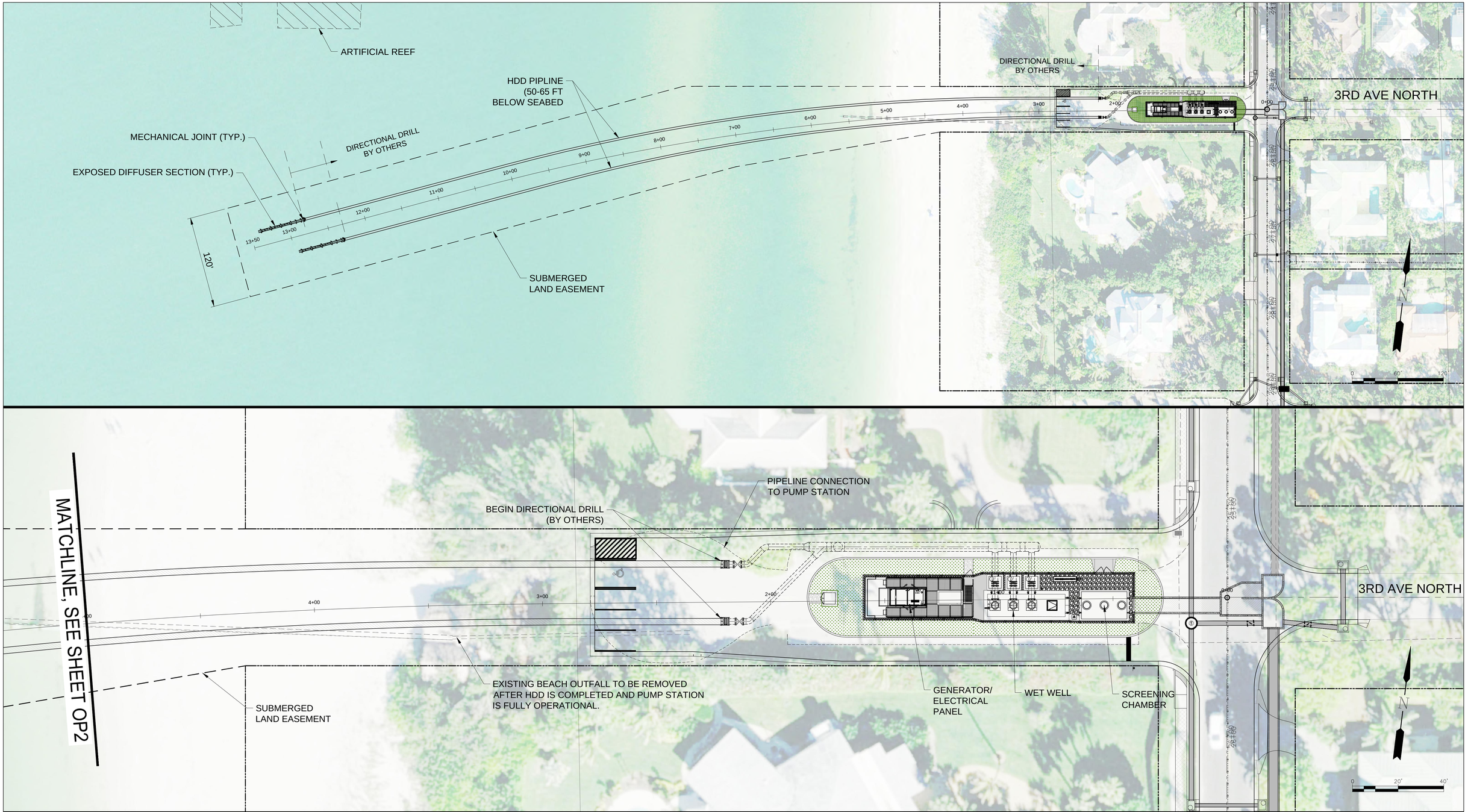


Z:\CADD_Graphics\US Projects\16-329_Naples Outfalls_Phase II\Design\90_100%_Plans\16-329_Naples Outfalls_OffshorePipelines.dwg Apr 15, 2022 - 8:57am

Revision	By	Appd.	YY.MM.DD

Issued	By	Appd.	YY.MM.DD
ISSUED 90% DESIGN DRAWINGS TO CITY (PRELIM REVIEW)	KME	APPROVED	22.04.15
ISSUED 75% DESIGN DRAWINGS TO CITY (PRELIM REVIEW)	KME	APPROVED	21.06.13

ECE
Erickson Consulting Engineers
7201 Delainey Court
Sarasota, FL 32420
www.ericksonconsultingengineers.com

Copyright Reserved
The Contractor shall verify and be responsible for all dimensions. DO NOT scale the drawing - any errors or omissions shall be reported to Erickson Consulting Engineers (ECE) without delay. The Copyrights to all designs and drawings are the property of ECE. Reproduction or use for any purpose other than that authorized by ECE is forbidden.

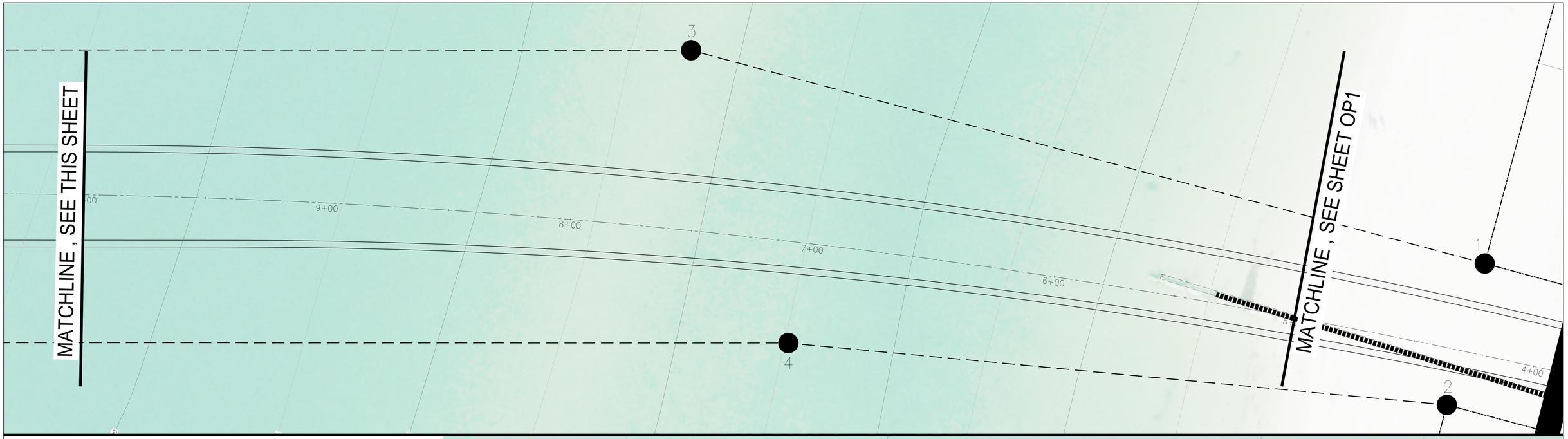
Client/Project
CITY OF NAPLES
735 8th St S
NAPLES, FL.
Naples Beach Restoration & Water Quality Improvement Project

File Name: 16-329_Naples Outfalls_OffshorePipelines.dwg

JAW	SMT	KME	21.06.01
Dwn.	Chkd.	Dsgn.	YY.MM.DD

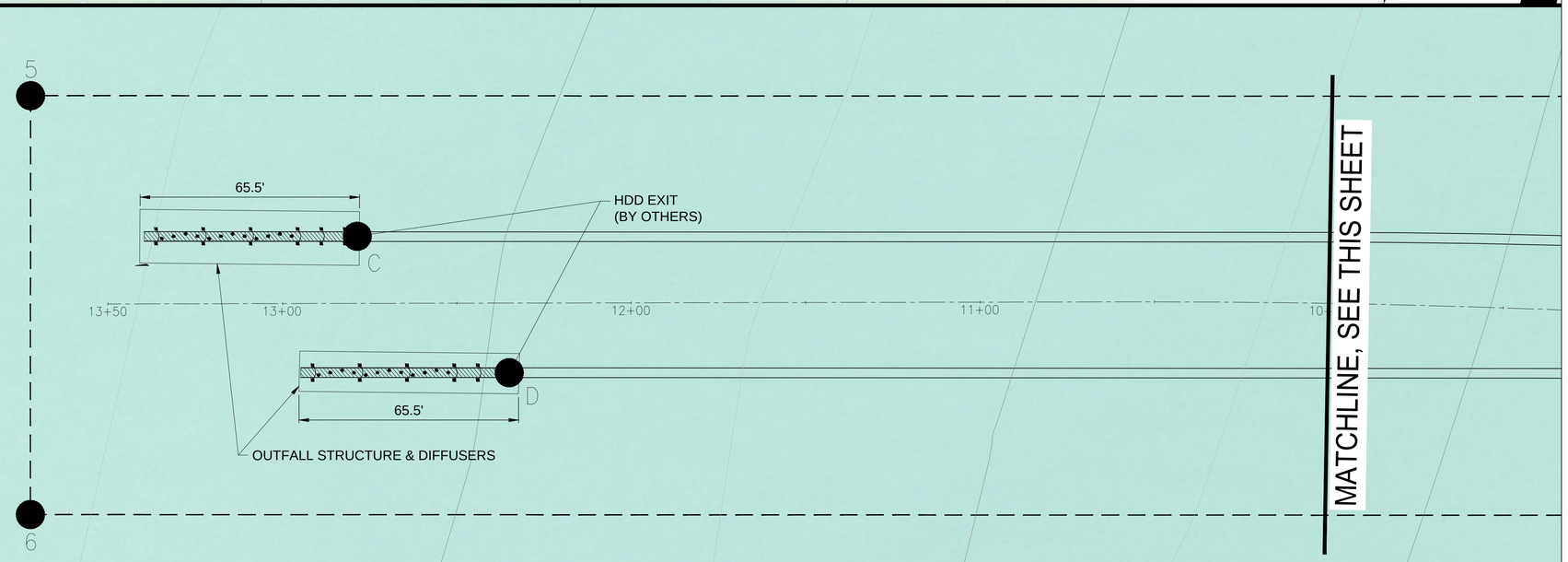
Title
OFFSHORE
PLAN VIEW

Project No.	Scale	
20-380	AS NOTED	
Drawing No.	Sheet	Revision
OP	1	0



COORDINATE TABLE – HDD			
POINT	NORTHING	EASTING	PIPE INFO.
A	660793	391163	NORTH LINE ENTRY
B	660768	391166	SOUTH LINE ENTRY
C	660508	390145	NORTH LINE EXIT
D	660488	390200	SOUTH LINE EXIT

COORDINATE TABLE SUBMERGED LAND EASEMENT		
POINT	NORTHING	EASTING
1	660692	390680
2	660723	390961
3	660742	390620
4	660646	390702
5	660510	390043
6	660399	390088



Revision	By	Appd.	YY.MM.DD

Issued	By	Appd.	YY.MM.DD
ISSUED 90% DESIGN DRAWINGS TO CITY (PRELIM REVIEW)	KME	APPROVED	22.04.15
ISSUED 75% DESIGN DRAWINGS TO CITY (PRELIM REVIEW)	KME	APPROVED	21.05.13

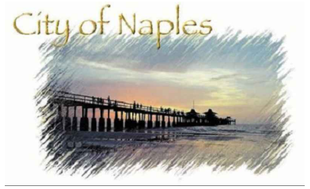
ECE
Erickson Consulting Engineers
7201 Delainey Court
Sarasota, FL 32420
www.ericksonconsultingengineers.com

Copyright Reserved
The Contractor shall verify and be responsible for all dimensions.
DO NOT scale the drawing - any errors or omissions shall be reported
to Erickson Consulting Engineers (ECE) without delay.
The Copyrights to all designs and drawings are the property of ECE.
Reproduction or use for any purpose other than that authorized by ECE is forbidden.

Client/Project
CITY OF NAPLES
735 8th St S
NAPLES, FL.
Naples Beach Restoration & Water Quality Improvement Project

File Name: 16-329_Naples Outfalls_OffshorePipelines.dwg

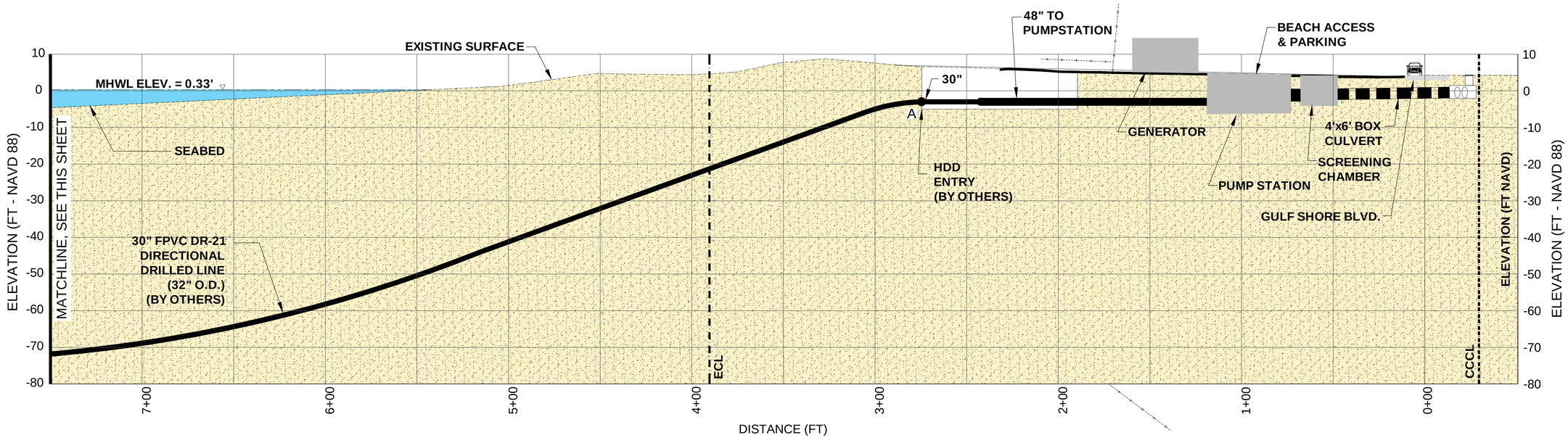
JAW	SMT	KME	21.06.01
Dwn.	Chkd.	Dsgn.	YY.MM.DD



Title
OFFSHORE
PLAN VIEW

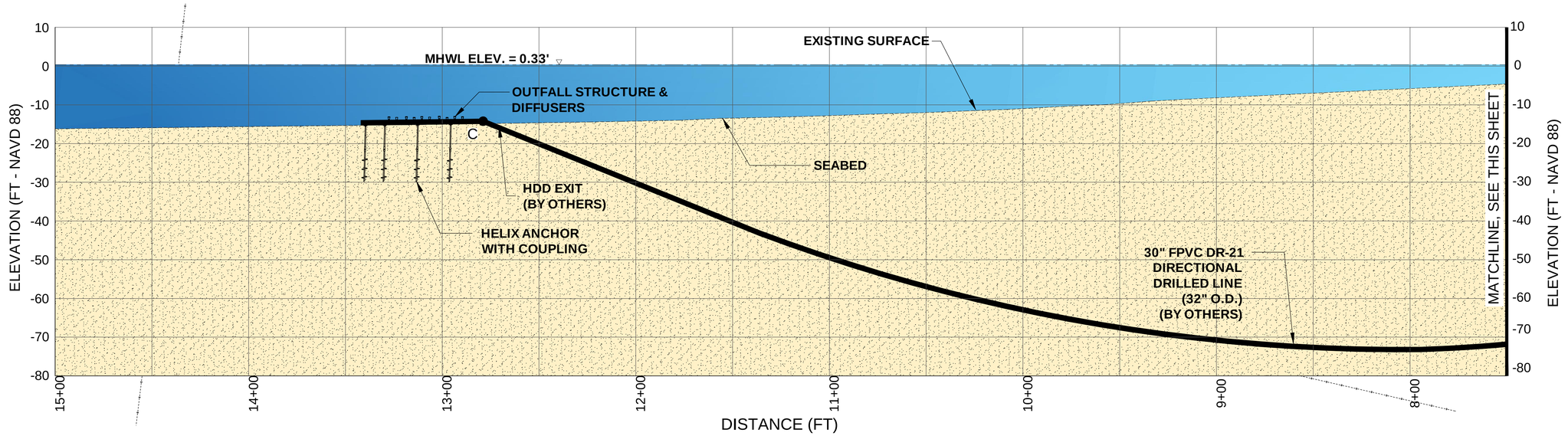
Project No.	Scale	
20-380	AS NOTED	
Drawing No.	Sheet	Revision
OP	2	0

Z:\CADD_Graphics\US Projects\16-329_Naples Outfalls_Phase II\Design\90_100%_Plans\16-329_Naples Outfalls_OffshorePipelines.dwg Apr 15, 2022 - 8:57am



NORTH PROFILE OFFSHORE DISCHARGE

SCALE: 1"=60' (H)
1"=30' (V)



NORTH PROFILE OFFSHORE DISCHARGE

SCALE: 1"=60' (H)
1"=30' (V)

Revision	By	Appd.	YY.MM.DD

Issued	By	Appd.	YY.MM.DD
ISSUED 90% DESIGN DRAWINGS TO CITY (PRELIM REVIEW)	KME	APPROVED	22.04.15
ISSUED 75% DESIGN DRAWINGS TO CITY (PRELIM REVIEW)	KME	APPROVED	21.05.13

ECE
Erickson Consulting Engineers
7201 Delainey Court
Sarasota, FL 32420
www.ericksonconsultingengineers.com

Copyright Reserved
The Contractor shall verify and be responsible for all dimensions. DO NOT scale the drawing - any errors or omissions shall be reported to Erickson Consulting Engineers (ECE) without delay. The Copyrights to all designs and drawings are the property of ECE. Reproduction or use for any purpose other than that authorized by ECE is forbidden.

Client/Project
CITY OF NAPLES
735 8th St S
NAPLES, FL.
Naples Beach Restoration & Water Quality Improvement Project

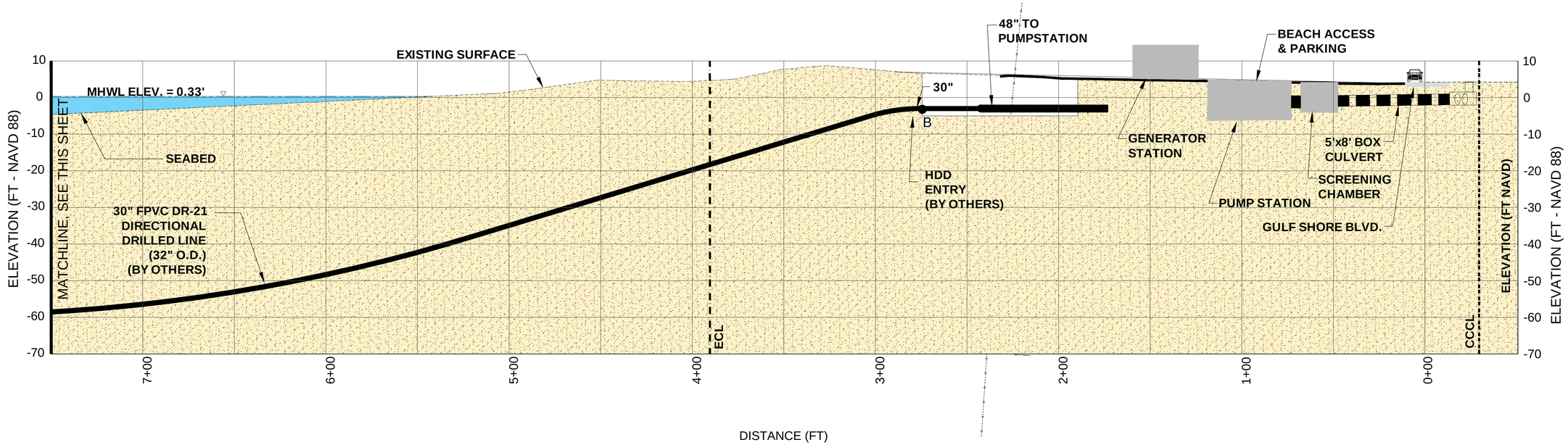
File Name: 16-329_Naples Outfalls_OffshorePipelines.dwg

Dwn.	Chkd.	Dsgn.	YY.MM.DD
JAW	SMT	KME	21.06.01

Title
OFFSHORE
PROFILE VIEW - NORTH

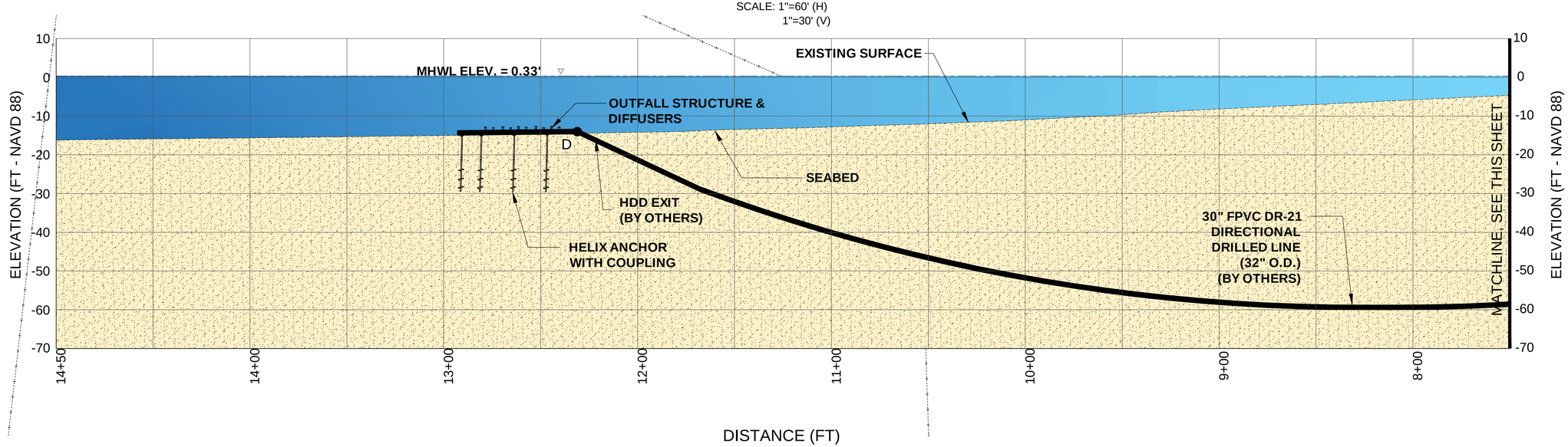
Project No.	Scale	
20-380	AS NOTED	
Drawing No.	Sheet	Revision
OP	3	0

Z:\CADD_Graphics\US Projects\16-329_Naples Outfalls_Phase II\Design\90_100%_Plans\16-329_Naples Outfalls_OffshorePipelines.dwg Apr 15, 2022-8:57am



SOUTH PROFILE OFFSHORE DISCHARGE

SCALE: 1"=60' (H)
1"=30' (V)



SOUTH PROFILE OFFSHORE DISCHARGE

SCALE: 1"=60' (H)
1"=30' (V)

Revision	By	Appd.	YY.MM.DD

Issued	By	Appd.	YY.MM.DD
ISSUED 90% DESIGN DRAWINGS TO CITY (PRELIM REVIEW)	KME	APPROVED	22.04.15
ISSUED 75% DESIGN DRAWINGS TO CITY (PRELIM REVIEW)	KME	APPROVED	21.05.13

ECE
Erickson Consulting Engineers
7201 Delainey Court
Sarasota, FL 32420
www.ericksonconsultingengineers.com

Copyright Reserved
The Contractor shall verify and be responsible for all dimensions. DO NOT scale the drawing - any errors or omissions shall be reported to Erickson Consulting Engineers (ECE) without delay. The Copyrights to all designs and drawings are the property of ECE. Reproduction or use for any purpose other than that authorized by ECE is forbidden.

Client/Project
CITY OF NAPLES
735 8th St S
NAPLES, FL.

