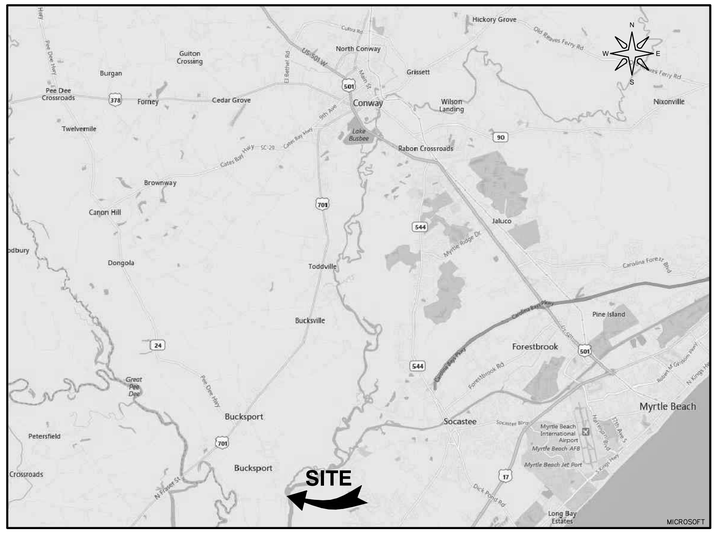
BUCKSPORT MARINE INDUSTRIAL PARK - PHASE 1



VICINITY MAP
NTS

OWNER:

GRAND STRAND WATER & SEWER AUTHORITY

166 JACKSON BLUFF ROAD
P.O. BOX 2368
CONWAY, SC 29526

ENGINEER:

MOFFATT & NICHOL, INC.

4700 FALLS OF NEUSE ROAD
SUITE 300
RALEIGH, NC 27609

SURVEYOR:

THOMAS & HUTTON ENGINEERING CO.

1350 FARROW PARKWAY
MYRTLE BEACH, SC 29577

UTILITY:

GRAND STRAND WATER & SEWER AUTHORITY

166 JACKSON BLUFF ROAD
P.O. BOX 2368
CONWAY, SC 29526

LOCATION MAP
NTS

FLOOD ZONE INFORMATION:
FIRM#: 45051C0665 H
REVISED: AUGUST 23, 1999
FLOOD ZONE AE (EL 5): BASE FLOOD ELEVATIONS DETERMINED
INCLUDES PART OF PARCELS: 451-00-00-0006, 451-00-00-0008
FLOOD ZONE X: AREAS DETERMINED TO BE OUTSIDE 500-YEAR FLOOD PLAIN
INCLUDES PARCELS: 451-00-00-0005, 451-00-00-0006, 451-00-00-0007, 451-00-00-0008, 451-00-00-0009

ISSUED FOR BID
JANUARY 2020

GRAND STRAND WATER & SEWER AUTHORITY

Mark	Description	Date	Appr.
	ISSUED FOR BID	05/01/20	JJT

BUCKSPORT MARINE INDUSTRIAL PARK - PHASE 1

COVER SHEET

Designed by: TRR | Drawn by: BDF | Checked by: PRG | Reviewed by: | Submitted by: MOFFATT & NICHOL
Date: JANUARY 2020 | M&N Project No. 7232-05 | Drawing scale: | Drawing Scale: AS SHOWN, Plot scale: 1:1 (0 SHEET) | Rev. 0

SOUTH CAROLINA LICENSED PROFESSIONAL ENGINEER
No.24067
TIMOTHY S. REID
SEAL 5-1-2020

MOFFATT & NICHOL ENGINEERS No. 000363
SOUTH CAROLINA CERTIFICATE OF AUTHORIZATION

4700 FALLS OF THE NEUSE ROAD
SUITE 300
RALEIGH, NC 27609
919-781-4626
SC COA No. 363
moffatt & nichol

Sheet Reference No.
G-001
INDEX: 1 OF 113

File: G:\RA\7232-05\CADD_Active_SheetSet\723205-G-001; Plotted: 4/29/2020 10:37 AM by THIBODEAUX, JASON; Saved: 3/24/2020 2:37 PM by JTHIBODEAUX

DRAWING SCALES SHOWN BASED ON 22"x34" DRAWING

DRAWING INDEX

SHEET REFERENCE NO.	SHEET TITLE
GENERAL	
G-001	COVER SHEET
G-002	INDEX OF DRAWINGS
G-003	GENERAL NOTES
G-004	ABBREVIATIONS
G-100	SITE PLAN
G-101	GENERAL SITE, SHEET LAYOUT AND BORING PLAN
G-601	BORING LOGS
G-602	BORING LOGS
G-603	BORING LOGS
G-604	BORING LOGS
CIVIL	
V-101	DEMOLITION PLAN
CD100	DREDGE PHASING PLAN
CD101	DREDGE PLAN
CD301	DREDGE SECTIONS
CD501	DREDGE DETAILS
CG101	GRADING – DRAINAGE SITE PLAN 1 OF 4
CG102	GRADING – DRAINAGE SITE PLAN 2 OF 4
CG103	GRADING – DRAINAGE SITE PLAN 3 OF 4
CG104	GRADING – DRAINAGE SITE PLAN 4 OF 4
CG105	PROPOSED GRADE SPOT ELEVATION TABLE
CG111	WEST POND PLAN 1 OF 2
CG112	WEST POND PLAN 2 OF 2
CG113	TEMPORARY DREDGE MATERIAL CONTAINMENT AREA 1 OF 2
CG114	TEMPORARY DREDGE MATERIAL CONTAINMENT AREA 2 OF 2
CG115	POND AND DMCA DETAILS
CG301	POND & DIKE TYPICAL SECTIONS
CG401	ENLARGED DRAINAGE PLAN
CG402	ENLARGED DRAINAGE PLAN
CG403	GRAVEL LOT PAVING PLAN
CG501	DRAINAGE DETAILS
CG502	DRAINAGE DETAILS
CG503	DRAINAGE DETAILS
CG504	DRAINAGE DETAILS
CG505	DRAINAGE DETAILS
CG506	CIVIL DETAILS
CR100	ROADWAY ALIGNMENT TABLE
CR101	MARINE PARK ROAD PLAN & PROFILE 1 OF 3
CR102	MARINE PARK ROAD PLAN & PROFILE 2 OF 3
CR103	MARINE PARK ROAD PLAN & PROFILE 3 OF 3
CR104	HENRIETTA BLUFFS ROAD PLAN & PROFILE
CR105	BUCKSPORT ROAD EXTENSION PLAN & PROFILE
CR121	MARINE PARK ROAD STRIPING PLAN 1 OF 2
CR122	MARINE PARK ROAD STRIPING PLAN 2 OF 2
CR123	HENRIETTA BLUFFS–BUCKSPORT ROAD STRIPING PLAN
CR301	ROAD TYPICAL SECTION
CR302	MARINE PARK ROAD CROSS-SECTIONS 1 OF 4
CR303	MARINE PARK ROAD CROSS-SECTIONS 2 OF 4

DRAWING INDEX

SHEET REFERENCE NO.	SHEET TITLE
CR304	MARINE PARK ROAD CROSS-SECTIONS 3 OF 4
CR305	MARINE PARK ROAD CROSS-SECTIONS 4 OF 4
CR306	HENRIETTA BLUFFS ROAD CROSS-SECTIONS
CR307	BUCKSPORT ROAD CROSS-SECTIONS
CS001	EROSION CONTROL NOTES
CS002	EROSION CONTROL LEGEND
CS101	SOIL EROSION CONTROL PLAN 1 OF 4
CS102	SOIL EROSION CONTROL PLAN 2 OF 4
CS103	SOIL EROSION CONTROL PLAN 3 OF 4
CS104	SOIL EROSION CONTROL PLAN 4 OF 4
CS501	SOIL EROSION CONTROL DETAILS 1 OF 8
CS502	SOIL EROSION CONTROL DETAILS 2 OF 8
CS503	SOIL EROSION CONTROL DETAILS 3 OF 8
CS504	SOIL EROSION CONTROL DETAILS 4 OF 8
CS505	SOIL EROSION CONTROL DETAILS 5 OF 8
CS506	SOIL EROSION CONTROL DETAILS 6 OF 8
CS507	SOIL EROSION CONTROL DETAILS 7 OF 8
CS508	SOIL EROSION CONTROL DETAILS 8 OF 8
CU101	PROPOSED SANITARY SEWER AND WATERLINE PLAN
CU102	WATERLINE UTILITY PLAN 1 OF 8
CU103	WATERLINE UTILITY PLAN 2 OF 8
CU104	WATERLINE UTILITY PLAN 3 OF 8
CU105	WATERLINE UTILITY PLAN 4 OF 8
CU109	WATERLINE UTILITY PLAN 8 OF 8
CU110	SANITARY SEWER UTILITY PLAN 1 OF 9
CU111	SANITARY SEWER UTILITY PLAN 2 OF 9
CU112	SANITARY SEWER UTILITY PLAN 3 OF 9
CU113	SANITARY SEWER UTILITY PLAN 4 OF 9
CU114	SANITARY SEWER UTILITY PLAN 5 OF 9
CU115	SANITARY SEWER UTILITY PLAN 6 OF 9
CU116	SANITARY SEWER UTILITY PLAN 7 OF 9
CU501	STANDARD WATER DETAILS SHEET 1 OF 2
CU502	STANDARD WATER DETAILS SHEET 2 OF 2
CU503	STANDARD SEWER DETAILS SHEET 1 OF 2
CU504	STANDARD SEWER DETAILS SHEET 2 OF 2
CU505	STANDARD WATER & SEWER DETAILS SHEET 1 OF 2
CU506	STANDARD WATER & SEWER DETAILS SHEET 2 OF 2
CU507	MARINA WATER SUPPLY DETAILS
CU508	PUMP STATION DETAILS 1 OF 2
CU509	PUMP STATION DETAILS 2 OF 2
L100	OVERALL LANDSCAPING PLAN
L501	LANSCAPE DETAILS
STRUCTURAL	
S-001	STRUCTURAL NOTES
S-002	SPECIAL INSPECTIONS
S-100	OVERALL STRUCTURAL SITE PLAN
S-101	ENLARGED STRUCTURAL SITE PLAN
S-102	FLOATING DOCK PLAN
S-201	TRAVEL LIFT PIER ELEVATION

DRAWING INDEX

SHEET REFERENCE NO.	SHEET TITLE
S-301	TYPICAL SECTIONS
S-501	TRAVEL LIFT PIER DETAILS
S-502	TIMBER FENDER SYSTEM DETAILS
S-503	GANGWAY DETAILS
S-504	FLOATING DOCK DETAILS
S-505	18 INCH SQUARE PRESTRESSED CONCRETE PILE
S-506	STRUCTURAL DETAILS
S-601	PILE SCHEDULES
MECHANICAL	
M001	MECHANICAL NOTES
M002	MECHANICAL ABBREVIATIONS
M101	MECHANICAL PLAN
M501	MECHANICAL DETAILS
M502	MECHANICAL DETAILS
ELECTRICAL	
E001	ELECTRICAL NOTES
E101	ELECTRICAL PLAN
E501	ELECTRICAL DETAILS
E601	SINGLE LINE DIAGRAM
E602	ELECTRICAL SCHEDULE

ISSUED FOR BID
JANUARY 2020

GRAND STRAND WATER & SEWER AUTHORITY

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BUCKSPORT MARINE INDUSTRIAL PARK - PHASE 1

INDEX OF DRAWINGS

Rev. 0
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Drawing code:
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Plot scale: 1:1 (D SHEET)
Designed by: TRR
Dwn by: BDF
Ckd by: PRG
Reviewed by:
Submitted by: MOFFATT & NICHOL

SOUTH CAROLINA LICENSED PROFESSIONAL ENGINEER TIMOTHY R. REID No.24067
SEAL 5-1-2020

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SC COA No. 363
moffatt & nichol

Sheet Reference No.
G-002
INDEX: 2 OF 113

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DRAWING SCALES SHOWN BASED ON 22"x34" DRAWING

GENERAL NOTES:

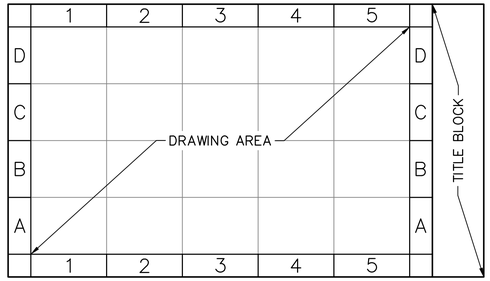
1. THE CONTRACTOR SHALL NOTIFY THE OWNER AND THE ENGINEER 48 HOURS IN ADVANCE OF ALL REQUIRED TEST AND OBSERVATIONS.
2. THE CONTRACTOR WILL NOTIFY THE ENGINEER IF UNSUITABLE MATERIAL IS DISCOVERED PRIOR TO BEGINNING ANY REMOVAL OPERATION.
3. THE EXISTING UNDERGROUND UTILITIES SHOWN HERE ON ARE BASED UPON AVAILABLE INFORMATION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR DETERMINING THE EXACT LOCATION OF ALL UTILITIES, IF UTILITIES OTHER THAN THOSE SHOWN ARE ENCOUNTERED DURING CONSTRUCTION, THE CONTRACTOR SHALL NOTIFY THE ENGINEER IMMEDIATELY AND TAKE STEPS TO PROTECT THE LINE(S) AND ENSURE CONTINUED SERVICE. DAMAGE CAUSED TO EXISTING UTILITIES BY THE CONTRACTOR SHALL BE REPAIRED BY THE CONTRACTOR. ADDITIONALLY, THE CONTRACTOR SHALL CONFIRM THE CONNECTION POINTS OF NEW UTILITIES TO EXISTING UTILITIES PRIOR TO BEGINNING NEW CONSTRUCTION.
4. IF WORK IS SUSPENDED OR DELAYED FOR 14 DAYS, THE CONTRACTOR SHALL TEMPORARILY STABILIZE THE DISTURBED AREA AT NO ADDITIONAL COST TO THE OWNER.
5. THE CONTRACTOR SHALL INSTALL ANY BARRICADES PRIOR TO BEGINNING CONSTRUCTION.
6. THE FOLLOWING NOTES ARE SPECIFIED BY THE COUNTY ENGINEER AND ARE TO BE EXECUTED BY THE CONTRACTOR FOR STREETS IN THE PROJECT WHICH ARE TO BE DEEDED TO THE COUNTY:
   a. ANY DAMAGE TO EXISTING PAVEMENT MUST BE REPAIRED AT CONTRACTORS EXPENSE AND TO THE SATISFACTION OF THE COUNTY ENGINEER AND THE PROJECT ENGINEER.
   b. ALL RIGHT-OF-WAY AND DRAINAGE EASEMENT CONSTRUCTION SHALL MEET SCDOT STANDARD SPECIFICATIONS UNLESS SPECIFIED ELSEWHERE AND APPROVED IN WRITING BY THE COUNTY ENGINEER.
   c. WHERE FIELD INSPECTIONS ARE REQUIRED BY THE COUNTY, THE CONTRACTOR SHALL NOTIFY THE ENGINEERING DIVISION A MINIMUM OF 48 HOURS IN ADVANCE TO SCHEDULE SUCH INSPECTIONS.
   d. A COMPLETE SET OF APPROVED DRAWINGS AND SPECIFICATIONS MUST BE MAINTAINED ON SITE AT ALL TIMES THAT THE CONTRACTOR IS PREFORMING WORK. THESE DRAWINGS SHALL BE MADE AVAILABLE UPON REQUEST.
   e. ANY REVISIONS DURING CONSTRUCTION WHICH ALTER THE ROAD LAYOUT, CONSTRUCTION METHODS, RIGHT-OF-WAY LOCATION OR DRAINAGE MUST BE SUBMITTED AND APPROVED IN WRITING BY THE COUNTY ENGINEER.
   f. THE CONTRACTOR IS RESPONSIBLE FOR OBTAINING ALL CONSTRUCTION PERMITS NECESSARY FROM OTHER RESPONSIBLE AGENCIES.
   g. ALL TREES SHOWING DISTURBANCE WITHIN THE PROTECTED ROOT ZONE SHALL BE PRUNED AND FERTILIZED BY A CERTIFIED ARBORIST PRIOR TO RECEIVING FINAL PLAT APPROVAL (THIS WORK WILL BE DONE BY THE OWNER OUTSIDE OF THE CONTRACT.)
   h. ALL ABOVE GROUND UTILITIES ARE TO BE OUTSIDE OF THE R/W AND ALL AT GRADE UTILITIES ARE TO BE OUT OF THE CURB LINE.
   i. FINAL RECORD DRAWINGS SHALL BE SUBMITTED TO HORRY COUNTY PRIOR TO FINAL INSPECTION.
7. THE CONTRACTOR SHALL INSTALL ALL EROSION CONTROL AND PREVENTION STRUCTURES SHOWN ON THE PLANS. BOTH MUST BE APPROVED BY HORRY COUNTY PRIOR TO BEGINNING ANY LAND DISTURBING ACTIVATES.
8. CONTRACTORS WILL BE REQUIRED TO ADJUST MANHOLE FRAMES TO MATCH FINAL GRADE AT NO ADDITIONAL COST.
9. THE FOLLOWING NOTES ARE SPECIFIED BY THE SOUTH CAROLINA DEPARTMENT OF HEALTH AND ENVIRONMENTAL CONTROL – OFFICE OF OCEAN AND COASTAL RESOURCES MANAGEMENT (SCDHEC-OCRM) AND ARE TO BE EXECUTED BY THE CONTRACTOR:
   a. ALL SEDIMENT CONTROL MEASURES SHALL BE INSPECTED AT LEAST ONCE EVERY SEVEN CALENDAR DAYS AND AFTER ANY STORM EVENT OF GREATER THAN 0.5 INCHES OF PRECIPITATION DURING ANY 24-HOUR PERIOD. ALL SEDIMENT CONTROL FEATURES SHALL BE MAINTAINED UNTIL FINAL STABILIZATION HAS BEEN OBTAINED.
   b. STABILIZATION MEASURES SHALL BE INITIATED AS SOON AS PRACTICABLE IN PORTIONS OF THE SITE WHERE CONSTRUCTION ACTIVITIES HAVE TEMPORARILY OR PERMANENTLY CEASED, BUT IN NO CASE MORE THAN 14 DAYS AFTER THE CONSTRUCTION ACTIVITY IN THE PORTION OF THE SITE HAS TEMPORARILY OR PERMANENTLY CEASED, UNLESS ACTIVITY IN THAT PORTION OF THE SITE WILL RESUME WITHIN 14 DAYS.
10. ALL EROSION AND SEDIMENT CONTROL DEVICES SHALL BE CONSTRUCTED SIMULTANEOUSLY WITH THE DISTURBANCE OF THE LAND AND SHALL REMAIN FUNCTIONAL UNTIL THE CONTRIBUTING DISTURBED AREAS ARE STABILIZED. SILT BARRIERS WILL BE INSTALLED AS NECESSARY TO PREVENT EXCESSIVE "EROSION AND SEDIMENT CONTROL PRACTICES FOR DEVELOPING AREAS" BY THE S.C. LAND RESOURCES CONSERVATION COMMISSION.
11. CONTRACTOR SHALL GRADE AREAS TO DRAIN FOR POSITIVE FLOW PRIOR TO FINAL ACCEPTANCE.
12. ALL TRAFFIC CONTROL SIGNS AND PAVEMENT MARKINGS SHALL BE IN ACCORDANCE WITH THE MANUAL ON "UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS" AND "SOUTH CAROLINA MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES" BOTH CURRENT ADDITIONS.
13. ALL AREAS DISTURBED WILL BE GRASSED IMMEDIATELY AFTER THE INSTALLATION. GRASSING SHALL BE IN ACCORDANCE WITH SECTION 810 OF THE SCDOT STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION CURRENT EDITION. PAYMENT SHALL BE AS SHOWN IN THE BID FORM AND SHALL BE COMPENSATION FOR ALL NECESSARY WORK AND MATERIALS TO COMPLETE THE SEEDING IN ACCORDANCE WITH THESE SPECIFICATIONS.
14. ALL DRAINAGE WILL BE MADE FUNCTIONAL DAILY AS WORK PROGRESSES.
15. EACH EXISTING ROAD WILL BE CLEANED UP AND RESTORED DAILY.
16. NEW PAVEMENT TO BE FLUSH WITH EDGE OF EXISTING PAVEMENT.
17. ALL STORM DRAIN PIPE INVERTS IN AND OUT ARE THE SAME AS THE BOX INVERT UNLESS OTHERWISE NOTED ON THE PLAN SHEETS AND/OR PROFILES.
18. ONLY TYPE S AND M MORTAR IS TO BE USED IN STORM WATER SYSTEM CONSTRUCTION AND ALL BRICKWORK AND BRICK MUST MEET SCDOT SPECIFICATIONS.
19. GENERAL NOTES ARE NOT INTENDED TO REPLACE THE CONTRACT DOCUMENTS. SEE CONTRACT DOCUMENTS FOR REQUIREMENTS IN ADDITION TO THESE GENERAL NOTES. THE CONTRACT DOCUMENTS SHALL CONSIST OF THE COMPLETE PROJECT MANUAL (SPECIFICATIONS) AND WORKING DRAWINGS. ALL WORK SHALL CONFORM TO THE REQUIREMENTS OF THESE DRAWINGS AND SPECIFICATIONS.
20. THE WORKING DRAWINGS ARE NOT NECESSARILY COMPLETE IN EVERY DETAIL. THE CONTRACTOR SHALL PROVIDE ALL EQUIPMENT, MATERIAL, SERVICES, LABOR, ETC, FOR A COMPLETE INSTALLATION; INCLUDING WORK REASONABLY INFERRED FROM THE CONTRACT DOCUMENTS AS BEING NECESSARY TO PRODUCE THE INTENDED RESULTS, WHETHER SHOWN OR NOT ON THE DRAWINGS.
21. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND EXISTING CONDITIONS BEFORE STARTING WORK. DO NOT SCALE PROJECT DRAWINGS. REPORT ANY DISCREPANCIES IN THE DRAWINGS AND/OR SPECIFICATIONS TO THE OWNER'S REPRESENTATIVE FOR CLARIFICATIONS OR ADJUSTMENTS PRIOR TO COMMENCING WORK. THE CONTRACTOR SHALL NOT BEGIN DEMOLITION/CONSTRUCTION IN ANY SUCH AFFECTED AREA UNTIL THE DISCREPANCY HAS BEEN RESOLVED.
22. ALL FEDERAL, STATE, AND LOCAL SAFETY REGULATIONS ARE TO BE STRICTLY FOLLOWED. METHODS OF DEMOLITION/CONSTRUCTION AND INSTALLATION OF MATERIAL IS THE CONTRACTOR'S RESPONSIBILITY.
23. THE CONTRACTOR SHALL ABIDE BY ALL APPLICABLE FEDERAL, STATE, AND LOCAL ENVIRONMENTAL PROTECTION STANDARDS, LAWS, AND REGULATIONS.
24. UNLESS OTHERWISE NOTED, THE CONTRACTOR SHALL, ON A DAILY BASIS, REMOVE FROM THE SITE ANY DEBRIS RESULTING FROM DEMOLITION/CONSTRUCTION. DISPOSAL OF MATERIALS IS THE RESPONSIBILITY OF THE CONTRACTOR. ALL MATERIALS TO BE REMOVED SHALL BECOME THE PROPERTY OF THE CONTRACTOR, UNLESS OTHERWISE NOTED, AND SHALL BE DISPOSED OF AS SPECIFIED. ALL DEBRIS SHALL BE PROPERLY DISPOSED OF IN A PERMITTED LANDFILL.
25. ALL CONSTRUCTION, EXCEPT THAT WHICH CAN BE PERFORMED FROM SHORE, SHALL BE CONDUCTED FROM BARGES, WORK BOATS, OR OTHER TEMPORARY PLATFORMS PROVIDED BY THE CONTRACTOR, AS APPLICABLE.
26. ALL ELEVATIONS PROVIDED ON THE DRAWINGS ARE REFERENCED TO THE NORTH AMERICAN VERTICAL DATUM (NAVD 1988).
27. THE FOLLOWING DATA IS PROVIDED REGARDING TIDAL INFORMATION. TIDAL INFORMATION WAS OBTAINED FROM THE NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION (NOAA), VDATUM SOFTWARE. ELEVATIONS ARE REFERENCED ON THE 1983–2001 EPOCH.

MHHW	= +1.93 FT (NAVD88)
MHW	= +1.81 FT (NAVD88)
MTL	= +0.73 FT (NAVD88)
MLW	= −0.34 FT (NAVD88)
MLLW	= −0.99 FT (NAVD88)

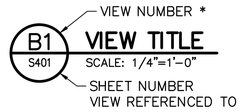
28. TOPOGRAPHIC SURVEY PROVIDED BY SANTEE COOPER WAS CONDUCTED FROM 2/21/13 TO 3/8/13 AND IS REPRESENTATIVE OF SAID CONDITIONS ON THOSE DATES.
29. BATHYMETRIC SURVEY PROVIDED BY SANTEE COOPER WAS CONDUCTED ON 10/18/18 AND 11/21/18 IS REPRESENTATIVE OF SAID CONDITIONS ON THOSE DATES
30. CONTRACTOR IS RESPONSIBLE FOR ADHERING TO ALL PERMIT CONDITIONS AND REPORTING REQUIREMENTS.
31. THE CONTRACTOR IS TO PROVIDE EROSION CONTROL/SEDIMENTATION BARRIERS (HAY BALES, SILTATION CURTAINS AND FLOATING TURBIDITY SCREENS) TO PREVENT SILTATION OF ADJACENT PROPERTY, STREETS, STORM SEWERS, AND WATERWAYS, IF IN THE OPINION OF THE CITY AND/OR LOCAL AUTHORITIES, EXCESSIVE QUANTITIES OF EARTH ARE BEING TRANSPORTED OFF SITE EITHER BY NATURAL DRAINAGE OR VEHICULAR TRAFFIC, THE CONTRACTOR IS TO REMOVE AND CLEAN SAID EARTH FROM TRAVEL WAYS TO THE SATISFACTION OF THE CITY.

ENVIRONMENTAL CONSTRAINTS

1. PILE DRIVING ACTIVITIES MUST BE LIMITED TO 12 HOURS PER DAY WITH A 12-HOUR REST PERIOD BETWEEN PILE DRIVING ACTIVITIES.
2. NO PILE DRIVING ACTIVITIES IS ALLOWED AFTER 7 P.M. OR BEFORE 8 A.M. AND NO PILE DRIVING ACTIVITIES IS ALLOWED ON SUNDAYS.
3. NO IN-WATER WORK IS ALLOWED FROM FEBRUARY 1 TO APRIL 30.
4. WETLANDS DELINEATED PER SAC # 1989-09259. ORIGINALLY PERMITTED MAY 2017. MODIFICATION AUTHORIZED VIA USACE LETTER DATED 03/22/2019 AND 11/18/2019.



DRAWING AREA COORDINATE SYSTEM (DACS)



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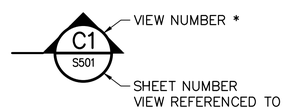
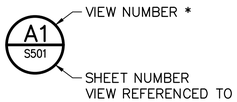


SECTION CUT



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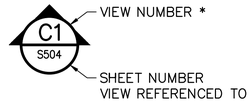
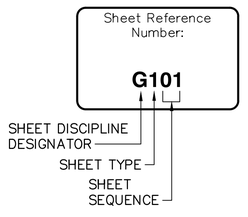


ELEVATION VIEW

* VIEW NUMBER IS BASED ON THE (DACS) LOCATION OF THE LOWER-LEFT EXTENTS OF THE VIEW ON THE REFERENCED SHEET. WHEN REFERENCING DRAWING INFORMATION BETWEEN SHEETS, BOTH THE VIEW AND SHEET NUMBERS MUST BE QUOTED TOGETHER – EITHER IN A CALLOUT FORMAT AS SHOWN ABOVE OR IN THE FORM; "VIEW NO./SHEET NO." (EG A1/G101)

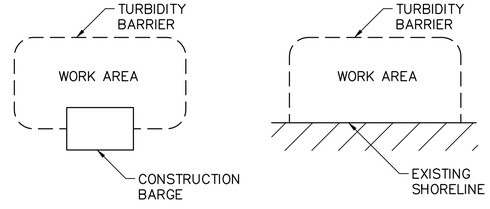


SHEET NUMBERING

SHEET DISCIPLINE DESIGNATORS
- G – GENERAL DRAWINGS
- V – SURVEY DRAWINGS
- C – CIVIL DRAWINGS
- S – STRUCTURAL DRAWINGS
- M – MECHANICAL DRAWINGS

SHEET TYPES
- 0 – GENERAL
- 1 – PLANS
- 2 – ELEVATIONS, TYPICAL SECTIONS AND PROFILES
- 3 – SECTIONS
- 4 – ENLARGED PLANS
- 5 – DETAILS
- 6 – SCHEDULES AND DIAGRAMS

TURBIDITY BARRIER DIAGRAMS:



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BUCKSPORT MARINE INDUSTRIAL PARK - PHASE 1

GENERAL NOTES

Designed by: TRR | Dwn by: BDF | Ckd by: PRG | Reviewed by: | Submitted by: MOFFATT & NICHOL

Date: JANUARY 2020 | M&N Project No. 7232-05 | Drawing code: | Drawing Scale: AS SHOWN Plot scale: 1:1 (D SHEET) | Rev. 0

SOUTH CAROLINA LICENSED PROFESSIONAL ENGINEER TIMOTHY R. REED No.24067
SEAL 5-1-2020
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DRAWING SCALES SHOWN BASED ON 22"x34" DRAWING

ABBREVIATIONS

A	AIR, AMPERE, ANCHOR OR AMMETER
A/C	AIR CONDITIONING
AB	ANCHOR BOLT
ABAND	ABANDONED
ABBR	ABBREVIATION
ABV	ABOVE
AC	ASPHALT CONCRETE, AIR COMPRESSOR, OR ALTERNATING CURRENT
ACI	AMERICAN CONCRETE INSTITUTE
ADA	AMERICANS WITH DISABILITIES ACT
AFG	ABOVE FINISHED GRADE
AGG	AGGREGATE
AHJ	AUTHORITY HAVING JURISDICTION
AISC	AMERICAN INSTITUTE OF STEEL CONSTRUCTION
ALUM	ALUMINUM
AMPS	AMPERES
ANSI	AMERICAN NATIONAL STANDARDS INSTITUTE
APPROX	APPROXIMATE
AS	AMPERE SWITCH
ASCE	AMERICAN SOCIETY OF CIVIL ENGINEERS
ASME	AMERICAN SOCIETY OF MECHANICAL ENGINEERS
ASTM	AMERICAN SOCIETY FOR TESTING AND MATERIALS
ATON	AID-TO-NAVIGATION
AWG	AMERICAN WIRE GAUGE
AWPA	AMERICAN WOOD PRESERVERS ASSOCIATION
AWS	AMERICAN WELDING SOCIETY
AWWA	AMERICAN WATER WORKS ASSOCIATION
BAV	BALL VALVE
BC	BEGIN CURVE OR BARE COPPER/CONDUCTOR
BD	BOARD
BF	BLIND FLANGE
BFP	BACK-FLOW PREVENTER
BFV	BUTTERFLY VALVE
BLDG	BUILDING
BLK'G	BLOCKING
BL'KOUT	BLOCKOUT
BM	BEAM
BOC	BOTTOM OF CONCRETE
BOS	BOTTOM OF STEEL
BOT	BOTTOM
BR	BRASS
BRKR	BREAKER
BTU	BRITISH THERMAL UNIT
BTW	BETWEEN
BV	BALL VALVE
C	CONDUIT OR CONTROL
CA	CEMENT ASBESTOS OR COMPRESSED AIR
CB	CONTAINER BERTH, CATCH BASIN OR CIRCUIT BREAKER
CF	CUBIC FEET
CH	COMMUNICATION HANDHOLE
CHK	CHECKERED
CI	CAST IRON
CJ	CONSTRUCTION JOINT
CKT	CIRCUIT
CL	CLASS
CL&C	CEMENT LINED AND COATED
CLF	CHAIN LINK FENCE
CL'G	CEILING
CLR	CLEAR
CM	CORRUGATED METAL
CMP	CORRUGATED METAL PIPE
CMU	CONCRETE MASONRY UNIT
CN	CANADIAN NATIONAL RAILWAY
CO	CLEANOUT OR CONDUIT ONLY
COL	COLUMN
CON	CONCRETE
CONC	CONCRETE
COND	CONDUIT
CONN	CONNECTION
CONST	CONSTRUCT OR CONSTRUCTION
CONT	CONTINUOUS OR CONTINUE
CONV	CONVEYOR
COORD	COORDINATE
CORR	CORRUGATED
CP	CONCRETE PIER
CS	CARBON STEEL
CT	COPPER TUBE, CERAMIC TILE, OR CURRENT TRANSFORMER
CTR	CENTER
CTS	CENTERS
CU	CUBIC OR COPPER
CV	CHECK VALVE
CW	COLD WATER
CY	CUBIC YARDS
C/C	CENTER TO CENTER PULLEY
D	DRAIN OR DEPTH
DBL	DOUBLE
DBW	DOUBLE STRAND BARBED WIRE
DET	DETAIL
DFT	DRY FILM THICKNESS
DI	DUCTILE IRON OR DROP INLET
DIA	DIAMETER
DIM	DIMENSION
DIP	DUCTILE IRON PIPE
DISCONT	DISCONTINUOUS
DM	DESIGN MANUAL
DN	DOWN
DO	DITTO
DR	DOOR
DT	DOZER TRAP
DWGS	DRAWINGS
DWT	DEADWEIGHT TONS
E	EAST
EA	EACH
EC	END CURVE OR EMPTY CONDUIT
EC	ELECTRICAL CONTRACTOR
EF	EACH FACE
EG	EXISTING GRADE
EH	ELECTRICAL HANDHOLE
EJ	EXPANSION JOINT
EL	ELEVATION
ELB	ELBOW
ELEC	ELECTRICAL
ELEV	ELEVATION
ELL	ELBOW
EMBED	EMBEDMENT
EMT	ELECTRICAL METALLIC CONDUIT
EP	EDGE OF PAVEMENT
EPR	ETHYLENE-PROPYLENE-RUBBER
EQ	EQUAL
EQUIP	EQUIPMENT
ERCP	ELLIPTICAL REINFORCED CONCRETE PIPE
ES	EACH SIDE OR EDGE OF SHOULDER
EW	EACH WAY OR EXISTING WATER
EXIST.	EXISTING
EXP	EXPANSION
EXT	EXTERIOR
F	FRAME, FLANGE, OR FUEL
FA	FIRE ALARM
FB	FIELD BEND
FD	FLOOR DRAIN
FDC	FIRE DEPARTMENT CONNECTION
FDN	FOUNDATION
FDR	FEEDER
FFE	FINISHED FLOOR ELEVATION
FG	FINISH GRADE
FH	FIRE HYDRANT
FIN	FINISH
FL	FLOW LINE OR FLASH
FLG	FLANGE
FLR	FLOOR
FLUOR	FLUORESCENT
FM	FORCE MAIN
FOT	FLAT ON TOP
FR	FUEL RETURN
FS	FINISHED SURFACE OR FUEL SUPPLY
FT	FOOT OR FEET
FTG	FOOTING
FU	FUSE
FVNR	FORWARD NON REVERSING (MOTOR)
F/S	FAR SIDE
G	GROUND
GA	GAUGE OR GENERAL ARRANGEMENT
GAL	GALLON
GALV	GALVANIZED
GB	GRADE BREAK
GF	GROUND FAULT
GFI	GROUND FAULT INTERRUPTER
GI	GALVANIZED IRON
GL	GLASS
GND	GROUND
GPM	GALLONS PER MINUTE
GRND	GROUND
GV	GATE VALVE
GW	GROSS WEIGHT
GYP	GYPSUM
H	HEIGHT
HB	HOSE BIBB
HD	HEAD
HDG	HOT DIPPED GALVANIZED
HDPE	HIGH DENSITY POLYETHYLENE
HK	HOOK
HM	HOLLOW METAL
HN'DR'L	HANDRAIL
HORIZ	HORIZONTAL
HP	HORSEPOWER
HPS	HIGH PRESSURE SODIUM
HR	HOUR
HS	HEADED STUD / HIGH STRENGTH
HSS	HOLLOW STRUCTURAL SECTION
HTR	HEATER
HW	HOT WATER
Hz	HERTZ
IBC	INTERNATIONAL BUILDING CODE
ID	INSIDE DIAMETER
IN.	INCHES
INFO	INFORMATION
INS	INSULATION
INT	INTERIOR
INV	INVERT ELEVATION
IP	INTERSECTION POINT
IPS	INSIDE PIPE SIZE
JB	JUNCTION BOX
JT	JOINT
KSI	KIPS PER SQUARE INCH
kV	KILOVOLTS
kVA	KILOVOLT-AMPERES
kW	KILOWATTS
kWHM	KILOWATT HOUR METER
L	LENGTH
LA	LIGHTNING ARRESTER
LAM	LAMINATE
LB	POUND
LF	LINEAR FOOT OR FEET
LG	LONG
LH	LEFT HAND
LLH	LONG LEG HORIZONTAL
LLV	LONG LEG VERTICAL
LOA	LENGTH OVERALL
LR	LONG RADIUS
LRFD	LOAD & RESISTANCE FACTOR DESIGN
LT	LIGHT, LONG TON OR LEFT
LTG	LIGHTING
M	MOTOR
MAS	MASONRY
MAT'L	MATERIAL
MAX	MAXIMUM
MCC	MOTOR CONTROL CENTER
MCM	THOUSAND CIRCULAR MILS
MECH	MECHANICAL
MET	METAL
MISC	MISCELLANEOUS
MFTR	MANUFACTURE
MH	MANHOLE
MHHW	MEAN HIGHER HIGH WATER
MHW	MEAN HIGH WATER
MIL	1000TH OF AN INCH
MIN	MINIMUM
MJ	MECHANICAL JOINT
MLLW	MEAN LOWER LOW WATER
MLW	MEAN LOW WATER
MON	MONUMENT
MPCB	MOTOR PROTECTION CIRCUIT BREAKER
MPH	MILES PER HOUR
MSL	MEAN SEA LEVEL
MTD	MOUNTED
N	NORTH
NAD	NORTH AMERICAN DATUM
NAVD	NORTH AMERICAN VERTICAL DATUM
NEC	NATIONAL ELECTRICAL CODE
NEMA	NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION
NFPA	NATIONAL FIRE PROTECTION ASSOCIATION
NGVD	NATIONAL GEODETIC VERTICAL DATUM
NIC	NOT IN CONTRACT
NO.	NUMBER
NOM	NOMINAL
NOS	NATIONAL OCEAN SERVICE
NPT	NATIONAL PIPE THREAD
NSF	NATIONAL SANITATION FOUNDATION
NTS	NOT TO SCALE
OBS	OBSTRUCTION
O.C.	ON CENTER
OD	OUTSIDE DIAMETER
OE	OVERHEAD ELECTRICAL
OH	OVERHEAD
OHE	OVERHEAD ELECTRICAL
OP'NG	OPENING
OPP	OPPOSITE
OP'RS	OPERATORS
OS	OUTSIDE
OSHA	OCCUPATIONAL SAFETY & HEALTH ADMINISTRATION
OW	OILY WASTE
P	POWER, POLE, PUMP OR PIPE
P&T	PRESSURE AND TEMPERATURE
P/S	PRESTRESSED
PART'N	PARTITION
PB	PULL BOX
PC	PIPE CLAMP, PRECAST CONCRETE OR POINT OF CURVATURE
PCC	POINT OF CONTINUING CURVATURE
PCF	POUND PER CUBIC FOOT
PCI	PRECAST CONCRETE INSTITUTE
PD	PROJECT DATUM
PDA	PILE DYNAMIC ANALYZER
PERF	PERFORATED
PF	POWER FACTOR
PG	PRESSURE GAUGE
PI	POINT OF INTERSECTION
PKG	PACKAGE
PL	PLATE
PLAS	PLASTIC OR PLASTER
PLATF	PLATFORM
PM	POWER MOUND
PNL	PANEL
PO	PUSH-ON
POB	POINT OF BEGINNING
POC	POINT OF CONNECTION OR POINT ON CURVE
POE	POINT OF ENDING
POT	POINT ON TANGENT
PP	POWER POLE
PPM	PARTS PER MILLION
PR	PROFILE
PRESS	PRESSURE
PRI	PRIMARY
PROP	PROPOSED
PRV	PRESSURE REDUCING VALVE
PS	PIPE SUPPORT, PRESSURE SWITCH OR POINT OF SWITCH
PSF	POUNDS PER SQUARE FOOT
PSI	POUNDS PER SQUARE INCH
PSIG	POUNDS PER SQUARE INCH GAUGE
PT	POINT OR POINT OF TANGENT
PTD	PAINTED
PV	PLUG VALVE
PVC	POLYVINYL CHLORIDE (CONDUIT)
PVMT	PAVEMENT
PW	POTABLE WATER
PWR	POWER
QTY	QUANTITY
R	RADIUS OR RIGID
RAD	RADIUS
RCP	REINFORCED CONCRETE PIPE
RD	ROOF DRAIN
RECEPT	RECEPTACLE
RED	REDUCER
REINF	REINFORCEMENT
REQ'D	REQUIRED
RET	RETAINING
RF	RAISED FACE
RGS	RIGID GALVANIZED STEEL CONDUIT
RH	RIGHT HAND
RM	ROOM
ROW	RIGHT-OF-WAY
RPM	REVOLUTIONS PER MINUTE
RT	RIGHT
RUB	RUBBER
RV	RELIEF VALVE
RW	RIGHT OF WAY
RWGV	RESILIENT WEDGE GATE VALVE
RWL	RAIN WATER LEADER
S	SEWER, SLOPE, SOUTH OR SWITCH
SAN	SANITARY
SB	SWAY BRACE
SC	SOUTH CAROLINA
SCH	SCHEDULE
SCHED	SCHEDULE
SD	STORM DRAIN
SDR	STANDARD DIMENSION RATIO
SEC	SECONDARY
SECT	SECTION
SF	SQUARE FEET
SHLD	SHOULDER
SHT	SHEET
SIM	SIMILAR
SL	SAFETY LADDER
SLO	SHORT LEG OUTSTANDING
SP	SPARE
SPA	SPACES
SPEC	SPECIAL
SPECS	SPECIFICATIONS
SPIB	SOUTHERN PINE INSPECTION BUREAU
SQ	SQUARE
S4S	SURFACE FOUR SIDES
SS	STAINLESS STEEL OR SANITARY SEWER
ST	SHORT TON
STA	STATION
STD	STANDARD
STIFF	STIFFENER
STL	STEEL
STRUCT	STRUCTURE, STRUCTURAL
SUBSTA	SUBSTATION
SWBD	SWITCHBOARD
SWM	STORM WATER MANAGEMENT
SYM	SYMMETRICAL
T	TON, TELEPHONE, OR TRANSFORMER
T&B	TOP AND BOTTOM
T/M	THERMAL MAGNETIC CIRCUIT BREAKER
T/R	TOP OF RAIL
TBM	TEMPORARY BENCHMARK
TBR	TO BE REMOVED
TC	TOP OF CURB
TD	TOP OF DITCH
TEL	TELEPHONE
TELE	TELEPHONE
TEMP	TEMPORARY OR TEMPERATURE
TESC	TEMP. EROSION AND SEDIMENT CONTROL
THD	THREAD
THK	THICK
TLM	TELEMETRY
TLT	TOILET
TO	TOP OF
TOC	TOP OF CONCRETE
TOS	TOP OF STEEL
TP	TANGENT POINT
TRANSV	TRANSVERSE
TRNSFMR	TRANSFORMER
TT	TRANSFER TOWER
TV	TELEVISION
TYP	TYPICAL
UE	UNDERGROUND ELECTRIC
UG	UNDERGROUND
UHMW-PE	ULTRA HIGH MOLECULAR WEIGHT POLYETHELYNE
UL	UNDERWRITERS LABORATORY
UON	UNLESS OTHERWISE NOTED
UTIL	UTILITY
UUL	UNKNOWN UNDERGROUND LINE
UV	ULTRAVIOLET
U/S	UNDERSIDE
V	VOLT, VENT OR VOLTMETER
VA	VOLT-AMPERES
VERT	VERTICAL
VIC	VICTAULIC
VLF	VERTICAL LINER FEET
VS	VOLTMETER SWITCH
VTR	VENT THRU ROOF
W	WATER, WEST, WIDE, WIRE OR WATT
W/	WITH
W/O	WITHOUT
WD	WOOD / WIDE
WN	WELD NECK
WP	WEATHERPROOF, WORKING PRESSURE, OR WORK POINT
WT	WEIGHT / WALL THICKNESS
WWF	WELDED WIRE FABRIC
&	AND
∠	ANGLE
*	ASTERISK
@	AT
℄	BASELINE
℄	CENTERLINE
°	DEGREES
ø	DIAMETER OR PHASE
'	MINUTES OR FEET
#	NUMBER OR POUNDS
%	PERCENT
℗	PROPERTY LINE OR PLATE
"	SECONDS OR INCH
□	SQUARE
(40)	SLIP LENGTH
GPx	GUIDE PILE NUMBER

ISSUED FOR BID
JANUARY 2020

GRAND STRAND WATER & SEWER AUTHORITY

Mark	Description	Date	Appr.
	ISSUED FOR BID	05/01/20	JJT

BUCKSPORT MARINE INDUSTRIAL PARK - PHASE 1

ABBREVIATIONS

Designed by: AC | Dwn by: BDF | Reviewed by: MEW | Submitted by: MOFFATT & NICHOL

Cad by: PRG

Date: JANUARY 2020 | M&N Project No. 7232-05 | Drawing code: | Drawing Scale: AS SHOWN | Plot scale: 1:1 (0 SHEET) | Rev: 0

LICENSED PROFESSIONAL ENGINEER — No.24067 — TIMOTHY S. REID — SOUTH CAROLINA

SEAL 5-1-2020

MOFFATT & NICHOL ENGINEERS No. 000363 — CERTIFICATE OF AUTHORIZATION — SOUTH CAROLINA

4700 FALLS OF THE NEUSE ROAD
SUITE 300
RALEIGH, NC 27609
919-781-4626

SC COA No. 363

moffatt & nichol

Sheet Reference No.

G-004

INDEX: 4 OF 113

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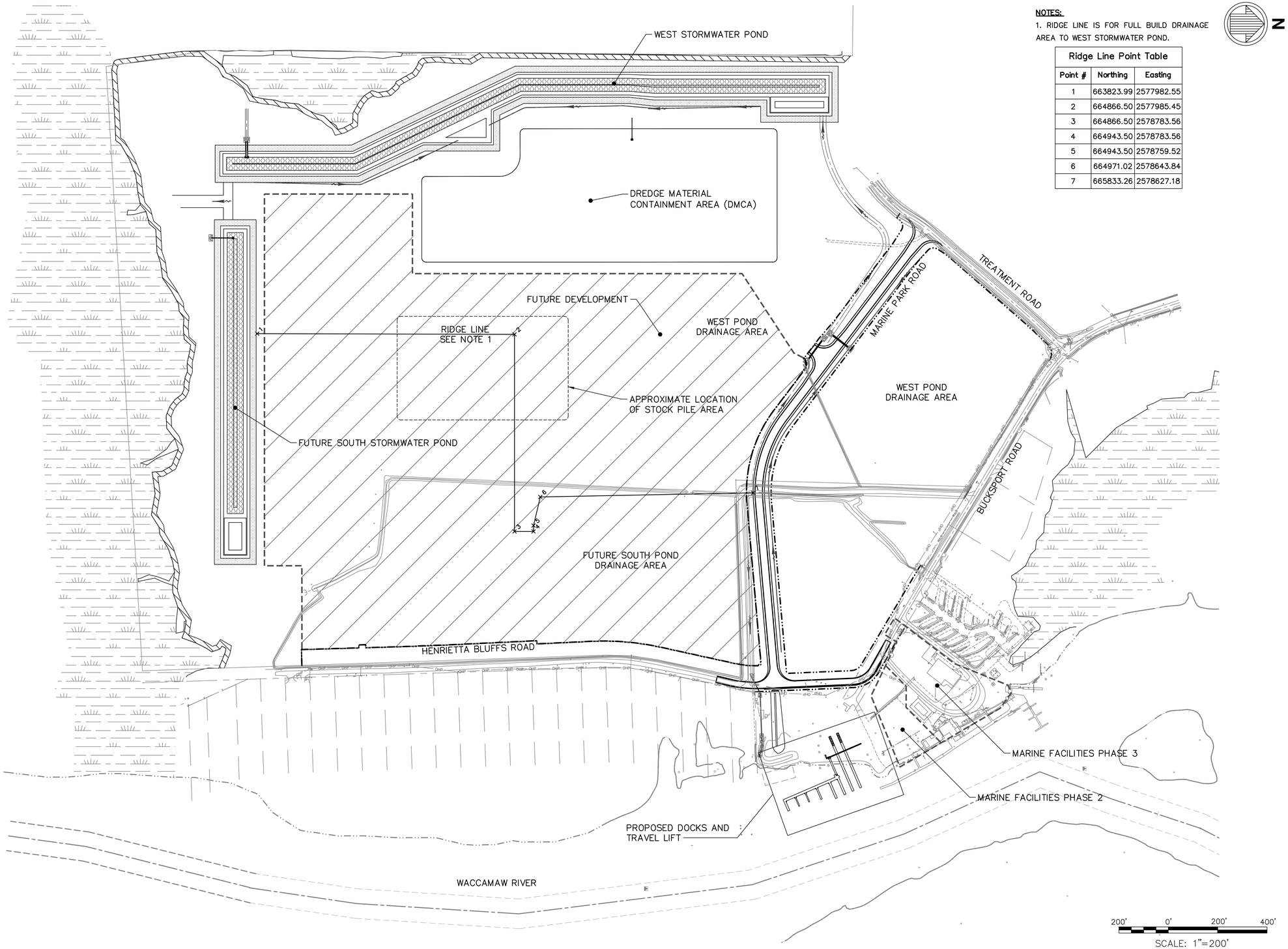
DRAWING SCALES SHOWN BASED ON 22"x34" DRAWING

NOTES:

1. RIDGE LINE IS FOR FULL BUILD DRAINAGE AREA TO WEST STORMWATER POND.

Ridge Line Point Table		
Point #	Northing	Easting
1	663823.99	2577982.55
2	664866.50	2577985.45
3	664866.50	2578783.56
4	664943.50	2578783.56
5	664943.50	2578759.52
6	664971.02	2578643.84
7	665833.26	2578627.18



200' 0' 200' 400'

SCALE: 1"=200'

ISSUED FOR BID
JANUARY 2020

DRAWING SCALES SHOWN BASED ON 22"x34" DRAWING

GRAND STRAND WATER & SEWER AUTHORITY

Mark	Description	Date	Appr.
	ISSUED FOR BID	05/01/20	JJT

BUCKSPORT MARINE INDUSTRIAL PARK - PHASE 1

SITE PLAN

Designed by: TRR	Dwn by: BDF	Reviewed by:	Submitted by: MOFFATT & NICHOL
Date: JANUARY 2020	Chd by: PRG	Drawing code:	Drawing Scale: AS SHOWN Plot scale: 1:1 (0 SHEET)
	M&N Project No. 7232-05		Rev.

LICENSED PROFESSIONAL ENGINEER
SOUTH CAROLINA
No.24067
TIMOTHY R. REED
5-1-2020
SEAL 5-1-2020

MOFFATT & NICHOL ENGINEERS No. 000363
SOUTH CAROLINA
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SC COA No. 363

moffatt & nichol

Sheet Reference No.

G-100

INDEX: 5 OF 113

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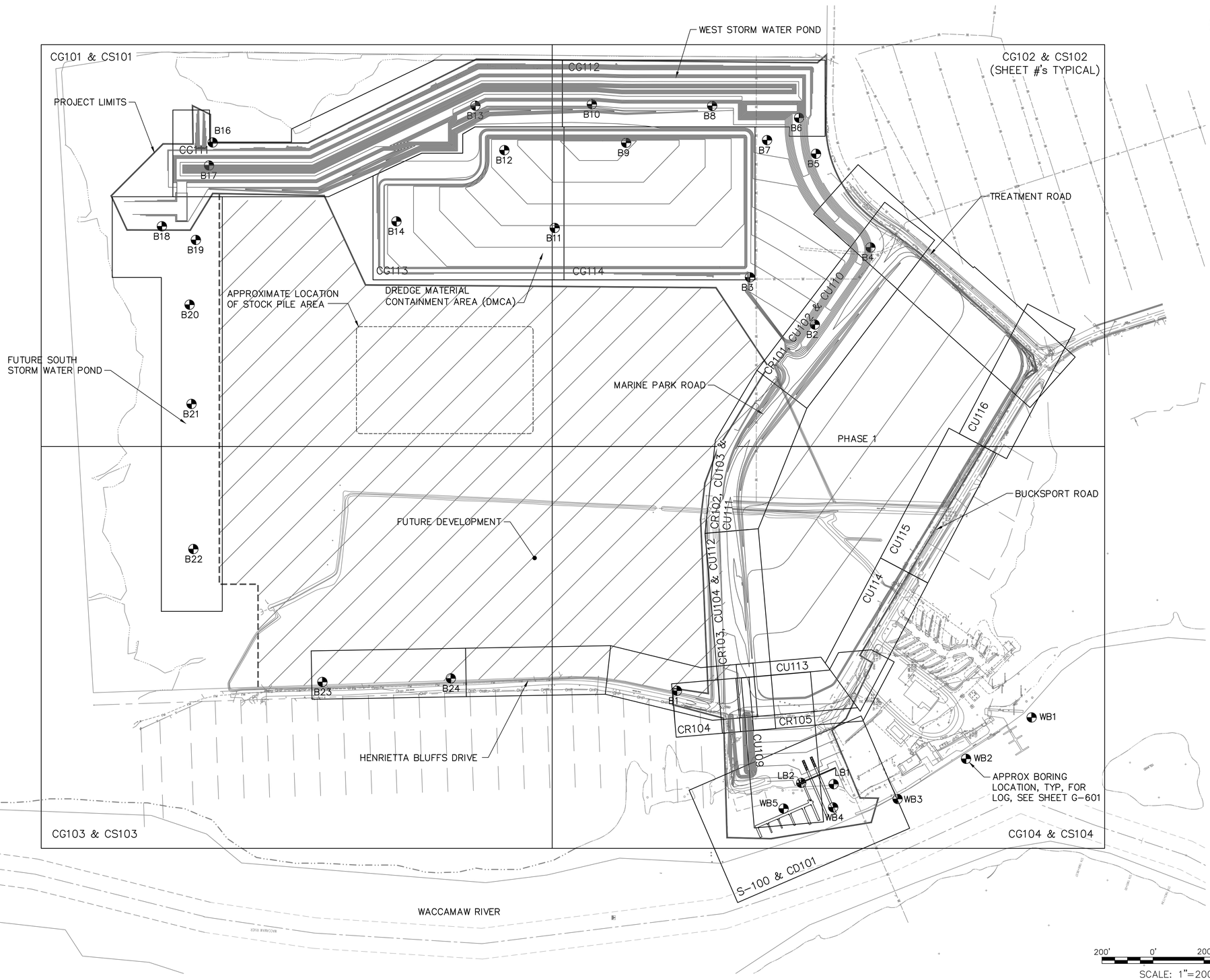

ISSUED FOR BID
JANUARY 2020

GRAND STRAND WATER & SEWER AUTHORITY

Mark	Description	Date	Appr.
	ISSUED FOR BID	05/01/20	JJT

BUCKSPORT MARINE INDUSTRIAL PARK - PHASE 1

GENERAL SITE, SHEET LAYOUT AND BORING PLAN

Designed by: TRR
Drawn by: BDF
Checked by: PRG
Reviewed by:
Submitted by: MOFFATT & NICHOL
Date: JANUARY 2020
M&N Project No. 7232-05
Drawing code:
Drawing Scale: AS SHOWN
Plot scale: 1:1 (D SHEET)
Rev. 0

SOUTH CAROLINA LICENSED PROFESSIONAL ENGINEER
No.24067
TIMOTHY R. REID
SEAL 5-1-2020

SOUTH CAROLINA CERTIFICATE OF AUTHORIZATION
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Sheet Reference No.
G-101
INDEX: 6 OF 113

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DRAWING SCALES SHOWN BASED ON 22"x34" DRAWING

TEST BORING RECORD

DEPTH (FT.)	DESCRIPTION	ELEVATION (FT.)	PENETRATION (BLOWS/FT.) 0 10 20 40 60 100	BLOWS PER SIX INCHES
0.0	Fill - Topsoil/Organic Sand	SM		2-5-8
1.0	Fill - Medium Dense Tan Clayey Silty Fine to Medium SAND	SC		
3.0	Fill - Loose Gray Black Clayey Fine to Medium SAND	CL		2-2-3
5.0	Fill - Soft Firm Tan Fine Sandy Silty CLAY	OL		1-0-1
6.0	Fill - Very Loose Black Brown Silty Clayey Fine to Medium SAND to Sandy Silty CLAY w/Wood (10% Organics by Weight)			1-0-1
14.0	Loose Gray Slightly Silty Fine to Medium SAND	SP		4-5-5
17.0	Very Loose Gray Tan Clayey Fine to Coarse SAND to Olive Gray Fine Sandy Silty CLAY	SC CL		2-2-3
20.5	Marl (Soft)	SC		
21.2	Marl (Hard - Cut 3-4" in 14 Minutes)	CL		
21.5	Loose Gray Olive Silty Clayey Fine SAND to Sandy CLAY			
22.5	Marl (Hard - Last 1" = 4 Minutes)			
23.2	Boring refusal at 23.2'			

Groundwater encountered at 4' at time of boring and at 3.5' at 24 hours.

JOB NUMBER 1-11-0506-EA
BORING NUMBER LB- 1
DATE 8-15-11

PAGE 1 OF 1

GeoTechnologies, Inc.
3200 Wellington Court, Suite 108
Raleigh, NC 27615

TEST BORING RECORD

DEPTH (FT.)	DESCRIPTION	ELEVATION (FT.)	PENETRATION (BLOWS/FT.) 0 10 20 40 60 100	BLOWS PER SIX INCHES
0.0	Fill - Topsoil	SC		3-4-4
0.3	Fill - Loose Tan Gray Silty Clayey Fine to Medium SAND to Sandy CLAY	CL		
4.0	Fill - Firm Brown & Tan Sandy Silty CLAY w/Few Organics	CL		1-4-3
6.0	Fill - Soft Black Gray Silty CLAY & Wood	OL		1-2-1
8.0	Possible Fill - Soft Black Gray Silty CLAY w/Lots of Wood (*Blow Counts Elevated Due to Wood)	OL		4-3-1*
12.0	Medium Dense Tan Medium SAND	SW		6-6-6
17.0	Loose Gray Olive Silty Clayey Fine to Medium SAND to Sandy CLAY w/Light Cementation	SC CL		5-50/3"
19.5	Marl (Cut 20" in 22 Minutes)			
21.2	Loose Gray Olive Silty Clayey Fine to Medium SAND to Sandy CLAY	SC CL		3-3-4
29.5	Marl (Cut 6" in 10 Minutes)	SC		4-50/3"
30.0	Loose Gray Olive Silty Clayey Fine to Medium SAND to Sandy CLAY	CL		
34.0	Marl (Cut 6" in 3 Minutes)			50/2"
34.5	Very Stiff Gray Fine Sandy Clayey SILT w/Thin Harder Lenses	ML		
40.5	Boring terminated at 40.5'			13-14-8

Groundwater encountered at 4' at time of boring and at 2.5' at 24 hours.

JOB NUMBER 1-11-0506-EA
BORING NUMBER LB- 2
DATE 8-15-11

PAGE 1 OF 1

GeoTechnologies, Inc.
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Raleigh, NC 27615

TEST BORING RECORD

DEPTH (FT.)	DESCRIPTION	ELEVATION (FT.)	PENETRATION (BLOWS/FT.) 0 10 20 40 60 100	BLOWS PER SIX INCHES
0.0	Water			
21.0	Very Soft Gray Black Organic Silty CLAY	OL		23-15-4*
24.0	Wood/Sand/Gravel (* Blow Counts Elevated Due to Wood)			3-3-10*
28.0	Stiff to Very Stiff Olive Gray Fine Sandy Clayey SILT	ML		4-4-5
35.0	Marl (Cut 14" in 3 Minutes)			5-6-11
36.2	Stiff Olive Gray Silty Fine Sandy CLAY to Clayey SAND	CL SC		4-4-5
42.1	Marl (Cut 15" in 6 Minutes)			50/0"
43.4	Stiff Gray Fine Sandy Silty CLAY w/Thin Harder Lenses	CL		
48.0	Marl (Cut 6" in 2 Minutes)			5-50/1"
48.5	Stiff Olive Gray Silty Fine Sandy CLAY	CH		
54.0	Boring terminated at 54'			4-5-7

JOB NUMBER 1-11-0506-EA
BORING NUMBER WB- 1
DATE 8-17-11

PAGE 1 OF 1

GeoTechnologies, Inc.
3200 Wellington Court, Suite 108
Raleigh, NC 27615

TEST BORING RECORD

DEPTH (FT.)	DESCRIPTION	ELEVATION (FT.)	PENETRATION (BLOWS/FT.) 0 10 20 40 60 100	BLOWS PER SIX INCHES
0.0	Water			
12.0	Very Soft Black Brown SILT	ML		WOR
16.0	Very Soft Black Slightly Fine Sandy Silty CLAY	CL		WOR-WOH
19.0	Wood and Sand			1-0-1
24.0	Loose Tan Medium SAND	SW		3-1-1
29.5	Marl (Cut 6" in 1 Minute)	CL		4-3-4
30.0	Very Stiff Olive Gray Slightly Fine Sandy CLAY w/Thin Harder Lenses			6-7-15
34.5	Marl (Cut 10" in 3 Minutes)	CL		
35.3	Very Stiff Olive Gray Slightly Fine Sandy CLAY w/Thin Harder Lenses			5-9-7
41.0	Marl (Cut 16" in 3 Minutes)	CL		50/1"
42.9	Very Stiff Olive Gray Slightly Fine Sandy Sandy Silty CLAY			
47.0	Marl			50/1"
47.1	Boring terminated at 47.1'			

JOB NUMBER 1-11-0506-EA
BORING NUMBER WB- 2
DATE 8-16-11

PAGE 1 OF 1

GeoTechnologies, Inc.
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Raleigh, NC 27615

TEST BORING RECORD

DEPTH (FT.)	DESCRIPTION	ELEVATION (FT.)	PENETRATION (BLOWS/FT.) 0 10 20 40 60 100	BLOWS PER SIX INCHES
0.0	Water			
16.0	Wood/Sand (*Blow Counts Elevated Due to Wood)			1-0-8*
22.0	Loose Tan Medium SAND	SW		2-0-4*
29.0	Medium Dense Gray Fine to Medium SAND	SP		2-4-4
34.5	Marl (Cut 8" in 4 Minutes)			2-3-6
35.2	Stiff Olive Gray Fine Sandy Silty CLAY w/Thin Harder Lenses	CL		9-14-14
41.7	Marl (Cut 6" in 4 Minutes)			6-4-5
42.2	Stiff Olive Gray Fine Sandy Silty CLAY w/Thin Harder Lenses	CH		6-50/1"
47.3	Marl (Cut 12" in 3 Minutes)			4-5-30/0"
48.3	Stiff Olive Gray Fine Sandy Silty CLAY	CH		
52.5	Boring terminated at 52.5'			4-6-6

JOB NUMBER 1-11-0506-EA
BORING NUMBER WB- 3
DATE 8-16-11

PAGE 1 OF 1

GeoTechnologies, Inc.
3200 Wellington Court, Suite 108
Raleigh, NC 27615

TEST BORING RECORD

DEPTH (FT.)	DESCRIPTION	ELEVATION (FT.)	PENETRATION (BLOWS/FT.) 0 10 20 40 60 100	BLOWS PER SIX INCHES
0.0	Water			
3.0	Very Soft Brown Silty Fine Sandy Clayey SILT w/Organics & Wood	ML OL		WOR
9.0	Loose Gray Tan Fine to Medium SAND w/Little Wood	SP		WOR-WOH
14.0	Medium Dense Tan Micaceous SAND w/Few Roots	SW		WOR-1-3
29.5	Stiff Olive Gray Fine Sandy Clayey SILT	ML		6-3-3
34.5	Marl (Cut 19" in 5 Minutes)			6-9-11
36.1	Loose Olive Gray Clayey Fine Sandy SILT	ML		3-6-9
41.7	Marl (Cut 18" in 5 Minutes)			6-7-3
43.2	Stiff Olive Gray Slightly Fine Sandy Silty CLAY w/Thin Harder Lenses	CH		3-5-6
48.0	Boring terminated at 48'			5-5-5
				50/0"
				5-6-6

JOB NUMBER 1-11-0506-EA
BORING NUMBER WB- 4
DATE 8-16-11

PAGE 1 OF 1

GeoTechnologies, Inc.
3200 Wellington Court, Suite 108
Raleigh, NC 27615

TEST BORING RECORD

DEPTH (FT.)	DESCRIPTION	ELEVATION (FT.)	PENETRATION (BLOWS/FT.) 17.00 10 20 40 60 100	BLOWS PER SIX INCHES
0.0	Topsoil/Vegetation			
1.0	Very Moist Firm to Stiff Brown Fine Sandy Silty CLAY	CL CH		1-2-3
6.0	Wet Loose Tan Slightly Silty Clayey Fine to Medium SAND	SC		3-5-6
10.0	Boring terminated at 10'			4-5-4
				4-4-3

Groundwater encountered at 6' at time of boring.

JOB NUMBER 1-11-0506-EA
BORING NUMBER WB- 5
DATE 8-17-11

PAGE 1 OF 1

GeoTechnologies, Inc.
3200 Wellington Court, Suite 108
Raleigh, NC 27615

NOTES:

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ISSUED FOR BID
JANUARY 2020

GRAND STRAND WATER & SEWER AUTHORITY

Mark	Description	Date	Appr.
	ISSUED FOR BID	05/01/20	JJT

BUCKSPORT MARINE INDUSTRIAL PARK - PHASE 1

BORING LOGS

SEAL

SOUTH CAROLINA CERTIFICATE OF AUTHORIZATION MOFFATT & NICHOL ENGINEERS No. 000363

4700 FALLS OF THE NEUSE ROAD
SUITE 300
RALEIGH, NC 27609
919-781-4626

SC COA No. 363

moffatt & nichol

Designed by:	TRR
Drawn by:	BDF
Checked by:	PRG
Reviewed by:	
Submitted by:	MOFFATT & NICHOL
Date:	JANUARY 2020
M&N Project No.	7232-05
Drawing code:	
Drawing Scale:	AS SHOWN
Plot scale: 1:1 (1 SHEET)	
Rev.	0

Sheet Reference No.

G-601

INDEX: 7 OF 113

File: C:\RA\7232-05\CADD_Active_SheetSet\7232305-G-601.dwg Plotted: 4/29/2020 10:39 AM by THIBODEAUX, JASON; Saved: 1/14/2020 10:48 AM by JTHIBODEAUX

DRAWING SCALES SHOWN BASED ON 22"x34" DRAWING

TEST BORING RECORD

DEPTH (FT.)	DESCRIPTION	ELEVATION (FT.)	PENETRATION (BLOWS/FT.) 10 20 40 60 100	BLOWS PER SIX INCHES
0.0	Topsoil/Vegetation	16.00		
1.0	Very Moist Stiff Gray Brown Fine Sandy Silty CLAY (CL/CH)			3-4-5
3.0	Wet Loose Red Gray Silty Clayey Fine to Medium SAND (SC/CL)		11	3-5-4
6.0	Wet Loose Tan Silty Clayey Fine to Medimm SAND (SC)			4-5-4
10.0	Boring terminated at 10'		6	3-4-4

Groundwater encountered at 6' at time of boring.

JOB NUMBER 1-18-0747-EA
BORING NUMBER B- 2
DATE 3-18-19

PAGE 1 OF 1

GeoTechnologies Inc.
3200 Wellington Court, Ste 108
Raleigh, NC 27615

TEST BORING RECORD

DEPTH (FT.)	DESCRIPTION	ELEVATION (FT.)	PENETRATION (BLOWS/FT.) 10 20 40 60 100	BLOWS PER SIX INCHES
0.0	Topsoil/Vegetation	15.00		
1.0	Moist Firm Red Brown Fine Sandy Silty CLAY (CH)			2-3-5
3.0	Wet Stiff Brown Fine Sandy Silty CLAY w/Organics (CH)		10	3-5-6
6.0	Wet Loose Gray Silty Clayey Fine SAND (SC/SM)			3-3-3
10.0	Boring terminated at 10'		5	2-4-5

Groundwater encountered at 6' at time of boring.

JOB NUMBER 1-18-0747-EA
BORING NUMBER B- 3
DATE 3-18-19

PAGE 1 OF 1

GeoTechnologies Inc.
3200 Wellington Court, Ste 108
Raleigh, NC 27615

TEST BORING RECORD

DEPTH (FT.)	DESCRIPTION	ELEVATION (FT.)	PENETRATION (BLOWS/FT.) 10 20 40 60 100	BLOWS PER SIX INCHES
0.0	Topsoil/Vegetation	16.00		
1.0	Very Moist Firm to Stiff Gray Brown Fine to Medium Sandy Silty CLAY (CL)			3-4-5
8.0	Wet Loose Black Gray Clayey Fine to Medium SAND w/Organics (SC)		11	3-3-4
12.0				2-3-3
			6	2-3-3

Groundwater encountered at 9' at time of boring.

JOB NUMBER 1-18-0747-EA
BORING NUMBER B- 4
DATE 3-18-19

PAGE 1 OF 2

GeoTechnologies Inc.
3200 Wellington Court, Ste 108
Raleigh, NC 27615

TEST BORING RECORD

DEPTH (FT.)	DESCRIPTION	ELEVATION (FT.)	PENETRATION (BLOWS/FT.) 10 20 40 60 100	BLOWS PER SIX INCHES
	Wet Loose Gray Silty Clayey Fine SAND (SC)	0		
15.0	Boring terminated at 15'		1	3-4-4
			-4	

JOB NUMBER 1-18-0747-EA
BORING NUMBER B- 4
DATE 3-18-19

PAGE 2 OF 2

GeoTechnologies Inc.
3200 Wellington Court, Ste 108
Raleigh, NC 27615

TEST BORING RECORD

DEPTH (FT.)	DESCRIPTION	ELEVATION (FT.)	PENETRATION (BLOWS/FT.) 10 20 40 60 100	BLOWS PER SIX INCHES
0.0	Topsoil/Vegetation	14.00		
1.0	Moist Firm to Stiff Red Fine to Medium Sandy Silty CLAY (CL)			3-3-4
6.0	Wet Loose Gray Silty Fine SAND (SM/SP)		9	3-5-4
8.0	Moist Medium Dense Tan Silty Clayey Fine to Medium SAND (SC)			3-4-4
10.0	Boring terminated at 10'		4	3-6-7

Groundwater encountered at 6' at time of boring.

JOB NUMBER 1-18-0747-EA
BORING NUMBER B- 5
DATE 3-18-19

PAGE 1 OF 1

GeoTechnologies Inc.
3200 Wellington Court, Ste 108
Raleigh, NC 27615

TEST BORING RECORD

DEPTH (FT.)	DESCRIPTION	ELEVATION (FT.)	PENETRATION (BLOWS/FT.) 10 20 40 60 100	BLOWS PER SIX INCHES
0.0	Topsoil/Vegetation	9.00		
1.0	Wet Firm Tan Brown Fine to Medium Sandy Silty CLAY (CL)			1-2-3
6.0	Wet Very Loose Black Silty Clayey Fine to Medium SAND (SC)		4	3-3-5
8.0	Wet Very Loose Orange Brown Silty Clayey Fine to Medium SAND (SC)			2-2-1
10.0	Boring terminated at 10'		-1	1-1-1

Groundwater encountered at 6' at time of boring.

JOB NUMBER 1-18-0747-EA
BORING NUMBER B- 6
DATE 3-18-19

PAGE 1 OF 1

GeoTechnologies Inc.
3200 Wellington Court, Ste 108
Raleigh, NC 27615

TEST BORING RECORD

DEPTH (FT.)	DESCRIPTION	ELEVATION (FT.)	PENETRATION (BLOWS/FT.) 10 20 40 60 100	BLOWS PER SIX INCHES
0.0	Topsoil/Vegetation	13.00		
1.0	Wet Very Loose to Loose Tan Brown Silty Clayey Fine to Medium SAND (SC)			2-3-4
6.0	Wet Very Loose Tan Silty Fine to Medium SAND (SM/SP)		8	3-2-3
10.0	Boring terminated at 10'			2-2-1
			3	1-1-1

Groundwater encountered at 5' at time of boring.

JOB NUMBER 1-18-0747-EA
BORING NUMBER B- 7
DATE 3-18-19

PAGE 1 OF 1

GeoTechnologies Inc.
3200 Wellington Court, Ste 108
Raleigh, NC 27615

TEST BORING RECORD

DEPTH (FT.)	DESCRIPTION	ELEVATION (FT.)	PENETRATION (BLOWS/FT.) 10 20 40 60 100	BLOWS PER SIX INCHES
0.0	Topsoil/Vegetation	8.00		
1.0	Wet Soft Gray Silty CLAY (CL/CH)			2-2-1
3.0	Wet Stiff Gray Fine to Medium Sandy Silty CLAY (CL)		3	3-4-5
6.0	Wet Very Loose Orange Brown Silty Clayey Fine to Medium SAND (SC)			1-1-1
8.0	Wet Very Loose Tan Gray Slightly Silty Fine to Medium SAND (SP)		-2	1-1-1
10.0	Boring terminated at 10'			

Groundwater encountered at 5' at time of boring.

JOB NUMBER 1-18-0747-EA
BORING NUMBER B- 8
DATE 3-18-19

PAGE 1 OF 1

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3200 Wellington Court, Ste 108
Raleigh, NC 27615

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ISSUED FOR BID
JANUARY 2020

GRAND STRAND WATER & SEWER AUTHORITY

Mark	Description	Date	Appr.
	ISSUED FOR BID	05/01/20	JJT

BUCKSPORT MARINE INDUSTRIAL PARK - PHASE 1

BORING LOGS

Rev.	Date: JANUARY 2020	M&N Project No. 7232-05	Drawing code:	Drawing Scale: AS SHOWN Plot scale: 1:1 (D SHEET)
	Designed by: TRR	Dwn by: BDF	Ckd by: PRG	Reviewed by:	Submitted by: MOFFATT & NICHOL

SEAL
SOUTH CAROLINA
MOFFATT & NICHOL ENGINEERS No. 000363
CERTIFICATE OF AUTHORIZATION

4700 FALLS OF THE NEUSE ROAD
SUITE 300
RALEIGH, NC 27609
919-781-4626
SC COA No. 363
moffatt & nichol

Sheet Reference No.
G-602
INDEX: 8 OF 113

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DRAWING SCALES SHOWN BASED ON 22"x34" DRAWING

TEST BORING RECORD

DEPTH (FT.)	DESCRIPTION	ELEVATION (FT.)	PENETRATION (BLOWS/FT.)	BLOWS PER SIX INCHES
0.0	Topsoil/Vegetation	9.00		
1.0	Wet Firm Brown Fine to Medium Sandy Silty CLAY (CL)			3-4-3
3.0	Very Moist Loose Tan Slightly Clayey Silty Fine to Medium SAND (SM)			4-3-4
6.0	Very Moist Very Loose to Loose Gray Brown Silty Clayey Fine to Medium SAND (SC)			1-3-4
12.0	Wet Soft Gray Fine to Medium Sandy Silty CLAY (CL)			2-3-2
15.0	Boring terminated at 15'			2-1-2

Groundwater encountered at 5' at time of boring.

JOB NUMBER 1-18-0747-EA
BORING NUMBER B- 9
DATE 3-18-19

PAGE 1 OF 1

GeoTechnologies, Inc.
3200 Wellington Court, Ste 108
Raleigh, NC 27615

TEST BORING RECORD

DEPTH (FT.)	DESCRIPTION	ELEVATION (FT.)	PENETRATION (BLOWS/FT.)	BLOWS PER SIX INCHES
0.0	Topsoil/Vegetation	7.00		
1.0	Wet Soft Gray Brown Fine Sandy Silty CLAY (CL)			1-1-2
3.0	Wet Loose Gray Slightly Silty Fine to Medium SAND (SP)			3-1-6
6.0	Wet Very Loose Gray Silty Clayey Fine to Medium SAND (SC/SM)			2-3-2
10.0	Boring terminated at 10'			3-5-5

Groundwater encountered at 4' after 24 hours.

JOB NUMBER 1-18-0747-EA
BORING NUMBER B-10
DATE 3-18-19

PAGE 1 OF 1

GeoTechnologies, Inc.
3200 Wellington Court, Ste 108
Raleigh, NC 27615

TEST BORING RECORD

DEPTH (FT.)	DESCRIPTION	ELEVATION (FT.)	PENETRATION (BLOWS/FT.)	BLOWS PER SIX INCHES
0.0	Topsoil/Vegetation	16.00		
1.0	Wet Firm Orange Brown Silty CLAY (CL/CH)			2-3-3
3.0	Very Moist Loose Gray Silty Clayey Fine to Medium SAND (SC)			4-5-5
6.0	Wet Very Loose Tan Silty Clayey Fine to Medium SAND (SC/SM)			2-2-2
9.0	Wet Very Loose Gray Silty Clayey Fine to Medium SAND (SC)			2-3-1
10.0	Boring terminated at 10'			

Groundwater encountered at 7' after 24 hours.

JOB NUMBER 1-18-0747-EA
BORING NUMBER B-11
DATE 3-18-19

PAGE 1 OF 1

GeoTechnologies, Inc.
3200 Wellington Court, Ste 108
Raleigh, NC 27615

TEST BORING RECORD

DEPTH (FT.)	DESCRIPTION	ELEVATION (FT.)	PENETRATION (BLOWS/FT.)	BLOWS PER SIX INCHES
0.0	Topsoil/Vegetation	11.00		
1.0	Very Moist Firm Brown Fine Sandy Silty CLAY (CL)			2-3-4
3.0	Very Moist Medium Dense Tan Slightly Clayey Silty Fine to Medium SAND (SM)			4-5-7
6.0	Wet Very Loose Gray Silty Clayey Fine SAND (SC/SM)			1-1-1
8.0	Wet Very Soft Gray Fine Sandy Silty CLAY (CL)			1-1-1
15.0	Boring terminated at 15'			1-1-1

Groundwater encountered at 8' at time of boring.

JOB NUMBER 1-18-0747-EA
BORING NUMBER B-12
DATE 3-18-19

PAGE 1 OF 1

GeoTechnologies, Inc.
3200 Wellington Court, Ste 108
Raleigh, NC 27615

TEST BORING RECORD

DEPTH (FT.)	DESCRIPTION	ELEVATION (FT.)	PENETRATION (BLOWS/FT.)	BLOWS PER SIX INCHES
0.0	Topsoil/Vegetation	9.00		
1.0	Moist Firm Red Silty CLAY (CL/CH)			3-4-3
3.0	Very Moist Stiff Tan Silty CLAY (CH)			3-5-6
6.0	Wet Very Loose Gray Silty Fine SAND (SM)			1-1-1
8.0	Wet Very Soft Gray Silty CLAY (CL)			1-1-1
10.0	Boring terminated at 10'			

Groundwater encountered at 8' at time of boring and at 5' after 24 hours.

JOB NUMBER 1-18-0747-EA
BORING NUMBER B-13
DATE 3-18-19

PAGE 1 OF 1

GeoTechnologies, Inc.
3200 Wellington Court, Ste 108
Raleigh, NC 27615

TEST BORING RECORD

DEPTH (FT.)	DESCRIPTION	ELEVATION (FT.)	PENETRATION (BLOWS/FT.)	BLOWS PER SIX INCHES
0.0	Topsoil/Vegetation	14.00		
1.0	Very Moist Firm Fine Sandy Silty CLAY (CL)			2-2-3
3.0	Very Moist Very Loose to Loose Tan Silty Clayey Fine SAND (SC)			5-4-6
8.0	Wet Loose Tan Silty Fine SAND (SM)			1-2-3
10.0	Boring terminated at 10'			2-5-4

Groundwater encountered at 7' at time of boring.

JOB NUMBER 1-18-0747-EA
BORING NUMBER B-14
DATE 3-18-19

PAGE 1 OF 1

GeoTechnologies, Inc.
3200 Wellington Court, Ste 108
Raleigh, NC 27615

TEST BORING RECORD

DEPTH (FT.)	DESCRIPTION	ELEVATION (FT.)	PENETRATION (BLOWS/FT.)	BLOWS PER SIX INCHES
0.0	Topsoil/Vegetation	12.00		
1.0	Very Moist Firm Orange Slightly Fine Sandy Silty CLAY (CH)			2-4-4
3.0	Firm Red Gray Clayey SILT (ML/CL)			3-3-3
6.0	Wet Very Loose Gray Slightly Micaceous Silty Fine SAND (SM)			2-2-2
8.0	Wet Very Loose Gray Silty Clayey Fine SAND (SC)			1-1-1
10.0	Boring terminated at 10'			

Groundwater encountered at 8' at time of boring and at 6' after 24 hours.

JOB NUMBER 1-18-0747-EA
BORING NUMBER B-15
DATE 3-18-19

PAGE 1 OF 1

GeoTechnologies, Inc.
3200 Wellington Court, Ste 108
Raleigh, NC 27615

TEST BORING RECORD

DEPTH (FT.)	DESCRIPTION	ELEVATION (FT.)	PENETRATION (BLOWS/FT.)	BLOWS PER SIX INCHES
0.0	Topsoil/Vegetation	12.00		
1.0	Wet Soft Brown Slightly Fine Sandy Silty CLAY (CL)			2-1-2
3.0	Very Moist Firm Orange Silty CLAY (CL)			3-2-3
6.0	Wet Firm Gray Slightly Fine Sandy Silty CLAY (CL)			1-4-2
8.0	Wet Very Soft to Soft Gray Silty CLAY (CL)			2-2-2
15.0	Boring terminated at 15'			1-1-1

Groundwater encountered at 10' at time of boring and at 6' after 24 hours.

JOB NUMBER 1-18-0747-EA
BORING NUMBER B-16
DATE 3-18-19

PAGE 1 OF 1

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Raleigh, NC 27615

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ISSUED FOR BID
JANUARY 2020

DRAWING SCALES SHOWN BASED ON 22"x34" DRAWING

GRAND STRAND WATER & SEWER AUTHORITY

Mark	Description	Date	Appr.
	ISSUED FOR BID	05/01/20	JJT

BUCKSPORT MARINE INDUSTRIAL PARK - PHASE 1

BORING LOGS

Designed by: TRR	Dwn by: BDF	Ckd by: PRG	Reviewed by:
Date: JANUARY 2020	M&N Project No. 7232-05	Drawing code:	
Submitted by: MOFFATT & NICHOL	Drawing Scale: AS SHOWN Plot scale: 1:1 (D SHEET)		

SEAL

SOUTH CAROLINA
MOFFATT & NICHOL ENGINEERS No. 000363
CERTIFICATE OF AUTHORIZATION

4700 FALLS OF THE NEUSE ROAD
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SC COA No. 363

moffatt & nichol

Sheet Reference No.
G-603
INDEX: 9 OF 113

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TEST BORING RECORD

DEPTH (FT.)	DESCRIPTION	ELEVATION (FT.)	PENETRATION (BLOWS/FT.)	BLOWS PER SIX INCHES
0.0	Topsoil/Vegetation	13.0		
1.0	Stiff Orange Fine Sandy Silty CLAY (CH)			4-5-6
3.0	Very Moist Stiff Orange Clayey SILT (ML/CL)		8	4-4-5
6.0	Wet Very Loose Orange Silty Clayey Fine SAND (SC)			2-2-2
8.0	Wet Very Loose Gray Silty Clayey Fine SAND (SC)			1-1-1
10.0	Boring terminated at 10'		3	

Groundwater encountered at 6' at time of boring.

JOB NUMBER 1-18-0747-EA
BORING NUMBER B-17
DATE 3-18-19

PAGE 1 OF 1

GeoTechnologies, Inc.
3200 Wellington Court, Ste 108
Raleigh, NC 27615

TEST BORING RECORD

DEPTH (FT.)	DESCRIPTION	ELEVATION (FT.)	PENETRATION (BLOWS/FT.)	BLOWS PER SIX INCHES
0.0	Topsoil/Vegetation	13.0		
1.0	Stiff Orange Brown Slightly Fine Sandy Silty CLAY (CL)			2-4-5
3.0	Loose Orange Silty Clayey Fine to Medium SAND (SC)		8	2-5-5
6.0	Wet Loose Tan Slightly Silty Fine SAND (SP/SM)			3-4-3
8.0	Wet Soft Gray Fine Sandy Silty CLAY (CL)		3	2-2-2
12.0	Wet Very Loose Tan Silty Clayey Fine SAND (SC/SM)		-2	2-1-2
15.0	Boring terminated at 15'			

Groundwater encountered at 10' at time of boring and at 7' after 24 hours.

JOB NUMBER 1-18-0747-EA
BORING NUMBER B-18
DATE 3-18-19

PAGE 1 OF 1

GeoTechnologies, Inc.
3200 Wellington Court, Ste 108
Raleigh, NC 27615

TEST BORING RECORD

DEPTH (FT.)	DESCRIPTION	ELEVATION (FT.)	PENETRATION (BLOWS/FT.)	BLOWS PER SIX INCHES
0.0	Topsoil/Vegetation	12.0		
1.0	Moist Very Loose Gray Silty Fine SAND (SM)			2-2-2
3.0	Very Moist Firm to Stiff Red Brown Fine to Medium Sandy Silty CLAY (CL)		7	2-4-5
9.0	Wet Very Loose Orange Silty Fine SAND (SM)			2-4-4
12.0	Wet Very Soft Gray Fine Sandy Silty CLAY (CL)		2	5-2-2
15.0	Boring terminated at 15'		-3	2-1-1

Groundwater encountered at 10' at time of boring.

JOB NUMBER 1-18-0747-EA
BORING NUMBER B-19
DATE 3-18-19

PAGE 1 OF 1

GeoTechnologies, Inc.
3200 Wellington Court, Ste 108
Raleigh, NC 27615

TEST BORING RECORD

DEPTH (FT.)	DESCRIPTION	ELEVATION (FT.)	PENETRATION (BLOWS/FT.)	BLOWS PER SIX INCHES
0.0	Topsoil/Vegetation	17.0		
1.0	Very Moist Firm Brown Fine Sandy Silty CLAY (CL)			2-2-3
3.0	Very Moist Very Loose Gray Silty Clayey Fine to Medium SAND (SC)		12	2-2-3
6.0	Wet Stiff Brown Gray Fine Sandy Silty CLAY (CL)			2-5-6
8.0	Very Moist Medium Dense Tan Gray Clayey Silty Fine to Medium SAND (SM)		7	5-7-8
14.0	Wet Loose to Medium Dense Tan Slightly Silty Fine to Medium SAND (SM/SP)		2	5-7-7
20.0	Boring terminated at 20'		-3	3-4-3

Groundwater encountered at 11' at time of boring and at 8' after 24 hours.

JOB NUMBER 1-18-0747-EA
BORING NUMBER B-20
DATE 3-18-19

PAGE 1 OF 1

GeoTechnologies, Inc.
3200 Wellington Court, Ste 108
Raleigh, NC 27615

TEST BORING RECORD

DEPTH (FT.)	DESCRIPTION	ELEVATION (FT.)	PENETRATION (BLOWS/FT.)	BLOWS PER SIX INCHES
0.0	Topsoil/Vegetation	18.0		
1.0	Moist Firm Orange Brown Fine to Medium Sandy Silty CLAY (CL)			3-2-5
3.0	Very Moist Loose to Medium Dense Tan Silty Fine to Medium SAND (SM)		13	6-4-5
8.0	Wet Medium Dense Tan Silty Clayey Fine to Medium SAND (SC)			3-6-5
12.0	Wet Very Loose Tan Silty Fine SAND (SM/SP)		8	5-6-6
16.0	Wet Very Loose Tan Orange Silty Clayey Fine SAND (SC)		3	2-2-2
20.0	Boring terminated at 20'		-2	2-2-3

Groundwater encountered at 9' at time of boring and at 9' after 24 hours.

JOB NUMBER 1-18-0747-EA
BORING NUMBER B-21
DATE 3-18-19

PAGE 1 OF 1

GeoTechnologies, Inc.
3200 Wellington Court, Ste 108
Raleigh, NC 27615

TEST BORING RECORD

DEPTH (FT.)	DESCRIPTION	ELEVATION (FT.)	PENETRATION (BLOWS/FT.)	BLOWS PER SIX INCHES
0.0	Topsoil/Vegetation	15.0		
1.0	Moist Firm Red Brown Fine to Medium Sandy Silty CLAY (CL)			3-3-4
3.0	Very Moist Loose Tan Silty Clayey Fine to Medium Sandy Silty CLAY (SC)		10	2-4-3
6.0	Stiff Brown Red Fine to Medium Sandy Silty CLAY (CL)			5-6-5
8.0	Wet Very Loose to Medium Dense Tan Slightly Silty Fine SAND (SM/SP)		5	3-5-6
16.0	Wet Soft Black Fine Sandy Silty CLAY (CL)		0	1-2-1
20.0	Boring terminated at 20'		-5	2-2-2

Groundwater encountered at 9' at time of boring.

JOB NUMBER 1-18-0747-EA
BORING NUMBER B-22
DATE 3-18-19

PAGE 1 OF 1

GeoTechnologies, Inc.
3200 Wellington Court, Ste 108
Raleigh, NC 27615

TEST BORING RECORD

DEPTH (FT.)	DESCRIPTION	ELEVATION (FT.)	PENETRATION (BLOWS/FT.)	BLOWS PER SIX INCHES
0.0	Topsoil/Vegetation	16.0		
1.0	Firm Brown Fine Sandy Silty CLAY (CL/CH)			2-3-4
3.0	Wet Firm Brown Silty Clayey Fine to Medium SAND (SC)		11	3-3-5
6.0	Wet Loose Tan Brown Silty Clayey Fine to Medium SAND (SC/SM)			3-5-5
10.0	Boring terminated at 10'		6	4-3-4

Groundwater encountered at 6' at time of boring.

JOB NUMBER 1-18-0747-EA
BORING NUMBER B-23
DATE 3-18-19

PAGE 1 OF 1

GeoTechnologies, Inc.
3200 Wellington Court, Ste 108
Raleigh, NC 27615

TEST BORING RECORD

DEPTH (FT.)	DESCRIPTION	ELEVATION (FT.)	PENETRATION (BLOWS/FT.)	BLOWS PER SIX INCHES
0.0	Topsoil/Vegetation	17.0		
1.0	Firm Red Brown Fine Sandy Silty CLAY (CL)			2-3-3
3.0	Moist Loose to Medium Dense Tan Silty Clayey Fine SAND (SC)		12	4-5-6
8.0	Wet Loose Tan Silty Fine SAND (SM)			4-5-4
10.0	Boring terminated at 10'		7	3-3-3

Groundwater encountered at 9' after 24 hours.

JOB NUMBER 1-18-0747-EA
BORING NUMBER B-24
DATE 3-18-19

PAGE 1 OF 1

GeoTechnologies, Inc.
3200 Wellington Court, Ste 108
Raleigh, NC 27615

NOTES:
1. SOIL BORING LOGS ARE PROVIDED FOR INFORMATIONAL PURPOSES ONLY. FOR ADDITIONAL INFORMATION, SEE GEOTECHNICAL REPORT.
2. SOIL BORINGS REPRESENT SUBSURFACE INFORMATION ONLY AT THE LOCATION OF THE BORING AND IS NOT INTENDED TO BE CONSIDERED TYPICAL BEYOND THE LIMITS OF THE BORING. THE CONTRACTOR SHOULD ANTICIPATE VARIABILITY IN THE SUBSURFACE CONDITIONS AND ALLOW FOR VARIATION IN PREPARATION OF THE BID.

ISSUED FOR BID
JANUARY 2020

GRAND STRAND WATER & SEWER AUTHORITY

Mark	Description	Date	Appr.
	ISSUED FOR BID	01/01/20	AJT

BUCKSPORT MARINE INDUSTRIAL PARK - PHASE 1

BORING LOGS

Designed by: TRR
Drawn by: BDF
Ckd by: PRG
Reviewed by:
Submitted by: MOFFATT & NICHOL
Date: JANUARY 2020
M&N Project No. 7232-05
Drawing code:
Drawing Scale: AS SHOWN
Plot scale: 1:1 (D SHEET)

SEAL

SOUTH CAROLINA CERTIFICATE OF AUTHORIZATION
MOFFATT & NICHOL ENGINEERS No. 000363

4700 FALLS OF THE NEUSE ROAD
SUITE 300
RALEIGH, NC 27609
919-781-4626
SC COA No. 363
moffatt & nichol

Sheet Reference No.
G-604
INDEX: 10 OF 113

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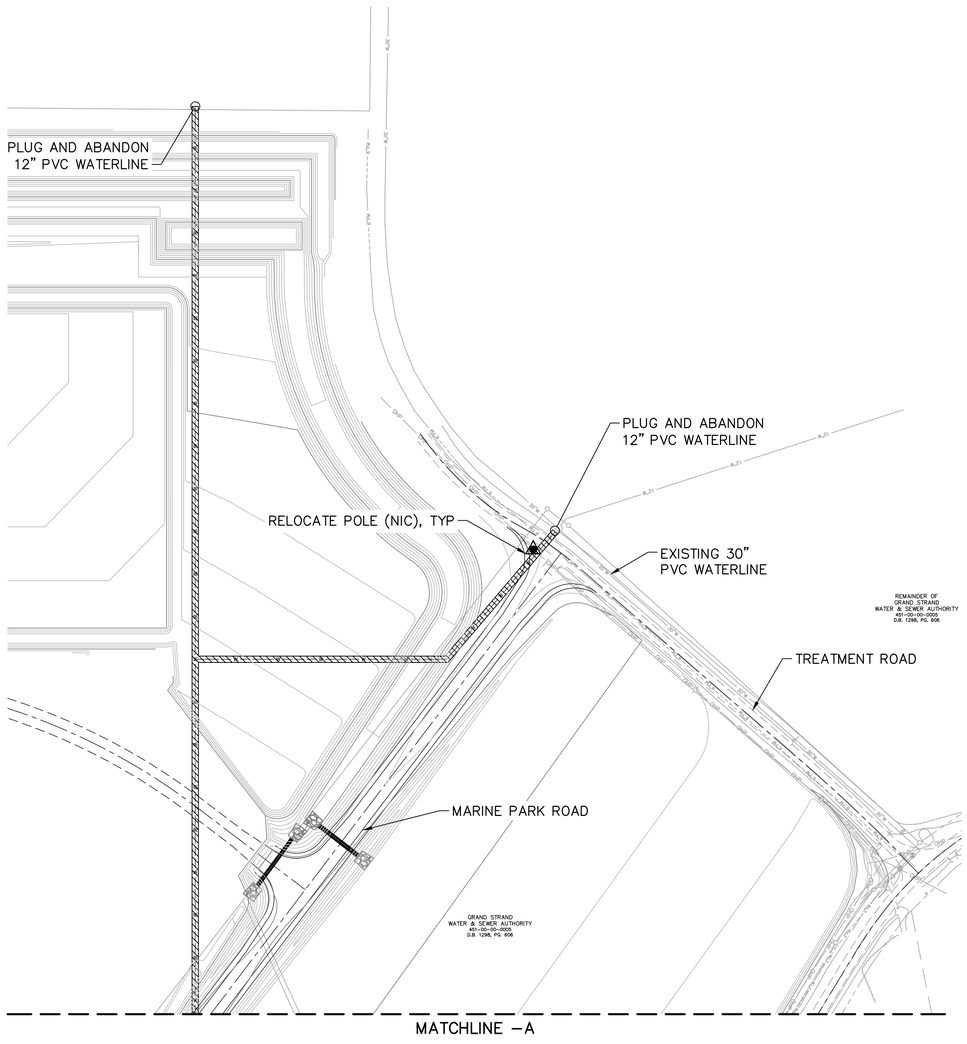
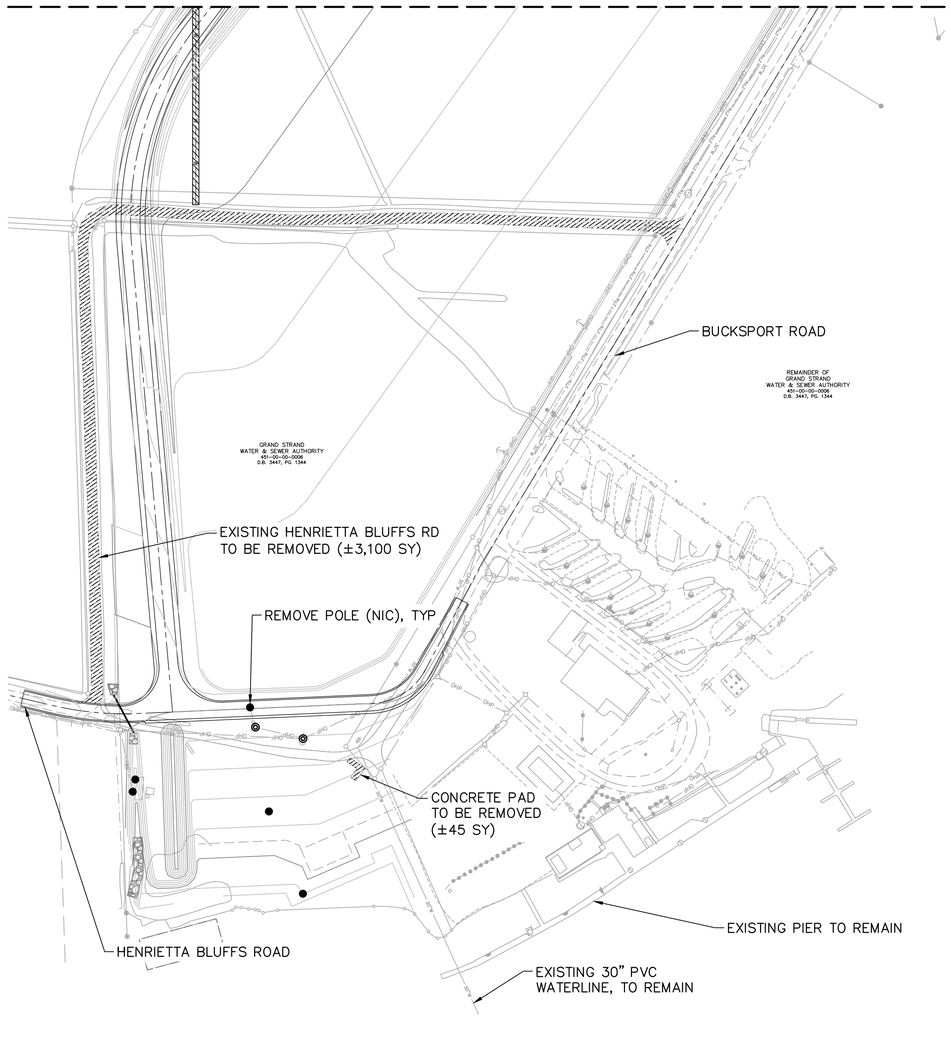
DRAWING SCALES SHOWN BASED ON 22"x34" DRAWING

NOTES:

1. EXISTING WATERLINE SHOWN TO BE ABANDONED SHALL BE PLUGGED WHERE EXPOSED BY SITE EXCAVATION.
2. ALL REMOVAL AND RELOCATION OF POWER POLES TO BE DONE BY OTHERS. NOT IN CONTRACT (NIC).
3. ◎ SANTEE COOPER IS RESPONSIBLE
   ● CONTRACTOR IS RESPONSIBLE
4. ACCESS TO THE EXISTING HENRIETTA BLUFFS ROAD SHALL BE MAINTAINED DURING CONSTRUCTION. THE ALIGNMENT SHALL REMAIN UNTIL SUCH TIME THAT A PLAT HAS BEEN RECORDED CREATING THE MARINE PARK ROAD RIGHT-OF-WAY.





120' 0' 120' 240'

SCALE: 1"=120'

ISSUED FOR BID
JANUARY 2020

GRAND STRAND WATER & SEWER AUTHORITY

Mark	Description	Date	Appr.
	ISSUED FOR BID	05/01/20	JJT

BUCKSPORT MARINE INDUSTRIAL PARK - PHASE 1

DEMOLITION PLAN

Designed by: TRR	Rev: 0
Dwn by: JT	Date: JANUARY 2020
Cad by: TRR	M&N Project No. 7232-05
Reviewed by:	Drawing code:
Submitted by: MOFFATT & NICHOL	Drawing Scale: AS SHOWN Plot scale: 1:1 (0 SHEET)

LICENSED PROFESSIONAL ENGINEER SOUTH CAROLINA No.24067 TIMOTHY R. REED

SEAL 5-1-2020

CERTIFICATE OF AUTHORIZATION SOUTH CAROLINA MOFFATT & NICHOL ENGINEERS No. 000363

4700 FALLS OF THE NEUSE ROAD
SUITE 300
RALEIGH, NC 27609
919-781-4626

SC COA No. 363

moffatt & nichol

Sheet Reference No.

V-101

INDEX: 11 OF 113

DRAWING SCALES SHOWN BASED ON 22"x34" DRAWING

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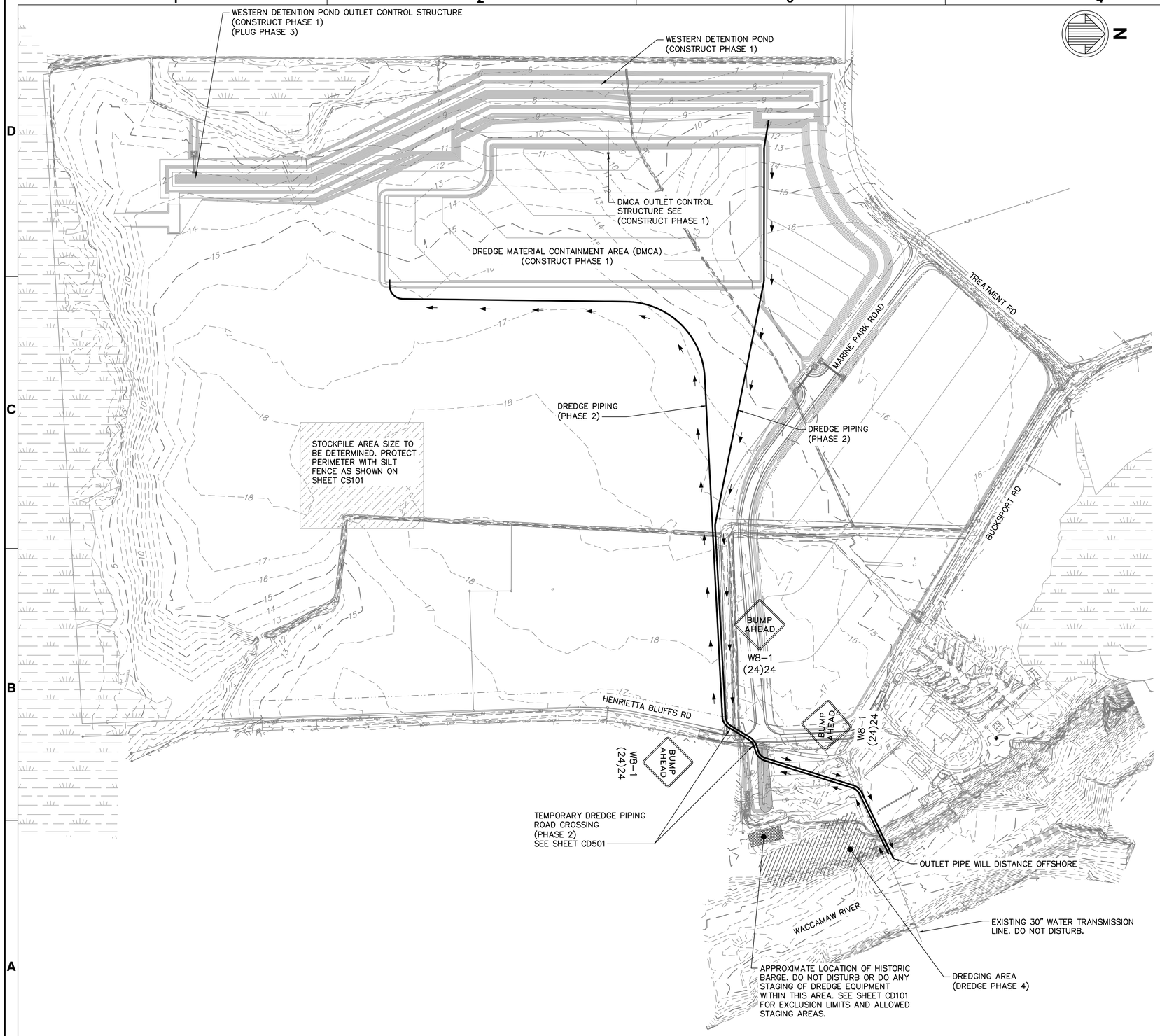

NOTES:

PHASE 1: CONSTRUCT THE WEST DETENTION POND AND OUTLET STRUCTURE, DREDGE MATERIAL CONTAINMENT AREA (DMCA) AND OUTLET CONTROL STRUCTURE, AND ALL SHEETPILE BULKHEAD AND TIE TOGETHER.

PHASE 2: INSTALL DREDGE PIPING FROM THE SHORE TO DMCA AND OUTLET FORCEMAIN FOR THE WEST DETENTION POND BACK TO THE RIVER (OUTLET TO EXTEND INTO THE RIVER TO PREVENT EROSION OF THE SHORELINE). INSTALL PORTABLE PUMP FOR THE FORCEMAIN. TEST THE FORCEMAIN PUMPING SYSTEM. INSTALL TEMPORARY ROAD CLOSURE FROM PARKING AREA TO HENRIETTA BLUFFS RD. INSTALL DREDGE PIPING ROAD CROSSING ON HENRIETTA BLUFFS RD FOR DISCHARGE AND RETURN PIPING.

PHASE 3: PLUG THE WEST DETENTION POND OUTLET.

