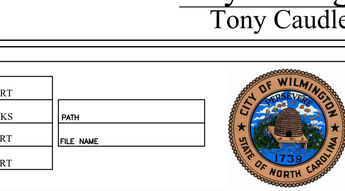
ABBREVIATIONS

&	AND
@	AT
#	NUMBER
ø	DIAMETER
A/E	ARCHITECT/ENGINEER
AB	ANCHOR BOLT
ACI	AMERICAN CONCRETE INSTITUTE
ADD'L	ADDITIONAL
AHU	AIR HANDLING UNIT
AISC	AMERICAN INSTITUTE OF STEEL CONSTRUCTION
ALT	ALTERNATE
ARCH	ARCHITECTURAL
ASCE	AMERICAN SOCIETY OF CIVIL ENGINEERS
ASTM	AMERICAN SOCIETY FOR TESTING MATERIALS
AWS	AMERICAN WELDING SOCIETY
B	BOTTOM
BAL	BALANCE
BLDG	BUILDING
BLKG	BLOCKING
BM	BEAM
BOT	BOTTOM
BP	BASE PLATE
BRG	BEARING
BSMT	BASEMENT
BTWN	BETWEEN
C–	COLUMN MARK
CANT	CANTILEVER
CIP	CAST IN PLACE
CJ	CONTROL JOINT
CL	CENTER LINE
CLR	CLEAR
CMU	CONCRETE MASONRY UNIT
COL	COLUMN
CONC	CONCRETE
CONN	CONNECTION
CONST	CONSTRUCTION
CONT	CONTINUOUS
D	DEPTH
DET	DETAIL
DIA	DIAMETER
DIAG	DIAGONAL
DN	DOWN
DWG	DRAWING
EXIST. (E)	EXISTING
EA	EACH
EE	EACH END
EF	EACH FACE
EJ	EXPANSION JOINT
EL	ELEVATION
ELECT	ELECTRICAL
ELEV	ELEVATOR
EQ	EQUAL
EW	EACH WAY
EXIST	EXISTING
EXP	EXPANSION
EXT	EXTERIOR
F–	FOOTING MARK
FD	FLOOR DRAIN
FDN	FOUNDATION
FIN	FINISH
FL	FULL LENGTH
FLR	FLOOR
FTG	FOOTING
FS	FOOTING STEP
FV	FIELD VERIFY
GA	GAGE, GAUGE
GALV	GALVANIZED
GB	GRADE BEAM
HK	HOOK
HORIZ	HORIZONTAL
HP	HIGH POINT
HVAC	HEATING – VENTILATION – AIR CONDITIONING
IBC	INTERNATIONAL BUILDING CODE
ID	INSIDE DIAMETER
IF	INSIDE FACE
IJ	ISOLATION JOINT
INT	INTERIOR
JT	JOINT
KSI	KIPS PER SQUARE INCH
LE	LEFT END
LLH	LONG LEG HORIZONTAL
LLV	LONG LEG VERTICAL
LP	LOW POINT
MATL	MATERIAL
MAX	MAXIMUM
MECH	MECHANICAL
MEZZ	MEZZANINE
MFR	MANUFACTURER
MIN	MINIMUM
MISC	MISCELLANEOUS
(N)	NEW
NIC	NOT IN CONTRACT
NTS	NOT TO SCALE
OC	ON CENTER
OD	OUTSIDE DIAMETER
OF	OUTSIDE FACE
OPNG	OPENING
OPP	OPPOSITE
P–	PIER MARK
PL	PLATE
PSF	POUNDS PER SQUARE FOOT
QTY	QUANTITY
R	RADIUS
RD	ROOF DRAIN
RE	RIGHT END
REF	REFERENCE
REINF	REINFORCE(D), (ING), (MENT)
REQ'D	REQUIRED
REV	REVISION
RO	ROUGH OPENING
RTU	ROOF TOP UNIT
SCHED	SCHEDULE
SECT	SECTION
SIM	SIMILAR
SJI	STEEL JOIST INSTITUTE
SL	SLOPE
SOG	SLAB ON GRADE
SPEC	SPECIFICATION
SQ	SQUARE
SS	STAINLESS STEEL
STD	STANDARD
STL	STEEL
STRUCT	STRUCTURAL
T	TOP
T&B	TOP AND BOTTOM
T/	TOP OF
THRU	THROUGH
TYP	TYPICAL
UNO	UNLESS NOTED OTHERWISE
VERT	VERTICAL
VIF	VERIFY IN FIELD
W	WIDTH
W–	WALL MARK
W/	WITH
W/O	WITHOUT
WP	WORKING POINT
WWF	WELDED WIRE FABRIC

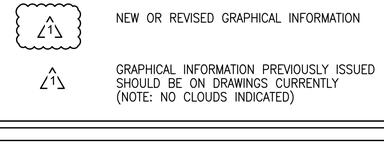
SYMBOLS AS ABBREVIATIONS

⊾	PERPENDICULAR
%	PERCENT
x°	DEGREE(S) OF ANGULAR MEASURE
<	LESS THAN
>	GREATER THAN
≤	GREATER THAN OR EQUAL TO
#	POUND(S)
@	AT
=	EQUAL
℄	CENTER LINE
℞	PROPERTY LINE
ft	FOOT
&	AND
∠	ANGLE
Ø	DIAMETER
/	DIVIDE BY, PER
x	MULTIPLY BY, BY
+/- OR ±	PLUS OR MINUS