Naples Beach Restoration & Water Quality Improvement Project

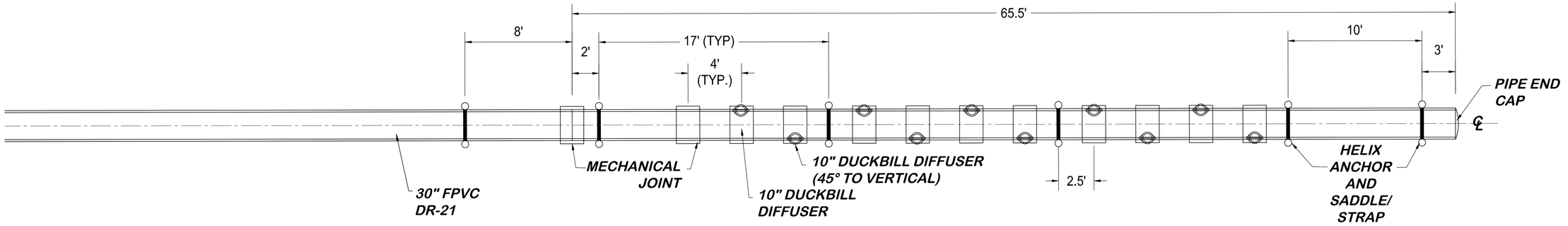
File Name:
16-329_Naples Outfalls_OffshorePipelines.dwg

Dwn.	Chkd.	Dsgn.	YY.MM.DD
JAW	SMT	KME	21.06.01

Title
OFFSHORE
PROFILE VIEW - SOUTH

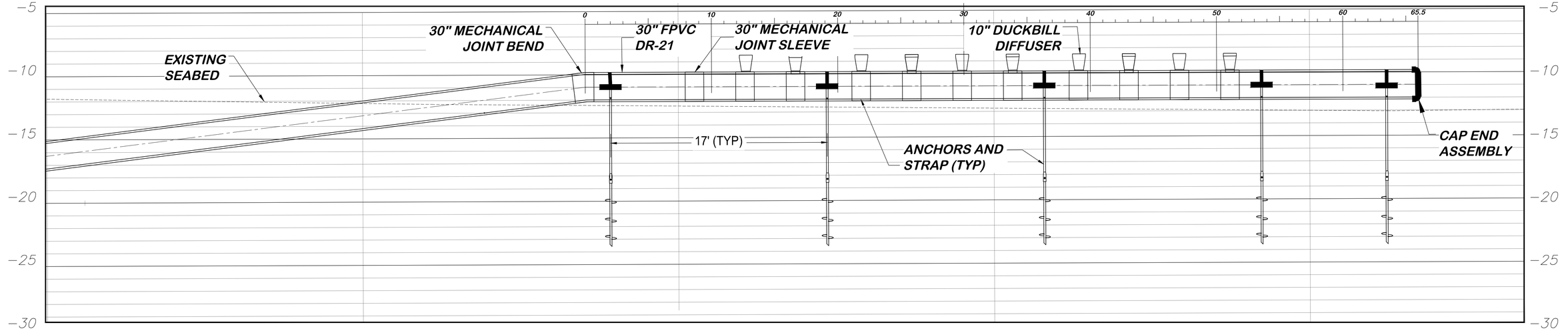
Project No.	Scale	
20-380	AS NOTED	
Drawing No.	Sheet	Revision
OP	4	0

Z:\CADD_Graphics\US Projects\16-329_Naples Outfalls_Phase II\Design\90_100%_Plans\16-329_Naples Outfalls_OffshorePipelines.dwg Apr 15, 2022 - 8:58am



DIFFUSER DISCHARGE PLAN VIEW

SCALE: 1"=4'



DIFFUSER DISCHARGE SECTION VIEW

SCALE: 1"=4' (HORIZ.)
1"=4' (VERT.)

Revision	By	Appd.	YY.MM.DD

Issued	By	Appd.	YY.MM.DD
ISSUED 90% DESIGN DRAWINGS TO CITY (PRELIM REVIEW)	KME	APPROVED	22.04.15
ISSUED 75% DESIGN DRAWINGS TO CITY (PRELIM REVIEW)	KME	APPROVED	21.05.13

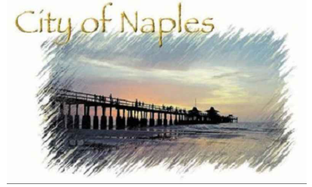
ECE
Erickson Consulting Engineers
7201 Delainey Court
Sarasota, FL 32420
www.ericksonconsultingengineers.com

Copyright Reserved
The Contractor shall verify and be responsible for all dimensions.
DO NOT scale the drawing - any errors or omissions shall be reported
to Erickson Consulting Engineers (ECE) without delay.
The Copyrights to all designs and drawings are the property of ECE.
Reproduction or use for any purpose other than that authorized by ECE is forbidden.

Client/Project
CITY OF NAPLES
735 8th St S
NAPLES, FL.
Naples Beach Restoration
& Water Quality
Improvement Project

File Name:
16-329_Naples Outfalls_OffshorePipelines.dwg

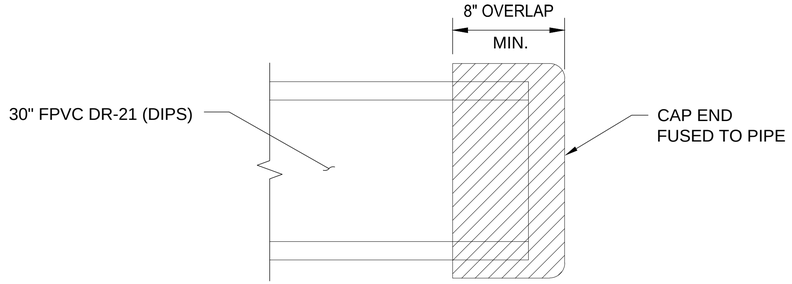
JAW	SMT	KME	21.06.01
Dwn.	Chkd.	Dsgn.	YY.MM.DD



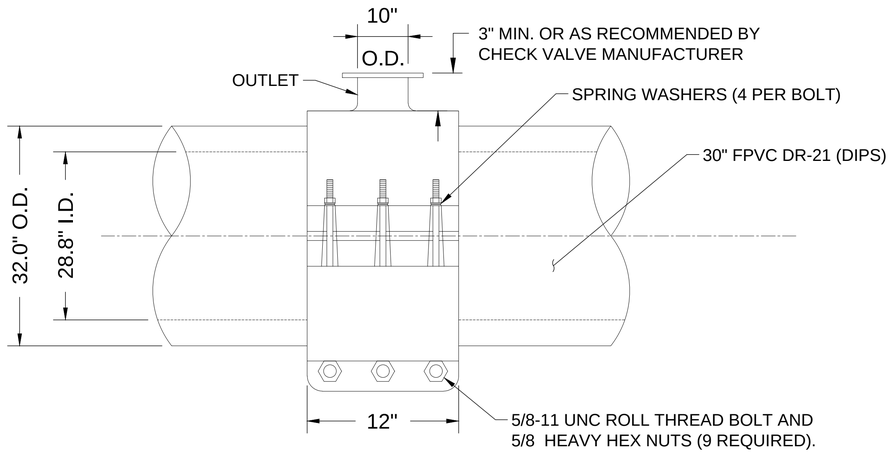
Title
OFFSHORE
STRUCTURE PLAN
& SECTION DETAILS

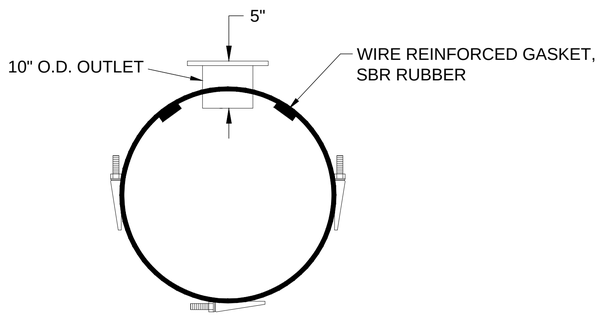
Project No.	Scale	
20-380	AS NOTED	
Drawing No.	Sheet	Revision
OP	5	0

Z:\CADD_Graphics\US Projects\16-329_Naples Outfalls_Phase II\Design\90_100%_Plans\16-329_Naples Outfalls_OffshorePipelines.dwg Apr 15, 2022-8:58am



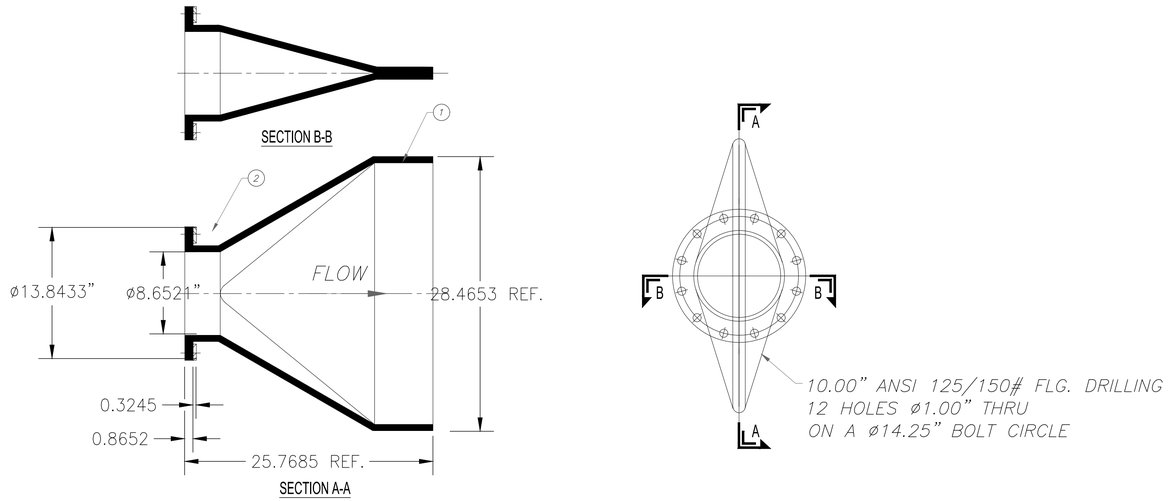
CAP END ASSEMBLY DETAIL
NOT TO SCALE



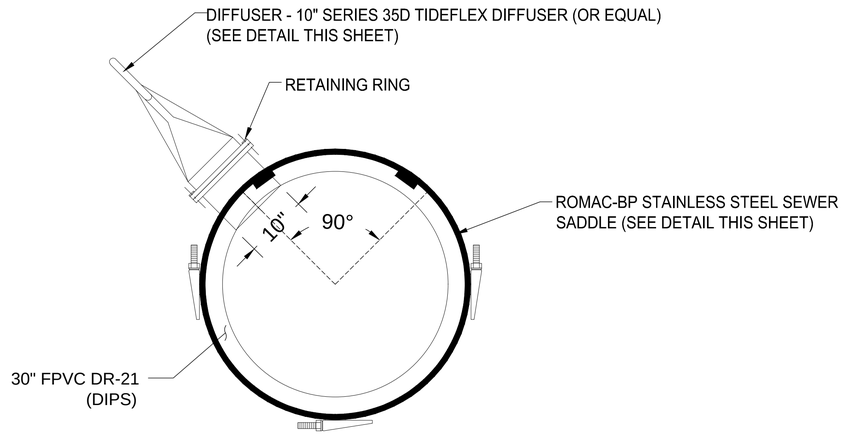


ROMAC - BP STAINLESS STEEL SEWER SADDLE (OR EQUAL)
NOT TO SCALE

NOTE:
1. ALL WELDS PASSIVATED FOR MAXIMUM CORROSION RESISTANCE.



DIFFUSER - 10" SERIES 35D TIDEFLEX DIFFUSER (OR EQUAL)
NOT TO SCALE



DIFFUSER AND SEWER SADDLE CONFIGURATION DETAIL
NOT TO SCALE

Revision	By	Appd.	YY.MM.DD

Issued	By	Appd.	YY.MM.DD
ISSUED 90% DESIGN DRAWINGS TO CITY (PRELIM REVIEW)	KME	APPROVED	22.04.15
ISSUED 75% DESIGN DRAWINGS TO CITY (PRELIM REVIEW)	KME	APPROVED	21.05.13

ECE
Erickson Consulting Engineers
7201 Delainey Court
Sarasota, FL 32420
www.ericksonconsultingengineers.com

Copyright Reserved
The Contractor shall verify and be responsible for all dimensions. DO NOT scale the drawing - any errors or omissions shall be reported to Erickson Consulting Engineers (ECE) without delay.
The Copyrights to all designs and drawings are the property of ECE. Reproduction or use for any purpose other than that authorized by ECE is forbidden.

Client/Project
CITY OF NAPLES
735 8th St S
NAPLES, FL.
Naples Beach Restoration & Water Quality Improvement Project

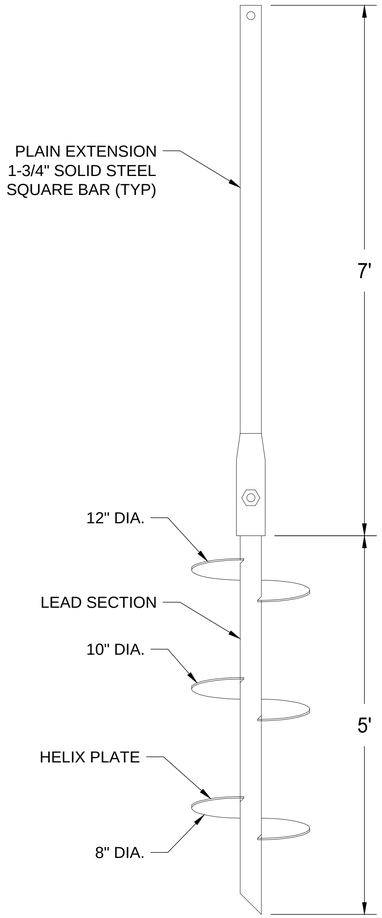
File Name: 16-329_Naples Outfalls_OffshorePipelines.dwg

JAW	SMT	KME	21.06.01
Dwn.	Chkd.	Dsgn.	YY.MM.DD

Title
DIFFUSER
MOUNTING DETAILS

Project No.	Scale	
20-380	AS NOTED	
Drawing No.	Sheet	Revision
OP	6	0

Z:\CADD_Graphics\US Projects\16-329_Naples Outfalls_Phase II\Design\90_100%_Plans\16-329_Naples Outfalls_OffshorePipelines.dwg Apr 15, 2022-8:58am

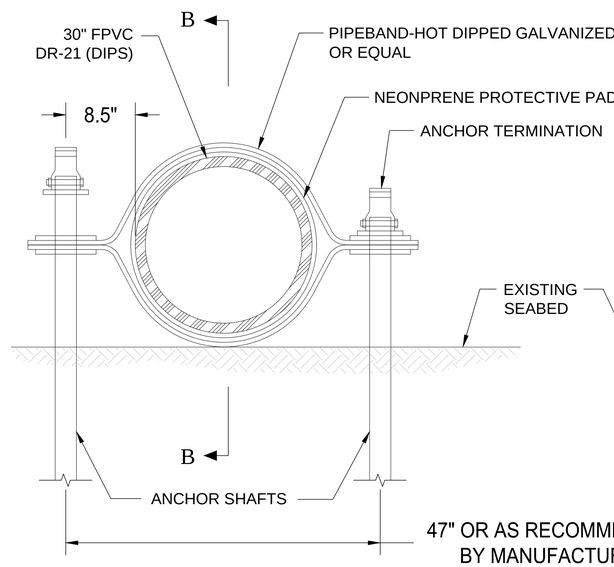


TYPICAL HELIX ANCHOR/PIER ASSEMBLY (OR EQUAL)

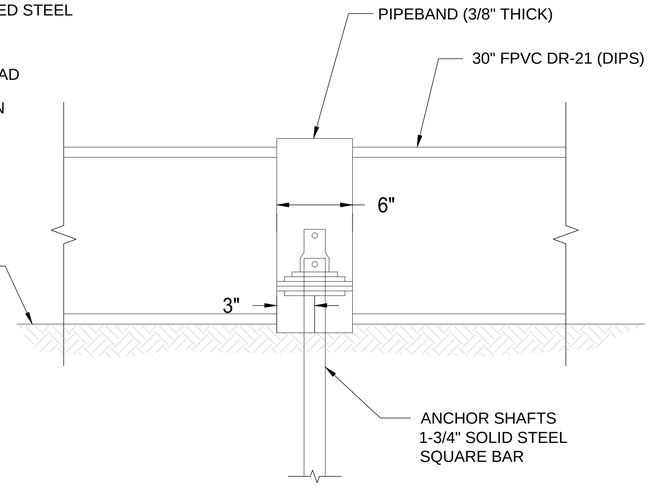
NOT TO SCALE

NOTES:

1. THE CONTRACTOR SHALL USE HELIX ANCHORS, CHANCE TYPE SS175 ANCHORS. THE ANCHOR SHAFTS SHALL BE 1.75" BY 1.75" SOLID SQUARE SHAFT OR MANUFACTURER RECOMMENDED HELIX ANCHOR OR APPROVED EQUAL. A 8"/10"/12" TRIPLE HELIX CONFIGURATION SHALL BE USED WITH A SEVEN FOOT PLAIN EXTENSION AS SHOWN.
2. ALL STEEL COMPONENTS SHALL BE HOT DIP GALVANIZED PER ASTM A153.
3. THE CONTRACTOR SHALL PROVIDE SHOP DRAWINGS, PRODUCT CUT SHEETS, FABRICATION SPECIFICATIONS, A SUMMARY OF MANUFACTURER RECOMMENDATIONS AND A DETAILED DESCRIPTION INSTALLATION METHODS FOR REVIEW BY THE ENGINEER PRIOR TO FABRICATION OF THE ANCHORING SYSTEM, STRAPPING AND DIFFUSER MECHANISM.



SECTION



SECTION B-B

PIPEBANDS, TERMINATIONS AND ANCHOR DETAIL

NOT TO SCALE

Revision	By	Appd.	YY.MM.DD

Issued	By	Appd.	YY.MM.DD
ISSUED 90% DESIGN DRAWINGS TO CITY (PRELIM REVIEW)	KME	APPROVED	22.04.15
ISSUED 75% DESIGN DRAWINGS TO CITY (PRELIM REVIEW)	KME	APPROVED	21.05.13

ECE
Erickson Consulting Engineers
7201 Delainey Court
Sarasota, FL 32420
www.ericksonconsultingengineers.com

Copyright Reserved
The Contractor shall verify and be responsible for all dimensions. DO NOT scale the drawing - any errors or omissions shall be reported to Erickson Consulting Engineers (ECE) without delay.
The Copyrights to all designs and drawings are the property of ECE. Reproduction or use for any purpose other than that authorized by ECE is forbidden.

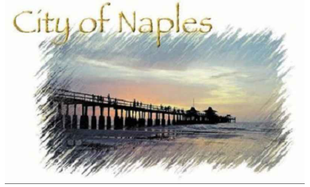
Client/Project

CITY OF NAPLES
735 8th St S
NAPLES, FL.

Naples Beach Restoration & Water Quality Improvement Project

File Name: 16-329_Naples Outfalls_OffshorePipelines.dwg

JAW	SMT	KME	21.06.01
Dwn.	Chkd.	Dsgn.	YY.MM.DD

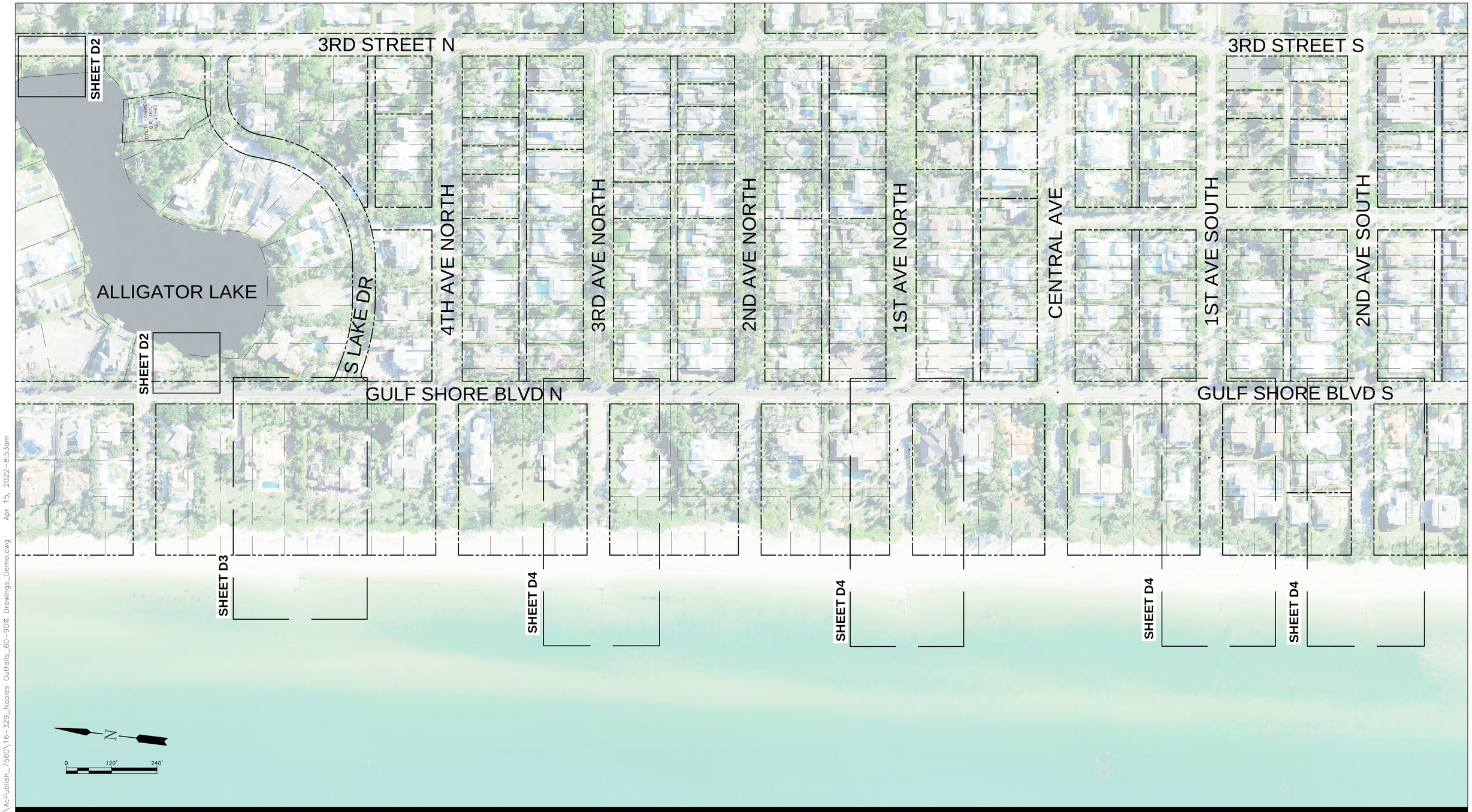


Title

PIPELINE
ANCHORING DETAILS

Project No.	Scale	
20-380	AS NOTED	
Drawing No.	Sheet	Revision
OP	7	0

Z:\CADD_Graphics\US Projects\16-329_Naples Outfalls_Phase II\Design\90_100%_Plans\16-329_Naples Outfalls_OffshorePipelines.dwg Apr 15, 2022-8:58am



C:\Users\bkrach\AppData\Local\Temp\AcPublish_7560\16-329_Naples Outfalls_60-90% Drawings_Demo.dwg Apr 15, 2022 - 8:53am

Revision	By	Appd.	YY.MM.DD

Issued	By	Appd.	YY.MM.DD
ISSUED 90% DESIGN DRAWINGS TO CITY (PRELIM REVIEW)	KME	APPROVED	22.04.15
ISSUED 75% DESIGN DRAWINGS TO CITY (PRELIM REVIEW)	KME	APPROVED	21.05.13

ECE
Erickson Consulting Engineers

7201 Delainey Court
Sarasota, FL 32420
www.ericksonconsultingengineers.com

Copyright Reserved

The Contractor shall verify and be responsible for all dimensions. DO NOT scale the drawing - any errors or omissions shall be reported to Erickson Consulting Engineers (ECE) without delay.
The Copyrights to all designs and drawings are the property of ECE. Reproduction or use for any purpose other than that authorized by ECE is forbidden.

