

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

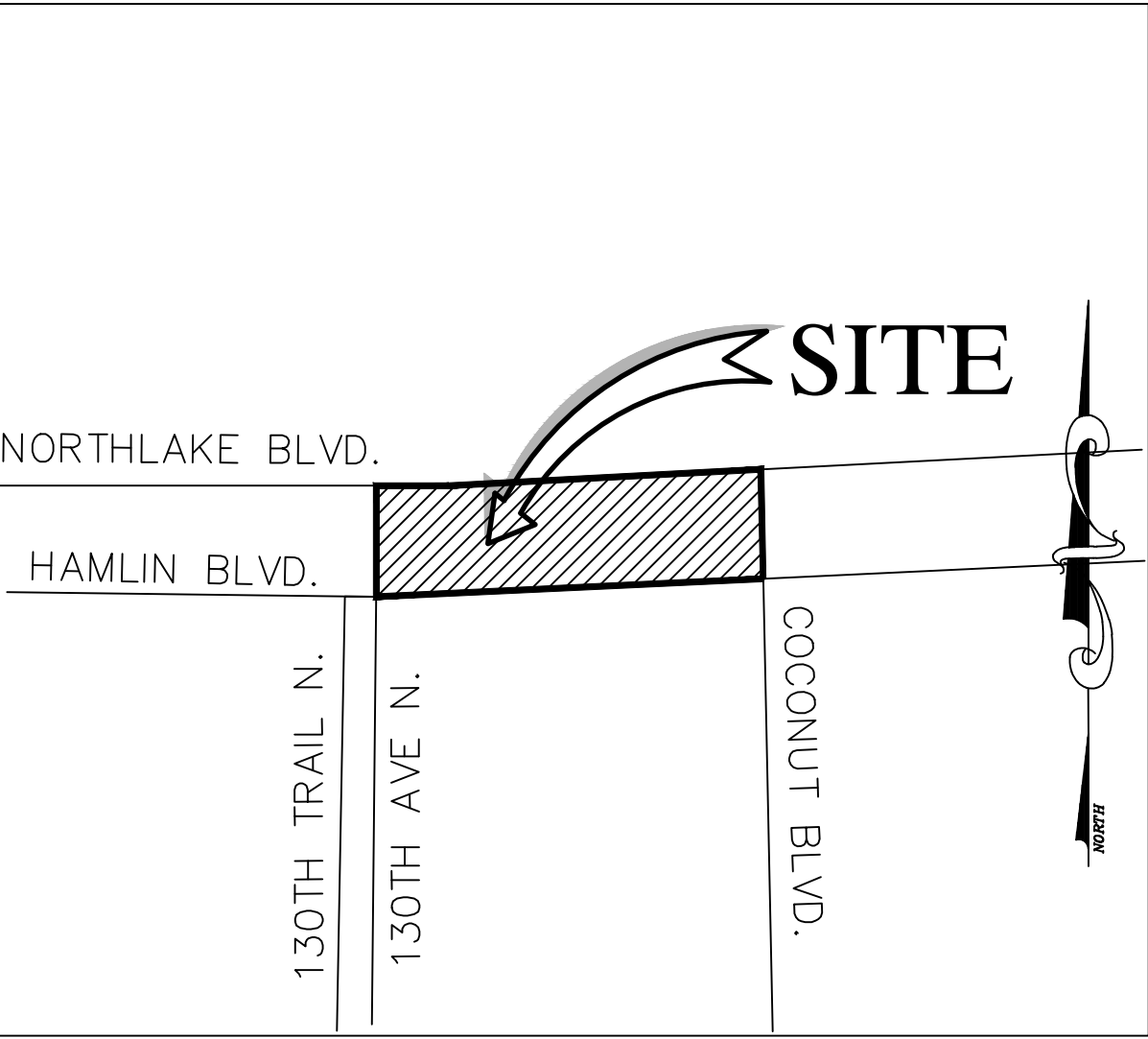
SHOPS AT INDIAN TRAILS A.K.A. COCONUT CROSSING

Palm Beach Gardens, Florida

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

INDEX

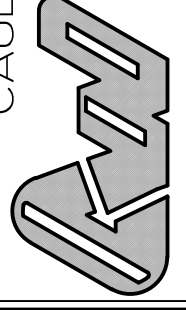
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LOCATION MAP
SECTION 15, TOWNSHIP 42S, RANGE 41E N.T.S.

REV. PER. PBQLD. COMMENTS	04/XX/25	MVK
REV. PER. PBQWD. 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 - 771ENC.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'

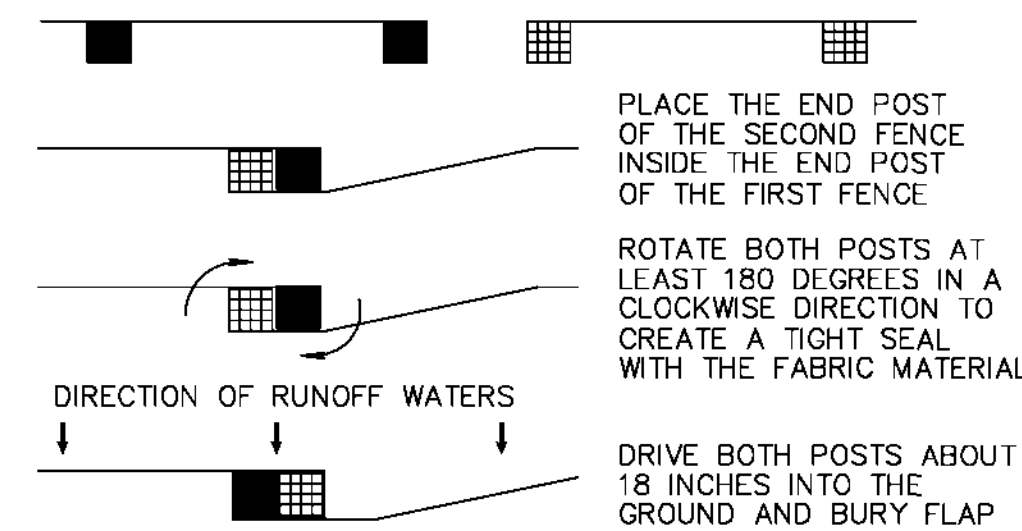
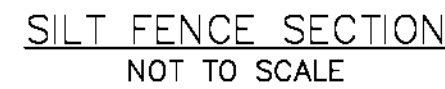
MATTHEW V. KAHN PROFESSIONAL ENGINEER LICENSE NO. 82227 STATE OF FLORIDA FOR THE FIRM - DATE

JOB # 7714-1 SHT.NO. C-1 OF 45 SHEETS
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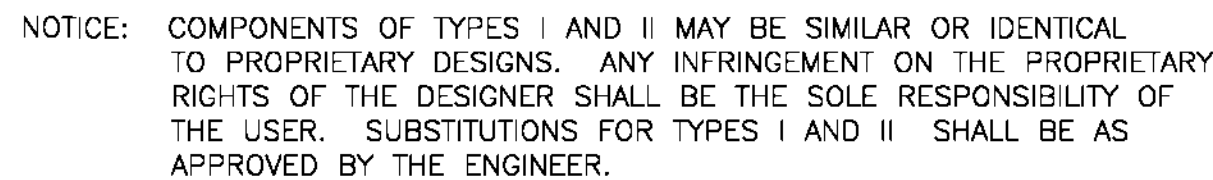
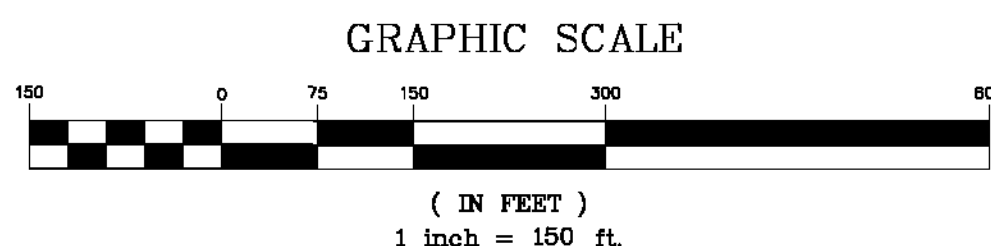
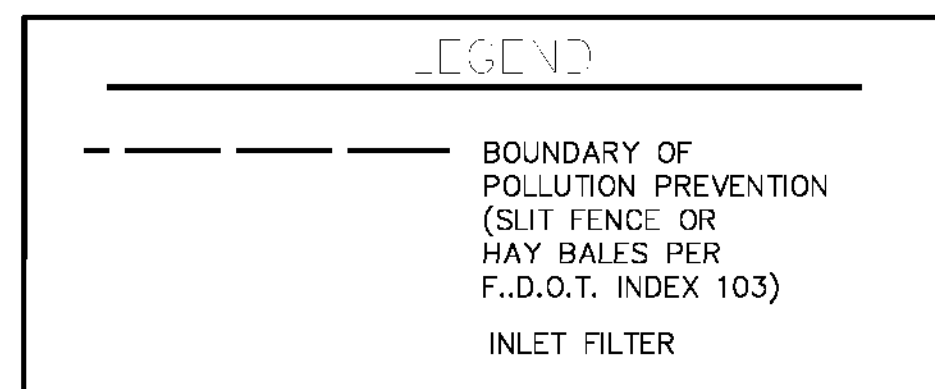
1. THE HEIGHT OF A SILT FENCE SHALL NOT EXCEED 36 INCHES (90 CM).
2. THE FILTER FABRIC SHALL BE PURCHASED IN A CONTINUOUS ROLL CUT TO THE LENGTH OF THE BARRIER TO AVOID THE USE OF JOINTS.
3. POSTS SHALL BE SPACED A MAXIMUM OF 10 FEET (3 M) APART AT THE BARRIER LOCATION AND DRIVEN SECURELY INTO THE GROUND 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, THE 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 ORIGINAL GROUND SURFACE.
7. THE TRENCH SHALL BE BACKFILLED AND THE SOIL COMPACTED OVER THE FILTER FABRIC.

SURFACE INSTALLATION OF A.D. 9.1a
 Sheet 1 of 2

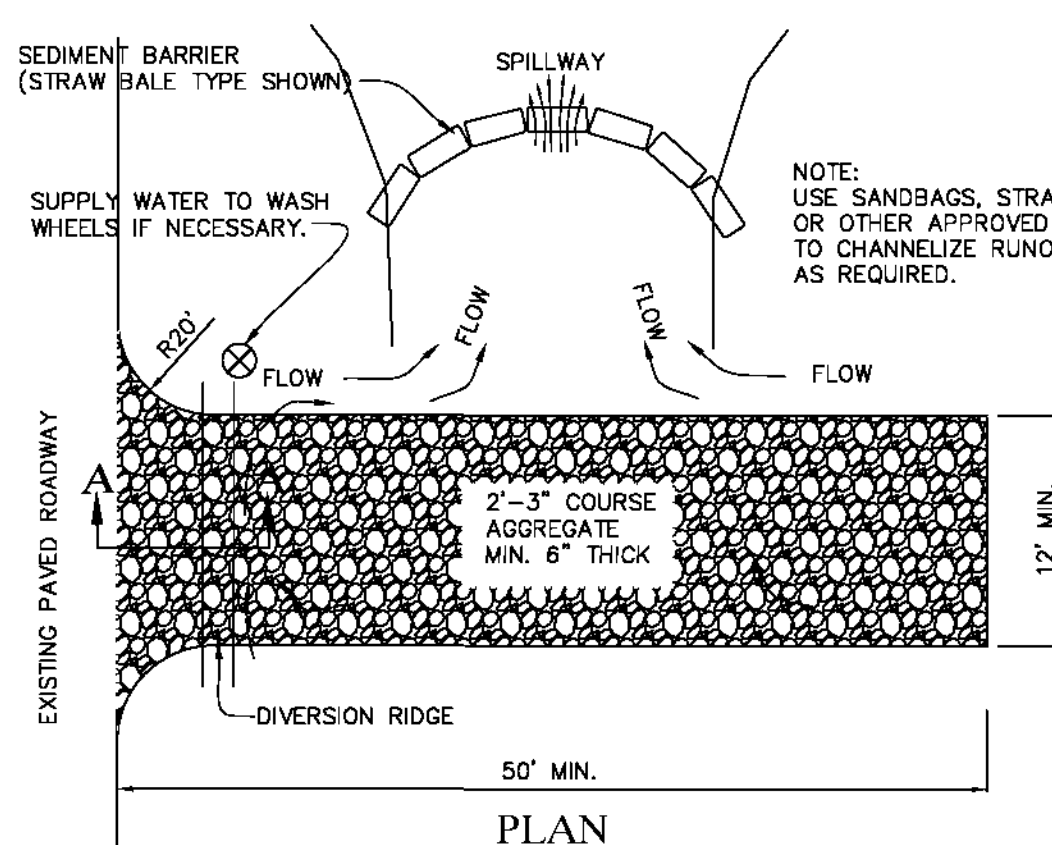


ATTACHING TWO SILT FENCES
NOT TO SCALE

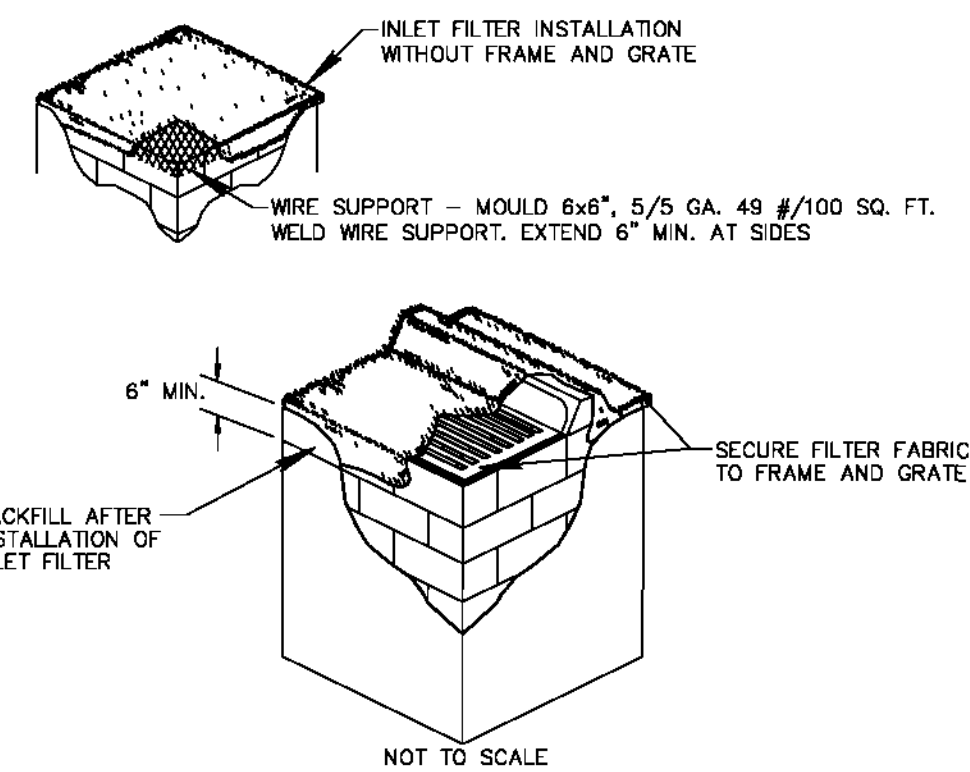
SILT FENCE INSTALLATION DETAIL D 0.1b
Steel 2' x 2'



FLOATING TURBIDITY BARRIERS



TEMPORARY GRAVEL CONSTRUCTION ENTRANCE
PLAT 4.03a
SOURCE: EROSION DRAW



- 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.

Figure 1: A diagram illustrating the relationship between the variables α , β , and γ . The diagram shows a central point labeled α connected to a point labeled β by a horizontal line. A vertical line segment connects β to a point labeled γ . A curved line segment connects α to γ . The diagram is labeled with α , β , and γ at the respective points.

REV PER	PCBLD	COMMENTS	04/XX/25	MVK
REV PER	PCBLD	PRECON	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			Z:\MVC\DWG	

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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**

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 # 114-1
SHT.NO. C-2
OF 45 SHEETS

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.

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

1767ND

-
-  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
 MATCH EXISTING ELEVATION
 GRADING CROSS-SECTION
 GENERAL UTILITY EASEMENT

1767ND

- | | |
|---|--|
|  | PROPOSED DRAINAGE PIPE |
|  | PROPOSED FORCE MAIN (SIZE NOTED) |
|  | PROPOSED RECLAIMED WATER LINE (SIZE NOTED) |
|  | PROPOSED GRAVITY SEWER LINE (SIZE NOTED) |
|  | PROPOSED WATER LINE (SIZE NOTED) |
|  | PROPOSED FPL ELECTRIC LINE |
|  | PROPOSED GATE VALVE AND BOX |
|  | PROPOSED REDUCER |
|  | FIRE HYDRANT |
|  | SAMPLE POINT |
|  | EXISTING WATER LINE |
|  | EXISTING GATE VALVE |
|  | EXISTING PIPE AND INLET |
|  | EXISTING SANITARY SEWER LINE |

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

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 PADDS, 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.

NORTHLAKE BLVD.

HAMLIN BLVD.

130TH TRAIL N.

130TH AVE N.

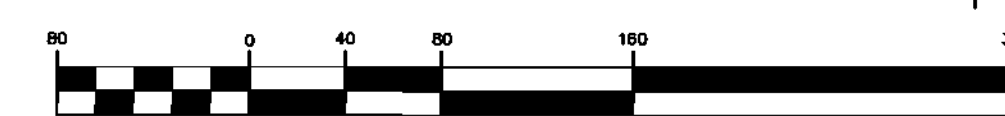
COCONUT BLVD.

SITE

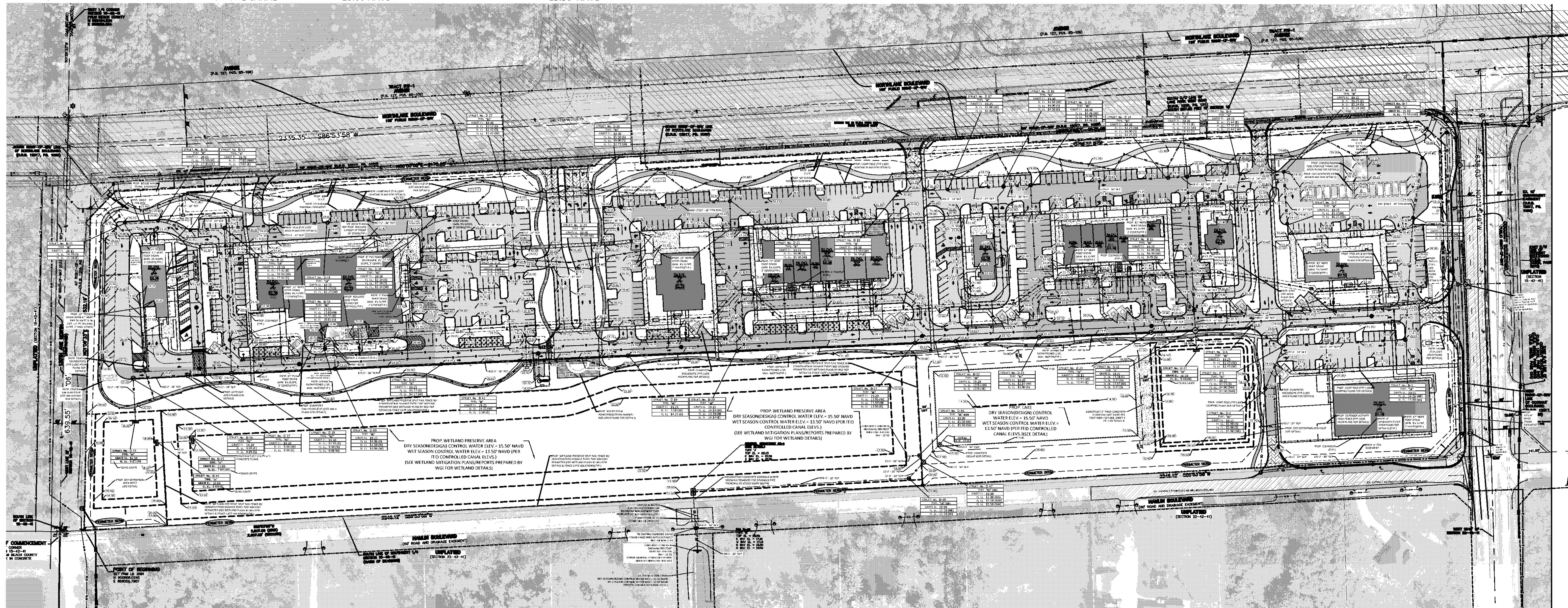
LOCATION MAP

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

GRAPHIC SCALE



(IN FEET)
1 inch = 80 ft.



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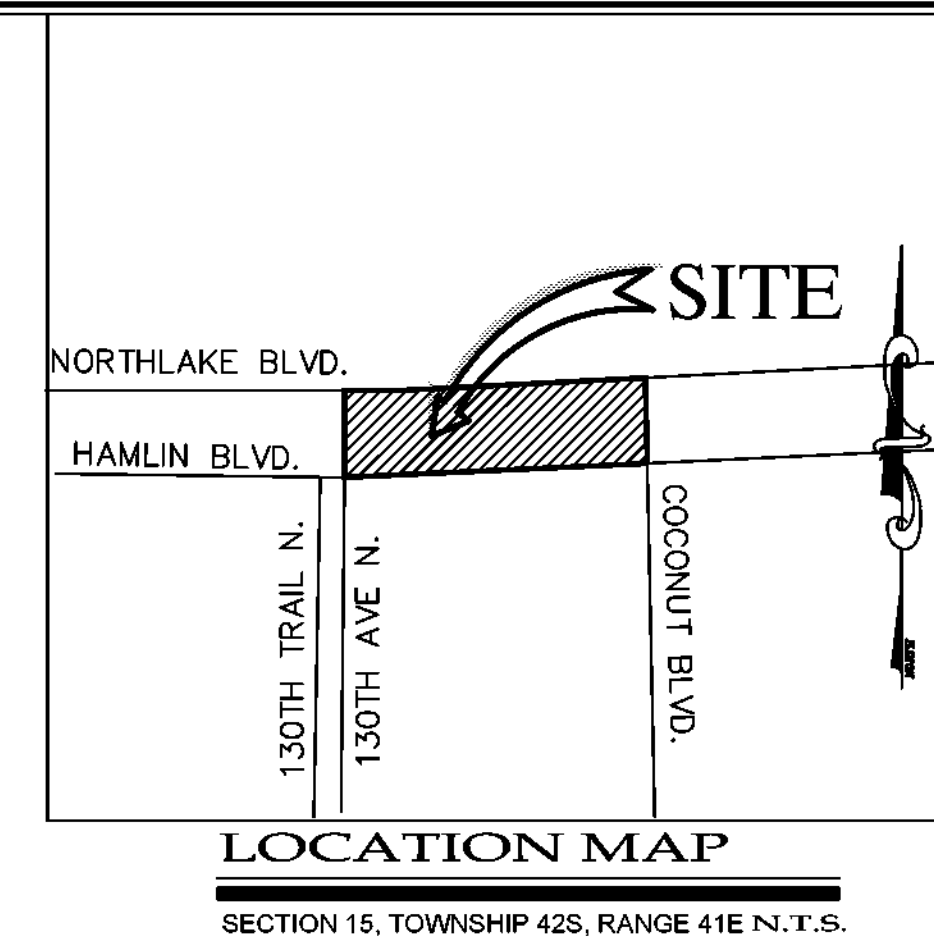
**SHOPS AT INDIAN TRAILS
A.K.A. COCONUT CROSSING**

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 # 114-1
SHT. NO. C-3
OF 45 SHEETS

NOTE: ELEVATIONS ARE NAVD 88
- CONVERSION FACTOR
 $(\text{NAVD } 88) = (\text{NGVD } 29) - 1.62$



			MVR
REV PER PRCDD COMMENTS		04/XX/25	MVR
REV PER PCWUD 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
SHEET NAME	Z246NC DWP.		

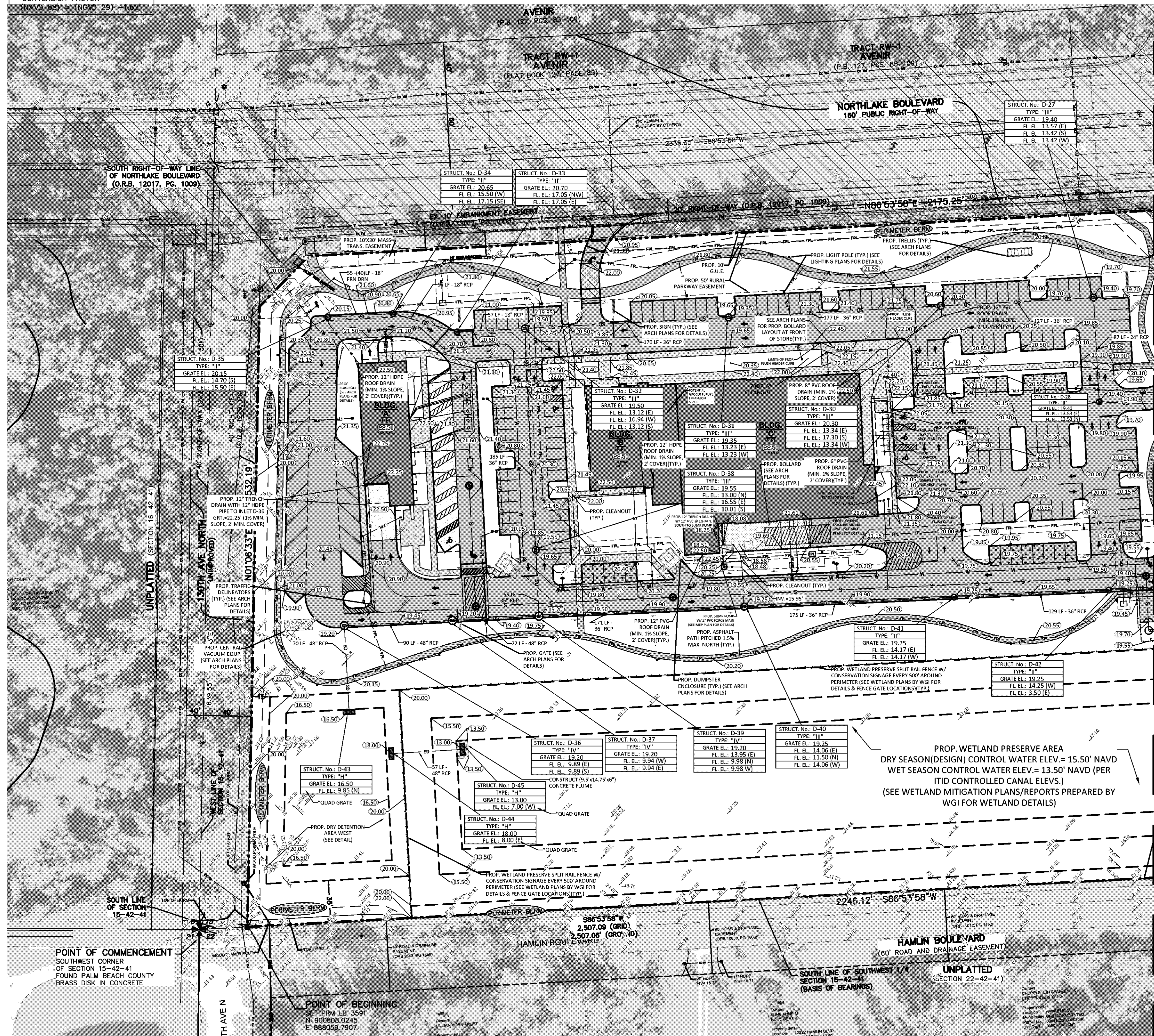
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BOCA RATON, FLORIDA 33434
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**SHOPS AT INDIAN TRAILS
A.K.A. COCONUT CROSSING
PAVING, GRADING AND DRAINAGE PLAN**

DATE	07/28/20
DRAWN BY	M.V.K.
F.B./ PG.	N/A
SCALE	1"=40'

MATTHEW V. KAHN
PROFESSIONAL ENGINEER
LICENSE NO. 8222
STATE OF FLORIDA
- FOR THE FIRM -
DATE

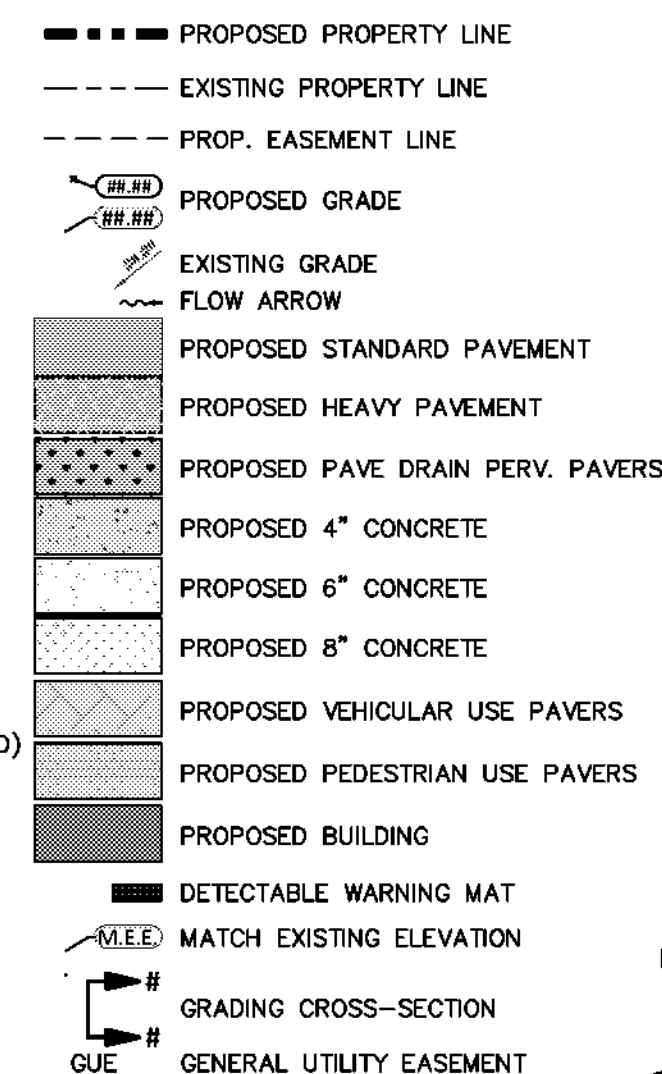
JOB # 7714-1
SHT.NO. C-4
OF 45 SHEETS



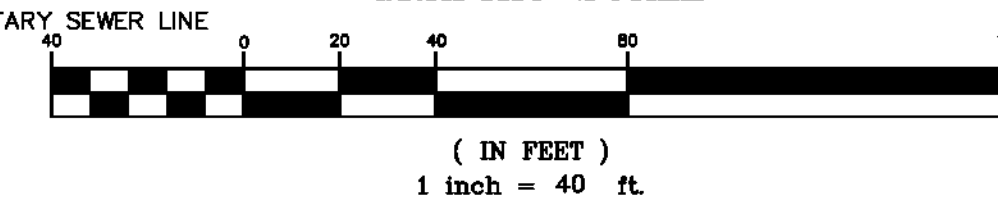
GENERAL NOTES:

- 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 WHILE COMMON 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



GRAPHIC SCALE

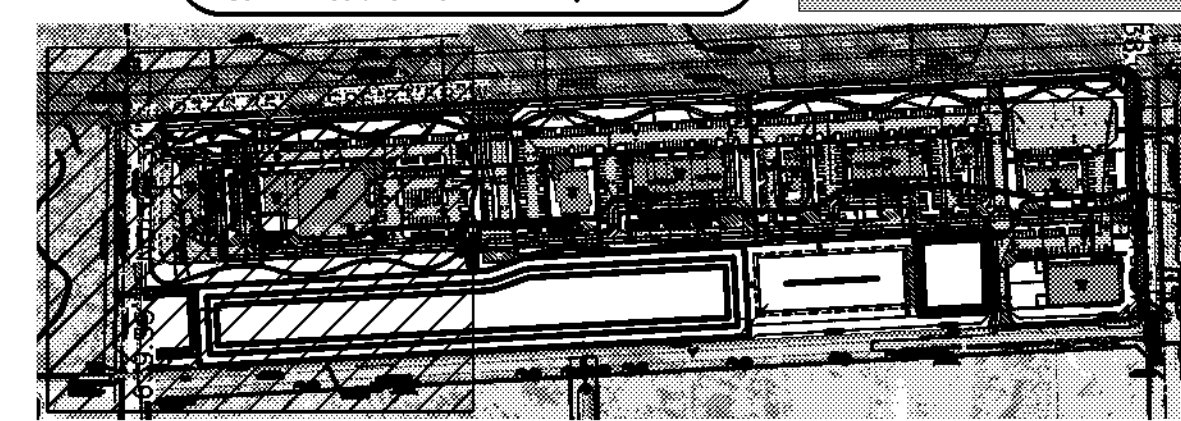


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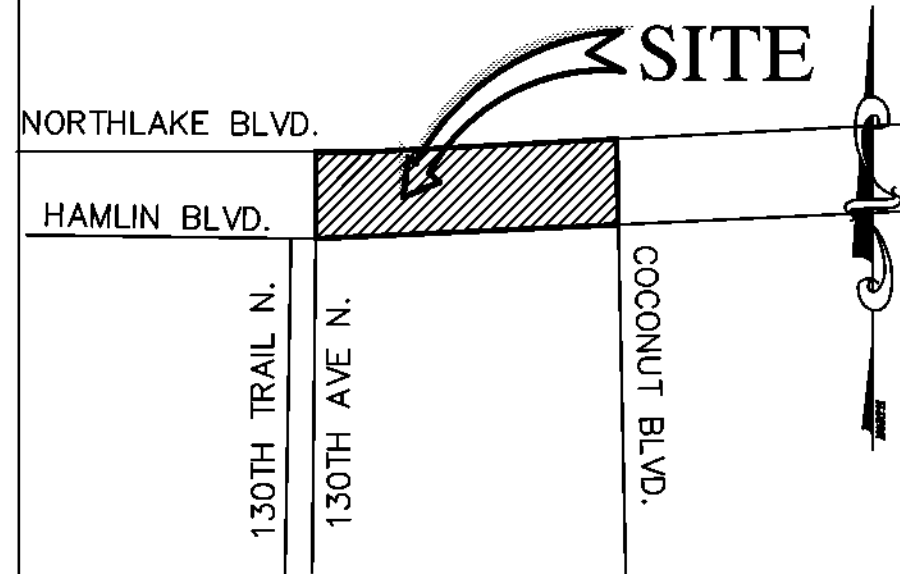
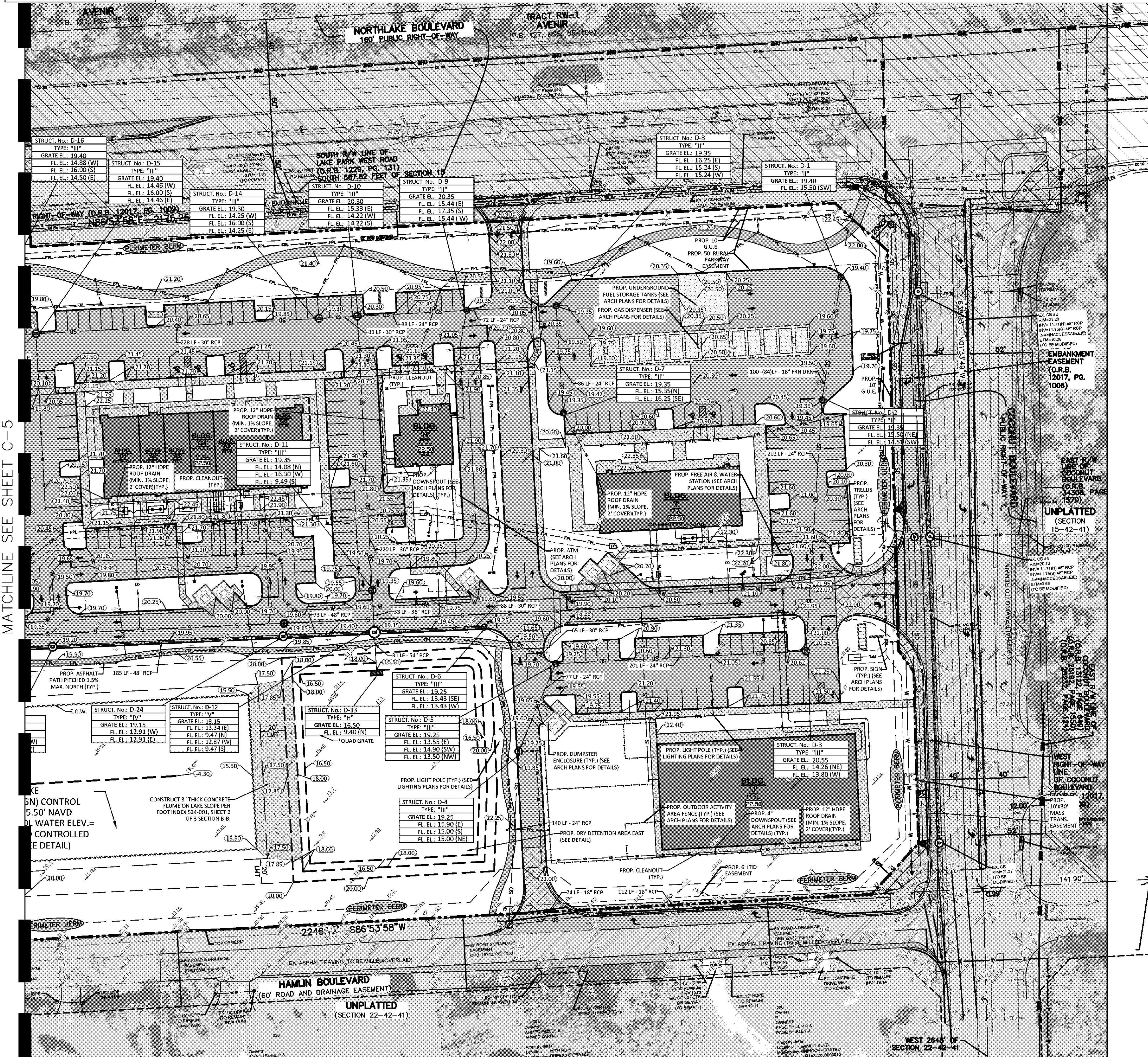
Sunshine State One Call of Florida, Inc.

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



KEY MAP

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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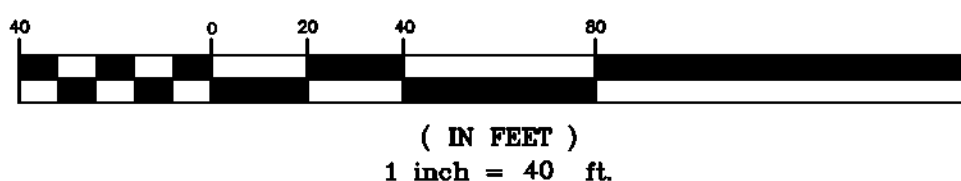
LEGEND

- PROPOSED PROPERTY LINE
- EXISTING PROPERTY LINE
- PROP. EASEMENT LINE
- PROPOSED GRADE
- EXISTING GRADE
- FLOW ARROW
- PROPOSED STANDARD PAVEMENT
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- PROPOSED PEDESTRIAN USE PAVERS
- PROPOSED BUILDING
- DETECTABLE WARNING MAT
- MATCH EXISTING ELEVATION
- GRADING CROSS-SECTION
- GENERAL UTILITY EASEMENT

LEGEND

- SD --- PROPOSED DRAINAGE PIPE
- FM --- PROPOSED FORCE MAIN (SIZE NOTED)
- RCVM --- 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
- EXVM --- EXISTING GATE VALVE
- EXSD --- EXISTING PIPE AND INLET
- EXSS --- EXISTING SANITARY SEWER LINE

GRAPHIC SCALE

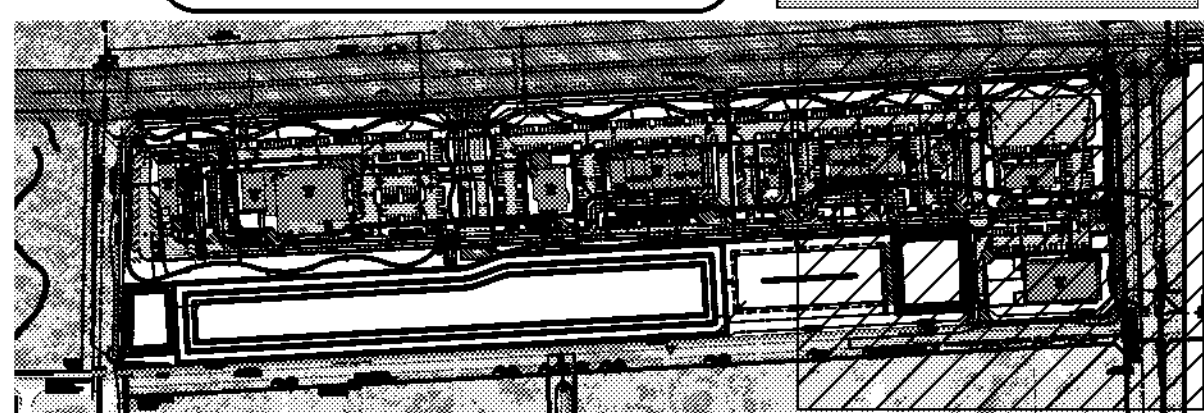


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Sunshine State One Call of Florida, Inc.

NOTE:
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DEPTH AND LOCATION OF
EXISTING UTILITIES PRIOR TO
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KEY MAP

REV	PER	PCD	COMMENTS	DATE
04/22/25	MVK			
03/11/25	MVK			
02/12/25	MVK			
01/14/25	MVK			
DATE	BY			

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

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'

LEGEND

- PROPOSED PROPERTY LINE
- EXISTING PROPERTY LINE
- PROP. EASEMENT LINE
- PROPOSED GRADE
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- 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
- GENERAL UTILITY EASEMENT

GENERAL NOTES:

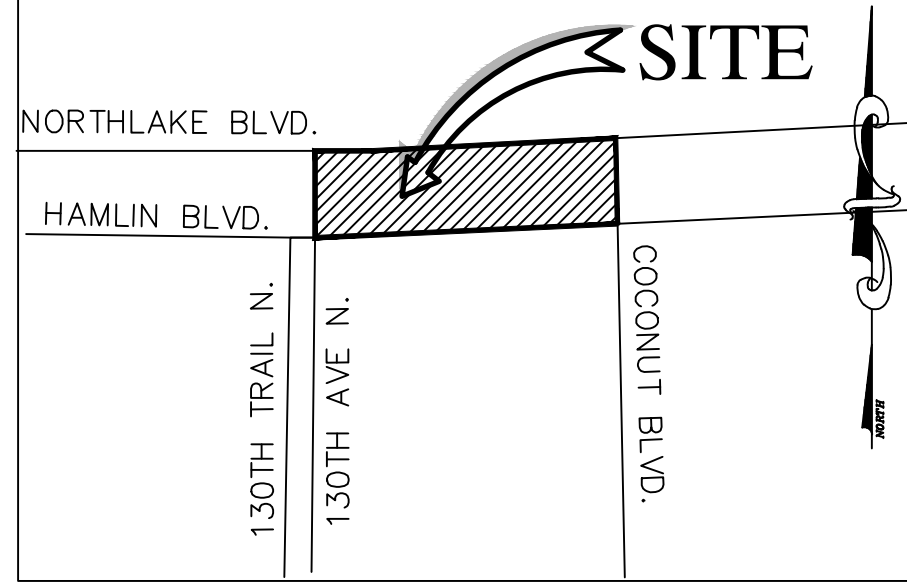
- 1.) CONTRACTOR TO VERIFY DEPTH AND LOCATION OF EXISTING UTILITIES PRIOR TO ANY CONSTRUCTION.
- 2.) ALL DRAINAGE SYSTEMS SHALL BE PUMPED COMPLETELY DRY AND LAMPED AS A REQUIREMENT OF THE FINAL DRAINAGE INSPECTIONS.
- 3.) ALL ONSITE SIDEWALK SHALL BE CONSTRUCTED AT 1.5% MAXIMUM CROSS SLOPE AND 5% MAXIMUM 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.

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

LEGEND

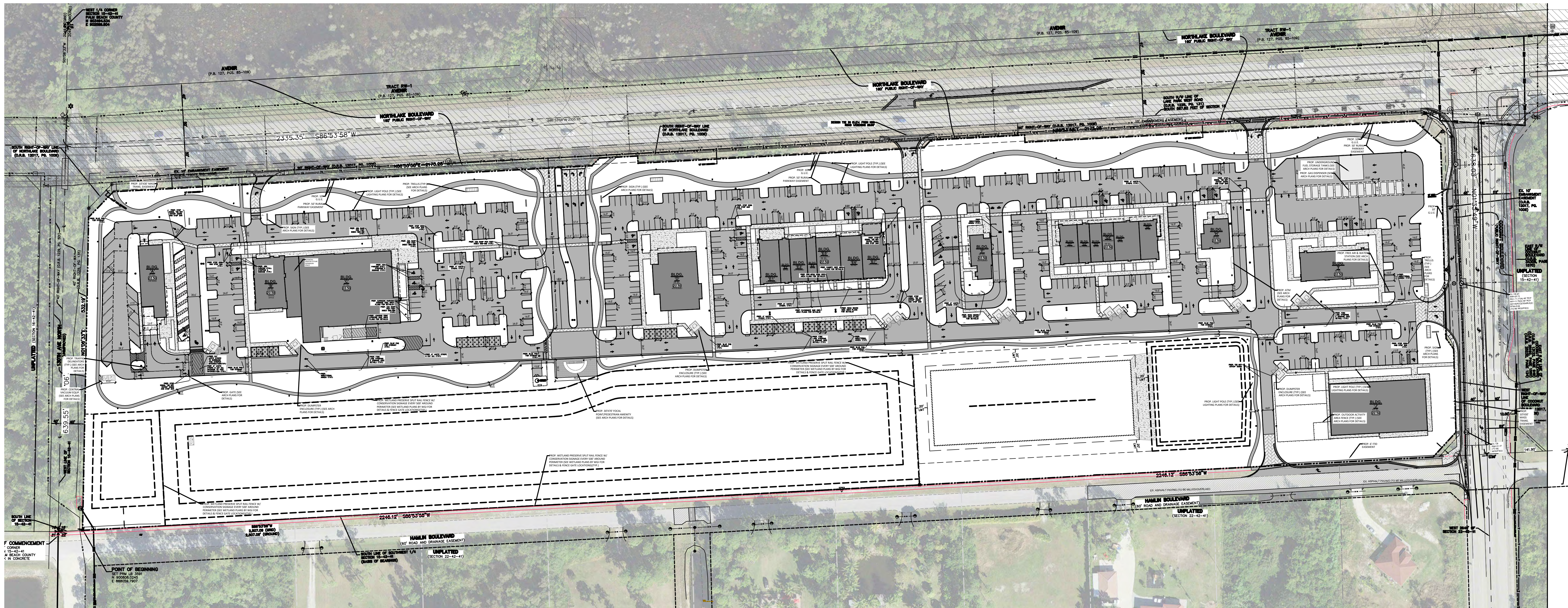
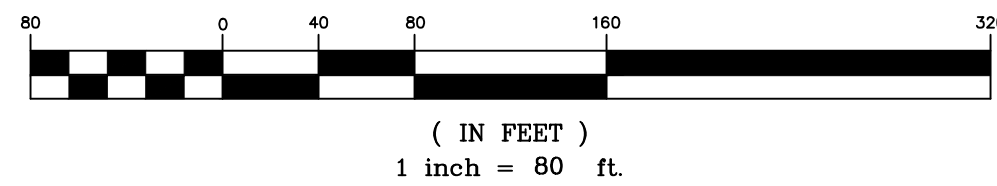
- SD PROPOSED DRAINAGE PIPE
- FM PROPOSED FORCE MAIN (SIZE NOTED)
- RCWM PROPOSED RECLAIMED WATER LINE (SIZE NOTED)
- S PROPOSED GRAVITY SEWER LINE (SIZE NOTED)
- V PROPOSED WATER LINE (SIZE NOTED)
- FPL PROPOSED FPL ELECTRIC LINE
- PROPOSED GATE VALVE AND BOX
- PROPOSED REDUCER
- FIRE HYDRANT
- SAMPLE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



LOCATION MAP

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

GRAPHIC SCALE



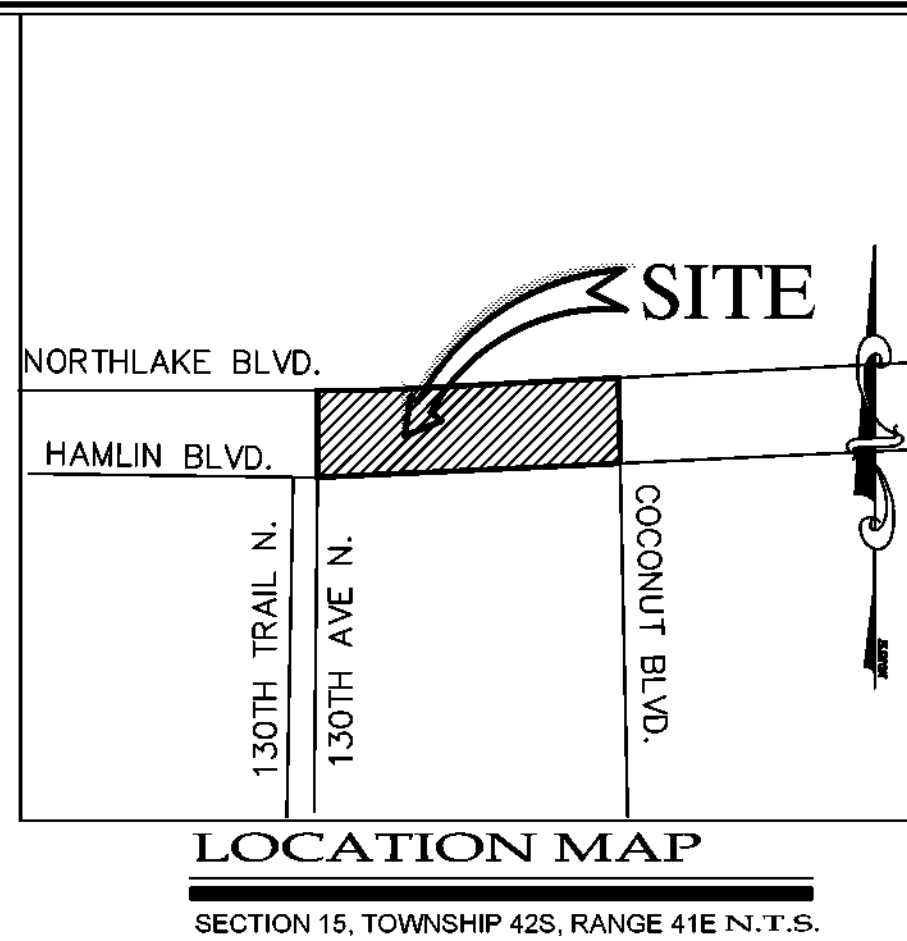
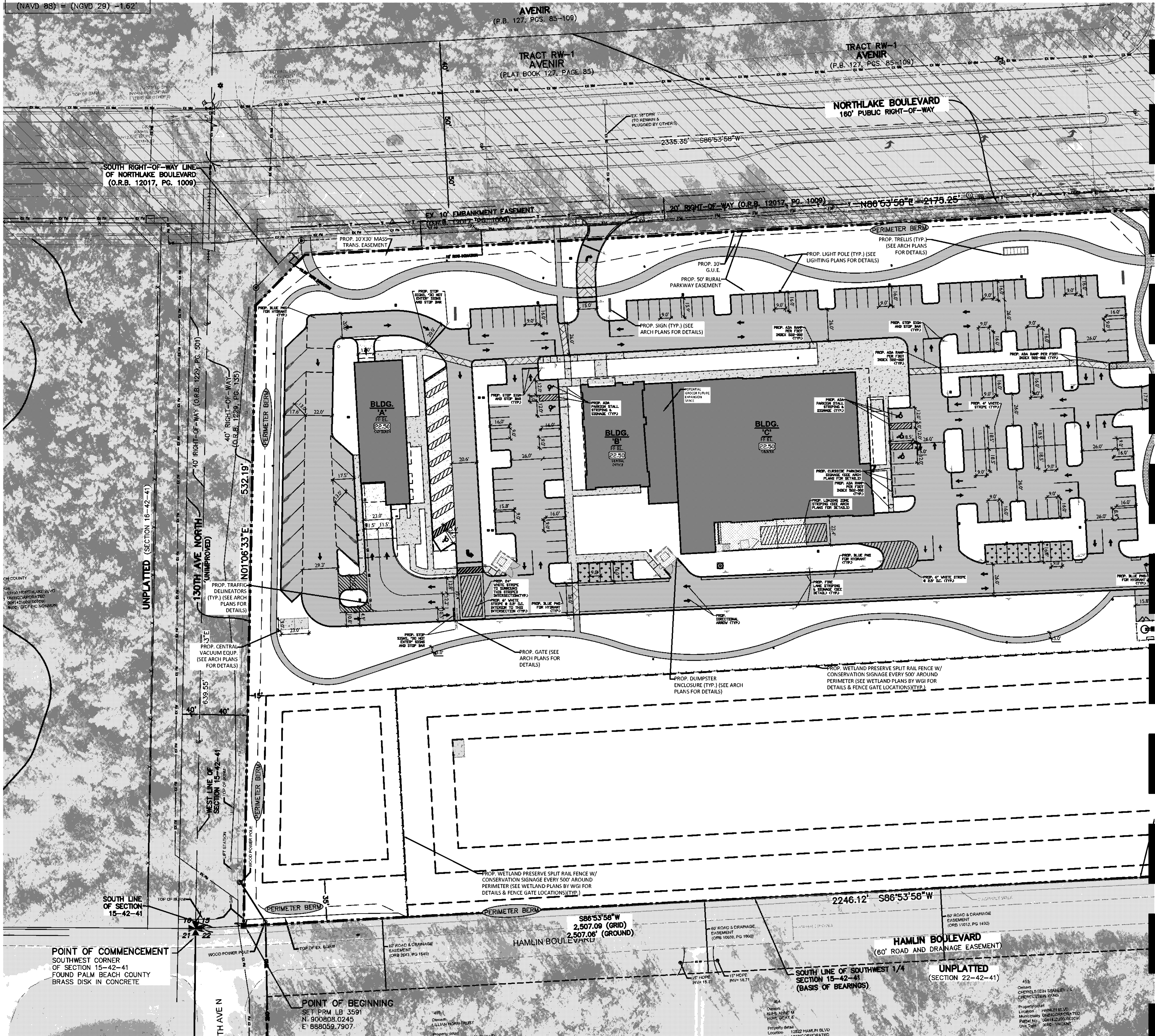
CAULFIELD & WHEELER, INC.
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LANDSCAPE DESIGN - SURVEYING
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PHONE (561)-392-1991 / FAX (561)-750-1452

SHOPS AT INDIAN TRAILS
A.K.A. COCONUT CROSSING
OVERALL PAVEMENT MARKING
& SIGNAGE PLAN
SWC NORTH LAKE BLVD. & COCONUT BLVD
PALM BEACH GARDENS, FLORIDA

