains shall be looped unless otherwise not feasible. Multiple feed lines may be required at discretion of the City.

b. In order to facilitate reclaimed water service for all properties within the service area, reclaimed water mains shall be extended along the full length of all fronting boundaries of a property by the Developer/Owner receiving reclaimed water service, and may be required to be extended through the property if another is to be served in the future. Property Owners who are retrofitting existing in-ground irrigation systems to reclaimed water service shall be required to extend reclaimed water mains only up to the Point of Service.

c. Reclaimed water distribution mains should be placed in rights-of-way whenever possible. Placement on or adjacent to interior property lines or between structures is discouraged and will be approved only when unavoidable or when necessary for looping. Reclaimed water mains shall not be placed in ditches, wetlands, or storm water management areas unless specifically approved.

d. Utility easements are required for lines outside of dedicated rights-of-way.

H. Reclaimed Water Main Materials:

a. Cement lined ductile iron pipe (all sizes) or C-900 Class 150 DR 18 PVC pipe (up to 12" diameter) shall be allowed for reclaimed water pipes. The lining for ductile iron pipe shall be factory applied in accordance with the manufacturer's specifications and shall be warranted by the pipe manufacturer. Unless specific approval is granted, no reclaimed water main shall be encased in concrete.

b. DIP shall be required in the following circumstances:

i. Mains smaller than 6" and larger than 12" in diameter.

ii. Within 3' (wall-to-wall horizontal separation) of Wastewater pipes or Potable Water mains.

iii. Within 15' of structures, top of bank of canals or lakes.

iv. Crossings over Potable Water, and over or under pipes with less than 12" separation with no joint within 10' of each other.

v. Jack and bores (mechanical joints with Megalugs or equal).

vi. The right is reserved to mandate DIP in any instances of off-site or on-site construction where future damage to the line is possible due to location or circumstances, or outside of dedicated Rights-of-way.

vii. Flanged ductile iron pipe is required for exposed (not buried) installation.

I. Reclaimed Water Pipe Sizing:

a. The piping shall be sized by the Developer's Engineer as required. Sizing within single family home subdivisions shall be based on usage of 20 GPM per single family home with not less than 25% of the platted homes in the subdivision using reclaimed water for irrigation at anyone time or 1/2" of Reclaimed Water per acre per hour for all porous areas. Pipe sizing design shall ensure minimum 50 psi residual pressure at peak instantaneous demand. Piping size for non-residential projects (golf courses, parks, etc.) shall be based on the demand of the connecting irrigation system. Reclaimed Water piping shall be sized based on a Hazen/Williams coefficient of C=120 and shall allow not more than 4.0 FPS ultimate design flow velocity. Minimum service line size is 1-1/2". Minimum size for reclaimed water distribution mains is 4".

b. The engineer may be required to demonstrate the adequacy of pipe sizing. In cases where the completion of gaps in the reclaimed water systems is necessary to meet flow requirements of the development, the developer shall construct the required improvements. The Developer may be required to construct oversized piping subject to oversizing credits and reimbursements as defined in the UPAP. Use the friction coefficient factor C= 120 for flow calculations and a maximum flow velocity of 3.0 FPS to determine pipe sizes.

c. The pipe sizing shall conform to the latest City Master Plan.

J. Valves and Appurtenances:

a. Valves - Valving of all systems shall be designed to facilitate the isolation of each section of pipeline between intersections of the grid system. Generally, the number of valves at an intersection shall be one less than the number of pipes forming the intersection. All valves shall be resilient seat gate valves with mechanical joint or flanged ends and right hand closed operation; valves 12" or greater shall be butterfly valves unless another type of valve is approved in writing by the City. Butterfly valves larger than 16" shall have worm gears and shall be certified for buried service if applicable. In-line valves shall generally be installed at intervals of no greater than 2,500 LF on transmission mains, at intervals of no greater than 1,000 LF on main distribution loops and feeders, and on all primary branches connected to these lines. In- line valves shall be installed for mains 16" and smaller near each side of a canal crossing and/or major road crossings. In all instances, effectiveness of placement shall be the primary criteria in determining valve location. Valves placed in curbs will not be accepted. Valve box covers for reclaimed water system valves shall be square with the words "Reclaimed Water" cast in raised letters on the cover. Clearance of 18" or

one pipe diameter, whichever is greater, shall be maintained between all fittings (bells, valves, flanges, etc.).

b. Air Release Valves - Air release valves shall be installed at all canal crossings and at high points. Air release valves shall be sized per manufacturer's recommendations.

c. All fittings, bends, crosses, caps shall have mechanical joint or flanged ends unless an approved flexible joint restraint system is used.

K. Thrust Restraint:

a. All bends, tees, crosses, reducers, valves and dead ends shall be restrained through an approved means of mechanical or approved flexible joint restraint. Thrust blocks consisting of poured-in-place concrete having a minimum compressive strength of 2,500 psi after 28 days cure may be utilized only if necessary for connections to existing piping system. The design and placement of concrete thrust blocks shall be prepared by the Engineer of Record prior to installation subject to the approval by the City. Any line terminated as a construction phase that is a known future extension, shall have a plugged valve placed at the end, and restrained with approved mechanical or flexible joint restraint.

b. An adequate number of pipe lengths shall be restrained using approved mechanical joint restraints (MJ pipe), flexible joint restraints (DIP push-on joint pipe) or pressure pipe bell restraints (PVC or DIP push-on joint pipe) to handle 150 psi working pressure and 250 psi surge pressure. Pipes and appurtenances larger than 24" shall be designed and pressure tested to 200 psi. The restrained pipe lengths shall be designed by a registered engineer based upon the soil conditions and shall be shown on the design drawings and record drawings.

c. If flexible joint restraints are utilized, the following requirements must be met:

    i. The installation of flexible joint restraints must be witnessed by the City inspector and the Engineer of Record.

    ii. A copy of the material invoice must be available on the job site for review to confirm the shipment of restraining gaskets, etc.

MINIMUM LENGTHS OF PIPE (FEET) TO BE RESTRAINED

(Sources: EBAA Iron Restraint Length Calculation Program for PVC Pipe, Release 3.1 and DIPRA Thrust Restraint for Ductile Iron Pipe, Release 3.2)

FITTING TYPE		PIPE SIZE											
		4"	**6"**	**8"**	**10"**	**12"**	**16"**	**20"**	**24"**	**30"**	**36"**	**42"**	**48"**
90° Horiz. Bend		14	20	25	30	35	45	54	62	73	84	93	101
45° Horiz. Bend		6	8	11	13	15	19	22	26	30	35	38	42
22.5° Horiz. Bend		3	4	5	6	7	9	11	12	15	17	18	20
11.25° Horiz. Bend		1	2	3	3	4	4	5	6	7	8	9	10
90° Vert. Offset	Upper Bend	55	79	103	125	147	189	228	266	319	368	412	454
	Lower Bend	22	38	49	59	69	88	106	123	145	165	184	201
45° Vert. Offset	Upper Bend	22	32	42	51	60	77	93	109	131	151	170	187
	Lower Bend	10	14	19	23	28	35	43	50	59	67	75	82
22.5° Vert. Offset	Upper Bend	7	12	17	21	26	34	42	49	60	70	78	87
	Lower Bend	2	4	6	8	10	14	17	21	25	29	33	36
11.25° Vert. Offset	Upper Bend	3	4	6	9	11	15	19	22	28	32	37	41
	Lower Bend	1	1	1	2	3	5	7	8	10	12	14	16
Plug (Dead End)		32	45	59	70	83	107	129	151	190	220	244	270
Inline Valve		32	45	59	70	83	107	129	151	100	110	125	135
Tee (Branch Restraint)	4"x 0	23											
	6"x 0	21	35										
	8"x 0	18	34	47									
	10"x 0	16	32	46	58								
	12"x 0	13	30	44	57	69							
	16"x 0	7	26	41	55	67	90						
	20"x 0	1	21	38	52	65	88	109					
	24"x 0	1	16	34	49	62	86	108	129				
	30"x 0	1	8	28	44	58	83	106	127	154			
	36"x 0	1	1	22	39	54	80	103	124	153	179		
	42"x 0	1	1	15	33	49	77	100	122	151	177	201	
	48"x 0	1	1	7	27	44	73	97	120	149	176	200	222
Reducer (Larger Pipe Restraint)	6"x 0	23											
	8"x 0	38	25										
	10"x 0	57	43	24									
	12"x 0	72	60	44	41								
	16"x 0	99	90	78	75	45							
	20"x 0	123	116	107	105	81	45						
	24"x 0	146	140	132	131	111	82	45					
	30"x 0	157	153	148	141	133	113	87	56				
	36"x 0	182	179	175	169	163	147	126	101	56			
	42"x 0	205	202	199	194	189	175	158	138	100	54		
	48"x 0	226	224	221	217	213	201	187	169	138	98	53	

Notes:

- *The data in the above table are based upon the following installation conditions:*
  Soil Type.....Sand
  Test Pressure .....150 psi, 200 psi for pipes larger than 24"
  Depth of Bury.....3'
  Trench Type.....3
  Safety Factor 1.5
  Vertical Off-Set .....3'
  Minimum pipe lengths
  along tee run.....5'
- *The restrained pipe lengths apply to Ductile Iron Pipe and PVC pipe.*
- *All joints between upper and lower bends shall be restrained.*
- *Restrained pipe lengths for valves apply to pipe on both sides of valves.*
- *Restrained joints shall extend to one joint beyond minimum length required.*

d. The above table shall serve as a general design guide only. It is the Engineer's responsibility to justify and document any deviations from the pipe lengths specified in the above table.

L. Reclaimed Water Service Lines and Taps:

a. Reclaimed water service taps on the main shall be spaced at a minimum distance of 18" apart. All service lines 2" and smaller shall have corporation stops. Services shall be as short as possible and not exceed 100 feet to meter box. Service lines under driveways and roadways shall be encased per details RW 1.1a, RW 1.1b and RW 2.1. Service taps under driveways or roadways shall be avoided whenever possible. Services crossing under parking tracts shall have their meter boxes placed prior to the crossing.

b. In developments where the property line is not clearly defined (condominiums and commercial), the meter box shall be placed within a utility easement in a readily accessible location.

c. Private reclaimed water services shall not cross over any public utility mains unless specifically identified on plans and approved by the City.

M. Service Installation:

a. Construction plans shall include a typical meter or meter box installation detail for each service size to be installed. Service line and meter sizes, if applicable must be shown on the plans. The proper sizing of meters, if applicable and service lines is the responsibility of the developer's engineer. Services will be available in the following sizes only: 3/4", 1", 1-1/2", 2", 3", 4" and larger sizes as necessary. Service sizing shall be based on expected peak demand and correspond to the standard for maximum continuous operating capacity for a meter: 3/4" - 20 GPM, 1" - 50 GPM, 1-1/2" - 120 GPM, 2" - 160 GPM, 3" - 350 GPM, 4" - 1000 GPM, 6" - 2000 GPM.

b. The City reserves the right to install or require the installation of a flow control device to regulate peak flow conditions. The installation of a private pressure-reducing valve on the Customer's side of the meter is recommended.

c. All applicable service installation and connection charges must be paid to the City prior to Service Activation. All meters shall be installed by the City personnel (see details). All service piping, valves, boxes must be completed in accordance to these standards prior to service initiation. 1-1/2" corporation stops and 316 S.S. double strap saddles shall be required for 3/4" and 1" meters and 2" corporation stops and 316 S.S. double strap saddles shall be required for 1-1/2" and 2" meters. Threaded area of corporation stops shall be spiral wrapped with two wraps of Teflon tape. The corporation stop shall not be bottomed out (1-3 threads showing). No PVC male/female adapters shall be used. The City will not install services for meters 3" and larger. Meter boxes shall not be installed in pedestrian walkways or driveway areas. All meters and meter box locations must be shown on the drawings prior to approval. Check valves are required for all reclaimed water services. Service lines under driveways and roadways shall be encased per details RW 1.1a, RW 1.1b and RW 2.1. Service taps under driveways or roadways shall be avoided whenever possible. Meter boxes shall be set in grassy area whenever possible.

d. For water meter installations within nonexclusive utility easement paralleling a road right-of-way, the control valve shall be located a maximum of 18" from the right-of-way line and the meter box shall not extend into the easement by more than 48" from the right-of- way line. Reclaimed service lines and meter boxes shall be a minimum of 3’ from the potable service.

e. Meter boxes and control valve locations shall be designed to be accessible and provide the "minimum unobstructed space" shown on applicable details (i.e., clear of buildings, trees, shrubbery, light poles, walled enclosures, hydrants, cable boxes, garbage compactors, etc.).

f. Minimum 12" horizontal separation is required between front edge of electrical transformer pad or its projection and back edge of meter box or control valve.

g. The developer and/or his representative shall be responsible for coordination of service location.

h. Meter/service will not be installed/activated until:

    i. Driveway, sidewalk and/or form boards for same are in place.

    ii. Minimum unobstructed space is provided as shown on applicable details. For services 1-1/2" and larger, the minimum 3' unobstructed space shall begin at the ball/gate valve on the discharge side of the meter.

i. The required backflow prevention assembly/device is installed on the Potable Water service and passes the initial testing (if applicable).

Note: Service line and meter assembly repairs, relocation and/or adjustments prior to issuance of a Certificate of Occupancy will be charged at cost to the Customer.

j. Double service meter boxes shall be used for dual services installed on a common property line whenever possible.

k. Meter boxes shall not be placed in areas that can be fenced, such as backyards, under any circumstances. Reclaimed service lines and meter boxes shall be a minimum of 3' from the potable service.

l. Meter boxes shall not be placed in any paved surfaces area (sidewalks, curbs, driveways, roadways, etc.) unless specifically approved by the City Engineer.

m. In areas where no alternative is available, meter will be allowed in paved area and:

    i. Top of box shall be flush with surface located outside of drainage flow lines (i.e., dry area).

    ii. Traffic rated box and lid shall placed out of a common traffic area. Bollards may be required under certain conditions.

n. In cases where reclaimed water, Potable Water and Wastewater lines have been constructed and a developer replatted the development or relocated structures, the City will require that reclaimed water services which cannot be reasonably adjusted, be removed and plugged at the main. If the number of services removed is excessive, the entire line may be required to be replaced. A reasonable adjustment is considered to be less than three (3) feet laterally. Any adjustments/reconstruction shall be regarded as having to meet all new construction standards and requirements.