Client/Project

CITY OF NAPLES
735 8th St S
NAPLES, FL.

Naples Beach Restoration & Water Quality Improvement Project

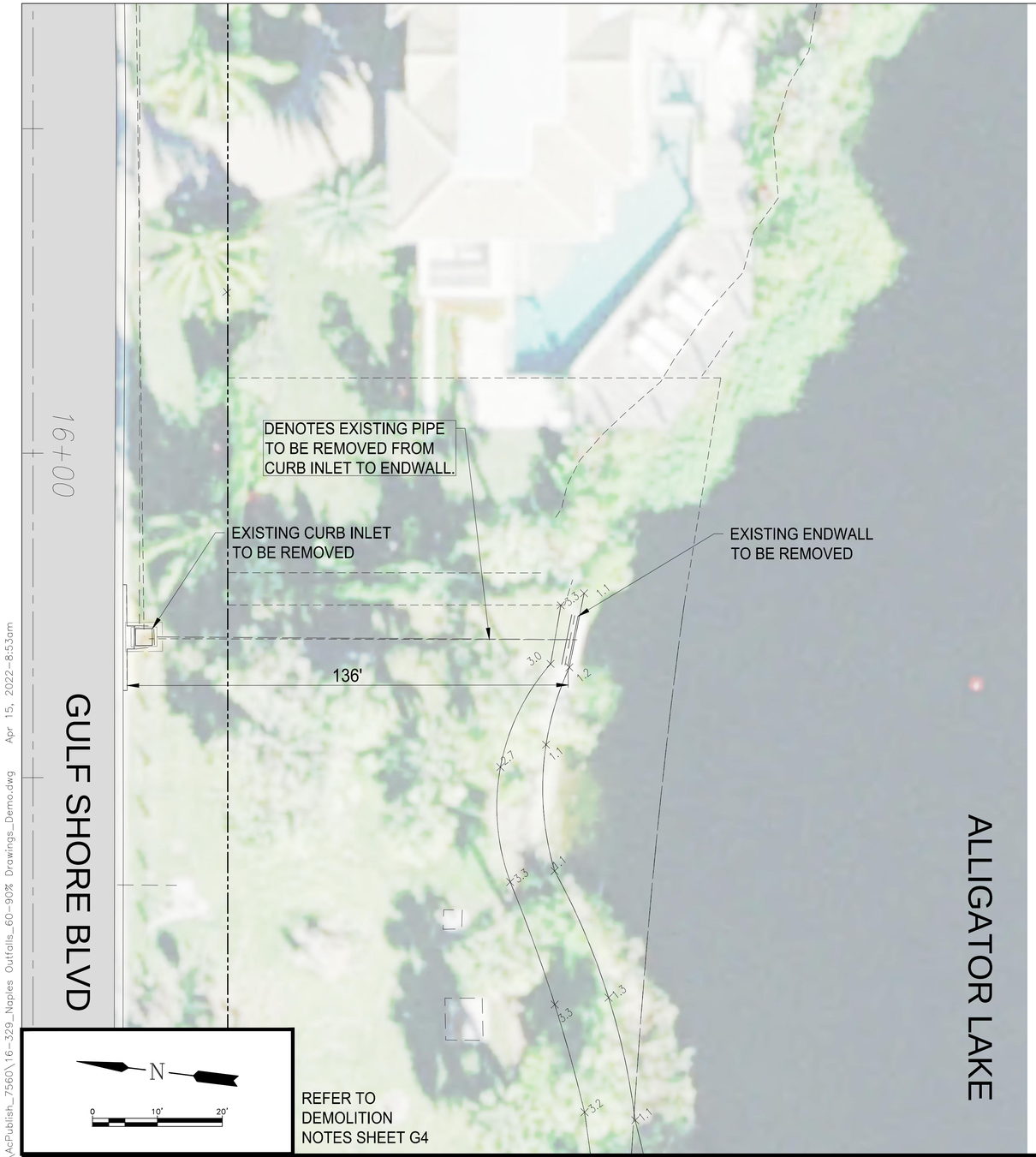
File Name: 16-329_Naples Outfalls_60-90% Drawings_Demo.dwg

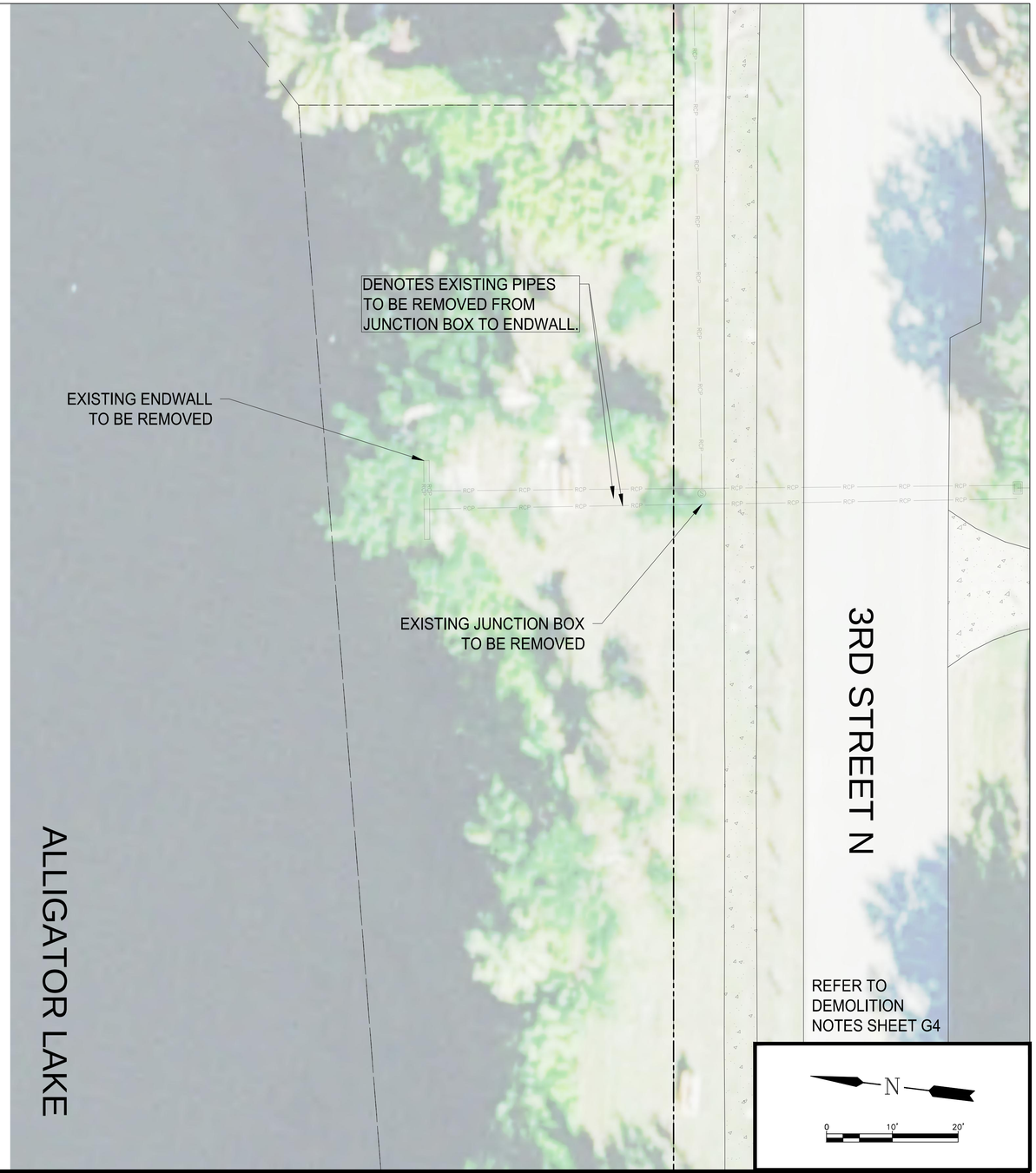
JAW	SMT	KME	21.06.01
Dwn.	Chkd.	Dsgn.	YY.MM.DD

Title

KEY SHEET
DEMOLITION OF EXISTING OUTFALL STRUCTURE PLANS

Project No.	Scale	
20-380	AS NOTED	
Drawing No.	Sheet	Revision
D	1	0





Revision	By	Appd.	YY.MM.DD

Issued	By	Appd.	YY.MM.DD
ISSUED 90% DESIGN DRAWINGS TO CITY (PRELIM REVIEW)	KME	APPROVED	22.04.15
ISSUED 75% DESIGN DRAWINGS TO CITY (PRELIM REVIEW)	KME	APPROVED	21.05.13

ECE
Erickson Consulting Engineers
7201 Delainey Court
Sarasota, FL 32420
www.ericksonconsultingengineers.com

Copyright Reserved
The Contractor shall verify and be responsible for all dimensions.
DO NOT scale the drawing - any errors or omissions shall be reported
to Erickson Consulting Engineers (ECE) without delay.
The Copyrights to all designs and drawings are the property of ECE.
Reproduction or use for any purpose other than that authorized by ECE is forbidden.

Client/Project
CITY OF NAPLES
735 8th St S
NAPLES, FL.
Naples Beach Restoration
& Water Quality
Improvement Project

File Name:
16-329_Naples Outfalls_60-90% Drawings_Demo.dwg

Dwn.	Chkd.	Dsgn.	YY.MM.DD
JAW	SMT	KME	21.06.01

Title
EXISTING HEADWALLS
DEMOLITION PLAN

Project No.	Scale	
20-380	AS NOTED	
Drawing No.	Sheet	Revision
D	2	0

C:\Users\tbrach\AppData\Local\Temp\AcPublish_7560\16-329_Naples Outfalls_60-90% Drawings_Demo.dwg Apr 15, 2022 - 8:53am

GULF OF MEXICO

APPROXIMATE EXTENTS
OF OUTFALL STRUCTURES
TO BE MODIFIED
(SEE SHEET OF-1)

EXISTING
STRUCTURE 6-2

78'

101'

OUTFALL #6
(2) 30" PVC

179'

EXISTING
BOX CULVERT

DENOTES EXISTING
PIPELINE AND
ASSOCIATED SUPPORTS
AND PILES TO BE
REMOVED FROM STRUCTURE 6-2
TO END OF OUTFALLS.

-2.00

18+00

19+00

20+00

GULF SHORE BLVD

N

0 20' 40'

REFER TO
DEMOLITION
NOTES SHEET G4

C:\Users\bkroch\AppData\Local\Temp\AcPublish_7560\16-329_Naples Outfalls_60-90% Drawings_Demo.dwg Apr 15, 2022 - 8:54am

Revision	By	Appd.	YY.MM.DD

Issued	By	Appd.	YY.MM.DD
ISSUED 90% DESIGN DRAWINGS TO CITY (PRELIM REVIEW)	KME	APPROVED	22.04.15
ISSUED 75% DESIGN DRAWINGS TO CITY (PRELIM REVIEW)	KME	APPROVED	21.05.13

ECE
Erickson Consulting Engineers

7201 Delainey Court
Sarasota, FL 32420
www.ericksonconsultingengineers.com

Copyright Reserved

The Contractor shall verify and be responsible for all dimensions.
DO NOT scale the drawing - any errors or omissions shall be reported
to Erickson Consulting Engineers (ECE) without delay.
The Copyrights to all designs and drawings are the property of ECE.
Reproduction or use for any purpose other than that authorized by ECE is forbidden.

Client/Project

CITY OF NAPLES
735 8th St S
NAPLES, FL.

Naples Beach Restoration
& Water Quality
Improvement Project

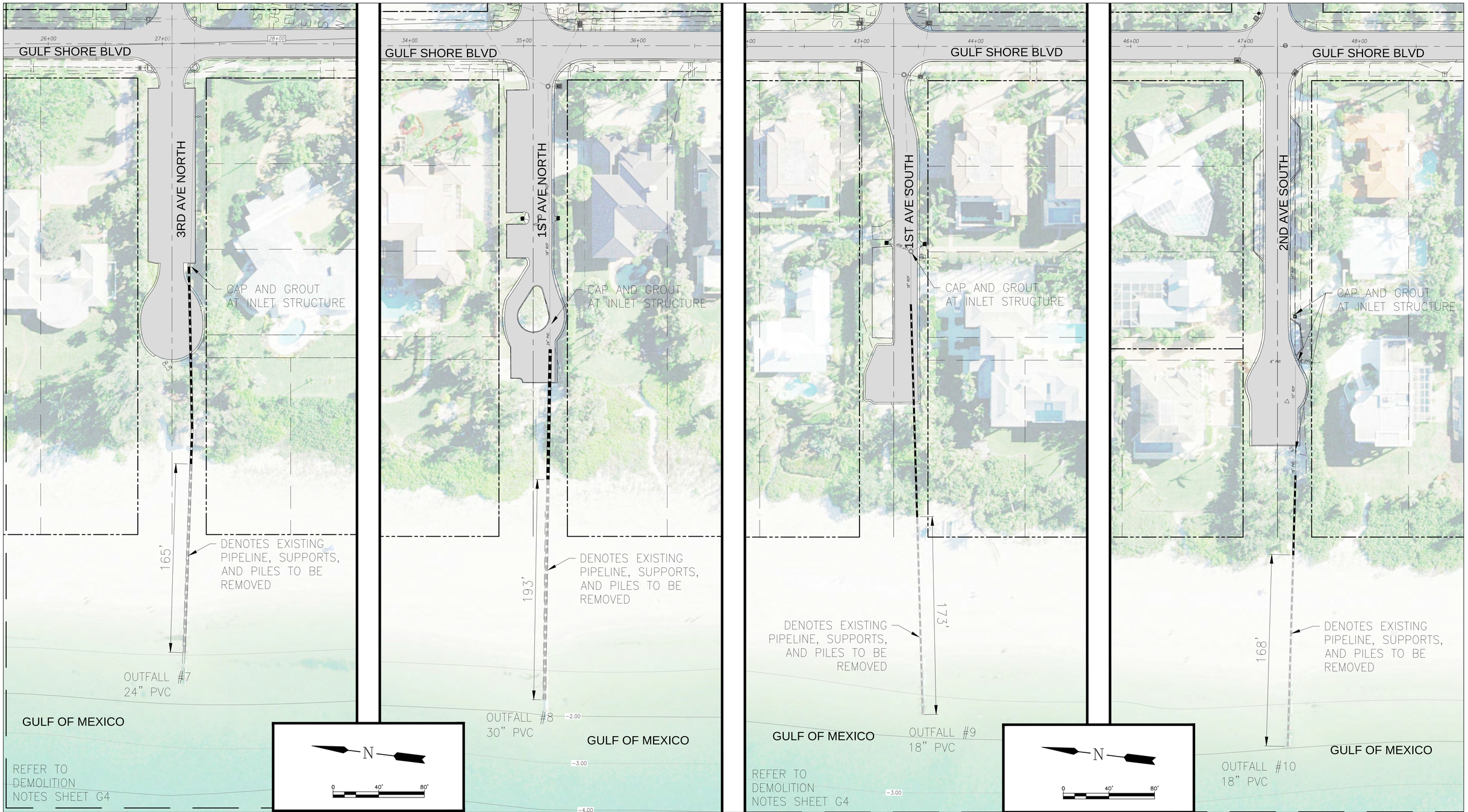
File Name:
16-329_Naples Outfalls_60-90% Drawings_Demo.dwg

Dwn.	Chkd.	Dsgn.	YY.MM.DD
JAW	SMT	KME	21.06.01

Title

EXISTING OUTFALL #6
DEMOLITION PLAN

Project No.	Scale	
20-380	AS NOTED	
Drawing No.	Sheet	Revision
D	3	0



Revision	By	Appd.	YY.MM.DD

Issued	By	Appd.	YY.MM.DD
ISSUED 90% DESIGN DRAWINGS TO CITY (PRELIM REVIEW)	KME	APPROVED	22.04.15
ISSUED 75% DESIGN DRAWINGS TO CITY (PRELIM REVIEW)	KME	APPROVED	21.05.13

ECE
Erickson Consulting Engineers
7201 Delainey Court
Sarasota, FL 32420
www.ericksonconsultingengineers.com

Copyright Reserved
The Contractor shall verify and be responsible for all dimensions. DO NOT scale the drawing - any errors or omissions shall be reported to Erickson Consulting Engineers (ECE) without delay. The Copyrights to all designs and drawings are the property of ECE. Reproduction or use for any purpose other than that authorized by ECE is forbidden.

Client/Project
CITY OF NAPLES
735 8th St S
NAPLES, FL.
Naples Beach Restoration & Water Quality Improvement Project

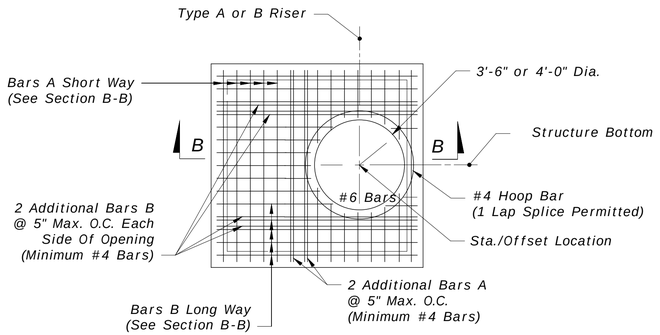
File Name: 16-329_Naples Outfalls_60-90% Drawings_Demo.dwg

Dwn.	Chkd.	Dsgn.	YY.MM.DD
JAW	SMT	KME	21.06.01

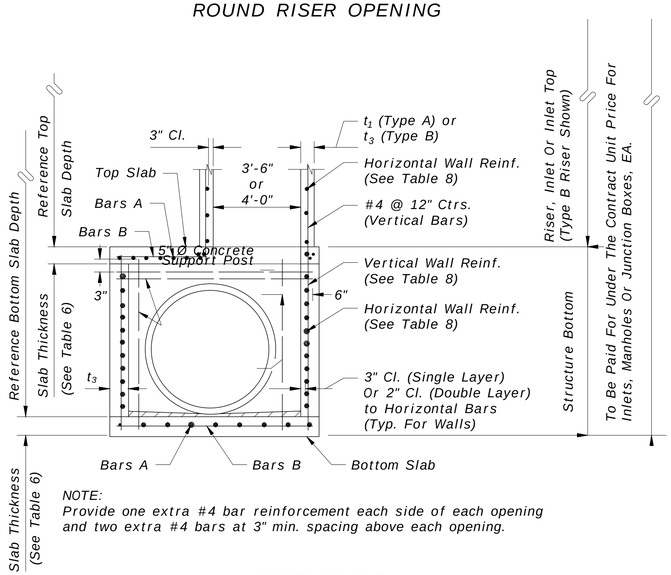
Title
EXISTING OUTFALLS #7, 8, 9, AND 10 DEMOLITION PLAN

Project No.	Scale	
20-380	AS NOTED	
Drawing No.	Sheet	Revision
D	4	0

C:\Users\bkrach\AppData\Local\Temp\AcPublish_7560\16-329_Naples Outfalls_60-90% Drawings_Demo.dwg Apr 15, 2022 - 8:54am



ROUND RISER OPENING



NOTE:
Provide one extra #4 bar reinforcement each side of each opening and two extra #4 bars at 3" min. spacing above each opening.

SECTION B-B
(ALTERNATE B)

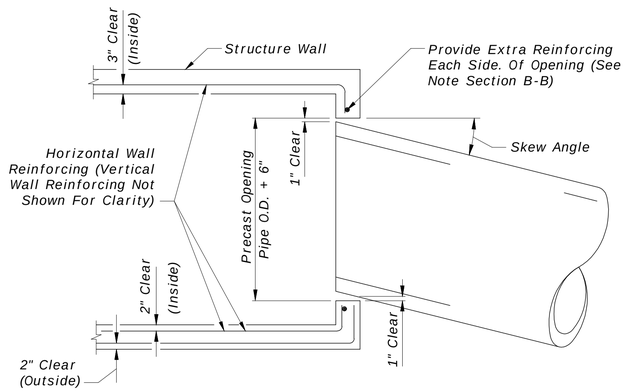
* See FDOT Standard Index 425-010 & 425-001 For Additional Details

STRUCTURE BOTTOM TYPE J

SQUARE & RECTANGULAR STRUCTURES (ALTERNATE B) - TABLE 2

Type	Wall Length (ft)	Max. Depth (ft)	Wall Thickness (t_3)	
			CIP (in.)	Precast (in.)
P	≤ 3'-6"	40	6 Riser 8 Bottom	6
J	4'-0"	40	8	6
J	5'-0"	22	-	6
J	6'-0"	15	-	6
J	5'-0" to 9'-0"	40	8	8
J	10'-0"	26	8	8
J	10'-0" to 12'-0"	40	10	9
J	16'-0"	35	-	9
J	16'-0"	40	10	10
J	20'-0"	25	-	9
J	20'-0"	30	10	10

TABLE 2 NOTES:
See Table 8 for Reinforcing Schedule.



MAXIMUM PIPE SKEW FOR PRECAST ROUND OPENINGS
PLAN VIEW

TABLE 3-MINIMUM STRUCTURE SIZES FOR SINGLE PIPE CONNECTION PER SIDE

PIPE SIZE	RECTANGULAR		ROUND	
	Side Dimension (L)		Diameter (D)	
	Single Pipe Per Side	Note Number	Single Pipe or θ=180°	2 to 4 Pipes θ=90°
18"	3'-6"		3'-6"	4'-0"
24"	3'-6"		3'-6"	5'-0"
30"	3'-6"/4'-0"	2	4'-0"	6'-0"
36"	4'-0"/5'-0"	3	5'-0"	7'-0"
42"	5'-0"		6'-0"	7'-0"
48"	6'-0"		6'-0"	8'-0"
54"	6'-0"		7'-0"	10'-0"
60"	7'-0"		7'-0"	10'-0"
66"	7'-0"/8'-0"	4	8'-0"	12'-0"
72"	8'-0"		8'-0"	12'-0"
78"	9'-0"		10'-0"	12'-0"
84"	9'-0"		12'-0"	N/A

TABLE 3 NOTES:
1. For Round Structures sizes with variable angles between pipes and variable pipe sizes, refer to the FDOT Storm Drain Handbook.
2. For 3'-6" Precast Square Structure Bottoms, 30" Pipes with similar invert elevations are not permitted in adjacent walls. Use 4'-0" Side Dimensions when 30" pipe openings are required on adjacent walls and the difference in flow lines is less than 3'-0".
3. For 4'-0" Precast Square Structure Bottoms, 36" Pipes with similar invert elevations are not permitted in adjacent walls. Use 5'-0" Side Dimensions when 36" pipe openings are required on adjacent walls and the difference in flow lines is less than 3'-0".

TABLE 5 - MAXIMUM PIPE SKEW FOR PRECAST ROUND OPENINGS

	WALL THICKNESS	PIPE SIZE										
		18"	24"	30"	36"	42"	48"	54"	60"	66"	72"	78"	84"
MAXIMUM SKEW ANGLE	8"	19°	17°	16°	16°	15°	14°	14°	13°	13°	13°	12°	12°
	6"	21°	20°	18°	17°	17°	16°	15°	15°	14°	14°	13°	13°

TABLE 5 NOTES:
These values are based on 2" clearance for precast structures. Larger skews are possible for Cast-In-Place Structures or elliptical pipe openings when approved by the Engineer.

Revision	By	Appd.	YY.MM.DD

Issued	By	Appd.	YY.MM.DD
ISSUED 90% DESIGN DRAWINGS TO CITY (PRELIM REVIEW)	KME	APPROVED	22.04.15
ISSUED 75% DESIGN DRAWINGS TO CITY (PRELIM REVIEW)	KME	APPROVED	21.05.13

ECE
Erickson Consulting Engineers
7201 Delainey Court
Sarasota, FL 32420
www.ericksonconsultingengineers.com

Copyright Reserved
The Contractor shall verify and be responsible for all dimensions. DO NOT scale the drawing - any errors or omissions shall be reported to Erickson Consulting Engineers (ECE) without delay. The Copyrights to all designs and drawings are the property of ECE. Reproduction or use for any purpose other than that authorized by ECE is forbidden.

