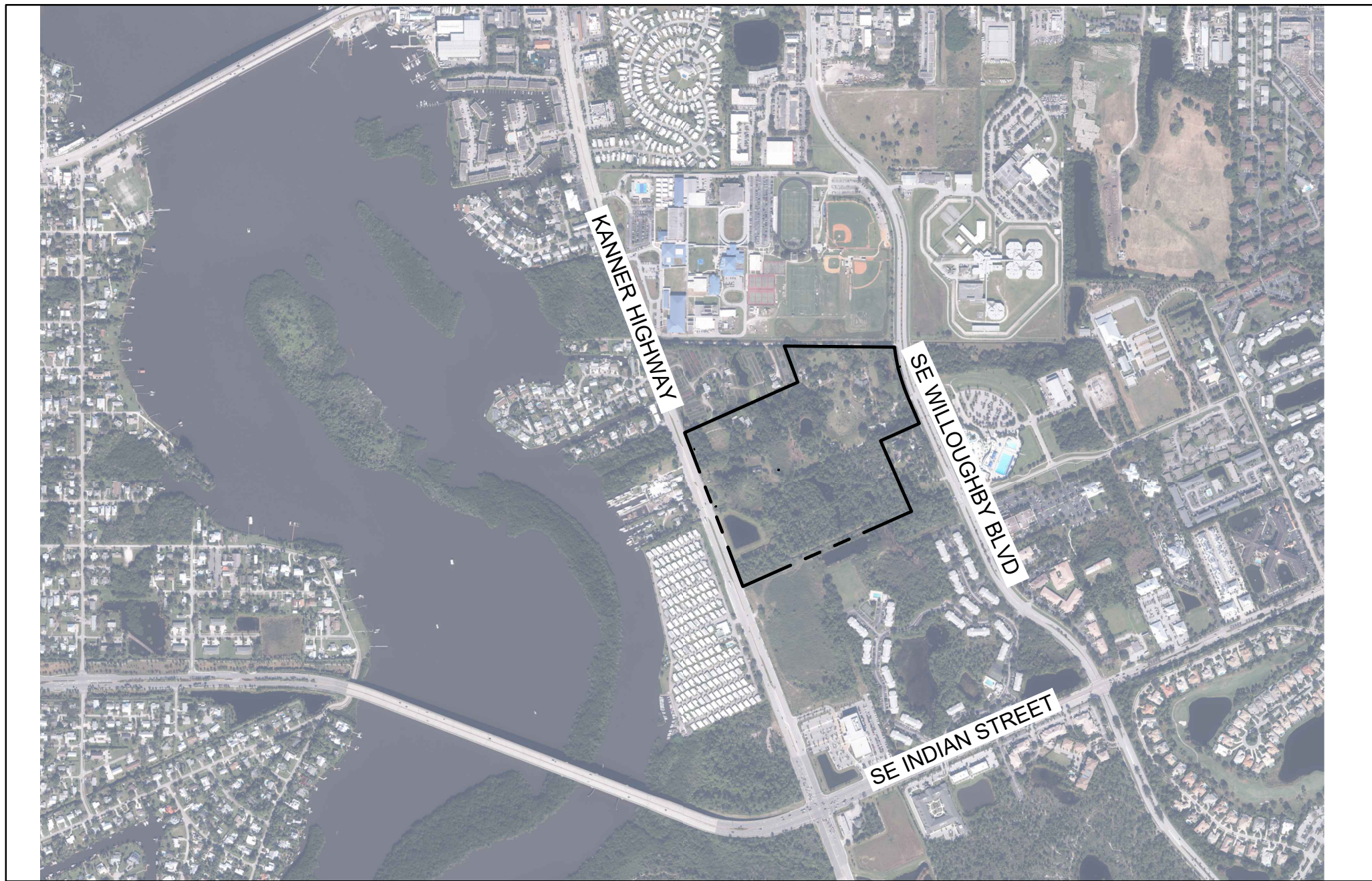


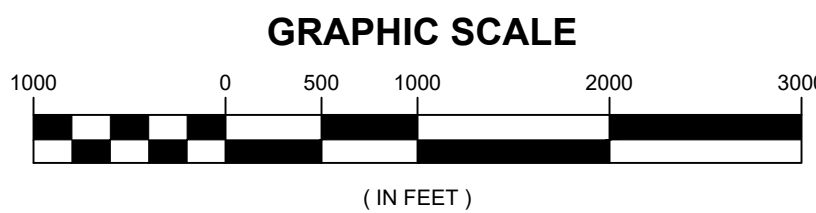
CONSTRUCTION PLANS AND SPECIFICATIONS

KANNER CPUD PHASE 1C

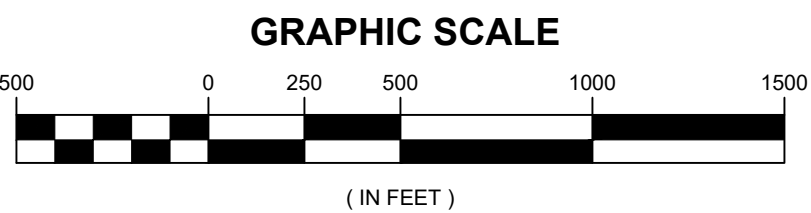
SECTION 16, TOWNSHIP 38S, RANGE 41E
STUART, FLORIDA



LOCATION MAP



PROJECT AREA



PROJECT INFORMATION

HW PROJECT NO: 21-397

PARCEL ID#: 16-38-41-017-000-00020-0
ZONING INFO: STUART ORD 2337-2017
OWNERSHIP: M&M STUART, LLC
C/O M&M REALTY PARTNERS LLC
1260 STELTON RD
PISCATAWAY NJ 08854

PROJECT DATUM AND COORDINATE SYSTEM:
HORIZONTAL: FLORIDA STATE PLANE NAD83 (FL83-EF)
VERTICAL: NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88)

GOVERNING STANDARDS & SPECIFICATIONS:
FLORIDA DEPARTMENT OF TRANSPORTATION, FY2024-25 STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE
CONSTRUCTION AT THE FOLLOWING WEBSITE:
<https://www.fdot.gov/programmanagement/Implemented/SpecBooks>
(EFFECTIVE:JULY2024-2025)

LAND DEVELOPMENT TO CONFORM TO THE CURRENT PORT SAINT LUCIE ENGINEERING DEPARTMENT STANDARDS.

UTILITY CONSTRUCTION TO CONFORM TO THE CURRENT EDITION OF THE CONSTRUCTION STANDARDS AND
DETAILS.(EFFECTIVE: 2019 WITH 2024 AMENDMENT)

LEGAL DESCRIPTION
TRACT 2 OF THE PLAT OF M&M KANNER CPUD, AS RECORDED IN PLAT
BOOK 22, PAGE 47 OF THE PUBLIC RECORDS OF MARTIN COUNTY, FLORIDA.


ISSUED FOR REGULATORY REVIEW
NOT FOR CONSTRUCTION

REVISIONS

DATE	COMMENT
-	-
-	-
-	-
-	-
-	-
-	-
-	-

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C-104	DEMOLITION PLAN & LAND CLEARING & EROSION CONTROL PLAN
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C-503	UTILITY DETAILS
C-504	UTILITY DETAILS
C-505	UTILITY DETAILS
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C-507	SPECIFICATIONS

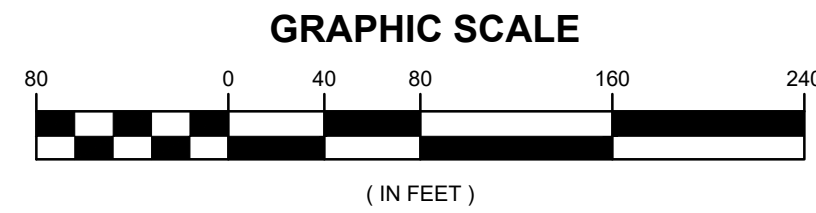
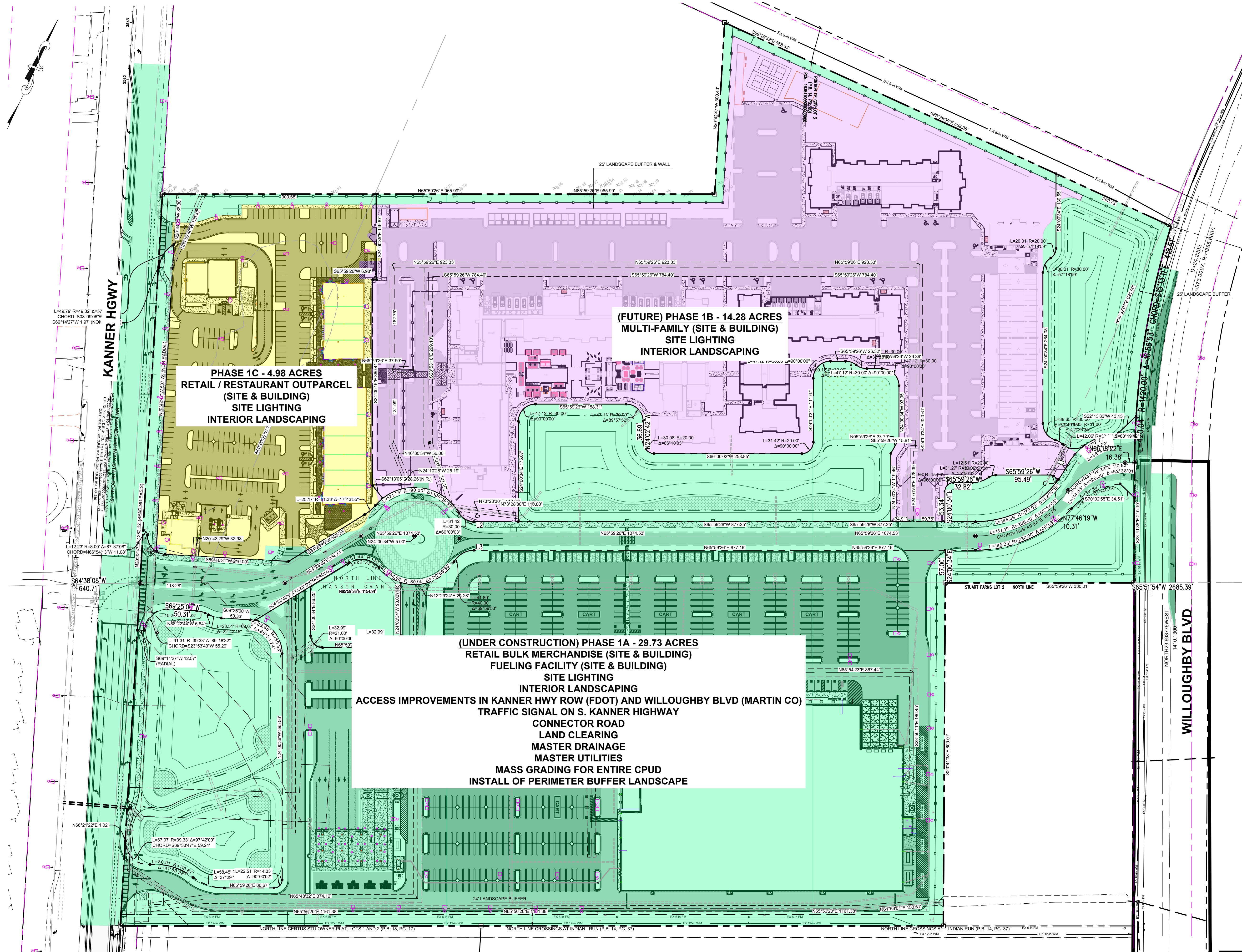



A DIVISION OF
HALEY WARD, INC.
10250 Village Parkway, Suite 201
Port Saint Lucie, Florida 34987
772.462.2455

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PROJECT KANNER CPUD PHASE 1C STUART		
DATE March 25, 2025	PROJECT No. 21-397	
	DAVID C. BAGGETT, P.E. (DATE) #81375 10250 SW VILLAGE PARKWAY - SUITE 201 PORT SAINT LUCIE, FL 34987 772.462.2455	REV.

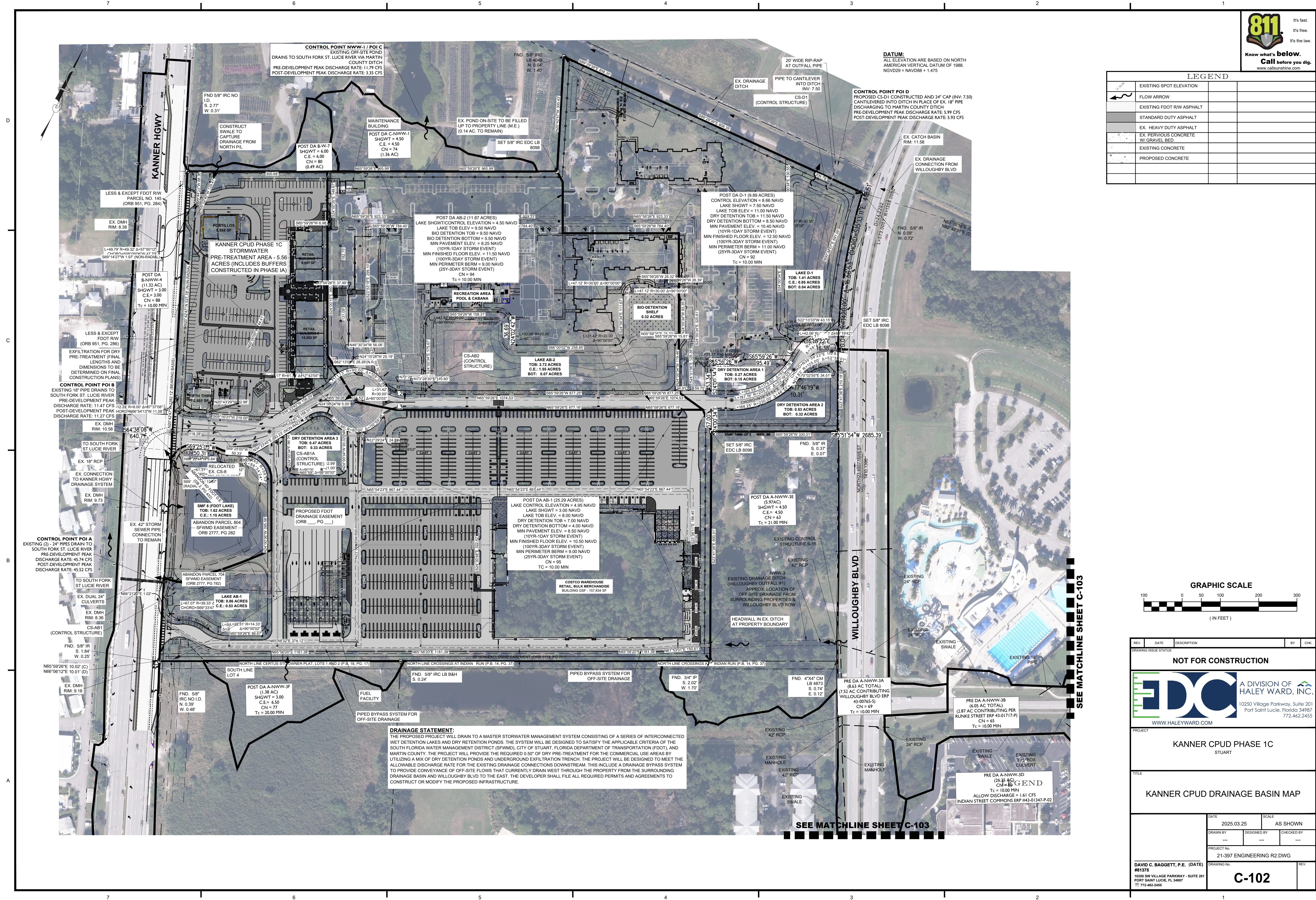
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KANNER CPUD PHASE 1C STUART					
TITLE					
PHASING PLAN					
<div>DAVID C. BAGGETT, P.E. (DATE)</div> <div>#81375</div> <div>10250 SW VILLAGE PARKWAY - SUITE 201</div> <div>PORT SAINT LUCIE, FL 34987</div> <div>772-462-2455</div>		DATE		SCALE	
		2025.03.25		AS SHOWN	
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		C-101			



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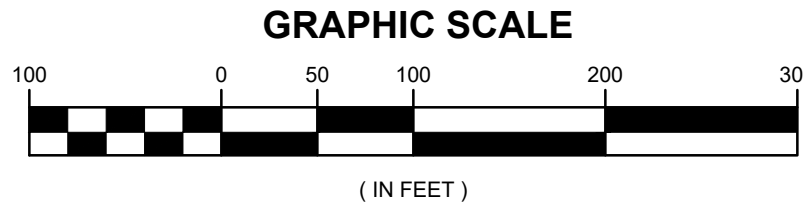



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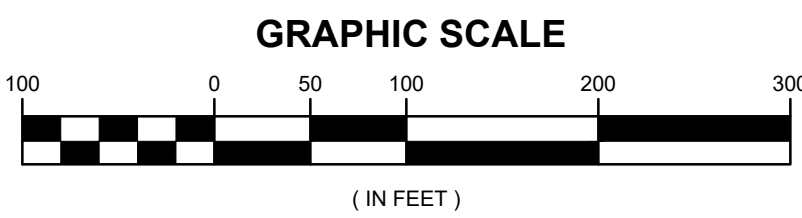
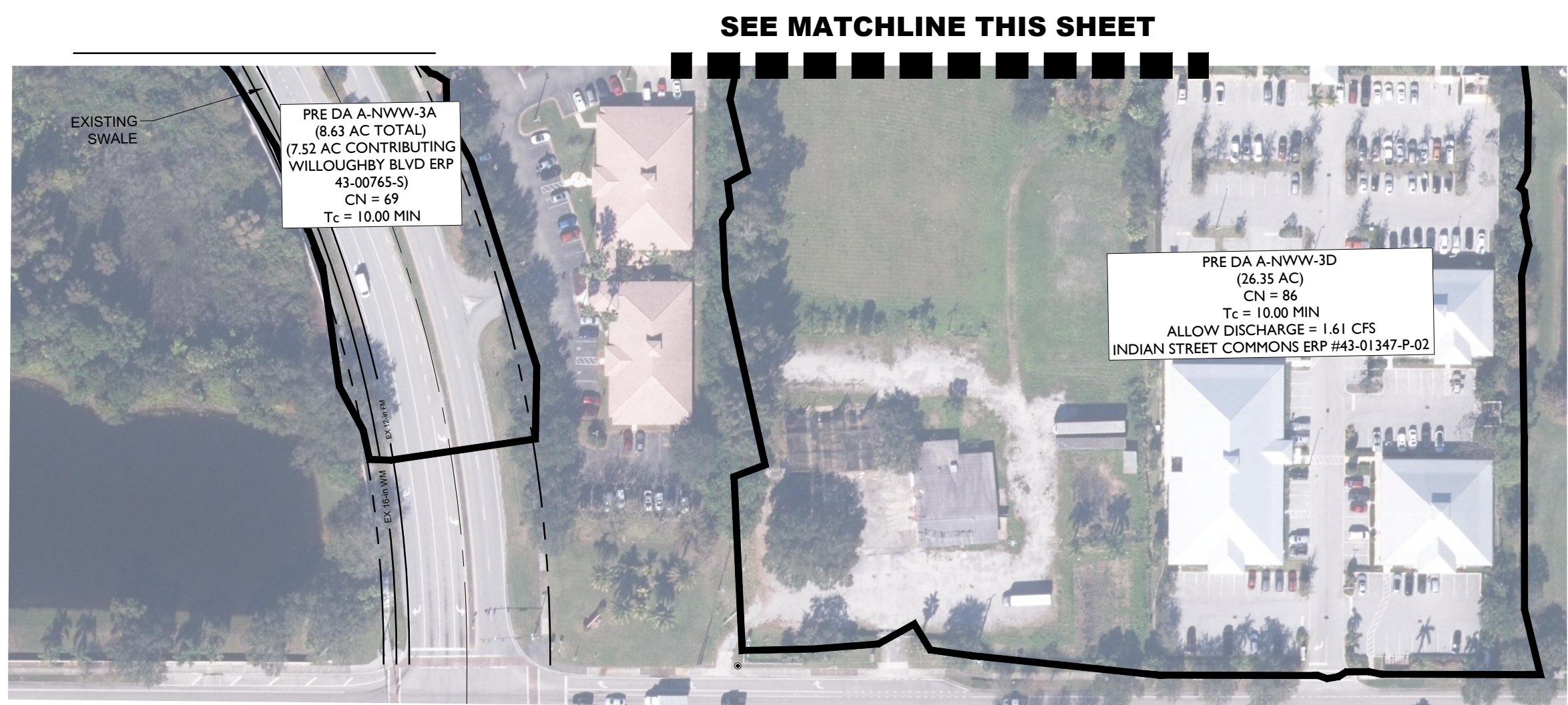
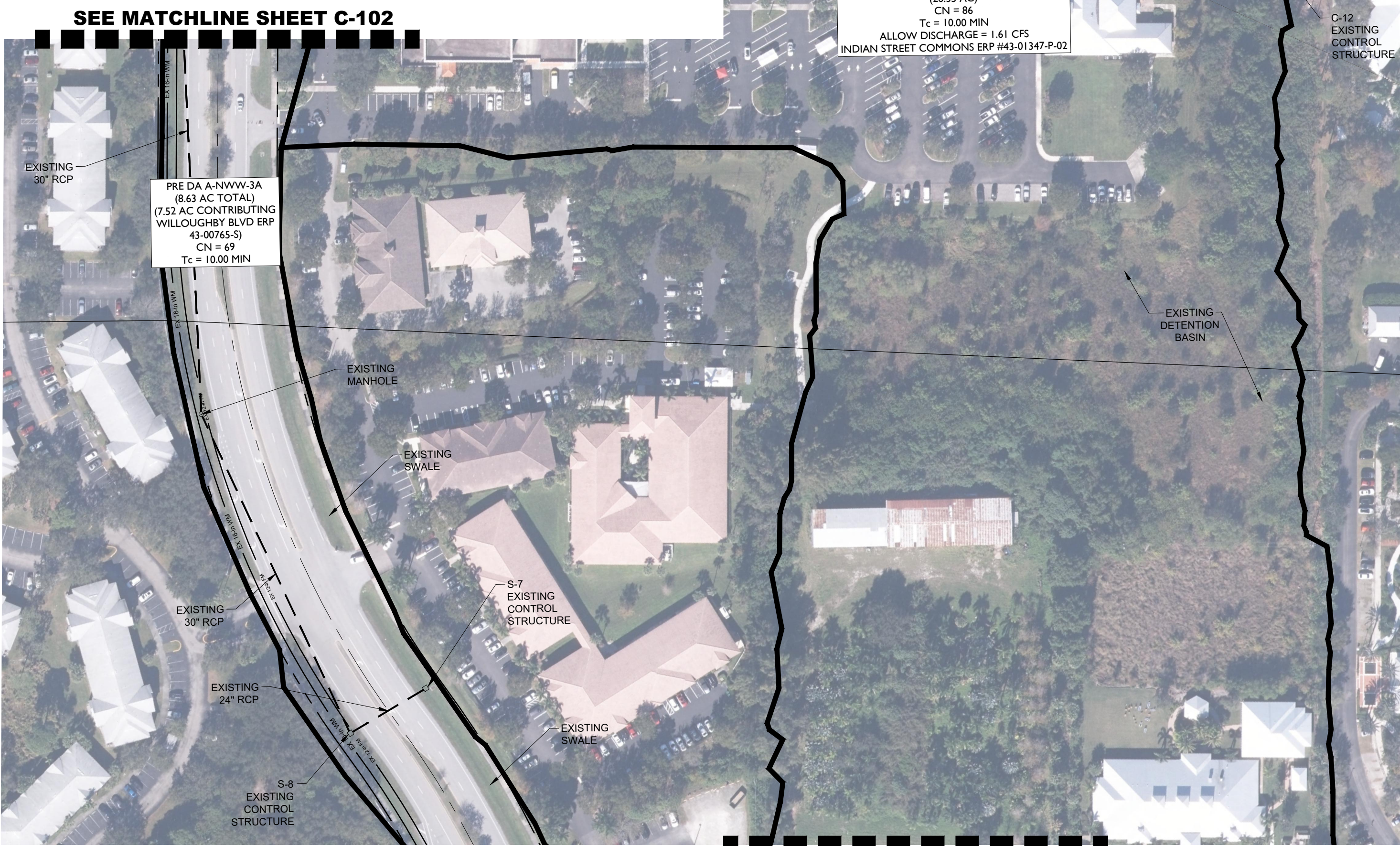
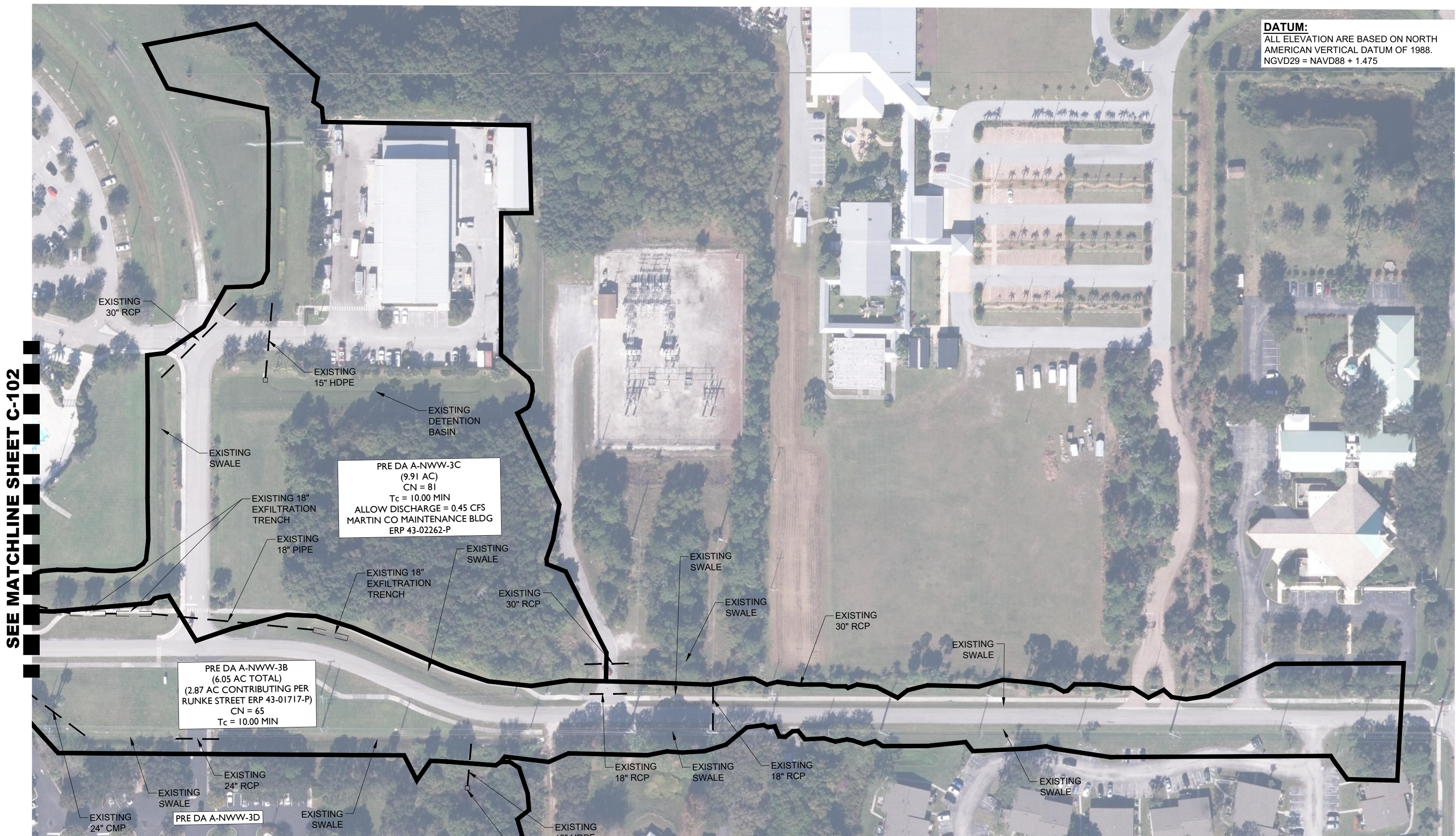
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LEGEND		
	EXISTING SPOT ELEVATION	
	FLOW ARROW	
	EXISTING FDOT R/W ASPHALT	
	STANDARD DUTY ASPHALT	
	EX. HEAVY DUTY ASPHALT	
	EX. PERVIOUS CONCRETE W/ GRAVEL BED	
	EXISTING CONCRETE	
	PROPOSED CONCRETE	



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KANNER CPUD PHASE 1C STUART					
TITLE					
KANNER CPUD DRAINAGE BASIN MAP					
<div>DAVID C. BAGGETT, P.E. (DATE) #81375</div> <div>10250 SW VILLAGE PARKWAY - SUITE 201 PORT SAINT LUCIE, FL 34987</div> <div>772-462-2455</div>		DATE		SCALE	
		2025.03.25		AS SHOWN	
		DRAWN BY	DESIGNED BY	CHECKED BY	
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		PROJECT No.			
21-397 ENGINEERING R2.DWG					
DRAWING No.		REV.			
C-102					

LEGEND			
	EXISTING SPOT ELEVATION		
	FLOW ARROW		
	PROPOSED FDOT R/W ASPHALT		
	STANDARD DUTY ASPHALT		
	HEAVY DUTY ASPHALT		
	PERVIOUS CONCRETE W/ GRAVEL BED		
	PROPOSED CONCRETE		



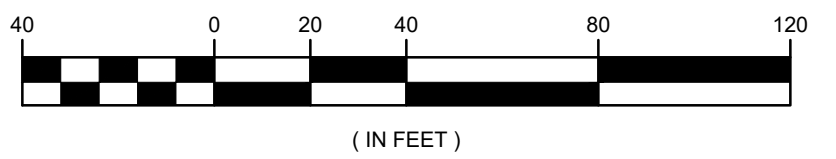
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KANNER CPUD PHASE 1C STUART				
TITLE				
KANNER CPUD DRAINAGE BASIN MAP				
DAVID C. BAGGETT, P.E. (DATE) #81375 10250 SW VILLAGE PARKWAY - SUITE 201 PORT SAINT LUCIE, FL 34987 ☎ 772-462-2455		DATE	SCALE	AS SHOWN DRAWN BY _____ DESIGNED BY _____ CHECKED BY _____
		2025.03.25		
		PROJECT No.		
		21-397 ENGINEERING R2.DWG		
DRAWING No.				REV.
		C-103		

LEGEND			
	EXISTING SPOT ELEVATION		
	FLOW ARROW		
	EXISTING FDOT R/W ASPHALT		
	HEAVY DUTY ASPHALT		
	EXISTING CONCRETE		

VERTICAL DATUM NOTE:
ALL ELEVATION SHOWN HERE REFERENCE THE
NORTH AMERICAN VERTICAL DATUM NAVD88.
CONVERSION: NGVD29 = NAVD88 + 1.5

1. GENERAL NOTES:
2. CONTRACTOR TO INSTALL & MAINTAIN ORANGE SAFETY FENCE ALONG ROW FOR ENTIRE PORTION IN WHICH CONSTRUCTION ACTIVITIES ARE TAKING PLACE.
3. CONTRACTOR RESPONSIBLE FOR VERIFYING ALL EASEMENT LOCATIONS AS PER PLAN.
4. CONTRACTOR SHALL MAINTAIN EFFECTIVE BEST MANAGEMENT PRACTICES FOR SEDIMENT AND EROSION CONTROL IN ACCORDANCE WITH NPDES, SFWMD, FDOT, AND CITY OF STUART STANDARDS AND CRITERIA.
5. CONTROL TO MAINTAIN OFF-SITE FLOWS THROUGH THE SOUTHERN DITCH WHILE INSTALLING THE 42" CULVERTPIPES.
6. CONTRACTOR TO PROVIDE TEMPORARY SEDIMENT BASINS AND DRAINAGE DITCHES TO BE RELOCATED AS NEEDED. SEE Dewatering PLAN FOR ADDITIONAL DETAILS.
7. ELEVATION SHOWN HEREIN REFERENCE VERTICAL DATUM OF 1988.
8. ALL MAINTENANCE OF TRAFFIC (MOT) OPERATIONS SHALL BE IN ACCORDANCE WITH FDOT STANDARD SPECIFICATIONS. DAILY INSPECTIONS MUST BE PERFORMED SO THAT MOT OPERATIONS ARE ADJUSTED AS REQUIRED TO CONTINUOUSLY MEET FDOT CRITERIA. CONTRACTOR SHOULD MAKE A CONTINUOUS EFFORT TO KEEP THE ROADWAY CLEAR AND FREE OF DEBRIS IN AREAS WHERE CONSTRUCTION EQUIPMENT AND TRUCKS ARE ACCESSING ROADWAYS.
9. CONTRACTOR SHALL OBTAIN A DEWATERING PERMIT FROM SFWMD IF ANY DEWATERING IS REQUIRED. THIS WORK IS PROPOSED TO BE PERFORMED IN DRY CONDITIONS.
10. CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING THE STORM DRAINAGE THROUGHOUT ENTIRE CONSTRUCTION PROCESS, BE IT THROUGH THE USE OF BY-PASS PUMPS OR MODIFIED BERM SECTIONS. SPECIAL ATTENTION SHALL BE GIVEN FOR ANY IMPENDING RAIN EVENTS TO ASSURE THE STORM WATER DRAINAGE CAN BE MAINTAINED.
11. CONTRACTOR SHALL LEAVE ALL PRIVATE PROPERTY AND SHALL RESTORE ANY DAMAGE TO PRIVATE PROPERTY TO EQUAL OR BETTER CONDITION THAN EXISTED PRIOR TO CONSTRUCTION INCLUDING REPLACEMENT OF DISTURBED PROPERTY CORNERS & FENCES.
12. CONTRACTOR SHALL COMPLY WITH ALL NPDES REQUIREMENTS FOR EROSION AND SEDIMENT CONTROL WHICH MAY INCLUDE GRASS TRACKING PADS AND/OR PERIODIC ROAD SWEEPING IF REQUIRED AT NO ADDITIONAL COST TO OWNER.
13. CONTRACTOR RESPONSIBLE FOR MONITORING WATER QUALITY DURING CONSTRUCTION PROCESS AND CORRECTING ANY DEFICIENCIES FOUND.
14. EXISTING WETLANDS, DITCHES, AND OTHER SURFACE WATERS TO BE FILLED SHALL FIRST BE DEMUCKED OF ALL ORGANIC AND/OR FINE SOILS THAT ARE NOT CAPABLE OF REACHING THE REQUIRED DENSITY AND COMPACTION FOR THE ASSOCIATED STRUCTURAL USE. AREAS TO BE BACKFILLED WITH CLEAN, DRY, AND UNCONTAMINATED SAND SHALL BE IDENTIFIED AND SHOWN ON THE SITE PLAN. CONTRACTOR SHALL REFERENCE THESE PLANS AND THE MOST RECENT SOILS REPORT FOR GEOTECHNICAL SPECIFICATIONS.
15. ALL TREES, STUMPS, ROOT BALLS, AND VEGETATIVE MATTER IN EXCESS OF ONE (1) INCH (25.4 MM) DIAMETER SHALL REMAIN ON THE SITE. THE SITE SHALL BE CUT AND REMOVED FROM THE SITE. REMOVE AND DISPOSE OF BRUSH, WASTE LOGS AND LIMBS, TIMBER TOPS, AND DEBRIS RESULTING FROM LOGGING, CLEARING, AND GRUBBING, OR OCCURRING WITHIN THE CLEARING AND GRUBBING LIMITS.