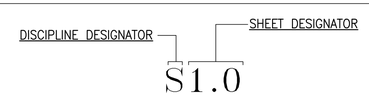
MATERIAL SYMBOLS



DELTA GRAPHIC LEGEND/ DESCRIPTION



SUB SHEET NUMBERING SYSTEM



STRUCTURAL SET ORGANIZATION

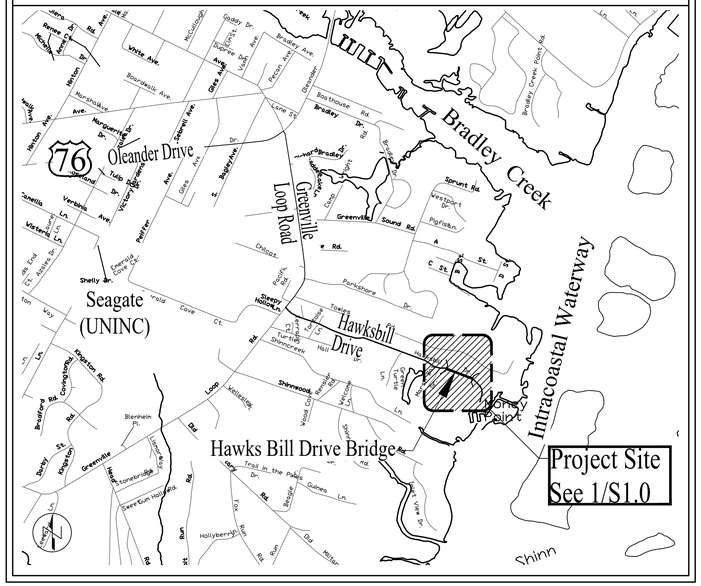
CO SERIES – SYMBOLS, NOTES AND LIVE LOAD DIAGRAMS
SO SERIES – STRUCTURAL PLANS & SECTIONS

DRAWING INDEX

PROJECT WORK SCOPE

1. REMOVE EXISTING DETERIORATED TIMBER GUARDRAILS (APPROX. 401± LF TOTAL)
2. ROUTE & FILL CRACKS IN ROADWAY SLAB – SEE NOTE ON S0.1 (ALLOWANCES OF 300 LF)
3. FILL VOIDS IN RIPRAP ALONG SIDES UNDER ROADWAY SLAB (ALLOWANCE OF 12 CY).
4. INSTALL NEW VINYL SHEET PILE CUTOFF WALLS AND STONE BACKFILL – APPROX. 810± LF TOTAL.
5. INSTALL CONCRETE COLLAR FOR RCP PIPE PENETRATIONS THRU VINYL WALL.
6. INSTALL NEW TIMBER GUARDRAILS (APPROX. 401 LF TOTAL).
7. ADD ALTERNATE #1: INSTALL TIMBER GUARDRAIL ALONG ONE EDGE OF ROADWAY (APPROX. 1,879± SF).
8. ADD ALTERNATE #2: COAT TOP OF DECK SLAB WITH A MIGRATING CORROSION INHIBITOR & COAT WITH A TRAFFIC COATING (APPROX. 5,987± SF)
9. ADD ALTERNATE #3: INSTALL NEW BOX CULVERT.

VICINITY PLAN



ENLARGED MAP

HAWKS BILL DRIVE EMBANKMENT ROADWAY REPAIRS

City of Wilmington
Wilmington, NC
Contract No: S6-1015.1 CALL#2

City Manager
Tony Caudle

City Engineer
David E. Cowell, P.E.

0	Issued For Construction	02.14.22
	REVISIONS	

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 32547 JAMES R. TROUTMAN

02.14.2022
P.E. DATE

DESIGNED	JRT
DRAWN	SKS
CHECKED	JRT
PROJ. ENGR.	JRT

PATH
FILE NAME

CITY OF WILMINGTON INCORPORATED 1739 STATE OF NORTH CAROLINA

WILMINGTON North Carolina
Development Services • Engineering Division
P.O. Box 1810 • 305 Chestnut Street • Wilmington, NC 28401 • (910) 341-7807

DATE 02.14.2022
PROJECT NUMBER S6-1015.1 CALL#2

Hawks Bill Drive
Embankment Roadway Repairs

LOCATION MAPS & NOTES

CRISER TROUTMAN TANNER
CRISER TROUTMAN TANNER CONSULTING ENGINEERS NC
3809 Peachtree Ave., Suite 102
Wilmington, NC 28403
910.397.2929 Ph.
910.397.2971 Fax
www.cttengineering.com
Firm License Number: F-0113
#8238.00