Client/Project
CITY OF NAPLES
735 8th St S
NAPLES, FL.
Naples Beach Restoration & Water Quality Improvement Project

File Name:
16-329_Naples Outfalls_60-90% Drawings_Details-General.dwg

JAW	SMT	KME	21.06.01
Dwn.	Chkd.	Dsgn.	YY.MM.DD

Title
GENERAL CONSTRUCTION DETAILS (1)

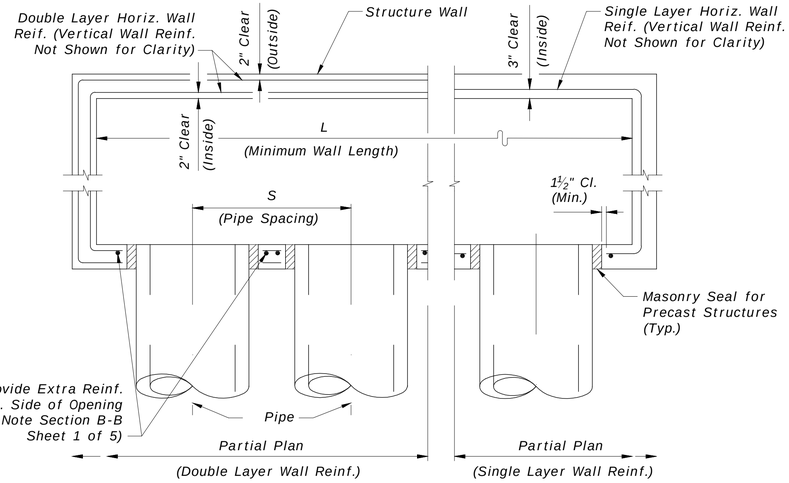
Project No.	Scale	
16-329	AS NOTED	
Drawing No.	Sheet	Revision
CD	1	0

Z:\CADD_Graphics\US Projects\16-329_Naples Outfalls_Phase II\Design\90_100%_Plans\16-329_Naples Outfalls_60-90% Drawings_Details-General.dwg Apr 15, 2022 - 8:33am

TABLE 4-MINIMUM SIZES FOR MULTIPLE PARALLEL PIPE CONNECTIONS FOR RECTANGULAR STRUCTURE BOTTOMS				
PIPE SIZE	PIPE SPACING (S)	MINIMUM WALL LENGTH (L) FOR NUMBER OF PARALLEL PIPES		
		2	3	4
18"	2'-10"	6'-0"	8'-6"	11'-0"
24"	3'-5"	6'-6"	10'-0"	13'-6"
30"	4'-3"	8'-0"	12'-6"	16'-6"
36"	5'-1'	9'-6"	14'-6"	19'-6"
42"	6'-0"	11'-0"	17'-0"	-
48"	6'-9"	12'-6"	19'-0"	-
54"	7'-8"	14'-0"	-	-
60"	8'-6"	15'-0"	-	-
66"	9'-0"	16'-6"	-	-
72"	10'-0"	18'-0"	-	-
78"	10'-9"	19'-0"	-	-
84"	11'-8"	20'-6"	-	-

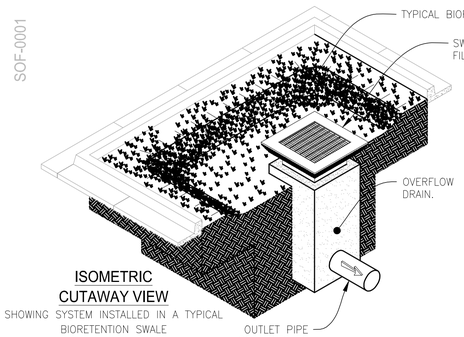
TABLE 4 NOTES:
1. *Minimum wall lengths based on precast structures, using concrete pipe with maximum skew angles per Table 5.*

2. *Wall lengths exceeding 20'-0" require special designs.*



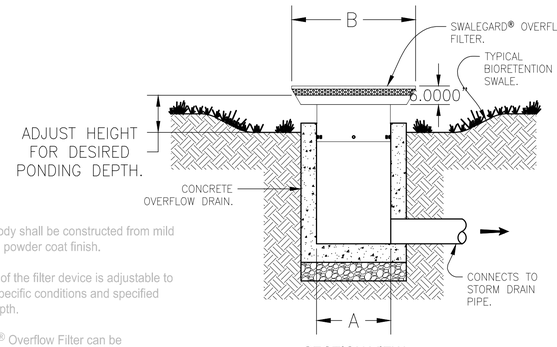
MULTIPLE PARALLEL PIPE CONNECTIONS DETAIL
PLAN VIEW

SOF-0001



ISOMETRIC
CUTAWAY VIEW
SHOWING SYSTEM INSTALLED IN A TYPICAL BIORETENTION SWALE
SCALE: 1X

MODEL	A (L" X W")	B (L" X W")
SOF-12	12" X 12"	26" X 26"
SOF-18	18" X 18"	34" X 34"
SOF-24	24" X 24"	40" X 40"
SOF-2436	24" X 36"	40" X 54"
SOF-36	36" X 36"	54" X 54"



SECTION VIEW
SCALE: 1X

NOTES:

1. The filter body shall be constructed from mild steel with a powder coat finish.
2. The height of the filter device is adjustable to meet site specific conditions and specified ponding depth.
3. Swalegard® Overflow Filter can be installed in most industry standard overflow drains and is ideal for both new and retro-fit applications.
4. For sizes not shown in the tabulation contact Oldcastle® Stormwater Solutions for assistance.

Bioretention/ Biofiltration

SwaleGard®
Overflow Filter
Swale Prefilter & Overflow Device

PATENT PENDING

Oldcastle® Stormwater Solutions
7921 Southpark Plaza, Suite 200 | Littleton, CO | 80120 | Ph: 800.579.8819 | oldcastlestormwater.com

THIS DOCUMENT IS THE PROPERTY OF OLDCASTLE PRECAST, INC. IT IS SUBMITTED FOR REFERENCE PURPOSES ONLY AND SHALL NOT BE USED IN ANY WAY INJURIOUS TO THE INTERESTS OF SAID COMPANY. COPYRIGHT © 2010 OLDCASTLE PRECAST, INC. ALL RIGHTS RESERVED.

DRAWING NO.	REV	ECO	DATE	DATE
SOF-0001	A	NEW	7/13/16	JPR 6/15/15

SHEET 1 OF 1

GRATE INLET SKIMMER BOX FOR DRAINAGE STRUCTURES ALONG GBS

Lifts Out Through Manhole

Suntree Technologies Inc.
798 Clearlake Road, Cocoa, FL 32922
Ph: 321-637-7552 FAX: 321-637-7554
www.suntreetech.com

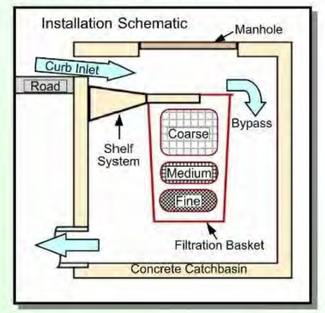
5 Year Warranty

Curb Inlet Basket
High Capacity
Patented

Multi-Stage Filtration
Screens of Different Sieve Sizes Optimize Filtration And Water Flow

- Storm Boom
- ***Stainless Steel Screens***
- Coarse Sieve Size Screen
- Medium Sieve Size Screen
- Fine Sieve Size Screen
(Fine sieve size screen also on bottom)

Will Not Impede The Flow Of The Inlet



For use in inlets where the only access is through a manhole.

A shelf system directs water flow into the filtration basket and positions the basket directly under the manhole for easy access. If necessary, the water flow can bypass the entire filtration system simply by flowing past the filter and into the catchbasin.

SUNTREE OR EQUAL

Revision	By	Appd.	YY.MM.DD

Issued	By	Appd.	YY.MM.DD
ISSUED 90% DESIGN DRAWINGS TO CITY (PRELIM REVIEW)	KME	APPROVED	22.04.15
ISSUED 75% DESIGN DRAWINGS TO CITY (PRELIM REVIEW)	KME	APPROVED	21.05.13

ECE
Erickson Consulting Engineers
7201 Delainey Court
Sarasota, FL 32420
www.ericksonconsultingengineers.com

Copyright Reserved
The Contractor shall verify and be responsible for all dimensions. DO NOT scale the drawing - any errors or omissions shall be reported to Erickson Consulting Engineers (ECE) without delay. The Copyrights to all designs and drawings are the property of ECE. Reproduction or use for any purpose other than that authorized by ECE is forbidden.

Client/Project
CITY OF NAPLES
735 8th St S
NAPLES, FL.
Naples Beach Restoration & Water Quality Improvement Project

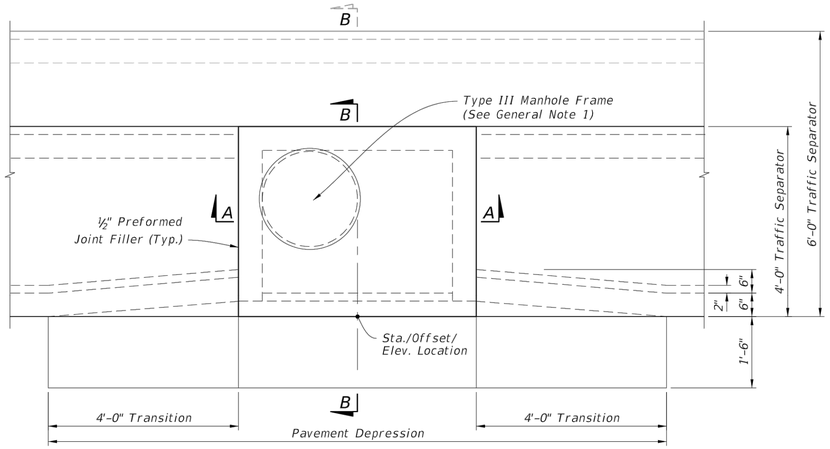
File Name: 16-329_Naples Outfalls_60-90% Drawings_Details-General.dwg

Dwn.	Chkd.	Dsgn.	YY.MM.DD
JAW	SMT	KME	21.06.01

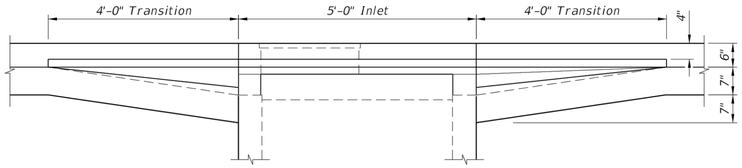
Title
GENERAL CONSTRUCTION DETAILS (2)

Project No.	Scale	
16-329	AS NOTED	
Drawing No.	Sheet	Revision
CD	2	0

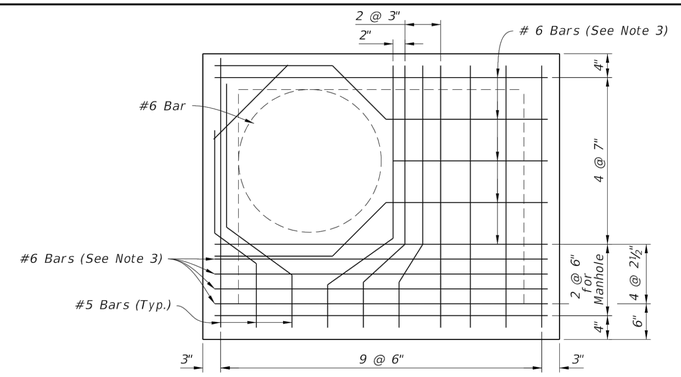
Z:\CADD_Graphics\US Projects\16-329_Naples Outfalls_Phase II\Design\90_100%_Plans\16-329_Naples Outfalls_60-90% Drawings_Details-General.dwg Apr 15, 2022-8:33am



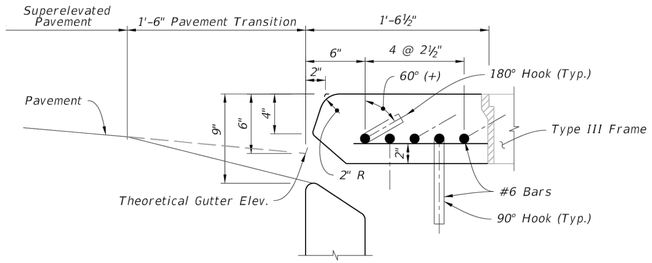
PLAN



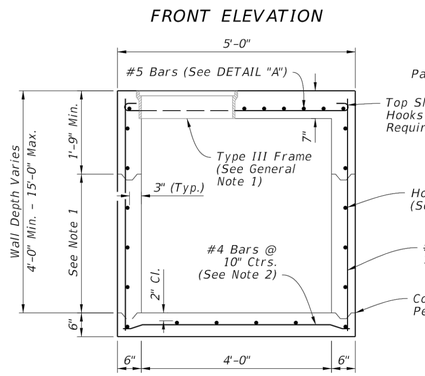
FRONT ELEVATION



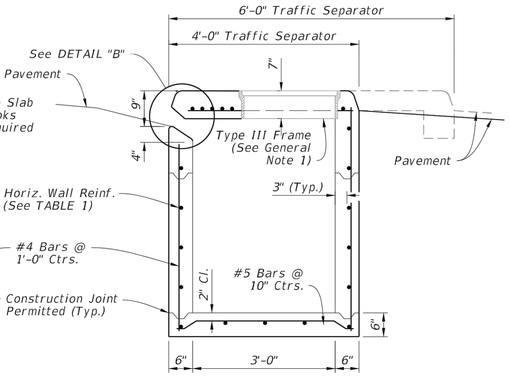
DETAIL "A"



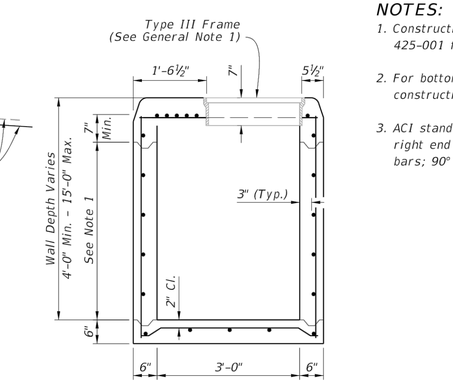
DETAIL "B"



SECTION A-A



SECTION B-B



MANHOLE MODIFICATION

NOTES:

1. Construction joints permitted between these limits. See Index 425-001 for minimum dimensions.
2. For bottom slab rebar embedment options, see optional construction joints, Index 425-001.
3. ACI standard hooks required each end of straight bars and right end of bent bars: 180° hooks, canted 60°(+), on odd bars; 90° hooks, down, on even bars numbered from throat side.

TABLE 1 - HORIZONTAL WALL REINFORCING SCHEDULE

WALL DEPTH	SCHEDULE	AREA (in.²/ft.)	MAX. SPACING	
			BARS	WWR
0' - 6'	A12	0.20	12"	8"
6' - 10'	A6	0.20	6"	5"
10' - 13'	A4	0.20	4"	3"
10' - 15'	B5.5	0.24	5½"	5"

DIMENSIONAL AND REINFORCING DETAILS

LAST REVISION	REVISION	DESCRIPTION:			
11/01/20			FY 2021-22 STANDARD PLANS	CURB INLET TYPE 8	INDEX 425-023 / SHEET 2 of 2

12/21/2020 1:11:37 PM

Z:\CADD_Graphics\US Projects\16-329_Naples Outfalls_Phase II\Design\90_100%_Plans\16-329_Naples Outfalls_60-90% Drawings_Details-General.dwg Apr 15, 2022 - 8:33am

Revision	By	Appd.	YY.MM.DD

Issued	By	Appd.	YY.MM.DD
ISSUED 90% DESIGN DRAWINGS TO CITY (PRELIM REVIEW)	KME	APPROVED	22.04.15
ISSUED 75% DESIGN DRAWINGS TO CITY (PRELIM REVIEW)	KME	APPROVED	21.05.13

ECE
Erickson Consulting Engineers
7201 Delainey Court
Sarasota, FL 32420
www.ericksonconsultingengineers.com

Copyright Reserved
The Contractor shall verify and be responsible for all dimensions. DO NOT scale the drawing - any errors or omissions shall be reported to Erickson Consulting Engineers (ECE) without delay. The Copyrights to all designs and drawings are the property of ECE. Reproduction or use for any purpose other than that authorized by ECE is forbidden.

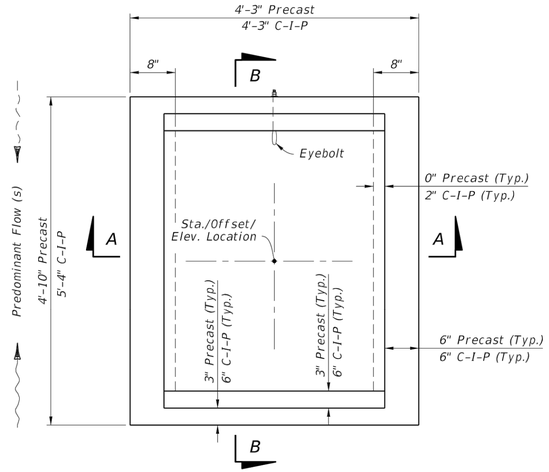
Client/Project
CITY OF NAPLES
735 8th St S
NAPLES, FL.
Naples Beach Restoration & Water Quality Improvement Project

File Name: 16-329_Naples Outfalls_60-90% Drawings_Details-General.dwg

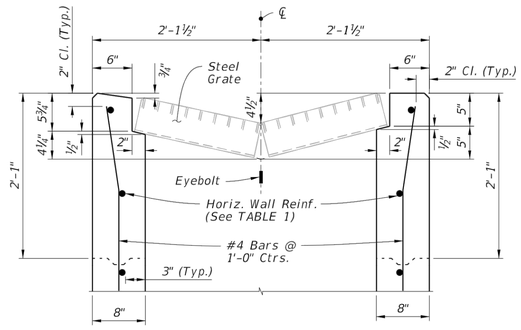
Dwn.	Chkd.	Dsgn.	YY.MM.DD
JAW	SMT	KME	21.06.01

Title
GENERAL CONSTRUCTION DETAILS (3)

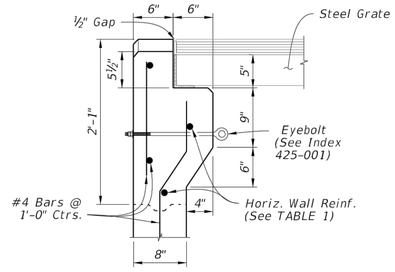
Project No.	Scale	
16-329	AS NOTED	
Drawing No.	Sheet	Revision
CD	3	0



PLAN

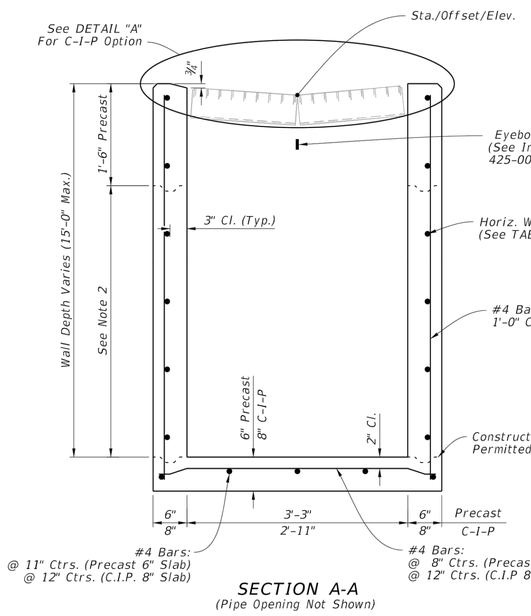


DETAIL "A"

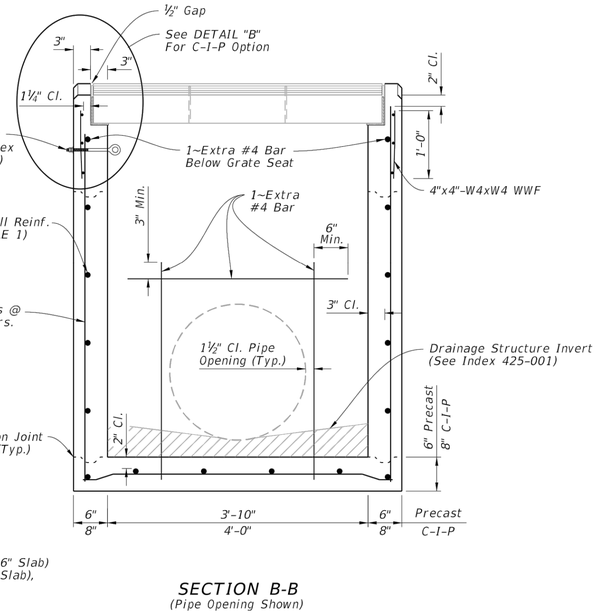


DETAIL "B"

CAST-IN-PLACE OPTION



SECTION A-A
(Pipe Opening Not Shown)



SECTION B-B
(Pipe Opening Shown)

TABLE 1
HORIZONTAL WALL REINFORCING SCHEDULE

WALL DEPTH	SCHEDULE	AREA (in.²/ft.)	MAX. SPACING	
			BARS	WWR
0' - 5'	A12	0.20	12"	8"
5' - 9'	A6	0.20	6"	5"
9' - 12'	A4	0.24	4"	3"
9' - 15'	B5.5	0.24	5½"	5"

NOTES:

1. Concrete Apron/Transition not shown.
2. Construction joints permitted between these limits. See Index 425-001 for minimum dimensions.

DIMENSIONAL AND REINFORCING DETAILS

LAST REVISION	REVISION	DESCRIPTION:			INDEX	SHEET
11/01/20			FY 2021-22 STANDARD PLANS	GUTTER INLET TYPE S	425-040	2 of 5

10/12/2020 6:50:22 AM

Z:\CADD_Graphics\US Projects\16-329_Naples Outfalls_Phase II\Design\90_100%_Plans\16-329_Naples Outfalls_60-90% Drawings_Details-General.dwg Apr 15, 2022 - 8:33am

Revision	By	Appd.	YY.MM.DD

Issued	By	Appd.	YY.MM.DD
ISSUED 90% DESIGN DRAWINGS TO CITY (PRELIM REVIEW)	KME	APPROVED	22.04.15
ISSUED 75% DESIGN DRAWINGS TO CITY (PRELIM REVIEW)	KME	APPROVED	21.05.13

ECE
Erickson Consulting Engineers
7201 Delainey Court
Sarasota, FL 32420
www.ericksonconsultingengineers.com

Copyright Reserved
The Contractor shall verify and be responsible for all dimensions. DO NOT scale the drawing - any errors or omissions shall be reported to Erickson Consulting Engineers (ECE) without delay.
The Copyrights to all designs and drawings are the property of ECE. Reproduction or use for any purpose other than that authorized by ECE is forbidden.

Client/Project
CITY OF NAPLES
735 8th St S
NAPLES, FL.
Naples Beach Restoration & Water Quality Improvement Project

File Name: 16-329_Naples Outfalls_60-90% Drawings_Details-General.dwg

JAW	SMT	KME	21.06.01
Dwn.	Chkd.	Dsgn.	YY.MM.DD

Title
CONSTRUCTION DETAILS
DETAILS (4)

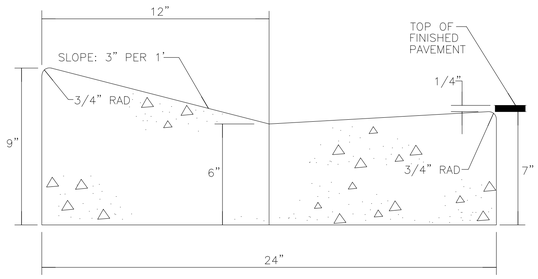
Project No.	Scale	
16-329	AS NOTED	
Drawing No.	Sheet	Revision
CD	4	0

PLAN VIEW

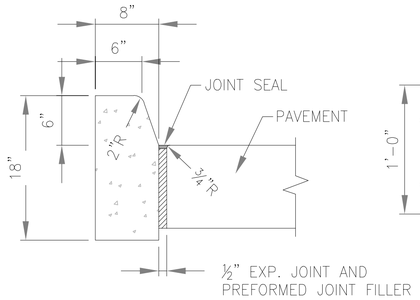
TRUNCATED DOME

ALL SIDEWALK CURB RAMPS SHALL HAVE DETECTABLE WARNING SURFACES THAT EXTEND THE FULL WIDTH OF THE RAMP AND IN THE DIRECTION OF TRAVEL 24 INCHES (610 MM) FROM THE BACK OF CURB.