PHASE 4: CONTRACTOR SHALL DREDGE THE MARINA AND TRAVEL LIFT PIER AREAS. AS SOON AS THE FLOW FROM THE DMCA STARTS TO ENTER THE WEST DETENTION POND, THE CONTRACTOR SHALL MONITOR THE DETENTION POND WATER ELEVATION AND KEEP THE WATER LEVEL BETWEEN 1 TO 2 FEET ABOVE NORMAL POOL – THE PUMPS MAY BE ENGAGED AND DISENGAGED AS REQUIRED. THE CONTRACTOR SHALL MEASURE THE APPROXIMATE FLOW OUT OF THE DMCA DURING THE DREDGING OPERATION.
ONCE ALL DREDGING IN COMPLETE AND THE FLOW FROM THE DMCA IS 20% OF THE MAXIMUM FLOW – THE CONTRACTOR SHALL PUMP THE POND UNTIL THE WATER LEVEL IS APPROXIMATELY 2 FT BELOW NORMAL POOL. NOTE: THE NORMAL POOL ELEVATION IS +8.00', THE ELEVATION OF THE OUTLET ORIFICE.
THE CONTRACTOR SHALL PUMP TO THIS ELEVATION FOR THREE CONSECUTIVE DAYS AFTER THE INITIAL DAY OF THE ORIGINAL POND PUMP DOWN.
ON THE 4TH DAY, THE CONTRACTOR SHALL REMOVE THE PLUG FROM THE WEST DETENTION POND OUTLET PIPE.

PHASE 5: AS THE DREDGE MATERIAL CONSOLIDATES, THE CONTRACTOR SHALL REMOVE SANDS AND OTHER SOLID MATERIALS AS SOON AS POSSIBLE AND PLACE THE MATERIAL IN THE STOCKPILE AREA OR INCORPORATE INTO THE EARTHWORK ON THE SITE. MATERIAL HAVING A PLASTICITY INDEX OF LESS THAN 12 AND THAT CAN BE COMPACTED TO 95% PROCTOR IS CONSIDERED COMPETENT MATERIAL FOR INCORPORATION OR FUTURE USE.
SILTY MATERIAL SHALL BE REMOVED AND PLACED IN THE STOCKPILE AREA AND SEGREGATED FROM THE "GOOD" MATERIAL VIA A POSITIVE BARRIER SUCH AS A SILT FENCE.
THE TIMBER STOP LOGS ON THE DMCA OUTLET CONTROL STRUCTURE SHALL BE REMOVED AND STORED ON THE DIKE AS THE MATERIAL CONSOLIDATES. AS FOLLOWS: WHEN THE WATER LEVEL RECEDES BELOW THE BOTTOM OF A REMAINING TOP STOP LOG, THE STOP LOG SHALL BE REMOVED. CONTINUE REMOVING STOP LOGS UNTIL SUCH TIME AS THERE ARE THREE STOP LOGS REMAINING IN THE OUTLET CONTROL STRUCTURE.
WHEN ALL MATERIAL IS REMOVED, ANY DAMAGE TO THE DMCA DIKES SHALL BE REPAIRED, AND THE INTERIOR SEEDED TO PREVENT EROSION AND THE SYSTEM IS READY TO ACCEPT FUTURE PHASE OF DREDGING.

SPECIAL CONSIDERATIONS: DURING PERIODS OF RAIN – THE CONTRACTOR SHALL MONITOR THE WEST DETENTION POND LEVELS AND PUMP WATER CONTINUOUSLY. THE OVERFLOW FROM THE WEST DETENTION POND SHALL NOT BE ENGAGED FOR ANY STORM SMALLER THAN A 5 YEAR EVENT. THE SIZE AND NUMBER OF PUMPS SHALL BE SUFFICIENT TO MAINTAIN THIS REQUIREMENT. THE APPROXIMATE RAINFALL INTO THE POND AND DMCA FOR A 5 YEAR EVENT IS 84 CFS AND DOES NOT ACCOUNT FOR ANY RUNOFF THAT MAY BE DIRECTED TO THE WEST DETENTION POND DUE TO THE GRADING OPERATIONS. THE CONTRACTOR OPERATIONS WILL DICTATE THE ACTUAL CATCHMENT AREA AND THEREFORE THE CONTRACTOR GRADING AND CONSTRUCTION SEQUENCE WILL DETERMINE THE FLOW VOLUME REQUIRED. THE CONTRACTOR SHALL SUBMIT A PUMPING PLAN FOR REVIEW.

ISSUED FOR BID
JANUARY 2020

GRAND STRAND WATER & SEWER AUTHORITY

Mark	Description	Date	Appr.
	ISSUED FOR BID	05/01/20	JJT

BUCKSPORT MARINE INDUSTRIAL PARK - PHASE 1

DREDGE PHASING PLAN

Date: JANUARY 2020 | Rev.
Designed by: TRR | Drawn by: JJT | Cad by: TRR | Reviewed by: | Submitted by: MOFFATT & NICHOL
M&N Project No. 7232-05
Drawing code:
Drawing Scale: AS SHOWN
Plot scale: 1:1 (0 SHEET)

LICENSED PROFESSIONAL ENGINEER
SOUTH CAROLINA
No.24067
TIMOTHY B. ROBERTS
SEAL 5-1-2020
MOFFATT & NICHOL ENGINEERS No. 000363
CERTIFICATE OF AUTHORIZATION
SOUTH CAROLINA

4700 FALLS OF THE NEUSE ROAD
SUITE 300
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SC COA No. 363
moffatt & nichol

Sheet Reference No.
CD100
INDEX: 12 OF 113

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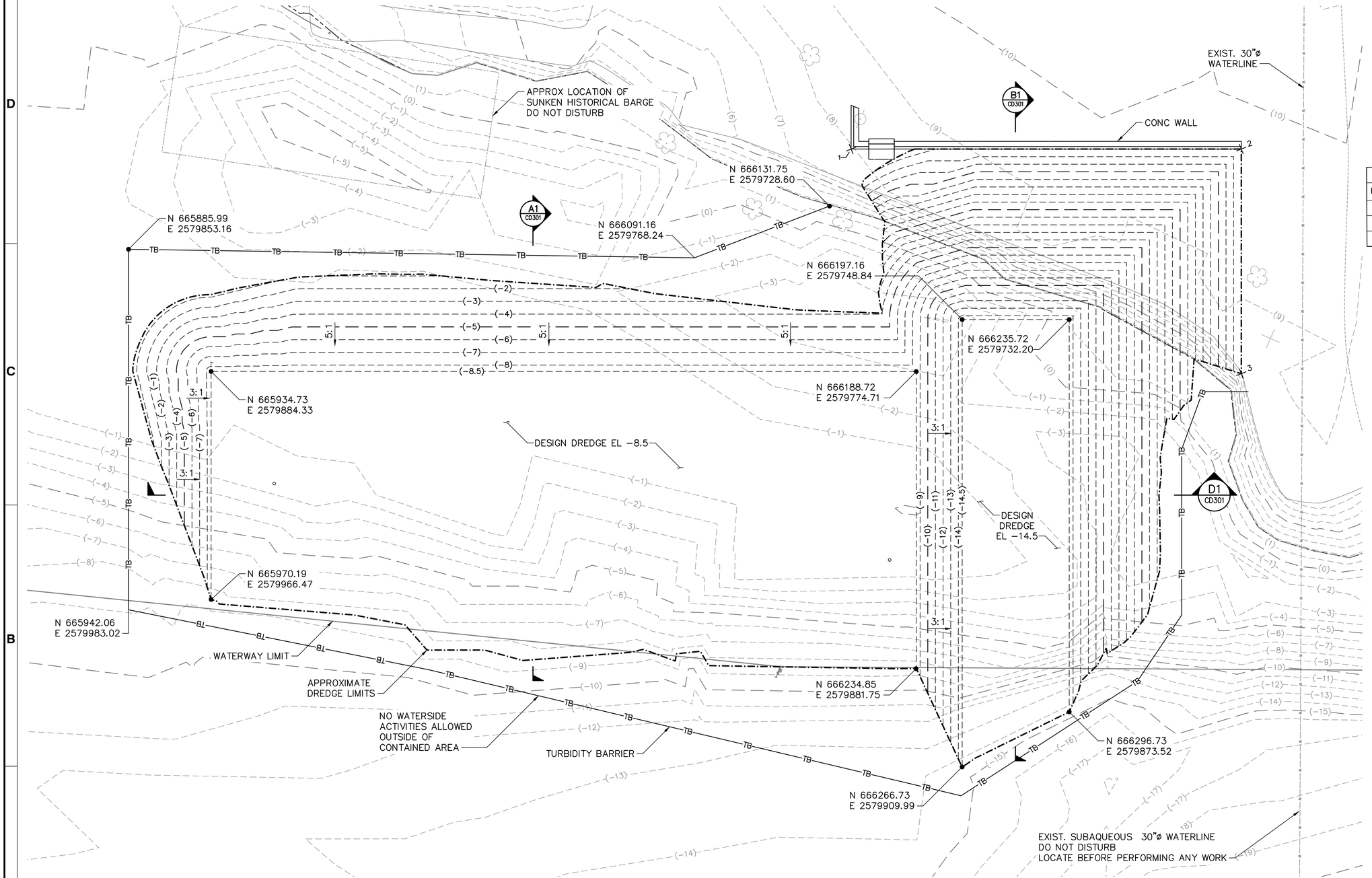

Point Table		
Point #	Northing	Easting
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2	666271.18	2579644.04
3	666306.11	2579724.95

NOTE:
TEMPORARY DREDGE MATERIAL CONTAINMENT FACILITY SHOWN ON CG113 & CG114.

20' 0' 20' 40'
SCALE: 1"=20'

ISSUED FOR BID
JANUARY 2020

GRAND STRAND WATER & SEWER AUTHORITY

Mark	Description	Date	Appr.
	ISSUED FOR BID	05/01/20	JJT

BUCKSPORT MARINE INDUSTRIAL PARK - PHASE 1

DREDGE PLAN

Designed by: TRR	Dwn by: JT	Ckd by: TRR	Reviewed by:
Date: JANUARY 2020	M&N Project No. 7232-05	Drawing code:	
Submitted by: MOFFATT & NICHOL	Drawing Scale: AS SHOWN Plot scale: 1:1 (D SHEET)		Rev. 0

LICENSED PROFESSIONAL ENGINEER — No.24067 — TIMOTHY R. REED — SOUTH CAROLINA
SEAL 5-1-2020
SOUTH CAROLINA — MOFFATT & NICHOL ENGINEERS No. 000363 — CERTIFICATE OF AUTHORIZATION

4700 FALLS OF THE NEUSE ROAD
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919-781-4626
SC COA No. 363
moffatt & nichol

Sheet Reference No.
CD101
INDEX: 13 OF 113

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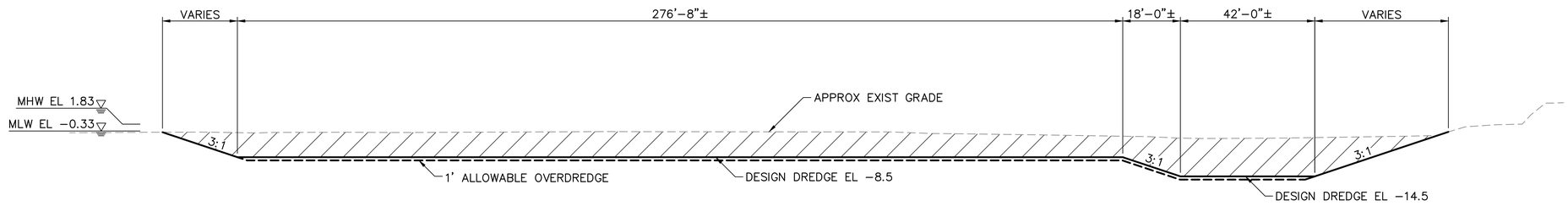
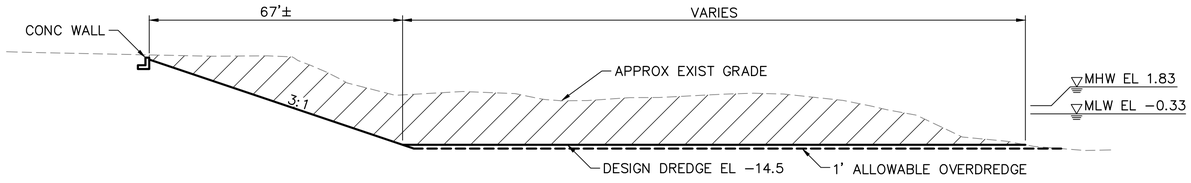
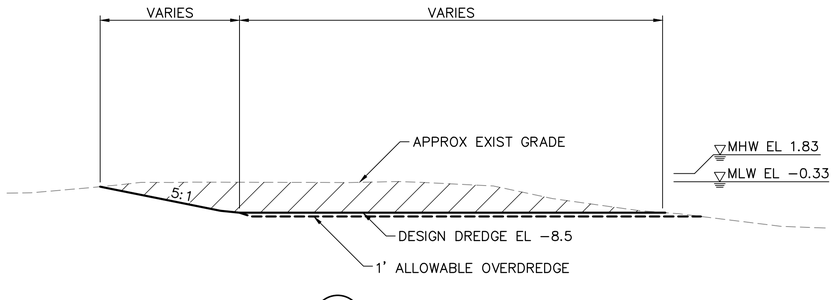


D1 / CD101 DREDGE SECTION
SCALE: 1"=20'



B1 / CD101 DREDGE SECTION
SCALE: NTS



A1 / CD101 DREDGE SECTION
SCALE: NTS

10' 0' 10' 20'
SCALE: 1"=10'

20' 0' 20' 40'
SCALE: 1"=20'

ISSUED FOR BID
JANUARY 2020

GRAND STRAND WATER & SEWER AUTHORITY

Mark	Description	Date	Appr.
	ISSUED FOR BID	05/01/20	JJT

BUCKSPORT MARINE INDUSTRIAL PARK - PHASE 1

DREDGE SECTIONS

Rev. 0
Date: JANUARY 2020
M&N Project No. 7232-05
Drawing code:
Drawing Scale: AS SHOWN
Plot scale: 1:1 (0 SHEET)
Designed by: TRR
Drawn by: JT
Chkd by: TRR
Reviewed by:
Submitted by: MOFFATT & NICHOL

SOUTH CAROLINA LICENSED PROFESSIONAL ENGINEER
No.24067
TIMOTHY R. REID
SEAL 5-1-2020

SOUTH CAROLINA CERTIFICATE OF AUTHORIZATION
MOFFATT & NICHOL ENGINEERS No. 000363

4700 FALLS OF THE NEUSE ROAD
SUITE 300
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919-781-4626
SC COA No. 363
moffatt & nichol

Sheet Reference No.
CD301
INDEX: 14 OF 113

File: Q:\RA\7232-05\CADD_Active_SheetSet\7232005-CD301; Plotted: 4/29/2020 10:41 AM by THIBODEAUX, JASON; Saved: 1/14/2020 10:49 AM by JTHIBODEAUX

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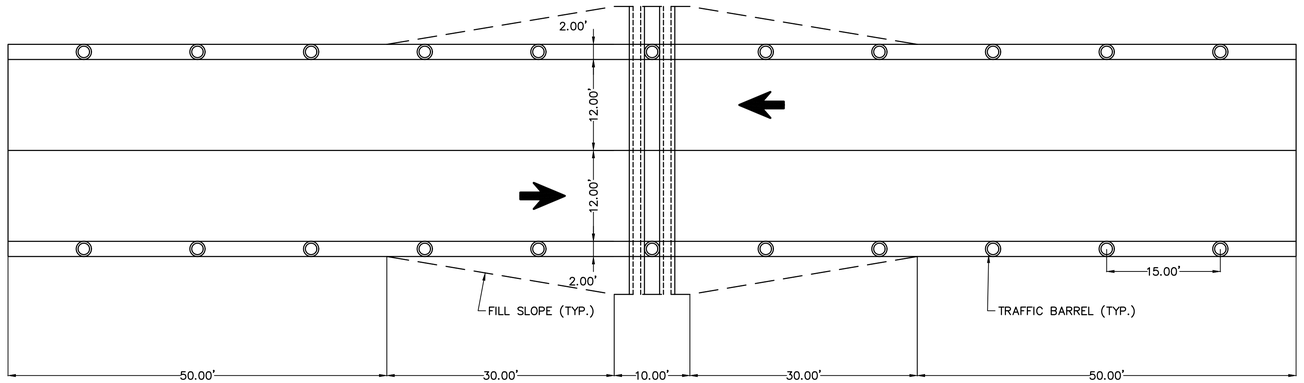

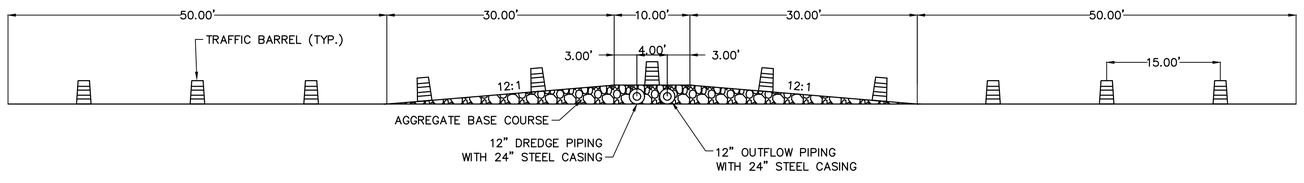

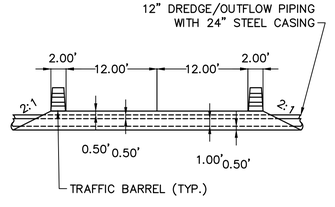

A3 / CD501 TEMPORARY DREDGE PIPING ROAD CROSSING
SCALE: 1" = 10'

10' 0' 10' 20'
SCALE: 1"=10'

ISSUED FOR BID
JANUARY 2020

GRAND STRAND WATER & SEWER AUTHORITY

Mark	Description	Date	Appr.
	ISSUED FOR BID	05/01/20	JJT

BUCKSPORT MARINE INDUSTRIAL PARK - PHASE 1

DREDGE DETAILS

Designed by: TRR	Date: JANUARY 2020
Dwn by: JJT	Chd by: TRR
Reviewed by:	Drawing code:
Submitted by: MOFFATT & NICHOL	M&N Project No. 7232-05
Drawing Scale: AS SHOWN Plot scale: 1:1 (D SHEET)	Rev.

LICENSED PROFESSIONAL ENGINEER
SOUTH CAROLINA
No.24067
TIMOTHY R. REID
SEAL 5-1-2020

SOUTH CAROLINA
MOFFATT & NICHOL ENGINEERS No. 000363
CERTIFICATE OF AUTHORIZATION

4700 FALLS OF THE NEUSE ROAD
SUITE 300
RALEIGH, NC 27609
919-781-4626
SC COA No. 363
moffatt & nichol

Sheet Reference No.
CD501
INDEX: 15 OF 113

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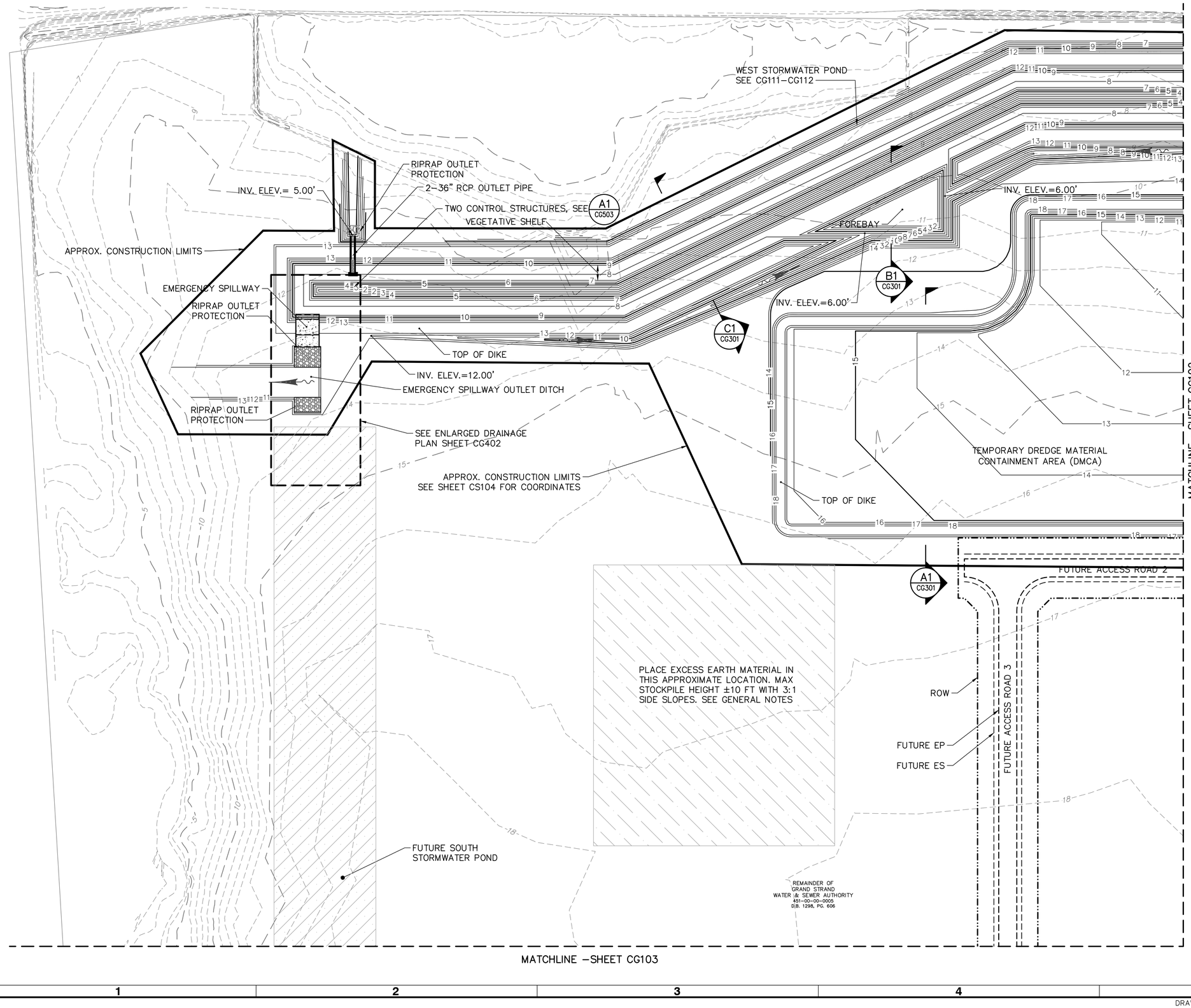

NOTE:
FOR EROSION CONTROL, SEE SHEET CS101

ISSUED FOR BID
JANUARY 2020

GRAND STRAND WATER & SEWER AUTHORITY

Mark	Description	Date	Appr.
	ISSUED FOR BID	05/01/20	JJT

BUCKSPORT MARINE INDUSTRIAL PARK - PHASE 1

GRADING - DRAINAGE SITE PLAN 1 OF 4

Rev. 0
Date: JANUARY 2020
M&N Project No. 7232-05
Drawing code:
Drawing Scale: AS SHOWN
Plot scale: 1:1 (0 SHEET)
Designed by: TRR
Dwn by: JT
Ckd by: TRR
Reviewed by:
Submitted by: MOFFATT & NICHOL

SOUTH CAROLINA LICENSED PROFESSIONAL ENGINEER No.24067 TIMOTHY R. RED
SEAL 5-1-2020
SOUTH CAROLINA MOFFATT & NICHOL ENGINEERS No. 000363 CERTIFICATE OF AUTHORIZATION

4700 FALLS OF THE NEUSE ROAD
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Sheet Reference No.
CG101
INDEX: 16 OF 113

DRAWING SCALES SHOWN BASED ON 22"x34" DRAWING

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WEST STORMWATER POND, SEE CG111–CG112

VEGETATIVE SHELF

TOP OF DIKE

FOREBAY

INV. ELEV.=5.00'

C1 CG301

±75 SY RIPRAP PAD
INV. ELEV.=9.70'

B1 CG301

DMCA OUTLET CONTROL STRUCTURE, SEE A1 CG504

GRADING CONTROL POINT
SEE SHEET CG105

TOP OF DIKE

TEMPORARY DREDGE MATERIAL
CONTAINMENT AREA (DMCA)

MATCHLINE – SHEET CG101

A1 CG301

FUTURE ACCESS ROAD 2

FUTURE EP

FUTURE ES

REMAINDER OF
GRAND STRAND
WATER & SEWER AUTHORITY
451-00-00-0005
D.B. 1298, PG. 606

ROW

GRADE EXISITING DITCH TO DRAIN

INV. ELEV.=10.14'

2–30" RCP
(CL V)

INV. ELEV.=10.44'

INV. ELEV.=9.96'

INV. ELEV.=10.38'

2–36" RCP
(CL V)

EP

ES

GRAND STRAND
WATER & SEWER AUTHORITY
451-00-00-0005
D.B. 1298, PG. 606

INV. ELEV.=14.00'

MARINE PARK ROAD

TREATMENT ROAD

BUCKSPORT ROAD

REMAINDER OF
GRAND STRAND
WATER & SEWER AUTHORITY
451-00-00-0005
D.B. 1298, PG. 606

APPROX. CONSTRUCTION LIMITS
SEE SHEET CS104 FOR COORDINATES

MATCHLINE – SHEET CG104

80' 0' 80' 160'
SCALE: 1"=80'

NOTE:
FOR EROSION CONTROL,
SEE SHEET CS102

ISSUED FOR BID
JANUARY 2020

N

GRAND STRAND WATER & SEWER AUTHORITY

Mark	Description	Date	Appr.
	ISSUED FOR BID	05/01/20	JJT

BUCKSPORT MARINE INDUSTRIAL PARK - PHASE 1

GRADING - DRAINAGE SITE PLAN 2 OF 4

Designed by:	TRR
Drawn by:	JT
Checked by:	TRR
Reviewed by:	
Submitted by:	MOFFATT & NICHOL
Date:	JANUARY 2020
M&N Project No.	7232-05
Drawing code:	
Drawing Scale:	AS SHOWN
Plot scale: 1:1 (0 SHEET)	
Rev.	0

SOUTH CAROLINA LICENSED PROFESSIONAL ENGINEER
No.24067
JASON H. RHODEAUX
SEAL
5-1-2020

MOFFATT & NICHOL ENGINEERS No. 000363
SOUTH CAROLINA CERTIFICATE OF AUTHORIZATION

4700 FALLS OF THE NEUSE ROAD
SUITE 300
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919-781-4626
SC COA No. 363
moffatt & nichol

Sheet Reference No.
CG102
INDEX: 17 OF 113

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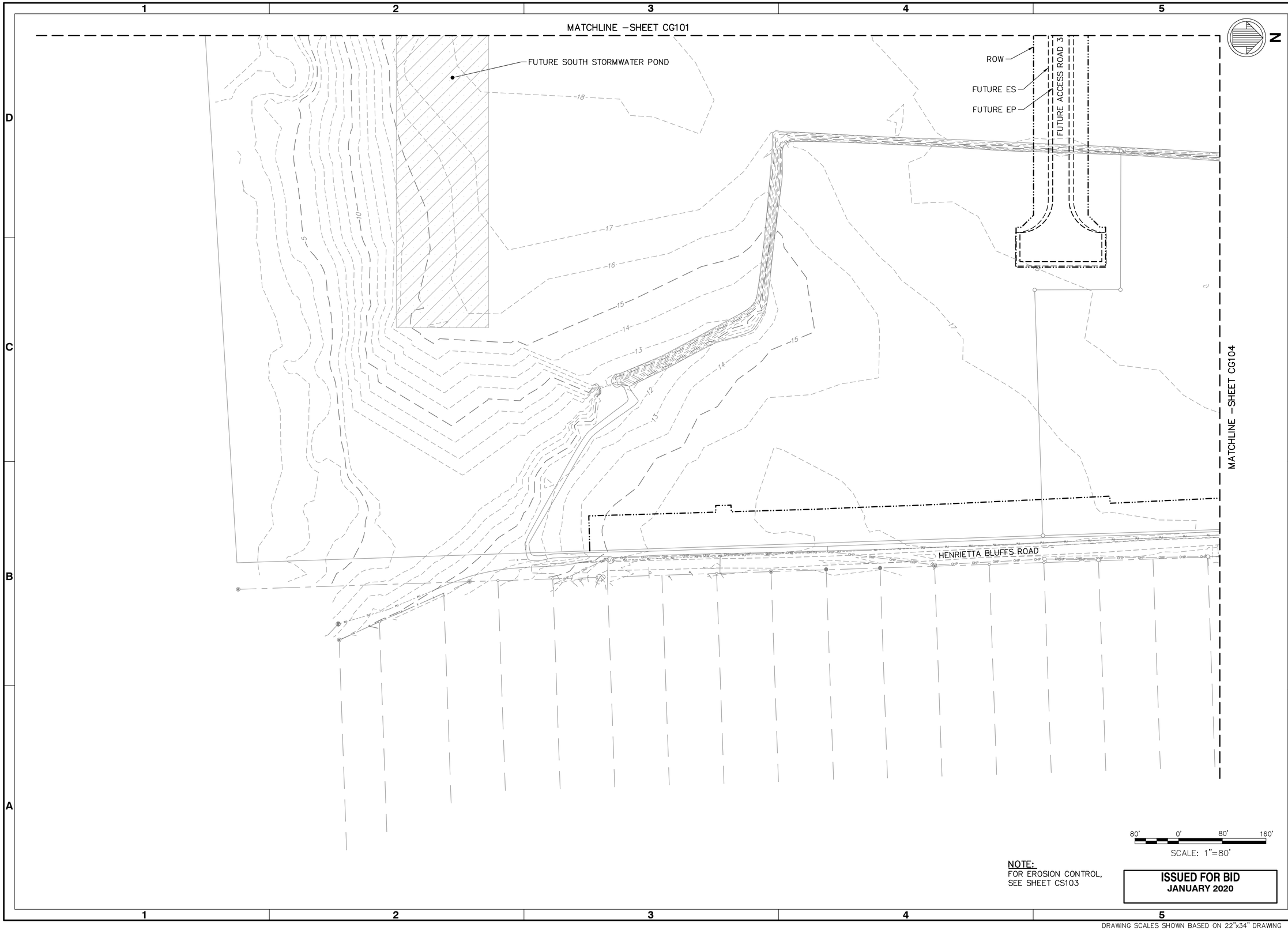
Saved: 1/14/2020 10:54 AM by JTHIBODEAUX

DRAWING SCALES SHOWN BASED ON 22"x34" DRAWING



NOTE:
FOR EROSION CONTROL, SEE SHEET CS103

ISSUED FOR BID
JANUARY 2020

DRAWING SCALES SHOWN BASED ON 22"x34" DRAWING

GRAND STRAND WATER & SEWER AUTHORITY

Mark	Description	Date	Appr.
	ISSUED FOR BID	05/01/20	JJT

BUCKSPORT MARINE INDUSTRIAL PARK - PHASE 1

GRADING - DRAINAGE SITE PLAN 3 OF 4

Designed by: TRR	Dwn by: JT	Reviewed by:	Submitted by: MOFFATT & NICHOL
	Ckd by: TRR	Drawing code:	Drawing Scale: AS SHOWN Plot scale: 1:1 (D SHEET)
Date: JANUARY 2020	M&N Project No. 7232-05		Rev. 0

SOUTH CAROLINA LICENSED PROFESSIONAL ENGINEER No.24067 TIMOTHY R. REID
SEAL 5-1-2020

SOUTH CAROLINA CERTIFICATE OF AUTHORIZATION MOFFATT & NICHOL ENGINEERS No. 000363

4700 FALLS OF THE NEUSE ROAD
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SC COA No. 363

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Sheet Reference No.
CG103
INDEX: 18 OF 113

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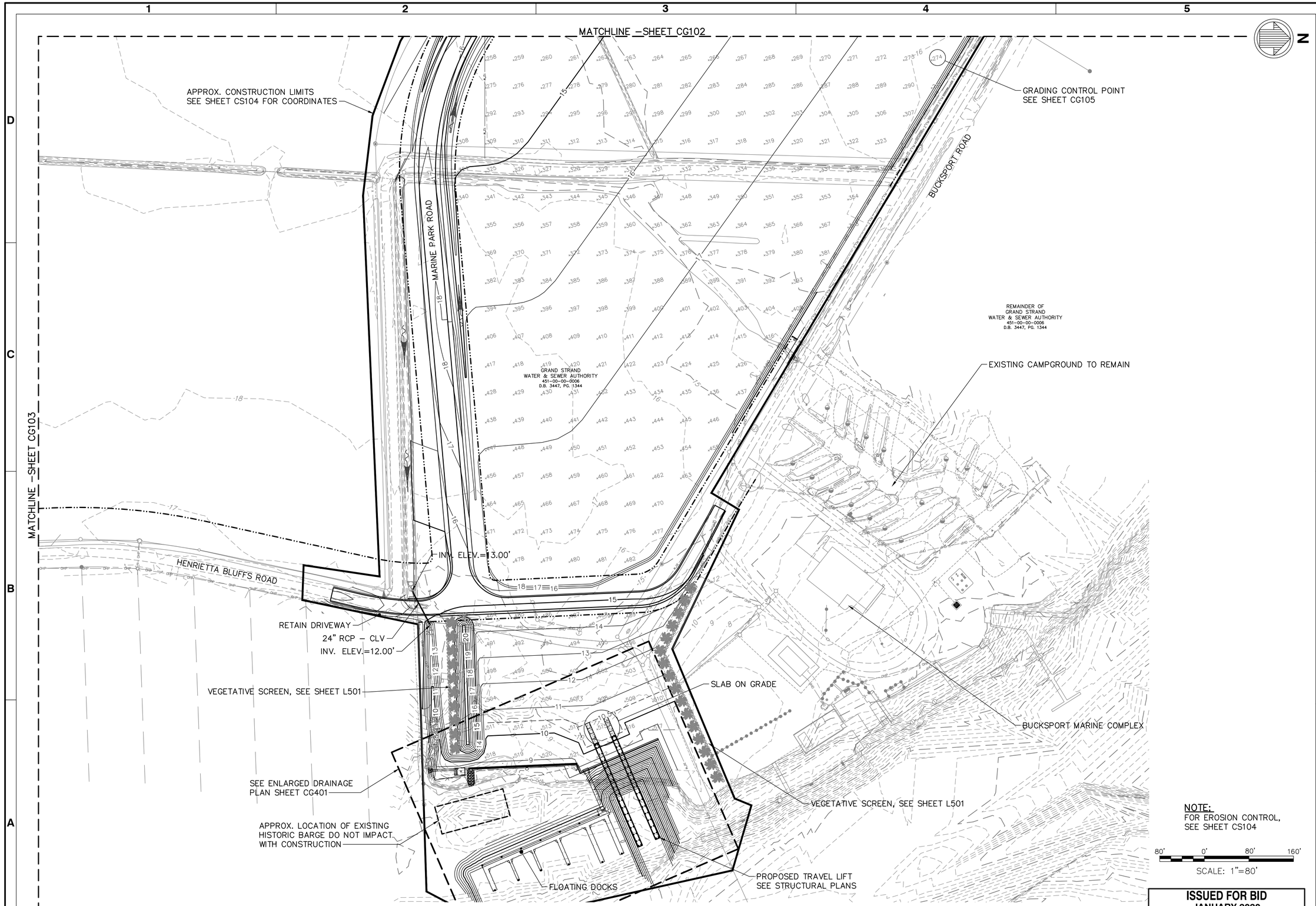

NOTE:
FOR EROSION CONTROL,
SEE SHEET CS104

ISSUED FOR BID
JANUARY 2020

DRAWING SCALES SHOWN BASED ON 22"x34" DRAWING

GRAND STRAND WATER & SEWER AUTHORITY

Mark	Description	Date	Appr.
	ISSUED FOR BID	05/01/20	JJT

BUCKSPORT MARINE
INDUSTRIAL PARK - PHASE 1

GRADING - DRAINAGE
SITE PLAN 4 OF 4

Rev.	0
Date:	JANUARY 2020
M&N Project No.	7232-05
Drawing code:	
Drawing Scale:	AS SHOWN
Plot scale: 1:1 (0 SHEET)	
Designed by:	TRR
Dwn by:	JT
Ckd by:	TRR
Reviewed by:	
Submitted by:	MOFFATT & NICHOL

SOUTH CAROLINA LICENSED PROFESSIONAL ENGINEER
No.24067
TIMOTHY R. RICHARDSON
SEAL
5-1-2020
SOUTH CAROLINA CERTIFICATE OF AUTHORIZATION
MOFFATT & NICHOL ENGINEERS No. 000363

4700 FALLS OF THE NEUSE ROAD
SUITE 300
RALEIGH, NC 27609
919-781-4626
SC COA No. 363
moffatt & nichol

Sheet
Reference No.
CG104
INDEX: 19 OF 113

File: Q:\RA\7232-05\CADD_Active_SheetSet\7232105-CG104; Plotted: 4/29/2020 10:42 AM by THIBODEAUX, JASON; Saved: 1/14/2020 11:03 AM by JTHIBODEAUX

Point Table			
Point #	Elevation	Northing	Easting
1	13.47	665961.42	2577175.14
2	13.44	666011.42	2577175.14
3	13.14	666061.42	2577175.14
4	13.94	665961.42	2577225.14
5	13.71	666011.42	2577225.14
6	13.56	666061.42	2577225.14
7	14.42	665961.42	2577275.14
8	14.33	666011.42	2577275.14
9	14.24	666061.42	2577275.14
10	14.90	665961.42	2577325.14
11	14.82	666011.42	2577325.14
12	14.49	666061.42	2577325.14
13	15.34	665961.42	257375.14
14	15.25	666011.42	2577375.14
15	15.17	666061.42	2577375.14
16	15.09	666111.42	2577375.14
17	15.77	665961.42	2577425.14
18	15.63	666011.42	2577425.14
19	15.52	666061.42	2577425.14
20	15.34	666111.42	2577425.14
21	16.22	665961.42	2577475.14
22	16.00	666011.42	2577475.14
23	15.82	666061.42	2577475.14
24	15.54	666111.42	2577475.14
25	15.26	666161.42	2577475.14
26	16.67	665961.42	2577525.14
27	16.44	666011.42	2577525.14
28	16.19	666061.42	2577525.14
29	15.94	666111.42	2577525.14
30	15.64	666161.42	2577525.14
31	15.28	666211.42	2577525.14
32	17.12	665961.42	2577575.14
33	16.87	666011.42	2577575.14
34	16.62	666061.42	2577575.14
35	16.36	666111.42	2577575.14
36	16.09	666161.42	2577575.14
37	15.77	666211.42	2577575.14
38	15.39	666261.42	2577575.14
39	17.56	665961.42	2577625.14
40	17.30	666011.42	2577625.14
41	17.05	666061.42	2577625.14
42	16.78	666111.42	2577625.14
43	16.52	666161.42	2577625.14
44	16.25	666211.42	2577625.14
45	15.98	666261.42	2577625.14
46	15.50	666311.42	2577625.14
47	17.99	665961.42	2577675.14
48	17.74	666011.42	2577675.14
49	17.47	666061.42	2577675.14
50	17.21	666111.42	2577675.14
51	16.94	666161.42	2577675.14
52	16.68	666211.42	2577675.14
53	16.35	666261.42	2577675.14
54	14.27	666561.42	2577675.14
55	14.72	666611.42	2577675.14
56	18.05	665961.42	2577725.14
57	18.16	666011.42	2577725.14
58	17.90	666061.42	2577725.14
59	17.63	666111.42	2577725.14
60	17.36	666161.42	2577725.14
61	17.10	666211.42	2577725.14
62	16.26	666261.42	2577725.14
63	14.22	666511.42	2577725.14
64	14.49	666561.42	2577725.14
65	14.79	666611.42	2577725.14
66	15.27	666661.42	2577725.14
67	18.70	665961.42	2577775.14
68	18.58	666011.42	2577775.14
69	18.32	666061.42	2577775.14
70	18.05	666111.42	2577775.14
71	17.79	666161.42	2577775.14
72	17.51	666211.42	2577775.14
73	14.15	666461.42	2577775.14
74	14.44	666511.42	2577775.14
75	14.72	666561.42	2577775.14
76	15.01	666611.42	2577775.14
77	15.36	666661.42	2577775.14
78	15.70	666711.42	2577775.14

Point Table			
Point #	Elevation	Northing	Easting
79	19.01	666011.42	2577825.14
80	18.74	666061.42	2577825.14
81	18.48	666111.42	2577825.14
82	18.21	666161.42	2577825.14
83	14.07	666411.42	2577825.14
84	14.36	666461.42	2577825.14
85	14.64	666511.42	2577825.14
86	14.93	666561.42	2577825.14
87	15.16	666611.42	2577825.14
88	15.38	666661.42	2577825.14
89	15.63	666711.42	2577825.14
90	15.93	666761.42	2577825.14
91	19.03	666061.42	2577875.14
92	18.71	666111.42	2577875.14
93	14.28	666411.42	2577875.14
94	14.56	666461.42	2577875.14
95	14.85	666511.42	2577875.14
96	15.10	666561.42	2577875.14
97	15.32	666611.42	2577875.14
98	15.54	666661.42	2577875.14
99	15.76	666711.42	2577875.14
100	15.99	666761.42	2577875.14
101	16.27	666811.42	2577875.14
102	19.31	666111.42	2577925.14
103	14.20	666361.42	2577925.14
104	14.48	666411.42	2577925.14
105	14.77	666461.42	2577925.14
106	15.04	666511.42	2577925.14
107	15.26	666561.42	2577925.14
108	15.48	666611.42	2577925.14
109	15.70	666661.42	2577925.14
110	15.92	666711.42	2577925.14
111	16.14	666761.42	2577925.14
112	16.37	666811.42	2577925.14
113	16.49	666861.42	2577925.14
114	16.36	666911.42	2577925.14
115	14.12	666311.42	2577975.14
116	14.40	666361.42	2577975.14
117	14.69	666411.42	2577975.14
118	14.97	666461.42	2577975.14
119	15.20	666511.42	2577975.14
120	15.42	666561.42	2577975.14
121	15.64	666611.42	2577975.14
122	15.86	666661.42	2577975.14
123	16.08	666711.42	2577975.14
124	16.30	666761.42	2577975.14
125	16.51	666811.42	2577975.14
126	16.73	666861.42	2577975.14
127	16.87	666911.42	2577975.14
128	17.93	666961.42	2577975.14
129	14.04	666261.42	2578025.14
130	14.33	666311.42	2578025.14
131	14.61	666361.42	2578025.14
132	14.89	666411.42	2578025.14
133	15.14	666461.42	2578025.14
134	15.36	666511.42	2578025.14
135	15.58	666561.42	2578025.14
136	15.79	666611.42	2578025.14
137	16.01	666661.42	2578025.14
138	16.23	666711.42	2578025.14
139	16.45	666761.42	2578025.14
140	16.67	666811.42	2578025.14
141	16.89	666861.42	2578025.14
142	17.17	666911.42	2578025.14
143	17.61	666961.42	2578025.14
144	14.25	666261.42	2578075.14
145	14.53	666311.42	2578075.14
146	14.81	666361.42	2578075.14
147	15.07	666411.42	2578075.14
148	15.29	666461.42	2578075.14
149	15.51	666511.42	2578075.14
150	15.73	666561.42	2578075.14
151	15.95	666611.42	2578075.14
152	16.17	666661.42	2578075.14
153	16.39	666711.42	2578075.14
154	16.61	666761.42	2578075.14
155	16.83	666811.42	2578075.14
156	17.07	666861.42	2578075.14

Point Table			
Point #	Elevation	Northing	Easting
157	17.40	666911.42	2578075.14
158	17.73	666961.42	2578075.14
159	14.19	666211.42	2578125.14
160	14.46	666261.42	2578125.14
161	14.73	666311.42	2578125.14
162	15.01	666361.42	2578125.14
163	15.23	666411.42	2578125.14
164	15.45	666461.42	2578125.14
165	15.67	666511.42	2578125.14
166	15.89	666561.42	2578125.14
167	16.11	666611.42	2578125.14
168	16.33	666661.42	2578125.14
169	16.55	666711.42	2578125.14
170	16.77	666761.42	2578125.14
171	16.99	666811.42	2578125.14
172	17.28	666861.42	2578125.14
173	17.59	666911.42	2578125.14
174	17.91	666961.42	2578125.14
175	14.13	666161.42	2578175.14
176	14.39	666211.42	2578175.14
177	14.67	666261.42	2578175.14
178	14.94	666311.42	2578175.14
179	15.17	666361.42	2578175.14
180	15.39	666411.42	2578175.14
181	15.61	666461.42	2578175.14
182	15.83	666511.42	2578175.14
183	16.05	666561.42	2578175.14
184	16.27	666611.42	2578175.14
185	16.49	666661.42	2578175.14
186	16.71	666711.42	2578175.14
187	16.93	666761.42	2578175.14
188	17.19	666811.42	2578175.14
189	17.49	666861.42	2578175.14
190	17.78	666911.42	2578175.14
191	14.08	666111.42	2578225.14
192	14.34	666161.42	2578225.14
193	14.60	666211.42	2578225.14
194	14.86	666261.42	2578225.14
195	15.11	666311.42	2578225.14
196	15.33	666361.42	2578225.14
197	15.55	666411.42	2578225.14
198	15.77	666461.42	2578225.14
199	15.99	666511.42	2578225.14
200	16.21	666561.42	2578225.14
201	16.43	666611.42	2578225.14
202	16.65	666661.42	2578225.14
203	16.86	666711.42	2578225.14
204	17.11	666761.42	2578225.14
205	17.39	666811.42	2578225.14
206	17.67	666861.42	2578225.14
207	17.97	666911.42	2578225.14
208	14.03	666061.42	2578275.14
209	14.28	666111.42	2578275.14
210	14.53	666161.42	2578275.14
211	14.79	666211.42	2578275.14
212	15.05	666261.42	2578275.14
213	15.27	666311.42	2578275.14
214	15.49	666361.42	2578275.14
215	15.71	666411.42	2578275.14
216	15.93	666461.42	2578275.14
217	16.15	666511.42	2578275.14
218	16.36	666561.42	2578275.14
219	16.58	666611.42	2578275.14
220	16.80	666661.42	2578275.14
221	17.03	666711.42	2578275.14
222	17.29	666761.42	2578275.14
223	17.57	666811.42	2578275.14
224	17.86	666861.42	2578275.14
225	14.22	666061.42	2578325.14
226	14.47	666111.42	2578325.14
227	14.73	666161.42	2578325.14
228	14.98	666211.42	2578325.14
229	15.21	666261.42	2578325.14
230	15.43	666311.42	2578325.14
231	15.64	666361.42	2578325.14
232	15.86	666411.42	2578325.14
233	16.08	666461.42	2578325.14
234	16.30	666511.42	2578325.14

Point Table			
Point #	Elevation	Northing	Easting
235	16.52	666561.42	2578325.14
236	16.74	666611.42	2578325.14
237	16.96	666661.42	2578325.14
238	17.21	666711.42	2578325.14
239	17.48	666761.42	2578325.14
240	17.75	666811.42	2578325.14
241	14.17	666011.42	2578375.14
242	14.42	666061.42	2578375.14
243	14.66	666111.42	2578375.14
244	14.91	666161.42	2578375.14
245	15.14	666211.42	2578375.14
246	15.36	666261.42	2578375.14
247	15.58	666311.42	2578375.14
248	15.80	666361.42	2578375.14
249	16.02	666411.42	2578375.14
250	16.24	666461.42	2578375.14
251	16.46	666511.42	2578375.14
252	16.68	666561.42	2578375.14
253	16.90	666611.42	2578375.14
254	17.14	666661.42	2578375.14
255	17.39	666711.42	2578375.14
256	17.65	666761.42	2578375.14
257	17.92	666811.42	2578375.14
258	14.09	665961.42	2578425.14
259	14.35	666011.42	2578425.14
260	14.60	666061.42	2578425.14
261	14.85	666111.42	2578425.14
262	15.08	666161.42	2578425.14
263	15.30	666211.42	2578425.14
264	15.52	666261.42	2578425.14
265	15.74	666311.42	2578425.14
266	15.96	666361.42	2578425.14
267	16.18	666411.42	2578425.14
268	16.40	666461.42	2578425.14
269	16.62	666511.42	2578425.14
270	16.84	666561.42	2578425.14
271	17.06	666611.42	2578425.14
272	17.30	666661.42	2578425.14
273	17.56	666711.42	2578425.14
274	17.82	666761.42	2578425.14
275	14.24	665961.42	2578475.14
276	14.50	666011.42	2578475.14
277	14.77	666061.42	2578475.14
278	15.02	666111.42	2578475.14
279	15.24	666161.42	2578475.14
280	15.46	666211.42	2578475.14
281	15.68	666261.42	2578475.14
282	15.90	666311.42	2578475.14
283	16.12	666361.42	2578475.14
284	16.34	666411.42	2578475.14
285	16.56	666461.42	2578475.14
286	16.78	666511.42	2578475.14
287	17.00	666561.42	2578475.14
288	17.23	666611.42	2578475.14
289	17.48	666661.42	2578475.14
290	17.72	666711.42	2578475.14
291	17.98	666761.42	2578475.14
292	14.38	665961.42	2578525.14
293	14.69	666011.42	2578525.14
294	14.95	666061.42	2578525.14
295	15.18	666111.42	2578525.14
296	15.40	666161.42	2578525.14
297	15.62	666211.42	2578525.14
298	15.84	666261.42	2578525.14
299	16.06	666311.42	2578525.14
300	16.28	666361.42	2578525.14
301	16.50	666411.42	2578525.14
302	16.71	666461.42	2578525.14
303	16.93	666511.42	2578525.14
304	17.16	666561.42	2578525.14
305	17.39	666611.42	2578525.14
306	17.63	666661.42	2578525.14
307	17.88	666711.42	2578525.14
308	14.15	665911.42	2578575.14
309	14.60	665961.42	2578575.14
310	14.87	666011.42	2578575.14
311	15.12	666061.42	2578575.14
312	15.34	666111.42	2578575.14

Point Table			
Point #	Elevation	Northing	Easting
313	15.56	666161.42	2578575.14
314	15.78	666211.42	2578575.14
315	15.99	666261.42	2578575.14
316	16.21	666311.42	2578575.14
317	16.43	666361.42	2578575.14
318	16.65	666411.42	2578575.14
319	16.87	666461.42	2578575.14
320	17.09	666511.42	2578575.14
321	17.32	666561.42	2578575.14
322	17.55	666611.42	2578575.14
323	17.79	666661.42	2578575.14
324	14.82	665911.42	2578625.14
325	15.01	665961.42	2578625.14
326	15.13	666011.42	2578625.14
327	15.29	666061.42	2578625.14
328	15.50	666111.42	2578625.14
329	15.71	666161.42	2578625.14
330	15.93	666211.42	2578625.14
331	16.15	666261.42	2578625.14
332	16.37	666311.42	2578625.14
333	16.59	666361.42	2578625.14
334	16.81	666411.42	2578625.14
335	17.03	666461.42	2578625.14
336	17.25	666511.42	2578625.14
337	17.47	666561.42	2578625.14
338	17.70	666611.42	2578625.14
339	17.94	666661.42	2578625.14
340	15.01	665911.42	2578675.14
341	15.13	665961.42	2578675.14
342	15.31	666011.42	2578675.14
343	15.49	666061.42	2578675.14
344	15.66	666111.42	2578675.14
345	15.87	666161.42	2578675.14
346	16.09	666211.42	2578675.14
347	16.31	666261.42	2578675.14
348	16.53	666311.42	2578675.14
349	16.75	666361.42	2578675.14
350	16.97	666411.42	2578675.14
351	17.18	666461.42	2578675.14
352	17.40	666511.42	2578675.14
353	17.62	666561.42	2578675.14
354	17.85	666611.42	2578675.14
355	15.23	665961.42	2578725.14
356	15.46	666011.42	2578725.14
357	15.63	666061.42	2578725.14
358	15.83	666111.42	2578725.14
359	16.03	666161.42	2578725.14
360	16.25	666211.42	2578725.14
361	16.47	666261.42	2578725.14
362	16.69	666311.42	2578725.14
363	16.91	666361.42	2578725.14
364	17.12	666411.42	2578725.14
365	17.33	666461.42	2578725.14
366	17.55	666511.42	2578725.14
367	17.76	666561.42	2578725.14
368	17.98	666611.42	2578725.14
369	15.35	665961.42	2578775.14
370	15.56	666011.42	2578775.14
371	15.78	666061.42	2578775.14
372	15.97	666111.42	2578775.14
373	16.19	666161.42	2578775.14
374	16.41	666211.42	2578775.14
375	16.63	666261.42	2578775.14
376	16.85	666311.42	2578775.14
377	17.06	666361.42	2578775.14
378	17.27	666411.42	2578775.14
379	17.47	666461.42	2578775.14
380	17.68	666511.42	2578775.14
381	17.90	666561.42	2578775.14
382	15.48	665961.42	2578825.14
383	15.74	666011.42	2578825.14
384	15.92	666061.42	2578825.14
385	16.13	666111.42	2578825.14
386	16.35	666161.42	2578825.14
387	16.56	666211.42	2578825.14
388	16.78	666261.42	2578825.14
389	17.00	666311.42	2578825.14
390	17.20	666361.42	2578825.14

Point Table			
Point #	Elevation	Northing	Easting
391	17.40	666411.42	2578825.14
392	17.61	666461.42	2578825.14
393	17.82	666511.42	2578825.14
394	16.03	665961.42	2578875.14
395	16.05	666011.42	2578875.14
396	16.14	666061.42	2578875.14
397	16.29	666111.42	2578875.14
398	16.51	666161.42	2578875.14
399	16.72	666211.42	2578875.14
400	16.94	666261.42	2578875.14
401	17.14	666311.42	2578875.14
402	17.34	666361.42	2578875.14
403	17.54	666411.42	2578875.14
404	17.74	666461.42	2578875.14
405	17.95	666511.42	2578875.14
406	16.18	665961.42	2578925.14
407	16.25	666011.42	2578925.14
408	16.31	666061.42	2578925.14
409	16.48	666111.42	2578925.14
410	16.67	666161.42	2578925.14
411	16.88	666211.42	2578925.14
412	17.09	666261.42	2578925.14
413	17.28	666311.42	2578925.14
414	17.47	666361.42	2578925.14
415	17.66	666411.42	2578925.14
416	17.87	666461.42	2578925.14
417	16.18	665961.42	2578975.14
418	16.43	666011.42	2578975.14
419	16.47	666061.42	2578975.14
420	16.63	666111.42	2578975.14
421	16.83	666161.42	2578975.14
422	17.03	666211.42	2578975.14
423	17.22	666261.42	2578975.14
424	17.40	666311.42	2578975.14
425	17.60	666361.42	2578975.14
426	17.79	666411.42	2578975.14
427	17.99	666461.42	2578975.14
428	16.23	665961.42	2579025.14
429	16.45	666011.42	2579025.14
430	16.66	666061.42	2579025.14
431	16.78	666111.42	2579025.14
432	16.98	666161.42	2579025.14
433	17.16	666211.42	2579025.14
434	17.34	666261.42	2579025.14
435	17.53	666311.42	2579025.14
436	17.72	666361.42	2579025.14
437	17.91	666411.42	2579025.14
438	16.32	665961.42	2579075.14
439	16.61	666011.42	2579075.14
440	16.78	666061.42	2579075.14
441	16.93	666111.42	2579075.14
442	17.11	666161.42	2579075.14
443	17.29	666211.42	2579075.14
444	17.46	666261.42	2579075.14
445	17.65	666311.42	2579075.14
446	17.84	666361.42	2579075.14
447	17.01	665961.42	2579125.14
448	17.04	666011.42	2579125.14
449	17.06	666061.42	2579125.14
450	17.11	666111.42	2579125.14
451	17.24	666161.42	2579125.14
452	17.40	666211.42	2579125.14
453	17.59	666261.42	2579125.14
454	17.77	666311.42	2579125.14
455	17.95	666361.42	2579125.14
456	17.09	665961.42	2579175.14
457	17.23	666011.42	2579175.14
458	17.25	666061.42	2579175.14
459	17.28	666111.42	2579175.14
460	17.36	666161.42	2579175.14
461	17.53	666211.42	2579175.14
462	17.70	666261.42	2579175.14
463	17.88	666311.42	2579175.14
464	17.05	665961.42	2579225.14
465	17.41	666011.42	2579225.14
466	17.44	666061.42	2579225.14
467	17.45	666111.42	2579225.14
468	17.53	666161.42	2579225.14

Point Table			
Point #	Elevation	Northing	Easting
469	17.64	666211.42	2579225.14
470	17.81	666261.42	2579225.14
471	17.03	665961.42	2579275.14
472	17.42	666011.42	2579275.14
473	17.64	666061.42	2579275.14
474	17.64	666111.42	2579275.14
475	17.70	666161.42	2579275.14
476	17.79	666211.42	2579275.14
477	17.92	666261.42	2579275.14
478	17.67	666011.42	2579325.14
479	17.79	666061.42	2579325.14
480	17.83	666111.42	2579325.14
481	17.88	666161.42	2579325.14
482	17.96	666211.42	2579325.14
483	14.57	665911.42	2579425.14
484	14.51	665961.42	2579425.14
485	14.46	666011.42	2579425.14
486	14.42	666061.42	2579425.14
487	14.37	666111.42	2579425.14
488	14.33	666161.42	2579425.14
489	14.28	666211.42	2579425.14
490	13.50	665911.42	2579475.14
491	13.46	665961.42	2579475.14
492	13.41	666011.42	2579475.14
493	13.36	666061.42	2579475.14
494	13.32	666111.42	2579475.14
495	13.27	666161.42	2579475.14
496	12.83	666211.42	2579475.14
497	12.43	665911.42	2579525.14
498	12.39	665961.42	2579525.14
499	12.34	666011.42	2579525.14
500	12.30	666061.42	2579525.14
501	12.25	666111.42	2579525.14
502	11.98	666161.42	2579525.14
503	11.59	666211.42	2579525.14
504	11.32	665961.42	2579575.14
505	11.27	666011.42	2579575.14
506	11.23	666061.42	2579575.14
507	11.18	666111.42	2579575.14
508	11.07	666161.42	2579575.14
509	10.68	666211.42	2579575.14
510	10.29	666261.42	2579575.14
511	10.25	665961.42	2579625.14
512	10.21	666011.42	2579625.14
513	10.16	666061.42	2579625.14
514	10.33	666111.42	2579625.14
515	10.50	666161.42	2579625.14
516	10.22	666211.42	2579625.14
517	8.86	666261.42	2579625.14
518	9.19	665961.42	2579675.14
519	9.14	666011.42	2579675.14
520	9.09	666061.42	2579675.14
521	9.05	666111.42	2579675.14
522	9.18	666161.42	2579675.14

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JANUARY 2020

GRAND STRAND WATER & SEWER AUTHORITY

Mark	Description	Date	Appr.
	ISSUED FOR BID	05/01/20	JJT

BUCKSPORT MARINE INDUSTRIAL PARK - PHASE 1

PROPOSED GRADE SPOT ELEVATION TABLE

Rev. 0
Date: JANUARY 2020
Designed by: TRR
Dwn by: JT
Ckd by: TRR
Reviewed by:
Submitted by: MOFFATT & NICHOL
M&N Project No. 7232-05
Drawing code:
Drawing Scale: AS SHOWN
Plot scale: 1:1 (D SHEET)

LICENSED PROFESSIONAL ENGINEER — SOUTH CAROLINA — No.24067 — TIMOTHY R. REED
SEAL 5-1-2020
MOFFATT & NICHOL ENGINEERS No. 000363 — CERTIFICATE OF AUTHORIZATION — SOUTH CAROLINA

4700 FALLS OF THE NEUSE ROAD
SUITE 300
RALEIGH, NC 27609
919-781-4626
SC COA No. 363
moffatt & nichol

Sheet Reference No.
CG105
INDEX: 20 OF 113

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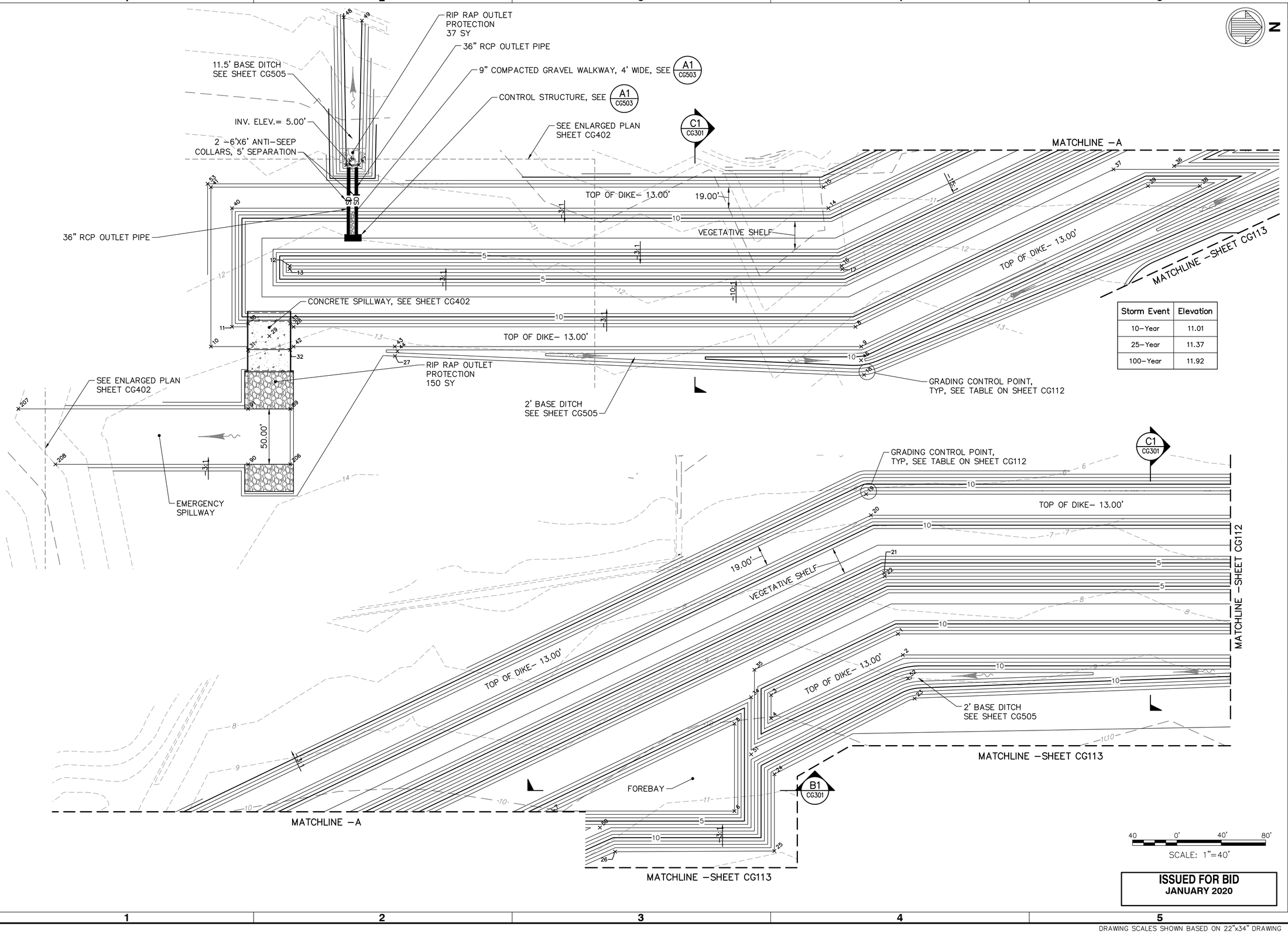
DRAWING SCALES SHOWN BASED ON 22"x34" DRAWING



Storm Event	Elevation
10-Year	11.01
25-Year	11.37
100-Year	11.92

ISSUED FOR BID
JANUARY 2020

GRAND STRAND WATER & SEWER AUTHORITY

Mark	Description	Date	Appr.
	ISSUED FOR BID	05/01/20	JJT

BUCKSPORT MARINE INDUSTRIAL PARK - PHASE 1

WEST POND PLAN 1 OF 2

Designed by: TRR	Date: JANUARY 2020
Dwn by: JT	Chkd by: TRR
Reviewed by:	M&N Project No. 7232-05
Submitted by: MOFFATT & NICHOL	Drawing code:
	Drawing Scale: AS SHOWN
	Plot scale: 1:1 (0 SHEET)
	Rev. 0

SOUTH CAROLINA LICENSED PROFESSIONAL ENGINEER No.24067 TIMOTHY R. TREED
SEAL 5-1-2020
SOUTH CAROLINA MOFFATT & NICHOL ENGINEERS No. 000363 CERTIFICATE OF AUTHORIZATION

4700 FALLS OF THE NEUSE ROAD
SUITE 300
RALEIGH, NC 27609
919-781-4626
SC COA No. 363
moffatt & nichol

Sheet Reference No.
CG111
INDEX: 21 OF 113

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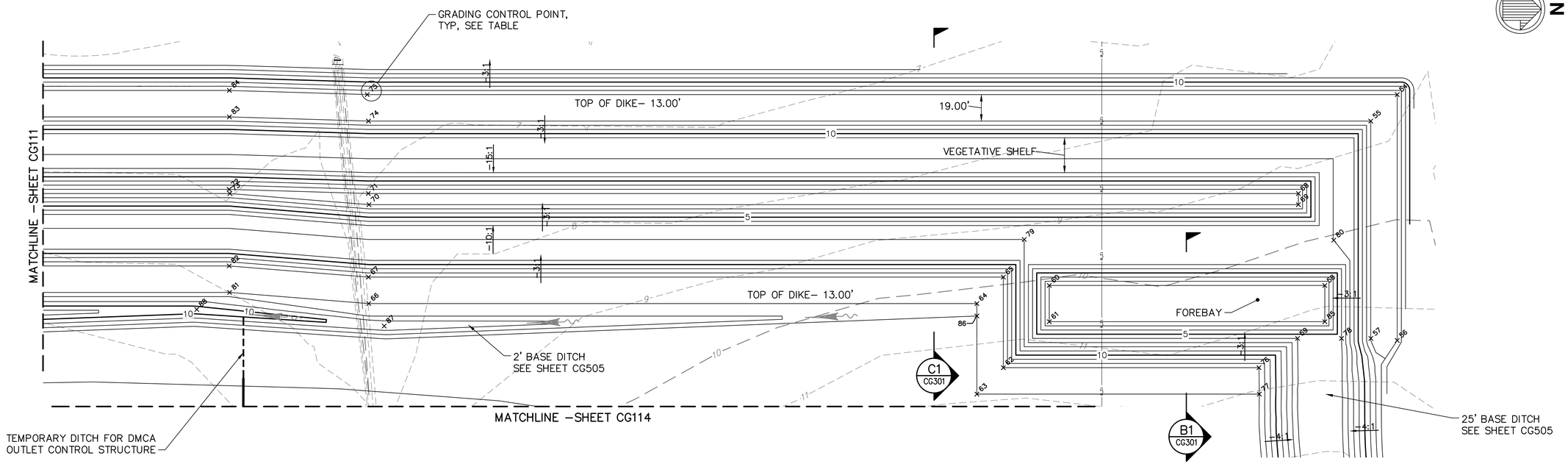
DRAWING SCALES SHOWN BASED ON 22"x34" DRAWING



West Pond Point Table			
Point #	Elevation	Northing	Easting
1	13.00	664899.01	2577028.27
2	13.00	664903.35	2577047.27
3	13.00	664784.52	2577083.41
4	13.00	664784.52	2577104.50
5	2.00	664751.52	2577109.29
6	2.00	664751.52	2577188.09
7	2.00	664587.88	2577188.09
8	13.00	664234.86	2577348.11
9	13.00	664240.05	2577365.92
10	13.00	663653.61	2577365.91
11	13.00	663672.61	2577348.11
12	2.00	663724.61	2577293.11
13	2.00	663724.61	2577296.11
14	13.00	664210.44	2577241.11
15	13.00	664206.10	2577222.11
16	2.00	664222.31	2577293.11
17	2.00	664222.99	2577296.11
18	13.00	664242.62	2577391.40
19	13.00	664870.25	2576902.27
20	13.00	664874.59	2576921.27
21	2.00	664886.46	2576973.27
22	2.00	664887.14	2576976.27

West Pond Point Table			
Point #	Elevation	Northing	Easting
23	13.00	664914.01	2577086.56
24	14.00	664787.52	2577154.82
25	14.00	664787.52	2577224.10
26	14.00	664643.82	2577224.71
27	13.00	663819.61	2577374.51
28	13.00	663728.11	2577348.11
29	11.50	663706.31	2577356.38
30	12.00	663687.11	2577345.11
31	12.00	663687.11	2577368.92
32	12.00	663725.11	2577368.92
33	12.00	663725.11	2577345.11
34	7.00	664766.52	2577085.42
35	8.00	664769.52	2577060.66
36	7.00	664522.16	2577203.10
37	8.00	664467.53	2577206.10
38	13.00	664545.54	2577221.10
39	13.00	664498.61	2577221.10
40	13.00	663672.61	2577241.11
41	13.00	663653.61	2577222.11
42	13.00	663728.11	2577365.92
43	13.00	663819.43	2577365.92
44	11.95	663821.82	2577370.04

West Pond Point Table			
Point #	Elevation	Northing	Easting
45	9.02	664239.90	2577378.26
46	5.00	663775.64	2577202.22
47	5.00	663786.99	2577202.24
48	5.00	663773.37	2577068.96
49	5.00	663789.82	2577071.90
50	6.05	664630.17	2577202.97
51	6.02	664766.57	2577136.94
52	6.98	664908.04	2577068.40
53	12.00	663650.61	2577219.11
54	13.00	666171.84	2576905.27
55	13.00	666152.84	2576924.27
56	13.00	666171.84	2577081.73
57	13.00	666152.91	2577080.27
58	2.00	666119.84	2577042.27
59	6.00	666100.26	2577080.27
60	2.00	665921.84	2577042.27
61	2.00	665921.84	2577068.27
62	13.00	665888.84	2577101.27
63	13.00	665869.84	2577120.27
64	13.00	665869.84	2577055.27
65	13.00	665888.84	2577036.27
66	13.00	665432.86	2577055.27

West Pond Point Table			
Point #	Elevation	Northing	Easting
67	13.00	665432.71	2577036.27
68	2.00	666100.84	2576976.27
69	2.00	666100.84	2576984.27
70	2.00	665433.07	2576984.27
71	2.00	665432.57	2576976.27
72	2.00	665332.57	2576973.27
73	2.00	665333.07	2576976.27
74	13.00	665432.71	2576924.27
75	13.00	665431.81	2576905.24
76	13.00	666072.51	2577101.27
77	13.00	666072.78	2577120.27
78	6.00	666131.84	2577080.27
79	8.00	665903.84	2577009.27
80	8.00	666126.23	2577009.76
81	13.00	665332.92	2577047.27
82	13.00	665332.59	2577028.27
83	13.00	665332.75	2576921.27
84	13.00	665332.75	2576902.27
85	2.00	666119.84	2577068.27
86	13.00	665869.84	2577064.13
87	10.25	665443.98	2577071.37
88	9.43	665309.32	2577059.50

40' 0' 40' 80'

SCALE: 1"=40'

ISSUED FOR BID
JANUARY 2020

GRAND STRAND WATER & SEWER AUTHORITY

Mark	Description	Date	Appr.
	ISSUED FOR BID	05/01/20	JJT

BUCKSPORT MARINE INDUSTRIAL PARK - PHASE 1

WEST POND PLAN 2 OF 2

Rev. 0
Date: JANUARY 2020
M&N Project No. 7232-05
Drawing code:
Drawing Scale: AS SHOWN
Plot scale: 1:1 (0 SHEET)
Designed by: TRR
Dwn by: JT
Ckd by: TRR
Reviewed by:
Submitted by: MOFFATT & NICHOL

SOUTH CAROLINA LICENSED PROFESSIONAL ENGINEER No.24067 TIMOTHY R. REID
SEAL 5-1-2020
SOUTH CAROLINA MOFFATT & NICHOL ENGINEERS No. 000363 CERTIFICATE OF AUTHORIZATION

4700 FALLS OF THE NEUSE ROAD
SUITE 300
RALEIGH, NC 27609
919-781-4626
SC COA No. 363
moffatt & nichol

Sheet Reference No.
CG112
INDEX: 22 OF 113

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Date: 4/29/2020 11:09 AM by JTHIBODEAUX

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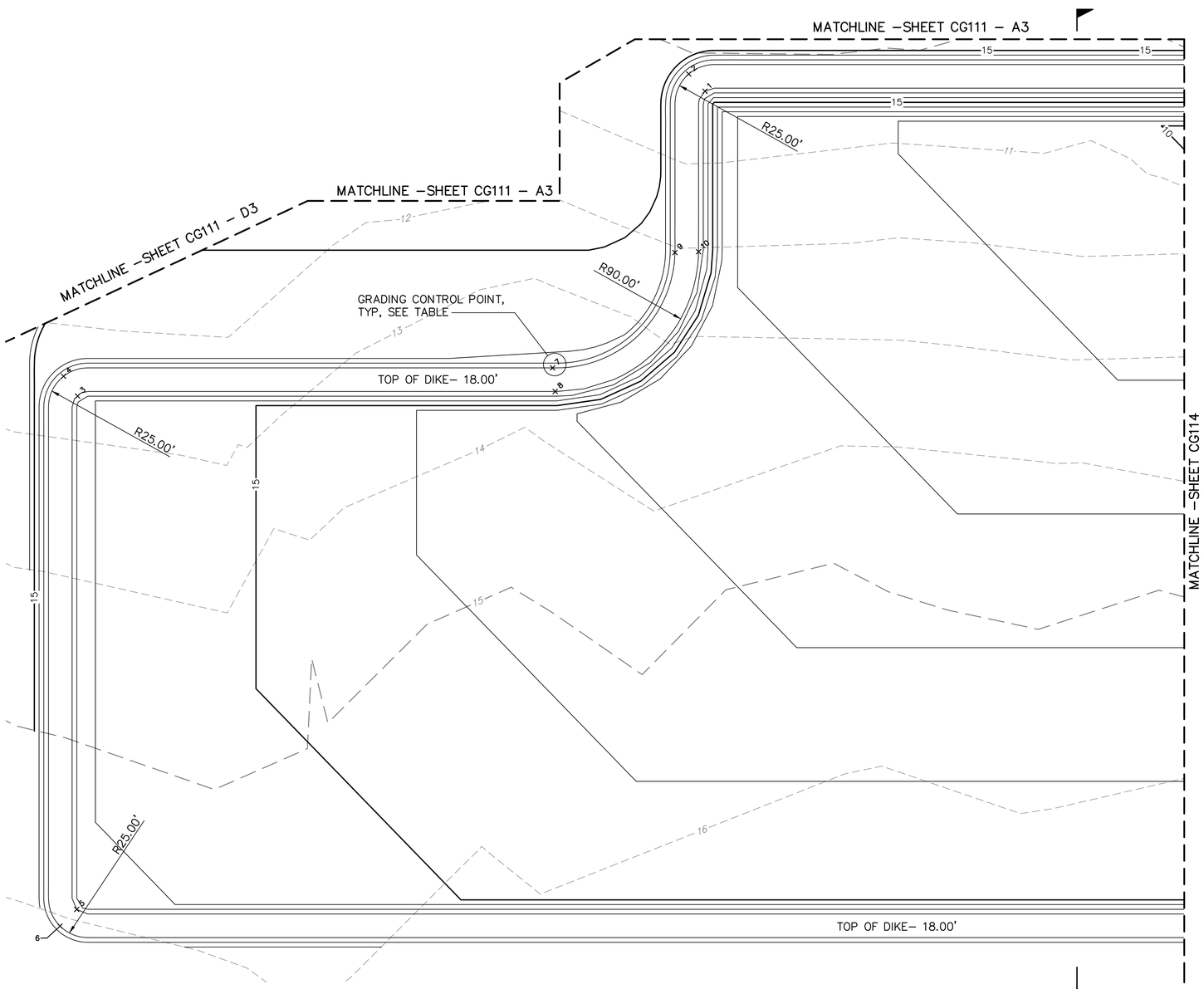

DMCA Point Table			
Point #	Elevation	Northing	Easting
1	18.00	664900.56	2577162.23
2	18.00	664890.25	2577151.28
3	18.00	664501.70	2577356.01
4	18.00	664492.78	2577343.42
5	18.00	664501.13	2577682.34
6	18.00	664490.52	2577692.95
7	18.00	664803.67	2577338.10
8	18.00	664805.36	2577353.10
9	18.00	664881.50	2577264.76
10	18.00	664896.51	2577264.26
11	18.00	665919.80	2577682.65
12	18.00	665924.99	2577697.51
13	18.00	665920.13	2577163.20
14	18.00	665929.85	2577151.75
15	14.00	665911.06	2577172.55
16	14.00	665938.07	2577143.01

NOTES:

1. FOR CONSTRUCTION OF DMCA, SEE GEOTECHNICAL NOTES, SHEET CG115

40' 0' 40' 80'

SCALE: 1"=40'

ISSUED FOR BID
JANUARY 2020

GRAND STRAND WATER & SEWER AUTHORITY

Mark	Description	Date	Appr.
	ISSUED FOR BID	05/01/20	JJT

BUCKSPORT MARINE INDUSTRIAL PARK - PHASE 1

TEMPORARY DREDGE MATERIAL CONTAINMENT AREA 1 OF 2

Rev: 0
Date: JANUARY 2020
M&N Project No. 7232-05
Drawing code:
Drawing Scale: AS SHOWN
Plot scale: 1:1 (0 SHEET)
Designed by: TRR
Dwn by: JT
Cad by: TRR
Reviewed by:
Submitted by: MOFFATT & NICHOL

LICENSED PROFESSIONAL ENGINEER
SOUTH CAROLINA
No.24067
TIMOTHY S. REED
SEAL 5-1-2020

SOUTH CAROLINA CERTIFICATE OF AUTHORIZATION
MOFFATT & NICHOL ENGINEERS No. 000363

4700 FALLS OF THE NEUSE ROAD
SUITE 300
RALEIGH, NC 27609
919-781-4626

SC COA No. 363

moffatt & nichol

Sheet Reference No.
CG113
INDEX: 23 OF 113

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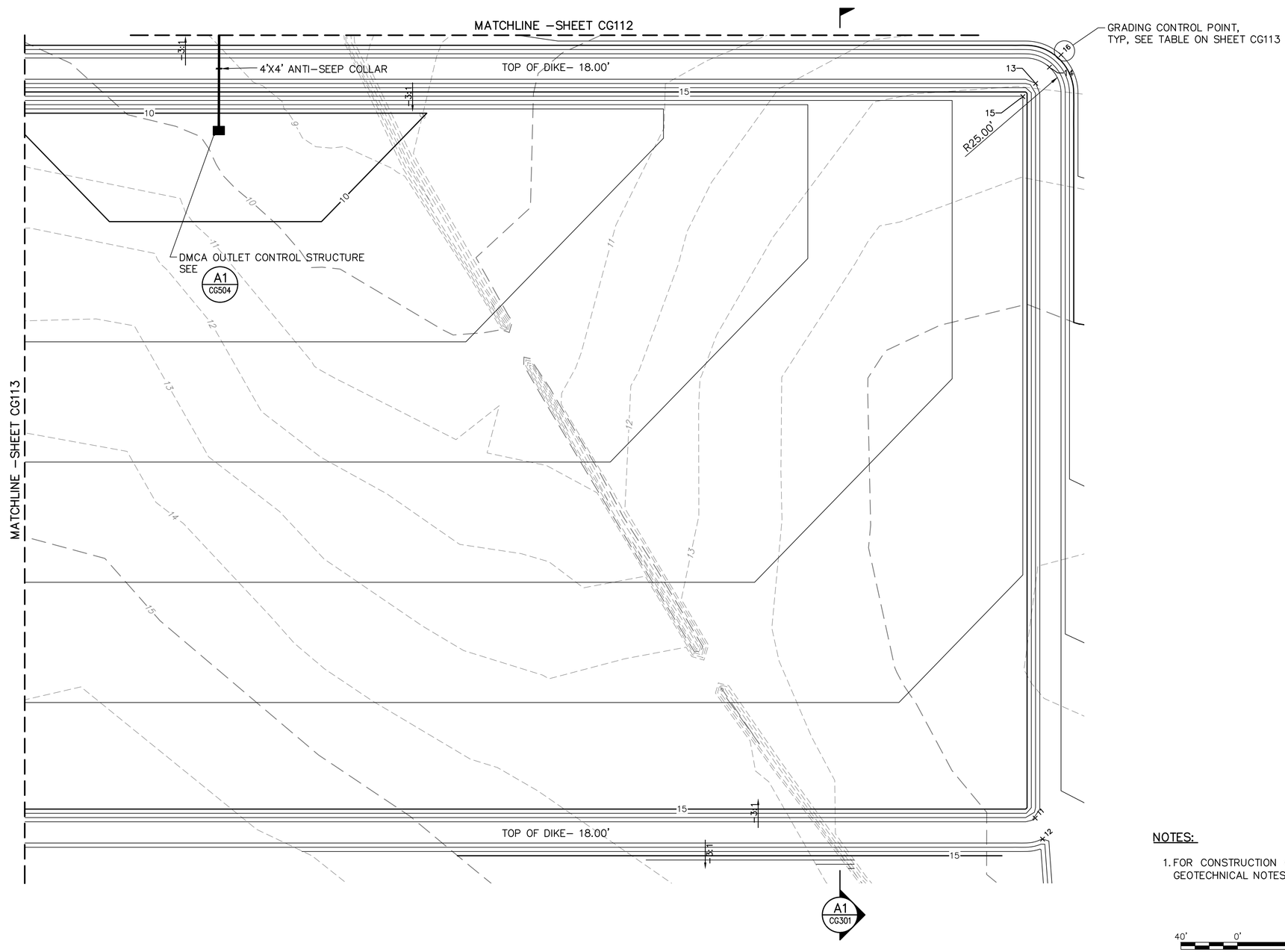

NOTES:

1. FOR CONSTRUCTION OF DMCA, SEE GEOTECHNICAL NOTES, SHEET CG115

40' 0' 40' 80'

SCALE: 1"=40'

ISSUED FOR BID
JANUARY 2020

GRAND STRAND WATER & SEWER AUTHORITY

Mark	Description	Date	Appr.
	ISSUED FOR BID	05/01/20	JJT

BUCKSPORT MARINE INDUSTRIAL PARK - PHASE 1

TEMPORARY DREDGE MATERIAL CONTAINMENT AREA 2 OF 2

Rev. 0
Date: JANUARY 2020
M&N Project No. 7232-05
Drawing code:
Drawing Scale: AS SHOWN
Plot scale: 1:1 (0 SHEET)
Designed by: TRR
Dwn by: JT
Ckd by: TRR
Reviewed by:
Submitted by: MOFFATT & NICHOL

SOUTH CAROLINA LICENSED PROFESSIONAL ENGINEER
No.24067
TIMOTHY S. REID
4.29.20
SEAL 5-1-2020
SOUTH CAROLINA MOFFATT & NICHOL ENGINEERS No. 000363 CERTIFICATE OF AUTHORIZATION

4700 FALLS OF THE NEUSE ROAD
SUITE 300
RALEIGH, NC 27609
919-781-4626
SC COA No. 363
moffatt & nichol

Sheet Reference No.
CG114
INDEX: 24 OF 113

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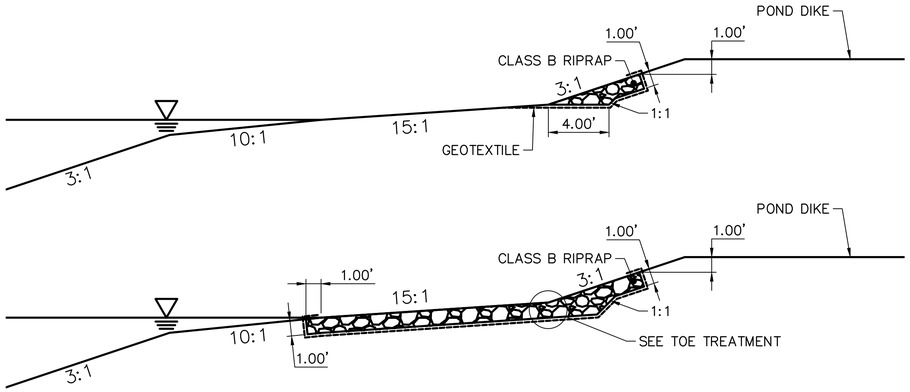
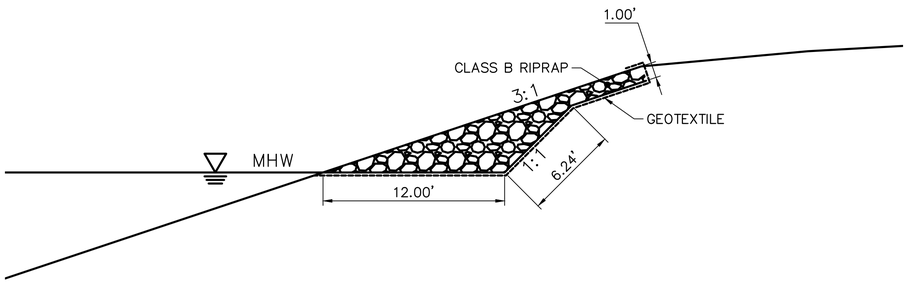


B2 CG115 WEST POND SLOPE LINING DETAIL
SCALE: 1" = 5'



A2 CG115 RIPRAP SLOPE PROTECTION DETAIL
SCALE: 1" = 5'

POND AND DMCA CONSTRUCTION NOTES:

THE ACTIVITIES NOTED BELOW WILL BE PERFORMED UNDER THE DIRECTION OF A GEOTECHNICAL ENGINEER PROVIDED BY GSWSA FOR THE EXCAVATION AND CONSTRUCTION OF THE WESTERN STORMWATER POND AND THE DMCA DIKES.

1. THE CONTRACTOR SHALL PLACE RIPRAP ALONG THE SLOPE OF THE PONDS WHERE DEEPER EXCAVATIONS ARE NEEDED AND WHERE THE CLEAN SAND POCKETS ARE EXPOSED, WHICH ARE ABOVE THE NORMAL POOL ELEVATION FOR THE NATURAL GROUNDWATER CONDITION. THESE SHALL BE PLACED ON A CASE BY CASE BASIS DURING EXCAVATION AS DIRECTED BY GSWSA PROVIDED GEOTECHNICAL REPRESENTATIVE.
2. THE DEPTH OF RIPRAP SHALL BE APPROXIMATELY 1 FEET AND USED IN CONJUNCTION WITH A WOVEN GEOTEXTILE AS NOTED IN THE DETAILS.
3. DEWATERING SHOULD BE ACCOUNTED FOR DURING THE INSTALLATION OF THE OUTLET PIPE AS THE EXCAVATION WILL CUT INTO THE CLEAN SANDS.
4. THE POND SHALL BE CONSTRUCTED BY CUTTING DOWN IN SHALLOW LIFTS AND LETTING THE WATER EQUALIZE WITHIN THE POND. THIS REDUCES THE SLOPE FAILURE POTENTIAL AND IS RELATED TO THE NEED TO ONLY ARMOR THE CLEAN SANDS ABOVE THE NORMAL WATER TABLE ELEVATIONS. SPECIAL ATTENTION SHOULD BE PAID TO THE USE OF GOOD TECHNIQUE TO ACCOMPLISH THIS.
5. IF THE CONTRACTOR ELECTS TO DITCH TO ASSIST WITH DEWATERING, DITCH EXCAVATIONS WILL NEED TO STAY ABOVE THE CLEAN SANDS.
6. IN CONSTRUCTING THE BERMS, PROOF-ROLLING SHALL BE USED TO FIND THE SOFT AREAS REQUIRING UNDERCUT. ONCE FOUND, UNDERCUT AND REPLACEMENT WITH SUITABLE MATERIAL IS REQUIRED.
7. SLOPES SHALL BE HYDROSEEDED OR TREATED WITH SEEDING AND MATTING FOR QUICK TURF ESTABLISHMENT.
8. CONTRACTOR SHALL NOT OVERCUT THE SLOPE AND THEN TRY TO REBUILD IT BY PLACING FILL, WHICH COULD LEAD TO SHALLOW EROSION AND SLIDES. IN GENERAL, THE INTACT SOILS SHALL BE BEST LEFT UNDISTURBED.

NOTES:

1. TO BE UTILIZED AS DIRECTED BY GSWSA PROVIDED GEOTECHNICAL REPRESENTATIVE (LINER REQUIRED FOR CLEAN SANDS ONLY).
2. ESTIMATE 30% OF POND SLOPE WILL REQUIRE LINING.

ISSUED FOR BID
JANUARY 2020

GRAND STRAND WATER & SEWER AUTHORITY

Mark	Description	Date	Appr.
	ISSUED FOR BID	05/01/20	JJT

BUCKSPORT MARINE INDUSTRIAL PARK - PHASE 1

POND AND DMCA DETAILS

Date: JANUARY 2020 | Rev.
M&N Project No. 7232-05
Drawing code:
Drawing Scale: AS SHOWN
Plot scale: 1:1 (0 SHEET)
Designed by: TRR | Dwn by: JT | Ckd by: TRR
Reviewed by:
Submitted by: MOFFATT & NICHOL

SOUTH CAROLINA LICENSED PROFESSIONAL ENGINEER
No.24067
TIMOTHY R. RICH
SEAL 5-1-2020

SOUTH CAROLINA MOFFATT & NICHOL ENGINEERS No. 000363 CERTIFICATE OF AUTHORIZATION

4700 FALLS OF THE NEUSE ROAD
SUITE 300
RALEIGH, NC 27609
919-781-4626
SC COA No. 363
moffatt & nichol

Sheet Reference No.
CG115
INDEX: 25 OF 113

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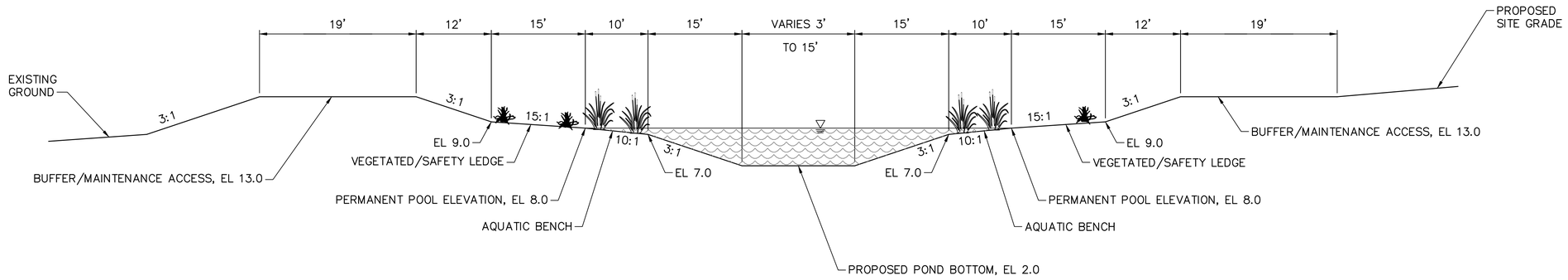
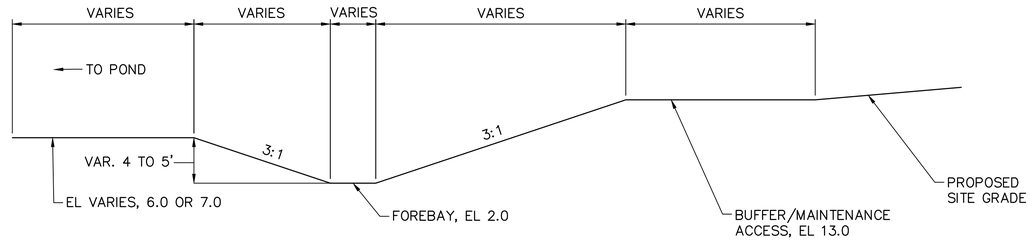
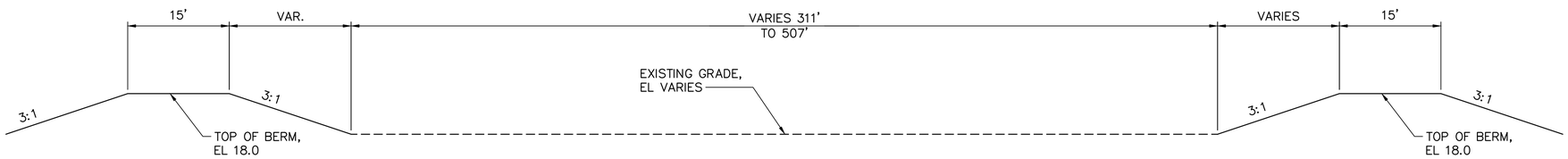
DRAWING SCALES SHOWN BASED ON 22"x34" DRAWING



C1 CG101 — STORM WATER POND TYPICAL SECTION
SCALE: 1"=10'
CG102, CG111, CG112



B1 CG101 — STORM WATER POND FOREBAY TYPICAL SECTION
SCALE: 1"=10'
CG102, CG111, CG112



A1 CG101 — TEMPORARY DREDGE MATERIAL CONTAINMENT AREA (DMCA) TYPICAL SECTION
SCALE: 1"=10'
CG102, CG113, CG114

10' 0' 10' 20'
SCALE: 1"=10'

ISSUED FOR BID
JANUARY 2020

GRAND STRAND WATER & SEWER AUTHORITY

Mark	Description	Date	Appr.
	ISSUED FOR BID	05/01/20	JJT

BUCKSPORT MARINE INDUSTRIAL PARK - PHASE 1

POND & DIKE TYPICAL SECTIONS

Designed by: TRR	Date: JANUARY 2020
Drawn by: JT	Chkd by: TRR
Reviewed by:	M&N Project No. 7232-05
Submitted by: MOFFATT & NICHOL	Drawing code:
Drawing Scale: AS SHOWN Plot scale: 1:1 (0 SHEET)	Rev. 0

SOUTH CAROLINA LICENSED PROFESSIONAL ENGINEER No.24067 TIMOTHY R. REID
SEAL 5-1-2020
SOUTH CAROLINA MOFFATT & NICHOL ENGINEERS No. 000363 CERTIFICATE OF AUTHORIZATION

4700 FALLS OF THE NEUSE ROAD
SUITE 300
RALEIGH, NC 27609
919-781-4626
SC COA No. 363
moffatt & nichol

Sheet Reference No.
CG301
INDEX: 26 OF 113

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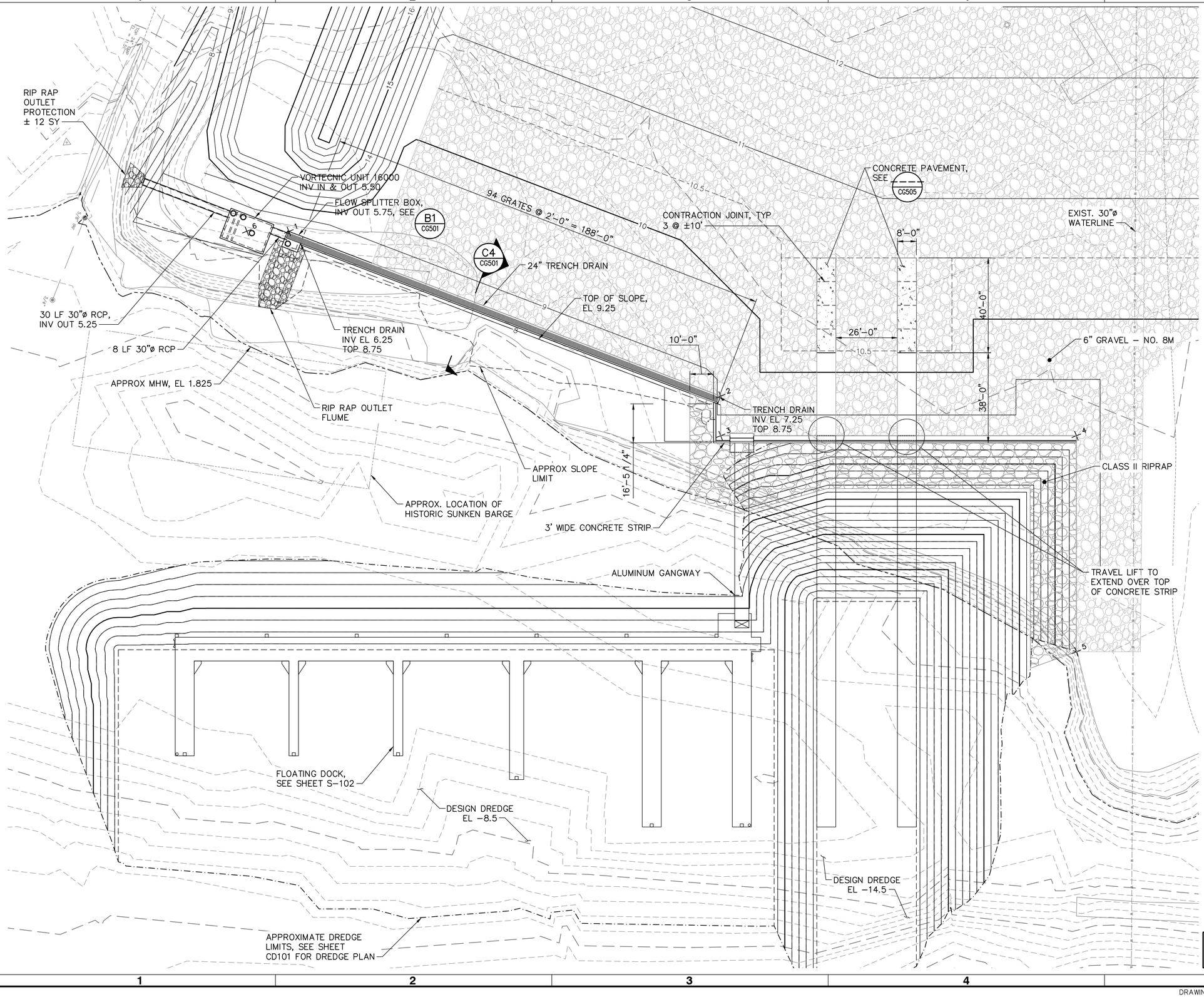

Point Table		
Point #	Northing	Easting
1	665930.86	2579693.85
2	666125.61	2579685.43
3	666132.23	2579700.76
4	666269.99	2579641.28
5	666306.11	2579724.95
6	665914.56	2579700.81

NOTES:

1. POINT 6 IS FOR THE CENTER OF THE STRUCTURE.

ISSUED FOR BID
JANUARY 2020

GRAND STRAND WATER & SEWER AUTHORITY

Mark	Description	Date	Appr.
	ISSUED FOR BID	05/01/20	JJT

BUCKSPORT MARINE INDUSTRIAL PARK - PHASE 1

ENLARGED DRAINAGE PLAN

Date: JANUARY 2020 | Rev. 0
Designed by: TRR | Drawn by: JT | Cad by: TRR | Reviewed by:
Submitted by: MOFFATT & NICHOL
M&N Project No. 7232-05
Drawing code:
Drawing Scale: AS SHOWN
Plot scale: 1:1 (0 SHEET)

SOUTH CAROLINA LICENSED PROFESSIONAL ENGINEER TIMOTHY R. TRIPLETT No.24067
SEAL 5-1-2020
SOUTH CAROLINA MOFFATT & NICHOL ENGINEERS No. 000363 CERTIFICATE OF AUTHORIZATION

4700 FALLS OF THE NEUSE ROAD
SUITE 300
RALEIGH, NC 27609
919-781-4626
SC COA No. 363
moffatt & nichol

Sheet Reference No.
CG401
INDEX: 27 OF 113

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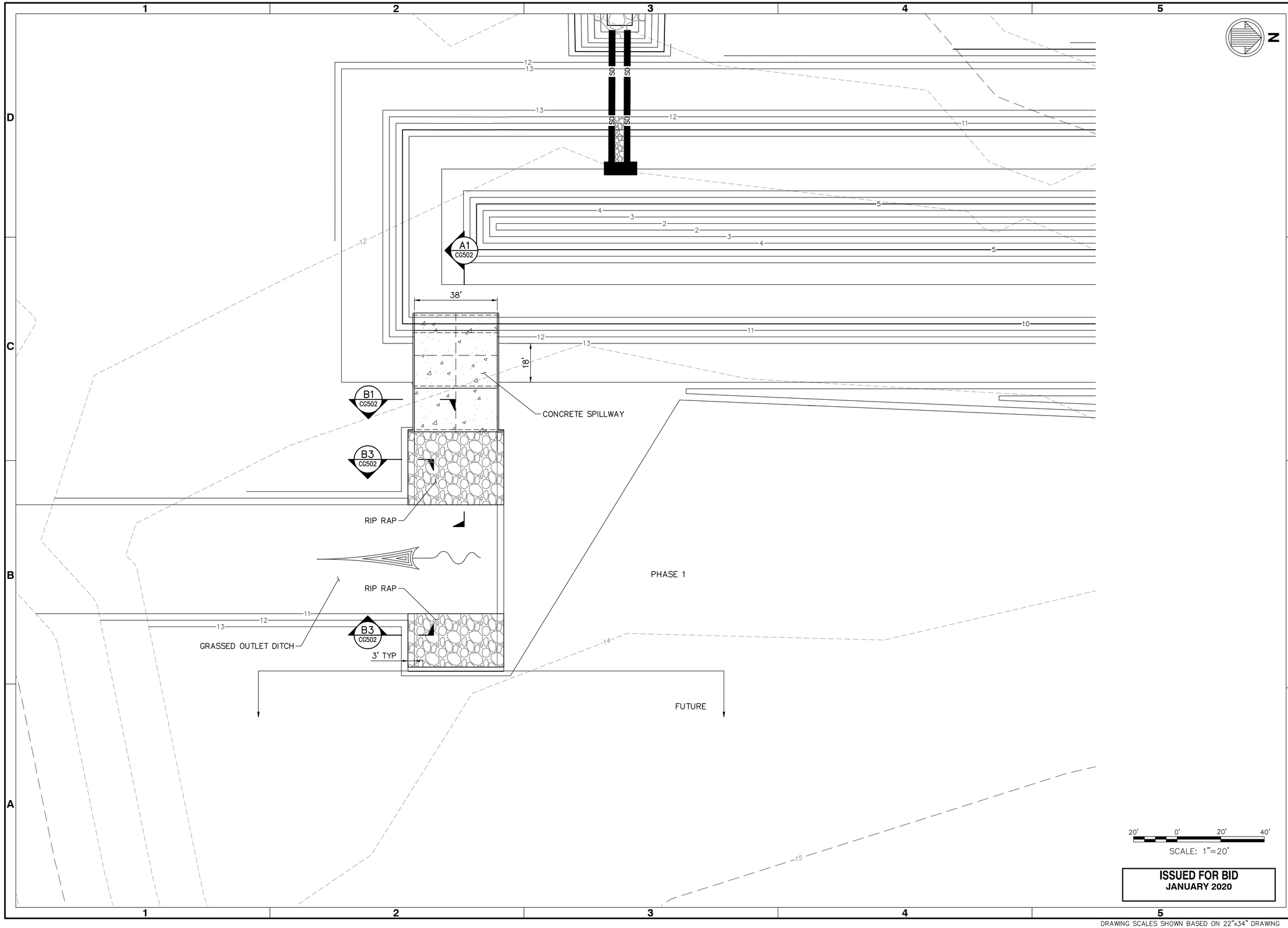

GRAND STRAND WATER & SEWER AUTHORITY

Mark	Description	Date	Appr.
	ISSUED FOR BID	05/01/20	JJT

BUCKSPORT MARINE INDUSTRIAL PARK - PHASE 1

ENLARGED DRAINAGE PLAN

Rev.	0
Date:	JANUARY 2020
M&N Project No.	7232-05
Drawing code:	
Drawing Scale:	AS SHOWN
Plot scale: 1:1 (0 SHEET)	
Designed by:	TRR
Cad by:	TRR
Dsn by:	JT
Reviewed by:	
Submitted by:	MOFFATT & NICHOL

SOUTH CAROLINA LICENSED PROFESSIONAL ENGINEER
No.24067
TIMOTHY R. RICH
SEAL 5-1-2020

SOUTH CAROLINA CERTIFICATE OF AUTHORIZATION
MOFFATT & NICHOL ENGINEERS No. 000363

4700 FALLS OF THE NEUSE ROAD
SUITE 300
RALEIGH, NC 27609
919-781-4626

SC COA No. 363

moffatt & nichol

Sheet Reference No.

