BISSELL PROFESSIONAL GROUP

The Coastal Experts

May 25, 2023

Currituck County
Development Services Department, Planning & Zoning
153 Courthouse Road, Suite 110
Currituck, NC 27929

Reference: ***Corolla Boat Club Phase 1 - Construction Drawing Approval – TRC Response***

Dear Staff,

On behalf of Outer Banks Ventures, Inc., Bissell Professional Group is submitting the following response to address TRC comments received regarding an Application for Construction Drawing Approval for the proposed Corolla Boat Club Phase 1 subdivision located in Corolla. Responses below are provided in the order in which comments were received and references are made to the enclosed revised plans.

Planning

1. Updated PUD Overview and Summary of Uses is enclosed.
2. Updated Preliminary Plat is enclosed.
3. The Application Form and Cover Sheet of the plans have been updated with the (3) PIN numbers.
4. Noted.
5. Plan Sheet 2 has been updated to show property lines of the (3) existing parcels.
6. BFE labels have been revised to follow the FEMA boundary lines on Sheet 2. BFE lines and labels have also been added to Overview Sheet 3.
7. A turnaround is provided via the CBU parking area.
8. The connectivity index has been added as Note 5 under County Development Notes on the Cover Sheet.
9. The Open Space Easement across Lot 6 has been added and labeled on Sheet 3.
10. The fee-in-lieu condition has been added as Note 3 under County Development Notes on the Cover Sheet.
11. Noted
12. The townhome buildings and driveways have been removed from the plans. The utilities serving the future Townhomes remain, however, as it is necessary to install them with the initial roadway and utility improvements.
13. An Open Space Summary has been added as Note 2 under County Development Notes on the Cover Sheet.
14. A label referencing the County's Stormwater Easement has been added to Sheet 2.
15. The CBU box is typically chosen by the owner. As there are many to select from, details on the box itself are not provided. See Sheet 8 for details regarding parking and access to the CBU.
16. Lighting details are provided on Sheet 7
17. Details of the sign are still being worked out and an application for a sign permit will be submitted once complete.
18. Min. BPE & FFE have been added to Sheet 4.
19. Note 4 under County Development Notes on the Cover Sheet has been added indicating that these items will be identified on the final plat.

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20. Labels specifying the use of TREE WELLS, as necessary, have been added to Sheet 7.
21. Stormwater Structure and Pipe data tables have been added to the Drainage Sheet 4. To avoid clutter, we ask not to duplicate these tables on Sheets 5, 6 & 8.
22. Spot elevations have been added throughout the grading and drainage plan on Sheet 4.
23. Townhomes are not final design and been removed from the plans. Drainage modifications will be addressed in the future, as necessary.
24. The pond edge in the vicinity of the existing outlet has been corrected. The proposed outlet control structure has been relocated to align with the pond edge and outlet. The existing 24" outlet pipe will be removed. The new structure will act as a single stage outlet weir with an armored connection to the existing outlet. An EPA SWMM Model of proposed conditions was prepared to serve as a design tool for the drainage system and to evaluate the function of the pond while accounting for off-site inflows. This model takes into account the Corolla Boat Club project at full build-out. An EPA SWMM Model report, presenting this work, has been added to this re-submission. Peak Flows and Velocities from this model were utilized to size / design conveyance elements and energy dissipators as needed.
25. The berm is intended to act as a wide weir during a 100 yr event.
26. Elevations on the weir detail have been corrected.
27. The existing 48" pipe has been added to the profile and proposed waterline revised to provide proper separation.
28. A surface skimmer is not being utilized. The Erosion Control note on Sheet 9 has been revised accordingly.
29. The existing pond will be excavated deeper to obtain necessary fill material for the project. Notes related to the existing bottom being maintained were an error and have been removed.
30. This is an existing shed that may remain until future development. Its approximate location has been added to the plans.
31. The approximate location of the pile of crushed concrete has been added to the plan. The owner plans to utilized this material for rip-rap stabilization as needed around the project site. A related note has been added to Sheet 5.
32. The owner shall install and maintain silt fence as shown and detailed on the plans approved by NCDEQ.
33. The owner shall stay within the limits of disturbance shown on the plans approved by NCDEQ. Disturbances outside of these limits share be restored to pre-construction conditions.

Currituck Soil and Water Engineering

1. Stormwater Structure and Pipe Tables have been added to Sheet 4

Southern Outer Banks Water

1. The watermain along Malia was intended to be C900 and the label revised accordingly.

Currituck County GIS

1. PIN numbers on the application form and Cover Sheet of the plans have been corrected.

McAdams Stormwater Review

1. Enclosed is an executed form SW-002.
2. Shortly after passage of the County's current stormwater rules, the County Engineer agreed that the Currituck Sound represents an Adequate Outfall and therefore projects that front on and flow to Currituck Sound without flow crossing adjoining properties are considered to be Alternatively Compliant. No peak flow reduction is required.

a. Project flows directly to an adequate outfall (Currituck Sound) and therefore meets the requirements for alternate compliance.
b. Project flows directly to an adequate outfall (Currituck Sound) and therefore meets the requirements for alternate compliance.
c. An EPA SWMM Model of proposed conditions was prepared to serve as a design tool for the drainage system and to evaluate the function of the pond while accounting for off-site inflows. This model takes into account the Corolla Boat Club project at full build-out. An EPA SWMM Model report, presenting this work, has been added to this re-submission.
d. An EPA SWMM Model of proposed conditions was prepared to serve as a design tool for the drainage system and to evaluate the function of the pond while accounting for off-site inflows. This model takes into account the Corolla Boat Club project at full build-out. An EPA SWMM Model report, presenting this work, has been added to this re-submission. Peak Flows and Velocities from this model were analyzed to size / design energy dissipators as needed. These calculations are provided in Appendix I to the report. A rip-rap level spreader is specified around the outlet of the control structure.
e. An EPA SWMM Model of proposed conditions was prepared to serve as a design tool for the drainage system and to evaluate the function of the pond while accounting for off-site inflows. This model takes into account the Corolla Boat Club project at full build-out. An EPA SWMM Model report, presenting this work, has been added to this re-submission. Peak Flows and Velocities from this model were analyzed to size / design energy dissipators as needed. These calculations are provided in Appendix I to the report. Dissipators are not needed at inlets to the pond.

3. Noted for future building construction.
4. Legends are provided on the cover sheet. BFE labels have been revised to follow the boundary of the FEMA Lines as shown on Sheets 2 & 3.
5. The pond is manmade and therefore exempt from riparian buffer. The buffer is not related to stormwater so it was not included in narrative.
6. Legends are provided on the cover sheet and include acronyms.
7. Development phase lines differ from construction phase lines and are, therefore, left off so as not to cause confusion.
8. All slopes are 3:1 or flatter. The slope along south side of Lot 1 is 3:1
9. RFPE elevations are used for building construction and are not typically provide on infrastructure construction drawings. FEMA base flood boundaries and elevations are shown on Sheets 2 and 3. To avoid clutter, we ask not to provide this information on all sheets. For reference, BFE across the Lots are generally AE (3) and Shaded X. Adding 2' of freeboard, the RFPE across the lots is 5' msl. The Minimum Building Pad Elevations (BPE) specified on Sheet 4 are set at 6.75' and well above the RFPE.
10. This an existing retaining wall on an adjoining property.
11. Peak Flows and Velocities from the EPA SWMM model were analyzed to size / design energy dissipators as needed. These calculations are provided in Appendix I to the report. Dissipators are not needed at inlets to the pond and a rip-rap level spreader is specified around the outlet of the control structure
12. The existing outlet pipe is to be removed.

13. Given the large size of the existing pond, NCDEQ approved its use as a temporary sediment basin without baffles.
14. Townhomes are not final design and have been removed from plans. Drainage modifications will be addressed in the future, as necessary.
15. Townhomes are not final design and have been removed from plans. Conflict with the existing groundwater discharge pipe will be addressed in the future, if necessary.
16. The berm is intended to act as a wide weir during a 100 yr event.
17. Given that the berm is approximately 12 inches tall, geotechnical specifications seem unnecessary.
18. See #11 above regarding energy dissipators. Elevations on the outlet structure detail have been corrected.

We believe these responses and related plan revisions address all the comments. Enclosed are (2) full size copies of the revised plans, (1) 8.5 x 11 reduction of the revised plans, other referenced documents and (1) .pdf digital copy of all enclosed documents. We thank you for the consideration and look forward to finalizing the construction drawing approval for this project. If you have any questions or need any additional information please do not hesitate to call.

Sincerely yours,
Bissell Professional Group

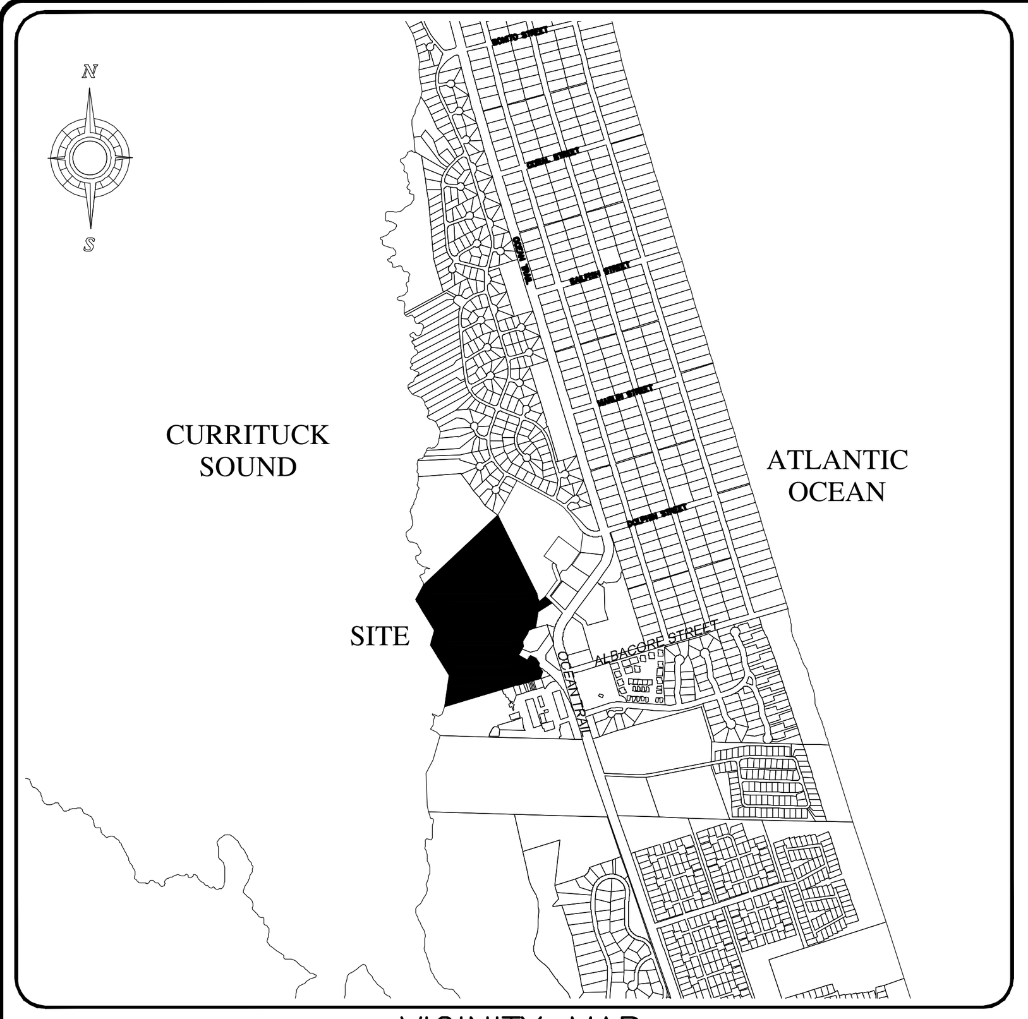
David M. Klebitz, P.E

CONSTRUCTION DRAWINGS FOR

COROLLA BOAT CLUB - PHASE 1

A 6 LOT SUBDIVISION DEVELOPMENT
MONTERAY SHORES PHASE 10

POPLAR BRANCH TOWNSHIP   CURRITUCK COUNTY   NORTH CAROLINA



VICINITY MAP
SCALE: 1" = 1000'

GENERAL NOTES:

1. PROJECT NAME: COROLLA BOAT CLUB – PHASE 1, MONTERAY SHORES PHASE 10
2. APPLICANT/DEVELOPER: OUTER BANKS VENTURES, INC.
   P.O. BOX 549
   COROLLA, NC 27927
3. PROPERTY DATA:
   DESCRIPTION: LOTS 1, 2 & 3 OUTER BANKS VENTURES EXEMPT DIVISION
   ADDRESS: MALIA DRIVE, COROLLA, NC
   PIN: 0116–000–010A–0000, 0116–000–010B–0000, 0116–000–010C–0000
   RECORD DOCUMENT(S): DB:1161, PG:734; PC:R, SL:372
   PROPERTY ZONING: SFO–PUD
4. F.I.R.M. DATA:
   THE PROPERTY CONTAINS ZONES X, SHADED X, AE (3), AE (4), AE (5) AND AE (6) PER F.E.M.A. F.I.R.M. MAP NUMBER 3721803200 K, EFFECTIVE DATE DECEMBER 21, 2018. USE OF LAND WITHIN A FLOODWAY OR FLOOD PLAIN IS SUBSTANTIALLY RESTRICTED BY CHAPTER 7 OF THE CURRITUCK COUNTY UNIFIED DEVELOPMENT ORDINANCE.
5. THIS PROPERTY CONTAINS ACOE "404' JURISDICTIONAL WETLANDS AS SHOWN AND CONFIRMED BY USACOE AND MAY REQUIRE U.S. CORP OF ENGINEERS APPROVAL PRIOR TO DEVELOPMENT OF THE PROPERTY.
6. SECTION 7.6.5 OF THE CURRITUCK U.D.O. SUBSTANTIALLY RESTRICTS DEVELOPMENT WITHIN A 30' RIPARIAN BUFFER TO CERTAIN WETLANDS.
7. EXISTING CONDITION INFORMATION BASED ON A COMBINATION OF THE FOLLOWING:
   - 2022 AERIAL IMAGERY OBTAINED FROM NCONEMAP.COM
   - FIELD TOPOGRAPHIC SURVEY DATA BY BISSELL PROFESSIONAL GROUP.
   - ELEVATIONS ARE REFERENCED TO NAVD 1988 VERTICAL DATUM.
   - WATER DEPTHS PER PLAN TITLED "WATER DEPTH SURVEY/CAMA FEASE" BY QUIBLE AND ASSOCIATES
8. ALL UTILITIES ARE TO BE UNDERGROUND.
9. A 10' EASEMENT FOR UTILITIES AND DRAINAGE ALONG REAR AND SIDE PROPERTY LINES AND A 25' EASEMENT ALONG FRONT PROPERTY LINES SHALL BE ESTABLISHED FOR DRAINAGE, UTILITIES, PEDESTRIAN WALKS & STREET TREES. A NON–EXCLUSIVE DRAINAGE EASEMENT IS HEREBY DEDICATED ACROSS ALL OPEN SPACE AREAS FOR PURPOSES OF OPERATION AND MAINTENANCE OF STORMWATER MANAGEMENT SYSTEM.

DEVELOPMENT NOTES:

THE FOLLOWING NOTES ARE PROVIDED FOR NCDEQ PERMITTING.

1. PHASE 1 PROPERTY AREA: 20.03 AC.
   PHASE 1 COASTAL WETLAND AREA: 6.22 AC.
   PHASE 1 SURFACE WATER & LAKE: 3.39 AC.
   TOTAL PHASE 1 PROJECT AREA: 10.42AC.
2. DEVELOPMENT SUMMARY
   TOTAL LOT AREA: 2.98 AC.
   R/W AREA: 0.58 AC.
   OPEN SPACE & FUTURE DEVELOPMENT AREA: 6.86 AC.
   TOTAL AREA: 10.42 AC.

   # OF SINGLE FAMILY LOTS: 5
   # OF COMMERCIAL LOTS: 1

   PROPOSED RIGHT–OF–WAY WIDTH: 30
   PROPOSED PAVED ROADWAY WIDTH: 25 FT. (W/ C&G),
   LINEAR FEET OF ROADWAY: 850 L.F.±
3. IMPERVIOUS COVERAGE DATA (BUA):
   LOT COVERAGE: 54,502 SF
   ROADWAY: 25,080 SF
   PARKING: 3,311 SF
   SIDEWALKS: 14,600 SF
   ALLOWANCE FOR MISC. AMENITIES: 3,000 SF
   FUTURE ROADWAY COVERAGE: 8,400 SF
   TOTAL COVERAGE: 108,893 SF (24.00%)
4. TOTAL PROPOSED DISTURBED AREA: 12 ACRES

DEVELOPMENT NOTES CONT'D:

THE FOLLOWING NOTES ARE PROVIDED FOR CURRITUCK COUNTY ZONING AND ARE SUBJECT TO CHANGE WITH FINAL PLATTING OF THE SUBDIVISION.

1. SUMMARY OF "PART A" (AS DESIGNATED ON APPROVED PRELIMINARY PLAT)
   TOTAL LOT AREA: 2.98 AC.
   TOTAL R/W AREA: 0.70 AC.
   OPEN SPACE AREA: 5.66 AC.
   FUTURE DEV. EASEMENT: 0.67 AC.
   TOTAL: 10.01 AC.
2. OPEN SPACE SUMMARY
   OPEN SPACE REQUIRED: 3.50 AC.

   OPEN SPACE EASEMENT LOT 6: 0.38 AC.
   OTHER OPEN SPACE: 5.66 AC.
   TOTAL PROVIDED: 6.04 AC.
3. RECREATION/PARKLAND FEE IN LIEU OF TO BE CALCULATED AND PAID PRIOR TO FINAL PLAT RECORDATION
4. PUBLIC AND PRIVATE USE AREAS WILL BE IDENTIFIED ON THE FINAL PLATS
5. CONNECTIVITY INDEX:
   2 LINKS/1 NODE = 2

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Sheet List Table

THE FOLLOWING PERMITS ARE REQUIRED PRIOR TO PROJECT CONSTRUCTION:

PERMIT	AGENCY	REFERENCE NUMBER	DATE OF ISSUANCE
SEDIMENTATION AND EROSION CONTROL PERMIT	N.C.D.E.Q. – DIVISION OF LAND RESOURCES	CURRI–2023–021	3/3/2023
STORMWATER MANAGEMENT PERMIT	N.C.D.E.Q – DIVISION OF LAND RESOURCES	SW7230209	4/10/2023
WATERLINE EXTENSION AUTHORIZATION TO CONSTRUCT	N.C.D.E.Q – PUBLIC WATER SUPPLY	23–00273	5/1/2023
WASTEWATER COLLECTION SYSTEM PERMIT	N.C.D.E.Q – DIVISION OF WATER RESOURCES	WQ0044361	5/4/2023
NATIONWIDE PERMIT 18 (WETLAND MINOR FILL)	U.S.A.C.O.E.	2017–01236	5/19/2022
CURRITUCK COUNTY PRELIMINARY PLAT & USE PERMIT	CURRITUCK COUNTY BOARD OF COMMISSIONERS	PB 87–56	1/17/2023
CURRITUCK COUNTY CONSTRUCTION AUTHORIZATION	CURRITUCK COUNTY PLANNING STAFF		

STORMWATER CERTIFICATE

I,____________________, OWNER/AGENT HEREBY CERTIFY THE INFORMATION INCLUDED ON THIS AND ATTACHED PAGES IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE.

ON THE PLAN ENTITLED, COROLLA BOAT CLUB – PHASE 1 – CONSTRUCTION DRAWINGS – GRADING, DRAINAGE AND STORMWATER MANAGEMENT PLAN, STORMWATER DRAINAGE IMPROVEMENTS SHALL BE INSTALLED ACCORDING TO THESE PLANS AND SPECIFICATIONS AND APPROVED BY CURRITUCK COUNTY. YEARLY INSPECTIONS ARE REQUIRED AS PART OF THE STORMWATER PLAN. THE OWNER IS RESPONSIBLE FOR ALL MAINTENANCE REQUIRED. CURRITUCK COUNTY ASSUMES NO RESPONSIBILITY FOR THE DESIGN, MAINTENANCE, OR PERFORMANCE OF THE STORMWATER IMPROVEMENTS.

____________ DATE   ____________________ OWNER/AGENT

SURVEY LEGEND

SCM	SET CONCRETE MONUMENT
ECM	EXISTING CONCRETE MONUMENT
SIR	SET IRON ROD
EIR	EXISTING IRON ROD
EIP	EXISTING IRON PIPE
CP	CALCULATED POINT
M.B.L.	MAXIMUM BUILDING LIMIT
N.T.S.	NOT TO SCALE
P.C.	PLAT CABINET
D.B.	DEED BOOK
SL	SLIDE
SF	SQUARE FEET
AC	ACRES

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811
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PLAN LEGEND

- ROADWAY CENTERLINE
- RIGHT–OF–WAY
- PROPERTY BOUNDARY
- ADJOINING PROPERTY LINE
- EXISTING DITCH CENTERLINE
- EXISTING DITCH TOP OF BANK
- EXISTING WETLANDS
- 30' UNDISTURBED BUFFER (COUNTY)
- PROPOSED SWALE W/ FLOW ARROW
- PROPOSED SWALE HIGH POINT
- EXISTING DITCH TO BE FILLED
- FEMA BOUNDARY LINE (FEMA)
- EXISTING GRADE CONTOUR (6)
- PROPOSED GRADE CONTOUR
- EXISTING SPOT GRADE (X 0.00)
- PROPOSED SPOT GRADE (•0.00)
- EXISTING CULVERT
- PROPOSED CULVERT
- PROPOSED DRAINAGE STRUCTURE (D)
- EXISTING WATER LINE (EWL)
- PROPOSED WATER LINE (SIZE AS NOTED) (WL)
- PROPOSED FIRE HYDRANT ASSEMBLY
- PROPOSED WATER SERVICE
- PROPOSED VALVE
- PROPOSED BLOW–OFF ASSEMBLY
- PROPOSED REDUCER
- PROPOSED SEWER FORCE MAIN (FM)
- PROPOSED SEWER COLLECTION MAIN
- PROPOSED SEWER MANHOLE (S)
- PROPOSED LIMITS OF DISTURBANCE
- PROPOSED SILT FENCE
- PROPOSED INLET PROTECTION (D)
- PROPOSED STABILIZED CONSTRUCTION ENTRANCE
- PROPOSED TEMPORARY CHECK DAM

PROFILE LEGEND

- EXISTING GRADE @ ROAD C/L
- PROPOSED GRADE @ ROAD C/L
- PROPOSED WATER LINE (SIZE AS NOTED) (WL)
- PROPOSED HYDRANT ASSEMBLY
- PROPOSED GATE VALVE
- PROPOSED REDUCER

NOTE:
EXISTING SITE INFORMATION DESCRIBED HEREON IS BELIEVED TO BE ACCURATE, HOWEVER, BPG INC. MAKES NO WARRANTY AS TO THE ACCURACY. IT IS THE CONTRACTORS RESPONSIBILITY TO VERIFY THIS INFORMATION BEFORE RELYING ON IT. THE CONTENT OF THESE DOCUMENTS MAY ALSO INCLUDE TECHNICAL INACCURACIES OR TYPOGRAPHICAL ERRORS. IF SUCH CONDITIONS EXIST, THE CONTRACTOR SHALL CONSULT WITH THE ENGINEER PRIOR TO PROCEEDING WITH THE SCHEDULED WORK AND MAY CONTINUE AFTER AN AUTHORIZATION TO PROCEED HAS BEEN GRANTED.

BISSELL PROFESSIONAL GROUP
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FAX (252) 261–1760

COVER SHEET, DEVELOPMENT NOTES & SITE LOCATION

PROJECT: COROLLA BOAT CLUB - PHASE 1, MONTERAY SHORES PHASE 10
POPLAR BRANCH TOWNSHIP   CURRITUCK COUNTY   NORTH CAROLINA

CONSTRUCTION DRAWINGS

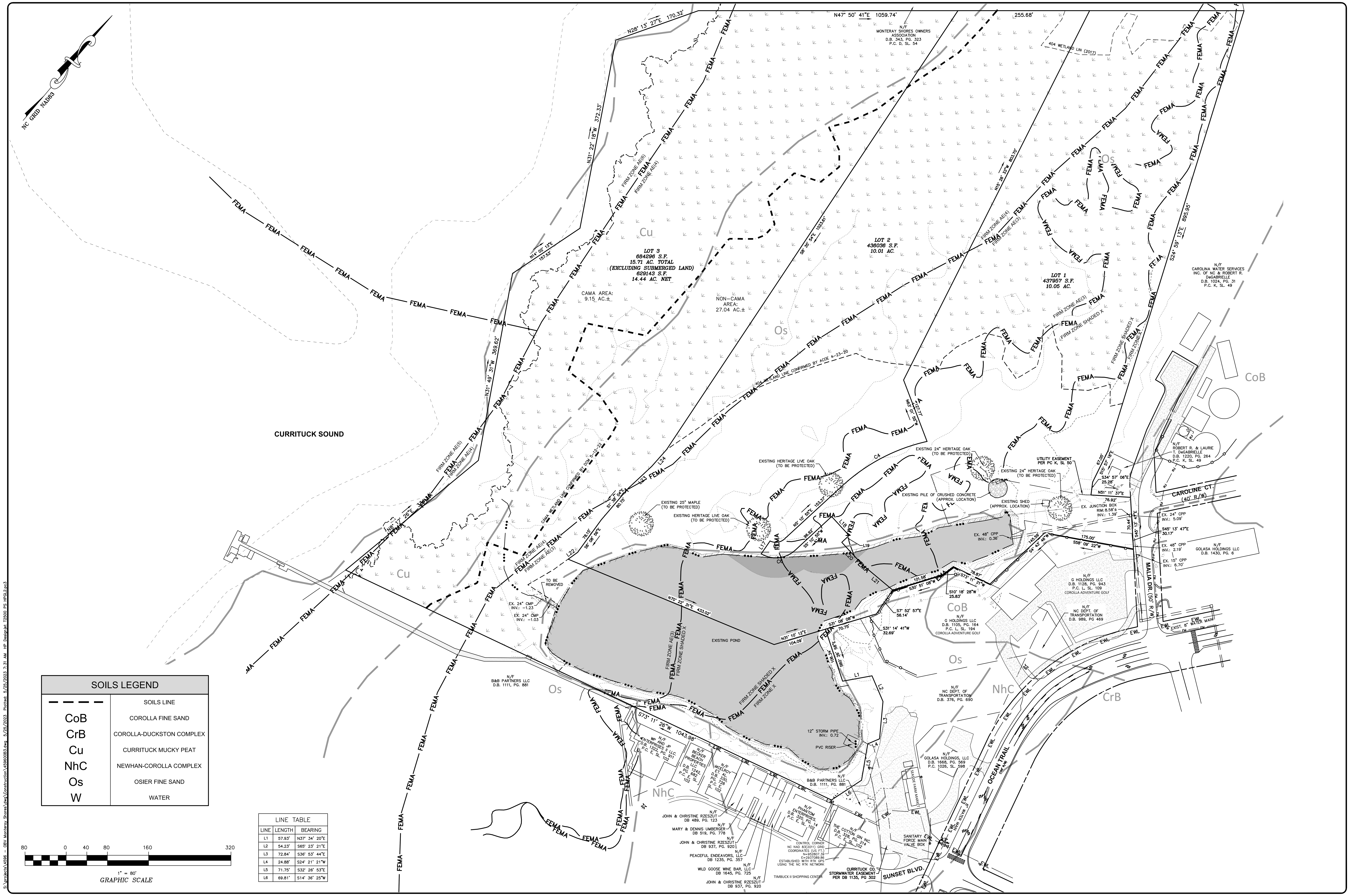
REVISIONS

NO.	DATE	DESCRIPTION	BY
1	2–23–23	REV PROJ AREA	DMK
2	5–24–23	ADDRESS TRC COMMENTS	DMK

SEAL 042639 – NORTH CAROLINA PROFESSIONAL ENGINEER – DAVID M. KLEBITZ
PRELIMINARY DO NOT USE FOR CONSTRUCTION

DATE: 2-15-23	SCALE: N/A
DESIGNED: BPG	CHECKED: MSB
DRAWN: DMK/KFW	APPROVED: BPG

SHEET: 1 OF 16
CAD FILE: 459600B3
PROJECT NO: 4596



SOILS LEGEND	
— — — —	SOILS LINE
CoB	COROLLA FINE SAND
CrB	COROLLA-DUCKSTON COMPLEX
Cu	CURRITUCK MUCKY PEAT
NhC	NEWHAN-COROLLA COMPLEX
Os	OSIER FINE SAND
W	WATER

80 0 40 80 160 320

1" = 80'

GRAPHIC SCALE

LINE TABLE

LINE	LENGTH	BEARING
L1	57.93'	N37° 34' 20"E
L2	54.23'	S65° 23' 21"E
L3	72.84'	S36° 53' 44"E
L4	24.88'	S24° 21' 21"W
L5	71.75'	S32° 26' 53"E
L6	69.81'	S14° 36' 25"W

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EXISTING CONDITIONS &
SITE FEATURES MAP

PROJECT:
COROLLA BOAT CLUB - PHASE 1, (MONTERAY SHORES PHASE 10)
POPLAR BRANCH TOWNSHIP CURRITUCK COUNTY NORTH CAROLINA

CONSTRUCTION DRAWINGS

REVISIONS

NO.	DATE	DESCRIPTION	BY
1	5-24-23	ADDRESS TRC COMMENTS	DMK

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 042639 DAVID M. KLEBITZ

PRELIMINARY DO NOT USE FOR CONSTRUCTION

DATE: 2-15-23	SCALE: 1"=80'
DESIGNED: BPG	CHECKED: MSB
DRAWN: DMK/KFW	APPROVED: BPG

SHEET: 2 OF 16

CAD FILE: 459600B3

PROJECT NO: 4596

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DEVELOPMENT OVERVIEW PLAN

PROJECT:
COROLLA BOAT CLUB - PHASE 1, (MONTERAY SHORES PHASE 10)
POPLAR BRANCH TOWNSHIP CURRITUCK COUNTY NORTH CAROLINA

CONSTRUCTION DRAWINGS

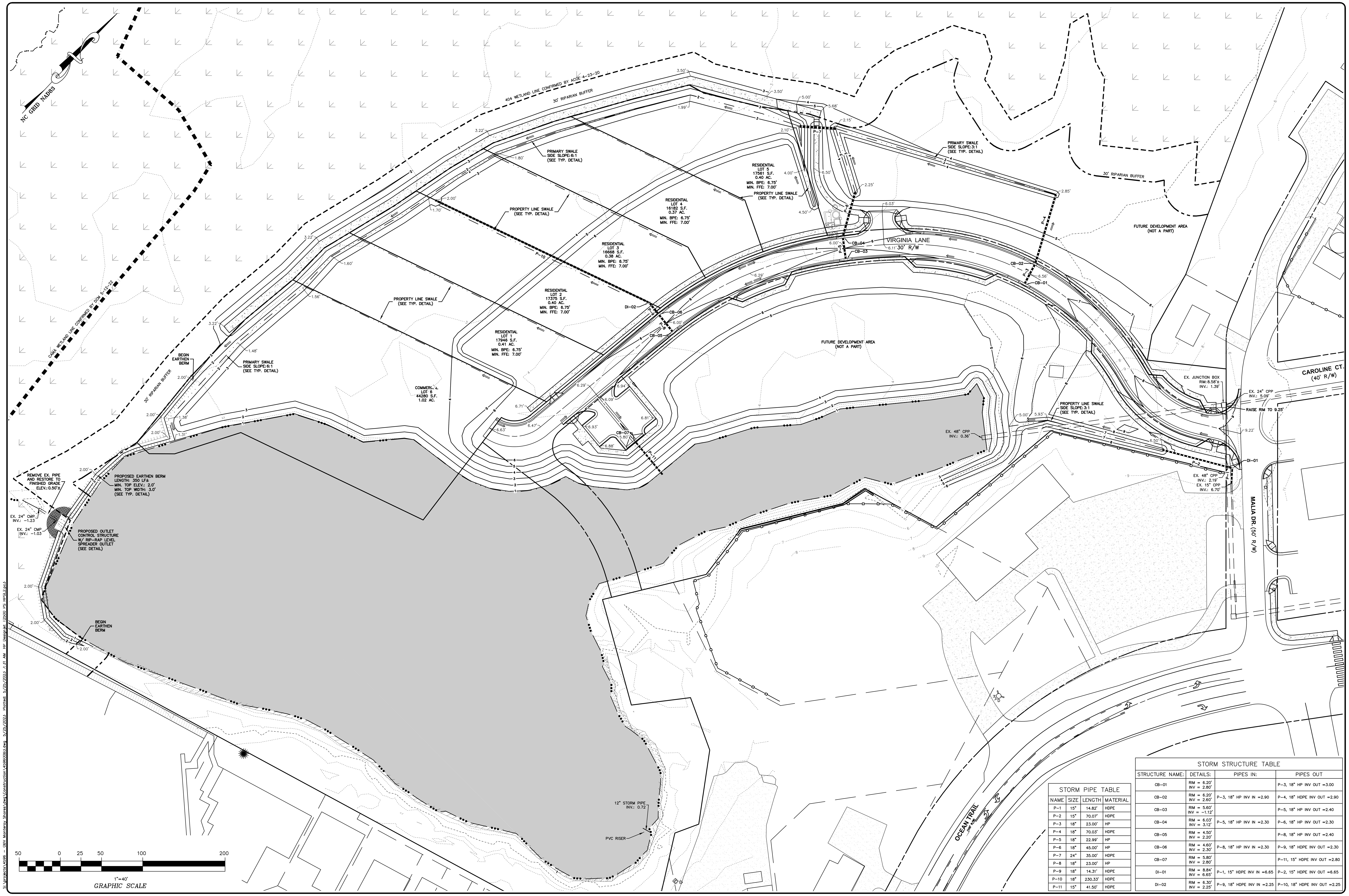
REVISIONS

NO.	DATE	DESCRIPTION	BY
1	5-24-23	ADDRESS TRC COMMENTS	DMK

PRELIMINARY DO NOT USE FOR CONSTRUCTION
NORTH CAROLINA PROFESSIONAL SEAL 042639 ENGINEER DAVID M. KLEIN

DATE: 2-15-23	SCALE: 1"=50'
DESIGNED: BPG	CHECKED: MSB
DRAWN: DMK/KFW	APPROVED: BPG

SHEET: 3 OF 16
CAD FILE: 459600B3
PROJECT NO: 4596



STORM PIPE TABLE			
NAME	SIZE	LENGTH	MATERIAL
P-1	15"	14.82'	HDPE
P-2	15"	70.07'	HDPE
P-3	18"	23.00'	HP
P-4	18"	70.03'	HDPE
P-5	18"	22.99'	HP
P-6	18"	45.00'	HP
P-7	24"	35.00'	HDPE
P-8	18"	23.00'	HP
P-9	18"	14.31'	HDPE
P-10	18"	230.33'	HDPE
P-11	15"	41.50'	HDPE

STORM STRUCTURE TABLE			
STRUCTURE NAME:	DETAILS:	PIPES IN:	PIPES OUT
CB-01	RIM = 6.20' INV = 2.80'		P-3, 18" HP INV OUT =3.00
CB-02	RIM = 6.20' INV = 2.60'	P-3, 18" HP INV IN =2.90	P-4, 18" HDPE INV OUT =2.90
CB-03	RIM = 5.60' INV = -1.12'		P-5, 18" HP INV OUT =2.40
CB-04	RIM = 6.03' INV = 3.12'	P-5, 18" HP INV IN =2.30	P-6, 18" HP INV OUT =2.30
CB-05	RIM = 4.50' INV = 2.20'		P-8, 18" HP INV OUT =2.40
CB-06	RIM = 4.60' INV = 2.30'	P-8, 18" HP INV IN =2.30	P-9, 18" HDPE INV OUT =2.30
CB-07	RIM = 5.80' INV = 2.80'		P-11, 15" HDPE INV OUT =2.80
DI-01	RIM = 8.84' INV = 6.65'	P-1, 15" HDPE INV IN =6.65	P-2, 15" HDPE INV OUT =6.65
DI-02	RIM = 6.30' INV = 2.25'	P-9, 18" HDPE INV IN =2.25	P-10, 18" HDPE INV OUT =2.25

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GRADING, DRAINAGE & STORMWATER MANAGEMENT

PROJECT:
COROLLA BOAT CLUB - PHASE 1, MONTEREY SHORES PHASE 10
POPLAR BRANCH TOWNSHIP CURRITUCK COUNTY NORTH CAROLINA

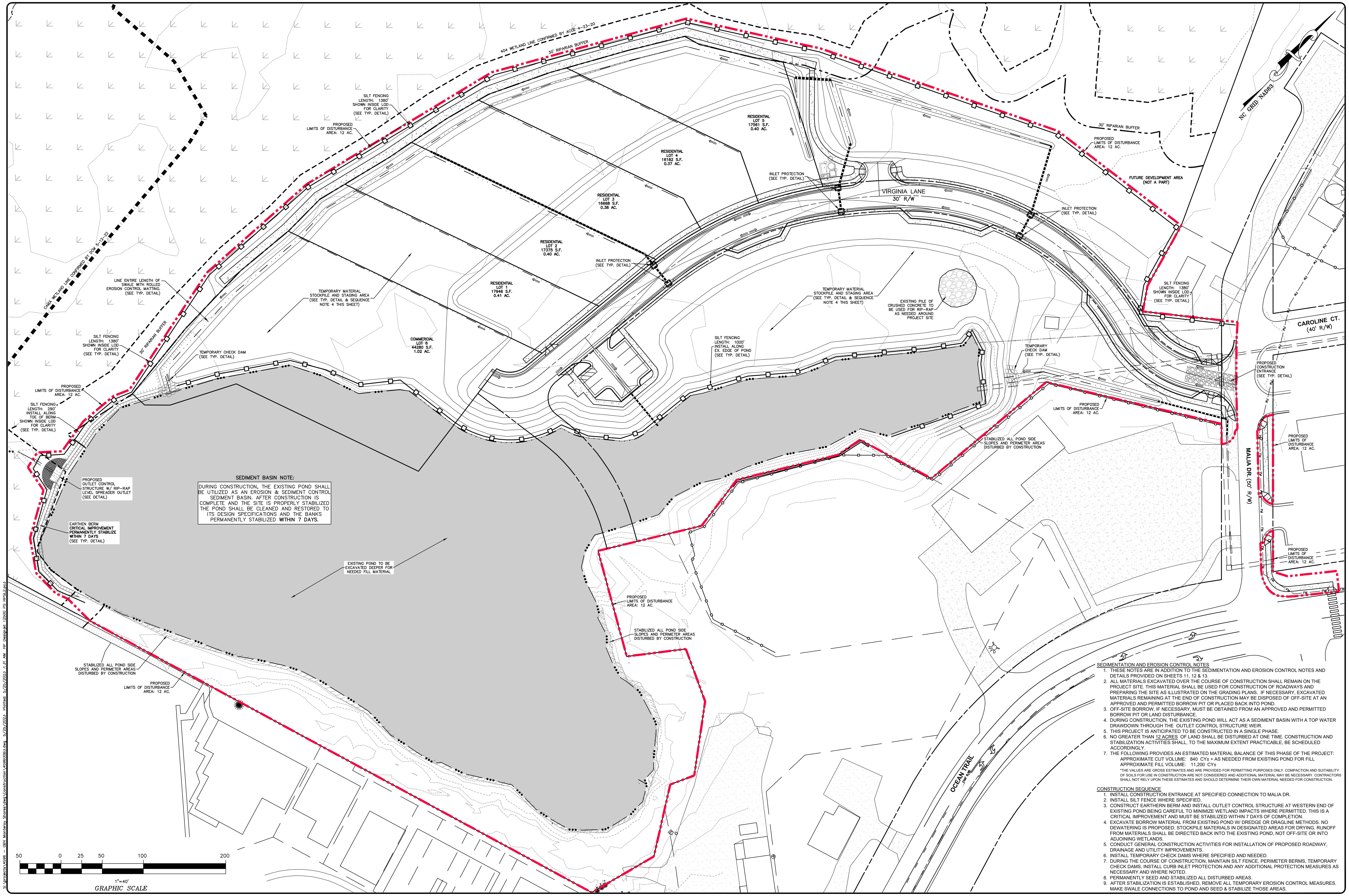
CONSTRUCTION DRAWINGS

REVISIONS

NO.	DATE	DESCRIPTION	BY
1	3-13-23	PIPE AND STRUCTURE TABLES	DMK
2	5-24-23	ADDRESS TRC COMMENTS	DMK

NORTH CAROLINA PROFESSIONAL SEAL 042639 ENGINEER DAVID M. KLEBITZ
PRELIMINARY DO NOT USE FOR CONSTRUCTION

DATE: 2-15-23	SCALE: 1"= 40'
DESIGNED: BPG	CHECKED: MSB
DRAWN: DMK/KFW	APPROVED: BPG
SHEET: 4 OF 16	
CAD FILE: 459600B3	
PROJECT NO: 4596	



SEDIMENTATION AND EROSION CONTROL NOTES

1. THESE NOTES ARE IN ADDITION TO THE SEDIMENTATION AND EROSION CONTROL NOTES AND DETAILS PROVIDED ON SHEETS 11, 12 & 13.
2. ALL MATERIALS EXCAVATED OVER THE COURSE OF CONSTRUCTION SHALL REMAIN ON THE PROJECT SITE. THIS MATERIAL SHALL BE USED FOR CONSTRUCTION OF ROADWAYS AND PREPARING THE SITE AS ILLUSTRATED ON THE GRADING PLANS. IF NECESSARY, EXCAVATED MATERIALS REMAINING AT THE END OF CONSTRUCTION MAY BE DISPOSED OF OFF-SITE AT AN APPROVED AND PERMITTED BORROW PIT OR PLACED BACK INTO POND.
3. OFF-SITE BORROW, IF NECESSARY, MUST BE OBTAINED FROM AN APPROVED AND PERMITTED BORROW PIT OR LAND DISTURBANCE.
4. DURING CONSTRUCTION, THE EXISTING POND WILL ACT AS A SEDIMENT BASIN WITH A TOP WATER DRAWDOWN THROUGH THE OUTLET CONTROL STRUCTURE WEIR.
5. THIS PROJECT IS ANTICIPATED TO BE CONSTRUCTED IN A SINGLE PHASE.
6. NO GREATER THAN 12 ACRES OF LAND SHALL BE DISTURBED AT ONE TIME. CONSTRUCTION AND STABILIZATION ACTIVITIES SHALL, TO THE MAXIMUM EXTENT PRACTICABLE, BE SCHEDULED ACCORDINGLY.
7. THE FOLLOWING PROVIDES AN ESTIMATED MATERIAL BALANCE OF THIS PHASE OF THE PROJECT:
   APPROXIMATE CUT VOLUME: 840 CY± + AS NEEDED FROM EXISTING POND FOR FILL
   APPROXIMATE FILL VOLUME: 11,200 CY±
   *THE VALUES ARE GROSS ESTIMATES AND ARE PROVIDED FOR PERMITTING PURPOSES ONLY. COMPACTION AND SUITABILITY OF SOILS FOR USE IN CONSTRUCTION ARE NOT CONSIDERED AND ADDITIONAL MATERIAL MAY BE NECESSARY. CONTRACTORS SHALL NOT RELY UPON THESE ESTIMATES AND SHOULD DETERMINE THEIR OWN MATERIAL NEEDED FOR CONSTRUCTION.

CONSTRUCTION SEQUENCE

1. INSTALL CONSTRUCTION ENTRANCE AT SPECIFIED CONNECTION TO MALIA DR.
2. INSTALL SILT FENCE WHERE SPECIFIED.
3. CONSTRUCT EARTHERN BERM AND INSTALL OUTLET CONTROL STRUCTURE AT WESTERN END OF EXISTING POND BEING CAREFUL TO MINIMIZE WETLAND IMPACTS WHERE PERMITTED. THIS IS A CRITICAL IMPROVEMENT AND MUST BE STABILIZED WITHIN 7 DAYS OF COMPLETION.
4. EXCAVATE BORROW MATERIAL FROM EXISTING POND W/ DREDGE OR DRAGLINE METHODS. NO DEWATERING IS PROPOSED. STOCKPILE MATERIALS IN DESIGNATED AREAS FOR DRYING. RUNOFF FROM MATERIALS SHALL BE DIRECTED BACK INTO THE EXISTING POND, NOT OFF-SITE OR INTO ADJOINING WETLANDS.
5. CONDUCT GENERAL CONSTRUCTION ACTIVITIES FOR INSTALLATION OF PROPOSED ROADWAY, DRAINAGE AND UTILITY IMPROVEMENTS.
6. INSTALL TEMPORARY CHECK DAMS WHERE SPECIFIED AND NEEDED.
7. DURING THE COURSE OF CONSTRUCTION, MAINTAIN SILT FENCE, PERIMETER BERMS, TEMPORARY CHECK DAMS, INSTALL CURB INLET PROTECTION AND ANY ADDITIONAL PROTECTION MEASURES AS NECESSARY AND WHERE NOTED.
8. PERMANENTLY SEED AND STABILIZED ALL DISTURBED AREAS.
9. AFTER STABILIZATION IS ESTABLISHED, REMOVE ALL TEMPORARY EROSION CONTROL MEASURES. MAKE SWALE CONNECTIONS TO POND AND SEED & STABILIZE THOSE AREAS.

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EROSION & SEDIMENT CONTROL PLAN AND SEQUENCE

PROJECT: COROLLA BOAT CLUB - PHASE 1, MONTERAY SHORES PHASE 10
POPLAR BRANCH TOWNSHIP CURRITUCK COUNTY NORTH CAROLINA

CONSTRUCTION DRAWINGS

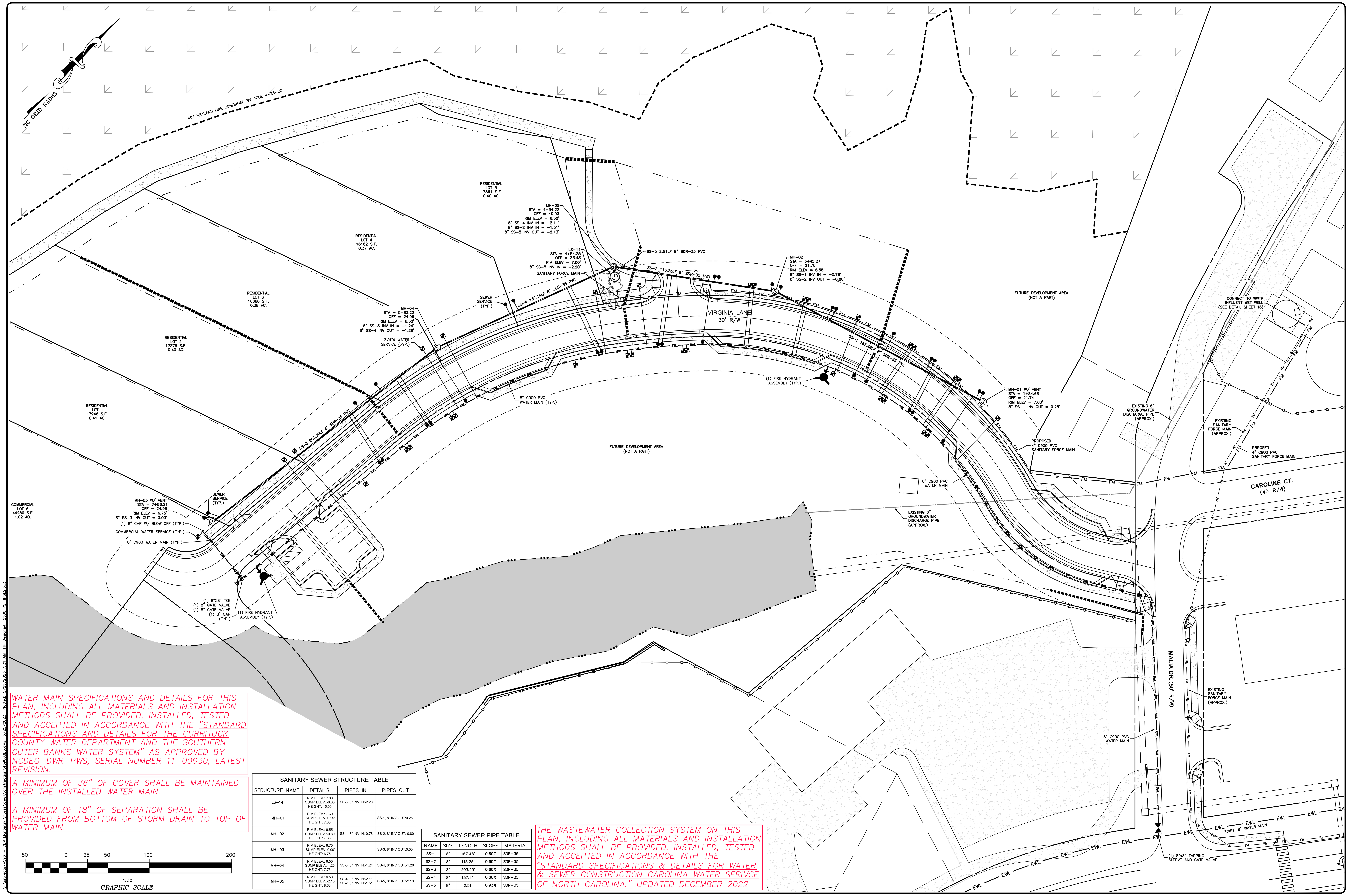
REVISIONS

NO.	DATE	DESCRIPTION	BY
1	5-24-23	ADDRESS TRC COMMENTS	DMK

NORTH CAROLINA PROFESSIONAL SEAL 042639 ENGINEER DAVID M. KLEBITZ
PRELIMINARY DO NOT USE FOR CONSTRUCTION

DATE: 2-15-23	SCALE: 1"= 40'
DESIGNED: BPG	CHECKED: MSB
DRAWN: DMK/KFW	APPROVED: BPG

SHEET: 5 OF 16
CAD FILE: 459600B3
PROJECT NO: 4596



WATER MAIN SPECIFICATIONS AND DETAILS FOR THIS PLAN, INCLUDING ALL MATERIALS AND INSTALLATION METHODS SHALL BE PROVIDED, INSTALLED, TESTED AND ACCEPTED IN ACCORDANCE WITH THE "STANDARD SPECIFICATIONS AND DETAILS FOR THE CURRITUCK COUNTY WATER DEPARTMENT AND THE SOUTHERN OUTER BANKS WATER SYSTEM" AS APPROVED BY NCDEQ-DWR-PWS, SERIAL NUMBER 11-00630, LATEST REVISION.

A MINIMUM OF 36" OF COVER SHALL BE MAINTAINED OVER THE INSTALLED WATER MAIN.

A MINIMUM OF 18" OF SEPARATION SHALL BE PROVIDED FROM BOTTOM OF STORM DRAIN TO TOP OF WATER MAIN.

SANITARY SEWER STRUCTURE TABLE

STRUCTURE NAME:	DETAILS:	PIPES IN:	PIPES OUT
LS-14	RIM ELEV.: 7.00' SUMP ELEV.:-8.00' HEIGHT: 15.00'	SS-5, 8" INV IN:-2.20	
MH-01	RIM ELEV.: 7.60' SUMP ELEV.:0.25' HEIGHT: 7.35'		SS-1, 8" INV OUT:0.25
MH-02	RIM ELEV.: 6.55' SUMP ELEV.:-0.80' HEIGHT: 7.35'	SS-1, 8" INV IN:-0.78	SS-2, 8" INV OUT:-0.80
MH-03	RIM ELEV.: 6.75' SUMP ELEV.:0.00' HEIGHT: 6.75'		SS-3, 8" INV OUT:0.00
MH-04	RIM ELEV.: 6.50' SUMP ELEV.:-1.26' HEIGHT: 7.76'	SS-3, 8" INV IN:-1.24	SS-4, 8" INV OUT:-1.26
MH-05	RIM ELEV.: 6.50' SUMP ELEV.:-2.13' HEIGHT: 8.63'	SS-4, 8" INV IN:-2.11 SS-2, 8" INV IN:-1.51	SS-5, 8" INV OUT:-2.13

SANITARY SEWER PIPE TABLE

NAME	SIZE	LENGTH	SLOPE	MATERIAL
SS-1	8"	167.48'	0.60%	SDR-35
SS-2	8"	115.25'	0.60%	SDR-35
SS-3	8"	203.29'	0.60%	SDR-35
SS-4	8"	137.14'	0.60%	SDR-35
SS-5	8"	2.51'	0.93%	SDR-35

THE WASTEWATER COLLECTION SYSTEM ON THIS PLAN, INCLUDING ALL MATERIALS AND INSTALLATION METHODS SHALL BE PROVIDED, INSTALLED, TESTED AND ACCEPTED IN ACCORDANCE WITH THE "STANDARD SPECIFICATIONS & DETAILS FOR WATER & SEWER CONSTRUCTION CAROLINA WATER SERIVCE OF NORTH CAROLINA." UPDATED DECEMBER 2022

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WATER MAIN EXTENSION AND WASTEWATER COLLECTION PLAN

PROJECT:
COROLLA BOAT CLUB - PHASE 1, (MONTERAY SHORES PHASE 10)
POPLAR BRANCH TOWNSHIP CURRITUCK COUNTY NORTH CAROLINA

CONSTRUCTION DRAWINGS

REVISIONS

NO.	DATE	DESCRIPTION	BY
1	3-13-23	GRAVITY SEWER LAYOUT & TABLES	DMK
2	3-24-23	ADD WASTEWATER SPEC NOTE	DMK
3	4-12-23	ADDRESS PWS COMMENTS	DMK
4	5-24-23	ADDRESS TRC COMMENTS	DMK

NORTH CAROLINA PROFESSIONAL SEAL 042639 ENGINEER DAVID M KLEBITZ
PRELIMINARY DO NOT USE FOR CONSTRUCTION

DATE: 2-15-23	SCALE: 1"=30'
DESIGNED: BPG	CHECKED: MSB
DRAWN: KFW/DMK	APPROVED: BPG

SHEET: 6 OF 16
CAD FILE: 459600B3
PROJECT NO: 4596

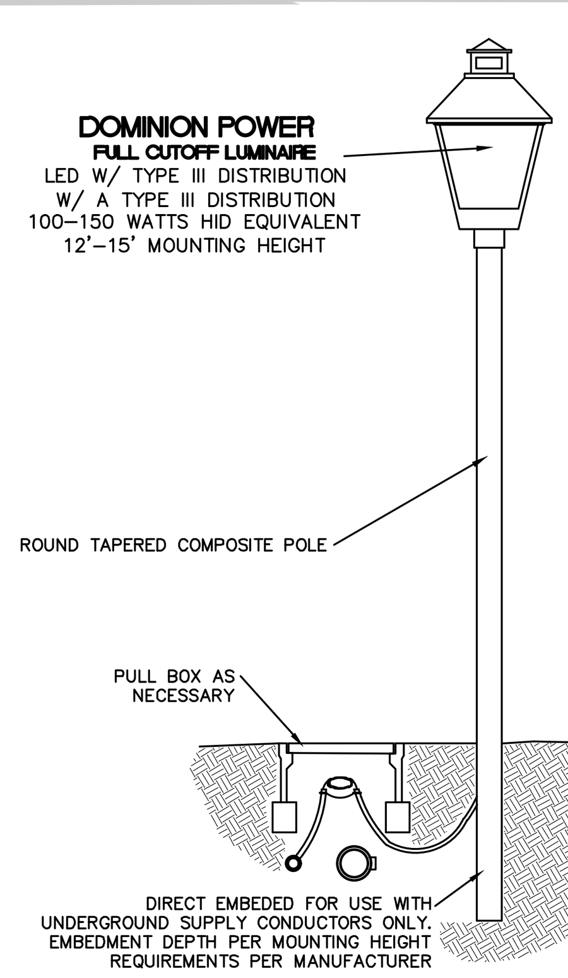
GENERAL LANDSCAPING AND BUFFERING NOTES:

1. STREET TREES:
   STREET TREES SHALL BE PROVIDED IN ACCORDANCE WITH SECTION 6.2.1.L OF THE CURRITUCK UDO.
   - TREES SHALL BE PLANTED ALONG EACH SIDE OF ROADWAYS AS GENERALLY SPECIFIED ON THE LANDSCAPE PLANS.
   - EXISTING TREES RETAINED IN THE VICINITY MAY BE CREDITED AS STREET TREES.
   - TREES SHALL BE PLANTED 35'± FROM CENTERLINE OF THE ROAD
   - TREES SHALL BE CANOPY TYPE PLANTED A MAXIMUM OF 50' O/C.
   - SEE TREE SPECIES AND PLANTING NOTE BELOW

4. OPEN SPACE VEGETATION:
   OPEN SPACE VEGETATION REQUIREMENTS ARE ACHIEVED THROUGH THE PRESERVATION OF THE EXISTING TREES ON THE PROPERTY TO THE MAXIMUM EXTENT PRACTICABLE.

5. HERITAGE TREES:
   A TOTAL OF (5) HERITAGE TREES HAVE BEEN IDENTIFIED WITHIN THE PROJECT AREA. ALL HERITAGE TREES ARE INTENDED TO REMAIN AND BE PROTECTED DURING CONSTRUCTION. (SEE "HERITAGE TREE PROTECTION FENCING" DETAIL THIS SHEET.) ANY HERITAGE TREES THAT ARE LOTS SHALL BE MITIGATED PURSUANT TO THE U.D.O.

6. TREE SPECIES AND PLANTING:
   TREES SHALL BE INSTALLED IN ACCORDANCE WITH THE PLANTING STANDARDS SPECIFIED IN SECTION 3.5 OF THE CURRITUCK COUNTY ADMINISTRATIVE MANUAL.
   - CANOPY AND UNDERSTORY TREE SPECIES SHALL BE OF THOSE LISTED UNDER "TABLE 3.4.6: RECOMMENDED PLANTINGS" IN THE SAME MANUAL.
   - TREE SPECIES SHALL BE DIVERSE. A MINIMUM OF (4) DIFFERENT SPECIES OF CANOPY TREES SHALL BE INSTALLED IN ROUGHLY EQUAL PROPORTIONS.
   - AT INSTALLATION, CANOPY TREES SHALL HAVE A MINIMUM CALIPER OF 2 INCHES MEASURED AT 6 INCHES. ABOVE GRADE. EIGHT FOOT HIGH TREES MAY BE PLANTED AS AN ALTERNATIVE.
   - MATERIALS SHALL BE OF HIGH-QUALITY NURSERY GRADE
   - THE USE OF NATIVE, DROUGHT TOLERANT TREES IS ENCOURAGED.
   - A REPUTABLE LANDSCAPE CONTRACTOR OR SUPPLIER SHALL PREPARE AN ITEMIZED SCHEDULE OF TREES TO BE INSTALLED IN ACCORDANCE WITH THIS LANDSCAPE PLAN. THIS SCHEDULE SHALL BE REVIEWED BY CURRITUCK COUNTY AND THE ENGINEER TO DETERMINE COMPLIANCE BEFORE ORDERING AND INSTALLATION. ALTERNATE TREES AND SPECIFICATIONS MAY BE PRESENTED FOR REVIEW AND APPROVAL.



TYP. STREET LIGHT DETAIL

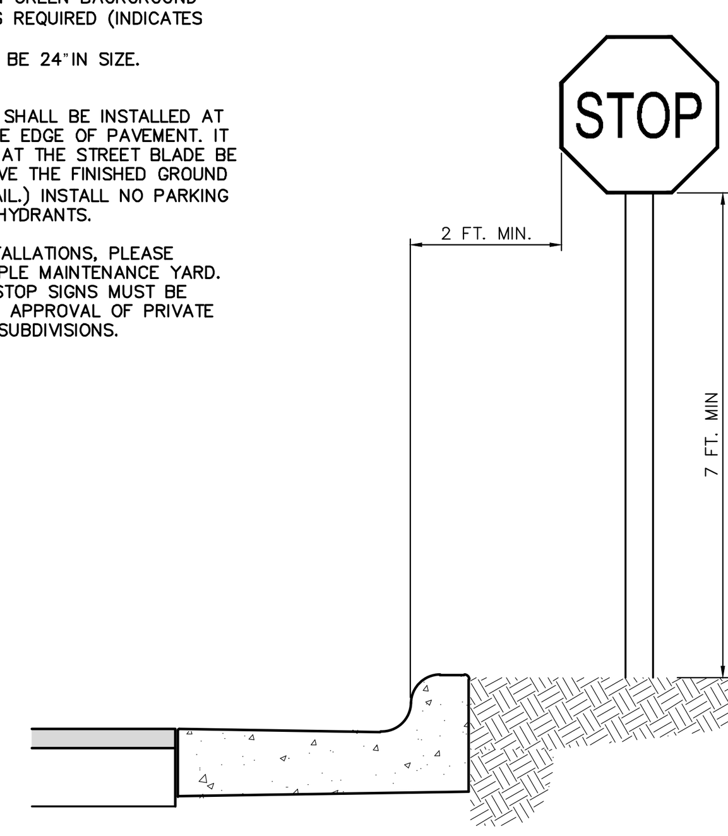
NOT TO SCALE   LOCATION AS NOTED ON PLAN

STREET SIGN ORDERING INFORMATION / NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

SIGN SPECIFICATIONS:
9" WIDE EXTRUDED ALUMINUM BLADE
5" WHITE LETTERS ON GREEN BACKGROUND
PVT DESIGNATION AS REQUIRED (INDICATES "PRIVATE")
STOP SIGNS ARE TO BE 24" IN SIZE.

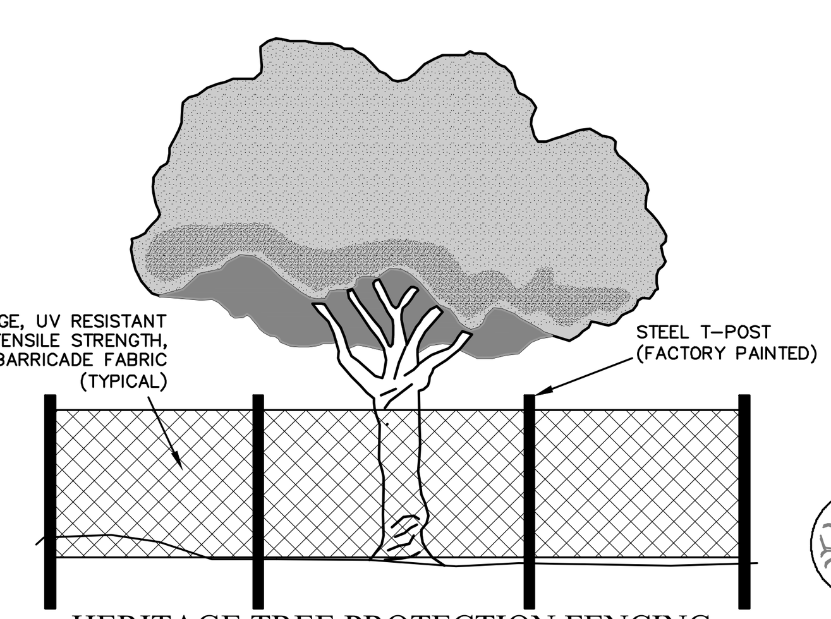
INSTALLATION:
STREET SIGN POSTS SHALL BE INSTALLED AT LEAST 2 FT. OFF THE EDGE OF PAVEMENT. IT IS RECOMMENDED THAT THE STREET BLADE BE LOCATED 7'-8' ABOVE THE FINISHED GROUND SURFACE. (SEE DETAIL.) INSTALL NO PARKING SIGNS AT ALL FIRE HYDRANTS.

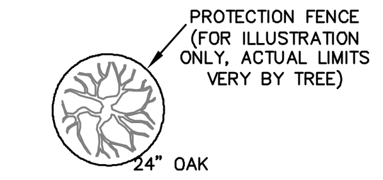
FOR STOP SIGN INSTALLATIONS, PLEASE CONTACT NCDOT MAPLE MAINTENANCE YARD. STREET NAME AND STOP SIGNS MUST BE INSTALLED PRIOR TO APPROVAL OF PRIVATE ACCESS AND FINAL SUBDIVISIONS.



NOT TO SCALE

ROAD SIGN INSTALLATION





EXISTING HERITAGE TREE TO BE RETAINED AND PROTECTED

HERITAGE TREE PROTECTION FENCING (SAFETY FENCE DETAIL)

PROTECTIVE FENCING:
ORANGE VINYL CONSTRUCTION FENCING, CHAIN LINK FENCING, SNOW FENCING OR OTHER SIMILAR FENCING AT LEAST FOUR FEET (4') HIGH AND SUPPORTED AT A MAXIMUM OF TEN-FOOT (10') INTERVALS BY APPROVED METHODS SUFFICIENT ENOUGH TO KEEP THE FENCE UPRIGHT AND IN PLACE. THE FENCING SHALL BE OF A HIGHLY VISIBLE MATERIAL THAT IS CLEARLY VISIBLE TO THE WORKERS ON-SITE.
PRIOR TO CONSTRUCTION:
THE CONTRACTOR OR SUBCONTRACTOR SHALL CONSTRUCT AND MAINTAIN, FOR EACH PROTECTED HERITAGE TREE AS IDENTIFIED ON THE PLAN, A PROTECTIVE FENCING WHICH ENCIRCLES THE OUTER LIMITS OF THE AREA AND/OR CRITICAL ROOT ZONE OF TREES, TO PROTECT THEM FROM CONSTRUCTION ACTIVITY. ALL PROTECTIVE FENCING SHALL BE IN PLACE PRIOR TO COMMENCEMENT OF ANY SITE WORK AND REMAIN IN PLACE UNTIL ALL EXTERIOR WORK HAS BEEN COMPLETED.