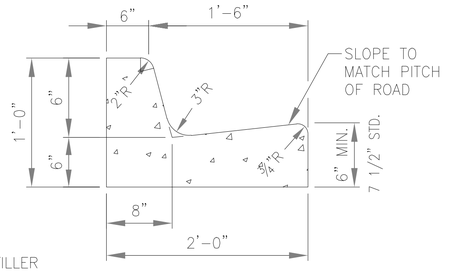
CURB RAMP DETECTABLE WARNING DETAIL
N.T.S.



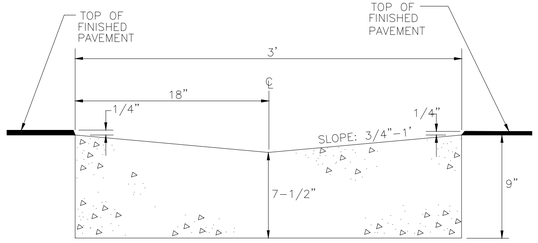
GUTTER CURB
N.T.S.



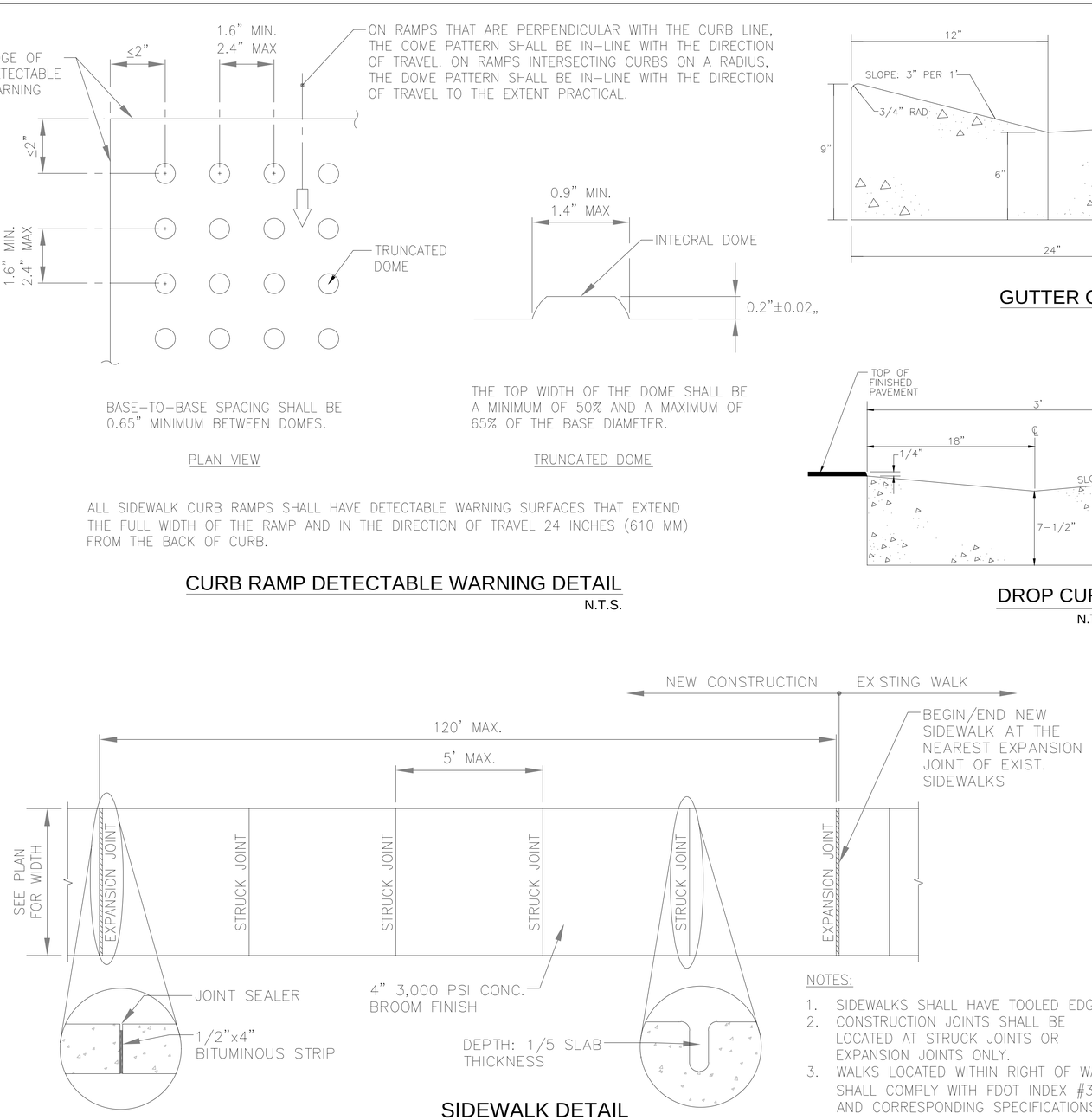
TYPE 'D' CURB
N.T.S.



TYPE 'F' CURB
N.T.S.



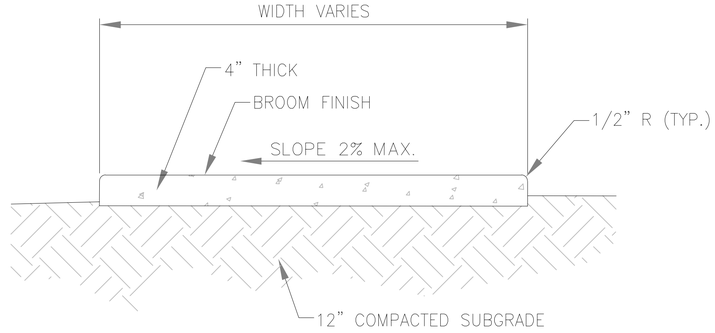
DROP CURB
N.T.S.



NOTES:

1. SIDEWALKS SHALL HAVE TOOLED EDGES.
2. CONSTRUCTION JOINTS SHALL BE LOCATED AT STRUCK JOINTS OR EXPANSION JOINTS ONLY.
3. WALKS LOCATED WITHIN RIGHT OF WAY SHALL COMPLY WITH FDOT INDEX #310 AND CORRESPONDING SPECIFICATIONS.

SIDEWALK DETAIL
N.T.S.



1. THE PROPOSED FILL SHALL BE COMPACTED IN 12" LIFTS TO 95% MAXIMUM DENSITY IN ACCORDANCE WITH AASHTO T-180 AND THE ENGINEER'S SPECIFICATIONS.
2. SUBGRADE SHALL BE SAND, COMPACTED TO A FIRM EVEN SURFACE, TRUE TO GRADE AND CROSS- SECTION, AND BE MOIST WHEN CONCRETE IS PLACED.
3. SIDEWALK SHALL HAVE CONTRACTION JOINTS AT 5' INTERVALS AND AN EXPANSION JOINT EVERY 120' MAXIMUM.

TYPICAL SIDEWALK SECTION
N.T.S.

Revision	By	Appd.	YY.MM.DD

Issued	By	Appd.	YY.MM.DD
ISSUED 90% DESIGN DRAWINGS TO CITY (PRELIM REVIEW)	KME	APPROVED	22.04.15
ISSUED 75% DESIGN DRAWINGS TO CITY (PRELIM REVIEW)	KME	APPROVED	21.05.13

ECE
Erickson Consulting Engineers
7201 Delainey Court
Sarasota, FL 32420
www.ericksonconsultingengineers.com

Copyright Reserved
The Contractor shall verify and be responsible for all dimensions. DO NOT scale the drawing - any errors or omissions shall be reported to Erickson Consulting Engineers (ECE) without delay. The Copyrights to all designs and drawings are the property of ECE. Reproduction or use for any purpose other than that authorized by ECE is forbidden.

Client/Project
CITY OF NAPLES
735 8th St S
NAPLES, FL.
Naples Beach Restoration & Water Quality Improvement Project

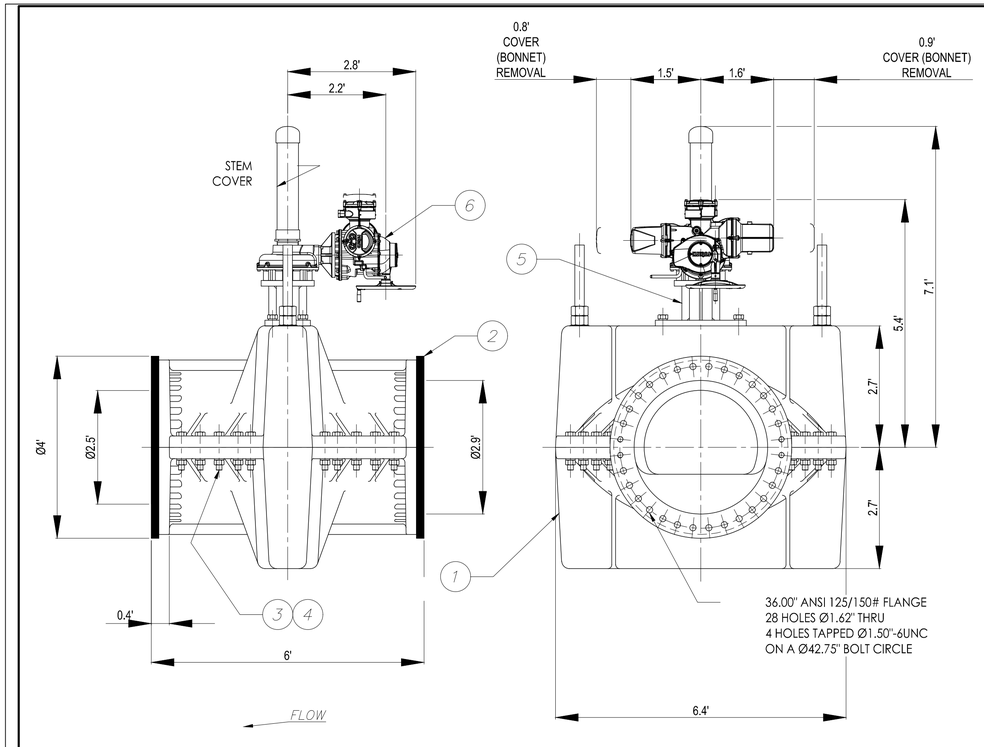
File Name: 16-329_Naples Outfalls_60-90% Drawings_Details-General.dwg

JAW	SMT	KME	21.06.01
Dwn.	Chkd.	Dsgn.	YY.MM.DD

Title
GENERAL CONSTRUCTION DETAILS (5)

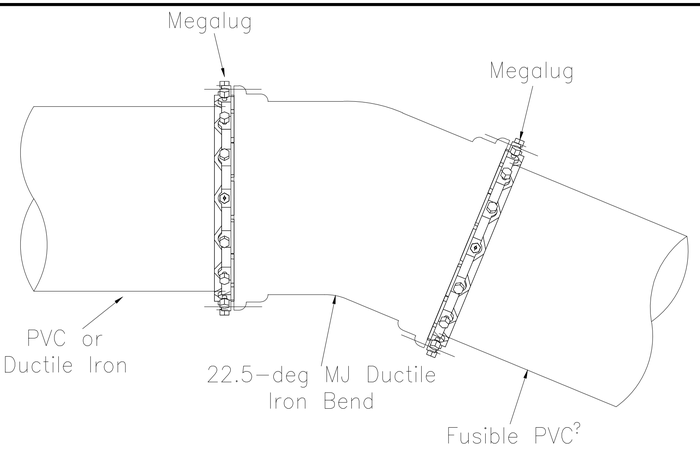
Project No.	Scale	
16-329	AS NOTED	
Drawing No.	Sheet	Revision
CD	5	0

Z:\CADD_Graphics\US Projects\16-329_Naples Outfalls_Phase II\Design\90_100%_Plans\16-329_Naples Outfalls_60-90% Drawings_Details-General.dwg Apr 15, 2022-8:33am



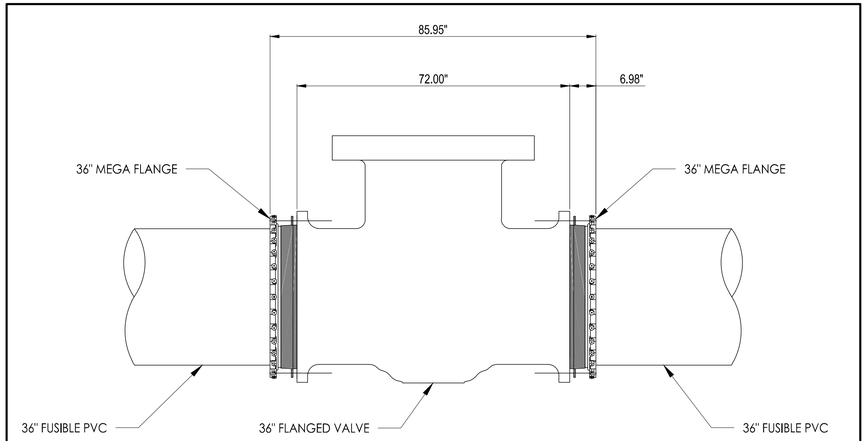
PINCH VALVE - 36.00" SERIES 5200E (OR 5700E) WITH ACTUATOR

NOT TO SCALE



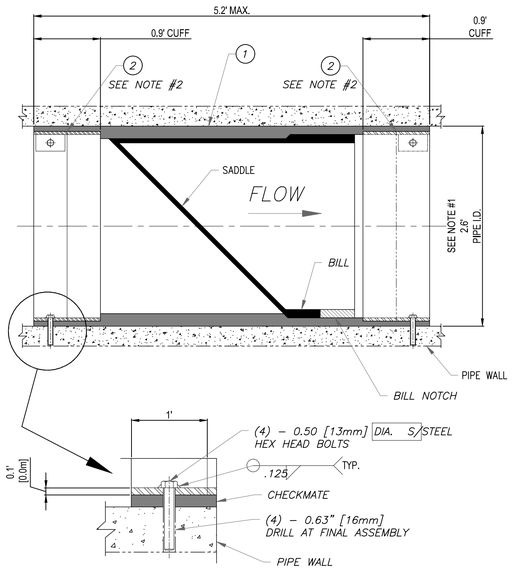
36" MECHANICAL JOINT DETAIL

NOT TO SCALE

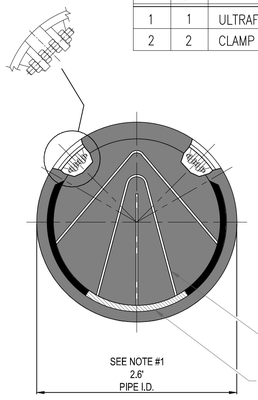


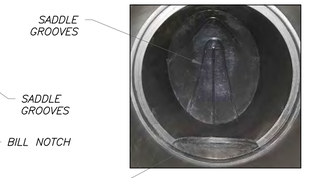
36" FLANGED VALVE

NOT TO SCALE



PIN PER NOTE #4
RECOMMENDED PINNING CONFIGURATION
(SUPPLIED BY CUSTOMER) (SEE I.O.M.)
NOT TO SCALE





ITEM	QTY.	DESCRIPTION	MAT'L
1	1	ULTRAFLEX CHECKMATE CHECK VALVE	MUST BE SUPPLIED
2	2	CLAMP	MUST BE SUPPLIED

NOTES:
1. PIPE INSIDE DIAMETER – MUST BE SUPPLIED
   (MINIMUM ALLOWABLE PIPE DIAMETER – 23.25 INCHES)
2. CLAMP INSTALLED IN UPSTREAM OR DOWNSTREAM CUFF DEPENDING ON INSTALLATION ORIENTATION
3. MAXIMUM ALLOWABLE BACK PRESSURE – 45.0 FEET
4. IT IS RECOMMENDED TO BOLT OR PIN CHECKMATE TO PIPE AS SHOWN, 4 PLACES 90° APART

PRELIMINARY DRAWING
NOT FOR APPROVAL PURPOSES

CUSTOMER: XXX
ORDER No: XXX

* PATENT PENDING *

PROPRIETARY NOTICE
THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION OF TIDEFLEX TECHNOLOGIES. IT IS LOANED BY TIDEFLEX TECHNOLOGIES, SUBJECT TO THE CONDITIONS THAT IT AND THE INFORMATION EMBODIED THEREIN SHALL BE USED ONLY FOR RECORD AND REFERENCE PURPOSES. IT SHALL NOT BE USED OR CAUSED TO BE USED IN ANY WAY PREJUDICIAL TO THE INTERESTS OF TIDEFLEX TECHNOLOGIES. IT SHALL NOT BE REPRODUCED OR COPIED IN WHOLE OR PART, OR DISCLOSED TO ANYONE WITHOUT THE DIRECT WRITTEN PERMISSION OF TIDEFLEX TECHNOLOGIES AND SHALL BE RETURNED UPON REQUEST.

OPPORTUNITY No: XXXXX | SALES ORDER No: TXX–XXXX

Tideflex® Technologies
A Division of Red Valve Company, Inc.
750 HOLIDAY DR. STE.400
PITTSBURGH, PA. 15220
info@redvalve.com
412.279.0044
fax 412.279.5410

TT PRODUCT: 24" ULTRAFLEX CHECKMATE CHECK VALVE
TT PART No: CMCBUF–240–APPROVAL
DR. BY: TLM DATE: 2–6–17 | CHKD. BY: DATE:
CAD SCALE: FULL | REV
PLOT SCALE: 1 = 1 | DWG No: TTS–XXXX

Revision	By	Appd.	YY.MM.DD
REV 3 Draft Construction Drawings			19.11.15
REV 2 Issued to City of Naples	KME	APPROVED	18.11.26
REV#1 City of Naples Comments	KME	APPROVED	18.07.12

Issued	By	Appd.	YY.MM.DD
ISSUED 60% DESIGN DRAWINGS	KME	APPROVED	18.11.26
ISSUED 60% DESIGN DRAWINGS	KME	APPROVED	18.03.14

ECE
Erickson Consulting Engineers
7201 Delainey Court
Sarasota, FL 32420
www.ericksonconsultingengineers.com

Copyright Reserved
The Contractor shall verify and be responsible for all dimensions. DO NOT scale the drawing - any errors or omissions shall be reported to Erickson Consulting Engineers (ECE) without delay. The Copyrights to all designs and drawings are the property of ECE. Reproduction or use for any purpose other than that authorized by ECE is forbidden.

Client/Project
CITY OF NAPLES
735 8th St S
NAPLES, FL.
Naples Beach Restoration & Water Quality Improvement Project

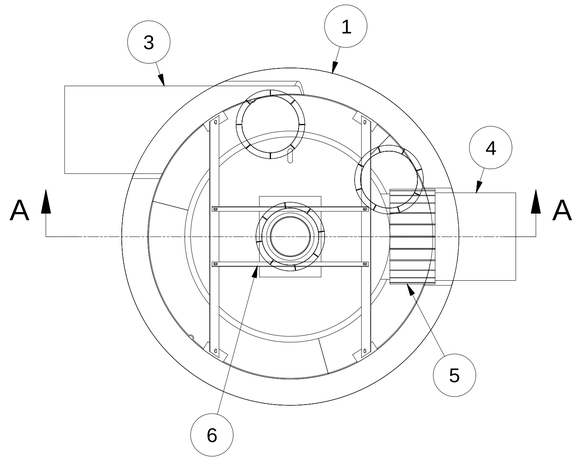
File Name: 16-329_Naples Outfalls_DirectionalDrill.dwg

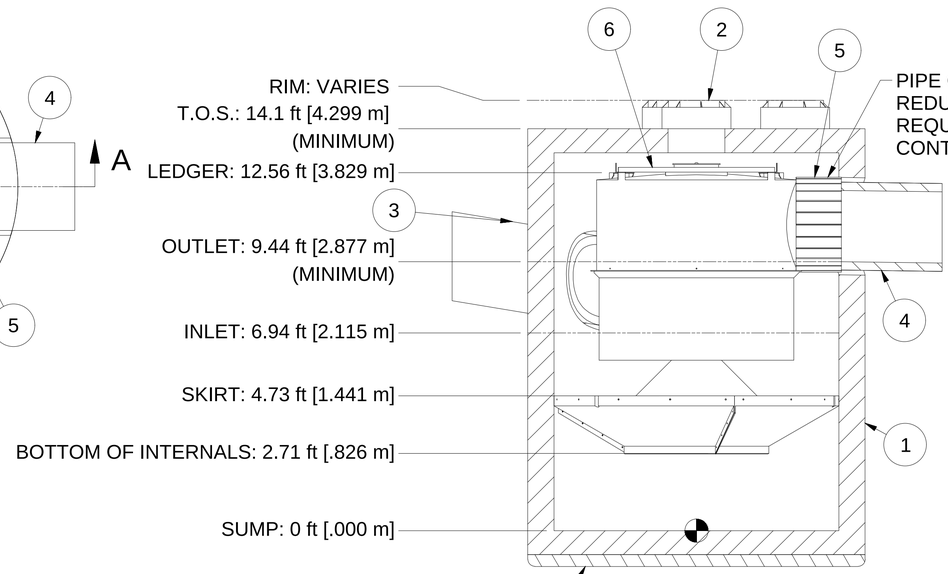
Dwn.	Chkd.	Dsgn.	YY.MM.DD
TJT	CLP	KME	19.10.04
MDP	CLP	KME	18.07.02

Title
GENERAL CONSTRUCTION DETAILS (6)

Project No.	Scale	
16-329	AS NOTED	
Drawing No.	Sheet	Revision
CD	6	0

Z:\CADD_Graphics\US Projects\16-329_Naples Outfalls_Phase II\Design\90_100%_Plans\16-329_Naples Outfalls_60-90% Drawings_Details-General.dwg Apr 15, 2022 - 8:33am





SECTION A-A

OUTLET STUB ID: 30" (750 mm)
OUTLET STUB OD: 36" (900 mm)

HYDRO FRAME AND COVER (INCLUDED)

GRADE RINGS BY OTHERS AS REQUIRED

NOTE: NOT FOR CONSTRUCTION. CONTACT HYDRO FOR SITE SPECIFIC DETAIL

EQUIPMENT PERFORMANCE

The stormwater treatment unit shall adhere to the hydraulic parameters given in the chart below and provide the removal efficiencies and storage capacities as follows:

1. The treatment system shall use an induced vortex to separate pollutants from stormwater runoff.
2. Peak Hydraulic Capacity: 25.0 cfs (708 l/s)
3. Sediment Storage Capacity: 8.70 cu. yd. (6.65 cu. m)
4. Continuous Oil Storage Capacity: 1050 gal. (3975 liters)
5. Sediment shall be stored in a zone that is isolated from the main flow path and protected from reintrainment by a benching skirt.
6. For more product information including regulatory acceptances, please visit https://hydro-int.com/en/products/downstream-defender

PARTS LIST

ITEM	QTY	SIZE (in)	SIZE (mm)	DESCRIPTION
1	1	120	3000	PRECAST MANHOLE (BY HYDRO VIA PRECASTER)
2	3	24	600	FRAME AND COVER (QTY 3)
3	1	30 (MAX)	750 (MAX)	INLET PIPE (BY OTHERS)
4	1	30 (MAX)	750 (MAX)	OUTLET PIPE (BY OTHERS)
5	1			PIPE COUPLING (BY OTHERS)
6	1			INTERNAL COMPONENTS (PRE-INSTALLED)

ANY WARRANTY GIVEN BY HYDRO INTERNATIONAL WILL APPLY ONLY TO THOSE ITEMS SUPPLIED BY IT. ACCORDINGLY HYDRO INTERNATIONAL CANNOT ACCEPT ANY RESPONSIBILITY FOR ANY STRUCTURE, PLANT, OR EQUIPMENT, (OR THE PERFORMANCE THERE OF) DESIGNED, BUILT, MANUFACTURED, OR SUPPLIED BY ANY THIRD PARTY. HYDRO INTERNATIONAL HAVE A POLICY OF CONTINUOUS DEVELOPMENT AND RESERVE THE RIGHT TO AMEND THE SPECIFICATION. HYDRO INTERNATIONAL CANNOT ACCEPT LIABILITY FOR PERFORMANCE OF ITS EQUIPMENT, (OR ANY PART THEREOF), IF THE EQUIPMENT IS SUBJECT TO CONDITIONS OUTSIDE ANY DESIGN SPECIFICATION. HYDRO INTERNATIONAL OWNS THE COPYRIGHT OF THIS DRAWING, WHICH IS SUPPLIED IN CONFIDENCE. IT MUST NOT BE USED FOR ANY PURPOSE OTHER THAN THAT FOR WHICH IT IS SUPPLIED AND MUST NOT BE REPRODUCED, IN WHOLE OR IN PART, WITHOUT PRIOR PERMISSION IN WRITING FROM HYDRO INTERNATIONAL.