GRAPHIC SCALE



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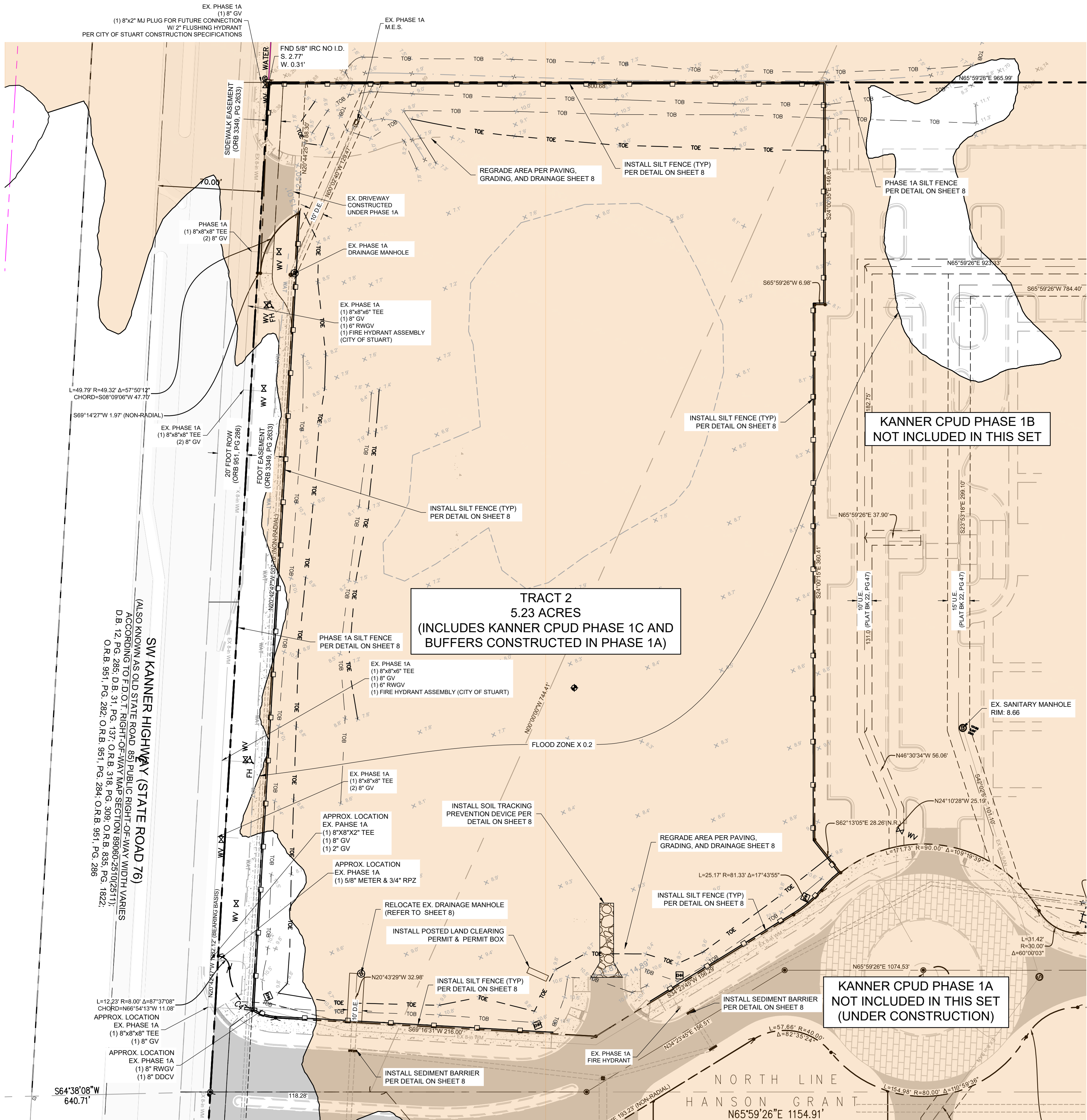
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KANNER CPUD PHASE 1C
STUART

DEMOLITION PLAN &
LAND CLEARING & EROSION CONTROL PLAN

<div>DAVID C. BAGGETT, P.E. (DATE)</div> <div>#81375</div> <div>10250 SW VILLAGE PARKWAY - SUITE 201</div> <div>PORT SAINT LUCIE, FL 34987</div> <div>☎ 772-462-2455</div>	DATE		SCALE	
	2025.03.26		AS SHOWN	
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	PROJECT NO.			
21-397 ENGINEERING R2.DWG				
DRAWING No.		REV.		
C-104				



GENERAL NOTES EROSION CONTROL

1.0 SITE DESCRIPTION

1.a Nature of Construction Activities

Clearing and development of approximately 48.99 acres of land consisting of 1 warehouse building, 4 future commercial buildings, & future residential buildings. The project will create a drainage system consisting of a series of inlets and conveyances that will route runoff to an on-site wet detention system. Control structures will be installed to allow the project to outfall into the FDOT right-of-way drainage system. Off-site flows will be bypassed to the FDOT system. FDOT turn lane improvements will discharge into the FDOT system directly.

1.b Sequence of Major Soil Disturbing activities:

The following sequence of major activities shall be followed unless the contractor can proposed an alternative that is equal or exceeds the erosion and sediment control practices described in this document, and is approved by the Engineer. The detailed sequence for the entire project can vary significantly from contractor to contractor. The contractor is responsible for providing a detailed sequence of construction for all construction activities.

- 1- Demolition
- 2- Clearing and grubbing of site
- 3- Excavation and general grading
- 4- Installation of underground utilities
- 5- Finishing grading.

1.c Area Estimates

Total site area: 4.98 Acres
Total area to be disturbed: 4.98 Acres

1.d Estimate of drainage area size for each discharge point.

PHASE 1C: 4.98 Acres

1.e Latitude and longitude of each discharge point and identify the receiving water or MS4 for each discharge point:

Post Development Basin: 27°09'34.3872", 80°14'45.8565"

Discharges to KANNER CPUD MASTER SYSTEM

2.0 CONTROLS

2.a Erosion and Sediment Controls

Silt fencing shall be installed and maintained around the perimeter of the disturbed area of the project. Gravel shall be installed at the entrance/exit of the site to prevent track out. Paved roads shall be swept and kept clear of transported soils. Permanent perimeter berms shall be installed as part of the City of Stuart Drainage Permit. All disturbed areas shall be sodded to prevent erosion and control wind-borne soil transport. Contractor shall have water trucks on-site for dust control. Filter Fabric shall be used to protect all inlets from Filtration.

2.a.1 Permanent and Temporary Stabilization Practices

Contractor shall be responsible for having water truck on-site for temporary stabilization during construction. All disturbed areas are to be sodded upon completion of grading. The contractor is responsible for documenting this portion of the SWPPP.

2.a.2 Structural Practices

Site shall be initially graded to direct runoff to on-site master surface water management system. Silt screens are to be installed and maintained around perimeter of site. No discharge from site permitted until certification of permitted surface water management system.

Temporary: Construct silt fence in accordance with Florida Stormwater Erosion & Sedimentary Control Inspector's Manual. A stabilized construction entrance and soil tracking prevention device shall be installed in accordance with Standard Specifications for Roadway & Bridge Construction dated 2018. A sediment basin is to be installed as part of the soil tracking prevention plan. All sediment controls shall be in place prior to any soil disturbing activity upstream of the controls.

2.b Stormwater Management

Upon certification of surface water management system, the wet detention will be permanent. Perimeter berms shall remain installed to prevent runoff from passing off-site prior to entering treatment facilities.

2.c Other Controls

2.c.1 Waste Disposal

Contractor shall be responsible for the proper disposal and storage of all debris, chemicals, litter, and sanitary waste per local, state and federal guidelines. No discharges are allowed into surface water management system.

2.c.2 Offsite vehicle tracking

Gravel to be installed at entrance/exit to minimize transport of soil off of site. Paved roads are to be swept daily.

2.c.3 Application rates of all fertilizers, herbicides and pesticides used.

Any fertilizers, herbicides, and pesticides to be used shall be applied per methods and rates recommended by the manufacturers label which must be affixed to or printed directly on the container.

2.c.4 Storage, application, generation and migration of all toxic substances.

Contractor is required to properly maintain all vehicles in good working order to prevent leakage. No toxic substances to be stored on site.

3.0 MAINTENANCE

3.a All structural and non-structural controls to be visually inspected and repaired on a daily basis by the contractor. These controls are to remain in good and effective operating condition per the approved construction plans and per standard FDOT plans.

4.0 INSPECTION

Contractor is responsible for visually inspecting silt fences, perimeter berms, and entrance/exit controls on a daily basis. A more thorough inspection of all structural and non-structural controls shall occur at least once per week and within 24 hours of the end of a storm that is 0.50 inches or greater.

STATE OF FLORIDA EROSION & SEDIMENT CONTROL - DESIGNER & REVIEWER MANUAL

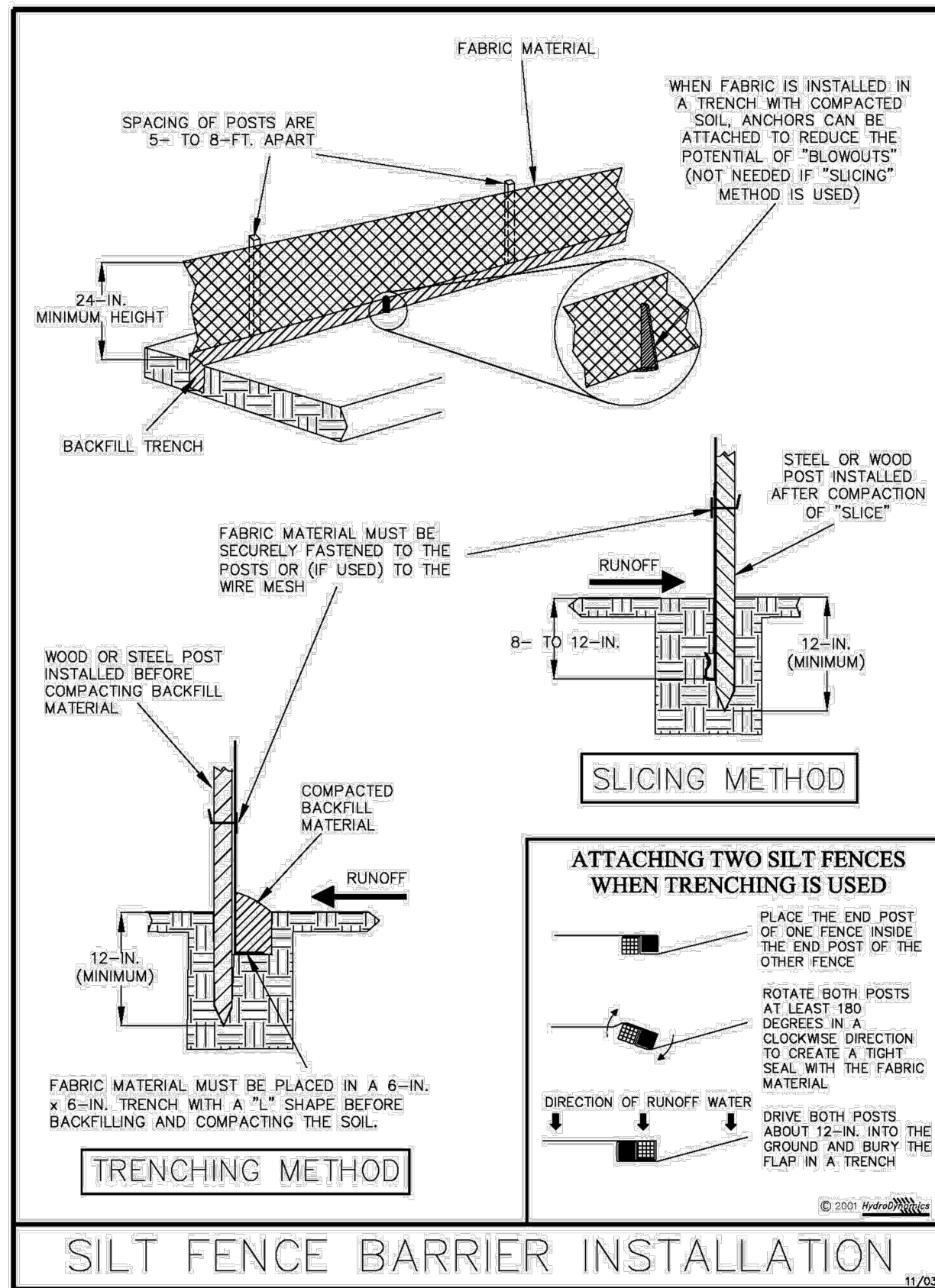


Figure V-40: Illustration of a Silt Fence Barrier

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V-7

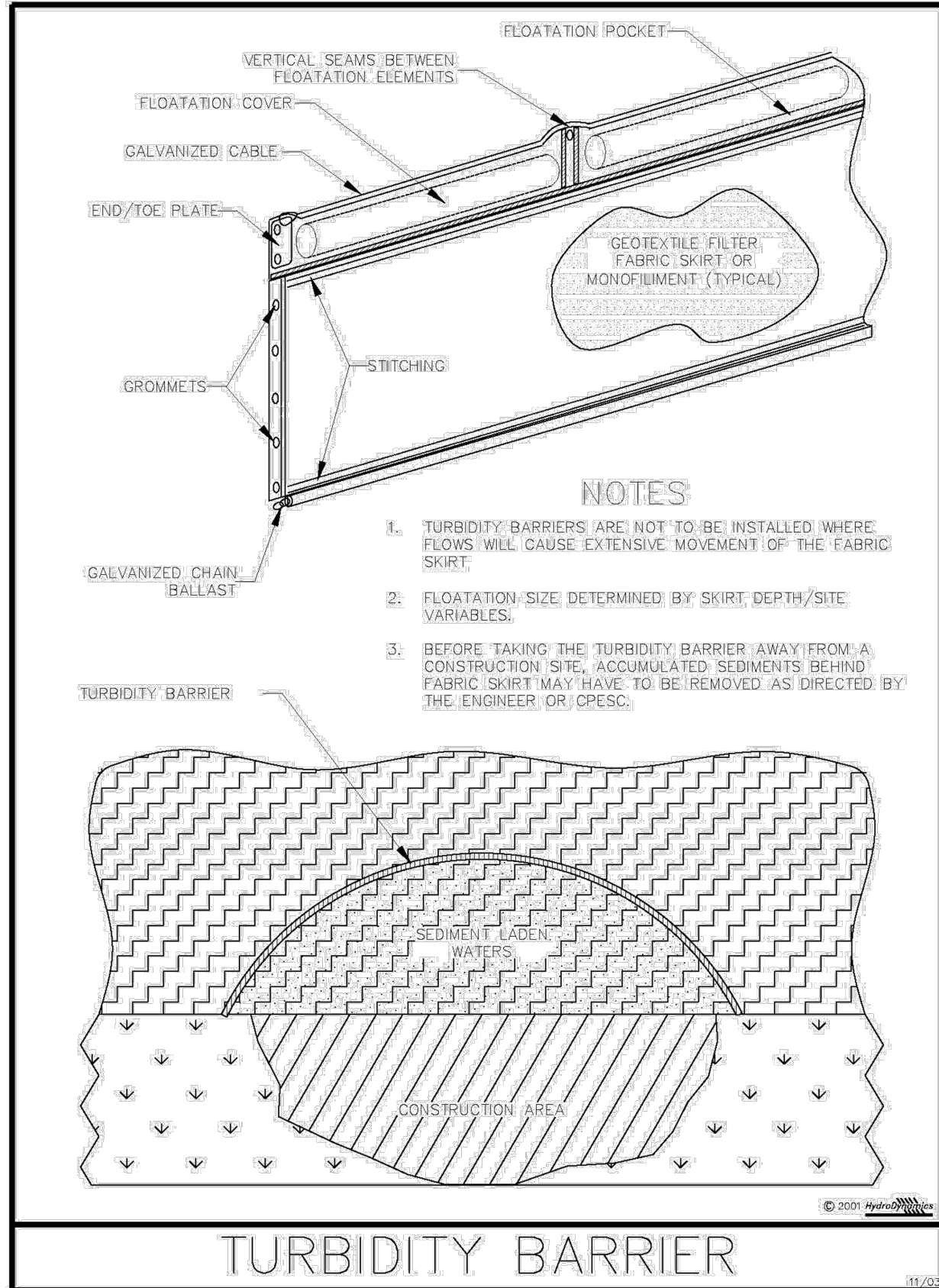


Figure V-44: Illustration of a Turbidity Barrier Curtain

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CHAPTER 4: BEST MANAGEMENT PRACTICES FOR EROSION AND SEDIMENTATION CONTROL

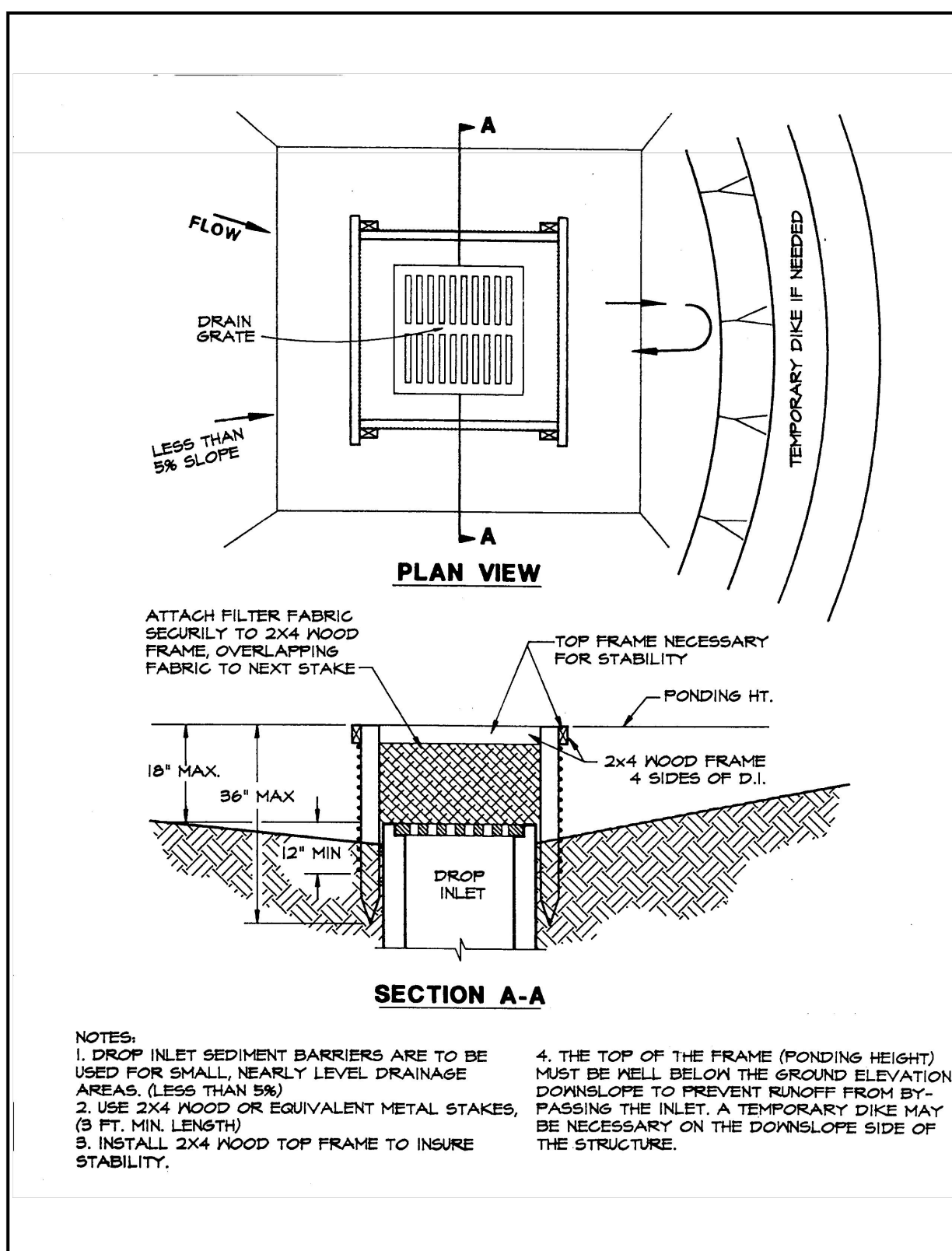


Figure 4.5a: Silt Fence Drop Inlet Sediment Barrier

Source: Erosion Draw

V-31

STATE OF FLORIDA EROSION & SEDIMENT CONTROL - DESIGNER & REVIEWER MANUAL

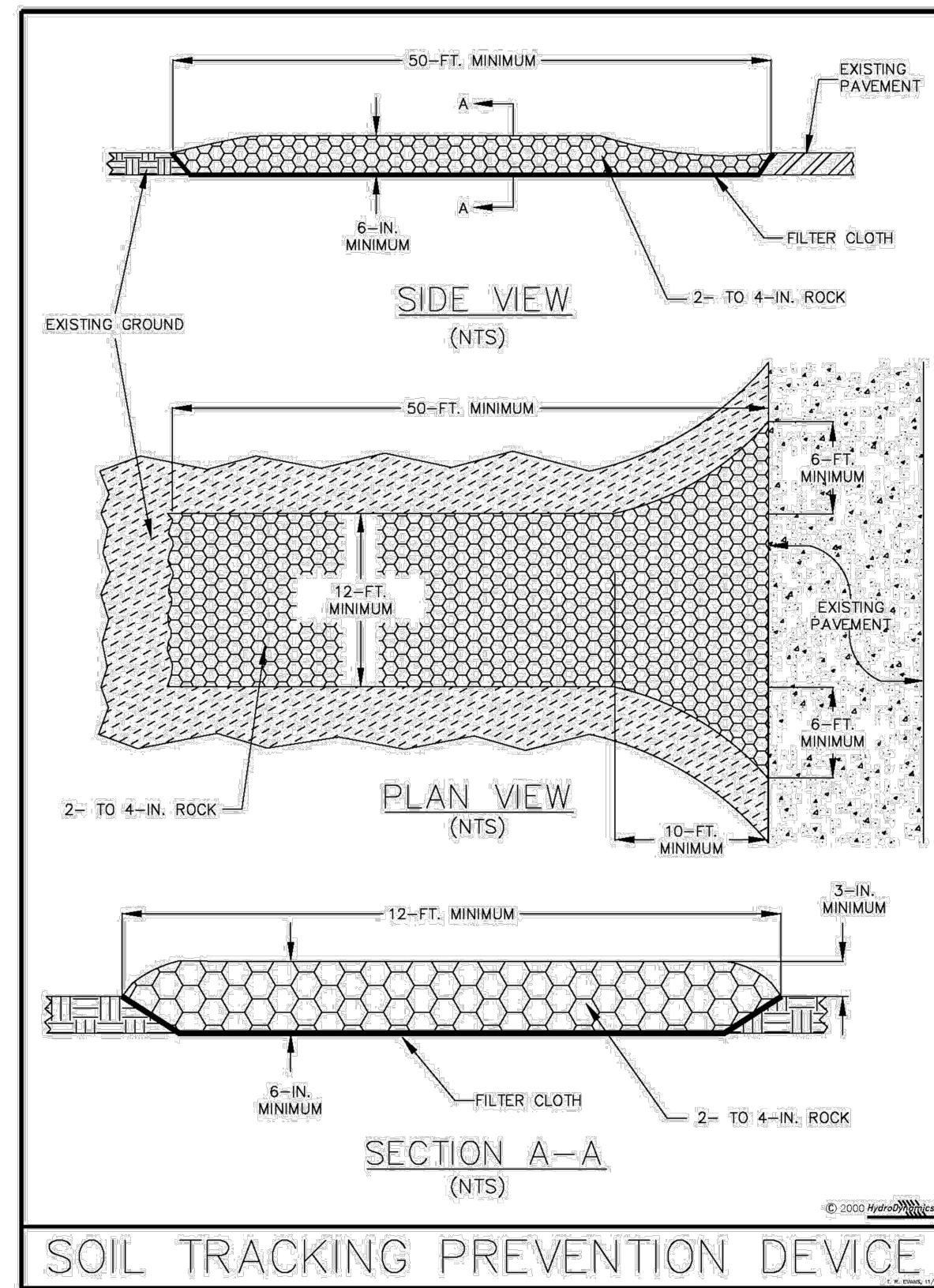




Figure V-52: Illustration of a Soil Tracking Prevention Device

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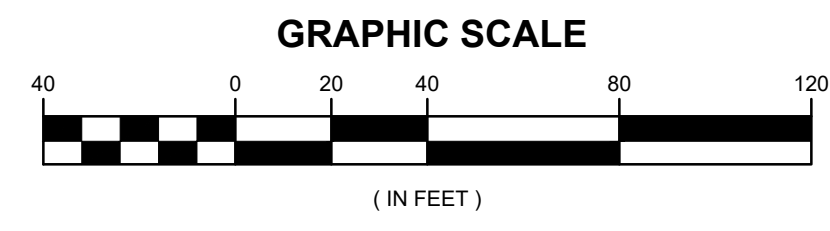
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TITLE				
STORMWATER POLLUTION PREVENTION DETAILS				
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		PROJECT No.		
		21-397 ENGINEERING R2.DWG		
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		C-105		

LEGEND		
	EXISTING SPOT ELEVATION	
	FLOW ARROW	
	EXISTING FDOT R/W ASPHALT	
	STANDARD DUTY ASPHALT	
	EX. HEAVY DUTY ASPHALT	
	EX. PERVIOUS CONCRETE W/ GRAVEL BED	
	EXISTING CONCRETE	
	PROPOSED CONCRETE	

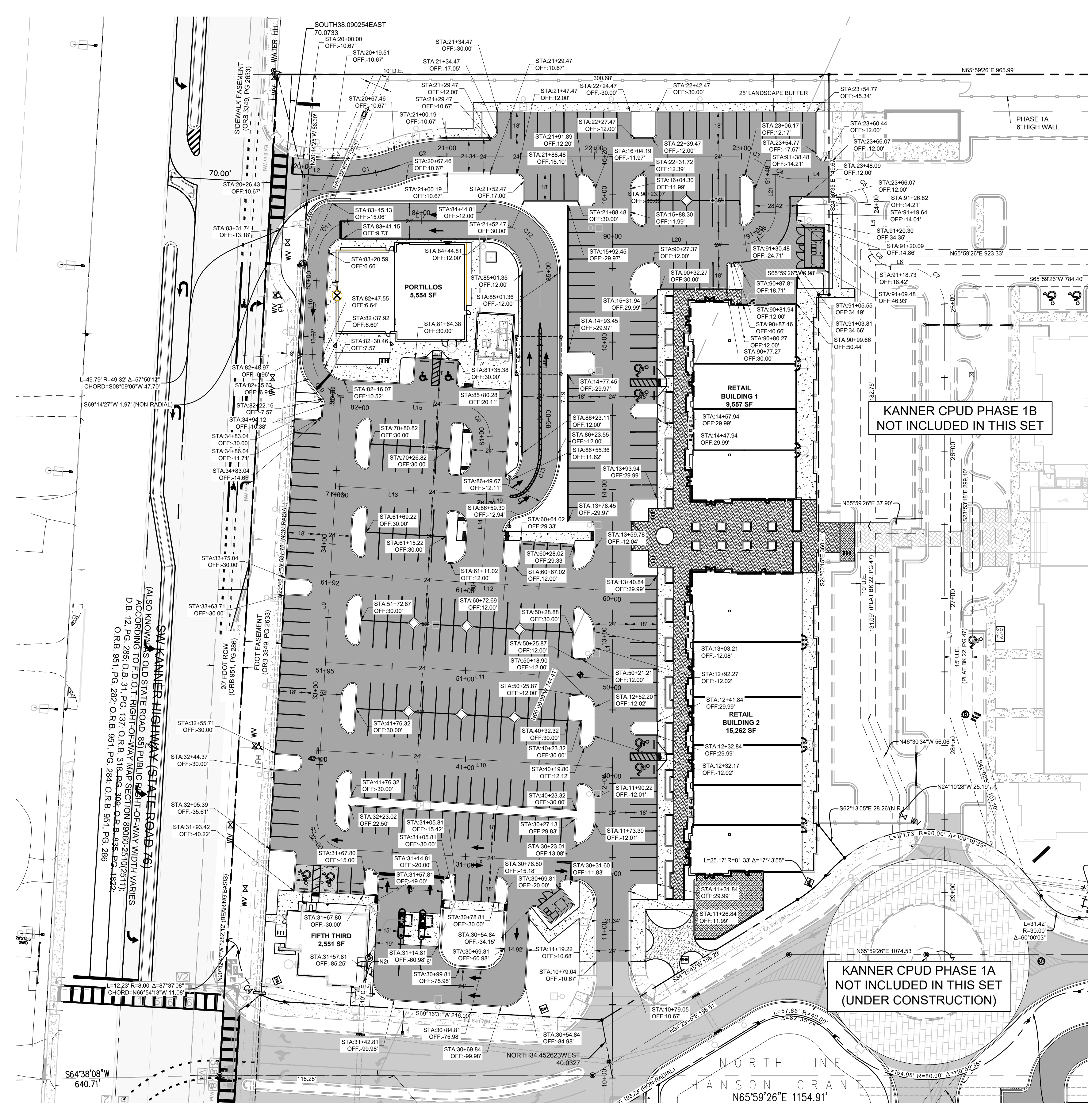
VERTICAL DATUM NOTE:
ALL ELEVATION SHOWN HERE REFERENCE THE
NORTH AMERICAN VERTICAL DATUM NAVD88.
CONVERSION: NGVD29 = NAVD88 + 1.5

