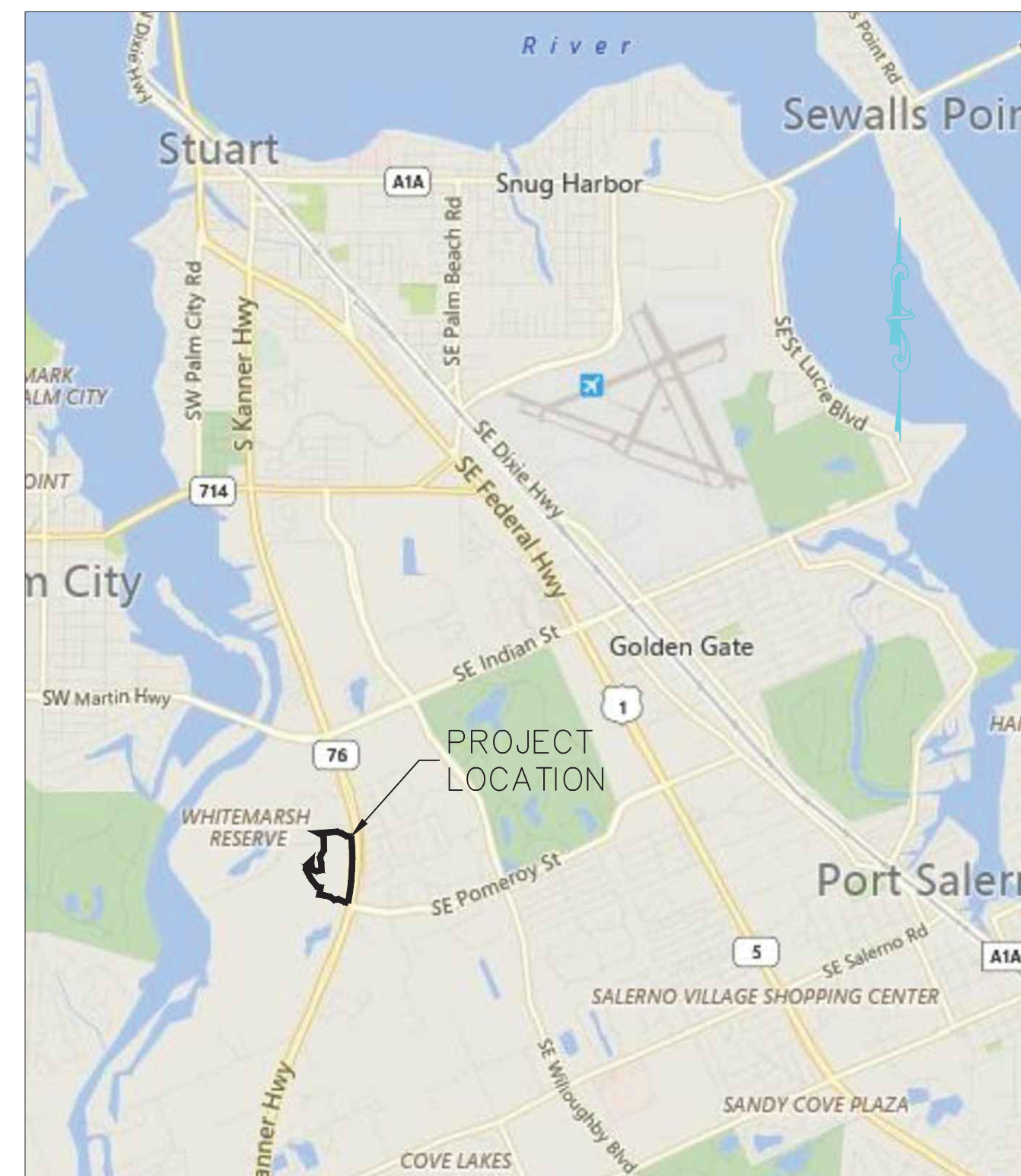


CONSTRUCTION DRAWINGS FOR
BANYAN BAY
PHASE 2C

MARTIN COUNTY, FLORIDA



LOCATION MAP

SHEET INDEX

- 1 COVER SHEET
- 2 KEY SHEET & PHASING PLAN
- 3 CLEARING AND EROSION CONTROL PH1-A
- 4 CLEARING AND EROSION CONTROL PH1-B
- 5 CLEARING AND EROSION CONTROL PH2-A
- 6 CLEARING AND EROSION CONTROL PH2-B
- 7 PAVING, DRAINAGE AND GRADING PLAN-A
- 8 PAVING DRAINAGE AND GRADING PLAN-B
- 9 DETAILS- PAVING, GRADING AND DRAINAGE
- 10 UTILITY PLANS-A
- 11 UTILITY PLANS -B
- 12 SEWER PROFILES
- 13 DETAILS- WATER AND SANITARY
- 14 DETAILS- WATER AND SANITARY
- 15 PROJECT SPECIFICATIONS
- 16 PROJECT SPECIFICATIONS
- 17 PROJECT SPECIFICATIONS

COVER SHEET

BANYAN BAY - PHASE 2C
MARTIN COUNTY, FLORIDA

Kimley»»Horn

445 24TH STREET, SUITE 200, VERO BEACH, FL 32960
PHONE (772) 794-4100 FAX (772) 794-4130
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DATE	JUNE 2017
FILE & DRAWING NO.	041052000

SHEET
1 OF 17

				PROFESSIONAL ENGINEER
				BLAINE BERGSTRESSER, P.
				84598
NO.	REVISIONS	DATE	BY	SFAI

Future Land Use: Medium Density
Existing Zoning: R-2A
Existing Use: Fisherman's Cove S/D

Future Land Use: Low Density
Existing Zoning: PUD
Existing Use: Martin's Crossing (Under Construction)

Future Land Use: Estate Density
Existing Zoning: A-1 and B-1
Existing Use: Vacant

BANYAN BAY - PHASE 2C
MARTIN COUNTY, FLORIDA

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PHASING PLAN.dwg

DATE	JUNE 2017
FILE & DRAWING NO.	041052000
SHEET	2 OF 17

PROFESSIONAL ENGINEER
BLAINE BERGSTRESSER, P.E.
84598

SCALE	AS SHOWN
DESIGNED BY	SDS
DRAWN BY	SDS
CHECKED BY	PVR
FILE	2 KEY SHEET &

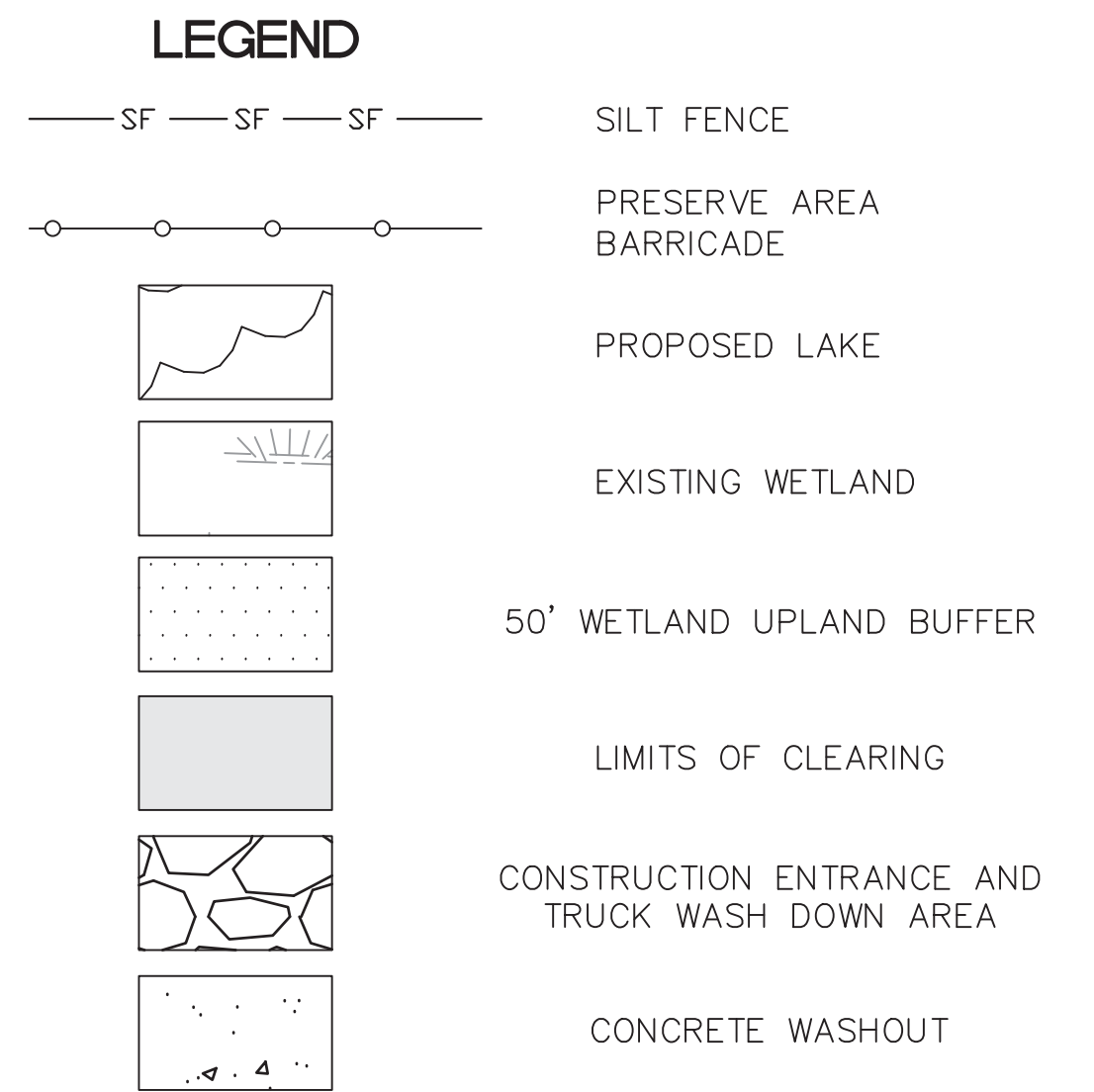
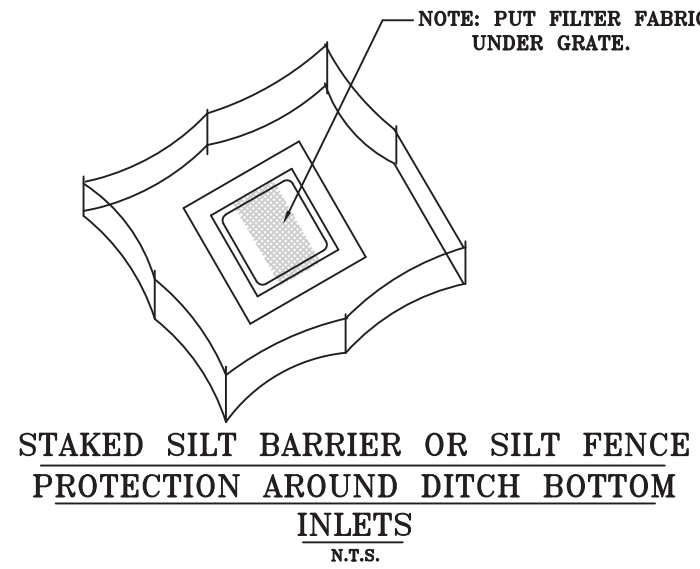
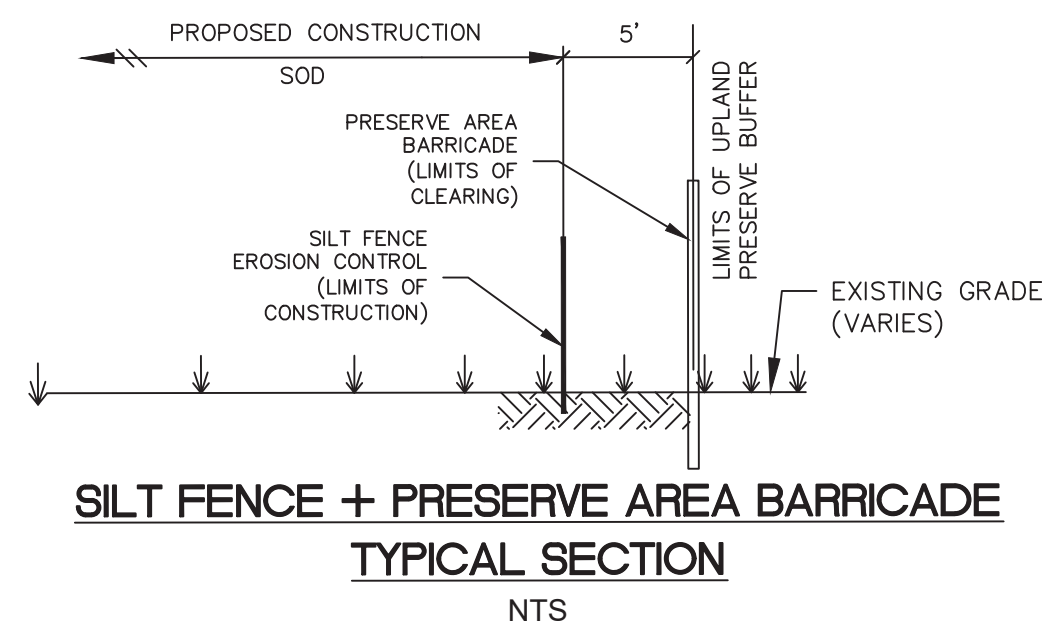
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PHASING PLAN.dwg

CA 0000069

2 OF 17

Drawing name: K:\VRB_LDEV\041\041052 Banyan Bay\2015 REVIEW\CAD\CONST\PHASE 2C\2 KEY SHEET & PHASING PLAN.dwg Jul 27, 2020 2:10pm by: Alex.Dougherty

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TEMPORARY SEDIMENT BASIN SIZE AND CALCULATIONS
 SIZE REQUIRED: (3,630 CU FT. PER DISTURBED ACRE)
 TOTAL DISTURBED AREA: 7.10 ACRES
 3,630 CU FT. (x 7.10 ACRES) = 25,787 CU FT.
 SIZE PROVIDED: 27,000 CU FT.

WETLAND NO.5
 SHWT 4.83'

WETLAND NO.8
 SHWT 8.23'

SEDIMENT BASIN 2
 90' X 60' X 3'

NATURAL RESOURCE FENCE TO BE INSTALLED ALONG WETLAND BOUNDARY LINE AND SILT FENCE INSTALLED 5' OFF NATURAL RESOURCE FENCE

EXISTING TREES (31,34) TO BE REMOVED

EXISTING TREE (47) TO BE REMOVED

NATURAL RESOURCE FENCE TO BE INSTALLED ALONG REAR LOT LINE AND SILT FENCE INSTALLED 5' OFF NATURAL RESOURCE FENCE

NATURAL RESOURCE FENCE TO BE INSTALLED ALONG WETLAND BOUNDARY LINE AND SILT FENCE INSTALLED 5' OFF NATURAL RESOURCE FENCE

EDGE OF WETLAND

SR 76

CATCH BASIN (CURB INLET)

Flood Zone AE

EXISTING TREE (47) TO BE REMOVED

EXISTING TREES (31,34) TO BE REMOVED

NATURAL RESOURCE FENCE TO BE INSTALLED ALONG REAR LOT LINE AND SILT FENCE INSTALLED 5' OFF NATURAL RESOURCE FENCE

NATURAL RESOURCE FENCE TO BE INSTALLED ALONG WETLAND BOUNDARY LINE AND SILT FENCE INSTALLED 5' OFF NATURAL RESOURCE FENCE

SEDIMENT BASIN 2
 90' X 60' X 3'

NATURAL RESOURCE FENCE TO BE INSTALLED ALONG WETLAND BOUNDARY LINE AND SILT FENCE INSTALLED 5' OFF NATURAL RESOURCE FENCE

EXISTING TREES (31,34) TO BE REMOVED

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NATURAL RESOURCE FENCE TO BE INSTALLED ALONG WETLAND BOUNDARY LINE AND SILT FENCE INSTALLED 5' OFF NATURAL RESOURCE FENCE

EDGE OF WETLAND

SR 76

CATCH BASIN (CURB INLET)

Flood Zone AE

SECTION 3 CONTROL OF WIND EROSION

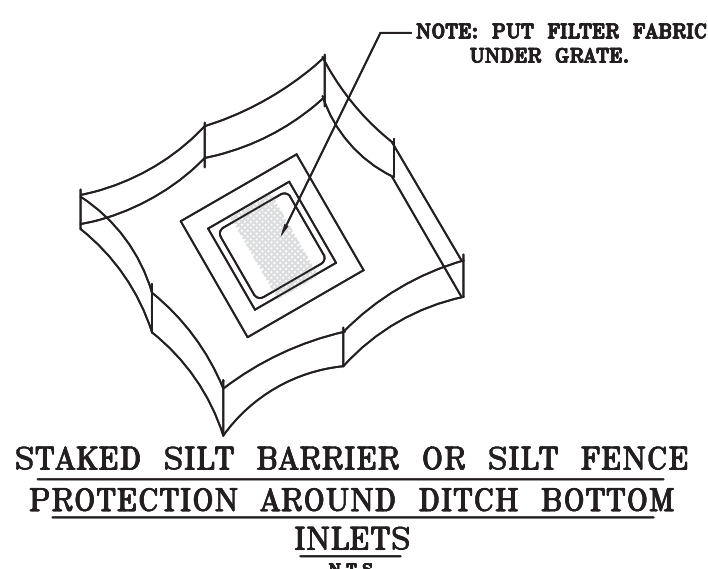
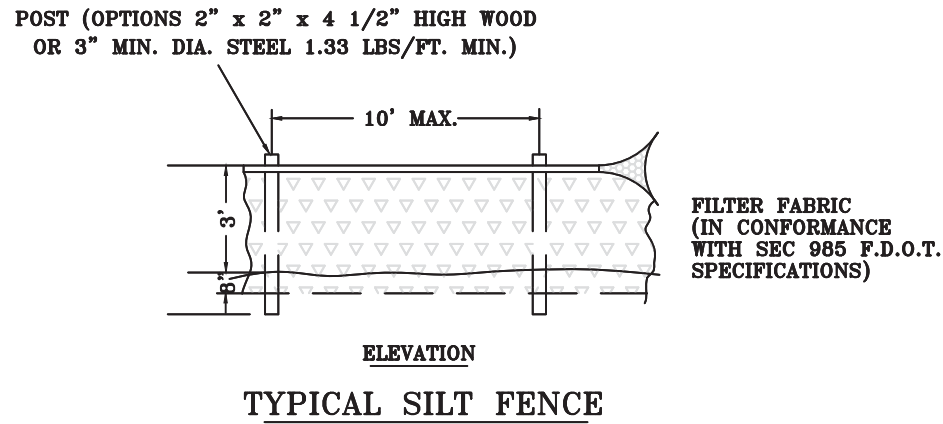
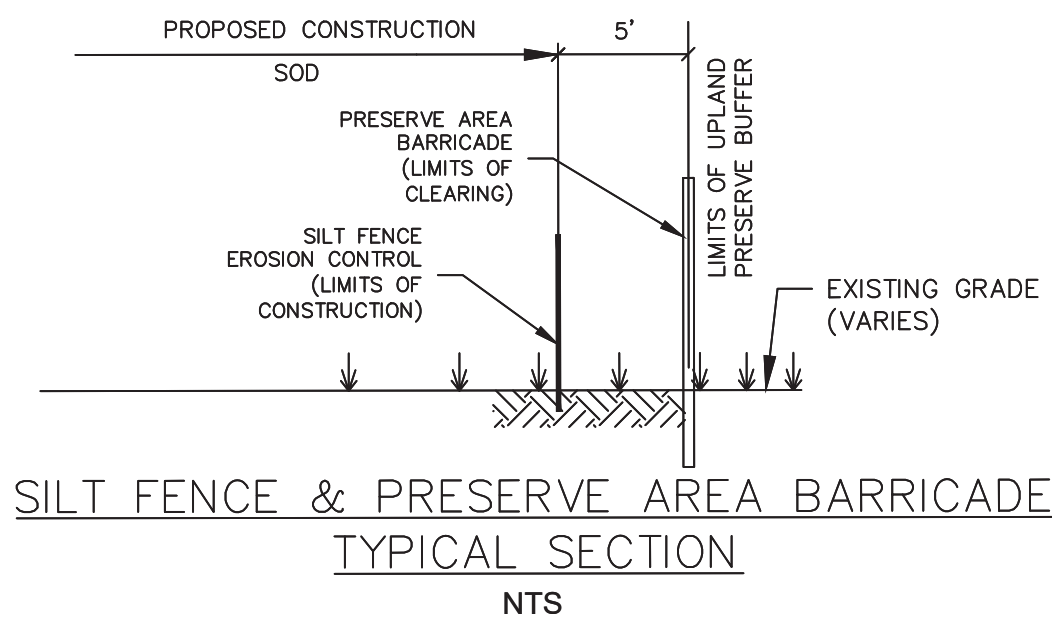
3.1 Wind erosion shall be controlled by employing the following methods as necessary and appropriate:

- a) Bare earth areas shall be watered during construction as necessary to minimize the transport of fugitive dust. It may be necessary to limit construction vehicle speed if bare earth has not been effectively watered. In no case shall fugitive dust be allowed to leave the site under construction.
- b) As soon as practical after completion of construction, bare earth areas shall be vegetated.
- c) At any time both during and after site construction that watering and/or vegetation are not effective in controlling wind erosion and/or transport of fugitive dust, other methods as are necessary for such control shall be employed. These methods may include erection of dust control fences. If required, dust control fences shall be constructed in accordance with the detail for a silt fence, as shown, except the minimum height shall be 4 feet.

- 1) THE LOCATIONS OF THE PROPOSED SILT FENCE AND PRESERVE AREA BARRICADE(S) AS SHOWN HEREON ARE GRAPHICAL REPRESENTATIONS ONLY AND SHOULD NOT BE USED FOR CONSTRUCTION.
- 2) FOR DETAILED LOCATIONS OF BOUNDARY LINES, RIGHT-OF-WAYS, EASEMENTS, LOT LINES, PRESERVE AREAS, BUFFERS, ETC. REFER TO THE RECORD PLAT, PREPARED BY GCY, INC., PROFESSIONAL SURVEYORS AND MAPPERS.
- 3) DISTURBED AREAS FOLLOWING LAND CLEARING AND/OR EARTHWORK OPERATIONS ARE TO BE SODDED OR SEEDED AND MULCHED AS SOON AS PRACTICABLE, BUT NOT LATER THAN 30 DAYS AFTER COMPLETION OF THE CONSTRUCTION ACTIVITY.
- 4) ALL CONSTRUCTION BARRICADES AND/OR SILT FENCES SHALL REMAIN IN PLACE AND BE MONITORED AND MAINTAINED FOR COMPLIANCE BY THE PERMIT HOLDER, DURING THE PERMITTED DEVELOPMENT ACTIVITIES.
- 5) FOLLOWING RECEIPT OF CERTIFICATE OF OCCUPANCY (C.O.) FOR THE PHASE, ALL BARRICADES AND EROSION CONTROL DEVICES SHALL BE REMOVED AND DISPOSED OF BY THE CONTRACTOR.

