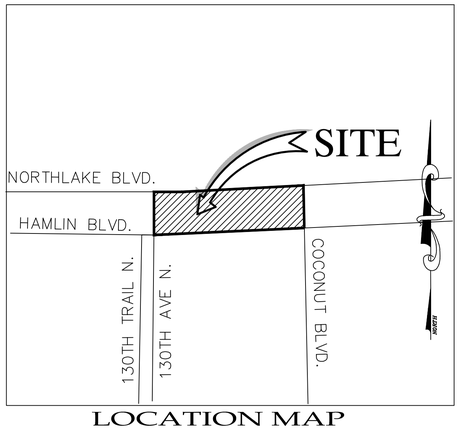
NOTE: ELEVATIONS ARE NAVD 88 – CONVERSION FACTOR (NAVD 88) = (NGVD 29) −1.62'

SHOPS AT INDIAN TRAILS A.K.A. COCONUT CROSSING

Palm Beach Gardens, Florida

SW CORNER NORTHLAKE BLVD. & COCONUT BLVD., PALM BEACH GARDENS, FLORIDA
CIVIL SITE PLAN PACKAGE
FOR COCONUT NORTHLAKE, LLC



LOCATION MAP
SECTION 15, TOWNSHIP 42S, RANGE 41E N.T.S.

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C-1 . . . . . Cover Sheet
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C-12 thru C-15 . . . . . Paving, Grading & Drainage Details
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REVISIONS	DATE	BY
REV PER PBCID COMMENTS	04/XX/25	MVK
REV PER PBCWUD PRECON COMMENTS	03/11/25	MVK
REV PER ADD. GRADES	02/12/25	MVK
REV PER NEW SITE PLAN	01/14/25	MVK

FILE NAME 7714ENG.DWG

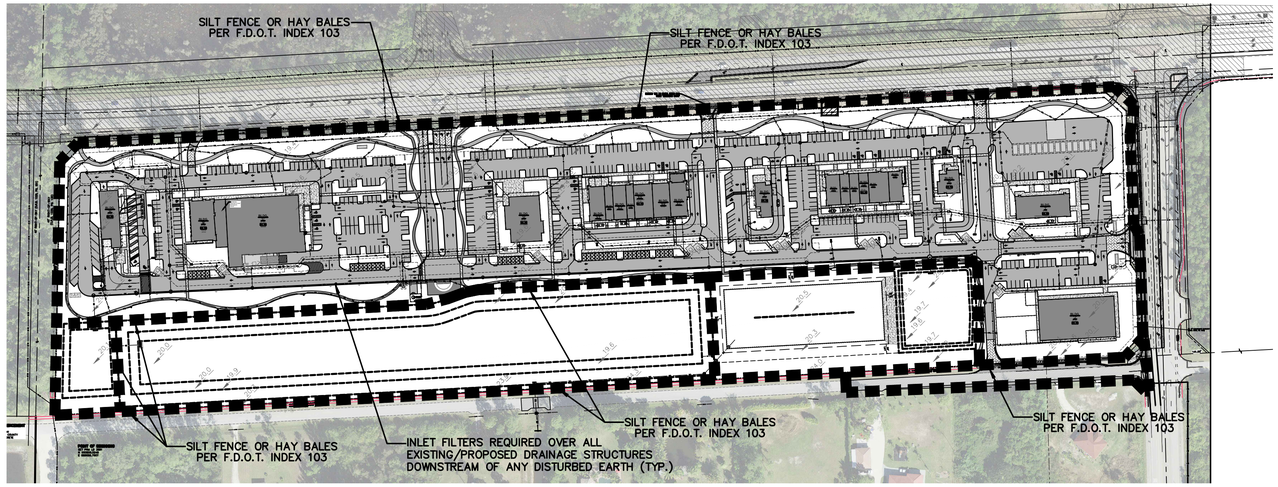
CAULFIELD & WHEELER, INC.
CIVIL ENGINEERING - LAND PLANNING
LANDSCAPE DESIGN - SURVEYING
7900 GLADES ROAD - SUITE 100
BOCA RATON, FLORIDA 33434
PHONE (561) 392-1991 / FAX (561)-750-1452

SHOPS AT INDIAN TRAILS
A.K.A. COCONUT CROSSING
COVER SHEET
SWC NORTHLAKE BLVD. & COCONUT BLVD
PALM BEACH GARDENS, FLORIDA

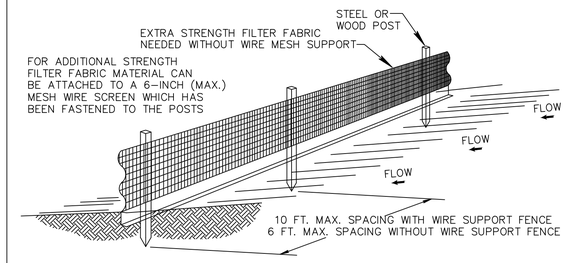
DATE	07/28/23
DRAWN BY	M.V.K.
F.B./ PG.	N/A
SCALE	1"=30'

MATTHEW V. KAHN
PROFESSIONAL ENGINEER
LICENSE NO. 82227
STATE OF FLORIDA
– FOR THE FIRM –
DATE

JOB # 7714-1
SHT.NO. C-1
OF 45 SHEETS



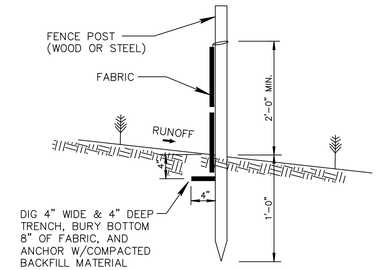
POLLUTION PREVENTION PLAN



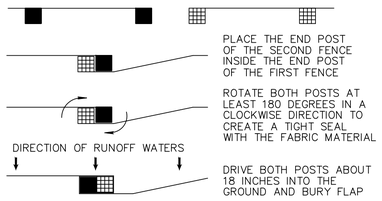
NOTES:

1. THE HEIGHT OF A SILT FENCE SHALL NOT EXCEED 36 INCHES (90 CM).
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 (3 M) APART AT THE BARRIER LOCATION AND DRIVEN SECURELY INTO THE GROUND A MINIMUM OF 12 INCHES (30 CM). WHEN EXTRA STRENGTH FABRIC IS USED WITHOUT THE WIRE SUPPORT FENCE, POST SPACING SHALL NOT EXCEED 6 FEET (1.8 M).
4. A TRENCH SHALL BE EXCAVATED APPROXIMATELY 4 INCHES (10 CM) WIDE AND 4 INCHES (10 CM) 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 (25 MM) LONG, TIE WIRES, OR HOG RINGS. THE WIRE SHALL EXTEND INTO THE TRENCH A MINIMUM OF 2 INCHES (5 CM) AND SHALL NOT EXTEND MORE THAN 36 INCHES (90 CM) ABOVE THE ORIGINAL GROUND SURFACE.
6. THE STANDARD STRENGTH FILTER FABRIC SHALL BE STAPLED OR WIRED TO THE FENCE, AND 8 INCHES (20 CM) OF THE FABRIC SHALL BE EXTENDED INTO THE TRENCH. THE FABRIC SHALL NOT EXTEND MORE THAN 36 INCHES (90 CM) ABOVE THE ORIGIONAL GROUND SURFACE.
7. THE TRENCH SHALL BE BACKFILLED AND THE SOIL COMPACTED OVER THE FILTER FABRIC.

SILT FENCE INSTALLATION DETAIL D 9.1a
Sheet 1 of 2



SILT FENCE SECTION
NOT TO SCALE



ATTACHING TWO SILT FENCES
NOT TO SCALE

SILT FENCE INSTALLATION DETAIL D 9.1b
Sheet 2 of 2

REV PER PBCLD COMMENTS	04/XX/25	MVK
REV PER PBCWUD PRECON COMMENTS	03/11/25	MVK
REV PER ADD. GRADES	02/12/25	MVK
REV PER NEW SITE PLAN	01/14/25	MVK
REVISIONS	DATE	BY

FILE NAME 7714ENG.DWG

CAULFIELD & WHEELER, INC.
CIVIL ENGINEERING - LAND PLANNING
LANDSCAPE DESIGN - SURVEYING
7900 GLADES ROAD - SUITE 100
BOCA RATON, FLORIDA 33434
PHONE (561)-392-1991 / FAX (561)-750-1452

Call 48 hours before you dig
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1-800-432-4770
Sunshine State One Call of Florida, Inc.

LEGEND

BOUNDARY OF POLLUTION PREVENTION (SLIT FENCE OR HAY BALES PER F..D.O.T. INDEX 103)

INLET FILTER

GRAPHIC SCALE

150 0 75 150 300 600
(IN FEET)
1 inch = 150 ft.

GENERAL NOTES

DEFINITIONS

1. COUNTY - PALM BEACH COUNTY
2. CONTRACTOR - UTILITY CONTRACTOR AND ALL UTILITY SUBCONTRACTORS
3. ENGINEER - ENGINEER RESPONSIBLE FOR INSPECTION AND CERTIFICATION

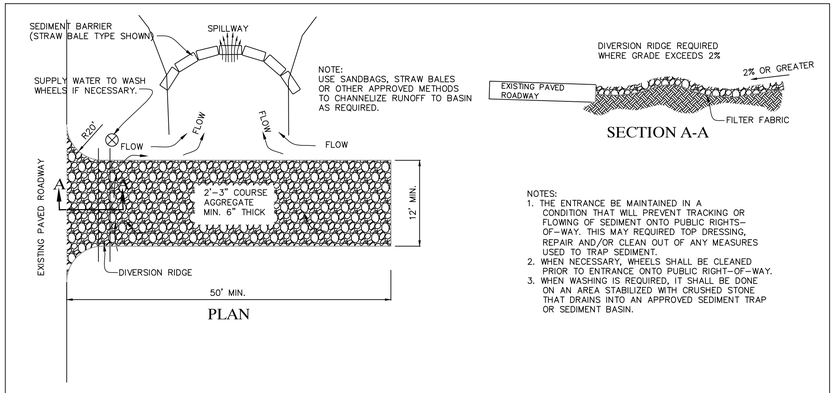
PROCEDURE

1. A PRE-CONSTRUCTION MEETING IS TO BE HELD PRIOR TO DELIVERY OF MATERIALS AND INITIATION OF ANY WATER AND SEWER 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. 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.
9. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING LOCATIONS OF ALL OTHER UTILITY FACILITIES.
10. THE CONTRACTOR SHALL SCHEDULE INSPECTIONS AND TESTS WITH THE CITY A MINIMUM OF 24 HOURS IN ADVANCE.
11. 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.
12. 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.
13. 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.
14. 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 No. T-P-13-001 (LATEST REVISION) UNLESS SHOWN OTHERWISE.
15. 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.
16. PRIOR TO COMMENCEMENT OF ANY EXCAVATION, THE CONTRACTOR SHALL COMPLY WITH FLORIDA STATUTE 553-851 FOR PROTECTION OF UNDERGROUND GAS PIPE LINES.
17. CONTRACTOR SHALL NOTIFY SUNSHINE STATE ONE (1-800-432-4770) 48 HOURS IN ADVANCE OF CONSTRUCTION.
18. 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.
19. 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.
20. EXISTING BASE MATERIAL THAT IS REMOVED DURING CONSTRUCTION SHALL NOT BE USED IN THE CONSTRUCTION OF NEW LIMEROCK BASE.
21. ALL VEGETATION, DEBRIS, CONCRETE OR OTHER UNSUITABLE MATERIAL SHALL BE LEGALLY DISPOSED OF OFF-SITE IN AN AREA AT THE CONTRACTORS EXPENSE.
22. 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.
23. ALL REINFORCED CONCRETE STORM SEWER PIPE SHALL BE CLASS III, UNLESS OTHERWISE NOTED.
24. 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.
25. 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.
26. 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.
27. SITE INFORMATION BASED ON A SURVEY PREPARED BY: CAULFIELD & WHEELER, INC.
28. 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.
29. 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.
30. CONTRACTOR IS RESPONSIBLE FOR THE MAINTENANCE AND REPAIR OF ALL EROSION CONTROL BEST MANAGEMENT PRACTICES AS DETAILED ON THIS SHEET AS A PART OF THE BASE CONTRACT.

D_1 =5' Std. (Single Panel For Depths 5' or Less).
D_2 =5' Std. (Additional Panel For Depths 5').
Curtain To Reach Bottom Up To Depths Of 10 Feet. Two(2) Panels To Be Used For Depths Greater Than 10 Feet Unless Special Depth Curtains Specifically Called For In The Plans Or As Determined By The Engineer.

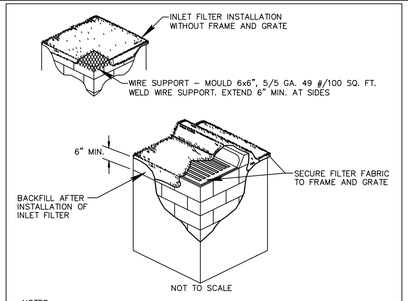
NOTICE: COMPONENTS OF TYPES I AND II MAY BE SIMILAR OR IDENTICAL TO PROPRIETARY DESIGNS. ANY INFRINGEMENT ON THE PROPRIETARY RIGHTS OF THE DESIGNER SHALL BE THE SOLE RESPONSIBILITY OF THE USER. SUBSTITUTIONS FOR TYPES I AND II SHALL BE AS APPROVED BY THE ENGINEER.

FLOATING TURBIDITY BARRIERS



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

TEMPORARY GRAVEL CONSTRUCTION ENTRANCE
PLAT 4.03a
SOURCE: EROSION DRAW



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.

INLET FILTER DETAIL

SHOPS AT INDIAN TRAILS A.K.A. COCONUT CROSSING

POLLUTION PREVENTION PLAN

SWC NORTHLAKE BLVD. & COCONUT BLVD
PALM BEACH GARDENS, FLORIDA

DATE	07/28/23
DRAWN BY	M.V.K.
F.B./ PG.	N/A
SCALE	1"=30'

MATTHEW V. KAHN
PROFESSIONAL ENGINEER
LICENSE NO. 82227
STATE OF FLORIDA
- FOR THE FIRM -
DATE

JOB # 7714-1
SHT.NO.
C-2
OF 45 SHEETS

NOTE: ELEVATIONS ARE NAVD 88
– CONVERSION FACTOR
(NAVD 88) = (NGVD 29) –1.62'

LEGEND

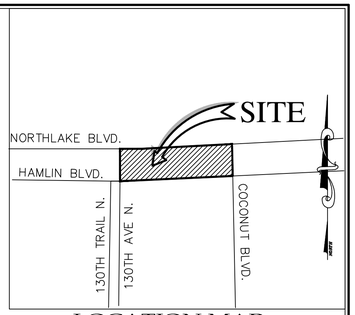
- PROPOSED PROPERTY LINE
- EXISTING PROPERTY LINE
- PROP. EASEMENT LINE
- PROPOSED GRADE
- EXISTING GRADE
- FLOW ARROW
- PROPOSED STANDARD PAVEMENT
- PROPOSED HEAVY PAVEMENT
- PROPOSED PAVE DRAIN PERV. PAVERS
- PROPOSED 4" CONCRETE
- PROPOSED 6" CONCRETE
- PROPOSED 8" CONCRETE
- PROPOSED VEHICULAR USE PAVERS
- PROPOSED PEDESTRIAN USE PAVERS
- PROPOSED BUILDING
- DETECTABLE WARNING MAT
- M.E.E. MATCH EXISTING ELEVATION
- GRADING CROSS-SECTION
- GUE GENERAL UTILITY EASEMENT

LEGEND

- SD PROPOSED DRAINAGE PIPE
- FM PROPOSED FORCE MAIN (SIZE NOTED)
- RCWM PROPOSED RECLAIMED WATER LINE (SIZE NOTED)
- S PROPOSED GRAVITY SEWER LINE (SIZE NOTED)
- W PROPOSED WATER LINE (SIZE NOTED)
- FPL PROPOSED FPL ELECTRIC LINE
- PROPOSED GATE VALVE AND BOX
- PROPOSED REDUCER
- FIRE HYDRANT
- SAMPLE POINT
- EXWM EXISTING WATER LINE
- EXISTING GATE VALVE
- EXSD EXISTING PIPE AND INLET
- EXSS EXISTING SANITARY SEWER LINE

GENERAL NOTES:

1.) CONTRACTOR TO VERIFY DEPTH AND LOCATION OF EXISTING UTILITIES PRIOR TO ANY CONSTRUCTION.
2.) ALL DRAINAGE SYSTEMS SHALL BE PUMPED COMPLETELY DRY AND LAMPED AS A REQUIREMENT OF THE FINAL DRAINAGE INSPECTIONS.
3.) ALL ONSITE SIDEWALK SHALL BE CONSTRUCTED AT 1.5% MAXIMUM CROSS SLOPE AND 5% MAXIMUM LONGITUDINAL SLOPE.
4.) SIDEWALKS ABUTTING LOTS/UNITS/CLUBHOUSE TO BE CONSTRUCTED AT TIME OF BUILDING CONSTRUCTION, WHILE COMMON AREA SIDEWALK WILL BE INSTALLED FROM START OF JOB.
5.) STRUCTURAL FILL WILL BE REQUIRED TO BE USED UNDER ALL BUILDING PADS, RIGHTS-OF-WAY, AND OTHER STRUCTURAL ELEMENTS.
6.) THE MUCK AND GUMBO SHALL BE REMOVED IN THE AREA OF AND WITHIN 10 FEET OF PROPOSED PAVEMENT OR FOUNDATION AREAS.
7.) PAVEMENT MARKINGS AND GEOMETRICS SHALL BE IN ACCORDANCE WITH THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS AND PALM BEACH COUNTY TYPICAL T-P-24.
8.) ALL ADA ACCESSIBLE PARKING AREAS AND RAMP LANDINGS SHALL NOT EXCEED 2% SLOPE IN ANY DIRECTION
9.)CONTRACTOR SHALL COORDINATE ALL UTILITY/DRAINAGE STUB LOCATIONS WITH THE BUILDING PLANS PRIOR TO INSTALLATION.

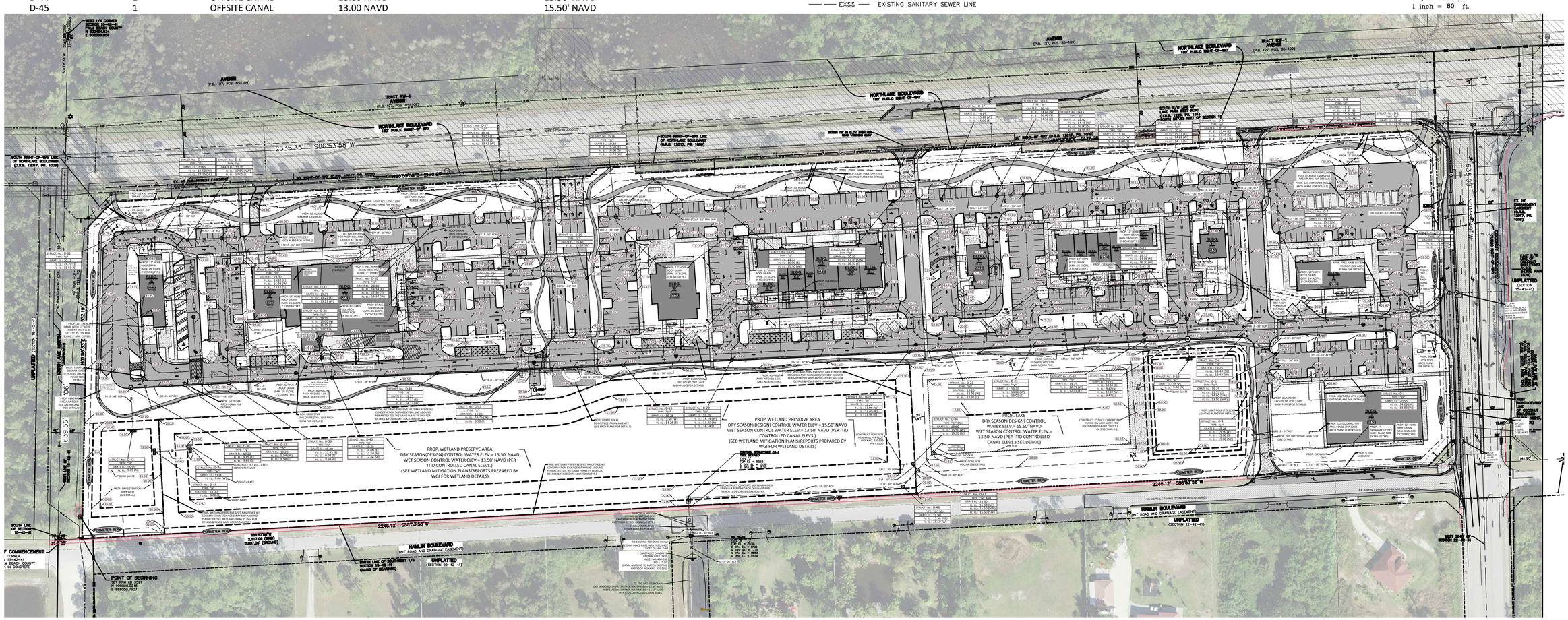


LOCATION MAP
SECTION 15, TOWNSHIP 42S, RANGE 41E N.T.S.

WETLAND CONTROL STRUCTURE SUMMARY:

STRUCTURE #:	WETLAND #:	WETLAND CONNECTED TO:	STRUCTURE ELEV.:	WETLAND SEASONAL HIGH WATER ELEV.:
CS-1	1	OFFSITE CANAL	19.30 NAVD WEIR/ 15.50 NAVD BLEEDER	15.50' NAVD
D-44	1	OFFSITE CANAL	18.00 NAVD	15.50' NAVD
D-45	1	OFFSITE CANAL	13.00 NAVD	15.50' NAVD

GRAPHIC SCALE
80 0 40 80 160 320
(IN FEET)
1 inch = 80 ft.


NORTHLAKE BOULEVARD
100' PUBLIC RIGHT-OF-WAY
HAMLIN BOULEVARD
100' ROAD AND DRAINAGE EASEMENT
UNPLATTED
(SECTION 22-42-41)
TRACT RW-1
AVENUE
(P.B. 127, PGS. 85-109)
2335.35' S86°53'58"W
2246.12' S86°53'58"W
PROP. WETLAND PRESERVE AREA
DRY SEASON(DESIGN) CONTROL WATER ELEV.= 15.50' NAVD
WET SEASON CONTROL WATER ELEV.= 13.50' NAVD (PER ITID CONTROLLED CANAL ELEVS.)
(SEE WETLAND MITIGATION PLANS/REPORTS PREPARED BY WGI FOR WETLAND DETAILS)
PROP. LAKE
DRY SEASON(DESIGN) CONTROL WATER ELEV.= 15.50' NAVD
WET SEASON CONTROL WATER ELEV.= 13.50' NAVD (PER ITID CONTROLLED CANAL ELEVS.)(SEE DETAIL)
PROP. 10' HOPE NON-POTABLE WATER MAIN
PROP. 12" HOPE FORCE MAIN
PROP. 8" HOPE RECLAIM WATER MAIN
PROP. 8" HOPE GRAVITY SEWER MAIN
PROP. 6" HOPE GRAVITY SEWER MAIN
PROP. 12" HOPE STORM DRAIN
PROP. 18" HOPE STORM DRAIN
PROP. 24" HOPE STORM DRAIN
PROP. 30" HOPE STORM DRAIN
PROP. 36" HOPE STORM DRAIN
PROP. 42" HOPE STORM DRAIN
PROP. 48" HOPE STORM DRAIN
PROP. 54" HOPE STORM DRAIN
PROP. 60" HOPE STORM DRAIN
PROP. 66" HOPE STORM DRAIN
PROP. 72" HOPE STORM DRAIN
PROP. 84" HOPE STORM DRAIN
PROP. 96" HOPE STORM DRAIN
PROP. 108" HOPE STORM DRAIN
PROP. 120" HOPE STORM DRAIN
PROP. 132" HOPE STORM DRAIN
PROP. 144" HOPE STORM DRAIN
PROP. 156" HOPE STORM DRAIN
PROP.

NOTE: ELEVATIONS ARE NAVD 88 – CONVERSION FACTOR (NAVD 88) = (NGVD 29) –1.62'

AVENIR (P.B. 127, PGS. 85–109)

TRACT RW–1 AVENIR (PLAT BOOK 127, PAGE 85)

TRACT RW–1 AVENIR (P.B. 127, PGS. 85–109)

NORTHLAKE BOULEVARD 160' PUBLIC RIGHT–OF–WAY

SOUTH RIGHT–OF–WAY LINE OF NORTHLAKE BOULEVARD (O.R.B. 12017, PG. 1009)

20' RIGHT–OF–WAY (O.R.B. 12017, PG. 1009)

EX. 10' EMBANKMENT EASEMENT (O.R.B. 12017, PG. 1009)

2335.35' S86°53'58"W

N86°53'58"E 2175.25'

EX. 18" DRN (TO REMAIN & PLUGGED BY OTHERS)

EX. MITERED END W/#4 BLANKET ROCK (TBR) BY OTHERS)

TOP OF BANK

CR 880 (SW12 SS) (#8 PVC ETHER-N)

STRUCT. No.: D-27
TYPE: "III"
GRATE EL.: 19.40
FL. EL.: 13.57 (E)
FL. EL.: 13.42 (S)
FL. EL.: 13.42 (W)

STRUCT. No.: D-34
TYPE: "II"
GRATE EL.: 20.65
FL. EL.: 15.50 (W)
FL. EL.: 17.15 (SE)

STRUCT. No.: D-33
TYPE: "II"
GRATE EL.: 20.70
FL. EL.: 17.05 (NW)
FL. EL.: 17.05 (E)

PROP. 10'X30' MASS TRANS. EASEMENT

PERIMETER BERM

PROP. TRELLIS (TYP.) (SEE ARCH PLANS FOR DETAILS)

PROP. LIGHT POLE (TYP.) (SEE LIGHTING PLANS FOR DETAILS)

PROP. 10' G.U.E.

PROP. 50' RURAL PARKWAY EASEMENT

55 -(40)LF - 18" FRN DRN

55 LF - 18" RCP

57 LF - 18" RCP

PROP. SIGN (TYP.) (SEE ARCH PLANS FOR DETAILS)

170 LF - 36" RCP

SEE ARCH PLANS FOR PROP. BOLLARD LAYOUT AT FRONT OF STORE(TYP.)

177 LF - 36" RCP

PROP. FLUSH HEADER CURB

PROP. 12" PVC ROOF DRAIN (MIN. 1% SLOPE, 2' COVER)(TYP.)

127 LF - 36" RCP

87 LF - 24" RCP

STRUCT. No.: D-35
TYPE: "II"
GRATE EL.: 20.15
FL. EL.: 14.70 (S)
FL. EL.: 15.50 (E)

PROP. 12" HDPE ROOF DRAIN (MIN. 1% SLOPE, 2' COVER)(TYP.)

PROP. FLAG POLE (SEE ARCH PLANS FOR DETAILS)

BLDG. 'A' F.F.E. 22.50

STRUCT. No.: D-32
TYPE: "II"
GRATE EL.: 19.50
FL. EL.: 13.12 (E)
FL. EL.: 16.94 (W)
FL. EL.: 13.12 (S)

BLDG. 'B' F.F.E. 22.50 (WITH OFFICE)

STRUCT. No.: D-31
TYPE: "III"
GRATE EL.: 19.35
FL. EL.: 13.23 (E)
FL. EL.: 13.23 (W)

PROP. 12" HDPE ROOF DRAIN (MIN. 1% SLOPE, 2' COVER)(TYP.)

STRUCT. No.: D-38
TYPE: "III"
GRATE EL.: 19.55
FL. EL.: 13.00 (N)
FL. EL.: 16.55 (E)
FL. EL.: 10.01 (S)

PROP. BOLLARD (SEE ARCH PLANS FOR DETAILS) (TYP.)

BLDG. 'C' F.F.E. 22.50

STRUCT. No.: D-30
TYPE: "III"
GRATE EL.: 20.30
FL. EL.: 13.34 (E)
FL. EL.: 17.30 (S)
FL. EL.: 13.34 (W)

PROP. 8" PVC ROOF DRAIN (MIN. 1% SLOPE, 2' COVER)

PROP. 6" CLEANOUT

PROP. 6" PVC ROOF DRAIN (MIN. 1% SLOPE, 2' COVER)(TYP.)

STRUCT. No.: D-28
TYPE: "II"
GRATE EL.: 19.40
FL. EL.: 13.53 (E)
FL. EL.: 13.53 (N)

PROP. BIKE RACK (SEE ARCH PLANS FOR DETAILS)

PROP. WHITE STOP (TYP.)(SEE ARCH PLANS FOR DETAILS)

PROP. 6" CLEANOUT

PROP. BOLLARD (TYP.) 6' O.C. EXCEPT WHERE NOTED (SEE ARCH PLANS FOR DETAILS)

PROP. WALL (SEE ARCH PLANS FOR DETAILS)

PROP. FLUSH CURB

PROP. CLEANOUT (TYP.)

PROP. 12" TRENCH DRAIN W/ 12" PVC @ 1% MIN. SLOPE TO SUMP PUMP

PROP. LOADING DOCK RETAINING WALL (SEE ARCH PLANS FOR DETAILS)

PROP. SUMP PUMP W/ 7" PVC FORCE MAIN (SEE MEP PLAN FOR DETAILS)

PROP. ASPHALT PATH PITCHED 1.5% MAX. NORTH (TYP.)

INV=-15.95'

171 LF - 36" RCP

PROP. 12" PVC ROOF DRAIN (MIN. 1% SLOPE, 2' COVER)(TYP.)

175 LF - 36" RCP

129 LF - 36" RCP

STRUCT. No.: D-41
TYPE: "II"
GRATE EL.: 19.25
FL. EL.: 14.17 (E)
FL. EL.: 14.17 (W)

STRUCT. No.: D-42
TYPE: "II"
GRATE EL.: 19.25
FL. EL.: 14.25 (W)
FL. EL.: 3.50 (E)

PROP. WETLAND PRESERVE SPLIT RAIL FENCE W/ CONSERVATION SIGNAGE EVERY 500' AROUND PERIMETER (SEE WETLAND PLANS BY WGI FOR DETAILS & FENCE GATE LOCATIONS)(TYP.)

PROP. DUMPSTER ENCLOSURE (TYP.) (SEE ARCH PLANS FOR DETAILS)

PROP. GATE (SEE ARCH PLANS FOR DETAILS)

PROP. CLEANOUT (TYP.)

PROP. 12" TRENCH DRAIN WITH 12" HDPE PIPE TO INLET D-36 GRT.=22.25' (1% MIN. SLOPE, 2' MIN. COVER)

PROP. TRAFFIC DELINEATORS (TYP.) (SEE ARCH PLANS FOR DETAILS)

PROP. CENTRAL VACUUM EQUIP. (SEE ARCH PLANS FOR DETAILS)

185 LF - 36" RCP

55 LF - 36" RCP

70 LF - 48" RCP

90 LF - 48" RCP

72 LF - 48" RCP

57 LF - 48" RCP

STRUCT. No.: D-36
TYPE: "IV"
GRATE EL.: 19.20
FL. EL.: 9.89 (E)
FL. EL.: 9.89 (S)

STRUCT. No.: D-37
TYPE: "IV"
GRATE EL.: 19.20
FL. EL.: 9.94 (W)
FL. EL.: 9.94 (E)

STRUCT. No.: D-39
TYPE: "IV"
GRATE EL.: 19.20
FL. EL.: 13.95 (E)
FL. EL.: 9.98 (N)
FL. EL.: 9.98 (W)

STRUCT. No.: D-40
TYPE: "III"
GRATE EL.: 19.25
FL. EL.: 14.06 (E)
FL. EL.: 11.50 (N)
FL. EL.: 14.06 (W)

CONSTRUCT (9.5'x14.75'x6") CONCRETE FLUME

PROP. WETLAND PRESERVE AREA
DRY SEASON(DESIGN) CONTROL WATER ELEV.= 15.50' NAVD
WET SEASON CONTROL WATER ELEV.= 13.50' NAVD (PER ITID CONTROLLED CANAL ELEVS.)
(SEE WETLAND MITIGATION PLANS/REPORTS PREPARED BY WGI FOR WETLAND DETAILS)

STRUCT. No.: D-43
TYPE: "H"
GRATE EL.: 16.50
FL. EL.: 9.85 (N)

*QUAD GRATE

STRUCT. No.: D-45
TYPE: "H"
GRATE EL.: 13.00
FL. EL.: 7.00 (W)

*QUAD GRATE

STRUCT. No.: D-44
TYPE: "H"
GRATE EL.: 18.00
FL. EL.: 8.00 (E)

*QUAD GRATE

PROP. DRY DETENTION AREA WEST (SEE DETAIL)

PROP. WETLAND PRESERVE SPLIT RAIL FENCE W/ CONSERVATION SIGNAGE EVERY 500' AROUND PERIMETER (SEE WETLAND PLANS BY WGI FOR DETAILS & FENCE GATE LOCATIONS)(TYP.)

LIFT STATION

WOOD POWER POLE

UNPLATTED (SECTION 16–42–41)

40' RIGHT–OF–WAY (O.R.B. 2263, PG. 501)

130TH AVE NORTH (UNIMPROVED)

N01°06'33"E 2532.19'

639.55'

40' 40'

15'

WEST LINE OF SECTION 15–42–41 (TOP OF BANK)

SOUTH LINE OF SECTION 15–42–41

TOP OF BURM

PERIMETER BERM

S86°53'58"W 2,507.09 (GRID) 2,507.08' (GROUND)

2246.12' S86°53'58"W

5' ASPHALT WALK

ASPHALT PAVING

60' ROAD & DRAINAGE EASEMENT (ORB 10650, PG 1663)

60' ROAD & DRAINAGE EASEMENT (ORB 11012, PG 1492)

60' ROAD & DRAINAGE EASEMENT (ORB 2643, PG 1545)

HAMLIN BOULEVARD (60' ROAD AND DRAINAGE EASEMENT)

UNPLATTED (SECTION 22–42–41)

SOUTH LINE OF SOUTHWEST 1/4 SECTION 15–42–41 (BASIS OF BEARINGS)

POINT OF COMMENCEMENT
SOUTHWEST CORNER OF SECTION 15–42–41
FOUND PALM BEACH COUNTY BRASS DISK IN CONCRETE

POINT OF BEGINNING
SET PRM LB 3591
N 900808.0245
E 888059.7907

WOOD POWER POLE

TOP OF EX. BERM

15" HDPE INV= 18.73

15" HDPE INV= 18.71

455
Owners
LILLIAN HORN TRUST
Property detail
Location 12600 HAMLIN BLVD

454
Owners
KUHL ANNE M
KUHL GERT A
Property detail
Location 12622 HAMLIN BLVD
Municipality UNINCORPORATED

413
Owners
CHERSELSTEIN STANLEY J &
CHERNELSTEIN YANG
Property detail
Location HAMLIN BLVD
Municipality UNINCORPORATED
Parcel No. 00414222000003090
Use Type 0000 - VACANT

MATCHLINE SEE SHEET C–5

NORTHLAKE BLVD.
HAMLIN BLVD.
SITE
130TH TRAIL N.
130TH AVE N.
COCONUT BLVD.

LOCATION MAP
SECTION 15, TOWNSHIP 42S, RANGE 41E N.T.S.

GENERAL NOTES:
1.) CONTRACTOR TO VERIFY DEPTH AND LOCATION OF EXISTING UTILITIES PRIOR TO ANY CONSTRUCTION.
2.) ALL DRAINAGE SYSTEMS SHALL BE PUMPED COMPLETELY DRY AND LAMPED AS A REQUIREMENT OF THE FINAL DRAINAGE INSPECTIONS.
3.) ALL ONSITE SIDEWALK SHALL BE CONSTRUCTED AT 1.5% MAXIMUM CROSS SLOPE AND 5% MAXIMUM LONGITUDINAL SLOPE.
4.) SIDEWALKS ABUTTING LOTS/UNITS/CLUBHOUSE TO BE CONSTRUCTED AT TIME OF BUILDING CONSTRUCTION, WHILE COMMON AREA SIDEWALK WILL BE INSTALLED FROM START OF JOB.
5.) STRUCTURAL FILL WILL BE REQUIRED TO BE USED UNDER ALL BUILDING PADS, RIGHTS-OF-WAY, AND OTHER STRUCTURAL ELEMENTS.
6.) THE MUCK AND GUMBO SHALL BE REMOVED IN THE AREA OF AND WITHIN 10 FEET OF PROPOSED PAVEMENT OR FOUNDATION AREAS.
7.) PAVEMENT MARKINGS AND GEOMETRICS SHALL BE IN ACCORDANCE WITH THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS AND PALM BEACH COUNTY TYPICAL T-P-24.
8.) ALL ADA ACCESSIBLE PARKING AREAS AND RAMP LANDINGS SHALL NOT EXCEED 2% SLOPE IN ANY DIRECTION
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- DETECTABLE WARNING MAT
- MATCH EXISTING ELEVATION
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- GUE GENERAL UTILITY EASEMENT

LEGEND

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- EXSD EXISTING PIPE AND INLET
- EXSS EXISTING SANITARY SEWER LINE

GRAPHIC SCALE
40 0 20 40 80 160
(IN FEET)
1 inch = 40 ft.

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Sunshine State One Call of Florida, Inc.

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KEY MAP

REVISIONS	DATE	BY
REV PER PBCLD COMMENTS	04/XX/25	MVK
REV PER PBCWUD PRECON COMMENTS	03/11/25	MVK
REV PER ADD. GRADES	02/12/25	MVK
REV PER NEW SITE PLAN	01/14/25	MVK

FILE NAME 7714ENG.DWG

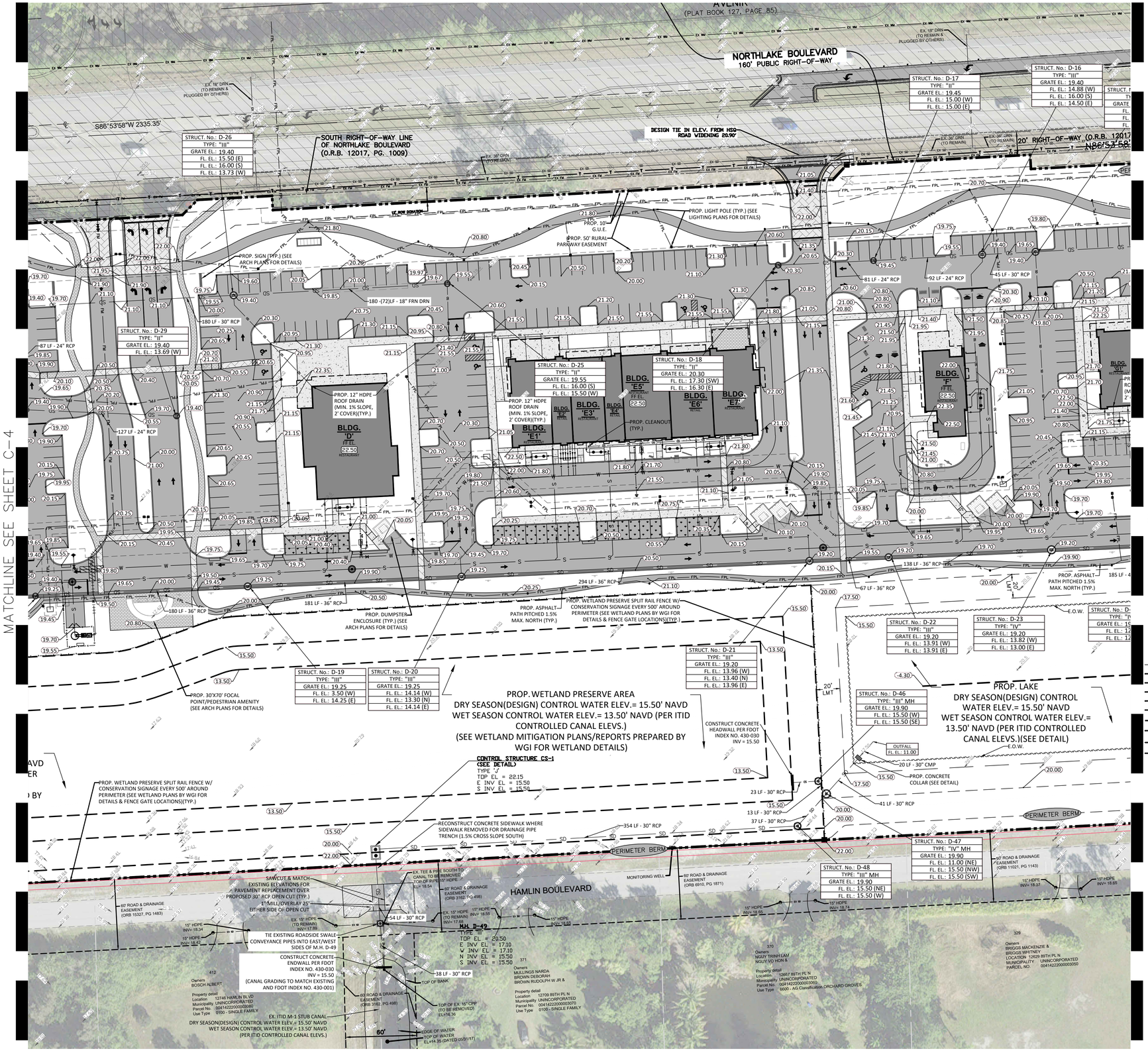
CAULFIELD & WHEELER, INC.
CIVIL ENGINEERING • LAND PLANNING
LANDSCAPE DESIGN • SURVEYING
7900 GLADES ROAD - SUITE 100
BOCA RATON, FLORIDA 33434
PHONE (561)-392-1991 / FAX (561)-750-1452

SHOPS AT INDIAN TRAILS A.K.A. COCONUT CROSSING
PAVING, GRADING AND DRAINAGE PLAN
SWC NORTHLAKE BLVD. & COCONUT BLVD
PALM BEACH GARDENS, FLORIDA

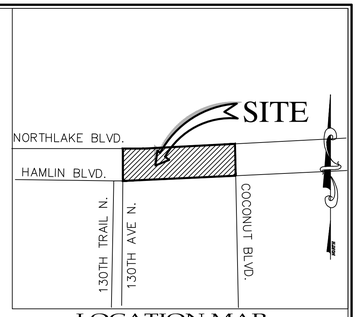
DATE	07/28/23
DRAWN BY	M.V.K.
F.B./ PG.	N/A
SCALE	1"=40'

MATTHEW V. KAHN
PROFESSIONAL ENGINEER
LICENSE NO. 82227
STATE OF FLORIDA
– FOR THE FIRM –
DATE

JOB # 7714-1
SHT.NO. C–4
OF 45 SHEETS



NOTE: ELEVATIONS ARE NAVD 88 – CONVERSION FACTOR (NAVD 88) = (NGVD 29) –1.62'



LOCATION MAP

SECTION 15, TOWNSHIP 42S, RANGE 41E N.T.S.

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GRAPHIC SCALE

40 0 20 40 80 160

(IN FEET) 1 inch = 40 ft.

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FILE NAME 7714ENG.DWG

CAULFIELD & WHEELER, INC.
CIVIL ENGINEERING - LAND PLANNING
LANDSCAPE DESIGN - SURVEYING
7900 GLADES ROAD - SUITE 100
BOCA RATON, FLORIDA 33434
PHONE (561) 392-1991 / FAX (561)-750-1452

SHOPS AT INDIAN TRAILS A.K.A. COCONUT CROSSING
PAVING, GRADING AND DRAINAGE PLAN CENTER

SWC NORTHLAKE BLVD. & COCONUT BLVD
PALM BEACH GARDENS, FLORIDA

DATE	07/28/23
DRAWN BY	M.V.K.
F.B./ PG.	N/A
SCALE	1"=40'

MATTHEW V. KAHN
PROFESSIONAL ENGINEER
LICENSE NO. 82227
STATE OF FLORIDA
– FOR THE FIRM –
DATE

JOB # 7714-1
SHT.NO. C-5
OF 45 SHEETS

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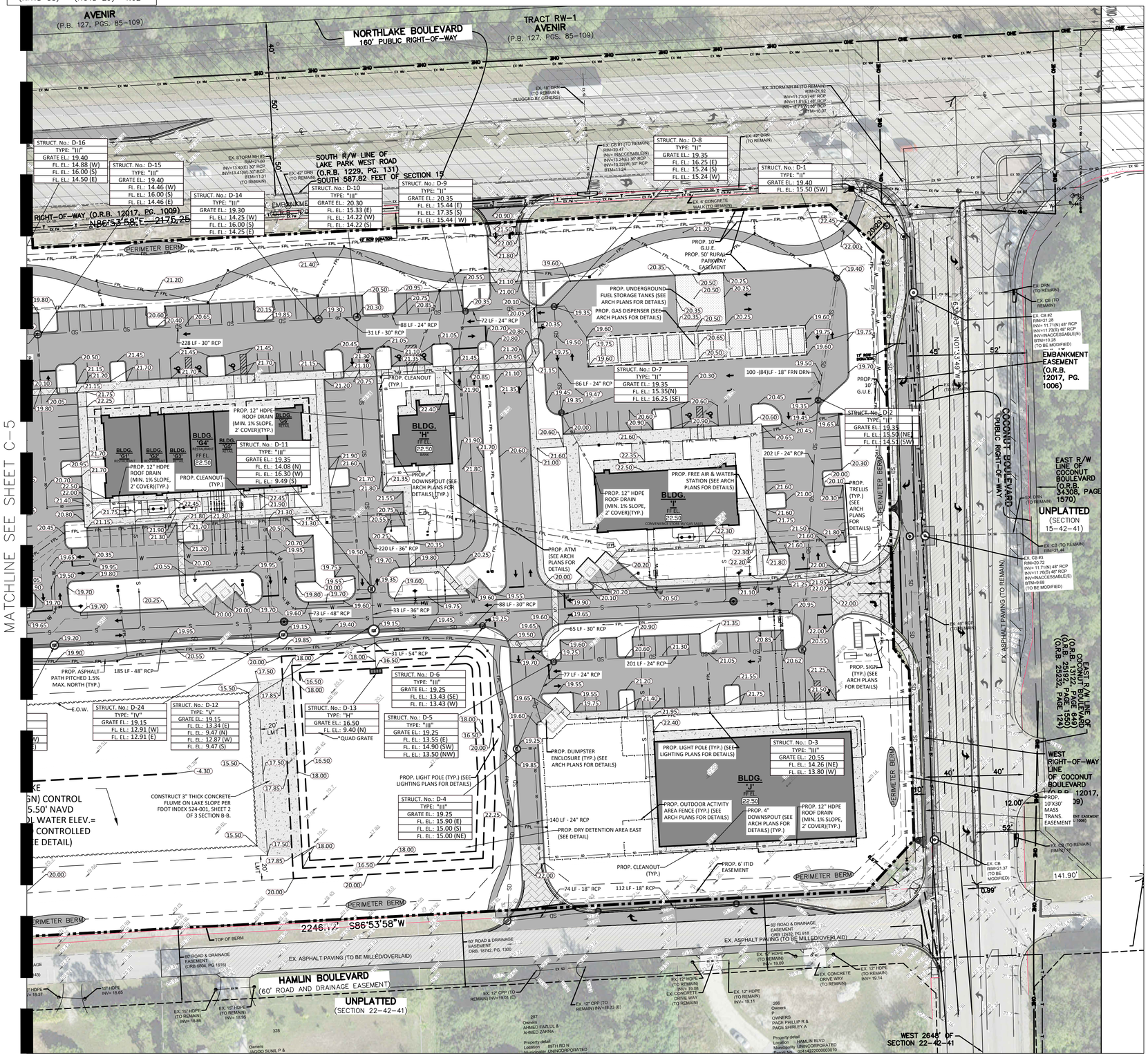

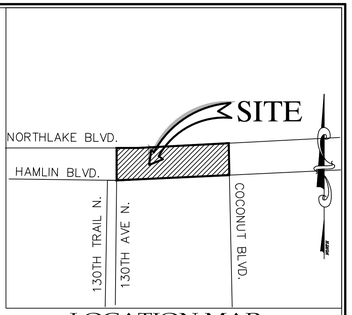

LOCATION MAP

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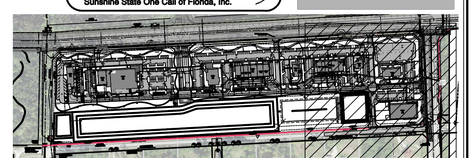

KEY MAP

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FILE NAME: 7714ENG.DWG		
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CAULFIELD & WHEELER, INC.
CIVIL ENGINEERING - LAND PLANNING
LANDSCAPE DESIGN - SURVEYING
7900 GLADES ROAD - SUITE 100
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PHONE (561) 392-1991 / FAX (561)-750-1452

SHOPS AT INDIAN TRAILS A.K.A. COCONUT CROSSING
PAVING, GRADING AND DRAINAGE PLAN
EAST

SWC NORTHLAKE BLVD. & COCONUT BLVD
PALM BEACH GARDENS, FLORIDA

DATE	07/28/23
DRAWN BY	M.V.K.
F.B./ PG.	N/A
SCALE	1"=40'

MATTHEW V. KAHN, PROFESSIONAL ENGINEER LICENSE NO. 82227 STATE OF FLORIDA – FOR THE FIRM – DATE

JOB # 7714-1
SHT.NO. C–6
OF 45 SHEETS

NOTE: ELEVATIONS ARE NAVD 88
– CONVERSION FACTOR
(NAVD 88) = (NGVD 29) –1.62'

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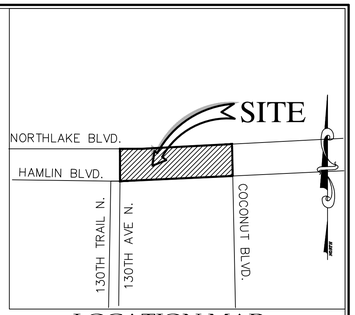
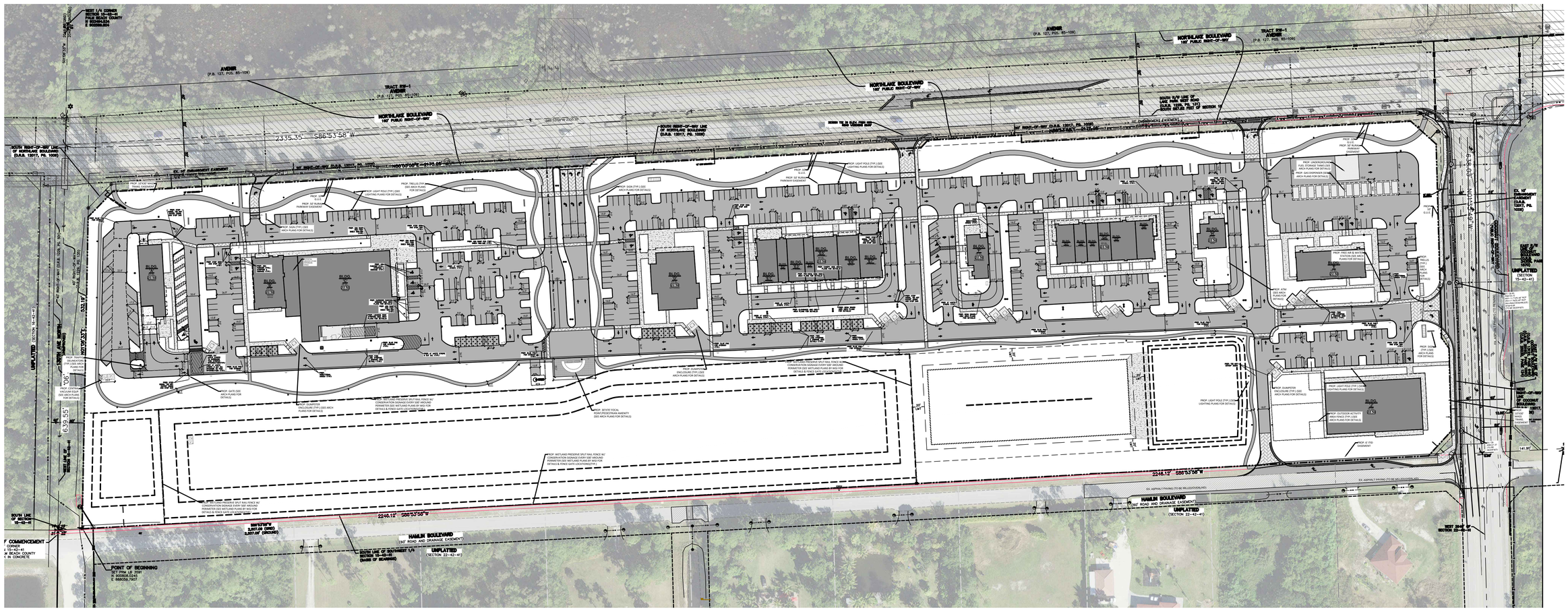
PALM BEACH GARDENS PMS NOTES:
1.) ALL PAVEMENT MARKING & STRIPING, EXCLUDING PARKING STALL STRIPING, SHALL BE INSTALLED WITH THERMOPLASTIC MATERIALS FOR CONFORMANCE WITH SECTION 78-344 OF THE CITY'S LDR



LOCATION MAP
SECTION 15, TOWNSHIP 42S, RANGE 41E N.T.S.

GRAPHIC SCALE
80 0 40 80 160 320
(IN FEET)
1 inch = 80 ft.



REV PER PBCD COMMENTS	04/XX/25	M.V.K.
REV PER PBCWUD PRECON COMMENTS	03/11/25	M.V.K.
REV PER ADD. GRADES	02/12/25	M.V.K.
REV PER NEW SITE PLAN	01/14/25	M.V.K.
REVISIONS	DATE	BY
FILE NAME 7714ENGDWG		

CAULFIELD & WHEELER, INC.
CIVIL ENGINEERING – LAND PLANNING
LANDSCAPE DESIGN – SURVEYING
7900 GLADES ROAD – SUITE 100
BOCA RATON, FLORIDA 33434
PHONE (561)-392-1991 / FAX (561)-750-1452

SHOPS AT INDIAN TRAILS A.K.A. COCONUT CROSSING OVERALL PAVEMENT MARKING & SIGNAGE PLAN

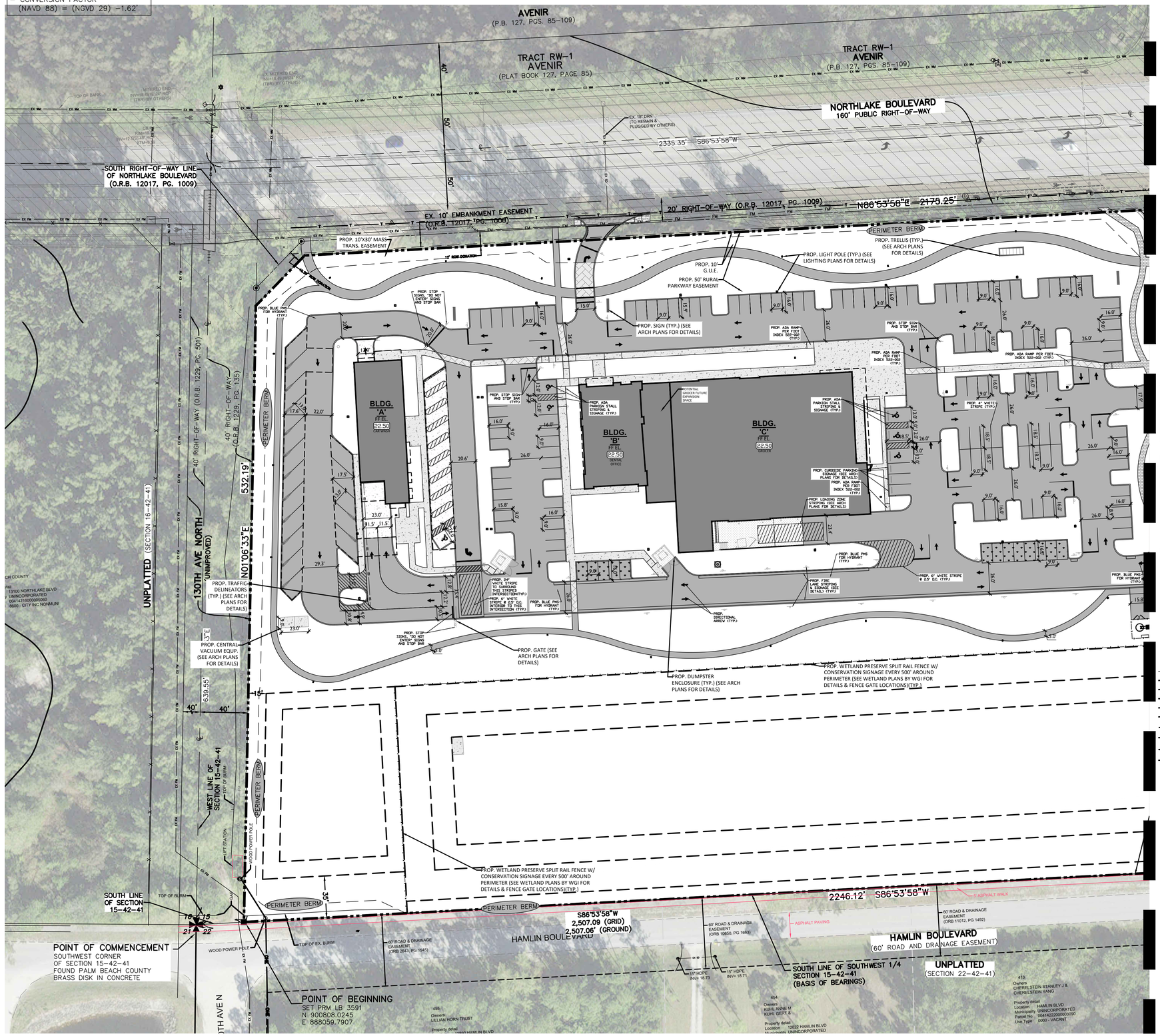
SWC NORTHLAKE BLVD. & COCONUT BLVD
PALM BEACH GARDENS, FLORIDA

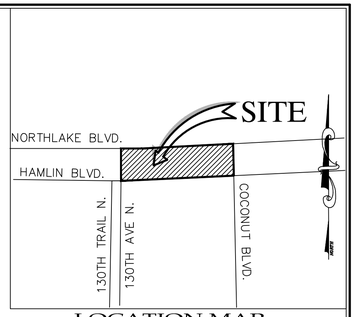
DATE	07/28/23
DRAWN BY	M.V.K.
F.B./ PG.	N/A
SCALE	1"=80'

MATTHEW V. KAHN
PROFESSIONAL ENGINEER
LICENSE NO. 82227
STATE OF FLORIDA
– FOR THE FIRM –
DATE

JOB # 7714-1
SHT.NO.
C – 7
OF 45 SHEETS

NOTE: ELEVATIONS ARE NAVD 88 – CONVERSION FACTOR (NAVD 88) = (NGVD 29) −1.62'





LOCATION MAP

SECTION 15, TOWNSHIP 42S, RANGE 41E N.T.S.

GENERAL NOTES:

1.) CONTRACTOR TO VERIFY DEPTH AND LOCATION OF EXISTING UTILITIES PRIOR TO ANY CONSTRUCTION.
2.) ALL DRAINAGE SYSTEMS SHALL BE PUMPED COMPLETELY DRY AND LAMPED AS A REQUIREMENT OF THE FINAL DRAINAGE INSPECTIONS.
3.) ALL ONSITE SIDEWALK SHALL BE CONSTRUCTED AT 1.5% MAXIMUM CROSS SLOPE AND 5% MAXIMUM LONGITUDINAL SLOPE.
4.) SIDEWALKS ABUTTING LOTS/UNITS/CLUBHOUSE TO BE CONSTRUCTED AT TIME OF BUILDING CONSTRUCTION, WHILE COMMON AREA SIDEWALK WILL BE INSTALLED FROM START OF JOB.
5.) STRUCTURAL FILL WILL BE REQUIRED TO BE USED UNDER ALL BUILDING PADS, RIGHTS-OF-WAY, AND OTHER STRUCTURAL ELEMENTS.
6.) THE MUCK AND GUMBO SHALL BE REMOVED IN THE AREA OF AND WITHIN 10 FEET OF PROPOSED PAVEMENT OR FOUNDATION AREAS.
7.) PAVEMENT MARKINGS AND GEOMETRICS SHALL BE IN ACCORDANCE WITH THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS AND PALM BEACH COUNTY TYPICAL T-P-24.
8.) ALL ADA ACCESSIBLE PARKING AREAS AND RAMP LANDINGS SHALL NOT EXCEED 2% SLOPE IN ANY DIRECTION
9.)CONTRACTOR SHALL COORDINATE ALL UTILITY/DRAINAGE STUB LOCATIONS WITH THE BUILDING PLANS PRIOR TO INSTALLATION.

LEGEND

- PROPOSED PROPERTY LINE
- EXISTING PROPERTY LINE
- PROP. EASEMENT LINE
- ##.## PROPOSED GRADE
- ##.## EXISTING GRADE
- FLOW ARROW
- PROPOSED STANDARD PAVEMENT
- PROPOSED HEAVY PAVEMENT
- PROPOSED PAVE DRAIN PERV. PAVERS
- PROPOSED 4" CONCRETE
- PROPOSED 6" CONCRETE
- PROPOSED 8" CONCRETE
- PROPOSED VEHICULAR USE PAVERS
- PROPOSED PEDESTRIAN USE PAVERS
- PROPOSED BUILDING
- DETECTABLE WARNING MAT
- M.E.E. MATCH EXISTING ELEVATION
- # # GRADING CROSS–SECTION
- GUE GENERAL UTILITY EASEMENT

LEGEND

- SD PROPOSED DRAINAGE PIPE
- FM PROPOSED FORCE MAIN (SIZE NOTED)
- RCWM PROPOSED RECLAIMED WATER LINE (SIZE NOTED)
- S PROPOSED GRAVITY SEWER LINE (SIZE NOTED)
- W PROPOSED WATER LINE (SIZE NOTED)
- FPL PROPOSED FPL ELECTRIC LINE
- PROPOSED GATE VALVE AND BOX
- PROPOSED REDUCER
- FIRE HYDRANT
- SAMPLE POINT
- EXWM EXISTING WATER LINE
- EXWM EXISTING GATE VALVE
- EXSD EXSD EXISTING PIPE AND INLET
- EXSS EXISTING SANITARY SEWER LINE

GRAPHIC SCALE

40 0 20 40 80 160

(IN FEET)
1 inch = 40 ft.

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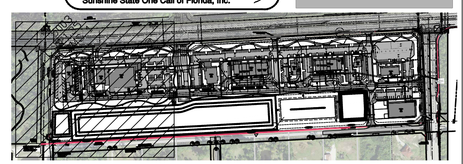
NOTE: CONTRACTOR TO VERIFY DEPTH AND LOCATION OF EXISTING UTILITIES PRIOR TO ANY CONSTRUCTION.