SIDEWALK AND WALKING TRAIL NOTE:
ALL SIDEWALKS AND WALKING TRAILS SHALL BE CONSTRUCTED IN ACCORDANCE WITH CURRENT ACCESSIBILITY CODE. WALKS, TRAILS AND PATHS SHALL BE HARD SURFACE WITH CROSS SLOPES NOT EXCEEDING 2% AND LONGITUDINAL SLOPES NOT EXCEEDING 20:1. WALKWAYS LESS THAN 5' IN WIDTH SHALL PROVIDE A 5' WIDE PASSING ZONE EVERY 200'.

50 0 25 50 100 200
1"=40'
GRAPHIC SCALE

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LANDSCAPING, LIGHTING & SIGNAGE PLAN

PROJECT:
COROLLA BOAT CLUB - PHASE 1, MONTERAY SHORES PHASE 10
POPLAR BRANCH TOWNSHIP   CURRITUCK COUNTY   NORTH CAROLINA

CONSTRUCTION DRAWINGS

REVISIONS

NO.	DATE	DESCRIPTION	BY
1	5-24-23	ADDRESS TRC COMMENTS	DMK

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 042639 DAVID M. KLEBITZ
PRELIMINARY DO NOT USE FOR CONSTRUCTION

DATE: 2-15-23	SCALE: 1"= 40'
DESIGNED: BPG	CHECKED: MSB
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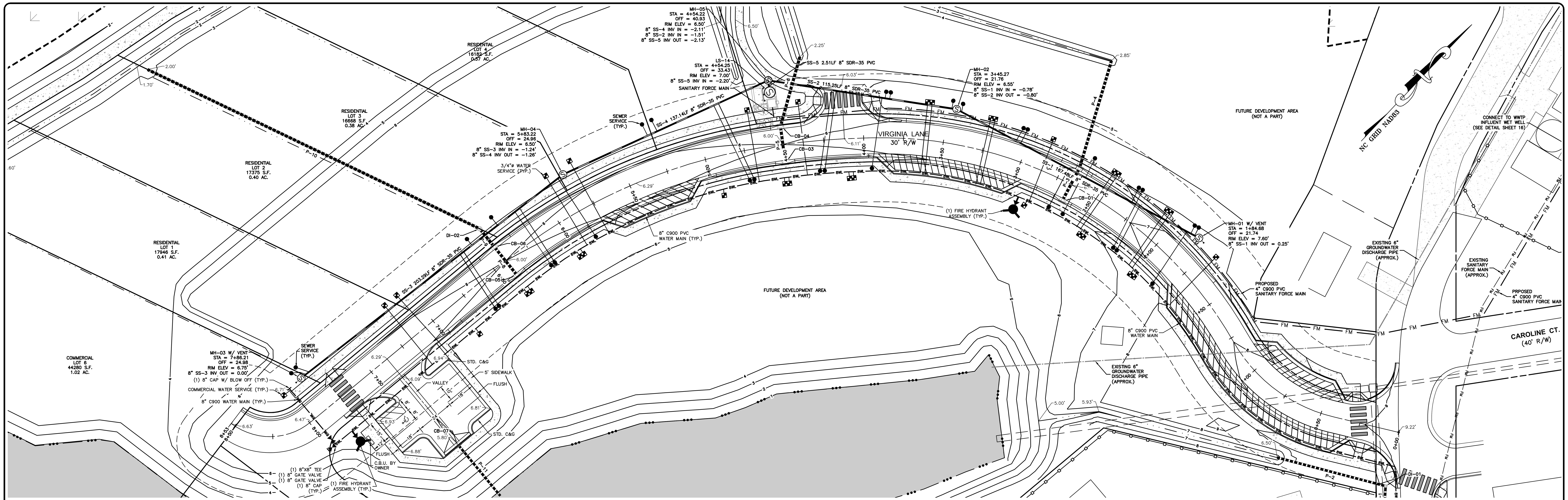
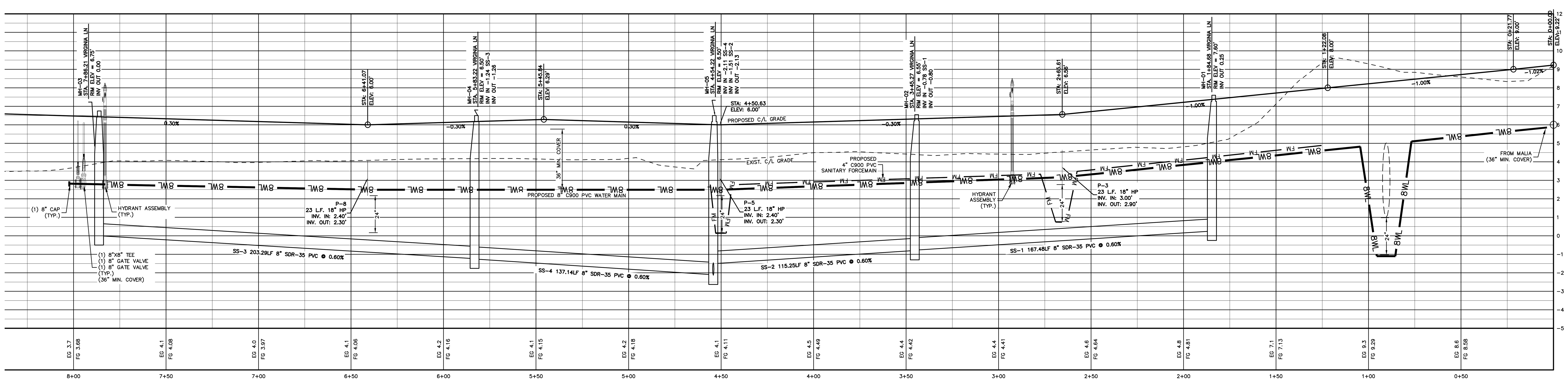
SHEET: 7 OF 16
CAD FILE: 459600B3
PROJECT NO: 4596



ALIGNMENT: VIRGINIA LANE (STA 0+00 - 8+31)
SCALE: HOR.: 1"=30' (PLAN VIEW)

GRAPHIC SCALE 1:30



ALIGNMENT: VIRGINIA LANE (STA 0+00 - 8+31)
SCALE: HOR.: 1"=30', VERT.: 1"=3' (PROFILE VIEW)

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VIRGINIA LANE (0+00 - 8+31)
PLAN & PROFILE

PROJECT:
COROLLA BOAT CLUB - PHASE 1, MONTERAY SHORES PHASE 10
POPLAR BRANCH TOWNSHIP CURRITUCK COUNTY NORTH CAROLINA

CONSTRUCTION DRAWINGS

REVISIONS

NO.	DATE	DESCRIPTION	BY
1	3-10-23	GRAVITY SEWER LAYOUT	DMK
2	3-24-23	LABEL SEWER FM	DMK
3	4-12-23	ADDRESS PWS COMMENTS	DMK
4	5-24-23	ADDRESS TRC COMMENTS	DMK

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 042639 DAVID ...
PRELIMINARY DO NOT USE FOR CONSTRUCTION

DATE: 2-15-23	SCALE: 1"=30'
DESIGNED: BPG	CHECKED: MSB
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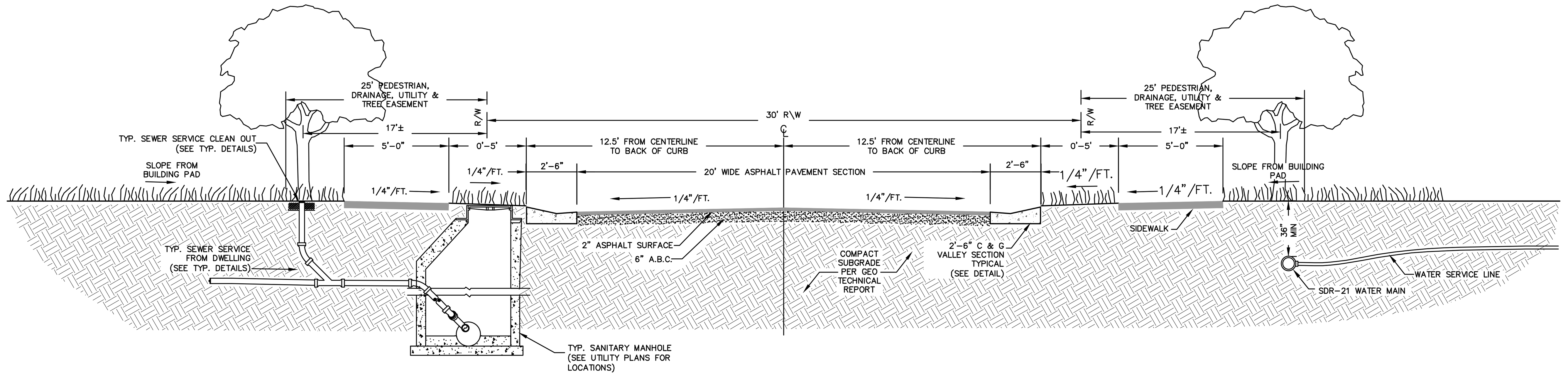
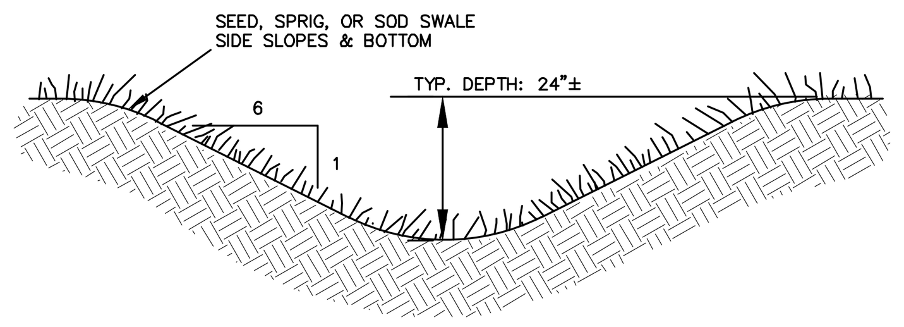
SHEET: 8 OF 16

CAD FILE: 459600B3

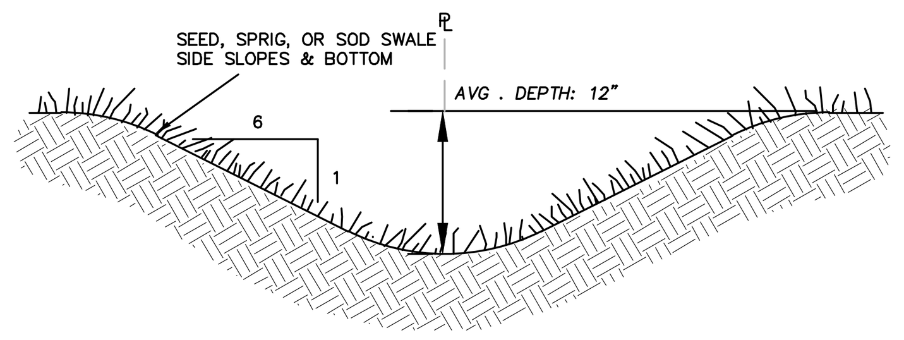
PROJECT NO: 4596



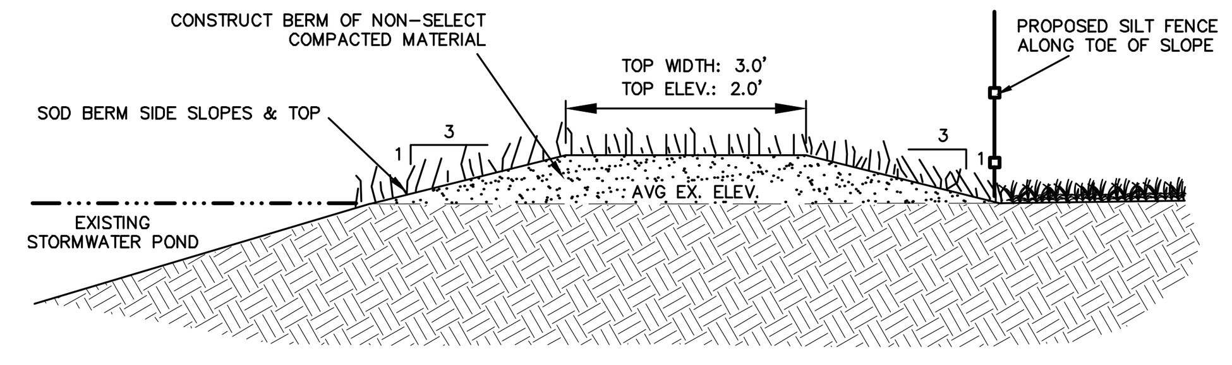
TYPICAL SUBDIVISION ROADWAY SECTION W/ UTILITIES
NOT TO SCALE SECTION VIEW



TYPICAL PRIMARY SWALE SECTION
NOT TO SCALE SLOPE PER INVERTS ON PLAN

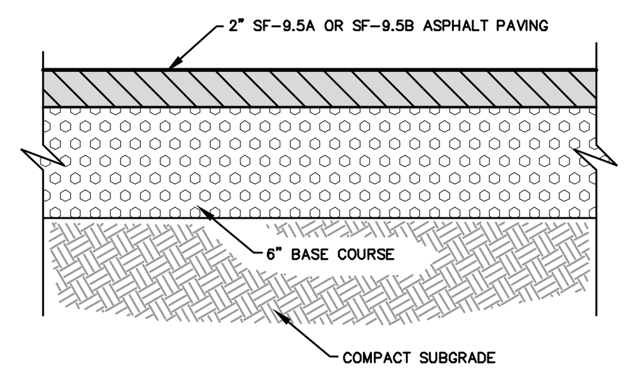


TYPICAL PROPERTY LINE SWALE
NOT TO SCALE SECTION VIEW



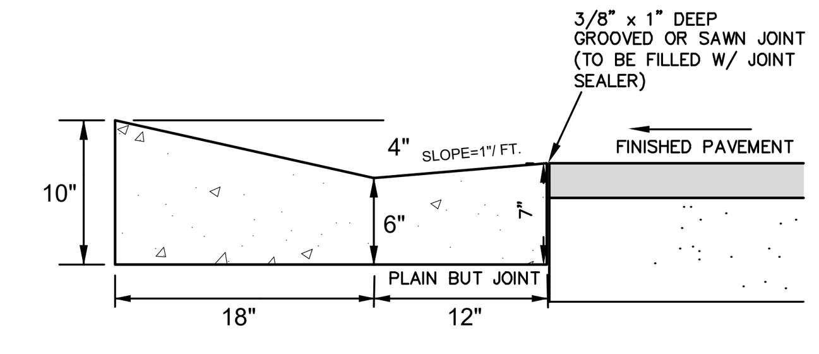
TYPICAL EARTHEN BERM SECTION
NOT TO SCALE LOCATION PER PLAN

EROSION CONTROL NOTE:
PERMANENTLY STABILIZED WITHIN 7 DAYS OF COMPLETION.

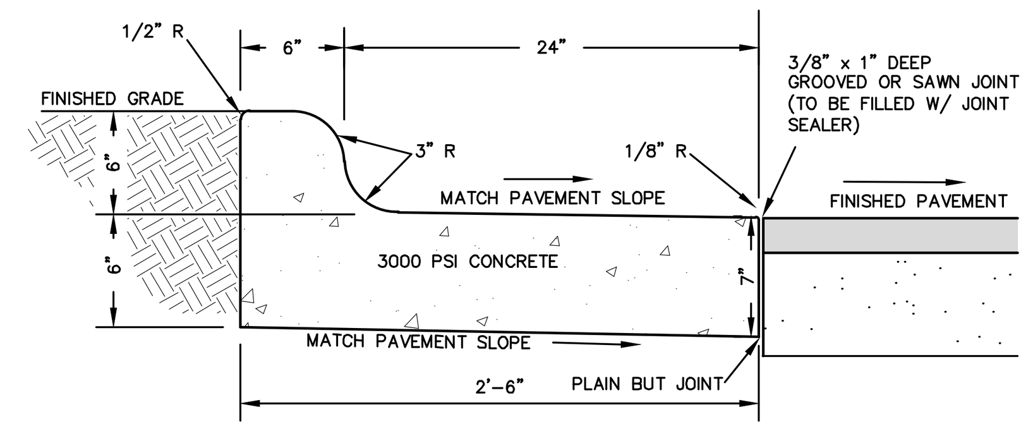


TYPICAL RESIDENTIAL ROADWAY PAVEMENT SECTION
NOT TO SCALE

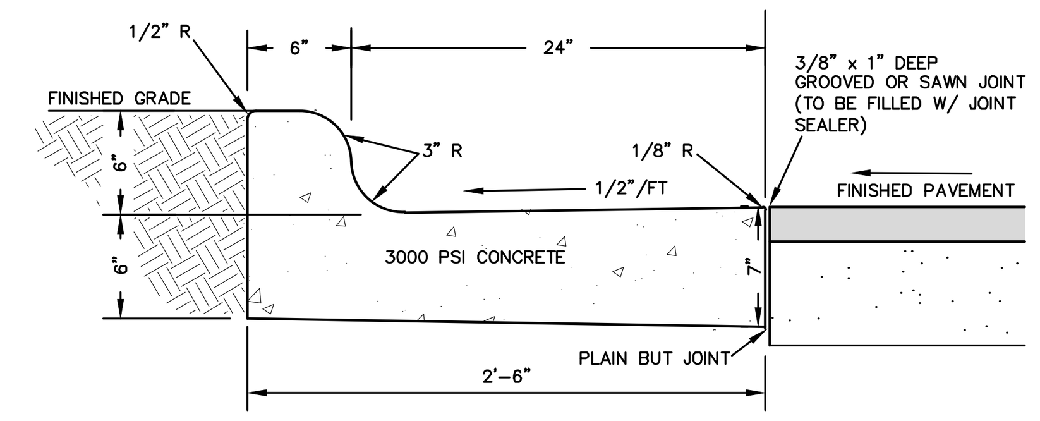
NOTE:
PAVING SHALL CONSIST OF FINE GRADING THE SPECIFIED PARKING & DRIVE AREAS AND INSTALLING 2" SF-9.5A OR SF-9.5B ASPHALT CONCRETE SURFACE COURSE IN CONJUNCTION WITH A 6" AGGREGATE BASE COURSE. THE SOIL SUBGRADE BENEATH PAVEMENTS SHALL BE COMPACTED TO AT LEAST 95% OF ASTM D 698 PRIOR TO ANY PLACEMENT OF SUBBASE FILL OR STONE BASE COURSE. ALL SITE PREPARATION AND THE DESIGN AND CONSTRUCTION OF ALL FOUNDATIONS, GROUND SLABS, AND PAVEMENTS SHALL BE IN ACCORDANCE WITH RECOMMENDATIONS PROVIDED BY A GEOTECHNICAL ENGINEER.



CURB & GUTTER VALLEY SECTION
NOT TO SCALE

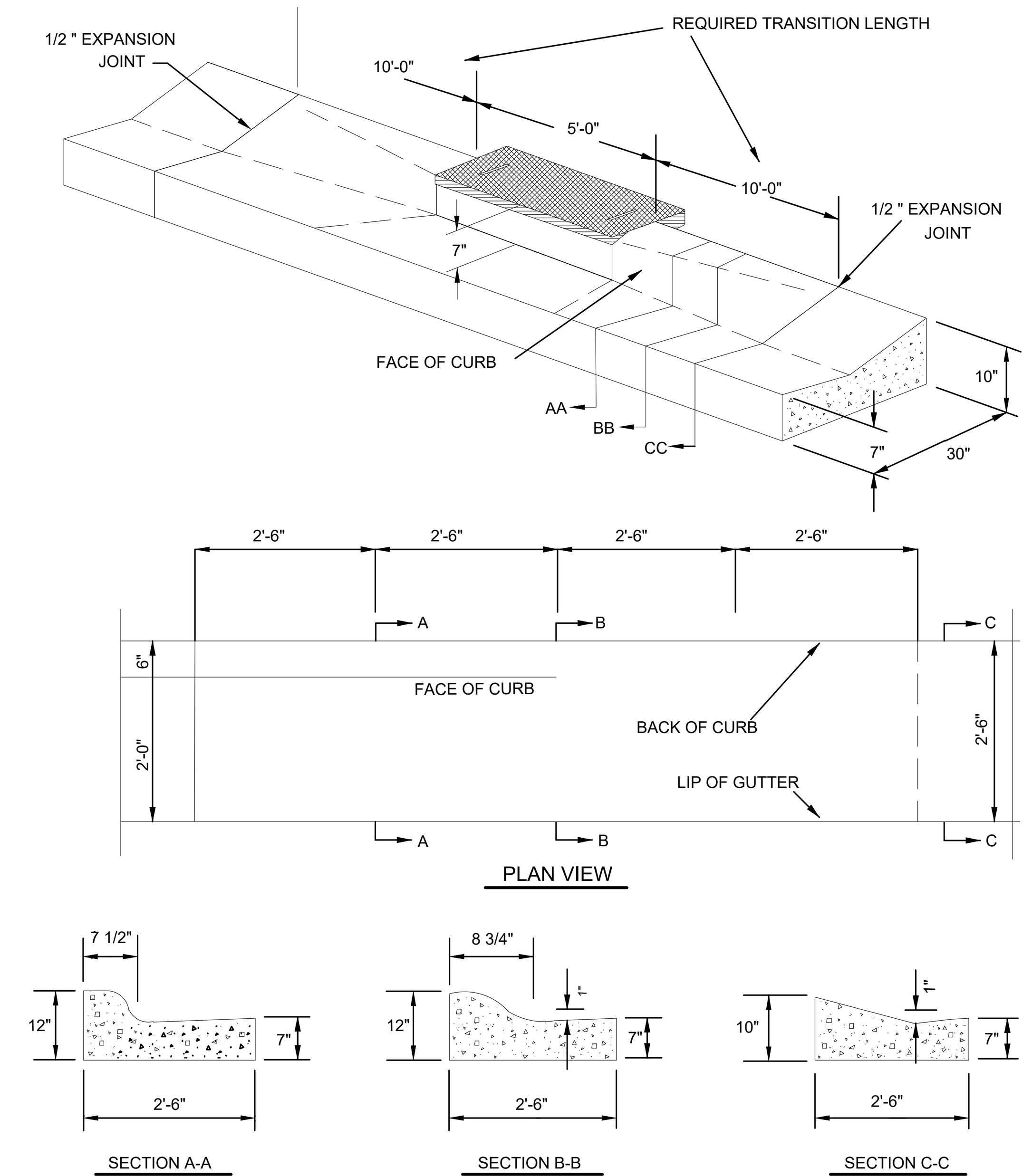


CURB & GUTTER DUMP SECTION
NOT TO SCALE NCDOT STD 846.01

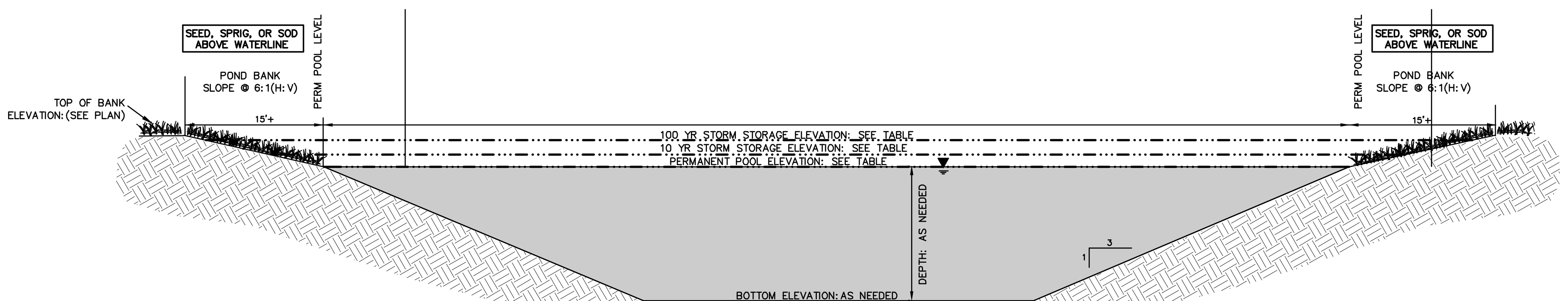


CURB & GUTTER COLLECTION SECTION
NOT TO SCALE NCDOT STD 846.01

GENERAL CURB & GUTTER NOTES:
1. 1/2" X 1-1/2" DEEP CONTRACTION JOINTS SHALL BE PLACED AT 10' INTERVALS, EXCEPT THAT A 15' SPACING MAY BE USED WHEN A MACHINE IS USED OR WHEN SATISFACTORY SUPPORT FOR THE FACE FORM CAN BE OBTAINED WITHOUT THE USE OF TEMPLATES AT 10' INTERVALS.
2. 1/2" EXPANSION JOINTS SHALL BE PLACED AT 90' INTERVALS AND ADJACENT TO ALL RIGID OBJECTS.
3. JOINT SPACING MAY BE ALTERED IF REQUIRED BY ENGINEER.
4. CONTRACTION JOINTS MAY BE INSTALLED WITH THE USE OF TEMPLATES OR FORMED BY OTHER APPROVED METHODS. CONSTRUCT NON-TEMPLATE FORMED JOINTS A MIN. OF 1-1/2" DEEP.
5. FILL ALL JOINTS, EXCEPT IN 8"X6" MEDIAN CURB, WITH JOINT FILLER AND SEALER.



CURB & GUTTER TRANSITION SECTION

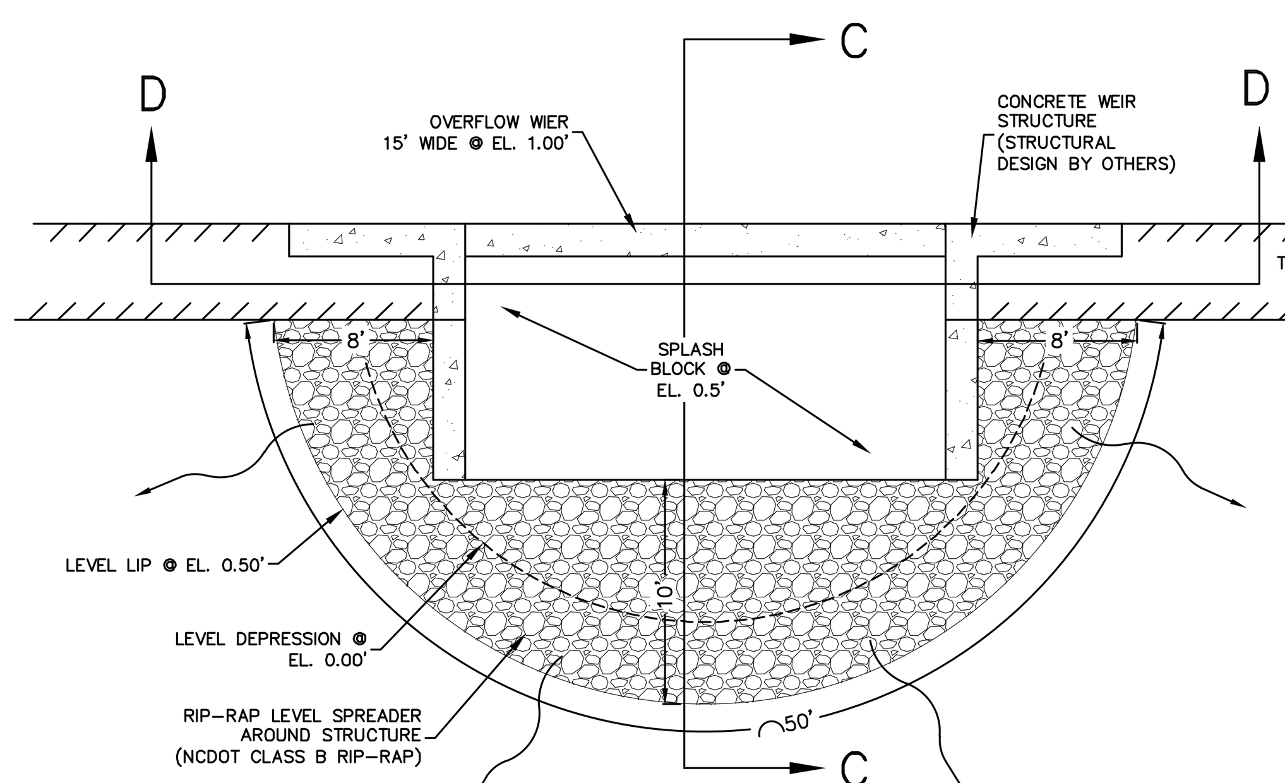


STORMWATER MANAGEMENT POND 1
TYPICAL CROSS SECTION
NOT TO SCALE

STORMWATER POND	TOP ELEV (FMSL)	100YR STORM STAGE (FMSL)	10YR STORM STAGE (FMSL)	PERM. POOL ELEV. (FMSL)	BOTTOM POND ELEV. (FMSL)	DEPTH (FT)	SIDE SLOPE ABOVE NWL	SIDE SLOPE BELOW NWL
1	SEE PLAN	4.11±	1.92±	1.00	AS NEEDED	AS NEEDED	6:1	EXISTING

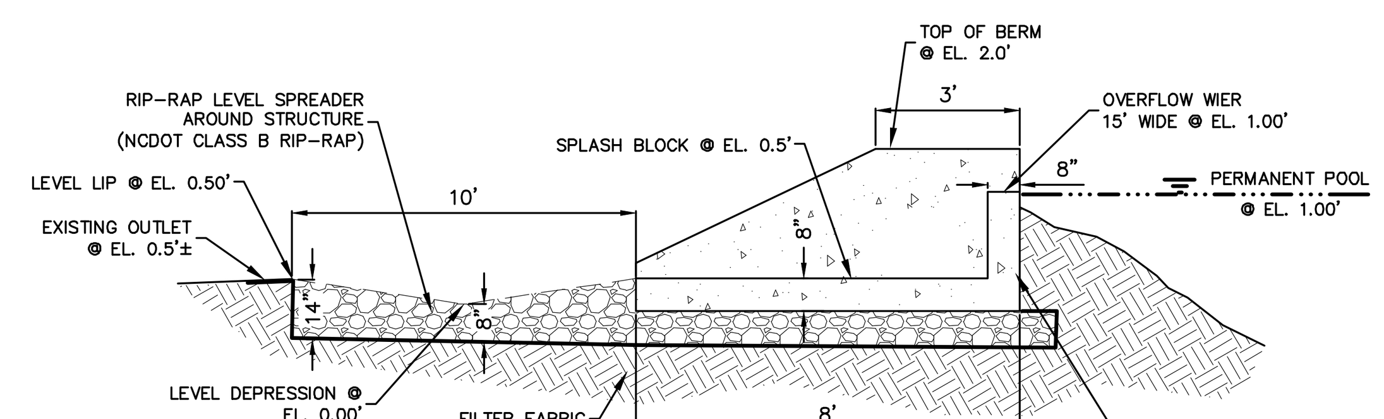
POND TABLE

BMP CONSTRUCTION SEQUENCE NOTES:
THE FOLLOWING SEQUENCE IS IN ADDITION TO THE **"CONSTRUCTION SEQUENCE SCHEDULE"** PROVIDED UNDER THE EROSION AND SEDIMENT CONTROL SPECIFICATIONS.
1. THE EXISTING POND SHALL BE MODIFIED AS DIRECTED ON THE PLAN AND DETAILS. PERIMETER SLOPES SHALL BE STABILIZED WITH TEMPORARY VEGETATION WITHIN 7 DAYS OF CONSTRUCTION. THIS WILL CREATE A TEMPORARY SEDIMENT BARRIER DURING PROJECT CONSTRUCTION. A GOOD TEMPORARY MEANS OF STABILIZATION IS A WET HYDROSEED MIX.
2. THE POND MAY BE EXCAVATED DEEPER TO OBTAIN SUITABLE MATERIALS FOR CONSTRUCTION OF THE PROJECT. UNSUITABLE MATERIALS MAY BE PLACED BACK INTO THE POND.
3. DURING CONSTRUCTION, THE POND WILL BE UTILIZED AS AN EROSION & SEDIMENT CONTROL SEDIMENT BASIN. ONCE CONSTRUCTION IS COMPLETE AND THE SITE IS PROPERLY STABILIZED THE POND SHALL BE CLEANED AND RESTORED TO ITS DESIGN SPECIFICATIONS AND THE BANKS PERMANENTLY STABILIZED **WITHIN 7 DAYS.**

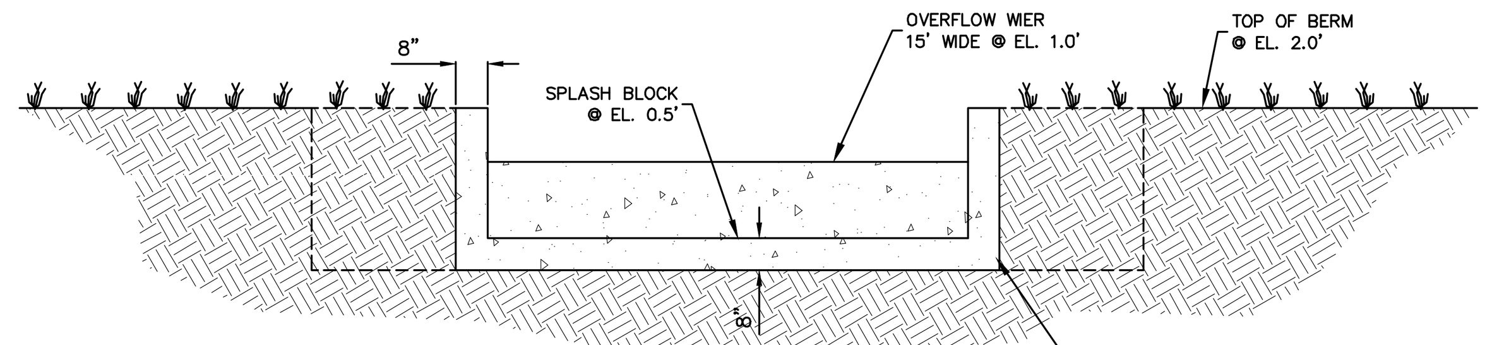


TOP VIEW

THE CONTRACTOR SHALL CONFIRM ALL STRUCTURE DIMENSIONS AND COORDINATE WITH MANUFACTURER BEFORE FABRICATION



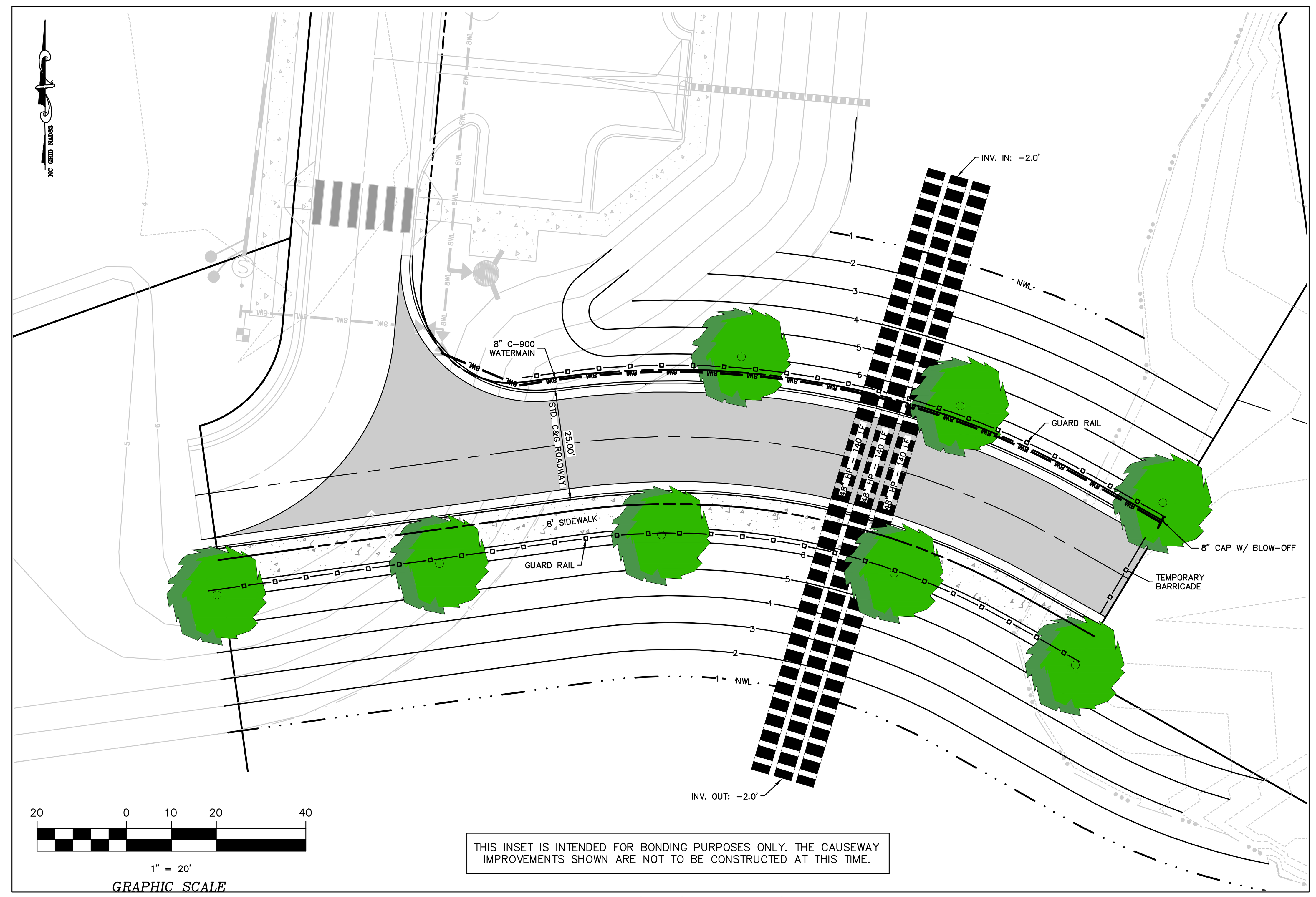
SECTION C-C



SECTION D-D

OUTLET STRUCTURE NOTES:
1. STRUCTURE DESIGN SPECIFICATIONS SHALL CONFORM TO LATEST ASTM C913 SPECIFICATIONS FOR "PRECAST CONCRETE WATER & WASTEWATER STRUCTURES.
2. CONCRETE COMPRESSIVE STRENGTH SHALL BE A MINIMUM OF 3,000PSI.
3. STEEL REINFORCING DESIGN TO CONFORM TO THE REQUIREMENTS OF ASTM C890 SPECIFICATIONS FOR "STRUCTURAL DESIGN LOADING FOR WATER & WASTEWATER STRUCTURES" AND SHALL UTILIZE GRADE 60 RE-BARS CONFORMING TO THE REQUIREMENTS OF ASTM A615 OR WWF CONFORMING TO THE REQUIREMENTS OF ASTM A185 OR BOTH.
4. PIPE PENETRATION TO BE AS SPECIFIED. PIPE TO BE INSTALLED AS PER NCDOT STANDARDS FOR MORTAR JOINT CONNECTIONS.
5. JOINTS TO BE SEALED WITH BUTYL RUBBER JOINT SEALANT CONFORMING TO THE REQUIREMENTS OF ASTM C990, OR MORTAR AS PER NCDOT REQUIREMENTS OR BOTH.
6. ANY DEVIATIONS FROM THE APPROVED PLAN & SPECIFICATIONS SHALL BE APPROVED BY THE ENGINEER PRIOR TO CONSTRUCTION.

OUTLET CONTROL STRUCTURE DETAIL
N.T.S.



FUTURE CAUSEWAY INSET

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BISSELL PROFESSIONAL GROUP
Engineers, Planners, Surveyors and Environmental Specialists

ROADWAY, DRAINAGE & MISC.
CONSTRUCTION DETAILS

PROJECT:
COROLLA BOAT CLUB - PHASE 1, MONTERAY SHORES PHASE 10
POPLAR BRANCH TOWNSHIP CURRITUCK COUNTY NORTH CAROLINA

CONSTRUCTION DRAWINGS

REVISIONS

NO.	DATE	DESCRIPTION	BY
1	5-24-23	ADDRESS TRC COMMENTS	DMK

PRELIMINARY DO NOT USE FOR CONSTRUCTION
NORTH CAROLINA PROFESSIONAL SEAL 042639 ENGINEER DAVID M. KLEIN

DATE: 2-15-23	SCALE: AS NOTED
DESIGNED: BPG	CHECKED: MSB
DRAWN: KFW/DMK	APPROVED: BPG

SHEET: 9 OF 16
CAD FILE: 459600B3
PROJECT NO: 4596

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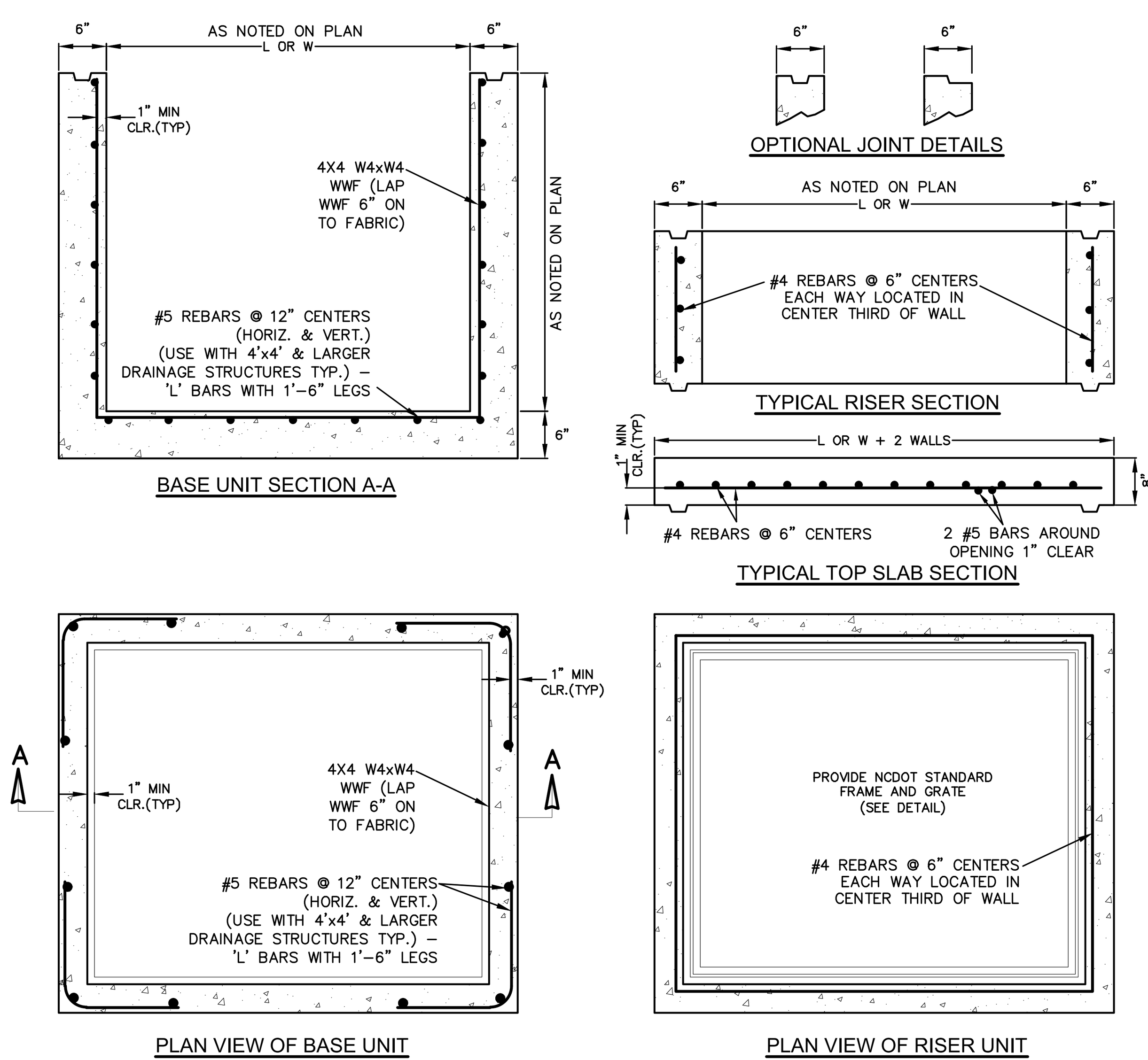


PLAN VIEW OF BASE UNIT

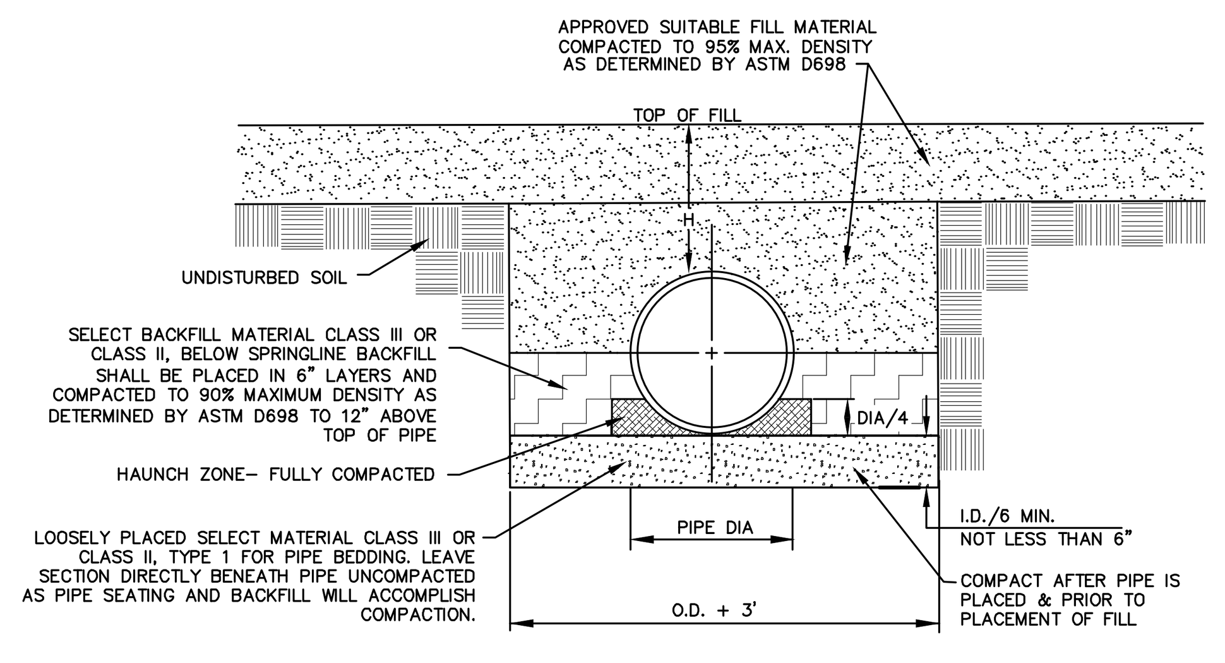
PLAN VIEW OF RISER UNIT

PRECAST DRAINAGE STRUCTURE GENERAL NOTES

1. DESIGN SHALL CONFORM TO LATEST NCDOT 840.46 SPECIFICATIONS FOR "TRAFFIC BEARING PRECAST DRAINAGE STRUCTURE".
2. CONCRETE COMPRESSIVE STRENGTH SHALL BE A MINIMUM OF 4,000PSI.
3. USE ASTM A615 GRADE 60 REINFORCING STEEL. USE ASTM A185 WELDED WIRE FABRIC WWF.
4. LIMIT MAXIMUM DEPTH TO TOP OF BOTTOM SLAB TO 15'
5. PLACE LIFT HOLES OR PINS IN ACCORDANCE WITH OSHA STANDARD 1926.704
6. ORIENT STRUCTURES SO THAT CORNERS WILL NOT BE CUT OR MODIFIED UNLESS ALLOWED BY DETAIL
7. PRECAST ALL ELEMENTS TO MEET ASTM C913
8. FRAME AND GRADE HEIGHT MAY BE ADJUSTED IN ACCORDANCE WITH STANDARD 840.25
9. PROVIDE PRECAST STRUCTURES OVER 4'-0" IN DEPTH WITH STEPS 12" ON CENTERS PER 840.66
10. WELDED WIRE FABRIC MAY BE SUBSTITUTED FOR REBAR IF THE SAME MIN. AREA OF STEEL IS PROVIDED.
11. SEAL JOINTS WITH AN APPROVED SEALANT (SECTION 840 OF NCDOT STANDARD SPECIFICATIONS)
12. LIMIT MAXIMUM STRUCTURE SIZES INSIDE CLEAR DIMENSIONS TO 6'-" X 6'-0"
13. THE OUTSIDE PIPE DIAMETER PLUS 2" IS MINIMUM STRUCTURE SIZE OR THE OPENING REQUIRED FOR FRAME AND GRATE, WHICHEVER IS GREATER.
14. ANY DEVIATIONS FROM THE APPROVED PLAN & SPECIFICATIONS SHALL BE APPROVED BY THE ENGINEER PRIOR TO CONSTRUCTION.

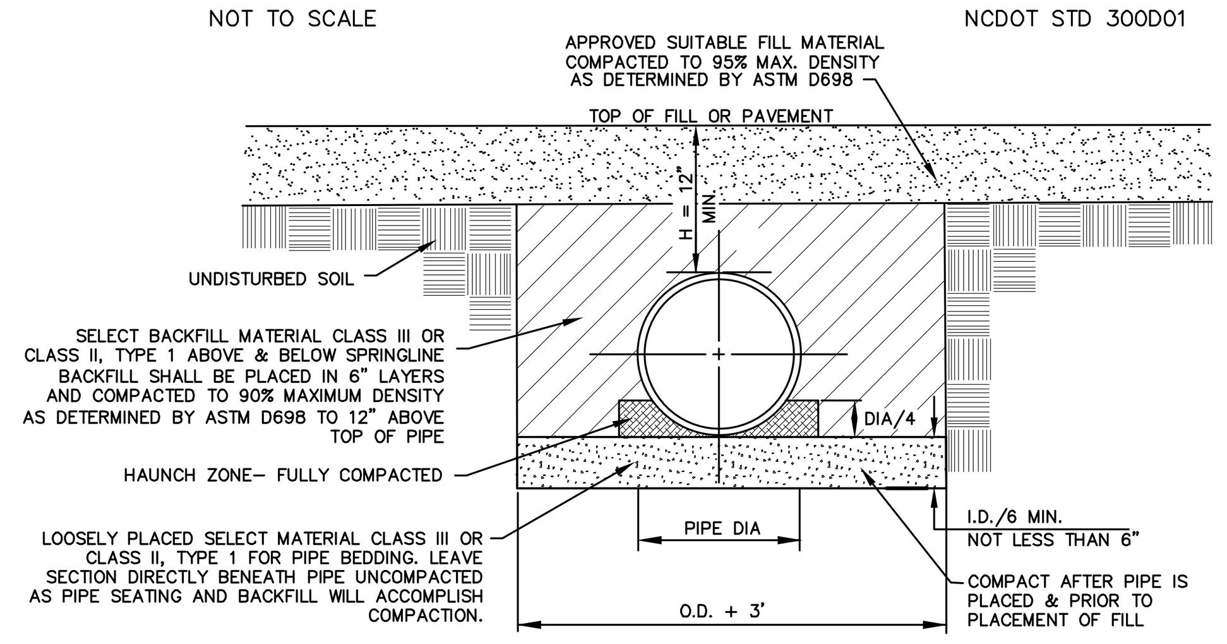
STANDARD TRAFFIC BEARING PRECAST DRAINAGE STRUCTURE

NOT TO SCALE — NCDOT STD 840.46



STANDARD RIGID PIPE INSTALLATION DETAIL

NOT TO SCALE — NCDOT STD 300D01



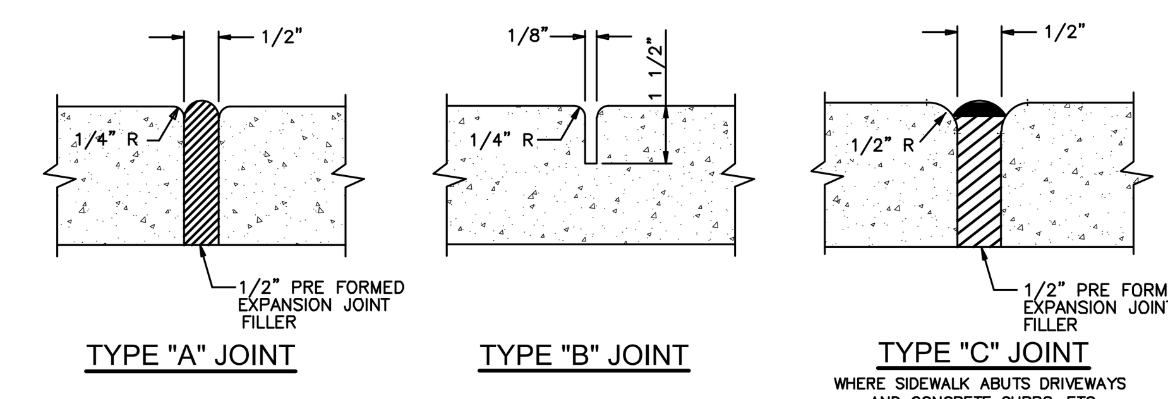
STANDARD FLEXIBLE PIPE INSTALLATION DETAIL

NOT TO SCALE — NCDOT STD 300D01

(ALL PROPOSED H.D.P.E. PIPING SHALL BE DOUBLE WALL, ADS N-12 TYPE OR APPROVED EQUAL)

GENERAL PIPE INSTALLATION NOTES:

1. ALL EXCAVATIONS SHALL COMPLY WITH THE TERMS AND CONDITIONS OF THE CONSTRUCTION STANDARDS FOR EXCAVATIONS IN OSHA "SAFETY AND HEALTH REGULATIONS FOR CONSTRUCTION", CHAPTER XV11 OF TITLE 29, CFR, PART 1926. THE CONTRACTOR SHALL HAVE A COMPETENT PERSON ON THE JOB AT ALL TIMES AND SHALL EMPLOY A PROFESSIONAL ENGINEER TO ACT UPON ALL PERTINENT MATTERS OF THE WORK.
2. DO NOT OPERATE HEAVY EQUIPMENT OVER ANY PIPE CULVERT UNTIL THE PIPE CULVERT HAS BEEN PROPERLY BACKFILLED AND COVERED WITH AT LEAST 3 FEET OF APPROVED MATERIAL.
3. THE PIPE CULVERT INSTALLATION SHALL BE INSTALLED IN ACCORDANCE WITH NCDOT TYPICAL STANDARD DETAIL 300D01.
   I.D. = THE MAXIMUM HORIZONTAL INSIDE DIAMETER DIMENSION.
   O.D. = THE MAXIMUM HORIZONTAL OUTSIDE DIAMETER DIMENSION.
   H = THE FILL HEIGHT MEASURED VERTICALLY AT ANY POINT ALONG THE PIPE FROM THE TOP OF THE PIPE TO THE TOP OF THE EMBANKMENT OR THE BOTTOM OF THE PAVEMENT STRUCTURE AT THAT POINT.



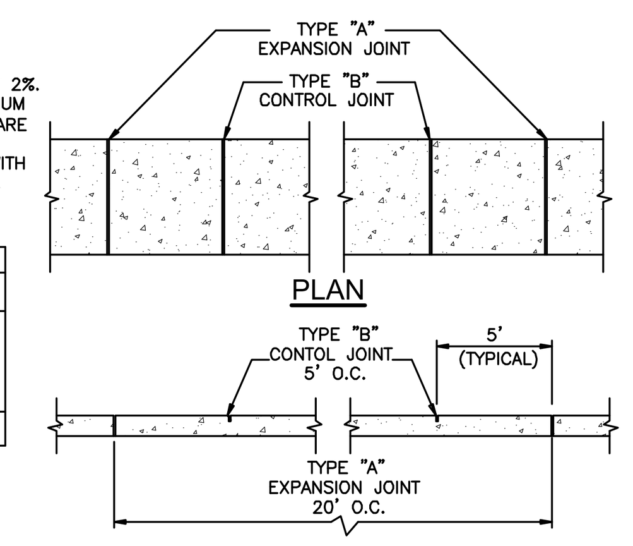
TYPE "A" JOINT — TYPE "B" JOINT — TYPE "C" JOINT

SIDEWALK AND WALKING TRAIL NOTES:

1. WALKS SHALL HAVE A 4 INCH MINIMUM THICKNESS.
2. CONCRETE SHALL BE A MINIMUM OF 3,000 PSI.
3. WALKS SHALL HAVE A 5 FOOT MINIMUM WIDTH.
4. CROSS SLOPE SHALL BE LIMITED TO A MAXIMUM OF 2%.
5. LONGITUDINAL SLOPE SHALL BE LIMITED TO A MAXIMUM OF 1:20 (V:H) EXCEPT WHERE ACCESIBILTY RAMPS ARE PROVIDED AS NOTED.
6. ALL SIDEWALKS AND TRAILS SHALL BE COMPLIANT WITH THE LATEST HANDICAP ACCESSIBILITY REQUIREMENTS.

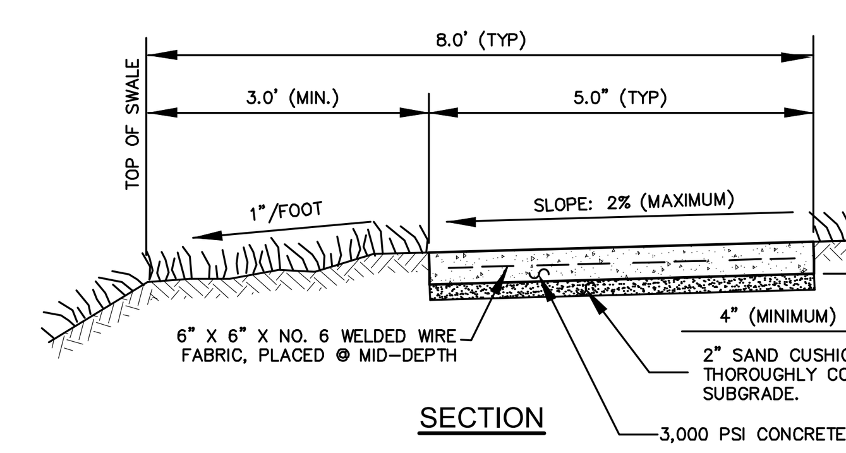
TABLE OF SIDEWALK JOINTS

TYPE	LOCATION
"A"	20' CENTER TO CENTER ON SIDEWALKS, P.C. AND P.T. OF CURVES. JUNCTION OF EXISTING AND NEW SIDEWALKS, DRIVEWAYS, AND SIMILAR STRUCTURES.
"B"	5' CENTER TO CENTER ON SIDEWALKS.



PLAN

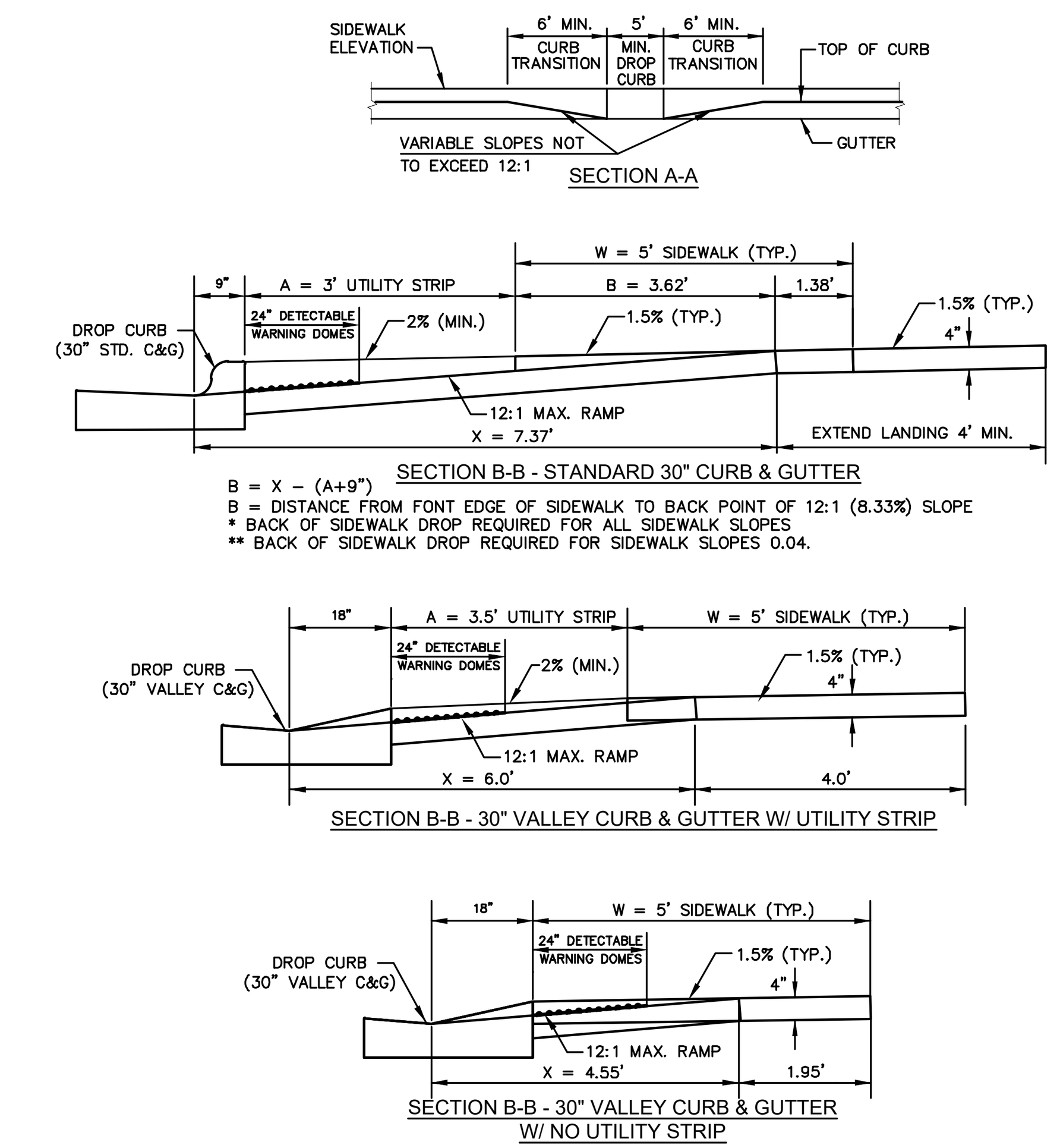
ELEVATION



SECTION

TYP. CONCRETE SIDEWALK DETAIL

NOT TO SCALE



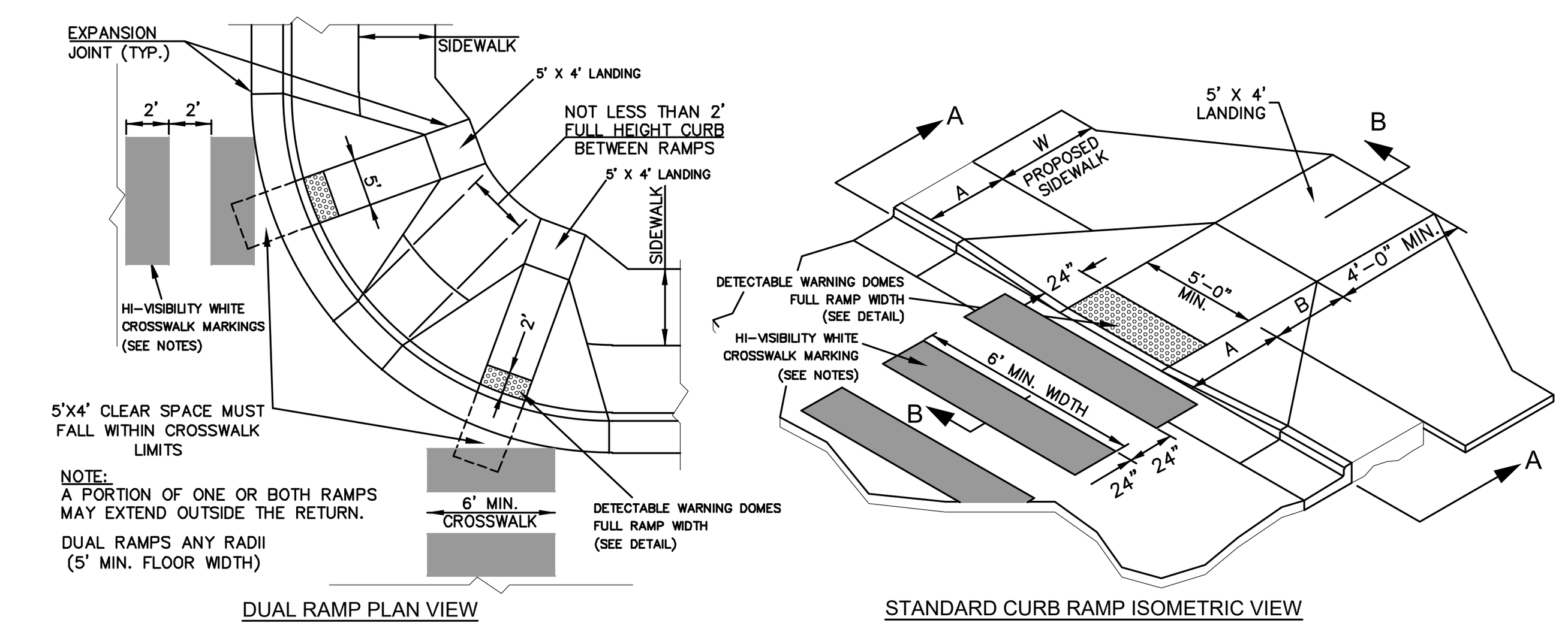
SECTION A-A

SECTION B-B - STANDARD 30" CURB & GUTTER

B = X - (A+9")
B = DISTANCE FROM FONT EDGE OF SIDEWALK TO BACK POINT OF 12:1 (8.33%) SLOPE
* BACK OF SIDEWALK DROP REQUIRED FOR ALL SIDEWALK SLOPES
** BACK OF SIDEWALK DROP REQUIRED FOR SIDEWALK SLOPES 0.04.