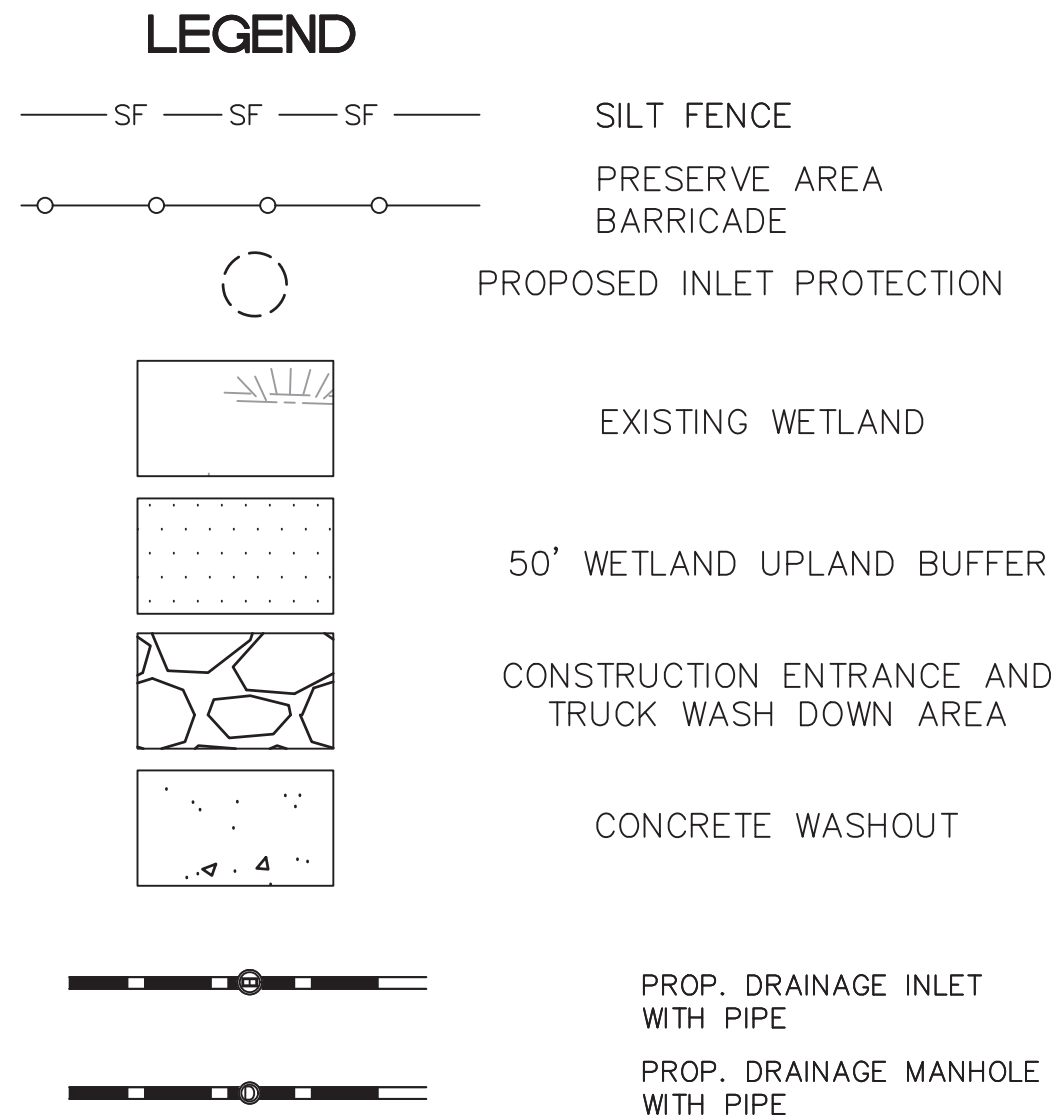
4 OF 17

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NOTES:

- PROPERTY CORNERS SHALL BE LOCATED BY A LICENSED LAND SURVEYOR AND CLEARLY MARKED IN THE FIELD PRIOR TO THE ENGINEERING DEPARTMENT'S PRE-CONSTRUCTION MEETING FOR SITE DEVELOPMENT.
- AUTHORIZATION TO INSTALL EROSION CONTROL DEVICES AND PRESERVE BARRICADES WILL BE GRANTED AT THE PRE-CONSTRUCTION MEETING. THIS AUTHORIZATION SHALL BE POSTED ON THE SITE, IN THE PERMIT BOX, ITS LOCATION SHOWN ELSEWHERE ON THIS PAGE.
- NO ADDITIONAL LAND CLEARING SHALL COMMENCE UNTIL A SATISFACTORY INSPECTION OF THE REQUIRED EROSION CONTROL BARRICADES HAS BEEN OBTAINED.
- ALL CONSTRUCTION BARRICADES AND SILT FENCES WILL REMAIN IN PLACE AND BE MONITORED FOR COMPLIANCE BY THE PERMIT HOLDER DURING THE PERMITTED DEVELOPMENT ACTIVITIES.
- PRIOR TO SCHEDULING A FINAL ENVIRONMENTAL INSPECTION FOR THE INFRASTRUCTURE, ALL BARRICADES AND EROSION CONTROL DEVICES SHALL BE REMOVED AND DISPOSED OF BY THE CONTRACTOR.



B.M.P.'s (BEST MANAGEMENT PRACTICES)

The plan addresses the following areas:

- General erosion control.
- Protection of surface water quality during and after construction
- Control of wind erosion.

The various techniques or actions identified under each section indicate the appropriate situation when the techniques should be employed. It should be noted that the measures identified on this plan are only suggested BMP's. The contractor shall provide pollution prevention and erosion control measures as specified in FDOT Index #104 and as necessary for each specific application.

SECTION 1 GENERAL EROSION CONTROL

- General erosion control BMP's shall be employed to minimize soil erosion and potential lake slope cave-ins. While the various techniques required will be site and plan specific, they should be employed as soon as possible during construction activities.
- Cleared site development areas not continually scheduled for construction activities shall be covered with hay or overseeded and periodically watered sufficient to stabilize the temporary groundcover.
- Slopes of banks of wet detention ponds shall be constructed not steeper than 4H:1V from top of bank to three feet below normal water level.
- All grass slopes constructed steeper than 4H:1V shall be sodded as soon as practical after their construction.
- Sod shall be placed for a 3-foot wide strip adjoining all curbing and around all inlets as required by plan. Sod shall be placed before silt barriers are removed.
- Where required to prevent erosion from sheet flow across bare ground from entering a lake or swale, a temporary sediment sump shall be constructed. The temporary sediment sump shall remain in place until vegetation is established on the ground draining to the sump.

SECTION 2 PROTECTION OF SURFACE WATER QUALITY DURING & AFTER CONSTRUCTION

- Surface water quality shall be maintained by employing the following BMP's in the construction planning and construction of all improvements.
- Where practical, stormwater shall be conveyed by swales.
- Erosion control measures shall be employed to minimize turbidity of surface waters located downstream of any construction activity. While the various measures required will be site specific, they shall be employed as needed in accordance with the following:
 - In general, erosion shall be controlled at the furthest practical upstream location.
 - Stormwater inlets shall be protected during construction as shown. Protection measures shall be employed as soon as practical during the various stages of inlet construction. Silt barriers shall remain in place until sodding around inlets is complete.
 - Heavy construction equipment parking and maintenance areas shall be designed to prevent oil, grease, and lubricants from entering site drainage features including stormwater collection and treatment systems. Contractors shall provide broad dikes, hay bales or silt screens around, and sediment sumps within, such areas as required to contain spills of oil, grease or lubricants. Contractors shall have available, and shall use, absorbent filter pads to clean up spills as soon as possible after occurrence.
 - Silt barriers, any silt which accumulates behind the barriers, and any fill used to anchor the barriers shall be removed promptly after the end of the maintenance period specified for the barriers.

SECTION 3 CONTROL OF WIND EROSION

- Wind erosion shall be controlled by employing the following methods as necessary and appropriate:
 - Bare earth areas shall be watered during construction as necessary to minimize the transport of fugitive dust. It may be necessary to limit construction vehicle speed if bare earth has not been effectively watered. In no case shall fugitive dust be allowed to leave the site under construction.
 - As soon as practical after completion of construction, bare earth areas shall be vegetated.
 - At any time both during and after site construction that watering and/or vegetation are not effective in controlling wind erosion and/or transport of fugitive dust, other methods as are necessary for such control shall be employed. These methods may include erection of dust control fences. If required, dust control fences shall be constructed in accordance with the detail for a silt fence, as shown, except the minimum height shall be 4 feet.

GENERAL NOTES:

- THE LOCATIONS OF THE PROPOSED SILT FENCE AND PRESERVE AREA BARRICADE(S) AS SHOWN HEREON ARE GRAPHICAL REPRESENTATIONS ONLY AND SHOULD NOT BE USED FOR CONSTRUCTION.
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CLEARING AND EROSION CONTROL PH2-A

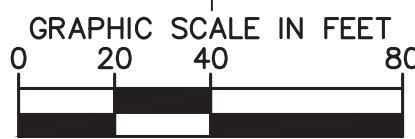
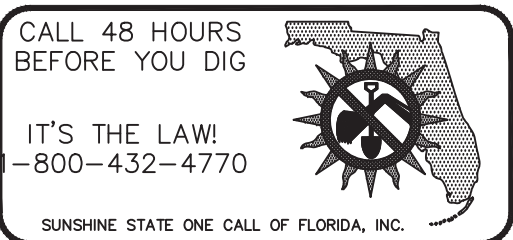
BANYAN BAY - PHASE 2C
MARTIN COUNTY, FLORIDA

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SHEET 5 OF 17

PROFESSIONAL ENGINEER BLAINE BERGSTRESSER, P.E. 84598					
SCALE AS SHOWN					
DESIGNED BY SDS					
DRAWN BY SDS					
CHECKED BY PVR					
FILE 4 CLEARING AND EROSION CONTROL PH2.dwg					
NO.	REVISIONS	DATE	BY	SEAL	
		2020-04-27	AMD		

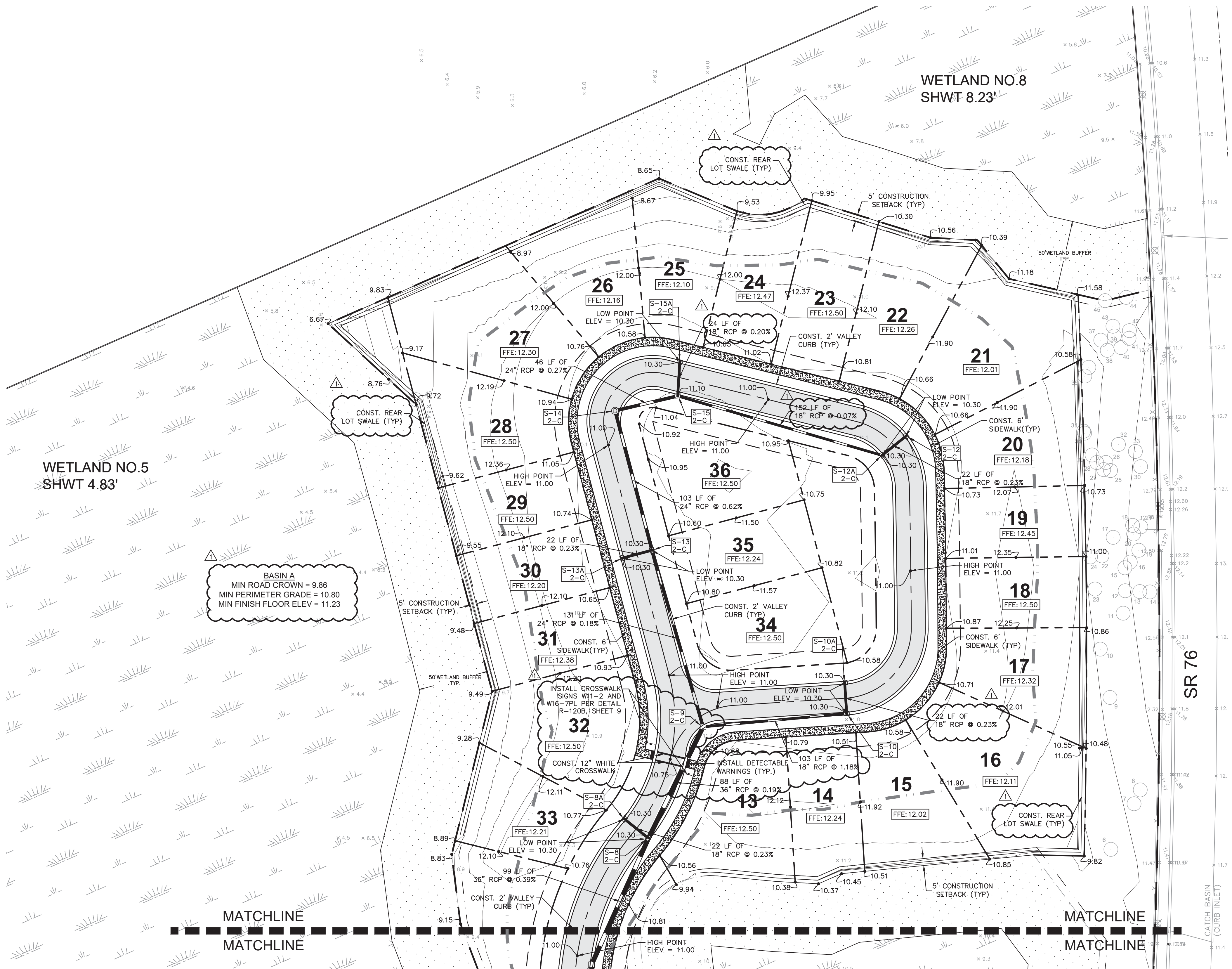


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Drawing name: K:\WB_LDEV\041\041052 Banyan Bay\2015 REVIEW\CAD CONST\PHASE 2C\4 CLEARING AND EROSION CONTROL PH2.dwg 5 CLEARING AND EROSION CONTROL PH2-A Jul 27, 2020 2:10pm by: AlexDaugherty



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LEGEND

0.0 EXIST. GRADE
11.32 PROP. GRADE
--- PROP. BASIN LINE
--- PROP. BERM PERIMETER
--- RIGHT-OF-WAY LINE
--- LOT LINE
--- LOT DIVISION RIGHT-OF-WAY LINE
--- ROAD CENTER LINE

100' @ 0.4% FLOW DIRECTION W/SLOPE

PROP. ASPHALT
PROP. CONC. SIDEWALK
EXISTING WETLAND
50' WETLAND UPLAND BUFFER
S-01 STRUCTURE NUMBER
2C PHASE



DRAINAGE STRUCTURE TABLE				
NO.	STATION/OFFSET	STRUCTURE TYPE	RIM	INVERT
S-1	99+89.90 (10.56 RT)	EXISTING INLET USF 5106-6149	10.23	1.00(N) 0.93(W)
S-2	99+90.10 (-11.44 LT)	EXISTING INLET USF 5106-6149	10.21	0.92(E)
S-3	100+71.49 (0.00)	MANHOLE USF 420-C	11.00	1.25(S) 1.25(E)
S-4	101+78.14 (11.00 RT)	STORM INLET USF 5106-6149	10.30	5.95(N) 1.54(W) 1.54(E)
S-4A	101+78.14 (-11.00 LT)	STORM INLET USF 5106-6149	10.30	6.00(S)
S-5	102+82.26 (11.00 RT)	STORM INLET USF 5106-6149	10.79	1.74(W) 1.74(N)
S-6	103+81.68 (11.00 RT)	STORM INLET USF 5106-6149	10.30	5.95(W) 1.74(S) 2.22(N)
S-6A	103+81.68 (-11.00 LT)	STORM INLET USF 5106-6149	10.30	6.00(E)
S-7	106+77.40 (11.00 RT)	STORM INLET USF 5106-6149	10.77	3.08(S) 3.08(NE)
S-8	107+83.95 (11.00 RT)	STORM INLET USF 5106-6149	10.30	3.47(SW) 3.47(NE) 5.95(NW)
S-8A	107+83.95 (-11.00 LT)	STORM INLET USF 5106-6149	10.30	6.00(SE)
S-9	108+74.93 (7.23 RT)	STORM INLET USF 5106-6149	10.65	3.63(SW) 4.63(E) 4.63(N)
S-10	109+83.07 (11.00 RT)	STORM INLET USF 5106-6149	10.30	5.95(N) 5.85(W)
S-10A	109+83.07 (-11.00 LT)	STORM INLET USF 5106-6149	10.30	6.00(S)
S-12	111+98.32 (7.13 RT)	STORM INLET USF 5106-6149	10.30	6.00(SW)
S-12A	111+98.30 (-14.87 LT)	STORM INLET USF 5106-6149	10.30	5.95(NE) 5.85(W)
S-13	201+49.84 (11.00 RT)	STORM INLET USF 5106-6149	10.30	5.95(W) 4.87(S) 4.87(N)

DRAINAGE STRUCTURE TABLE				
NO.	STATION/OFFSET	STRUCTURE TYPE	RIM	INVERT
S-13A	201+49.84 (-11.00 LT)	STORM INLET USF 5106-6149	10.30	6.00(E)
S-14	202+57.18 (7.05 RT)	MANHOLE USF 420-C	10.85	5.50(S) 5.52(E)
S-15	113+60.58 (-13.05 LT)	STORM INLET USF 5106-6149	11.10	5.95(N) 5.75(E) 5.65(W)
S-15A	113+64.99 (11.00 RT)	STORM INLET USF 5106-6149	10.30	6.00(S)
S-18	105+81.85 (11.00 RT)	STORM INLET USF 5106-6149	10.30	5.95(W) 2.77(S) 2.87(N)
S-18A	105+81.85 (-11.00 LT)	STORM INLET USF 5106-6149	10.30	6.00(E)

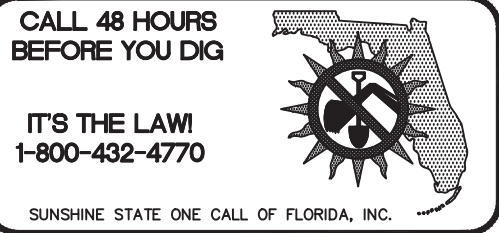
PAVING DRAINAGE AND GRADING
PLAN-B

BANYAN BAY - PHASE 2C
MARTIN COUNTY, FLORIDA

Kimley»Horn

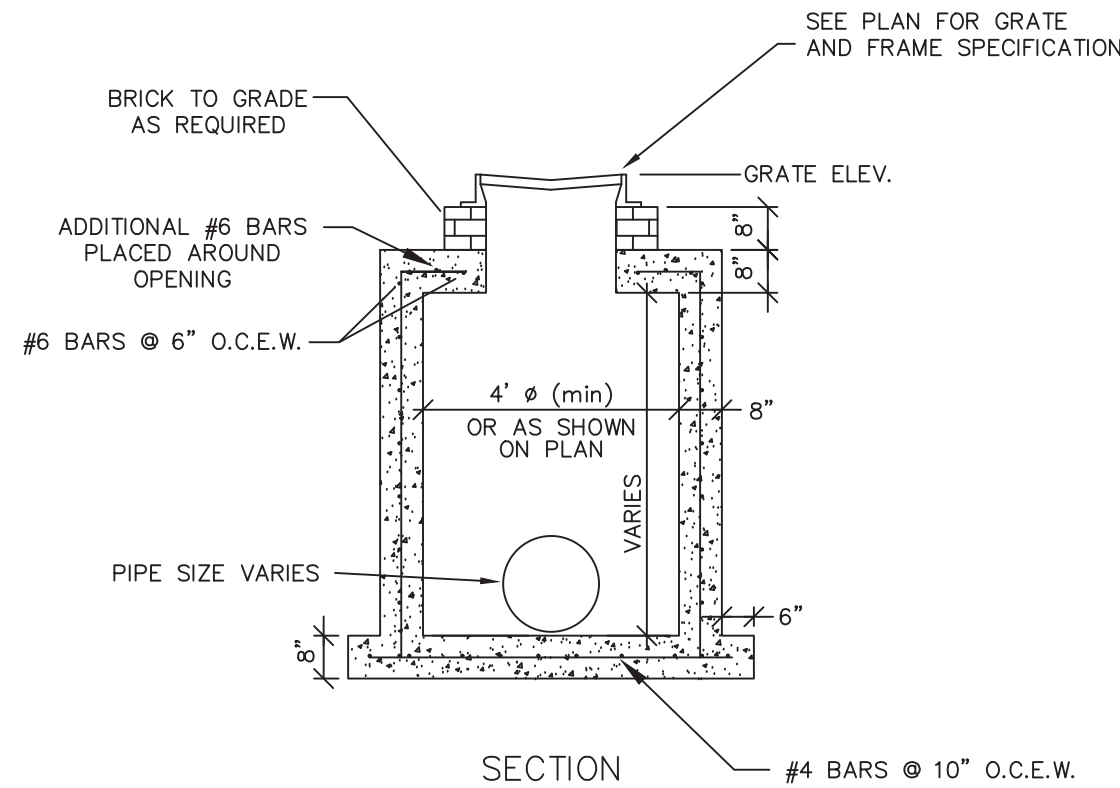
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SHEET
8 OF 17

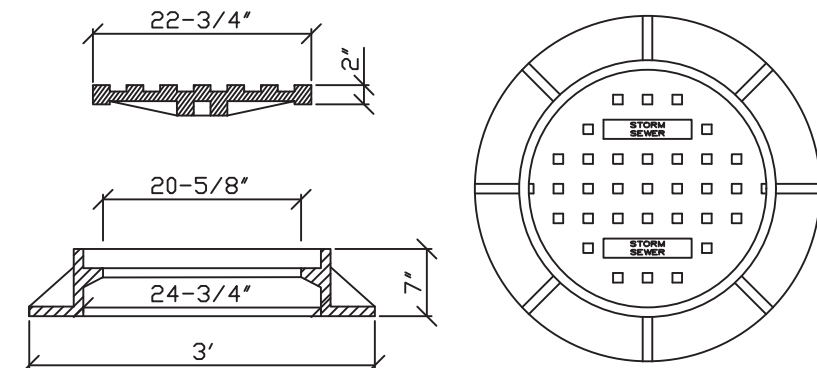


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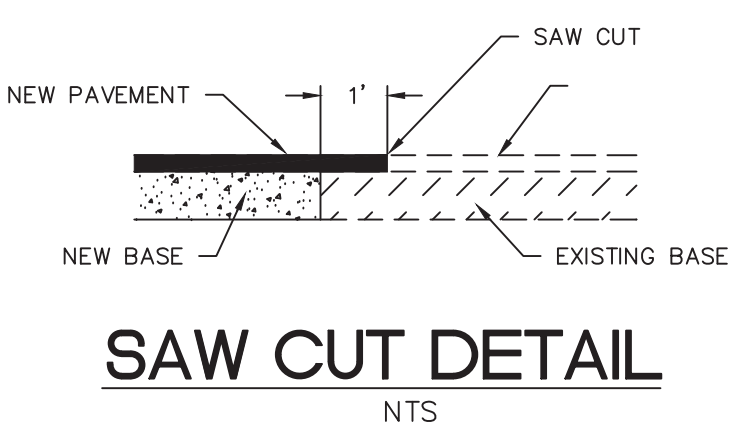
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PER COUNTY COMMENTS			
NO.	REVISIONS	DATE	BY
		2020-04-27	AMD
			SEAL