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

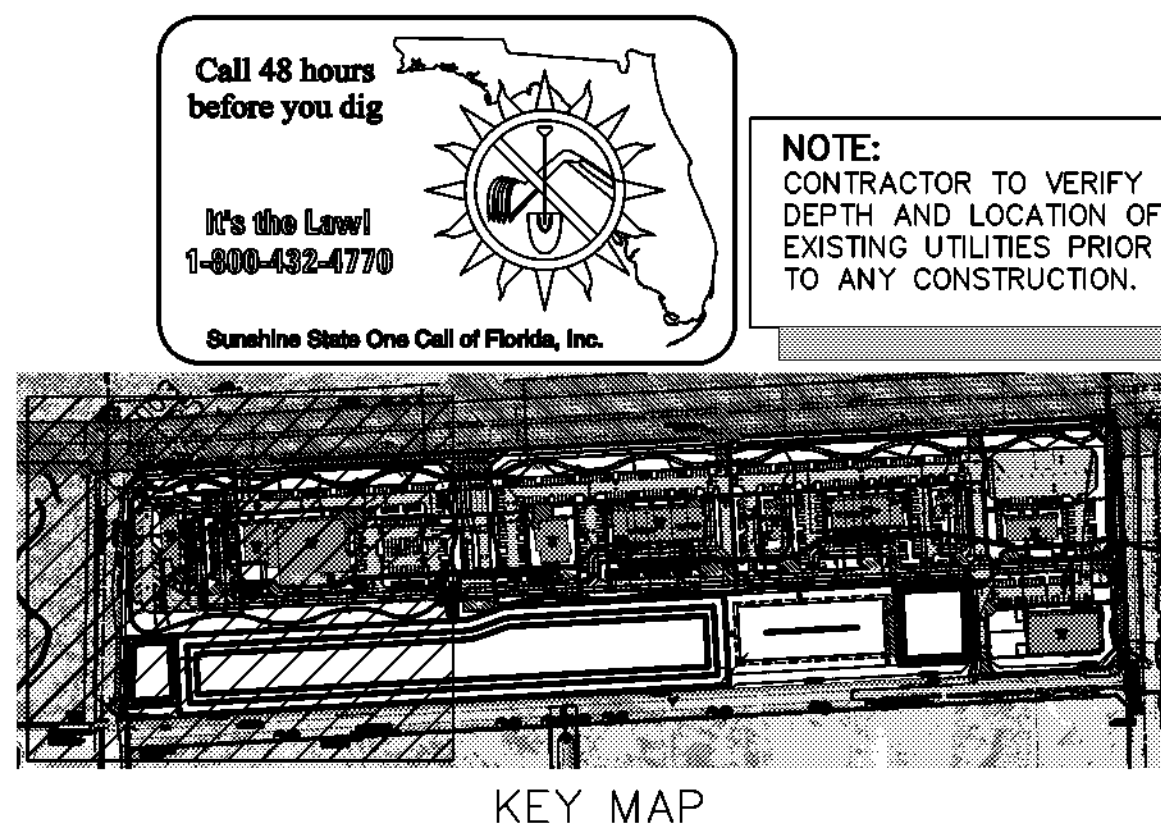
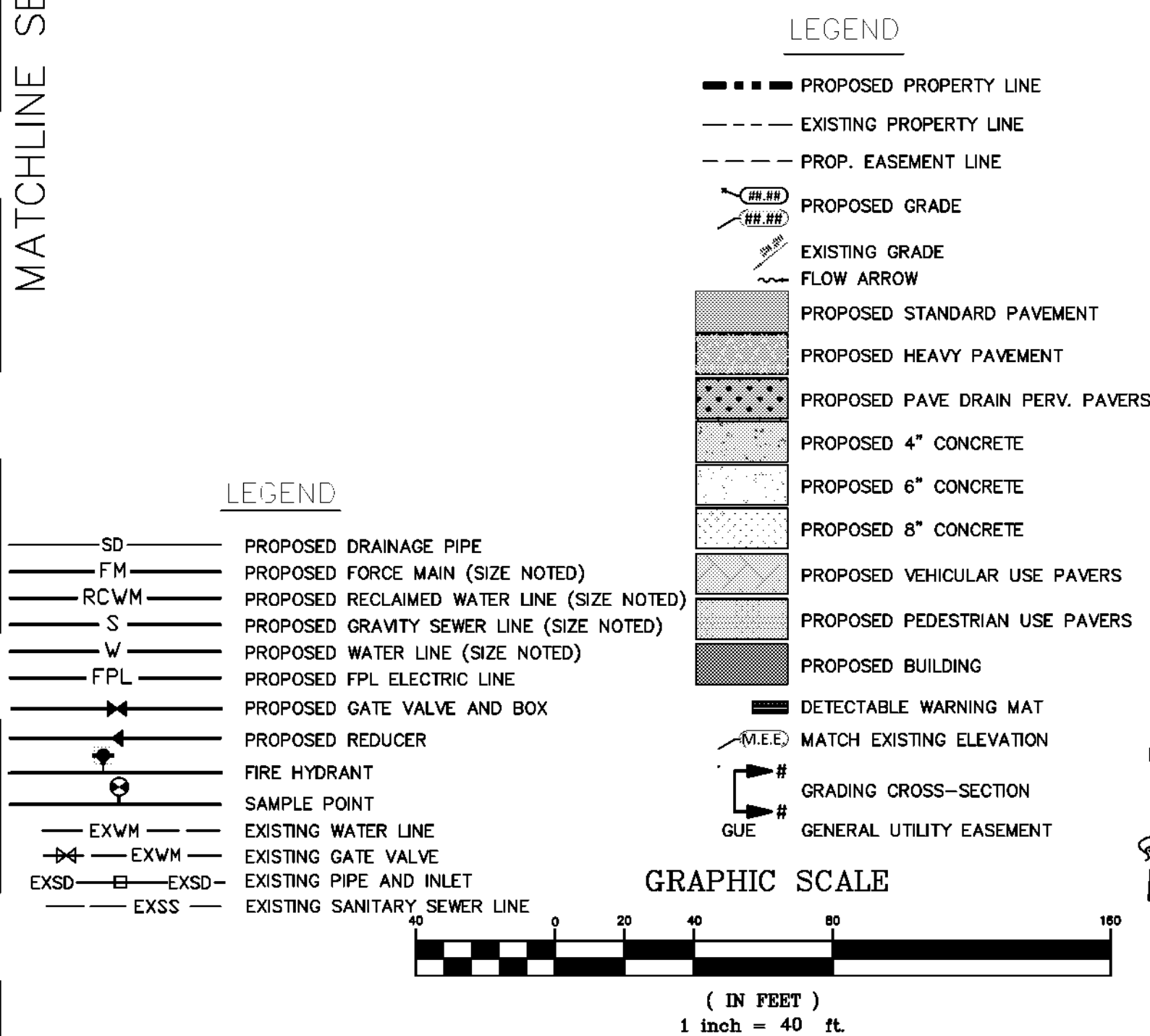
MATTHEW V. KAHN
PROFESSIONAL ENGINEER
LICENSE NO. 82227
STATE OF FLORIDA
FOR THE FIRM -
DATE

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

$$(\text{NAVD } 88) = (\text{NGVD } 29) - 1.62$$


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.
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REV PER PBCLD COMMENTS	04/XX/25	MVK
REV PER PBCLD PRECON COMMENTS	03/11/25	MVK
REV PER ADD. GRADES	02/12/25	MVK
REV PER NEW SITE PLAN	07/14/25	MVK
REVISIONS	DATE	BY
FILE NAME	7746ENCUNG	

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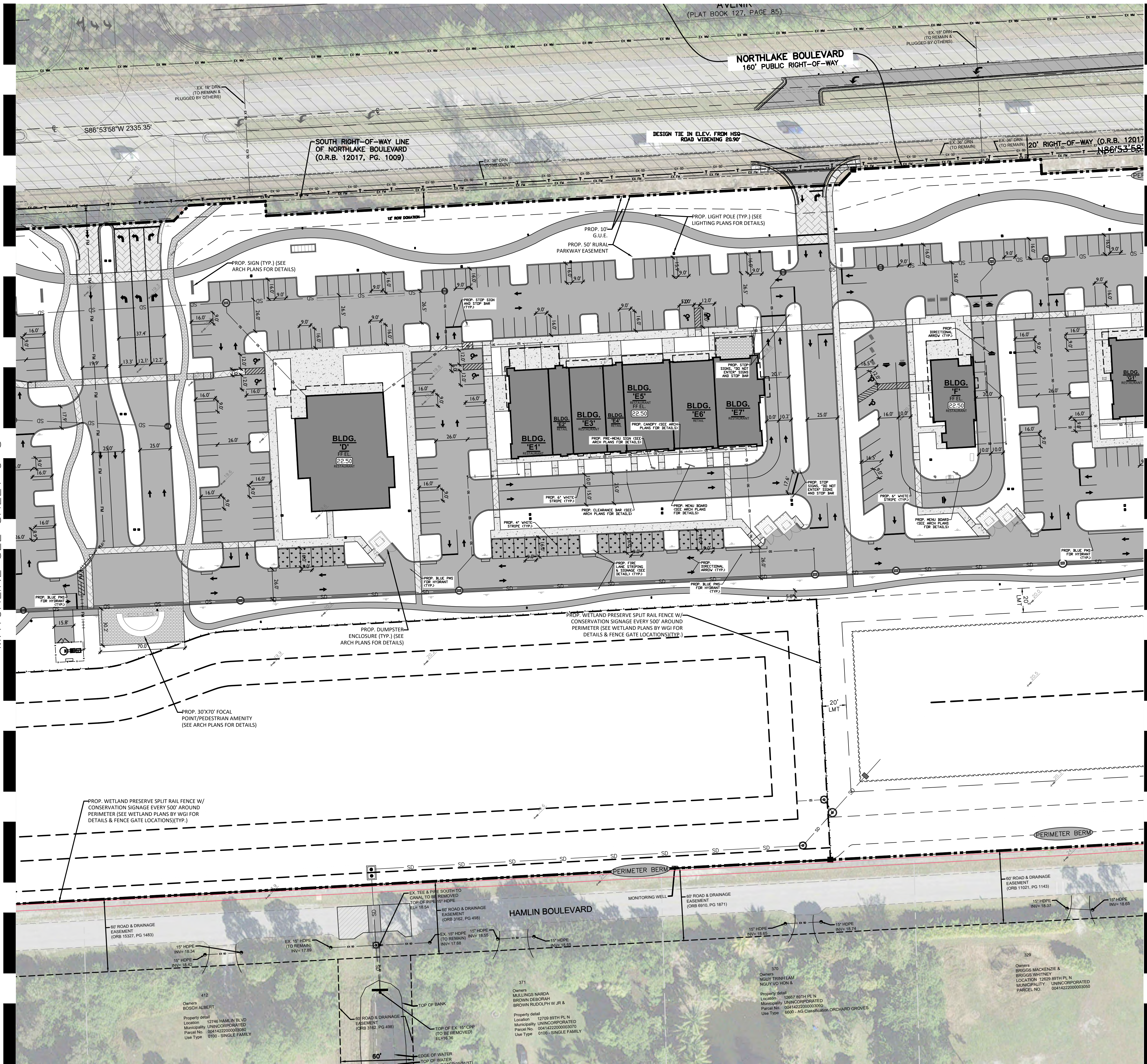
**SHOPS AT INDIAN TRAILS
A.K.A. COCONUT CROSSING
PAVEMENT MARKING &
SIGNAGE PLAN WEST
SWC NORTHLAKE BLVD. & COCONUT BLVD
PALM BEACH GARDENS, FLORIDA**

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

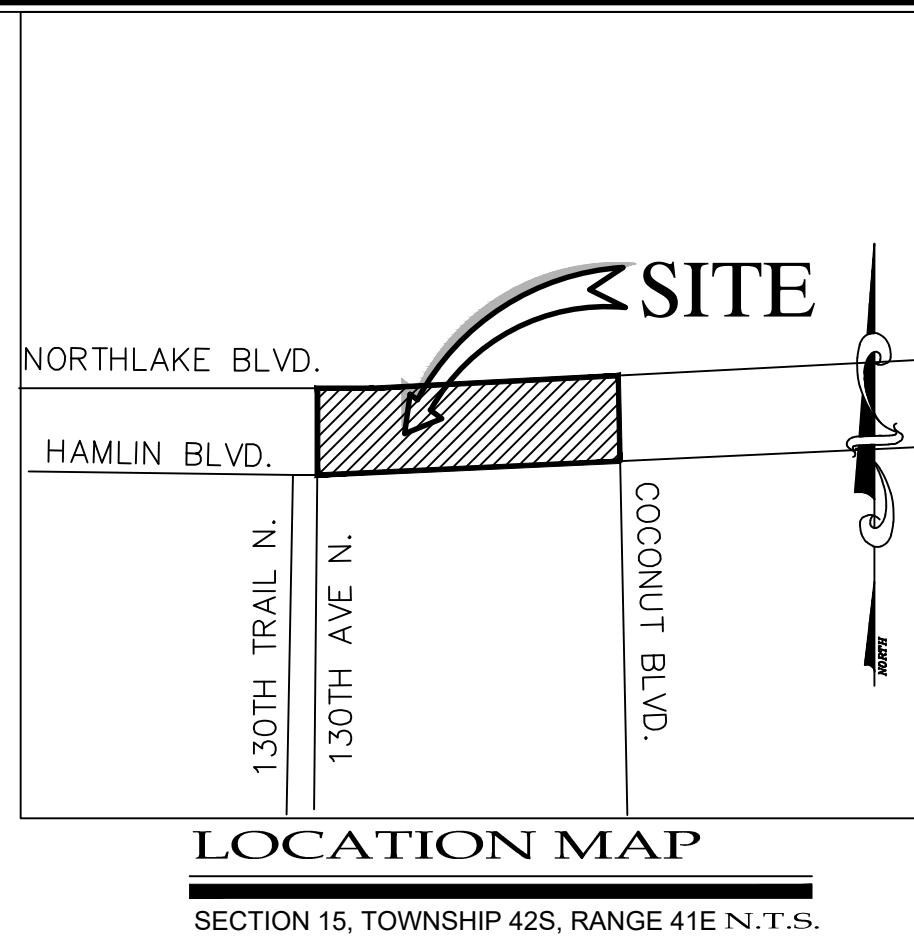
MATTHEW V. KAHN PROFESSIONAL ENGINEER LICENSE NO. 82227 STATE OF FLORIDA — FOR THE FIRM — DATE

JOB # 7714-1
SHT.NO. C-8
OF 45 SHEETS

MATCHLINE SEE SHEET C-8



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



- GENERAL NOTES:
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MATCHLINE SEE SHEET C-10

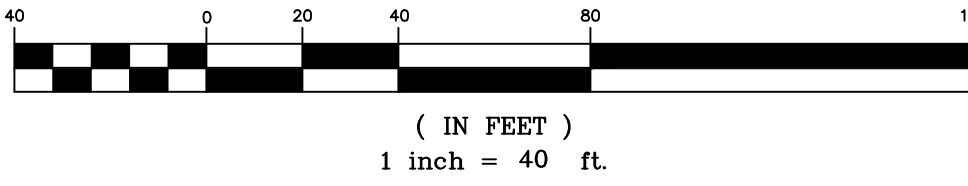
LEGEND

- 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
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- M.E.E. MATCH EXISTING ELEVATION
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- GUE GENERAL UTILITY EASEMENT

LEGEND

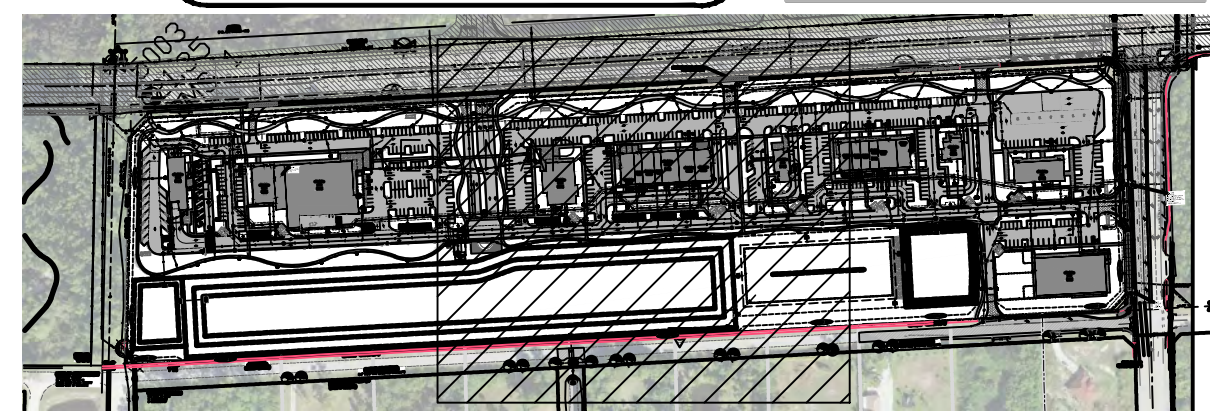
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- EXGW EXISTING GATE VALVE
- EXSD EXISTING PIPE AND INLET
- EXSS EXISTING SANITARY SEWER LINE

GRAPHIC SCALE



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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

REV PER	BY
04/XX/25	MVK
03/11/25	MVK
02/12/25	MVK
01/14/25	MVK
DATE	BY

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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

MATCHLINE SEE SHEET C-5



BACK TO WORKING

THE 2000 CONSTRUCTION



ON THE WAY TO
A BETTER WORLD



Page 10

DATE 07/08/03

11/11/2019

JOB # 3714 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-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.

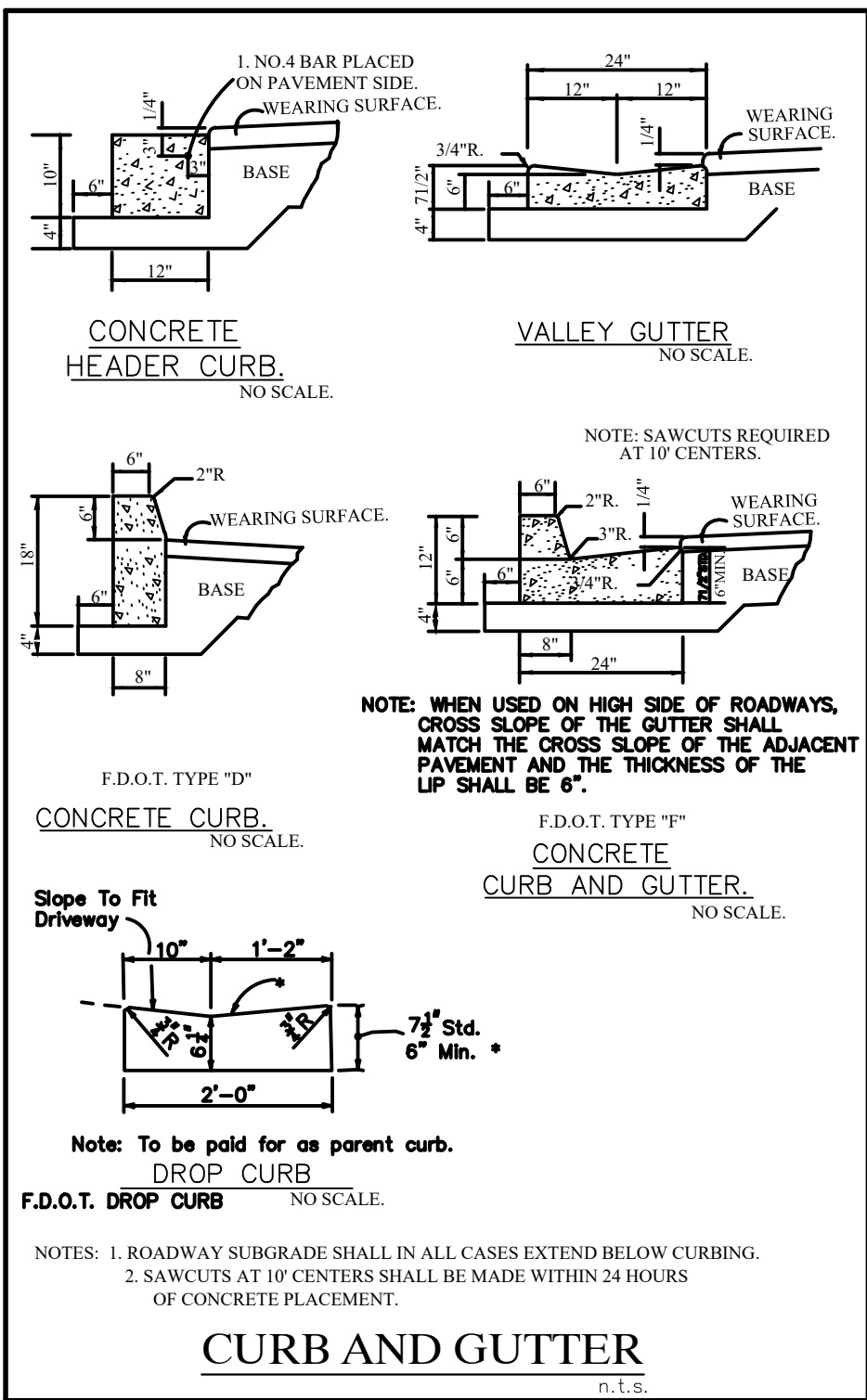
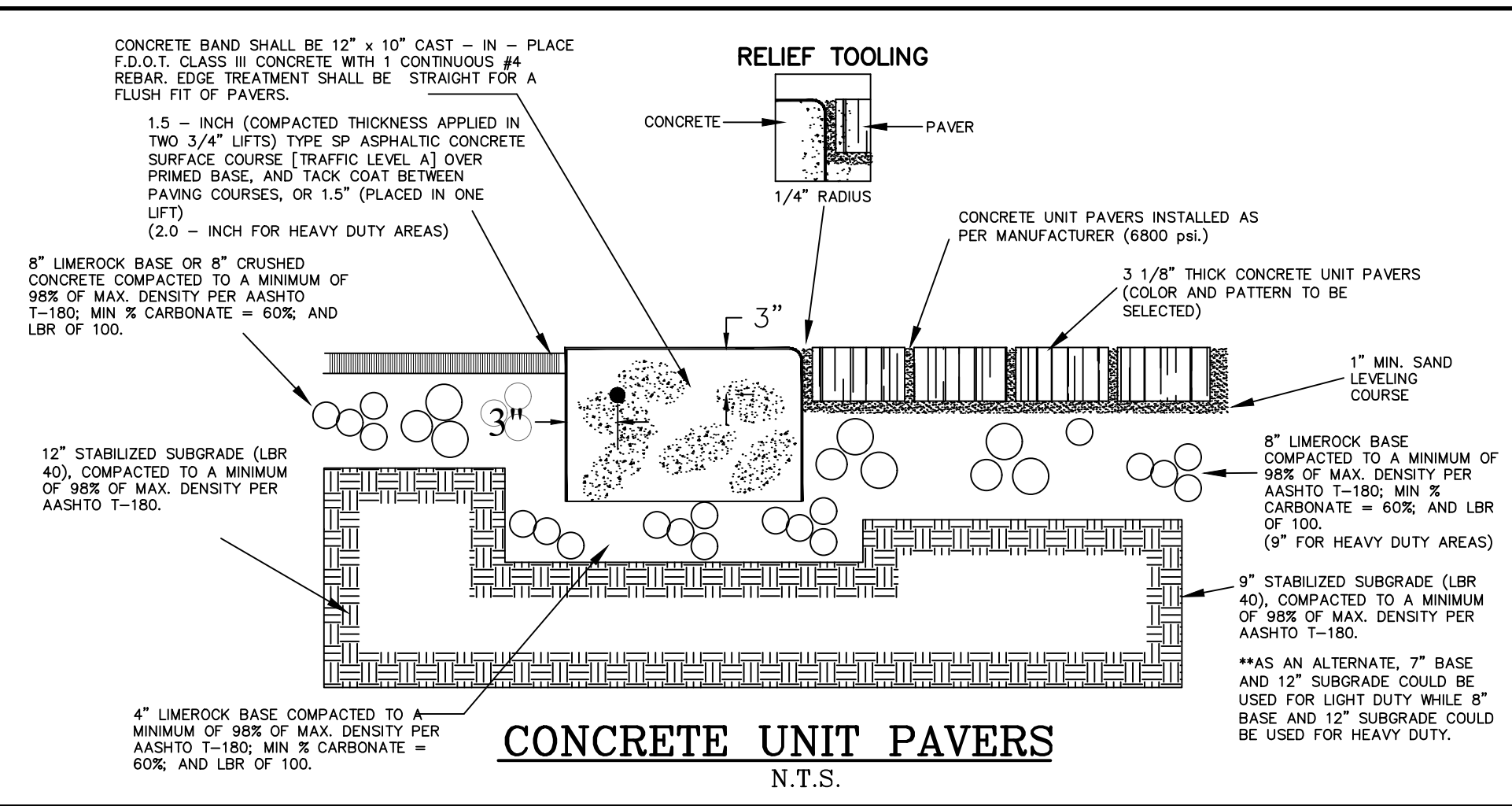
NOTIFICATION, TESTING

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 COMPLETE THE WORK. CALL U.N.C.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'



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, drag, and other degrading items.
 - Chalk shall be used for all layout markings
- Materials:**
- All materials shall be alkyl 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.

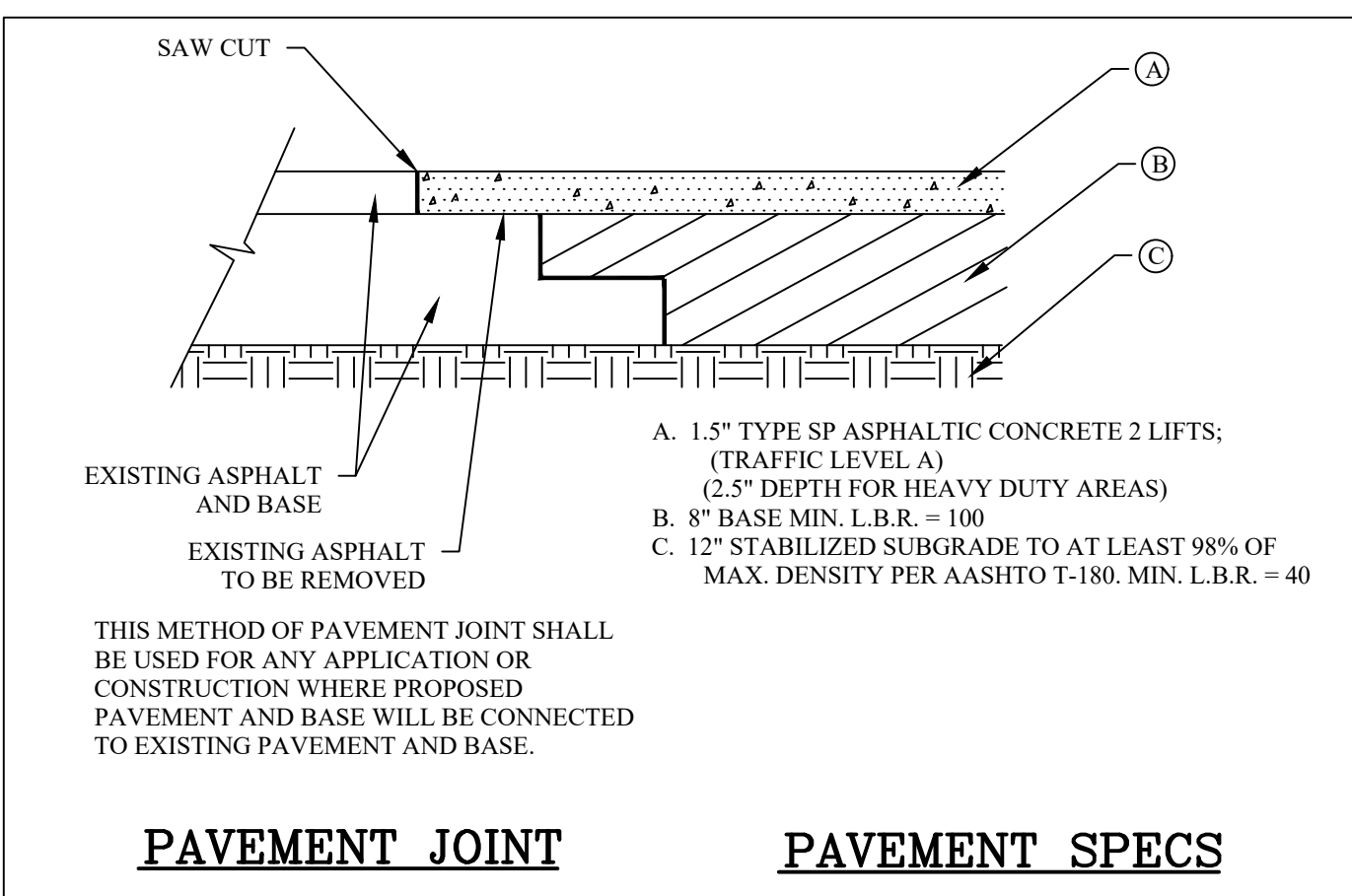
- Other Pavement Surfaces:**
- Intermediate pavement surfaces may be marked with FDOT approved materials, designs, and specifications.

ALL PAVEMENT MARKINGS

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

RAISED PAVEMENT MARKERS

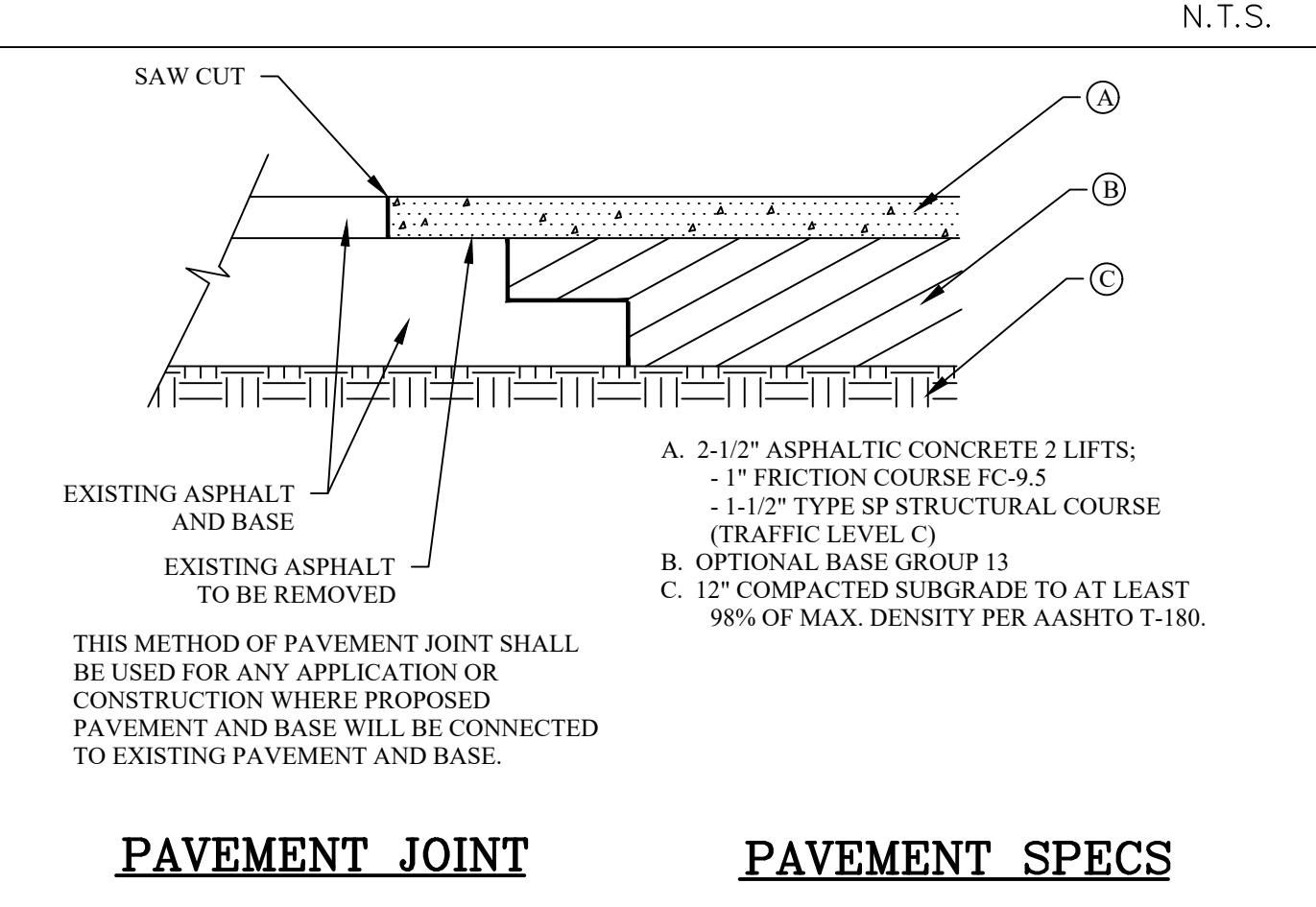
- R.P.M.s shall be installed on all lane lines and centerlines, spaced at 20' or 40'.
- R.P.M.s shall be a 4 x 4 type class "B" marker meeting FDOT specifications and shall be approved by the Engineer prior to use.
- R.P.M.'s shall be installed using alkyl thermoplastic on asphalt and epoxy on concrete.



PAVEMENT JOINT

PAVEMENT SPECS

ROAD PAVEMENT SPECIFICATIONS (ON-SITE)



PAVEMENT JOINT

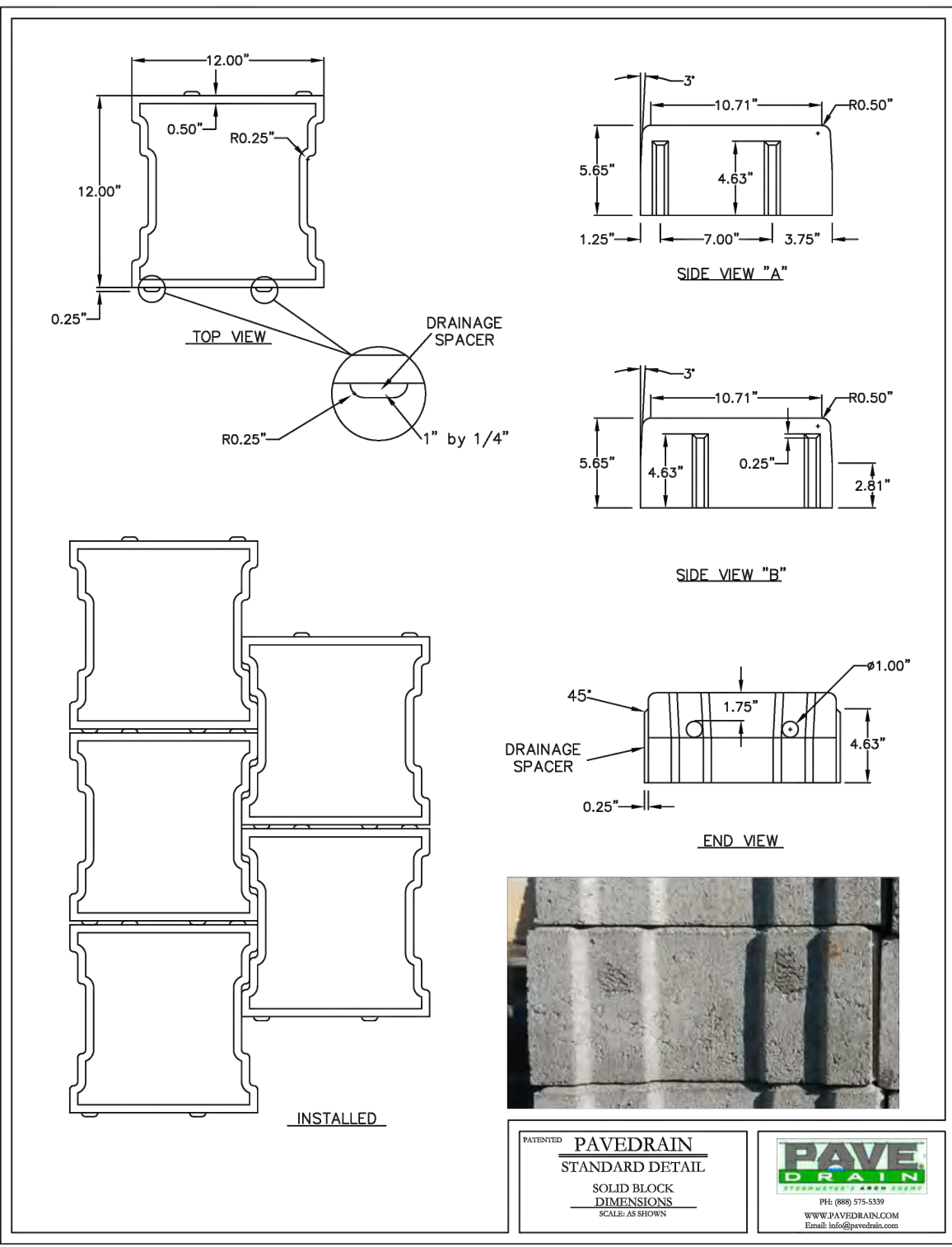
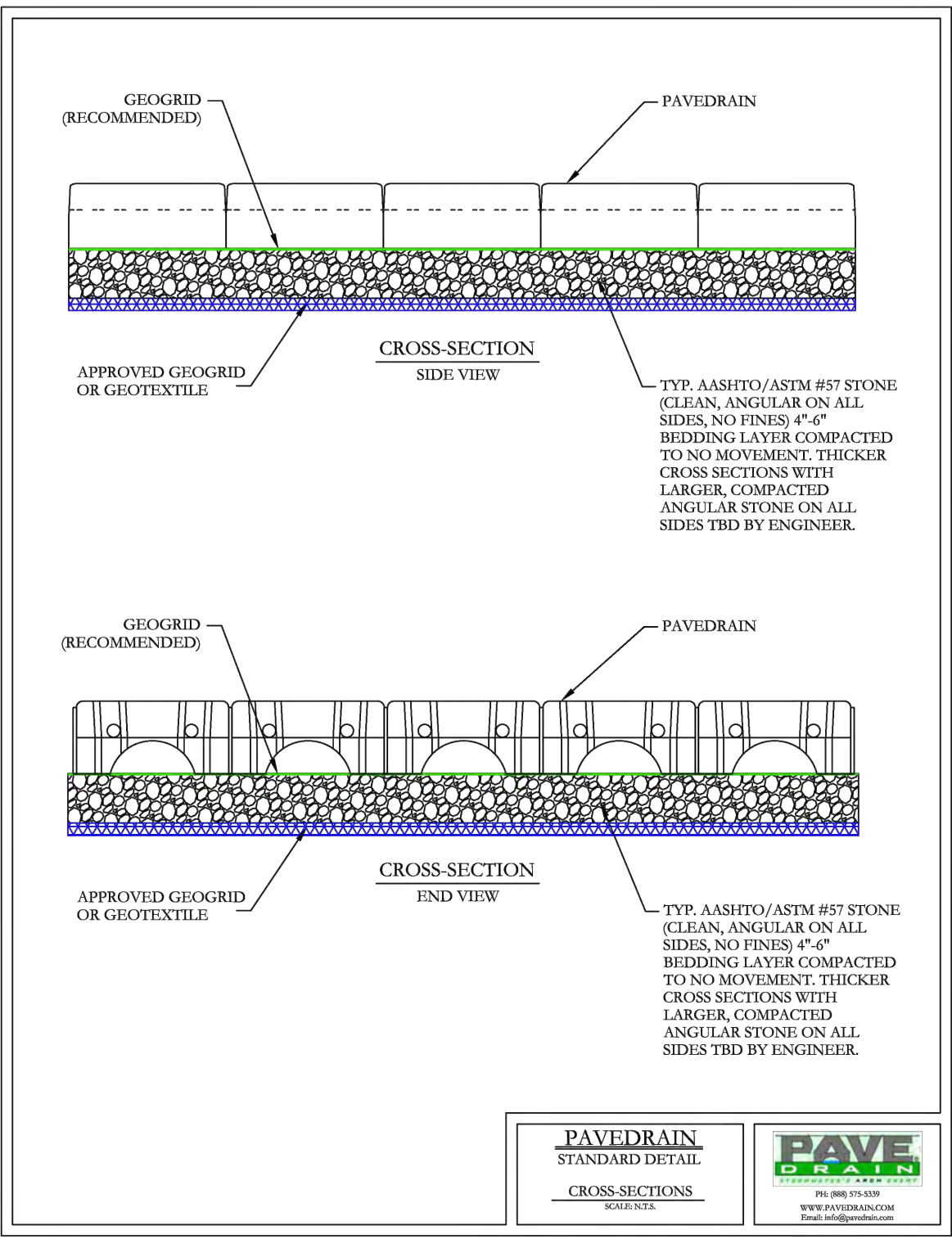
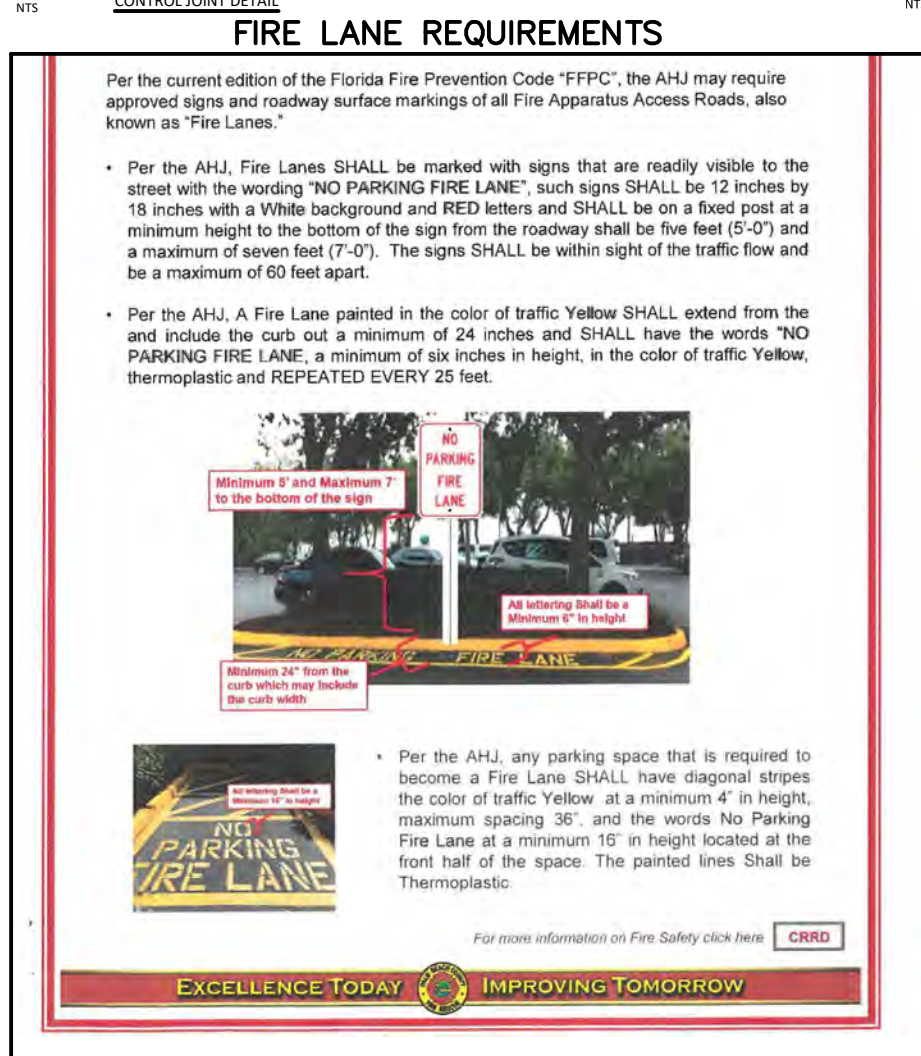
PAVEMENT SPECS

ROAD PAVEMENT SPECIFICATIONS (OFFSITE)

NOTES:

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



REV PER	PROJWD, 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:	7714E/ML3-PQD		

CAULFIELD & WHEELER, INC.
CIVIL ENGINEERING - LAND PLANNING
LANDSCAPE DESIGN - SURVEYING
7900 GLADES ROAD - SUITE 100
BOCA RATON, FLORIDA 33434
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SHOPS AT INDIAN TRAILS
A.K.A. COCONUT CROSSING
PAVING, GRADING, &
DRAINAGE DETAILS
S.W.C. 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

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:

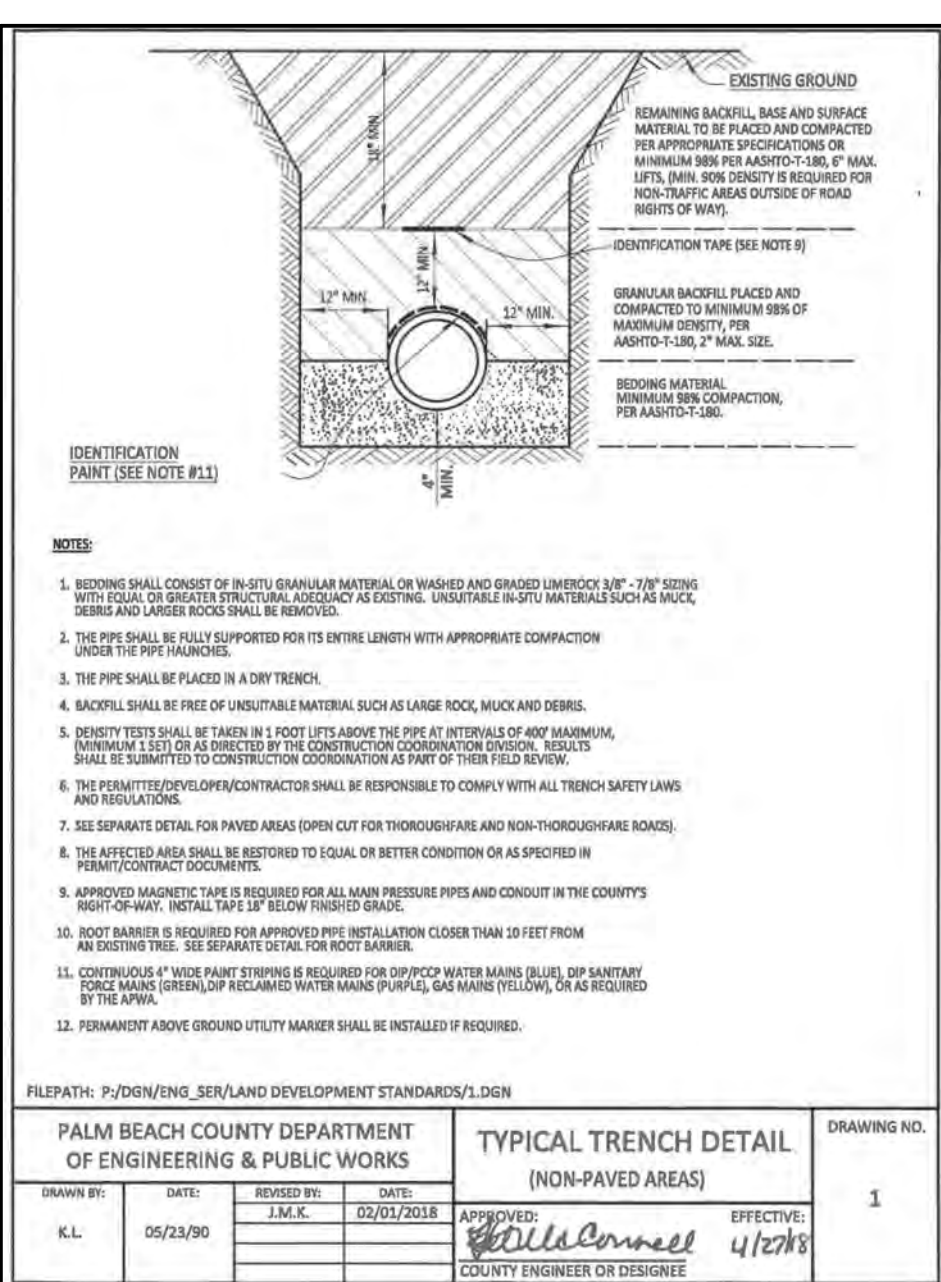
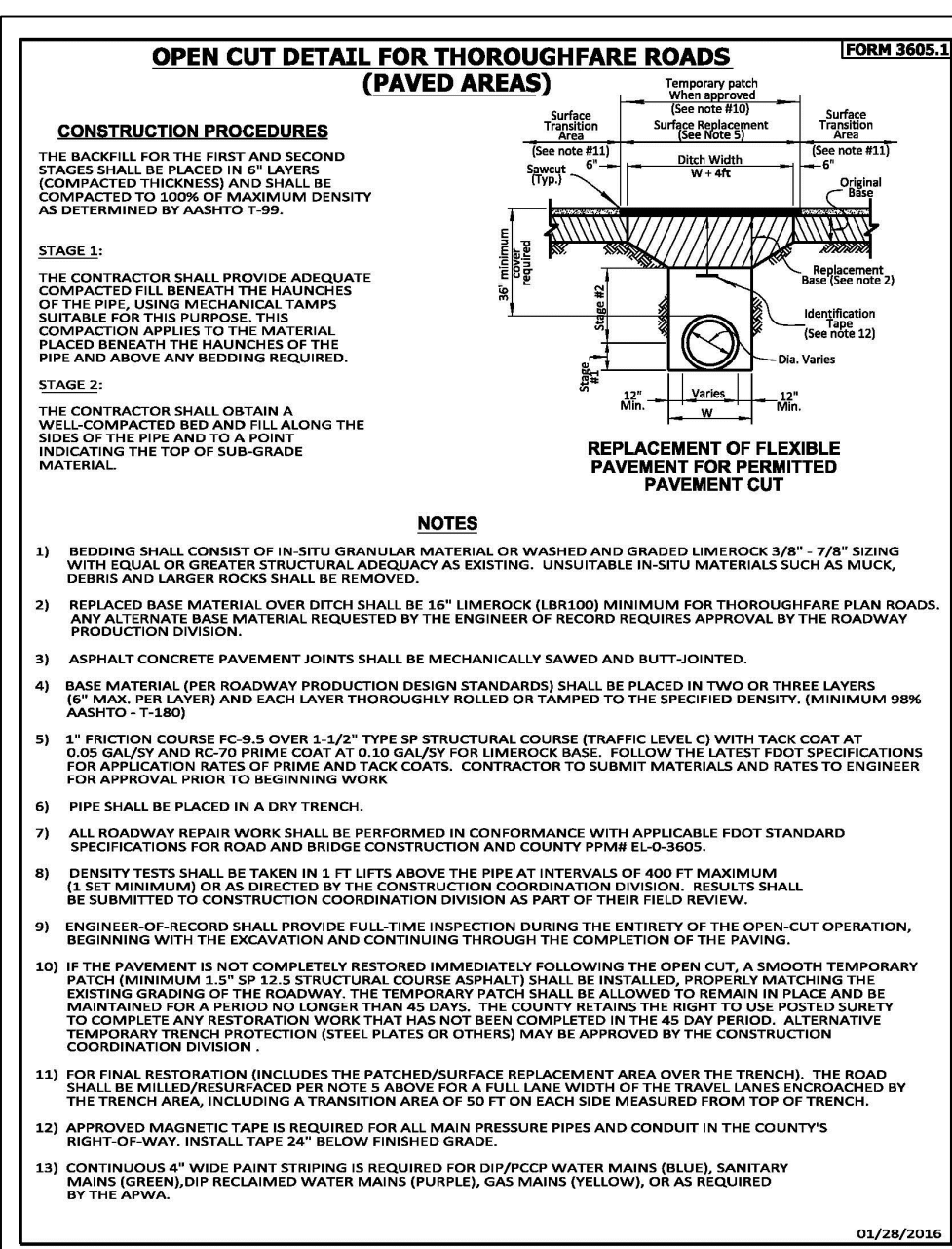
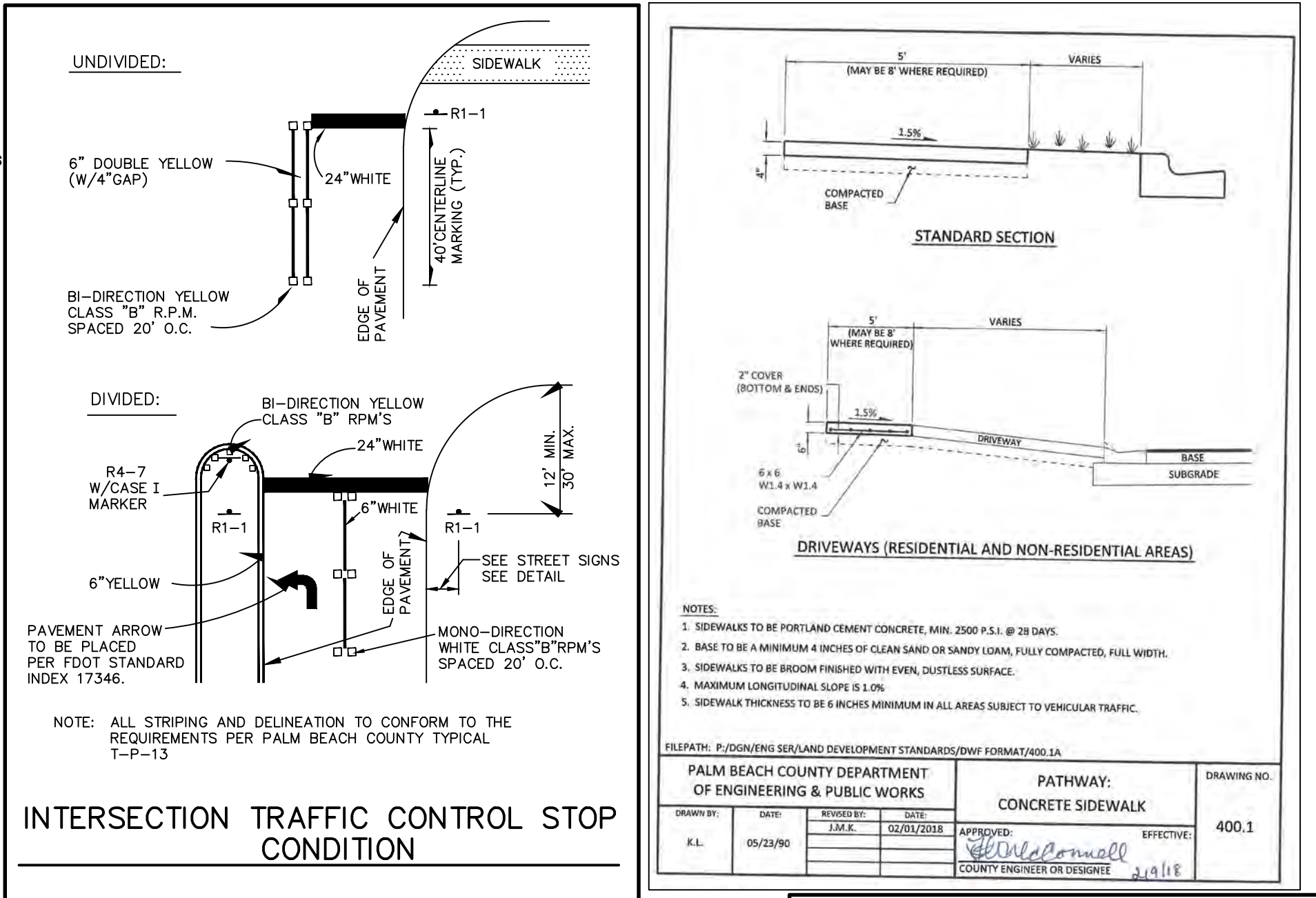
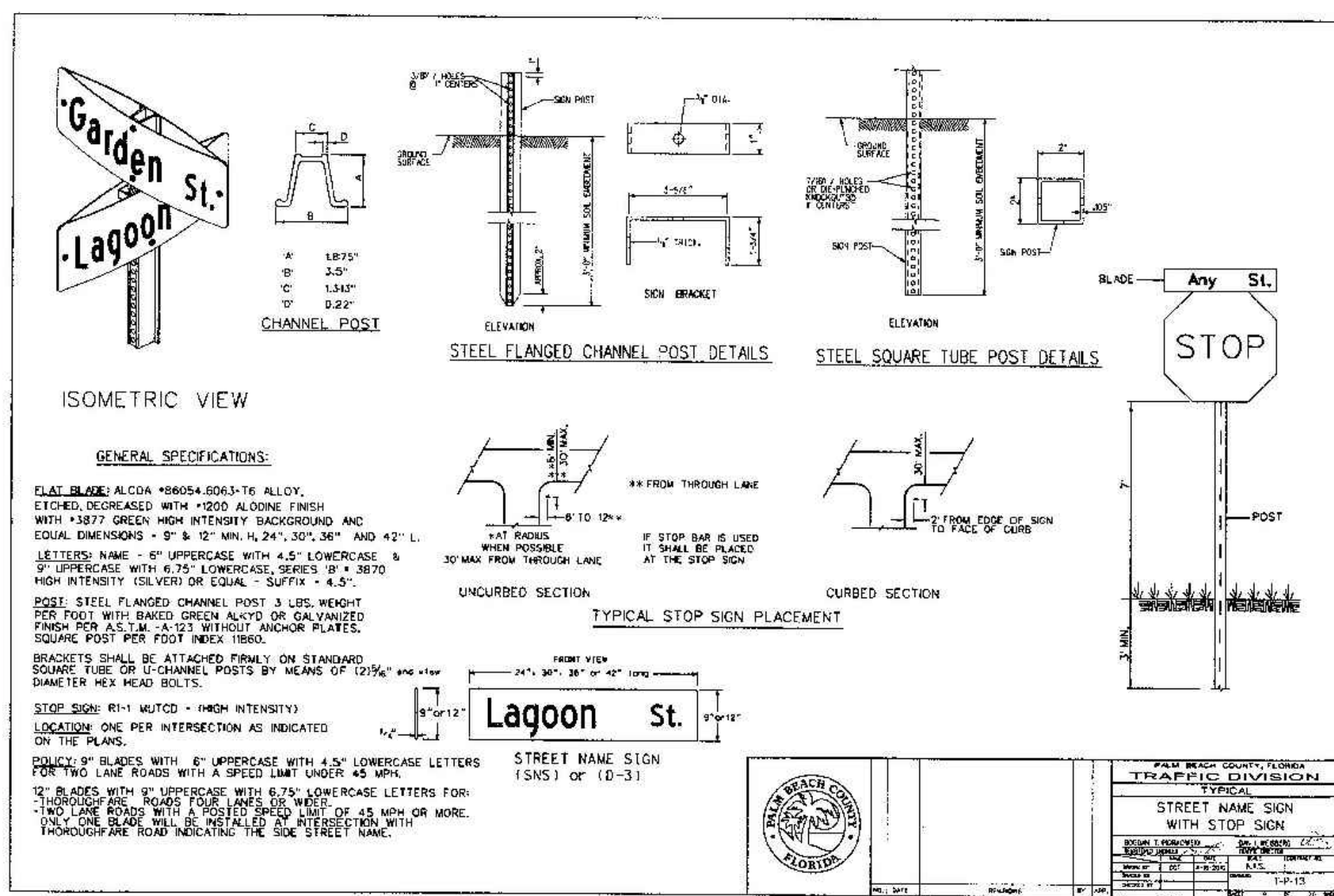
2.1 SOLID CONCRETE INTERLOCKING PAVING STONES

- 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.