SCALE AS SHOWN

SHEET C0 of 9

STRUCTURAL NOTES

GENERAL

1. DESIGN LIVE LOAD: UNKNOWN
2. CONTRACTOR SHALL VISIT THE JOB SITE, PRIOR TO BIDDING PROJECT. ANY QUANTITIES SHOWN ARE ESTIMATED AND ARE FOR CONTRACTOR'S GENERAL INFORMATION ONLY.
3. CONTRACTOR SHALL PROVIDE ALL LAYOUT REQUIRED TO CONSTRUCT HIS WORK.
4. CONTRACTOR SHALL PROVIDE A TEMPORARY CONSTRUCTION ENTRANCE/EXIT FROM ALL ACCESS ROADS TO SITE WHERE INTERSECTING WITH PUBLIC ROADWAY(S).
5. CONTRACTOR SHALL FIELD VERIFY EXISTING DIMENSIONS AND CONDITIONS FOR REPAIRS TO EXISTING CONSTRUCTION TO SATISFY HIMSELF AS TO EXISTING CONDITIONS, RELATIONSHIP BETWEEN STRUCTURES WITH RESPECT TO WATER ELEVATIONS & ACCESS LOCATIONS. ANY DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE OWNER/ENGINEER. PRIOR TO CONSTRUCTION COMMENCING.
6. A BENCH MARK AND BASE LINE IS PROVIDED BY THE OWNER. CONTRACTOR SHALL ESTABLISH BENCH MARKS AS REQUIRED BY HIS SURVEYOR, BASED ON EXISTING SPOT ELEVATIONS.
7. CONTRACTOR IS CAUTIONED TO TAKE EXTREME CARE WHEN WORKING AROUND EXISTING STRUCTURES.
8. CONTRACTOR SHALL ADHERE TO ALL OSHA REGULATIONS AND CONDITIONS OF ALL PERMITS.
9. CONTRACTOR SHALL LIMIT THE AMOUNT OF DISTURBANCE ADJACENT TO THE WORK.
10. ALL ITEMS TO BE REMOVED OR REPLACED SHALL BE DISPOSED OF OFF-SITE.
11. ANY DAMAGE DONE DURING CONSTRUCTION TO EXISTING SIDEWALKS, STREETS, BUILDING, ETC. SHALL BE REPAIRED BY THE CONTRACTOR.
12. CONTRACTOR SHALL OBTAIN ALL BUILDING PERMITS REQUIRED OR NECESSARY TO PROVIDE CONSTRUCTION OF THE PROJECT.
13. CONTRACTOR SHALL OBTAIN WRITTEN APPROVAL FOR ANY WORK, WHICH HE CONSIDERS OUT OF THE WORK SCOPE, PRIOR TO BEGINNING THE WORK.
14. PROTECT ADJACENT MATERIALS AND SURFACES TO REMAIN FREE FROM DAMAGE. REPAIR OR REPLACE DAMAGED ITEMS REQUIRED FOR PROJECT COMPLETION AT NO COST TO OWNER.
15. PROTECT NEIGHBORING PROPERTIES DURING PROJECT.
16. MAINTAIN PUBLIC ACCESS OF RIGHT OF WAY AND SIDEWALKS UNLESS PERMITS STATING OTHERWISE ARE GRANTED. MAINTAIN SAFETY RAILS OR OTHER PROTECTION FROM HAZARDS INCLUDING FALLING AT SITE AND FALLING OBJECTS.
17. THE HAWKS BILL DRIVE CAUSEWAY WILL HAVE TRAFFIC DETOURED DURING THE PROJECT.M
18. THE CONTRACTOR SHALL PROVIDE ADEQUATE BRACING, SHORING, AND PROTECTION DURING CONSTRUCTION AND IS RESPONSIBLE FOR ANY FAILURES AND DAMAGES DUE TO THE LACK OF SUCH.
19. ITEMS TO BE REMOVED AND REINSTALLED BY THE CONTRACTOR SHALL BE ADEQUATELY PROTECTED, ADEQUATELY STORED, AND THOROUGHLY CLEANED BY THE CONTRACTOR PRIOR TO REINSTALLATION.
20. CONTRACTOR SHALL INSTALL MATTING ON ONE SIDE OF THE CAUSEWAY FOR USE IN MATTING OUT FOR EQUIPMENT. EQUIPMENT USED ON THE EXISTING ROADWAY SLAB SHALL BE LIMITED IN WEIGHT TO AN EQUIVALENT AASHTO H15 LOAD AND BE RUBBER TIRED.
21. THE CONTRACTOR IS LIMITED TO AVAILABLE LAYDOWN/STOCKPILE AREAS ON THE PROJECT SITE.
22. CONTRACTOR SHALL CONTRACT WITH AN INDEPENDENT TESTING LABORATORY (ITL) TO PROVIDE VIBRATION MONITORING OF EXISTING CAUSEWAY DURING INSTALLATION OF SHEET PILES. SHOULD THE VIBRATION LEVEL EXCEED THE ITL'S RECOMMENDED THRESHOLD LEVEL, THE CONTRACTOR SHALL BE REQUESTED TO STOP AND/OR MODIFY HIS OPERATIONS TO REDUCE THE VIBRATION LEVEL. A REASONABLE STAND-BY TIME FOR ADJUSTMENTS AND DECISIONS SHALL BE INCLUDED IN THE CONTRACTOR'S CONTRACT PRICE.

PRECAST CONCRETE BOX CULVERT (DELEGATED DESIGN): (ADD ALTERNATE #3)