KEY MAP

REVISIONS	DATE	BY
REV PER PBCLD COMMENTS	04/XX/25	MVK
REV PER PBCWUD PRECON COMMENTS	03/11/25	MVK
REV PER ADD. GRADES	02/12/25	MVK
REV PER NEW SITE PLAN	01/14/25	MVK
FILE NAME 7714ENG.DWG		

CAULFIELD & WHEELER, INC.
CIVIL ENGINEERING • LAND PLANNING
LANDSCAPE DESIGN • SURVEYING
7900 GLADES ROAD - SUITE 100
BOCA RATON, FLORIDA 33434
PHONE (561)-392-1991 / FAX (561)-750-1452

SHOPS AT INDIAN TRAILS A.K.A. COCONUT CROSSING

PAVEMENT MARKING & SIGNAGE PLAN WEST

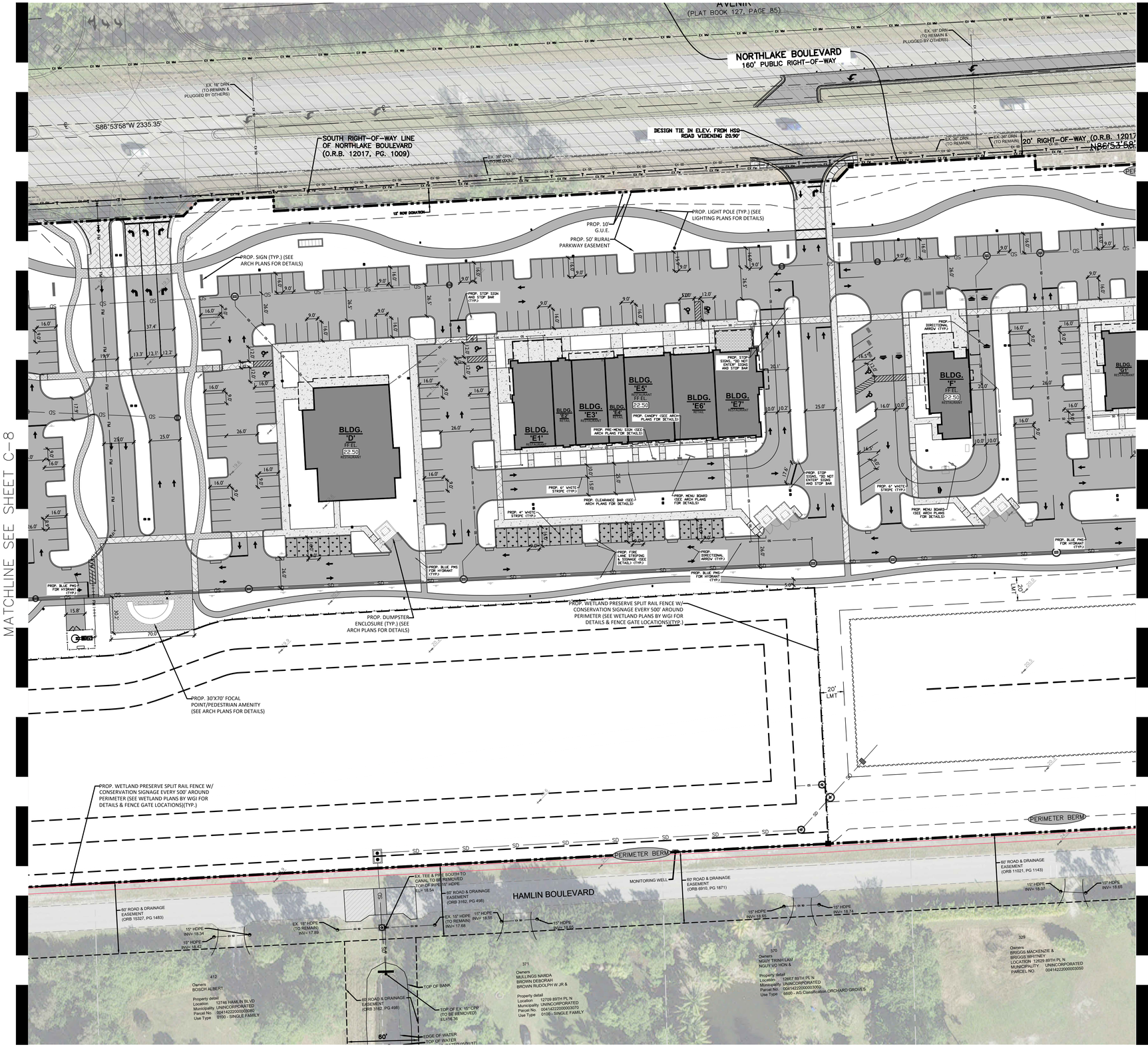
SWC NORTHLAKE BLVD & COCONUT BLVD
PALM BEACH GARDENS, FLORIDA

DATE	07/28/23
DRAWN BY	M.V.K.
F.B./ PG.	N/A
SCALE	1"=40'

MATTHEW V. KAHN
PROFESSIONAL ENGINEER
LICENSE NO. 82227
STATE OF FLORIDA
– FOR THE FIRM –

DATE

JOB # 7714-1
SHT.NO. C–8
OF 45 SHEETS



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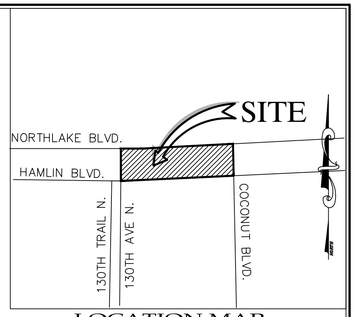

LOCATION MAP

SECTION 15, TOWNSHIP 42S, RANGE 41E N.T.S.

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- EXISTING GRADE
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- PROPOSED VEHICULAR USE PAVERS
- PROPOSED PEDESTRIAN USE PAVERS
- PROPOSED BUILDING
- DETECTABLE WARNING MAT
- MATCH EXISTING ELEVATION
- GRADING CROSS-SECTION
- GENERAL UTILITY EASEMENT

LEGEND

- SD — PROPOSED DRAINAGE PIPE
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GRAPHIC SCALE

40 0 20 40 80 160

(IN FEET)
1 inch = 40 ft.

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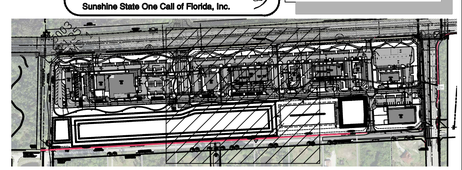


KEY MAP

REVISIONS	DATE	BY
FILE NAME 7714ENGDWG		
REV PER PBCID COMMENTS	04/XX/25	MVK
REV PER PBCWUD PRECON COMMENTS	03/11/25	MVK
REV PER ADD. GRADES	02/12/25	MVK
REV PER NEW SITE PLAN	01/14/25	MVK

CAULFIELD & WHEELER, INC.
CIVIL ENGINEERING - LAND PLANNING
LANDSCAPE DESIGN - SURVEYING
7900 GLADES ROAD - SUITE 100
BOCA RATON, FLORIDA 33434
PHONE (561) 392-1991 / FAX (561)-750-1452

SHOPS AT INDIAN TRAILS
A.K.A. COCONUT CROSSING
PAVEMENT MARKING & SIGNAGE PLAN CENTER

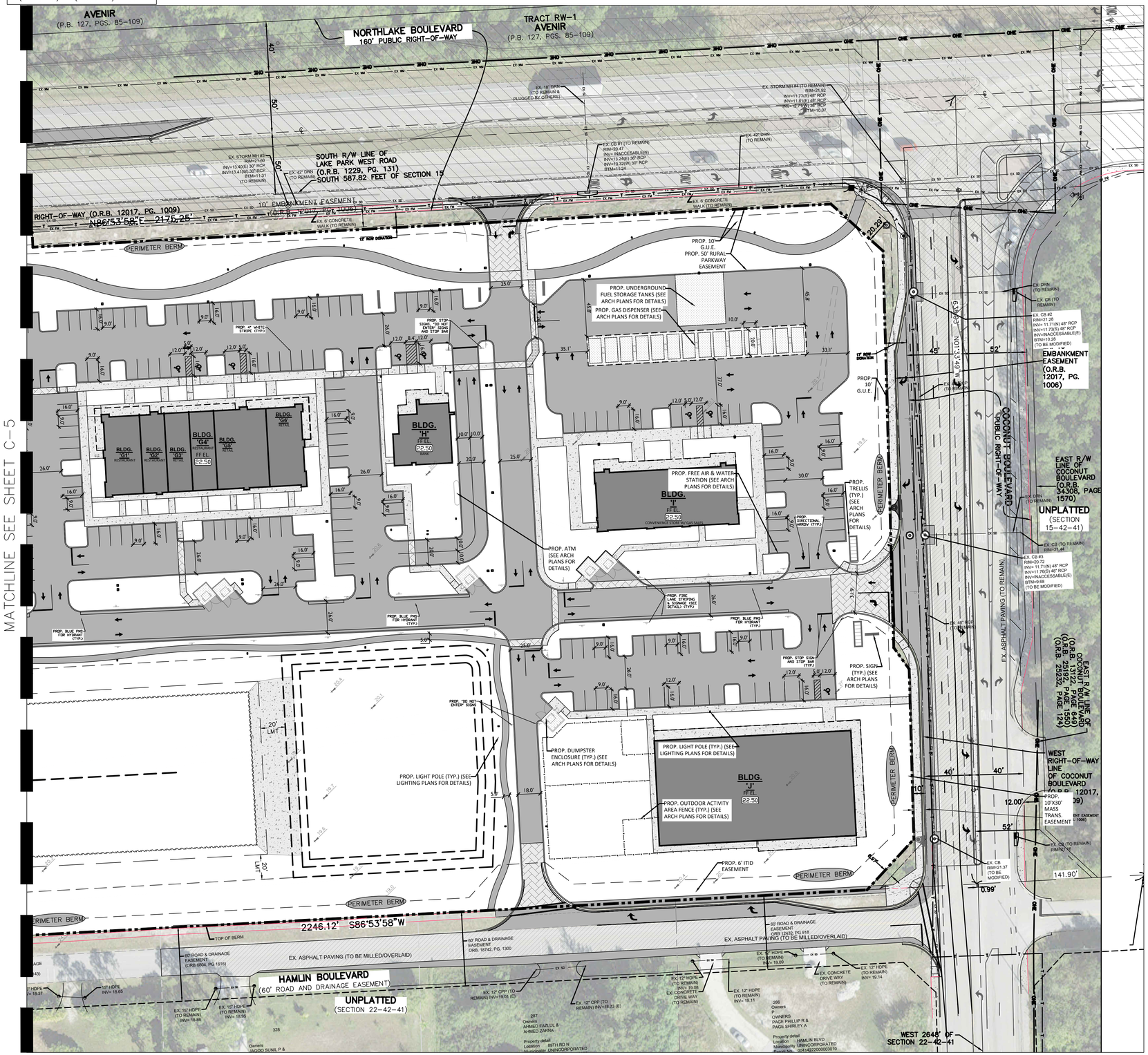
SWC NORTHLAKE BLVD. & COCONUT BLVD
PALM BEACH GARDENS, FLORIDA

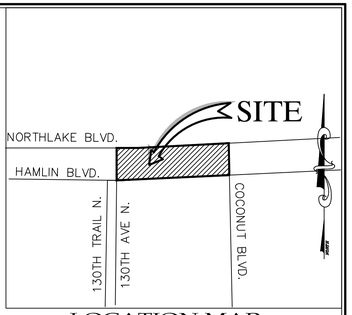
DATE	07/28/23
DRAWN BY	M.V.K.
F.B./ PG.	N/A
SCALE	1"=40'

MATTHEW V. KAHN
PROFESSIONAL ENGINEER
LICENSE NO. 82227
STATE OF FLORIDA
– FOR THE FIRM –
DATE

JOB # 7714-1
SHT.NO.
C – 9
OF 45 SHEETS

NOTE: ELEVATIONS ARE NAVD 88 – CONVERSION FACTOR (NAVD 88) = (NGVD 29) –1.62'





LOCATION MAP

SECTION 15, TOWNSHIP 42S, RANGE 41E N.T.S.

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- GUE GENERAL UTILITY EASEMENT

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GRAPHIC SCALE

40 0 20 40 80 160

(IN FEET)
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NORTH

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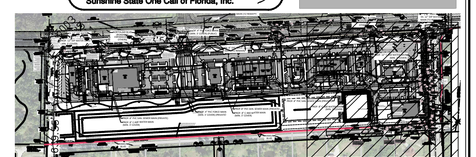
NOTE: CONTRACTOR TO VERIFY DEPTH AND LOCATION OF EXISTING UTILITIES PRIOR TO ANY CONSTRUCTION.



KEY MAP

REVISIONS	DATE	BY
FILE NAME 7714ENG.DWG		
REV PER PBCDLP COMMENTS	04/XX/25	MVK
REV PER PBCWUD PRECON COMMENTS	03/11/25	MVK
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PAVEMENT MARKING & SIGNAGE PLAN EAST
SWC NORTHLAKE BLVD. & COCONUT BLVD
PALM BEACH GARDENS, FLORIDA

DATE	07/28/23
DRAWN BY	M.V.K.
F.B./ PG.	N/A
SCALE	1"=40'

MATTHEW V. KAHN
PROFESSIONAL ENGINEER
LICENSE NO. 82227
STATE OF FLORIDA
– FOR THE FIRM –

DATE

JOB # 7714-1
SHT.NO. C–10
OF 45 SHEETS

GENERAL NOTES PAVING, GRADING & DRAINAGE

1. ALL DIMENSIONS SHOWN ON THESE DRAWINGS ARE SCALED DISTANCES. THE CONTRACTOR SHALL CONFIRM ALL MEASUREMENTS IN THE FIELD AND NOTIFY THE ENGINEER IN WRITING OF ANY DISCREPANCY PRIOR TO PERFORMING THE WORK. ALL QUANTITIES SHALL BE PAID ON THE BASIS OF FIELD MEASUREMENTS OF COMPLETED WORK.
2. REINFORCED CONCRETE PIPE (R.C.P.) SHALL BE IN ACCORDANCE WITH F.D.O.T. STANDARDS SPECIFICATIONS SEC. 941. CORRUGATED ALUMINUM PIPE (C.A.P.) SHALL BE IN ACCORDANCE WITH F.D.O.T. STANDARDS SPECIFICATIONS SEC. 945.
3. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO MAKE SUCH EXAMINATION OF THE SITE OF THE WORK, AND OF ANY MATERIAL SOURCES INDICATED IN THE PLANS, AS MAY BE NECESSARY TO INFORM HIMSELF OF THE CONDITIONS UNDER WHICH WORK IS TO BE PERFORMED.
4. PROPOSED GRADES SHOWN IN PAVED AREAS REFER TO FINISH PAVEMENT GRADES.
5. PAVEMENT MARKING AND GEOMETRICS SHALL BE IN ACCORDANCE WITH THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS AND PALM BEACH COUNTY TYPICAL NO. T–P–17.
6. ALL LOTS, ROADWAYS AND BORROW AREAS SHALL BE STRIPPED OF ALL DELETERIOUS (UNSUITABLE) MATERIALS AND MATERIALS SHALL BE DISPOSED WITHIN THE SITE.
7. ALL GRADING OF STREETS, INCLUDING THE REMOVAL OF ALL MATERIALS AND THE FINISHING OF ALL SHOULDERS, SUBGRADE PREPARATION, SWALES AND BACKSLOPES, IN ACCORDANCE WITH THE TYPICAL SECTIONS SHOWN HEREON SHALL BE INCLUDED IN THE BID PRICE FOR PAVING.
8. ANY EXISTING ROADWAY AND/OR UTILITY THAT IS DAMAGED BY THE CONTRACTOR SHALL BE CORRECTED AT THE CONTRACTOR'S EXPENSE TO THE SATISFACTION OF THE ENGINEER, AND UTILITY.
9. THE FULL DEPTH OF ALL EXISTING ORGANIC AND DELETERIOUS MATERIALS WITHIN THE RIGHT –OF– WAY AND UTILITIES AND DRAINAGE EASEMENT SHALL BE COMPLETE REMOVED. NO MATERIALS OF F.D.O.T. CLASS A–5, A–7, OR A–8 SHALL BE ALLOWED.
10. ANY MUCK POCKETS OR GUMBO ENCOUNTERED SHALL BE REMOVED WITHIN THE ROADWAY TO 1.0' BELOW SUBGRADE AND TO OUTSIDE EDGE OF BOTH SHOULDERS. THE MUCK AND GUMBO SHOULD BE REMOVED IN THE AREA OF AND WITHIN 10 FEET OF PROPOSED PAVEMENT OR FOUNDATION AREAS.
11. ALL PAVING AND DRAINAGE WORK TO BE CONSTRUCTED IN FULL ACCORDANCE WITH PALM BEACH COUNTY STANDARDS AND SPECIFICATIONS.
12. THE SEQUENCE OF CONSTRUCTION SHALL BE SUCH THAT ALL UNDERGROUND INSTALLATIONS OF EVERY KIND THAT WILL BE BENEATH THE PAVEMENT CURRENTLY TO BE CONSTRUCTED SHALL BE INSTALLED PRIOR TO THE COMPACTION OF SUBGRADE.
13. CONTRACTOR SHALL SUBMIT SHOP DRAWINGS TO ENGINEER AND COUNTY ON ALL PIPE, PIPE BANDS, DRAINAGE STRUCTURES, GRATES, FRAMES AND COVERS.
14. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE THE LOCATION OF EXISTING UTILITIES WHETHER SHOWN OR NOT SHOWN ON THESE DRAWINGS AND SHALL VERIFY ALL ELEVATIONS BEFORE STARTING CONSTRUCTION. ALL EXISTING UTILITIES DAMAGED BY THE CONTRACTOR SHALL BE RESTORED TO EXISTING OR BETTER CONDITIONS BY CONTRACTOR AT NO EXPENSE TO OWNER.
15. WHERE CONNECTIONS TO AN EXISTING DRAINAGE SYSTEM ARE PROPOSED, SAID EXISTING DRAINAGE STRUCTURES AND LINES SHALL BE PURGED OF ALL SILT AND DEBRIS PRIOR TO SAID CONNECTION, AND WHERE EXISTING DRAINAGE SYSTEM INCLUDES DITCHES, SAID DITCHES SHALL BE CLEARED AND REWORKED, AS NECESSARY, TO RESTORE THEM TO THEIR APPROVED DESIGN SECTION.
16. ALL PIPE JOINTS ARE TO BE INSPECTED BY A REPRESENTATIVE OF THE ENGINEER PRIOR TO BACKFILLING. ALL INSPECTIONS SHOULD BE ARRANGED NO LESS THAN 48 HOURS IN ADVANCE.
17. ALL CATCH BASIN GRATES MUST HAVE LOCKING CHAINS IN ACCORDANCE WITH FDOT INDEX 201.

CLEARING AND GRUBBING:

18. WORK SHALL CONSIST OF THE COMPLETE REMOVAL AND DISPOSAL OF ALL BUILDINGS, TIMBER, BRUSH, STUMPS, ROOTS, RUBBISH, AND DEBRIS AND ALL OTHER OBSTRUCTIONS RESTING ON OR PROTRUDING THROUGH THE SURFACE OF THE EXISTING GROUND AND THE SURFACE OF EXCAVATED AREAS, AND OF ALL OTHER STRUCTURES AND OBSTRUCTIONS NECESSARY TO BE REMOVED, INCLUDING SEPTIC TANKS, BUILDING FOUNDATIONS, AND PIPES.
19. ROOTS AND OTHER DEBRIS SHALL BE REMOVED TO A DEPTH OF AT LEAST ONE FOOT BELOW THE GROUND SURFACE. ALL STUMPS WITHIN THE CONSTRUCTION AREA SHALL BE COMPLETELY REMOVED AND DISPOSED OF BY THE CONTRACTOR.
20. EXISTING TREES TO REMAIN WHERE SO DIRECTED BY THE ENGINEER, SHALL BE TRIMMED, PROTECTED AND LEFT STANDING.
21. PROPERTY OBSTRUCTIONS WHICH ARE TO REMAIN IN PLACE, SUCH AS BUILDINGS, SEWERS, DRAINS, WATER OR GAS PIPES, CONDUITS, POLES, WALLS, POSTS, BRIDGES, ETC. ARE TO BE CAREFULLY PROTECTED FROM INJURY AND ARE NOT TO BE DISPLACED.
22. CLEARING AND GRUBBING MATERIALS SHALL BE DISPOSED OF BY THE CONTRACTOR IN LOCATIONS AND BY METHODS APPROVED BY THE ENGINEER.

SUB–GRADE:

23. UTILIZATION OF MATERIAL IN SUBGRADE CONSTRUCTION SHALL BE IN ACCORDANCE WITH PLAN DETAILS OR AS DIRECTED BY THE ENGINEER.
24. A PROCTOR TEST SHALL BE PERFORMED ON THE PROPOSED SUBGRADE MATERIAL TO DETERMINE THE OPTIMUM MOISTURE CONTENT AND MAXIMUM DENSITY OF THE MATERIAL. IN–PLACE DENSITY TESTS OF THE FINISH SUBGRADE SHALL BE PERFORMED AT A FREQUENCY OF AT LEAST ONE TEST FOR EVERY 7,000 SQ.FT. OF PORPOSED PAVEMENT AREA TO DETERMINE COMPLIANCE WITH THE DESIGN SPECIFICATIONS OF 100% OF MAX. DENSITY PER AASHTO T–99 TESTING METHODS.
25. STABILIZED SUBGRADE SHALL HAVE A MINIMUM LIMEROCK BEARING RATIO (LBR) OF 40. THE COMPACTED SUBGRADE SHALL CONFORM TO THE LINES, GRADES, AND CROSS–SECTIONS SHOWN ON THE PLANS. ALL ROOTS, STUMPS, OR OBJECTIONABLE MATERIAL PRESENT ON, UNDER, OR PROTRUDING THROUGH THE SURFACE SHALL BE COMPLETELY REMOVED FROM THE SUBGRADE. THE FINISHED SURFACE OF THE SUBGRADE SHALL BE STRING–LINED PRIOR TO PLACEMENT OF ROCK BASE TO VERIFY THAT THE SUBGRADE HAS BEEN CONSTRUCTED TO THE PROPER LINES, CROSS–SECTIONS, AND ELEVATIONS WITHIN AN ALLOWABLE TOLERANCE OF 1/2" OF THE PROPOSED FINISH SUBGRADE ELEVATIONS.

BASE:

26. LIMEROCK COMPOSITION – THE FOLLOWING TESTS ARE REQUIRED ON THE LIMEROCK MATERIAL: A. CHEMICAL COMPOSITION TEST TO DETERMINE THAT MATERIAL HAS A MINIMUM PERCENT CARBONATES OF 60%. B. LIMEROCK BEARING RATIO TEST TO DETERMINE THAT MATERIAL CAN ACHIEVE AN LBR OF 100. C. SIEVE ANALYSIS TO INSURE THAT AT LEAST 97% (BY WEIGHT) OF THE MATERIAL SHALL PASS A 3–1/2" SIEVE AND MATERIAL SHALL BE GRADED UNIFORMLY DOWN TO DUST. THE FINE MATERIAL SHALL CONSIST ENTIRELY OF DUST OF FRACTURE. ALL CRUSHING OR BREAKING–UP WHICH MIGHT BE NECESSARY IN ORDER TO MEET SUCH SIZE REQUIREMENTS SHALL BE DONE BEFORE THE MATERIAL IS PLACED ON THE ROAD.
27. A PROCTOR TEST SHALL BE PERFORMED ON THE PROPOSED LIMEROCK MATERIAL TO DETERMINE THE MAXIMUM DENSITY OF THE MATERIAL. IN–PLACE DENSITY TESTS SHALL BE TAKEN AT A FREQUENCY OF AT LEAST ONE TEST FOR EVERY 7,000 SQ.FT. OF PROPOSED PAVEMENT TO DETERMINE COMPLIANCE WITH THE DESIGN SPECIFICATIONS OF 98% OF MAX. DENSITY PER AASHTO T–180 TESTING METHODS.
28. THE COMPACTED BASE SHALL CONFORM TO THE LINES, GRADES, AND CROSS–SECTION SHOWN ON THE PLANS. THE FINISH BASE SURFACE SHALL BE STRINGLINED OR CHECKED WITH A TEMPLATE TO VERIFY CONFORMANCE WITH THE PLAN GRADES WITHIN AN ALLOWABLE TOLERANCE OF 1/4" OF THE PROPOSED BASE ELEVATIONS. PRIME COAT SHALL BE APPLIED AT A RATE OF 0.25 GALLONS PER SQUARE YARD.

ASPHALTIC CONCRETE SURFACE COURSE:

29. TACK COAT A. PRIOR TO INSTALLATION OF THE OVERLAY, THE SURFACE OF THE EXISTING ASPHALT SHALL BE BROOMED TO REMOVE ALL LOOSE MATERIAL WHICH MIGHT INTERFERE WITH THE ADHESION OF THE EXISTING ASPHALT AND OVERLAY. B. A TACK COAT SHALL BE APPLIED TO THE TOP OF THE CLEAN ASPHALT SURFACE AT A RATE OF 0.10 GALLONS/SQ.FT. IN THE PRESENCE OF THE ENGINEER'S REPRESENTATIVE.
30. PRIME COAT SHALL BE APPLIED AT A RATE OF 0.25 GALLONS PER SQUARE YARD. PRIME AND TACK COAT FOR BASE SHALL CONFORM TO THE REQUIREMENTS AND SPECIFICATIONS OF SECTION 300–1 THROUGH 300–7 OF F.D.O.T. STANDARDS SPECIFICATIONS.
31. ASPHALTIC CONCRETE SHALL CONFORM TO FLORIDA D.O.T. REQUIREMENTS OF TYPE S–1 AND S–3. CERTIFICATIONS OF THE ASPHALT MIX SHALL BE SUBMITTED BY THE ASPHALT PLANT TO THE ENGINEER FOR APPROVAL PRIOR TO CONSTRUCTION.
32. THE TEMPERATURE OF THE ASPHALT SHALL BE AT LEAST 230 DEGREES F. DURING THE LAYING OPERATION.
33. THE THICKNESS OF THE FINISHED SURFACE COURSE SHALL BE CHECKED AT VARIOUS INTERVALS TO INSURE THE CONSTRUCTED SURFACE COURSE IS WITHIN 1/8" OF THE DESIGN THICKNESS (NO NEGATIVE TOLERANCE WILL BE ACCEPTABLE).
34. THE FINISHED SURFACE OF THE ASPHALT SHALL BE CHECKED WITH A STRAIGHT EDGE TO INSURE THAT THE LINE, GRADE, AND CROSS–SECTION OF THE FINISHED PAVEMENT SECTION IS IN CONFORMANCE WITH THE DESIGN PLANS. THE FINISHED SURFACE SHALL BE OF UNIFORM TEXTURE AND COMPACTION. THE SURFACE SHALL HAVE NO PULLED, TORN, OR LOOSENED PORTIONS AND SHALL BE FREE OF SEGREGATION, SAND, STREAKS, SAND SPOTS, OR RIPPLES. ALL AREAS OF THE SURFACE WHICH DOES NOT MEET THE FOREGOING REQUIREMENTS SHALL BE CORRECTED TO THE ENGINEER'S SATISFACTION.
35. ALL REPAIRS TO EXISTING PAVEMENT SHALL RECEIVE SAWCUT EDGE PRIOR TO RELAYING ASPHALT. UNDER PAVEMENT UTILITY PIPING OR WIRING LESS THAN FOUR (4) INCHES IN DIAMETER REQUIRES A SCHEDULE 40 PVC CASING PIPE WITH SAND BACKFILLS.
36. ALL PERMANENT CONTROL POINTS AND/OR REFERENCE MARKERS SHOWN ON PLAT SHALL BE RAISED TO FINAL GRADE IF LOCATED IN PAVEMENT OR CONCRETE. THESE POINTS AND REFERENCE MARKERS SHALL BE LOCATED AND NOTED ON THE PLAT.

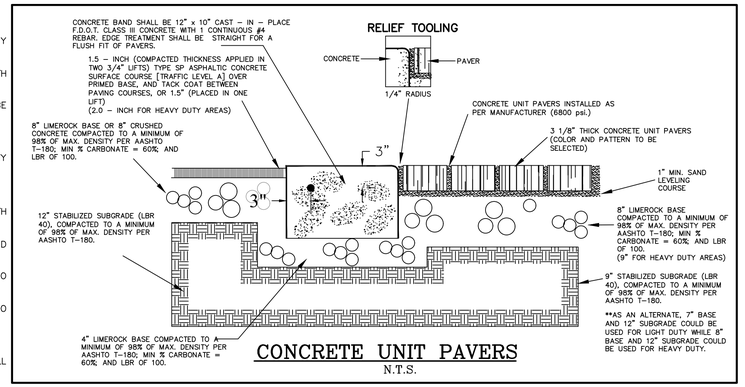
NOTIFICATION, TESTING

37. NOTIFICATION – THE CONTRACTOR SHALL NOTIFY THE ENGINEER, THE COUNTY AND UTILITIES 48 HOURS PRIOR TO SCHEDULING FIELD OBSERVATIONS AND SHALL SUPPLY ALL EQUIPMENT NECESSARY TO TEST THE COMPLETED WORK. CALL U.N.C.L.E. PRIOR TO ANY EXCAVATION.
38. ALL DRAINAGE SYSTEMS SHALL BE PUMPED DOWN TO BELOW 1/3 OF THE DIAMETER OF THE PIPE (FROM THE INVERT) AND LAMPED AS A REQUIREMENT OF THE FINAL DRAINAGE INSPECTION.
39. GRATE AND RIM ELEVATION ARE BASED ON PROPOSED FINISHED GRADE. ADJUSTMENTS MAY BE NECESSARY DUE TO FIELD CONDITIONS. ADJUSTMENTS ARE TO BE MADE BY THE CONTRACTOR WHEN THE BASE COURSE IS IN PLACE OR SITE GRADING IS COMPLETE. COST OF ADJUSTING RIMS AND GRATES IS TO BE INCLUDED IN BASE BID.

SODDING:

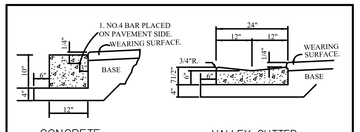
40. WORK CONSISTS OF THE ESTABLISHING OF A STAND OF GRASS WITHIN THE AREAS CALLED FOR BY THE FURNISHING AND PLACING OF GRASS SOD AND FERTILIZING, WATERING, AND MAINTAINING SODDED AREAS SUCH AS TO ASSURE A HEALTHY STAND OF GRASS.
41. THE AREA OVER WHICH THE SOD IS TO BE PLACED SHALL BE SCARIFIED OR LOOSENED TO SUITABLE DEPTH. THE SOD SHALL BE PLACED ON THE PREPARED SURFACE WITH EDGES IN CLOSE CONTACT AND SHALL BE FIRMLY AND SMOOTHLY EMBEDDED BY LIGHT TAMPING WITH APPROPRIATE TOOLS. ON AREAS WHERE THE SOD MAY SLIDE DUE TO HEIGHT AND SLOPE, THE ENGINEER MAY DIRECT THAT THE SOD BE PEGGED WITH PEGS DRIVEN THROUGH THE SOD BLOCKS INTO FIRM EARTH AT SUITABLE INTERVALS.

NOTE: ELEVATIONS ARE NAVD 88 – CONVERSION FACTOR (NAVD 88) = (NGVD 29) –1.62'



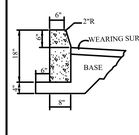
CONCRETE UNIT PAVERS

N.T.S.

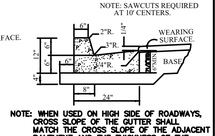


CONCRETE HEADER CURB.
NO SCALE.

VALLEY GUTTER
NO SCALE.

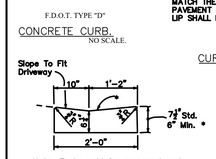


F.D.O.T. TYPE "D"
CONCRETE CURB.
NO SCALE.



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".

F.D.O.T. TYPE "F"
CONCRETE CURB AND GUTTER.
NO SCALE.

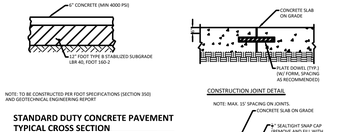


Note: To be paid for as parent curb.
DROP CURB
NO SCALE.
F.D.O.T. DROP CURB

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

CURB AND GUTTER

N.T.S.



STANDARD DUTY CONCRETE PAVEMENT TYPICAL CROSS SECTION
NTS

HEAVY DUTY CONCRETE PAVEMENT TYPICAL CROSS SECTION
NTS

CONTROL JOINT DETAIL
NTS

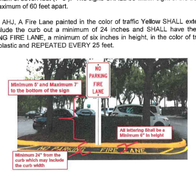
CONSTRUCTION JOINT DETAIL
NOTE: MAX. 15' SPACING ON JOINTS.

ISOLATION JOINT DETAIL
W/DOWELS
CONCRETE JOINT DETAILS
NTS'

FIRE LANE REQUIREMENTS

Per the current edition of the Florida Fire Prevention Code "FFPC", the AHJ may require approved signs and roadway surface markings of all Fire Apparatus Access Roads, also known as "Fire Lanes."

- Per the AHJ, Fire Lanes SHALL be marked with signs that are readily visible to the street with the wording "NO PARKING FIRE LANE"; such signs SHALL be 12 inches by 18 inches with a White background and RED letters and SHALL be on a fixed post at a minimum height to the bottom of the sign from the roadway shall be five feet (5'-0") and a maximum of seven feet (7'-0"). The signs SHALL be within sight of the traffic flow and be a maximum of 60 feet apart.
- Per the AHJ, A Fire Lane painted in the color of traffic Yellow SHALL extend from the and include the curb out a minimum of 24 inches and SHALL have the words "NO PARKING FIRE LANE, a minimum of six inches in height, in the color of traffic Yellow, thermoplastic and REPEATED EVERY 25 feet.



- Per the AHJ, any parking space that is required to become a Fire Lane SHALL have diagonal stripes the color of traffic Yellow at a minimum 4" in height, maximum spacing 36", and the words No Parking Fire Lane at a minimum 16" in height located at the front half of the space. The painted lines Shall be Thermoplastic.

For more information on Fire Safety click here CRRD

EXCELLENCE TODAY IMPROVING TOMORROW

PERMANENT MARKINGS
(TO FOLLOW PBC TRAFFIC T–P–24 OR LATEST EDITION)

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 thermoplastic meeting all State specifications.

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

Beads:
- Reflective beads are to be installed per FDOT specifications on all markings.

Layout:
- Layout shall be made using marking chalk.
- It is recommended that marking layout be inspected by the City Engineer 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 Palm Beach County Engineer.

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

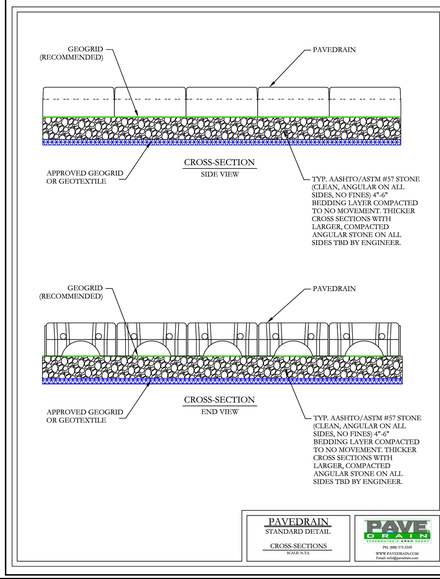
Other Pavement Surfaces:
- Intermediate pavement surfaces may be marked with FDOT approved materials, designs, and specifications.

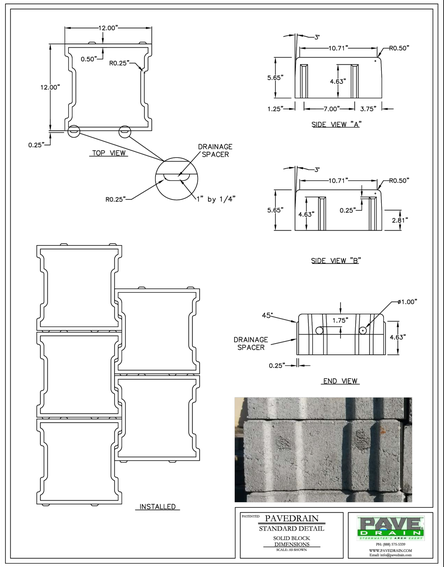
ALL PAVEMENT MARKINGS

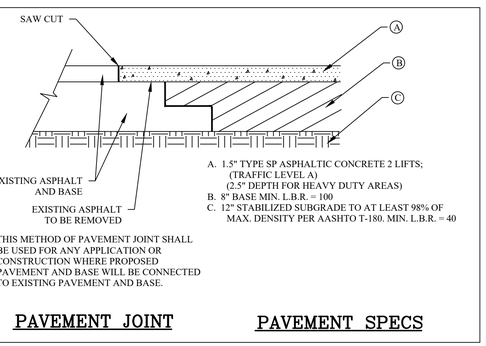
All paved surfaces shall be properly marked prior to the hours of darkness.

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 FDOT specifications and shall be approved by the Engineer prior to use.
- R.P.M.'s shall be installed using alkyd thermoplastic on asphalt and epoxy on concrete.



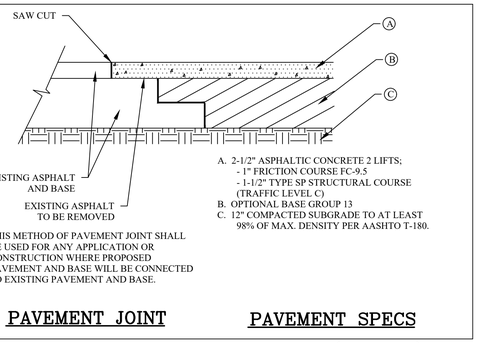




PAVEMENT JOINT **PAVEMENT SPECS**

ROAD PAVEMENT SPECIFICATIONS (ON–SITE)

N.T.S.



PAVEMENT JOINT **PAVEMENT SPECS**

ROAD PAVEMENT SPECIFICATIONS (OFFSITE)

N.T.S.

NOTES:

–ELEVATIONS SHOWN ARE IN NAVD 88 DATUM

–ALL DRAINAGE SYSTEMS SHALL BE PUMPED COMPLETELY DRY AND LAMPED AS A REQUIREMENT OF THE FINAL DRAINAGE INSPECTIONS.

NOTE: ELEVATIONS ARE NAVD 88 – CONVERSION FACTOR (NAVD 88) = (NGVD 29) –1.62'

REV PER PBCWDD PRECON COMMENTS	03/11/25	M.V.K.
REV PER ADD. GRADES	02/12/25	M.V.K.
REV PER NEW SITE PLAN	01/14/25	M.V.K.
REVISIONS	DATE	BY

FILE NAME: 7714DETAILS-P0D

CAULFIELD & WHEELER, INC.
CIVIL ENGINEERING – LAND PLANNING
LANDSCAPE DESIGN – SURVEYING
8000 GLADES ROAD – SUITE 100
BOCA RATON, FLORIDA 33434
PHONE (561) 392-1991 / FAX (561) 750-1452

SHOPS AT INDIAN TRAILS
A.K.A. COCONUT CROSSING
PAVING, GRADING, & DRAINAGE DETAILS
SWC NORTHLAKE BLVD. & COCONUT BLVD
PALM BEACH COUNTY, FLORIDA

DATE 07/28/23
DRAWN BY M.V.K.
F.B./ PG. N/A
SCALE AS NOTED

MATTHEW V. KAHN
PROFESSIONAL ENGINEER
LICENSE NO. 82227
STATE OF FLORIDA
– FOR THE FIRM –
DATE

JOB # 7714-1
SHT.NO.
C-12
OF 45 SHEETS

Drawing: P:\7771-15-42-41\drawings\vero\details\7714DETAILS-P0D.dwg\C-12 - P0D Details

SOLID CONCRETE INTERLOCKING PAVING STONE SPECIFICATIONS

1. DESCRIPTION:

1.1 GENERAL:

A. Scope of Work:
1. Furnish and place sand bedding course.
2. Furnish and install concrete interlocking paving stones in the quality, shape, thickness and a color as specified.
3. Furnish and install all accessory items as required by the contract.

B. Related Work:
1. Furnish and install subgrade per Table 100.6 of the Palm Beach County Land Development Design Standards Manual.
2. Furnish and install base per Table 100.6 of the Palm Beach County Land Development Design Standards Manual.

C. Product Handling:
1. Paving stones shall be delivered and unloaded at jobsite in such a manner that no damage occurs during shipping, handling and storage.

D. References:
1. Solid concrete interlocking paving stones shall meet or exceed the requirements in ASTM C–936 Standard Specifications for Solid Concrete Interlocking Paving Units.

II. MATERIALS:

2.1 SOLID CONCRETE INTERLOCKING PAVING STONES

A. Thickness, Color and Pattern:
1. Paving stone thickness shall be between 3–1/8" min – 4" max..
2. All paving stones shall be colored through the full depth of paver and not just the surface.
3. A multi–colored paving stone pattern shall be used.

B. Cementitious Materials:
1. Portland cements shall conform to ASTM C–150.

C. Aggregates:
1. Aggregates shall conform to ASTM C–33 for normal weight concrete except that grading requirements shall not necessarily apply.

D. Other Materials:
1. Coloring pigments, air entraining agents, integral water repellents, finely ground silica, etc., shall conform to ASTM standard where applicable or shall be previously established as suitable for use in concrete.

E. Compressive Strength:
1. At the time of delivery to the work site, the average compressive strength shall not be less than 8,000 psi with no individual unit strength less than 7,200 psi, with testing procedures in accordance with ASTM C–140.

F. Absorption:
1. The average absorption shall not be greater than 5% with no individual unit absorption greater than 7%.

G. Proven Field Performance:
1. Satisfying field performance is indicated when paving stones similar in composition, and made with the same manufacturing equipment as those supplied to the purchaser, do not exhibit deterioration after one year.

H. Visual Inspection:
1. All paving stones shall be sound and free of defects that would interfere with the proper placement of the paving stone or impair the strength or permanence of the construction.
2. Minor cracks incidental to the usual methods of manufacture, or chipping resulting from customary methods of handling in shipment and delivery, shall not be deemed grounds for rejection.

I. Sampling and Testing:
1. The purchaser shall be accorded proper facilities to inspect and sample the paving stones at the place of manufacture from lots ready for delivery.
2. Paving stones will be sampled and tested in accordance with ASTM C–140.

J. Rejection:
1. If the shipment fails to conform to the specified requirements, the manufacturer may sort it, and new test paving stones shall be selected at random by the purchaser from the retained lot and tested at the expense of the manufacturer. If the second set of test paving stones fail to conform to the specified requirements, the entire lot shall be rejected.

2.2 BEDDING COURSE:
A. The bedding course shall be a well graded, clean, washed sand with 100% passing a 3/8" sieve size and a maximum of 3% passing a No. 200 sieve size. The use of mason sand shall not be approved.
B. The bedding course shall be the responsibility of the paving stone installer.

2.3 EDGE RESTRAINT:
A. All edges of the installed paving stones shall be restrained. The type of edge restraint, shall be approved at locations and to details noted on plans.

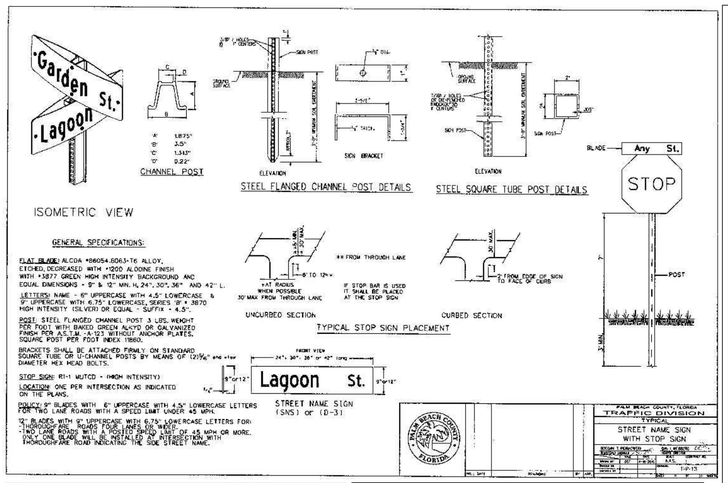
III. CONSTRUCTION METHODS:

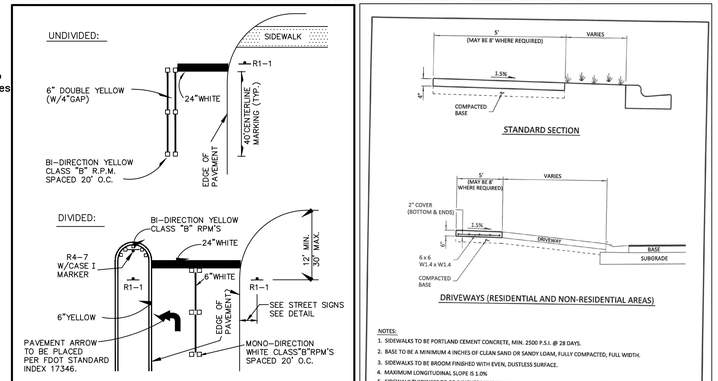
3.1 PREPARATION OF THE BASE COURSE:
A. A suitable base shall be prepared as specified in Section B.2. of this specification.
B. The base course shall be shaped to grade and cross section with allowable tolerance of ¼".

3.2 CONSTRUCTION OF THE BEDDING COURSE:
A. The finished base course shall be approved before the placement of the bedding course.
B. The sand bedding course shall be spread evenly over the area to receive the paving stones and the screeded level to produce a 1" thickness when the paving stones have been placed and vibrated.
C. The final elevation of paving stones should be nominally ¼" to 3/8" higher than the adjacent curb, gutter, etc., to allow for free drainage from chamfers on paving stone edges.
D. The bedding course shall not be disturbed, once screeded and leveled to the desired elevation.

3.3 INSTALLATION OF PAVING STONES:
A. The paving stones shall be placed as shown on the drawings.
B. The paving stones shall be placed in such a manner that the desired pattern is maintained and that no intentional space is left between the stones for maximum interlock.
C. String lines should be used to hold all patterns true.
D. The gaps at the edge of the paving stone surface shall be filled with standard edge stone or with stones cut to fit. Cutting of concrete paving stone shall be accomplished to leave a clean edge to the traffic surface using a double–headed breaker or a masonry saw. Wherever possible, no cut should result with a paving stone less than 1/3 of original dimension.
E. Paving stones shall be vibrated into the bedding course using a plat vibrator capable of 3000 to 5000 pounds compaction force with the surface clean and the joints open.
F. After vibration, clean, sharp sand containing at least 30% of 1/8" particles shall be spread over the paving stone surface, allowed to dry and vibrated into the joints with additional plate vibrator passes and brushing as to completely fill the joints.
G. Surplus material shall then be swept from the surface or left on the surface during construction to insure complete filling of joints during initial use.
H. Upon completion of work covered in this section, the Contractor shall clean up all work areas by removing all debris, surplus material and equipment from the site.

1. Paver brick shall conform with Palm Beach County Land Development Design Standards Manual with the following exceptions:
   A) Under II Material 2.1 # A.1, Paving stone thickness shall be 3 1/8" (min.) to 4" (max.)
   b) Under II Material 2.1 # A.3, The coloring shall be throughout the entire brick with the white and yellow conforming with F.D.O.T. Standard Specifications for Road and Bridge Construction (latest edition) section 710–4.7
2. Glass spheres to meet the requirements of sections 971–1 and 971–14 with retroflectivity to be not less than 300 minicandles.
3. When header curb is used to outline a crosswalk the curb shall be white concrete with glass beads in the white concrete.
4. The brick shall be pre–approved per project before installation by the Palm Beach County Traffic Engineering Division.





INTERSECTION TRAFFIC CONTROL STOP CONDITION

NOTES:
1. SIDEWALKS TO BE PORTLAND CEMENT CONCRETE, MIN. 2500 P.S.I. @ 28 DAYS.
2. BASE TO BE A MINIMUM 4 INCHES OF CLEAN SAND OR SANDY LOAM, FULLY COMPACTED, FULL WIDTH.
3. SIDEWALKS TO BE BROOM FINISHED WITH EVEN, DUSTLESS SURFACE.
4. MAXIMUM LONGITUDINAL SLOPE IS 5.0%
5. SIDEWALK THICKNESS TO BE 6 INCHES MINIMUM IN ALL AREAS SUBJECT TO VEHICULAR TRAFFIC.

FILEPATH: P:/DGN/ENG SER/LAND DEVELOPMENT STANDARDS/DWF FORMAT/400.1A

PALM BEACH COUNTY DEPARTMENT OF ENGINEERING & PUBLIC WORKS				PATHWAY: CONCRETE SIDEWALK	DRAWING NO.
DRAWN BY: K.L.	DATE: 05/23/90	REVISED BY: J.M.K.	DATE: 02/01/2018	APPROVED: COUNTY ENGINEER OR DESIGNEE	EFFECTIVE: 4/19/18	400.1

OPEN CUT DETAIL FOR THOROUGHFARE ROADS (PAVED AREAS)

FORM 3605.1

CONSTRUCTION PROCEDURES

THE BACKFILL FOR THE FIRST AND SECOND STAGES SHALL BE PLACED IN 6" LAYERS (COMPACTED THICKNESS) AND SHALL BE COMPACTED TO 100% OF MAXIMUM DENSITY AS DETERMINED BY AASHTO T-99.

STAGE 1:

THE CONTRACTOR SHALL PROVIDE ADEQUATE COMPACTED FILL BENEATH THE HAUNCHES OF THE PIPE, USING MECHANICAL TAMPS WHERE NECESSARY. THIS COMPACTION APPLIES TO THE MATERIAL PLACED BENEATH THE HAUNCHES OF THE PIPE AND ABOVE ANY BEDDING REQUIRED.

STAGE 2:

THE CONTRACTOR SHALL OBTAIN A WELL-COMPACTED BED AND FULL ALONG THE SIDES OF THE PIPE AND TO A POINT INDICATING THE TOP OF SUB-GRADE MATERIAL.

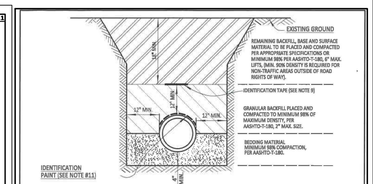
Surface Thickness (See note #12)
Temporary patch (See note #10)
Surface Replacement (See Note 5)
Surface Thickness (See note #12)
Base (See note #12)
Stab Width W + 4ft
Original Ground
Replacement Base (See note 2)
Backfill (See note 3,4)
Da Varies
Bedding (See note 3,5)
12" MIN.
W
W+2ft

REPLACEMENT OF FLEXIBLE PAVEMENT FOR PERMITTED PAVEMENT CUT

NOTES

1) BEDDING SHALL CONSIST OF IN-SITU GRANULAR MATERIAL OR WASHED AND GRADED LIMEROCK 3/8" - 7/8" SIZING WITH EQUAL OR GREATER STRUCTURAL ADEQUACY AS EXISTING. UNSUITABLE IN-SITU MATERIALS SUCH AS MUCK, DEBRIS AND LARGER ROCKS SHALL BE REMOVED.
2) REPLACED BASE MATERIAL OVER DITCH SHALL BE 16" LIMEROCK (LBR100) MINIMUM FOR THOROUGHFARE PLAN ROADS. ANY ALTERNATE BASE MATERIAL REQUESTED BY THE ENGINEER OF RECORD REQUIRES APPROVAL BY THE ROADWAY PRODUCTION DIVISION.
3) ASPHALT CONCRETE PAVEMENT JOINTS SHALL BE MECHANICALLY SAWED AND BUTT-JOINTED.
4) BASE MATERIAL (PER ROADWAY PRODUCTION DESIGN STANDARDS) SHALL BE PLACED IN TWO OR THREE LAYERS (MAX. 8" COMPACTED THICKNESS) AND EACH LAYER THOROUGHLY ROLLED OR TAMPED TO THE SPECIFIED DENSITY. (MINIMUM 98% AASHTO-T-180)
5) 1" FRICTION COURSE FC-9.5 OVER 1-1/2" TYPE SP STRUCTURAL COURSE (TRAFFIC LEVEL C) WITH TACK COAT AT 0.05 GAL/SY AND PG-70 PRIME COAT AT 0.10 GAL/SY FOR LIMEROCK BASE. FOLLOW THE LATEST FDOT SPECIFICATIONS FOR APPLICATION RATES OF PRIME AND TACK COATS. CONTRACTOR TO SUBMIT MATERIALS AND RATES TO ENGINEER FOR APPROVAL PRIOR TO BEGINNING WORK.
6) PIPE SHALL BE PLACED IN A DRY TRENCH.
7) ALL ROADWAY REPAIR WORK SHALL BE PERFORMED IN CONFORMANCY WITH APPLICABLE FDOT STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION AND COUNTY PHASE ELO-3600.
8) DENSITY TESTS SHALL BE TAKEN IN 1 FT LIFTS ABOVE THE PIPE AT INTERVALS OF 400 FT MAXIMUM (MINIMUM 1 SET) OR AS DIRECTED BY THE CONSTRUCTION COORDINATION DIVISION. RESULTS SHALL BE SUBMITTED TO CONSTRUCTION COORDINATION DIVISION AS PART OF THEIR FIELD REVIEW.
9) ENGINEER-OF-RECORD SHALL PROVIDE FULL-TIME INSPECTION DURING THE ENTIRETY OF THE OPEN-CUT OPERATION, BEGINNING WITH THE EXCAVATION AND CONTINUING THROUGH THE COMPLETION OF THE PAVING.
10) IF THE PAVEMENT IS NOT COMPLETELY RESTORED IMMEDIATELY FOLLOWING THE OPEN CUT, A SMOOTH TEMPORARY PATCH (MINIMUM 1.5" SP 12.5 STRUCT) UNDER EXISTING ASPHALTS SHALL BE INSTALLED. TEMPORARY MATCHING TYPE CONCRETE SHALL BE INSTALLED UNDER EXISTING CONCRETE. THE TEMPORARY PATCH SHALL BE MAINTAINED FOR A PERIOD NO LONGER THAN 45 DAYS. THE COUNTY RETAINS THE RIGHT TO USE POSTED SURETY TO COMPLETE ANY RESTORATION WORK THAT HAS NOT BEEN COMPLETED IN THE 45 DAY PERIOD. ALTERNATIVE TEMPORARY PATCH PROTECTION (STEEL PLATES OR OTHERS) MAY BE APPROVED BY THE CONSTRUCTION COORDINATION DIVISION.
11) FINAL RESTORATION (INCLUDES THE PATCHED/SURFACE REPLACEMENT AREA OVER THE TRENCH). THE ROAD SHALL BE MILLED/RESURFACED PER NOTE 5 ABOVE FOR A FULL LANE WIDTH OF THE TRAVEL LANES ENCROACHED BY THE TRENCH AREA, INCLUDING A TRANSITION AREA OF 50 FT ON EACH SIDE MEASURED FROM TOP OF TRENCH.
12) APPROVED MAGNETIC TAPE IS REQUIRED FOR ALL MAIN PRESSURE PIPES AND CONDUIT IN THE COUNTY'S RIGHT-OF-WAY. INSTALL TAPE 24" BELOW FINISHED GRADE.
13) CONTINUOUS 4" WIDE PAINT STRIPING IS REQUIRED FOR DI/PCCP WATER MAINS (BLUE), SANITARY MAINS (GREEN),OIP RECLAIMED WATER MAINS (PURPLE), GAS MAINS (YELLOW), OR AS REQUIRED BY THE APWA.

01/28/2016



NOTES:
1. BEDDING SHALL CONSIST OF IN-SITU GRANULAR MATERIAL OR WASHED AND GRADED LIMEROCK 3/8" - 7/8" SIZING WITH EQUAL OR GREATER STRUCTURAL ADEQUACY AS EXISTING. 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 SHALL BE TAKEN IN 1 FOOT LIFTS ABOVE THE PIPE AT INTERVALS OF 400' MAXIMUM, (MINIMUM 1 SET) OR AS DIRECTED BY THE CONSTRUCTION COORDINATION DIVISION. RESULTS SHALL BE SUBMITTED TO CONSTRUCTION COORDINATION DIVISION AS PART OF THEIR FIELD REVIEW.
6. THE PERMITTEE/DEVELOPER/CONTRACTOR SHALL BE RESPONSIBLE TO COMPLY WITH ALL TRENCH SAFETY LAWS AND REGULATIONS.
7. SEE SEPARATE DETAIL FOR PAVED AREAS OPEN CUT FOR THOROUGHFARE AND NON-THOROUGHFARE ROADS.
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 ALL MAIN PRESSURE PIPES AND CONDUIT IN THE COUNTY'S RIGHT-OF-WAY. INSTALL TAPE 24" BELOW FINISHED GRADE.
10. ROOT BARRIER IS REQUIRED FOR APPROVED PMT INSTALLATION CLOSER THAN 10 FEET FROM AN EXISTING TREE. SEE SEPARATE DETAIL FOR ROOT BARRIER.
11. CONTINUOUS 4" WIDE PAINT STRIPING IS REQUIRED FOR DI/PCCP WATER MAINS (BLUE), OIP SANITARY MAINS (GREEN),OIP RECLAIMED WATER MAINS (PURPLE), GAS MAINS (YELLOW), OR AS REQUIRED BY THE APWA.
12. PERMANENT ABOVE GROUND UTILITY MARKER SHALL BE INSTALLED IF REQUIRED.

FILEPATH: P:/DGN/ENG_SER/LAND DEVELOPMENT STANDARDS/S_1.DGN

PALM BEACH COUNTY DEPARTMENT OF ENGINEERING & PUBLIC WORKS				TYPICAL TRENCH DETAIL (NON-PAVED AREAS)	DRAWING NO.
DRAWN BY: K.L.	DATE: 05/23/90	REVISED BY: J.M.K.	DATE: 02/01/2018	APPROVED: COUNTY ENGINEER OR DESIGNEE	EFFECTIVE: 4/19/18	1

REVISIONS	DATE	BY
REV PER PBCWUD PRECON COMMENTS	03/11/25	MVK
REV PER ADD. GRADES	02/14/25	MVK
REV PER NEW SITE PLAN	01/14/25	MVK

FILE NAME: 7714DETAILS-P02

CAULFIELD & WHEELER, INC.
CIVIL ENGINEERING - LAND PLANNING
LANDSCAPE DESIGN - SURVEYING
7900 GLADES ROAD - SUITE 100
BOCA RATON, FLORIDA 33434
PHONE: (561) 392-1991 / FAX (561) 750-1452

NOTES:

–ELEVATIONS SHOWN ARE IN NAVD 88 DATUM

–ALL DRAINAGE SYSTEMS SHALL BE PUMPED COMPLETELY DRY AND LAMPED AS A REQUIREMENT OF THE FINAL DRAINAGE INSPECTIONS.

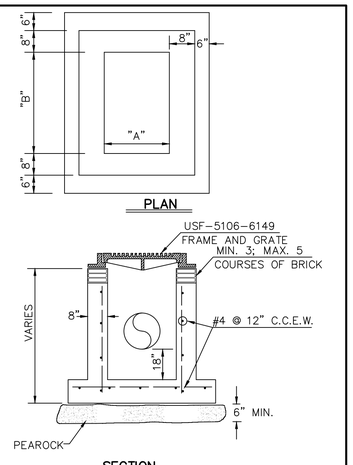
NOTE: ELEVATIONS ARE NAVD 88 – CONVERSION FACTOR (NAVD 88) = (NGVD 29) –1.62'

SHOPS AT INDIAN TRAILS A.K.A. COCONUT CROSSING
PAVING, GRADING, & DRAINAGE DETAILS
SWC NORTHLAKE BLVD. & COCONUT BLVD
PALM BEACH COUNTY, FLORIDA

DATE	07/28/23
DRAWN BY	M.V.K.
F.B./ PG.	N/A
SCALE	AS NOTED

MATTHEW V. KAHN
PROFESSIONAL ENGINEER
LICENSE NO. 82227
STATE OF FLORIDA
– FOR THE FIRM –
DATE

JOB # 7714-1
SHT.NO. C–13
OF 45 SHEETS



CATCH BASIN TYPE	"C"	"E"
DIM "A"	2'–0"	3'–0"
DIM "B"	3'–1"	4'–6"

PRECAST CATCH BASIN TYPE "C" & "E" n.t.s.

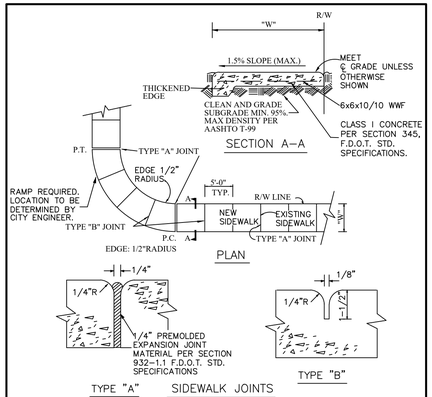
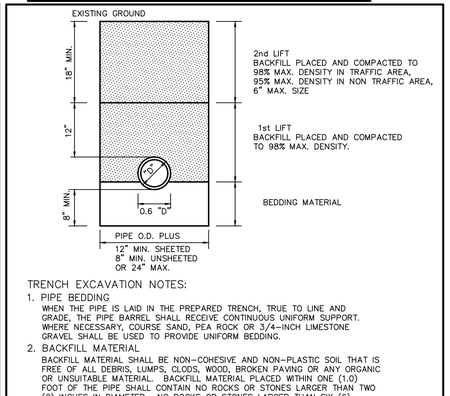


TABLE OF SIDEWALK THICKNESS – "T"	
RESIDENTIAL AREAS	4"
WITHIN 10' OF CROSS–STREETS, AT DRIVEWAYS & OTHER AREAS	6"
TABLE OF SIDEWALK WIDTHS – "W"	
SINGLE–FAMILY AREAS	6'
MULTI–FAMILY AREAS	6'
OTHER AREAS AS SPECIFIED BY THE ENGINEER.	

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.

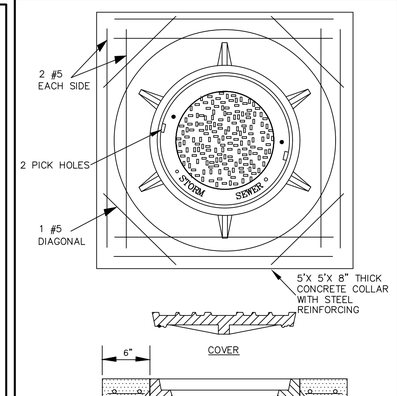
ONSITE SIDEWALK CONSTRUCTION



TRENCH EXCAVATION NOTES:

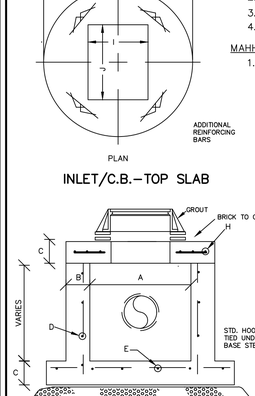
1. PIPE BEDDING
   WHEN THE PIPE IS LAID IN THE PREPARED TRENCH, TRUE TO LINE AND GRADE, THE PIPE BARREL SHALL RECEIVE CONTINUOUS UNIFORM SUPPORT. WHERE NECESSARY, COURSE SAND, PEA ROCK OR 3/4–INCH LIMESTONE GRAVEL SHALL BE USED TO PROVIDE UNIFORM BEDDING.
2. BACKFILL MATERIAL
   BACKFILL MATERIAL SHALL BE NON–COHESIVE AND NON–PLASTIC SOIL THAT IS FREE OF ALL DEBRIS, LUMPS, CLODS, WOOD, BROKEN PAVING OR ANY ORGANIC OR UNSUITABLE MATERIAL. BACKFILL MATERIAL PLACED WITHIN ONE (1.0) FOOT OF THE PIPE SHALL CONTAIN NO ROCKS OR STONES LARGER THAN TWO (2) INCHES IN DIAMETER. NO ROCKS OR STONES LARGER THAN SIX (6) INCHES IN DIAMETER WILL BE PERMITTED IN THE REMAINING BACKFILL UNLESS OTHERWISE SPECIFIED.
3. BACKFILL COMPACTION
   TRENCH BACKFILL SHALL BE COMPACTED TO NOT LESS THAN 98 PERCENT OF THE MAXIMUM DRY DENSITY DETERMINED BY AASHTO T–180. WHERE THE BACKFILL LIES WITHIN THE ROADWAY EMBANKMENT OR SUBGRADE, IT SHALL BE COMPACTED TO DENSITIES SPECIFIED FOR THESE AREAS.
4. DENSITY TESTING
   FIELD DENSITY TESTS SHALL BE PERFORMED IN EACH BACKFILL LIFT AND AT A FREQUENCY OF NOT LESS THAN ONE TEST PER 40 CUBIC YARDS OF BACKFILL PLACED, AND A MINIMUM OF ONE TEST LOCATION WITHIN 1.0' OF EACH INLET AND OR MANHOLE
5. WHERE REQUIRED, SHEETING AND SHORING SHALL BE IN ACCORDANCE WITH OSHA REGULATIONS.
6. MUCK OR OTHER SUITABLE MATERIAL BE COMPLETELY REMOVED.