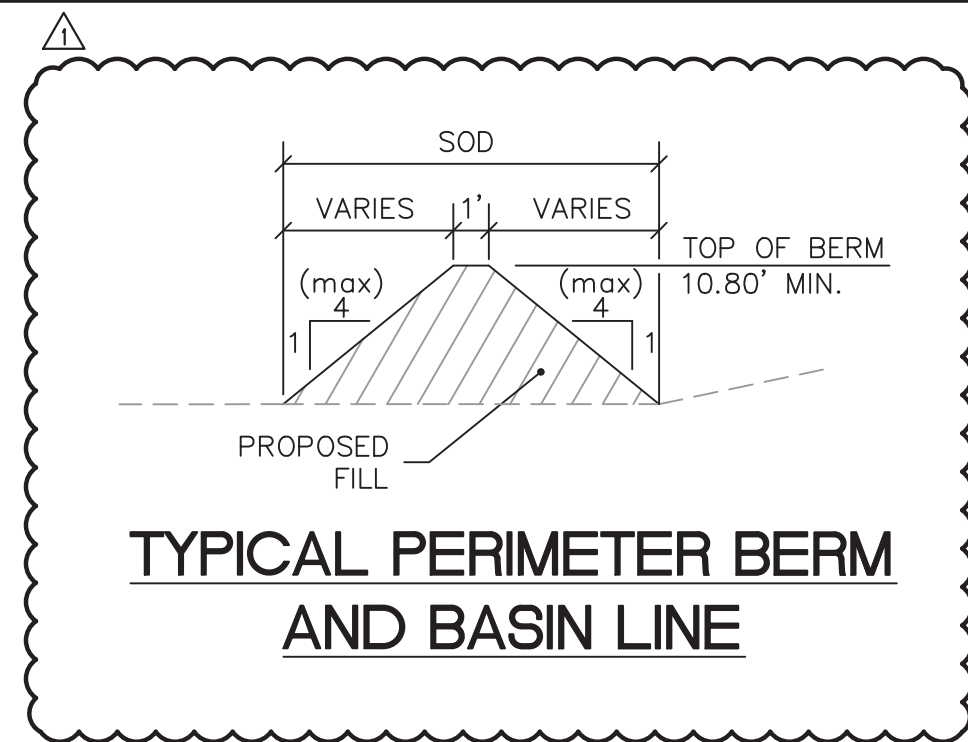
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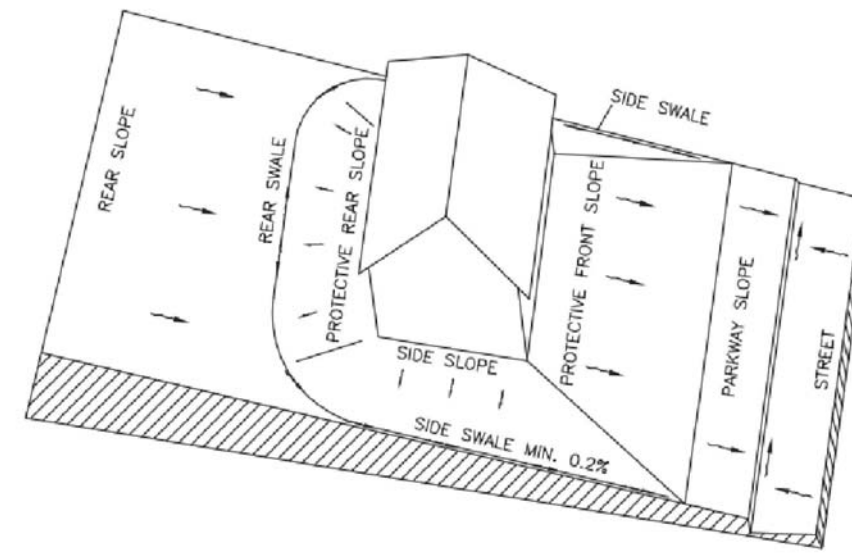
STORM MANHOLE DETAIL
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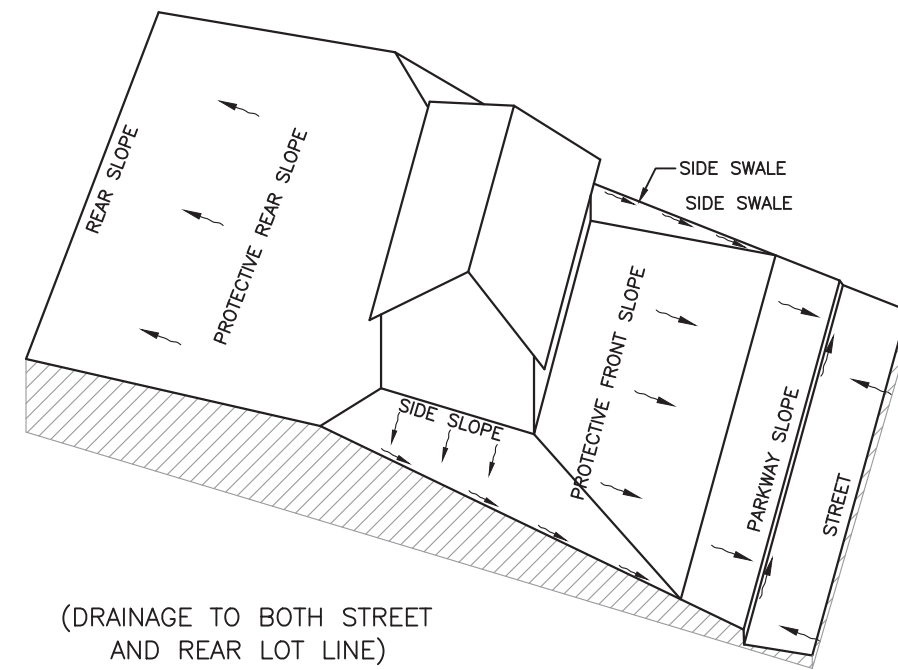
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PER FDOT ROADWAY DESIGN INDEX #232
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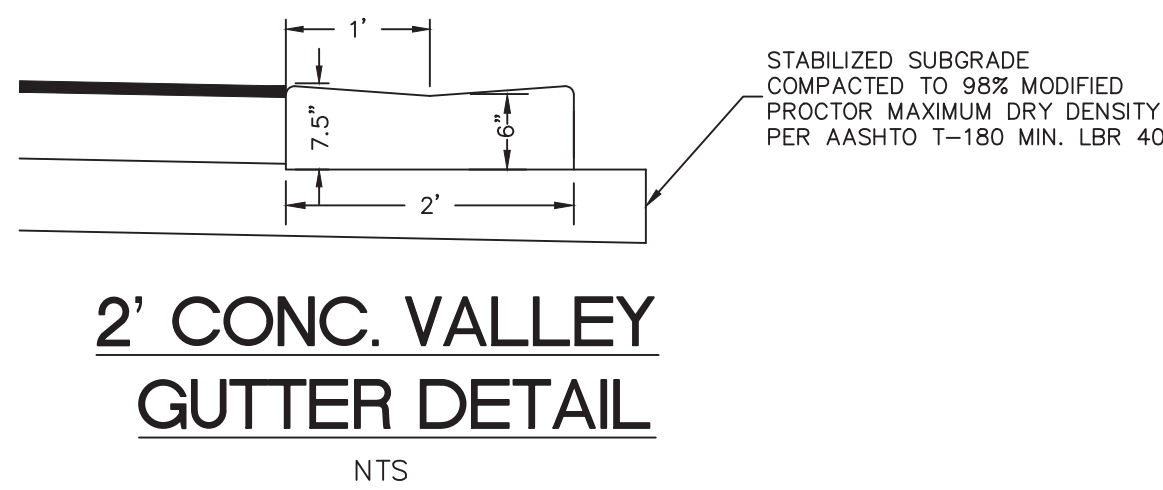
TYPICAL PERIMETER BERM AND BASIN LINE
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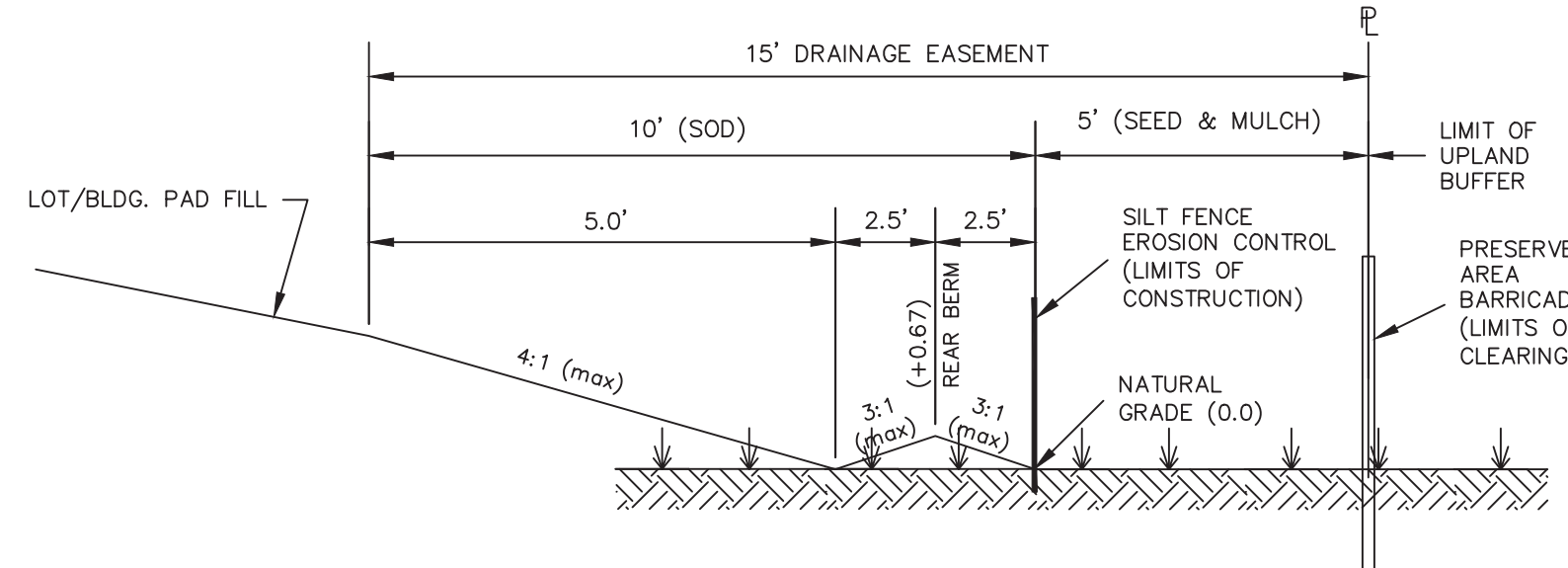
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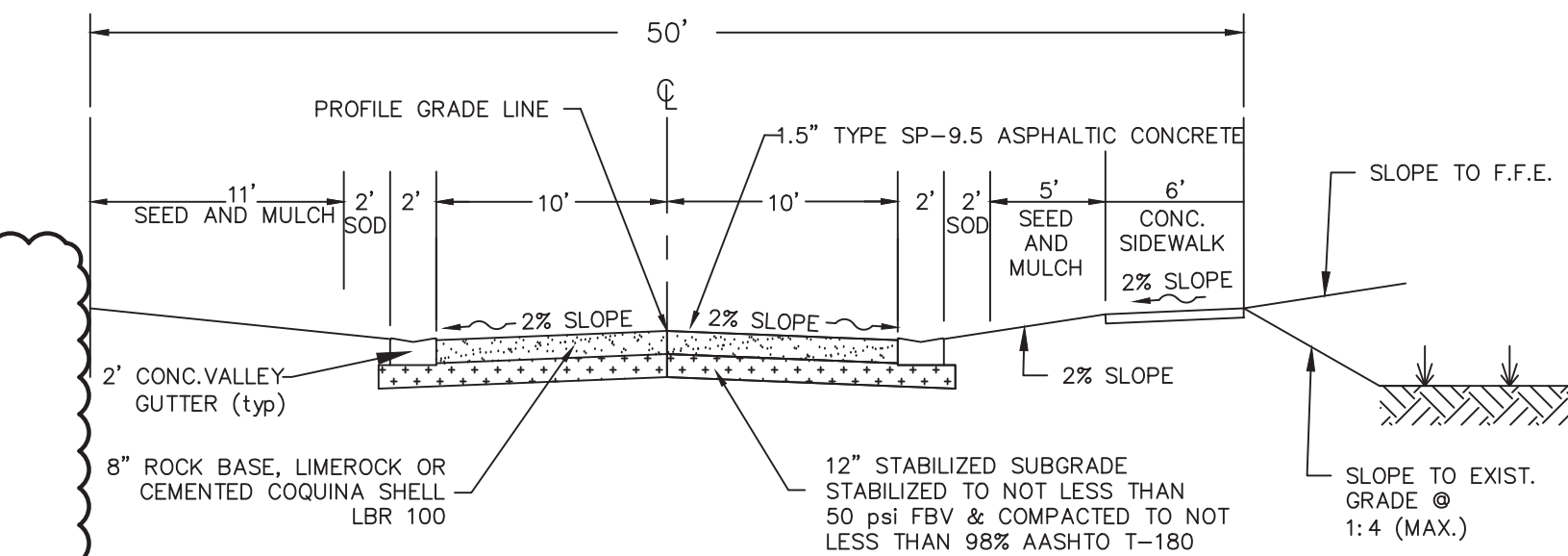
TYPE 'B' LOT GRADING DETAIL
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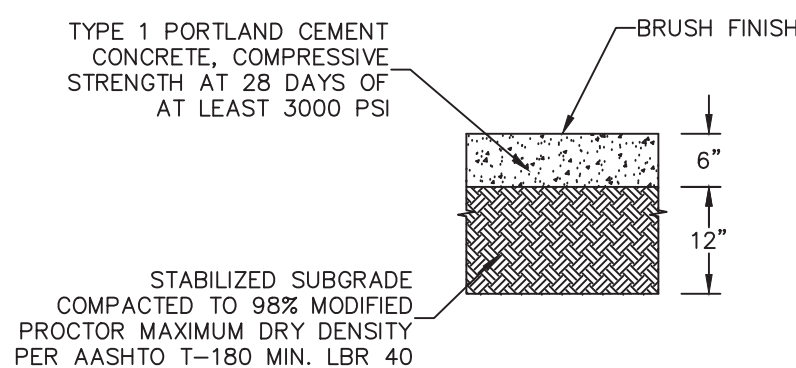
2' CONC. VALLEY GUTTER DETAIL
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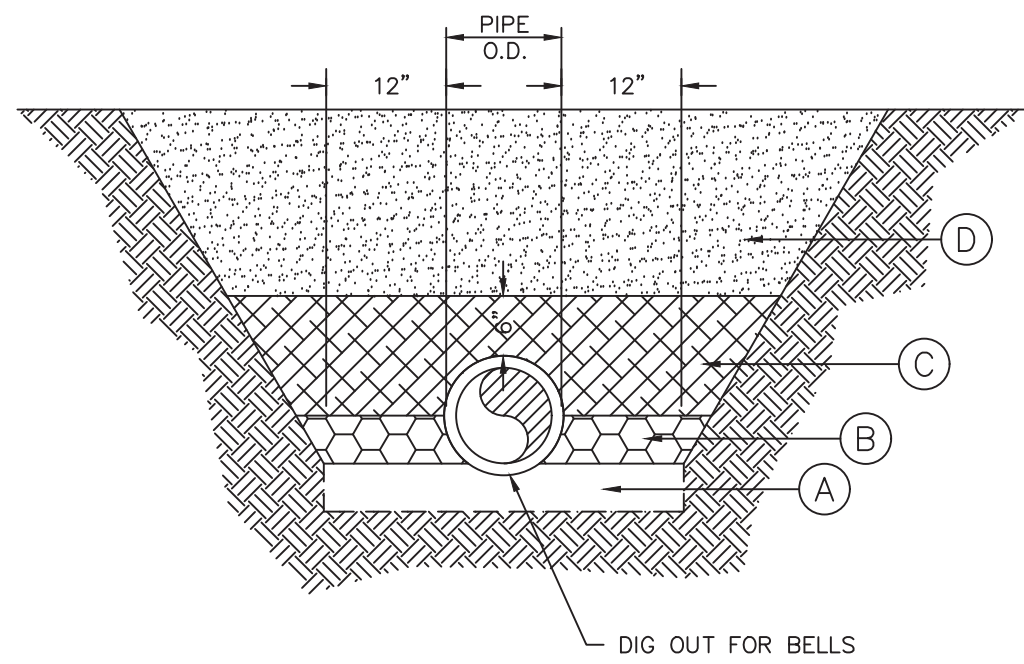
TYPICAL REAR LOT GRADING AND SWALE SECTION
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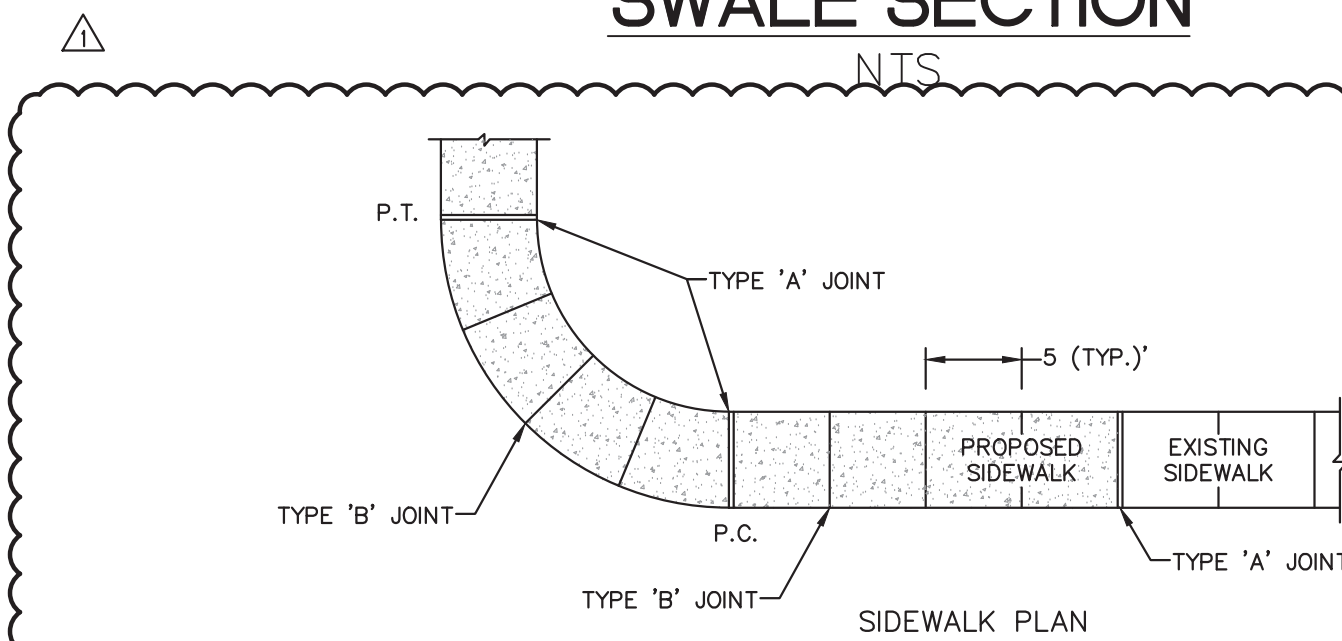
TYPICAL ROAD SECTION
50' RIGHT-OF-WAY



STANDARD DUTY CONCRETE
NTS



TYPICAL TRENCH DETAIL
NTS



TYPICAL SIDE LOT SWALE SECTION
NTS

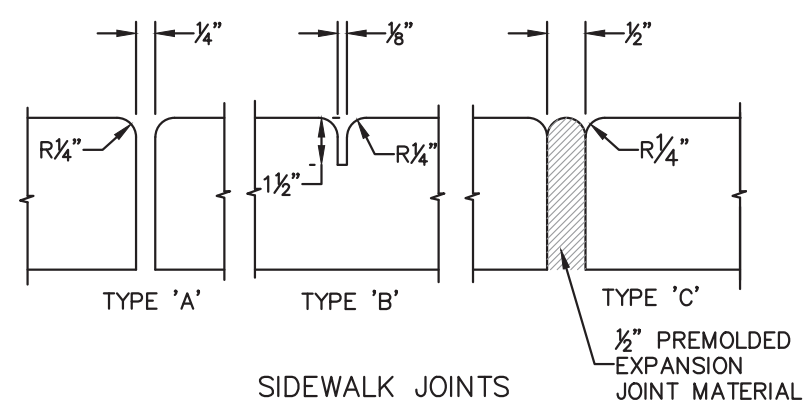
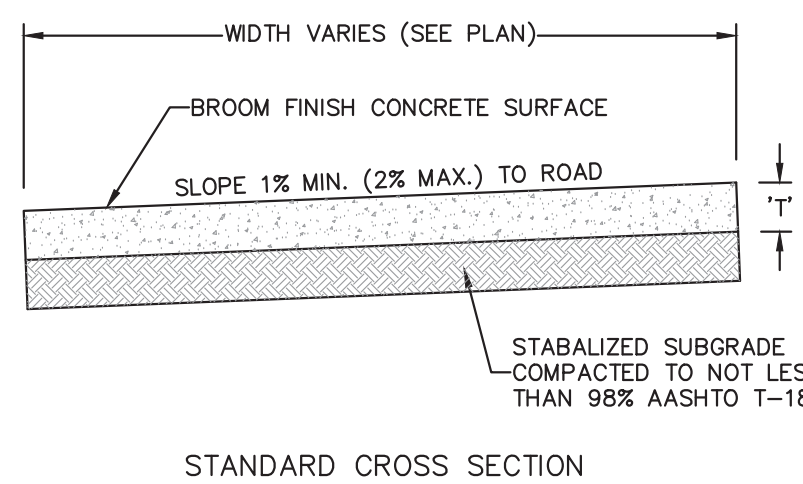