1. BOX CULVERT SHALL BE DESIGNED IN ACCORDANCE WITH AASHTO BRIDGE DESIGN SPECIFICATIONS & NCDOT STANDARDS.
2. BOX CULVERT SHALL BE A 6'x4' (NOMINAL) TYPE I SPLIT BOX CULVERT.
   A. PROVIDE A MINIMUM WATERWAY AREA OF 21.86 SF.
   B. TOP SLAB SHALL BE DESIGNED WITH A 3/4" DROP KEYWAY.
3. APPLICABLE DESIGN DOCUMENTS (CURRENT EDITIONS):
   A. AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS.
   B. ACI 318-14 BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE.
4. PRECAST CULVERT SHALL BE DESIGNED FOR AASHTO HS-20 AND HL-93 TRUCK LIVE LOAD SURCHARGE WITH IMPACT PER AASHTO LRFD SPEC.
5. MINIMUM CONCRETE COMPRESSIVE STRENGTH AT 28 DAYS: 5,000 PSI (MIN), NORMAL WEIGHT.
6. PROVIDE A PRECAST CONCRETE MIX DESIGN CONTAINING A CORROSION INHIBITING ADMIXTURE AT A MINIMUM DOSAGE RATE OF 4.5 GAL/CY, MEETING ASTM C494; SIKA CNI OR EQUIVALENT.
7. REINFORCEMENT: ASTM A615, GRADE 60 (DEFORMED), EPOXY COATED PER ASTM A775 WITH LESS THAN 2% DAMAGED COATING IN EACH 12-INCH BAR LENGTH.
8. PROVIDE ACI MINIMUM CLEAR CONCRETE COVER ON REINFORCING.
9. JOINT SEALANT SHALL CONSIST OF ONE OF THE FOLLOWING OR PRECASTERS STANDARD EQUIVALENT JOINT SEALANT:
   A. CS-102 CONSEAL BUTYL RUBBER SEALANT (OR EQUIV.) I.A.W. ASTM C990 FED. SS-S-210.
   B. CS-212 CONSEAL EXTERIOR JOINT WRAP (OR EQUIV.) I.A.W. ASTM C877 AND ASTM C990.
9. CURE ALL PRECAST CONCRETE BY PRECASTERS STANDARD CURING METHODS IN ACCORDANCE WITH ACI 308.

TIMBER:

1. WOOD MATERIAL:
   GUARDRAIL TIMBERS: NO 1 DENSE, SD-19 S.Y. PINE, S2E OR ROUGH, PRESSURE TREATED WITH 2.5 LB/CF CCA PER AWPA C2 & C18.
   STRINGERS & KING PILES: NO 2, SD-19 S.Y. PINE, S4S/S2E PRESSURE TREATED WITH 2.5 LB/CF CCA PER AWPA C2 & C18.
   DECKING, POSTS & RAILING: NO 1 SELECT KD-19 S.Y. PINE, S4S, PRESSURE TREATED WITH CAQ.
2. COAT ALL FIELD CUTS AND HOLES IN PILES WITH COPPER NAPTHENATE IN ACCORDANCE WITH AWPA M4.
3. ALL HARDWARE (BOLTS, ANGLES, ETC.) SHALL BE HOT-DIP GALVANIZED.
4. BELOW THE DECKING, USE ¾"ø & LARGER BOLTS AND USE CUT WASHERS OR ⅝"ø OGEE WASHERS UNDER ALL BOLT HEADS AND NUTS SHOWN. USE ACCORDING TO GOOD CARPENTRY PRACTICE & 2012 NC STATE BUILDING CODE.
5. SCREWS FOR ATTACHING TIMBER DECKING TO STRINGERS/JOISTS SHALL BE #12 X 316 STAINLESS STEEL WOOD SCREWS WITH STAR DRIVE HEADS. ALIGN SCREW HEADS ALONG LENGTH OF DECK.
6. DRILL UNDERSIZED HOLES FOR BOLTS/NAILS IN SMALL MEMBERS AS NECESSARY TO PREVENT SPLITTING.
7. PRE-DRILL HOLES FOR LAG BOLTS SAME SIZE AS BOLT THREAD ROOT SECTION.
8. PROVIDE EASED EDGES FOR ALL DECKING, CURBS AND POSTS.

SITE & EROSION CONTROL

1. CONTRACTOR IS RESPONSIBLE FOR AND SHALL UTILIZE BEST MANAGEMENT PRACTICES FOR TEMPORARY SEDIMENT AND EROSION CONTROL MEASURES WHILE CONSTRUCTION IS IN PROGRESS.
2. CONTRACTOR SHALL INSTALL SILT FENCING AROUND HIGHGROUND PROJECT LOCATIONS AND A TURBIDITY CURTAIN ALONG ADJACENT WATER LOCATIONS.
3. NO EXCAVATED OR DEMOLISHED MATERIAL SHALL BE PLACED IN ANY STREAM, CREEK, DITCH OR DRAINAGE-WAY.
4. CONTRACTOR IS RESPONSIBLE FOR LAYDOWN AND STOCKPILE AREAS (TO ARRANGE AND INSURE COMPLIANCE WITH LOCAL AND STATE REGULATIONS).
5. CONTRACTOR SHALL CONTROL ANY SILT/WATER RUNOFF, WHICH MAY BE GENERATED DURING PROJECT, AND PREVENT IT FROM RUNNING OFF INTO WETLANDS, CREEKS, DITCHES, ETC.

DRAINAGE AND STABILIZATION/SEPARATION FABRICS:

1. DRAINAGE GEOTEXTILE FABRIC SHALL BE WOVEN FABRIC OF POLYPROPYLENE, MONO-FILAMENT GEOTEXTILE, MANUFACTURED FOR SUBSURFACE DRAINAGE APPLICATIONS. DRAINAGE GEOTEXTILE SHALL BE GEOTEX 117F AS MANUFACTURED BY PROPEX OR APPROVED EQUIVALENT.
   A. GRAB TENSILE STRENGTH: 370 x 225 LBS/IN ASTM D4632
   B. GRAB ELONGATION: 20 x 15 %; ASTM D4632
   C. APPARENT OPENING SIZE: NO. 20 US STD. SIEVE; ASTM D 4751.
   D. PERMITTIVITY: 1.5 PER SECOND-1, MIN; ASTM D 4491.
   E. UV STABILITY: 90% AFTER 500 HOURS OF EXPOSURE; ASTM D 4355.
   F. MINIMUM WEIGHT: 8 OZ/SY
   G. FLOW RATE: 200 GAL./MIN./SF.
   H. PERCENT OPENING AREA: 17%.
2. STABILIZATION/SEPARATION FABRIC SHALL CONSIST OF ONE OF THE FOLLOWING:
   A. US 250 WOVEN GOETEXTILE BY US FABRICS, INC.
   B. WINFAB 315W WOVEN INDUSTRIAL FABIC STABILIZATION/SEPARATION FABRIC