PROJECTION

IF IN DOUBT ASK

COMMENTS:
1. MANHOLE WALL AND SLAB THICKNESSES ARE NOT TO SCALE.
2. CONTACT HYDRO INTERNATIONAL FOR A BOTTOM OF STRUCTURE ELEVATION PRIOR TO SETTING DOWNSTREAM DEFENDER MANHOLE.

DATE:	SCALE:
11/8/2019	NTS

DRAWN BY:	CHECKED BY:	APPROVED BY
GW		

Title
10ft-DIAMETER
DOWNSTREAM DEFENDER

Hydro International®
hydro-int.com
HYDRO INTERNATIONAL

DO NOT SCALE DRAWING
STEEL FABRICATION TOLERANCES
UNLESS OTHERWISE SPECIFIED, DIMENSIONS ARE IN INCHES.

LINEAR
000 - 012in = ±0.04in
012 - 024in = ±0.06in
024 - 048in = ±0.08in
048 - 120in = ±0.12in
120in >>>> = ±0.20in

ANGULAR
000 - 120in = ±1°
120 - 240in = ±0.5°
240in >>>> = ±0.25°

WEIGHT:	MATERIAL:
N/A	

REFERENCE NUMBER:

DRAWING NO.:

SHEET SIZE:	SHEET:	Rev:
B	1 OF 1	-

Revision	By	Appd.	YY.MM.DD

Issued	By	Appd.	YY.MM.DD
ISSUED 90% DESIGN DRAWINGS TO CITY (PRELIM REVIEW)	KME	APPROVED	22.04.15
ISSUED 75% DESIGN DRAWINGS TO CITY (PRELIM REVIEW)	KME	APPROVED	21.05.13

ECE
Erickson Consulting Engineers
7201 Delainey Court
Sarasota, FL 32420
www.ericksonconsultingengineers.com

Copyright Reserved
The Contractor shall verify and be responsible for all dimensions. DO NOT scale the drawing - any errors or omissions shall be reported to Erickson Consulting Engineers (ECE) without delay. The Copyrights to all designs and drawings are the property of ECE. Reproduction or use for any purpose other than that authorized by ECE is forbidden.

Client/Project
CITY OF NAPLES
735 8th St S
NAPLES, FL.
Naples Beach Restoration & Water Quality Improvement Project

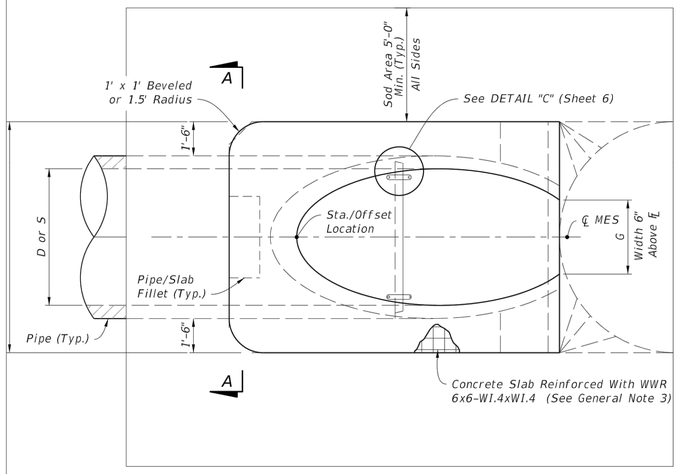
File Name:
16-329_Naples Outfalls_60-90% Drawings_Details-General.dwg

Dwn.	Chkd.	Dsgn.	YY.MM.DD
JAW	SMT	KME	21.06.01

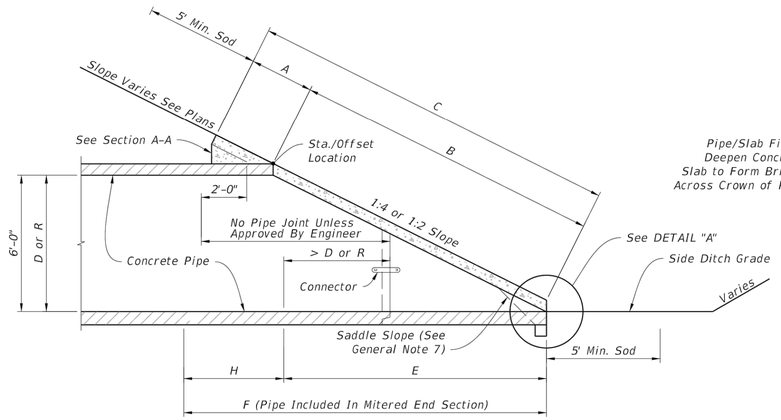
Title
GENERAL CONSTRUCTION DETAILS (7)

Project No.	Scale	
16-329	AS NOTED	
Drawing No.	Sheet	Revision
CD	7	0

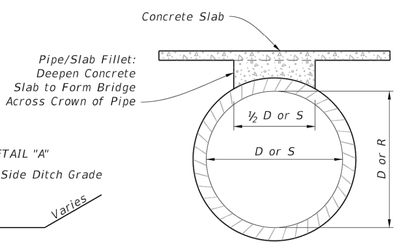
Z:\CADD_Graphics\US Projects\16-329_Naples Outfalls_Phase II\Design\90_100%_Plans\16-329_Naples Outfalls_60-90% Drawings_Details-General.dwg Apr 15, 2022 - 8:33am



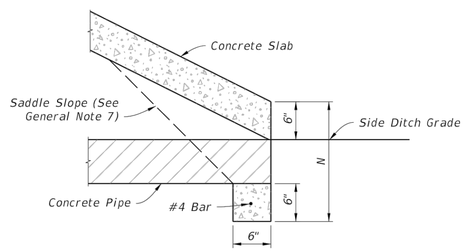
PLAN - SINGLE PIPE



ELEVATION



SECTION A-A
(Pipe/Slab Fillet)



DETAIL "A"

ROUND CONCRETE PIPE

GENERAL NOTES:

1. Unless otherwise designated in the plans, concrete pipe mitered end sections may be used with any type of cross drain pipe; corrugated steel pipe mitered end sections may be used with any type of cross drain pipe except aluminum pipe; and, corrugated aluminum mitered end sections may be used with any type of cross drain pipe except steel pipe. When bituminous coated metal pipe is specified for cross drain pipe, construct the mitered end sections with like pipe or concrete pipe. When the mitered end section pipe is dissimilar to the cross drain pipe, construct a concrete jacket in accordance with Index 430-001.

2. Use either corrugated metal or concrete mitered end sections for corrugated polyethylene pipe (HDPE), polyvinyl-chloride pipe (PVC), steel reinforced polyethylene pipe (SRPE), and polypropylene pipe (PP). When used in conjunction with corrugated mitered end sections, make connection using either a formed metal band specifically designated to join HDPE, PVC, SRPE, or PP pipe, with metal pipe. When used in conjunction with a concrete mitered end sections, construct concrete jacket in accordance with Index 430-001.

3. Class NS concrete cast-in-place reinforced slabs are required for all sizes of cross drain pipes. Construct slabs at 5½" thick, unless 3" thickness is called for in the Plans.

4. Select lengths of concrete pipe that avoid excessive connections in the assembly of the mitered end section.

5. Repair corrugated metal pipe galvanizing that is damaged during beveling and perforating.

6. When existing multiple cross drain pipes are spaced other than the dimensions shown in this Index, have nonparallel axes, or non-uniform sections, either construct the mitered end sections separately as single pipe or collectively as multiple pipe end sections as directed by the Engineer.

7. Saddle Slope:
   1:4 Miter – Slope to ℄ of pipe for round pipes less than or equal to 18" diameter and 1:1 for round pipes greater than or equal to 24" diameter.
   Slope to the major axis for elliptical pipes 24"x38" or smaller and 1:2 for pipes 29"x45" or larger.
   Slope to the span line for pipe arch 28"x20" or smaller and 1:2 for pipe arch 35"x24" or larger.

   1:2 Miter – Slope to ℄ of pipe for round pipes less than or equal to 18"diameter and 1:2 for round pipes greater than or equal to 24" diameter.
   Slope to the major axis for elliptical pipes 29"x45" or smaller and 1:1 for pipes 34"x53" or larger.
   Slope 1:1 for all pipe arch sizes.

8. Quantities shown are for estimating purposes only.

CROSS DRAIN MITERED SECTION

FDOT INDEX 430-021

Revision	By	Appd.	YY.MM.DD

Issued	By	Appd.	YY.MM.DD
ISSUED 90% DESIGN DRAWINGS TO CITY (PRELIM REVIEW)	KME	APPROVED	22.04.15
ISSUED 75% DESIGN DRAWINGS TO CITY (PRELIM REVIEW)	KME	APPROVED	21.05.13

ECE
Erickson Consulting Engineers
7201 Delainey Court
Sarasota, FL 32420
www.ericksonconsultingengineers.com

Copyright Reserved
The Contractor shall verify and be responsible for all dimensions. DO NOT scale the drawing - any errors or omissions shall be reported to Erickson Consulting Engineers (ECE) without delay.
The Copyrights to all designs and drawings are the property of ECE. Reproduction or use for any purpose other than that authorized by ECE is forbidden.

Client/Project
CITY OF NAPLES
735 8th St S
NAPLES, FL.
Naples Beach Restoration & Water Quality Improvement Project

File Name: 16-329_Naples Outfalls_60-90% Drawings_Details-General.dwg

JAW	SMT	KME	21.06.01
Dwn.	Chkd.	Dsgn.	YY.MM.DD

Title
GENERAL CONSTRUCTION DETAILS (8)

Project No.	Scale	
16-329	AS NOTED	
Drawing No.	Sheet	Revision
CD	8	0

Z:\CADD_Graphics\US Projects\16-329_Naples Outfalls_Phase II\Design\90_100%_Plans\16-329_Naples Outfalls_60-90% Drawings_Details-General.dwg Apr 15, 2022 - 8:33am

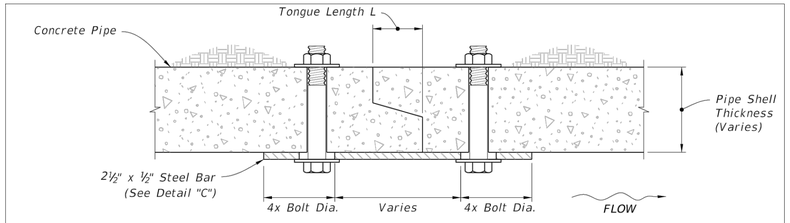
TABLE 1
SINGLE AND MULTIPLE CONCRETE PIPE DIMENSIONS AND QUANTITIES

		Dia. D	Rise R	Span S	X	A	B	C	E	F	G	H	M Single Pipe	M Double Pipe	M Triple Pipe	M Quad. Pipe.	N	5½" CONC. SLAB (CY) (See General Note 3) Single Pipe	5½" CONC. SLAB (CY) (See General Note 3) Double Pipe	5½" CONC. SLAB (CY) (See General Note 3) Triple Pipe	5½" CONC. SLAB (CY) (See General Note 3) Quad. Pipe	3" CONC. SLAB (CY) (See General Note 3) Single Pipe	3" CONC. SLAB (CY) (See General Note 3) Double Pipe	3" CONC. SLAB (CY) (See General Note 3) Triple Pipe	3" CONC. SLAB (CY) (See General Note 3) Quad. Pipe	SODDING (SY) Single Pipe	SODDING (SY) Double Pipe	SODDING (SY) Triple Pipe	SODDING (SY) Quad. Pipe.
Round Concrete Pipe	1:2 Slope	15"	—	—	2'-7"	1.92'	2.18'	4.10'	2.06'	5'	1.22'	2.9'	4.63'	7.21'	9.79'	12.37'	1.19'	0.38	0.58	0.77	0.96	0.27	0.41	0.54	0.67	21	24	27	30
		18"	—	—	2'-10"	1.97'	2.74'	4.71'	2.56'	6'	1.41'	3.4'	4.92'	7.75'	10.58'	13.42'	1.21'	0.44	0.65	0.87	1.09	0.31	0.45	0.60	0.75	22	25	28	31
		24"	—	—	3'-5"	2.06'	3.85'	5.91'	3.56'	7'	1.73'	3.4'	5.50'	8.92'	12.33'	15.75'	1.25'	0.54	0.83	1.12	1.42	0.39	0.59	0.79	1.00	24	28	32	35
		30"	—	—	4'-3"	2.15'	4.95'	7.10'	4.56'	8'	2.00'	3.4'	6.08'	10.33'	14.58'	18.83'	1.29'	0.66	1.09	1.50	1.91	0.46	0.76	1.04	1.32	26	31	35	40
		36"	—	—	5'-1"	2.25'	6.08'	8.33'	5.56'	9'	2.24'	3.4'	6.67'	11.75'	16.83'	21.92'	1.33'	0.81	1.38	1.95	2.51	0.55	0.94	1.33	1.71	28	34	39	45
		42"	—	—	6'-0"	2.34'	7.21'	9.55'	6.56'	10'	2.45'	3.4'	7.25'	13.25'	19.25'	25.25'	1.38'	0.97	1.70	2.45	3.19	0.66	1.15	1.66	2.15	30	37	43	50
		48"	—	—	6'-9"	2.43'	8.33'	10.76'	7.56'	11'	2.65'	3.4'	7.83'	14.58'	21.33'	28.08'	1.42'	1.13	2.04	2.93	3.84	0.76	1.37	1.96	2.57	32	39	47	54
		54"	—	—	7'-8"	2.52'	9.44'	11.96'	8.56'	12'	2.83'	3.4'	8.42'	16.08'	23.75'	31.42'	1.46'	1.31	2.44	3.58	4.72	0.87	1.62	2.38	3.14	34	42	51	59
		60"	—	—	8'-6"	2.62'	10.56'	13.18'	9.56'	14'	3.00'	4.4'	9.00'	17.50'	26.00'	34.50'	1.50'	1.51	2.89	4.28	5.68	0.99	1.90	2.81	3.73	36	45	55	64
		66"	—	—	9'-2"	2.71'	11.68'	14.39'	10.56'	15'	3.18'	4.4'	9.58'	18.75'	27.92'	37.08'	1.54'	1.68	3.25	4.84	6.43	1.11	2.15	3.21	4.27	38	48	58	68
		72"	—	—	10'-0"	2.80'	12.80'	15.60'	11.56'	16'	3.30'	4.4'	10.16'	20.16'	30.16'	40.16'	1.58'	1.89	3.74	5.59	7.45	1.24	2.46	3.68	4.90	40	51	62	73
	1:4 Slope	15"	—	—	2'-7"	2.27'	4.09'	6.36'	4.03'	8'	1.22'	4.0'	4.63'	7.21'	9.79'	12.37'	1.19'	0.57	0.87	1.15	1.44	0.40	0.61	0.80	1.00	23	26	29	32
		18"	—	—	2'-10"	2.36'	5.12'	7.48'	5.03'	9'	1.41'	4.0'	4.92'	7.75'	10.58'	13.42'	1.21'	0.66	0.99	1.31	1.65	0.47	0.69	0.91	1.14	25	28	31	35
		24"	—	—	3'-5"	2.53'	7.18' △	9.71'	7.03' △	11'	1.73'	4.0'	5.50'	8.92'	12.33'	15.75'	1.25'	0.85	1.30	1.75	2.20	0.60	0.90	1.21	1.52	28	32	36	40
		30"	—	—	4'-3"	2.70'	9.25'	11.95'	9.03'	13'	2.00'	4.0'	6.08'	10.33'	14.58'	18.83'	1.29'	1.10	1.74	2.39	3.05	0.76	1.19	1.63	2.07	31	36	41	46
		36"	—	—	5'-1"	2.87'	11.31' ◇	14.18'	11.03' ◇	15'	2.24'	4.0'	6.67'	11.75'	16.83'	21.92'	1.33'	1.32	2.21	3.08	3.96	0.89	1.48	2.05	2.63	34	40	46	52
		42"	—	—	6'-0"	3.05'	13.37'	16.42'	13.03'	17'	2.45'	4.0'	7.25'	13.25'	19.25'	25.25'	1.38'	1.58	2.76	3.91	5.09	1.05	1.82	2.57	3.34	38	44	51	58
		48"	—	—	6'-9"	3.22'	15.43'	18.65'	15.03'	19'	2.65'	4.0'	7.83'	14.58'	21.33'	28.08'	1.42'	1.85	3.30	4.73	6.17	1.21	2.15	3.07	4.00	41	48	56	63
		54"	—	—	7'-8"	3.39'	17.49'	20.88'	17.03'	21'	2.83'	4.0'	8.42'	16.08'	23.75'	31.42'	1.46'	2.14	3.95	5.77	7.58	1.39	2.55	3.72	4.88	44	52	61	69
		60"	—	—	8'-6"	3.56'	19.55'	23.11'	19.03'	23'	3.00'	4.0'	9.00'	17.50'	26.00'	34.50'	1.50'	2.45	4.66	6.87	9.07	1.59	3.02	4.44	5.86	47	56	66	75
		66"	—	—	9'-2"	3.73'	21.62'	25.35'	21.03'	25'	3.18'	4.0'	9.58'	18.75'	27.92'	37.08'	1.54'	2.88	5.54	8.18	10.84	1.91	3.66	5.40	7.15	49	59	69	80
		72"	—	—	10'-0"	3.91'	23.68'	27.59'	23.03'	27'	3.30'	4.0'	10.16'	20.16'	30.16'	40.16'	1.58'	3.54	6.61	9.87	13.13	2.12	4.18	6.24	8.30	52	63	74	85
Elliptical Concrete Pipe	1:2 Slope	—	12"	18"	2'-10"	1.97'	1.62'	3.59'	1.56'	4'	1.50'	2.4'	4.92'	7.75'	10.58'	13.42'	1.21'	0.30	0.49	0.67	0.85	0.19	0.33	0.45	0.57	21	24	27	30
		—	14"	23"	3'-4"	2.01'	1.99'	4.00'	1.89'	5'	1.90'	3.1'	5.38'	8.71'	12.04'	15.38'	1.23'	0.37	0.59	0.81	1.02	0.25	0.40	0.55	0.69	22	26	29	33
		—	19"	30"	4'-0"	2.11'	2.92'	5.03'	2.73'	6'	2.37'	3.3'	6.04'	10.04'	14.04'	18.04'	1.27'	0.50	0.80	1.09	1.39	0.34	0.55	0.75	0.95	24	28	33	37
		—	24"	38"	5'-0"	2.20'	3.85'	6.05'	3.56'	7'	2.85'	3.4'	6.79'	11.79'	16.79'	21.79'	1.31'	0.62	1.03	1.45	1.86	0.43	0.71	1.00	1.28	26	31	37	42
		—	29"	45"	5'-11"	2.34'	4.79'	7.13'	4.39'	8'	3.19'	3.6'	7.50'	13.42'	19.33'	25.25'	1.38'	0.75	1.30	1.84	2.39	0.52	0.90	1.27	1.65	28	34	41	47
		—	34"	53"	7'-0"	2.43'	5.72'	8.15'	5.23'	9'	3.57'	3.8'	8.25'	15.25'	22.25'	29.25'	1.42'	0.90	1.61	2.32	3.03	0.62	1.11	1.60	2.09	30	37	45	53
		—	38"	60"	7'-10"	2.52'	6.46'	8.98'	5.89'	9'	3.95'	3.1'	8.92'	16.75'	24.58'	32.42'	1.46'	1.03	1.89	2.74	3.60	0.70	1.29	1.87	2.46	31	40	49	57
		—	43"	68"	8'-11"	2.62'	7.39'	10.01'	6.73'	10'	4.28'	3.3'	9.67'	18.58'	27.50'	36.42'	1.50'	1.19	2.26	3.33	4.40	0.81	1.54	2.26	2.99	33	43	53	63
		—	48"	76"	9'-11"	2.71'	8.33'	11.04'	7.56'	11'	4.59'	3.4'	10.42'	20.33'	30.25'	40.17'	1.54'	1.38	2.65	3.93	5.21	0.93	1.79	2.66	3.53	35	46	57	68
		—	53"	83"	10'-8"	2.80'	9.26'	12.06'	8.39'	12'	4.77'	3.6'	11.08'	21.75'	32.42'	43.08'	1.58'	1.55	3.03	4.50	5.96	1.04	2.04	3.03	4.02	37	49	61	73
		—	58"	91"	11'-8"	2.90'	10.19'	13.09'	9.23'	13'	5.01'	3.8'	11.83'	23.50'	35.17'	46.83'	1.63'	1.75	3.47	5.20	6.93	1.17	2.33	3.49	4.66	39	52	65	78
	1:4 Slope	—	12"	18"	2'-10"	2.36'	3.06'	5.42'	3.03'	5'	1.50'	2.0'	4.92'	7.75'	10.58'	13.42'	1.21'	0.45	0.68	0.92	1.14	0.30	0.45	0.61	0.76	23	26	29	32
		—	14"	23"	3'-4"	2.44'	3.75'	6.19'	3.70'	6'	1.90'	2.3'	5.38'	8.71'	12.04'	15.38'	1.23'	0.53	0.83	1.13	1.42	0.36	0.56	0.76	0.95	24	28	32	35
		—	19"	30"	4'-0"	2.62'	5.47'	8.09'	5.36'	8'	2.37'	2.6'	6.04'	10.04'	14.04'	18.04'	1.27'	0.74	1.15	1.57	1.98	0.51	0.79	1.08	1.36	27	32	36	40
		—	24"	38"	5'-0"	2.79'	7.18'	9.97'	7.03'	10'	2.85'	3.0'	6.79'	11.79'	16.79'	21.79'	1.31'	0.97	1.57	2.19	2.81	0.68	1.10	1.53	1.96	30	36	41	47
		—	29"	45"	5'-11"	3.05'	8.90'	11.95'	8.70'	12'	3.19'	3.3'	7.50'	13.42'	19.33'	25.25'	1.38'	1.22	2.07	2.92	3.77	0.86	1.45	2.04	2.63	33	40	46	53
		—	34"	53"	7'-0"	3.22'	10.62'	13.84'	10.36'	13'	3.57'	2.6'	8.25'	15.25'	22.25'	29.25'	1.42'	1.48	2.62	3.77	4.92	1.02	1.81	2.60	3.39	36	44	52	59
		—	38"	60"	7'-10"	3.39'	11.99'	15.38'	11.70'	15'	3.95'	3.3'	8.92'	16.75'	24.58'	32.42'	1.46'	1.72	3.12	4.53	5.92	1.18	2.14	3.10	4.05	38	47	56	65
		—	43"	68"	8'-11"	3.56'	13.71'	17.27'	13.36'	17'	4.28'	3.6'	9.67'	18.58'	27.50'	36.42'	1.50'	2.02	3.78	5.56	7.32	1.38	2.58	3.79	4.99	41	51	61	71
		—	48"	76"	9'-11"	3.73'	15.43'	19.16'	15.03'	19'	4.59'	4.0'	10.42'	20.33'	30.25'	40.17'	1.54'	2.34	4.49	6.64	8.79	1.59	3.05	4.51	5.97	44	55	66	77
		—	53"	83"	10'-8"	3.91'	17.15'	21.06'	16.70'	20'	4.77'	3.3'	11.08'	21.75'	32.42'	43.08'	1.58'	2.66	5.17	7.66	10.16	1.80	3.50	5.19	6.88	47	59	71	83
		—	58"	91"	11'-8"	4.08'	18.87'	22.95'	18.36'	22'	5.01'	3.6'	11.83'	23.50'	35.17'	46.83'	1.63'	3.02	5.98	8.95	11.90	2.04	4.04	6.05	8.05	50	63	76	89

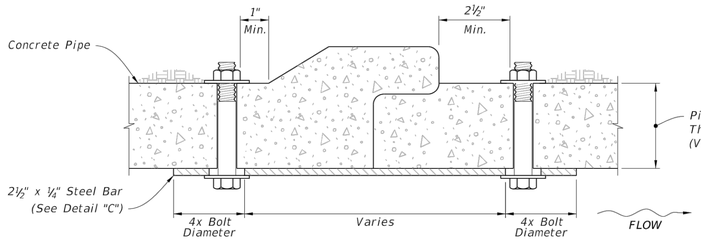
B E

△ 6.42' △ 6.25' Dimensions permitted to allow use of 8' standard pipe lengths.