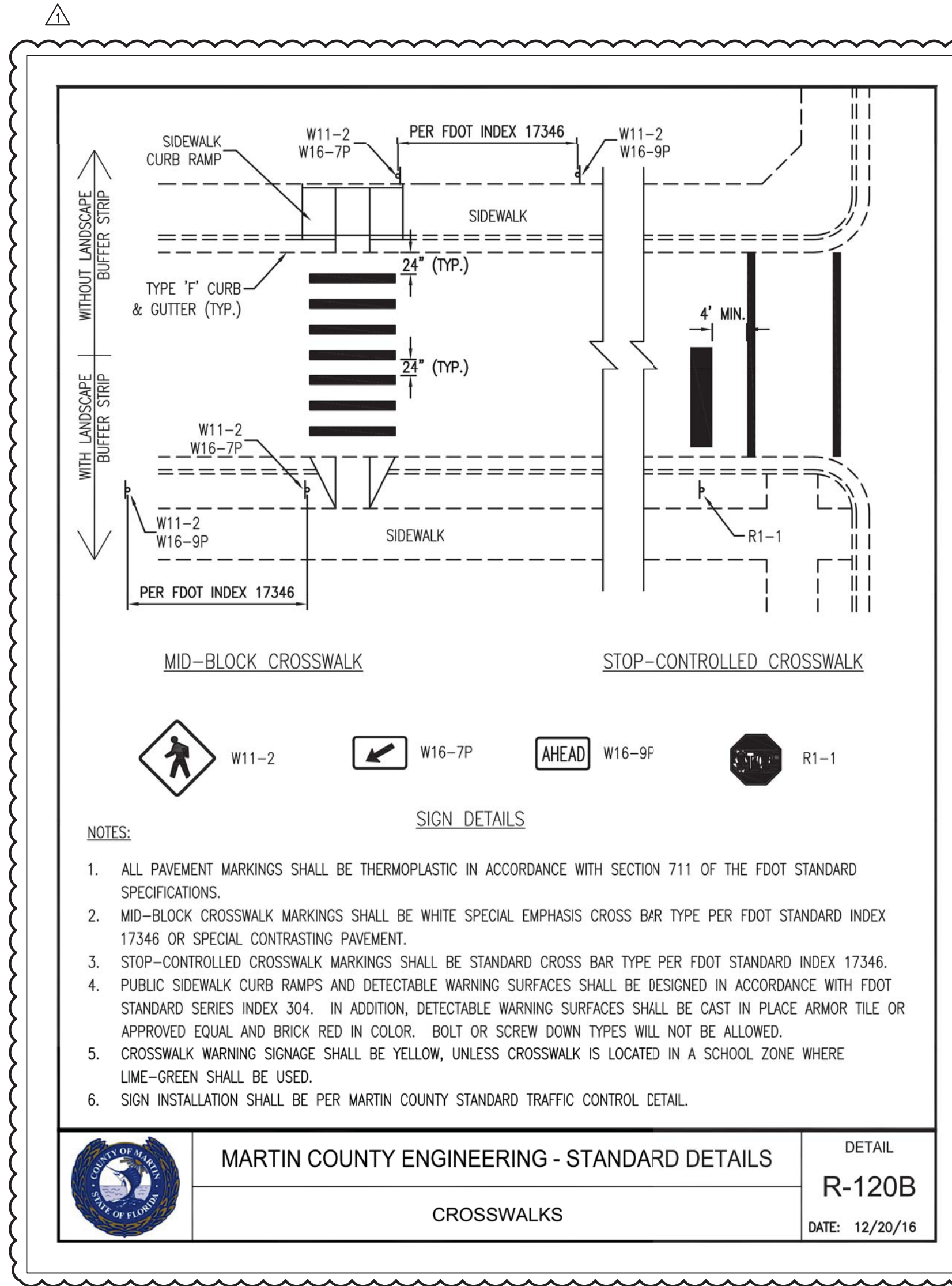
TABLE OF SIDEWALK JOINTS	
TYPE	LOCATION
'A'	100' MAX. SPACING, P.C./P.T. OF CURVES, JUNCTION OF EXISTING AND NEW SIDEWALKS.
'B'	5'-0" CENTER TO CENTER
'C'	WHERE SIDEWALK ABUTS CONCRETE CURBS, DRIVEWAYS AND SIMILAR STRUCTURES.



CONCRETE SIDEWALK
NTS

TABLE OF SIDEWALK THICKNESS	
LOCATION	"T"
PEDESTRIAN ONLY AREAS	4"
DRIVEWAYS AND OTHER TRAFFIC AREAS	6"

NOTE: ALL SIDEWALK STREET CROSSINGS MUST MEET THE REQUIREMENTS OF THE AMERICAN DISABILITIES ACT (ADA) COMPLIANCE GUIDE. TRANSITIONS FROM RAMPS TO WALKS, GUTTERS, OR STREETS SHALL BE FLUSH AND FREE OF ABRUPT CHANGES.



- NOTES:**
- ALL PAVEMENT MARKINGS SHALL BE THERMOPLASTIC IN ACCORDANCE WITH SECTION 711 OF THE FDOT STANDARD SPECIFICATIONS.
 - MID-BLOCK CROSSWALK MARKINGS SHALL BE WHITE SPECIAL EMPHASIS CROSS BAR TYPE PER FDOT STANDARD INDEX 17346 OR SPECIAL CONTRASTING PAVEMENT.
 - STOP-CONTROLLED CROSSWALK MARKINGS SHALL BE STANDARD CROSS BAR TYPE PER FDOT STANDARD INDEX 17346.
 - PUBLIC SIDEWALK CURB RAMPS AND DETECTABLE WARNING SURFACES SHALL BE DESIGNED IN ACCORDANCE WITH FDOT STANDARD SERIES INDEX 304. IN ADDITION, DETECTABLE WARNING SURFACES SHALL BE CAST IN PLACE ARMOR TILE OR APPROVED EQUAL AND BRICK RED IN COLOR. BOLT OR SCREW DOWN TYPES WILL NOT BE ALLOWED.
 - CROSSWALK WARNING SIGNAGE SHALL BE YELLOW, UNLESS CROSSWALK IS LOCATED IN A SCHOOL ZONE WHERE LIME-GREEN SHALL BE USED.
 - SIGN INSTALLATION SHALL BE PER MARTIN COUNTY STANDARD TRAFFIC CONTROL DETAIL.



MARTIN COUNTY ENGINEERING - STANDARD DETAILS

CROSSWALKS

DETAIL

R-120B

DATE: 12/29/16

DETAILS- PAVING, GRADING AND DRAINAGE

BANYAN BAY - PHASE 2C
MARTIN COUNTY, FLORIDA

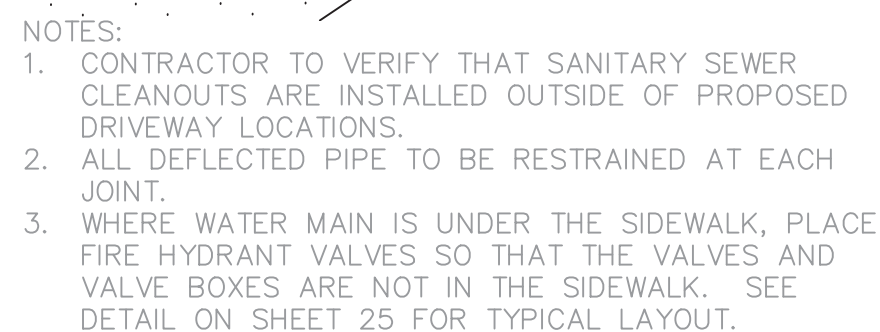
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DESIGNED BY SDS
DRAWN BY SDS
CHECKED BY PVR
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Kimley»Horn
445 24TH STREET, SUITE 200, VERO BEACH, FL 32960
PHONE (772) 794-4100 FAX (772) 794-4130
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DATE JUNE 2017
FILE & DRAWING NO. 041052000
SHEET 9 OF 17

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TYPICAL PERIMETER BERM AND BASIN LINE



- | | |
|---|---------------------------|
| | PROFESSIONAL ENGINEER |
| | BLAINE BERGSTRESSER, P.E. |
| | 84598 |
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SCALE	AS SHOWN	 <p>445 24TH STREET, SUITE 200, VERO BEACH, FL 32960 PHONE (772) 794-4100 FAX (772) 794-4130 © 2017 KIMLEY-HORN AND ASSOC. INC. CA 000069</p>
DESIGNED BY	SDS	
DRAWN BY	SDS	
CHECKED BY	PVR	
FILE	11 UTILITY PLANS	

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SHEET	10 OF 17

UTILITY PLANS-A



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UTILITY PLANS -B

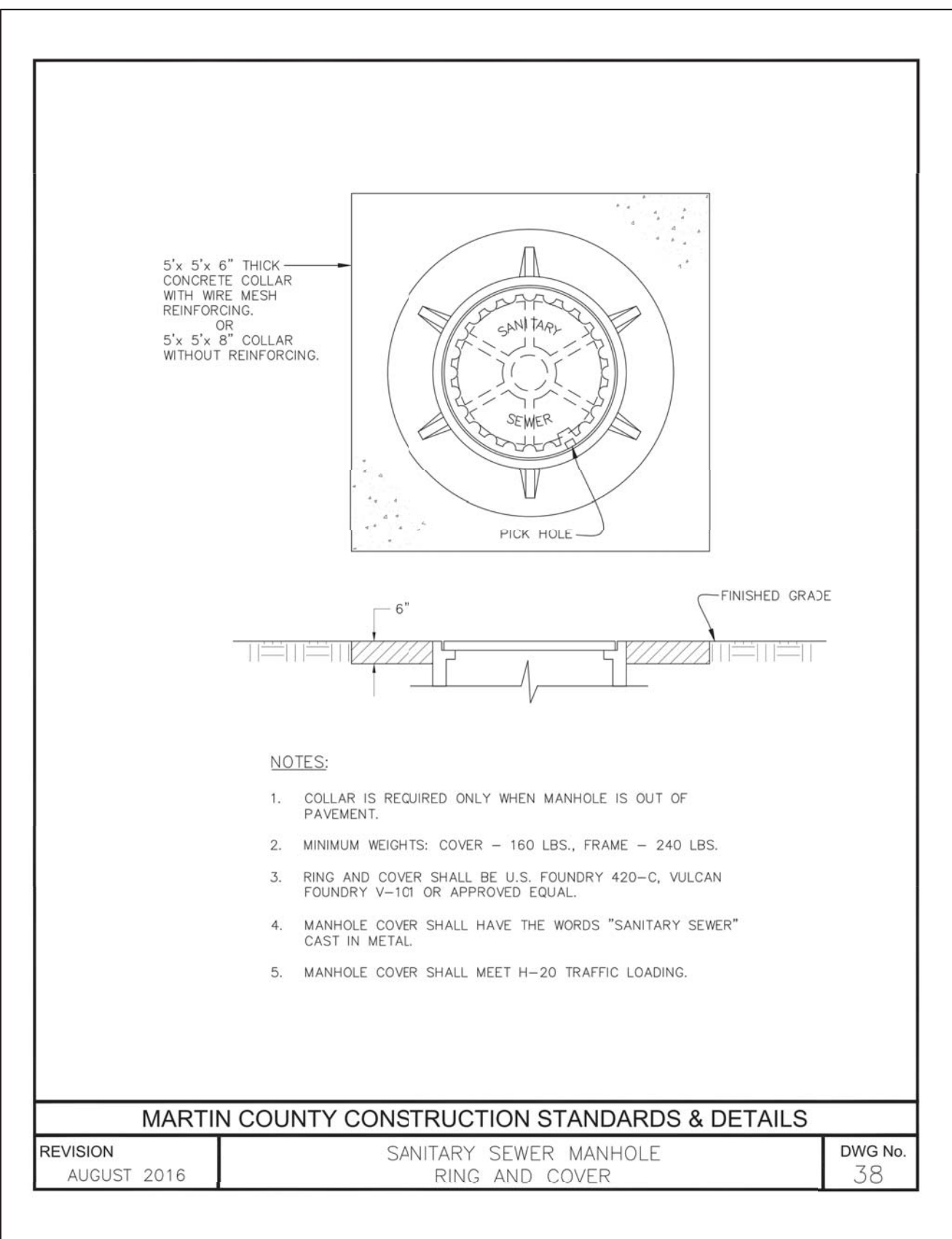
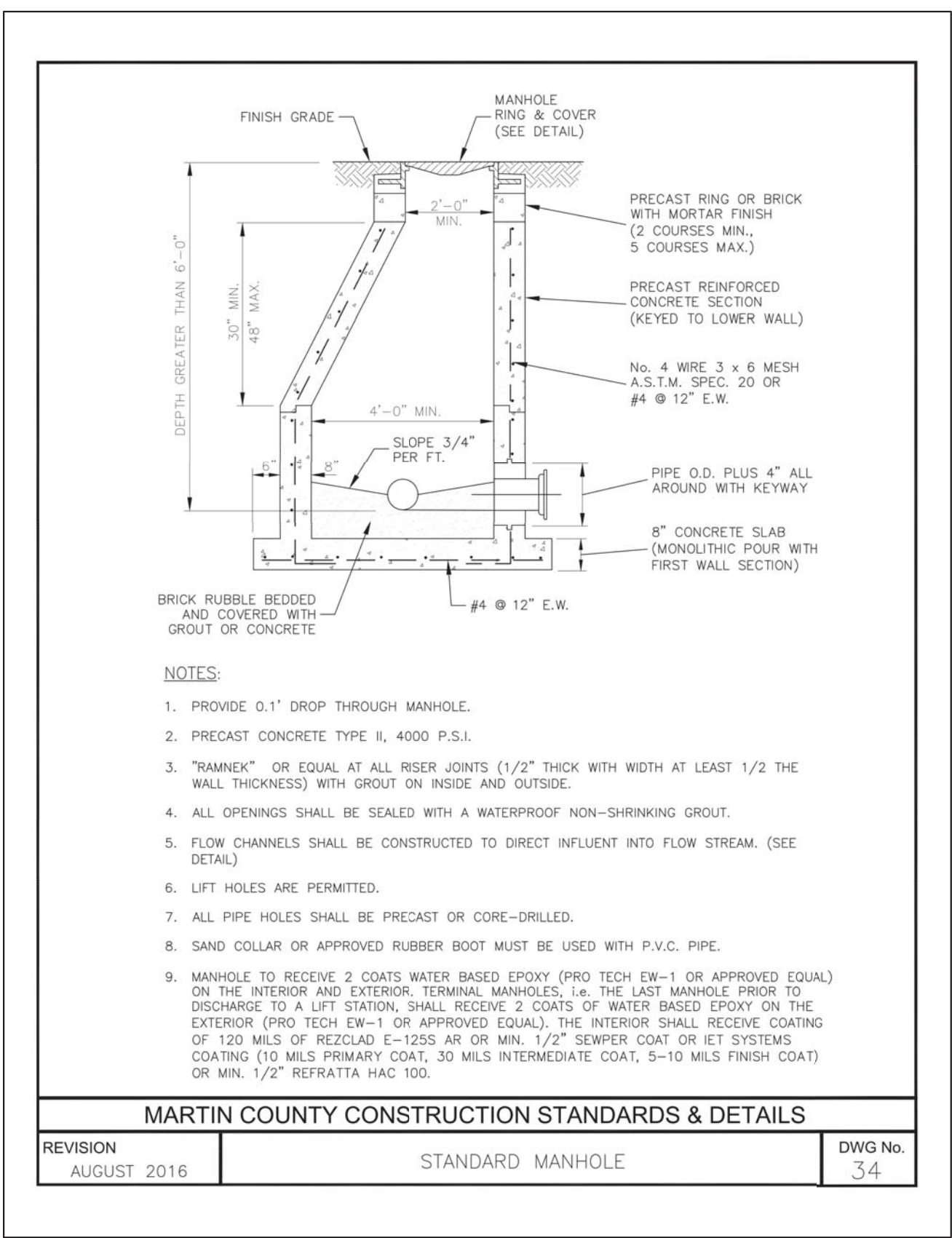
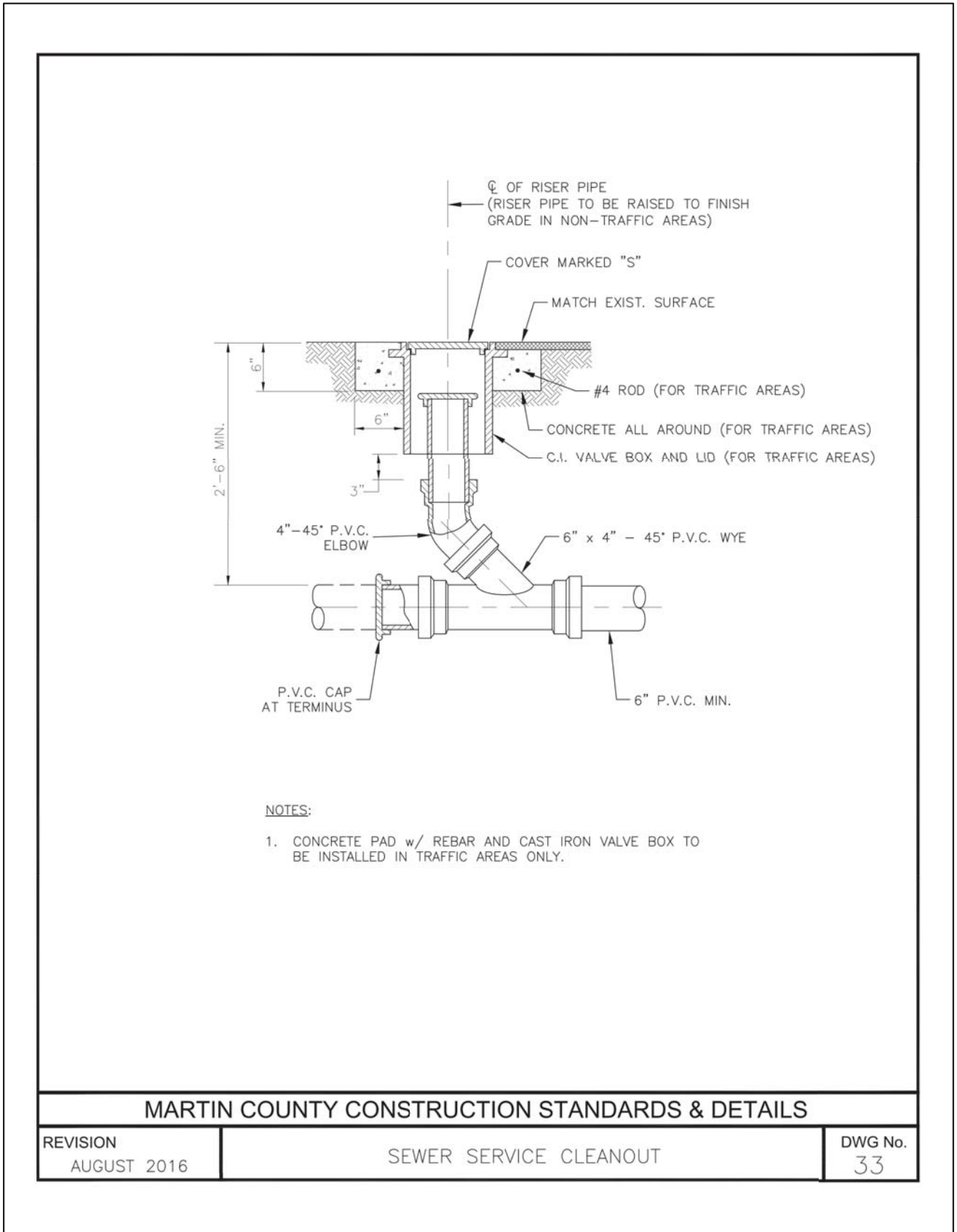
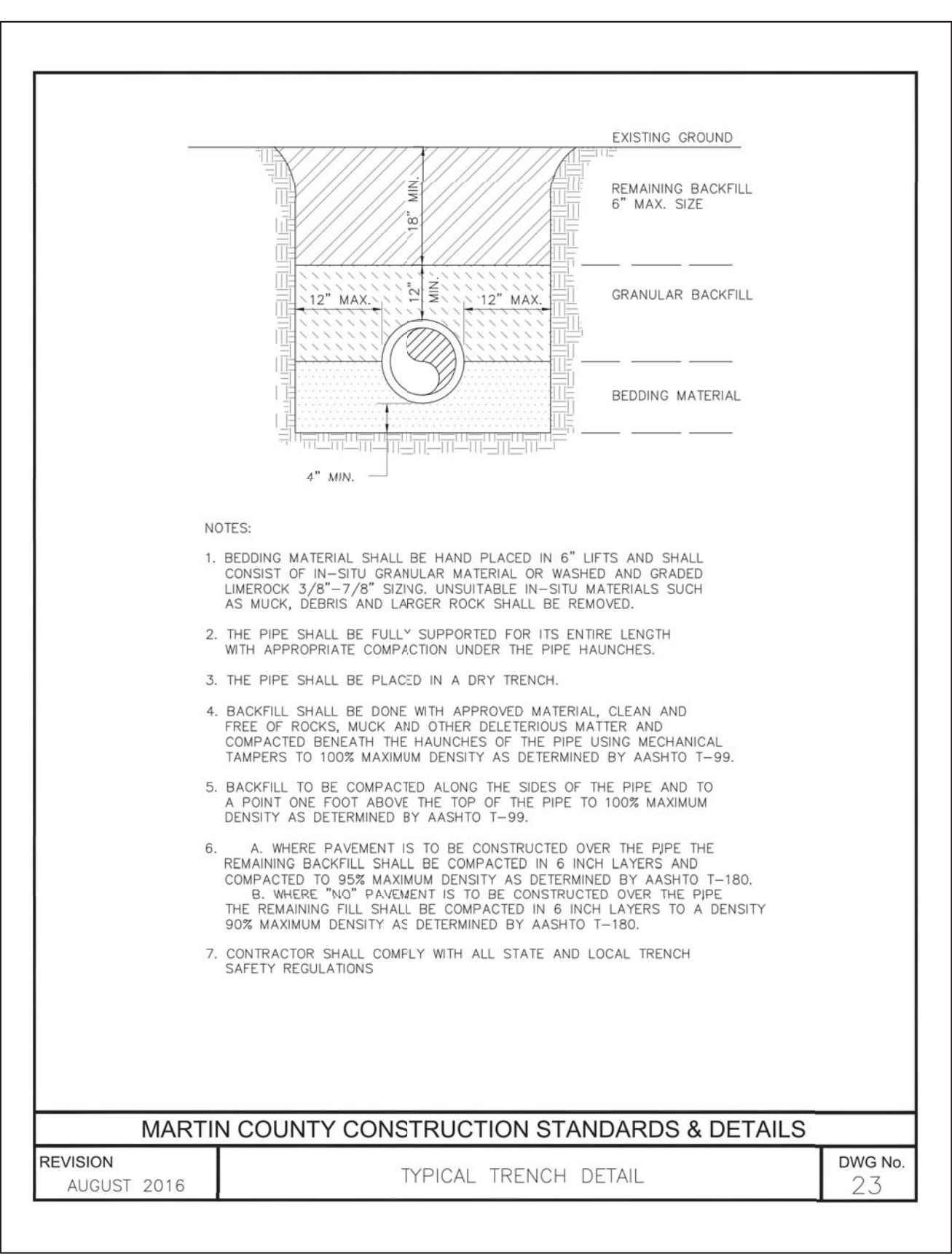
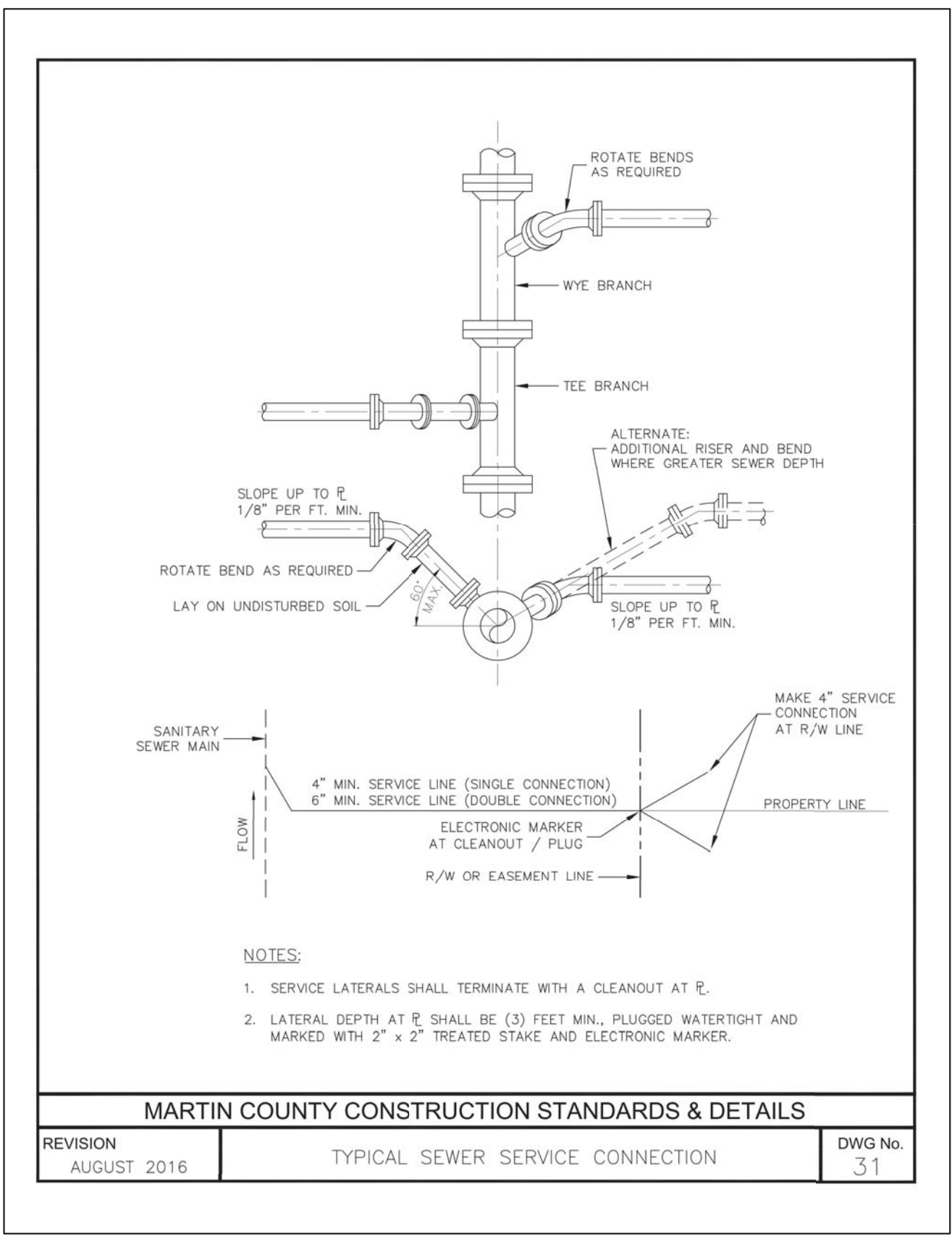
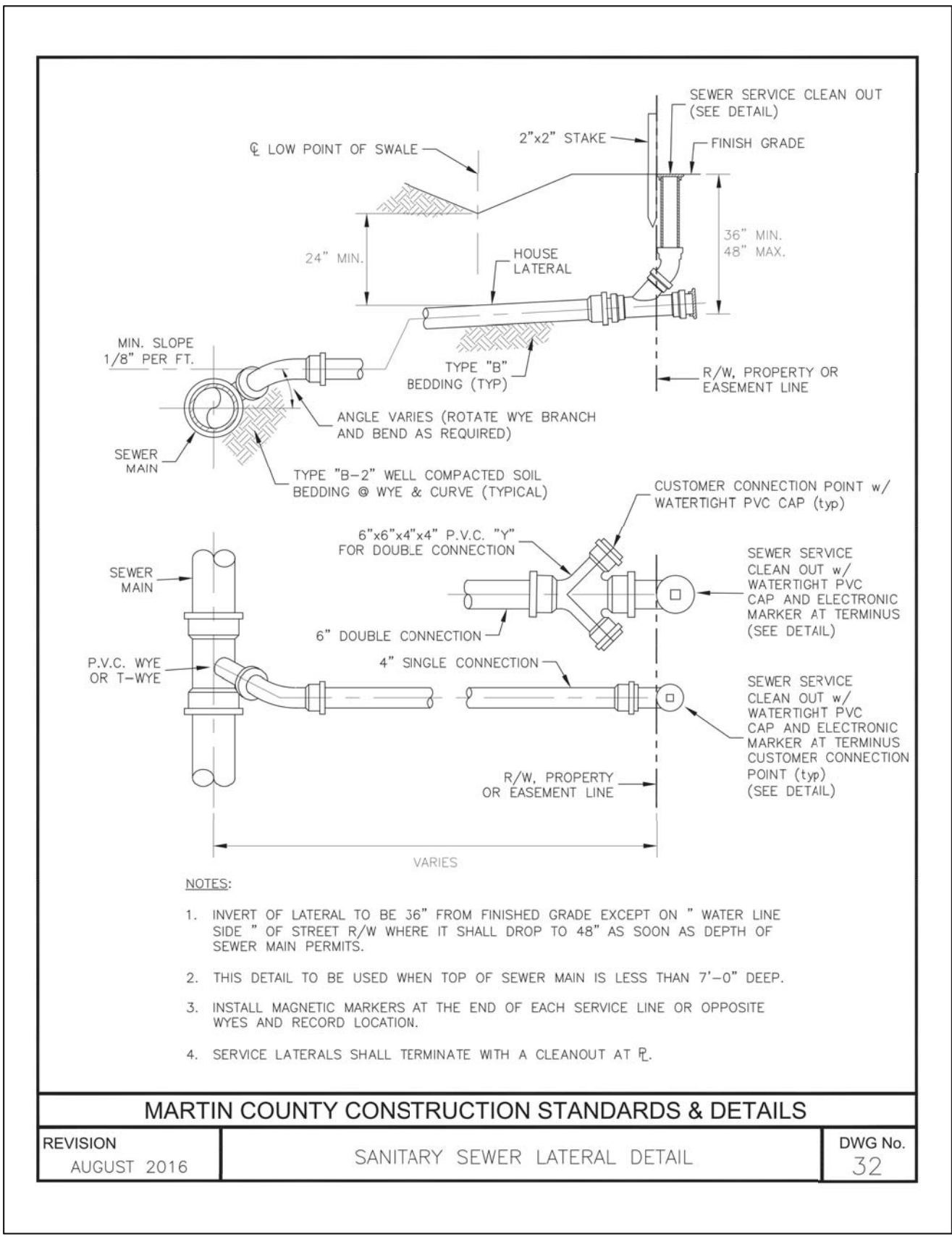
11 OF 17