ALIGNMENT LINE DATA		
LINE #	LENGTH	BEARING
L1	626.29'	N24° 00' 14"W
L2	19.51'	N69° 12' 40"E
L3	199.06'	N65° 59' 26"E
L4	33.23'	N65° 59' 24"E
L5	23.34'	S24° 00' 34"E
L6	6.67'	N65° 59' 26"E
L7	445.10'	S24° 00' 38"E
L8	180.63'	S69° 17' 13"W
L9	285.61'	N20° 42' 47"W
L10	201.10'	S69° 17' 13"W
L11	195.37'	S69° 17' 13"W
L12	191.92'	S69° 17' 13"W
L13	102.90'	S69° 17' 13"W
L14	98.00'	N20° 42' 47"W
L15	71.73'	S69° 17' 13"W
L16	65.70'	N20° 42' 47"W
L17	89.85'	N65° 59' 40"E
L18	122.13'	S24° 00' 16"E
L19	15.79'	S69° 17' 13"W
L20	86.78'	N65° 59' 26"E
L21	23.42'	N24° 00' 36"W

ALIGNMENT CURVE DATA		
CURVE #	RADIUS	LENGTH
C1	112.00'	47.95'
C2	88.00'	32.73'
C3	24.00'	19.74'
C4	24.00'	19.74'
C5	18.33'	28.79'
C6	18.33'	28.79'
C7	27.00'	42.41'
C8	22.00'	34.56'
C9	22.00'	34.56'
C10	30.00'	47.12'
C11	25.00'	37.83'
C12	36.00'	56.55'
C13	39.38'	24.25'
C14	15.00'	15.06'
C15	24.00'	37.70'



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KANNER CPUD PHASE 1C STUART				
TITLE				
HORIZONTAL CONTROL PLAN				
DATE		SCALE		
2025.03.26		AS SHOWN		
DRAWN BY	DESIGNED BY	CHECKED BY		
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21-397 ENGINEERING R2.DWG				
DAVID C. BAGGETT, P.E. (DATE)		DRAWING No.		REV.
#81375				
10250 SW VILLAGE PARKWAY - SUITE 201 PORT SAINT LUCIE, FL 34987 772.462.2455				
C-106				



LEGEND			
	EXISTING SPOT ELEVATION	(A)	INSTALL TYPE F-CURB
	FLOW ARROW	(B)	INSTALL TYPE D-CURB
	EXISTING FDOT R/W ASPHALT	(C)	INSTALL FLUSH PAVEMENT JOINT
	STANDARD DUTY ASPHALT		
	EX HEAVY DUTY ASPHALT		
	EX PERVIOUS CONCRETE W/ GRAVEL BED		
	EXISTING CONCRETE		
	PROPOSED CONCRETE		

STORM PIPE TABLE				
PIPE NAME	SIZE	MATERIAL	LENGTH	SLOPE
P-1	24"	ADS HP	97	0.00%
P-2	24"	ADS HP	60	0.00%
P-3	24"	ADS HP	175	0.00%
P-4	24"	ADS HP	120	0.00%
P-5	24"	ADS HP	5	0.00%
P-6	24"	PERFORATED ADS HP (W/ EXFIL TRENCH)	139	0.00%
P-7	24"	ADS HP	5	0.00%
P-8	24"	ADS HP	41	0.00%
P-9	24"	ADS HP	5	0.00%
P-10	24"	PERFORATED ADS HP (W/ EXFIL TRENCH)	50	0.00%
P-11	24"	ADS HP	5	0.00%
P-12	24"	ADS HP	5	0.00%
P-13	24"	PERFORATED ADS HP (W/ EXFIL TRENCH)	110	0.00%
P-14	24"	ADS HP	5	0.00%
P-15	24"	ADS HP	5	0.00%
P-16	24"	PERFORATED ADS HP (W/ EXFIL TRENCH)	185	0.00%
P-17	24"	ADS HP	5	0.00%
P-18	24"	ADS HP	126	0.00%
P-19	24"	PERFORATED ADS HP (W/ EXFIL TRENCH)	82	0.00%
P-20	12"	ADS HP	40	0.00%
P-21	24"	PERFORATED ADS HP (W/ EXFIL TRENCH)	100	0.00%
P-22	30"	ADS HP	75	0.00%
P-23	30"	ADS HP	77	0.00%
P-24	12"	ADS HP	56	0.00%
P-25	16"	ADS HP	20	0.00%
P-26	16"	ADS HP	36	0.00%
P-27	16"	ADS HP	13	0.00%
P-28	24"	ADS HP	5	0.00%
P-29	24"	ADS HP	5	0.00%
P-30	24"	ADS HP	5	0.00%
P-31	24"	ADS HP	5	0.00%

SURVEY NOTES:

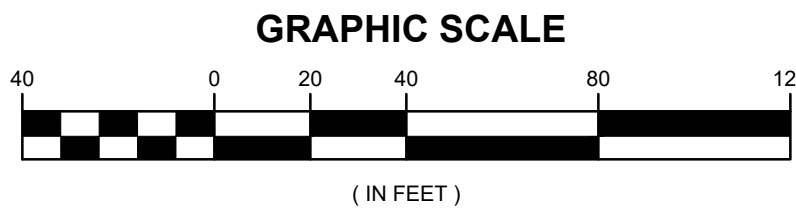
ELEVATIONS SHOWN HEREON ARE RELATIVE TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (N.A.V.D.88) AND ARE GIVEN IN U.S. SURVEY FEET UNLESS OTHERWISE NOTED.
N.G.V.D29 = N.A.V.D.88 + 1.5

NOTE TO CONTRACTOR:

- ALL PIPE ELEVATIONS SHALL BE FIELD VERIFIED BEFORE COMMENCEMENT.
- REGRADE AND SOD ALL DISTURBED AREA.

YARD DRAIN TABLE							
STRUCTURE NAME	BOT TYPE	TOP TYPE	STATION	OFFSET	RIM	IN INV.	OUT INV.
YD-4	15" YD	15" GRATE	31+76.65	-96.57	10.72	6.50 (W)	6.50 (E)
YD-5	15" YD	15" GRATE	31+86.35	-100.76	11.95	6.50 (W)	6.50 (E)
YD-6	15" YD	15" GRATE	31+89.87	-97.93	9.50	6.50 (N)	6.50 (E)
YD-7	12" YD	12" GRATE	31+96.82	-50.86	9.50		6.50 (S)
YD-8	12" YD	12" GRATE	31+98.82	-41.82	8.05		6.50 (NW)

STORM SEWER INLET TABLE								
STRUCTURE NAME	BOT TYPE	TOP TYPE	STATION	OFFSET	RIM	IN INV.	OUT INV.	BOTTOM ELEV.
CB-55	TYPE E	USF 4155 6209	30+92.31	0.00'	9.41	3.75 (W)	3.75 (E) 3.50 (S)	2.50
CB-56	TYPE E	USF 4155 6209	11+44.70	0.04'	8.95	3.75 (W) 3.50 (NW)		2.50
CB-57	TYPE E	USF 4155 6209	15+66.29	0.00'	8.91	4.00 (NW)	4.00 (SE)	3.00
CB-58	TYPE E	USF 4155 6209	33+19.36	0.00'	8.50	3.75 (N)	3.75 (E)	2.75
CB-59	TYPE E	USF 4155 6209	12+71.08	0.02'	8.95	3.75 (NW) 4.00 (NW)	3.50 (SE)	2.50
CB-60	TYPE E	USF 4155 6209	34+39.36	0.00'	8.75	3.75 (N)	3.75 (S)	2.75
CB-61	TYPE E	USF 4155 6209	13+91.18	0.01'	8.95	4.00 (NW)	4.00 (SE)	3.00
CB-62	TYPE E	USF 4155 6209	34+99.36	0.00'	9.05	4.00 (NW) 3.75 (E)	3.75 (S)	2.75
CB-63	TYPE E	USF 4155 6209	22+12.47	0.06'	8.50	4.00 (NE)	4.00 (SE)	3.00
CB-64	TYPE E	USF 4155 6209	23+08.55	-1.91'	8.91		4.00 (SW)	3.00
CB-65	6" DIA MANHOLE	USF 6290	30+92.31	-74.98'	10.17	3.50 (N)	3.50 (SW)	2.50
CB-66	TYPE E	USF 4155 6209	31+97.91	-9.11'	9.13	6.50 (SE)	3.75 (E)	2.75
CB-67	TYPE E	USF 6290	82+50.95	-7.84'	9.49		4.00 (SE)	3.00
CB-68	TYPE E	USF 6290	85+94.26	-13.00'	8.96		3.75 (W)	2.75
DMH-8	4" DIA	MANHOLE W/ WEIR @ 6.00	31+64.14	-101.43'	8.39	3.50 (NE) 6.50 (W)	3.00 (S)	2.00



REV.	DATE	DESCRIPTION	BY	CHK.
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DRAWING ISSUE STATUS

NOT FOR CONSTRUCTION



PROJECT

KANNER CPUD PHASE 1C
STUART

TITLE

PAVING, GRADING, & DRAINAGE PLAN

DATE: 2025.03.26 SCALE: AS SHOWN

DRAWN BY: DESIGNED BY: CHECKED BY:

PROJECT No. 21-397 ENGINEERING R2.DWG

DAVID C. BAGGETT, P.E. (DATE) #81375
10250 SW VILLAGE PARKWAY - SUITE 201
PORT SAINT LUCIE, FL 34987
772-462-2455

C-107

REV.

LEGEND			
	EXISTING SPOT ELEVATION		
	PROPOSED LIGHTS (BY OTHERS)		
	EXISTING FDOT R/W ASPHALT		
	STANDARD DUTY ASPHALT		
	EX. HEAVY DUTY ASPHALT		
	EX. PERVIOUS CONCRETE W/ GRAVEL BED		
	EXISTING CONCRETE		
	PROPOSED CONCRETE		

- NOTE TO CONTRACTOR:**
- ALL PIPE ELEVATIONS SHALL BE FIELD VERIFIED BEFORE COMMENCEMENT.
 - REGRADE AND SOD ALL DISTURBED AREA.
 - ALL WATER MAINS 4"-12" IN SIZE SHALL BE CONSTRUCTED USING PVC DR-18.
 - CONNECTION TO EXISTING WATER MAIN AND FORCE MAIN SHALL NOT BE MADE UNTIL APPROVED BY MUNICIPALITY.
 - WHERE UNDERGROUND WATER MAIN AND FIRE HYDRANTS ARE TO BE PROVIDED, THEY SHALL BE INSTALLED, COMPLETED, AND IN SERVICE PRIOR TO COMMENCING ON ANY STRUCTURE.

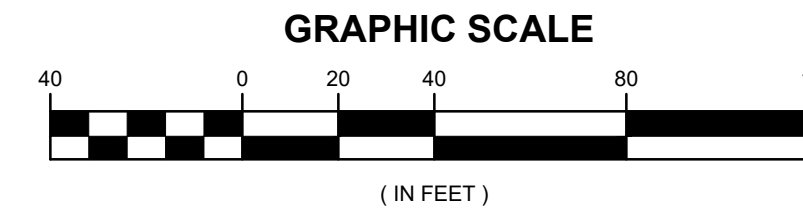
- FIRE PROTECTION NOTES TO CONTRACTOR**
- NFPA 1, 16.4.3.1.3 WHERE UNDERGROUND WATER MAINS AND HYDRANTS ARE TO BE PROVIDED, THEY SHALL BE INSTALLED, COMPLETED, AND IN SERVICE PRIOR TO COMMENCING CONSTRUCTION WORK ON ANY STRUCTURE.
 - NFPA 1, 16.4.3.1.1 A WATER SUPPLY FOR FIRE PROTECTION, EITHER TEMPORARY OR PERMANENT, SHALL BE MADE AVAILABLE AS SOON AS COMBUSTIBLE MATERIAL ACCUMULATES.
 - NFPA 1, 16.1.4 FIRE DEPARTMENT ACCESS ROADS PROVIDED IN ACCORDANCE WITH 18.2.3 SHALL BE PROVIDED AT THE START OF A PROJECT AND SHALL BE MAINTAINED THROUGHOUT CONSTRUCTION.
 - NFPA 1, 16.4.3.1.2 THERE SHALL BE NO DELAY IN THE INSTALLATION OF FIRE PROTECTION EQUIPMENT.
 - FIRE LINE SHALL BE PERMITTED SEPARATELY.
 - SHOW HOW NFPA 1, 16.3.5 STANDPIPES, IN ALL NEW BUILDINGS IN WHICH STANDPIPES ARE REQUIRED OR WHERE STANDPIPES EXIST IN BUILDINGS BEING ALTERED OR DEMOLISHED, SUCH STANDPIPES SHALL BE MAINTAINED IN CONFORMITY WITH THE PROGRESS OF BUILDING CONSTRUCTION IN SUCH A MANNER THAT THEY ARE ALWAYS READY FOR USE.



GRAVITY SEWER MANHOLE TABLE

Structure Name	DEPTH	STATION	OFFSET	RIM	IN INV.	OUT INV.
SMH-11	11	27+78.91	-14.2303'	9.203	-1.16 (NW)	-1.26 (SE)
SMH-12	10	26+32.91	-11.5960'	9.339	-0.48 (NW) -0.48 (SW)	-0.57 (SE)
SMH-13	9	13+83.22	7.0042'	9.128	0.65 (SE) 0.65 (NW)	0.55 (NE)
SMH-14	8	11+35.29	6.9939'	9.094	5.37 (W) 3.41 (NE)	1.64 (NW)
SMH-15	9	15+22.94	6.9941'	9.245	3.46 (SW) 3.82 (N)	1.21 (SE)
SMH-22	10	26+42.52	105.8942'	9.551	0.10 (SW)	0.00 (NE)

SANITARY SEWER CLEANOUT TABLE

Structure Name	STATION	OFFSET	RIM	IN INV.	OUT INV.
SCO-18	30+47.48	-9.02'	9.54	5.92 (W)	5.92 (E)
SCO-19	31+02.48	-8.98'	9.58	6.47 (W)	6.47 (E)
SCO-20	31+55.86	-9.00'	9.52	7.01 (S)	7.01 (E)
SCO-21	31+59.18	-54.84'	10.07	7.47 (W)	7.47 (N)
SCO-22	31+62.50	-54.84'	10.10		7.50 (E)
SCO-23	15+22.85	-10.00'	9.22	3.63 (W)	3.63 (NE)
SCO-24	90+14.40	35.95'	9.37	3.93 (NE)	3.93 (S)
SCO-25	90+64.43	35.97'	10.46	4.43 (NE)	4.43 (SW)
SCO-26	90+97.16	42.07'	10.42	4.93 (SE) 4.93 (NE)	4.93 (SW)
SCO-27	91+01.94	50.32'	10.38	5.09 (SE)	5.09 (SW)
SCO-28	91+00.84	55.35'	10.43	5.15 (SE)	5.15 (NW)
SCO-29	90+98.61	67.35'	10.43	5.44 (SW)	5.44 (NW)
SCO-30	13+87.19	110.70'	10.48	5.50 (NW)	5.50 (SE)
SCO-31	13+95.46	131.66'	10.42	5.14 (NW)	5.14 (SE)
SCO-32	14+09.46	131.66'	10.42	5.43 (SW)	5.43 (SE)
SCO-33	13+77.86	133.62'	10.19	4.83 (SE)	4.84 (N)
SCO-34	13+45.21	133.62'	10.39	5.16 (SE) 5.16 (SW)	5.16 (NW)
SCO-35	13+31.21	133.62'	10.41	5.45 (SW)	5.45 (NW)
SCO-36	13+45.21	115.62'	10.48	5.34 (SE)	5.34 (NE)
SCO-37	11+33.72	69.07'	10.48	4.05 (NE)	4.04 (SW)
SCO-38	11+33.69	110.70'	10.28	4.47 (NW) 4.47 (NE)	4.47 (SW)
SCO-39	11+33.69	132.64'	10.23	4.69 (NW) 4.69 (NE)	4.69 (SW)
SCO-40	11+40.85	132.64'	10.43	4.76 (NW)	4.76 (SE)
SCO-41	11+54.85	132.64'	10.43	5.05 (SW)	5.05 (SE)
SCO-42	11+33.69	139.64'	9.86	4.76 (NW)	4.76 (SW)
SCO-43	11+54.85	137.64'	10.34	4.97 (NW)	4.97 (SE)
SCO-44	11+76.01	132.62'	10.43	5.19 (NW)	5.19 (SE)
SCO-45	11+90.02	132.62'	10.43	5.48 (SW)	5.48 (SE)
SCO-46	84+98.32	-0.13'	9.43	4.10 (SW)	4.10 (E)
SCO-47	84+92.52	23.48'	9.85	4.34 (SW)	4.40 (SE)
SCO-48	84+35.93	32.96'	10.36	4.55 (SW)	4.55 (NE)
SCO-49	85+03.92	23.84'	9.90	4.34 (NW) 4.40 (SW)	
SCO-50	85+03.93	37.85'	10.12	4.77 (SE) 4.69 (NE)	
SCO-51	85+11.93	37.85'	10.19	4.69 (NW)	4.79 (NE)
SCO-52	85+11.92	23.85'	9.98	5.06 (SE) 5.04 (SW)	
SCO-53	85+19.92	23.85'	10.19	5.14 (SW)	5.14 (NW)
SCO-54	85+19.93	37.85'	10.26	5.43 (SW)	5.43 (NE)
SCO-55	85+19.92	44.88'	10.43	5.50 (SW)	5.50 (NE)



REV.	DATE	DESCRIPTION	BY	CHK.
DRAWING ISSUE STATUS				
NOT FOR CONSTRUCTION				
		A DIVISION OF HALEY WARD, INC. 		
		10250 Village Parkway, Suite 201 Port Saint Lucie, Florida 34987 772.462.2455		
WWW.HALEYWARD.COM				
PROJECT				
KANNER CPUD PHASE 1C STUART				
TITLE				
UTILITY PLAN				
DATE		SCALE		
2025.03.26		AS SHOWN		
DRAWN BY		DESIGNED BY		CHECKED BY
---		---		---
PROJECT No.				
21-397 ENGINEERING R2.DWG				
DAVID C. BAGGETT, P.E. (DATE)		DRAWING No.		REV.
#81375		10250 SW VILLAGE PARKWAY - SUITE 201 PORT SAINT LUCIE, FL 34987 772-462-2455		
C-108				

SEWER PIPE TABLE				
PIPE NAME	SIZE	MATERIAL	LENGTH	SLOPE
SAN-1	6"	SDR-26	55	1% MIN
SAN-2	6"	SDR-26	55	1% MIN
SAN-3	6"	SDR-26	53	1% MIN
SAN-4	6"	SDR-26	46	1% MIN
SAN-5	6"	SDR-26	3	1% MIN
SAN-6	6"	SDR-26	17	1% MIN
SAN-7	6"	SDR-26	10	1% MIN
SAN-8	6"	SDR-26	50	1% MIN
SAN-9	6"	SDR-26	50	1% MIN
SAN-10	6"	SDR-26	4	1% MIN
SAN-11	6"	SDR-26	16	1% MIN
SAN-12	6"	SDR-26	6	1% MIN
SAN-13	6"	SDR-26	2	1% MIN
SAN-14	6"	SDR-26	2	1% MIN
SAN-15	6"	SDR-26	6	1% MIN
SAN-16	6"	SDR-26	5	1% MIN
SAN-17	6"	SDR-26	5	1% MIN
SAN-18	6"	SDR-26	12	1% MIN
SAN-19	6"	SDR-26	2	1% MIN
SAN-20	6"	SDR-26	2	1% MIN
SAN-21	6"	SDR-26	7	1% MIN
SAN-22	6"	SDR-26	8	1% MIN
SAN-23	6"	SDR-26	33	1% MIN
SAN-24	6"	SDR-26	2	1% MIN
SAN-25	6"	SDR-26	2	1% MIN
SAN-26	6"	SDR-26	5	1% MIN
SAN-27	6"	SDR-26	18	1% MIN
SAN-28	6"	SDR-26	2	1% MIN
SAN-29	6"	SDR-26	62	1% MIN
SAN-30	6"	SDR-26	42	1% MIN
SAN-31	6"	SDR-26	6	1% MIN
SAN-32	6"	SDR-26	22	1% MIN
SAN-33	6"	SDR-26	7	1% MIN
SAN-34	6"	SDR-26	2	1% MIN
SAN-35	6"	SDR-26	2	1% MIN
SAN-36	6"	SDR-26	4	1% MIN
SAN-37	6"	SDR-26	7	1% MIN
SAN-38	6"	SDR-26	21	1% MIN
SAN-39	6"	SDR-26	22	1% MIN
SAN-40	6"	SDR-26	2	1% MIN
SAN-41	6"	SDR-26	2	1% MIN
SAN-42	6"	SDR-26	4	1% MIN
SAN-43	6"	SDR-26	47	1% MIN
SAN-44	6"	SDR-26	24	1% MIN
SAN-45	6"	SDR-26	21	1% MIN
SAN-46	6"	SDR-26	6	1% MIN
SAN-47	6"	SDR-26	2	1% MIN
SAN-48	6"	SDR-26	2	1% MIN
SAN-49	6"	SDR-26	8	1% MIN
SAN-50	6"	SDR-26	2	1% MIN
SAN-51	6"	SDR-26	2	1% MIN
SAN-52	6"	SDR-26	8	1% MIN
SAN-53	6"	SDR-26	2	1% MIN
SAN-54	6"	SDR-26	2	1% MIN
SAN-55	6"	SDR-26	7	1% MIN

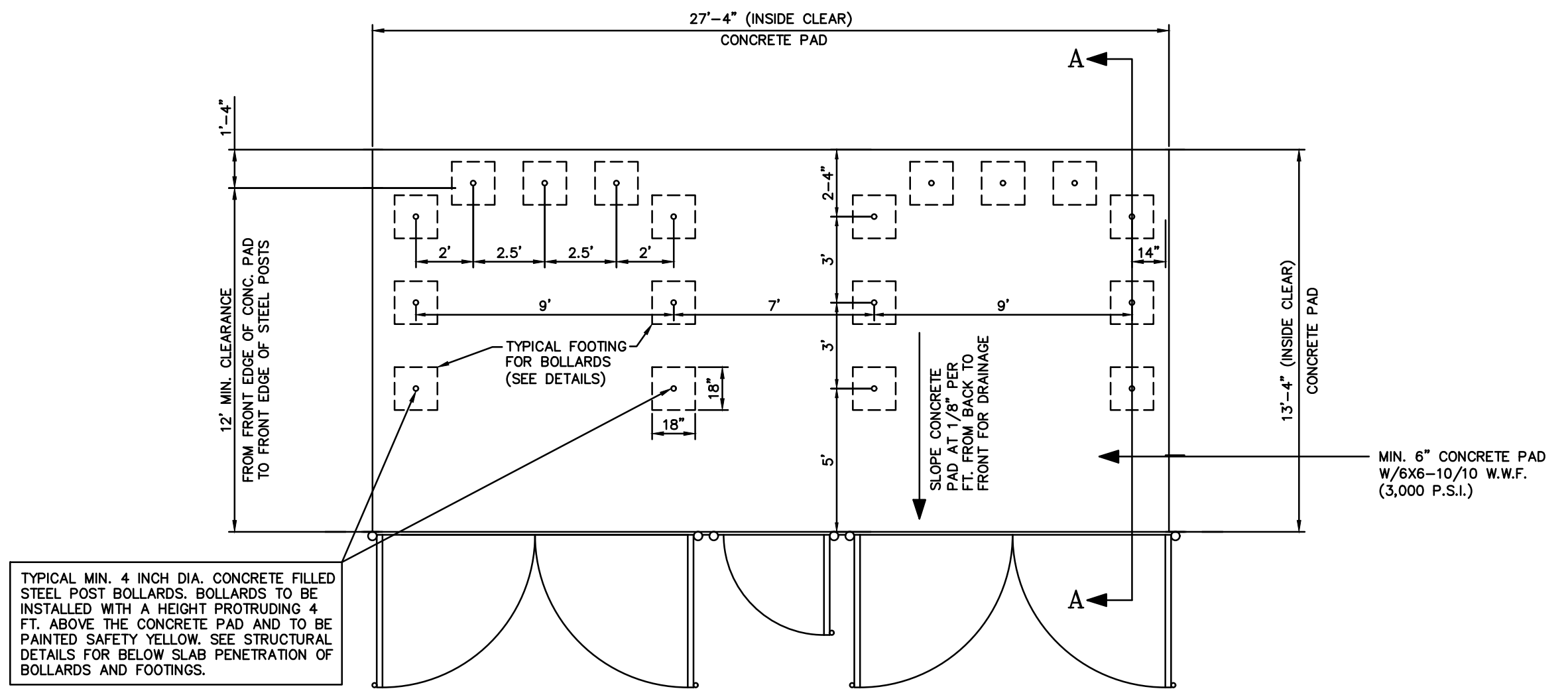
GREASE INTERCEPTOR TABLE				
NAME	RIM	INV IN:	INV OUT:	
G-1 (1,000 gal)	10.10	4.67	4.42	
G-2 (1,000 gal)	10.10	5.04	4.79	
G-3 (1,000 gal)	10.10	5.41	5.16	
G-4 (750 gal)	10.42	5.42	5.17	
G-5 (1,000 gal)	10.42	5.41	5.16	
G-6 (750 gal)	10.40	5.43	5.18	
G-7 (1,000 gal)	10.43	5.46	5.21	
G-8 (1,000 gal)	10.43	5.03	4.78	
* NOTE: INSTALL GREASE TRAPS PER CITY OF STUART STANDARD DETAIL				

SURVEY NOTES:

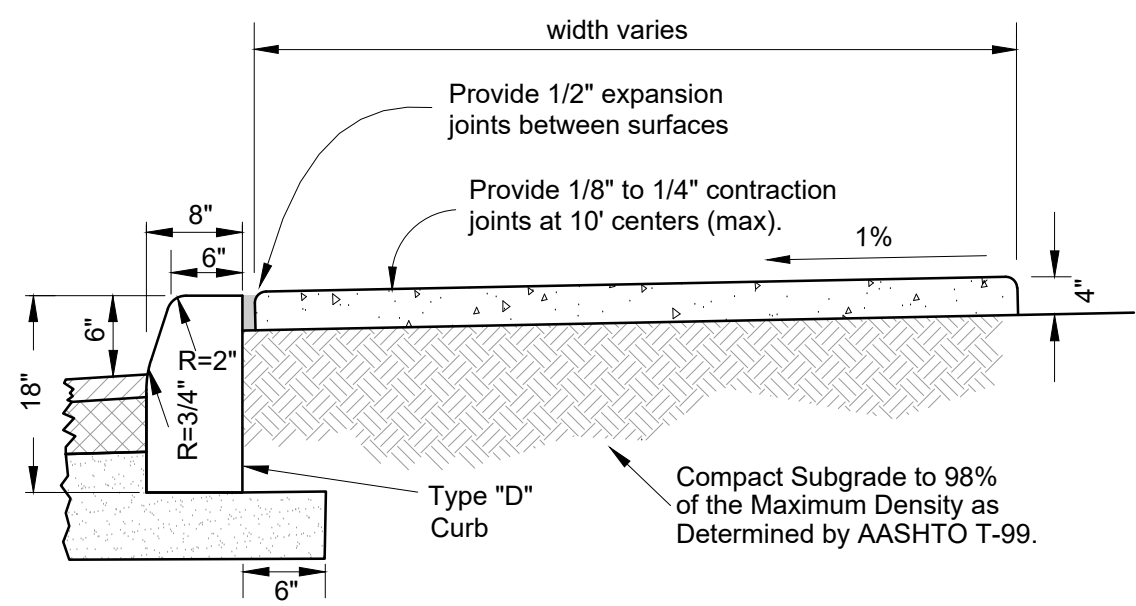
ELEVATIONS SHOWN HEREON ARE RELATIVE TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (N.A.V.D.88) AND ARE GIVEN IN U.S. SURVEY FEET UNLESS OTHERWISE NOTED.

N.G.V.D.29 = N.A.V.D.88 + 1.5

FILE LOCATION: Z:\EDC-002101-397 - AMM REALTY - KANNER - COMMERCIAL CTR - PHASE 1\ENGINEERING\AUTOCAD\DWG\021-397 ENGINEERING R2.DWG, 2025.03.26, 9:27 AM

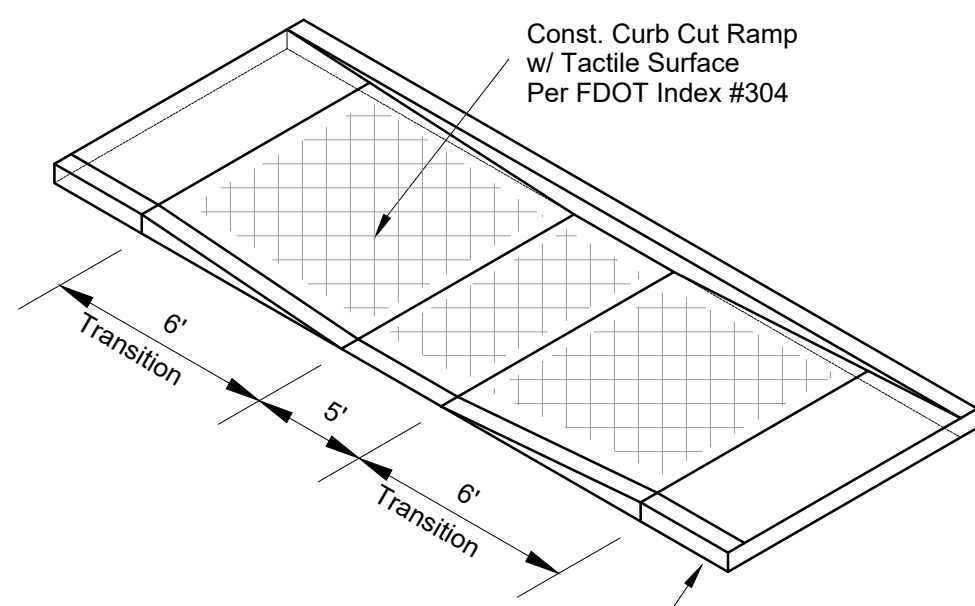


CITY OF STUART DUMPSTER ENCLOSURE – STRUCTURAL PLAN
DOUBLE DUMPSTER w/ RECYCLING
N.T.S.



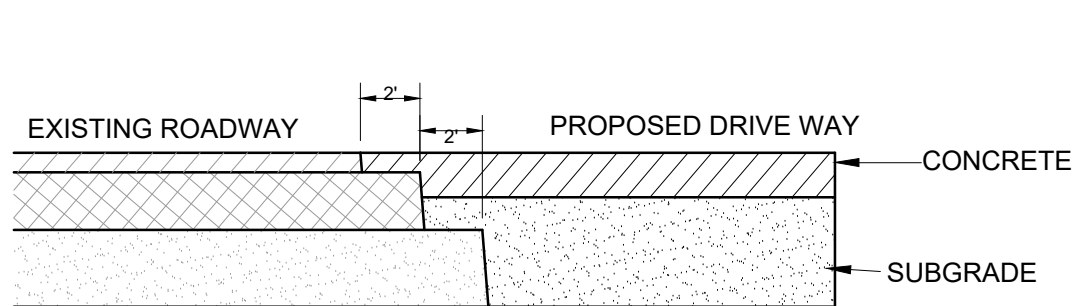
- NOTES:
1. USE 3,000 P.S.I. CONCRETE AT 28 DAYS FOR CONSTRUCTION.
 2. SUBGRADE TO EXTEND AN ADDITIONAL 6" BEYOND TYPE "D" CURB.