SECTION B-B - 30" VALLEY CURB & GUTTER W/ UTILITY STRIP

SECTION B-B - 30" VALLEY CURB & GUTTER W/ NO UTILITY STRIP



DUAL RAMP PLAN VIEW

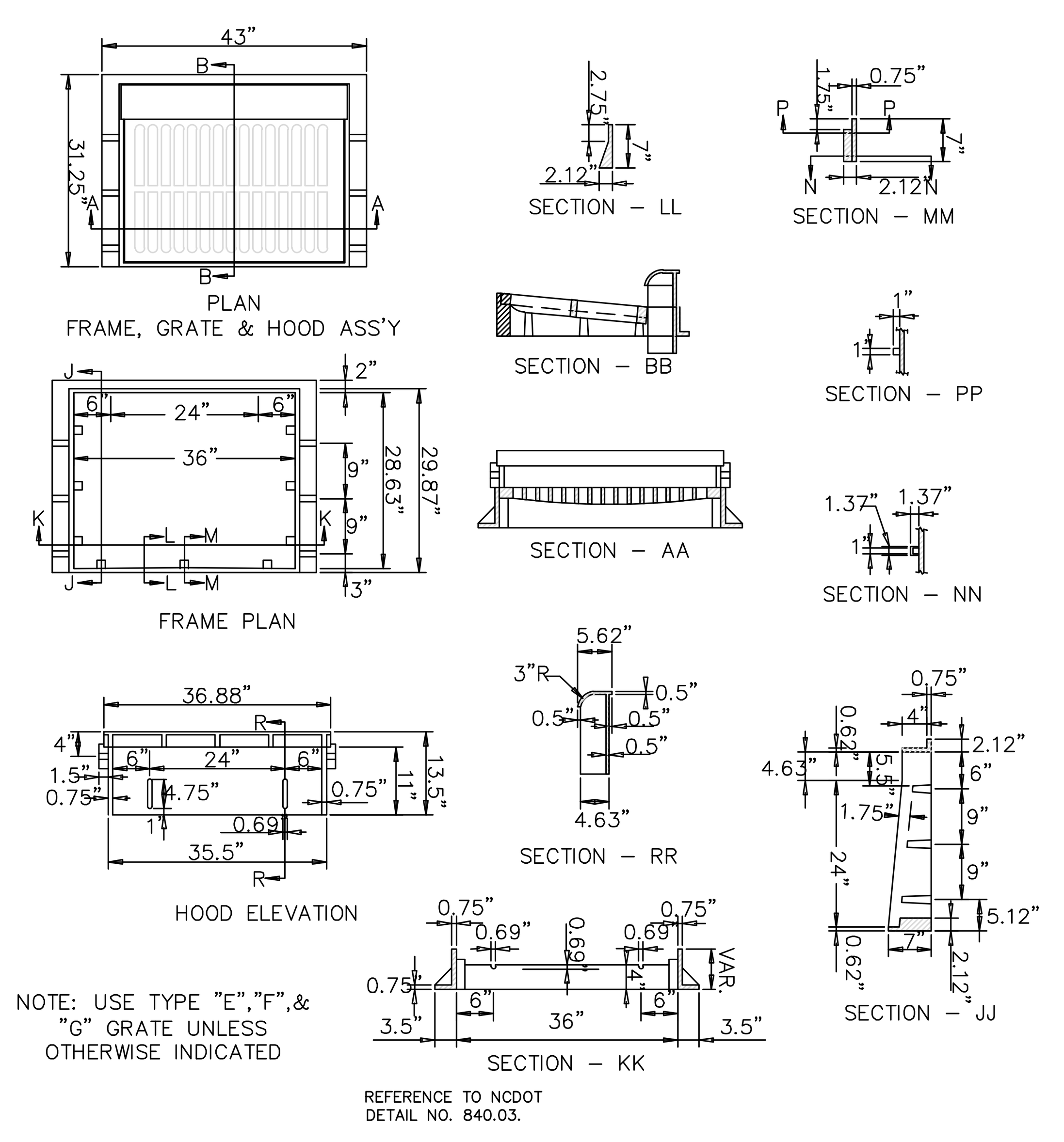
STANDARD CURB RAMP ISOMETRIC VIEW

ACCESSIBLE RAMP GENERAL NOTES: [NCDOT STD. DETAIL 848.05]

1. CONSTRUCT THE RAMP SURFACE TO BE STABLE, FIRM AND SLIP RESISTANT. CONSTRUCT THE CURB RAMP TYPE AS SHOWN IN THE PAVEMENT MARKING PLANS OR AS DIRECTED BY THE ENGINEER.
2. LOCATE CURB RAMPS AND PLACE PEDESTRIAN CROSSWALK MARKINGS AS SHOWN ON THE PROJECT DRAWINGS OR AS DIRECTED BY THE ENGINEER. WHEN FIELD ADJUSTMENTS REQUIRE MOVING CURB RAMPS OR MARKINGS AS SHOWN, CONTACT AND LOCATE AS DIRECTED BY THE ENGINEER.
3. COORDINATE THE CURB RAMP AND THE PEDESTRIAN CROSSWALK MARKINGS SO A MIN. 4'X4' CLEAR SPACE AT THE BASE OF THE CURB RAMP WILL FALL WITHIN THE PEDESTRIAN CROSSWALK LINES.
4. SETBACK DISTANCE FROM INSIDE CROSSWALK MARKING TO NEAREST EDGE OF TRAVEL LANE IS 4' MINIMUM.
5. REFER TO PROJECT DRAWINGS FOR STOP BAR LOCATIONS, IF PROVIDED, OR AS DIRECTED BY THE ENGINEER..
6. TERMINATE PARKING A MINIMUM OF 20' BACK OF A PEDESTRIAN CROSSWALK.
7. CONSTRUCT CURB RAMPS A MINIMUM OF 4' WIDE, OR AS SPECIFIED ON PLANS.
8. CONSTRUCT THE RUNNING SLOPE OF THE RAMP 8.33% (12:1 H:V) MAXIMUM.
9. ALLOWABLE CROSS SLOPE ON SIDEWALKS AND CURB RAMPS WILL BE 2% MAXIMUM.
10. WHERE REQUIRED, CONSTRUCT THE SIDE FLARE SLOPE A MAXIMUM OF 10% MEASURED ALONG THE CURB LINE.
11. CONSTRUCT THE COUNTER SLOPE OF THE GUTTER OR STREET AT THE BASE OF THE CURB RAMP A MAXIMUM OF 5% AND MAINTAIN A SMOOTH TRANSITION.
12. CONSTRUCT LANDINGS FOR SIDEWALK A MIN. OF 4'X4' WITH A MAXIMUM SLOPE OF 2% IN ANY DIRECTION. CONSTRUCT LANDINGS FOR MEDIAN ISLANDS A MINIMUM OF 5'X5' WITH A MAXIMUM SLOPE OF 2% IN AN DIRECTION.
13. TO USE A MEDIAN ISLAND AS A PEDESTRIAN REFUGE AREA, MEDIAN ISLANDS WILL BE A MINIMUM OF 6' WIDE. CONSTRUCT MEDIAN ISLANDS TO PROVIDE PASSAGE OVER OR THROUGHOUT THE ISLAND
14. SMALL CHANNELIZATION ISLANDS THAT CAN NOT PROVIDE A 5'X5' LANDING AT THE TOP OF A RAMP, WILL BE CUT THROUGH LEVEL WITH THE SURFACE STREET.
15. CURB RAMPS WITH RETURNED CURBS MAY BE USED ONLY WHERE PEDESTRIANS WOULD NOT NORMALLY WALK ACROSS THE RAMP. THE ADJACENT SURFACE IS PLANTING OR OTHER NON-WALKING SURFACE OR THE SIDE APPROACH IS SUBSTANTIALLY OBSTRUCTED.
16. PLACE A ½" EXPANSION JOINT WHERE THE CONCRETE CURB RAMP JOINS THE CURB AS SHOWN IN ROADWAY STANDARD DRAWING 848.01
17. CURB RAMPS THROUGH MEDIAN ISLANDS, SINGLE RAMPS AT DUAL CROSSWALKS OR LIMITED R/W SITUATIONS, WILL BE HANDLED BY SPECIAL DETAILS.

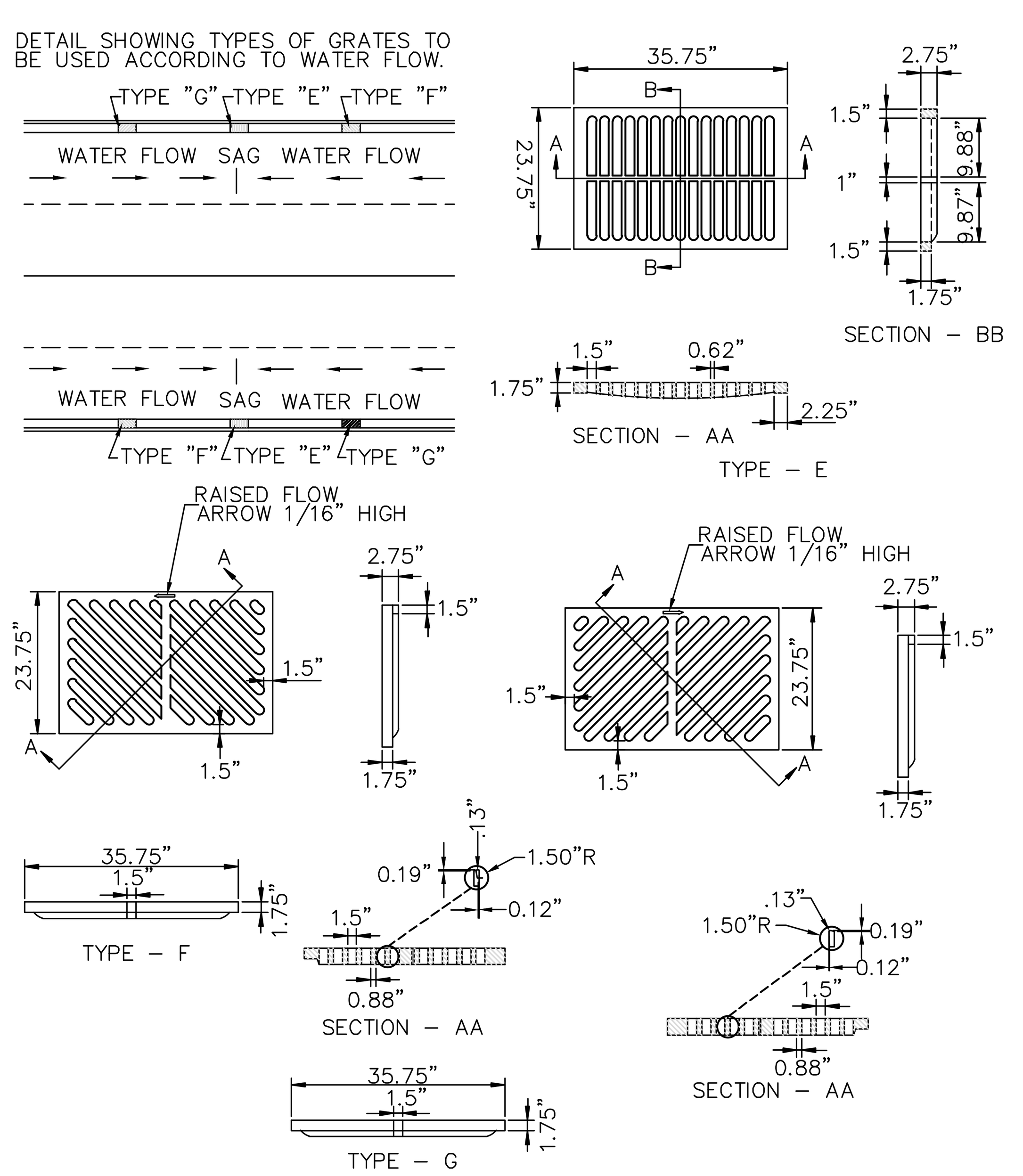
PEDESTRIAN CROSSWALK GENERAL NOTES: [NCDOT STD. DETAIL 1205.07]

1. USE THE DETAILS ABOVE AND THE FOLLOWING NOTES FOR GUDIANCE IN PLACING CROSSWALK MARKINGS. REFER TO NCDOT ROADWAY STANDARD DRAWINGS, MUTCD AND ADA STANDARDS FOR ADDITIONAL GUIDANCE.
2. THE LOCATION AND TYPE OF CROSSWALK MARKINGS SHOWN ON THE ABOVE DETAILS ARE FOR REFERENCE ONLY. LOCATE CROSSWALK MARKINGS AS SHOWN ON THE PROJECT DRAWINGS OR AS DIRECTED BY THE ENGINEER. THE CROSSWALK MARKING TYPE, STANDARD OR HI-VISIBILITY, SHALL BE INSTALLED AS SPECIFIED ON THE PROJECT DRAWINGS OR AS DIRECTED BY THE ENGINEER..
3. THE STANDARD CROSSWALK IS THE TWO WHITE 8" MIN. TRANSVERSE LINES WITH A 6' MIN. GAP BETWEEN THE LINES. THE HI-VISIBILITY CROSSWALK IS WHITE 24" MAX. WIDE LONGITUDINAL LINES WITH 24" MIN. GAPS BETWEEN LINES, SEE DETAIL, HI-VISIBILITY CROSSWALKS SHOULD BE A MINIMUM OF 6' WIDE OR AS SPECIFIED ON THE PROJECT DRAWINGS. CURB RAMPS SHALL BE WHOLLY CONTAINED WITHIN THE MARKINGS, EXCLUDING AN FLARES.
4. STOP BARS (IF PROVIDED) SHOULD BE PLACED A 4' MIN. IN ADVANCE OF NEAREST CROSSWALK LINE.
5. SET BACK DISTANCE FROM INSIDE CROSSWALK MARKING TO NEAREST EDGE OF TRAVEL IS 4' MIN.
6. BEYOND THE BOTTOM GRADE BREAK, A CLEAR SPACE OF 4'X4' MIN. SHALL BE PROVIDED WITHIN THE MARKINGS.
7. SINGLE DIAGONAL CURB RAMPS WITH FLARED SIDES SHALL HAVE A SEGMENT OF CURB 2' MIN. LONG LOCATED ON EACH SIDE OF THE CURB RAMP AND WITHIN THE MARKED CROSSING, SEE DETAIL.
8. CURB RAMPS SHALL BE CONSTRUCTED IN ACCORDANCE TO THE LATEST NCDOT ROADWAY STANDARD DRAWINGS. CURB RAMPS THROUGH MEDIAN ISLANDS, SINGLE RAMPS AT DUAL CROSSWALKS OR LIMITED R/W SITUATIONS, WILL BE HANDLED BY SPECIAL DETAILS.



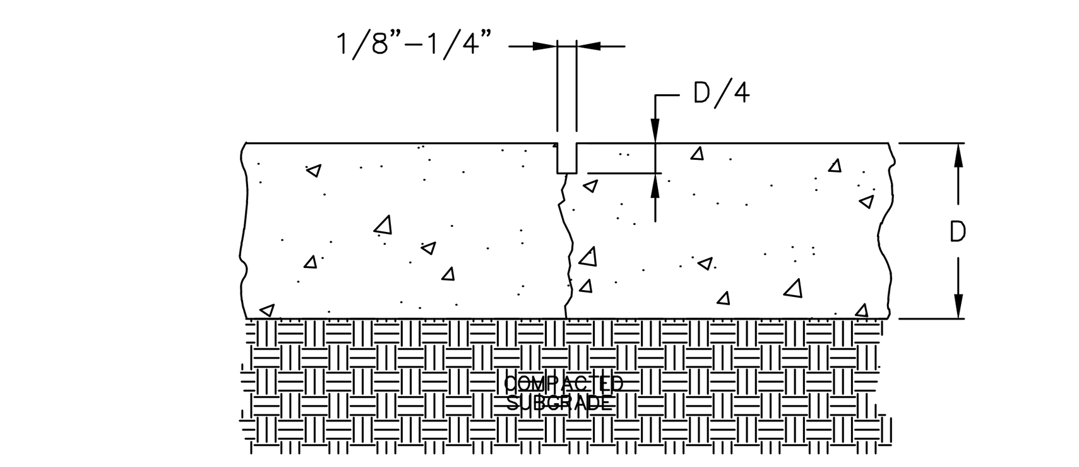
CATCH BASIN FRAME,GRATE & HOOD DETAIL

NOT TO SCALE — NCDOT STD 840.03



CATCH BASIN GRATE DETAIL

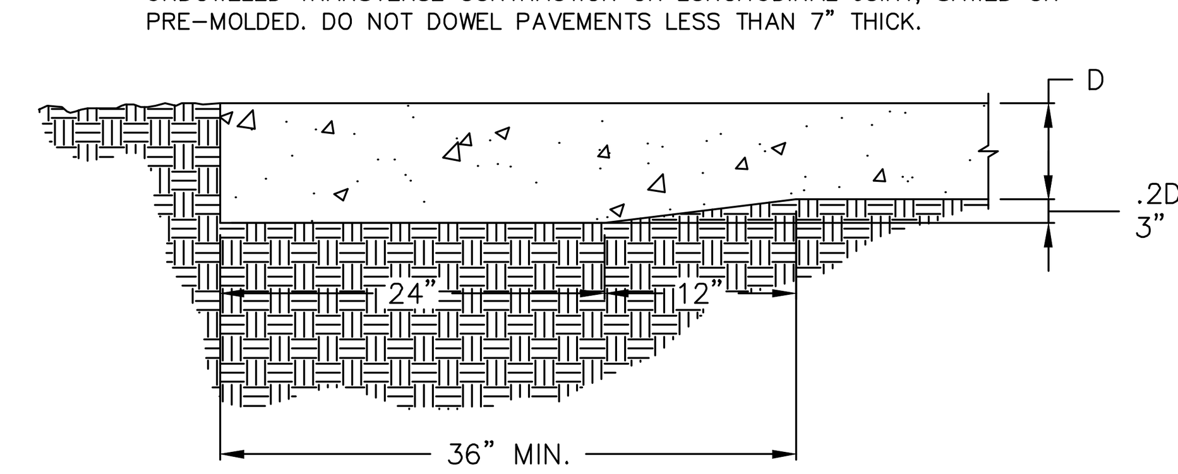
NOT TO SCALE — NCDOT STD 840.03B



CONVENTIONAL CONCRETE CONTROL JOINT DETAIL

NOT TO SCALE — SECTION VIEW

NOTES:
MINIMUM PAVEMENT THICKNESS (D) = 6" W/6x6-W2.9 x W2.9 WWF REINFORCEMENT, PLACE 2" BELOW TOP OF SLAB
UNDOWELED TRANSVERSE CONTRACTION OR LONGITUDINAL JOINT, SAWED OR PRE-MOLDED. DO NOT DOWEL PAVEMENTS LESS THAN 7" THICK.

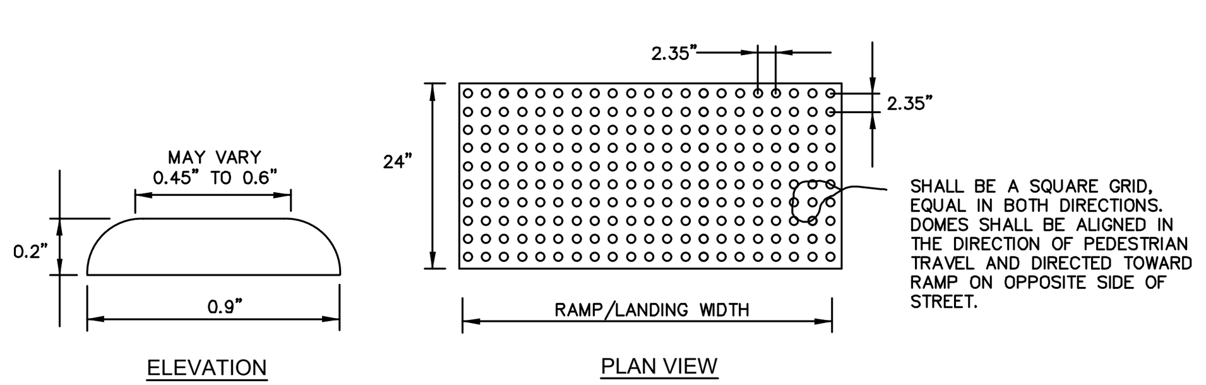


CONVENTIONAL CONCRETE THICKENED EDGE DETAIL

NOT TO SCALE — SECTION VIEW

CONVENTIONAL CONCRETE SPECIFICATIONS:

1. USE ACI CERTIFIED FLATWORK FINISHER
2. USE ACI 330R-01 GUIDE FOR DESIGN AND CONSTRUCTION OF CONCRETE PARKING LOTS
3. USE ACI 330.1-94 STANDARD SPECIFICATION FOR PLAIN CONCRETE PARKING LOTS
4. ALL CONCRETE USED IN PARKING LOT, UNLESS OTHERWISE INDICATED, SHALL HAVE A COMPRESSIVE STRENGTH OF 3,500 PSI AT 28 DAYS.
5. IF SUBGRADE SOILS ARE FOUND BY THE CONTRACTOR TO BE UNSUITABLE, TESTING AND PREPARATION RECOMMENDATIONS BY A GEOTECHNICAL ENGINEER MUST BE PROVIDED PRIOR TO CONCRETE PLACEMENT.
6. IMPORTED SOIL USE FOR BACK FILL SHOULD BE FREE OF HEAVY CLAY, SILTS, STONES, PLANT ROOT OR OTHER FOREIGN MATERIAL GREATER THAN 1½" IN DIAMETER IN ORDER TO ACHIEVE ADEQUATE COMPACTION AROUND ANY FIXED OBJECT IN GROUND. ALTERNATE WILL BE TO USE FLOWABLE FILL.
7. KEEP ALL JOINTS CONTINUOUS WITH A MAXIMUM JOINT SPACING OF 10 FT.
8. CONTROL JOINTS SHALL BE FORMED OR SAWED WITHIN 12 HOURS FROM TIME OF PLACEMENT;
   A. SIDEWALK-SPACING SHALL BE SAME AS WIDTH OF PAVEMENT AND LESS THAN 5 FEET IN LENGTH
   B. PAVEMENT-MAXIMUM SPACING SHALL BE 2.5 TIMES THICKNESS IN UNIT OF FEET AND LESS THAN 15 FEET IN LENGTH (E.G. T=4 INCH SPACING AT 10'x10')
9. CURE CONCRETE IMMEDIATELY AFTER FINISHING OPERATION IS COMPLETED BY USING ONE OF THE FOLLOWING METHODS: WATER, PIGMENTED WATER-BASED CURING COMPOUND OR VISQUEEN AND BURLAP



ELEVATION — PLAN VIEW

TRUNCATED DOME DETECTABLE WARNING DETAIL

NOT TO SCALE

DETECTABLE WARNING GENERAL NOTES

1. DETECTABLE WARNING SHALL CONSIST OF RAISED TRUNCATED DOMES MANUFACTURED BY "COTE-L INDUSTRIES, INC.". CALLED "SAFTI-TRAX", WITH POLYURETHANE COATING "DURABAK", OR APPROVED EQUAL. APPLIED ON SMOOTH (NON-GROOVED) CLEAN CONCRETE RAMP, AND SHALL CONFORM TO THE DETAILS IN THE PLANS AND IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS AND INSTALLATION INSTRUCTIONS.
2. ALL DETECTABLE WARNING AREAS SHALL START AT BACK OF CURB, BE 24 INCHES IN DEPTH AND COVER THE COMPLETE WIDTH OF THE RAMP AREA 48 INCHES MIN..
3. 70% VISUAL CONTRAST IS REQUIRED. THE COLOR SHALL BE AN INTEGRAL PART OF THE DETECTABLE WARNING MATERIAL, AS SPECIFIED ON THE PLANS. COLOR TO BE DETERMINED BY THE CITY STAFF, SAFETY YELLOW IS THE DEFAULT COLOR.
4. THE SMOOTH AND CLEAN CONCRETE UNDER DETECTABLE WARNING DEVICE AREA SHALL BE INCLUDED IN THE COST OF THE CONCRETE CURB RAMP. THE COST OF FURNISHING AND INSTALLING THE DETECTABLE WARNING DEVICE SHALL BE INCLUDED SEPARATELY AS "DETECTABLE WARNING DEVICE" PER SQUARE FOOT OR AS OUTLINED IN THE SPECIFICATIONS.
5. DETECTABLE WARNING SURFACE: APPLIED A COATING OF "DURABAK" SLIP-RESISTANT POLYURETHANE COATING TO THE SMOOTH, CLEAN CONCRETE SURFACE. ON TOP OF THE POLYURETHANE COATING APPLY TRUNCATED DOMES FROM A "SAFTY-TRAX" CONTACT SHEET. ON TOP OF THE TRUNCATED DOMES AND INITIAL POLYURETHANE COATING PLACE THREE ADDITIONAL COATS OF "DURABAK" POLYURETHANE COATING. COLOR TO BE DETERMINED BY CITY STAFF OR AS SPECIFIED ON THE PLANS. SAFETY YELLOW IS A DEFAULT COLOR.
6. ALL RAMPS AND DETECTABLE WARNING SHALL BE ALIGNED IN THE DIRECTION OF PEDESTRIAN TRAVEL AND DIRECTED TOWARD RAMP ON THE OPPOSITE SIDE OF STREET.

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BISSELL PROFESSIONAL GROUP
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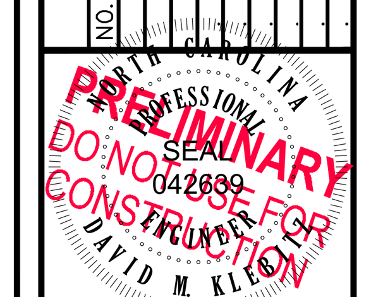
ROADWAY, SIDEWALK & MISC. CONSTRUCTION DETAILS

PROJECT: COROLLA BOAT CLUB - PHASE 1, MONTERAY SHORES PHASE 10
POPLAR BRANCH TOWNSHIP — CURRITUCK COUNTY — NORTH CAROLINA

CONSTRUCTION DRAWINGS

REVISIONS

NO.	DATE	DESCRIPTION	BY



NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 042639 DAVID M. KLEBITZ
PRELIMINARY DO NOT USE FOR CONSTRUCTION

DATE: 2-15-23	SCALE: NO SCALE
DESIGNED: BPG	CHECKED: MSB
DRAWN: KFW/DMK	APPROVED: BPG

SHEET: 10 OF 16

CAD FILE: 459600B3

PROJECT NO: 4596

GENERAL PROJECT NOTES:

1. PROJECT NAME: COROLLA BOAT CLUB - PHASE 1
   POPLAR BRANCH, CURRITUCK COUNTY, NORTH CAROLINA
2. APPLICANT: OUTER BANKS VENTURES, INC.
   P.O. BOX 549
   COROLLA, NC 27927
3. PROJECT DESCRIPTION: 6 LOT SUBDIVISION
4. NEAREST RECEIVING STREAM: SANDERS BAY - INDEX NUMBER: 30-1-11
5. STREAM CLASSIFICATION: SC - PASQUOTANK RIVER BASIN
6. PROJECT AREA TABULATION:

TOTAL PROPERTY AREA :	36 AC.
TOTAL PROPOSED DISTURBED AREA :	12.0 AC.

AREA CALCULATION NOTE:
All areas have been calculated utilizing properties within the Autocad software.

MATERIAL BALANCE NOTE:
All excavated material occurring during the course of construction shall remain on-site for roadway construction and lot grading. See SCHEDULE OF LAND DISTURBING ACTIVITIES provided on Sheet 5 of this set for an estimated cut fill material balance for the project.

WETLAND NOTE:
No 404 jurisdictional wetlands have been identified on the property.

STABILIZATION NOTE:
The angle of graded slopes and fills shall be no greater than the angle that can be retained by vegetative cover or other adequate erosion control devices or structures.
In any event, all disturbed areas left exposed will, WITHIN 14 CALENDAR DAYS OF COMPLETION of any phase of grading, be planted or otherwise provided with temporary or permanent ground cover, devices, or structures sufficient to restrain erosion.
Additionally, certain critical areas as identified on the plan, such as, but not limited to, perimeter dikes, swales, slopes steeper than 3:1, and areas located within High Quality Water Zones, must be temporarily or permanently stabilized WITHIN 7 CALENDAR DAYS OF COMPLETION of any phase of grading in these areas.
A permanent ground cover for all disturbed areas must be provided WITHIN 15 WORKING DAYS OR 90 CALENDAR DAYS (whichever is shorter) following completion of construction or development.

SEDIMENTATION AND EROSION CONTROL NOTES:

A. NARRATIVE AND SITE DATA

COROLLA BOAT CLUB - PHASE 1 IS A MIXED USE DEVELOPMENT SLATED FOR CONSTRUCTION ON A VACANT TRACT OF LAND LOCATED WEST OF NC HWY 12 ALONG THE SOUTH SIDE OF MALIA DR IN THE COROLLA, CURRITUCK COUNTY. THE DEVELOPMENT IS ALSO KNOWN AS PHASE 10 OF THE MONTERAY SHORES PUD AND INCLUDES 1 COMMERCIAL LOT AND 5 RESIDENTIAL SINGLE FAMILY HOME LOTS. THE SUBDIVISION IS SERVED BY PROPOSED ROADWAY, DRAINAGE, UTILITY AND AMENITY IMPROVEMENTS.

THE SITE'S EXISTING TOPOGRAPHY IS GENERALLY FLAT, WITH SLOPES RANGING BETWEEN 0-1% AND ELEVATIONS RANGING FROM 10 FT MSL TO BELOW 1 FT MSL. THE PROPERTY IS BOUNDED TO THE NORTH BY MALIA DR, TO THE EAST AND SOUTH BY EXISTING COMMERCIAL DEVELOPMENT AND TO THE WEST BY SANDERS BAY. THE PROPERTY IS CURRENTLY VACANT SURROUNDING DEVELOPMENT IS PRIMARILY COMMERCIAL. APPROX. 21 ACRES OF CAMA AND 404 JURISDICTIONAL WETLANDS EXISTT BETWEEN THE SOUTHEASTERN UPLAND AREAS AND THE BAY.

ON-SITE DRAINAGE IS LIMITED TO AN EXISTING CULVERT EXTENDING FROM MALIA DR. TO AN EXISTING POND LOCATED ON THE PROPERTY. THE EXISTING CULVERT SERVICES AS A DRAINAGE OUTLET TO SURROUNDING COMMERCIAL DEVELOPMENTS.

PURSUANT TO THE USDA SOIL SURVEY MANUAL OF CURRITUCK COUNTY, SITE SOILS ARE PRIMARILY COMPOSED OF OSIER FINE SAND ACROSS THE DEVELOPABLE UPLAND AREA AND CURRITUCK MUCKY PEAT ACROSS THE WETLANDS.

CONSTRUCTION SEQUENCE SCHEDULE

CONSTRUCTION ACTIVITY	SCHEDULE CONSIDERATION
Construction Access– Construction entrance, construction routes, equipment parking areas	First land–disturbing activity–Stabilize bare areas immediately with gravel & temporary vegetation as construction takes place.
Sediment Traps & Barriers Basin traps, sediment fences, & outlet protection	Install principal basins after construction site is accessed. Install additional traps and barriers as needed during grading.
Runoff Control– Diversions, perimeter dikes, water bars, and outlet protection	Install key practices after principal sediments traps and before land grading. Install additional runoff–control conveyance measures during grading.
Runoff Conveyance System– Stabiles stream banks, storm drains, channels, Inlet & outlet protection, slope drains	Where necessary, stabilize stream banks as early as possible. Install principal runoff conveyance system with runoff–control measures. Install remainder of system after grading.
Land Clearing & Grading– Site preparation– cutting, filling & grading, sediment traps, barriers, diversions, drains, surface roughening	Begin major clearing and grading after principal & key runoff–control measures area installed. Clear borrow & disposal areas as needed. Install control measures as grading progresses. Mark trees & buffer areas for preservation.
Surface Stabilization– Temporary & permanent seeding, mulching, sodding, rip rap.	Apply temporary or permanent stabilization measures immediately on all disturbed areas where work is delayed or complete.
Building Construction– Buildings, utilities, paving.	Install necessary erosion & sedimentation control practices as work takes place.
Landscaping & Final Stabilization– Topsoiling, trees & shrubs, permanent seeding, mulching, sodding, rip rap	Stabilize all open areas, including borrow & spoil areas. Remove & stabilize all temporary control measures.

LAND GRADING CONSTRUCTION SPECIFICATIONS

1. Construct & maintain all erosion & sedimentation control practices & measures in accordance with the approved sedimentation control plan and construction schedule.
2. Remove good topsoil from areas to be graded and filled, and preserve it for use in finishing the grading of all critical areas.
3. Scarify areas to be topsoiled to a minimum depth of 2 inches before placing topsoil.
4. Clear & grub areas to be filled to remove trees, vegetation, roots, or other objectionable material that would affect the planned stability of fill.
5. Ensure that fill material is free of brush, rubbish, rocks, logs, stumps, building debris, and other materials inappropriate for constructing stable fills.
6. Place all fill in layers not to exceed 9 inches in thickness, and compact the layers as required to reduce erosion, slippage, settlement, or other related problems.
7. Do not incorporate frozen material or soft, mucky, or highly compressible materials into fill slopes.
8. Do not place fill on a frozen foundation, due to possible subsidence and slippage.
9. Keep diversions and other water conveyance measures free of sediment during all phases of development.
10. Handle seeps or springs encountered during construction in accordance with approved methods.
11. Following completion of any phase of grading, provide a groundcover (temporary or permanent) on all exposed slopes within 14 calendar days, or 7 calendar days in critical areas identified on the plan; and, a permanent groundcover for all disturbed areas within 15 working days or 90 calendar days (whichever is shorter) following completion of construction or development.
12. Provide adequate protection from erosion for all topsoil stockpiles, borrow areas, and spoil areas.

MAINTENANCE
Periodically check all graded areas & the supporting erosion & sedimentation control practices, especially after heavy rainfalls. Promptly remove all sediment from diversions and other water–disposal practices. If washouts or breaks occur, repair them immediately. Prompt maintenance of small–eroded areas before they become significant gullies is an essential part of an effective erosion & sedimentation control plan.

PERMANENT SEEDING

The purpose of permanent seeding is to reduce erosion and decrease sediment yield from disturbed areas, and to permanently stabilize such areas in a manner that is economical, adapts to site conditions, and allows selection of the most appropriate plant materials. These areas must be seeded or planted within 15 working days or 90 calendar days after final grade is reached, unless temporary stabilization is applied.

PERMANENT SEEDING SPECIFICATIONS
Seeding Recommendations for Summer
SEEDING DATES – April to July
SEEDING MIXTURE

Species	Rate
Common bermudagrass	10/1,000 sf (sprigs)
	1–2 lb/1,000 sf (seed)
	SOD (See Sodding Notes)

Seeding Recommendations for Early Fall through Early Spring
SEEDING DATES – August to March (early fall and spring recommended)

Species	Rate
Kentucky 31 Tall Fescue	6 lb/1,000 sf (broadcast seed)

SEEDING NOTES–
1. Sprig or sod. Moisture is essential during initial establishment. Sod must be kept watered for 2–3weeks, but can be planted earlier or later than sprigs.

Soil Amendments–
It is highly recommended that soils be tested and amended as found necessary. If a soils are not tested follow these recommendations:
Apply 3,000 lb/acre of ground agricultural limestone and 500 lb/acre of 10–10–10 starter fertilizer, or 50 lb/acre nitrogen from turf–type slow–release fertilizer. Add 25–50 lb/acre nitrogen at 2–3 week intervals through midsummer.

Sprigging–
Plant sprigs in furrows with a tractor–drawn transplanter, or broadcast by hand. (Not recommended for Tall Fescue)

Furrows should be 4–6 inches deep and 2 feet apart. Place sprigs about 2 ft. apart in a row with one end at or above ground level.

Broadcast at rates shown above, and press sprigs into the top 1/2–2 inches of soil with a disk set straight so that sprigs are not brought back toward the surface.

Mulch–
Do not mulch Bermuda Grass. For Tall Fesuce seed, apply 4,000–lb/acre straw. Anchor straw by tacking with asphalt, netting, or a mulch–anchoring tool. A disk with blades set nearly straight can be used as a mulch–anchoring tool.

Maintenance–
Water as needed. Mow bermuda to 3/4 to 1–inch height and tall fescue to 2.5 – 3.5 inch height. Topdress bermuda with 40 lb/acre nitrogen in April, 50 lb in May, 50 lb in June, 50 lb in July, and 25 lb in August. Top dress tall fescue in mid September,again in November and February with turf–grade 3–1–2 or 4–1–2 ratio turf–grade fertilizer. Fertilize with 1 lb of actual nitrogen per 1,000 sf. Do not fertilize tall fescue between Mid March and Early September.

TEMPORARY SEEDING

The purpose of temporary seeding is to temporarily stabilize denuded areas that will not be brought to final grade or permanently seeded for a period of more than 14 calendar days, **or 7 days in critical areas indentified on the plan.**

TEMPORARY SEEDING SPECIFICATIONS
Seeding Recommendations for Late Winter & Early Spring
SEEDING DATES– December 1 to April 15
SEEDING MIXTURE

Species	Rate (lb/acre)
Winter Rye (grain)	120 (Annual Ryegrass shall not be used)
Annual Lespedeza (Kobe)	50

*Omit Annual Lespedeza when duration of temporary cover is not to extend beyond June

Soil Amendments–
Follow recommendations of soil tests or apply 2,000 lb/acre ground agricultural limestone and 750 lb/acre 10–10–10 fertilizer.

Mulch–
Apply 4,000–lb/acre straw. Anchor straw by tacking with asphalt, netting, or a mulch–anchoring tool. A disk with blades set nearly straight can be used as a mulch–anchoring tool.

Maintenance–
Refertilize if growth is not fully adequate. Reseed, fertilize and mulch immediately following erosion or other damage.

Seeding Recommendations for Summer
SEEDING DATES– April 15 to August 15
SEEDING MIXTURE

Species	Rate (lb/acre)
German Millet	40

Soil Amendments–
Follow recommendations of soil tests or apply 2,000 lb/acre ground agricultural limestone and 750 lb/acre 10–10–10 fertilizer.

Mulch–
Apply 4,000–lb/acre straw. Anchor straw by tacking with asphalt, netting, or a mulch–anchoring tool. A disk with blades set nearly straight can be used as a mulch–anchoring tool.

Maintenance–
Refertilize if growth is not fully adequate. Reseed, fertilize and mulch immediately following erosion or other damage.

Seeding Recommendations for Fall
SEEDING DATES– August 15 to December 30
SEEDING MIXTURE

Species	Rate (lb/acre)
Winter Rye (grain)	120

Soil Amendments–
Follow recommendations of soil tests or apply 2,000 lb/acre ground agricultural limestone and 1,000 lb/acre 10–10–10 fertilizer.

Mulch–
Apply 4,000–lb/acre straw. Anchor straw by tacking with asphalt, netting, or a mulch–anchoring tool. A disk with blades set nearly straight can be used as a mulch–anchoring tool.

Maintenance–
Repair and refertilize damaged areas immediately. Topdress with 50 lb/acre of nitrogen in March. If it is necessary to extend temporary cover beyond June 15, overseed with 50 ld/acre Kobe Lespedeza in late February or Early March.

SODDING

The purpose of permanent seeding is to prevent erosion and damage from sediment and runoff by stabilizing the soil surface with permanent vegetation for the purpose of:
–the provision of immediate vegetative cover in critical areas
–to stabilize disturbed areas with a suitable plant material that cannot be established by seed.
–to stabilize drainage ways & channels and other areas of concentrated flow where flow velocities will not exceed that specified grass lining.

SODDING SPECIFICATIONS
Sod Quality
–Sod should be machine cut at a uniform depth of 1/2–2 inches
–Sod should not have been cut in excessively wet or dry weather.
–Sections of sod should be standard size as determined by the supplier, uniform, and untorn.
–Sections of sod should be strong enough to support their own weight and retain their size and shape when lifted by one end.
–Harvest, delivery, and installation of sod should take place within a period of 36 hours.

Soil Amendments–
Apply lime and fertilizer according to soil tests or apply 2 tons/acre of pulverized agricultural limestone and 1,000 lb/acre 10–10–10 fertilizer in the fall, or 5–10–10 in spring.

Prior to laying sod, clear the soil surface of trash, debris, roots, branches, stones, and clods larger than 2 inches in diameter. Fill or level low spots in order to avoid standing water. Rake or harrow the site to achieve a smooth and level final grade. Complete soil preparation by rolling or cultipacking to firm soil.

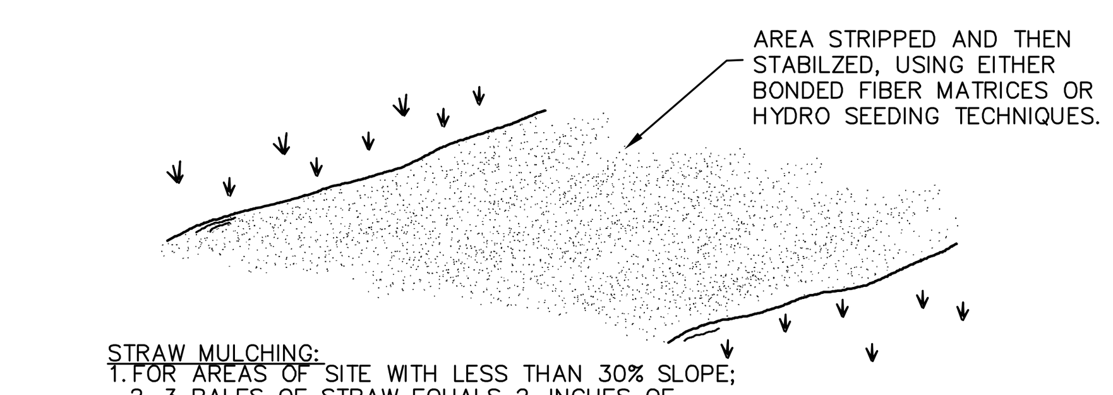
Sod Installation–
1. Moistening the sod after it is unrolled helps maintain viability. Store in shade during installation.
2. Rake the soil surface to break the crust just before laying sod. During the summer, lightly irrigate the soil, immediately before laying sod to cool the soil and reduce root burning & dieback.
3. Do not sod on grave, frozen soils, or soils that have been treated recently with sterilants or herbicides.
4. Lay the first row of sod in a straight line with subsequent rows placed parallel to and butting tightly against each other. Stagger strips in a brick–like pattern. Be sure that the sod is not stretched or overlapped and that all joints are butted tightly to prevent voids. Use a knife or sharp spade to trim and fit irregular shaped areas.
5. Install strips of sod with their longest dimension perpindicular to the slope. On slopes of 3:1 or greater, or wherever erosion may be a problem, secure sod with pegs or staples.
6. As sodding of clearly defined areas is completed, roll sod to provide good contact between roots and soil.
7. After rolling, irrigate until the soil is wet 4 inches below the sod.
8. Keep sodded areas moist to a depth of 4 inches until the grass takes root. This can be determined by tugging on the sod.
9. Mowing should not be attempted until the sod is firmly rooted, usually 2–3 weeks.

Sodded Waterways
1. Prepare soil as described above.
2. Lay sod strips perpindicular to the direction of flow, with the lateral joints staggered in a brick–like pattern. Butt edges tightly together.

Maintenance–
After the first week, water as necessary to maintain adequate moisture in the root zone & prevent dormancy of the sod.

Do not remove more than one–third of the shoot in any one mowing. Grass height should be maintained between 2–3 inches unless otherwise specified.

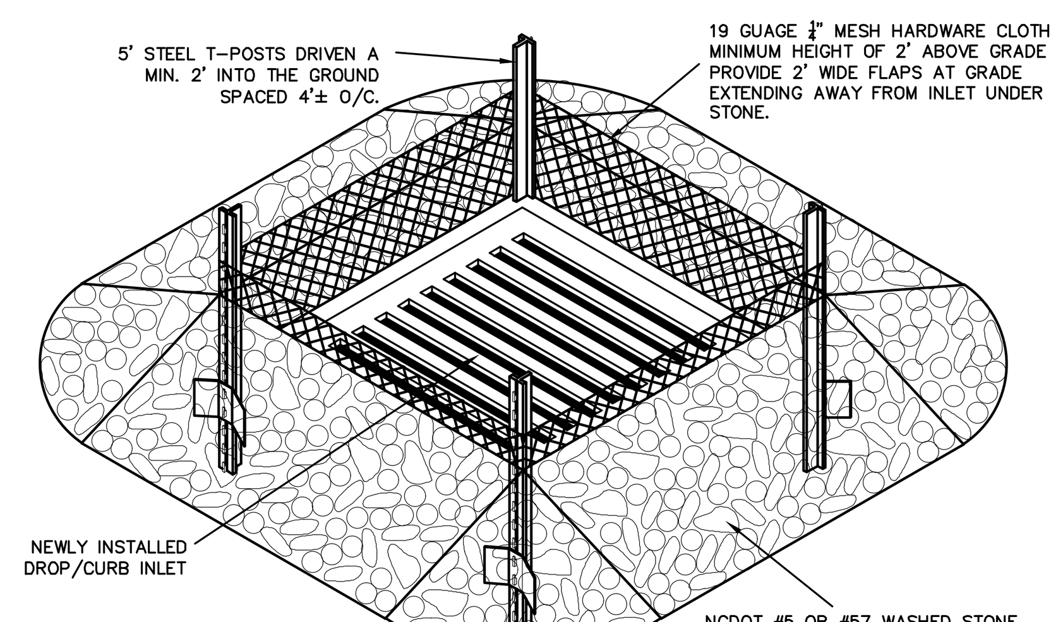
After first growing season, established sod requires fertilization, and may also require lime. Follow soil test recommendations.



STRAW MULCHING:
1. FOR AREAS OF SITE WITH LESS THAN 30% SLOPE; 2–3 BALES OF STRAW EQUALS 2–INCHES OF STRAW MULCH OVER 1000 SQARE FEET.
2. MULCH SHALL BE WEED FREE STRAW.

TO PROVIDE TEMPORARY SOIL STABILIZATION BY PLANTING GRASSES AND LEGUMES TO AREAS THAT WOULD REMAIN BARE FOR MORE THAN 14 CALENDAR DAYS, OR 7 DAYS IN INDENTIFIED CRITICAL AREAS, WHERE PERMANENT COVER IS NOT NECESSARY OR APPROPRIATE.

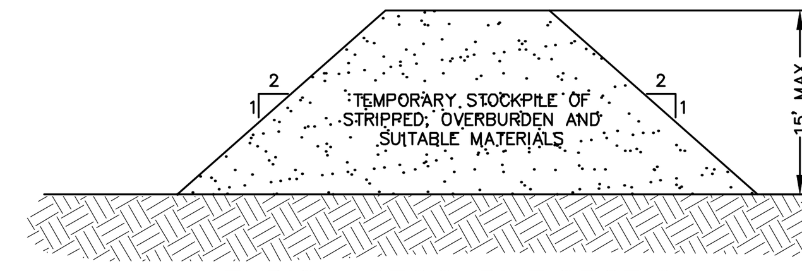
LAND DISTURBANCE & STABILIZATION DETAIL
NOT TO SCALE



DROP/CURB INLET PROTECTION
NOT TO SCALE — ISOMETRIC VIEW

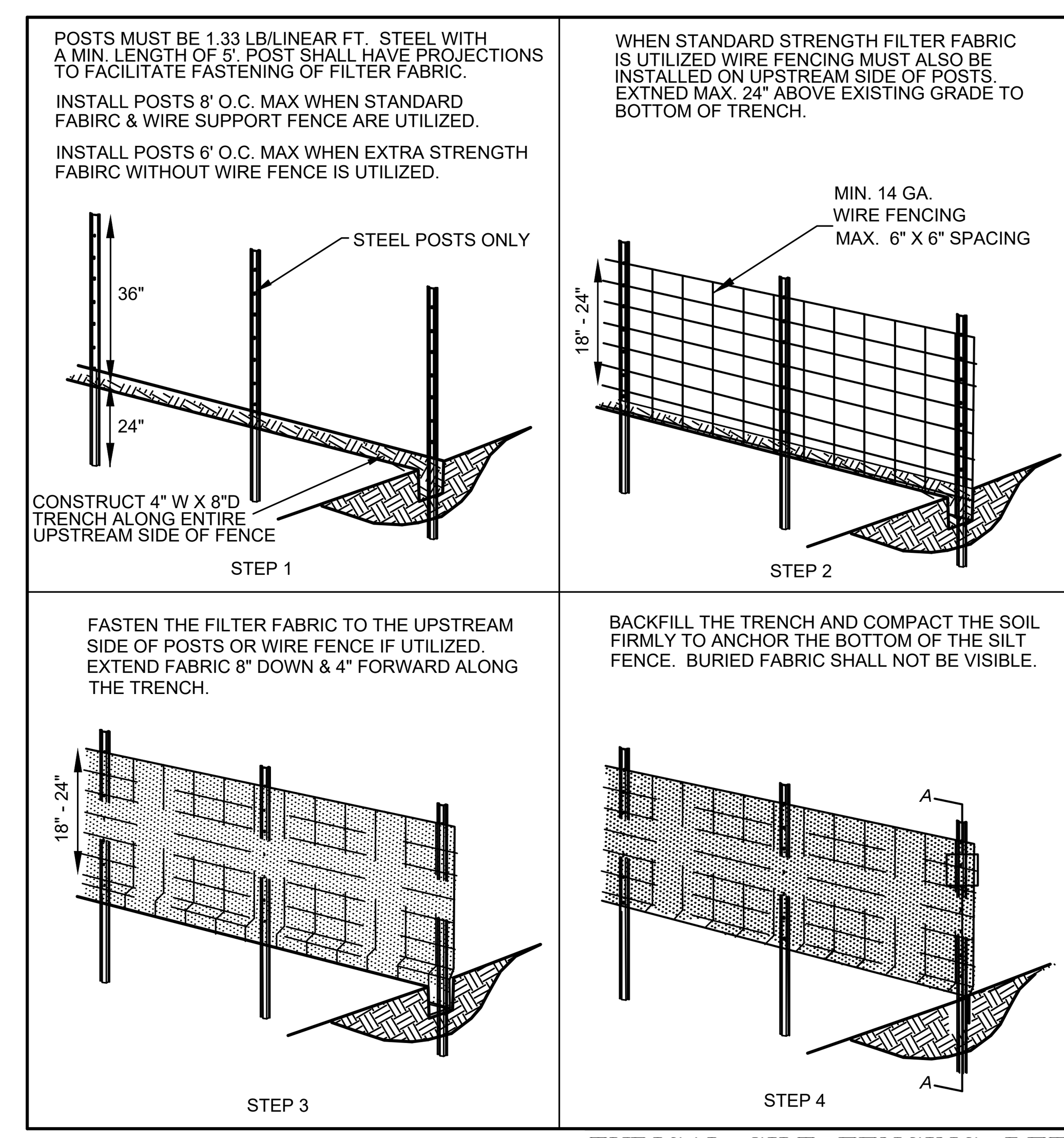
INLET PROTECTION SPECIFICATIONS:
INSPECT AT LEAST WEEKLY AND AFTER EACH SIGNIFICANT (½" OR GREATER) RAINFALL EVENT AND REPAIR IMMEDIATELY. REMOVE DEBRIS FROM MESH AND REPLACE STONES AS NEEDED.

REMOVE ONCE CONTRIBUTING DRAINAGE AREA HAS BEEN STABILIZED.



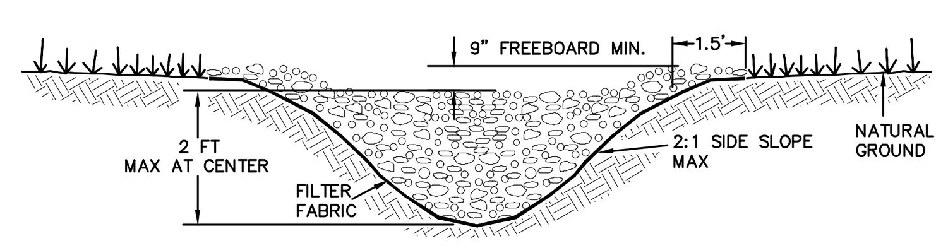
TYPICAL STOCKPILE SECTION
NOT TO SCALE — SECTION VIEW

STOCKPILES HAVING 2:1 SIDE SLOPES ARE CONSIDERED CRITICAL AREAS. SEE STABILIZATION NOTES FOR TEMPORARY AND PERMANENT STABILIZATION REQUIREMENTS. LEVEL GRADE AREA AND STABILIZE AT COMPLETION

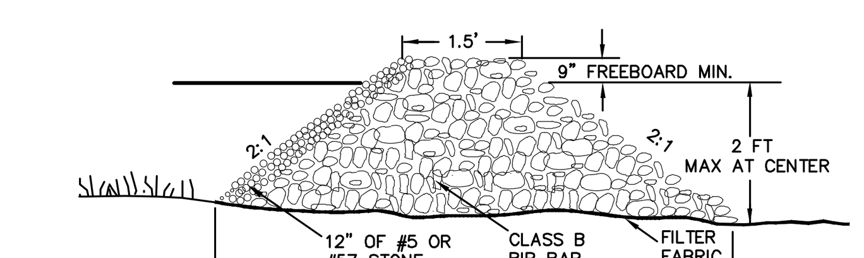


1. USE SYNTHETIC FILTER FABRIC OF AT LEAST 95% BY WEIGHT OF POLYOLEFINS OR POLYESTER, WHICH IS CERTIFIED BY THE MANUFACTURER AS CONFORMING TO THE REQUIREMENTS IN ASTM D 6461. FILTER FABRIC SHALL CONTAIN ULTRAVIOLET RAY INHIBITORS AND STABILIZERS TO PROVIDE A MINIMUM OF 6 MONTHS OF EXPECTED USABLE CONSTRUCTION LIFE AT A TEMPERATURE RANGE OF 0 TO 120F.
2. CONSTRUCT THE SEDIMENT BARRIER OF STANDARD OR EXTRA STRENGTH SYNTHETIC FILTER FABRIC. ENSURE THAT THE HEIGHT OF THE SEDIMENT FENCE DOES NOT EXCEED 24 INCHES ABOVE THE GROUND SURFACE.
3. CONSTRUCT THE FILTER FABRIC FROM A CONTINUOUS ROLL CUT TO THE LENGTH OF THE BARRIER TO AVOID JOINTS. WHEN JOINTS ARE NECESSARY, SECURELY FASTEN THE FILTER CLOTH ONLY AT A SUPPORT POST WITH 4 FT MINIMUM OVERLAP TO THE NEXT POST.
4. SYNTHETIC FILTER FABRIC SHALL BE FASTENED SECURELY TO EACH FENCE POST WITH MIN. 50 LB. TENSILE STRENGTH WIRE OR ZIP TIES AT TOP, MID–SECTION AND BOTTOM. FABRIC HEIGHT SHALL BE BETWEEN 18" MIN. TO 24" MAX. ABOVE GROUND LEVEL ON THE UPSLOPE SIDE OF THE POSTS. EXTRA STRENGTH FILTER FABRIC W/6' POST SPACING SHALL BE SECURELY FASTENED DIRECTLY TO POSTS.
5. 12 INCHES OF FILTER FABRIC SHALL BE BURIED IN AN EXCAVATED TRENCH APPROXIMATELY 4 INCHES WIDE AND 8 INCHES DEEP ALONG THE PROPOSED LINE OF POSTS AND UPSLOPE FROM THE BARRIER. BACKFILL TRENCH WITH MECHANICALLY COMPACTED SOIL PLACED OVER THE FILTER FABRIC. DO NOT ATTACH FILTER FABRIC TO TREES.
6. SILT FENCE SHALL BE INSPECTED AT LEAST ONCE A WEEK & AFTER EACH RAINFALL EVENT. MAKE ANY REPAIRS IMMEDIATELY. SHOULD THE FABRIC COLLAPSE, TEAR, DECOMPOSE OR BECOME INEFFECTIVE, REPLACE IT PROMPTLY.
7. REMOVE SEDIMENT DEPOSITS AS NECESSARY TO PROVIDE ADEQUATE STORAGE VOLUME FOR THE NEXT RAIN AND TO REDUCE PRESSURE ON THE FENCE. TAKE CARE TO AVOID UNDERMINING THE FENCE DURING CLEANOUT.
8. REMOVE ALL FENCING MATERIALS AND UNSTABLE SEDIMENT DEPOSITS AND BRING THE AREA TO GRADE AND STABILIZE IT AFTER THE CONTRIBUTING DRAINAGE AREA HAS BEEN PROPERLY STABILIZED.

TYPICAL SILT FENCING DETAIL
NOT TO SCALE — LOCATION AS NOTED ON PLAN



FRONT VIEW



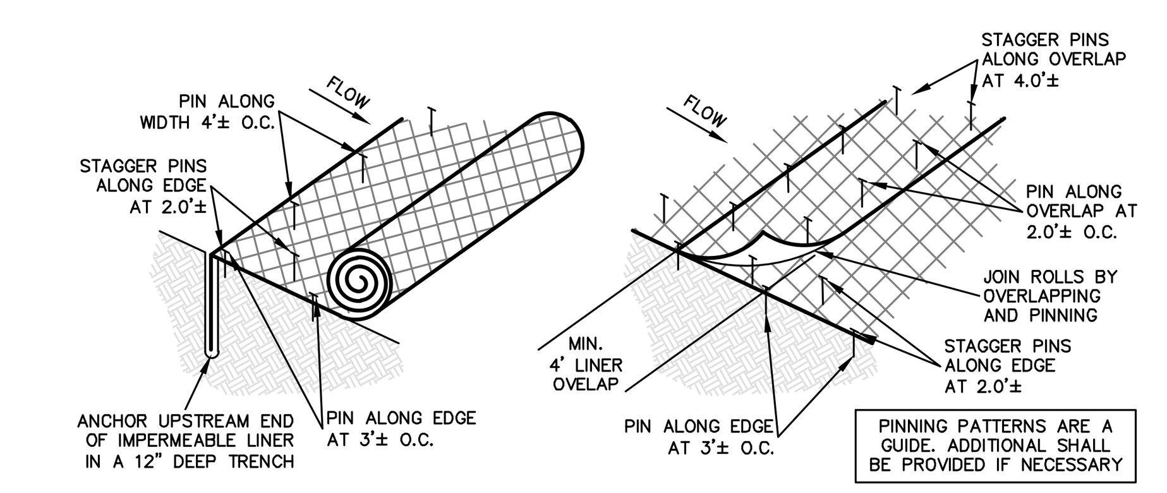
SECTION VIEW

TEMPORARY STONE CHECK DAM CONSTRUCTION
NOT TO SCALE — LOCATIONS AS NOTED ON PLAN

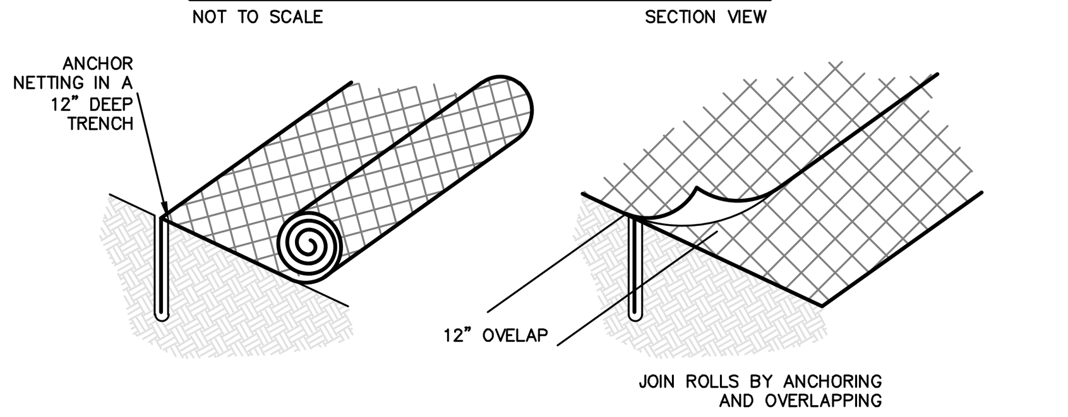
TEMPORARY STONE CHECK DAM CONSTRUCTION SPECIFICATIONS:
1. CLEAR, GRUB, AND STRIP THE AREA UNDER THE EMBANKMENT OF ALL VEGETATION AND ROOT MAT. REMOVE ALL SURFACE SOIL CONTAINING HIGH AMOUNTS OF ORGANIC MATTER AND STOCKPILE OR DISPOSE OF IT PROPERLY. HAUL ALL OBJECTIONABLE MATERIAL TO THE DESIGNATED DISPOSAL AREA.
2. PLACE STONE TO THE LINES AND DIMENSIONS SHOWN IN THE PLAN ON A FILTER FABRIC FOUNDATION.
3. KEEP THE CENTER STONE SECTION AT LEAST 9 INCHES BELOW NATURAL GROUND LEVEL WHERE THE DAM ABUTS THE CHANNEL BANKS.
4. EXTEND STONE AT LEAST 1.5 FEET BEYOND THE DITCH BANK TO KEEP WATER FROM CUTTING AROUND THE ENDS OF THE CHECK DAM.
5. ALL CUT AND FILL SLOPES SHOULD BE 2:1 OR FLATTER.
6. PROTECT THE CHANNEL AFTER THE LOWEST CHECK DAM FROM HEAVY FLOW THAT COULD CAUSE EROSION.
7. MATERIAL USED IN THE STONE SECTION SHOULD BE A WELL–GRADED MIXTURE OF STONE WITH A d50 SIZE OF 9 INCHES(CLASS B EROSION CONTROL STONE IS RECOMMENDED) AND A MAXIMUM STONE SIZE OF 14 INCHES. THE STONE MAY BE MACHINE PLACED AND THE SMALLER STONES WORKED INTO THE VOIDS OF THE LARGER STONES. THE STONE SHOULD BE HARD, ANGULAR, AND HIGHLY WEATHER–RESISTANT.
8. STABILIZE THE EMBANKMENT AND ALL DISTURBED AREAS ABOVE THE SEDIMENT POOL AND DOWNSTREAM FROM THE TRAP IMMEDIATELY AFTER CONSTRUCTION.
9. ENSURE THAT OTHER AREAS OF THE CHANNEL, SUCH AS CULVERT ENTRANCES BELOW THE CHECK DAMS, ARE NOT SUBJECT TO DAMAGE OR BLOCKAGE FROM DISPLACES STONES.

MAINTENANCE OF TEMPORARY STONE CHECK DAMS:
INSPECT CHECK DAMS AND CHANNELS AT LEAST WEEKLY AND AFTER EACH SIGNIFICANT (½" OR GREATER) RAINFALL EVENT AND REPAIR IMMEDIATELY. CLEAN OUT SEDIMENT, STRAW, LIMBS, OR OTHER DEBRIS WHEN NEEDED.

REMOVE SEDIMENT ACCUMULATION BEHIND THE DAMS AS NEEDED TO PREVENT DAMAGE TO CHANNEL VEGETATION, ALLOW THE CHANNEL TO DRAIN THROUGH THE STONE CHECK DAM, AND PREVENT LARGE FLOWS FROM CARRYING SEDIMENT OVER THE DAM. ADD STONES TO DAMS AS NEEDED TO MAINTAIN DESIGN HEIGHT AND CROSS SECTION.

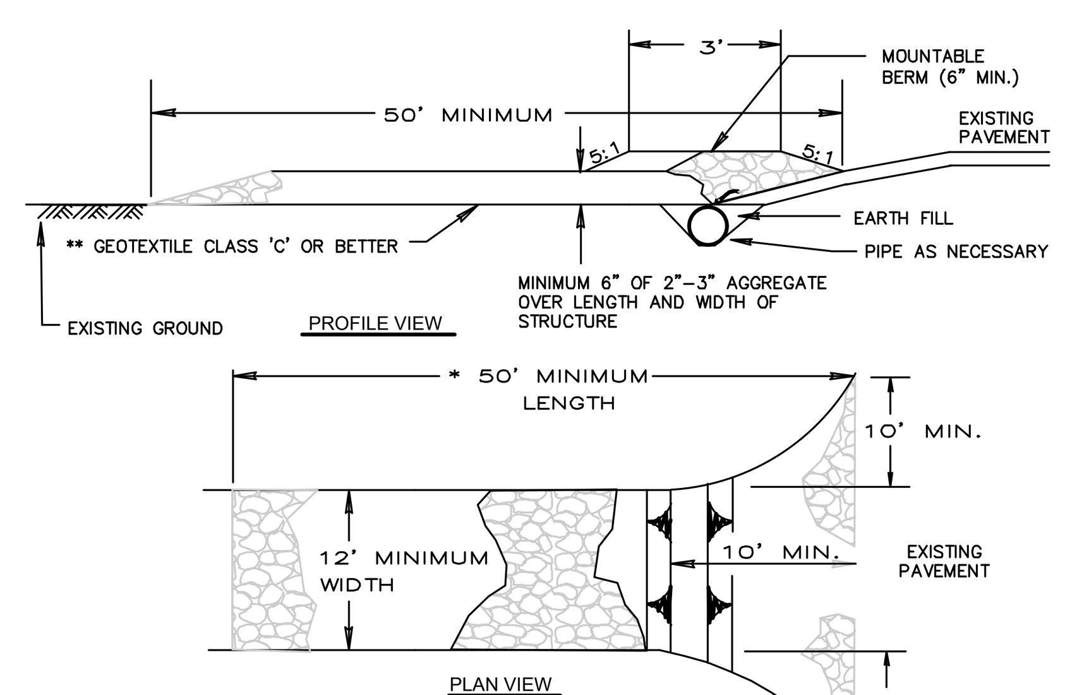


ROLLED LINER CONNECTION DETAIL
NOT TO SCALE — SECTION VIEW



ROLLED EROSION CONTROL MATTING DETAIL
NO SCALE — LOCATION AS NOTED ON PLAN

ROLLED EROSION CONTROL MATTING (R.E.C.M.) SPECIFICATIONS:
1. All areas identified on these plans as requiring an erosion control matting shall be lined with a protective covering to minimize erosion and protect seed until permanent vegetation is established.
2. Covering shall be composed of a bio or photo degradable material to minimize long term environmental impacts.
3. Mulching with straw or other organic materials can be utilized only when it will not impede the establishment of permanent vegetation. Mulches must be properly anchored which may be difficult in some environments. An example is straw mulch with jute netting stapled or pinned in place.
4. Pre–manufactured rolled erosion control products (RECP) are highly recommended for this application. RECP's shall be installed according to manufacturer specifications for channel linings. An example is a woven straw or wooden fiber Excelsior matting.