CG402

INDEX: 28 OF 113

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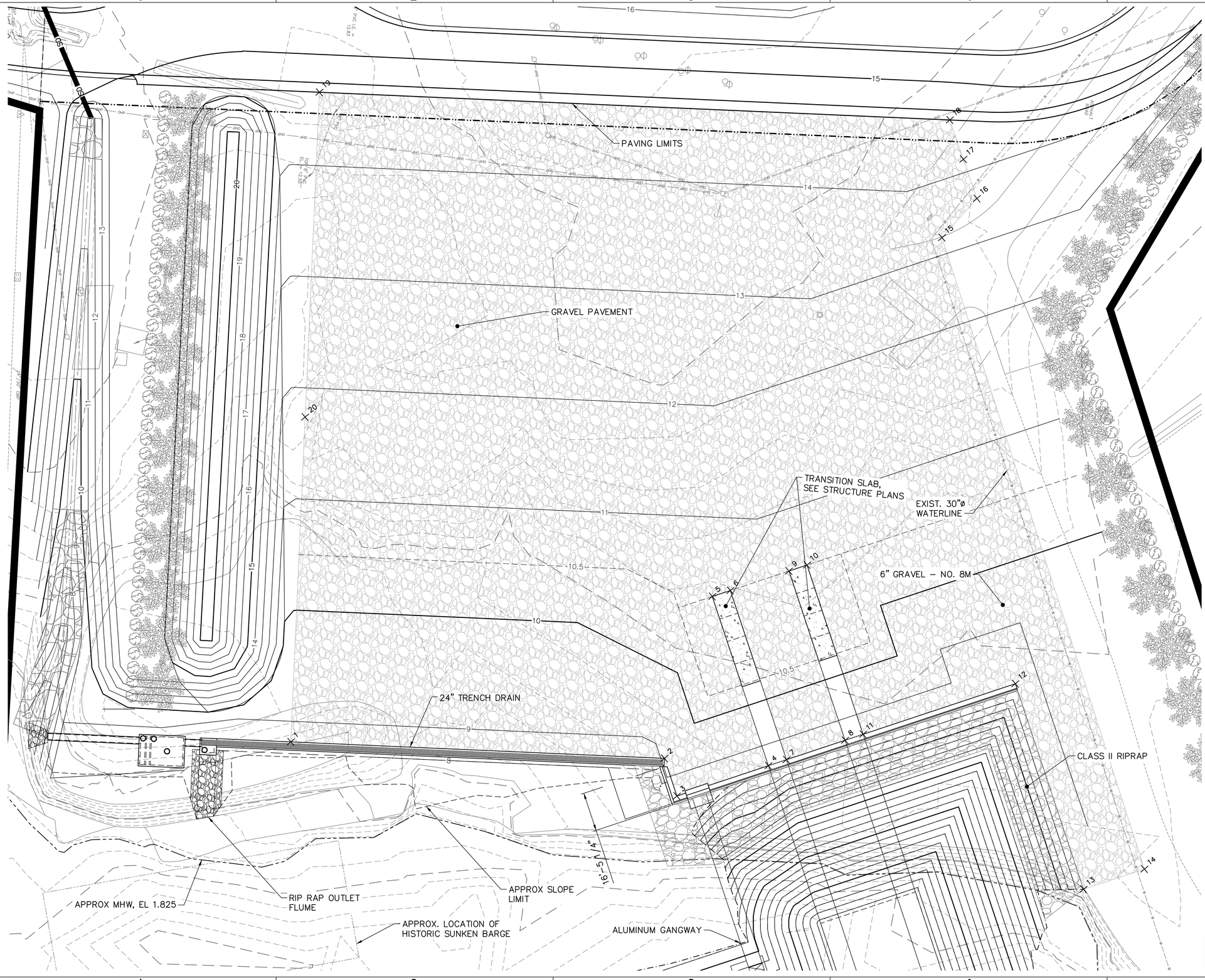

Gravel Limits Point Table		
Point #	Northing	Easting
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2	666125.61	2579685.43
3	666132.23	2579700.76
4	666169.46	2579684.69
5	666139.73	2579615.83
6	666147.08	2579612.66
7	666176.81	2579681.52
8	666200.68	2579671.21
9	666170.95	2579602.35
10	666178.29	2579599.18
11	666208.02	2579668.04
12	666269.99	2579641.28
13	666306.11	2579724.95
14	666330.89	2579714.23
15	666222.89	2579457.03
16	666236.10	2579439.33
17	666228.97	2579423.37
18	666221.84	2579407.41
19	665956.55	2579418.92
20	665962.46	2579555.57

ISSUED FOR BID
JANUARY 2020

GRAND STRAND WATER & SEWER AUTHORITY

Mark	Description	Date	Appr.
1	ISSUED FOR BID	05/01/20	JJT

BUCKSPORT MARINE INDUSTRIAL PARK - PHASE 1

GRAVEL LOT PAVING PLAN

Designed by:	Dwn by:	Ckd by:	Reviewed by:	Submitted by:	Date:	Drawing code:	Drawing Scale:	Rev.
TRR	JT	TRR		MOFFATT & NICHOL	JANUARY 2020	M&N Project No. 7232-05	AS SHOWN Plot scale: 1:1 (9 SHEET)	

SOUTH CAROLINA LICENSED PROFESSIONAL ENGINEER No.24067 TIMOTHY R. REID
SEAL 5-1-2020
SOUTH CAROLINA CERTIFICATE OF AUTHORIZATION MOFFATT & NICHOL ENGINEERS No. 000363

4700 FALLS OF THE NEUSE ROAD
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919-781-4626
SC COA No. 363
moffatt & nichol

Sheet Reference No.
CG403
INDEX: 29 OF 113

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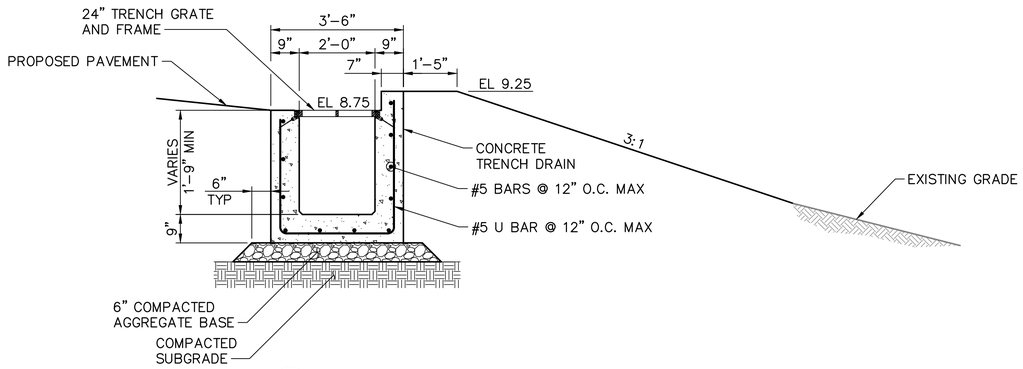
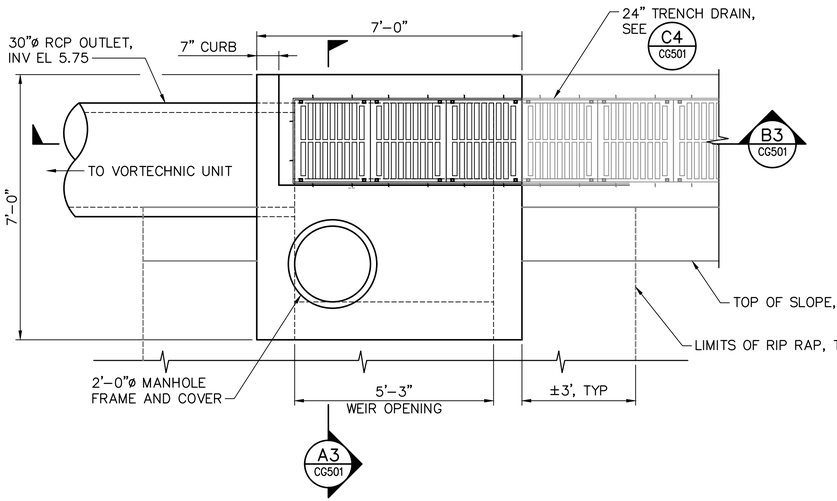
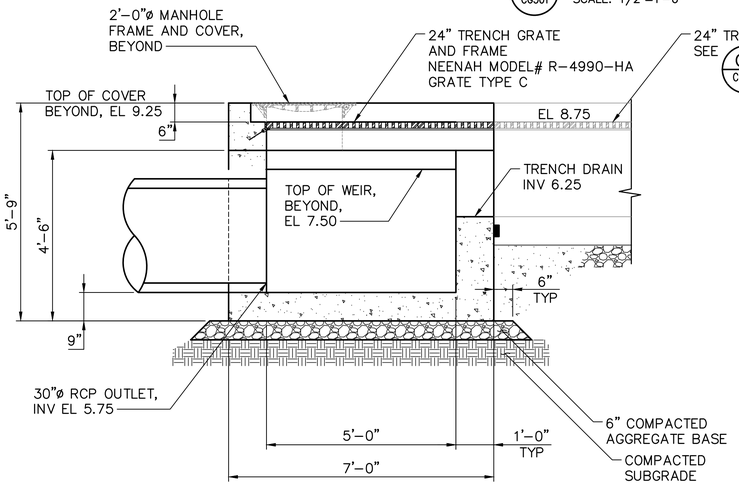


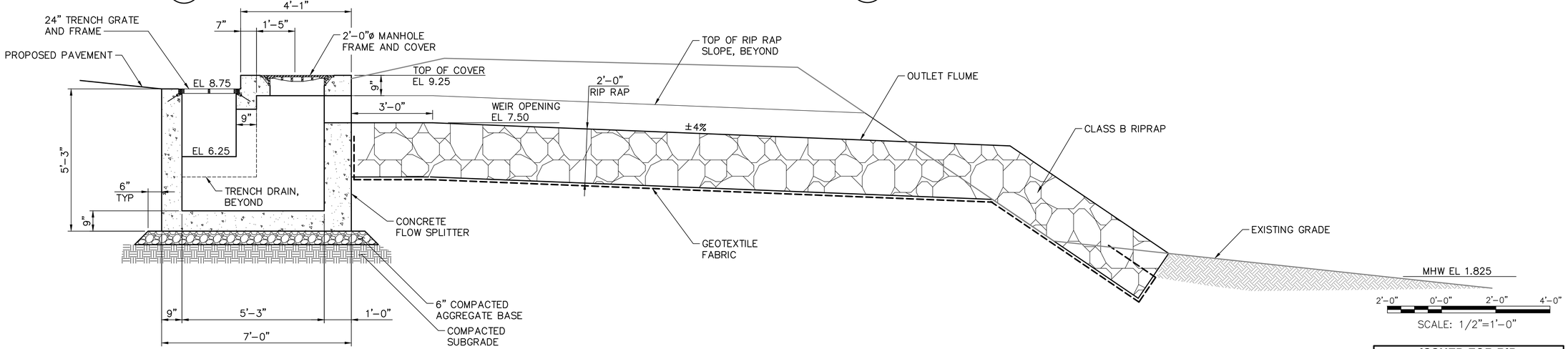
C4 CG501 **24 INCH TRENCH DRAIN WITH GRATE**
SCALE: 1/2"=1'-0"



B1 CG501 **FLOW SPLITTER BOX**
SCALE: 1/2"=1'-0"



B3 CG501 **SECTION**
SCALE: 1/2"=1'-0"



A3 CG501 **SECTION**
SCALE: 1/2"=1'-0"

ISSUED FOR BID
JANUARY 2020

GRAND STRAND WATER & SEWER AUTHORITY

Mark	Description	Date	Appr.
	ISSUED FOR BID	05/01/20	JJT

BUCKSPORT MARINE INDUSTRIAL PARK - PHASE 1

DRAINAGE DETAILS

Rev.	0
Date:	JANUARY 2020
M&N Project No.	7232-05
Drawing code:	
Drawing Scale:	AS SHOWN
Plot scale: 1:1 (0 SHEET)	
Designed by:	TRR
Dwn by:	JT
Chd by:	TRR
Reviewed by:	
Submitted by:	MOFFATT & NICHOL

SOUTH CAROLINA LICENSED PROFESSIONAL ENGINEER No.24067 TIMOTHY R. REID
SEAL 5-1-2020
SOUTH CAROLINA MOFFATT & NICHOL ENGINEERS No. 000363 CERTIFICATE OF AUTHORIZATION

4700 FALLS OF THE NEUSE ROAD
SUITE 300
RALEIGH, NC 27609
919-781-4626
SC COA No. 363
moffatt & nichol

Sheet Reference No.
CG501
INDEX: 30 OF 113

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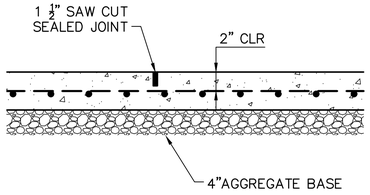
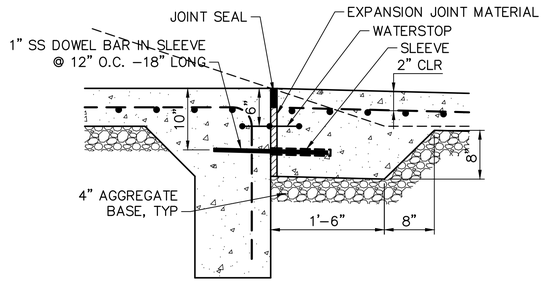
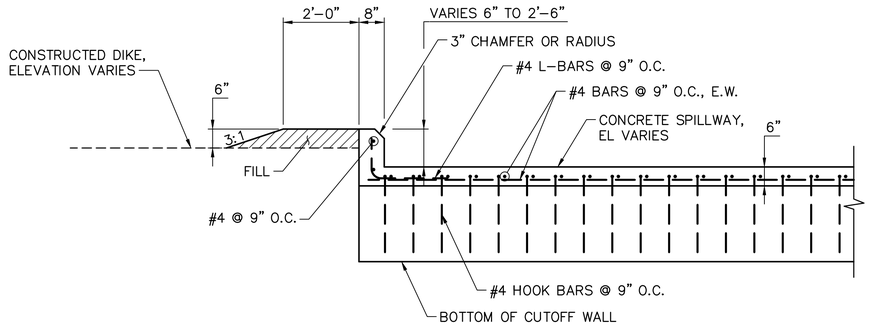


D1 CG502 SAWED JOINT
SCALE: 1/2"=1'-0"
CG402



D3 CG502 CONSTRUCTION JOINT
SCALE: 1/2"=1'-0"
CG402



B1 CG502 SECTION
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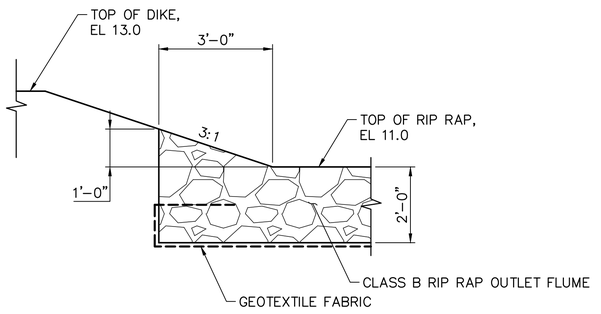

B3 CG502 SECTION
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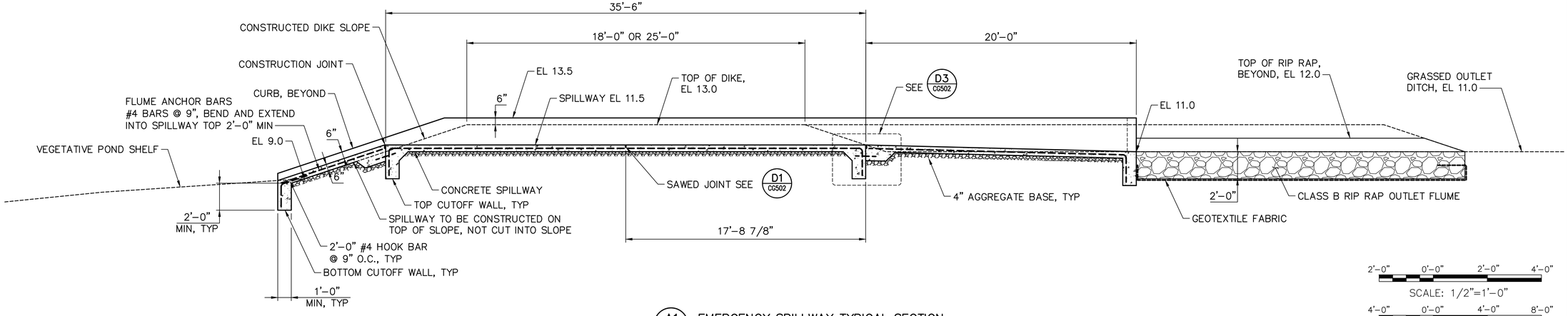

A1 CG502 EMERGENCY SPILLWAY TYPICAL SECTION
SCALE: 1/4"=1'-0"

EMERGENCY SPILLWAY NOTES:

1. USE CONCRETE WITH A MINIMUM 28 DAY COMPRESSIVE STRENGTH OF 4000 PSI.
2. USE AASHTO M31 TYPE W REINFORCEMENT STEEL. USE #4 BARS @ 9" ON CENTER FOR ALL REINFORCEMENT. USE 2' HOOK LENGTH ON ALL BENT BARS. PROVIDE SUFFICIENT TRANSVERSE BARS TO SUPPORT PRIMARY CAGE DURING FORMING. WELDED WIRE FABRIC CONFORMING TO AASHTO M336 MAY BE SUBSTITUTED IN PLACE OF #4 REBAR. PROVIDE A TOTAL CROSS SECTIONAL AREA OF AT LEAST 0.44 SQUARE INCHES WHEN USING WELDED WIRE FABRIC.
3. BOTTOM CUTOFF WALL IS REQUIRED ON ALL FLUMES. TOP CUTOFF WALL IS REQUIRED ON ALL FLUMES.
4. SPILLWAY IS TO BE CONSTRUCTED ON TOP OF SIDE SLOPE, NOT CUT INTO SIDE SLOPE.

PAY ITEMS:
CONCRETE FLUME WITH CURB AND WALLS
RIP RAP (CLASS B)
GEOTEXTILE FABRIC FOR EROSION CONTROL
UNDER RIP RAP (CLASS 2) TYPE C

2'-0" 0'-0" 2'-0" 4'-0"
SCALE: 1/2"=1'-0"
4'-0" 0'-0" 4'-0" 8'-0"
SCALE: 1/4"=1'-0"

ISSUED FOR BID
JANUARY 2020

GRAND STRAND WATER & SEWER AUTHORITY

Mark	Description	Date	Appr.
	ISSUED FOR BID	05/01/20	JJT

BUCKSPORT MARINE INDUSTRIAL PARK - PHASE 1

DRAINAGE DETAILS

Date: JANUARY 2020 | Rev. 0
M&N Project No. 7232-05
Drawing code:
Drawing Scale: AS SHOWN
Plot scale: 1:1 (0 SHEET)
Designed by: TRR | Det by: TRR | Dwn by: JT
Reviewed by:
Submitted by: MOFFATT & NICHOL

SOUTH CAROLINA LICENSED PROFESSIONAL ENGINEER TIMOTHY R. TRIED No.24067
SEAL 5-1-2020
SOUTH CAROLINA MOFFATT & NICHOL ENGINEERS No. 000363 CERTIFICATE OF AUTHORIZATION

4700 FALLS OF THE NEUSE ROAD
SUITE 300
RALEIGH, NC 27609
919-781-4626
SC COA No. 363
moffatt & nichol

Sheet Reference No.
CG502
INDEX: 31 OF 113

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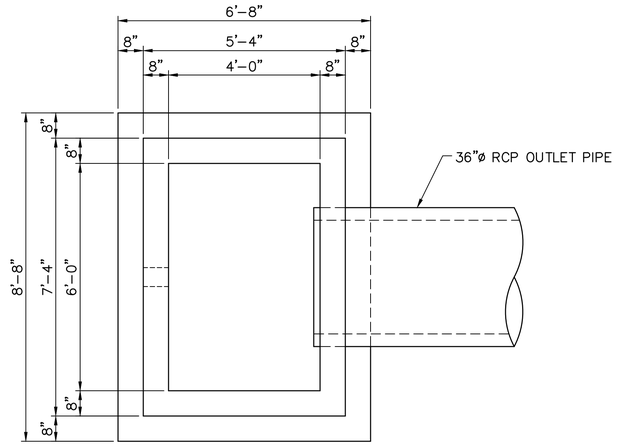
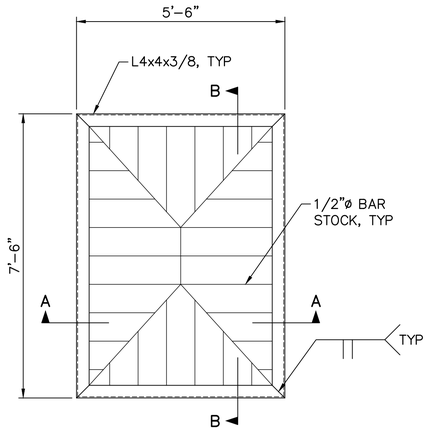


PLAN



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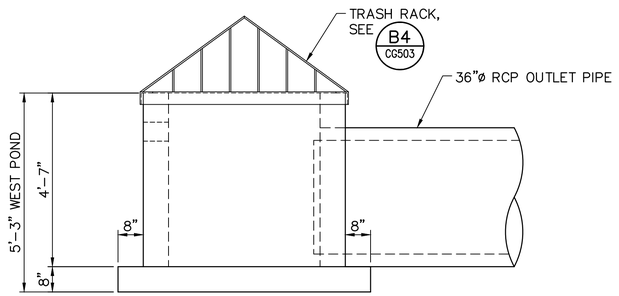
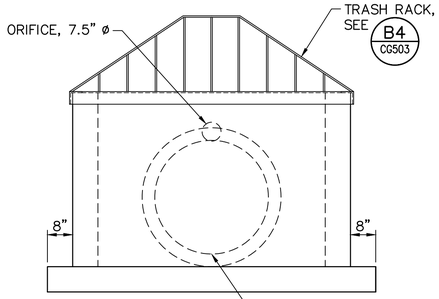


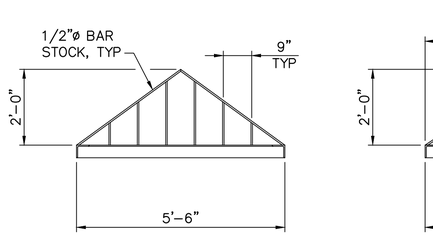
SIDE ELEVATION



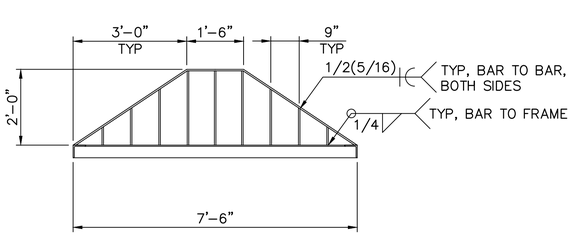
FRONT ELEVATION

NOTE:
PRECAST CONTROL STRUCTURE SHALL BE DESIGNED BY MANUFACTURER IN ACCORDANCE WITH ASTM C913 "STANDARD SPECIFICATIONS FOR PRECAST CONCRETE WATER AND WASTE WATER STRUCTURES" AND ASTM C890 "STANDARD PRACTICE FOR MINIMUM STRUCTURAL DESIGN LOADING FOR MONOLITHIC OR SECTIONAL PRECAST CONCRETE WATER AND WASTE WATER STRUCTURES".

B1 CG503 PRECAST CONCRETE STORM WATER POND OUTLET CONTROL STRUCTURE
SCALE: 1/2"=1'-0"



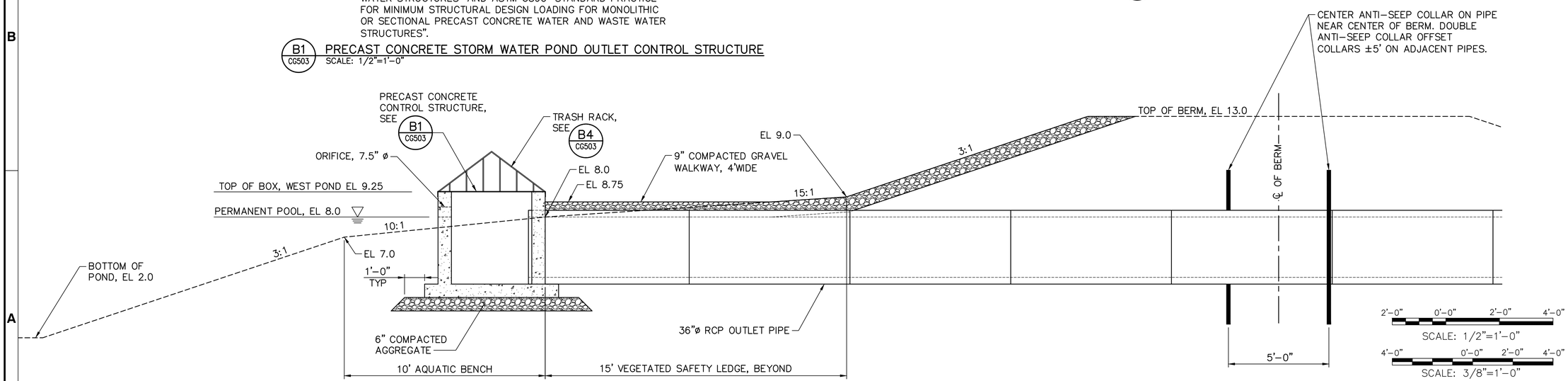
SECTION A-A



SECTION B-B

NOTE:
GALVANIZE RACK AFTER FABRICATION

B4 CG503 TRASH RACK
SCALE: 1/2"=1'-0"



A1 CG101 STORM WATER POND OUTLET CONTROL STRUCTURE SECTION
SCALE: 3/8"=1'-0"

CG111

2'-0" 0'-0" 2'-0" 4'-0"
SCALE: 1/2"=1'-0"

4'-0" 0'-0" 2'-0" 4'-0"
SCALE: 3/8"=1'-0"

ISSUED FOR BID
JANUARY 2020

DRAWING SCALES SHOWN BASED ON 22"x34" DRAWING

GRAND STRAND WATER & SEWER AUTHORITY

Mark	Description	Date	Appr.
	ISSUED FOR BID	05/01/20	JJT

BUCKSPORT MARINE INDUSTRIAL PARK - PHASE 1

DRAINAGE DETAILS

Rev: 0
Date: JANUARY 2020
M&N Project No. 7232-05
Drawing code:
Drawing Scale: AS SHOWN
Plot scale: 1:1 (0 SHEET)
Designed by: TRR
Det by: TRR
Dsn by: JT
Reviewed by:
Submitted by: MOFFATT & NICHOL

SOUTH CAROLINA LICENSED PROFESSIONAL ENGINEER
No.24067
TIMOTHY R. REED
SEAL
5-1-2020
SOUTH CAROLINA CERTIFICATE OF AUTHORIZATION
MOFFATT & NICHOL ENGINEERS No. 000363

4700 FALLS OF THE NEUSE ROAD
SUITE 300
RALEIGH, NC 27609
919-781-4626
SC COA No. 363
moffatt & nichol

Sheet Reference No.
CG503
INDEX: 32 OF 113

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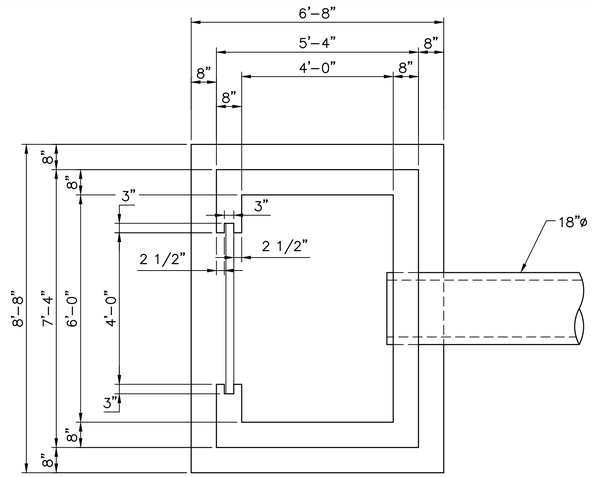
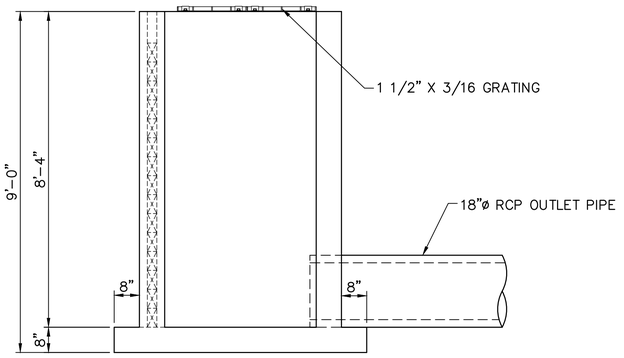
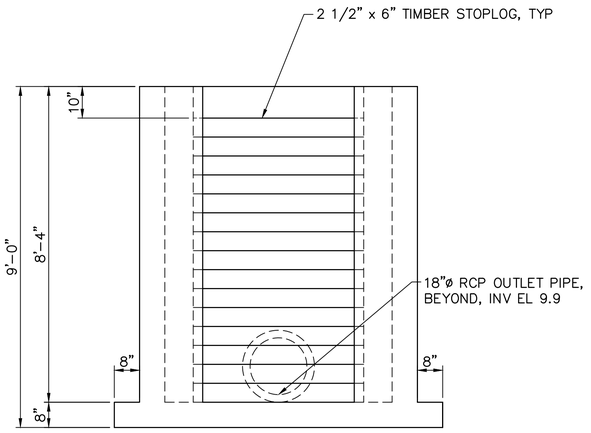


PLAN

NOTE:
PRECAST CONTROL STRUCTURE SHALL BE DESIGNED BY MANUFACTURER IN ACCORDANCE WITH ASTM C913 "STANDARD SPECIFICATIONS FOR PRECAST CONCRETE WATER AND WASTE WATER STRUCTURES" AND ASTM C890 "STANDARD PRACTICE FOR MINIMUM STRUCTURAL DESIGN LOADING FOR MONOLITHIC OR SECTIONAL PRECAST CONCRETE WATER AND WASTE WATER STRUCTURES".

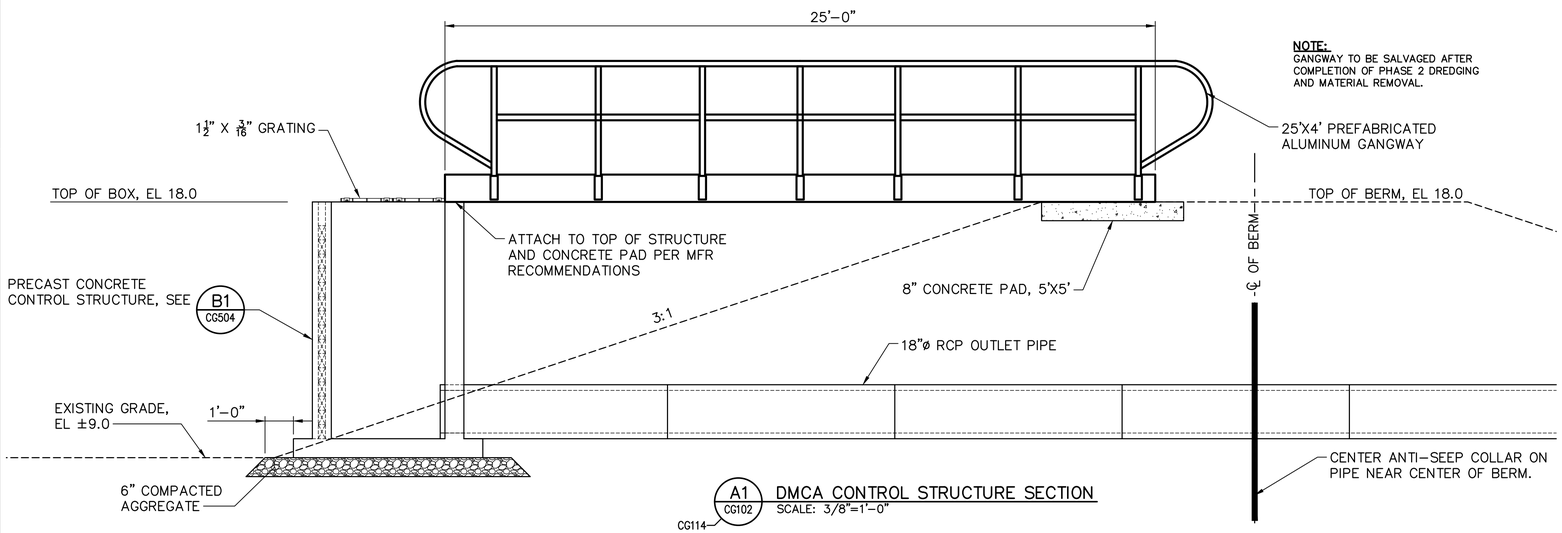


SIDE ELEVATION



FRONT ELEVATION

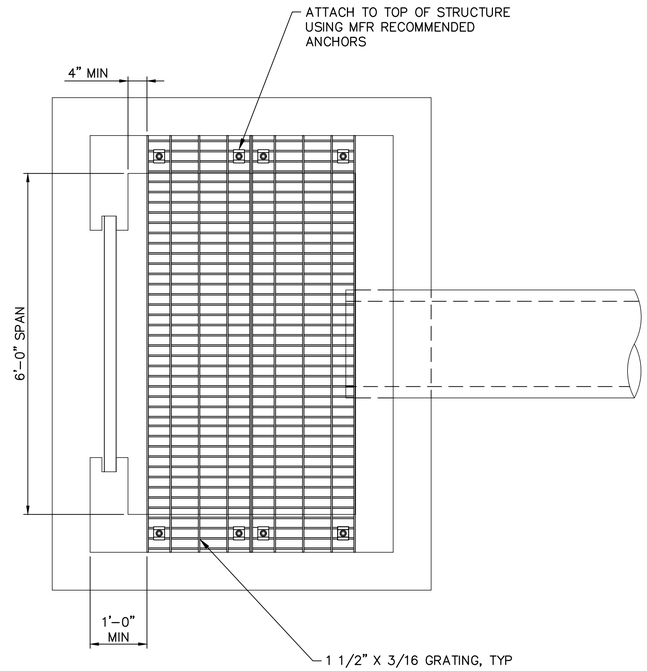
B1 / CG504 PRECAST CONCRETE DMCA CONTROL STRUCTURE
SCALE: 1/2"=1'-0"



NOTE:
GANGWAY TO BE SALVAGED AFTER COMPLETION OF PHASE 2 DREDGING AND MATERIAL REMOVAL.

25'X4' PREFABRICATED ALUMINUM GANGWAY

A1 / CG102 DMCA CONTROL STRUCTURE SECTION
SCALE: 3/8"=1'-0"
CG114



C4 / CG504 GRATING DETAIL
SCALE: 3/4" = 1'-0"

2'-0" 0'-0" 2'-0" 4'-0"
SCALE: 1/2"=1'-0"

4'-0" 0'-0" 2'-0" 4'-0"
SCALE: 3/8"=1'-0"

ISSUED FOR BID
JANUARY 2020

GRAND STRAND WATER & SEWER AUTHORITY

Mark	Description	Date	Appr.
	ISSUED FOR BID	05/01/20	JJT

BUCKSPORT MARINE INDUSTRIAL PARK - PHASE 1

DRAINAGE DETAILS

Date: JANUARY 2020
M&N Project No. 7232-05
Drawing code:
Drawing Scale: AS SHOWN
Plot scale: 1:1 (0 SHEET)
Rev. 0

Designed by: TRR
Drawn by: JT
Ckd by: TRR
Reviewed by:
Submitted by: MOFFATT & NICHOL

SOUTH CAROLINA LICENSED PROFESSIONAL ENGINEER No.24067 TIMOTHY R. REED
SEAL 5-1-2020

SOUTH CAROLINA MOFFATT & NICHOL ENGINEERS No. 000363 CERTIFICATE OF AUTHORIZATION

4700 FALLS OF THE NEUSE ROAD
SUITE 300
RALEIGH, NC 27609
919-781-4626
SC COA No. 363
moffatt & nichol

Sheet Reference No.
CG504
INDEX: 33 OF 113

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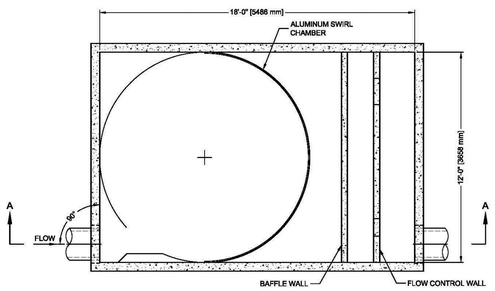
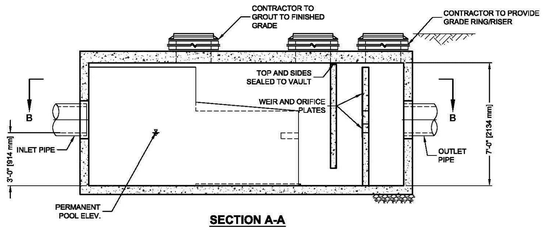
DRAWING SCALES SHOWN BASED ON 22"x34" DRAWING



SECTION B-B

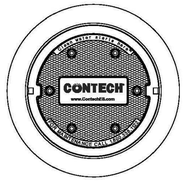


SECTION A-A

VORTECHS 16000 DESIGN NOTES

VORTECHS 16000 RATED TREATMENT CAPACITY IS 25 CFS, OR PER LOCAL REGULATIONS. IF THE SITE CONDITIONS EXCEED RATED TREATMENT CAPACITY, AN UPSTREAM BYPASS STRUCTURE IS REQUIRED.

THE STANDARD INLET/OUTLET CONFIGURATION IS SHOWN. FOR OTHER CONFIGURATION OPTIONS , PLEASE CONTACT YOUR CONTECH CONSTRUCTION PRODUCTS REPRESENTATIVE. www.ContechES.com



FRAME AND COVER
(DIAMETER VARIES)
N.T.S.

SITE SPECIFIC DATA REQUIREMENTS

STRUCTURE ID	*
WATER QUALITY FLOW RATE (CFS)	*
PEAK FLOW RATE (CFS)	*
RETURN PERIOD OF PEAK FLOW (YRS)	*

PIPE DATA:	I.E.	MATERIAL	DIAMETER
INLET PIPE 1	*	*	*
INLET PIPE 2	*	*	*
OUTLET PIPE	*	*	*

RIM ELEVATION	*

ANTI-FLOTATION BALLAST	WIDTH	HEIGHT
	*	*

NOTES/SPECIAL REQUIREMENTS:

* PER ENGINEER OF RECORD

GENERAL NOTES
1. CONTECH TO PROVIDE ALL MATERIALS UNLESS NOTED OTHERWISE.
2. DIMENSIONS MARKED WITH ( ) ARE REFERENCE DIMENSIONS. ACTUAL DIMENSIONS MAY VARY.
3. FOR FABRICATION DRAWINGS WITH DETAILED STRUCTURE DIMENSIONS AND WEIGHT, PLEASE CONTACT YOUR CONTECH ENGINEERED SOLUTIONS LLC REPRESENTATIVE. www.ContechES.com
4. VORTECHS WATER QUALITY STRUCTURE SHALL BE IN ACCORDANCE WITH ALL DESIGN DATA AND INFORMATION CONTAINED IN THIS DRAWING.
5. STRUCTURE SHALL MEET AASHTO HS20 AND CASTINGS SHALL MEET AASHTO M306 LOAD RATING, ASSUMING GROUNDWATER ELEVATION AT, OR BELOW, THE OUTLET PIPE INVERT ELEVATION. ENGINEER OF RECORD TO CONFIRM ACTUAL GROUNDWATER ELEVATION.
6. INLET PIPE(S) MUST BE PERPENDICULAR TO THE VAULT AND AT THE CORNER TO INTRODUCE THE FLOW TANGENTIALLY TO THE SWIRL CHAMBER. DUAL INLETS NOT TO HAVE OPPOSING TANGENTIAL FLOW DIRECTIONS.
7. OUTLET PIPE(S) MUST BE DOWN STREAM OF THE FLOW CONTROL BAFFLE AND MAY BE LOCATED ON THE SIDE OR END OF THE VAULT. THE FLOW CONTROL WALL MAY BE TURNED TO ACCOMODATE OUTLET PIPE KNOCKOUTS ON THE SIDE OF THE VAULT.

INSTALLATION NOTES
A. ANY SUB-BASE, BACKFILL DEPTH, AND/OR ANTI-FLOTATION PROVISIONS ARE SITE-SPECIFIC DESIGN CONSIDERATIONS AND SHALL BE SPECIFIED BY ENGINEER OF RECORD.
B. CONTRACTOR TO PROVIDE EQUIPMENT WITH SUFFICIENT LIFTING AND REACH CAPACITY TO LIFT AND SET THE VORTECHS STRUCTURE (LIFTING CLUTCHES PROVIDED).
C. CONTRACTOR TO INSTALL JOINT SEALANT BETWEEN ALL STRUCTURE SECTIONS AND ASSEMBLE STRUCTURE.
D. CONTRACTOR TO PROVIDE, INSTALL, AND GROUT PIPES. MATCH PIPE INVERTS WITH ELEVATIONS SHOWN.
E. CONTRACTOR TO TAKE APPROPRIATE MEASURES TO ASSURE UNIT IS WATER TIGHT, HOLDING WATER TO FLOWLINE INVERT MINIMUM. IT IS SUGGESTED THAT ALL JOINTS BELOW PIPE INVERTS ARE GROUTED.

Vortechs®
THIS PRODUCT MAY BE PROTECTED BY THE FOLLOWING U.S. PATENT: 5,759,415; RELATED FOREIGN PATENTS.

CONTECH ENGINEERED SOLUTIONS LLC
www.ContechES.com
9025 Centre Pointe Dr., Suite 400, West Chester, OH 45069
800-338-1122 513-645-7000 513-645-7993 FAX

VORTECHS 16000
STANDARD DETAIL

10' 0' 10' 20'
SCALE: 1"=10'

ISSUED FOR BID
JANUARY 2020

Mark	Description	Date	Appr.
	ISSUED FOR BID	05/01/20	JJT

GRAND STRAND WATER & SEWER AUTHORITY

BUCKSPORT MARINE INDUSTRIAL PARK - PHASE 1

DRAINAGE DETAILS

Rev.	0
Date:	JANUARY 2020
M&N Project No.	7232-05
Drawing code:	
Drawing Scale:	AS SHOWN
Plot scale: 1:1 [0 SHEET]	
Designed by:	TRR
Dwn by:	JT
Ckd by:	TRR
Reviewed by:	
Submitted by:	MOFFATT & NICHOL

SEAL

SOUTH CAROLINA CERTIFICATE OF AUTHORIZATION
MOFFATT & NICHOL ENGINEERS No. 000363

4700 FALLS OF THE NEUSE ROAD
SUITE 300
RALEIGH, NC 27609
919-781-4626
SC COA No. 363
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CG505
INDEX: 34 OF 113

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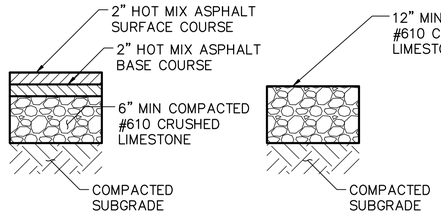
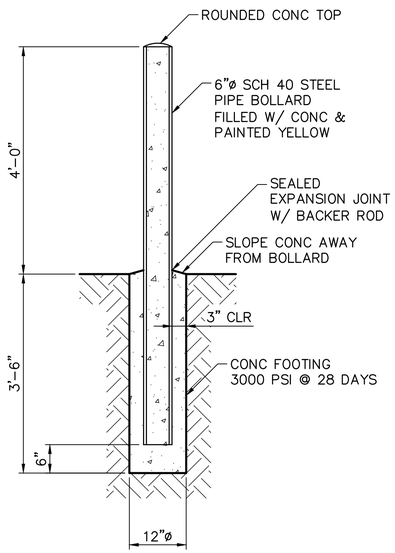
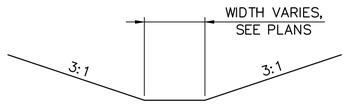


ASPHALT PAVEMENT GRAVEL PAVEMENT

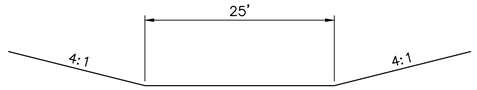
D1 / CG506 PAVEMENT SECTIONS
NOT TO SCALE



B1 / CG506 PIPE BOLLARD
NOT TO SCALE



BASE DITCH (VARYING BASE w/ 3:1 SIDE SLOPES)



25' BASE DITCH w/ 4:1 SIDE SLOPES

D4 / CG506 TYPICAL DITCH SECTIONS
SCALE: 1" = 10'

10' 0' 10' 20'
SCALE: 1"=10'

ISSUED FOR BID
JANUARY 2020

GRAND STRAND WATER & SEWER AUTHORITY

Mark	Description	Date	Appr.
	ISSUED FOR BID	05/01/20	JJT

BUCKSPORT MARINE INDUSTRIAL PARK - PHASE 1

CIVIL DETAILS

Designed by: TRR	Dwn by: JT	Chd by: TRR	Reviewed by:
Submitted by: MOFFATT & NICHOL	Date: JANUARY 2020	M&N Project No. 7232-05	Drawing code:
Drawing Scale: AS SHOWN Plot scale: 1:1 (D SHEET)	Rev.		

SOUTH CAROLINA LICENSED PROFESSIONAL ENGINEER TIMOTHY R. REED No.24067
SEAL 5-1-2020
SOUTH CAROLINA MOFFATT & NICHOL ENGINEERS No. 000363 CERTIFICATE OF AUTHORIZATION

4700 FALLS OF THE NEUSE ROAD
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RALEIGH, NC 27609
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SC COA No. 363
moffatt & nichol

Sheet Reference No.
CG506
INDEX: 35 OF 113

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DRAWING SCALES SHOWN BASED ON 22"x34" DRAWING

BUCKSPORT ROAD POINT TABLE		
DESCRIPTION	NORTHING	EASTING
BP	665922.76	2579404.46
PC	666239.26	2579390.73
PT	666323.04	2579337.80
PI	666381.13	2579228.22
EP	666414.20	2579166.07

TREATMENT ROAD POINT TABLE		
DESCRIPTION	NORTHING	EASTING
BP	667104.87	2578064.78
PC	667087.76	2578046.78
PT	666934.67	2577900.24
PC	666565.84	2577579.08
PRC	666474.44	2577515.38
PCC	666433.16	2577489.03
EP	666315.73	2577367.97

MARINE PARK ROAD POINT TABLE		
DESCRIPTION	NORTHING	EASTING
BP	666539.00	2577557.23
PC	665958.08	2578321.70
PT	665858.09	2578667.95
EP	665922.76	2579404.46

HENRIETTA BLUFFS POINT TABLE		
DESCRIPTION	NORTHING	EASTING
BP	665922.76	2579404.46
PC	665868.12	2579406.83
PT	665731.14	2579393.82
PC	665700.01	2579386.44
EP	665636.64	2579371.86

GRAND STRAND WATER & SEWER AUTHORITY

Mark	Description	Date	Appr.
	ISSUED FOR BID	05/01/20	JJT

BUCKSPORT MARINE INDUSTRIAL PARK - PHASE 1

ROADWAY ALIGNMENT TABLE

Designed by: TRR	Dwn by: JT	Chkd by: TRR	Reviewed by:
Date: JANUARY 2020	M&N Project No. 7232-05	Drawing code:	Drawing Scale: AS SHOWN Plot scale: 1:1 (D SHEET)
Rev. 0			
Submitted by: MOFFATT & NICHOL			

SOUTH CAROLINA LICENSED PROFESSIONAL ENGINEER TIMOTHY S. REID No.24067

SEAL 5-1-2020

SOUTH CAROLINA MOFFATT & NICHOL ENGINEERS No. 000363 CERTIFICATE OF AUTHORIZATION

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SC COA No. 363

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Sheet Reference No.

CR100

INDEX: 36 OF 113

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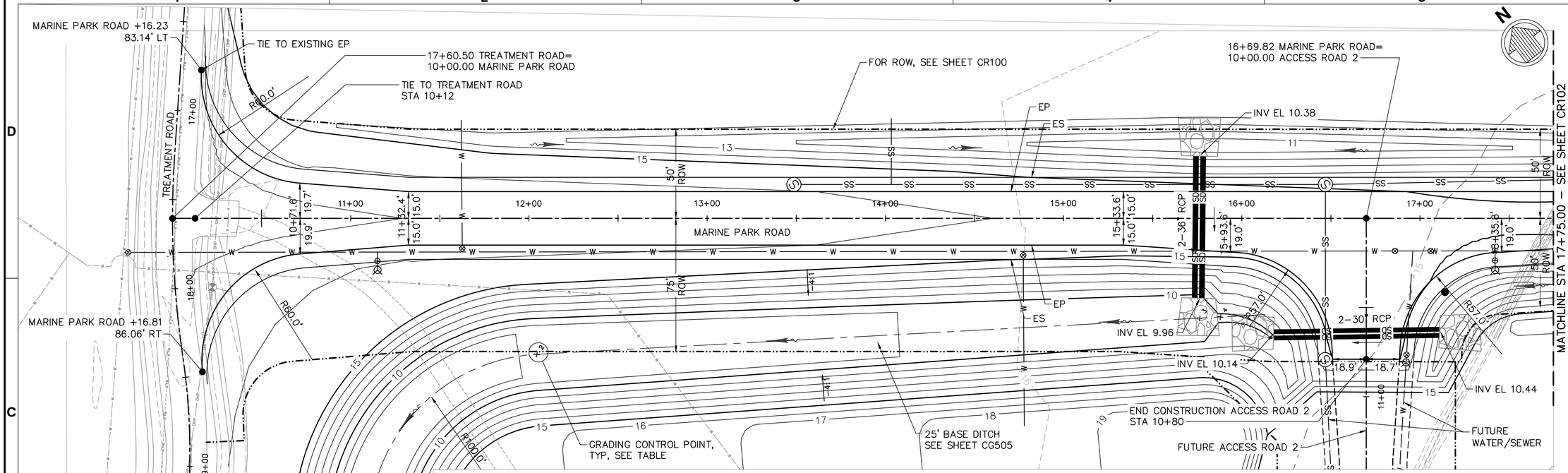
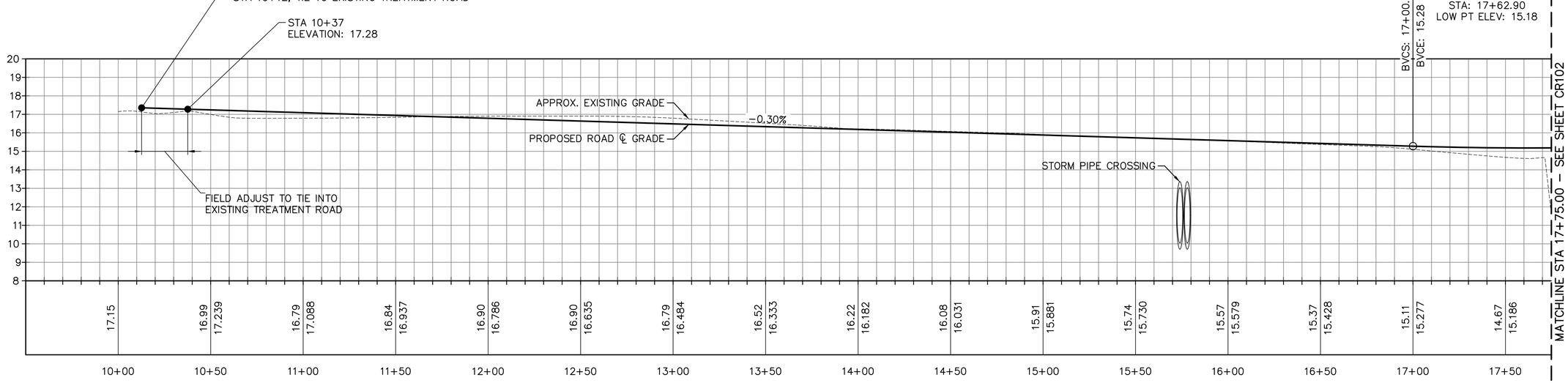


Point Table			
Point #	Elevation	Northing	Easting
1	7.34	666332.31	2577538.24
2	8.05	666354.60	2577673.94
3	9.79	666145.73	2577982.29
4	9.85	666139.18	2577991.96

NOTES:

1. MARINE PARK ROAD SUPERELEVATION IS NORMAL CROWN.
2. FOR DITCH ELEVATIONS, SEE ROADWAY CROSS SECTIONS.



SCALE: 1"=3' VERTICAL

SCALE: 1"=30' HORIZONTAL

ISSUED FOR BID
JANUARY 2020

DRAWING SCALES SHOWN BASED ON 22"x34" DRAWING

GRAND STRAND WATER & SEWER AUTHORITY

Mark	Description	Date	Appr.
	ISSUED FOR BID	05/01/20	JJT

BUCKSPORT MARINE INDUSTRIAL PARK - PHASE 1

MARINE PARK ROAD PLAN & PROFILE 1 OF 3

Date: JANUARY 2020 | Rev. 0
M&N Project No. 7232-05
Drawing code:
Drawing Scale: AS SHOWN
Plot scale: 1:1 (0 SHEET)
Designed by: TRR | Dwn by: JT | Cad by: TRR
Reviewed by:
Submitted by: MOFFATT & NICHOL

LICENSED PROFESSIONAL ENGINEER — No.24067 — TIMOTHY S. REID — SOUTH CAROLINA
SEAL 5-1-2020

SOUTH CAROLINA CERTIFICATE OF AUTHORIZATION — MOFFATT & NICHOL ENGINEERS No. 000363

4700 FALLS OF THE NEUSE ROAD
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Sheet Reference No.
CR101
INDEX: 37 OF 113

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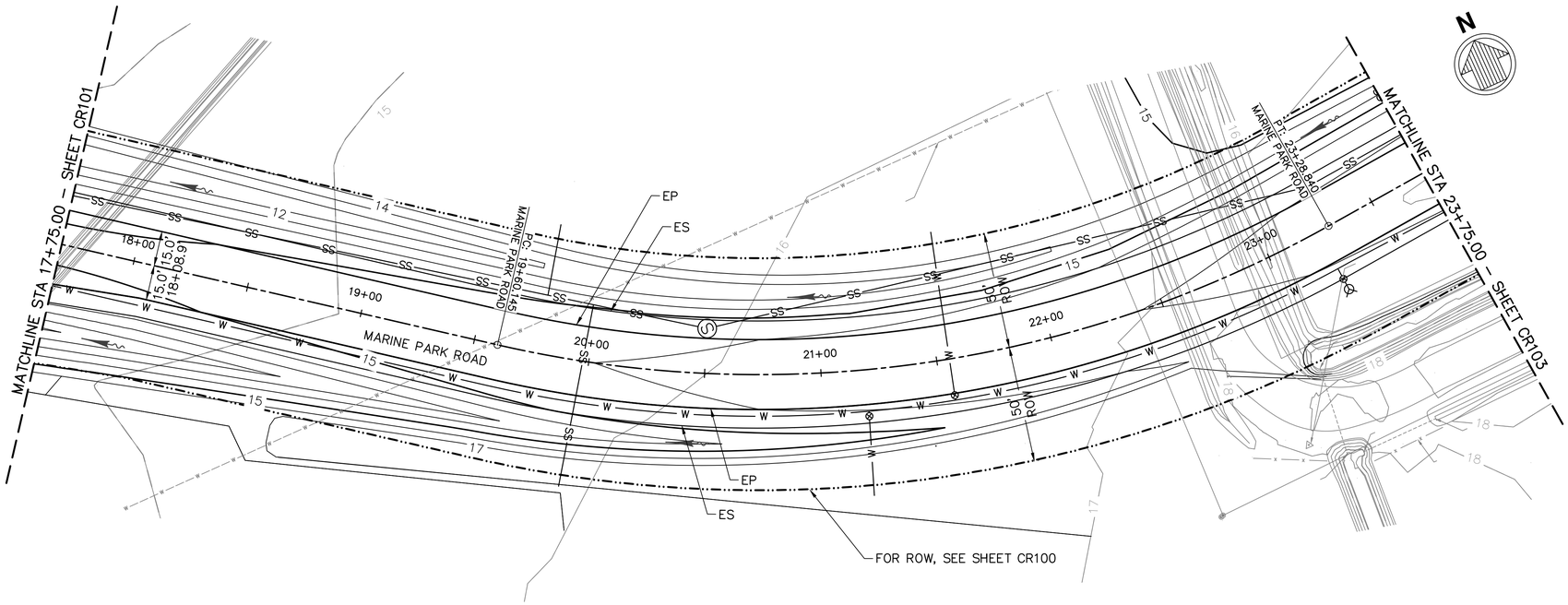
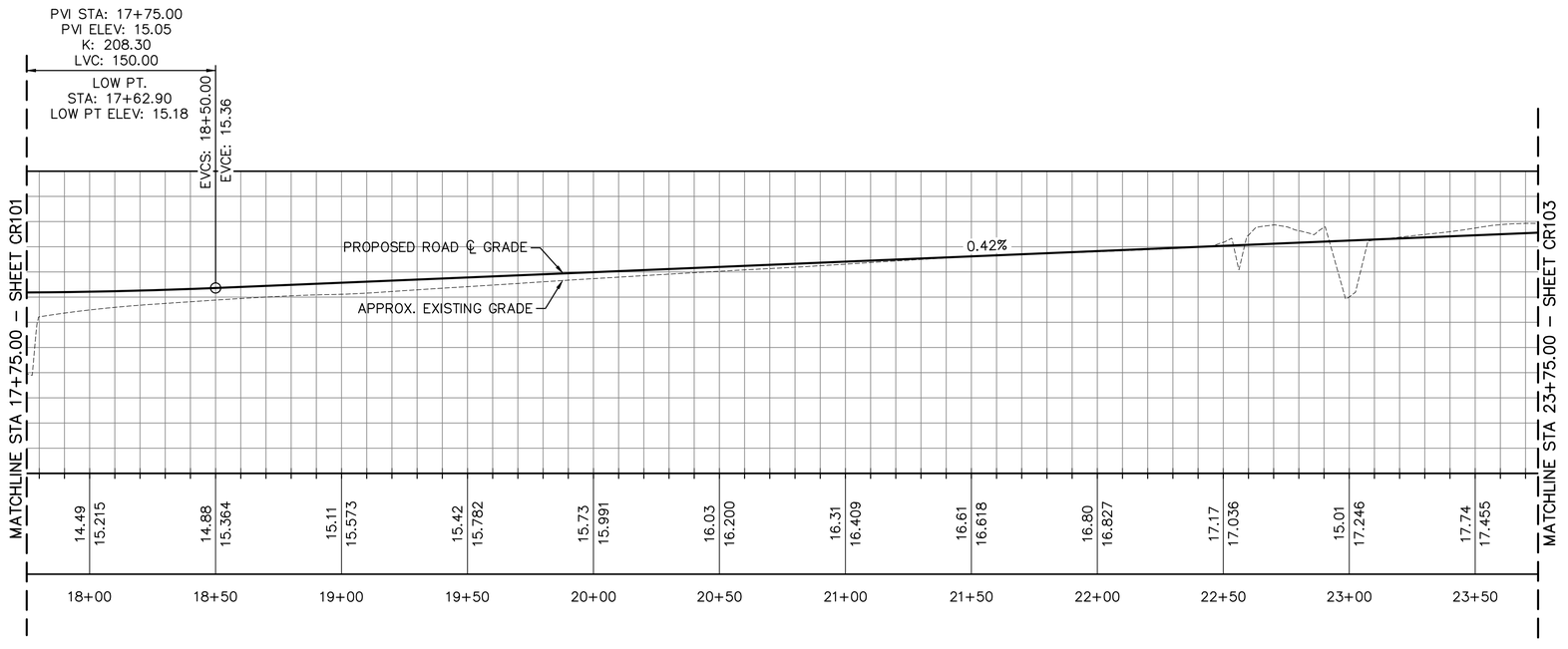


NOTES:

1. MARINE PARK ROAD SUPERELEVATION IS NORMAL CROWN.
2. FOR DITCH ELEVATIONS, SEE ROADWAY CROSS SECTIONS.



3' 0' 3' 6'
SCALE: 1"=3' VERTICAL

30' 0' 30' 60'
SCALE: 1"=30' HORIZONTAL

ISSUED FOR BID
JANUARY 2020

GRAND STRAND WATER & SEWER AUTHORITY

Mark	Description	Date	Appr.
	ISSUED FOR BID	05/01/20	JJT

BUCKSPORT MARINE INDUSTRIAL PARK - PHASE 1

MARINE PARK ROAD PLAN & PROFILE 2 OF 3

Designed by: TRR
Drawn by: JT
Checked by: TRR
Reviewed by:
Submitted by: MOFFATT & NICHOL
Date: JANUARY 2020
M&N Project No. 7232-05
Drawing code:
Drawing Scale: AS SHOWN
Plot scale: 1:1 (D SHEET)
Rev. 0

SOUTH CAROLINA LICENSED PROFESSIONAL ENGINEER No.24067 TIMOTHY R. RED
SEAL 5-1-2020
SOUTH CAROLINA MOFFATT & NICHOL ENGINEERS No. 000363 CERTIFICATE OF AUTHORIZATION

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Sheet Reference No.
CR102
INDEX: 38 OF 113

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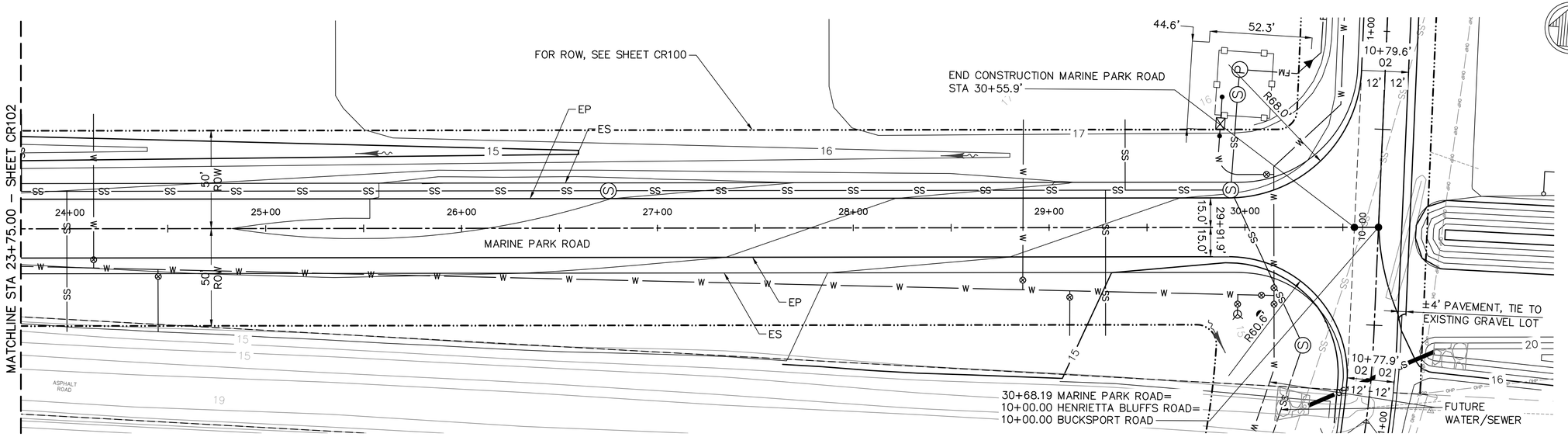
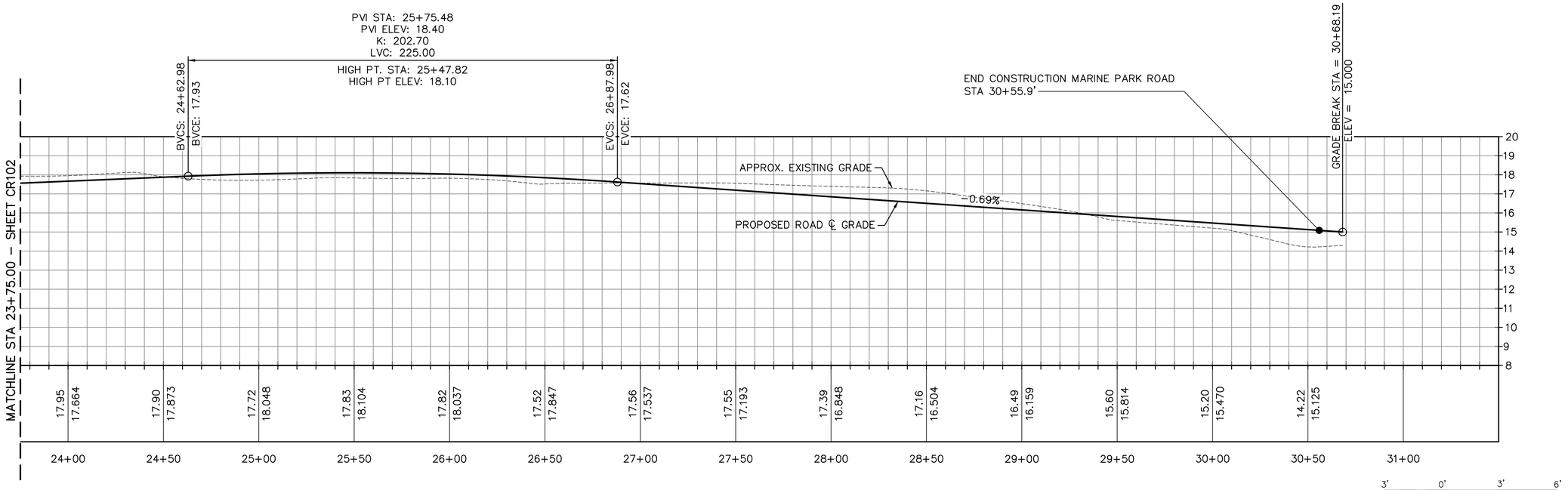


NOTES:

1. MARINE PARK ROAD SUPERELEVATION IS NORMAL CROWN.
2. FOR DITCH ELEVATIONS, SEE ROADWAY CROSS SECTIONS.



SCALE: 1"=3' VERTICAL

SCALE: 1"=30' HORIZONTAL

ISSUED FOR BID
JANUARY 2020

GRAND STRAND WATER & SEWER AUTHORITY

Mark	Description	Date	Appr.
	ISSUED FOR BID	05/01/20	JJT

BUCKSPORT MARINE INDUSTRIAL PARK - PHASE 1

MARINE PARK ROAD PLAN & PROFILE 3 OF 3

Rev.	0
Date:	JANUARY 2020
Designed by:	TRR
Dwn by:	JT
Ckd by:	TRR
Reviewed by:	
Submitted by:	MOFFATT & NICHOL
M&N Project No.	7232-05
Drawing code:	
Drawing Scale:	AS SHOWN
Plot scale: 1:1 (0 SHEET)	

SOUTH CAROLINA LICENSED PROFESSIONAL ENGINEER
No.24067
TIMOTHY R. REID
SEAL 5-1-2020

MOFFATT & NICHOL ENGINEERS No. 000363
CERTIFICATE OF AUTHORIZATION

4700 FALLS OF THE NEUSE ROAD
SUITE 300
RALEIGH, NC 27609
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Sheet Reference No.
CR103
INDEX: 39 OF 113

DRAWING SCALES SHOWN BASED ON 22"x34" DRAWING

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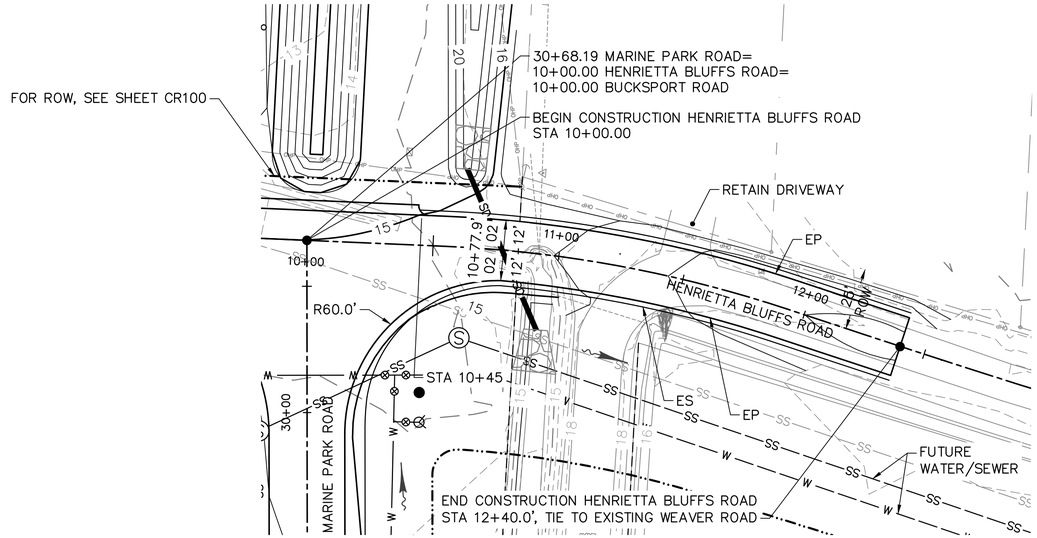
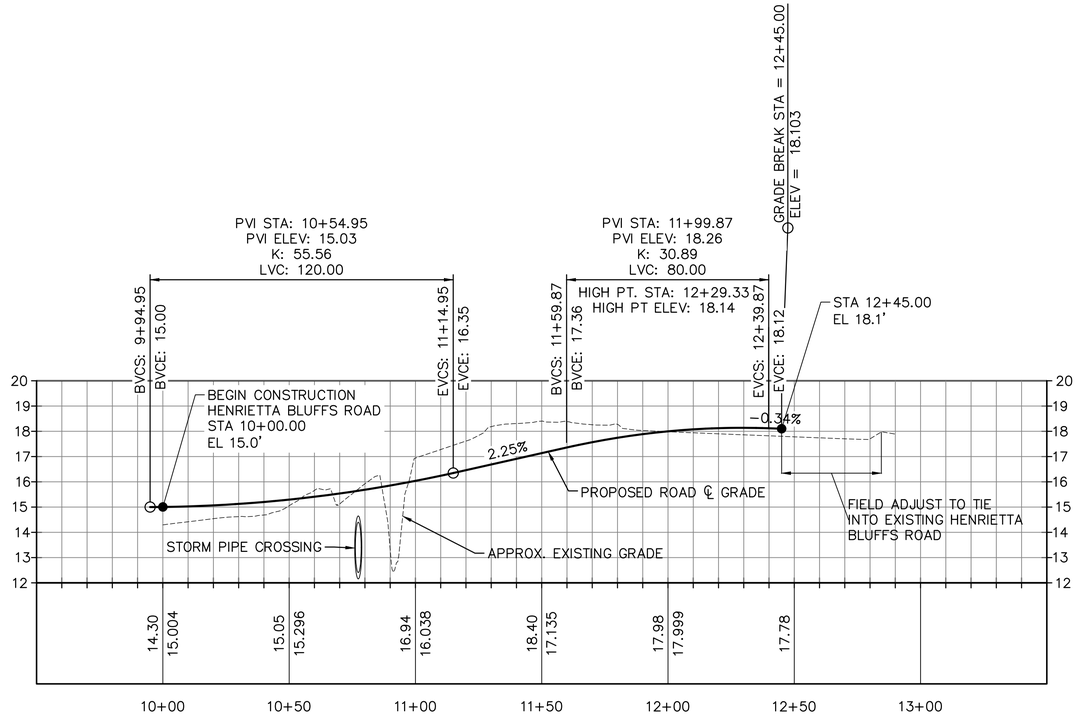


NOTES:

1. FOR DITCH ELEVATIONS, SEE ROADWAY CROSS SECTIONS.



3' 0' 3' 6'

SCALE: 1"=3' VERTICAL

30' 0' 30' 60'

SCALE: 1"=30' HORIZONTAL

ISSUED FOR BID
JANUARY 2020

GRAND STRAND WATER & SEWER AUTHORITY

Mark	Description	Date	Appr.
	ISSUED FOR BID	05/01/20	JJT

BUCKSPORT MARINE INDUSTRIAL PARK - PHASE 1

HENRIETTA BLUFFS ROAD PLAN & PROFILE

Rev.	0
Date:	JANUARY 2020
M&N Project No.	7232-05
Drawing code:	
Drawing Scale:	AS SHOWN
Plot scale: 1:1 (D SHEET)	
Designed by:	TRR
Dwn by:	JT
Ckd by:	TRR
Reviewed by:	
Submitted by:	MOFFATT & NICHOL

SOUTH CAROLINA LICENSED PROFESSIONAL ENGINEER No.24067 TIMOTHY R. REED
SEAL 5-1-2020
SOUTH CAROLINA MOFFATT & NICHOL ENGINEERS No. 000363 CERTIFICATE OF AUTHORIZATION

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Sheet Reference No.
CR104
INDEX: 40 OF 113

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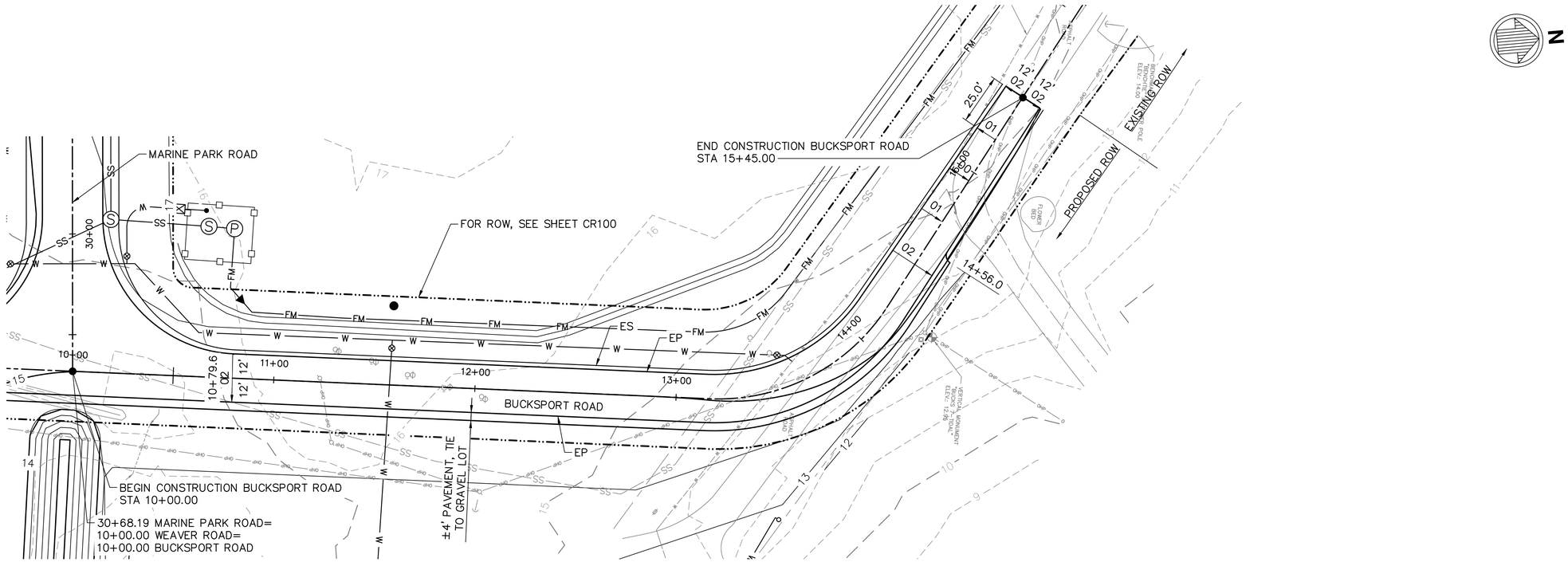
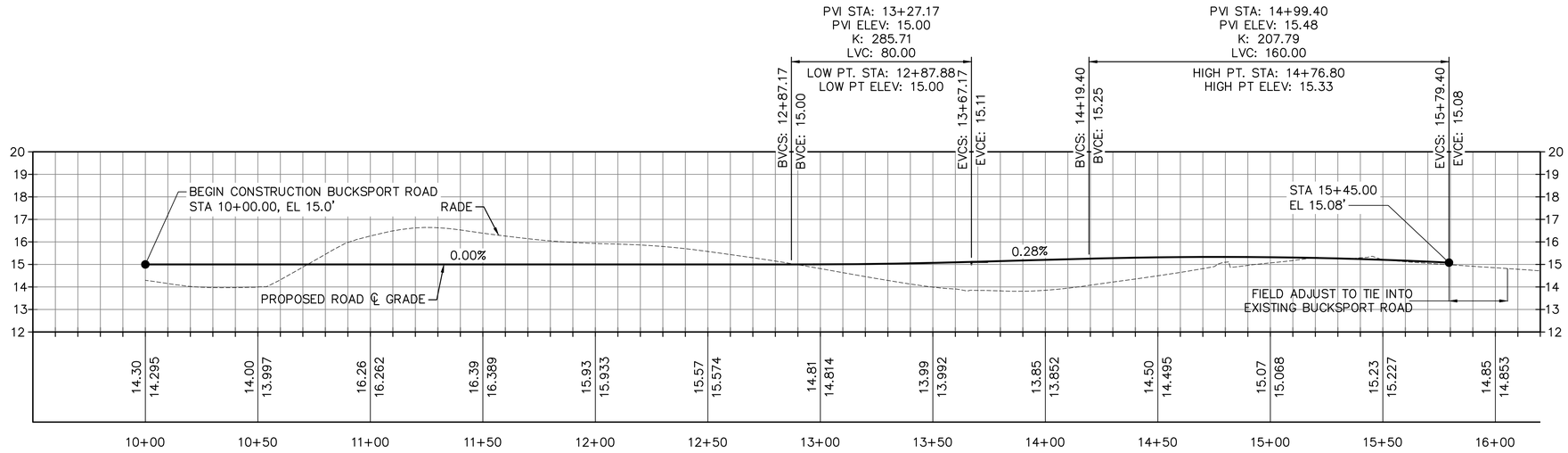
DRAWING SCALES SHOWN BASED ON 22"x34" DRAWING



NOTES:

1. FOR DITCH ELEVATIONS, SEE ROADWAY CROSS SECTIONS.
2. 02 SUPERELEVATION HELD FROM BUCKSPORT RD STA 10+79.6 TO BUCKSPORT RD STA 14+45.8 FOR OPERATIONAL CONSIDERATION.



SCALE: 1"=3' VERTICAL

SCALE: 1"=30' HORIZONTAL

ISSUED FOR BID
JANUARY 2020

GRAND STRAND WATER & SEWER AUTHORITY

Mark	Description	Date	Appr.
	ISSUED FOR BID	05/01/20	JJT

BUCKSPORT MARINE INDUSTRIAL PARK - PHASE 1

BUCKSPORT ROAD EXTENSION PLAN & PROFILE

Rev.	0
Date:	JANUARY 2020
M&N Project No.	7232-05
Drawing code:	
Drawing Scale:	AS SHOWN
Plot scale: 1:1 (0 SHEET)	
Designed by:	TRR
Dwn by:	JT
Cad by:	TRR
Reviewed by:	
Submitted by:	MOFFATT & NICHOL

SOUTH CAROLINA LICENSED PROFESSIONAL ENGINEER No.24067 TIMOTHY B. REED

SEAL 5-1-2020

SOUTH CAROLINA CERTIFICATE OF AUTHORIZATION MOFFATT & NICHOL ENGINEERS No. 000363

4700 FALLS OF THE NEUSE ROAD
SUITE 300
RALEIGH, NC 27609
919-781-4626

SC COA No. 363

moffatt & nichol

Sheet Reference No.

CR105

INDEX: 41 OF 113

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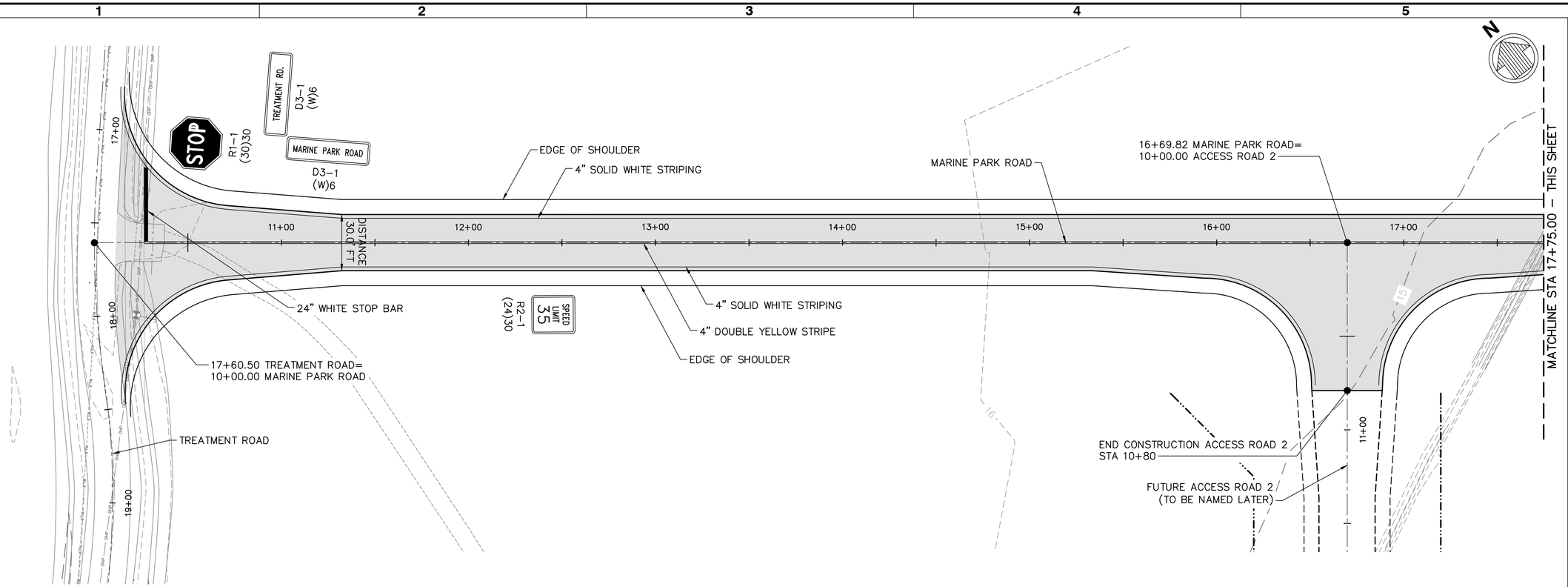

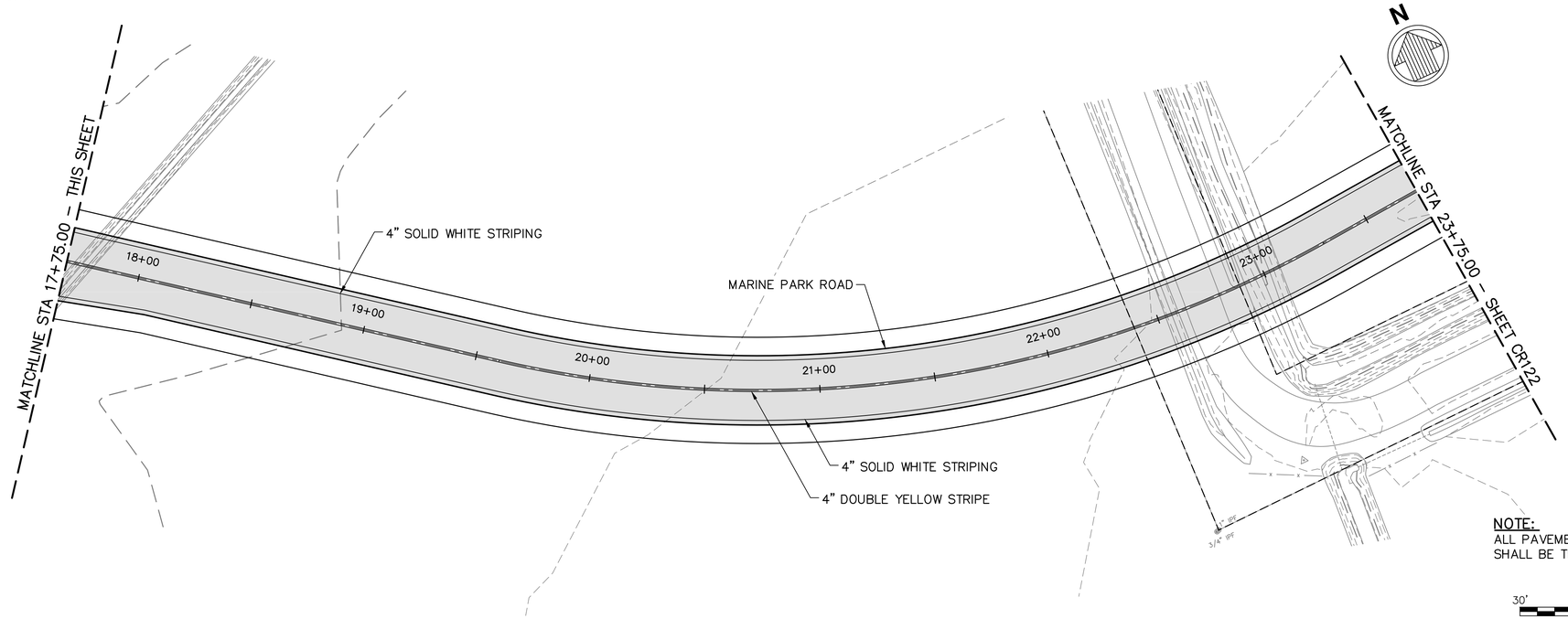

NOTE:
ALL PAVEMENT MARKING AND STRIPING SHALL BE THERMOPLASTIC.

30' 0' 30' 60'

SCALE: 1"=30'

ISSUED FOR BID
JANUARY 2020

GRAND STRAND WATER & SEWER AUTHORITY

Mark	Description	Date	Appr.
	ISSUED FOR BID	05/01/20	JJT

BUCKSPORT MARINE INDUSTRIAL PARK - PHASE 1

MARINE PARK ROAD STRIPING PLAN 1 OF 2

Designed by: TRR	Rev. 0
Dwn by: JT	Date: JANUARY 2020
Ckd by: TRR	M&N Project No. 7232-05
Reviewed by:	Drawing code:
Submitted by: MOFFATT & NICHOL	Drawing Scale: AS SHOWN
	Plot scale: 1:1 (0 SHEET)

SOUTH CAROLINA LICENSED PROFESSIONAL ENGINEER TIMOTHY R. REID No.24067
SEAL 5-1-2020
SOUTH CAROLINA CERTIFICATE OF AUTHORIZATION MOFFATT & NICHOL ENGINEERS No. 000363

4700 FALLS OF THE NEUSE ROAD
SUITE 300
RALEIGH, NC 27609
919-781-4626
SC COA No. 363
moffatt & nichol

Sheet Reference No.
CR121
INDEX: 42 OF 113

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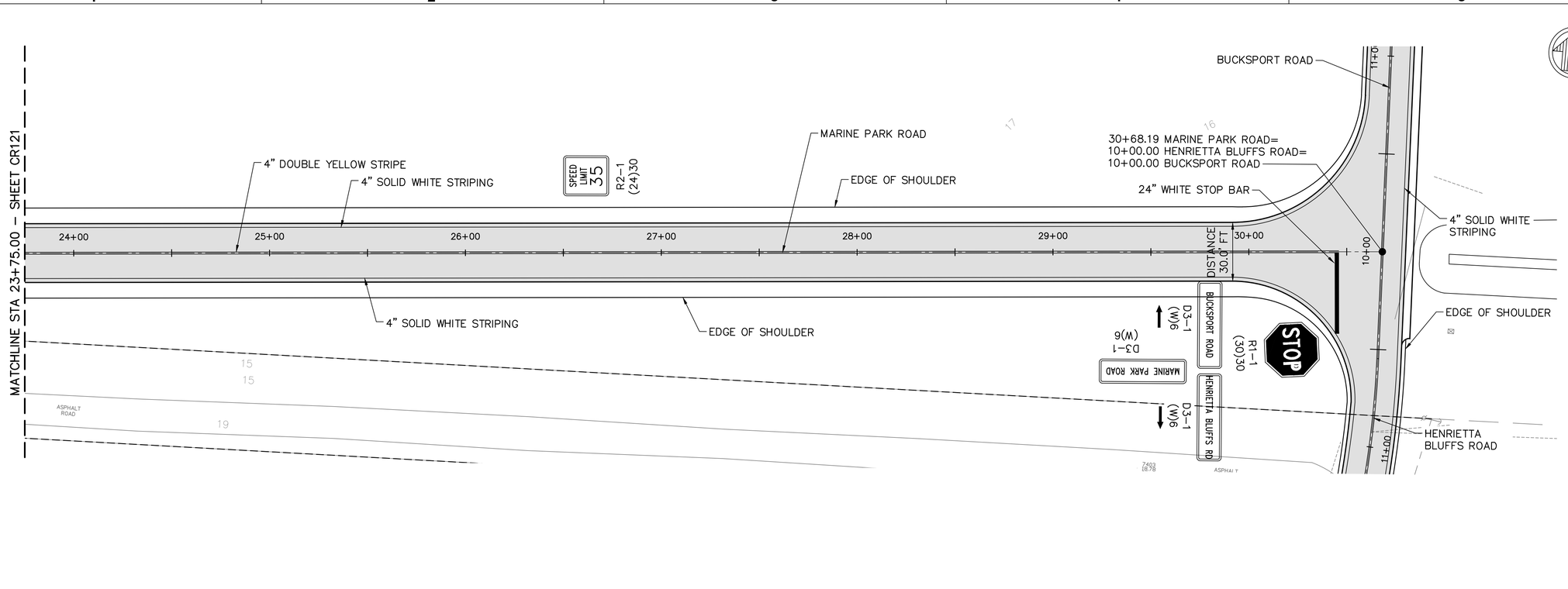

N

NOTE:
ALL PAVEMENT MARKING AND STRIPING SHALL BE THERMOPLASTIC.

30' 0' 30' 60'

SCALE: 1"=30'

ISSUED FOR BID
JANUARY 2020

GRAND STRAND WATER & SEWER AUTHORITY

Mark	Description	Date	Appr.
	ISSUED FOR BID	05/01/20	JJT

BUCKSPORT MARINE INDUSTRIAL PARK - PHASE 1

MARINE PARK ROAD STRIPING PLAN 2 OF 2

Designed by: TRR	Date: JANUARY 2020
Dwn by: JT	Ckd by: TRR
Reviewed by:	M&N Project No. 7232-05
Submitted by: MOFFATT & NICHOL	Drawing code:
Drawing Scale: AS SHOWN Plot scale: 1:1 (D SHEET)	Rev. 0

SOUTH CAROLINA LICENSED PROFESSIONAL ENGINEER No.24067 TIMOTHY R. REID

SEAL 5-1-2020

SOUTH CAROLINA CERTIFICATE OF AUTHORIZATION MOFFATT & NICHOL ENGINEERS No. 000363

4700 FALLS OF THE NEUSE ROAD
SUITE 300
RALEIGH, NC 27609
919-781-4626

SC COA No. 363

moffatt & nichol

Sheet Reference No.
CR122
INDEX: 43 OF 113

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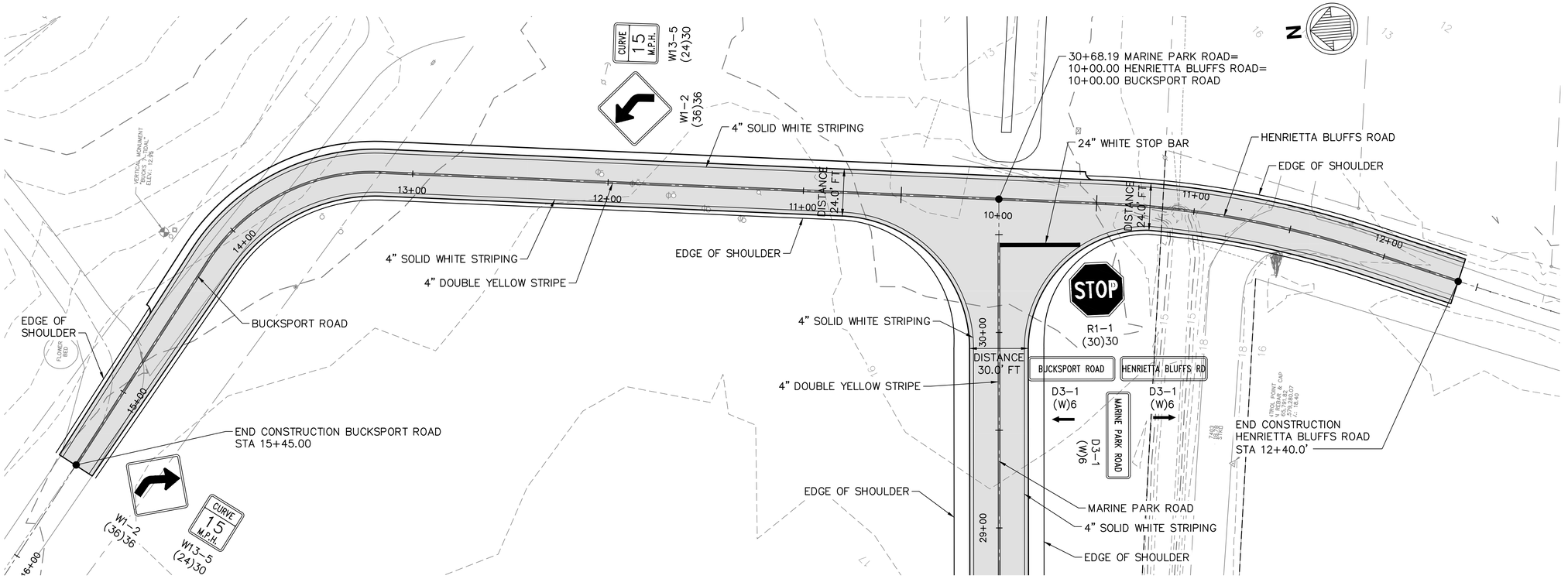

NOTE:
ALL PAVEMENT MARKING AND STRIPING SHALL BE THERMOPLASTIC.

30' 0' 30' 60'

SCALE: 1"=30'

ISSUED FOR BID
JANUARY 2020

DRAWING SCALES SHOWN BASED ON 22"x34" DRAWING

GRAND STRAND WATER & SEWER AUTHORITY

Mark	Description	Date	Appr.
	ISSUED FOR BID	05/01/20	JJT

BUCKSPORT MARINE INDUSTRIAL PARK - PHASE 1

HENRIETTA BLUFFS-BUCKSPORT ROAD STRIPING PLAN

Designed by: TRR	Date: JANUARY 2020
Dwn by: JT	Ckd by: TRR
Reviewed by:	Drawing code:
Submitted by: MOFFATT & NICHOL	M&N Project No. 7232-05
Drawing Scale: AS SHOWN	Rev. 0
Plot scale: 1:1 (0 SHEET)	

SOUTH CAROLINA LICENSED PROFESSIONAL ENGINEER
No.24067
TIMOTHY R. REED
SEAL 5-1-2020

SOUTH CAROLINA CERTIFICATE OF AUTHORIZATION
MOFFATT & NICHOL ENGINEERS No. 000363

4700 FALLS OF THE NEUSE ROAD
SUITE 300
RALEIGH, NC 27609
919-781-4626
SC COA No. 363
moffatt & nichol

Sheet Reference No.
CR123
INDEX: 44 OF 113

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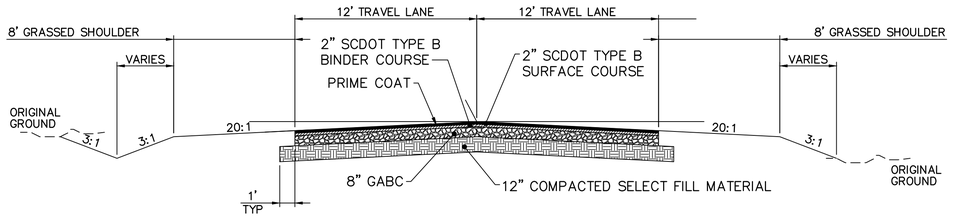
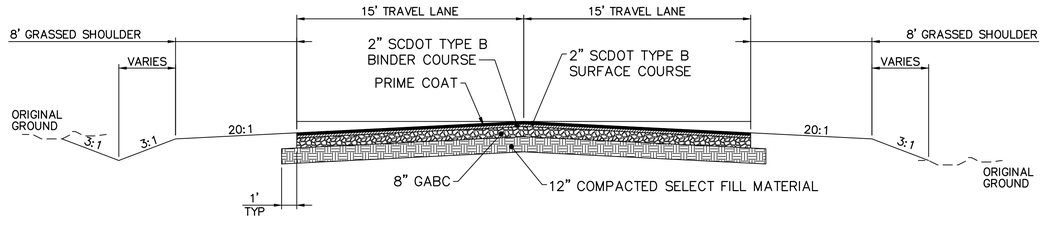


LOCATION: HENRIETTA BLUFFS ROAD 10+00.00 TO 12+40.00

BUCKSPORT ROAD 10+00.00 TO 15+45.00



LOCATION: MARINE PARK ROAD 10+00.00 TO 30+55.90

A1 / CR301 PROPOSED ROAD TYPICAL SECTION

SCALE: 1"=5'-0"

5' 0' 5' 10'

SCALE: 1"=5'

ISSUED FOR BID
JANUARY 2020

GRAND STRAND WATER & SEWER AUTHORITY

Mark	Description	Date	Appr.
	ISSUED FOR BID	05/01/20	JJT

BUCKSPORT MARINE INDUSTRIAL PARK - PHASE 1

ROAD TYPICAL SECTION

Rev. 0
Date: JANUARY 2020
M&N Project No. 7232-05
Drawing code:
Drawing Scale: AS SHOWN
Plot scale: 1:1 (0 SHEET)
Designed by: TRR
Dwn by: JT
Ckd by: TRR
Reviewed by:
Submitted by: MOFFATT & NICHOL

SOUTH CAROLINA LICENSED PROFESSIONAL ENGINEER TIMOTHY S. REID No.24067
SEAL 5-1-2020
MOFFATT & NICHOL ENGINEERS No. 000363 CERTIFICATE OF AUTHORIZATION SOUTH CAROLINA

4700 FALLS OF THE NEUSE ROAD
SUITE 300
RALEIGH, NC 27609
919-781-4626
SC COA No. 363
moffatt & nichol

Sheet Reference No.
CR301
INDEX: 45 OF 113

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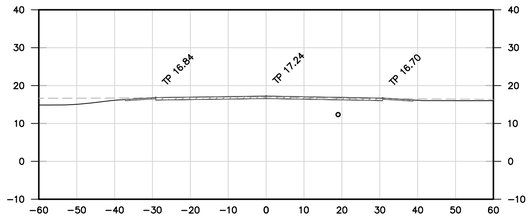
DRAWING SCALES SHOWN BASED ON 22"x34" DRAWING

10+50.00



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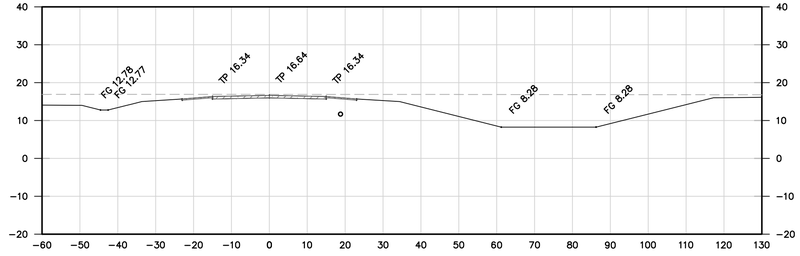

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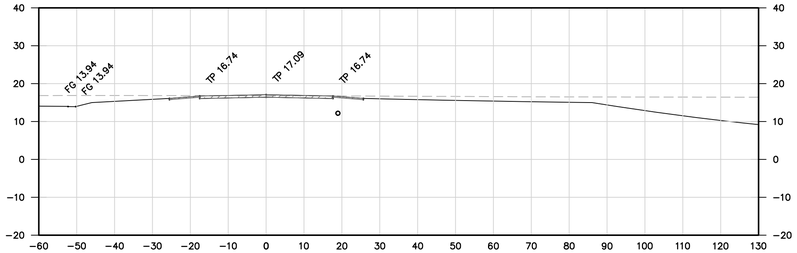

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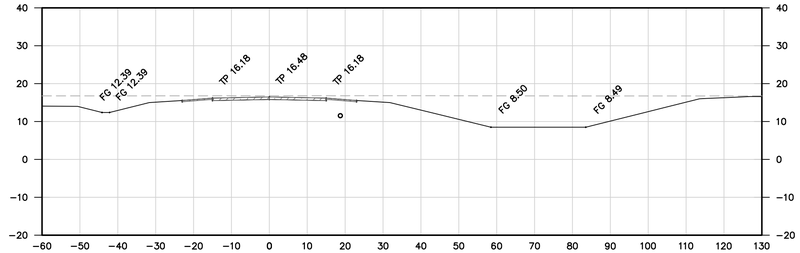

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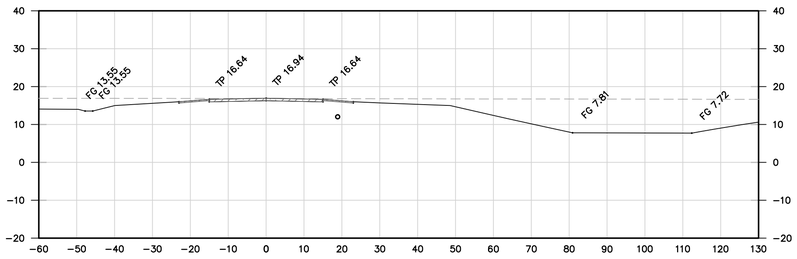

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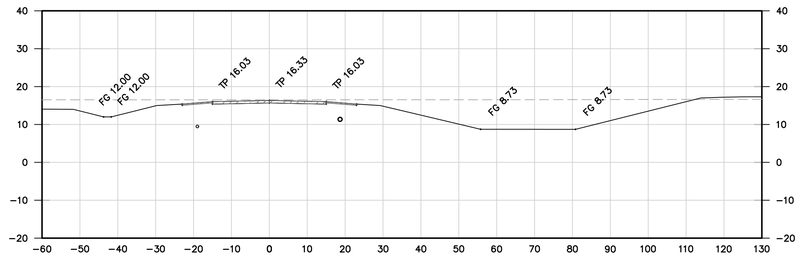

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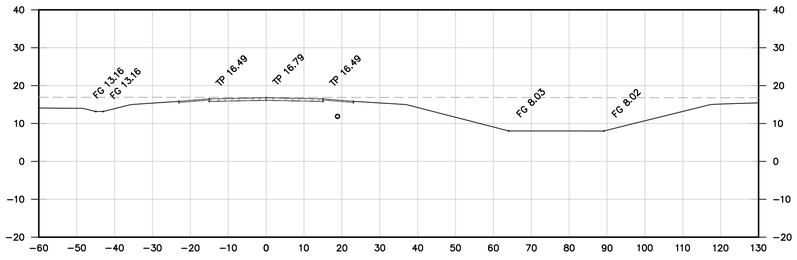

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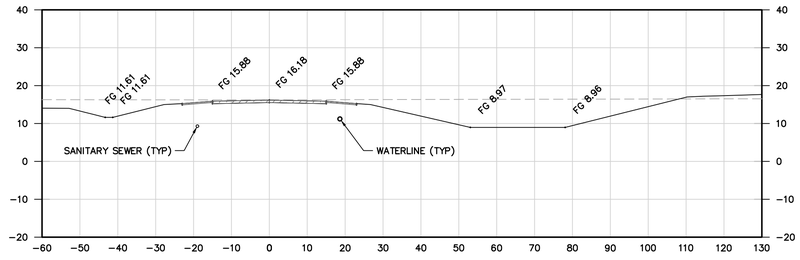

20' 0' 20' 40'

SCALE: 1"=20'

ISSUED FOR BID
JANUARY 2020

DRAWING SCALES SHOWN BASED ON 22"x34" DRAWING

GRAND STRAND WATER & SEWER AUTHORITY

Mark	Description	Date	Appr.
	ISSUED FOR BID	05/01/20	JJT

BUCKSPORT MARINE INDUSTRIAL PARK - PHASE 1

MARINE PARK ROAD CROSS-SECTIONS 1 OF 4

Rev.	0
Date:	JANUARY 2020
Designed by:	TRR
Dwn by:	JT
Ckd by:	TRR
Reviewed by:	
Submitted by:	MOFFATT & NICHOL
M&N Project No.	7232-05
Drawing code:	
Drawing Scale:	AS SHOWN
Plot scale: 1:1 (0 SHEET)	

SOUTH CAROLINA LICENSED PROFESSIONAL ENGINEER No.24067 TIMOTHY R. REID

SEAL 5-1-2020

MOFFATT & NICHOL ENGINEERS No. 000363 SOUTH CAROLINA CERTIFICATE OF AUTHORIZATION

4700 FALLS OF THE NEUSE ROAD
SUITE 300
RALEIGH, NC 27609
919-781-4626

SC COA No. 363

moffatt & nichol

Sheet Reference No.