TYPE "D" CURB & SIDEWALK COMBINATION
NOT TO SCALE

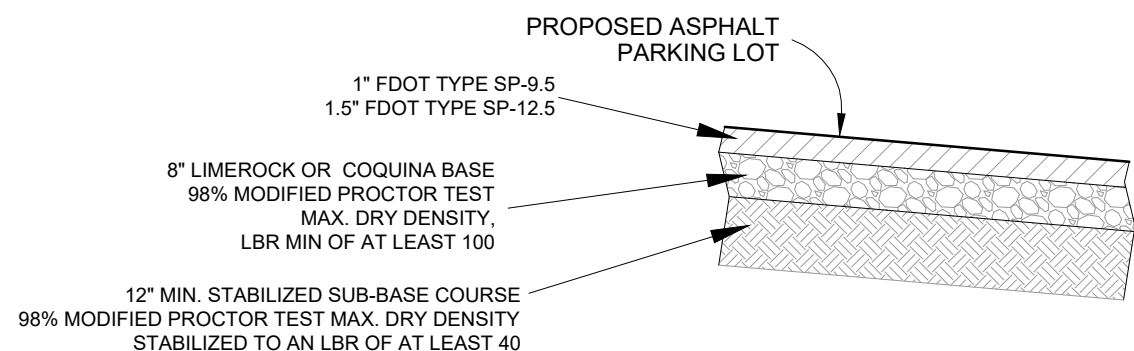


- NOTE:
1. SIDEWALK IS PARALLEL TO CURB.

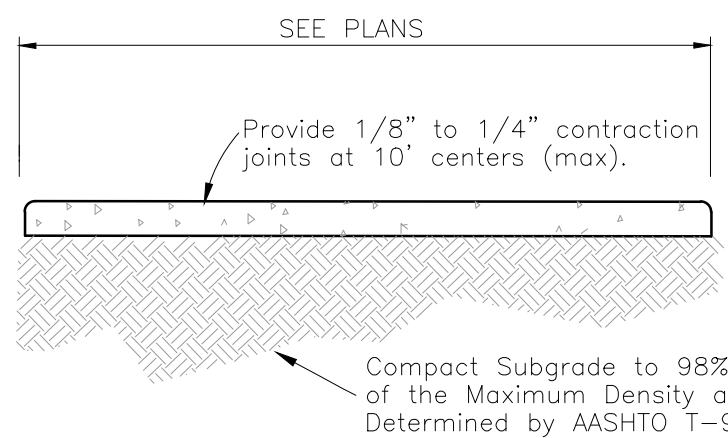
HANDICAP CURB CUT RAMP
NOT TO SCALE



MATERIAL BENCHING DETAIL
(FOR ATTACHING TO EXISTING ROADWAY)

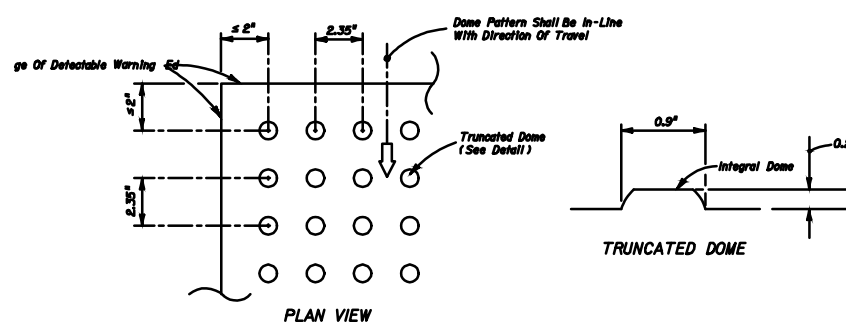


TYPICAL ASPHALT PAVEMENT SECTION
NOT TO SCALE



- NOTES:
1. Use 3,000 P.S.I. Concrete At 28 Days for sidewalk construction.
 2. Sidewalk thickness to be 6" thick at driveway locations.
 3. All repairs required during construction shall be removed and replaced 10' minimum to next full joint.
 4. All sidewalk within FDOT right-of-way to be constructed per Standard plans 522-001.

6" THICK SIDEWALK DETAIL
NOT TO SCALE



- NOTES:
- REFER TO FDOT INDEX 522-002 FOR FURTHER DETAILS

CURB RAMP
DETECTABLE WARNING

SPACING OR REQUIRED ROADWAY / PARKING AREA TESTS						
ITEMS TO BE TESTED	F.B.V.	DENSITY		L.B.R.		THICKNESS
	MAX. SPACING LIN.FT. SQ.FT.	MAX. SPACING LIN.FT. SQ.FT.	MAX. SPACING LIN.FT. SQ.FT.	MAX. SPACING LIN.FT. SQ.FT.	MAX. SPACING LIN.FT. SQ.FT.	
COMPACTED OR STABILIZED SUBGRADE	200	5,000	200	5,000	200	5,000
LIMEROCK BASE	—	—	200	5,000	—	200
SHELLROCK BASE	—	—	200	5,000	—	200
ASPHALT	—	—	—	—	PER INSP.	PER INSP.

NOTE: ALL TESTING SHALL BE TAKEN IN A STAGGERED SAMPLING PATTERN FROM A POINT 12" INSIDE THE LEFT EDGE OF THE ITEM TESTED, TO THE CENTER, TO A POINT 12" INSIDE OF THE RIGHT EDGE.

NOTES:

1. PANELS = 7,000 PSI CONCRETE
2. COLUMNS AND CAPS = 4,000 PSI CONCRETE
3. FOUNDATIONS = 3,000 PSI CONCRETE
4. REINFORCING STEEL FOR PANELS TO BE ASTM A615 DEFORMED BARS MIN. 70,000 PSI, ALL OTHER STEEL TO BE 60,000 PSI
5. WIND LOAD DESIGN CONFORMS TO F.B.C. 2020 7th EDITION AND ASCE 7-16, FOR WIND LOAD OF 170 M.P.H. 3 SECOND GUST, EXPOSURE 'C'.

FOUNDATION DEPTH SCHEDULE BASED ON 30" DIA FOOTING, AND SOIL BEARING CAP. OF 2000 P.S.F.			
WALL HEIGHT	SOLID ROCK	DRY, UNDISTURBED MEDIUM DENSITY, SAND	SATURATED, UNDISTURBED MEDIUM DENSITY SAND
6'-0"		4'-0"	
8'-0"		4'-9"	

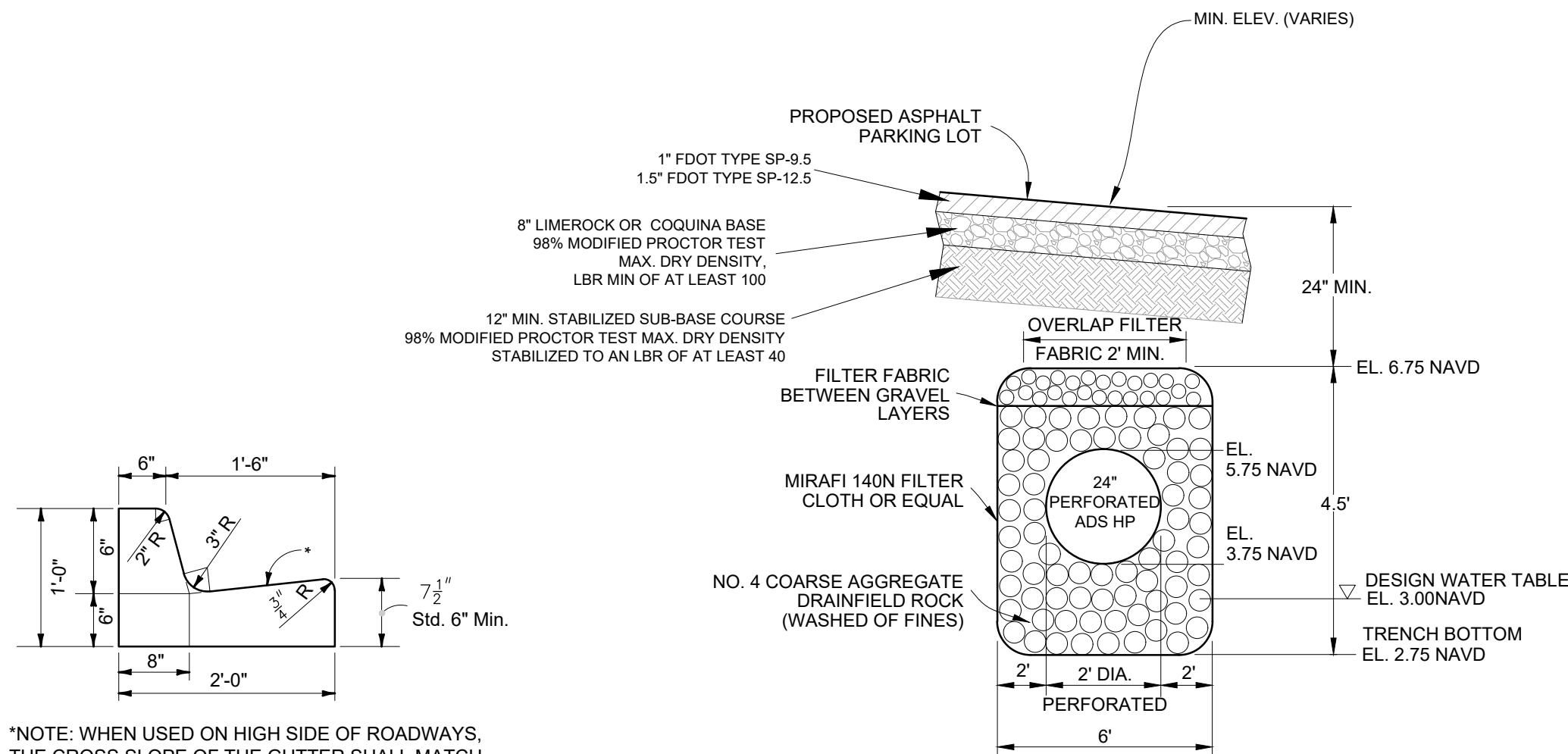
ALTERNATE FOOTING DIMENSIONS

WALL HEIGHT	SOLID ROCK	DRY, UNDISTURBED MEDIUM DENSITY, SAND	SATURATED, UNDISTURBED MEDIUM DENSITY SAND
6'-0"		4'-0"	
8'-0"		4'-9"	

REINFORCING STEEL SPECIFICATIONS			
COLUMN - REINFORCEMENT DETAILS		PANEL - MESH REINFORCEMENT SYSTEM	
WALL HEIGHT	POST SIZE	REINFORCING DETAILS	REINFORCING DETAILS
6'-0"	12"x13"	4 - # 5 RE-BARS	5'-8"x19'-0" D-9 BARS 12" O.C. A.S. 0.08 4" O.C. A.S. 0.27
8'-0"	12"x13"	4 - # 6 RE-BARS	7'-8"x19'-0" D-9 BARS 12" O.C. A.S. 0.09 4" O.C. A.S. 0.27

PRECAST WALL SYSTEMS, INC.
1888 NW 22ND COURT
POMPAHO BEACH, FL 33069
954-973-8488


JAMES BUSHOUSE P.E.
PROFESSIONAL ENGINEER 20311
STATE OF FLORIDA
3300 NE 10TH TERR
POMPAHO BEACH FLORIDA, 33064
954-955-2203

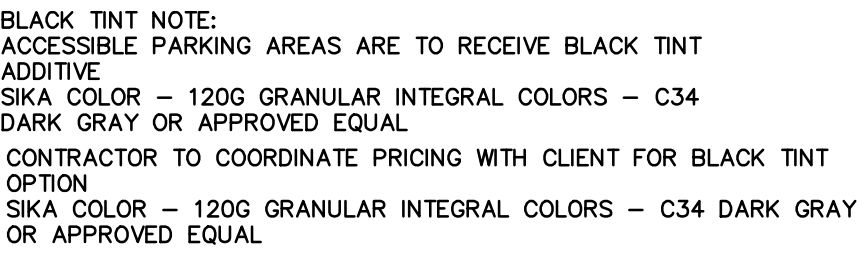


- NOTE: WHEN USED ON HIGH SIDE OF ROADWAYS, THE CROSS SLOPE OF THE GUTTER SHALL MATCH THE CROSS SLOPE OF THE ADJACENT PAVEMENT THE THICKNESS OF THE LIP SHALL BE 6", UNLESS OTHERWISE SHOWN ON PLANS.

TYPE "F" CURB DETAIL
NOT TO SCALE

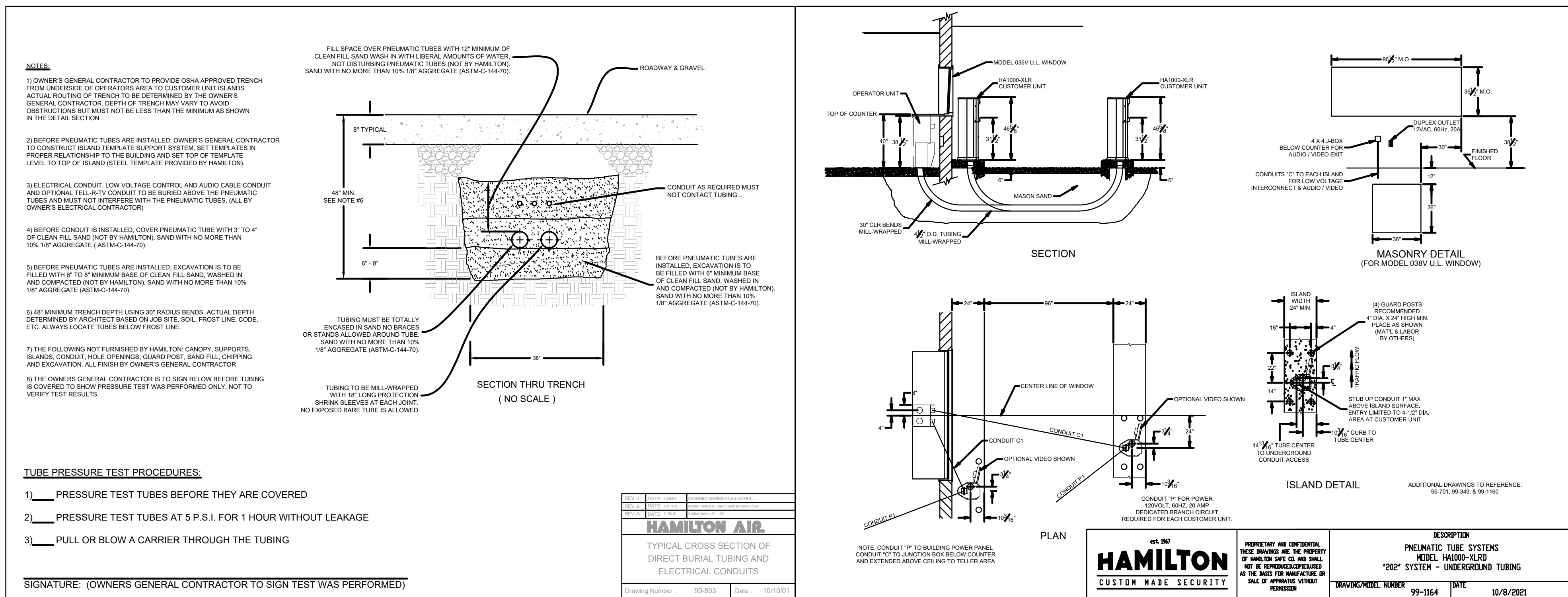
EXFILTRATION TRENCH (TYPICAL)
WITH GEOGRID REINFORCEMENT

REV.	DATE	DESCRIPTION	BY	CHK.
DRAWING ISSUE STATUS				
NOT FOR CONSTRUCTION				
 A DIVISION OF HALEY WARD, INC. 10250 Village Parkway, Suite 201 Port Saint Lucie, Florida 34987 772.462.2455 WWW.HALEYWARD.COM				
PROJECT KANNER CPUD PHASE 1C STUART				
TITLE PAVING, GRADING, & DRAINAGE DETAILS				
DATE 2025.03.26		SCALE AS SHOWN		
DRAWN BY ---		DESIGNED BY ---		CHECKED BY ---
PROJECT No. 21-397 ENGINEERING R2.DWG				
DAVID C. BAGGETT, P.E. (DATE) #81375 10250 SW VILLAGE PARKWAY - SUITE 201 PORT SAINT LUCIE, FL 34987 772-462-2455		DRAWING No. C-501		REV.



FIFTH THIRD (FIFTH THIRD BANK) BLACK TINTED CONCRETE DETAIL

NOT TO SCALE



FIFTH THIRD (FIFTH THIRD BANK) PNEUMATIC TUBE SYSTEMS DETAILS

NOT TO SCALE

CITY OF STUART
WATER DISTRIBUTION NOTES

- ALL CONSTRUCTION MATERIAL, INSTALLATION AND TESTING SHALL CONFORM TO THE STANDARD SPECIFICATIONS OF THE CITY OF STUART.
- WATER MAIN WHERE SPECIFIED AS POLYVINYL CHLORIDE (PVC) SHALL CONFORM TO AWWA C-900 OR C-905, PRESSURE CLASS 150 OR 235, DR (18).
- MIN. CLASS 50 WATER MAIN, WHERE SPECIFIED AS DUCTILE IRON PIPE, SHALL CONFORM TO ANSI/AWWA C-150/A-21.50 OR ANSI/AWWA C-151/A-21.51 AND SHALL BE PRESSURE CLASS 350 (MINIMUM).
- POLYVINYL CHLORIDE WATER MAIN SHALL BE BLUE IN COLOR. ALL PIPE REQUIRES THIN TRACER WIRE.
- FITTINGS SHALL BE CAST OR DUCTILE IRON, CONFORMING TO AWWA C-110 AND ANSI A21.11, CLASS 250 MINIMUM, CEMENT LINED, AND SEAL COATED.
- GATE VALVES SHALL BE RESILIENT WEDGE SEAT. VALVES SHALL CONFORM TO AWWA C-509, AS WELL AS THE CITY OF STUART'S APPROVED PRODUCTS LIST.
- WATER LINES SHALL BE BACKFILLED AND COMPACTED IN ACCORDANCE WITH THE CITY OF STUART'S DESIGN AND CONSTRUCTION STANDARDS. THE CONTRACTOR SHALL SUBMIT CERTIFIED DENSITY TESTS AS REQUIRED BY THE CITY, THE COUNTY AND FDOT. IN CASES WHERE PAVED AREAS FALL WITHIN THE JURISDICTION OF LOCAL OR STATE AGENCIES, THE COMPACTION REQUIREMENTS SHALL NOT BE LESS THAN THE MINIMUM REQUIRED BY THE APPROPRIATE RESPONSIBLE AGENCY.
- NO FIELD CHANGES OR DEVIATIONS FROM THE DESIGN SHALL BE MADE WITHOUT PRIOR APPROVAL OF THE ENGINEER AND CITY/COUNTY/FDOT.
- THE CONTRACTOR SHALL NOTIFY THE ENGINEER, CITY OF STUART AND COUNTY/FDOT 48 HOURS PRIOR TO COMMENCING CONSTRUCTION.
- A PRE-CONSTRUCTION CONFERENCE BETWEEN THE ENGINEER, THE CONTRACTOR, THE CITY, COUNTY/FDOT AND ANY OTHER APPLICABLE AGENCIES SHALL BE MANDATORY PRIOR TO COMMENCEMENT OF CONSTRUCTION.
- TRAFFIC CONTROL, BARRICADES, ETC., SHALL BE IN ACCORDANCE WITH THE FLORIDA DEPARTMENT OF OF TRANSPORTATION STANDARDS AND APPROVED BY THE CITY ENGINEER.
- MINIMUM COVER SHALL BE 36" FOR MAINS 8" IN DIAMETER OR LESS AND 48" FOR MAINS 10" IN DIAMETER OR MORE, EXCEPT AS APPROVED BY THE ENGINEER AND CITY/COUNTY/FDOT.
- DISTURBED AREAS SHALL BE RESTORED IN CONFORMANCE WITH THE APPLICABLE GOVERNING AGENCY REQUIREMENTS.
- EXISTING UTILITIES AND DRAINAGE SHALL BE FIELD VERIFIED PRIOR TO CONSTRUCTION AND PROTECTED BY THE CONTRACTOR.
- WATER MAINS SHALL BE TESTED AND DISINFECTED IN ACCORDANCE WITH THE APPLICABLE FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION AND AWWA C-601 FOR DISINFECTION.



STANDARD UTILITY DETAILS
City of Stuart
Utilities & Engineering Department
121 S.W. Flagler Avenue, Stuart, Florida 34994

WATER DISTRIBUTION NOTES

DATE: OCTOBER 2021
FILE NAME: 2021 COS Std Details.dwg
SHEET NUMBER: 1

CITY OF STUART
WASTEWATER CONSTRUCTION NOTES
(CONTINUED)

- MINIMUM COVER SHALL BE 48 INCHES, PIPES WITH LESS COVER REQUIRE PRIOR APPROVAL OF THE ENGINEER AND CITY OF STUART AND SHALL BE CONSTRUCTED OF DUCTILE IRON PIPE.
- ALL MANHOLES SHALL HAVE SEWER RAIN GUARDS INSTALLED.
- THE CONTRACTOR SHALL COMPLY WITH THE FLORIDA TRENCH SAFETY ACT REQUIREMENTS.
- PRIOR TO ANY TESTING, ALL MAINS 3 INCHES IN DIA. AND LARGER SHALL HAVE A LINE SIZE SWAB PASSED THROUGH THE ENTIRE LENGTH OF THE LINE. NOTE: SWAB SHOULD BE PLACED IN 1st. JOINT OF NEW LINE. END OF MAIN SHOULD BE "TURNED UP" AT 45° AND EXTENDED SO THAT SWABBING AND A FULL BORE FLUSH CAN BE ACCOMPLISHED. BLOW-OFF ASSY. CAN THEN BE PLACED, WHERE LINES BRANCH, SWABS WILL BE PLACED IN BRANCH LINES AND SEQUENTIALLY SWABBED AND FLUSHED.



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WASTEWATER CONSTRUCTION NOTES

DATE: OCTOBER 2021
FILE NAME: 2021 COS Std Details.dwg
SHEET NUMBER: 4

CITY OF STUART
WATER DISTRIBUTION NOTES
(CONTINUED)

- THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING EXISTING UTILITIES AND DRAINAGE.
- THE CONTRACTOR SHALL FURNISH RECORD DRAWING INFORMATION TO THE ENGINEER INCLUDING LOCATIONS OF VALVES, FITTINGS, SERVICE CONNECTIONS, BLOWOFFS, AIR RELEASE VALVES, AND ANY OTHER PERTINENT INFORMATION NECESSARY TO LOCATE ITEMS CONSTRUCTED UNDER THIS PROJECT, AS REQUIRED BY THE UTILITIES ENGINEER.
- THE CONTRACTOR SHALL TAP EXISTING LINES UNDER THE SUPERVISION OF THE CITY OF STUART ONLY AFTER TESTING AND DISINFECTION HAS BEEN COMPLETED AND APPROVED ON THE TAPPING SLEEVE AND VALVE. REVERSE TAPS ARE STRICTLY PROHIBITED (TAPS ON MAIN ARE TO BE ON THE SAME SIDE AS THE PROPOSED METER LOCATION).
- SAMPLE POINT TAPS SHALL BE PLACED APPROXIMATELY 3 FEET AWAY FROM GATE VALVES, AS SHOWN, FOR TESTING. FOLLOWING TESTING AND STERILIZATION OF WATER LINES, CONTRACTOR SHALL PLACE A BRASS PLUG IN CORPORATION STOPS, AND CURB STOPS SHALL BE REMOVED FROM TESTING LOCATIONS.
- MECHANICAL RESTRAINTS TO BE USED ON ALL FITTINGS AND PLACED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS AND CITY OF STUART REQUIREMENTS, MORE STRINGENT SHALL APPLY.
- ALL MAINS SHALL BE TESTED AT A MINIMUM OF 150 PSI. TESTING METHODS SHALL CONFORM TO AWWA C-600.

$L = \frac{SD(P)^{1/2}}{133,200}$ OR CURRENT AWWA STANDARD
L = LEAKAGE IN GPH
S = LENGTH OF PIPE IN FEET
D = PIPE DIAMETER IN INCHES
P = TESTING PRESSURE IN PSI

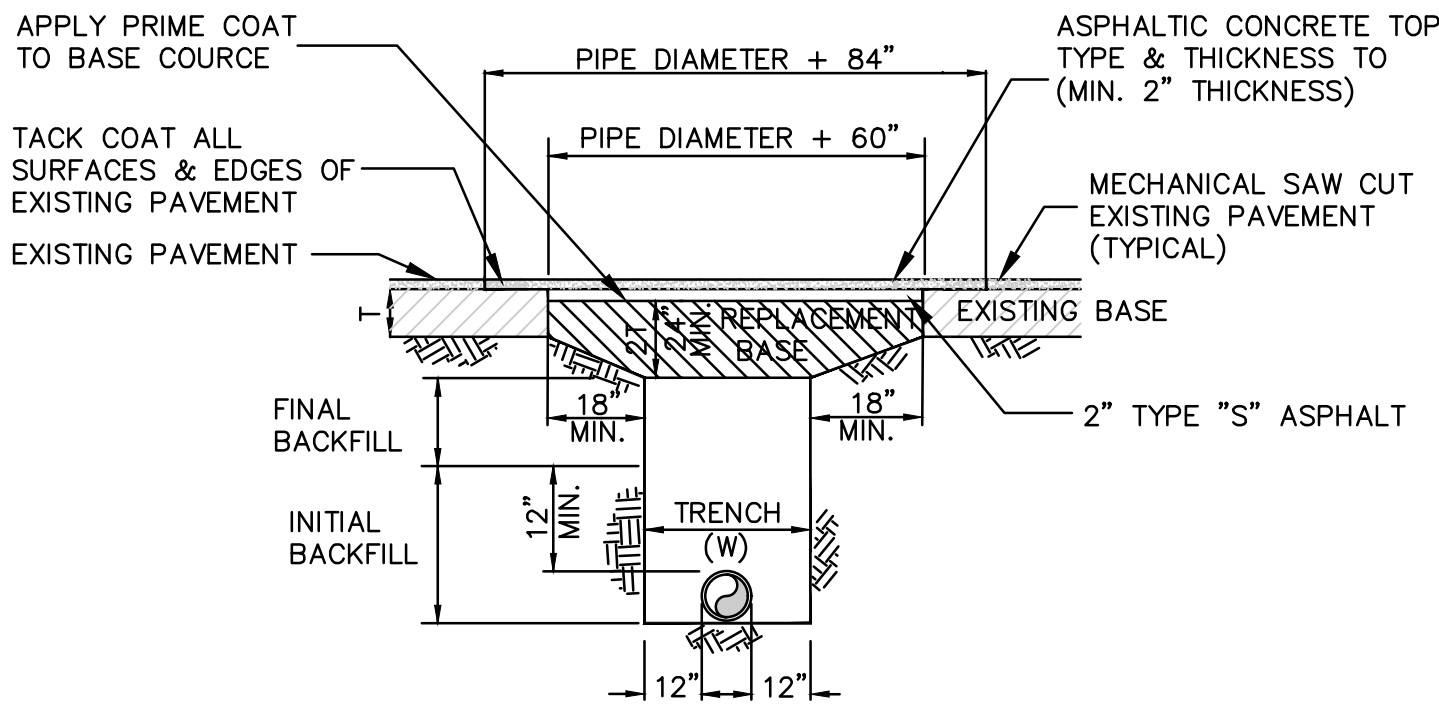
- PRIOR TO ANY TESTING, ALL MAINS 3 INCHES IN DIA. AND LARGER SHALL HAVE A LINE SIZE SWAB PASSED THROUGH THE ENTIRE LENGTH OF THE LINE. NOTE: SWAB SHOULD BE PLACED IN 1st. JOINT OF NEW LINE. END OF MAIN SHOULD BE "TURNED UP" AT 45° AND EXTENDED SO THAT SWABBING AND A FULL BORE FLUSH CAN BE ACCOMPLISHED. BLOW-OFF ASSY. CAN THEN BE PLACED, WHERE LINES BRANCH, SWABS WILL BE PLACED IN BRANCH LINES AND SEQUENTIALLY SWABBED AND FLUSHED.
- 10 FEET MINIMUM HORIZONTAL AND 12 INCHES MINIMUM VERTICAL SEPARATION SHALL BE MAINTAINED BETWEEN THE WATER MAIN AND ANY WASTEWATER LINES. THE DISTANCE SHALL BE MEASURED FROM OUTSIDE OF PIPE TO OUTSIDE OF PIPE OR STRUCTURE. WHERE THIS MINIMUM SEPARATION CANNOT BE MAINTAINED, THE CROSSING SHALL BE ARRANGED SO THAT THE WASTEWATER PIPE JOINTS AND THE WATER MAIN PIPE JOINTS ARE EQUIDISTANT FROM THE POINT OF CROSSING, AND THE WATER MAIN SHALL BE CONSTRUCTED OF DUCTILE IRON PIPE (DIP) AT THE CROSSING. SUFFICIENT LENGTHS OF DIP MUST BE USED TO PROVIDE A MINIMUM SEPARATION OF 10 FEET BETWEEN ANY TWO (2) JOINTS. ALL JOINTS ON THE WATER MAIN WITHIN 20 FEET OF THE CROSSING MUST BE MECHANICALLY RESTRAINED. A MINIMUM VERTICAL CLEARANCE OF 6 INCHES MUST BE MAINTAINED AT ALL CROSSINGS.
- WHERE A WATER MAIN IS TO BE INSTALLED BELOW A STORM DRAIN PIPE, A MINIMUM OF 6 INCHES OF VERTICAL CLEARANCE BETWEEN PIPES SHALL BE CONSTRUCTED OF DIP AT THE CROSSING, AND SHALL BE MECHANICALLY RESTRAINED WITHIN 20 FEET OF THE CROSSING.
- CONTRACTOR SHALL COMPLY WITH FLORIDA TRENCH SAFETY ACT REQUIREMENTS.



STANDARD UTILITY DETAILS
City of Stuart
Utilities & Engineering Department
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WATER DISTRIBUTION NOTES

DATE: OCTOBER 2021
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SHEET NUMBER: 2



LIMEROCK, SAND-CLAY, SHELL, ETC.
6" LAYERS, COMPACTED THICKNESS. (METHOD: AASHTO T-180)
DENSITY REQUIREMENTS:
98% UNDER ROADWAY / WITHIN 3' OF
E.O.P.
95% SHOULDER PAVEMENT.

NOTES:

PAVEMENT RESTORATIONS FOR LONGITUDINAL CUTS IN ARTERIAL STREETS SHALL INCLUDE FULL LANE WIDTH RESURFACING FOR EACH LANE WITHIN THE LIMITS OF THE CUT.