TYPICAL TRENCH EXCAVATION n.t.s.



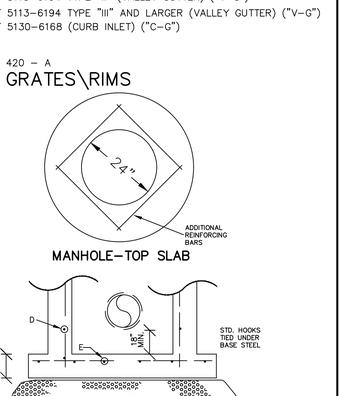
NOTES:
1. COLLAR IS REQUIRED ONLY WHEN MANHOLE IS OUT OF PAVEMENT.
2. FRAME AND COVER SHALL BE U.S. FOUNDRY 420 A (OR EQUAL).

STORM SEWER MANHOLE FRAME AND COVER n.t.s.



INLET OR CATCH BASIN (C.B.)
1. USF 4155–6210 (SOD/PAVEMENT)
2. USF 5113–6194 TYPE "II" (VALLEY GUTTER) ("V–G")
3. USF 5113–6194 TYPE "III" AND LARGER (VALLEY GUTTER) ("V–G")
4. USF 5130–6168 (CURB INLET) ("C–G")

MAHHOLE
1. USF 420 – A

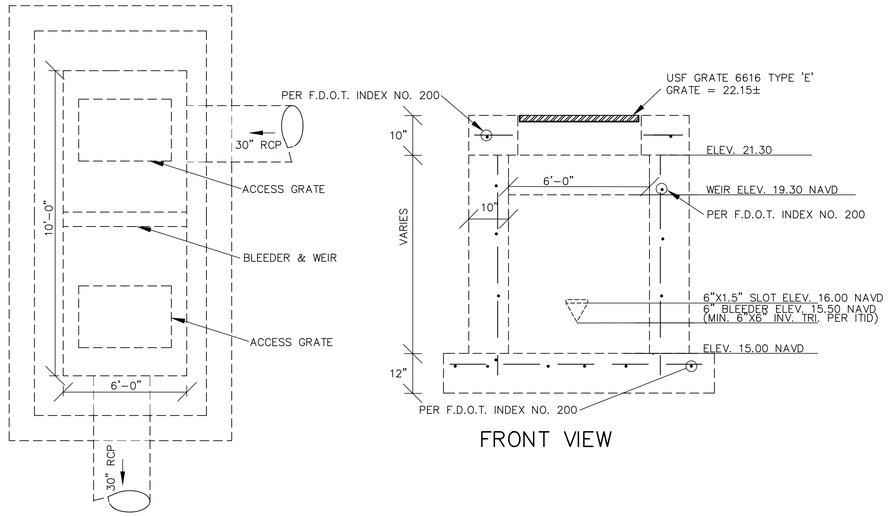


PRECAST INLET TYPE II–IV

PRECAST CATCH BASIN TYPE II–IV

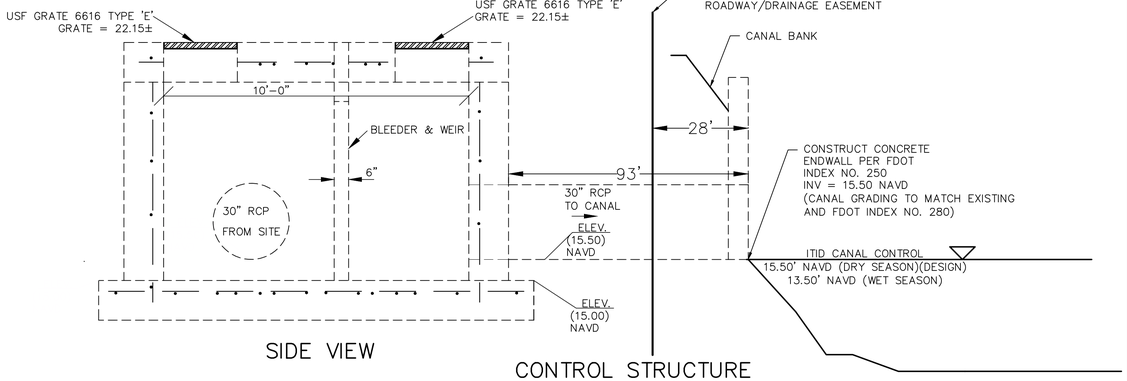
PIPE DIA.	TYPE	"A"	"B"	"C"	"D"	"E"	"F"	"G"	"H"	"I"	"J"
15"–24"	II	4'–0" Φ	8"	8"	#4 @ 12" C.C.E.W.	#4 @ 12" C.C.E.W.	6'–4"Φ	5'–4"Φ	#4 @ 6" C.C.E.W.	22"	22"
30"–36"	III	5'–0" Φ	8"	8"	#5 @ 12" C.C.E.W.	#5 @ 12" C.C.E.W.	7'–4"Φ	6'–4"Φ	#5 @ 8" C.C.E.W.	22"	46"
42"–48"	IV	6'–0" Φ	8"	10"	#5 @ 12" C.C.E.W.	#5 @ 6" C.C.E.W.	8'–4"Φ	7'–4"Φ	#5 @ 6" C.C.E.W.	22"	46"
54"	V	8'–0" Φ	10"	10"	2–W.W.M. W/4 12" C.C. VERT.	#5 @ 6" C.C.E.W.	10'–8"Φ	9'–8"Φ	#5 @ 6" C.C.E.W.	22"	46"

Drawing: P:\7771-15-42-41\drawings\serg\details\7714DETAILS-P02.dwg\C–13 – P02 Details



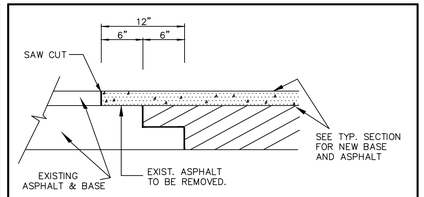
TOP VIEW

FRONT VIEW



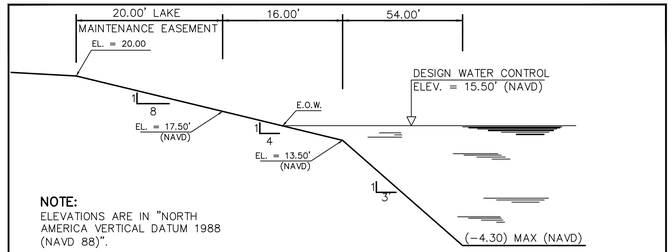
SIDE VIEW

CONTROL STRUCTURE
TYPE "J" 10'X6' F.D.O.T. INDEX NO. 200
N.T.S.



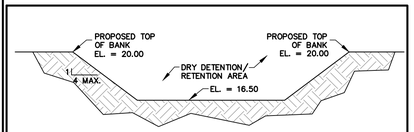
NOTE:
THIS METHOD OF PAVEMENT JOINT SHALL BE USED FOR ANY APPLICATION OR CONSTRUCTION WHERE PROPOSED PAVEMENT AND BASE WILL BE CONNECTED TO EXISTING PAVEMENT AND BASE.

PAVEMENT JOINT
N.T.S.

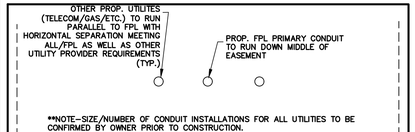


NOTE:
ELEVATIONS ARE IN "NORTH AMERICA VERTICAL DATUM 1988 (NAVD 88)".

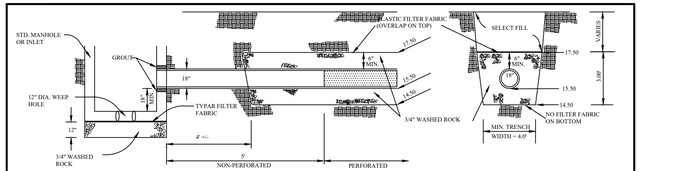
TYPICAL LAKE SECTION
NOT TO SCALE



TYPICAL DRY
RETENTION AREA SECTION
NOT TO SCALE



TYPICAL 10' WIDE FPL PRIMARY CONDUIT
EASEMENT SECTION
NOT TO SCALE

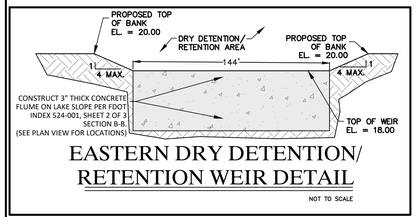


LONGITUDINAL VIEW CROSS - SECTION

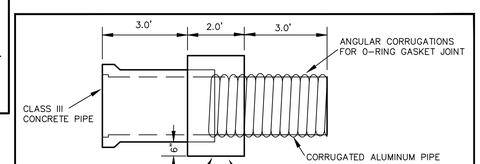
NOTES:

1. THE CONTRACTOR SHALL TAKE NECESSARY PRECAUTIONS TO PREVENT CONTAMINATION OF THE TRENCH BY SAND, SILT, OR OTHER MATERIAL.
2. THE CONTRACTOR SHALL INSTALL
   A. PERFORATED RCP IN ACCORDANCE WITH F.DO.T. REQUIREMENTS.
   B. CORRUGATED ALUMINUM IN ACCORDANCE WITH F.DO.T. REQUIREMENTS.
3. NO PIPE PERFORATIONS FOR THE FIRST 5 FEET FROM THE INLET OR MANHOLE.
4. PIPE PERFORATIONS SHALL BE PER FDOT REQUIREMENTS
5. SEE DETAILS OF MANHOLE AND/OR INLET FOR CONSTRUCTION DETAILS OF SAME.
6. PLASTIC FILTER FABRIC SHALL CONFORM TO D.O.T. SECTION 985 OR APPROVED EQUAL.
7. PRIOR TO BACKFILLING ANY DRAINAGE STRUCTURES, THE CITY ENGINEERING DEPARTMENT SHALL BE GIVEN 24 HOURS NOTICE IN ORDER TO SCHEDULE AN INSPECTION OF THE FACILITY.

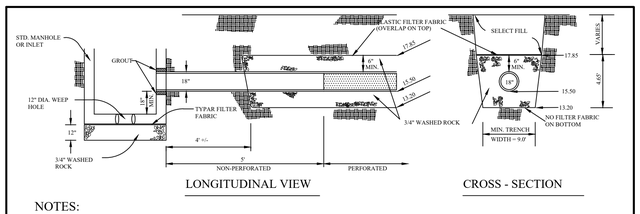
ONSITE FRENCH DRAIN
N.T.S.



EASTERN DRY DETENTION/
RETENTION WEIR DETAIL
NOT TO SCALE



CONCRETE COLLAR
NOT TO SCALE



LONGITUDINAL VIEW CROSS - SECTION

NOTES:

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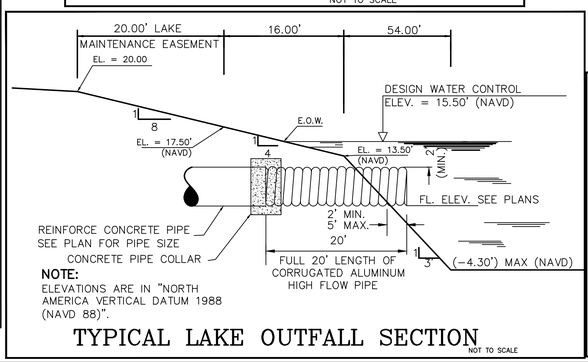
   B. CORRUGATED ALUMINUM IN ACCORDANCE WITH F.DO.T. REQUIREMENTS.
3. NO PIPE PERFORATIONS FOR THE FIRST 5 FEET FROM THE INLET OR MANHOLE.
4. PIPE PERFORATIONS SHALL BE PER FDOT REQUIREMENTS
5. SEE DETAILS OF MANHOLE AND/OR INLET FOR CONSTRUCTION DETAILS OF SAME.
6. PLASTIC FILTER FABRIC SHALL CONFORM TO D.O.T. SECTION 985 OR APPROVED EQUAL.
7. PRIOR TO BACKFILLING ANY DRAINAGE STRUCTURES, THE CITY ENGINEERING DEPARTMENT SHALL BE GIVEN 24 HOURS NOTICE IN ORDER TO SCHEDULE AN INSPECTION OF THE FACILITY.

TRENCH DESIGN VALUES:

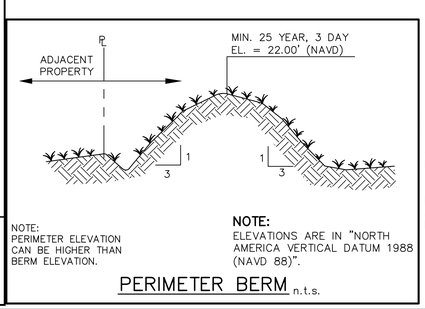
1. SATURATED TRENCH DEPTH = 2.30'
2. NON-SATURATED TRENCH DEPTH = 2.35'
3. WATER TABLE ELEV. = 15.50'
4. DEPTH TO GROUNDWATER, H2 = 2.35'

OFFSITE FRENCH DRAIN
N.T.S.



NOTE:
ELEVATIONS ARE IN "NORTH AMERICA VERTICAL DATUM 1988 (NAVD 88)".

TYPICAL LAKE OUTFALL SECTION
NOT TO SCALE



NOTE:
PERIMETER ELEVATION CAN BE HIGHER THAN BERM ELEVATION.

NOTE:
ELEVATIONS ARE IN "NORTH AMERICA VERTICAL DATUM 1988 (NAVD 88)".

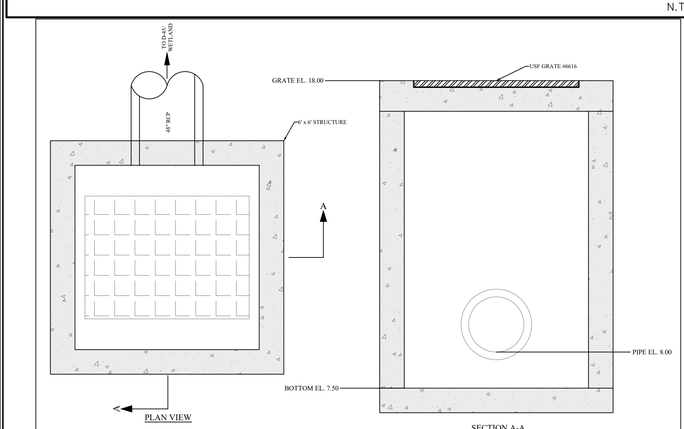
PERIMETER BERM n.t.s.

NOTES:

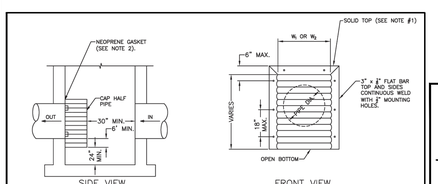
-ELEVATIONS SHOWN ARE IN NAVD 88 DATUM

-ALL DRAINAGE SYSTEMS SHALL BE PUMPED COMPLETELY DRY AND LAMPED AS A REQUIREMENT OF THE FINAL DRAINAGE INSPECTIONS.

NOTE: ELEVATIONS ARE NAVD 88 - CONVERSION FACTOR (NAVD 88) = (NGVD 29) -1.62'



WESTERN DRY RETENTION DISCHARGE STRUCTURE/ D-44 DETAIL
NTS



DISCHARGE PIPE DIAMETER	WEIR DIAMETER (W1)	WEIR DIAMETER (W2)	GAUGE (T)
15"	21"	21"	16
18"	24"	24"	16
24"	30"	30"	16
30"	36"	42"	14
36"	42"	48"	14
42"	48"	54"	14
48"	54"	60"	14
54"	60"	66"	14

NOTES:
1. ALUMINUM SHEET OF SAME THICKNESS (GAUGE) AS PIPE SHALL BE WELDED TO CLOSE THE OPENING AT THE TOP.
2. NEOPRENE ADHESIVE BACKED GASKET, OR APPROVED EQUAL (1"x3") SHALL BE INSTALLED ON THE SIDES AND TOP OF ALL BAFFLES.
3. POLLUTION RETARDANT BAFFLE TO BE FASTENED IN PLACE WITH 3"x4" STAINLESS STEEL "RED HEADS," OR APPROVED EQUAL.
4. MOUNTING BRACKETS MAY BE ADDED TO FLAT BARS TO EASE INSTALLATION IN ROUND STRUCTURES. SPACING TO MATCH HOLES IN FLAT BARS.

POLLUTANT RETARDANT BAFFLE DETAIL
N.T.S.

	03/11/25	M.V.K.
	02/12/25	M.V.K.
REV PER PBCWUD PRECON COMMENTS	01/14/25	M.V.K.
REV PER ADD. GRADES		
REV PER NEW SITE PLAN		
REVISIONS	DATE	BY

FILE NAME: 7714DETAILS-P0D

CAULFIELD & WHEELER, INC.
CIVIL ENGINEERING - LAND PLANNING
LANDSCAPE DESIGN - SURVEYING
7900 GLADES ROAD - SUITE 100
BOCA RATON, FLORIDA 33434
PHONE (561) 392-1991 / FAX (561) 750-1452

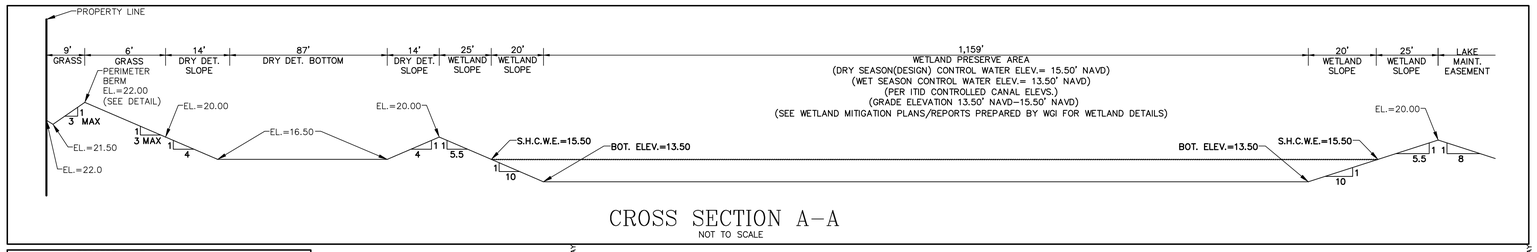
SHOPS AT INDIAN TRAILS
A.K.A. COCONUT CROSSING
PAVING, GRADING, &
DRAINAGE DETAILS
SWC NORTHLAKE BLVD. & COCONUT BLVD
PALM BEACH COUNTY, FLORIDA

DATE	07/28/23
DRAWN BY	M.V.K.
F.B./ PG.	N/A
SCALE	AS NOTED

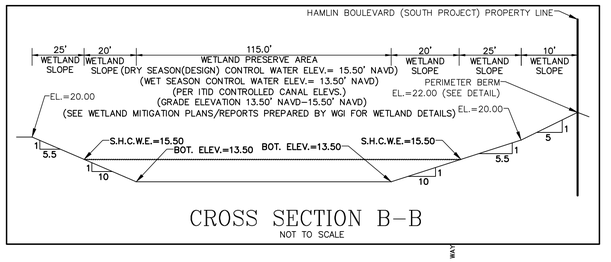
MATTHEW V. KAHN
PROFESSIONAL ENGINEER
LICENSE NO. 82227
STATE OF FLORIDA
- FOR THE FIRM -
DATE

JOB # 7714-1
SHT.NO.
C-14
OF 45 SHEETS

Drawing P:\7714-15-42-41\drawings\engineering\details\7714DETAILS-P0D.dwg\C-14 - P0D Details



CROSS SECTION A-A
NOT TO SCALE



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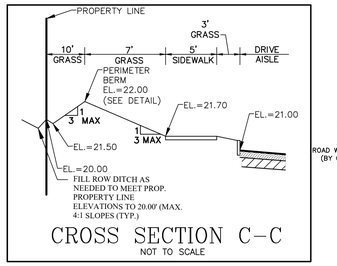

CROSS SECTION C-C
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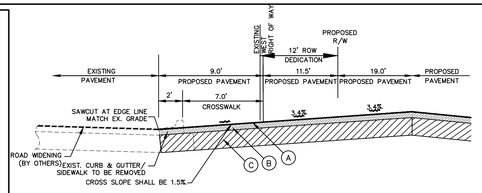
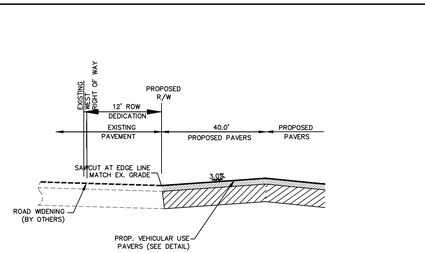


A. 1" TYPE FC-9.5 ASPHALTIC CONCRETE, 1 1/2" TYPE SP STRUCTURAL COURSE (TRAFFIC LEVEL C) ASPHALTIC CONCRETE

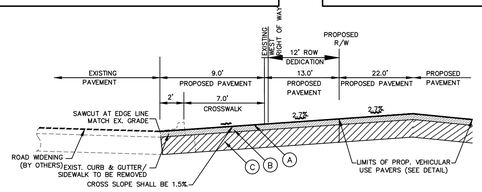
B. OPTION BASE GROUP 13 (6" MAX. LIFTS) COMPACTED TO 98% MAX. DENSITY PER AASHTO T-180

C. 12" COMPACTED SUBGRADE, COMPACTED TO 98% MAX DENSITY PER AASHTO T-180

PROPOSED DRIVEWAY (NORTHLAKE BLVD)
SECTION D-D n.t.s.



PROPOSED DRIVEWAY (NORTHLAKE BLVD)
SECTION E-E n.t.s.



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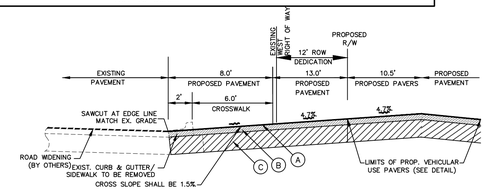
C. 12" COMPACTED SUBGRADE, COMPACTED TO 98% MAX DENSITY PER AASHTO T-180

PROPOSED DRIVEWAY (NORTHLAKE BLVD)
SECTION F-F n.t.s.



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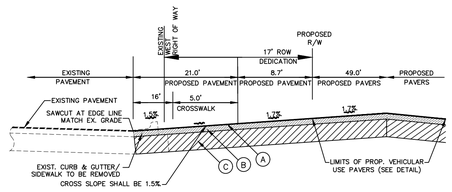
C. 12" COMPACTED SUBGRADE, COMPACTED TO 98% MAX DENSITY PER AASHTO T-180

PROPOSED DRIVEWAY (NORTHLAKE BLVD)
SECTION G-G n.t.s.



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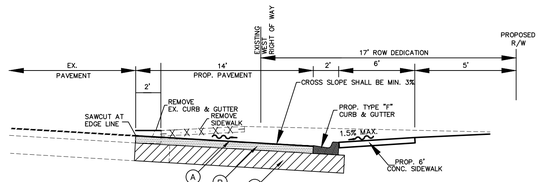
B. OPTION BASE GROUP 13 (6" MAX. LIFTS) COMPACTED TO 98% MAX. DENSITY PER AASHTO T-180

C. 12" COMPACTED SUBGRADE, COMPACTED TO 98% MAX DENSITY PER AASHTO T-180

PROPOSED DRIVEWAY (NORTHLAKE BLVD)
SECTION H-H n.t.s.



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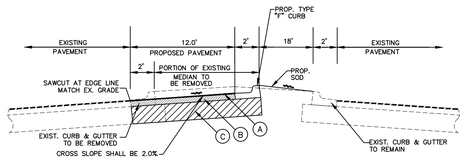
B. OPTION BASE GROUP 13 (6" MAX. LIFTS) COMPACTED TO 98% MAX. DENSITY PER AASHTO T-180

C. 12" COMPACTED SUBGRADE, COMPACTED TO 98% MAX DENSITY PER AASHTO T-180

PROPOSED RIGHT TURN LANE (COCONUT BLVD)
SECTION RT-RT n.t.s.



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B. OPTION BASE GROUP 13 (6" MAX. LIFTS) COMPACTED TO 98% MAX. DENSITY PER AASHTO T-180

C. 12" COMPACTED SUBGRADE, COMPACTED TO 98% MAX DENSITY PER AASHTO T-180

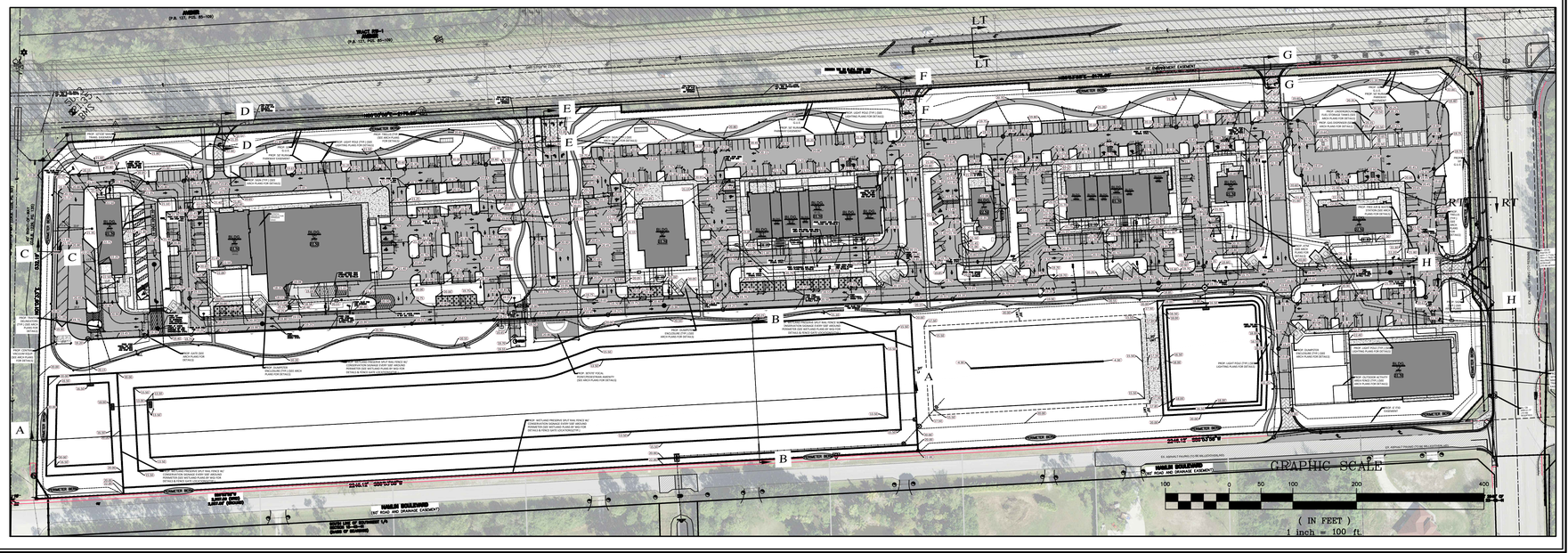
PROPOSED LEFT TURN LANE (NORTHLAKE BLVD)
SECTION LT-LT n.t.s.

NOTES:

-ELEVATIONS SHOWN ARE IN NAVD 88 DATUM

-ALL DRAINAGE SYSTEMS SHALL BE PUMPED COMPLETELY DRY AND LAMPED AS A REQUIREMENT OF THE FINAL DRAINAGE INSPECTIONS.

NOTE: ELEVATIONS ARE NAVD 88 - CONVERSION FACTOR (NAVD 88) = (NGVD 29) -1.62'



REV PER PBCWD PRECON COMMENTS	03/11/25	MVK
REV PER ADD. GRADES	02/12/25	MVK
REV PER NEW SITE PLAN	01/14/25	MVK
REVISIONS	DATE	BY

FILE NAME: 7714DETAILS-P0D

CAULFIELD & WHEELER, INC.
CIVIL ENGINEERING - LAND PLANNING
LANDSCAPE DESIGN - SURVEYING
7900 GLADES ROAD - SUITE 100
BOCA RATON, FLORIDA 33434
PHONE (561) 392-1991 / FAX (561) 750-1452

SHOPS AT INDIAN TRAILS
A.K.A. COCONUT CROSSING
PAVING, GRADING, & DRAINAGE DETAILS
SWC NORTHLAKE BLVD. & COCONUT BLVD
PALM BEACH COUNTY, FLORIDA

DATE 07/28/23
DRAWN BY M.V.K.
F.B./ PG. N/A
SCALE AS NOTED

MATTHEW V. KAHN
PROFESSIONAL ENGINEER
LICENSE NO. 82227
STATE OF FLORIDA
- FOR THE FIRM -
DATE

JOB # 7714-1
SHT.NO.
C-15
OF 45 SHEETS

Drawing: P:\7714-15-42-41\drawings\sheets\7714DETAILS-P0D.dwg\C-15- P0D Details

LEGEND

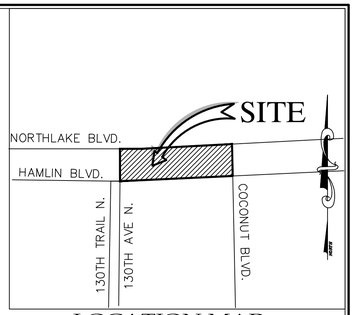
SD	PROPOSED DRAINAGE PIPE
FM	PROPOSED FORCE MAIN (SIZE NOTED)
RCWM	PROPOSED RECLAIMED WATER LINE (SIZE NOTED)
S	PROPOSED GRAVITY SEWER LINE (SIZE NOTED)
W	PROPOSED WATER LINE (SIZE NOTED)
FPL	PROPOSED FPL ELECTRIC LINE
	PROPOSED GATE VALVE AND BOX
	PROPOSED REDUCER
	FIRE HYDRANT
	SAMPLE POINT
EXWM	EXISTING WATER LINE
EXWM	EXISTING GATE VALVE
EXSD	EXISTING PIPE AND INLET
EXSS	EXISTING SANITARY SEWER LINE

LEGEND

	PROPOSED PROPERTY LINE
	EXISTING PROPERTY LINE
	PROP. EASEMENT LINE
##.##	PROPOSED GRADE
##.##	EXISTING GRADE
	FLOW ARROW
	PROPOSED STANDARD PAVEMENT
	PROPOSED HEAVY PAVEMENT
	PROPOSED PAVE DRAIN PERV. PAVERS
	PROPOSED 4" CONCRETE
	PROPOSED 6" CONCRETE
	PROPOSED 8" CONCRETE
	PROPOSED VEHICULAR USE PAVERS
	PROPOSED PEDESTRIAN USE PAVERS
	PROPOSED BUILDING
	DETECTABLE WARNING MAT
M.E.E.	MATCH EXISTING ELEVATION
#	GRADING CROSS-SECTION
GUE	GENERAL UTILITY EASEMENT

GENEBAL NOTES:
1.) CONTRACTOR TO VERIFY DEPTH AND LOCATION OF EXISTING UTILITIES PRIOR TO ANY CONSTRUCTION.
2.) ALL DRAINAGE SYSTEMS SHALL BE PUMPED COMPLETELY DRY AND LAMPED AS A REQUIREMENT OF THE FINAL DRAINAGE INSPECTIONS.
3.) ALL ONSITE SIDEWALK SHALL BE CONSTRUCTED AT 1.5% MAXIMUM CROSS SLOPE AND 5% MAXIMUM LONGITUDINAL SLOPE.
4.) SIDEWALKS ABUTTING LOTS/UNITS/CLUBHOUSE TO BE CONSTRUCTED AT TIME OF BUILDING CONSTRUCTION, WHILE COMMON AREA SIDEWALK WILL BE INSTALLED FROM START OF JOB.
5.) STRUCTURAL FILL WILL BE REQUIRED TO BE USED UNDER ALL BUILDING PADS, RIGHTS-OF-WAY, AND OTHER STRUCTURAL ELEMENTS.
6.) THE MUCK AND GUMBO SHALL BE REMOVED IN THE AREA OF AND WITHIN 10 FEET OF PROPOSED PAVEMENT OR FOUNDATION AREAS.
7.) PAVEMENT MARKINGS AND GEOMETRICS SHALL BE IN ACCORDANCE WITH THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS AND PALM BEACH COUNTY TYPICAL T-P-24.
8.) ALL ADA ACCESSIBLE PARKING AREAS AND RAMP LANDINGS SHALL NOT EXCEED 2% SLOPE IN ANY DIRECTION
9.)CONTRACTOR SHALL COORDINATE ALL UTILITY/DRAINAGE STUB LOCATIONS WITH THE BUILDING PLANS PRIOR TO INSTALLATION.

PALM BEACH GARDENS FIRE RESCUE NOTES:
1.) WET FIRE HYDRANTS REQUIRED PRIOR TO, DURING AND AFTER CONSTRUCTION.
2.) HYDRANT MARKERS (BLUE DOTS) REQUIRED AT HYDRANT LOCATIONS.
3.) FIRE HYDRANTS TO BE LOCATED WITHIN 100' OF A FIRE DEPARTMENT CONNECTION.
4.) PROPER CLEARANCES ARE TO BE PROVIDED TO FIRE HYDRANTS.
5.) KNOX LOCKING CAPS REQUIRED FOR NEW FIRE DEPARTMENT CONNECTIONS.
6.) SECURITY DEVICES ON HYDRANTS "CAPTIVATORS" ARE NOT ACCEPTABLE.



LOCATION MAP

SECTION 15, TOWNSHIP 42S, RANGE 41E N.T.S.

PBCUE RECORDED IN:
O.R.B._____P.G.____

PLAT RECORDED IN:
P.B._____P.G.____

INDEMNITY AGREEMENT RECORDED IN:
O.R.B._____P.G.____

NOTE: ELEVATIONS ARE NAVD 88 – CONVERSION FACTOR (NAVD 88) = (NGVD 29) –1.62'

RECORD DRAWING NOTES:
1. RECORD DRAWINGS SHALL BE PREPARED IN THE STATE PLANE COORDINATE SYSTEM.
2. ALL UTILITY FEATURES SHALL BE SHOWN IN THEIR AS-BUILT LOCATION.
3. STATE PLAN COORDINATES SHALL BE DISPLAYED ON RECORD DRAWING FOR ALL FEATURES SPECIFIED IN PBCWUD STANDARDS.
4. STATE PLAN COORDINATES SHALL BE SHOWN ON PROPERTY CORNERS AS REQUIRED BY PBCWUD.

GENERAL WATER NOTES:
1. ALL WATER MAIN DUCTILE IRON PIPE AND PIPE FITTINGS SHALL BE PAINTED WITH A 4" WIDE CONTINUOUS BLUE LINE THAT RUNS PARALLEL TO THE AXIS OF THE PIPE AND IS LOCATED ALONG THE TOP OF THE PIPE.
2. ALL WATER MAINS SHALL BE MARKED WITH ONE CONTINUOUS STRIP OF 6" WIDE MAGNETIC BLUE CODED TAPE IMPRINTED WITH ONE AND ONE HALF INCH (1.5") HIGH LETTERING READING "CAUTION - POTABLE WATER LINE BELOW" AND LOCATED APPROXIMATELY TWELVE (12) INCHES ABOVE THE CROWN OF THE PIPE. THE WORDING SHALL OCCUR EVERY THREE (3) FEET.
3. ALL WATER SERVICE BRASS FITTINGS ARE REQUIRED TO BE LEAD FREE.
4. ALL EXISTING PBCWUD FACILITIES (IE. VALVES) TO BE OPERATED BY PBCWUD PERSONNEL ONLY.

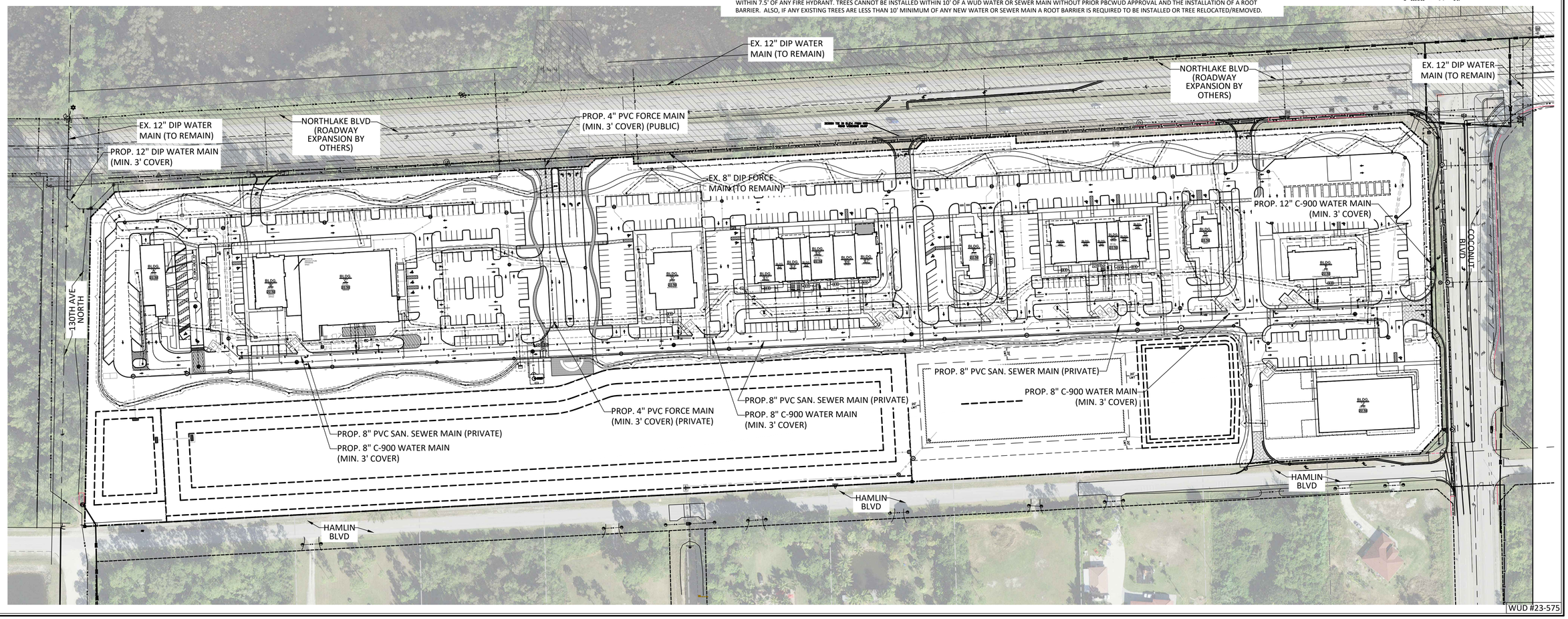
GENERAL SEWER NOTES:
1. ALL ON-SITE SEWER LATERALS, GRAVITY SEWER, LIFT STATION AND FORCE MAIN UP TO 4" GV #2E WILL BE PRIVATELY OWNED AND MAINTAINED.
2. SEWER CLEAN OUT MINI-MANHOLES ARE REQUIRED ON ALL CLEANOUTS WITHIN PAVEMENT AREAS.
3. ALL FORCE MAIN DUCTILE IRON PIPE AND PIPE FITTINGS TO BE PAINTED WITH A 4" WIDE CONTINUOUS GREEN LINE THAT RUNS PARALLEL TO THE AXIS OF THE PIPE AND IS LOCATED ALONG THE TOP OF PIPE
4. FORCE MAIN SHALL BE MARKED WITH ONE CONTINUOUS STRIP OF 6" WIDE MAGNETIC BROWN CODED TAPE IMPRINTED WITH ONE AND ONE HALF INCH (1.5") HIGH LETTERING READING "CAUTION - FORCE MAIN BELOW" AND LOCATED APPROXIMATELY TWELVE (12) INCHES ABOVE THE CROWN OF THE PIPE. THE WORDING SHALL OCCUR EVERY THREE (3) FEET.

GENERAL LANDSCAPE NOTES:
1. IF ANY NEW LANDSCAPE MATERIALS ARE INSTALLED AS PART OF THIS PROJECT THEN SOD ONLY WITH NO SHRUBS AND/OR TREES ARE TO BE INSTALLED WITHIN 5' OF ANY WATER METER AND WITHIN 7.5' OF ANY FIRE HYDRANT. TREES CANNOT BE INSTALLED WITHIN 10' OF A WUD WATER OR SEWER MAIN WITHOUT PRIOR PBCWUD APPROVAL AND THE INSTALLATION OF A ROOT BARRIER. ALSO, IF ANY EXISTING TREES ARE LESS THAN 10' MINIMUM OF ANY NEW WATER OR SEWER MAIN A ROOT BARRIER IS REQUIRED TO BE INSTALLED OR TREE RELOCATED/REMOVED.

GRAPHIC SCALE

80 0 40 80 160 320

(IN FEET)
1 inch = 80 ft.



REVISIONS	DATE	BY
REV PER LIGHTING/FPL/BLDG CHANGES	07/25/25	MVK
REV PER PBCWUD PRECON COMMENTS	03/11/25	MVK
REV PER ADD. GRADES	02/12/25	MVK
REV PER NEW SITE PLAN	01/14/25	MVK
FILE NAME 7714ENG.DWG		

CAULFIELD & WHEELER, INC.
CIVIL ENGINEERING - LAND PLANNING
LANDSCAPE DESIGN - SURVEYING
7900 GLADES ROAD - SUITE 100
BOCA RATON, FLORIDA 33434
PHONE (561)-392-1991 / FAX (561)-750-1452

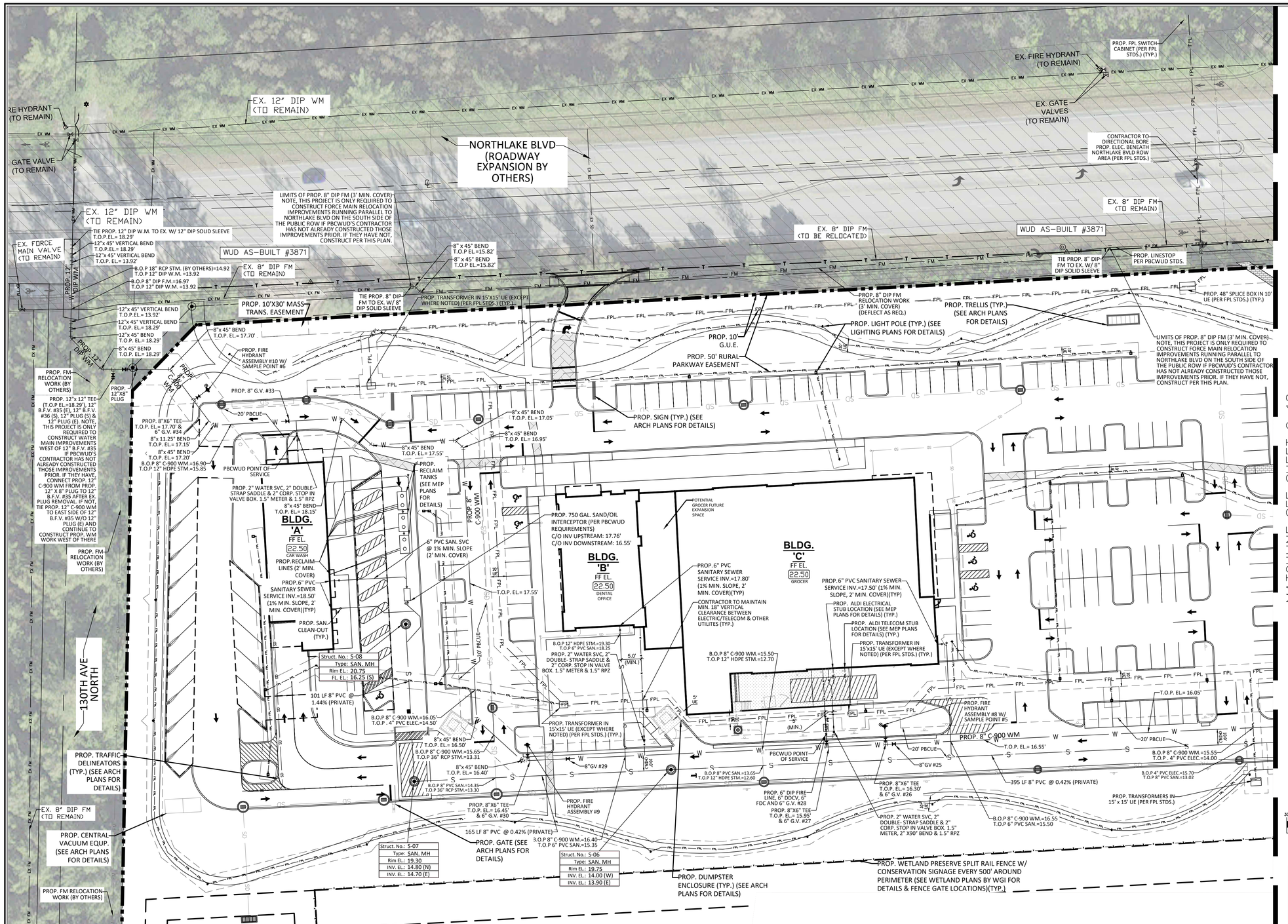
SHOPS AT INDIAN TRAILS A.K.A. COCONUT CROSSING OVERALL WATER DISTRIBUTION, SANITARY SEWER & UTILITY PLAN

SWC NORTHLAKE BLVD. & COCONUT BLVD
PALM BEACH GARDENS, FLORIDA

DATE	07/28/23
DRAWN BY	M.V.K.
F.B./ PG.	N/A
SCALE	1"=80'

MATTHEW V. KAHN
PROFESSIONAL ENGINEER
LICENSE NO. 82227
STATE OF FLORIDA
– FOR THE FIRM –
DATE

JOB # 7714-1
SHT.NO.
C-16
OF 45 SHEETS



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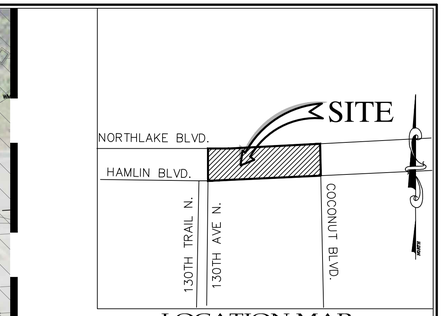


LOCATION MAP

SECTION 15, TOWNSHIP 42S, RANGE 41E N.T.S.

NOTE: ELEVATIONS ARE NAVD 88 – CONVERSION FACTOR (NAVD 88) = (NGVD 29) –1.62'

PBCUE RECORDED IN: O.R.B._____P.G.____

PLAT RECORDED IN: P.B._____P.G.____

INDEMNITY AGREEMENT RECORDED IN: O.R.B._____P.G.____

LEGEND

- SD — PROPOSED DRAINAGE PIPE
- FM — PROPOSED FORCE MAIN (SIZE NOTED)
- RCWM — PROPOSED RECLAIMED WATER LINE (SIZE NOTED)
- S — PROPOSED GRAVITY SEWER LINE (SIZE NOTED)
- W — PROPOSED WATER LINE (SIZE NOTED)
- FPL — PROPOSED FPL ELECTRIC LINE
- PROPOSED GATE VALVE AND BOX
- PROPOSED REDUCER
- FIRE HYDRANT
- SAMPLE POINT
- EXWM — EXISTING WATER LINE
- EXWM — EXISTING GATE VALVE
- EXSD — EXSD — EXISTING PIPE AND INLET
- EXSS — EXISTING SANITARY SEWER LINE

LEGEND

- PROPOSED PROPERTY LINE
- EXISTING PROPERTY LINE
- PROP. EASEMENT LINE
- ##.## PROPOSED GRADE
- ##.## EXISTING GRADE
- FLOW ARROW
- PROPOSED STANDARD PAVEMENT
- PROPOSED HEAVY PAVEMENT
- PROPOSED PAVE DRAIN PERV. PAVERS
- PROPOSED 4" CONCRETE
- PROPOSED 6" CONCRETE
- PROPOSED 8" CONCRETE
- PROPOSED VEHICULAR USE PAVERS
- PROPOSED PEDESTRIAN USE PAVERS
- PROPOSED BUILDING
- DETECTABLE WARNING MAT
- M.E.E. MATCH EXISTING ELEVATION
- GRADING CROSS-SECTION
- GUE GENERAL UTILITY EASEMENT

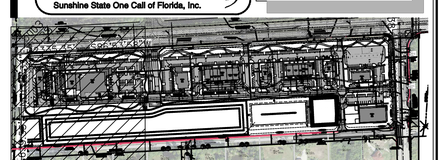
GRAPHIC SCALE

30 0 15 30 60 120

(IN FEET)
1 inch = 30 ft.

Call 48 hours before you dig
It's the Law!
1-800-432-4770
Sunshine State One Call of Florida, Inc.

NOTE: CONTRACTOR TO VERIFY DEPTH AND LOCATION OF EXISTING UTILITIES PRIOR TO ANY CONSTRUCTION.



KEY MAP

WUD #23-575

REVISIONS	DATE	BY
REV PER LIGHTING/FPL/BLDG CHANGES	07/25/25	MVK
REV PER PBCWUD PRECON COMMENTS	03/11/25	MVK
REV PER ADD. GRADES	02/12/25	MVK
REV PER NEW SITE PLAN	01/14/25	MVK
FILE NAME 7714ENG.DWG		

CAULFIELD & WHEELER, INC.
CIVIL ENGINEERING • LAND PLANNING
LANDSCAPE DESIGN • SURVEYING
7900 GLADES ROAD - SUITE 100
BOCA RATON, FLORIDA 33434
PHONE (561)-392-1991 / FAX (561)-750-1452

SHOPS AT INDIAN TRAILS A.K.A. COCONUT CROSSING WATER DISTRIBUTION, SANITARY SEWER & UTILITY PLAN WEST

SWC NORTHLAKE BLVD. & COCONUT BLVD
PALM BEACH GARDENS, FLORIDA

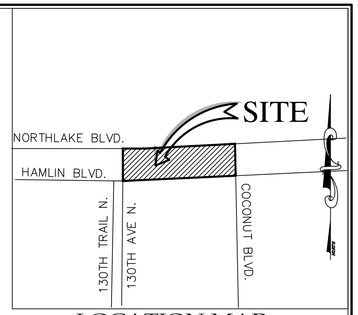
DATE	07/28/23
DRAWN BY	M.V.K.
F.B./ PG.	N/A
SCALE	1"=30'

MATTHEW V. KAHN
PROFESSIONAL ENGINEER
LICENSE NO. 82227
STATE OF FLORIDA
– FOR THE FIRM –
DATE

JOB # 7714-1
SHT.NO. C-17
OF 45 SHEETS

REVISIONS	DATE	BY
REV PER LIGHTING/FPL/BLDG CHANGES	07/25/25	MVK
REV PER PBCWUD PRECON COMMENTS	03/11/25	MVK
REV PER ADD. GRADES	02/12/25	MVK
REV PER NEW SITE PLAN	01/14/25	MVK

FILE NAME 7714ENGDWG



LOCATION MAP

SECTION 15, TOWNSHIP 42S, RANGE 41E N.T.S.

PBCUE RECORDED IN:
O.R.B._____P.G.____

PLAT RECORDED IN:
P.B._____P.G.____

INDEMNITY AGREEMENT RECORDED IN:
O.R.B._____P.G.____

NOTE: ELEVATIONS ARE NAVD 88 – CONVERSION FACTOR (NAVD 88) = (NGVD 29) –1.62'

CAULFIELD & WHEELER, INC.
CIVIL ENGINEERING - LAND PLANNING
LANDSCAPE DESIGN - SURVEYING
7900 GLADES ROAD - SUITE 100
BOCA RATON, FLORIDA 33434
PHONE (561)-392-1991 / FAX (561)-750-1452

SHOPS AT INDIAN TRAILS A.K.A. COCONUT CROSSING WATER DISTRIBUTION, SANITARY SEWER & UTILITY PLAN CENTER

SWC NORTHLAKE BLVD. & COCONUT BLVD.
PALM BEACH GARDENS, FLORIDA

DATE	07/28/23
DRAWN BY	M.V.K.
F.B./ PG.	N/A
SCALE	1"=30'

MATTHEW V. KAHN
PROFESSIONAL ENGINEER
LICENSE NO. 82227
STATE OF FLORIDA
– FOR THE FIRM –
DATE

JOB # 7714-1
SHT.NO. C-18
OF 45 SHEETS

MATCHLINE SEE SHEET C-17

MATCHLINE SEE SHEET C-19

S86°53'58"W 2335.35'

NORTHLAKE BLVD (ROADWAY EXPANSION BY OTHERS)

WUD AS-BUILT #3871

EX. 12" DIP WM (TO REMAIN)

EX. FORCE MAIN VALVE (TO REMAIN)

EX. 8" DIP FM (TO REMAIN)

PROP. FPL SWITCH CABINET (PER FPL STDS.) (TYP.)

CONTRACTOR TO DIRECTIONAL BORE PROP. ELEC. BENEATH NORTHLAKE BVLD ROW AREA (PER FPL STDS.)

PROP. 4" X 8" TAPPING SLEEVE W/ 4" GV #1F

4" PVC FM (3' MIN. COVER) (PRIVATE)

20' x 10' PBCUE

PROP. 4" GV #2F (END OF PBCWUD RESPONSIBILITY)

PROP. 48" SPLICE BOX IN 10' UE (PER FPL STDS.) (TYP.)

PROP. SIGN (TYP.) (SEE ARCH PLANS FOR DETAILS)

PROP. 10' G.U.E.

PROP. 50' RURAL PARKWAY EASEMENT

PROP. LIGHT POLE (TYP.) (SEE LIGHTING PLANS FOR DETAILS)

B.O.P 4" PVC FM.=17.80
T.O.P 30" RCP STM.=16.45

B.O.P 4" PVC FM.=16.95
T.O.P 24" RCP STM.=15.90

CONTRACTOR TO MAINTAIN MIN. 18" VERTICAL CLEARANCE BETWEEN ELECTRIC/TELECOM & OTHER UTILITES (TYP.)

PROP. 1,250 GAL. OIL/GREASE INTERCEPTOR (PER PBCWUD REQUIREMENTS)
C/O INV UPSTREAM: 18.35'
C/O INV DOWNSTREAM: 18.14'

PROP. 6" PVC SANITARY SEWER SERVICE INV.=18.50' (1% MIN. SLOPE, 2' MIN. COVER)(TYP)

PROP. 4" DIP FIRE-LINE, 4" DDCV, 4" FDC AND 4" G.V. #23

PROP. 48" SPLICE BOX IN 15'x15' UE (PER FPL STDS.) (TYP.)

PROP. 1.5" DOUBLE- STRAP SADDLE & 1.5" CORP. STOP IN VALVE BOX.

PROP. FIRE HYDRANT ASSEMBLY #7

PROP. 8"X6" TEE T.O.P. EL.= 16.30' & 6" G.V. #24

4" x 45° BEND

(2) 4" X 45° VERTICAL BENDS

20 LF 4" DIP FM SECTION CENTERED ON CROSSING

B.O.P 8" DIP WM.=16.10
T.O.P 4" DIP FM.=15.05

20 LF 8" DIP WM SECTION CENTERED ON CROSSING

B.O.P 4" PVC FM.=14.65
T.O.P 8" PVC SAN.=9.69

B.O.P 4" PVC FM.=16.10
T.O.P 36" RCP STM.=6.90

(2) 4" X 45° VERTICAL BENDS

B.O.P 8" PVC SAN.=8.45
T.O.P 36" RCP STM.=6.90

4" x 90° BEND

46 LF 8" PVC @ 0.42% (PRIVATE)

PROP. 1.5" WATER SVC, 5/8" METER & 5/8" RPZ

PROP. WETLAND PRESERVE SPLIT RAIL FENCE W/ CONSERVATION SIGNAGE EVERY 500' AROUND PERIMETER (SEE WETLAND PLANS BY WGI FOR DETAILS & FENCE GATE LOCATIONS)(TYP.)

PROP. 30'X70' FOCAL POINT/PEDESTRIAN AMENITY (SEE ARCH PLANS FOR DETAILS)

PROP. DUMPSTER ENCLOSURE (TYP.) (SEE ARCH PLANS FOR DETAILS)

PROP. 1,250 GAL. OIL/GREASE INTERCEPTOR (PER PBCWUD REQUIREMENTS)
C/O INV UPSTREAM: 15.60'
C/O INV DOWNSTREAM: 15.39'

PROP. 1.5" WATER SERVICE W/ 5/8" WATER METER & 5/8" RPZ (E-2)
PROP. 1.5" WATER SERVICE W/ 5/8" WATER METER & 5/8" RPZ (E-3)
PROP. 1.5" WATER SERVICE W/ 1" WATER METER & 1" RPZ (E-4)
PROP. 1.5" WATER SERVICE W/ 1" WATER METER & 1" RPZ (E-5)

PROP. 1,250 GAL. OIL/GREASE INTERCEPTOR (PER PBCWUD REQUIREMENTS)
C/O INV UPSTREAM: 18.40'
C/O INV DOWNSTREAM: 18.19'

PROP. SAN. CLEAN-OUT (TYP.)

PROP. TRANSFORMER IN 15'x15' UE (EXCEPT WHERE NOTED) (PER FPL STDS.) (TYP.)

PROP. 2" WATER SVC, 2" DOUBLE- STRAP SADDLE & 2" CORP. STOP IN VALVE BOX. 2" METER, 2" X90° BEND & 2" RPZ

B.O.P 8" C-900 WM.=16.20
T.O.P 12" HDPE STM.=15.15

8"x45° BEND T.O.P. EL=16.30'

PROP. 4" DIP FIRE-LINE, 4" DDCV, 4" FDC AND 4" G.V. #23

PROP. 48" SPLICE BOX IN 15'x15' UE (PER FPL STDS.) (TYP.)

B.O.P 8" C-900 WM.=16.20
T.O.P 6" PVC SAN.=15.15

PROP. FIRE HYDRANT ASSEMBLY #6

20 LF 4" DIP FM SECTION CENTERED ON CROSSING

B.O.P 8" DIP WM.=16.10
T.O.P 4" DIP FM.=15.05

20 LF 8" DIP WM SECTION CENTERED ON CROSSING

B.O.P 4" PVC FM.=14.65
T.O.P 8" PVC SAN.=9.69

236 LF 8" PVC @ 0.42% (PRIVATE)

20' PBCUE

PBCWUD POINT OF SERVICE

8"GV #21

PROP. 8"X4" TEE T.O.P. EL= 16.30' & 4" G.V. #22

PROP. 8"X6" TEE T.O.P. EL= 16.30' & 6" G.V. #20

8"x45° BEND T.O.P. EL=16.30'

PROP. 6" PVC SANITARY SEWER SERVICE INV. @ BLDG=18.50' (1% MIN. SLOPE, 2' MIN. COVER)(TYP)

PROP. 6" DIP FIRE LINE, 6" DDCV, 6" FDC, 6"X90° TEE, 90° BEND AND 6" G.V. #19

INV. =14.80'

INV. =15.75'

PROP. 1,250 GAL. OIL/GREASE INTERCEPTOR (PER PBCWUD REQUIREMENTS)
C/O INV UPSTREAM: 14.65'
C/O INV DOWNSTREAM: 14.44'

PROP. 1,250 GAL. OIL/GREASE INTERCEPTOR (PER PBCWUD REQUIREMENTS)
C/O INV UPSTREAM: 18.40'
C/O INV DOWNSTREAM: 18.19'

PROP. 6" PVC SANITARY SEWER SERVICE INV.=18.50' (1% MIN. SLOPE, 2' MIN. COVER)(TYP)

B.O.P 8" C-900 WM.=17.40
T.O.P 6" PVC SAN.=14.50

B.O.P 8" C-900 WM.=16.75
T.O.P 12" HDPE STM.=15.70

B.O.P 8" C-900 WM.=16.20
T.O.P . 4" PVC ELEC.=14.65'

8"x45° BEND T.O.P. EL=16.90'

8"x45° BEND T.O.P. EL=16.75'

PROP. 2" WATER SVC, 2" DOUBLE- STRAP SADDLE & 2" CORP. STOP IN VALVE BOX. 2" METER & 2' RPZ

PROP. TRANSFORMER IN 15'x15' UE (EXCEPT WHERE NOTED) (PER FPL STDS.) (TYP.)

METERS/BAYS WEST TO EAST

PBCWUD POINT OF SERVICE

PROP. 8" C-900 WM
20' PBCUE

5' (MIN.)

B.O.P 8" C-900 WM.=16.70
T.O.P . 4" PVC ELEC.=15.15

B.O.P 8" C-900 WM.=17.05
T.O.P 6" PVC SAN.=16.00

8"x45° BEND T.O.P. EL=16.75'

PROP. 2" WATER SERVICE W/ 1.5" WATER METER, 1.5" RPZ, 2" DOUBLE-STRAP SADDLE & 2" CORP. STOP IN VALVE BOX (E-1)

8"x45° BEND T.O.P. EL=16.35'

398 LF 8" PVC @ 0.42% (PRIVATE)

PROP. 2" DOUBLE-STRAP SADDLE & 2" CORP. STOP IN VALVE BOX

B.O.P 12" HDPE STM.=13.30
T.O.P 8" PVC SAN.=11.10

PROP. 2" WATER SERVICE W/ 1.5" WATER METER, 1.5 RPZ, 2" DOUBLE- STRAP SADDLE & 2" CORP. STOP IN VALVE BOX (E-7)

PROP. 1.5" WATER SERVICE W/ 1" WATER METER, 1" RPZ 1.5" DOUBLE- STRAP SADDLE & 1.5" CORP. STOP IN VALVE BOX (E-6)

8"x45° BEND T.O.P. EL=16.40'

B.O.P 8" C-900 WM.=16.15
T.O.P 6" PVC SAN.=15.10

379 LF 8" PVC @ 0.42% (PRIVATE)

PROP. 6" PVC SANITARY SEWER SERVICE INV. @ BLDG=14.80' (1% MIN. SLOPE, 2' MIN. COVER)(TYP)

PROP. 8"X6" TEE T.O.P. EL.= 17.60' & 6" G.V. #17

PROP. 8"X6" TEE T.O.P. EL.= 18.60' & 6" G.V. #18

PROP. FIRE HYDRANT ASSEMBLY #5 & SAMPLE POINT #4

B.O.P 8" C-900 WM.=17.70
T.O.P 6" PVC SAN.=14.95

B.O.P 8" C-900 WM.=17.30
T.O.P 6" DIP WM.=16.25

PROP. 6" PVC SANITARY SEWER SERVICE (1% MIN. SLOPE, 2' MIN. COVER)(TYP)

B.O.P 8" C-900 WM.=16.00
T.O.P . 4" PVC ELEC.=14.45

8"x45° BEND - T.O.P. EL=16.45'

8"GV #16

20' PBCUE

B.O.P 12" HDPE STM.=13.40
T.O.P 8" PVC SAN.=12.35

20'

LMT

Struct. No.: S-03	
Type:	SAN. MH
Rim EL.:	19.25
INV. EL.:	11.94 (E)
INV. EL.:	11.70 (W)

Struct. No.: S-04	
Type:	SAN. MH
Rim EL.:	20.00
INV. EL.:	10.02 (E)
INV. EL.:	9.92 (W)

Struct. No.: S-05	
Type:	SAN. MH
Rim EL.:	19.45
INV. EL.:	8.92 (E)
INV. EL.:	12.24 (W)
INV. EL.:	8.82 (S)

*EXTERIOR DROP CONNECTION FOR WEST INVERT

Struct. No.:	LIFT STA.
Type:	WET WELL
Rim EL.:	20.05
FL. EL.:	8.62 (N)

PROP. PRIVATE LIFT STATION (SEE MOPS PLAN FOR DETAILS)

B.O.P 1.5" PVC WM.=18.05
T.O.P 8" PVC SAN.=13.30

RECORD DRAWING NOTES:

1. RECORD DRAWINGS SHALL BE PREPARED IN THE STATE PLANE COORDINATE SYSTEM.
2. ALL UTILITY FEATURES SHALL BE SHOWN IN THEIR AS-BUILT LOCATION.
3. STATE PLAN COORDINATES SHALL BE DISPLAYED ON RECORD DRAWING FOR ALL FEATURES SPECIFIED IN PBCWUD STANDARDS.
4. STATE PLAN COORDINATES SHALL BE SHOWN ON PROPERTY CORNERS AS REQUIRED BY PBCWUD.