CR302

INDEX: 46 OF 113

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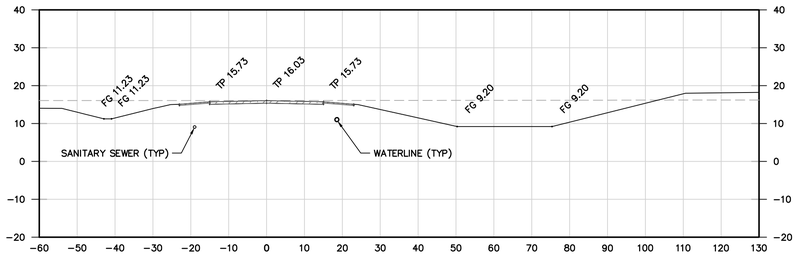
14+50.00



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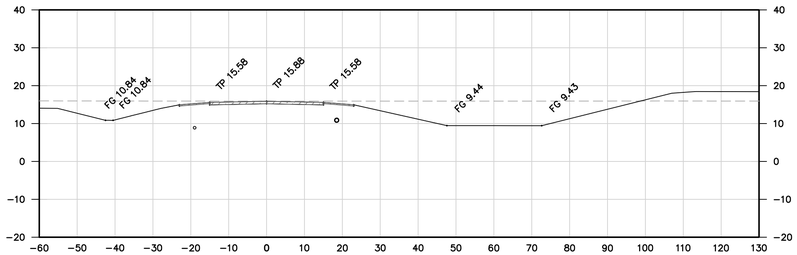

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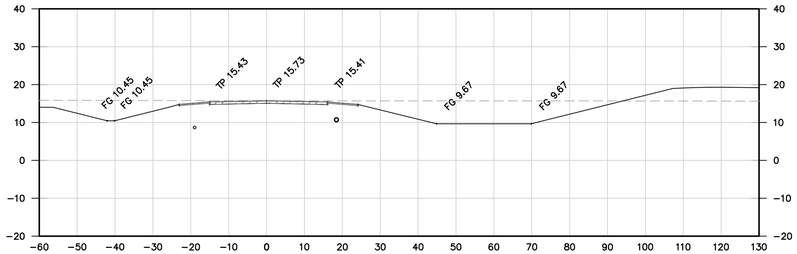

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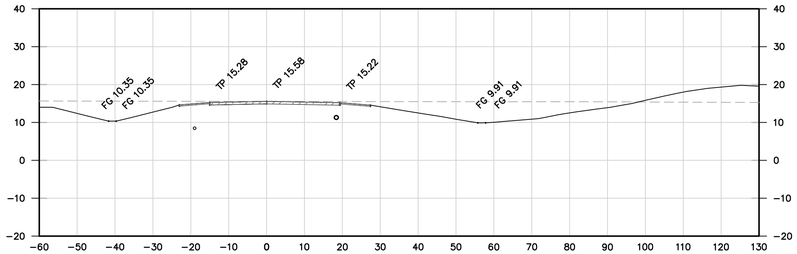

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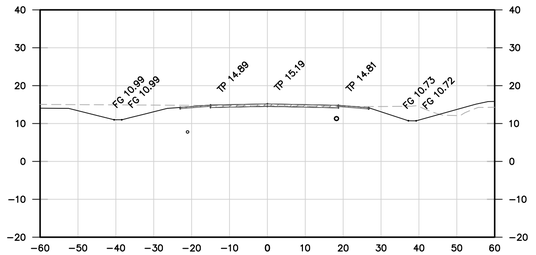

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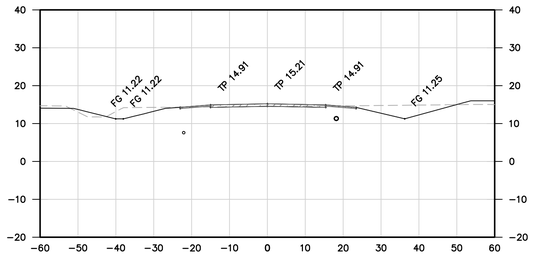

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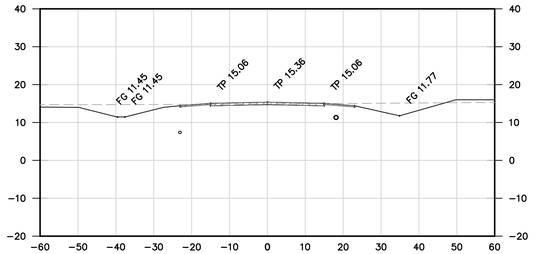

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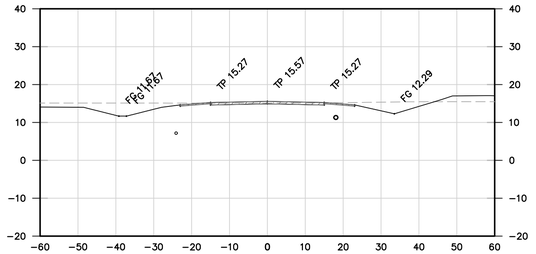

20' 0' 20' 40'

SCALE: 1"=20'

ISSUED FOR BID
JANUARY 2020

GRAND STRAND WATER & SEWER AUTHORITY

Mark	Description	Date	Appr.
	ISSUED FOR BID	05/01/20	JJT

BUCKSPORT MARINE INDUSTRIAL PARK - PHASE 1

MARINE PARK ROAD CROSS-SECTIONS 2 OF 4

Designed by: TRR
Drawn by: JT
Checked by: TRR
Reviewed by:
Submitted by: MOFFATT & NICHOL
Date: JANUARY 2020
M&N Project No. 7232-05
Drawing code:
Drawing Scale: AS SHOWN
Plot scale: 1:1 (0 SHEET)
Rev. 0

SOUTH CAROLINA LICENSED PROFESSIONAL ENGINEER
No.24067
TIMOTHY R. REED
SEAL 5-1-2020

SOUTH CAROLINA CERTIFICATE OF AUTHORIZATION
MOFFATT & NICHOL ENGINEERS No. 0003653

4700 FALLS OF THE NEUSE ROAD
SUITE 300
RALEIGH, NC 27609
919-781-4626

SC COA No. 363

moffatt & nichol

Sheet Reference No.
CR303
INDEX: 47 OF 113

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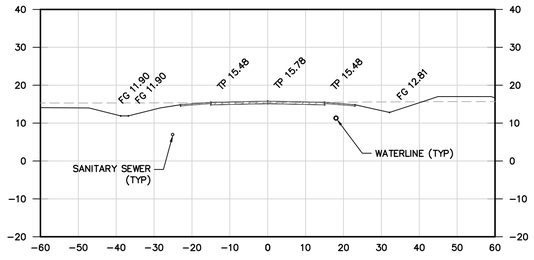
DRAWING SCALES SHOWN BASED ON 22"x34" DRAWING

19+50.00



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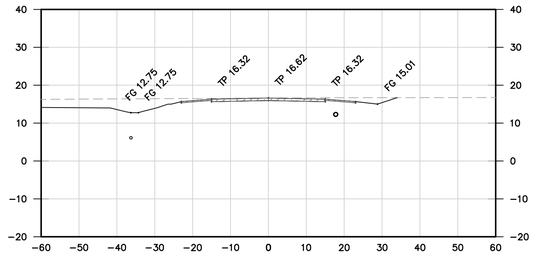

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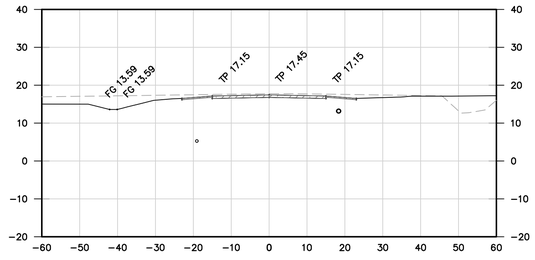

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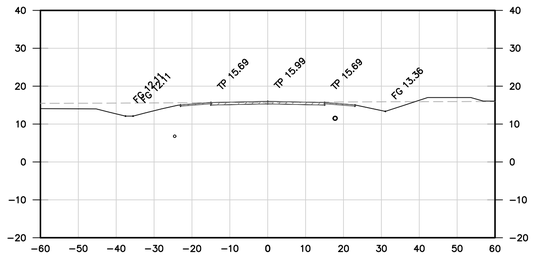

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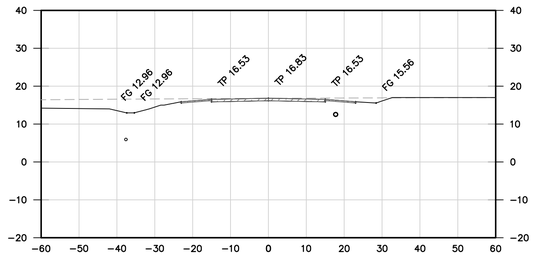

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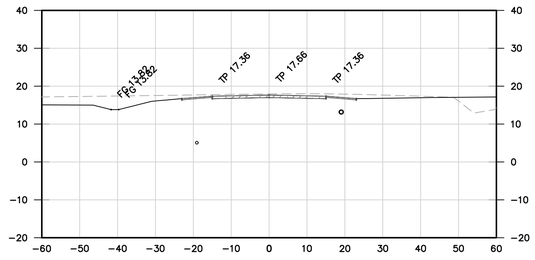

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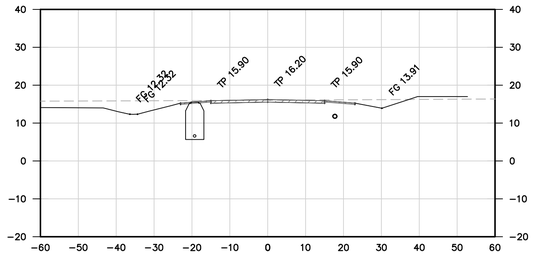

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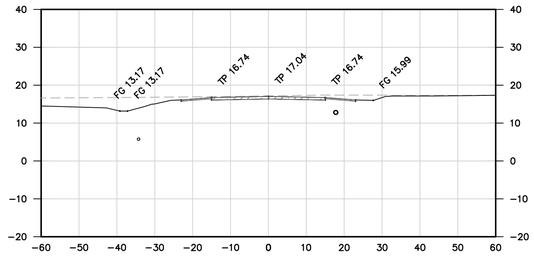

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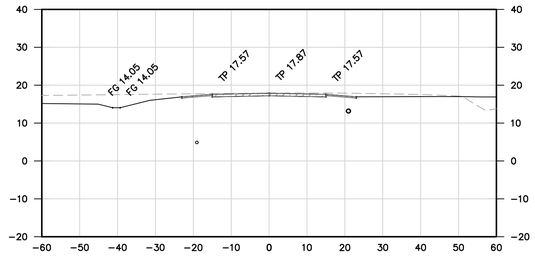

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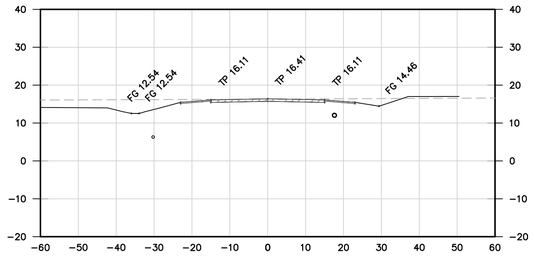

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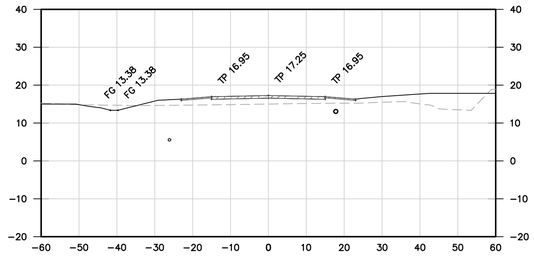

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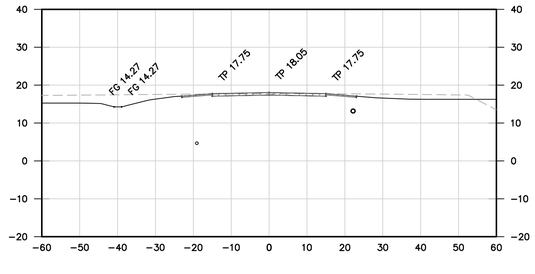

20' 0' 20' 40'

SCALE: 1"=20'

ISSUED FOR BID
JANUARY 2020

GRAND STRAND WATER & SEWER AUTHORITY

Mark	Description	Date	Appr.
	ISSUED FOR BID	05/01/20	JJT

BUCKSPORT MARINE INDUSTRIAL PARK - PHASE 1

MARINE PARK ROAD CROSS-SECTIONS 3 OF 4

Date: JANUARY 2020 | Rev: 0
Designed by: TRR | Dwn by: JT | Ckd by: TRR | Reviewed by:
M&N Project No. 7232-05 | Drawing code:
Drawing Scale: AS SHOWN
Plot scale: 1:1 (0 SHEET)
Submitted by: MOFFATT & NICHOL

SOUTH CAROLINA LICENSED PROFESSIONAL ENGINEER No.24067 TIMOTHY R. REID

SEAL 5-1-2020

SOUTH CAROLINA CERTIFICATE OF AUTHORIZATION MOFFATT & NICHOL ENGINEERS No. 000363

4700 FALLS OF THE NEUSE ROAD
SUITE 300
RALEIGH, NC 27609
919-781-4626

SC COA No. 363

moffatt & nichol

Sheet Reference No.
CR304
INDEX: 48 OF 113

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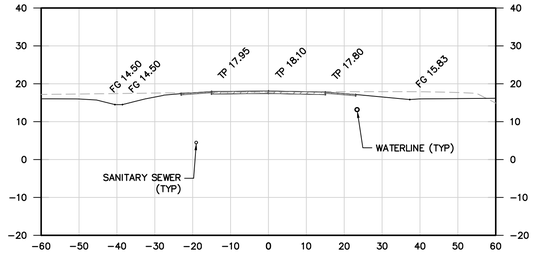

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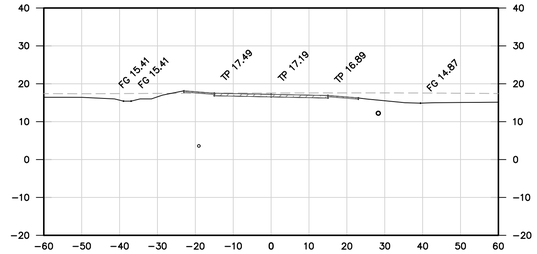

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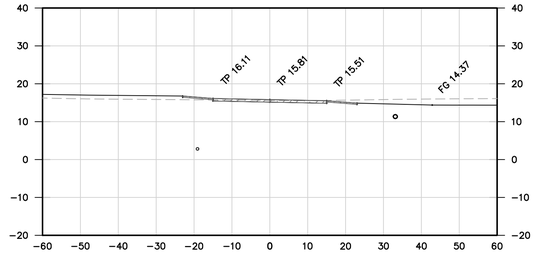

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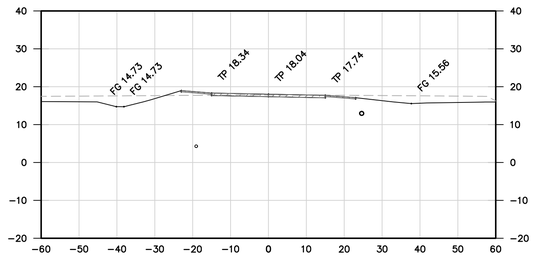

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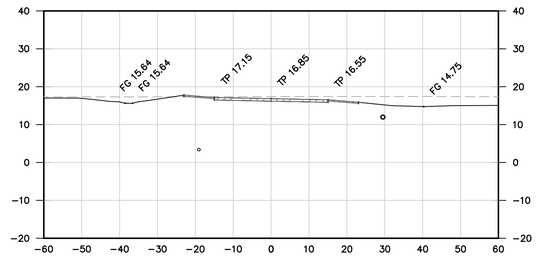

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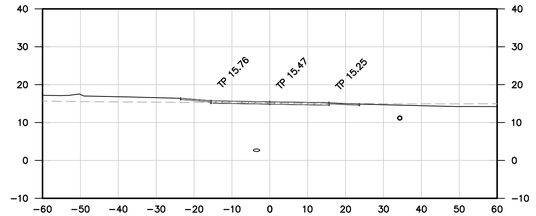

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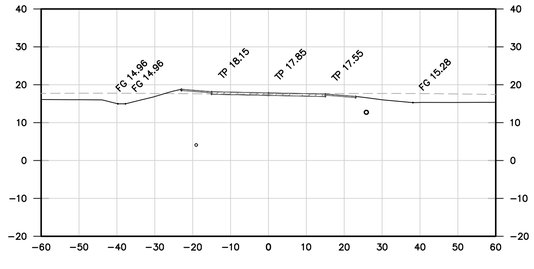

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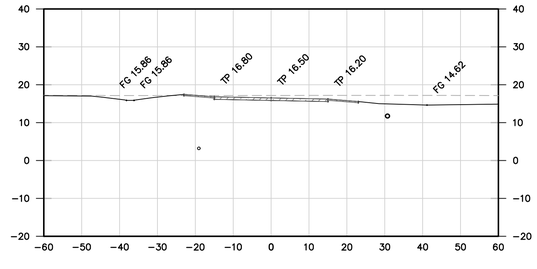

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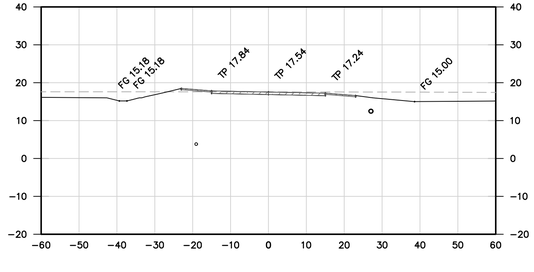

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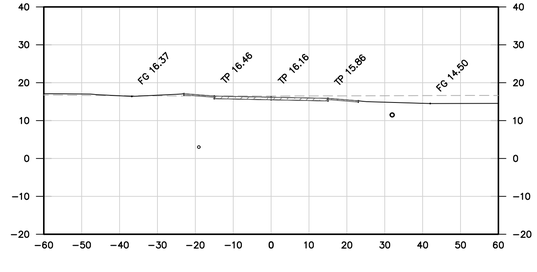

20' 0' 20' 40'

SCALE: 1"=20'

ISSUED FOR BID
JANUARY 2020

GRAND STRAND WATER & SEWER AUTHORITY

Mark	Description	Date	Appr.
	ISSUED FOR BID	05/01/20	JJT

BUCKSPORT MARINE INDUSTRIAL PARK - PHASE 1

MARINE PARK ROAD CROSS-SECTIONS 4 OF 4

Rev.	0
Date:	JANUARY 2020
M&N Project No.	7232-05
Drawing code:	
Drawing Scale:	AS SHOWN
Plot scale: 1:1 (0 SHEET)	
Designed by:	TRR
Dwn by:	JT
Ckd by:	TRR
Reviewed by:	
Submitted by:	MOFFATT & NICHOL

SOUTH CAROLINA LICENSED PROFESSIONAL ENGINEER No.24067 TIMOTHY R. REID

SEAL 5-1-2020

SOUTH CAROLINA CERTIFICATE OF AUTHORIZATION MOFFATT & NICHOL ENGINEERS No. 000363

4700 FALLS OF THE NEUSE ROAD
SUITE 300
RALEIGH, NC 27609
919-781-4626

SC COA No. 363

moffatt & nichol

Sheet Reference No.

CR305

INDEX: 49 OF 113

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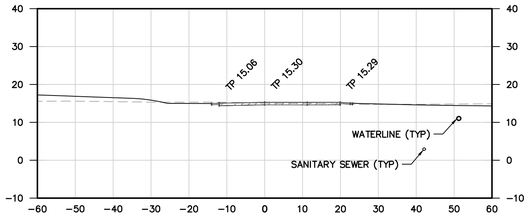

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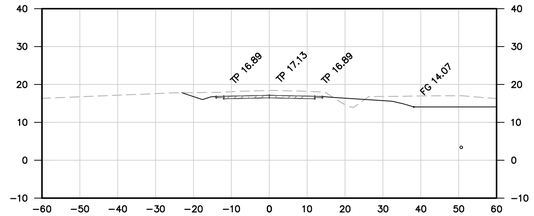

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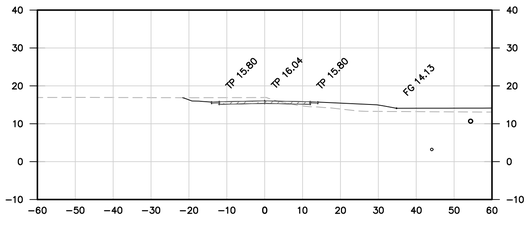

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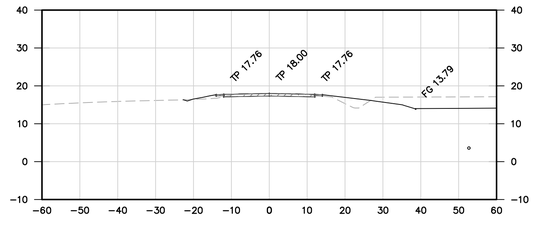

20' 0' 20' 40'

SCALE: 1"=20'

ISSUED FOR BID
JANUARY 2020

GRAND STRAND WATER & SEWER AUTHORITY

Mark	Description	Date	Appr.
	ISSUED FOR BID	05/01/20	JJT

BUCKSPORT MARINE INDUSTRIAL PARK - PHASE 1

HENRIETTA BLUFFS ROAD CROSS-SECTIONS

Designed by: TRR	Rev. 0
Dwn by: JT	Ckd by: TRR
Reviewed by:	Drawing code:
Submitted by: MOFFATT & NICHOL	Drawing Scale: AS SHOWN Plot scale: 1:1 (0 SHEET)
Date: JANUARY 2020	M&N Project No. 7232-05

LICENSED PROFESSIONAL ENGINEER — SOUTH CAROLINA — No.24067 — TIMOTHY R. REID

SEAL 5-1-2020

MOFFATT & NICHOL ENGINEERS No. 000363 — SOUTH CAROLINA — CERTIFICATE OF AUTHORIZATION

4700 FALLS OF THE NEUSE ROAD
SUITE 300
RALEIGH, NC 27609
919-781-4626

SC COA No. 363

moffatt & nichol

Sheet Reference No.

CR306

INDEX: 50 OF 113

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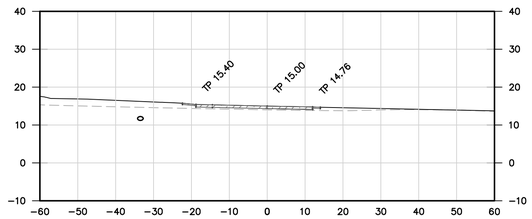

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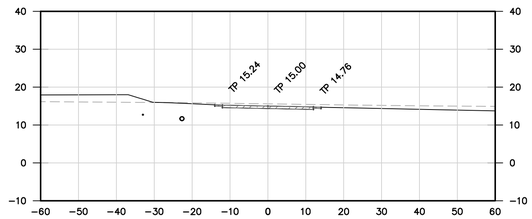

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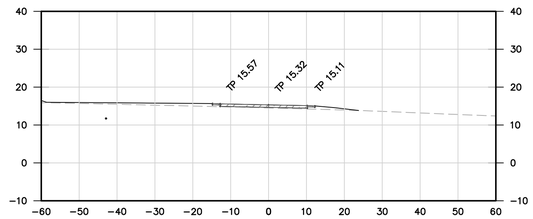

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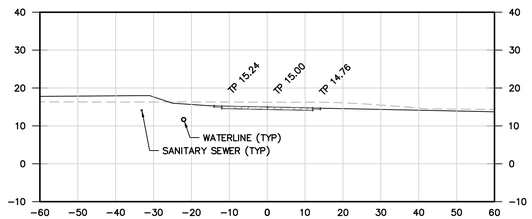

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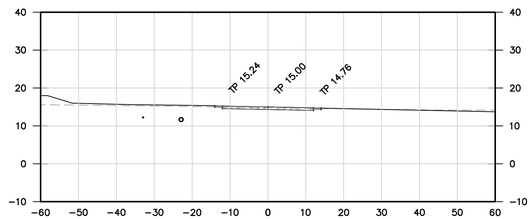

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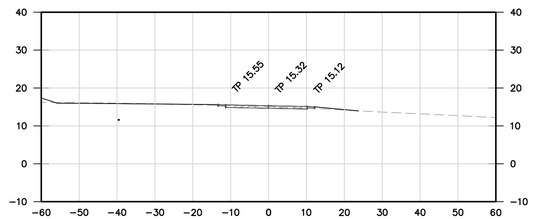

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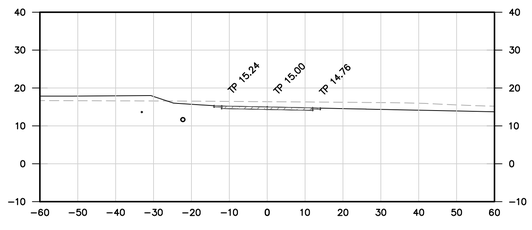

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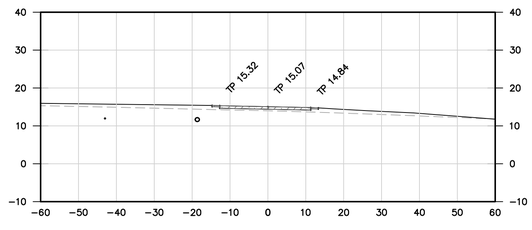

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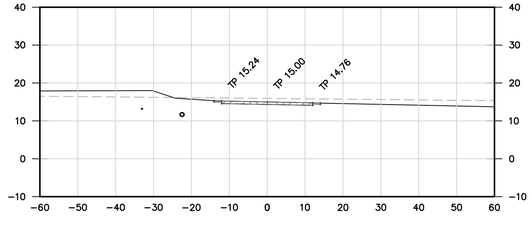

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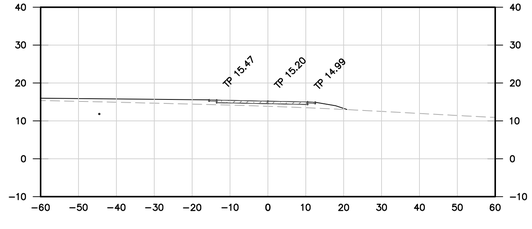

20' 0' 20' 40'

SCALE: 1"=20'

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Mark	Description	Date	Appr.
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BUCKSPORT MARINE INDUSTRIAL PARK - PHASE 1

BUCKSPORT ROAD CROSS-SECTIONS

Designed by: TRR
Dwn by: JT
Ckd by: TRR
Reviewed by:
Submitted by: MOFFATT & NICHOL
Date: JANUARY 2020
M&N Project No. 7232-05
Drawing code:
Drawing Scale: AS SHOWN
Plot scale: 1:1 (0 SHEET)
Rev. 0

SOUTH CAROLINA LICENSED PROFESSIONAL ENGINEER No.24067 TIMOTHY R. REID
SEAL 5-1-2020

SOUTH CAROLINA CERTIFICATE OF AUTHORIZATION MOFFATT & NICHOL ENGINEERS No. 000363

4700 FALLS OF THE NEUSE ROAD
SUITE 300
RALEIGH, NC 27609
919-781-4626

SC COA No. 363

moffatt & nichol

Sheet Reference No.
CR307
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DRAWING SCALES SHOWN BASED ON 22"x34" DRAWING

I. SITE DESCRIPTION

A. PROJECT DESCRIPTION

A.1. PROJECT AREA	169.4 ACRES
A.2. AREA DISTURBED	84.5 ACRES
A.3. PERCENT IMPERVIOUS AREA BEFORE CONSTRUCTION	1.8%
A.4. RUNOFF COEFFICIENT BEFORE CONSTRUCTION	88 CN
A.5. PERCENT IMPERVIOUS AREA AFTER CONSTRUCTION	70.1%
A.6. RUNOFF COEFFICIENT AFTER CONSTRUCTION	92 CN

B. DESCRIPTION OF CONSTRUCTION ACTIVITY

WORK CONSISTS OF CLEARING, GRADING, DRAINAGE IMPROVEMENTS, GRASSING, INSTALLATION OF ROADWAY AND BRIDGE

C. RUNOFF DATA

C.1. SOIL CLASSIFICATIONS: (HSG)	C
C.2. LAND USE(S):	CULTIVATED LAND, OPEN SPACE

D. RECEIVING WATERS

D.1. CLOSEST RECEIVING WATERS:	WACCAMAW RIVER
D.2. ULTIMATE RECEIVING WATERS:	WACCAMAW RIVER

E. FLOOD

E.1. FEMA FLOOD ZONE(S):	ZONE X
E.2. FEMA FLOOD INSURANCE MAP(S):	45051C0665 H

II. CONTROL MEASURES

1. EROSION AND SEDIMENT CONTROLS

PRIOR TO START OF CONSTRUCTION, ALL EXTERIOR SILT FENCE WILL BE INSTALLED AS SHOWN ON THE PLANS.

1.1. CLEARING

1.1.1. AS CLEARING IS COMPLETED, ADDITIONAL SILT FENCE WILL BE INSTALLED WHERE NECESSARY, SUCH AS POINTS WHERE FLOWS BECOME CHANNELIZED, AND,OTHER POINTS WHERE EXCESSIVE RUNOFF VELOCITIES MAY OCCUR.

1.1.2. INSTALL CONSTRUCTION ENTRANCES/ EXITS BEFORE BEGINNING CLEARING

1.1.3. CONSTRUCTION DELAYS IN ANY ONE AREA GREATER THAN 14 DAYS PRIOR TO START OF ROUGH GRADING WILL MANDATE STABILIZATION PROCEDURES. ACCEPTABLE METHODS OF STABILIZATION INCLUDE MULCHING AND TEMPORARY SEEDING.

1.1.4. MAINTAIN EXISTING VEGETATION WHENEVER POSSIBLE AND MINIMIZE THE AREA OF DISTURBANCE. RETAIN AND PROTECT TREES TO ENHANCE FUTURE LANDSCAPING EFFORTS AND REDUCE RAINDROP IMPACT.

1.1.5. INSTALL ALL SEDIMENT CONTROL PRACTICES PRIOR TO ANY UP-SLOPE SOIL DISTURBING ACTIVITIES.

1.1.6. PHASE CONSTRUCTION ACTIVITIES TO MINIMIZE THE AREAS DISTURBED AT ONE TIME. THIS WILL ALSO ALLOW COMPLETED AREAS TO BE STABILIZED AND RE-VEGETATED BEFORE DISTURBING ADJACENT SITES. THE NEED FOR TEMPORARY EROSION CONTROL MEASURES MAY BE AVOIDED BY COMPLETING A PHASE AND INSTALLING PERMANENT EROSION CONTROL MEASURES WHEN THE FINAL GRADE IS ATTAINED.

1.1.7. MAINTAIN AND PROTECT ALL NATURAL WATERWAYS. FILTER OUT SEDIMENT AND OTHER POLLUTANTS NEAR SENSITIVE WATERS.

1.1.8. INSTALL SILT FENCE (OR BIO ROLLS/ROCK SOCK PRODUCTS) ON THE DOWN-SLOPE PERIMETER OF ALL DISTURBED AREAS PRIOR TO ANY SOIL DISTURBING ACTIVITIES (INCLUDING CLEARING AND GRUBBING). SILT FENCE CAN TREAT A MAXIMUM OF 100 SQUARE FEET PER LINEAL FOOT OF FENCE. INSTALL SILT FENCE IN SHORTER REACHES ON THE CONTOUR WITH EACH END TURNED UP-SLOPE. SWALES AND SHORELAND AREAS SHOULD ALSO BE PROTECTED WITH SILT FENCE, BIO ROLLS, OR ROCK SOCKS.

1.1.9. IN AREAS OF CONCENTRATED FLOW INSTALL STRAW BALE CHECKS, ROCK CHECK DAMS, TRIANGULAR DIKES, BIO ROLL BLANKETS. OR ROCK SOCKS TO SLOW RUNOFF AND TRAP SEDIMENT.

1.1.10. USE TEMPORARY SLOPE DRAINS OR ROCK CHUTES TO MOVE WATER DOWN STEEP SLOPES.

1.1.11. STORMWATER TREATMENT PONDS SHALL BE UTILIZED TEMPORARILY AS SEDIMENT BASINS.

1.2. ROUGH GRADING

1.2.1. ALL EXISTING CONTROLS WILL BE MAINTAINED DURING ROUGH GRADING, DELAYS OF GREATER THAN 14 DAYS PRIOR TO START OF NEXT ACTIVITY WILL MANDATE STABILIZATION PROCEDURES. ACCEPTABLE METHODS OF STABILIZATION INCLUDE MULCHING AND TEMPORARY SEEDING.

1.2.2. ALL AREAS NOT SUBJECT TO FURTHER CONSTRUCTION (DRAINAGE, SANITARY SEWER, ROADS. WATER DISTRIBUTION SYSTEMS, OR STORM WATER FACILITIES) SHALL BE GRASSED WITH A PERMANENT COVER.

1.2.3. COVER ANY STOCK PILED TOPSOIL WITH PLASTIC (OR OTHER IMPERVIOUS COVERING) OR USE A TEMPORARY SEED MIX. USE STOCKPILED TOPSOIL AS EARTHEN BERMS TO SERVE AS TEMPORARY SEDIMENT BASINS.

1.3. DRAINAGE

1.3.1. ALL EXISTING CONTROLS WILL BE MAINTAINED DURING DRAINAGE INSTALLATION.

1.3.2. CONSTRUCTION DRAINAGE WILL BE ROUTED THROUGH LAKES, WHICH WILL ACT AS SEDIMENT BASINS OR OTHER ACCEPTABLE SEDIMENT BASINS/TRAPS.

1.3.3. STORM DRAIN INLET PROTECTION AS SHOWN ON DETAIL SHEET SHALL BE INSTALLED ON ALL CURB INLETS, STORM DRAIN MANHOLES, JUNCTION BOXES, AND GRATE INLETS.

1.3.4. DELAYS OF GREATER THAN 14 DAYS PRIOR TO START OF THE NEXT CONSTRUCTION SEQUENCE WILL MANDATE STABILIZATION PROCEDURES. ACCEPTABLE METHODS OF STABILIZATION INCLUDE MULCHING AND TEMPORARY SEEDING.

1.3.5. ALL STORM LINES NOT IN STREETS OR OTHER PAVED AREAS ARE TO BE MULCHED AND SEEDED WITHIN 5 DAYS AFTER BACKFILL.

1.4. WASTE DISTRIBUTION SYSTEM INSTALLATION

1.4.1. ALL EXISTING CONTROLS WILL BE MAINTAINED DURING INSTALLATION OF THE WATER DISTRIBUTION SYSTEM.

1.4.2. DELAYS OF GREATER THAN 14 DAYS PRIOR TO START OF NEXT ACTIVITY WILL MANDATE STABILIZATION PROCEDURES. ACCEPTABLE METHODS OF STABILIZATION INCLUDE MULCHING AND TEMPORARY SEEDING.

1.5. WASTEWATER COLLECTION SYSTEM INSTALLATION

1.5.1. ALL EXISTING CONTROLS WILL BE MAINTAINED DURING INSTALLATION OF THE WASTEWATER SYSTEM.

1.5.2. DELAYS OF GREATER THAN 14 DAYS PRIOR TO START OF NEXT ACTIVITY WILL MANDATE STABILIZATION PROCEDURES. ACCEPTABLE METHODS OF STABILIZATION INCLUDE MULCHING AND TEMPORARY SEEDING.

1.6. CONSTRUCTION OF ROADS

1.6.1. ALL EXISTING CONTROLS WILL BE MAINTAINED DURING ROAD CONSTRUCTION.

1.6.2. DELAYS OF GREATER THAN 14 DAYS PRIOR TO START OF NEXT ACTIVITY WILL MANDATE STABILIZATION PROCEDURE.S ACCEPTABLE METHODS OF STABILIZATION INCLUDE MULCHING AND TEMPORARY SEEDING.

1.7. GRASSING

1.7.1. ALL EXISTING CONTROLS WILL BE MAINTAINED UNTIL GRASSING IS ESTABLISHED

1.7.2. ANY AREAS THAT ERODE OR WHERE GRASS DOES NOT ESTABLISH ITSELF SHALL BE RE-GRADED AND RE-GRASSED.

2. STORM WATER MANAGEMENT

RUNOFF FROM THIS PROJECT WILL DISCHARGE INTO A STORM WATER MANAGEMENT SYSTEM. TREATMENT WILL OCCUR IN STORM WATER DETENTION PONDS.

3. OTHER CONTROLS

3.1. WASTE DISPOSAL

3.1.1. NO SOLID MATERIALS, INCLUDING BUILDING MATERIALS, SHALL BE DISCHARGED TO ANY RECEIVING WATERS.

3.1.2. OFFSITE VEHICLE TRACKING OF SEDIMENTS AND THE GENERATION OF DUST SHALL BE MINIMIZED.

3.1.3. THIS PLAN SHALL COMPLY WITH STATE AND/OR LOCAL WASTE DISPOSAL, SANITARY SEWER OR SEPTIC SYSTEM REGULATIONS.

3.1.4. DUST CONTROL ON DISTURBED AREAS – CONTROLLING SURFACE AND AIR MOVEMENT OF DUST ON CONSTRUCTION SITE AND HAUL ROUTES. THE PURPOSE OF THE MEASURE IS TO REDUCE THE PRESENCE OF AIRBORNE SUBSTANCES, WHICH MAYBE HARMFUL OR INJURIOUS TO HUMAN HEALTH WELFARE OR SAFETY, OR TO ANIMALS OR PLANT LIFE.

III. MAINTENANCE

1. MAINTENANCE PROGRAM

1.1. THE SITE SUPERINTENDENT, OR HIS/HER REPRESENTATIVE, SHALL MAKE VISUAL INSPECTIONS OF ALL MECHANICAL CONTROLS AND NEWLY STABILIZED AREAS (I.E. SEEDED AND MULCHED AND/OR SODDED AREAS) ON A DAILY BASIS; ESPECIALLY AFTER HEAVY RAINFALL EVENT TO INSURE THAT ALL CONTROLS ARE MAINTAINED AND PROPERLY FUNCTIONING. ANY DAMAGED CONTROLS SHALL BE REPAIRED PRIOR TO THE END OF THE WORK DAY INCLUDING RE-SEEDING AND MULCHING OR RE-SODDING IF NECESSARY.

1.2. EROSION CONTROL MEASURES WILL BE MAINTAINED AT ALL TIMES. IF FULL IMPLEMENTATION OF THE APPROVED PLAN DOES NOT PROVIDE FOR EFFECTIVE EROSION CONTROL, ADDITIONAL EROSION AND SEDIMENTATION CONTROL MEASURES SHALL BE IMPLEMENTED TO CONTROL OR TREAT THE SEDIMENT SOURCE. ALL DRAINAGE SWALES, POCKETS, DEPRESSION, LOW LINES, AND OUTLET DITCHES SHALL DRAIN EFFECTIVELY AT ALL TIMES. SETTLEMENT OR WASHING THAT MAY OCCUR SHALL BE REPAIRED BY THE CONTRACTOR. SEDIMENT WILL BE REMOVED FROM BEHIND THE SEDIMENT FENCE WHEN IT REACHES 1/3 THE HEIGHT OF THE FENCE. THE SEDIMENT FENCE WILL BE REPAIRED AS NECESSARY TO MAINTAIN AN EFFECTIVE BARRIER. MAINTAIN THE CONSTRUCTION EXIT IN A CONDITION TO PREVENT MUD OR SEDIMENT FROM LEAVING THE SITE. THIS MAY REQUIRE PERIODIC TOP DRESSING WITH ADDITIONAL STONE. IMMEDIATELY REMOVE ALL OBJECTIONABLE MATERIALS SPILLED, WASHED, OR TACKED ONTO PUBLIC ROADWAYS. RESEED AND MULCH AREA WHERE SEEDING EMERGENCE IS POOR, OR WHERE EROSION OCCURS. PROTECT FROM TRAFFIC AS MUCH AS POSSIBLE. INSPECT ALL MULCHES PERIODICALLY, AND AFTER RAINSTORMS TO CHECK FOR EROSION, DISLOCATION OR FAILURE. IF WASHOUT OCCURS, REPAIR THE SLOPE GRADE, RESEED AND REINSTALL MULCH. FOLLOW THE CONSTRUCTION SEQUENCE THROUGHOUT THE PROJECT DEVELOPMENT. WHEN CHANGES IN CONSTRUCTION ACTIVITIES ARE NEEDED, AMEND THE SEQUENCE SCHEDULE IN ADVANCE TO MAINTAIN MANAGEMENT CONTROL. IF MAJOR CHANGES ARE NECESSARY, SEND A COPY OF THE MODIFIED SCHEDULE TO THE ENGINEER. SEDIMENT AND EROSION CONTROL MEASURES WILL REMAIN IN PLACE AND BE MAINTAINED UNTIL THE DISTURBED AREAS.ARE STABILIZED.

2. SILT FENCE

SILT FENCES WILL BE MONITORED DURING CONSTRUCTION. ANY SILT FENCE WHICH IS NOT FUNCTIONING PROPERLY WILL BE PROMPTLY REPAIRED. CLEAN OUT THE SILT FENCE WHEN IT REACHES 1/3 THE HEIGHT OF THE FENCE OR REPLACE WITH FUNCTIONAL SILT FENCE WITHIN 24 HOURS. USE OF HOSES AND WATER TO FLUSH THE SEDIMENT INTO THE STORM INLETS IS UNACCEPTABLE.

3. SEDIMENTATION BASINS

SEDIMENTATION BASINS WHICH ARE AT 50% USED CAPACITY OR APPROACHING SUCH CAPACITY SHALL BE RE-EXCAVATED TO ORIGINAL DIMENSIONS AND THE SILT PROPERLY DISPOSED OF.

4. SEDIMENT LOGS/ROLLS

SEDIMENT LOGS/ROLLS OR OTHER CONTROL MEASURES WHICH BEGIN TO DISINTEGRATE OR FUNCTION INEFFECTIVELY SHALL BE PROMPTLY REPLACED.

5. VEGETATION COVER

ANY VEGETATION COVER SERVING TO STABILIZE DISTURBED SOILS WHICH IS ITSELF DISTURBED SHALL IMMEDIATELY BE REPLACED.

6. CONSTRUCTION ENTRANCE

MAINTAIN ROCK CONSTRUCTION ENTRANCE AND CLEAN ADJACENT ROADS OF ANY MUD TRACKED ONTO THEM.

IV. INSPECTIONS

1. QUALIFIED PERSONNEL WILL INSPECT DISTURBED AREAS OF THE CONSTRUCTION SITE, AREAS USED FOR STORAGE OF MATERIALS THAT ARE EXPOSED TO PRECIPITATION THAT HAVE NOT BEEN FINALLY STABILIZED, STRUCTURAL CONTROL MEASURES, AND LOCATIONS WHERE VEHICLES ENTER OR EXIT THE SITE AT LEAST ONCE EVERY SEVEN CALENDAR DAYS. WHERE SITES HAVE BEEN FINALLY STABILIZED SUCH INSPECTIONS SHALL BE CONDUCTED AT LEAST ONCE EVERY MONTH DURING THE WARRANTY PERIOD.

2. DISTURBED AREAS AND AREAS USED FOR STORAGE OF MATERIALS THAT ARE EXPOSED TO PRECIPITATION SHALL BE INSPECTED FOR EVIDENCE OF, OR THE POTENTIAL FOR, POLLUTANTS ENTERING THE DRAINAGE SYSTEM. EROSION AND SEDIMENT CONTROL MEASURES IDENTIFIED IN THE PLAN SHALL BE OBSERVED TO ENSURE THAT THEY ARE OPERATING CORRECTLY. WHERE DISCHARGE LOCATIONS OR POINTS ARE ACCESSIBLE, THEY SHALL BE INSPECTED TO ASCERTAIN WHETHER EROSION CONTROL MEASURES ARE EFFECTIVE IN PREVENTING SIGNIFICANT IMPACTS TO RECEIVING WATERS. LOCATIONS WHERE VEHICLES ENTER OR EXIT THE SITE SHALL BE INSPECTED FOR EVIDENCE OF OFFSITE SEDIMENT TRACKING.

3. A WRITTEN REPORT SUMMARIZING THE SCOPE OF THE INSPECTION, NAME(S) AND QUALIFICATIONS OF PERSONNEL MAKING THE INSPECTION, THE DATE(S) OF THE INSPECTION, WEATHER INFORMATION FOR THE PERIOD SINCE THE LAST INSPECTION (OR SINCE COMMENCEMENT OF CONSTRUCTION ACTIVITY) INCLUDING A BEST ESTIMATE OF THE BEGINNING OF EACH STORM EVENT, DURATION OF EACH STORM EVENT, APPROXIMATE AMOUNT OF RAINFALL FOR EACH STORM EVENT (IN INCHES) AND WHETHER ANY DISCHARGES OCCURRED, LOCATION(S) OF DISCHARGES OF SEDIMENT OR OTHER POLLUTANTS FROM THE SITE, LOCATION(S) OF BMP'S THAT NEED MAINTENANCE, LOCATION(S) OF BMP'S THAT FAILED TO OPERATE AS DESIGNED OR PROVED INADEQUATE FOR A PARTICULAR LOCATION, LOCATION(S) WHERE ADDITIONAL BMP'S ARE NEEDED THAT DID NOT EXIST AT THE TIME OF INSPECTION AND ANY CORRECTIVE ACTION REQUIRED INCLUDING ANY CHANGES TO SWPPP NECESSARY AND IMPLEMENTATION DATES.

4. THE REPORT SHALL BE MAINTAINED AT LEAST THREE YEARS FROM THE DATE THE SITE IS FINALLY STABILIZED. THE REPORT MUST BE SIGNED AND SHALL CONTAIN A CERTIFICATION THAT THE FACILITY IS IN COMPLIANCE WITH THE STORM WATER POLLUTION PREVENTION PLAN AND THE NPDES PERMIT REFERENCED ABOVE. THE CONTRACTOR SHALL MAINTAIN THIS REPORT. THE REPORT SHALL BE SUBMITTED TO THE ENGINEER AND OWNER.

V. LONG GERM MAINTENANCE OF DRAINAGE AND STORM WATER MANAGEMENT SYSTEM

THE ROADS AND DRAINAGE SYSTEM WILL BE OWNED AND MAINTAINED BY HORRY COUNTY AFTER CONSTRUCTION IS COMPLETE.

VI. SC DHEC STANDARD NOTES

1. IF NECESSARY, SLOPES WHICH EXCEED EIGHT (8) VERTICAL FEET SHOULD BE STABILIZED WITH SYNTHETIC OR VEGETATIVE MATS, IN ADDITION TO GRASSING / HYDROSEEDING. IT MAY BE NECESSARY TO INSTALL TEMPORARY SLOPE DRAINS DURING CONSTRUCTION. TEMPORARY BERMS MAY-BE NEEDED UNTIL THE SLOPE IS BROUGHT TO GRADE.

2. STABILIZATION MEASURES SHALL BE INITIATED AS SOON AS PRACTICABLE IN PORTIONS OF THE SITE WHERE CONSTRUCTION ACTIVITIES HAVE TEMPORARILY OR PERMANENTLY CEASED, BUT IN NO CASE MORE THAN FOURTEEN (14) DAYS AFTER WORK HAS CEASED, EXCEPT AS STATED BELOW:

2.1. WHERE STABILIZATION BY THE 14TH DAY IS PRECLUDED BY SNOW COVER OR FROZEN GROUND CONDITIONS STABILIZATION MEASURES MUST BE INITIATED AS SOON AS PRACTICABLE.

2.2. WHERE CONSTRUCTION ACTIVITY ON A PORTION OF THE SITE IS TEMPORARILY CEASED, AND EARTH-DISTURBING ACTIVITIES WILL BE RESUMED WITHIN 14 DAYS, TEMPORARY STABILIZATION MEASURES DO NOT HAVE TO BE INITIATED ON THAT PORTION OF THE SITE.

3. ALL SEDIMENT AND EROSION CONTROL DEVICES SHALL BE INSPECTED ONCE EVERY CALENDAR WEEK. IF SITE INSPECTIONS IDENTIFY BMP'S THAT ARE DAMAGED OR ARE NOT OPERATING EFFECTIVELY, MAINTENANCE MUST BE PERFORMED AS SOON AS PRACTICAL OR AS REASONABLY POSSIBLE BEFORE THE NEXT STORM EVENT WHENEVER PRACTICAL.

4. PROVIDE SILT FENCE AND/OR OTHER CONTROL DEVICES, AS MAY BE REQUIRED, TO CONTROL SOIL EROSION DURING UTILITY CONSTRUCTION. ALL DISTURBED AREAS SHALL BE CLEANED, GRADED AND STABILIZED WITH GRASSING IMMEDIATELY AFTER THE UTILITY INSTALLATION. FILL, COVER, AND TEMPORARY SEEDING AT THE END OF EACH DAY ARE RECOMMENDED. IF WATER IS ENCOUNTERED WHILE TRENCHING, THE WATER SHOULD BE FILTERED TO REMOVE ANY SEDIMENTS BEFORE BEING PUMPED INTO ANY WATERS OF THE STATE.

5. ALL EROSION CONTROL DEVICES SHALL BE PROPERLY MAINTAINED DURING ALL PHASES OF CONSTRUCTION UNTIL THE COMPLETION OF ALL CONSTRUCTION ACTIVITIES AND ALL DISTURBED AREAS HAVE BEEN STABILIZED. ADDITIONAL CONTROL DEVICES MAY BE REQUIRED DURING CONSTRUCTION IN ORDER TO CONTROL EROSION AND/OR OFFSITE SEDIMENTATION. ALL TEMPORARY CONTROL DEVICES SHALL BE REMOVED ONCE CONSTRUCTION IS COMPLETE AND THE SITE IS STABILIZED.

6. THE CONTRACTOR MUST TAKE NECESSARY ACTION TO MINIMIZE THE TRACKING OF MUD ONTO THE PAVED ROADWAY FROM CONSTRUCTION AREAS AND THE GENERATION OF DUST. THE CONTRACTOR SHALL DAILY REMOVE MUD/SOIL FROM PAVEMENT AS MAY BE REQUIRED.

7. RESIDENTIAL SUBDIVISIONS REQUIRE EROSION CONTROL FEATURES FOR INFRASTRUCTURE AS WELL AS FOR INDIVIDUAL LOT CONSTRUCTION. INDIVIDUAL PROPERTY OWNERS SHALL FOLLOW THESE PLANS DURING CONSTRUCTION OR OBTAIN APPROVAL OF AN INDIVIDUAL PLAN IN ACCORDANCE WITH S.C. REG. 72-300 AND SCR100000.

8. TEMPORARY DIVERSION BERMS AND/OR DITCHES WILL BE PROVIDED AS NEEDED DURING CONSTRUCTION TO PROTECT WORK AREAS FROM UPSLOPE RUNOFF AND/OR TO DIVERT SEDIMENT LADEN WATER TO APPROPRIATE TRAPS OR STABLE OUTLETS.

9. ALL WATERS OF THE STATE (WOS), INCLUDING WETLANDS, ARE TO BE FLAGGED OR OTHERWISE CLEARLY MARKED IN THE FIELD. A DOUBLE ROW OF SILT FENCE IS TO BE INSTALLED IN ALL AREAS WHERE A 50-FOOT BUFFER CAN NOT BE MAINTAINED BETWEEN THE DISTURBED AREA AND ALL WOS. A 10-FOOT BUFFER SHOULD BE MAINTAINED BETWEEN THE LAST ROW OF SILT FENCE AND ALL WOS.

10. LITTER, CONSTRUCTION DEBRIS, OILS, FUELS, AND BUILDING PRODUCTS WITH SIGNIFICANT POTENTIAL FOR IMPACT (SUCH AS STOCKPILES OF FRESHLY TREATED LUMBER) AND CONSTRUCTION CHEMICALS THAT COULD BE EXPOSED TO STORM WATER MUST BE PREVENTED FROM BECOMING A POLLUTANT SOURCE IN STORM WATER DISCHARGES.

11. A COPY OF THE SWPPP, INSPECTION RECORDS AND RAINFALL DATA MUST BE RETAINED AT THE CONSTRUCTION SITE OR A NEARBY LOCATION EASILY ACCESSIBLE DURING NORMAL BUSINESS HOURS, FROM THE DATE OF COMMENCEMENT OF CONSTRUCTION ACTIVITIES TO THE DATE THAT FINAL STABILIZATION IS REACHED.

12. INITIATE STABILIZATION MEASURES ON ANY EXPOSED STEEP SLOPE (3H:1V OR GREATER} WHERE LAND DISTURBING ACTIVITIES HAVE PERMANENTLY OR TEMPORARILY CEASED, AND WILL NOT RESUME FOR A PERIOD OF 7 CALENDAR DAYS.

13. MINIMIZE SOIL COMPACTION IN AREAS NOT UNDER PAVEMENTS AND /OR STRUCTURES AND. UNLESS INFEASIBLE, PRESERVE TOPSOIL.

14. MINIMIZE THE DISCHARGE OF POLLUTANTS FROM EQUIPMENT AND VEHICLE WASHING, WHEEL WASH WATER AND OTHER WASH WATERS. WASH WATERS MUST BE TREATED IN A SEDIMENT BASIN OR ALTERNATIVE CONTROL THAT PROVIDES EQUAL OR BETTER TREATMENT PRIOR TO DISCHARGE.

15. MINIMIZE THE DISCHARGE OF POLLUTANTS FROM DEWATERING OF TRENCHES AND EXCAVATED AREAS. THESE DISCHARGES ARE TO BE ROUTED THROUGH APPROPRIATE BMPS (SEDIMENT BASIN, FILTER BAG, ETC.).

16. THE FOLLOWING DISCHARGES ARE PROHIBITED:

16.1. WASTEWATER FROM WASHOUT OF CONCRETE, UNLESS MANAGED BY AN APPROPRIATE CONTROL;

16.2. WASTEWATER FROM WASHOUT AND CLEANOUT OF OF STUCCO. PAINT, FORM RELEASE OILS, CURING COMPOUNDS AND OTHER CONSTRUCTION MATERIALS;

16.3. FUELS, OILS OR OTHER POLLUTANTS USED IN VEHICLE AND EQUIPMENT OPERATION AND MAINTENANCE; AND

16.4. SOAPS OR SOLVENTS USED IN VEHICLE AND EQUIPMENT WASHING.

17. AFTER CONSTRUCTION ACTIVITIES BEGIN, INSPECTIONS MUST BE CONDUCTED AT A MINIMUM OF AT LEAST ONCE EVERY CALENDAR WEEK AND MUST BE CONDUCTED UNTIL FINAL STABILIZATION IS REACHED ON ALL AREAS OF THE CONSTRUCTION SITE.

18. IF EXISTING BMPS NEED TO BE MODIFIED OR IF ADDITIONAL BMPS ARE NECESSARY TO COMPLY WITH THE REQUIREMENTS OF PERMIT SCR100000 AND/OR SC'S WATER QUALITY STANDARDS, IMPLEMENTATION MUST BE COMPLETED BEFORE THE NEXT STORM EVENT WHENEVER PRACTICABLE. IF IMPLEMENTATION BEFORE THE NEXT STORM EVENT IS IMPRACTICABLE, THE SITUATION MUST BE DOCUMENTED IN THE SWPPP AND ALTERNATIVE BMPS MUST BE IMPLEMENTED AS SOON AS REASONABLY POSSIBLE.

19. A PRE-CONSTRUCTION CONFERENCE MUST BE HELD FOR EACH CONSTRUCTION SITE WITH AN APPROVED ON-SITE SWPPP PRIOR TO THE IMPLEMENTATION OF CONSTRUCTION ACTIVITIES. FOR NON-LINEAR PROJECTS THAT DISTURB 10 ACRES OR MORE, THIS CONFERENCE MUST BE HELD ON-SITE UNLESS THE DEPARTMENT HAS APPROVED OTHERWISE.

VII. EROSION, SEDIMENTATION & POLLUTION CONTROL NOTES

1. THE IMPLEMENTATION OF THESE EROSION SEDIMENT CONTROL (ESC) PLANS AND THE CONSTRUCTION, MAINTENANCE, REPLACEMENT, AND UPGRADING OF THESE ESC FACILITIES IS THE RESPONSIBILITY OF THE CONTRACTOR UNTIL ALL CONSTRUCTION IS COMPLETED AND APPROVED AND VEGETATION/LANDSCAPING IS ESTABLISHED.

2. THE ESC FACILITIES SHOWN ON THIS PLAN MUST BE CONSTRUCTED IN CONJUNCTION WITH ALL CLEARING AND GRADING ACTIVITIES, AND IN SUCH A MANNER AS TO INSURE THAT SEDIMENT AND SEDIMENT LADEN WATER DO NOT ENTER THE DRAINAGE SYSTEM, ROADWAYS, OR VIOLATE. APPLICABLE WATER STANDARDS.

3. THE ESC FACILITIES SHOWN ON THIS PLAN ARE THE MINIMUM REQUIREMENTS FOR ANTICIPATED SITE CONDITIONS. DURING THE CONSTRUCTION PERIOD, THESE ESC FACILITIES SHALL BE UPGRADED AS NEEDED FOR UNEXPECTED STORM EVENTS AND TO ENSURE THAT SEDIMENT AND SEDIMENT LADEN WATER DO NOT LEAVE THE SITE.

4. THE ESC FACILITIES SHALL BE INSPECTED DAILY BY THE CONTRACTOR AND MAINTAINED AS NECESSARY TO ENSURE THEIR CONTINUED FUNCTIONING.

5. THE ESC FACILITIES ON INACTIVE SITES SHALL BE INSPECTED AND MAINTAINED A MINIMUM OF ONCE A MONTH OR WITHIN THE 24 HOURS FOLLOWING A MAJOR STORM EVENT.

6. AT NO TIME SHALL MORE THAN ONE FOOT OF SEDIMENT BE ALLOWED TO ACCUMULATE WITHIN A CATCH BASIN. ALL CATCH BASINS AND CONVEYANCE LINES SHALL BE CLEANED PRIOR TO PAVING AND PRIOR TO FINAL INSPECTION. THE CLEANING OPERATION SHALL NOT FLUSH SEDIMENT LADEN WATER INTO THE DOWNSTREAM SYSTEM.

7. STABILIZED CONSTRUCTION ENTRANCES SHALL BE INSTALLED AT THE BEGINNING OF CONSTRUCTION AND MAINTAINED FOR THE DURATION OF THE PROJECT. ADDITIONAL MEASURES MAYBE REQUIRED TO INSURE THAT ALL PAVED AREAS ARE KEPT CLEAN FOR THE DURATION OF THE PROJECT.

8. BEFORE COMMENCING ANY LAND DISTURBING ACTIVITY, THE EXISTING STORM WATER INLET(S) THAT RECEIVING RUNOFF FROM THE PROPOSED WORK AREA SHALL BE PROTECTED. THE TEMPORARY INLET PROTECTION MUST REMAIN IN PLACE UNTIL THE CONSTRUCTION ACTIVITY IS COMPLETED, THE STREET HAS BEEN SWEPT AND ANY EXPOSED SOILS ARE STABILIZED. THE CONTRACTOR IS ALSO RESPONSIBLE FOR REMOVING ANY TEMPORARY INLET PROTECTION INSTALLED; AFTER ALL DISTURBED AREAS ARE STABILIZED. TEMPORARY PROTECTION OF THE INLETS MAY BE ACCOMPLISHED BY ONE OR MORE OF THE FOLLOWING:

8.1. USE OF GRAVEL BAGS TO FILTER THE SEDIMENT FROM ANY RUNOFF. TO MAKE A GRAVEL BAG, USE A BAG MADE OF GEOTEXTILE FABRIC (NOT BURLAP) AND FILL WITH EITHER 3/4 INCH ROCK OR 1/4 INCH PEA GRAVEL.

8.2. USE OF SEDIMENT LOGS TO FILTER THE SEDIMENT FROM ANY RUNOFF (AVAILABLE THROUGH LOCAL EROSION CONTROL SUPPLIERS).

8.3. USE OF ABOVE OR UNDER-GRATE FILTER BAGS OR DEVICES TO FILTER THE SEDIMENT FROM ANY RUNOFF (AVAILABLE THROUGH EROSION CONTROL SUPPLIERS).

9. WATER MAY NOT BE DISCHARGED IN A MANNER THAT CAUSES EROSION, SEDIMENTATION, OR FLOODING ON THE SITE, ON DOWNSTREAM PROPERTIES, IN THE RECEIVING CHANNELS, OR IN ANY STORMWATER INLET. WHEN SITE DEWATERING, WATER PUMPED FROM THE SITE, INCLUDING TRENCHES, SHALL BE TREATED BY ONE OF THE FOLLOWING:

9.1. TEMPORARY SEDIMENTATION BASINS

9.2. SEDIMENT FILTERING BAGS

10. THE CONTRACTOR SHALL VERIFY THE SIZE AND LOCATION OF ALL EXISTING UTILITIES. EXISTING UTILITIES ARE ALL UTILITIES THAT EXIST ON THE PROJECT IN AN ORIGINAL, RELOCATED OR NEWLY INSTALLED POSITION. THE CONTRACTOR SHALL BE HELD RESPONSIBLE FOR THE COST OF REPAIRS TO DAMAGED UNDERGROUND OR OVERHEAD FACILITIES, EVEN IF THE UTILITY IS NOT SHOWN ON THE SITE DEVELOPMENT PLANS. THE CONTRACTOR SHALL CONTACT THE LOCAL UTILITIES PROTECTION CENTER TO COORDINATE THE MARKING OF EXISTING UTILITY LINES A MINIMUM OF 96 HOURS PRIOR TO COMMENCEMENT OF ANY WORK.

11. THE CONTRACTOR SHALL FLUSH ALL INLETS AND PIPE AT THE COMPLETION OF CONSTRUCTION TO REMOVE SILT AND DEBRIS. THE CLEANING AND FLUSHING OF INLETS AND PIPE (EXISTING AND PROPOSED) SHALL BE CONSIDERED PART OF THE COST FOR THE PROJECT.

12. EGRESS FROM THE SITE SHALL BE CONTROLLED SUCH THAT VEHICLES LEAVING THE SITE MUST TRAVERSE CONSTRUCTION EXITS TO REMOVE MUD FROM TIRES.

13. SCHEDULE CONSTRUCTION ACTIVITIES TO MINIMIZE THE EXPOSED AREA AND DURATION OF EXPOSURE. IN SCHEDULING, TAKE INTO ACCOUNT THE SEASON AND THE WEATHER FORECAST.

14. EROSION CONTROL MEASURES ARE THE MINIMUM REQUIRED. THE CONTRACTOR SHALL PROVIDE ADDITIONAL CONTROL MEASURES AS DICTATED BY ACTUAL FIELD CONDITIONS AT THE TIME OF CONSTRUCTION IN ORDER TO PREVENT EROSION AND CONTROL SEDIMENT. EROSION AND SEDIMENT CONTROL MEASURES WILL REMAIN IN PLACE AND BE MAINTAINED UNTIL THE ENTIRE PROJECT IS TERMINATED OR SUSPENDED FOR AN INDEFINITE LENGTH OF TIME, ALL DISTURBED AREAS SHALL BE PLANTED WITH PERMANENT VEGETATION.

15. THE DATA, TOGETHER WITH ALL OTHER INFORMATION SHOWN ON THESE PLANS, OR IN ANY WAY INDICATED THEREBY, WHETHER BY DRAWINGS OR NOTES, OR IN ANY OTHER MANNER, IS BASED UPON FIELD INVESTIGATIONS AND IS BELIEVED TO BE INDICATIVE OF ACTUAL CONDITIONS. HOWEVER, THE SAME IS SHOWN AS INFORMATION ONLY, IS NOT GUARANTEED AND DOES NOT BIND THE DESIGNER OR THE OWNER IN ANY WAY.

16. CONTRACTOR SHALL MAINTAIN SITE ON A DAILY BASIS TO PROVIDE FOR POSITIVE DRAINAGE. CONTRACTOR, AT HIS COST, SHALL GRADE SITE AND PROVIDE NECESSARY TEMPORARY DRAINAGE SWALES TO INSURE STORM WATER DOES NOT POND ON SITE.

17. SITE DRAINAGE SHALL BE ESTABLISHED TO PREVENT ANY PONDED WATER CONDITIONS WITHIN THE CONSTRUCTION AREA AND TO FACILITATE STORM WATER DISCHARGE.

18. THE ESCAPE OF SEDIMENT FROM THE SITE SHALL BE PREVENTED BY THE INSTALLATION OF EROSION AND SEDIMENT CONTROL MEASURES AND PRACTICES PRIOR TO, OR CONCURRENT WITH, LAND DISTURBING ACTIVITIES.

19. LIME RATES AND ANALYSIS:

19.1. AGRICULTURAL LIME SHALL BE APPLIED AT THE RATE SHOWN IN THE SEEDING SECTION UNLESS SOIL TESTS INDICATE OTHERWISE. GRADED AREAS REQUIRE LIME APPLICATION. IF LIME IS APPLIED WITHIN SIX MONTHS OF PLANTING PERMANENT PERENNIAL VEGETATION, ADDITIONAL LIME IS NOT REQUIRED. AGRICULTURAL LIME APPLICATION SHALL BE WITHIN THE SPECIFICATIONS OF THE SOUTH CAROLINA DEPARTMENT OF AGRICULTURE.

20. MULCHING:

MULCHING IS REQUIRED FOR ALL PERMANENT VEGETATION APPLICATIONS. MULCH APPLIED TO SEEDED AREAS SHALL ACHIEVE 75% SOIL COVER. SELECT THE MULCHING MATERIAL FROM THE FOLLOWING AND APPLY AS INDICATED:

20.1.

Temporary Seeding – Coastal

Species	Lbs/Ac	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Sandy, Droughty Sites													
Browntop Millet	40 lbs./ac.												
Rye, Grain	56 lbs./ac.												
Ryegrass	50 lbs./ac.												
Well drained, clayey/loamey Sites													
Browntop Millet or Japanese Millet	40 lbs./ac.												
Rye, Grain or Oats	56 lbs./ac. 75 lbs./ac.												
Ryegrass	50 lbs./ac.												

Permanent Seeding - Coastal

Species	Lbs/Ac	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Sandy, Droughty Sites													
Browntop Millet Bahiagrass	10 lbs./ac. 40 lbs./ac.												
Browntop Millet Bahiagrass Sericea Lespedeza	10 lbs./ac. 30 lbs./ac. 40 lbs/ac.												
Browntop Millet Atlantic Coastal Panicgrass	10 lbs./ac. 15 lbs./ac. PLS												
Browntop Millet Switchgrass (Alamo) Little Bluestem Sericea Lespedeza	10 lbs./ac. 8 lbs./ac. PLS 4 lbs./ac. 20 lbs./ac.												
Browntop Millet Weeping Lovegrass	10 lbs./ac. 8 lbs./ac.												
Well drained, clayey/loamey Sites													
Browntop Millet Bahiagrass	10 lbs./ac. 40 lbs./ac.												
Rye, Grain Bahiagrass Clover, Crimson (Annual)	10 lbs./ac. 40 lbs./ac. 5 lbs./ac.												
Browntop Millet Bahiagrass Sericea lespedeza	10 lbs./ac. 30 lbs./ac. 40 lbs./ac.												
Browntop Millet Bermuda, Common Sericea lespedeza	10 lbs./ac. 10 lbs./ac. 40 lbs./ac.												
Browntop Millet Bermuda, Common Kobe Lespedeza (Annual)	10 lbs./ac. 12 lbs./ac. 10 lbs./ac.												
Browntop Millet Bahiagrass Bermuda, Common Sericea lespedeza	10 lbs./ac. 20 lbs./ac. 6 lbs./ac. 40 lbs./ac.												
Browntop Millet Switchgrass Little Bluestem Indiangrass	10 lbs./ac. 8 lbs./ac. PLS 3 lbs./ac. PLS 3 lbs./ac. PLS												

NOTES:

ALL PERMANENT GRASS PLANTINGS SHALL BE MULCHED

1. CENTIPEDE SOD CAN BE USED AS PERMANENT COVER ANYTIME EXCEPT JUNE THRU OCTOBER
2. IF GRASSING OCCURS DURING A MONTH REQUIRING TEMPORARY.COVER, THECONTRACTOR SHALL APPLY PERMANENT COVER (IN ADDITION TO THE TEMPORARY COVER) AT THE APPROPRIATE TIME AT NO ADDITIONAL COST. THE CONTRACTOR MUST ACHIEVE A STRAND OF PERMANENT GRASS WITH AT LEAST 95% COVER. BARE SPOTS CAN NOT BE MORE THAN 1 INCH SQUARE IN ANY 10 SF.

CONSTRUCTION SEQUENCE

	CONSTRUCTION ACTIVITY	SCHEDULE CONSIDERATION
1	OBTAIN COPIES OF ALL PLAN APPROVALS AND OTHER APPLICABLE PERMITS.	CONTRACTOR TO HAVE ONSITE AT ALL TIMES DURING CONSTRUCTION.
2	FLAG THE WORK LIMITS AND BARRICADE TREES AND MARK BUFFER AREAS FOR PROTECTION.	HAVE LOCALREGULATORY AGENCY INSPECT TREE BARRICADES.
3	HOLD PRE CONSTRUCTION CONFERENCE AT LEAST ONE WEEK PRIOR TO STARTING CONSTRUCTION.	REVIEW TREE PROTECTION (BARRICADE) WITH OWNER ANO LOCAL REGULATORY AGENCY. TAKE PICTURES OF ALL PROTECTED TREES ANO LOCATIONS WHERE SITE WORK TIES INTO EXISTING TO DOCUMENT PREDEVELOPMENT PROCEDURES.
4	INSTALL CONSTRUCTION ACCESS AND LAY DOWN AREAS	STABILIZE BARE AREAS IMMEDIATELY AND INSTALL CONSTRUCTION EXITS/ ENTRANCES.
5	CONSTRUCT SEDIMENT TRAPS AND BARRIERS - BASIN TRAPS, SEDIMENT FENCES, AND OUTLET PROTECTION.	INSTALL PRINCIPAL BASINS AFTER CONSTRUCTION SITEIS ACCESSED. INSTALL ADDITIONAL TRAPS AND BARRIERS AS NEEDED DURING GRADING.
6	ESTABLISH RUNOFF CONTROL- DIVERSIONS, PERIMETER DIKES, WATER BARS, AND OUTLET PROTECTION.	INSTALL KEY PRACTICES AFTER PRINCIPAL SEDIMENT TRAPS AND BEFORE LAND GRADING. INSTALL ADDITIONAL
7	LANDCLEARING AND GRADING-SITE PREPARATION CUTTING, FILLING AND GRADING, SEDIMENTATION TRAPS, BARRIERS, DIVERSIONS, DRAINS, SURFACE ROUGHENING.	BEGIN MAJOR CLEARING AND GRADING AFTER PRINCIPAL SEDIMENT AND KEY RUNOFF-CONTROL MEASURES ARE INSTALLED. CLEAR BORROW AND DISPOSAL AREAS ONLY AS NEEDED. INSTALL ADDITIONAL CONTROL MEASURES AS GRADING PROGRESSES. MARK TREES AND BUFFER AREAS FOR
8	RUNOFF CONVEYANCE SYSTEM-INSTALL STORM DRAINS, STABILIZE BANKS, CHANNELS, INSTALL INLET AND OUTLET PROTECTION, SLOPE DRAINS.	WHERE NECESSARY, STABILIZE BANKS AS EARLY AS POSSIBLE. INSTALL PRINCIPAL RUNOFF CONVEYANCE SYSTEM WITH RUNOFF- CONTROL MEASURES. INSTALL REMAINDER OF SYSTEM AFTER GRADING.
9	INSTALL WASTEWATER COLLECTION, WATER DISTRIBUTION, AND STORM DRAINAGE SYSTEMS	APPLY TEMPORARY OR PERMANENT STABILIZATION MEASURES IMMEDIATELY ON ALL DISTURBED AREAS WHERE WORK IS DELAYED OR COMPLETE.
10	SURFACE STABILIZATION-TEMPORARY AND PERMANENT SEEDING, MULCHING, SODDING, RIP RAP.	APPLY TEMPORARY OR PERMANENT STABILIZATION MEASURES IMMEDIATELY ON ALL DISTURBED AREAS WHERE WORK IS DELAYED OR COMPLETE.
11	BUILDING CONSTRUCTION- BUILDINGS UTILITIES, ROADS, ETC.	INSTALL NECESSARY EROSION AND SEDIMENTATION CONTROL PRACTICES AS WORK TAKES PLACE.
12	LANDSCAPING AND RNAL STABILIZATION· TOPSOILING, TREES AND SHRUBS, PERMANENT SEEDING, MULCHING,	LAST CONSTRUCTION PHASE-STABILIZE ALL OPEN AREAS, INCLUDING BORROW ANO SPOIL AREAS. REMOVE AND STABILIZE ALL TEMPORARY CONTROL

DESCRIPTION	PLAN SYMBOL
EROSION PREVENTION	
LAND GRADING:	LG OR
SURFACE ROUGHENING:	
TOPSOILING:	
TEMPORARY SEEDING:	TS
MULCHING:	M
ECB OR TRM	
FGM	FGM
BFM	BFM
PERMANENT SEEDING:	PS
SODDING:	SO
RIPRAP:	
OUTLET PROTECTION	RipRap / ECB or TRM
DUST CONTROL:	DC
POLYACRYLAMIDE (PAM)	PAM

DESCRIPTION	PLAN SYMBOL
SEDIMENT CONTROL	
SEDIMENT BASIN:	
TEMPORARY SEDIMENT TRAP:	
ROCK SEDIMENT DIKE:	
ROCK CHECK DAM:	OR
SEDIMENT TUBE:	
SILT FENCE:	
REINFORCED SILT FENCE:	
TYPE A – FABRIC INLET PROTECTION:	A
TYPE A – SEDIMENT TUBE INLET PROTECTION:	A
TYPE B – WIRE MESH AND STONE DROP INLET PROTECTION:	B
TYPE C – BLOCK AND GRAVEL INLET PROTECTION:	C
TYPE D – RIGID INLET FILTERS	D
TYPE E – SURFACE COURSE CURB INLET FILTER	E
TYPE F – INLET TUBE	F

DESCRIPTION	PLAN SYMBOL
RUNOFF CONVEYANCE MEASURES:	
VEGETATED CHANNELS:	
RIPRAP–LINED CHANNELS:	
ECB OR TRM–LINED CHANNELS:	
PAVED CHANNELS:	PC PC PC
PIPE SLOPE DRAINS:	
TEMPORARY STREAM CROSSING:	T
TEMPORARY DIVERSION DITCH OR SWALE	TD TD
PERMANENT DIVERSION DITCH:	PD PD
DIVERSION DIKE OR BERM	DD DB
LEVEL SPREADER:	
SUBSURFACE DRAIN:	SSD SSD

LIST OF ACRONYMS FOR SEDIMENT AND EROSION CONTROL

AASHTO	AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS
AMO	ACRYLAMIDE POLYMER
BFM	BONDED FIBER MATRIX
BMP(S)	BEST MANAGEMENT PRACTICE(S)
CFS	CUBIC FEET PER SECOND
CMP	CORRUGATED METAL PIPE
DHEC	DEPARTMENT OF HEATH AND ENVIRONMENTAL CONTROL
ECB	EROSION CONTROL BLANKET
EPA	UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
EPSC	EROSION PREVENTION AND SEDIMENTATION CONTROL
FDA	UNITED STATES FOOD AND DRUG ADMINISTRATION
FGM	FLEXIBLE GROWTH MATRIX
HOPE	HIGH DENSITY POLYETHYLENE
MS4	MUNICIPAL SEPARATE STORM SEWER SYSTEM
MSDS	MATERIAL SAFETY DATA SHEETS
NPDES	NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM
PAM	POLYACRYLAMIDE OR POLYMER
RCP	REINFORCED CONCRETE PIPE
SCS	SOIL CONSERVATION SERVICE
SWPPP	STORMWATER POLLUTION PREVENTION PROGRAM
TRM	TURF REINFORCEMENT MAT
VFS	VEGETATED FILTER STRIP

ISSUED FOR BID
JANUARY 2020

GRAND STRAND WATER & SEWER AUTHORITY

Mark	Description	Date	Appr.
	ISSUED FOR BID	01/01/20	JJT

BUCKSPORT MARINE INDUSTRIAL PARK - PHASE 1

EROSION CONTROL LEGEND

Designed by: TRR | Dwn by: JT | Rvwd by: | Sbmtd by: MOFFATT & NICHOL

Date: JANUARY 2020 | Chd by: TRR | M&N Project No. 7232-05 | Drawing code: | Drawing Scale: AS SHOWN | Plot scale: 1:1 (0 SHEET) | Rev. 0

4700 FALLS OF THE NEUSE ROAD
SUITE 300
RALEIGH, NC 27609
919-781-4626
SC COA No. 363
moffatt & nichol

Sheet Reference No.
CS002
INDEX: 53 OF 113

LICENSED PROFESSIONAL ENGINEER
No.24061
TIMOTHY R. RENEAU
SEAL 5-1-2020
SOUTH CAROLINA
MOFFATT & NICHOL ENGINEERS No. 000363
CERTIFICATE OF AUTHORIZATION

DRAWING SCALES SHOWN BASED ON 22"x34" DRAWING

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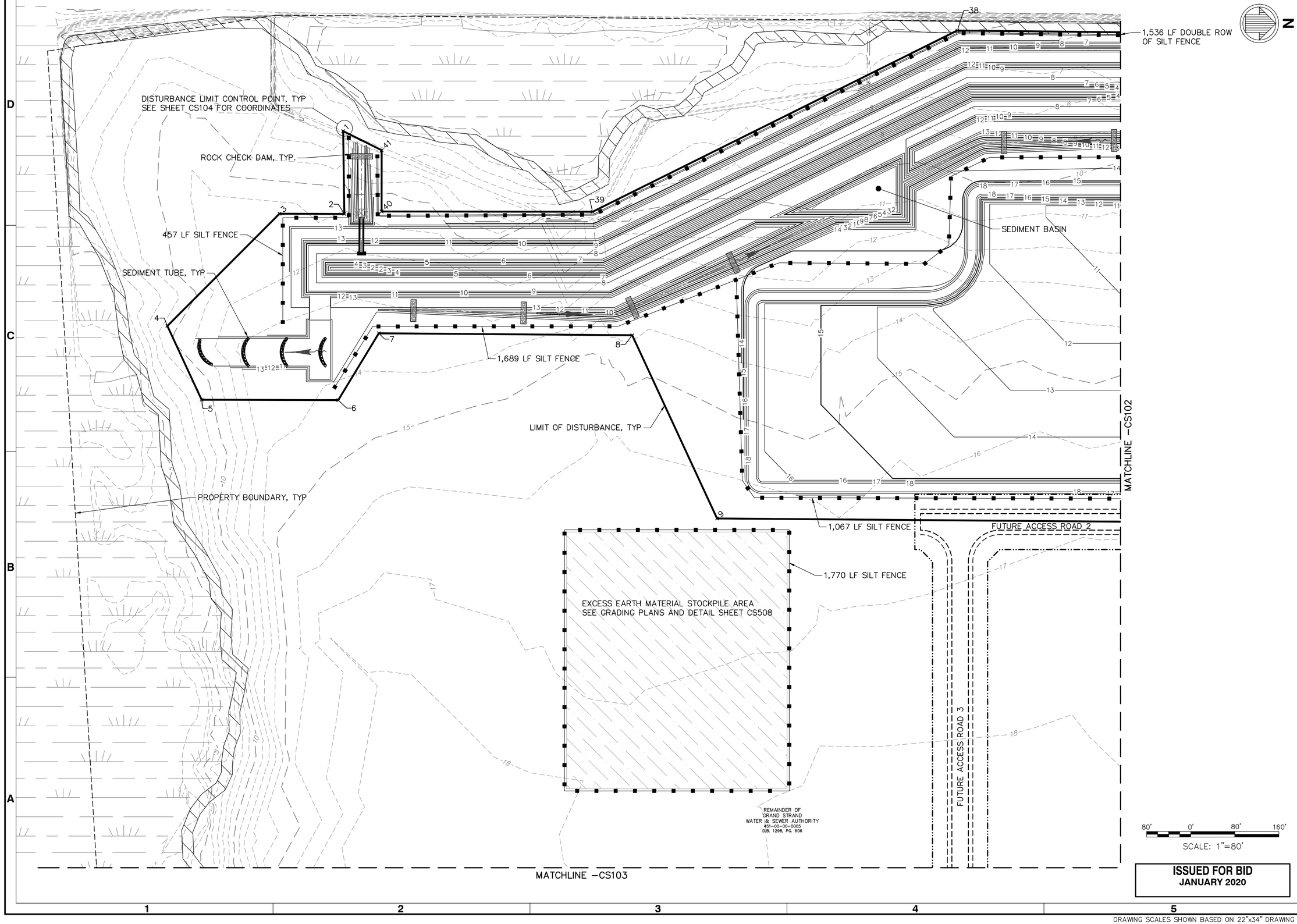

ISSUED FOR BID
JANUARY 2020

GRAND STRAND WATER & SEWER AUTHORITY

Mark	Description	Date	Appr.
	ISSUED FOR BID	05/01/20	JJT

BUCKSPORT MARINE INDUSTRIAL PARK - PHASE 1

SOIL EROSION CONTROL PLAN 1 OF 4

Date:	JANUARY 2020
Rev.	0
M&N Project No.	7232-05
Drawing code:	
Drawing Scale:	AS SHOWN
Plot scale:	1:1 (9 SHEET)
Designed by:	TRR
Dwn by:	JT
Ckd by:	TRR
Reviewed by:	
Submitted by:	MOFFATT & NICHOL

SOUTH CAROLINA LICENSED PROFESSIONAL ENGINEER No.24067 TIMOTHY R. REID

SEAL 5-1-2020

MOFFATT & NICHOL ENGINEERS No. 000363 SOUTH CAROLINA CERTIFICATE OF AUTHORIZATION

4700 FALLS OF THE NEUSE ROAD
SUITE 300
RALEIGH, NC 27609
919-781-4626

SC COA No. 363

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Sheet Reference No.

CS101

INDEX: 54 OF 113

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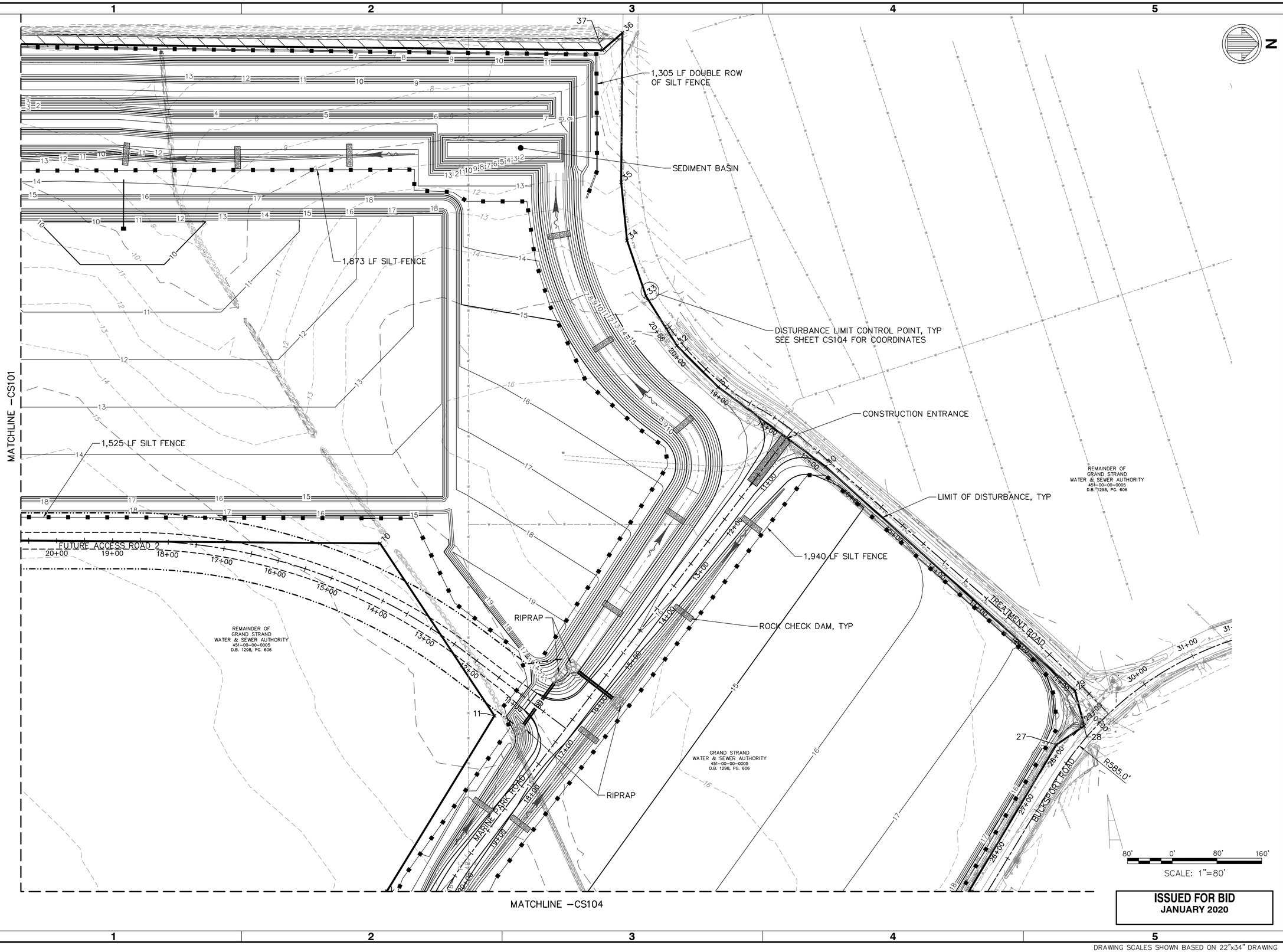

ISSUED FOR BID
JANUARY 2020

GRAND STRAND WATER & SEWER AUTHORITY

Mark	Description	Date	Appr.
0	ISSUED FOR BID	05/01/20	JJT

BUCKSPORT MARINE INDUSTRIAL PARK - PHASE 1

SOIL EROSION CONTROL PLAN 2 OF 4

Designed by: TRR
Drawn by: JT
Ckd by: TRR
Reviewed by:
Submitted by: MOFFATT & NICHOL
Date: JANUARY 2020
M&N Project No. 7232-05
Drawing code:
Drawing Scale: AS SHOWN
Plot scale: 1:1 (D SHEET)
Rev. 0

SOUTH CAROLINA LICENSED PROFESSIONAL ENGINEER No.24067 TIMOTHY R. REID
SEAL 5-1-2020
SOUTH CAROLINA MOFFATT & NICHOL ENGINEERS No. 000363 CERTIFICATE OF AUTHORIZATION

4700 FALLS OF THE NEUSE ROAD
SUITE 300
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Sheet Reference No.
CS102
INDEX: 55 OF 113

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DRAWING SCALES SHOWN BASED ON 22"x34" DRAWING

MATCHLINE –CS101

FUTURE SOUTH STORMWATER POND

FUTURE ACCESS ROAD 3

PROPERTY BOUNDARY

NO WORK THIS SHEET

MATCHLINE –CS104

HENRIETTA BLUFFS ROAD

N

80' 0' 80' 160'

SCALE: 1"=80'

ISSUED FOR BID
JANUARY 2020

GRAND STRAND WATER & SEWER AUTHORITY

Mark	Description	Date	Appr.
	ISSUED FOR BID	05/01/20	JJT

BUCKSPORT MARINE INDUSTRIAL PARK - PHASE 1

SOIL EROSION CONTROL PLAN 3 OF 4

Designed by: TRR
Drawn by: JT
Cked by: TRR
Reviewed by:
Submitted by: MOFFATT & NICHOL
Date: JANUARY 2020
M&N Project No. 7232-05
Drawing code:
Drawing Scale: AS SHOWN
Plot scale: 1:1 (0 SHEET)
Rev. 0

SOUTH CAROLINA LICENSED PROFESSIONAL ENGINEER No.24067 TIMOTHY R. REID

SEAL 5-1-2020

MOFFATT & NICHOL ENGINEERS No. 000363 SOUTH CAROLINA CERTIFICATE OF AUTHORIZATION

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Sheet Reference No.

CS103

INDEX: 56 OF 113

DRAWING SCALES SHOWN BASED ON 22"x34" DRAWING

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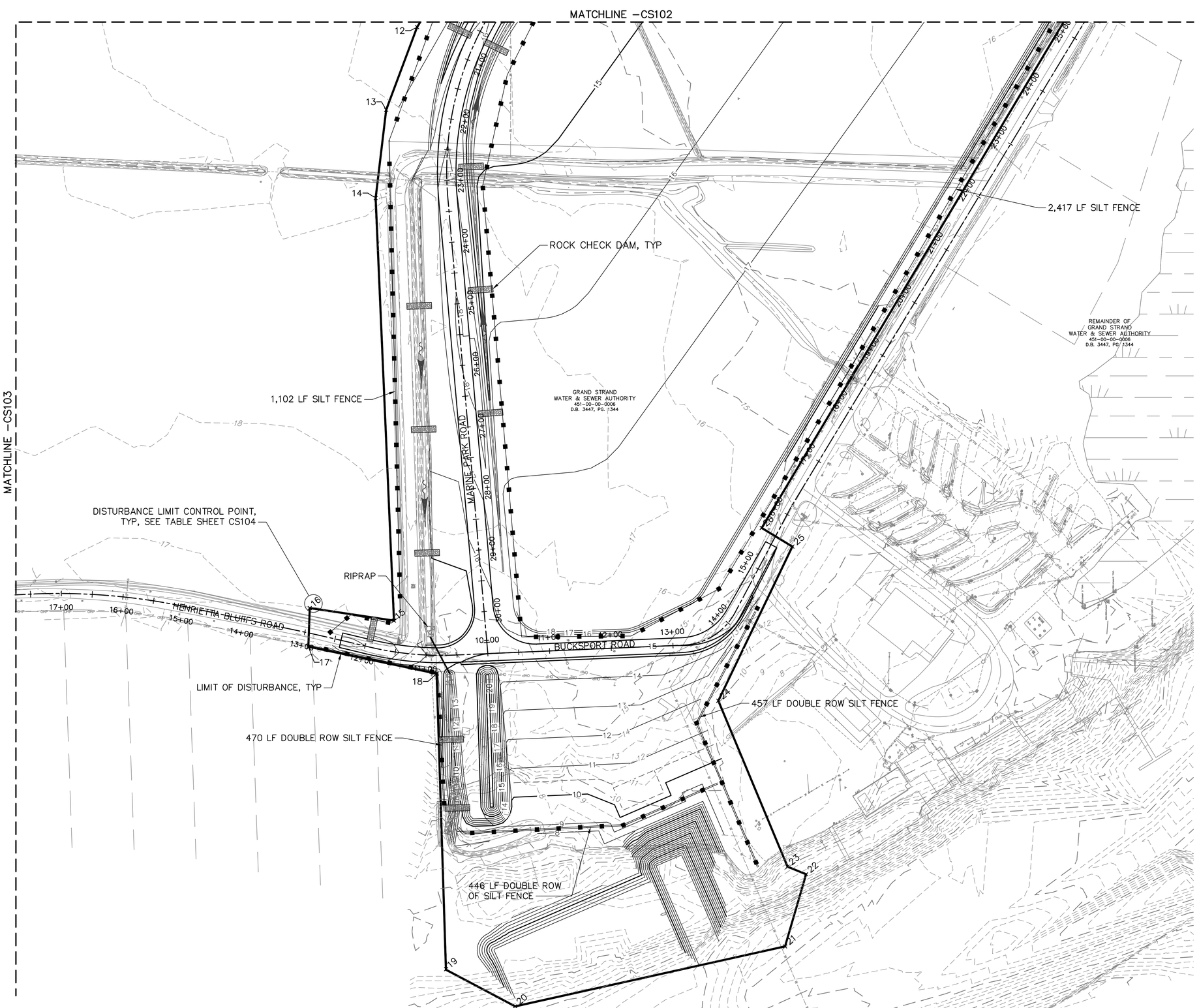

DISTURBED AREA CONTROL POINT TABLE		
POINT #	NORTHING	EASTING
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2	663750.21	2577196.16
3	663632.66	2577195.63
4	663429.15	2577399.25
5	663491.21	2577533.23
6	663739.19	2577533.94
7	663812.83	2577412.64
8	664272.68	2577416.20
9	664426.55	2577748.65
10	665801.64	2577759.65
11	666006.15	2578068.03
12	665808.31	2578390.63
13	665758.26	2578524.50
14	665741.17	2578667.26
15	665770.81	2579351.07
16	665634.55	2579330.77
17	665632.22	2579393.20
18	665839.92	2579436.90
19	665855.24	2579915.04
20	665966.97	2579975.25
21	666403.82	2579878.24
22	666437.91	2579761.53
23	666407.82	2579749.20
24	666295.91	2579480.73
25	666415.69	2579231.24
26	666366.11	2579201.13
27	667011.48	2578119.89
28	667061.21	2578086.06
29	667044.88	2578023.72
30	666598.64	2577622.25
31	666406.57	2577480.05
32	666332.55	2577405.92
33	666277.22	2577316.98
34	666243.42	2577217.84
35	666232.92	2577113.61
36	666235.22	2576846.31
37	666199.19	2576877.42
38	664862.55	2576863.34
39	664200.69	2577192.15
40	663817.90	2577191.64
41	663818.04	2577080.49

80' 0' 80' 160'

SCALE: 1"=80'

ISSUED FOR BID
JANUARY 2020

DRAWING SCALES SHOWN BASED ON 22"x34" DRAWING

GRAND STRAND WATER & SEWER AUTHORITY

Mark	Description	Date	Appr.
	ISSUED FOR BID	05/01/20	JJT

BUCKSPORT MARINE INDUSTRIAL PARK - PHASE 1

SOIL EROSION CONTROL PLAN 4 OF 4

Designed by: TRR	Date: JANUARY 2020
Drawn by: JT	Chkd by: TRR
Submitted by: MOFFATT & NICHOL	Reviewed by:
M&N Project No. 7232-05	Rev. 0
Drawing code:	
Drawing Scale: AS SHOWN	
Plot scale: 1:1 (0 SHEET)	

LICENSED PROFESSIONAL ENGINEER — SOUTH CAROLINA — No.24067 — TIMOTHY R. REED

SEAL 5-1-2020

SOUTH CAROLINA — MOFFATT & NICHOL ENGINEERS No. 000363 — CERTIFICATE OF AUTHORIZATION

4700 FALLS OF THE NEUSE ROAD
SUITE 300
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919-781-4626

SC COA No. 363

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Sheet Reference No.
CS104
INDEX: 57 OF 113

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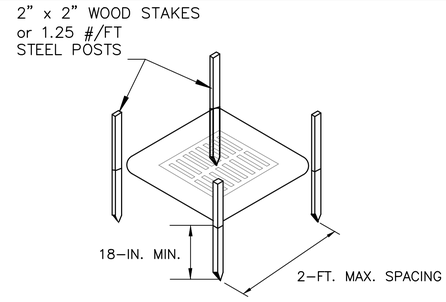

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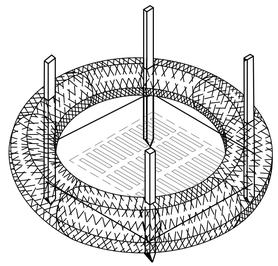
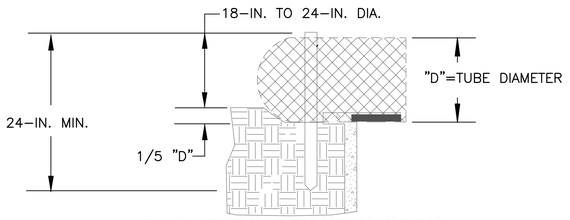


SEDIMENT TUBE INSTALLATION DETAIL



SEDIMENT TUBE BURIAL DETAIL

PLAN SYMBOL

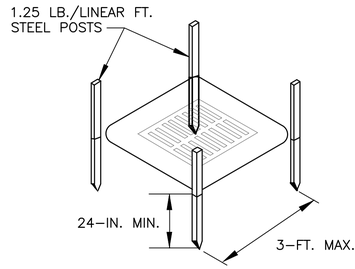
South Carolina Department of Health and Environmental Control

Type A

SEDIMENT TUBE INLET PROTECTION

STANDARD DRAWING NO. SC–07A PAGE 1 of 2

NOT TO SCALE — FEBRUARY 2014 DATE



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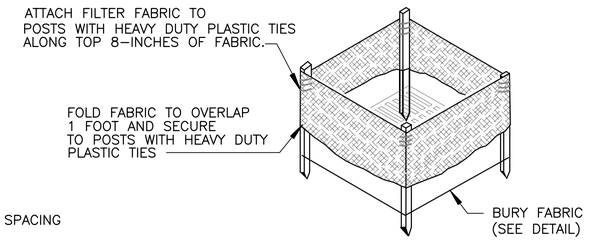
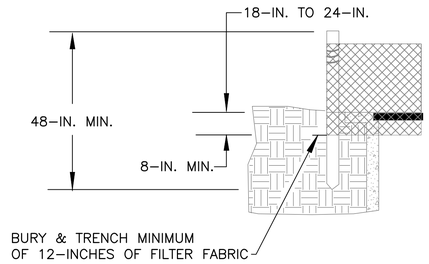


FILTER FABRIC INSTALLATION DETAIL



FILTER FABRIC BURIAL DETAIL

PLAN SYMBOL

South Carolina Department of Health and Environmental Control

Type A

FILTER FABIC INLET PROTECTION

STANDARD DRAWING NO. SC–07 PAGE 1 of 2

NOT TO SCALE — FEBRUARY 2014 DATE

TYPE A – SEDIMENT TUBE INLET PROTECTION

GENERAL NOTES

1. Sediment tubes are elongated tubes of compacted geotextiles, curled excelsior wood, natural coconut fiber, or hardwood mulch. Straw, pine needle, and leaf mulch–filled sediment tubes are not permitted.
2. The outer netting of the sediment tube should consist of seamless, high–density polyethylene photodegradable materials treated with ultraviolet stabilizers or a seamless, high–density polyethylene non–degradable material.
3. Sediment tube diameters shall range from 18–inches to 24–inches. Sediment tunes with smaller diameters are prohibited when used as inlet protection.
4. Curled excelsior wood, or natural coconut products that are rolled up to create a sediment tube are not allowed.
5. Sediment tubes should be staked using wooden oak stakes (2–inch X 2–inch) or steel posts (standard "U" or "T" sections with a minimum weight of 1.25 pounds per foot) at a minimum of 48–inches in length placed on 2–foot centers.
6. Install all sediment tubes to ensure that no gaps exist between the soil and the bottom of the tube. Manufactuer's recommendations should always be consulted before installation.
7. The ends of adjacent sediment tubes should be overlapped 6–inches to prevent flow and sediment from passing through the field joint.
8. Sediment tubes should not be stacked on top of one another.
9. Each sediment tube should be installed in a trench with a depth equal to 1/5 the diameter of the sediment tube.
10. Install stakes at a diagonal facing incoming runoff.

INSPECTION & MAINTENANCE

1. The key to functional inlet protection is weekly inspections, routine maintenance, and regular sediment removal.
2. Regular inspections of sediment tube inlet protection shall be conducted once every calendar week and, as recommended, within 24–hours after each rainfall even that produces 1/2–inch or more of precipitation.
3. Attention to sediment accumulations in front of the sediment tube is extremely important. Accumulated sediment should be continually monitored and removed when necessary.
4. Remove accumulated sediment when it reaches 1/3 the height of the sediment tube. When a sump is installed in front of the inlet protection, sediment shall be removed when if fills approximately 1/3 the depth of the sump.
5. Removed sediment shall be placed in stockpile storage areas or spread thinly across disturbed area. Stabilize the removed sediment after it is relocated.
6. Large debris, trash, and leaves should be removed from in front of tubes when found.
7. Inlet protection structures should be removed after the disturbed areas are permanently stabilized. Remove all construction material and sediment, and dispose of them properly. Grade the disturbed area to the elevation of the drop inlet structure crest. Stabilize all bare areas immediately.

South Carolina Department of Health and Environmental Control

Type A

SEDIMENT TUBE INLET PROTECTION

STANDARD DRAWING NO. SC–07A PAGE 2 of 2

NOT TO SCALE — FEBRUARY 2014 DATE

TYPE A – FILTER FABRIC REQUIREMENTS

1. Silt fence must be composed of woven geotextile filter fabric that consists of the following requirements:
   - Composed of fibers consisting of long chain synthetic polymers of at least 85% by weight of polyolefins, polyesters, or polyamides that are formed into a network such that the filaments or yarns retain dimensional stability relative to each other;
   - Free of any treatment or coating which might adversely alter its physical properties after installation;
   - Free of any defects or flaws that significantly affect its physical and/or filtering properties; and,
   - Have a minimum width of 36–inches.
2. Use only fabric appearing on SC DOT's Qualified Products Listing (QPL), Approval Sheet #34, meeting the requirements of the most current edition of the SC DOT Standard Specifications for Highway Construction.
3. 12–inches of the fabric should be placed within excavated trench and toed in when the trench is backfilled.
4. Filter Fabric shall be purchased in continuous rolls and cut to the length of the barrier to avoid joints.
5. Filter Fabric shall be installed at a minimum of 24–inches above the ground.

TYPE A – POST REQUIREMENTS

1. Silt Fence posts must be 48–inch long steel posts that meet, at a minimum, the following physical characteristics.
   - Composed of a high strength steel with a minimum yield strength of 50,000 psi.
   - Include a standard "T" section with a nominal face width of 1.38–inches and a nominal "T" length of 1.48–inches.
   - Weigh 1.25 pounds per foot (± 8%)
2. Posts shall be equipped with projections to aid in fastening of filter fabric.
3. Install posts to a minimum of 24–inches. A minimum height of 1– to 2– inches above the fabric shall be maintained, and a maximum height of 3 feet shall be maintained above the ground.
4. Post spacing shall be at a maximum of 3–feet on center.

TYPE A – INSPECTION & MAINTENANCE

1. The key to functional inlet protection is weekly inspections, routine maintenance, and regular sediment removal.
2. Regular inspections of inlet protection shall be conducted once every calendar week and, as recommended, within 24–hours after each rainfall even that produces 1/2–inch or more of precipitation.
3. Attention to sediment accumulations along the filter fabric is extremely important. Accumulated sediment should be continually monitored and removed when necessary.
4. Remove accumulated sediment when it reaches 1/3 the height of the filter fabric. When a sump is installed in front of the fabric, sediment should be removed when it fills approximately 1/3 the depth of the sump.
5. Removed sediment shall be placed in stockpile storage areas or spread thinly across disturbed area. Stabilize the removed sediment after it is relocated.
6. Check for areas where stormwater runoff has eroded a channel beneath the filter fabric, or where the fabric has sagged or collapsed due to runoff overtopping the inlet protection.
7. Check for tears within the filter fabric, areas where fabric has begun to decompose, and for any other circumstance that may render the inlet protection ineffective. Removed damaged fabric and reinstall new filter fabric immediately.
8. Inlet protection structures should be removed after all the disturbed areas are permanently stabilized. Remove all construction material and sediment, and dispose of them properly. Grade the disturbed area to the elevation of the drop inlet structure crest. Stabilize all bare areas immediately.

South Carolina Department of Health and Environmental Control

Type A

FILTER FABIC INLET PROTECTION

STANDARD DRAWING NO. SC–07 PAGE 2 of 2

GENERAL NOTES — FEBRUARY 2014 DATE

ISSUED FOR BID
JANUARY 2020

GRAND STRAND WATER & SEWER AUTHORITY

Mark	Description	Date	Appr.
	ISSUED FOR BID	05/01/20	JJT

BUCKSPORT MARINE INDUSTRIAL PARK - PHASE 1

SOIL EROSION CONTROL DETAILS 1 OF 8

Rev.	Date:	Designed by:	Drawing code:	Drawing Scale:
0	JANUARY 2020	TRR		AS SHOWN
	M&N Project No.	Dwn by:	Reviewed by:	Plot scale: 1:1 (D SHEET)
	7232–05	JT		
		Dsd by:	Submitted by:	
		TRR	MOFFATT & NICHOL	

SEAL

SOUTH CAROLINA
MOFFATT & NICHOL ENGINEERS No. 000363
CERTIFICATE OF AUTHORIZATION

4700 FALLS OF THE NEUSE ROAD
SUITE 300
RALEIGH, NC 27609
919–781–4626

SC COA No. 363

moffatt & nichol

Sheet Reference No.

CS501

INDEX: 58 OF 113

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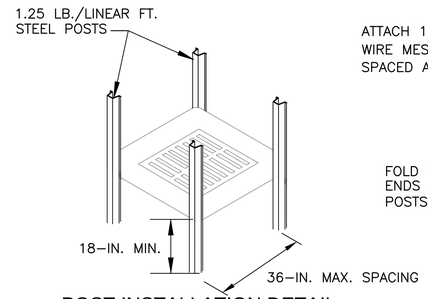
DRAWING SCALES SHOWN BASED ON 22"x34" DRAWING



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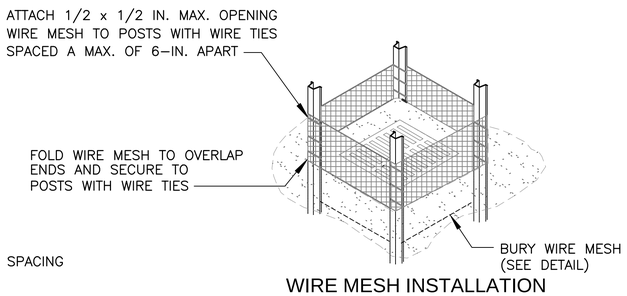
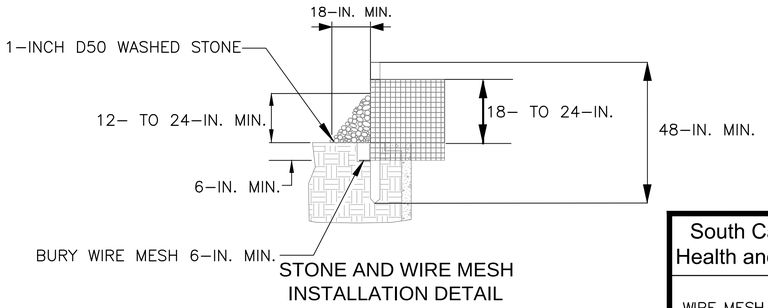


WIRE MESH INSTALLATION DETAIL



STONE AND WIRE MESH INSTALLATION DETAIL

PLAN SYMBOL

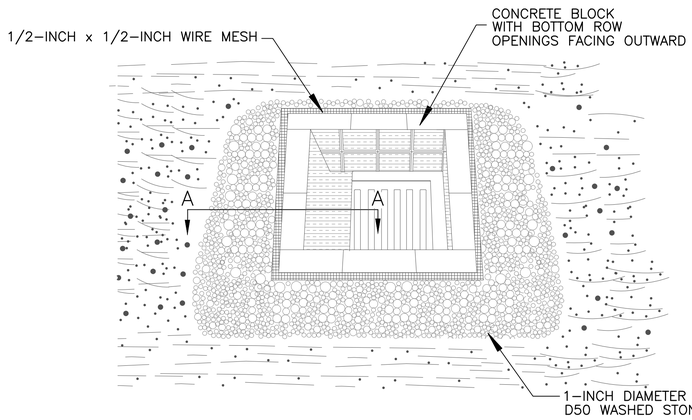
South Carolina Department of Health and Environmental Control

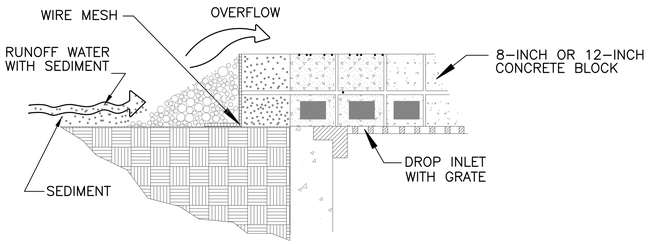
Type B

WIRE MESH & STONE INLET PROTECTION

STANDARD DRAWING NO. SC–08 PAGE 1 of 2

NOT TO SCALE FEBRUARY 2014 DATE





CROSS SECTION A-A

PLAN SYMBOL

South Carolina Department of Health and Environmental Control

Type C

BLOCK & GRAVEL INLET PROTECTION

STANDARD DRAWING NO. SC–09 PAGE 1 of 2

NOT TO SCALE FEBRUARY 2014 DATE

WIRE MESH & STONE INLET PROTECTION

GENERAL NOTES

1. Use hardware fabric or comparable wire mesh with maximum openings of 0.5–inches x 0.5–inches as the supporting material.
2. Use steel posts that meet the following physical requirements:
   - Be composed of high strength steel with a minimum yield of 50,000 psi.
   - Have a standard "T" section with a nominal face width of 1.38 inches and a nominal "T" width of 1.48–inches.
   - Weigh 1.25 pounds per foot (±8%)
3. Use heavy–duty wire ties to attach the wire mesh material to the steel posts.
4. Space the steel posts a maximum of 3–feet apart around the perimeter of the inlet and drive them into the ground a minimum of 18–inches.
5. Excavate a trench 6–inches deep around the outside perimeter of the inlet to install wire mesh. Backfill the trench with soil or crushed stone and compact over the wire mesh.
6. Place Aggregate No. 5 washed stone (or 1–inch D50 stone) to a minimum height of 12–inches, and a maximum of 24–inches against the wire mesh on all sides.

INSPECTION & MAINTENANCE

1. The key to functional inlet protection is weekly inspections, routine maintenance, and regular sediment removal.
2. Regular inspections of wire mesh and stone inlet protection shall be conducted once every calendar week and, as recommended, within 24–hours after each rainfall even that produces 1/2–inch or more of precipitation.
3. Attention to sediment accumulations in front of the inlet protection is extremely important. Accumulated sediment should be continually monitored and removed when necessary.
4. Remove accumulated sediment when the sediment reaches 1/3 height of the stone fill or when stone becomes clogged. When a sump is installed in front of inlet protection, sediment should be removed when it fills approximately 1/3 the depth of the sump.
5. Removed sediment shall be placed in stockpile storage areas or spread thinly across disturbed area. Stabilize the removed sediment after it is relocated.
6. Large debris, trash, and leaves should be removed from in front of the inlet protection when found.
7. After accumulated sediment is removed, pull stones from around wire mesh to wash or to replace with fresh stones as necessary.
8. Inlet protection structures should be removed after the disturbed areas are permanently stabilized. Remove all construction material and sediment, and dispose of them properly. Grade the disturbed area to the elevation of the drop inlet crest. Stabilize all bare areas immediately.