CONSTRUCTION STANDARDS: RECLAIMED WATER

A. Installation:

a. Installation of reclaimed water pipe and associated fittings shall be in accordance with current AWWA standards for Potable Water, manufacturers' requirements for their particular products, and FDEP regulations. All mains shall have a minimum of 30" clear cover to finished grade with pipe being as level as possible. Approved pipe joints restraint shall be required at each fitting involving a change of direction and as specified in plan details. The contractors shall be responsible to ensure that all safety requirements are met with respect to construction.

b. All pipes shall be laid in trenches having a dry and stable bottom. Backfill shall be free of boulders and debris. Pipe shall be fully supported along its entire length. Sharp or rocky material encountered in the base shall be replaced with proper bedding. Pipe shall be laid on line and grade as designed. Changes in pipe

alignment may be accomplished using appropriate fittings or through pipe deflection. Pipe deflection at the joint is allowed with ductile iron pipe and with specially designed PVC pipes (see Approved Materials Lists). The deflection shall not exceed 75% of the Manufacturer's recommended maximum joint deflection. No deflection at the joint is allowed for PVC pipe unless allowed by the pipe manufacturer. If joint deflection is not allowed, PVC pipe curvature shall be accomplished by installing appropriate bends.

c. All valves shall be placed according to plans unless the City approves relocation. As-built drawings shall reflect the actual location of all mains, services, and valves. All taps must be at least 18" from a fitting or bell. Reclaimed water mains shall not be laid in fuel-contaminated areas. All valves 10” and larger require identification tags.

d. All road crossings and pavement cuttings shall be in accordance with the requirements of the particular authority governing the area.

B. Connection to Existing System: All connections to existing mains shall be made under the direct supervision of the City and under normal working pressure. If this cannot be accommodated, the design shall incorporate special provisions such as line stops to minimize the impact on existing customers. Valves on existing mains shall be operated by City personnel only. Tapping sleeve and valve shall be pressure tested prior to tapping. The contractor shall be ready to proceed with as much material preassembled as possible at the site to minimize the length of service interruption. The City will postpone a tie-in if the contractor is not ready to proceed on schedule. A reverse tap due to pre-existing conditions is acceptable only if previously approved (detail drawing is required).

C. Cleaning and Flushing: Foreign material shall be kept out of the pipe or cleaned from pipe prior to installation. Upon completion of installation, the reclaimed water mains shall be flushed with Potable Water and the water disposed of without creating a nuisance. The use of reclaimed water for flushing will not be permitted. The ends of pipe installed during one day shall be capped at the end of each day with pipe plugs to prevent contamination.

D. Testing: All mains shall be pressure-tested with Potable Water to the required pressure, 150 psi. Mains located in road rights-of-way shall be pressure tested after the rock and "tack coat" is installed in the road right-of-way. Reclaimed water shall not be used for pressure testing. The maximum length of line to be tested as one section will be 2,500 feet. The test shall be performed as determined in the current AWWA specification. The standard test duration is two (2) hours. Certifications of Completion to the FDEP and project releases for service from the FDEP for the reclaimed water distribution and irrigations systems are required prior to any Service Activation.

CONSTRUCTION USING HORIZONTAL DIRECTIONAL DRILLING (HDD)

A. General:

a. The City reserves the right to disapprove a horizontal directional drilling installation if the conventional open trench or jack and bore type installation is preferred by the City because:

i. Excessive depth of pipe is of concern.

ii. A casing is required by the City to protect the utility pipe

iii. Future service and main connections to the utility pipe are possible

B. Pipe sizes, pipe material:

a. The horizontal directional drilled utility pipe shall be restraint joint PVC AWWA C-900 IDRI4, 200 psi, NSF 61 (4"-12"). If the directional-drilled pipe is to be used as a casing for a small diameter service line (up to 2" diameter), DR 18 pipe is acceptable. Pipe, coupling and all restraining components shall be completely non-metallic. Pipe and couplings shall be free from voids, cracks, inclusions, and other defects and shall be uniform in color throughout the installation.

C. Design Requirements:

a. The Engineer shall inquire with the City about approval of a horizontal directional drilling procedure for a pipe installation. With the City's concurrence, the Engineer shall submit a signed and sealed pilot bore plan for review and approval. The plan shall be submitted on a 24" x 36" sheet at a maximum 1"=30' horizontal and 1"=3' vertical scale (1"= 20' horizontal, 1"= 20' vertical scale preferred).

b. The plan must show:

i. Finished grade and surface improvements

ii. Locations of drill set-up

iii. Length of bore

iv. Deflection and radiuses of the pilot bore

v. Locations of existing utilities and underground structures

vi. Minimum horizontal and vertical clearances from underground structures, conduits, piping systems (the proposed clearances must exceed the City's standards plus the guidance system accuracy tolerance)

vii. Pipe size and specifications

viii. Proposed pilot bore pipe defection limits (not to exceed 75% of the maximum deflection allowed by the pipe manufacturer)

ix. Limits of directional bore installation

x. Limits of pressure testing

xi. Connection to existing utilities

xii. Rights-of-way limits, utility easements and temporary construction easements

D. Preconstruction Meeting:

a. Upon approval of the pilot drill plan by the City and obtaining all necessary permits for the directional drilling, the Engineer shall schedule a preconstruction meeting with the City. The Engineer and the Contractors performing the utility work shall attend the meeting.

E. Pilot Bore:

a. The Engineer shall schedule the beginning of work with the City a minimum of 3 days in advance. The drill path shall be accurately surveyed and plotted to create an "as-built" drawing (same scale as the pilot drill plan). The Engineer shall evaluate the as-built data and confirm the compliance with the design parameters. Deviation beyond approved parameters (depths, deflection radius, and separation to other utilities or structures) shall be brought to the attention of the City. The signed and sealed pilot bore "as-built" drawing shall be submitted to the City for review and approval.

F. Pull back of carrier pipe:

a. Upon approval of the pilot bore location by the City; the pullback operation of the required carrier pipe shall begin. The Contractor shall select the proper reamer type with the final hole opening to be a maximum of 1.5 times the outside diameter of the largest component system.

b. The open borehole shall be stabilized by means of bentonite drilling slurry. The slurry shall be contained at the entry or the exit side of the bore in pits or holding tanks.

c. The pipe sections shall be joined together in accordance with the manufacturer’s specifications. The ends of the pipe, gaskets and couplings shall be inspected for cleanliness. Chipped, scratched, scraped, cracked or excessive deformed pipe or couplings shall be rejected. A tracer wire shall be taped to the pipe at 24"

intervals. The pipe shall be elevated to the approximate angle of entry and supported by roller arms or equivalent.

G. Testing:

a. Installed pipe shall be flushed and pressure tested using Potable Water. Pressure testing shall be conducted at 150 psi for minimum 2 hours. No leakage is acceptable. Installed services, tees and stub-outs shall be pressure tested together with the main. Pressure test is not required if the installed pipe is intended to be used as a casing. If the pipe successfully passed the pressure test, a connection to the existing pipe system may be performed. Bacteriological testing and final pressure testing are required.

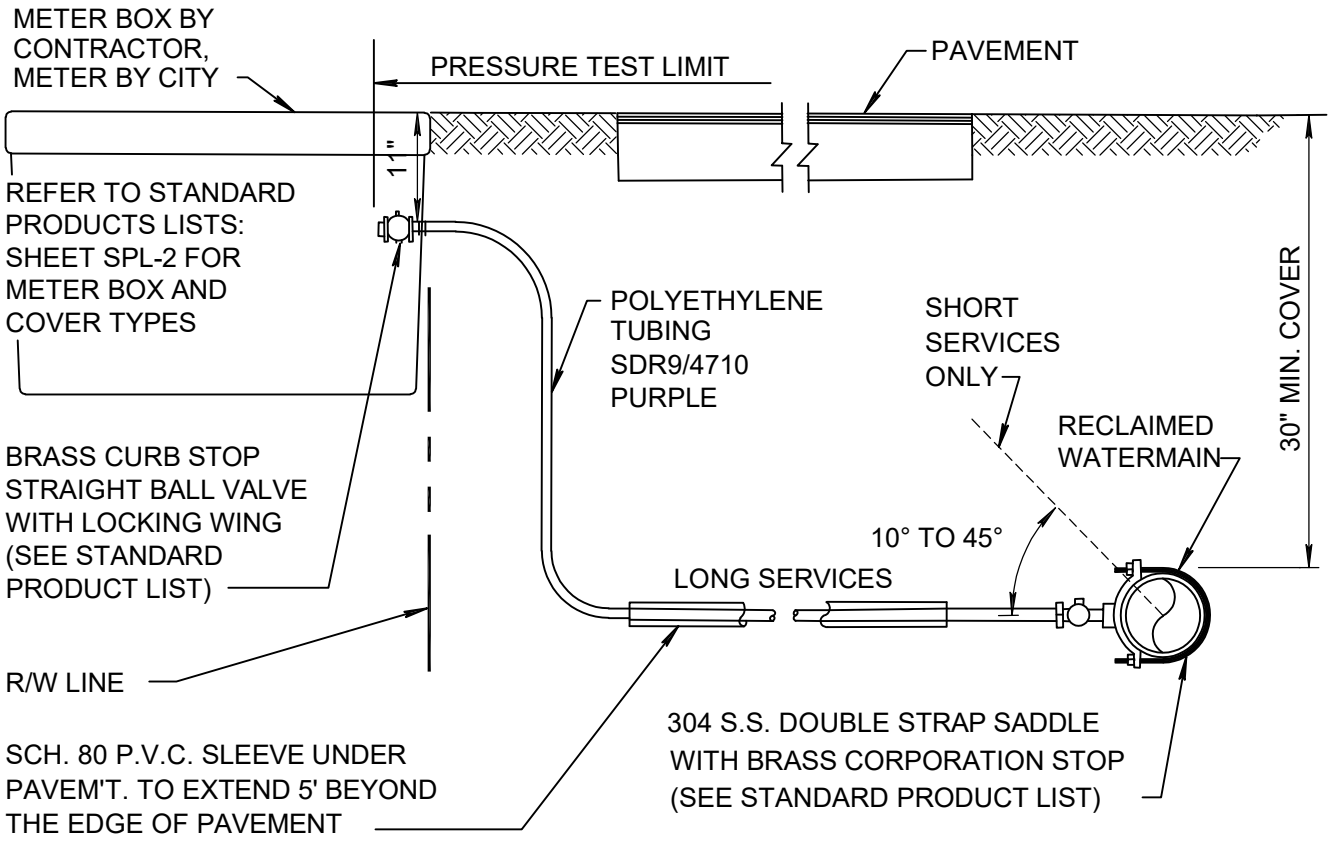
H. Preconstruction Meetings

a. Prior to construction, a preconstruction meeting is to be scheduled with the City's Construction Division. The meeting shall include a city inspector, the owner, the contractor, and the engineer of record. Preconstruction meetings are to be scheduled with the Deputy Director of Construction at 561-243-7322.

I. As-Builts

a. The Engineer or Contractor (City projects only) is to submit two sets of black/blue line prints, Record or As-built drawings, one Mylar, and one digital copy in AutoCAD, v. 2005 to the Engineering Department along with the FDEP Application for Release of the System. All "as-built drawings" shall be signed sealed and dated by the Engineer of Record. Certified as-built drawings must be submitted to the City for review and approval prior to any final certification.

b. As the work progresses, the Engineer (or their representative) shall record on one set of drawings the location including station and offset with sufficient dimensions and distances to adequately describe the location of the improvement from the baseline. Elevations are to be provided at the top of pipe at increments of every 100 feet on all water and force mains. Stationing is required on all valves, fittings, and reclaimed water services. The lengths of all reclaimed water service lines shall be noted.



NOTES:

1. SUCCESSIVE TAPS INTO THE RECLAIMED WATER MAIN SHALL BE SPACED A MINIMUM OF 18" ON CENTER.
2. SERVICE LINES SHALL NOT BE PLACED UNDER DRIVEWAYS.
3. ALL METERS REQUIRE A LOCKING BRASS CURB STOP WITH LOCK WING (1"MIN.).
4. NO FITTINGS BETWEEN CORPORATION STOP AND BRANCH ASSEMBLY.
5. MAXIMUM SERVICE LENGTH IS 100' TO METER.
6. MINIMUM BEND RADIUS ON SERVICES SHALL NOT BE LESS THAN 30 TIMES THE PIPE DIAMETER ON ALL SERVICES BEHIND METER.
7. METER SIZE WILL BE DETERMINED BY THE UTILITIES DEPT. UPON APPLICATION FOR SERVICE.
8. ALL VALVES TO BE BALL VALVES.
9. METER BOX SHALL BE PROVIDED AND INSTALLED BY CONTRACTOR.
10. METER BOX SHALL BE PERMANENTLY INFUSED PURPLE COLOR WITH LID MARKED "RECLAIMED WATER DO NOT DRINK."

NOTES:

11. 12" MINIMUM CLEARANCE TO BE MAINTAINED BETWEEN METER BOX AND AND ANY OBSTRUCTION.

12. FOR INSTALLATION OF SERVICES UNDER ROADWAYS A CASING WILL BE USED. PVC SCH 80 OR HDPE SDR 9 PURPLE CASING. CASING TO EXTEND MIN. 5' BEYOND EDGE OF PAVEMENT. END OF CASING TO BE SEALED WITH CEMENT. CASING PIPE I.D. SHALL BE SERVICE O.D. PLUG 1" MINIMUM.

13. METER SHALL NOT BE PLACED IN SIDEWALK OR DRIVEWAY AREAS. SERVICE LINES AND TAPS SHALL NOT BE PLACED UNDER DRIVEWAYS WHENEVER POSSIBLE.