GENERAL WATER NOTES:

1. ALL WATER MAIN DUCTILE IRON PIPE AND PIPE FITTINGS SHALL BE PAINTED WITH A 4" WIDE CONTINUOUS BLUE LINE THAT RUNS PARALLEL TO THE AXIS OF THE PIPE AND IS LOCATED ALONG THE TOP OF THE PIPE.
2. ALL WATER MAINS SHALL BE MARKED WITH ONE CONTINUOUS STRIP OF 6" WIDE MAGNETIC BLUE CODED TAPE IMPRINTED WITH ONE AND ONE HALF INCH (1.5") HIGH LETTERING READING "CAUTION - POTABLE WATER LINE BELOW" AND LOCATED APPROXIMATELY TWELVE (12) INCHES ABOVE THE CROWN OF THE PIPE. THE WORDING SHALL OCCUR EVERY THREE (3) FEET.
3. ALL WATER SERVICE BRASS FITTINGS ARE REQUIRED TO BE LEAD FREE.
4. ALL EXISTING PBCWUD FACILITIES (IE. VALVES) TO BE OPERATED BY PBCWUD PERSONNEL ONLY.

GENERAL SEWER NOTES:

1. ALL ON-SITE SEWER LATERALS, GRAVITY SEWER, LIFT STATION AND FORCE MAIN UP TO 4" GV #2F WILL BE PRIVATELY OWNED AND MAINTAINED.
2. SEWER CLEAN OUT MINI-MANHOLES ARE REQUIRED ON ALL CLEANOUTS WITHIN PAVEMENT AREAS.
3. ALL FORCE MAIN DUCTILE IRON PIPE AND PIPE FITTINGS TO BE PAINTED WITH A 4" WIDE CONTINUOUS GREEN LINE THAT RUNS PARALLEL TO THE AXIS OF THE PIPE AND IS LOCATED ALONG THE TOP OF PIPE.
4. FORCE MAIN SHALL BE MARKED WITH ONE CONTINUOUS STRIP OF 6" WIDE MAGNETIC BROWN CODED TAPE IMPRINTED WITH ONE AND ONE HALF INCH (1.5") HIGH LETTERING READING "CAUTION - FORCE MAIN BELOW" AND LOCATED APPROXIMATELY TWELVE (12) INCHES ABOVE THE CROWN OF THE PIPE. THE WORDING SHALL OCCUR EVERY THREE (3) FEET.

GENERAL LANDSCAPE NOTES:

1. IF ANY NEW LANDSCAPE MATERIALS ARE INSTALLED AS PART OF THIS PROJECT THEN SOD ONLY WITH NO SHRUBS AND/OR TREES ARE TO BE INSTALLED WITHIN 5' OF ANY WATER METER AND WITHIN 7.5' OF ANY FIRE HYDRANT. TREES CANNOT BE INSTALLED WITHIN 10' OF A WUD WATER OR SEWER MAIN WITHOUT PRIOR PBCWUD APPROVAL AND THE INSTALLATION OF A ROOT BARRIER. ALSO, IF ANY EXISTING TREES ARE LESS THAN 10' MINIMUM OF ANY NEW WATER OR SEWER MAIN A ROOT BARRIER IS REQUIRED TO BE INSTALLED OR TREE RELOCATED/REMOVED.

LEGEND

SD	PROPOSED DRAINAGE PIPE
FM	PROPOSED FORCE MAIN (SIZE NOTED)
RCWM	PROPOSED RECLAIMED WATER LINE (SIZE NOTED)
S	PROPOSED GRAVITY SEWER LINE (SIZE NOTED)
W	PROPOSED WATER LINE (SIZE NOTED)
FPL	PROPOSED FPL ELECTRIC LINE
	PROPOSED GATE VALVE AND BOX
	PROPOSED REDUCER
	FIRE HYDRANT
	SAMPLE POINT
EXWM	EXISTING WATER LINE
EXWM	EXISTING GATE VALVE
EXSD	EXISTING PIPE AND INLET
EXSS	EXISTING SANITARY SEWER LINE

LEGEND

	PROPOSED PROPERTY LINE
	EXISTING PROPERTY LINE
	PROP. EASEMENT LINE
##.##	PROPOSED GRADE
##.##	EXISTING GRADE
	FLOW ARROW
	PROPOSED STANDARD PAVEMENT
	PROPOSED HEAVY PAVEMENT
	PROPOSED PAVE DRAIN PERV. PAVERS
	PROPOSED 4" CONCRETE
	PROPOSED 6" CONCRETE
	PROPOSED 8" CONCRETE
	PROPOSED VEHICULAR USE PAVERS
	PROPOSED PEDESTRIAN USE PAVERS
	PROPOSED BUILDING
	DETECTABLE WARNING MAT
M.E.E.	MATCH EXISTING ELEVATION
#	GRADING CROSS-SECTION
GUE	GENERAL UTILITY EASEMENT

GRAPHIC SCALE

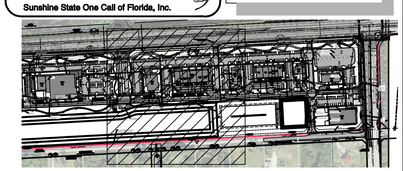
30 0 15 30 60 120

(IN FEET)
1 inch = 30 ft.

NORTH

Call 48 hours before you dig
It's the Law!
1-800-432-4770
Sunshine State One Call of Florida, Inc.

NOTE: CONTRACTOR TO VERIFY DEPTH AND LOCATION OF EXISTING UTILITIES PRIOR TO ANY CONSTRUCTION.



KEY MAP

WUD #23-575

NOTE: ELEVATIONS ARE NAVD 88
– CONVERSION FACTOR
(NAVD 88) = (NGVD 29) –1.62'

EX. 12" DIP WM (TO REMAIN)

NORTHLAKE BLVD (ROADWAY EXPANSION BY OTHERS)

EX. 12" DIP WM (TO REMAIN)

EX. 12" DIP WM (TO REMAIN)

WUD AS-BUILT #3871

EX. 8" DIP FM (TO REMAIN)

WUD AS-BUILT #3871

EX. 8" DIP FM (TO REMAIN)

10' EMBANKMENT EASEMENT (O.R.B. 12017, PG. 1008)

EX. 12" B.F.V. W/ PLUG (B.F.V. TO REMAIN) (REMOVE PLUG)

EX. FIRE HYDRANT W/ 6" G.V. (TO REMAIN)

JUMPER FROM EX. FIRE HYDRANT (PER WUD STD DETAIL 33W W/ SAMPLE POINT #1)

12"x 90° BEND T.O.P. EL.=18.50'

B.O.P 12" DIP WM =17.34
T.O.P 48" RCP STM. =16.22

PROP. 12" DIP WM (3' MIN. COVER)

PROP. 12"GV #2

CONNECT PROP. 12" DIP WM TO EX. AFTER EX. PLUG REMOVAL W/ 12"x 12" TEE, 12" B.F.V. #1 (W), 8" G.V. #1 (S) & 8" PLUG (G.V. TO BE USED IN PLACE OF B.F.V. #1 IF INSUFFICIENT COVER AVAILABLE FOR B.F.V.)

COCONUT PALM PLAZA (WUD PROJECT # 23-579)

PROP. 48" SPLICE BOX IN 10' UE (PER FPL STDS.) (TYP.)

PROP. 10' G.U.E.
PROP. 50' RURAL PARKWAY EASEMENT

PROP. UNDERGROUND FUEL STORAGE TANKS (SEE ARCH PLANS FOR DETAILS)

PROP. GAS DISPENSER (SEE ARCH PLANS FOR DETAILS)

PROP. 12" DIP WM (3' MIN. COVER)

PROP. 10' G.U.E.

PROP. 12" DIP WM (3' MIN. COVER)

PROP. 1,250 GAL. OIL/GREASE INTERCEPTOR (PER PBCWUD REQUIREMENTS)
C/O INV UPSTREAM: 17.10'
C/O INV DOWNSTREAM: 16.89'

PROP. 1.5" WATER SERVICE W/ 1" WATER METER & 1" RPZ (G-2)
PROP. 1.5" WATER SERVICE W/ 5/8" WATER METER & 5/8" RPZ (G-3)
PROP. 1.5" WATER SERVICE W/ 5/8" WATER METER & 5/8" RPZ (G-4)
PROP. 1.5" WATER SERVICE W/ 1" WATER METER & 1" RPZ (G-5)

PROP. 1,250 GAL. OIL/GREASE INTERCEPTOR (PER PBCWUD REQUIREMENTS)
C/O INV UPSTREAM: 17.25'
C/O INV DOWNSTREAM: 17.04'

PROP. 6" DIP FIRE LINE, 6" DDCV, 6" FDC, (6) 6"x 45° BENDS AND 6" G.V. #14

PBCWUD POINT OF SERVICE

B.O.P 8" C-900 WM.=16.70
T.O.P 6" PVC SAN.=15.65

BLDG. 'G1' RESTAURANT
BLDG. 'G2' RETAIL
BLDG. 'G3' RETAIL
BLDG. 'G4' RETAIL FF EL. 22.50 INV. =17.40'
BLDG. 'G5' RESTAURANT
BLDG. 'G6' RESTAURANT

PROP. 6" PVC SANITARY SEWER SERVICE INV.=17.40' (1% MIN. SLOPE, 2' MIN. COVER)(TYP)

PROP. 1,250 GAL. OIL/GREASE INTERCEPTOR (PER PBCWUD REQUIREMENTS)
C/O INV UPSTREAM: 17.10'
C/O INV DOWNSTREAM: 16.89'

INV. =17.40'

CONTRACTOR TO MAINTAIN MIN. 18" VERTICAL CLEARANCE BETWEEN ELECTRIC/TELECOM & OTHER UTILITES (TYP.)

PROP. 8"X6" TEE T.O.P. EL.= 17.40' & 6" G.V. #13

PROP. TRANSFORMER IN 15'x15' UE (EXCEPT WHERE NOTED) (PER FPL STDS.) (TYP.)

PROP. TRANSFORMER IN 15'x15' UE (EXCEPT WHERE NOTED) (PER FPL STDS.) (TYP.)

METERS/ BAYS WEST TO EAST

5' (MIN.)

6' (MIN.)

PROP. FIRE HYDRANT ASSEMBLY #3

B.O.P 8" C-900 WM.=15.90'
T.O.P. 4" PVC ELEC.=14.35'

B.O.P 8" C-900 WM.=16.05'
T.O.P. 4" PVC ELEC.=14.50'

B.O.P 8" C-900 WM.=16.65
T.O.P 6" DIP WM.=15.60

B.O.P 8" PVC SAN.=13.90
T.O.P 36" RCP STM.=12.85

B.O.P 8" C-900 WM.=15.50
T.O.P 36" RCP STM.=12.85

B.O.P 8" C-900 WM.=15.85'
T.O.P 6" PVC SAN.=14.80

PROP. 2" WATER SVC. 2" DOUBLE-STRAP SADDLE & 2" CORP. STOP IN VALVE BOX. 1" METER & 1" RPZ

PROP. 2" WATER SVC. 2" DOUBLE-STRAP SADDLE & 2" CORP. STOP IN VALVE BOX. 2" METER, 2" X90° BEND & 2" RPZ

PROP. 8" C-900 WM

PROP. 4" DIP FIRE LINE, 4" DDCV, 4" FDC AND 4" G.V. #10
PBCWUD POINT OF SERVICE

PROP. 8"X4" TEE T.O.P. EL.= 17.55' & 4" G.V. #9

PROP. 8"X6" TEE T.O.P. EL.= 18.00' & 6" G.V. #8

B.O.P 8" PVC WM.=17.65
T.O.P 24" RCP STM. =16.60

PROP. 8"X6" TEE T.O.P. EL.= 17.65' & 6" G.V. #6

PROP. 6" DIP FIRE LINE, 6" DDCV, 6" FDC AND 6" G.V. #7

PROP. 12'X 8" TEE T.O.P. EL.= 18.35' W/ 8" G.V. #5 (W) & 12" G.V. #3 (S)

12"x 45° BEND T.O.P. EL.=17.30'

12"x 45° BEND T.O.P. EL.=17.30'

12'x 45° BEND T.O.P. EL.=18.30'

12'x 45° BEND T.O.P. EL.=18.30'

PROP. 8"X6" TEE T.O.P. EL.= 16.30' & 6" G.V. #15

PROP. FIRE HYDRANT ASSEMBLY #4

8"x 45° BEND T.O.P. EL.=16.70'
8"x 45° BEND T.O.P. EL.=16.60'
8"x 45° BEND T.O.P. EL.=16.25'
8"x 45° BEND T.O.P. EL.=16.20'

8"x 45° BEND T.O.P. EL.=16.65'
8"x 45° BEND T.O.P. EL.=16.60'
8"x 45° BEND T.O.P. EL.=16.30'
8"x 45° BEND T.O.P. EL.=16.20'

8"x 45° BEND T.O.P. EL.=16.30'

PROP. 8"X6" TEE T.O.P. EL.= 16.55' 6" G.V. #12 (N) & 8" G.V. #11 (E)

PROP. 2" WATER SERVICE W/ 1.5" WATER METER, 1.5" RPZ, 2" DOUBLE-STRAP SADDLE & 2" CORP. STOP IN VALVE BOX (G-1)

PROP. 2" DOUBLE-STRAP SADDLE & 2" CORP. STOP IN VALVE BOX

PROP. 2" WATER SERVICE W/ 1.5" WATER METER, 1.5" RPZ, 2" DOUBLE-STRAP SADDLE & 2" CORP. STOP IN VALVE BOX (G-6)

Struct. No.: S-02
Type: SAN. MH
Rim EL.: 19.25
INV. EL.: 13.64 (E)
INV. EL.: 13.54 (W)

364 LF 8" PVC @ 0.42% (PRIVATE)

Struct. No.: S-01
Type: SAN. MH
Rim EL.: 20.75
FL. EL.: 15.17 (W)

B.O.P 6" PVC SAN.=17.40
T.O.P 24" RCP STM.=16.05

B.O.P 8" C-900 WM.=17.35
T.O.P. 4" PVC ELEC.=15.80

PROP. 2" WATER SVC. 2" DOUBLE STRAP SADDLE & 2" CORP. STOP IN VALVE BOX. 1.5" METER, 2" X90° BEND & 1.5" RPZ

B.O.P 2" WM.=17.28
T.O.P 24" RCP STM.=15.98

PROP. 48" SPLICE BOX IN 10' UE (PER FPL STDS.) (TYP.)

PBCWUD POINT OF SERVICE

PROP. SAN. CLEANOUT (TYP)

PROP. 1,250 GAL. OIL/GREASE INTERCEPTOR (PER PBCWUD REQUIREMENTS)
C/O INV UPSTREAM: 18.40'
C/O INV DOWNSTREAM: 18.19'

PROP. FREE AIR & WATER STATION (SEE ARCH PLANS FOR DETAILS)

PROP. 6" PVC SANITARY SEWER SERVICE INV.=18.50' (1% MIN. SLOPE, 2' MIN. COVER)(TYP)

CONVENIENCE STORE W/ GAS SALES

PROP. FIRE HYDRANT ASSEMBLY #2 & SAMPLE POINT #3

PROP. ATM (SEE ARCH PLANS FOR DETAILS)

PROP. TRELLIS (TYP.) (SEE ARCH PLANS FOR DETAILS)

PROP. SIGN (TYP.) (SEE ARCH PLANS FOR DETAILS)

PROP. DUMPSTER ENCLOSURE (TYP.) (SEE ARCH PLANS FOR DETAILS)

PROP. LIGHT POLE (TYP.) (SEE LIGHTING PLANS FOR DETAILS)

PROP. 6" PVC SANITARY SEWER SERVICE INV.=18.50' (1% MIN. SLOPE, 2' MIN. COVER)(TYP)

PROP. LIGHT POLE (TYP.) (SEE LIGHTING PLANS FOR DETAILS)

PROP. OUTDOOR ACTIVITY AREA FENCE (TYP.) (SEE ARCH PLANS FOR DETAILS)

PROP. 6' ITID EASEMENT

PROP. FIRE HYDRANT ASSEMBLY #1, 12" X 6" REDUCER, 12" GV #4 & SAMPLE POINT #2

BLDG. 'H' FF EL. 22.50 BANK

BLDG. 'T' FF EL. 22.5

BLDG. 'J' FF EL. 22.50

EX. ASPHALT PAVING (TO REMAIN)

COCONUT BLVD.

PROP. 10'X30' MASS TRANS. EASEMENT

PROP. 12" DIP WM (3' MIN. COVER)

6.0" (MIN.)

MATCHLINE SEE SHEET C-18

RECORD DRAWING NOTES:
1. RECORD DRAWINGS SHALL BE PREPARED IN THE STATE PLANE COORDINATE SYSTEM.
2. ALL UTILITY FEATURES SHALL BE SHOWN IN THEIR AS-BUILT LOCATION.
3. STATE PLAN COORDINATES SHALL BE DISPLAYED ON RECORD DRAWING FOR ALL FEATURES SPECIFIED IN PBCWUD STANDARDS.
4. STATE PLAN COORDINATES SHALL BE SHOWN ON PROPERTY CORNERS AS REQUIRED BY PBCWUD.

GENERAL WATER NOTES:
1. ALL WATER MAIN DUCTILE IRON PIPE AND PIPE FITTINGS SHALL BE PAINTED WITH A 4" WIDE CONTINUOUS BLUE LINE THAT RUNS PARALLEL TO THE AXIS OF THE PIPE AND IS LOCATED ALONG THE TOP OF THE PIPE.
2. ALL WATER MAINS SHALL BE MARKED WITH ONE CONTINUOUS STRIP OF 6" WIDE MAGNETIC BLUE CODED TAPE IMPRINTED WITH ONE AND ONE HALF INCH (1.5") HIGH LETTERING READING "CAUTION - POTABLE WATER LINE BELOW" AND LOCATED APPROXIMATELY TWELVE (12) INCHES ABOVE THE CROWN OF THE PIPE. THE WORDING SHALL OCCUR EVERY THREE (3) FEET.
3. ALL WATER SERVICE BRASS FITTINGS ARE REQUIRED TO BE LEAD FREE.
4. ALL EXISTING PBCWUD FACILITIES (IE. VALVES) TO BE OPERATED BY PBCWUD PERSONNEL ONLY.

GENERAL SEWER NOTES:
1. ALL ON-SITE SEWER LATERALS, GRAVITY SEWER, LIFT STATION AND FORCE MAIN UP TO 4" GV #2F WILL BE PRIVATELY OWNED AND MAINTAINED.
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3. ALL FORCE MAIN DUCTILE IRON PIPE AND PIPE FITTINGS TO BE PAINTED WITH A 4" WIDE CONTINUOUS GREEN LINE THAT RUNS PARALLEL TO THE AXIS OF THE PIPE AND IS LOCATED ALONG THE TOP OF PIPE
4. FORCE MAIN SHALL BE MARKED WITH ONE CONTINUOUS STRIP OF 6" WIDE MAGNETIC BROWN CODED TAPE IMPRINTED WITH ONE AND ONE HALF INCH (1.5") HIGH LETTERING READING "CAUTION - FORCE MAIN BELOW" AND LOCATED APPROXIMATELY TWELVE (12) INCHES ABOVE THE CROWN OF THE PIPE. THE WORDING SHALL OCCUR EVERY THREE (3) FEET.

GENERAL LANDSCAPE NOTES:
1. IF ANY NEW LANDSCAPE MATERIALS ARE INSTALLED AS PART OF THIS PROJECT THEN SOD ONLY WITH NO SHRUBS AND/OR TREES ARE TO BE INSTALLED WITHIN 5' OF ANY WATER METER AND WITHIN 7.5' OF ANY FIRE HYDRANT. TREES CANNOT BE INSTALLED WITHIN 10' OF A WUD WATER OR SEWER MAIN WITHOUT PRIOR PBCWUD APPROVAL AND THE INSTALLATION OF A ROOT BARRIER. ALSO, IF ANY EXISTING TREES ARE LESS THAN 10' MINIMUM OF ANY NEW WATER OR SEWER MAIN A ROOT BARRIER IS REQUIRED TO BE INSTALLED OR TREE RELOCATED/REMOVED.

SITE

NORTHLAKE BLVD.

HAMLIN BLVD.

130TH TRAIL N.

130TH AVE N.

COCONUT BLVD.

LOCATION MAP

SECTION 15, TOWNSHIP 42S, RANGE 41E N.T.S.

PBCUE RECORDED IN:
O.R.B._____P.G.____

PLAT RECORDED IN:
P.B._____P.G.____

INDEMNITY AGREEMENT RECORDED IN:
O.R.B._____P.G.____

LEGEND

- SD — PROPOSED DRAINAGE PIPE
- FM — PROPOSED FORCE MAIN (SIZE NOTED)
- RCWM — PROPOSED RECLAIMED WATER LINE (SIZE NOTED)
- S — PROPOSED GRAVITY SEWER LINE (SIZE NOTED)
- W — PROPOSED WATER LINE (SIZE NOTED)
- FPL — PROPOSED FPL ELECTRIC LINE
- PROPOSED GATE VALVE AND BOX
- PROPOSED REDUCER
- FIRE HYDRANT
- SAMPLE POINT
- EXWM — EXISTING WATER LINE
- EXWM — EXWM — EXISTING GATE VALVE
- EXSD — EXSD — EXISTING PIPE AND INLET
- EXSS — EXISTING SANITARY SEWER LINE

LEGEND

- PROPOSED PROPERTY LINE
- EXISTING PROPERTY LINE
- PROP. EASEMENT LINE
- PROPOSED GRADE
- EXISTING GRADE
- FLOW ARROW
- PROPOSED STANDARD PAVEMENT
- PROPOSED HEAVY PAVEMENT
- PROPOSED PAVE DRAIN PERV. PAVERS
- PROPOSED 4" CONCRETE
- PROPOSED 6" CONCRETE
- PROPOSED 8" CONCRETE
- PROPOSED VEHICULAR USE PAVERS
- PROPOSED PEDESTRIAN USE PAVERS
- PROPOSED BUILDING
- DETECTABLE WARNING MAT
- M.E.E. — MATCH EXISTING ELEVATION
- GRADING CROSS–SECTION
- GUE — GENERAL UTILITY EASEMENT

GRAPHIC SCALE

30 0 15 30 60 120

(IN FEET)
1 inch = 30 ft.

NORTH

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Sunshine State One Call of Florida, Inc.

NOTE:
CONTRACTOR TO VERIFY DEPTH AND LOCATION OF EXISTING UTILITIES PRIOR TO ANY CONSTRUCTION.

KEY MAP

WUD #23-575

REVISIONS	DATE	BY
REV PER LIGHTING/FPL/BLDG CHANGES	07/25/25	M.V.K.
REV PER PBCWUD PRECON COMMENTS	03/11/25	M.V.K.
REV PER ADD. GRADES	02/12/25	M.V.K.
REV PER NEW SITE PLAN	01/14/25	M.V.K.

FILE NAME 7714ENGNG

CAULFIELD & WHEELER, INC.
CIVIL ENGINEERING - LAND PLANNING
LANDSCAPE DESIGN - SURVEYING
7900 GLADES ROAD - SUITE 100
BOCA RATON, FLORIDA 33434
PHONE (561)-392-1991 / FAX (561)-750-1452

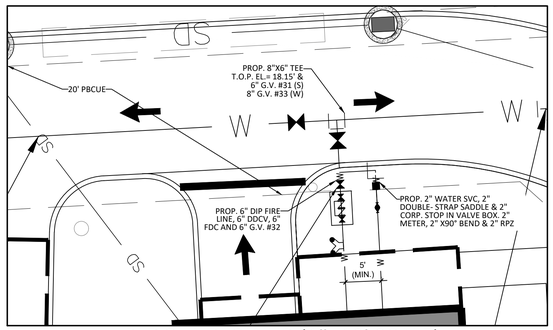
SHOPS AT INDIAN TRAILS A.K.A. COCONUT CROSSING WATER DISTRIBUTION, SANITARY SEWER & UTILITY PLAN EAST

SWC NORTHLAKE BLVD. & COCONUT BLVD.
PALM BEACH GARDENS, FLORIDA

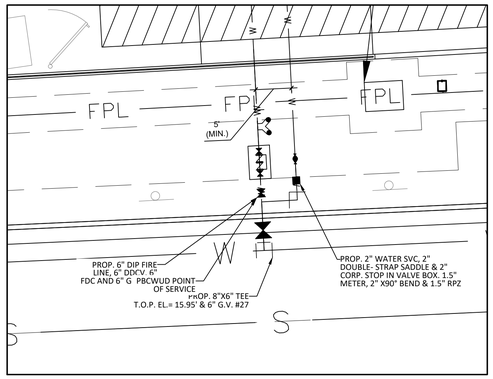
DATE	07/28/23
DRAWN BY	M.V.K.
F.B./ PG.	N/A
SCALE	1"=30'

MATTHEW V. KAHN
PROFESSIONAL ENGINEER
LICENSE NO. 82227
STATE OF FLORIDA
– FOR THE FIRM –
DATE

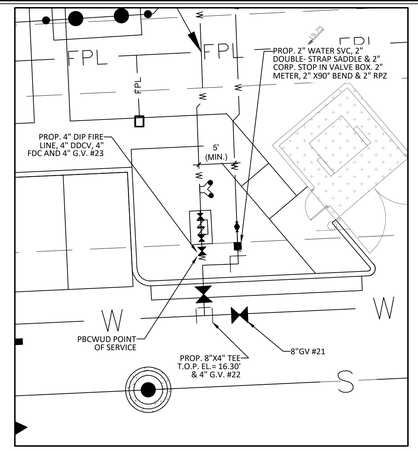
JOB # 7714-1
SHT.NO.
C – 19
OF 45 SHEETS



BLDG. A BLOWUP (1"=10' SCALE)



BLDG. C BLOWUP (1"=10' SCALE)



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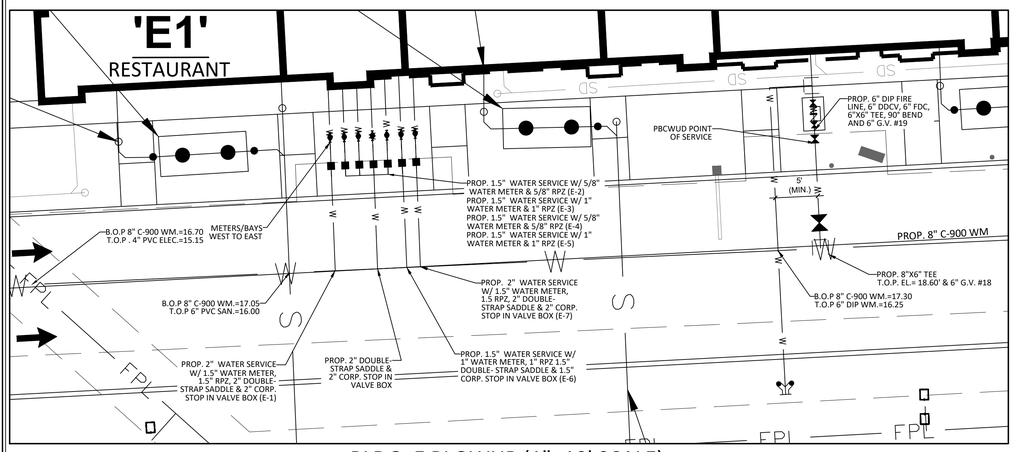
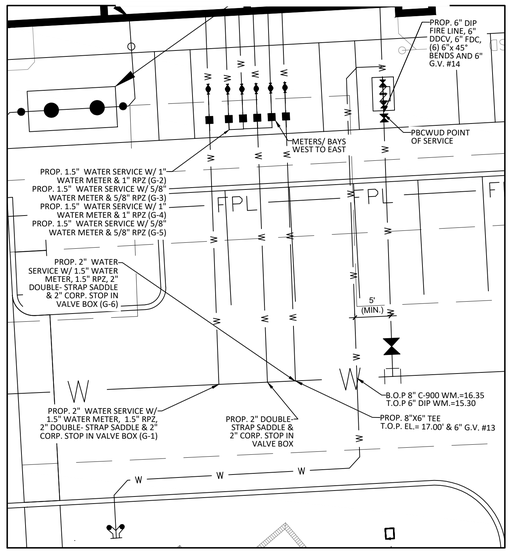
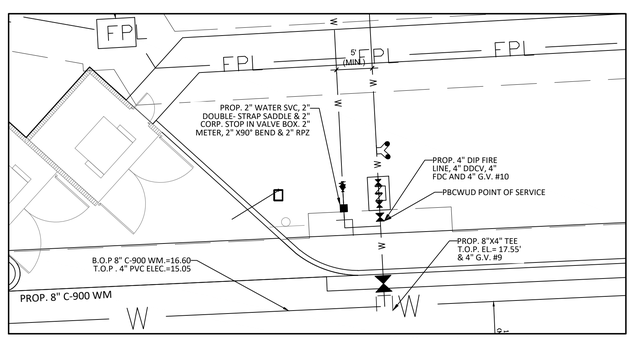


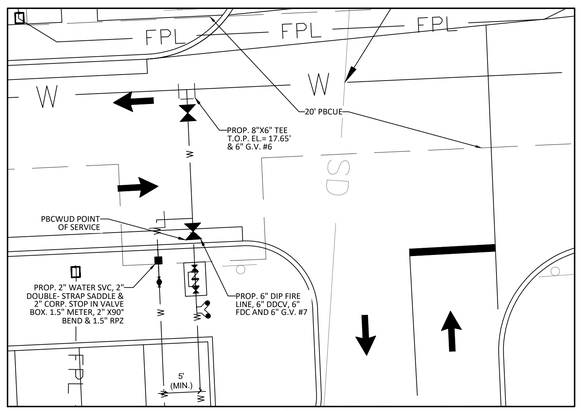
BLDG. E BLOWUP (1"=10' SCALE)



BLDG. G BLOWUP (1"=10' SCALE)



BLDG. I BLOWUP (1"=10' SCALE)



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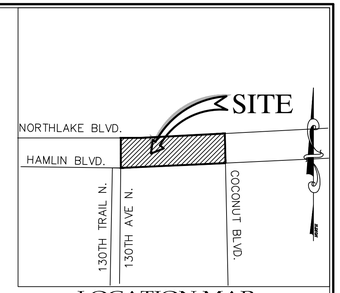

LOCATION MAP

SECTION 15, TOWNSHIP 42S, RANGE 41E N.T.S.

NOTE: ELEVATIONS ARE NAVD 88 – CONVERSION FACTOR (NAVD 88) = (NGVD 29) –1.62'

PBCUE RECORDED IN:
O.R.B._____P.G.____

PLAT RECORDED IN:
P.B._____P.G.____

INDEMNITY AGREEMENT RECORDED IN:
O.R.B._____P.G.____

LEGEND

SD	PROPOSED DRAINAGE PIPE
FM	PROPOSED FORCE MAIN (SIZE NOTED)
RCWM	PROPOSED RECLAIMED WATER LINE (SIZE NOTED)
S	PROPOSED GRAVITY SEWER LINE (SIZE NOTED)
W	PROPOSED WATER LINE (SIZE NOTED)
FPL	PROPOSED FPL ELECTRIC LINE
	PROPOSED GATE VALVE AND BOX
	PROPOSED REDUCER
	FIRE HYDRANT
	SAMPLE POINT
EXWM	EXISTING WATER LINE
EXWM	EXISTING GATE VALVE
EXSD	EXISTING PIPE AND INLET
EXSS	EXISTING SANITARY SEWER LINE

LEGEND

	PROPOSED PROPERTY LINE
	EXISTING PROPERTY LINE
	PROP. EASEMENT LINE
##.##	PROPOSED GRADE
##.##	EXISTING GRADE
	FLOW ARROW
	PROPOSED STANDARD PAVEMENT
	PROPOSED HEAVY PAVEMENT
	PROPOSED PAVE DRAIN PERV. PAVERS
	PROPOSED 4" CONCRETE
	PROPOSED 6" CONCRETE
	PROPOSED 8" CONCRETE
	PROPOSED VEHICULAR USE PAVERS
	PROPOSED PEDESTRIAN USE PAVERS
	PROPOSED BUILDING
	DETECTABLE WARNING MAT
M.E.E.	MATCH EXISTING ELEVATION
#	GRADING CROSS-SECTION
GUE	GENERAL UTILITY EASEMENT

GRAPHIC SCALE

30 0 15 30 60 120

(IN FEET)
1 inch = 30 ft.

NORTH

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NOTE:
CONTRACTOR TO VERIFY DEPTH AND LOCATION OF EXISTING UTILITIES PRIOR TO ANY CONSTRUCTION.

WUD #23-575

REVISIONS	DATE	BY
REV PER PBCU COMMENTS	04/XX/25	MVK
REV PER PBCWUD PRECON COMMENTS	03/11/25	MVK
REV PER ADD. GRADES	02/12/25	MVK
REV PER NEW SITE PLAN	01/14/25	MVK

FILE NAME 7714ENG.DWG

CAULFIELD & WHEELER, INC.
CIVIL ENGINEERING - LAND PLANNING
LANDSCAPE DESIGN - SURVEYING
7900 GLADES ROAD - SUITE 100
BOCA RATON, FLORIDA 33434
PHONE (561) 392-1991 / FAX (561)-750-1452

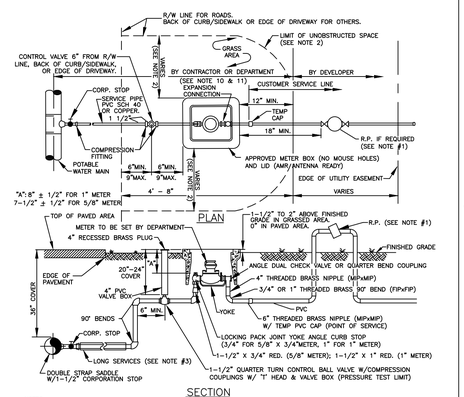
SHOPS AT INDIAN TRAILS A.K.A. COCONUT CROSSING WATER DISTRIBUTION, SANITARY SEWER, & UTILITY PLAN BLOWUPS

SWC NORTHLAKE BLVD. & COCONUT BLVD
PALM BEACH GARDENS, FLORIDA

DATE	07/28/23
DRAWN BY	M.V.K.
F.B./ PG.	N/A
SCALE	1"=30'

MATTHEW V. KAHN
PROFESSIONAL ENGINEER
LICENSE NO. 82227
STATE OF FLORIDA
– FOR THE FIRM –
DATE

JOB # 7714-1
SHT.NO.
C-19A
OF 45 SHEETS

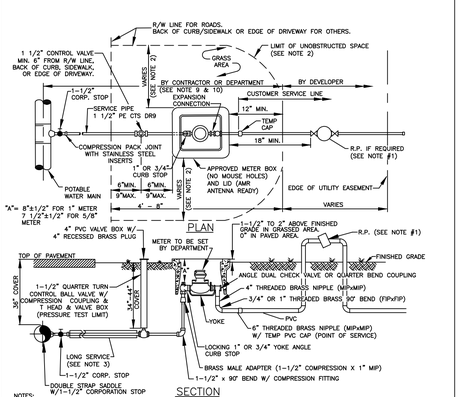


SECTION

NOTES:

1. ALL NON-RESIDENTIAL SERVICES AND RESIDENTIAL SERVICES WITH SEPARATE METERED RECLAIMED WATER SERVICE SHALL HAVE AN APPROVED REDUCED PRESSURE PRINCIPLE BACKFLOW PREVENTION ASSEMBLY (R.P.). THE INITIAL TEST OF THE R.P. SHALL BE PERFORMED BY THE DEPARTMENT. THE R.P. SHALL BE INSTALLED AS CLOSE AS POSSIBLE TO THE POINT OF SERVICE NOT TO EXCEED 48" WITHOUT PRIOR DEPARTMENT APPROVAL. THE R.P. DEVICE SHALL BE USC APPROVED PER FAC 62-555.360.#
2. METER BOX SHALL BE LOCATED 12" MINIMUM FROM EDGE OF SIDEWALK, BACK OF CURB, OR EDGE OF DRIVEWAY WITH SOD ONLY WITHIN 5" MINIMUM AND NO TREES WITHIN 10' MINIMUM. IF METER BOX IS 18" OR LESS FROM A DRIVEWAY, THE BOX AND LID MUST BE RATED TIER 15.#
3. FOR INSTALLATION OF SERVICES UNDER DRIVEWAYS AND ROADWAYS USE MIN. 3" DIAMETER BLACK IRON, PVC SCH 40 OR HDPE SDR 9 CASING. CASING SHALL EXTEND MIN. 24" BEYOND EDGE OF PAVEMENT. END OF CASING TO BE SEALED WITH FOAM SEALANT. CASING SHALL BE COLOR-CODED BLACK, WHITE, BLUE, OR BLUE STRIPED.
4. SUCCESSIVE TAPS INTO THE WATER MAIN SHALL BE SPACED A MINIMUM OF 18" APART. TAPS SPACED BETWEEN 18" AND 48" SHALL BE OFFSET TO EACH SIDE OF THE MAIN. TAPS ON THE SAME SIDE OF A PVC PIPE SECTION SHALL BE MIN. 10' APART.
5. METER SHALL NOT BE PLACED IN SIDEWALK OR DRIVEWAY AREAS. WATER SERVICE LINES AND TAPS SHALL NOT BE PLACED UNDER DRIVEWAYS WHENEVER POSSIBLE AND IF REQUIRED, ONLY WITH PRIOR DEPARTMENT APPROVAL.
6. PVC PIPE SHALL BE SCH. 40. WITH SCH 80 PVC FITTINGS. ALL BRASS SHALL BE "LEAD FREE".#
7. MAXIMUM SERVICE LENGTH IS 100' TO METER.
8. 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.
9. METER/SERVICE WILL NOT BE INSTALLED/ACTIVATED UNTIL:
   A. ALL FORM BOARDS FOR DRIVEWAY AND/OR SIDEWALK MUST BE COMPLETELY INSTALLED OR THE DRIVEWAY AND/OR SIDEWALK MUST HAVE BEEN INSTALLED.
   B. "MINIMUM UNOBSTRUCTED SPACE" AS SHOWN IN NOTE 2 AND ON THE PLAN VIEW IS PROVIDED WITH 12" MINIMUM VERTICAL SEPARATION REQUIRED TO ALL OTHER UTILITIES.
   C. THE REQUIRED BACKFLOW PREVENTION ASSEMBLY/DEVICE IS INSTALLED AND HAS PASSED INITIAL TEST.
10. METER TO BE INSTALLED BY DEPARTMENT. THE PIPING BEYOND THE CONTROL VALVE SHALL BE INSTALLED BY THE DEVELOPER OR THE DEPARTMENT DEPENDING ON THE TYPE OF SERVICE INSTALLATION REQUIRED.
11. THE DEVELOPER/PROPERTY OWNER OR ASSIGNEE SHALL BE RESPONSIBLE FOR INSTALLATION OF SERVICES BEYOND PRESSURE TEST LIMITS AS SPECIFIED BY THE DEPARTMENT.
12. THREADED AREAS OF CORPORATION STOP AND OTHER FITTINGS SHALL BE SPIRAL WRAPPED WITH TWO (2) WRAPS OF TEFLON TAPE.
13. METER BOXES IN NON-GRASS AREAS SHALL HAVE TRAFFIC RATED LIDS.
14. A 12" THICK COMPACTED 3/4" ROCK BASE IS REQUIRED FOR METER BOXES OUTSIDE OF GRASS AREA. THE BASE SHALL EXTEND MINIMUM 12" BEYOND THE METER BOX PERIMETER.

POTABLE WATER SERVICE SINGLE 5/8" X 3/4" & * 1" METER INSTALLATION DETAIL (PVC) — 1W



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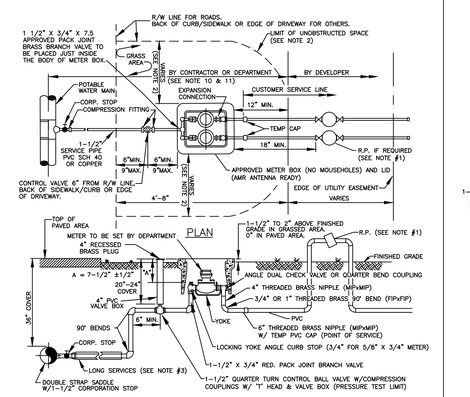
3. FOR INSTALLATION OF SERVICES UNDER DRIVEWAYS AND ROADWAYS USE MIN. 3" DIAMETER BLACK IRON, PVC SCH 40 OR HDPE SDR 9 CASING. CASING SHALL EXTEND MIN. 24" BEYOND EDGE OF PAVEMENT. END OF CASING TO BE SEALED WITH FOAM SEALANT. CASING SHALL BE COLOR-CODED BLACK, WHITE, BLUE, OR BLUE STRIPED.
4. SUCCESSIVE TAPS INTO THE WATER MAIN SHALL BE SPACED A MINIMUM OF 18" APART. TAPS SPACED BETWEEN 18" AND 48" SHALL BE OFFSET TO EACH SIDE OF THE MAIN. TAPS ON THE SAME SIDE OF A PVC PIPE SECTION SHALL BE MIN. 10' APART.
5. METER SHALL NOT BE PLACED IN SIDEWALK OR DRIVEWAY AREAS. WATER SERVICE LINES AND TAPS SHALL NOT BE PLACED UNDER DRIVEWAYS WHENEVER POSSIBLE AND IF REQUIRED, ONLY WITH PRIOR DEPARTMENT APPROVAL.
6. MAXIMUM SERVICE LENGTH IS 100' TO METER.
7. 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.
8. METER/SERVICE WILL NOT BE INSTALLED/ACTIVATED UNTIL:
   A. ALL FORM BOARDS FOR DRIVEWAY AND/OR SIDEWALK MUST BE COMPLETELY INSTALLED OR THE DRIVEWAY AND/OR SIDEWALK MUST HAVE BEEN INSTALLED.
   B. "MINIMUM UNOBSTRUCTED SPACE" AS SHOWN IN NOTE 2 AND ON THE PLAN VIEW IS PROVIDED WITH 12" MINIMUM VERTICAL SEPARATION REQUIRED TO ALL OTHER UTILITIES.
   C. THE REQUIRED BACKFLOW PREVENTION ASSEMBLY/DEVICE IS INSTALLED AND HAS PASSED INITIAL TEST.
9. SERVICE COMPONENTS SHALL BE CONSTRUCTED FOR THE METER TO BE INSTALLED "TRUE" AND "PLUMB" AND TO ALLOW METER READING THROUGH THE METER READER LID.
10. APPROVED COPPER SETTER ASSEMBLY REQUIRED. PVC SHALL BE SCHEDULE 40 PIPE WITH SCHEDULE 80 FITTINGS. ALL BRASS FITTINGS SHALL BE "LEAD FREE".
11. METER TO BE INSTALLED BY THE DEPARTMENT. THE PIPING BEYOND THE CONTROL VALVE SHALL BE INSTALLED BY THE DEVELOPER OR THE DEPARTMENT DEPENDING ON THE TYPE OF SERVICE INSTALLATION REQUESTED.
12. ALL HARDWARE FOR FLANGED CONNECTIONS (BOLTS, ETC.) TO BE STAINLESS STEEL.
13. THREADED AREAS OF CORPORATION STOP AND OTHER FITTINGS SHALL BE SPIRAL WRAPPED WITH TWO (2) WRAPS OF TEFLON TAPE. ALL BRASS FITTINGS SHALL BE "LEAD FREE".
14. METER BOXES IN NON-GRASS AREAS SHALL HAVE TRAFFIC RATED LIDS.
15. A 4" THICK COMPACTED 3/4" ROCK BASE IS REQUIRED. THE BASE SHALL EXTEND MINIMUM 12" BEYOND THE METER BOX PERIMETER.

POTABLE WATER SERVICE SINGLE 5/8" X 3/4" & * 1" METER INSTALLATION DETAIL (POLYETHYLENE) — 2W

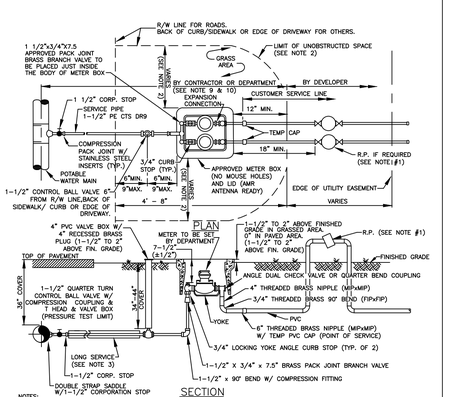


SECTION

NOTES:

1. ALL NON-RESIDENTIAL SERVICES AND RESIDENTIAL SERVICES WITH SEPARATE METERED RECLAIMED WATER SERVICE SHALL HAVE AN APPROVED REDUCED PRESSURE PRINCIPLE BACKFLOW PREVENTION ASSEMBLY (R.P.). THE INITIAL TEST OF THE R.P. SHALL BE PERFORMED BY THE DEPARTMENT. THE R.P. SHALL BE INSTALLED AS CLOSE AS POSSIBLE TO THE POINT OF SERVICE NOT TO EXCEED 48" WITHOUT PRIOR DEPARTMENT APPROVAL. THE R.P. DEVICE SHALL BE USC APPROVED PER FAC 62-555.360.#
2. METER BOX SHALL BE LOCATED 12" MINIMUM FROM EDGE OF SIDEWALK, BACK OF CURB, OR EDGE OF DRIVEWAY WITH SOD ONLY WITHIN 5" MINIMUM AND NO TREES WITHIN 10' MINIMUM. IF METER BOX IS 18" OR LESS FROM A DRIVEWAY, THE BOX AND LID MUST BE RATED TIER 15.#
3. FOR INSTALLATION OF SERVICES UNDER DRIVEWAYS AND ROADWAYS USE MIN. 3" DIAMETER BLACK IRON, PVC SCH 40 OR HDPE SDR 9 CASING. CASING SHALL EXTEND MIN. 24" BEYOND EDGE OF PAVEMENT. END OF CASING TO BE SEALED WITH FOAM SEALANT. CASING SHALL BE COLOR-CODED BLACK, WHITE, BLUE, OR BLUE STRIPED.
4. SUCCESSIVE TAPS INTO THE WATER MAIN SHALL BE SPACED A MINIMUM OF 18" APART. TAPS SPACED BETWEEN 18" AND 48" SHALL BE OFFSET TO EACH SIDE OF THE MAIN. TAPS ON THE SAME SIDE OF A PVC PIPE SECTION SHALL BE MIN. 10' APART.
5. METER SHALL NOT BE PLACED IN SIDEWALK OR DRIVEWAY AREAS. WATER SERVICE LINES AND TAPS SHALL NOT BE PLACED UNDER DRIVEWAYS WHENEVER POSSIBLE AND IF REQUIRED, ONLY WITH PRIOR DEPARTMENT APPROVAL.
6. MAXIMUM SERVICE LENGTH IS 100' TO METER.
7. 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.
8. METER/SERVICE WILL NOT BE INSTALLED/ACTIVATED UNTIL:
   A. ALL FORM BOARDS FOR DRIVEWAY AND/OR SIDEWALK MUST BE COMPLETELY INSTALLED OR THE DRIVEWAY AND/OR SIDEWALK MUST HAVE BEEN INSTALLED.
   B. "MINIMUM UNOBSTRUCTED SPACE" AS SHOWN IN NOTE 2 AND ON THE PLAN VIEW IS PROVIDED WITH 12" MINIMUM VERTICAL SEPARATION REQUIRED TO ALL OTHER UTILITIES.
   C. THE REQUIRED BACKFLOW PREVENTION ASSEMBLY/DEVICE IS INSTALLED AND HAS PASSED INITIAL TEST.
9. SERVICE COMPONENTS SHALL BE CONSTRUCTED FOR THE METER TO BE INSTALLED "TRUE" AND "PLUMB" AND TO ALLOW METER READING THROUGH THE METER READER LID.
10. METER TO BE INSTALLED BY DEPARTMENT. THE PIPING BEYOND THE CONTROL VALVE SHALL BE INSTALLED BY THE DEVELOPER OR THE DEPARTMENT DEPENDING ON THE TYPE OF SERVICE INSTALLATION REQUIRED.
11. THE DEVELOPER/PROPERTY OWNER OR ASSIGNEE SHALL BE RESPONSIBLE FOR INSTALLATION OF SERVICES BEYOND PRESSURE TEST LIMITS AS SPECIFIED BY THE DEPARTMENT.
12. THREADED AREAS OF CORPORATION STOP AND OTHER FITTINGS SHALL BE SPIRAL WRAPPED WITH TWO (2) WRAPS OF TEFLON TAPE.
13. METER BOXES IN NON-GRASS AREAS SHALL HAVE TRAFFIC RATED LIDS.
14. A 12" THICK COMPACTED 3/4" ROCK BASE IS REQUIRED FOR METER BOXES OUTSIDE OF GRASS AREA. THE BASE SHALL EXTEND MINIMUM 12" BEYOND THE METER BOX PERIMETER.

POTABLE WATER SERVICE DUAL 5/8" X 3/4" METER INSTALLATION DETAIL (PVC) — 3W

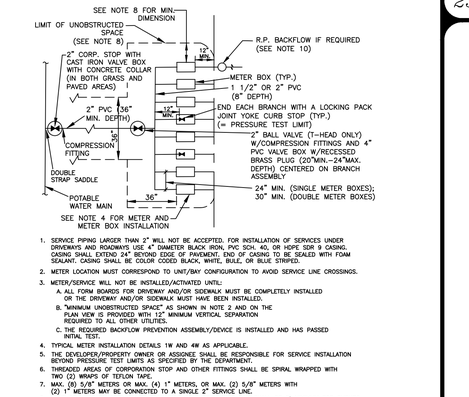


SECTION

NOTES:

1. ALL NON-RESIDENTIAL SERVICES AND RESIDENTIAL SERVICES WITH SEPARATE METERED RECLAIMED WATER SERVICE SHALL HAVE AN APPROVED REDUCED PRESSURE PRINCIPLE BACKFLOW PREVENTION ASSEMBLY (R.P.). THE INITIAL TEST OF THE R.P. SHALL BE PERFORMED BY THE DEPARTMENT. THE R.P. SHALL BE INSTALLED AS CLOSE AS POSSIBLE TO THE POINT OF SERVICE NOT TO EXCEED 48" WITHOUT PRIOR DEPARTMENT APPROVAL. THE R.P. DEVICE SHALL BE USC APPROVED PER FAC 62-555.360.#
2. METER BOX SHALL BE LOCATED 12" MINIMUM FROM EDGE OF SIDEWALK, BACK OF CURB, OR EDGE OF DRIVEWAY WITH SOD ONLY WITHIN 5" MINIMUM AND NO TREES WITHIN 10' MINIMUM. IF METER BOX IS 18" OR LESS FROM A DRIVEWAY, THE BOX AND LID MUST BE RATED TIER 15.#
3. FOR INSTALLATION OF SERVICES UNDER DRIVEWAYS AND ROADWAYS USE MIN. 3" DIAMETER BLACK IRON, PVC SCH 40 OR HDPE SDR 9 CASING. CASING SHALL EXTEND MIN. 24" BEYOND EDGE OF PAVEMENT. END OF CASING TO BE SEALED WITH FOAM SEALANT. CASING SHALL BE COLOR-CODED BLACK, WHITE, BLUE, OR BLUE STRIPED.
4. SUCCESSIVE TAPS INTO THE WATER MAIN SHALL BE SPACED A MINIMUM OF 18" APART. TAPS SPACED BETWEEN 18" AND 48" SHALL BE OFFSET TO EACH SIDE OF THE MAIN. TAPS ON THE SAME SIDE OF A PVC PIPE SECTION SHALL BE MIN. 10' APART.
5. METER SHALL NOT BE PLACED IN SIDEWALK OR DRIVEWAY AREAS. WATER SERVICE LINES AND TAPS SHALL NOT BE PLACED UNDER DRIVEWAYS WHENEVER POSSIBLE AND IF REQUIRED, ONLY WITH PRIOR DEPARTMENT APPROVAL.
6. MAXIMUM SERVICE LENGTH IS 100' TO METER.
7. 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.
8. METER/SERVICE WILL NOT BE INSTALLED/ACTIVATED UNTIL:
   A. ALL FORM BOARDS FOR DRIVEWAY AND/OR SIDEWALK MUST BE COMPLETELY INSTALLED OR THE DRIVEWAY AND/OR SIDEWALK MUST HAVE BEEN INSTALLED.
   B. "MINIMUM UNOBSTRUCTED SPACE" AS SHOWN IN NOTE 2 AND ON THE PLAN VIEW IS PROVIDED WITH 12" MINIMUM VERTICAL SEPARATION REQUIRED TO ALL OTHER UTILITIES.
   C. THE REQUIRED BACKFLOW PREVENTION ASSEMBLY/DEVICE IS INSTALLED AND HAS PASSED INITIAL TEST.
9. SERVICE COMPONENTS SHALL BE CONSTRUCTED FOR THE METER TO BE INSTALLED "TRUE" AND "PLUMB" AND TO ALLOW METER READING THROUGH THE METER READER LID.
10. APPROVED COPPER SETTER ASSEMBLY REQUIRED. PVC SHALL BE SCHEDULE 40 PIPE WITH SCHEDULE 80 FITTINGS. ALL BRASS FITTINGS SHALL BE "LEAD FREE".
11. METER TO BE INSTALLED BY THE DEPARTMENT. THE PIPING BEYOND THE CONTROL VALVE SHALL BE INSTALLED BY THE DEVELOPER OR THE DEPARTMENT DEPENDING ON THE TYPE OF SERVICE INSTALLATION REQUESTED.
12. ALL HARDWARE FOR FLANGED CONNECTIONS (BOLTS, ETC.) TO BE STAINLESS STEEL.
13. THREADED AREAS OF CORPORATION STOP AND OTHER FITTINGS SHALL BE SPIRAL WRAPPED WITH TWO (2) WRAPS OF TEFLON TAPE. ALL BRASS FITTINGS SHALL BE "LEAD FREE".
14. METER BOXES IN NON-GRASS AREAS SHALL HAVE TRAFFIC RATED LIDS.
15. A 4" THICK COMPACTED 3/4" ROCK BASE IS REQUIRED. THE BASE SHALL EXTEND MINIMUM 12" BEYOND THE METER BOX PERIMETER.

POTABLE WATER SERVICE DUAL 5/8" X 3/4" METER INSTALLATION DETAIL (POLYETHYLENE) — 4W



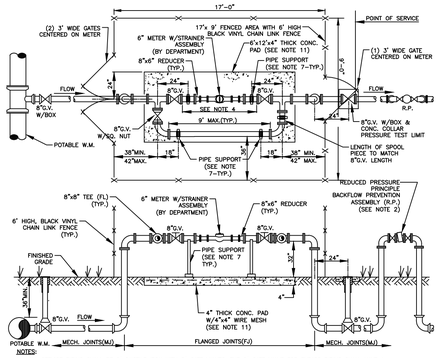
SECTION

NOTES:

1. ALL NON-RESIDENTIAL SERVICES AND RESIDENTIAL SERVICES WITH SEPARATE METERED RECLAIMED WATER SERVICE SHALL HAVE AN APPROVED REDUCED PRESSURE PRINCIPLE BACKFLOW PREVENTION ASSEMBLY (R.P.). THE INITIAL TEST OF THE R.P. SHALL BE PERFORMED BY THE DEPARTMENT. THE R.P. SHALL BE INSTALLED AS CLOSE AS POSSIBLE TO THE POINT OF SERVICE NOT TO EXCEED 48" WITHOUT PRIOR DEPARTMENT APPROVAL. THE R.P. DEVICE SHALL BE USC APPROVED PER FAC 62-555.360.#
2. METER BOX SHALL BE LOCATED 12" MINIMUM FROM EDGE OF SIDEWALK, BACK OF CURB, OR EDGE OF DRIVEWAY WITH SOD ONLY WITHIN 5" MINIMUM AND NO TREES WITHIN 10' MINIMUM. IF METER BOX IS 18" OR LESS FROM A DRIVEWAY, THE BOX AND LID MUST BE RATED TIER 15.#
3. FOR INSTALLATION OF SERVICES UNDER DRIVEWAYS AND ROADWAYS USE MIN. 3" DIAMETER BLACK IRON, PVC SCH 40 OR HDPE SDR 9 CASING. CASING SHALL EXTEND MIN. 24" BEYOND EDGE OF PAVEMENT. END OF CASING TO BE SEALED WITH FOAM SEALANT. CASING SHALL BE COLOR-CODED BLACK, WHITE, BLUE, OR BLUE STRIPED.
4. SUCCESSIVE TAPS INTO THE WATER MAIN SHALL BE SPACED A MINIMUM OF 18" APART. TAPS SPACED BETWEEN 18" AND 48" SHALL BE OFFSET TO EACH SIDE OF THE MAIN. TAPS ON THE SAME SIDE OF A PVC PIPE SECTION SHALL BE MIN. 10' APART.
5. METER SHALL NOT BE PLACED IN SIDEWALK OR DRIVEWAY AREAS. WATER SERVICE LINES AND TAPS SHALL NOT BE PLACED UNDER DRIVEWAYS WHENEVER POSSIBLE AND IF REQUIRED, ONLY WITH PRIOR DEPARTMENT APPROVAL.
6. MAXIMUM SERVICE LENGTH IS 100' TO METER.
7. 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.
8. METER/SERVICE WILL NOT BE INSTALLED/ACTIVATED UNTIL:
   A. ALL FORM BOARDS FOR DRIVEWAY AND/OR SIDEWALK MUST BE COMPLETELY INSTALLED OR THE DRIVEWAY AND/OR SIDEWALK MUST HAVE BEEN INSTALLED.
   B. "MINIMUM UNOBSTRUCTED SPACE" AS SHOWN IN NOTE 2 AND ON THE PLAN VIEW IS PROVIDED WITH 12" MINIMUM VERTICAL SEPARATION REQUIRED TO ALL OTHER UTILITIES.
   C. THE REQUIRED BACKFLOW PREVENTION ASSEMBLY/DEVICE IS INSTALLED AND HAS PASSED INITIAL TEST.
9. SERVICE COMPONENTS SHALL BE CONSTRUCTED FOR THE METER TO BE INSTALLED "TRUE" AND "PLUMB" AND TO ALLOW METER READING THROUGH THE METER READER LID.
10. APPROVED COPPER SETTER ASSEMBLY REQUIRED. PVC SHALL BE SCHEDULE 40 PIPE WITH SCHEDULE 80 FITTINGS. ALL BRASS FITTINGS SHALL BE "LEAD FREE".
11. METER TO BE INSTALLED BY THE DEPARTMENT. THE PIPING BEYOND THE CONTROL VALVE SHALL BE INSTALLED BY THE DEVELOPER OR THE DEPARTMENT DEPENDING ON THE TYPE OF SERVICE INSTALLATION REQUESTED.
12. ALL HARDWARE FOR FLANGED CONNECTIONS (BOLTS, ETC.) TO BE STAINLESS STEEL.
13. THREADED AREAS OF CORPORATION STOP AND OTHER FITTINGS SHALL BE SPIRAL WRAPPED WITH TWO (2) WRAPS OF TEFLON TAPE. ALL BRASS FITTINGS SHALL BE "LEAD FREE".
14. METER BOXES IN NON-GRASS AREAS SHALL HAVE TRAFFIC RATED LIDS.
15. A 4" THICK COMPACTED 3/4" ROCK BASE IS REQUIRED. THE BASE SHALL EXTEND MINIMUM 12" BEYOND THE METER BOX PERIMETER.

POTABLE WATER TYPICAL CONNECTION FOR MULTIPLE SERVICES * — 5W

SEE NOTE 8 FOR MIN. DIMENSION
LIMIT OF UNOBSTRUCTED SPACE (SEE NOTE 8)
2" CORP. STOP WITH CAST IRON VALVE

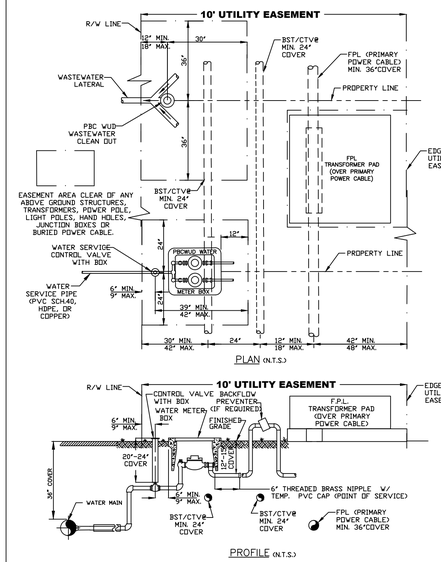


NOTES:

1. ALL SERVICE PIPING SHALL BE 8" DUCTILE IRON WITH 8" GATE VALVES. THE 8" GATE VALVE FOR BYPASS PIPING SHALL HAVE A SQUARE NUT.
2. ALL SERVICES SHALL HAVE AN APPROVED REDUCED PRESSURE PRINCIPLE BACKFLOW PREVENTION ASSEMBLY (R.P.). THE INITIAL TEST OF THE R.P. SHALL BE PERFORMED BY THE DEPARTMENT. THE R.P. SHALL BE INSTALLED AS CLOSE AS POSSIBLE TO THE POINT OF SERVICE, NOT TO EXCEED 48" WITHOUT PRIOR DEPARTMENT APPROVAL. THE R.P. DEVICE SHALL BE USC APPROVED PER FAC 62-555.360.4
3. APPROVED RESTRAINED FLANGED ADAPTERS ARE REQUIRED.
4. THE ENTIRE METER ASSEMBLY INCLUDING BYPASS (EXCLUDING WATER METER) SHALL BE PRESSURE TESTED AS REQUIRED.
5. WATER METER SHALL BE INSTALLED BY THE DEPARTMENT. LAYING LENGTH OF THE METER TO BE CONFIRMED PRIOR TO SERVICE INSTALLATION.
6. SERVICE COMPONENTS SHALL BE CONSTRUCTED FOR THE METER TO BE INSTALLED "TRUE" AND "PLUMB".
7. PIPE SUPPORTS SHALL BE CONSTRUCTED PER WUD STANDARD DETAIL 479 AND SHALL BE LOCATED PER THIS DETAIL.
8. METER/SERVICE WILL NOT BE INSTALLED/ACTIVATED UNTIL:
   A. ALL FORM BOARDS FOR DRIVEWAY AND/OR SIDEWALK MUST BE COMPLETELY INSTALLED OR THE DRIVEWAY AND/OR SIDEWALK MUST HAVE BEEN INSTALLED.
   B. "MINIMUM UNOBSTRUCTED SPACE" AS SHOWN IN NOTE 12 AND ON THE PLAN VIEW IS PROVIDED.
   C. THE REQUIRED BACKFLOW PREVENTION ASSEMBLY/DEVICE IS INSTALLED AND HAS PASSED INITIAL TEST.
9. BYPASS PIPING SHALL BE INSTALLED ON THE RIGHT SIDE OF METER IN DIRECTION OF FLOW UNLESS OTHERWISE PREVIOUSLY APPROVED BY THE DEPARTMENT.
10. ALL HARDWARE FOR FLANGED CONNECTIONS SHALL BE STAINLESS STEEL 304 OR PRIOR APPROVED EQUAL BY THE DEPARTMENT.
11. CONCRETE PAD FOR WATER METER ASSEMBLY SHALL BE 4" THICK WITH 4"x4" WIRE MESH. CONCRETE PAD IS REQUIRED TO BE BROOM FINISHED AND INSTALLED PRIOR TO THE WATER METER ASSEMBLY.
12. LIMIT OF UNOBSTRUCTED SPACE FROM SIDE OF WATER METER ASSEMBLY CONCRETE PAD SHALL BE 36" MINIMUM FOR SHRUBS AND SIMILAR OBSTRUCTIONS WITH 60" MINIMUM FOR TREES, WALLS, AND OTHER SIMILAR OBSTRUCTIONS.