CONSTRUCTION ENTRANCE
NO SCALE — LOCATION AS NOTED ON PLAN

CONSTRUCTION ENTRANCE SPECIFICATIONS
1. Length – minimum of 50' (*30' for single residence lot).
2. Width – 12' minimum, should be flared at the existing road to provide a turning radius.
3. Geotextile fabric (filter cloth) shall be placed over the existing ground prior to placing stone. **The plan approval authority may not require single family residences to use geotextile.
4. Stone – crushed aggregate (2" to 3") or reclaimed or recycled concrete equivalent shall be placed at least 6" deep over the length and width of the entrance.
5. Surface Water – all surface water flowing to or diverted toward construction entrances shall be piped through the entrance, maintaining positive drainage. Pipe installed through the stabilized construction entrance shall be protected with a mountable berm with 5:1 slopes and a minimum of 6" of stone over the pipe. Pipe has to be sized according to the drainage. When the SCE is located at a high spot and has no drainage to convey a pipe will not be necessary. Pipe should be sized according to the amount of runoff to be conveyed. A 6" minimum will be required.
6. Location – A stabilized construction entrance shall be located at every point where construction traffic enters or leaves a construction site. Vehicles leaving the site must travel over the entire length of the stabilized construction entrance.

Bissell Professional Group
Firm License # C-3656
3512 North Croatan Highway
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Kitty Hawk, North Carolina 27949
(252) 261-3266
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BISSELL PROFESSIONAL GROUP
Engineers, Planners, Surveyors and Environmental Specialists

EROSION AND SEDIMENT CONTROL NOTES & DETAILS

PROJECT: COROLLA BOAT CLUB - PHASE 1, MONTERAY SHORES PHASE 10
POPLAR BRANCH TOWNSHIP — CURRITUCK COUNTY — NORTH CAROLINA

CONSTRUCTION DRAWINGS

REVISIONS

NO.	DATE	DESCRIPTION	BY

PRELIMINARY DO NOT USE FOR CONSTRUCTION — NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 042... DAVID M. KLEBITZ

DATE: 2-15-23	SCALE: NO SCALE
DESIGNED: BPG	CHECKED: MSB
DRAWN: KFW/DMK	APPROVED: BPG

SHEET: 11 OF 16

CAD FILE: 459600B3

PROJECT NO: 4596

GROUND STABILIZATION AND MATERIALS HANDLING PRACTICES FOR COMPLIANCE WITH THE NCG01 CONSTRUCTION GENERAL PERMIT

Implementing the details and specifications on this plan sheet will result in the construction activity being considered compliant with the Ground Stabilization and Materials Handling sections of the NCG01 Construction General Permit (Sections E and F, respectively). The permittee shall comply with the Erosion and Sediment Control plan approved by the delegated authority having jurisdiction. All details and specifications shown on this sheet may not apply depending on site conditions and the delegated authority having jurisdiction.

SECTION E: GROUND STABILIZATION

Required Ground Stabilization Timeframes

Site Area Description	Stabilize within this many calendar days after ceasing land disturbance	Timeframe variations
(a) Perimeter dikes, swales, ditches, and perimeter slopes	7	None
(b) High Quality Water (HQW) Zones	7	None
(c) Slopes steeper than 3:1	7	If slopes are 10' or less in length and are not steeper than 2:1, 14 days are allowed
(d) Slopes 3:1 to 4:1	14	-7 days for slopes greater than 50' in length and with slopes steeper than 4:1 -7 days for perimeter dikes, swales, ditches, perimeter slopes and HQW Zones -10 days for Falls Lake Watershed
(e) Areas with slopes flatter than 4:1	14	-7 days for perimeter dikes, swales, ditches, perimeter slopes and HQW Zones -10 days for Falls Lake Watershed unless there is zero slope

Note: After the permanent cessation of construction activities, any areas with temporary ground stabilization shall be converted to permanent ground stabilization as soon as practicable but in no case longer than 90 calendar days after the last land disturbing activity. Temporary ground stabilization shall be maintained in a manner to render the surface stable against accelerated erosion until permanent ground stabilization is achieved.

GROUND STABILIZATION SPECIFICATION

Stabilize the ground sufficiently so that rain will not dislodge the soil. Use one of the techniques in the table below:

Temporary Stabilization	Permanent Stabilization
• Temporary grass seed covered with straw or other mulches and tackifiers • Hydroseeding • Rolled erosion control products with or without temporary grass seed • Appropriately applied straw or other mulch • Plastic sheeting	• Permanent grass seed covered with straw or other mulches and tackifiers • Geotextile fabrics such as permanent soil reinforcement matting • Hydroseeding • Shrubs or other permanent plantings covered with mulch • Uniform and evenly distributed ground cover sufficient to restrain erosion • Structural methods such as concrete, asphalt or retaining walls • Rolled erosion control products with grass seed

POLYACRYLAMIDES (PAMS) AND FLOCCULANTS

1. Select flocculants that are appropriate for the soils being exposed during construction, selecting from the *NC DWR List of Approved PAMS/Flocculants*.
2. Apply flocculants at or before the inlets to Erosion and Sediment Control Measures.
3. Apply flocculants at the concentrations specified in the *NC DWR List of Approved PAMS/Flocculants* and in accordance with the manufacturer's instructions.
4. Provide ponding area for containment of treated Stormwater before discharging offsite.
5. Store flocculants in leak-proof containers that are kept under storm-resistant cover or surrounded by secondary containment structures.

EQUIPMENT AND VEHICLE MAINTENANCE

1. Maintain vehicles and equipment to prevent discharge of fluids.
2. Provide drip pans under any stored equipment.
3. Identify leaks and repair as soon as feasible, or remove leaking equipment from the project.
4. Collect all spent fluids, store in separate containers and properly dispose as hazardous waste (recycle when possible).
5. Remove leaking vehicles and construction equipment from service until the problem has been corrected.
6. Bring used fuels, lubricants, coolants, hydraulic fluids and other petroleum products to a recycling or disposal center that handles these materials.

LITTER, BUILDING MATERIAL AND LAND CLEARING WASTE

1. Never bury or burn waste. Place litter and debris in approved waste containers.
2. Provide a sufficient number and size of waste containers (e.g dumpster, trash receptacle) on site to contain construction and domestic wastes.
3. Locate waste containers at least 50 feet away from storm drain inlets and surface waters unless no other alternatives are reasonably available.
4. Locate waste containers on areas that do not receive substantial amounts of runoff from upland areas and does not drain directly to a storm drain, stream or wetland.
5. Cover waste containers at the end of each workday and before storm events or provide secondary containment. Repair or replace damaged waste containers.
6. Anchor all lightweight items in waste containers during times of high winds.
7. Empty waste containers as needed to prevent overflow. Clean up immediately if containers overflow.
8. Dispose waste off-site at an approved disposal facility.
9. On business days, clean up and dispose of waste in designated waste containers.

PAINT AND OTHER LIQUID WASTE

1. Do not dump paint and other liquid waste into storm drains, streams or wetlands.
2. Locate paint washouts at least 50 feet away from storm drain inlets and surface waters unless no other alternatives are reasonably available.
3. Contain liquid wastes in a controlled area.
4. Containment must be labeled, sized and placed appropriately for the needs of site.
5. Prevent the discharge of soaps, solvents, detergents and other liquid wastes from construction sites.

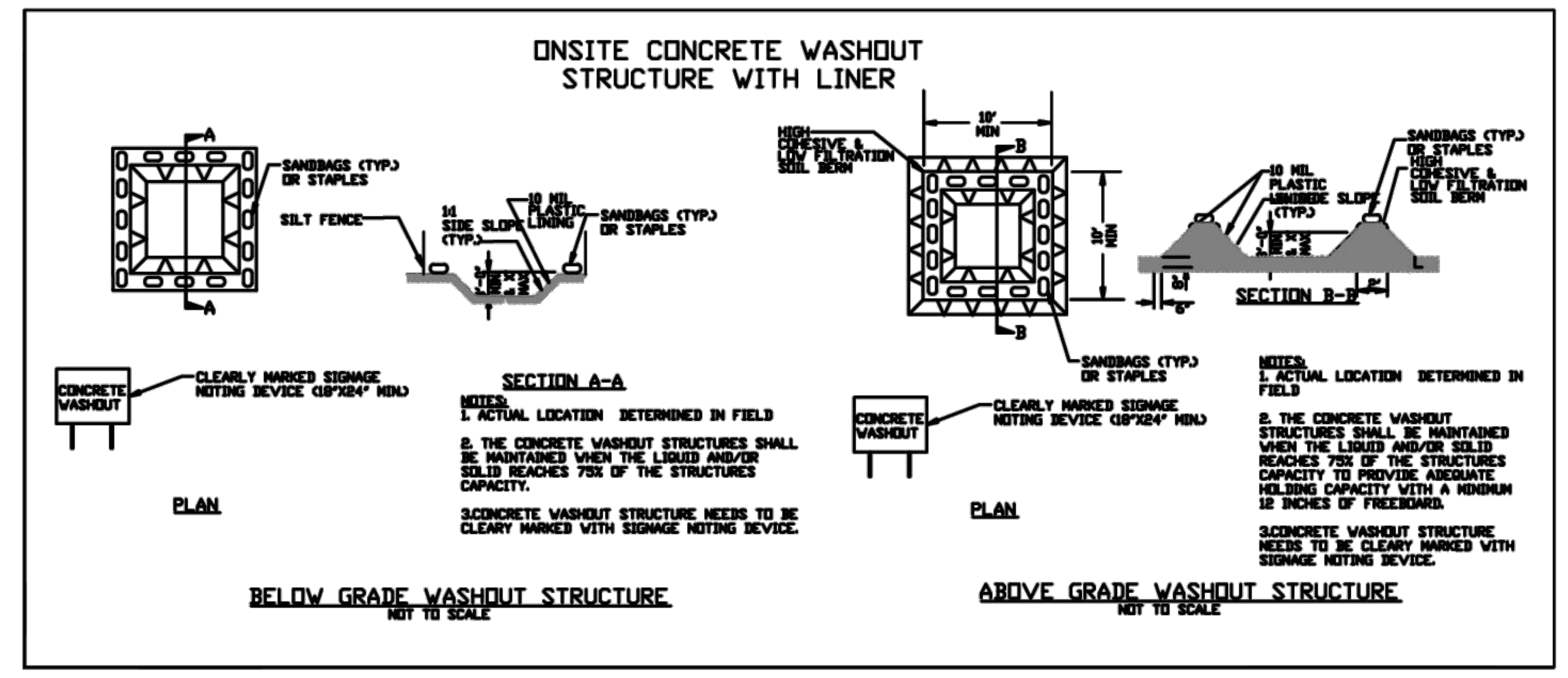
PORTABLE TOILETS

1. Install portable toilets on level ground, at least 50 feet away from storm drains, streams or wetlands unless there is no alternative reasonably available. If 50 foot offset is not attainable, provide relocation of portable toilet behind silt fence or place on a gravel pad and surround with sand bags.
2. Provide staking or anchoring of portable toilets during periods of high winds or in high foot traffic areas.
3. Monitor portable toilets for leaking and properly dispose of any leaked material. Utilize a licensed sanitary waste hauler to remove leaking portable toilets and replace with properly operating unit.

EARTHEN STOCKPILE MANAGEMENT

1. Show stockpile locations on plans. Locate earthen-material stockpile areas at least 50 feet away from storm drain inlets, sediment basins, perimeter sediment controls and surface waters unless it can be shown no other alternatives are reasonably available.
2. Protect stockpile with silt fence installed along toe of slope with a minimum offset of five feet from the toe of stockpile.
3. Provide stable stone access point when feasible.
4. Stabilize stockpile within the timeframes provided on this sheet and in accordance with the approved plan and any additional requirements. Soil stabilization is defined as vegetative, physical or chemical coverage techniques that will restrain accelerated erosion on disturbed soils for temporary or permanent control needs.

NORTH CAROLINA
Environmental Quality



CONCRETE WASHOUTS

1. Do not discharge concrete or cement slurry from the site.
2. Dispose of, or recycle settled, hardened concrete residue in accordance with local and state solid waste regulations and at an approved facility.
3. Manage washout from mortar mixers in accordance with the above item and in addition place the mixer and associated materials on impervious barrier and within lot perimeter silt fence.
4. Install temporary concrete washouts per local requirements, where applicable. If an alternate method or product is to be used, contact your approval authority for review and approval. If local standard details are not available, use one of the two types of temporary concrete washouts provided on this detail.
5. Do not use concrete washouts for dewatering or storing defective curb or sidewalk sections. Stormwater accumulated within the washout may not be pumped into or discharged to the storm drain system or receiving surface waters. Liquid waste must be pumped out and removed from project.
6. Locate washouts at least 50 feet from storm drain inlets and surface waters unless it can be shown that no other alternatives are reasonably available. At a minimum, install protection of storm drain inlet(s) closest to the washout which could receive spills or overflow.
7. Locate washouts in an easily accessible area, on level ground and install a stone entrance pad in front of the washout. Additional controls may be required by the approving authority.
8. Install at least one sign directing concrete trucks to the washout within the project limits. Post signage on the washout itself to identify this location.
9. Remove leavings from the washout when at approximately 75% capacity to limit overflow events. Replace the tarp, sand bags or other temporary structural components when no longer functional. When utilizing alternative or proprietary products, follow manufacturer's instructions.
10. At the completion of the concrete work, remove remaining leavings and dispose of in an approved disposal facility. Fill pit, if applicable, and stabilize any disturbance caused by removal of washout.

HERBICIDES, PESTICIDES AND RODENTICIDES

1. Store and apply herbicides, pesticides and rodenticides in accordance with label restrictions.
2. Store herbicides, pesticides and rodenticides in their original containers with the label, which lists directions for use, ingredients and first aid steps in case of accidental poisoning.
3. Do not store herbicides, pesticides and rodenticides in areas where flooding is possible or where they may spill or leak into wells, stormwater drains, ground water or surface water. If a spill occurs, clean area immediately.
4. Do not stockpile these materials onsite.

HAZARDOUS AND TOXIC WASTE

1. Create designated hazardous waste collection areas on-site.
2. Place hazardous waste containers under cover or in secondary containment.
3. Do not store hazardous chemicals, drums or bagged materials directly on the ground.

NCG01 GROUND STABILIZATION AND MATERIALS HANDLING

EFFECTIVE: 04/01/19

Bissell Professional Group
Firm License # C-956
3512 North Croatan Highway
P.O. Box 1068
Kitty Hawk, North Carolina 27949
(252) 261-3266
FAX (252) 261-1760
BISSELL PROFESSIONAL GROUP
Engineers, Planners, Surveyors and Environmental Specialists

NCG01 - GROUND STABILIZATION & MATERIALS HANDLING

PROJECT: COROLLA BOAT CLUB - PHASE 1, MONTERAY SHORES PHASE 10
POPLAR BRANCH TOWNSHIP — CURRITUCK COUNTY — NORTH CAROLINA
CONSTRUCTION DRAWINGS

NO.	DATE	REVISIONS DESCRIPTION	BY

PRELIMINARY DO NOT USE FOR CONSTRUCTION

DATE: 2-15-23	SCALE: NO SCALE
DESIGNED: BPG	CHECKED: MSB
DRAWN: KFW/DMK	APPROVED: BPG

SHEET: 12 OF 16
CAD FILE: 459600B3
PROJECT NO: 4596

PART III
SELF-INSPECTION, RECORDKEEPING AND REPORTING

SECTION A: SELF-INSPECTION

Self-inspections are required during normal business hours in accordance with the table below. When adverse weather or site conditions would cause the safety of the inspection personnel to be in jeopardy, the inspection may be delayed until the next business day on which it is safe to perform the inspection. In addition, when a storm event of equal to or greater than 1.0 inch occurs outside of normal business hours, the self-inspection shall be performed upon the commencement of the next business day. Any time when inspections were delayed shall be noted in the Inspection Record.

Inspect	Frequency (during normal business hours)	Inspection records must include:
(1) Rain gauge maintained in good working order	Daily	Daily rainfall amounts. If no daily rain gauge observations are made during weekend or holiday periods, and no individual-day rainfall information is available, record the cumulative rain measurement for those un-attended days (and this will determine if a site inspection is needed). Days on which no rainfall occurred shall be recorded as "zero." The permittee may use another rain-monitoring device approved by the Division.
(2) E&SC Measures	At least once per 7 calendar days and within 24 hours of a rain event ≥ 1.0 inch in 24 hours	1. Identification of the measures inspected, 2. Date and time of the inspection, 3. Name of the person performing the inspection, 4. Indication of whether the measures were operating properly, 5. Description of maintenance needs for the measure, 6. Description, evidence, and date of corrective actions taken.
(3) Stormwater discharge outfalls (SDOs)	At least once per 7 calendar days and within 24 hours of a rain event ≥ 1.0 inch in 24 hours	1. Identification of the discharge outfalls inspected, 2. Date and time of the inspection, 3. Name of the person performing the inspection, 4. Evidence of indicators of stormwater pollution such as oil sheen, floating or suspended solids or discoloration, 5. Indication of visible sediment leaving the site, 6. Description, evidence, and date of corrective actions taken.
(4) Perimeter of site	At least once per 7 calendar days and within 24 hours of a rain event ≥ 1.0 inch in 24 hours	If visible sedimentation is found outside site limits, then a record of the following shall be made: 1. Actions taken to clean up or stabilize the sediment that has left the site limits, 2. Description, evidence, and date of corrective actions taken, and 3. An explanation as to the actions taken to control future releases.
(5) Streams or wetlands onsite or offsite (where accessible)	At least once per 7 calendar days and within 24 hours of a rain event ≥ 1.0 inch in 24 hours	If the stream or wetland has increased visible sedimentation or a stream has visible increased turbidity from the construction activity, then a record of the following shall be made: 1. Description, evidence and date of corrective actions taken, and 2. Records of the required reports to the appropriate Division Regional Office per Part III, Section C, Item (2)(a) of this permit.
(6) Ground stabilization measures	After each phase of grading	1. The phase of grading (installation of perimeter E&SC measures, clearing and grubbing, installation of storm drainage facilities, completion of all land-disturbing activity, construction or redevelopment, permanent ground cover). 2. Documentation that the required ground stabilization measures have been provided within the required timeframe or an assurance that they will be provided as soon as possible.

NOTE: The rain inspection resets the required 7 calendar day inspection requirement.

PART III
SELF-INSPECTION, RECORDKEEPING AND REPORTING

SECTION B: RECORDKEEPING

1. E&SC Plan Documentation

The approved E&SC plan as well as any approved deviation shall be kept on the site. The approved E&SC plan must be kept up-to-date throughout the coverage under this permit. The following items pertaining to the E&SC plan shall be kept on site and available for inspection at all times during normal business hours.

Item to Document	Documentation Requirements
(a) Each E&SC measure has been installed and does not significantly deviate from the locations, dimensions and relative elevations shown on the approved E&SC plan.	Initial and date each E&SC measure on a copy of the approved E&SC plan or complete, date and sign an inspection report that lists each E&SC measure shown on the approved E&SC plan. This documentation is required upon the initial installation of the E&SC measures or if the E&SC measures are modified after initial installation.
(b) A phase of grading has been completed.	Initial and date a copy of the approved E&SC plan or complete, date and sign an inspection report to indicate completion of the construction phase.
(c) Ground cover is located and installed in accordance with the approved E&SC plan.	Initial and date a copy of the approved E&SC plan or complete, date and sign an inspection report to indicate compliance with approved ground cover specifications.
(d) The maintenance and repair requirements for all E&SC measures have been performed.	Complete, date and sign an inspection report.
(e) Corrective actions have been taken to E&SC measures.	Initial and date a copy of the approved E&SC plan or complete, date and sign an inspection report to indicate the completion of the corrective action.

2. Additional Documentation to be Kept on Site

In addition to the E&SC plan documents above, the following items shall be kept on the site and available for inspectors at all times during normal business hours, unless the Division provides a site-specific exemption based on unique site conditions that make this requirement not practical:

(a) This General Permit as well as the Certificate of Coverage, after it is received.

(b) Records of inspections made during the previous twelve months. The permittee shall record the required observations on the Inspection Record Form provided by the Division or a similar inspection form that includes all the required elements. Use of electronically-available records in lieu of the required paper copies will be allowed if shown to provide equal access and utility as the hard-copy records.

3. Documentation to be Retained for Three Years

All data used to complete the e-NOI and all inspection records shall be maintained for a period of three years after project completion and made available upon request. [40 CFR 122.41]

PART III
SELF-INSPECTION, RECORDKEEPING AND REPORTING

SECTION C: REPORTING

1. Occurrences that Must be Reported

Permittees shall report the following occurrences:

(a) Visible sediment deposition in a stream or wetland.

(b) Oil spills if:

- They are 25 gallons or more,
- They are less than 25 gallons but cannot be cleaned up within 24 hours,
- They cause sheen on surface waters (regardless of volume), or
- They are within 100 feet of surface waters (regardless of volume).

(c) Releases of hazardous substances in excess of reportable quantities under Section 311 of the Clean Water Act (Ref: 40 CFR 110.3 and 40 CFR 117.3) or Section 102 of CERCLA (Ref: 40 CFR 302.4) or G.S. 143-215.85.

(d) Anticipated bypasses and unanticipated bypasses.

(e) Noncompliance with the conditions of this permit that may endanger health or the environment.

2. Reporting Timeframes and Other Requirements

After a permittee becomes aware of an occurrence that must be reported, he shall contact the appropriate Division regional office within the timeframes and in accordance with the other requirements listed below. Occurrences outside normal business hours may also be reported to the Department's Environmental Emergency Center personnel at (800) 858-0368.

Occurrence	Reporting Timeframes (After Discovery) and Other Requirements
(a) Visible sediment deposition in a stream or wetland	• ***Within 24 hours***, an oral or electronic notification. • ***Within 7 calendar days***, a report that contains a description of the sediment and actions taken to address the cause of the deposition. Division staff may waive the requirement for a written report on a case-by-case basis. • If the stream is named on the NC 303(d) list as impaired for sediment-related causes, the permittee may be required to perform additional monitoring, inspections or apply more stringent practices if staff determine that additional requirements are needed to assure compliance with the federal or state impaired-waters conditions.
(b) Oil spills and release of hazardous substances per Item 1(b)-(c) above	• ***Within 24 hours***, an oral or electronic notification. The notification shall include information about the date, time, nature, volume and location of the spill or release.
(c) Anticipated bypasses [40 CFR 122.41(m)(3)]	• ***A report at least ten days before the date of the bypass, if possible***. The report shall include an evaluation of the anticipated quality and effect of the bypass.
(d) Unanticipated bypasses [40 CFR 122.41(m)(3)]	• ***Within 24 hours***, an oral or electronic notification. • ***Within 7 calendar days,*** a report that includes an evaluation of the quality and effect of the bypass.
(e) Noncompliance with the conditions of this permit that may endanger health or the environment[40 CFR 122.41(l)(7)]	• ***Within 24 hours***, an oral or electronic notification. • ***Within 7 calendar days***, a report that contains a description of the noncompliance, and its causes; the period of noncompliance, including exact dates and times, and if the noncompliance has not been corrected, the anticipated time noncompliance is expected to continue; and steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance. [40 CFR 122.41(l)(6). • Division staff may waive the requirement for a written report on a case-by-case basis.

PART II, SECTION G, ITEM (4)
DRAW DOWN OF SEDIMENT BASINS FOR MAINTENANCE OR CLOSE OUT

Sediment basins and traps that receive runoff from drainage areas of one acre or more shall use outlet structures that withdraw water from the surface when these devices need to be drawn down for maintenance or close out unless this is infeasible. The circumstances in which it is not feasible to withdraw water from the surface shall be rare (for example, times with extended cold weather). Non-surface withdrawals from sediment basins shall be allowed only when all of the following criteria have been met:

(a) The E&SC plan authority has been provided with documentation of the non-surface withdrawal and the specific time periods or conditions in which it will occur. The non-surface withdrawal shall not commence until the E&SC plan authority has approved these items,

(b) The non-surface withdrawal has been reported as an anticipated bypass in accordance with Part III, Section C, Item (2)(c) and (d) of this permit,

(c) Dewatering discharges are treated with controls to minimize discharges of pollutants from stormwater that is removed from the sediment basin. Examples of appropriate controls include properly sited, designed and maintained dewatering tanks, weir tanks, and filtration systems,

(d) Vegetated, upland areas of the sites or a properly designed stone pad is used to the extent feasible at the outlet of the dewatering treatment devices described in Item (c) above,

(e) Velocity dissipation devices such as check dams, sediment traps, and riprap are provided at the discharge points of all dewatering devices, and

(f) Sediment removed from the dewatering treatment devices described in Item (c) above is disposed of in a manner that does not cause deposition of sediment into waters of the United States.

NORTH CAROLINA
Environmental Quality

NCG01 SELF-INSPECTION, RECORDKEEPING AND REPORTING

EFFECTIVE: 04/01/19

Bissell Professional Group
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Kitty Hawk, North Carolina 27949
(252) 261-3266
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BISSELL PROFESSIONAL GROUP
Engineers, Planners, Surveyors and Environmental Specialists

NCG01 - SELF INSPECTION, RECORDKEEPING & REPORTING

PROJECT: COROLLA BOAT CLUB - PHASE 1, MONTERAY SHORES PHASE 10
POPLAR BRANCH TOWNSHIP CURRITUCK COUNTY NORTH CAROLINA

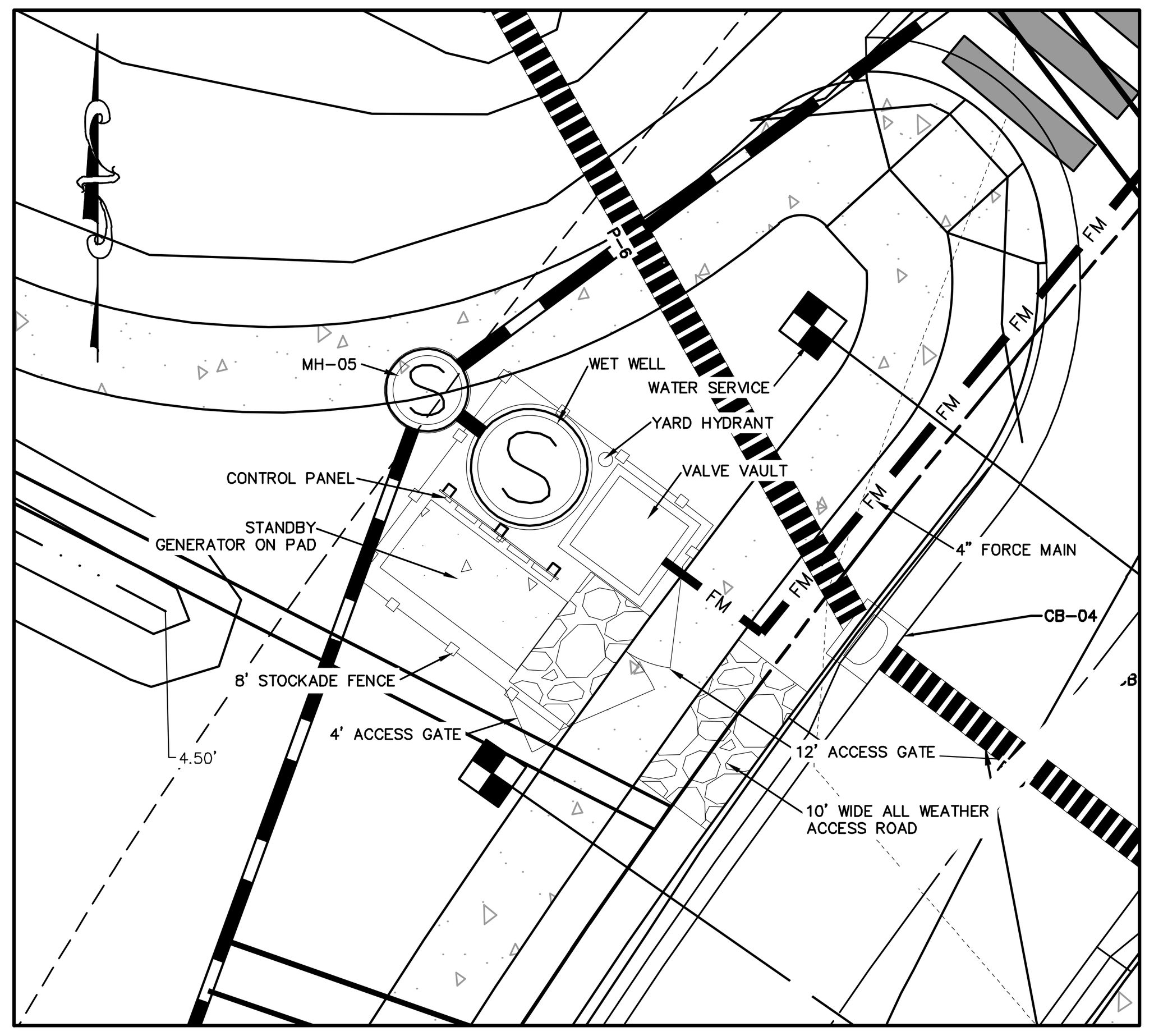
CONSTRUCTION DRAWINGS

REVISIONS			
NO.	DATE	DESCRIPTION	BY

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 042699 DAVID M. KLEIN
PRELIMINARY DO NOT USE FOR CONSTRUCTION

DATE: 2-15-23	SCALE: NO SCALE
DESIGNED: BPG	CHECKED: MSB
DRAWN: KFW/DMK	APPROVED: BPG
SHEET: 13 OF 16	
CAD FILE: 459600B3	
PROJECT NO: 4596	

WASTEWATER COLLECTION SYSTEM LIFT STATION SCHEDULE	
DIMENSION	
A: TOP OF TANKS	7.00 M.S.L.
B: GROUND ELEV. (FINISHED)	6.50 M.S.L.
C: HEIGHT OF WET WELL	15.0'
D: INV. IN	−2.20 M.S.L.
E: BOTTOM OF WET WELL	−8.00 M.S.L.
F: DIAMETER OF TANK	6'ø INSIDE
G: VALVE CHAMBER	5'X5' INSIDE
H: F.M. ELEV. OUT	2.78 M.S.L.
I: F.M. DIAMETER	4"ø
J: ALARM LEVEL	−3.00 M.S.L.
K: LAG PUMP ON	−3.50 M.S.L.
L: LEAD PUMP ON	−4.00 M.S.L.
M: BOTH PUMPS OFF	−6.00 M.S.L.
N: D−E	5.96'
O: BOTTOM OF VALVE VAULT	1.50 M.S.L.
P: AUTO DIALER FLOAT	−3.00 M.S.L.
PUMP AND MOTOR DATA	
DESIGN FLOW (Q)	82 GPM
TOTAL DYNAMIC HEAD (TDH)	36.0'
RECOMMENDED PUMP OR APPROVED EQUAL	HOMA AMS434−170/4, 3T/C 6 11/16" IMPELLER, 4.3 HP (OR APPROVED EQUAL)

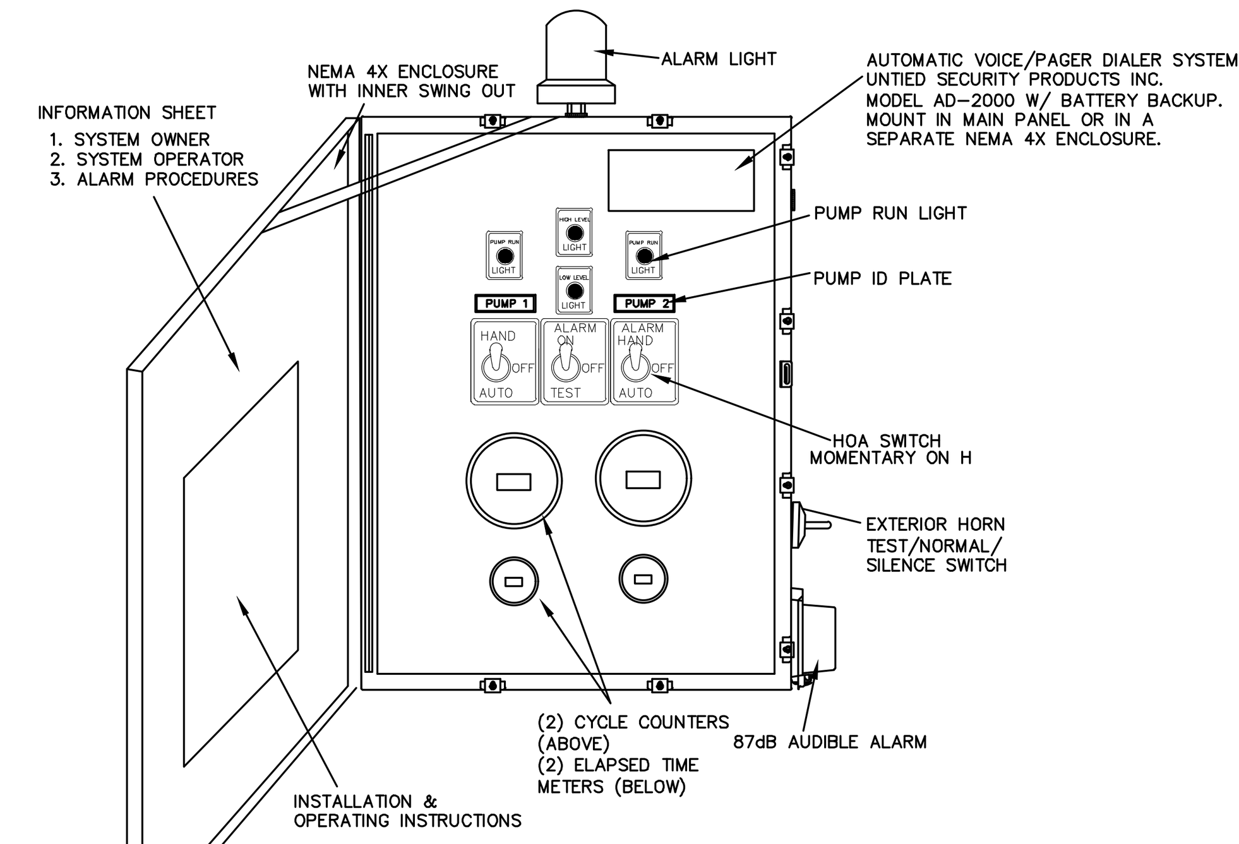


COROLLA BOAT CLUB - PHASE 1
LIFT STATION-14 SITE PLAN

SCALE: 1"=10' (PLAN VIEW)

NOTES:

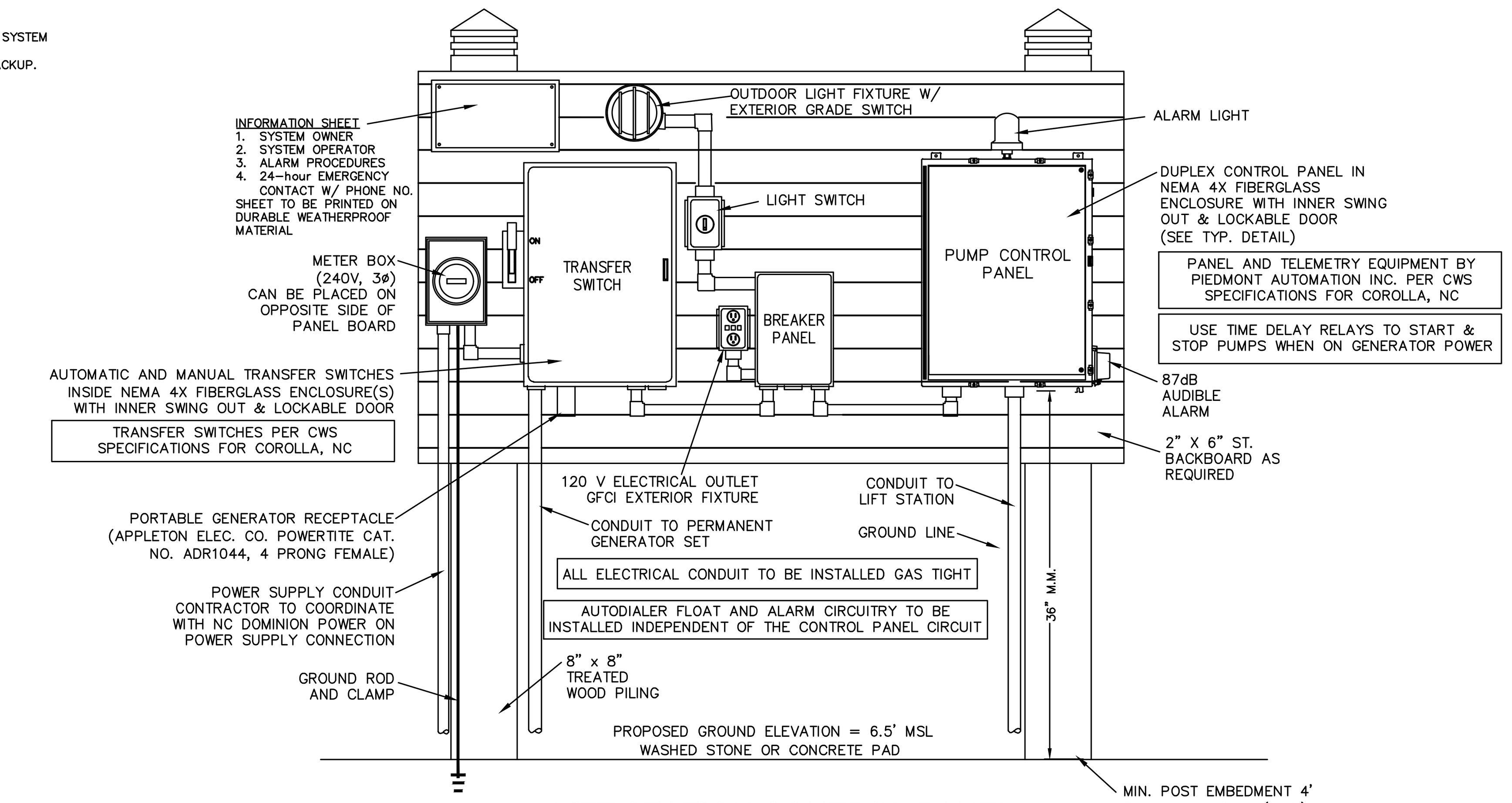
1. THIS PUMP STATION HAS BEEN DESIGNED TO COMPLY WITH NCAC 15A 2T.0305 AND MEETS OR EXCEEDS ALL REQUIREMENTS OF FAST−TRACK PERMITTING, MINIMUM DESIGN CRITERIA.
2. DESIGN PUMPING CAPACITY: 82 GPM, @ 36.0 TDH
3. PUMP SELECTION: HOMA AMS434−170/4, 3T/C (OR APPROVED EQUAL).
4. ALL HATCHES SHALL BE PADLOCKED AT ALL TIMES.
5. ALL DIP DISCHARGE PIPING 12" AND SMALLER SHALL BE PRESSURE CLASS 350. SEE SPECS
6. ALL PVC DISCHARGE PIPING 4" AND LARGER SHALL BE CLASS 235 DR 18 PER AWWA C900. SEE SPECS.
7. ALL CONTROL SYSTEM ENCLOSURES SHALL BE NEMA 4X RATED.
8. ALL TANKS SHALL BE LEAK TESTED IN ACCORDANCE WITH SPACES
9. ALL COMPONENTS WITHIN THE PUMP TANK SHALL BE STAINLESS STEEL INCLUDING GUIDE RAILS, BRACKETS, BOLTS, LIFTING CHAIN, ETC.
10. PRECAST INLET BOOTS SHALL BE PROVIDED BY PRECAST LIFT STATION MANUFACTURER. ALL OPENINGS SHALL BE GROUTED.
11. PUMP LIFT−OUT RAIL SYSTEM SHALL BE HOMA WITH STAINLESS STEEL COMPONENTS, OR APPROVED EQUAL.
12. ACCESS HATCHES SHALL BE HALLIDAY MODELS, AS SPECIFIED ON DRAWINGS.
13. AN ALL WEATHER ACCESS ROAD SHALL BE PROVIDED TO THE LIFT STATION.
14. THE WET WELL, VALVE VAULT & CONTROL PANELS SHALL BE SECURELY LOCKED AT ALL TIMES.
15. CONTRACTOR TO BE RESPONSIBLE FOR VERIFYING EXISTING POWER VOLTAGE AND PHASE PRIOR TO ORDERING PUMPS & CONTROLS
16. PUMP STATION DESIGN SPECIFICATIONS TO CONFORM TO LATEST ASTM C478 SPECIFICATIONS FOR "PRECAST REINFORCED CONCRETE MANHOLE SECTIONS." CONCRETE COMPRESSIVE STRENGTH SHALL BE 4000 PSI MINIMUM. MANHOLE STEPS SHALL BE STEEL REINFORCED COPOLYMER POLYPROPYLENE PLASTIC STEPS WHICH CONFORM TO LATEST ASTM C478 SPECIFICATIONS IN BOTH MATERIAL & DESIGN.
17. ADDITIONAL WASTEWATER FLOWS SHALL NOT BE MADE TRIBUTARY TO THE LIFT STATION UNTIL A REQUEST FOR A PERMIT MODIFICATION IS SUBMITTED & APPROVED BY NCDENR−DWQ.



DUPLEX CONTROL PANEL DETAIL

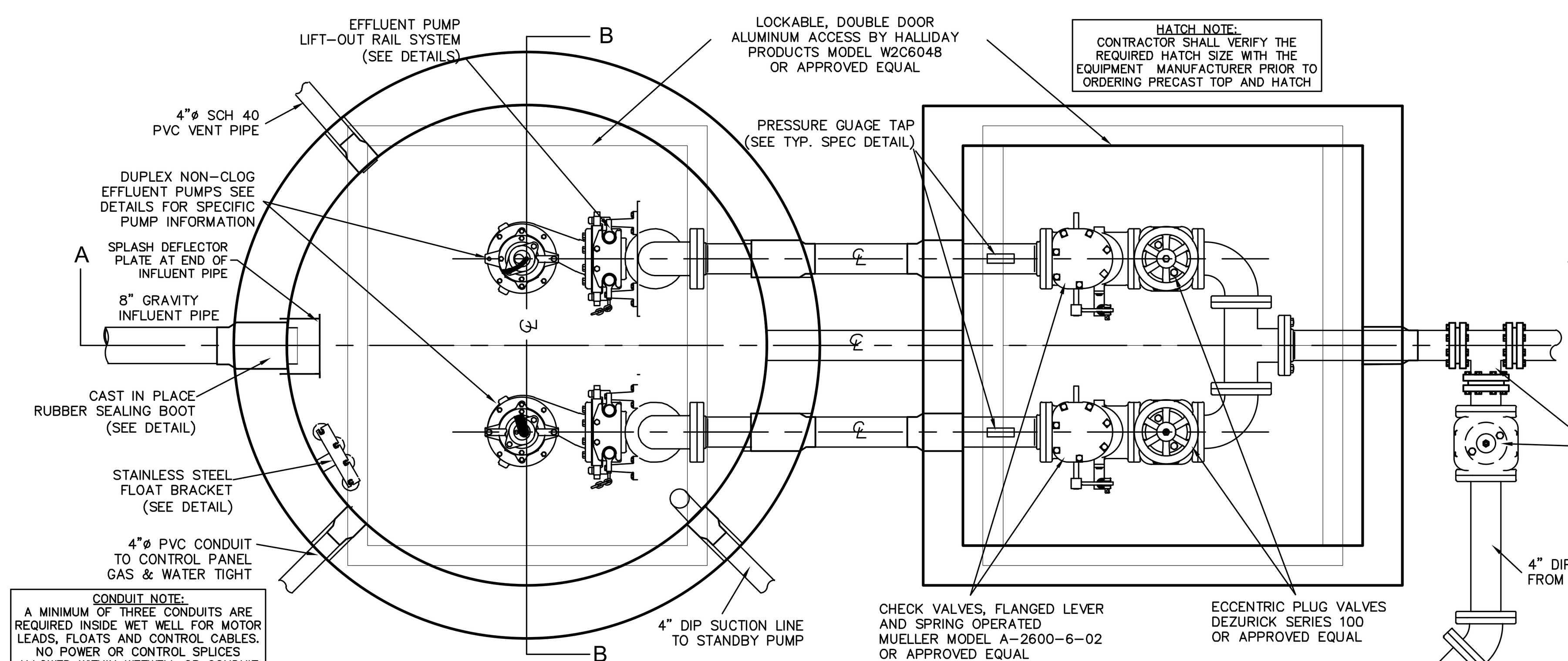
NOT TO SCALE — FRONT VIEW

ALL PANELS SHALL BE DEAD FRONT WITH INNER SWING OUT DOORS ONLY. ALL ENCLOSURES SHALL BE NEMA 4X RATED ONLY AND LOCKABLE. NO EXCEPTIONS



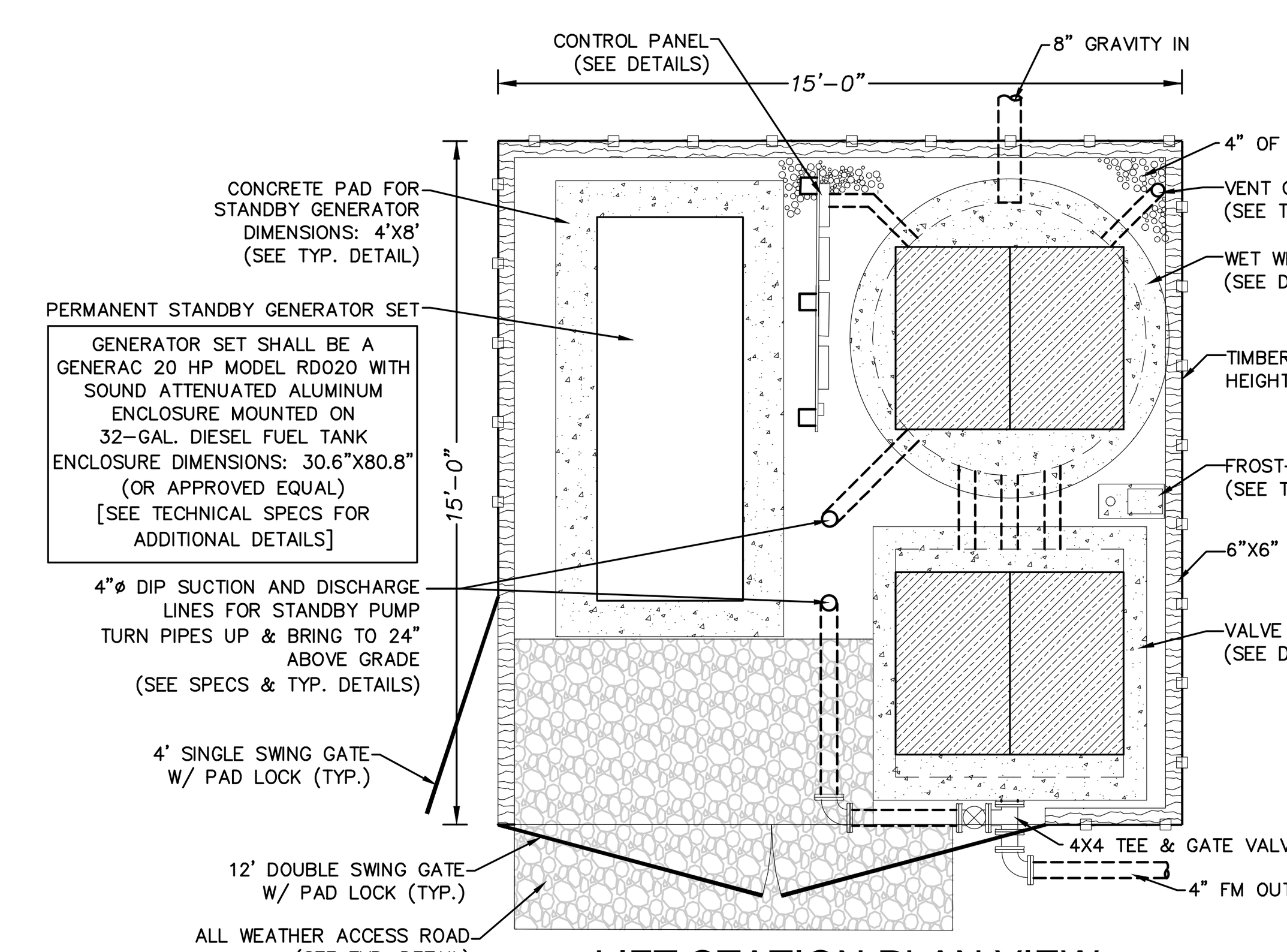
LIFT STATION CONTROL PANEL

NOT TO SCALE



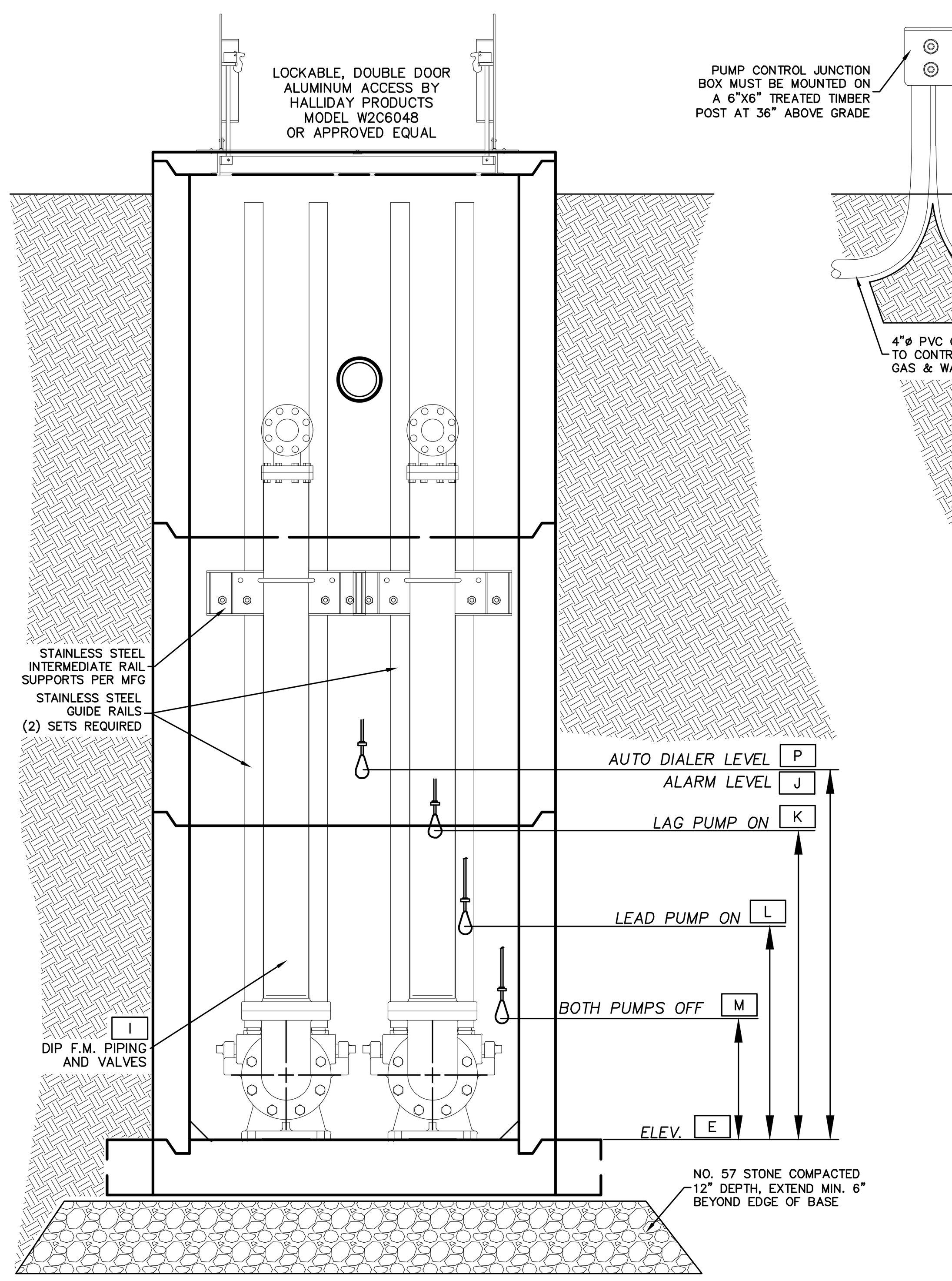
WETWELL AND VALVE VAULT

NOT TO SCALE — PLAN VIEW

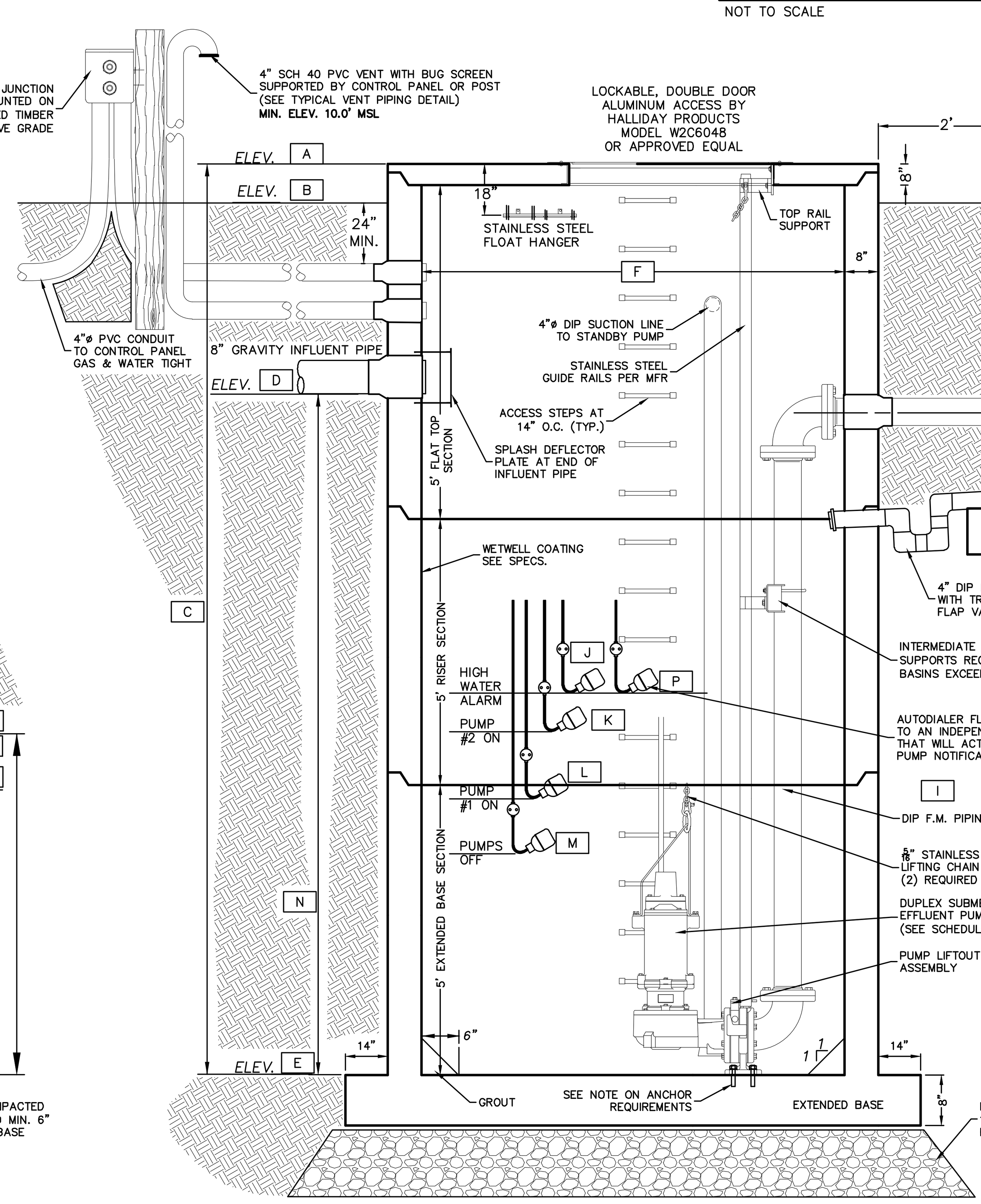


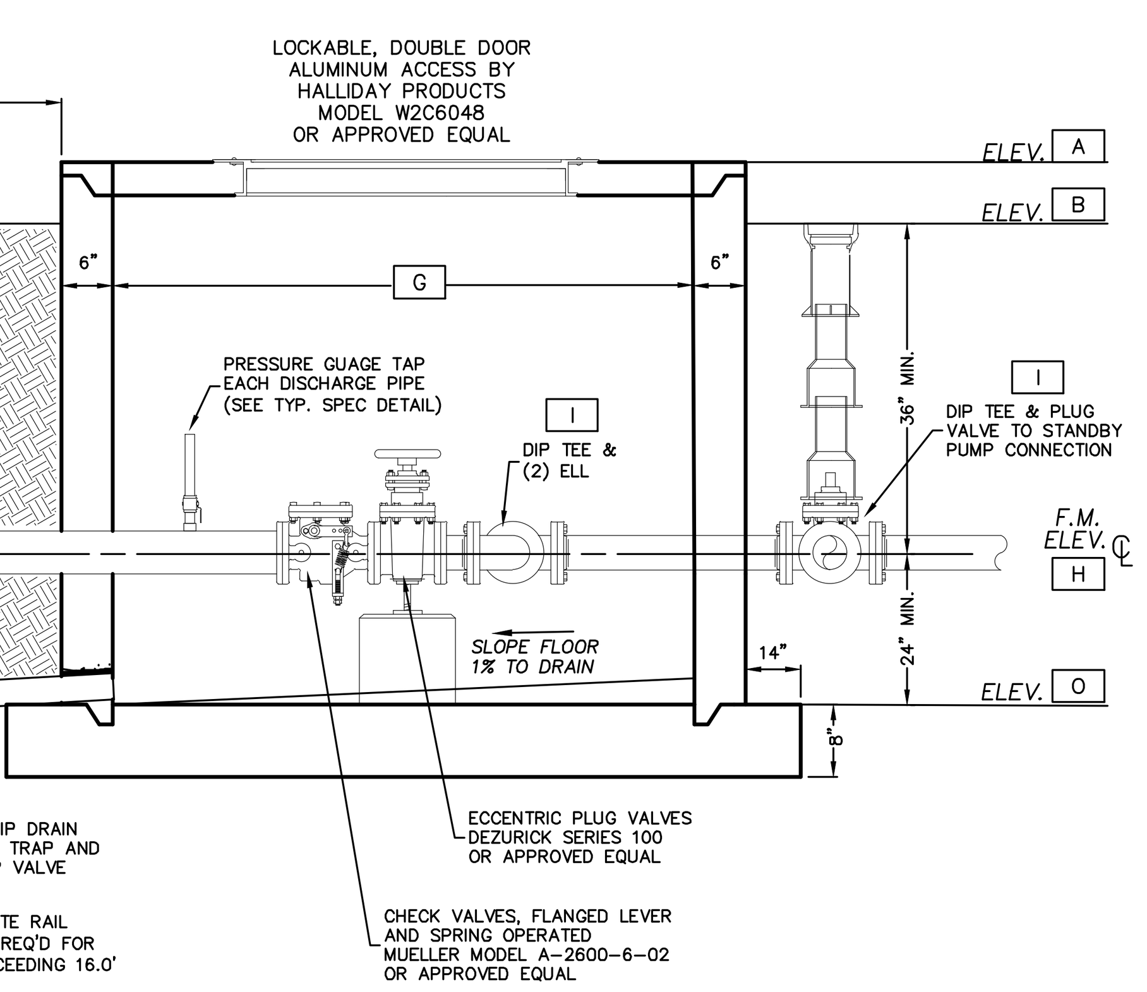
LIFT STATION PLAN VIEW

(SEE PLAN FOR LOCATION)