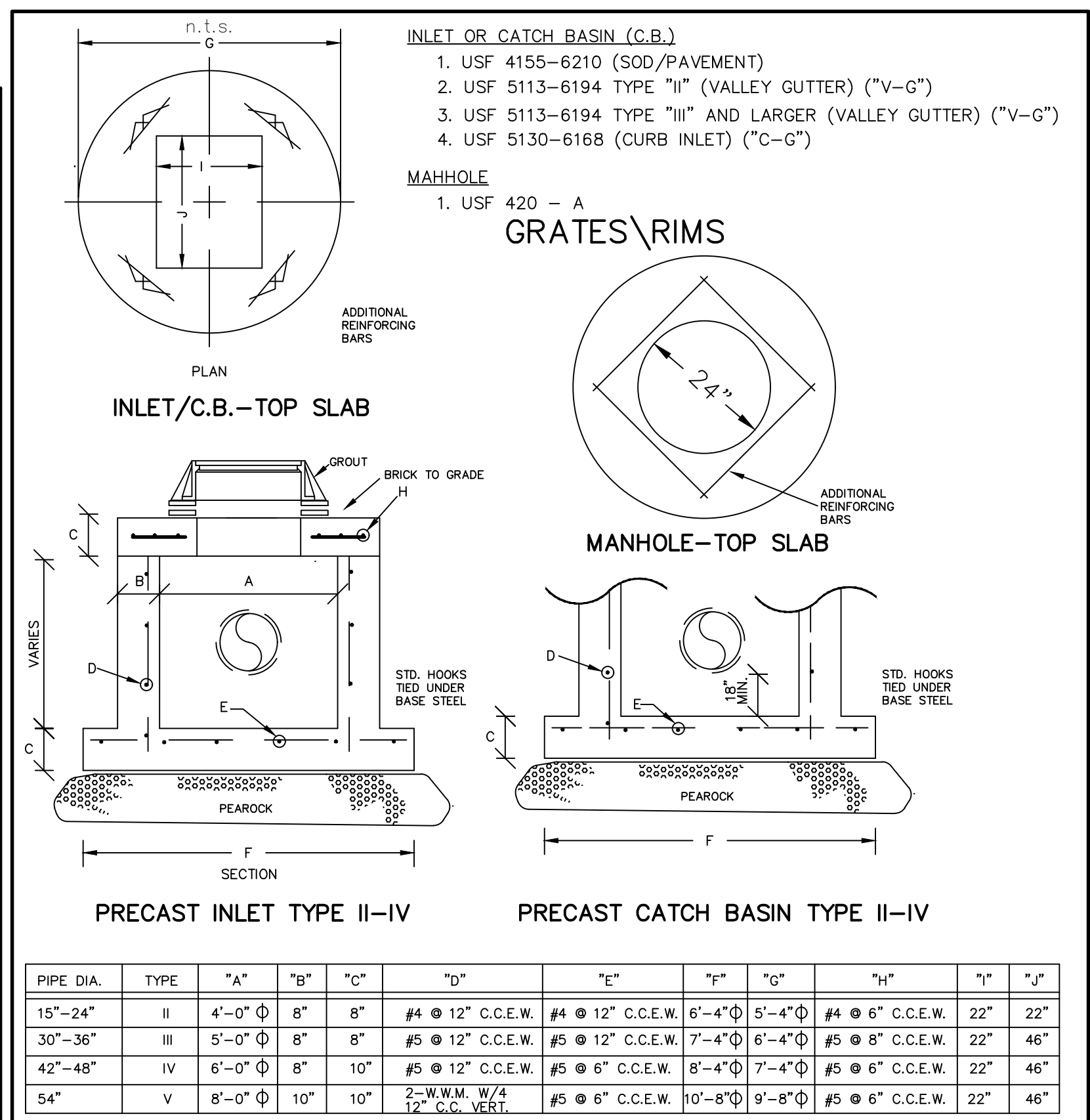
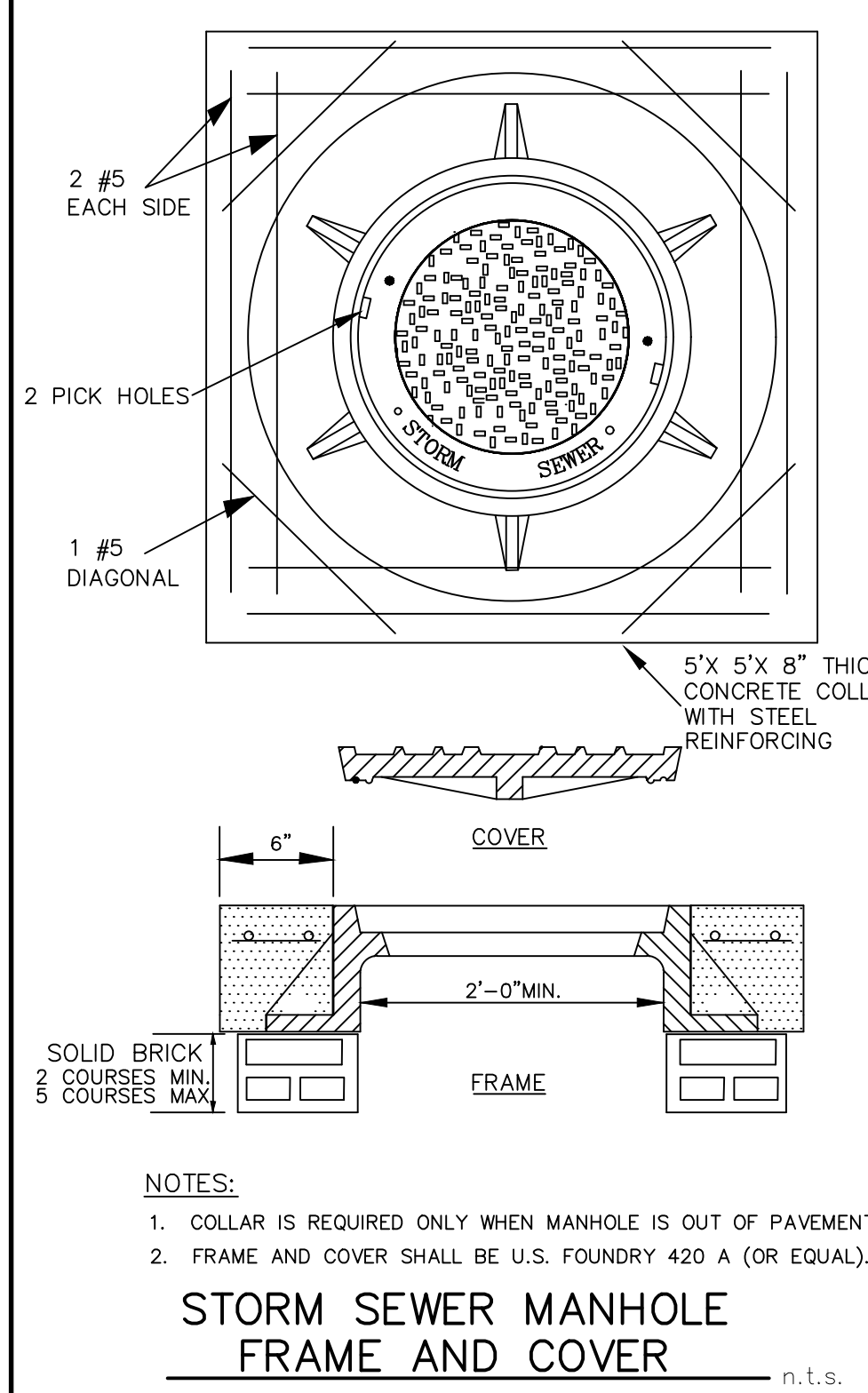
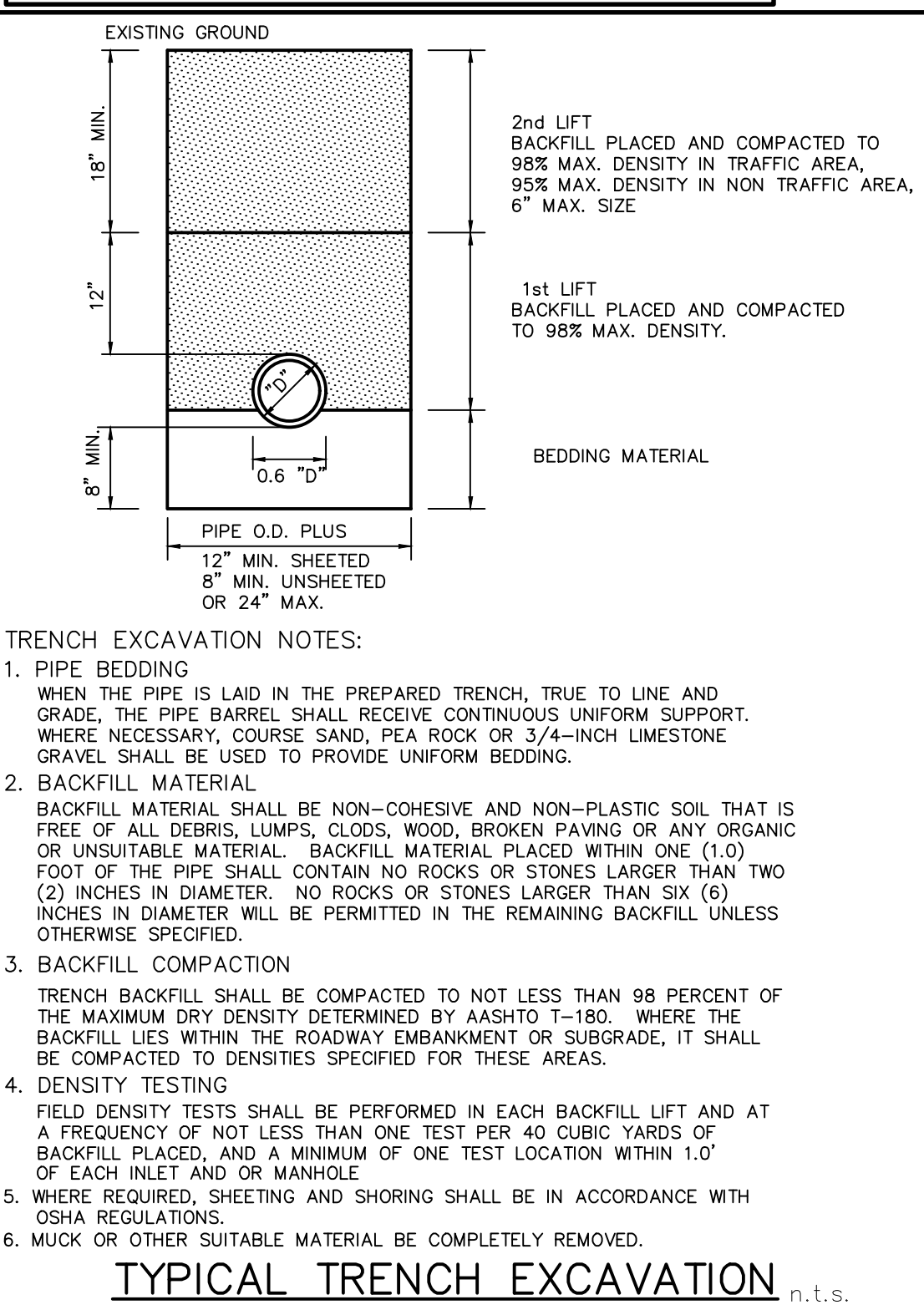
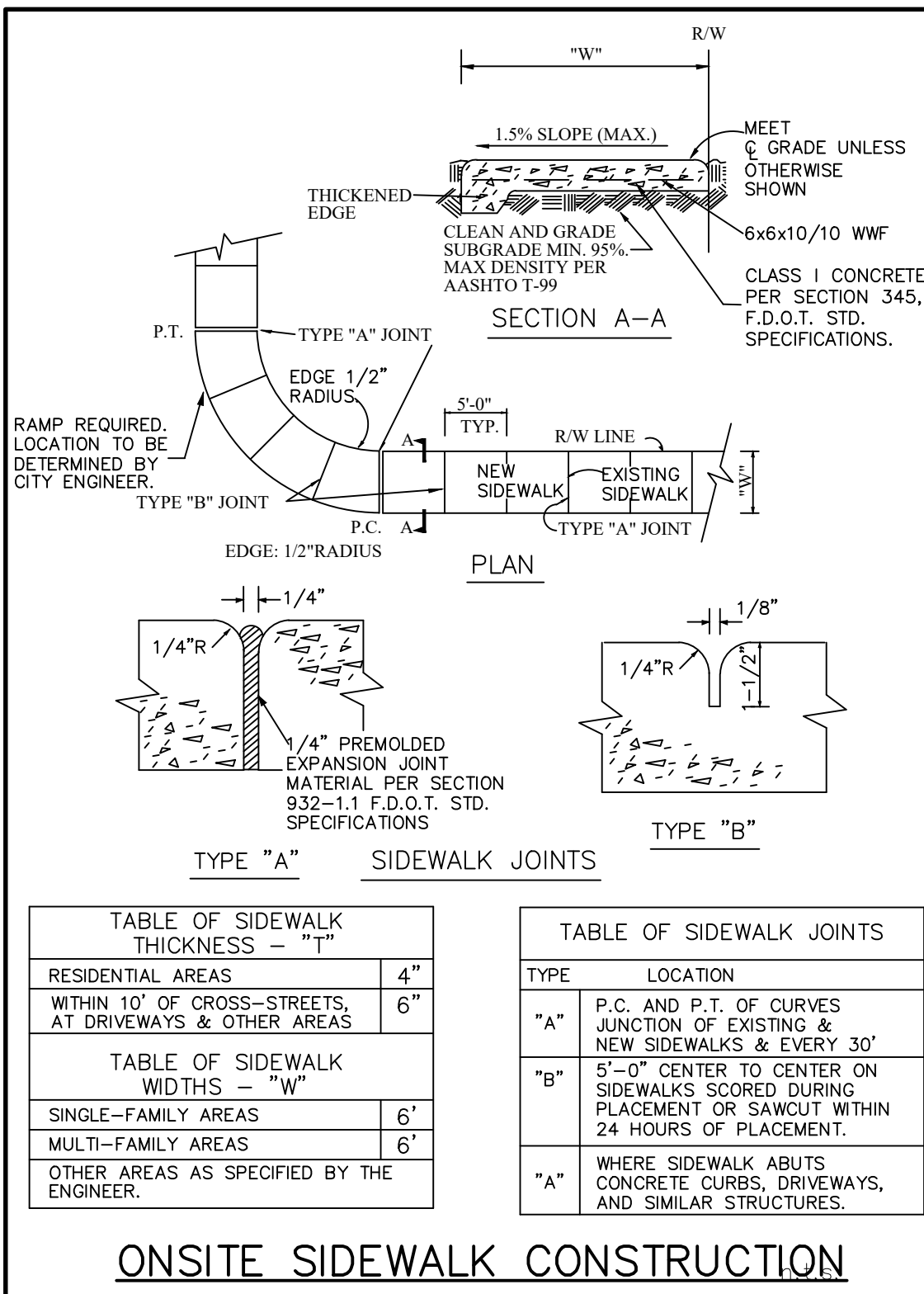
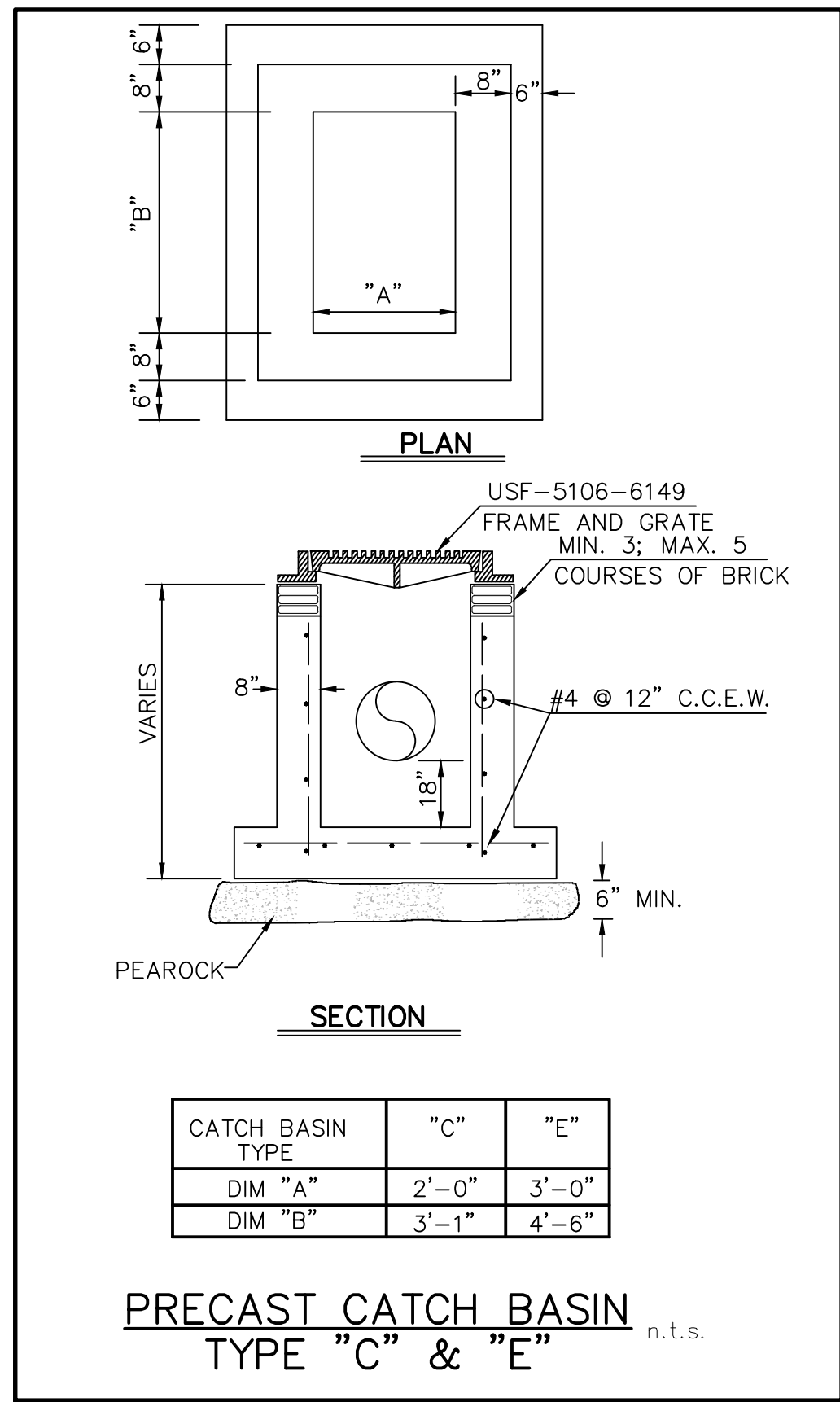
III. CONSTRUCTION METHODS:

- 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 1/4".
- 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 1/4" 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. Whenever 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 plate 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 so 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 retroreflectivity 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.



NOTES:

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REV	PER	PROJWD	PRECEN	COMMENTS	DATE	BY
03/11/25	MVK					
02/12/25	MVK					
01/14/25	MVK					

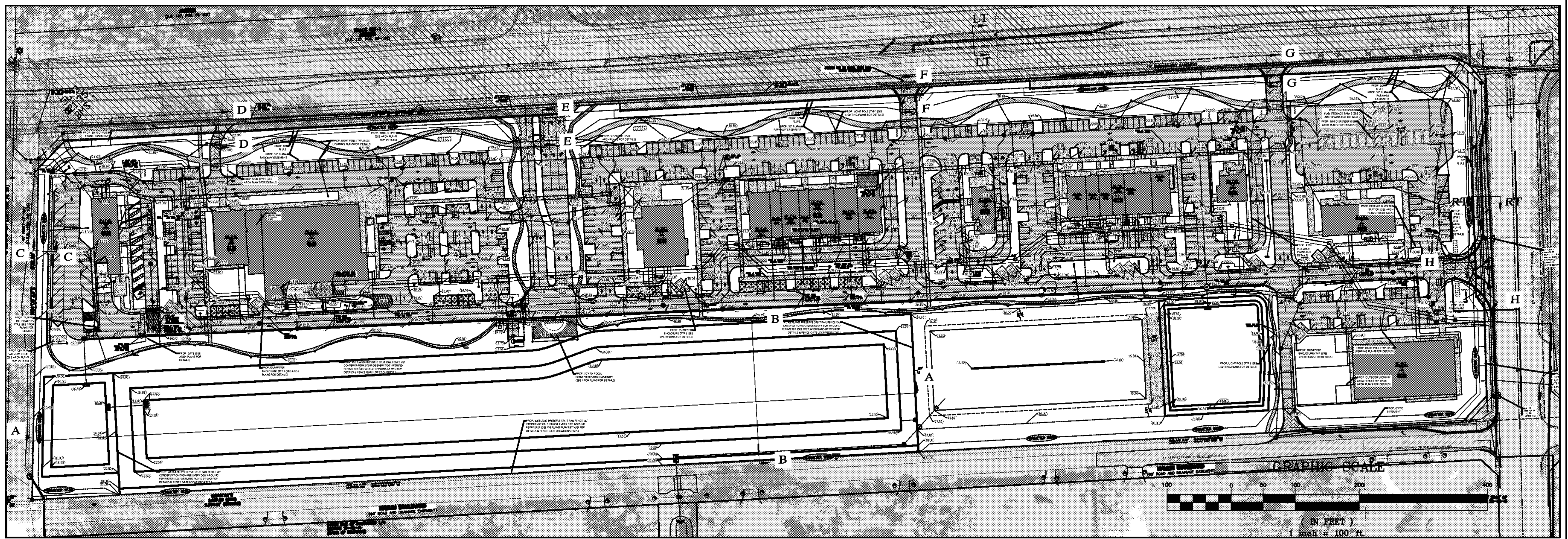
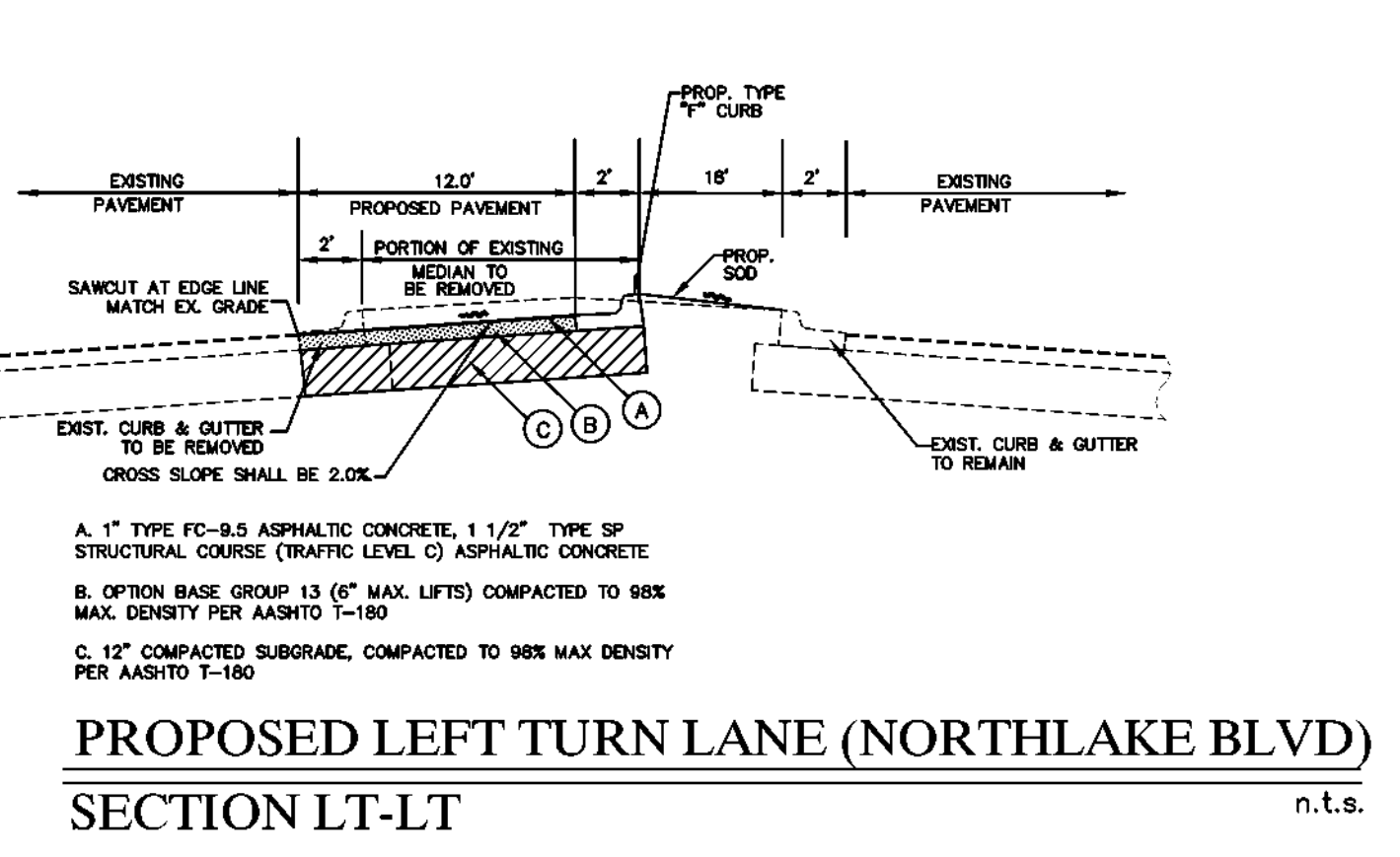
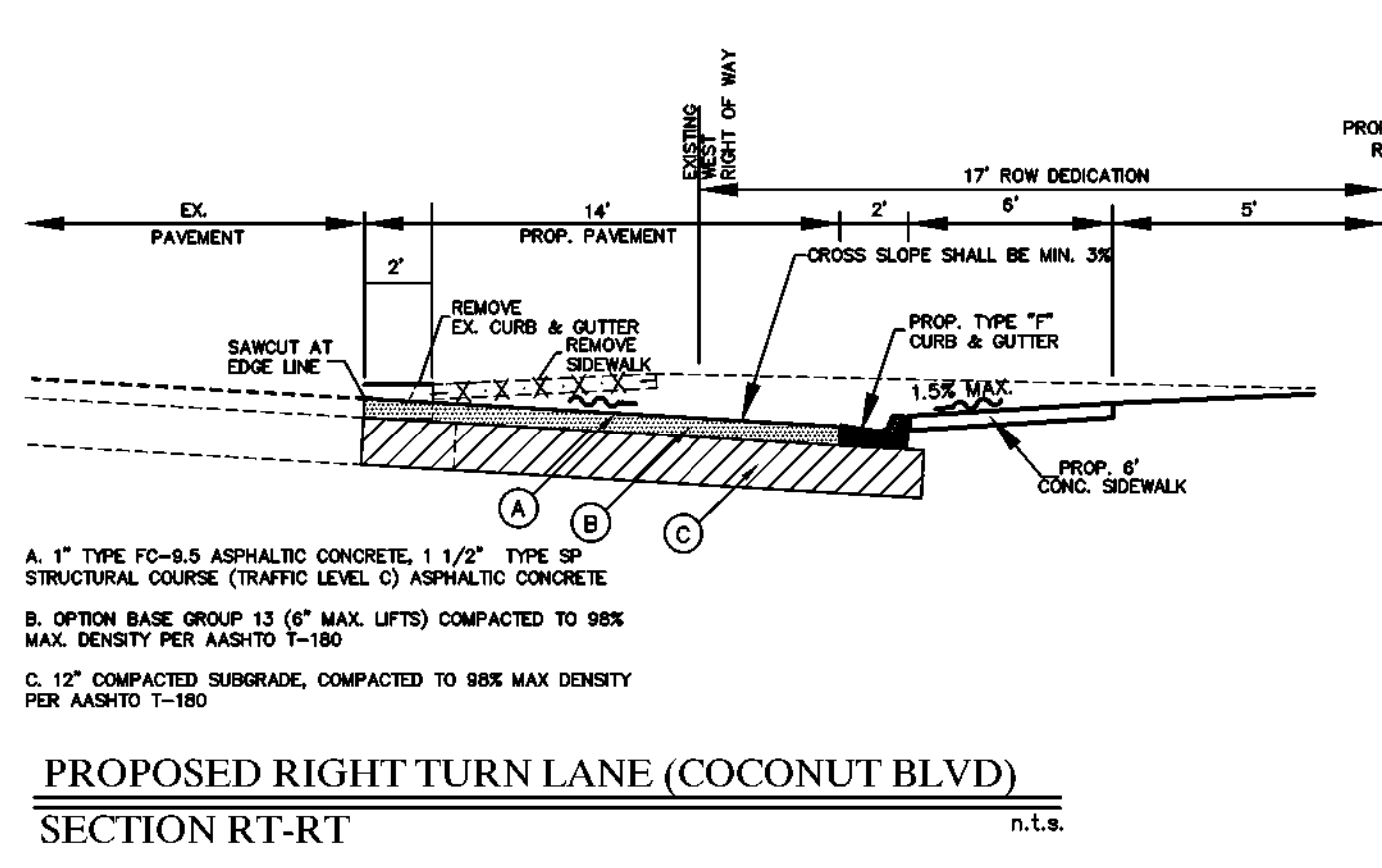
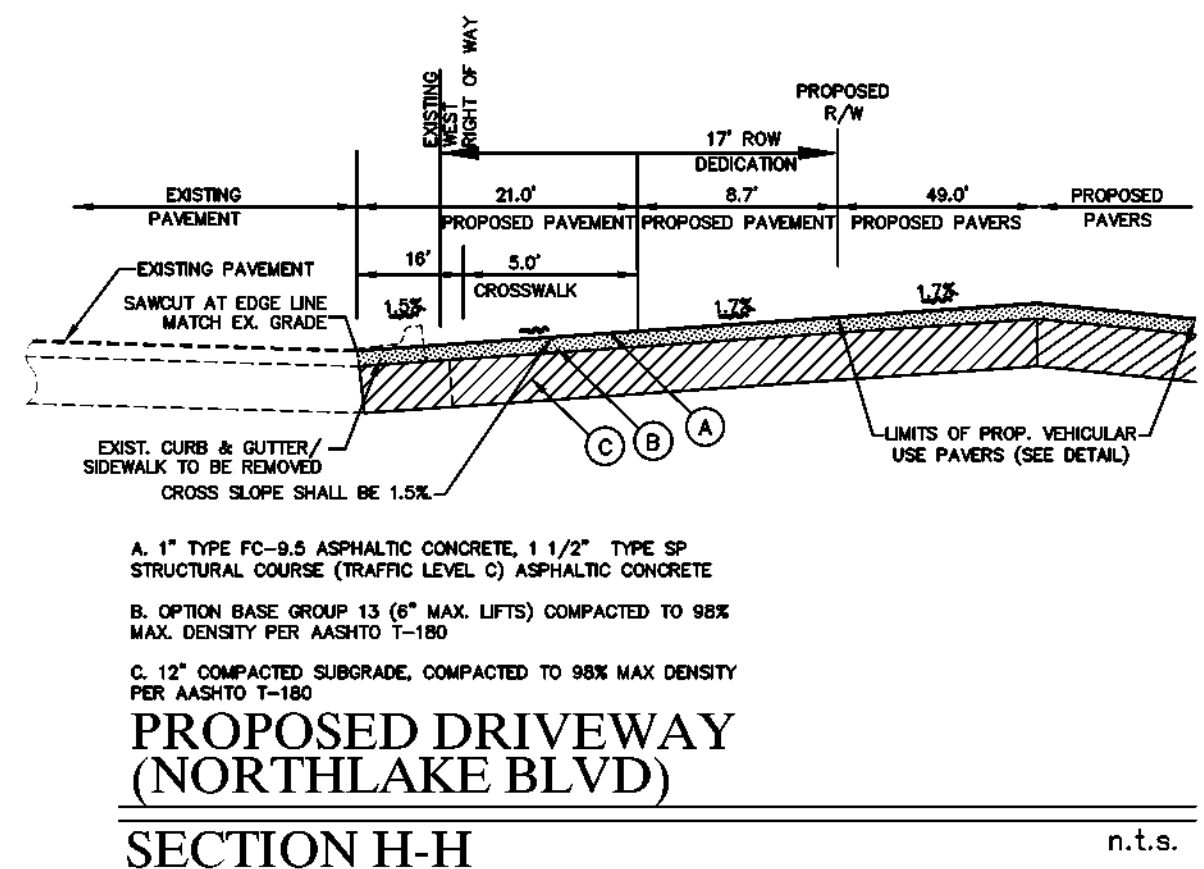
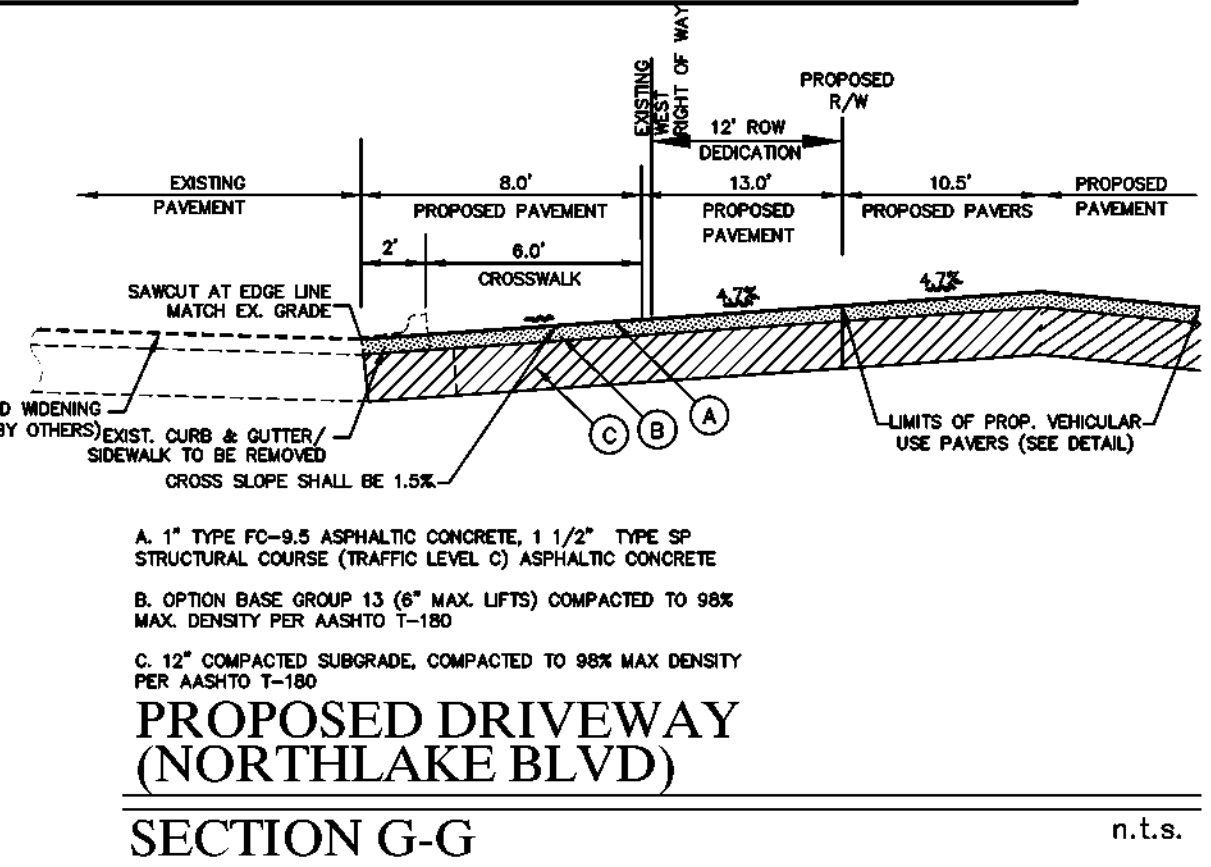
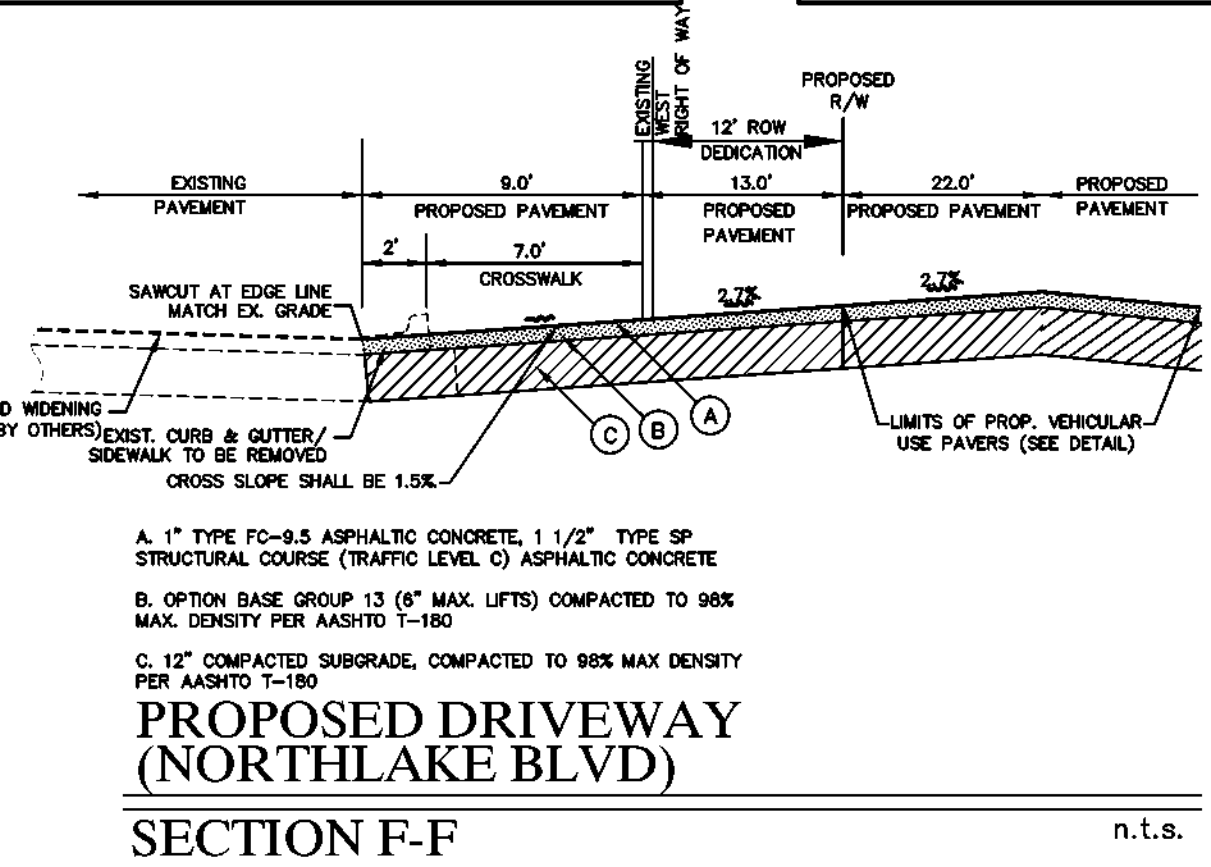
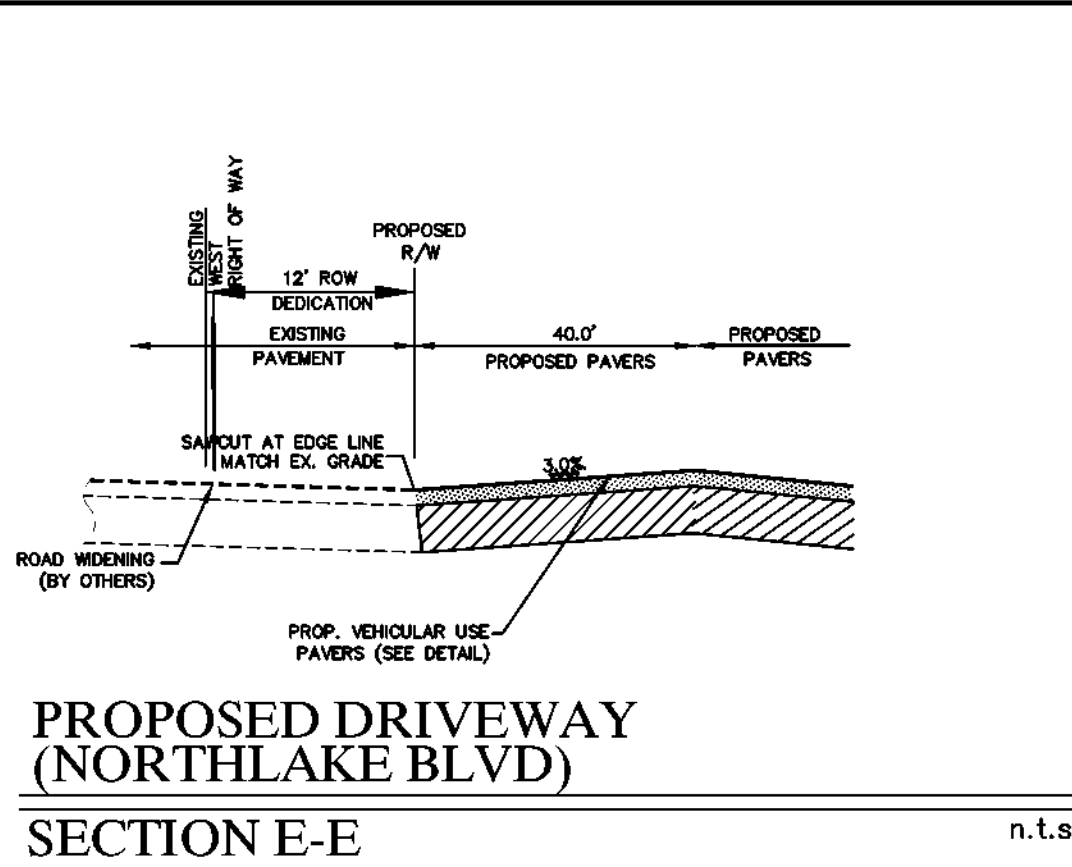
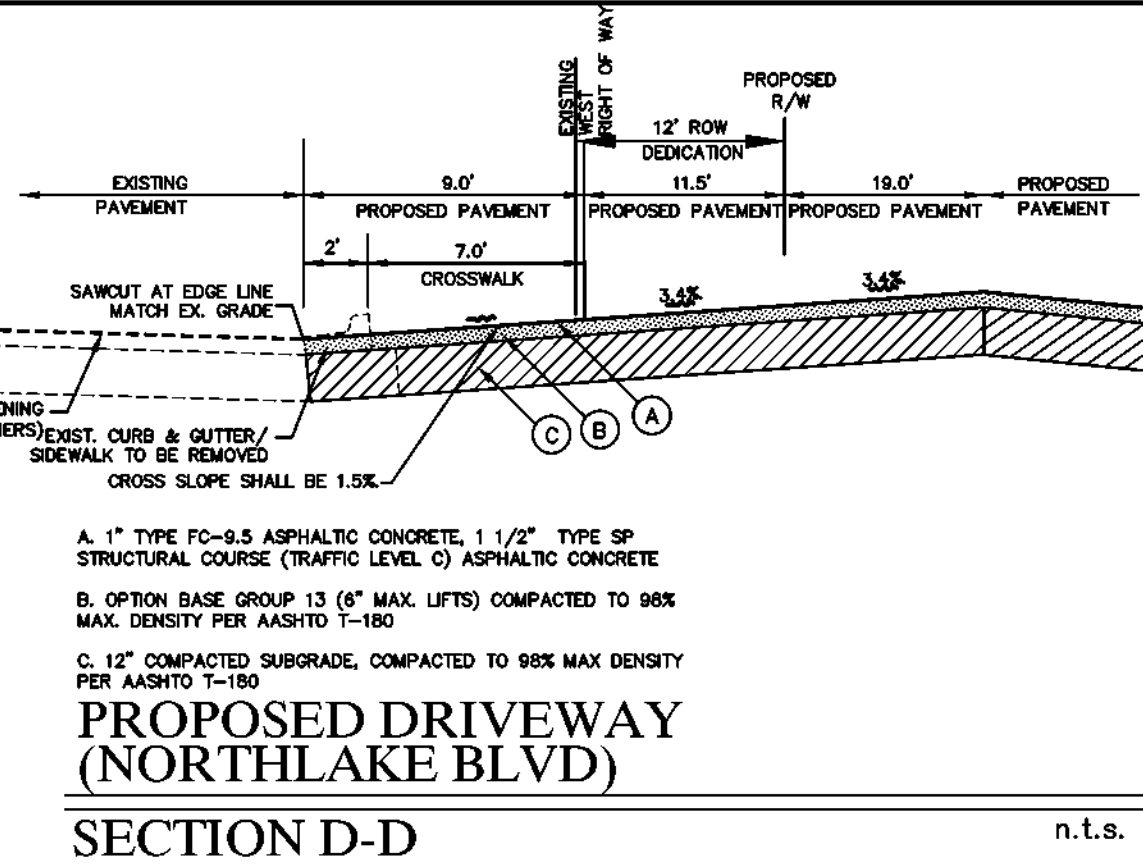
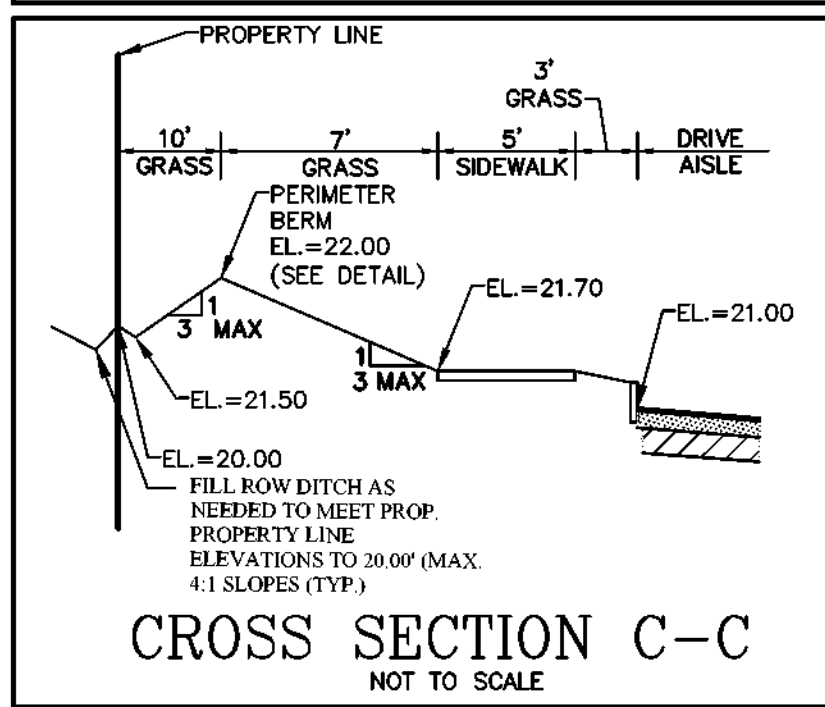
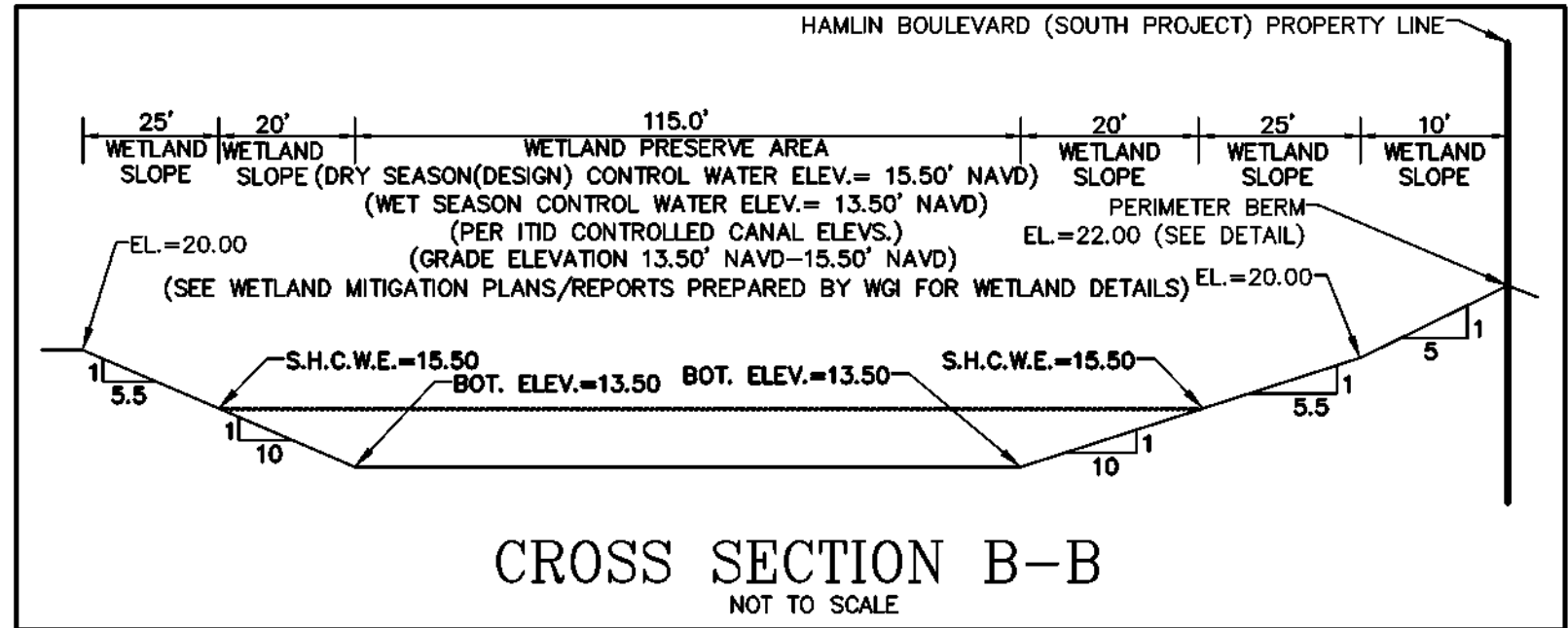
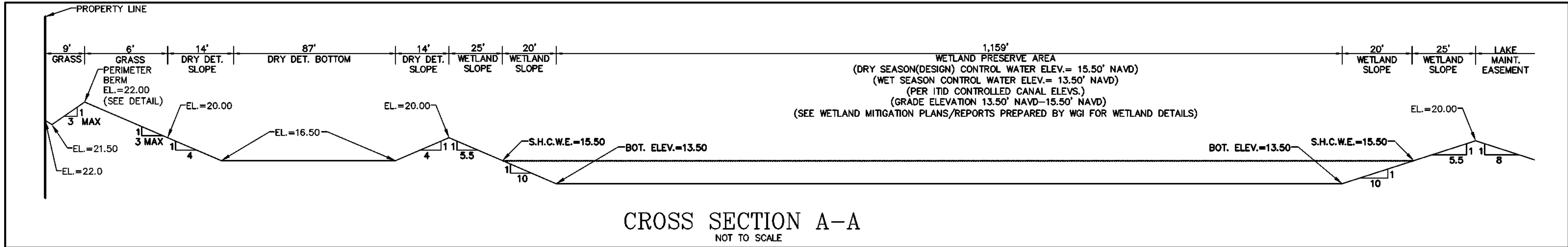
CAULFIELD & WHEELER, INC.
CIVIL ENGINEERING - LAND PLANNING
LANDSCAPE DESIGN - SURVEYING
7900 GLADES ROAD - SUITE 100
BOCA RATON, FLORIDA 33434
PHONE (561) 392-1991 / FAX (561) 750-1452

SHOPS AT INDIAN TRAILS
A.K.A. COCONUT CROSSING
PAVING, GRADING, &
DRAINAGE DETAILS
NORTH LAKE 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 -

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



NOTES:
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REV	DATE	BY
03/11/25	MVK	
02/12/25	MVK	
01/14/25	MVK	
DATE		

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SHOPS AT INDIAN TRAILS
A.K.A. COCONUT CROSSING
PAVING, GRADING, &
DRAINAGE DETAILS
SWC 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

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
- EXVM EXISTING GATE VALVE
- EXSD EXISTING PIPE AND INLET
- EXSS EXISTING SANITARY SEWER LINE

LEGEND

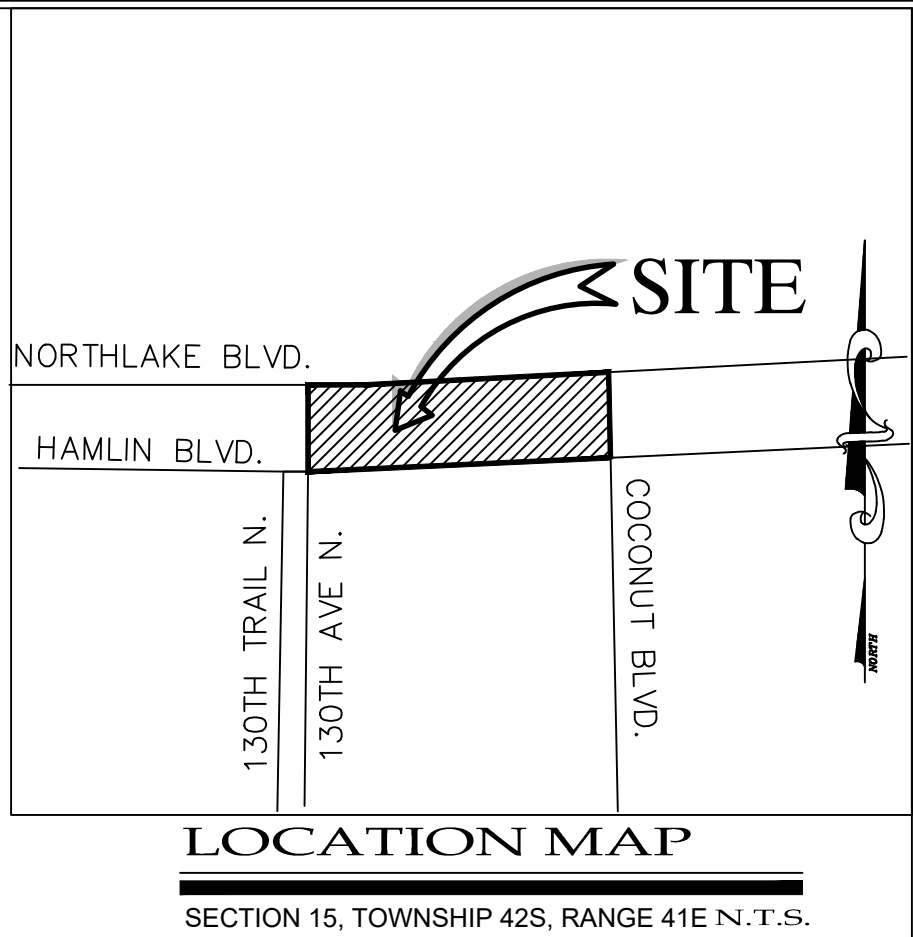
- PROPOSED PROPERTY LINE
- EXISTING PROPERTY LINE
- PROP. EASEMENT LINE
- PROPOSED GRADE
- EXISTING GRADE
- FLOW ARROW
- PROPOSED STANDARD PAVEMENT
- PROPOSED HEAVY PAVEMENT
- PROPOSED PAVE DRAIN PERV. PAVERS
- PROPOSED 4" CONCRETE
- PROPOSED 6" CONCRETE
- PROPOSED 8" CONCRETE
- PROPOSED VEHICULAR USE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

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.

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.

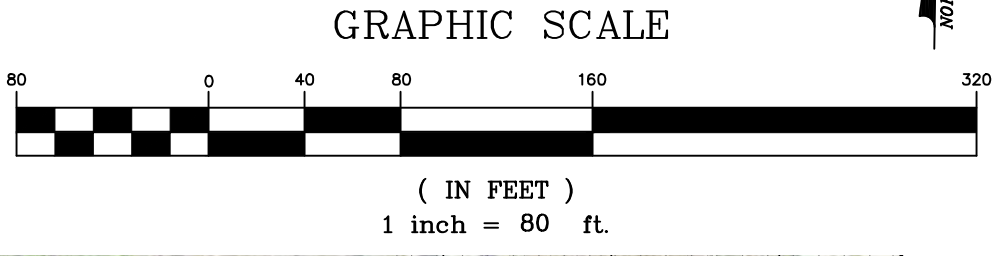


PBCUE RECORDED IN:
O.R.B. _____ P.G. _____

PLAT RECORDED IN:
P.B. _____ P.G. _____

INDEMNITY AGREEMENT
RECORDED IN:
O.R.B. _____ P.G. _____

NOTE: ELEVATIONS ARE NAVD 88
- CONVERSION FACTOR
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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:

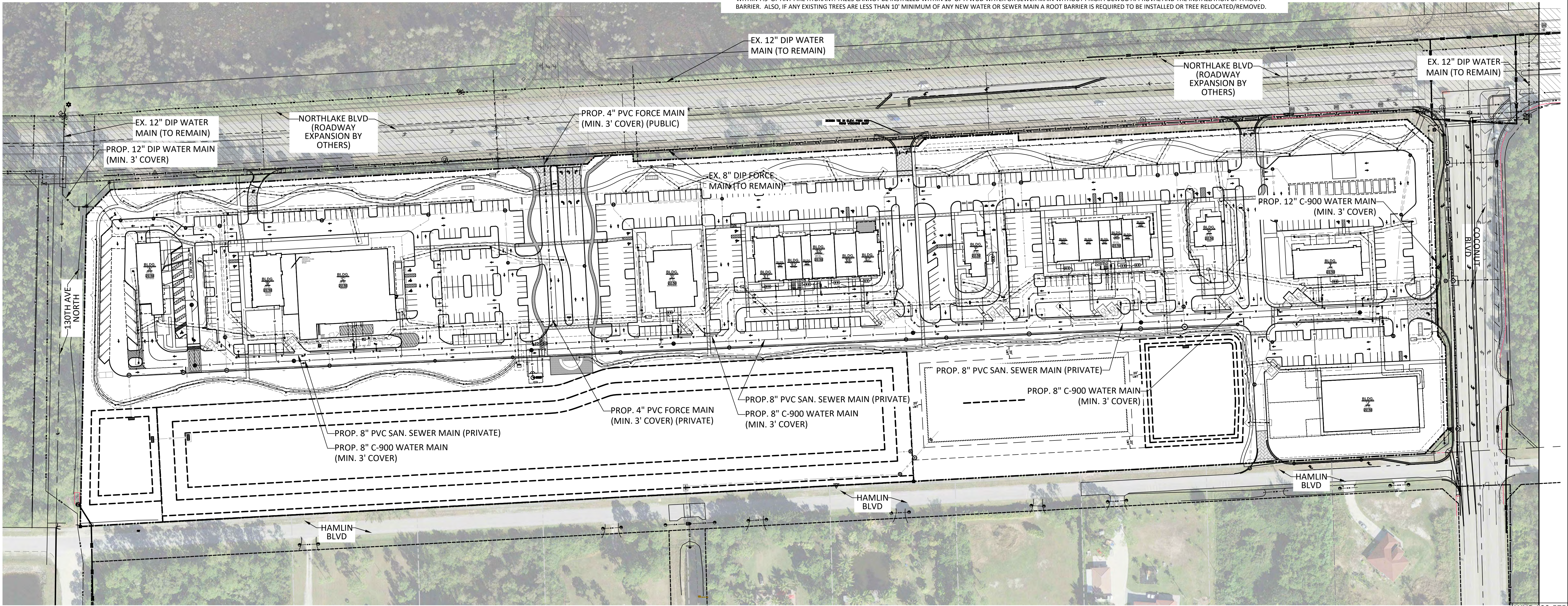
1. ALL WATER MAIN DUCTILE IRON PIPE AND PIPE FITTINGS SHALL BE PAINTED WITH A 4" WIDE CONTINUOUS BLUE LINE THAT RUNS PARALLEL TO THE AXIS OF THE PIPE AND IS LOCATED ALONG THE TOP OF THE PIPE.
2. ALL WATER MAINS SHALL BE MARKED WITH ONE CONTINUOUS STRIP OF 6" WIDE MAGNETIC BLUE CODED TAPE IMPRINTED WITH 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-MANHOLE ARE REQUIRED ON ALL CLEAROUTS 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.