POTABLE WATER
6" METER INSTALLATION

10W

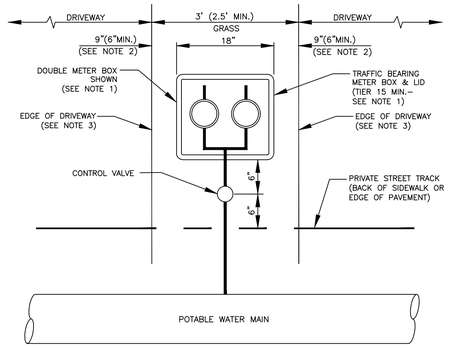


NOTES:

1. THE DETAIL WAS DEVELOPED IN COLLABORATION WITH UTILITY COMPANIES SUPPLYING VARIOUS UTILITY SERVICES TO P.B.C.W.U.D. CUSTOMERS.
2. THE DIMENSIONS SHOWN SHALL SERVE AS A GENERAL GUIDELINE TO INSTALL UTILITIES WITHIN A 10' WIDE UTILITY EASEMENT PARALLELING A RIGHT-OF-WAY.
3. THE PARTICIPATING UTILITIES PLEDGE TO OBSERVE, FOLLOW, AND ENFORCE THE INSTALLATION PARAMETERS SHOWN ON THIS DETAIL.

TYPICAL UTILITY INSTALLATION DETAIL IN A 10' UTILITY EASEMENT ADJACENT TO R/W

11WA

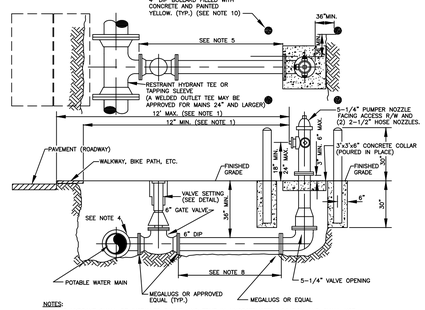


NOTES:

1. METER BOX AND LID MUST BE TIER 15 RATED MINIMUM AND APPLIES TO BOTH A SINGLE METER BOX OR A DOUBLE METER BOX.
2. WHEN INSTALLING A SINGLE METER BOX THE 9" DIMENSION APPLIES. THEN WHEN INSTALLING A DOUBLE METER BOX THE 6" MINIMUM DIMENSION WILL APPLY.
3. THE EDGE OF THE DRIVEWAY IS EITHER THE ASPHALT/CONCRETE PAVEMENT AREA AND/OR PAVER BRICK AREA WHICH MAY INCLUDE ANY CONCRETE EDGING.

WATER METER BOX
BETWEEN TOWNHOME DRIVEWAYS DETAIL

11WB

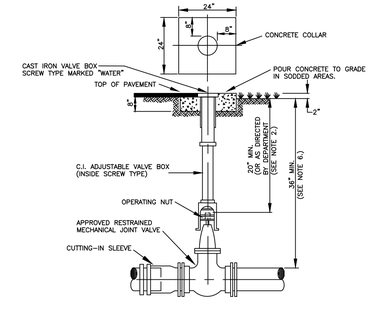


NOTES:

1. FIRE HYDRANT SHALL BE INSTALLED PLUMB AND TRUE IN UNOBSTRUCTED LOCATION AND SHALL NOT INTERFERE WITH PEDESTRIAN WALKWAYS, BIKE PATHS, AND SUCH OTHER SIMILAR PATHWAYS WITH THE EDGE OF THE PUMPER NOZZLE AND/OR HOSE NOZZLES BEING A MINIMUM OF 12" BEHIND SUCH PATHWAYS. A MINIMUM OF 7.5' FEET CLEARANCE IS REQUIRED FROM EACH SIDE AND REAR OF THE HYDRANT. THE FRONT OF THE HYDRANT PUMPER NOZZLE SHALL BE LOCATED A MAXIMUM OF 12' FROM THE EDGE OF PAVEMENT UNLESS OTHERWISE PREVIOUSLY APPROVED BY THE FIRE MARSHAL OFFICE HAVING JURISDICTION.
2. THE SAME MODEL HYDRANT SHALL BE USED THROUGHOUT THE SAME PROJECT OR CONTRACT PHASE. HYDRANTS MUST BE ORDERED RED IN COLOR, WITH FINISHED EPOXY COAT APPLIED BY THE HYDRANT MANUFACTURER. HYDRANT SHALL BE FACTORY EQUIPPED WITH PLUGGED DRAIN HOLES.
3. VALVE SHALL BE PLACED ADJACENT TO MAIN AND RESTRAINED WITH MEGALUGS OR EQUAL.
4. ALL HYDRANTS SHALL BE TEE'D OF THE MAIN PREFERABLY BY A TEE OR TAPPING SLEEVE WITH PRIOR DEPARTMENT APPROVAL.
5. ALL D.I.P. MATERIALS SHALL BE USED BETWEEN TEE/TAPPING SLEEVE AND HYDRANT.
6. HYDRANTS SHALL NOT BE PLACED IN SIDEWALKS, ROADWAYS, OR BIKEPATHS.
7. FIRE HYDRANT SHALL BE LOCATED 5' MINIMUM FROM EDGE OF PAVEMENT WITH RAISED CURBING AND 6" MINIMUM WITHOUT RAISED CURBING.
8. ON RUNS LONGER THAN 60 FEET ANOTHER VALVE IS REQUIRED LESS THAN ONE PIPE JOINT FROM THE HYDRANT.
9. PAINT SAFETY RED, IF REQUIRED, WITH APPROVED PAINT.
10. BOLLARDS MAY BE REQUIRED FOR HYDRANTS WITH LESS THAN SIX (6) FEET TO EDGE OF PAVEMENT WITHOUT RAISED CURBING. NO BOLLARDS SHALL BE INSTALLED IN COUNTY AND/OR FDOT RIGHT-OF-WAY "CLEAR ZONE".
11. BURIED HYDRANT HARDWARE SHALL BE STAINLESS STEEL (TYPE 304L OR TYPE 304 BOLTS/TYPE 304 NUTS).
12. NO CONNECTION (TEE, TAP) IS ALLOWED BETWEEN THE HYDRANT CONTROL VALVE AND THE FIRE HYDRANT.
13. APPROVED SECURITY CAPS WITH CHAINS ARE REQUIRED FOR ALL NOZZLES.

TYPICAL FIRE HYDRANT INSTALLATION WITH BOLLARDS DETAIL

12W



NOTES:

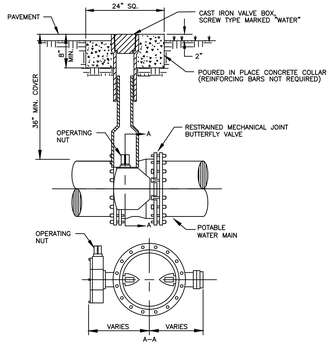
1. CONCRETE COLLAR IS NOT REQUIRED IN PAVED AREAS IF PAVEMENT SURFACE IS FINISHED PRIOR TO CONDITIONAL FINAL INSPECTION.
2. WHEN OPERATING NUT IS DEEPER THAN 36" A ONE PIECE EXTENSION WILL BE REQUIRED TO BRING OPERATING NUT 20"–30" BELOW FINISHED GRADE. EXTENSION BOLTS & NUTS ARE TO BE STAINLESS STEEL. A HIGH STRENGTH STEEL CENTERING PLATE, WELDED TO THE EXTENSION, IS ALSO REQUIRED.
3. VALVE BOXES SHALL HAVE COVERS MARKED "WATER".
4. VALVE BOX EXTENSION TO BE D.I.P. OR C-900 PVC SDR 18 (BLUE)
5. A CUT-IN INSTALLATION SHALL REQUIRE MEGALUGS OR EQUAL THROUGHOUT ASSEMBLY.
6. IN ORDER TO MAINTAIN ADEQUATE COVER OVER VALVE NUT, THE FOLLOWING MINIMUM COVERS OVER PIPE ARE REQUIRED:

GATE VALVE SIZE	MIN. COVER OVER PIPE
16"	48"
20"	54"
24"	60"
30"	72"
36"	84"

7. VALVES IN ROADWAYS SHALL BE LOCATED OUTSIDE OF WHEEL PATHS WHENEVER POSSIBLE.

POTABLE WATER MAIN TYPICAL GATE VALVE SETTING AND MAIN CUT–IN DETAIL

13W

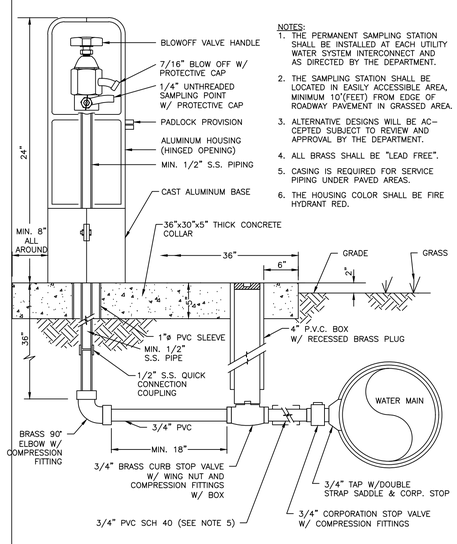


NOTES:

1. CONCRETE COLLAR IS NOT REQUIRED IN PAVED AREAS IF PAVEMENT SURFACE IS FINISHED PRIOR TO CONDITIONAL FINAL INSPECTION.
2. WHEN TOP OF OPERATING NUT IS DEEPER THAN 42" AN EXTENSION WILL BE REQUIRED TO BRING OPERATING NUT 24"–30" BELOW FINISHED GRADE. EXTENSION BOLTS & NUTS ARE TO BE STAINLESS STEEL. A HIGH STRENGTH STEEL CENTERING PLATE, WELDED TO THE EXTENSION, IS ALSO REQUIRED.
3. VALVE BOXES SHALL HAVE COVERS MARKED "WATER".
4. A CUT–IN INSTALLATION SHALL REQUIRE MEGALUGS OR EQUAL THROUGHOUT ASSEMBLY.
5. EXTENSION VALVE BOX TO BE D.I.P. OR C–900 PVC DR 18 (COLOR: BLUE)
6. VALVES IN ROADWAYS SHALL BE LOCATED OUTSIDE OF WHEEL PATHS WHENEVER POSSIBLE.

POTABLE WATER MAIN
TYPICAL BUTTERFLY VALVE SETTING

14W

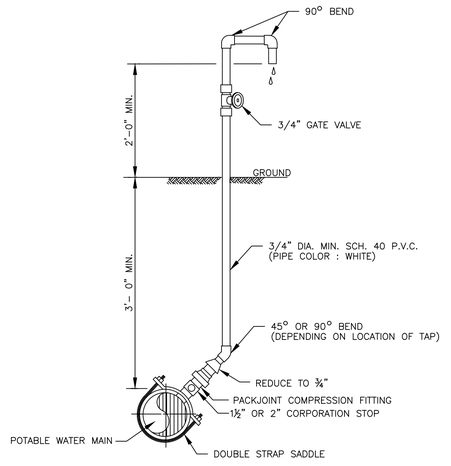


NOTES:

1. THE PERMANENT SAMPLING STATION SHALL BE INSTALLED AT EACH UTILITY WATER SYSTEM INTERCONNECT AND AS DIRECTED BY THE DEPARTMENT.
2. THE SAMPLING STATION SHALL BE LOCATED IN EASILY ACCESSIBLE AREA, MINIMUM 10'(FEET) FROM EDGE OF ROADWAY PAVEMENT IN GRASSED AREA.
3. ALTERNATIVE DESIGNS WILL BE AC–CEPTED SUBJECT TO REVIEW AND APPROVAL BY THE DEPARTMENT.
4. ALL BRASS SHALL BE "LEAD FREE".
5. CASING IS REQUIRED FOR SERVICE PIPING UNDER PAVED AREAS.
6. THE HOUSING COLOR SHALL BE FIRE HYDRANT RED.

PERMANENT SAMPLING POINT

15W

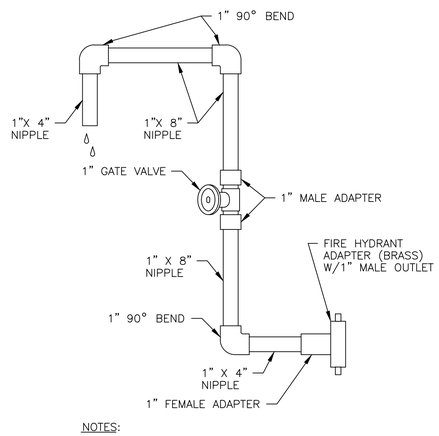


NOTE:

1. SAMPLE POINT SHOULD BE A SERVICE LINE OR FIRE HYDRANT IF POSSIBLE.
2. THREADED AREAS OF CORPORATION STOP SHALL BE SPIRAL WRAPPED WITH TWO WRAPS OF TEFLON TAPE.
3. CLOSE AND CAP CORPORATION STOP AFTER SAMPLING COMPLETION.

POTABLE WATER MAIN TEMPORARY SAMPLING POINT

16W



NOTES:

1. USE HYDRANT WRENCH ONLY.
2. ALL PIPES AND FITTINGS SCH. 40 P.V.C. (PIPE COLOR : WHITE).

POTABLE WATER MAIN FIRE HYDRANT SAMPLING POINT

17W

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POTABLE WATER #2
STANDARD DETAILS

CONSULTANT:

CAULFIELD & WHEELER, INC.
CIVIL ENGINEERING - LAND PLANNING
LANDSCAPE ARCHITECTURE - SURVEYING
7900 GLADES ROAD - SUITE 100
BOCA RATON, FLORIDA 33434
PHONE (561)392-1991 / FAX (561)750-1452

IT'S THE LAW !
CALL 48 HOURS BEFORE YOU DIG
1-800-432-4770
SUNSHINE STATE ONE CALL OF FLORIDA, INC.
UTILITIES NOTIFICATION CENTER

DESIGNED BY: WUD
DRAWN BY: M. BUCKNER
CHECKED BY: J. LAMMERT
APPROVED BY: WUD

Palm Beach County
Water Utilities Department
P.O.Box 16097
West Palm Beach, FL 33416–6097

WUD PROJECT No.
23–575

SHOPS AT INDIAN TRAILS
A.K.A.COCONUT CROSSING

PALM BEACH COUNTY
WATER UTILITIES DEPARTMENT
P.O. BOX 16097
WEST PALM BEACH, FL 33416
(561)493–6000

NO.	DATE	REVISION / REMARKS	BY
	JUNE 2019	GENERAL REVISION	JL
	JAN 2023	GENERAL REVISION	JL
*			

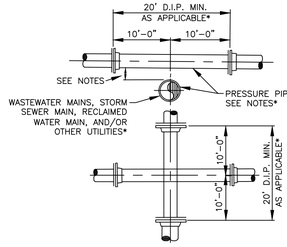
STD DETAILS

SHEET NUMBER
C–23
OF
45

SEAL

MATTHEW V. KAHN
PROFESSIONAL ENGINEER
LICENSE NO. 82227
STATE OF FLORIDA
– FOR THE FIRM –
DATE

Drawing: P:\07714-15-42-41\drawings\eng\details\7714WS Details.dwg\C-23 - Last Modified: Fri, Dec 13, 2024 - 4:14pm

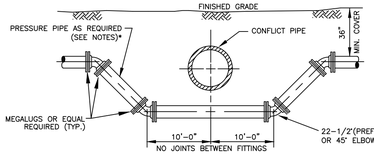


NOTES:

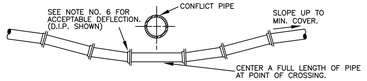
1. WHEN A POTABLE WATER MAIN CROSSES OVER A STORM SEWER, GRAVITY WASTEWATER, VACUUM GRAVITY WASTEWATER, WASTEWATER FORCE MAIN, AND/OR A RECLAIMED WATER MAIN THE POTABLE WATER MAIN SHALL BE LAID TO PROVIDE A MINIMUM OF TWELVE (12) INCH VERTICAL SEPARATION BETWEEN THE BOTTOM OF THE UPPER PIPE AND THE CROWN OF THE LOWER PIPE. WHEN THE MINIMUM TWELVE (12) INCH VERTICAL SEPARATION CANNOT BE OBTAINED, A MINIMUM SIX (6) INCH VERTICAL SEPARATION IS PERMITTED PROVIDED THAT A TWENTY (20) FOOT SECTION OF POTABLE WATER DUCTILE IRON PIPE MAIN IS CENTERED ON CROSSING WITH THE LOWER PIPE BEING A PRESSURE CLASS PIPE HAVING A TWENTY (20) FOOT SECTION CENTERED ON THE CROSSING PER DEP REGULATIONS. WHEN THE POTABLE WATER MAIN CROSSES UNDER ANY STORM SEWER, GRAVITY WASTEWATER, VACUUM GRAVITY WASTEWATER, WASTEWATER FORCE MAIN, AND/OR A RECLAIMED WATER MAIN A MINIMUM TWELVE (12) INCH VERTICAL SEPARATION IS REQUIRE WITH NO EXCEPTIONS AND ONLY WITH PRIOR DEPARTMENT APPROVAL. *
2. A TEN (10) FOOT MINIMUM HORIZONTAL SEPARATION (OUTSIDE WALL TO OUTSIDE WALL) IS REQUIRED BETWEEN A POTABLE WATER MAIN AND A STORM SEWER, GRAVITY WASTEWATER, VACUUM GRAVITY WASTEWATER, WASTEWATER FORCE MAIN, AND/OR A RECLAIMED WATER MAIN. A SIX (6) FOOT MINIMUM HORIZONTAL SEPARATION (OUTSIDE WALL TO OUTSIDE WALL) IS ACCEPTABLE WITH PRIOR DEPARTMENT APPROVAL BEFORE THE INSTALLATION OF THE POTABLE WATER MAIN. A THREE (3) FOOT MINIMUM HORIZONTAL SEPARATION (OUTSIDE WALL TO OUTSIDE WALL) BETWEEN A POTABLE WATER MAIN AND A RECLAIMED WATER MAIN IS ACCEPTABLE WITH PRIOR DEPARTMENT APPROVAL BEFORE THE INSALLATION OF THE POTABLE WATER MAIN. *
3. WHEN A POTABLE WATER MAIN CROSSES ANY ELECTRICAL CONDUIT(S), COMMUNICATION CONDUIT(S), AND/OR GAS MAIN, A MINIMUM OF EIGHTEEN (18) INCH VERTICAL SEPARATION IS REQUIRED BETWEEN THE BOTTOM OF THE UPPER PIPE AND THE CROWN OF THE LOWER PIPE. THE POTABLE WATER MAIN SHALL ALWAYS CROSS OVER THE OTHER UTILITY MAIN(S) UNLESS THE DEPARTMENT APPROVED OTHERWISE BEFORE THE INSTALLATION OF THE POTABLE WATER MAIN. WHEN THE POTABLE WATER MAIN IS D.I.P. AND THE GAS MAIN IS STEEL PIPE THE POTABLE WATER MAIN SHALL BE POLYWRAPPED PER DEPARTMENT STANDARDS.*
4. WASTEWATER LATERALS SHALL CROSS UNDER POTABLE WATER MAINS WITH A MINIMUM OF TWELVE (12) INCH VERTICAL SEPARATION BETWEEN THE BOTTOM OF THE UPPER PIPE AND THE CROWN OF THE LOWER PIPE. WHEN THE MINIMUM TWELVE (12) INCH VERTICAL SEPARATION CANNOT BE OBTAINED A MINIMUM SIX (6) INCH VERTICAL SEPARATION IS PERMITTED PROVIDED THAT A TWENTY (20) FOOT SECTION OF POTABLE WATER DUCTILE IRON PIPE MAIN IS CENTERED OVER THE WASTEWATER LATERAL AND THE LATERAL IS PVC C-900 PIPE. WHEN A WASTEWATER LATERAL MUST CROSS OVER A POTABLE WATER MAIN A MINIMUM TWELVE (12) INCH VERTICAL SEPARATION IS REQUIRED WITH THE LATERAL BEING PVC C-900 PIPE AND THE POTABLE WATER MAIN HAVING A TWENTY (20) FOOT SECTION OF POTABLE WATER DUCTILE IRON PIPE POTABLE WATER MAIN CENTERED ON THE CROSSING. *
5. POTABLE WATER SERVICE LINES SHALL ALWAYS CROSS OVER WASTEWATER MAINS WITH MINIMUM TWELVE (12) INCH VERTICAL SEPARATION BETWEEN THE BOTTOM OF THE UPPER PIPE AND THE CROWN OF THE LOWER PIPE. IF THE MINIMUM TWELVE (12) INCH VERTICAL SEPARATION CANNOT BE MAINTAINED THE WATER SERVICE LINE SHALL BE ENCASED IN A TEN (10) FOOT MINIMUM LONG CASING CENTERED OVER THE CROSSING WITH SIX (6) INCH MINIMUM VERTICAL SEPARATION. *
6. POTABLE WATER MAINS SHALL CROSS PERPENDICULAR TO ALL WASTEWATER MAINS, STORM SEWER MAINS, RECLAIMED WATER MAINS, AND/OR OTHER UTILITIES WHENEVER POSSIBLE. *

POTABLE WATER, WASTEWATER MAIN AND STORM SEWER CONFLICT

* 18W



DEFLECTION BY FITTING METHOD WITH POTABLE WATER MAIN GOING UNDER OR OVER CONFLICT PIPE – SEE NOTES 1&2 *



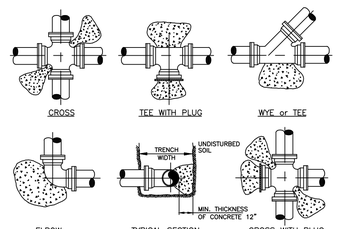
DEFLECTION BY PIPE JOINT METHOD WITH POTABLE WATER MAIN GOING UNDER OR OVER CONFLICT PIPE – SEE NOTES 1,3,&4 *

NOTES:

1. DEFLECTIONS BY FITTINGS AND/OR PIPE JOINT METHODS APPLIES TO POTABLE WATER MAIN CROSSING OVER OR UNDER CONFLICT PIPE WITH CROSSING OVER CONFLICT PIPE PREFERRED. WHEN A POTABLE WATER MAIN CROSSES OVER A STORM SEWER, GRAVITY WASTEWATER, VACUUM GRAVITY WASTEWATER, WASTEWATER FORCE MAIN, AND/OR RECLAIMED WATER MAIN THE POTABLE WATER MAIN SHALL BE LAID TO PROVIDE A MINIMUM TWELVE (12) INCH VERTICAL SEPARATION BETWEEN THE BOTTOM OF THE OF THE UPPER PIPE AND THE CROWN OF THE LOWER PIPE. WHEN THE MINIMUM TWELVE (12) INCH VERTICAL SEPARATION CANNOT BE OBTAINED, A MINIMUM SIX (6) INCH VERTICAL SEPARATION IS PERMITTED PROVIDED THAT A TWENTY (20) FOOT SECTION OF POTABLE WATER DUCTILE IRON PIPE MAIN IS CENTERED ON THE CROSSING WITH THE LOWER PIPE BEING A PRESSURE CLASS PIPE HAVING A TWENTY (20) FOOT SECTION CENTERED ON CROSSING PER DEP REGULATIONS. WHEN THE POTABLE WATER MAIN CROSSES UNDER ANY STORM SEWER, GRAVITY WASTEWATER, VACUUM GRAVITY WASTEWATER, WASTEWATER FORCE MAIN, AND/OR RECLAIMED WATER MAIN, A MINIMUM TWELVE (12) INCH VERTICAL SEPARATION IS REQUIRED WITH NO EXCEPTIONS AND ONLY WITH PRIOR DEPARTMENT APPROVAL. *
2. THE PREFERRED PIPE DEFLECTION METHOD IS BY USING MECHANICAL RESTRAINT FITTINGS. *
3. POTABLE WATER MAIN DEFLECTION BY PIPE JOINT METHOD REQUIRES DEPARTMENT APPROVAL PRIOR TO THE INSTALLATION OF THE POTABLE WATER MAIN. *
4. DEFLECTION BY PIPE JOINT SHALL NOT EXCEED SEVENTY-FIVE PERCENT (75%) OF MANUFACTURER'S RECOMMENDED MAXIMUM JOINT DEFLECTION FOR DUCTILE IRON PIPE AND PVC PVC PIPE DEFLECTION CAN ONLY BE ALLOWED BY INSTALLING THE APPROPRIATE FITTINGS – NO EXCEPTIONS. *

POTABLE WATER MAIN / FORCE MAIN PRESSURE PIPE CONFLICT DETAIL

* 19W



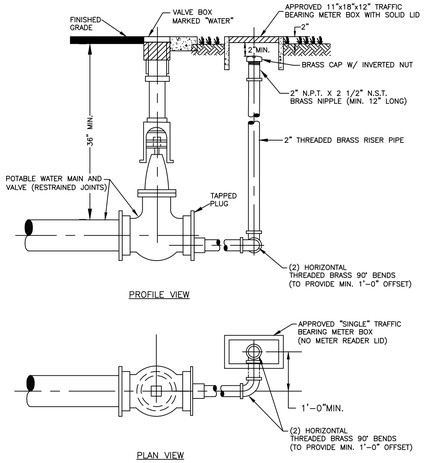
PIPE	THRUST BLOCK AREA REQ'D	REMARKS	NOTE: FOR OTHER FITTINGS USE THE FOLLOWING FACTORS.
4"	2.0 SQ. FT.	VALUES ARE FOR 90° BEND, BASED ON 2000 P.S.F. SAFE BEARING LOAD AND PIPE PRESSURE OF 150 P.S.I. FOR OTHER SOILS & PRESSURES THE AREA REQUIRED IS IN DIRECT PROPORTION	TEE 100% 45° BEND 71% 22 1/2° BEND 39% 11 1/4° BEND 20% DEAD END 100%
6"	4.0 SQ. FT.		
8"	6.6 SQ. FT.		
10"	10.0 SQ. FT.		
12"	14.0 SQ. FT.		
14"	18.6 SQ. FT.		

NOTES:

1. CONCRETE THRUST BLOCKS OR THRUST COLLARS MAY BE UTILIZED ONLY IF NECESSARY FOR CONNECTIONS TO AN EXISTING PIPING SYSTEM, OTHERWISE MECHANICAL RESTRAINTS SHALL BE USED. KEEP "T" BOLTS CLEAR OF CONCRETE, WRAPPED IN VISQUEEN FOR FUTURE ACCESS, WITH A MINIMUM OF 1" THICKNESS BETWEEN THE FITTING AND SOIL.
2. BEFORE POURING CONCRETE, PLUGS SHALL BE WRAPPED WITH VISQUEEN AND A BOARD PLACED IN FRONT.
3. CONCRETE SHALL BE 2500 P.S.I. MINIMUM.
4. THE ENGINEER OF RECORD SHALL SUBMIT A THRUST BLOCK SIZE CALCULATION FOR TEE CONNECTIONS INTO UNRESTRAINED EXISTING MAINS LARGER THAN 14".
5. THE ENGINEER OF RECORD SHALL SUBMIT A PIPE RESTRAINT DESIGN FOR INLINE EXTENSIONS OF A EXISTING UNRESTRAINED MAIN IF MECHANICAL JOINT RESTRAINT CAN NOT BE INSTALLED ON THE EXISTING MAIN.

TYPICAL THRUST BLOCKS FOR PRESSURE PIPE

20W

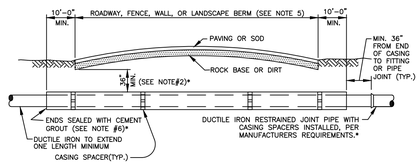


NOTES:

1. TEMPORARY DEAD END BLOWOFF ONLY ALLOWED WITH PRIOR DEPARTMENT APPROVAL.
2. BLOWOFF BOX TO BE LOCATED IN GRASS AREA, MIN. 2' FROM SIDEWALK OR PAVEMENT
3. PERMANENT DEAD ENDS REQUIRE THE INSTALLATION OF AN APPROVED AUTOMATIC FLUSHING ASSEMBLY.
4. ALL BRASS SHALL BE "LEAD FREE".

TYPICAL 2" TERMINAL BLOWOFF POTABLE WATER DISTRIBUTION MAINS

21W



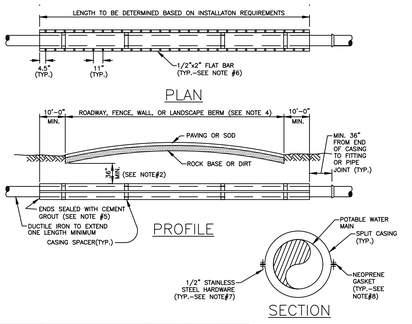
CARRIER PIPE SIZE	STEEL CASING INSIDE DIAMETER (MIN)	MINIMUM WALL THICKNESS (SEE NOTE 2)
4"	12"	.188
6"	14"	.250
8"	20"	.250
10"	20"	.250
12"	24"	.250
14"	24"	.250
16"	30"	.312
18"	30"	.312
20"	36"	.372
24"	42"	.500
30"	48"	.500
36"	54"	.625
42"	60"	.625
48"	72"	.625

NOTES:*

1. A PROFILE DRAWING TO SCALE FOR EACH JACK AND BORE, DIRECTIONAL DRILL, OR DIRECT BURIED INSTALLATION IS REQUIRED TO BE APPROVED BY THE DEPARTMENT PRIOR TO INSTALLATION. IF A SPLIT CASING IS REQUIRED SEE WUD DETAIL 22WB.*
2. THE RIGHT-OF-WAY OWNER MAY REQUIRE THICKER WALL CASING AND LARGER COVER OVER CASING.*
3. STEEL CASING SHALL BE COATED OUTSIDE WITH COAL TAR EPOXY (MIN. 16 MILS DFT) AND BE PAINTED WITH A 4" MINIMUM CONTINUOUS STRIPE, ALASKA BLUE IN COLOR, ALONG THE TOP SIDE OF THE CASING.*
4. PIPE IN CASING SHALL BE PULLED TO FULLY ENGAGE RESTRAINT.
5. STEEL CASING IS REQUIRED FOR ALL POTABLE WATER MAIN INSTALLATIONS UTILIZING JACK AND BORE OR WHEN MAINS ARE INSTALLED UNDER FENCES, WALLS, OR LANDSCAPE BERMS. WHEN A CASING IS INSTALLED UNDER A FENCE, WALL, OR BERM SEE WUD STANDARD DETAIL 48W FOR INSTALLATION REQUIREMENTS.*
6. NON-SHRINKABLE CEMENT GROUT TO BE INSTALLED TO OBTAIN WATERTIGHT SEAL AT EACH END OF CASING.*

POTABLE WATER MAIN SOLID CASING INSTALLATION DETAIL

* 22WA



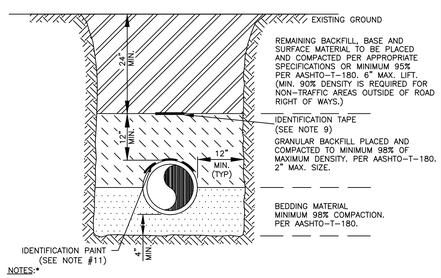
CARRIER PIPE SIZE	STEEL CASING INSIDE DIAMETER (MIN)	MINIMUM WALL THICKNESS (SEE NOTE 2)
4"	12"	.188
6"	14"	.250
8"	20"	.250
10"	20"	.250
12"	24"	.250

NOTES:

1. A SHOP DRAWING TO SCALE FOR EACH SPLIT CASING INSTALLATION IS REQUIRED AND TO BE APPROVED BY THE DEPARTMENT PRIOR TO INSTALLATION.
2. THE RIGHT-OF-WAY OWNER MAY REQUIRE THICKER WALL CASING AND LARGER COVER OVER CASING.
3. STEEL CASING SHALL BE COATED OUTSIDE WITH COAL TAR EPOXY (MIN. 16 MILS DFT) AND BE PAINTED WITH A 4" MINIMUM CONTINUOUS STRIPE, ALASKA BLUE IN COLOR, ALONG THE TOP SIDE OF THE CASING.
4. SPLIT STEEL CASING IS REQUIRED ON ALL EXISTING POTABLE WATER INSTALLATIONS WHEN A NEW STORM DRAINAGE OR OTHER UTILITY PIPE IS INSTALLED AND CANNOT ACHIEVE THE PROPER VERTICAL SEPARATION PER WUD STANDARDS ALONG WITH WHEN A NEW FENCE, WALL, OR LANDSCAPE BERM IS INSTALLED OVER AN EXISTING POTABLE WATER MAIN. WHEN A SPLIT CASING IS INSTALLED UNDER A FENCE, WALL OR LANDSCAPE BERM SEE WUD STANDARD DETAIL 48W FOR INSTALLATION REQUIREMENTS.
5. NON-SHRINKABLE CEMENT GROUT TO BE INSTALLED TO OBTAIN WATERTIGHT SEAL AT EACH END OF CASING.
6. FLAT BARS TO BE STITCH WELDED AT 6" LENGTHS TO EDGE OF CASING ON EACH SIDE.
7. CASING TO BE ASSEMBLED IN FIELD WITH 1/2" STAINLESS STEEL BOLTS, WASHERS, AND NUTS ON EACH SIDE.
8. 1/4" NEOPRENE GASKET MATERIAL EXTENDING PAST CASING JOINT FOR POSITIVE SEAL ON EACH SIDE.

POTABLE WATER MAIN SPLIT CASING INSTALLATION DETAIL

* 22WB



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.
6. THE DEVELOPER/CONTRACTOR SHALL BE RESPONSIBLE TO COMPLY WITH ALL TRENCH SAFETY LAWS AND REGULATIONS.
7. SEE SEPARATE DETAILS 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 6" WIDE MAGNETIC TAPE IS REQUIRED ON ALL POTABLE WATER MAINS.*
10. CONTINUOUS 4" WIDE BLUE PAINT STRIPPING IS REQUIRED FOR POTABLE WATER MAIN DUCTILE IRON PIPE (D.I.P.) INSTALLED BELOW GRADE ONLY.*
11. A CONTINUOUS 4" WIDE PAINTED STRIP (BLUE) IS REQUIRED FOR ALL DIP/PCCP POTABLE WATER MAINS.*
12. POTABLE WATER MAIN INSTALLATIONS WITHIN PUBLIC ROAD RIGHT-OF-WAYS SHALL BE BY THE SPECIFICATIONS OF THE JURISDICTION GRANTING THE RIGHT-OF-WAY UTILITY PERMIT.*
13. FOR PIPE INSTALLATIONS IN ROAD RIGHTS-OF-WAY, ROAD OWNER'S PERMIT SPECIFICATIONS SHALL APPLY.

POTABLE WATER TRENCH DETAIL

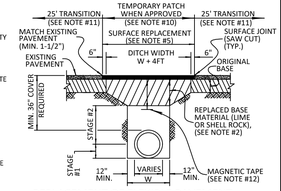
* 23W

CONSTRUCTION PROCEDURES

THE BACKFILL FOR THE FIRST AND SECOND STAGES SHALL BE PLACED IN 6" LAYERS (COMPACTED THICKNESS) AND SHALL BE COMPACTED TO 100% OF MAXIMUM DENSITY AS DETERMINED BY AASHTO T-99.

STAGE 1:
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.

STAGE 2:
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.



REPLACEMENT OF FLEXIBLE PAVEMENT FOR PERMITTED PAVEMENT CUT

NOTES

1) BEDDING SHALL CONSIST OF IN-SITU GRANULAR MATERIAL OR WASHED AND GRADED LIMEROCK 3/8" – 7/8" SIZING WITH EQUAL OR GREATER STRUCTURAL ADEQUACY AS EXISTING. UNSUITABLE IN-SITU MATERIALS SUCH AS MUCK, DEBRIS AND LARGER ROCKS SHALL BE REMOVED.
2) REPLACED BASE MATERIAL (PER LAND DEVELOPMENT DESIGN STANDARDS) OVER DITCH SHALL BE TWICE THE THICKNESS OF THE ORIGINAL BASE AND MATCH THE TYPE OF MATERIAL OF THE ORIGINAL BASE OR 12" MINIMUM, WHICHEVER IS GREATER.
3) ASPHALT CONCRETE PAVEMENT JOINTS SHALL BE MECHANICALLY SAWED AND BUTT-JOINTED.
4) BASE MATERIAL SHALL BE PLACED IN TWO OR THREE LAYERS (6" MAX. PER LAYER) AND EACH LAYER THOROUGHLY ROLLED OR TAMPED TO THE SPECIFIED DENSITY (MINIMUM 98% AASHTO – T-180)
5) SURFACE MATERIAL WILL BE CONSISTENT WITH THE EXISTING SURFACE OR 1-1/2" SP 12.5 STRUCTURAL COURSE (TRAFFIC LEVEL A) ASPHALTIC CONCRETE WITH RC-70 PRIME COAT AT 0.10 GAL/SQ. YD. FOR LIMEROCK BASE AND TACK COAT AT 0.05 GAL/S.Y.FOLLOW THE LATEST FDOT SPECIFICATIONS FOR APPLICATION RATES OF PRIME AND TACK COATS. CONTRACTOR TO SUBMIT MATERIALS AND RATES TO ENGINEER FOR APPROVAL PRIOR TO BEGINNING WORK.
6) PIPE SHALL BE PLACED IN A DRY TRENCH.
7) ALL ROADWAY REPAIR WORK SHALL BE PERFORMED IN CONFORMANCE WITH APPLICABLE FDOT STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION AND COUNTY PPM# EL-0-3606.
8) DENSITY TESTS SHALL BE TAKEN IN 1 FT LIFTS ABOVE THE PIPE AT INTERVALS OF 400 FT MAXIMUM (1 SET MINIMUM) OR AS DIRECTED BY THE CONSTRUCTION COORDINATION DIVISION. RESULTS SHALL BE SUBMITTED TO CONSTRUCTION COORDINATION DIVISION AS PART OF THEIR FIELD REVIEW.
9) ENGINEER-OF-RECORD SHALL PROVIDE FULL-TIME INSPECTION DURING THE ENTIRETY OF THE OPEN-CUT OPERATION, BEGINNING WITH THE EXCAVATION AND CONTINUING THROUGH THE COMPLETION OF THE PAVING.
10) IF THE PAVEMENT IS NOT COMPLETELY RESTORED IMMEDIATELY FOLLOWING THE OPEN CUT, A SMOOTH TEMPORARY PATCH (MINIMUM 1.5" SP 12.5 STRUCTURAL COURSE ASPHALT) SHALL BE INSTALLED PROPERLY MATCHING THE EXISTING GRADING OF THE ROADWAY. THE TEMPORARY PATCH SHALL BE ALLOWED TO REMAIN IN PLACE AND BE MAINTAINED FOR A PERIOD NO LONGER THAN 45 DAYS. THE COUNTY RETAINS THE RIGHT TO USE POSTED SURETY TO COMPLETE ANY RESTORATION WORK THAT HAS NOT BEEN COMPLETED IN THE 45 DAY PERIOD. ALTERNATIVE TEMPORARY TRENCH PROTECTION (STEEL PLATES OR OTHERS) MAY BE APPROVED BY THE CONSTRUCTION COORDINATION DIVISION.
11) FOR FINAL RESTORATION (INCLUDES THE PATCHED/SURFACE REPLACEMENT AREA OVER THE TRENCH), THE ROAD SHALL BE MILLED AND RESURFACED WITH 1-1/2" (ONE AND A HALF INCH) OF SP 12.5 STRUCTURAL COURSE (TRAFFIC LEVEL A) WITH TACK COAT AT 0.05 GAL/SY AND RC-70 PRIME COAT AT 0.10 GAL/SY. FOR A FULL LANE WIDTH ENCROACHED BY THE TRENCH INCLUDING A TRANSITION AREA OF 25 FT. EACH SIDE MEASURED FROM TOP OF TRENCH.
12) APPROVED MAGNETIC TAPE IS REQUIRED FOR ALL MAIN PRESSURE PIPES AND CONDUIT IN THE COUNTY'S RIGHT-OF-WAY. INSTALL TAPE 24" BELOW FINISHED GRADE.
13) CONTINUOUS 4" WIDE PAINT STRIPING IS REQUIRED FOR DIP/PCCP WATER MAINS (BLUE), DIP SANITARY FORCE MAINS (GREEN), DIP RECLAIMED WATER MAINS (PURPLE), GAS MAINS (YELLOW), OR AS REQUIRED BY THE APWA .

WUD ONLY UTILITY NOTE:
THE CONTINUOUS PAINTED STRIPE REFERENCED IN NOTE #13 ABOVE SHALL BE ALASKA BLUE IN COLOR PER WUD STANDARDS.

OPEN CUT PIPE INSTALLATION NON-THOROUGHFARE ROAD

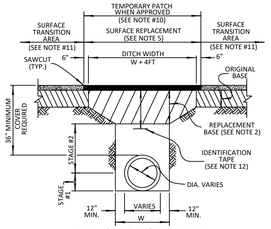
* 24W

CONSTRUCTION PROCEDURES

THE BACKFILL FOR THE FIRST AND SECOND STAGES SHALL BE PLACED IN 6" LAYERS (COMPACTED THICKNESS) AND SHALL BE COMPACTED TO 100% OF MAXIMUM DENSITY AS DETERMINED BY AASHTO T-99.

STAGE 1:
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.

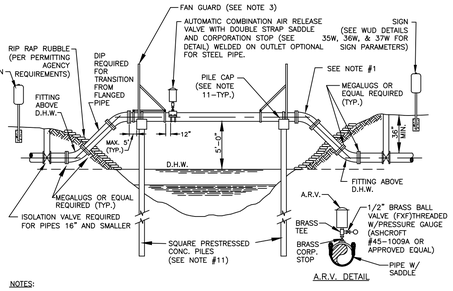
STAGE 2:
THE CONTRACTOR SHALL OBTAIN A WELL-COMPACTED BED AND FILL ALONG THE SIDES OF THE PIPE AND TO A POINT INDICATING THE TOP OF SUB-GRADE MATERIAL.



REPLACEMENT OF FLEXIBLE PAVEMENT FOR PERMITTED PAVEMENT CUT

NOTES

1) BEDDING SHALL CONSIST OF IN-SITU GRANULAR MATERIAL OR WASHED AND GRADED LIMEROCK 3/8" – 7/8" SIZING WITH EQUAL OR GREATER STRUCTURAL ADEQUACY AS EXISTING. UNSUITABLE IN-SITU MATERIALS SUCH AS MUCK, DEBRIS AND LARGER ROCKS SHALL BE REMOVED.
2) REPLACED BASE MATERIAL OVER DITCH SHALL BE 16" LIMEROCK (LBR100) MINIMUM FOR THOROUGHFARE PLAN ROADS. ANY ALTERNATE BASE MATERIAL REQUIRED BY THE ENGINEER OF RECORD REQUIRES APPROVAL BY THE ROADWAY PRODUCTION DIVISION.
3) ASPHALT CONCRETE PAVEMENT JOINTS SHALL BE MECHANICALLY SAWED AND BUTT-JOINTED.
4) BASE MATERIAL (PER ROADWAY PRODUCTION DESIGN STANDARDS) SHALL BE PLACED IN TWO OR THREE LAYERS (6" MAX. PER LAYER) AND EACH LAYER THOROUGHLY ROLLED OR TAMPED TO THE SPECIFIED DENSITY. (MINIMUM 98% AASHTO-T-180).
5) 1" FRICTION COURSE FC-9.5 OVER 1-1/2" TYPE SP STRUCTURAL COURSE (TRAFFIC LEVEL C) WITH TACK COAT AT 0.05 GAL/SY AND RC-70 PRIME COAT AT 0.10 GAL/SY FOR LIMEROCK BASE. FOLLOW THE LATEST FDOT SPECIFICATIONS FOR APPLICATION RATES OF PRIME AND TACK COATS. CONTRACTOR TO SUBMIT MATERIALS AND RATES TO ENGINEER FOR APPROVAL PRIOR TO BEGINNING WORK.
6) PIPE SHALL BE PLACED IN A DRY TRENCH.
7) ALL ROADWAY REPAIR WORK SHALL BE PERFORMED IN CONFORMANCE WITH APPLICABLE FDOT STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION AND COUNTY PPM# EL-0-3606.
8) DENSITY TESTS SHALL BE TAKEN IN 1 FT LIFTS ABOVE THE PIPE AT INTERVALS OF 400 FT MAXIMUM (1 SET MINIMUM) OR AS DIRECTED BY THE CONSTRUCTION COORDINATION DIVISION. RESULTS SHALL BE SUBMITTED TO CONSTRUCTION COORDINATION DIVISION AS PART OF THEIR FIELD REVIEW.
9) ENGINEER-OF-RECORD SHALL PROVIDE FULL-TIME INSPECTION DURING THE ENTIRETY OF THE OPEN-CUT OPERATION, BEGINNING WITH THE EXCAVATION AND CONTINUING THROUGH THE COMPLETION OF THE PAVING.
10) IF THE PAVEMENT IS NOT COMPLETELY RESTORED IMMEDIATELY FOLLOWING THE OPEN CUT, A SMOOTH TEMPORARY PATCH (MINIMUM 2.5" SP 12.5 STRUCTURAL COURSE ASPHALT) SHALL BE INSTALLED, PROPERLY MATCHING THE EXISTING GRADING OF THE ROADWAY. THE TEMPORARY PATCH SHALL BE ALLOWED TO REMAIN IN PLACE AND BE MAINTAINED FOR A PERIOD NO LONGER THAN 45 DAYS. THE COUNTY RETAINS THE RIGHT TO USE POSTED SURETY TO COMPLETE ANY RESTORATION WORK THAT HAS NOT BEEN COMPLETED IN THE 45 DAY PERIOD. ALTERNATIVE TEMPORARY TRENCH PROTECTION (STEEL PLATES OR OTHERS) MAY BE APPROVED BY THE CONSTRUCTION COORDINATION DIVISION.
11) FOR FINAL RESTORATION (INCLUDES THE PATCHED/SURFACE REPLACEMENT AREA OVER THE TRENCH). THE ROAD SHALL BE MILLED 1" MILLING AND RESURFACED PER NOTE 5 ABOVE FOR A FULL LANE WIDTH OF THE TRAVEL LANES ENCROACHED BY THE TRENCH AREA, INCLUDING A TRANSITION AREA OF 50 FT. ON EACH SIDE MEASURED FROM TOP OF TRENCH.
12) APPROVED MAGNETIC TAPE IS REQUIRED FOR ALL MAIN PRESSURE PIPES AND CONDUIT IN THE COUNTY'S RIGHT-OF-WAY. INSTALL TAPE 24" BELOW FINISHED GRADE.
13) CONTINUOUS 4" WIDE PAINT STRIPING IS REQUIRED FOR D

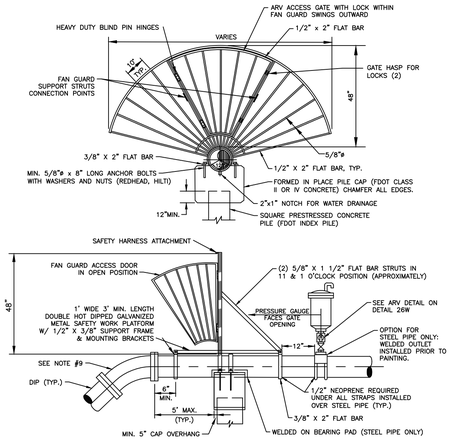


A.R.V. DETAIL

NOTES:

1. ALL EXPOSED PIPE SHALL BE DUCTILE IRON OR PREFABRICATED STEEL WITH FLANGED FITTINGS AND PROFILED GASKETS. RETAINER GLANDS AND UNIFLANGE TYPE FITTINGS ARE NOT TO BE SUBSTITUTED FOR FLANGED FITTINGS. PREFABRICATED STEEL PIPE MAY INCORPORATE WELDED ON LONG RADIUS UPPER BENDS. PREFABRICATED FLANGED PIPE SHALL BE FACTORY TESTED.
2. SPAN LENGTHS AS REQUIRED BY PERMITTING AGENCY
3. FAN GUARDS ARE REQUIRED. SEE FAN GUARD/PILE CAP DESIGN DETAIL 27W FOR ADDITIONAL REQUIREMENTS. ACCESS PLATFORM AND GATE REQUIRED ON ARV SIDE ONLY.
4. ALL STEEL PIPE SHALL HAVE WELDED ON BEARING PADS EXTENDED 1" MINIMUM BEYOND PIPE CRADLE WITH PAD INSTALLED PRIOR TO PAINTING. ALL EXPOSED STEEL PIPING SHALL BE PAINTED AS SPECIFIED IN THE APPROVED MATERIALS LIST WITH ALL HARDWARE BEING PAINTED WITH COAL-TAR EPOXY.
5. PIPE SHALL BE CRADLED ON ½" THICK NEOPRENE.(DUROMETER GRADE 50.) CURRENT FDOT STANDARDS APPLY. NEOPRENE IS REQUIRED AT ALL STRAPS INSTALLED OVER STEEL PIPE. NEOPRENE SHALL EXTEND MIN. 1" BEYOND THE EDGES OF CRADLE AND STRAPS.
6. TIE-DOWN STRAPS TO BE PROPERLY FIT AND SECURE PIPE IN CRADLE.
7. PIPE CRADLE IN CAP SHALL CONTACT ½ CIRCUMFERENCE OF PIPE. (SEE FAN GUARD DETAIL 27W)
8. SHOW EXISTING CANAL CROSS SECTION ULTIMATE CANAL SECTION AND RELEVANT ELEVATIONS AND DISTANCES ON A TO SCALE DETAIL DRAWING.
9. PILE LIFT CABLE SHALL BE REMOVED BELOW SURFACE; HOLE SHALL BE FILLED WITH EPOXY CEMENT.
10. THREADED AREAS OF BRASS FITTINGS SHALL BE SPIRAL WRAPPED WITH TWO WRAPS OF TEFLON TAPE.
11. THE PILES AND CAP DESIGN TO BE ON DETAILED SHOP DRAWINGS. THE REQUIRED PILES SHALL BE 14"x14" MIN. – TYPE 1A (PER FLORIDA DOT INDEX PILES. PILE PENETRATION BELOW CANAL BOTTOM SHALL BE 15' MINIMUM WITH EACH PILE LOAD CAPACITY BEING 20 TONS MINIMUM (FDOT STANDARDS APPLY). ALL REQUIRED AERIAL CROSSING SHOP DRAWINGS SHALL BE TO SCALE AND SIGNED AND SEALED BY A STRUCTURAL ENGINEER.
12. THE AERIAL CROSSING STRUCTURAL ENGINEER OF RECORD SHALL PROVIDE IN WRITING A SIGNED AND SEALED LETTER CERTIFYING THE AERIAL CROSSING INSTALLATION WAS COMPLETED PER HIS/HER DESIGN AND ALL APPLICABLE STANDARDS AND PERMITS.

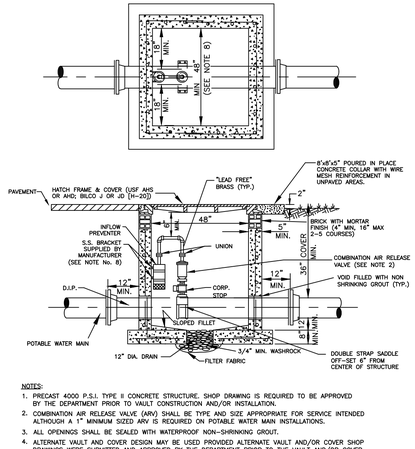
POTABLE WATER MAIN TYPICAL AERIAL CANAL CROSSING – SINGLE PIPE (SINGLE PILES) * 26W



NOTES:

1. FAN GUARDS SHALL BE PLACED AT EACH END OF CANAL CROSSING.
2. FANGUARD WITH HARDWARE SHALL BE FABRICATED FROM DOUBLE HOT DIPPED GALVANIZED STEEL.
3. SHOP DRAWINGS FOR FANGUARDS, CAPS, AND PILES MUST BE SUBMITTED TO PBCWUD FOR REVIEW AND APPROVAL PRIOR TO PRE-CONSTRUCTION MEETING.
4. REINFORCING STEEL SHALL CONFORM TO ASTM A-615, GRADE 60. MIN. 2" CONCRETE COVER OVER ALL STEEL.
5. NO WELDING OF REBAR TO REBAR OR REBAR TO PILE STRANDS SHALL BE ALLOWED.
6. LONG RADIUS WELDED ON UPPER BENDS ARE ACCEPTABLE FOR STEEL PIPE.
7. THE PILE/CAP STEEL CONNECTION SHALL BE WITH A MINIMUM OF 4-#8 REINFORCEMENT BARS. THE BARS SHALL BE DRILLED AND DOWLED (EPOXIED) A MINIMUM OF 14" IN DEPTH INTO THE PILE AND TIED TO THE CAP STEEL.
8. ACCESS PLATFORM AND GATE REQUIRED ON ARV SIDE ONLY.
9. SEE TYPICAL AERIAL CROSSING DETAIL 26W FOR ADDITIONAL REQUIREMENTS.

FAN GUARD/ PILE CAP DESIGN SINGLE PIPE (SINGLE PILES) * 27W



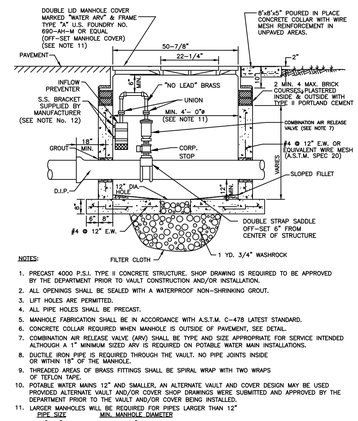
NOTES:

1. PRECAST 4000 P.S.I. TYPE II CONCRETE STRUCTURE. SHOP DRAWING IS REQUIRED TO BE APPROVED BY THE DEPARTMENT PRIOR TO VAULT CONSTRUCTION AND/OR INSTALLATION.
2. COMBINATION AIR RELEASE VALVE (ARV) SHALL BE TYPE AND SIZE APPROPRIATE FOR SERVICE INTENDED ALTHOUGH A 1" MINIMUM SIZED ARV IS REQUIRED ON POTABLE WATER MAIN INSTALLATIONS.
3. ALL OPENINGS SHALL BE SEALED WITH WATERPROOF NON-SHRINKING GROUT.
4. ALTERNATE VAULT AND COVER DESIGN MAY BE USED PROVIDED ALTERNATE VAULT AND/OR COVER SHOP DRAWINGS WERE SUBMITTED AND APPROVED BY THE DEPARTMENT PRIOR TO THE VAULT AND/OR COVER BEING INSTALLED.
5. DUCTILE IRON PIPE IS REQUIRED THROUGH THE VAULT. NO PIPE JOINTS INSIDE OR WITHIN 12" OF THE VAULT.
6. THREADED AREAS OF BRASS FITTINGS SHALL BE SPIRAL WRAPPED WITH TWO WRAPS OF TEFLON TAPE.
7. LARGER VAULTS WILL BE REQUIRED FOR PIPES LARGER THAN 12"

PIPE SIZE	MIN. VAULT SIZE
16"-24"	4'X5'
30"-42"	4'X6'

8. SHOP DRAWINGS ARE REQUIRED FOR CUSTOM MADE BRACKETS

POTABLE WATER MAIN UNDERGROUND AIR RELEASE VALVE AND VAULT IN NON-TRAFFIC AREAS OUTSIDE OF ROAD R/W 28W



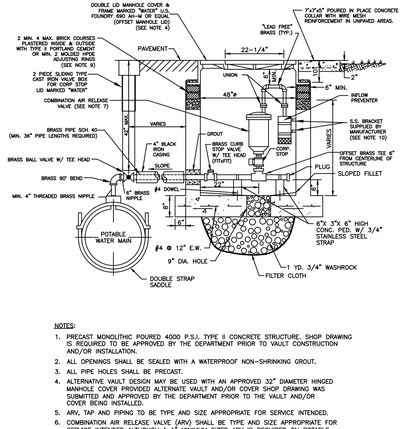
NOTES:

1. PRECAST 4000 P.S.I. TYPE II CONCRETE STRUCTURE. SHOP DRAWING IS REQUIRED TO BE APPROVED BY THE DEPARTMENT PRIOR TO VAULT CONSTRUCTION AND/OR INSTALLATION.
2. ALL OPENINGS SHALL BE SEALED WITH A WATERPROOF NON-SHRINKING GROUT.
3. LIFT HOLES ARE PERMITTED.
4. ALL PIPE HOLES SHALL BE PRECAST.
5. MANHOLE FABRICATION SHALL BE IN ACCORDANCE WITH A.S.T.M. C-478 LATEST STANDARD.
6. CONCRETE COLLAR REQUIRED WHEN MANHOLE IS OUTSIDE OF PAVEMENT, SEE DETAIL.
7. COMBINATION AIR RELEASE VALVE (ARV) SHALL BE TYPE AND SIZE APPROPRIATE FOR SERVICE INTENDED ALTHOUGH A 1" MINIMUM SIZED ARV IS REQUIRED ON POTABLE WATER MAIN INSTALLATIONS.
8. DUCTILE IRON PIPE IS REQUIRED THROUGH THE VAULT. NO PIPE JOINTS INSIDE OR WITHIN 18" OF THE MANHOLE.
9. THREADED AREAS OF BRASS FITTINGS SHALL BE SPIRAL WRAP WITH TWO WRAPS OF TEFLON TAPE.
10. POTABLE WATER MAINS 12" AND SMALLER, AN ALTERNATE VAULT AND COVER DESIGN MAY BE USED PROVIDED ALTERNATE VAULT AND/OR COVER SHOP DRAWINGS WERE SUBMITTED AND APPROVED BY THE DEPARTMENT PRIOR TO THE VAULT AND/OR COVER BEING INSTALLED.
11. LARGER MANHOLES WILL BE REQUIRED FOR PIPES LARGER THAN 12"

PIPE SIZE	MIN. MANHOLE DIAMETER
16"-24"	60"
30"-42"	72"

12. SHOP DRAWINGS ARE REQUIRED FOR CUSTOM MADE BRACKETS
13. MANHOLES IN ROADWAYS SHALL BE LOCATED OUTSIDE OF WHEEL PATHS.

POTABLE WATER MAIN AIR RELEASE MANHOLE IN PAVED AREAS AND ROAD R/W 29W



NOTES:

1. PRECAST MONOLITHIC POURED 4000 P.S.I. TYPE II CONCRETE STRUCTURE. SHOP DRAWING IS REQUIRED TO BE APPROVED BY THE DEPARTMENT PRIOR TO VAULT CONSTRUCTION AND/OR INSTALLATION.
2. ALL OPENINGS SHALL BE SEALED WITH A WATERPROOF NON-SHRINKING GROUT.
3. ALL PIPE HOLES SHALL BE PRECAST.
4. ALTERNATIVE VAULT DESIGN MAY BE USED WITH AN APPROVED 32" DIAMETER HINGED MANHOLE COVER PROVIDED ALTERNATE VAULT AND/OR COVER SHOP DRAWING WAS SUBMITTED AND APPROVED BY THE DEPARTMENT PRIOR TO THE VAULT AND/OR COVER BEING INSTALLED.
5. ARV, TAP AND PIPING TO BE TYPE AND SIZE APPROPRIATE FOR SERVICE INTENDED.
6. COMBINATION AIR RELEASE VALVE (ARV) SHALL BE TYPE AND SIZE APPROPRIATE FOR SERVICE INTENDED ALTHOUGH A 1" MINIMUM SIZED ARV IS REQUIRED ON POTABLE WATER MAIN INSTALLATIONS.
7. SHOP DRAWING IS REQUIRED FOR REVIEW AND APPROVAL.
8. THREADED AREAS OF BRASS FITTINGS AND OTHER FITTINGS SHALL BE SPIRAL WRAPPED WITH TWO WRAPS OF TEFLON TAPE.
9. IN LIEU OF BRICK WORK, APPROVED PRECAST CONCRETE ADJUSTING RINGS MAY BE USED. INSTALLATION SHALL FOLLOW MANUFACTURERS RECOMMENDATIONS.
10. SHOP DRAWINGS ARE REQUIRED FOR CUSTOM MADE BRACKETS
11. PIPE AND FITTINGS SHALL BE NO LEAD BRASS.
12. MANHOLES SHALL BE INSTALLED OUTSIDE TRAFFIC AREAS.

POTABLE WATER MAIN OFF-SET UNDERGROUND AIR RELEASE VALVE 30W

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	0.63	0.74	0.84	0.95	1.06	1.27	1.59	1.91	2.22	2.54

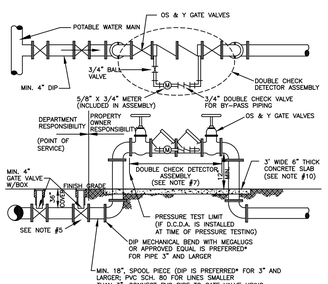
FORMULA BASIS: $L = \frac{(N)\times(D)\times(P)^{1/2}}{148,000} \times 1/2$

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.)

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.; 200 P.S.I. FOR MAINS LARGER THAN 24"
6. PRESSURE TEST DURATION TO BE MIN. 2 HOURS.