A	PER COUNTY COMMENTS	2020-06-30	AMD
A	PER COUNTY COMMENTS	2020-04-27	AMD
NO.	REVISIONS	DATE	BY

SEAL

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Drawing name: K:\VRB_LDCV\041\041052 Banyan Bay\2015 REVIEW\CAD\CONSTR\PHASE 20\13 DETAILS- WATER AND SANITARY.dwg 13 DETAILS- WATER AND SANITARY.dwg Jul 27, 2020 2:11pm by: AlexDougherty



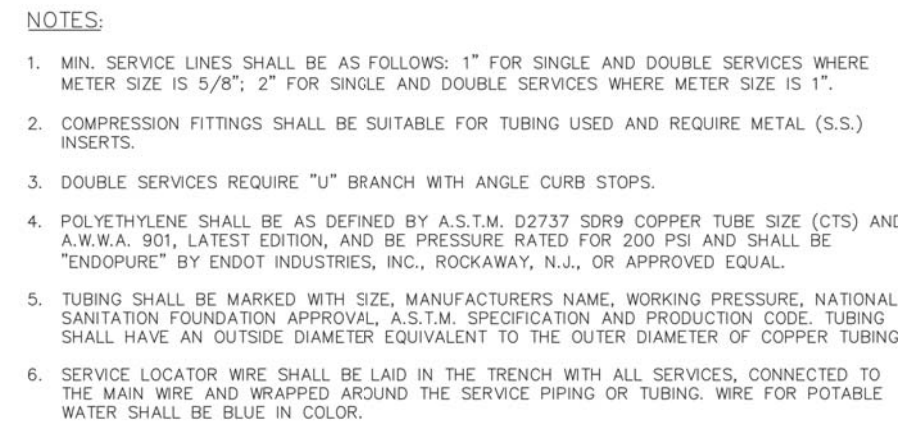
DETAILS- WATER AND SANITARY

BANYAN BAY - PHASE 2C
MARTIN COUNTY, FLORIDA

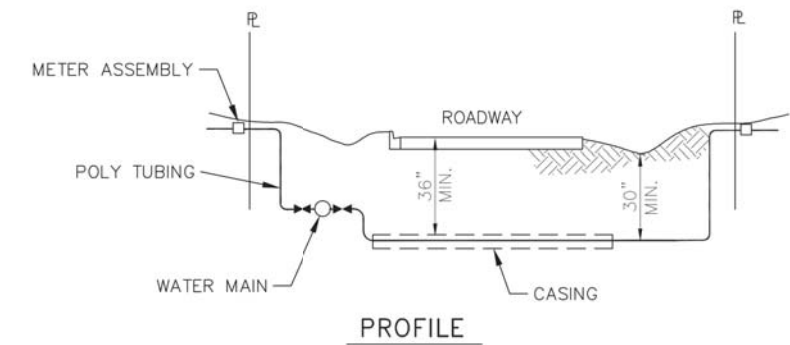
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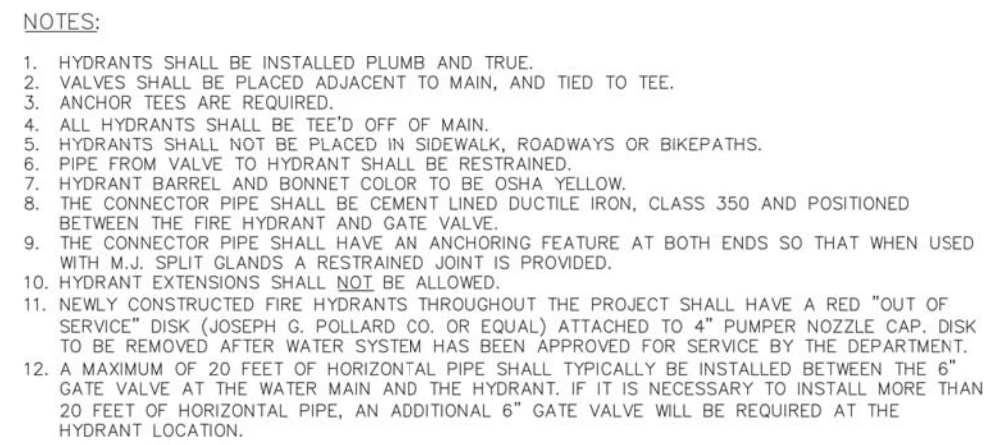
DATE JUNE 2017
FILE & DRAWING NO. 041052000
SHEET 13 OF 17



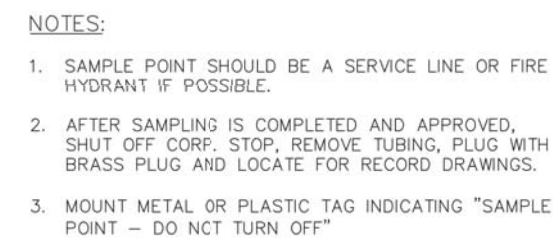
REVISION AUGUST 2016	SERVICE CONNECTION DETAIL 5/8" OR 1" METER	DWG No. 2
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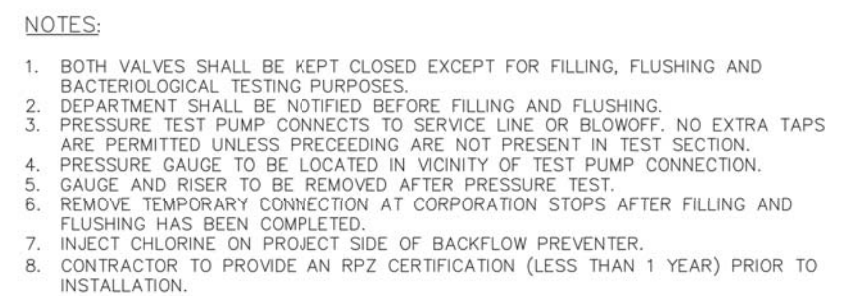
REVISION AUGUST 2016	WATER SERVICE CONNECTIONS (SINGLE OR DOUBLE) PLAN / PROFILE	DWG No. 3
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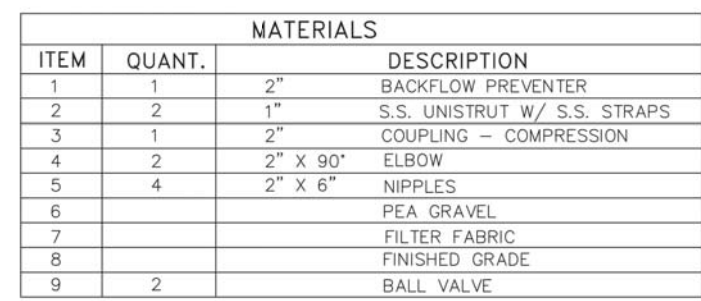
REVISION AUGUST 2016	FIRE HYDRANT INSTALLATION DETAIL AND NOTES	DWG No. 7
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REVISION AUGUST 2016	SAMPLE POINT DETAIL	DWG No. 9
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REVISION AUGUST 2016	DOUBLE VALVE DETAIL AND FILLING AND FLUSHING CONNECTION	DWG No. 11
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REVISION	REDUCED PRESSURE BACKFLOW PREVENTER SINGLE SERVICE 3/4" 1" 1-1/2" AND 2"	DWG No.
AUGUST 2016		13



REVISION AUGUST 2016	VALVE SETTING DETAIL	DWG No. 18
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REVISION AUGUST 2016	PRESSURE PIPE CONFLICT DETAIL	DWG No. 20
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NOTES:

1. THE DATA IN THE ABOVE TABLE ARE BASED UPON THE FOLLOWING INSTALLATION CONDITIONS:

SOIL TYPE-SAND	TEST PRESSURE-150 PSI	DEPTH OF BURY-3'
TRENCH TYPE-3	SAFETY FACTOR- 1.5	VERTICAL OFFSET-3'
MINIMUM PIPE LENGTH ALONG TEE RUN-5'		
2. THE RESTRAINED PIPE LENGTHS APPLY TO DUCTILE IRON AND PVC PIPE.
3. JOINTS BETWEEN UPPER AND LOWER BENDS SHALL BE RESTRAINED.
4. RESTRAINED PIPE LENGTHS APPLY TO PIPE ON BOTH SIDES OF VALVES AND FITTINGS.
5. DESIGN ENGINEER SHALL BE RESPONSIBLE FOR PROPERLY SIZING THE LENGTH OF PIPE TO BE RESTRAINED.

REVISION AUGUST 2016	MECHANICAL JOINT ANCHORING REQUIREMENTS	DWG No. 21
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					PROFESSIONAL ENGINEER BLAINE BERGSTRESSER, P.E. 84598
	PER COUNTY COMMENTS		2020-04-27	AMD	
NO.	REVISIONS		DATE	BY	SEAL

PROFESSIONAL ENGINEER
BLAINE BERGSTRESSER, P.E.
84598

BANYAN BAY - PHASE 2C
MARTIN COUNTY, FLORIDA

Kimley»»Horn

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DATE JUNE 2017

FILE & DRAWING NO.
041052000

SHEET

14 OF 17

PROJECT SPECIFICATIONS

Scope of Work:
The Contractor shall furnish all materials, labor, equipment, tools, supervision, transportation and incidentals necessary to construct grading, paving, drainage, roadway, water and sewer improvements in accordance with the provisions of these Supplementary Conditions, Specifications and Drawings, entitled, "BANYAN BAY – PHASE 2A" consisting of 37 sheets, issued January 2017, and prepared by Kimley–Horn and Associates, Inc.

It is the objective of these documents to assure the total completion of the work required to provide functional, operable and efficient drainage, roadway, water and sewer improvements for the "BANYAN BAY – PHASE 2A".

Location:
The work is located in Martin County, Florida consisting of approximately 56 acres.

Permits and Licenses:
Construction permits for certain elements of the project work have been obtained by the Owner, and the design and construction requirements of the project reflect constraints and conditions imposed by these permits. These include construction permits from Martin County, ACCE, FDOT, FDEP and the South Florida Water Management District. The Contractor shall perform all work and shall construct the project in accordance with the requirements of these permits and approvals, copies of which are available for his review and use from the Engineer, upon request. Additionally, the Contractor shall secure all other work permits, approvals or licenses required to perform the work, and he shall perform the work in strict accordance with those permits, approvals, or licenses.

Reference to Other Documents:
For brevity, reference may be made to other specifications or documents which will be used to specify or control the materials placed in the work, the construction methods to be used, the tolerances that will be acceptable, and contractual or legal obligations. The specifications shall include:

1. "Standard General Conditions of the Construction Contract," 1996 Edition, prepared by the Engineer's Joint Contract Documents Committee and published by the National Society of Professional Engineers. Reference shall be made: "General Conditions."
2. "Florida Department of Transportation Standard Specifications for Road and Bridge Construction, 2000 edition," published by the Florida Department of Transportation and any Supplemental Specifications thereto. Reference shall be made: "FDOT Specifications."
3. "Florida Department of Transportation Roadway and Traffic Design Standards, January 2004 edition," published by the Florida Department of Transportation shall be made: "FDOT Index."
4. "American Society for Testing and Materials Specifications," latest edition. Reference shall be made: "ASTM."
5. "American Association of State Highway and Transportation Officials," latest edition. Reference shall be made: "AASHTO."

By reference, the documents cited above are made part of these Supplementary Conditions and Specifications. The Contractor shall have copies of each in his possession for use throughout this project work.

Additionally, the work shall be performed in accordance with all other applicable local, regional, state and Federal laws, regulations and codes including, but not limited to, the Federal Occupational Safety and Health Act.

General Conditions:
Unless otherwise stated in these Supplementary Conditions, the provisions of the "Standard General Conditions of the Construction Contract," referenced above, shall be used to govern all issues addressed in those General Conditions for this project.

Owner–Engineer Relationship:
Any agreement between Owner and Engineer shall not be construed to provide any obligation from the Engineer to any third parties including, but not limited to, any contractors (general or sub), nor to any successors in title to the Owner. The rights under any agreement between Owner and Engineer inure only to those two parties.

Partial Payments:
Partial payments shall be calculated from quantities of work in place. These payments shall be based on the Agreement unit prices and will be made on or about the 15th of each month for the previous month's progress. The Contractor shall, after the first of each month, submit invoices for materials used and work performed for the previous month. The Engineer will review all invoices before presenting them to the owner for payment. Ten percent (10%) of the amount due and payable to the Contractor will be retained from each partial payment. Final payments will be accomplished as prescribed in the Agreement.

Errors or Omissions in the Drawings or Specifications:
Prior to initiation of the work, the Contractor shall check dimensions, grades and elevations shown on the Drawings and summary of estimated quantities to assure himself that they are correct and that the work can be accomplished as intended. The Contractor shall take no advantage of any apparent error or omission which he might discover, but will immediately notify the Engineer who will then make such corrections and interpretations as he deems necessary for reflecting the actual spirit and intent of the Drawings and Specifications.

Soil and Subsoil Conditions:
It is the sole and exclusive responsibility of the Contractor to:

1. Place his own interpretation on any and all soil and subsoil data portrayed on the Drawings;
2. Perform his own soil and subsoil investigation to determine the nature, character, location and extent of all soil and subsoil conditions that may affect his work; and
3. Include in his contract price considerations for all work necessary to assure that the soil and subsoil conditions will meet the requirements of the Specifications and the applicable regulations of Martin County.

Pre–Construction Conference:
Immediately after the Agreement has been awarded, the Engineer shall call a pre–construction conference prior to initiation of the work at a place designated by him to review the construction aspects of the project. The meeting will be between the Engineer and the Contractor. The Contractor shall present his tentative detailed working schedule for the project so that it may be reviewed by the Engineer. Additionally, it will afford the Contractor an opportunity to have any questions he may have on the work clarified by the Engineer. No work under the Agreement shall be commenced until after the Notice to Proceed has been issued.

Estimated Quantities:
The quantities estimated for various items of work are only estimates, and may not reflect all the items of work or the final quantities needed to complete the project. These quantities are subject to increase or decrease by the Owner to make them conform to the program of work selected and the responsibility of the Contractor to do all work and to furnish and install all improvements shown on the Drawings, whether they are shown in the estimated quantities, or whether the final quantities are more or less than those estimated. Payment of all unit price work shall be on the basis stated in Paragraph 119.9.1 of the General Conditions.

Horizontal and Vertical Control:
The Contractor shall construct the required improvements in the location shown on the Drawings, and shall use as horizontal control points the parcel corners and benchmarks at the site for use in establishing the necessary elevations and grades. The topographic survey and control points for this project provided by GCY, Inc.

Coordination of Work with Others:
The Contractor shall coordinate his work with the work or improvements of others with regard to new construction, or for the need of removal, relocation or alteration of existing facilities. This includes, but is not limited to, Martin County Utilities, Florida Power & Light Company, Bell South, Cable and Gas Companies, and their contractors, subcontractors, or agents.

Standards for Quality and Workmanship:
All materials, equipment and supplied furnished by the Contractor for permanent incorporation in the work shall be new and of quality standards specified. Workmanship shall be first–class and the finished product equal to the best accepted standards of the trade for the category of work performed.