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

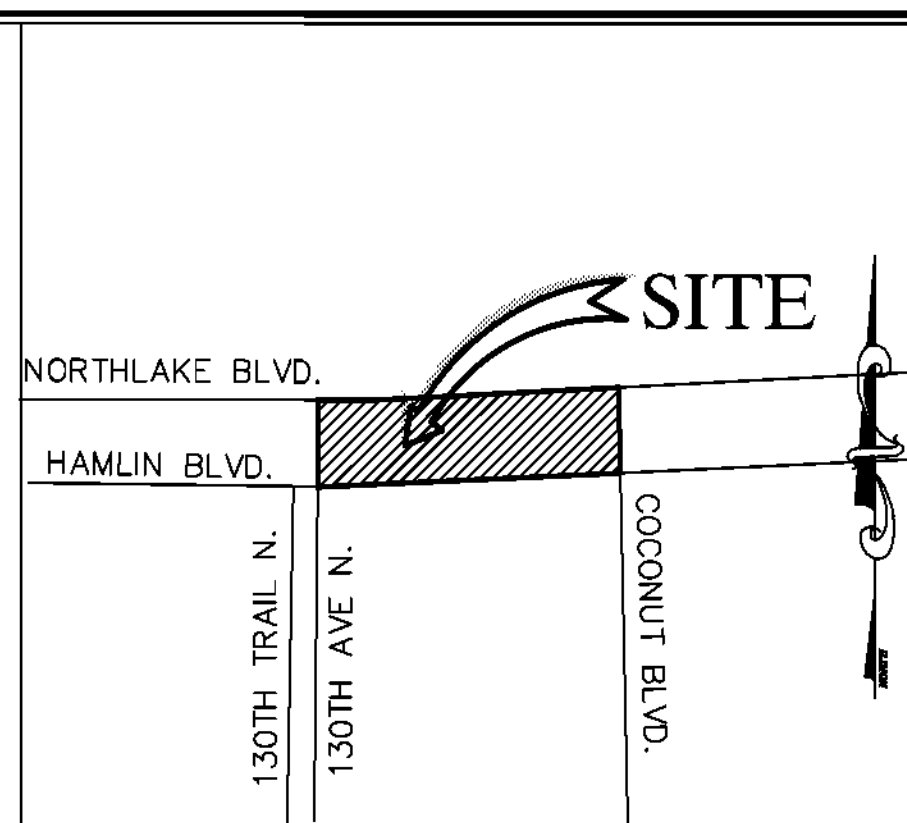
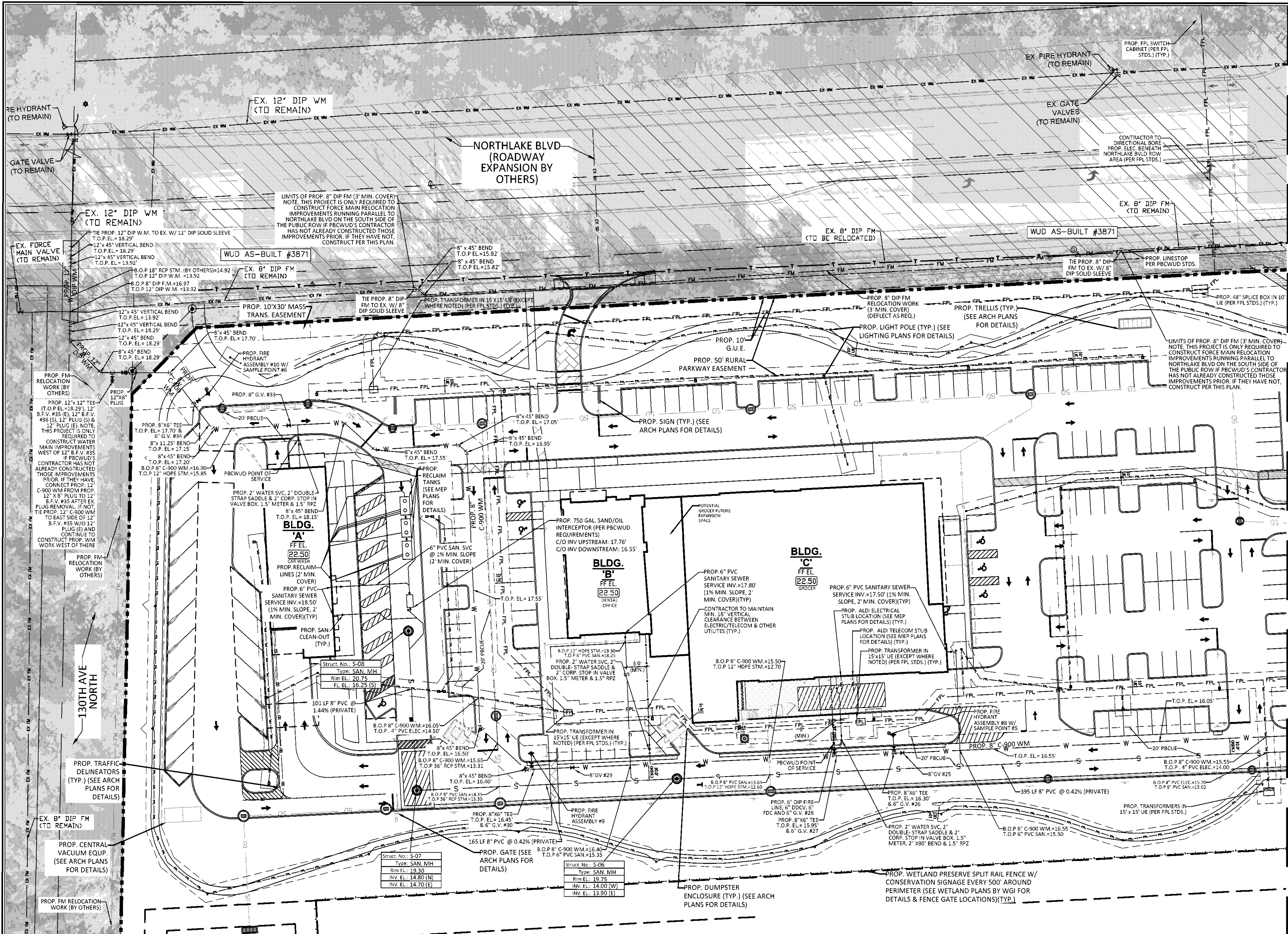
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7900 GLADES ROAD - SUITE 100
BOCA RATON, FLORIDA 33434
PHONE (561)-392-1991 / FAX (561)-750-1452

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



LOCATION MAP

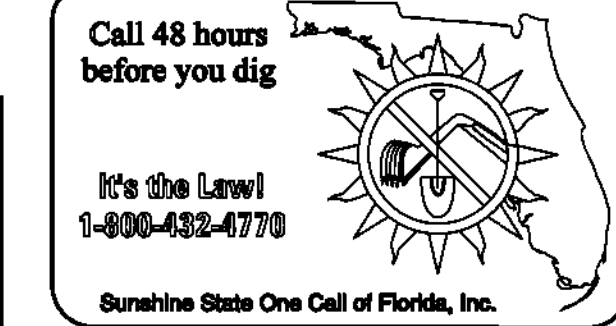
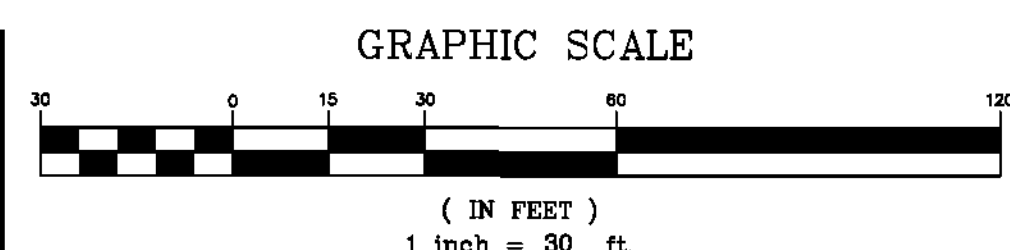
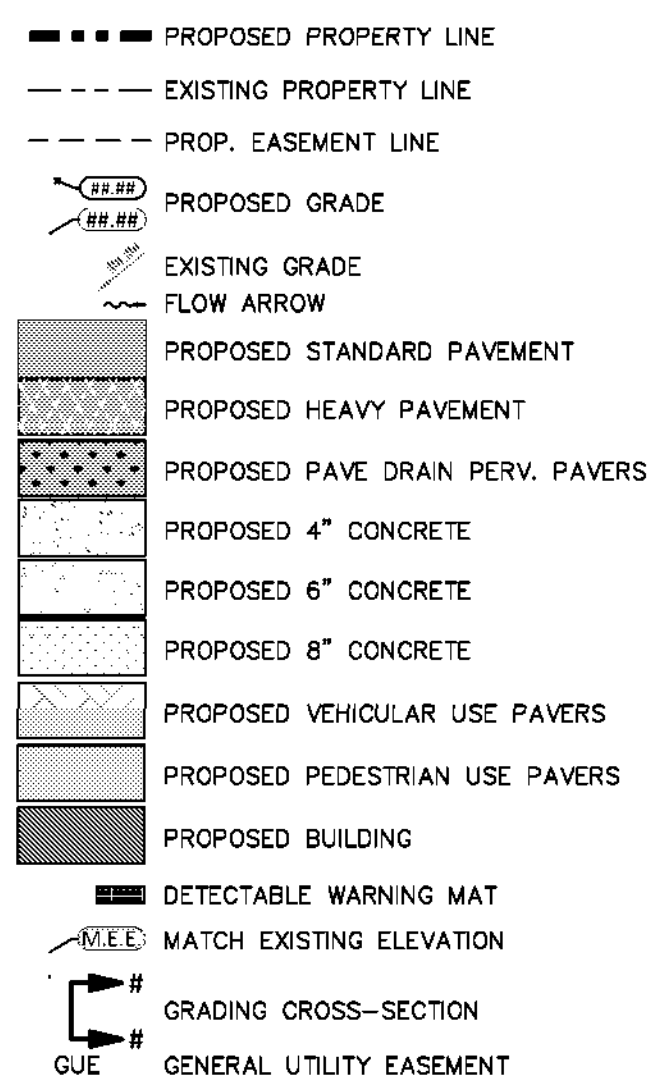
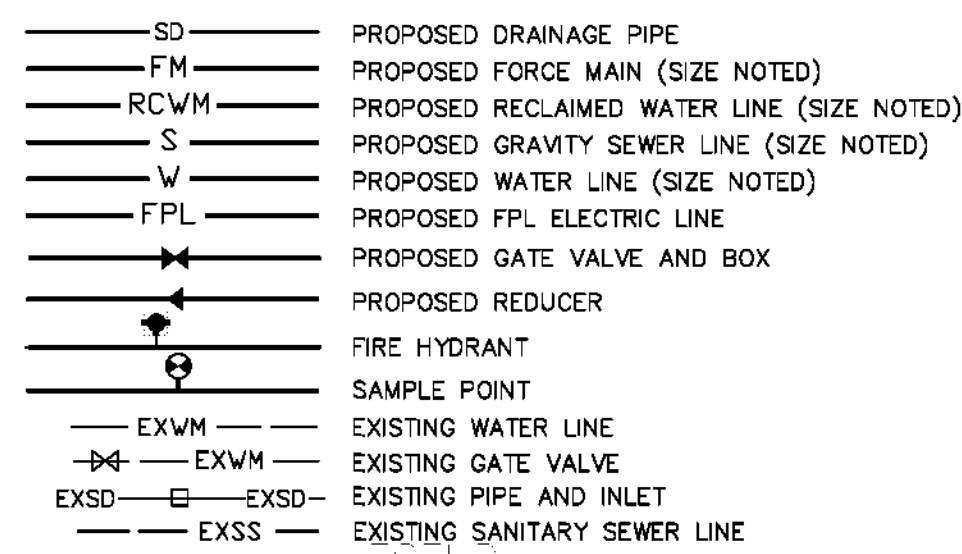
SECTION 15, TOWNSHIP 42S, RANGE 41E N.T.S.

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

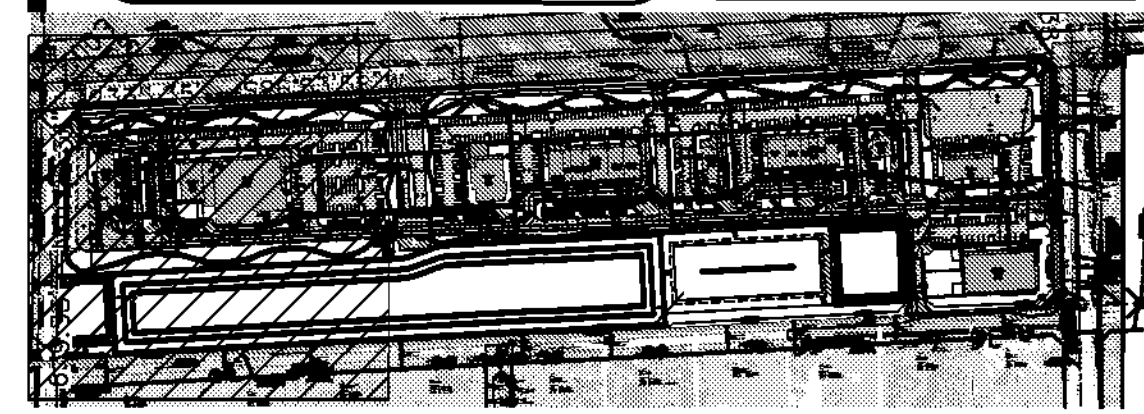
PBCUE RECORDED IN:
O.R.B. P.G.

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

INDEMNITY AGREEMENT
RECORDED IN:
O.R.B. P.G.



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



KEY MAP

WUD #23-575

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 PLANE COORDINATES SHALL BE DISPLAYED ON RECORD DRAWING FOR ALL FEATURES SPECIFIED IN PBCWUD STANDARDS.
4. STATE PLANE 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" G.V. #2F WILL BE PRIVATELY OWNED AND MAINTAINED.
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GENERAL LANDSCAPE NOTES:

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REV	PER	LIGHTING/FPL/BLDG CHANGES	DATE
07/25/25	MVK		
03/11/25	MVK		
02/12/25	MVK		
01/14/25	MVK		
REVISIONS	DATE	BY	
FILE NAME	77HENS.DWG		

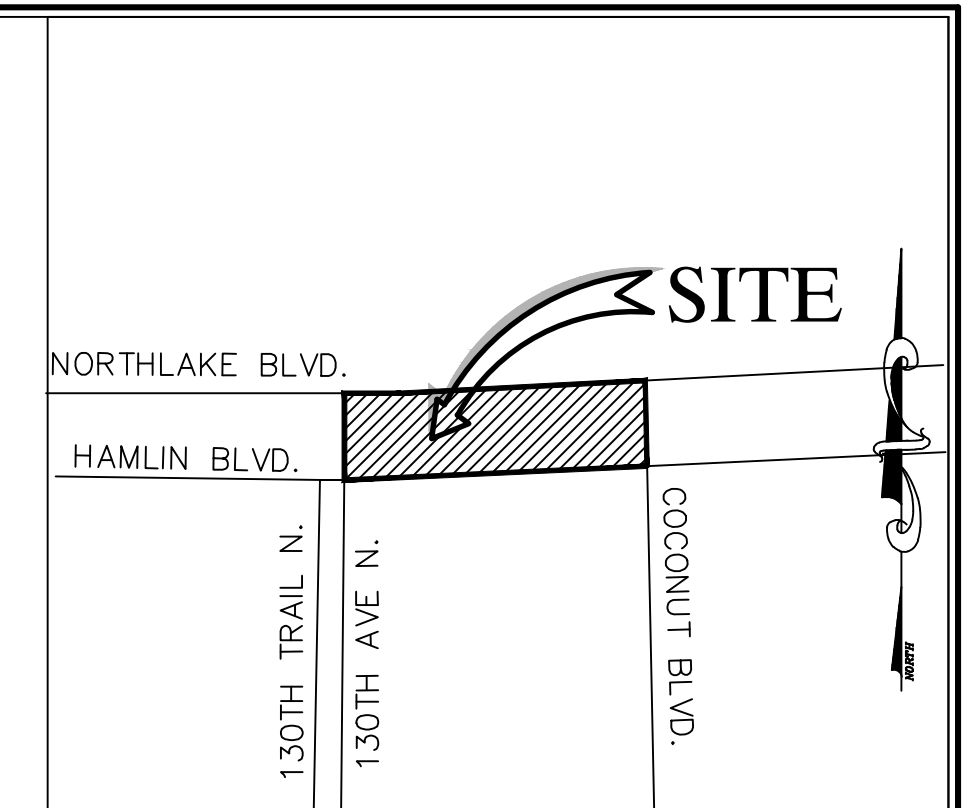
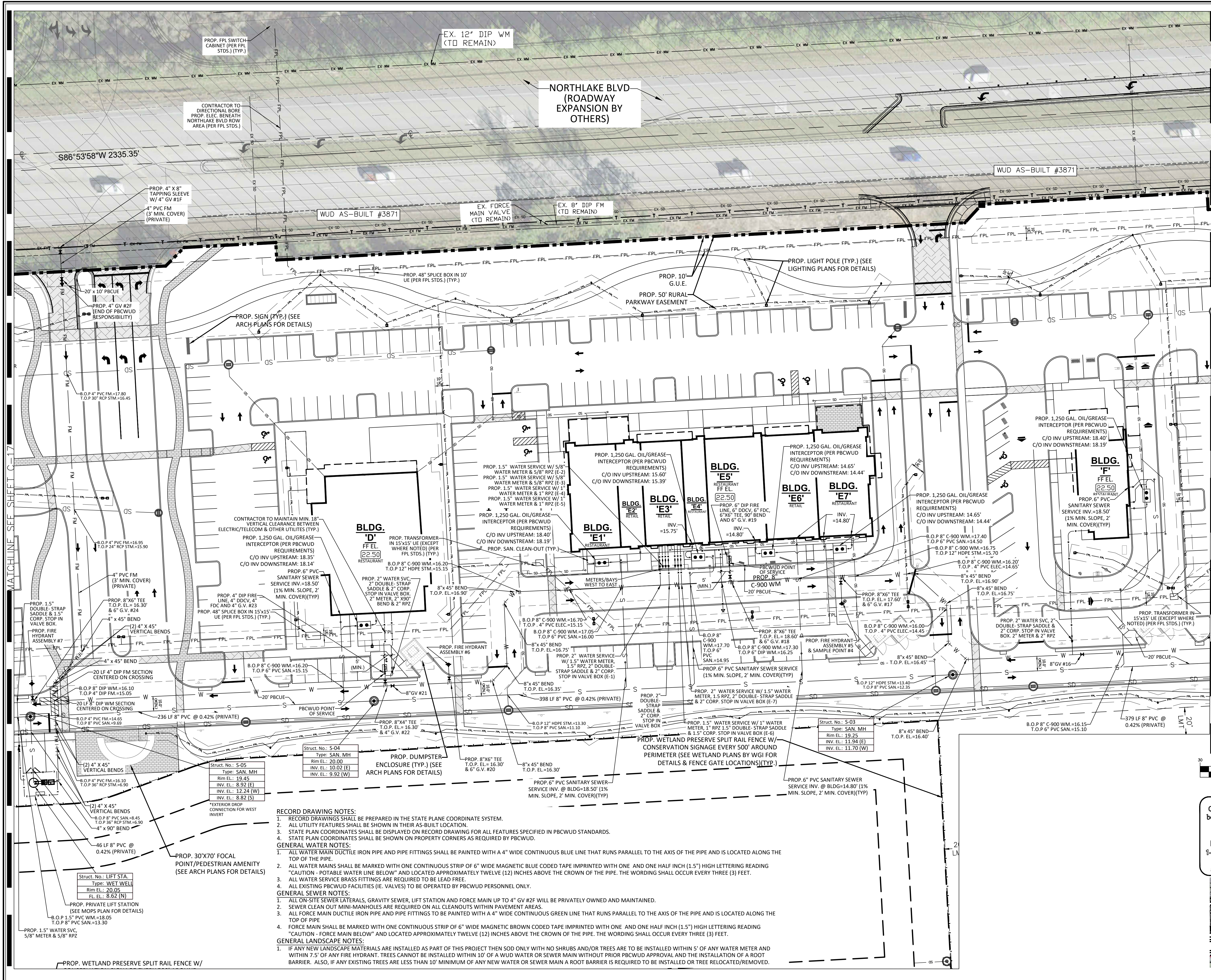
CAULFIELD & WHEELER, INC.
CIVIL ENGINEERING - LAND PLANNING
LANDSCAPE DESIGN - SURVEYING
7900 GLADES ROAD - SUITE 100
BOCA RATON, FLORIDA 33434
PHONE (561) 392-1991 / FAX (561) 750-1452

SHOPS AT INDIAN TRAILS
A.K.A. COCONUT CROSSING
WATER DISTRIBUTION, SANITARY
SEWER & UTILITY PLAN WEST
NORTH LAKE BLVD. & COCONUT BLVD
SW PALM BEACH GARDENS, FLORIDA

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

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

JOB # 774-1 SHT. NO. C-17 OF 45 SHEETS



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

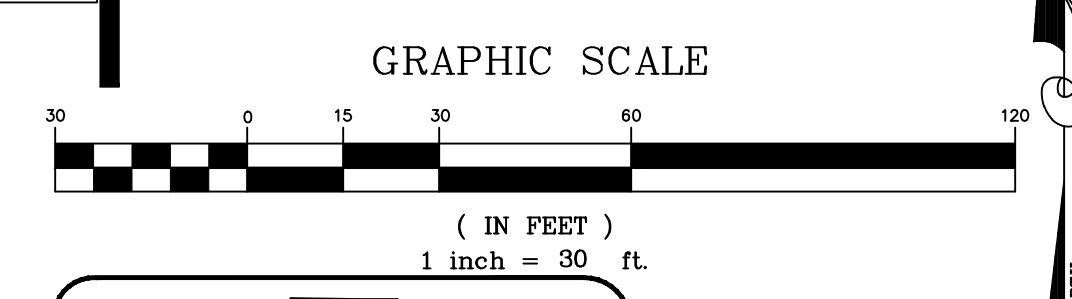
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O.R.B. P.G.

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

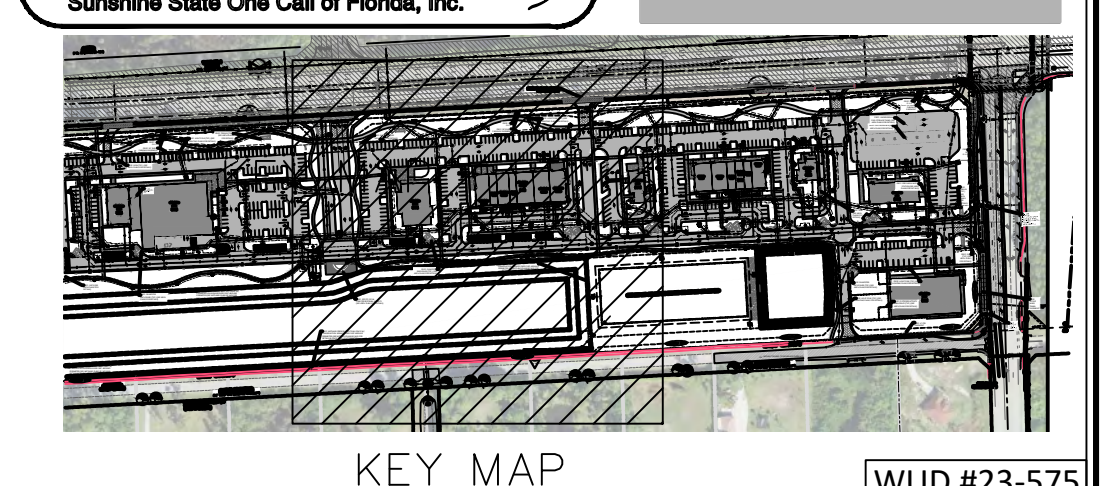
INDEMNITY AGREEMENT
RECORDED IN:
O.R.B. P.G.

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

- 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
 - EXISTING WATER LINE
 - EXISTING GATE VALVE
 - EXISTING PIPE AND INLET
 - 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
 - GENERAL UTILITY EASEMENT



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



REV PER LIGHTING/FPL/BLDG CHANGES	07/25/25	MVK
REV PER PBCWD PRECON COMMENTS	03/11/25	MVK
REV PER ADD. GRADES	02/11/25	MVK
REV PER NEW SITE PLAN	01/14/25	MVK
REVISIONS	DATE	BY
FILE NAME	77HENDWG	

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./ P.G.	N/A
SCALE	1"=30'

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

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

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

WUD AS-BUILT #3871

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)
K PROPOSED WATER LINE (SIZE NOTED)
FPL PROPOSED FPL ELECTRIC LINE
PROPOSED GATE VALVE AND BOX
PROPOSED REDUCER
FIRE HYDRANT
SAMPLE POINT
EXISTING WATER LINE
EXVM EXISTING GATE VALVE
EXSD EXISTING PIPE AND INLET
EXSS EXISTING SANITARY SEWER LINE

LEGEND

- PROPOSED PROPERTY LINE
EXISTING PROPERTY LINE
PROPOSED EASEMENT LINE
PROPOSED GRADE
EXISTING GRADE
EXISTING 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
MATCH EXISTING ELEVATION
GRADING CROSS-SECTION
GENERAL UTILITY EASEMENT

GRAPHIC SCALE

(IN FEET)
1 inch = 30 ft

NOTE:
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DEPTH AND LOCATION OF
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KEY MAP

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REV	PER	DATE	BY
07/25/25	WVK		
03/11/25	WVK		
02/12/25	WVK		
01/14/25	WVK		
REVISIONS			
FILE NAME	7714E.DWG		

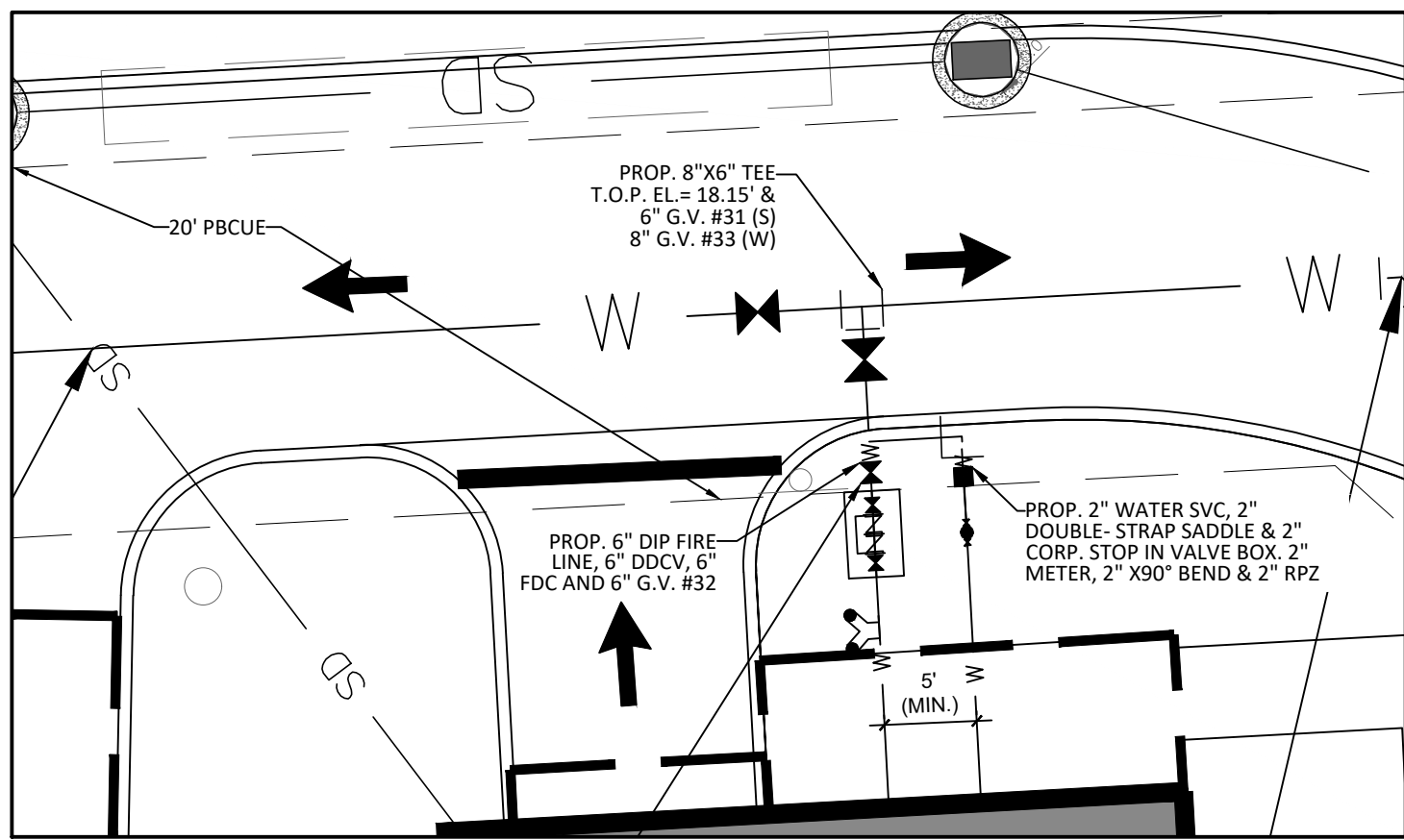
CAULFIELD & WHEELER, INC.
CIVIL ENGINEERING - LAND PLANNING
LANDSCAPE DESIGN - SURVEYING
7900 GLADES ROAD - SUITE 100
BOCA RATON, FLORIDA 33434
PHONE (561)-392-1991 / FAX (561)-750-1452

SHOPS AT INDIAN TRAILS
A.K.A. COCONUT CROSSING
WATER DISTRIBUTION, SANITARY
SEWER & UTILITY PLAN EAST
NORTHLAKE BLVD. & COCONUT BLVD.
SWC PALM BEACH GARDENS, FLORIDA

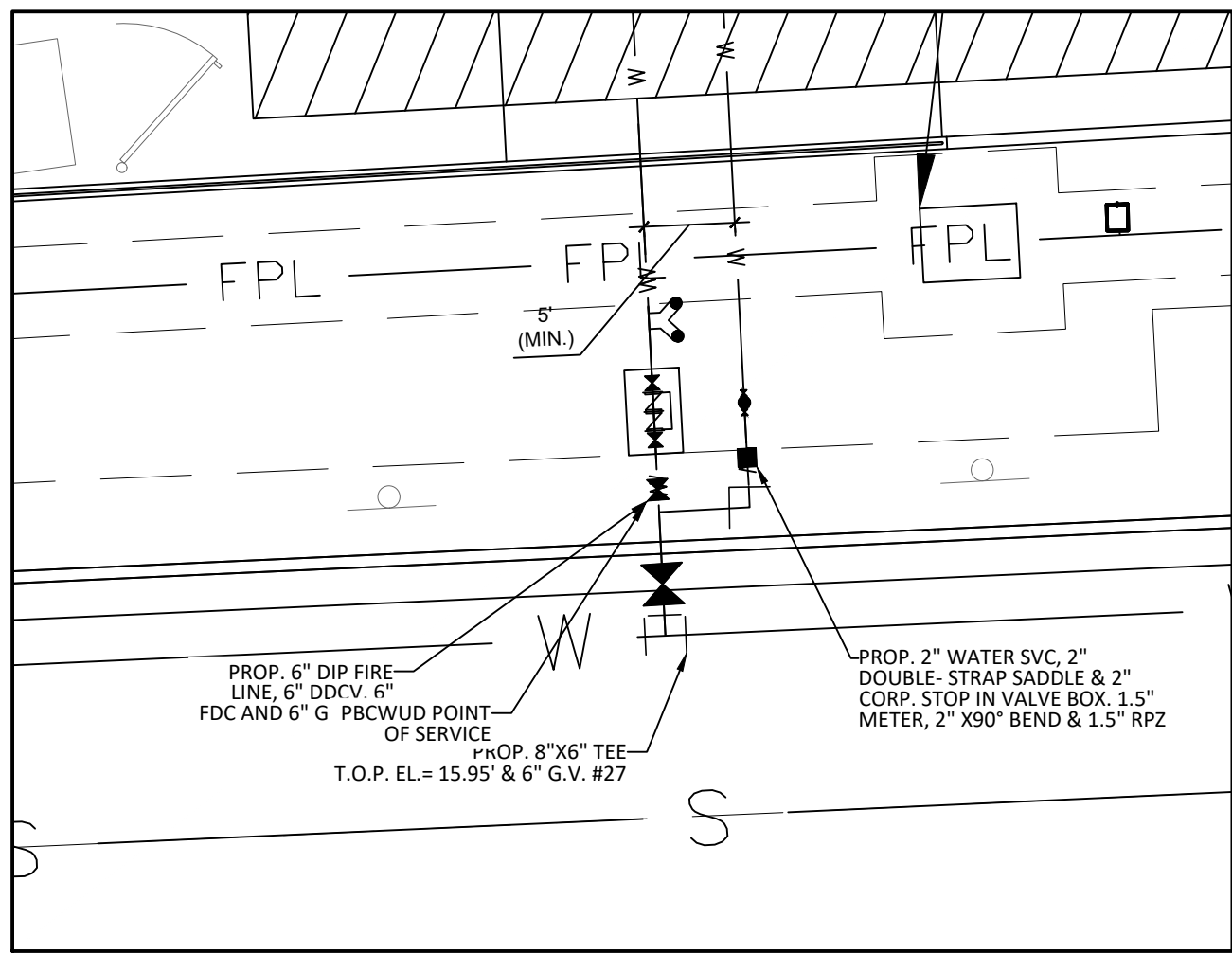
DATE 07/28/23
DRAWN BY M.V.K.
F.B./ P.G. N/A
SCALE 1"=30'

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

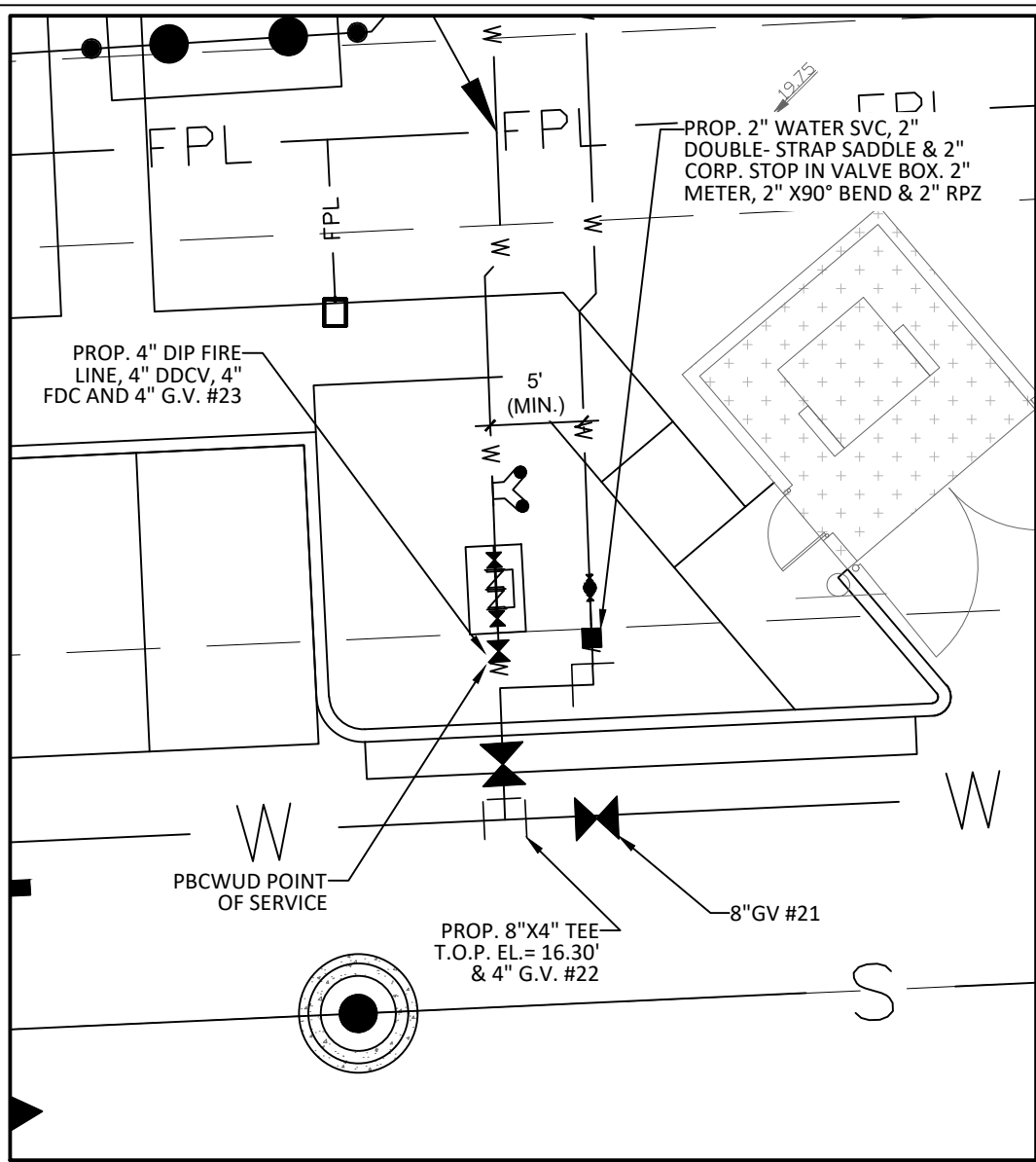
JOB # 7714-1
SHT. NO.
C-19
OF 45 SHEETS



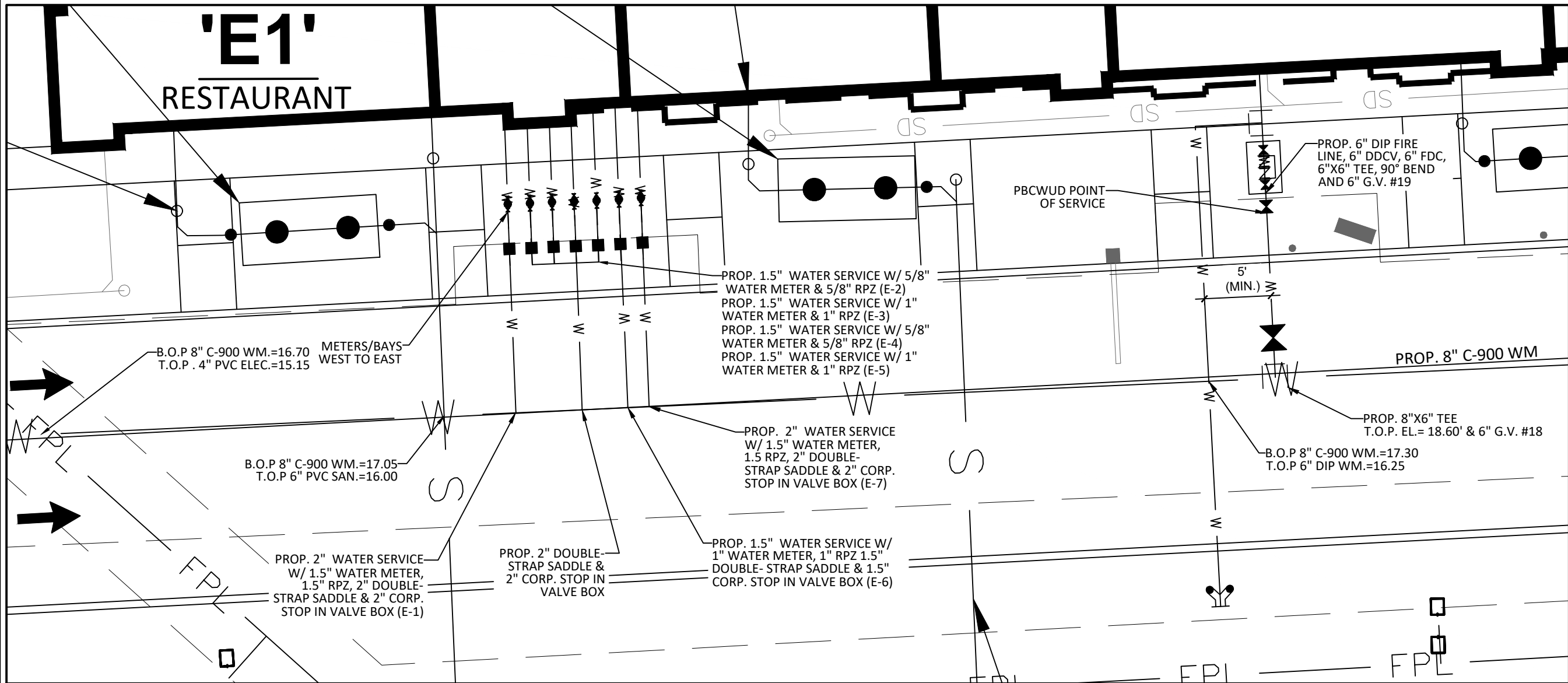
BLDG. A BLOWUP (1"=10' SCALE)



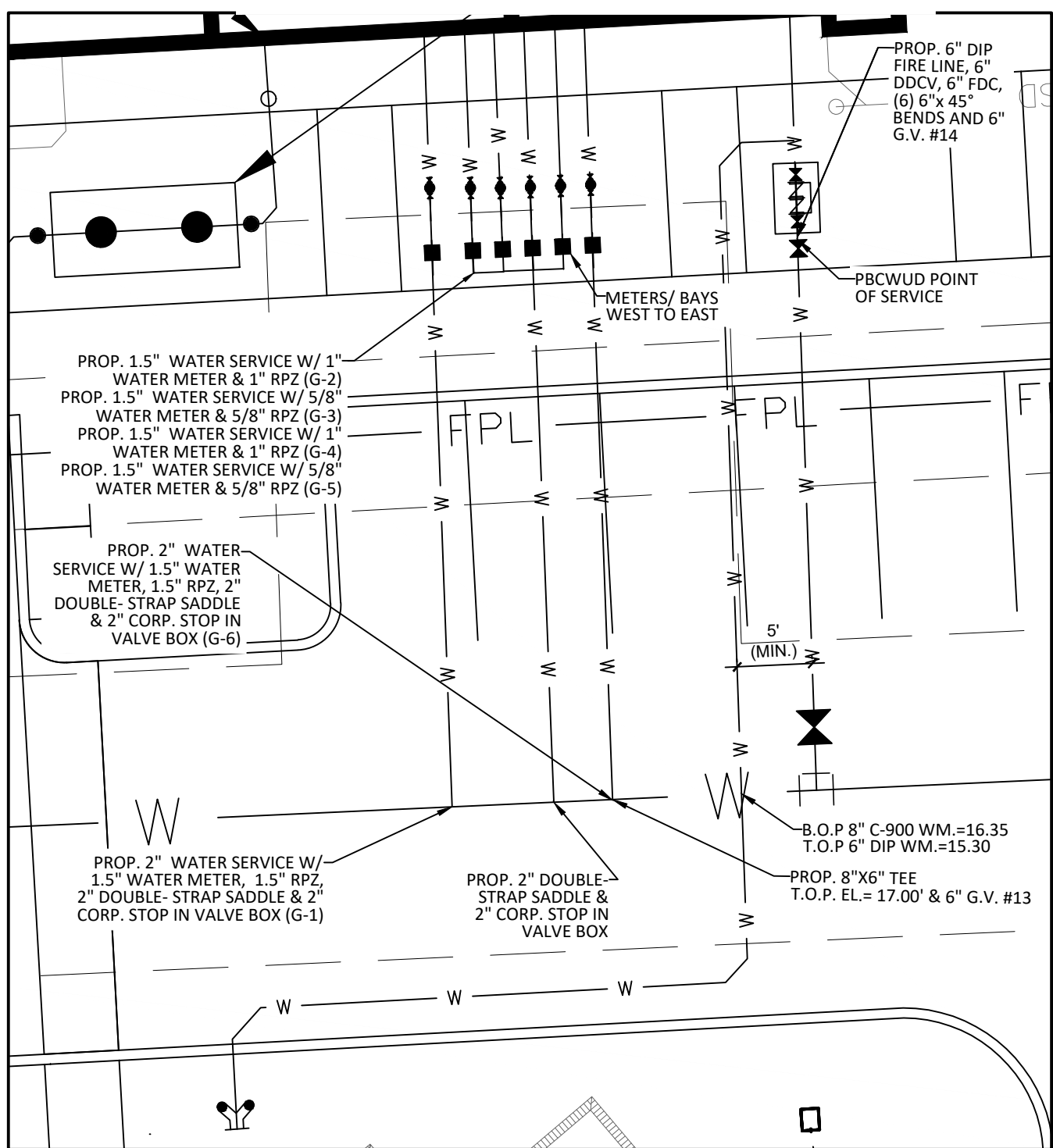
BLDG. C BLOWUP (1"=10' SCALE)



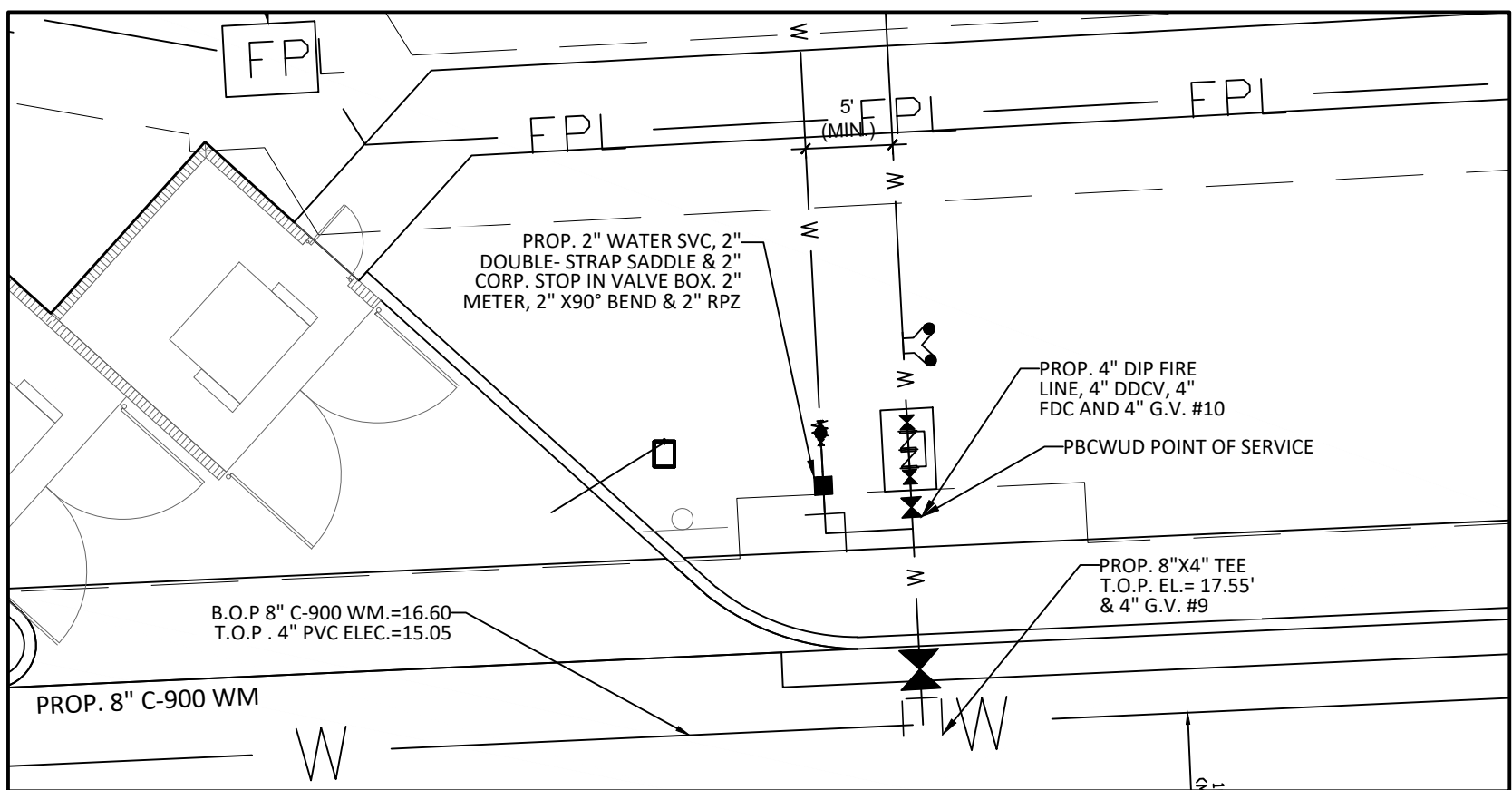
BLDG. D BLOWUP (1"=10' SCALE)



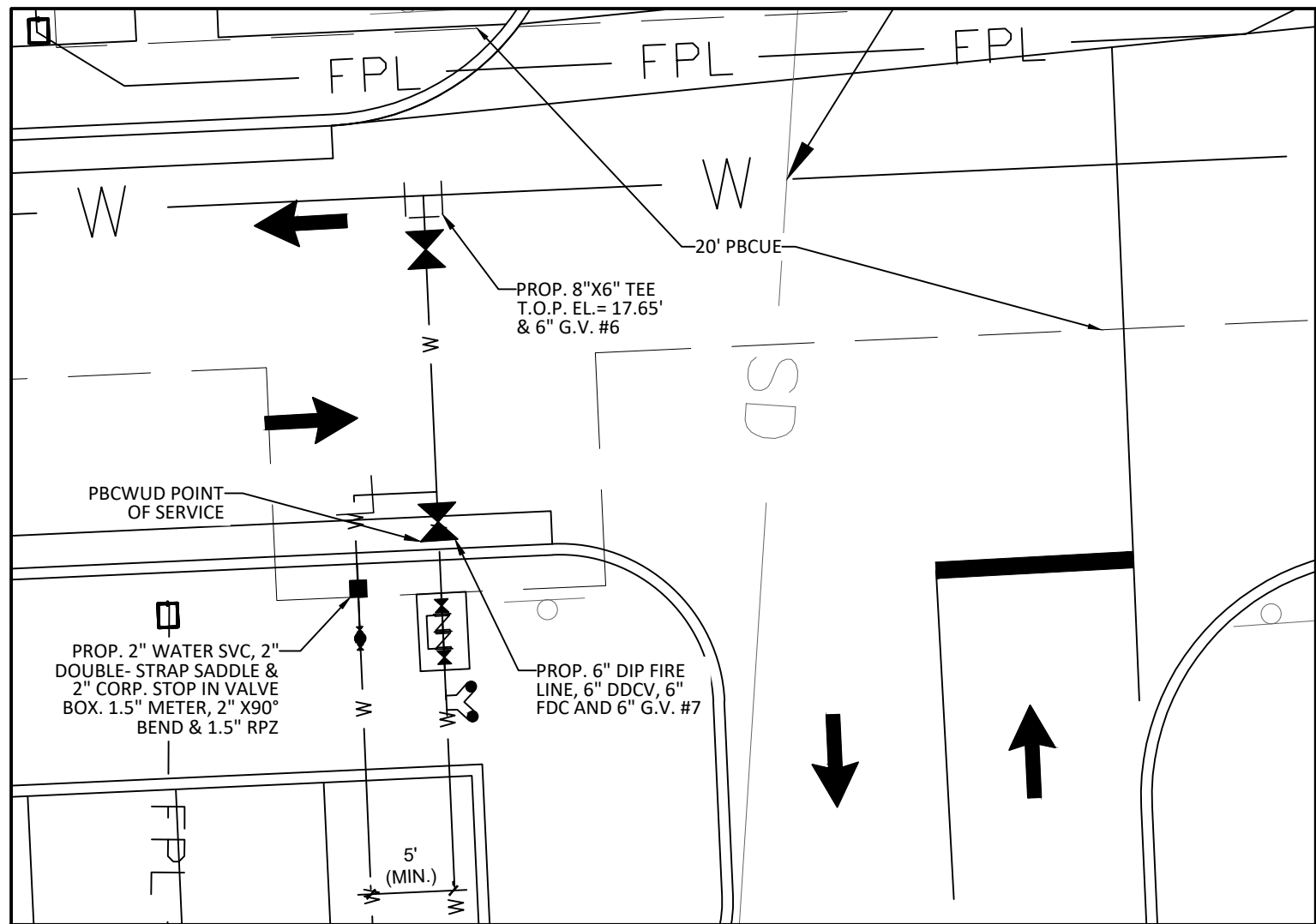
BLDG. E BLOWUP (1"=10' SCALE)



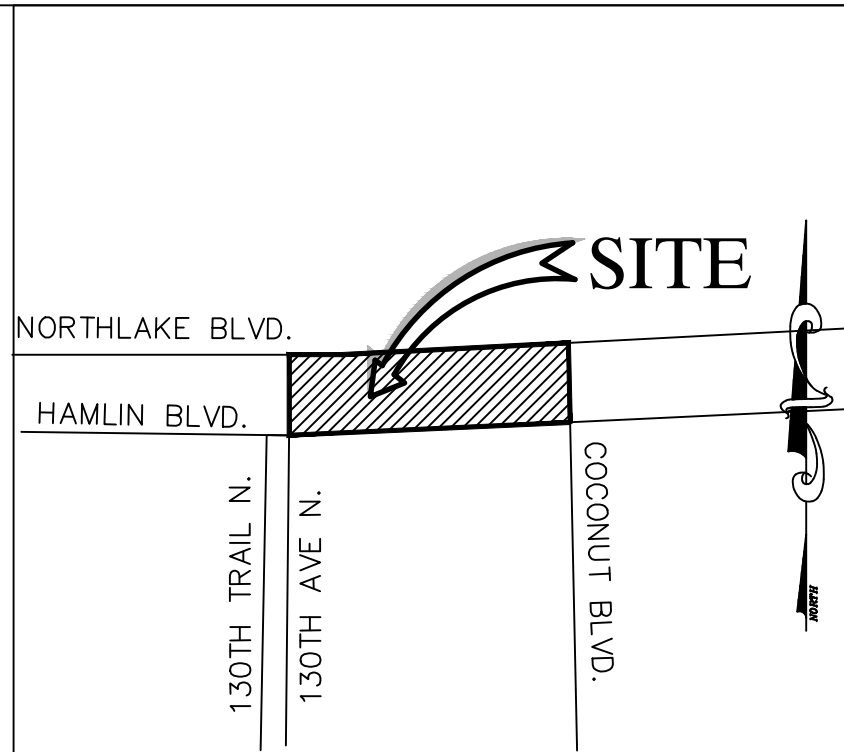
BLDG. G BLOWUP (1"=10' SCALE)



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



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



LOCATION MAP

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

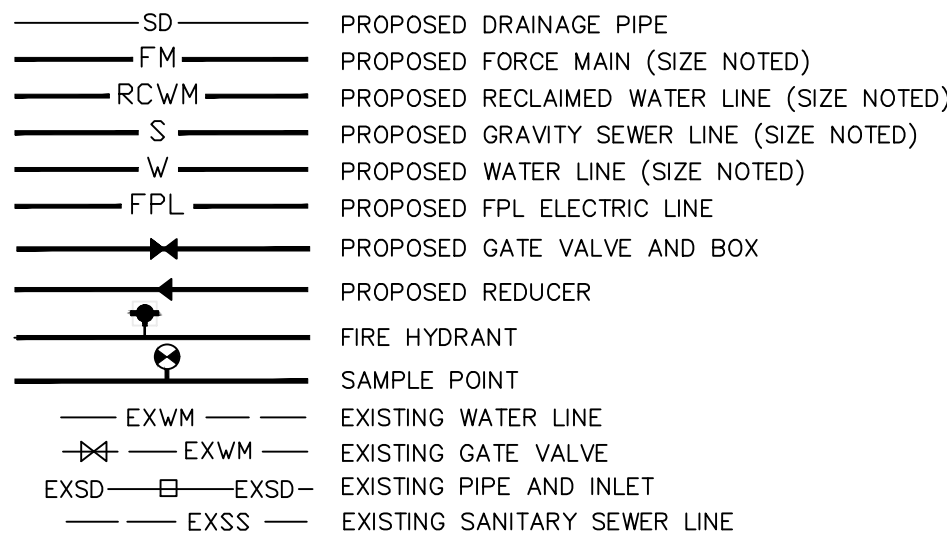
NOTE: ELEVATIONS ARE NAVD 88
CONVERSION FACTOR
(NAVD 88) = (NGVD 29) -1.62'