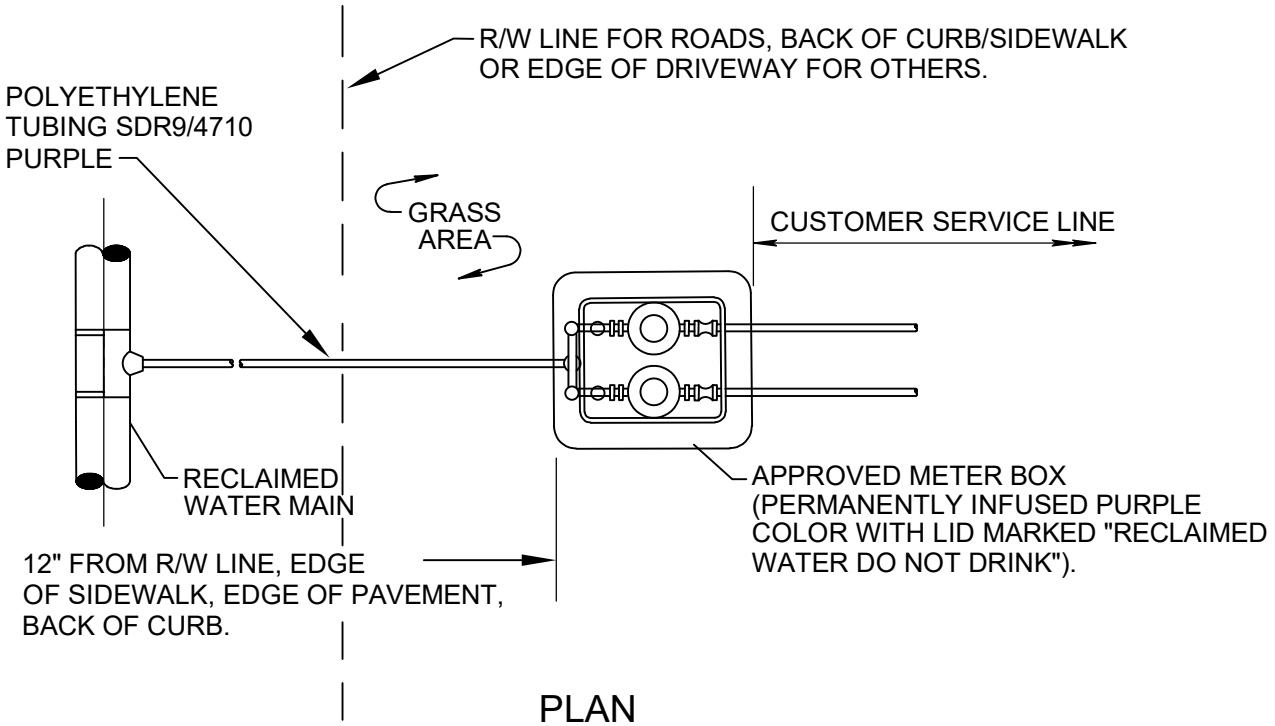
14. DUAL CHECK VALVE IS REQUIRED FOR EVERY RECLAIMED WATER SERVICE. CHECK VALVE SHALL BE PLACED ON DEVELOPER SIDE OF METER.

15. BEDDING (MIN. 4") AND COVER (MIN. 4") OVER SERVICE LINE OR CASING SHALL CONSIST OF FINE GRANULAR MATERIAL. UNSUITABLE IN-SITU MATERIALS SUCH AS MUCK, DEBRIS AND LARGER ROCKS SHALL BE REMOVED WITH 2" MAXIMUM SIZE.

16. METER TO BE SET BY CITY.

17. THE DEVELOPER/PROPERTY OWNER OR ASSIGNEE SHALL BE RESPONSIBLE FOR INSTALLATION OF SERVICES BEYOND PRESSURE TEST LIMITS AS SPECIFIED BY THE CITY.

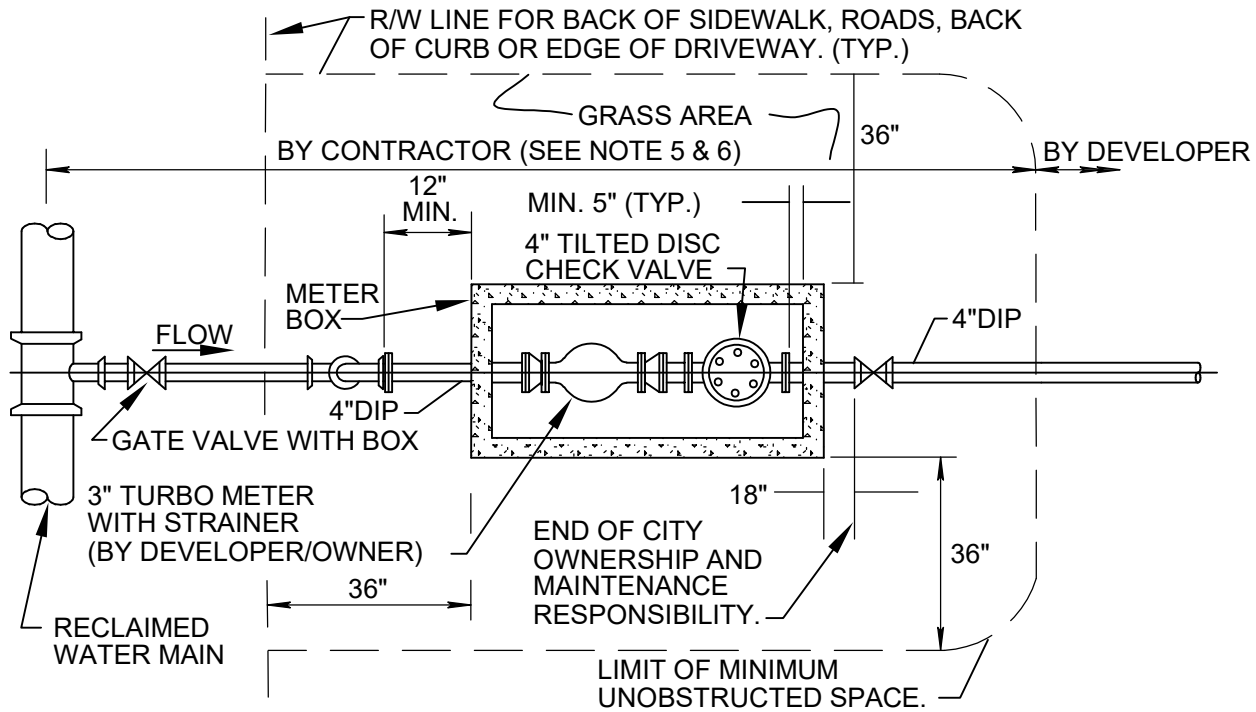
18. PIPING VALVE & BOX TO BE PERMANENTLY IDENTIFIED AS "RECLAIMED WATER SYSTEM."

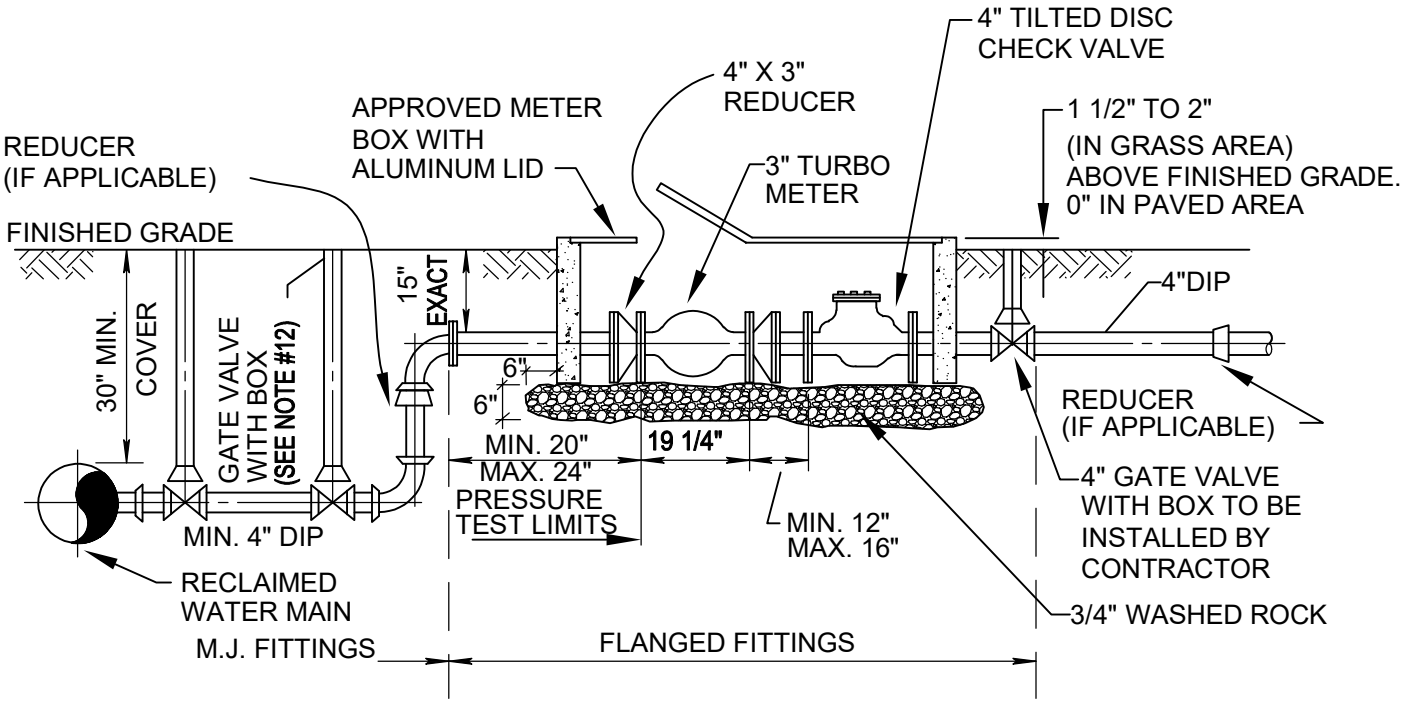


PLAN

NOTES:

1. ALL TYPICAL RECLAIMED WATER SERVICE CONNECTION NOTES AND DETAILS ARE APPLICABLE.





CITY of DELRAY BEACH
PUBLIC WORKS DEPARTMENT
434 SOUTH SWINTON AVENUE, DELRAY BEACH, FLORIDA 33444

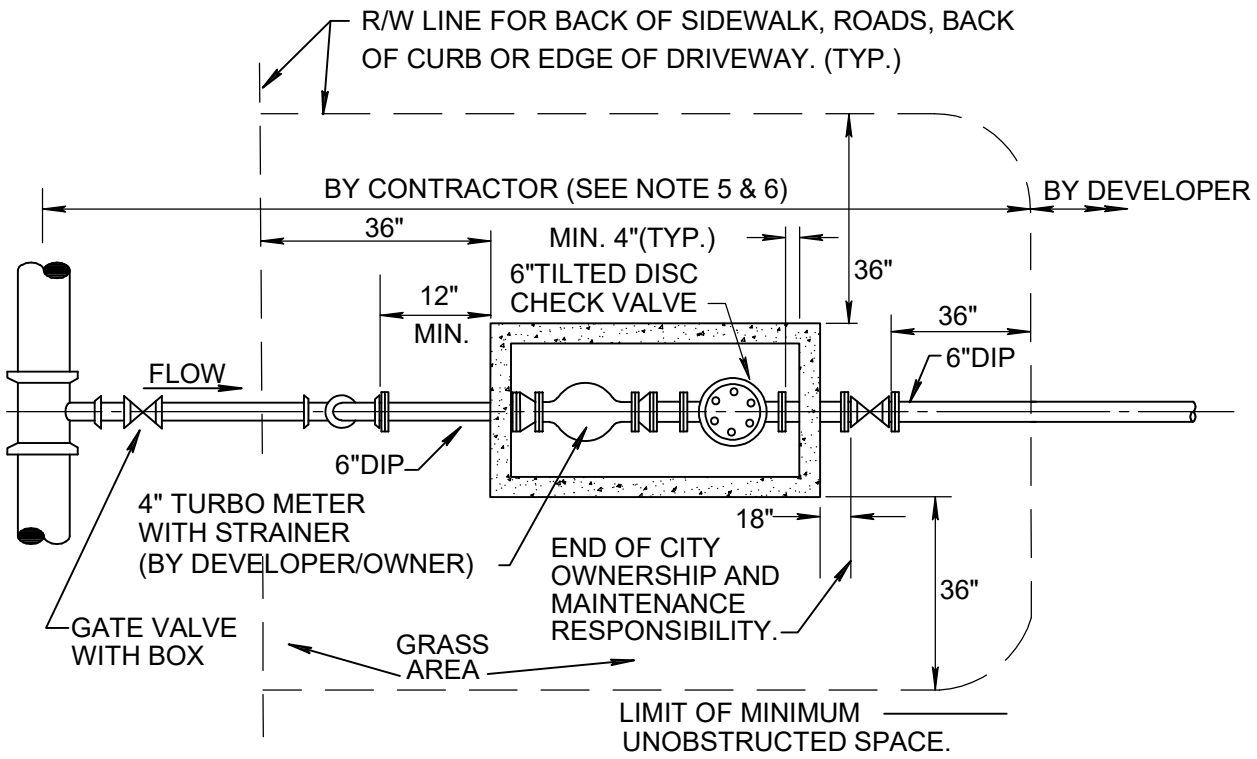
3" METER SERVICE DETAIL
(SHEET 1 OF 2)

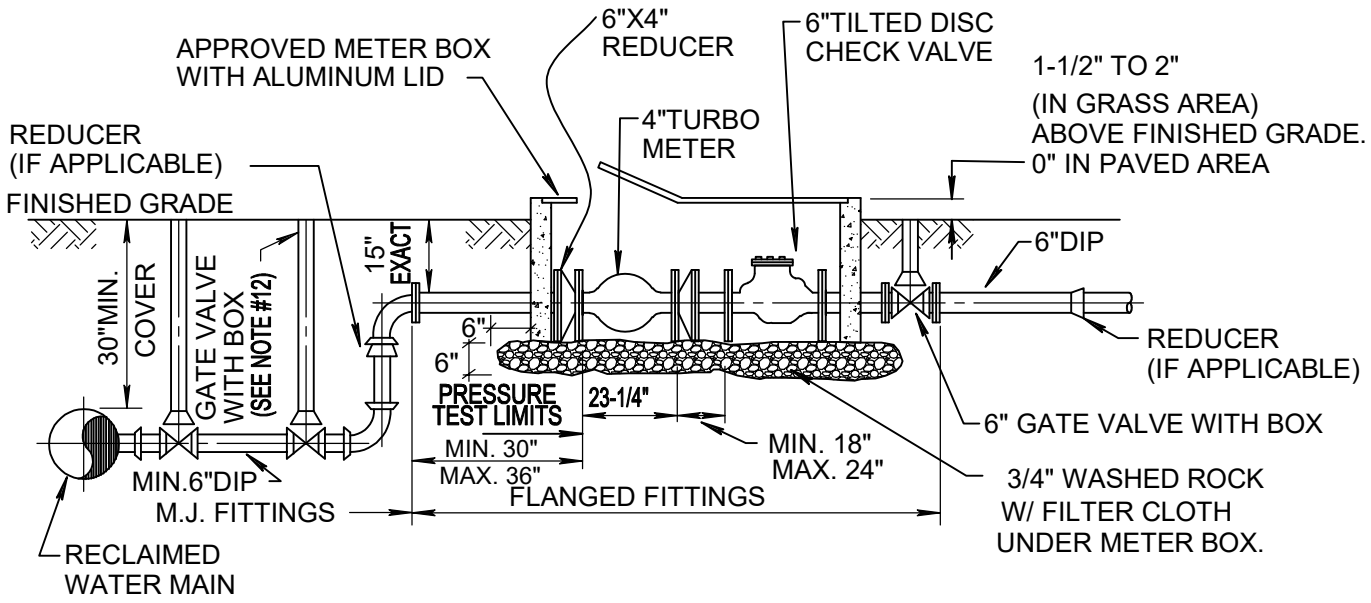
DATE: 10-04-2024

RW 3.0

NOTES:

1. ALL SERVICE PIPING SHALL BE MINIMUM 4" DIP PRESSURE CLASS 350.
2. APPROVED METER BOX TO BE PERMANENTLY INFUSED PURPLE COLOR WITH LID MARKED "RECLAIMED WATER - DO NOT DRINK" AND PAINTED PURPLE:
3. ALL FITTINGS SHALL BE MECHANICAL JOINT OR FLANGED WITH RESTRAINED JOINTS.
4. PIPING & VALVE TO BE IDENTIFIED AS "RECLAIMED WATER SYSTEM" COMPONENTS.
5. METER TO BE PROVIDED, PAID AND INSTALLED BY THE DEVELOPER.
6. THE DEVELOPER/PROPERTY OWNER OR ASSIGNEE SHALL BE RESPONSIBLE FOR INSTALLATION OF SERVICES BEYOND PRESSURE TEST LIMITS AS SPECIFIED BY THE CITY.
7. CONTRACTOR SHALL CONSTRUCT SERVICE COMPONENTS FOR THE METER TO BE INSTALLED "TRUE" AND "PLUMB".
8. METER SHALL NOT BE PLACED IN SIDEWALK OR DRIVEWAY AREAS.
9. ALL HARDWARE FOR FLANGED CONNECTIONS (BOLTS ETC.) TO BE 316 STAINLESS STEEL.
10. CHECK VALVE TO BE FREE OF OBSTRUCTION FOR PROPER OPERATION.
11. A GATE VALVE WITH BOX TO BE LOCATED WITHIN 5 FEET OF METER BOX.