Power and Water:
All arrangements and costs for temporary power and water during construction shall be the responsibility of the Contractor.

Existing Utilities and Structures:
Existing utilities, structures and facilities shown on the Drawings were located as accurately as possible from the records examined. No guarantee is made that all existing facilities are shown or that those shown are entirely accurate. The Contractor shall assure himself of the actual location of the utilities, structures or facilities prior to performance of any work in the vicinity. The utility companies or utility agencies will cooperate with the Contractor in locating underground utilities that may be subject to damage or interruption of services during the Contractor's operations. Prior to start of the work, the Contractor shall request each utility agency to advise him of the location of their facilities in the vicinity. The Owner will assume no liability for damages sustained or costs incurred because of the Contractor's operation in the vicinity of existing utilities or structures, or to the temporary bracing and shoring of same. In the event that it is necessary to shore, brace or swing a utility, the utility company or department affected should be contacted and their permission secured as to the method used for any such work.

Restoration of Damaged Structures or Utilities:
It shall be the responsibility of the Contractor to repair, rebuild or restore to its former condition, any and all portions of existing utilities, structures, equipment, appurtenances or facilities, other than those to be paid for under this Contract, which may be disturbed or damaged due to this construction operation, at no cost to the Owner.

Final Cleanup:
Upon completion of the work but before final payment will be made, the Contractor shall clear and remove from the project area, all falsework, equipment, surplus and discarded materials, rubbish and temporary structures which result from the work under this Agreement, and shall restore in an acceptable manner all property which has been damaged during the prosecution of the work.

Guarantee:
All materials and the installation thereof which are furnished and installed by the Contractor, under the terms of the Agreement, shall be guaranteed by the Contractor against defective workmanship, mechanical and physical defects, leakage, breakage, and other damages and failure under normal operation for a period of one (1) year from the date of final payment, said date to constitute the commencement of the one (1) year warranty period. All materials and installations proving to be defective within the specified period of the guarantee shall be replaced, without cost to the Owner, by the manufacturer or the Contractor. The period of guarantee of each such replacement shall be from and after the date of installation thereof.

1. The Contractor shall be responsible for protecting all existing above–ground, underground, and on the surface structures and utilities against the construction operation that may cause damage to said facility.
2. The locations of existing underground utilities are shown in an approximate way only and have not been independently verified by the Owner or its representative. The Contractor shall determine the exact location of all existing utilities before commencing work, and agrees to be fully responsible for any and all damages which might be occasioned by the Contractor's failure to exactly locate and preserve any and all underground utilities.
3. The Contractor shall give adequate notification to all affected utility owners for removal, relocation, and alteration of their existing facilities.
4. Where encountered, unsuitable material shall be removed to a depth and area determined by the Engineer and backfilled with clean granular sand or select material approved by the Engineer. Backfilling shall be in layers not greater than 8" thickness and compacted to 100 percent of the maximum density as determined by AASHTO T–99–C.
5. Contractor is responsible for checking actual site conditions before starting construction.
6. Street or highway restoration work is to be done as per local or state agency having jurisdiction.
7. The Contractor shall comply with all rules and regulations of the State, County and City authorities regarding closing or restricting the use of public streets or highways.
8. Traffic control on all county and state highway rights–of–way shall meet the requirements of the Manual of Uniform Traffic Control Devices (U.S. DOT/FHA) and the requirements of the state and any local agency having jurisdiction.
9. Contractor to maintain positive drainage outfall during construction.
10. Contractor shall not use any public right–of–way for any staging loading/ unloading and/or staging of equipment or supplies without proper permits from the appropriate regulatory agency.

ROADWAY PAVING, GRADING + DRAINAGE

CLEARING AND GRUBBING

All trees, brush, stumps, roots, grass, weeds, rubbish, and other obstructions resting on or lying within 12" below finished grade or subgrade shall be completely removed for the full width of all road right– of–way and easements, swales, utility easements and drainage easements. All work shall be performed in accordance with Section 110 of the Standard Specifications.

BURNING

Prior to burning any material on site, Contractor shall obtain permit from proper authority and submit to Engineer.

DISTURBED AREAS

All areas disturbed by construction shall be seeded and mulched or sodded as specified below:

Seeding and Mulching:
Unless otherwise noted, the Contractor shall, after final grading and cleanup of all disturbed areas, establish a stand of grass by seeding and mulching in accordance with Section 570 of the FDOT Specifications. The Contractor shall water the seeded area to maintain moisture levels for optimum growth for at least 2 weeks or until the grass is established.

Sodding:
Within the limits delineated in the plans, the Contractor shall, after final grading and cleanup, establish a stand of grass by furnishing and placing sod in accordance with Section 575 of the FDOT Specifications. The Contractor shall water the sodded area to maintain moisture levels for optimum growth to assure a healthy stand of grass. Sod shall be Bahia grass sod.

GRADING

Contractor shall perform all necessary grading to achieve the typical sections as per plan. All workmanship shall be in accordance with the FDOT Specifications.

CONSTRUCTION STAKING

Construction staking is performed by the Contractor, loss or disturbance of control points due to negligence by the Contractor will be replaced at the Contractor's expense. Construction staking of property corners is to be maintained by the contractor until project completion.

STABILIZING

Stabilized subgrade shall be constructed to the Florida bearing value as per plan for the depth and limits shown on the plan, and in accordance with Section 160 of the FDOT Specifications.

Type C Stabilization:
All stabilized areas shall be compacted to at least 98% of the maximum density as determined by AASHTO T–180.

ROCK BASE

Rock base shall be constructed of cemented coquina shell material in accordance with Section 915 of the FDOT Specifications.

Cemented coquina shell base shall be constructed in accordance with Section 250 of the FDOT Specifications. Contractor shall provide rock pit certification for cemented coquina shell material.

Rock base shall be constructed to the depth and limits as shown on the plan. The rock base shall be compacted to at least 98% of the maximum density as determined by AASHTO T–180 and shall be primed.

PRIME AND TACK COAT

Prime and tack coats for the base course shall be in accordance with Section 300 of the FDOT Specifications.

ASPHALTIC CONCRETE SURFACE COURSE (ACSC)

ACSC shall be constructed for the depth and limits shown on the plan in accordance with sections 320, 330, and 331 of the FDOT Specifications unless otherwise specified.

TESTING

The Contractor shall retain the services of an Owner approved independent testing laboratory to conduct all required tests on subgrade, base and surface course materials. Test results must be submitted prior to any request for payment on the above items.

The schedule for testing the pavement shall be as follows:

1. Subgrade:
 - a. Florida bearing value test shall be taken at intervals of not more than 200 feet, or closer as may be necessary in the event of variations in subsoil conditions.
 - b. Density tests shall be taken at intervals of not more than 200 feet or closer as may be necessary.
2. Base:
 - a. Density tests shall be taken at intervals of not more than 500 feet or closer as may be necessary.

All testing shall be taken in a staggered sampling pattern from a point 12 inches inside the left edge, to the center, to a point 12 inches inside the right edge of the item tested.

If any test indicates that the work does not meet the specifications, the substandard item shall be reworked or corrected and retested, at the Contractor's expense, until the provisions of these specifications are met.

All required testing to meet project specifications shall be paid for by the Contractor.

SIGNING AND MARKING

Signing shall be in accordance with Section 700 and traffic paint shall be in accordance with Section 710 of the FDOT Specifications.

CLEAN–UP

The Contractor must provide clean–up of excess construction material upon completion of the project. The site must be left in a neat, clean, graded condition.

DRAINAGE SPECIFICATIONS

Storm inlets and manholes shall be constructed in general accordance with Section 425 of the FDOT Specifications.

All reinforcing steel to be ASTM A 615 (latest revision) Grade 40 F_y=40,000 PSI, and shall be handled and placed in accordance with ACI 318 (latest revision).

Precast concrete manholes and storm inlets are to be used (only after the Engineer's review of the manufacturer's shop drawings).

Storm sewer construction shall be in accordance with Section 430 and related sections of the FDOT Specifications.

CONCRETE

Unless otherwise specified or indicated, all concrete shall have a minimum compressive strength at 28 days of 3000 psi. All work shall comply with the current edition of the American Concrete Institute (ACI) building code and the applicable building codes having jurisdiction in the area.

PRECAST INLETS

All storm inlets shall be precast reinforced concrete in accordance with the details shown herein. Type II Portland Cement shall be used in the concrete mix. Concrete shall have a minimum compressive strength at 28 days of 4000 psi.

Bituminous coated corrugated steel pipe (BCCSP) shall be in accordance with Section 943 of the FDOT Specifications.

Reinforced concrete pipe (RCP) shall be in accordance with Section 941 of the FDOT Specifications.

Corrugated polyethylene pipe shall be in accordance with Section 430–11 of the FDOT Specifications.

All drainage pipe joints, including round concrete pipes, shall have a filter fabric jacket in accordance with FDOT Roadway and Traffic Design Standards.

CONSTRUCTION OBSERVATION

The Contractor shall notify the Engineer 48 hours prior to periods of the following construction activities so that the Engineer can notify the City, County or State to be present for construction observations and shall supply all equipment necessary to properly observe the completed work.

- I. Erosion Control/ Preserve Barricading
 - A. Upon completion of silt fence/ preserve barricading but prior to clearing
- II. Drainage
 - A. Laying of Pipe (before back-fill)
 - B. All drainage structures and pipe laying completed
 - C. Construction and stabilization of retention areas and swales
 - D. Seeding, mulch, and sodding in areas where erosion is evident or where plans so identify
- III. Utilities (U–2 permits or development order)
 - A. Pipe laying within County or State rights–of–way
 - B. Jack and boring in County or State rights–of–way
 - C. Restoration of all rights–of–way
- IV. Concrete
 - A. Completion of forming for curbing, sidewalk, and retaining walls before placement of concrete
- V. Pavement
 - A. Line and grade (Certification)
 - B. Sub–base (prior to adding base material)
 - C. Base (prior to priming and sand seal)
 - D. Base (after priming, sand seal, and before placing asphalt)
 - E. Asphalt or concrete (while paving is in progress)
 - F. Turn out construction on to County or State road (above inspections apply)
 - G. Test results on sub–base
 - H. Final project observation

CLOSEOUT

Contractor shall submit record drawings prepared by a Florida Registered surveyor documenting all information shown on the paving and grading and drainage plans and details.

Contractor shall also include the location and depth of the lines and retaining walls and wall details.

Contractor shall submit lake as–built's with cross sections prepared by a Florida Registered surveyor to demonstrate compliance with the lake and littoral requirements.

PROJECT SPECIFICATIONS

BANYAN BAY – PHASE 2C
MARTIN COUNTY, FLORIDA

SCALE AS SHOWN	<div>Kimley»Horn</div> <div>445 24TH STREET, SUITE 200, VERO BEACH, FL 32960 PHONE (772) 794-4100 FAX (772) 794-4130 ©2017 KIMLEY–HORN AND ASSOC. INC.</div>	DATE JUNE 2017
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FILE 15 PROJECT SPECIFICATIONS.dwg		CA 00000696

UTILITY SPECIFICATIONS

All wastewater system construction shall be installed, inspected, and tested in accordance with Martin County Utilities (MCU) "Minimum Design & Construction Standards", latest edition. In case of discrepancies between the construction plans and MCU specifications, the most restrictive shall apply.

SCOPE

Furnish all labor, materials, equipment and perform all operations required to complete the construction of a wastewater collection system and water distribution system as shown on the plans, specified herein, or both.

It is the intent to provide a complete and operating facility in accordance with the engineering drawings. The material and equipment shown or specified shall not be taken to exclude any other incidentals necessary to complete the work. All construction materials shall be first quality, not previously used. All construction shall meet with the requirements of MCU (hereafter termed "The Department").

GENERAL NOTES

For the purpose of the general notes below, the term department shall mean the Martin County Utilities and Solid Waste Department.

1. All connections to existing mains shall be observed by the department. Valves on existing mains shall be operated by department personnel or under their direct supervision. Tapping sleeve and valve shall be pressure tested prior to tapping. If service must be cut off to existing customers, the department must have three days notice to make necessary notifications. The contractor may be required to assist in notifications. In this event, contractor shall be ready to proceed with as much material preassembled as possible at the site to minimize the length of service interruption. The department will postpone a service cut off if the contractor is not ready to proceed on schedule. Such connections shall be made at night to minimize effects unless otherwise authorized by the department. No customer should be without service for more than four hours.

Local chlorination will be required for all pipe and fittings used to complete connections with potable water.

2. The contractor shall have available at the job site at all times one copy of Martin County Utilities "Minimum Design and Construction Standards", one copy of the contract documents, including plans, specifications and special provisions, and copies of any required construction permits.

3. The contractor shall contact all concerned utilities at least 48 hours in advance of construction operations.

4. The location and size of all existing utilities shown on the plans are approximate and are based on the best available information. The contractor shall be responsible for the location of all existing utilities. The contractor shall verify all utilities by electronic method 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 department 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.

5. Location of proposed facilities will be staked by contractor. contractor must give 48 hours notice to the department in advance of layout.

6. 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 meetings. The contractor shall notify the department by letter prior to the pre-construction meeting appointing the superintendent for this project including a formal resume showing qualifications. In the event the superintendent will not be present for any period of time during contract work the contractor shall provide 48 hours notice in writing to the department, including the appointment of a qualified replacement superintendent who will be present during the construction. Work shall not be allowed to proceed unless the assigned superintendent is present.

7. It is the contractor's responsibility to ensure his complete familiarity with the project site and components to include subsurface conditions of soil and groundwater table.

Warnings: Exact location of underground utilities is not known nor is this drawing to be construed as depicting the location of all underground utilities or structures. The contractor is responsible for determination of location prior to commencement of work. The contractor is responsible, therefore, for all damage and repair costs.

8. Density tests of trench backfill material shall be required at intervals of not more than 500 feet. Density tests of pavement open-cut areas including roads, turnlanes, and drives shall be required at each open-cut at intervals of not more than 50 feet. All tests shall commence at the top of conduit and every 12 inches to the finish grade. Compaction shall be in accordance with Martin County Utilities construction standards "typical trench detail" and "flexible pavement replacement detail", Florida Bearing Tests for the stability of existing subsoil shall be taken at intervals of not more than 500 feet, and closer as might be necessary in the event of variations in the strata. A certified copy of the tests shall be provided to the department and the florida department of transportation or Martin County Engineering department depending on jurisdiction. contractors bid price shall include payment for all tests conducted by an independent testing lab.

9. Any landscaping disturbed, unless otherwise shown on the plans, shall be replaced by the contractor to the satisfaction of the department at the contractors expense.

10. Any walk, curb and gutter or pavement disturbed, unless otherwise shown on plans, shall be replaced by the contractor at the contractor's expense. All construction shall meet ADA requirements.

11. All sod is to be placed for the full width disturbed at the per linear foot unit price for sod. Sod shall be replaced to match existing kind unless otherwise shown on plans.

12. Contractor shall provide proper bends to maintain required depth and alignment of pipe. Cost of bends not designated on plans shall be included with the unit price for pipe.

13. Any trees and/or scrub or other vegetation not to be replaced shall be removed from the project at the contractor's expense.

14. All rubble and unsuitable material must be removed from the project and disposed of properly by the contractor at the contractor's expense.

15. Mailboxes must be maintained to be capable of receiving mail at all times.

16. Deflect pipe as necessary to obtain the required alignment. Use appropriate fittings when deflection exceeds 75% of manufacturer's recommended maximum deflection.

17. All fittings shall be mechanically restrained. Refer to Martin County Utilities and Solid Waste Department, "Minimum Design & Construction Standards," (latest edition).

18. All construction dewatering (well points, pumps, etc.) will require a dewatering permit from South Florida Water Management District. This shall be obtained by the contractor at the contractor's expense prior to beginning of construction.

19. The "Trench Safety Act" shall be incorporated into this contract as enacted by the legislature of the State of Florida to be in effect as of October 1, 1990.

20. A U-2 permit is required for all work within County right-of-way. This permit must be obtained by the contractor from the Martin County Engineering Department. All costs payable by the contractor. A copy of this permit must be maintained on the project site at all times during construction.

21. All concrete and asphalt drives must be replaced from saw cut to edge of pavement.

22. Locations of fire hydrants and air release valves are approximate only. Final locations will be determined by department personnel in field.

23. Maximum length of water main and force main pressure test shall be 1500 feet. Water source for flushing, filling and pressure testing the water main shall be from a treated source approved by the department.

24. The contractor is responsible for the protection and restoration (if damaged) of all existing structures within the construction limits of the project, including but not limited to walls, fences, power poles, mail boxes, drainage pipes and structures, etc.

25. The contractor shall verify the location of existing water services prior to construction. The contractor shall protect the existing water services from damage and repair any breaks immediately.

26. "Record Drawings" shall include furnishing Martin County Utilities Department with all information necessary for a complete set of record drawings as stipulated in the Martin County Utilities and Solid Waste Department "Minimum Design and Construction Standards," (latest edition).

27. Mechanically restrain three (3) full lengths each side of all bends and as stipulated in the Martin County Utilities and Solid Waste Department "Minimum Design and Construction Standards," (latest edition). Mechanical restraints shall be either meg-a-lug, tyler or uniflange. The contractors bid price for pipe, gate valves and fittings shall include mechanical restraint.

28. The contractor shall protect existing utilities from damage during construction operations. The contractor shall support utilities and shore trench as required to protect and maintain existing utilities. The contractor shall notify each utility prior to attempting to support their facilities. If the utility requires the contractor to create their own crew to support their facilities, then it shall be the contractors responsibility to coordinate work and pay the utility for their expenses if required. All costs for this work shall be at the contractors expense and included in the contractors bid price.

29. All pressure tests shall be in accordance with AWWA standards.

30. Air release valve vault covers shall be constructed per detail "standard aluminum cover" as shown in the departments "Minimum Design and Construction Standards". Minimum cover size to match vault inside wall dimensions.

31. All water services shall be horizontal directional drilled under existing pavement.

GENERAL NOTES (cont.)

32. Valve stem riser shall be required where operating nut depth exceeds 4 feet. The riser shall be bolted to the valve nut. Method and materials shall be approved by the department. Cost for this work shall be included in the contractors bid unit price for gate valves.

33. The contractor shall clean mains using approved polyurethane pig(s). Temporary cleaning stations shall be constructed by the contractor. The contractor shall provide a cleaning plan showing method of filling and cleaning mains prior to start of construction. The cleaning plan shall be approved by the department prior to construction. All costs for filling and cleaning shall be at the contractors expense.

34. A Florida Department of Transportation permit is required for all work within the State right-of-way. A copy of this permit must be maintained on the project site at all times during construction.

35. The contractor shall install testing points for pressure testing mains. The contractor shall install and remove and plug corp stops per Martin County Utilities & Solid Waste dept. Standards "sample point detail". The location of test points shall be approved by the department.

36. Water main disinfection shall be in accordance with current AWWA, bulletin C-651.

37. Water mains and appurtenances shall be in accordance with current AWWA and NSF standards.

38. Minimum cover to finished grade over water mains shall be 30 inches up to 8" diameter; 10" or larger shall have 36" cover or greater to provide a minimum 18" cover over operating nut of gate valves.

39. All mains shall be tested for leakage. Water shall be supplied to the main and pumped to the required 150 psi pressure. The main tested shall either be isolated from existing potable lines or protected from leakage by a double valve arrangement.

40. Newly constructed fire hydrants throughout the project shall have a red "out of service" disk (Joseph G. Pollard Co. or equal) attached to 4" pumper nozzle cap; disk to be removed after water system has been approved for service by the department.

The department shall be notified at least 48 hours in advance of any testing procedures. After flushing is completed, line pressure shall be applied to the water system to determine if any major defects are present. The complete water system shall then be tested at a pressure of 150 psi for a period of not less than two hours. The department may at its discretion, increase the period to four hours. Maximum length of line to be tested at one time shall not exceed 1500 linear feet. An oil filled pressure gauge up to 200 psi at 2 pound increments shall be used for all pressure tests. No visible movement of the system shall occur and leakage shall not exceed:

L = ND times the square root of P divided by 7,400

where:
L = leakage in gallons
N = number of joints in test section
P = test pressure in psi
D = diameter of pipe in inches

STANDARD WATER/SEWER SEPARATION STATEMENT

62-555.314 Location of Public Water System Mains.

For the purpose of this section, the phrase "water mains" shall mean mains, including treatment plant process piping, conveying either raw, partially treated, or finished drinking water; fire hydrant leads; and service lines that are under the control of a public water system and that have an inside diameter of three inches or greater.

(1) Horizontal Separation Between Water Mains and Sanitary or Storm Sewers, Wastewater or Stormwater Force Mains, Reclaimed Water Pipelines, and On-Site Sewage Treatment and Disposal Systems.

(a) New or relocated, underground water mains shall be laid to provide a horizontal distance of at least three feet between the outside of the water main and the outside of any existing or proposed storm sewer, stormwater force main, or pipeline conveying water regulated under Part III of Chapter 62-610, F.A.C.

(b) New or relocated, underground water mains shall be laid to provide a horizontal distance of at least three feet, and preferably ten feet, between the outside of the water main and the outside of any existing or proposed vacuum-type sanitary sewer.

(c) New or relocated, underground water mains shall be laid to provide a horizontal distance of at least six feet, and preferably ten feet, between the outside of the water main and the outside of any existing or proposed gravity- or pressure-type sanitary sewer, wastewater force main, or pipeline conveying reclaimed water not regulated under Part III of Chapter 62-610, F.A.C.

(d) New or relocated, underground water mains shall be laid to provide a horizontal distance of at least ten feet between the outside of the water main and all parts of any existing or proposed "on-site sewage treatment and disposal system" as defined in Section 381.0065(2), F.S., and Rule 64E-6.002, F.A.C.

(2) Vertical Separation Between Underground Water Mains and Sanitary or Storm Sewers, Wastewater or Stormwater Force Mains, and Reclaimed Water Pipelines.

(a) New or relocated, underground water mains crossing any existing or proposed gravity- or vacuum-type sanitary sewer or storm sewer shall be laid so the outside of the water main is at least six inches, and preferably 12 inches, above or at least 12 inches below the outside of the other pipeline. However, it is preferable to lay the water main above the other pipeline.

(b) New or relocated, underground water mains crossing any existing or proposed pressure-type sanitary sewer, wastewater or stormwater force main, or pipeline conveying reclaimed water shall be laid so the outside of the water main is at least 12 inches above or below the outside of the other pipeline. However, it is preferable to lay the water main above the other pipeline.

(c) At the utility crossings described in paragraphs (a) and (b) above, one full length of water main pipe shall be centered above or below the other pipeline so the water main joints will be as far as possible from the other pipeline. Alternatively, at such crossings, the pipes shall be arranged so that all water main joints are at least three feet from all joints in vacuum-type sanitary sewers, storm sewers, stormwater force mains, or pipelines conveying reclaimed water regulated under Part III of Chapter 62-610, F.A.C., and at least six feet from all joints in gravity- or pressure-type sanitary sewers, wastewater force mains, or pipelines conveying reclaimed water not regulated under Part III of Chapter 62-610, F.A.C.