SECTION B-B

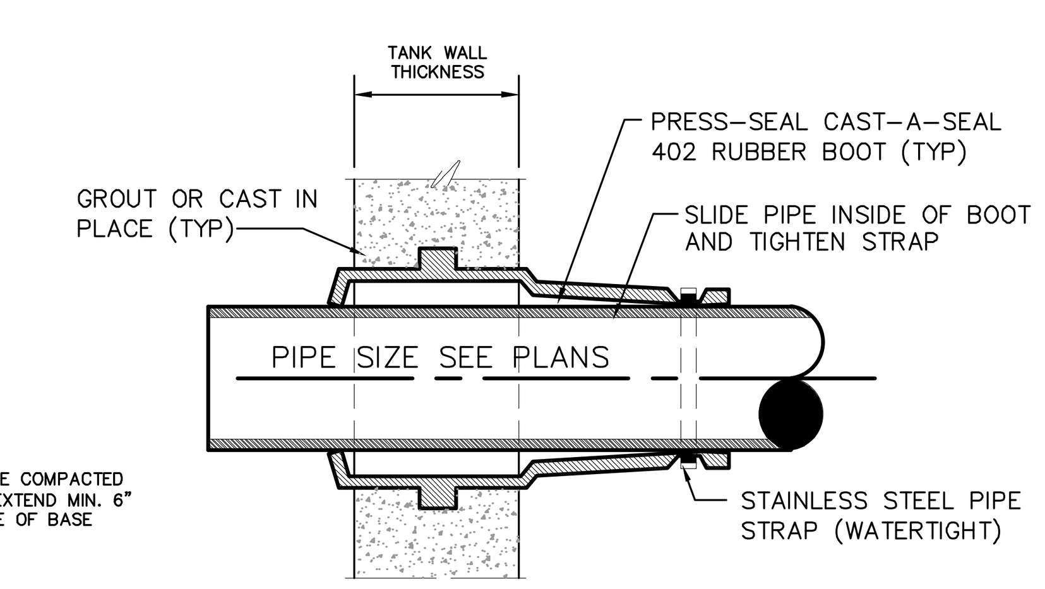




SECTION A-A

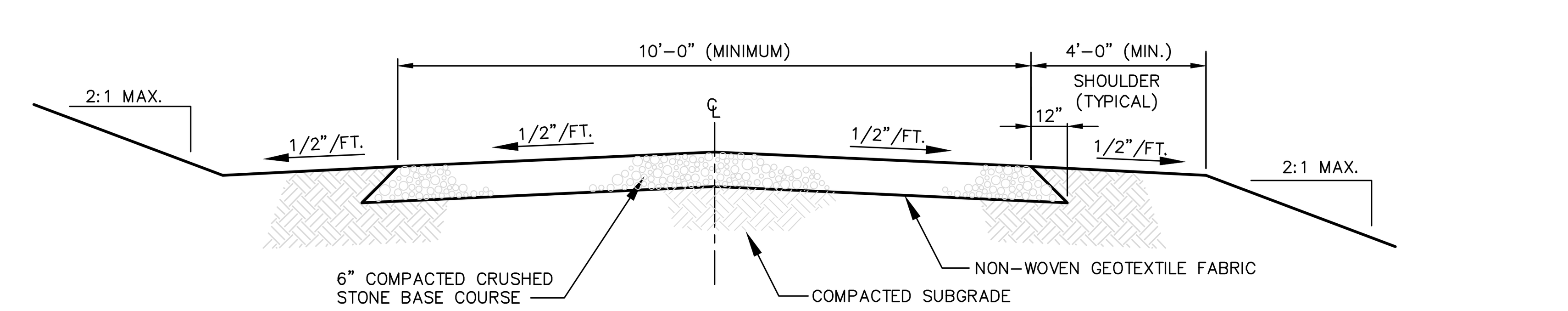
WETWELL AND VALVE VAULT SECTION

NOT TO SCALE — SECTION VIEW



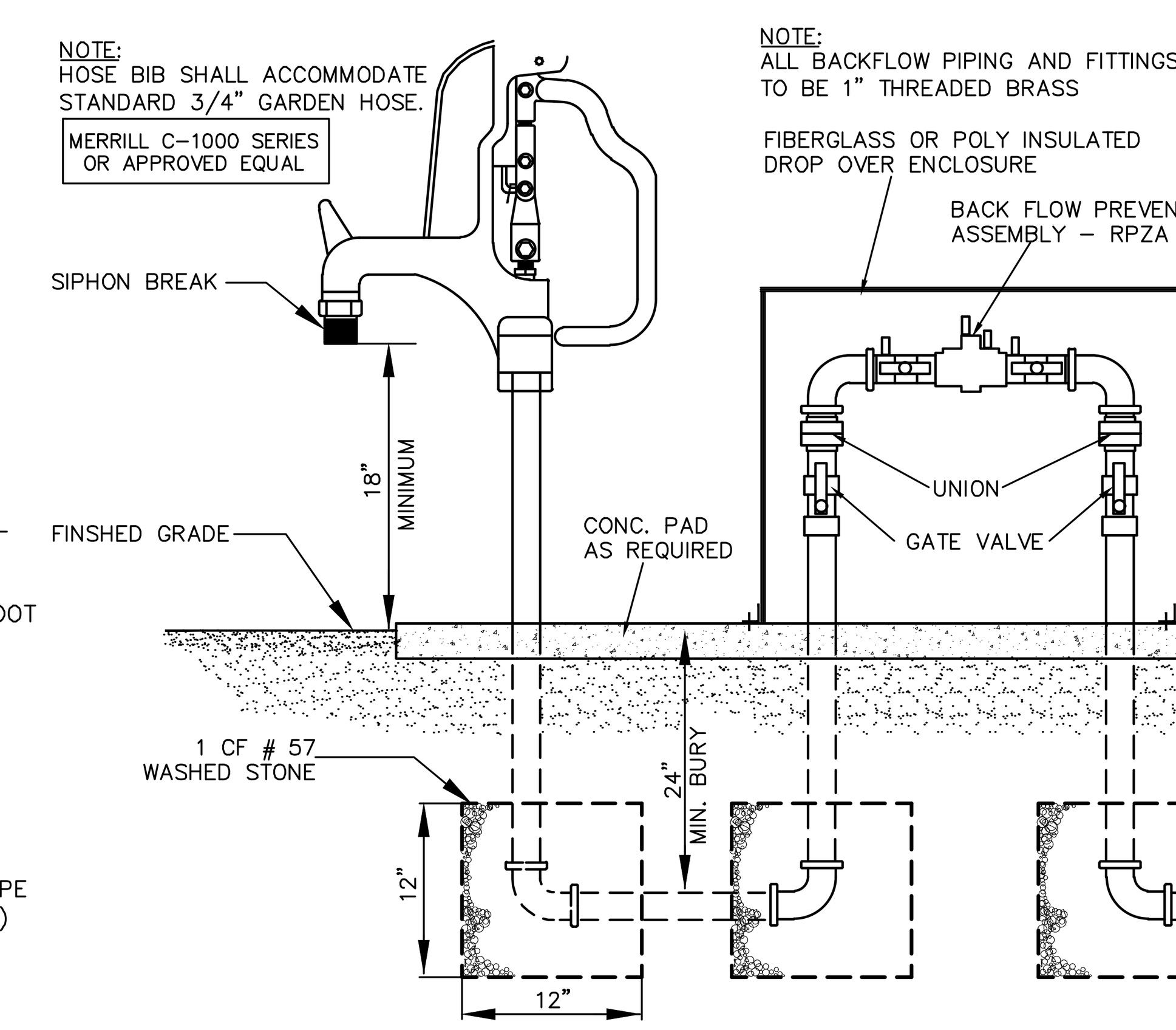
GASKETED FLEXIBLE WATERTIGHT CONNECTION DETAIL

NOT TO SCALE



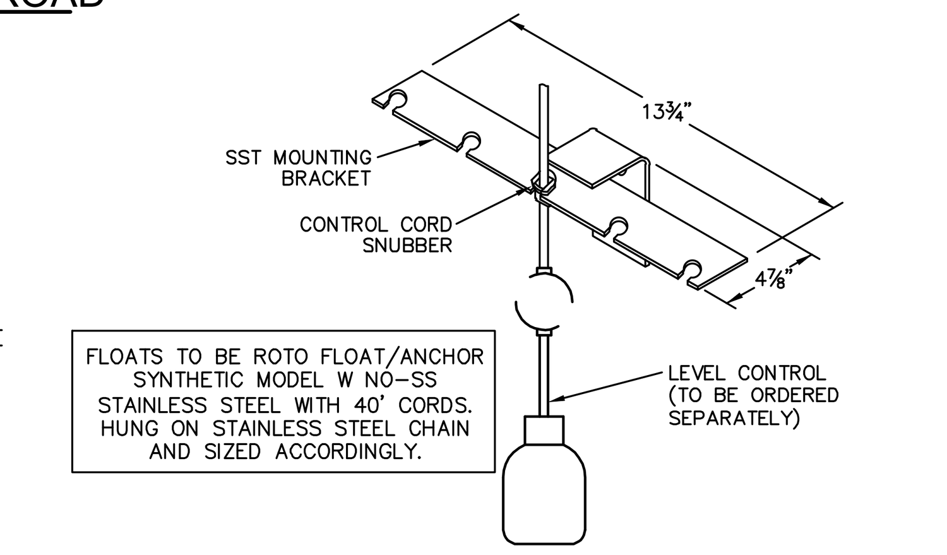
PUMP STATION ACCESS ROAD

NOT TO SCALE



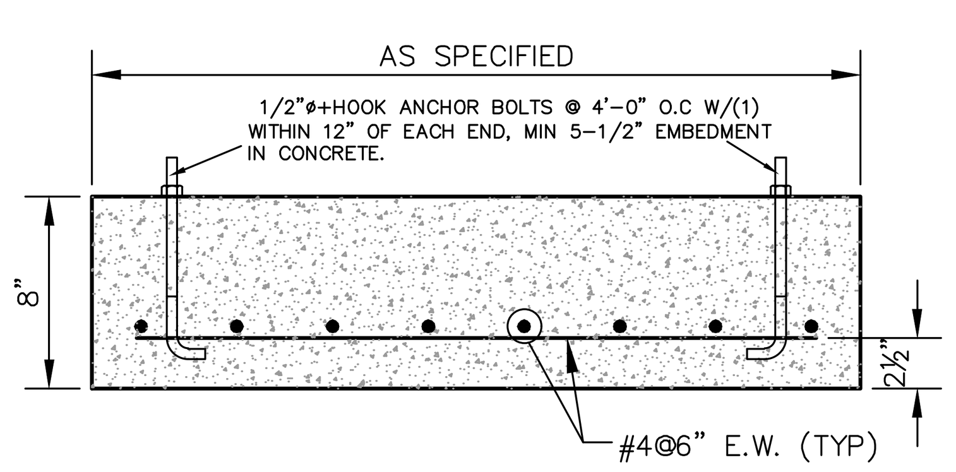
FROST-PROOF YARD HYDRANT DETAIL

NOT TO SCALE



FLOAT BRACKET DETAIL FOR SUBMERSIBLE LIFT STATION

NOT TO SCALE — MYERS CSB5-SS



STANDBY PUMP/GENERATOR PAD DETAIL

NOT TO SCALE

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3512 North Croatan Highway
P.O. Box 1068
Kitty Hawk, North Carolina 27949
(252) 261-3266
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BISSELL PROFESSIONAL GROUP
Engineers, Planners, Surveyors and Environmental Specialists

WASTEWATER LIFT STATION CONSTRUCTION DETAILS

PROJECT: COROLLA BOAT CLUB - PHASE 1, MONTERAY SHORES PHASE 10

POPLAR BRANCH TOWNSHIP — CURRITUCK COUNTY — NORTH CAROLINA

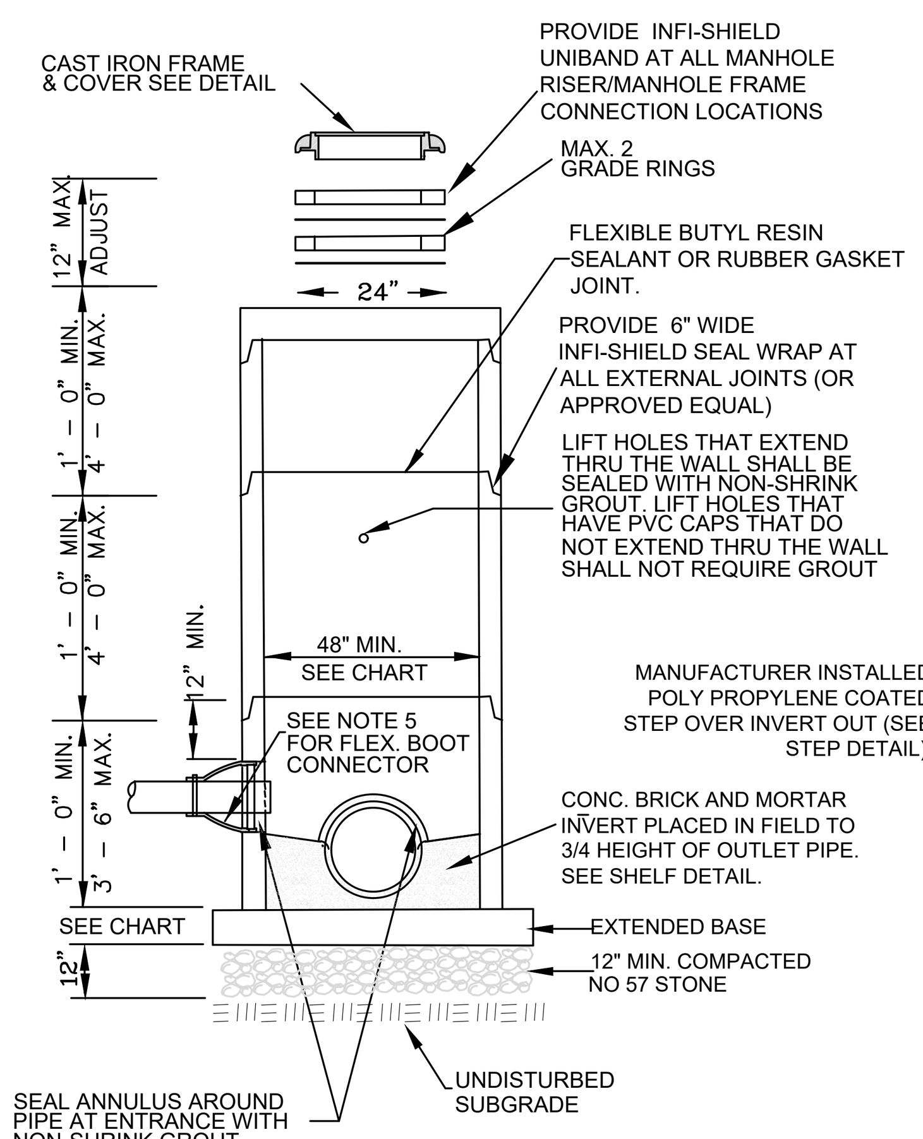
CONSTRUCTION DRAWINGS

REVISIONS

NO.	DATE	DESCRIPTION	BY
1	3-24-23	LIFT STATION DETAILS	DMK

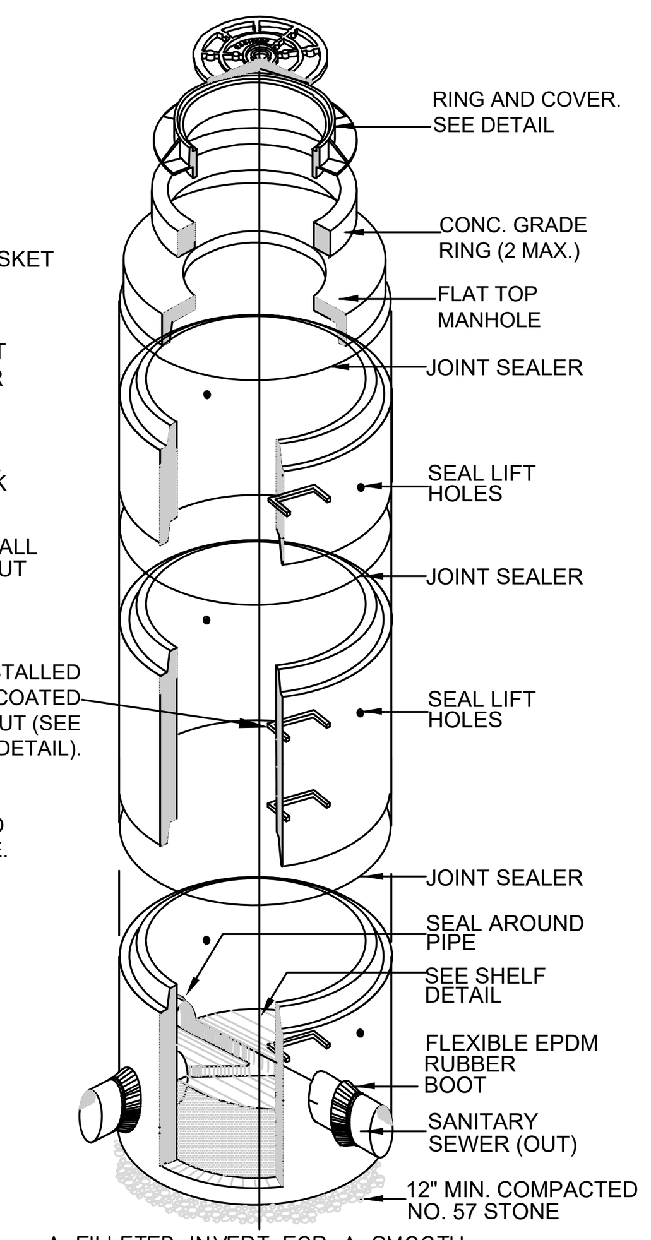
PRELIMINARY DO NOT USE FOR CONSTRUCTION

DATE: 2-15-23	SCALE: 1"=30'
DESIGNED: BPG	CHECKED: MSB
DRAWN: KFW/DMK	APPROVED: BPG
SHEET: 14 OF 16	
CAD FILE: 459600B3	
PROJECT NO: 4596	



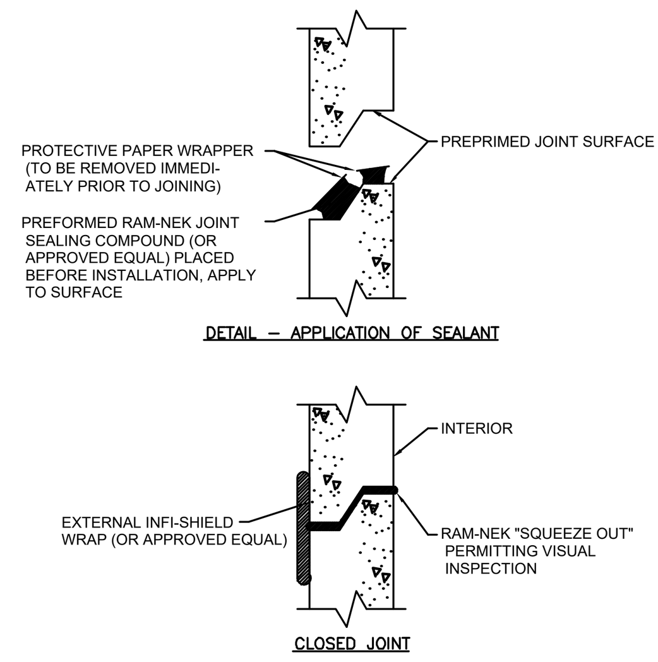
STANDARD PRECAST CONCRETE MANHOLE

NOT TO SCALE (ALL MH SHALL HAVE EX. BASES)



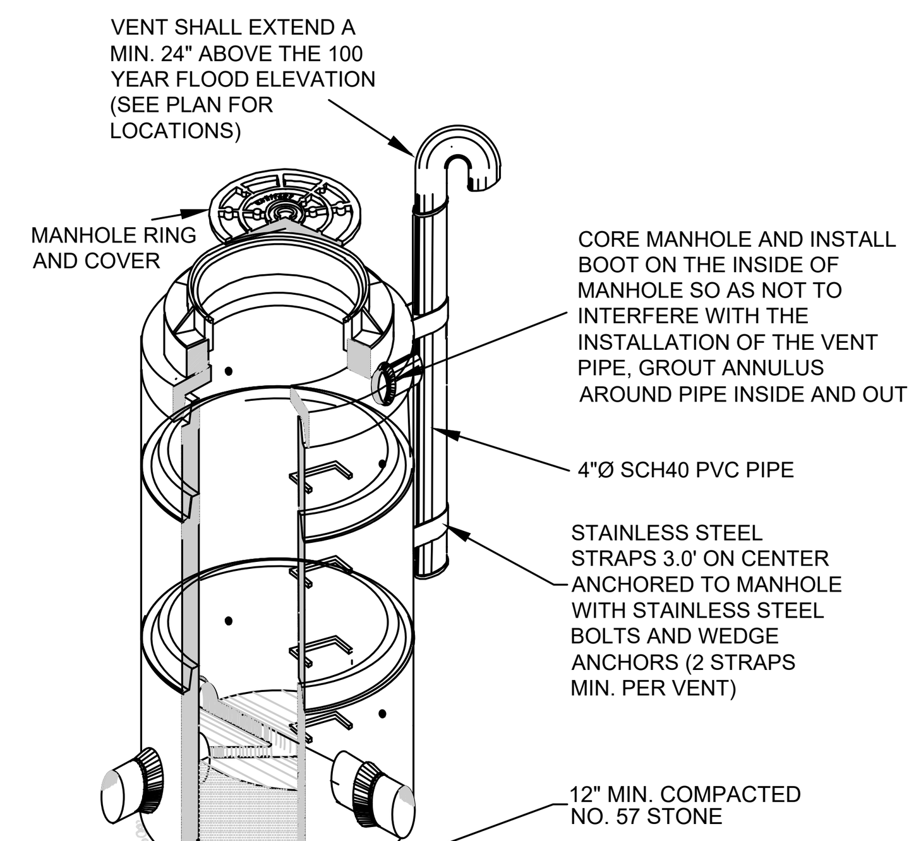
A FILLETED INVERT FOR A SMOOTH TRANSITION OF FLOW BETWEEN INLET & OUTLET PIPE SHALL BE PROVIDED.

NOTES:
1. PRECAST REINFORCED CONCRETE MANHOLES SHALL BE IN ACCORDANCE WITH ASTM C-478
2. MIN. CONCRETE COMPRESSIVE STRENGTH SHALL BE 4000 PSI.
3. ALL MANHOLES SHALL HAVE MIN. 6" EXTENDED BASE.
4. FLEXIBLE BUTYL RESIN JOINT SEALANT SHALL BE IN ACCORDANCE W/ ASTM C990. RUBBER GASKET JOINTS SHALL BE IN ACCORDANCE W/ASTM C-443.
5. FLEXIBLE EPDM RUBBER BOOT CONNECTORS SHALL BE IN ACCORDANCE W/ ASTM C923, INSTALLED BY MANUFACTURER W/STAIN- LESS STEEL COMPRESSION RING AND TAKE-UP CLAMP. CONNECTION TO MAIN SHALL BE BY CONTRACTOR WITH STAINLESS STEEL PIPE CLAMP.
6. MORTAR SHALL BE QUICK SETTING, NON-SHRINK GROUT MIXED IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.
7. MANHOLE STEPS SHALL BE IN ACCORDANCE WITH ASTM C478 AND OSHA REGULATIONS ALIGN W/INVERT OUT.
8. PREFORMED MANHOLE INVERTS ARE NOT ACCEPTABLE UNLESS SPECIFICALLY APPROVED BY THE PROJECT ENGINEER. STANDING WATER IN INVERT OF MANHOLE IS NOT ACCEPTABLE.
9. ALL MANHOLES SHALL BE TESTED IN ACCORDANCE WITH ASTM C1244 "STANDARD TEST METHOD FOR CONCRETE SEWER MANHOLES BY THE NEGATIVE AIR PRESSURE (VACUUM) TEST PRIOR TO BACKFILL.



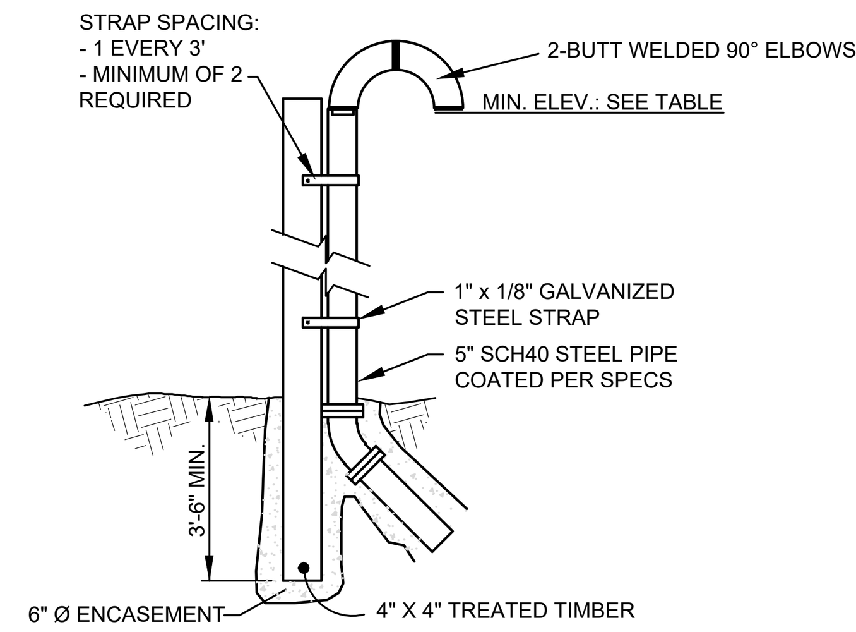
JOINT SEAL DETAIL

NOT TO SCALE



STANDARD PRECAST CONCRETE MANHOLE WITH VENT PIPING

NOT TO SCALE

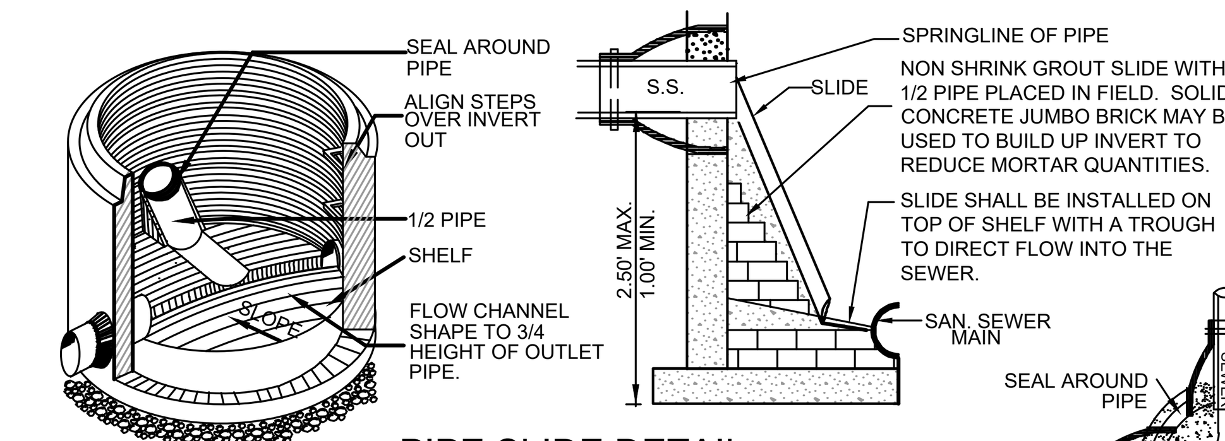


VENT PIPING DETAIL

NOT TO SCALE

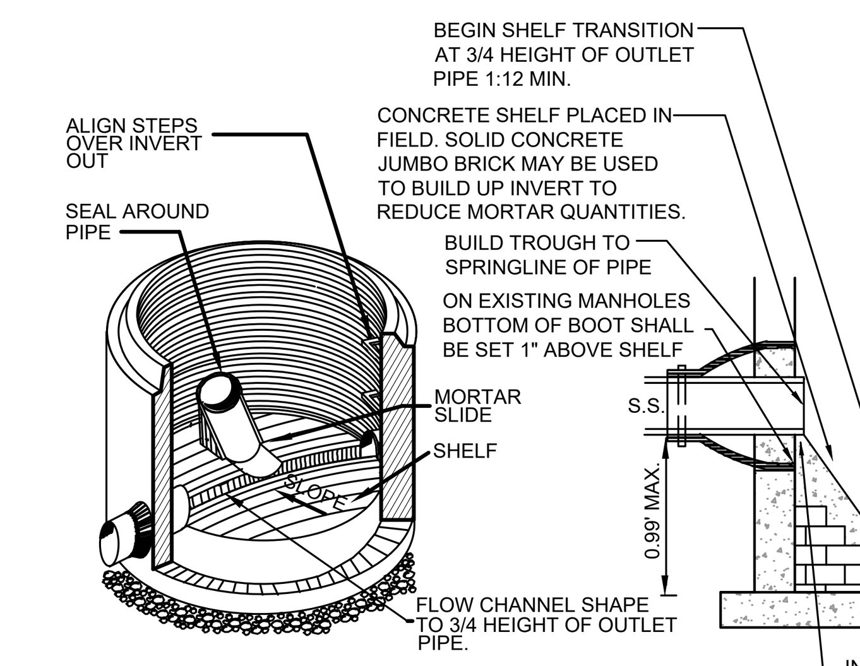
NOTES:
1. VENT PIPE OPENING IN PRECAST CONCRETE MANHOLE WALL SHALL BE CAST OR CORED WITH A CONCRETE CORING MACHINE.
2. LOCATION OF VENT PIPE SHALL BE AS DIRECTED BY THE CONSTRUCTION INSPECTOR WITH WATERTIGHT RING AND COVER VENT TOP TO BE ELEVATED AT LEAST 12" ABOVE THE 100 YEAR FLOOD PLAIN ELEVATION.
3. PASSIVE CARBON VENT FILTERS SHALL ONLY BE INSTALLED ON LIFT STATIONS AND MANHOLES WITH VENT PIPING. (SEE VENTED MANHOLE SCHEDULE)

VENTED MANHOLE SCHEDULE	
MANHOLE #	MIN. ELEVATION
MH-01	10.0'
MH-03	10.0'



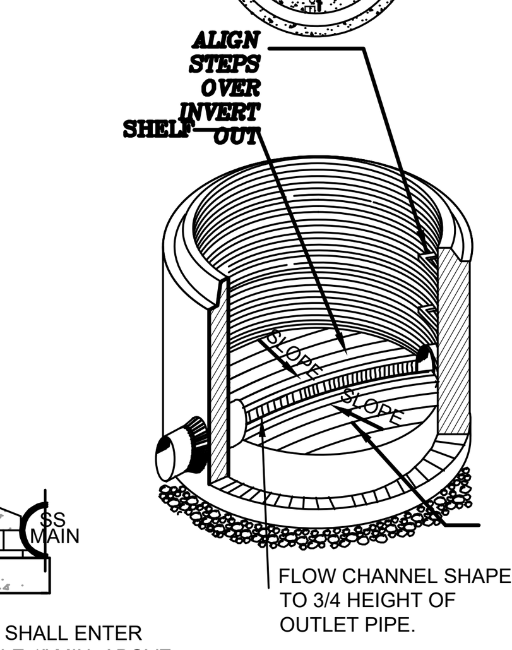
PIPE SLIDE DETAIL

NOT TO SCALE



MORTAR SLIDE DETAIL

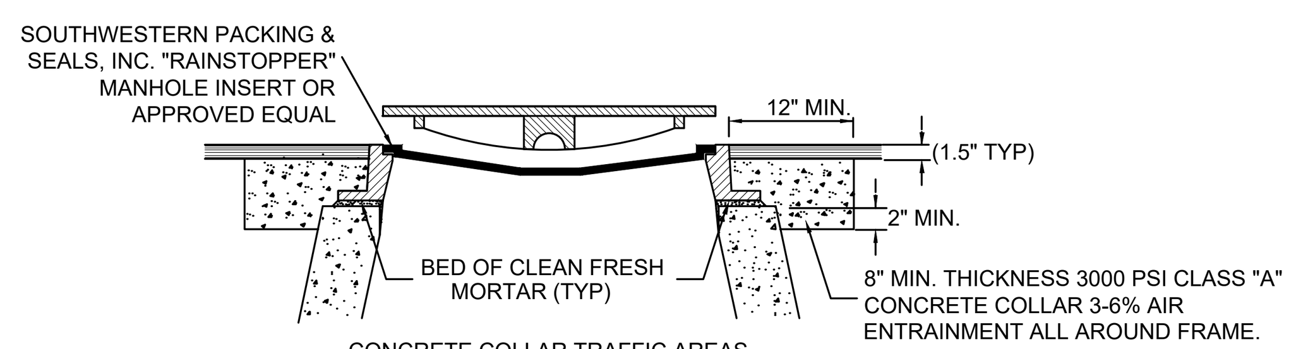
NOT TO SCALE



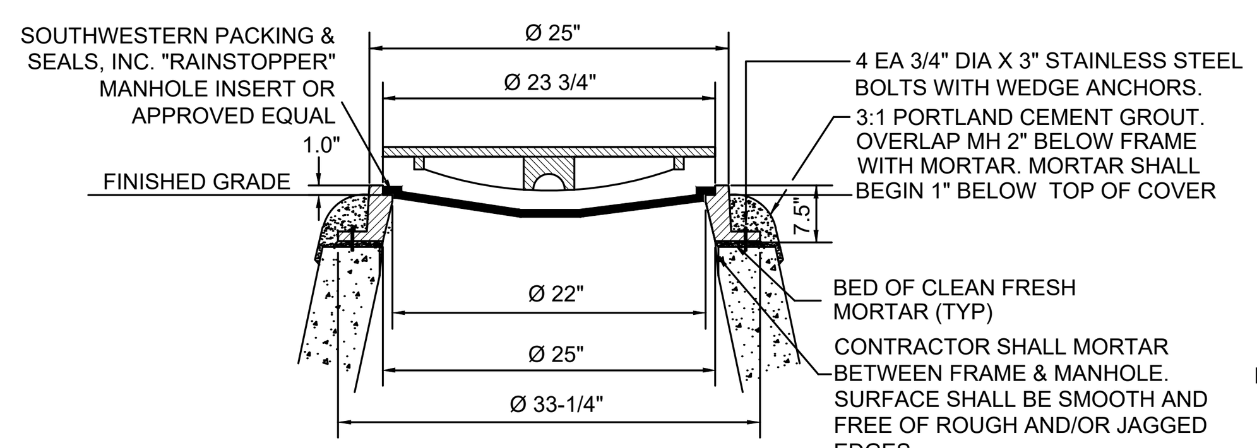
SHELF DETAIL

NOT TO SCALE

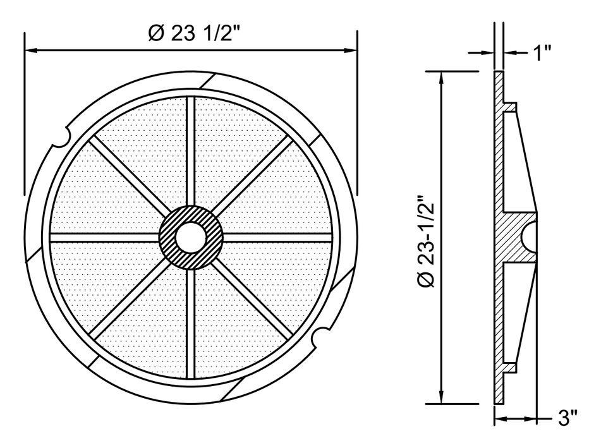
MORTAR AND PIPE SLIDE NOTES:
1. MORTAR SLIDE SHALL BE USED FOR LESS THAN 1 FOOT SEPARATION BETWEEN INVERT OUT & INVERT OF INCOMING PIPE.
2. PIPE SLIDE REQ'D WHERE VERTICAL SEPARATION BETWEEN PIPE INVERTS IS GREATER THAN 1 ' AND LESS THAN, OR EQUAL TO 2.5'.
3. OUTSIDE DROP STRUCTURE REQUIRED WHERE VERTICAL SEPARATION BETWEEN INVERTS EXCEEDS 2.50'. SEE OUTSIDE DROP MANHOLE DETAIL.
4. VERIFY SLIDE INSTALLATION WITH PROJECT COORDINATOR PRIOR TO CONSTRUCTION.
5. MANHOLE AND CONNECTIONS SHALL BE IN ACCORDANCE WITH STANDARD MANHOLE DETAIL.
6. BRICK USED FOR INVERT AND SHELF CONSTRUCTION SHALL BE NCDOT STANDARD CONCRETE JUMBO BRICK. MEETING ASTM C55 GRADE S-II EXCEPT ABSORPTION LESS THAN 10 LBS/CU.FT.
7. MANHOLES GREATER THAN 12' IN DEPTH SHALL HAVE MIN. 6" EXTENDED BASE.
8. THE MINIMUM SLOPE ACROSS THE INVERT OF THE MANHOLE SHALL BE 2% UNLESS OTHERWISE APPROVED BY ENGINEER
9. SEE STANDARD MANHOLE DETAIL FOR ADDITIONAL REQUIREMENTS.
10. DROP AND / OR SLIDE REQUIREMENTS SHALL APPLY TO ALL LATERALS ENTERING MANHOLES AS OUTLINED IN NOTES 1, 2 & 3. NO MORE THAN 4, FOUR INCH LATERALS OR 3, SIX INCH LATERALS SHALL ENTER A 4' DIAMETER TERMINAL MANHOLE. NO MORE THAN 2 LATERALS (REGARDLESS OF SIZE) SHALL ENTER ALL OTHER 4' DIAMETER MANHOLES. ALL LATERALS SHALL HAVE AN INDIVIDUAL TROUGH. 5' DIAMETER MANHOLES SHALL BE USED IF THE ABOVE CONDITIONS ARE NOT MET. THE INVERT OF THE LATERAL SHALL BE A MINIMUM OF 1" ABOVE THE SHELF.

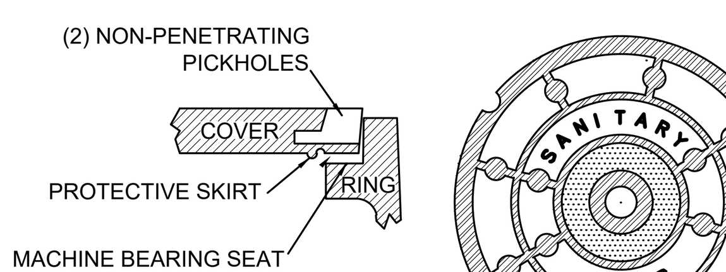


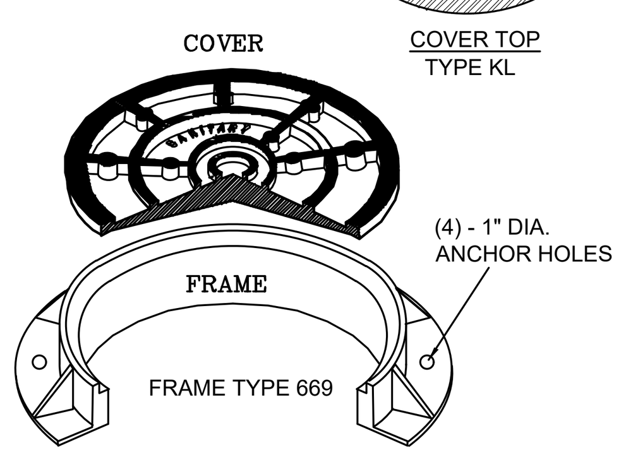
CONCRETE COLLAR TRAFFIC AREAS



COLLAR NON-TRAFFIC AREAS



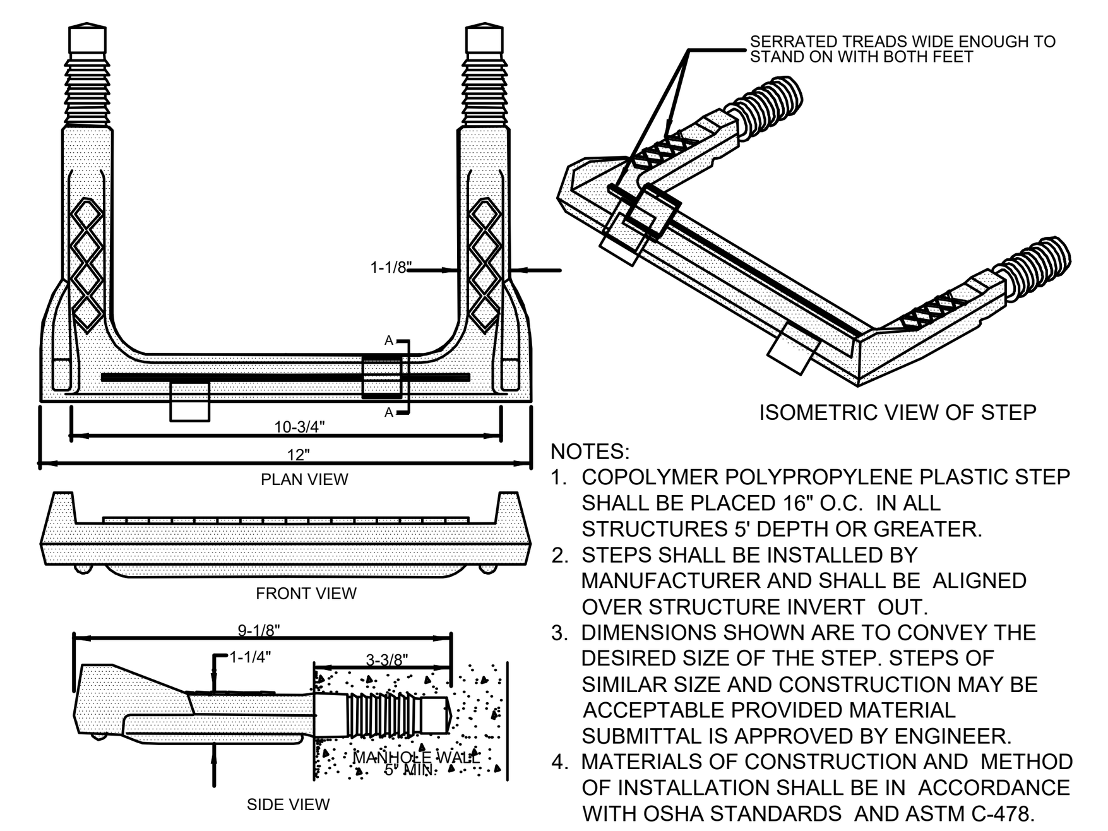




STANDARD MANHOLE RING AND COVER

NOT TO SCALE (TO BE USED ON ALL MANHOLES)

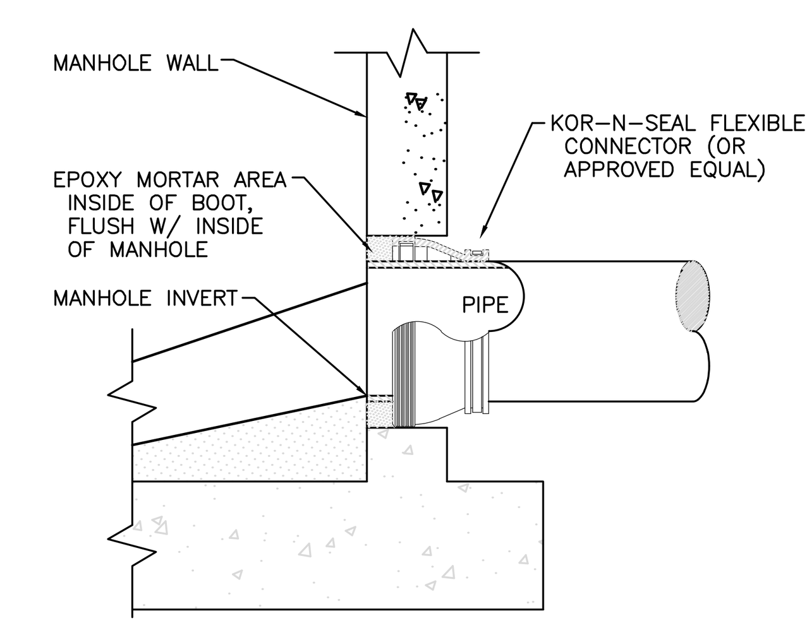
NOTES:
1. MANHOLE FRAME AND COVER SHALL BE MADE OF GRAY CAST IRON CONFORMING TO ASTM-A48 CLASS 35B, MANUFACTURED BY SAME MANUFACTURER. ALL CASTINGS SHALL CONFORM TO THE SHAPE AND DIMENSIONS SHOWN. THEY SHALL BE CLEAN AND PERFECT, WITHOUT BLOW OR SAND HOLES OR DEFECTS OF ANY KIND, TENDING TO IMPAIR THEIR STRENGTH. NO PLUGGING OR STOPPING OF DEFECTIVE HOLES WILL BE PERMITTED.
2. CASTINGS SHALL BE UNPAINTED AND SHALL HAVE THE LETTERS "SANITARY SEWER" CAST INTO COVER. LETTERS SHALL BE RAISED AND CLEARLY VISIBLE.
3. MANHOLE RING AND COVER SHALL WITHSTAND H-20 VEHICULAR TRAFFIC LOADING CONDITIONS.
4. MINIMUM AVERAGE WEIGHT: PLUS OR MINUS 5% RING 190 LBS., COVER 125 LBS, UNIT 315 LBS.
5. COVERS SHALL HAVE (2) NON-PENETRATING PICKHOLES.
6. RING AND COVER SHALL BE US FOUNDRY & MFG. CORP RING MODEL 669 & COVER MODEL KL (ALTERNATES SHALL BE APPROVED BEFORE INSTALLATION)



NOTES:
1. COPOLYMER POLYPROPYLENE PLASTIC STEP SHALL BE PLACED 16" O.C. IN ALL STRUCTURES 5' DEPTH OR GREATER.
2. STEPS SHALL BE INSTALLED BY MANUFACTURER AND SHALL BE ALIGNED OVER STRUCTURE INVERT OUT.
3. DIMENSIONS SHOWN ARE TO CONVEY THE DESIRED SIZE OF THE STEP. STEPS OF SIMILAR SIZE AND CONSTRUCTION MAY BE ACCEPTABLE PROVIDED MATERIAL SUBMITTAL IS APPROVED BY ENGINEER.
4. MATERIALS OF CONSTRUCTION AND METHOD OF INSTALLATION SHALL BE IN ACCORDANCE WITH OSHA STANDARDS AND ASTM C-478.

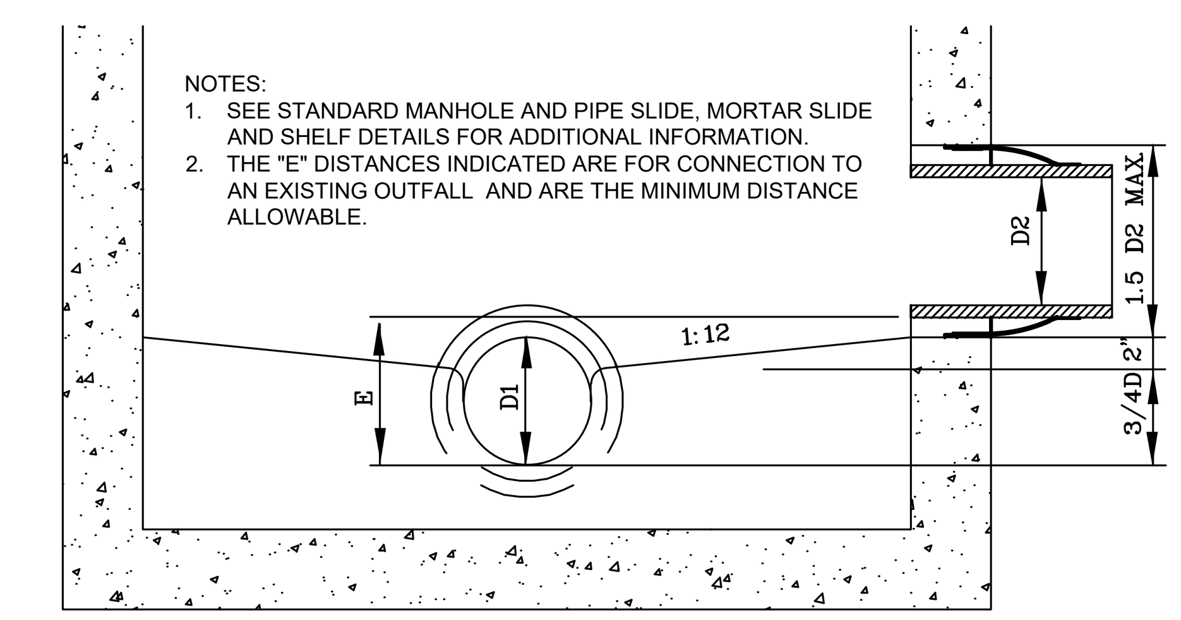
MANHOLE STEP DETAIL

NOT TO SCALE



FLEXIBLE MANHOLE CONNECTION DETAIL

NOT TO SCALE



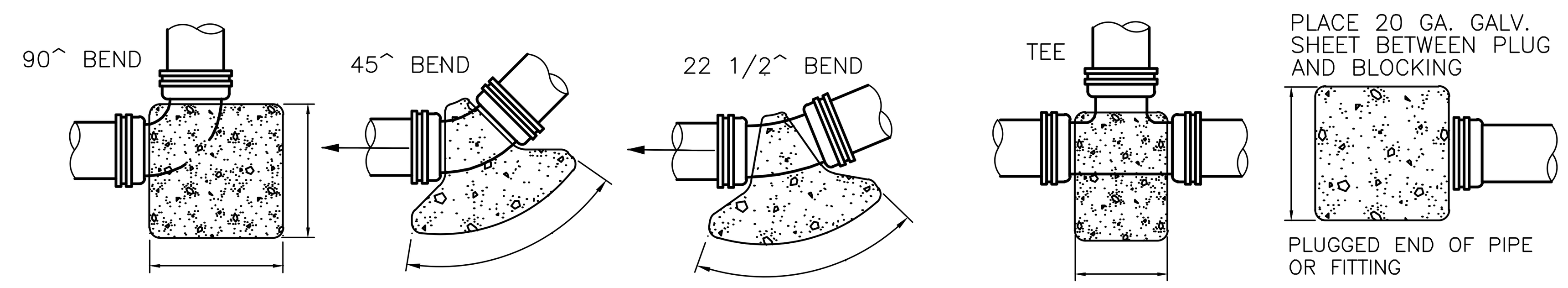
NOTES:
1. SEE STANDARD MANHOLE AND PIPE SLIDE, MORTAR SLIDE AND SHELF DETAILS FOR ADDITIONAL INFORMATION.
2. THE "E" DISTANCES INDICATED ARE FOR CONNECTION TO AN EXISTING OUTFALL AND ARE THE MINIMUM DISTANCE ALLOWABLE.

1. TO FIND "E" ENTER CHART AT LEFT WITH EFFLUENT PIPE SIZE AND ENTER PIPE AT TOP WITH INFLUENT PIPE SIZE. "E" DISTANCE IS POINT OF CONVERGENCE OF COLUMN AND ROW.
2. WHERE A 5' MH IS REQUIRED ADD 1/2" TO "E" DISTANCE TO ACCOUNT FOR THE ADDITIONAL 6" OF SHELF SLOPE.

D1 \ D2	4"	6"	8"	12"	15"	18"	24"
8	9.00	9.50	10.00	–	–	–	–
12	11.00	11.50	12.00	13.00	–	–	–
15	14.25	14.75	15.25	16.25	17.00	–	–
18	16.50	17.00	17.50	18.50	19.25	20.00	–
24	21.00	21.50	22.00	23.00	23.75	24.50"	26.00

MANHOLE CONNECTION GUIDE

NOT TO SCALE



90° BEND

PIPE	AREA AGAINST UNDISTURBED SOIL
2"	1'-0" x 1'-0"
4"	1'-0" x 1'-0"
6"	1'-3" x 1'-3"
8"	2'-0" x 2'-0"
10"	2'-6" x 2'-6"
12"	3'-0" x 3'-0"

45° BEND

PIPE	AREA AGAINST UNDISTURBED SOIL
2"	1'-0" x 1'-0"
4"	1'-0" x 1'-0"
6"	1'-3" x 1'-3"
8"	1'-6" x 1'-6"
10"	2'-0" x 2'-0"
12"	2'-3" x 2'-3"

22 1/2° BEND

PIPE	AREA AGAINST UNDISTURBED SOIL
2"	1'-0" x 1'-0"
4"	1'-0" x 1'-0"
6"	1'-0" x 1'-0"
8"	1'-2" x 1'-2"
10"	1'-6" x 1'-6"
12"	1'-8" x 1'-8"

TEE

PIPE	AREA AGAINST UNDISTURBED SOIL
2"	1'-0" x 1'-0"
4"	1'-2" x 1'-2"
6"	1'-6" x 1'-6"
8"	1'-9" x 1'-9"
10"	2'-2" x 2'-2"
12"	2'-8" x 2'-8"

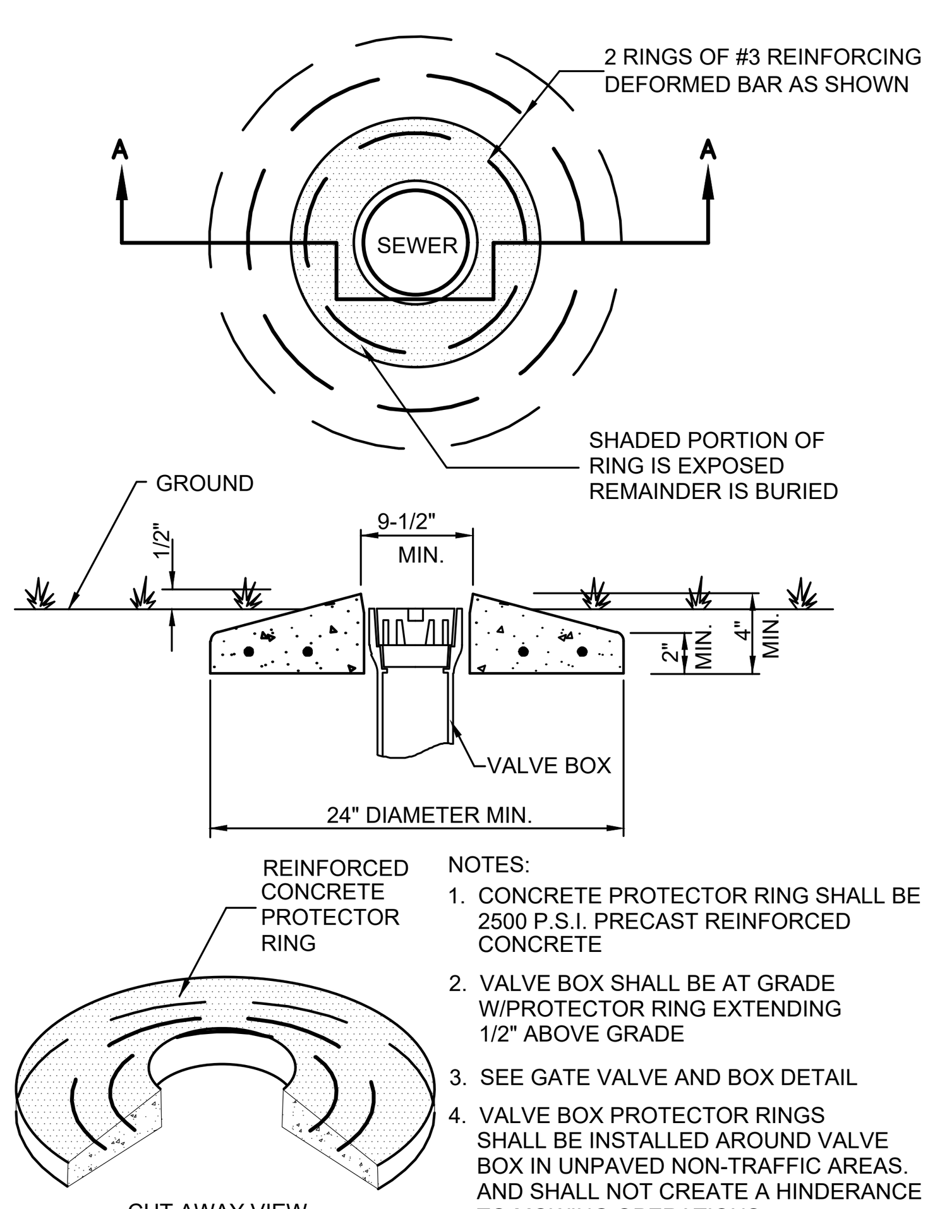
PLUGGED END OF PIPE OR FITTING

PIPE	AREA AGAINST UNDISTURBED SOIL
2"	1'-0" x 1'-0"
4"	1'-2" x 1'-2"
6"	1'-6" x 1'-6"
8"	1'-9" x 1'-9"
10"	2'-2" x 2'-2"
12"	2'-8" x 2'-8"

NOTES:
1. PIPING LESS THAN 2" IN DIAMETER SHALL HAVE THE SAME REQUIREMENTS AS 2" DIAMETER PIPE
2. CONCRETE THRUST BLOCKING SHALL ONLY BE USED WHERE MECHANICAL RESTRAINTS ARE NOT FEASIBLE. PRIOR APPROVAL MUST BE OBTAINED FROM ENGINEER PRIOR TO USING THRUST BLOCKING

CONCRETE THRUST BLOCKING DETAILS

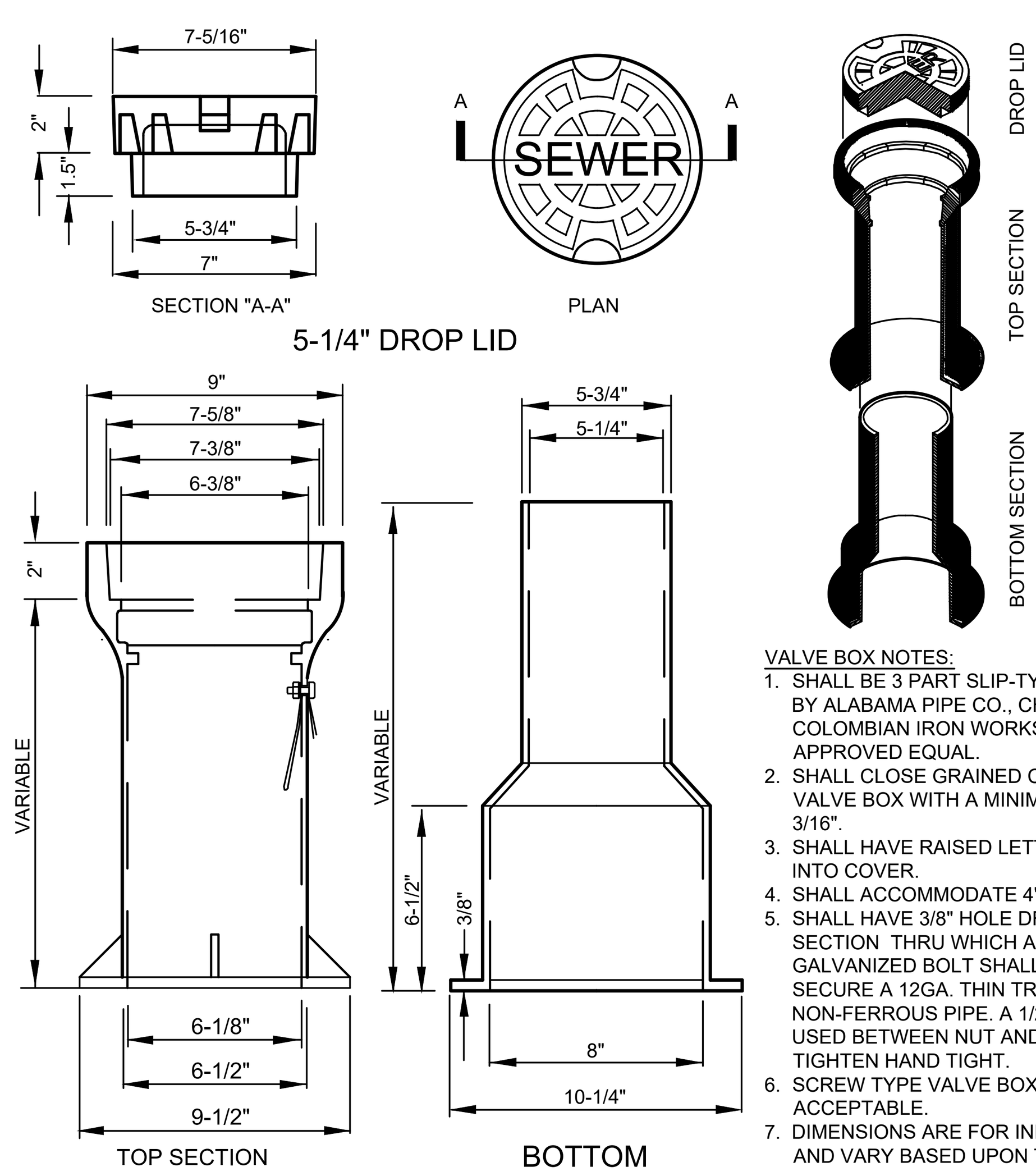
NOT TO SCALE



NOTES:
1. CONCRETE PROTECTOR RING SHALL BE 2500 P.S.I. REINFORCED CONCRETE
2. VALVE BOX SHALL BE AT GRADE W/PROTECTOR RING EXTENDING 1/2" ABOVE GRADE
3. SEE GATE VALVE AND BOX DETAIL
4. VALVE BOX PROTECTOR RINGS SHALL BE INSTALLED AROUND VALVE BOX IN UNPAVED NON-TRAFFIC AREAS. AND SHALL NOT CREATE A HINDERANCE TO MOWING OPERATIONS.

VALVE BOX PROTECTOR RING DETAIL

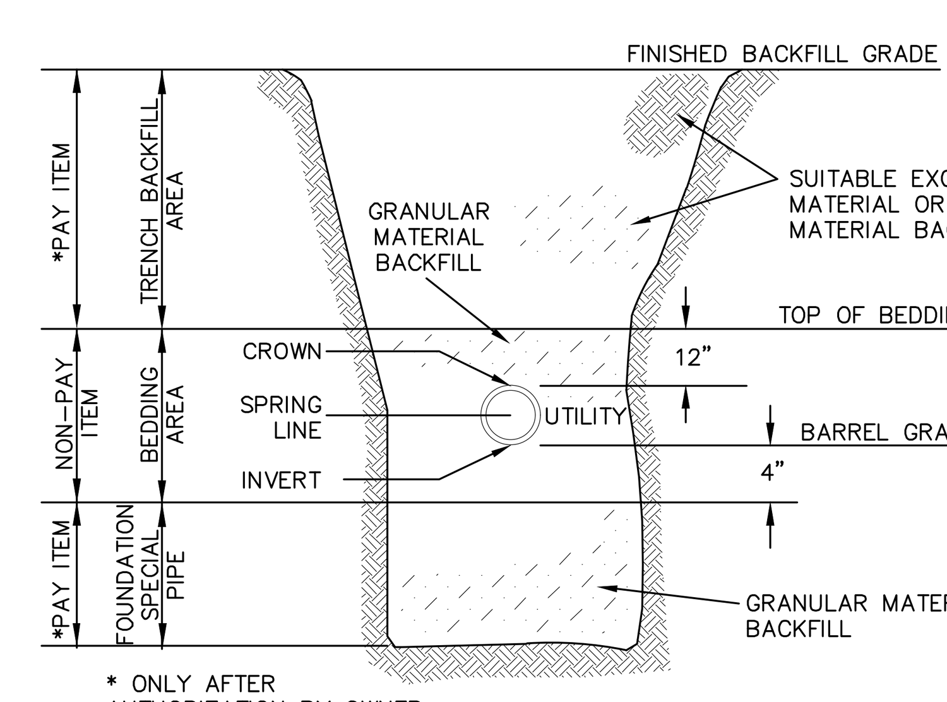
SCALE: NONE



VALVE BOX NOTES:
1. SHALL BE 3 PART SLIP-TYPE MANUFACTURED BY ALABAMA PIPE CO., CHAPMAN VALVE CO., COLOMBIAN IRON WORKS, R.D. WOOD CO. OR APPROVED EQUAL.
2. SHALL CLOSE GRAINED CAST IRON SLIP-TYPE VALVE BOX WITH A MINIMUM THICKNESS OF 3/16".
3. SHALL HAVE RAISED LETTERS "SEWER" CAST INTO COVER.
4. SHALL ACCOMMODATE 4" THRU 12" VALVES.
5. SHALL HAVE 3/8" HOLE DRILLED IN TOP SECTION THRU WHICH A 1/4" X 1-1/2" GALVANIZED BOLT SHALL BE USED TO SECURE A 12GA. THIN TRACER WIRE FOR NON-FERROUS PIPE. A 1/2" WASHER SHALL BE USED BETWEEN NUT AND INSIDE OF BOX. TIGHTEN HAND TIGHT.
6. SCREW TYPE VALVE BOXES ARE NOT ACCEPTABLE.
7. DIMENSIONS ARE FOR INFORMATION ONLY AND VARY BASED UPON THE MANUFACTURER.

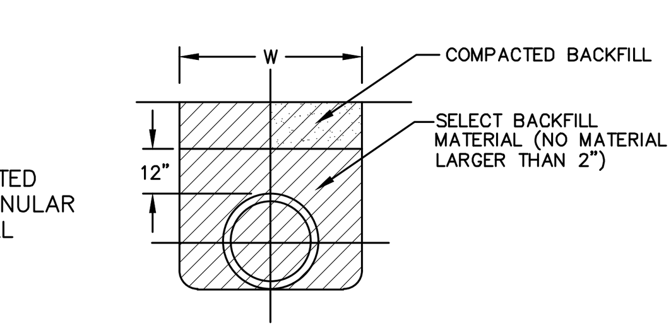
VALVE BOX DETAIL

SCALE: NONE

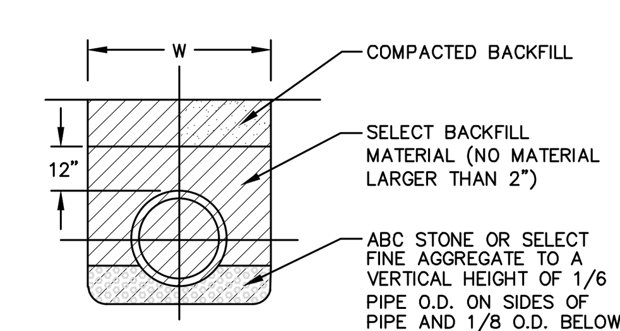


FORCE MAIN & GRAVITY SEWER SERVICE TRENCH DETAIL

NOT TO SCALE



TYPE "A"
SANITARY SEWER LATERAL & SCH 80 PVC FORCEMAIN



TYPE "C"
D.I.P. FORCEMAIN

1. EMBEDMENT MATERIALS, CLASSES I, II, OR III AS DESCRIBED IN ASTM D 2321, SHALL BE USED FOR BEDDING FOR BEDDING, HAUNCHING AND INITIAL BACKFILL AND CAREFULLY COMPACTED FOR ALL FLEXIBLE PIPE.
2. BEDDING CLASSES A, B, C OR CRUSHED STONE AS DESCRIBED IN ASTM C 12 SHALL BE USED AND CAREFULLY COMPACTED FOR ALL RIGID PIPE.
3. ALL EXCAVATIONS SHALL COMPLY WITH THE TERMS AND CONDITIONS OF THE CONSTRUCTION STANDARDS FOR EXCAVATIONS IN OSHA "SAFETY AND HEALTH REGULATIONS FOR CONSTRUCTION", CHAPTER XV11 OF TITLE 29, CFR, PART 1926. THE CONTRACTOR SHALL HAVE A COMPETENT PERSON ON THE JOB AT ALL TIMES AND SHALL EMPLOY A PROFESSIONAL ENGINEER TO ACT UPON ALL PERTINENT MATTERS OF THE WORK.

GRAVITY SANITARY SEWER PIPE SCHEDULE

PIPE MATERIAL	PIPE SIZE INCHES	BEDDING TYPE FOR DEPTH OF COVER SHOWN: TYPE "B"	TYPE "C"
PVC	8"	0 - 24"	N/A
PVC	15"	0 - 24"	N/A
DIP	8"	N/A	ALL DEPTHS
DIP	16"	N/A	ALL DEPTHS

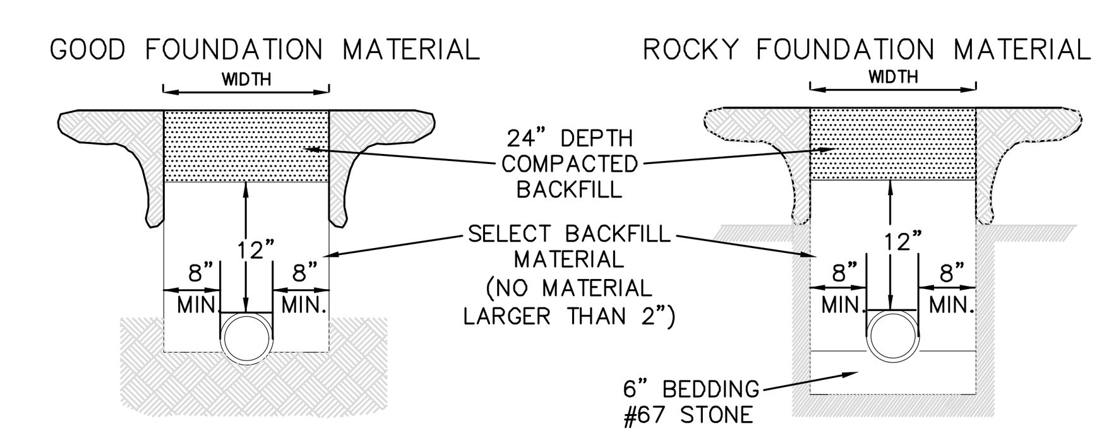
NOTES:
1. ALL SEWER SERVICE PIPE SHALL HAVE TYPE "A" BEDDING
2. CHANGES IN PIPE BEDDING CLASSIFICATION SHALL ONLY BE MADE AT MANHOLES.
3. DUCTILE IRON FORCE MAIN SHALL HAVE TYPE "A" BEDDING.