ADD ALTERNATE #2 DECK COATINGS

1. COAT TOP AND SIDE SLAB SURFACES WITH A SURFACE APPLIED MIGRATING CORROSION INHIBITOR AND A VEHICULAR TRAFFIC COATING SYSTEM.
2. POWER WASH EXISTING EXPOSED CONCRETE SURFACES TO REMOVE ALL SURFACE IMPURITIES, CONTAMINATES, SAND, OIL, SALT AND OTHER DELETERIOUS MATERIALS.
3. COAT EXPOSED CONCRETE SURFACES WITH A SURFACE APPLIED, MIGRATING CORROSION INHIBITING IMPREGNATION COATING.
4. PROVIDE MIGRATING CORROSION INHIBITING COATING PRODUCT BY ONE OF THE FOLLOWING MANUFACTURERS, WHICH SHALL BE COMPATIBLE WITH THE TRAFFIC COATING SYSTEM:
   A. BASF CORPORATION; MASTERPROTECT 8020CI
   B. CORTEC CORPORATION; MCI
   C. SIKA CORPORATION; FERROGARD 908
5. COAT EXPOSED CONCRETE SURFACES WITH A TRAFFIC COATING SYSTEM.
   A. TRAFFIC COATING SYSTEM SHALL CONSIST OF A SINGLE COMPONENT OR TWO-COMPONENT, AROMATIC, MOISTURE CURED, ELASTOMERIC POLYURETHANE, TRAFFIC-BEARING COATING SYSTEM (BASE, INTERMEDIATE AND TOP COATS).
   B. PRIME AND APPLY BASE COAT: 32 MILS WET (23 MILS DFT) AND AS RECOMMENDED BY MRF.
   C. INTERMEDIATE TOP COAT: 20 MILS WET (16 MILS DFT) AND AS RECOMMENDED BY MRF.
   D. TOP TRAFFIC BEARING WEAR COAT: 18 TO 20 MILS WET (14 TO 16 MILS DFT) WITH ANTI-SKID AGGREGATE, BACKROLLED AND AS RECOMMENDED BY MFR.
   E. FOLLOW MANUFACTURER'S WRITTEN RECOMMENDATIONS FOR CURE TIME BETWEEN COATINGS.
   F. COLOR: AS SELECTED BY CITY FROM MFR'S STANDARD COLORS
   G. WARRANTY: 10 YEAR

CONCRETE CRACK REPAIRS:

1. VEE-NOTCH ROUTE EXISTING CRACKS UP TO 1" IN WIDTH TO A DEPTH OF 3/4" AND GRAVITY FILL WITH A TWO-COMPONENT, 100% SOLIDS, MOISTURE-TOLERANT, LOW-VISCOSITY, HIGH-STRENGTH, MULTI-PURPOSE, EPOXY RESIN ADHESIVE.
2. RESIN SHALL CONFORM TO ASTM C-881, TYPES I, II AND IV, GRADE-1, CLASS C AND SHALL BE SIKA CORPORATION - SIKADUR 35 HI-MOD LV OR EQUIVALENT.
3. IF THE TRAFFIC COATING (ADD ALTERNATE #2) IS SELECTED BY THE CITY, THEN IN LIEU OF ROUTING AND FILLING CRACKS LESS THAN OR EQUAL TO 1/16" IN WIDTH, APPLY A DETAIL COAT OF THE TRAFFIC COATING SYSTEM'S POLYURETHANE BASE AT 32 WET MILS X 4" WIDE, CENTERED OVER THE CRACK AND ALLOWED TO BECOME TACK FREE PRIOR TO OVER COATING WITH THE TRAFFIC COATING SYSTEM.

BULKHEAD WALL:

1. BULKHEAD DESIGNED FOR HORIZONTAL EARTH LOADS AND ANTICIPATED HYDROSTATIC LOADS WITH NO PROVISIONS FOR MOORING LOADS.
2. BULKHEAD SOIL CHARACTERISTIC WERE DERIVED FROM EXPERIENCE WITH SIMILAR COASTAL SOIL CONDITIONS AND FROM THE GEOTECHNICAL REPORT, ENTITLED "GEOTECHNICAL ENGINEERING REPORT – HAWKS BILL DRIVE CAUSEWAY" DATED MAY 1, 2018 BY ECS CAROLINAS, LLP (ECS PROJECT #22.26592).
3. SOIL GENERALLY CONSISTS OF A NON-HOMOGENEOUS MATERIAL OF VERY LOOSE TO LOOSE, SILTY AND CLEAN SAND WITH POSSIBLE ORIGANICS AND RIPRAP IN UPPER LAYERS.
4. BACKFILL BETWEEN NEW SHEET PILE WALL AND EXISTING CAUSEWAY WITH #57 STONE FILL, WITH SEPARATION FABRIC ALONG BOTTOM SURFACES.
5. CONTRACTOR SHALL ANTICIPATE SOME POSSIBLE ROOTS, BURIED RIPRAP AND OTHER DEBRIS DURING INSTALLATION OF SHEET PILES AND SHALL MAKE PROVISIONS WHEN ENCOUNTERED. SHEET PILES MAY REQUIRE MANDRELS TO BE USED WHEN DRIVING. CONTRACTOR MAY PREFER TO FABRIC A METAL SHEET PILE MANDREL FORMED TO MATCH THE SHEET PILING USED AND TO ASSIST IN DRIVING.