South Carolina Department of Health and Environmental Control

Type B

WIRE MESH & STONE INLET PROTECTION

STANDARD DRAWING NO. SC–08 PAGE 2 of 2

GENERAL NOTES FEBRUARY 2014 DATE

BLOCK AND GRAVEL DROP INLET PROTECTION

GENERAL NOTES

1. Block and gravel filters can be used where heavy flows and higher velocities are expected and where an overflow capacity is necessary to prevent excessive ponding around the structure.
2. Gravel shall consist of 1–inch D50 Washed Stone and should extend to height equal to the elevation of the top of the blocks.
3. Place the bottom row of the concrete blocks lengthwise on their side so that the open end faces outward, not upward.
4. The height of the barrier can be varied, depending upon design needs by stacking a combination of blocks that are 8– to 12–inches wide.
5. Wire mesh should be placed over the outside vertical face of the concrete blocks to prevent stones from being washed through the holes in the blocks. Hardware cloth or comparable wire mesh with ½–inch x ½–inch openings should be used.

INSPECTION AND MAINTENACNE

1. The key to functional inlet protection is weekly inspections, routine maintenance, and regular sediment removal.
2. Regular inspections of all inlet protection shall be conducted once every calendar week and, as recommended, within 24–hours after each rainfall event that produces 1/2–inch or more of precipitation.
3. Attention to sediment accumulations in front of the inlet protection is extremely important. Accumulated sediment should be continually monitored and removed when necessary.
4. Remove accumulated sediment when it reaches 1/3 the height of the blocks. If a sump is used, sediment should be removed when it fills approximately 1/3 the depth of the hole.
5. Removed sediment shall be placed in stockpile storage areas or spread thinly across disturbed area. Stabilize the removed sediment after it is relocated.
6. Large debris, trash, and leaves should be removed from in front of tubes when found.
7. If the stone filter becomes clogged with sediment, the stones must be pulled away from the inlet and cleaned or replaced with fresh stone.
8. Inlet protection structures should be removed after the disturbed areas are permanently stabilized. Remove all construction material and sediment, and dispose of them properly. Grade the disturbed area to the elevation of the drop inlet structure crest. Stabilize all bare areas immediately.

South Carolina Department of Health and Environmental Control

Type C

BLOCK & GRAVEL INLET PROTECTION

STANDARD DRAWING NO. SC–09 PAGE 2 of 2

GENERAL NOTES FEBRUARY 2014 DATE

ISSUED FOR BID
JANUARY 2020

GRAND STRAND WATER & SEWER AUTHORITY

Mark	Description	Date	Appr.
	ISSUED FOR BID	05/01/20	JJT

BUCKSPORT MARINE INDUSTRIAL PARK - PHASE 1

SOIL EROSION CONTROL DETAILS 2 OF 8

Date: JANUARY 2020	Rev. 0		
Designed by: TRR	Drawn by: JT	Cad by: TRR	Reviewed by:
M&N Project No. 7232–05		Drawing code:	
Submitted by: MOFFATT & NICHOL		Drawing Scale: AS SHOWN Plot scale: 1:1 (0 SHEET)	

SEAL

SOUTH CAROLINA CERTIFICATE OF AUTHORIZATION MOFFATT & NICHOL ENGINEERS No. 000363

4700 FALLS OF THE NEUSE ROAD
SUITE 300
RALEIGH, NC 27609
919–781–4626

SC COA No. 363

moffatt & nichol

Sheet Reference No.

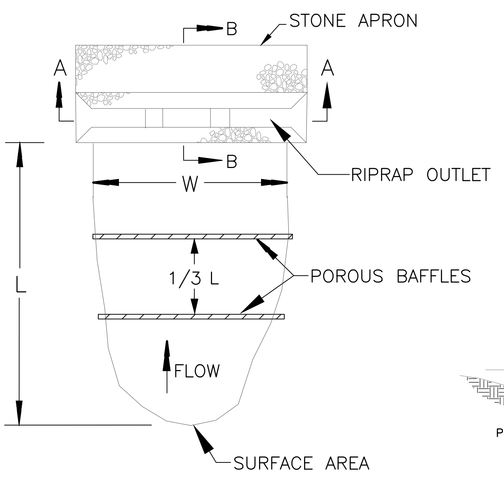
CS502

INDEX: 59 OF 113

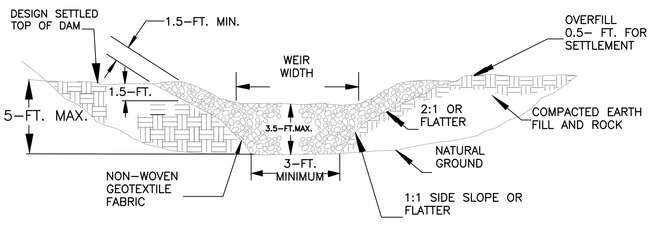
File: O:\RA\7232–05\CADD_Active_SheetSet\723205–CS502; Plotted: 4/29/2020 10:55 AM by THIBODEAUX, JASON; Saved: 1/14/2020 2:22 PM by JTHIBODEAUX

DRAWING SCALES SHOWN BASED ON 22"x34" DRAWING

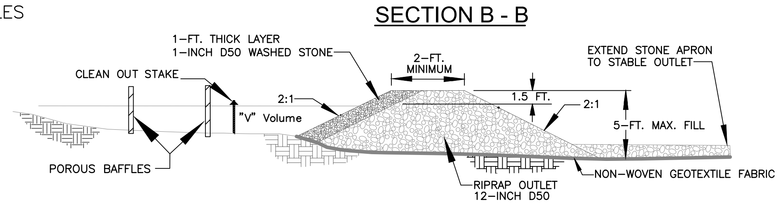
SEDIMENT TRAP PLAN VIEW



SECTION A - A



SECTION B - B



PLAN SYMBOL

SECTION A - A DIMENSIONS

Trap #	Riprap Outlet Height	Riprap Bottom Width	Riprap Top Width	Side Slopes	Embankment Height

SECTION B - B DIMENSIONS

Trap #	Riprap Bottom Length	Riprap Top Length	Side Slopes	Stone Apron Length	"V" Volume

South Carolina Department of Health and Environmental Control

SEDIMENT TRAP

STANDARD DRAWING NO. SC-02 Page 1 of 2

NOT TO SCALE — FEBRUARY 2014 (DATE)

SEDIMENT TRAP – GENERAL NOTES

1. Sediment traps should not be placed in Waters of the State or USGS blue-line streams (unless approved by Federal Authorities).
2. The rock outlet structure shall consist of 12-inch D50 riprap. The upstream face of this outlet shall consist of a 1-foot thick layer of 1-inch D50 washed stone. The maximum steepness of the rock outlet structure shall be 2:1.
3. Both the rock outlet and the stone apron shall have an underlying layer of non-woven geotextile filter fabric.
4. All internal side slopes of the sediment trap should be 3:1 or flatter.
5. A sediment cleanout stake should be installed and marked to remove sediment at 50% of the sediment storage volume.
6. At least two (2) porous baffles shall be installed within the sediment trap. There should be at least 10 linear feet between each baffle and between any row of baffles and any of the sediment trap's inlets/outlets.
7. After construction of each sediment trap, the area disturbed to construct the trap should be promptly stabilized, including all side slopes.
8. The following sediment trap requirements shall be maintained:
   - Maximum embankment height shall be 5-feet.
   - Maximum riprap outlet height shall be 3.5-feet.
   - Minimum width at bottom of riprap outlet shall be 3-feet.
   - Minimum flow length at top of riprap outlet shall be 2-feet.

SEDIMENT TRAP – INSPECTION AND MAINTENANCE

1. The key to a functional sediment trap is weekly inspections, routine maintenance and regular sediment removal.
2. Attention to sediment accumulations within the trap is extremely important. Accumulated sediment deposition should be continually monitored in the trap and removed when necessary.
3. Remove accumulated sediment when it reaches 50% of the designed sediment storage volume as marked by the cleanout stake.
4. Removed sediment from the trap shall be placed in stockpile storage areas or spread thinly across the disturbed area. Stabilize the removed sediment after it is relocated.
5. Regular inspections of sediment traps should be conducted once every calendar week and, as recommended, within 24-hours after each rainfall event that produces ½-inch or more of precipitation.
6. Disturbed areas resulting from the removal of the sediment trap should be permanently stabilized and additional BMPs, such as silt fence, should be utilized to handle stormwater runoff from this disturbed area until final stabilization is reached.

South Carolina Department of Health and Environmental Control

SEDIMENT TRAP

STANDARD DRAWING NO. SC-02 Page 2 of 2

GENERAL NOTES — FEBRUARY 2014 (DATE)

ISSUED FOR BID
JANUARY 2020

DRAWING SCALES SHOWN BASED ON 22"X34" DRAWING

Sheet Reference No. **CS503**
INDEX: 60 OF 113

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SC COA No. 363

SEAL

Designed by: TRR	Date: JANUARY 2020	Rev. 0
Dwn by: JT / Ckd by: TRR	M&N Project No. 7232-05	
Reviewed by:	Drawing code:	
Submitted by: MOFFATT & NICHOL	Drawing Scale: AS SHOWN; Plot scale: 1:1 (D SHEET)	

BUCKSPORT MARINE INDUSTRIAL PARK - PHASE 1

SOIL EROSION CONTROL DETAILS 3 OF 8

Mark	Description	Date	Appr.
	ISSUED FOR BID	05/01/20	JJT

GRAND STRAND WATER & SEWER AUTHORITY

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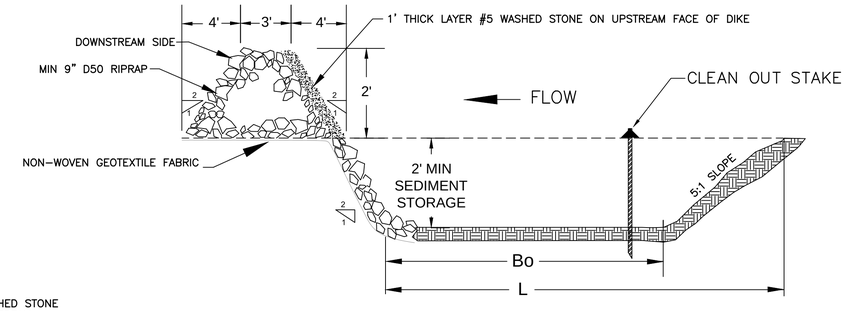
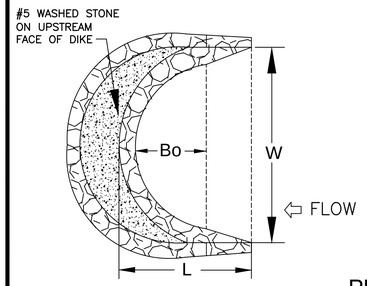




TYPICAL ROCK DIKE DIMENSIONS

W	L	Bo	MAX. DRAINAGE (ACRES)	TOTAL STORAGE VOL. (CU. FT.)	SEDIMENT STORAGE VOLUME (CU. FT.)
15'	17.5'	3.5'	0.5	1259	283
20'	20.0'	6.0'	1.0	1946	529
25'	22.5'	8.5'	1.5	2790	855
30'	25.0'	11.0'	2.0	3790	1257

MAXIMUM 2–ACRE DRAINAGE AREA TO DIKE

PLAN SYMBOL

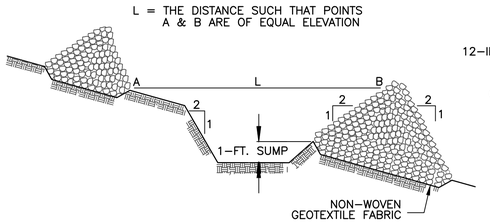
South Carolina Department of Health and Environmental Control

ROCK SEDIMENT DIKE

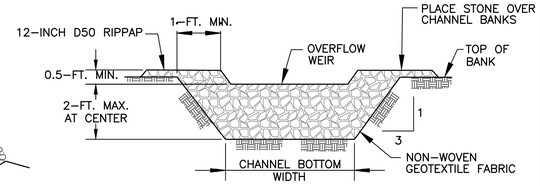
STANDARD DRAWING NO. SC–12 PAGE 1 of 2

NOT TO SCALE FEBRUARY 2014 DATE

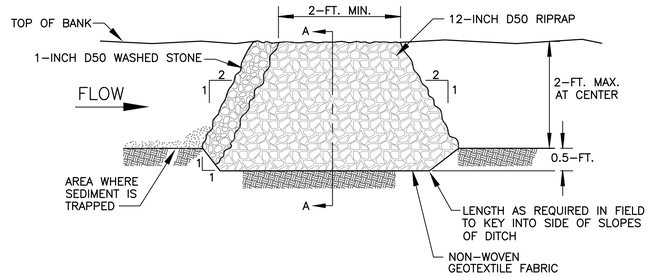
SPACING BETWEEN DITCH CHECK



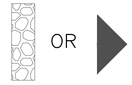
CROSS SECTION A-A THRU STONE DITCH CHECK



TYPICAL DITCH CHECK SECTION



PLAN SYMBOL



South Carolina Department of Health and Environmental Control

ROCK DITCH CHECK

STANDARD DRAWING NO. SC–04 PAGE 1 of 2

NOT TO SCALE FEBRUARY 2014 DATE

ROCK SEDIMENT DIKE – GENERAL NOTES

1. Rock sediment dikes should not be placed in Waters of the State or USGS blue–line streams (unless approved by Federal Authorities).
2. A non–woven geotextile fabric shall be installed over the soil surface where the rock sediment dike is to be placed.
3. The body of a rock sediment dike shall be composed of 9–inch D50 riprap at a minimum.
4. The upstream face of the rock sediment dike shall be composed of a 1–foot thick layer of 3/4–inch to 1–inch D50 washed stone placed at a slope of 2H:1V.
5. Rock sediment dikes shall have a minimum top flow length of 3–feet (2–foot flow length through the riprap and 1–foot flow length through the washed stone).
6. The rock must be placed by hand or mechanical placement (no dumping of rock to form the sediment dike) to achieve proper dimensions.
7. A sediment sump shall be located on the upstream side of the structure to provide sediment storage. The upstream side of the sump shall have a slope of 5H:1V to inhibit erosion of the sediment storage area. The minimum depth of the sump shall be 2–feet.
8. Mark the sediment clean–out level of the sediment dike with a stake in the field.
9. Seed and mulch all disturbed areas.

ROCK SEDIMENT DIKE – INSPECTION AND MAINTENANCE

1. The key to a functional rock sediment dike is weekly inspection, routine maintenance and regular sediment removal.
2. Attention to sediment accumulations within the rock sediment dike is extremely important. Accumulated sediment deposition should be continually monitored in the trap and removed when necessary.
3. Remove accumulated sediment when it reaches 50% of the designed sediment storage volume as marked by the clean–out stake.
4. Removed sediment from the rock sediment dike shall be placed in stockpile storage areas or spread thinly across the disturbed area. Stabilize the removed sediment after it is relocated.
5. Regular inspections of rock sediment dikes should be conducted once every calendar week and, as recommended, within 24–hours after each rainfall event that produces ½–inch or more of precipitation.
6. All rock sediment dikes should be removed within 30 days after final stabilization is achieved. Dispose of all construction materials appropriately. Disturbed area resulting from removal shall be permanently stabilized.

South Carolina Department of Health and Environmental Control

ROCK SEDIMENT DIKE

STANDARD DRAWING NO. SC–12 PAGE 2 of 2

GENERAL NOTES FEBRUARY 2014 DATE

ROCK DITCH CHECK – GENERAL NOTES

1. Rock Ditch Checks should not be placed in Waters of the State or USGS blue–line streams (unless approved by Federal Authorities).
2. Rock Ditch Checks should be installed in steeply sloped channels where adequate vegetation cannot be established. This BMP measure should only be used in small open channels.
3. A non–woven geotextile fabric shall be installed over the soil surface where the rock ditch check is to be placed.
4. The body of the rock ditch check shall be composed of 12–inch D50 Riprap. The upstream face may be composed of 1–inch D50 washed stone.
5. Rock Ditch Checks should not exceed a height of 2–feet at the centerline of the channel.
6. Rock Ditch Checks should have a minimum top flow length of 2–feet.
7. Riprap should be placed over channel banks to prevent water from cutting around the ditch check.
8. The riprap should be placed by hand or mechanical placement (no dumping of rock to form dam) to achieve complete coverage of the channel. Doing so will also ensure that the center of the check is lower than the edges.
9. The maximum spacing between the dams should be such that the toe of the upstream check is at the same elevation as the top of the downstream check.

ROCK DITCH CHECK – INSPECTION & MAINTENANCE

1. The key to functional rock ditch check is weekly inspections, routine maintenance, and regular sediment removal.
2. Regular inspections of rock ditch checks shall be conducted once every calendar week and, as recommended, within 24–hours after each rainfall even that produces 1/2–inch or more of precipitation.
3. Attention to sediment accumulations in front of the rock ditch check is extremely important. Accumulated sediment should be continually monitored and removed when necessary.
4. Remove accumulated sediment when it reaches 1/3 the height of the rock ditch check.
5. Removed sediment shall be placed in stockpile storage areas or spread thinly across disturbed area. Stabilize the removed sediment after it is relocated.
6. Inspect Rock Ditch Checks' edges for erosion and evidence of runoff bypassing the installed check. If evident repair promptly as necessary to prevent erosion and bypassing.
7. In the case of grass–lined ditches, channels, and swales, rock ditch checks should be removed when the grass has matured sufficiently to protect the ditch or swale unless the slope of the swale is greater than 4%.
8. After construction is completed and final stabilization is reached, the entirety of the rock ditch check should be removed if vegetation will be used for permanent erosion control measures. The area beneath the removed rock ditch check must be addressed with permanent stabilization measures.

South Carolina Department of Health and Environmental Control

ROCK DITCH CHECK

STANDARD DRAWING NO. SC–04 PAGE 2 of 2

GENERAL NOTES FEBRUARY 2014 DATE

ISSUED FOR BID
JANUARY 2020

GRAND STRAND WATER & SEWER AUTHORITY

Mark	Description	Date	Appr.
	ISSUED FOR BID	05/01/20	JJT

BUCKSPORT MARINE INDUSTRIAL PARK - PHASE 1

SOIL EROSION CONTROL DETAILS 4 OF 8

Date: JANUARY 2020 | Rev: 0
Designed by: TRR | Drawn by: JT | Cad by: TRR | Reviewed by:
M&N Project No. 7232–05 | Drawing code:
Submitted by: MOFFATT & NICHOL | Drawing Scale: AS SHOWN | Plot scale: 1:1 (0 SHEET)

SEAL

SOUTH CAROLINA — MOFFATT & NICHOL ENGINEERS No. 000363 — CERTIFICATE OF AUTHORIZATION

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SC COA No. 363

moffatt & nichol

Sheet Reference No.

CS504

INDEX: 61 OF 113

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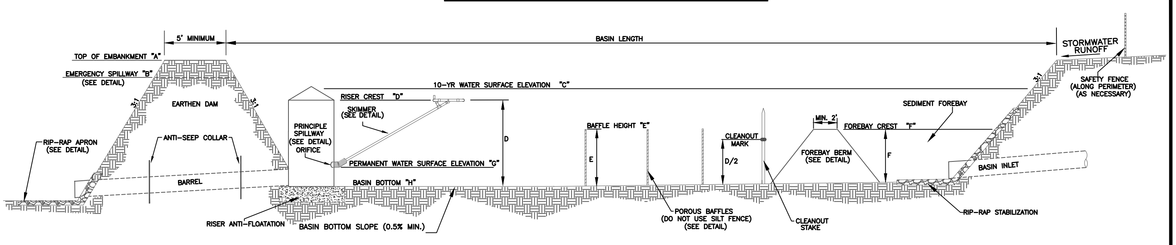
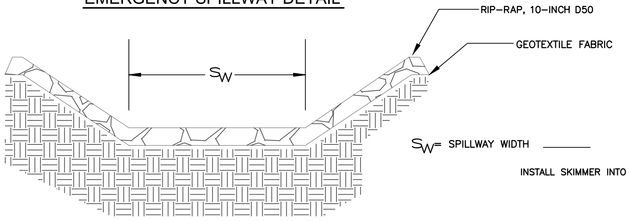
DRAWING SCALES SHOWN BASED ON 22"x34" DRAWING

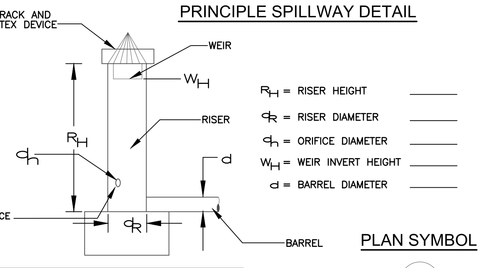
WET SEDIMENT BASIN SECTIONAL VIEW



EMERGENCY SPILLWAY DETAIL



PRINCIPLE SPILLWAY DETAIL



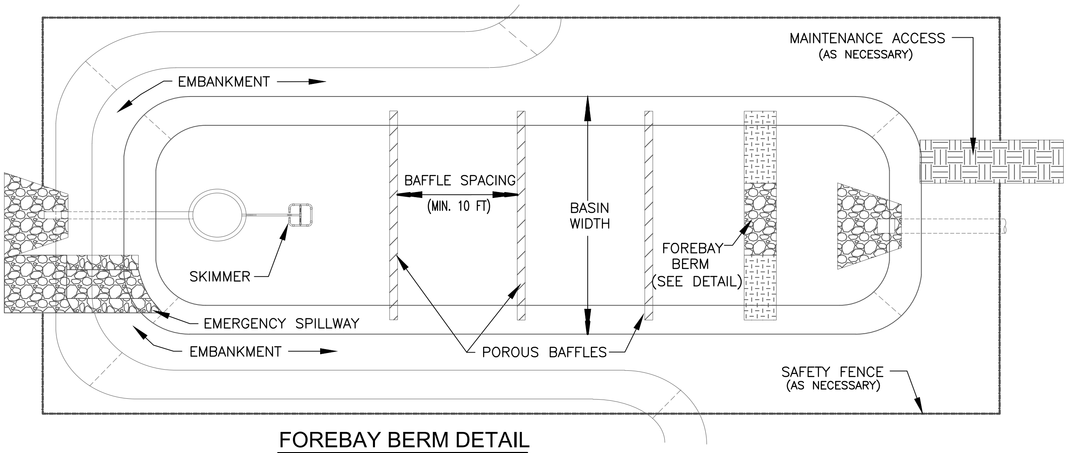
PLAN SYMBOL

SEDIMENT BASIN DESIGN TABLE

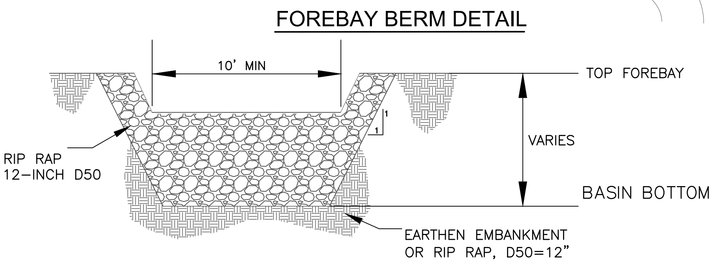
Sediment Basin Name/Number	"A"	"B"	"C"	"D"	"E"	"F"	"G"	"H"	Skimmer Size (in.)	Skimmer Orifice (in.)	Skimmer Daily Discharge Capacity (FT^3/DAY)	Skimmer Average Discharge Rate (CFS)	Dewatering Time (Days)	No. of Skimmers
WEST POND	13.00	11.50	10.85	9.25	6.00	7.50	8.00	2.00	8.00	7.50	90,720	1.05	3.00	1
SOUTH POND	13.00	11.50	9.54	9.50	6.00	7.00	8.00	2.00	6.00	5.50	52,704	0.61	3.00	1

South Carolina Department of Health and Environmental Control
WET SEDIMENT BASIN
STANDARD DRAWING NO. SC-01A Page 1 of 3
NOT TO SCALE FEBRUARY 2014 DATE

WET SEDIMENT BASIN PLAN VIEW



FOREBAY BERM DETAIL



South Carolina Department of Health and Environmental Control
WET SEDIMENT BASIN
STANDARD DRAWING NO. SC-01A Page 2 of 3
NOT TO SCALE FEBRUARY 2014 DATE

WET SEDIMENT BASIN – GENERAL NOTES

1. Sediment basins should not be placed in Waters of the State or USGS blue-line streams (unless approved by Federal Authorities).
2. Sediment basin's side slopes shall be seeded and, when necessary, stabilized with vegetative or synthetic matting to prevent the formation of rills and gullies.
3. Install three (3) rows of porous baffles with a minimum spacing of 10 feet. Baffles should ultimately be placed to maximize the space between each row of baffles and the basin's inlets/outlets. Only two (2) rows of baffles are necessary for basins that are less than 50 feet in length.
4. Porous Baffles should be composed of coir-based materials or TRMs with a light penetration (open spaces) between 10-35%. These materials should not have loose straw. Silt Fence may not be used as Porous Baffles.
5. Each porous baffles shall be installed across the entire width of the basin and along the basin's side slope until the height of the baffle intersects the slope.
6. Install skimmer and coupling (as necessary) to riser structure at orifice along bottom of the principle spillway's riser structure. (Refer to skimmer manufacturer for installation procedures and skimmer specifications.)
7. Skimmer should be equipped with a mechanism, such as a rope, to allow easy access to skimmer to unclogged orifice or perform other necessary maintenance.
8. Stormwater runoff entering the basin must be directed into proper BMPs to prevent erosion along side slopes and to prevent scour at the basin's inlets.
9. The forebay berm should consist of riprap, gabion, or an earthen berm with a rock filled outlet that is constructed across the bottom of the basin's width.
10. An additional cleanout stake for the forebay area is recommended and should be marked for cleanout at 50% of provided sediment storage.
11. The elevation of the emergency spillway should be at least 1 foot below the top of the embankment. The emergency spillway should not be located on fill material, when possible. Riprap and geotextile liner should be placed on all spillways that must be located on fill material.

WET SEDIMENT BASIN – INSPECTION AND MAINTENANCE

1. The key to a functional sediment basin is weekly inspections, routine maintenance, and regular sediment removal.
2. Attention to sediment accumulations within the basin is extremely important. Accumulated sediment deposition should be continually checked and removed when necessary.
3. Remove accumulated sediment when it reaches 50% of the design sediment storage volume or 1/2 the height of the riser structure, whichever is reached first.
4. Removed sediment from the basin shall be placed in stockpile storage areas or spread thinly across the disturbed area. Stabilize the removed sediment after it is relocated.
5. Inspections of sediment basins should be conducted once every calendar week and, as recommended, within 24-hours of each rainfall event that produces ½-inch or more of precipitation.
6. All temporary sediment basins, which are not to be converted to a detention basin post-construction, should be removed within 30 days after final site stabilization is achieved.
7. Disturbed areas resulting from the removal of the sediment basin should be permanently stabilized and additional BMPs, such as silt fence, should be utilized to accept stormwater runoff from this disturbed area until final stabilization is reached.

South Carolina Department of Health and Environmental Control
WET SEDIMENT BASIN
STANDARD DRAWING NO. SC-01A Page 3 of 3
GENERAL NOTES FEBRUARY 2014 DATE

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JANUARY 2020

DRAWING SCALES SHOWN BASED ON 22"X34" DRAWING

Sheet Reference No. **CS505**
INDEX: 62 OF 113

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SC COA No. 363

SEAL

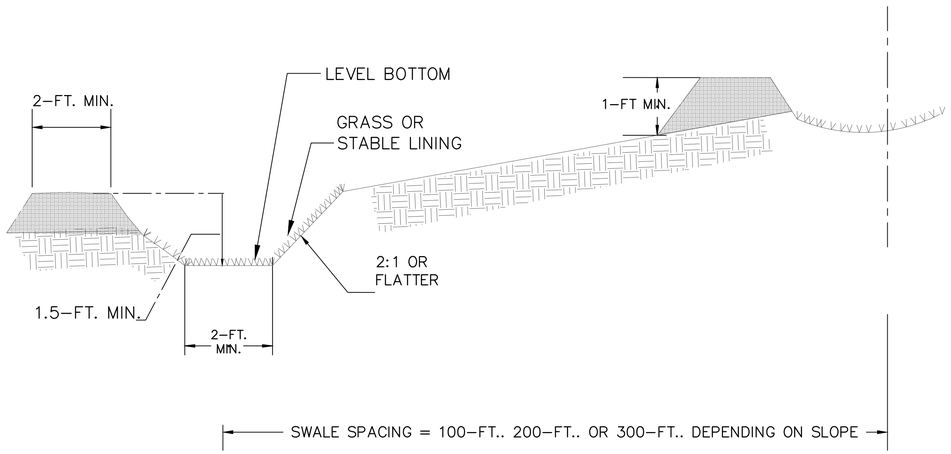
Designed by:	Date:	Rev.
TRR	JANUARY 2020	0
Dwn by: JT / Ckd by: TRR	M&N Project No. 7232-05	
Reviewed by:	Drawing code:	
Submitted by: MOFFATT & NICHOL	Drawing Scale: AS SHOWN Plot scale: 1:1 (D SHEET)	

BUCKSPORT MARINE INDUSTRIAL PARK - PHASE 1

SOIL EROSION CONTROL DETAILS 5 OF 8

Mark	Description	Date	Appr.
	ISSUED FOR BID	05/01/20	JJT

GRAND STRAND WATER & SEWER AUTHORITY



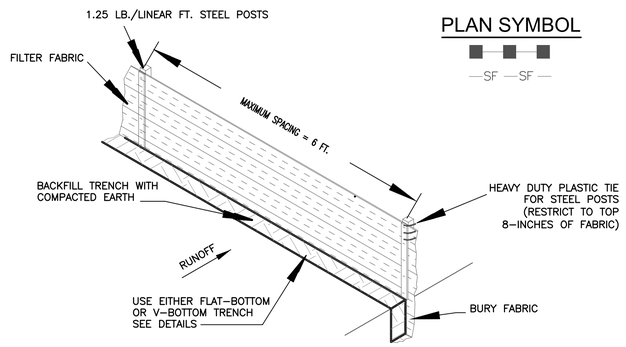
South Carolina Department of Health and Environmental Control

DIVERSION SWALE

STANDARD DRAWING NO. RC–03 Page 1 of 2

NOT TO SCALE — JULY 31, 2005 (DATE)

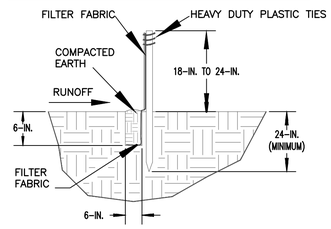
SILT FENCE INSTALLATION



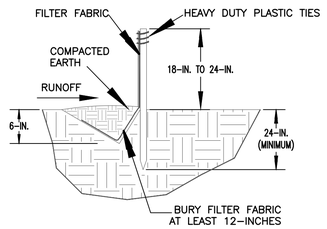
PLAN SYMBOL

—SF —SF—

FLAT-BOTTOM TRENCH DETAIL



V-SHAPED TRENCH DETAIL



SILT FENCE – GENERAL NOTES

1. Do not place silt fence across channels or in other areas subject to concentrated flows. Silt fence should not be used as a velocity control BMP. Concentrated flows are any flows greater than 0.5 cfs.
2. Maximum sheet or overland flow path length to the silt fence shall be 100–feet.
3. Maximum slope steepness (normal [perpendicular] to the fence line) shall be 2:1.
4. Silt fence joints, when necessary, shall be completed by one of the following options:
   - Wrap each fabric together at a support post with both ends fastened to the post, with a 1–foot minimum overlap;
   - Overlap silt fence by installing 3–feet passed the support post to which the new silt fence roll is attached. Attach old roll to new roll with heavy–duty plastic ties; or,
   - Overlap entire width of each silt fence roll from one support post to the next support post.
5. Attach filter fabric to the steel posts using heavy–duty plastic ties that are evenly spaced within the top 8–inches of the fabric.
6. Install the silt fence perpendicular to the direction of the stormwater flow and place the silt fence the proper distance from the toe of steep slopes to provide sediment storage and access for maintenance and cleanout.
7. Install Silt Fence Checks (Tie–Backs) every 50–100 feet, dependent on slope, along silt fence that is installed with slope and where concentrated flows are expected or are documented along the proposed/installed silt fence.

South Carolina Department of Health and Environmental Control

SILT FENCE

STANDARD DRAWING NO. SC–03 Page 1 of 2

NOT TO SCALE — FEBRUARY 2014 (DATE)

DIVERSION SWALE

Installation

The bottom width should be a minimum of 2–feet, and the bottom should be level.

The depth should be a minimum of 1.5–feet and the side slopes should be 2H:1V or flatter.

The maximum grade shall be 5%, with positive drainage to a suitable outlet.

Slopes shall be stabilized immediately using vegetation, sod, and erosion control blankets or turf reinforcement mats to prevent erosion.

The upslope side of the swale should provide positive drainage so no erosion occurs at the outlet. Provide energy dissipation measures as necessary.

Sediment–laden runoff shall be directed to a sediment trapping facility.

Inspection and Maintenance:

Swales should be inspected, every seven (7) calendar days and within 24–hours after each rainfall event that produces ½–inches or more of precipitation and repairs made as necessary.

Damage caused by construction traffic or other activity must be repaired before the end of each working day.

South Carolina Department of Health and Environmental Control

DIVERSION SWALE

STANDARD DRAWING NO. RC–03 PAGE 2 of 2

GENERAL NOTES — JULY 31, 2005 (DATE)

SILT FENCE – POST REQUIREMENTS

1. Silt Fence posts must be 48–inch long steel posts that meet, at a minimum, the following physical characteristics.
   - Composed of a high strength steel with a minimum yield strength of 50,000 psi.
   - Include a standard "T" section with a nominal face width of 1.38–inches and a nominal "T" length of 1.48–inches.
   - Weigh 1.25 pounds per foot (± 8%)
2. Posts shall be equipped with projections to aid in fastening of filter fabric.
3. Steel posts may need to have a metal soil stabilization plate welded near the bottom when installed along steep slopes or installed in loose soils. The plate should have a minimum cross section of 17–square inches and be composed of 15 gauge steel, at a minimum. The metal soil stabilization plate should be completely buried.
4. Install posts to a minimum of 24–inches. A minimum height of 1– to 2–inches above the fabric shall be maintained, and a maximum height of 3 feet shall be maintained above the ground.
5. Post spacing shall be at a maximum of 6–feet on center.

SILT FENCE – FABRIC REQUIREMENTS

1. Silt fence must be composed of woven geotextile filter fabric that consists of the following requirements:
   - Composed of fibers consisting of long chain synthetic polymers of at least 85% by weight of polyolefins, polyesters, or polyamides that are formed into a network such that the filaments or yarns retain dimensional stability relative to each other;
   - Free of any treatment or coating which might adversely alter its physical properties after installation;
   - Free of any defects or flaws that significantly affect its physical and/or filtering properties; and,
   - Have a minimum width of 36–inches.
2. Use only fabric appearing on SC DOT's Qualified Products Listing (QPL), Approval Sheet #34, meeting the requirements of the most current edition of the SC DOT Standard Specifications for Highway Construction.
3. 12–inches of the fabric should be placed within excavated trench and toed in when the trench is backfilled.
4. Filter Fabric shall be purchased in continuous rolls and cut to the length of the barrier to avoid joints.
5. Filter Fabric shall be installed at a minimum of 24–inches above the ground.

SILT FENCE – INSPECTION & MAINTENANCE

1. The key to functional silt fence is weekly inspections, routine maintenance, and regular sediment removal.
2. Regular inspections of silt fence shall be conducted once every calendar week and, as recommended, within 24–hours after each rainfall even that produces 1/2–inch or more of precipitation.
3. Attention to sediment accumulations along the silt fence is extremely important. Accumulated sediment should be continually monitored and removed when necessary.
4. Remove accumulated sediment when it reaches 1/3 the height of the silt fence.
5. Removed sediment shall be placed in stockpile storage areas or spread thinly across disturbed area. Stabilize the removed sediment after it is relocated.
6. Check for areas where stormwater runoff has eroded a channel beneath the silt fence, or where the fence has sagged or collapsed due to runoff overtopping the silt fence. Install checks/tie–backs and/or reinstall silt fence, as necessary.
7. Check for tears within the silt fence, areas where silt fence has begun to decompose, and for any other circumstance that may render the silt fence ineffective. Removed damaged silt fence and reinstall new silt fence immediately.
8. Silt fence should be removed within 30 days after final stabilization is achieved and once it is removed, the resulting disturbed area shall be permanently stabilized.

South Carolina Department of Health and Environmental Control

SILT FENCE

STANDARD DRAWING NO. SC–03 PAGE 2 of 2

GENERAL NOTES — FEBRUARY 2014 (DATE)

ISSUED FOR BID
JANUARY 2020

GRAND STRAND WATER & SEWER AUTHORITY

Mark	Description	Date	Appr.
	ISSUED FOR BID	05/01/20	JJT

BUCKSPORT MARINE INDUSTRIAL PARK - PHASE 1

SOIL EROSION CONTROL DETAILS 6 OF 8

Rev. 0
Date: JANUARY 2020
Designed by: TRR
Drawn by: JT
Checked by: TRR
Reviewed by:
M&N Project No. 7232–05
Drawing code:
Submitted by: MOFFATT & NICHOL
Drawing Scale: AS SHOWN
Plot scale: 1:1 (0 SHEET)

SEAL

SOUTH CAROLINA
MOFFATT & NICHOL ENGINEERS No. 000363
CERTIFICATE OF AUTHORIZATION

4700 FALLS OF THE NEUSE ROAD
SUITE 300
RALEIGH, NC 27609
919–781–4626
SC COA No. 363
moffatt & nichol

Sheet Reference No.
CS506
INDEX: 63 OF 113

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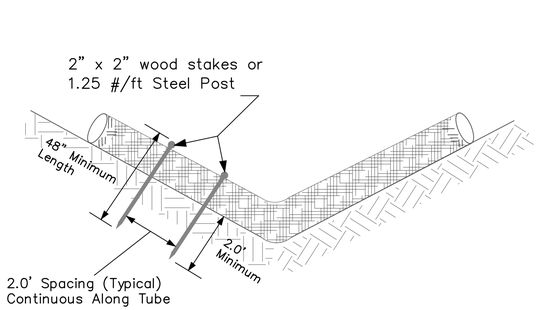
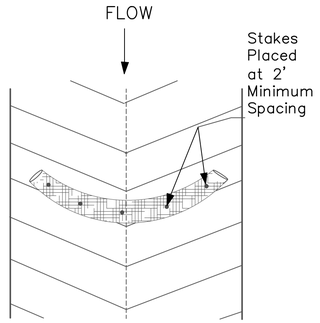
DRAWING SCALES SHOWN BASED ON 22"x34" DRAWING

SEDIMENT TUBE INSTALLATION





PLAN SYMBOL

SEDIMENT TUBE SPACING

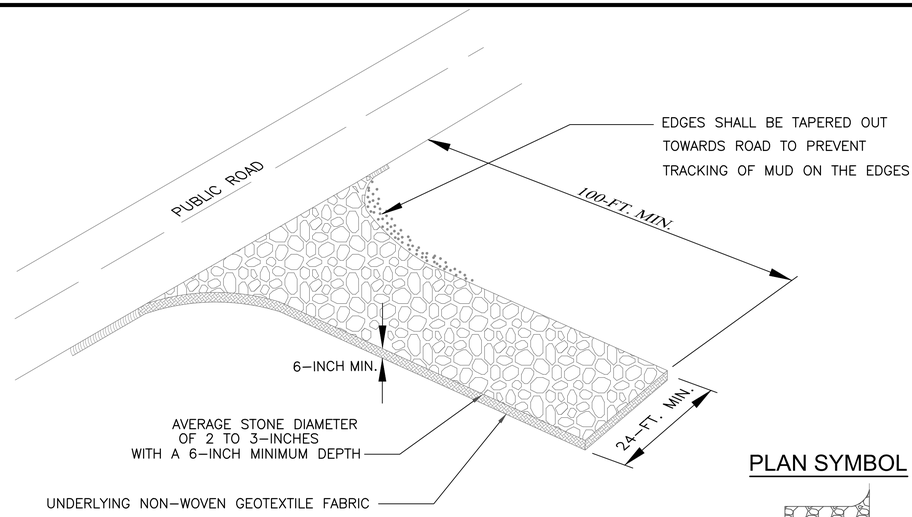
SLOPE	MAX. SEDIMENT TUBE SPACING
LESS THAN 2%	150-FEET
2%	100-FEET
3%	75-FEET
4%	50-FEET
5%	40-FEET
6%	30-FEET
GREATER THAN 6%	25-FEET

South Carolina Department of Health and Environmental Control

SEDIMENT TUBES

STANDARD DRAWING NO. SC–05 PAGE 1 of 2

NOT TO SCALE FEBRUARY 2014 DATE



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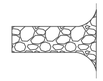

SPECIFICATION	SIZE
ROCK PAD THICKNESS	6 INCHES
ROCK PAD WIDTH	24 FEET
ROCK PAD LENGTH	100 FEET
ROCK PAD STONE SIZE	D = 2–3 INCHES

South Carolina Department of Health and Environmental Control

CONSTRUCTION ENTRANCE

STANDARD DRAWING NO. SC–06 PAGE 1 of 2

NOT TO SCALE FEBRUARY 2014 DATE

SEDIMENT TUBES – GENERAL NOTES

1. Sediment tubes may be installed along contours, in drainage conveyance channels, and around inlets to help prevent off–site discharge of sediment–laden stormwater runoff.
2. Sediment tubes are elongated tubes of compacted geotextiles, curled excelsior wood, natural coconut fiber, or hardwood mulch. Straw, pine needle, and leaf mulch–filled sediment tubes are not permitted.
3. The outer netting of the sediment tube should consist of seamless, high–density polyethylene photodegradable materials treated with ultraviolet stabilizers or a seamless, high–density polyethylene non–degradable material.
4. Sediment tubes, when used as checks within channels, should range between 18–inches and 24–inches depending on channel dimensions. Diameters outside this range may be allowed where necessary when approved.
5. Curled excelsior wood, or natural coconut products that are rolled up to create a sediment tube are not allowed.
6. Sediment tubes should be staked using wooden stakes (2–inch X 2–inch) or steel posts (standard "U" or "T" sections with a minimum weight of 1.25 pounds per foot) at a minimum of 48–inches in length placed on 2–foot centers.
7. Install all sediment tubes to ensure that no gaps exist between the soil and the bottom of the tube. Manufacturer's recommendations should always be consulted before installation.
8. The ends of adjacent sediment tubes should be overlapped 6–inches to prevent flow and sediment from passing through the field joint.
9. Sediment tubes should not be stacked on top of one another, unless recommended by manufacturer.
10. Each sediment tube should be installed in a trench with a depth equal to 1/5 the diameter of the sediment tube.
11. Sediment tubes should continue up the side slopes a minimum of 1–foot above the design flow depth of the channel.
12. Install stakes at a diagonal facing incoming runoff.

SEDIMENT TUBES – INSPECTION & MAINTENANCE

1. The key to functional sediment tubes is weekly inspections, routine maintenance, and regular sediment removal.
2. Regular inspections of sediment tubes shall be conducted once every calendar week and, as recommended, within 24–hours after each rainfall even that produces 1/2–inch or more of precipitation.
3. Attention to sediment accumulations in front of the sediment tube is extremely important. Accumulated sediment should be continually monitored and removed when necessary.
4. Remove accumulated sediment when it reaches 1/3 the height of the sediment tube.
5. Removed sediment shall be placed in stockpile storage areas or spread thinly across disturbed area. Stabilize the removed sediment after it is relocated.
6. Large debris, trash, and leaves should be removed from in front of tubes when found.
7. If erosion causes the edges to fall to a height equal to or below the height of the sediment tube, repairs should be made immediately to prevent runoff from bypassing tube.
8. Sediment tubes should be removed after the contributing drainage area has been completely stabilized. Permanent vegetation should replace areas from which sediment tubes have been removed.

South Carolina Department of Health and Environmental Control

SEDIMENT TUBES

STANDARD DRAWING NO. SC–05 PAGE 2 of 2

GENERAL NOTES FEBRUARY 2014 DATE

CONSTRUCTION ENTRANCE – GENERAL NOTES

1. Stabilized construction entrances should be used at all points where traffic will egress/ingress a construction site onto a public road or any impervious surfaces, such as parking lots.
2. Install a non–woven geotextile fabric prior to placing any stone.
3. Install a culvert pipe across the entrance when needed to provide positive drainage.
4. The entrance shall consist of 2–inch to 3–inch D50 stone placed at a minimum depth of 6–inches.
5. Minimum dimensions of the entrance shall be 24–feet wide by 100–feet long, and may be modified as necessary to accommodate site constraints.
6. The edges of the entrance shall be tapered out towards the road to prevent tracking at the edge of the entrance.
7. Divert all surface runoff and drainage from the stone pad to a sediment trap or basin or other sediment trapping structure.
8. Limestone may not be used for the stone pad.

CONSTR. ENTRANCE – INSPECTION & MAINTENANCE

1. The key to functional construction entrances is weekly inspections, routine maintenance, and regular sediment removal.
2. Regular inspections of construction entrances shall be conducted once every calendar week and, as recommended, within 24–hours after each rainfall even that produces 1/2–inch or more of precipitation.
3. During regular inspections, check for mud and sediment buildup and pad integrity. Inspection frequencies may need to be more frequent during long periods of wet weather.
4. Reshape the stone pad as necessary for drainage and runoff control.
5. Wash or replace stones as needed and as directed by site inspector. The stone in the entrance should be washed or replaced whenever the entrance fails to reduce the amount of mud being carried off–site by vehicles. Frequent washing will extend the useful life of stone pad.
6. Immediately remove mud and sediment tracked or washed onto adjacent impervious surfaces by brushing or sweeping. Flushing should only be used when the water can be discharged to a sediment trap or basin.
7. During maintenance activities, any broken pavement should be repaired immediately.
8. Construction entrances should be removed after the site has reached final stabilization. Permanent vegetation should replace areas from which construction entrances have been removed, unless area will be converted to an impervious surface to serve post–construction.

South Carolina Department of Health and Environmental Control

CONSTRUCTION ENTRANCE

STANDARD DRAWING NO. SC–06 PAGE 2 of 2

GENERAL NOTES FEBRUARY 2014 DATE

ISSUED FOR BID
JANUARY 2020

GRAND STRAND WATER & SEWER AUTHORITY

Mark	Description	Date	Appr.
	ISSUED FOR BID	05/01/20	JJT

BUCKSPORT MARINE INDUSTRIAL PARK - PHASE 1

SOIL EROSION CONTROL DETAILS 7 OF 8

Designed by: TRR
Dwn by: JT
Ckd by: TRR
Reviewed by:
Submitted by: MOFFATT & NICHOL
Date: JANUARY 2020
M&N Project No. 7232–05
Drawing code:
Drawing Scale: AS SHOWN
Plot scale: 1:1 (0 SHEET)
Rev. 0

SEAL

SOUTH CAROLINA CERTIFICATE OF AUTHORIZATION
MOFFATT & NICHOL ENGINEERS No. 000363

4700 FALLS OF THE NEUSE ROAD
SUITE 300
RALEIGH, NC 27609
919–781–4626
SC COA No. 363
moffatt & nichol

Sheet Reference No.
CS507
INDEX: 64 OF 113

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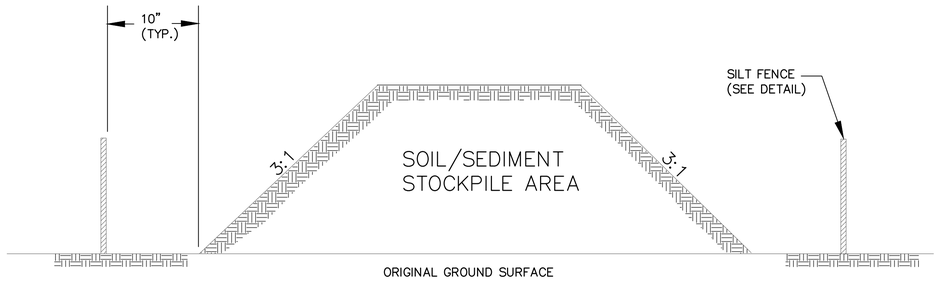
DRAWING SCALES SHOWN BASED ON 22"x34" DRAWING

TEMPORARY STOCKPILE AREA



NOTES:

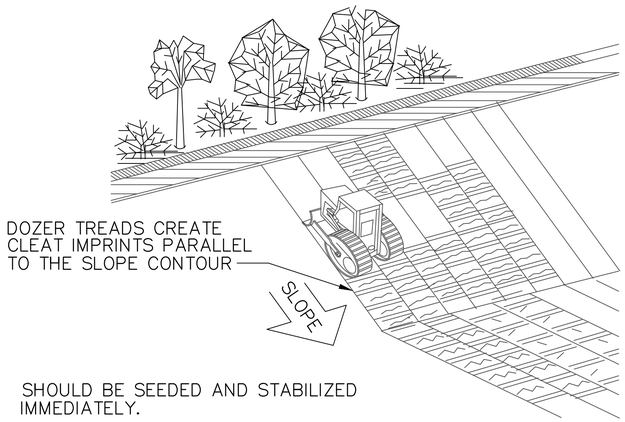
1. SILT FENCE TO EXTEND AROUND ENTIRE PERIMETER OF STOCKPILE, OR IF STOCKPILE AREA IS LOCATED ON/NEAR A SLOP THE SILT FENCE IS TO EXTEND ALONG CONTOURS OF THE DOWN–GRADIENT AREA.
2. IF STOCKPILE IS TO REMAIN FOR MORE THAN 14 DAYS, TEMPORARY STABILIZATION MEASURES MUST BE IMPLEMENTED.
3. SILT FENCE SHALL BE MAINTAINED UNTIL STOCKPILE AREA HAS EITHER BEEN REMOVED OR PERMANENTLY STABILIZED.
4. THE KEY TO FUNCTIONAL TEMPORARY STOCKPILE AREAS IS WEEKLY INSPECTIONS, ROUTINE MAINTENANCE, AND REGULAR SEDIMENT REMOVAL.

South Carolina Department of Health and Environmental Control

TEMPORARY STOCKPILE

STANDARD DRAWING NO. SC–15 PAGE 1 of 1

NOT TO SCALE FEBRUARY 2014 DATE



SHOULD BE SEEDED AND STABILIZED IMMEDIATELY.

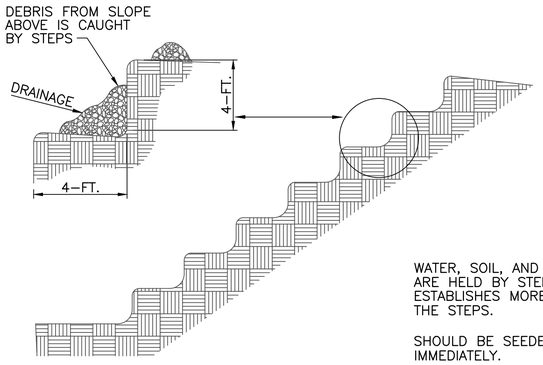
TRACKING

South Carolina Department of Health and Environmental Control

TRACKING

STANDARD DRAWING NO. EC–01 Page 1

APPROVED BY: _____ SCDHEC AUGUST, 2005 DATE



WATER, SOIL, AND FERTILIZER ARE HELD BY STEPS – VEGETATION ESTABLISHES MORE EASILY ON THE STEPS.

SHOULD BE SEEDED AND STABILIZED IMMEDIATELY.

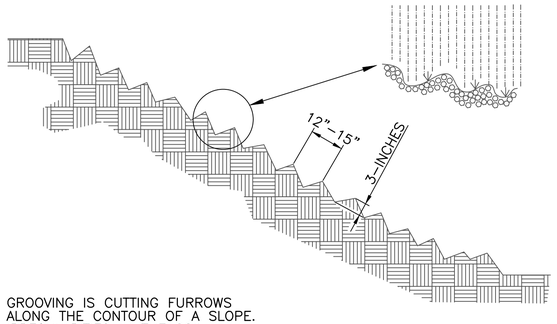
STAIR STEP GRADING

South Carolina Department of Health and Environmental Control

STAIR STEP GRADING

STANDARD DRAWING NO. EC–02 Page 1

APPROVED BY: _____ SCDHEC AUGUST, 2005 DATE



GROOVING IS CUTTING FURROWS ALONG THE CONTOUR OF A SLOPE. IRREGULARITIES IN THE SOIL SURFACE CATCH RAINWATER AND PROVIDE SOME COVERAGE OF LIME, FERTILIZER AND SEED.

SHOULD BE SEEDED AND STABILIZED IMMEDIATELY.

SLOPE GROOVING

South Carolina Department of Health and Environmental Control

SLOPE GROOVING

STANDARD DRAWING NO. EC–03 Page 1

APPROVED BY: _____ SCDHEC AUGUST, 2005 DATE

ISSUED FOR BID
JANUARY 2020

GRAND STRAND WATER & SEWER AUTHORITY

Mark	Description	Date	Appr.
	ISSUED FOR BID	05/01/20	JJT

BUCKSPORT MARINE INDUSTRIAL PARK - PHASE 1

SOIL EROSION CONTROL DETAILS 8 OF 8

Rev.	0
Date:	JANUARY 2020
M&N Project No.	7232–05
Drawing code:	
Drawing Scale:	AS SHOWN
Plot scale: 1:1 (0 SHEET)	
Designed by:	TRR
Dwn by:	JT
Ckd by:	TRR
Reviewed by:	
Submitted by:	MOFFATT & NICHOL

SEAL

SOUTH CAROLINA CERTIFICATE OF AUTHORIZATION
MOFFATT & NICHOL ENGINEERS No. 000363

4700 FALLS OF THE NEUSE ROAD
SUITE 300
RALEIGH, NC 27609
919–781–4626

SC COA No. 363

moffatt & nichol

Sheet Reference No.

CS508

INDEX: 65 OF 113

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DRAWING SCALES SHOWN BASED ON 22"x34" DRAWING

ABANDON 12" PVC WATERLINE

CONNECT TO EXISTING 30" PVC WATERLINE

EXISTING 30" PVC WATERLINE, TO REMAIN

ACCESS ROAD 2

ACCESS ROAD 3

FUTURE ACCESS ROADS, WATERLINE AND SEWER LINE

MARINE PARK ROAD

TREATMENT ROAD

BUCKSPORT ROAD

ROW

PROPOSED SANITARY SEWER

PROPOSED 6" SANITARY SEWER FORCEMAIN

PROPOSED 12" WATERLINE

HENRIETTA BLUFFS ROAD

PROPOSED 4" SANITARY SEWER FORCEMAIN

CONNECT EXISTING 2" AND PROPOSED 4" SANITARY SEWER FORCEMAIN TO NEW 6" SANITARY SEWER FORCEMAIN

EXISTING 2" SANITARY SEWER FORCEMAIN

PROPOSED SANITARY SEWER PUMP STATION

PROPOSED 6" WATERLINE

CONNECT TO EXISTING 30" PVC WATERLINE

EXISTING 30" PVC WATERLINE, TO REMAIN

REMAINDER OF GRAND STRAND WATER & SEWER AUTHORITY 451-00-00-0005 D.B. 1298, PG. 606

REMAINDER OF GRAND STRAND WATER & SEWER AUTHORITY 451-00-00-0006 D.B. 3447, PG. 1344

GRAND STRAND WATER & SEWER AUTHORITY 451-00-00-0005 D.B. 1298, PG. 606

GRAND STRAND WATER & SEWER AUTHORITY 451-00-00-0005 D.B. 3447, PG. 1344

NOTES:

1. FOR WATERLINE – SEE SHEETS CU102–CU109
2. FOR SEWER LINE – SEE SHEETS CU110–CU116

80' 0' 80' 160'

SCALE: 1"=80'

ISSUED FOR BID
JANUARY 2020

GRAND STRAND WATER & SEWER AUTHORITY

Mark	Description	Date	Appr.
	ISSUED FOR BID	05/01/20	JJT

BUCKSPORT MARINE INDUSTRIAL PARK - PHASE 1

PROPOSED SANITARY SEWER AND WATERLINE PLAN

Rev.	0
Date:	JANUARY 2020
M&N Project No.	7232-05
Drawing code:	
Drawing Scale:	AS SHOWN
Plot scale: 1:1 (0 SHEET)	
Designed by:	TRR
Dwn by:	JT
Chd by:	TRR
Reviewed by:	
Submitted by:	MOFFATT & NICHOL

SOUTH CAROLINA LICENSED PROFESSIONAL ENGINEER TIMOTHY R. REID No.24067

SEAL 5-1-2020

MOFFATT & NICHOL ENGINEERS No. 000363 SOUTH CAROLINA CERTIFICATE OF AUTHORIZATION

4700 FALLS OF THE NEUSE ROAD
SUITE 300
RALEIGH, NC 27609
919-781-4626

SC COA No. 363

moffatt & nichol

Sheet Reference No.

CU101

INDEX: 66 OF 113

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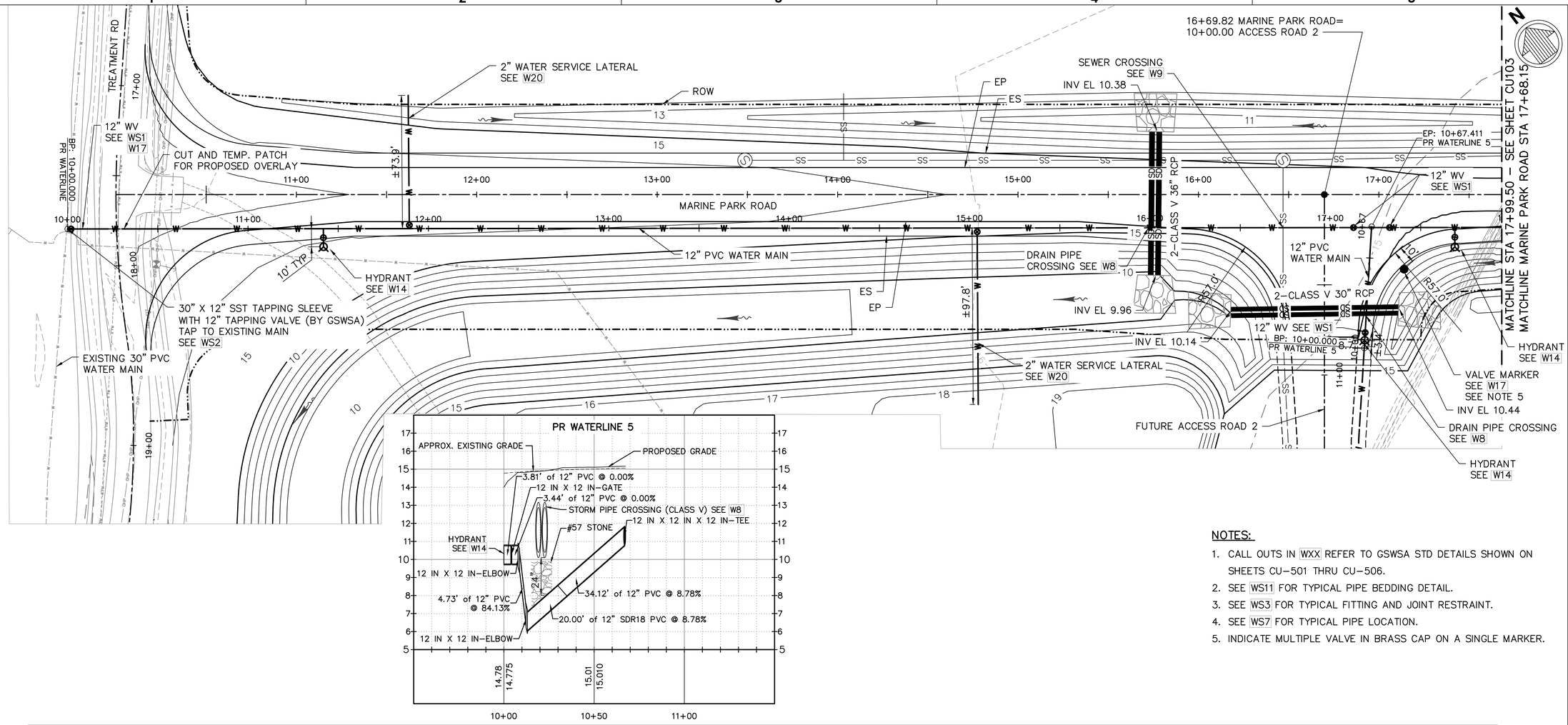

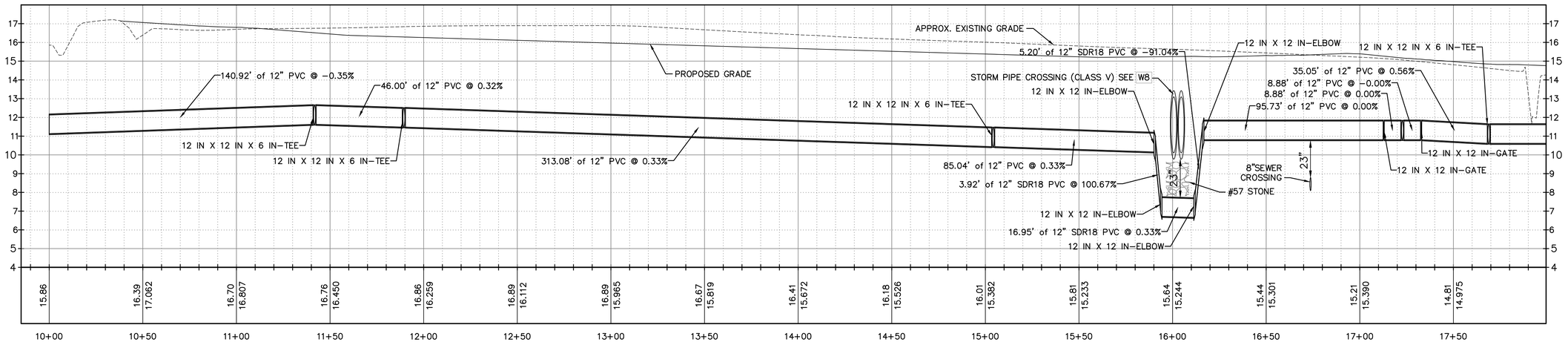

NOTES:

1. CALL OUTS IN WXX REFER TO GSWSA STD DETAILS SHOWN ON SHEETS CU-501 THRU CU-506.
2. SEE WS11 FOR TYPICAL PIPE BEDDING DETAIL.
3. SEE WS3 FOR TYPICAL FITTING AND JOINT RESTRAINT.
4. SEE WS7 FOR TYPICAL PIPE LOCATION.
5. INDICATE MULTIPLE VALVE IN BRASS CAP ON A SINGLE MARKER.

3' 0' 3' 6'
SCALE: 1"=3' VERTICAL

30' 0' 30' 60'
SCALE: 1"=30' HORIZONTAL

ISSUED FOR BID
JANUARY 2020

GRAND STRAND WATER & SEWER AUTHORITY

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	ISSUED FOR BID	05/01/20	JJT

BUCKSPORT MARINE INDUSTRIAL PARK - PHASE 1

WATERLINE UTILITY PLAN 1 OF 8

Rev.	0
Date:	JANUARY 2020
M&N Project No.	7232-05
Drawing code:	
Drawing Scale:	AS SHOWN
Plot scale: 1:1 (0 SHEET)	
Designed by:	TRR
Drawn by:	JT
Cad by:	TRR
Reviewed by:	
Submitted by:	MOFFATT & NICHOL

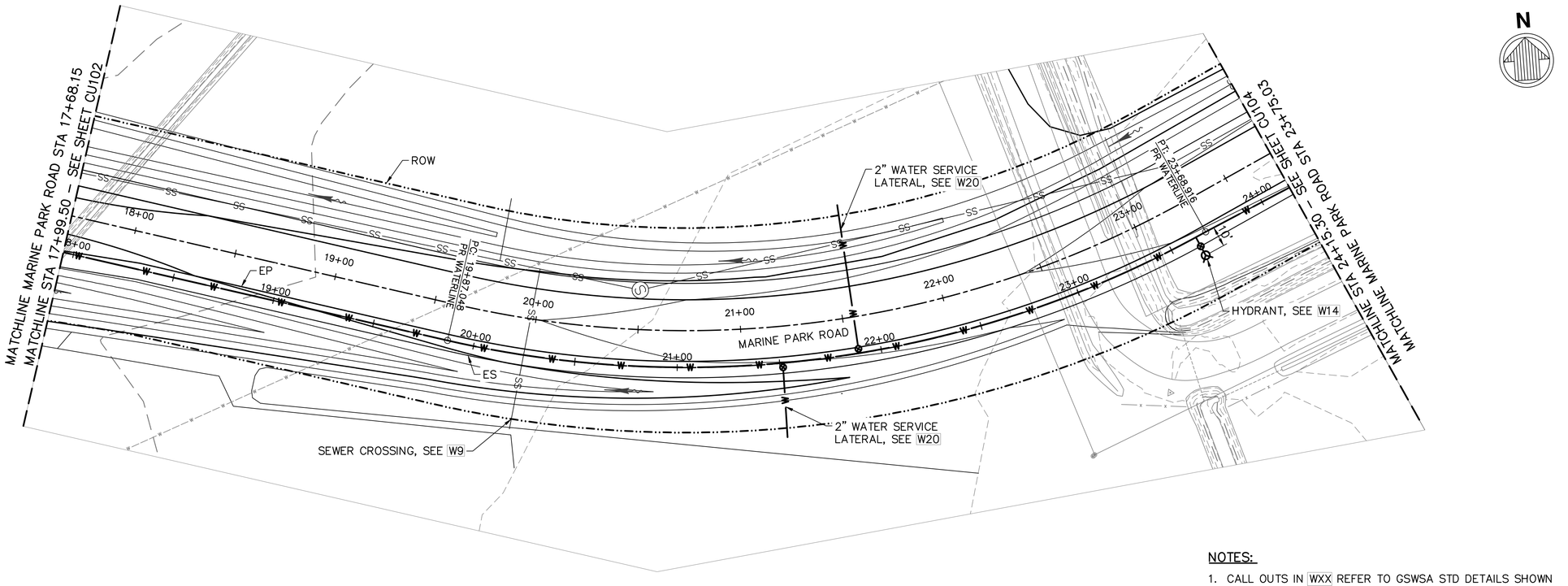
SOUTH CAROLINA LICENSED PROFESSIONAL ENGINEER TIMOTHY R. RUSH No.24067
SEAL 5-1-2020
SOUTH CAROLINA MOFFATT & NICHOL ENGINEERS No. 000363 CERTIFICATE OF AUTHORIZATION

4700 FALLS OF THE NEUSE ROAD
SUITE 300
RALEIGH, NC 27609
919-781-4626
SC COA No. 363
moffatt & nichol

Sheet Reference No.
CU102
INDEX: 67 OF 113

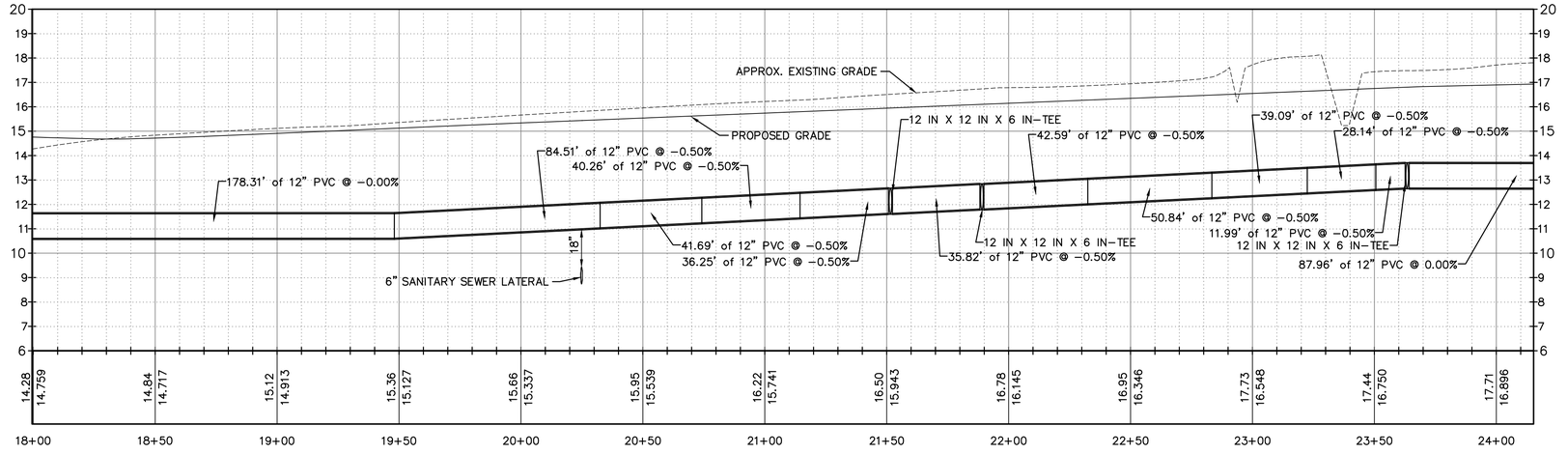
File: G:\PA\7232-05\CADD_Active_Sheets\7232105-CU102; Plotted: 4/29/2020 10:58 AM by THIBODEAUX, JASON; Saved: 1/14/2020 2:27 PM by JTHIBODEAUX

DRAWING SCALES SHOWN BASED ON 22"x34" DRAWING



NOTES:

1. CALL OUTS IN WXX REFER TO GSWSA STD DETAILS SHOWN ON SHEETS CU–501 THRU CU–506.
2. SEE WS11 FOR TYPICAL PIPE BEDDING DETAIL.
3. SEE WS3 FOR TYPICAL FITTING AND JOINT RESTRAINT.
4. SEE WS7 FOR TYPICAL PIPE LOCATION.



3' 0' 3' 6'
SCALE: 1"=3' VERTICAL

30' 0' 30' 60'
SCALE: 1"=30' HORIZONTAL

ISSUED FOR BID
JANUARY 2020

GRAND STRAND WATER & SEWER AUTHORITY

Mark	Description	Date	Appr.
	ISSUED FOR BID	05/01/20	JJT

BUCKSPORT MARINE INDUSTRIAL PARK - PHASE 1

WATERLINE UTILITY PLAN 2 OF 8

Rev.	0
Date:	JANUARY 2020
M&N Project No.	7232-05
Drawing code:	
Drawing Scale:	AS SHOWN
Plot scale: 1:1 (0 SHEET)	
Designed by:	TRR
Dwn by:	JT
Ckd by:	TRR
Reviewed by:	
Submitted by:	MOFFATT & NICHOL

SOUTH CAROLINA LICENSED PROFESSIONAL ENGINEER No.24067 TIMOTHY R. REED
SEAL 5-1-2020
SOUTH CAROLINA MOFFATT & NICHOL ENGINEERS No. 000363 CERTIFICATE OF AUTHORIZATION

4700 FALLS OF THE NEUSE ROAD
SUITE 300
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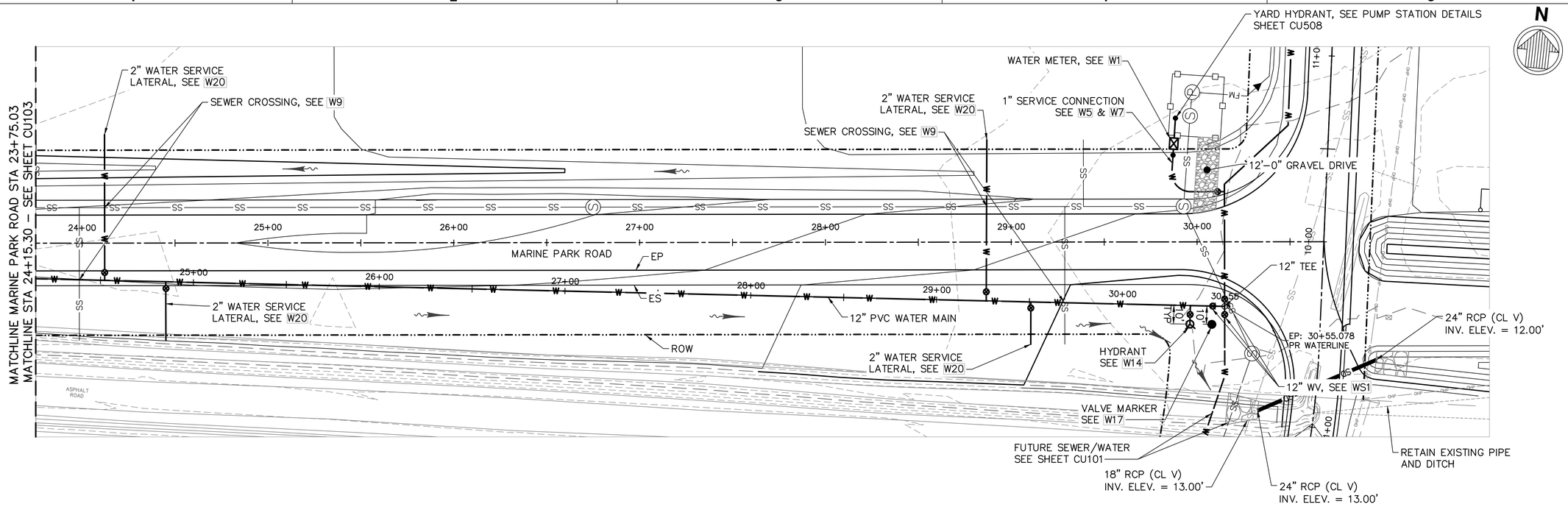
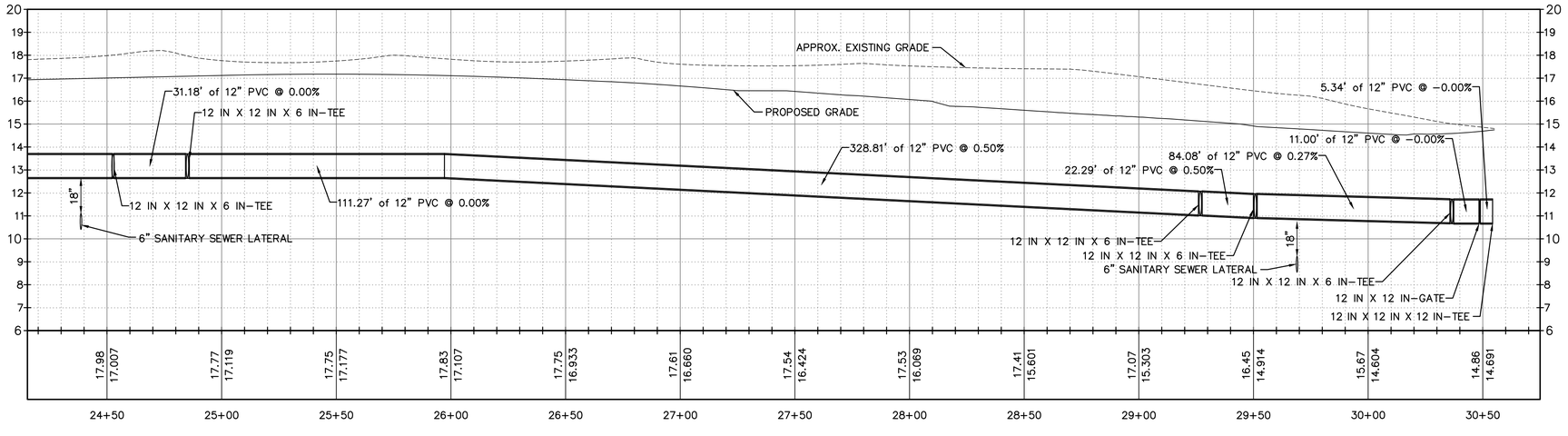
919-781-4626
SC COA No. 363
moffatt & nichol

Sheet Reference No.
CU103
INDEX: 68 OF 113

File: Q:\RA\7232-05\CADD_Active_SheetSet\7232105-CU103; Plotted: 4/29/2020 10:58 AM by THIBODEAUX, JASON; Saved: 1/14/2020 2:28 PM by JTHIBODEAUX

DRAWING SCALES SHOWN BASED ON 22"x34" DRAWING





NOTES:

1. CALL OUTS IN WXX REFER TO GSWSA STD DETAILS SHOWN ON SHEETS CU–501 THRU CU–506.
2. SEE WS11 FOR TYPICAL PIPE BEDDING DETAIL.
3. SEE WS3 FOR TYPICAL FITTING AND JOINT RESTRAINT.
4. SEE WS7 FOR TYPICAL PIPE LOCATION.

3' 0' 3' 6'
SCALE: 1"=3' VERTICAL

30' 0' 30' 60'
SCALE: 1"=30' HORIZONTAL

ISSUED FOR BID
JANUARY 2020

DRAWING SCALES SHOWN BASED ON 22"x34" DRAWING

GRAND STRAND WATER & SEWER AUTHORITY

Mark	Description	Date	Appr.
0	ISSUED FOR BID	05/01/20	JJT

BUCKSPORT MARINE INDUSTRIAL PARK - PHASE 1

WATERLINE UTILITY PLAN 3 OF 8

Rev.	Date:	M&N Project No.	Drawing code:	Drawing Scale:
0	JANUARY 2020	7232–05		AS SHOWN

Designed by: TRR | Dwn by: JT | Ckd by: TRR | Reviewed by: | Submitted by: MOFFATT & NICHOL

Plot scale: 1:1 (0 SHEET)

SOUTH CAROLINA LICENSED PROFESSIONAL ENGINEER TIMOTHY R. REID No.24067
SEAL 5-1-2020
SOUTH CAROLINA CERTIFICATE OF AUTHORIZATION MOFFATT & NICHOL ENGINEERS No. 000363

4700 FALLS OF THE NEUSE ROAD
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RALEIGH, NC 27609
919–781–4626
SC COA No. 363
moffatt & nichol

Sheet Reference No.
CU104
INDEX: 69 OF 113

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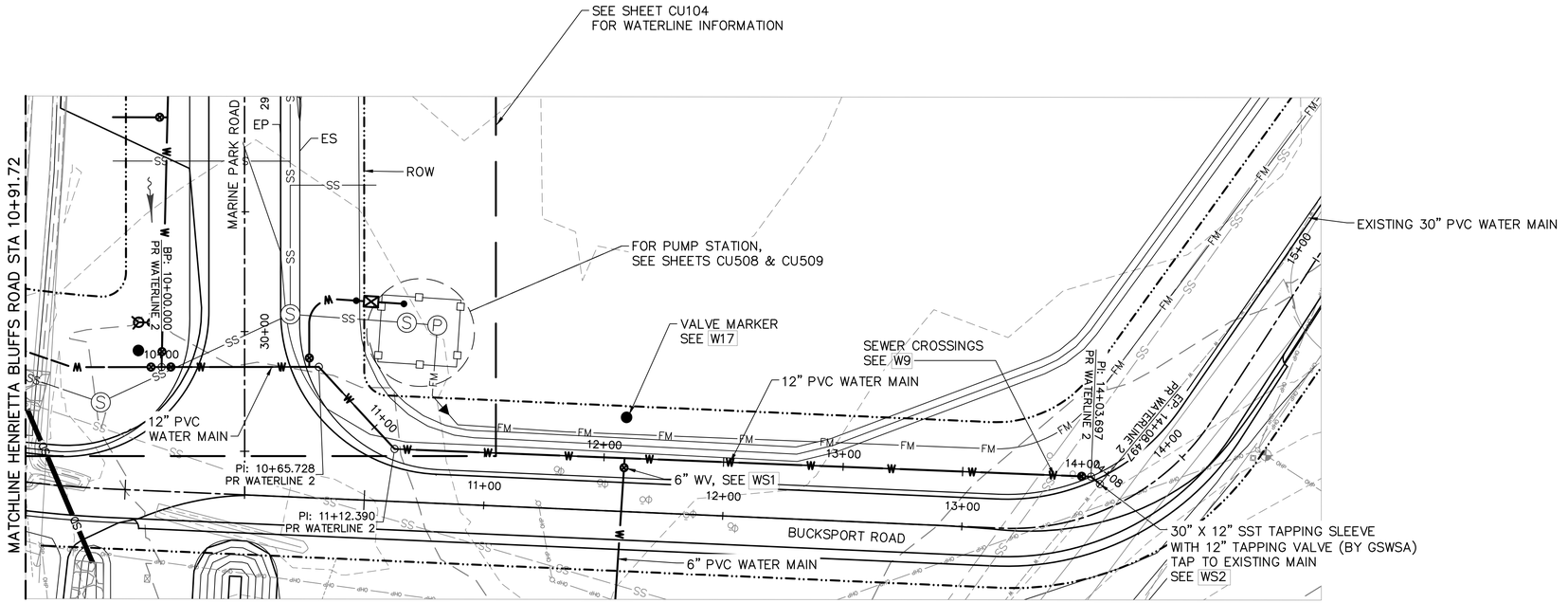

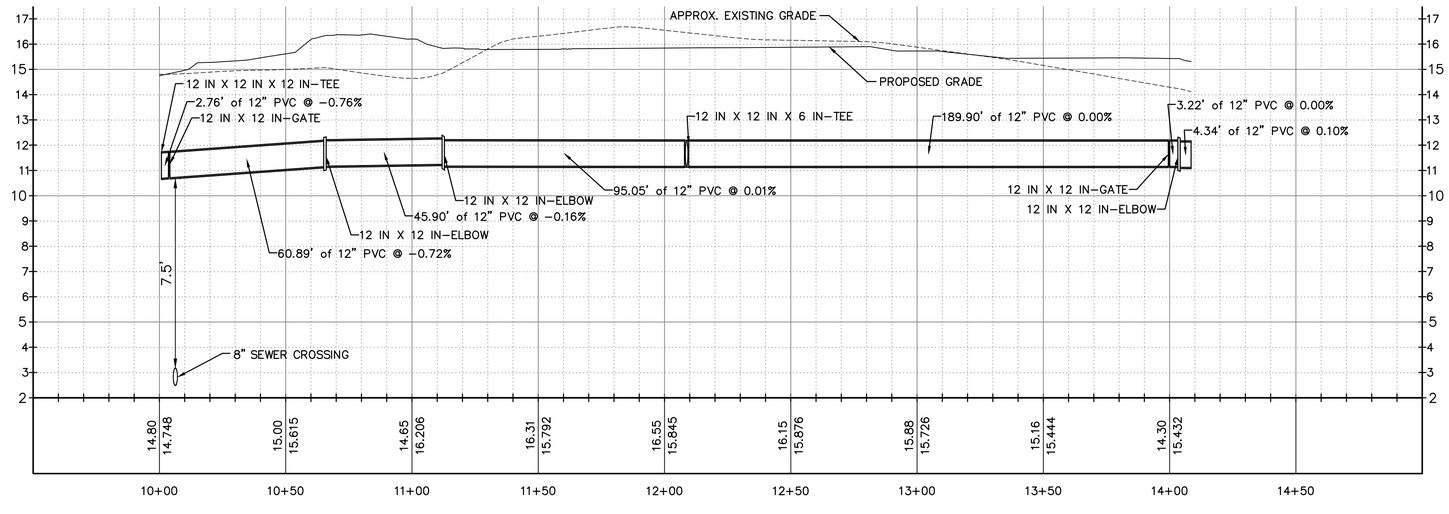

NOTES:

1. CALL OUTS IN WXX REFER TO GSWSA STD DETAILS SHOWN ON SHEETS CU–501 THRU CU–506.
2. SEE WS11 FOR TYPICAL PIPE BEDDING DETAIL.
3. SEE WS3 FOR TYPICAL FITTING AND JOINT RESTRAINT.
4. SEE WS7 FOR TYPICAL PIPE LOCATION.
5. INDICATE MULTIPLE VALVE IN BRASS CAP ON A SINGLE MARKER.

SCALE: 1"=3' VERTICAL

SCALE: 1"=30' HORIZONTAL

ISSUED FOR BID
JANUARY 2020

GRAND STRAND WATER & SEWER AUTHORITY

Mark	Description	Date	Appr.
	ISSUED FOR BID	05/01/20	JJT

BUCKSPORT MARINE INDUSTRIAL PARK - PHASE 1

WATERLINE UTILITY PLAN
4 OF 8

Designed by: TRR
Drawn by: JT
Cked by: TRR
Reviewed by:
Submitted by: MOFFATT & NICHOL
Date: JANUARY 2020
M&N Project No. 7232–05
Drawing code:
Drawing Scale: AS SHOWN
Plot scale: 1:1 (D SHEET)
Rev. 0

SOUTH CAROLINA LICENSED PROFESSIONAL ENGINEER No.24067 TIMOTHY R. REID
SEAL 5-1-2020

SOUTH CAROLINA CERTIFICATE OF AUTHORIZATION MOFFATT & NICHOL ENGINEERS No. 000363

4700 FALLS OF THE NEUSE ROAD
SUITE 300
RALEIGH, NC 27609
919–781–4626
SC COA No. 363
moffatt & nichol

Sheet Reference No.
CU105
INDEX: 70 OF 113

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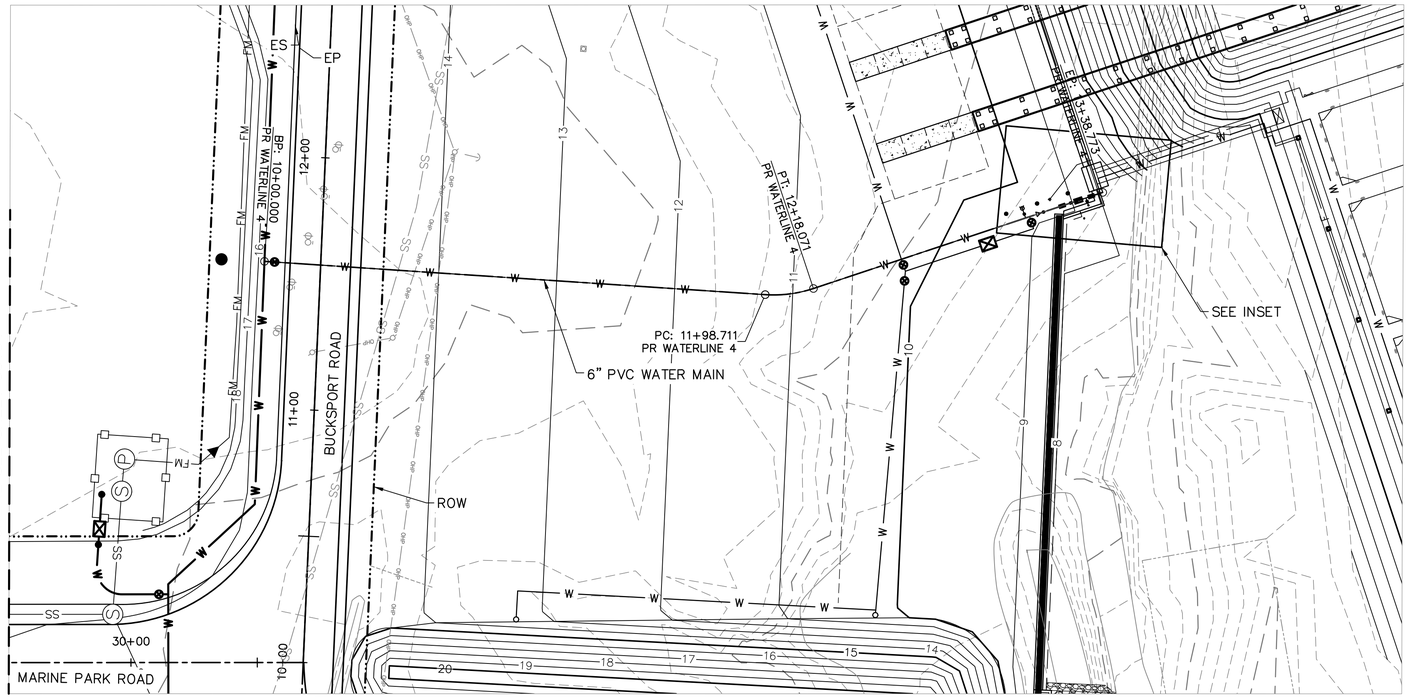
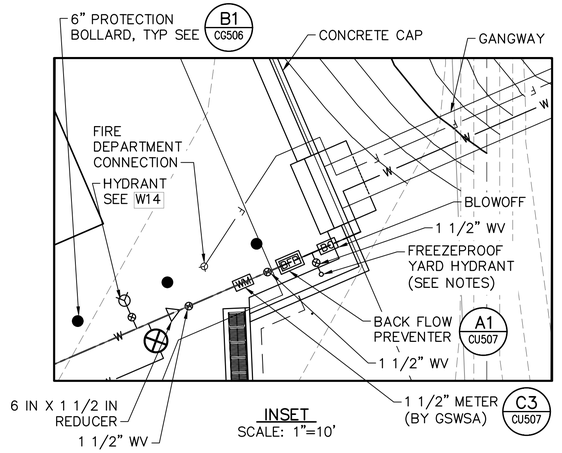
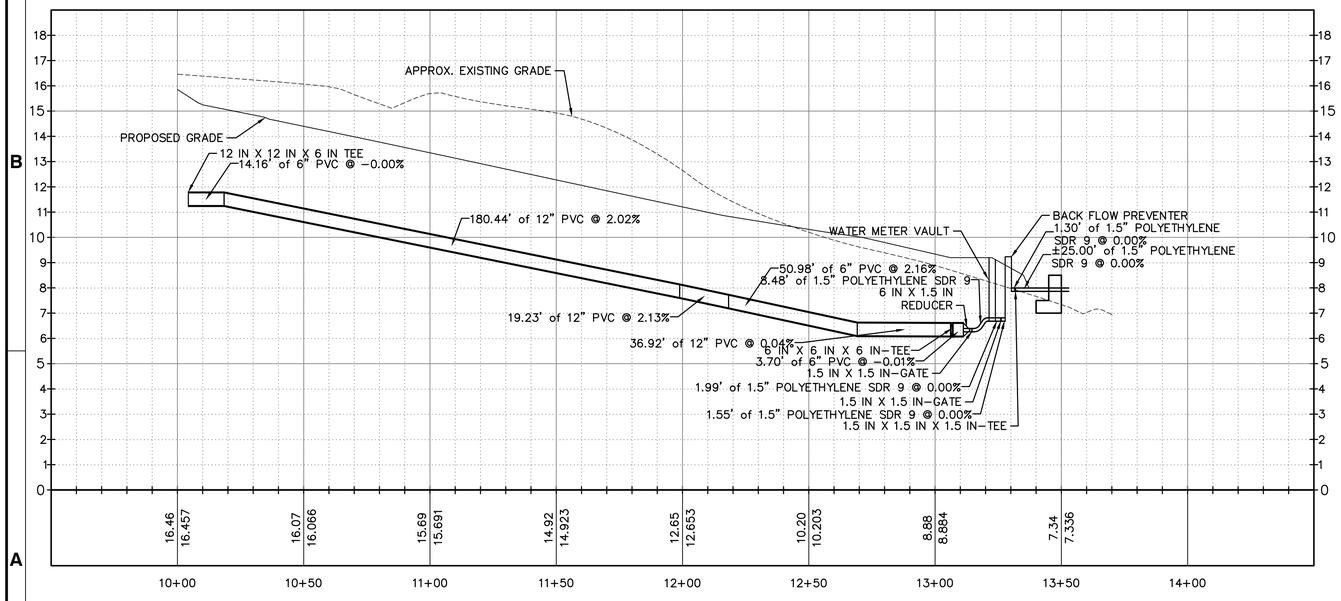
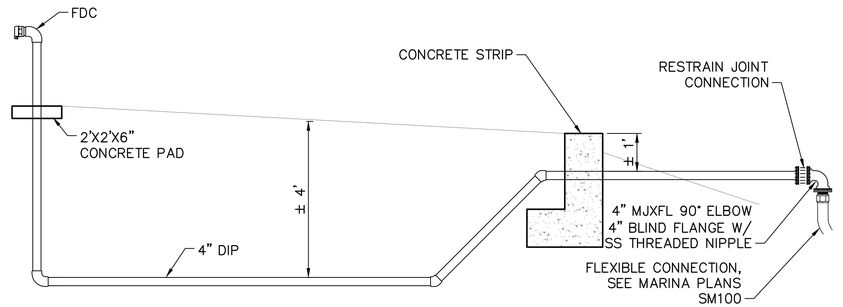
DRAWING SCALES SHOWN BASED ON 22"x34" DRAWING





INSET
SCALE: 1"=10'





B4 CU109 FIRE DEPARTMENT CONNECTION ELEVATION
SCALE: NTS

NOTES:

1. CALL OUTS IN WXX REFER TO GSWSA STD DETAILS SHOWN ON SHEETS CU-501 THRU CU-506.
2. SEE WS11 FOR TYPICAL PIPE BEDDING DETAIL.
3. SEE WS3 FOR TYPICAL FITTING AND JOINT RESTRAINT.
4. SEE WS7 FOR TYPICAL PIPE LOCATION.
5. FOR FREEZE PROOF YARD HYDRANT, SEE PUMP STATION YARD HYDRANT DETAIL, SHEET CU508.