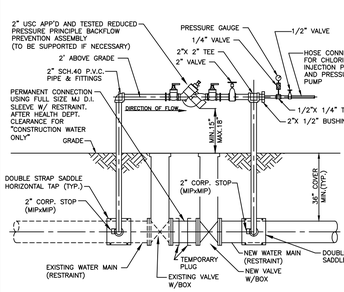
POTABLE WATER MAIN PRESSURE TEST CRITERIA 31W



NOTES:

1. ALL PIPE AND FITTINGS UP TO THE BACKFLOW PREVENTION ASSEMBLY (I.E. D.C.D.A.) POINT OF SERVICE VALVE SHALL BE DUCTILE IRON PER WUD STANDARDS.*
2. THE INITIAL TEST OF THE BACKFLOW PREVENTION ASSEMBLY SHALL BE PERFORMED BY THE DEPARTMENT PRIOR TO SERVICE ACTIVATION.
3. THE DOUBLE CHECK DETECTOR ASSEMBLY SHALL BE APPROVED BY THE UNIVERSITY OF SOUTHERN CALIFORNIA (U.S.C.) OR THE A.S.S.E. (WITH ONE YEAR FIELD TESTING).
4. THE PROPERTY OWNER SHALL BE RESPONSIBLE FOR THE PROPER OPERATION, MAINT-ENANCE AND SUBSEQUENT TESTING OF THE DOUBLE CHECK DETECTOR ASSEMBLY BY A CERTIFIED BACKFLOW TECHNICIAN.
5. WHEN FIRE LINE LENGTH IS OVER ONE PIPE LENGTH, LINE SHALL BE TERMINATED WITH A GATE VALVE (=POINT OF SERVICE). NO PIPE JOINTS / CONNECTIONS ARE PERMITTED BETWEEN POINT OF SERVICE AND VERTICAL 90° BEND
6. THE DESIGN SHALL MINIMIZE ANY POTENTIAL FOR WATER MAIN WITH NO FLOW. A FIRE HYDRANT LOCATED NEAR THE DOUBLE CHECK DETECTOR ASSEMBLY MAY BE REQUIRED FOR LONG, DEAD ENDING DEDICATED FIRE LINES.
7. AN APPROVED REDUCED PRESSURE PRINCIPLE DETECTOR ASSEMBLY SHALL BE REQUIRED FOR ALL FIRE SYSTEMS WITH STORAGE TANKS AND/OR AUXILIARY WATER SUPPLY.
8. TAMPER SWITCHES MAY BE REQUIRED BY THE FIRE MARSHAL.*
9. PIPE MATERIAL ON THE CUSTOMER SIDE OF POINT OF SERVICE VALVE SHALL COMPLY WITH FIRE MARSHAL REQUIREMENTS.*
10. 3' WIDE 6" THICK CONCRETE SLAB IS RECOMMENDED FOR ASSEMBLY SMALLER THAN 4".

DOUBLE CHECK DETECTOR ASSEMBLY * 32W



1. ENSURE PROPER RESTRAINT OF EXISTING VALVE AND EXISTING PIPE PRIOR TO NEW PIPE CONNECTION.
2. ENSURE PROPER OPERATION OF EXISTING VALVE.
3. INSTALL BY-PASS PIPING AS SHOWN. A NEARBY HYDRANT OR SERVICE TAP MAY BE USED AS A WATER SOURCE.
4. USING BY-PASS AND CHLORINE INJECTOR PUMP, DISINFECT NEW WATER MAIN (MIN. 50 CHLORINE PPM IS REQUIRED FOR DISINFECTION).
5. COMPLETE FILLING OF THE NEW WATER MAIN AND PERFORM BACTERIOLOGICAL TESTING.
6. REMOVE EXISTING BLOW OFF (IF APPLICABLE) AND EXISTING PLUG., CONNECT NEW MAIN TO EXISTING VALVE.
7. CRACK OPEN EXISTING VALVE AFTER INITIAL DISINFECTION AND FLUSH THE NEW WATER MAIN (PBCWUD PRESENCE IS REQUIRED).
8. REMOVE BY-PASS PIPING. CAP CORPORATION STOPS WITH BRASS CAPS.
9. PRESSURE TESTING IS REQUIRED AFTER SUCCESSFUL COMPLETION OF BACTERIOLOGICAL TESTING AND HEALTH DEPARTMENT CLEARANCE IS OBTAINED. CONTRACTOR SHALL SUPPLY INITIAL PRESSURE TEST TO BE PERFORMED AFTER BACKFILL, ROAD BASE AND ROAD ROCK BASE INSTALLATION/ COMPACTION.
10. AN ALTERNATIVE TIE-IN PROCEDURE (PRESSURE TESTING PRIOR TO BACTERIOLOGICAL TESTING) MAY BE CONSIDERED WITH PRIOR APPROVAL (SEE SEPARATE DETAIL).
11. RECORD DRAWINGS TO SHOW DATA FOR ALL TEST TAPS.
12. ALL BRASS SHALL BE "LEAD FREE".

STANDARD POTABLE WATER MAIN TIE-IN 33W

MIN. LENGTH 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	98	112	124	135
45° HORIZ. BEND		6	8	11	13	15	19	22	26	41	46	51	56
22.5° HORIZ. BEND		3	4	5	6	7	9	11	12	19	22	25	27
11.25° HORIZ. BEND		1	2	3	3	4	5	6	10	11	12	12	13
90° VERT. OFFSET	UPPER BEND	29	41	53	64	74	95	115	134	214	246	276	304
	LOWER BEND	7	10	13	16	19	25	30	35	57	66	74	83
45° VERT. OFFSET	UPPER BEND	12	19	24	29	34	39	48	56	89	102	114	126
	LOWER BEND	3	4	6	7	8	10	12	15	23	27	31	34
22.5° VERT. OFFSET	UPPER BEND	6	9	12	14	17	19	23	27	43	49	55	60
	LOWER BEND	1	2	4	4	4	5	6	7	11	13	15	16
11.25° VERT. OFFSET	UPPER BEND	3	4	6	7	8	9	11	13	21	24	27	30
	LOWER BEND	1	1	1	2	2	2	3	3	6	6	7	8
PLUG (DEAD END)		32	45	59	70	83	107	129	151	214	246	276	304
IN-LINE VALVE		32	45	45	45	45	55	65	80	110	125	140	155
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	–	–	–	–
	30"x ø	1	8	28	44	58	83	106	127	208	–	–	–
	36"x ø	1	1	22	39	54	80	103	124	206	240	–	–
	42"x ø	1	1	15	33	49	77	100	122	205	239	270	–
	48"x ø	1	1	7	27	44	73	97	120	203	238	269	298
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	–	–	–	–	–
200psi	30"x ø	209	204	197	188	177	153	116	75	–	–	–	–
	36"x ø	243	236	233	226	217	196	168	135	74	–	–	–
	42"x ø	273	270	265	259	252	234	211	183	133	72	–	–
	48"x ø	301	298	294	289	283	268	249	226	183	131	71	–

NOTES:

1. THE DATA IN THE ABOVE TABLE ARE BASED UPON THE FOLLOWING INSTALLATION CONDITIONS:
   SOIL TYPE-SAND — TEST PRESSURE-150 PSI/200 PSI — DEPTH OF BURY-3'
   TRENCH TYPE-3 — SAFETY FACTOR- 1.5 — VERTICAL OFFSET-3'
   MINIMUM PIPE LENGTH ALONG TEE RUN-5'
2. THE RESTRAINED PIPE LENGTHS APPLY TO DUCTILE IRON AND PVC PIPE.
3. ALL JOINTS BETWEEN UPPER AND LOWER BENDS SHALL BE RESTRAINED.
4. RESTRAINED PIPE LENGTHS APPLY TO PIPE ON BOTH SIDES OF VALVES AND FITTINGS.
5. MULTIPLY PIPE LENGTH BY 1.4 FOR POLYETHYLENE ENCASED PIPE.
6. RESTRAINED PIPE LENGTHS EQUAL TO AN "INLINE VALVE" CONDITION ARE REQUIRED AT EACH END OF A TRANSITION FROM HDPE PIPE TO OTHER PIPE MATERIALS.
7. DESIGN ENGINEER IS RESPONSIBLE TO PROPERLY SIZE THE RESTRAINT PIPE LENGTHS FOR THE PROJECT

MECHANICAL THRUST RESTRAINT MINIMUM PIPE LENGTHS 34W

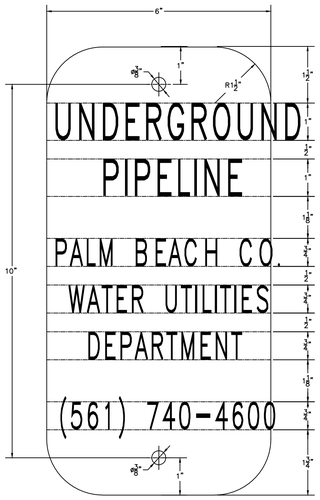
GENERAL NOTES

DEFINITIONS

1. DEPARTMENT – THE PALM BEACH COUNTY WATER UTILITIES DEPARTMENT.
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 POTABLE WATER, RECLAIMED WATER AND/OR WASTEWATER SYSTEM CONSTRUCTION. THE MEETING SHALL BE ATTENDED BY THE DEPARTMENT, CONTRACTOR, ENGINEER AND OTHER INTERESTED PARTIES.
2. ANY REVISIONS TO THE APPROVED PLANS SHALL BE CALLED TO THE ATTENTION OF THE DEPARTMENT PRIOR TO THE PRE-CONSTRUCTION MEETING. REVISED PLANS MUST BE APPROVED PRIOR TO THE MEETING.
3. FIVE (5) COPIES OF THE CURRENT APPROVED MATERIAL LIST AND ALL NECESSARY SHOP DRAWINGS SHALL BE SUBMITTED FOR APPROVAL PRIOR TO SCHEDULING OF THE PRE-CONSTRUCTION MEETING.
4. ALL APPLIC

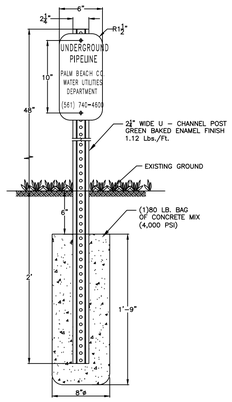


NOTE:

SIGN SHALL BE 6" WIDE X 12" LONG, ALUMINUM (0.080 GA.). SIGN COLOR IS WHITE WITH BLACK LETTERING. ROUNDED CORNERS (1.5" RAD.), 2 HOLES (3/8" DIAM.), 10" O.C.

UNDERGROUND PIPELINE SIGN DETAIL

35W

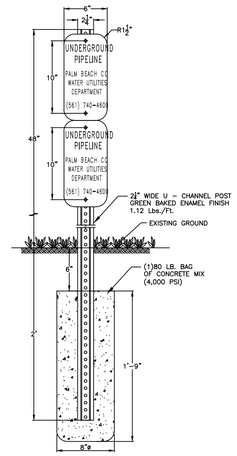


NOTE:

SIGNS SHALL BE 6" WIDE X 12" LONG, ALUMINUM (0.080 GA.). SIGN COLOR IS WHITE WITH BLACK LETTERING, ROUNDED CORNERS (1.5" RAD.), 2 HOLES (3/8" DIAM.), 10" O.C.

SINGLE UNDERGROUND PIPELINE SIGN DETAIL

36W

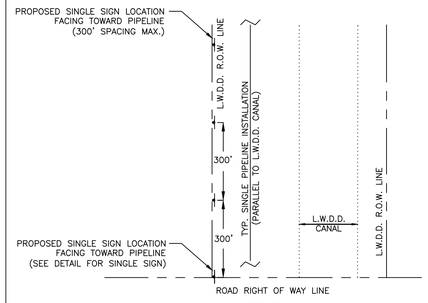


NOTES:

1. SIGNS SHALL BE 6" WIDE X 12" LONG, ALUMINUM (0.080 GA.). SIGN COLOR IS WHITE WITH BLACK LETTERING. ROUNDED CORNERS (1.5" RAD.), 2 HOLES (3/8" DIAM.), 10" O.C.
2. THE DUAL UNDERGROUND PIPELINE SIGN SHALL BE UTILIZED FOR TWO UNDERGROUND PIPELINES WITHIN THE L.W.D.D. RIGHT-OF-WAY.

DUAL UNDERGROUND PIPELINE SIGN DETAIL

37W

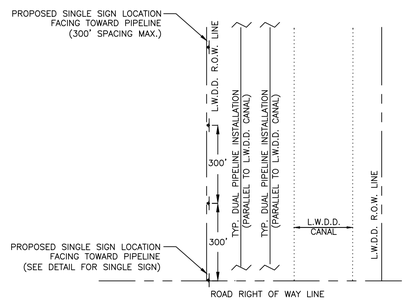


NOTE:

1. UNDERGROUND PIPELINE WARNING SIGNS ARE TO BE PLACED AT THE POINT IN WHICH THE LINE INGRESSES AND EGRESSES THE L.W.D.D. RIGHT-OF-WAY.
2. SIGN SPACING IS TO BE A MAXIMUM OF 300' ALONG THE L.W.D.D. RIGHT-OF-WAY, AS CLOSE AS POSSIBLE TO THE L.W.D.D. RIGHT-OF-WAY.

L.W.D.D. – SINGLE PIPE PARALLEL INSTALLATION UNDERGROUND PIPELINE SIGN INSTALLATION DETAIL

38W

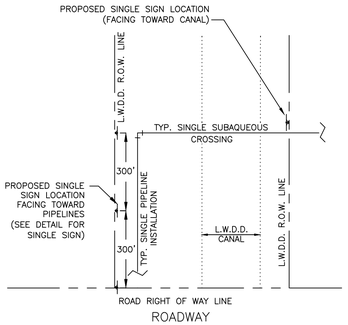


NOTE:

1. UNDERGROUND PIPELINE WARNING SIGNS ARE TO BE PLACED AT THE POINT IN WHICH THE LINE INGRESSES AND EGRESSES THE L.W.D.D. RIGHT-OF-WAY.
2. SIGN SPACING IS TO BE A MAXIMUM OF 300' ALONG THE L.W.D.D. RIGHT-OF-WAY, AS CLOSE AS POSSIBLE TO THE L.W.D.D. RIGHT-OF-WAY.

L.W.D.D. – DUAL PIPE PARALLEL INSTALLATION UNDERGROUND PIPELINE SIGN INSTALLATION DETAIL

39W

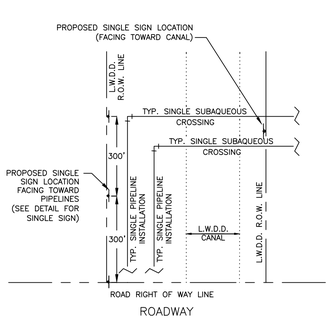


NOTE:

1. UNDERGROUND PIPELINE WARNING SIGNS ARE TO BE PLACED ON BOTH SIDES OF THE CANAL CROSSING; AT THE INSIDE EDGE OF THE RIGHT-OF-WAY.
2. SIGN POST IS NOT TO BE PLACED DIRECTLY OVER PIPELINE. OFFSET SIGN POST 5' FROM PIPELINE.

L.W.D.D. – SINGLE PIPE SUBAQUEOUS CROSSING UNDERGROUND PIPELINE SIGN INSTALLATION DETAIL

40W

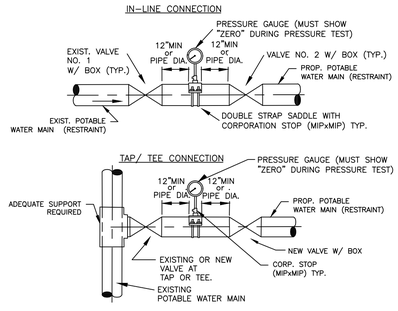


NOTE:

1. UNDERGROUND PIPELINE WARNING SIGNS ARE TO BE PLACED ON BOTH SIDES OF THE CANAL CROSSING; AT THE INSIDE EDGE OF THE RIGHT-OF-WAY.
2. SIGN POST IS NOT TO BE PLACED DIRECTLY OVER PIPELINE. OFFSET SIGN POST 5' FROM PIPELINE.

L.W.D.D. – DUAL PIPE SUBAQUEOUS CROSSING UNDERGROUND PIPELINE SIGN INSTALLATION DETAIL

41W

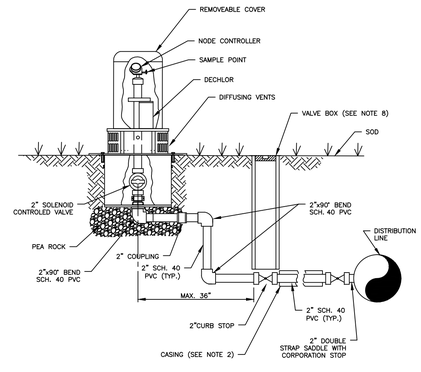


NOTES:

1. THE "ALTERNATIVE" PROCEDURE MUST BE APPROVED BY WUD IN ADVANCE. IT ALLOWS THE NEW PIPE TO BE PRESSURE TESTED PRIOR TO BACTERIOLOGICAL TESTING.
2. BOTH VALVES SHALL BE KEPT CLOSED EXCEPT FOR FILLING AND FLUSHING.
3. WUD SHALL BE NOTIFIED BEFORE FILLING AND FLUSHING.
4. PRESSURE TEST PUMP MAY BE CONNECTED TO SERVICE LINE, FIRE HYDRANT OR BLOWOFF IN THE TESTED WATER MAIN. NO EXTRA TAPS ARE PERMITTED UNLESS UNAVOIDABLE.
5. GAUGE AND RISER TO BE REMOVED AFTER PRESSURE TEST, HOLE TO BE PLUGGED AT SADDLE WITH BRASS PLUG. A BRASS CAP IS REQUIRED.
6. THREAD AREAS OF CORPORATION STOP SHALL BE SPIRAL WRAPPED WITH TWO WRAPS OF TEFLON TAPE.
7. ENSURE PROPER RESTRAINT OF EXISTING VALVE(S) AND PIPE PRIOR TO NEW CONNECTION.
8. SEE ALSO DETAIL FOR "STANDARD POTABLE WATER MAIN TIE–IN PROCEDURE"
9. RECORD DRAWINGS TO SHOW DATA FOR ALL TEST TAPS.
10. ALL BRASS SHALL BE "LEAD FREE".

ALTERNATIVE WATER MAIN TIE–IN

42W



NOTES:

1. AUTOMATIC FLUSHING ASSEMBLY TO BE INSTALLED PER MANUFACTURER'S REQUIREMENTS.
2. FOR INSTALLATION OF SERVICES UNDER DRIVEWAYS AND ROADWAYS, USE MIN. 4" DIAMETER BLACK IRON, PVC SCH 40, OR HDPE SDR 9 CASING. CASING SHALL EXTEND MIN. 24" BEYOND EDGE OF PAVEMENT. CASING TO BE SEALED WITH CEMENT. CASING SHALL BE COLOR-CODED BLACK, WHITE, BLUE, OR BLUE STRIPED.
3. AUTOMATIC FLUSHING ASSEMBLY TO BE INSTALLED AS CLOSE AS POSSIBLE TO THE WATER MAIN WITHIN AN UTILITY EASEMENT OR ROAD RIGHT-OF-WAY WITH PRIOR DEPARTMENT APPROVAL. IF AUTOMATIC FLUSHING ASSEMBLY HOUSING IS INSTALLED IN ROAD RIGHT-OF-WAY IT SHALL NOT INTERFERE WITH CLEAR ZONE REQUIREMENTS AS SPECIFIED BY ROAD OWNER.
4. 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.
5. ALL HARDWARE (I.E. BOLTS, ETC.) REQUIRED FOR ASSEMBLY INSTALLATION SHALL BE 304 STAINLESS STEEL.
6. THREADED AREAS OF CORPORATION STOP AND OTHER FITTINGS SHALL BE SPIRAL WRAPPED WITH TWO (2) WRAPS OF TEFLON TAPE. ALL BRASS SHALL BE "LEAD FREE".
7. A 4" THICK COMPACTED 3/4" ROCK BASE IS REQUIRED. THE BASE SHALL EXTEND MINIMUM 12" BEYOND AUTOMATIC FLUSHING ASSEMBLY PAD PERIMETER.
8. WHEN VALVE BOX IS LOCATED IN GRASS A CONCRETE COLLAR IS REQUIRED PER DEPARTMENT STANDARDS.

AUTOMATIC FLUSHING ASSEMBLY (TYPE A)

43W

THIS SPACE
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POTABLE WATER #5
STANDARD DETAILS

CONSULTANT:

CAULFIELD & WHEELER, INC.
CIVIL ENGINEERING - LAND PLANNING
LANDSCAPE ARCHITECTURE - SURVEYING
7900 GLADES ROAD - SUITE 100
BOCA RATON, FLORIDA 33434
PHONE (561)-392-1991 / FAX (561)-750-1452

IT'S THE LAW ! CALL 48 HOURS BEFORE YOU DIG 1-800-432-4770 SUNSHINE STATE ONE CALL OF FLORIDA, INC. UTILITIES NOTIFICATION CENTER

DESIGNED BY: WUD
DRAWN BY: M. BUCKNER
CHECKED BY: J. LAMMERT
APPROVED BY: WUD

Palm Beach County
Water Utilities Department
P.O.Box 16097
West Palm Beach, FL 33416-6097

WUD PROJECT No.
23-575

SHOPS AT INDIAN TRAILS
A.K.A.COCONUT CROSSING

PALM BEACH COUNTY
WATER UTILITIES DEPARTMENT
P.O. BOX 16097
WEST PALM BEACH, FL 33416
(561)493-6000

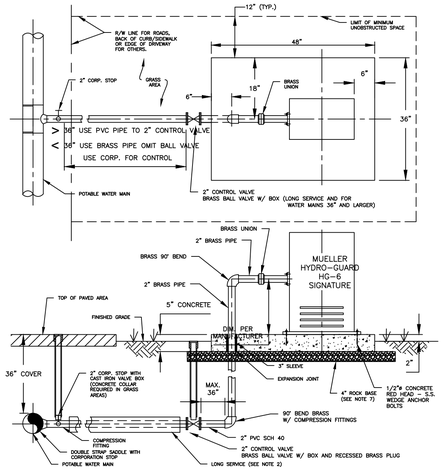
NO.	DATE	REVISION / REMARKS	BY
1	JUNE 2019	GENERAL REVISION	JL
2	JAN 2023	GENERAL REVISION	JL

STD DETAILS

SHEET NUMBER
C-26
OF
45

SEAL

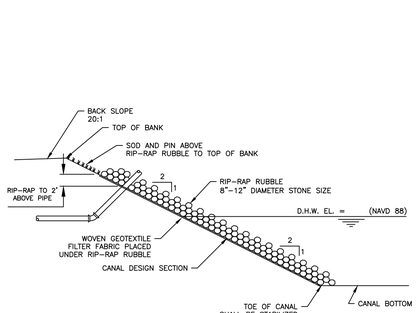
MATTHEW V. KAHN
PROFESSIONAL ENGINEER
LICENSE NO. 82227
STATE OF FLORIDA
– FOR THE FIRM –
DATE



NOTES:
1. 12" MINIMUM CLEARANCE TO BE MAINTAINED BETWEEN AUTOMATIC FLUSHING SYSTEM PAD AND ANY OBSTRUCTION.
2. FOR INSTALLATION OF SERVICES UNDER DRIVEWAYS AND ROADWAYS, USE MIN. 4" DIAMETER BLACK IRON, PVC SCH 40, OR HDPE SDR 9 CASING. CASING SHALL EXTEND MIN. 24" BEYOND EDGE OF PAVEMENT. CASING TO BE SEALED WITH CEMENT. CASING SHALL BE COLOR-CODED BLACK, WHITE, BLUE, OR BLUE STRIPED.
3. AUTOMATIC FLUSHING ASSEMBLY TO BE INSTALLED AS CLOSE AS POSSIBLE TO THE WATER MAIN.
4. 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.
5. ALL HARDWARE FOR FLANGED CONNECTIONS (BOLTS, ETC.) TO BE STAINLESS STEEL.
6. THREADED AREAS OF CORPORATION STOP AND OTHER FITTINGS SHALL BE SPIRAL WRAPPED WITH TWO (2) WRAPS OF TEFLON TAPE. ALL BRASS SHALL BE "LEAD FREE".
7. A 4" THICK COMPACTED 3/4" ROCK BASE IS REQUIRED. THE BASE SHALL EXTEND MINIMUM 12" BEYOND AUTOMATIC FLUSHING ASSEMBLY PAD PERIMETER.

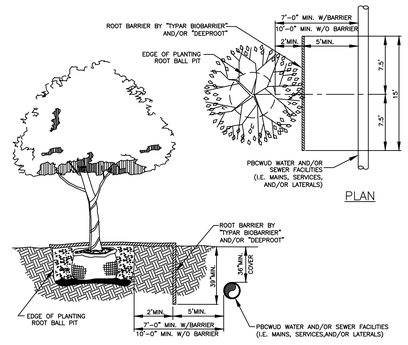
PRIOR DEPARTMENT APPROVAL REQUIRED BEFORE PROJECT BEING APPROVED FOR INSTALLATION.

AUTOMATIC FLUSHING ASSEMBLY (TYPE B) — 44W



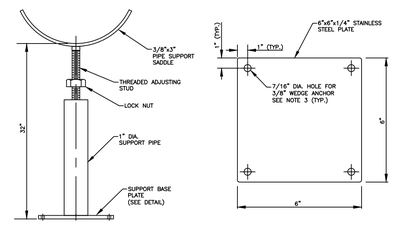
NOTES:
1. RIP-RAP RUBBLE AND ITS INSTALLATION MUST MEET CANAL OWNERSHIP SPECIFICATIONS AND PERMITTING REQUIREMENTS.
2. DUMP RUBBLE IN PLACE FORMING A COMPACT LAYER CONFORMING TO THE CANAL DESIGN SECTION SLOPE. ENSURE THAT RUBBLE DOES NOT SEGREGATE SO THAT SMALLER PIECES EVENLY FILL THE VOIDS BETWEEN LAGER PIECES.
3. AN ALTERNATIVE DESIGN WILL BE CONSIDERED AND MUST RECEIVE PRIOR APPROVAL FROM THE CANAL PROPERTY OWNER.

RIP-RAP RUBBLE DETAIL — 45W



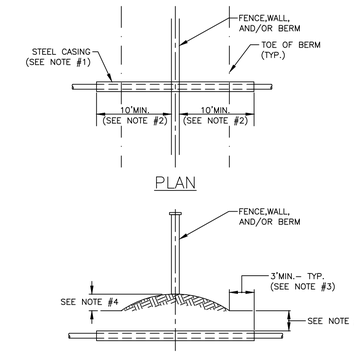
NOTES:
1. TREES SHOWN ON THIS PLAN ARE FOR GRAPHIC REPRESENTATION ONLY. TREE SPACING IS BASED ON DESIGN REQUIREMENTS AND THE TREES SHOWN ON THESE PLANS ATTEMPT TO ACCOMPLISH THAT SPACING WHILE MAINTAINING THE REQUIRED SETBACKS FROM UTILITIES. TREES MAY BE FIELD ADJUSTED TO AVOID CONFLICTS WITH DRIVEWAYS AND UNDERGROUND UTILITIES. IN ANY CASE THE TREES SHALL BE LOCATED IN THE FIELD IN ACCORDANCE WITH THE PLANTING DETAILS SHOWN HEREON.
2. TREES ARE TO BE INSTALLED WITH A TEN FOOT (10') SEPARATION FROM ANY WATER OR SEWER MAIN AND/OR SERVICE, HYDRANTS, AND LIFT STATIONS. IF A TEN FOOT (10') SEPARATION CANNOT BE ACHIEVED, THE TREE CAN BE INSTALLED WITH A ROOT BARRIER SYSTEM. HOWEVER, IN NO CASE SHALL A TREE ENCROACH INTO A PBCUE WITHOUT PRIOR DEPARTMENT APPROVAL.
3. ONLY SOD CAN BE INSTALLED WITHIN 7.5' MINIMUM OF A FIRE HYDRANT UNLESS OTHERWISE APPROVED BY THE FIRE MARSHAL AND THE DEPARTMENT.
4. SOD ONLY SHALL BE INSTALLED WITHIN 5.0' MINIMUM OF ANY DEPARTMENT WATER METER.
5. WHEN INSTALLING A SOLID ROOT BARRIER PANEL SYSTEM THE PANEL RIBS MUST FACE THE TREE ROOT BALL.*

LANDSCAPE AND ROOT BARRIER DETAIL * — 46W



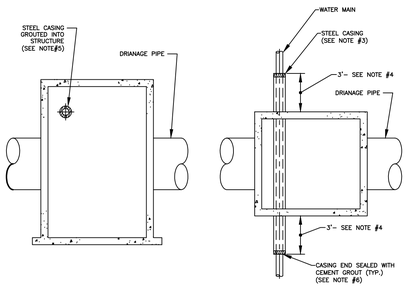
NOTES:
1. SHOP DRAWING FOR THE METER ASSEMBLY PIPE SUPPORT IS REQUIRED TO BE SUBMITTED FOR APPROVAL BY THE DEPARTMENT PRIOR TO THE PIPE SUPPORT BEING CONSTRUCTED AND/OR INSTALLED. ALL PIPE SUPPORTS FOR EACH METER ASSEMBLY INSTALLATION SHALL BE THE SAME.
2. ALL PIPE SUPPORT MATERIALS AND MOUNTING HARDWARE ARE REQUIRED TO BE 304 STAINLESS STEEL.
3. THE REQUIRED WEDGE ANCHORS FOR EACH SUPPORT SHALL BE 3/8" DIAMETER WITH NOMINAL EMBEDMENT OF 2-3/8". EACH ANCHOR SHALL HAVE A WASHER, LOCK WASHER, AND NUT.

ABOVE GROUND WATER METER INSTALLATION PIPE SUPPORT — 47W



NOTES:
1. STEEL CASING PER WUD STANDARD DETAIL 22W (SOLID CASING) OR WUD STANDARD DETAIL 22AW (SPLIT CASING) AS APPLICABLE.
2. STEEL CASING SHALL EXTEND TEN (10) FEET MINIMUM PAST FENCE OR WALL. FIVE (5) FEET MINIMUM MAY BE ACCEPTABLE ON A CASE-BY-CASE BASIS DUE TO SITE CONDITIONS AND ONLY WITH PRIOR DEPARTMENT APPROVAL.
3. STEEL CASING SHALL EXTEND THREE (3) FEET MINIMUM PAST THE TOE OF THE BERM. IF BERM CASING IS ASSOCIATED WITH A WALL OR FENCE INSTALLATION OF THE CASING SHALL EXTEND THREE (3) FEET MINIMUM PAST THE TOE OF THE BERM OR TEN (10) FEET MINIMUM PAST THE WALL OR FENCE WHICH EVER IS GREATER.
4. STEEL CASING INSTALLATION REQUIRED WHEN A BERM IS TWO (2) FEET OR HIGHER ABOVE SURROUNDING GRADE.
5. TOP OF STEEL CASING SHALL BE THREE (3) FEET MINIMUM BELOW THE TOE OF THE BERM OR BASE OF WALL OR FENCE ELEVATION WHICHEVER IS LOWER.

POTABLE WATER MAIN CROSSING FENCE,WALL, OR BERM CASING DETAIL* * — 48W



WUD MAIN SIZE	DIAMETER OF STEEL CASING SIZE	OPENING SIZE FOR SOLID CASING	OPENING SIZE FOR SPLIT CASING
6"	14"	18"	20"
8"	20"	24"	26"
10"	20"	24"	26"
12"	24"	28"	30"

NOTES:
1. THE CONFLICT STRUCTURE IS TO BE DESIGNED PER CURRENT FDOT UTILITY CONFLICT THRU DRAINAGE STRUCTURE STANDARDS.
2. A SHOP DRAWING TO SCALE FOR EACH CONFLICT STRUCTURE INSTALLATION IS REQUIRED TO BE APPROVED BY THE DEPARTMENT PRIOR TO INSTALLATION.
3. STEEL CASING PER WUD STANDARD DETAIL 22W (SOLID CASING) OR WUD STANDARD DETAIL 22AW (SPLIT CASING) FOR EXISTING WATER MAIN ONLY.
4. STEEL CASING SHALL EXTEND THREE (3) FEET PAST EACH SIDE OF STRUCTURE. CASING CAN EXTEND FURTHER PAST THE STRUCTURE WHEN EXISTING CONDITIONS WARRANT AND ONLY WITH PRIOR DEPARTMENT APPROVAL.
5. STEEL CASING SHALL BE GROUTED IN PLACE WITH NON-SHRINKABLE CEMENT GROUT TO PROVIDE A WATERTIGHT SEAL TO PREVENT ANY LEAKAGE INTO THE STRUCTURE.
6. NON-SHRINKABLE CEMENT GROUT TO BE INSTALLED AT EACH END OF CASING TO OBTAIN WATERTIGHT SEAL.

POTABLE WATER MAIN CONFLICT STRUCTURE DETAIL* * — 49W

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POTABLE WATER #6 STANDARD DETAILS

WUD PROJECT No. 23-575

SHOPS AT INDIAN TRAILS
A.K.A. COCONUT CROSSING

PALM BEACH COUNTY
WATER UTILITIES DEPARTMENT
P.O. BOX 16097
WEST PALM BEACH, FL 33416
(561)493-6000

NO.	DATE	REVISION / REMARKS	BY
	JUNE 2019	GENERAL REVISION	JL
*	JAN 2023	GENERAL REVISION	JL

STD DETAILS

SHEET NUMBER C-27 OF 45

CONSULTANT:
CAULFIELD & WHEELER, INC.
CIVIL ENGINEERING - LAND PLANNING
LANDSCAPE ARCHITECTURE - SURVEYING
7900 GLADES ROAD - SUITE 100
BOCA RATON, FLORIDA 33434
PHONE (561)-392-1991 / FAX (561)-750-1452

IT'S THE LAW ! CALL 48 HOURS BEFORE YOU DIG 1-800-432-4770 SUNSHINE STATE ONE CALL OF FLORIDA, INC. UTILITIES NOTIFICATION CENTER

DESIGNED BY: WUD
DRAWN BY: M. BUCKNER
CHECKED BY: J. LAMMERT
APPROVED BY: WUD

Palm Beach County
Water Utilities Department
P.O.Box 16097
West Palm Beach, FL 33416-6097

SEAL

MATTHEW V. KAHN
PROFESSIONAL ENGINEER
LICENSE NO. 82227
STATE OF FLORIDA
- FOR THE FIRM -
DATE

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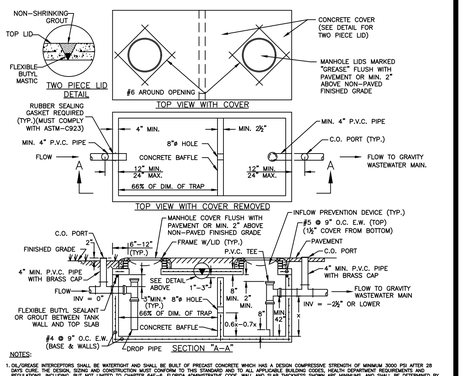
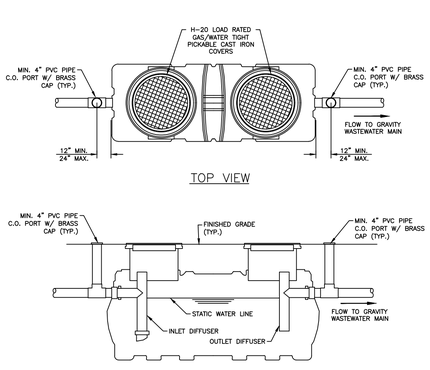


NOTES:

1. OIL/GREASE INTERCEPTORS SHALL BE WATERTIGHT AND SHALL BE BUILT OF PRECAST CONCRETE WHICH HAS A DESIGN COMPRESSIVE STRENGTH OF MINIMUM 3000 PSI AFTER 28 DAYS CURE, THE DESIGN, SIZING AND CONSTRUCTION MUST CONFORM TO THIS STANDARD AND TO ALL APPLICABLE BUILDING CODES, HEALTH DEPARTMENT REQUIREMENTS AND REGULATIONS, INCLUDING, BUT NOT LIMITED TO CHAPTER 64E-6, FLORIDA ADMINISTRATIVE CODE. WALL AND SLAB THICKNESS SHOWN ARE MINIMUMS, AND SHALL BE DETERMINED BY THE OWNER'S ENGINEER, THE CONCRETE BOX SHALL BE MONOLITHIC POURED AND SHALL HAVE A PRECAST HOLE ON EACH END ONLY FOR LATERAL. THE PRECAST HOLES SHALL HAVE CAST-IN BOOTS WHENEVER POSSIBLE. THESE INTERCEPTORS SHALL BE INSTALLED ON A MINIMUM SIX (6) INCH VERTICAL SEPARATION BETWEEN THE BOTTOM OF THE UPPER PIPE AND THE CROWN OF THE LOWER PIPE. WHEN THE MINIMUM TWELVE (12) INCH VERTICAL SEPARATION CANNOT BE OBTAINED A MINIMUM SIX (6) INCH VERTICAL SEPARATION IS PERMITTED PROVIDED THAT A TWENTY (20) FOOT SECTION OF WASTEWATER DUCTILE IRON PIPE MAIN IS CENTERED ON THE CROSSING WITH THE OTHER PIPE HAVING A TWENTY (20) FOOT SECTION CENTERED ON THE CROSSING AND WITH PRIOR DEPARTMENT APPROVAL. A WASTEWATER FORCE MAIN MUST CROSS UNDER ANY POTABLE WATER MAIN WITH A MINIMUM TWELVE (12) INCH VERTICAL SEPARATION REQUIRED. WHEN THE MINIMUM TWELVE (12) INCH VERTICAL SEPARATION CANNOT BE OBTAINED A MINIMUM SIX (6) INCH VERTICAL SEPARATION IS PERMITTED PROVIDED THAT A TWENTY (20) FOOT SECTION CENTERED ON THE CROSSING AND ONLY WITH PRIOR DEPARTMENT APPROVAL. A WASTEWATER FORCE MAIN MAY CROSS OVER A POTABLE WATER MAIN ON A CASE BY CASE BASIS PROVIDED A MINIMUM TWELVE (12) INCH VERTICAL SEPARATION IS OBTAINED BETWEEN THE BOTTOM OF THE UPPER PIPE AND THE CROWN OF THE LOWER PIPE AND ONLY WITH PRIOR DEPARTMENT APPROVAL.*
2. GREASE INTERCEPTOR SHALL BE USED FOR APPLICATIONS EXCEEDING 25 GPM FLOW RATE, DETERMINED USING THE PLUMBING AND DRAINAGE INSTITUTE PDI G101 STANDARD. A DESIGN CALCULATION MUST BE SUBMITTED FOR APPROVAL WITH A SHOP DRAWING PRIOR TO THE PRE-CONSTRUCTION MEETING FOR APPLICATIONS UP TO 25 GPM FLOW RATE (ONE MINUTE FLOW) OR 50 GPM (TWO MINUTE FLOW), AN APPROVED OUTDOOR "GREASE TRAP" MAY BE USED; OTHER DESIGNS MAY BE CONSIDERED UPON APPROVAL OF SHOP DRAWINGS.
3. INSPECTION PORTS (CLEAN OUTS) ARE REQUIRED TO BE INSTALLED AT EACH END OF ANY TYPE OF INTERCEPTOR WITH PORTS TO REMAIN EASILY ACCESSIBLE FOR UTILITY INSPECTION AND SAMPLING.
4. THE INTERCEPTOR AND CLEAN-OUTS PORT SHALL BE LOCATED OUTSIDE AND IN NON-TRAFFIC AREA WHENEVER POSSIBLE. IF INSTALLED IN A TRAFFIC AREA MANHOLES ARE REQUIRED ON THE INSPECTION PORTS (CLEAN OUTS), THE SURFACE SURROUNDING THE INTERCEPTOR SHALL BE SLOPED TO DRAIN STORM WATER AWAY FROM THE INTERCEPTOR.
5. THE CAPACITY DETERMINATION FOR THE INTERCEPTOR IS THE RESPONSIBILITY OF THE OWNER/CUSTOMER. THE MINIMUM VOLUME OF ANY GREASE INTERCEPTOR SHALL BE 750 GALLONS AND THE MINIMUM VOLUME OF A SINGLE GREASE INTERCEPTOR SHALL BE 1250 GALLONS. WHEN THE REQUIRED EFFECTIVE CAPACITY OF THE GREASE INTERCEPTOR IS GREATER THAN 1250 GALLONS, INSTALLATION OF MULTIPLE GREASE INTERCEPTORS IS REQUIRED.
6. NO BAFFLE IS REQUIRED IF THERE ARE MULTIPLE GREASE INTERCEPTORS INSTALLED IN SERIES. HOWEVER, CLEANOUT PORTS MUST BE INSTALLED ON EACH END OF EACH INTERCEPTOR.
7. THE PROPERTY OWNER/CUSTOMER SHALL BE RESPONSIBLE FOR THE OPERATION AND MAINTENANCE OF THE INTERCEPTOR.
8. THE GREASE INTERCEPTOR SHALL NOT BE USED FOR THE PURPOSE OF INTERCEPTING SAND AND OIL FROM NON- FOOD HANDLING ESTABLISHMENTS.
9. EACH FACILITY WITH AN OIL/GREASE INTERCEPTOR SHALL HAVE A SEPARATE (NOT SHARED) INTERCEPTOR AND SHALL BE INDIVIDUALLY METERED THROUGH THE DEPARTMENT.
10. A "GREASE TRAP" OR "OIL/GREASE INTERCEPTOR" SHALL BE REQUIRED TO RECEIVE THE DRAINAGE FROM FIXTURES AND EQUIPMENT (SINKS, DISHWASHERS, FLOOR DRAINS, CAN WASH AREAS, ETC.) WITH GREASE LADEN WASTE LOCATED IN COMMERCIAL FOOD PREPARATION AREAS SUCH AS RESTAURANTS, HOTEL KITCHENS, HOSPITALS, SCHOOL KITCHENS, BARS, FACTORY CAFETERIAS, CLUBS, ETC.
11. THE "GREASE TRAP" OR "OIL/GREASE INTERCEPTOR" SHALL BE LOCATED AS CLOSE PRACTICALLY POSSIBLE TO THE FIXTURES AND EQUIPMENT GENERATING GREASE.
12. A "SOLIDS INTERCEPTOR" SHALL BE CONSIDERED TO BE INSTALLED UPSTREAM OF A " GREASE TRAP" WHERE SUBSTANTIAL AMOUNT OF SOLIDS FROM FOOD GRINDERS, DISPOSALS MAY BE PRESENT.
13. MANHOLE COVER SHALL BE MACHINED TO ACCEPT INFLOW PROTECTOR.
14. SEE WUD STANDARD DETAIL 15B FOR FIBERGLASS TYPE OIL/GREASE INTERCEPTORS INSTALLATIONS.*

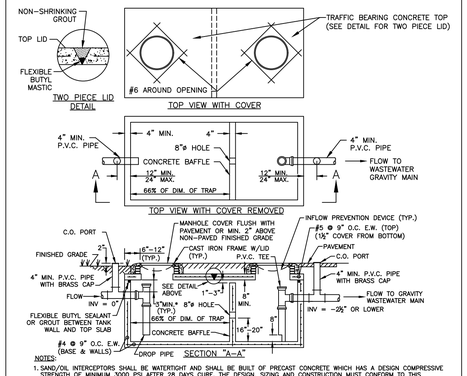
OIL/ GREASE INTERCEPTOR
CONCRETE STRUCTURE
* 1SA



NOTES:

1. INSPECTION PORTS (CLEANOUTS) ARE REQUIRED TO BE INSTALLED AT EACH END OF ANY TYPE OF INTERCEPTOR WITH PORTS TO REMAIN EASILY ACCESSIBLE FOR UTILITY INSPECTION AND SAMPLING.
2. THE INTERCEPTOR PORTS (CLEANOUTS) SHALL BE LOCATED OUTSIDE AND IN A NON-TRAFFIC AREA WHEREVER POSSIBLE. IF INSTALLED IN A TRAFFIC AREA, MINI-MANHOLES ARE REQUIRED TO BE INSTALLED ON ALL PORTS (CLEANOUTS). THE SURFACE SURROUNDING THE INTERCEPTOR SHALL BE SLOPED TO DRAIN STORM WATER AWAY FROM THE INTERCEPTOR.
3. IF AN INTERCEPTOR NEEDS TO BE INSTALLED IN DOORS DUE TO EXISTING SITE CONDITIONS, PRIOR DEPARTMENT APPROVAL IS REQUIRED WITH IN DOOR INSTALLATIONS APPROVED ON A CASE BY CASE BASIS.
4. THE PROPERTY OWNER/CUSTOMER SHALL BE RESPONSIBLE FOR THE OPERATION AND MAINTENANCE OF THE INTERCEPTOR.
5. EACH FACILITY WITH AN OIL/GREASE INTERCEPTOR SHALL HAVE A DEDICATED (NOT SHARED) INTERCEPTOR WITH THEIR POTABLE WATER SERVICE INDIVIDUALLY METERED THROUGH THE DEPARTMENT.
6. SEE WUD STANDARD DETAIL 1SA FOR CONCRETE STRUCTURE TYPE OIL/GREASE INTERCEPTOR INSTALLATIONS.

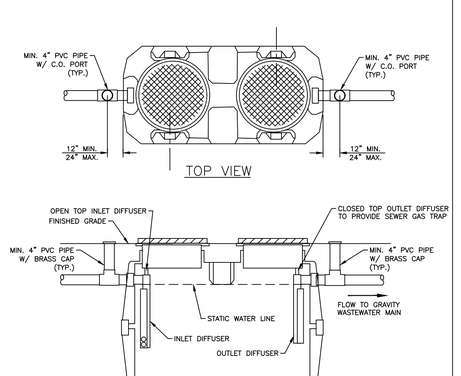
OIL/ GREASE INTERCEPTOR
FIBERGLASS STRUCTURE ONLY
* 1SB



NOTES:

1. SAND/OIL INTERCEPTORS SHALL BE WATERTIGHT AND SHALL BE BUILT OF PRECAST CONCRETE WHICH HAS A DESIGN COMPRESSIVE STRENGTH OF MINIMUM 3000 PSI AFTER 28 DAYS CURE, THE DESIGN, SIZING AND CONSTRUCTION MUST CONFORM TO THIS STANDARD AND TO ALL APPLICABLE BUILDING CODES, HEALTH DEPARTMENT REQUIREMENTS AND REGULATIONS, INCLUDING, BUT NOT LIMITED TO CHAPTER 64E-6, FLORIDA ADMINISTRATIVE CODE. WALL AND SLAB THICKNESS SHOWN ARE MINIMUMS, AND SHALL BE DETERMINED BY THE OWNER'S ENGINEER, THE CONCRETE BOX SHALL BE MONOLITHIC POURED AND SHALL HAVE A PRECAST HOLE ON EACH END ONLY FOR LATERAL. THE PRECAST HOLES SHALL HAVE CAST-IN BOOTS WHENEVER POSSIBLE.
2. AN ALTERNATIVE TYPE OF INTERCEPTOR STRUCTURE MAY BE INSTALLED ONLY WITH PRIOR DEPARTMENT APPROVAL. SHOP DRAWINGS ARE REQUIRED TO BE SUBMITTED AND APPROVED BY THE DEPARTMENT PRIOR TO THE PRE-CONSTRUCTION MEETING FOR ALL INTERCEPTORS.
3. INSPECTION PORTS (CLEAN OUTS) ARE REQUIRED TO BE INSTALLED AT EACH END OF ANY TYPE OF INTERCEPTOR WITH PORTS TO REMAIN EASILY ACCESSIBLE FOR UTILITY INSPECTION AND SAMPLING.
4. THE INTERCEPTOR SHALL BE LOCATED IN GRASS AREA/NON-TRAFFIC AREA WHENEVER POSSIBLE. THE SURFACE SURROUNDING THE INTERCEPTOR SHALL BE SLOPED TO DRAIN STORM WATER AWAY FROM THE INTERCEPTOR.
5. THE CAPACITY DETERMINATION FOR THE INTERCEPTOR IS THE RESPONSIBILITY OF THE OWNER/CUSTOMER. THE MINIMUM VOLUME OF A SAND/OIL INTERCEPTOR SHALL BE 750 GALLONS. WHEN THE REQUIRED EFFECTIVE CAPACITY OF THE SAND/OIL INTERCEPTOR IS GREATER THAN 750 GALLONS, INSTALLATION OF SINGLE COMPARTMENT SAND/OIL INTERCEPTORS IN SERIES IS REQUIRED.
6. THE PROPERTY OWNER/CUSTOMER SHALL BE RESPONSIBLE FOR THE OPERATION AND MAINTENANCE OF THE INTERCEPTOR.
7. SAND/OIL INTERCEPTOR SHALL NOT BE USED FOR THE PURPOSE OF INTERCEPTION OF GREASE FROM FOOD HANDLING ESTABLISHMENTS.
8. EACH FACILITY REQUIRED TO HAVE A SAND/OIL INTERCEPTOR SHALL HAVE A SEPERATE INTERCEPTOR AND SHALL BE INDIVIDUALLY METERED THROUGH THE DEPARTMENT.
9. MANHOLE LIDS SHALL BE MACHINED TO ACCEPT INFLOW PREVENTER.
10. SEE WUD STANDARD DETAIL 2SB FOR FIBERGLASS TYPE SAND/OIL INTERCEPTOR INSTALLATIONS.*

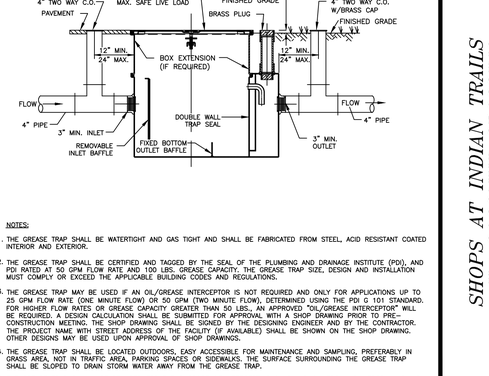
SAND/ OIL INTERCEPTOR
CONCRETE STRUCTURE
* 2SA



NOTES:

1. INSPECTION PORTS (CLEANOUTS) ARE REQUIRED TO BE INSTALLED AT EACH END OF ANY TYPE OF INTERCEPTOR WITH PORTS TO REMAIN EASILY ACCESSIBLE FOR UTILITY INSPECTION AND SAMPLING.
2. THE INTERCEPTOR PORTS (CLEANOUTS) SHALL BE LOCATED OUTSIDE AND IN A NON-TRAFFIC AREA WHEREVER POSSIBLE. IF INSTALLED IN A TRAFFIC AREA, MINI-MANHOLES ARE REQUIRED TO BE INSTALLED ON ALL PORTS (CLEANOUTS). THE SURFACE SURROUNDING THE INTERCEPTOR SHALL BE SLOPED TO DRAIN STORM WATER AWAY FROM THE INTERCEPTOR.
3. IF AN INTERCEPTOR NEEDS TO BE INSTALLED IN DOORS DUE TO EXISTING SITE CONDITIONS, PRIOR DEPARTMENT APPROVAL IS REQUIRED WITH IN DOOR INSTALLATIONS APPROVED ON A CASE BY CASE BASIS.
4. THE PROPERTY OWNER/CUSTOMER SHALL BE RESPONSIBLE FOR THE OPERATION AND MAINTENANCE OF THE INTERCEPTOR.
5. EACH FACILITY WITH AN SAND/OIL INTERCEPTOR SHALL HAVE A DEDICATED (NOT SHARED) INTERCEPTOR WITH THEIR POTABLE WATER SERVICE INDIVIDUALLY METERED THROUGH THE DEPARTMENT.
6. SEE WUD STANDARD DETAIL 2SA FOR CONCRETE STRUCTURE TYPE SAND/OIL INTERCEPTOR INSTALLATIONS.

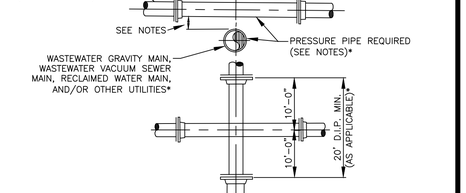
SAND/ OIL INTERCEPTOR
POLYETHEYLENE/FIBERGLASS STRUCTURE ONLY
* 2SB



NOTES:

1. THE GREASE TRAP SHALL BE WATERTIGHT AND GAS TIGHT AND SHALL BE FABRICATED FROM STEEL, ACID RESISTANT COATED INTERIOR AND EXTERIOR.
2. THE GREASE TRAP SHALL BE CERTIFIED AND TAGGED BY THE SEAL OF THE PLUMBING AND DRAINAGE INSTITUTE (PDI), AND PDI RATED AT 50 GPM FLOW RATE AND 100 LBS. GREASE CAPACITY. THE GREASE TRAP SIZE, DESIGN AND INSTALLATION MUST COMPLY OR EXCEED THE APPLICABLE BUILDING CODES AND REGULATIONS.
3. THE GREASE TRAP MAY BE USED IF AN OIL/GREASE INTERCEPTOR IS NOT REQUIRED AND ONLY FOR APPLICATIONS UP TO 25 GPM FLOW RATE (ONE MINUTE FLOW) OR 50 GPM (TWO MINUTE FLOW), DETERMINED USING THE PDI G 101 STANDARD. FOR HIGHER FLOW RATES OR GREASE CAPACITY GREATER THAN 50 LBS., AN APPROVED "OIL/GREASE INTERCEPTOR" WILL BE REQUIRED. A DESIGN CALCULATION SHALL BE SUBMITTED FOR APPROVAL WITH A SHOP DRAWING PRIOR TO PRE-CONSTRUCTION MEETING. THE SHOP DRAWING SHALL BE SIGNED BY THE DESIGNING ENGINEER AND BY THE CONTRACTOR. THE PROJECT NAME WITH STREET ADDRESS OF THE FACILITY (IF AVAILABLE) SHALL BE SHOWN ON THE SHOP DRAWING. OTHER DESIGNS MAY BE USED UPON APPROVAL OF SHOP DRAWINGS.
4. THE GREASE TRAP SHALL BE LOCATED OUTDOORS, EASY ACCESSIBLE FOR MAINTENANCE AND SAMPLING, PREFERABLY IN GRASS AREA, NOT IN TRAFFIC AREA, PARKING SPACES OR SIDEWALKS. THE SURFACE SURROUNDING THE GREASE TRAP SHALL BE SLOPED TO DRAIN STORM WATER AWAY FROM THE GREASE TRAP.
5. THE GREASE TRAP SHALL NOT BE USED FOR THE PURPOSE OF INTERCEPTING SAND AND OIL FROM NON-FOOD HANDLING ESTABLISHMENTS.
6. THE PROPERTY OWNER/CUSTOMER SHALL BE RESPONSIBLE FOR THE OPERATION AND MAINTENANCE OF THE GREASE TRAP.
7. EACH FACILITY WITH A GREASE TRAP SHALL BE INDIVIDUALLY METERED THROUGH THE DEPARTMENT.
8. EACH FACILITY WHICH IS REQUIRED TO INSTALL A GREASE TRAP SHALL HAVE A SEPARATE (NOT SHARED) GREASE TRAP.
9. INSPECTION PORTS (CLEAN OUTS) ARE REQUIRED TO BE INSTALLED AT EACH END OF ANY TYPE OF INTERCEPTOR WITH PORTS TO REMAIN EASILY ACCESSIBLE FOR UTILITY INSPECTION AND SAMPLING.
10. A "GREASE TRAP" OR "OIL/GREASE INTERCEPTOR" SHALL BE REQUIRED TO RECEIVE THE DRAINAGE FROM FIXTURES AND EQUIPMENT (SINKS, DISHWASHERS, FLOOR DRAINS, CAN WASH AREAS, ETC.) WITH GREASE LADDEN WASTE LOCATED IN COMMERCIAL FOOD PREPARATION AREAS SUCH AS RESTAURANTS, HOTEL KITCHENS, HOSPITALS, SCHOOL KITCHENS, BARS, FACTORY CAFETERIAS, CLUBS, ETC.
11. THE "GREASE TRAP" OR "OIL/GREASE INTERCEPTOR" SHALL BE LOCATED AS CLOSE PRACTICALLY POSSIBLE TO THE FIXTURES AND EQUIPMENT GENERATING GREASE.
12. GREASE TRAPS SHALL BE EQUIPPED WITH DEVICES TO CONTROL THE RATE OF FLOW, SO THE RATE OF THE FLOW DO NOT EXCEED 25 GPM. THE FLOW CONTROL DEVICE SHALL BE INSTALLED IN ACCORDANCE WITH THE CODE AND MANUFACTURER'S INSTRUCTIONS.
13. A "SOLIDS INTERCEPTOR" SHALL BE CONSIDERED TO BE INSTALLED UPSTREAM OF A " GREASE TRAP" WHERE SUBSTANTIAL AMOUNT OF SOLIDS FROM FOOD GRINDERS, DISPOSALS MAY BE PRESENT.

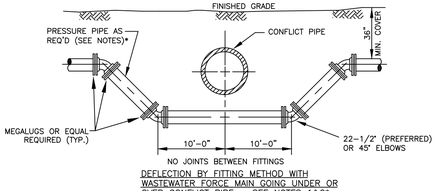
GREASE TRAP
3S



NOTES:

1. WHEN A WASTEWATER FORCE MAIN CROSSES OVER AND/OR UNDER A STORM SEWER, GRAVITY WASTEWATER, VACUUM GRAVITY MAIN THE WASTEWATER FORCE MAIN, AND/OR RECLAIMED WATER MAIN SHALL BE LAID TO PROVIDE A MINIMUM TWELVE (12) INCH VERTICAL SEPARATION BETWEEN THE BOTTOM OF THE UPPER PIPE AND THE CROWN OF THE LOWER PIPE. WHEN THE MINIMUM TWELVE (12) INCH VERTICAL SEPARATION CANNOT BE OBTAINED A MINIMUM SIX (6) INCH VERTICAL SEPARATION IS PERMITTED PROVIDED THAT A TWENTY (20) FOOT SECTION OF WASTEWATER DUCTILE IRON PIPE MAIN IS CENTERED ON THE CROSSING WITH THE OTHER PIPE HAVING A TWENTY (20) FOOT SECTION CENTERED ON THE CROSSING AND WITH PRIOR DEPARTMENT APPROVAL. A WASTEWATER FORCE MAIN MUST CROSS UNDER ANY POTABLE WATER MAIN WITH A MINIMUM TWELVE (12) INCH VERTICAL SEPARATION REQUIRED. WHEN THE MINIMUM TWELVE (12) INCH VERTICAL SEPARATION CANNOT BE OBTAINED A MINIMUM SIX (6) INCH VERTICAL SEPARATION IS PERMITTED PROVIDED THAT A TWENTY (20) FOOT SECTION CENTERED ON THE CROSSING AND ONLY WITH PRIOR DEPARTMENT APPROVAL. A WASTEWATER FORCE MAIN MAY CROSS OVER A POTABLE WATER MAIN ON A CASE BY CASE BASIS PROVIDED A MINIMUM TWELVE (12) INCH VERTICAL SEPARATION IS OBTAINED BETWEEN THE BOTTOM OF THE UPPER PIPE AND THE CROWN OF THE LOWER PIPE AND ONLY WITH PRIOR DEPARTMENT APPROVAL.*
2. TEN (10) FOOT MINIMUM HORIZONTAL SEPARATION (OUTSIDE WALL TO OUTSIDE WALL) IS REQUIRED BETWEEN A WASTEWATER MAIN AND POTABLE WATER MAIN, A STORM SEWER, AND/OR RECLAIMED WATER MAIN. A SIX (6) FOOT MINIMUM HORIZONTAL SEPARATION (OUTSIDE WALL TO OUTSIDE WALL) IS ACCEPTABLE WITH PRIOR DEPARTMENT APPROVAL BEFORE THE INSTALLATION OF THE WASTEWATER MAIN. A THREE (3) FOOT MINIMUM HORIZONTAL SEPARATION (OUTSIDE WALL TO OUTSIDE WALL) BETWEEN A WASTEWATER MAIN AND A RECLAIMED WATER MAIN IS ACCEPTABLE WITH PRIOR DEPARTMENT APPROVAL BEFORE THE INSTALLATION OF THE WASTEWATER MAIN.*
3. WHEN A WASTEWATER MAIN CROSSES ANY ELECTRICAL CONDUIT(S), COMMUNICATION CONDUIT(S), AND/OR GAS MAIN, A MINIMUM OF EIGHTEEN (18) INCH VERTICAL SEPARATION IS REQUIRED BETWEEN THE BOTTOM OF THE UPPER PIPE AND THE CROWN OF THE LOWER PIPE. A WASTEWATER PIPE SHALL ALWAYS CROSS OVER THE OTHER UTILITY MAINS UNLESS APPROVED BY THE DEPARTMENT BEFORE THE INSTALLATION OF THE WASTEWATER MAIN. WHEN THE WASTEWATER MAIN IS D.I.P. AND THE GAS MAIN IS STEEL PIPE, THE WASTEWATER MAIN SHALL BE POLY-WRAPPED PER DEPARTMENT STANDARDS.
4. WASTEWATER LATERALS SHALL CROSS UNDER POTABLE WATER MAINS WITH A MINIMUM TWELVE (12) INCH VERTICAL SEPARATION BETWEEN THE BOTTOM OF THE UPPER PIPE AND THE CROWN OF THE LOWER PIPE. WHEN THE MINIMUM TWELVE (12) INCH VERTICAL SEPARATION CANNOT BE OBTAINED A MINIMUM SIX (6) INCH VERTICAL SEPARATION IS PERMITTED PROVIDED THAT A TWENTY (20) FOOT SECTION OF POTABLE WATER DUCTILE IRON PIPE MAIN IS CENTERED OVER THE WASTEWATER LATERAL AND THE LATERAL IS PVC C-900 PIPE. WHEN A WASTEWATER LATERAL MUST CROSS OVER A POTABLE WATER MAIN A MINIMUM TWELVE (12) INCH VERTICAL SEPARATION IS REQUIRED WITH THE LATERAL MAIN BEING PVC C-900 PIPE AND THE POTABLE WATER MAIN HAVING A TWENTY (20) FOOT SECTION OF POTABLE WATER DUCTILE IRON PIPE MAIN CENTERED ON CROSSING.*
5. WASTEWATER MAINS SHALL ALWAYS CROSS UNDER POTABLE WATER SERVICE LINES WITH A MINIMUM TWELVE (12) INCH VERTICAL SEPARATION BETWEEN THE BOTTOM OF THE UPPER PIPE AND THE CROWN OF THE LOWER PIPE. IF THE MINIMUM TWELVE (12) INCH VERTICAL SEPARATION CANNOT BE MAINTAINED THE WATER SERVICE LINE SHALL BE ENCASED IN A TEN (10) FOOT MINIMUM LONG CASING CENTERED OVER THE CROSSING WITH SIX (6) INCH MINIMUM VERTICAL SEPARATION.*
6. WASTEWATER MAINS SHALL CROSS PERPENDICULAR TO ALL POTABLE WATER MAINS, STORM MAINS, STORM SEWER MAINS, RECLAIMED WATER MAINS, AND/OR OTHER UTILITIES WHENEVER POSSIBLE.*

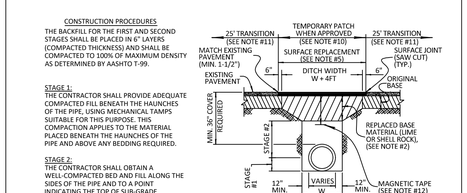
WASTEWATER MAIN CROSSING OTHER MAINS AND UTILITIES
* 4S

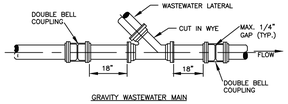


NOTES:

1. DEFLECTION BY FITTINGS AND/OR PIPE JOINT METHODS APPLIES TO WASTEWATER FORCE MAIN CROSSING OVER OR UNDER CONFLICT PIPE WITH CROSSING OVER CONFLICT PIPE PREFERRED. WHEN A WASTEWATER FORCE MAIN CROSSES OVER A STORM SEWER, GRAVITY WASTEWATER, VACUUM GRAVITY AND/OR RECLAIMED WATER MAIN THE WASTEWATER FORCE MAIN SHALL BE LAID TO PROVIDE A MINIMUM TWELVE (12) INCH VERTICAL SEPARATION BETWEEN THE BOTTOM OF THE UPPER PIPE AND THE CROWN OF THE LOWER PIPE. WHEN THE MINIMUM OF TWELVE (12) INCH VERTICAL SEPARATION CANNOT BE OBTAINED A MINIMUM SIX (6) INCH VERTICAL SEPARATION IS PERMITTED PROVIDED THAT A TWENTY (20) FOOT SECTION OF WASTEWATER DUCTILE IRON PIPE FORCE MAIN IS CENTERED ON THE CROSSING WITH THE LOWER PIPE HAVING A TWENTY (20) FOOT SECTION CENTERED ON THE CROSSING. A WASTEWATER FORCE MAIN MUST CROSS UNDER ANY POTABLE WATER MAIN WITH A MINIMUM TWELVE (12) INCH VERTICAL SEPARATION REQUIRED. WHEN THE MINIMUM TWELVE (12) INCH VERTICAL SEPARATION CANNOT BE OBTAINED A MINIMUM SIX (6) INCH VERTICAL SEPARATION IS PERMITTED PROVIDED THAT A TWENTY (20) FOOT DUCTILE IRON PIPE SECTION OF POTABLE WATER MAIN IS CENTERED ON THE CROSSING WITH THE WASTEWATER FORCE MAIN HAVING A TWENTY (20) FOOT DUCTILE IRON PIPE SECTION CENTERED ON THE CROSSING. A WASTEWATER FORCE MAIN MAY CROSS OVER A POTABLE WATER MAIN ON A CASE BY CASE BASIS PROVIDED A MINIMUM OF TWELVE (12) INCH VERTICAL SEPARATION IS OBTAINED BETWEEN THE BOTTOM OF THE UPPER PIPE AND THE CROWN OF THE LOWER PIPE AND ONLY WITH PRIOR DEPARTMENT APPROVAL.*
2. THE PREFERRED PIPE DEFLECTION METHOD IS BY USING MECHANICAL RESTRAINT FITTINGS.*
3. WASTEWATER FORCE MAIN DEFLECTION BY PIPE JOINT METHOD REQUIRES DEPARTMENT APPROVAL PRIOR TO THE INSTALLATION OF THE FORCE MAIN.*
4. DEFLECTION BY PIPE JOINT SHALL NOT EXCEED SEVENTY-FIVE PERCENT (75%) OF MANUFACTURER'S RECOMMENDED MAXIMUM JOINT DEFLECTION FOR DUCTILE IRON PIPE AND PVC PIPE DEFLECTION CAN ONLY BE ALLOWED BY INSTALLING THE APPROPRIATE FITTINGS - NO EXCEPTIONS.*

WASTEWATER MAIN CONFLICT
DEFLECTION DETAIL
* 5S

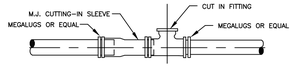

CONSTRUCTION PROCEDURES
THE BACKFILL FOR THE FIRST AND SECOND STAGES SHALL BE PLACED IN 6" LAYERS (COMPACTED THICKNESS) AND SHALL BE COMPACTED TO 100% OF MAXIMUM DENSITY AS DETERMINED BY AASHTO T-99.
STAGE 1:
THE CONTRACTOR SHALL PROVIDE ADEQUATE COMPACTED FILL BENEATH THE HAUNCHES OF THE PIPE, USING MECHANICAL TAMPS SUITABLE FOR THIS PURPOSE. THIS COMPACTION APPLIES TO THE MATERIAL PLACED BENEATH THE HAUNCHES OF THE PIPE AND ABOVE ANY BEDDING REQUIRED.
STAGE 2:
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.
25' TRANSITION (SEE NOTE #11)
TEMPORARY PATCH WHEN APPROVED (SEE NOTE #10)
25' TRANSITION (SEE NOTE #11)
MATCH EXISTING PAVEMENT (MIN. 1-1/2")
SURFACE REPLACEMENT (SEE NOTE #5)
SURFACE JOINT (SAW CUT) (



GRAVITY WASTEWATER MAIN

NOTE:

DUCTILE IRON FITTINGS (WYE, TEE, SLEEVES) ARE REQUIRED FOR DUCTILE IRON AND/OR C-900 PVC MAIN.