(3) Separation Between Water Mains and Sanitary or Storm Sewer Manholes.

(a) No water main shall pass through, or come into contact with, any part of a sanitary sewer manhole.

(b) Effective August 28, 2003, water mains shall not be constructed or altered to pass through, or come into contact with, any part of a storm sewer manhole or inlet structure. Where it is not technically feasible or economically sensible to comply with this requirement (i.e., where there is a conflict in the routing of a water main and a storm sewer and where alternative routing of the water main or the storm sewer is not technically feasible or is not economically sensible), the Department shall allow exceptions to this requirement (i.e., the Department shall allow construction of conflict manholes), but suppliers of water or persons proposing to construct conflict manholes must first obtain a specific permit from the Department in accordance with Part V of this chapter and must provide in its preliminary design report or drawings, specifications, and design data accompanying their permit application the following information:

1. Technical or economic justification for each conflict manhole.

2. A statement identifying the party responsible for maintaining each conflict manhole.

3. Assurance of compliance with the design and construction requirements in sub-subparagraphs a. through d. below.

a. Each water main passing through a conflict manhole shall have a flexible, watertight joint on each side of the manhole to accommodate differential settling between the main and the manhole.

b. Within each conflict manhole, the water main passing through the manhole shall be installed in a watertight casing pipe having high impact strength (i.e., having an impact strength at least equal to that of 0.25-inch-thick ductile iron pipe).

c. Each conflict manhole shall have an access opening, and shall be sized, to allow for easy cleaning of the manhole.

d. Gratings shall be installed at all storm sewer inlets upstream of each conflict manhole to prevent large objects from entering the manhole.

(4) Separation Between Fire Hydrant Drains and Sanitary or Storm Sewers, Wastewater or Stormwater Force Mains, Reclaimed Water Pipelines, and On-Site Sewage Treatment and Disposal Systems. New or relocated fire hydrants with underground drains shall be located so that the drains are at least three feet from any existing or proposed storm sewer, stormwater force main, or pipeline conveying reclaimed water regulated under Part III of Chapter 62-610, F.A.C.; at least three feet, and preferably ten feet, from any existing or proposed vacuum-type sanitary sewer; at least six feet, and preferably ten feet, from any existing or proposed gravity- or pressure-type sanitary sewer, wastewater force main, or pipeline conveying reclaimed water not regulated under Part III of Chapter 62-610, F.A.C.; and at least ten feet from any existing or proposed "on-site sewage treatment and disposal system" as defined in Section 381.0065(2), F.S., and Rule 64E-6.002, F.A.C.

(5) Exceptions. Where it is not technically feasible or economically sensible to comply with the requirements in subsection (1) or (2) above, the Department (Dep) shall allow exceptions to these requirements if suppliers of water or construction permit applicants provide technical or economic justification for each exception and provide alternative construction features that afford a similar level of reliability and public health protection. Acceptable alternative construction features include the following:

(a) Where an underground water main is being laid less than the required minimum horizontal distance from another pipeline and where an underground water main is crossing another pipeline and joints in the water main are being located less than the required minimum distance from joints in the other pipeline:

1. Use of pressure-rated pipe conforming to the American Water Works Association standards incorporated into Rule 62-555.330, F.A.C., for the other pipeline if it is a gravity- or vacuum-type pipeline;

2. Use of welded, fused, or otherwise restrained joints for either the water main or the other pipeline; or

3. Use of watertight casing pipe or concrete encasement at least four inches thick for either the water main or the other pipeline.

(b) Where an underground water main is being laid less than three feet horizontally from another pipeline and where an underground water main is crossing another pipeline and is being laid less than the required minimum vertical distance from the other pipeline:

1. Use of pipe, or casing pipe, having high impact strength (i.e., having an impact strength at least equal to that of 0.25-inch-thick ductile iron pipe) or concrete encasement at least four inches thick for the water main; and

2. Use of pipe, or casing pipe, having high impact strength (i.e., having an impact strength at least equal to that of 0.25-inch-thick ductile iron pipe) or concrete encasement at least four inches thick for the other pipeline if it is new and is conveying wastewater or reclaimed water.

WATER DISTRIBUTION SYSTEM

INSTALLATION

A) Installation and testing of water system pipe and fittings shall be in accordance with AWWA Specification C-600 Latest Revision and Department's Construction Standards and Specifications.

B) Any pavement cut shall be replaced in accordance with requirements of the agency of jurisdiction.

C) All loading or unloading of pipe, fittings, valves and accessories shall be done in such a manner so as to avoid damage to the pipe shall not be skidded or rolled against pipe already unloaded. Special precautions should be taken to avoid damage to cement lined fittings and pipe. The interior of all pipe, fittings and other appurtenances shall be kept free of dirt and foreign matter at all times.

D) All valves, bends, tees, crosses, and dead ends shall be restrained with an approved mechanical restrained joint system. Where proprietary restrained joints are not used, tie rods and megalugs are the recommended system. (See Section XIV for approved product list.)

E) Tie rods used as a method of joint restraint shall be by means of steel tie back bolts, nuts, washers and all thread rods meeting ASTM A-242 requirements (Cor-Ten steel or equal) and painted in accordance with the procedures described herein. Tie rods and nuts shall be equal in diameter to the tee bolts and nuts which were supplied with the applicable fittings. Two tie rods per joint are required for sizes 4" diameter through 10" diameter, four tie rods per joint for sizes 12" diameter through 16" and 6 tie rods per joint for sizes 18" through 24".

F) Air relief valves shall be at the design high points. Installation of air release valves to correct high points caused by improper installation of pipe (not at design grade) will not be permitted. (See Section XIV for approved product list.)

G) All pipe shall be laid to line in a clean dry trench on line and grade with valves and hydrant stems plumb. All pipe shall have a minimum cover of 30 inches and a maximum cover of 48 inches unless otherwise noted on the plans or required by permit.

H) The trench at the top of the pipe shall be kept to a maximum width of 24 inches plus the pipe diameter. The trench shall have a flat bottom, cut true and even, so that the barrel of the pipe shall bear its full length. Pipe bells will be placed in small pockets specifically excavated to receive the bell. All excavations must be in compliance with OSHA regulations.

I) No rocks larger than 2 inches in diameter or other items that may damage the pipe will be permitted over the pipe. In the event pipe is installed in rock excavation, 6 inches of granular material will be provided for bedding under the pipe. All pipe joints, conflicts and service connections shall be left exposed until visually inspected and approved by a Department representative.

J) All tapping assemblies installed on existing water mains shall be pressure tested and witnessed by a Department's representative prior to the actual tap of the main. The pipe coupon shall be carefully preserved and submitted to the Authority's representative. All tapping sleeves shall be installed a minimum of 18 inches from pipe joints.

K) All field cuts on pipe shall require careful repair of the particular lining damaged in strict accordance with the manufacturer's recommendations.

L) Fire hydrants shall be installed true and plumb. Hydrant extensions shall not be permitted in new construction.

MINIMUM COVER

Minimum cover to finished grade over water mains shall be 30 inches up to 8" diameter; 10" or larger shall have 36" cover or greater to provide a minimum 18" cover over operating nut of gate valves.

WATER MAIN MATERIAL

PVC Water Main 4 inch to 12 inch in diameter (4" - 12") shall be DR-18 manufactured to ductile iron pipe outside dimensions and in compliance with AWWA Standard C900. The pipe shall have an integral bell end and gasket seal with the joint in compliance with the requirements of ASTM D3139. The pipe shall be approved by the National Sanitation Foundation for use as a potable water main. The pipe color shall be blue.

PVC Water Main 14 inch to 20 inch in diameter (14" - 20") shall be DR-18 manufactured to ductile iron pipe outside dimensions and in compliance with AWWA C905. The pipe shall have an internal bell end and gasket seal with the joint in compliance with the requirements of ASTM D3139. The pipe shall be approved by the National Sanitation Foundation for use as a potable water main. The pipe color shall be blue.

HDPE water main 4 inch to 16 inch in diameter (4" - 16") shall be DR-11 manufactured to ductile iron pipe outside dimensions and in compliance with AWWA C901 and C906, latest revision and ASTM F714. The pipe will be extruded from resin meeting specifications of ASTM D-3350 with a cell classification of type III, class C, category 5, grade P34 polyethylene compound. The pipe shall be approved by the National Sanitation Foundation for use as a potable water main. The pipe color shall be blue or co-extruded blue color stripes. For all size connections, fused mechanical joint adapters shall be used. S.S. inserts will not be allowed.

Ductile iron pipe shall be a minimum of Pressure Class 350. The Department reserves the right to require a different thickness class for unusual or non-standard laying conditions.

Ductile iron pipe shall conform to latest standards of ANSI/AWWA C150/A21.50 for the thickness design of ductile iron pipe and ANSI/AWWA C151/A21.51 for ductile iron pipe centrifugally cast in metal molds or sand-lined molds.

Joints for ductile iron pipe shall conform to the latest standard of ANSI/AWWA C111/A21.11 for rubber gasket joints and ANSI/AWWA C115/A21.15 for threaded flanges.

Cement-lined ductile iron pipe shall conform to the latest standards of ANSI/AWWA C104/A21.4

VALVES AND FITTINGS

Gate valves shall be ductile iron, resilient seat type with mechanical joints conforming to AWWA C-500, latest revision. Valves shall be designed for a working pressure of not less than 200 psi. Each valve shall have the pressure rating cast into the body and manufacturer's name or initial cast into the body or bonnet.

Valving of all systems shall be designed to facilitate the isolation of each section of pipeline between intersections of the grid system. Generally, the number of valves at an intersection shall be one less than the number of pipes forming the intersection.

Valves shall generally be installed at intervals of not more than 1,500 LF. In high density areas, valves shall be installed as necessary to minimize the number of persons affected by a break.

In all instances, effectiveness of placement shall be primary criteria in determining valve locations. Valves shall not be placed in swales or ditches.

All pressure pipe fittings of size 4" and larger shall be ductile iron fittings, with mechanical joints, unless plans call specifically for flanged, restrained joint fittings. Mechanical joints fittings shall be used for buried installations; flanged fittings shall be used for above ground installations. Compact mechanical joint fittings shall conform to ANSI/AWWA C-153/A21.53.

All valves, bends, tees, crosses and dead ends shall be mechanically restrained. Clearance of 18 inches shall be maintained between all fittings (bells, valves, flanges, etc.), unless otherwise specified. Temporary dead ends shall be terminated with a gate valve with a mechanical joint plug and flushing hydrant.

All valve boxes on 4" valves or larger, shall be 3 piece cast iron construction with screw type riser sections. The valve box lid shall carry the word "WATER" and be the deep skirt type. Valve boxes must have a minimum inside diameter of 5-1/4". A square concrete collar that is 24"x24"x6" thick shall be poured at the top of each valve box at finished grade.

Height adjustments to valve boxes will require a screw type, cast iron extension. A Tyler series 6850 (3 piece c.i.) valve box or equal will be used. No. 58 and No. 59 high extensions will be used, if necessary. No substitutions with PVC will be allowed.

When the gate valve is deeper than 36" an extension will be required to bring the operating nut within 24" of finished grade. A ¾"x3" 316 stainless steel roll pin will be inserted through the valve operating nut to secure the extension stem.

FIRE HYDRANTS/FIRE SERVICE MAINS

Fire Hydrants shall conform to latest AWWA Specifications C502, and shall be of the traffic-model type. Inlet connection shall be for a 6 inch pipe and main valve opening shall be a minimum of 5 1/2 inches. Hydrant bonnet shall have two 2 1/2 inch hose connections and one 4 1/2 inch pumper connection. Working pressure for hydrant shall be a minimum of 150 psi. Hydrants shall be installed so that the pumper connection is perpendicular to the street. Hydrants shall be installed not more than 15 feet from the pavement (except as required by F.D.O.T.) nor in a ditch area. Hydrants shall be placed in line with the lot side lines unless otherwise approved by the Department.

All working parts shall be of cast iron and high grade bronze. All hose threads shall be ANSI B26 Standard threads. The 2 1/2 inch nozzles shall have 60 degree V-threads, 7 1/2 threads per inch and a 3 1/16 inch outside diameter male thread. The 4 1/2 inch nozzle shall have four threads per inch outside diameter male thread.

NOZZLE CAPS WITH GASKETS SHALL BE PROVIDED FOR ALL OUTLETS TO PROVIDE TIGHT CLOSURE FOR NOZZLES. CAPS SHALL BE SECURELY CHAINED TO BARREL OF HYDRANT. CAP NUTS SHALL HAVE SAME DIMENSIONS AS OPERATING NUT OF HYDRANT.

HYDRANT SHALL BE TRAFFIC MODEL, 3-WAY. ALL HYDRANTS TO BE INSTALLED WITH HYDRANT TEES, GATE VALVE, THE REQUIRED LENGTHS OF 6 INCH DIAMETER DUCTILE IRON PIPE (HYDRANT NIPPLE), RESTRAINER GLANDS, 6" ANCHOR FITTINGS, A 6" X 36" X 36" CONCRETE PAD AT BURY LINE.

FIRE HYDRANTS/FIRE SERVICE MAINS (cont.)

Fire hydrants shall be installed with the center of the streamer nozzle 18 to 24 inches above finished grade. Hydrants shall not be placed in sidewalks. It will be the responsibility of the Developer and Contractor to move hydrants placed in the sidewalk.

Hydrant barrel color to be OSHA Yellow and bonnet to be OSHA White. Drain holes shall be deleted or plugged with appropriate brass seat screws.

Fire hydrants shall be provided in all water mains, transmission, and distribution systems. Fire hydrants shall be spaced as required. A Fire Marshall approved plan is required with all preliminary plan submissions.

Fire hydrant branches (from main to hydrant) shall be not less than 6 inches inside diameter. Each branch shall be provided with a gate valve located as close as possible to the main. Valve box top shall be set to grade. Hydrants shall be located near road lines with pumper discharge nozzle facing the roadway. Hydrants shall be laid as to minimize their vulnerability to traffic.

Fire hydrant extensions shall not be allowed.

Hydrants shall be placed within 15 feet of the street of paved area when possible, and shall be no closer than 5 feet from the edge of the street or paved area. The height of the hydrant above grade shall be acceptable to the Fire Marshall and Department/Utility.

A detector check valve and other appurtenances as may be required will be specified on fire sprinkler lines and privately owned and maintained fire hydrant lines.

THRUST BLOCKS

Mechanical joint anchoring shall be required at each fitting involving a change of direction & as specified in plan details. Where concrete thrust blocks, encasements &/or protective slabs are specifically called for, they shall be ready-mixed concrete and shall have a minimum 28-day compressive strength of 3000 psi.

LOCATOR FOR WATER PIPE

On all pipe construction 8 gauge, THWN insulated, stranded copper wire shall be laid and secured on top of pipe. Wire shall be continuous from valve box to valve box, wrapped two times around each joint of pipe and extended inside each wire box to enable location devices to be attached without digging up the valve box (see Standard/Drawing Details).

Service wire shall be laid in the trench with all services, connected to the main wire and wrapped around the service piping or tubing. Wire for potable water shall be blue in color.

All wire connections shall be made with Dri-Splice wire connectors, Imperial Snip-Snap fittings filled with waterproof silicone sealant or approved equal. All splices shall be inspected by the Department before burial.

CONNECTION TO EXISTING SYSTEM

a) Tapping Tees and Valves

Tapping sleeves shall be #304 stainless steel with flanged outlets. Tapping valves shall be resilient seat type with a flanged joint on the inlet side and a mechanical joint on the discharged side of the valves. Tapping valves shall have a 2 inch operating nut. Working pressure rating shall not be less than 200 psi. Gaskets between the flange faces of the tapping sleeve and tapping valve shall be 1/8" minimum thickness of BUNA N gasket material.

b) Size on size taps

Taps may be made on the same size main only when the main to be tapped is AWWA C900, C905 or DIP.

c) Installation

A department representative shall approve each tapping location before the tapping sleeve is installed. Tapping sleeves shall not be installed within 18 inches of any joint or fitting. Before installation of tapping tee, the area to be tapped and the tapping tee shall be cleaned with potable water. After all sand, dirt and debris have been removed from the main, the tapping tee shall be installed. The tapping tee shall be installed on the existing main pipe that shall be swabbed with a chlorine or bleach solution with at least 100 ppm of chlorine.

After the tapping tee is attached to the main, the gate valve shall be closed and tapping tee and gate valve assembly shall be pressured tested at 180 psi for a minimum of 15 minutes with water. A department representative shall witness the pressure test. No visible leaks or loss of pressure shall be evident. After pressure testing, the main may be tapped. Only shell type cutters shall be used. The coupon from the hole that is cut shall be delivered to the Department.

METERS/BACKFLOW PREVENTION DEVICES

Construction plans shall include a typical meter installation for each size meter to be installed (see attached Standard Details). Dual metering of a single building service (i.e., two 1 inch meters instead of one 2 inch meter) shall not be permitted. The proper sizing of meters and service lines is the responsibility of the Developer's Engineer, subject to the Department's approval of the sizing. Meters will be available in the following sizes only: 5/8", 1", 1 1/2", 2", 3", 4" inch, and larger sizes as necessary. Meter boxes for 2 inch and smaller meters are standard and must be installed to finished grade by utility contractor.

Meters 3 inches (3") and larger shall be installed above ground. The backflow prevention device shall be installed above ground close to the meter on the customer side. Do not point or cut any connections are allowed between the meter and the backflow prevention device. All meters must be in accordance with the approved product list. Meters 2 inches and smaller will be installed by the Department.

All above ground piping and meters shall be coated with blue paint as follows:

Sandblast and remove all point and any loose material in accordance with SSPC SP-10. Sandblasting shall be performed using iron-silica media and coat any nameplates, brass or stainless steel surfaces. Contractor shall use the following paint system or approved equal.

- 1) Primer: TNEME-ALUMINIUM MASTIC #135-TNEMEC (3.0 to 5.0 mils DFT)
- 2) Intermediate Coat: Series 66 Epoxaline-TNEMEC Hi-Build Epoxy (4.0 to 6.0 mils DFT)
- 3) Finish Coat: Series 73 Endura-Shield III-TNEMEC (2.0 to 3.0 mils DFT)

Meter boxes shall be kept out of pedestrian walkways and out of driveway areas. For shopping centers, Developer's Engineer shall give special consideration to meter layout so as to satisfy these requirements. Final approval of meter location will be by the Department.

Once a service connection is made

WASTEWATER COLLECTION SYSTEM

A color videotape (VCR tape, VHS format) of all new gravity sewer lines must be made by the contractor or the developer. Video taping of the complete sewer system will occur after completion of the backfilling operation and the placement and compaction of the roadway base (just prior to laying of asphalt). The video taping will determine that the lines have been laid to accurate line and grade. At time of video taping the lines shall be clean with sufficient water having been introduced into each segment of line to show any sags or dips present. The video camera shall have a depth gauge attached to the camera skid and in front of the camera that will show depth of water in the line at dips. Video shall be narrated. A final taping with a Department Representative present will be performed after the roadway is completed to verify that the system has not been damaged. All lines and appurtenances not meeting specifications and these MINIMUM STANDARDS shall be repaired or replaced.

The original video tape report and a set of "as-built" record drawings will be submitted to and become the property of the Department. The tape, report and record drawings must clearly show:

- a. Project name, date & time of video taping, segment of line being taped (i.e., MH #1 to MH #2) including street name, and direction of taping process (i.e., with the flow or against the flow). Linear foot indicator on videotape.
- b. All lateral sizes, locations and orientation.
- c. Depth of any sags/dips found in the line. No more than 1/2" of sag will be allowed.
- d. Entire length of line between manholes.
- e. Video Pauses at problem areas with clear audible sound voice report describing deficiency.
- f. A manhole video inspection and report shall be required for all manholes.

Any sand, rock, dirt or debris found in the lines shall be removed by the Contractor. All leaking joints or fittings shall be replaced or sealed from the inside with grout as determined by the Department. All cracked or defective pipe shall be replaced by the Contractor. Any cleaning, repair or replacement of lines must be video taped again. The Contractor and/or Developer will be responsible for all inspection costs.

Department personnel must be notified at least 48 hours in advance and be present for all video taping inspections.

The sewer main, house laterals and manholes shall be subjected to infiltration and exfiltration tests (method to be agreed upon by Engineer and Department). The allowable leakage shall not exceed 50 gallons/day/inch of diameter/mile.

Magnetic markers shall be placed at the end of each sewer lateral. See approved product list for markers.

Once a service connection is made to Martin County Utilities' sewage system, disconnection from the sewage system is prohibited.

LIFT STATIONS

Sewage pumping stations shall be of below ground design with submersible pumps. All stations shall be designed for not less than 230 volt, 3 phase, 60 cycle electric service.

Station structures, including the wet well and the box containing the valves, shall be of pre-cast concrete (Class II, 28 day compressive strength of 3500 psi. minimum) and meet the requirements of ASTM C-76. Joints shall be assembled with "Ram-Neck" sealant or equal and overlaid with grout on the inside and outside of the wet well. Grout shall be non-shrinking waterproof cement mortar. Bottom and lower wall section shall be cast as one unit. Wet well structures shall have a minimum internal diameter of 6 feet. Wall thickness shall be a minimum of 8-inches. Rebar shall meet the requirements of ASTM A-185. Wet well structures shall be lined with two coats of a heavy bituminous coating.

Tremie installations will be approved by the Department on a case-by-case basis. Buoyancy calculations for all wet well installations shall be submitted to the Department for approval.

Covers for the wet well and the valve box shall be of diamond plate aluminum with a minimum thickness of 1/4 inch. The covers shall have hinges, frames, locking hasps, a flush lifting handle, and a hold-open bracket all constructed of aluminum or stainless steel. Wet well aluminum cover shall be hinged on side closest to electrical panel. Valve box hinges will be placed on side furthest from electrical panel. Covers must be positioned to allow easy removal of the pumps and to allow easy access to the valve wheels. All covers shall be traffic bearing to handle a minimum H-20 truck loading.

Pumping stations shall be located so that they will be accessible by maintenance vehicles. All stations shall be provided with asphalt or concrete driveways suitable for truck access and designed for H-40 truck loading.

At least two pumps with alternating controls shall be provided. They shall be of the same type and capacity and shall each be capable of handling the peak hourly flow unless a tri-plex station is approved by the Department. The peak hourly flow shall be determined by multiplying the average daily flow by a minimum factor of 2.5 or as determined by 10 State Standards. Pumps shall be capable of passing a minimum of 3-inch solids. Complete pump curves and pump specifications shall be submitted to the Department before installation of the pumps. The pumps shall be non-overloading at any point on the pressure, volume, characteristic curve. All submersible pump motors shall be explosion proof rated.