3' 0' 3' 6'
SCALE: 1"=3' VERTICAL

30' 0' 30' 60'
SCALE: 1"=30' HORIZONTAL

ISSUED FOR BID
JANUARY 2020

GRAND STRAND WATER & SEWER AUTHORITY

Mark	Description	Date	Appr.
0	ISSUED FOR BID	05/01/20	JJT

BUCKSPORT MARINE INDUSTRIAL PARK - PHASE 1

WATERLINE UTILITY PLAN
8 OF 8

Rev.	Date:	Designed by:	Dwn by:	Ckd by:	Reviewed by:	Submitted by:	Drawing code:	Drawing Scale: AS SHOWN Plot scale: 1:1 (0 SHEET)
0	JANUARY 2020	TRR	JT	TRR		MOFFATT & NICHOL	M&N Project No. 7232-05	

SOUTH CAROLINA LICENSED PROFESSIONAL ENGINEER No.24067 TIMOTHY R. REED
SEAL 5-1-2020
MOFFATT & NICHOL ENGINEERS No. 000363 CERTIFICATE OF AUTHORIZATION

4700 FALLS OF THE NEUSE ROAD
SUITE 300
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SC COA No. 363
moffatt & nichol

Sheet Reference No.
CU109
INDEX: 71 OF 113

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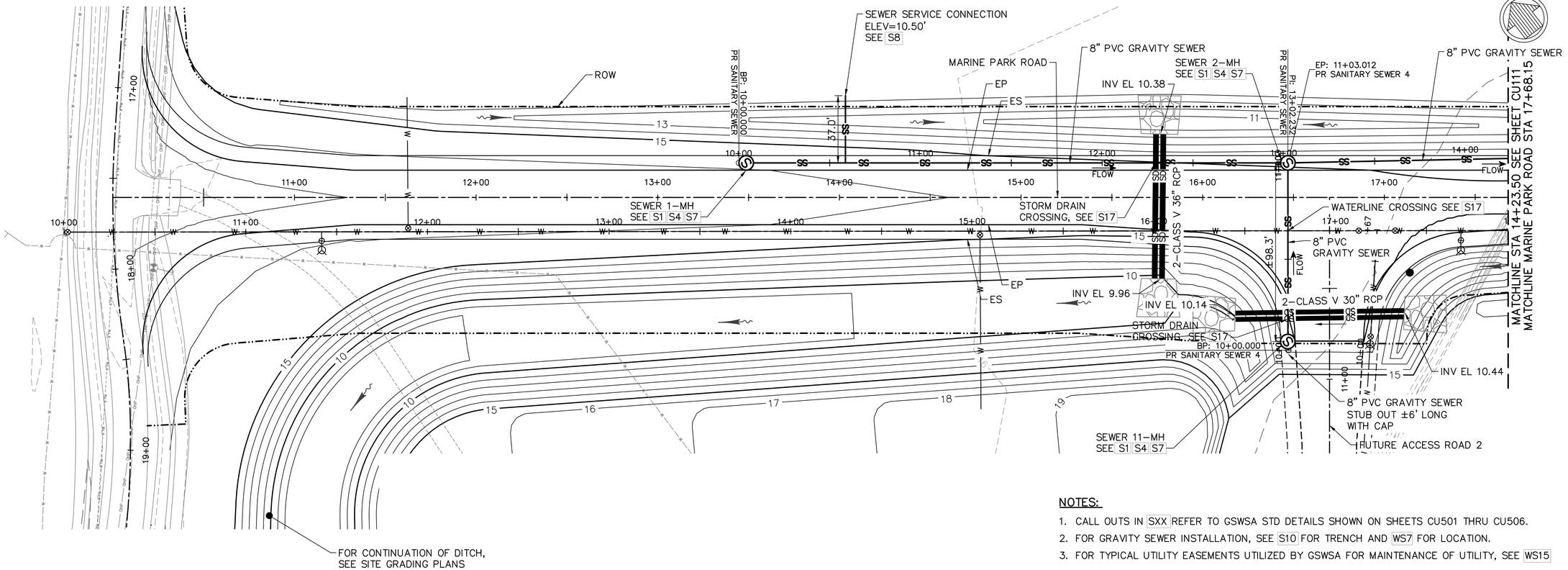

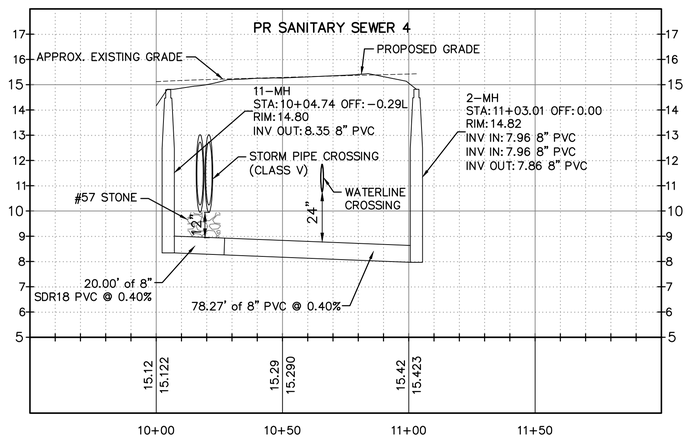

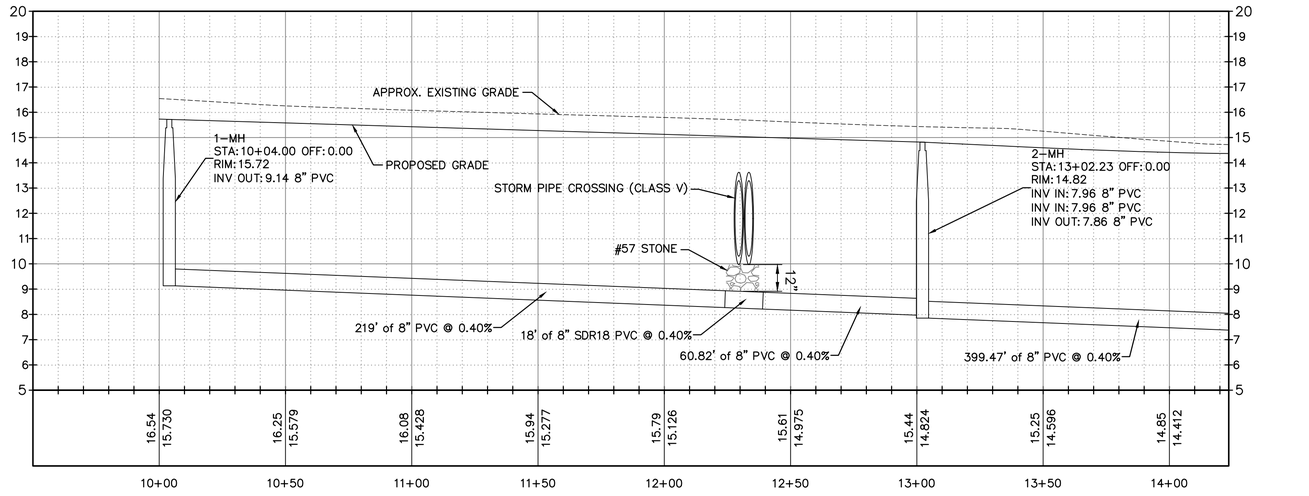

NOTES:

1. CALL OUTS IN SXX REFER TO GSWSA STD DETAILS SHOWN ON SHEETS CU501 THRU CU506.
2. FOR GRAVITY SEWER INSTALLATION, SEE S10 FOR TRENCH AND WS7 FOR LOCATION.
3. FOR TYPICAL UTILITY EASEMENTS UTILIZED BY GSWSA FOR MAINTENANCE OF UTILITY, SEE WS15

3' 0' 3' 6'
SCALE: 1"=3' VERTICAL

30' 0' 30' 60'
SCALE: 1"=30' HORIZONTAL

ISSUED FOR BID
JANUARY 2020

GRAND STRAND WATER & SEWER AUTHORITY

Mark	Description	Date	Appr.
	ISSUED FOR BID	05/01/20	JJT

BUCKSPORT MARINE INDUSTRIAL PARK - PHASE 1

SANITARY SEWER UTILITY PLAN 1 OF 9

Designed by: TRR
Drawn by: JT
Cad by: TRR
Reviewed by:
Submitted by: MOFFATT & NICHOL
Date: JANUARY 2020
M&N Project No. 7232-05
Drawing scale:
Drawing Scale: AS SHOWN
Plot scale: 1:1 (0 SHEET)
Rev. 0

LICENSED PROFESSIONAL ENGINEER TIMOTHY R. REED No.24067 SOUTH CAROLINA
SEAL 5-1-2020
CERTIFICATE OF AUTHORIZATION MOFFATT & NICHOL ENGINEERS No. 000363 SOUTH CAROLINA

4700 FALLS OF THE NEUSE ROAD
SUITE 300
RALEIGH, NC 27609
919-781-4626
SC COA No. 363
moffatt & nichol

Sheet Reference No.
CU110
INDEX: 72 OF 113

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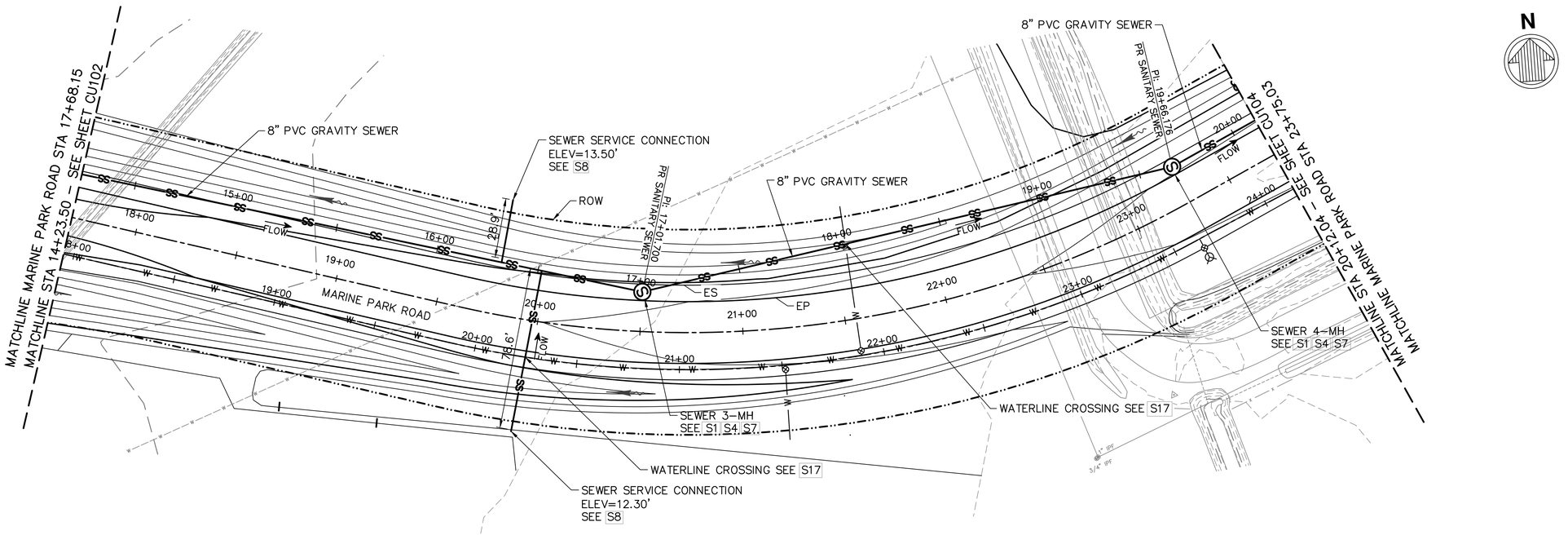
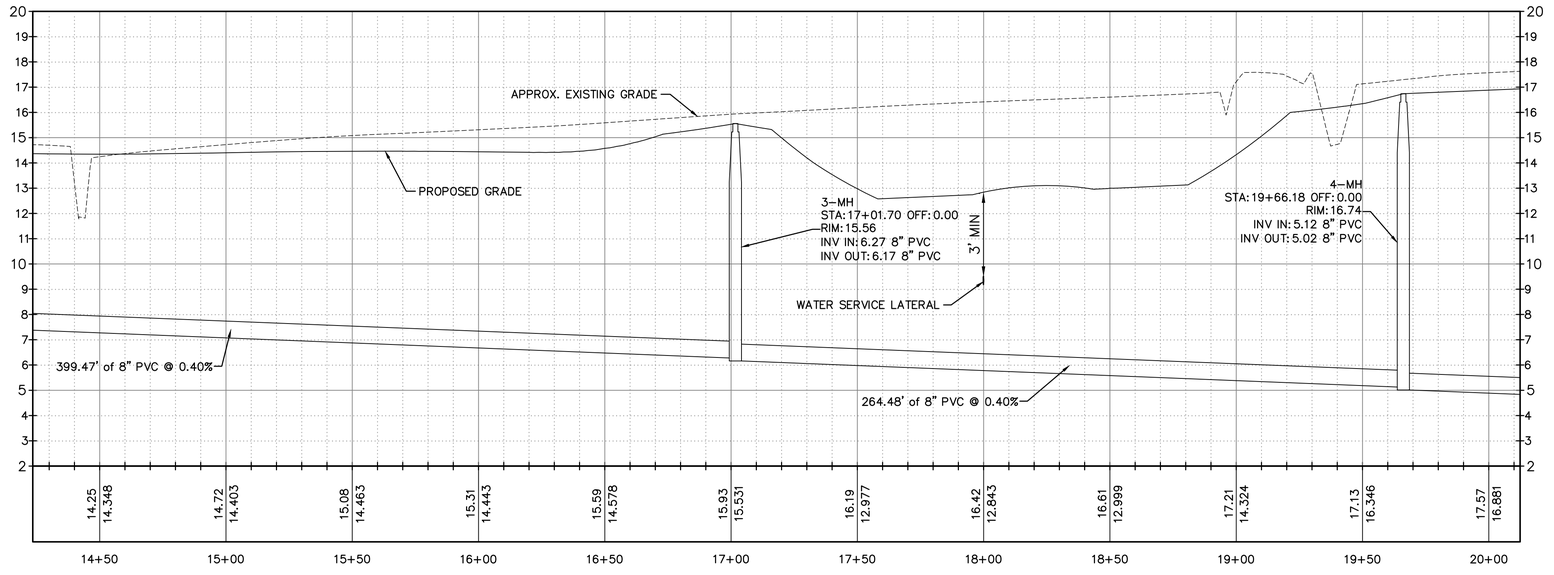
DRAWING SCALES SHOWN BASED ON 22"x34" DRAWING





NOTES:

1. CALL OUTS IN SXX REFER TO GSWSA STD DETAILS SHOWN ON SHEETS CU501 THRU CU506.
2. FOR GRAVITY SEWER INSTALLATION, SEE S10 FOR TRENCH AND WS7 FOR LOCATION.
3. FOR TYPICAL UTILITY EASEMENTS UTILIZED BY GSWSA FOR MAINTENANCE OF UTILITY, SEE WS15

SCALE: 1"=3' VERTICAL

SCALE: 1"=30' HORIZONTAL

ISSUED FOR BID
JANUARY 2020

GRAND STRAND WATER & SEWER AUTHORITY

Mark	Description	Date	Appr.
	ISSUED FOR BID	05/01/20	JJT

BUCKSPORT MARINE INDUSTRIAL PARK - PHASE 1

SANITARY SEWER UTILITY PLAN 2 OF 9

Rev. 0
Date: JANUARY 2020
M&N Project No. 7232-05
Drawing code:
Drawing Scale: AS SHOWN
Plot scale: 1:1 (0 SHEET)
Designed by: TRR
Dwn by: JT
Ckd by: TRR
Reviewed by:
Submitted by: MOFFATT & NICHOL

SOUTH CAROLINA LICENSED PROFESSIONAL ENGINEER TIMOTHY R. REED No.24067
SEAL 5-1-2020
SOUTH CAROLINA MOFFATT & NICHOL ENGINEERS No. 000363 CERTIFICATE OF AUTHORIZATION

4700 FALLS OF THE NEUSE ROAD
SUITE 300
RALEIGH, NC 27609
919-781-4626
SC COA No. 363
moffatt & nichol

Sheet Reference No.
CU111
INDEX: 73 OF 113

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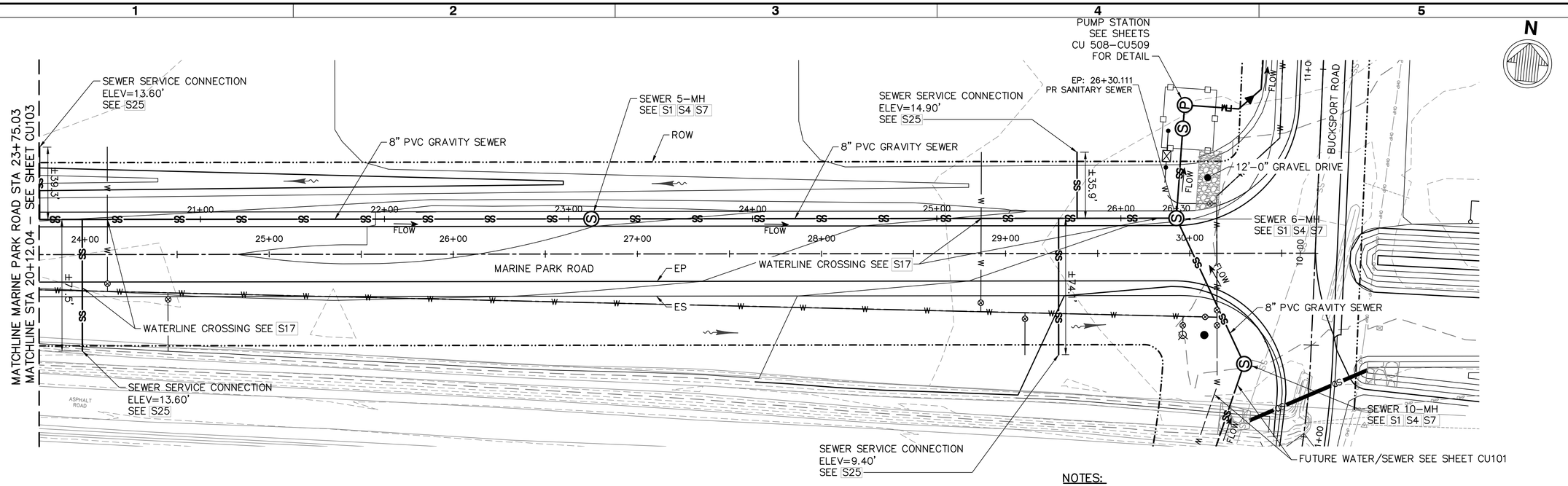
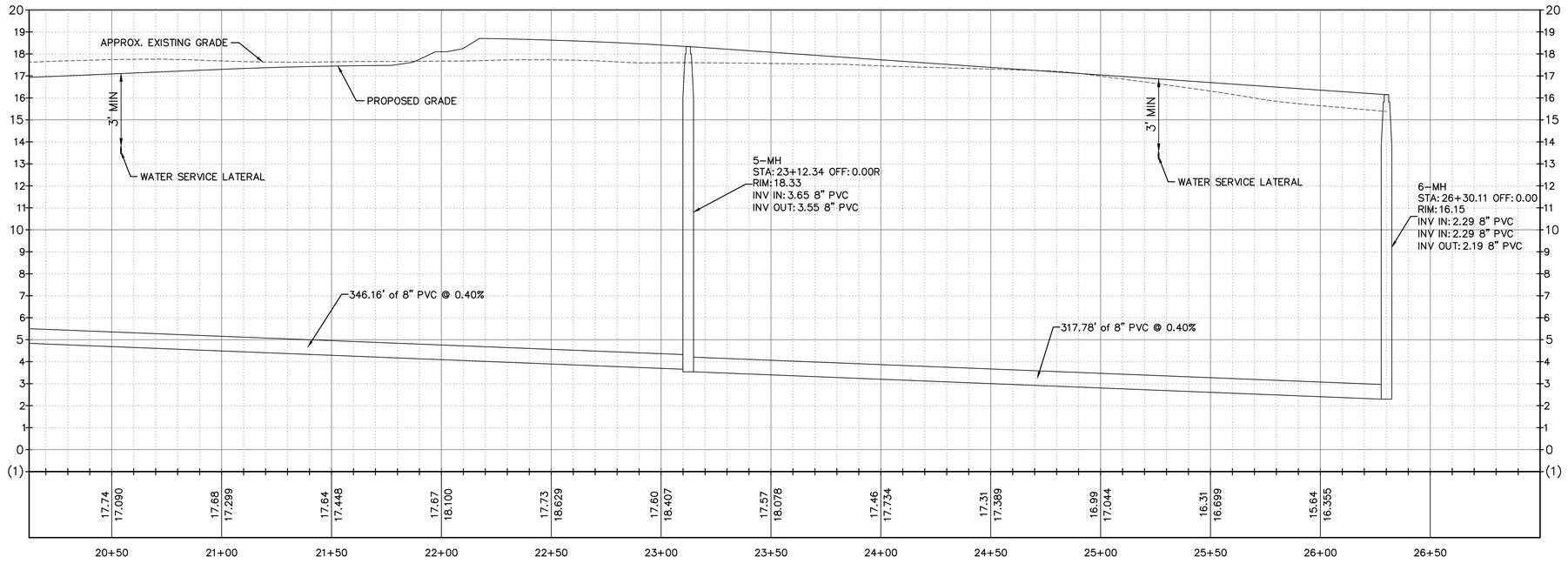
DRAWING SCALES SHOWN BASED ON 22"x34" DRAWING





NOTES:

1. CALL OUTS IN SXX REFER TO GSWSA STD DETAILS SHOWN ON SHEETS CU501 THRU CU506.
2. FOR GRAVITY SEWER INSTALLATION, SEE S10 FOR TRENCH AND WS7 FOR LOCATION.
3. FOR TYPICAL UTILITY EASEMENTS UTILIZED BY GSWSA FOR MAINTENANCE OF UTILITY, SEE WS15

3' 0' 3' 6'
SCALE: 1"=3' VERTICAL

30' 0' 30' 60'
SCALE: 1"=30' HORIZONTAL

ISSUED FOR BID
JANUARY 2020

GRAND STRAND WATER & SEWER AUTHORITY

Mark	Description	Date	Appr.
	ISSUED FOR BID	05/01/20	JJT

BUCKSPORT MARINE INDUSTRIAL PARK - PHASE 1

SANITARY SEWER UTILITY PLAN 3 OF 9

Designed by:	TRR
Dwn by:	JT
Ckd by:	TRR
Reviewed by:	
Submitted by:	MOFFATT & NICHOL
Date:	JANUARY 2020
M&N Project No.	7232–05
Drawing code:	
Drawing Scale:	AS SHOWN
Plot scale: 1:1 (0 SHEET)	
Rev.	0

SOUTH CAROLINA LICENSED PROFESSIONAL ENGINEER No.24067 TIMOTHY R. REID
SEAL 5-1-2020
SOUTH CAROLINA CERTIFICATE OF AUTHORIZATION MOFFATT & NICHOL ENGINEERS No. 000363

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Sheet Reference No.
CU112
INDEX: 74 OF 113

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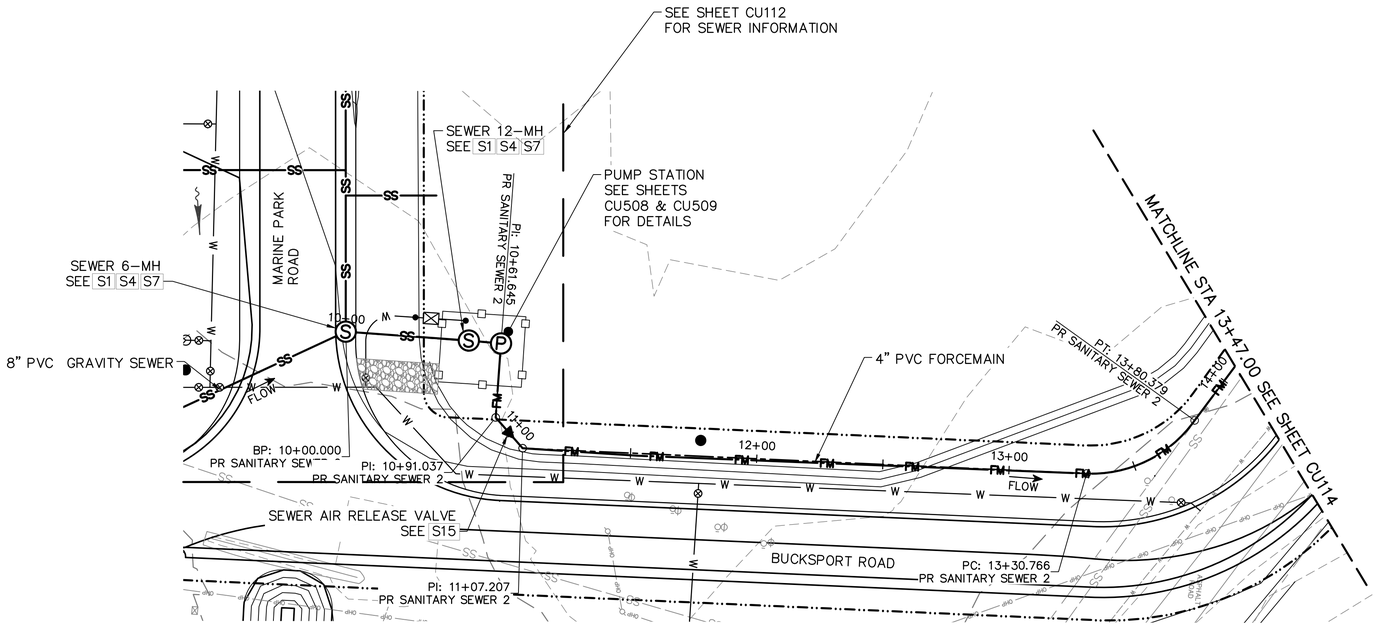
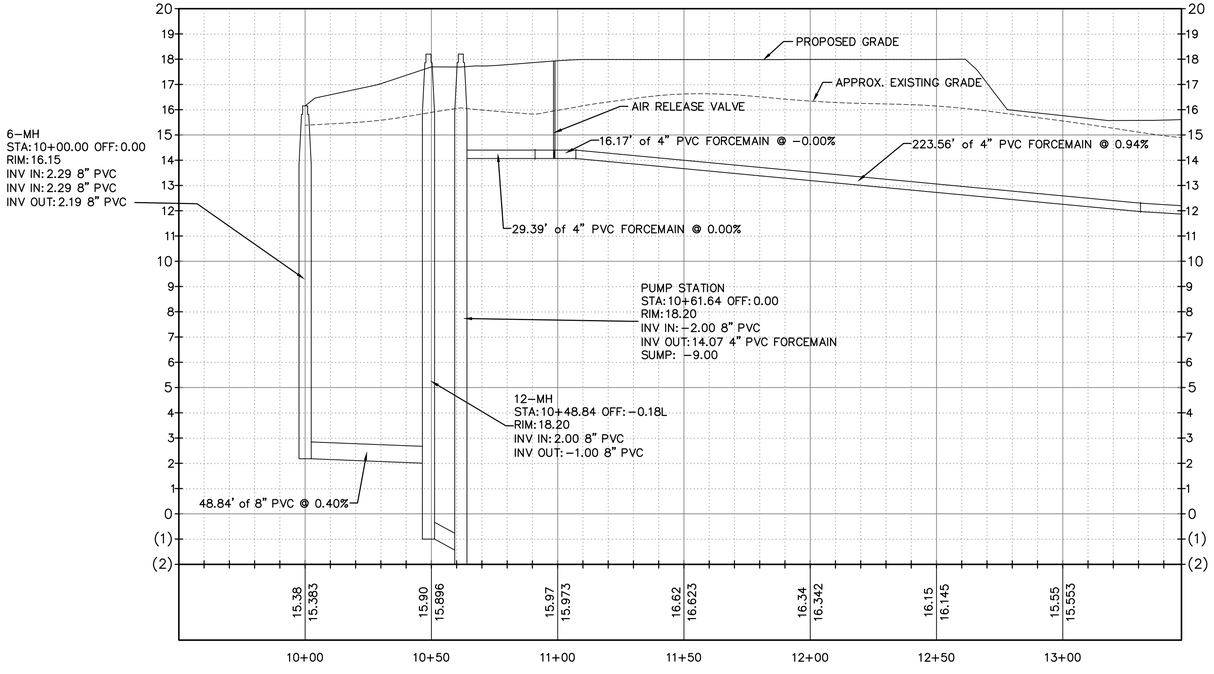
4/2020 2:36 PM by JTHIBODEAUX

DRAWING SCALES SHOWN BASED ON 22"x34" DRAWING





NOTES:

1. CALL OUTS IN SXX REFER TO GSWSA STD DETAILS SHOWN ON SHEETS CU501 THRU CU506.
2. FOR GRAVITY SEWER INSTALLATION, SEE S10 FOR TRENCH AND WS7 FOR LOCATION.
3. FOR TYPICAL UTILITY EASEMENTS UTILIZED BY GSWSA FOR MAINTENANCE OF UTILITY, SEE WS15
4. FOR FORCEMAIN FITTING AND JOINT RESTRAINT, SEE WS3

SCALE: 1"=3' VERTICAL

SCALE: 1"=30' HORIZONTAL

ISSUED FOR BID
JANUARY 2020

DRAWING SCALES SHOWN BASED ON 22"x34" DRAWING

GRAND STRAND WATER & SEWER AUTHORITY

Mark	Description	Date	Appr.
	ISSUED FOR BID	05/01/20	JJT

BUCKSPORT MARINE INDUSTRIAL PARK - PHASE 1

SANITARY SEWER UTILITY PLAN 4 OF 9

Rev.	0
Date:	JANUARY 2020
M&N Project No.	7232-05
Drawing code:	
Drawing Scale:	AS SHOWN
Plot scale: 1:1 (0 SHEET)	
Designed by:	TRR
Dwn by:	JT
Ckd by:	TRR
Reviewed by:	
Submitted by:	MOFFATT & NICHOL

SOUTH CAROLINA LICENSED PROFESSIONAL ENGINEER TIMOTHY R. REID No.24067

SEAL 5-1-2020

SOUTH CAROLINA MOFFATT & NICHOL ENGINEERS No. 000363 CERTIFICATE OF AUTHORIZATION

4700 FALLS OF THE NEUSE ROAD
SUITE 300
RALEIGH, NC 27609
919-781-4626

SC COA No. 363

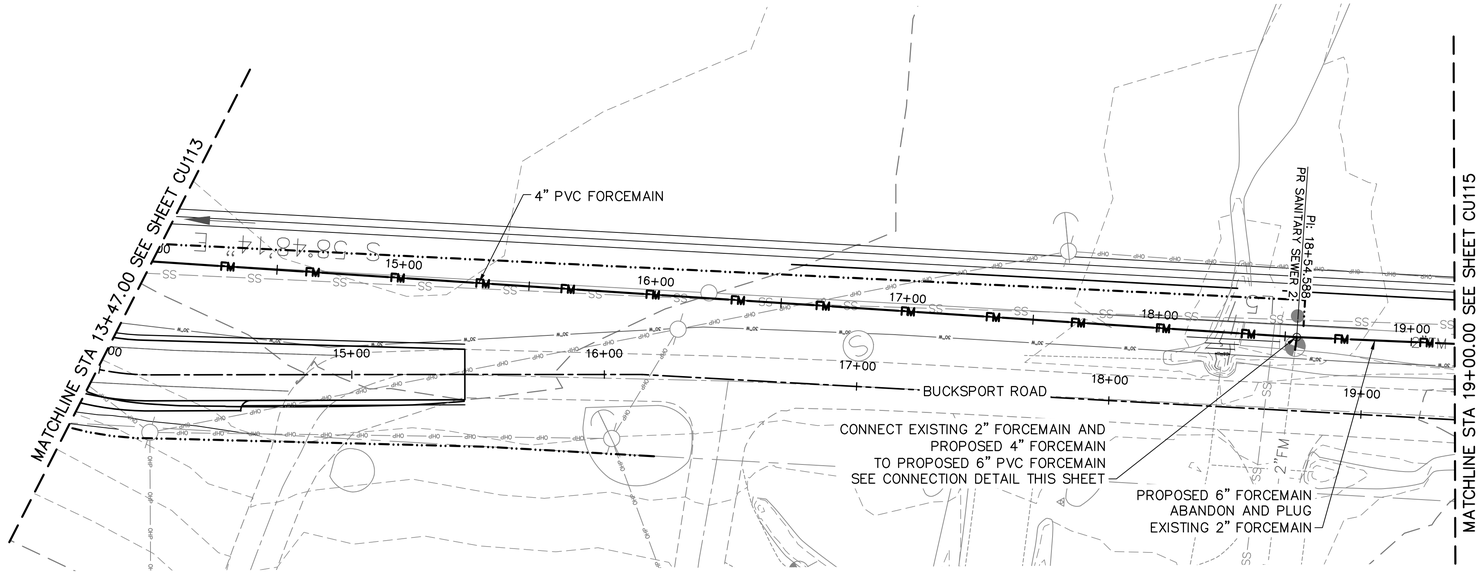
moffatt & nichol

Sheet Reference No.

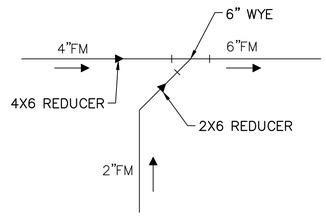
CU113

INDEX: 75 OF 113

File: Q:\RA\7232-05\CADD\Active_SheetSet\723205-CU113; Plotted: 4/29/2020 11:05 AM by JTHIBODEAUX
4/2020 2:36 PM by JTHIBODEAUX

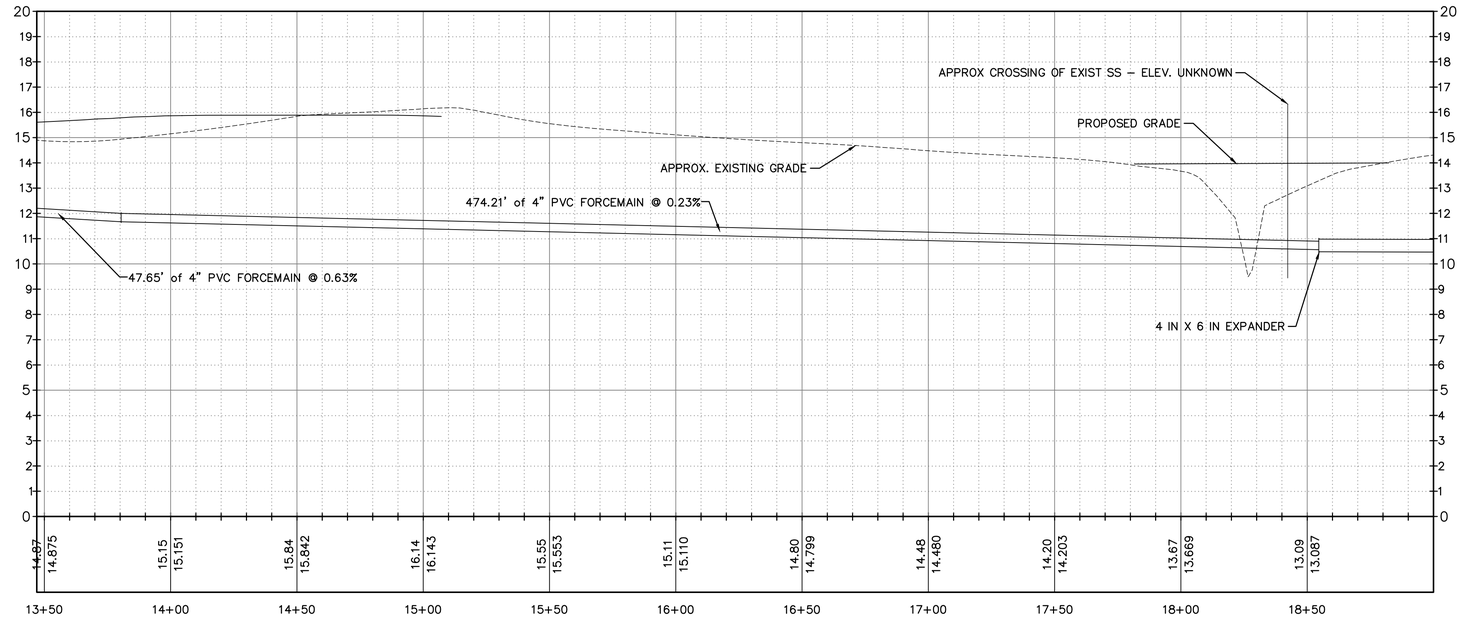


SANITARY CONNECTION DETAIL



NOTES:

1. CALL OUTS IN SXX REFER TO GSWSA STD DETAILS SHOWN ON SHEETS CU501 THRU CU506.
2. FOR GRAVITY SEWER INSTALLATION, SEE S10 FOR TRENCH AND WS7 FOR LOCATION.
3. FOR TYPICAL UTILITY EASEMENTS UTILIZED BY GSWSA FOR MAINTENANCE OF UTILITY, SEE WS15
4. FOR FORCEMAIN FITTING AND JOINT RESTRAINT, SEE WS3
5. EXISTING SEWER IS REQUIRED TO BE FIELD VERIFIED TO DETERMINE IF PROPOSED ALIGNMENT IS FEASIBLE.



3' 0' 3' 6'
SCALE: 1"=3' VERTICAL

30' 0' 30' 60'
SCALE: 1"=30' HORIZONTAL

ISSUED FOR BID
JANUARY 2020

GRAND STRAND WATER & SEWER AUTHORITY

Mark	Description	Date	Appr.
	ISSUED FOR BID	05/01/20	JJT

BUCKSPORT MARINE INDUSTRIAL PARK - PHASE 1

SANITARY SEWER UTILITY PLAN 5 OF 9

Designed by: TRR
Drawn by: JT
Ckd by: TRR
Reviewed by:
Submitted by: MOFFATT & NICHOL
Date: JANUARY 2020
M&N Project No. 7232-05
Drawing code:
Drawing Scale: AS SHOWN
Plot scale: 1:1 (D SHEET)
Rev. 0

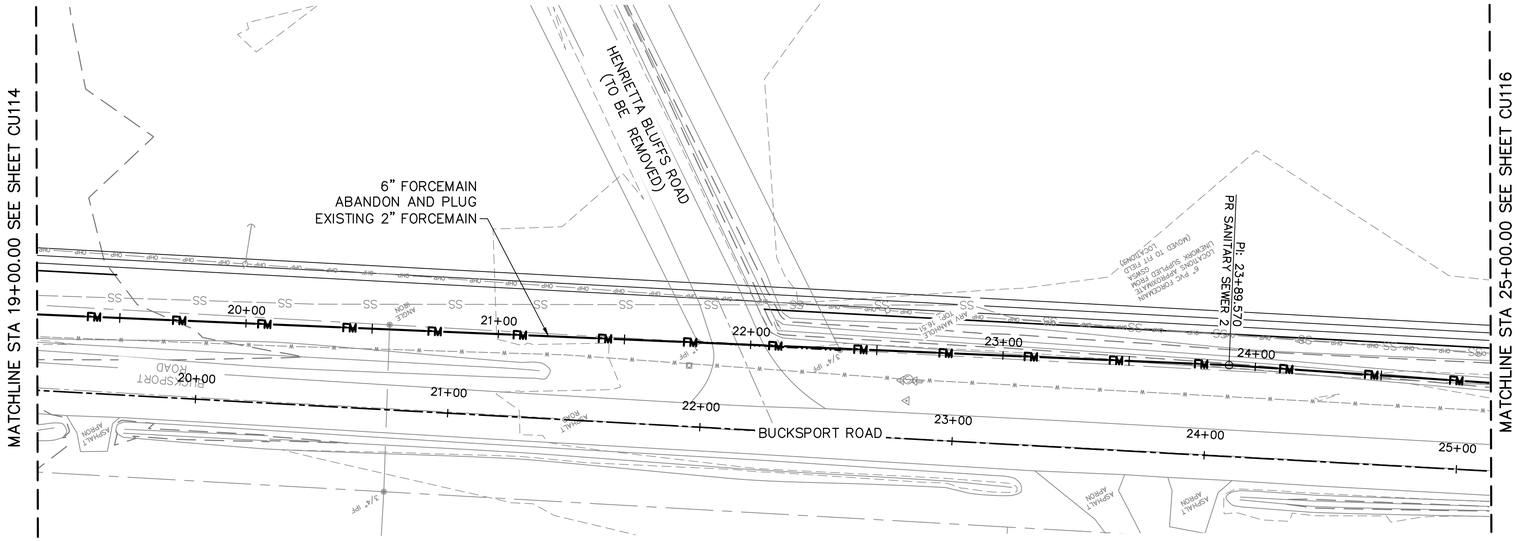
SOUTH CAROLINA LICENSED PROFESSIONAL ENGINEER No.24067 TIMOTHY R. REID
SEAL 5-1-2020
SOUTH CAROLINA CERTIFICATE OF AUTHORIZATION MOFFATT & NICHOL ENGINEERS No. 000363

4700 FALLS OF THE NEUSE ROAD
SUITE 300
RALEIGH, NC 27609
919-781-4626
SC COA No. 363
moffatt & nichol

Sheet Reference No.
CU114
INDEX: 76 OF 113

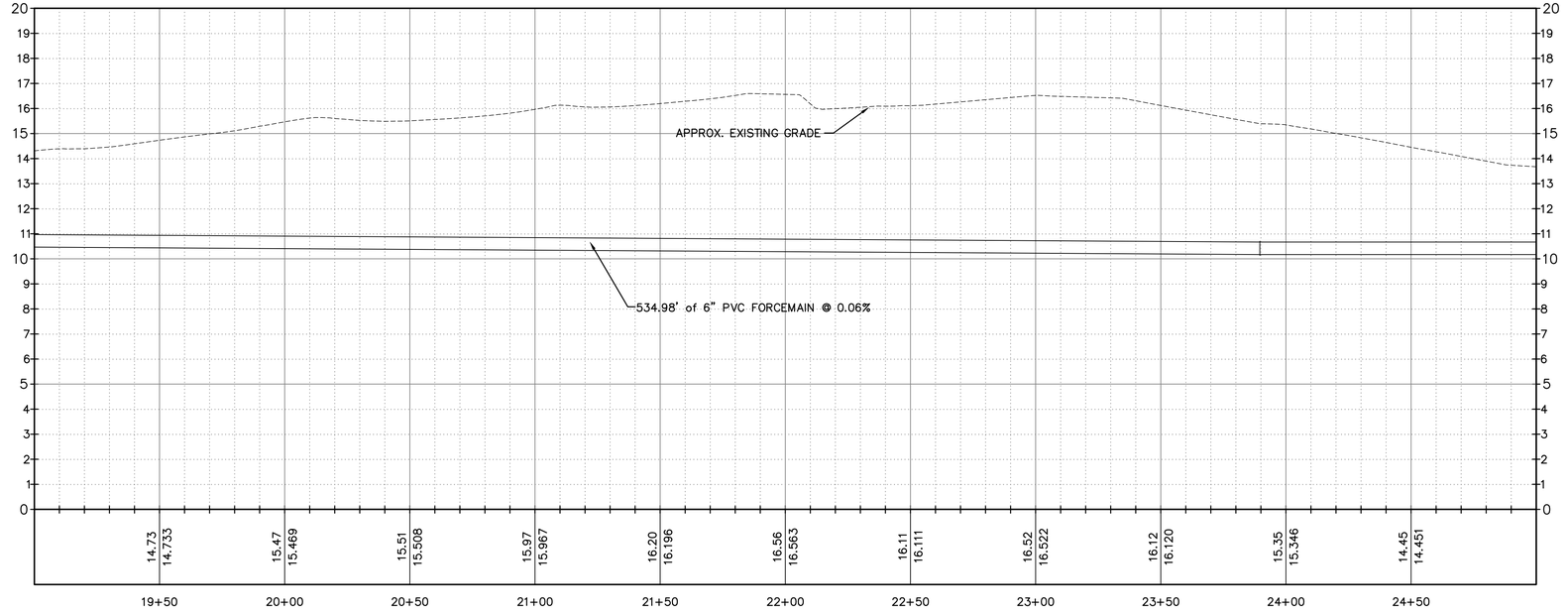
File: C:\PA\7232-05\CADD_Active_SheetSet\7232105-CU114; Plotted: 4/29/2020 11:05 AM by THIBODEAUX, JASON; Saved: 1/14/2020 2:37 PM by JTHIBODEAUX

DRAWING SCALES SHOWN BASED ON 22"x34" DRAWING



NOTES:

1. CALL OUTS IN SXX REFER TO GSWSA STD DETAILS SHOWN ON SHEETS CU501 THRU CU506.
2. FOR GRAVITY SEWER INSTALLATION, SEE S10 FOR TRENCH AND WS7 FOR LOCATION.
3. FOR TYPICAL UTILITY EASEMENTS UTILIZED BY GSWSA FOR MAINTENANCE OF UTILITY, SEE WS15
4. FOR FORCEMAIN FITTING AND JOINT RESTRAINT, SEE WS3



SCALE: 1"=3' VERTICAL

SCALE: 1"=30' HORIZONTAL

ISSUED FOR BID
JANUARY 2020

GRAND STRAND WATER & SEWER AUTHORITY

Mark	Description	Date	Appr.
	ISSUED FOR BID	05/01/20	JJT

BUCKSPORT MARINE INDUSTRIAL PARK - PHASE 1

SANITARY SEWER UTILITY PLAN 6 OF 9

Designed by: TRR
Drawn by: JT
Cad by: TRR
Reviewed by:
Submitted by: MOFFATT & NICHOL
Date: JANUARY 2020
M&N Project No. 7232-05
Drawing code:
Drawing Scale: AS SHOWN
Plot scale: 1:1 (0 SHEET)
Rev. 0

SOUTH CAROLINA LICENSED PROFESSIONAL ENGINEER No.24067 TIMOTHY R. REID
SEAL 5-1-2020
MOFFATT & NICHOL ENGINEERS No. 000363 SOUTH CAROLINA CERTIFICATE OF AUTHORIZATION

4700 FALLS OF THE NEUSE ROAD
SUITE 300
RALEIGH, NC 27609
919-781-4626
SC COA No. 363
moffatt & nichol

Sheet Reference No.
CU115
INDEX: 77 OF 113

DRAWING SCALES SHOWN BASED ON 22"x34" DRAWING

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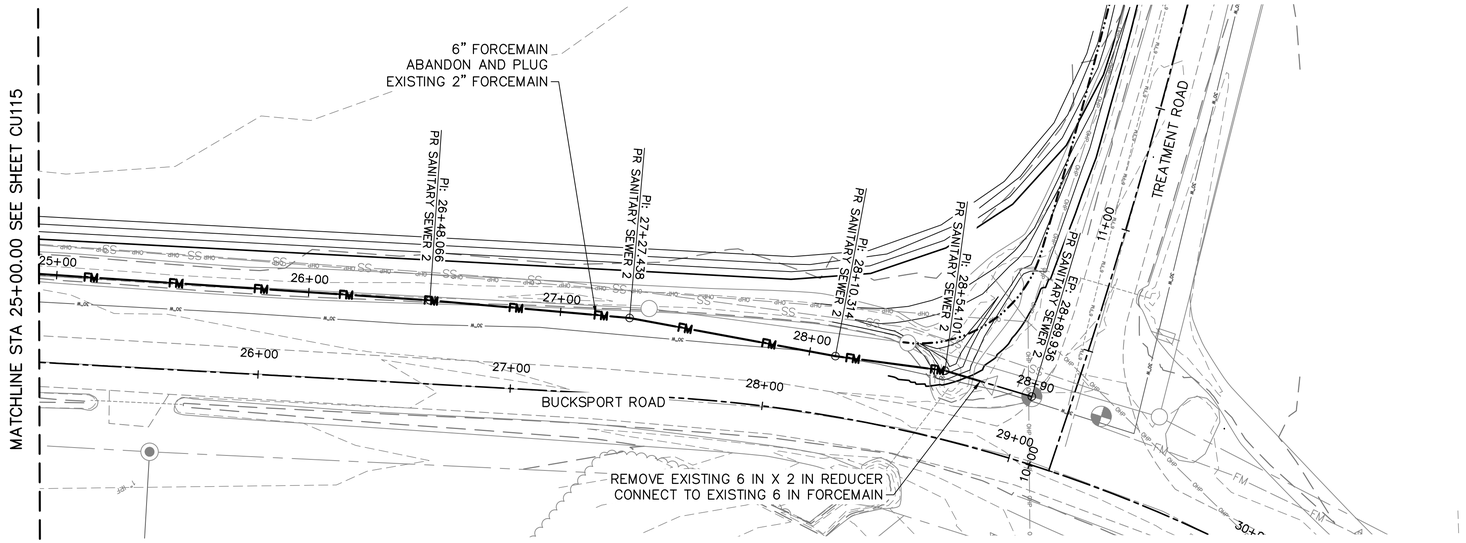

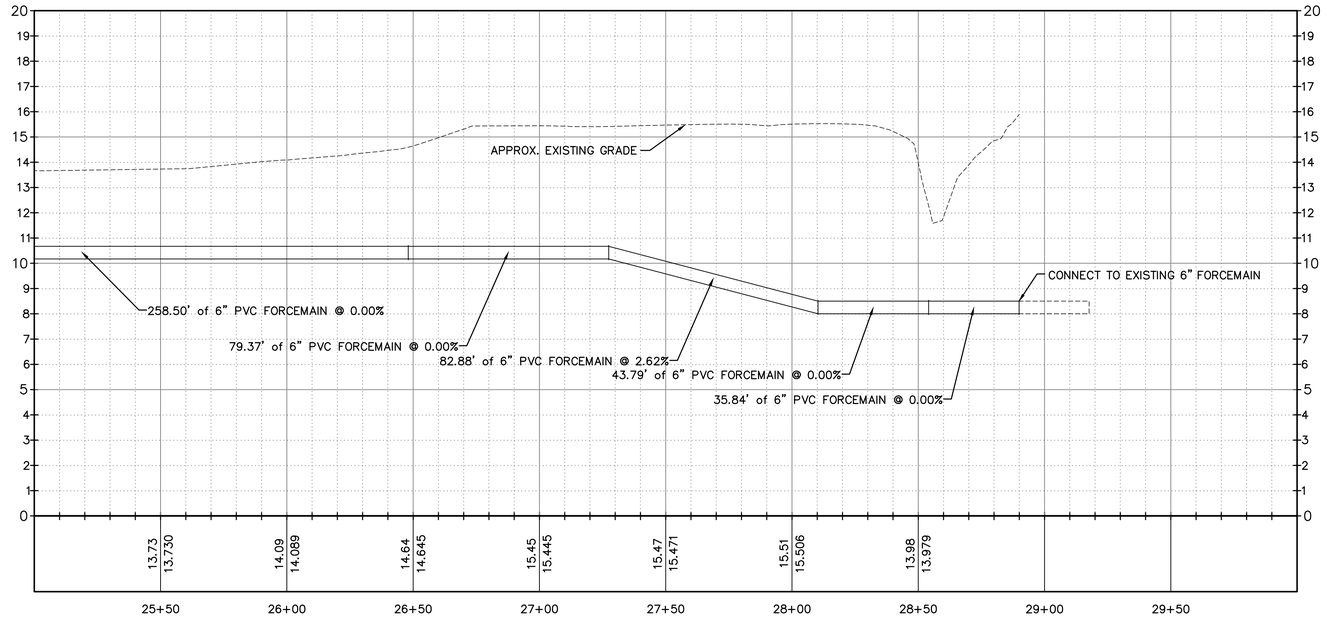

NOTES:

1. CALL OUTS IN SXX REFER TO GSWSA STD DETAILS SHOWN ON SHEETS CU501 THRU CU506.
2. FOR GRAVITY SEWER INSTALLATION, SEE S10 FOR TRENCH AND WS7 FOR LOCATION.
3. FOR TYPICAL UTILITY EASEMENTS UTILIZED BY GSWSA FOR MAINTENANCE OF UTILITY, SEE WS15
4. FOR FORCEMAIN FITTING AND JOINT RESTRAINT, SEE WS3

SCALE: 1"=3' VERTICAL

SCALE: 1"=30' HORIZONTAL

ISSUED FOR BID
JANUARY 2020

GRAND STRAND WATER & SEWER AUTHORITY

Mark	Description	Date	Appr.
	ISSUED FOR BID	05/01/20	JJT

BUCKSPORT MARINE INDUSTRIAL PARK - PHASE 1

SANITARY SEWER UTILITY PLAN 7 OF 9

Rev.	0
Date:	JANUARY 2020
M&N Project No.	7232-05
Drawing code:	
Drawing Scale:	AS SHOWN
Plot scale: 1:1 (0 SHEET)	
Designed by:	TRR
Dwn by:	JT
Ckd by:	TRR
Reviewed by:	
Submitted by:	MOFFATT & NICHOL

SOUTH CAROLINA LICENSED PROFESSIONAL ENGINEER TIMOTHY R. REID No.24067

SEAL 5-1-2020

MOFFATT & NICHOL ENGINEERS No. 000363 SOUTH CAROLINA CERTIFICATE OF AUTHORIZATION

4700 FALLS OF THE NEUSE ROAD
SUITE 300
RALEIGH, NC 27609
919-781-4626

SC COA No. 363

moffatt & nichol

Sheet Reference No.

CU116

INDEX: 78 OF 113

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4/2020 2:38 PM by JTHIBODEAUX

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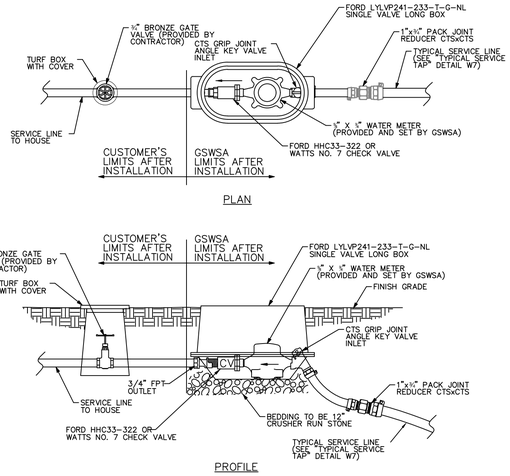
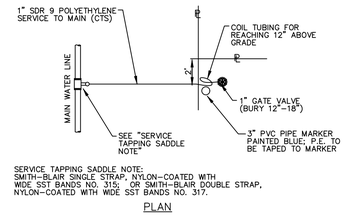


TYPICAL METER BOX 1

W1

LATEST REVISION:
10/29/2014 DRT CORRECTED METER BOX SPECIFICATIONS

TYPICAL WATER SERVICE DETAIL FOR FUTURE CUSTOMER CONNECTIONS (FOR GSWSA RURAL & CAPITAL PROJECTS ONLY)
WATER ONLY
UPDATED: 10/29/2014
W1
GRAND STRAND WATER & SEWER AUTHORITY



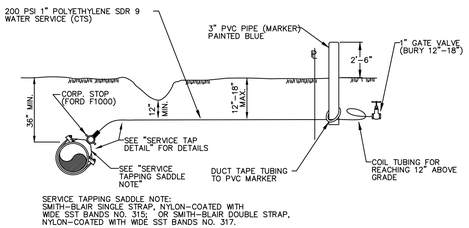
SERVICE TAPPING SADDLE NOTE:
SMITH-BLAIR SINGLE STRAP, NYLON-COATED WITH WIDE SST BANDS NO. 315; OR SMITH-BLAIR DOUBLE STRAP, NYLON-COATED WITH WIDE SST BANDS NO. 317.

PLAN

TYPICAL SINGLE SERVICE CONNECTION FOR FUTURE CUSTOMER CONNECTIONS (FOR DEVELOPER PROJECTS ONLY)

W5

TYPICAL SINGLE SERVICE CONNECTION FOR FUTURE CUSTOMER CONNECTIONS (FOR DEVELOPER PROJECTS ONLY)
WATER ONLY
UPDATED: 6/26/02
W5
GRAND STRAND WATER & SEWER AUTHORITY

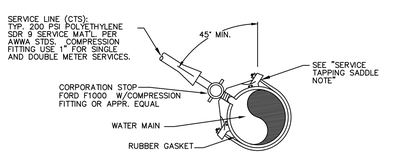


SERVICE TAPPING SADDLE NOTE:
SMITH-BLAIR SINGLE STRAP, NYLON-COATED WITH WIDE SST BANDS NO. 315; OR SMITH-BLAIR DOUBLE STRAP, NYLON-COATED WITH WIDE SST BANDS NO. 317.

TYPICAL WATER SERVICE DETAIL FOR FUTURE CUSTOMER CONNECTIONS (FOR DEVELOPER PROJECTS ONLY)

W6

TYPICAL WATER SERVICE DETAIL FOR FUTURE CUSTOMER CONNECTIONS (FOR DEVELOPER PROJECTS ONLY)
WATER ONLY
UPDATED: 6/26/02
W6
GRAND STRAND WATER & SEWER AUTHORITY



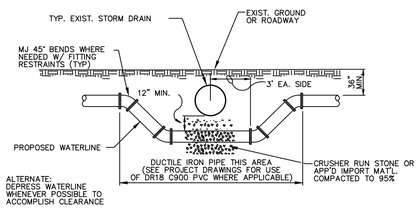
SERVICE TAPPING SADDLE NOTE:
SMITH-BLAIR SINGLE STRAP, NYLON-COATED WITH WIDE SST BANDS NO. 315; OR SMITH-BLAIR DOUBLE STRAP, NYLON-COATED WITH WIDE SST BANDS NO. 317.

TYPICAL SERVICE TAP

W7

LATEST REVISION:
8/28/06 DRT CHANGED "IPS" TO "CTS" SERVICE LINE

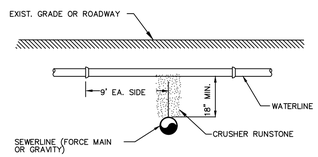
TYPICAL SERVICE TAP
WATER ONLY
UPDATED: 08/28/06
W7
GRAND STRAND WATER & SEWER AUTHORITY



TYPICAL STORM DRAIN CROSSING

W8

TYPICAL STORM DRAIN CROSSING
WATER ONLY
UPDATED: 5/13/02
W8
GRAND STRAND WATER & SEWER AUTHORITY



TYPICAL SEWERLINE CROSSING

W9

TYPICAL SEWERLINE CROSSING
WATER ONLY
UPDATED: 2/16/98
W9
GRAND STRAND WATER & SEWER AUTHORITY

ISSUED FOR BID
JANUARY 2020

GRAND STRAND WATER & SEWER AUTHORITY

Mark	Description	Date	Appr.
	ISSUED FOR BID	05/01/20	JJT

BUCKSPORT MARINE INDUSTRIAL PARK - PHASE 1

STANDARD WATER DETAILS SHEET 1 OF 2

Rev. 0
Date: JANUARY 2020
M&N Project No. 7232-05
Drawing code:
Drawing Scale: AS SHOWN
Plot scale: 1:1 (0 SHEET)
Designed by: TRR
Dwn by: JT
Ckd by: TRR
Reviewed by:
Submitted by: MOFFATT & NICHOL

SEAL
SOUTH CAROLINA
MOFFATT & NICHOL ENGINEERS No. 000363
CERTIFICATE OF AUTHORIZATION

4700 FALLS OF THE NEUSE ROAD
SUITE 300
RALEIGH, NC 27609
919-781-4626
SC COA No. 363
moffatt & nichol

Sheet Reference No.
CU501
INDEX: 79 OF 113

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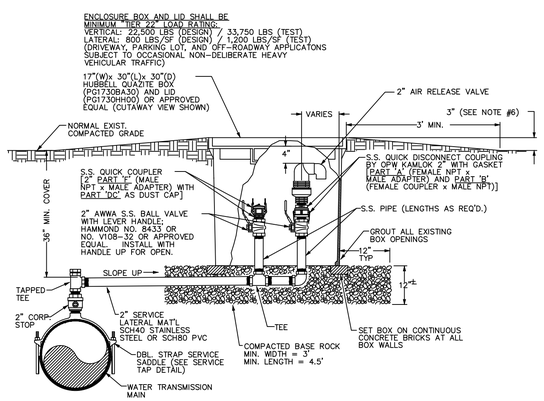
DRAWING SCALES SHOWN BASED ON 22"x34" DRAWING

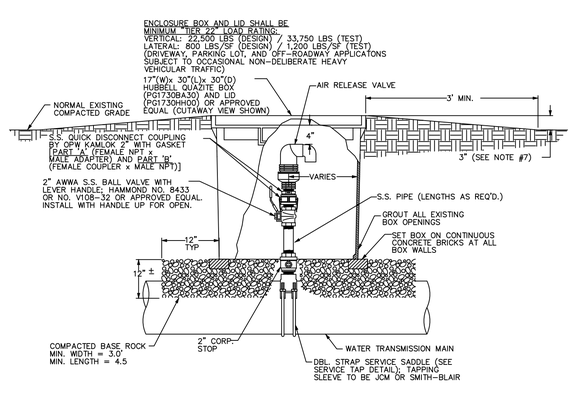


NOTES:
1) AIR RELEASE VALVE SHALL BE INSTALLED ON THE HIGH POINT OF WATER MAIN.
2) ALL MATERIALS & EQUIPMENT TO BE PER AWWA SPEC'S.
3) AIR RELEASE SHALL BE VALMATIC NO. 38, A.R.I. MODEL D-040.2 OR APPROVED EQUAL
4) CORP. STOP, PIPING, FITTINGS, AND VALVES TO BE SAME DIAMETER AS AIR RELEASE VALVE INLET.
5) LIMIT OF PAY ITEMS INCLUDES SERVICE SADDLE.
6) ARV ASSEMBLIES INSTALLED IN ROAD RIGHTS-OF-WAY MUST BE FLUSH WITH EXISTING SHOULDER GRADE. INSTALLATIONS IN EASEMENT AREAS SHALL BE RAISED ABOVE EXISTING GRADE AS SHOWN IN DETAIL.
7) 2" TEE, NIPPLE & BALL VALVE TO BE STD AWWA OR APPROVED EQUAL. NIPPLES & BALL VALVES SHALL BE STAINLESS STEEL.

TYPICAL AIR RELEASE VALVE ASSEMBLY
W12

LATEST REVISION:
07/18/08 DRT DESCRIBED PARTS 'A' & 'B' FOR A.R.V. QUICK DISCONNECT AND CHANGED PART 'A' TO PART 'F' FOR OTHER QUICK DISCONNECT. REMOVED NOTE FOR STABILITY BLOCKING INSIDE BOX. CHANGED ENCLOSURE SUPPLIER FROM STRONGWELL TO HUBBELL.
12/02/2013 DRT CHANGED LID TO "HH" (TIER 22) AND ADDED NOTE FOR TIER 22 ENCLOSURE BOX AND LID.

TYPICAL AIR RELEASE VALVE ASSEMBLY
WATER ONLY
UPDATED: 12/02/2013
W12
GRAND STRAND WATER & SEWER AUTHORITY

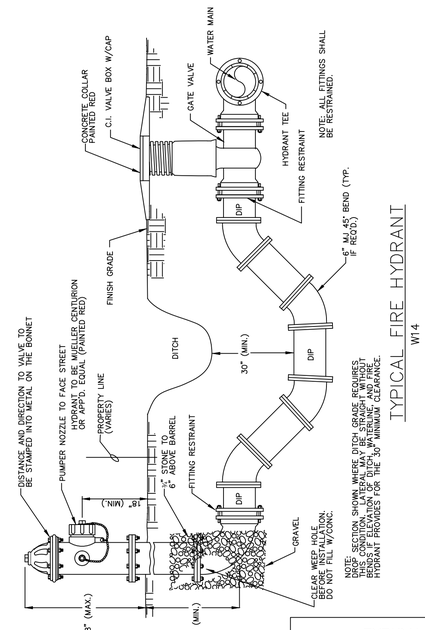


NOTES:
1) AIR RELEASE VALVE SHALL BE INSTALLED ON THE HIGH POINT OF WATER MAIN.
2) ALL MATERIALS & EQUIPMENT TO BE PER AWWA SPEC'S.
3) AIR RELEASE SHALL BE A.R.I. MODEL D-040.2
4) CORPORATION STOP, S.S. PIPE, FITTINGS, AND PIPING TO BE SAME DIAMETER AS AIR RELEASE VALVE INLET.
5) AIR RELEASE VALVES MUST BE NSF APPROVED.
6) LIMIT OF PAY ITEMS INCLUDES SERVICE SADDLE.
7) ARV ASSEMBLIES INSTALLED IN ROAD RIGHTS-OF-WAY MUST BE FLUSH WITH EXISTING SHOULDER GRADE; INSTALLATIONS IN EASEMENT AREAS SHALL BE RAISED ABOVE EXISTING GRADE AS SHOWN IN DETAIL.

TYPICAL AIR RELEASE VALVE ASSEMBLY
W13

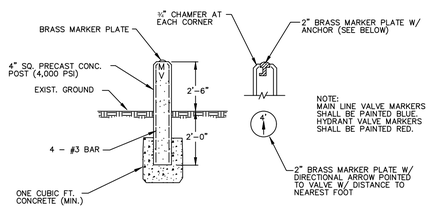
LATEST REVISION:
07/18/08 DRT DESCRIBED PARTS 'A' & 'B' FOR QUICK DISCONNECT. REMOVED NOTE FOR STABILITY BLOCKING INSIDE BOX. CHANGED ENCLOSURE SUPPLIER FROM STRONGWELL TO HUBBELL.
12/02/2013 DRT CHANGED LID TO "HH" (TIER 22) AND ADDED NOTE FOR TIER 22 ENCLOSURE BOX AND LID.

TYPICAL AIR RELEASE VALVE ASSEMBLY
WATER ONLY
UPDATED: 12/02/2013
W13
GRAND STRAND WATER & SEWER AUTHORITY



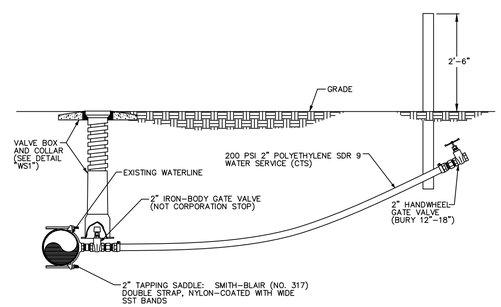
TYPICAL FIRE HYDRANT
W14

TYPICAL FIRE HYDRANT
WATER ONLY
UPDATED: 8/13/01
W14
GRAND STRAND WATER & SEWER AUTHORITY



TYPICAL CONCRETE VALVE MARKER
W17

TYPICAL CONCRETE VALVE MARKER
WATER ONLY
UPDATED: 5/13/02
W17
GRAND STRAND WATER & SEWER AUTHORITY



ELEVATION

TYPICAL WATER SERVICE DETAIL FOR 1 1/2" – 2" METER SERVICES (FOR DEVELOPER PROJECTS ONLY)
W20

LATEST REVISION:
02/02/2010 DRT 2" HANDWHEEL G.V. TO BE BURIED RATHER THAN LEFT ABOVE GROUND.

TYPICAL WATER SERVICE DETAIL FOR 1 1/2" – 2" METER SERVICES (FOR DEVELOPER PROJECTS ONLY)
WATER ONLY
UPDATED: 02/02/2010
W20
GRAND STRAND WATER & SEWER AUTHORITY

ISSUED FOR BID
JANUARY 2020

DRAWING SCALES SHOWN BASED ON 22"x34" DRAWING

GRAND STRAND WATER & SEWER AUTHORITY

Mark	Description	Date	Appr.
	ISSUED FOR BID	05/01/20	JJT

BUCKSPORT MARINE INDUSTRIAL PARK - PHASE 1

STANDARD WATER DETAILS SHEET 2 OF 2

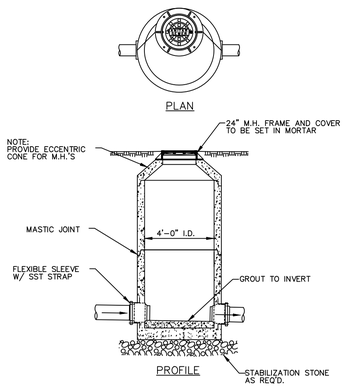
Rev.	0
Date:	JANUARY 2020
Designed by:	TRR
Dwn by:	JT
Ckd by:	TRR
Reviewed by:	
M&N Project No.	7232-05
Drawing code:	
Drawing Scale:	AS SHOWN
Plot scale: 1:1 (0 SHEET)	
Submitted by:	MOFFATT & NICHOL

SEAL
SOUTH CAROLINA CERTIFICATE OF AUTHORIZATION
MOFFATT & NICHOL ENGINEERS No. 000363

4700 FALLS OF THE NEUSE ROAD
SUITE 300
RALEIGH, NC 27609
919-781-4626
SC COA No. 363
moffatt & nichol

Sheet Reference No.
CU502
INDEX: 80 OF 113

File: Q:\RA\7232-05\CADD_Active_Sheet(Set) 7232005-CU502; Plotted: 4/29/2020 11:07 AM by THIBODEAUX, JASON; Saved: 1/14/2020 2:39 PM by JTHIBODEAUX

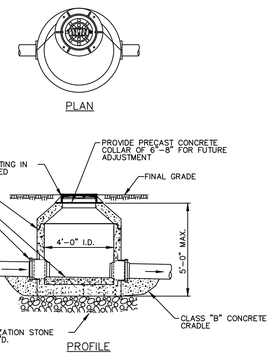


TYPICAL SECTION OF PRECAST SANITARY MANHOLE

S1

LATEST REVISION:
07/6/2012 DRT REMOVED STEPS AND NOTES REFERRING TO STEPS.

TYPICAL SECTION OF PRECAST SANITARY MANHOLE	
SEWER ONLY UPDATED: 7/6/2012	S1
GRAND STRAND WATER & SEWER AUTHORITY	

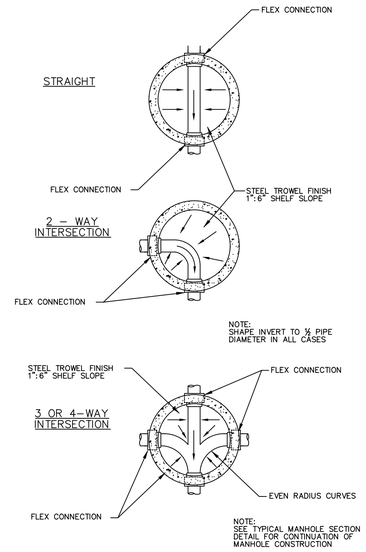


TYPICAL SECTION OF PRECAST SANITARY SEWER SHALLOW MANHOLE

S3

LATEST REVISION:
07/6/2012 DRT REMOVED STEPS AND NOTES REFERRING TO STEPS.

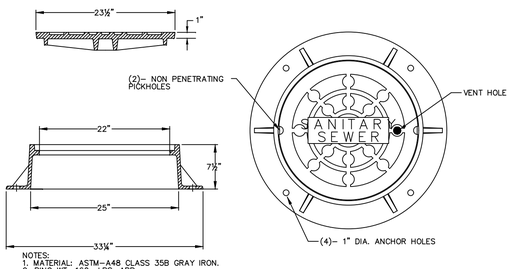
TYPICAL SECTION OF PRECAST SANITARY SEWER SHALLOW MANHOLE	
SEWER ONLY UPDATED: 7/6/2012	S3
GRAND STRAND WATER & SEWER AUTHORITY	



TYPICAL MANHOLE INVERTS

S4

TYPICAL MANHOLE INVERTS	
SEWER ONLY UPDATED: 12/26/97	S4
GRAND STRAND WATER & SEWER AUTHORITY	



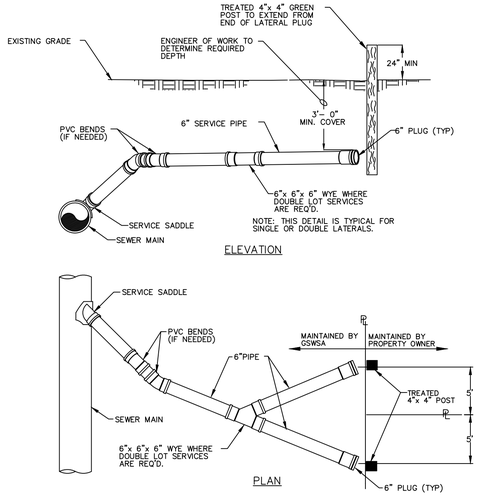
NOTES:
1. MATERIAL: ASTM–A48 CLASS 35B GRAY IRON.
2. RING WT: 160 LBS. APP.
3. COVER WT: 125 LBS. APP.
4. POLYETHYLENE (H.D.P.E.) ADJUSTING RINGS AS MANUFACTURED BY LADTECH, INC. MAY BE USED FOR LEVELING AND FINAL GRADE OF MANHOLE FRAME AND COVER.
5. USE U.S. FOUNDRY 668–KL–1 "VENT" FRAME AND COVER OR APPROVED EQUAL.

TYPICAL MANHOLE FRAME & COVER

S7

LATEST REVISION:
10/21/08 DRT CHANGED LETTERING FROM "S" TO "SANITARY SEWER" ON MANHOLE COVER

TYPICAL MANHOLE FRAME & COVER	
SEWER ONLY UPDATED: 10/21/2008	S7
GRAND STRAND WATER & SEWER AUTHORITY	

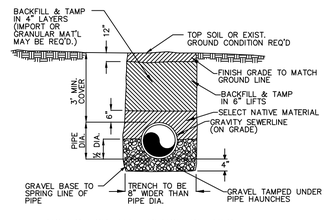


TYPICAL SEWER SERVICE CONNECTION

S8

LATEST REVISION:
08/28/06 DRT ADDED THE WORD "GREEN" FOR 4"x 4" POST MARKER
DESCRIPTION.

TYPICAL SEWER SERVICE CONNECTION	
SEWER ONLY UPDATED: 08/28/06	S8
GRAND STRAND WATER & SEWER AUTHORITY	



NOTES FOR ALL TRENCH DETAILS

1. TRENCH SHALL BE BACKFILLED AND THOROUGHLY TAMPED WITH SUITABLE MATERIAL TO LEVEL OF STONE. STONE & PAV'T TO BE PLACED BY CONTR. WITH LEAST INTERFERENCE WITH TRAFFIC.
2. ALL CONSTRUCTION TO BE INSPECTED AND APPROVED BY LOCAL COUNTY OR STATE ROAD DEPT.
3. CONTRACTOR IS RESPONSIBLE FOR NOTIFICATION AND OBTAINING INSPECTION.
4. GRAVEL BASE SHALL BE 4" MIN., AND EXTEND UP TO SPRING LINE OF PIPE. GRAVEL SHALL NOT EXCEED ? DIA.

TYPICAL TRENCH SECTION IN NATIVE GROUND CONDITION FOR GRAVITY SEWERLINE

S10

LATEST REVISION:
08/28/06 DRT CORRECTED TO SHOW 4" OF GRAVEL FROM TRENCH BOTTOM TO BOTTOM OF PIPE.

TYPICAL TRENCH SECTION IN NATIVE GROUND CONDITION FOR GRAVITY SEWERLINE	
SEWER ONLY UPDATED: 08/28/06	S10
GRAND STRAND WATER & SEWER AUTHORITY	

ISSUED FOR BID
JANUARY 2020

GRAND STRAND WATER & SEWER AUTHORITY

Mark	Description	Date	Appr.
	ISSUED FOR BID	05/01/20	JJT

BUCKSPORT MARINE INDUSTRIAL PARK - PHASE 1

STANDARD SEWER DETAILS SHEET 1 OF 2

Designed by: TRR	Date: JANUARY 2020
Dwn by: JT	Chd by: TRR
Reviewed by:	Drawing code:
Submitted by: MOFFATT & NICHOL	M&N Project No. 7232–05
Drawing Scale: AS SHOWN Plot scale: 1:1 (0 SHEET)	Rev. 0

SEAL

SOUTH CAROLINA MOFFATT & NICHOL ENGINEERS No. 000363 CERTIFICATE OF AUTHORIZATION

4700 FALLS OF THE NEUSE ROAD
SUITE 300
RALEIGH, NC 27609
919–781–4626

SC COA No. 363

moffatt & nichol

Sheet Reference No.

CU503

INDEX: 81 OF 113

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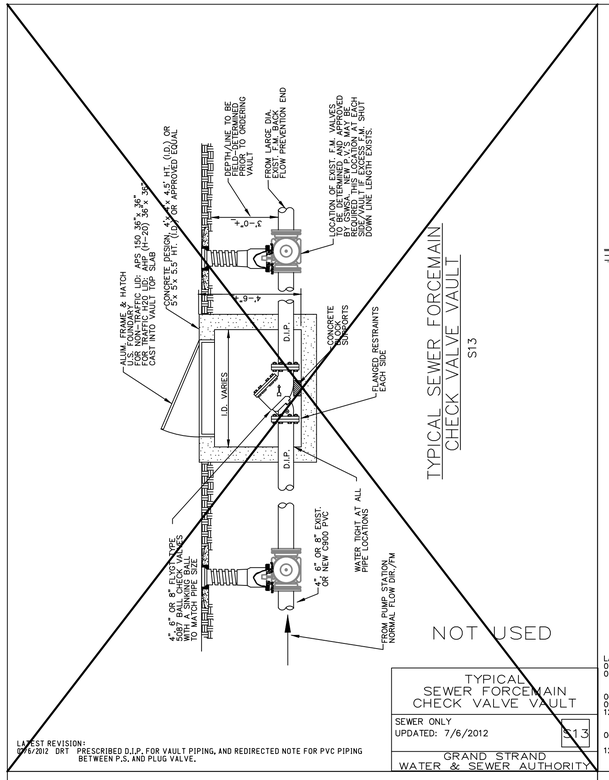


TYPICAL SEWER FORCEMAIN
CHECK VALVE VAULT
S13

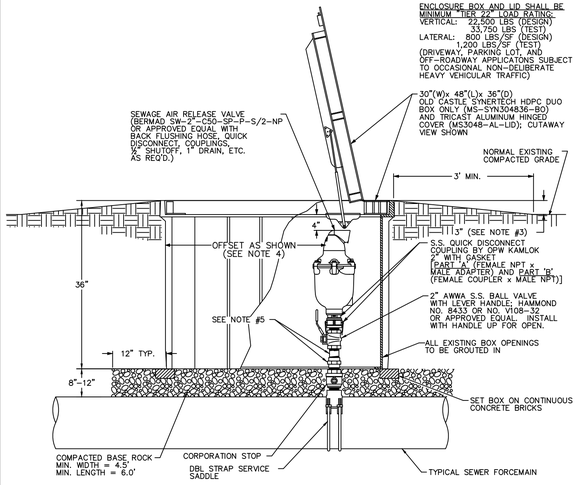
NOT USED

LATEST REVISION:
05/6/2012 DRT PRESCRIBED D.I.P. FOR VAULT PIPING, AND REDIRECTED NOTE FOR PVC PIPING BETWEEN P.S. AND PLUG VALVE.

TYPICAL
SEWER FORCEMAIN
CHECK VALVE VAULT

SEWER ONLY
UPDATED: 7/6/2012 S13

GRAND STRAND
WATER & SEWER AUTHORITY



NOTES:
1) USE AN APPROVED JOINT COMPOUND ON ALL THREADED CONNECTIONS.
2) ROTATION & LOCATION OF BOX SETTING TO BE APPROVED BY THE INSPECTOR PRIOR TO INSTALLATION.
3) ARV ASSEMBLIES INSTALLED IN ROAD RIGHTS-OF-WAY MUST BE FLUSH WITH EXISTING SHOULDER GRADE. INSTALLATIONS IN EASEMENT AREAS SHALL BE RAISED ABOVE EXISTING GRADE AS SHOWN IN DETAIL.
4) ARV ASSEMBLY SHOULD BE OFFSET TO ONE SIDE OF THE BOX AS SHOWN TO ALLOW EASIER ACCESS TO QUICK DISCONNECT AND BALL VALVE HANDLE.
5) 2" S.S. NIPPLES AND COUPLINGS SHALL BE USED IF NEEDED.

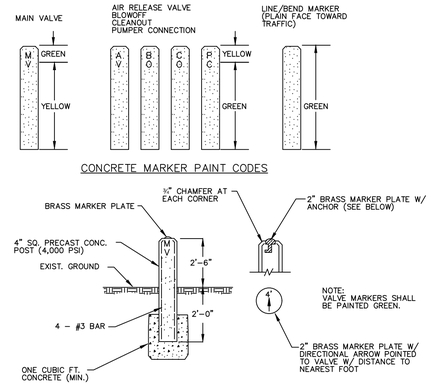
TYPICAL SEWER FORCEMAIN
AIR RELEASE VALVE ASSEMBLY
S15

LATEST REVISION:
07/18/2008 DRT DESCRIBED PARTS 'A' & 'B' FOR QUICK DISCONNECT.
07/08/2008 DRT SPECIFIED LARGER ENCLOSURE AND CHANGED SUPPLIER FROM STRONGWELL TO HUBBELL. REMOVED NOTE FOR STABILITY BLOCKING INSIDE.
06/28/2013 DRT CHANGED QUAZITE BOX LID SPECIFICATION.
09/10/2013 DRT CHANGED QUAZITE BOX SPECIFICATION (DEPTH).
12/02/2013 DRT CHANGED LID TO "HH" (TIER 22) AND ADDED NOTE FOR TIER 22 ENCLOSURE BOX AND LID. DELETED "H12 LOADING LID REQUIRED" NOTE.
06/01/2018 DRT CHANGED BOX (OLD CASTLE SYNERTECH) AND LID (TRICAST ALUMINUM HINGED COVER) SPECIFICATIONS.
12/17/2018 DRT CHANGED ARV TO "BERMAD SW-2"-C50-SP-P-S/2-NP OR APPROVED EQUAL."

TYPICAL
SEWER FORCEMAIN
AIR RELEASE VALVE ASSEMBLY

SEWER ONLY
UPDATED: 12/17/2018 S15

GRAND STRAND
WATER & SEWER AUTHORITY



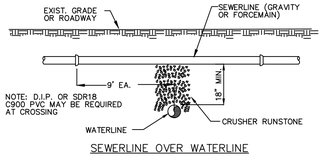
CONCRETE MARKER PAINT CODES

TYPICAL CONCRETE MARKERS
(VALVE, ARV, BLOWOFF, CLEANOUT, PUMPER CONNECTION, LINE/BEND)
S16

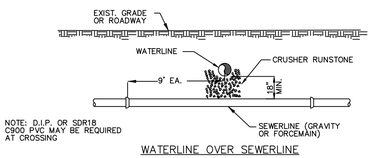
TYPICAL
CONCRETE MARKERS

SEWER ONLY
UPDATED: 5/13/02 S16

GRAND STRAND
WATER & SEWER AUTHORITY



SEWERLINE OVER WATERLINE



WATERLINE OVER SEWERLINE

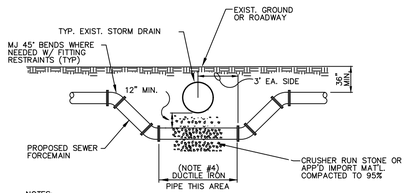
WATERLINE CROSSINGS
S17

WATERLINE CROSSINGS

SEWER ONLY
UPDATED: 08/28/06 S17

GRAND STRAND
WATER & SEWER AUTHORITY

LATEST REVISION:
08/28/06 DRT CORRECTED THE NOTE ABOUT PIPE MATERIAL POSSIBLY REQUIRED FOR WATERLINE CROSSINGS.



NOTES:
1) IN CASES WHERE D.I.P. FORCEMAIN IS NEEDED AT STORM DRAIN, D.I.P. SECTION MUST BE AT A SUFFICIENT ELEVATION TO KEEP IT FULL AT ALL TIMES. IF SECTION OF FORCEMAIN CALLING FOR D.I.P. DOES NOT MEET THIS REQUIREMENT, THEN C900 SDR 18 PVC PIPE SHALL BE USED INSTEAD.
2) DEPRESS FORCEMAIN WHENEVER POSSIBLE TO ACCOMPLISH CLEARANCE WITHOUTH USE OF FITTINGS.
3) SEWER FORCEMAIN MAY BE PLACED ABOVE STORM DRAIN IF THERE IS 12" MIN. CLEARANCE OF STORM DRAIN, 30" GROUND COVER ABOVE AND AROUND, AND IT MEETS REQUIREMENT OF NOTE #1.
4) SEE PROJECT DRAWINGS FOR USE OF DR18 C900 PVC WHERE APPLICABLE.

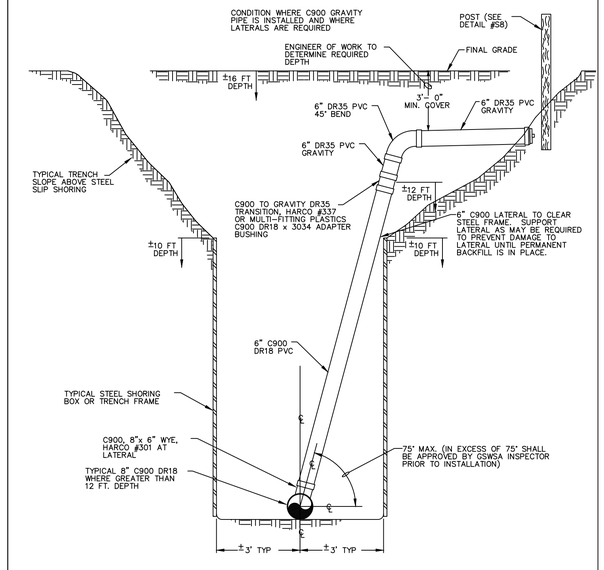
TYPICAL STORM DRAIN CROSSING
S18

TYPICAL
STORM DRAIN CROSSING

SEWER ONLY
UPDATED: 08/28/06 S18

GRAND STRAND
WATER & SEWER AUTHORITY

LATEST REVISION:
08/28/06 DRT CORRECTED TYPO IN NOTE #4 ("USE").



TYPICAL GRAVITY SEWER
IN EXCESS OF 12' DEPTH
(USE OF C900 PIPE & LATERAL CONNECTION)
S25

TYPICAL GRAVITY SEWER
IN EXCESS OF 12' DEPTH
(USE OF C900 PIPE & LATERAL CONNECTION)

SEWER ONLY
UPDATED: 7/03/19 S25

GRAND STRAND
WATER & SEWER AUTHORITY

LATEST REVISION:
07/03/2019 DRT ADDED 36" COVER NOTE.

ISSUED FOR BID
JANUARY 2020

GRAND STRAND
WATER & SEWER AUTHORITY

Mark	Description	Date	Appr.
	ISSUED FOR BID	05/01/20	JJT

BUCKSPORT MARINE INDUSTRIAL PARK - PHASE 1

STANDARD SEWER DETAILS SHEET 2 OF 2

Rev.	0
Date:	JANUARY 2020
Designed by:	TRR
Cad by:	TRR
Dwn by:	JT
Reviewed by:	
Submitted by:	MOFFATT & NICHOL
M&N Project No.	7232-05
Drawing code:	
Drawing Scale:	AS SHOWN
Plot scale: 1:1 (0 SHEET)	

SEAL

SOUTH CAROLINA
MOFFATT & NICHOL ENGINEERS No. 0000363
CERTIFICATE OF AUTHORIZATION

4700 FALLS OF THE NEUSE ROAD
SUITE 300
RALEIGH, NC 27609
919-781-4626

SC COA No. 363

moffatt & nichol

Sheet Reference No.
CU504
INDEX: 82 OF 113

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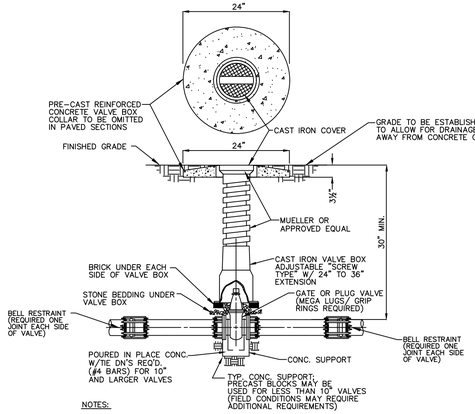
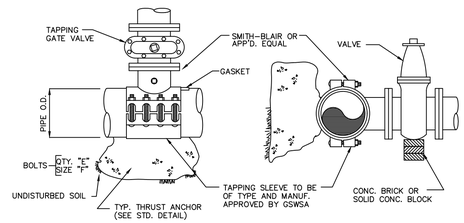


NOTES:

(1) SEE "TYPICAL FITTING AND JOINT RESTRAINT" DETAIL FOR VALVE RESTRAINTS.
(2) TOP OF VALVE BOX AND COLLAR SHALL BE PAINTED GREEN FOR SEWER FM AND BLUE FOR WATER.
(3) EXTENSION STEM WILL BE REQUIRED TO BE WITHIN 2 FT. OF THE SURFACE IF OPERATING NUT IS OVER 5 FT. BELOW GRADE. EXTENSIONS SHALL BE PERMANENTLY ATTACHED TO VALVE NUT AND SHALL BE PROVIDED WITH HORIZONTAL SPACERS FOR BERTICLE ALIGNMENT WITHIN THE VALVE BOX.
(4) PER GSWSA STANDARDS, MATERIAL APPROVAL THRU THE SUBMITTAL PROCESS ARE REQUIRED PRIOR TO ANY INSTALLATIONS.

TYPICAL VALVE AND VALVE BOX
WS1

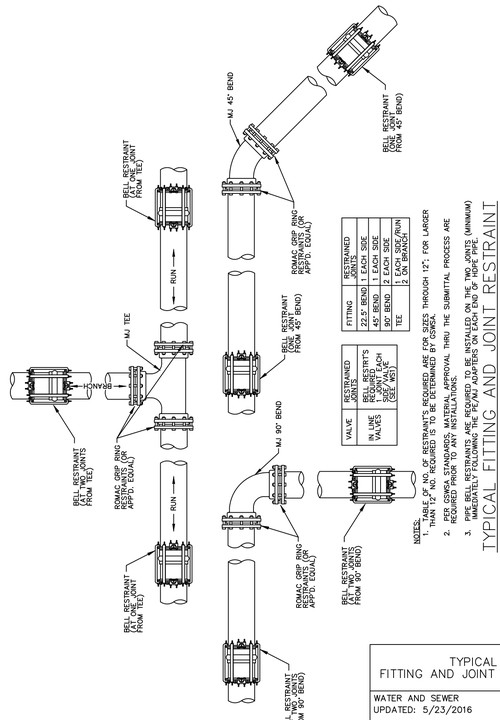


TYPICAL TAPPING SLEEVE
(FOR WATERLINE OR SEWER FORCEMAIN)
WS2

TYPICAL VALVE AND VALVE BOX	
SEWER ONLY UPDATED: 08/28/06	WS1
GRAND STRAND WATER & SEWER AUTHORITY	

LATEST REVISION:
08/28/06 DRT DELETED "GROUT ANNULAR SPACE" NOTE FOR AREA BETWEEN VALVE BOX AND VALVE COLLAR.

TYPICAL TAPPING SLEEVE	
WATER OR SEWER UPDATED: 2/16/98	WS2
GRAND STRAND WATER & SEWER AUTHORITY	

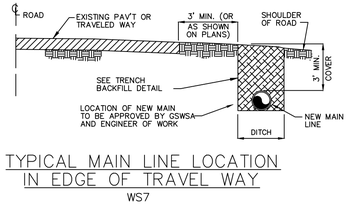


FITTING	RESTRAINED JOINTS
22.5° BEND	1 EACH SIDE
45° BEND	1 EACH SIDE
90° BEND	2 EACH SIDE
TEE	1 EACH SIDE/RUN & ON BRANCH

VALVE	RESTRAINED JOINTS
IN LINE VALVES	RESTRAINTS REQUIRED ON EACH SIDE/ VALVE (SEE #3?)

NOTES:
1. TABLE OF NO. OF RESTRAINTS REQUIRED ARE FOR SIZES THROUGH 12". FOR LARGER THAN 12" NO. REQUIRED TO BE DETERMINED BY ENGINEER.
2. PER GSWSA STANDARDS MATERIAL APPROVAL THRU THE SUBMITTAL PROCESS ARE REQUIRED PRIOR TO ANY INSTALLATIONS.
3. PIPE BELL RESTRAINTS ARE REQUIRED TO BE INSTALLED ON THE TWO JOINTS (MINIMUM) ADJACENT TO ALL FITTINGS AS WELL AS ALL JOINTS WITHIN THE TWO JOINTS.

TYPICAL FITTING AND JOINT RESTRAINT
WS3



TYPICAL MAIN LINE LOCATION IN EDGE OF TRAVEL WAY
WS7

TYPICAL FITTING AND JOINT RESTRAINT	
WATER AND SEWER UPDATED: 5/23/2016	WS3
GRAND STRAND WATER & SEWER AUTHORITY	

LATEST REVISION:
05/23/2016 DRT CORRECTED DESIGNATION FOR "WATER AND SEWER"

TYPICAL MAIN LINE LOCATION IN EDGE OF TRAVEL WAY	
SEWER ONLY UPDATED: 2/23/01	WS7
GRAND STRAND WATER & SEWER AUTHORITY	

ISSUED FOR BID
JANUARY 2020

GRAND STRAND WATER & SEWER AUTHORITY

Mark	Description	Date	Appr.
	ISSUED FOR BID	05/01/20	JJT

BUCKSPORT MARINE INDUSTRIAL PARK - PHASE 1

STANDARD WATER & SEWER DETAILS SHEET 1 OF 2

Designed by: TRR	Date: JANUARY 2020	Rev. 0	
Dwn by: JT	Ckd by: TRR	M&N Project No. 7232-05	
Reviewed by:		Drawing code:	
Submitted by: MOFFATT & NICHOL		Drawing Scale: AS SHOWN Plot scale: 1:1 (0 SHEET)	

SEAL

SOUTH CAROLINA
MOFFATT & NICHOL ENGINEERS No. 000363
CERTIFICATE OF AUTHORIZATION

4700 FALLS OF THE NEUSE ROAD
SUITE 300
RALEIGH, NC 27609
919-781-4626
SC COA No. 363
moffatt & nichol

Sheet Reference No.
CU505
INDEX: 83 OF 113

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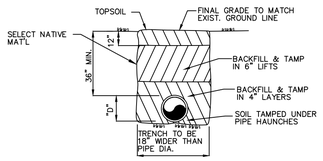
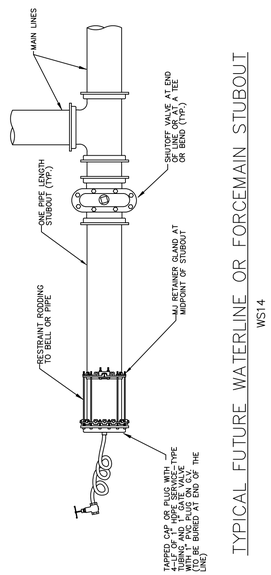


TYPICAL PIPE BEDDING DETAIL

WS11

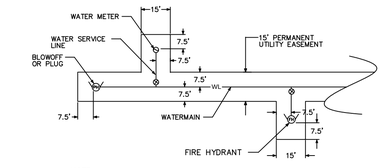
TYPICAL PIPE BEDDING DETAIL	
WATER OR SEWER UPDATED: 12/26/97	WS11
GRAND STRAND WATER & SEWER AUTHORITY	



TYPICAL FUTURE WATERLINE OR FORCEMAIN STUBOUT

WS14

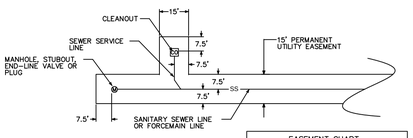
TYPICAL FUTURE WATERLINE OR FORCEMAIN STUBOUT	
WATER OR SEWER UPDATED: 5/13/02	WS14
GRAND STRAND WATER & SEWER AUTHORITY	



NOTE:
ALL UTILITY EASEMENTS TO BE CONVEYED OVER WATERLINES AND WATER SERVICE LINES SHALL BE 15'IN WIDTH AND 7.5' BEYOND FIRE HYDRANT, WATER METER OR PLUG

TYPICAL GSWSA WATER UTILITY EASEMENT FOR DEVELOPER PROJECTS

WS15



NOTE:
ALL UTILITY EASEMENTS TO BE CONVEYED OVER SEWER LINES AND SEWER SERVICE LINES SHALL BE MINIMUM 15'IN WIDTH AND 7.5' BEYOND MANHOLE, STUBOUT, PLUG OR CLEANOUT. THE WIDTH OF THE EASEMENT SHALL BE BASED ON A 1:1 SLOPE AS MEASURED FROM THE BOTTOM OF THE PIPE IN 5' INCREMENTS (SEE CHART).

EASEMENT CHART

UTILITY DEPTH	EASEMENT WIDTH
0'-7.5'	20'
7.6'-10'	25'
10.1'-12.5'	28'
12.6'-15'	30'
15.1'-17.5'	35'
17.6'-20'	40'

TYPICAL GSWSA SEWER UTILITY EASEMENT FOR DEVELOPER PROJECTS

WS15

TYPICAL WATER & SEWER UTILITY EASEMENT FOR DEVELOPER PROJECTS	
WATER OR SEWER UPDATED: 06/19/08	WS15
GRAND STRAND WATER & SEWER AUTHORITY	

ISSUED FOR BID
JANUARY 2020

GRAND STRAND WATER & SEWER AUTHORITY

Mark	Description	Date	Appr.
	ISSUED FOR BID	05/01/20	JJT

BUCKSPORT MARINE INDUSTRIAL PARK - PHASE 1

STANDARD WATER & SEWER DETAILS SHEET 2 OF 2

Date: JANUARY 2020	Rev. 0
M&N Project No. 7232-05	
Drawing code:	
Drawing Scale: AS SHOWN Plot scale: 1:1 (0 SHEET)	
Designed by: TRR	Cad by: TRR
Dwn by: JT	Reviewed by:
Submitted by: MOFFATT & NICHOL	

SEAL

SOUTH CAROLINA
MOFFATT & NICHOL ENGINEERS No. 000363
CERTIFICATE OF AUTHORIZATION

4700 FALLS OF THE NEUSE ROAD
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RALEIGH, NC 27609
919-781-4626

SC COA No. 363

moffatt & nichol

Sheet Reference No.

CU506

INDEX: 84 OF 113

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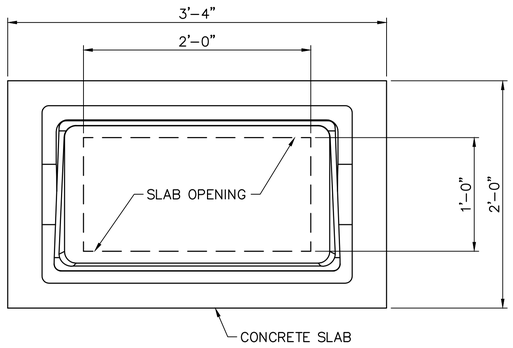
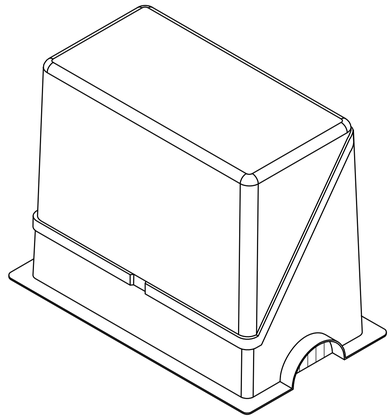
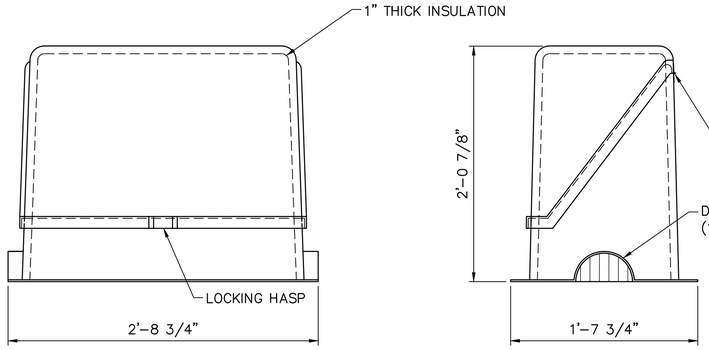
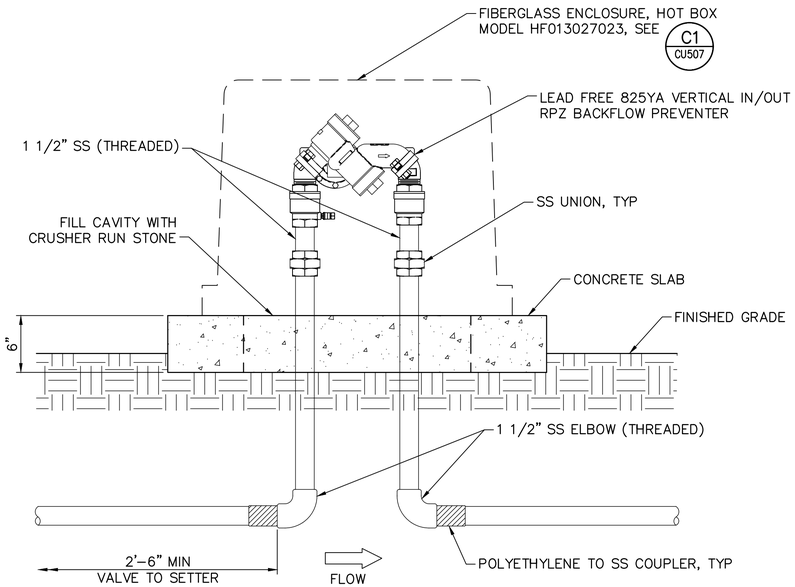


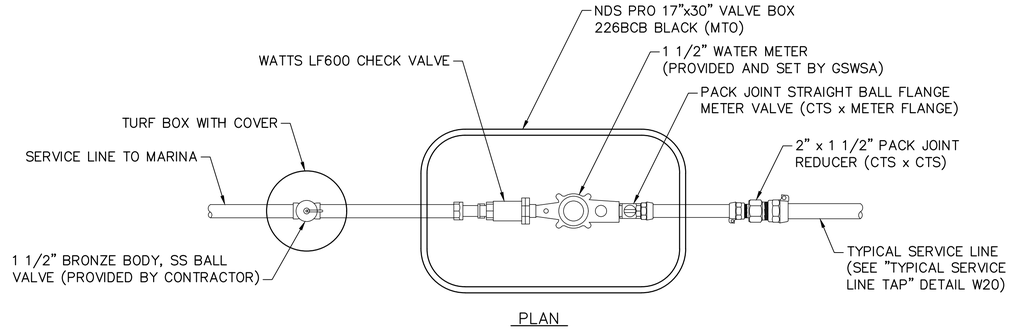




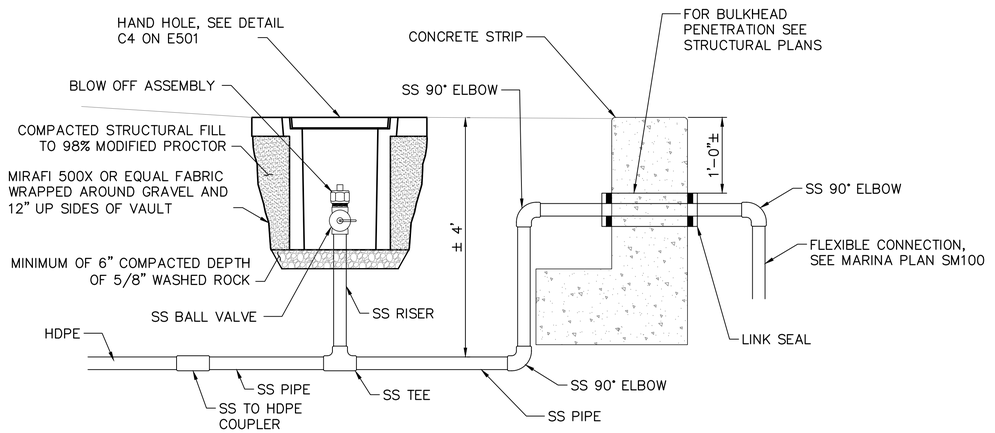
C1 CU507 HOT BOX FIBERGLASS FLIP TOP ENCLOSURE
SCALE: NTS



A1 CU109 BACKFLOW PREVENTER
SCALE: NTS



C3 CU109 METER BOX DETAIL
SCALE: NTS



NOTE:
1. SS PIPE CONNECTION TO UTILIZE THREADED FITTINGS.
2. SEE CU109

A3 CU109 BLOW OFF DETAIL
SCALE: NTS

ISSUED FOR BID
JANUARY 2020

GRAND STRAND WATER & SEWER AUTHORITY

Mark	Description	Date	Appr.
	ISSUED FOR BID	01/01/20	JJT

BUCKSPORT MARINE
INDUSTRIAL PARK - PHASE 1

MARINA WATER SUPPLY DETAILS

Rev.	Date:	Designed by:	Drawn by:	Checked by:	Reviewed by:	Submitted by:	Drawing code:	M&N Project No.	Drawing Scale:	Plot scale: 1:1 (D SHEET)
0	JANUARY 2020	TRR	JT	TRR		MOFFATT & NICHOL		7232-05	AS SHOWN	

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SC COA No. 363
moffatt & nichol

Sheet
Reference No.
CU507
INDEX: 85 OF 113

SOUTH CAROLINA LICENSED PROFESSIONAL ENGINEER
No.24067
TIMOTHY R. RENO
SEAL
5-1-2020
SOUTH CAROLINA
MOFFATT & NICHOL ENGINEERS No. 000363
CERTIFICATE OF AUTHORIZATION

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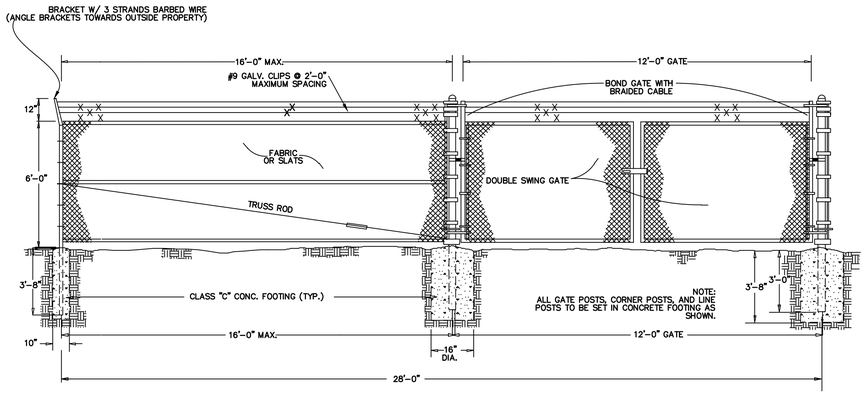
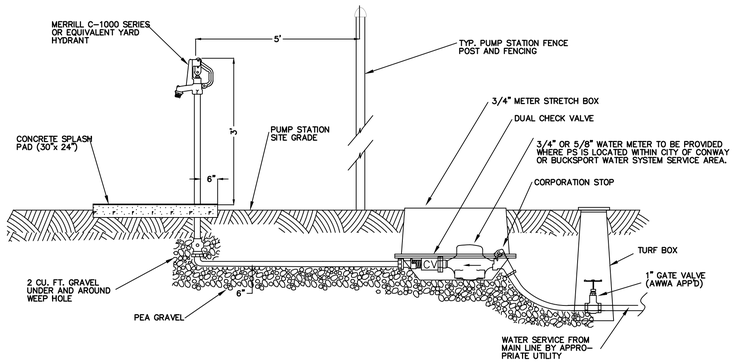
DRAWING SCALES SHOWN BASED ON 22"x34" DRAWING



6'–0" GALV. CHAIN LINK FENCE & GATE DETAIL

N.T.S.

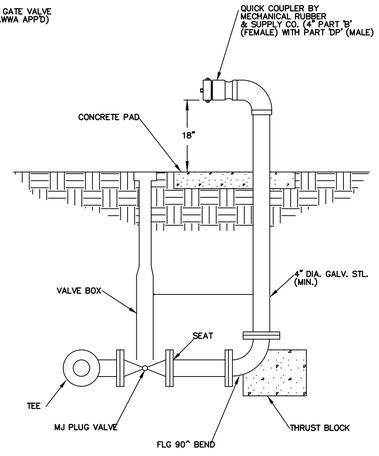
NOTES:
1. SEE STANDARD SPECIAL PROVISIONS AND STANDARDS FOR SPECIAL REQUIREMENTS.
2. FINAL SITE FENCING DIMENSIONS TO BE DETERMINED BY GSWSA.
3. SIGN WITH STATION NUMBER AND EMERGENCY PHONE NUMBER WILL BE PROVIDED BY OPERATIONS AFTER FINAL ACCEPTANCE.
4. WIND SCREEN FABRIC AND/OR SLATS MAY BE REQUIRED TO MEET HORRY COUNTY'S ZONING ORDINANCE. WIND SCREEN AND SLATS ARE TO BE GREEN OR BLACK IN COLOR.



NOTES:
1. METER BOX ASSEMBLY TO BE 3/4" STRETCH BOX WITH LOCKING VALVE AND WATTS NO. 7 DUAL C.V. (OR APP'D. EQUAL) AS SUPPLIED BY CITIES SUPPLY. DHEC APP'D BACKFLOW PREVENTION DEVICES REQ'D.
2. METER WILL BE A 3/4" OR 5/8" POSITIVE TYPE DISPLACEMENT METER CONFORMING TO AWWA SPEC'S C700-71 KENT ALL BRONZE METER OR APP'D EQUAL
3. IF WATER SERVICE IS ON GSWSA SYSTEM, NO WATER METER WILL BE REQUIRED. CONTRACTOR SHALL INSTALL DUAL CHECK VALVE, GATE VALVE, AND TURF BOX INSIDE PUMP STATION FENCE.

PUMP STATION YARD HYDRANT DETAIL

N.T.S.

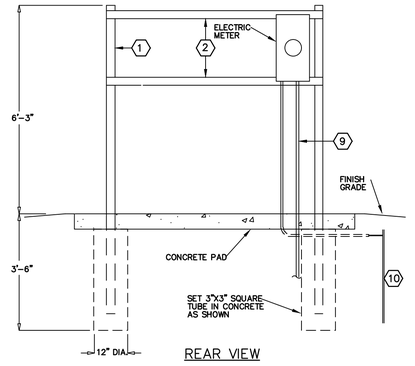


EMERGENCY CONNECTION DETAIL

N.T.S.

ELECTRICAL KEY NOTES

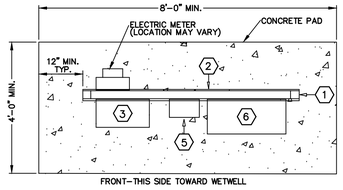
1. ALUMINUM SQUARE TUBE 3"x 3"x 1/8"x 9'-3" LONG WITH ALUMINUM 3"x 3"x 1/2" TOP CAP. SET SQUARE TUBE IN CONCRETE.
2. ALUMINUM FLAT BAR 3"x 1/2"x 6'-6". ALL BOLTS, NUTS, WASHERS, ETC., NECESSARY TO FABRICATE RACK AND INSTALL EQUIPMENT SHALL BE STAINLESS STEEL.
3. SQUARE D NEMA 3R DOUBLE THROW SWITCH.
4. CROUSE HINDS #APQ 1047 RECEPTACLE.
5. NEMA TYPE 4 GALVANIZED ENCLOSURE. SQUARE D QO OR QI CIRCUIT BREAKERS.
6. PUMP CONTROLLER MOUNT TOP SIX FEET ABOVE SLAB. NEMA 3RX STAINLESS STEEL. WITH 3 POINT LATCH AND DRIP SHIELD. PAD LOCKABLE
7. EYS SEALOFF FITTINGS WITH DUXSEAL.
8. 2–1 1/4" PVC CONDUITS TO WETWELL FOR PUMP POWER CABLES. 1–1/2" PVC CONDUIT TO WETWELL FOR FLOAT CABLES.
9. 1 1/4" PVC CONDUIT WITH 4–#2THHN CONDUCTORS TO UTILITY COMPANY TRANSFORMER OR HAND HOLE AS DIRECTED BY UTILITY COMPANY.
10. GROUND ROD AND CLAMP.



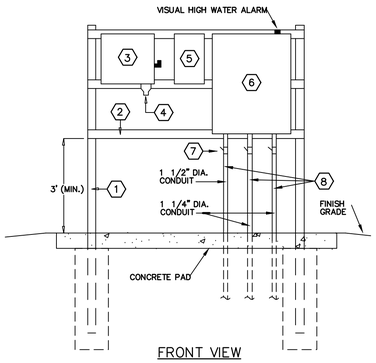
REAR VIEW

GENERAL ELECTRICAL NOTES

1. ELECTRICAL WORK SHALL BE PERFORMED BY AN ELECTRICAL CONTRACTOR WITH AN APPROPRIATE BUSINESS LICENSE.
2. ELECTRICAL PERMITS SHALL BE APPLIED FOR AT HORRY COUNTY BUILDING INSPECTION OFFICE.
3. SEE PUMP STATION SPECIFICATIONS FOR ALL PLC/RADIO CONTROL REQUIREMENTS AND ALL ELECTRIC AND CONTROL REQUIREMENTS. PLC/RADIO PACKAGE NOT SHOWN.



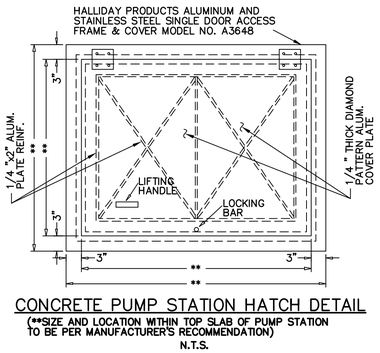
PLAN VIEW



FRONT VIEW

PUMP STATION CONTROL PANEL DETAIL

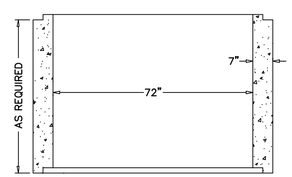
N.T.S.



CONCRETE PUMP STATION HATCH DETAIL

(**SIZE AND LOCATION WITHIN TOP SLAB OF PUMP STATION TO BE PER MANUFACTURER'S RECOMMENDATION)

N.T.S.



NOTES:
1. ALL STANDARD SEWER PUMP STATION WETWELLTO MEET OR EXCEED THE REQUIREMENTS OF ASTM C478.
2. BUTYL RUBBER SEALANT IS RECOMMENDED FOR SEALING JOINTS. O–RING GASKETS MAY BE USED.

CONCRETE PUMP STATION RISER SECTION

N.T.S.

ISSUED FOR BID
JANUARY 2020

GRAND STRAND WATER & SEWER AUTHORITY

Mark	Description	Date	Appr.
	ISSUED FOR BID	05/01/20	JJT

BUCKSPORT MARINE INDUSTRIAL PARK - PHASE 1

PUMP STATION DETAILS 1 OF 2

Designed by: TRR | Dwn by: JT | Chkd by: TRR | Reviewed by:
Date: JANUARY 2020 | Rev. 0
M&N Project No. 7232-05
Drawing code:
Drawing Scale: AS SHOWN
Plot scale: 1:1 (0 SHEET)
Submitted by: MOFFATT & NICHOL

SOUTH CAROLINA LICENSED PROFESSIONAL ENGINEER
No.24067
TIMOTHY R. REED
SEAL 5-1-2020
SOUTH CAROLINA
MOFFATT & NICHOL ENGINEERS No. 000363
CERTIFICATE OF AUTHORIZATION

4700 FALLS OF THE NEUSE ROAD
SUITE 300
RALEIGH, NC 27609
919-781-4626
SC COA No. 363
moffatt & nichol

Sheet Reference No.
CU508
INDEX: 86 OF 113

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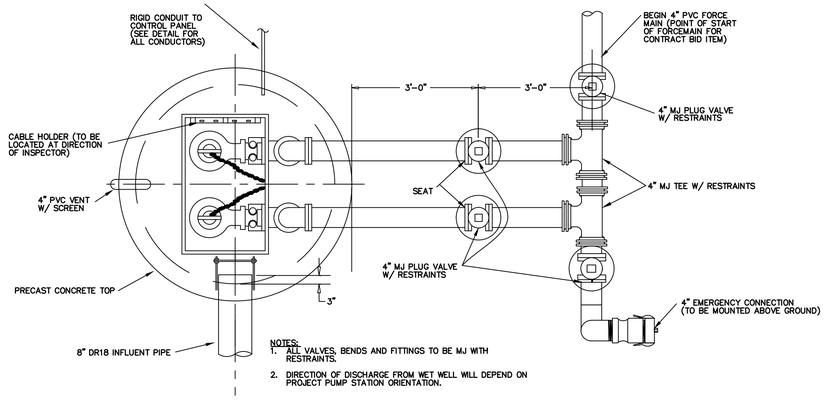
DRAWING SCALES SHOWN BASED ON 22"x34" DRAWING



TYPICAL PLAN – DUPLEX PUMP STATION

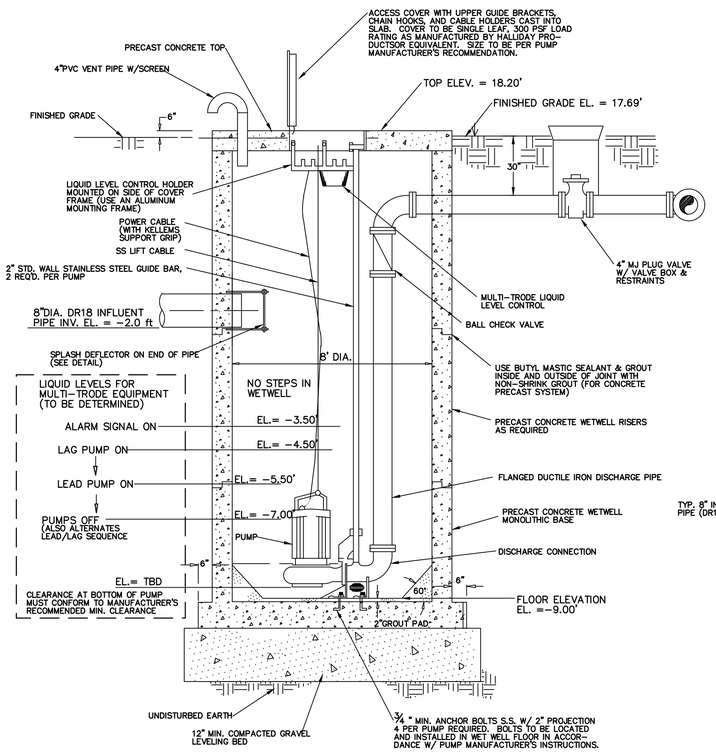
N.T.S.