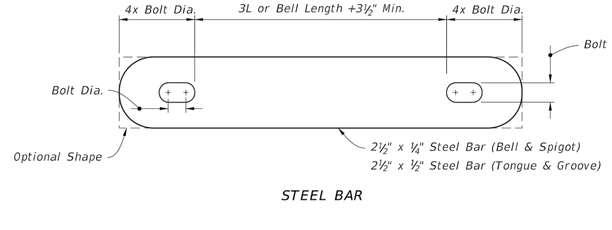
◇ 10.40' ◇ 10.10' Dimensions permitted to allow use of 12' standard pipe lengths.



TONGUE AND GROOVE CONNECTOR DETAIL



BELL AND SPIGOT CONNECTOR DETAIL



STEEL BAR

NOTES:

1. Use galvanized steel for all bars, bolts, nuts, and washers.
2. Two connectors required per joint, located 60° right and left of bottom center of pipe.
3. Bolt holes in pipe shell are to be drilled.

Bolt Dia.	Pipe Dia.
⅜"	15" to 36"
⅝"	42" to 72"

CONCRETE PIPE CONNECTION DETAIL
DETAIL "C"

CROSS DRAIN MITERED SECTION
FDOT INDEX 430-021

Revision	By	Appd.	YY.MM.DD

Issued	By	Appd.	YY.MM.DD
ISSUED 90% DESIGN DRAWINGS TO CITY (PRELIM REVIEW)	KME	APPROVED	22.04.15
ISSUED 75% DESIGN DRAWINGS TO CITY (PRELIM REVIEW)	KME	APPROVED	21.05.13

ECE
Erickson Consulting Engineers
7201 Delainey Court
Sarasota, FL 32420
www.ericksonconsultingengineers.com

Copyright Reserved
The Contractor shall verify and be responsible for all dimensions. DO NOT scale the drawing - any errors or omissions shall be reported to Erickson Consulting Engineers (ECE) without delay. The Copyrights to all designs and drawings are the property of ECE. Reproduction or use for any purpose other than that authorized by ECE is forbidden.

Client/Project
CITY OF NAPLES
735 8th St S
NAPLES, FL.
Naples Beach Restoration & Water Quality Improvement Project

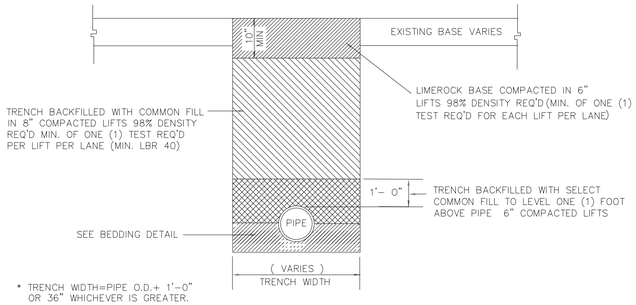
File Name: 16-329_Naples Outfalls_60-90% Drawings_Details-General.dwg

Dwn.	Chkd.	Dsgn.	YY.MM.DD
JAW	SMT	KME	21.06.01

Title
GENERAL CONSTRUCTION DETAILS (9)

Project No.	Scale	
16-329	AS NOTED	
Drawing No.	Sheet	Revision
CD	9	0

Z:\CADD_Graphics\US Projects\16-329_Naples Outfalls_Phase II\Design\90_100%_Plans\16-329_Naples Outfalls_60-90% Drawings_Details-General.dwg Apr 15, 2022 - 8:33am



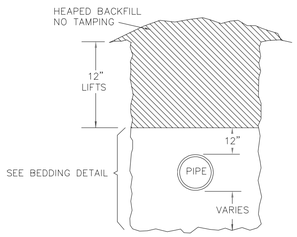
LIMEROCK ROAD

NOTES: 1) ALL PROCTOR AND DENSITY TESTS SHALL BE TAKEN BY A CERTIFIED LABORATORY

2) ALL TESTS SHALL BE COMPLETED AND MEET MINIMUM DENSITY REQUIREMENTS PRIOR TO ADDITIONAL BACK-FILLING

3) ALL BACKFILL MATERIAL REQUIRES APPROVAL BY PROJECT ENGINEER

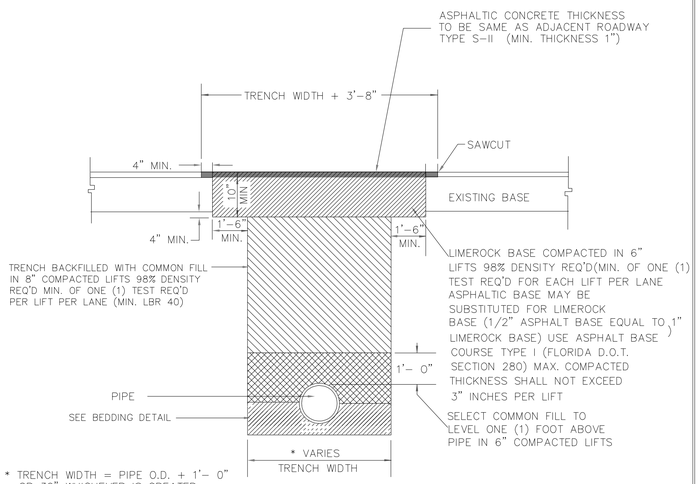
***** CONTRACTOR SHALL UTILIZE BEST METHODS AND PRACTICES TO CONTROL GROUND WATER DURING ENTIRE EXCAVATION, INSTALLATION, BACKFILL AND COMPACTION. INSTALLATION OF PIPELINE IN WET AND/OR FLOODED TRENCH IS NOT ACCEPTABLE. PROPER BEDDING AND COMPACTION CAN NOT BE ACCOMPLISHED IN WET AND/OR FLOODED TRENCH.



OPEN TERRAIN

THIS DETAIL CONSTITUTES MINIMUM STANDARDS. DESIGN ENGINEERS SHALL PROVIDE STANDARDS EQUAL TO OR GREATER THAN THESE.

FOR:	UTILITIES DEPARTMENT	CITY OF NAPLES
DATE: JAN. 2016	*BACKFILL – LIMEROCK ROAD & OPEN TERRAIN*	SHEET: U-01
DRAWN: DAG/AMH		DIR: UTILITIES
SCALE: N.T.S.	380 RIVERSIDE CIRCLE, NAPLES, FLORIDA, 34102	DWG. U-01-16.DWG



NOTES: 1) ALL PROCTOR AND DENSITY TESTS SHALL BE TAKEN BY A CERTIFIED LABORATORY

2) ALL TESTS SHALL BE COMPLETED AND MEET MINIMUM DENSITY REQUIREMENTS PRIOR TO ADDITIONAL BACK-FILLING

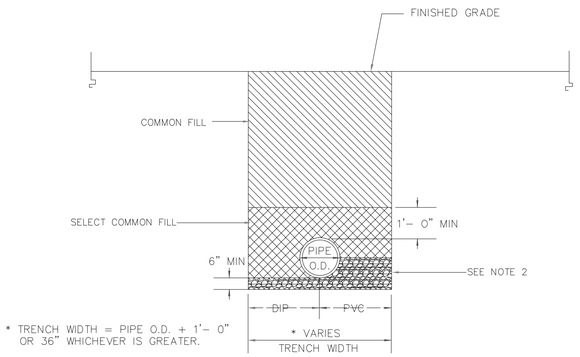
3) ORDINANCE 82-91 REQUIRES A R.O.W. PERMIT FOR ALL WORK WITHIN PUBLIC ROADS. THE R.O.W. PERMIT REQUIREMENTS SHALL SUPERSEDE THIS DETAIL.

***** CONTRACTOR SHALL UTILIZE BEST METHODS AND PRACTICES TO CONTROL GROUND WATER DURING ENTIRE EXCAVATION, INSTALLATION, BACKFILL AND COMPACTION. INSTALLATION OF PIPELINE IN WET AND/OR FLOODED TRENCH IS NOT ACCEPTABLE. PROPER BEDDING AND COMPACTION CAN NOT BE ACCOMPLISHED IN WET AND/OR FLOODED TRENCH.

***** INSTALLATION OF ANY WATER, WASTEWATER, OR RECLAIM WATER LINE REQUIRED TO PASS UNDER OR TRENCHING CAUSING UNDERMINING OF ANY EXISTING CONCRETE CURB, GUTTER, OR SIDEWALK; TUNNELING UNDER IS NOT ALLOWED. ANY AFFECTED CONCRETE CURB, GUTTER, OR SIDEWALK SHALL BE CLEANLY REMOVED (ALL SECTIONS AFFECTED, 5 FT MINIMUM), FULL BACKFILL AND PROPER COMPACTION PERFORMED, CONCRETE REPLACED REQUIRING A MINIMUM OF 5 FT BETWEEN EXPANSION JOINTS.

THIS DETAIL CONSTITUTES MINIMUM STANDARDS. DESIGN ENGINEERS SHALL PROVIDE STANDARDS EQUAL TO OR GREATER THAN THESE.

FOR:	UTILITIES DEPARTMENT	CITY OF NAPLES
DATE: JAN. 2016	*BACKFILL – PAVED ROADWAYS*	SHEET: U-02
DRAWN: DAG/AMH		DIR: UTILITIES
SCALE: N.T.S.	380 RIVERSIDE CIRCLE, NAPLES, FL. 34102	DWG. U-02-16.DWG



NOTES: 1) COMMON FILL SHALL BE COMPACTED TO MATCH CRITERIA PROVIDED IN BACKFILL DETAILS FOR PAVED AND UNPAVED LOCATIONS RESPECTIVELY.

2) BEDDING MATERIAL SHALL BE FDOT #57 STONE IF BELOW THE SEASONAL LOW GROUNDWATER TABLE, OR FDOT #89 STONE, FDOT #131 OR #132 SCREENING IF ABOVE THE SEASONAL LOW GROUNDWATER TABLE.

3) ORDINANCE 82-91 REQUIRES A R.O.W. PERMIT FOR ALL WORK WITHIN PUBLIC ROADS. THE R.O.W. PERMIT REQUIREMENTS SHALL SUPERSEDE THIS DETAIL.

***** CONTRACTOR SHALL UTILIZE BEST METHODS AND PRACTICES TO CONTROL GROUND WATER DURING ENTIRE EXCAVATION, INSTALLATION, BACKFILL AND COMPACTION. INSTALLATION OF PIPELINE IN WET AND/OR FLOODED TRENCH IS NOT ACCEPTABLE. PROPER BEDDING AND COMPACTION CAN NOT BE ACCOMPLISHED IN WET AND/OR FLOODED TRENCH.

***** INSTALLATION OF ANY WATER, WASTEWATER, OR RECLAIM WATER LINE REQUIRED TO PASS UNDER OR TRENCHING CAUSING UNDERMINING OF ANY EXISTING CONCRETE CURB, GUTTER, OR SIDEWALK; TUNNELING UNDER IS NOT ALLOWED. ANY AFFECTED CONCRETE CURB, GUTTER, OR SIDEWALK SHALL BE CLEANLY REMOVED (ALL SECTIONS AFFECTED, 5 FT MINIMUM), FULL BACKFILL AND PROPER COMPACTION PERFORMED, CONCRETE REPLACED REQUIRING A MINIMUM OF 5 FT BETWEEN EXPANSION JOINTS.

THIS DETAIL CONSTITUTES MINIMUM STANDARDS. DESIGN ENGINEERS SHALL PROVIDE STANDARDS EQUAL TO OR GREATER THAN THESE.

FOR:	UTILITIES DEPARTMENT	CITY OF NAPLES
DATE: JAN. 2016	*PIPE BEDDING & BACKFILL*	SHEET: U-03
DRAWN: DAG/AMH		DIR: UTILITIES
SCALE: N.T.S.	380 RIVERSIDE CIRCLE, NAPLES, FL. 34102	DWG. U-03-16.DWG

Revision	By	Appd.	YY.MM.DD

Issued	By	Appd.	YY.MM.DD
ISSUED 90% DESIGN DRAWINGS TO CITY (PRELIM REVIEW)	KME	APPROVED	22.04.15
ISSUED 75% DESIGN DRAWINGS TO CITY (PRELIM REVIEW)	KME	APPROVED	21.05.13

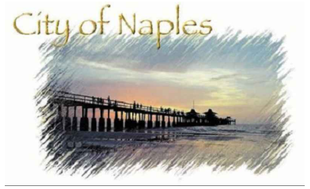
ECE
Erickson Consulting Engineers
7201 Delainey Court
Sarasota, FL 32420
www.ericksonconsultingengineers.com

Copyright Reserved
The Contractor shall verify and be responsible for all dimensions. DO NOT scale the drawing - any errors or omissions shall be reported to Erickson Consulting Engineers (ECE) without delay. The Copyrights to all designs and drawings are the property of ECE. Reproduction or use for any purpose other than that authorized by ECE is forbidden.

Client/Project
CITY OF NAPLES
735 8th St S
NAPLES, FL.
Naples Beach Restoration & Water Quality Improvement Project

File Name: 16-329_Naples Outfalls_60-90% Drawings_Details-General.dwg

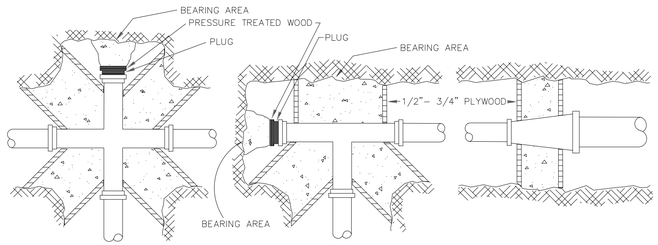
JAW	SMT	KME	21.06.01
Dwn.	Chkd.	Dsgn.	YY.MM.DD



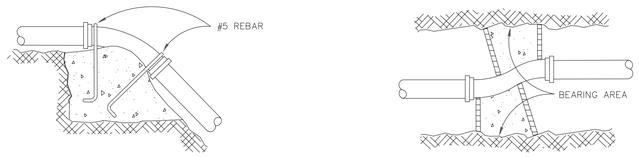
Title
GENERAL CONSTRUCTION DETAILS (10)

Project No.	Scale	
16-329	AS NOTED	
Drawing No.	Sheet	Revision
CD	10	0

Z:\CADD_Graphics\US Projects\16-329_Naples Outfalls_Phase II\Design\90_100%_Plans\16-329_Naples Outfalls_60-90% Drawings_Details-General.dwg Apr 15, 2022 - 8:34am



CROSS TEE WITH PLUG TAPPED TEE WITH PLUG REDUCERS



VERTICAL BEND OFFSET

* THRUST BLOCKS TYPICAL FOR ALL NON-RESTRAINED PIPE SYSTEMS, ESPECIALLY A.C. & C.I. PIPES.

* FOR FULLY RESTRAINED PIPE SYSTEMS, THE USE, LOCATION, AND TYPE OF THRUST BLOCKS SHALL BE DETERMINED BY THE CITY UTILITY ENGINEER IF REQUIRED.

MINIMUM BEARING AREAS IN SQUARE FEET FOR THRUST BLOCKS

PIPE SIZE	TEES	90 BEND	45 BEND	22 1/2 BEND	VALVES & PLUGS
4"	1	1	1	1	1
6"	3	4	2	1	3
8"	5	7	4	2	5
10"	8	12	6	3	9
12"	12	16	9	5	12
16"	16	20	12	7	16
20"	24	20	17	10	24
24"	34	34	24	13	34

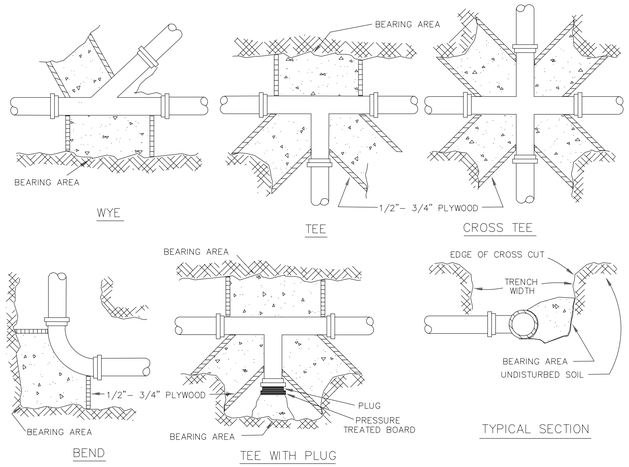
NOTES:

1. ON BENDS AND TEES, EXTEND THRUST BLOCKS FULL LENGTH.
2. PLACE BOARD IN FRONT OF ALL PLUGS BEFORE POURING THRUST BLOCKS.
3. POUR THRUST BLOCKS AGAINST UNDISTURBED SOIL WHERE TRENCH WALL HAS BEEN DISTURBED, EXCAVATE LOOSE SOIL AND EXTEND THRUST BLOCK TO UNDISTURBED SOIL.
4. IN BACK FILLING, ANY MUCK ENCOUNTERED SHALL BE REMOVED AND REPLACED WITH ACCEPTABLE MATERIAL.
5. BACK FILL MATERIAL SHALL NOT INCLUDE ROCK OR BOULDERS.
6. THRUST BLOCK AREAS BASED ON SOIL BEARING LOAD OF 2000 P. S. F. AND LINE PRESSURE OF 150 P. S. I..
7. ALL CONCRETE SHALL BE MINIMUM 2000 PSI

TYPICAL THRUST BLOCKS

THIS DETAIL CONSTITUTES MINIMUM STANDARDS. DESIGN ENGINEERS SHALL PROVIDE STANDARDS EQUAL TO OR GREATER THAN THESE.

FOR:	UTILITIES DEPARTMENT	CITY OF NAPLES
DATE: JAN. 2016	*THRUST BLOCKS NO. 1*	SHEET: U-04
DRAWN: DAG/AMH		DIR: UTILSTDS
SCALE: N.T.S.	380 RIVERSIDE CIRCLE, NAPLES, FL. 34102	DWG. U-04-16.DWG



MINIMUM BEARING AREAS IN SQUARE FEET FOR THRUST BLOCKS

PIPE SIZE	TEES	90° BEND	45° BEND	22 1/2° BEND	VALVES & PLUGS
4"	1	1	1	1	1
6"	3	4	2	1	3
8"	5	7	4	2	5
10"	8	12	6	3	9
12"	12	16	9	5	12
16"	16	20	12	7	16
20"	24	20	17	10	24
24"	34	34	24	13	34

NOTES:

1. ON BENDS AND TEES, EXTEND THRUST BLOCKS FULL LENGTH.
2. PLACE BOARD IN FRONT OF ALL PLUGS BEFORE POURING THRUST BLOCKS.
3. POUR THRUST BLOCKS AGAINST UNDISTURBED SOIL WHERE TRENCH WALL HAS BEEN DISTURBED, EXCAVATE LOOSE SOIL AND EXTEND THRUST BLOCKS TO UNDISTURBED SOIL.
4. IN BACK FILLING, ANY MUCK ENCOUNTERED SHALL BE REMOVED AND REPLACED WITH ACCEPTABLE MATERIAL.
5. BACK FILL MATERIAL SHALL NOT INCLUDE ROCK OR BOULDERS.
6. THRUST BLOCK AREAS BASED ON SOIL BEARING LOAD OF 2000 P. S. F. AND LINE PRESSURE OF 150 P. S. I..
7. ALL CONCRETE SHALL BE MINIMUM 2000 PSI

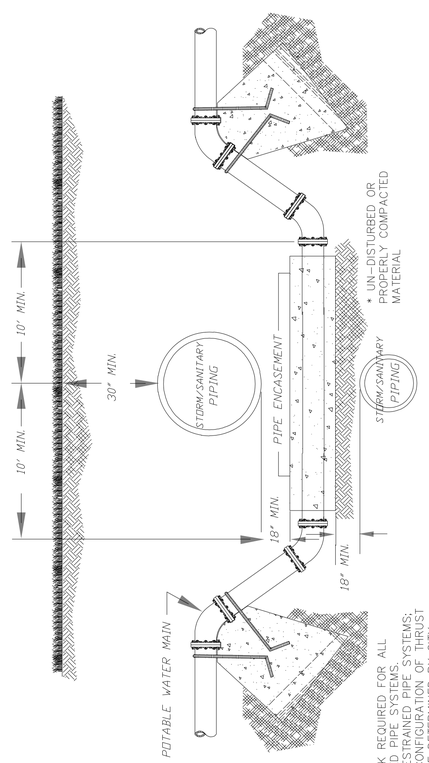
TYPICAL THRUST BLOCKS

* THRUST BLOCKS TYPICAL FOR ALL NON-RESTRAINED PIPE SYSTEMS, ESPECIALLY A.C. & C.I. PIPES.

* FOR FULLY RESTRAINED PIPE SYSTEMS, THE USE, LOCATION, AND TYPE OF THRUST BLOCKS SHALL BE DETERMINED BY THE CITY UTILITY ENGINEER IF REQUIRED.

THIS DETAIL CONSTITUTES MINIMUM STANDARDS. DESIGN ENGINEERS SHALL PROVIDE STANDARDS EQUAL TO OR GREATER THAN THESE.

FOR:	UTILITIES DEPARTMENT	CITY OF NAPLES
DATE: JAN. 2016	*THRUST BLOCKS NO. 2*	SHEET: U-05.
DRAWN: DAG/AMH		DIR: UTILSTDS
SCALE: N.T.S.	380 RIVERSIDE CIRCLE, NAPLES, FL. 34102	DWG. U-05-16.DWG



NOTES:
AT THE DISCRETION OF THE CITY UTILITY ENGINEER - THE USE, TYPE, AND CONFIGURATION OF PIPE ENCASEMENT SHALL BE DETERMINED:

1. TYPES OF ENCASEMENT:
   - CONCRETE ENCASEMENT: PIPE SHALL BE TOTALLY ENCASED WITH FIBER MESH 3000 PSI CONCRETE MIX.
   - FLOW-ABLE FILL ENCASEMENT: PIPE SHALL BE TOTALLY ENCASED WITH "ENGINEER PREFERENCE" NON-EXCAVATABLE/EXCAVATABLE FLOW-ABLE FILL.
2. SUPPORT STRUCTURES: SHALL BE MANDATORY WHEN EXCAVATION UNDERMINES ANY INFRASTRUCTURE, OR SPECIAL COMPACTION REQUIREMENTS MAY BE REQUIRED BY THE CITY UTILITY ENGINEER.
3. COMPACTION OF SOILS SHALL CONFORM TO AWWA C600-93 AND F.D.O.T. REQUIREMENTS.

* THRUST BLOCK REQUIRED FOR ALL NON-RESTRAINED PIPE SYSTEMS.
* FOR FULLY RESTRAINED PIPE SYSTEMS; USE, TYPE, & CONFIGURATION OF THRUST BLOCK SHALL BE DETERMINED BY CITY UTILITY ENGINEER, IF REQUIRED.