TRENCH EXCAVATION LIMITS

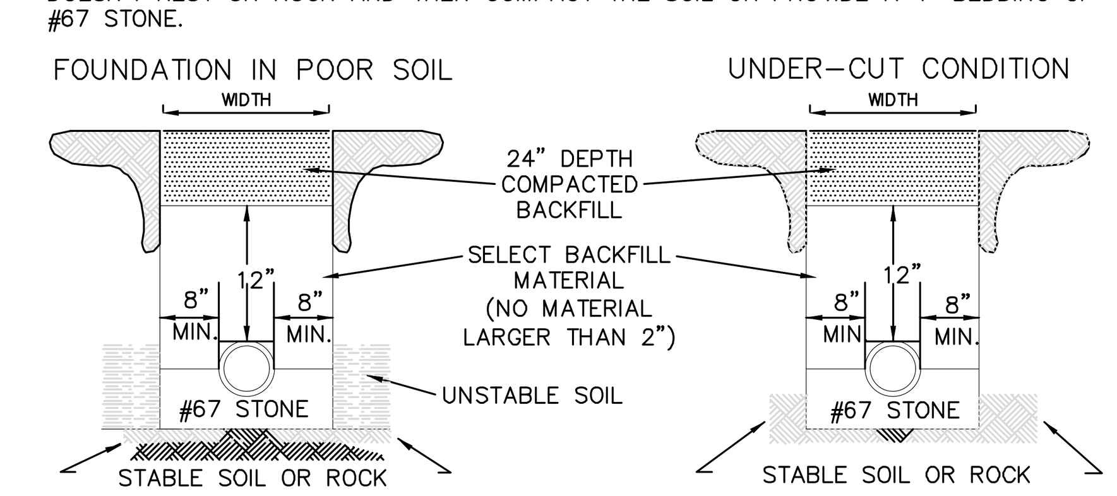
INTERNAL DIAMETER OF PIPE	W WIDTH OF TRENCH MAX.	MIN.
4"-6"	NO LIMIT	2'-0"
8"-10"	NO LIMIT	2'-2"
12"	3'-9"	O.D.+2'
14"-16"	4'-2"	O.D.+2'
18"	4'-4"	O.D.+2'
20"	4'-8"	O.D.+2'
24"	4'-11"	O.D.+2'
30"	5'-6"	O.D.+2'
36"	6'-0"	O.D.+2'

W = TRENCH WIDTH AT TOP OF PIPE
S = PAVEMENT REPLACEMENT WIDTH (S = W + 3'-0")

MAIN OR LATERAL MIN SLOPE
4" @ 2.00% MIN.
6" @ 0.67% MIN./MAIN
6" @ 2.00% MIN./LATERAL
8" @ 0.40% MIN.
12" @ 0.22% MIN.
15" @ 0.15% MIN.
18" @ 0.12% MIN.



*SCRAPE THE BOTTOM OF THE TRENCH. REMOVE ALL STONES TO INSURE THE PIPE DOESN'T REST ON ROCK AND THEN COMPACT THE SOIL OR PROVIDE A 4" BEDDING OF #67 STONE.



TYPICAL SEWER PIPE INSTALLATION & BEDDING

NOT TO SCALE

NOTES:
1. NO ROCKS SHALL BE ALLOWED WITHIN 24" OF THE WATER LINES.
2. NO ROCKS LARGER THAN 6" IN ANY DIMENSION SHALL BE ALLOWED ABOVE THE INITIAL BACKFILL.
3. THE INITIAL BACKFILL SHALL BE PLACED AND COMPACTED IN 6" LIFTS.
4. NO ORGANIC OR FROZEN MATERIAL OR DEBRIS SHALL BE ALLOWED IN THE TRENCH.
5. BELL HOLES SHALL BE DUG OUT IN ALL CASES.

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Kitty Hawk, North Carolina 27949
(252) 261-3266
FAX (252) 261-1760
BISSELL PROFESSIONAL GROUP
Engineers, Planners, Surveyors and Environmental Specialists

WASTEWATER COLLECTION
TYP. CONSTRUCTION DETAILS

PROJECT:
COROLLA BOAT CLUB - PHASE 1, MONTERAY SHORES PHASE 10
POPLAR BRANCH TOWNSHIP CURRITUCK COUNTY NORTH CAROLINA

CONSTRUCTION DRAWINGS

REVISIONS

NO.	DATE	DESCRIPTION	BY
1	12-26-23	VENT & MH ID DETAIL	DMK

PRELIMINARY DO NOT USE FOR CONSTRUCTION

DATE: 2-15-23	SCALE: NO SCALE
DESIGNED: BPG	CHECKED: MSB
DRAWN: KFW/DMK	APPROVED: BPG
SHEET: 15 OF 16	
CAD FILE: 459600B3	
PROJECT NO: 4596	

ORDER OF PRECENDENCE GENERAL NOTES/TECHNICAL SPECIFICATIONS

1. THE NOTES CONTAINED HEREIN ARE INTENDED TO SUPPLEMENT THE TECHNICAL SPECIFICATIONS AND PROVIDE EASY REFERENCE FOR THE CONTRACTOR. IN NO CASE SHALL THESE NOTES VOID ANY PART, SECTION OR REQUIREMENT OUTLINED IN THE TECHNICAL SPECIFICATIONS CONTAINED IN THE CONTRACT DOCUMENTS. IF CONFLICTS OCCUR BETWEEN THE TECHNICAL SPECIFICATIONS AND THE NOTES CONTAINED HEREIN, THE TECHNICAL SPECIFICATIONS SHALL SUPERSEDE.

2. CONTRACTOR IS CHARGED WITH PERFORMING SITE INVESTIGATIONS TO ASCERTAIN EXISTING SITE CONDITIONS. PHOTOGRAPHIC DOCUMENTATION OF PRE-EXISTING CONSTRUCTION CONDITIONS WILL BE CONDUCTED BY THE ENGINEER FOR DETERMINATION OF COMPLIANCE WITH CONDITIONS NOTED HEREON.

GENERAL NOTES

1. ACCESS TO SITES SHALL BE BY PUBLIC RIGHT-OF-WAYS AND UTILITY EASEMENTS. OTHER ACCESS LOCATIONS REQUIRED SHALL BE SECURED BY THE CONTRACTOR AT NO ADDITIONAL EXPENSE TO THE OWNER. SUPPLEMENTAL EROSION CONTROL MEASURES SHALL BE REQUIRED TO INCLUDE CONSTRUCTION ENTRANCES, SILT FENCING, RESTORATION, ETC. ADDITIONAL MEASURES SHALL BE INCLUDED AS PART OF A SUPPLEMENTAL EROSION CONTROL PLAN PREPARED BY THE CONTRACTOR.

2. THE CONTRACTOR SHALL BE REQUIRED TO PROVIDE THE CONSTRUCTION STAGING AREA AT HIS EXPENSE.

3. THE CONTRACTOR IS EXPECTED AND REQUIRED TO COOPERATE WITH THE PROPERTY OWNERS AFFECTED BY THE WORK. MAIL ADJOINING PROPERTY OWNER LETTERS TO EFFECTED PROPERTY OWNERS NOTIFYING THEM THAT WORK WILL BE OCCURRING WITHIN THE AREAS ADJOINING THEIR PROPERTIES. THIS LETTER SHALL GIVE PROPERTY OWNERS A MINIMUM OF 14 DAYS WRITTEN NOTICE PRIOR TO COMMENCEMENT OF CONSTRUCTION FOR REMOVAL OF ANY PERSONAL ITEMS FROM THE RIGHT- OF-WAY. THE LETTER OUTLINES THE EXTENT OF THE WORK TO BE PERFORMED TO INCLUDE DRIVEWAY DISRUPTIONS.

4. CONTRACTOR SHALL MAINTAIN A NEAT AND CLEAN JOB-SITE TO INCLUDE STAGING/STORAGE AREAS AS FOLLOWS:
   - PERFORM DUST CONTROL BY WATERING DAILY OR AS DIRECTED BY THE ENGINEER AND/OR CURRITUCK COUNTY.
   - SWEEP STREETS A MINIMUM OF ONCE WEEKLY (FRIDAY) OR AS DIRECTED BY THE ENGINEER AND/OR CURRITUCK COUNTY.
   - BLADE, LEVEL AND RE-COMPACT ALL EXPOSED TRENCHES WEEKLY (OR AS DIRECTED BY THE ENGINEER) TO PRODUCE A SMOOTH "RIDE".
   - PERFORM DAILY CLEAN-UP OF ALL DIRT, DEBRIS AND SCRAP MATERIALS.
   - REMOVE EXCESS EQUIPMENT, MATERIALS, TOOLS, ETC. NOT NEEDED.
   -ANY DRIVEWAY REMOVALS MUST HAVE A TEMPORARY SURFACE INSTALLED WITHIN THE SAME DAY AS REMOVAL. APPROVED SURFACES MAY CONSIST OF EITHER ABC OR MILLINGS.

   THE WORK WITHIN RIGHT OF WAY AREAS MUST BE KEPT IN AN ORDERLY AND NEAT FASHION. NO MATERIAL (SOILS, GRAVEL OR OTHER PROJECT FILL) CAN BE PLACED DIRECTLY ON ANY STREET SURFACE WITHOUT MATTING BEING PUT DOWN FIRST. ANY DAMAGE TO ANY ROAD SURFACE FROM CONSTRUCTION ACTIVITIES MUST BE REPAIRED AT OWNERS EXPENSE.

5. EXCESS SUITABLE SOIL EXCAVATED DURING CONSTRUCTION SHALL BE STOCKPILED FOR USE ON THE PROJECT OR DISPOSED OF OFF-SITE AS DIRECTED BY THE ENGINEER. THE CONTRACTOR SHALL NOT BE ALLOWED TO STOCKPILE MATERIALS OR EXCESS MATERIALS IN THE STREET RIGHT-OF-WAYS AT ANY TIME. THE CONTRACTOR SHALL PROVIDE A SUFFICIENT AND SUITABLE STOCKPILE AREA AND LOCATION AT THE CONTRACTOR'S EXPENSE.

6. CONTRACTOR SHALL PROVIDE MEASURES DURING CONSTRUCTION TO SECURE THE SITE AND EXCAVATION FROM THE GENERAL PUBLIC AND COMPLY WITH ALL OSHA REGULATIONS. JOB SITE SAFETY IS THE EXCLUSIVE AND SOLE RESPONSIBILITY OF THE CONTRACTOR. OPEN EXCAVATION LEFT UNATTENDED OR OVER NIGHT IS NOT ACCEPTABLE AND SHALL BE FILLED IMMEDIATELY.

7. CONTRACTOR SHALL REPAIR OR REPLACE DRIVES DISTURBED BY CONSTRUCTION TO EXISTING OR BETTER CONDITIONS. NO SEPARATE PAYMENT UNLESS OTHERWISE INDICATED.

8. CONTRACTOR SHALL PROVIDE TEMPORARY FENCING WHERE FENCES ARE REMOVED FOR CONSTRUCTION. CONTRACTOR SHALL COORDINATE FENCE REMOVAL OR REINSTALLATION WITH INDIVIDUAL PROPERTY OWNERS PRIOR TO REMOVAL. CONTRACTOR SHALL REINSTALL ALL SHEDS, FENCES, ETC. TO AS GOOD OR BETTER THAN EXISTING CONDITIONS UNLESS OTHERWISE INDICATED. (NO SEPARATE PAYMENT).

9. CONTRACTOR SHALL REPLACE ALL DISTURBED MAILBOXES, SIGNS, ETC. DISTURBED DURING CONSTRUCTION WITHIN 24 HOURS OF DISTURBANCE. PERMANENT ROAD SIGNAGE DISTURBED SHALL BE REPLACED IMMEDIATELY AND IF NECESSARY ROADWAY SIGNS SHALL BE TEMPORARILY INSTALLED IN A LOCATION CONSISTENT WITH THE NCMUTCD TO PROVIDE CONTINUOUS TRAFFIC AWARENESS OF ROADWAY CONDITIONS. (NO SEPARATE PAYMENT).

10. CONTRACTOR SHALL PROVIDE SECURITY FENCING, SECURITY GUARD, AND ANY AND ALL OTHER MEASURES CONTRACTOR DEEMS NECESSARY TO PROTECT EQUIPMENT AND MATERIALS STORED ON THE PROJECT. (NO SEPARATE PAYMENT).

11. WHERE CONTRACTOR CEASES WORK OPERATIONS FOR A 72 HOUR PERIOD OR LONGER, SUCH AS HOLIDAYS, ETC., THE FOLLOWING SHALL BE ACCOMPLISHED PRIOR TO THE WORK STOPPAGE.
    A. CONTRACTOR SHALL STORE ALL EQUIPMENT IN THE CONTRACTOR STAGING AREA OR OFF SITE.
    B. THE CONTRACTOR SHALL SWEEP ALL STREETS, PERFORM GENERAL CLEANUP AND SHALL PERFORM MAINTENANCE ON ALL EXPOSED PATCHES.

12. CONTRACTOR SHALL SCHEDULE WORK AND MATERIAL DELIVERIES SO THAT STORED MATERIAL QUANTITIES ON THE JOB SITE SHALL BE MINIMIZED.

13. CONTRACTOR SHALL STORE ALL MATERIALS IN THE CONTRACTOR STAGING AREA 72 HOURS PRIOR TO INCORPORATING INTO THE WORK TO REDUCE OBSTRUCTIONS TO TRAFFIC AND INCONVENIENCE TO RESIDENTS. WHERE UTILITIES ARE BEING CONSTRUCTED IN EASEMENTS OUT OF TRAFFIC AREAS CONTRACTOR MAY STORE MATERIALS AHEAD OF CONSTRUCTION FOR A DISTANCE NOT GREATER THAN 1800 FEET UNLESS APPROVED OTHERWISE BY THE ENGINEER.

14. CLEARING AND GRUBBING SHALL BE RESTRICTED TO PERMANENT EASEMENTS ONLY. CONTRACTOR SHALL LIMIT TREE/BUSH CLEARING IN THE TEMPORARY EASEMENTS, BETWEEN HOUSES AND ALONG PROPERTY LINES TO ONLY ABSOLUTELY NECESSARY FOR CONSTRUCTION.

RELATION OF WATER MAINS TO SEWERS

(A) LATERAL SEPARATION OF SEWERS AND WATER MAINS. WATER MAINS SHALL BE LAID AT LEAST 10 FEET LATERALLY FROM EXISTING OR PROPOSED SEWERS, UNLESS LOCAL CONDITIONS OR BARRIERS PREVENT A 10-FOOT LATERAL SEPARATION--IN WHICH CASE:
(1) THE WATER MAIN IS LAID IN A SEPARATE TRENCH, WITH THE ELEVATION OF THE BOTTOM OF THE WATER MAIN AT LEAST 18 INCHES ABOVE THE TOP OF THE SEWER; OR
(2) THE WATER MAIN IS LAID IN THE SAME TRENCH AS THE SEWER WITH THE WATER MAIN LOCATED AT ONE SIDE ON A BENCH OF UNDISTURBED EARTH, AND WITH THE ELEVATION OF THE BOTTOM OF THE WATER MAIN AT LEAST 18 INCHES ABOVE THE TOP OF THE SEWER.

(B) CROSSING A WATER MAIN OVER A SEWER. WHENEVER IT IS NECESSARY FOR A WATER MAIN TO CROSS OVER A SEWER, THE WATER MAIN SHALL BE LAID AT SUCH AN ELEVATION THAT THE BOTTOM OF THE WATER MAIN IS AT LEAST 18 INCHES ABOVE THE TOP OF THE SEWER, UNLESS LOCAL CONDITIONS OR BARRIERS PREVENT AN 18 INCH VERTICAL SEPARATION--IN WHICH CASE BOTH THE WATER MAIN AND SEWER SHALL BE CONSTRUCTED OF FERROUS MATERIALS AND WITH JOINTS THAT ARE EQUIVALENT TO WATER MAIN STANDARDS FOR A DISTANCE OF 10 FEET ON EACH SIDE OF THE POINT OF CROSSING.

(C) CROSSING A WATER MAIN UNDER A SEWER. WHENEVER IT IS NECESSARY FOR A WATER MAIN TO CROSS UNDER A SEWER, BOTH THE WATER MAIN AND SEWER SHALL BE CONSTRUCTED OF FERROUS MATERIALS AND WITH JOINTS EQUIVALENT TO WATER MAIN STANDARDS FOR A DISTANCE OF 10 FEET ON EACH SIDE OF THE POINT OF CROSSING. A SECTION OF WATER MAIN PIPE SHALL BE CENTERED AT THE POINT OF CROSSING.

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CONSTRUCTION SEQUENCE NOTES

1. PRIOR TO COMMENCEMENT OF ANY WORK WITHIN EASEMENTS OR RIGHTS-OF-WAYS THE CONTRACTOR IS REQUIRED TO NOTIFY CONCERNED UTILITY COMPANIES IN ACCORDANCE WITH GS 87-102. CONTRACTOR SHALL VERIFY LOCATION OF EXISTING UTILITIES PRIOR TO BEGINNING CONSTRUCTION. NO SEPARATE PAYMENT. EXISTING UTILITIES SHOWN ARE TAKEN FROM MAPS FURNISHED BY VARIOUS UTILITY COMPANIES AND HAVE NOT BEEN PHYSICALLY LOCATED (I.E. TELEPHONE, GAS, CABLE, ETC.).

2. THE CONTRACTOR SHALL DIG UP EACH UTILITY WHICH MAY CONFLICT WITH CONSTRUCTION 14 DAYS IN ADVANCE TO VERIFY LOCATIONS (HORIZONTALLY AND VERTICALLY) TO ALLOW THE ENGINEER AN OPPORTUNITY TO ADJUST THE DESIGN TO AVOID CONFLICTS (NO SEPARATE PAYMENT).

3. ALL SANITARY SEWER & WATER CONSTRUCTION SHALL BE IN ACCORDANCE WITH STANDARDS AND SPECIFICATIONS OF THE NCDENR-DWQ & NCDENR-PWS. STORM DRAINAGE, STREET CONSTRUCTION AND PAVING SHALL BE IN ACCORDANCE WITH THE N.C.D.O.T.

4. UTILITY SERVICES TO INDIVIDUAL PROPERTIES ARE NOT SHOWN IN THE PROFILES FOR SIMPLICITY OF THE DRAWINGS. SERVICES MAY INCLUDE WATER LATERALS, TELEPHONE, ELECTRIC, CABLE, GAS, ETC.

5. CONTRACTOR SHALL COORDINATE WITH UTILITY OWNER AND BE RESPONSIBLE FOR TEMPORARY RELOCATION AND/OR SECURING EXISTING UTILITY POLES AND SIGNS AND/OR UTILITIES IN ACCORDANCE WITH UTILITY OWNER REQUIREMENTS DURING THE UTILITY MAIN INSTALLATION AND STREET CONSTRUCTION. (NO SEPARATE PAYMENT).

6. CONTRACTOR SHALL PROVIDE TEMPORARY SUPPORTS FOR UTILITY CROSSINGS AND REPAIR DAMAGES DUE TO CONSTRUCTION TO THE SATISFACTION OF THE UTILITY INVOLVED AT NO ADDITIONAL EXPENSE TO THE OWNER. UNDERGROUND ELECTRICAL CROSSINGS SHALL BE CROSSED IN ACCORDANCE WITH THE NEC AND TECHNICAL SPECIFICATION SECTION UNDERGROUND ELECTRICAL CROSSING

7. WHERE DEEMED NECESSARY BY THE ENGINEER THAT A SUBSURFACE DRAINAGE SYSTEM IS REQUIRED, THE CONTRACTOR SHALL PROVIDE ALL MATERIALS, TOOLS, LABOR, EQUIPMENT, TIE-IN'S TO EXISTING DRAINAGE STRUCTURES AND ALL OTHER INCIDENTALS NECESSARY TO PROVIDE COMPLETE INSTALLATION. IMPROPERLY INSTALLED AND NON-FUNCTIONING DRAINAGE SHALL BE REMOVED AND REPLACED AT THE CONTRACTOR'S EXPENSE. EXISTING FRENCH DRAINAGE DAMAGED DURING CONSTRUCTION SHALL BE REPLACED AND OR REPAIRED AT NO ADDITIONAL EXPENSE TO THE OWNER.

8. STORM DRAINAGE REPAIRS BY CONTRACTOR DUE TO CONSTRUCTION DAMAGE AND JOINTS EXPOSED DURING CONSTRUCTION SHALL BE INSPECTED BY THE OWNER PRIOR TO BACKFILLING.

9. CONTRACTOR SHALL PROVIDE ALL LABOR, EQUIPMENT AND MATERIAL AND PERFORM ALL WORK REQUIRED FOR INSTALLATION OF SEWER LINES, MANHOLES AND APPURTENANCES AS OUTLINED ON DRAWINGS AND ON SPECIFICATIONS, ALL OF WHICH BECOME PART OF THE CONTRACT DOCUMENTS.

10. ALL CONSTRUCTION OF SANITARY SEWER MAINS AND APPURTENANCES IN THE COLLECTION SYSTEMS SHALL BE IN STRICT ACCORDANCE WITH PLANS AND SPECIFICATIONS PREPARED AS PART OF THE CONTRACT DOCUMENTS AND AS APPROVED BY THE BPG, INC. ENGINEER. ALL MATERIALS SHALL BE NEW AND UNUSED. PRIOR TO CONSTRUCTION OF THE APPROVED SANITARY SEWER, CONTRACTOR SHALL PROVIDE FIELD STAKEOUT INCLUDING ADEQUATE LINE AND GRADE STAKES IN ORDER THAT SANITARY SEWER AND APPURTENANCES MAY BE CONSTRUCTED IN ACCORDANCE WITH CONTRACT DRAWINGS.

11. A PRECONSTRUCTION CONFERENCE SHALL BE HELD AT THE COMPLETION OF THE FIELD STAKEOUT WITH THE ENGINEEER AN HIS/HER REPRESENTATIVE, CURRITUCK COUNTY REPRESENTATIVE, NCDENR REPRESENTATIVE, AND ANY REQUISITE UTILITY REPRESENTATIVES THAT WILL REQUIRE COORDINATION WITH DURING THE COURSE OF CONSTRUCTION. A MINIMUM OF 2 DAYS NOTICE SHALL BE GIVEN FOR MEETING REPRESENTATIVES.

12. PREPARE PHOTOGRAPHIC DOCUMENTATION OF PRE-EXISTING CONDITIONS OF THE PROJECTED CONSTRUCTION ROUTE PRIOR TO COMMENCING WORK.

13. IF ANY DEVIATION IS CONTEMPLATED IN LOCATION OR LINE GRADE OF ANY SEWER, STRUCTURE OR APPURTENANCE AS SHOWN ON THE CONTRACT DRAWINGS, A REVISION OF THE DRAWINGS SHOWING THE PROPOSED DEVIATION SHALL BE SUBMITTED TO THE BPG, INC. ENGINEER FOR REVIEW AND APPROVAL BEFORE ANY CHANGES ARE CONSTRUCTED. MINOR FIELD CHANGES MAY BE MADE WITH APPROVAL OF BPG, INC. APPOINTED FIELD INSPECTOR. SHOULD CONTRACTOR DISCOVER AND/OR DAMAGE ANY UNDERGROUND UTILITY FACILITIES, WHICH ARE NOT SHOWN ON DRAWINGS AND/OR MARKED ON THE GROUND, CONTRACTOR SHALL PROMPTLY NOTIFY UTILITY OWNER AND OWNER'S PROJECT REPRESENTATIVE. RELOCATION OF ANY UTILITIES SHALL BE APPROVED AND COORDINATED WITH THE APPROPRIATE UTILITY OWNER.

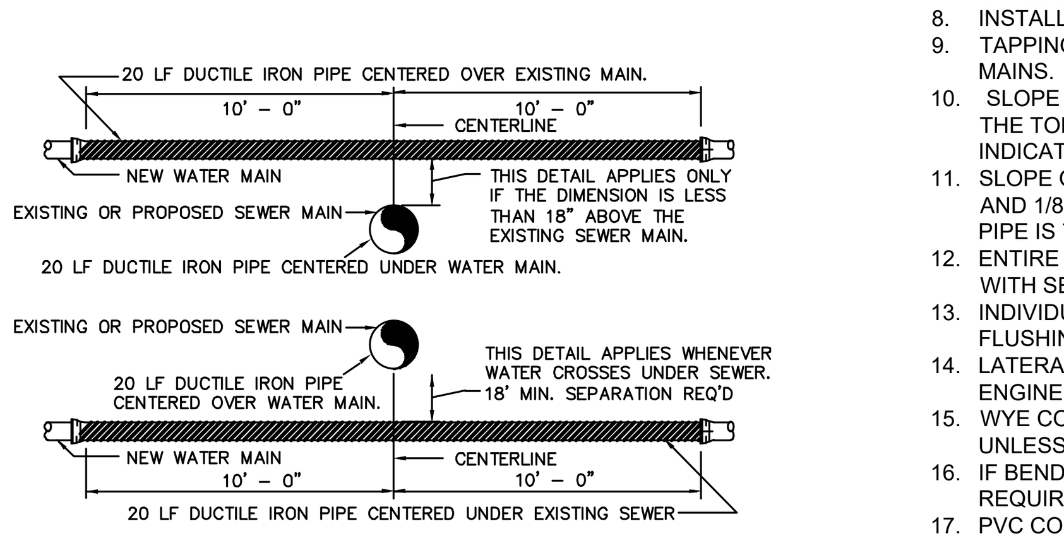
14. EXCAVATION SHALL CONFORM TO THE LINES AND GRADES SHOWN ON THE PLANS. THE WIDTH OF EXCAVATION FOR TRENCHES SHALL BE A MINIMUM OF 24". EXCAVATION SHALL NOT BE CARRIED BELOW THE ESTABLISHED GRADES AND ANY EXCAVATION BELOW THE REQUIRED LEVEL SHALL BE BACKFILLED WITH SUITABLE, THOROUGHLY COMPACTED GRANULAR BEDDING MATERIAL. CONTRACTOR SHALL INSTALL ALL SHEETING, BRACING, AND SHORING NECESSARY TO PERFORM THE WORK, TO PROTECT EXISTING STRUCTURES AND ALL EXCAVATIONS AS REQUIRED UNDER NORTH CAROLINA OSHA REGULATIONS. COMPLIANCE WITH PROVISIONS OF THE OVERHEAD HIGH VOLTAGE LINE SAFETY ACT IS REQUIRED.

15. DEWATERING EQUIPMENT SHALL BE SIZED TO MAINTAIN THE TRENCH IN A SATISFACTORY DEWATERED CONDITION SUITABLE FOR PIPE LAYING AND BACKFILLING. PIPE LAYING WILL BE PERMITTED ONLY WHERE THE DEPTH OF WATER IS MAINTAINED BELOW THE BEDDING MATERIAL. BEDDING MATERIAL SHALL NOT BE PLACED ON UNSTABLE TRENCH MATERIAL.

16. NOT MORE THAN ONE HUNDRED FIFTY FEET (150') OF TRENCH SHALL BE OPENED IN ADVANCE OF THE COMPLETED PIPE LAYING. TRENCH WALLS SHALL BE PROTECTED IN ACCORDANCE WITH CURRENT OSHA REGULATIONS. EXCAVATION AT MANHOLES AND SIMILAR STRUCTURES SHALL PROVIDE A MINIMUM CLEARANCE OF EIGHTEEN INCHES (18") BETWEEN THE OUTER SURFACE OF THE STRUCTURE AND THE EMBANKMENT OR SHEETING.

17. WHEREVER FOUNDATION MATERIAL IS UNSUITABLE, IT SHALL BE EXCAVATED UNTIL A STABLE FOUNDATION IS ACHIEVED. GRANULAR MATERIAL, #67 STONE PER ASTM C 12, SHALL THEN BE PLACED IN SIX INCH (6") LAYERS AND COMPACTED UNTIL THE TRENCH BOTTOM HAS BEEN STABILIZED. STANDARD GRANULAR PIPE BEDDING MATERIAL SHALL BE PLACED IN ACCORDANCE WITH ASTM D 2321 FOR PVC PIPE AND ASTM C 12 FOR DIP.

18. ALL GRAVITY SEWER MAINS, SERVICE LATERALS AND FORCE MAINS SHALL HAVE A MINIMUM COVER OF THREE FEET (3') AS MEASURED FROM TOP OF PIPE TO FINISH GRADE. THE BPG, INC. ENGINEER MAY REQUIRE ADDITIONAL COVER AS NEEDED FOR PIPE PROTECTION. SEWERS, WHICH HAVE A DEPTH OF COVER LESS THAN THREE FEET (3'), SHALL BE APPROVED AND INSTALLED AS PER BPG, INC. ENGINEER'S WRITTEN INSTRUCTIONS.



WATER CROSSING SEWER DETAIL
NOT TO SCALE

19. PIPE SHALL BE LAID TRUE TO LINE AND GRADE WITH BELLS UPSTREAM AND SHALL BE JOINTED TOGETHER SUCH THAT THE COMPLETED PIPE WILL HAVE A SMOOTH INVERT. PIPE SHALL BE PUSHED HOME BY HAND. THE USE OF EQUIPMENT (I.E. BACKHOE) SHALL NOT BE PERMITTED. CUTTING OF PIPE SHALL BE PERFORMED BY SAWING. STANDARD BEDDING SHALL BE SHAPED TO THE CURVATURE OF BOTH THE BELL AND BARREL OF THE PIPE. THE TRENCH SHALL BE KEPT FREE OF WATER WHILE THE WORK IS IN PROGRESS. THE ENDS OF THE PIPE SHALL BE CLEANED SO THAT PROPER JOINTS CAN BE MADE. AS THE WORK PROGRESSES, THE INTERIOR OF THE PIPE SHALL BE CLEARED OF DIRT, CEMENT, OR OTHER DELETERIOUS MATERIAL.

20. EXCEPT AS REQUIRED FOR USE OF A LASER LEVEL, EXPOSED END OF ALL PIPE AND FITTINGS SHALL BE FULLY CLOSED TO PREVENT EARTH, WATER OR OTHER SUBSTANCES FROM ENTERING PIPE. TRENCH SHALL BE COMPLETELY BACKFILLED AT END OF EACH WORKDAY. WHEN NEW PIPE IS TIED INTO AN EXISTING MANHOLE, NEW PIPE SHALL BE PLUGGED WITH A STANDARD SEWER PLUG AND SHALL REMAIN PLUGGED UNTIL ALL NEW LINE(S) THAT WILL FLOW TO EXISTING MANHOLE HAVE BEEN COMPLETED, TESTED, AND ACCEPTED.

21. BACKFILL SHALL BEGIN AT THE TOP OF THE STANDARD GRANULAR BEDDING AND SHALL BE PLACED IN SIX INCH (6") LAYERS FOR THE INITIAL ONE FOOT OVER THE PIPE AND SHALL BE THOROUGHLY TAMPED TO NINETY-FIVE PERCENT (95%) OF THE MAXIMUM THEORETICAL COMPACTION DENSITY AS DETERMINED BY A STANDARD PROCTOR ON THE MATERIAL. REMAINDER OF THE BACKFILL SHALL BE IN TWO FOOT (2') LAYERS PROPERLY TAMPED.

22. COMPLETION: BEFORE CONNECTING TO AN ACTIVE SYSTEM, THE LEAKAGE TESTS SHALL PROMPTLY FOLLOW INSTALLATION OF WASTEWATER PIPE INCLUDING SERVICES AND KEPT WITHIN A MAXIMUM OF 1000 FEET BEHIND THE WASTEWATER PIPE LAYING OPERATION.

23. CONTRACTOR SHALL FURNISH WEIRS, STAND PIPES, PIPE PLUGS, WATER, PRESSURE GAUGES, STOP WATCHES, AIR COMPRESSOR, VACUUM PUMP, HOSE AND SUCH MATERIALS AND ASSISTANCE AS REQUIRED TO PERFORM THESE TESTS. ALL ACCEPTANCE TESTS SHALL BE CONDUCTED BY CONTRACTOR IN THE PRESENCE OF A BPG, INC. APPOINTED INSPECTOR.

24. ACCEPTANCE TESTS SHALL NOT BE MADE UNTIL SANITARY SEWER, MANHOLES AND PROPOSED SEWER SERVICE CONNECTIONS, AS SHOWN ON THE APPROVED SEWER PLANS, HAVE BEEN INSTALLED, THE SEWER TRENCHES (INCLUDING MANHOLES AND CLEANOUT STACKS) BACKFILLED AND COMPACTED TO FINISHED SUB-GRADE.

25. CONTRACTOR SHALL BE RESPONSIBLE AT ALL TIMES FOR MAINTAINING SEWER FLOWS DURING PROJECT TO INCLUDE ANY REQUIRED BY-PASS PUMPING OF WASTEWATER BETWEEN MANHOLES DURING INSTALLATION OF SEWER LINES AND/OR MANHOLES. BY-PASS PUMPING SYSTEM SHALL PROVIDE CONTINUOUS FULL CONVEYANCE AND CONTAINMENT OF WASTEWATER PRESENT DURING THE WORK AND SHALL NOT SURCHARGE THE UPSTREAM PUMP STATION BY MORE THAN TWO (2) FEET ABOVE THE NORMAL EFFLUENT LEVELS.

26. ONCE ACCEPTANCE AND START OF THE COLLECTION SYSTEM HAS BEEN RECIEVED, THE CONTRACTOR SHALL PROCEED WITH THE ABANDONMENT PROCEDURES OF THE EXISTING WASTEWATER COLLECTION SYSTEM AS DESCRIBED HEREON.

27. THE NOTES CONTAINED HEREIN ARE INTENDED TO SUPPLEMENT THE TECHNICAL SPECIFICATIONS AND PROVIDE EASY REFERENCE FOR THE CONTRACTOR. IN NO CASE SHALL THESE NOTES VOID ANY PART, SECTION OR REQUIREMENT OUTLINED IN THE TECHNICAL SPECIFICATIONS CONTAINED IN THE CONTRACT DOCUMENTS.

TRENCH DEWATERING DURING SEWER LINE INSTALLATION

1. ALL GROUND WATER WHICH MAY BE FOUND IN THE TRENCHES AND ANY WATER WHICH MAY GET INTO THEM FROM ANY CAUSE WHATSOEVER SHALL BE PUMPED OR BAILED OUT SO THAT THE TRENCH SHALL BE DRY DURING THE PIPE LAYING PERIOD. NO WATER SHALL BE PERMITTED TO REACH CONCRETE UNTIL IT HAS SET SUFFICIENTLY. ALL WATER PUMPED FROM THE TRENCHES SHALL BE DISPOSED OF IN A MANNER SATISFACTORY TO THE OWNER. CONTRACTOR SHALL PROVIDE AT LEAST TWO (2) PUMPS FOR EACH TRENCH OPENED IN WET GROUND AND AT THE SAME TIME, HE SHALL HAVE ONE (1) PUMP IN RESERVE.

2. IF, DURING ANY TIME THAT CONTRACTOR IS PERMITTED TO LAY PIPE IN A TRENCH CONTAINING UNAVOIDABLE TRENCH WATER AND CONSTRUCTION IS INTERRUPTED FOR ANY REASON, THE OPEN ENDS OF PIPE SHALL BE CLOSED BY WATERTIGHT PLUGS OR CAPS, OR OTHER MEANS APPROVED BY THE OWNER. IN ANY CASE, SUCH PROTECTION SHALL BE PROVIDED WHEN WORK IS SUSPENDED OVERNIGHT OR ON WEEKENDS AND HOLIDAYS, REGARDLESS OF THE CONDITION OF THE TRENCH WITH RESPECT TO WATER AT THE TIME THAT THE WORK IS SUSPENDED

3. CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF ALL STRUCTURES, INCLUDING PIPES AND MANHOLES, AGAINST ANY TENDENCY TO FLOAT UNDER CONDITIONS OF HIGH WATER, WHETHER DUE TO HIGH GROUND WATER OR FLOOD CONDITIONS ON THE PROJECT SITE. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO TAKE WHATEVER STEPS MAY BE REQUIRED, INCLUDING THE INSTALLATION AND OPERATION OF PUMPS AND PUMPING SYSTEMS, WELL POINTS OR RELIEF DEVICES, TO PREVENT ANY STRUCTURE FROM FLOATING DURING CONSTRUCTION.

4. COST OF THE NECESSARY PUMPS, WELL POINTS OR OTHER APPURTENANCES REQUIRED TO PREVENT FLOTATION SHALL BE INCLUDED IN THE UNIT PRICES BID IN THE PROPOSAL FOR THE VARIOUS BID ITEMS, AND NO EXTRA COMPENSATION SHALL BE ALLOWED FOR SUCH WORK. ANY DAMAGE WHICH MAY OCCUR TO ANY PART OF THE WORK AS THE RESULT OF THE FLOTATION EFFECT OF GROUND OR FLOOD WATERS SHALL BE REPAIRED IN A MANNER FULLY SATISFACTORY TO THE OWNER, AT NO ADDITIONAL COST TO THE OWNER.

5. CONTRACTOR SHALL PROVIDE AND PLACE ALL NECESSARY FLUMES OR OTHER CHANNELS OF ADEQUATE SIZE TO CARRY TEMPORARILY ALL STREAMS, BROOKS, STORMWATER OR OTHER WATER, WHICH MAY FLOW ALONG OR ACROSS THE LINES OF THE PIPE LINE. ALL FLUMES OR CHANNELS THUS UTILIZED SHALL BE TIGHT SO AS TO PREVENT LEAKAGE INTO THE TRENCHES. WATER PUMPED FROM TRENCHES SHALL BE LED TO NATURAL WATERCOURSES. EXISTING SEWERS SHALL NOT BE EMPLOYED AS A DRAIN FOR THE REMOVAL OF DEWATERING WASTES.

SEWER SERVICE LATERAL NOTES

1. CONTRACTOR SHALL MAKE UP STACK AND SUBMIT TO ENGINEER FOR APPROVAL AND SHALL SUBMIT TAPPING SADDLE IF USED TO ENGINEER FOR APPROVAL.
2. HOLE IN SANITARY SEWER MAIN MUST BE CUT WITH SHELL CUTTER. NO HAMMER TAPS ALLOWED.
3. LATERAL SHALL CONFORM TO ASTM SPECS. D-3034 SDR-35 UNLESS OTHERWISE INDICATED AS DUCTILE IRON.
4. ALL PIPE AND FITTINGS SHALL BE 4" OR 6" UNLESS OTHERWISE SPECIFIED.
5. ALL D.I. PIPE SHALL HAVE AN INTERIOR LINING OF CERAMIC EPOXY OR FUSED CALCIUM ALUMINATE CEMENT WITH FUSED CALCIUM ALLUMINATE AGGREGATES. THE ENTIRE D.I. LATERAL SHALL BE COMPRISED OF D.I. PIPE AND MECHANICAL JOINT FITTINGS.
6. ALL CONNECTIONS SHALL HAVE RUBBER GASKET SEALS INSTALLED.
7. THE CONTRACTOR SHALL USE SDR 35 P.V.C. WYE FOR CONNECTION TO SDR 35 P.V.C. PIPE OR DI TEE FOR CONNECTION TO DUCTILE IRON PIPE. PVC WYE SHALL BE ONE PIECE MOLDED OR FABRICATED.
8. INSTALLATION OTHER THAN AS SHOWN MUST BE ENGINEER APPROVED
9. TAPPING PROCESS SHOWN SHALL BE USED FOR ALL SANITARY SEWER MAINS.
10. SLOPE AND DEPTH OF THE SERVICE LATERAL SHALL BE DETERMINED BY THE TOPOGRAPHY OF THE LOT AS APPROVED BY THE ENGINEER OR AS INDICATED ON THE DRAWINGS.
11. SLOPE OF LATERALS SHALL CONFORM TO 1/4" PER FOOT MIN. FOR 4" PIPE AND 1/8" PER FOOT MIN. FOR 6" PIPE. MAXIMUM CLEAN OUT SPACING FOR 4" PIPE IS 75', 100' FOR 6" PIPE
12. ENTIRE SEWER LATERAL ASSEMBLY SHALL BE AIR TESTED CONCURRENTLY WITH SEWER MAIN.
13. INDIVIDUAL LATERALS SHALL BE CLEANED AND FLUSHED PRIOR TO FLUSHING SANITARY SEWER MAINS.
14. LATERAL SHALL NOT BE BACK-FILLED UNTIL INSPECTED BY THE PROJECT ENGINEER OR HIS REPRESENTATIVE.
15. WYE CONNECTIONS SHALL NOT BE USED TO TIE LATERALS INTO A MANHOLE, UNLESS OTHERWISE APPROVED BY ENGINEER.
16. IF BENDS ARE APPROVED BY THE PROJECT ENGINEER, STONE BEDDING IS REQUIRED TO BE INSTALLED FROM UNDISTURBED SOIL TO BOTTOM OF BEND.
17. PVC COMBINATION SHALL BE 2 PIECE TEE-WYE, GASKETED, SDR35, AS MANUFACTURED BY HARCO, GPK OR APPROVED EQUAL.

UTILITY GENERAL NOTES

1. PRIOR TO COMMENCEMENT OF ANY WORK WITHIN EASEMENTS OR RIGHTS-OF-WAYS THE CONTRACTOR IS REQUIRED TO NOTIFY CONCERNED UTILITY COMPANIES IN ACCORDANCE WITH GS 87-102. CONTRACTOR SHALL VERIFY LOCATION OF EXISTING UTILITIES PRIOR TO BEGINNING CONSTRUCTION. NO SEPARATE PAYMENT. EXISTING UTILITIES SHOWN ARE TAKEN FROM MAPS FURNISHED BY VARIOUS UTILITY COMPANIES AND HAVE NOT BEEN PHYSICALLY LOCATED (i.e. TELEPHONE, GAS, CABLE, ETC.).

2. THE CONTRACTOR SHALL DIG UP EACH UTILITY WHICH MAY CONFLICT WITH CONSTRUCTION 14 DAYS IN ADVANCE TO VERIFY LOCATIONS (HORIZONTALLY AND VERTICALLY) TO ALLOW THE ENGINEER AN OPPORTUNITY TO ADJUST THE DESIGN TO AVOID CONFLICTS (NO SEPARATE PAYMENT).

3. ALL SANITARY SEWER & WATER CONSTRUCTION SHALL BE IN ACCORDANCE WITH STANDARDS AND SPECIFICATIONS OF THE NCDENR-DWQ & NCDENR-PWS. STORM DRAINAGE, STREET CONSTRUCTION AND PAVING SHALL BE IN ACCORDANCE WITH THE N.C.D.O.T.

4. UTILITY SERVICES TO INDIVIDUAL PROPERTIES ARE NOT SHOWN IN THE PROFILES FOR SIMPLICITY OF THE DRAWINGS. SERVICES MAY INCLUDE WATER LATERALS, TELEPHONE, ELECTRIC, CABLE, GAS, ETC.

5. CONTRACTOR SHALL COORDINATE WITH UTILITY OWNER AND BE RESPONSIBLE FOR TEMPORARY RELOCATION AND/OR SECURING EXISTING UTILITY POLES AND SIGNS AND/OR UTILITIES IN ACCORDANCE WITH UTILITY OWNER REQUIREMENTS DURING THE UTILITY MAIN INSTALLATION AND STREET CONSTRUCTION. (NO SEPARATE PAYMENT).

6. CONTRACTOR SHALL PROVIDE TEMPORARY SUPPORTS FOR UTILITY CROSSINGS AND REPAIR DAMAGES DUE TO CONSTRUCTION TO THE SATISFACTION OF THE UTILITY INVOLVED AT NO ADDITIONAL EXPENSE TO THE OWNER. UNDERGROUND ELECTRICAL CROSSINGS SHALL BE CROSSED IN ACCORDANCE WITH THE NEC AND TECHNICAL SPECIFICATION SECTION UNDERGROUND ELECTRICAL CROSSING

7. WHERE DEEMED NECESSARY BY THE ENGINEER THAT A SUBSURFACE DRAINAGE SYSTEM IS REQUIRED, THE CONTRACTOR SHALL PROVIDE ALL MATERIALS, TOOLS, LABOR, EQUIPMENT, TIE-IN'S TO EXISTING DRAINAGE STRUCTURES AND ALL OTHER INCIDENTALS NECESSARY TO PROVIDE COMPLETE INSTALLATION IN ACCORDANCE WITH CITY OF FAYETTEVILLE STANDARDS. IMPROPERLY INSTALLED AND NON-FUNCTIONING DRAINAGE SHALL BE REMOVED AND REPLACED AT THE CONTRACTOR'S EXPENSE. EXISTING FRENCH DRAINAGE DAMAGED DURING CONSTRUCTION SHALL BE REPLACED AND OR REPAIRED AT NO ADDITIONAL EXPENSE TO THE OWNER.

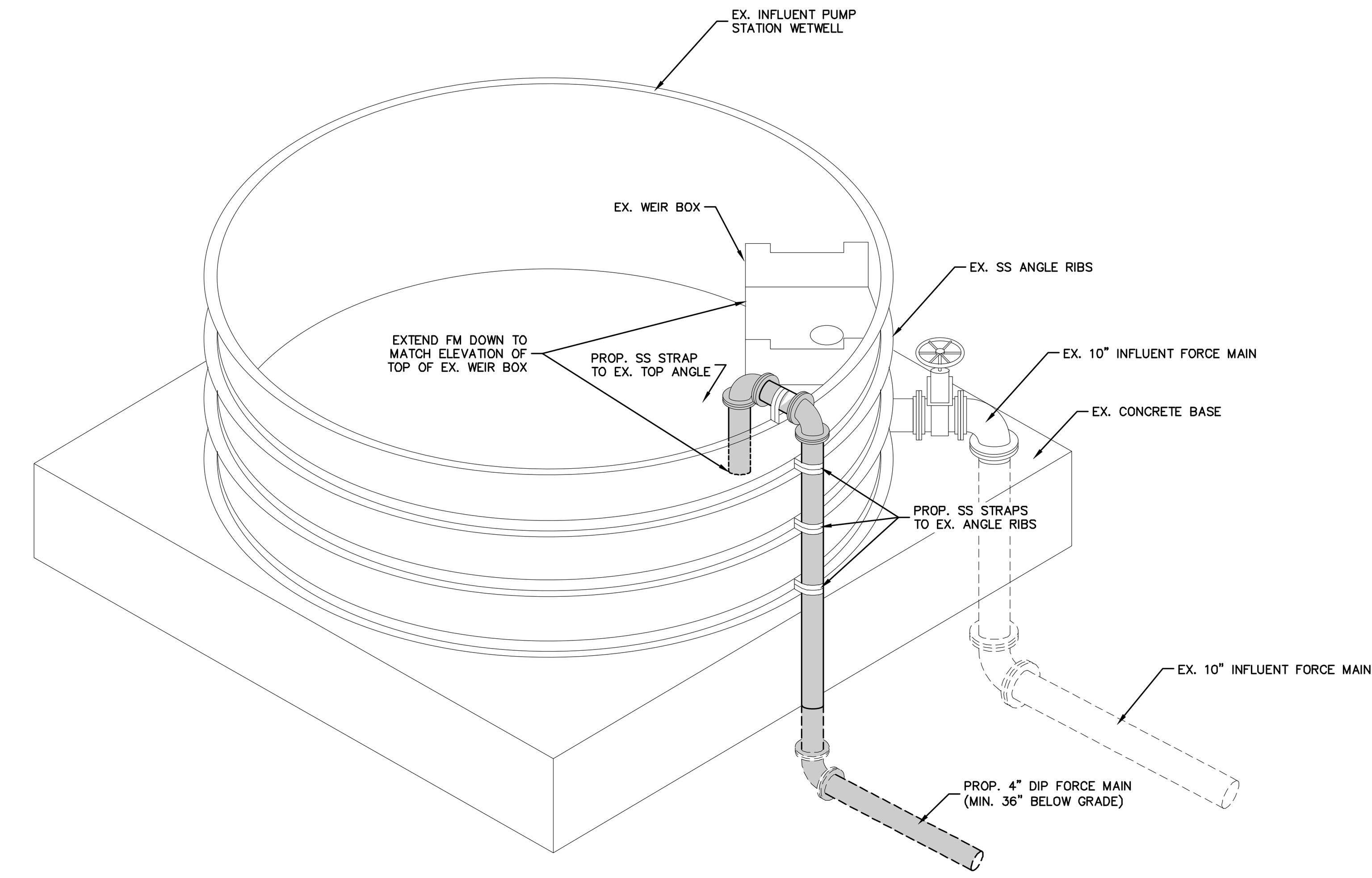
8. ANY DRIVEWAY CULVERTS DAMAGED DURING CONSTRUCTION SHALL BE EITHER REPAIRED OR REPLACED AT CONTRACTOR'S EXPENSE. FILTER FABRIC CLOTH SHALL BE PLACED OVER EITHER CULVERT ENDS DURING THE COURSE OF CONSTRUCTION. ALL EX. DRAINAGE INFRASTRUCTURE WILL BE RETURNED TO PRE-EXISTING CONDITIONS PRIOR TO FINAL PROJECT APPROVALS.

GENERAL NOTES SANITARY SEWER UTILITY

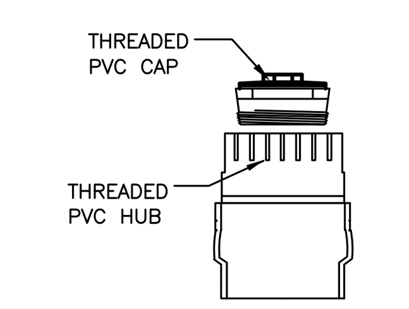
1. CLEANOUT ELEVATIONS AND/OR LOCATIONS MAY BE ADJUSTED IN THE FIELD AS DIRECTED BY THE ENGINEER WHEN NECESSARY. CLEANOUT STACK TOP ELEVATION IS DETERMINED BY INTERPOLATING FIELD DATA AND MAY NOT BE EXACT. CLEANOUT ELEVATION TOP SHALL BE SET IN ACCORDANCE WITH THE TYPICAL DETAIL DESCRIBED HEREON. (NO SEPARATE PAYMENT).

2. WHERE SANITARY SEWER MAINS ARE TO BE CONSTRUCTED WITHIN 20' OF EXISTING RESIDENCES SPECIAL CONSIDERATION SHALL BE GIVEN TO MINIMIZE UNDERMINING OR OTHERWISE DISTURBING EXISTING RESIDENCES ADJACENT TO THE SEWER MAIN. THE CONTRACTOR SHALL USE A RUBBER TIRED BACK HOE AND NO MECHANICAL COMPACTION EQUIPMENT IN THESE AREAS. THE TRENCH SHALL BE SHORED ADEQUATELY TO PREVENT ANY SLOTHING OF THE SIDE SLOPES. SUITABLE BACK FILL SHALL BE PLACED IN THE TRENCH. CONTRACTOR SHALL BE FULLY RESPONSIBLE FOR REPAIR OF STRUCTURES, FOUNDATIONS, FOOTINGS, ETC. DAMAGED DUE TO CONSTRUCTION.

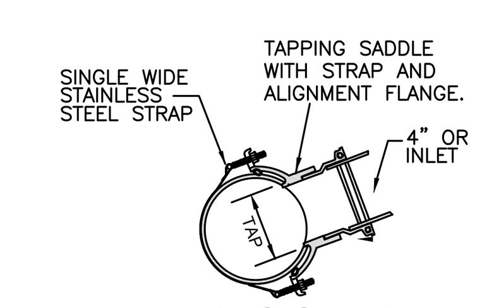
3. SANITARY SEWER MANHOLE DEFLECTION ANGLE'S ARE 180 DEGREES UNLESS NOTED OTHERWISE. ALL INVERT ELEVATIONS ARE SHOWN TO THE MANHOLE CENTERLINE.



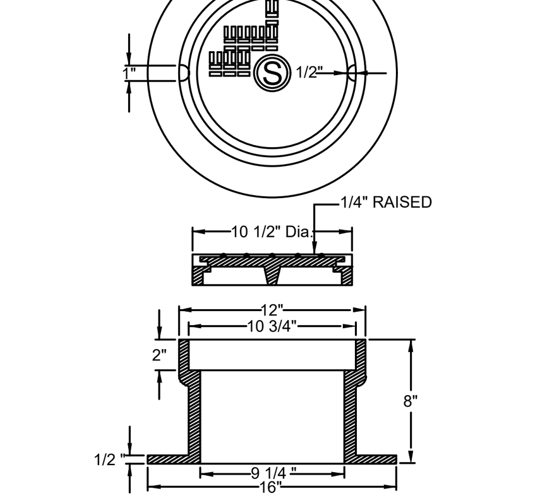
INFLUENT WETWELL FORCE MAIN CONNECTION DETAIL
NOT TO SCALE



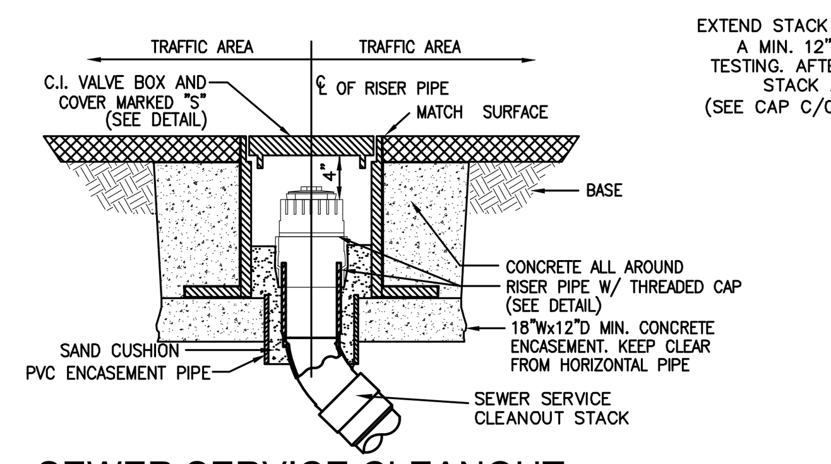
SERVICE PLUG/ C/O CAP ASSEMBLY
NOT TO SCALE
SEE CLEANOUT COVER ASSEMBLY DETAIL FOR USE IN TRAFFIC AREAS



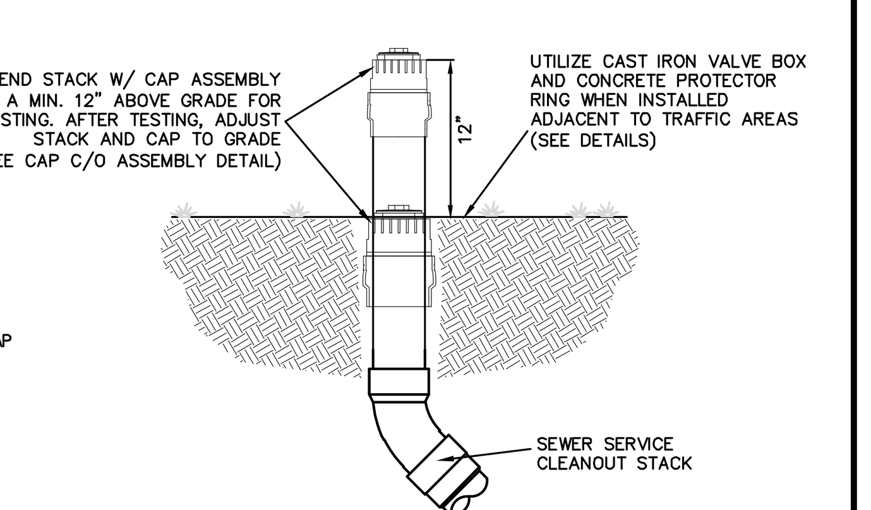
TAPPING SADDLE (OPTIONAL)
NOTE: TAP SHALL BE 4 1/2" FOR 4" LATERAL, AND SHALL BE 6 1/2" FOR 6" LATERAL.



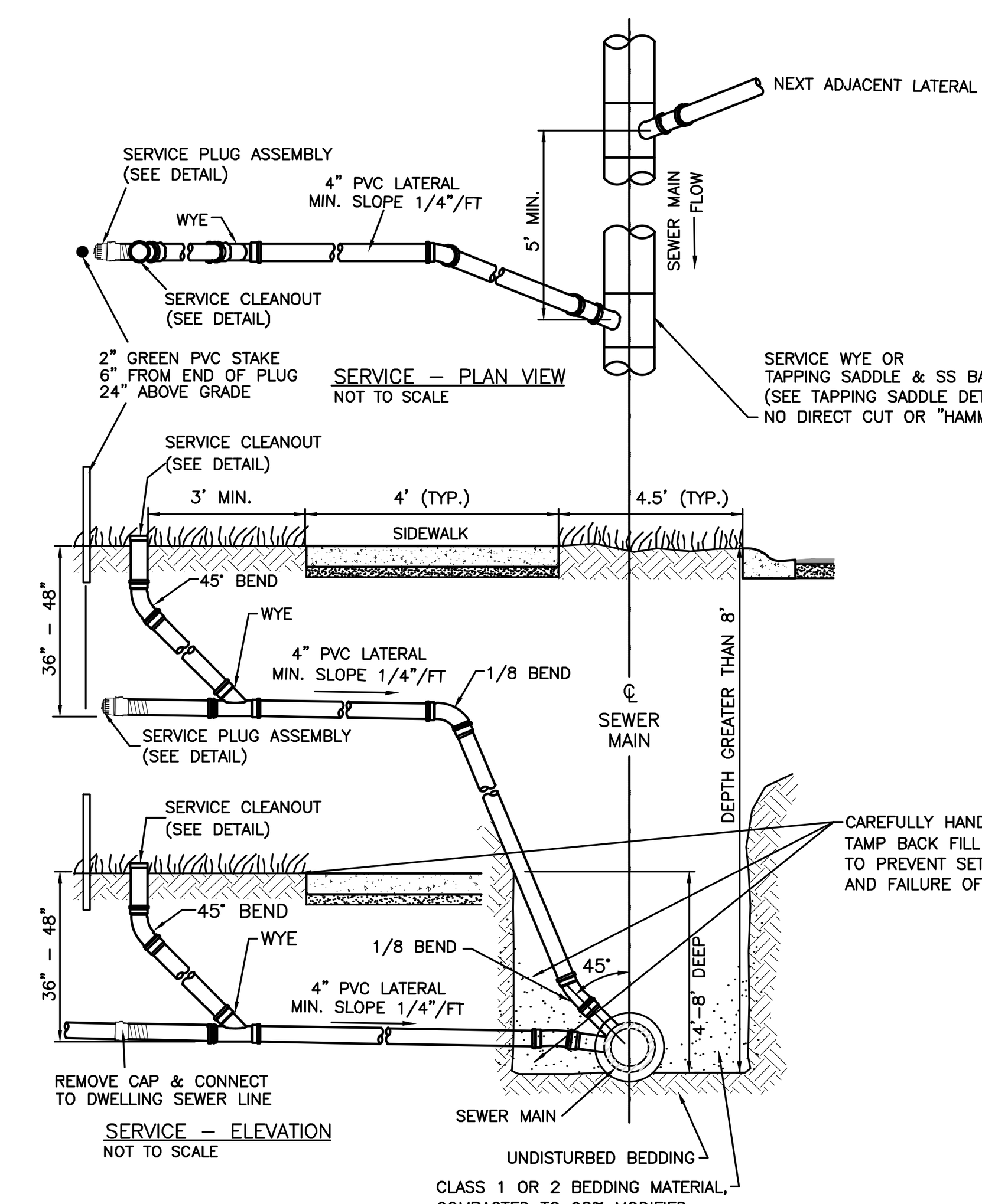
CLEANOUT COVER ASSEMBLY
NOT TO SCALE (FOR TRAFFIC AREAS)



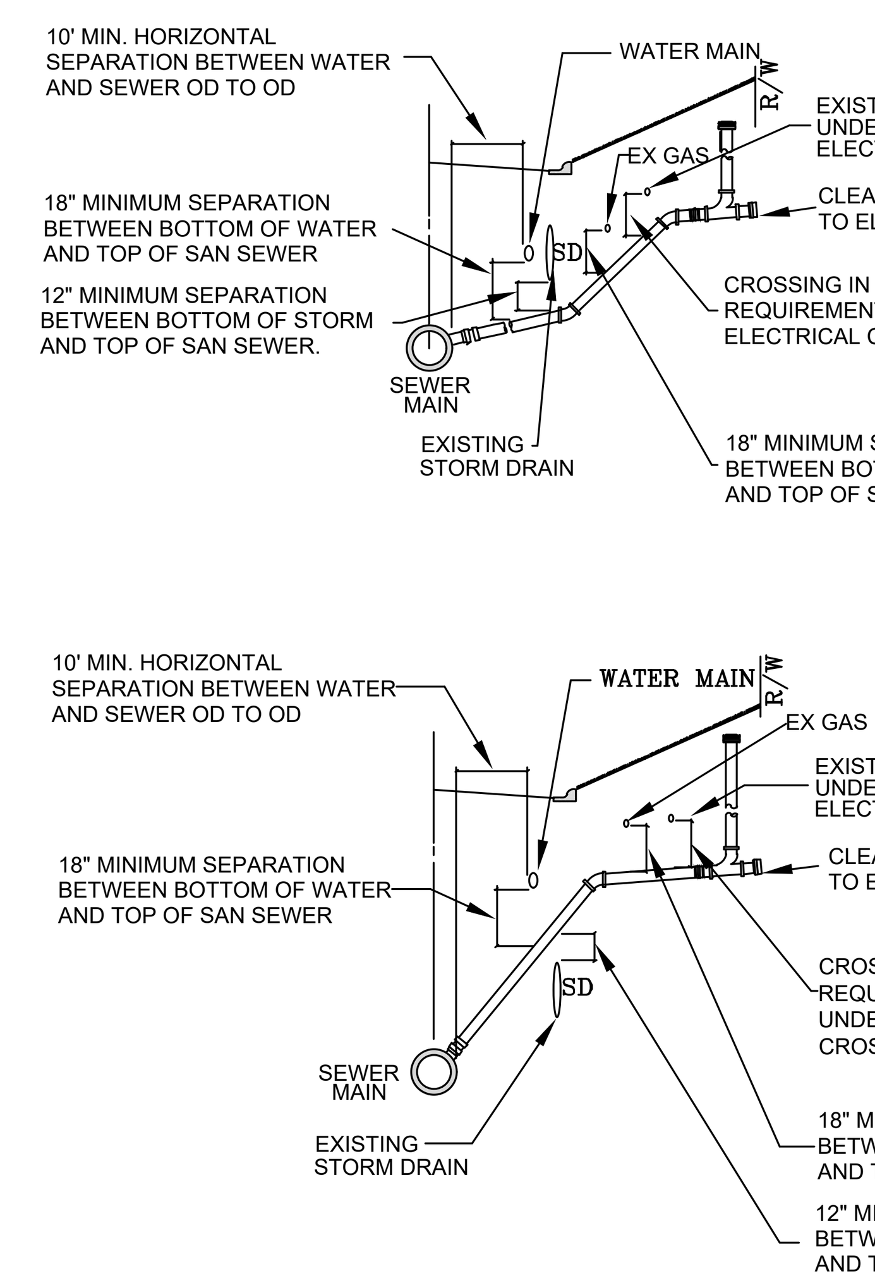
SEWER SERVICE CLEANOUT
NOT TO SCALE (FOR TRAFFIC AREAS)

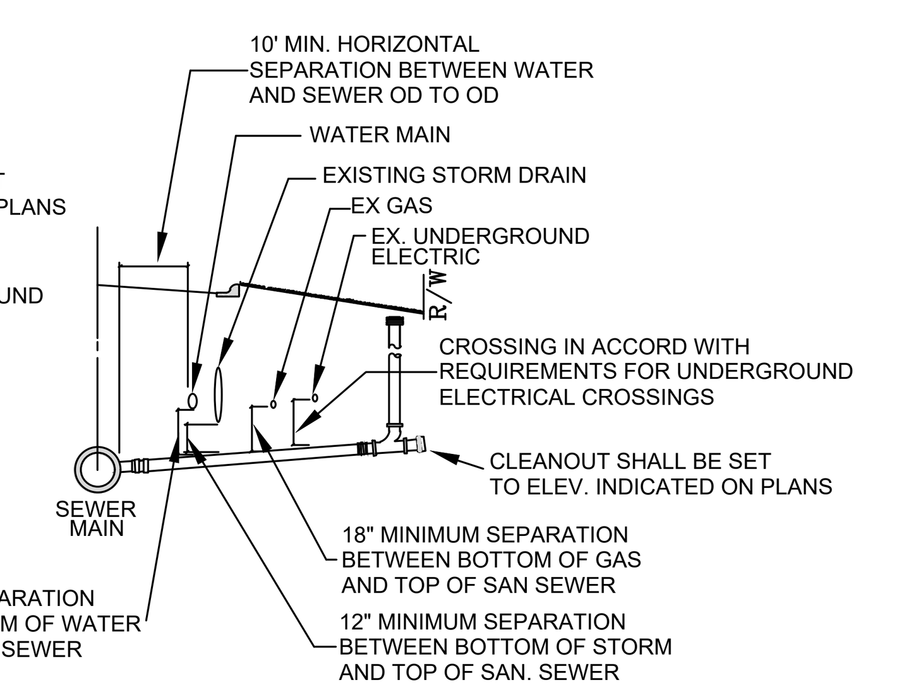


SEWER SERVICE CLEANOUT
NOT TO SCALE (FOR NON-TRAFFIC AREAS)



4"Ø LATERAL SEWER SERVICE CONNECTION DETAIL
NOT TO SCALE LOCATIONS AS NOTED





1. ALL VERTICAL AND HORIZONTAL SEPARATION SHALL BE IN ACCORDANCE WITH STATE REGULATIONS.
2. THE SKETCHES SHOWN ARE FOR INFORMATIONAL PURPOSES ONLY.
3. THE CONTRACTOR SHALL BE REQUIRED TO VERIFY ALL EXISTING UTILITIES BOTH HORIZONTALLY AND VERTICALLY AT EACH CROSSING PRIOR TO CONSTRUCTION OF LATERAL TO INSURE PROPER CLEARANCES ARE MAINTAINED.
4. ALL PIPE BEND LOCATIONS AND MAX. NUMBER OF BENDS INSTALLED ON LATERALS SHALL BE APPROVED BY THE PROJECT COORDINATOR PRIOR TO INSTALLATION OF BEND OR EXTENDING THE LATERAL FROM THE MAIN.
5. ALL REQUIREMENTS FOR SEWER LATERAL NOTES AND DETAILS SHALL BE APPLICABLE.
6. REFER TO UNDERGROUND ELECTRICAL DETAILS FOR ADDITIONAL INFORMATION WHEN CROSSING UNDERGROUND ELECTRICAL FACILITIES.