VINYL SHEET PILE:

1. VINYL SHEET PILING SHALL BE INTERLOCKING SHEET PILING, UV INHIBITED, IMPACT MODIFIED, WEATHERABLE RIGID POLYVINYL CHLORIDE WITH A 50 YEAR LIMITED WARRANTY.
2. PROVIDE MINIMUM EMBEDMENT DEPTH AS NOTED.
3. PROVIDE SHEET PILES MEETING ALL OF THE FOLLOWING MINIMUM PHYSICAL PROPERTIES:
   A. ALLOWABLE LONG-TERM BENDING MOMENT:6,507 FT-LBS/LF
   B. MOMENT OF INERTIA: 122 IN^4/LF
   C. SECTION MODULUS (Z): 24.4 IN^3/LF
   D. THICKNESS WEB/FLANGE: 0.385"
   E. SECTION DEPTH: 10.0"
   F. MODULUS OF ELASTICITY: 208,000 PSI
4. SHEET PILES SHALL BE INSTALLED BY VIBRATORY HAMMER OR IMPACT HAMMER TO REACH MINIMUM PENETRATION DEPTHS. SHOULD OBSTRUCTIONS BE ENCOUNTERED, SHEET PILE SHALL BE EXTRACTED & SOIL EXCAVATED OR BROKEN UP AS REQUIRED TO REMOVE OBSTRUCTION. PILE INSTALLATION MAY RESUME ONCE OBSTRUCTION IS REMOVED.
5. UNDER NO CIRCUMSTANCES SHALL THE CONTRACTOR CUT-OFF OR INSTALL SHORTER SHEET PILES WITHOUT WRITTEN AUTHORIZATION FROM THE ENGINEER.
6. CONTRACTOR SHALL TAKE ADEQUATE PRECAUTIONS TO ENSURE THAT SHEET PILES ARE DRIVEN PLUMB. SHEET PILING SHALL NOT BE DRIVEN MORE THAN 1-INCH PER FOOT OUT OF PLUMB IN THE PLAN OF THE WALL NOR MORE THAN 1/16-INCH PER FOOT "OUT" OF PLUMB PERPENDICULAR TO THE PLANE OF THE WALL, NOR MORE THAN 1/4-INCH PER FOOT "IN" OF PLUMB PERPENDICULAR TO THE VERTICAL PLANE OF THE WALL.
7. PILES DRIVEN OUT OF INTERLOCK WITH ADJACENT PILES (WHICH CANNOT BE EXTRACTED & RE-INSTALLED) OR OTHERWISE DAMAGED, SHALL BE REMOVED AND REPLACED BY NEW SHEET PILES AT THE CONTRACTOR'S EXPENSE.

CONCRETE:

1. REINFORCED CONCRETE WORK SHALL CONFORM TO THE LATEST EDITION OF ACI.
2. CONCRETE COMPRESSIVE STRENGTH AT 28 DAYS: 3,000 PSI (SIDEWALK)
3. REINFORCING STEEL: ASTM A615, GRADE 60.
4. MINIMUM CLEAR CONCRETE COVER ON REINFORCING:
   CONCRETE CAST AGAINST AND PERMANENTLY EXPOSED TO EARTH: 3 INCHES
   CONCRETE EXPOSED TO EARTH AND WEATHER: 2 INCHES (UNO).
5. DOWELS AND CONTINUOUS REINFORCING SHALL HAVE A MINIMUM LAP OF 42 BAR DIAMETERS BUT NOT LESS THAN 12 INCHES.
6. PROVIDE AIR ENTRAINMENT OF 4 TO 6 PERCENT. MAXIMUM SLUMP: 4" – 6"; W/C (MAX.) = 0.45
7. CONCRETE FINISH: BROOM FINISH, UNO. SEE PLANS.
8. CURING COMPOUND: ANSI/ASTM C309, TYPE 1, CLASS A.

0	Issued For Construction	02.14.22
	REVISIONS	

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 42567 JOSEPH R TROUTMAN

P.E.

02.14.2022

DATE

DESIGNED	JRT
DRAWN	SKS
CHECKED	JRT
PROJ. ENGR.	JRT

PATH

FILE NAME

CITY OF WILMINGTON NORTH CAROLINA 1739 STATE OF NORTH CAROLINA

WILMINGTON North Carolina
Development Services • Engineering Division
P.O. Box 1810 • 305 Chestnut Street • Wilmington, NC 28401 • (910) 341-7807

DATE 02.14.2022

PROJECT NUMBER S6-1015.1 CALL#2

Hawks Bill Drive
Embankment Roadway Repairs

STRUCTURAL NOTES

CRISER TROUTMAN TANNER

CRISER TROUTMAN TANNER CONSULTING ENGINEERS NC
3809 Peachtree Ave., Suite 102
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910.397.2929 Ph.
910.397.2971 Fax
www.cttengineering.com
Firm License Number: F-0113

#8238.00

SCALE AS SHOWN

SHEET S0.1 of 9

SPECIAL INSPECTIONS

Statement of Special Inspections

Project: Hawks Bill Drive Embankment Roadway Repairs
Location: Hawks Bill Drive Causeway, Wilmington, NC
Owner's Representative: Mr. Anthony Geathers, EI
Owner's Address: City of Wilmington
305 Chestnut Street
Wilmington, NC 28401

Architect of Record: N/A
Structural Engineer of Record: Jeffrey R. Troutman, PE

This Statement of Special Inspections is submitted as a condition for permit issuance in accordance with the Special Inspection requirements of the 2018 North Carolina State Building Code. It includes a Schedule of Special Inspection Services applicable to this project as well as the name of the Special Inspector and the identity of other approved agencies intended to be retained for conducting these inspections.