DUCTILE IRON-MECHANICAL JOINT (FORCE MAIN)

NOTE:

MEGALUGS OR EQUAL ARE REQUIRED THROUGHOUT ASSEMBLY.

WASTEWATER SYSTEM STANDARD CUT-IN DETAILS 9S

I. FORCE MAINS AND GRAVITY WASTEWATER MAINS WITHIN WELLFIELD PROTECTION ZONE

PRESSURE TEST PROCEDURE TO FOLLOW THE CURRENT AWWA C-600 STANDARD (150psi, (2) HOUR DURATION).

THERE SHALL BE NO PRESSURE DROP IN THE PIPE DURING THE TEST ("ZERO" FILL-UP TOLERANCE).

II. FORCE MAINS OUTSIDE OF WELLFIELD PROTECTION ZONE

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- PSI	PIPE DIAMETER (INCHES)														
	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

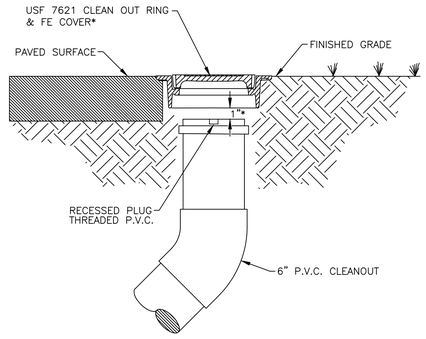
FORMULA BASIS: $L = \frac{(S) \times (D) \times (P)^{1/2}}{148,000} \times 1/2$

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.)

NOTES:

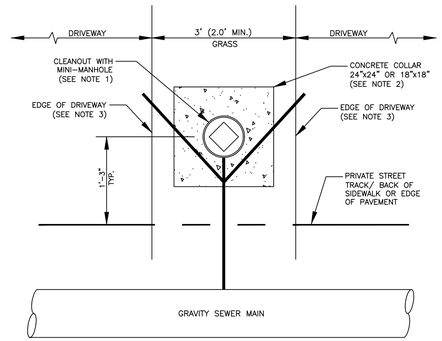
1. TO OBTAIN THE MAXIMUM QUANTITY OF WATER FOR PIPE WITH 20 FT. NOMINAL LENGTHS, MULTIPLY THE QUANTITY CALCULATED FROM THE TABLE BY 0.9
2. THE MAXIMUM QUANTITY OF ADDED WATER FOR A PIPELINE IS CALCULATED BY MULTIPLYING THE QUANTITY PER HOUR AS OBTAINED FROM THE ABOVE TABLE, BY THE DURATION OF THE TEST 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. PRESSURE TEST DURATION TO BE MIN. 2 HOURS.

PRESSURE TEST CRITERIA FOR GRAVITY WASTEWATER MAIN IN WELL FIELD & FORCE MAIN * 10S



1. CLEANOUTS TO BE LOCATED IN GRASS AREA WHENEVER POSSIBLE WITH A MINIMUM OF THREE (3) FEET FROM EDGE OF PAVEMENT, BACK OF CURB, EDGE OF DRIVEWAY, AND TRANSFORMERS ON RESIDENTIAL AND NON-RESIDENTIAL LOTS UNLESS LOTS ARE ASSOCIATED WITH TOWNHOME OR ZERO LOT LINE LOTS. ON ZERO LOT LINE LOTS THE MINIMUM DIMENSION SHALL BE ONE (1) FOOT INSTEAD OF THREE (3) FOOT MINIMUM UNLESS OTHERWISE APPROVED BY THE DEPARTMENT.*
2. CLEANOUTS SHALL NOT BE INSTALLED IN TRAFFIC LANES OR AREAS UNDER HEAVY TRAFFIC LOADS.
3. THE COVER TO BE MARKED "S".
4. CLEANOUTS TO BE INSTALLED PRIOR TO WATER METER RELEASE.
5. THE DEVELOPER/PROPERTY OWNER OR ASSIGNEE SHALL BE RESPONSIBLE FOR CLEANOUT INSTALLATION PRIOR TO WATER METER INSTALLATION AS SPECIFIED BY THE DEPARTMENT.
6. A CONCRETE COLLAR MAY BE REQUIRED IF CLEANOUT IS LOCATED BETWEEN DRIVEWAYS. SPECIAL CONSTRUCTION DETAIL WILL BE REQUIRED.
7. ALONG STREETS WITH ADJACENT NON-EXCLUSIVE UTILITY EASEMENT, THE CLEANOUTS ENDING PBCWUD MAINTENANCE RESPONSIBILITY SHALL BE INSTALLED MIN. 12", MAX. 18" INTO THE EASEMENT.

TYPICAL CLEANOUT INSTALLATION * 11SA



NOTES:

1. CLEANOUT WITH MINI-MANHOLE MUST BE CENTERED BETWEEN DRIVEWAYS IN GRASS AREA.
2. DRIVEWAYS THAT ARE SEPARATED BY (3)THREE FEET INSTALL A 24"x24" CONCRETE COLLAR. WHEN THERE IS LESS THAN (3)THREE FEET SEPARATION BETWEEN DRIVEWAYS INSTALL A 18"x18" CONCRETE COLLAR.
3. THE EDGE OF THE DRIVEWAY IS EITHER THE ASPHALT/CONCRETE PAVEMENT AREA AND/OR PAVER BRICK AREA WHICH MAY INCLUDE ANY CONCRETE EDGING.

CLEANOUT INSTALLATION DETAIL BETWEEN TOWNHOME DRIVEWAYS * 11SB

GENERAL NOTES

DEFINITIONS

1. DEPARTMENT – THE PALM BEACH COUNTY WATER UTILITIES DEPARTMENT.
2. CONTRACTOR – UTILITY CONTRACTOR AND ALL UTILITY SUBCONTRACTORS.
3. ENGINEER – ENGINEER RESPONSIBLE FOR INSPECTION AND CERTIFICATION.

PROCEDURE

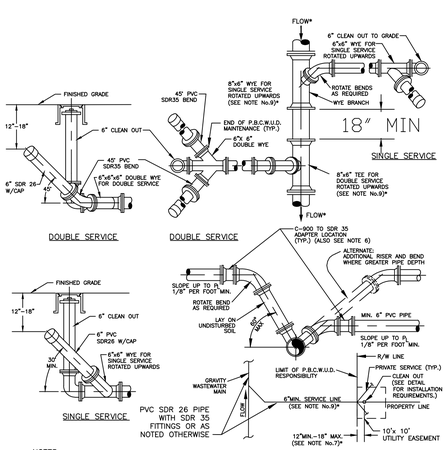
1. A PRE-CONSTRUCTION MEETING IS TO BE HELD PRIOR TO DELIVERY OF MATERIALS AND INITIATION OF ANY POTABLE WATER, RECLAIMED WATER AND/OR WASTEWATER SYSTEM CONSTRUCTION. THE MEETING SHALL BE ATTENDED BY THE DEPARTMENT, CONTRACTOR, ENGINEER AND OTHER INTERESTED PARTIES.
2. ANY REVISIONS TO THE APPROVED PLANS SHALL BE CALLED TO THE ATTENTION OF THE DEPARTMENT PRIOR TO THE PRE-CONSTRUCTION MEETING. REVISED PLANS MUST BE APPROVED PRIOR TO THE MEETING.
3. FIVE (5) COPIES OF THE CURRENT APPROVED MATERIAL LIST AND ALL NECESSARY SHOP DRAWINGS SHALL BE SUBMITTED FOR APPROVAL PRIOR TO SCHEDULING OF THE PRE-CONSTRUCTION MEETING.
4. ALL APPLICABLE PERMITS MUST BE OBTAINED PRIOR TO PRECONSTRUCTION MEETING. (DOT, HEALTH DEPARTMENT, COUNTY ENGINEER, ETC.).
5. THE CONTRACTOR SHALL MAINTAIN A CURRENT APPROVED SET OF CONSTRUCTION PLANS ON JOB SITE.
6. ALL MATERIALS SUPPLIED SHALL CONFORM TO PRODUCT LIST AND SHOP DRAWINGS AS APPROVED PRIOR TO CONSTRUCTION. SUBSTITUTE MATERIALS SHALL NOT BE APPROVED AFTER DELIVERY TO THE JOB SITE. ALL REQUESTS FOR MATERIAL SUBSTITUTION SHALL BE APPROVED PRIOR TO DELIVERY OF THESE MATERIALS TO THE JOB SITE.
7. THE LOCATIONS OF EXISTING UTILITIES SHOWN ON THE APPROVED PLANS ARE TO BE VERIFIED IN THE FIELD BY THE CONTRACTOR. APPROVAL OF DEVELOPMENT PLANS BY THE DEPARTMENT IN NO WAY IMPLIES VERIFICATION OF THE ACCURACY OF THOSE PLANS OR FEATURES DEPICTED THEREON. ANY DISCREPANCY IN OR VARIATION FROM THE APPROVED PLANS IS TO BE BROUGHT TO THE ATTENTION OF THE DEPARTMENT BY THE ENGINEER AND CONTRACTOR. THE CONTRACTOR SHALL CONFIRM AND INSTALL (IF NECESSARY) ADEQUATE MECHANICAL PIPE / JOINT RESTRAINT ON EXISTING PIPES PRIOR TO CONNECTION.
8. 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.
9. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING LOCATIONS FROM ALL OTHER UTILITY FACILITIES.
10. THE CONTRACTOR OR ENGINEER SHALL SCHEDULE INSPECTIONS AND TESTS A MINIMUM OF 24-48 HOURS IN ADVANCE.
11. NO CONNECTION TO OR ANY OTHER CONSTRUCTION SHALL BE PERFORMED ON AN EXISTING DEPARTMENT OWNED OR MAINTAINED MAIN OR STRUCTURE WITHOUT THE PRESENCE OF A DEPARTMENT INSPECTOR.
12. FACILITIES PROPOSED HEREIN SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE APPROVED PLANS AND THE DEPARTMENT'S MINIMUM STANDARDS. CONFLICTS BETWEEN THE PRECEDING DOCUMENTS SHOULD BE CALLED TO THE ATTENTION OF THE DEPARTMENT FOR RESOLUTION. DEVIATIONS FROM THE APPROVED PLANS MUST BE APPROVED IN ADVANCE BY THE DEPARTMENT.
13. UPON COMPLETION OF CONSTRUCTION, A FINAL INSPECTION SHALL VERIFY PROPER ADHERENCE TO ALL FACETS OF THE PLANS AND SPECIFICATIONS.

PRESSURE PIPE NOTES

1. THERE SHALL BE 36" MINIMUM COVER FROM FINISHED GRADE TO TOP OF PIPE.
2. DUCTILE IRON PIPE (DIP) THICKNESS SHALL CONFORM TO THE DEPARTMENT'S APPROVED MATERIAL LIST. POTABLE WATER AND RECLAIMED WATER MAINS DIP SHALL BE CEMENT LINED. FORCE MAIN DIP SHALL BE CERAMIC EPOXY LINED.
3. PVC PRESSURE PIPE SHALL BE C-900, SDR-18, 150 PSI.
4. ALL FITTINGS SHALL BE DUCTILE IRON WITH MECHANICAL JOINTS AND CEMENT OR APPROVED EPOXY LINING.
5. POTABLE WATER, RECLAIMED WATER AND WASTEWATER FORCE MAIN VALVES 10 INCHES AND SMALLER SHALL BE RESILIENT SEAT GATE VALVES. TWELVE-INCH (12") OR LARGER FORCE MAIN VALVES SHALL BE RESILIENT SEAT GATE VALVES OR ECCENTRIC PLUG VALVES (IF APPROVED IN ADVANCE BY DEPARTMENT). POTABLE WATER AND RECLAIMED WATER MAIN VALVES LARGER THAN 10 INCHES SHALL BE BUTTERFLY VALVES.
6. ALL TRENCHING, PIPE-LAYING, BACKFILL, PRESSURE TESTING, AND DISINFECTION MUST COMPLY WITH ALL APPLICABLE FEDERAL, STATE, COUNTY AND HEALTH DEPARTMENT STANDARDS AND REGULATIONS.

GRAVITY SEWER NOTES

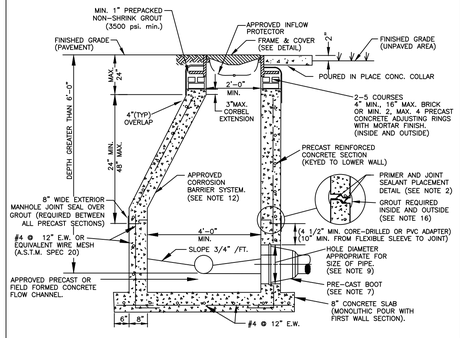
1. MANHOLES AND OTHER CASTINGS SHALL BE INSPECTED BY THE DEPARTMENT BEFORE PLACEMENT AND BEFORE APPLICATION OF THE CORROSION BARRIER SYSTEM (IF APPLICABLE).
2. ALL OPENINGS IN PRECAST MANHOLES SHALL BE CAST AT TIME OF MANUFACTURE OR CORED IN FIELD.
3. ALL MANHOLES SHALL BE SET PLUMB TO LINE AND GRADE, AND SHALL REST ON A FIRM, CAREFULLY GRADED SUBGRADE, WHICH SHALL PROVIDE UNIFORM BEARING UNDER BASE.
4. PVC WASTEWATER GRAVITY PIPE SHALL CONFORM TO ASTM D-3034, SDR 26 WITH PVC SDR 35 FITTINGS, OR PVC C-900 SDR 18, PIPE AND FITTINGS, WITH PUSH-ON RUBBER GASKET JOINTS.
5. D.I.P GRAVITY SEWER PIPE SHALL BE PRESSURE CLASS 350, EPOXY LINED.
6. THE COMPLETED GRAVITY WASTEWATER SYSTEM SHALL BE INSPECTED BY THE DEPARTMENT TO VERIFY ALIGNMENT AND INTEGRITY; THERE SHALL BE NO LEAKAGE. ALL MAINS SHALL BE LAMPED, SHOWING A FULL CIRCLE OF LIGHT. DURING THESE INSPECTIONS, THE MAIN SHALL BE CLEAN AND DRY.



NOTES:

1. MIN. 3' AND 5' MAX. DEPTH IS REQUIRED, UNLESS PLANS SHOW OTHERWISE, FOR SERVICE LATERAL WYE AT THE CLEAN OUT ENDING P.B.C.W.U.D. OWNERSHIP AND MAINTENANCE RESPONSIBILITY.
2. CLEAN OUT IS TO BE INSTALLED PER DEPARTMENT STANDARDS PRIOR TO WATER METER INSTALLATION.
3. WASTEWATER MAIN WYE BRANCH TO MATCH MAIN PIPE MATERIAL.
4. CLEAN OUTS DESIGNATING THE END OF THE DEPARTMENT'S MAINTENANCE RESPONSIBILITY SHALL BE LOCATED WITHIN AN UTILITY EASEMENT OR RIGHT-OF WAY DEDICATED FOR UTILITIES.
5. THE DEVELOPER/PROPERTY OWNER OR ASSIGNEE SHALL BE RESPONSIBLE FOR CLEAN OUT INSTALLATION PRIOR TO WATER METER INSTALLATION AS SPECIFIED BY THE DEPARTMENT.
6. SEE MINIMUM SEPARATION STATEMENT FOR P.V.C. C-900 SDR 18 PIPE MATERIAL REQUIREMENTS AT WASTEWATER LATERAL/POTABLE WATER MAIN CROSSINGS.
7. ALONG STREETS WITH ADJACENT NON-EXCLUSIVE UTILITY EASEMENT, THE CLEANOUT ENDING PBCWUD MAINTENANCE RESPONSIBILITY SHALL BE INSTALLED 12" MIN. TO 18" MAX. INTO THE UTILITY EASEMENT.*
8. MIN. 3' HORIZONTAL SEPARATION MUST BE MAINTAINED BETWEEN CLEANOUTS AND EDGE OF PAVEMENT, BACK OF CURB, EDGE OF DRIVEWAY, LIGHTPOLES, TRANSFORMERS, POWER POLES.
9. GRAVITY SEWER MAINS ARE 8" DIAMETER WITH ALL SEWER LATERAL CONNECTIONS TO A GRAVITY SEWER MAINS REQUIRED TO BE 6" DIAMETER IN SIZE UNLESS OTHERWISE PREVIOUSLY APPROVED BY THE DEPARTMENT.*

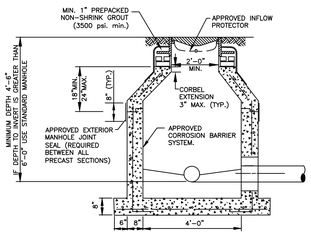
TYPICAL WASTEWATER SERVICE CONNECTION * 12S



NOTES:

1. PRECAST CONCRETE TYPE II 4000 P.S.I. CALCAREOUS AGGREGATE REQUIRED (MIN. CaCO3 CONTENT: 65% IN LARGE AGGREGATE, 50% IN CONCRETE SCREENING).
2. INSTALL APPROVED JOINT SEALANT AT ALL RISER JOINTS WITH GROUT ON INSIDE AND OUTSIDE. MANHOLE SHOP DRAWINGS SHALL INCLUDE THE SIZE AND PLACEMENT OF JOINT SEALANT. AN APPROVED JOINT PRIMER SHALL BE APPLIED BY THE PRECASTER (TONGUE SECTION ONLY).
3. ALL OPENINGS SHALL BE SEALED WITH A WATERPROOF NON-SHRINKING GROUT.
4. FLOW CHANNELS SHALL BE PRECAST OR FIELD CONSTRUCTED TO DIRECT INFLUENT INTO FLOW STREAM. (SEE DETAIL)
5. LIFT HOLES ARE PERMITTED.
6. ALL PIPE HOLES SHALL BE PRECAST OR CORE – DRILLED.
7. A. FOR PVC PIPE ENTERING MANHOLE WITH PRECAST HOLES USE THE APPROVED, PRECASTED FLEXIBLE MANHOLE SLEEVE FOR THE APPROPRIATE PIPE DIAMETER AND DIMENSION RATIO. DOUBLE BANDING IS REQUIRED FOR FLEXIBLE MANHOLE SLEEVE.
   B. CONNECTION TO A MANHOLE WITH A CORE DRILLED HOLE SHALL BE MADE USING A 5" MIN. PVC C900 DR 18 AND THE APPROVED PVC-MANHOLE ADAPTER. THE ADAPTER SHALL NOT EXTEND MORE THAN 1"INTO THE MANHOLE.
   C. THE INSIDE AND OUTSIDE SPACE BETWEEN PIPE AND MANHOLE WALL SHALL BE FILLED WITH GROUT
8. INSIDE DROPS SHALL NOT BE DESIGNED TO EXCEED 1.80 FEET AND NOT CONSTRUCTED TO EXCEED 2.0 FEET, MAX. 6" INSIDE DROP IS PERMITTED FOR MANHOLES WITH 3 OR MORE INVERTS AND MANHOLES WITH A CHANGE IN FLOW DIRECTION OF MORE THAN 45 DEGREES.
9. 8" DIAMETER PIPE: 15" HOLE FOR PVC – 10" DIAMETER PIPE: 17" HOLE FOR PVC.
10. MANHOLE FABRICATION SHALL BE IN ACCORDANCE WITH ASTM C-478, LATEST STANDARD.
11. MINIMUM 5 FEET IS REQUIRED BETWEEN OUTSIDE OF MANHOLE AND A SERVICE WYE.
12. MANHOLES TO BE COATED INSIDE WITH AN APPROVED CORROSION BARRIER SYSTEM. SOLID THERMOPLASTIC CAST-IN LINER IS REQUIRED FOR LAST MANHOLE PRIOR TO LIFT STATION, MANHOLES DEEPER THAN 14 FT., MANHOLES WITH OUTSIDE DROP, AND MANHOLES WITH A FORCE MAIN CONNECTION. (SEE APPROPRIATE DETAILS)
13. APPROVED INFLOW PROTECTORS ARE REQUIRED.
14. MANHOLES IN ROADWAYS SHALL BE LOCATED OUTSIDE OF WHEEL PATHS.
15. SPECIAL PRE-APPROVED GROUT IS REQUIRED FOR PRECAST STRUCTURES WITH ANTIMICROBIAL ADMIXTURE.

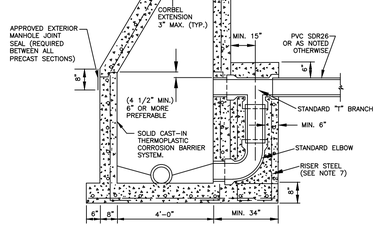
STANDARD MANHOLE 13S



NOTE:

ALL STANDARD MANHOLE NOTES AND DETAILS ARE APPLICABLE.

SHALLOW MANHOLE 14S



NOTES:

1. ALL DETAILS AND SPECIFICATIONS FOR STANDARD MANHOLES ARE APPLICABLE EXCEPT FOR REFERENCES TO DROP ASSEMBLY AND CAST IN LINERS.
2. THE PRECAST BASE SHALL EXTEND FULLY UNDER THE DROP ASSEMBLY.
3. MASONRY CONSTRUCTION ABOVE THE EXTENDED PRECAST BASE, IF FILLED WITH CONCRETE, IS PERMISSIBLE.
4. BRICK AND CONCRETE RUBBLE ARE PERMITTED AS FILLER IN DROP ENCASEMENT.
5. DROP CONNECTIONS SHALL BE REQUIRED WHENEVER AN INFLUENT INVERT IS LOCATED 2.0 FEET OR MORE ABOVE THE MAIN INVERT CHANNEL. DROP CONNECTIONS SHOULD NOT BE DESIGNED FOR LESS THAN A 2.4 FOOT DROP.
6. PVC SDR 26 PIPE WITH PVC SDR 35 FITTINGS SHALL BE UTILIZED IN THE DROP ASSEMBLY.
7. RISER STEEL TO BE CAST IN PLACE WITH BASE (4 RODS) OR USE 4 – 1/2" DIA. COIL LOOP INSERTS CAST IN PLACE WITH BASE (TO BE USED WITH 1/2" COIL RODS). COIL LOOP INSERTS TO BE "DAYTON SUPERIOR" B16, 1/2"X 4" OR APPROVED EQUAL.

DROP CONNECTION PRECAST MANHOLE 15S

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WASTEWATER #2 STANDARD DETAILS

CONSULTANT:

CAULFIELD & WHEELER, INC.
CIVIL ENGINEERING - LAND PLANNING
LANDSCAPE ARCHITECTURE - SURVEYING
7900 GLADES ROAD - SUITE 100
BOCA RATON, FLORIDA 33434
PHONE (561)-392-1991 / FAX (561)-750-1452

IT'S THE LAW ! CALL 48 HOURS BEFORE YOU DIG
1-800-432-4770
SUNSHINE STATE ONE CALL OF FLORIDA, INC.
UTILITIES NOTIFICATION CENTER

DESIGNED BY: WUD
DRAWN BY: M. BUCKNER
CHECKED BY: J. LAMMERT
APPROVED BY: WUD

Palm Beach County
Water Utilities Department
P.O.Box 16097
West Palm Beach, FL 33416-6097

WUD PROJECT No. 23-575

SHOPS AT INDIAN TRAILS
A.K.A.COCONUT CROSSING

PALM BEACH COUNTY
WATER UTILITIES DEPARTMENT
P.O. BOX 16097
WEST PALM BEACH, FL 33416
(561)493-6000

NO.	DATE	REVISION / REMARKS	BY
	DEC. 2021	GENERAL REVISION	J.L.
	JAN 2023	GENERAL REVISION	J.L.
*			

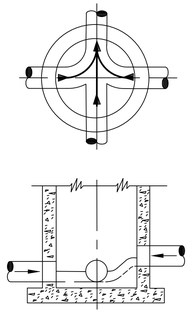
STD DETAILS

SHEET NUMBER C-29 OF 45

SEAL

MATTHEW V. KAHN
PROFESSIONAL ENGINEER
LICENSE NO. 82227
STATE OF FLORIDA
– FOR THE FIRM –
DATE

Drawing: P:\07714-15-42-41\drawings\eng\details\7714WS Details.dwg\C-29 - Last Modified: Fri, Dec 13, 2024 - 4:14pm

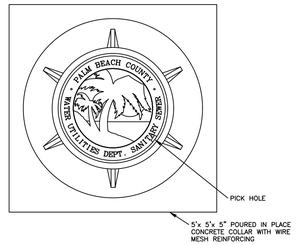


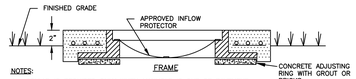
NOTES:

1. PROPERLY SHAPED INVERT CHANNELS AND SPILLWAYS SHALL BE CONSTRUCTED BETWEEN PIPES WITH DIFFERENT INVERT ELEVATIONS TO PROVIDE FOR SMOOTH FLOWS.
2. SERVICE LATERALS SHALL NOT ENTER MANHOLES UNLESS SPECIFIED ON PLANS AND THEN MUST BE TREATED AS MAINS (ELEVATIONS SHOWN, PRECAST HOLE, FLOW CHANNEL)
3. APPROVED PRECAST POLYPROPYLENE OR FIBER REINFORCED POLYMER (FRP) FLOW CHANNELS WITH INTEGRATED PIPE INVERTS (SEE SEPARATE DETAILS). PRECAST CONCRETE FLOW CHANNELS, OR FIELD INSTALLED CONCRETE FLOW CHANNELS ARE REQUIRED.
4. SIDEWALLS OF FLOW CHANNELS SHALL BE AT LEAST HALF OF PIPE HEIGHT AT ALL POINTS.
5. NO INSIDE DROP LARGER THAN 6" SHALL BE ALLOWED WITH 3 OR 4 INVERTS AND MANHOLES WITH A CHANGE OF DIRECTION OF FLOW OF MORE THAN 45 DEGREES.
6. THE FIELD APPLIED CORROSION BARRIER SYSTEM SHALL BE INSTALLED AFTER INVERT CHANNEL CONSTRUCTION UNLESS PRECAST THERMOPLASTIC BASELINER IS USED. THE FIELD APPLIED CORROSION BARRIER MAY NOT BE APPLIED TO THE FLOW CHANNEL.

INVERT FLOW CHANNELS

16S



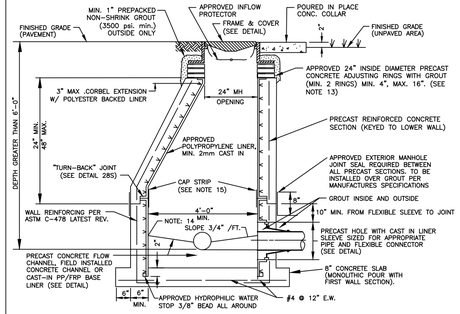


NOTES:

1. COLLAR IS REQUIRED ONLY WHEN MANHOLE IS OUT OF PAVEMENT.
2. STANDARD FRAME AND COVER SIZE SHALL BE SEVEN INCHES (7"). A 4" FRAME MAY ONLY BE USED WITH PRIOR APPROVAL.
3. A STEEL MANHOLE RISER, APPROVED PRECAST CONCRETE ADJUSTING RINGS OR ADDITIONAL BRICKS MAY BE USED TO ELEVATE EXISTING MANHOLE COVERS TO RESURFACED GRADE (MAX. 4" HEIGHT).
4. COVER SHALL FIT FLUSH WITH THE FRAME WITH THE INFLOW PROTECTOR INSTALLED.

GRAVITY SEWER MANHOLE FRAME & COVER

17S

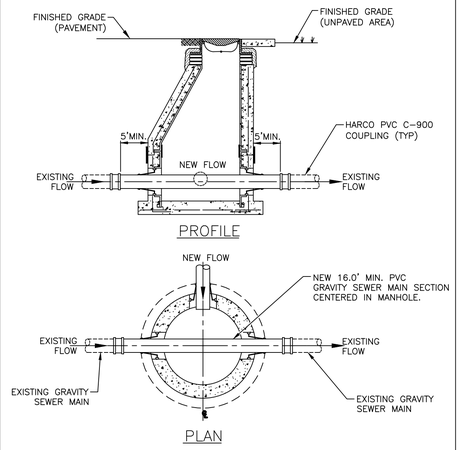


NOTES:

1. PRECAST CONCRETE TYPE II 4000 P.S.I. CALCAREOUS AGGREGATE REQUIRED (MIN. CaCO3 CONTENT: 65% IN LARGE AGGREGATE, 50% IN CONCRETE SCREENING).
2. APPROVED PRIMER AND SEALANT GASKET AT ALL RISER JOINTS. SEALANT GASKET SIZE AND PLACEMENT SHALL BE CALLED OUT ON SHOP DRAWINGS. PRIMER TO BE APPLIED BY THE PRECASTER (TONGUE SECTION ONLY).
3. ALL PIPE OPENINGS SHALL BE GAS TIGHT AND WATER TIGHT WITH NO EXPOSED CONCRETE SURFACES.
4. CAST OPENINGS SHALL BE MANUFACTURED WITH A POLYPROPYLENE SLEEVE CAST IN. APPROVED FLEXIBLE MANHOLE CONNECTORS SHALL BE USED AT PIPE CONNECTIONS. HOLE SIZE PER BOOT MANUFACTURER'S SPECIFICATIONS. DOUBLE PIPE CLAMPS MUST BE INSTALLED ON FLEXIBLE SLEEVES WHERE REQUIRED BY BOOT MANUFACTURERS INSTALLATION INSTRUCTIONS.
5. CORED PIPE OPENINGS SHALL BE INSTALLED PER DETAIL. APPROVED FLEXIBLE CONNECTOR WILL BE INSTALLED ONTO POLY-PROPYLENE WALL SLEEVE. WALL SLEEVE SHALL BE EPOXIED INTO CORED OPENING AND THERMAL WELDED TO WALL LINER.
6. FLOW CHANNELS SHALL BE CONSTRUCTED TO DIRECT INFLUENT INTO FLOW STREAM. APPROVED CAST-IN PP/FRP BASE LINER IS ACCEPTABLE (SEE DETAIL).
7. LIFT HOLES ARE PERMITTED.
8. INSIDE DROPS SHALL NOT BE DESIGNED TO EXCEED 1.80 FEET AND NOT CONSTRUCTED TO EXCEED 2.0 FEET, MAX. 6" INSIDE DROP IS PERMITTED FOR MANHOLES WITH 3 OR MORE INVERTS AND MANHOLES WITH A CHANGE IN FLOW DIRECTION OF MORE THAN 45 DEGREES.
9. MANHOLE FABRICATION SHALL BE IN ACCORDANCE WITH ASTM C-478, LATEST STANDARD.
10. MINIMUM 5 FEET IS REQUIRED BETWEEN OUTSIDE OF MANHOLE AND SERVICE WYE OR ANY PIPE JOINT.
11. ONLY APPROVED THERMOPLASTIC LINER SYSTEM SHALL BE USED. LINERS MUST BE WELDED BY LINER MFG CERTIFIED WELDERS AND BE CAST INTO THE MANHOLE BY A LINER MANUFACTURER CERTIFIED PRECASTER.
12. APPROVED INFLOW PROTECTORS ARE REQUIRED.
13. MAXIMUM HEIGHT OF CHIMNEY SHALL NOT EXCEED 24" (INCLUDING FRAME CASTING).
14. SEAL INVERT BENCH AND CHANNEL TO WALL LINER WITH 3M WEATHERBAN 5354 SEALANT TAPE OR APPROVED EQUAL.
15. MIN. 4" WIDE FIELD WELDED CAP STRIP IS REQUIRED FOR ALL JOINTS.
16. SOLID THERMOPLASTIC CAST-IN LINER IS REQUIRED FOR LAST MANHOLE PRIOR TO LIFT STATION. MANHOLES DEEPER THAN 14 FT., MANHOLES WITH OUTSIDE DROP, AND MANHOLES WITH A FORCE MAIN CONNECTION. (SEE APPROPRIATE DETAILS)
17. MANHOLES IN ROADWAYS SHALL BE LOCATED OUTSIDE OF WHEEL PATHS.

STANDARD MANHOLE WITH CAST-IN LINER

18SA

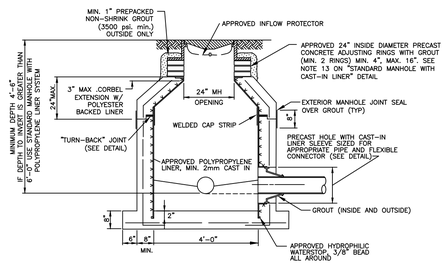


NOTES:

1. MANHOLE TO BE CONSTRUCTED AND INSTALLED PER WUD STANDARD DETAIL 18SA.
2. A TEMPORARY GRAVITY SEWER MAIN BYPASS SIXTEEN(16) FOOT MINIMUM TO BE INSTALLED THROUGH NEW MANHOLE TO MAINTAIN EXISTING WASTEWATER FLOW DURING CONSTRUCTION OF NEW GRAVITY SEWER SYSTEM.
3. ONCE THE NEW GRAVITY SEWER SYSTEM INSTALLATION IS COMPLETED AND HAS RECEIVED FINAL DEP WASTEWATER CERTIFICATION THE TEMPORARY BYPASS PIPE SHALL BE CUT AND REMOVED FROM WITHIN THE MANHOLE WITH A NEW FLOW CHANNEL CONSTRUCTED PER WUD MINIMUM DESIGN STANDARDS.
4. AFTER ALL CONSTRUCTION HAS BEEN COMPLETED, INCLUDING THE REMOVAL OF THE BYPASS PIPE AND CONSTRUCTION OF THE NEW FLOW CHANNEL, THE EXISTING UPSTREAM AND DOWNSTREAM GRAVITY SEWER MAIN SHALL BE LAMPED TO VERIFY NO ADVERSE DAMAGE OCCURED DURING CONSTRUCTION TO THE EXISTING GRAVITY SEWER MAIN.

NEW MANHOLE CUT INTO EXISTING GRAVITY SEWER MAIN

18SB

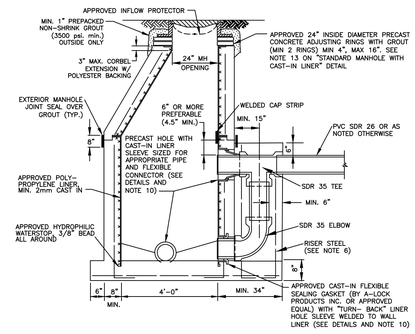


NOTES:

1. ALL "STANDARD MANHOLE WITH POLYPROPYLENE LINER SYSTEM" NOTES AND DETAILS ARE APPLICABLE.
2. SEAL INVERT BENCH AND CHANNEL TO WALL LINER WITH 3M WEATHERBAN 5354 SEALANT TAPE (OR APPROVED EQUAL).
3. SEE SEPARATE DETAIL FOR OPTIONAL CAST-IN POLYPROPYLENE OR FIBER REINFORCED POLYMER BASE LINER.

SHALLOW MANHOLE WITH CAST-IN LINER

19S

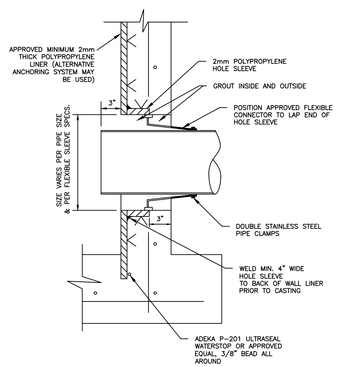


NOTES:

1. ALL DETAILS AND SPECIFICATIONS FOR "STANDARD MANHOLE WITH SOLID POLYPROPYLENE LINER SYSTEM" ARE APPLICABLE EXCEPT FOR REFERENCES TO DROP ASSEMBLY.
2. THE PRECAST BASE SHALL EXTEND FULLY UNDER THE DROP ASSEMBLY.
3. PRECAST DROP ENCASEMENT REQUIRED UP TO TOP EDGE OF 90 DEGREE ELBOW, BRICK AND CONCRETE RUBBLE ARE PERMITTED AS FILLER IN REMAINDER OF DROP ENCASEMENT.
4. DROP CONNECTIONS SHALL BE REQUIRED WHENEVER AN INFLUENT INVERT IS LOCATED 2.0 FEET OR MORE ABOVE THE MAIN INVERT CHANNEL. DROP CONNECTIONS SHOULD NOT BE DESIGNED FOR LESS THAN A 2.4 FOOT DROP.
5. PVC SDR 26 PIPE WITH PVC SDR 35 FITTINGS SHALL BE UTILIZED IN THE DROP ASSEMBLY.
6. DROP ENCASEMENT REINFORCING STEEL TO BE CAST IN PLACE WITH BASE (4 RODS) OR USE 4-1/2" DIA. COIL LOOP INSERTS CAST IN PLACE WITH BASE (TO BE USED WITH 1/2" COIL RODS). COIL LOOP INSERTS TO BE "DAYTON SUPERIOR" B16, 1/2"X 4" OR APPROVED EQUAL.
7. MIN. 4" WIDE FIELD WELDED CAP STRIP IS REQUIRED OVER ALL JOINTS.
8. SEAL INVERT BENCH AND CHANNEL TO WALL LINER WITH 3M WEATHERBAN 5354 SEALANT TAPE (OR APPROVED EQUAL).
9. SEE SEPARATE DETAIL FOR OPTIONAL CAST-IN POLYPROPYLENE OR FIBER REINFORCED POLYMER BASE LINER.

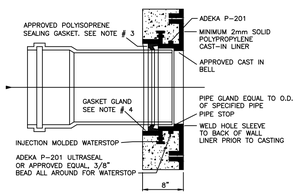
OUTSIDE DROP MANHOLE WITH CAST-IN LINER

20S



PIPE TO MANHOLE CONNECTION – TYPE "A"

21S



INSTALLATION:

1) CLEAN BELL
2) INSTALL GASKET AS SHOWN
3) LUBRICATE PIPE SPIGOT AND SLIDE INTO BELL AND GASKET UNTIL REACHING PIPESTOP
4) CHECK FOR WATERTIGHT CONNECTION

DO NOT LUBRICATE THE GASKET OR THE BELL

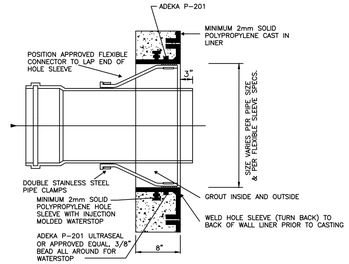
NOTES:

1) MANHOLE SHOP DRAWINGS SHALL IDENTIFY THE TYPE OF MANHOLE/PIPE CONNECTION.
2) MANHOLE SHOP DRAWINGS SHALL IDENTIFY THE PIPE SIZE, TYPE, GASKET TYPE, AND HOLE SIZE.
3) ONLY THE POLYISOPRENE GASKET SUPPLIED BY THE BELL MANUFACTURER SHALL BE USED IN COMPRESSION TYPE BELLS.
4) GASKET GLAND VARIES ACCORDING TO PIPE SIZE AND TYPE.
5) HOLE SLEEVES AND BELL CONNECTORS SHALL EXTEND TO THE OUTER PROFILE OF THE CONCRETE STRUCTURE AT MINIMUM PROVIDING A COMPLETELY LINED SURFACE WHERE THE GASKET AND HOLE LINER MATE TOGETHER.

CAST-IN BELL WITH COMPRESSION SEAL GASKET

PIPE TO MANHOLE CONNECTION – TYPE "B"

22S



INSTALLATION:

1) CLEAN BOOT HUB
2) INSTALL RUBBER BOOT CONNECTOR (PER MANUFACTURER'S INSTRUCTIONS).
3) LUBRICATE PIPE SPIGOT AND SLIDE INTO RUBBER BOOT CONNECTOR.
4) TIGHTEN RUBBER BOOT CLAMPS (PER MANUFACTURER'S INSTRUCTIONS)
5) SECURE AND BACKFILL WITH PROPER MATERIAL AS SPECIFIED
6) CHECK FOR WATERTIGHT CONNECTION

DO NOT LUBRICATE THE BOOT CONNECTOR OR THE BOOT HUB

NOTES:

1) MANHOLE SHOP DRAWINGS SHALL IDENTIFY THE TYPE OF MANHOLE/PIPE CONNECTION.
2) MANHOLE SHOP DRAWINGS SHALL IDENTIFY THE PIPE SIZE, TYPE, GASKET TYPE, AND HOLE SIZE.
3) ONLY THE POLYISOPRENE GASKET SUPPLIED BY THE BELL MANUFACTURER SHALL BE USED IN COMPRESSION TYPE BELLS.
4) GASKET GLAND VARIES ACCORDING TO PIPE SIZE AND TYPE.
5) HOLE SLEEVES AND BELL CONNECTORS SHALL EXTEND TO THE OUTER PROFILE OF THE CONCRETE STRUCTURE AT MINIMUM PROVIDING A COMPLETELY LINED SURFACE WHERE THE GASKET AND HOLE LINER MATE TOGETHER.

TURN BACK BOOT HUB WITH BOOT CONNECTOR

PIPE TO MANHOLE CONNECTION – TYPE "C"

23S

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WASTEWATER #3
STANDARD DETAILS

CONSULTANT:

CAULFIELD & WHEELER, INC.
CIVIL ENGINEERING - LAND PLANNING
LANDSCAPE ARCHITECTURE - SURVEYING
7900 GLADES ROAD - SUITE 100
BOCA RATON, FLORIDA 33434
PHONE (561)-392-1991 / FAX (561)-750-1452

IT'S THE LAW ! CALL 48 HOURS BEFORE YOU DIG 1-800-432-4770 SUNSHINE STATE ONE CALL OF FLORIDA, INC. UTILITIES NOTIFICATION CENTER

DESIGNED BY: WUD
DRAWN BY: M. BUCKNER
CHECKED BY: J. LAMMERT
APPROVED BY: WUD

Palm Beach County
Water Utilities Department
P.O.Box 16097
West Palm Beach, FL 33416-6097

WUD PROJECT No.
23-575

SHOPS AT INDIAN TRAILS
A.K.A.COCONUT CROSSING

PALM BEACH COUNTY
FLORIDA

PALM BEACH COUNTY
WATER UTILITIES DEPARTMENT
P.O. BOX 16097
WEST PALM BEACH, FL 33416
(561)493-6000

NO.	DATE	REVISION / REMARKS	BY
1	DEC. 2021	GENERAL REVISION	J.L.
2	JAN 2023	GENERAL REVISION	J.L.
*			

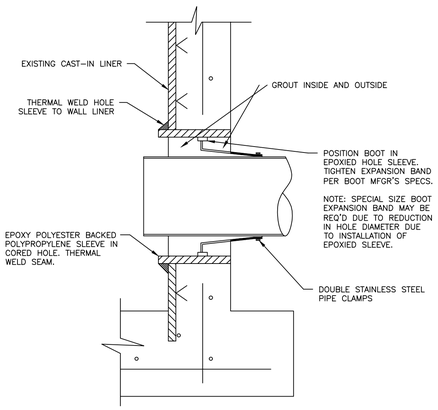
STD DETAILS

SHEET NUMBER C-30 OF 45

SEAL

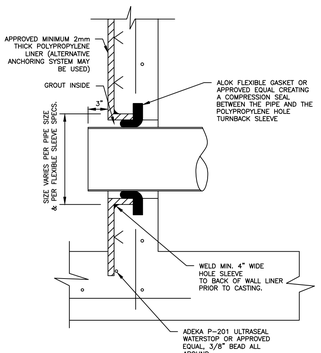
MATTHEW V. KAHN
PROFESSIONAL ENGINEER
LICENSE NO. 82227
STATE OF FLORIDA
– FOR THE FIRM –
DATE

Drawing: P:\07714-15-42-41\drawings\eng\details\7714WS Details.dwg\C-30 - Last Modified: Fri, Dec 13, 2024 - 4:14pm

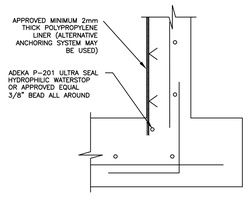


NOTE:
THERMAL WELDING AND EPOXY OF THE SLEEVE TO BE PERFORMED BY A CONTRACTOR CERTIFIED BY THE LINER MANUFACTURER

CORED HOLE W/FLEX. CONNECTOR & TURNBACK SLEEVE POLYPROPYLENE LINER SYSTEM CAST-IN — 24S



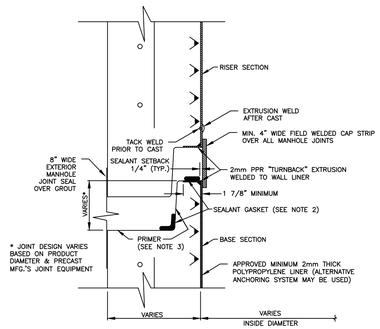
PIPE TO DROP MANHOLE CONNECTION LOWER INVERT — 25S



NOTE:

THIS STYLE WATERSTOP IS USED ON STRUCTURES CAST WITH A MONOLITHICALLY POURED BOTTOM SLAB.

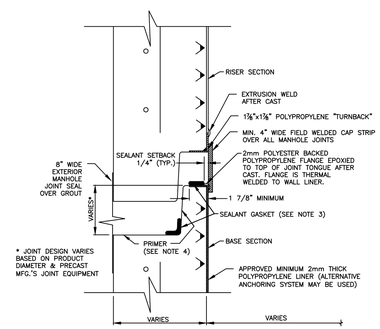
BASE MANHOLE SECTION WATERSTOP DETAIL — 26S



NOTES:

1. LINER WELDING SHALL BE PERFORMED EXCLUSIVELY BY LICENSED, CERTIFIED WELDERS.
2. STRUCTURE SHOP DRAWINGS SHALL CALL OUT THE SIZE, TYPE AND PLACEMENT OF THE JOINT SEALANT.
3. JOINT PRIMER TO BE APPLIED BY THE PRECASTER (TONGUE SECTION ONLY).

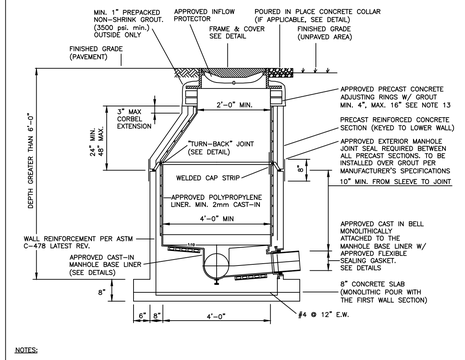
TURN BACK JOINT INSTALLED PRIOR TO CAST — 27S



NOTES:

1. THE "AFTER CAST" "TURNBACK" JOINT IS USED WHEN THE "PRIOR TO CAST" "TURNBACK" JOINT IS NOT FEASIBLE.
2. LINER WELDING SHALL BE PERFORMED EXCLUSIVELY BY LICENSED, CERTIFIED WELDERS.
3. STRUCTURE SHOP DRAWINGS SHALL CALL OUT THE SIZE, TYPE AND PLACEMENT OF THE JOINT SEALANT.
4. JOINT PRIMER TO BE APPLIED BY THE PRECASTER (TONGUE SECTION ONLY).

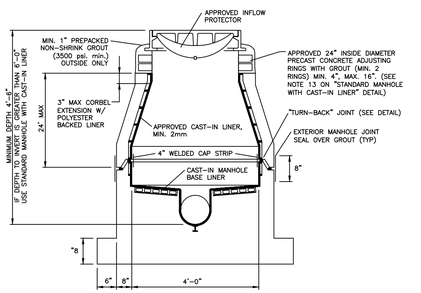
TURN BACK JOINT INSTALLED AFTER CAST — 28S



NOTES:

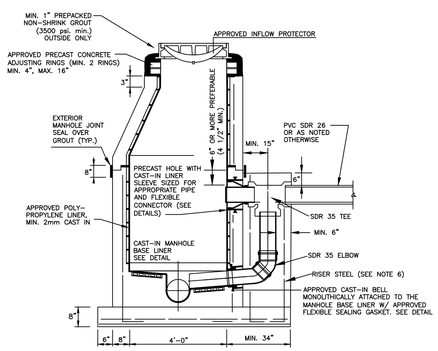
1. PRECAST CONCRETE TYPE II 4000 P.S.I. CALCAREOUS AGGREGATE REQUIRED (MIN. CaCO3 CONTENT: 65% IN LARGE AGGREGATE, 50% IN CONCRETE SCREENING).
2. RUB'R NEK (RU 106) OR APPROVED EQUAL AT ALL RISER JOINTS. SIZES TO BE SPECIFIED ON SHOP DRAWINGS.
3. ALL PIPE OPENINGS SHALL BE GAS TIGHT AND WATER TIGHT WITH NO EXPOSED CONCRETE SURFACES.
4. CAST OPENINGS SHALL BE MANUFACTURED WITH A POLYPROPYLENE SLEEVE CAST IN. APPROVED FLEXIBLE MANHOLE CONNECTORS SHALL BE USED AT PIPE CONNECTIONS. HOLE SIZE PER BOOT MANUFACTURER'S SPECIFICATIONS. DOUBLE PIPE CLAMPS MUST BE INSTALLED ON FLEXIBLE SLEEVES WHERE REQUIRED BY BOOT MANUFACTURER'S INSTALLATION INSTRUCTIONS.
5. CORED PIPE OPENINGS SHALL BE INSTALLED PER DETAIL. APPROVED FLEXIBLE CONNECTOR WILL BE INSTALLED ONTO POLY-PROPYLENE WALL SLEEVE. WALL SLEEVE SHALL BE EPOXIED INTO CORED OPENING AND THERMAL WELDED TO WALL LINER. BY LICENSED CONTRACTOR.
6. FLOW CHANNELS SHALL DIRECT INFLUENT INTO FLOW STREAM. (SEE DETAIL)
7. LIFT HOLES ARE PERMITTED.
8. INSIDE DROPS SHALL NOT BE DESIGNED TO EXCEED 1.80 FEET AND NOT CONSTRUCTED TO EXCEED 2.0 FEET, MAX. 6" INSIDE DROP IS PERMITTED FOR MANHOLES WITH 3 OR MORE INVERTS AND MANHOLES WITH A CHANGE IN FLOW DIRECTION OF MORE THAN 45 DEGREES.
9. MANHOLE FABRICATION SHALL BE IN ACCORDANCE WITH ASTM C-478, LATEST STANDARD.
10. MINIMUM 5 FEET IS REQUIRED BETWEEN OUTSIDE OF MANHOLE AND SERVICE WYE.
11. MANHOLES SHALL BE LINED INSIDE WITH AN APPROVED POLYPROPYLENE LINER SYSTEM. LINERS MUST BE WELDED BY LINER MFG CERTIFIED WELDERS AND BE CAST INTO THE MANHOLE BY A LINER MANUFACTURER CERTIFIED PRECASTER.
12. APPROVED INFLOW PROTECTORS ARE REQUIRED.
13. MAXIMUM HEIGHT OF CHIMNEY SHALL NOT EXCEED 24" (INCLUDING FRAME CASTING).
14. APPROVED THERMO-PLASTIC CHIMNEY LINER SHALL COMPLETELY COVER THE PRECAST CONCRETE GRADE RINGS AND SHALL BE SEALED TO THE CORBEL LINER BY MEANS OF AN APPROVED POLYISOPRENE LIP SEAL GASKET AND SEALED TO THE RING USING APPROVED BUTYL STRIPS. SEE DETAILS.
15. SOLID THERMO-PLASTIC CAST-IN LINER SYSTEM IS REQUIRED FOR LAST MANHOLE PRIOR TO A LIFT STATION, MANHOLES DEEPER THAN 14 FEET, MANHOLES WITH AN OUTSIDE DROP, AND MANHOLES WITH A FORCE MAIN CONNECTION. SEE APPROPRIATE DETAILS.
16. MANHOLES IN ROADWAYS SHALL BE LOCATED OUTSIDE OF WHEEL PATHS.

STANDARD MANHOLE WITH CAST-IN LINER AND BASE LINER — 29S



NOTE: ALL CORRESPONDING STANDARD MANHOLE NOTES AND DETAILS SHALL APPLY.

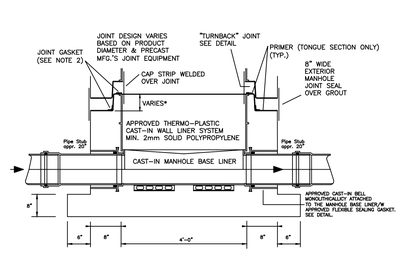
SHALLOW MANHOLE WITH CAST-IN LINER AND BASE LINER — 30S



NOTES:

1. ALL DETAILS AND SPECIFICATIONS FOR "STANDARD MANHOLE WITH SOLID POLYPROPYLENE LINER SYSTEM" ARE APPLICABLE EXCEPT FOR REFERENCES TO DROP ASSEMBLY.
2. THE PRECAST BASE SHALL EXTEND FULLY UNDER THE DROP ASSEMBLY.
3. PRECAST DROP ENCASEMENT REQUIRED UP TO TOP EDGE OF 90 DEGREE ELBOW, BRICK AND CONCRETE RUBBLE ARE PERMITTED AS FILLER IN REMAINDER OF DROP ENCASEMENT.
4. DROP CONNECTIONS SHALL BE REQUIRED WHENEVER AN INFLUENT INVERT IS LOCATED 2.0 FEET OR MORE ABOVE THE MAIN INVERT CHANNEL. DROP CONNECTIONS SHOULD NOT BE DESIGNED FOR LESS THAN A 2.4 FOOT DROP.
5. PVC SDR 26 PIPE WITH PVC SDR 35 FITTINGS SHALL BE UTILIZED IN THE DROP ASSEMBLY.
6. DROP ENCASEMENT REINFORCING STEEL TO BE CAST IN PLACE WITH BASE (4 RODS) OR USE 4-1/2" DIA. COIL LOOP INSERTS CAST IN PLACE WITH BASE (TO BE USED WITH 1/2" COIL RODS). COIL LOOP INSERTS TO BE "DAYTON SUPERIOR" B16, 1/2"X 4" OR APPROVED EQUAL.

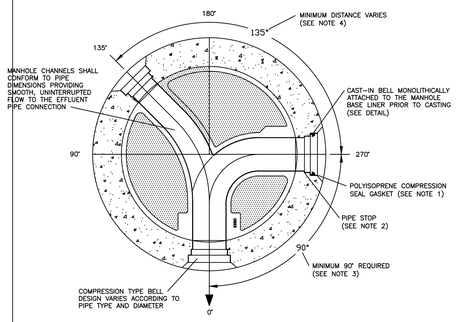
OUTSIDE DROP MANHOLE WITH CAST-IN LINER AND BASE LINER — 31S



NOTES:

1. LINER WELDING SHALL BE PERFORMED EXCLUSIVELY BY LICENSED, CERTIFIED WELDERS.
2. SHOP DRAWINGS SHALL CALL OUT THE SIZE, TYPE AND POSITIONING OF THE APPROVED JOINT SEALANT.
3. PRIMER TO BE APPLIED BY THE PRECASTER (TONGUE SECTION ONLY).

MANHOLE BASE SECTION — 32S



NOTES:

1. ONLY THE POLYISOPRENE GASKET PROVIDED BY THE MANHOLE BASE LINER MANUFACTURER SHALL BE USED IN COMPRESSION TYPE BELLS.
2. CONNECTION PIPES SHALL BE INSERTED COMPLETELY INTO THE BELL CONNECTOR FLUSH WITH THE PIPE STOP PROVIDING A SMOOTH TRANSITION FROM PIPE TO MANHOLE BASE LINER CHANNEL.
3. MINIMUM OF 90 DEGREES BETWEEN INCOMING, LEFT OR RIGHT OF OUTGOING PIPE. DISTANCE BETWEEN CONNECTIONS MAY VARY ACCORDING TO MANHOLE DIAMETER, PIPE SIZE AND TYPE.
4. MINIMUM DISTANCE BETWEEN INFLUENT PIPE CONNECTIONS MAY VARY AND SHALL BE SPECIFIED BY THE LINER MANUFACTURER ACCORDING TO MANHOLE AND/OR PIPE DIAMETER AND TYPE.

FLOW CHANNEL/PIPE CONNECTION TO NEW CAST-IN BASE LINER — 33S

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WASTEWATER #4
STANDARD DETAILS

CONSULTANT:
CAULFIELD & WHEELER, INC.
CIVIL ENGINEERING - LAND PLANNING
LANDSCAPE ARCHITECTURE - SURVEYING
7900 GLADES ROAD - SUITE 100
BOCA RATON, FLORIDA 33434
PHONE (561)-392-1991 / FAX (561)-750-1452

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1-800-432-4770
SUNSHINE STATE ONE CALL OF FLORIDA, INC.
UTILITIES NOTIFICATION CENTER

DESIGNED BY: WUD
DRAWN BY: M. BUCKNER
CHECKED BY: J. LAMMERT
APPROVED BY: WUD

Palm Beach County
Water Utilities Department
P.O.Box 16097
West Palm Beach, FL 33416-6097

SEAL

MATTHEW V. KAHN
PROFESSIONAL ENGINEER
LICENSE NO. 82227
STATE OF FLORIDA
– FOR THE FIRM –
DATE

WUD PROJECT No.
23-575

SHOPS AT INDIAN TRAILS
A.K.A.COCONUT CROSSING

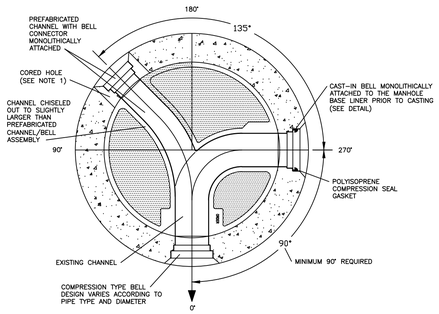
PALM BEACH COUNTY
WATER UTILITIES DEPARTMENT
P.O. BOX 16097
WEST PALM BEACH, FL 33416
(561)493-6000

NO.	DATE	REVISION / REMARKS	BY
1	DEC. 2021	GENERAL REVISION	J.L.
2	JAN 2023	GENERAL REVISION	J.L.

STD DETAILS

SHEET NUMBER
C-31
OF
45

Drawing: P:\07714-15-42-41\drawings\eng\details\7714WS Details.dwg\C-31 - Last Modified: Fri, Dec 13, 2024 - 4:14pm

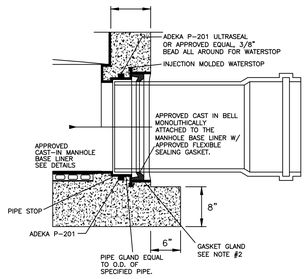


NOTES:

1. CORED OPENING AND CHANNEL DIAMETER PER CHANNEL/BELL MANUFACTURER REQUIREMENTS. SIZES SHALL BE SPECIFIED ON SHOP DRAWING.
2. ONLY AN APPROVED CHANNEL/BELL ASSEMBLY PROVIDED BY THE BASE LINER MANUFACTURER SHALL BE USED.
3. CHANNEL/BELL ASSEMBLY MUST BE COMPLETELY GROUTED IN PLACE USING AN APPROVED CEMENT.
4. UPON "SETTING" OF GROUT, THE NEW CHANNEL/BELL ASSEMBLY MUST BE JOINED TO THE EXISTING MANHOLE BASE LINER BY EITHER THERMO-PLASTIC WELDING OR FRP PATCH AS SPECIFIED BY BASE LINER MANUFACTURER.