PBCUE RECORDED IN:
O.R.B. _____ P.G. _____

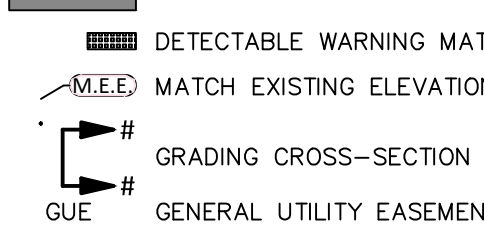
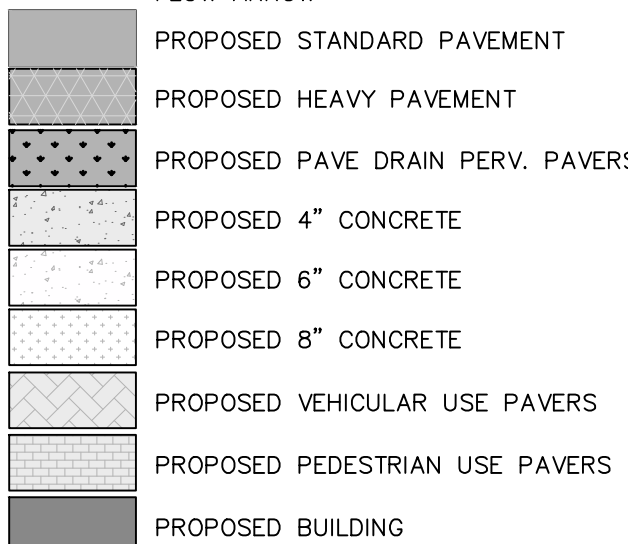
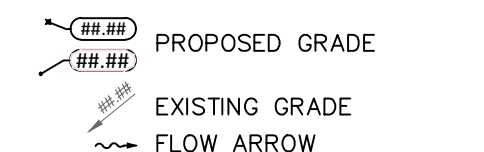
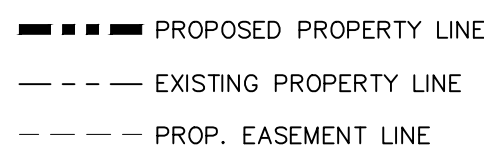
PLAT RECORDED IN:
P.B. _____ P.G. _____

INDEMNITY AGREEMENT
RECORDED IN:
O.R.B. _____ P.G. _____

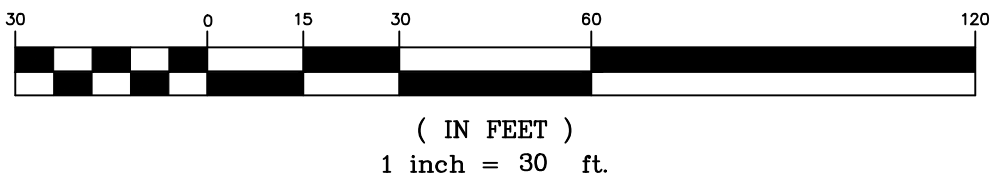
LEGEND



LEGEND



GRAPHIC SCALE



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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
FILE NAME	774ENG.DWG		

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
WATER DISTRIBUTION, SANITARY
SEWER & UTILITY PLAN BLOWUPS**
S.W.C. PALM BEACH GARDENS, FLORIDA

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

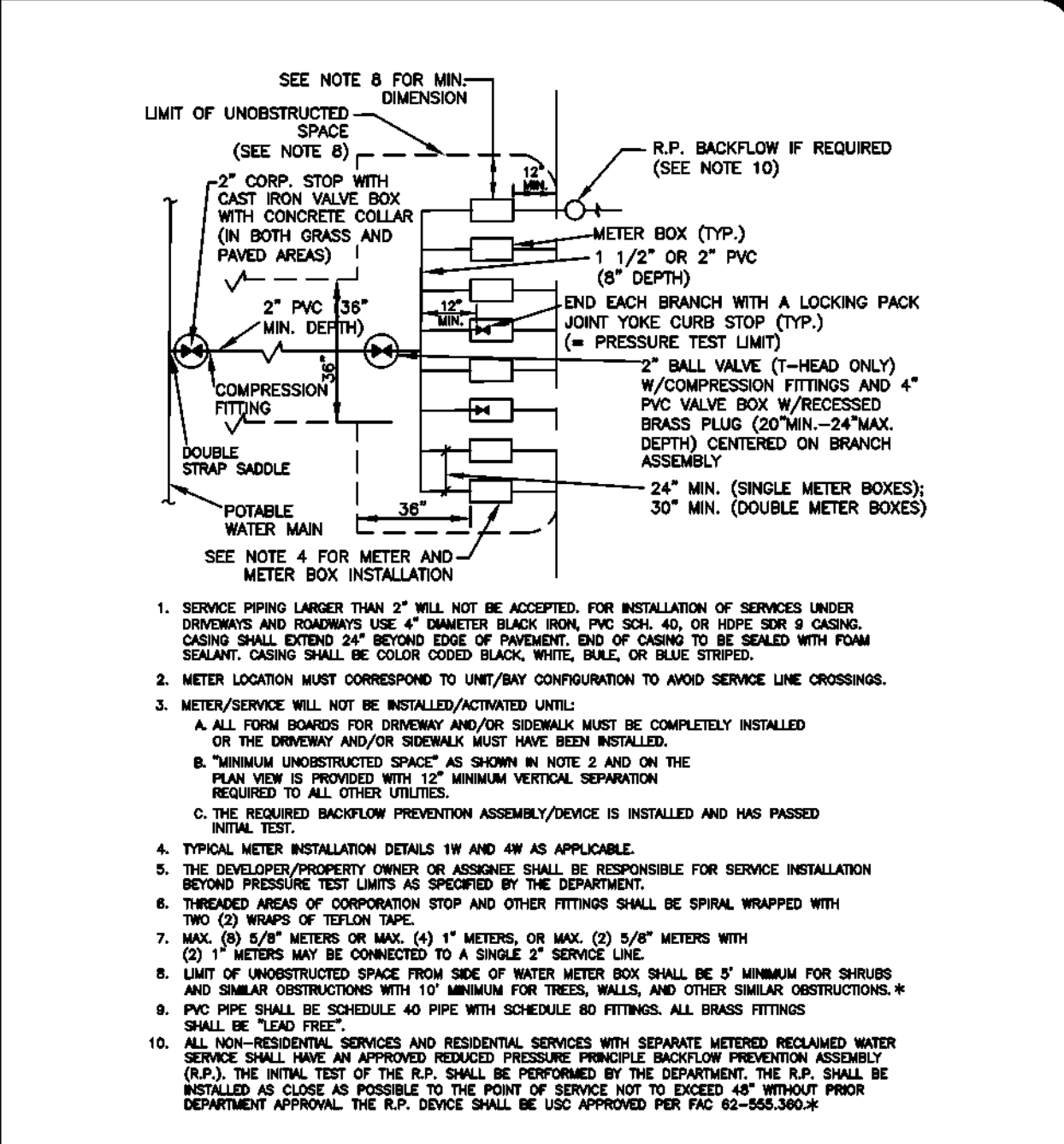
MATTHEW V. KAHN PROFESSIONAL ENGINEER LICENSE NO. 82227 STATE OF FLORIDA - FOR THE FIRM -	DATE
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JOB # 7714-1 SHT.NO. C-19A OF 45 SHEETS

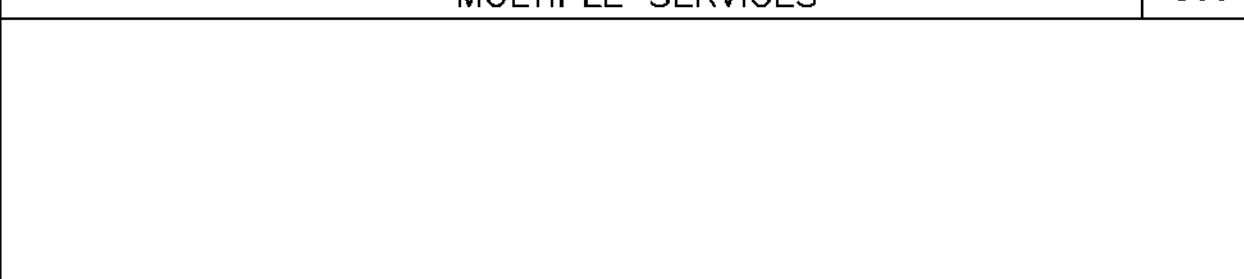
DATE	NO.	REVISION / REMARKS
JAN 2010	1	ORIGINAL
JUN 2023	2	REVISION
	3	REVISION

DATE	NO.	REVISION / REMARKS
JAN 2010	1	ORIGINAL
JUN 2023	2	REVISION
	3	REVISION

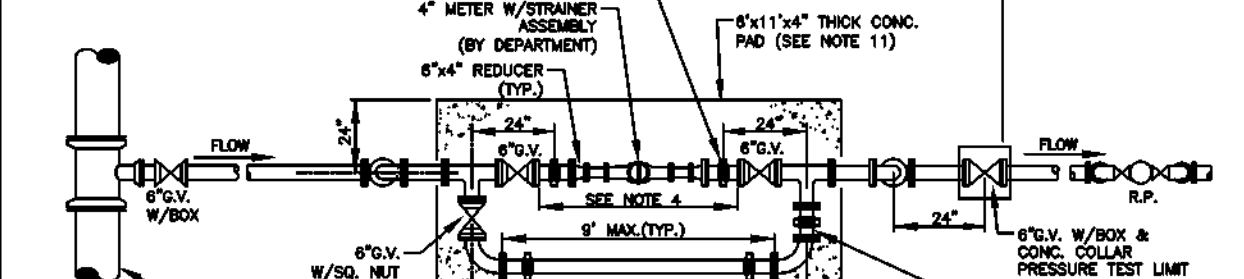
STANDARD DETAILS
SHEET
C-22
OF
45
SEAL



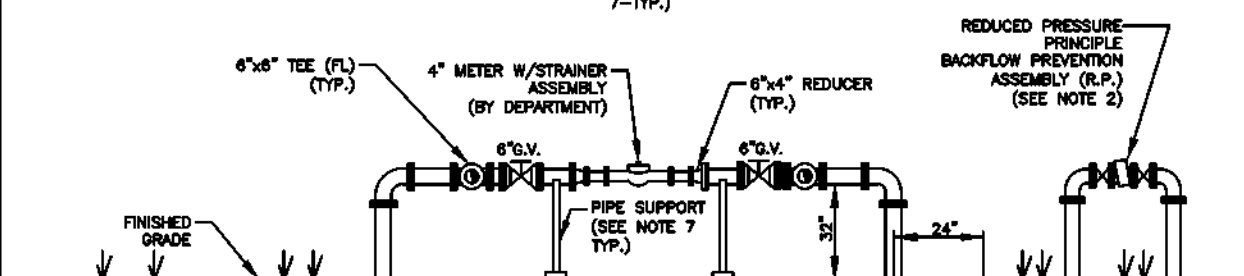
POTABLE WATER TYPICAL CONNECTION FOR MULTIPLE SERVICES



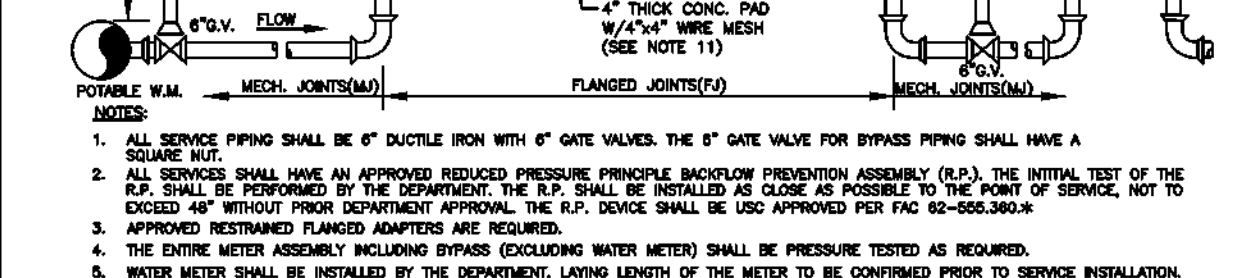
POTABLE WATER #1 STANDARD DETAILS



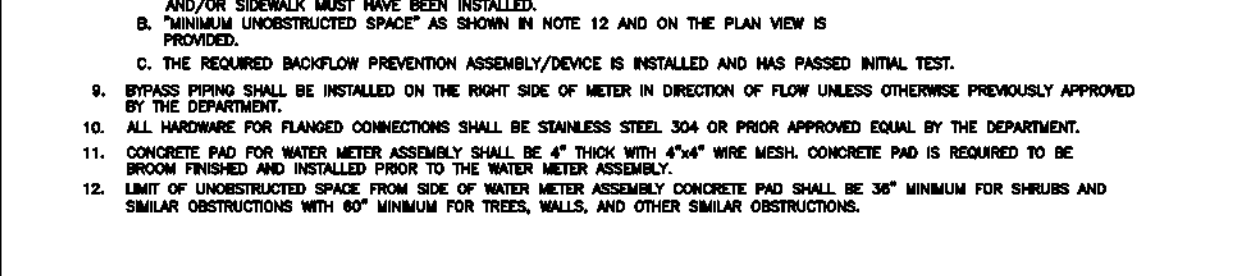
POTABLE WATER #2 STANDARD DETAILS



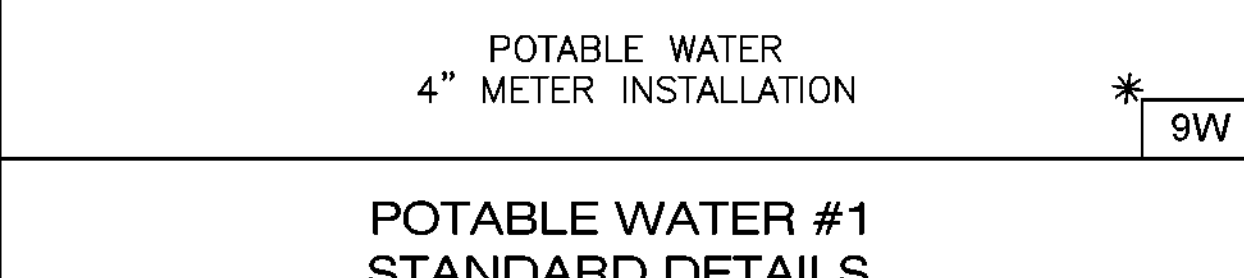
POTABLE WATER #3 STANDARD DETAILS



POTABLE WATER #4 STANDARD DETAILS



POTABLE WATER #5 STANDARD DETAILS

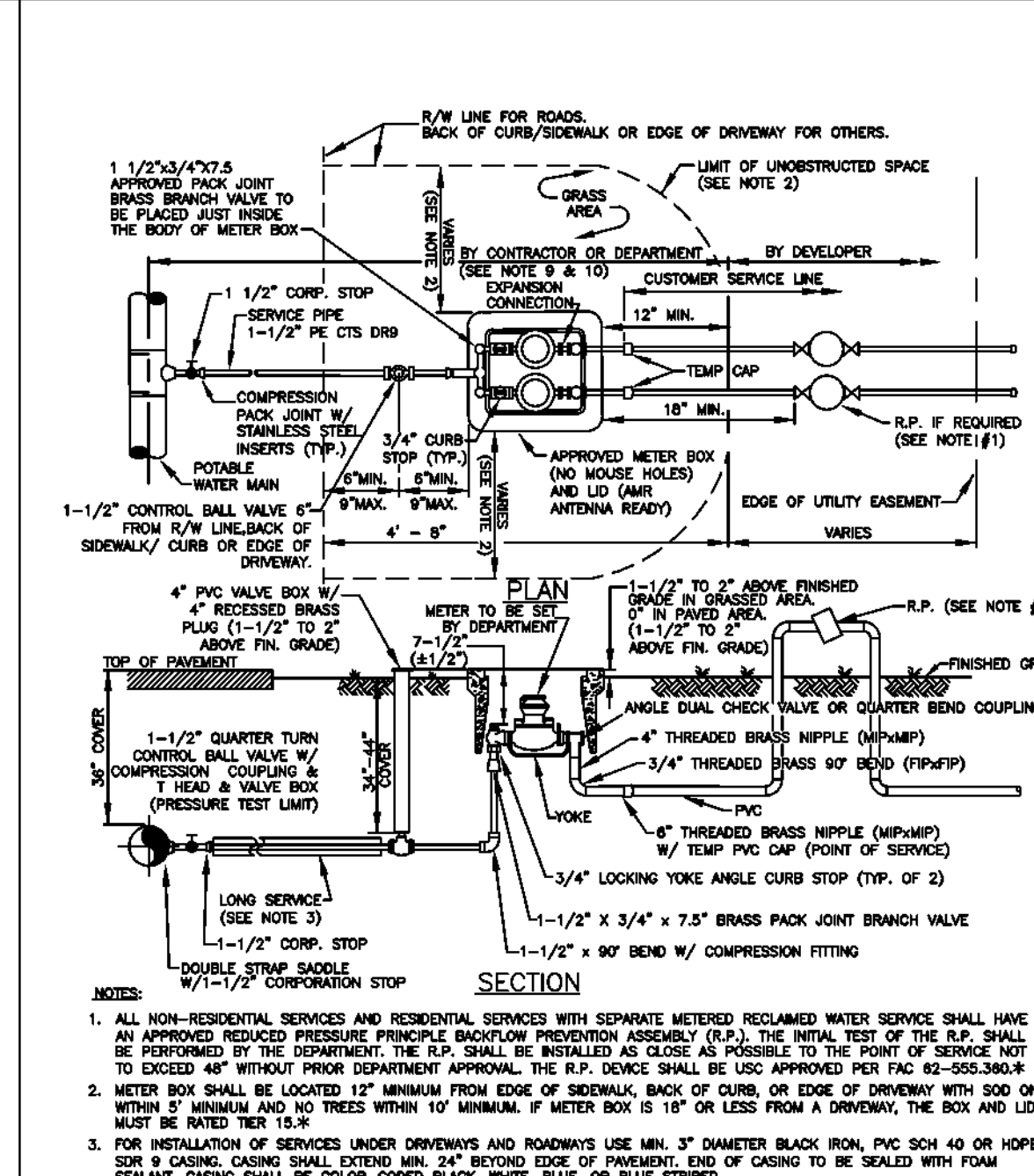


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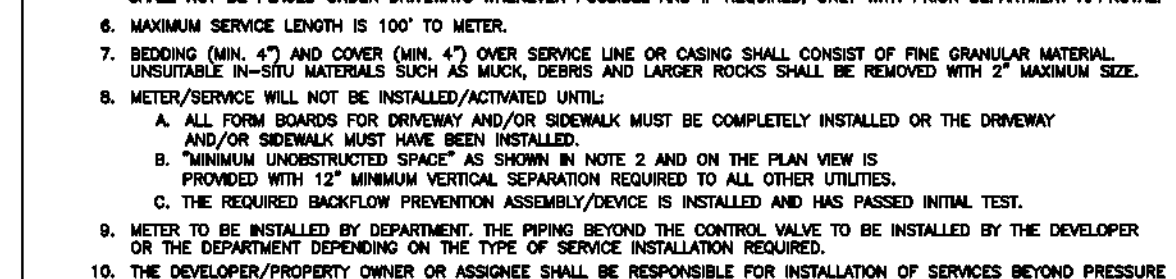


POTABLE WATER #7 STANDARD DETAILS

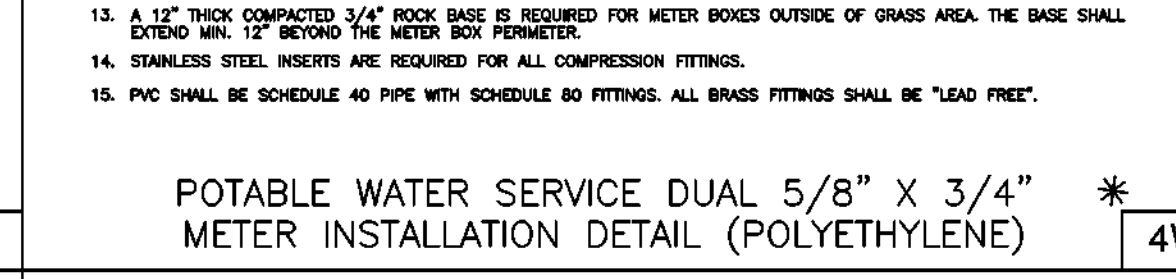
CONSULTANT:
CAULFIELD & WHEELER, INC.
1111 S. FLORIDA AVE., SUITE 100
WEST PALM BEACH, FL 33411
TEL: (561) 833-4770
FAX: (561) 833-4771
DESIGNED BY: WUD
DRAWN BY: M. BUCKNER
CHECKED BY: J. LAMMERT
APPROVED BY: WUD
Palm Beach County
Water Utilities Department
P.O. Box 16097
West Palm Beach, FL 33416-6097



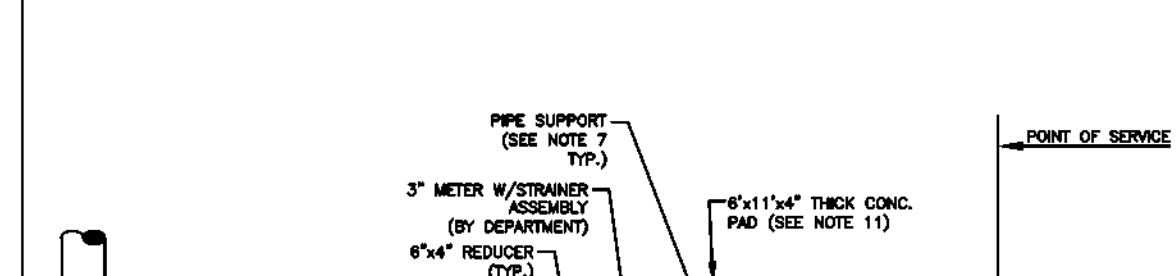
POTABLE WATER SERVICE DUAL 5/8" x 3/4" x 3/4" METER INSTALLATION DETAIL (POLYETHYLENE)



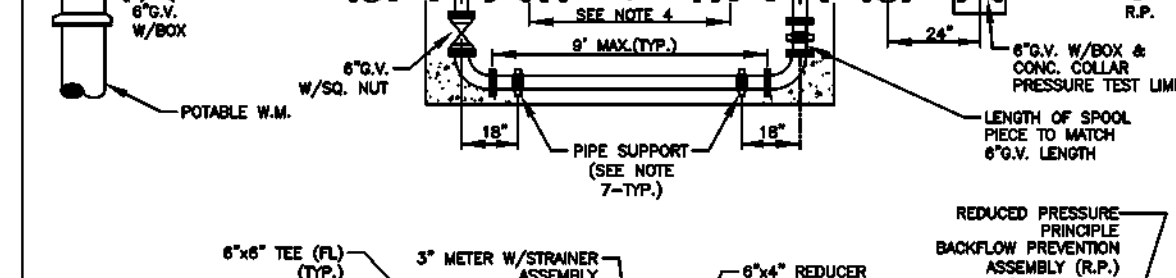
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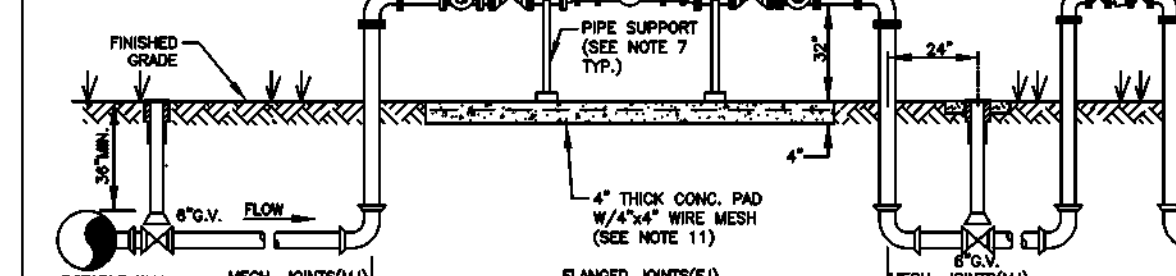
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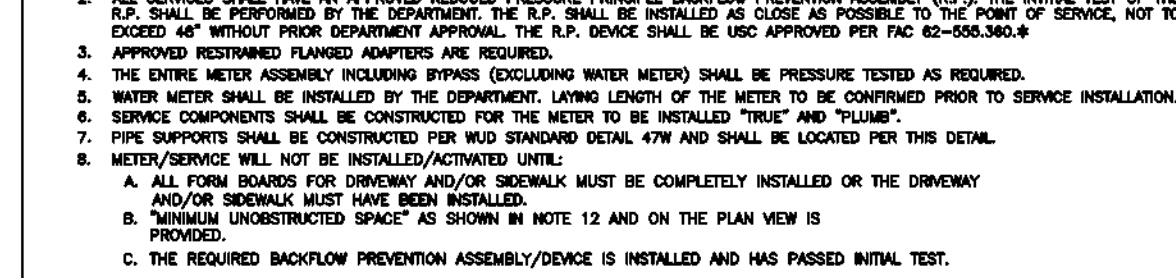
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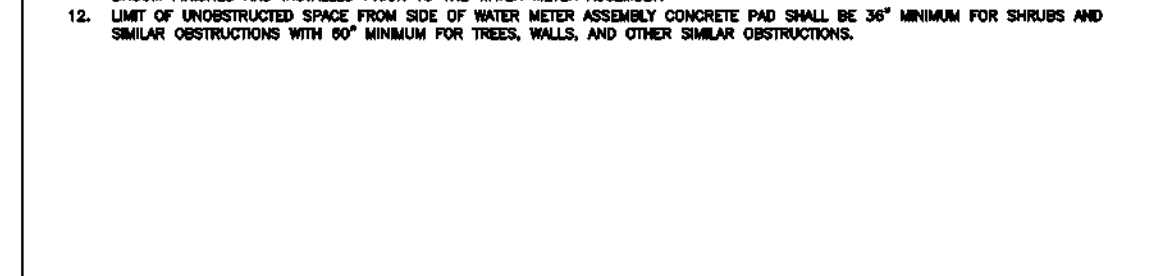
POTABLE WATER SERVICE DUAL 5/8" x 3/4" x 3/4" METER INSTALLATION DETAIL (POLYETHYLENE)



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

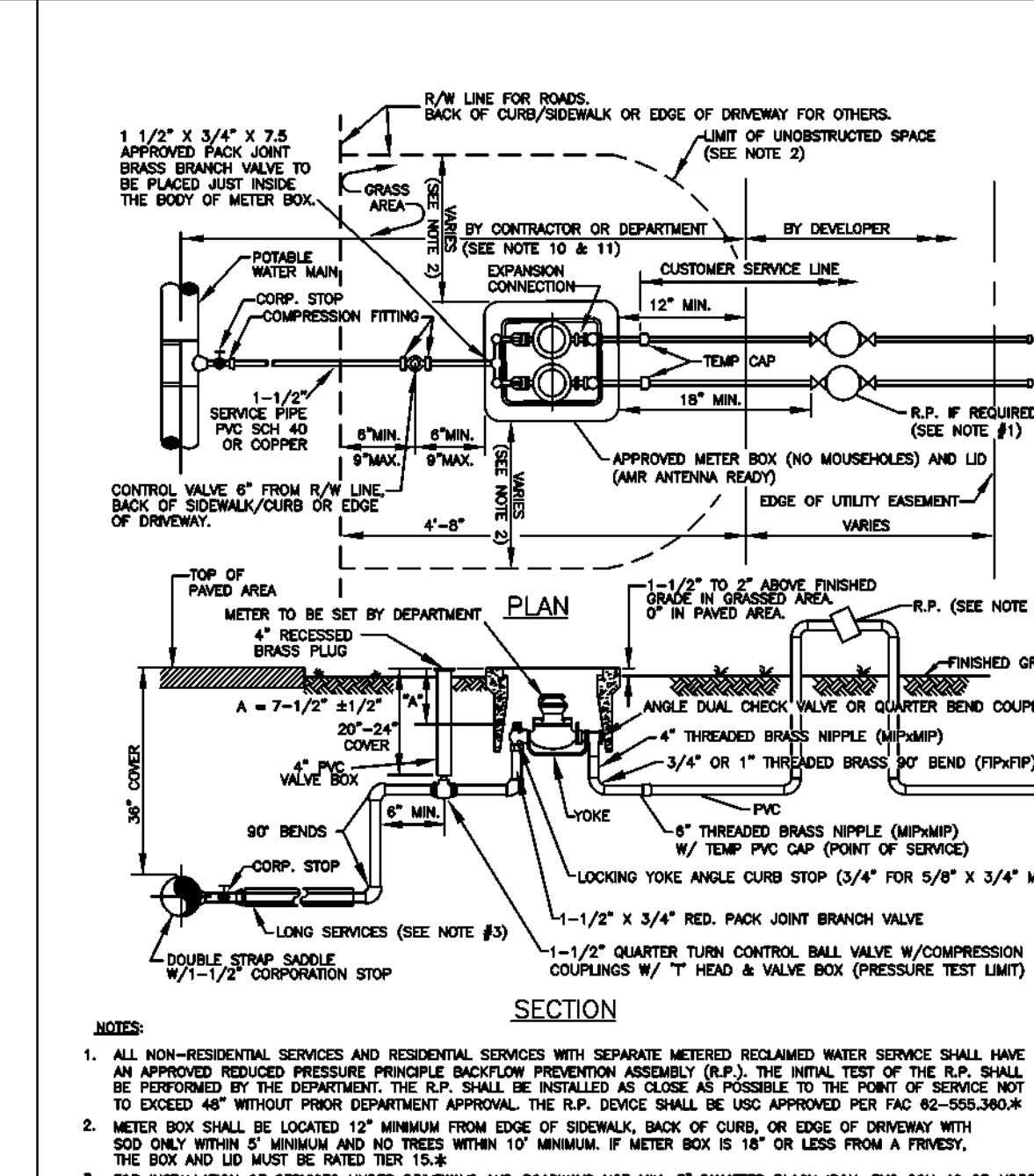


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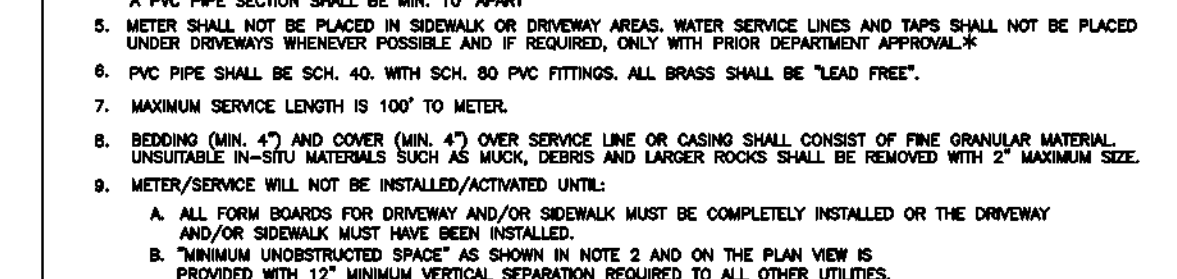


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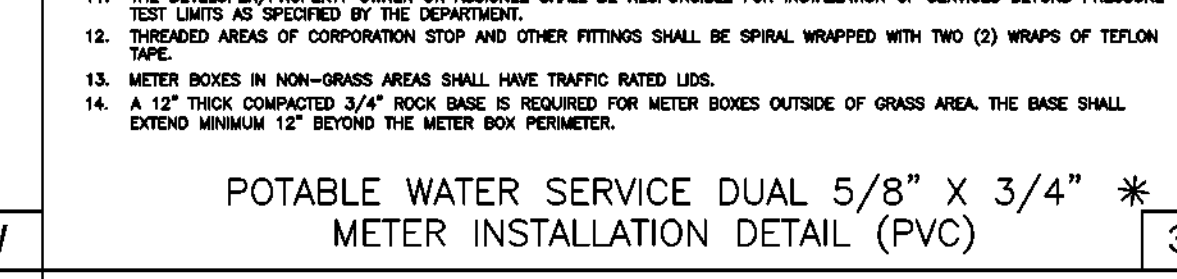
DESIGNED BY: WUD
DRAWN BY: M. BUCKNER
CHECKED BY: J. LAMMERT
APPROVED BY: WUD
Palm Beach County
Water Utilities Department
P.O. Box 16097
West Palm Beach, FL 33416-6097



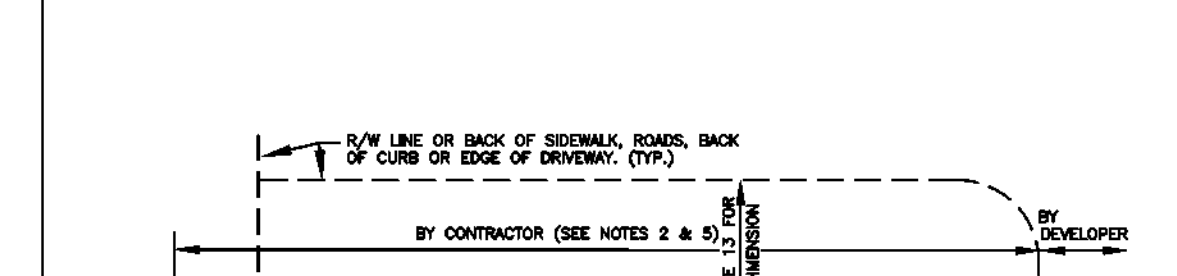
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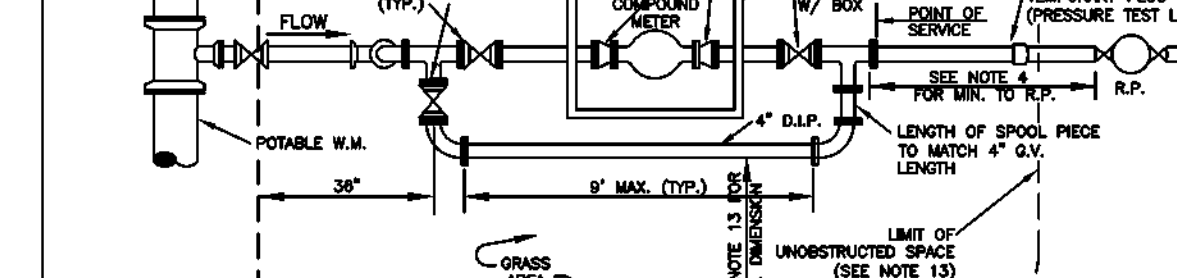
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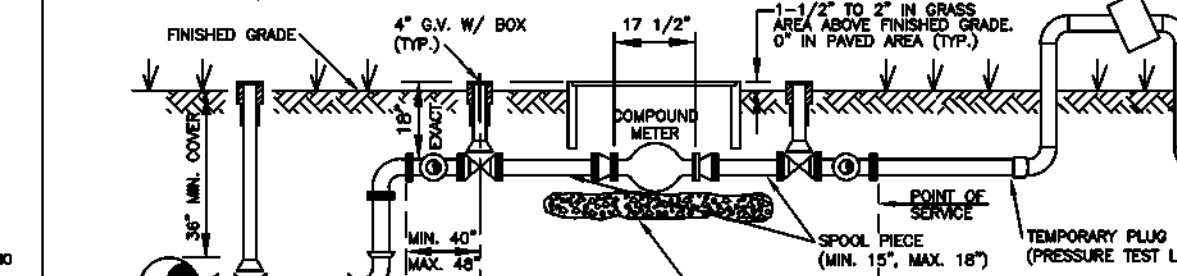
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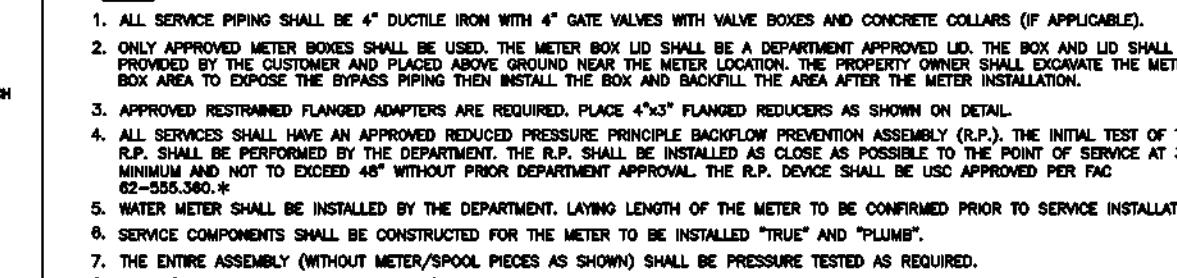
POTABLE WATER SERVICE DUAL 5/8" x 3/4" x 3/4" METER INSTALLATION DETAIL (POLYETHYLENE)



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



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



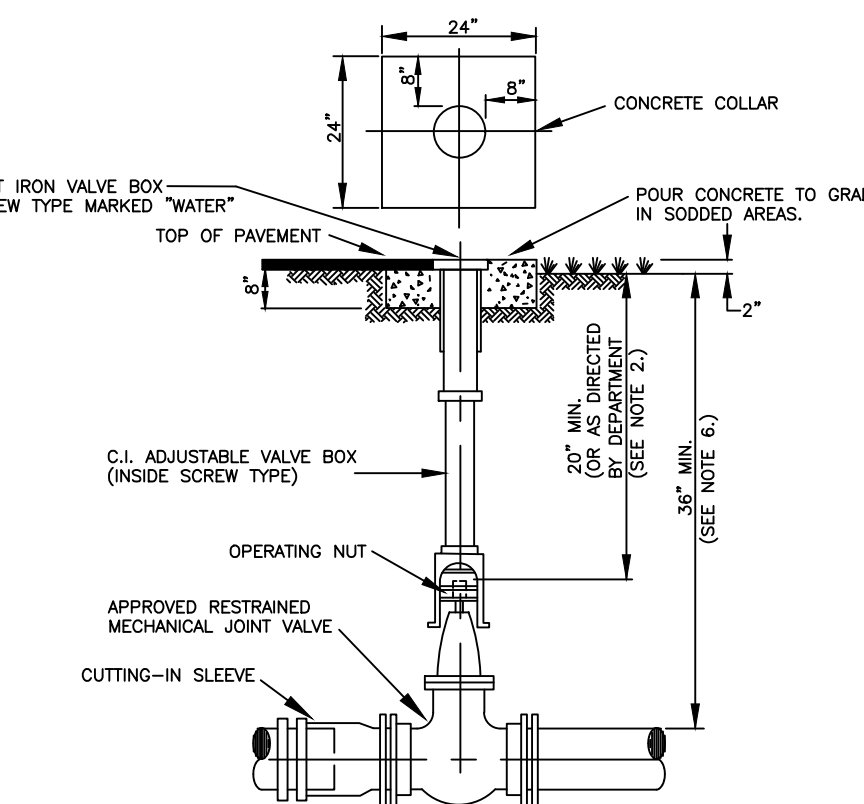
NO.	DATE	REVISION / REMARKS
JUL 2019	GENERAL REVISION	
JAN 2023	GENERAL REVISION	
*		

STD
DETAILS

SHEET
NUMBER
C-23
OF
45

SEAL

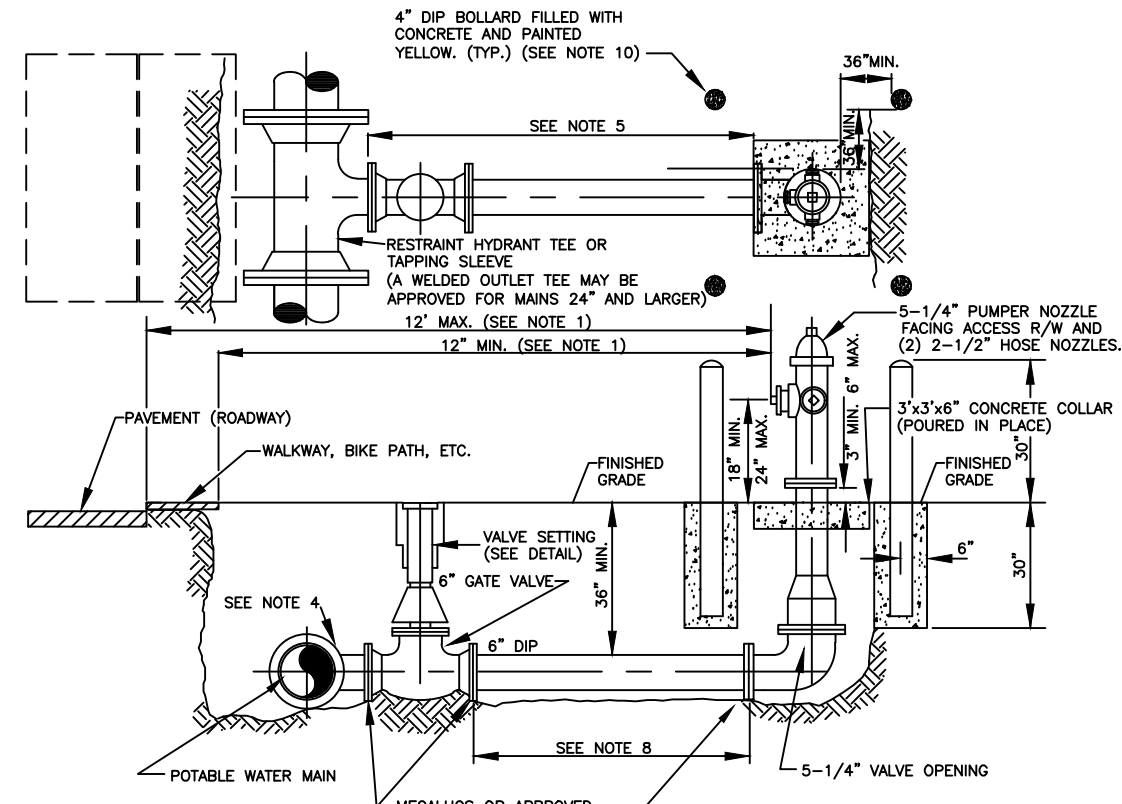
MATTHEW V. KAHN
PROFESSIONAL ENGINEER
LICENSE NO. 82227
STATE OF FLORIDA
- FOR THE FIRM -
DATE



- NOTES:
- CONCRETE COLLAR IS NOT REQUIRED IN PAVED AREAS IF PAVEMENT SURFACE IS FINISHED PRIOR TO CONDITIONAL FINAL INSPECTION.
 - WHEN OPERATING NUT IS DEEPER THAN 24" 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.
 - VALVE BOXES SHALL HAVE COVERS MARKED "WATER".
 - VALVE BOX EXTENSION TO BE D.I.P. OR C-900 PVC SDR 18 (BLUE).
 - A CUT-IN INSTALLATION SHALL REQUIRE MEGALUGS OR EQUAL THROUGHOUT ASSEMBLY.
 - 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

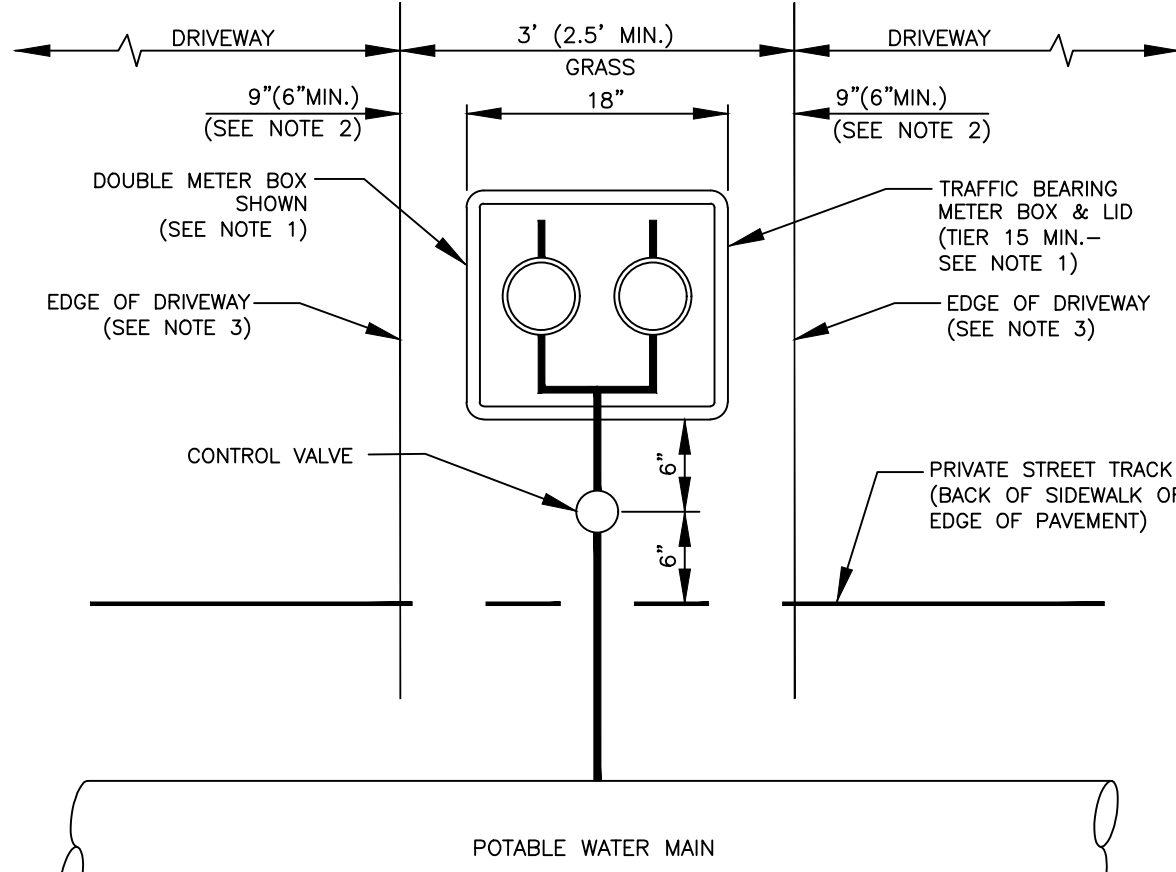
13W



- NOTES:
- 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.
 - 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 DNH VALVES.
 - VALVE SHALL BE PLACED ADJACENT TO MAIN AND RESTRAINED BY MEGALUGS OR EQUAL.
 - ALL HYDRANTS SHALL BE TIED TO THE MAIN PREFERABLY BY A TEE OR TAPPING SLEEVE WITH PRIOR DEPARTMENT APPROVAL.
 - ALL D.I.P. MATERIALS SHALL BE USED BETWEEN TEE/TAPPING SLEEVE AND HYDRANT.
 - HYDRANTS SHALL NOT BE PLACED IN SIDEWALKS, ROADWAYS, OR BIKEPATHS.
 - FIRE HYDRANT SHALL BE LOCATED 5' MINIMUM FROM EDGE OF PAVEMENT WITH RAISED CURBING AND 4' MINIMUM WITHOUT RAISED CURBING.
 - ON RUNS LONGER THAN 60 FEET ANOTHER VALVE IS REQUIRED LESS THAN ONE PIPE JOINT FROM THE HYDRANT.
 - PAINT SAFETY RED, IF REQUIRED, WITH APPROVED PAINT.
 - 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 FOOT RIGHT-OF-WAY "CLEAR ZONE".
 - BURIED HYDRANT HARDWARE SHALL BE STAINLESS STEEL (TYPE 304L OR TYPE 304 BOLTS/TYPE 304 NUTS).
 - NO CONNECTION (TEE, TAP) IS ALLOWED BETWEEN THE HYDRANT CONTROL VALVE AND THE FIRE HYDRANT.
 - APPROVED SECURITY CAPS WITH CHAINS ARE REQUIRED FOR ALL NOZZLES.

TYPICAL FIRE HYDRANT INSTALLATION WITH
BOLLARDS DETAIL

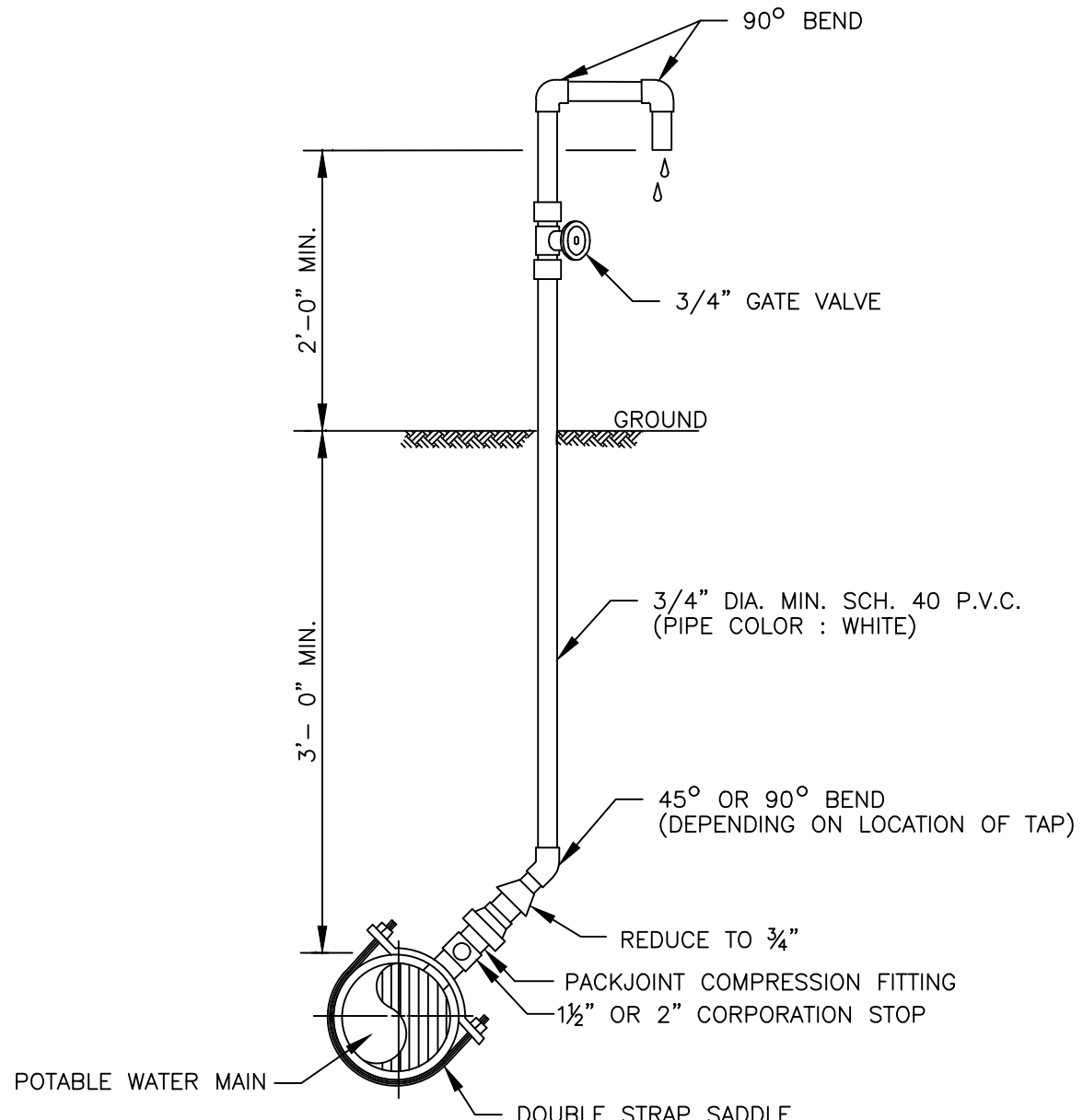
12W



- NOTES:
- METER BOX AND LID MUST BE TIER 15 RATED MINIMUM AND APPLIES TO BOTH A SINGLE METER BOX OR A DOUBLE METER BOX.
 - WHEN INSTALLING A SINGLE METER BOX THE 9" DIMENSION APPLIES. THEN WHEN INSTALLING A DOUBLE METER BOX THE 6" MINIMUM DIMENSION WILL APPLY.
 - 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

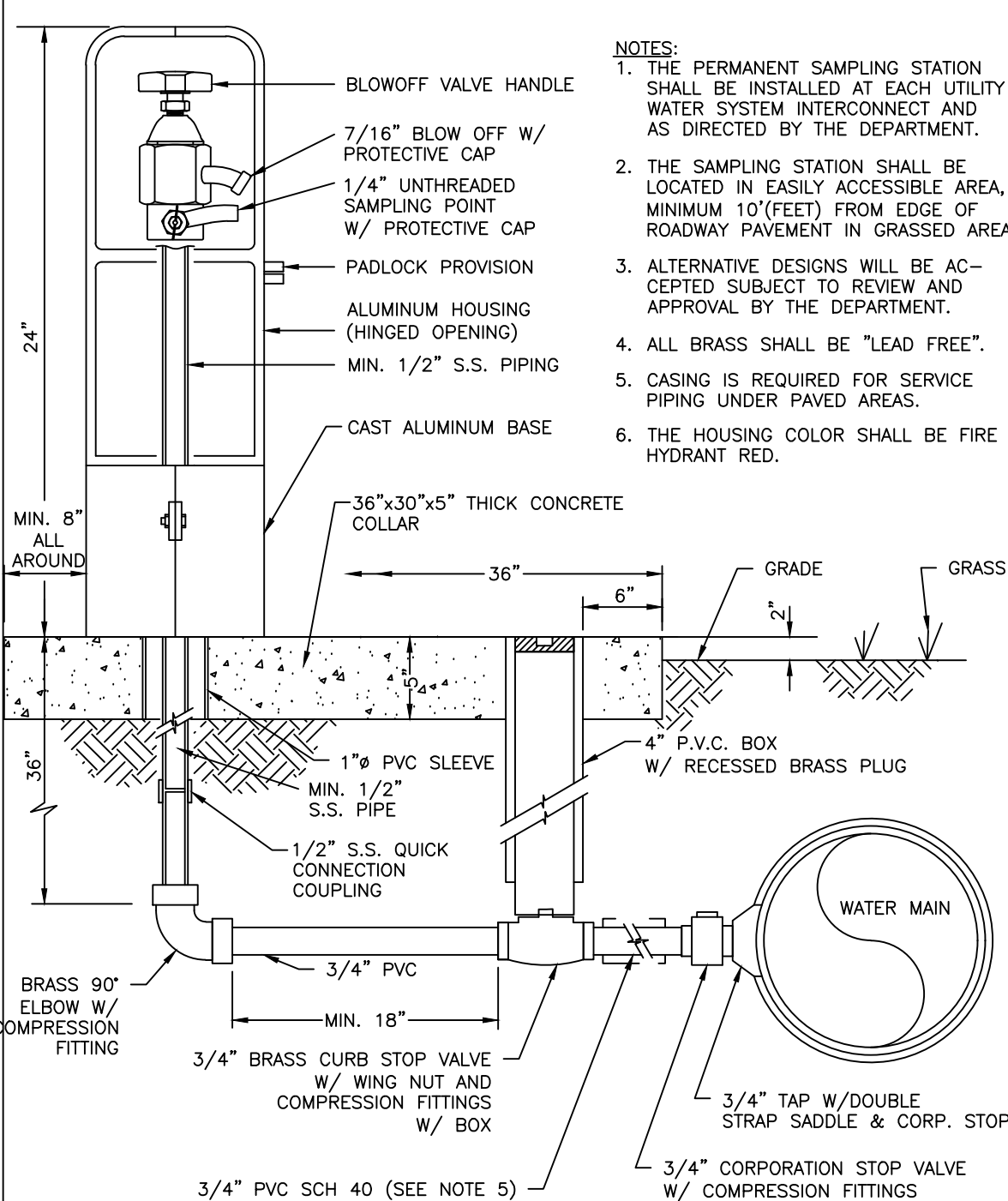
11WB



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

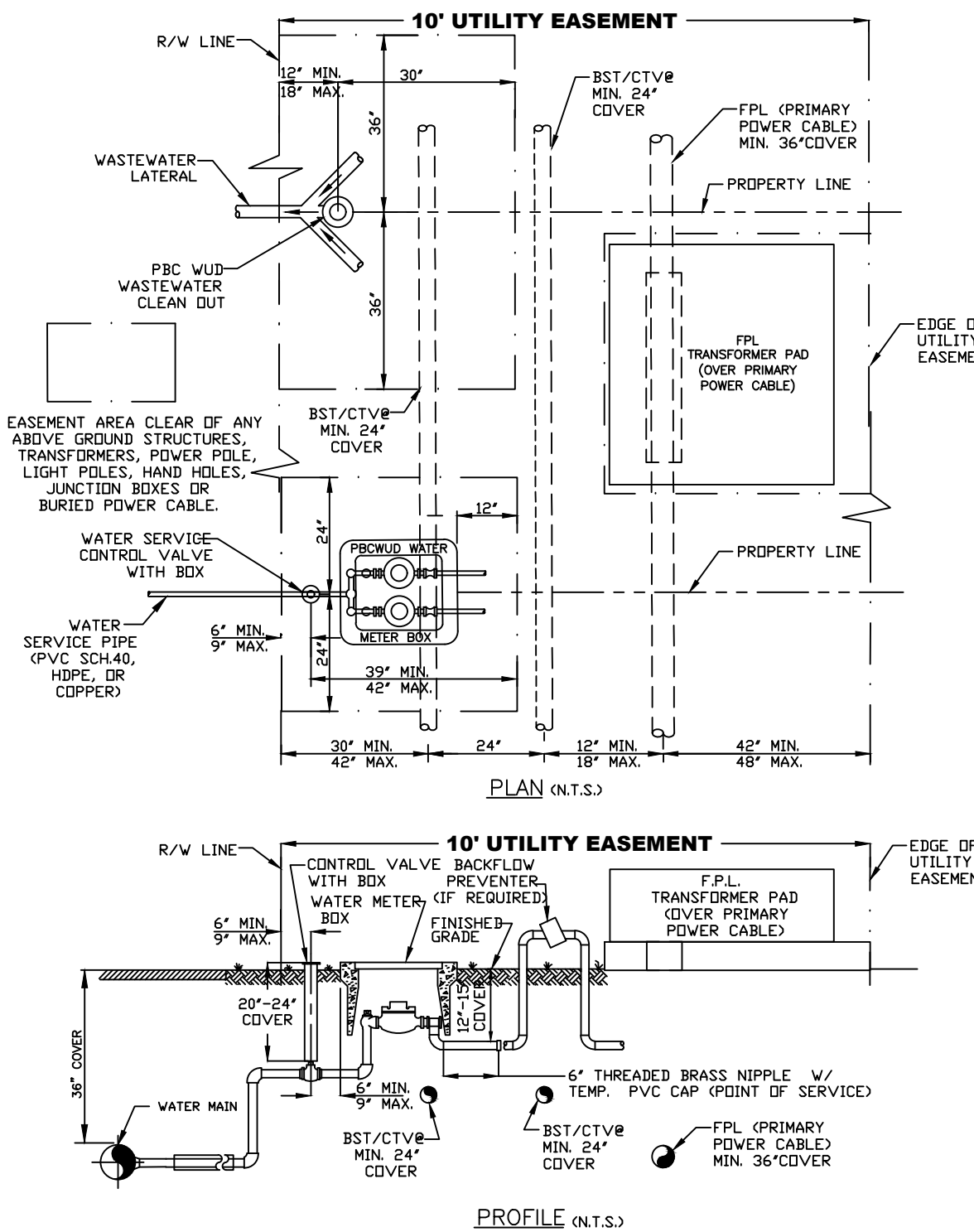
POTABLE WATER MAIN TEMPORARY SAMPLING POINT