NOTES:

1. ALL SERVICE PIPING SHALL BE MINIMUM 6" DIP PRESSURE CLASS 350.
2. APPROVED METER BOX TO BE PERMANENTLY INFUSED PURPLE COLOR WITH LID MARKED "RECLAIMED WATER - DO NOT DRINK" AND PAINTED PURPLE, AND BE PROVIDED AND INSTALLED BY CONTRACTOR.
3. ALL FITTINGS SHALL BE MECHANICAL JOINT OR FLANGED WITH RESTRAINED JOINTS.

NOTES:

4. PIPING & VALVE TO BE IDENTIFIED AS "RECLAIMED WATER SYSTEM" COMPONENTS.

5. METER TO BE PROVIDED, PAID AND INSTALLED BY THE DEVELOPER.

6. THE DEVELOPER/PROPERTY OWNER OR ASSIGNEE SHALL BE RESPONSIBLE FOR INSTALL-ATION OF SERVICES BEYOND PRESSURE TEST LIMITS AS SPECIFIED BY THE CITY.

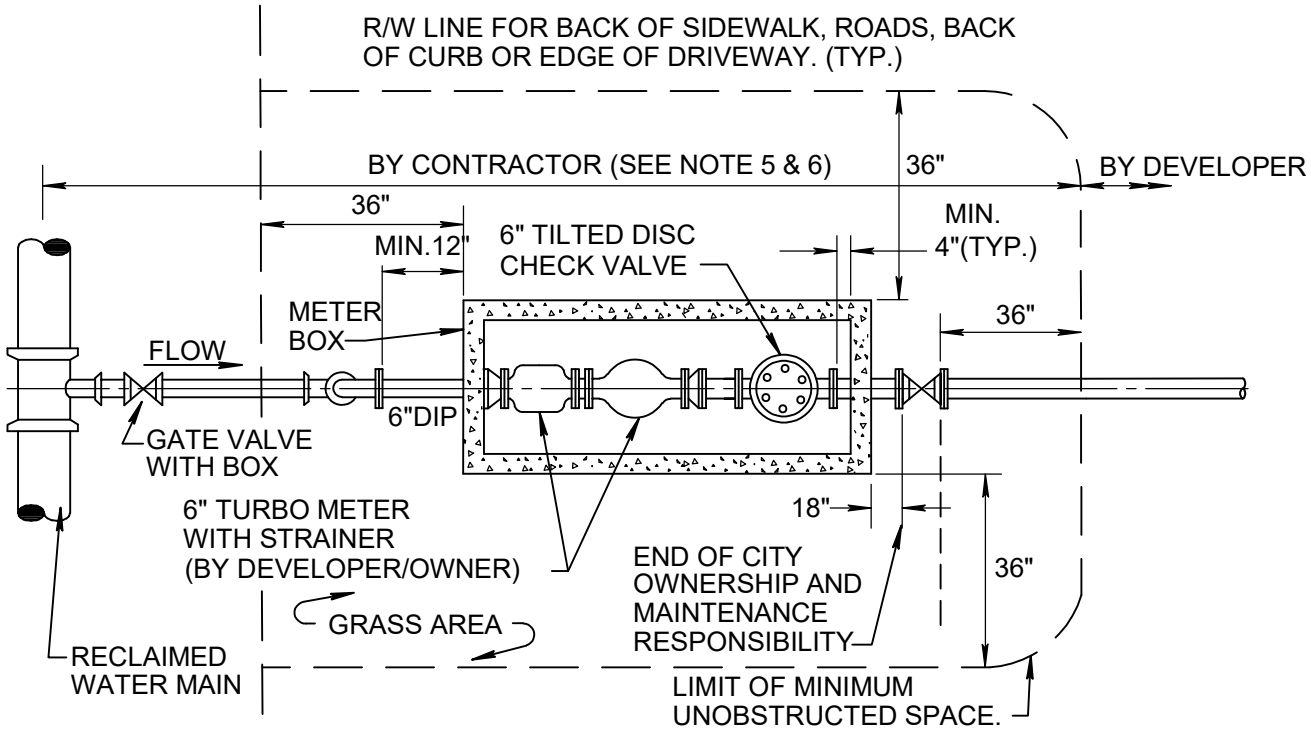
7. CONTRACTOR SHALL CONSTRUCT SERVICE COMPONENTS FOR THE METER TO BE INSTALLED "TRUE" AND "PLUMB" AND TO ALLOW METER READING THROUGH THE METER READER LID.

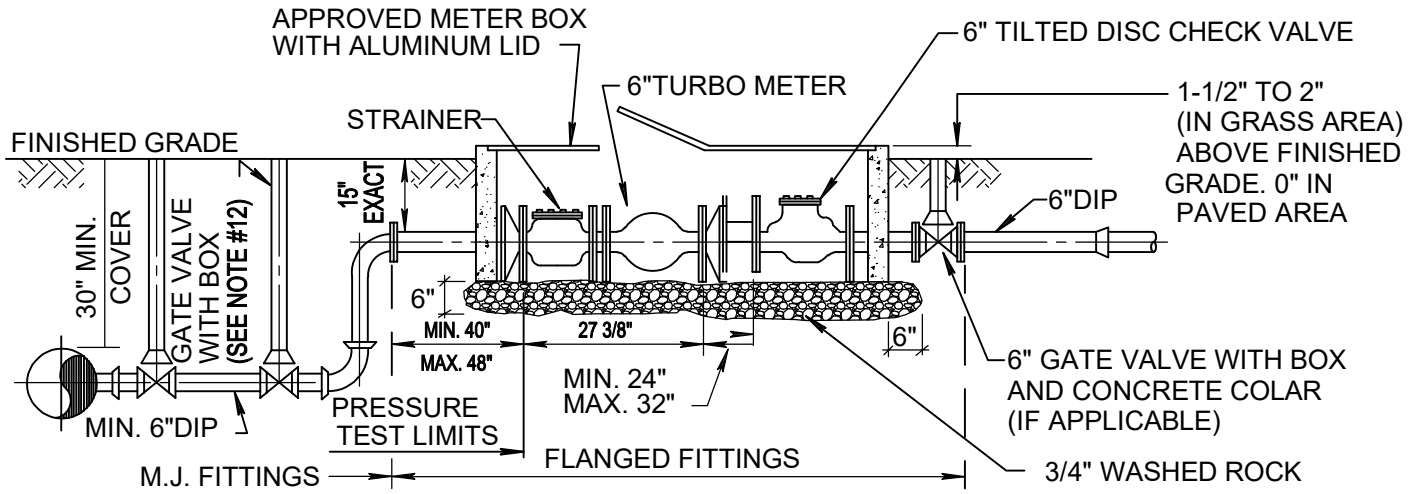
8. METER SHALL NOT BE PLACED IN SIDEWALK OR DRIVEWAY AREAS.

9. ALL HARDWARE FOR FLANGED CONNECTIONS (BOLTS etc...) TO BE 316 STAINLESS STEEL.

10. CHECK VALVE TO BE FREE OF OBSTRUCTION FOR PROPER OPERATION.

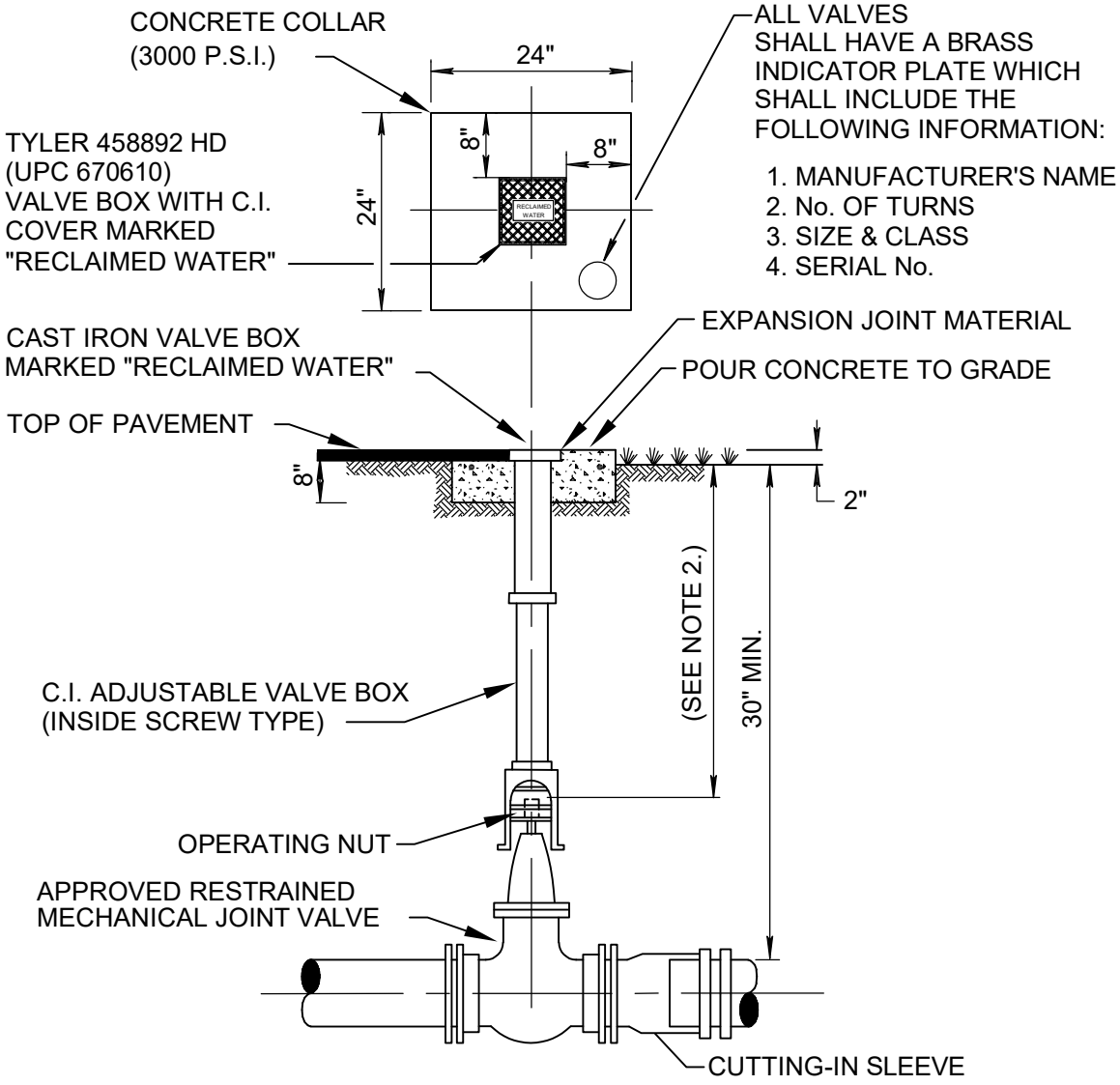
11. A GATE VALVE WITH BOX TO BE LOCATED WITHIN 5 FEET OF METER BOX.