SEWER SERVICE LATERAL UTILITY CONFLICT SEPARATION REQUIREMENTS
NOT TO SCALE

Bissell Professional Group
Firm License # C-956
3512 North Croatan Highway
P.O. Box 1068
Kitty Hawk, North Carolina 27949
(252) 261-3266
FAX (252) 261-1760

BISSELL PROFESSIONAL GROUP
Engineers, Planners, Surveyors and Environmental Specialists

WASTEWATER COLLECTION
TYP. CONSTRUCTION DETAILS

PROJECT:
COROLLA BOAT CLUB - PHASE 1, MONTERAY SHORES PHASE 10
POPLAR BRANCH TOWNSHIP CURRITUCK COUNTY NORTH CAROLINA

CONSTRUCTION DRAWINGS

REVISIONS

NO.	DATE	DESCRIPTION	BY
1	3-24-23	WWTP CONNECTION & CO DETAIL	DMK

PRELIMINARY
DO NOT USE FOR CONSTRUCTION

DATE: 2-15-23	SCALE: NO SCALE
DESIGNED: BPG	CHECKED: MSB
DRAWN: KFW/DMK	APPROVED: BPG

SHEET: 16 OF 16

CAD FILE: 459600B3

PROJECT NO: 4596

OFFICIAL USE ONLY:
Permit Number: _____
Date Filed: _____
Date Approved: _____

Major Stormwater Plan
Form SW-002

Contact Information

APPLICANT:

Name: Outer Banks Ventures, Inc.
Address: PO Box 549
Corolla, NC 27927
Telephone: 252-453-4198
E-Mail Address: rcwillis@outerbanksventures.com

PROPERTY OWNER:

Name: Same
Address: _____
_____
Telephone: _____
E-Mail Address: _____

Property Information

Physical Street Address: Malia Drive, Corolla, NC
Parcel Identification Number(s): 0116-000-010A-0000, 0116-000-010B-0000, 0116-000-010C-0000
FEMA Flood Zone Designation: AE3, AE4, AE5, AE6, X, Shaded X

Request

Project Description: Subdivision
Total land disturbance activity: 12 Ac. sf
Calculated volume of BMPs: 380,044 sf
Maximum lot coverage: 108,893 sf
Proposed lot coverage: 108,893 sf

TYPE OF REQUEST

- [X] Major subdivision (10-year, 24-hour rate)
- [ ] Major site plan (5-year, 24-hour rate)

METHOD USED TO CALCULATE PEAK DISCHARGE

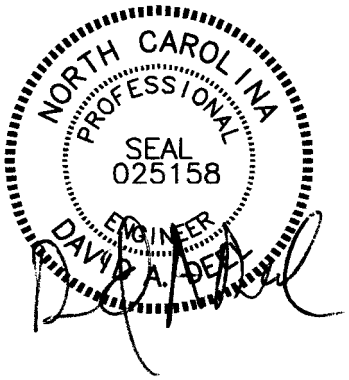
- [ ] Rational Method
- [ ] NRCS Method (TR-55 and TR-20)
- [ ] Simple volume calculation for small sites (less than 10 acres)
- [X] Alternative stormwater runoff storage analysis
- [ ] Downstream drainage capacity analysis

I hereby authorize county officials to enter my property for purposes of determining compliance. All information submitted and required as part of this process shall become public record.

President
Property Owner(s)/Applicant

5/25/23
Date

Stormwater Management Plan Narrative
Corolla Boat Club
Single-Family Residential & Townhome Development
Corolla
Currituck County Submittal
Revised 5/24/2023



General

The Corolla Boat Club project is a proposed mixed use development consisting of five single family residential lots, one commercial lot, 25 townhome residences, and associated roadway and utility infrastructure. The project will be located on 36.07 acre parcel located in Corolla, NC. A 23.02 acre NCDEQ Project Area has been defined containing the proposed improvements associated with this plan and a Low Density Stormwater Permit is being pursued accordingly.

Due to the project's particular siting adjacent to Currituck Sound and existing drainage infrastructure, consisting primarily of a large pond which drains directly to the sound without crossing other properties, the project qualifies for alternative compliance with Currituck County's stormwater flow reduction requirements, as an adequate outfall is deemed to exist (direct outfall to Currituck Sound). Therefore, there is no 10-yr/2-yr flow reduction required. This approach is consistent with other soundfront project approvals since the 10-yr/2-yr requirements were put in place.

The following narrative, application and calculations will demonstrate the parameters of this design.

Summary of Existing Conditions

The project site consists of a 36.07 acre parcel is located immediately southwest of the intersection of Malia Drive and Caroline Court (approximately 255' west of the intersection of Malia Drive and NC 12) in Corolla, NC. The Project Area currently consists of an undeveloped soundfront parcel with a large pond and coastal wetland fringe. Drainage within the parcel generally flows overland towards the wetland fringe or towards the pond. The pond accepts runoff from surrounding off-site areas as well as the County's Whalehead drainage pump system and overflows overland into the wetland fringe, and ultimately into Currituck Sound. Soils across the site consist primarily of fine sand.

Improvements to Existing Common Drainage Features

As a preventative measure to protect the western edge of the pond from degradation and potential future direct connection to the sound, this project proposes to install a formal berm and weir control structure between the pond and the western wetland fringe. Design flows from the Whalehead system were coordinated with Currituck County and conservative assumptions were made to initially size the control weirs. An EPA SWMM Model of proposed conditions was also prepared to serve as a design tool for the drainage system and to evaluate the function of the pond while accounting for off-site inflows. This model takes into account the Corolla Boat Club project at full build-out. Peak Flows and Velocities from this model were utilized to size / design conveyance elements and energy dissipators as needed.

Summary of Proposed Conditions

The Corolla Boat Club project consists of five single family residential lots, one commercial lot, 25 townhome residences, and associated roadway and utility infrastructure. The total coverage (BUA) associated with the project is 14.58% impervious coverage.

Runoff from the bulk of the Project Area will be allowed to sheet flow overland to either a collector swale running along the western edge of the developed area or overland to the existing pond. Runoff from the interior roadway will be collected via curb & gutter and discharged to the western collector swale which will function as a curb outlet swale. The collector swale will promote filtration by the maintained vegetation and infiltration into the subsoil and will ultimately discharge to the existing pond.

No downstream properties will be impacted by the proposed development as the pond discharges directly to an on-site wetland fringe which discharges to the Currituck Sound. Therefore, approval of Alternate Compliance, as has been granted to similar projects in the past, is requested.

Pond Peak HGL Calculations

In coordination with Currituck County, the design parameters for the Whalehead Drainage system were shared. These design parameters dictate that the water level in the on-site pond not be raised by more than 2 feet by the pumped discharge from the Whalehead Drainage System. In order to demonstrate compliance with the County mandate that the new development not increase HGL's for upstream properties, this restriction was utilized to design the weir system for the pond, but expanded to include all flows from the surrounding drainage area as well as the proposed project. An EPA SWMM Model of proposed conditions was prepared to serve as a design tool for the drainage system and to evaluate the function of the pond while accounting for off-site inflows. This model takes into account the Corolla Boat Club project at full build-out as well as the theoretical maximum pump flow from the Whalehead drainage system. An EPA SWMM Model report, presenting this work, has been included as an attachment to this report.

Calculated maximum HGL's are as follows:

		HGL (ft)
Normal Pond Level (ft)	1.0	0
Max Whalehead Pump System Discharge Elev(ft)	1.5	0.5
10-yr runoff + max WH Pump discharge Elev(ft)	1.92	0.92
100-yr runoff + max WH Pump discharge Elev (ft)	2.94	1.94

As calculated, the 100-yr runoff from the post-construction drainage area, including the peak theoretical discharge from the Whalehead pump system, results in a peak HGL of 1.94 feet above normal pond, which is within the allowable maximum pond storage depth of 2.0 feet which was established at the time that the County tied the Whalehead pump system into the existing pond.

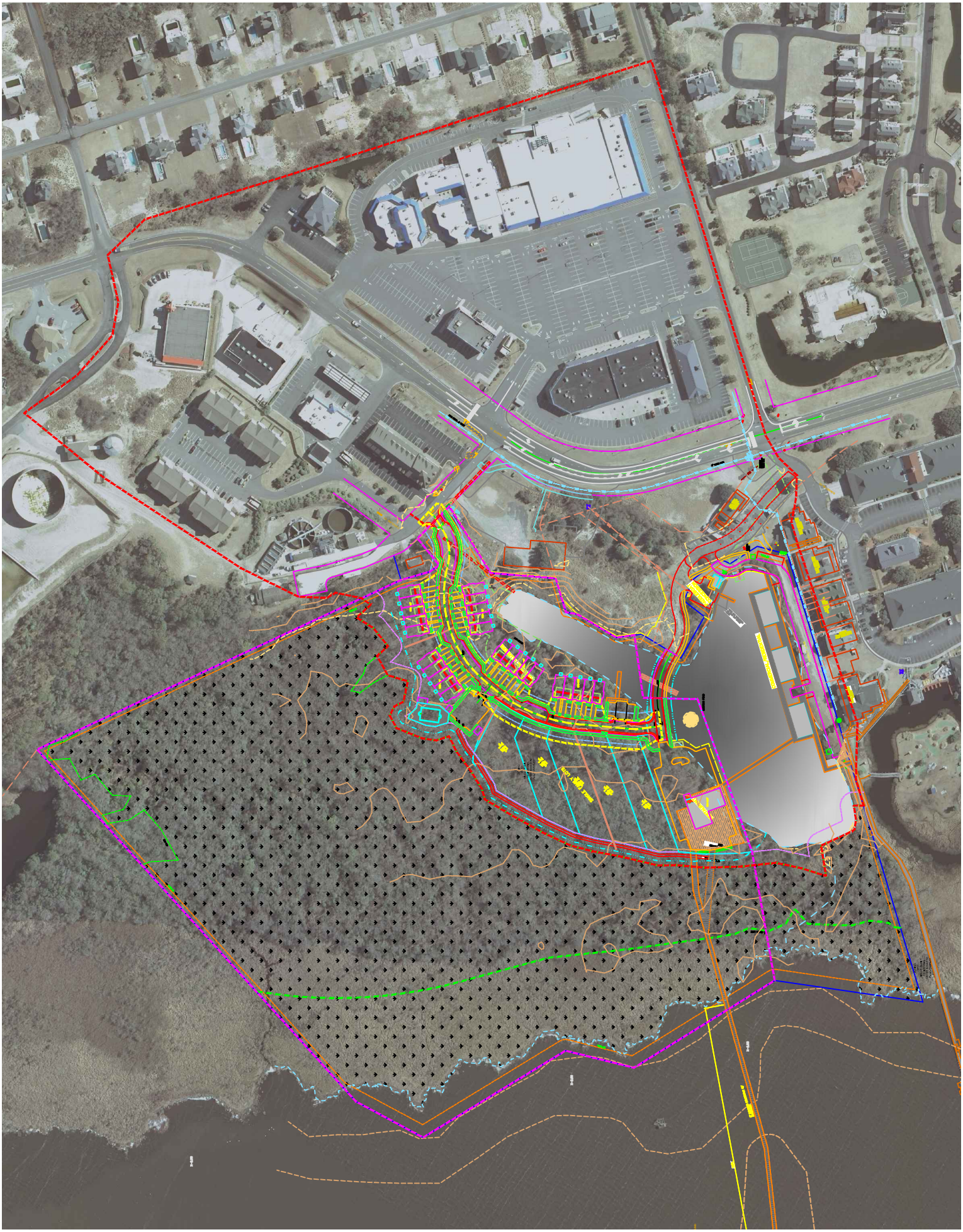
Calculations

An EPA SWMM Model of proposed conditions was prepared to serve as a design tool for the drainage system and to evaluate the function of the pond while accounting for off-site inflows. This model takes into account the Corolla Boat Club project at full build-out as well as the theoretical maximum pump flow from the Whalehead drainage system. An EPA SWMM Model report, presenting this work, has been included as an attachment to this report.

Conclusions

The proposed stormwater management plan for this site incorporates the existing pond for runoff while accommodating the design parameters for the pond that were established when the County installed the Whalehead Drainage pump system. There are no downstream properties and the existing pond will discharge across the subject property to Currituck Sound without crossing adjoiners, therefore, this property is deemed to have an adequate outfall. This proposed design will more than adequately serve the stormwater management requirements of this site and meets the requirements for Alternate Compliance with Currituck County's Stormwater Management requirements.

APPENDIX A
Aerial Imagery



APPENDIX B
Whalehead Drainage System Pump Information

Corolla Boat Club
Pond Weir Calcs
10/26/2022

Data from Currituck County:

PUMP STATION	DESGIN FLOW RATE (gpm)		SCADA Readings 2021-2022 (gpm)
TUNA	604		270-300
STURGEON	179		130-140
BARRACUDA	782		meter doesn't work
HERRING	711		730-790
CORAL	810		meter doesn't work
DOLPHIN	796		280-330
MACKEREL	715		700-790
MARLIN	828		meter doesn't work
SAILFISH	604		850-1080
PERCH	171		115-170

*Per Conversation with Eric Weatherly, P.E. (Currituck County Engineer), the County has unreliable meter data for the pump system and also has no breakdown of flows between the two outfalls. Mr. Weatherly's stated preference for design of the weir system is a conservative approach assuming full Pump Station Design Flow Rates and all of the flow coming to the Corolla Boat Club pond.

Total Design Flow (GPM):	6200
Total Design Flow (cfs)	13.81

EPA SWMM Model Report

Corolla Boat Club
Single-Family Residential & Townhome Development
Corolla
May 24, 2023

General

The following report will detail the EPA SWMM Model which was constructed & analyzed in order to provide design guidance for the stormwater management systems to be installed with the construction of the proposed Corolla Boat Club development in Corolla, NC.

The Project Site

The project site consists 36.07 acre parcel immediately southwest of the intersection of Malia Drive and Caroline Court (approximately 255' west of the intersection of Malia Drive and NC 12) in Corolla, NC. The project site currently consists of an undeveloped soundfront parcel with a large pond and coastal wetland fringe. Drainage within the parcel generally flows overland towards the wetland fringe or towards the pond. The pond accepts runoff from surrounding off-site areas and overflows via overland flow and a pipe outlet into the wetland fringe, and ultimately into Currituck Sound. Soils across the site consist primarily of fine sand.

The Corolla Boat Club project is a proposed mixed use development consisting of five single family residential lots, one commercial lot, 25 townhome residences, and associated roadway and utility infrastructure. .

Plans which accompany this submittal are schematic in nature and are intended to provide guidance in how the SWMM Model was constructed. A separate submission of detailed Construction Plans will be submitted for Currituck County Construction Plans review.

Target Design Standards

Due to the project's particular siting adjacent to Currituck Sound and existing drainage infrastructure, consisting primarily of a large pond which drains directly to the sound without crossing other properties, the project qualifies for alternative compliance with Currituck County's stormwater flow reduction requirements, as an adequate outfall is deemed to exist (direct outfall to Currituck Sound). Therefore, there is no 10-yr/2-yr flow reduction required. This approach is consistent with other soundfront project approvals since the 10-yr/2-yr requirements were put in place.

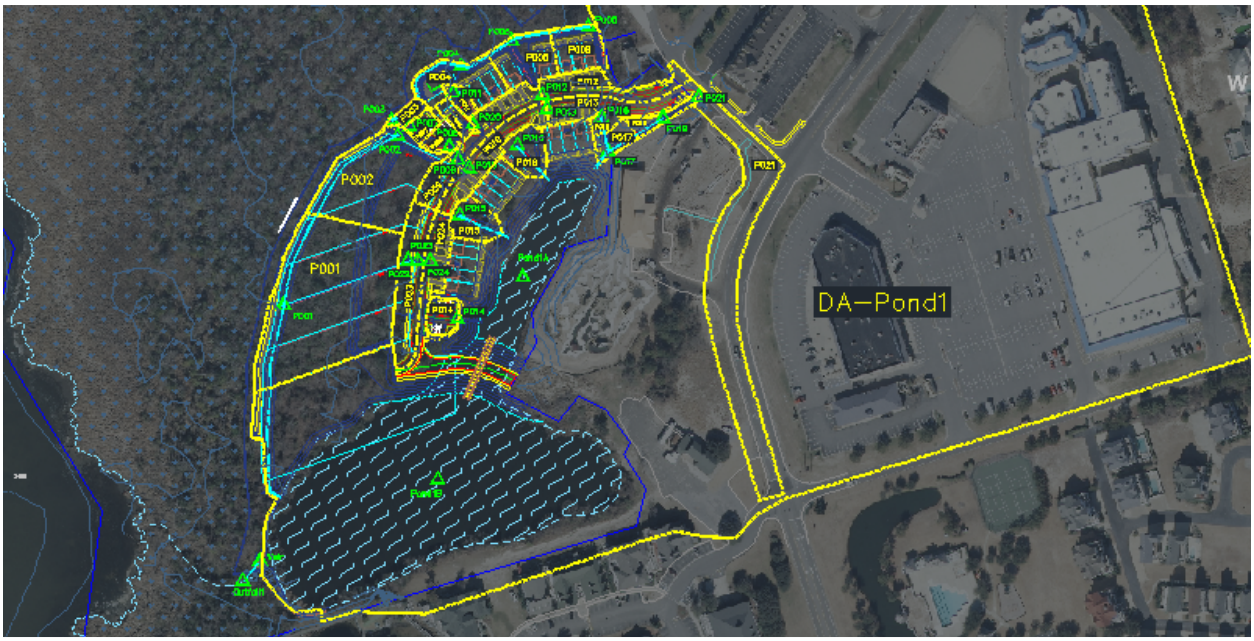
A post-construction model was built to check design parameters (pipe sizing, weir sizing, swale sizing, flow rates & velocities, and system HGL's) for the proposed design.

The post-construction model was also utilized to verify that the project design does not raise normal pond level within the existing pond by more than 2.0' during a storm event (this is actually a requirement placed on the County's Whalehead Drainage pump system, which discharges to the pond – during the early stages of this design, the County Engineer asked that our project use that requirement from the Whalehead Discharge Agreement as a design standard for our project). This requirement breaks down as follows:

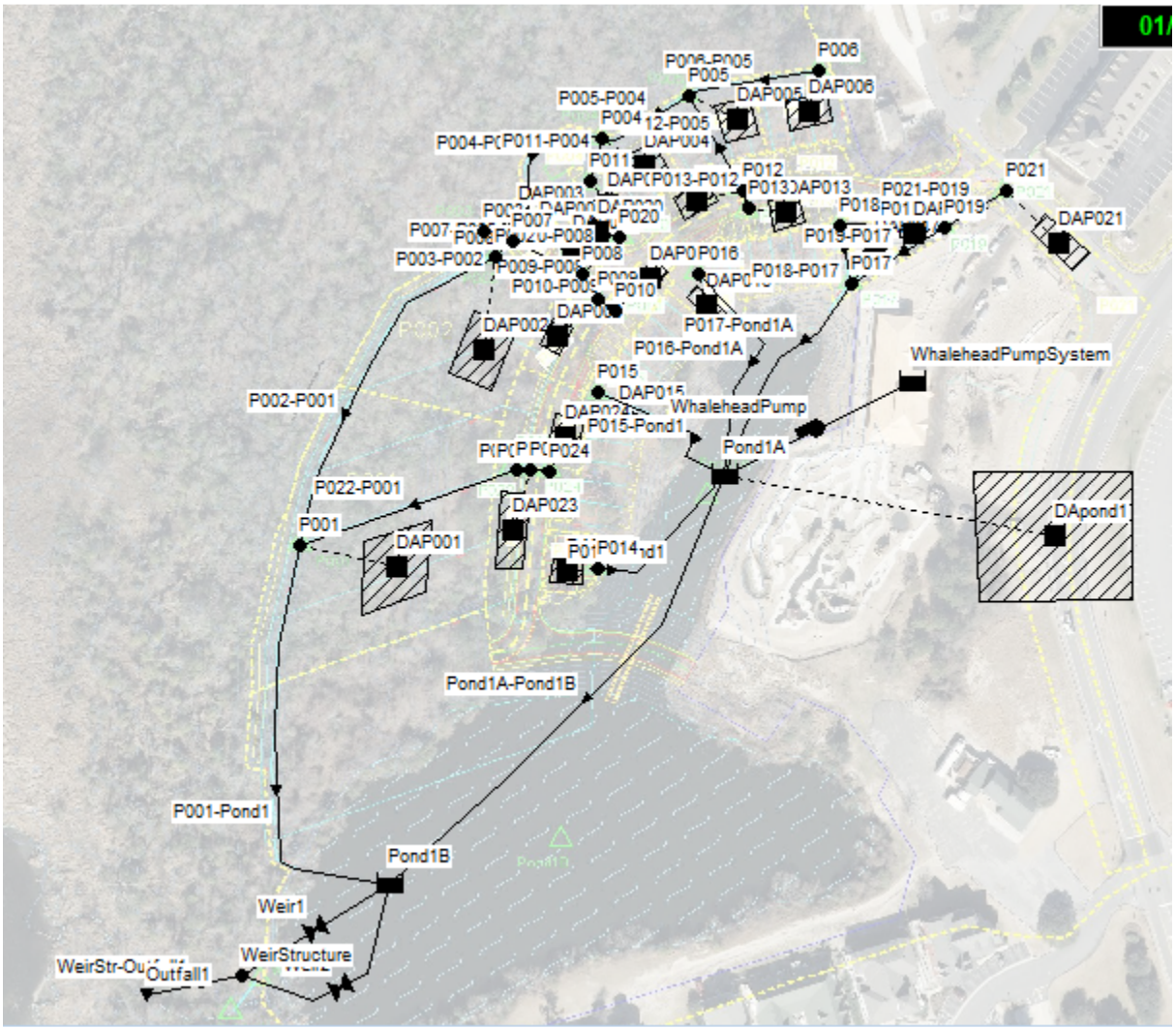
Normal Pool of Existing Pond: +/- 1.0'
Maximum Allowable Pond HGL (to match Whalehead Agreement: 3.0'

EPA SWMM Model (Prop. Conditions Aerial Schematic):

Full-Size (readable) Copy enclosed with this submission



EPA SWMM Model (Prop. Conditions Graphical Model):



Model Hydrology

Runoff was modeled utilizing the NRCS (SCS) Method for the 2-yr, 10-yr, and 100-yr, 24-hour storm events. NRCS standard Type III (coastal) rainfall distributions were utilized with total rainfall depths of:

2yr, 24hr Total Rainfall Depth = 3.74 in. (Currituck County Standard)
10yr, 24 hr Total Rainfall Depth = 5.74 in. (NOAA Atlas 14)
100yr, 24 hr Total Rainfall Depth = 9.54 in. (NOAA Atlas 14)

Runoff was routed through the model utilizing a Dynamic Wave method.

Model Elements

Subbasin Input Data is included in the Appendix to this Narrative. Proposed conveyance data utilized in this model can be found in the accompanying Construction Plans.

Methodology

A node & link model of the drainage shed draining to the existing pond was built within EPA SWMM. Runoff was modeled utilizing the SCS Curve Number methodology, as incorporated in EPA SWMM, version 5.1. Flow within the system was modeled utilizing Dynamic Wave modeling. 24 hour rainfall events with 2-yr, 10-yr, and 100-yr recurrence probabilities were modeled. In order to examine long-term draw-down within the pond, the model was run for a 5 day time period, with the subject rainfall event applied in the first 24 hours. Computational intervals within the model were set a 1 second.

For this project, critical elements of interest were HGL within the pond, Flow Rate & Velocity at the pond discharge (weir overflow), and Flow Rate & Velocity within the proposed conveyances.

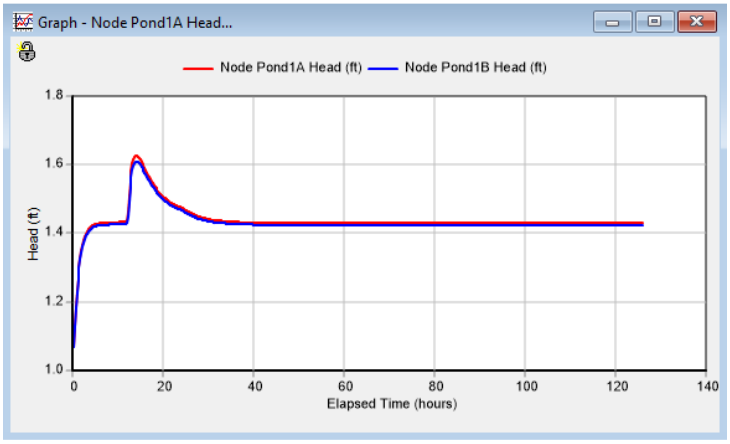
To produce a conservative result, the entirety of the large existing off-site drainage area to the pond was connected to Pond 1A, such that Pond 1A HGL values will be conservative (high). This direct connection will also produce a conservatively high peak of flow into Pond 1A, as flows from “Drainage Area Pond 1” will reach the pond in-sync with flow from the adjacent proposed project area.

To account for a worst-case scenario, where the Whalehead Drainage System is pumping to the pond at the maximum theoretical capacity of the system and at the same time as the subject rainfall events are occurring, a theoretical storage unit was created (“WhaleheadPumpSystem”), filled with water, and then a pump link was connected which pumps water at a constant rate of 13.81 cfs (theoretical maximum) into Pond 1A throughout the entirety of the model run. This approach produces conservative results for the Pond System.

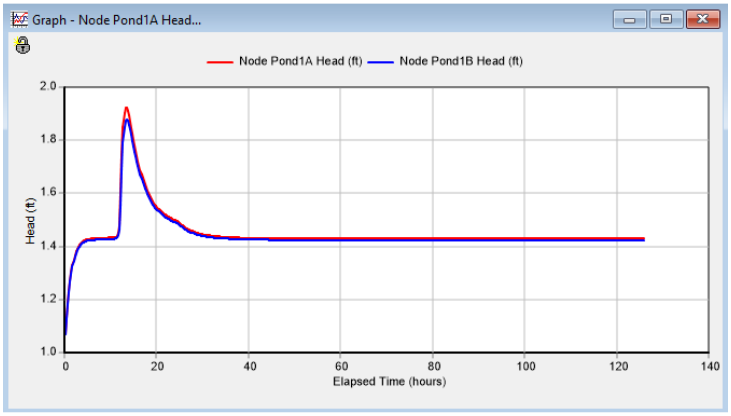
Results:

Pond 1A & 1B

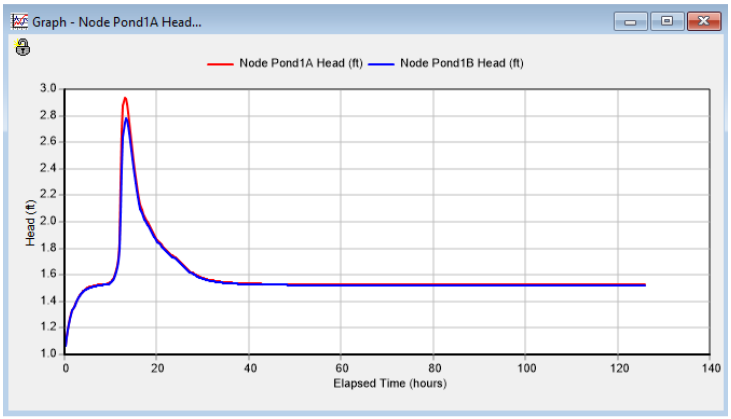
2-yr:



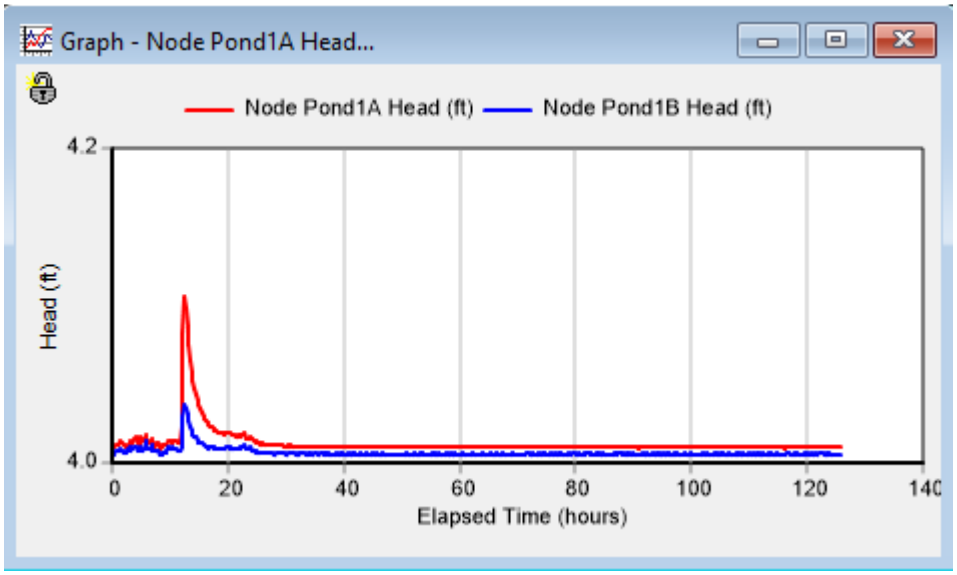
10-yr:



100-yr:



100-yr w/FEMA Tailwater (4.0’):



*Please note that this model is unstable at low-flows. This is the result of the entire system being inundated by the FEMA tailwater such that there is little flow within the system outside of the peak event. Flows from the system such as draw-down will be dominated by the rise and fall of the tailwater. The most useful information that can be gleaned from this model is that there is very little head (0.04’-0.11’) that is built-up in the ponds as the result of incoming runoff – the entire situation is overwhelmingly dominated by the FEMA tailwater condition.

Pond 1A & 1B Conclusions: Under flow-dominated situations, the proposed conditions result in pond depths that range from 0.61’ to 1.94’ above normal pool (1.0’), which is compliant with the County Engineer’s request that the design not result in pond HGL’s that exceed more than 2.0’ above normal pool. In the fully flooded condition, the FEMA tailwater elevation of 4.0’ dominates conditions within the system and pond HGL’s are only increased by 0.04’ to 0.11’ above the FEMA tailwater pool elevation.

Max HGL Results:

The following Max HGL results were obtained for all model nodes and were subsequently used to verify proposed grades throughout the design.

Node	2-yr Max HGL (ft)	10-yr Max HGL (ft)	100-yr (no TW) Max HGL (ft)	100-yr (4' TW) Max HGL (ft)
P001	2.5	2.78	3.29	4.04
P002	2.76	3.04	3.47	4.04
P003	2.91	3.26	3.77	4.07
P004	3.26	3.51	3.85	4.08
P005	3.34	3.59	3.9	4.08
P006	4.79	4.88	4.96	4.88
P007	2.78	3.07	3.54	4.05
P008	2.85	3.15	3.65	4.07
P009	2.89	3.21	3.76	4.13
P010	2.9	3.23	3.78	4.13
P011	3.26	3.51	3.85	4.09
P012	3.47	3.75	4.12	4.14
P013	3.49	3.78	4.14	4.15
P014	3.07	3.14	3.17	4.11
P015	4.5	4.61	4.78	4.6
P016	4.5	4.61	4.77	4.61
P017	5.47	5.73	5.91	5.73
P018	6	6.04	6.15	6.04
P019	6.81	7.01	7.16	7.01
P020	2.85	3.15	3.65	4.07
P021	7.14	7.58	8.18	7.58
P022	2.68	2.85	3.31	4.04
P023	2.76	2.93	3.41	4.08
P024	2.78	2.97	3.44	4.08
Pond1B	1.61	1.88	2.78	4.04
Pond1A	1.63	1.92	2.94	4.11

Max HGL Conclusions: Calculated Max HGL's were utilized to set grades throughout the proposed development. An accounting of these grades can be found on the Construction Plans.

Flow & Velocity Results:

The following peak flow & velocity results were obtained for all model nodes and were subsequently used to verify the sizing of proposed conveyances throughout the design.

Link Name	2-yr Max Flow (cfs)	10-yr Max Flow (cfs)		2-yr Max Vel (fps)	10-yr Max Vel (fps)	
P001-Pond1	1.65	4.13		0.85	1.12	
P002-P001	1.67	4.32		0.59	0.79	
P003-P002	1.12	2.96		1.72	2.39	
P004-P003	0.99	3.1		0.72	0.92	
P005-P004	0.93	2.47		0.57	0.64	
P006-P005	0.19	0.55		0.26	0.35	
P007-P002	1.06	2.15		1.4	1.64	
P008-P007	1	2.05		1.35	1.54	
P009-P008	0.74	1.65		1.33	1.54	
P010-P009	0.43	0.92		0.84	1.04	
P011-P004	0.01	0.06		0.34	0.43	
P012-P005	0.88	1.77		1.62	1.92	
P013-P012	0.48	0.92		0.88	1.01	
P014-Pond1	0.21	0.33		0.36	0.47	
P015-Pond1	0	0.03		0	0.67	
P016-Pond1A	0	0.02		0	0.53	
P017-Pond1A	0.75	2.95		0.95	1.45	
P018-P017	0	0		0	0.03	
P019-P017	0.8	3		1.48	1.38	
P021-P019	0.84	3.02		2.26	3.61	
P020-P008	0.11	0.19		0.22	0.23	
P022-P001	0.61	1.16		0.93	1.18	
P023-P022	0.61	1.17		1.45	1.78	
P024-P023	0.34	0.75	100-yr Max Flow (cfs)	0.84	1.14	100-yr Max Vel (fps)
Pond1A-Pond1B	24.58	46.72		0.69	1.28	
WeirStr-Outfall1	23.79	41.22	77.16	1.65	1.61	1.26
Weir1	23.79	41.22	30.64	2.6	3.12	1.15
Weir2	0	0	124.95	0	0	0.21

Peak Flow & Velocity Conclusions: Calculated peak Flows were utilized to size conveyances throughout the proposed development. An accounting of this sizing can be found on the Construction Plans. Calculated Peak Velocities were utilized to check conveyances for erosive conditions & utilized in the design of erosion control features. These calculations can be found within the E&S Calculations prepared by David Klebitz, P.E.

Conclusions:

Due to a direct outfall to Currituck Sound, the proposed Corolla Boat Club project qualifies for alternate compliance with Currituck County's Flow Mitigation requirements and is not required to provide a 2-yr/10-yr flow reduction. An EPA SWMM Model of the Post-Construction conditions was prepared to serve as a design assistance tool in order to check Pond HGL's, Max HGL's within the proposed system, and to provide peak flow & velocity results in order to size conveyances and erosion control measures. The Pond HGL's conform to the County Engineer's stated requirements (maximum stored water depth of 2.0' over normal pool). The grading & drainage plans reflect adequate clearance from the Max HGL's within the system, and the conveyances are designed to pass stormwater with flows and velocities reported in the tables above.

This model reflects a stormwater drainage system that has been designed with adequate capacity and outfall to handle the 2-yr, 10-yr, and 100-yr (24 hr) rainfall events.

APPENDIX A
Node Input Information

Node	Elevation (ft)	MaxDepth (ft)	InitDepth 2-yr (ft)	InitDepth 10-yr (ft)	InitDepth 100-yr (ft)	InitDepth 100-yr (ft) FEMA TW=4.0'
WeirStructure	0.5	20	0	0	0	3.5
P001	1.7	20	0	0	0	2.3
P002	2.1	20	0	0	0	1.9
P003	2.5	20	0	0	0	1.5
P004	2.7	20	0	0	0	1.3
P005	2.8	20	0	0	0	1.2
P006	4.61	20	0	0	0	0
P007	2.15	3.85	0	0	0	1.85
P008	2.25	3.85	0	0	0	1.75
P009	2.3	3.5	0	0	0	1.7
P010	2.4	3.4	0	0	0	1.6
P011	2.25	20	0	0	0	1.75
P012	2.9	3.49	0	0	0	1.1
P013	3	3.39	0	0	0	1
P014	2.8	3	0	0	0	1.2
P015	4.5	20	0	0	0	0
P016	4.5	20	0	0	0	0
P017	5	20	0	0	0	0
P018	6	20	0	0	0	0
P019	6.5	20	0	0	0	0
P020	2.3	3.8	0	0	0	1.7
P021	6.65	20	0	0	0	0
P022	2.25	4.05	0	0	0	1.75
P023	2.3	3.5	0	0	0	1.7
P024	2.4	3.4	0	0	0	1.6
Pond1B	-2	20	3	3	3	6
Pond1A	-2	20	3	3	3	6

Pond 1A Storage Curve		
Depth (ft)	WSEL (ft)	Area (sf)
3.0	1.0	24863
4.0	2.0	30053
5.0	3.0	35615
6.0	4.0	41520
20.0	18.0	41520

Pond 1B Storage Curve		
Depth (ft)	WSEL (ft)	Area (sf)
3.0	1.0	149945
4.0	2.0	159819
5.0	3.0	169920
6.0	4.0	180247
20.0	18.0	180247

APPENDIX B
Link Input Information

[CONDUITS]						
Name	From Node	To Node	Length	Roughness	InOffset	OutOffset
WeirStr-Outfall1	WeirStructure	Outfall1	305	0.07	*	*
P001-Pond1	P001	Pond1B	356	0.035	*	1.35
P002-P001	P002	P001	384.35	0.035	*	*
P003-P002	P003	P002	25	0.013	*	*
P004-P003	P004	P003	185.94	0.035	*	*
P005-P004	P005	P004	105.04	0.035	*	*
P006-P005	P006	P005	139.97	0.035	*	*
P007-P002	P007	P002	20	0.013	*	*
P008-P007	P008	P007	80	0.013	*	*
P009-P008	P009	P008	26	0.013	*	*
P010-P009	P010	P009	20	0.013	*	*
P011-P004	P011	P004	45	0.013	*	*
P012-P005	P012	P005	100	0.013	*	*
P013-P012	P013	P012	20	0.013	*	*
P014-Pond1	P014	Pond1A	40	0.013	*	0.5
P015-Pond1	P015	Pond1A	40	0.035	*	4
P016-Pond1A	P016	Pond1A	40	0.035	*	4
P017-Pond1A	P017	Pond1A	38	0.035	*	5
P018-P017	P018	P017	61.72	0.035	*	*
P019-P017	P019	P017	116	0.035	*	*
P021-P019	P021	P019	70	0.013	*	*
P020-P008	P020	P008	52	0.013	*	*
P022-P001	P022	P001	230	0.013	*	*
P023-P022	P023	P022	12	0.013	*	*
P024-P023	P024	P023	20	0.013	*	*
Pond1A-Pond1B	Pond1A	Pond1B	120	0.013	*	*

[CHANNELS]				
Link	Shape	Bottom Width (ft)	Left Side Slope H:V	Right Side Slope H:V
WeirStr-Outfall1	TRAPEZOIDAL	20	3	3
P001-Pond1	TRAPEZOIDAL	0	6	6
P002-P001	TRAPEZOIDAL	0	6	6
P004-P003	TRAPEZOIDAL	0	6	6
P005-P004	TRAPEZOIDAL	0	6	6
P006-P005	TRAPEZOIDAL	0	6	6
P015-Pond1	TRAPEZOIDAL	0	6	6
P016-Pond1A	TRAPEZOIDAL	0	6	6
P017-Pond1A	TRAPEZOIDAL	0	6	6
P018-P017	TRAPEZOIDAL	0	6	6
P019-P017	TRAPEZOIDAL	0	6	6
Weir1	TRAPEZOIDAL	15	0	0
Weir2	TRAPEZOIDAL	305	0	0

[PIPES]						
Link	Shape	Diameter (ft)	Barrels	Culvert Code	Kentry	Kexit
P003-P002	CIRCULAR	2	1	6	0.9	1
P007-P002	CIRCULAR	2	1	2	0.5	1
P008-P007	CIRCULAR	2	1	2	0.5	1
P009-P008	CIRCULAR	1.5	1	2	0.5	1
P010-P009	CIRCULAR	1.5	1	2	0.5	1
P011-P004	CIRCULAR	1.25	1	6	0.9	1
P012-P005	CIRCULAR	1.5	1	2	0.5	1
P013-P012	CIRCULAR	1.5	1	2	0.5	1
P014-Pond1	CIRCULAR	1.25	1	2	0.5	1
P021-P019	CIRCULAR	1.5	1	2	0.5	1
P020-P008	CIRCULAR	1.5	1	2	0.5	1
P022-P001	CIRCULAR	2	1	2	0.5	1
P023-P022	CIRCULAR	1.5	1	2	0.5	1
P024-P023	CIRCULAR	1.5	1	2	0.5	1
Pond1A-Pond1B	CIRCULAR	4	3	6	0.9	1

APPENDIX C
Subcatchment Input Information

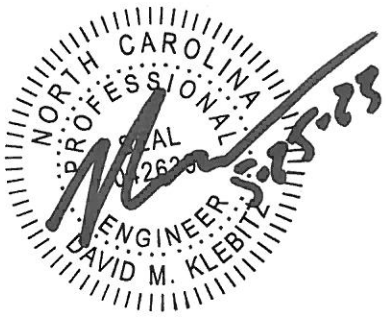
[SUBCATCHMENTS]										
Name	Outlet	Area (ac)	% Imperv	Width (ft)	%Slope	N-Imperv	N-Perv	S-Imperv (in)	S-Perv (in)	Curve Number
DAP001	P001	1.3	0	259.85	1.26	0.013	0.2	0.05	1.42	58
DAP002	P002	0.61	0	190.59	1.96	0.013	0.2	0.05	1.41	59
DAP003	P003	0.04	0	121.67	3.33	0.013	0.2	0.05	1.73	54
DAP004	P004	0.23	0	338.3	1.67	0.013	0.2	0.05	0.72	74
DAP005	P005	0.21	0	302.1	1.67	0.013	0.2	0.05	1.04	66
DAP006	P006	0.16	0	233.37	1.67	0.013	0.2	0.05	0.64	76
DAP007	P007	0.05	98.46	0.58	0.55	0.013	0.2	0.05	3.13	39
DAP008	P008	0.07	92.21	3.38	1.22	0.013	0.2	0.05	3.13	39
DAP009	P009	0.26	39.37	309.95	1.82	0.013	0.2	0.05	1.07	65
DAP010	P010	0.22	60.94	166.5	1.82	0.013	0.2	0.05	0.76	72
DAP011	P011	0.04	0	156.75	7.33	0.013	0.2	0.05	1.21	62
DAP012	P012	0.21	61.58	156.73	1.82	0.013	0.2	0.05	0.88	69
DAP013	P013	0.21	71.91	118.32	1.82	0.013	0.2	0.05	0.82	71
DAP014	P014	0.08	85.52	14.11	0.86	0.013	0.2	0.05	3.13	39
DAP015	P015	0.12	0	209.96	2	0.013	0.2	0.05	1.69	54
DAP016	P016	0.13	0	204.07	1.85	0.013	0.2	0.05	1.74	54
DAP017	P017	0.07	0	216.53	3.33	0.013	0.2	0.05	2.47	45
DAP018	P018	0.04	0	91.06	2.94	0.013	0.2	0.05	1.8	53
DAP019	P019	0.06	0	161.53	6.67	0.013	0.2	0.05	3.13	39
DAP020	P020	0.05	97.43	0.92	0.67	0.013	0.2	0.05	3.13	39
DAP021	P021	0.88	0	1914.2	5	0.013	0.2	0.05	0.74	73
DAP023	P023	0.29	29.36	408.23	1.82	0.013	0.2	0.05	1.24	62
DAP024	P024	0.18	59.67	142.27	1.82	0.013	0.2	0.05	0.8	71
DApond1	Pond1A	40.06	0	2181.2	0.38	0.013	0.2	0.05	0.47	81


COROLLA BOAT CLUB
EPA SWMM EXHIBIT
(THIS EXHIBIT IS INTENDED TO PROVIDE A SCHEMATIC GUIDE TO THE ELEMENTS UTILIZED IN THE ASSOCIATED EPA SWMM MODEL. FOR DETAILED INFORMATION, PLEASE SEE THE CONSTRUCTION PLANS)
DA-Pond1
Pond1A
Pond1B
Weir
Outfall1
P001
P003
P004
P005
P006
P007
P008
P009
P010
P011
P012
P013
P014
P015
P016
P017
P018
P019
P020
P021
P022
P023
P024
LEGEND
EPA SWMM NODE
EPA SWMM LINK
SUBCATCHMENT
SCALE: 1" = 60'

APPENDIX I – SEDIMENTATION & EROSION CONTROL CALCULATIONS

Calculations Include the Following:

- **EROSIVE VELOCITY CHECKS**
- **SEDIMENT BASIN CALCULATIONS**
- **RIP-RAP OUTLET PROTECTION CALCULATIONS**



EROSIVE VELOCITY CHECK

Calculations Include the Following:

- 2 Year, Bare Soil Condition; 2 fps Max Velocity
- 10 Year, Vegetated Condition; 4 fps Max Velocity

Note:
This check is performed by highlighting respective summaries of conveyances that exceed maximum permissible velocities as determined by EPA SWMM modeling performed by Deel Engineering, PLLC.

2 YEAR, BARE SOIL CONDITION; 2 FPS MAX VELOCITY

Corolla Boat Club
Mixed Use Development

Erosive Velocity Calculations

5/25/2023

Link Flow and Velocity - 2yr				Velocity Check
Link Name	Shape	Flow (cfs)	Velocity (fps)	Bare Soil > 2 fps
P001-Pond1	CONDUIT	1.65	0.85	
P002-P001	CONDUIT	1.67	0.59	
P003-P002	CONDUIT	1.12	1.72	
P004-P003	CONDUIT	0.99	0.72	
P005-P004	CONDUIT	0.93	0.57	
P006-P005	CONDUIT	0.19	0.26	
P007-P002	CONDUIT	1.06	1.4	
P008-P007	CONDUIT	1	1.35	
P009-P008	CONDUIT	0.74	1.33	
P010-P009	CONDUIT	0.43	0.84	
P011-P004	CONDUIT	0.01	0.34	
P012-P005	CONDUIT	0.88	1.62	
P013-P012	CONDUIT	0.48	0.88	
P014-Pond1	CONDUIT	0.21	0.36	
P015-Pond1	CONDUIT	0	0	
P016-Pond1A	CONDUIT	0	0	
P017-Pond1A	CONDUIT	0.75	0.95	
P018-P017	CONDUIT	0	0	
P019-P017	CONDUIT	0.8	1.48	
P021-P019	CONDUIT	0.84	2.26	N/A - PROP CULVERT
P020-P008	CONDUIT	0.11	0.22	
P022-P001	CONDUIT	0.61	0.93	
P023-P022	CONDUIT	0.61	1.45	
P024-P023	CONDUIT	0.34	0.84	
Pond1A-Pond1B	CONDUIT	24.58	0.69	
WeirStr-Outfall1	RIP-RAP OUTLET	23.79	1.65	< 2 FPS TO WETLANDS
Weir1	OCS	23.79	2.6	N/A - PROP OCS
Weir2	BERM	0	0	

10 YEAR, VEGETATED CONDITION; 4 FPS MAX VELOCITY

Corolla Boat Club
Mixed Use Development

Erosive Velocity Calculations

5/25/2023

Link Flow and Velocity - 10yr				Velocity Check
Link Name	Shape	Flow (cfs)	Velocity (fps)	Vegetated > 4 fps
P001-Pond1	CONDUIT	4.13	1.12	
P002-P001	CONDUIT	4.32	0.79	
P003-P002	CONDUIT	2.96	2.39	
P004-P003	CONDUIT	3.1	0.92	
P005-P004	CONDUIT	2.47	0.64	
P006-P005	CONDUIT	0.55	0.35	
P007-P002	CONDUIT	2.15	1.64	
P008-P007	CONDUIT	2.05	1.54	
P009-P008	CONDUIT	1.65	1.54	
P010-P009	CONDUIT	0.92	1.04	
P011-P004	CONDUIT	0.06	0.43	
P012-P005	CONDUIT	1.77	1.92	
P013-P012	CONDUIT	0.92	1.01	
P014-Pond1	CONDUIT	0.33	0.47	
P015-Pond1	CONDUIT	0.03	0.67	
P016-Pond1A	CONDUIT	0.02	0.53	
P017-Pond1A	CONDUIT	2.95	1.45	
P018-P017	CONDUIT	0	0.03	
P019-P017	CONDUIT	3	1.38	
P021-P019	CONDUIT	3.02	3.61	
P020-P008	CONDUIT	0.19	0.23	
P022-P001	CONDUIT	1.16	1.18	
P023-P022	CONDUIT	1.17	1.78	
P024-P023	CONDUIT	0.75	1.14	
Pond1A-Pond1B	CONDUIT	46.72	1.28	
WeirStr-Outfall1	RIP-RAP OUTLET	41.22	1.61	< 2 FPS TO WETLANDS
Weir1	OCS	41.22	3.12	
Weir2	BERM	0	0	

SEDIMENT BASIN CALCULATIONS

Sediment Basin A

Requirements			
Tributary Drainage Area	7.40	*acres*	
Min. Required Storage Volume	13,320	ft^3	*(1,800 ft^3/acre)*
*Estimated 10 year peak inflow**	41.00	*cfs*	
Min. Required Surface Area	17,835	ft^2	*(435 ft^2/cfs)*
Design			
Choose Avg. Storage Depth	1.0	*ft*	
Necessary Storage Surface Area	13,320	ft^2	
Is Necessary Surface Area > Required	NO		
Choose Storage Width	100	*ft*	
Choose Storage Length	900	*ft*	
Length to Width Ratio	**9.0**	***Ratio Not Met***	
Surface Area Provided	**186,890**	ft^2	*10.5* ***times required***
Is Surface Area Provided > Required	YES		
*Storage Volume Provided***	**186,890**	ft^3	
Is Storage Volume Provided > Required	YES		*14.0* ***times required***

* Estimated 10 year peak flows per EPA SWMM calculations prepare by DEEL
**Based on calculations performed in autocad

RIP-RAP OUTLET PROTECTION CALCULATION

Calculations Include the Following:

- Mannings n
- Shear Stress
- Stone Size and Apron Thickness
- Erosive Velocity Check

Note:
This check is performed utilizing depths and velocities determined by EPA SWMM modeling performed by Deel Engineering, PLLC.

Corolla Boat Club
Mixed Use Development

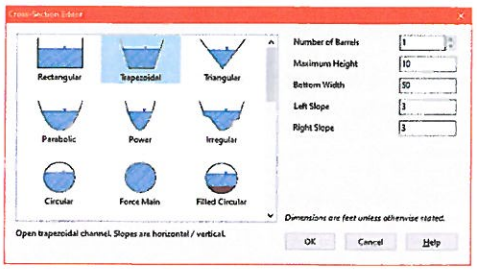
RIP-RAP OUTLET PROTECTION CALCULATION

5/25/2023

Given:

Q_{10}: 41.2 cfs
S: 0.001 ft/ft
B: 50 ft
d: 0.5 ft
Z: 3

EPA SWM INPUT DATA FOR RIPR-RAP Link at Outlet



Conduit WeirStr-Outfall1

Property	Value
Name	WeirStr-Outfall1
Inlet Node	WeirStructure
Outlet Node	Outfall1
Description	
Tag	
Shape	TRAPEZOIDAL
Max. Depth	10
Length	15
Roughness	.104
Inlet Offset	*
Outlet Offset	*
Initial Flow	0
Maximum Flow	0
Entry Loss Coeff.	0
Exit Loss Coeff.	0
Avg. Loss Coeff.	0
Seepage Loss Rate	0
Flap Gate	NO
Culvert Code	

Click to edit the conduit's cross section geometry

Choose Rip-Rap Size: (Table 8.05f NCDEQ E&S Manual)

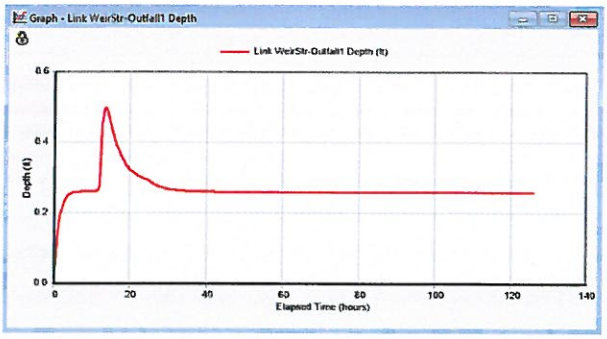
For Rip-Rap D_{50} = 6" and depth range of 0 - 0.5' , n = 0.104

Permissible Unit Shear Stress: (Table 8.05g NCDEQ E&S Manual)

For Rip-Rap D_{50} = 6" , T_d = 2.0 lb/sf

Check Normal Flow Depth

Per EPA SWMM Model the max flow depth = 0.5'. The above Mannings n condition is confirmed.



Calculate Shear Stress

T= (62.4 lbs/cf)*(0.50ft)*(0.001 ft/ft) = 0.03 lb/sf. This is less than the Permissible T_d above. OK

Determine Stone Size and Apron Thickness

D_{max} = 1.5 D_{50}, 1.5 * 6 in = 9 in. Utilize NCDOT Class B Rip-Rap

Thickness = 1.5 D_{max}, 1.5 * 9 in = 13.5 in. Set apron thickness at 14"

Erosive Velocity Check

Per EPA SWMM Model the flow velocity = 1.61 fps. Less than allowable 2 fps into wetlands

Summary Results

Topic: Link Flow — Click a column header to sort the column.

Link	Type	Maximum |Flow| CFS	Day of Maximum Flow	Hour of Maximum Flow	Maximum |Velocity| ft/sec
WeirStr-Outfall1	CONDUIT	41.22	0	13:27	1.61

Major Subdivision
Application

OFFICIAL USE ONLY:
Case Number:
Date Filed:
Gate Keeper:
Amount Paid:

Contact Information

APPLICANT:
Name: Outer Banks Ventures, Inc.
Address: PO Box 549
Corolla, NC 27927
Telephone: 252-453-4198
E-Mail Address: rcwillis@outerbanksventures.com

PROPERTY OWNER:
Name: Same
Address:
Telephone:
E-Mail Address:

LEGAL RELATIONSHIP OF APPLICANT TO PROPERTY OWNER: Same

Request

Physical Street Address: Malia Drive
Parcel Identification Number(s): 0116000010A0000, 0116000010B0000, 0116000010C000
Subdivision Name: Corolla Boat Club-Ph. 1 (Monteray Shores Ph. 10)
Number of Lots or Units: 6
Phase: 10

TYPE OF SUBMITTAL

- ☐ Conservation and Development Plan
- ☐ Amended Sketch Plan/Use Permit
- ☐ Preliminary Plat (or amended)
  - ☐ Type I OR ☐ Type II
- ☒ Construction Drawings (or amended)
- ☐ Final Plat (or amended)

TYPE OF SUBDIVISION

- ☐ Traditional Development
- ☐ Conservation Subdivision
- ☒ Planned Unit Development
- ☐ Planned Development

I hereby authorize county officials to enter my property for purposes of determining compliance with all applicable standards. All information submitted and required as part of this process shall become public record.

Property Owner(s)/Applicant*

4/27/23
Date

***NOTE: Form must be signed by the owner(s) of record, contract purchaser(s), or other person(s) having a recognized property interest. If there are multiple property owners/applicants a signature is required for each.**

Community Meeting, if applicable

Date Meeting Held:
Meeting Location:

Use Permit Review Standards, If applicable

PUD Amended Sketch Plan/Use Permit, Type II Preliminary Plat

Purpose of Use Permit and Project Narrative (please provide on additional paper if needed)

The applicant shall provide a response to the each one of the following issues. The Board of Commissioners must provide specific findings of fact based on the evidence submitted. All findings shall be made in the affirmative for the Board of Commissioners to issue the use permit.

A. The use will not endanger the public health or safety.

B. The use will not injure the value of adjoining or abutting lands and will be in harmony with the area in which it is located.

C. The use will be in conformity with the Land Use Plan or other officially adopted plan.

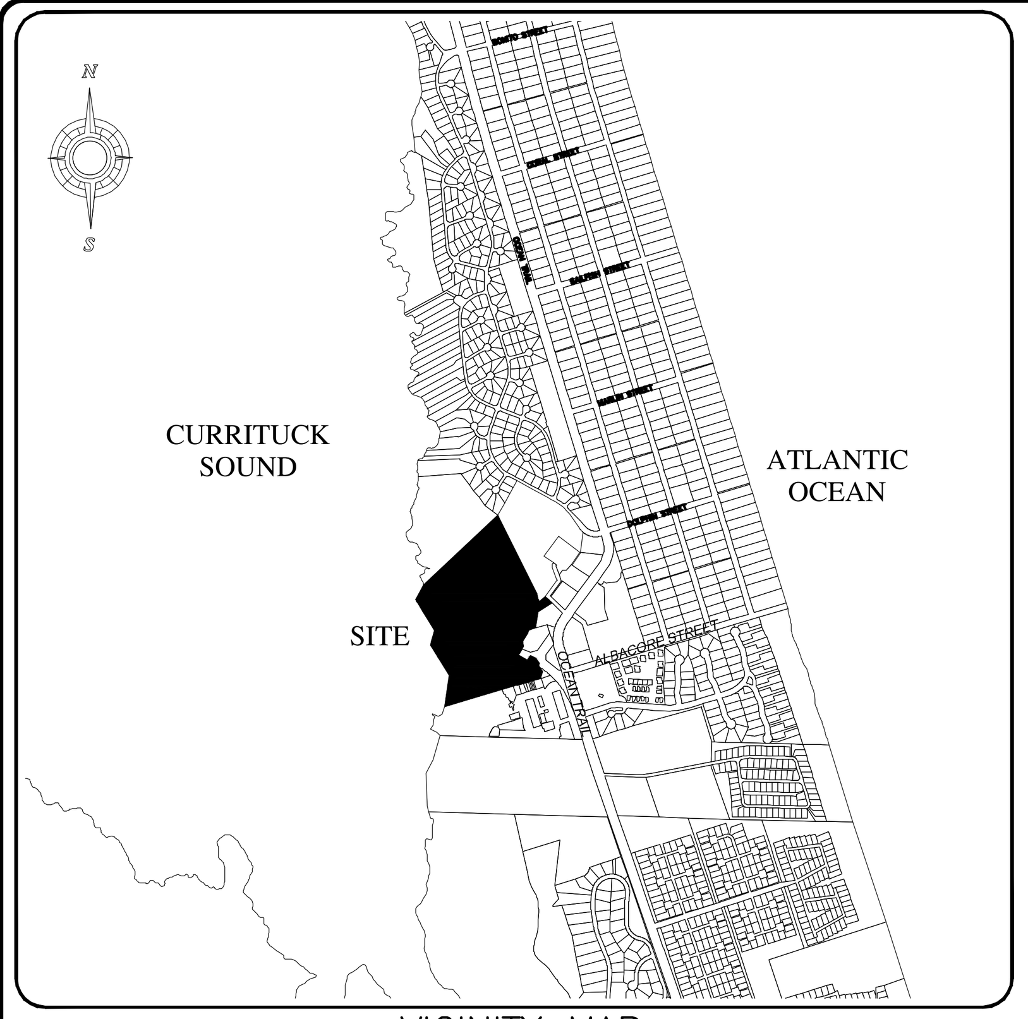
D. The use will not exceed the county's ability to provide adequate public facilities, including, but not limited to, schools, fire and rescue, law enforcement, and other county facilities. Applicable state standards and guidelines shall be followed for determining when public facilities are adequate.

I, the undersigned, do certify that all of the information presented in this application is accurate to the best of my knowledge, information, and belief. Further, I hereby authorize county officials to enter my property for purposes of determining zoning compliance. All information submitted and required as part of this application process shall become public record.

Property Owner(s)/Applicant*

2/27/25
Date

***NOTE: Form must be signed by the owner(s) of record, contract purchaser(s), or other person(s) having a recognized property interest. If there are multiple property owners/applicants a signature is required for each.**



VICINITY MAP
SCALE: 1" = 1000'

PRELIMINARY PLAT FOR

COROLLA BOAT CLUB

MONTERAY SHORES PHASE 10 (PART A - 6 LOTS)

POPLAR BRANCH TOWNSHIP CURRITUCK COUNTY NORTH CAROLINA
(REVISED PER B.O.C. APPROVAL)

GENERAL NOTES:

1. PROJECT NAME: COROLLA BOAT CLUB (MONTERAY SHORES PHASE 10 (PART A – 6 LOTS))

2. OWNER/APPLICANT: OUTER BANKS VENTURES, INC.
   P.O. BOX 549
   COROLLA, NC 27927

3. PROPERTY DATA:
   PARCEL ID#: 0116–000–0010–0000
   PRIMARY ADDRESS: MALIA DRIVE, COROLLA, NC
   RECORDED REFERENCES: D.B. 1161, PG. 734, P.C. K, SL. 49
   PROPERTY ZONING: SFO–PUD

5. F.I.R.M. DATA:
   ZONES X, AE (3') AND SHADED X PER F.E.M.A. F.I.R.M. MAP NUMBER 3721803200 K, EFFECTIVE DATE DECEMBER 21, 2018. USE OF LAND WITHIN A FLOODWAY OR FLOOD PLAIN IS SUBSTANTIALLY RESTRICTED BY CHAPTER 7 OF THE CURRITUCK COUNTY UNIFIED DEVELOPMENT ORDINANCE.

6. THIS PROPERTY CONTAINS ACOE "404' JURISDICTIONAL WETLANDS.

7. A 10' EASEMENT FOR UTILITIES AND DRAINAGE ALONG REAR AND SIDE PROPERTY LINES AND A 25' EASEMENT ALONG FRONT PROPERTY LINES IS HEREBY ESTABLISHED FOR DRAINAGE, UTILITIES, PEDESTRIAN WALKS & STREET TREES. (SEE SECTION PLAN, SHEET 8)

8. A NON–EXCLUSIVE DRAINAGE EASEMENT IS HEREBY DEDICATED ACROSS ALL OPEN SPACE AREAS FOR PURPOSES OF OPERATION AND MAINTENANCE OF STORMWATER MANAGEMENT SYSTEM.

9. EXISTING CONDITION INFORMATION BASED ON A COMBINATION OF THE FOLLOWING:
   - 2016 FIELD SURVEY DATA OBTAINED BY BISSELL PROFESSIONAL GROUP
   - FIELD TOPOGRAPHIC SURVEY DATA BY BISSELL PROFESSIONAL GROUP
   - ELEVATIONS ARE REFERENCED TO NAVD 1988 VERTICAL DATUM.

10. SUBDIVISION IS DESIGNED FOR SINGLE FAMILY DWELLINGS OF LESS THAN 4,800 S.F. AND NO GREATER THAN 2 STORIES. LOTS 1–5 ARE INTENDED FOR SINGLE FAMILY RESIDENCES. LOT 6 IS LIMITED TO COMMERCIAL DEVELOPMENT.

11. AVAILABLE WATER SUPPLY SHALL BE VERIFIED THROUGH FIELD TESTING.

12. A NON–EXCLUSIVE DRAINAGE EASEMENT IS HEREBY DEDICATED ACROSS ALL OPEN SPACE AREAS. A 25' DRAINAGE EASEMENT IS HEREBY ESTABLISHED FROM THE TOP OF BANK OF ALL DITCHES DRAINING 5 OR MORE ACRES, WHICH MAY EXTEND BEYOND DEDICATED OPEN SPACE AREAS ONTO SOME LOTS.

13. ALL NEW UTILITIES SHALL BE INSTALLED UNDERGROUND.

CONNECTIVITY INDEX:
3 LINKS/1 NODE = 3.0

DEVELOPMENT NOTES:

TOTAL TRACT AREA:	36.194 AC.
CAMA WETLANDS:	9.15 AC.
AREA THIS PHASE:	10.01 AC.
# OF PROPOSED LOTS:	6 LOTS
AVERAGE LOT AREA:	21,500± S.F.
PROPOSED RIGHT–OF–WAY WIDTH:	30 FT.
PROPOSED PAVED ROADWAY WIDTH:	24 FT. B.O.C.–B.O.C.
LINEAR FEET OF ON–SITE ROADWAY:	850 L.F.±
LOT DEVELOPMENT CONFIGURATION:	
LOT AREAS: VARY FROM 16,182 S.F. TO 44,280 S.F.	
MINIMUM LOT WIDTH:	65 FT.
SETBACKS:	
FRONT:	20 FT.
SIDE:	10 FT.
REAR:	10 FT.

RECREATION/PARKLAND: RECREATION/PARKLAND FEE IN LIEU OF TO BE CALCULATED AND PAID PRIOR TO FINAL PLAT RECORDATION.

DEVELOPMENT NOTES (THIS PHASE):

AREA THIS PHASE:	10.01 AC.
OPEN SPACE REQUIRED:	3.50 AC.
OPEN SPACE PROVIDED:	6.04 AC.