STANDARD UTILITY DETAILS
City of Stuart
Utilities & Engineering Department
121 S.W. Flagler Avenue, Stuart, Florida 34994

UTILITY ROAD CUT PAVEMENT RESTORATION

DATE: OCTOBER 2021
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SHEET NUMBER: 6

CITY OF STUART
WASTEWATER CONSTRUCTION NOTES

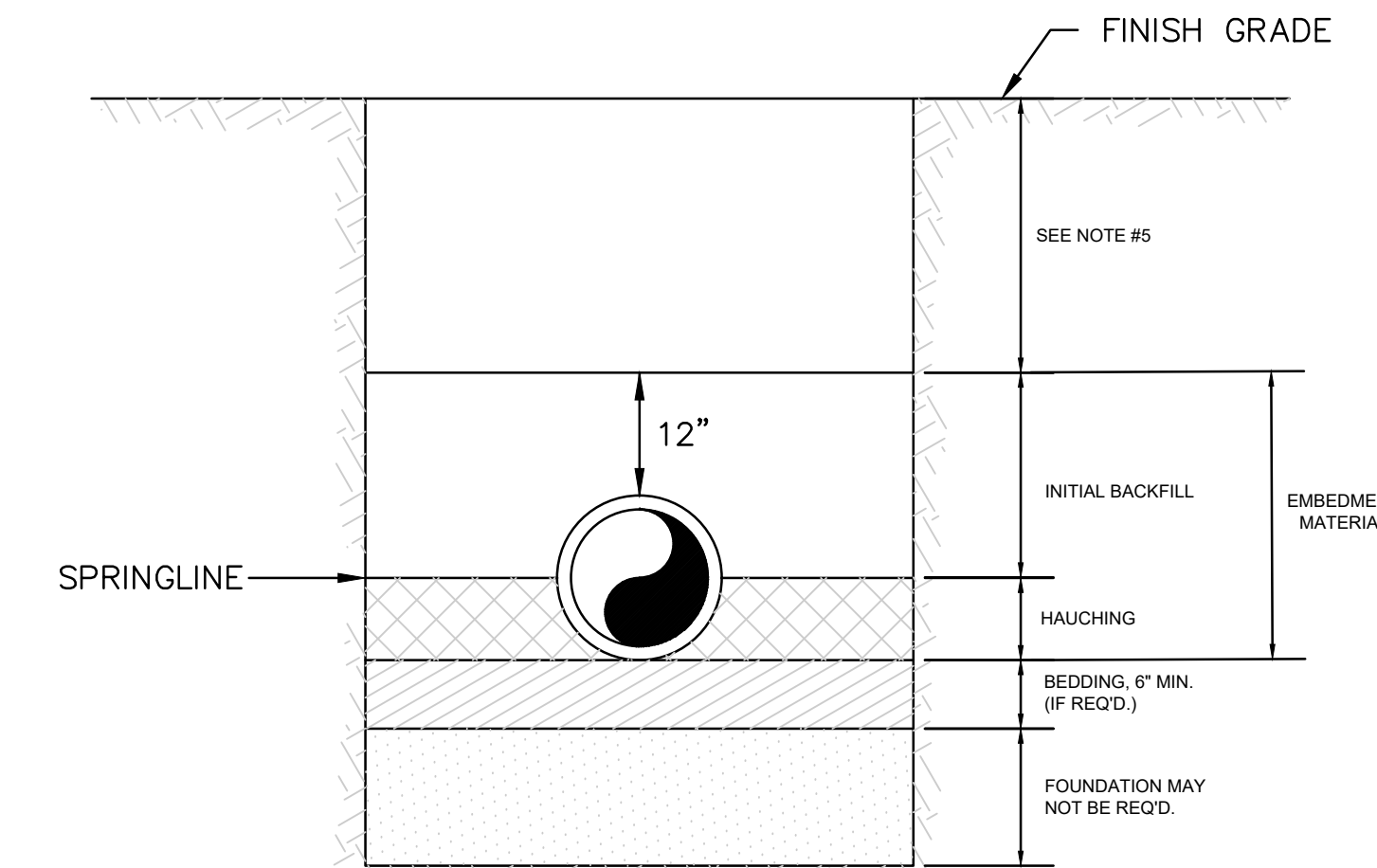
- ALL CONSTRUCTION MATERIAL, INSTALLATION AND TESTING SHALL CONFORM TO THE STANDARD SPECIFICATIONS OF THE CITY OF STUART.
- GRAVITY SEWER MAIN SHALL BE POLYVINYL CHLORIDE (PVC) SDR-26, GREEN IN COLOR.
- THE MANHOLE BASE SHALL BE SET ON A FIRM, DRY, AND STABLE OR COMPACTED BASE FOUNDATION. IF NECESSARY, THE CONTRACTOR SHALL UTILIZE ROCK TO PROVIDE A FIRM AND SUITABLE MANHOLE BASE FOUNDATION.
- WASTEWATER LINES SHALL BE BACKFILLED AND COMPACTED IN ACCORDANCE WITH THE CITY OF STUART DESIGN AND CONSTRUCTION STANDARDS. THE CONTRACTOR SHALL SUBMIT CERTIFIED DENSITY TESTS AS REQUIRED BY THE CITY. IN CASES WHERE AREAS FALL WITHIN THE JURISDICTION OF LOCAL OR STATE AGENCIES, THE COMPACTION REQUIREMENTS SHALL NOT BE LESS THAN THE MINIMUM REQUIRED BY THE APPROPRIATE RESPONSIBLE AGENCY.
- A 1% MINIMUM SLOPE SHALL BE MAINTAINED ON ALL SANITARY SERVICE LATERALS.
- THE CONTRACTOR SHALL FURNISH RECORD DRAWING INFORMATION TO THE ENGINEER CONSISTING OF PIPE SIZES, LOCATION OF SERVICE TEE WYES, DIAMETER OF SERVICES, LOCATION OF ANY FITTINGS, FINAL RIM AND INVERT ELEVATION OF ALL MANHOLES AND ANY OTHER PERTINENT INFORMATION NECESSARY TO LOCATE ITEMS CONSTRUCTED UNDER THIS PROJECT.
- MAINTAIN 10 FEET HORIZONTAL DISTANCE BETWEEN WATER MAINS AND SEWER MAINS AS A MINIMUM.
- WASTEWATER FORCE MAINS, WASTEWATER COLLECTION LINES, AND STORM SEWERS SHOULD CROSS UNDER WATER MAINS WHENEVER POSSIBLE. A MINIMUM VERTICAL DISTANCE OF 12 INCHES BETWEEN THE INVERT OF THE UPPER PIPE AND THE CROWN OF THE LOWER PIPE SHALL BE PROVIDED WHENEVER POSSIBLE. WHERE THIS MINIMUM SEPARATION CANNOT BE MAINTAINED, THE CROSSING SHALL BE ARRANGED SO THAT THE WASTEWATER PIPE JOINTS AND THE WATER PIPE JOINTS ARE EQUIDISTANT FROM THE POINT OF CROSSING, AND THE WATER MAIN SHALL BE CONSTRUCTED OF DIP AT THE CROSSING. SUFFICIENT LENGTHS OF DIP MUST BE USED TO PROVIDE A MINIMUM SEPARATION OF 10 FEET BETWEEN ANY TWO (2) JOINTS. ALL JOINTS ON THE WATER MAIN WITHIN 20 FEET OF THE CROSSING MUST BE MECHANICALLY RESTRAINED. A MINIMUM VERTICAL CLEARANCE OF 6 INCHES MUST BE MAINTAINED AT ALL CROSSINGS.
- A PRE-CONSTRUCTION CONFERENCE BETWEEN THE ENGINEER, THE CONTRACTOR, CITY OF STUART UTILITIES & ENGINEERING DEPT., COUNTY/FDOT AND ANY OTHER NECESSARY AGENCY SHALL BE MANDATORY PRIOR TO THE COMMENCEMENT OF CONSTRUCTION.
- NO FIELD CHANGES OR DEVIATIONS FROM THE DESIGN SHALL BE MADE WITHOUT PRIOR APPROVAL FROM THE ENGINEER, CITY, OR COUNTY/FDOT.
- TRAFFIC CONTROL, BARRICADES, ETC. SHALL BE IN ACCORDANCE WITH THE FLORIDA DEPARTMENT OF TRANSPORTATION STANDARDS.
- CONTRACTOR SHALL NOTIFY THE CITY OF STUART 48 HOURS PRIOR TO COMMENCING CONSTRUCTION.
- WASTEWATER FORCE MAIN SHALL BE POLYVINYL CHLORIDE CONFORMING TO AWWA C-900, AND SHALL BE CLASS 150, DR-18 (12" AND SMALLER), OR DR-21, AWWA C-905 (14" AND LARGER).
- WASTEWATER FORCE MAIN SHALL BE GREEN IN COLOR. WASTEWATER FORCE MAIN SHALL HAVE THIN WIRE & LOCATOR TAPE WITH "SEWER" MARKED ON TAPE.
- FITTINGS SHALL BE CAST OR DUCTILE IRON, CONFORMING TO AWWA C-110 AND ANSI A21.11, CLASS 250 MINIMUM, CEMENT LINED, AND EPOXY COATED.
- WASTEWATER FORCE MAIN SHALL BE MARKED BY THE USE OF CONTINUOUS COPPER WIRE (GREEN IN COLOR) PERMANENTLY ATTACHED TO THE TOP OF THE FORCE MAIN.



STANDARD UTILITY DETAILS
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WASTEWATER CONSTRUCTION NOTES

DATE: OCTOBER 2021
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SHEET NUMBER: 3



NOTES:

- IN CERTAIN SOIL CONDITIONS A FOUNDATION MAY BE REQUIRED.
- BEDDING IS REQUIRED PRIMARILY TO BRING THE TRENCH BOTTOM UP TO GRADE. BEDDING MATERIALS SHALL PROVIDE A UNIFORM AND ADEQUATE LONGITUDINAL SUPPORT UNDER THE PIPE.
- HAUNCHING MATERIAL SHALL BE HAND PLACED TO THE SPRINGLINE OF THE PIPE. MATERIAL SHALL BE CONSOLIDATED UNDER THE PIPE AND HAND TAMPED TO PROVIDE ADEQUATE SIDE SUPPORT.
- INITIAL BACKFILL MATERIAL SHALL BE HAND PLACED TO 12" ABOVE THE TOP OF PIPE AND BE COMPACTED USING A HAND OPERATED TAMPING DEVICE.
- BACKFILL SHALL BE COMPACTED TO 98% OF MAX. DENSITY AS PER AASHTO T-180.
- DENSITY TEST SHALL BE PERFORMED AT AREAS DETERMINED BY THE DESIGN ENGINEER OR PERMIT AGENCY HAVING JURISDICTION.

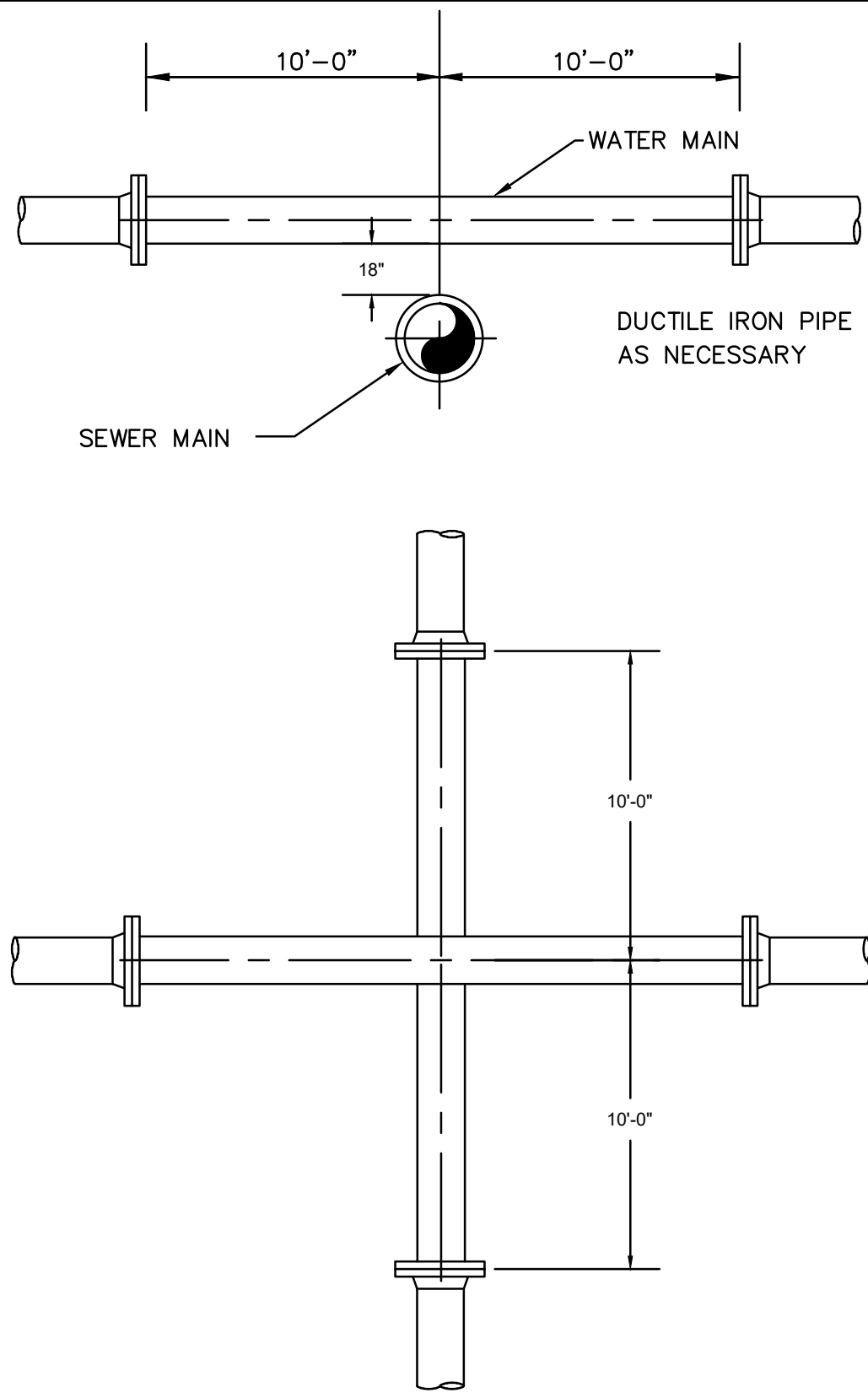


STANDARD UTILITY DETAILS
City of Stuart
Utilities & Engineering Department
121 S.W. Flagler Avenue, Stuart, Florida 34994

BACKFILLING REQUIREMENTS

DATE: OCTOBER 2021
FILE NAME: 2021 COS Std Details.dwg
SHEET NUMBER: 11

REV.	DATE	DESCRIPTION	BY	CHK.
DRAWING ISSUE STATUS				
NOT FOR CONSTRUCTION				
		A DIVISION OF HALEY WARD, INC.		
10250 Village Parkway, Suite 201 Port Saint Lucie, Florida 34987 772.462.2455		WWW.HALEYWARD.COM		
PROJECT KANNER CPUD PHASE 1C STUART				
TITLE UTILITY DETAILS				
DATE 2025.03.26		SCALE AS SHOWN		
DRAWN BY ---		DESIGNED BY ---		CHECKED BY ---
PROJECT No. 21-397 ENGINEERING R2.DWG				
DAVID C. BAGGETT, P.E. (DATE) #81375		REV.		
10250 SW VILLAGE PARKWAY - SUITE 201 PORT SAINT LUCIE, FL 34987 772-462-2455		C-503		



NOTES:

WATER MAIN CROSSING EXISTING FORCE MAIN SHALL BE LAID TO PROVIDE A VERTICAL DISTANCE OF 18 INCHES BETWEEN THE INVERT OF THE UPPER PIPE AND THE CROWN OF THE LOWER PIPE MUST BE USED TO PROVIDE A MINIMUM SEPARATION OF 10 FEET BETWEEN ANY TWO JOINTS. ALL CROSSINGS SHALL BE ARRANGED SO THAT THE SEWER PIPE JOINTS AND THE WATER MAIN PIPE JOINTS ARE EQUAL DISTANCE FROM THE POINT OF CROSSING (PIPES CENTERED ON THE CROSSING). IN ALL CASES AN 18" VERTICAL SEPERATION SHALL BE REQUIRED.

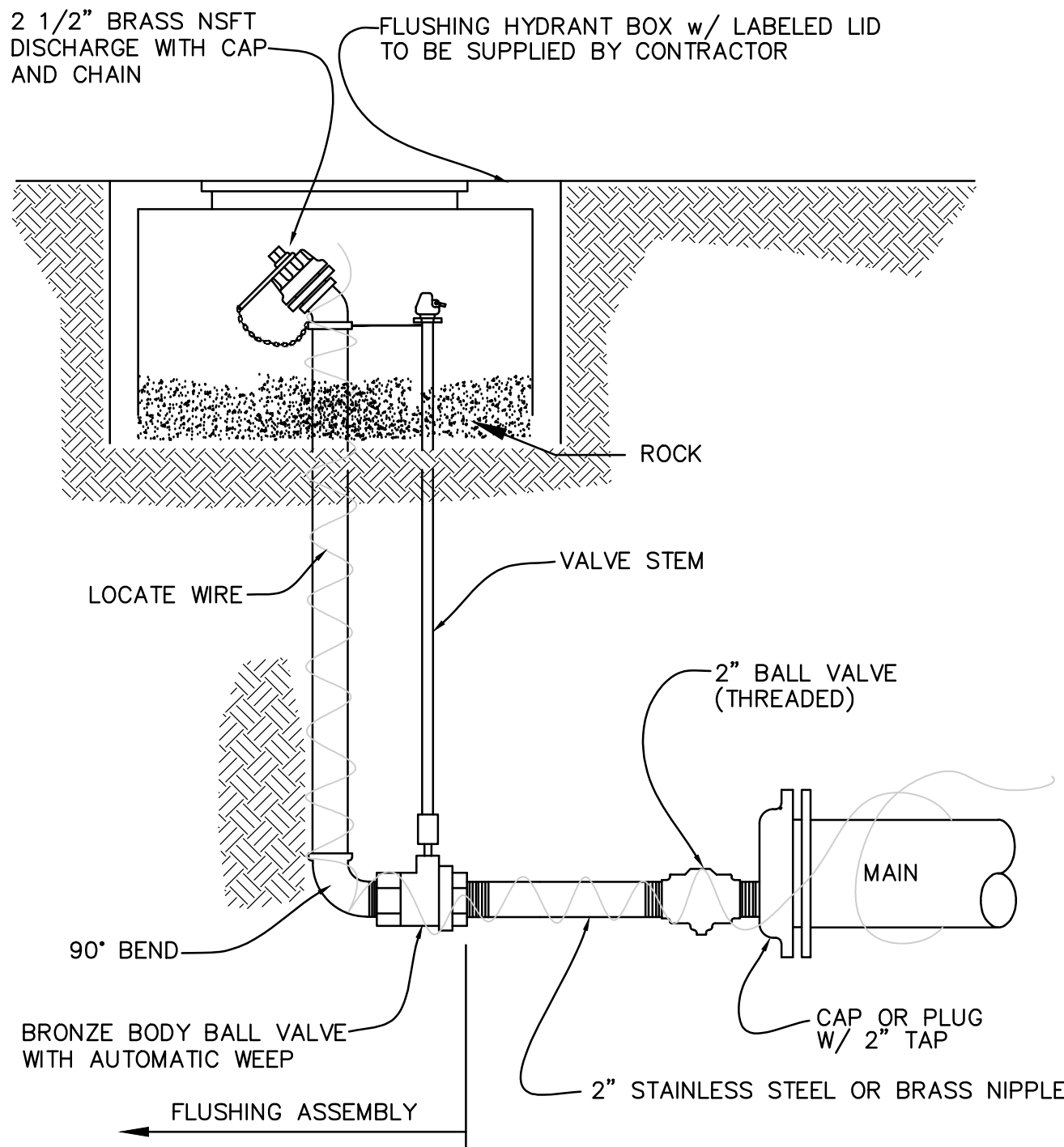


STANDARD UTILITY DETAILS
City of Stuart
Utilities & Engineering Department
121 S.W. Flagler Avenue, Stuart, Florida 34994

UTILITY CROSSING

DATE: OCTOBER 2021
FILE NAME: 2021 COS Std Details.dwg

SHEET NUMBER
16



NOTES:

1. MAIN TO BE RESTRAINED PER CITY OF STUART SPECIFICATIONS.
2. DEAD ENDS INTENDED FOR FUTURE USE SHALL INCLUDE A LINE SIZE GATE VALVE, MECHANICALLY RESTRAINED.
3. MUST BE DESIGNED TO ACHIEVE 2 FPS FLUSHING VELOCITY IN MAIN.

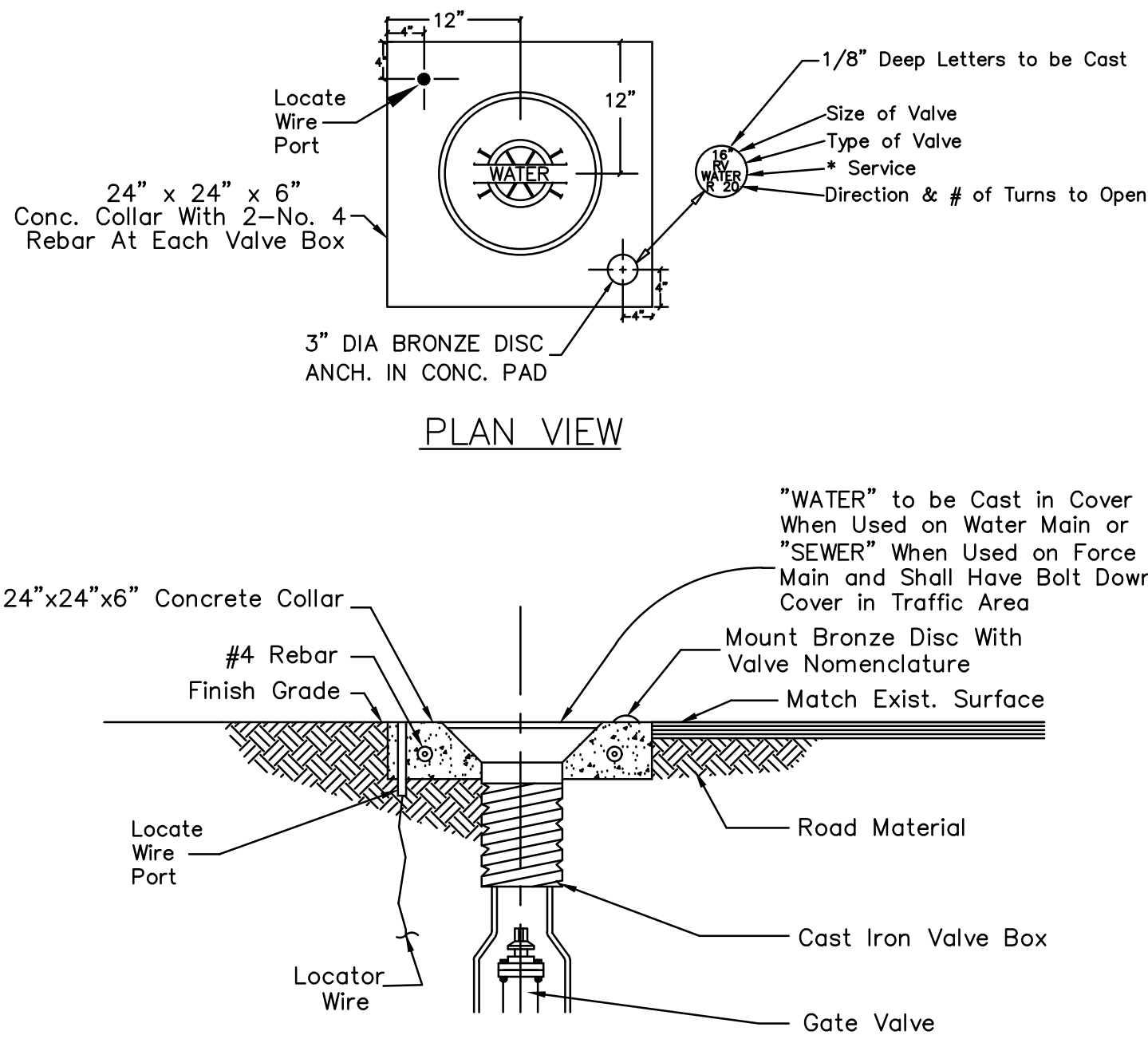


STANDARD UTILITY DETAILS
City of Stuart
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POTABLE WATER FLUSHING HYDRANT

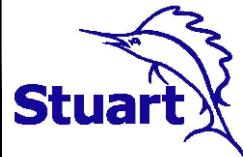
DATE: OCTOBER 2021
FILE NAME: 2021 COS Std Details.dwg

SHEET NUMBER
28



PLAN VIEW

SECTION VIEW

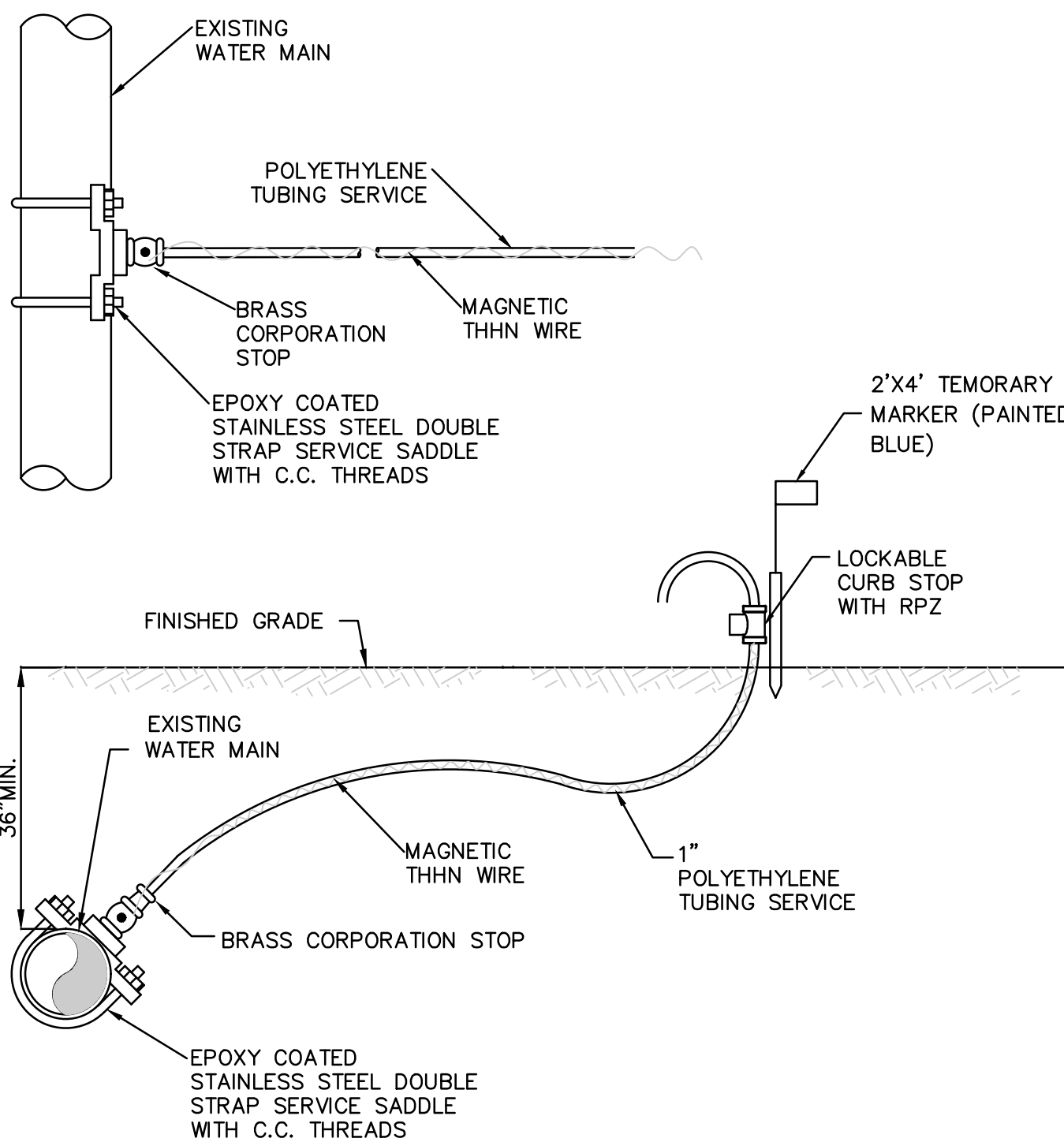


STANDARD UTILITY DETAILS
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Utilities & Engineering Department
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CONCRETE VALVE COLLAR

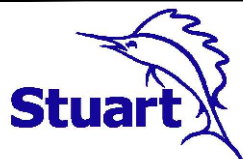
DATE: OCTOBER 2021
FILE NAME: 2021 COS Std Details.dwg

SHEET NUMBER
18



NOTE:

1. ADD LAMINATED SIGN NOTING THAT "TESTING IS IN PROGRESS - DO NOT DISTURB" WHILE SAMPLE POINT IS IN SERVICE.
2. AFTER TESTING, REMOVE THE 1" PE LINE AND CAP WITH BRASS PLUG/CAP AT CORPORATION STOP.

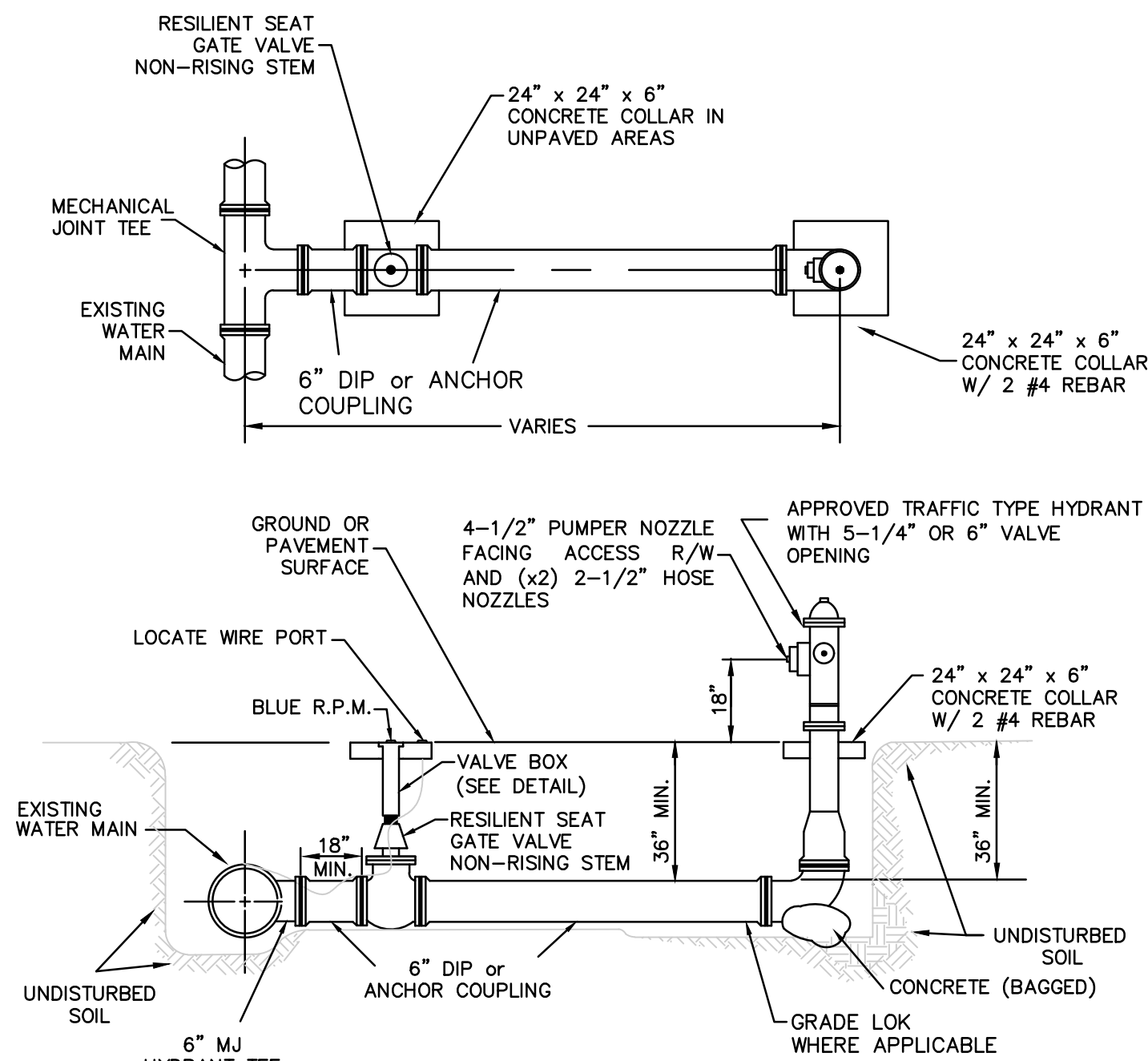


STANDARD UTILITY DETAILS
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BACTERIOLOGICAL SAMPLE POINT

DATE: OCTOBER 2021
FILE NAME: 2021 COS Std Details.dwg

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29



1. HYDRANT SHALL BE INSTALLED PLUMB & TRUE.
2. HYDRANT SHALL BE PAINTED FROM FACTORY.
3. FOOT TO REST IN UNDISTURBED SOIL.
4. HYDRANT ASSEMBLY MUST BE RESTRAINED TO TEE.