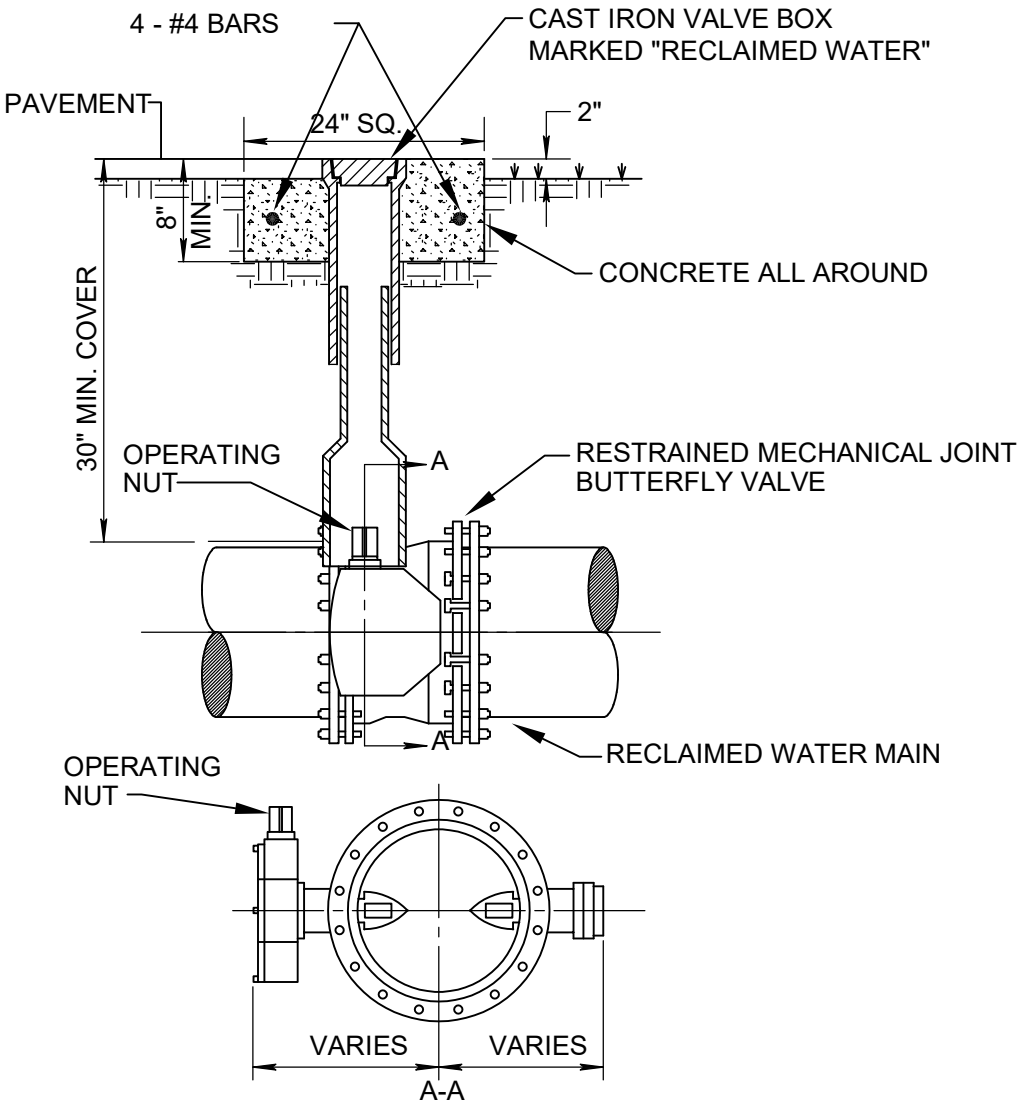
NOTES:

1. ALL SERVICE PIPING SHALL BE DUCTILE IRON PRESSURE CLASS 350.
2. APPROVED METER BOX TO BE PERMANENTLY INFUSED PURPLE COLOR WITH LID MARKED "RECLAIMED WATER - DO NOT DRINK" AND PAINTED PURPLE, TO BE PROVIDED AND INSTALLED BY CONTRACTOR
3. ALL FITTINGS SHALL BE MECHANICAL JOINT OR FLANGED JOINT WITH RESTRAINED JOINTS.
4. PIPING & VALVE TO BE IDENTIFIED AS "RECLAIMED WATER SYSTEM" COMPONENTS.
5. METER AND STRAINER TO BE PROVIDED AND INSTALLED BY THE DEVELOPER/CONTRACTOR.



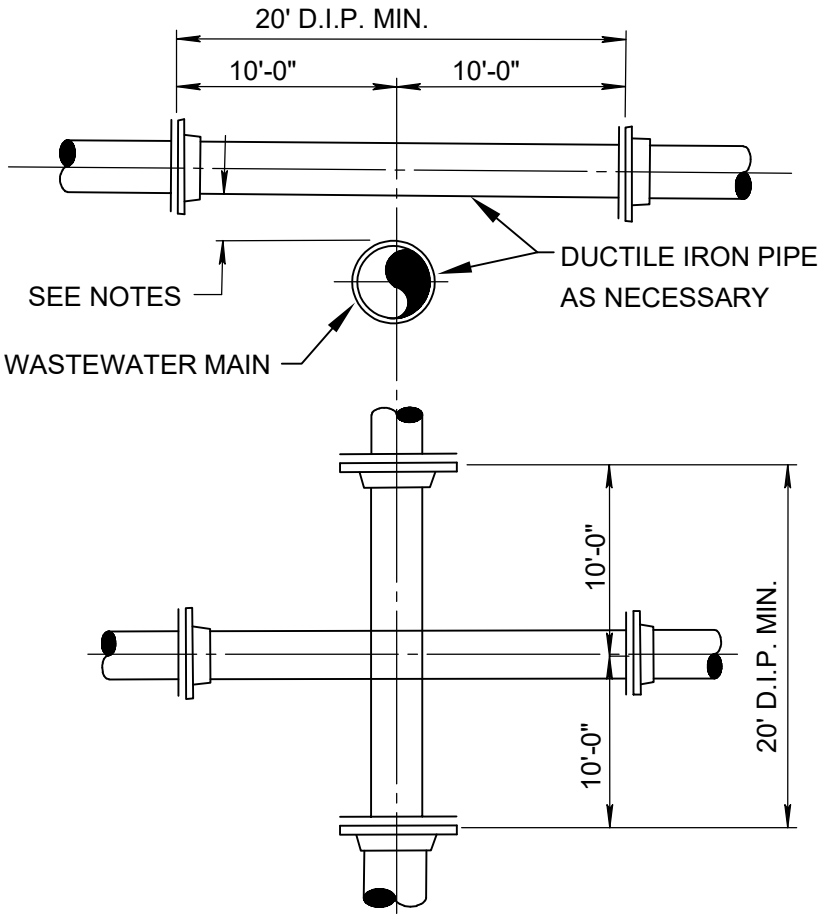
NOTES:

1. WHEN OPERATING NUT IS DEEPER THAN 30" AN EXTENSION WILL BE REQUIRED TO BRING OPERATING NUT 24"-30" BELOW FINISHED GRADE. EXTENSION BOLTS & NUTS ARE TO BE 304 STAINLESS STEEL. A HIGH STRENGTH STEEL CENTERING PLATE, WELDED TO THE EXTENSION, IS ALSO REQUIRED.
2. VALVE BOXES SHALL HAVE COVERS MARKED "RECLAIMED WATER".
3. EXTENSION VALVE BOX TO BE D.I.P. (COLOR: PURPLE)
4. A CUT-IN INSTALLATION SHALL REQUIRE RESTRAINED JOINTS THROUGHOUT ASSEMBLY.
5. AT DEAD END OR WHERE MAIN LINES CHANGE DIRECTION, VALVES SHALL BE RESTRAINED USING AN APPROVED RESTRAINT METHOD.



NOTES:

1. WHEN TOP OF OPERATING NUT IS DEEPER THAN 30" AN EXTENSION WILL BE REQUIRED TO BRING OPERATING NUT 24"-30" BELOW FINISHED GRADE. EXTENSION BOLTS & NUTS ARE TO BE 304 STAINLESS STEEL. A HIGH STRENGTH STEEL CENTERING PLATE, WELDED TO THE EXTENSION, IS ALSO REQUIRED.
2. VALVE BOXES SHALL HAVE COVERS MARKED "RECLAIMED WATER".
3. A CUT-IN INSTALLATION SHALL REQUIRE RESTRAINED JOINTS THROUGHOUT ASSEMBLY.
4. EXTENSION VALVE BOX TO BE D.I.P. (COLOR: PURPLE)
5. AT DEAD END OR WHERE MAIN LINES CHARGE DIRECTION VALVES SHALL BE RESTRAINED USING AN APPROVED RESTRAINT METHOD.



NOTES:

1. STORM SEWER, GRAVITY WASTEWATER AND RECLAIMED WATER MAIN CROSSING UNDER POTABLE WATER MAINS SHALL BE LAID TO PROVIDE A MINIMUM VERTICAL DISTANCE OF EIGHTEEN (18) INCHES BETWEEN THE INVERT OF THE UPPER PIPE AND THE CROWN OF THE LOWER PIPE. WHERE THIS MINIMUM SEPARATION CANNOT BE MAINTAINED, THE CROSSING SHALL BE ARRANGED SO THAT THE STORM/WASTEWATER/RECLAIMED WATER PIPE JOINTS AND POTABLE WATER MAIN JOINTS ARE EQUIDISTANT FROM THE POINT OF CROSSING WITH NO LESS THAN TEN (10) FEET BETWEEN ANY TWO JOINTS, BOTH PIPES SHALL BE D.I.P., AND THE MINIMUM VERTICAL SEPARATION SHALL BE 6 INCHES. WHERE THERE IS NO ALTERNATIVE TO STORM/WASTEWATER/RECLAIMED WATER PIPES CROSSING OVER A POTABLE WATER MAIN, THE CRITERIA FOR MINIMUM 18" VERTICAL SEPARATION BETWEEN LINES AND JOINT ARRANGEMENT, AS STATED ABOVE, SHALL BE REQUIRED, AND BOTH PIPES SHALL BE D.I.P. IRRESPECTIVE OF SEPARATION. D.I.P. IS NOT REQUIRED FOR STORM SEWERS.

2. MAINTAIN MINIMUM TEN (10) FEET HORIZONTAL DISTANCE (WALL TO WALL) BETWEEN POTABLE WATER MAIN AND STORM SEWER, WASTEWATER MAIN, OR FORCE MAIN MAINTAIN MINIMUM THREE (3) FEET HORIZONTAL DISTANCE (WALL TO WALL) BETWEEN RECLAIMED WATER MAIN AND POTABLE WATER MAIN, STORM SEWER, WASTEWATER GRAVITY MAIN OR FORCE MAIN.

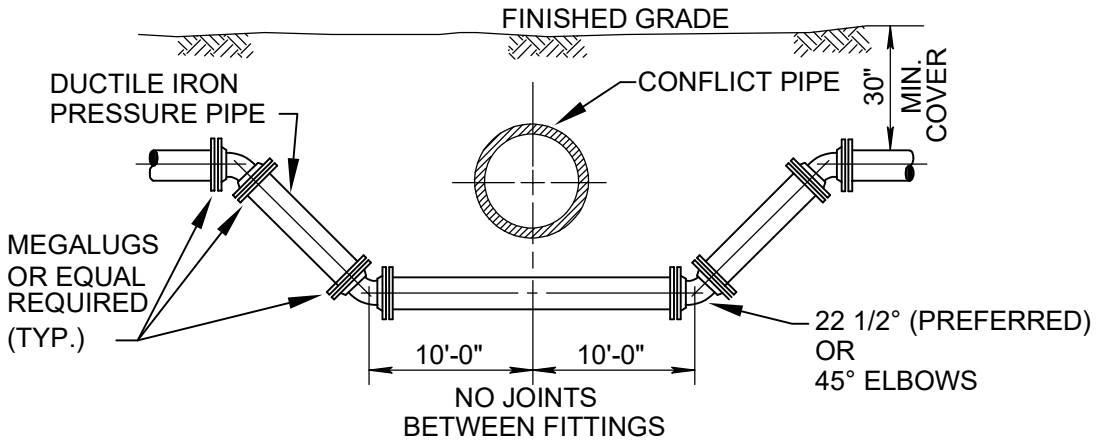
3. COMPLY WITH PALM BEACH COUNTY HEALTH DEPARTMENT REQUIREMENTS.

NOTES:

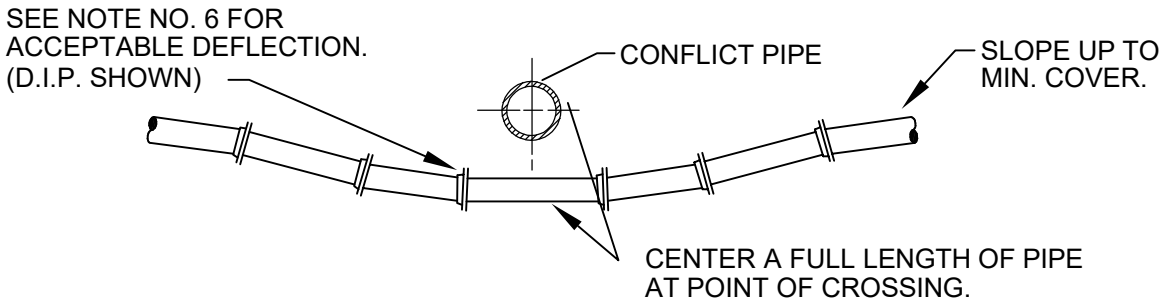
4. FORCE MAIN CROSSING POTABLE WATER MAIN OR RECLAIMED WATER MAIN SHALL BE LAID TO PROVIDE A MINIMUM VERTICAL DISTANCE OF EIGHTEEN (18) INCHES BETWEEN THE OUTSIDE OF THE FORCE MAIN AND OUTSIDE OF THE POTABLE WATER MAIN OR RECLAIMED WATER MAIN WITH THE POTABLE WATER MAIN OR RECLAIMED WATER MAIN CROSSING OVER THE FORCE MAIN.

5. DO NOT EXCEED 75% OF MANUFACTURERS RECOMMENDED MAXIMUM JOINT DEFLECTION FOR DUCTILE IRON PIPE. PVC PIPE CURVATURE MAY ONLY BE ACCOMPLISHED BY INSTALLING APPROPRIATE BENDS.

6. POTABLE WATER SERVICE LINES SHALL CROSS OVER WASTEWATER MAINS WITH MINIMUM 12" VERTICAL SEPARATION. WHERE THIS MINIMUM SEPARATION CAN NOT BE MAINTAINED, THE WATER SERVICE SHALL BE ENCASED IN A MINIMUM 10' LONG CASING CENTERED OVER THE CROSSING WITH MINIMUM 6" VERTICAL SEPARATION.



FITTING TYPE



DEFLECTION TYPE

NOTES:

1. STORM SEWER, GRAVITY WASTEWATER AND RECLAIMED WATER MAIN CROSSING UNDER POTABLE WATER MAINS SHALL BE LAID TO PROVIDE A MINIMUM VERTICAL DISTANCE OF EIGHTEEN (18) INCHES BETWEEN THE INVERT OF THE UPPER PIPE AND THE CROWN OF THE LOWER PIPE. WHERE THIS MINIMUM SEPARATION CANNOT BE MAINTAINED, THE CROSSING SHALL BE ARRANGED SO THAT THE STORM/WASTEWATER/RECLAIMED WATER PIPE JOINTS AND POTABLE WATER MAIN JOINTS ARE EQUIDISTANT FROM THE POINT OF CROSSING WITH NO LESS THAN TEN (10) FEET BETWEEN ANY TWO JOINTS, BOTH PIPES SHALL BE D.I.P., AND THE MINIMUM VERTICAL SEPARATION SHALL BE 6 INCHES. WHERE THERE IS NO ALTERNATIVE TO STORM/WASTEWATER/RECLAIMED WATER PIPES CROSSING OVER A POTABLE WATER MAIN, THE CRITERIA FOR MINIMUM 18" VERTICAL SEPARATION BETWEEN LINES AND JOINT ARRANGEMENT, AS STATED ABOVE, SHALL BE REQUIRED, AND BOTH PIPES SHALL BE D.I.P. IRRESPECTIVE OF SEPARATION. D.I.P. IS NOT REQUIRED FOR STORM SEWERS.