PUMP STATION SCHEDULE

INFLUENT	PIPE I.D.	8"
	ELEVATION	–2.00'
WET WELL	INSIDE DIAMETER	8.00'
	TOP ELEVATION	±18.20'
	HIGH WATER LEVEL	–3.50'
	LOW WATER LEVEL	–7.00'
	FLOOR ELEVATION	–9.00'
SENSOR ELEV.	ALARM SIGNAL ON	–3.50'
	LAG PUMP ON	–4.50'
	LEAD PUMP ON	–5.50'
	PUMPS OFF	–7.00'
PUMPS	MODEL (PUMP/MANUF.)	XYLEM NP3127HT ADDAPTIVE 488
	IMPELLER (SELECTION)	8–7/16"
DISCHARGE PIPING		4"
CHECK VALVE SIZE		4"
PLUG VALVE SIZE		4"
DESIGN FLOW*		110 / 234.6 GPM (1/2 Pumps)
DESIGN HEAD* (TDH)		74.4'
VOLTAGE		230 V
PHASE		3
HORSEPOWER		10 HP
RPM (PUMP/MOTOR)		1720 RPM

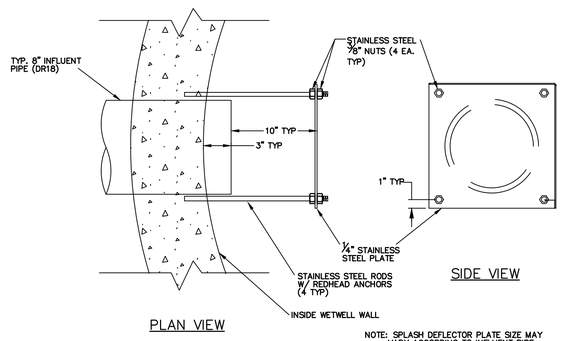
PUMP STATION NOTES

1. ALL WORK AND MATERIALS SHALL CONFORM TO REQUIREMENTS OF GRAND STRAND WATER & SEWER AUTHORITY SEWER SYSTEM STANDARDS & SPECIFICATIONS.
2. ALL HINGES, GUIDE HOLDERS, CABLE HOLDERS, ALL NUTS, BOLTS, WASHERS, AND OTHER FASTENERS SHALL BE 302 STAINLESS STEEL.
3. THE NEMA 4X ENCLOSURES SHALL BE STAINLESS STEEL OR FIBERGLASS, AND RAIN TIGHT. A REMOTE TELEMETRY PANEL SHALL BE REQUIRED.
4. ALL WETWELL HARDWARE SHALL BE MOUNTED SUCH THAT ANY COMPONENT CAN BE REMOVED.
5. THE POWER CABLE IS TO BE WIRED NON–STOP FROM THE PUMP TO THE BOTTOM OF THE STARTER WITH NO JUNCTION BOXES OR SPLICES IN BETWEEN. POWER CABLE WITHIN WET WELL SHALL BE SUPPORTED USING KELLEMS SINGLE EYE CLOSED MESH SUPPORT GRIPS (SIZED FOR CABLE DIA.) AND ATTACHED TO THE PUMP CABLE SUPPORT HOOKS.
6. WETWELL SECTIONS SHALL CONFORM TO ASTM C–478.
7. ALL PIPING WITHIN THE WETWELL SHALL BE CLASS 50 DUCTILE IRON PIPE.
8. PUMPS AND MOTORS SHALL HAVE A STAINLESS STEEL CABLE FOR LIFTING. THE LENGTH SHALL REACH TO THE TOP OF THE STATION PLUS AN ADDITIONAL SIX FEET. CABLES SHALL BE 5/16" DIAMETER FOR PUMPS UP TO 20 HP AND 3/8" DIAMETER FOR PUMPS IN EXCESS OF 20 HP.
9. LOCATION OF THE CONTROL PANEL WILL BE DETERMINED IN THE FIELD BY GSWSA INSPECTIONS DEPT.
10. INFLUENT PIPING TO PUMP STATION SHALL BE DR18 PVC.
11. PUMPS ARE TO BE XYLEM NP 3127 HT 3 ~ADAPTIVE 488 WITH A 6.42 HP, 230 VOLTS, 3 PH MOTOR. SHOP DRAWINGS WILL BE REQUIRED.
12. CONTROL PANEL IS TO CONTAIN AN AUDIO AND VISUAL HIGH LEVEL ALARM VISUAL ALARM MUST HAVE 360° VISIBILITY.
13. PROVIDE ALUMINUM LADDER, LENGTH ADEQUATE TO EXTEND FROM BOTTOM OF WETWELL TO 4' BEYOND HATCH AND TO BE RATED AT 375 POUNDS. LADDER TO BE PROVIDED TO GSWSA O&M DEPT. AT TIME OF FINAL INSPECTION.
14. PUMP SPARE PARTS TO BE PROVIDED PER GSWSA SPECIAL CONTRACT PROVISIONS.
15. THE LIQUID LEVEL CONTROLS SHALL BE MULTI–TRODE, WITH THE PUMP ON/OFF & ALARM LEVELS TO BE DETERMINED BY THE ENGINEER OF WORK AND APPROVED BY GSWSA. THE TRANSMITTER–RECEIVER IS TO BE MOUNTED IN THE PUMP CONTROL PANEL.
16. INTERIOR COATING FOR WET WELL TO COMPLY WITH 4.2.8–J. GSWSA SPECIFICATIONS.
17. PUMP STATION WETWELL WILL BE EQUIPPED WITH FALL PROTECTION AS PER 4.2.15 OF GRAND STRAND WATER & SEWER AUTHORITY SEWER SYSTEM STANDARDS & SPECIFICATIONS.



TYPICAL SECTION THRU PUMP STATION

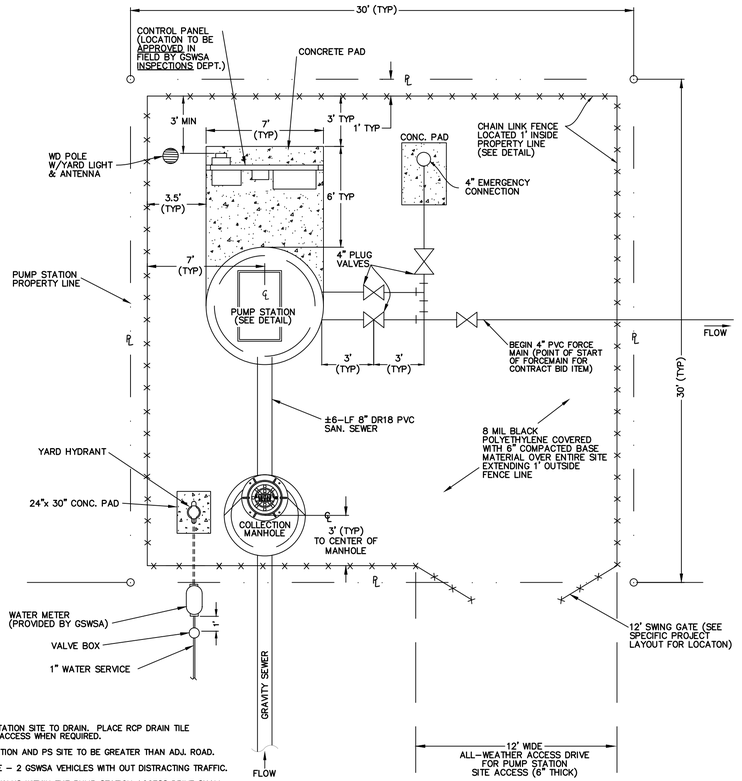
N.T.S.



NOTE: SPLASH DEFLECTOR PLATE SIZE MAY VARY ACCORDING TO INFLUENT PIPE SIZE.

TYPICAL SPLASH DEFLECTOR PLATE

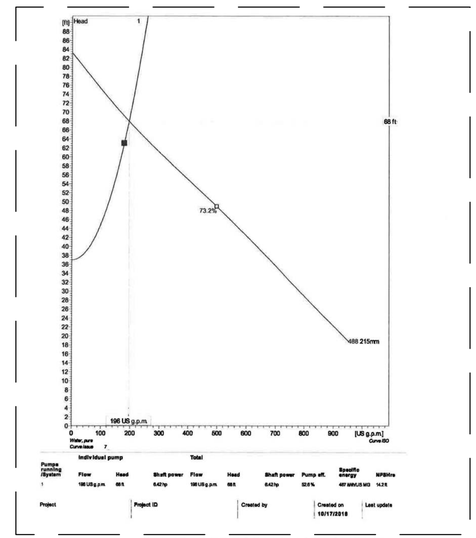
N.T.S.



NOTES:
1. GRADE PUMP STATION SITE TO DRAIN. PLACE RCP DRAIN TILE FOR DRIVEWAY ACCESS WHEN REQUIRED.
2. FINISHED ELEVATION AND PS SITE TO BE GREATER THAN ADJ. ROAD.
3. ACCESS TO SITE – 2 GSWSA VEHICLES WITH OUT DISTRACTING TRAFFIC.
4. CONCRETE SIDEWALKS WITHIN THE PUMP STATION ACCESS DRIVE SHALL BE 8" IN THICKNESS.

PUMP STATION SITE PLAN

NTS



PUMP PERFORMANCE CURVE

XYLEM NP 3127 HT 3 ~ADAPTIVE 488

ISSUED FOR BID
JANUARY 2020

GRAND STRAND WATER & SEWER AUTHORITY

Mark	Description	Date	Appr.
	ISSUED FOR BID	05/01/20	JJT

BUCKSPORT MARINE INDUSTRIAL PARK - PHASE 1

PUMP STATION DETAILS 2 OF 2

Designed by: TRR	Dwn. by: JT	Ckd by: TRR	Reviewed by:
Date: JANUARY 2020	M&N Project No. 7232–05	Drawing code:	Drawing Scale: AS SHOWN Plot scale: 1:1 (0 SHEET)
Rev. 0			

Submitted by: MOFFATT & NICHOL

SOUTH CAROLINA LICENSED PROFESSIONAL ENGINEER TIMOTHY S. REED No.24067

SEAL 5-1-2020

MOFFATT & NICHOL ENGINEERS No. 000363 CERTIFICATE OF AUTHORIZATION

4700 FALLS OF THE NEUSE ROAD
SUITE 300
RALEIGH, NC 27609
919–781–4626
SC COA No. 363
moffatt & nichol

Sheet Reference No.
CU509
INDEX: 87 OF 113

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DRAWING SCALES SHOWN BASED ON 22"x34" DRAWING

INV. ELEV. = 13.00'

HENRIETTA BLUFFS ROAD +23.65 28.41' LT

HENRIETTA BLUFFS ROAD +2.31 34.13' LT

24" RCP (CL V) – SEE NOTE

BUCKSPORT ROAD

N: 666,328.48
E: 2,579,371.30

HOSE BIB (TYP)

LANDSCAPED BUFFER SEE SHEET L501

34.86'

INV. ELEV. = 12.00'

TREE ℄

N: 666,274.38
E: 2,579,483.99

±47'

129°19'7"

±65'

±125'

TREE ℄

GRAVEL PAVEMENT

1" SERVICE CONNECTION SEE W5 & W7

EXIST. 30"ø WATERLINE

±198'

±140'

CLASS II RIPRAP

BERM SEE DETAIL SEE SHEET L501

±5' MIN

6" GRAVEL – NO. 8M

±100'

1" SERVICE CONNECTION SEE W5 & W7

5.00'

HOSE BIB (TYP)

19.74'

N: 665,929.18
E: 2,579,652.90

N: 665,907.54
E: 2,579,658.73

±60'

±55'

24" TRENCH DRAIN

WATER METER, SEE W1

CLASS II RIPRAP

N: 666,375.14
E: 2,579,710.66

16'-5"

APPROX SLOPE LIMIT

ALUMINUM GANGWAY

RIP RAP OUTLET FLUME

APPROX MHW, EL 1.825

20' 0' 20' 40'

SCALE: 1"=20'

NOTE: 24" RCP UNDER HENRIETTE BLUFFS ROAD TO BE PLUGGED WHEN PHASE 2 IS DEVELOPED AND FLOW IS DIRECTED TO STORMWATER POND.

ISSUED FOR BID
JANUARY 2020

GRAND STRAND WATER & SEWER AUTHORITY

Mark	Description	Date	Appr.
	ISSUED FOR BID	05/01/20	JJT

BUCKSPORT MARINE INDUSTRIAL PARK - PHASE 1

OVERALL LANDSCAPING PLAN

Designed by: TRR	Dwn by: JJT	Ckd by: TRR	Reviewed by:
Date: JANUARY 2020	M&N Project No. 7232-05	Drawing code:	Rev.
Submitted by: MOFFATT & NICHOL	Drawing Scale: AS SHOWN	Plot scale: 1:1 (0 SHEET)	

LICENSED PROFESSIONAL ENGINEER
No.24067
TIMOTHY R. REID
SOUTH CAROLINA
SEAL 5-1-2020

MOFFATT & NICHOL ENGINEERS No. 000363
CERTIFICATE OF AUTHORIZATION
SOUTH CAROLINA

4700 FALLS OF THE NEUSE ROAD
SUITE 300
RALEIGH, NC 27609
919-781-4626

SC COA No. 363

moffatt & nichol

Sheet Reference No.
L100

INDEX: 88 OF 113

DRAWING SCALES SHOWN BASED ON 22"x34" DRAWING

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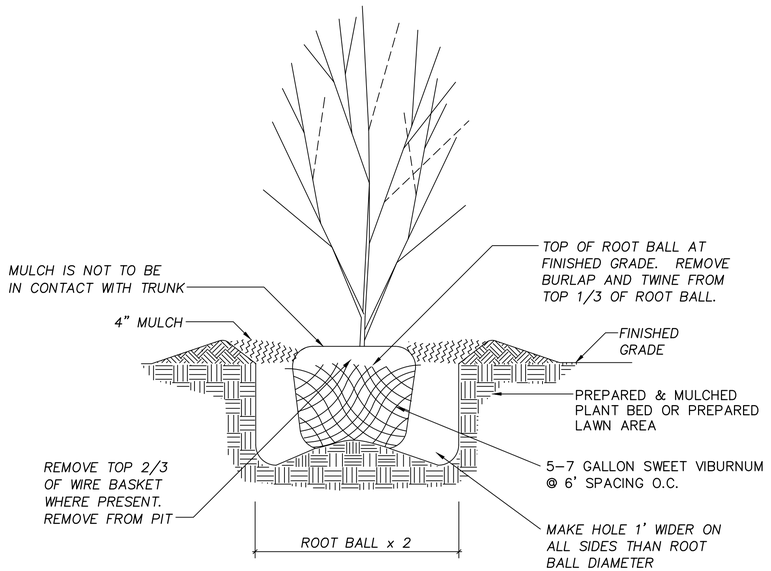
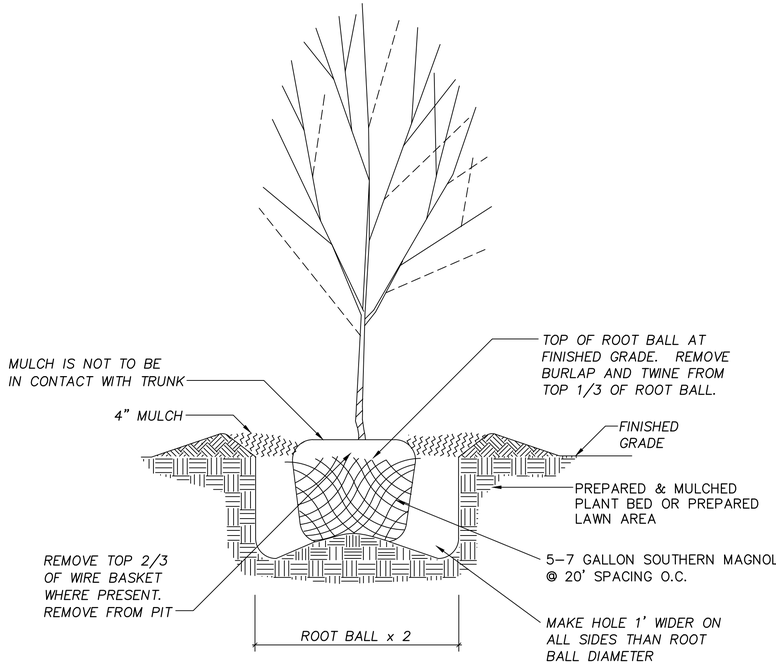


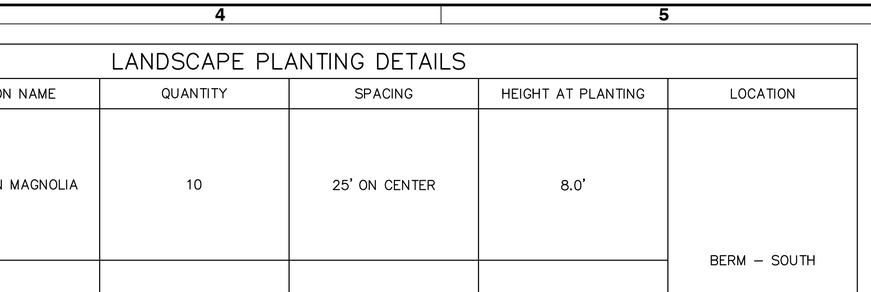
C2 / L100 SHRUB PLANTING DETAIL
NOT TO SCALE

LANDSCAPE PLANTING DETAILS

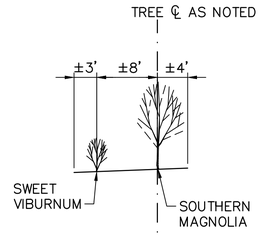
SYMBOL	COMMON NAME	QUANTITY	SPACING	HEIGHT AT PLANTING	LOCATION
	SOUTHERN MAGNOLIA	10	25' ON CENTER	8.0'	BERM – SOUTH
	SWEET VIBURNUM	41	6' ON CENTER	15"	
	SOUTHERN MAGNOLIA	16	25' ON CENTER	8.0'	EDGE OF GRAVEL – NORTH
	SWEET VIBURNUM	65	6' ON CENTER	15"	



A2 / L100 TREE PLANTING DETAIL
NOT TO SCALE



B4 / L100 PROPOSED DITCH AND BERM DETAIL
SCALE: 1"=10'



A3 / L100 PROPOSED LANSCAPING TYPICAL CROSS SECTION
NOT TO SCALE

NOTE: PLANT SUBSTITUTIONS SHALL REQUIRE AUTHORIZATION FROM HORRY COUNTY PLANNING & ZONING.

10' 0' 10' 20'
SCALE: 1"=10'

ISSUED FOR BID
JANUARY 2020

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BUCKSPORT MARINE INDUSTRIAL PARK - PHASE 1

LANSCAPE DETAILS

Rev.			
Date: JANUARY 2020	M&N Project No. 7232-05	Drawing code:	Drawing Scale: AS SHOWN Plot scale: 1:1 (D SHEET)
Designed by: TRR	Dwn by: JJT	Ckd by: TRR	Reviewed by:
			Submitted by: MOFFATT & NICHOL

SOUTH CAROLINA LICENSED PROFESSIONAL ENGINEER TIMOTHY R. REID No.24067
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Sheet Reference No.
L501
INDEX: 89 OF 113

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DRAWING SCALES SHOWN BASED ON 22"x34" DRAWING

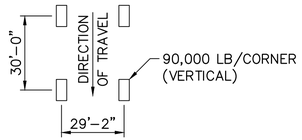
DESIGN CRITERIA

1. VERTICAL DESIGN LOADS:

   THE CONSTRUCTION DOCUMENTS ARE BASED ON THE REQUIREMENTS OF THE 2015 INTERNATIONAL BUILDING CODE WITH SC MODIFICATIONS.

   A. LIVE LOAD:

      a. TRAVEL LIFT PIERS
         1. 100 TON TRAVEL LIFT = 100 PSF
         2. CORNER WHEEL LOADS



      b. FLOATING DOCK

         1. UNIFORM LIVE LOAD = 40 PSF
         2. CONCENTRATED LIVE LOAD = 400 LBS

      c. GANGWAY

         1. TRIBUTARY LOAD TO FLOATING DOCK = 50 PSF
         2. DECK LOAD = 100 PSF
         3. HANDRAIL LOAD = AS REQUIRED BY SC BUILDING CODE
         4. MAXIMUM DEFLECTION = L/240

2. LATERAL LOADS:

   A. TRAVEL LIFT PIERS: A LATERAL THRUST OF 10% OF THE WHEEL LOADING AT THE WHEEL LOCATIONS FOR THE 100 BFM MARINE TRAVEL LIFT.

3. WIND LOADS:

   A. 145 MPH BASED ON RISK CATEGORY II (w/o VESSELS AND TRAVEL LIFT OVER WATER)
   B. FLOATING DOCKS (20 PSF WITH MOORED VESSELS)

4. SEISMIC DESIGN CRITERIA:
   ALL STRUCTURES SHALL BE DESIGN TO RESIST APPLICABLE EARTHQUAKE MOTIONS IN ACCORDANCE WITH ASCE 7-16 CODE FOR THE BUCKSPORT AREA.

   A. RISK CATEGORY II, I_e = 1.0
   B. SPECTRAL RESPONSE ACCELERATIONS (2% IN 50 YEARS):
      S_S = 0.353g
      S_1 = 0.125g
      S_{DS} = 0.357g
      S_{D1} = 0.196g
   C. SITE CLASS = D
   D. RESPONSE MODIFICATION FACTOR R = 1.0
   E. PGA_m = 0.270g

5. CODES & REFERENCES:

   A. IBC 2018 INTERNATIONAL BUILDING CODE WITH SC MODIFICATIONS
   B. ASCE 7 2016 EDITION (AMERICAN SOCIETY OF CIVIL ENGINEERS)
   C. UFC 4-152-01 DESIGN: "PIERS AND WHARVES"
   D. ACI 318-14 BUILDNG CODE REQUIREMENTS FOR STRUCTURAL CONCRETE
   E. PCI DESIGN HANDBOOK, 7TH EDITION, 2010
   F. AISC 14th EDITION (AMERICAN INSTITUTE OF STEEL CONSTRUCTION) – LRFD
   G. AWS D1.1 & D1.2 (AMERICAN WELDING SOCIETY)
   H. ASCE MANUAL NO. 50

CONCRETE AND REINFORCING STEEL

1. ALL CONCRETE WORK SHALL BE PERFORMED IN ACCORDANCE WITH ACI 318, ACI 301 & PCI UNLESS OTHERWISE NOTED. ALL DETAILING, FABRICATION, AND ERECTION OF REINFORCING STEEL SHALL CONFORM TO THE ACI MANUAL OF STANDARD PRACTICE FOR DETAILING REINFORCED CONCRETE STRUCTURES, ACI 315, ACI SP-66 AND PCI DESIGN HANDBOOK.

2. ALL CONCRETE SHALL BE NORMAL WEIGHT CONCRETE (145 PCF).

3. MATERIALS SHALL CONFORM TO THE FOLLOWING, UNLESS OTHERWISE NOTED:

   A. CONCRETE: 28 DAY STRENGTH

   - CAST-IN-PLACE CONCRETE. . . . . 5000 PSI
   - CEMENTITIOUS GROUT (UON). . . . . 7000 PSI
   - PRESTRESSED CONCRETE. . . . . 7000 PSI

   B. REINFORCING SHALL HAVE THE FOLLOWING CHARACTERISTICS:

   - REINFORCING STEEL AND DOWELS FOR CONCRETE. . . . . ASTM A 615, GRADE 60 (UON)

4. PROVIDE CALCIUM NITRITE IN THE MARINE CONCRETE FOR CHLORIDE ION PROTECTION AS PER SPECIFICATION.

5. CHAMFER ALL EXPOSED EXTERNAL CORNERS OF CONCRETE WITH 45 DEGREE 3/4 INCH CHAMFERS, UNLESS OTHERWISE NOTED.

6. THE CONCRETE CLEAR COVER FOR THE REINFORCING SHALL BE 3.0 INCHES, UNLESS OTHERWISE NOTED.

7. ALL CONSTRUCTION JOINTS BETWEEN CAST-IN-PLACE AND/OR PRECAST CONCRETE SHALL BE BONDED WITH AN BONDING AGENT AND SHALL HAVE A ROUGHENED SURFACE OF 1/4 INCH AMPLITUDE.

8. ALL REINFORCING BAR SPLICES SHALL BE CLASS "B" TENSION LAP SPLICES PER ACI 318. SPLICING SHALL OCCUR @ 1/3 POINTS OF THE SPAN PER ACI 318 CHAPTER 21. SPLICING OVER JOINTS IS NOT PERMITTED.

9. ALL LONGITUDINAL REINFORCING SPLICE LOCATIONS SHALL BE CONFINED WITH STIRRUPS SPACED NO MORE THAN 4" O.C.

10. TERMINATE ALL LONGITUDINAL TOP BARS WITH A STANDARD 90° OR 180° HOOK OR TERMINATOR.

11. ALL CONCRETE SURFACES SHALL HAVE A BROOMED FINISH ON TOP AND FORM FINISH ON SIDES AND BOTTOM.

12. LIFTING INSERTS SHALL BE PROVIDED IN ALL APPLICABLE PRECAST MEMBERS TO FACILITATE LIFTING AND SUPPORTING MEMBERS DURING ERECTION. ADDITIONAL REINFORCING STEEL SHALL BE PROVIDED AS NECESSARY TO PREVENT CRACKING DURING HANDLING, DELIVERY, AND ERECTION.

13. WET CURE CONCRETE FOR A MINIMUM OF 7-DAYS, SEE SPECIFICATIONS FOR REQUIREMENTS.

LAP SPLICES OF REINFORCING BARS F'c=5,000 PSI			
BAR SIZE	LAP CLASS	TOP BARS	BOTTOM BARS
#3	B	22"	17"
#4	B	29"	23"
#5	B	36"	28"
#6	B	43"	34"
#7	B	63"	49"
#8	B	72"	56"
#9	B	81"	63"
#10	B	90"	69"

STRUCTURAL AND MISCELLANEOUS METALS

1. ALL STEEL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE AISC SPECIFICATIONS FOR THE DESIGN, FABRICATION, AND ERECTION OF STRUCTURAL STEEL FOR BUILDINGS (LRFD).

2. ALL WELDING SHALL CONFORM TO AWS D1.1 OR D1.2.

3. STEEL MATERIALS SHALL CONFORM TO THE FOLLOWING, UNLESS OTHERWISE NOTED:

   A. STRUCTURAL CARBON STEEL . . . . . ASTM A 992, GALV
   B. MISC PLATES, BARS, AND SHAPES. . . . . ASTM A 572, GRADE 50, GALV
   C. BOLTS. . . . . ASTM F 3125, GRADE A325, GALV
   D. THREADED FASTENERS/ANCHOR RODS. . . . . ASTM F 1554, GRADE 55, GALV
   E. STAINLESS STEEL FASTENERS . . . . . ASTM A 193, GRADE 8M, CLASS 1
   F. HOLLOW STRUCTURAL SECTION. . . . . ASTM A 500, GRADE B, GALV
   G. H PILE STINGERS . . . . . ASTM A 572, GRADE 50

4. ALL STEEL (EXCEPT STRINGERS) SHALL BE GALVANIZED BY THE HOT-DIPPED PROCESS IN ACCORDANCE WITH THE REQUIREMENTS OF ASTM A 123 AND/OR A 153, AS APPLICABLE, AFTER FABRICATION, UNLESS OTHERWISE NOTED. INSTALL VENT HOLES IN TUBE SHAPES AS REQUIRED FOR PROPER INTERNAL PROTECTION.

5. FIELD TREAT DAMAGED GALVANIZED FINISH WITH TWO COATS OF HIGH ZINC DUST OXIDE PAINT, COLD GALVANIZING COMPOUNDS OR APPROVED EQUAL CONFORMING TO THE REQUIREMENTS OF ASTM A 780. IN ADDITION, ALL EXPOSED THREADED SURFACES SHALL BE PAINTED WITH TWO COATS OF HIGH ZINC DUST OXIDE PAINT AFTER INSTALLATION OF UNIT.

FOUNDATION

1. PILES SHALL ACHIEVE A MINIMUM BEARING CAPACITY SPECIFIED ON SHEET S-505 AND IN ACCORDANCE WITH THE SPECIFICATIONS, USING A HAMMER OF AN APPROVED TYPE WITH A CAPACITY AT LEAST EQUAL TO THE HAMMER MANUFACTURER'S RECOMMENDATION FOR THE TOTAL WEIGHT OF PILE AND CHARACTERISTICS OF SUBSURFACE MATERIAL TO BE ENCOUNTERED.

2. FOLLOW PILE INSTALLATION RECOMMENDATIONS OUTLINED IN THE GEOTECHNICAL REPORT, DATED OCTOBER 31, 2018 BY GEOTECHNOLOGIES, INC. OF RALEIGH, NC.

3. THE CONTRACTOR SHALL COORDINATE THE PILE INSTALLATION SCHEDULE SO AS NOT TO INTERFERE WITH OR BE DETRIMENTAL TO THE CONCRETE PLACEMENT AND CURING OPERATIONS AND DOCK INSTALLATION.

TIMBER CONSTRUCTION

1. ALL TIMBER CONSTRUCTION SHALL CONFORM TO THE RECOMMENDATIONS OF THE AMERICAN INSTITUTE OF TIMBER CONSTRUCTION.

2. ALL SOLID SAWN LUMBER AND TIMBERS SHALL BE NO. 1 MARINE GRADE SOUTHERN YELLOW PINE (S4S).

3. ALL LUMBER SHALL BE TREATED WITH WATERBORNE PRESERVATIVES IN ACCORDANCE WITH AWPA (USE CATEGORY SYSTEM STANDARD U1-18).

4. LUMBER TREATMENT REQUIREMENTS:

   A. TRAVEL LIFT FENDER SYSTEM TREATED IN ACCORDANCE WITH USE CATEGORY 5B (UC5B)

5. FIELD TREAT ALL CUTS AND ABRASIONS IN TREATED TIMBERS IN ACCORDANCE WITH THE AMERICAN WOOD PRESERVERS ASSOCIATION STANDARD M4. TRIM ALL CUTS AND ABRASIONS BEFORE FIELD TREATMENT. COAT ALL DEPRESSIONS OR OPENINGS AROUND BOLT HOLES, JOINTS OR GAPS INCLUDING RECESSES FORMED BY COUNTERBORING, WITH PRESERVATIVE TREATMENT USED FOR TIMBER.

6. CONNECTING BOLTS AND NUTS SHALL CONFORM TO ASTM A307, GALVANIZED, UNLESS OTHERWISE NOTED.

7. WHEN CONNECTING HARDWARE IS SHOWN ON THE DRAWINGS, THE TYPE, SIZE, SPACING, AND ALIGNMENT ARE CRITICAL AND MUST BE MAINTAINED. DO NOT UNDERCUT WOOD. CONNECTIONS SHALL PULL AND HOLD MEMBERS BEING JOINED INTO FLUSH CONTACT.

8. WASHERS SHALL BE CIRCULAR FLAT SMOOTH AND SHALL CONFORM TO ANSI B18.21.1. USE DOCK WASHERS OR OGEE WASHERS WHERE INDICATED OR REQUIRED.

9. CHECK ALL BOLTS BY BURRING THE THREADS AFTER THE NUTS HAVE BEEN FINALLY TIGHTENED. RECOAT EXPOSED PORTION OF BOLT WITH TWO COATS OF HIGH ZINC DUST OXIDE PAINT.

10. BORE HOLES FOR THRU BOLTS WITH A BIT 1/16 INCH LARGER IN DIAMETER THAN THE SHANK OF THE BOLT.

11. COUNTERSINK ALL TIMBER HARDWARE TO PROVIDE 1/2" MINIMUM CLEARANCE BETWEEN BOLT AND/OR NUT AND THE OUTSIDE SURFACE OF TIMBER MEMBER BEING JOINED.

UTILITIES

1. THE CONTRACTOR IS TO LOCATE, PROTECT AND IDENTIFY ALL UNDERGROUND AND OVERHEAD UTILITIES AND SERVICES. THE CONTRACTOR IS RESPONSIBLE FOR OBTAINING INFORMATION AND SATISFYING HIMSELF AS TO THE LOCATION OF UTILITIES, SHOWN AND NOT SHOWN. ALL REPAIRS OR RELOCATIONS NECESSARY WILL BE MADE AS REQUIRED BY THE OWNER OF THE UTILITIES OR STRUCTURES. THE COST OF SUCH REPAIRS OR RELOCATIONS NECESSARY SHALL BE BORNE BY THE CONTRACTOR.

2. THE EXISTING 30" DIAMETER WATERLINE SHALL BE PHYSICALLY MARKED BOTH ON SHORE AND OVER THE WATER WITH APPROVED MARKING DEVICE. MARKING DEVICE SHALL BE MAINTAINED THROUGHOUT THE DURATION OF THE PROJECT.

ISSUED FOR BID
JANUARY 2020

GRAND STRAND WATER & SEWER AUTHORITY

Mark	Description	Date	Appr.
	ISSUED FOR BID	05/01/20	JJT

BUCKSPORT MARINE INDUSTRIAL PARK - PHASE 1

STRUCTURAL NOTES

Designed by: AC | Drawn by: BDF | Checked by: PRG | Reviewed by: MEW | Submitted by: MOFFATT & NICHOL

Date: JANUARY 2020 | Rev. 0

M&N Project No. 7232-05

Drawing code:

Drawing Scale: AS SHOWN
Plot scale: 1:1 (0 SHEET)

SOUTH CAROLINA LICENSED PROFESSIONAL ENGINEER
No.36411
PATRICK R. GRANEY
SEAL
05-01-2020
SOUTH CAROLINA CERTIFICATE OF AUTHORIZATION
MOFFATT & NICHOL ENGINEERS No. 000363

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SC COA No. 363

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Sheet Reference No.
S-001
INDEX: 90 OF 113

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DRAWING SCALES SHOWN BASED ON 22"x34" DRAWING

SPECIAL INSPECTION:

STRUCTURAL STEEL:

1. IN ACCORDANCE WITH SECTION 1705.2.1 OF THE 2018 INTERNATIONAL BUILDING CODE, SPECIAL INSPECTION FOR STRUCTURAL STEEL SHALL BE IN ACCORDANCE WITH THE QUALITY ASSURANCE INSPECTION REQUIREMENTS OF AISC 360, SPECIFICATION OF STRUCTURAL STEEL BUILDINGS.

2. QUALITY CONTROL, QUALITY ASSURANCE AND NONDESTRUCTIVE TESTING FOR STRUCTURAL STEEL SYSTEMS SHALL MEET THE MINIMUM REQUIREMENTS AS DEFINED IN AISC 360, CHAPTER N, QUALITY CONTROL AND QUALITY ASSURANCE.

3. QUALITY CONTROL (QC) SHALL BE PROVIDED BY THE FABRICATOR AND ERECTOR.

4. QUALITY ASSURANCE (QA) SHALL BE PROVIDED BY THE OWNER.

5. NONDESTRUCTIVE TESTING (NDT) SHALL BE PERFORMED BY THE AGENCY OR FIRM RESPONSIBLE FOR QUALITY ASSURANCE (QA).

6. INSPECTION OF WELDING
   AS A MINIMUM, WELDING INSPECTION TASKS SHALL BE IN ACCORDANCE WITH TABLES N5.4–1, N5.4–2 AND N5.4–3 OF AISC 360. IN THESE TABLES, THE INSPECTION TASKS ARE AS FOLLOWS:

   O – OBSERVE THESE ITEMS ON A RANDOM BASIS. OPERATIONS NEED NOT BE DELAYED PENDING THESE INSPECTIONS.

   P – PERFORM THESE TASKS FOR EACH WELDED JOINT OR MEMBER.

TABLE N5.4–1 INSPECTION TASKS PRIOR TO WELDING

INSPECTION TASKS PRIOR TO WELDING	QC	QA
WELDER QUALIFICATION RECORDS AND CONTINUITY RECORDS	P	O
WELDING PROCEDURE SPECIFICATIONS (WPSs) AVAILABLE	P	P
MANUFACTURER CERTIFICATIONS FOR WELDING CONSUMABLES AVAILABLE	P	P
MATERIAL IDENTIFICATION (TYPE/GRADE)	O	O
WELDER IDENTIFICATION SYSTEM[1]	O	O
FIT–UP OF GROOVE WELDS (INCLUDING JOINT GEOMETRY) • JOINT PREPARATION • DIMENSIONS (ALIGNMENT, ROOT OPENING, ROOT FACE, BEVEL) • CLEANLINESS (CONDITION OF STEEL SURFACES) • TACKING (TACK WELD QUALITY AND LOCATION) • BACKING TYPE AND FIT (IF APPLICABLE)	O	O
CONFIGURATION AND FINISH OF ACCESS HOLES	O	O
FIT–UP OF FILLET WELDS • DIMENSIONS (ALIGNMENT, GAPS AT ROOT) • CLEANLINESS (CONDITION OF STEEL SURFACES) • TACKING (TACK WELD QUALITY AND LOCATION)	O	O
CHECK WELDING EQUIPMENT	O	—

[1] THE FABRICATOR OR ERECTOR, AS APPLICABLE, SHALL MAINTAIN A SYSTEM BY WHICH A WELDER WHO HAS WELDED A JOINT OR MEMBER CAN BE IDENTIFIED. STAMPS, IF USED, SHALL BE THE LOW–STRESS TYPE.

TABLE N5.4–2 INSPECTION TASKS DURING WELDING

INSPECTION TASKS DURING WELDING	QC	QA
CONTROL AND HANDLING OF WELDING CONSUMABLES • PACKAGING • EXPOSURE CONTROL	O	O
NO WELDING OVER CRACKED TACK WELDS	O	O
ENVIRONMENTAL CONDITIONS • WIND SPEED WITHIN LIMITS • PRECIPITATION AND TEMPERATURE	O	O
WPS FOLLOWED • SETTINGS ON WELDING EQUIPMENT • TRAVEL SPEED • SELECTED WELDING MATERIALS • SHIELDING GAS TYPE/FLOW RATE • PREHEAT APPLIED • INTERPASS TEMPERATURE MAINTAINED (MIN./MAX.) • PROPER POSITION (F, V, H, OH)	O	O
WELDING TECHNIQUES • INTERPASS AND FINAL CLEANING • EACH PASS WITHIN PROFILE LIMITATIONS • EACH PASS MEETS QUALITY REQUIREMENTS	O	O
PLACEMENT AND INSTALLATION OF STEEL HEADED STUD ANCHORS	P	P

TABLE N5.4–3 INSPECTION TASKS AFTER WELDING

INSPECTION TASKS AFTER WELDING	QC	QA
WELDS CLEANED	O	O
SIZE, LENGTH AND LOCATION OF WELDS	P	P
WELDS MEET VISUAL ACCEPTANCE CRITERIA • CRACK PROHIBITION • WELD/BASE–METAL FUSION • CRATER CROSS SECTION • WELD PROFILES • WELD SIZE • UNDERCUT • POROSITY	P	P
ARC STRIKES	P	P
K–AREA[1]	P	P
WELD ACCESS HOLES IN ROLLED HEAVY SHAPES AND BUILT–UP HEAVY SHAPES	P	P
BACKING REMOVED AND WELD TABS REMOVED (IF REQUIRED)	P	P
REPAIR ACTIVITIES	P	P
DOCUMENT ACCEPTANCE OR REJECTION OF WELDED JOINT OR MEMBER	P	P

[1] WHEN WELDING OF DOUBLER PLATES, CONTINUITY PLATES OR STIFFENERS HAS BEEN PERFORMED IN THE K–AREA, VISUALLY INSPECT THE WEB K–AREA FOR CRACKS WITHIN 3 IN. (75 MM) OF THE WELD.

7. AS A MINIMUM, BOLTING INSPECTION TASKS SHALL BE IN ACCORDANCE WITH TABLES N5.6–1, N5.6–2 AND N5.6–3. IN THESE TABLES, THE INSPECTION TASKS ARE AS FOLLOWS:

   O – OBSERVE THESE ITEMS ON A RANDOM BASIS. OPERATIONS NEED NOT BE DELAYED PENDING THESE INSPECTIONS.

   P – PERFORM THESE TASKS FOR EACH BOLTED CONNECTION.

TABLE N5.6–1 INSPECTION PRIOR TO BOLTING

INSPECTION TASKS PRIOR TO BOLTING	QC	QA
MANUFACTURER'S CERTIFICATIONS AVAILABLE FOR FASTENER MATERIALS	O	P
FASTENERS MARKED IN ACCORDANCE WITH ASTM REQUIREMENTS	O	O
CORRECT FASTENERS SELECTED FOR THE JOINT DETAIL (GRADE, TYPE, BOLT LENGTH IF THREADS ARE TO BE EXCLUDED FROM SHEAR PLANE)	O	O
CORRECT BOLTING PROCEDURE SELECTED FOR JOINT DETAIL	O	O
CONNECTING ELEMENTS, INCLUDING THE APPROPRIATE FAYING SURFACE CONDITION AND HOLE PREPARATION, IF SPECIFIED, MEET APPLICABLE REQUIREMENTS	O	O
PRE–INSTALLATION VERIFICATION TESTING BY INSTALLATION PERSONNEL OBSERVED AND DOCUMENTED FOR FASTENER ASSEMBLIES AND METHODS USED	P	O
PROTECTED STORAGE PROVIDED FOR BOLTS, NUTS, WASHERS AND OTHER FASTENER COMPONENTS	O	O

TABLE N5.6–2 INSPECTION TASKS DURING BOLTING

INSPECTION TASKS DURING BOLTING	QC	QA
FASTENER ASSEMBLIES, OF SUITABLE CONDITION, PLACED IN ALL HOLES AND WASHERS (IF REQUIRED) ARE POSITIONED AS REQUIRED	O	O
JOINT BROUGHT TO THE SNUG–TIGHT CONDITION PRIOR TO THE PRETENSIONING OPERATION	O	O
FASTENER COMPONENT NOT TURNED BY THE WRENCH PREVENTED FROM ROTATING	O	O
FASTENERS ARE PRETENSIONED IN ACCORDANCE WITH THE RCSC SPECIFICATION, PROGRESSING SYSTEMATICALLY FROM THE MOST RIGID POINT TOWARD THE FREE EDGES	O	O

TABLE N5.6–3 INSPECTION TASKS AFTER BOLTING

INSPECTION TASKS AFTER BOLTING	QC	QA
DOCUMENT ACCEPTANCE OR REJECTION OF BOLTED CONNECTIONS	P	P

CONCRETE CONSTRUCTION:

IN ACCORDANCE WITH CHAPTER 17 OF THE INTERNATIONAL BUILDING CODE AND ALL APPLICABLE STATE AND LOCAL REQUIREMENTS, AN INDEPENDENT APPROVED AGENCY SHALL MAKE PERIODIC AND/OR CONTINUOUS INSPECTIONS OF THE CONSTRUCTION PROGRESS IN ACCORDANCE WITH SECTION 1705.3 & TABLE 1705.3 (SEE FOLLOWING)

TABLE 1705.3 – REQUIRED SPECIAL INSPECTIONS AND TESTS OF CONCRETE CONSTRUCTION

TYPE	CONTINUOUS	PERIODIC	REFERENCED STANDARD	IBC REFERENCE
INSPECT REINFORCEMENT, INCLUDING PRESTRESSING TENDONS, AND VERIFY PLACEMENT.	–	X	ACI 318: Ch. 20, 25.2, 25.3, 26.6.1–26.6.3	1908.4
REINFORCING BAR WELDING: a. VERIFY WELDABILITY OF REINFORCING BARS OTHER THAN ASTM A706; b. INSPECT SINGLE–PASS FILLET WELDS, MAXIMUM 5/16"; AND c. INSPECT ALL OTHER WELDS.	– – X	X X –	AWS D1.4 ACI318: 26.6.4	–
INSPECTION OF ANCHORS CAST IN CONCRETE	–	X	ACI 318: 17.8.2	–
INSPECT ANCHORS POST–INSTALLED IN HARDENED CONCRETE MEMBERS: a. ADHESIVE ANCHORS INSTALLED IN HORIZONTALLY OR UPWARDLY INCLINED ORIENTATIONS TO RESIST SUSTAINED TENSION LOADS. b. MECHANICAL ANCHORS AND ADHESIVE ANCHORS NOT DEFINED IN a.	X	 X	ACI318: 17.8.2.4 ACI 318: 17.8.2	–
VERIFYING USE OF REQUIRED DESIGN MIX.	–	X	ACI 318: CH 19, 26.4.3, 26.4.4	1904.1 1904.2, 1908.2, 1908.3
PRIOR TO CONCRETE PLACEMENT, FABRICATE SPECIMENS FOR STRENGTH TESTS, PERFORM SLUMP AND AIR CONTENT TESTS, AND DETERMINE THE TEMPERATURE OF THE CONCRETE	X	–	ASTM C172 ASTM C31 ACI 318: 26.5, 26.12	1908.10
INSPECT CONCRETE AND SHOTCRETE PLACEMENT FOR PROPER APPLICATION TECHNIQUES.	X	–	ACI 318: 26.5	1908.6, 1908.7, 1908.8
VERIFY MAINTENANCE OF SPECIFIED CURING TEMPERATURE AND TECHNIQUES.	–	X	ACI 318: 26.5.3–26.5.5	1908.9
INSPECT PRESTRESSED CONCRETE: a. APPLICATION OF PRESTRESSING FORCES. b. GROUTING OF BONDED PRESTRESSING TENDONS.	X X	– –	ACI 318: 26.10	–
INSPECT ERECTION OF PRECAST CONCRETE MEMBERS.	–	X	ACI 318: 26.9	–
VERIFY IN–SITU CONCRETE STRENGTH, PRIOR TO REMOVAL OF SHORES AND FORMS FROM BEAMS AND STRUCTURAL SLABS.	–	X	ACI 318: 26.11.2	–
INSPECT FORMWORK FOR SHAPE, LOCATION AND DIMENSIONS OF THE CONCRETE MEMBER BEING FORMED.	–	X	ACI 318: 26.11.1.2(b)	–

SOILS:

IN ACCORDANCE WITH CHAPTER 17 OF THE INTERNATIONAL BUILDING CODE AND ALL APPLICABLE STATE AND LOCAL REQUIREMENTS, AN INDEPENDENT APPROVED AGENCY SHALL MAKE PERIODIC AND/OR CONTINUOUS INSPECTIONS OF THE CONSTRUCTION PROGRESS IN ACCORDANCE WITH SECTIONS 1705.6 AND TABLE 1705.6 (SEE FOLLOWING)

TABLE 1705.6 – REQUIRED SPECIAL INSPECTIONS AND TESTS OF SOILS

TYPE	CONTINUOUS	PERIODIC
VERIFY MATERIALS BELOW SHALLOW FOUNDATIONS ARE ADEQUATE TO ACHIEVE THE DESIGN BEARING CAPACITY.	–	X
VERIFY EXCAVATIONS ARE EXTENDED TO PROPER DEPTH AND HAVE REACHED PROPER MATERIAL.	–	X
PERFORM CLASSIFICATION AND TESTING OF COMPACTED FILL MATERIALS.	–	X
VERIFY USE OF PROPER MATERIALS, DENSITIES AND LIFT THICKNESSES DURING PLACEMENT AND COMPACTION OF COMPACTED FILL.	X	–
PRIOR TO PLACEMENT OF COMPACTED FILL, INSPECT SUBGRADE AND VERIFY THAT SITE HAS BEEN PREPARED PROPERLY.	–	X

DEEP FOUNDATIONS:

IN ACCORDANCE WITH CHAPTER 17 OF THE INTERNATIONAL BUILDING CODE AND ALL APPLICABLE STATE AND LOCAL REQUIREMENTS, AN INDEPENDENT APPROVED AGENCY SHALL MAKE PERIODIC AND/OR CONTINUOUS INSPECTIONS OF THE CONSTRUCTION PROGRESS IN ACCORDANCE WITH SECTIONS 1705.7 AND TABLE 1705.7 (SEE FOLLOWING)

TABLE 1705.7 – REQUIRED SPECIAL INSPECTIONS AND TESTS OF DRIVEN DEEP FOUNDATION ELEMENTS

TYPE	CONTINUOUS	PERIODIC
VERIFY ELEMENT MATERIALS, SIZES AND LENGTHS COMPLY WITH THE REQUIREMENTS.	X	–
DETERMINE CAPACITIES OF TEST ELEMENTS AND CONDUCT ADDITIONAL LOAD TESTS, AS REQUIRED.	X	–
INSPECT DRIVING OPERATIONS AND MAINTAIN COMPLETE AND ACCURATE RECORDS FOR EACH ELEMENT.	X	–
VERIFY PLACEMENT LOCATIONS AND PLUMBNESS, CONFIRM TYPE AND SIZE OF HAMMER, RECORD NUMBER OF BLOWS PER FOOT OF PENETRATION, DETERMINE REQUIRED PENETRATIONS TO ACHIEVE DESIGN CAPACITY, RECORD TIP AND BUTT ELEVATIONS AND DOCUMENT ANY DAMAGE TO FOUNDATION ELEMENT.	X	–
FOR STEEL ELEMENTS, PERFORM ADDITIONAL SPECIAL INSPECTIONS IN ACCORDANCE WITH SECTION 1705.2.	–	–
FOR CONCRETE–FILLED ELEMENTS, PERFORM ADDITIONAL SPECIAL INSPECTIONS IN ACCORDANCE WITH SECTION 1705.3.	–	–
FOR SPECIAL ELEMENTS, PERFORM ADDITIONAL INSPECTIONS AS DETERMINED BY THE REGISTERED DESIGN PROFESSIONAL IN RESPONSIBLE CHARGE.	–	–

ISSUED FOR BID
JANUARY 2020

GRAND STRAND WATER & SEWER AUTHORITY

Mark	Description	Date	Appr.
	ISSUED FOR BID	05/01/20	JJT

BUCKSPORT MARINE INDUSTRIAL PARK - PHASE 1

SPECIAL INSPECTIONS

Rev: 0
Date: JANUARY 2020
M&N Project No.: 7232–05
Drawing code:
Drawing Scale: AS SHOWN
Plot scale: 1:1 (0 SHEET)
Designed by: AC
Dwn by: BDF
Chd by: PRG
Reviewed by: MEW
Submitted by: MOFFATT & NICHOL

SOUTH CAROLINA LICENSED PROFESSIONAL ENGINEER No.36411 PATRICK R. GRANEY
SEAL
05-01-2020
SOUTH CAROLINA MOFFATT & NICHOL ENGINEERS No. 000363 CERTIFICATE OF AUTHORIZATION

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SC COA No. 363
moffatt & nichol

Sheet Reference No.
S-002
INDEX: 91 OF 113

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4/29/2020 2:51 AM by JTHIBODEAUX

DRAWING SCALES SHOWN BASED ON 22"x34" DRAWING

GRAVEL PAVEMENT, SEE CIVIL SHEETS

TRAVEL LIFT PIERS, SEE SHEET S-101

TRANSITION SLAB, TYP

TRAVEL LIFT PIER, TYP

TRENCH DRAIN, SEE CIVIL SHEETS

APPROX LOCATION OF HISTORIC SUNKEN BARGE (DO NOT DISTURB)

FLOATING DOCK, SEE SHEET S-102

ALUM GANGWAY

72'-0"

40'-0" TYP

38'-0" TYP

162'-0" TYP

EXIST. 30"ø WATERLINE (MARK & PROTECT)

FLOATING DOCK

DESIGN DREDGE EL -8.5

DESIGN DREDGE EL -14.5

WATERWAY LIMIT

243'-0"

APPROXIMATE DREDGE LIMITS, SEE SHEET CD101 FOR DREDGE PLAN

N

20' 0' 20' 40'

SCALE: 1"=20'

ISSUED FOR BID
JANUARY 2020

GRAND STRAND WATER & SEWER AUTHORITY

Mark	Description	Date	Appr.
ISSUED FOR BID		05/01/20	JJT

BUCKSPORT MARINE INDUSTRIAL PARK - PHASE 1

OVERALL STRUCTURAL SITE PLAN

Designed by: AC	Dwn by: BDF	Ckd by: PRG	Reviewed by: MEW
Submitted by: MOFFATT & NICHOL			
Date: JANUARY 2020	M&N Project No. 7232-05	Drawing code:	Drawing Scale: AS SHOWN Plot scale: 1:1 (D SHEET)
Rev. 0			

LICENSED PROFESSIONAL ENGINEER SOUTH CAROLINA No.36411 PATRICK R. GRANEY

SEAL

05-01-2020

MOFFATT & NICHOL ENGINEERS No. 000363 SOUTH CAROLINA CERTIFICATE OF AUTHORIZATION

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SC COA No. 363

moffatt & nichol

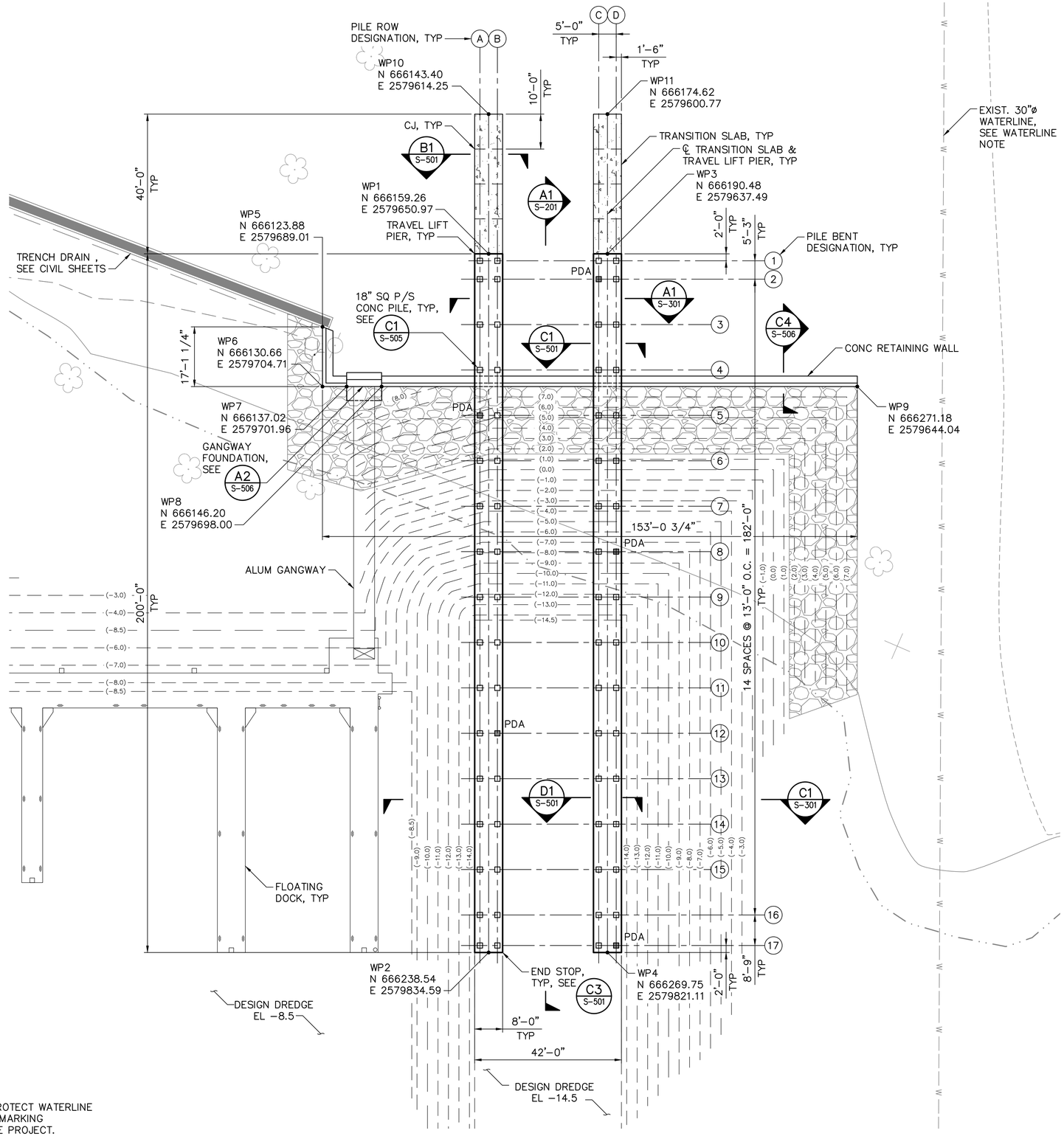
Sheet Reference No.

S-100

INDEX: 92 OF 113

File: Q:\RA\7232-05\CADD_Active_SheetSet\7232S-S-100. Plotted: 4/29/2020 11:10 AM by THIBODEAUX, JASON. Saved: 1/15/2020 8:59 AM by JTHIBODEAUX

DRAWING SCALES SHOWN BASED ON 22"x34" DRAWING



WATERLINE NOTE:
PHYSICALLY LOCATE, MARK, AND PROTECT WATERLINE WITHIN BOUNDARIES AND MAINTAIN MARKING THROUGHOUT THE DURATION OF THE PROJECT.

16' 0' 16' 32'

SCALE: 1"=16'

ISSUED FOR BID
JANUARY 2020

DRAWING SCALES SHOWN BASED ON 22"x34" DRAWING

GRAND STRAND WATER & SEWER AUTHORITY

Mark	Description	Date	Appr.
	ISSUED FOR BID	05/01/20	JJT

BUCKSPORT MARINE INDUSTRIAL PARK - PHASE 1

ENLARGED STRUCTURAL SITE PLAN

Designed by: AC | Dwn by: BDF | Ckd by: PRG | Reviewed by: MEW | Submitted by: MOFFATT & NICHOL

Date: JANUARY 2020 | M&N Project No. 7232-05 | Drawing code: | Drawing Scale: AS SHOWN | Plot scale: 1:1 (D SHEET) | Rev. 0

SOUTH CAROLINA LICENSED PROFESSIONAL ENGINEER No.36411 PATRICK R. GRANEY SEAL 05-01-2020

SOUTH CAROLINA MOFFATT & NICHOL ENGINEERS No. 000363 CERTIFICATE OF AUTHORIZATION

4700 FALLS OF THE NEUSE ROAD
SUITE 300
RALEIGH, NC 27609
919-781-4626
SC COA No. 363
moffatt & nichol

Sheet Reference No.
S-101
INDEX: 93 OF 113

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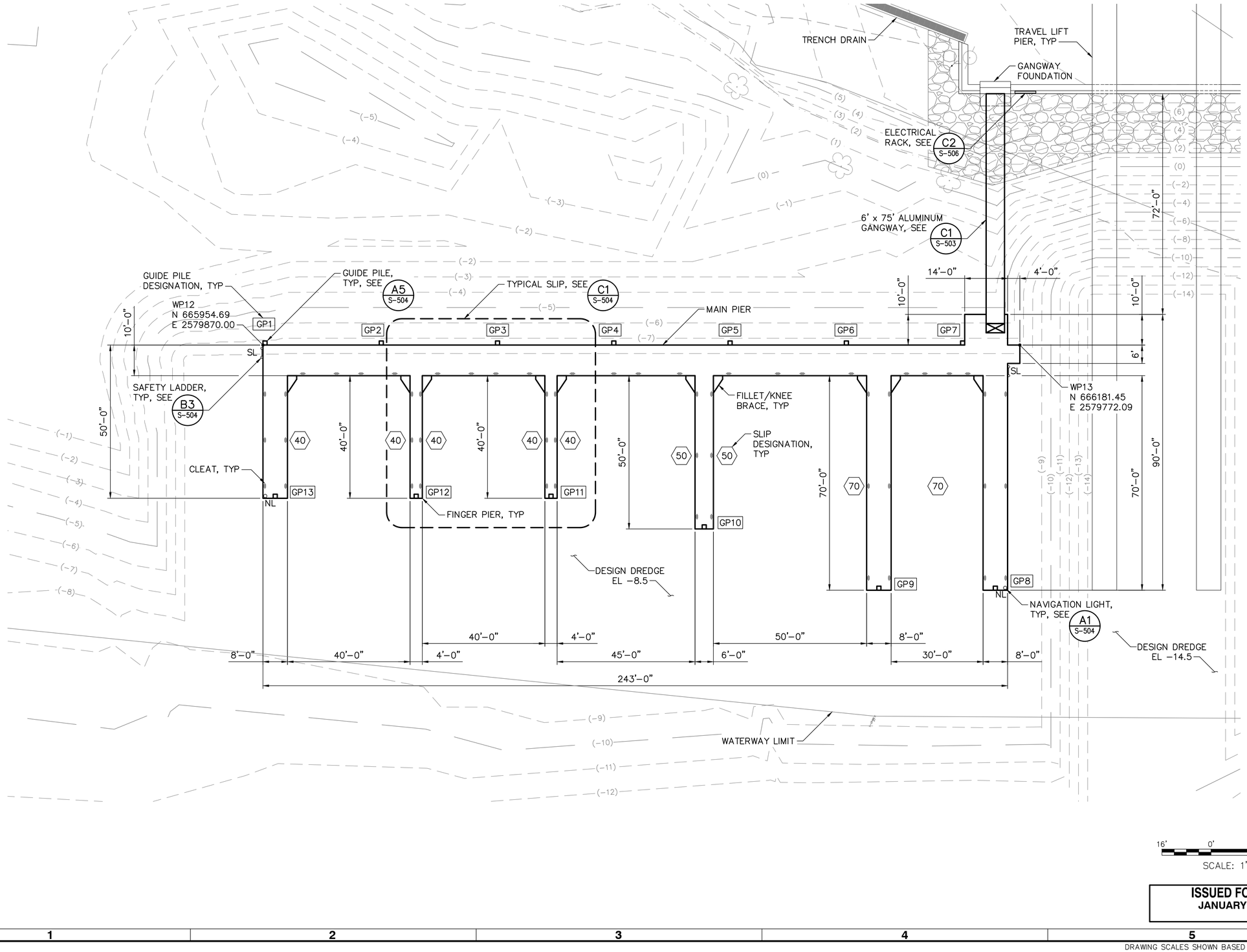

16' 0' 16' 32'

SCALE: 1"=16'

ISSUED FOR BID
JANUARY 2020

GRAND STRAND WATER & SEWER AUTHORITY

Mark	Description	Date	Appr.
	ISSUED FOR BID	05/01/20	JJT

BUCKSPORT MARINE INDUSTRIAL PARK - PHASE 1

FLOATING DOCK PLAN

Date: JANUARY 2020 | Rev. 0
Designed by: AC | Drawn by: BDF | Checked by: PRG | Reviewed by: MEW | Submitted by: MOFFATT & NICHOL
M&N Project No. 7232-05
Drawing code:
Drawing Scale: AS SHOWN
Plot scale: 1:1 (0 SHEET)

SOUTH CAROLINA LICENSED PROFESSIONAL ENGINEER PATRICK R. GRANEY No.36411

SEAL

05-01-2020

SOUTH CAROLINA CERTIFICATE OF AUTHORIZATION MOFFATT & NICHOL ENGINEERS No. 000363

4700 FALLS OF THE NEUSE ROAD
SUITE 300
RALEIGH, NC 27609
919-781-4626

SC COA No. 363

moffatt & nichol

Sheet Reference No.

S-102

INDEX: 94 OF 113

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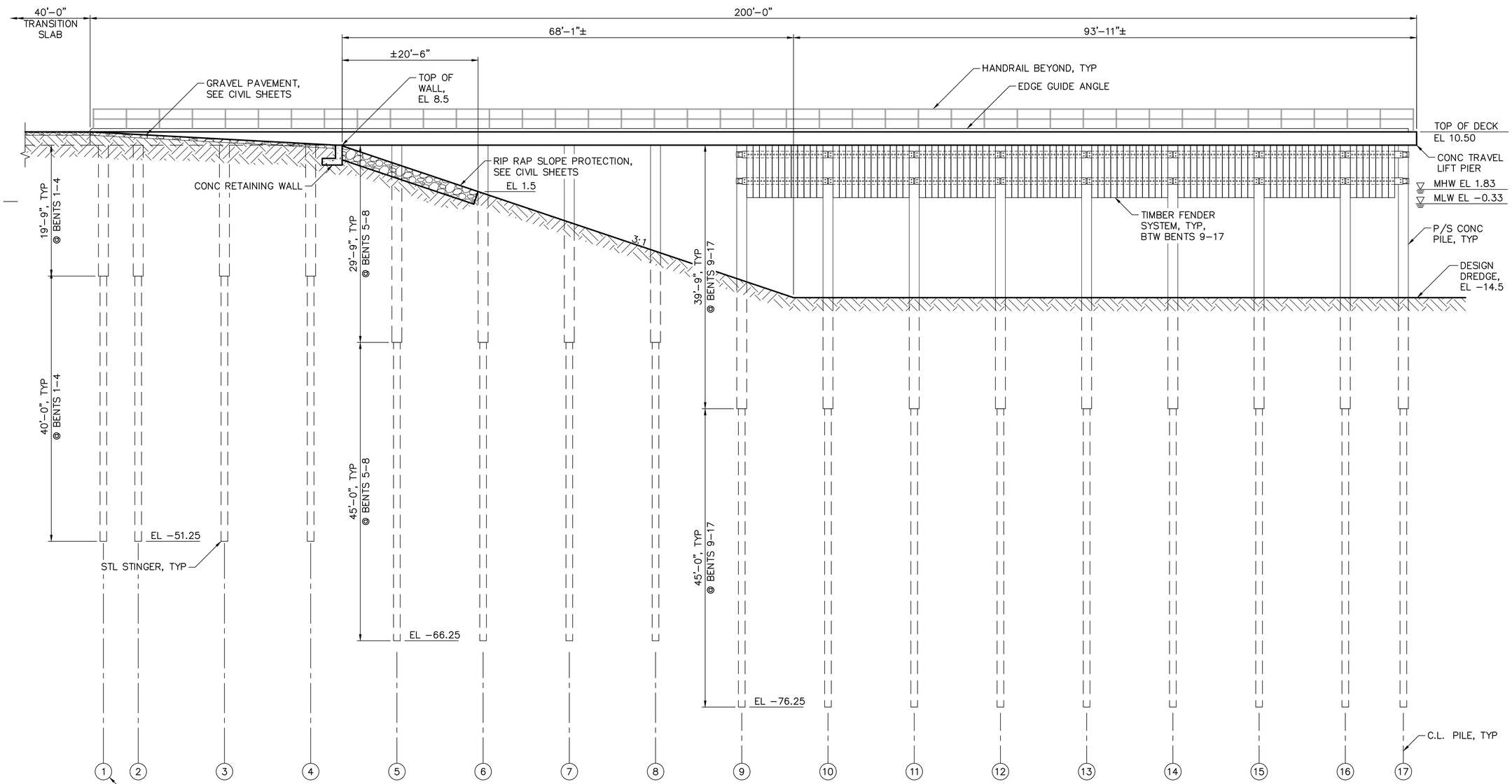
DRAWING SCALES SHOWN BASED ON 22"x34" DRAWING



A1 / S-101 TRAVEL LIFT PIER ELEVATION
SCALE: 1/8"=1'–0"

8'–0" 0'–0" 8'–0" 16'–0"
SCALE: 1/8"=1'–0"

ISSUED FOR BID
JANUARY 2020

GRAND STRAND WATER & SEWER AUTHORITY

Mark	Description	Date	Appr.
	ISSUED FOR BID	05/01/20	JJT

BUCKSPORT MARINE INDUSTRIAL PARK - PHASE 1

TRAVEL LIFT PIER ELEVATION

Designed by: AC | Dwn by: BDF | Ckd by: PRG | Reviewed by: MEW | Submitted by: MOFFATT & NICHOL | Date: JANUARY 2020 | Rev: 0 | M&N Project No. 7232-05 | Drawing code: | Drawing Scale: AS SHOWN | Plot scale: 1:1 (0 SHEET)

SOUTH CAROLINA LICENSED PROFESSIONAL ENGINEER PATRICK R. GRANEY No.36411
SEAL
05-01-2020
SOUTH CAROLINA MOFFATT & NICHOL ENGINEERS No. 000363 CERTIFICATE OF AUTHORIZATION

4700 FALLS OF THE NEUSE ROAD
SUITE 300
RALEIGH, NC 27609
919-781-4626
SC COA No. 363
moffatt & nichol

Sheet Reference No.
S-201
INDEX: 95 OF 113

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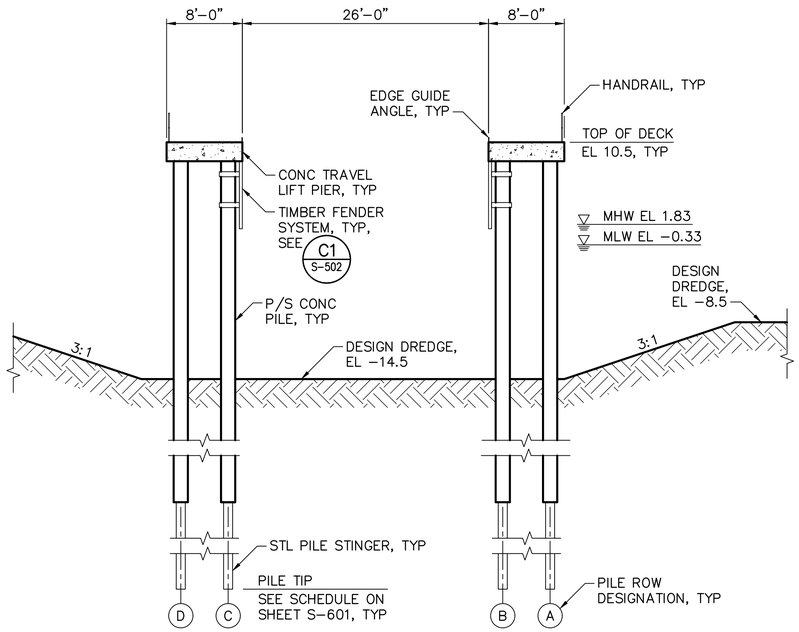
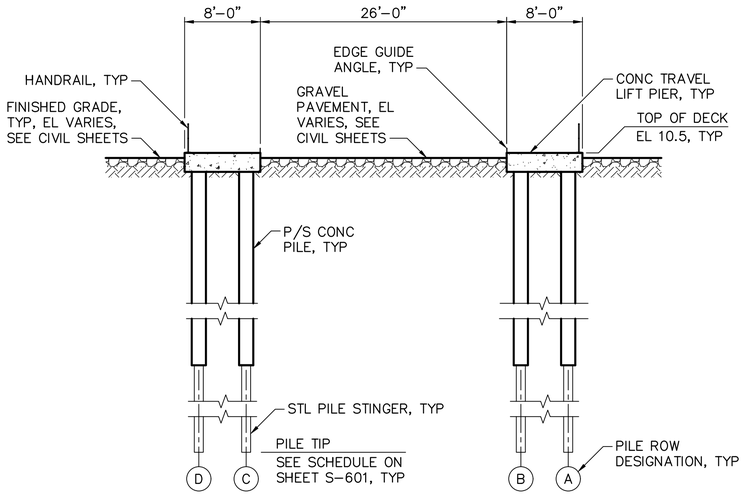


C1 / S–101 WATERSIDE TRAVEL LIFT PIERS SECTION
SCALE: 1/8"=1'–0"



A1 / S–101 LANDSIDE TRAVEL LIFT PIERS SECTION
SCALE: 1/8"=1'–0"

8'–0" 0'–0" 8'–0" 16'–0"
SCALE: 1/8"=1'–0"

ISSUED FOR BID
JANUARY 2020

DRAWING SCALES SHOWN BASED ON 22"x34" DRAWING

GRAND STRAND WATER & SEWER AUTHORITY

Mark	Description	Date	Appr.
	ISSUED FOR BID	05/01/20	JJT

BUCKSPORT MARINE INDUSTRIAL PARK - PHASE 1

TYPICAL SECTIONS

Designed by: AC	Rev. 0
Dwn by: BDF	Date: JANUARY 2020
Ckd by: PRG	M&N Project No. 7232–05
Reviewed by: MEW	Drawing code:
Submitted by: MOFFATT & NICHOL	Drawing Scale: AS SHOWN Plot scale: 1:1 (0 SHEET)

SOUTH CAROLINA LICENSED PROFESSIONAL ENGINEER
No.36411
PATRICK R. GRANEY
SEAL
05-01-2020
SOUTH CAROLINA CERTIFICATE OF AUTHORIZATION
MOFFATT & NICHOL ENGINEERS No. 000363

4700 FALLS OF THE NEUSE ROAD
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SC COA No. 363
moffatt & nichol

Sheet Reference No.
S-301
INDEX: 96 OF 113

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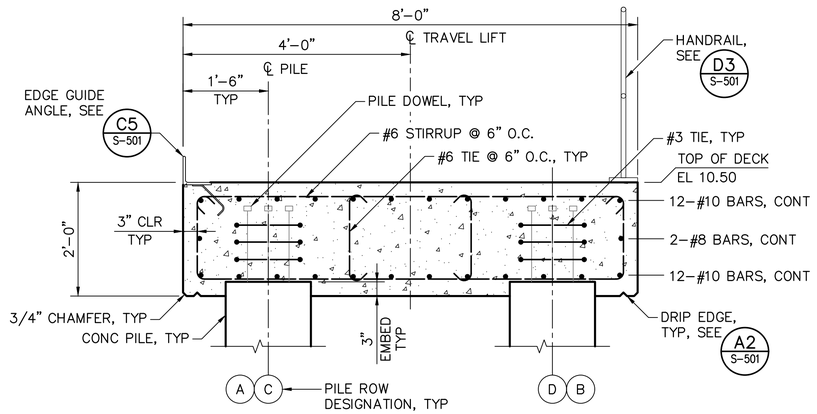
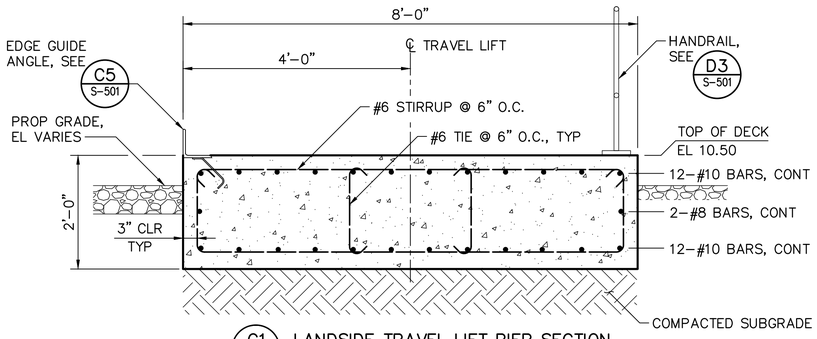
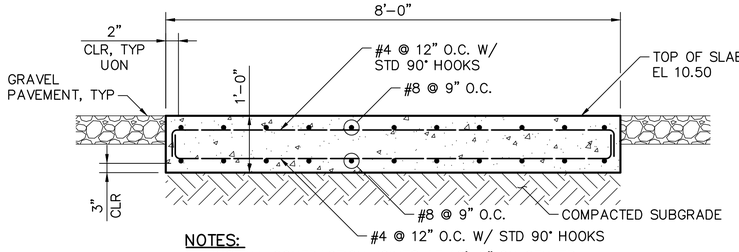


D1 S-101 WATERSIDE TRAVEL LIFT PIER SECTION
SCALE: 3/4"=1'-0"

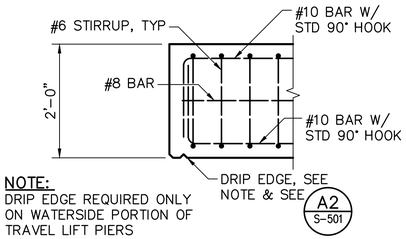


C1 S-101 LANDSIDE TRAVEL LIFT PIER SECTION
SCALE: 3/4"=1'-0"



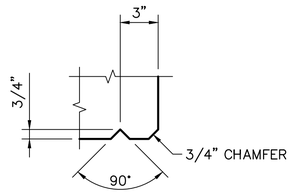
NOTES:
1. INSTALL CONTRACTION JOINTS AT 10'-0" ON CENTER.
2. TURNDOWN REQUIRED AT BOTH EAST AND WEST ENDS OF APPROACH SLAB, SEE DETAIL B3 ON SHEET S-501.

B1 S-101 TRANSITION SLAB SECTION
SCALE: 3/4"=1'-0"

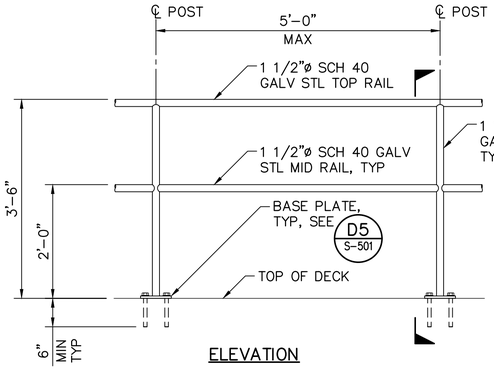


NOTE:
DRIP EDGE REQUIRED ONLY ON WATERSIDE PORTION OF TRAVEL LIFT PIERS

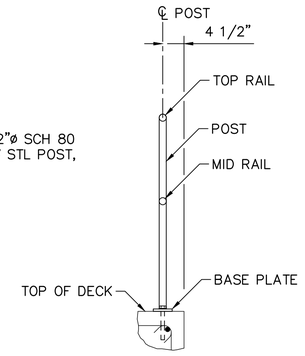
A1 S-501 SECTION
SCALE: 3/4"=1'-0"



A2 S-501 DRIP EDGE
NOT TO SCALE



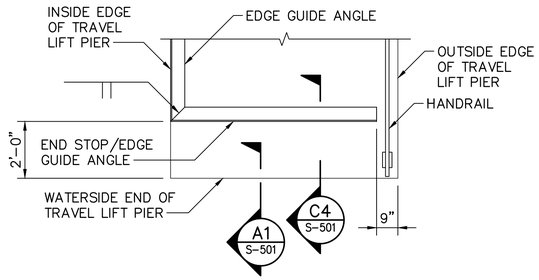
ELEVATION



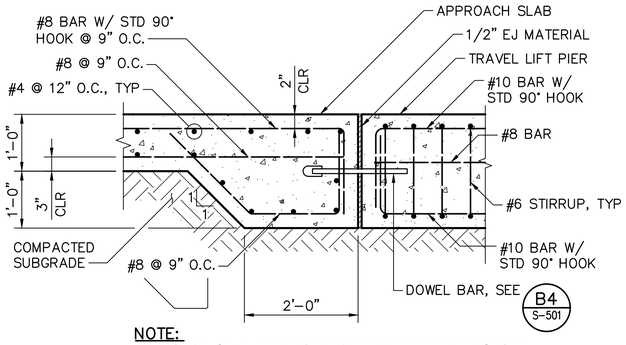
SECTION

NOTE:
HANDRAIL TO RUN ALONG ENTIRE OUTSIDE EDGE OF EACH TRAVEL LIFT PIER.

D3 S-501 TRAVEL LIFT HANDRAIL
SCALE: 3/4"=1'-0"

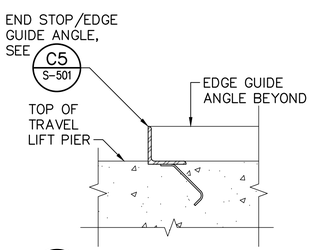


C3 S-101 END STOP
SCALE: 3/8"=1'-0"

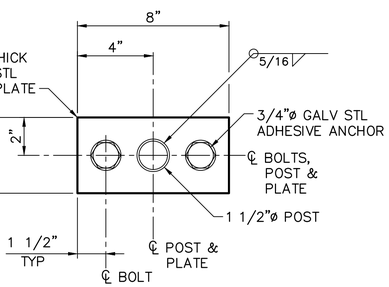


NOTE:
APPROACH SLAB TURNDOWN @ TRAVEL LIFT PIER SHOWN, TURNDOWN AT WEST END OF APPROACH SLAB SIMILAR.

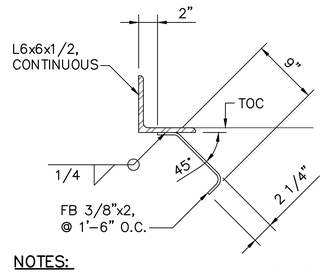
B3 S-501 APPROACH SLAB TURNDOWN
SCALE: 3/4"=1'-0"



C4 S-501 END STOP SECTION
SCALE: 1"=1'-0"

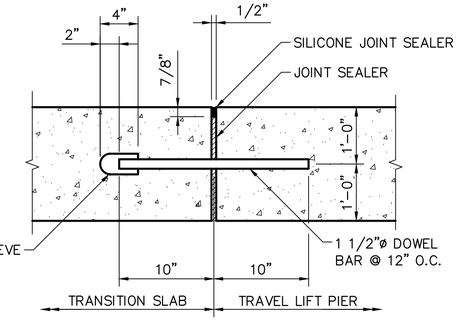


D5 S-501 HANDRAIL BASE PLATE
SCALE: 3"=1'-0"



NOTES:
1. HOT DIP GALVANIZE AFTER FABRICATION.
2. GUIDE ANGLE TO RUN CONTINUOUS ALONG INSIDE EDGE OF TRAVEL LIFT PIER.

C5 S-501 EDGE GUIDE ANGLE
NOT TO SCALE



NOTES:
1. CONCRETE REINFORCEMENT NOT SHOWN FOR CLARITY.
2. USE AN APPROVED TYPE OF DOWEL ASSEMBLY.
3. USE RIGID CONSTRUCTED DOWEL ASSEMBLY, CAPABLE OF HOLDING THE DOWELS BARS IN PROPER POSITION DURING PLACEMENT OF THE CONCRETE AND DESIGNED TO PERMIT UNRESTRICTED MOVEMENT OF THE CONCRETE SLABS.

B4 S-501 DOWEL BAR
NOT TO SCALE

6" 0'-0" 3" 6"
SCALE: 3"=1'-0"

4'-0" 0'-0" 2'-0" 4'-0"
SCALE: 3/8"=1'-0"

2'-0" 0'-0" 1'-0" 2'-0"
SCALE: 3/4"=1'-0"

1'-0" 0'-0" 1'-0" 2'-0"
SCALE: 1"=1'-0"

ISSUED FOR BID
JANUARY 2020

GRAND STRAND WATER & SEWER AUTHORITY

Mark	Description	Date	Appr.
1	ISSUED FOR BID	05/01/20	JJT

BUCKSPORT MARINE INDUSTRIAL PARK - PHASE 1

TRAVEL LIFT PIER DETAILS

Designed by: AC	Drawn by: BDF	Checked by: PRG	Reviewed by: MEW	Submitted by: MOFFATT & NICHOL	Date: JANUARY 2020
					M&N Project No. 7232-05
					Drawing Code:
					Drawing Scale: AS SHOWN Plot scale: 1:1 (D SHEET)
					Rev. 0

SOUTH CAROLINA LICENSED PROFESSIONAL ENGINEER No.36411 PATRICK R. GRANEY
SEAL
05-01-2020
SOUTH CAROLINA MOFFATT & NICHOL ENGINEERS No. 000363 CERTIFICATE OF AUTHORIZATION

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SC COA No. 363
moffatt & nichol

Sheet Reference No.
S-501
INDEX: 97 OF 113

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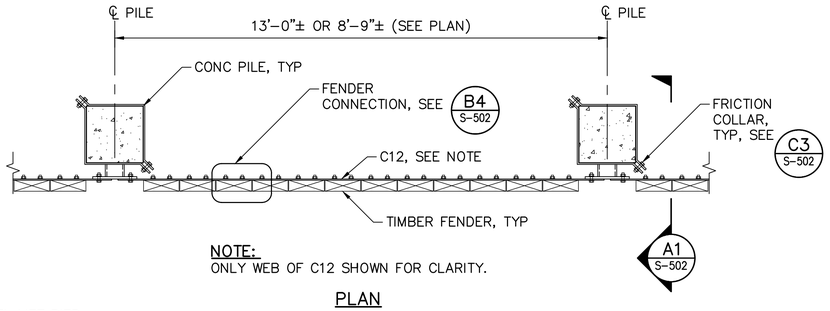
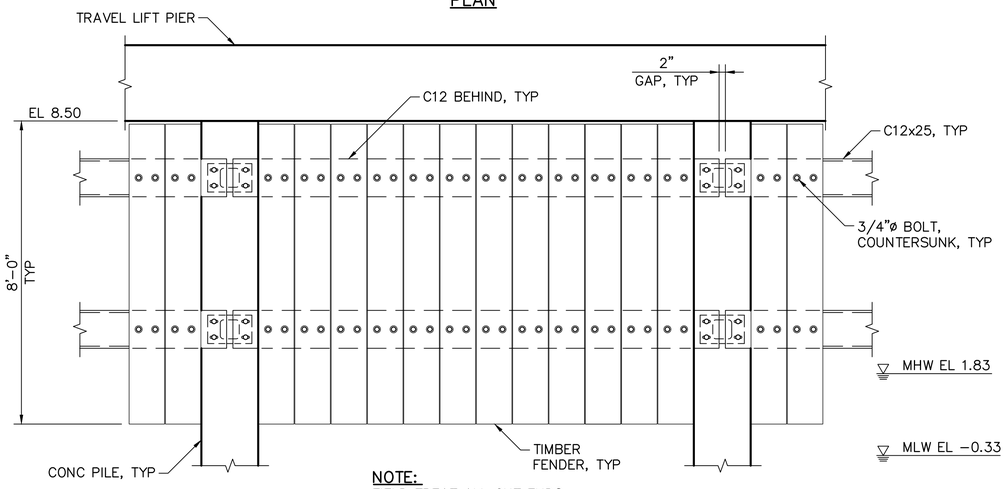


NOTE:
ONLY WEB OF C12 SHOWN FOR CLARITY.

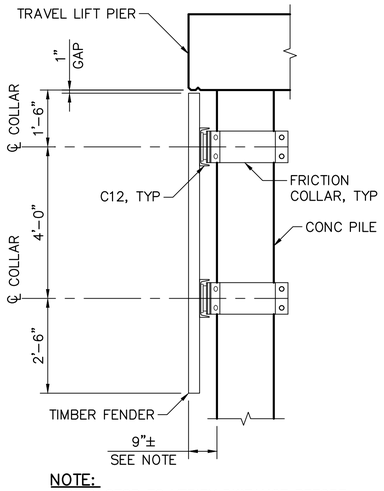
PLAN



NOTE:
FIELD TREAT ALL CUT ENDS.

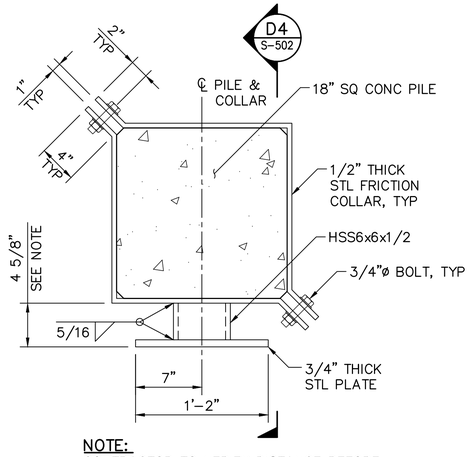
FRONT ELEVATION

C1 S-301 TIMBER FENDER SYSTEM
SCALE: 1/2"=1'–0"



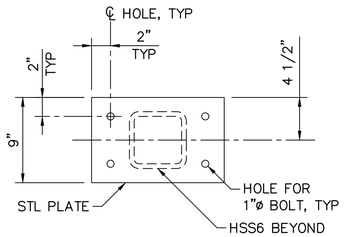
NOTE:
CONTRACTOR TO VERIFY DISTANCE BEFORE FABRICATION, FACE OF TIMBER FENDER TO BE FLUSH WITH FACE OF TRAVEL LIFT PIER.

A1 S-502 SECTION
SCALE: 1/2"=1'–0"



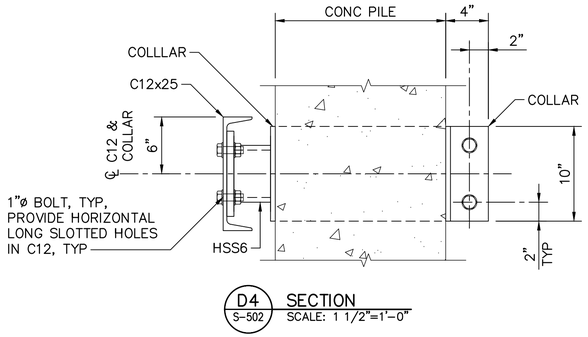
NOTE:
CONTRACTOR TO VERIFY DISTANCE BEFORE FABRICATION, FACE OF TIMBER FENDER TO BE FLUSH WITH FACE OF TRAVEL LIFT PIER.

PLAN

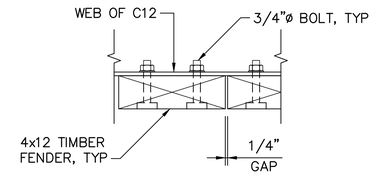


FRONT ELEVATION

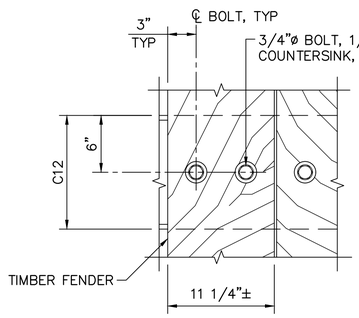
C3 S-502 FRICTION COLLAR
SCALE: 1 1/2"=1'–0"



D4 S-502 SECTION
SCALE: 1 1/2"=1'–0"



PLAN



FRONT ELEVATION

B4 S-502 FENDER CONNECTION
SCALE: 1 1/2"=1'–0"

2'–0" 0'–0" 2'–0" 4'–0"
SCALE: 1/2"=1'–0"

1'–0" 0'–0" 6" 1'–0"
SCALE: 1 1/2"=1'–0"

ISSUED FOR BID
JANUARY 2020

GRAND STRAND WATER & SEWER AUTHORITY

Mark	Description	Date	Appr.
ISSUED FOR BID		05/01/20	JJT

BUCKSPORT MARINE INDUSTRIAL PARK - PHASE 1

TIMBER FENDER SYSTEM DETAILS

Date: JANUARY 2020 | Rev. 0
Designed by: AC | Drawn by: BDF | Checked by: PRG | Reviewed by: MEW
M&N Project No. 7232-05
Drawing code:
Submitted by: MOFFATT & NICHOL
Drawing Scale: AS SHOWN
Plot scale: 1:1 (0 SHEET)

SOUTH CAROLINA LICENSED PROFESSIONAL ENGINEER No.36411 PATRICK R. GRANEY
SEAL
05-01-2020
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moffatt & nichol

Sheet Reference No.
S-502
INDEX: 98 OF 113

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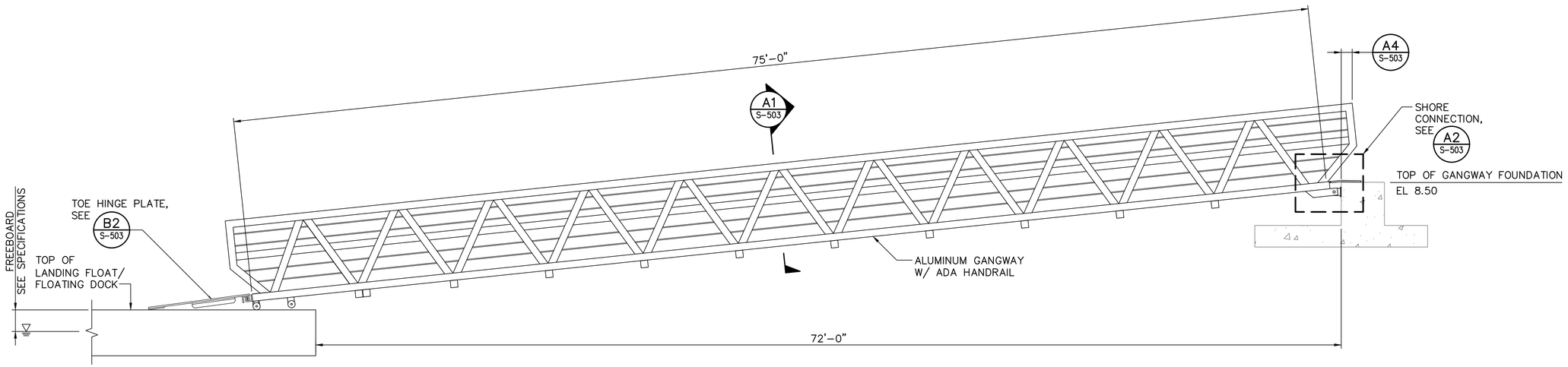
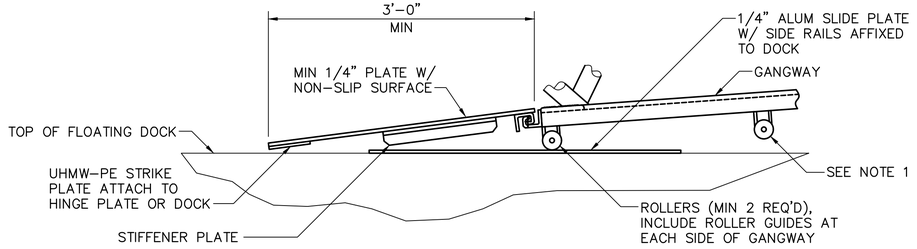
DRAWING SCALES SHOWN BASED ON 22"x34" DRAWING

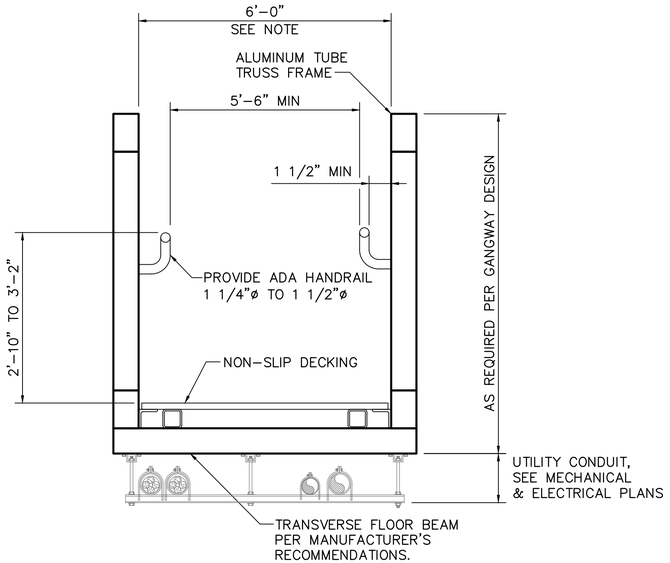


C1 S-102 **ALUMINUM GANGWAY**
NOT TO SCALE



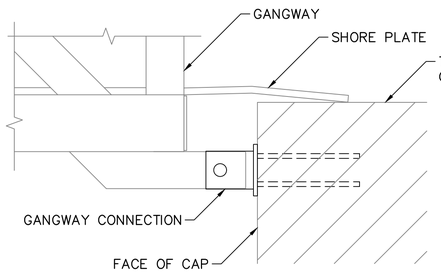
NOTES:
1. MANUFACTURER SHALL PROVIDE A SECONDARY ROLLER/SUPPORT TO ACCOMMODATE HIGH WATER EVENTS DEFINED BY WATER LEVEL OF 8.00. GANGWAY DESIGN SHALL INCLUDE SPACING BETWEEN ROLLERS.
2. MANUFACTURER SHALL LIMIT HORIZONTAL MOVEMENT OF TOE PLATE PARALLEL TO GANGWAY LENGTH.

B2 S-503 **TOE HINGE PLATE**
NOT TO SCALE



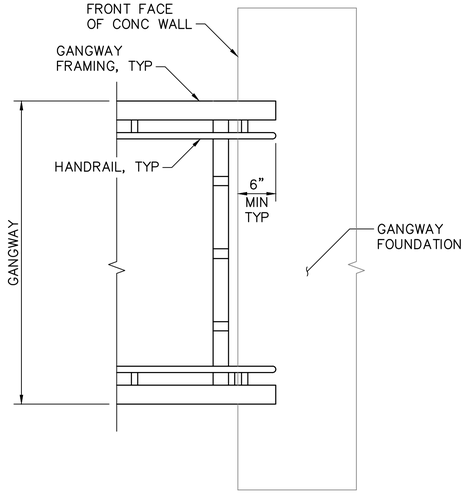
NOTE:
WIDTH DIMENSION SHOWN ON PLANS IS MAXIMUM INSIDE DIMENSION PERMITTED.

A1 S-503 **GANGWAY SECTION**
NOT TO SCALE



NOTES:
1. GANGWAY CONNECTION FOR REFERENCE ONLY, DESIGN BY GANGWAY MANUFACTURER.
2. SHORE CONNECTION SHALL INCLUDE HINGE COVER PLATE SPANNING FROM THE GANGWAY TO THE LANDING.
3. SHORE CONNECTION DESIGN AND DETAILS FOR CONNECTION TO CONCRETE GANGWAY FOUNDATION SHALL BE INCLUDED WITH GANGWAY SUBMITTAL FOR APPROVAL.
4. SHORE CONNECTION SHALL BE DESIGNED TO MEET PERFORMANCE CRITERIA IN GANGWAY SPECIFICATION.

A2 S-503 **SHORE CONNECTION**
NOT TO SCALE



A4 S-503 **HANDRAIL OVERHANG**
NOT TO SCALE

ISSUED FOR BID
JANUARY 2020

GRAND STRAND WATER & SEWER AUTHORITY

Mark	Description	Date	Appr.
ISSUED FOR BID		05/01/20	JJT

BUCKSPORT MARINE
INDUSTRIAL PARK - PHASE 1

GANGWAY DETAILS

Designed by: AC	Rev. 0
Dwn by: BDF	Date: JANUARY 2020
Ckd by: PRG	M&N Project No. 7232-05
Reviewed by: MEW	Drawing code:
Submitted by: MOFFATT & NICHOL	Drawing Scale: AS SHOWN Plot scale: 1:1 (0 SHEET)

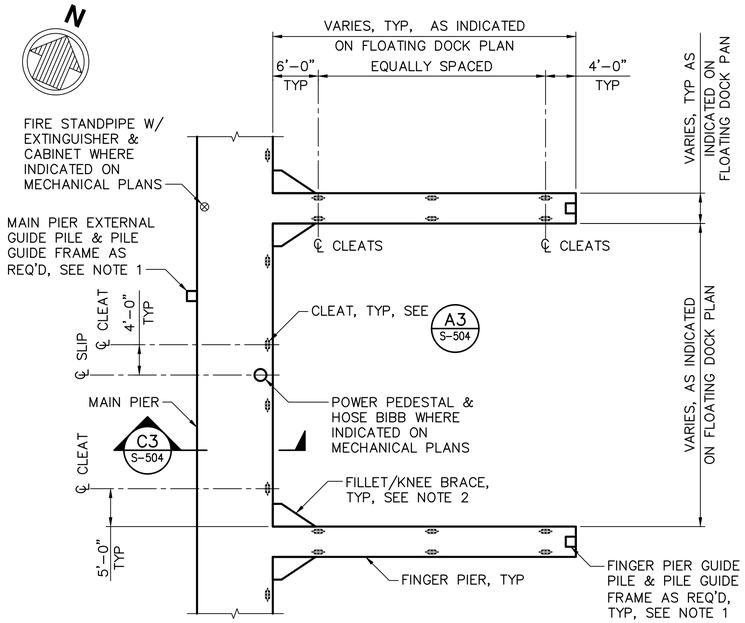
PATRICK R. GRANEY
LICENSED PROFESSIONAL ENGINEER
No.36411
SOUTH CAROLINA
05-01-2020
SEAL
MOFFATT & NICHOL ENGINEERS No. 000363
CERTIFICATE OF AUTHORIZATION
SOUTH CAROLINA

4700 FALLS OF THE NEUSE ROAD
SUITE 300
RALEIGH, NC 27609
919-781-4626
SC COA No. 363
moffatt & nichol

Sheet Reference No.
S-503
INDEX: 99 OF 113

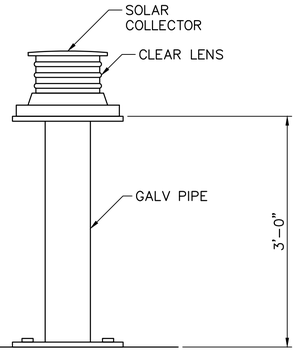
File: Q:\RA\7232-05\CADD_Active_Sheet(Set) 7232105-S-503; Plotted: 4/29/2020 11:17 AM by THIBODEAUX, JASON; Saved: 1/15/2020 9:02 AM by JTHIBODEAUX

DRAWING SCALES SHOWN BASED ON 22"x34" DRAWING



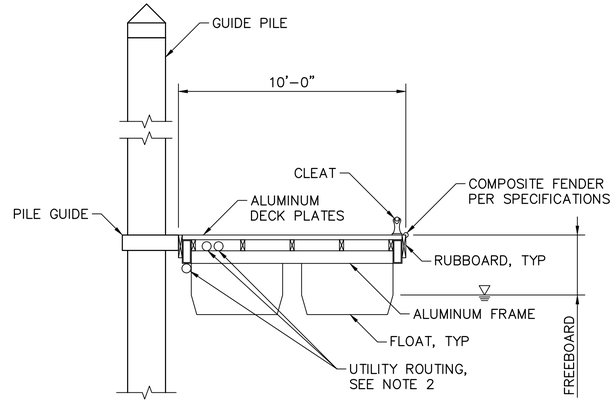
NOTES:
1. GUIDE PILES SHOWN FOR REFERENCE ONLY. LOCATION TO BE DETERMINED BY DOCK MANUFACTURER.
2. MAINTAIN MINIMUM CLEARANCE OF 2'-0" FROM EDGE OF CLEAT TO ANY PILE GUIDES, PEDESTAL, OR OTHER DOCK ACCESSORIES.

C1 S-102 TYPICAL SLIP PLAN
NOT TO SCALE



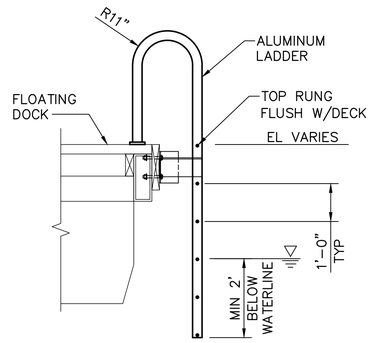
NOTE:
NAVIGATION LIGHT SHALL BE SOLAR MARINE LIGHT MODEL M502 WHITE PROGRAMMABLE SOLAR POWERED LED MARKER-LIGHT, 46cd PEAK INTENSITY "FL 4S" FLASH CODE W/ AUTOMATIC LIGHT CONTROL ENERGY MANAGEMENT SYSTEM, IP68 RATED OR APPROVED EQUAL. MOUNT ON SCHEDULE 40 GALVANIZED PIPE AND ATTACHED TO DECK OF FLOATING DOCK PER MANUFACTURER'S RECOMMENDATIONS.

A1 S-102 NAVIGATION LIGHT
NOT TO SCALE

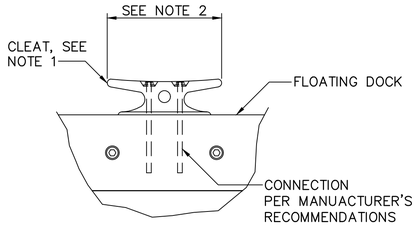


NOTES:
1. SEE SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.
2. SEE ELECTRICAL AND MECHANICAL PLANS FOR UTILITY ROUTING.
3. CONTRACTOR SHALL DETERMINE SIZE, LENGTH, AND LOCATIONS OF GUIDE PILES.
4. EXTERNAL GUIDE PILES SHALL NOT BE USED ALONG SIDE/END TIE BERTHS.

C3 S-504 SECTION
NOT TO SCALE

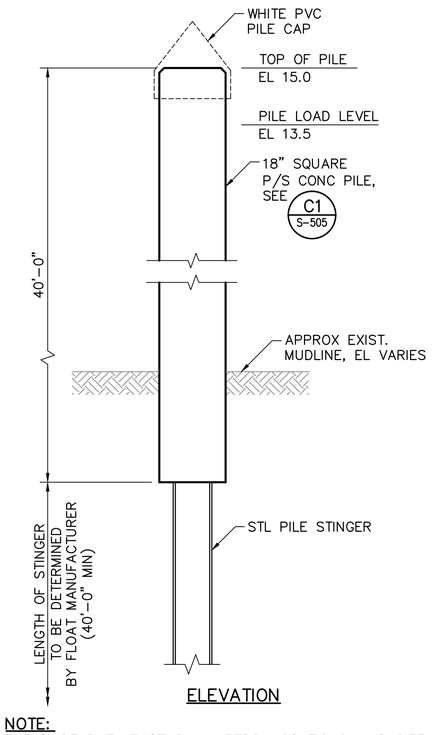


B3 S-102 SAFETY LADDER
NOT TO SCALE



NOTES:
1. MOUNT CLEAT ON DOCK OR WALER PER MANUFACTURER'S RECOMMENDATIONS.
2. MINIMUM CLEAT SIZES SHALL BE AS FOLLOWS:
   - 40' & 50' SLIPS. . . . . .15"
   - 70' SLIP. . . . . 18"

A3 S-504 CLEAT
NOT TO SCALE



ELEVATION

NOTE:
THE GUIDE PILE LENGTHS, NUMBERS, LOCATIONS, AND SIZE SHALL BE BASED ON THE PILE DESIGN REQUIREMENTS. SEE SPECIFICATIONS FOR REQUIREMENTS.