Sheet Number	*Sheet Title*
1	COVER SHEET, DEVELOPMENT NOTES & SITE LOCATION
2	EXISTING CONDITIONS & SITE FEATURES PLAN
3	OVERALL SITE PLAN
4	METES & BOUNDS & STORMWATER MANAGEMENT PLAN
5	WATER MAIN EXTENSION, SERVICES & WASTEWATER PLAN
6	LANDSCAPING, BUFFERING & SIGNAGE PLAN
7	TYPICAL CONSTRUCTION DETAILS

SURVEY LEGEND

Symbol	Description
	RIGHT–OF–WAY
	PROPERTY BOUNDARY
	ADJOINING PROPERTY LINE
	EASEMENT LINE
	CENTERLINE OF ROADWAY
	SET IRON ROD
	EXISTING IRON ROD
	EXISTING IRON PIPE
	EXISTING CONCRETE MONUMENT
N/F	NOW OR FORMERLY
TWP.	TOWNSHIP
P.C.	PLAT CABINET
SL.	SLIDE
D.B.	DEED BOOK
M.B.	MAP BOOK
PG.	PAGE
SQ.FT. or S.F.	SQUARE FEET
M.B.L.	MAXIMUM BUILDING LINE
AC or AC.	ACRES
P/O	PART OF
TYP.	TYPICAL
N.T.S.	NOT TO SCALE
O.S.	OPEN SPACE
R/W	RIGHT–OF–WAY

LEGEND

Symbol	Description
	EXISTING DITCH CENTERLINE
	EXISTING DITCH TOP OF BANK
	PROPOSED SWALE W/ FLOW ARROW
	PROPOSED SWALE HIGH POINT
	FEMA BOUNDARY LINE
	EXISTING 404 BOUNDARY
6	EXISTING GRADE CONTOUR
	30' UNDISTURBED BUFFER (COUNTY)
	EXISTING CULVERT
	EXISTING UTILITY POLE
OHE OHE	EXISTING OVERHEAD TRANSMISSION LINES
EWL EWL	EXISTING WATER LINE
	PROPOSED WATER LINE (SIZE AS NOTED)
	PROPOSED FIRE HYDRANT ASSEMBLY
	PROPOSED WATER SERVICE
	PROPOSED BLOW–OFF ASSEMBLY
	PROPOSED VALVE
	PROPOSED REDUCER
	PROPOSED SIDEWALK
FM FM FM	PROPOSED FORCE MAIN SANITARY SEWER (SIZE AS NOTED)
	PROPOSED GRAVITY SANITARY SEWER (SIZE AS NOTED)
S	PROPOSED SANITARY SEWER MANHOLE
BOC	BACK OF CURB
EOP	EDGE OF PAVEMENT
	PROPOSED CATCH BASIN
	PROPOSED STREET LIGHT
	PROPOSED STORM SEWER PIPE
	EDGE OF WATER
	STREET LIGHT

OWNERSHIP AND DEDICATION CERTIFICATE
I HEREBY CERTIFY THAT I AM THE OWNER OF THE PROPERTY DESCRIBED HEREON, WHICH PROPERTY IS LOCATED WITHIN THE SUBDIVISION REGULATION JURISDICTION OF CURRITUCK COUNTY, THAT I HEREBY FREELY ADOPT THIS PLAT OF SUBDIVISION AND DEDICATE TO PUBLIC USE ALL AREA SHOWN ON THIS PLAT AS STREETS, UTILITIES, ALLEYS, WALKS, RECREATION AND PARKS, OPEN SPACE AND EASEMENTS, EXCEPT THOSE SPECIFICALLY INDICATED AS PRIVATE AND THAT I WILL MAINTAIN ALL SUCH AREAS UNTIL THE OFFER OF DEDICATION IS ACCEPTED BY THE APPROPRIATE PUBLIC AUTHORITY OR HOME OWNERS' ASSOCIATION. ALL PROPERTY SHOWN ON THIS PLAT AS DEDICATED FOR A PUBLIC USE SHALL BE DEEMED TO BE DEDICATED FOR ANY OTHER PUBLIC USE AUTHORIZED BY LAW WHEN SUCH USE IS APPROVED BY THE APPROPRIATE PUBLIC AUTHORITY IN THE PUBLIC INTEREST.

________ DATE ________________ OWNER

I, ______________________, A NOTARY PUBLIC

OF______________COUNTY, NORTH CAROLINA, DO HEREBY CERTIFY THAT

______________________________ PERSONALLY APPEARED BEFORE ME THIS DATE AND ACKNOWLEDGED THE DUE EXECUTION OF THE FOREGOING CERTIFICATE.

WITNESS MY HAND AND OFFICIAL SEAL THIS _______ DAY OF_______________, 20_____

________________________ NOTARY PUBLIC

MY COMMISSION EXPIRES ________________

SURVEYOR'S CERTIFICATION
I, MICHAEL D. BARR, CERTIFY THAT THIS PLAT WAS DRAWN UNDER MY SUPERVISION FROM AN ACTUAL SURVEY MADE UNDER MY SUPERVISION (DEED AND DESCRIPTION RECORDED IN BOOKS REFERENCED); THAT THE BOUNDARIES NOT SURVEYED ARE CLEARLY INDICATED AS DRAWN FROM INFORMATION FOUND IN BOOKS REFERENCED; THAT THE RATIO OF PRECISION AS CALCULATED IS 1:10,000; THAT THIS PLAT WAS PREPARED IN ACCORDANCE WITH G.S. 47–30 AS AMENDED.

THIS IS TO CERTIFY THAT THIS SURVEY CREATES A SUBDIVISION OF LAND WITHIN THE AREA OF A COUNTY OR MUNICIPALITY THAT HAS AN ORDINANCE THAT REGULATES PARCELS OF LAND.

WITNESS MY ORIGINAL SIGNATURE, REGISTRATION NUMBER AND SEAL THIS ____

DAY OF ____________, A.D., 2022.

________________________________ L–1756
SIGNATURE

INTERCONNECTIVITY STATEMENT
THIS SUBDIVISION CONTAINS A RIGHT–OF–WAY THAT IS PLATTED WITH THE INTENT OF BEING EXTENDED AND CONTINUED TO AND FROM ADJOINING PROPERTIES. ACCESS WITHIN THE RIGHT–OF–WAY FOR STREETS AND UTILITIES SHALL NOT BE RESTRICTED.

APPROVAL CERTIFICATE
I HEREBY CERTIFY THAT THE SUBDIVISION SHOWN ON THIS PLAT IS IN ALL RESPECTS IN COMPLIANCE WITH THE CURRITUCK COUNTY UNIFIED DEVELOPMENT ORDINANCE AND, THEREFORE, THIS PLAT HAS BEEN APPROVED BY THE CURRITUCK COUNTY TECHNICAL REVIEW COMMITTEE AND SIGNED BY THE ADMINISTRATOR, SUBJECT TO ITS BEING RECORDED IN THE CURRITUCK COUNTY REGISTRY WITHIN 90 DAYS OF THE DATE BELOW.

________ DATE ________________ ADMINISTRATOR

REQUIRED IMPROVEMENTS CERTIFICATE
I HEREBY CERTIFY THAT ALL IMPROVEMENTS REQUIRED BY THE CURRITUCK COUNTY UNIFIED DEVELOPMENT ORDINANCE HAVE BEEN INSTALLED IN ACCORDANCE WITH THE PLANS AND SPECIFICATIONS PREPARED BY BISSELL PROFESSIONAL GROUP, AND SAID IMPROVEMENTS COMPLY WITH CURRITUCK COUNTY SPECIFICATIONS.

________ DATE ________________ REGISTERED LAND SURVEYOR/ENGINEER

________________ REGISTRATION NUMBER

STORMWATER STATEMENT
NO MORE THAN 30% OF ANY LOT SHALL BE COVERED BY IMPERVIOUS STRUCTURES AND MATERIALS, INCLUDING ASPHALT, GRAVEL, CONCRETE, BRICK STONE, SLATE, OR SIMILAR MATERIAL, NOT INCLUDING WOOD DECKING OR THE WATER SURFACE OF SWIMMING POOLS. THIS COVENANT IS INTENDED TO ENSURE COMPLIANCE WITH THE STORMWATER PERMIT NUMBER ____________ ISSUED BY THE STATE OF NORTH CAROLINA. THE COVENANT MAY NOT BE CHANGED OR DELETED WITHOUT THE CONSENT OF THE STATE. FILLING IN OR PIPING OF ANY VEGETATIVE CONVEYANCES (DITCHES, SWALES, ETC.) ASSOCIATED WITH THIS DEVELOPMENT, EXCEPT FOR AVERAGE DRIVEWAY CROSSINGS, IS STRICTLY PROHIBITED BY ANY PERSON. THE LOT COVERAGE ALLOWANCE PROVIDED IN THE CURRITUCK COUNTY UNIFIED DEVELOPMENT ORDINANCE MAY BE DIFFERENT THAN THE NC STATE STORMWATER PERMIT. THE MOST RESTRICTIVE LOT COVERAGE SHALL APPLY.

PRIVATE STREETS OWNER CERTIFICATE
I HEREBY CERTIFY THAT THE PRIVATE STREETS SHOWN ON THIS PLAT ARE INTENDED FOR PRIVATE USE AND WILL REMAIN UNDER THE CONTROL, MAINTENANCE, AND RESPONSIBILITY OF THE DEVELOPER AND/OR A HOMEOWNER'S ASSOCIATION AND ACKNOWLEDGE THAT SOME PUBLIC SERVICES MAY NOT BE PROVIDED DUE TO THE PRIVATE NATURE OF THE ROAD.

________ DATE ________________ DISTRICT ENGINEER

REVIEW OFFICER CERTIFICATE
STATE OF NORTH CAROLINA
COUNTY OF CURRITUCK

I,______________________________,
REVIEW OFFICER OF CURRITUCK COUNTY, CERTIFY THAT THE MAP OR PLAT TO WHICH THIS CERTIFICATION IS AFFIXED MEETS ALL STATUTORY REQUIREMENTS FOR RECORDING.

________ DATE ________________ REVIEW OFFICER

BISSELL PROFESSIONAL GROUP
Engineers, Planners, Surveyors and Environmental Specialists
Bissell Professional Group
Firm License # C–956
3512 North Croatan Highway
P.O. Box 1068
Kitty Hawk, North Carolina 27949
(252) 261–3266
FAX (252) 261–1760

COVER SHEET, DEVELOPMENT NOTES & SITE LOCATION

PROJECT:
OUTER BANKS VENTURES
POPLAR BRANCH TOWNSHIP CURRITUCK COUNTY NORTH CAROLINA
PRELIMINARY DEVELOPMENT PLANS

REVISIONS

NO.	DATE	DESCRIPTION	BY
1	9/21/22	TRC COMMENTS	KFW
2	10/27/22	2ND TRC COMMENTS	KFW
3	11/16/22	TRC COMMENTS	KFW
4	11/23/22	FINAL UPDATE	KFW
5	5/25/23	PER BOC APPROVAL CONDITIONS	KFW
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PRELIMINARY
DO NOT USE FOR CONSTRUCTION

DATE: 8/22/22	SCALE: N/A
DESIGNED: BPG	CHECKED: MSB
DRAWN: KFW	APPROVED: BPG
SHEET: 1 OF 7	
CAD FILE: 459600PP-L1	
PROJECT NO: 4596	

LINE TABLE		
LINE	LENGTH	BEARING
L1	57.93'	N37° 34' 20"E
L2	54.23'	S65° 23' 21"E
L3	72.84'	S36° 53' 44"E
L4	24.88'	S24° 21' 21"W
L5	71.75'	S32° 26' 53"E
L6	69.81'	S14° 36' 25"W

SOILS LEGEND	
— — —	SOILS LINE
CoB	COROLLA FINE SAND
CrB	COROLLA-DUCKSTON COMPLEX
Cu	CURRITUCK MUCKY PEAT
NhC	NEWHAN-COROLLA COMPLEX
Os	OSIER FINE SAND
W	WATER

SCS – SOIL SURVEY OF CURRITUCK COUNTY
SEE NOTES SHEET XX FOR SOILS DESCRIPTIONS

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BISSELL PROFESSIONAL GROUP
Engineers, Planners, Surveyors and Environmental Specialists

EXISTING CONDITIONS & SITE FEATURES PLAN

PROJECT: OUTER BANKS VENTURES
POPLAR BRANCH TOWNSHIP CURRITUCK COUNTY NORTH CAROLINA

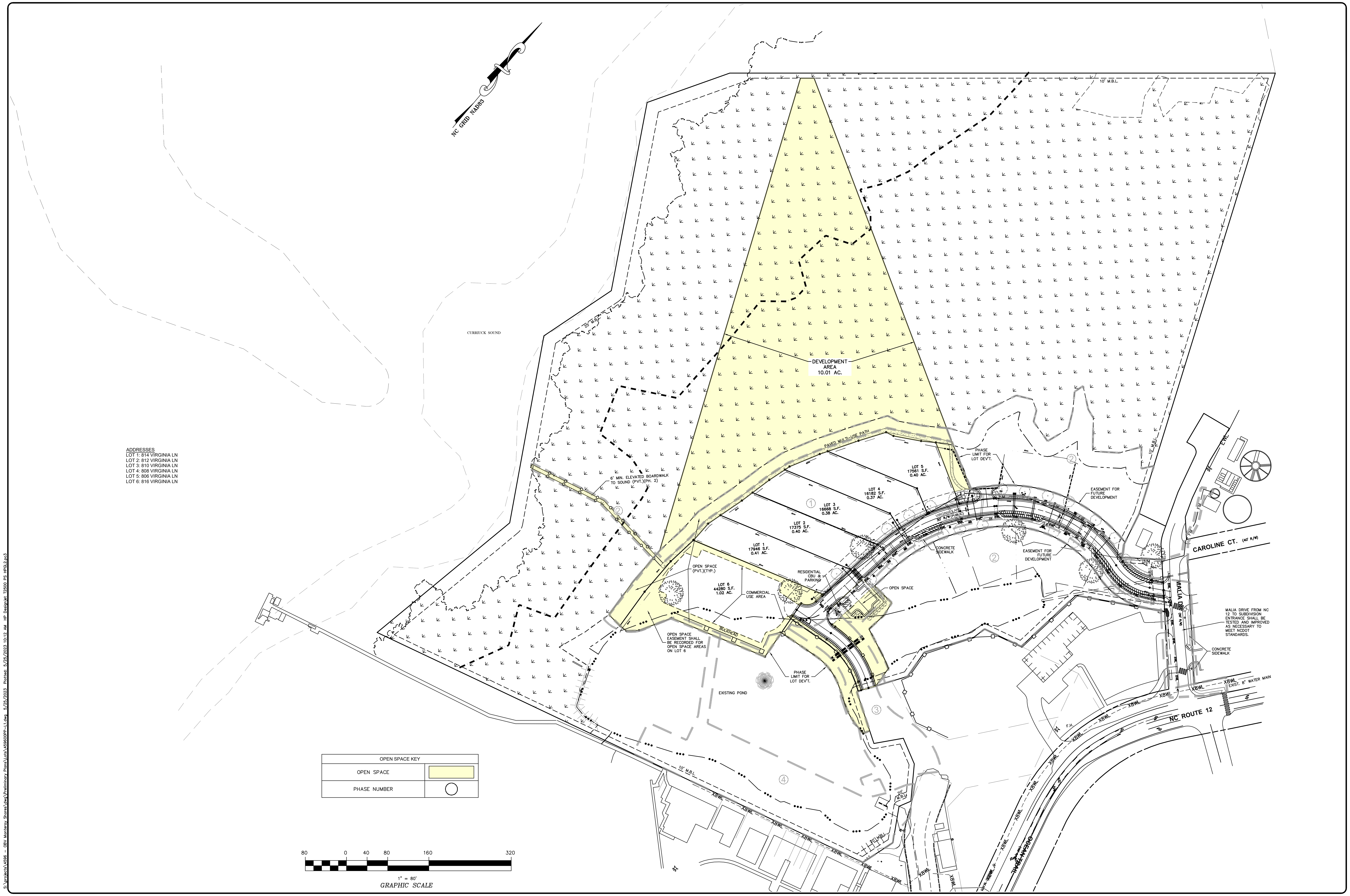
PRELIMINARY DEVELOPMENT PLANS

REVISIONS			
NO.	DATE	DESCRIPTION	BY

PRELIMINARY
DO NOT USE FOR CONSTRUCTION

DATE: 8/22/22	SCALE: 1"=80'
DESIGNED: BPG	CHECKED: MSB
DRAWN: KFW	APPROVED: BPG

SHEET: 2 OF 7
CAD FILE: 459600PP-L1
PROJECT NO: 4596



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OVERALL SITE PLAN AND PHASING PLAN

PROJECT:
OUTER BANKS VENTURES
POPLAR BRANCH TOWNSHIP CURRITUCK COUNTY NORTH CAROLINA

PRELIMINARY DEVELOPMENT PLANS

REVISIONS

NO.	DATE	DESCRIPTION	BY
1	9/21/22	TRC COMMENTS	KFW
2	10/27/22	2ND TRC COMMENTS	KFW
3	11/16/22	TRC COMMENTS	KFW
4	11/23/22	FINAL UPDATE	KFW
5	5/25/23	PER B.O.C. APPROVAL CONDITIONS	KFW

PRELIMINARY
DO NOT USE FOR CONSTRUCTION

DATE: 8/22/22	SCALE: 1"=80'
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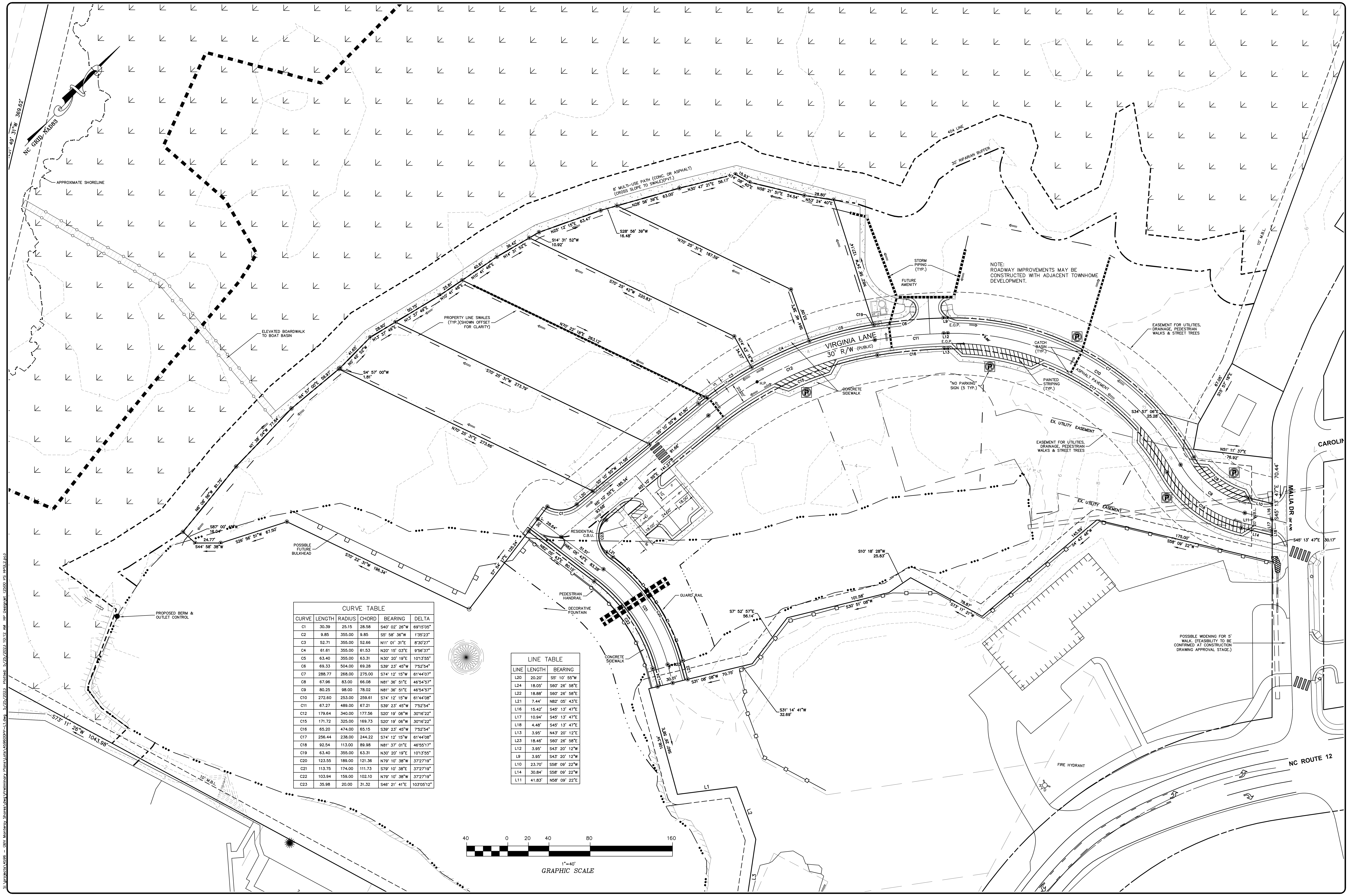
DRAWN: KFW	APPROVED: BPG

SHEET: 3 OF 7

CAD FILE: 459600PP-L1

PROJECT NO: 4596



CURVE TABLE					
CURVE	LENGTH	RADIUS	CHORD	BEARING	DELTA
C1	30.39	25.15	28.58	S40° 02' 26"W	69°15'05"
C2	9.85	355.00	9.85	S5° 58' 36"W	1°35'23"
C3	52.71	355.00	52.66	N11° 01' 31"E	8°30'27"
C4	61.61	355.00	61.53	N20° 15' 03"E	9°56'37"
C5	63.40	355.00	63.31	N30° 20' 19"E	10°13'55"
C6	69.33	504.00	69.28	S39° 23' 45"W	7°52'54"
C7	288.77	268.00	275.00	S74° 12' 15"W	61°44'07"
C8	67.96	83.00	66.08	N81° 36' 51"E	46°54'57"
C9	80.25	98.00	78.02	N81° 36' 51"E	46°54'57"
C10	272.60	253.00	259.61	S74° 12' 15"W	61°44'08"
C11	67.27	489.00	67.21	S39° 23' 45"W	7°52'54"
C12	179.64	340.00	177.56	S20° 19' 06"W	30°16'22"
C15	171.72	325.00	169.73	S20° 19' 06"W	30°16'22"
C16	65.20	474.00	65.15	S39° 23' 45"W	7°52'54"
C17	256.44	238.00	244.22	S74° 12' 15"W	61°44'08"
C18	92.54	113.00	89.98	N81° 37' 01"E	46°55'17"
C19	63.40	355.00	63.31	N30° 20' 19"E	10°13'55"
C20	123.55	189.00	121.36	N79° 10' 38"W	37°27'19"
C21	113.75	174.00	111.73	S79° 10' 38"E	37°27'19"
C22	103.94	159.00	102.10	N79° 10' 38"W	37°27'19"
C23	35.98	20.00	31.32	S46° 21' 41"E	103°05'12"

LINE TABLE		
LINE	LENGTH	BEARING
L20	20.20'	S5° 10' 55"W
L24	18.05'	S60° 26' 58"E
L22	18.88'	S60° 26' 58"E
L21	7.44'	N82° 05' 43"E
L16	15.42'	S45° 13' 47"E
L17	10.94'	S45° 13' 47"E
L18	4.48'	S45° 13' 47"E
L13	3.95'	N43° 20' 12"E
L23	18.46'	S60° 26' 58"E
L12	3.95'	S43° 20' 12"W
L9	3.95'	S43° 20' 12"W
L10	23.70'	S58° 09' 22"W
L14	30.84'	S58° 09' 22"W
L11	41.83'	N58° 09' 22"E

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METES & BOUNDS & STORMWATER MANAGEMENT PLAN

PROJECT:

OUTER BANKS VENTURES

POPLAR BRANCH TOWNSHIP CURRITUCK COUNTY NORTH CAROLINA

PRELIMINARY DEVELOPMENT PLANS

REVISIONS

NO.	DATE	DESCRIPTION	BY
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3	11/16/22	TRC COMMENTS	KFW
.	11/23/22	FINAL UPDATE	KFW
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PRELIMINARY
DO NOT USE FOR CONSTRUCTION

DATE: 8/22/22	SCALE: 1"=40'
DESIGNED: BPG	CHECKED: MSB
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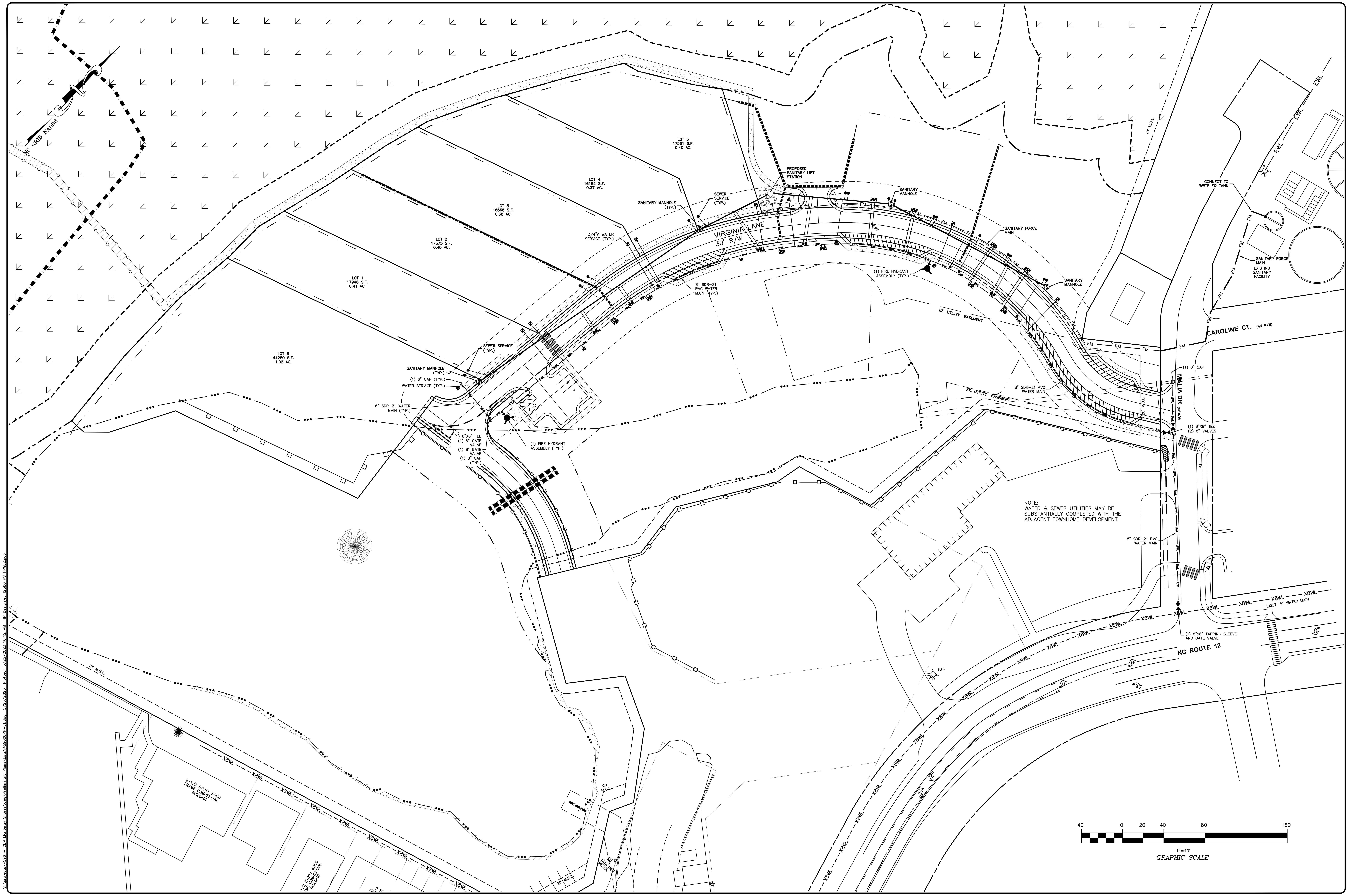
SHEET: 4 OF 7

CAD FILE: 459600PP-L1

PROJECT NO: 4596



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BISSELL PROFESSIONAL GROUP
Engineers, Planners, Surveyors and Environmental Specialists

WATER MAIN EXTENSION, SERVICES & WASTEWATER PLAN

PROJECT:
OUTER BANKS VENTURES
POPLAR BRANCH TOWNSHIP CURRITUCK COUNTY NORTH CAROLINA

PRELIMINARY DEVELOPMENT PLAN

REVISIONS

NO.	DATE	DESCRIPTION	BY
1	9/21/22	TRC COMMENTS	KFW
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3	11/16/22	TRC COMMENTS	KFW

PRELIMINARY
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DATE: 8/22/22	SCALE: 1"=40'
DESIGNED: BPG	CHECKED: MSB
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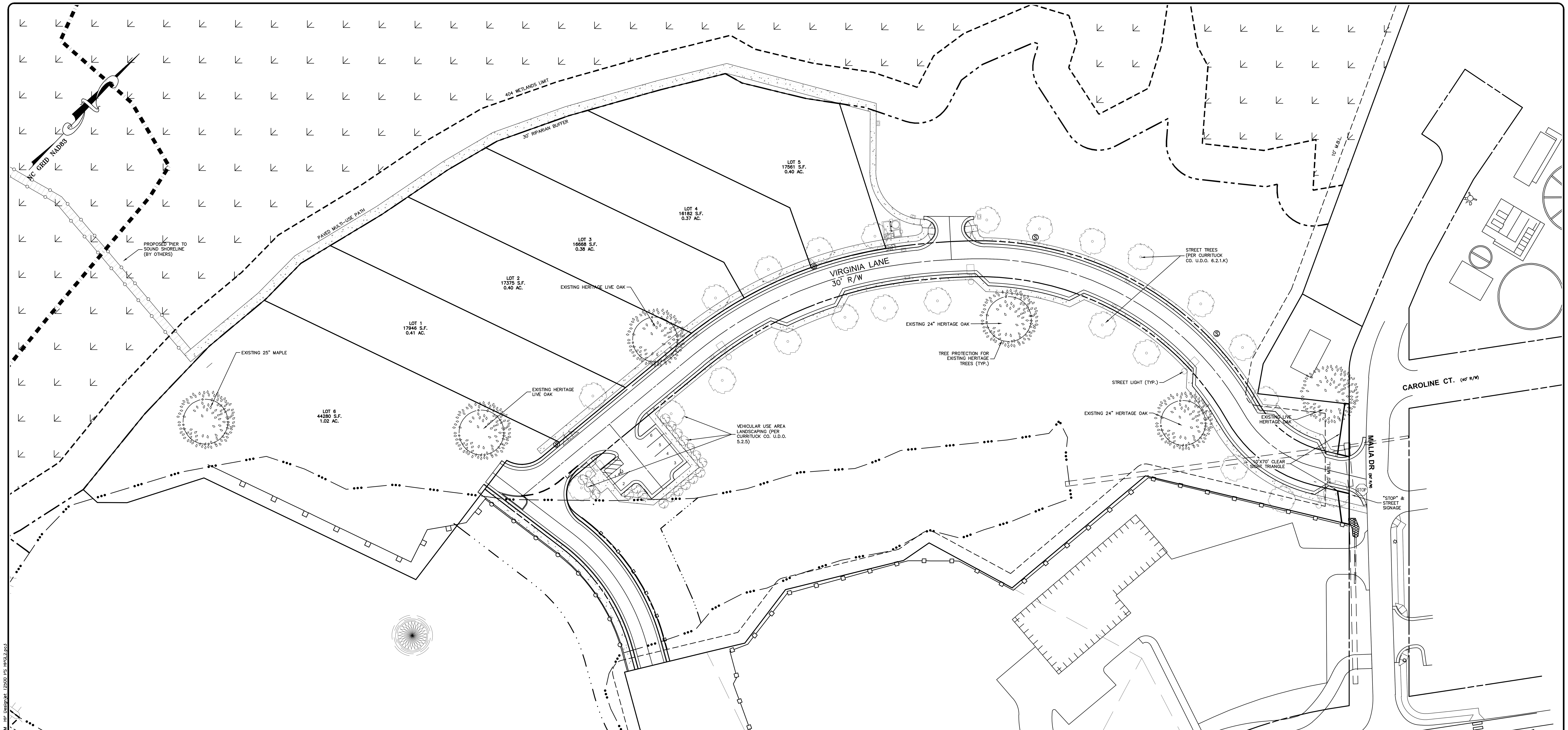
SHEET:
5 OF 7

CAD FILE:
459600PP-L1

PROJECT NO:
4596



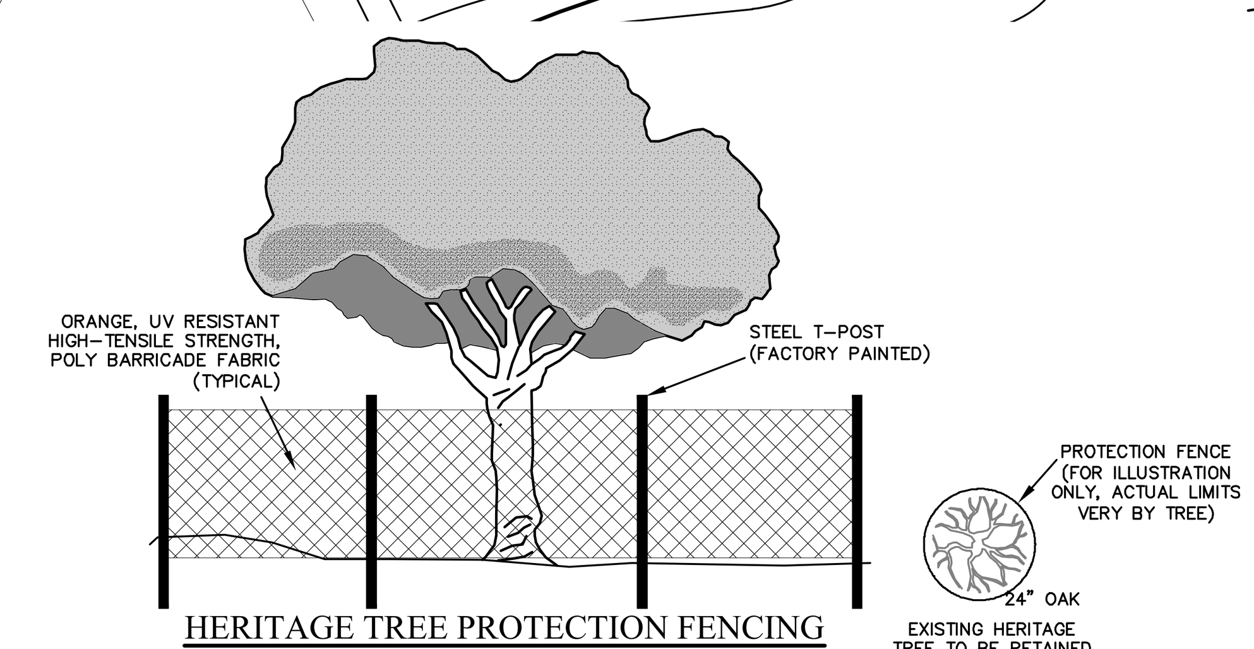
GENERAL LANDSCAPING AND BUFFERING NOTES:

1. STREET TREES:
   STREET TREES SHALL BE PROVIDED IN ACCORDANCE WITH SECTION 6.2.1.L OF THE CURRITUCK UDO.
   - TREES SHALL BE PLANTED ALONG EACH SIDE OF ROADWAYS AS GENERALLY SPECIFIED ON THE LANDSCAPE PLANS.
   - EXISTING TREES RETAINED IN THE VICINITY MAY BE CREDITED AS STREET TREES.
   - TREES SHALL BE PLANTED 35'± FROM CENTERLINE OF THE ROAD
   - TREES SHALL BE CANOPY TYPE PLANTED A MAXIMUM OF 50' O/C.
   - SEE TREE SPECIES AND PLANTING NOTE BELOW

4. OPEN SPACE VEGETATION:
   OPEN SPACE VEGETATION REQUIREMENTS ARE ACHIEVED THROUGH THE PRESERVATION OF THE EXISTING TREES ON THE PROPERTY TO THE MAXIMUM EXTENT PRACTICABLE.

5. HERITAGE TREES:
   A TOTAL OF (5) HERITAGE TREES HAVE BEEN IDENTIFIED WITHIN THE PROJECT AREA. ALL HERITAGE TREES ARE INTENDED TO REMAIN AND BE PROTECTED DURING CONSTRUCTION. (SEE "HERITAGE TREE PROTECTION FENCING" DETAIL THIS SHEET.) ANY HERITAGE TREES THAT ARE LOTS SHALL BE MITIGATED PURSUANT TO THE U.D.O.

6. TREE SPECIES AND PLANTING:
   TREES SHALL BE INSTALLED IN ACCORDANCE WITH THE PLANTING STANDARDS SPECIFIED IN SECTION 3.5 OF THE CURRITUCK COUNTY ADMINISTRATIVE MANUAL.
   - CANOPY AND UNDERSTORY TREE SPECIES SHALL BE OF THOSE LISTED UNDER "TABLE 3.4.6: RECOMMENDED PLANTINGS" IN THE SAME MANUAL.
   - TREE SPECIES SHALL BE DIVERSE. A MINIMUM OF (4) DIFFERENT SPECIES OF CANOPY TREES SHALL BE INSTALLED IN ROUGHLY EQUAL PROPORTIONS.
   - AT INSTALLATION, CANOPY TREES SHALL HAVE A MINIMUM CALIPER OF 2 INCHES MEASURED AT 6 INCHES. ABOVE GRADE. EIGHT FOOT HIGH TREES MAY BE PLANTED AS AN ALTERNATIVE.
   - MATERIALS SHALL BE OF HIGH-QUALITY NURSERY GRADE
   - THE USE OF NATIVE, DROUGHT TOLERANT TREES IS ENCOURAGED.
   - A REPUTABLE LANDSCAPE CONTRACTOR OR SUPPLIER SHALL PREPARE AN ITEMIZED SCHEDULE OF TREES TO BE INSTALLED IN ACCORDANCE WITH THIS LANDSCAPE PLAN. THIS SCHEDULE SHALL BE REVIEWED BY CURRITUCK COUNTY AND THE ENGINEER TO DETERMINE COMPLIANCE BEFORE ORDERING AND INSTALLATION. ALTERNATE TREES AND SPECIFICATIONS MAY BE PRESENTED FOR REVIEW AND APPROVAL.



HERITAGE TREE PROTECTION FENCING
(SAFETY FENCE DETAIL)

PROTECTIVE FENCING:
ORANGE VINYL CONSTRUCTION FENCING, CHAIN LINK FENCING, SNOW FENCING OR OTHER SIMILAR FENCING AT LEAST FOUR FEET (4') HIGH AND SUPPORTED AT A MAXIMUM OF TEN-FOOT (10') INTERVALS BY APPROVED METHODS SUFFICIENT ENOUGH TO KEEP THE FENCE UPRIGHT AND IN PLACE. THE FENCING SHALL BE OF A HIGHLY VISIBLE MATERIAL THAT IS CLEARLY VISIBLE TO THE WORKERS ON-SITE.
PRIOR TO CONSTRUCTION:
THE CONTRACTOR OR SUBCONTRACTOR SHALL CONSTRUCT AND MAINTAIN, FOR EACH PROTECTED HERITAGE TREE AS IDENTIFIED ON THE PLAN, A PROTECTIVE FENCING WHICH ENCIRCLES THE OUTER LIMITS OF THE AREA AND/OR CRITICAL ROOT ZONE OF TREES, TO PROTECT THEM FROM CONSTRUCTION ACTIVITY. ALL PROTECTIVE FENCING SHALL BE IN PLACE PRIOR TO COMMENCEMENT OF ANY SITE WORK AND REMAIN IN PLACE UNTIL ALL EXTERIOR WORK HAS BEEN COMPLETED.

40 0 20 40 80 160
1"=40'
GRAPHIC SCALE

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LANDSCAPING, BUFFERING, LIGHTING & SIGNAGE PLAN

PROJECT:
OUTER BANKS VENTURES
POPLAR BRANCH TOWNSHIP CURRITUCK COUNTY NORTH CAROLINA
PRELIMINARY DEVELOPMENT PLANS

REVISIONS

NO.	DATE	DESCRIPTION	BY
1	9/21/22	TRC COMMENTS	KFW
2	10/27/22	2ND TRC COMMENTS	KFW

PRELIMINARY
DO NOT USE FOR CONSTRUCTION

DATE: 8/22/22	SCALE: 1"=40'
DESIGNED: BPG	CHECKED: MSB
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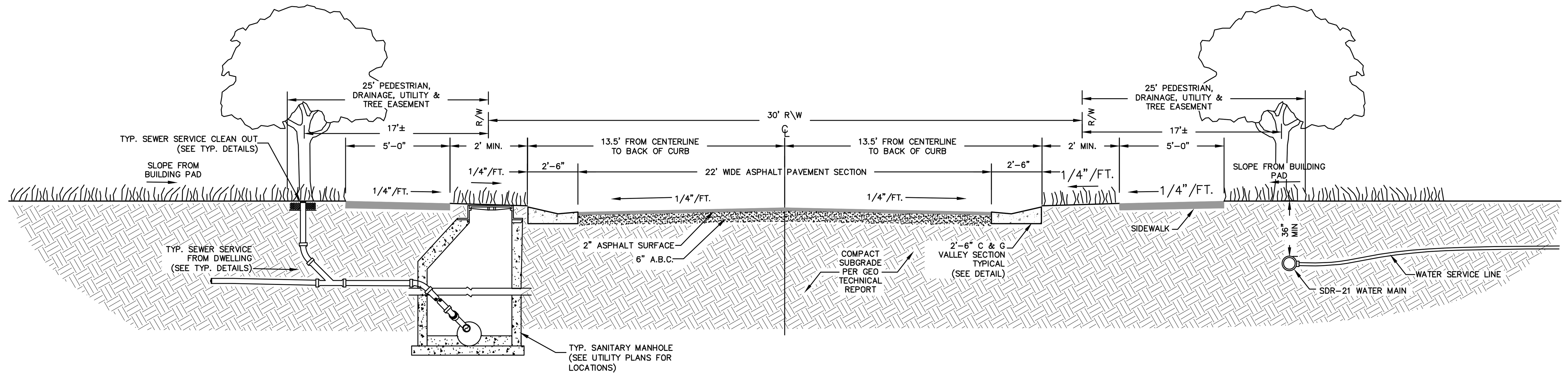
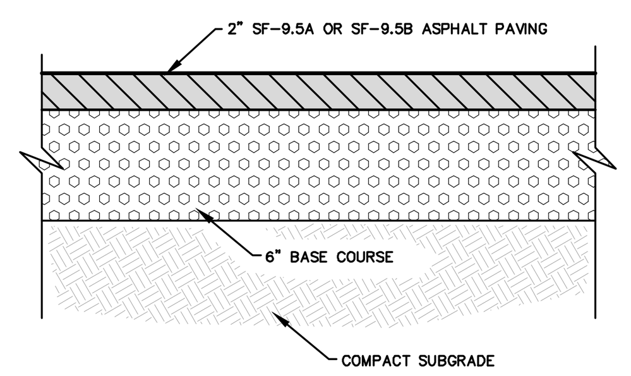
SHEET: 6 OF 7
CAD FILE: 459600PP-L1
PROJECT NO: 4596



TYPICAL SUBDIVISION ROADWAY SECTION W/ UTILITIES

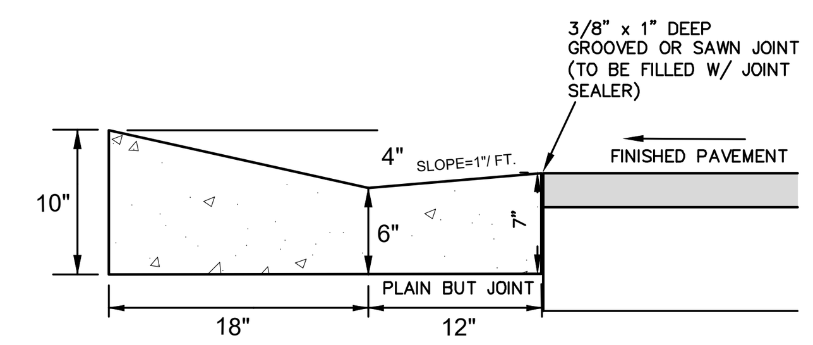
NOT TO SCALE SECTION VIEW



TYPICAL RESIDENTIAL ROADWAY PAVEMENT SECTION

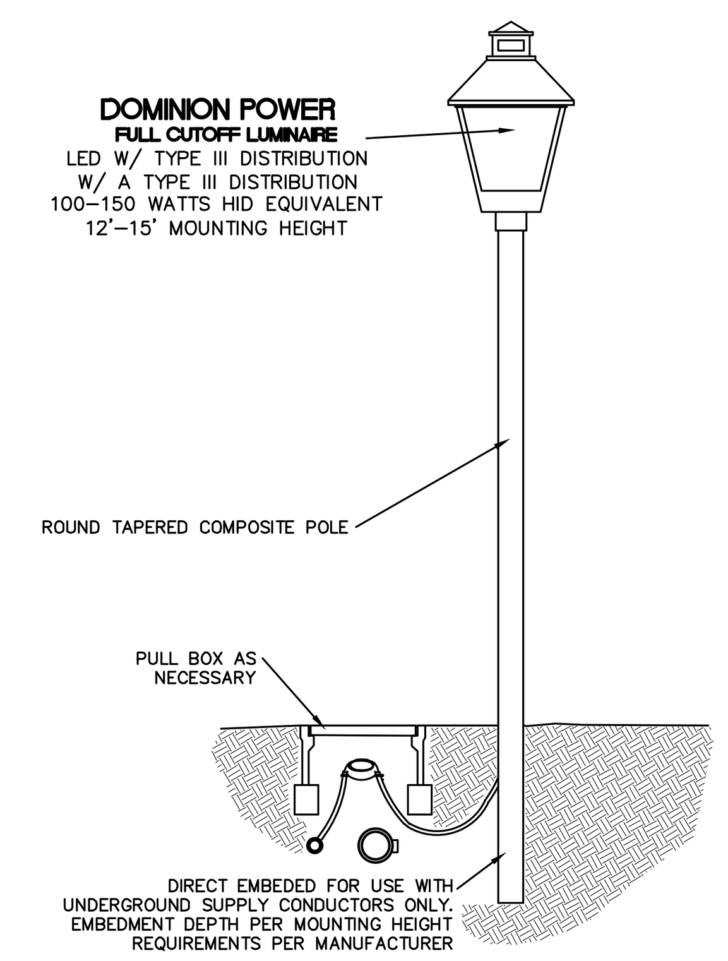
NOTE: NOT TO SCALE

PAVING SHALL CONSIST OF FINE GRADING THE SPECIFIED ROADWAY & PARKING AREAS AND INSTALLING 2" SF-9.5A OR SF-9.5B ASPHALT CONCRETE SURFACE COURSE IN CONJUNCTION WITH A 6" AGGREGATE BASE COURSE. THE SOIL SUBGRADE BENEATH PAVEMENTS SHALL BE COMPACTED TO AT LEAST 95% OF ASTM D 698 PRIOR TO ANY PLACEMENT OF SUBBASE FILL OR STONE BASE COURSE. ALL SITE PREPARATION AND THE DESIGN AND CONSTRUCTION OF ALL FOUNDATIONS, GROUND SLABS, AND PAVEMENTS SHALL BE IN ACCORDANCE WITH RECOMMENDATIONS PROVIDED BY A GEOTECHNICAL ENGINEER.



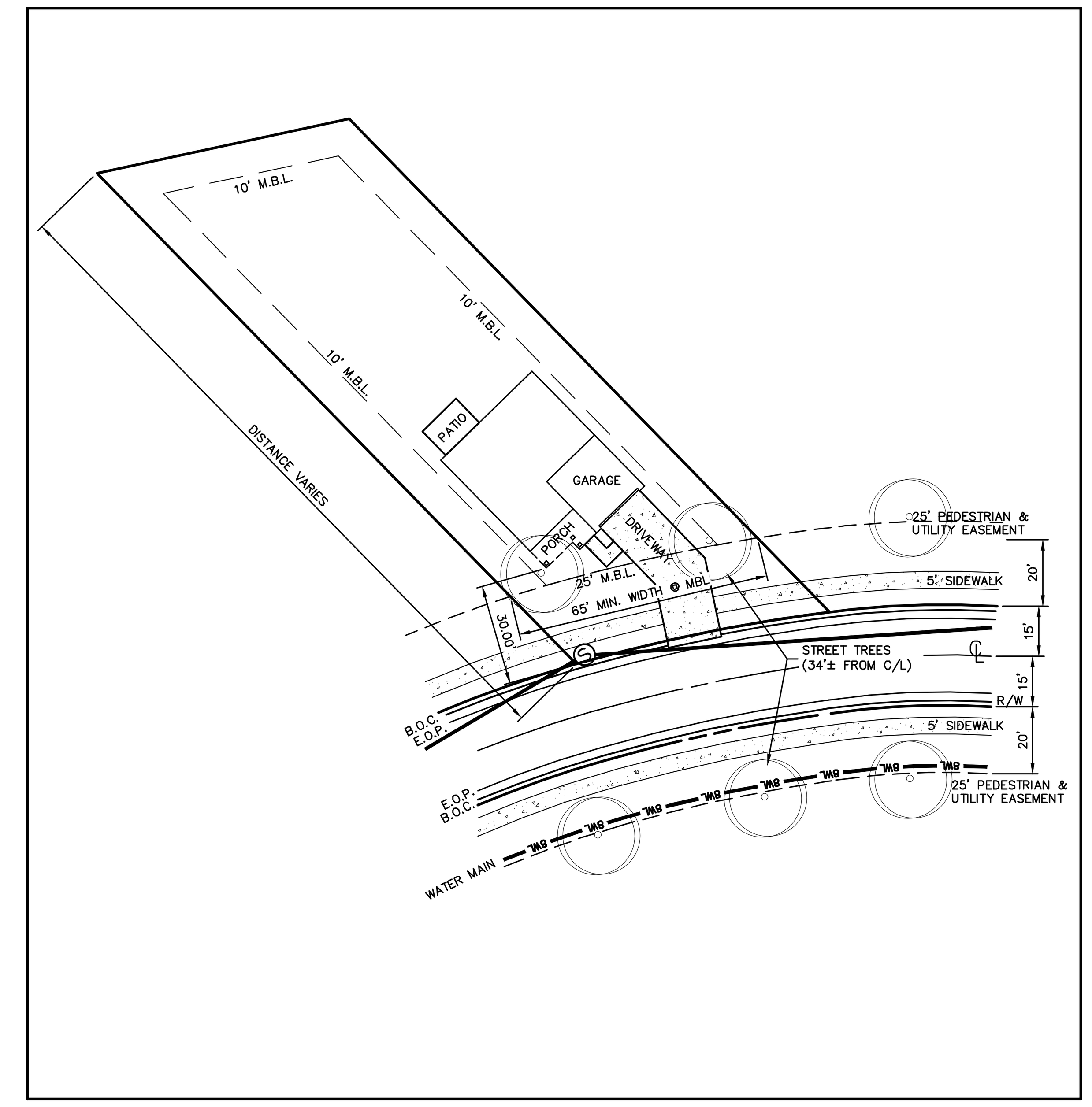
CURB & GUTTER VALLEY SECTION

NOT TO SCALE



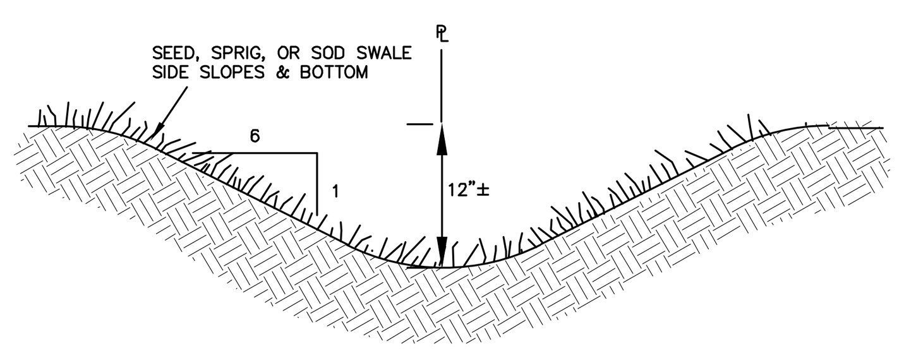
TYP. STREET LIGHT DETAIL

NOT TO SCALE LOCATION AS NOTED ON PLAN



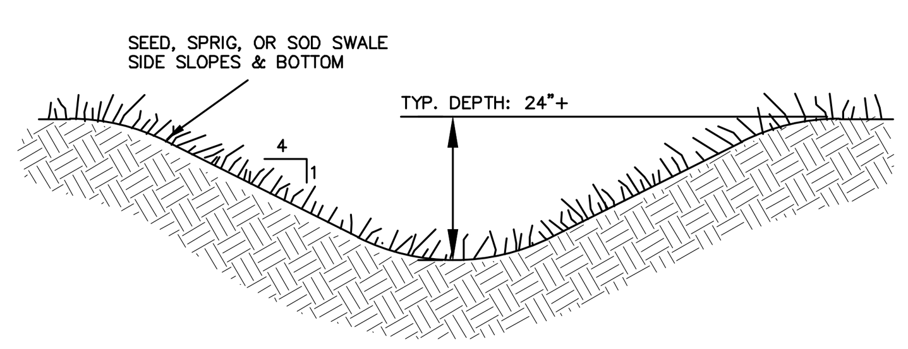
SINGLE FAMILY DEVELOPMENT EXHIBIT

SCALE: 1" = 40'



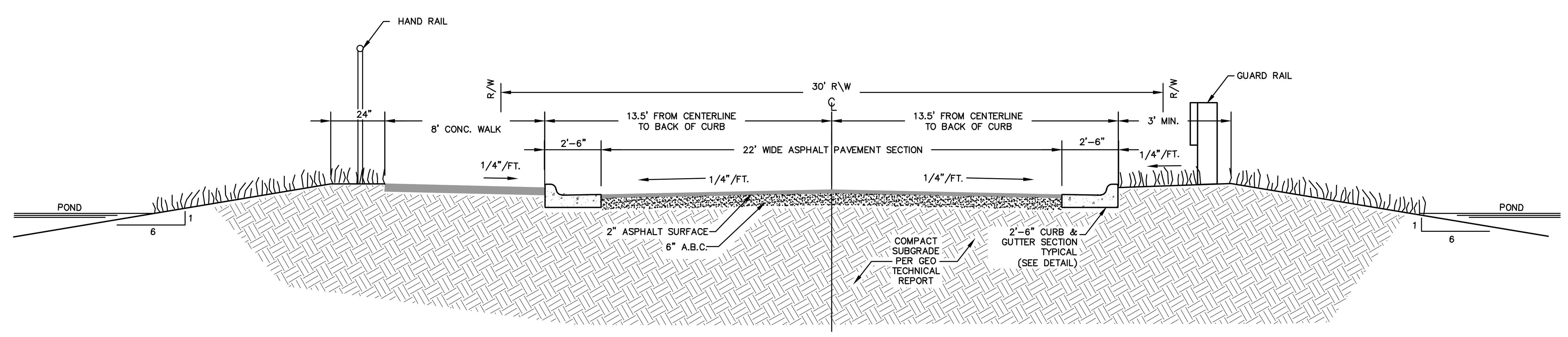
TYPICAL PROPERTY LINE SWALE SECTION

NOT TO SCALE MIN. LONGITUDINAL SLOPE: 0.10%



TYPICAL PRIMARY SWALE SECTION

NOT TO SCALE MIN. LONGITUDINAL SLOPE: 0.10%



SUBDIVISION ROADWAY SECTION (POND CROSSING)

NOT TO SCALE SECTION VIEW

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TYPICAL CONSTRUCTION DETAILS

PROJECT:

OUTER BANKS VENTURES

POPLAR BRANCH TOWNSHIP CURRITUCK COUNTY NORTH CAROLINA

PRELIMINARY DEVELOPMENT PLANS

REVISIONS

NO.	DATE	DESCRIPTION	BY
1	9/21/22	TRC COMMENTS	KFW
2	11/16/22	TRC COMMENTS	KFW

PRELIMINARY DO NOT USE FOR CONSTRUCTION

DATE: AS NOTED	SCALE: N/A
DESIGNED: BPG	CHECKED: MSB
DRAWN: KFW	APPROVED: BPG
SHEET: 7 OF 7	
CAD FILE: 459600PP-L1	
PROJECT NO: 4596	

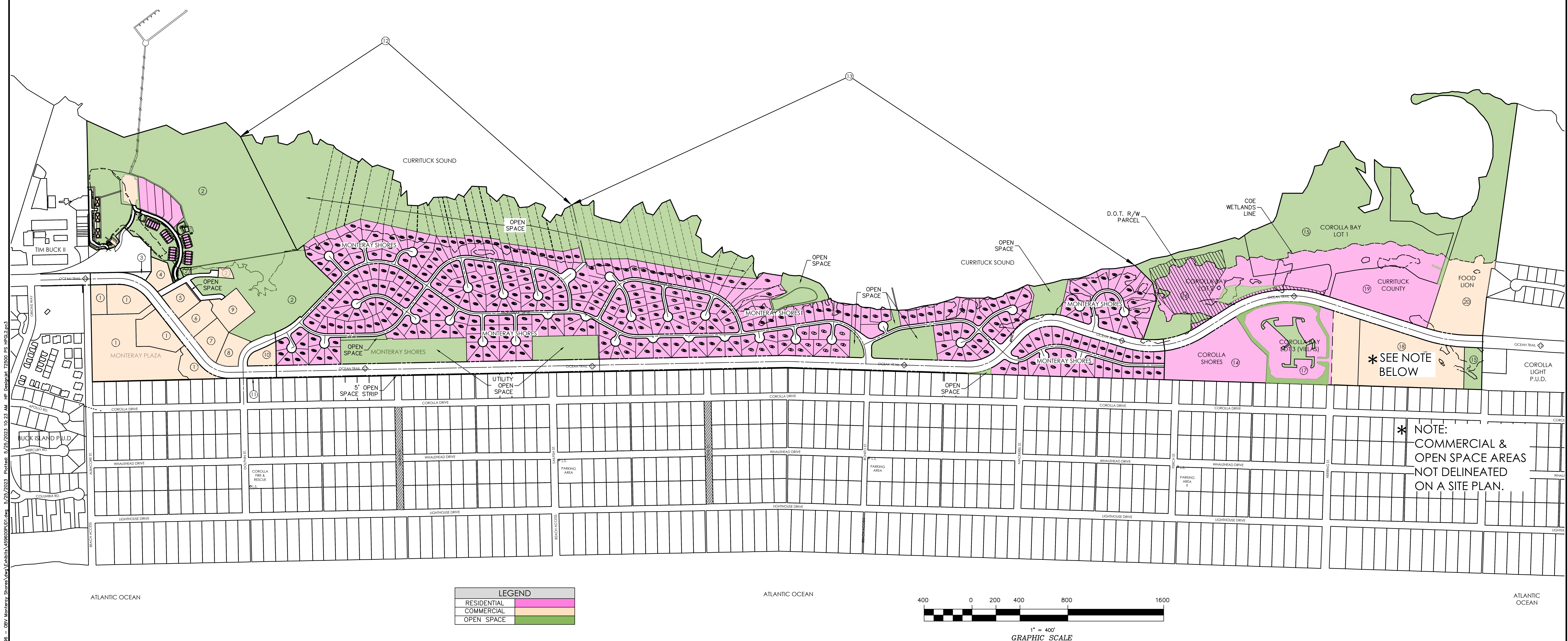
Map Reference	Designation	Total Area	Cama Wetlands	Net Area for Development	Commercial	Residential	Open Space	References	Notes; Comments
	South of Phase 2:	69.630	9.0(5)	60.63	21.736	52 Units	46.858		
1.	Monteray Plaza	12.785	–	12.785	12.785	–	–	"P.C. D., SL. 322"	Original Commercial Tract
2.	"Parcels 7,8,9,& 10"	48.721	9.0	39.721	1.433	–	46.744	"P.C.K., SL. 49–51"	Acreage includes 0.549AC R/W for Malia Drive, (R/W Ac. On plat is incorrect); parcel 10 commercial area from 11/20/09 and 1/22/14 A.S.P's; CAMA area unconfirmed.(2021 A.S.P.) Parcel 9 area corrected based on Parcel 5 condo Plat.
•	Parcel 7	0.220 (1)	–	0.220	0.220	–	–		
•	Parcel 8	0.119 (1)	–	0.119	–	–	0.119		
•	Parcel 9	11.639 (1)	–	11.639	–	–	11.639		
•	Parcel 10	36.194 (1)	9.0	27.194	1.208	–	34.986		Parcel 10 commercial per last several A.S.P.'s.
3.	NCDOT Residual	0.165	–	0.165	–	–		"D.B. 984, P. 113"	
4.	Church Parcel 6	0.918	–	0.918	0.918	1 Unit	–	"P.C. G, SL. 205"	Now mini–golf parcel
5.	Commercial Lot 4	0.976	–	0.976	0.976	1 Unit	–	"P.C. G, SL. 90"	
6.	Commercial Parcel 3	1.114	–	1.114	1.114	–	–	"P.C. G, SL. 176"	
7.	Commercial Area 1	1.056	–	1.056	1.056	2 Units	–	"P.C. E, SL.. 136"	
8.	Commercial Area 2	0.995	–	0.995	0.995	–	–	"P.C. E, SL. 137"	
9.	Monteray Pines (Parcel 5)	2.093	–	2.093	1.712	48 Units	0.045 (UTILITY STRIP)	"P.C. G, SL. 135; P.C. I, SL. 133"	Common areas & amenity areas are not credited as open space; Caroline Court R/W acreage overlaps 0.047 Ac. with Malia Dr. R/W (corrected in table); Parcel 5 area also corrected per Condo Plat.
10.	Bank Parcel	0.778	–	0.778	0.778	–	–	"P.C. D, LS. 158"	
11.	5' Buffer (across from bank)	0.029	–	0.029	–	–	0.029	Not shown on separate plat	Computed from plat
12.	Phase 2:	93.008	9.4	83.608	–	184 Lots	36.542	"P.C. D, S.L 20–27; P.C. D, SL. 54–61"	34.04 Ac. Open space on plat excludes 2.525 Ac. Well site (was originally included in PH. 1 open space calc.)
13.	Phase 1:	103.843	3.39	100.453	200 Lots	19.294		"P.C. B, SL. 366–371; 377"	43.15 Ac. Open space on plat: Ac. Shown in table is net of 16.08 Ac. WW site included in ""South of Phase 2"" in table) and 2.30 Ac. Well (actually 2.525 Ac. Included in Phase 2). Other open space areas (9 parcels) total 19.294 Ac.
	Phase 3:	88.828	3.875	84.953	14.46	218	31.699		"1.35 Ac. Disappeared from Corolla Bay when recombination plat was filed (P.C. J., SL. 126–127); and 0.1 Ac. Difference in Food Lion plats. 218 residential allocated to Phase 3 on A. S. P. dated approved on 3/15/20 and on 1/22/14 A. S. P.
14.	Corolla Shores	7.24	–	7.24	–	19 Lots		"P.C. N, SL. 133"	Excludes any reduction due to NCDOT taking.
15.	Corolla Bay 1–4	57.418	3.875	53.543	–			"P.C. I, SL. 32–35; "P.C. J., SL. 126–127	"CAMA wetlands shown on P.C.Q., SL 9–11
•	Section1 (Lot 1)	20.590* (2)	3.875	16.715	–	30 Lots	9.511	"P.C. J, SL. 198–200"	0.179 Ac. of land area was lost in recombination of Lots 1 & 2 (did not supersede)
•	1A (Lot 1)	(included in Lot 1)	–			6 Lots		"P.C. P., SL. 71"	0.018 Ac. Open space from Section 1 omitted from plat
16.	Section2 (Lot 2)	12.63* (2)	– (3)			10 Lots	3.504	"P.C. Q., SL. 9–11"	Acreage includes NCDOT R/W acquired (6.47Ac.) and 1.16 Ac. Lost compared to P.C. J., SL. 126–127
17.	Lot 3 (Villas)	12.848 *(2)	– (3)			83 Units (57+26)	3.818	"P.C. L., SL. 173–175; P.C. L., SL. 171–179, P.C. M, SL. 160–163"	Commercial for Lots 3 & 4 shown as 8.36 Ac. on approved plans. Computes as 8.95 Ac.
•	Lot 3 (Residential)(Included)		– (3)		3.007	–	–		
18.	Lot 4 (Undev.)	10.00 *(2)	– (3)		5.353	127	4.057	"P.C. I, SL. 32–35"	Open space and residential allocation per amended sketch plans for P.U.D (3/15/2010 & 1/22/2014);
19.	Currituck County	10.07	– (3)	10.07			2.809	"P.C. H, SL. 221"	Open space per amended sketch plans for P.U.D. (3/15/2010 & 1/22/2014)
20.	Corolla Shores V (Food Lion)	14.1	– (3)	14.1	6.1		8	"P.C. G, SL. 356"	Commercial & open space allocations are from 1/22/2014 ASP (recorded plat shows 14.0 Ac. +/–, A.S.P. shows 14.1 Ac.; 14.1 used in development calcs.
TOTALS:		355.309	25.665	329.644	36.222	711	134.353		711 total does not consider any loss of lots in Corolla Shores due to N.C.D.O.T. taking.

FOOTNOTES:

(1) Included in 48.721 Ac. Totals for Parcels 7, 8, 9 & 10.
(2) Included in 57.418 Ac. Totals for Corolla Bay 1–4.
(3) No CAMA wetland data provided on plats.
(4) 43.35 Ac. CAMA in 2006 A.S.P., but not identified by plat.
(5) Confirmed CAMA delineation is 9.15 Ac. (2022)

SUMMARY OF PROPOSED CHANGES TO DEVELOPMENT DATA WITH OCTOBER 2021 AMENDMENT

	PREVIOUS	10-21 MODIFICATION	AFTER MODIFICATION	Notes
Total area in P.U.D.	355.309 Ac.	-	355.309 Ac.	Recomputed from record maps
CAMA Wetlands	43.53 Ac.	-	43.53 Ac.	Updated per 8-22 Delineation
Net Development Area	311.779 Ac.	-	311.779 Ac.	
Commercial Area	36.222 Ac.	-	36.222 Ac.	From 2010 & 2014 A.S.P.'s
Commercial %	10.195 %	-	10.195 %	
Residential Units	711	36 Units	747	
Residential Density	2.280/Ac.		2.396/Ac.	Based on Updated Net Area
Open Space Area	134.353 Ac.	4.01 Ac.	130.343 Ac.	Recomputed from record maps
Open Space %	37.81 %		36.67%	



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BISSELL PROFESSIONAL GROUP
Engineers, Planners, Surveyors and Environmental Specialists

P.U.D. OVERVIEW & SUMMARY OF USES

PROJECT:

MONTERAY SHORES P.U.D.

POPLAR BRANCH TOWNSHIP CURRITUCK COUNTY NORTH CAROLINA

AMENDED SKETCH PLAN

REVISIONS

NO.	DATE	DESCRIPTION	BY
1	9/22/21	TRC COMMENTS	KFW
2	9/21/22	UDATED PER S.U.P.	KFW
3	10/27/22	2ND TRC COMMENTS	KFW
4	5/25/23	PER STAFF COMMENTS	KFW

PRELIMINARY DO NOT USE FOR CONSTRUCTION

DATE: 5/27/21	SCALE: 1" = 400'
DESIGNED: BPG	CHECKED: MSB
DRAWN: KFW	APPROVED: BPG

SHEET: 1 OF 1

CAD FILE: 459600PUD1

PROJECT NO: 4596