FLOW CHANNEL/ PIPE CONNECTION TO EXISTING CAST-IN BASE LINER

34S



INSTALLATION:

1. CLEAN BELL REMOVING ANY EXCESS CONCRETE SLURRY OR DIRT INSIDE BELL.
2. INSTALL GASKET AS SHOWN.
3. LUBRICATE PIPE SPIGOT AND SLIDE INTO BELL AND GASKET UNTIL REACHING PIPE STOP.
4. CHECK FOR WATERTIGHT CONNECTION. (VACUUM TESTING OR OTHER APPROVED METHOD).

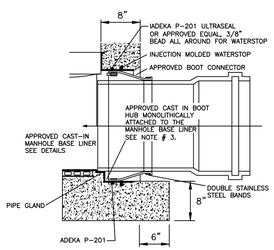
DO NOT LUBRICATE THE GASKET OR THE BELL

NOTES:

1. MANHOLE SHOP DRAWINGS SHALL IDENTIFY THE TYPE OF MANHOLE/PIPE CONNECTION.
2. ONLY THE POLYISOPRENE GASKET SUPPLIED BY THE BELL MANUFACTURER SHALL BE USED IN COMPRESSION TYPE BELLS.
3. BOOT HUB VARIES ACCORDING TO GASKET MANUFACTURER'S SPECIFICATION FOR SPECIFIC PIPE SIZE AND TYPE.
4. MANHOLE SHOP DRAWINGS MUST IDENTIFY THE PIPE SIZE, TYPE, GASKET TYPE AND HOLE SIZE.

PIPE TO MANHOLE CONNECTION DETAIL TYPE "A" (GASKET)

35S



INSTALLATION:

1. CLEAN BOOT HUB REMOVING ANY EXCESS CONCRETE SLURRY OR DIRT INSIDE BELL.
2. INSTALL RUBBER BOOT CONNECTOR (PER MANUFACTURER'S INSTRUCTIONS). WEDGE STYLE EXPANDER BOLTS MUST BE ALIGNED WITH THE "TOP" OF BOOT HUB ACCESS NOTCH.
3. PRE-MITER PIPE END AS REQUIRED TO PREDETERMINED PIPE DEFLECTION ANGLE. MERELY "DE-BURR" PIPE END – DO NOT CHAMFER OR BEVEL PIPE END.
4. LUBRICATE SPIGOT; ORIENT PIPE MITER; SLIDE INTO RUBBER BOOT CONNECTOR; "HOME" PIPE TO BASE LINER CHANNEL END; DEFLECT PIPE AS REQUIRED. INSPECT MANHOLE BASE INTERIOR FOR CHANNEL/PIPE INVERT ALIGNMENT AND SEAL; TIGHTEN RUBBER BOOT CLAMP (PER MANUFACTURER'S INSTRUCTIONS).
1. CHECK FOR WATERTIGHT CONNECTION; (VACUUM TESTING OR OTHER APPROVED METHOD).

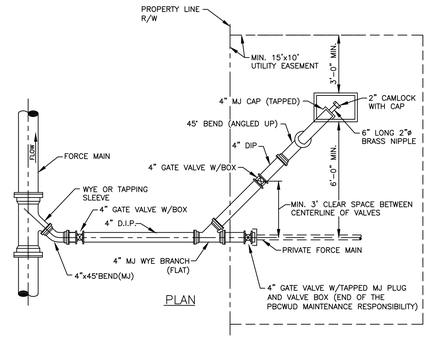
DO NOT LUBRICATE THE GASKET OR THE BELL

NOTES:

1. MANHOLE SHOP DRAWINGS SHALL IDENTIFY THE TYPE OF MANHOLE/PIPE CONNECTION.
2. ONLY THE POLYISOPRENE GASKET SUPPLIED BY THE BELL MANUFACTURER SHALL BE USED IN COMPRESSION TYPE BELLS.
3. BOOT HUB VARIES ACCORDING TO GASKET MANUFACTURER'S SPECIFICATION FOR SPECIFIC PIPE SIZE AND TYPE.
4. MANHOLE SHOP DRAWINGS MUST IDENTIFY THE PIPE SIZE, TYPE, GASKET TYPE AND HOLE SIZE.

PIPE TO MANHOLE CONNECTION TYPE "B" (BOOT)

36S

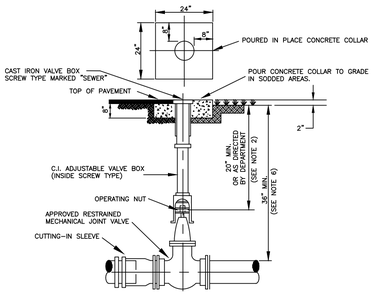


NOTE:

1. THE FLUSHING CONNECTION SHALL BE LOCATED IN GRASS AREA.
2. ALL 4" PIPES SHALL BE RESTRAINED.

CONNECTION OF PRIVATE FORCE MAIN UNDER 4" IN DIAMETER

37S



NOTES:

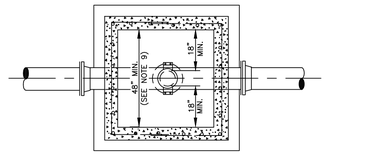
1. CONCRETE COLLAR IS NOT REQUIRED IN PAVED AREAS IF PAVEMENT SURFACE IS FINISHED PRIOR TO CONDITIONAL FINAL INSPECTION.
2. WHEN OPERATING NUT IS DEEPER THAN 36" A ONE PIECE EXTENSION WILL BE REQUIRED TO BRING OPERATING NUT 20"-30" BELOW FINISHED GRADE. EXTENSION BOLTS & NUTS ARE TO BE STAINLESS STEEL, A HIGH STRENGTH STEEL CENTERING PLATE, WELDED TO THE EXTENSION, IS ALSO REQUIRED.
3. VALVE BOXES SHALL HAVE COVERS MARKED "SEWER".
4. EXTENSION VALVE BOX TO BE D.I.P. OR C-900 PVC DR 18 (COLOR: GREEN).
5. A CUT-IN INSTALLATION SHALL REQUIRE MEGALUGS OR EQUAL THROUGHOUT ASSEMBLY.
6. IN ORDER TO MAINTAIN ADEQUATE COVER OVER VALVE NUT, THE FOLLOWING MINIMUM COVERS OVER PIPE ARE REQUIRED:

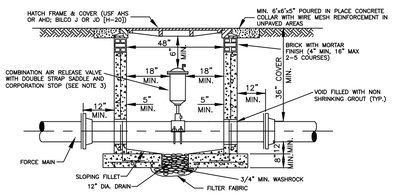
GATE VALVE SIZE	MIN. COVER OVER PIPE
16"	48"
20"	54"
24"	60"
30"	72"
36"	84"

7. PIPE SHALL BE RESTRAINED ON BOTH SIDES OF THE VALVE AS REQUIRED.
8. VALVES IN ROADWAYS SHALL BE LOCATED OUTSIDE OF WHEEL PATHS WHENEVER POSSIBLE.

TYPICAL FORCE MAIN GATE VALVE SETTING AND CUT-IN DETAIL

38S





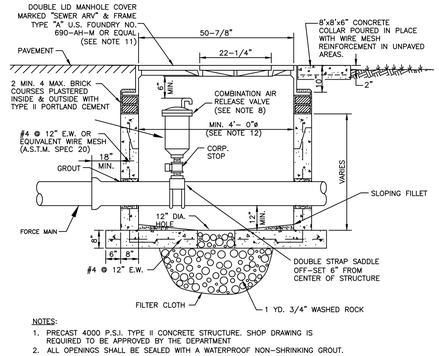
NOTES:

1. 4000 P.S.I. TYPE II CONCRETE
2. VAULT SHALL BE PRECAST WITH STEEL REINFORCING. SHOP DRAWING IS REQUIRED TO BE APPROVED BY THE DEPARTMENT PRIOR TO VAULT CONSTRUCTION AND/OR INSTALLATION.
3. COMBINATION AIR RELEASE VALVE (ARV) SHALL BE TYPE AND SIZE APPROPRIATE FOR SERVICE INTENDED. ALTHOUGH A 2" MINIMUM SIZED ARV IS REQUIRED ON FORCE MAIN INSTALLATIONS.
4. ALL OPENINGS SHALL BE SEALED WITH WATERPROOF NON-SHRINKING GROUT.
5. ALTERNATE VAULT AND COVER DESIGN MAY BE USED PROVIDED ALTERNATE VAULT AND/OR COVER SHOP DRAWINGS WERE SUBMITTED AND APPROVED BY THE DEPARTMENT PRIOR TO THE VAULT AND/OR COVER BEING INSTALLED.
6. COAT INSIDE WITH AN APPROVED CORROSION BARRIER SYSTEM.
7. DUCTILE IRON PIPE IS REQUIRED THROUGH THE VAULT. NO PIPE JOINTS WITHIN THE VAULT.
8. THREADED AREAS OF CORPORATION STOP SHALL BE SPIRAL WRAPPED WITH TWO WRAPS OF TEFLON TAPE.
9. LARGER VAULTS WILL BE REQUIRED FOR PIPES LARGER THAN 12"

PIPE SIZE	MIN. VAULT SIZE
16"-24"	4'W x 5'L
30"-42"	4'W x 6'L

FORCE MAIN AIR RELEASE VALVE AND VAULT OUTSIDE OF R/W, NON-TRAFFIC AREAS

39S



NOTES:

1. PRECAST 4000 P.S.I. TYPE II CONCRETE STRUCTURE. SHOP DRAWING IS REQUIRED TO BE APPROVED BY THE DEPARTMENT
2. ALL OPENINGS SHALL BE SEALED WITH A WATERPROOF NON-SHRINKING GROUT.
3. LIFT HOLES ARE PERMITTED.
4. ALL PIPE HOLES SHALL BE PRECAST.
5. MANHOLE FABRICATION SHALL BE IN ACCORDANCE WITH A.S.T.M. C-478 LATEST STANDARD.
6. COAT INSIDE WITH AN APPROVED PROTECTIVE CORROSION BARRIER SYSTEM.
7. CONCRETE COLLAR REQUIRED WHEN MANHOLE IS OUTSIDE OF PAVEMENT, SEE DETAIL.
8. COMBINATION AIR RELEASE VALVE (ARV) SHALL BE TYPE AND SIZE APPROPRIATE FOR SERVICE INTENDED. ALTHOUGH A 2" MINIMUM SIZED ARV IS REQUIRED ON FORCE MAIN INSTALLATIONS.
9. DUCTILE IRON PIPE IS REQUIRED THROUGH THE MANHOLE. NO PIPE JOINTS INSIDE THE MANHOLE.
10. THREADED AREAS OF CORPORATION STOP SHALL BE SPIRAL WRAPPED WITH TWO WRAPS OF TEFLON TAPE.
11. FORCE MAINS 12" AND SMALLER, AN ALTERNATIVE VAULT AND COVER DESIGN MAY BE USED PROVIDED ALTERNATE VAULT AND/OR COVER SHOP DRAWINGS WERE SUBMITTED AND APPROVED BY THE DEPARTMENT PRIOR TO THE VAULT AND/OR COVER BEING INSTALLED.
12. LARGER MANHOLES WILL BE REQUIRED FOR PIPES LARGER THAN 12"

PIPE SIZE	MIN. MANHOLE DIAMETER
16"-24"	60"
30"-42"	72"

13. MANHOLES IN ROADWAYS SHALL BE LOCATED OUTSIDE OF WHEEL PATHS.

FORCE MAIN AIR RELEASE VALVE AND MANHOLE IN PAVED AREAS AND ROAD R/W

40S

MIN. LENGTH 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)

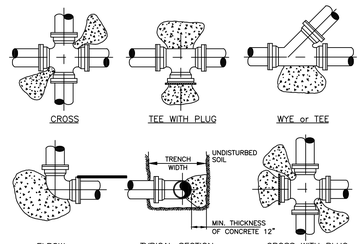
FITTING TYPE		PIPE SIZE 4"	6"	8"	10"	12"	16"	20"	24"	30"	36"	42"	48"
90° VERT. BEND		14	20	25	30	35	45	54	62	73	84	93	101
45° HORIZ. BEND		6	8	11	13	15	19	22	26	30	35	38	42
22.5° HORIZ. BEND		3	4	5	6	7	9	11	12	15	17	18	20
11.25° HORIZ. BEND		1	2	3	3	4	4	5	6	7	8	9	10
90° VERT. OFFSET	UPPER BEND	29	41	53	64	74	95	115	134	160	185	207	228
	LOWER BEND	7	10	13	16	19	25	30	35	42	49	56	62
45° VERT. OFFSET	UPPER BEND	12	19	24	29	34	39	48	56	66	77	86	94
	LOWER BEND	3	4	6	7	8	10	12	15	18	20	23	26
22.5° VERT. OFFSET	UPPER BEND	6	9	12	14	17	19	23	27	32	37	41	45
	LOWER BEND	1	2	4	4	4	5	6	7	8	10	11	12
11.25° VERT. OFFSET	UPPER BEND	3	4	6	7	8	9	11	13	16	18	20	22
	LOWER BEND	1	1	1	2	2	2	3	3	4	5	5	6
PLUG (DEAD END)		32	45	59	70	83	107	129	151	160	185	207	228
IN-LINE VALVE		32	45	45	45	45	55	65	80	85	95	105	115
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	–	–	–	–
	30"x ø	1	8	28	44	58	83	106	127	154	–	–	–
	36"x ø	1	1	22	39	54	80	103	124	153	179	–	–
	42"x ø	1	1	15	33	49	77	100	122	151	177	201	–
	48"x ø	1	1	7	27	44	73	97	120	149	176	200	222
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	–	–	–	–	–
	30"x ø	157	153	148	141	133	113	87	56	–	–	–	–
	36"x ø	182	179	175	169	163	147	126	101	56	–	–	–
	42"x ø	205	202	199	194	189	175	150	138	100	54	–	–
	48"x ø	226	224	221	217	213	201	187	169	138	98	53	–

NOTES:

1. THE DATA IN THE ABOVE TABLE ARE BASED UPON THE FOLLOWING INSTALLATION CONDITIONS:
   SOIL TYPE-SAND TEST PRESSURE-150 PSI DEPTH OF BURY-3'
   TRENCH TYPE-3 SAFETY FACTOR- 1.5 VERTICAL OFFSET-3'
   MINIMUM PIPE LENGTH ALONG TEE RUN-5'
2. THE RESTRAINED PIPE LENGTHS APPLY TO DUCTILE IRON AND PVC PIPE.
3. ALL JOINTS BETWEEN UPPER AND LOWER BENDS SHALL BE RESTRAINED.
4. RESTRAINED PIPE LENGTHS APPLY TO PIPE ON BOTH SIDES OF VALVES AND FITTINGS.
5. MULTIPLY PIPE LENGTH BY 1.4 FOR POLYETHYLENE ENCASED PIPE.
6. RESTRAINED PIPE LENGTHS EQUAL TO AN "INLINE VALVE" CONDITION ARE REQUIRED AT EACH END OF A TRANSITION FROM HDPE PIPE TO OTHER PIPE MATERIALS.
7. DESIGN ENGINEER IS RESPONSIBLE FOR PROPER RESTRAINT PIPE LENGTH SIZING FOR THE PROJECT.

MECHANICAL THRUST RESTRAINT MINIMUM PIPE LENGTHS (FORCE MAINS)

41S



PIPE	THRUST BLOCK AREA REQ'D	REMARKS
4"	2.0 SQ. FT.	VALUES ARE FOR 90° BEND, BASED ON 2000 P.S.F SAFE BEARING LOAD AND PIPE PRESSURE OF 150 P.S.I. FOR OTHER SOILS & PRESSURES THE AREA REQUIRED IS IN DIRECT PROPORTION
6"	4.0 SQ. FT.	
8"	6.6 SQ. FT.	
10"	10.0 SQ. FT.	
12"	14.0 SQ. FT.	
14"	18.6 SQ. FT.	

NOTE:
FOR OTHER FITTINGS USE THE FOLLOWING FACTORS.

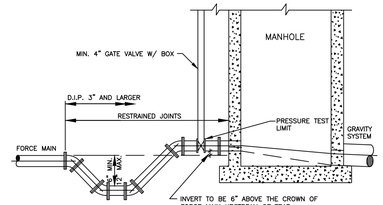
TEE 100%
45° BEND 71%
22 1/2° BEND 39%
11 1/4° BEND 20%
DEAD END 100%

NOTES:

1. CONCRETE THRUST BLOCKS OR THRUST COLLARS MAY BE UTILIZED ONLY IF NECESSARY FOR CONNECTIONS TO AN EXISTING PIPING SYSTEM, OTHERWISE MECHANICAL RESTRAINTS SHALL BE USED. KEEP "T" BOLTS CLEAR OF CONCRETE, WRAPPED IN VISQUEEN FOR FUTURE ACCESS, WITH A MINIMUM OF 1" THICKNESS BETWEEN THE FITTING AND SOIL.
2. BEFORE POURING CONCRETE, PLUGS SHALL BE WRAPPED WITH VISQUEEN AND A BOARD PLACED IN FRONT.
3. CONCRETE SHALL BE 2500 P.S.I. MINIMUM.
4. THE ENGINEER OF RECORD SHALL SUBMIT A THRUST BLOCK SIZE CALCULATION FOR TEE CONNECTIONS INTO UNRESTRAINED EXISTING MAINS LARGER THAN 14".
5. THE ENGINEER OF RECORD SHALL SUBMIT A PIPE RESTRAINT DESIGN FOR INLINE EXTENSIONS OF A EXISTING UNRESTRAINED MAIN IF MECHANICAL JOINT RESTRAINT CAN NOT BE INSTALLED ON THE EXISTING MAIN.

TYPICAL THRUST BLOCKS FOR PRESSURE PIPING

42S



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 OUTFLOW INVERT OF MANHOLE.
3. CORE ENTRY ONLY INTO EXISTING MANHOLES.
4. TRAP TO BE LOCATED PRIOR TO DROP INTO MANHOLE AND OUTSIDE OF PAVED AREAS.
5. USE TWO 45° ELBOWS PAST TRAP IF ELEVATION DROP IS REQUIRED TO ENTER MANHOLE.
6. CAST-IN OR FIELD INSTALLED FLOW CHANNEL IS REQUIRED.
7. MANHOLE WALL TO BE COATED WITH AN APPROVED SOLID THERMOPLASTIC CAST-IN CORROSION BARRIER SYSTEM.
8. TRAP JOINTS TO BE RESTRAINED.

FORCE MAIN ENTERING MANHOLE

43S

WASTEWATER #5 STANDARD DETAILS

CONSULTANT:

CAULFIELD & WHEELER, INC.
CIVIL ENGINEERING - LAND PLANNING
LANDSCAPE ARCHITECTURE - SURVEYING
7900 GLADES ROAD - SUITE 100
BOCA RATON, FLORIDA 33434
PHONE (561)-392-1991 / FAX (561)-750-1452

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CALL 48 HOURS BEFORE YOU DIG
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SUNSHINE STATE ONE CALL OF FLORIDA, INC.
UTILITIES NOTIFICATION CENTER

DESIGNED BY: WUD
DRAWN BY: M. BUCKNER
CHECKED BY: J. LAMMERT
APPROVED BY: WUD

Palm Beach County
Water Utilities Department
P.O.Box 16097
West Palm Beach, FL 33416-6097

WUD PROJECT No.
23-575

SHOPS AT INDIAN TRAILS
A.K.A.COCONUT CROSSING

PALM BEACH COUNTY
WATER UTILITIES DEPARTMENT
P.O. BOX 16097
WEST PALM BEACH, FL 33416
(561)493-6000

NO.	DATE	REVISION / REMARKS	BY
	JUNE 2019	GENERAL REVISION	JJL
	OCT. 2021	GENERAL REVISION	JJL
	JAN 2023	GENERAL REVISION	JJL
*			

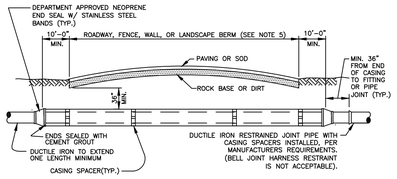
STD DETAILS

SHEET NUMBER C-32 OF 45

SEAL

MATTHEW V. KAHN
PROFESSIONAL ENGINEER
LICENSE NO. 82227
STATE OF FLORIDA
– FOR THE FIRM –
DATE

Drawing: P:\07714-15-42-41\drawings\eng\details\7714WS Details.dwg/C-32 - Last Modified: Fri, Dec 13, 2024 - 4:14pm

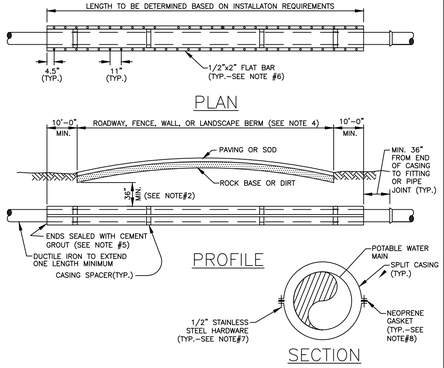


CARRIER PIPE SIZE	STEEL CASING INSIDE DIAMETER (MIN)	MINIMUM WALL THICKNESS (SEE NOTE 2)
4"	12"	.188
6"	14"	.250
8"	20"	.250
10"	20"	.250
12"	24"	.250
14"	24"	.250
16"	30"	.312
18"	30"	.312
20"	36"	.372
24"	42"	.500
30"	48"	.500
36"	54"	.625
42"	60"	.625
48"	72"	.625

NOTES:

1. A PROFILE DRAWING TO SCALE FOR EACH JACK AND BORE, DIRECTIONAL DRILL, OR DIRECT BURIED INSTALLATION IS REQUIRED TO BE APPROVED BY THE DEPARTMENT PRIOR TO INSTALLATION. IF A SPLIT CASING IS REQUIRED THEN SHOP DRAWINGS ARE REQUIRED TO BE SUBMITTED AND APPROVED BY THE DEPARTMENT PRIOR TO CONSTRUCTION AND/OR INSTALLATION.
2. THICKER WALL CASINGS AND LARGER COVER OVER CASING MAY BE REQUIRED BY THE RIGHT-OF-WAY OWNER.
3. STEEL CASING SHALL BE COATED OUTSIDE WITH COAL TAR EPOXY (MIN. 16 MILS DFT) AND BE PAINTED WITH A 4" MINIMUM CONTINUOUS STRIPE, COLOR CODED TO MATCH THE PIPE INSIDE, ALONG THE TOP AXIS OF THE CASING.
4. PIPE IN CASING SHALL BE PULLED TO FULLY ENGAGE RESTRAINT.
5. STEEL CASING IS REQUIRED FOR ALL WASTEWATER MAIN INSTALLATIONS UTILIZING JACK AND BORE CONSTRUCTION AND WHEN MAINS ARE INSTALLED UNDER FENCES, WALLS, OR LANDSCAPE BERMS. WHEN THE CASING IS INSTALLED UNDER FENCES, WALLS, OR LANDSCAPE BERMS IT SHALL BE CENTERED ON THE PREVIOUS BARRIER AND IS REQUIRED TO EXTEND 10' MINIMUM PAST BARRIER ON EACH SIDE UNLESS OTHERWISE PREVIOUSLY APPROVED BY THE DEPARTMENT.

WASTEWATER MAIN CASING INSTALLATION * 44SA

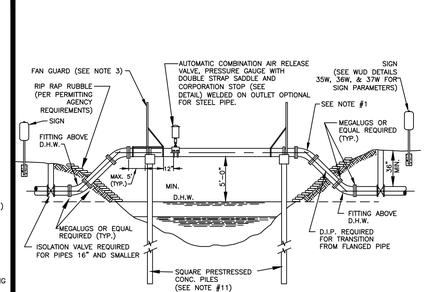


CARRIER PIPE SIZE	STEEL CASING INSIDE DIAMETER (MIN)	MINIMUM WALL THICKNESS (SEE NOTE 2)
4"	12"	.188
6"	14"	.250
8"	20"	.250
10"	20"	.250
12"	24"	.250

NOTES:*

1. A SHOP DRAWING TO SCALE FOR EACH SPLIT CASING INSTALLATION IS REQUIRED AND TO BE APPROVED BY THE DEPARTMENT PRIOR TO INSTALLATION.
2. THE RIGHT-OF-WAY OWNER MAY REQUIRE THICKER WALL CASING AND LARGER COVER OVER CASING.
3. STEEL CASING SHALL BE COATED OUTSIDE WITH COAL TAR EPOXY (MIN. 16 MILS DFT) AND BE PAINTED WITH A 4" MINIMUM CONTINUOUS STRIPE, ALASKA BLUE IN COLOR, ALONG THE TOP SIDE OF THE CASING.
4. SPLIT STEEL CASING IS REQUIRED ON ALL EXISTING WASTEWATER INSTALLATIONS WHEN A NEW STORM DRAINAGE OR OTHER UTILITY PIPE IS INSTALLED AND CANNOT ACHIEVE THE PROPER VERTICAL SEPARATION PER WUD STANDARDS ALONG WITH WHEN A NEW FENCE, WALL, OR LANDSCAPE BERM IS INSTALLED OVER AN EXISTING POTABLE WATER MAIN. WHEN A SPLIT CASING IS INSTALLED UNDER A FENCE, WALL, OR LANDSCAPE BERM SEE WUD STANDARD DETAIL 91S FOR INSTALLATION REQUIREMENTS.
5. NON-SHRINKABLE CEMENT GROUT TO BE INSTALLED TO OBTAIN WATERTIGHT SEAL AT EACH END OF CASING.*
6. FLAT BARS TO BE STITCH WELDED AT 6" LENGTHS TO EDGE OF CASING ON EACH SIDE.
7. CASING TO BE ASSEMBLED IN FIELD WITH 1/2" STAINLESS STEEL BOLTS, WASHERS, AND NUTS ON EACH SIDE.
8. 1/4" NEOPRENE GASKET MATERIAL EXTENDING PAST CASING JOINT FOR POSITIVE SEAL ON EACH SIDE.

WASTEWATER MAIN SPLIT CASING INSTALLATION * 44SB



NOTES:

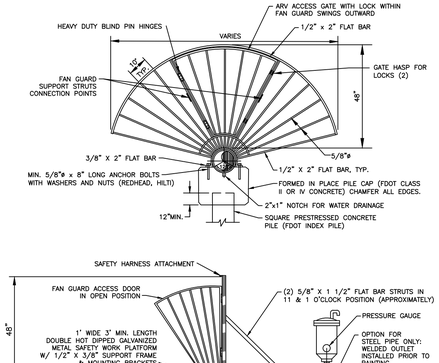
1. ALL EXPOSED PIPE SHALL BE DUCTILE IRON OR PREFABRICATED STEEL WITH FLANGED FITTINGS AND PROFILED GASKETS. RETAINER GLANDS AND UNIFLANGE TYPE FITTINGS ARE NOT TO BE SUBSTITUTED FOR FLANGED FITTINGS. PREFABRICATED STEEL PIPE MAY INCORPORATE WELDED ON LONG RADIUS UPPER BENDS. PREFABRICATED FLANGED PIPE SHALL BE FACTORY TESTED.
2. SPAN LENGTHS AS REQUIRED BY PERMITTING AGENCY
3. FAN GUARDS ARE REQUIRED. SEE FAN GUARD/PILE CAP DESIGN DETAILS, FOR ADDITIONAL REQUIREMENTS. ACCESS PLATFORM AND GATE REQUIRED ON ARV SIDE ONLY.

4A. ALL EXPOSED PIPING SHALL BE PAINTED AS SPECIFIED IN THE APPROVED MATERIAL LIST.

4B. ALL HARDWARE SHALL BE PAINTED WITH COAL–TAR EPOXY.

5. PIPE SHALL BE CRADLED ON ¾" THICK NEOPRENE. (DUROMETER GRADE 50) CURRENT FDOT STANDARDS APPLY. NEOPRENE IS REQUIRED AT ALL STRAPS INSTALLED OVER STEEL PIPE. NEOPRENE SHALL EXTEND 1" BEYOND THE EDGES OF CRADLE AND STRAPS.
6. TIE–DOWN STRAPS MUST PROPERLY FIT AND SECURE PIPE IN CRADLE.
7. PIPE CRADLE IN CAP SHALL CONTACT ⅞ 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. PILE LIFT CABLE SHALL BE REMOVED BELOW SURFACE; HOLE SHALL BE FILLED WITH EPOXY CEMENT.
10. THREADED AREAS OF BRASS FITTINGS SHALL BE SPIRAL WRAPPED WITH TWO WRAPS OF TEFLON TAPE.
11. THE PILES AND CAP DESIGN SHALL BE SHOWN ON TO SCALE SIGNED AND SEALED DETAIL DRAWINGS. MIN. 12"x12" TYPE 1A FLORIDA DOT INDEX PILES ARE REQUIRED. PILE PENETRATION BELOW CANAL BOTTOM SHALL BE 15' MINIMUM. MINIMUM LOAD CAPACITY OF 20 TONS PER PILE IS REQUIRED (FDOT STANDARDS APPLY). SIGNED AND SEALED SHOP DRAWINGS ARE REQUIRED.
12. PREFABRICATED STEEL PIPE SHALL HAVE WELDED ON BEARING PADS EXTENDING MIN. 1" BEYOND PIPE CRADLE. THE PADS SHALL BE INSTALLED BY STEEL PIPE MANUFACTURER PRIOR TO PAINTING.
13. FORCE MAIN CROSSINGS OVER BODIES OF WATER MAY BE SUBJECT TO A D.E.P. "NOTICED GENERAL ENVIRONMENTAL RESOURCE PERMIT" (NGP)

TYPICAL FORCE MAIN AERIAL CANAL CROSSING – SINGLE PIPE (SINGLE PILES) * 45S



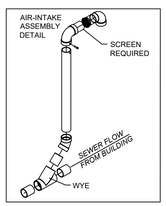
NOTES:

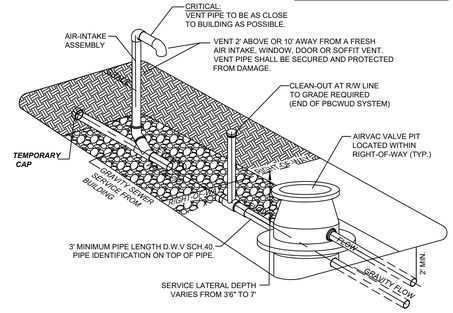
1. FAN GUARDS SHALL BE PLACED AT EACH END OF CANAL CROSSING.
2. HARDWARE SHALL BE PAINTED WITH COAL TAR EPOXY.
3. FANGUARD WITH HARDWARE SHALL BE FABRICATED FROM DOUBLE HOT DIPPED GALVANIZED STEEL.
4. SHOP DRAWINGS FOR FANGUARDS, CAPS, AND PILES MUST BE SUBMITTED TO PBCWUD FOR REVIEW AND APPROVAL PRIOR TO PRE–CONSTRUCTION MEETING.
5. REINFORCING STEEL SHALL CONFORM TO ASTM A–615, GRADE 60. MIN. 2" CONCRETE COVER OVER ALL STEEL.
6. SEE "TYPICAL CANAL CROSSING DETAIL" FOR ADDITIONAL REQUIREMENTS.
7. NO WELDING OF REBAR TO REBAR OR REBAR TO PILE STRANDS SHALL BE ALLOWED.
8. DESIGN DRAWINGS ARE REQUIRED.
9. LONG RADIUS WELDED ON UPPER BENDS ARE ACCEPTABLE FOR STEEL PIPE.
10. IF A PILE/CAP STEEL CONNECTION IS REQUIRED BY DESIGNING ENGINEER, MIN. (4) #8 REINFORCEMENT BARS SHALL BE DRILLED AND DOWELED (EPOXIED) MIN. 16" DEEP INTO THE PILE AND TIED WITH THE CAP STEEL.
11. ACCESS PLATFORM AND GATE REQUIRED ON ARV SIDE ONLY.

FAN GUARD/ PILE CAP DESIGN – SINGLE PIPE (SINGLE PILES) * 46S

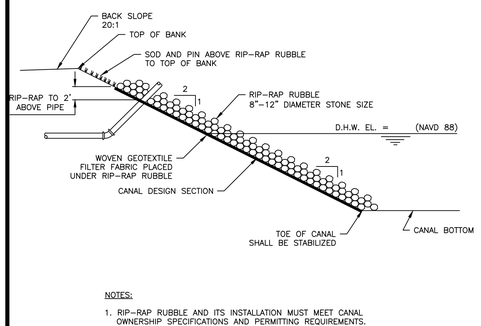
NOTES:

1. APPROVED PLUMBING PLAN MUST BE ON JOB SITE FOR INSPECTION, IF NOT, INSTALLATION WILL BE REJECTED.
2. PLUMBING SHALL CONFORM TO ALL PALM BEACH COUNTY AND OTHER APPLICABLE CODES.
3. ***TEMPORARY CAP IN PLACE (NO SEWAGE). UPSTREAM OF THE VENT PIPE TO BE IN PLACE UNTIL WUD INSPECT AND INSTALL VALVE***
4. EXISTING SEPTIC TANK TO BE ABANDONED IN ACCORDANCE WITH LOCAL HEALTH DEPT. SPECIFICATIONS.
5. AIR INTAKE ASSEMBLY IS REQUIRED.
6. AIR VAC VALVE WILL BE INSTALLED BY UTILITY **AFTER** 4" AIR-INTAKE ASSEMBLY IS IN PLACE.
7. 6. SEWER CONNECTION FEES TO BE PAID PRIOR TO CONNECTION.
8. ***TEMPORARY CAP IN PLACE UNTIL WUD INSPECT AND INSTALL VALVE.***
9. ***CAP IS NOT TO BE REMOVED UNTIL WUD HAS INSTALLED VALVE***





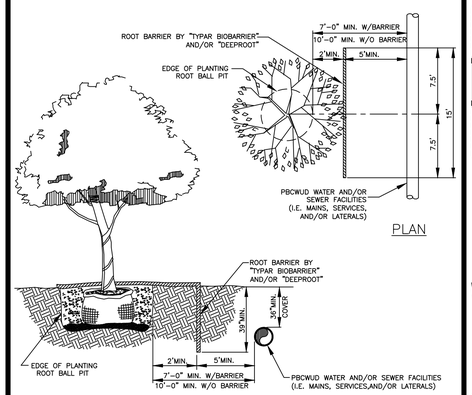
TYPICAL WASTEWATER SERVICE INSTALLATION FOR VACUUM SEWER * 87S



NOTES:

1. RIP–RAP RUBBLE AND ITS INSTALLATION MUST MEET CANAL OWNERSHIP SPECIFICATIONS AND PERMITTING REQUIREMENTS.
2. DUMP RUBBLE IN PLACE FORMING A COMPACT LAYER CONFORMING TO THE CANAL DESIGN SECTION SLOPE. ENSURE THAT RUBBLE DOES NOT SEGREGATE SO THAT SMALLER PIECES EVENLY FILL THE VOIDS BETWEEN LAGER PIECES.
3. AN ALTERNATIVE DESIGN WILL BE CONSIDERED AND MUST RECEIVE PRIOR APPROVAL FROM THE CANAL PROPERTY OWNER.

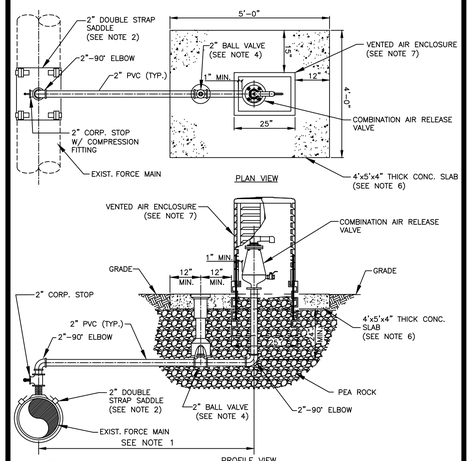
RIP–RAP RUBBLE DETAIL (N.T.S.) * 88S



NOTES:

1. TREES SHOWN ON THIS PLAN ARE FOR GRAPHIC REPRESENTATION ONLY. TREE SPACING IS BASED ON DESIGN REQUIREMENTS AND THE TREES SHOWN ON THESE PLANS ATTEMPT TO ACCOMPLISH THAT SPACING WHILE MAINTAINING THE REQUIRED SETBACKS FROM UTILITIES. TREES MAY BE FIELD ADJUSTED TO AVOID CONFLICTS WITH DRIVEWAYS AND UNDERGROUND UTILITIES. IN ANY CASE THE TREES SHALL BE LOCATED IN THE FIELD IN ACCORDANCE WITH THE PLANTING DETAILS SHOWN HEREON.
2. TREES ARE TO BE INSTALLED WITH A TEN FOOT (10') SEPARATION FROM ANY WATER OR SEWER MAIN AND/OR SERVICE, HYDRANTS, AND LIFT STATIONS. IF A TEN FOOT (10') SEPARATION CANNOT BE ACHIEVED, THE TREE CAN BE INSTALLED WITH A ROOT BARRIER SYSTEM. HOWEVER, IN NO CASE SHALL A TREE ENCROACH INTO A PBCUE WITHOUT PRIOR DEPARTMENT APPROVAL.

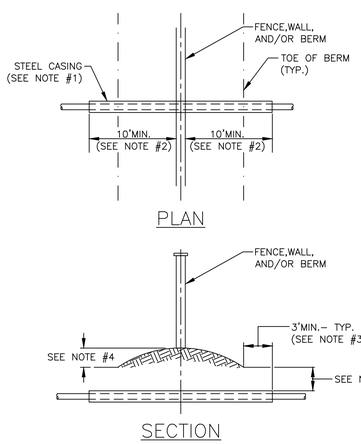
LANDSCAPE AND ROOT BARRIER DETAIL * 89S



NOTES:

1. OFF–SET DISTANCE VARIES ON LOCATION OF FORCE MAIN TO ARV ENCLOSURE. IN NO CASE SHALL THE OFF–SET DISTANCE EXCEED 10' UNLESS OTHERWISE APPROVED BY THE DEPARTMENT PRIOR TO INSTALLATION.
2. 2" DOUBLE STRAP SADDLE TO BE INSTALLED PERPENDICULAR TO FORCE MAIN IN THE DIRECTION OF TOP.
3. ALL PVC PIPING AND FITTINGS TO BE SCHEDULE 80.
4. 2" BALL VALVE AND CORPORATION STOP SHALL BE BRASS WITH COMPRESSION FITTINGS ON EACH END.
5. ALL FITTINGS AND VALVES SHALL BE COMPRESSION TYPE.
6. CONCRETE PAD FOR WATER METER ASSEMBLY SHALL BE 4" THICK WITH WIRE MESH (4"x4") CONCRETE PAD IS REQUIRED TO BE BROOM FINISHED.
7. VENTED ENCLOSURE SHALL BE CHANNELL COMPANY #SPH1420, SEE APPROVED MATERIALS AND EQUIPMENT LIST. ENCLOSURE SHALL BE CAPABLE OF ALLOWING THE SAME AMOUNT OF AIR FLOW AS THE ARV.
8. THIS FORCE MAIN OFF–SET ARV REQUIRES PREVIOUS DEPARTMENT APPROVAL PRIOR TO INSTALLATION.

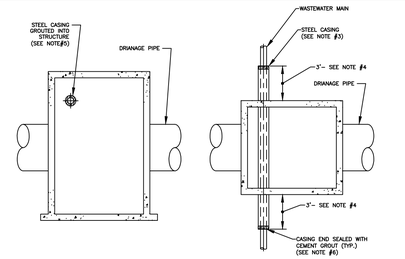
FORCE MAIN AIR RELEASE VALVE W/ VENTED AIR ENCLOSURE * 90S



NOTES:

1. STEEL CASING PER WUD STANDARD DETAIL 44S (SOLID CASING) OR WUD STANDARD DETAIL 44AS (SPLIT CASING) AS APPLICABLE.
2. STEEL CASING SHALL EXTEND TEN (10) FEET MINIMUM PAST FENCE OR WALL. FIVE (5) FEET MINIMUM MAY BE ACCEPTABLE ON A CASE–BY–CASE BASIS DUE TO SITE CONDITIONS AND ONLY WITH PRIOR DEPARTMENT APPROVAL.
3. STEEL CASING SHALL EXTEND THREE (3) FEET MINIMUM PAST THE TOE OF THE BERM. IF BERM CASING IS ASSOCIATED WITH A WALL OR FENCE INSTALLATION OF THE CASING SHALL EXTEND THREE (3) FEET MINIMUM PAST THE TOE OF THE BERM OR TEN (10) FEET MINIMUM PAST THE WALL OR FENCE WHICH EVER IS GREATER.
4. STEEL CASING INSTALLATION REQUIRED WHEN A BERM IS TWO (2) FEET OR HIGHER ABOVE SURROUNDING GRADE.
5. TOP OF STEEL CASING SHALL BE THREE (3) FEET MINIMUM BELOW THE TOE OF THE BERM OR BASE OF WALL OR FENCE ELEVATION WHICHEVER IS LOWER.

WASTEWATER MAIN CROSSING FENCE, WALL, OR BERM CASING DETAIL * 91S



WUD MAIN SIZE	DIAMETER OF STEEL CASING SIZE	OPENING SIZE FOR SOLID CASING	OPENING SIZE FOR SPLIT CASING
6"	14"	18"	20"
8"	20"	24"	26"
10"	20"	24"	26"
12"	24"	28"	30"

NOTES:

1. THE CONFLICT STRUCTURE IS TO BE DESIGNED PER CURRENT FDOT UTILITY CONFLICT THRU DRAINAGE STRUCTURE STANDARDS.
2. A SHOP DRAWING TO SCALE FOR EACH CONFLICT STRUCTURE INSTALLATION IS REQUIRED TO BE APPROVED BY THE DEPARTMENT PRIOR TO INSTALLATION.
3. STEEL CASING PER WUD STANDARD DETAIL 44S (SOLID CASING) OR WUD STANDARD DETAIL 44AS (SPLIT CASING) FOR EXISTING WASTEWATER MAIN ONLY.
4. STEEL CASING SHALL EXTEND THREE (3) FEET PAST EACH SIDE OF STRUCTURE. CASING CAN EXTEND FURTHER PAST THE STRUCTURE WHEN EXISTING CONDITIONS WARRANT AND ONLY PRIOR TO DEPARTMENT APPROVAL.
5. STEEL CASING SHALL BE GROUTED IN PLACE WITH NON–SHRINKABLE CEMENT GROUT TO PROVIDE A WATERTIGHT SEAL TO PREVENT ANY LEAKAGE INTO THE STRUCTURE.
6. NON–SHRINKABLE CEMENT GROUT TO BE INSTALLED AT EACH END OF CASING TO OBTAIN WATERTIGHT SEAL.
7. 16" AND LARGER WASTEWATER MAINS REQUIRING A CONFLICT STRUCTURE WILL BE CONSIDERED BY THE DEPARTMENT ONLY WHEN EXTREME CIRCUMSTANCES EXIST WHEN THE MAIN CANNOT BE DEFLECTED AROUND THE DRAINAGE PIPE.

WASTEWATER MAIN CONFLICT STRUCTURE DETAIL * 92S

WASTEWATER #6 STANDARD DETAILS

CONSULTANT:

CAULFIELD & WHEELER, INC.
CIVIL ENGINEERING - LAND PLANNING
LANDSCAPE ARCHITECTURE - SURVEYING
7900 GLADES ROAD - SUITE 100
BOCA RATON, FLORIDA 33434
PHONE (561) 392-1991 / FAX (561) 750-1452

IT'S THE LAW ! CALL 48 HOURS BEFORE YOU DIG 1-800-432-4770 SUNSHINE STATE ONE CALL OF FLORIDA, INC. UTILITIES NOTIFICATION CENTER

DESIGNED BY: WUD
DRAWN BY: M. BUCKNER
CHECKED BY: J. LAMMERT
APPROVED BY: WUD

Palm Beach County
Water Utilities Department
P.O.Box 16097
West Palm Beach, FL 33416–6097

SEAL

MATTHEW V. KAHN
PROFESSIONAL ENGINEER
LICENSE NO. 82227
STATE OF FLORIDA
– FOR THE FIRM –
DATE

WUD PROJECT No. 23–575

SHOPS AT INDIAN TRAILS
A.K.A.COCONUT CROSSING

PALM BEACH COUNTY
WATER UTILITIES DEPARTMENT
P.O. BOX 16097
WEST PALM BEACH, FL 33416
(561)493–6000

NO.	DATE	REVISION / REMARKS	BY
*	JUNE 2019	GENERAL REVISION	JJL
*	OCT 2021	GENERAL REVISION	JJL
*	JAN 2023	GENERAL REVISION	JJL

STD DETAILS

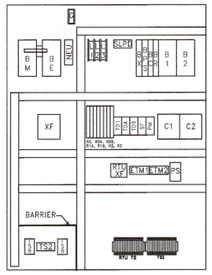
SHEET NUMBER C–33 OF 45

Drawing: P:\07714-15-42-41\drawings\eng\details\7714WS Details.dwg\C-33 - Last Modified: Fri, Dec 13, 2024 - 4:14pm

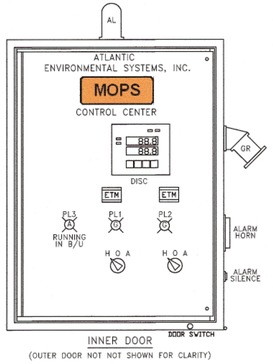
MOPS CONTROL CENTER

CONTROL CENTER DESIGNED & MANUFACTURED TO MEET ALL D.E.P. REQUIREMENTS

SEE SCHEDULE FOR ELECTRICAL SERVICE REQUIREMENTS



INTERIOR LAYOUT



INNER DOOR
(OUTER DOOR NOT NOT SHOWN FOR CLARITY)

PANEL COMPONENTS

ALT	ALTERNATOR (IN DISC)
AS	ALARM SILENCE SWITCH
B1-2	MOTOR BREAKERS
BC	CONTROL BREAKER
BE	EMERGENCY BREAKER
BM	MAIN BREAKER
BR	GFI RECEPTACLE BREAKER
BPS	POWER SUPPLY BREAKER
BX	TRANSFORMER BREAKER
C1-2	MOTOR START CONTACTORS
CR	GFI CONVENIENCE RECEPTACLE
DISC	DUPLEX INTRINSICALLY- SC100 SAFE CONTROLLER
ETM	ELAPSED TIME METER
G	GROUND
GR	GENERATOR RECEPTACLE
H	HORN
HOA	HAND-OFF-AUTO SWITCH- GE (ON DISC)
NEU	NEUTRAL
PL1,2,3	PILOT LIGHT (GE)
PM	PHASE MONITOR
PS	POWER SUPPLY
R2-3	RELAYS
RBA	BRATTERY RELAYS
RS	SILENCE RELAY
R1A	RELAYS
RTUXF	RTU TRANSFORMER
SF	SEAL FAIL RELAY
SLPD	SURGE/LIGHTNING PROTECTION DEVICE
TS1	TERMINAL STRIP FOR PUMPS
TS2	TERMINAL STRIP FOR I.S.
XF	50/60Hz 0.5KVA TRANSFORMER

ENCLOSURE

NEMA 4X STAINLESS STEEL
SINGLE DOOR w/PADLOCK HASP
ALUMINUM INNER (DEAD FRONT) DOOR
30"H x 30"W x 8"D
PANEL LABELED FOR U.L. 508A "MOTOR CONTROL CENTERS" AND U.L. 698A "HAZARDOUS LOCATION PANELS"

NOTE:

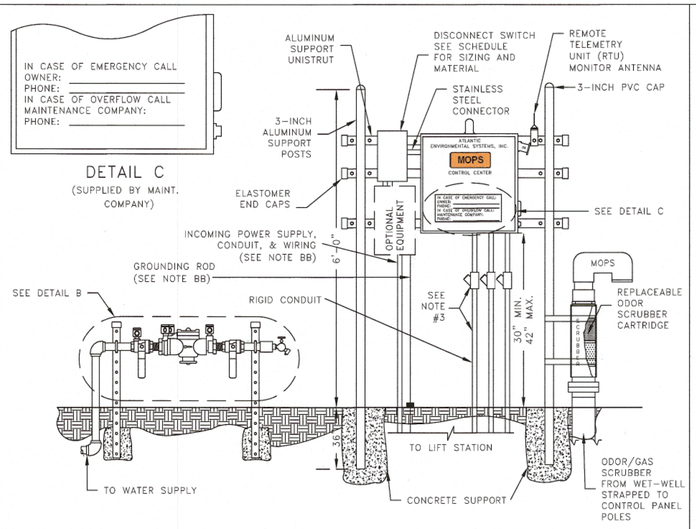
SEE CONTROL PANEL DETAIL SHEET FOR ADDITIONAL NOTES.

27	NEU	NEU	120	120	120	#1-20	COM	SF1	SF2	T1	T2	T3
DOOR	NEU		120V			RTU TERMINALS		PUMP SEAL FAIL		MOTOR LEADS		

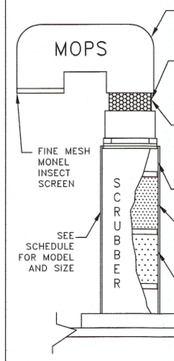
TS1 TERMINAL SCHEDULE

15	16	P1	T1	T2	T3	17	18	P2
MT1 MOTOR 1		GND	MOTOR 2 LEADS			MT2 MOTOR 2		GND

TS2 TERMINAL SCHEDULE



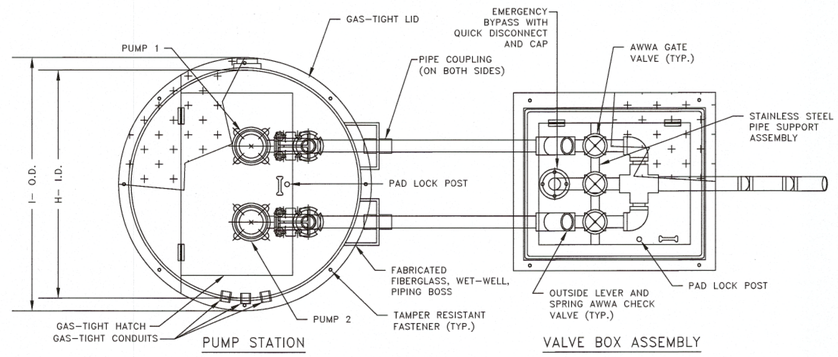
CONTROL CENTER ASSEMBLY AND INSTALLATION N.T.S.



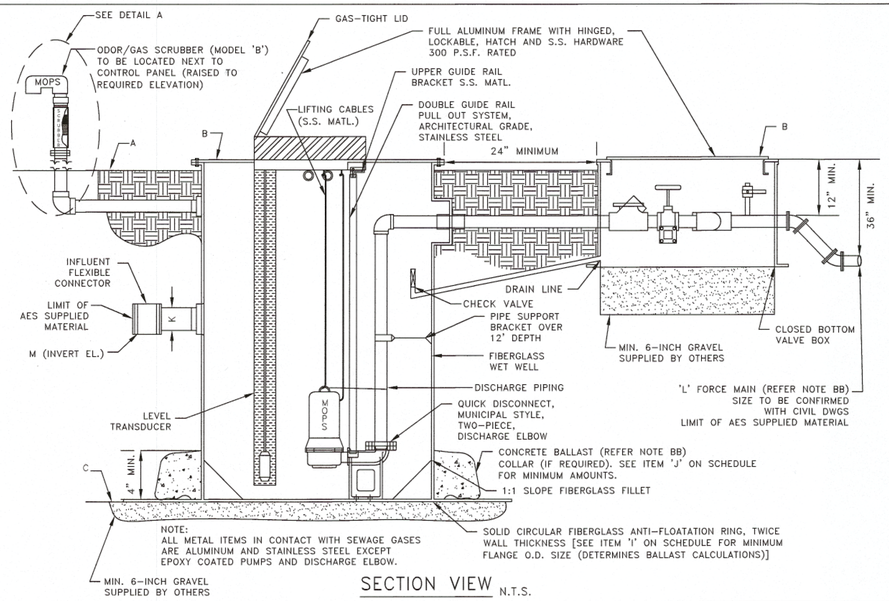
DETAIL A

MOPS ODOR/GAS SCRUBBER

NOTES:
1. SCRUBBER DESIGNED TO REMOVE TOXIC SEWAGE GASES, H2S, AND OFFENSIVE ODORS SUCH AS SKATOLES AND MERCAPTANS.
2. SCRUBBER'S LIFE EXPECTANCY CALCULATIONS ARE INCLUDED IN SHOP DRAWING SUBMITTALS.
3. SCRUBBER UNIT CAN BE MOUNTED INSIDE WET-WELL OR TOP MOUNTED.
4. MODEL 'B' SHOWN.

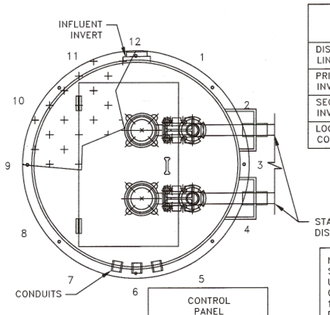


TOP VIEW N.T.S.



SECTION VIEW N.T.S.

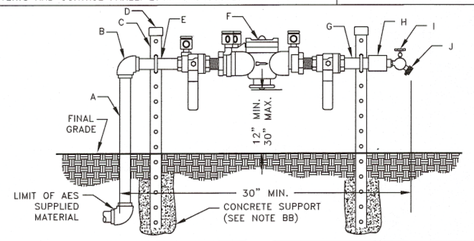
HUB AND INVERT LOCATION



ITEMS	CLOCK POSITION
DISCHARGE LINES	3:00
PRIMARY INVERT	12:00
SECONDARY INVERT	N/A
LOCATION OF CONTROL PANEL	6:00

SCHEMATIC BASED ON THE STATION'S DISCHARGE BEING LOCATED AT THE #3 CLOCK POSITION. SEE SCHEDULE FOR LOCATION OF INVERTS AND CONTROL PANEL. LOCATIONS SUBJECT TO CHANGE.

NOTE: BACKFILL AROUND LIFT STATION FROM ANTI-FLOATATION RING UP TO FINISHED GRADE SHALL BE COMMON FILL COMPACTED IN 12-INCH MAX. LIFTS TO 98% DENSITY PER AASHTO T-180. CONTRACTOR SHALL EXERCISE CARE NOT TO DAMAGE WETWELL DURING COMPACTION.



MATERIALS		
ITEM	QTY.	DESCRIPTION
A	1	3/4" x 36" S.S. NIPPLE
B	1	3/4" S.S. 90° ELBOW
C	2	1-5/8"x1-5/8"x40" ALUM. SUPPORT BRACKET
D	2	SUPPORT BRACKET CAPS P/N 2150
E	2	3/4" S.S. PIPE BOLTS

MATERIALS		
ITEM	QTY.	DESCRIPTION
F	1	3/4" APP. BACKFLOW PREVENTER
G	2	3/4" x 3" S.S. NIPPLE
H	1	3/4" x 3/4" S.S. COUPLING
I	1	3/4" BRONZE HOSE BIB
J	1	3/4" VACUUM BREAKER

DETAIL B

R.P.Z. BACKFLOW PREVENTER ASSEMBLY DETAIL

U.S.C. AND A.S.S.E. APPROVED N.T.S.

MOPS

PRIVATE SERIES

MANUFACTURED ODORLESS PUMP STATION
ATLANTIC ENVIRONMENTAL SYSTEMS, INC.
LAKE WORTH, FL 33461
PH: (561) 547-8080 FAX: (561) 547-3999

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MOPS PUMP STATION SCHEDULE

MOPS SERIES		ITEM	DESCRIPTION	
INITIAL DESIGN FLOW (G.P.M.)	140		100 YEAR FLOOD ELEVATION	19.27'
INITIAL DESIGN HEAD (T.D.H.)	108'		25 YEAR FLOOD ELEVATION	18.65'
SECONDARY DESIGN FLOW (G.P.M.)	277	A	GRADE ELEVATION	20.05'
SECONDARY DESIGN HEAD (T.D.H.)	78'	B	TOP ELEVATION OF WET WELL	20.05'
RATED PERFORMANCE SPEED	3450	C	BOTTOM ELEVATION OF WET WELL	0.05'
RATED MOTOR HORSEPOWER	20	D	ALL PUMPS OFF ELEVATION	3.00'
SUBMERSIBLE PUMP TYPE (P-1,P-2)	NON-CLOG	E	LEAD PUMP ON ELEVATION	5.50'
PUMP MODEL NUMBER	MOPS	F	LAG PUMP ON ELEVATION	6.50'
SERVICE ENTRANCE VOLTAGE	208	G	HIGH ALARM ELEVATION	7.50'
SERVICE ENTRANCE PHASE	3	H	INSIDE DIAMETER OF WET-WELL	72"
CONTROL CENTER FULL LOAD AMPS	122	I	OUTSIDE DIAMETER OF ANTI-FLOATATION RING	96"
NEMA 3R PAINTED STEEL DISCONNECT SWITCH, RATED AMPS	200	J	MINIMUM CUBIC FEET OF CONCRETE BALLAST (CU YDS)	297/(11)
WET WELL SCOURER SYSTEM	N/A	K	INVERT PIPE DIAMETER	8"
REMOTE STATION MONITOR (TELEMETRY)	W/SA	L	FORCE MAIN DIAMETER	4"
ON-SITE GENERATOR SYSTEM	N/A	M	PRIMARY INVERT ELEVATION	8.62'
		N	SECONDARY INVERT ELEVATION	N/A

MOPS EQUIPMENT IDENTIFICATION	QTY.	MODEL DESIGNATION
MOPS PUMP STATION	1	A24-72240-C-20.0
MOPS VALVE BOX ASSEMBLY (VBA)	1	VBA-24
MOPS ODOR/GAS SCRUBBER (OGS)	1	OGS-B
MOPS R.P.Z. ASSEMBLY	1	75
MOPS CONTROL CENTER	1	PSC-222-20.0-T
MOPS DISCONNECT SWITCH	1	FDS-200-3-2-PS
MOPS CONTROL CENTER MOUNTING ASSEMBLY	1	CCMA-32AL
MOPS WET WELL SCOURER SYSTEM	0	N/A
MOPS REMOTE STATION MONITOR	1	PROVIDED WITH SERVICE AGREEMENT
1st YEAR SERVICE/MAINTENANCE CONTRACT	1	LEVEL 2 WITH REMOTE MONITOR
MOPS ON-SITE GENERATOR SYSTEM	0	N/A
MOPS FIELD SERVICE WORK	1	CONTROL INSTALLATION & START-UP

MOPS PUMP STATION COMPLIANCE NOTES:

THIS PUMP STATION DESIGN COMPLIES WITH THE FOLLOWING REQUIRED STANDARDS:
- STATE OF FLORIDA ENVIRONMENTAL PROTECTION STANDARDS
- FLORIDA ADMINISTRATIVE CODE (F.A.C.): 62-640.400- COLLECTION AND TRANSMISSION SYSTEMS
- NATIONAL ELECTRIC CODE (NEC) CLASS 1, DIVISION 1, GROUP D- HAZARDOUS LOCATIONS
- UNDERWRITER'S LABORATORIES (U.L.) 508A-MOTOR CONTROL CENTERS AND U.L. 698A-INSTRINSICALLY SAFE CONTROL CENTERS
- RECOMMENDED STANDARDS FOR WASTEWATER FACILITIES (2014 EDITION).

1. PUMPS ARE RATED BY FACTORY MUTUAL FOR CLASS 1, DIVISION 1, GROUP D ATMOSPHERES AS REQUIRED BY NEC.
2. THE CONTROL CENTER INCORPORATES INTRINSICALLY SAFE RELAYS AND IS LISTED TO UL 698A INTRINSICALLY SAFE FOR CLASS 1, DIVISION 1 ATMOSPHERES.
3. THE CONDUIT PROVIDED, ALONG WITH CONDUIT GAS-SEAL-OFFS, ARE RATED FOR CLASS 1, DIVISION 1 LOCATIONS.
4. THE WASTEWATER PUMPS AND THE CONTROL CENTER INCORPORATE A MECHANICAL SEAL FAILURE DETECTION AND NOTIFICATION SYSTEM.
5. THE CONTROL CENTER INCLUDES EITHER A REMOTE TELEMETRY UNIT (RTU) OR A SELF-CHARGING, BACK-UP ALARM SYSTEM TO OPERATE ON POWER FAILURE.
6. THE PUMP STATION INCORPORATES AN ODORLESS DESIGN WITH A SCRUBBER SYSTEM TO CONTROL TOXIC GASES AND ODORS FOR COMPLIANCE TO F.A.C. 62-604.400.
7. THE BOTTOM OF THE TOP RIM ELEVATION OF PUMP STATION MUST BE LOCATED AT A HIGHER ELEVATION THAN THE 25 YEAR FLOOD ELEVATION. THE LISTED 25 YEAR FLOOD ELEVATION PROVIDED BY SITE CIVIL ENGINEER.
8. THE BOTTOM ELEVATION OF THE MOPS CONTROL CENTER MUST BE LOCATED AT A HIGHER ELEVATION THAN THE 100 YEAR FLOOD ELEVATION. THE LISTED 100 YEAR FLOOD ELEVATION PROVIDED BY THE SITE CIVIL ENGINEER.

MOPS ENGINEERING NOTES:

AA. THE HORSEPOWER SHOWN ON THE SCHEDULE IS A MINIMUM HORSEPOWER REQUIREMENT BASED ON THE STATION'S DESIGN CRITERIA AND THE REQUIRE TORQUE. (LOWER RATED HORSEPOWER EQUIPMENT WILL NOT BE ACCEPTABLE.)
BB. THESE ITEMS ARE NOT SUPPLIED BY A.E.S. WITH THE MOPS STATION.
CC. INVERT ELEVATIONS BASED ON INSIDE BOTTOM OF PIPE.
DD. THE MOPS CONTROL ASSEMBLY CONSISTS OF THE FOLLOWING: CONTROL CENTER DISCONNECT SWITCH, MOUNTING ASSEMBLY, ELECTRICAL CONDUITS, AND SEAL-OFF. THESE ITEMS MUST BE SUPPLIED AND INSTALLED BY THE MOPS PUMP STATION MANUFACTURER TO VALIDATE MOPS WARRANTY PROGRAM.
EE. FOR STATIONS IN MIAMI-DADE COUNTY, THE MOPS PUMP STATION IS SUPPLIED WITH A REMOTE TELEMETRY MONITORING UNIT AND A.E.S. MAINTENANCE SERVICE. THE R.T.U. ALLOWS FOR MONITORING OF LAG ALARM, HIGH ALARM, AND POWER FAILURE PER CHAPTER 24.42.2(5). THE R.T.U. IS EQUIPPED WITH A BATTERY BACK UP AND IS INSTALLED ABOVE THE 100 YEAR FLOOD ELEVATION.

THE MOPS WASTEWATER PUMP STATION DESIGN AND EQUIPMENT SHOWN ON THIS DRAWING HAS BEEN REVIEWED, PERMITTED, AND CERTIFIED AS COMPLYING WITH ALL THE STATE OF FLORIDA D.E.P. AND LOCAL REQUIREMENTS. ANY SUBSTITUTION FROM THIS DESIGN MAY REQUIRE NEW PERMITS, APPLICATION FEES, AND ENGINEERING SERVICES FOR RE-CERTIFICATION AND DESIGN REVIEW.

P.E. CERTIFICATION: Bonnie McLeod 9/11/24

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BONNIE SERINA MCLEOD LICENSE No. 70797 STATE OF FLORIDA PROFESSIONAL ENGINEER

REVISION	DATE
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COCONUT CROSSING
CAULFIELD AND WHEELER
7900 GLADES ROAD, SUITE 100, BOCA RATON, FL 33434

Project:
Prepared For:

AES. Project No: 2150

Date: 05/09/2024

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