5. ALL FITTINGS TO BE MECHANICAL JOINT.
6. ENTIRE ASSEMBLY TO BE MECHANICALLY RESTRAINED.
7. ALL HYDRANTS ARE TO UTILIZE ANCHOR COUPLINGS, WHEN APPLICABLE.

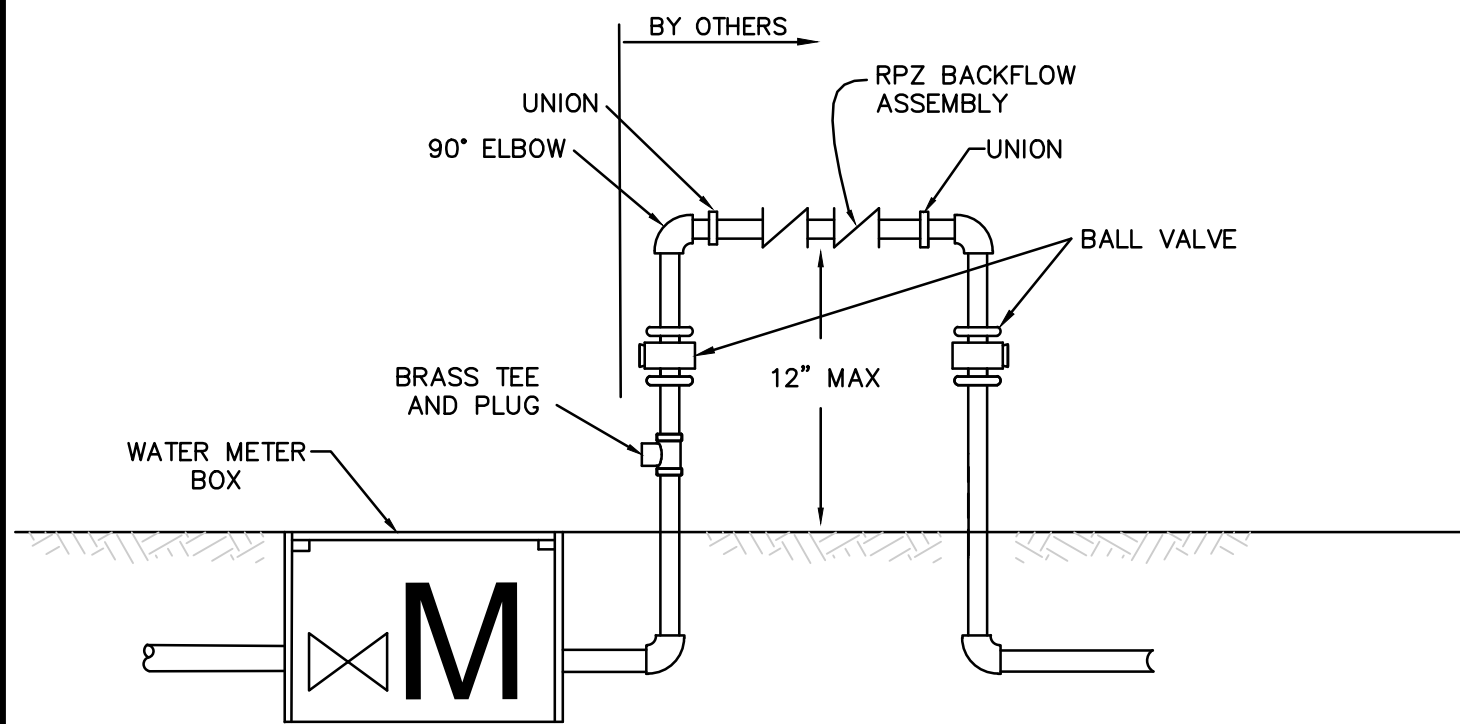


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City of Stuart
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FIRE HYDRANT ASSEMBLY

DATE: OCTOBER 2021
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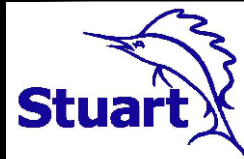
SHEET NUMBER
26



TYPICAL POTABLE / RECLAIMED WATER METER WITH BACKFLOW PREVENTION ASSEMBLY
5/8" - 3/4"
(COMMERCIAL / IRRIGATION)

NOTES:

1. RECLAIMED WATER BACKFLOW PREVENTION ASSEMBLY MUST BE PAINTED PURPLE PANTONE 522.
2. METER TO BE SUPPLIED BY THE CITY OF STUART.
3. BACKFLOW PREVENTION ASSEMBLY MUST BE COVERED BY LANDSCAPE.
4. NO TAPS OR CONNECTION ALLOWED BETWEEN THE METER AND BACKFLOW PREVENTION DEVICE.




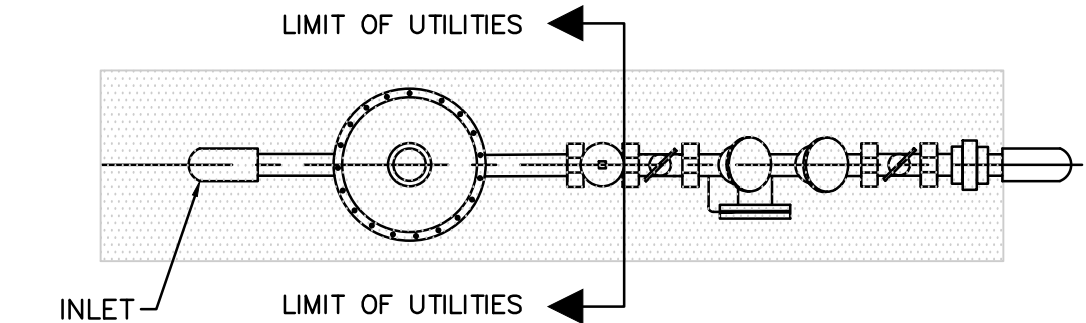
STANDARD UTILITY DETAILS
City of Stuart
Utilities & Engineering Department
121 S.W. Flagler Avenue, Stuart, Florida 34994

BACKFLOW PREVENTION ASSEMBLY

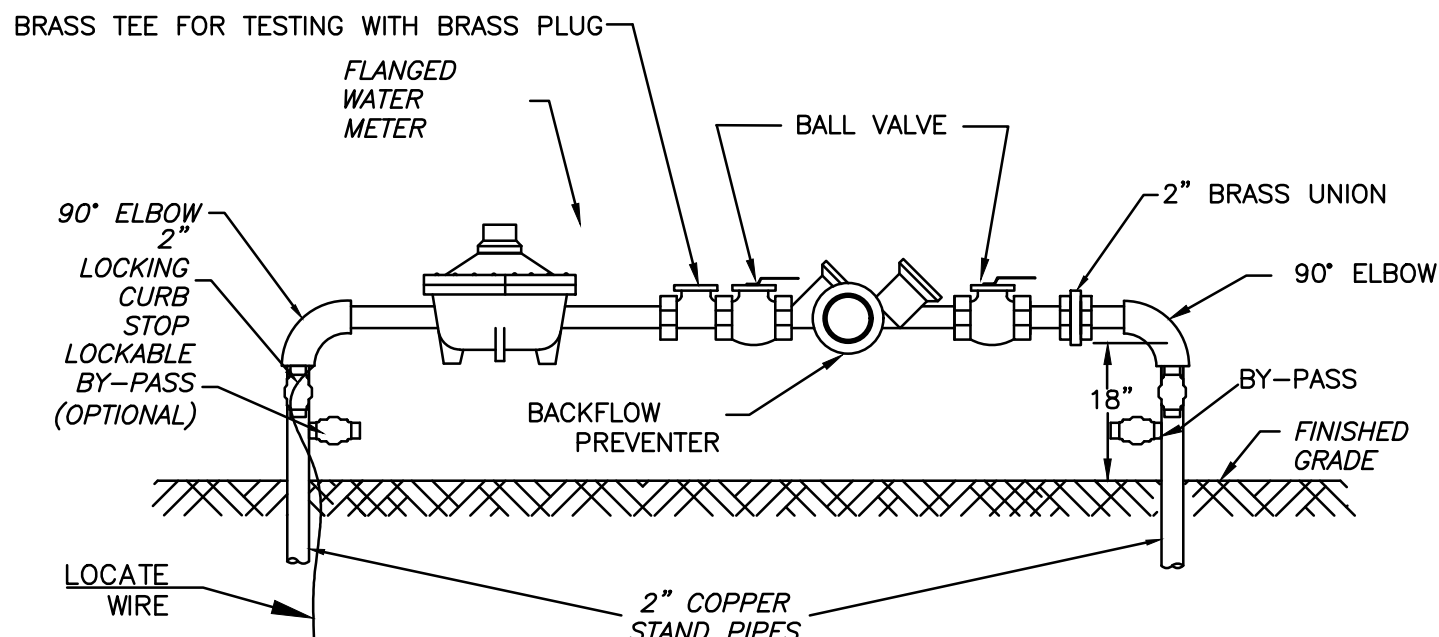
DATE: OCTOBER 2021
FILE NAME: 2021 COS Std Details.dwg

SHEET NUMBER
30

REV	DATE	DESCRIPTION	BY	CHK
DRAWING ISSUE STATUS				
NOT FOR CONSTRUCTION				
 A DIVISION OF HALEY WARD, INC. 10250 Village Parkway, Suite 201 Port Saint Lucie, Florida 34987 772.462.2455 WWW.HALEYWARD.COM				
PROJECT				
KANNER CPUD PHASE 1C STUART				
TITLE				
UTILITY DETAILS				
DATE		2025.03.26	SCALE	
DRAWN BY		DESIGNED BY	AS SHOWN	
PROJECT No.		21-397	ENGINEERING R2.DWG	
DAVID C. BAGGETT, P.E. (DATE)		#81375	REV.	
10250 SW VILLAGE PARKWAY - SUITE 201		PORT SAINT LUCIE, FL 34987	C-504	
772-462-2455				



PLAN VIEW



PROFILE VIEW

**1", 1.5" & 2" POTABLE / RECLAIMED
WATER METER & BACKFLOW
PREVENTION ASSEMBLY SERVICE
(COMMERCIAL)**

NOTES:

1. LANDSCAPING REQUIRED PER CITY OF STUART ORDINANCE. NO PLANTS OR TREES WITHIN 18" AROUND METER OR BACKFLOW. NO SOLDER JOINTS. MUST BE SCREENED, NO GROW IN PERIOD.
2. ASSEMBLY TO BE 18" FROM FINISH GRADE TO CENTERLINE OF THE 90° BEND.
3. RECLAIMED WATER METER ASSEMBLY MUST BE PAINTED PANTONE PURPLE 522.
4. NO SOLDER JOINTS.
5. NO TAPS OR CONNECTIONS ALLOWED BETWEEN METER AND BACKFLOW PREVENTION DEVICE
6. METERS 1.5" OR LARGER ARE TO BE PROVIDED BY THE DEVELOPER PER CITY'S APPROVED PRODUCTS LIST.

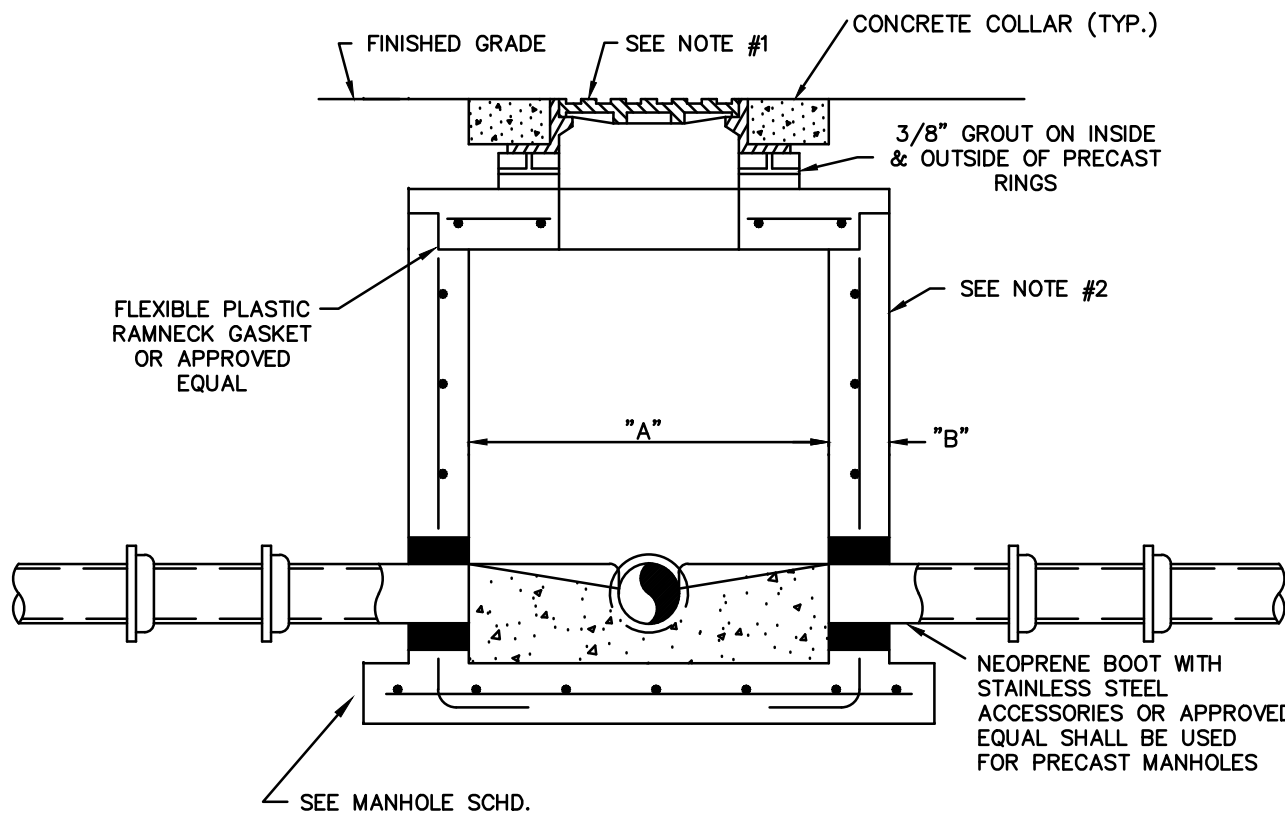


STANDARD UTILITY DETAILS
City of Stuart
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121 S.W. Flagler Avenue, Stuart, Florida 34994

BACKFLOW PREVENTION ASSEMBLY

DATE: OCTOBER 2021
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31

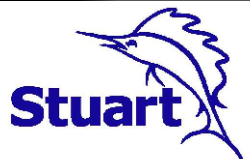


TYPICAL MANHOLE DIMENSIONS

**SHALLOW MANHOLE
(DEPTH LESS THAN 5'-0")**

NOTES:

1. MANHOLE FRAME & COVER SHALL BE GRAY CAST IRON, TRAFFIC RATED, HEAVY DUTY ASTM A48, CLASS 30 WITH THE WORDS " SANITARY SEWER" CAST IN THE COVER. U.S. FOUNDRY 170 OR APPROVED EQUAL.
2. ALL CONCRETE MANHOLES TO BE 4000 P.S.I. AFTER TWENTY-EIGHT (28) DAYS TO MEET OR EXCEED ASTM C478. ALL CEMENT TO BE TYPE II ACID RESISTANT. REINFORCING AREA OF 0.02 SQ. IN/FT FOR WALL SECTION MIN. TO MEET OR EXCEED ASTM A185.
3. A MAXIMUM OF 2 LAYERS OF PRECAST CONCRETE RINGS, IF REQUIRED.
4. RAIN GUARDS SHALL BE INSTALLED IN MANHOLES.
5. ALL MANHOLES SHALL RECEIVE TWO (2) COATS, INSIDE AND OUTSIDE, W/ 4-5 MILS EACH OF 100% WATER BASED EPOXY.

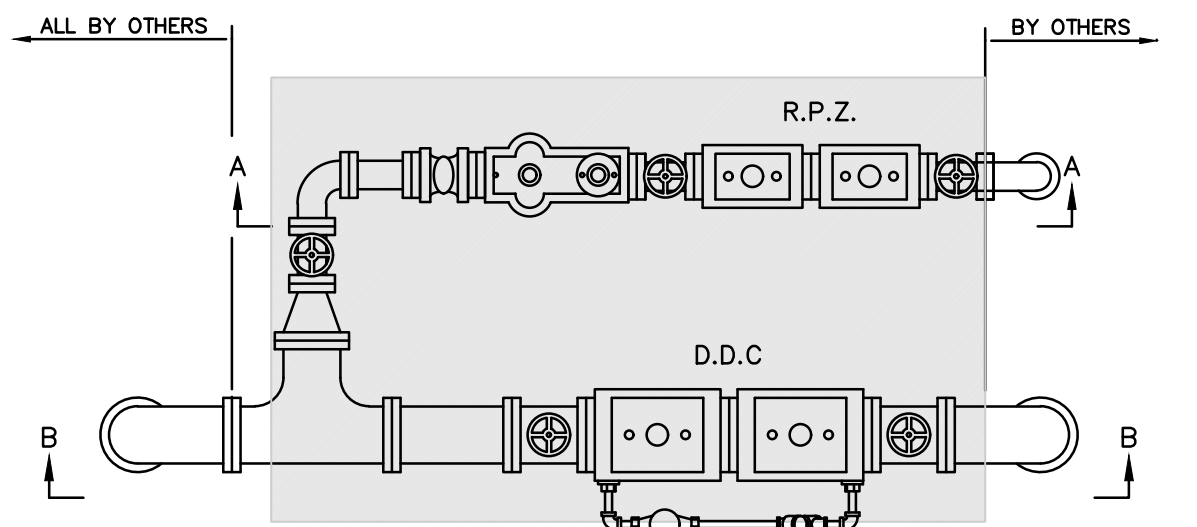


STANDARD UTILITY DETAILS
City of Stuart
Utilities & Engineering Department
121 S.W. Flagler Avenue, Stuart, Florida 34994

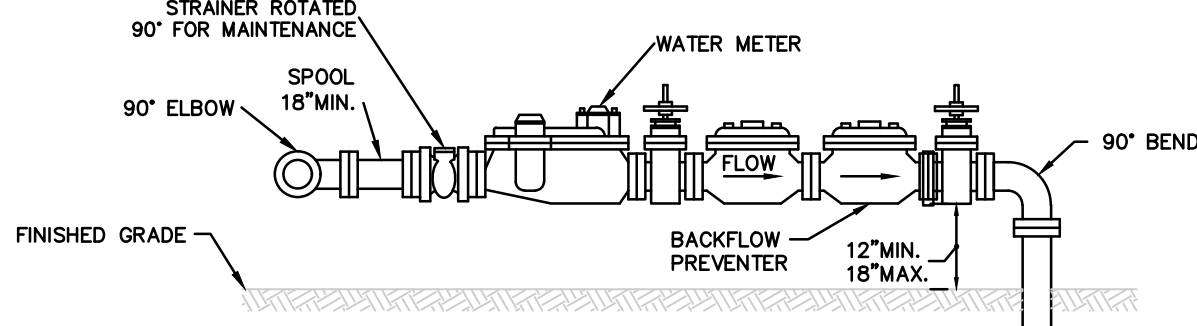
SHALLOW MANHOLE

DATE: OCTOBER 2021
FILE NAME: 2021 COS Std Details.dwg

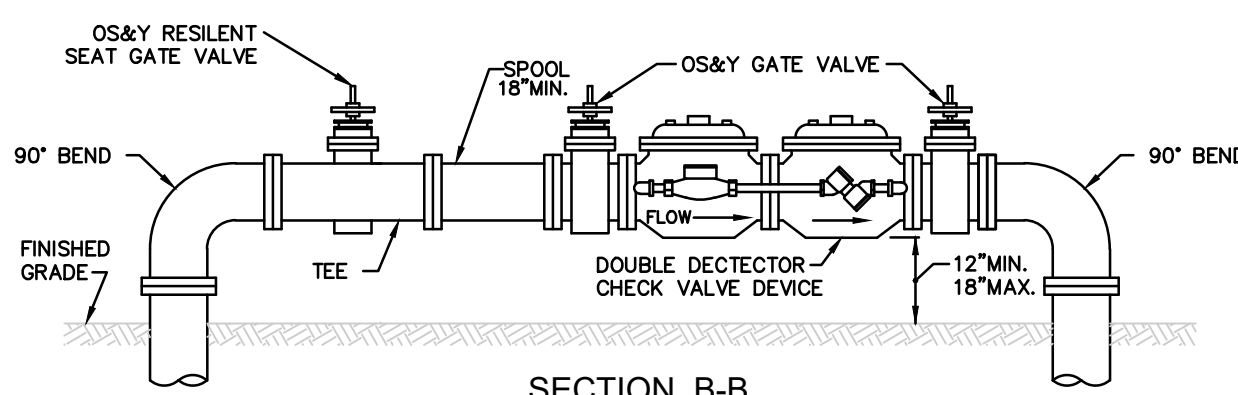
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37



PLAN VIEW



SECTION A-A
(DOMESTIC SUPPLY PORTION)



SECTION B-B
(FIRE SERVICE PORTION)

**WATER METER / BACKFLOW PREVENTION ASSEMBLY
- FIRE SERVICE w/ DOMESTIC SUPPLY**

NOTES:

1. LANDSCAPING REQUIRED PER CITY OR COUNTY ORDINANCE. NO PLANTS OR TREES WITHIN 18" AROUND METER TO ALLOW MAINTENANCE WITHOUT DAMAGE TO PLANTS ETC.
2. NO SOLDER JOINTS.

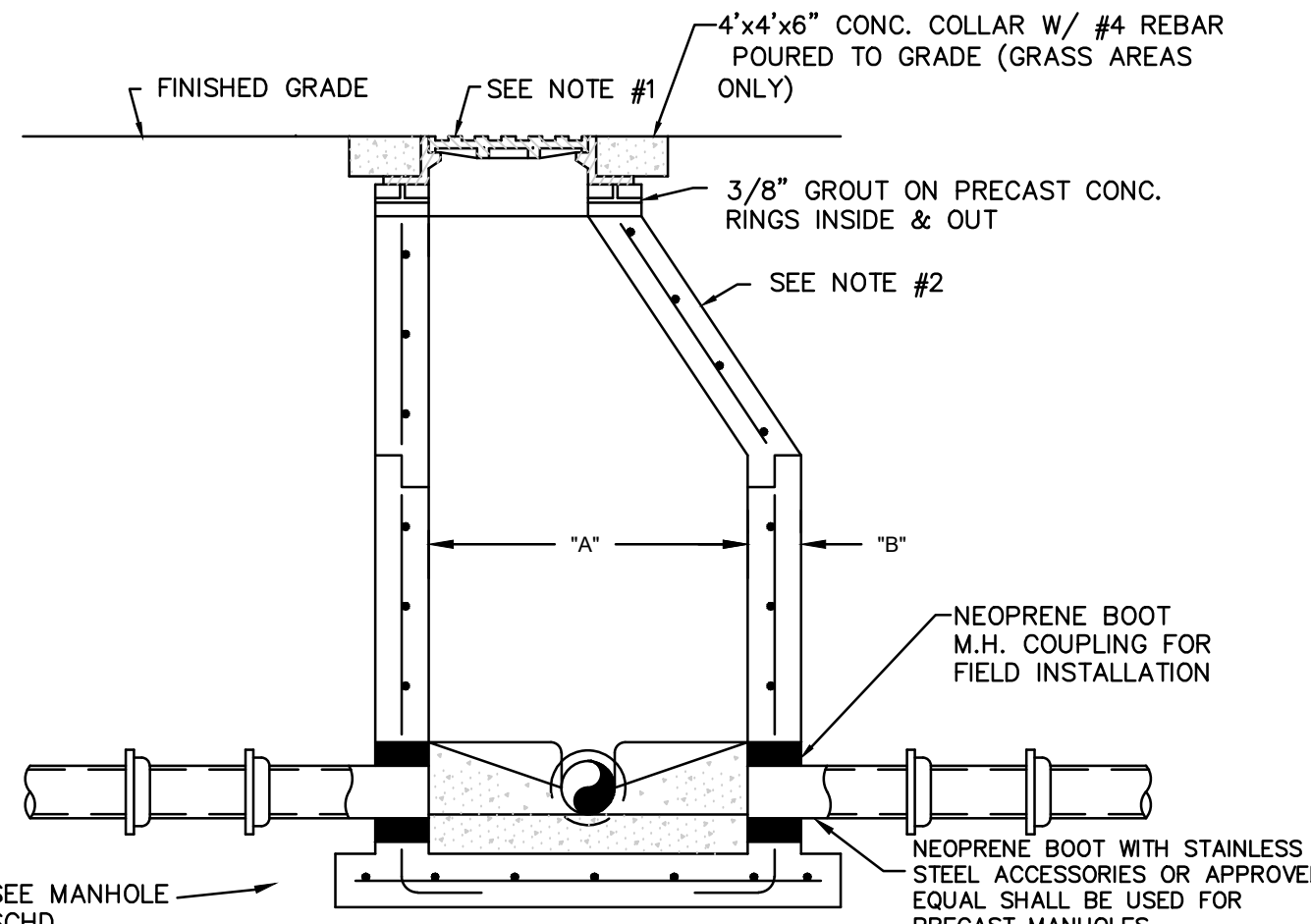


STANDARD UTILITY DETAILS
City of Stuart
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BACKFLOW PREVENTION ASSEMBLY

DATE: OCTOBER 2021
FILE NAME: 2021 COS Std Details.dwg

SHEET NUMBER
33

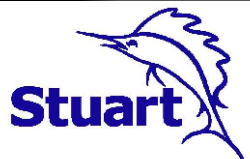


TYPICAL MANHOLE DIMENSIONS

STANDARD MANHOLE

NOTES:

1. MANHOLE FRAME & COVER SHALL BE GRAY CAST IRON, TRAFFIC RATED, HEAVY DUTY ASTM A48, CLASS 30 WITH THE WORDS " SANITARY SEWER" CAST IN THE COVER. U.S. FOUNDRY 170 OR APPROVED EQUAL.
2. ALL CONCRETE MANHOLES TO BE 4000 P.S.I. AFTER TWENTY-EIGHT (28) DAYS TO MEET OR EXCEED ASTM C478. ALL CEMENT TO BE TYPE II ACID RESISTANT. REINFORCING AREA OF 0.02 SQ. IN/FT FOR WALL SECTION MIN. TO MEET OR EXCEED ASTM A185.
3. A MAXIMUM OF 2 LAYERS OF PRECAST CONCRETE RINGS, IF REQUIRED.
4. RAIN GUARDS SHALL BE INSTALLED IN MANHOLES.
5. ALL MANHOLES SHALL RECEIVE TWO (2) COATS, INSIDE AND OUTSIDE, W/ 4-5 MILS EACH OF 100% WATER BASED EPOXY.

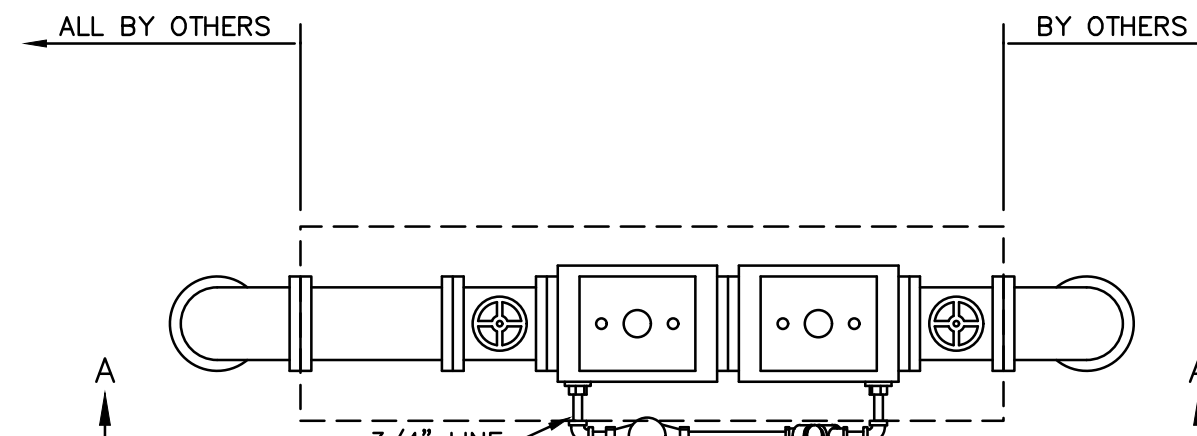


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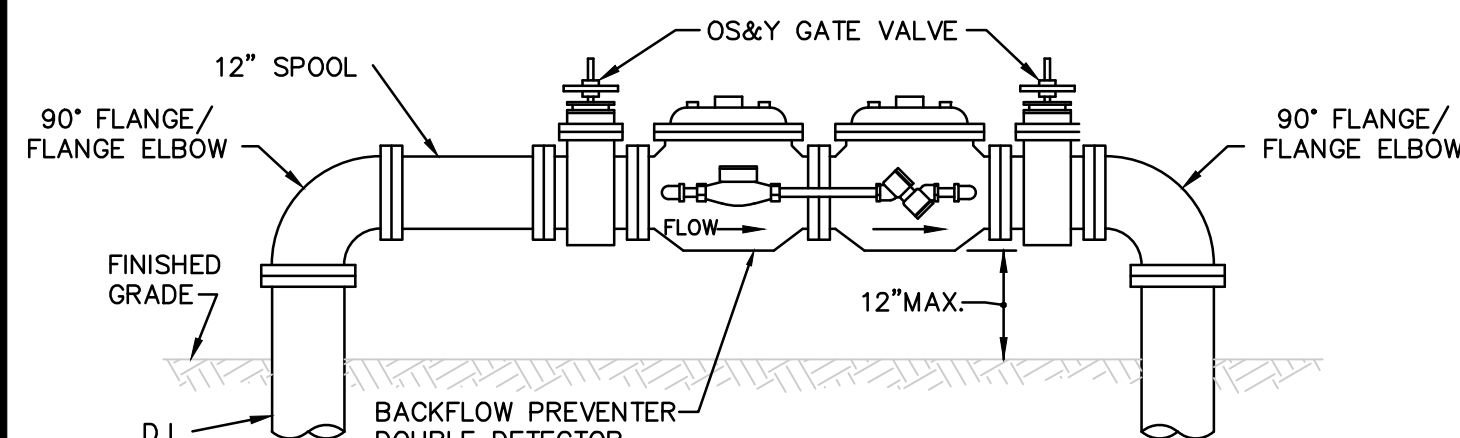
STANDARD MANHOLE

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FILE NAME: 2021 COS Std Details.dwg

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38



PLAN VIEW



SECTION A-A

**DOUBLE CHECK VALVE
w/ DETECTOR CHECK ASSEMBLY / FIRE SERVICE**

NOTE:

LANDSCAPING IS REQUIRED PER CITY OR COUNTY ORDINANCE. PLANTINGS MUST SCREEN AT PLANT HEIGHT, NO GROW IN PERIOD.