2. MAINTAIN MINIMUM TEN (10) FEET HORIZONTAL DISTANCE (WALL TO WALL) BETWEEN POTABLE WATER MAIN AND STORM SEWER, WASTEWATER MAIN, OR FORCE MAIN MAINTAIN MINIMUM THREE (3) FEET HORIZONTAL DISTANCE (WALL TO WALL) BETWEEN RECLAIMED WATER MAIN AND POTABLE WATER MAIN, STORM SEWER, WASTEWATER GRAVITY MAIN OR FORCE MAIN.

NOTES:

3. FORCE MAIN CROSSING POTABLE WATER MAIN OR RECLAIMED WATER MAIN SHALL BE LAID TO PROVIDE A MINIMUM VERTICAL DISTANCE OF TWELVE (12) INCHES BETWEEN THE OUTSIDE OF THE FORCE MAIN AND OUTSIDE OF THE POTABLE WATER MAIN OR RECLAIMED WATER MAIN WITH THE POTABLE WATER MAIN OR RECLAIMED WATER MAIN CROSSING OVER THE FORCE MAIN.

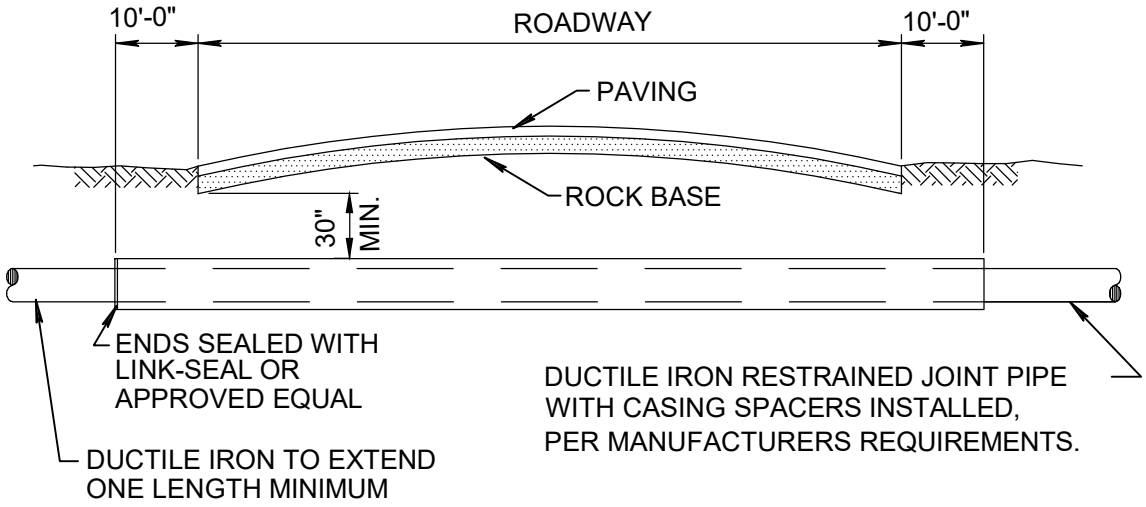
4. FITTINGS SHALL BE RESTRAINED WITH AN APPROVED RESTRAINT METHOD.

5. THE DEFLECTION TYPE CROSSING IS PREFERRED.

6. DO NOT EXCEED 75% OF MANUFACTURERS RECOMMENDED MAXIMUM JOINT DEFLECTION FOR DUCTILE IRON PIPE. PVC PIPE CURVATURE MAY ONLY BE ACCOMPLISHED BY INSTALLING APPROPRIATE BENDS.

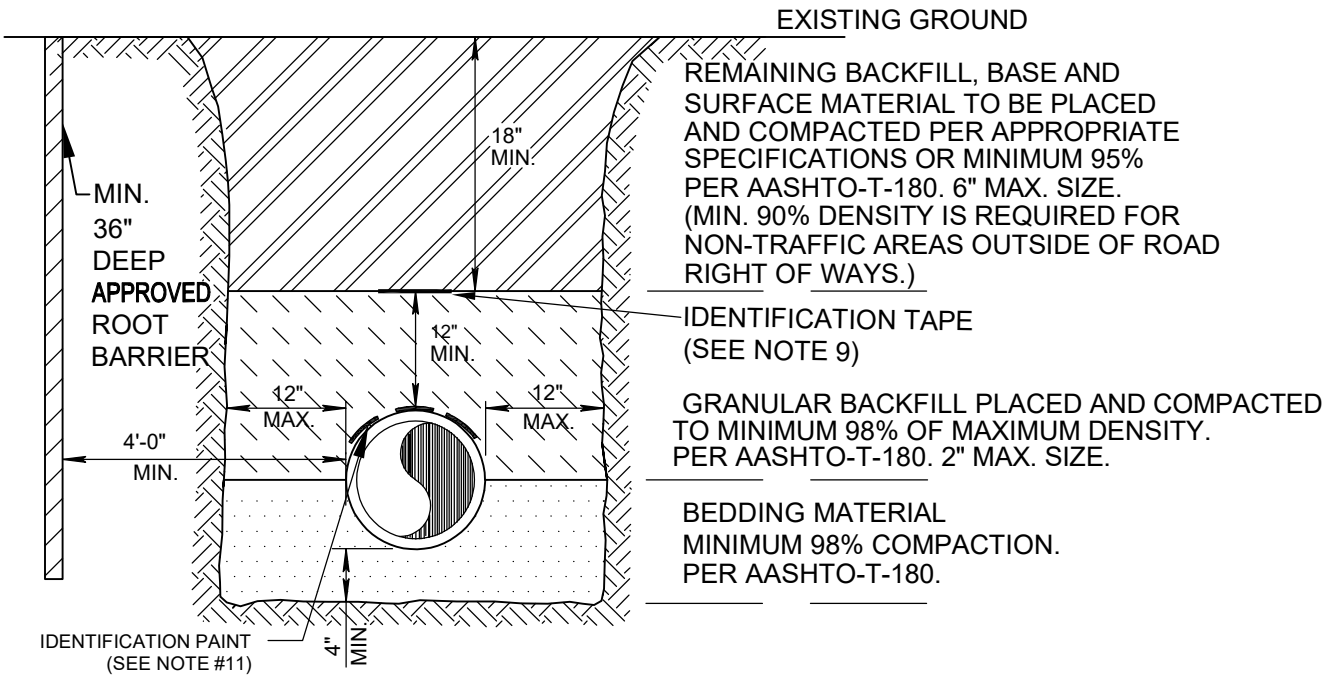
7. ALL EXPOSED TIE STEEL SHALL BE COATED WITH COAL-TAR EPOXY

8. POTABLE WATER SERVICE LINES SHALL CROSS OVER WASTEWATER MAINS WITH MINIMUM 12" VERTICAL SEPARATION. WHERE THIS MINIMUM SEPARATION CAN NOT BE MAINTAINED, THE WATER SERVICE SHALL BE ENCASED IN A MINIMUM 10' LONG CASING CENTERED OVER THE CROSSING WITH MINIMUM 6" VERTICAL SEPARATION.



CARRIER PIPE SIZE	STEEL CASING INSIDE DIAMETER (MIN)	MINIMUM WALL THICKNESS
4"	12"	.188
6"	14"	.250
8"	20"	.250
10"	20"	.250
12"	24"	.250
14"	24"	.250
16"	30"	.312
18"	30"	.312
20"	36"	.372
24"	42"	.500
30"	48"	.500
36"	54"	.500
42"	60"	.500
48"	72"	.500

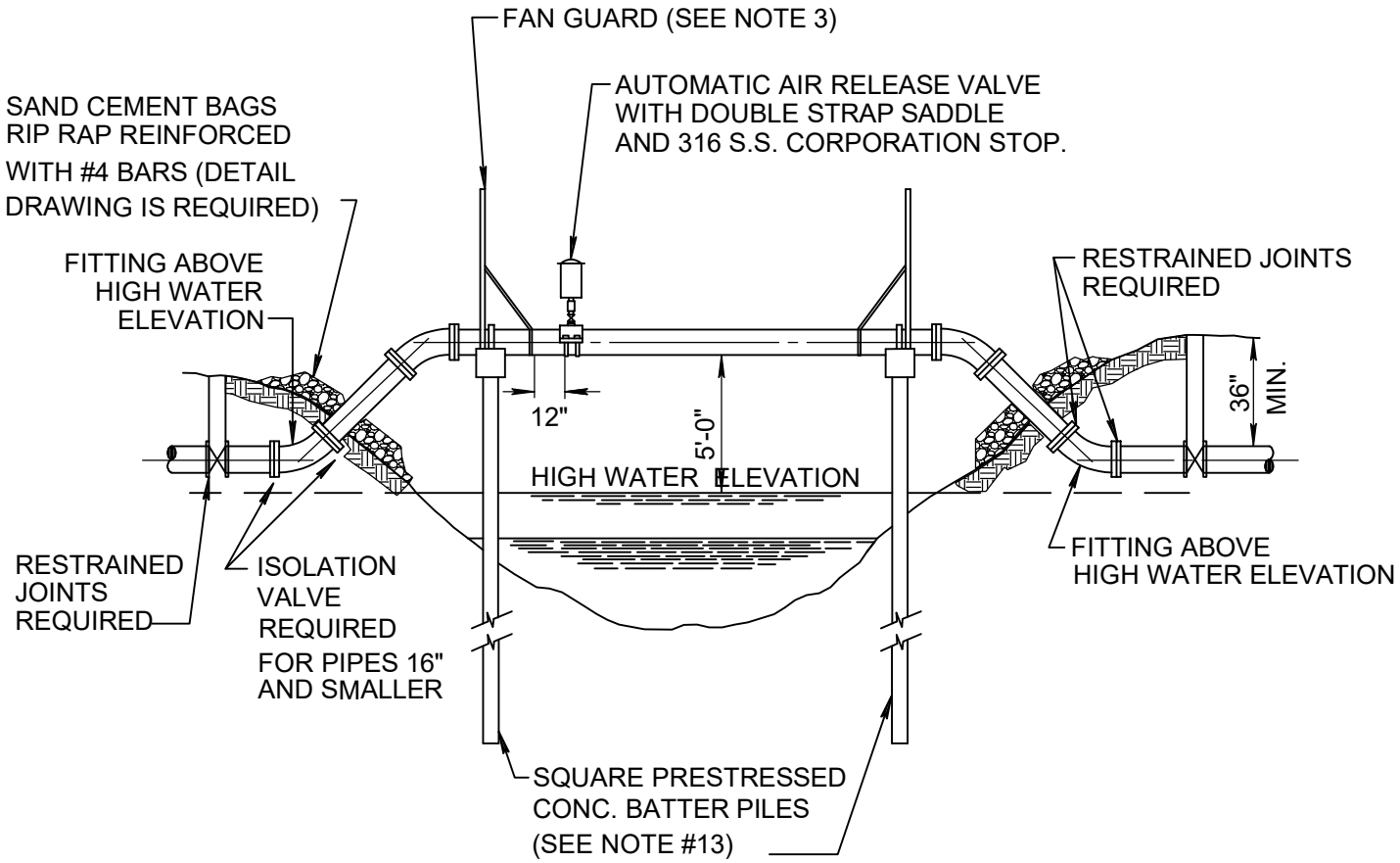
NOTE:
A TO-SCALE PROFILE DRAWING FOR EACH UTILITY MAIN JACK AND BORE IS REQUIRED. ALL RELEVANT DATA MUST BE SHOWN (LENGTH AND SIZE OF CASING, PIPE CONFLICTS, ELEVATIONS, ETC.).



MIN. 42" DEEP APPROVED ROOT BARRIER 15' LONG CENTERED ON TREE

NOTES:

1. BEDDING SHALL CONSIST OF IN-SITU GRANULAR MATERIAL OR WASHED AND GRADED LIMEROCK 3/8"- 7/8" SIZING. UNSUITABLE IN-SITU MATERIALS SUCH AS MUCK, DEBRIS AND LARGER ROCKS SHALL BE REMOVED.
2. THE PIPE SHALL BE FULLY SUPPORTED FOR ITS ENTIRE LENGTH WITH APPROPRIATE COMPACTION UNDER THE PIPE HAUNCHES.
3. THE PIPE SHALL BE PLACED IN A DRY TRENCH.
4. BACKFILL SHALL BE FREE OF UNSUITABLE MATERIAL SUCH AS LARGE ROCK, MUCK AND DEBRIS.
5. DENSITY TESTS ARE REQUIRED IN 1 FOOT LIFTS ABOVE THE PIPE AT INTERVALS OF 400' MAXIMUM, MINIMUM 1 SET OF TESTS FOR EACH WASTEWATER GRAVITY MAIN RUN, OR AS DIRECTED BY THE INSPECTOR AND PAID FOR BY THE CONTRACTOR.
6. THE DEVELOPER/CONTRACTOR SHALL BE RESPONSIBLE TO COMPLY WITH ALL TRENCH SAFETY LAWS AND REGULATIONS.
7. SEE SEPARATE DETAIL FOR "PIPE INSTALLATION UNDER EXISTING PAVEMENT - OPEN CUT."
8. THE AFFECTED AREA SHALL BE RESTORED TO EQUAL OR BETTER CONDITION OR AS SPECIFIED IN PERMIT/CONTRACT DOCUMENTS.
9. APPROVED MAGNETIC TAPE IS REQUIRED FOR: PVC RECLAIMED WATER MAINS. THE TAPE SHALL BE INSTALLED MAXIMUM 24" BELOW FINISHED GRADE.
10. ROOT BARRIER IS REQUIRED FOR APPROVED TREE INSTALLATION CLOSER THAN 10 FEET FROM UTILITY FACILITIES.
11. CONTINUOUS 4" WIDE PAINT STRIPING IS REQUIRED FOR RECLAIMED WATER MAINS (PURPLE).