The Special Inspector shall keep records of all inspections and shall furnish inspection reports to the City, New Hanover County Code Enforcement ("NHCCE"), Structural Engineer. Discovered discrepancies shall be brought to the immediate attention of the Contractor for correction. If such discrepancies are not corrected, the discrepancies shall be brought to the attention of the City, NHCCE, and Structural Engineer. The Special Inspections program does not relieve the Contractor of his or her responsibilities.

Interim reports shall be submitted to the City, NHCCE, and the Structural Engineer.

Interim Report Frequency: Monthly

A Final Report of Special Inspections documenting completion of all required Special Inspections and correction of any discrepancies should be submitted prior to issuance of a Certificate of Use and Occupancy.

Job Site safety and means and methods of construction are solely the responsibility of the Contractor.

Statement of Special Inspections Prepared by (Structural Engineer of Record):

Jeffrey R. Troutman, PE
(Type or print name)

Signature Date 02.09.2022

City of Wilmington's Authorization Accepted by NHCCE :

Signature Date Signature Date

Schedule of Special Inspection Services

The following sheets comprise the required schedule of special inspections for this project. The construction divisions which require special inspections for this project are as follows.

- ☐ Structural Steel
- ☐ Cold-Formed Steel Framing
- ☐ Cast-in-Place Concrete
- ☐ Masonry
- ☐ Wood Construction
- ☐ Soils
- ☒ Special Foundations (Piles or Piers)
- ☐ Wall Panels/Veneer
- ☐ Sprayed Fire Resistant Material
- ☐ Exterior Insulation & Finish System
- ☐ Smoke Control
- ☐ Seismic Requirements
- ☐ Fire Rated Penetrations

Inspection Agents	Qualifications	Address
1. Special Inspector	SI	ECS Carolinas, LLP 7211 Ogden Business Park Suite 201 Wilmington, NC 28411
2. Structural Engineer of Record **Criser Troutman Tanner Consulting Engineers**	SER	3809 Peachtree Avenue, Ste 102 Wilmington, NC 28403
3. Testing Laboratory	ITL	ECS Carolinas, LLP 7211 Ogden Business Park Suite 201 Wilmington, NC 28411
4. Other	G-TECH 2, GE, SE, S-EIT	ECS Carolinas, LLP 7211 Ogden Business Park Suite 201 Wilmington, NC 28411

Note: The inspection and testing agent shall be engaged by the Owner's Agent, and not by the Contractor or Subcontractor whose work is to be inspected or tested. Any conflict of interest must be disclosed to the Code Enforcement Official, prior to commencing work.

Seismic Design Category: C

Basic Wind Speed: 135 MPH

Wind Exposure Category: C

Qualifications of Inspectors and Agents of Special Inspectors

The qualifications of all personnel performing Special Inspection activities are subject to the approval of the Building Official. The credentials of all Inspectors and testing technicians shall be provided, if requested. When the Structural Engineer of Record deems it appropriate that the individual performing a stipulated test or inspection have a specific certification or license as indicated below, such designation shall appear below on the *Schedule of Special Inspections.*

The Special Inspector (SI) shall be a licensed Professional Engineer with a minimum of 3 years of experience as a Special Inspector.

1. **SE - Structural Engineer:** a licensed PE or SE specializing in the design of building structures.
2. **GE - Geotechnical Engineer:** a licensed PE specializing in soil mechanics and foundations.
3. **S-EI - Structural Engineer-In-Training:** a graduate engineer who has passed the Fundamentals of Engineering examination with experience in the design of building structures and working under the supervision of a licensed structural PE or SE.
4. **G-EI - Geotechnical Engineer-In-Training:** a graduate engineer who has passed the Fundamentals of Engineering examination with experience in soil mechanics and foundations and working under the supervision of a licensed geotechnical PE or SE.
5. **G-TECH1 - Geotechnical Technician 1:** an experienced technician with National Institute for Certification in Engineering Technologies: Level 2 – Soils Certification.
6. **G-TECH2 - Geotechnical Technician 1:** an experienced technician with National Institute for Certification in Engineering Technologies: Level 2 – Geotechnical Engineering.

Schedule of Special Inspection Services
Special Foundations

Item	Qualifications	Scope
1. Sheet Pile Installation	SI, G-TECH 2, GE, SE, S-EI	• Periodic inspection of installation of 75% of all piles • Verify testing agency's record of all pile tip elevations and cutoff elevations. Confirm installation method complies with contract documents • Periodic inspection of anchorage/connection details to pile caps and walers to confirm compliance with contract documents • Periodic review of Contractor's report of top and tip elevation of each sheet pile relative to a permanent reference • Periodic visual inspection vertical and horizontal alignment.