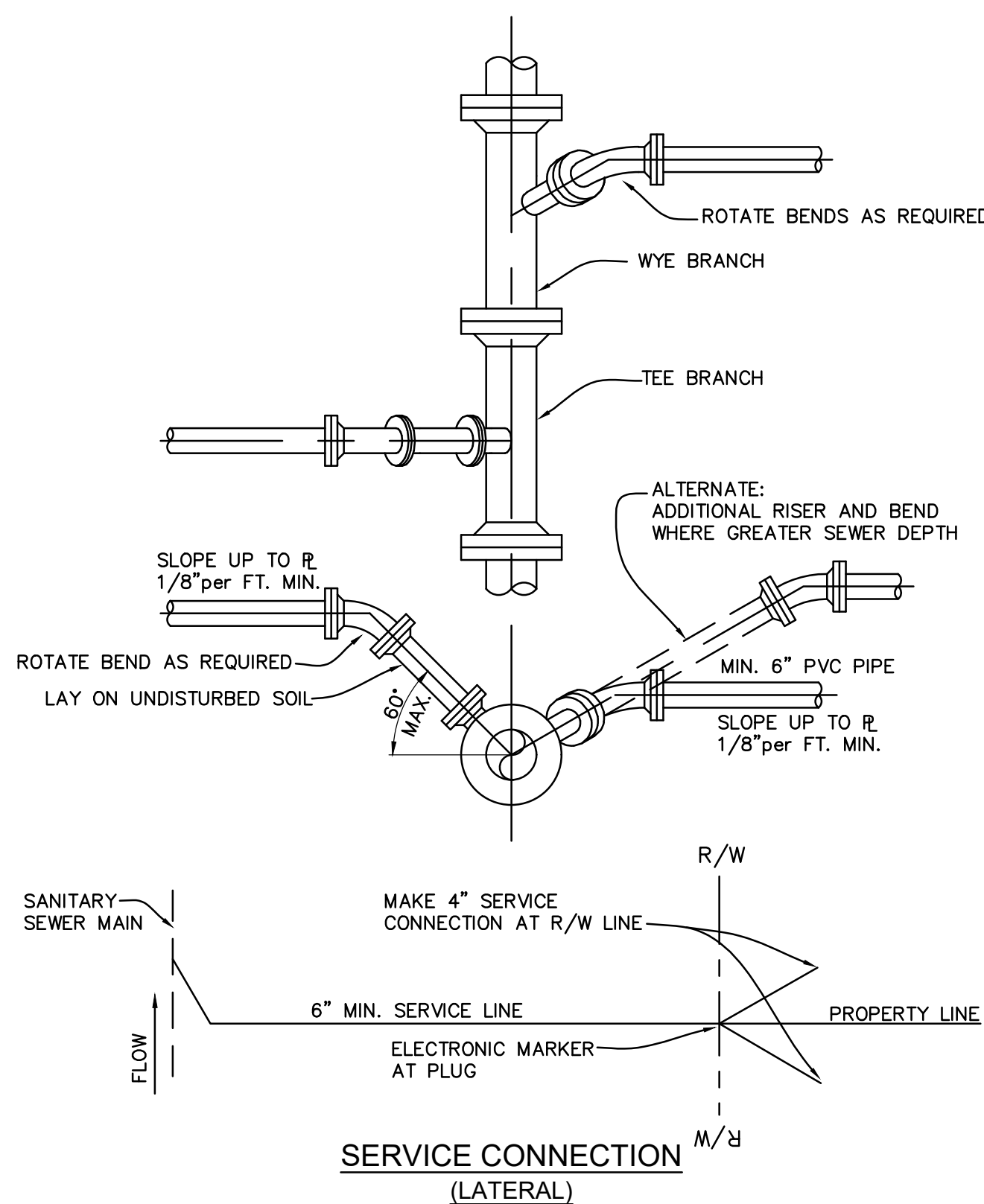


STANDARD UTILITY DETAILS
City of Stuart
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BACKFLOW PREVENTION ASSEMBLY

DATE: OCTOBER 2021
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34



NOTE:

SERVICE LATERALS SHALL TERMINATE AT PROPERTY LINE AT A DEPTH OF 3', PLUGGED WATERTIGHT AND MARKED WITH 2"x2" TREATED STAKE AND ELECTRONIC MARKER.




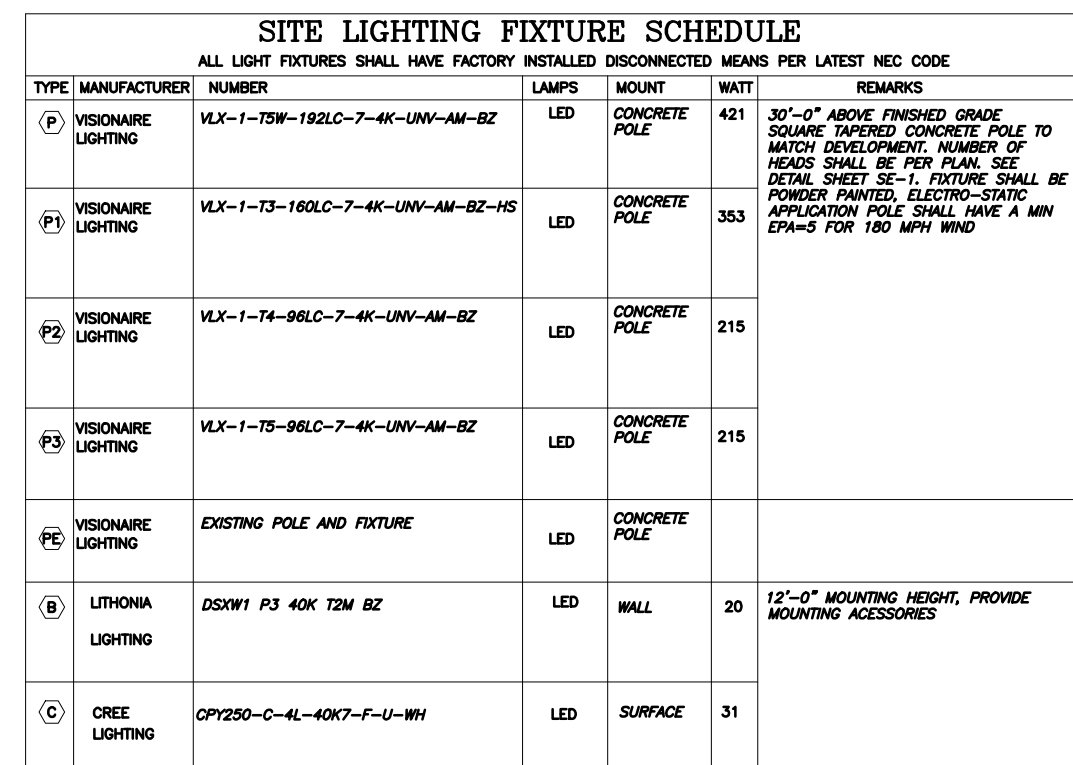
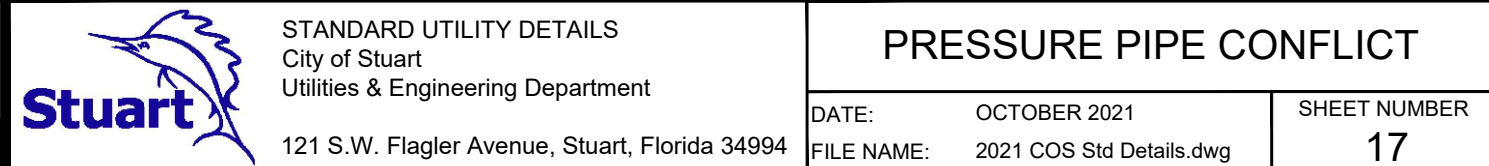
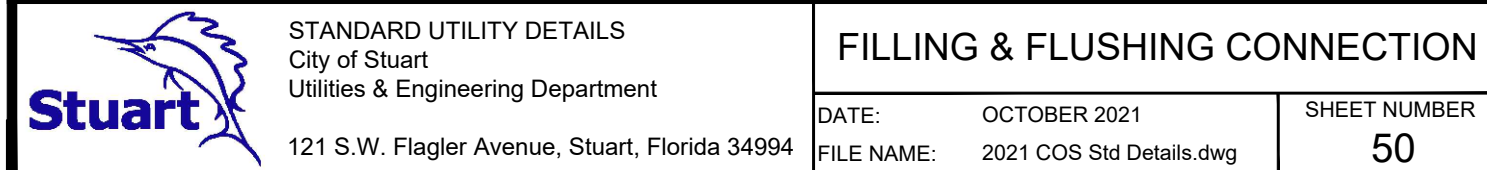
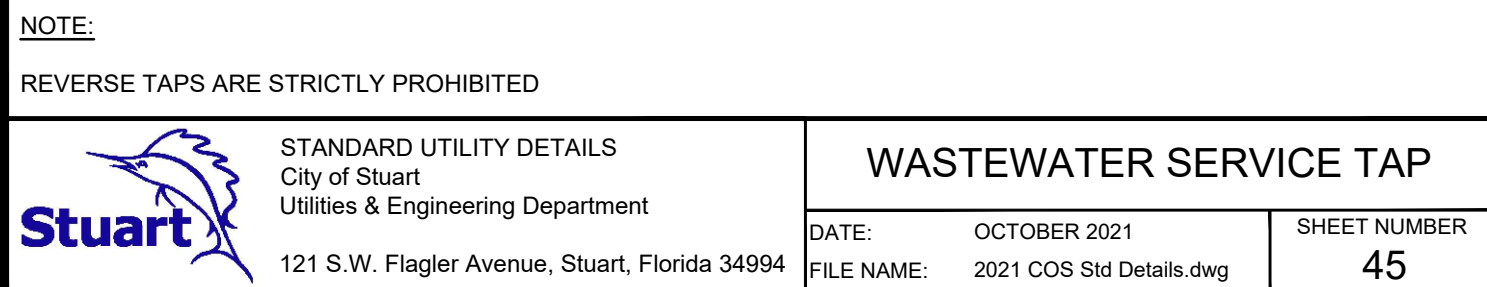
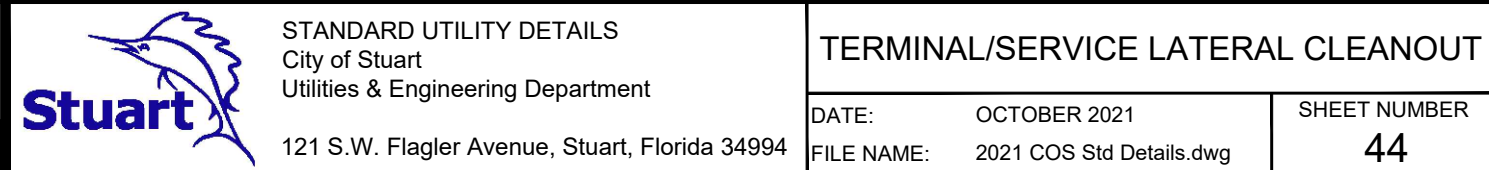
STANDARD UTILITY DETAILS
City of Stuart
Utilities & Engineering Department
121 S.W. Flagler Avenue, Stuart, Florida 34994

SERVICE CONNECTION

DATE: OCTOBER 2021
FILE NAME: 2021 COS Std Details.dwg

SHEET NUMBER
42

REV	DATE	DESCRIPTION	BY	CHK				
DRAWING ISSUE STATUS								
NOT FOR CONSTRUCTION								
			<div>A DIVISION OF HALEY WARD, INC.</div> <div>10250 Village Parkway, Suite 201 Port Saint Lucie, Florida 34987 772.462.2455</div>					
WWW.HALEYWARD.COM								
PROJECT								
KANNER CPUD PHASE 1C STUART								
TITLE								
UTILITY DETAILS								
			DATE		SCALE			
			2025.03.25		AS SHOWN			
			DRAWN BY		DESIGNED BY		CHECKED BY	
			----		----		----	
			PROJECT No.					
			21-397 ENGINEERING R2.DWG					
DAVID C. BAGGETT, P.E. (DATE) #81375 10250 SW VILLAGE PARKWAY - SUITE 201 PORT SAINT LUCIE, FL 34987 772-462-2455			DRAWING No.				REV.	
			C-505					



FILE LOCATION: Z:\EDC-2021\21-397 - M&M REALTY - KANNER - COMMERCIAL CTR - PHASE 1\ENGINEERING\AUTOCAD\DWGS\21-397 ENGINEERING R2.DWG, 2025-03-26, 9:27 AM

GENERAL NOTES

1. ANY DISCREPANCIES ON THE DRAWINGS SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER BEFORE COMMENCING WORK. NO FIELD CHANGE OR DEVIATIONS FROM THE DESIGN ARE TO BE MADE WITHOUT PRIOR APPROVAL OF THE ENGINEER.

2. THE CONTRACTOR SHALL CONTACT ENGINEER OF RECORD, THE APPROPRIATE GOVERNMENTAL JURISDICTIONAL AGENCY AND ALL OTHER CONCERNED UTILITIES AT LEAST 21 BUSINESS DAYS IN ADVANCE OF CONSTRUCTION OPERATIONS.

3. THE LOCATION AND SIZE OF ALL EXISTING UTILITIES SHOWN ON THE PLANS ARE APPROXIMATE AND ARE BASED ON THE BEST AVAILABLE INFORMATION. ADDITIONAL UTILITIES MAY EXIST WHICH ARE NOT SHOWN ON THE PLANS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PHYSICALLY LOCATING ALL UTILITIES PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL VERIFY ALL UTILITIES BY ELECTRONIC METHODS AND BY HAND EXCAVATION IN COORDINATION WITH ALL UTILITY COMPANIES. PRIOR TO BEGINNING ANY CONSTRUCTION OPERATIONS, ANY AND ALL CONFLICTS OF EXISTING UTILITIES WITH PROPOSED IMPROVEMENTS SHALL BE RESOLVED BY THE ENGINEER AND THE OWNER PRIOR TO BEGINNING ANY CONSTRUCTION OPERATIONS. THIS WORK BY THE CONTRACTOR SHALL BE CONSIDERED INCIDENTAL TO THE CONTRACT AND NO ADDITIONAL COMPENSATION SHALL BE ALLOWED.

4. PROJECT SUPERINTENDENT: THE CONTRACTOR SHALL PROVIDE A QUALIFIED SUPERINTENDENT TO REMAIN ON THE JOB SITE AT ALL TIMES WHEN WORK IS BEING PERFORMED. THE SUPERINTENDENT SHALL BE PRESENT AT THE PRE-CONSTRUCTION MEETING. THE CONTRACTOR SHALL NOTIFY THE OWNER BY LETTER, PRIOR TO THE PRE-CONSTRUCTION MEETING, APPOINTING THE SUPERINTENDENT FOR THIS PROJECT INCLUDING A FORMAL RESUME SHOWING QUALIFICATIONS.

5. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO ENSURE HIS COMPLETE FAMILIARITY WITH THE PROJECT SITE AND COMPONENTS TO INCLUDE SUBSURFACE CONDITIONS OF SOIL AND GROUNDWATER TABLE. BY SUBMITTAL OF A BID FOR THIS PROJECT, THE CONTRACTOR ACKNOWLEDGES HIS COMPLETE UNDERSTANDING AND RESPONSIBILITIES WITH RESPECT TO THE CONSTRUCTION ACTIVITIES REQUIRED UNDER THE SCOPE OF THIS PROJECT.

6. THE "TRENCH SAFETY ACT" SHALL BE INCORPORATED INTO THIS CONTRACT AS ENHANCED BY THE LEGISLATURE OF THE STATE OF FLORIDA TO BE IN EFFECT AS OF OCTOBER 1, 1990.

7. AS-BUILT PLANS: THE CONTRACTOR SHALL PROVIDE ONE (1) REPRODUCIBLE MYLAR COPY, FIFTEEN (15) BLACK LINE COPIES AND ONE (1) DIGITAL FORMAT OF A CERTIFIED AS-BUILT SURVEY. DRAWINGS SHALL BEAR THE ORIGINAL SIGNATURE AND EMOSSUED SEAL OF THE SURVEYOR AND SHALL BE SUBMITTED AFTER THE COMPLETION OF CONSTRUCTION, BUT PRIOR TO FINAL APPROVAL. THE AS-BUILT SURVEY SHALL BE PREPARED IN PLAN AND PROFILE FORMAT BY A LICENSED PROFESSIONAL LAND SURVEYOR REGISTERED IN THE STATE OF FLORIDA AND SHALL COMPLY WITH APPLICABLE PROVISIONS OF THE FLORIDA ADMINISTRATIVE CODE AND CHAPTER 472 OF THE FLORIDA STATUTES. THE DRAWINGS SHALL BE AT A SCALE COMPARABLE TO THE DESIGN DRAWINGS PREPARED BY THE ENGINEER AND SHALL REFERENCE THE BASE LINE OF SURVEY APPEARING ON THE ENGINEERING DRAWINGS. THE HORIZONTAL AND VERTICAL LOCATION OF THE ROADWAYS, DRAINAGE FACILITIES AND ALL APPURTENANCES SHALL BE ACCURATELY DEPICTED TO SCALE AND SHALL BE IDENTIFIED RELATIVE TO THE BASE LINE AND TO READILY IDENTIFIABLE PERMANENT OR SEMI-PERMANENT REFERENCE POINTS EXISTING AFTER THE COMPLETION OF CONSTRUCTION. LOCATIONS SHALL BE SHOWN FOR ALL FITTINGS, VALVES, HYDRAULIC MANHOLES, SAMPLE POINTS, AIR RELEASES, ETC., BOTH HORIZONTAL AND VERTICAL, AND THE LOCATION OF THE MAIN AT EACH BASELINE STATION AS SHOWN ON THE PLANS (100 FEET MAXIMUM) HORIZONTAL AND VERTICAL. UNDERGROUND FACILITIES (I.E. DRAINAGE, GAS, ELECTRIC, TELEPHONE, ETC.) CROSSING THE MAINS SHALL BE ACCURATELY SHOWN BOTH HORIZONTAL AND VERTICAL AND SHALL IDENTIFY SIZE, TYPE, FACILITY, MATERIAL AND CLEARANCE. ALL INFORMATION SHALL BE BASED UPON MEASUREMENTS AND OBSERVATIONS MADE IN THE FIELD BY THE SURVEYOR CERTIFYING THE SURVEY OR BY PERSONNEL UNDER HIS EMPLOYMENT, DIRECTION AND SUPERVISION. THE COST FOR PREPARING AND MAINTAINING THE AS-BUILT PLANS SHALL BE INCIDENTAL TO THE CONSTRUCTION COST.

8. THE CONTRACTOR SHALL PREPARE A PLAN SHOWING THE SCHEDULE OF WORK, INCLUDING A HIGHLIGHTED PLAN SHOWING THE ORDER OF CONSTRUCTION WHICH WILL FACILITATE MAINTAINING EXISTING SERVICES DURING CONSTRUCTION. THIS PLAN SHALL BE IN ACCORDANCE WITH THE FLORIDA DEPARTMENT OF TRANSPORTATION MAINTENANCE OF TRAFFIC AND STAGING PLAN.

9. ALL CONSTRUCTION IS TO BE IN ACCORDANCE WITH FLORIDA DEPARTMENT OF TRANSPORTATION STANDARDS AND SPECIFICATIONS, OR THE LOCAL JURISDICTIONAL MUNICIPALITY, WHICHEVER IS MORE STRINGENT.

10. ALL UNDERGROUND MUNICIPAL UTILITIES, FIBER OPTIC, TELEPHONE, FPL, LOCAL CABLE AND ALL OTHER LOCAL UTILITY COMPANY LOCATIONS SHOWN ARE TAKEN FROM INFORMATION PROVIDED BY THAT UTILITY COMPANY. THESE LOCATIONS HAVE NOT BEEN VERIFIED IN THE FIELD. THE CONTRACTOR IS RESPONSIBLE FOR VERIFYING ALL UTILITY LOCATIONS PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL EXPOSE ALL CROSSINGS WITH PUBLIC & PRIVATE UTILITIES PRIOR TO BEGINNING CONSTRUCTION AND DELIVERY OF PIPE. THE CONTRACTOR SHALL USE EXTREME CAUTION WITHIN THE VICINITY OF PUBLIC & PRIVATE UTILITIES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS. THE UTILITY REPRESENTATIVES DURING CONSTRUCTION IN THE VICINITY OF THEIR FACILITIES EVEN IF A PROFILE OF THE UTILITY FACILITIES IS PROVIDED IN THESE DRAWINGS. THE CONTRACTOR IS RESPONSIBLE FOR CONTACTING THE PUBLIC & PRIVATE UTILITIES AND VERIFYING/OBTAINING THE LOCATIONS OF THESE FACILITIES.

11. ANY NGV20 AND NAVD 88 MONUMENT WITHIN THE LIMITS OF CONSTRUCTION IS TO BE PROTECTED. IF IN DANGER OF DAMAGE, THE CONTRACTOR SHOULD NOTIFY:

GEODETIC INFORMATION CENTER
ATTN: MARK MATTHEW CENTER
ATTN: MGS-192
6001 EXECUTIVE BOULEVARD
ROCKVILLE, MD 20862
TELEPHONE: (301) 443-8319

CITY OF STUART
PUBLIC WORKS DEPARTMENT

12. CONTRACTOR TO UTILIZE "APPROVED FOR CONSTRUCTION" PLANS ONLY. ANY PLANS NOT "APPROVED FOR CONSTRUCTION" SHALL BE CONSIDERED PRELIMINARY AND SHOULD NOT BE USED FOR BIDDING OR CONSTRUCTION.

13. SHOP DRAWINGS FOR ALL STRUCTURES SHALL BE SUBMITTED TO ENGINEER FOR REVIEW AND APPROVAL PRIOR TO ORDERING.

14. SHOP DRAWINGS ARE REQUIRED ON ALL STRUCTURES. THE ENGINEER REQUIRES FIVE (5) BUSINESS DAYS TO REVIEW SHOP DRAWINGS AFTER RECEIPT. ADDITIONAL TIME MAY BE REQUIRED IF LOCAL GOVERNMENT OR MUNICIPALITIES REQUIRE AN INTERNAL REVIEW AND APPROVAL PROCESS.

15. CONCRETE SHALL BE CLASS 1 - 3000 PSI MINIMUM COMPRESSIVE STRENGTH UNLESS NOTED OTHERWISE. REINFORCING SHALL BE GRADE 60 DEFORMED STEEL BARS IN ACCORDANCE ASTM A-615.

16. CONTRACTOR SHALL PROTECT ALL EXISTING ABOVE OR UNDERGROUND STRUCTURES, LANDSCAPE FEATURES, TREES AND UTILITIES NOT SHOWN ON THE PLANS. THE CONTRACTOR SHALL REPAIR OR REPLACE ANY ITEM DAMAGED BY CONSTRUCTION ACTIVITY TO MEET ALL APPLICABLE CURRENT CODES. ANY REPAIRED/REPLACED ITEMS ARE SUBJECT TO REVIEW AND APPROVAL BY APPLICABLE LOCAL JURISDICTIONAL AGENCY.

17. ALL PROPOSED UTILITY MATERIALS, CONSTRUCTION METHODS, TESTING AND DISINFECTION SHALL CONFORM TO THE REQUIREMENTS OF THE CURRENT LOCAL UTILITY COMPANY STANDARDS AND AWWA CURRENT STANDARD. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO OBTAIN AND UTILIZE A CURRENT COPY OF THE LOCAL REGULATING UTILITY COMPANY STANDARDS AND ENSURE ALL CONSTRUCTION IS IN ACCORDANCE WITH THEIR STANDARDS. ANY CONFLICT WITH THE CONSTRUCTION DRAWINGS AND THE LOCAL UTILITY COMPANY SHALL BE RESOLVED UTILIZING THE MOST STRINGENT DIRECTIONS.

18. ALL HORIZONTAL AND VERTICAL SURVEY CONTROL POINTS SHALL BE PROTECTED AND UNDISTURBED. IN THE EVENT THAT A CONTROL POINT IS DISTURBED OR DESTROYED, THE POINT SHALL BE RE-ESTABLISHED BY A FLORIDA REGISTERED LAND SURVEYOR. THE METHOD TO RE-ESTABLISH THE POINT SHALL BE APPROVED BY THE CITY/COUNTY ENGINEER AT THE EXPENSE OF THE CONTRACTOR.

19. THE CONTRACTOR SHALL PREPARE A COMPLETE VIDEO RECORD OF THE PROJECT SITE BEFORE BEGINNING ANY WORK. THE VIDEO RECORD SHALL INCLUDE ALL ROADWAY, DRAINAGE AND UTILITIES POINTS OF CONNECTION AND SHALL EXTEND A MINIMUM OF 1800 FEET BEYOND THE WORK LIMITS TO DOCUMENT THE EXISTING CONDITIONS. THE CONTRACTOR SHALL ALSO VIDEO DOCUMENT ALL HAIL ROUTES REQUIRED FOR THE OFF-SITE MOVEMENT OF EARTHWORK. COPIES OF THE VIDEO RECORD SHALL BE PROVIDED TO THE ENGINEER OF RECORD AND THE OWNER PRIOR TO SUBMITTAL OF THE FIRST PAY REQUEST. IF DAMAGE TO EXISTING INFRASTRUCTURE IS RECOGNIZED DURING THE COURSE OF THE PROJECT AND CANNOT BE IDENTIFIED AS A PRE-CONSTRUCTION CONDITION ON THE VIDEO RECORD, THE CONTRACTOR MAY BE REQUIRED TO MAKE PROPER REPAIRS.

20. THE CONTRACTOR SHALL VIDEO TAPE THE EXTERIOR AND REAR YARDS OF ALL HOUSES / BUSINESSES IN THE PROJECT AREA.

PAVING, GRADING AND DRAINAGE NOTES

1. ALL UNSUITABLE MATERIALS, SUCH AS MUCK, ORGANIC MATERIAL AND OTHER DELETERIOUS MATERIAL AS CLASSIFIED BY AASHTO M-808, SHOULD BE REMOVED DOWN TO ROCK OR SUBGRADE MATERIAL, AND REPLACED WITH THE SPECIFIED FILL MATERIAL. IN MAXIMUM 12 INCH LIFTS COMPACTED TO NOT LESS THAN 100% MAXIMUM DRY DENSITY AT OPTIMUM MOISTURE IN ACCORDANCE WITH AASHTO T-99. THICKNESS OF LAYERS MAY BE INCREASED, PROVIDED THAT THE EQUIPMENT AND METHODS USED ARE PROVEN BY FIELD DENSITY TESTING AND CAPABLE OF COMPACTING THICK LAYERS TO SPECIFIED DENSITIES.

2. ALL AREAS SHALL BE CLEARED AND GRUBBED PRIOR TO CONSTRUCTION. THIS SHALL CONSIST OF THE COMPLETE REMOVAL AND DISPOSAL OF ALL TREES, BRUSH, STUMPS, GRASS, WEEDS, RUBBISH AND ALL OTHER OBSTRUCTIONS RESTING ON, OR PROTRUDING THROUGH THE SURFACE OF THE EXISTING GROUND TO A DEPTH OF ONE (1) FOOT. ITEMS DESIGNATED TO REMAIN, TO BE RELOCATED, OR TO BE ADJUSTED SHALL BE SO DESIGNATED ON THE DRAWINGS.

3. FILL MATERIAL SHALL BE CLASSIFIED AS A-1, A-3, OR A-2-4 IN ACCORDANCE WITH AASHTO M-145 AND SHALL BE FREE FROM VEGETATION AND ORGANIC MATERIAL NOT MORE THAN 12% BY WEIGHT OF FILL MATERIAL. SHALL PASS THE NO. 200 SIEVE.

4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING CERTIFIED MATERIAL. TEST RESULTS TO THE ENGINEER OF THE RECORD PRIOR TO THE RELEASE OF FINAL CERTIFICATION BY THE ENGINEER. TEST RESULTS MUST INCLUDE, BUT NOT BE LIMITED TO, DENSITIES FOR SUBGRADE AND BASE DENSITIES AT UTILITY CROSSINGS, MANHOLES, INLETS AND STRUCTURES. TEST SHALL INCLUDE ASPHALT GRADATION REPORTS, CONCRETE CYLINDERS, ETC. DENSITY TESTS SHALL BE PERFORMED AT VARIOUS LOCATIONS AROUND THE STRUCTURE. THE STRIPES SHALL BE PLACED AT THE BOTTOM OF THE STRUCTURE AND THEN EVERY TWO FEET TO WITHIN TWO FEET OF THE FINISH GRADE. THESE DENSITY REQUIREMENTS ARE THE MINIMUM. THE CONTRACTOR SHALL VERIFY DENSITY REQUIREMENTS AND PROTOCOLS WITH THE LOCAL APPROVING AUTHORITY PRIOR TO CONSTRUCTION OR BIDDING OF THE PROJECT.

5. ALL INLETS AND PIPE SHALL BE PROTECTED DURING CONSTRUCTION TO PREVENT SILTATION IN THE DRAINAGE SYSTEMS BY WAY OF TEMPORARY PLUGS AND PLASTIC COVERS OVER THE INLETS. THE ENTIRE DRAINAGE SYSTEM SHALL BE CLEARED OF ALL DEBRIS PRIOR TO FINAL ACCEPTANCE. ALL CONCRETE SHALL BE A MINIMUM 3000 PSI. SOME LOCAL GOVERNMENT STORMWATER PROJECTS MAY REQUIRE TELEVISION OF THE STORM SEWER. CONTRACTOR SHOULD BE KNOWLEDGEABLE OF THIS REQUIREMENT PRIOR TO BIDDING OF THE PROJECT.

6. ALL PROPOSED ELEVATIONS REFER TO FINISHED GRADES.

7. THE CONTRACTOR MUST OBTAIN A WATER USE PERMIT PRIOR TO CONSTRUCTION DEWATERING UNLESS THE WORK QUALIFIES FOR A GEOTECHNICAL PERMIT PURSUANT TO SUBSECTION 46C.03(2)(A), F.A.C.

STORM SEWER NOTES

1. STANDARD SEPARATION FOR ALL WATER AND/OR WASTEWATER MAINS, HORIZONTAL AND VERTICAL, SHALL BE PER PED REQUIREMENTS, PROVISIONS OF F.A.C. RULE 62.004 AND TEN STATES STANDARD OR LOCAL MUNICIPALITIES, WHICHEVER IS MORE STRINGENT.

2. ALL DISTURBED OUTFALL DRAINAGE AREAS SHALL BE SOODED UPON COMPLETION OF GRADING AFTER AS-BUILT GRADE ELEVATIONS ARE APPROVED BY THE ENGINEER.

3. PRIOR TO FINAL PAYMENT FOR RETENTION, DETENTION AND DRAINAGE DITCH QUANTITIES, ALL SLOPES AND SWALES SHALL BE SOODED TO AVOID EROSION.

4. THERE IS TO BE NO OFF-SITE HAULING WITHOUT PRIOR APPROVAL AND ALL EXCAVATED MATERIAL SHALL BE USED ON-SITE. COORDINATION WITH THE OWNER IS REQUIRED FOR THE REMOVAL OF ANY UNSUITABLE MATERIALS.

5. THE CONTRACTOR SHALL CONSTRUCT THE STORMWATER MANAGEMENT SYSTEM IN A MANNER SO AS TO MINIMIZE ANY ADVERSE IMPACTS ON THE WORKS ON FISH, WILDLIFE, NATURAL ENVIRONMENT AND WATER QUALITY. ANY ON-OFF-SITE, THE CONTRACTOR SHALL INSTITUTE NECESSARY MEASURES DURING THE CONSTRUCTION PERIOD, INCLUDING FULL COMPACTION OF ANY FILL MATERIAL PLACED AROUND NEWLY INSTALLED STRUCTURES TO REDUCE EROSION, TURBIDITY, NUTRIENT LOADING AND SEDIMENTATION IN THE RECEIVING WATERS.