NOTES:

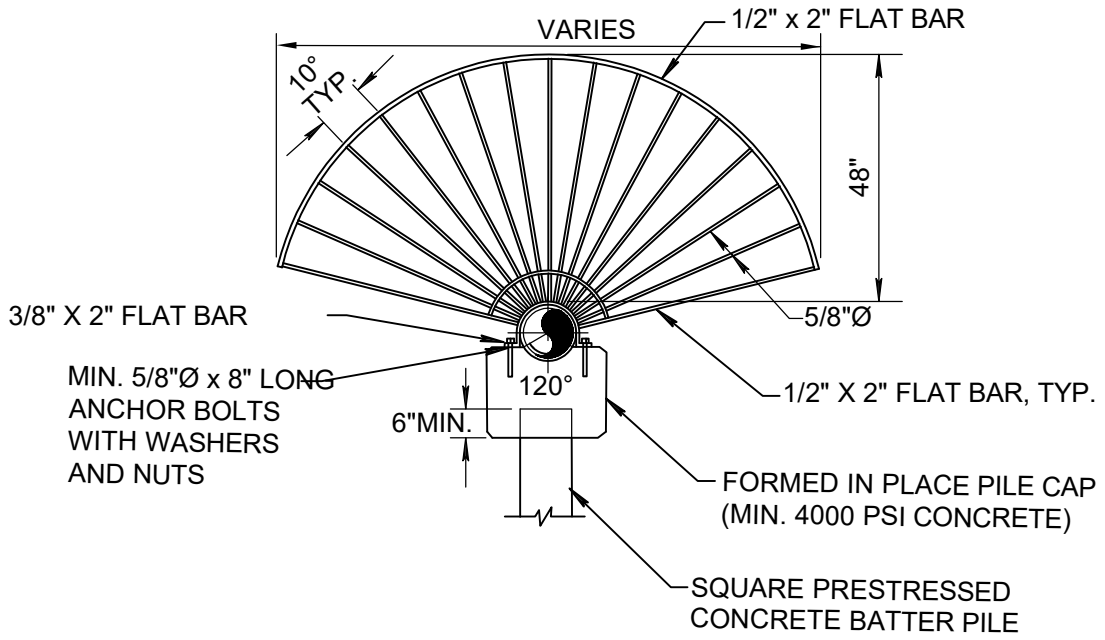
1. ALL EXPOSED PIPE SHALL BE DUCTILE IRON OR PREFABRICATED STEEL WITH FLANGED FITTINGS AND TORUSEAL GASKETS. RETAINER GLANDS AND UNIFLANGE TYPE FITTINGS ARE NOT TO BE SUBSTITUTED FOR FLANGED FITTINGS.
2. SPAN LENGTHS AS REQUIRED BY PERMITTING AGENCY
3. FAN GUARDS ARE REQUIRED. SEE FAN GUARD / PILE CAP DESIGN DETAIL, FOR ADDITIONAL REQUIREMENTS
4. ALL EXPOSED PIPING SHALL BE PAINTED AS SPECIFIED IN THE APPROVED MATERIAL LIST.
5. PIPE SHALL BE CRADLED ON 1/2" THICK NEOPRENE.(DUROMETER GRADE 50,) CURRENT FDOT STANDARDS APPLY.
6. TIE-DOWN STRAPS MUST PROPERLY FIT AND SECURE PIPE IN CRADLE.
7. PIPE CRADLE IN CAP SHALL CONTACT 1/3 CIRCUMFERENCE OF PIPE. (SEE FAN GUARD DETAIL)
8. SHOW EXISTING CANAL CROSS SECTION ULTIMATE CANAL SECTION AND RELEVANT ELEVATIONS AND DISTANCES ON A TO SCALE DETAIL DRAWING.
9. CORPORATION STOP TO BE SELECTED FROM THE STANDARD PRODUCT LIST.

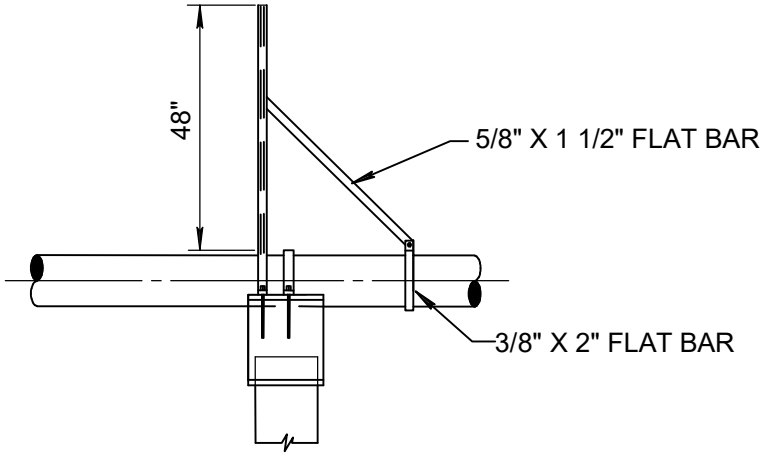
10. PILE LIFT CABLE SHALL BE REMOVED BELOW SURFACE; HOLE SHALL BE FILLED WITH EPOXY CEMENT.

11. THREADED AREAS OF BRASS FITTINGS SHALL BE SPIRAL WRAPPED WITH TWO WRAPS OF TEFLON TAPE.

12. THE BATTER PILES AND CAP DESIGN SHALL BE SHOWN ON TO SCALE SIGNED AND SEALED DETAIL DRAWINGS. (MIN. 10"x10" TYPE 1A BATTER PILES ARE REQUIRED. PILES PENETRATION BELOW CANAL BOTTOM SHALL BE 15' MINIMUM. MINIMUM LOAD CAPACITY OF 25 TONS PER PILE IS REQUIRED (FDOT STANDARDS APPLY). SHOP DRAWINGS ARE REQUIRED.

13. RECLAIMED WATER SYSTEM PIPE SHALL BE PAINTED AS SPECIFIED IN THE APPROVED RECLAIMED WATER SYSTEM MATERIAL LIST.





NOTES:

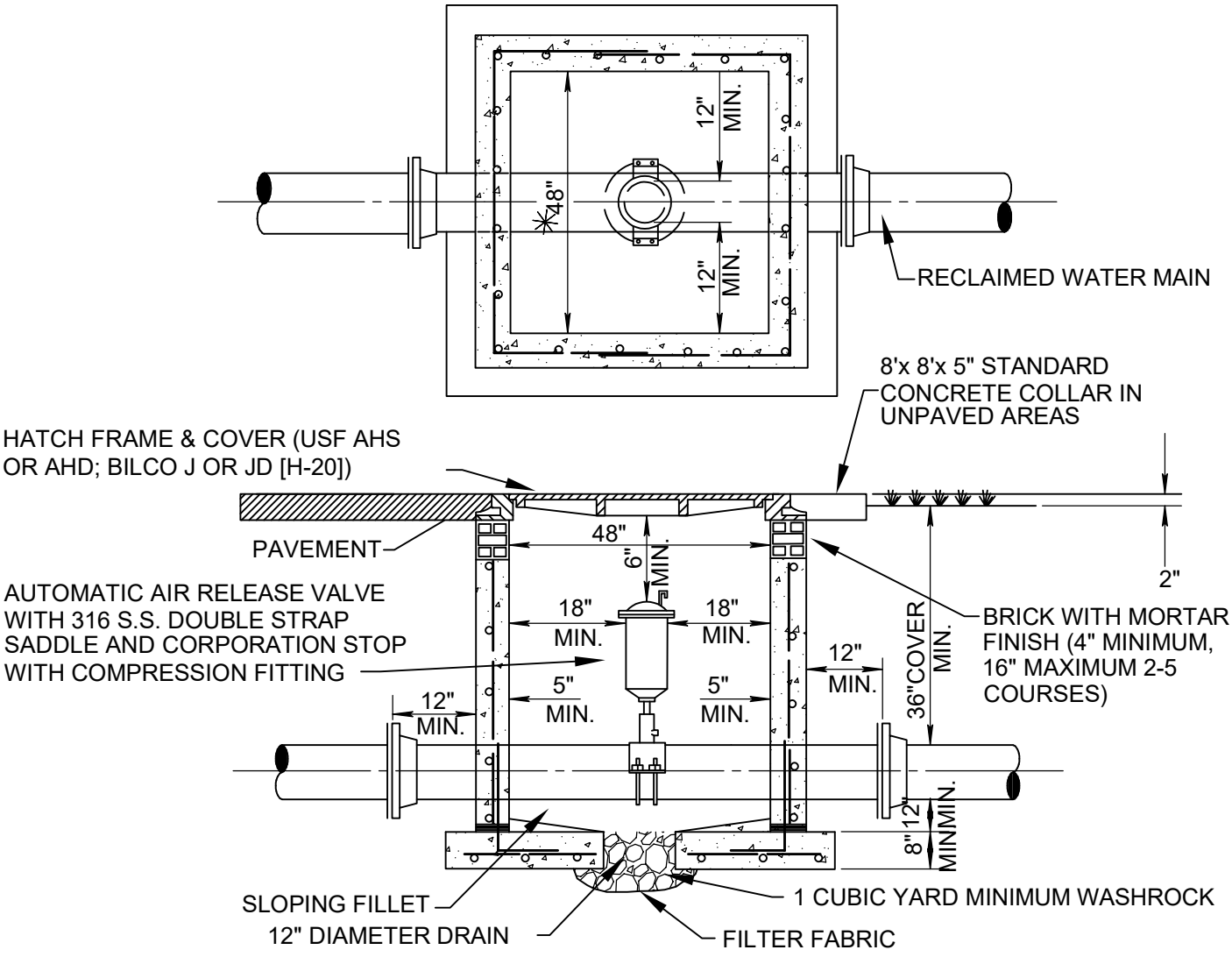
1. FAN GUARDS SHALL BE PLACED AT EACH END OF CANAL CROSSING.
2. FANGUARD AND HARDWARE SHALL BE FABRICATED FROM DOUBLE HOT DIPPED GALVANIZED STEEL.
3. FAN GUARD AND HARDWARE SHALL BE PAINTED WITH EPOXY.
4. CUT PILE, EXTEND PRESTRESSING STRANDS INTO PILE CAP AND TIE WITH CAP STEEL.
5. REINFORCING STEEL SHALL CONFORM TO ASTM A-615, GRADE 60. MINIMUM 3" COVER OVER ALL STEEL. SEE "TYPICAL CANAL CROSSING DETAIL" FOR ADDITIONAL REQUIREMENTS.

CITY of DELRAY BEACH
PUBLIC WORKS DEPARTMENT
434 SOUTH SWINTON AVENUE, DELRAY BEACH, FLORIDA 33444

FAN GUARD / PIPE CAP
DESIGN DETAIL

DATE: 10-04-2024

RW 13.0



NOTES:

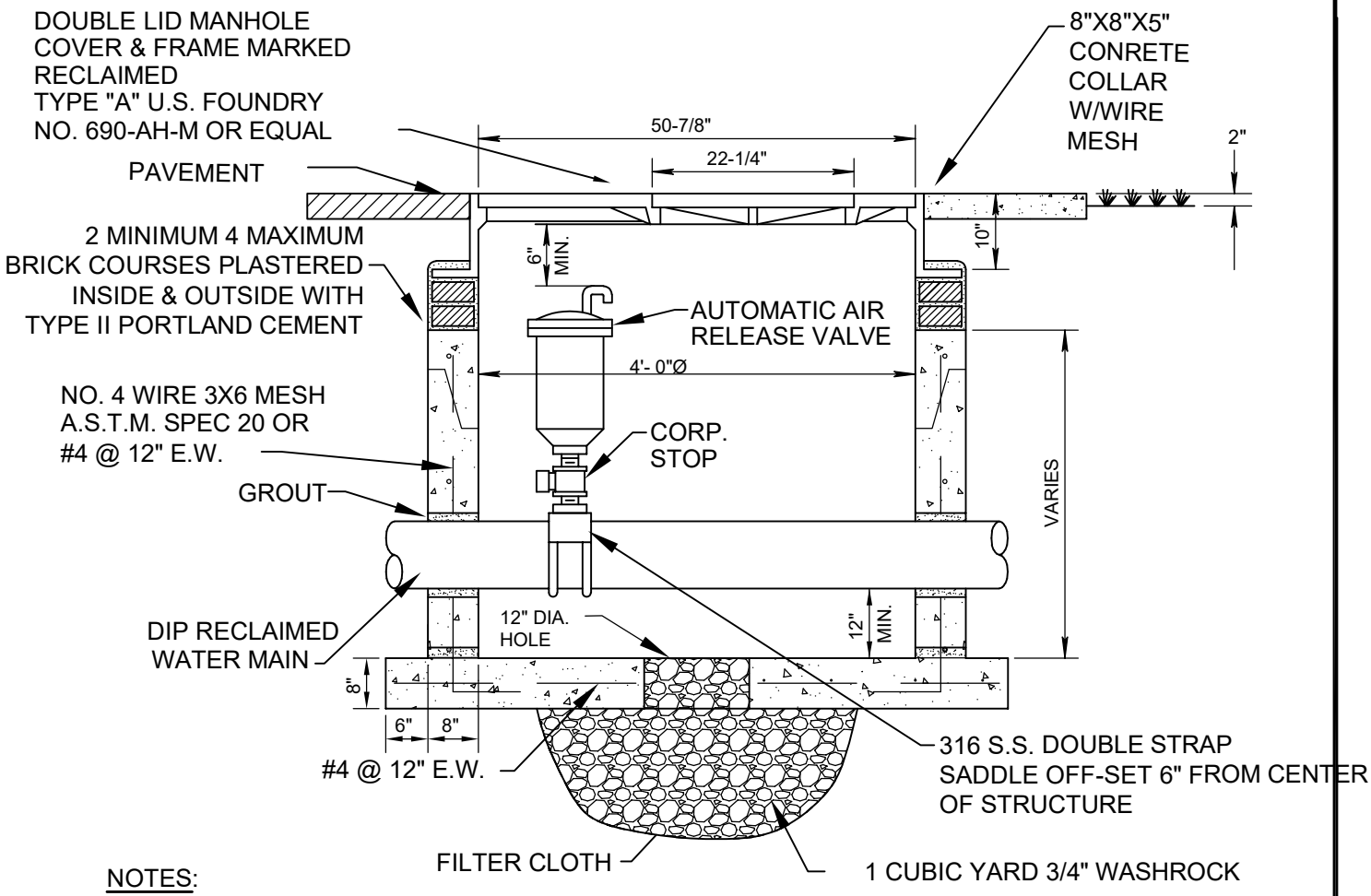
1. 4000 P.S.I. AT 28 DAYS, TYPE II CONCRETE
2. VAULT SHALL BE PRECAST WITH STEEL REINFORCING.
3. AIR RELEASE VALVE SHALL BE TYPE AND SIZE APPROPRIATE FOR SERVICE INTENDED.
4. ALL OPENINGS SHALL BE SEALED WITH WATERPROOF NON-SHRINKING GROUT.
5. OTHER VAULT AND COVER DESIGNS MAY BE USED UPON SUBMITTAL AND APPROVAL OF SHOP DRAWINGS.
6. AIR RELEASE VALVE AND PIPING TO BE IDENTIFIED AS "RECLAIMED WATER".
7. TWO PIECE STRUCTURE WITH JOINT AT BASE IS PERMITTED.
8. DUCTILE IRON PIPE IS REQUIRED THROUGH THE VAULT. NO PIPE JOINTS ARE ALLOWED IN VAULT.
9. THREADED AREAS OF CORPORATION STOP SHALL BE COMPLETELY SPIRAL WRAPPED WITH TWO WRAPS OF TEFLON TAPE.