16W



PERMANENT SAMPLING POINT

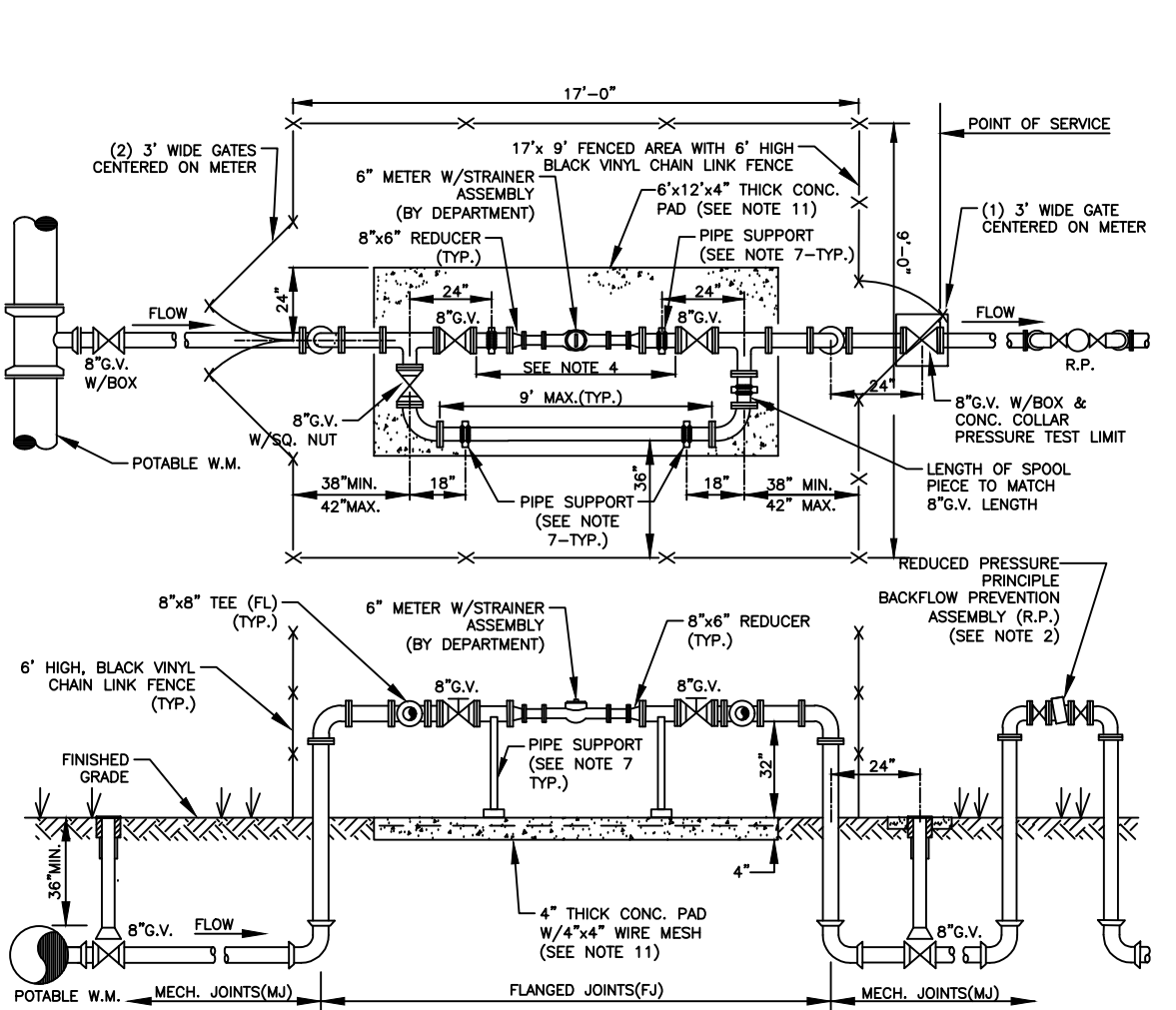
15W



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

11WA

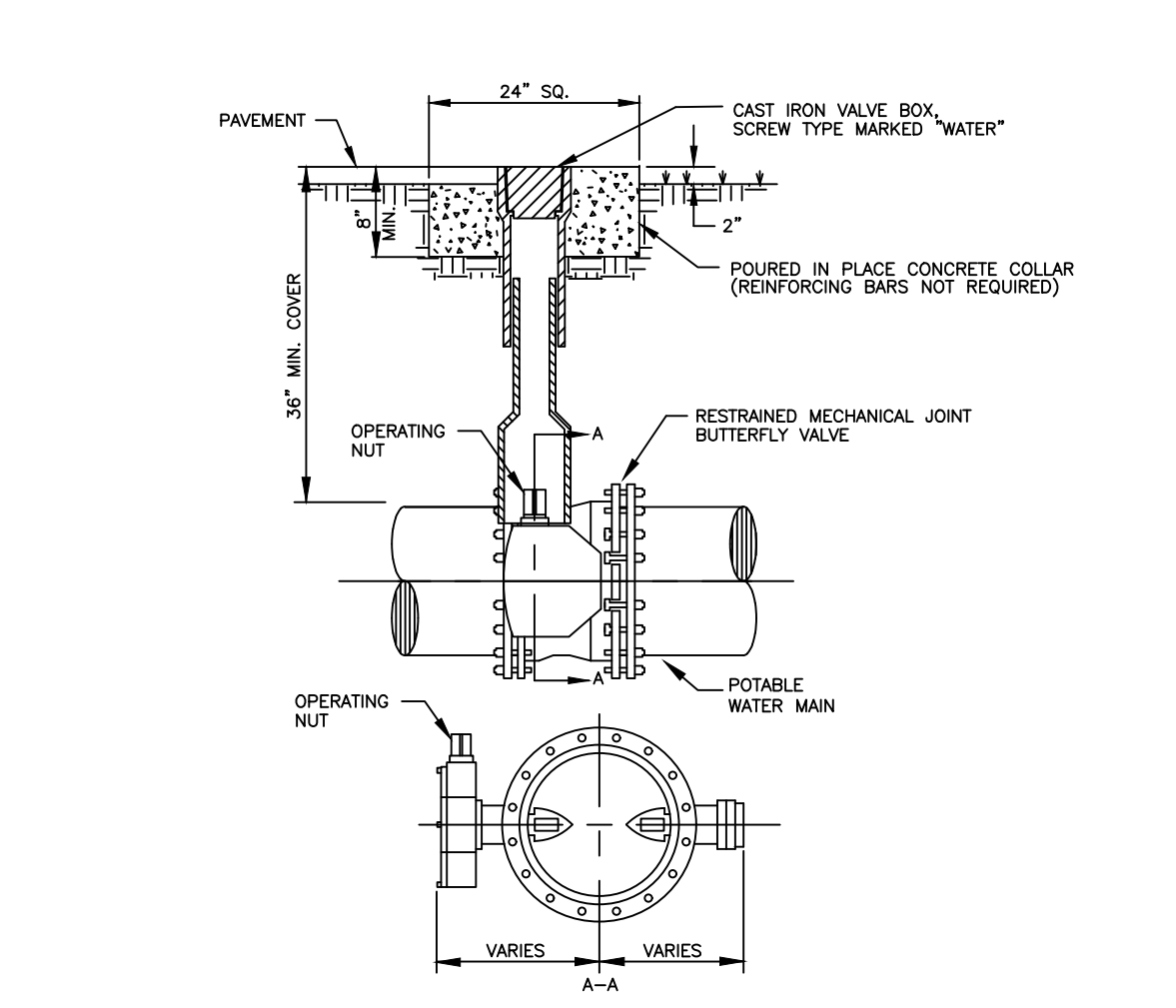
- NOTES:
- THE DETAIL WAS DEVELOPED IN COLLABORATION WITH UTILITY COMPANIES SUPPLYING VARIOUS UTILITY SERVICES TO P.B.C. W.U.D. CUSTOMERS.
 - THE DIMENSIONS SHOWN SHALL SERVE AS A GENERAL GUIDELINE TO INSTALL UTILITIES WITHIN A 10' WIDE UTILITY EASEMENT PARALLELING A RIGHT-OF-WAY.
 - THE PARTICIPATING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



- NOTES:
- ALL SERVICE PIPING SHALL BE 8" DUCTILE IRON WITH 8" GATE VALVES. THE 8" GATE VALVE FOR BYPASS PIPING SHALL HAVE A SQUARE NUT.
 - ALL SERVICES SHALL HAVE AN APPROVED REDUCED PRESSURE PRINCIPLE BACKFLOW PREVENTION ASSEMBLY (R.P.P.) THE INITIAL TEST OF THE R.P.P. SHALL BE PERFORMED BY THE DEPARTMENT. THE R.P.P. SHALL BE INSTALLED AS CLOSE AS POSSIBLE TO THE POINT OF SERVICE, NOT TO EXCEED 48" WITHOUT PRIOR DEPARTMENT APPROVAL. THE R.P.P. DEVICE SHALL BE USE APPROVED PER FAC 62-555.360.8
 - APPROVED RESTRAINED FLANGED ADAPTERS ARE REQUIRED.
 - THE ENTIRE METER ASSEMBLY INCLUDING BYPASS (EXCLUDING WATER METER) SHALL BE PRESSURE TESTED AS REQUIRED.
 - WATER METER SHALL BE INSTALLED BY THE DEPARTMENT. LAYOUT LENGTH OF METER TO BE CONFIRMED PRIOR TO SERVICE INSTALLATION.
 - SERVICE COMPONENTS SHALL BE CONSTRUCTED FOR THE METER TO BE INSTALLED "TRUE" AND "PLUMB".
 - PIPE SUPPORTS SHALL BE CONSTRUCTED FOR WUD STANDARD DETAIL 47W AND SHALL BE LOCATED PER THIS DETAIL.
 - METER/SERVICE WILL NOT BE INSTALLED/ACTIVATED UNTIL:
 - A. ALL FORM BOARDS FOR DRIVEWAY AND/OR SIDEWALK MUST BE COMPLETELY INSTALLED ON 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.
 - BYPASS PIPING SHALL BE INSTALLED ON THE RIGHT SIDE OF METER IN DIRECTION OF FLOW UNLESS OTHERWISE PREVIOUSLY APPROVED BY THE DEPARTMENT.
 - ALL HARDWARE FOR FLANGED CONNECTIONS SHALL BE STAINLESS STEEL 304 OR PRIOR APPROVED EQUAL BY THE DEPARTMENT.
 - 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.
 - 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

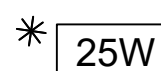
10W

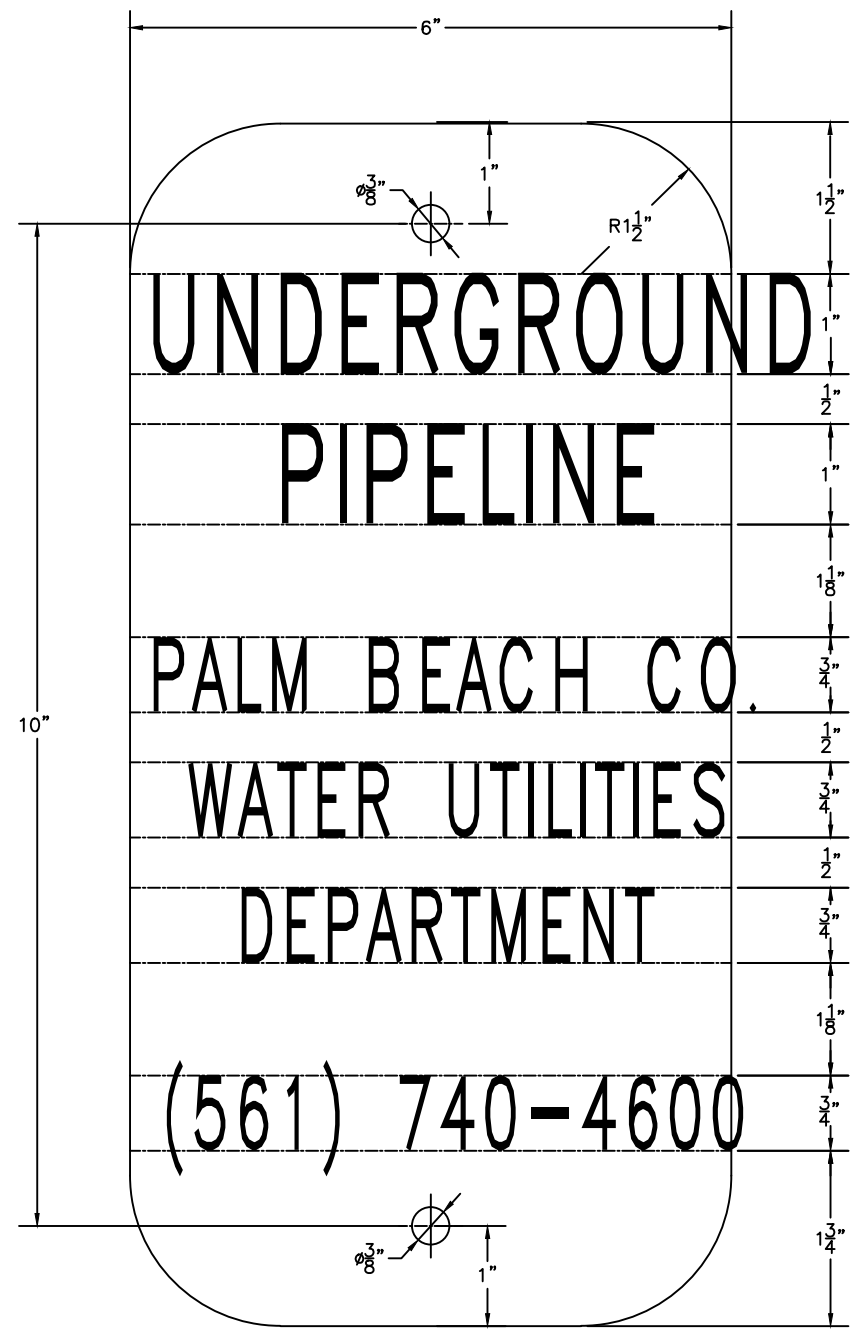


- NOTES:
- CONCRETE COLLAR IS NOT REQUIRED IN PAVED AREAS IF PAVEMENT SURFACE IS FINISHED PRIOR TO CONDITIONAL FINAL INSPECTION.
 - WHEN TOP OF OPERATING NUT IS DEEPER THAN 42" AN EXTENSION WILL BE REQUIRED TO BRING OPERATING NUT 24"-30" BELOW FINISHED GRADE. EXTENSION BOLTS & NUTS ARE TO BE STAINLESS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

POTABLE WATER MAIN
TYPICAL BUTTERFLY VALVE SETTING

14W

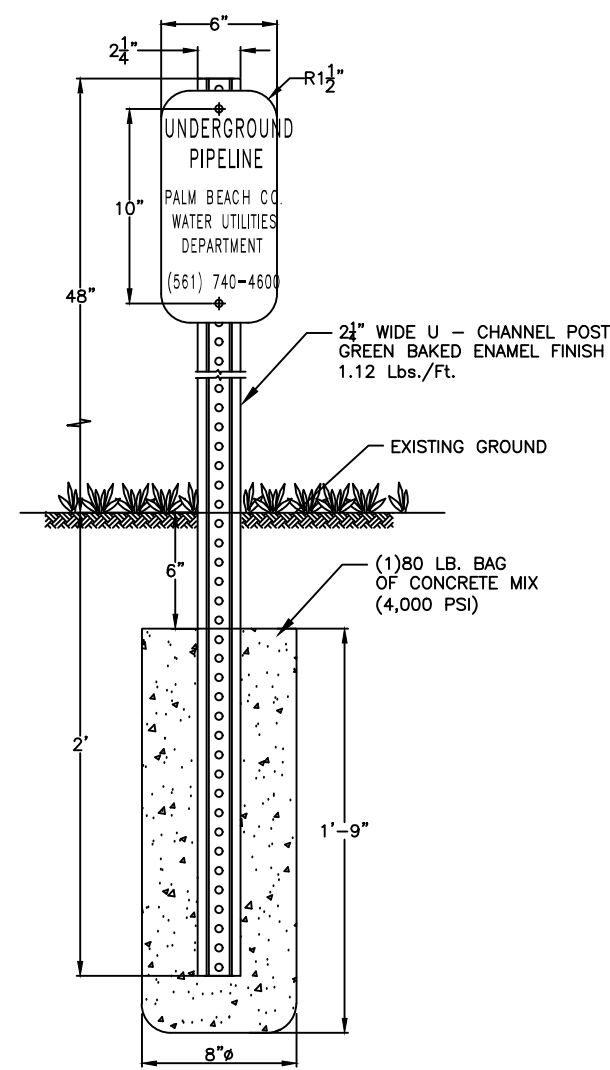




NOTE:
SIGN SHALL BE 6\"/>

UNDERGROUND PIPELINE SIGN DETAIL

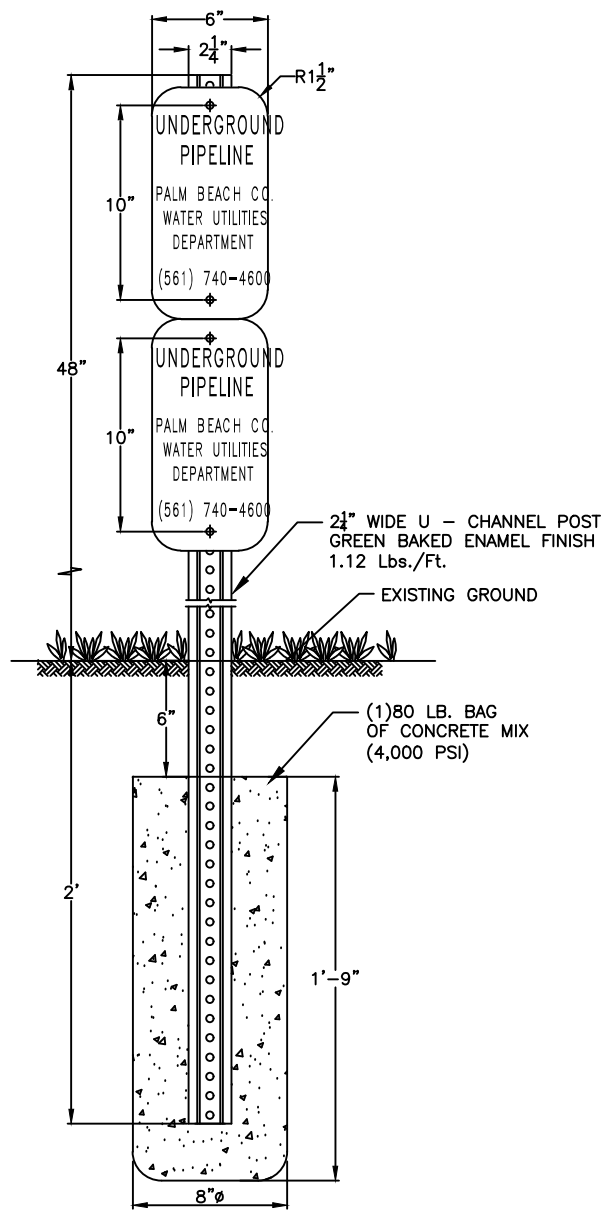
35W



NOTE:
SIGNS SHALL BE 6\"/>

SINGLE UNDERGROUND
PIPELINE SIGN DETAIL

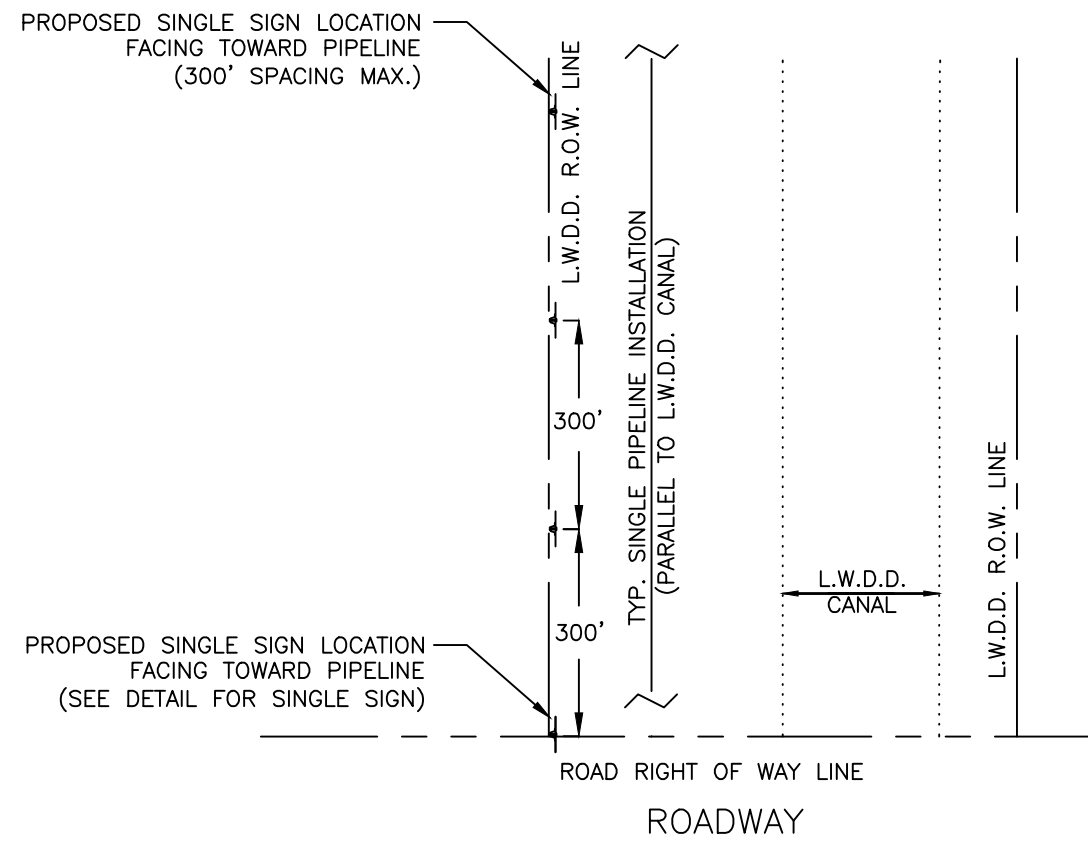
36W



NOTES:
1. SIGNS SHALL BE 6\"/>

DUAL UNDERGROUND
PIPELINE SIGN DETAIL

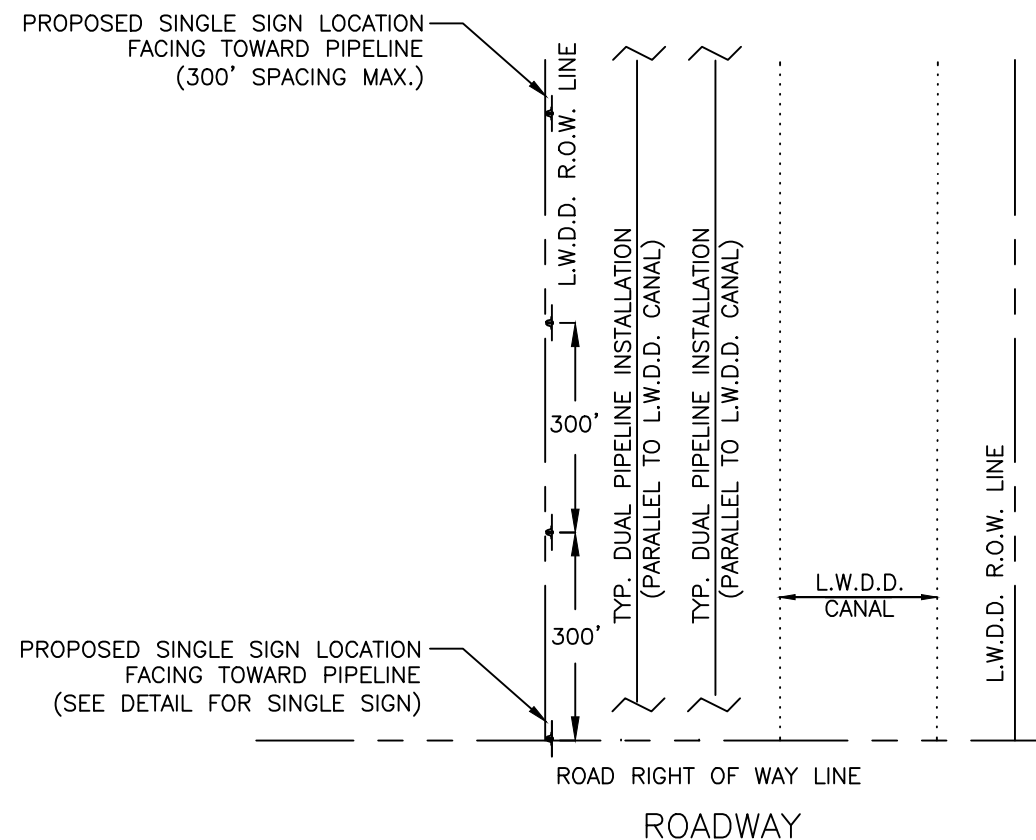
37W



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

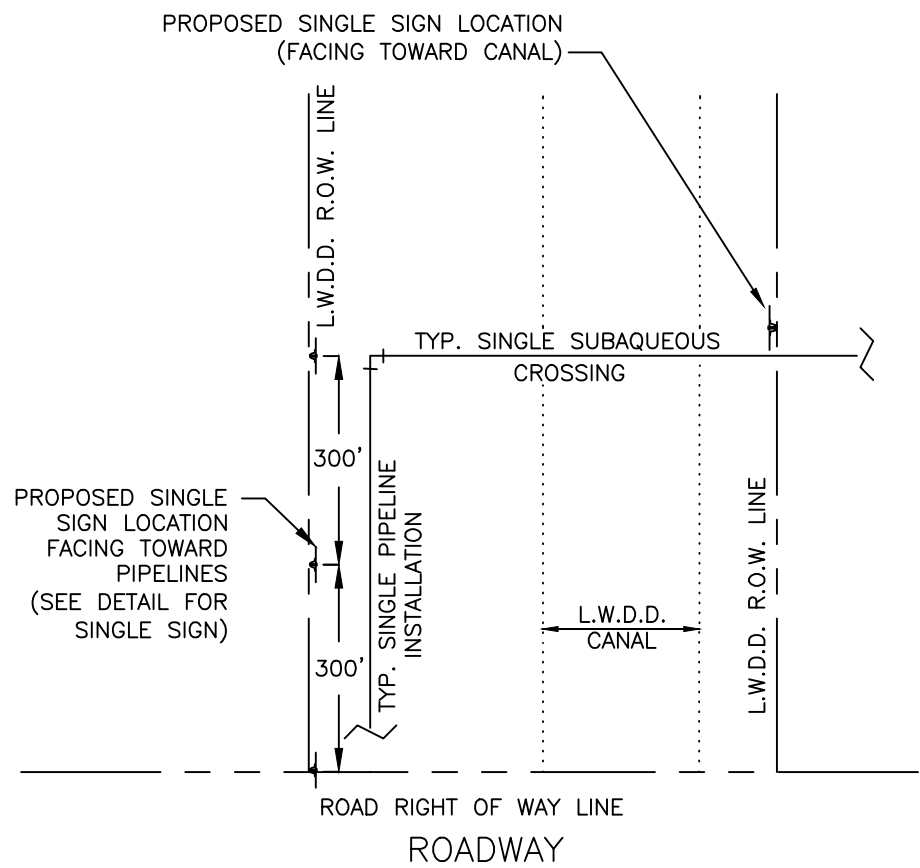
38W



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

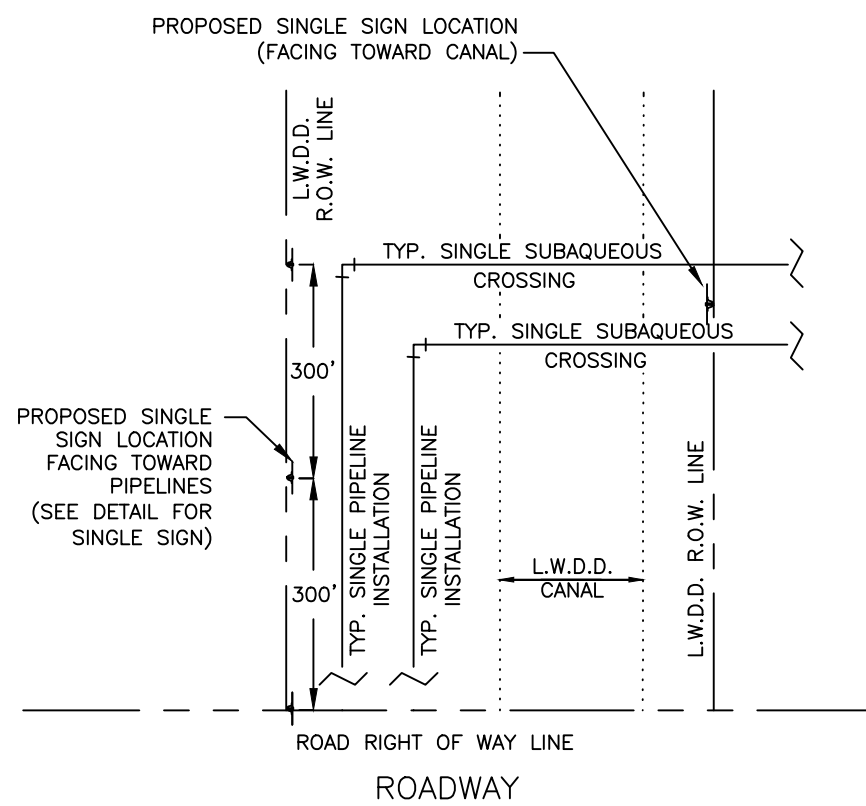
39W



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

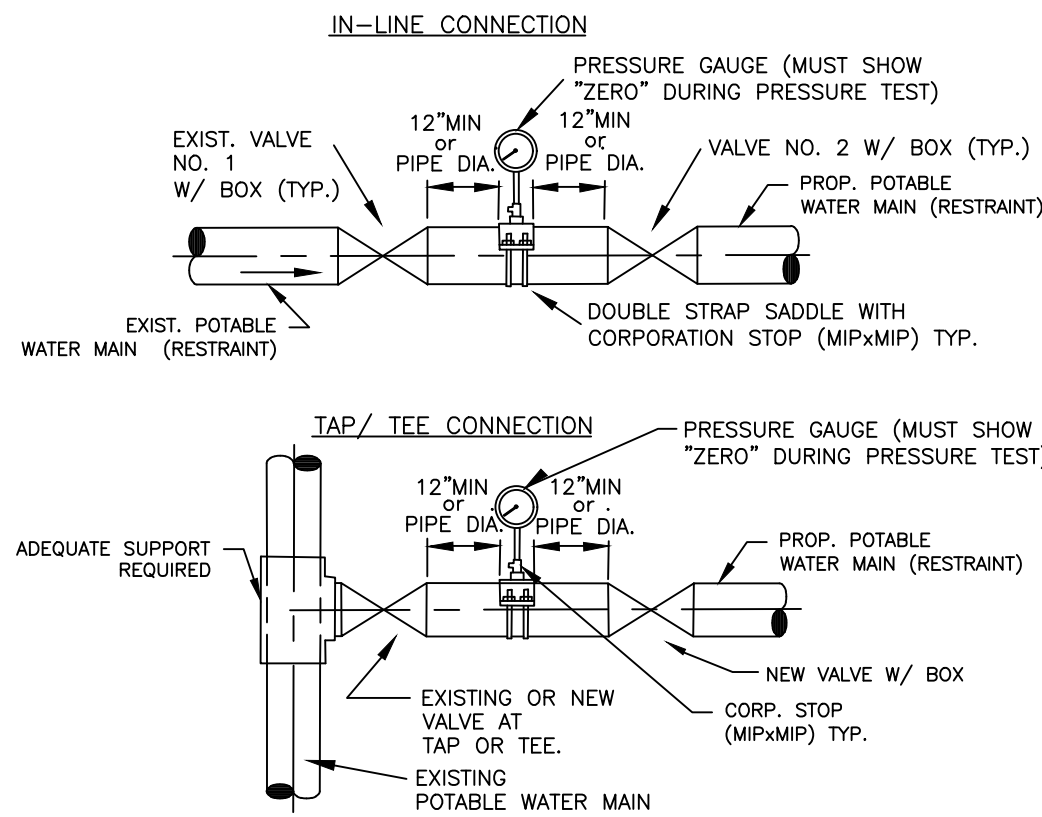
40W



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

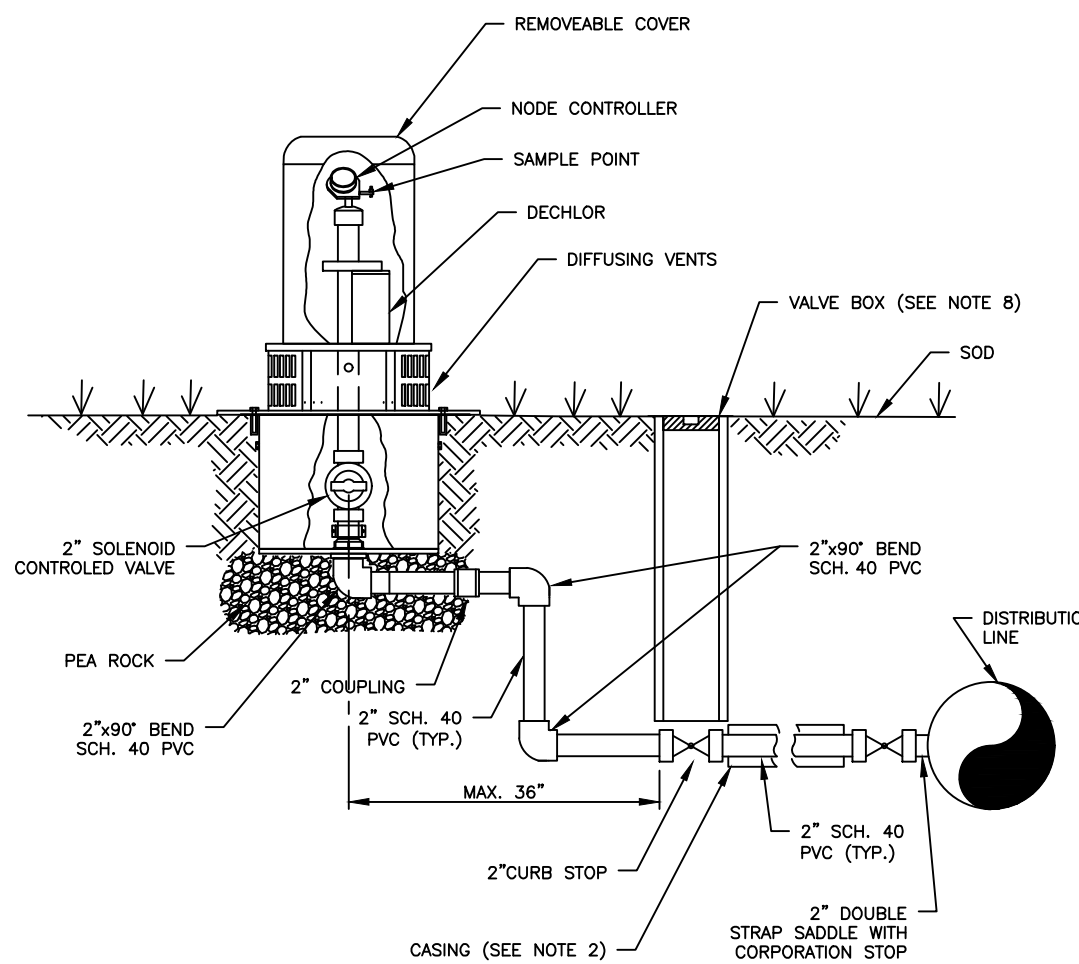
41W



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
INTENTIONALLY LEFT
BLANK

POTABLE WATER #5
STANDARD DETAILS

CONSULTANT:



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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

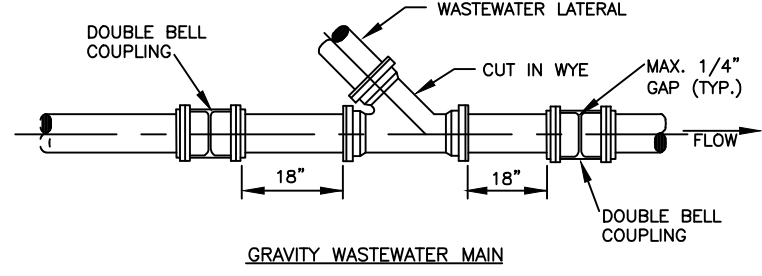
NO.	DATE	REVISION / REMARKS
1	JUNE 2019	GENERAL REVISION
2	JAN 2023	GENERAL REVISION

STD
DETAILS

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OF
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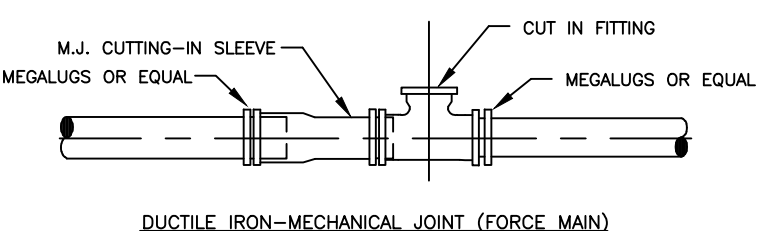
SEAL

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



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.

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).

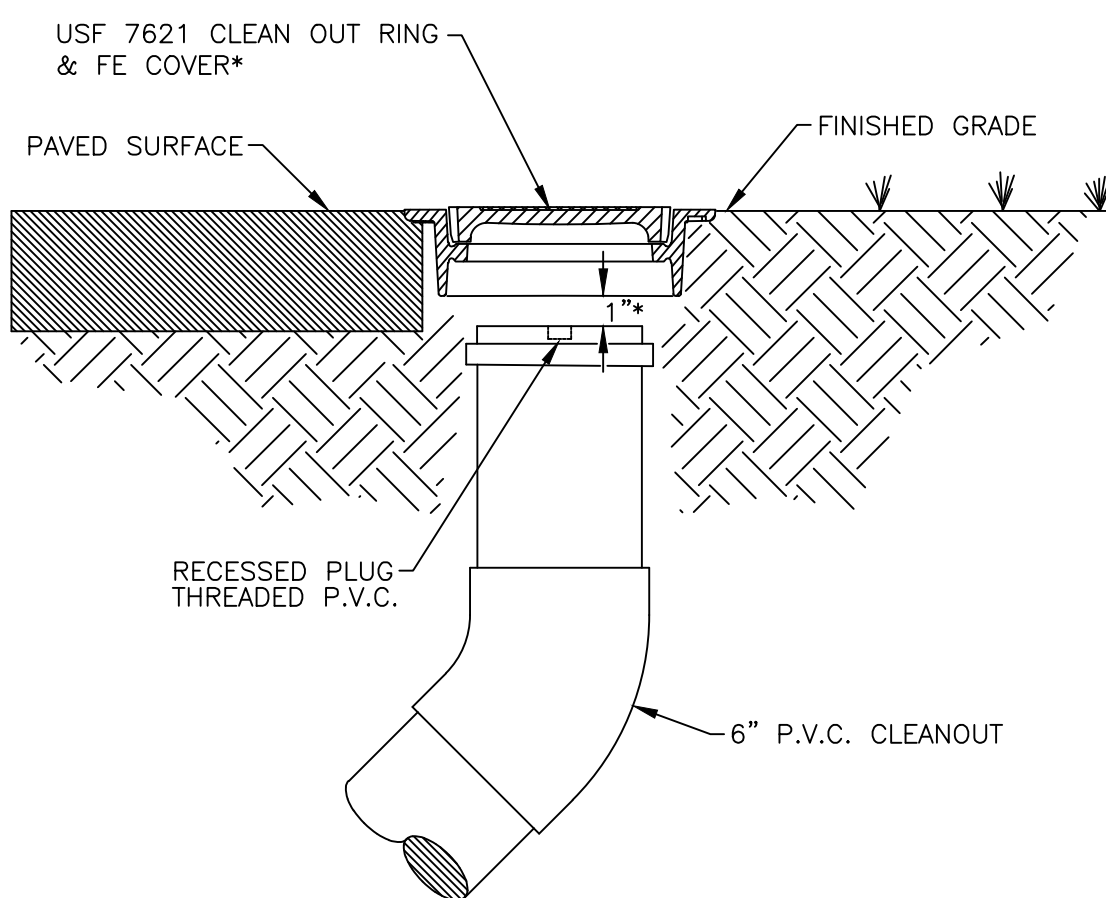
II. FORCE MAINS OUTSIDE OF WELLFIELD PROTECTION ZONE

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)

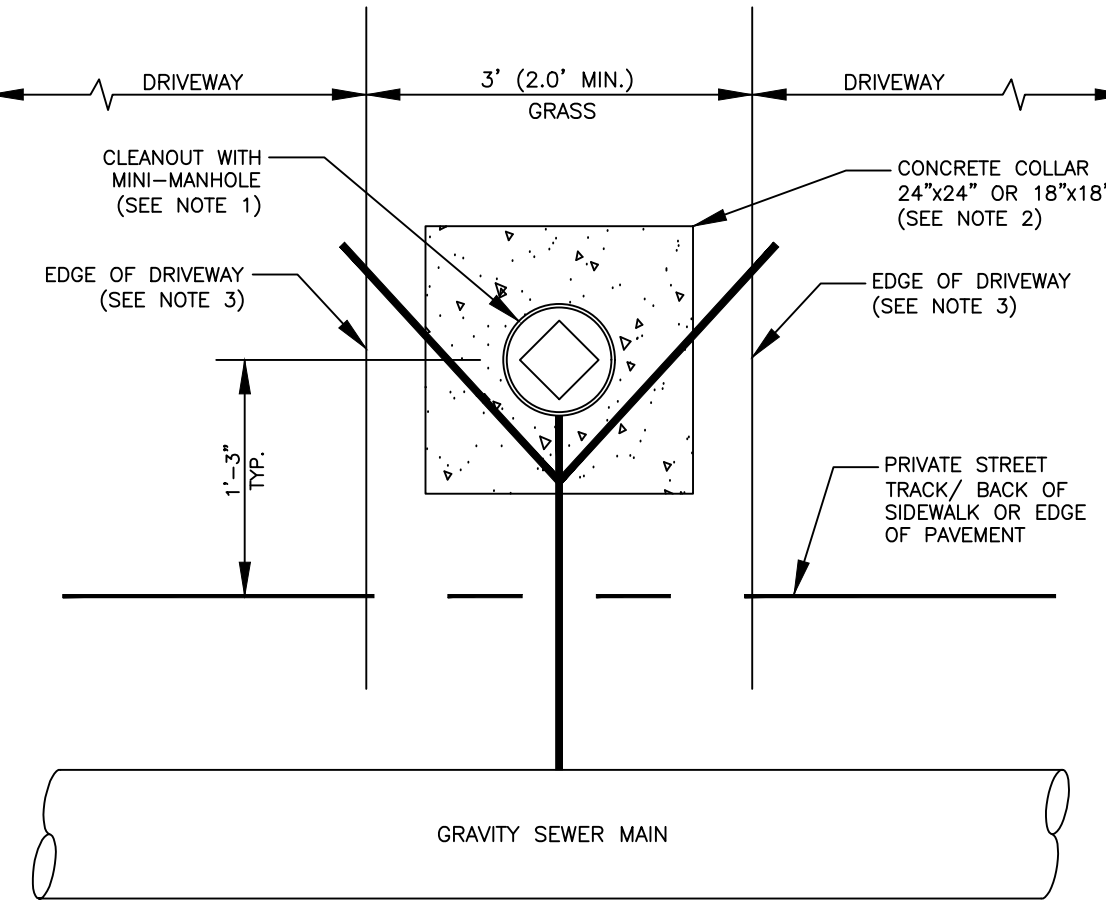
AWG. TEST PRESSURE PSI	2	3	4	6	8	10	12	14	16	18	20	24	30	36	42	48
150	0.10	0.14	0.18	0.27	0.37	0.46	0.55	0.64	0.73	0.83	0.92	1.10	1.38	1.65	1.93	2.20

FORMULA BASIS: $L = \frac{(S) \times (D) \times (P)^{1/2} \times 1/2}{148,000}$
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:
- TO OBTAIN THE MAXIMUM QUANTITY OF WATER FOR PIPE WITH 20 FT. NOMINAL LENGTHS, MULTIPLY THE QUANTITY CALCULATED FROM THE TABLE BY 0.9.
 - 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.
 - MAXIMUM TEST LENGTH = 2,500 FEET PER SECTION.
 - 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.
 - STANDARD TEST PRESSURE = 150 P.S.I.
 - PRESSURE TEST DURATION TO BE MIN. 2 HOURS.



- 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.
- CLEANOUTS SHALL NOT BE INSTALLED IN TRAFFIC LANES OR AREAS UNDER HEAVY TRAFFIC LOADS.
- THE COVER TO BE MARKED "S".
- CLEANOUTS TO BE INSTALLED PRIOR TO WATER METER RELEASE.
- THE DEVELOPER/PROPERTY OWNER OR ASSIGNEE SHALL BE RESPONSIBLE FOR CLEANOUT INSTALLATION PRIOR TO WATER METER INSTALLATION AS SPECIFIED BY THE DEPARTMENT.
- A CONCRETE COLLAR MAY BE REQUIRED IF CLEANOUT IS LOCATED BETWEEN DRIVEWAYS. SPECIAL CONSTRUCTION DETAIL WILL BE REQUIRED.
- ALONG STREETS WITH ADJACENT NON-EXCLUSIVE UTILITY EASEMENT, THE CLEANOUTS ENDING BEYOND MAINTENANCE RESPONSIBILITY SHALL BE INSTALLED MIN. 12", MAX. 18" INTO THE EASEMENT.



- NOTES:
- CLEANOUT WITH MINI-MANHOLE MUST BE CENTERED BETWEEN DRIVEWAYS IN GRASS AREA.
 - 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.
 - THE EDGE OF THE DRIVEWAY IS EITHER THE ASPHALT/CONCRETE PAVEMENT AREA AND/OR PAVER BRICK AREA WHICH MAY INCLUDE ANY CONCRETE EDGING.

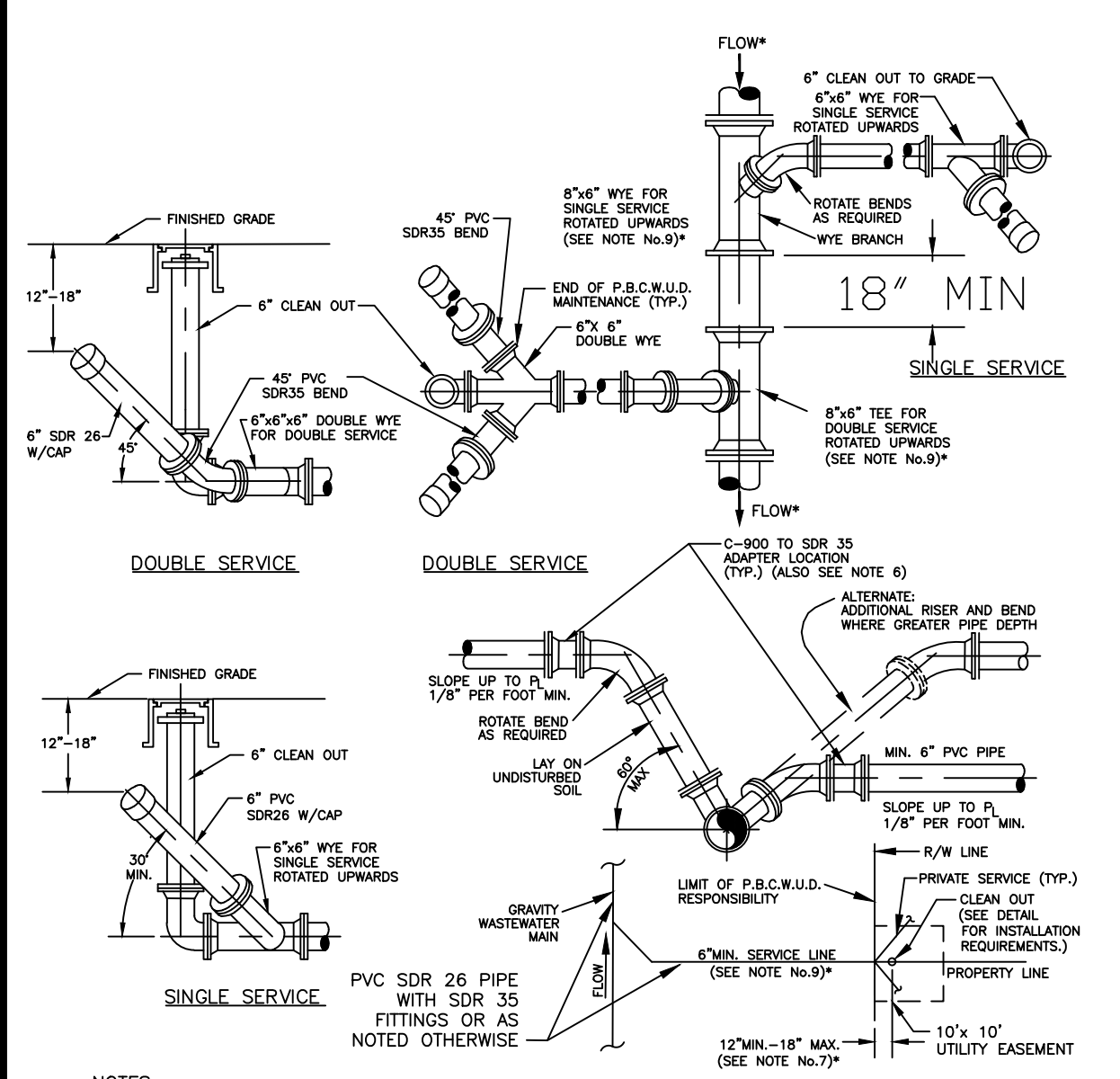
- DEFINITIONS
- DEPARTMENT - THE PALM BEACH COUNTY WATER UTILITIES DEPARTMENT.
 - CONTRACTOR - UTILITY CONTRACTOR AND ALL UTILITY SUBCONTRACTORS.
 - ENGINEER - ENGINEER RESPONSIBLE FOR INSPECTION AND CERTIFICATION.
- PROCEDURES
- A PRE-CONSTRUCTION MEETING IS TO BE HELD PRIOR TO DELIVERY OF MATERIALS 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.
 - 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.
 - 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.
 - ALL APPLICABLE PERMITS MUST BE OBTAINED PRIOR TO PRECONSTRUCTION MEETING. (DOT, HEALTH DEPARTMENT, COUNTY ENGINEER, ETC.).
 - THE CONTRACTOR SHALL MAINTAIN A CURRENT APPROVED SET OF CONSTRUCTION PLANS ON JOB SITE.
 - 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.
 - 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.
 - 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.
 - THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING LOCATIONS FROM ALL OTHER UTILITY FACILITIES.
 - THE CONTRACTOR OR ENGINEER SHALL SCHEDULE INSPECTIONS AND TESTS A MINIMUM OF 24-48 HOURS IN ADVANCE.
 - 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.
 - 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.
 - UPON COMPLETION OF CONSTRUCTION, A FINAL INSPECTION SHALL VERIFY PROPER ADHERENCE TO ALL FACETS OF THE PLANS AND SPECIFICATIONS.

- PRESSURE PIPE NOTES
- THERE SHALL BE 36" MINIMUM COVER FROM FINISHED GRADE TO TOP OF PIPE.
 - 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.
 - PVC PRESSURE PIPE SHALL BE C-900, SDR-18, 150 PSI.
 - ALL FITTINGS SHALL BE DUCTILE IRON WITH MECHANICAL JOINTS AND CEMENT OR APPROVED EPOXY LINING.
 - 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.
 - 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
- MANHOLES AND OTHER CASTINGS SHALL BE INSPECTED BY THE DEPARTMENT BEFORE PLACEMENT AND BEFORE APPLICATION OF THE CORROSION BARRIER SYSTEM (IF APPLICABLE).
 - ALL OPENINGS IN PRECAST MANHOLES SHALL BE CAST AT TIME OF MANUFACTURE OR CORDED IN FIELD.
 - 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.
 - 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.
 - D.I.P. GRAVITY SEWER PIPE SHALL BE PRESSURE CLASS 350, EPOXY LINED.
 - 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.

WASTEWATER SYSTEM STANDARD CUT-IN DETAILS

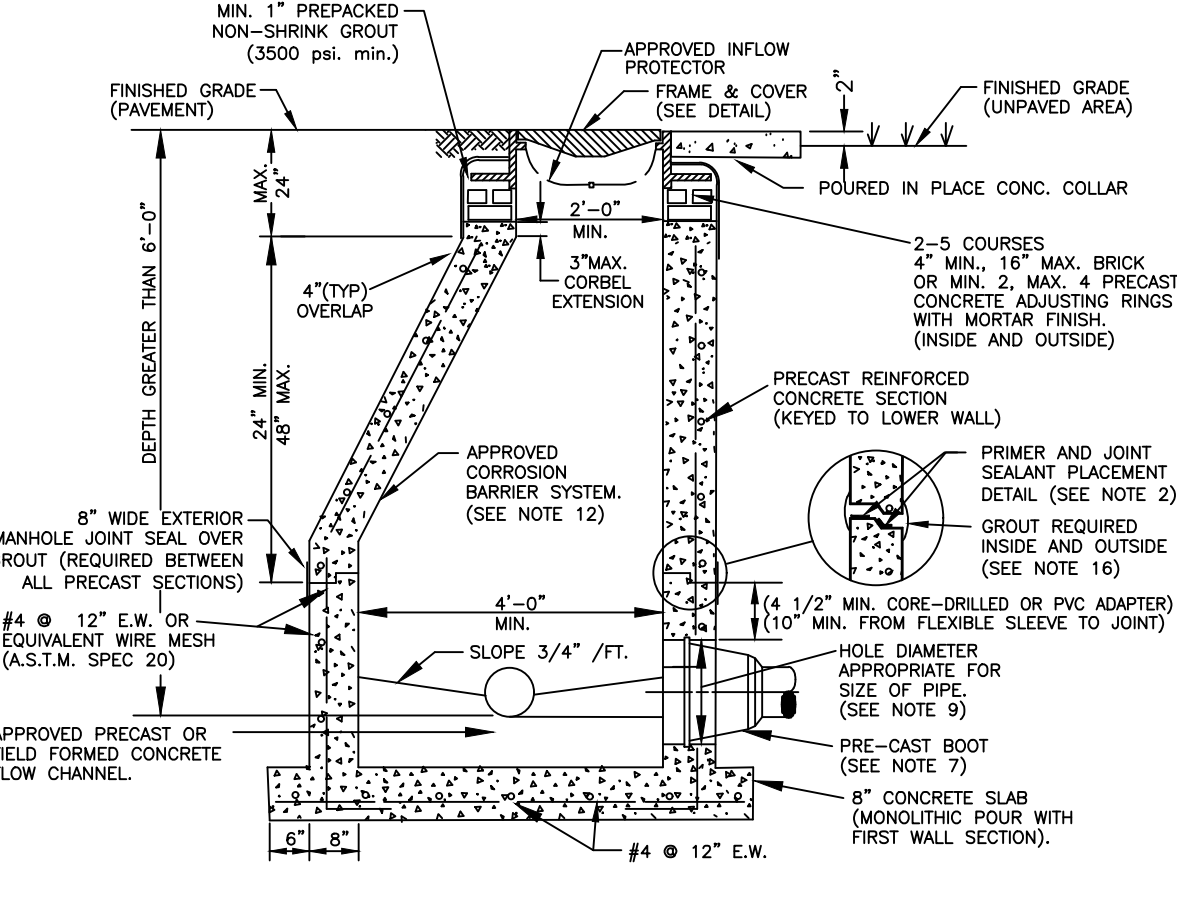
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- NOTES:
- MIN. 3" AND 5" MAX. DEPTH IS REQUIRED, UNLESS PLANS SHOW OTHERWISE, FOR SERVICE LATERAL WYE AT THE CLEAN OUT ENDING P.B.C.W.U.D. OWNERSHIP AND MAINTENANCE RESPONSIBILITY.
 - CLEAN OUT IS TO BE INSTALLED PER DEPARTMENT STANDARDS PRIOR TO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

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

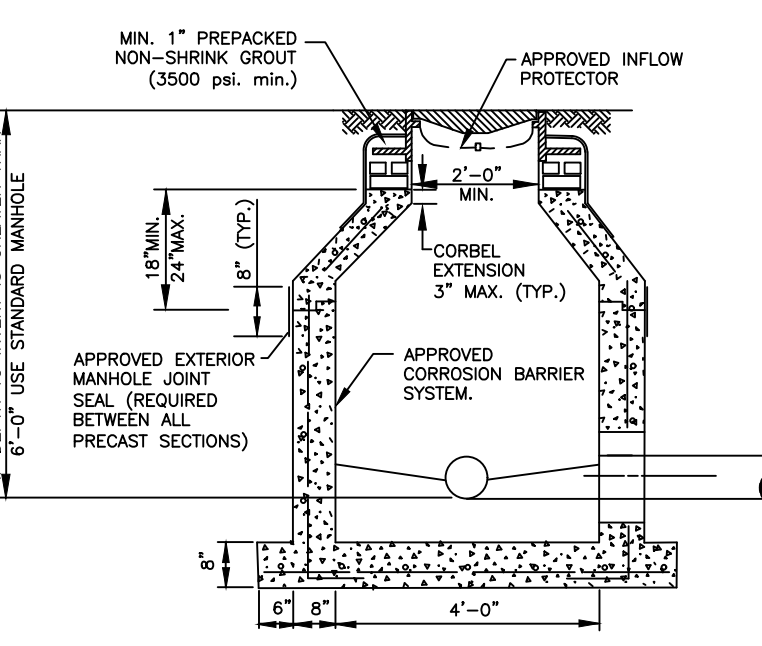
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- NOTES:
- PRECAST CONCRETE TYPE II 4000 P.S.I. CALCEDEUS AGGREGATE REQUIRED (MIN. C6033 CONTENT: 65% IN LARGE AGGREGATE, 50% IN CONCRETE SCREENINGS).
 - INSTALL APPROVED JOINT SEALANT AT ALL RISER JOINTS WITH GROUT ON INSIDE AND OUTSIDE. MANHOLE SHOP DRAWINGS SHALL INCLUDE THE SIZE AND PLACEMENT OF JOINT SEALANT. AN APPROVED JOINT PRIMER SHALL BE APPLIED BY THE PRECASTER (TONGUE SECTION ONLY).
 - ALL OPENINGS SHALL BE SEALED WITH A WATERPROOF NON-SHRINKING GROUT.
 - FLOW CHANNELS SHALL BE PRECAST OR FIELD CONSTRUCTED TO DIRECT INFLUENT INTO FLOW STREAM. (SEE DETAIL)
 - LIFT HOLES ARE PERMITTED.
 - ALL PIPE HOLES SHALL BE PRECAST OR CORE - DRILLED.
 - 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 C800 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.
 - 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.
 - 8" DIAMETER PIPE; 15" HOLE FOR PVC - 10" DIAMETER PIPE; 17" HOLE FOR PVC.
 - MANHOLE FABRICATION SHALL BE IN ACCORDANCE WITH ASTM C-478, LATEST STANDARD.
 - MINIMUM 5 FEET IS REQUIRED BETWEEN OUTSIDE OF MANHOLE AND A SERVICE WYE.
 - 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)
 - APPROVED INFLOW PROTECTORS ARE REQUIRED.
 - MANHOLES IN ROADWAYS SHALL BE LOCATED OUTSIDE OF WHEEL PATHS.
 - SPECIAL PRE-APPROVED GROUT IS REQUIRED FOR PRECAST STRUCTURES WITH ANTIMICROBIAL ADMIXTURE.