THIS DETAIL CONSTITUTES MINIMUM STANDARDS. DESIGN ENGINEERS SHALL PROVIDE STANDARDS EQUAL TO OR GREATER THAN THESE.

FOR:	UTILITIES DEPARTMENT	CITY OF NAPLES
DATE: JAN. 2016	*TYPICAL ENCASEMENT*	SHEET: U-06
DRAWN: DAG/AMH		DIR: UTILSTDS
SCALE: N.T.S.	380 RIVERSIDE CIRCLE, NAPLES, FL. 34102	DWG. U-06-16.DWG

Revision	By	Appd.	YY.MM.DD

Issued	By	Appd.	YY.MM.DD
ISSUED 90% DESIGN DRAWINGS TO CITY (PRELIM REVIEW)	KME	APPROVED	22.04.15
ISSUED 75% DESIGN DRAWINGS TO CITY (PRELIM REVIEW)	KME	APPROVED	21.05.13

ECE
Erickson Consulting Engineers
7201 Delainey Court
Sarasota, FL 32420
www.ericksonconsultingengineers.com

Copyright Reserved
The Contractor shall verify and be responsible for all dimensions. DO NOT scale the drawing - any errors or omissions shall be reported to Erickson Consulting Engineers (ECE) without delay.
The Copyrights to all designs and drawings are the property of ECE. Reproduction or use for any purpose other than that authorized by ECE is forbidden.

Client/Project
CITY OF NAPLES
735 8th St S
NAPLES, FL.
Naples Beach Restoration & Water Quality Improvement Project

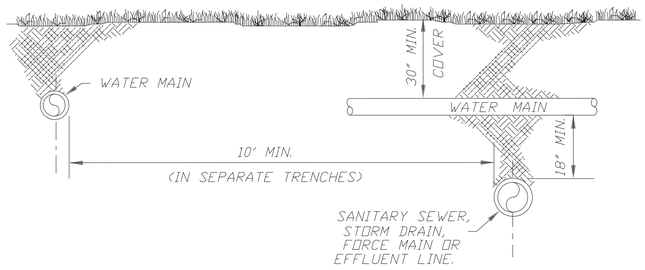
File Name: 16-329_Naples Outfalls_60-90% Drawings_Details-General.dwg

Dwn.	Chkd.	Dsgn.	YY.MM.DD
JAW	SMT	KME	21.06.01

Title
GENERAL CONSTRUCTION DETAILS (11)

Project No.	Scale	
16-329	AS NOTED	
Drawing No.	Sheet	Revision
CD	11	0

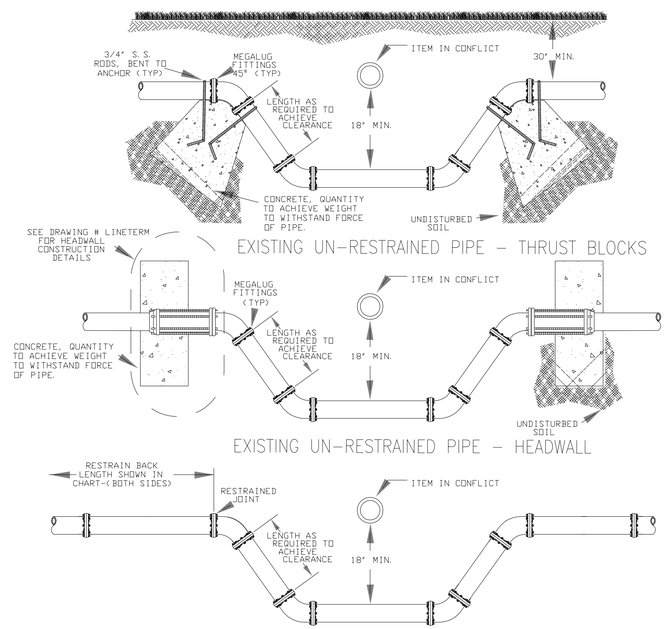
Z:\CADD_Graphics\US Projects\16-329_Naples Outfalls_Phase II\Design\90_100%_Plans\16-329_Naples Outfalls_60-90% Drawings_Details-General.dwg Apr 15, 2022 - 8:34am



** NOTES:
1. SANITARY SEWER LINES OR FORCE MAINS SHALL BE SEPARATED FROM WATER MAINS BY A MINIMUM CLEAR VERTICAL DISTANCE OF 18" AND A HORIZONTAL DISTANCE OF 10'-0".
2. ALL CROSSING WITH VERTICAL CLEARANCE LESS THAN 18" SHALL BE MADE USING THICKNESS CLASS 200 AWWA C-900 P.V.C. OR DUCTILE IRON, CLASS 350 PIPE FOR DISTANCE OF 10' EACH SIDE OF THE CROSSING AND SEWER SHALL BE CONCRETE ENCASED.
3. THE 18" CLEAR DISTANCE SHALL NOT BE REDUCED IN CASES WHERE WATER MAIN CROSSES UNDER SEWER LINE.
4. VERTICAL CLEARANCE LESS THAN 12" SHALL NOT BE ALLOWED,UNLESS APPROVED BY THE CITY UTILITY ENGINEER.

THIS DETAIL CONSTITUTES MINIMUM STANDARDS. DESIGN ENGINEERS SHALL PROVIDE STANDARDS EQUAL TO OR GREATER THAN THESE.

FOR:	UTILITIES DEPARTMENT	CITY OF NAPLES
DATE: JAN. 2016	*CROSS OVER*	SHEET: U-07
DRAWN: DAG/AMH		DIR: UTILSTDS
SCALE: N.T.S.	380 RIVERSIDE CIRCLE, NAPLES, FL. 34102	DWG. U-07-16.DWG



EXISTING UN-RESTRAINED PIPE - THRUST BLOCKS

EXISTING UN-RESTRAINED PIPE - HEADWALL

NEW PIPE - RESTRAINED JOINT

*RESTRAINED JOINT PIPE DISTANCES FOR NEW PIPE (IN FEET)

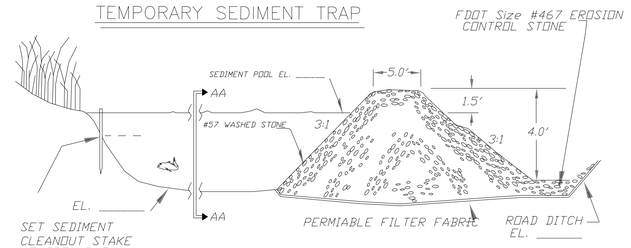
PIPE SIZE	90° BEND	45° BEND	22 1/2° BEND	11 1/4° BEND
8"	74	31	15	7
10"	87	36	17	9
12"	100	41	20	10
16"	123	51	24	12
20"	143	59	29	14
24"	162	67	32	16
30"	184	76	37	18
36"	207	86	41	20

*FOR FITTINGS NOT SHOWN HERE, REFER TO PIPE RESTRAINT DETAIL DRAWING

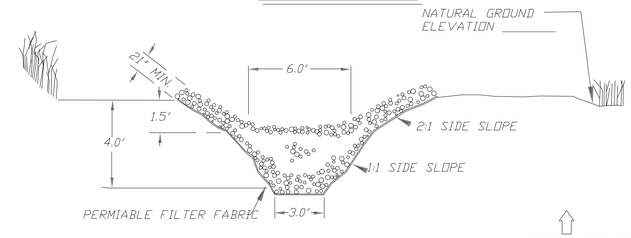
THIS DETAIL CONSTITUTES MINIMUM STANDARDS. DESIGN ENGINEERS SHALL PROVIDE STANDARDS EQUAL TO OR GREATER THAN THESE.

FOR:	UTILITIES DEPARTMENT	CITY OF NAPLES
DATE: JAN. 2016	*TYPICAL CONFLICT CROSSING*	SHEET: U-08
DRAWN: DAG/AMH		DIR: UTILSTDS
SCALE: N.T.S.	380 RIVERSIDE CIRCLE, NAPLES, FL. 34102	DWG. U-08-16.DWG

TEMPORARY SEDIMENT TRAP



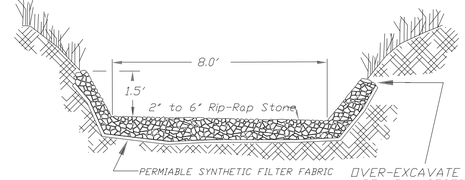
CROSS SECTION



RIPRAP CHANNEL

STONE SECTION

SECTION AA



TYPICAL CROSS SECTION

THIS DETAIL CONSTITUTES MINIMUM STANDARDS. DESIGN ENGINEERS SHALL PROVIDE STANDARDS EQUAL TO OR GREATER THAN THESE.

FOR:	UTILITIES DEPARTMENT	CITY OF NAPLES
DATE: JAN. 2016	*SEDIMENTATION CONTROL NO. 1*	SHEET: U-16
DRAWN: DAG/AMH		DIR: UTILSTDS
SCALE: N.T.S.	380 RIVERSIDE CIRCLE, NAPLES, FL. 34102	DWG. U-16-16.DWG

Revision	By	Appd.	YY.MM.DD

Issued	By	Appd.	YY.MM.DD
ISSUED 90% DESIGN DRAWINGS TO CITY (PRELIM REVIEW)	KME	APPROVED	22.04.15
ISSUED 75% DESIGN DRAWINGS TO CITY (PRELIM REVIEW)	KME	APPROVED	21.05.13

ECE
Erickson Consulting Engineers
7201 Delainey Court
Sarasota, FL 32420
www.ericksonconsultingengineers.com

Copyright Reserved
The Contractor shall verify and be responsible for all dimensions. DO NOT scale the drawing - any errors or omissions shall be reported to Erickson Consulting Engineers (ECE) without delay.
The Copyrights to all designs and drawings are the property of ECE. Reproduction or use for any purpose other than that authorized by ECE is forbidden.

Client/Project
CITY OF NAPLES
735 8th St S
NAPLES, FL.
Naples Beach Restoration & Water Quality Improvement Project

File Name: 16-329_Naples Outfalls_60-90% Drawings_Details-General.dwg

JAW	SMT	KME	21.06.01
Dwn.	Chkd.	Dsgn.	YY.MM.DD

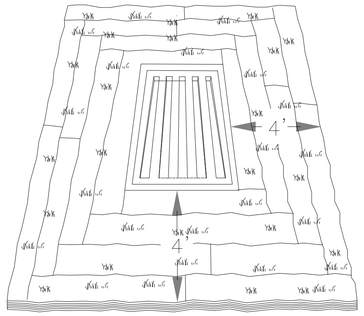
Title
GENERAL CONSTRUCTION DETAILS (12)

Project No.	Scale	
16-329	AS NOTED	
Drawing No.	Sheet	Revision
CD	12	0

Z:\CADD_Graphics\US Projects\16-329_Naples Outfalls_Phase II\Design\90_100%_Plans\16-329_Naples Outfalls_60-90% Drawings_Details-General.dwg Apr 15, 2022 - 8:34am

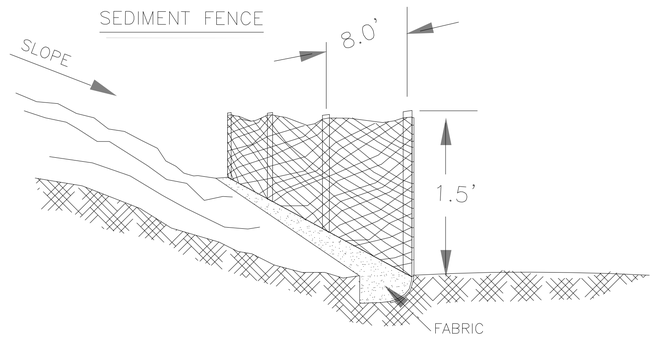
SOD DROP INLET PROTECTION

AFTER THE CONTRIBUTING DRAINAGE AREA HAS BEEN PERMANENTLY STABILIZED, THE TEMPORARY EROSION CONTROL MEASURES WILL BE REMOVED AND PERMANENT SOD LAID AROUND THE DROP INLET.



FOUR 1' WIDE STRIPS OF SOD
ON EACH SIDE OF THE INLET.

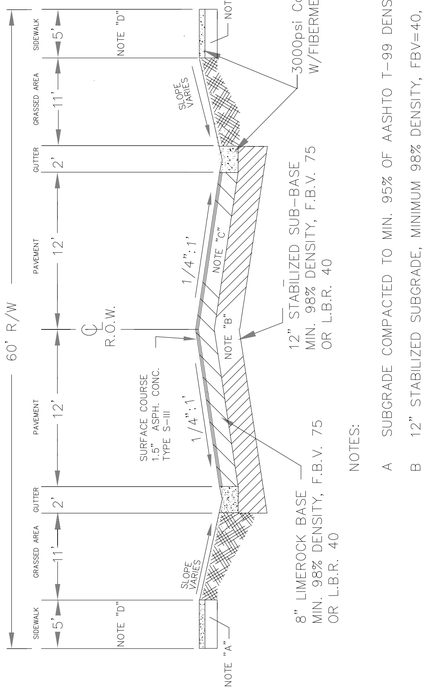
SEDIMENT FENCE



THIS DETAIL CONSTITUTES MINIMUM STANDARDS. DESIGN ENGINEERS SHALL PROVIDE STANDARDS EQUAL TO OR GREATER THAN THESE.

FOR:	UTILITIES DEPARTMENT	CITY OF NAPLES
DATE: JAN. 2016	*SEDIMENTATION CONTROL NO. 2*	SHEET: U-17
DRAWN: DAG/AMH		DIR: UTILSTDS
SCALE: N.T.S.	380 RIVERSDIE CIRCLE, NAPLES, FL. 34102	DWG. U-17-16.DWG

60' ROAD R.O.W.



NOTES:

A SUBGRADE COMPACTED TO MIN. 95% OF AASHTO T-99 DENSITY.

B 12" STABILIZED SUBGRADE, MINIMUM 98% DENSITY, FBV=40, LBR=30, OR AS DIRECTED BY ENGINEER

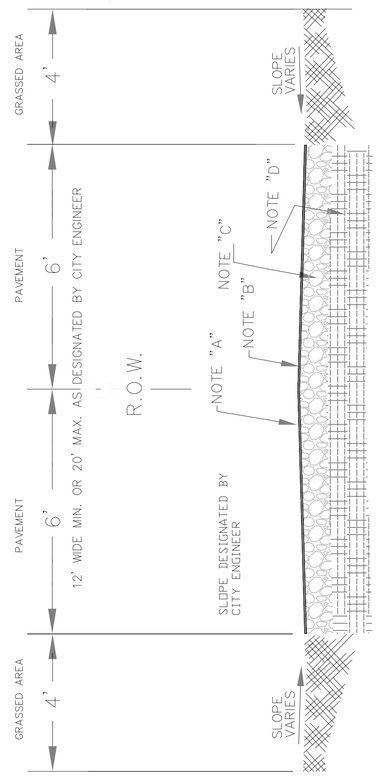
C 8" PRIMED LIMEROCK BASE, MINIMUM 98% DENSITY

D CONCRETE SIDEWALK, 4" THICK (MIN.), 5' WIDE (MIN.) AT RESIDENTIAL
CONCRETE SIDEWALK, 4" THICK (MIN.), 8' WIDE (MIN.) AT COMMERCIAL
CONCRETE SIDEWALK, 6" THICK (MIN.), 5' WIDE (MIN.) AT ST. CROSSINGS
'SIDEWALK WIDTHS MAY VARY PER SECT 50-182 CITY CODE OF ORDINANCES"

THIS DETAIL CONSTITUTES MINIMUM STANDARDS. DESIGN ENGINEERS SHALL PROVIDE STANDARDS EQUAL TO OR GREATER THAN THESE.

FOR:	UTILITIES DEPARTMENT	CITY OF NAPLES
DATE: JAN. 2016	*2-LAVE LOCAL STREET*	SHEET: U-19
DRAWN: DAG/AMH	*60' ROADWAY*	DIR: UTILSTDS
SCALE: N.T.S.	380 RIVERSIDE CIRCLE, NAPLES, FL. 34102	DWG. U-19-16.DWG

20' ALLEY R.O.W.



NOTES:

A 1" ASPHALT S-III

B PRIMED RC-70 OR SS-1, 0.14 GAL/SY

C 6" LIMEROCK BASE COMPACTED TO MINIMUM 98% MAXIMUM DENSITY PER AASHTO T-180

D 12" STABALIZED SUBGRADE COMPACTED TO MINIMUM 98% MAXIMUM DENSITY PER AASHTO T-180 (MIN LBR 40 OR FBV 50)

THIS DETAIL CONSTITUTES MINIMUM STANDARDS. DESIGN ENGINEERS SHALL PROVIDE STANDARDS EQUAL TO OR GREATER THAN THESE.

FOR:	UTILITIES DEPARTMENT	CITY OF NAPLES
DATE: JAN. 2016	*ALLEY (20' RIGHT of WAY)*	SHEET: U-25
DRAWN: DAG/AMH		DIR: UTILSTDS
SCALE: N.T.S.	380 RIVERSIDE CIRCLE, NAPLES, FL. 34102	DWG. U-25-16.DWG

Revision	By	Appd.	YY.MM.DD

Issued	By	Appd.	YY.MM.DD
ISSUED 90% DESIGN DRAWINGS TO CITY (PRELIM REVIEW)	KME	APPROVED	22.04.15
ISSUED 75% DESIGN DRAWINGS TO CITY (PRELIM REVIEW)	KME	APPROVED	21.05.13

ECE
Erickson Consulting Engineers
7201 Delainey Court
Sarasota, FL 32420
www.ericksonconsultingengineers.com

Copyright Reserved
The Contractor shall verify and be responsible for all dimensions. DO NOT scale the drawing - any errors or omissions shall be reported to Erickson Consulting Engineers (ECE) without delay.
The Copyrights to all designs and drawings are the property of ECE. Reproduction or use for any purpose other than that authorized by ECE is forbidden.

Client/Project
CITY OF NAPLES
735 8th St S
NAPLES, FL.
Naples Beach Restoration & Water Quality Improvement Project

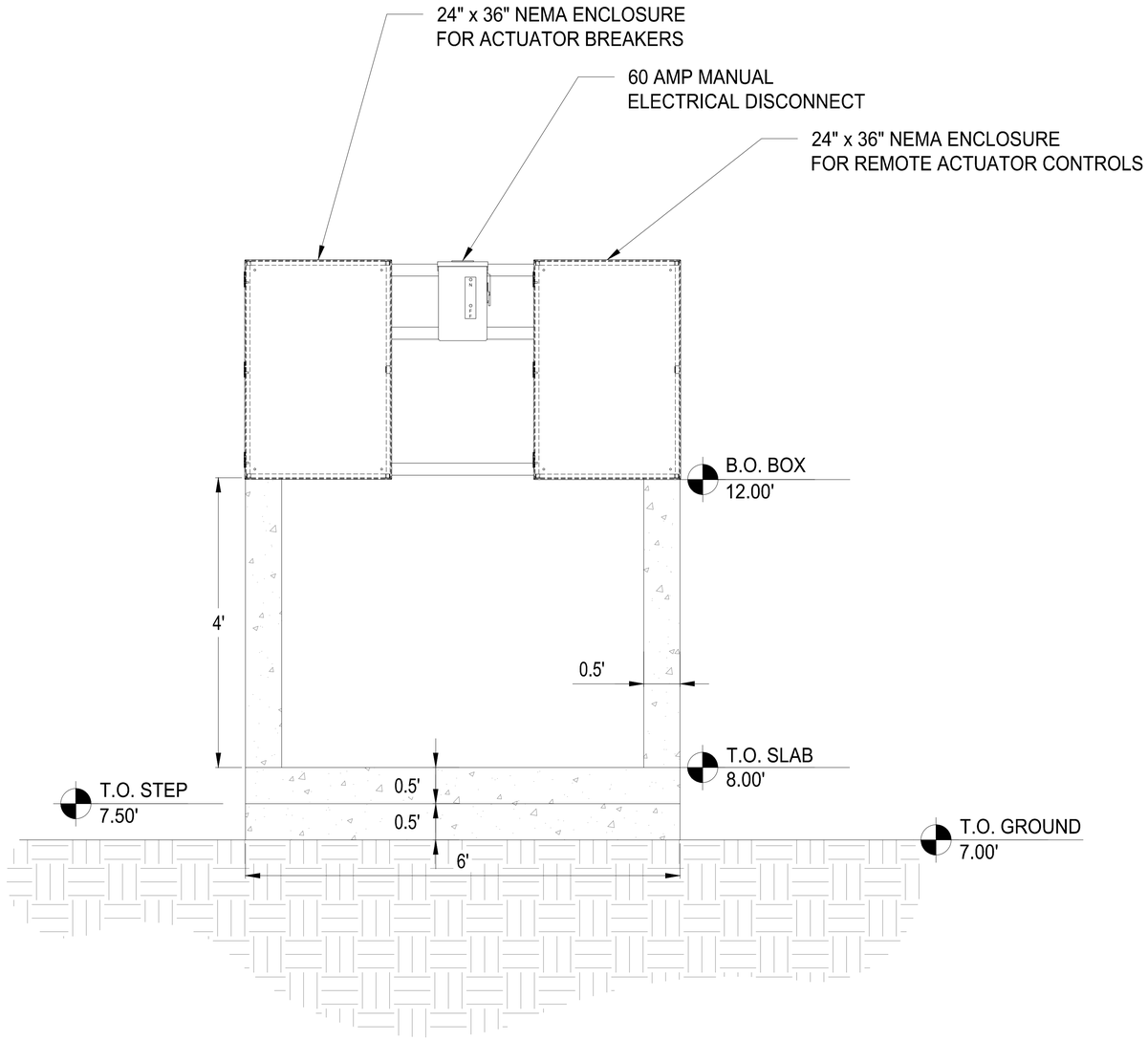
File Name: 16-329_Naples Outfalls_60-90% Drawings_Details-General.dwg

JAW	SMT	KME	21.06.01
Dwn.	Chkd.	Dsgn.	YY.MM.DD

Title
GENERAL CONSTRUCTION DETAILS (13)

Project No.	Scale	
16-329	AS NOTED	
Drawing No.	Sheet	Revision
CD	13	0

Z:\CADD_Graphics\US Projects\16-329_Naples Outfalls_Phase II\Design\90_100%_Plans\16-329_Naples Outfalls_60-90% Drawings\16-329_Naples Outfalls_60-90% Drawings_Details-General.dwg Apr 15, 2022-8:34am



ALLIGATOR LAKE ELECTRICAL PANEL DETAIL

N.T.S.

Revision	By	Appd.	YY.MM.DD

Issued	By	Appd.	YY.MM.DD
ISSUED 90% DESIGN DRAWINGS TO CITY (PRELIM REVIEW)	KME	APPROVED	22.04.15
ISSUED 75% DESIGN DRAWINGS TO CITY (PRELIM REVIEW)	KME	APPROVED	21.05.13

ECE
Erickson Consulting Engineers
7201 Delainey Court
Sarasota, FL 32420
www.ericksonconsultingengineers.com

Copyright Reserved
The Contractor shall verify and be responsible for all dimensions.
DO NOT scale the drawing - any errors or omissions shall be reported
to Erickson Consulting Engineers (ECE) without delay.
The Copyrights to all designs and drawings are the property of ECE.
Reproduction or use for any purpose other than that authorized by ECE is forbidden.

Client/Project
CITY OF NAPLES
735 8th St S
NAPLES, FL.
Naples Beach Restoration
& Water Quality
Improvement Project

File Name:
16-329_Naples Outfalls_60-90% Drawings_Details-General.dwg

Dwn.	Chkd.	Dsgn.	YY.MM.DD
JAW	SMT	KME	21.06.01

Title
GENERAL CONSTRUCTION
DETAILS (14)

Project No.	Scale	
16-329	AS NOTED	
Drawing No.	Sheet	Revision
CD	14	0

Z:\CADD_Graphics\US Projects\16-329_Naples Outfalls_Phase II\Design\90_100%_Plans\16-329_Naples Outfalls_60-90% Drawings_Details-General.dwg Apr 15, 2022 - 8:34am