A5 S-102 GUIDE PILE
NOT TO SCALE

ISSUED FOR BID
JANUARY 2020

GRAND STRAND WATER & SEWER AUTHORITY

Mark	Description	Date	Appr.
	ISSUED FOR BID	05/01/20	JJT

BUCKSPORT MARINE INDUSTRIAL PARK - PHASE 1

FLOATING DOCK DETAILS

Designed by: AC	Rev. 0
Dwn by: BDF	Date: JANUARY 2020
Ckd by: PRG	M&N Project No. 7232-05
Reviewed by: MEW	Drawing code:
Submitted by: MOFFATT & NICHOL	Drawing Scale: AS SHOWN Plot scale: 1:1 (0 SHEET)

SOUTH CAROLINA LICENSED PROFESSIONAL ENGINEER No.36411 PATRICK R. GRAMLEY

SEAL

05-01-2020

SOUTH CAROLINA MOFFATT & NICHOL ENGINEERS No. 000363 CERTIFICATE OF AUTHORIZATION

4700 FALLS OF THE NEUSE ROAD
SUITE 300
RALEIGH, NC 27609
919-781-4626
SC COA No. 363
moffatt & nichol

Sheet Reference No.
S-504
INDEX: 100 OF 113

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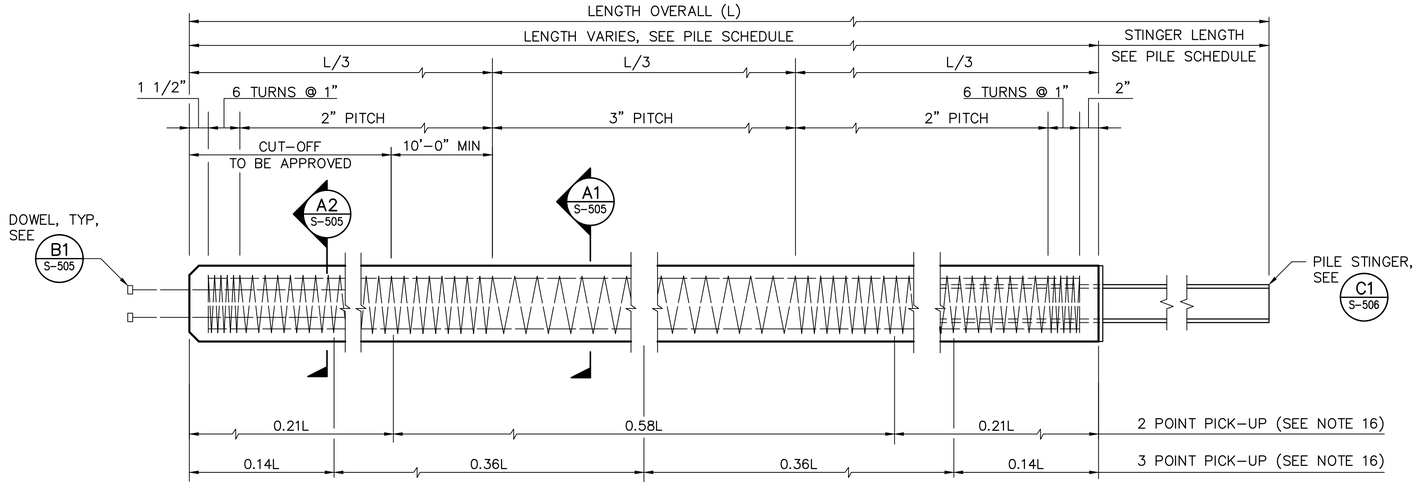
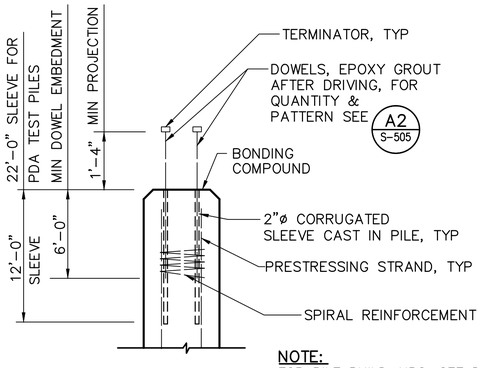
DRAWING SCALES SHOWN BASED ON 22"x34" DRAWING



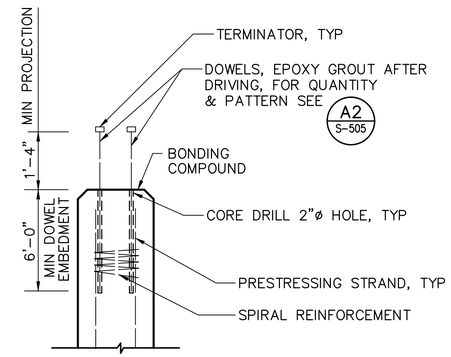
C1 / S-101 — 18 INCH SQUARE PRESTRESSED CONCRETE PILE
S-504 — NOT TO SCALE

PRESTRESSED CONCRETE PILE NOTES:

1. PILES ARE COMPOSED OF 18" SQUARE CONCRETE PILES PLUS A STEEL HP 14x73 STINGER.
   A. PILES SHALL BE DRIVEN TO A MINIMUM ALLOWABLE CAPACITY OF 60 TONS (150 TONS ULTIMATE) IN COMPRESSION, 40 TONS (120 TONS ULTIMATE) IN TENSION.
   B. NOTIFY ENGINEER IF PILE FAILS TO DEVELOP CAPACITY AND/OR MINIMUM REQUIRED TIP ELEVATION.
2. PILE TYPE & LOCATION ARE SHOWN ON PLANS, SEE SHEETS S-101 AND S-102.
3. FOR ANTICIPATED PILE TIP & CUT OFF ELEVATIONS, SEE SHEET S-601.
4. CONCRETE:
   A. f'c=5600 PSI @ TRANSFER
      f'c=5600 PSI @ TIME OF MOVING PILE
      f'c=7000 PSI @ 28 DAYS & TIME OF DRIVING PILE
   B. PROVIDE CALCIUM NITRITE FOR CHLORIDE ION PROTECTION AS PER SPECIFICATIONS.
5. PROVIDE AN APPROVED NON-SHRINK, NON-METALLIC GROUT FOR SETTING OF THE DOWELS. GROUT SHALL EXTEND THE FULL HEIGHT OF THE HOLE.
6. REINFORCING:
   A. PRESTRESSING STEEL SHALL CONFORM TO ASTM A416 7-WIRE LOW RELAXATION STRAND (L.R.S) GRADE 270
   B. MILD STEEL DOWEL – ASTM A 615, GRADE 60
   C. MILD STEEL SPIRALS – ASTM A1064
7. EACH WRAP OF SPIRAL SHALL BE TIED TO AT LEAST TWO (2) CORNER STRANDS.
8. FINAL STRESS IN PRESTRESSING STEEL:
   AFTER ALL LOSSES = 154 KSI
   ESTIMATED LOSSES = 48.5 KSI
9. CONTRACTOR MAY AT HIS OPTION CAST CORRUGATED METAL TUBE IN THE TOP OF THE PILE FOR EACH DOWEL. METAL TUBE SHALL BE GALVANIZED, HAVE A MINIMUM THICKNESS OF 0.023 INCH AND SHALL HAVE AN INTERNAL DIMENSION AS SHOWN. CAP TUBE TO PREVENT INFILTRATION OF CONCRETE DURING PLACING. CLEAN HOLE OF DUST, WATER, AND/OR OIL BEFORE INSTALLING DOWEL. INSURE THAT THERE IS NO POLISHED SURFACE INSIDE OF HOLE, OR CORE DRILL PILE FOR DOWELS AS SHOWN. IN EITHER OPTION DOWEL TO BE GROUTED IN FIELD AFTER PILE DRIVING. DO NOT INSTALL DOWEL HOLES IN GUIDE PILES.
10. IN CUTTING OFF CONCRETE PILES, AN ABRASIVE SAW SHALL BE USED TO SCORE THE CONCRETE AT THE CUT OFF ELEVATION TO THE APPROXIMATE DEPTH OF REINFORCING STEEL.
11. PROVIDE BONDING AGENT ON CONTACT SURFACE OF PILES PRIOR TO PLACING CAST-IN-PLACE CONCRETE DECK AND/OR CONCRETE FOR BUILD-UPS.
12. PILE WILL BE REJECTED IF BUILT-UP LENGTH IS MORE THAN TWO (2) FEET BELOW BOTTOM OF DECK. DRIVING OF PILE BUILD-UPS SHALL NOT BE PERMITTED.
13. DYNAMICALLY TEST AND EVALUATE THE PILES INDICATED ON SHEET S-101 USING A PILE DRIVING ANALYZER (PDA). DYNAMIC TESTING SHALL BE CONDUCTED OVER THE FULL LENGTH OF THE DRIVEN PILE. TEST PILES SHALL BE RESTRUCK 72 HOURS AFTER INITIAL DRIVING.
14. IF OBSTRUCTIONS ARE ENCOUNTERED DURING DRIVING OF PILES, PILE MAY BE PULLED AND RE-DRIVEN WITH A SLIGHT (NOT MORE THAN 1/2"/FOOT) BATTER TO AVOID THE OBSTRUCTION. PILES SHALL BE BATTERED PARALLEL WITH THE LONGITUDINAL AXIS OF THE STRUCTURE. NOTIFY THE ENGINEER IMEDIATELY IF OBSTRUCTIONS ARE ENCOUNTERED DURING DRIVING OF PILES.
15. IF STRANDS STRESS IS RELIEVED BY BURNING, THE STRANDS SHALL BE BURNED IN OPPOSITE PAIRS.
16. CONTRACTOR SHALL DETERMINE PICK-UP POINTS PER PCI STANDARDS SO AS NOT TO OVERSTRESS PILES DURING HANDLING.

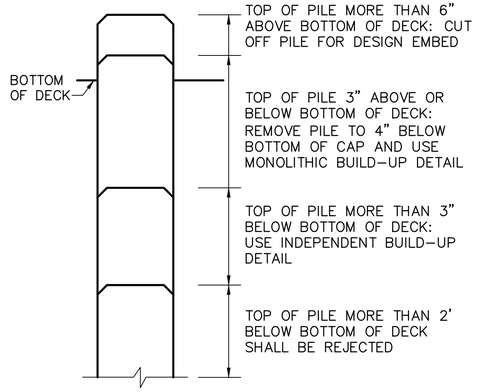


OPTION 1



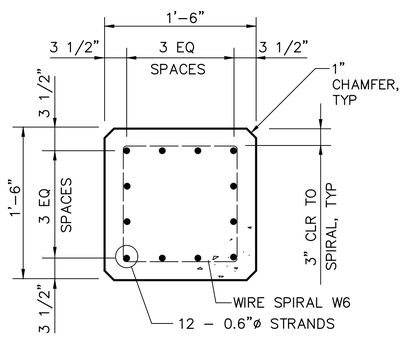
OPTION 2

NOTE:
FOR PILE BUILD-UPS, SEE DETAIL A3 THIS SHEET.

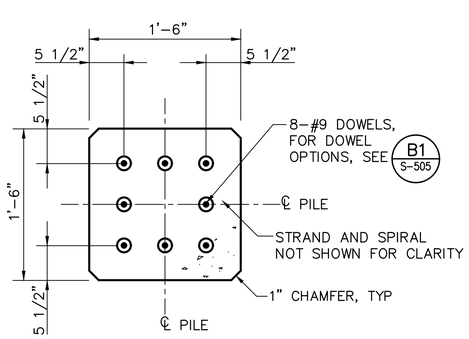


PILE CUTOFF/BUILD-UP DETAIL

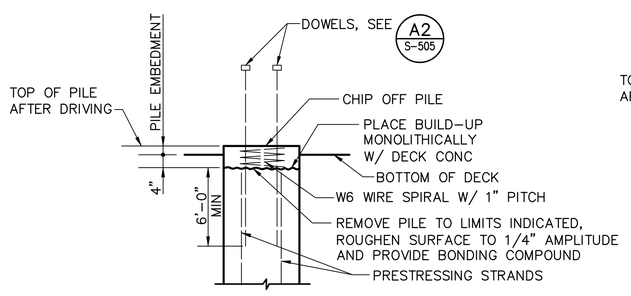
B1 / S-505 — DOWELS
NOT TO SCALE



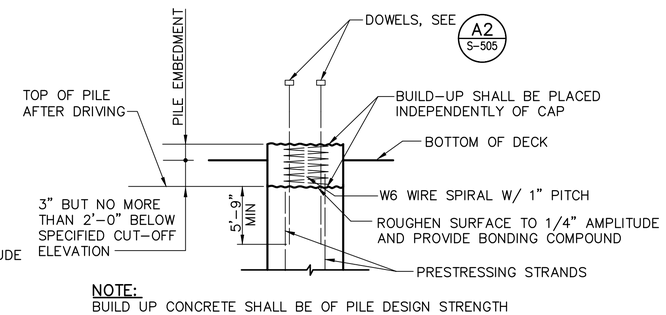
A1 / S-505 — SECTION
NOT TO SCALE



A2 / S-505 — SECTION
NOT TO SCALE



MONOLITHIC BUILD-UP



NOTE:
BUILD UP CONCRETE SHALL BE OF PILE DESIGN STRENGTH

INDEPENDENT BUILD-UP

A3 / S-505 — BUILD-UPS
NOT TO SCALE

ISSUED FOR BID
JANUARY 2020

GRAND STRAND WATER & SEWER AUTHORITY

Mark	Description	Date	Appr.
	ISSUED FOR BID	05/01/20	JJT

BUCKSPORT MARINE INDUSTRIAL PARK - PHASE 1

18 INCH SQUARE PRESTRESSED CONCRETE PILE

Designed by: AJC | Dwn by: BDF | Ckd by: PRG | Reviewed by: MEW | Submitted by: MOFFATT & NICHOL
Date: JANUARY 2020 | M&N Project No. 7232-05 | Drawing code: | Drawing Scale: AS SHOWN | Plot scale: 1:1 (D SHEET) | Rev. 0

SOUTH CAROLINA LICENSED PROFESSIONAL ENGINEER
No.36411
PATRICK R. GRANEY
SEAL
05-01-2020
SOUTH CAROLINA CERTIFICATE OF AUTHORIZATION
MOFFATT & NICHOL ENGINEERS No. 000363

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Sheet Reference No.
S-505
INDEX: 101 OF 113

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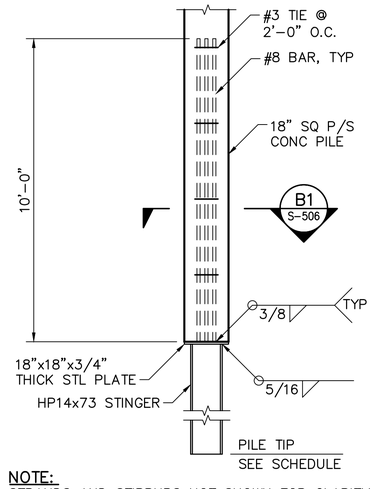
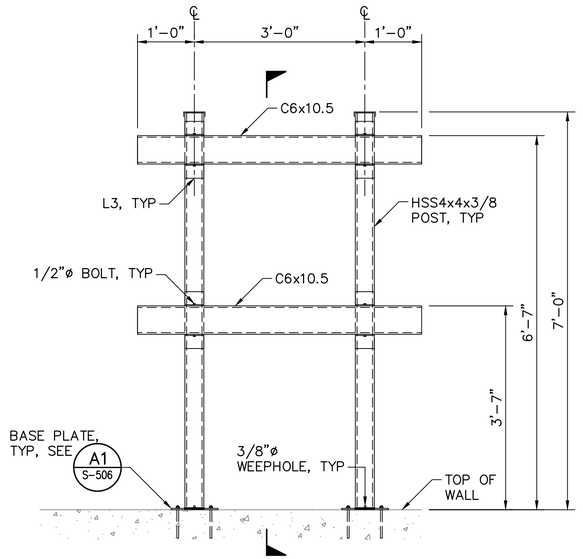
DRAWING SCALES SHOWN BASED ON 22"x34" DRAWING

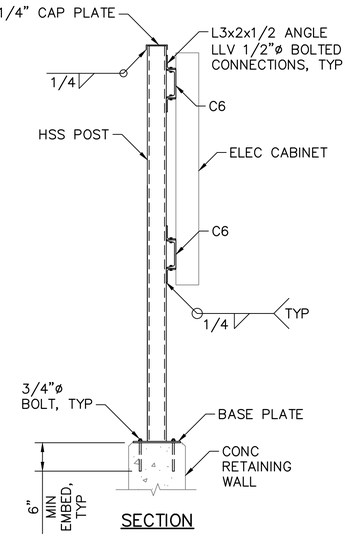


NOTE:
STRANDS AND STIRRUPS NOT SHOWN FOR CLARITY.

C1 S-505 PILE STINGER
NOT TO SCALE

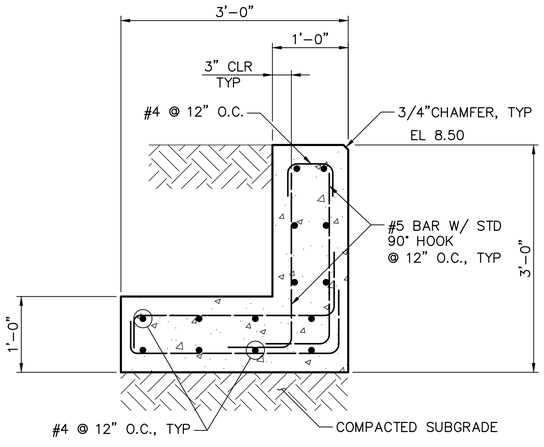


FRONT ELEVATION



SECTION

C2 S-102 ELECTRICAL RACK
SCALE: 3/4"=1'-0"



C4 S-101 SECTION
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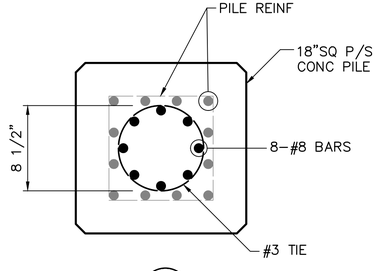
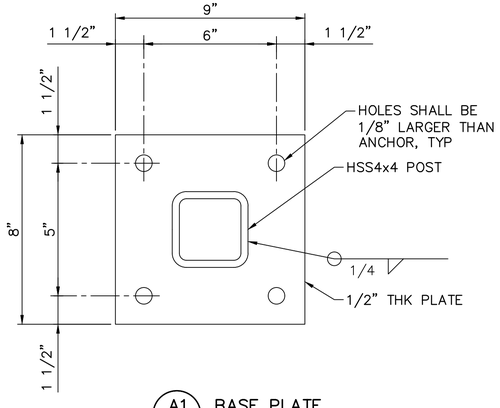
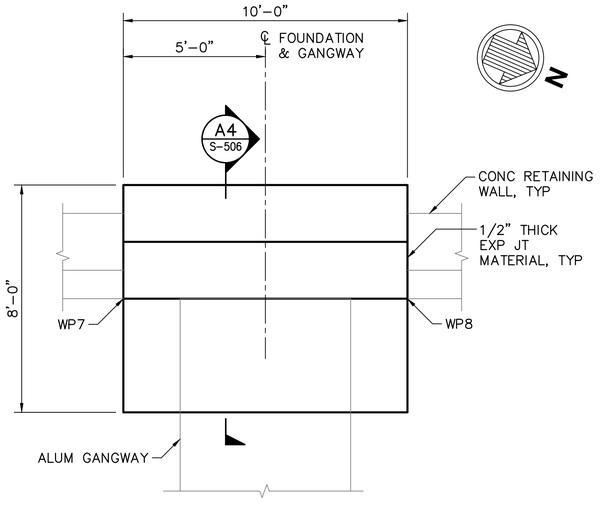


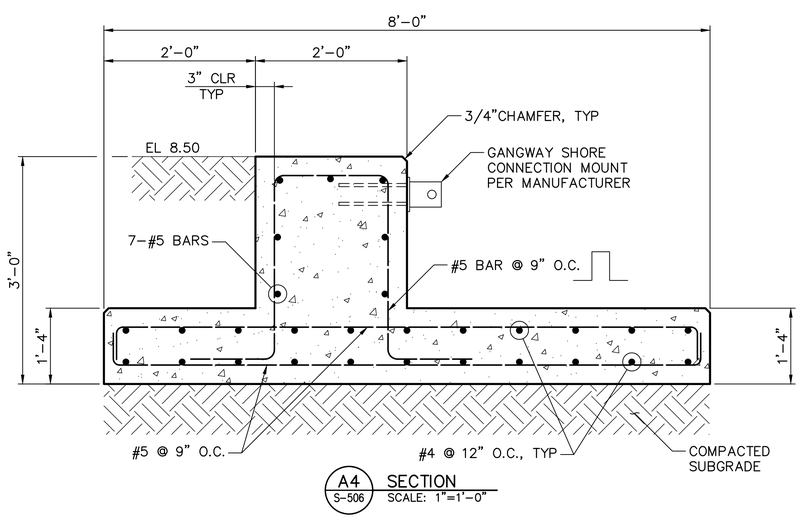
B1 S-506 SECTION
NOT TO SCALE



A1 S-506 BASE PLATE
NOT TO SCALE



A2 S-101 GANGWAY FOUNDATION PLAN
SCALE: 3/8"=1'-0"



A4 S-506 SECTION
SCALE: 1"=1'-0"

4'-0" 0'-0" 2'-0" 4'-0"
SCALE: 3/8"=1'-0"

2'-0" 0'-0" 1'-0" 2'-0"
SCALE: 3/4"=1'-0"

1'-0" 0'-0" 1'-0" 2'-0"
SCALE: 1"=1'-0"

ISSUED FOR BID
JANUARY 2020

GRAND STRAND WATER & SEWER AUTHORITY

Mark	Description	Date	Appr.
	ISSUED FOR BID	05/01/20	JJT

BUCKSPORT MARINE INDUSTRIAL PARK - PHASE 1

STRUCTURAL DETAILS

Rev.	0
Date:	JANUARY 2020
Designed by:	AC
Dwn by:	BDF
Chd by:	PRG
Reviewed by:	MEW
Submitted by:	MOFFATT & NICHOL
M&N Project No.	7232-05
Drawing code:	
Drawing Scale:	AS SHOWN
Plot scale: 1:1 (D SHEET)	

SOUTH CAROLINA LICENSED PROFESSIONAL ENGINEER
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Sheet
Reference No.
S-506
INDEX: 102 OF 113

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DRAWING SCALES SHOWN BASED ON 22"x34" DRAWING

18" SQ P/S CONC PILE SCHEDULE – TRAVEL LIFT PIERS

PILE LOCATION	PILE CUT–OFF ELEVATION	ESTIMATED PILE TIP ELEVATION*	P/S CONC PILE LENGTH (FT)	MINIMUM STINGER EXPOSED LENGTH (FT)	DRIVEN PILE TIP ELEVATION	PROVIDED PILE LENGTH (VLF)
A1	8.75	−51.25	20.00	40.00		
A2	8.75	−51.25	20.00	40.00		
A3	8.75	−51.25	20.00	40.00		
A4	8.75	−51.25	20.00	40.00		
A5 (PDA)	8.75	−66.25	30.00	55.00		
A6	8.75	−66.25	30.00	45.00		
A7	8.75	−66.25	30.00	45.00		
A8	8.75	−66.25	30.00	45.00		
A9	8.75	−76.25	40.00	45.00		
A10	8.75	−76.25	40.00	45.00		
A11	8.75	−76.25	40.00	45.00		
A12	8.75	−76.25	40.00	45.00		
A13	8.75	−76.25	40.00	45.00		
A14	8.75	−76.25	40.00	45.00		
A15	8.75	−76.25	40.00	45.00		
A16	8.75	−76.25	40.00	45.00		
A17	8.75	−76.25	40.00	45.00		
B1	8.75	−51.25	20.00	40.00		
B2	8.75	−51.25	20.00	40.00		
B3	8.75	−51.25	20.00	40.00		
B4	8.75	−51.25	20.00	40.00		
B5	8.75	−66.25	30.00	45.00		
B6	8.75	−66.25	30.00	45.00		
B7	8.75	−66.25	30.00	45.00		
B8	8.75	−66.25	30.00	45.00		
B9	8.75	−76.25	40.00	45.00		
B10	8.75	−76.25	40.00	45.00		
B11	8.75	−76.25	40.00	45.00		
B12 (PDA)	8.75	−76.25	40.00	55.00		
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B14	8.75	−76.25	40.00	45.00		
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B16	8.75	−76.25	40.00	45.00		
B17	8.75	−76.25	40.00	45.00		
C1	8.75	−51.25	20.00	40.00		
C2 (PDA)	8.75	−51.25	20.00	50.00		
C3	8.75	−51.25	20.00	40.00		
C4	8.75	−51.25	20.00	40.00		
C5	8.75	−66.25	30.00	45.00		
C6	8.75	−66.25	30.00	45.00		
C7	8.75	−66.25	30.00	45.00		
C8	8.75	−66.25	30.00	45.00		
C9	8.75	−76.25	40.00	45.00		
C10	8.75	−76.25	40.00	45.00		
C11	8.75	−76.25	40.00	45.00		
C12	8.75	−76.25	40.00	45.00		
C13	8.75	−76.25	40.00	45.00		
C14	8.75	−76.25	40.00	45.00		
C15	8.75	−76.25	40.00	45.00		
C16	8.75	−76.25	40.00	45.00		
C17	8.75	−76.25	40.00	45.00		

18" SQ P/S CONC PILE SCHEDULE – TRAVEL LIFT PIERS

PILE LOCATION	PILE CUT–OFF ELEVATION	ESTIMATED PILE TIP ELEVATION*	P/S CONC PILE LENGTH (FT)	MINIMUM STINGER EXPOSED LENGTH (FT)	DRIVEN PILE TIP ELEVATION	PROVIDED PILE LENGTH (VLF)
D1	8.75	−51.25	20.00	40.00		
D2	8.75	−51.25	20.00	40.00		
D3	8.75	−51.25	20.00	40.00		
D4	8.75	−51.25	20.00	40.00		
D5	8.75	−66.25	30.00	45.00		
D6	8.75	−66.25	30.00	45.00		
D7	8.75	−66.25	30.00	45.00		
D8 (PDA)	8.75	−66.25	30.00	55.00		
D9	8.75	−76.25	40.00	45.00		
D10	8.75	−76.25	40.00	45.00		
D11	8.75	−76.25	40.00	45.00		
D12	8.75	−76.25	40.00	45.00		
D13	8.75	−76.25	40.00	45.00		
D14	8.75	−76.25	40.00	45.00		
D15	8.75	−76.25	40.00	45.00		
D16	8.75	−76.25	40.00	45.00		
D17 (PDA)	8.75	−76.25	40.00	55.00		

* BOTTOM OF STINGER ELEVATION

18" SQ P/C P/S CONC PILE SCHEDULE – GUIDE PILES

PILE LOCATION	PILE CUT–OFF ELEVATION	ESTIMATED PILE TIP ELEVATION*	P/S CONC PILE LENGTH (FT)	MINIMUM STINGER EXPOSED LENGTH (FT)**	DRIVEN PILE TIP ELEVATION	PROVIDED PILE LENGTH (VLF)
GP1	15.00	−65.00	40.00	40.00		
GP2	15.00	−65.00	40.00	40.00		
GP3	15.00	−65.00	40.00	40.00		
GP4	15.00	−65.00	40.00	40.00		
GP5	15.00	−65.00	40.00	40.00		
GP6	15.00	−65.00	40.00	40.00		
GP7	15.00	−65.00	40.00	40.00		
GP8	15.00	−65.00	40.00	40.00		
GP9	15.00	−65.00	40.00	40.00		
GP10	15.00	−65.00	40.00	40.00		
GP11	15.00	−65.00	40.00	40.00		
GP12	15.00	−65.00	40.00	40.00		
GP13	15.00	−65.00	40.00	40.00		

* BOTTOM OF STINGER ELEVATION

** LENGTH OF STINGER TO BE DETERMINED BY FLOAT MANUFACTURER

LEGEND:
PDA = PILES TO BE PDA TESTED, SEE NOTE 4

NOTES:
1. LAST TWO (2) COLUMNS OF SCHEDULE TO BE FILLED OUT BY CONTRACTOR AFTER PILE INSTALLATION.
2. CONTRACTOR TO PROVIDE UNIT PRICES FOR ADD/DELETE PER FOOT OF PILE.
3. MARK EACH PILE WITH LENGTH. PRIOR TO CUTOFF INSPECTOR SHALL VERIFY PILE HAS BEEN DRIVEN TO THE REQUIRED CAPACITY. RECORD FINAL PILE LENGTH.
4. TEST PILES SHALL INCLUDE AN ADDITIONAL 10 FEET OF STINGER LENGTH. DRIVE TEST PILES TO NOTED TIP ELEVATION, AFTER PDA TEST SHOWS THAT PILE HAS REACHED THE REQUIRED CAPACITY DRIVE PILE TO CUT–OFF ELEVATION.

ISSUED FOR BID
JANUARY 2020

GRAND STRAND WATER & SEWER AUTHORITY

Mark	Description	Date	Appr.
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BUCKSPORT MARINE INDUSTRIAL PARK - PHASE 1

PILE SCHEDULES

Rev: 0
Date: JANUARY 2020
M&N Project No.: 7232-05
Drawing code:
Drawing Scale: AS SHOWN
Plot scale: 1:1 (0 SHEET)
Designed by: AC
Dwn by: BDF
Ckd by: PRG
Reviewed by: MEW
Submitted by: MOFFATT & NICHOL

SOUTH CAROLINA LICENSED PROFESSIONAL ENGINEER PATRICK R. GRANEY No.36411
SEAL
05-01-2020
SOUTH CAROLINA MOFFATT & NICHOL ENGINEERS No. 000363 CERTIFICATE OF AUTHORIZATION

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SC COA No. 363
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DRAWING SCALES SHOWN BASED ON 22"x34" DRAWING

MECHANICAL NOTES

1. SCHEDULING, TRENCHING, LINE SHUTDOWN, DRAINAGE, TIE–IN, PIPE BEDDING, SUPPORTS, INSTALLATION OF NEW LINE, PRESSURE TESTING, DISINFECTION, FLUSHING, WARNING TAPE, BACKFILL, SURFACING, ACTIVATION OF SERVICE, ETC., SHALL COMPLY WITH THE REQUIREMENTS OF HORRY COUNTY PUBLIC SERVICES AND FIRE DEPARTMENTS AND OTHER AHJ STANDARDS AND REGULATIONS AND SHALL BE COORDINATED WITH THE WATER, FIRE, AND OTHER AHJ DEPARTMENTS. PRIOR APPROVAL OF AND NOTICE TO PROCEED WITH THE TIE–INS ARE REQUIRED BY THE LOCAL AHJ FOR THE PW AND FW SYSTEMS.

2. ALL MATERIAL AND EQUIPMENT SHALL BE WORKED INTO A COMPLETE, CONVENIENT, AND ECONOMICAL SYSTEM OR SYSTEMS: ALL APPARATUS, PARTS, MATERIALS, AND ACCESSORIES WHICH ARE NECESSARY TO ACCOMPLISH THIS RESULT SHALL BE FURNISHED AND WORKED INTO PLACE. MANUFACTURER'S INSTRUCTIONS, WRITTEN OR OTHERWISE, SHALL BE FOLLOWED UNLESS SPECIFICALLY SUPERSEDED HEREIN.

3. ALL PIPING SHALL FOLLOW THE GENERAL ARRANGEMENT SHOWN. PIPING SHALL BE RUN ESSENTIALLY AS INDICATED, CARE BEING TAKEN TO AVOID INTERFERENCE WITH OTHER PIPING, CONDUIT, OR EQUIPMENT. THE LOCATION OF PIPING TO BE RUN ON DOCKS SHALL BE CAREFULLY COORDINATED WITH ELECTRICAL CONDUITS SPECIFIED. BEFORE JOINTING AND ERECTION OF PIPING, THOROUGHLY CLEAN INTERIORS OF PIPE AND COMPONENTS. MAINTAIN CLEANLINESS BY CLOSURE OF PIPE OPENINGS WITH CAPS OR PLUGS.

4. THE CONTRACTOR SHALL ENSURE SUFFICIENT PIPE FLEXIBILITY AND ANCHORAGE IS PROVIDED FOR ALL LINES FOR THERMAL EXPANSION AND CONTRACTION, PRESSURE AND DOCK FLEXING. THE DOCK STRUCTURE AND COMPONENTS SHALL ACCOMMODATE THE PIPING LAYOUT REQUIREMENTS SUCH THAT THE PIPE SHALL NOT BECOME OVERSTRESSED. THE PIPING SHALL BE PROPERLY SUPPORTED AND ANCHORED.

5. CONTRACTOR SHALL INSPECT MATERIALS DELIVERED TO SITE FOR DAMAGE. UNLOAD AND STORE WITH MINIMUM HANDLING. STORE MATERIALS ON SITE IN ENCLOSURES OR UNDER PROTECTIVE COVERING. STORE PLASTIC PIPING UNDER COVER OUT OF DIRECT SUNLIGHT. DO NOT STORE MATERIALS DIRECTLY ON THE GROUND. KEEP INSIDE OF PIPES, FITTINGS AND EQUIPMENT FREE OF DIRT AND DEBRIS. HANDLE PIPE, FITTINGS, VALVES, AND OTHER ACCESSORIES IN SUCH MANNER AS TO ENSURE DELIVERY TO THE DOCKS AND INSTALLATION LOCATION IN A SOUND UNDAMAGED CONDITION.

6. ALL PW AND FW SYSTEM MATERIALS (PIPE, VALVES, ETC.) SHALL BE FURNISHED BY THE CONTRACTOR. ALL SUCH MATERIALS SHALL BE NEW, SHALL MEET HORRY COUNTY AND OTHER AHJ SPECIFICATION REQUIREMENTS FOR EACH ITEM, AND PRIOR TO INSTALLATION, MUST BE APPROVED IN WRITING BY THE ENGINEER.

7. ALL WORK SHALL COMPLY WITH THE REQUIREMENTS OF THE 2015 SOUTH CAROLINA PLUMBING CODE AND LOCAL AMENDMENTS, AS APPLICABLE.

8. SHOULD THERE BE A CONFLICT BETWEEN THESE GENERAL NOTES, CONTRACT DRAWINGS, AND/OR CONTRACT DOCUMENTS, THE MOST RESTRICTIVE INTERPRETATION SHALL PREVAIL. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING FROM THE ENGINEER ANY CLARIFICATION OR INTERPRETATION OF GENERAL NOTES, CONTRACT DRAWINGS, AND/OR SPECIFICATIONS IN WRITING AND IN ADVANCE OF THE BEGINNING OF CONSTRUCTION.

9. THE CONTRACTOR SHALL VERIFY ALL EXISTING UTILITY LOCATIONS IN THE FIELD BEFORE STARTING WORK. THE REGIONAL NOTIFICATION CENTER AND/OR SOUTH CAROLINA 811 1–888–721–7877 SHALL BE NOTIFIED 48 HOURS PRIOR TO THE START OF DIGGING OR EXCAVATION WORK. THE CONTRACTOR SHALL FIELD VERIFY THE POINT OF CONNECTIONS. LOCATIONS OF PIPING AND APPURTENANT FITTINGS SHOWN ON THE PLANS (DRAWINGS) ARE APPROXIMATE. IT IS INTENDED THAT SUCH ITEMS BE LOCATED BASED ON EXACT LOCATIONS DETERMINED IN THE FIELD AND THE SUPPLIED MATERIALS.

10. LOCATIONS OF UTILITIES, PUBLIC AND/OR PRIVATE, ARE APPROXIMATE ONLY, AND THE EXACT LOCATIONS SHALL BE DETERMINED IN THE FIELD. IT IS POSSIBLE THAT SOME EXISTING FACILITIES ARE NOT SHOWN ON THESE DRAWINGS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR HAVING ALL UNDERGROUND UTILITY FACILITIES LOCATED AND MARKED PRIOR TO THE BEGINNING OF CONSTRUCTION.

11. GEOTECHNICAL INVESTIGATION WAS CONDUCTED AS INDICATED BY THE SOIL BORING LOG SHOWN ON G–601. THESE SOIL BORINGS REPRESENT SUBSURFACE INFORMATION AT THE LOCATION OF BORING ONLY AND IS NOT INTENDED TO BE CONSIDERED TYPICAL BEYOND LIMITS OF BORING. THE CONTRACTOR SHOULD ANTICIPATE VARIABILITY IN SUBSURFACE CONDITIONS AND SATISFY HIMSELF BY ON SITE INSPECTIONS. THE RISK OF ENCOUNTERING AND CORRECTING UNFAVORABLE SUBSURFACE CONDITIONS SHALL BE SOLELY BORNE BY CONTRACTOR.

12. THE CONTRACTOR SHALL PROVIDE ALL NECESSARY PROTECTIVE MEASURES TO SAFEGUARD EXISTING UTILITIES TO REMAIN FROM DAMAGE DURING CONSTRUCTION OF THIS PROJECT. SHOULD SPECIAL EQUIPMENT BE REQUIRED TO WORK OVER AND AROUND THE UTILITIES, THE CONTRACTOR SHALL BE REQUIRED TO FURNISH SUCH EQUIPMENT. THE COST OF PROTECTING UTILITIES FROM DAMAGE AND FOR FURNISHING SPECIAL EQUIPMENT SHALL BE INCLUDED IN THE PRICE BID FOR OTHER ITEMS OF CONSTRUCTION.

13. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR CONTACTING ALL AFFECTED UTILITY OWNERS PRIOR TO SUBMITTING HIS BID, SO THAT HE MAY DETERMINE THE EXTENT OF DELAYS THAT UTILITY RELOCATIONS AND/OR ADJUSTMENTS MAY HAVE UPON THE SCHEDULING OF WORK FOR THE PROJECT. SOME UTILITY FACILITIES MAY NEED TO BE ADJUSTED CONCURRENTLY WITH THE CONTRACTOR'S OPERATIONS, WHILE SOME WORK MAY BE REQUIRED AROUND UTILITY FACILITIES THAT SHALL REMAIN IN PLACE. IT IS SPECIFIED AND AGREED THAT THE CONTRACTOR SHALL RECEIVE NO ADDITIONAL COMPENSATION FOR ANY DELAYS OR INCONVENIENCE CAUSED BY UTILITY ADJUSTMENTS.

14. THE CONTRACTOR SHALL NOTIFY ALL AFFECTED UTILITY OWNERS PRIOR TO INTERRUPTING ANY GAS, WATER, POWER, COMMUNICATION, OR SEWER SERVICES. THE CONTRACTOR SHALL ALSO NOTIFY AFFECTED UTILITY CUSTOMERS AT LEAST 48 HOURS BEFORE INTERRUPTING THE CUSTOMERS' SERVICE. BETWEEN THE HOURS OF 9:00 A.M. TO 4:00 P.M., WHERE INDIVIDUAL SERVICES ARE TO BE DISCONTINUED FOR MORE THAN 4 HOURS, THE CONTRACTOR SHALL MAKE ARRANGEMENTS FOR PROVIDING TEMPORARY SERVICE SATISFACTORY TO THE AFFECTED CUSTOMER, OR AS REQUIRED BY THE CITY. THE REPAIR OR REPLACEMENT OF UTILITY COMPONENTS SHALL CONFORM TO ALL APPLICABLE REQUIREMENTS OF THE UTILITY OWNER. NO SEPARATE PAYMENT SHALL BE MADE FOR THESE ACTIVITIES, AND COMPENSATION SHALL BE INCLUDED IN THE CONTRACT PRICES FOR OTHER ITEMS.

15. CONSTRUCTION EQUIPMENT AND MATERIAL MAY BE STORED ONLY IN AREAS DESIGNATED FOR CONTRACTOR'S USE.

16. THE OWNER SHALL HAVE THE AUTHORITY TO DESIGNATE AND/OR LIMIT AREAS OF CONSTRUCTION.

17. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO PROVIDE ALL FIELD LAYOUTS FOR APPROVAL BY THE ENGINEER. ALL DEMOLISHED MATERIAL SHALL BE REMOVED FROM THE SITE DAILY AND LEGALLY DISPOSED OF BY THE CONTRACTOR. CONTRACTOR SHALL RETRIEVE ANY DEMOLISHED PIPING OR EQUIPMENT DROPPED BELOW WATER.

18. SUPPORTS AND HARDWARE SHALL BE TYPE 316 STAINLESS STEEL AND SHALL BE FROM MANUFACTURED SHAPES. FIELD BENDING IS NOT PERMITTED. VALVE SUPPORTS SHALL BE INSTALLED ON ADJACENT PIPING ON BOTH SIDES OF THE VALVE. SUBMIT SHOP DRAWINGS OR CATALOG DATA FOR REVIEW AND APPROVAL. A DIELECTRIC ISOLATION SHEET SHALL BE PLACED WHERE DISSIMILAR METALS CONTACT ON THE SUPPORT.

19. DIELECTRIC COUPLINGS SHALL BE USED AT DISSIMILAR METAL PIPING CONNECTIONS.

20. ALL UNSUITABLE MATERIAL, AS DETERMINED BY THE ENGINEER, OR THROUGH TESTING, SHALL BE REMOVED, LEGALLY DISPOSED, AND REPLACED WITH SUITABLE MATERIAL, WITH CORRESPONDING CLOSURE REPORT(S), AND ACCEPTABLE TO THE ENGINEER AND ALL REGULATORY AUTHORITIES.

21. IT IS THE RESPONSIBILITY OF THE OWNER TO MAINTAIN THE INTEGRITY OF THE SYSTEMS. CONTRACTOR SHALL PROVIDE OWNER WITH OPERATION AND MAINTENANCE INFORMATION FROM EQUIPMENT MANUFACTURERS.

22. CONTRACTOR SHALL PROVIDE BLOW OFF VALVES AT THE END OF EACH WATER LINE.

23. THE CONTRACTOR MAY USE THE HOSE BIBBS AS BACTERIOLOGICAL SAMPLING POINTS.

24. ALL WATER SERVICE CONSTRUCTION MUST BE DONE BY A LICENSED UTILITY CONTRACTOR.

25. EXCAVATION AND/OR SHORING AND DE–WATERING SHALL BE IN COMPLIANCE WITH APPLICABLE STATE, LOCAL, AND OSHA REQUIREMENTS.

26. CONTRACTOR SHALL COMPLY WITH COAST GUARD REGULATIONS TO PROTECT AND MAINTAIN ALL BOAT TRAFFIC. CONTRACTOR SHALL NOT INTERFERE WITH NORMAL BOAT TRAFFIC.

GENERAL FIRE PROTECTION NOTES

1. FIRE PROTECTION PLANS SHALL BE APPROVED BY THE HORRY COUNTY FIRE MARSHAL PRIOR TO THE INSTALLATION OF ANY PIPE. DURING CONSTRUCTION A SET OF APPROVED PLANS SHALL BE MAINTAINED AT ALL TIMES ON THE JOB SITE.

2. PIPING MATERIAL & FIREWATER SYSTEM SHALL BE IN COMPLIANCE WITH NFPA 13, NFPA 14, NFPA, 24, NFPA 303, AND APPENDIX II–C OF THE CFC, AS APPLICABLE, EXCEPT WHERE NOTED, AND REQUIREMENTS OF AUTHORITY HAVING JURISDICTION. ALL MATERIALS SHALL BE UL/FM LISTED WHERE AVAILABLE.

3. THE MARINA FIREWATER SYSTEM IS A MANUAL–DRY, CLASS I SYSTEM, PER NFPA 14. THE STANDPIPE SYSTEM SHALL BE IN COMPLIANCE WITH NFPA 14. SYSTEM SHALL BE CAPABLE OF PRODUCING A MINIMUM OF 250 GPM EACH AND 100 PSI AT THE TWO MOST REMOTE HOSE OUTLETS ON THE SAME DOCK WITH A MAXIMUM OF 150 PSI AT THE FDC ONSHORE.

4. THE SYSTEM SHALL ONLY EMPLOY THE USE OF APPROVED MATERIALS AND DEVICES. PIER AND DOCK FIREWATER/STANDPIPE PIPING UNDER GANGWAYS, AND LOCATIONS WHERE PIPING IS EXPOSED TO IMPACT OR UV RADIATION SHALL BE 316L STAINLESS STEEL, SCHEDULE 40. DOCK FIREWATER/STANDPIPE PIPING IN DOCK UTILITY CHASE AREAS SHALL BE HDPE SDR–11 CONFORMING TO ASTM D3035 AND ASTM F714. USE OF HDPE SHALL REQUIRE INTERNAL INSPECTION TO VERIFY PIPE INTERIOR IS SMOOTH, WITHIN INTERNAL DIAMETER TOLERANCES, WITH NO EXCESSIVE INTERIOR WELD BEADS (WITHIN TOLERANCES) AND ARE SMOOTH. PIPE AND JOINTS NOT COMPLYING SHALL BE REJECTED AND REPLACED, AND RE–INSPECTED. ANY VALVES INSTALLED SHALL BE LOCKED OPEN, 200 PSI WORKING PRESSURE MINIMUM. ALL PIPING, EQUIPMENT, INSTALLATION, AND TESTING SHALL BE PER NBFD STANDARDS AND REQUIREMENTS.

5. 2 1/2" FIRE HOSE CONNECTIONS SHALL BE SPACED TO PROVIDE PROTECTION TO ANY PORTION OF DOCKS OR VESSELS. HOSE VALVE SHALL BE POTTER ROEMER FIG. 4065, OR APPROVED EQUAL. LOCATIONS SHALL PROVIDE FOR 100' HOSE TO REACH TO END OF DOCKS WITH 25' OF HOSE REMAINING. SHOP DRAWINGS OR CATALOG DATA FOR ABOVE HOSE VALVE AND MOUNTINGS SHALL BE SUBMITTED FOR APPROVAL.

6. PROVIDE ONE (1) 10 POUND ABC MULTI–PURPOSE DRY CHEMICAL FIRE EXTINGUISHER HAVING A MINIMUM RATING OF 4A:60B:C, POTTER ROEMER MODEL 3010, OR APPROVED EQUAL, PER FIRE EXTINGUISHER CABINET. CABINET SHALL BE AS SHOWN ON SHEET M502, OR APPROVED EQUAL.

7. FLEXIBLE HOSE SHALL BE FACTORY ASSEMBLED LENGTHS OF GOODYEAR PLICORD FLEXWING HOSE, OR APPROVED EQUAL, 16" MAX BEND RADIUS ON A 4" HOSE, 250 PSI MIN WORKING PRESSURE WITH MARINE STAINLESS STEEL VICTAULIC COUPLINGS EACH END.

8. COMPLETED WORK SHALL BE SUBJECTED TO A FIRE WATER PRESSURE TEST OF 200 PSI FOR TWO HOURS AT 73°F OR LESS, DURING WHICH THERE IS TO BE NO REDUCTION IN TEST PRESSURE. IF A REDUCTION SHOULD OCCUR, LEAK(S) SHALL BE LOCATED, REPAIRED AND THE TEST REPEATED. IN ADDITION, ALL NEWLY INSTALLED FIRE SERVICE LINES SHALL PASS HYDROSTATIC AND HYDRODYNAMIC TESTING REQUIREMENTS AS PERFORMED BY THE LOCAL FIRE MARSHALL.

9. MAXIMUM DISTANCE OF ABOVEGROUND AND DOCK PIPE BETWEEN PIPE SUPPORTS SHALL NOT EXCEED THE FOLLOWING UNO:

NOMINAL PIPE SIZE	CU PIPE SPAN, FT	SS PIPE SPAN, FT	HDPE PIPE SPAN, FT
4"	10	10	4
3"	10	12	4
2 1/2"	10	12	4

10. FIRE PROTECTION CONTRACTOR SHALL BE LICENSED.

11. REFER TO THIS DRAWING FOR GENERAL NOTES. CONTRACTOR TO DETERMINE LINE ANCHORING BASED ON FINAL ROUTING AND DOCK STRUCTURE FOR ANCHOR MOUNTING.

12. A FLOW TEST WILL BE PERFORMED AT THE TIME OF FINAL ACCEPTANCE TO CONFIRM MINIMUM FLOW AND PRESSURE. THE FLOW TEST/PUMPER TRUCK SHALL BE PROVIDED BY THE CONTRACTOR, NOT THE FIRE DEPARTMENT.

POTABLE WATER NOTES

1. POTABLE WATER PIPING EXPOSED TO IMPACT AND/OR SUNLIGHT (ULTRAVIOLET RADIATION) AT GANGWAYS, HOSE BIBB AND DOCK HOSE RISER SHALL BE SCHEDULE 40, TYPE 316 SS WITH VICTAULIC FITTINGS. PIPING AND INSTALLATION SHALL CONFORM TO THE INTERNATIONAL PLUMBING CODE. PIPING FOR POTABLE WATER AT DOCKS SHALL BE HDPE, ASTM D 3035, SDR–11, ASTM F714, BUTT FUSED JOINTS. PIPE AND FITTINGS SHALL BE FROM ONE MANUFACTURER. PIPING AND INSTALLATION SHALL CONFORM TO THE INTERNATIONAL PLUMBING CODE.

2. THE POTABLE WATER SYSTEM SHALL BE PRESSURE TESTED DOWNSTREAM OF THE POC. FLUSH PIPING WITH CLEAN WATER TO REMOVE DEBRIS. APPLY AND MAINTAIN 75 PSI WORKING TEST PRESSURE FOR 15 MINUTES, DURING WHICH TIME THERE WILL BE NO REDUCTION IN TEST PRESSURE – SHOULD A REDUCTION OCCUR, LEAKS SHALL BE LOCATED, REPAIRED AND THE TEST REPEATED.

3. POTABLE WATER SYSTEM SHALL BE DISINFECTED PER COUNTY STANDARDS.

4. FLEXIBLE HOSE: HOSE AND FITTING MATERIALS SHALL BE COMPATIBLE WITH POTABLE WATER AND SUITABLE FOR 24 HOUR CONTACT WITH CHLORINE STERILIZATION SOLUTION IN THE PIPE/HOSE INTERIOR, AND WITH SEAWATER AND SUNLIGHT ON THE PIPE/HOSE EXTERIOR. FACTORY ASSEMBLED LENGTHS OF GOODYEAR PLICORD BREWLINE HOSE, OR APPROVED EQUAL, 12 INCH MAX BEND RADIUS FOR 3" HOSE, 150 PSI WORKING PRESSURE WITH MARINE STAINLESS STEEL COUPLINGS EACH END.

5. HOSE BIBBS SHALL CONTAIN INTEGRAL ANTI–SIPHON VACUUM BREAKERS.

6. MAXIMUM DISTANCE OF PIPE BETWEEN PIPE SUPPORTS PER UNIFORM PLUMBING CODE SHALL NOT EXCEED THE FOLLOWING, UNO:

NOMINAL PIPE SIZE	HDPE PIPE SPAN, FT	SS PIPE SPAN, FT	CU PIPE SPAN, FT
3"	4	12	10
2"	4	12	10
1 1/2"	4	12	6
1"	4	12	6
3/4"	4	10	6

7. HDPE PIPE SHALL BE MARKED AT MANUFACTURER FOR POTABLE WATER AND BE NSF 14 LISTED.

8. CONTRACTOR TO PROVIDE SHUTOFF VALVE AND ACCESS BOX WITH LABELED COVER.

ISSUED FOR BID
JANUARY 2020

GRAND STRAND WATER & SEWER AUTHORITY

Mark	Description	Date	Appr.
	ISSUED FOR BID	05/01/20	JJT

BUCKSPORT MARINE
INDUSTRIAL PARK - PHASE 1

MECHANICAL NOTES

Designed by: Dwn by: Ckd by: Reviewed by: Submitted by: MOFFATT & NICHOL

Date: DECEMBER 2019 Rev: 0

M&N Project No. 7232–05

Drawing code:

Drawing Scale: AS SHOWN
Plot scale: 1:1 (0 SHEET)

SOUTH CAROLINA LICENSED PROFESSIONAL ENGINEER No.24067 TIMOTHY R. NICHOL
SEAL 5-1-2020

SOUTH CAROLINA MOFFATT & NICHOL ENGINEERS No. 000363 CERTIFICATE OF AUTHORIZATION

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SC COA No. 363

moffatt & nichol

Sheet Reference No.
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INDEX: 104 OF 113

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DRAWING SCALES SHOWN BASED ON 22"x34" DRAWING

LEGEND AND ABBREVIATIONS

SYMBOLS	ABBREV	DESCRIPTION
	AHJ	AUTHORITY HAVING JURISDICTION
	ANSI	AMERICAN NATIONAL STANDARDS INSTITUTE
	ASTM	AMERICAN SOCIETY FOR TESTING AND MATERIALS
	BFP	BACKFLOW PREVENTION DEVICE
	BV	BALL VALVE
	CO	CLEAN OUT
	CONN	CONNECTION
	CU	COPPER
	DI	DROP INLET
ø	DIA	DIAMETER
	DIP	DUCTILE IRON PIPE
	EIR	EXISTING IRON ROD
	ELL	ELBOW
	EXIST	EXISTING
	FDC	FIRE DEPARTMENT CONNECTION
		FLOW DIRECTION ARROW
FM	FM	SANITARY SEWER FORCEMAIN
	FT	FEET
F	FW	FIRE WATER
		GATE VALVE
	GPM	GALLONS PER MINUTE
	GALV	GALVANIZED
	HB	HOSE BIBB
	HDPE	HIGH DENSITY POLYETHYLENE
	MAX	MAXIMUM
	MIN	MINIMUM
	MSS	MANUFACTURER'S STANDARDIZATION SOCIETY
	NFPA	NATIONAL FIRE PROTECTION ASSOCIATION
	NIC	NOT IN CONTRACT
	NPT	NATIONAL PIPE THREAD
	NSF	NATIONAL SANITATION FOUNDATION INTERNATIONAL
	NTS	NOT TO SCALE
		OVERHEAD ELECTRIC
	POC	POINT OF CONNECTION
		POWER POLE
	PPM	PARTS PER MILLION
	PVC	POLYVINYL CHLORIDE PIPE
W	PW	POTABLE WATER
	PSI	POUNDS PER SQUARE INCH
	RED	REDUCER
	RPZ	REDUCED PRESSURE ZONE
	SDR	STANDARD DIMENSION RATIO
	SS	STAINLESS STEEL
	STD	STANDARD
	STL	STEEL
	TYP	TYPICAL
UGE	UGE	UNDERGROUND ELECTRIC
	UL	UNDERWRITERS LABORATORIES, INC.
	UNO	UNLESS NOTED OTHERWISE
	VIC	VICTALULIC
	W/	WITH
		WATER ELEVATION
WM		WATER METER
	WP	WORKING PRESSURE
	UV	ULTRAVIOLET

ISSUED FOR BID
JANUARY 2020

DRAWING SCALES SHOWN BASED ON 22"x34" DRAWING

GRAND STRAND WATER & SEWER AUTHORITY

Mark	Description	Date	Appr.
	ISSUED FOR BID	05/01/20	JJT

BUCKSPORT MARINE INDUSTRIAL PARK - PHASE 1

MECHANICAL ABBREVIATIONS

Designed by: | Drawn by: | Checked by: | Reviewed by: | Submitted by: MOFFATT & NICHOL
Date: DECEMBER 2019 | M&N Project No. 7232-05 | Drawing code: | Drawing Scale: AS SHOWN | Plot scale: 1:1 (D SHEET) | Rev. 0

SOUTH CAROLINA LICENSED PROFESSIONAL ENGINEER TIMOTHY R. RELYEA No.24067
SEAL 5-1-2020
SOUTH CAROLINA MOFFATT & NICHOL ENGINEERS No. 000363 CERTIFICATE OF AUTHORIZATION

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moffatt & nichol

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M002
INDEX: 105 OF 113

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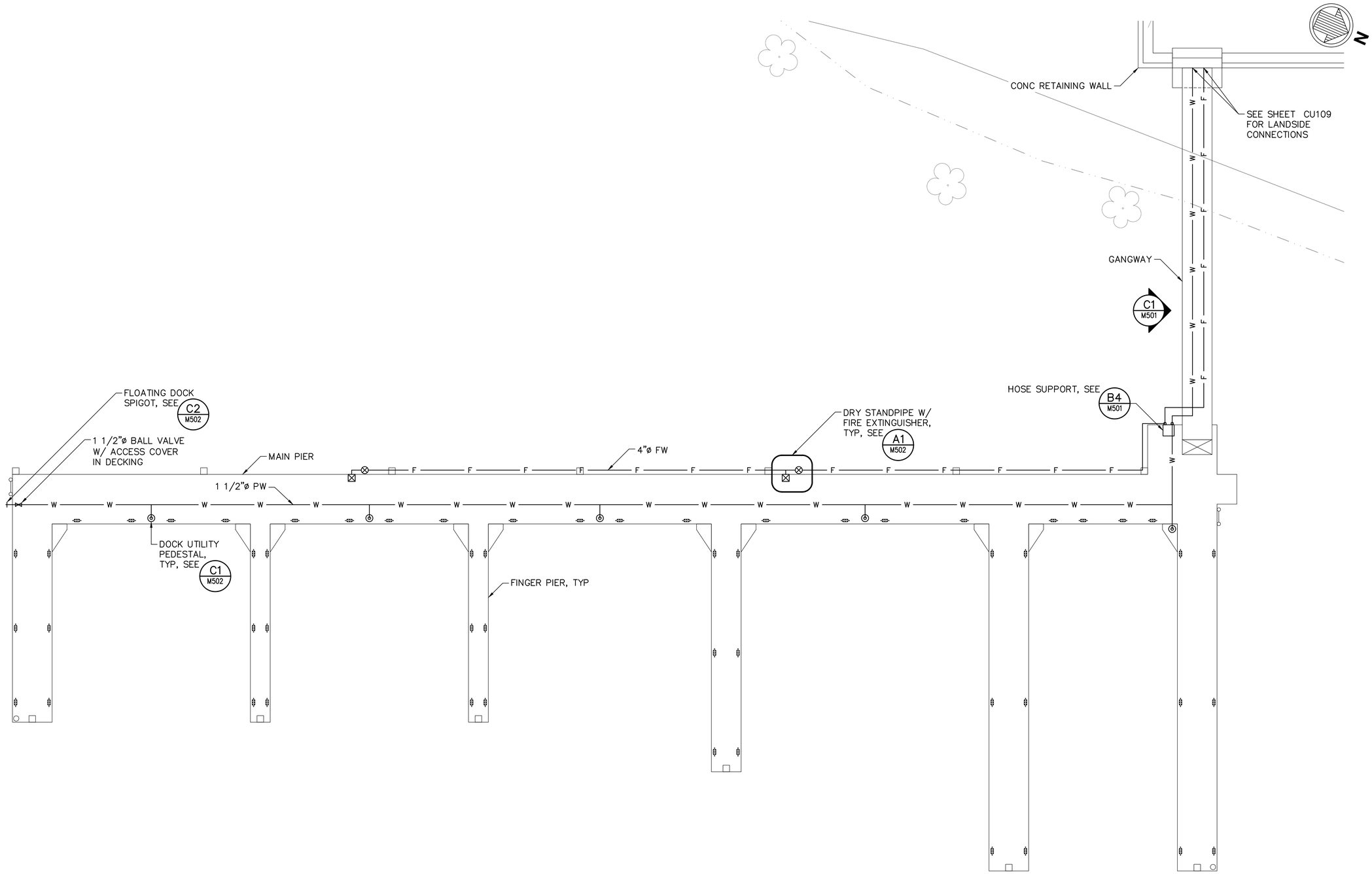

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JANUARY 2020

DRAWING SCALES SHOWN BASED ON 22"x34" DRAWING

Mark	Description	Date	Appr.
	ISSUED FOR BID	05/01/20	JJT

GRAND STRAND WATER & SEWER AUTHORITY

BUCKSPORT MARINE INDUSTRIAL PARK - PHASE 1

MECHANICAL PLAN

Rev. 0
Date: DECEMBER 2019
M&N Project No. 7232-05
Drawing code:
Drawing Scale: AS SHOWN
Plot scale: 1:1 (D SHEET)
Designed by:
Dwn by:
Ckd by:
Reviewed by:
Submitted by: MOFFATT & NICHOL

SOUTH CAROLINA LICENSED PROFESSIONAL ENGINEER No.24067 TIMOTHY R. REID
SEAL 5-1-2020
SOUTH CAROLINA MOFFATT & NICHOL ENGINEERS No. 000363 CERTIFICATE OF AUTHORIZATION

4700 FALLS OF THE NEUSE ROAD
SUITE 300
RALEIGH, NC 27609
919-781-4626
SC COA No. 363
moffatt & nichol

Sheet Reference No.
M101
INDEX: 106 OF 113

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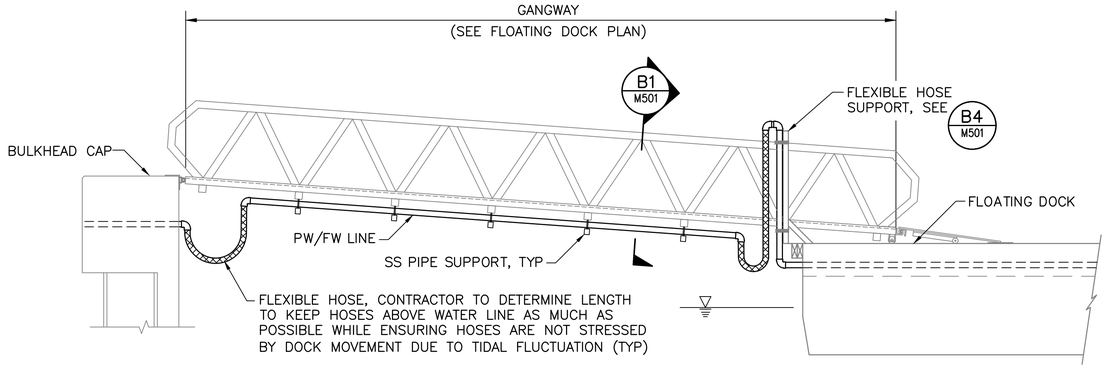
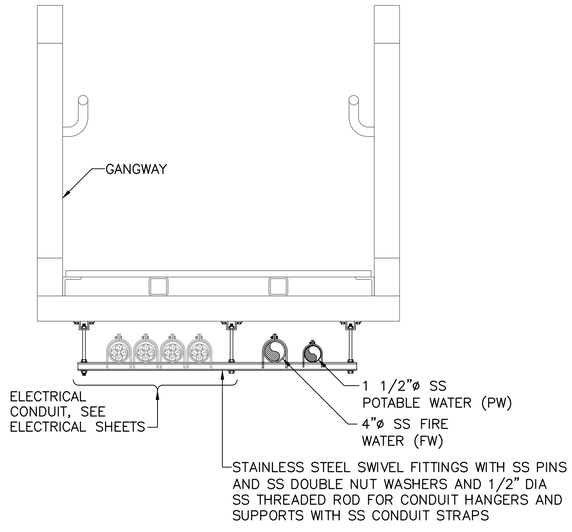
5/15/2020 9:08 AM by JTHIBODEAUX



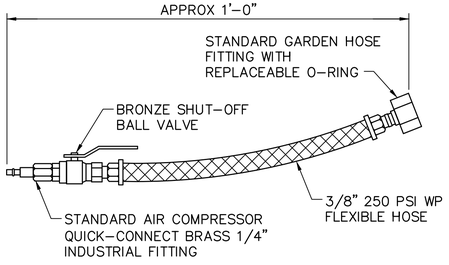
NOTES:

1. DOCK STRUCTURE SHOWN IS DIAGRAMMATIC. CONTRACTOR SHALL ADAPT WORK TO SELECTED DOCK STRUCTURE.
2. CONTRACTOR SHALL BE RESPONSIBLE FOR DESIGN OF CABLE/CONDUIT AND PIPE SUPPORTS. SUPPORTS SHOWN ARE ONLY REPRESENTATIVE. ALL MATERIAL SHALL BE 316 SS. CONTRACTOR SHALL COORDINATE SUPPORT ATTACHMENTS TO GANGWAY AND FLOATING DOCKS WITH GANGWAY AND DOCK SUPPLIERS/FABRICATORS.

C1 M101 GANGWAY PIPING ELEVATION
NOT TO SCALE

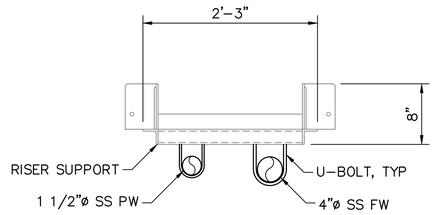


B1 M501 SECTION
NOT TO SCALE

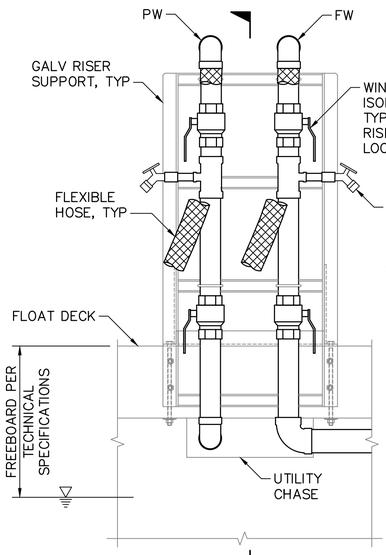


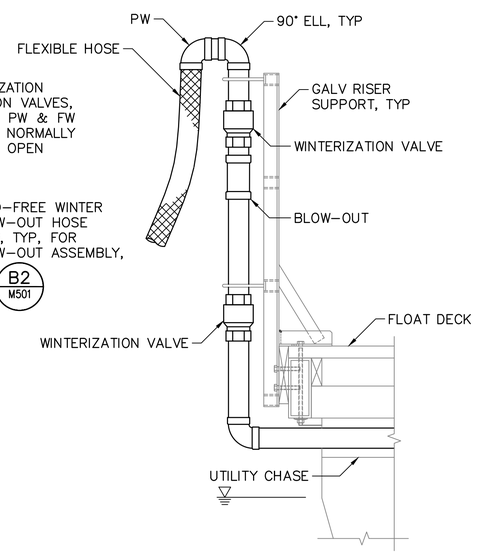
NOTE:
CONTRACTOR TO PROVIDE 2 ASSEMBLIES.

B2 M501 BLOW OUT HOSE ASSEMBLY
NOT TO SCALE



PLAN





FRONT ELEVATION

SECTION

NOTES:

1. DOCK STRUCTURE SHOWN IS DIAGRAMMATIC. CONTRACTOR SHALL ADAPT WORK TO SELECTED DOCK STRUCTURE.
2. CONTRACTOR SHALL BE RESPONSIBLE FOR DESIGN OF PIPE SUPPORTS. SUPPORTS SHOWN ARE ONLY REPRESENTATIVE. CONTRACTOR SHALL COORDINATE SUPPORT ATTACHMENTS FOR PIER/PLATFORM AND FLOATING DOCKS WITH PIER/PLATFORM AND DOCK SUPPLIERS/FABRICATORS.
3. PROVIDE DIELECTRIC SEPARATION BETWEEN DISSIMILAR METALS.
4. ALL FITTINGS SHALL BE VICTAULIC.

B4 M501 HOSE SUPPORT
NOT TO SCALE

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BUCKSPORT MARINE INDUSTRIAL PARK - PHASE 1

MECHANICAL DETAILS

Designed by: Dwn by: Chd by: Reviewed by: Submitted by: MOFFATT & NICHOL
Date: DECEMBER 2019
M&N Project No. 7232-05
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SOUTH CAROLINA LICENSED PROFESSIONAL ENGINEER No.24067 TIMOTHY R. QUINN, P.E.
SEAL 5-1-2020
SOUTH CAROLINA MOFFATT & NICHOL ENGINEERS No. 000363 CERTIFICATE OF AUTHORIZATION

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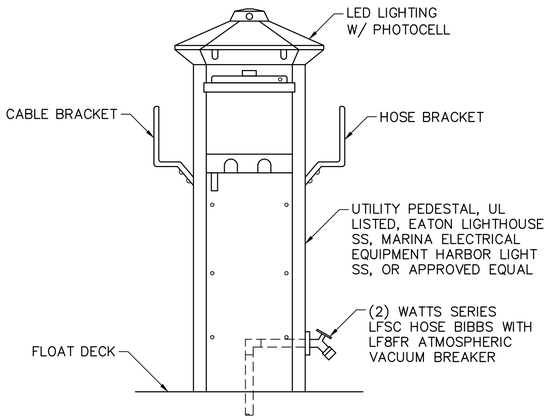
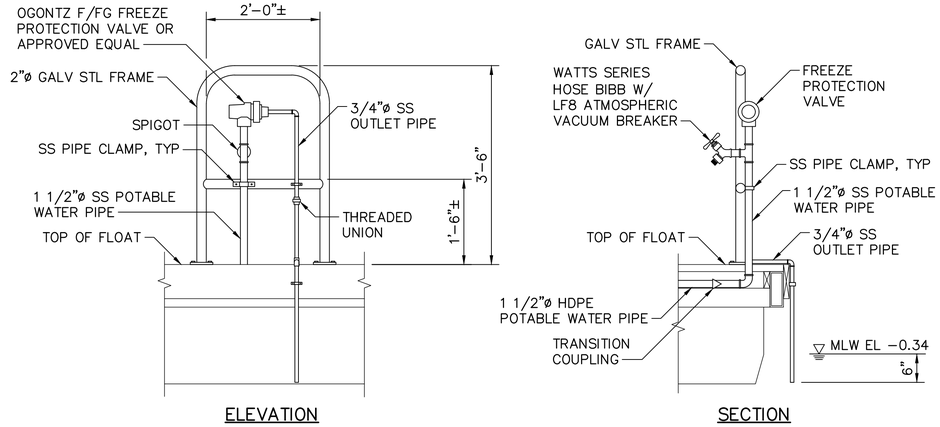
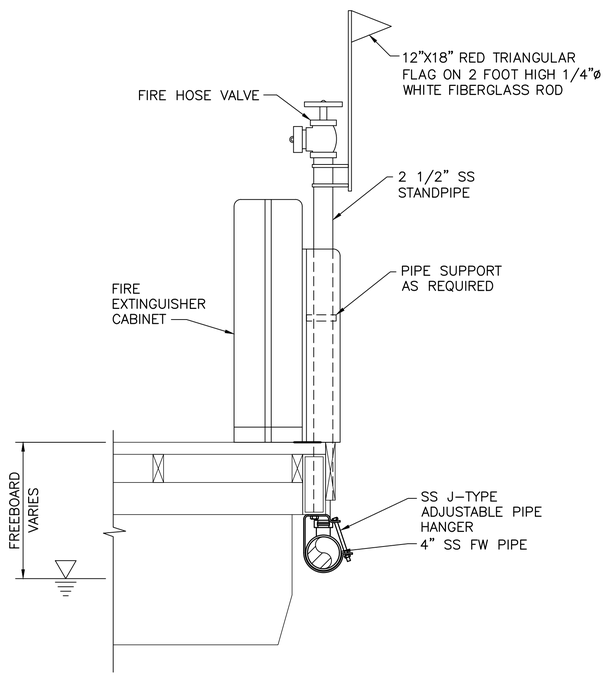


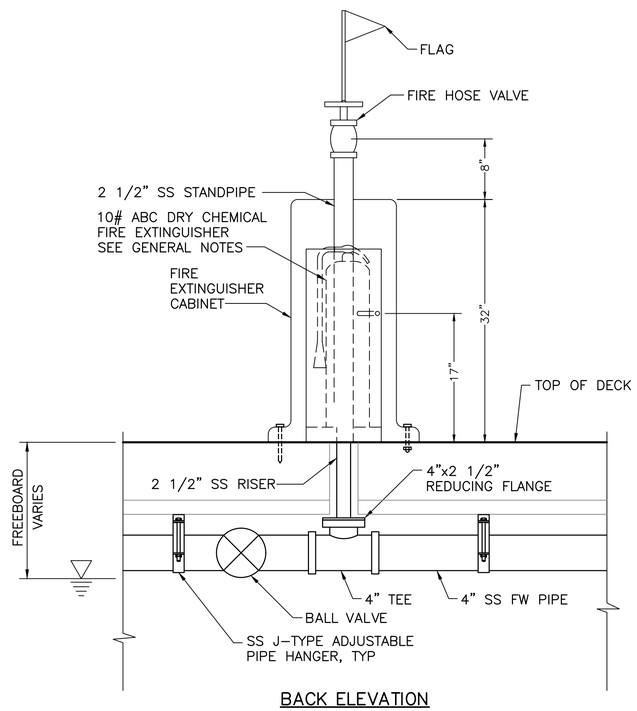
C1 M101 DOCK UTILITY PEDESTAL
NOT TO SCALE



C2 M502 FLOATING DOCK SPIGOT
NOT TO SCALE



SIDE ELEVATION



BACK ELEVATION

NOTES:
1. STANDPIPE SHOWN IS OFFSET INSTALLED AT BACKSIDE OF MAIN WALKWAY.
2. SUPPORT OF PIPING SHALL BE INCORPORATED WITH DOCK STRUCTURE FOR DRY STANDPIPE SYSTEM.
3. FIRE EXTINGUISHER CABINET MATERIALS SHALL BE NON-CORROSIVE AND UV RESISTANT.
4. ALL FITTINGS SHALL BE VICTAULIC.

A1 M101 DRY STANDPIPE HYDRANT
NOT TO SCALE

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JANUARY 2020

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BUCKSPORT MARINE
INDUSTRIAL PARK - PHASE 1

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Submitted by: MOFFATT & NICHOL	Drawing Scale: AS SHOWN Plot scale: 1:1 (D SHEET)
	Rev. 0

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DRAWING SCALES SHOWN BASED ON 22"x34" DRAWING

ELECTRICAL NOTES:

1. UNLESS SPECIFICALLY NOTED TO BE EXISTING OR SUPPLIED BY OTHERS, ALL WORK AND MATERIAL SHOWN ARE NEW AND SHALL BE PROVIDED BY THE CONTRACTOR. THE CONTRACTOR SHALL FURNISH ALL LABOR, MATERIAL, EQUIPMENT, APPURTENANCES, SERVICES AND SUPERVISION FOR A COMPLETE ELECTRICAL SYSTEM AS SHOWN ON THE DRAWING. ALL MATERIAL AND EQUIPMENT SHALL BE WORKED INTO A COMPLETE, CONVENIENT, AND ECONOMICAL SYSTEM OR SYSTEMS. ALL APPARATUS, PARTS, MATERIAL, AND ACCESSORIES WHICH ARE NECESSARY TO ACCOMPLISH THIS RESULT SHALL BE PROVIDED AND SHALL INCLUDE OTHER EQUIPMENT SELECTIONS TO MEET THE PARAMETERS INDICATED. MANUFACTURER'S INSTRUCTIONS, WRITTEN OR OTHERWISE, SHALL BE FOLLOWED UNLESS SUPERSEDED HERE IN. ALL ACCOMPLISHED RESULTS SHALL BE PROVIDED AT NO ADDITIONAL COST OR TIME TO THE OWNER AND NO ADDITIONAL COST TO THE CONTRACT AMOUNT.

2. PROVIDE IS DEFINED TO MEAN THAT THE CONTRACTOR SHALL FURNISH, INSTALL, ADJUST, TEST AND INTEGRATE INTO A COMPLETE SYSTEM THE ITEM INDICATED. INCLUDING ALL HARDWARE WIRING, AND MISCELLANEOUS ITEMS AS NECESSARY FOR A COMPLETE AND OPERATIONAL SYSTEM.

3. THE CONTRACTOR SHALL CLOSELY STUDY THE CONSTRUCTION SEQUENCE AND NOTES AS OUTLINED. SLIGHT DEVIATIONS FROM CONFINED WORK SPACES MAY BE NECESSARY TO FULLY COMPLETE A CONSTRUCTION AREA AS OUTLINED ON THAT SHEET. THE DEVIATIONS SHALL BE HELD TO A MINIMUM AND SHALL BE FULLY COORDINATED WITH THE OWNER. ALL SUCH DEVIATIONS SHALL BE MADE WITH NO ADDITIONAL COST TO THE OWNER.

4. CONDUIT SHALL BE BURIED, MINIMUM, THIRTY SIX INCHES BELOW FINISHED GRADE.

5. CONDUIT ROUTINGS SHALL NOT INTERFERE WITH NEW OR EXISTING EQUIPMENT, PIPING, CONDUIT OR WORK AND SHALL NOT OBSTRUCT ACCESS TO ANY EQUIPMENT.

6. A SEPARATE EQUIPMENT GROUND CONDUCTOR SHALL BE INSTALLED WITH CIRCUITS. THE EQUIPMENT GROUND CONDUCTOR SHALL BE CONNECTED TO ALL DEVICES AND EQUIPMENT SUCH THAT REMOVAL OF ANY DEVICE OR EQUIPMENT CANNOT INTERRUPT THE CONTINUITY OF THE EQUIPMENT GROUNDING CONDUCTOR TO AND FROM OTHER DEVICES OR EQUIPMENT.

7. THE CONTRACTOR SHALL VERIFY LOCATION, SIZE, AND LOAD OF ALL EQUIPMENT BEING FURNISHED BY OTHERS BEFORE ROUGHING IN OF ANY CONDUIT. WHERE LOCATIONS OF EQUIPMENT ARE INSTALLED OTHER THAN INDICATED OR EQUIPMENT OF HIGHER OR LOWER LOADS IS INSTALLED, THE SIZE OF STARTERS, CIRCUITRY, PROTECTIVE DEVICES, AND ACCESSORIES SHALL BE ADJUSTED ACCORDINGLY AT NO ADDITIONAL COST TO THE OWNER.

8. WIRE AND CONDUIT FOR EQUIPMENT AND MOTOR LOADS SHALL BE CONTINUOUS IN SIZE AND COUNT FROM THE SOURCE TO THE FINAL CONNECTION. SIZE AND COUNT SHALL BE AS INDICATED ON THE CIRCUIT HOMERUN, UNLESS OTHERWISE NOTED.

9. THE ELECTRICAL CONTRACTOR SHALL PROVIDE ALL POWER WIRING, CONDUIT, AND ASSOCIATED APPURTENANCE FOR EQUIPMENT PROVIDED BY OTHERS AND OTHER CONTRACTORS, UNLESS OTHERWISE NOTED.

10. THE ELECTRICAL CONTRACTOR SHALL EXAMINE THE CONTRACT DOCUMENTS AS A WHOLE. THE ELECTRICAL CONTRACTOR SHALL PROVIDE STARTERS, CIRCUITRY, PROTECTIVE DEVICES, AND ASSOCIATED APPURTENANCES FOR ALL EQUIPMENT REQUIRING POWER THAT IS NOT INDICATED ON THE ELECTRICAL DRAWINGS BUT INDICATED IN THE CONTRACT DOCUMENTS. THIS WORK SHALL BE PROVIDED AT NO ADDITIONAL COST TO THE OWNER.

11. PROVIDE SINGLE POINT GFI RECEPTACLES. GFI RECEPTACLES SHALL NOT BE WIRED FOR FEED THRU PROTECTION OF DOWNSTREAM RECEPTACLES.

12. PROVIDE GFI CIRCUIT BREAKERS WHERE INDICATED.

13. PROVIDE GFI RECEPTACLES FOR ALL EXTERIOR LOCATIONS WITHIN 6 FEET OF WATER SOURCES WHERE CONDITIONS DO NOT ALLOW THE INSTALLATION OF GFI RECEPTACLES, PROVIDE GFI CIRCUIT BREAKERS.

14. PROVIDE DIRECTORIES IN PANELBOARDS COMPLETE WITH LOAD TYPE, AND LOCATIONS.

15. MOUNTING HEIGHTS SHALL BE TO THE CENTER OF THE DEVICE INDICATED, UNLESS OTHERWISE NOTED. MOUNTING HEIGHTS OF DEVICES SHALL BE INSTALLED PER THE DRAWINGS AND IN COMPLIANCE WITH THE NATIONAL ELECTRICAL CODE.

16. WHEREVER A NEW TO EXISTING CONNECTION IS REQUIRED, PROVIDE EXTENSION RINGS, SPLICES, WIRE, CONDUIT FITTINGS, AND ASSOCIATED APPURTENANCES. PERFORM ALL CUTTING AND PATCHING AS REQUIRED TO MAKE THE CONNECTIONS.

17. PROVIDE A #12 (MIN.) COPPER TRACER WIRE WITH INSULATION THAT IS NOT WHITE, GRAY, OR GREEN IN COLOR IN ALL NEW SPARE CONDUITS. THE TRACER WIRE MAY ALSO SERVE AS THE PULL CORD.

18. PAINT ALL SURFACE MOUNTED CONDUITS TO MATCH ADJACENT SURFACES, UNLESS OTHERWISE NOTED.

19. ALL WORK TO CONFORM WITH 2017 EDITION OF NATIONAL ELECTRICAL CODE (N.E.C.) AND STATE AND LOCAL CODES. INSTALLATION SHALL BE IN ACCORDANCE WITH NATIONAL ELECTRICAL CONTRACTORS ASSOCIATION (N.E.C.A.) STANDARDS.

LEGEND

- POWER PANEL
- XX — SLIP NUMBER
- XXXXX — CABLE NUMBER
- DUAL SERVICE MARINE POWER PEDESTAL
  (2) 50A, 125V/250V, 1Ø, RECEPTACLES, NEMA SS-2
  W/ 30A GFPE (30MA TRIP) CIRCUIT BREAKERS
  (2) 30A, NEMA L5-30, 125V, 1Ø RECEPTACLES
  W/ 30A GFPE (30MA TRIP) CIRCUIT BREAKERS
  (1) 20A,120V GFI CONVENIENCE RECEPTACLES W/ 20A CIRCUIT BREAKERS
- DUAL SERVICE MARINE POWER PEDESTAL
  (4) 50A, 125/250V, 1Ø RECEPTACLES W/ 50A GFI (30mA TRIP) CIRCUIT BREAKERS NEMA SS-2
  (1) 20A, 120V GFI CONVENIENCE RECEPTACLES W/ 20A CIRCUIT BREAKERS
- E — ELECTRICAL CONDUIT
- ELECTRICAL HANDHOLE
- DISCONNECT SWITCH (NEMA 3R, 2P, 60A, 45A F)

ABBREVIATIONS

1P	ONE POLE, OR AS INDICATED
2P	TWO POLE, OR AS INDICATED
3P	THREE POLE, OR AS INDICATED
A	AMPERES, AMPERE FUSE
AFG	ABOVE FINISHED GRADE
AIC	AMPERES INTERRUPTING CAPACITY
AWG	AMERICAN WIRE GAGE
CKT	CIRCUIT
C	CONDUIT
CB	CIRCUIT BREAKER
CO	CONDUIT ONLY
CONC	CONCRETE
CT	CURRENT TRANSFORMER
DFE	DESIGN FLOOD ELEVATION
DIA	DIAMETER
DWG	DRAWING
EC	EMPTY CONDUIT
EX,	EXISTING
FRP	FIBER GLASS REINFORCED PLASTICS
GEC	GROUND ELECTRODE CONDUCTOR
GND	GROUND
GFCI	GROUND FAULT CIRCUIT INTERRUPTER
GFI	GROUND FAULT INTERRUPTER
GFM	GROUND FAULT MONITOR
GFPE	GROUND FAULT PROTECTION DEVICE
Hz	CYCLES PER SECOND
KCMIL	THOUSAND CIRCULAR MILS
KWH	KILOWATT HOUR
KVA	KILOVOLT AMPERE
LTFMC	LIQUID TIGHT FLEXIBLE METAL CONDUIT
NEC	NATIONAL ELECTRICAL CODE
NIC	NOT IN CONTRACT
NTS	NOT TO SCALE
P	POLE
PB	PULL BOX
PC	PHOTOCELL
PH,Ø	PHASE
PVC	POLYVINYL CHLORIDE
SC	SHORT CIRCUIT
SCH	SCHEDULE
SPD	SURGE PROTECTION DEVICE
SS	STAINLESS STEEL
TYP	TYPICAL
UL	UNDERWRITERS LABORATORIES
UON	UNLESS OTHERWISE NOTED
V	VOLT
W	WATT
XFMR	TRANSFORMER

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BUCKSPORT MARINE INDUSTRIAL PARK - PHASE 1

ELECTRICAL NOTES

Designed by: MLS	Rev. 0
Dwn by: JMJ	Date: JANUARY 2020
Chd by: DJS	M&N Project No. 7232-05
Reviewed by: DAW	Drawing code:
Submitted by: MOFFATT & NICHOL	Drawing Scale: AS SHOWN Plot scale: 1:1 (0 SHEET)

SOUTH CAROLINA LICENSED PROFESSIONAL ENGINEER 05/01/2020 No.29529 DAVID A. WILLIS

SEAL

SOUTH CAROLINA MOFFATT & NICHOL ENGINEERS No. 000363 CERTIFICATE OF AUTHORIZATION

4700 FALLS OF THE NEUSE ROAD
SUITE 300
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SC COA No. 363

moffatt & nichol

Sheet Reference No.
E001
INDEX: 109 OF 113

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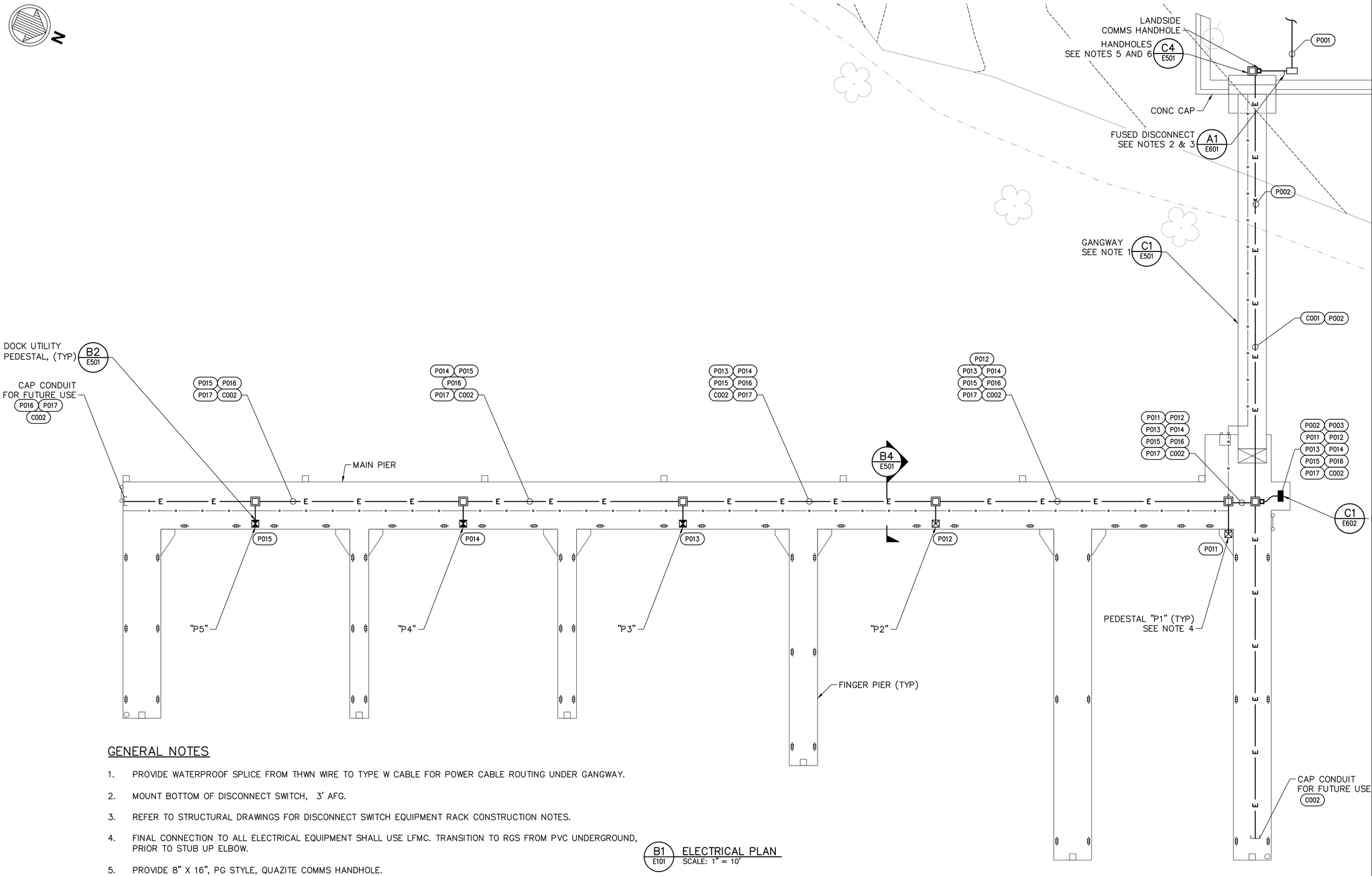

GENERAL NOTES

1. PROVIDE WATERPROOF SPLICE FROM THWN WIRE TO TYPE W CABLE FOR POWER CABLE ROUTING UNDER GANGWAY.
2. MOUNT BOTTOM OF DISCONNECT SWITCH, 3' AFG.
3. REFER TO STRUCTURAL DRAWINGS FOR DISCONNECT SWITCH EQUIPMENT RACK CONSTRUCTION NOTES.
4. FINAL CONNECTION TO ALL ELECTRICAL EQUIPMENT SHALL USE LFMC. TRANSITION TO RGS FROM PVC UNDERGROUND, PRIOR TO STUB UP ELBOW.
5. PROVIDE 8" X 16", PG STYLE, QUAZITE COMMS HANDHOLE.
6. PROVIDE TIER 22 RATED 24" X 36" QUAZITE, PG STYLE POLYMER CONCRETE HANDHOLE.

B1 E101 ELECTRICAL PLAN
SCALE: 1" = 10'

10'–0" 0'–0" 10'–0" 20'–0"
SCALE: 1"=10'

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			Submitted by: MOFFATT & NICHOL

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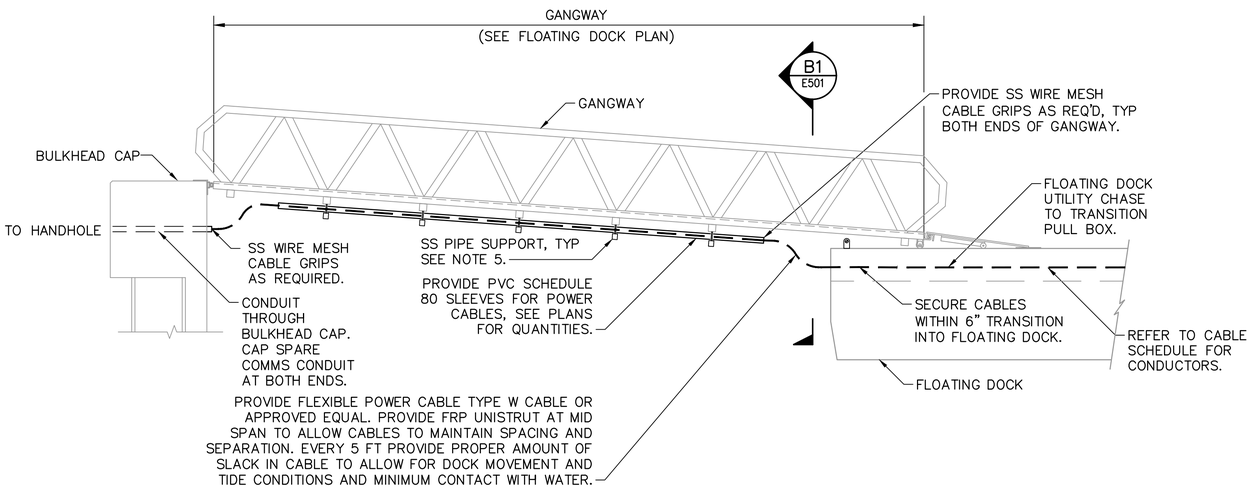
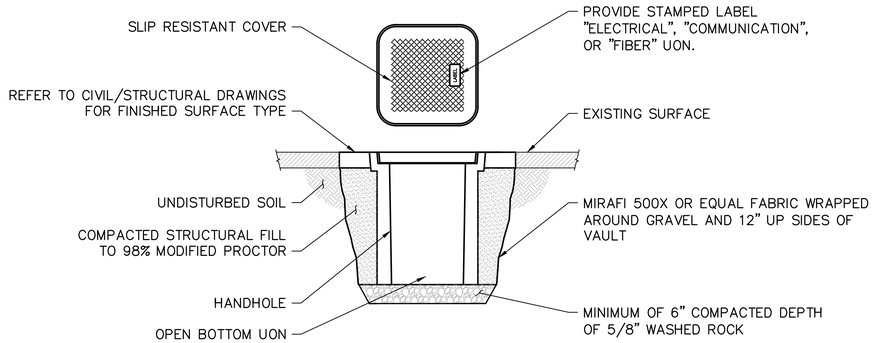
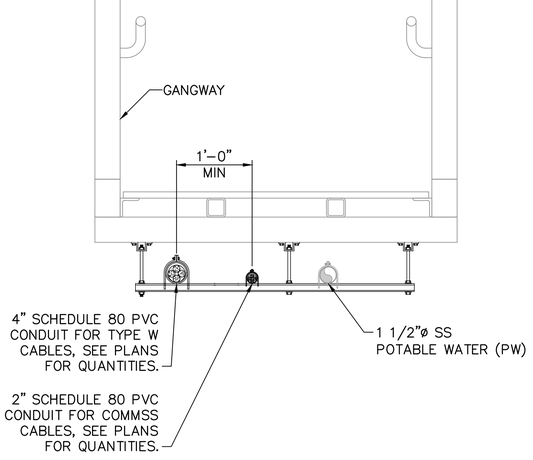


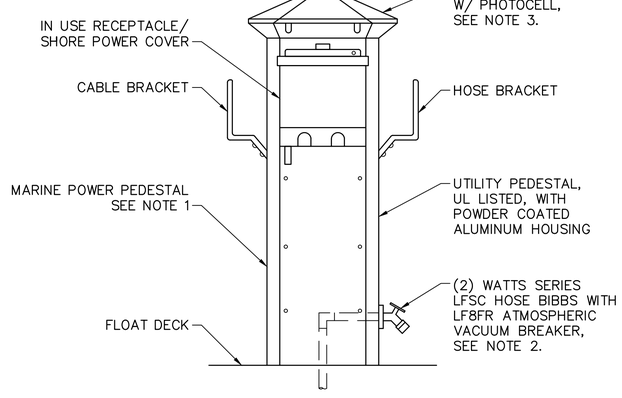
C1 E101 GANGWAY CONDUIT ELEVATION
SCALE: NTS



C4 E101 DETAIL – HANDHOLE
SCALE: NTS

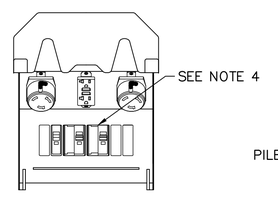


B1 E501 GANGWAY CONDUIT ELEVATION
SCALE: NTS

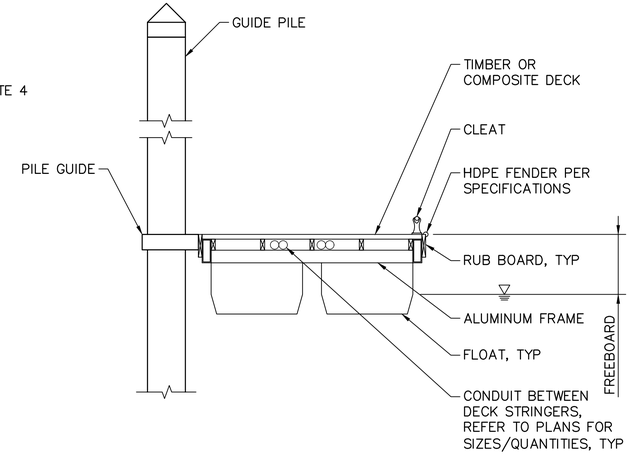


NOTE: ACTUAL PEDESTAL MAY VARY FROM DEPICTION
REFER TO SHEET SE001 FOR PEDESTAL CONFIGURATIONS

B2 E101 TYPICAL POWER PEDESTAL
SCALE: NTS



FACEPLATE DETAIL
(NTS)



B4 E101 FLOATING DOCK
SCALE: NTS

NOTES

1. PROVIDE MARINE POWER PEDESTALS (MEE OR ENGINEER APPROVED EQUAL), HARBOR LIGHT SS SERIES WITH A NEMA 3R RATING AND 316L STAINLESS STEEL ENCLOSURE.
2. WATER HOSE BIBB WITH STAINLESS STEEL 316L HANDLE.
3. LIGHTING ASSEMBLY, (2) 14 W LED LIGHTS.
4. PROVIDE CIRCUIT BREAKERS WITH A CLEAR LINE OF SIGHT AND NO POWER CORD OBSTRUCTIONS WITH RECEPTACLES WHEN IN USE BY MARINA. SUBMIT TO ENGINEER FOR APPROVAL PRIOR TO FABRICATION. CIRCUIT BREAKERS SHALL NOT BE LOCATED UNDER RECEPTACLES.
5. PROVIDE STAINLESS STEEL 316L WASHERS, CAPTIVE HEAD BOLTS, AND PULL SLOTS.

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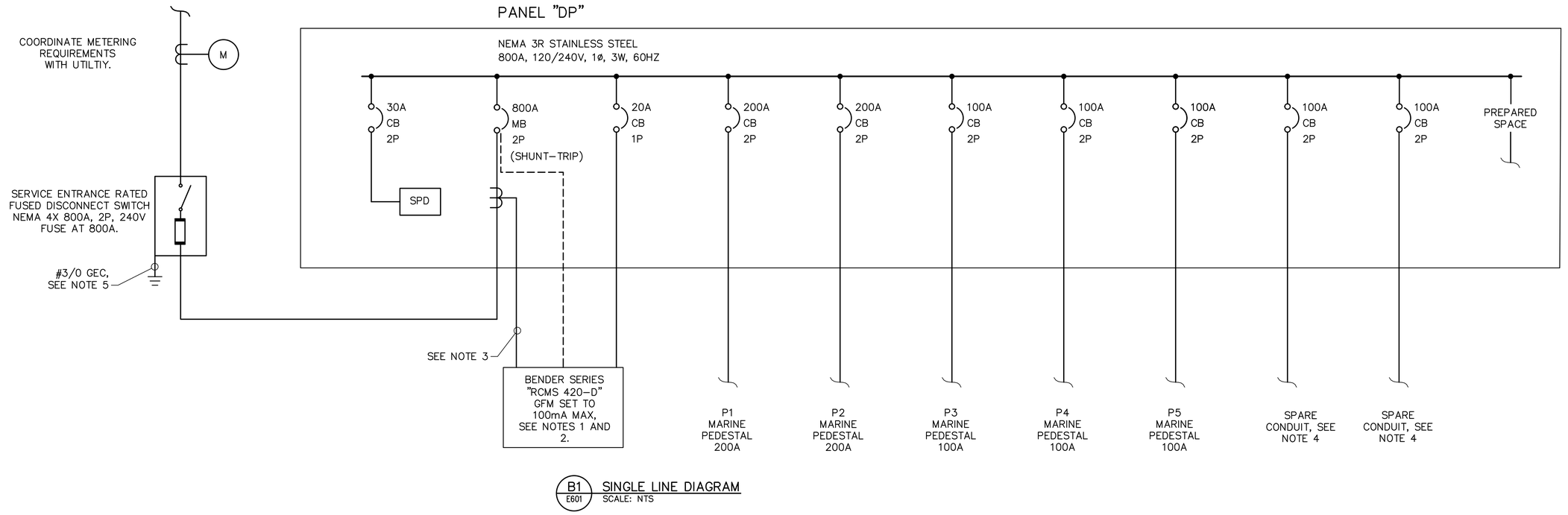
INDEX: 111 OF 113

File: C:\RA\7232-05\CADD_Active_SheetSet\723205-E501; Plotted: 4/29/2020 12:16 PM by JTHIBODEAUX
File: C:\RA\7232-05\CADD_Active_SheetSet\723205-E501; Saved: 1/15/2020 9:12 AM by JTHIBODEAUX

DRAWING SCALES SHOWN BASED ON 22"x34" DRAWING

NOTES

1. PROVIDE GROUND FAULT MONITORING (GFM) OF PANELBOARD. GFM MANUFACTURER SHALL BE BENDER, MODEL RCM420-D OR ENGINEER APPROVED EQUAL. PROVIDE 120V POWER TO GFM PER MANUFACTURER'S INSTRUCTIONS. IN THE EVENT OF A GROUND FAULT, THE GFM WILL PROVIDE A TRIP SIGNAL TO THE SHUNT TRIP BREAKER IN THE MARINE PANEL, DE-ENERGIZING THE CIRCUIT CONTAINING THE GROUND FAULT.
2. PROVIDE NEMA 4X FIBERGLASS ENCLOSURE FOR GFM. MOUNT ADJACENT TO PANEL "DP". PROVIDE 120V SHUNT TRIP COIL ON MAIN BREAKER.
3. WIRE CT'S PER GFM MANUFACTURER REQUIREMENTS.
4. REFER TO SITE PLAN AND CABLE SCHEDULE FOR SPARE CONDUIT QUANTITIES/SIZES.
5. PROVIDE THREE 3/4" X 10'-0" COPPER CLAD STEEL GROUND RODS FOR THE SERVICE GROUND ROD CLUSTER. SPACE AND DRIVE GROUND RODS IN A TRIANGULAR CONFIGURATION APPROXIMATELY 20' APART AT 12" BELOW FINISHED GRADE FROM THE TOP OF THE ROD. INTER-CONNECT RODS IN DELTA WITH A #3/0 BARE COPPER CONDUCTOR. USE EXOTHERMIC WELDS FOR CONNECTIONS TO THE RODS.



B1 / E601 SINGLE LINE DIAGRAM
SCALE: NTS

ISSUED FOR BID
JANUARY 2020

GRAND STRAND WATER & SEWER AUTHORITY

Mark	Description	Date	Appr.

BUCKSPORT MARINE INDUSTRIAL PARK - PHASE 1

SINGLE LINE DIAGRAM

Date: JANUARY 2020 | M&N Project No. 7232-05 | Drawing code: | Drawing Scale: AS SHOWN Plot scale: 1:1 (D SHEET) | Rev. 0

Designed by: MLS | Dwn by: JMJ | Ckd by: DJS | Reviewed by: DAW | Submitted by: MOFFATT & NICHOL

SOUTH CAROLINA PROFESSIONAL ENGINEER LICENSED 05/01/2020 No.29529 DAVID A. WILLS

SEAL

SOUTH CAROLINA MOFFATT & NICHOL ENGINEERS No. 000363 CERTIFICATE OF AUTHORIZATION

4700 FALLS OF THE NEUSE ROAD
SUITE 300
RALEIGH, NC 27609
919-781-4626

SC COA No. 363

moffatt & nichol

Sheet Reference No.
E601
INDEX: 112 OF 113

File: Q:\RA\7232-05\CADD_Active_SheetSet\723205-E601; Plotted: 4/29/2020 12:16 PM by THIBODEAUX, JASON; Saved: 1/23/2020 11:12 AM by JTHIBODEAUX

DRAWING SCALES SHOWN BASED ON 22"x34" DRAWING

PANEL:	DISTRIBUTION PANEL (DP)			
VOLTAGE:	240/120	BUS RATING (A):	800	ENCLOSURE: NEMA 3R STAINLESS STEEL
PHASE:	1	MAIN OC DEVICE:	800*	MOUNTING: SURFACE
WIRE:	3	INTERRUPTING RATING (KA):	42	LOCATION: FLOATING DOCK
NEUTRAL:	YES	SERVICE ENTRANCE LABEL:	NO	

CKT NO.	DESCRIPTION	CONNECTED LOAD (VA) LTS	REC	MECH	MISC	OCP AMPS	P		OCP AMPS	P	CONNECTED LOAD (VA) LTS	REC	MECH	MISC	DESCRIPTION	CKT NO.
1	SPARE					100	2	A	100	2		12000			PEDESTAL P3	2
3								B				12000				4
5	SPARE					100	2	A	100	2		12000			PEDESTAL P4	6
7								B				12000				8
9	SPD				100	30	2	A	100	2		12000			PEDESTAL P5	10
11					100			B				12000				12
13	SPARE					20	1	A	20	1					GFM	14
15	SPARE					20	1	B	20	1					SPARE	16
17	SPARE					20	1	A	20	1					SPARE	18
19	SPARE					20	1	B	20	1					SPARE	20
21	SPARE					20	1	A	20	1					SPARE	22
23	PREPARED SPACE							B							PREPARED SPACE	24
25	PREPARED SPACE							A							PREPARED SPACE	26
27	PREPARED SPACE							B							PREPARED SPACE	28
29	PREPARED SPACE							A							PREPARED SPACE	30
31	PREPARED SPACE							B							PREPARED SPACE	32
33	PREPARED SPACE							A							PREPARED SPACE	34
35	PEDESTAL P1		24000			200	2	B							PREPARED SPACE	36
37			24000					A							PREPARED SPACE	38
39	PEDESTAL P2		24000			200	2	B							PREPARED SPACE	40
41			24000					A							PREPARED SPACE	42

LOAD SUMMARY

	LTS	REC	MECH	MISC	SPARE	TOTAL			
CONNECTED LOAD (KVA)	0.0	168.0	0.0	0.2	---	168.2		240	LINE-TO-LINE VOLTS
DEMAND FACTOR	1.25	0.80	1.00	1.00	0%	---		701	CONNECTED AMPS
DESIGN LOAD (KVA)	0.0	134.4	0.0	0.2	0.0	134.6		561	DESIGN AMPS

NOTES:

C1 / E602 PANEL SCHEDULE
SCALE: NTS

CABLE#	FROM	TO	CONDUCTORS	CONDUIT	VOLTAGE/CONTROL	SEE NOTE
P001	UTILITY TRANSFORMER	SERVICE ENTRANCE RATED FUSED DISCONNECT	(2) SETS 3#600KCMIL	4" PVC	240V	
P002	SERVICE ENTRANCE RATED FUSED DISCONNECT	800A DISTRIBUTION PANEL "DP"	(2) SETS 3#600KCMIL,#1/0 GND	4" PVC	120V/240V	
P003	800A DISTRIBUTION PANEL	GFM	2 #12, #12 GND	3/4" PVC	120V, 1 PHASE	
P011	800A DISTRIBUTION PANEL	MARINE PEDESTAL "P1"	3 #4/0, #4 GND	2 1/2" PVC	120V/240V, 1 PHASE	
P012	800A DISTRIBUTION PANEL	MARINE PEDESTAL "P2"	3 #4/0, #4 GND	2 1/2" PVC	120V/240V, 1 PHASE	
P013	800A DISTRIBUTION PANEL	MARINE PEDESTAL "P3"	3 #1/0, #6 GND	1 1/2" PVC	120V/240V, 1 PHASE	
P014	800A DISTRIBUTION PANEL	MARINE PEDESTAL "P4"	3 #1/0, #6 GND	1 1/2" PVC	120V/240V, 1 PHASE	
P015	800A DISTRIBUTION PANEL	MARINE PEDESTAL "P5"	3 #1/0, #6 GND	1 1/2" PVC	120V/240V, 1 PHASE	
P016	800A DISTRIBUTION PANEL	END OF PIER	N/A	1 1/2" PVC	FUTURE POWER	SPARE
P017	800A DISTRIBUTION PANEL	END OF PIER	N/A	1 1/2" PVC	FUTURE POWER	SPARE
SPARE COMMUNICATION CONDUIT						
C001	LANDSIDE COMMS HANDHOLE	FLOATING DOCK COMMS HANDHOLE (ADJ. PANEL)	N/A	2" PVC	FUTURE COMM	SPARE COMM
C002	FLOATING DOCK COMMS HANDHOLE (ADJ. PANEL)	END OF PIERS	N/A	1" PVC	FUTURE COMM	SPARE COMM

A1 / E602 CABLE SCHEDULE
SCALE: NTS

NOTES

1. * INDICATES A SHUNT-TRIP CIRCUIT BREAKER. (CONTROLLED BY DEDICATED BENDER RCMS-420D RELAY CHANNEL, UON).
2. DEMAND FACTOR CALCULATED PER NEC ARTICLE 555.

ISSUED FOR BID
JANUARY 2020

GRAND STRAND WATER & SEWER AUTHORITY

Mark	Description	Date	Appr.

BUCKSPORT MARINE INDUSTRIAL PARK - PHASE 1

ELECTRICAL SCHEDULES

Designed by: MLS | Drawn by: JMJ | Checked by: DJS | Reviewed by: DAW | Submitted by: MOFFATT & NICHOL
Date: JANUARY 2020 | M&N Project No. 7232-05 | Drawing code: | Drawing Scale: AS SHOWN Plot scale: 1:1 (D SHEET)
Rev. 0

SOUTH CAROLINA LICENSED PROFESSIONAL ENGINEER
05/01/2020
No.29529
DAVID A. WILLS, PE

SEAL

SOUTH CAROLINA
MOFFATT & NICHOL ENGINEERS No. 000363
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moffatt & nichol

Sheet Reference No.
E602
INDEX: 113 OF 113

File: Q:\RA\7232-05\CADD_Active_SheetSet\7232005-E602; Plotted: 4/29/2020 12:16 PM by JTHIBODEAUX, JASON; Saved: 1/23/2020 12:17 PM by JTHIBODEAUX

DRAWING SCALES SHOWN BASED ON 22"x34" DRAWING