TYPICAL CLEANOUT INSTALLATION

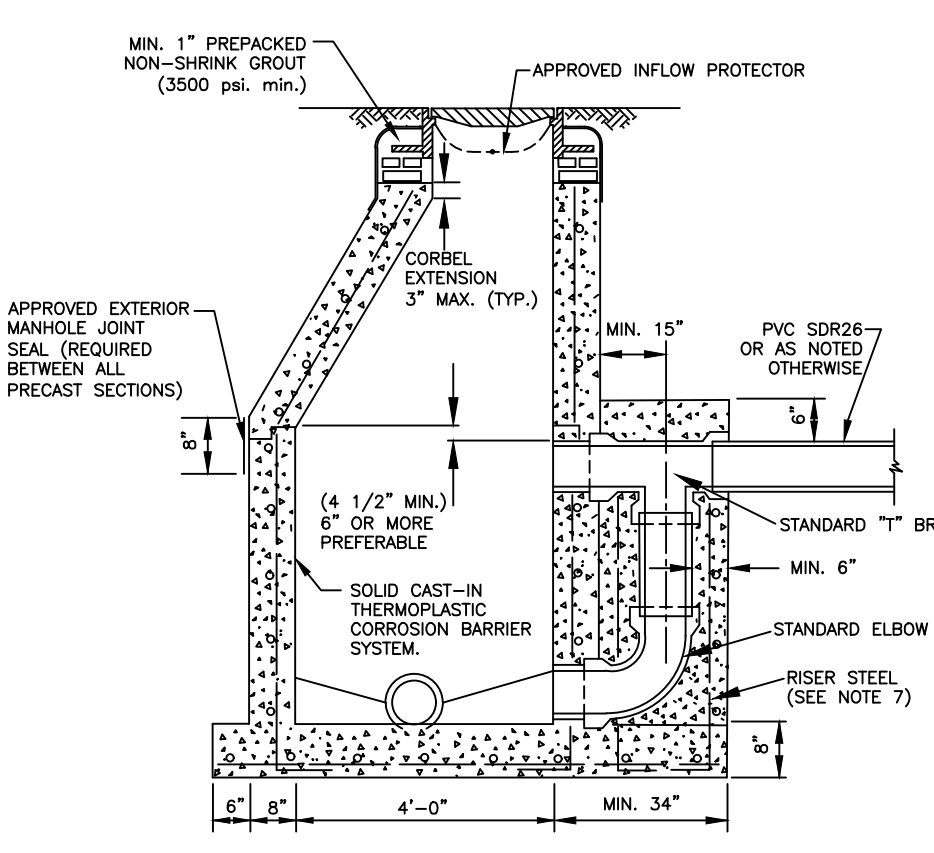
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NOTE:
ALL STANDARD MANHOLE NOTES AND DETAILS ARE APPLICABLE.

CLEANOUT INSTALLATION DETAIL BETWEEN TOWNHOME DRIVEWAYS

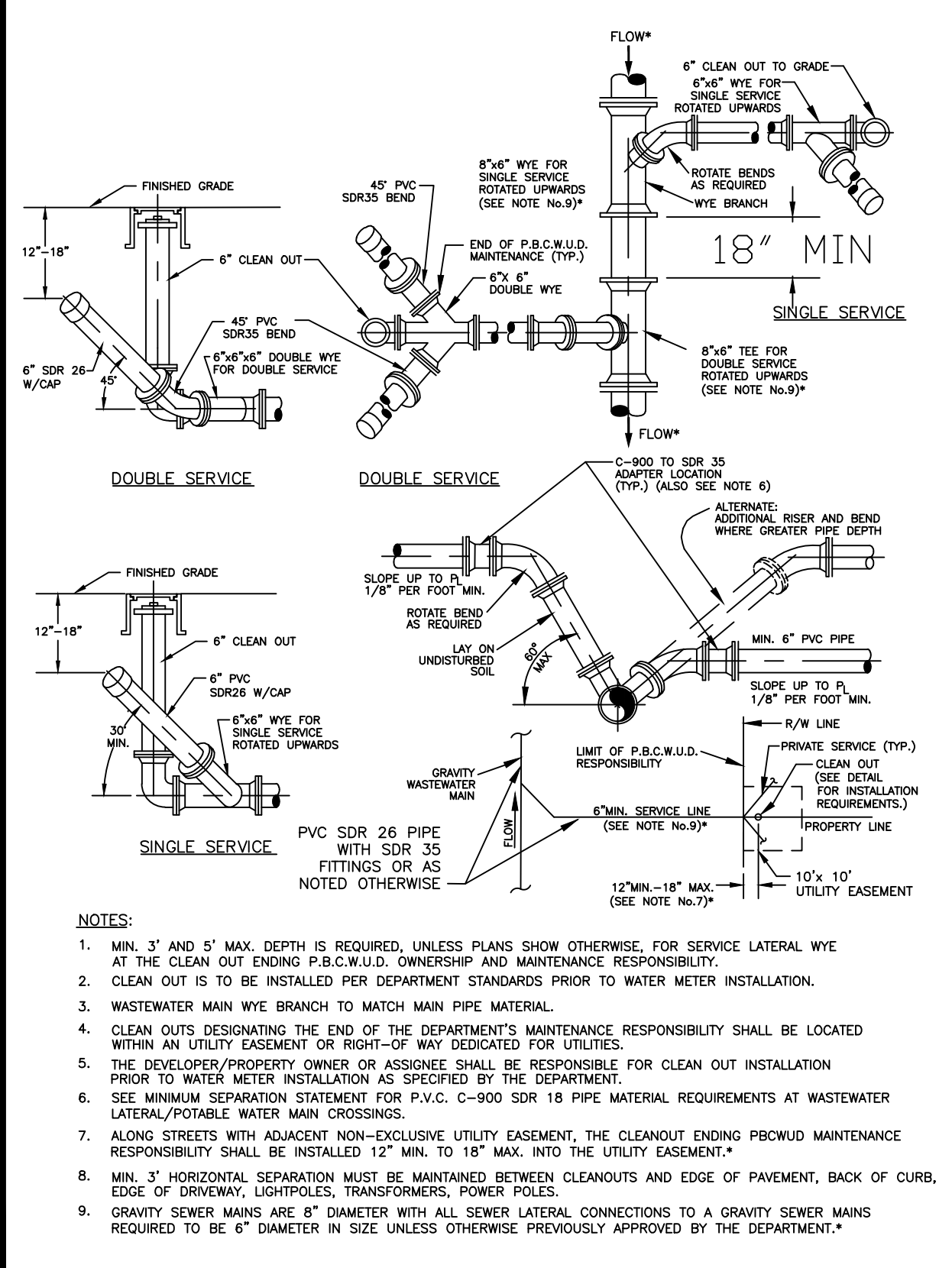
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- NOTES:
- ALL DETAILS AND SPECIFICATIONS FOR STANDARD MANHOLES ARE APPLICABLE EXCEPT FOR REFERENCES TO DROP ASSEMBLY AND CAST IN LINERS.
 - THE PRECAST BASE SHALL EXTEND FULLY UNDER THE DROP ASSEMBLY.
 - MASONRY CONSTRUCTION ABOVE THE EXTENDED PRECAST BASE, IF FILLED WITH CONCRETE, IS PERMISSIBLE.
 - BRICK AND CONCRETE RUBBLE ARE PERMITTED AS FILLER IN DROP ENCASEMENT.
 - DROP CONNECTIONS SHALL BE REQUIRED WHENEVER AN INFLUENT INVERT IS LOCATED 2.0 FEET OR MORE ABOVE THE MAIN INVERT CHANNEL. DROP CONNECTIONS SHALL NOT BE DESIGNED FOR LESS THAN A 2.4 FOOT DROP.
 - PVC SDR 26 PIPE WITH PVC SDR 35 FITTINGS SHALL BE UTILIZED IN THE DROP ASSEMBLY.
 - 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.

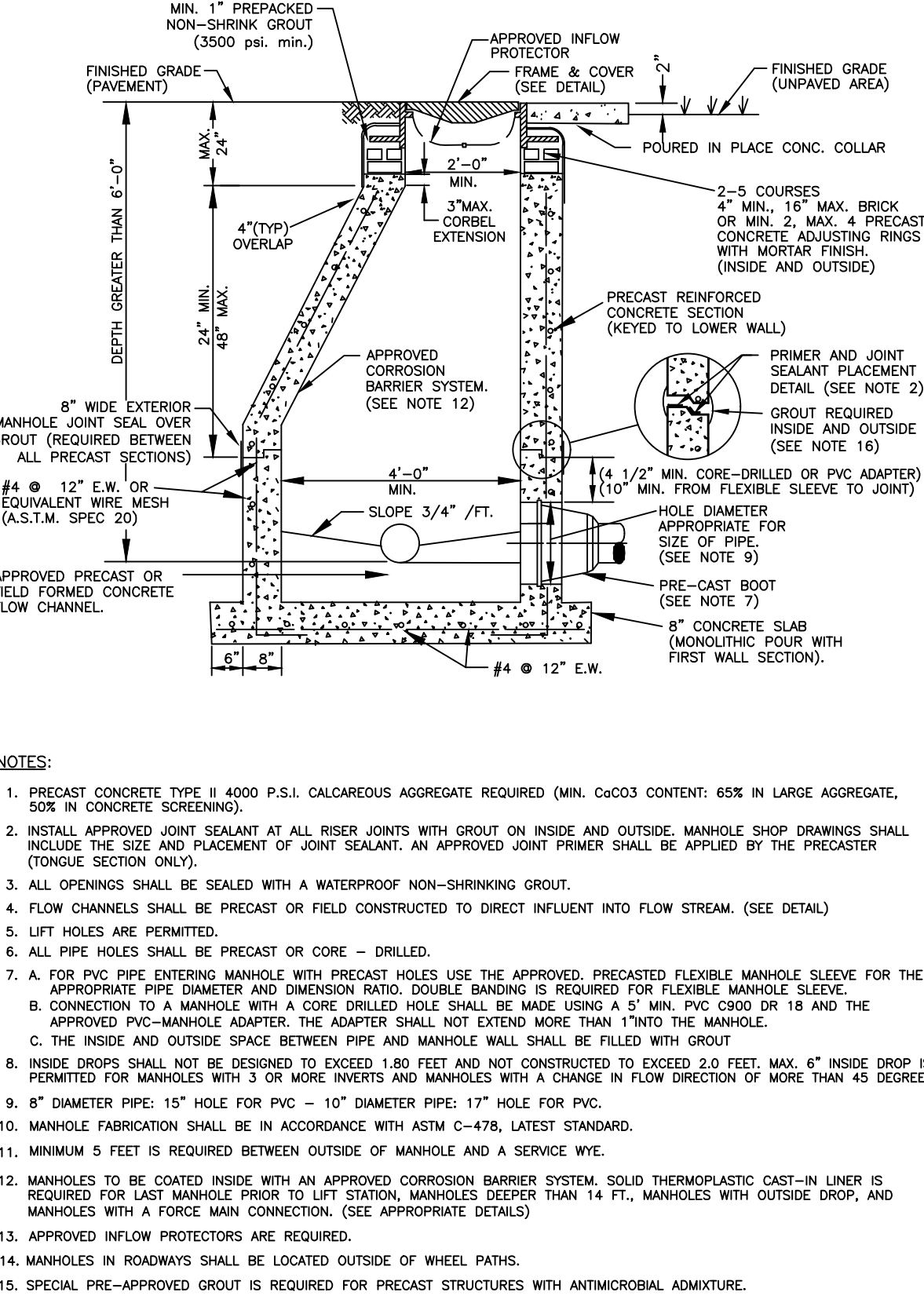
TYPICAL WASTEWATER SERVICE CONNECTION

12S



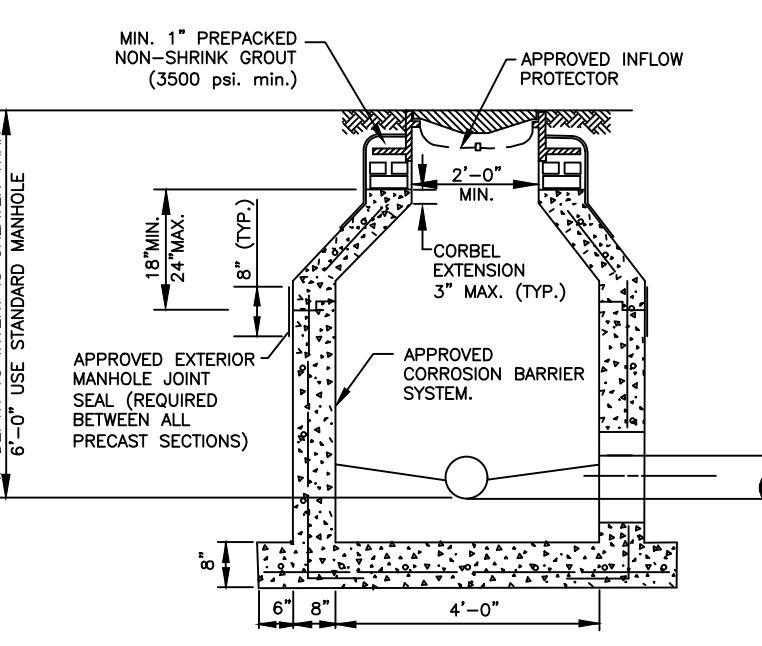
STANDARD MANHOLE

13S



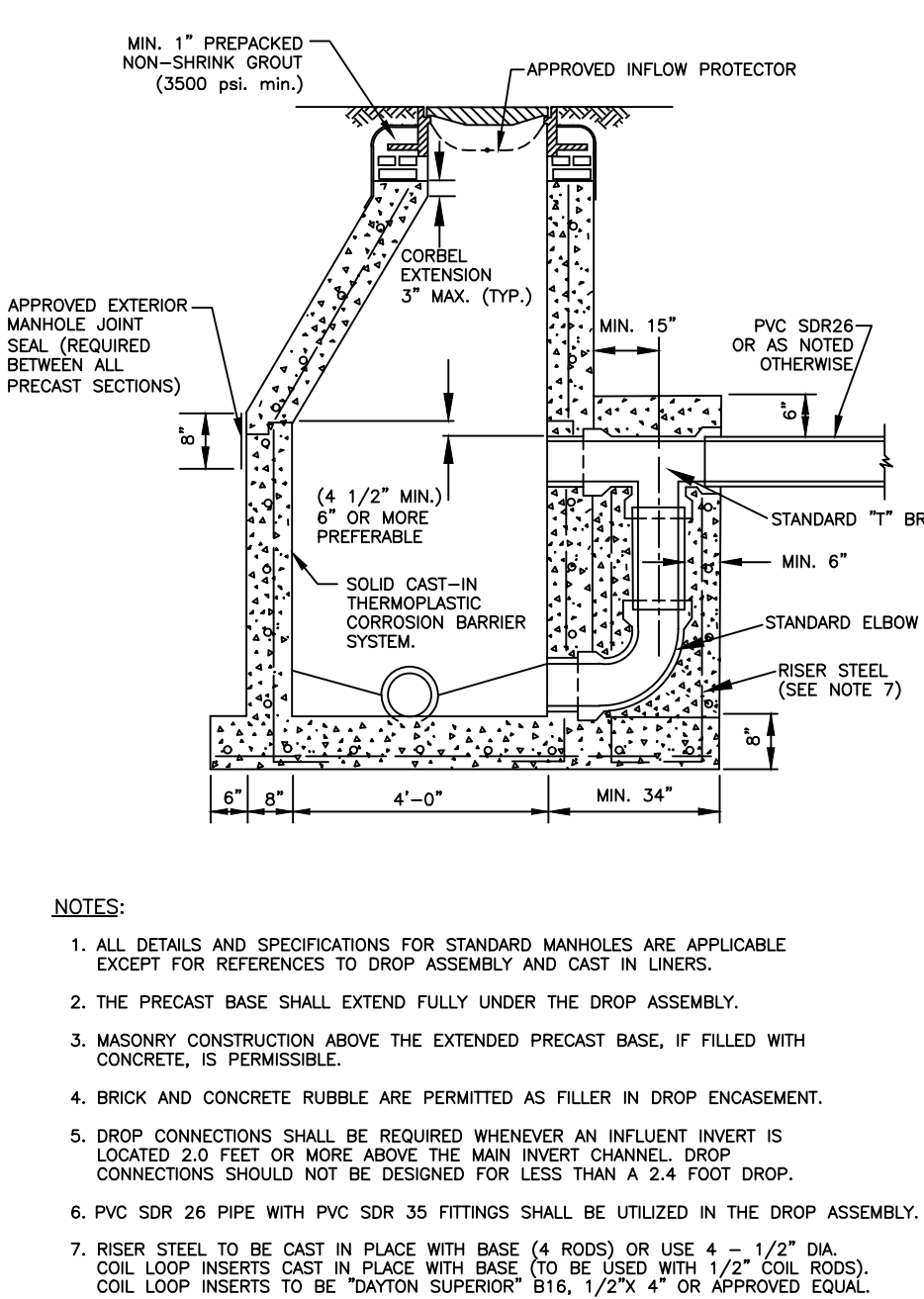
SHALLOW MANHOLE

14S



DROP CONNECTION PRECAST MANHOLE

15S



WASTEWATER #2 STANDARD DETAILS

CONSULTANT:

CAULFIELD & WHEELER, INC.
CALL 48 HOURS BEFORE YOU DIG
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UTILITIES NOTIFICATION CENTER

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

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

SEAL

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

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

STD
DETAILS

SHEET
NUMBER
C-30
OF
45

SEAL

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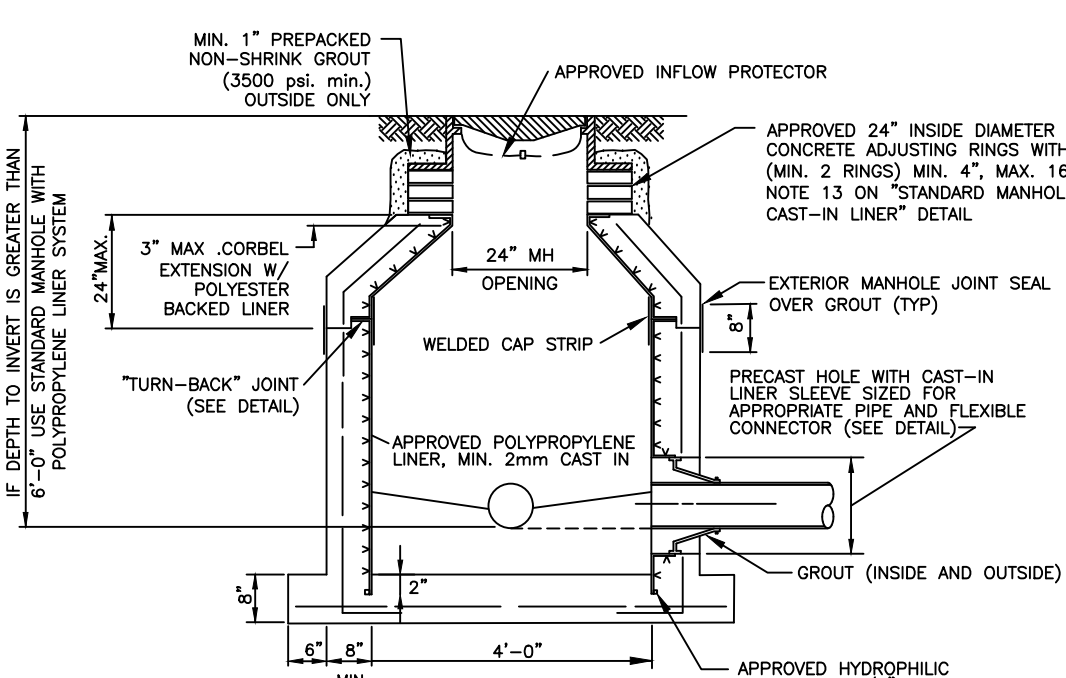
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DRAWN BY: M. BUCKNER

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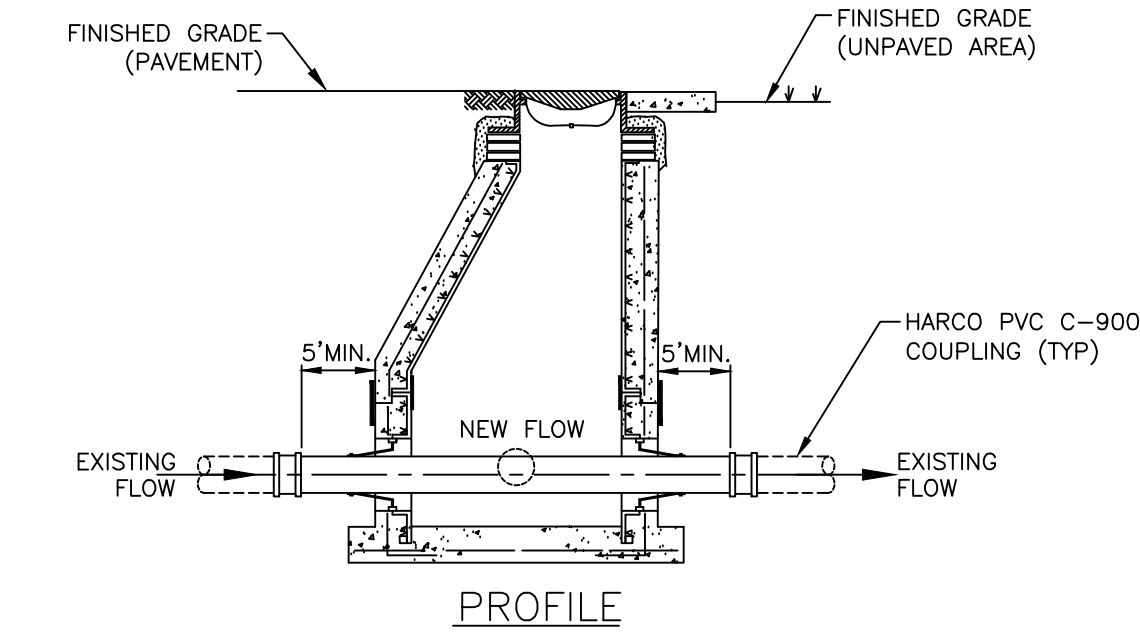
Palm Beach County
Water Utilities Department
P.O. Box 16097
West Palm Beach, FL 33416-6097



- 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

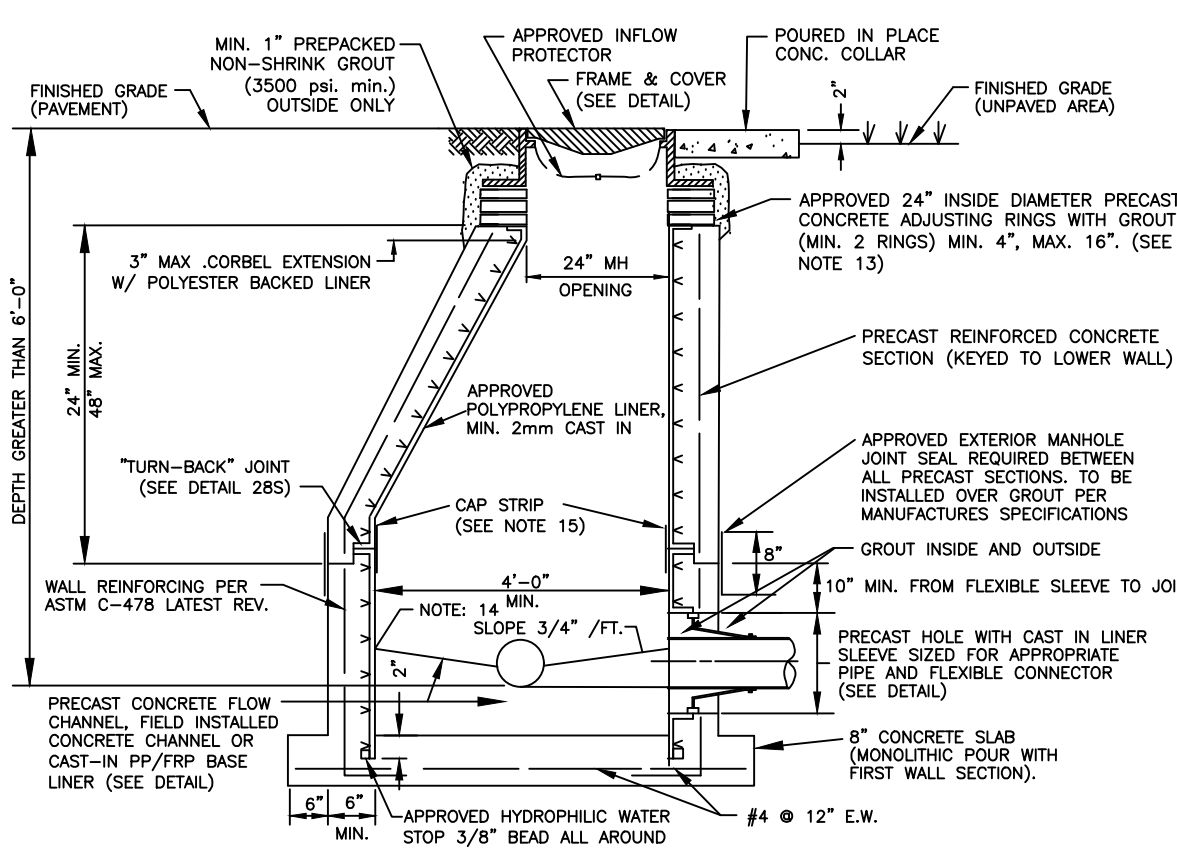
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- NOTES:
1. MANHOLE TO BE CONSTRUCTED AND INSTALLED PER WUD STANDARD DETAIL 18SA.
 2. A TEMPORARY GRAVITY SEWER MAIN BYPASS SIXTEEN(16) FOOT MINIMUM TO BE INSTALLED THROUGH NEW MANHOLE TO MAINTAIN EXISTING WASTEWATER FLOW DURING CONSTRUCTION OF NEW 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 OCCURRED DURING CONSTRUCTION TO THE EXISTING GRAVITY SEWER MAIN.

NEW MANHOLE CUT INTO EXISTING
GRAVITY SEWER MAIN

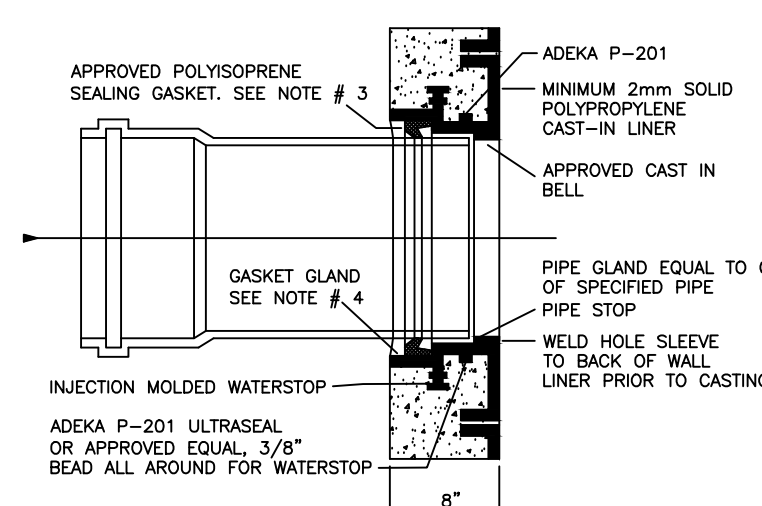
18SB



- NOTES:
1. PRECAST CONCRETE TYPE II 4000 P.S.I. CALCEAREOUS AGGREGATE REQUIRED (MIN. 60% C-3 CONCENT. 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 MANUFACTURER'S INSTALLATION INSTRUCTIONS.
 5. CURED PIPE OPENINGS SHALL BE INSTALLED PER DETAIL. APPROVED FLEXIBLE CONNECTOR WILL BE INSTALLED ONTO POLYPROPYLENE WALL SLEEVE. WALL SLEEVE SHALL BE EPOXY INTO CURED 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



- INSTALLATION:
- 1) CLEAN BELL
 - 2) INSTALL GASKET AS SHOWN
 - 3) LUBRICATE PIPE SPOUT AND SLIDE INTO BELL AND GASKET UNTIL REACHING PRESTOP
 - 4) CHECK FOR WATERTIGHT CONNECTION

DO NOT LUBRICATE THE GASKET
OR THE BELL

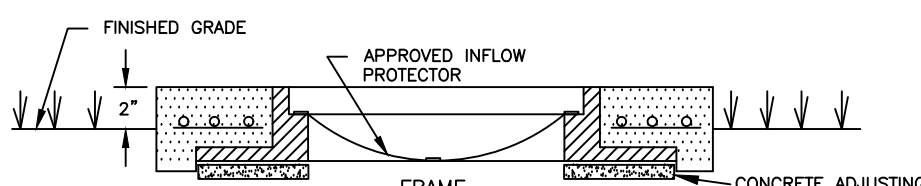
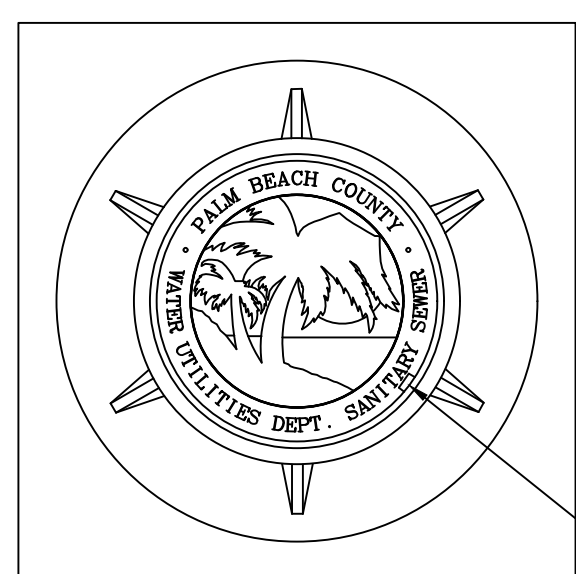
- NOTES:
- 1) MANHOLE SHOP DRAWINGS SHALL IDENTIFY THE TYPE OF MANHOLE/PIPE CONNECTION.
 - 2) MANHOLE SHOP DRAWINGS SHALL IDENTIFY THE PIPE SIZE, TYPE, GASKET TYPE, AND HOLE SIZE.
 - 3) ONLY THE POLYISOPRENE GASKET SUPPLIED BY THE BELL MANUFACTURER SHALL BE USED IN COMPRESSION TYPE BELLS.
 - 4) GASKET 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

22S

PIPE TO MANHOLE CONNECTION - TYPE "C"

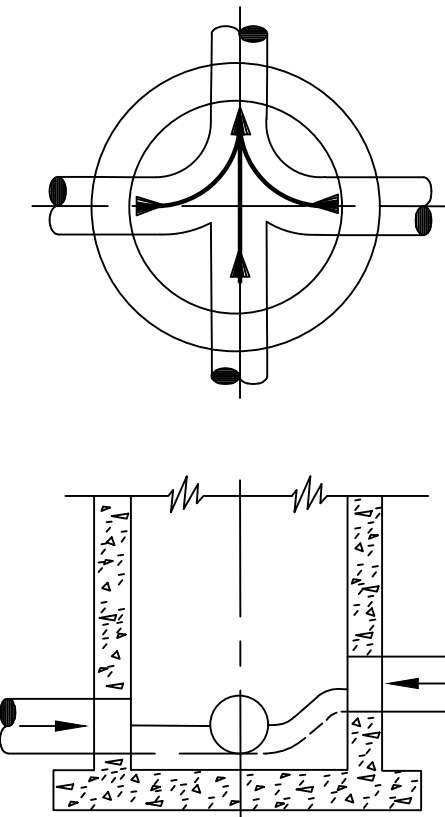
23S



- 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

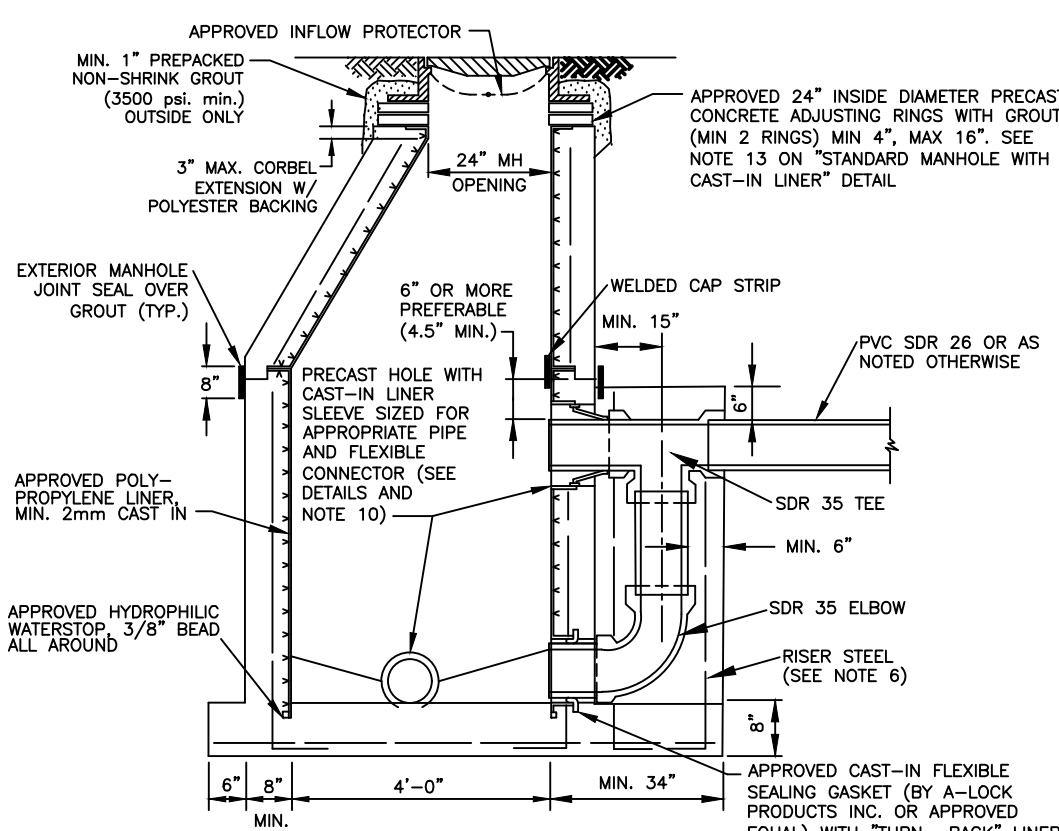
17S



- NOTES:
1. 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



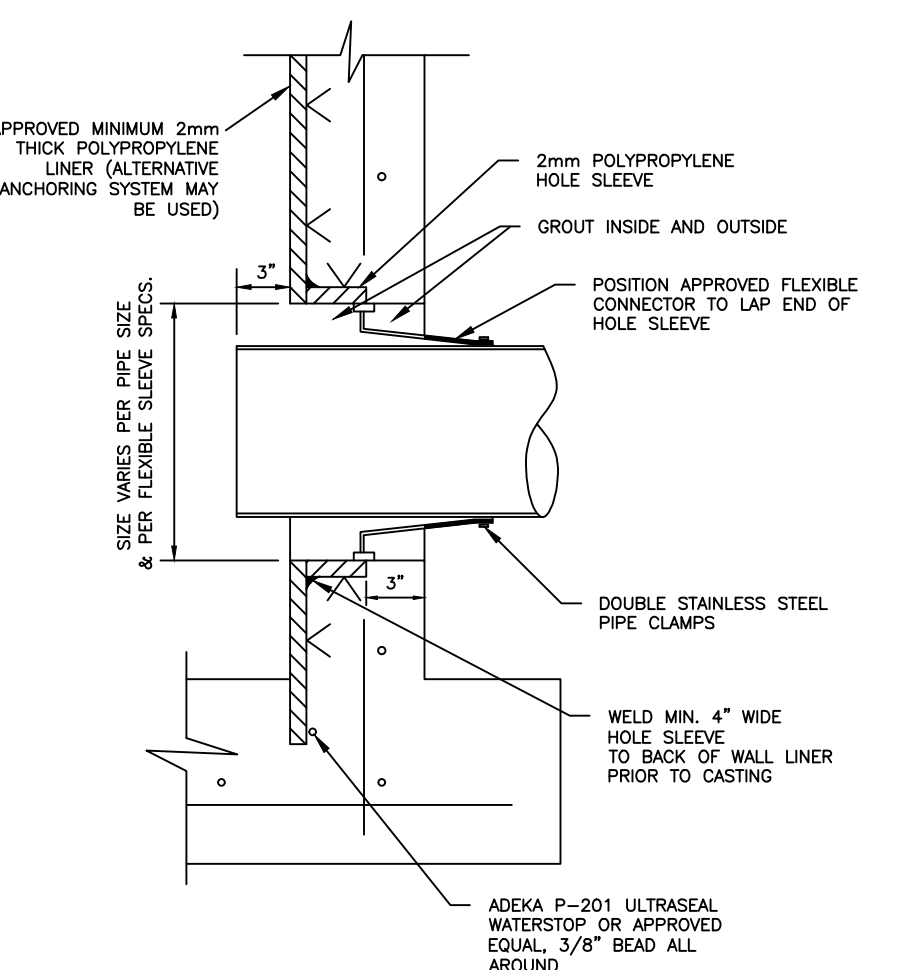
- NOTES:
1. ALL DETAILS AND SPECIFICATIONS FOR "STANDARD MANHOLE WITH SOLID POLYPROPYLENE LINER SYSTEM" ARE APPLICABLE EXCEPT FOR REFERENCES TO DROP ASSEMBLY.
 2. THE PRECAST BASE SHALL EXTEND FULLY UNDER THE DROP ASSEMBLY.
 3. PRECAST DROP ENCASEMENT REQUIRED UP TO TOP EDGE OF 90 DEGREE ELBOW, BRICK 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



PIPE TO MANHOLE CONNECTION - TYPE "A"

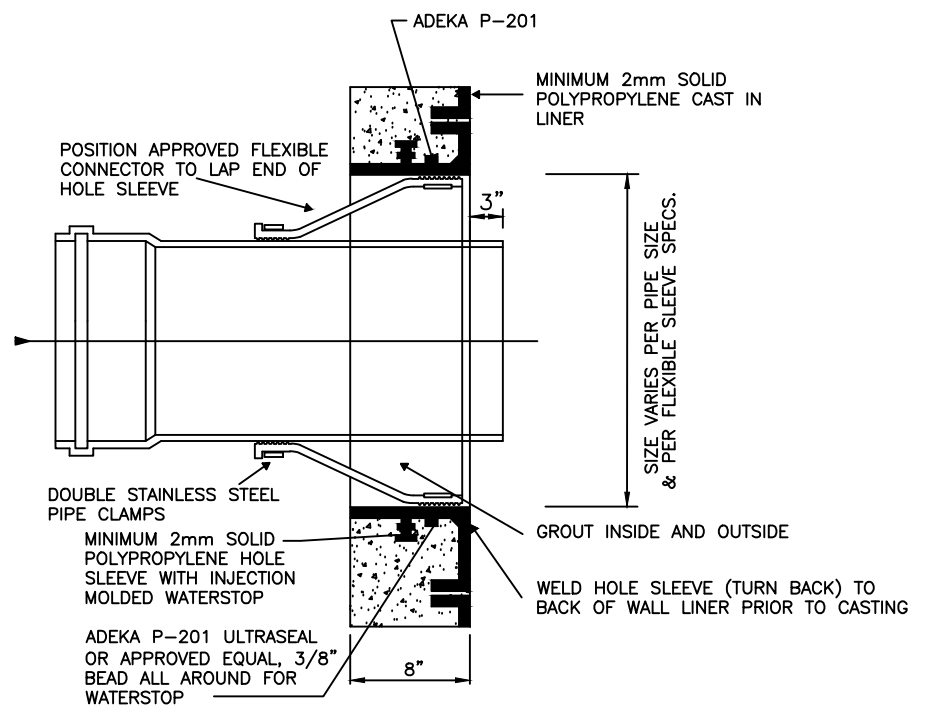
21S

PIPE TO MANHOLE CONNECTION - TYPE "B"

22S

PIPE TO MANHOLE CONNECTION - TYPE "C"

23S



- INSTALLATION:
- 1) CLEAN BOOT HUB
 - 2) INSTALL RUBBER BOOT CONNECTOR (PER MANUFACTURER'S INSTRUCTIONS).
 - 3) LUBRICATE PIPE SPOUT AND SLIDE INTO RUBBER BOOT CONNECTOR.
 - 4) TIGHTEN RUBBER BOOT CLAMPS (PER MANUFACTURER'S INSTRUCTIONS)
 - 5) SECURE AND SICKLELL 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

WASTEWATER #3
STANDARD DETAILS

SEAL

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

PIPE TO DROP MANHOLE CONNECTION
LOWER INVERT

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

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).

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).

1. PRECAST CONCRETE TYPE I SHALL MEET P. 511 CALCAUREUS AGGREGATE REQUIRED (MIN. 60% C303 CONTENT; 60% IN LARGE AGGREGATE, 50% IN CONCRETE SCREENING).
2. RUB'R NEK (R 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 SPECIFIED MANHOLE CONNECTORS SHALL BE USED AT PIPE CONNECTIONS. HOLE SIZE PER FOOT MANUFACTURER'S SPECIFICATIONS. DOUBLE PIPE CLAMPS MUST BE USED AT ALL PIPE CONNECTIONS AS REQUIRED BY FOOT MANUFACTURER'S INSTALLATION INSTRUCTIONS.
5. CORED PIPE OPENINGS SHALL BE INSTALLED PER DETAIL. APPROVED SPECIFIED CONNECTOR WILL BE INSTALLED ONTO POLY-PROPYLENE WALL SLEEVE. WALL SLEEVE SHALL BE EXPOSED INTO CORED OPENING AND THERM WELDED TO WALL LINER.
6. FLOW CHANNELS SHALL DIRECT INFLOW INTO FLOW STREAM. (SEE DETAIL)
7. LIFT HOLES ARE PERMITTED.
8. INSIDE DIPS SHALL NOT BE DESIGNED TO EXCEED 1.80 FEET AND NOT CONSTRUCTED TO EXCEED 2.0 FEET. MAX. 6" INSIDE DIP 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 INSIDES 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 RING CORNER WITH AN APPROVED POLYURETHAN UPL SEAL GASKET AND SEALED TO THE RING USING APPROVED BUTYL STRIPS. SEE DETAILS.
15. SOLD THERMO-PLASTIC CAST-IN LINER SYSTEM IS REQUIRED FOR LAST MANHOLE PRIOR TO A LIFT STATION, MANHOLES DEEPER THAN 10 FEET CORNER TO CORNER AND MANHOLES WITH A FORCE MAIN CONNECTION. SEE APPROPRIATE DETAILS.
16. MANHOLES IN ROADWAYS SHALL BE LOCATED OUTSIDE OF WHEEL PATHS.

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

1. ALL DETAILS AND SPECIFICATIONS FOR "STANDARD MANHOLE WITH SOLID POLYPROPYLENE LINER SYSTEM" ARE ACCEPTED 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 SR 28 PIPE WITH PVC SR 35 FITTINGS SHALL BE UTILIZED IN THE DROP ASSEMBLY.
6. DROP ENCASEMENT REINFORCING STEEL TO BE CAST IN PLACE (4 RODS) OR CAST 4" (4 RODS) OR 4" 1/2" (4 RODS) REINFORCING CAST IN PLACE. MINIMUM CAST IN PLACE REINFORCING SHALL BE 1/2" (4 RODS). COIL LOUPE INSERTS TO BE "DAYTON SEPORMER" B16, 1/2" X 4" OR APPROVED EQUAL.

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).

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.

STANDARD MANHOLE WITH CAST-IN LINER
AND BASE LINER

MANHOLE BASE SECTION

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

CONSULTANT:



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UTILITIES NOTIFICATION CENTER

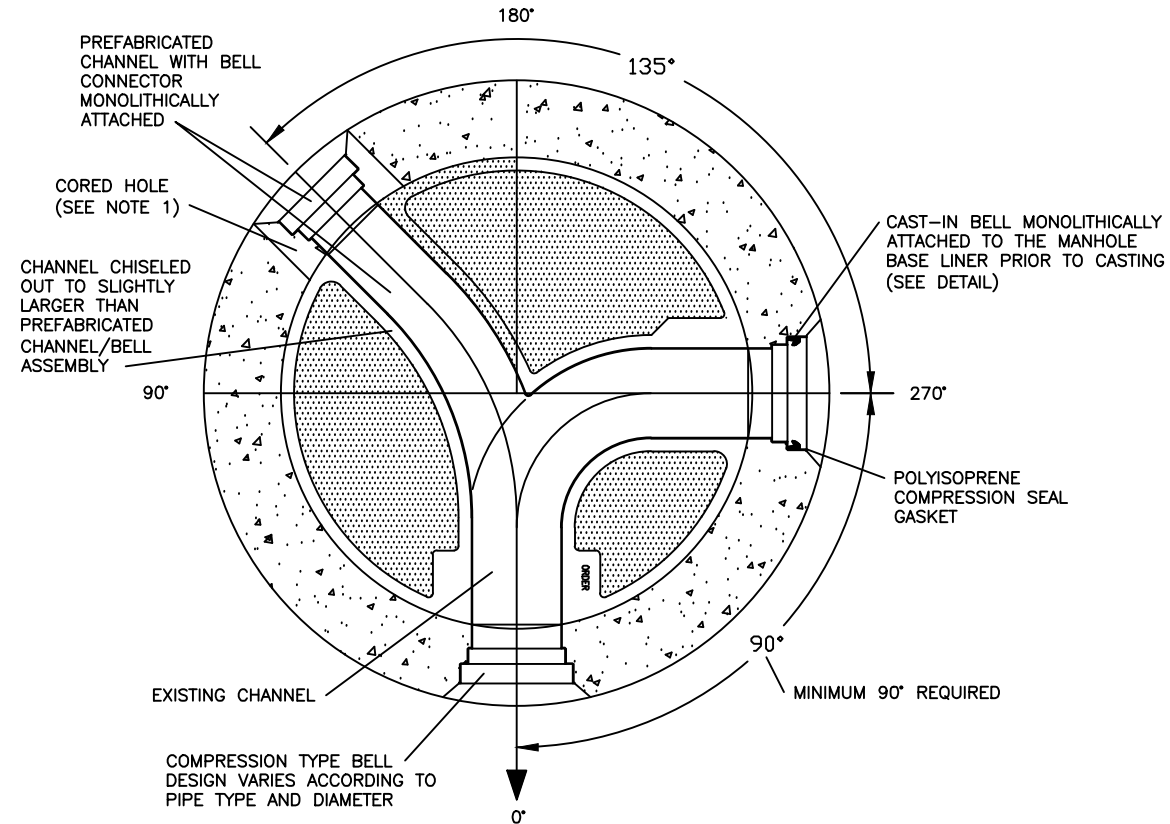
DESIGNED BY: WUD

DRAWN BY: M. BUCK

CHECKED BY: J. LAMM

APPROVED BY: WUD

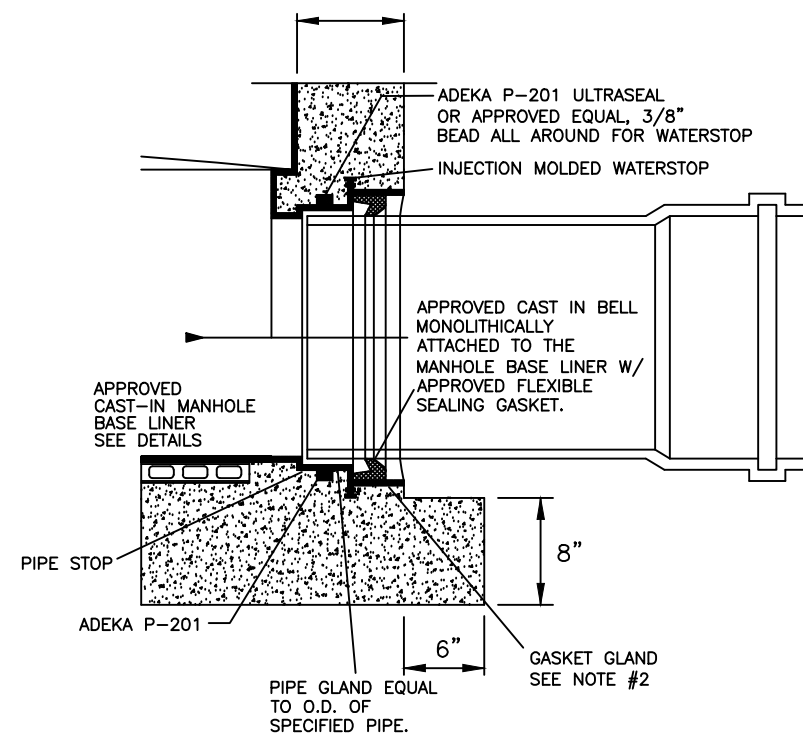
Palm Beach County
Water Utilities Department
P.O.Box 16097
West Palm Beach, FL 33416-6097



- NOTES:
- CORED OPENING AND CHANNEL DIAMETER PER CHANNEL/BELL MANUFACTURER REQUIREMENTS. SIZES SHALL BE SPECIFIED ON SHOP DRAWING.
 - ONLY AN APPROVED CHANNEL/BELL ASSEMBLY PROVIDED BY THE BASE LINER MANUFACTURER SHALL BE USED.
 - CHANNEL/BELL ASSEMBLY MUST BE COMPLETELY GROUTED IN PLACE USING AN APPROVED CEMENT.
 - 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



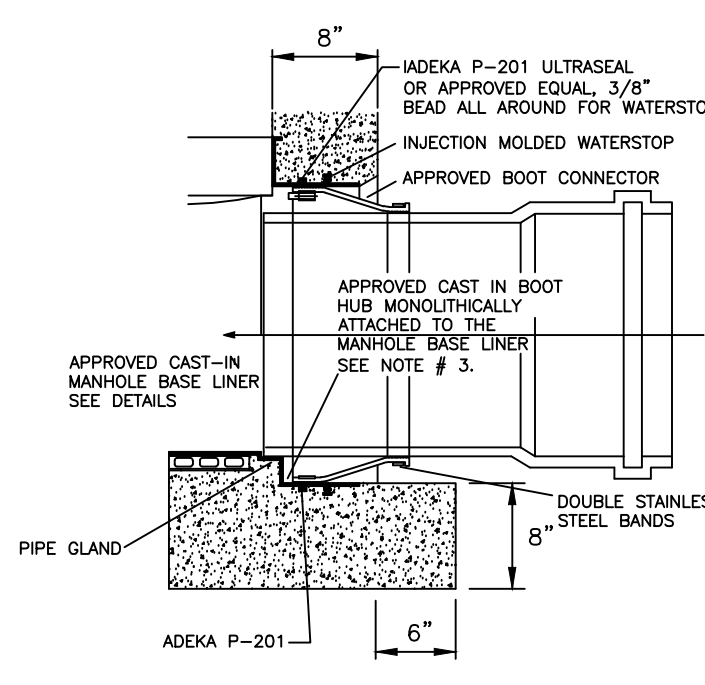
- INSTALLATION:
- CLEAN BELL REMOVING ANY EXCESS CONCRETE SLURRY OR DIRT INSIDE BELL.
 - INSTALL GASKET AS SHOWN.
 - LUBRICATE PIPE SPOOT AND SLIDE INTO BELL AND GASKET UNTIL REACHING PIPE STOP.
 - CHECK FOR WATERTIGHT CONNECTION. (VACUUM TESTING OR OTHER APPROVED METHOD).

DO NOT LUBRICATE THE GASKET OR THE BELL

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

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

35S



- INSTALLATION:
- CLEAN BOOT HUB REMOVING ANY EXCESS CONCRETE SLURRY OR DIRT INSIDE BELL.
 - INSTALL RUBBER BOOT CONNECTOR (PER MANUFACTURER'S INSTRUCTIONS). WEDGE STYLE EXPANDER BOLTS MUST BE ALIGNED WITH THE "TOP" OF BOOT HUB ACCESS NOTCH.
 - PRE-WATER PIPE END AS REQUIRED TO PREDETERMINED PIPE DEFLECTION ANGLE.
 - LUBRICATE SPOOT; ORIENT PIPE MITER; SLIDE INTO RUBBER BOOT CONNECTOR; "HOMET" 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).

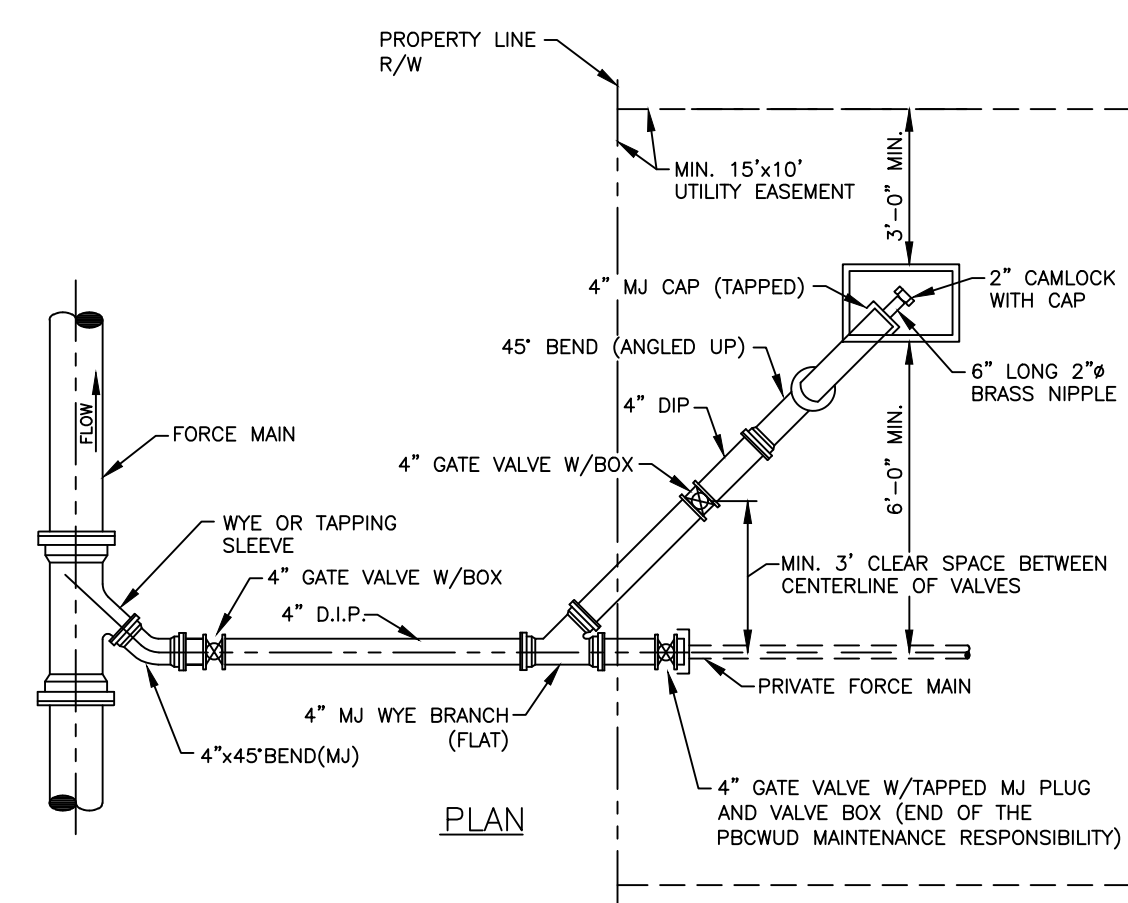
1. CHECK FOR WATERTIGHT CONNECTION. (VACUUM TESTING OR OTHER APPROVED METHOD).