6. WITHIN THIRTY (30) DAYS AFTER COMPLETION OF CONSTRUCTION OF THE SURFACE WATER MANAGEMENT SYSTEM, THE CONTRACTOR SHALL ASSESS THE STORMWATER ENGINEER TO PROVIDE A WRITTEN STATEMENT OF COMPLETION AND CERTIFICATION BY A FLORIDA PROFESSIONAL ENGINEER. THESE STATEMENTS MUST SPECIFY THE ACTUAL DATE OF CONSTRUCTION COMPLETION AND MUST CERTIFY THAT ALL FACILITIES HAVE BEEN CONSTRUCTED IN SUBSTANTIAL CONFORMANCE WITH THE PLANS AND SPECIFICATIONS. THE CONSTRUCTION COMPLETION CERTIFICATION MUST INCLUDE, AT A MINIMUM EXISTING ELEVATIONS, LOCATIONS AND DIMENSIONS OF THE COMPONENTS OF THE SURFACE WATER MANAGEMENT FACILITIES. ADDITIONALLY, IF DEVIATIONS FROM THE APPROVED DRAWINGS ARE DISCOVERED DURING THE CERTIFICATION PROCESS, THE CERTIFICATION MUST BE ACCOMPANIED BY A COPY OF THE APPROVED PERMIT DRAWINGS WITH DEVIATIONS NOTED. SEE ALSO AS-BUILT REQUIREMENTS.

7. A STABLE PERMANENT AND ACCESSIBLE ELEVATION REFERENCE SHALL BE ESTABLISHED ON OR WITHIN ONE HUNDRED (100) FEET OF ALL PERMITTED DISCHARGE STRUCTURES NO LATER THAN THE SUBMISSION OF THE CERTIFICATION TO THE WATER MANAGEMENT DISTRICT. THE LOCATION OF THE ELEVATION REFERENCE MUST BE NOTED ON OR WITHIN THE CERTIFICATION REPORT.

8. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE CORRECTION OF ANY EROSION OR SHOALING OF THE WATER QUALITY MANAGEMENT SYSTEM.

9. INLETS (425 / 430) INCLUDES THE LIST OF MATERIALS / INSTALLATION / DEWATERING STABILIZATION / AS-BUILT SURVEYING / TESTING. ALL STRUCTURES WILL REQUIRE THREE (3) COMPACTION TESTS AT DIFFERENT LOCATIONS AND UNDER STRUCTURES OR PER LOCAL APPROVING AUTHORITY, WHICHEVER IS MORE STRINGENT.

10. PIPE CULVERTS AND STORM SEWERS SHALL BE CONSTRUCTED AND INSTALLED IN ACCORDANCE WITH SECTION 430 FOOT STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION.

11. HOPE (HIGH DENSITY POLYETHYLENE) CULVERT SHALL BE N-12 INSTALLED PER MANUFACTURER RECOMMENDATIONS. MANUFACTURER IS A.S. (ADVANCED DRAINAGE SYSTEMS, INC.) AIR ENTRENCHED PIPE.

12. REINFORCED CONCRETE PIPE SHALL BE ASTM C-76 CLASS III IN ACCORDANCE WITH SECTION 941 OF THE FDOT STANDARD SPECIFICATIONS.

FILTER FABRIC (STORM PIPE JOINTS)

THE CONTRACTOR SHALL WRAP ALL STORM PIPE JOINTS. CONSTRUCTION SHALL BE PER F.D.O.T. INDEX NO. 280 WITH WOVEN GEOTEXTILE TYPE D-3 (D.O.T. INDEX NO. 199), SECURED W/ STRAPPING. ALL JOINTS SHALL BE WRAPPED FOR A MINIMUM OF 180 INCHES FROM THE BAND OR JOINT OR BELL AND SPIGOT AS APPLICABLE.

DEWATERING

STORM SEWER PIPES AND STRUCTURES AND UTILITIES SHALL BE LAID "IN THE DRY", UNLESS OTHERWISE APPROVED IN WRITING BY THE UTILITY AND ENGINEER. INSPECTION AND REPAIR ARE REQUIRED FOR ALL EXPOSED AREAS SHALL BE PERFORMED BY THE UTILITY COMPANY. TRENCH EXCAVATIONS SHALL BE DEWATERED BY USING ONE OR MORE OF THE FOLLOWING METHODS: SOCK DRAINS, WELL POINT SYSTEM, PUMP SUMPS OR OTHER METHODS AS APPROVED BY THE ENGINEER. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS. THE DEWATERING METHOD SHALL BE SUFFICIENT ENOUGH TO LOWER THE WATER LEVEL IN ADVANCE OF THE EXCAVATION AND MAINTAIN IT CONTINUOUSLY TO KEEP THE TRENCH DRY AND SHALL BE UTILIZED IN ACCORDANCE WITH GOOD STANDARD PRACTICE AND SHALL BE PROVIDED AT INTERVALS AT THE SIDE OF THE MAIN TRENCH EXCAVATION, WITH PUMPS USED TO LOWER THE WATER LEVEL BY TAKING THEIR SUCTION FROM SAND SUMPS. DISCHARGE FROM DEWATERING SHALL BE DISPOSED OF IN SUCH A MANNER THAT IT WILL NOT INTERFERE WITH NORMAL DRAINAGE OF THE AREA IN WHICH THE WORK IS BEING PERFORMED. CREATE A PUBLIC NUISANCE OR PESTAGE SHALL BE IN ACCORDANCE WITH THE TRENCH EXCAVATION. THE OPERATIONS SHALL NOT CAUSE INJURY TO ANY PORTION OF THE WORK COMPLETED OR IN PROGRESS OR TO THE SURFACE OF STREETS OR TO PRIVATE PROPERTY. THE ENGINEER OF RECORD AND NECESSARY REGULATORY AGENCIES, PRIOR TO CONSTRUCTION, SHALL APPROVE THE PROPOSED DEWATERING METHODS AND SCHEDULE. ADDITIONALLY, WHERE PRIVATE PROPERTY WILL BE INVOLVED, THE CONTRACTOR SHALL OBTAIN ADVANCE PERMISSION FROM THE PROPERTY OWNER.

CONFLICTS

IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO BECOME ACQUAINTED WITH EXISTING CONDITIONS AND TO LOCATE STRUCTURES AND STORM PIPES ALONG THE PROPOSED STORM PIPE ALIGNMENT IN ORDER TO AVOID CONFLICTS. WHERE ACTUAL CONDITIONS ARE UNAVOIDABLE, WORK SHALL BE COORDINATED WITH THE FACILITY OWNER AND PERFORMED SO AS TO CAUSE AS LITTLE INTERFERENCE AS POSSIBLE WITH THE SERVICE RENDERED BY THE FACILITY. DISTURBED, ALL AFFECTED UTILITIES SHALL BE NOTIFIED PRIOR TO EXCAVATION IN THEIR VICINITY. CONTRACTOR TO POTENTIAL CONFLICTS OF EXISTING UTILITIES AND PROPOSED IMPROVEMENTS AT LEAST 10 DAYS PRIOR TO CONSTRUCTION TO CONFIRM CONFLICT RESOLUTION SHOWN ON THE PLANS.

SOD

1. THE SOD SHALL BE CERTIFIED TO MEET FLORIDA STATE PLANT BOARD SPECIFICATIONS, ABSOLUTELY TRUE TO VARIETAL TYPE AND FREE FROM DISEASE AND DISEASE OF ANY KIND. ALL SOODED AREAS SHALL BE GRASSED AS SPECIFIED ON PLANS AND SURVIVAL GUARANTEED FOR NINETY DAYS FROM DATE OF REPLACEMENT. SURVIVAL OF ALL RELOCATED TREES SHALL BE GUARANTEED FOR 1 YEAR AFTER TRANSPLANTING.

2. SODDING SHALL CONSIST OF SITE PREPARATION, FURNISHING AND PLACING SOD, STAPLES AND FERTILIZER AND IRRIGATING AT THE RATES AND MANNER DESCRIBED IN THIS SPECIFICATION FOR THE DESIGNATED AREAS.

3. UNLESS NOTED OTHERWISE ON LANDSCAPE PLANS, SOD SHALL BE ARGENTINE BAHIA GRASS AND SHALL BE 12-INCH BY 12-INCH SQUARES OR OTHER COMMERCIALLY AVAILABLE RECTANGLES. THE SOD SHALL BE SUFFICIENTLY THICK (MINIMUM THICKNESS OF 2 INCHES) AND CONTAIN NO FOREIGN OR UNDESIRABLE WEEDS. THE SOD SHALL BE TESTED AND VERIFIED AS PHOSPHORUS DEFICIENT BY THE UF-IFAS EXTENSION OFFICE. ALL FERTILIZER APPLICATION SHALL BE IN ACCORDANCE WITH CITY OF STUART ORDINANCE.

4. FERTILIZER SHALL BE EITHER IN THE LIQUID OR DRY FORM. FERTILIZER SHALL BE UNIFORM IN COMPOSITION, FREE-FLOWING AND SUITABLE FOR APPLICATION WITH STANDARD EQUIPMENT. THE FERTILIZER SHALL CONFORM TO THE FLORIDA FERTILIZER LAWS IN EFFECT ON THE DATE OF IT BEING PLACED AND SHALL BE DELIVERED IN BAGS, BOTTLES, DRUMS, OR OTHER CONVENIENT CONTAINERS, EACH FULLY LABELED AND BEARING THE NAME, TRADEMARK, ANALYSIS, AND WARRANTY OF THE PRODUCT. FERTILIZER SHALL HAVE AN AVAILABLE PLANT FOOD ANALYSIS OF 18-10-0 OR EQUIVALENT PLANT FOOD VALUE AND SHALL BE MIXED WITH THE TOP 3 TO 4 INCHES OF SOIL. FERTILIZER SHALL BE APPLIED AT THE RATE OF 1 POUND PER 1,000 SQ. FT. NOT TO EXCEED 2.4 LBS. PER YEAR. ALL FERTILIZERS MUST BE AT LEAST 5% SLOW RELEASE NITROGEN AND CONTAIN NO PHOSPHORUS UNLESS THE SOD HAS BEEN TESTED AND VERIFIED AS PHOSPHORUS DEFICIENT BY THE UF-IFAS EXTENSION OFFICE. ALL FERTILIZER APPLICATION SHALL BE IN ACCORDANCE WITH CITY OF STUART ORDINANCE.

5. STAPLES FOR SOD PLACED ON SIDE SLOPES 3:1 & STEEPER SHALL BE BLACK RIN WIRE NOT SMALLER THAN 1/4 GAUGE, AND BENT FROM A LENGTH OF WIRE AT LEAST 25 INCHES LONG INTO A "U" WITH A 1 INCH WIDTH AT THE CROWN. COST OF STAPLES SHALL BE INCIDENTAL TO THE SOD UNIT PRICE.

6. WATER USED FOR IRRIGATION MAY BE OBTAINED FROM ANY APPROVED SOURCE. IT SHALL BE FREE OF EXCESS AND HARMFUL CHEMICALS, ACIDS, ALKALIES, OR ANY SUBSTANCE, WHICH IS HARMFUL TO PLANT GROWTH.

7. WHERE SODDING WILL BE DONE, ALL LOOSE ROCK, WOODY MATERIAL, AND OTHER OBSTRUCTIONS THAT WILL INTERFERE WITH SODDING SHALL BE REMOVED AND THE AREA SHALL BE REASONABLY SMOOTH AND UNIFORM. LIME AND FERTILIZER WILL BE APPLIED IN THE SAME QUANTITY AND MANNER AS SPECIFIED BY THE MANUFACTURER.

8. THE SOD STRIPS SHALL BE LAID IN A STAGGERED PATTERN WITH SNOOED EVEN JOINTS. ALL JOINTS SHALL BE BUTTED TIGHT TO PREVENT VOIDS. IMMEDIATELY FOLLOWING SOD PLACEMENT, IT SHALL BE ROLLED OR TAMPED TO INSURE SOLID CONTACT OF ROOT MAT TO SOIL SURFACE. THE SOD SHALL BE SECURELY ANCHORED TO THE SOIL BY PINNING WITH PETALS OR WOODEN PEGS WHEN PLACED ON SLOPES 3:1 OR STEEPER. COST OF STAPLES AND PEGS SHALL BE INCIDENTAL TO THE SOD UNIT PRICE. PIN OR PEG EACH SEPARATE PIECE OF SOD PLACED OR EVERY 3 FEET ALONG EACH CONTINUOUS STRIP OF SOD.

SOIL EROSION PLAN

1. NO POLLUTION OR EROSION CAUSED BY THIS PROJECT WILL BE ALLOWED IN THE STORMWATER DRAINAGE SYSTEM. THE CONTRACTOR SHALL INSTALL ANY DEVICES NECESSARY TO PREVENT POLLUTION OR EROSION. THE COST OF POLLUTION AND EROSION CONTROL SHALL BE INCIDENTAL TO THE COST OF THE CONSTRUCTION.

2. PRIOR TO CONSTRUCTION, THE CONTRACTOR SHALL SUBMIT A SITE SPECIFIC SOIL EROSION CONTROL PLAN. IN GENERAL, THE SOIL EROSION CONTROL PLAN SHALL REQUIRE THAT ALL ON-SITE SOILS WILL REMAIN ON-SITE AND WILL NOT ERODE INTO THE ADJACENT ROADSIDE SWALES. ADJACENT PROPERTIES OR RETENTION DITCHES, ALL EXISTING SWALES SHALL REMAIN SOODED DURING CONSTRUCTION. THE CONTRACTOR SHALL SCARIFY ONLY AS NECESSARY TO CONSTRUCT THE PROJECT. THE CONTRACTOR SHALL SCARIFY AREAS TO PLACE VARIOUS TYPES OF PLANT MATERIAL AFTER PLACEMENT OF THE PIPE. THESE TRENCHES SHALL BE BACKFILLED AND COMPACTED TO 98% MODIFIED PROCTOR AASHTO T-180. PRIOR TO DISCHARGE FROM THE SITE, SILTATION BARRIERS SHALL BE UTILIZED AS PER FLORIDA STORMWATER EROSION & SEDIMENT CONTROL INSPECTORS MANUAL. THE DRAINAGE WHICH OUTFALLS TO THE RETENTION AREAS SHALL BE STABILIZED AND SOODED IMMEDIATELY UPON COMPLETION OF CONSTRUCTION. ANY DEWATERING OR PUMPING OF WATER INTO THE ROADSIDE SWALES SHALL BE PROHIBITED. THE STABILIZATION SHALL BE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS FOR ROADWAY & BRIDGE CONSTRUCTION DATED 2016. UPON COMPLETION OF THE SITE WORK, ALL AREAS SHALL BE SOODED TO AVOID EROSION. CONTRACTOR IS REQUIRED TO COMPLY WITH ALL STATE WATER QUALITY CRITERIA. SPECIFICALLY, NO OFF-SITE DISCHARGES WILL BE ALLOWED WHICH EXCEED THE STATE TURBIDITY CRITERIA.

WATER QUALITY NOTES

1. THE CONTRACTOR MUST MAINTAIN A COPY OF THE LATEST LOCAL WATER MANAGEMENT DISTRICT SURFACE WATER PERMIT, COMPLETE WITH ALL CONDITIONS, ATTACHMENTS, EXHIBITS AND PERMIT MODIFICATIONS IN HAND AT THE CONSTRUCTION SITE. THE COMPLETE PERMIT MUST BE AVAILABLE FOR REVIEW UPON REQUEST BY DISTRICT THEREAFTER. IF LOCAL AGENCY REQUIREMENTS ARE STRICTER, THEY SHALL BE FOLLOWED.

2. ALL ACTIVITIES SHALL BE IMPLEMENTED AS SET FORTH IN THE PLANS, SPECIFICATIONS AND PERFORMANCE CRITERIA AS APPROVED BY LOCAL SURFACE WATER PERMIT. ANY DEVIATION FROM THE PERMITTED ACTIVITY AND THE CONDITIONS FOR UNDERTAKING THAT ACTIVITY SHALL BE CONSIDERED A VIOLATION OF THE PERMIT. PRIOR TO ANY WORK COVERED BY A PERMIT FROM SOUTH FLORIDA WATER MANAGEMENT DISTRICT (SFWMD), A NOTICE OF CONSTRUCTION COMMENCEMENT (FORM 0660) MUST BE SUBMITTED TO SFWMD BY THE PERMITTEE OR AUTHORIZED AGENT.

3. THE LOCAL WATER MANAGEMENT DISTRICT AUTHORIZED STAFF, UPON INSURE IDENTIFICATION, MUST BE GRANTED PERMISSION TO ENTER, INSPECT AND OBSERVE THE SYSTEM TO INSURE CONFORMITY WITH THE PLANS AND SPECIFICATIONS APPROVED BY THE PERMIT.

4. PRIOR TO AND DURING CONSTRUCTION, THE CONTRACTOR SHALL IMPLEMENT AND MAINTAIN ALL EROSION AND SEDIMENT CONTROL MEASURES (BEST MANAGEMENT PRACTICES) REQUIRED TO RETAIN SEDIMENT ON-SITE AND TO PREVENT VIOLATIONS OF STATE WATER QUALITY STANDARDS. ALL PRACTICES MUST BE IN ACCORDANCE WITH THE GUIDELINES AND SPECIFICATIONS IN CHAPTER 6 OF THE FLORIDA LAND DEVELOPMENT MANUAL, A GUIDE TO SOUND LAND AND WATER MANAGEMENT (FLORIDA DEPARTMENT OF ENVIRONMENTAL REGULATIONS 1988), WHICH ARE HEREBY INCORPORATED BY REFERENCE. UNLESS A PROJECT'S SPECIFIC EROSION AND SEDIMENT CONTROL PLAN IS APPROVED AS PART OF THE SFWMD PERMIT, IN WHICH CASE THE PRACTICES MUST BE IN ACCORDANCE WITH THE PLAN. IF SITE'S SPECIFIC CONDITIONS REQUIRE ADDITIONAL MEASURES DURING ANY PHASE OF CONSTRUCTION OR OPERATION TO PREVENT EROSION OR CONTROL SEDIMENT, BEYOND THOSE SPECIFIED IN THE EROSION AND SEDIMENT CONTROL PLAN, THE CONTRACTOR SHALL IMPLEMENT ADDITIONAL BEST MANAGEMENT PRACTICES AS NECESSARY. IN ACCORDANCE WITH THE SPECIFICATIONS IN CHAPTER 6 OF THE FLORIDA LAND DEVELOPMENT MANUAL, A GUIDE TO SOUND LAND AND WATER MANAGEMENT (FLORIDA DEPARTMENT OF ENVIRONMENTAL REGULATION 1988), THE CONTRACTOR SHALL CORRECT ANY EROSION OR SHOALING THAT CAUSES ADVERSE IMPACTS TO THE WATER RESOURCES AT NO ADDITIONAL COST TO OWNER.

5. WITHIN 30 DAYS AFTER COMPLETION OF THE STORMWATER SYSTEM, THE CONTRACTOR MUST ASSIST IN SUBMITTING TO THE SOUTH FLORIDA WATER MANAGEMENT DISTRICT THE FOLLOWING: DISTRICT FORM 0346 (AS-BUILT CERTIFICATION BY A REGISTERED PROFESSIONAL), SIGNED AND SEALED BY AN APPROPRIATE PROFESSIONAL REGISTERED IN THE STATE OF FLORIDA AND TWO SETS OF AS-BUILT DRAWINGS WHEN A) REQUIRED BY A SPECIAL CONDITION OF THIS PERMIT; B) TO THE PROFESSIONAL USES AS-BUILT DRAWINGS TO SUPPORT THE AS-BUILT CERTIFICATION; OR C) WHEN THE COMPLETED SYSTEM SUBSTANTIALLY DIFFERS FROM PERMITTED PLANS. THIS SUBMITTAL WILL SERVE TO NOTIFY THE DISTRICT STAFF THAT THE SYSTEM IS READY FOR INSPECTION AND APPROVAL.

6. STABILIZATION MEASURES SHALL BE INITIATED FOR EROSION AND SEDIMENT CONTROL ON DISTURBED AREAS AS SOON AS PRACTICABLE IN PORTIONS OF THE SITE WHERE CONSTRUCTION ACTIVITIES HAVE TEMPORARY OR PERMANENTLY CEASED, BUT IN NO CASE MORE THAN SEVEN (7) DAYS AFTER THE CONSTRUCTION ACTIVITY IN THAT PORTION OF THE SITE HAS TEMPORARILY OR PERMANENTLY CEASED.

7. THE STORMWATER MANAGEMENT SYSTEM MUST BE COMPLETE IN ACCORDANCE WITH THE PERMITTED PLANS AND PERMIT CONDITIONS PRIOR TO THE INITIATION OF THE PERMITTED USE OF SITE INFRASTRUCTURE. THE SYSTEM MUST BE COMPLETED IN ACCORDANCE WITH THE PERMITTED PLANS AND PERMIT CONDITIONS PRIOR TO TRANSFERRING RESPONSIBILITY FOR OPERATION AND MAINTENANCE OF THE STORMWATER MANAGEMENT SYSTEM TO A RESPONSIBLE ENTITY.

8. IF DEWATERING IS TO OCCUR DURING ANY PHASE OF CONSTRUCTION OR THEREAFTER AND THE SURFACE WATER PUMPS, WELLS OR FACILITIES ARE CAPABLE OF WITHDRAWING ONE MILLION GALLONS OF WATER PER DAY OR MORE OR AN AVERAGE OF 180,000 GALLONS PER DAY OR MORE OVER A YEAR AND ANY DISCHARGE IS TO BE OFF-SITE, THE CONTRACTOR MUST APPLY FOR AND OBTAIN A CONSUMPTIVE USE PERMIT (CUC-2) FROM THE SFWMD. CONTRACTOR SHALL NOTIFY ENGINEER IF ADDITIONAL INFORMATION OR APPLICATION MATERIALS ARE NEEDED.

9. WATER QUALITY MONITORING SHALL BE PERFORMED DAILY. SAMPLING SHALL BE PERFORMED IN THE MIDDLE OF ADJACENT CHANNELS MEASURING FOR TURBIDITY, 100 FEET UPSTREAM AND 100 FEET DOWNSTREAM OF DISCHARGES. WHEN TURBIDITY EXCEEDS 30 NTU ABOVE BACKGROUND LEVELS AT A SAMPLE POINT 100 FEET UPSTREAM OF DISCHARGES AND / OR 100 FEET ABOVE BACKGROUND LEVELS AT A SAMPLE POINT 100 FEET DOWNSTREAM OF DISCHARGES, WORK MUST CEASE AND REMEDIAL MEASURES MUST BE PERFORMED TO RETURN CONDITIONS TO ACCEPTABLE TURBIDITY LEVELS. CONTRACTOR MUST RECEIVE ENGINEER'S APPROVAL PRIOR TO RESTARTING WORK. SAMPLE POINT LOCATIONS ARE IDENTIFIED IN THE SFWMD PERMITS.

10. THE CONTRACTOR SHALL PLACE TURBIDITY BARRIERS AT ALL OUTFALLS PRIOR TO CONSTRUCTION. ALL CUT / FILL WILL BE RELOCATED WITHIN THE EXISTING SITE AND THEREFORE HAULING OF MATERIAL WILL NOT BE REQUIRED, UNLESS APPROVED BY THE OWNER. CONTRACTOR SHALL INSTALL TURBIDITY CONTROL MEASURES PRIOR TO COMMENCEMENT OF CONSTRUCTION. MAINTAIN CONTRACTOR'S RECORD OF TURBIDITY MONITORING DURING THE CONSTRUCTION PERIOD. ASSURE THAT TURBID DISCHARGES FROM THE PROJECT TO PROTECTED WATERS AND WETLANDS DO NOT EXCEED LIMITS STATED IN NOTE 9 AND REMOVE SOD CONTROLS AFTER COMPLETION OF CONSTRUCTION.

EARTHWORK AND RELATED OPERATIONS

1. THE CONTRACTOR SHALL PROVIDE A QUALITY CONTROL PLAN FOR MONITORING OF ALL EARTHWORK AND RELATED OPERATIONS. THE QUALITY CONTROL PLAN SHALL INCLUDE AS A MINIMUM, ALL TESTS THAT WILL BE PERFORMED INCLUDING THE PROPOSED TEST FREQUENCIES, ALL MATERIAL SOURCES, THE NAME AND BACKGROUND OF THE PERSON THAT THE CONTRACTOR WILL DESIGNATE AS THE CONTRACTOR'S QUALITY CONTROL ENGINEER, THE NAME AND QUALIFICATIONS OF THE TESTING LABORATORY THAT WILL BE PERFORMING QUALITY CONTROL TESTING AND THE NAMES AND QUALIFICATIONS OF THE TESTING LABORATORY PERSONNEL THAT WILL BE PERFORMING THE QUALITY CONTROL TESTING.

2. THE TESTING LABORATORY THAT IS RETAINED TO PERFORM THE CONTRACTOR'S QUALITY CONTROL TESTING MUST BE CERTIFIED BY A RECOGNIZED QUALIFYING AGENCY SUCH AS FDOT, CMIC OR AASHTO FOR THE TYPE OF WORK TO BE PERFORMED.

3. THE QUALITY CONTROL PLAN SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW AND APPROVAL PRIOR TO THE START OF ANY EARTHWORK OR RELATED OPERATION.

4. UTILIZATION OF MATERIALS WITHIN ANY ROADWAY CROSS-SECTION SHALL BE IN ACCORDANCE WITH FDOT ROADWAY AND TRAFFIC DESIGN STANDARDS (LATEST EDITION) UNLESS OTHERWISE SHOWN ON THE PLANS.

5. IF THE EXISTING FILL IS CLASSIFIED AS A-2-4 BASED ON AASHTO M-145 CRITERIA, THE MAXIMUM PERMISSIBLE MOISTURE CONTENT SHALL BE 2 PERCENT ABOVE THE OPTIMUM MOISTURE CONTENT.

COMPACTION

1. WHERE THERE ARE EXISTING STRUCTURES ADJACENT TO THE SITE THAT MAY BE AFFECTED BY THE SELF-PROPELLED STEEL DRUM VIBRATORY EQUIPMENT, THE CONTRACTOR MUST BE NOTIFIED PRIOR TO THE START OF THE CONSTRUCTION. THE REQUIRED DENSIFICATION PROCEDURE MUST BE IDENTIFIED AND THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE REQUIRED DENSIFICATION PROCEDURE.

2. LOADERS AND HEAVY PLATE COMPACTORS ARE TWO TYPES OF EQUIPMENT THAT HAVE BEEN USED SUCCESSFULLY.

3. DENSIFICATION PROCEDURES MUST COMPLY WITH THE CAPABILITY OF THE EQUIPMENT EMPLOYED.

4. WHEN SELF-PROPELLED STEEL DRUM VIBRATORY EQUIPMENT CANNOT BE USED AS SPECIFIED, VIBRATORY PLATE COMPACTORS MAY BE USED. WHEN THIS CONDITION OCCURS, THE OVERALL DENSIFICATION PROCEDURE MUST BE REVISED TO COMPLY WITH THE CAPABILITY OF THE EQUIPMENT EMPLOYED. IN GENERAL, SMALL PLATE COMPACTORS WILL BE EFFECTIVE TO A MAXIMUM DEPTH OF 6 TO 8 INCHES.

COSTCO COMPACTION STANDARDS:

A. LOCATION	B. GRANULAR SOILS AND SILTS WITH NON-PLASTIC SILT AND LOW PLASTICITY CLAY (P-20) AND PLASTICITY CLAY (P-25) AND EXPANSIVE SOILS	C. MODERATE TO HIGH PLASTICITY CLAY SOILS (P-25) AND EXPANSIVE SOILS
D. MODIFIED PROCTOR	E. ASTM D155	F. STANDARD PROCTOR
G. ASTM D155	H. UNDER BUILDING & STRUCTURES	I. 95%
J. UNDER PAVEMENT & WALKWAYS	K. 95%	M. 95% (90%)
N. BEHIND RETENTION WALL	O. 92%	Q. 90% (90%)
P. WITHIN 5' (1.5 m)	R. 92%	S. 90% (90%)
UTILITY TRENCHES	S. 95%	T. 95% (90%)
LAWNS OR UNIMPROVED AREAS	V. 90%	W. 92% (88%)

SOIL RECOMMENDATION AND REQUIREMENTS

1. STRIPPING AND GRUBBING:

- DURING THE GRUBBING OPERATION, ROOTS WITH A DIAMETER GREATER THAN 1/4 INCH, OR SMALL ROOTS IN A DENSE STATE, SHOULD BE GRUBBED AND COMPLETELY REMOVED.
- PROOF-ROLLING THE CLEARED SURFACE IS RECOMMENDED TO LOCATE ANY UNFORESEEN SOFT AREAS OR UNSUITABLE SURFACE OR LOOSE TO LOOSE FINE SAND SOILS WITHIN THE TOP 3 TO 4 FEET, AND TO PREPARE THE EXISTING SURFACE FOR THE ADDITION OF THE FILL SOILS (AS REQUIRED).
- A COVER PASS CONSISTS OF PARALLEL PASSES OF THE VIBRATORY ROLLER TRAVELING AT "WALKING SPEED". EACH PASS SHOULD OVERLAP THE PRECEDING PASS BY 30% TO INSURE COMPLETE COVERAGE. SUBSEQUENT COVERAGES SHOULD BE CONDUCTED IN A DIRECTION PERPENDICULAR TO THE PRECEDING COVERAGE. IN AREAS THAT CONTINUE TO YIELD REMOVE ALL DELETERIOUS MATERIAL AND REPLACE WITH A CLEAN, COMPACTED SAND BACKFILL. THE PROOF ROLLING SHOULD PRODUCE A DENSITY EQUIVALENT TO 95% OF THE MODIFIED PROCTOR (ASTM D-1557) MAXIMUM DRY DENSITY VALUE FOR A DEPTH OF 10 INCHES OF THE FILL MATERIAL. ADDITIONAL PASSES MAY BE REQUIRED IF THESE MINIMUM DENSITY REQUIREMENTS ARE NOT ACHIEVED.

ALL TREES, STUMPS, ROOT BALLS AND VEGETATIVE MATTER IN EXCESS OF ONE (1) INCH (25.4 MM) DIAMETER SHALL BE REMOVED FROM THE SITE. CROPS SHALL BE CUT AND REMOVED FROM THE SITE. REMOVE AND DISPOSE OF BRUSH, WASTE LOGS AND LIMBS, TIMBER TOPS, AND DEBRIS RESULTING FROM LOGGING, CLEARING AND GRUBBING, OR OCCURRING WITHIN THE CLEARING AND GRUBBING LIMITS.

• FILL REPLACEMENTS:

- WHERE FILL IS TO BE PLACED ON NATURAL GROUND, THE SURFACE MUST FIRST BE PREPARED AS OUTLINED ABOVE. THE FILL AT GRADE SHOULD EXTEND A MINIMUM OF FIVE FEET (5') BEYOND THE STRUCTURE OUTLINE.
- FILL SHOULD BE A UNIFORM FREE DRAINING GRANULAR SOIL (CLEAN SAND) AND BE PLACED IN LAYERS NOT TO EXCEED 12 INCHES LOOSE MEASURE AND COMPACTED AS OUTLINED ABOVE. SUFFICIENT COMPACTIVE EFFORT SHOULD BE APPLIED TO OBTAIN A MINIMUM OF 108% OF THE MODIFIED PROCTOR (ASTM D-1557) MAXIMUM VALUE. REFER TO LANDSCAPING PLANS FOR GUIDANCE ON ANY FIELD MATERIAL TO BE PLACED IN ANY PLANTING AREAS.

EXCAVATION AND BACKFILLING:

- WHERE EXCAVATION AND BACKFILLING ARE REQUIRED, THE SOILS SHOULD BE REMOVED TO THE SPECIFIED DEPARTMENT SUFFICIENT COMPACTIVE EFFORT MUST THEN BE APPLIED TO THE EXCAVATED SURFACE TO OBTAIN A MINIMUM OF 108% OF THE MODIFIED PROCTOR (ASTM D-1557) MAXIMUM VALUE.
- BACKFILL SHALL BE UNIFORM FREE DRAINING GRANULAR SOIL (CLEAN SAND) AND BE PLACED IN LAYERS NOT TO EXCEED 15 INCHES LOOSE MEASURE. SUFFICIENT COMPACTIVE EFFORT SHOULD BE APPLIED TO EACH LAYER TO OBTAIN A MINIMUM OF 108% OF THE MODIFIED PROCTOR (ASTM D-1557) MAXIMUM VALUE.
- EACH LAYER OF BACKFILL SHOULD BE COMPACTED WITH A SELF-PROPELLED STEEL DRUM VIBRATORY ROLLER HAVING A MINIMUM T