CITY of DELRAY BEACH
PUBLIC WORKS DEPARTMENT
434 SOUTH SWINTON AVENUE, DELRAY BEACH, FLORIDA 33444

UNDERGROUND AIR RELEASE VALVE & VAULT IN NON TRAFFIC AREAS OUTSIDE OF ROAD RIGHT-OF-WAY

DATE: 10-04-2024

RW 14.0



NOTES:

1. PRECAST CONCRETE TYPE II, 4000 P.S.I. AT 28 DAYS.
2. ALL OPENINGS SHALL BE SEALED WITH A WATERPROOF NON-SHRINKING GROUT.
3. LIFT HOLES ARE PERMITTED AND SHALL BE FILLED AFTER INSTALLATION.
4. ALL PIPE HOLES SHALL BE PRECAST OR CORE-DRILLED.
5. MANHOLE FABRICATION SHALL BE IN ACCORDANCE WITH A.S.T.M. C-478 LATEST STANDARD.
6. CONCRETE COLLAR REQUIRED WHEN MANHOLE IS OUTSIDE PAVEMENT, SEE DETAIL.
7. AIR RELEASE VALVE SHALL BE TYPE AND SIZE APPROPRIATE FOR SERVICE INTENDED.
8. AIR RELEASE VALVE AND PIPING TO BE IDENTIFIED AS RECLAIMED.
9. TWO PIECE MANHOLE WITH JOINT AT BASE IS PERMITTED. NO PIPE JOINTS INSIDE MANHOLE.
10. DUCTILE IRON PIPE IS REQUIRED THROUGH THE VAULT.
11. THREADED AREAS OF CORPORATION STOP SHALL BE COMPLETELY SPIRAL WRAPPED WITH TWO WRAPS OF TEFLON TAPE.
12. CORPORATION STOP TO BE SELECTED FROM THE STANDARD PRODUCT LIST.

MAXIMUM QUANTITY OF WATER (GALLONS PER HOUR) THAT MAY BE SUPPLIED TO MAINTAIN PRESSURE WITHIN 5 P.S.I. OF THE SPECIFIED TEST PRESSURE.

(MECHANICAL OR PUSH-ON JOINT, 18 FT. NOMINAL LENGTHS, PER 1000 FT. OF PIPE)

AVG. TEST PRESSURE	PIPE DIAMETER (INCHES)															
PSI	2	3	4	6	8	10	12	14	16	18	20	24	30	36	42	48
150	0.10	0.14	0.18	0.27	0.37	0.46	0.55	0.64	0.73	0.83	0.92	1.10	1.38	1.65	1.93	2.20
200	0.10	0.15	0.21	0.31	0.42	0.53	0.64	0.74	0.84	0.95	1.06	1.27	1.59	1.91	2.22	2.54

NOTES:

1. TO OBTAIN THE MAXIMUM QUANTITY OF WATER FOR PIPE WITH 20 FT. NOMINAL LENGTHS, MULTIPLY THE QUANTITY CALCULATED FROM THE TABLE BY 0.9

2. THE MAXIMUM QUANTITY OF ADDED WATER FOR A PIPELINE IS CALCULATED BY MULTIPLYING THE QUANTITY PER HOUR AS OBTAINED FROM THE ABOVE TABLE, BY THE DURATION OF THE TEST IN HOURS,AND BY THE TOTAL LENGTH OF THE LINE BEING TESTED DIVIDED BY 1,000. IF THE LINE UNDER TEST CONTAINS SECTIONS OF VARIOUS DIAMETERS, THE MAXIMUM QUANTITY ADDED WILL BE THE SUM OF THE COMPUTED QUANTITIES FOR EACH SIZE.

3. MAXIMUM TEST LENGTH = 2,500 FEET PER SECTION.

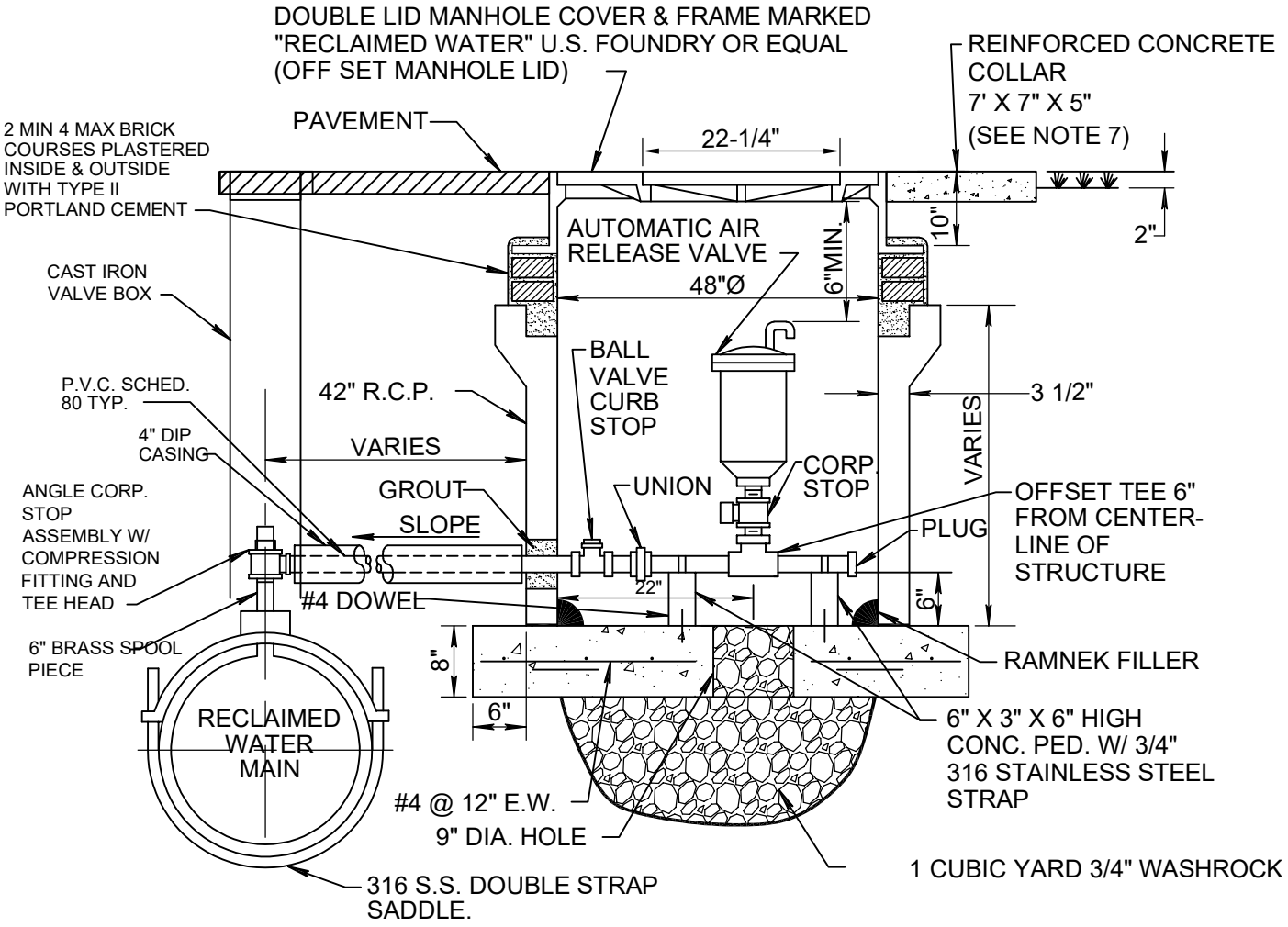
4. THIS STANDARD SHALL REFLECT ANY REVISION OF A.W.W.A. C-600. HOWEVER, THE MAXIMUM QUANTITY OF WATER ADDED SHALL NOT EXCEED 50% OF THE RECOMMENDED LIMIT PER APPLICABLE AWWA C-600 STANDARD.

5. STANDARD TEST PRESSURE = 150 P.S.I.

6. FORMULA BASIS: $L = \frac{(S) \times (D) \times (P)}{133{,}200}$ $\frac{1}{2} \times \frac{1}{2}$

   L = MAXIMUM QUANTITY OF WATER TO BE ADDED (GALLONS PER HOUR)
   S = LENGTH OF PIPE TESTED (FEET)
   D = DIAMETER OF PIPE (INCHES)
   P = TEST PRESSURE (P.S.I.)

7. PRESSURE TEST DURATION TO BE MINIMUM 2 HOURS.



NOTES:

1. ALL OPENINGS SHALL BE SEALED WITH A WATERPROOF NON-SHRINKING GROUT.
2. ALL PIPE HOLES SHALL BE PRECAST.
3. PAINT OUTSIDE WITH 2 COATS OF APPROVED PROTECTIVE COATING (MIN. 10 MIL PER COAT D.F.T.)
4. ARV, TAP AND PIPING TO BE TYPE AND SIZE APPROPRIATE FOR SERVICE INTENDED.
5. CONCRETE COLLAR REQUIRED.
6. PIPING AND STRUCTURE TO BE IDENTIFIED AS "RECLAIMED WATER SYSTEM" COMPONENTS.
7. THREADED AREAS OF CORPORATION STOP AND OTHER FITTINGS SHALL BE SPIRAL WRAPPED WITH TWO WRAPS OF TEFLON TAPE.
8. CORPORATION STOP TO BE SELECTED FROM THE STANDARD PRODUCT LIST.

DENSITY PROCEDURES:

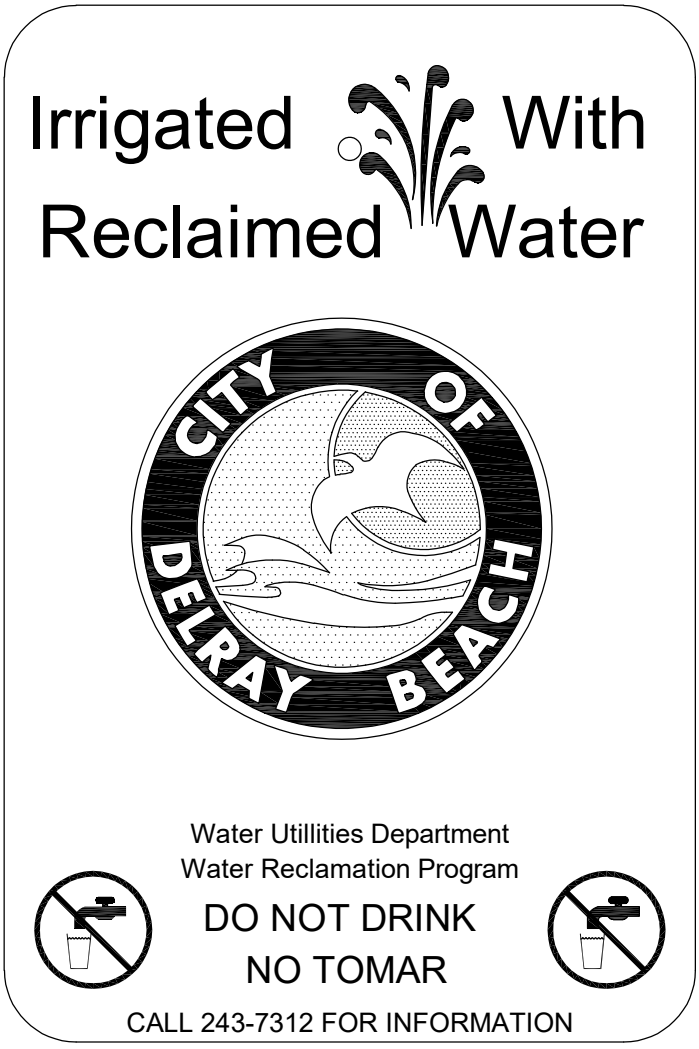
THE BACKFILL FOR THE FIRST AND SECOND STAGES SHALL BE PLACED IN 6" LAYERS (COMPACTED THICK- NESS) AND SHALL BE COMPACTED TO 100% OF MAXIMUM DENSITY AS DETERMINED BY AASHTO T-99.

THE CONTRACTOR SHALL PROVIDE ADEQUATE COMPACTED FILL BENEATH THE HAUNCHES OF THE PIPE, USING MECHANICAL TAMPS SUITABLE FOR THIS PURPOSE. THIS COMPACTION APPLIES TO THE MATERIAL PLACED BENEATH THE HAUNCHES OF THE PIPE AND ABOVE ANY BEDDING REQUIRED.

THE CONTRACTOR SHALL OBTAIN A WELL COMPACTED BED AND FILL ALONG THE SIDES OF THE PIPE AND TO A POINT INDICATING THE TOP OF SUB-GRADE MATERIAL.

GENERAL NOTES:

1. SEE NOTES FOR TYPICAL TRENCH DETAIL FOR BACKFILL AND BEDDING MATERIAL SPECIFICATIONS.
2. BASE MATERIAL SHALL BE PLACED IN 6" LAYERS AND EACH LAYER COMPACTED TO 98% OF MAXIMUM DENSITY PER AASHTO T-180.
3. ASPHALT CONCRETE PAVEMENT JOINTS SHALL BE MECHANICALLY SAWED (BUTT JOINTS ONLY).
4. SURFACE MATERIAL WILL BE CONSISTENT WITH THE EXISTING SURFACE. THE AFFECTED AREA SHALL BE RESTORED TO EQUAL OR BETTER CONDITION.
5. THE DEVELOPER/CONTRACTOR SHALL BE RESPONSIBLE FOR COMPLIANCE REGARDING ANY ADDITIONAL SPECIFICATIONS AS REQUIRED BY THE PROPERTY OWNER. (FDOT, COUNTY, CITY, ETC.)
6. EXCAVATABLE "FLOWABLE FILL" WITH ULTIMATE COMPRESSIVE STRENGTH BETWEEN 50 AND 150 PSI MAY BE USED TO SUBSTITUTE FOR THE BACKFILL AND BASE MATERIALS.
7. PAVEMENT OVERLAY ON BOTH SIDES OF THE CUT MAY BE REQUIRED PER OWNER SPECIFICATION.
8. MAGNETIC TAPE IS REQUIRED FOR ALL PVC/HDPE RECLAIMED WATER MAINS. (SEE TRENCHING DETAIL FOR INSTALLATION INSTRUCTIONS).
9. THE CONTRACTOR SHALL BE COMPLIANT WITH APPLICABLE TRENCH SAFETY REGULATIONS (OSHA, ETC.)



NOTE:

1. SIGNS SHALL BE 12" X 18", WITH PURPLE BACKGROUND AND WHITE LETTERING IMPRINTS ON WHITE ALUMINUM (.063 GA.), ROUNDED CORNERS (1.25" RAD.), 2 HOLES (13/32" DIAM.) 12" O.C.

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