DO NOT LUBRICATE THE GASKET OR THE BELL

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

PIPE TO MANHOLE CONNECTION TYPE "B" (BOOT)

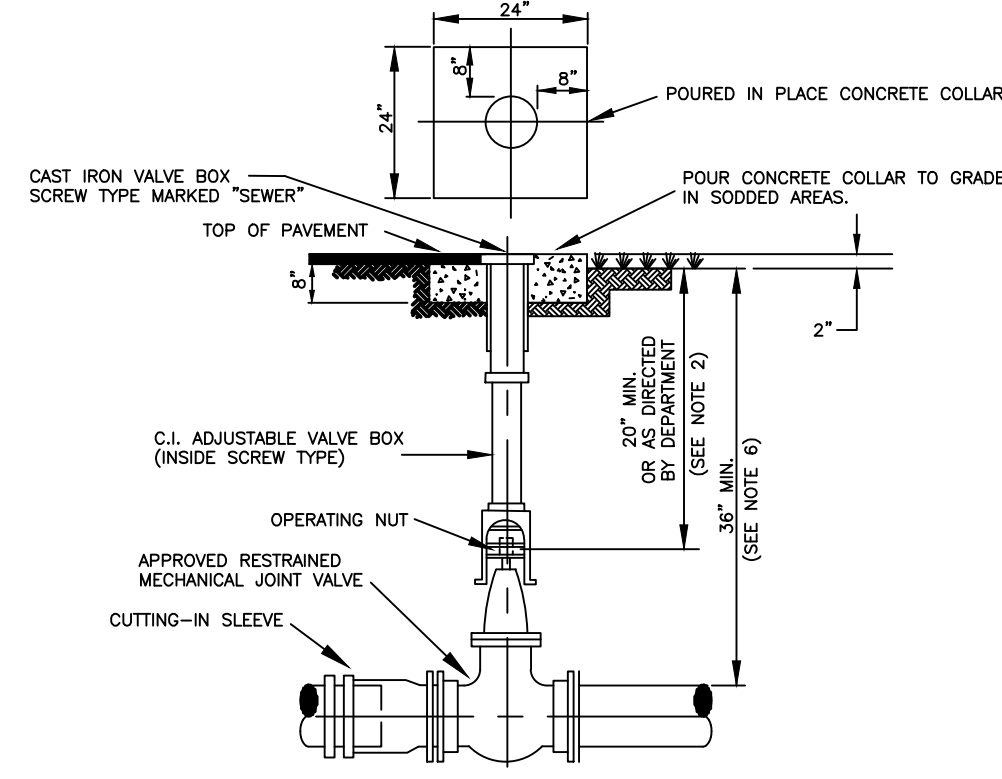
36S



- NOTE:
- THE FLUSHING CONNECTION SHALL BE LOCATED IN GRASS AREA.
 - ALL 4" PIPES SHALL BE RESTRAINED.

CONNECTION OF PRIVATE FORCE MAIN UNDER 4" IN DIAMETER

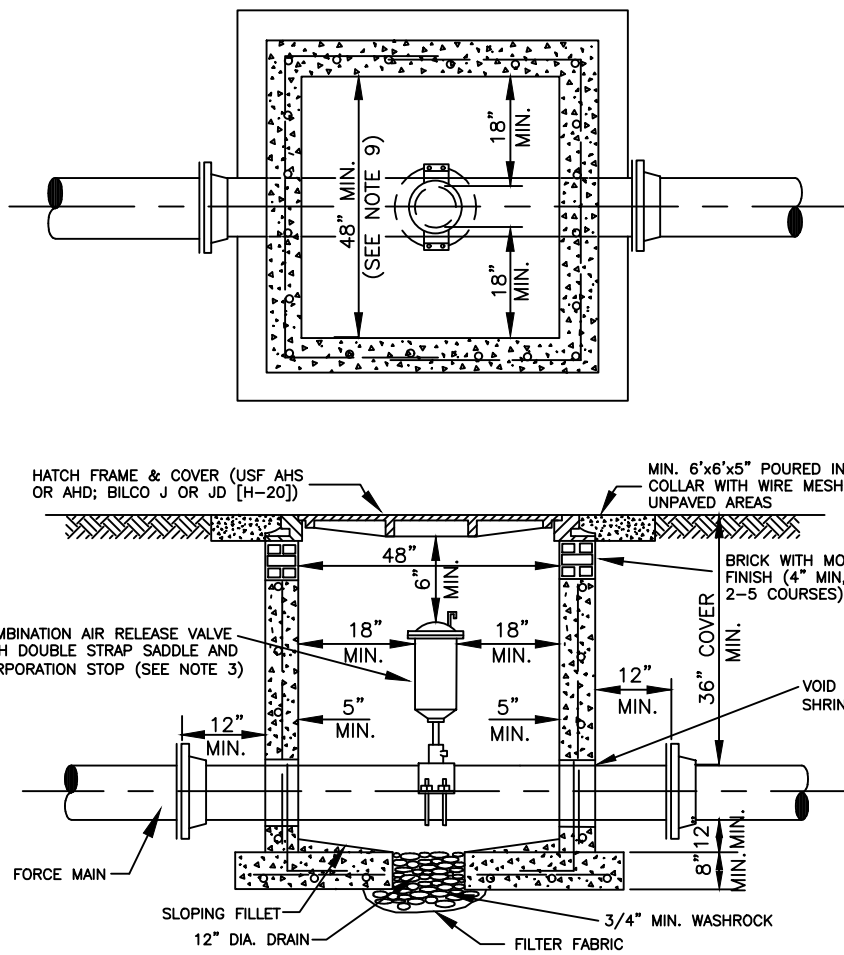
37S



- NOTES:
- CONCRETE COLLAR IS NOT REQUIRED IN PAVED AREAS IF PAVEMENT SURFACE IS FINISHED PRIOR TO CONDITIONAL FINAL INSPECTION.
 - 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.
 - VALVE BOXES SHALL HAVE COVERS MARKED "SEWER".
 - EXTENSION VALVE BOX TO BE D.I.P. OR C-900 PVC OR 18 (COLOR: GREEN).
 - A CUT-IN INSTALLATION SHALL REQUIRE MEQUALUS OR EQUAL THROUGHOUT ASSEMBLY.
 - 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" |
- PIPE SHALL BE RESTRAINED ON BOTH SIDES OF THE VALVE AS REQUIRED.
 - VALVES IN ROADWAYS SHALL BE LOCATED OUTSIDE OF WHEEL PATHS WHENEVER POSSIBLE.

TYPICAL FORCE MAIN GATE VALVE SETTING AND CUT-IN DETAIL

38S

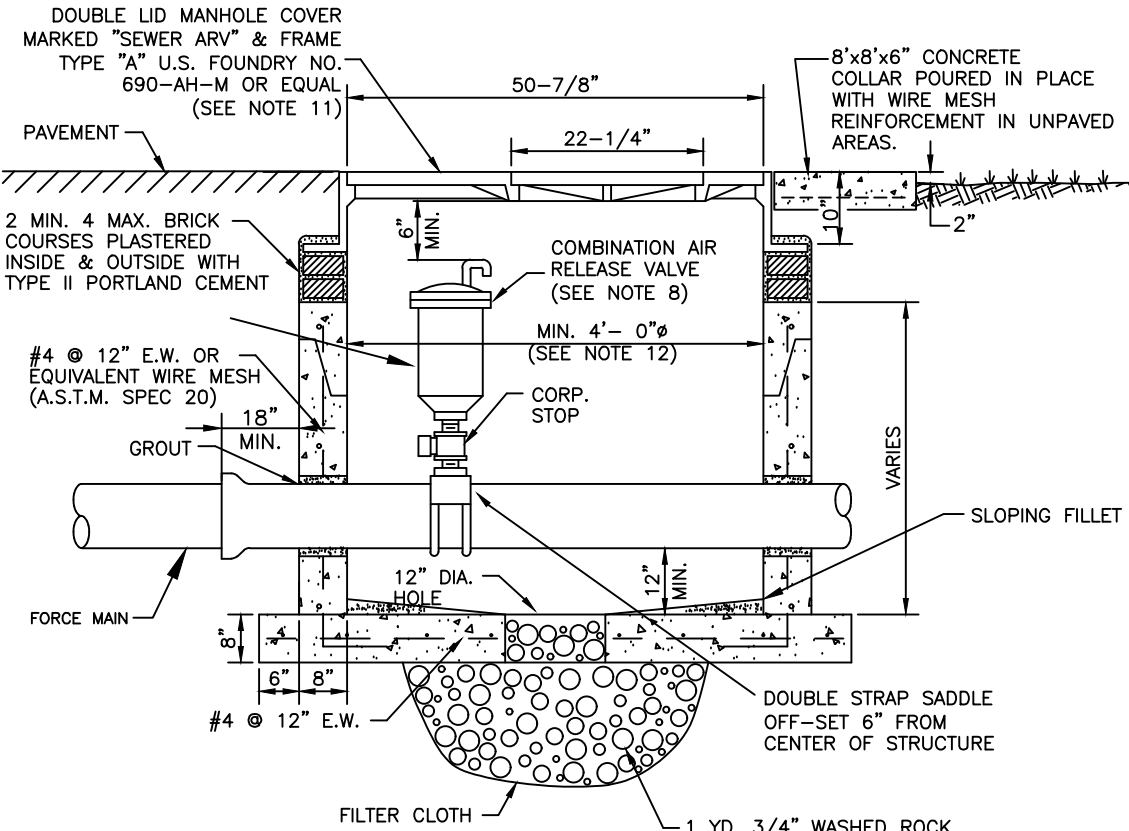


- NOTES:
- 4000 P.S.I. TYPE I CONCRETE.
 - VAULT SHALL BE PRECAST WITH STEEL REINFORCING. SHOP DRAWING IS REQUIRED TO BE APPROVED BY THE DEPARTMENT PRIOR TO VAULT CONSTRUCTION AND/OR INSTALLATION.
 - COMBINATION AIR RELEASE VALVE (ARV) SHALL BE TYPE AND SIZE APPROPRIATE FOR SERVICE INTENDED. ALTHOUGH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

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

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

39S



- NOTES:
- PRECAST 4000 P.S.I. TYPE II CONCRETE STRUCTURE. SHOP DRAWING IS REQUIRED TO BE APPROVED BY THE DEPARTMENT.
 - ALL OPENINGS SHALL BE SEALED WITH A WATERPROOF NON-SHRINKING GROUT.
 - LIFT HOLES ARE PERMITTED.
 - ALL PIPE HOLES SHALL BE PRECAST.
 - MANHOLE FABRICATION SHALL BE IN ACCORDANCE WITH A.S.T.M. C-478 LATEST STANDARD.
 - COAT INSIDE WITH AN APPROVED PROTECTIVE CORROSION BARRIER SYSTEM.
 - CONCRETE COLLAR REQUIRED WHEN MANHOLE IS OUTSIDE OF PAVEMENT. SEE DETAIL.
 - 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.
 - DUCTILE IRON PIPE IS REQUIRED THROUGH THE MANHOLE. NO PIPE JOINTS INSIDE THE MANHOLE.
 - THREADED AREAS OF CORPORATION STOP SHALL BE SPIRAL WRAPPED WITH TWO WRAPS OF TEFLON TAPE.
 - 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.
 - LARGER MANHOLES WILL BE REQUIRED FOR PIPES LARGER THAN 12"

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

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

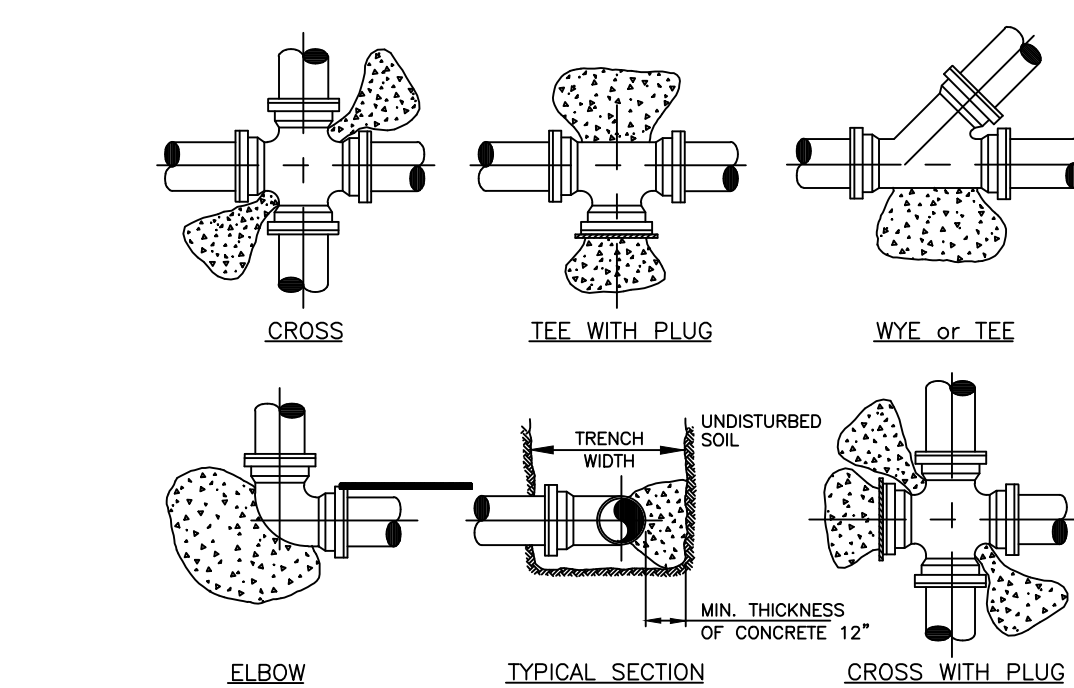
40S

FITTING TYPE		PIPE SIZE															
		4"	6"	8"	10"	12"	16"	20"	24"	30"	36"	42"	48"	60"	72"	84"	96"
90° HORIZ. BEND	UPPER BEND	14	20	25	30	35	45	54	62	73	84	93	101				
	LOWER BEND	6	8	11	13	15	19	22	26	30	35	38	42				
	PLUG (DEAD END)	3	4	5	6	7	9	11	12	15	17	18	20				
22.5° HORIZ. BEND	UPPER BEND	1	2	3	4	5	6	7	8	9	10	11	12				
	LOWER BEND	29	41	53	64	74	95	115	134	160	185	207	228				
	PLUG (DEAD END)	7	10	13	16	19	25	30	35	42	49	56	62				
45° HORIZ. BEND	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				
	PLUG (DEAD END)	6	9	12	14	17	19	23	27	32	37	41	45				
22.5° VERT. OFFSET	UPPER BEND	1	2	4	4	4	5	6	7	8	10	11	12				
	LOWER BEND	3	4	6	7	8	9	11	13	16	18	20	22				
	PLUG (DEAD END)	1	1	1	2	2	2	3	3	4	5	5	6				
11.25° VERT. OFFSET	UPPER BEND	32	45	59	70	83	107	129	151	160	185	207	228				
	LOWER BEND	32	45	59	70	83	107	129	151	160	185	207	228				
	PLUG (DEAD END)	32	45	59	70	83	107	129	151	160	185	207	228				
TEE (BRANCH RESTRAINT)	4"x 4"	23	-	-	-	-	-	-	-	-	-	-	-				
	6"x 6"	21	35	-	-	-	-	-	-	-	-	-	-				
	8"x 8"	18	34	47	-	-	-	-	-	-	-	-	-				
TEE (LARGER REDUCER)	12"x 12"	13	30	44	57	69	-	-	-	-	-	-	-				
	16"x 16"	7	26	41	55	67	90	-	-	-	-	-	-				
	20"x 20"	1	21	38	52	65	88	109	-	-	-	-	-				
REDUCER (LARGER)	24"x 24"	1	16	34	49	62	86	108	129	-	-	-	-				
	30"x 30"	1	8	28	44	58	83	106	127	154	-	-	-				
	36"x 36"	1	1	22	39	54	80	103	124	153	179	-	-				
REDUCER (SMALLER)	42"x 42"	1	1	15	33	49	71	100	122	151	177	201	-				
	48"x 48"	1	1	7	27	44	73	97	120	149	176	200	222				
	60"x 60"	1	1	1	1	1	1	1	1	1	1	1	1				
REDUCER (SMALLER)	72"x 72"	1	1	1	1	1	1	1	1	1	1	1	1				
	84"x 84"	1	1	1	1	1	1	1	1	1	1	1	1				
	96"x 96"	1	1	1	1	1	1	1	1	1	1	1	1				

- NOTES:
- THE DATA IN THE ABOVE TABLE ARE BASED UPON THE FOLLOWING INSTALLATION CONDITIONS: SOIL TYPE-SAND; TEST PRESSURE-150 PSI; DEPTH OF BURY-3'; MINIMUM PIPE LENGTH ALONG TEE RUN-3'; SAFETY FACTOR-1.5; VERTICAL OFFSET-3'.
 - THE RESTRAINED PIPE LENGTHS APPLY TO DUCTILE IRON AND PVC PIPE.
 - ALL JOINTS BETWEEN UPPER AND LOWER BENDS SHALL BE RESTRAINED.
 - RESTRAINED PIPE LENGTHS APPLY TO PIPE ON BOTH SIDES OF VALVES AND FITTINGS.
 - MULTIPLY PIPE LENGTH BY 1.4 FOR POLYETHYLENE ENCASED PIPE.
 - RESTRAINED PIPE LENGTHS EQUAL TO AN "INLINE VALVE" CONDITION ARE REQUIRED AT EACH END OF A TRANSITION FROM HOPE PIPE TO OTHER PIPE MATERIALS.
 - 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	NOTE:
4"	2.0 SQ. FT.	VALUES ARE FOR 90° BEND. BASED ON 2000 P.S.I. SAFE BEARING LOAD AND PIPE PRESSURE OF 150 P.S.I.	FOR OTHER FITTINGS USE THE FOLLOWING FACTORS:
6"	4.0 SQ. FT.		TEE 100K
8"	6.6 SQ. FT.		45° BEND 71K
10"	10.0 SQ. FT.		22 1/2° BEND 39K
12"	14.0 SQ. FT.		11 1/4° BEND 20K
14"	18.6 SQ. FT.		DEAD END 100K

- NOTES:
- 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.
 - BEFORE POURING CONCRETE, PLUGS SHALL BE WRAPPED WITH VISQUEEN AND A BOARD PLACED IN FRONT.
 - CONCRETE SHALL BE 2500 P.S.I. MINIMUM.
 - THE ENGINEER OF RECORD SHALL SUBMIT A THRUST BLOCK SIZE CALCULATION FOR TEE CONNECTIONS INTO UNRESTRAINED EXISTING MAINS LARGER THAN 14".
 - 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

CONSULTANT:



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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



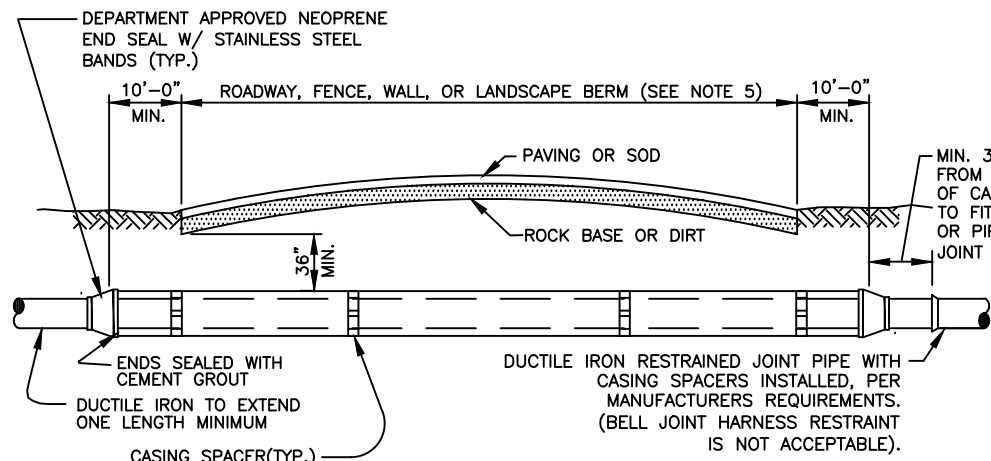
PALM BEACH COUNTY
WATER UTILITIES DEPARTMENT
P.O. BOX 16097
WEST PALM BEACH, FL 33416
(561) 493-6000

NO.	DATE	REVISION / REMARKS
1	JUNE 2019	GENERAL REVISION
2	OCT 2021	GENERAL REVISION
3	JAN 2023	GENERAL REVISION

STD DETAILS
SHEET NUMBER
C-32
OF
45

SEAL

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



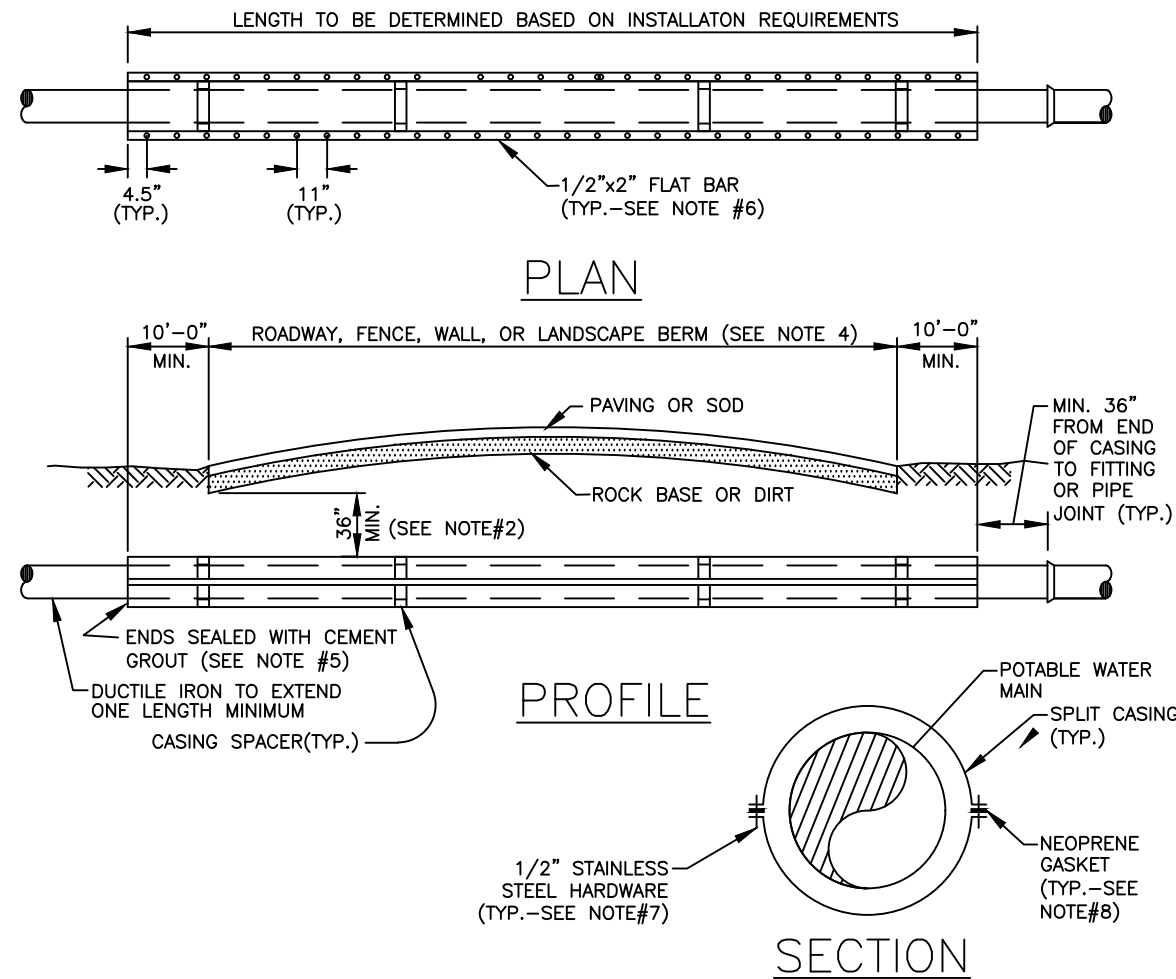
CARRIER PIPE SIZE	STEEL CASING INSIDE DIAMETER (MIN)	MINIMUM WALL THICKNESS (SEE NOTE 2)
4"	12"	.188
6"	14"	.250
8"	20"	.250
10"	20"	.250
12"	24"	.250
14"	24"	.250
16"	30"	.312
18"	30"	.312
20"	36"	.372
24"	42"	.500
30"	48"	.500
36"	54"	.625
42"	60"	.625
48"	72"	.625

NOTES:

- A PROFILE DRAWING TO SCALE FOR EACH JACK AND BORE, DIRECTIONAL DRILL, OR DIRECT BURED 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.
- THICKER WALL CASINGS AND LARGER COVER OVER CASING MAY BE REQUIRED BY THE RIGHT-OF-WAY OWNER.
- STEEL CASING SHALL BE COATED OUTSIDE WITH COAL TAR EPOXY (MIN. 16 MILS DFT) AND BE PAINTED WITH A 4" MINIMUM WIDE CONTINUOUS STRIPE, COLOR CODED TO MATCH THE PIPE INSIDE, ALONG THE TOP AND OF THE CASING.
- 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 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 915 FOR INSTALLATION REQUIREMENTS.
- NON-SHRINKABLE CEMENT GROUT TO BE INSTALLED TO OBTAIN WATER TIGHT SEAL AT EACH END OF CASING.
- FLAT BARS TO BE STITCH WELDED AT 6" LENGTHS TO EDGE OF CASING ON EACH SIDE.
- CASING TO BE ASSEMBLED IN FIELD WITH 1/2" STAINLESS STEEL BOLTS, WASHERS, AND NUTS ON EACH SIDE.
- 1/4" NEOPRENE GASKET MATERIAL EXTENDING PAST CASING JOINT FOR POSITIVE SEAL ON EACH SIDE.

WASTEWATER MAIN CASING INSTALLATION

44SA



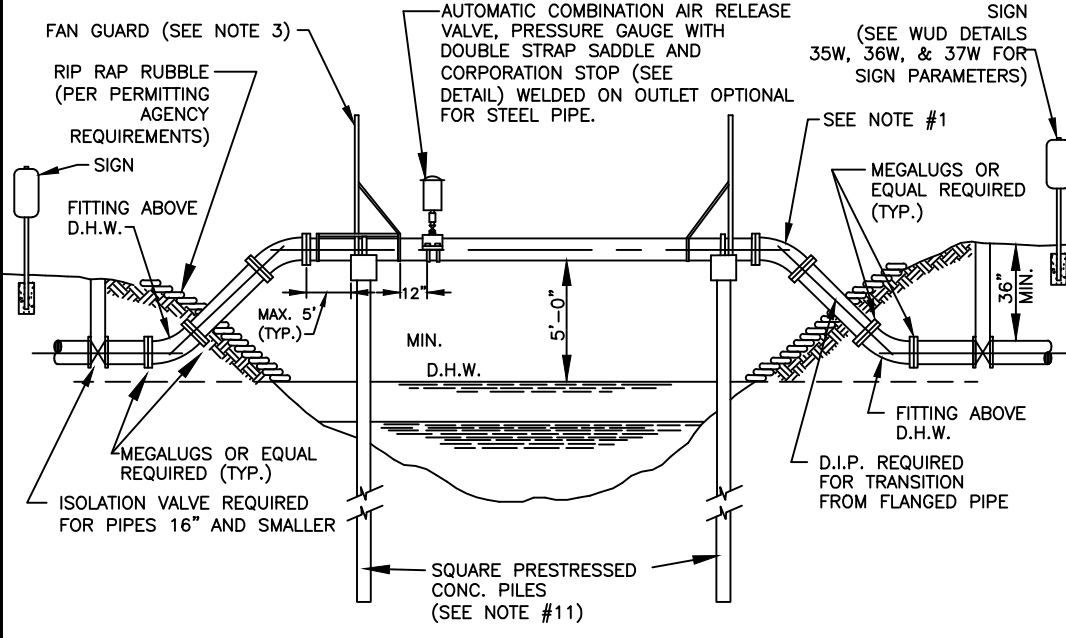
CARRIER PIPE SIZE	STEEL CASING INSIDE DIAMETER (MIN)	MINIMUM WALL THICKNESS (SEE NOTE 2)
4"	12"	.188
6"	14"	.250
8"	20"	.250
10"	20"	.250
12"	24"	.250

NOTES:*

- A SHOP DRAWING TO SCALE FOR EACH SPLIT CASING INSTALLATION IS REQUIRED AND TO BE APPROVED BY THE DEPARTMENT PRIOR TO INSTALLATION.
- THE RIGHT-OF-WAY OWNER MAY REQUIRE THICKER WALL CASING AND LARGER COVER OVER CASING.
- STEEL CASING SHALL BE COATED OUTSIDE WITH COAL TAR EPOXY (MIN. 16 MILS DFT) AND BE PAINTED WITH A 4" MINIMUM WIDE CONTINUOUS STRIPE, COLOR CODED TO MATCH THE PIPE INSIDE, ALONG THE TOP AND OF THE CASING.
- 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 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 915 FOR INSTALLATION REQUIREMENTS.
- NON-SHRINKABLE CEMENT GROUT TO BE INSTALLED TO OBTAIN WATER TIGHT SEAL AT EACH END OF CASING.
- FLAT BARS TO BE STITCH WELDED AT 6" LENGTHS TO EDGE OF CASING ON EACH SIDE.
- CASING TO BE ASSEMBLED IN FIELD WITH 1/2" STAINLESS STEEL BOLTS, WASHERS, AND NUTS ON EACH SIDE.
- 1/4" NEOPRENE GASKET MATERIAL EXTENDING PAST CASING JOINT FOR POSITIVE SEAL ON EACH SIDE.

WASTEWATER MAIN SPLIT CASING INSTALLATION

44SB

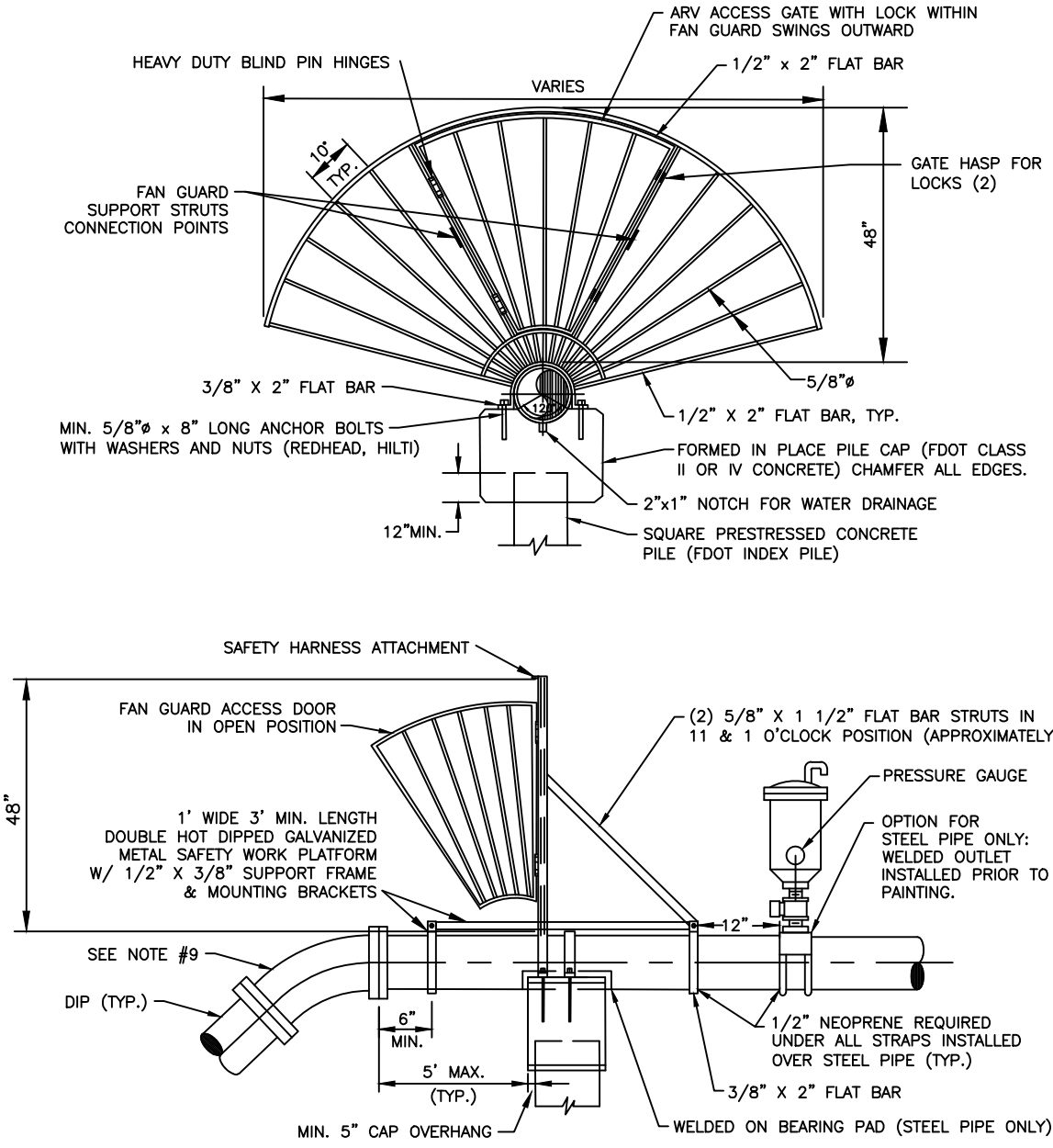


NOTES:

- ALL EXPOSED PIPE SHALL BE DUCTILE IRON OR PREFABRICATED STEEL WITH FLANGED FITTINGS AND PROFILED GASKETS, RETAINER GLANDS AND UNFLANGE 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.
- SPAN LENGTHS AS REQUIRED BY PERMITTING AGENCY.
- FAN GUARDS ARE REQUIRED. SEE FAN GUARD/PILE CAP DESIGN DETAILS, FOR ADDITIONAL REQUIREMENTS. ACCESS PLATFORM AND GATE REQUIRED ON ARV SIDE ONLY.
- ALL EXPOSED PIPING SHALL BE PAINTED AS SPECIFIED IN THE APPROVED MATERIAL LIST.
- ALL HARDWARE SHALL BE PAINTED WITH COAL-TAR EPOXY.
- PIPE SHALL BE CRADLED ON 3" THICK NEOPRENE (DUPONETER 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.
- TIE-DOWN STRAPS MUST PROPERLY FIT AND SECURE PIPE IN CRADLE.
- PIPE CRADLE IN CAP SHALL CONTACT 1/2 CIRCUMFERENCE OF PIPE. (SEE FAN GUARD DETAIL).
- SHOW EXISTING CANAL CROSS SECTION, ULTIMATE CANAL SECTION, AND RELEVANT ELEVATIONS AND DISTANCES ON A TO SCALE DETAIL DRAWING.
- PILE LIFT CABLE SHALL BE REMOVED BELOW SURFACE; HOLE SHALL BE FILLED WITH EPOXY CEMENT.
- THREADED AREAS OF BRASS FITTINGS SHALL BE SPIRAL WRAPPED WITH TWO WRAPS OF TEFELON TAPE.
- 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.
- 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.
- FORCE MAIN CROSSINGS OVER BODIES OF WATER MAY BE SUBJECT TO A D.E.P. "NOTICED GENERAL ENVIRONMENTAL RESOURCE PERMIT" (NGEP)

TYPICAL FORCE MAIN AERIAL CANAL CROSSING - SINGLE PIPE (SINGLE PILES)

45S



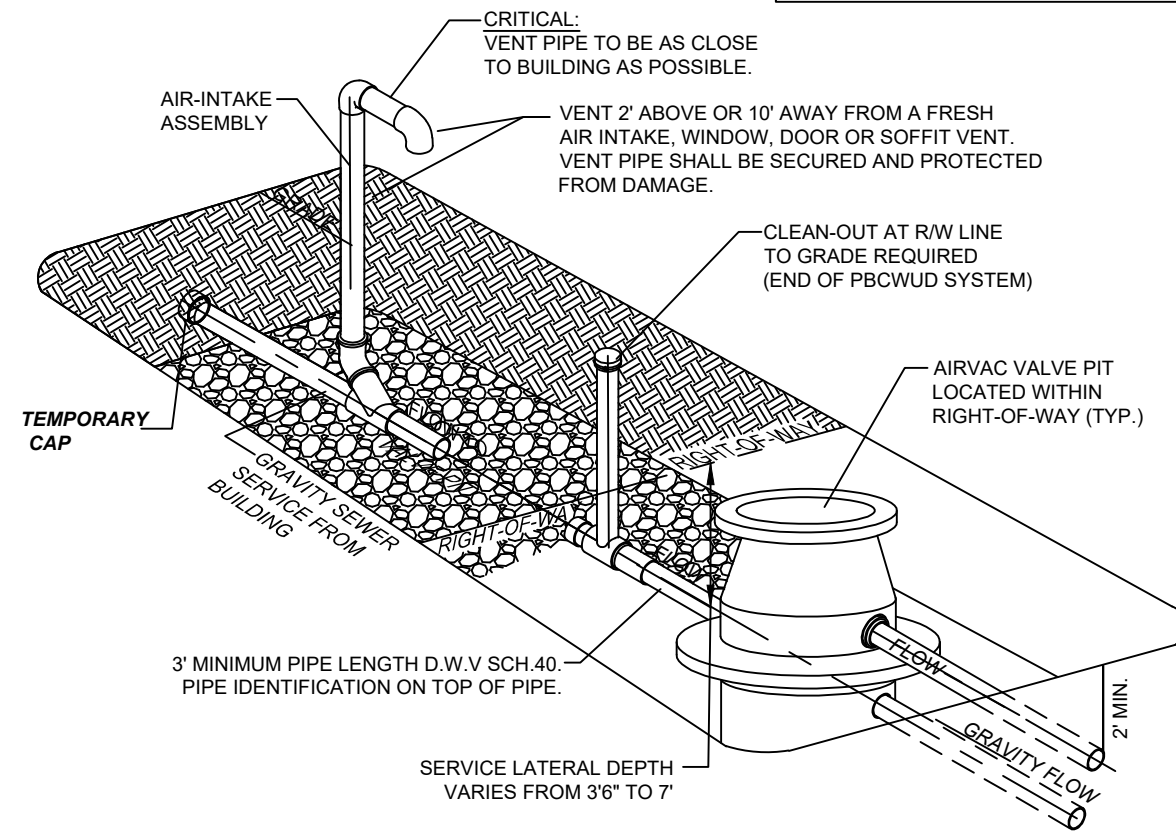
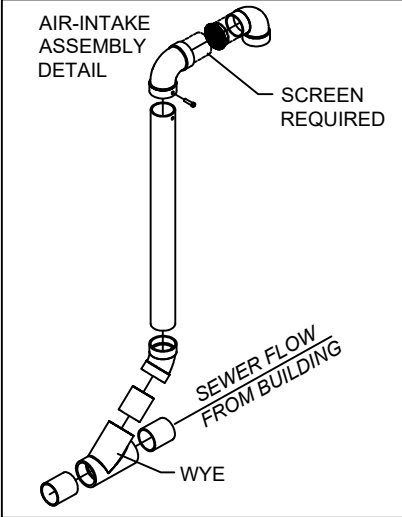
NOTES:

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

FAN GUARD/ PILE CAP DESIGN - SINGLE PIPE (SINGLE PILES)

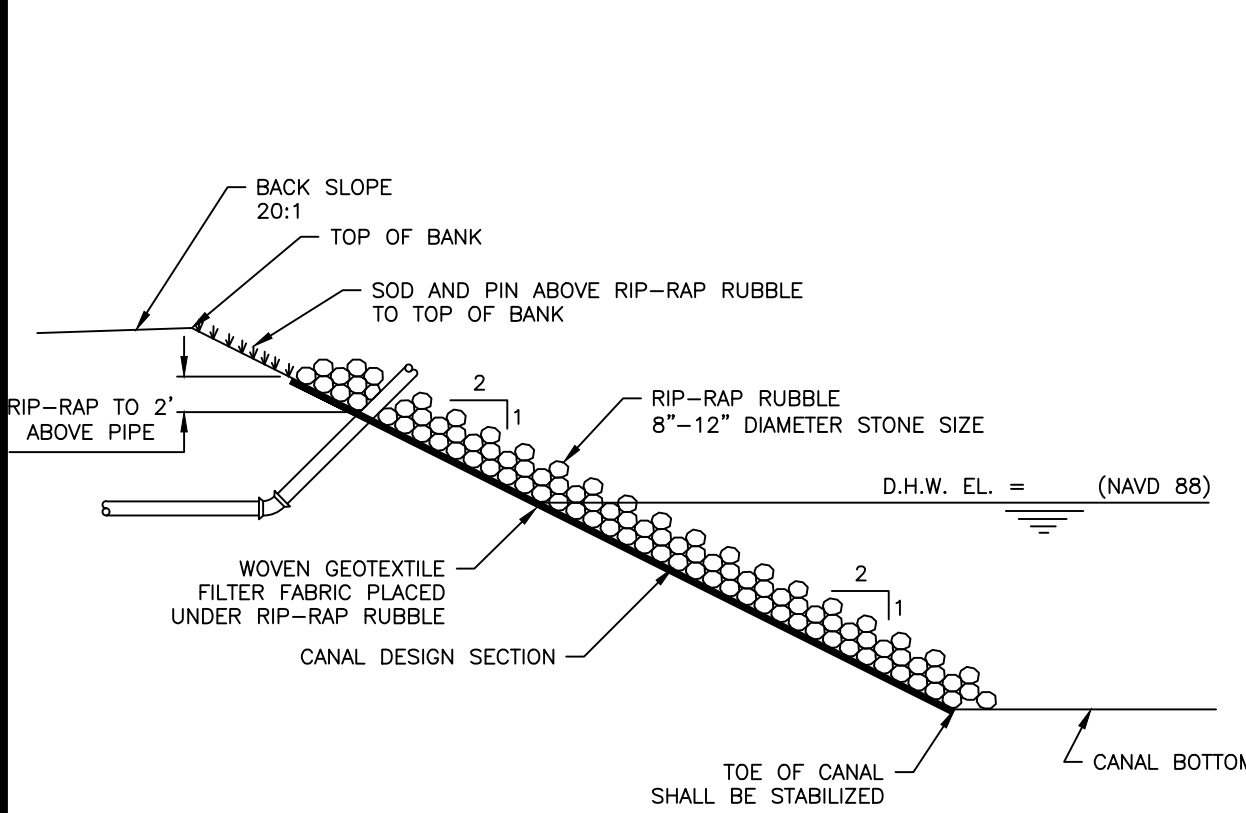
46S

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



TYPICAL WASTEWATER SERVICE INSTALLATION FOR VACUUM SEWER

87S

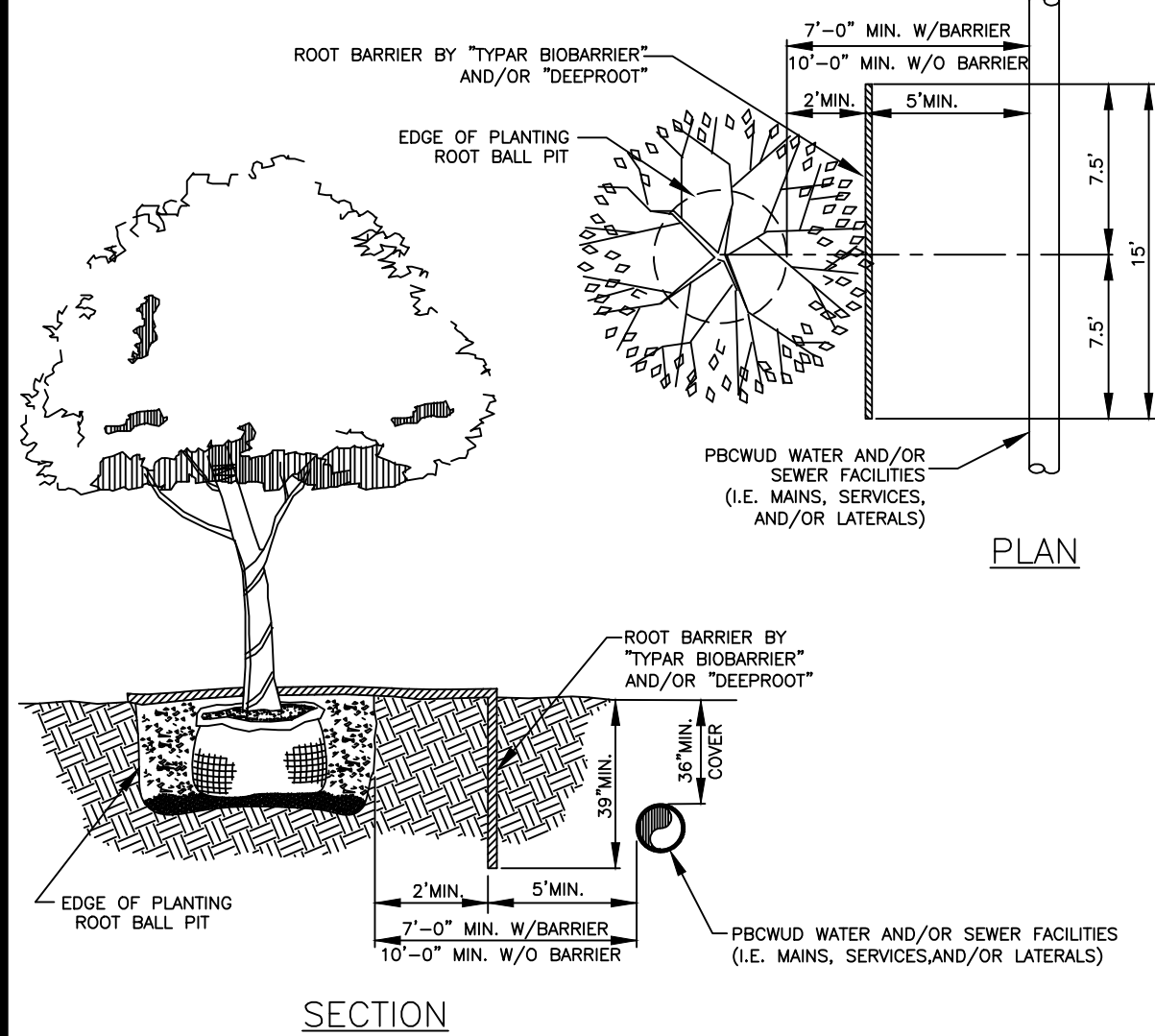


NOTES:

- RIP-RAP RUBBLE AND ITS INSTALLATION MUST MEET CANAL OWNERSHIP SPECIFICATIONS AND PERMITTING REQUIREMENTS.
- 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 LARGER PIECES.
- AN ALTERNATIVE DESIGN WILL BE CONSIDERED AND MUST RECEIVE PRIOR APPROVAL FROM THE CANAL PROPERTY OWNER.

RIP-RAP RUBBLE DETAIL (N.T.S.)

88S

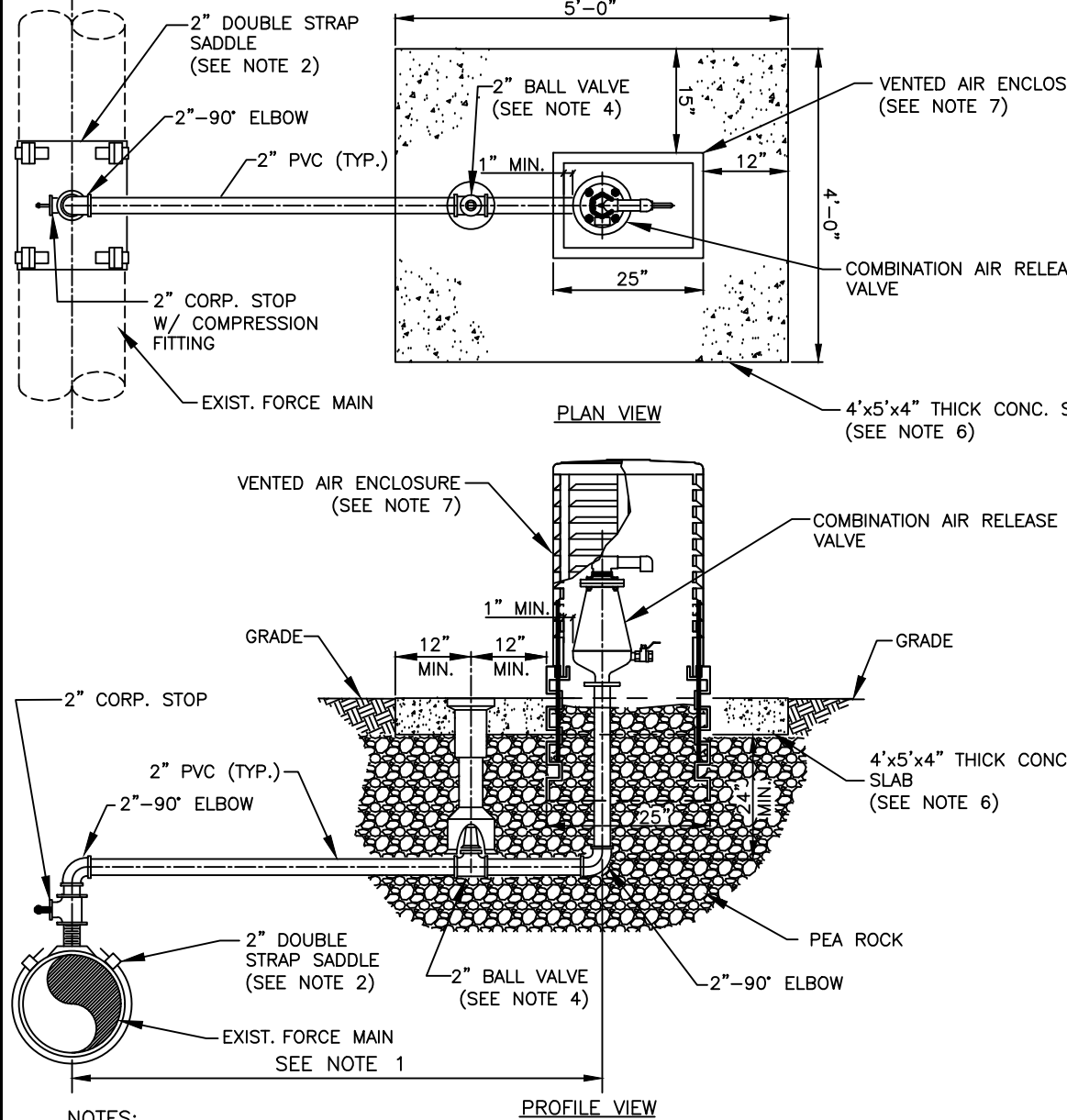


NOTES:

- 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.
- 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 ENCRONCH INTO A PBCUE WITHOUT PRIOR DEPARTMENT APPROVAL.

LANDSCAPE AND ROOT BARRIER DETAIL

89S

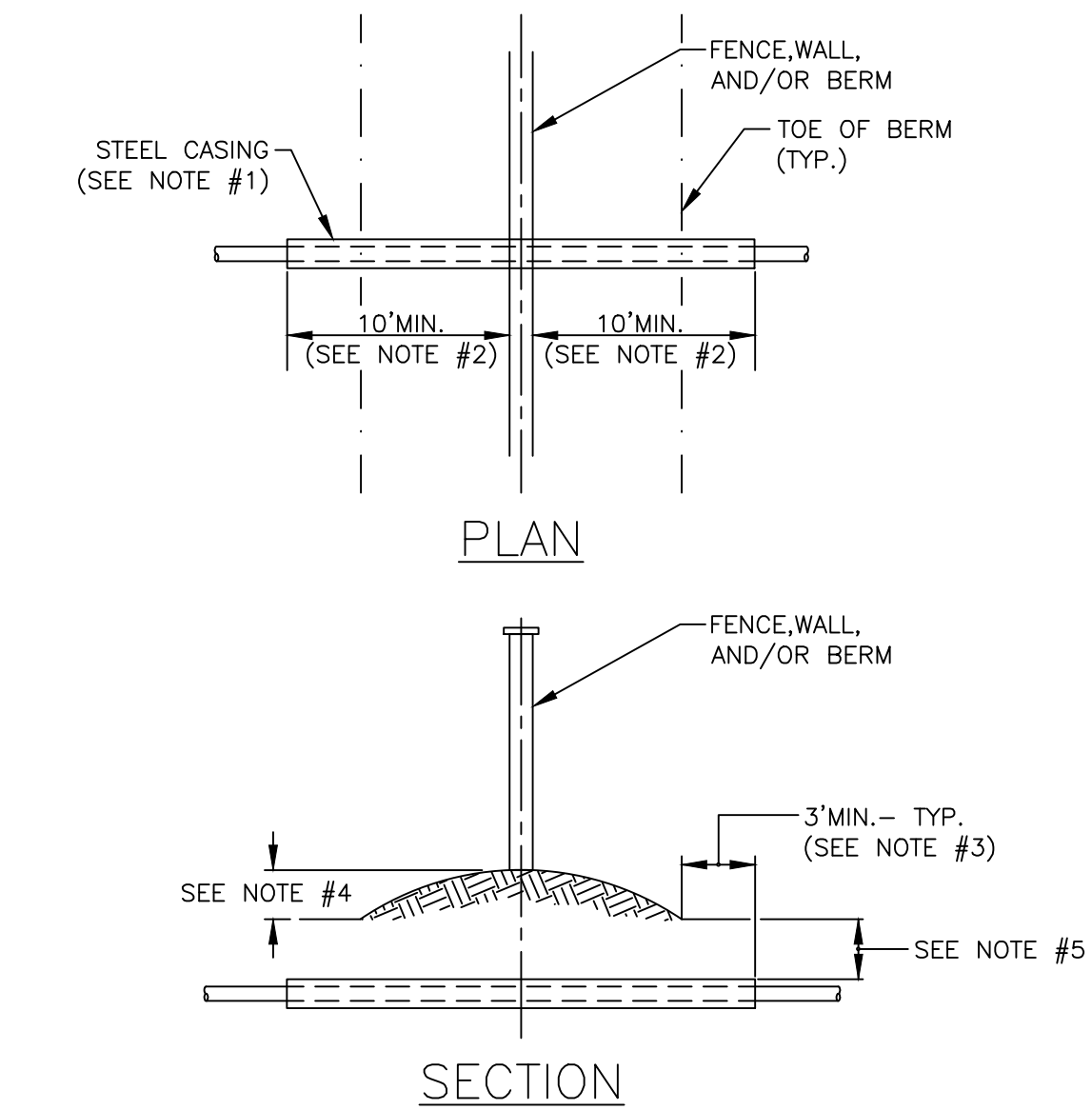


NOTES:

- 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.
- DOUBLE STRAP SADDLE TO BE INSTALLED PERPENDICULAR TO FORCE MAIN IN THE DIRECTION OF FLOW.
- ALL PVC PIPING AND FITTINGS TO BE SCHEDULE 80.
- 2" BALL VALVE AND CORROSION STOP SHALL BE BRASS WITH COMPRESSION FITTINGS ON EACH END.
- ALL FITTINGS AND VALVES SHALL BE COMPRESSION TYPE.
- CONCRETE PAD FOR WATER METER ASSEMBLY SHALL BE 4" THICK WITH WIRE MESH (4"x4") CONCRETE PAD IS REQUIRED TO BE BROOM FINISHED.
- 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.
- THIS FORCE MAIN OFF-SET ARV REQUIRES PREVIOUS DEPARTMENT APPROVAL PRIOR TO INSTALLATION.

FORCE MAIN AIR RELEASE VALVE W/ VENTED AIR ENCLOSURE

90S



NOTES:

- STEEL CASING PER WUD STANDARD DETAIL 44S (SOLID CASING) OR WUD STANDARD DETAIL 44AS (SPLIT CASING) AS APPLICABLE.
- 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.
- 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.
- STEEL CASING INSTALLATION REQUIRED WHEN A BERM IS TWO (2) FEET OR HIGHER ABOVE SURROUNDING GRADE.
- 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 DIAMETER OR OPENING SIZE	STEEL CASING FOR SOLID CASING	OPENING SIZE FOR SPLIT CASING	OPENING SIZE FOR SPLIT CASING
6"	14"	18"	20"
8"	20"	24"	26"
10"	20"	24"	26"
12"	24"	28"	30"

NOTES:

- THE CONFLICT STRUCTURE IS TO BE DESIGNED PER CURRENT FOOT UTILITY CONFLICT THRU DRAINAGE STRUCTURE STANDARDS.
- A SHOP DRAWING TO SCALE FOR EACH CONFLICT STRUCTURE INSTALLATION IS REQUIRED TO BE APPROVED BY THE DEPARTMENT PRIOR TO INSTALLATION.
- STEEL CASING PER WUD STANDARD DETAIL 44S (SOLID CASING) OR WUD STANDARD DETAIL 44AS (SPLIT CASING) FOR EXISTING WASTEWATER MAIN ONLY.
- 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.
- STEEL CASING SHALL BE PROUTED IN PLACE WITH NON-SHRINKABLE CEMENT GROUT TO PROVIDE A WATER TIGHT SEAL TO PREVENT ANY LEAKAGE INTO THE STRUCTURE.
- NON-SHRINKABLE CEMENT GROUT TO BE INSTALLED AT EACH END OF CASING TO OBTAIN WATER TIGHT SEAL.
- 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 DELETED FROM THE DRAINAGE PIPE.

WASTEWATER MAIN CONFLICT STRUCTURE DETAIL

92S

CONSULTANT:

CAULFIELD & WHEELER, INC.
CIVIL ENGINEERING - LAND TO PLANNING
LANDSCAPE ARCHITECTURE - SURVEYING
7900 GLASSBORO ROAD - SUITE 100
BOCA RATON, FLORIDA 33424
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DRAWN BY: M. BUCKNER

CHECKED BY: J. LAMMERT

APPROVED BY: WUD

Palm Beach County
Water Utilities Department
P.O. Box 16097
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SEAL

MATTHEW V. KAHN
PROFESSIONAL ENGINEER
LICENSE NO. 82227
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DATE

WUD PROJECT No.
23-575

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



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WATER UTILITIES DEPARTMENT
P.O. BOX 16097
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STD DETAILS

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45