In projects constructed by phase, master lift stations that will have minimal flows for a considerable time shall be equipped with temporary pumps with reduced capacity, though not less than 50% of a permanent pump capacity.

Only pump brands approved by the Department are acceptable. Approved pumps are listed in the Approved Material List in these MINIMUM STANDARDS.

Submersible pumps shall be installed with guide rails, discharge connections, and lifting chains or lifting cables. Guide bars or rails shall be Schedule 40, 316 stainless steel pipe. The discharge connection shall be firmly attached to the bottom of the wet well with 316 stainless steel bolts. Lifting chains or cables shall be 316 stainless steel. All nuts, bolts, washers and other hardware inside the wet well shall be 316 stainless steel.

Each pump shall have a gate valve and a check valve which shall be installed in a concrete valve pit structure adjacent to the wet well. Piping and fittings shall meet force main standards in these MINIMUM STANDARDS with #316 stainless steel bolts, nuts and hardware inside the wet well. Piping shall be a minimum of 4 inches in diameter and all piping and valves shall be flanged. Check valves shall be cast iron, swing check type with levers and weights. A valved emergency pump connection with a gate valve shall be installed downstream of the valves. A male aluminum cam-lock fitting shall be provided on the emergency pump connection with a female cap. Piping shall be adequately restrained to prevent pipe movement through the wall of the wet well. All piping and fittings inside the wet well shall be coated with the Department approved wetwell coating systems. The concrete structure containing the valves shall have a 2-inch minimum size PVC drain with a "P" trap in the wet well. Two 4 inch, 0 to 60 p.s.i. oil filled pressure gauges with brass piping, diaphragm, filters and petcocks, two 45-degree elis and two brass valves shall be installed downstream of the check valves with the gauge inside the valve structure. The tap on the piping shall be through the use of a tapping saddle only.

All above ground piping shall be coated with green paint as follows:

Sandblast and remove all paint and any loose material in accordance with SSPC SP-10. Sandblasting shall be performed using non-silica media. Do not paint or coat any nameplates, brass or stainless steel surfaces. Contractor shall use the following paint system or approved equal. Primer shall be applied no later than 2 hours after sand blasting.

- TNEMEC
- 1) Primer: TNEME-ALUMINUM MASTIC #135 (3.0 to 5.0 mils DFT)
 - 2) Intermediate Coat: Series 66 Epoxioline HI-Build Epoxy (4.0 to 6.0 mils DFT)
 - 3) Finish Coat: Series 73 Endura-Shield III Urethane or equal (2.0 to 3.0 mils DFT)

a) Float Switches

Float switches shall be weighted non-mercury float switch type and should be installed as approved by the Department. All float switches shall be rated for a minimum of 10 amps at 250 volts.

b) Level Transducers

Any lift stations with a design capacity exceeding 250 gpm shall be fitted with a level transducer. Level transducers shall be submersible pressure transducers. Level transducers shall be loop-powered devices operating on 24 VDC and providing an analog 4-20 mA signal to the pump controller and installed as approved by the Department.

This document, together with the concepts and designs presented herein, as an instrument of service is intended only for the specific purpose and client for which it was prepared. Reuse of and improper reliance on this document without written authorization and adaptation by Kimley-Horn and Associates, Inc. shall be without liability to Kimley-Horn and Associates, Inc.

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a) Control Panel

Pump control panel shall respond to wet well float switches to automatically start and stop pumps. The pump control panel shall be fabricated by a qualified controls manufacturer. Electrical power to be furnished to the panel shall be 120/240 volt, 3-phase, 4-wire or 20/240 volt 1-phase, 3-wire as indicated in the contract drawings. When available higher voltages may be required for larger stations.

Single phase shall be allowed only on a case-by-case basis as approved by the Department. Single phase installations shall utilize a VFD for each motor to enable the use of standard 3-phase motors. VFDs shall be Softronics Model GP-10, sized as required.

Control panel wiring and parts shall conform to Department standard drawing for Lift Station Control panels, drawing number MCULSCP1 pages 1-6 and MCULSCP pages 1-6.

The control panel shall be designed so that electrical systems and components in raw wastewater wells comply with National Electric Code requirements for Class I Group D Division 1 locations. This shall be achieved through the use of explosion proof equipment, intrinsically safe circuitry or other approved method. Ground Fault interruption protection shall be used to de-energize the pump motors in the event of any failure in the electrical integrity of motor power conductors.

Each control panel shall have a Main and Emergency circuit breaker. A mechanical interlock between the Main and Generator circuit breakers shall be provided. The interlock shall not allow one breaker to be turned on without the other being in the off position. The interlock mechanism shall be professionally machined from aluminum plate and securely fastened to the interior door of the control panel. The control panel will be UL listed as a complete unit. All nuts, bolts, washers and mounting hardware related to mounting the panel shall be 316 stainless steel.

b) Generator Power Receptacle, Convenience Receptacle and Breakers

To insure continuous operation of lift stations during disaster events, a mobile engine generator will be provided for every five lift stations in the inventory of the Department. To insure the purchase of these generators developer shall pay to Martin County at the execution of the standard water and wastewater service agreement, an amount of 1/5 of the cost of one 60 kw emergency engine generator per lift station dedicated to Martin County for perpetual maintenance. This fee is currently \$8,000.00 per lift station.

A generator power receptacle shall be provided on the exterior of the pump control panel, mounted on the lower right side with a downward facing 45° angle adapter. The power receptacle shall be wired to the generator circuit breaker. Each pump motor shall be protected and controlled by a thermal-magnetic circuit breaker, melting alloy overload relay and motor starter contractor. Two (2) 15-ampere circuit breakers for control power and convenience outlet power shall be provided. A GFI type 15-ampere convenience outlet shall be provided on the exterior of the control panel utilizing a weatherproof box and cover.

c) Alarms and Shut-off

High level alarm and pump shut-off and turn-on shall be accomplished by float type liquid level switches or a liquid level transducer in conjunction with the control components of the pump control system. The liquid level control system shall continuously monitor wet well liquid level in and conjunction with the pump control system, shall control the operation of the pumps.

d) Seal Leak Detection

Seal leak detection shall be provided using high sensitivity relays, on pick-up, shall cause a "Seal Leak" indicator on the interior door to light and send a signal to the RTU. Normally closed thermal switches in submersible pump motors shall, through the pump control panel's control circuitry, shut down the affected pump and send a signal to the RTU.

e) Pump Control Panel Housing

The pump control panel housing shall be a NEMA Type 12/3R with rain-shield and 3-point padlockable latch, dead front enclosure, constructed of not less than 14 gauge #316 stainless steel. The minimum panel housing shall be 12" deep x 30" wide x 36" high. The enclosure shall be equipped with an exterior door, interior "dead front" door and shall incorporate a removable 1/8 inch thick aluminum back panel on which control components shall be mounted. The front door shall be secured to the enclosure with a continuous stainless steel piano hinge and be equipped with a padlocking three point latching mechanism. The handle of the three point latching mechanism shall be fabricated of heavy gauge stainless steel. The back panel shall be secured to the enclosure with collar studs.

f) Fastenings and duct work

All motor branch circuit breakers, motor starter contactors, overload relays, control transformer and control relays shall be securely fastened to the removable back panel with cadmium plated steel screws and lock washers. The back panel shall be topped to accept the component mounting screws. Self-tapping screws shall not be used to mount any component.

g) Contactors and Switches

An open frame, across-the-line, NEMA rated, magnetic motor contactors with 120 volt, 60 Hz coils shall be furnished for each pump motor (Softronics Model GP-10 VFDs shall be supplied in approved single phase installations). Contact without removing the enclosure with a continuous stainless steel piano hinge and be equipped with position. All operating controls and instrument shall be securely mounted on the control compartment interior door. All controls and instruments shall be clearly labeled using engraved plastic plates to indicate function. Trouble light switch shall be NEMA 4.

h) Primary Disconnect

The primary disconnect shall be a re-settable primary circuit breaker located in the circuit prior to the control panel. Amperage rating and stainless steel enclosure type to be specified by Engineer. Lightning arresters and surge protectors shall be installed.

i) Interior

The following components shall be mounted on the interior door:

- Access to Primary and Generator circuit breaker and interlock mechanism
- Access to Pump and secondary breakers.
- Trouble light On-Off switch.
- "Run in Backup" indicator light.

Two (2) each of the following:

- 1. Hand-Off-Auto (HOA) switches
- 2. Green Pump Run indicator lights
- 3. Amber "Seal Fail" indicator lights
- 4. Green "Power On" indicator light
- 5. Red "Running in Backup" indicator light
- 6. Overload reset buttons

Wire Markers shall be machine printed heat-shrink tubing or clip-on, chevron cut, type. Wire markers shall be manufactured by Panduit, Brandy, or approved equal.

Cable ties shall be type PRT as manufactured by Panduit, Thomas & Betts, Heyco, Tyco or approved equal.

4-Way adhesive back mounts shall be made of heat stabilized nylon with an adhesive backing protected with a peel back paper covering. The mounts shall be type ABM2S as manufactured by Panduit.

Engraved plastic plates shall be of laminated plastic with black surface and white 1/8 inch high letters secured with stainless steel screws.

Plastic wiring duct shall be PVC with restricted slot openings and slotted mounting holes. Wiring duct shall be complete with a matching solid PVC cover. Plastic wiring duct shall be type E as manufactured by Panduit.

The wire number shall be installed as designated on the submittal schematic at each termination end of every control wire using wire markers. If minor changes need to be made during panel fabrication, these changes shall be made to the schematic for the O & M manual. Panel wiring shall be done in a neat and professional manner using cable ties, adhesive back mounts, and plastic wiring ducts as required. Wiring bundles and duct shall be run horizontal or vertical only. Diagonal runs shall not be allowed.

Wires shall be carefully stripped of insulation when making terminations using a wire stripper which does not cut off wiring strands during the stripping process. Wiring terminations shall be made to lift or barrel type terminal or compression applied spade lugs. Wires shall not be wrapped under screw terminals when making an electrical termination.

Control panel wiring shall be with 18 AWG, 600 volt rated, tinned, stranded copper conductor UL 1007 and UL 1569 type Hook-up wire.

j) Stand-by Power

Standby power receptacles and phase monitors shall be provided at all pumping stations. Lift stations shall be equipped for auxiliary generator power supply. The following plug and receptacle shall be used as manufactured by Russell and Stoll.

- 100 amp service, JRSB 1044, FR Receptacle
- 200 amp service, JRSB 2044, FR Receptacle

k) Enclosures

All lift stations shall be enclosed by vinyl coated posts and wire mesh fencing (chain link, 6 feet high) with a 12 foot wide gate centered on the wet well. Decorative fencing may be used at the Developer's expense in addition to the chain link fencing. The higher water light shall be extended above the decorative fencing. Direct vehicle access will be provided for maintenance purposes. An 8" thick concrete slab shall be placed over the entire area within the fenced portion of the station..

l) Access

Easements of sufficient size or right-of-way is necessary for access. An easement or deed will be required for the lift station property. The exterior top of the wet well shall generally not be more than 1 foot above the road grade adjacent to the station but in all cases shall be above the 100-year flood zone elevation. The layout of the station should be such to provide easy access without interference. The fenced area shall be laid with six inch thick concrete.

Access road from paved street to the lift station shall be 10 feet wide with a minimum curve radius of 75 feet, maximum incline of ten (10) percent and maximum cross-section incline of fifteen (15) per cent. Swale crossings require culverts of proper design.

Access road shall be constructed in accordance with FDOT specifications. For materials and thickness refer to typical lift station layout detail.

Developer or Engineer shall provide the following items on pump station start-up.

- a. Deed to property or plant showing easement.
- b. Operation and Maintenance Manuals (3 sets required).
- c. Pump data and technical information concerning pump operation, maintenance and repair shall be supplied at the time of completion of lift station construction. Parts lists, warranties, and all other pertinent information is also required. All equipment shall be warranted by the manufacturer for one year from the date of start-up.
- d. Individual schematic wiring diagrams and information concerning Control Panel operation and parts replacement.
- e. Verification of operational approval by Manufacturer's Representative and Engineer in writing to include actual operating conditions (total g.p.m. at l.d.h., impeller size, h.p., r.p.m., voltage, discharge size).

A certified factory trained representative shall be provided by the contractor for the start-up.

No start-up can begin without the Department representative on site. Submersible pumps shall be pulled to the surface and put on the ground, then reinstalled on the guide rails and lowered in place by the manufacturer's representative prior to testing of the pumps.

Backflow assemblies shall be certified complete by a technician certified by TREEO of the University of Florida or by an equivalent certified 40 hour program.

Telemetry is required for all lift stations maintained by the Department. Construction plans shall include the typical remote telemetry unit (RTU) Motorola Ace 3600 for each lift station to be constructed. Reference current Martin County Details 58-50.

The Developer and/or Contractor shall provide and install a RTU which will communicate with an existing Telemetry system by radio. The existing system is provided by DCR Engineering Services, Inc.; 502 County Road 640 East; Mulberry, FL 33860; Phone: 863-428-8080.

The new RTU equipment shall be housed in a 24"H X 20"W X 12"D stainless steel enclosure, acid dipped and painted white, equipped with lightning protection, RTU with radio, and battery back-up. See Martin County Details for wiring diagram, enclosure, and parts list.

Each of the main components of the RTU shall be as specified below:

a) Remote Terminal Unit (RTU). The RTU module shall be a microprocessor-based controller designed for use with the existing telemetry systems. The RTU shall control up to three (3) pumps and interface with up to six (6) floats, 4 analog signals and up to 15 other discrete inputs. As a minimum the RTU module shall have the following features:

- 1. Local automatic control from floats and level transducer.
- 2. Local manual control provided by HOA switches on the pump control panel. The HOA switches shall function with the floats to provide extra operational flexibility (one pump can be taken out of service for repair by the HOA switch and the floats will control the remaining pump(s)).
- 3. Remote control from the central site computer shall provide individual pump overrides, station and alarm disables, if programmed at the central site.
- 4. Triplex/Duplex/Simplex configurable.
- 5. Triplex configuration shall use emergency high, lag 2, lag 1, lead, and all off float.
- 6. Duplex configuration shall use emergency high, lag, lead, and all off float.
- 7. The alternator function shall alternate around pumps that don't run when called. The alternator shall allow the operator to override a pump on or off with the HOA switches and the alternator will still provide alternator control over the remaining pump(s).
- 8. Remote alarm bell/horn disable from central site computer.
- 9. Float alarm reporting back to central site computer when floats are operating out of sequence.
- 10. Pumps/Starter/Breaker Fault alarms shall be reported back to central site computer. The alarms shall be activated when a pump is called to run, but fails to run, or if the pump is turned off by the RTU module, but continues to run.
- 11. HOA Switch Alarms shall be reported back to central site computer. Alarms shall indicate that an HOA switch has been left in the HAND or OFF position.
- 12. Pump run status shall be reported back to central site computer. Pump run times shall be recorded with 2-second accuracy.
- 13. RTU Power Status shall be reported back to central site computer.

b) Radio.

Trunked 800 MHZ, 3 watt adjustable
Manufacturer Motorola
Model MTS2000

The Contractor shall supply all necessary components for a fully functional RTU per Martin County Details. Any appurtenance not specifically detailed above, but required for proper operation shall be provided.

The Contractor shall be responsible for all installation and start-up and testing of the RTU, including mounting of the panel, wiring, supports, etc

a. Grease Traps. Restaurants and other food service businesses, service stations and vehicle repair garages.

- 1. Grease, oil, and sand interceptors shall be provided on drains leading to sewer pipes when, in the opinion of the Director, they are necessary for the proper handling of wastewater containing excessive amounts of grease and oil, or sand; except that such interceptors shall not be required for residential users. All interception units shall be of type and capacity, and constructed based upon the standards set forth in Chapter 64-E6 FAC, as well as, the latest version of the Martin County Utilities Minimum Design and Construction Standards.

- b. Lint Traps. Lint screens are required on drains leading to sewer pipes from commercial laundries. Filtering apparatus should be sized to handle flow rate of laundry discharge through a minimum of three screens --two, 1/4" mesh size and one, 1/8" mesh size. Metal fabric must be used for filtering. No toxic metal fabrics will be allowed.

1	UPDATED MCU DETAILS TO JULY 2006	04-09-07	RS		
NO.	REVISIONS	DATE	BY		

RECORD DRAWINGS

DESCRIPTION: The Work covered under this section shall include furnishing the Department all information necessary for a complete set of Record Drawings.

APPLICABLE CODES, STANDARDS AND SPECIFICATIONS: The Record Drawings information shall be in strict accordance with the following codes and standards:

- A. Local County and Municipal Codes.
- B. Department of Environmental Protection.
- C. State of Florida Department of Health and Rehabilitative Services.

RESPONSIBILITY: The Contractor and or Developer shall be required to provide Record Drawings as outlined in this section.

RECORD DRAWINGS: The record drawings shall correctly and accurately show all changes from the Contract Documents made during construction and shall reflect surveyed information which shall be performed by a professional engineer and land surveyor registered in the State of Florida and shall include any and all necessary dedicated utility easements (noted with O.R. book/Plat book and Page Numbers). The drawings shall be neat and legible. Show all elevations and horizontal control of all lift stations, gravity sewers including laterals, force mains, water mains including services, reclaimed water mains and raw water mains. Locations shall be made by reference to the baseline stationing with offsets or by other means acceptable to the Department. Elevations shall be according to National Geodetic Vertical Datum (NGVD). Surface elevations (in NGVD) shall also be provided.

The contractor shall furnish one set of copies of all as-built surveyors field notes. A minimum of two pipe center line locations near the project limits shall be tied by a closed field traverse to the nearest approved Martin County geodetic control station and azimuth mark or approved pair of Martin County adjusted traverse points or to other control points established by Global Positioning System (GPS) which meet or exceed Third Order Class I Accuracy Standards according to current publication of the Federal Geodetic Control Committee (FGCC) procedures. Field traverse from "project center line locates" to geodetic control shall meet Third Order Class II traverse closure standards when possible; however, at a minimum, traverse closure must meet the minimum technical standards set forth in Chapter 61G17-6. A signed copy of geodetic tie in field notes and traverse closure data is required with final record submittal for review by Martin County Utilities along with final record drawings.

- A. A. Water, Force, and Reclaimed Water Mains: Record drawings shall show the following field information:
 1. Show size, type of material, used to construct mains.
 2. Show location and elevation of all tees, crosses, bends, terminal ends, valves, fire hydrants, air release valves, and sampling points, etc., by distances from known reference points.
 3. Show location, size and type of material of all sleeves and casing pipes.
 4. Elevation and horizontal location of all storm sewers, gravity sewers including laterals, force mains, water mains, etc. which are crossed; including clearance dimension at all conflicts or crossings.
 5. Top of pipe elevation and horizontal location of all water and force main stub-outs.
 6. Horizontal location of all services at the property lines.
 7. Top of pipe vertical and horizontal location and size of all mains and ground elevation at 100' intervals. Contractor shall construct temporary tell-tale pipes at each of the 100' intervals at every fitting, and every conflict/crossing to facilitate the record drawing survey. The tell-tale pipes shall be constructed of 2-inch PVC pipe, shall be placed on the top of the mains to be surveyed, and shall be removed by the Contractor after completion of the field survey by the "As-Built" professional Surveyor.
 8. Location of fire lines.
 9. Dedicated easement locations, identified by O.R. Book and Page Number.

- B. Gravity Sewer: Record drawings shall show the following surveyed information:
 1. Manholes: Elevation of top rim and invert of each influent and effluent line.
 2. Show distance between manholes center-to-center and horizontal location.
 3. Show material size and type used to construct sewer mains.
 4. Show length (center of manhole to end of stub) distances from known reference points or baseline offsets, and elevation of stub-outs.
 5. Show which services have 20 ft length of DIP at water main crossings.
 6. Show station and offset location of sanitary services' at property line. Particular care in dimensioning needed in special situations, i.e., cul-de-sacs and locations where services are not perpendicular to water.
 7. Show invert elevation of sanitary service at property line.
 8. Any and all necessary dedicated easement locations, identified by O.R. Book and Page Number.

- C. Pump/Lift Station: Record drawings shall show elevations for top and bottom and diameter of wet well along with invert of influent line. Record drawings should also indicate the make, model number, horsepower, impeller and condition point of pumps selected and installed, shape of wet well, location of control panel, location of pump out connection, float level settings, any deviation from the plans, and serial number of the pumps.

RECORDS: Daily records of changes in location of piping, fixtures and other items shall be kept and recorded on the record drawings. The contractor, developer or developers engineer shall submit monthly progress reports containing the record information including copies of the signed and sealed surveyor's field notes.

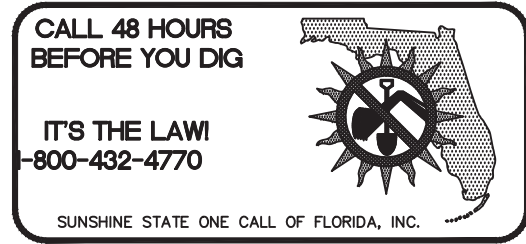
The contractor, or developers engineer shall review the completed record drawings and ascertain that all data furnished is accurate and truly represents the work actually installed. No Record Drawing information will be accepted by the Department from subcontractors.

SUBMITTAL: Upon completion of the work, but prior to submittal of request for final payment or final acceptance, the contractor or developers engineer shall obtain and submit record information certified by a Florida Professional Land Surveyor. One reproducible and three paper prints of the plan sheets, profiles, details and lift station shall be provided. The reproducible set shall be mylar. The three prints shall be signed and sealed by the Florida Professional Land Surveyor and the Florida Professional Engineer responsible for certifying the project. Also, two (2) copies of the electronic record drawing files on disc, if available, shall be submitted in AutoCAD 2000 format.

For horizontal directionally drilled segments of pipe mains, a pre-drill survey shall be performed by a Professional Surveyor and Mapper to obtain reference measurements as required to tie the H.D.D. tracking information from the driller to the project survey control. As a minimum this will include vertical (NGVD) and horizontal location at the point of entry for the borehole. This shall include the alignment vector for the drill rig relative to the project control baseline survey.

Once all required documentation is received by the Department, 10 days must pass for processing. After the 10 day period, meters may be issued.

NOTE: MARTIN COUNTY UTILITIES DEPARTMENT'S MINIMUM DESIGN AND CONSTRUCTION STANDARDS (LATEST EDITION, JUNE 2014), ARE TO BE ADHERED TO AND WILL BE ENFORCED TO AT LEAST THESE MINIMUM STANDARDS.



PROJECT SPECIFICATIONS

BANYAN BAY - PHASE 2C
MARTIN COUNTY, FLORIDA

Kimley»Horn

SCALE AS SHOWN	DATE JUNE 2017
DESIGNED BY SDS	FILE & DRAWING NO. 041052000
DRAWN BY SDS	SHEET
CHECKED BY PVR	17 OF 17
FILE 17 PROJECT SPECIFICATIONS.dwg	

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