0	Issued For Construction	02.14.22
	REVISIONS	

P.E.
DATE 02.14.2022

DESIGNED	JRT
DRAWN	SKS
CHECKED	JRT
PROJ. ENGR.	JRT

PATH
FILE NAME

WILMINGTON North Carolina
Development Services • Engineering Division
P.O. Box 1810 • 305 Chestnut Street • Wilmington, NC 28401 • (910) 341-7807

DATE 02.14.2022
PROJECT NUMBER S6-1015.1 CALL#2

Hawks Bill Drive
Embankment Roadway Repairs

SPECIAL INSPECTIONS

CRISER TROUTMAN TANNER
CRISER TROUTMAN TANNER CONSULTING ENGINEERS NC
3809 Peachtree Ave., Suite 102
Wilmington, NC 28403
910.397.2929 Ph.
910.397.2971 Fax
www.cttengineering.com
Firm License Number: F-0113
#8238.00

SCALE AS SHOWN
SHEET S0.2 of 9

WHEEL, ESTATES INC.
PID: R06313-003-015-000
6340 TOWLES DRIVE
WILMINGTON, NC 28409

WHEEL, ESTATES INC.
PID: R06313-003-012-000
6301 TOWLES DRIVE
WILMINGTON, NC 28409

WHEEL, ESTATES INC.
PID: R06313-003-017-000
6301 TOWLES DRIVE
WILMINGTON, NC 28409

UTILITY RIGHT OF WAY
MB 26 PG. 126
MB 28 PG. 114

EXISTING 8" PVC WATER LINE

FIELD LOCATION OF EXISTING VEGETATION LINE

75' AEC

30' BUFFER

EDGE OF EASEMENT

EXISTING 6" PVC WATER LINE

Hawks Bill Drive

SPEED LIMIT SIGN

TBM-MAG NAIL FOUND
N: 165,606.5343
E: 2,354,388.1470'
ELEV.=5.44'

TEMPORARY TIMBER OR STEEL MATTING FOR CRANE & EQUIPMENT ACCESS; LAY OVER EXISTING VEGETATION FOR DURATION OF PROJECT. SEE NOTE 15.

EXIST. INV. −0.57

INSTALL TURBIDITY BARRIER CURTAIN (TYPE II) PRIOR TO DEMOLITION

15'-0"± (TYP.)

EXIST. INV. −0.72

400.95± LF

TURTLE HALL HOME OWNERS ASSOC.
R06313-001-019-000 DEED BOOK 5611 PAGE 442 PLAT BOOK 3 PAGE 73

EDGE OF PAVEMENT

MORGAN HOBSON S, JOY O
PID: R06313-001-006-000
5601 MARSH BAY DRIVE
WILMINGTON, NC 28409

Shinn Creek

FLOOD

EBB

TURTLE HALL HARBOUR OWNERS
PID: R06313-001-017-000
1442 MILITARY CUTOFF ROAD
WILMINGTON, NC 28403

MARTIN, RICHARD L WINONA L
PID: R06313-001-007-000
6424 HAWKBILL DRIVE
WILMINGTON, NC 28409

NORTH

1 S1.0 PLAN - PHASE I - DEMOLITION

1"=20' 0' 20' 40' 60' 80' 100'

NOTES

1. SURVEY ELEVATION AS PROVIDED BY THE CITY OF WILMINGTON DATED MAY 2, 2018. SURVEY INFORMATION PROVIDED BY THE CITY OF WILMINGTON, SURVEYED WETLANDS PROVIDED BY PARAMOUNTE ENGINEERING, INC., DATED 07/02/2021.
2. ALL DISTANCES ARE HORIZONTAL DIMENSION.
3. AREAS DETERMINED BY COORDINATE COMPUTATION.
4. SUBJECT PROJECT IS LOCATED WITHIN A FEMA DESIGNATED FLOOD HAZARD AREA PER FIRM MAP 3720315600J DATED APRIL 3, 2006.
5. UNDERGROUND UTILITIES SHOWN AS LOCATED BY CAROLINA 811.
6. CONTOUR INTERVAL = 0.5'
7. GPS CERTIFICATION APPLIES TO CONTROL POINTS ONLY. ALL OTHER SURVEYING WAS PERFORMED BY GROUND METHODS.
8. OWNERS OF RECORD FROM NEW HANOVER COUNTY GIS. NO TITLE SEARCHES WERE PERFORMED BY THE SURVEYOR.
9. HORIZONTAL COORDINATE SYSTEM IS NAD '83 (2011).
10. VERTICAL DATUM IS NAVD 88 (GEOID 2012B).
11. 0.0 MLW DATUM = −2.56 NAVD88; MHW = +1.42 NAVD88 = +3.98 MLW (BASED ON WRIGHTSVILLE BEACH, NC STATION 8658163).
12. MLW: MEAN LOW WATER LINE
    MHW: MEAN HIGH WATER LINE
13. TOTAL CAUSEWAY ROAD LENGTH: 400.95± LF.
14. CONTRACTOR SHALL MAT DOWN ALONG THE SOUTHERN SIDE OF THE CAUSEWAY FOR CRANE AND EQUIPMENT ACCESS.
    A. CONTRACTOR SHALL SETUP OPERATIONS TO ALLOW AN EMERGENCY VEHICLE PASSAGE WITHIN 10 MINUTES OF NOTIFICATION.
    B. NO PEDESTRIAN TRAFFIC WILL BE ALLOWED TO CROSS BRIDGE DURING WORKING HOURS.
    C. CONTRACTOR SHALL ALLOW REGULAR VEHICLE TRAFFIC TO UTILIZE CAUSEWAY BEFORE 8 AM AND AFTER 6 PM AS WELL AS ALLOW USE FROM 12 PM TO 1 PM, MONDAY THRU SATURDAY.
    D. CONTRACTOR SHALL ENSURE CAUSEWAY IS OPEN AND CLEAR OF ALL DEBRIS, STORED ITEMS, ETC. DURING ALL OPEN HOURS.
15. IN THE EVENT OF ANTICIPATED FLOODING OR HURRICANE CONDITIONS, CONTRACTOR SHALL SECURE ALL MATS IN PLACE WITH GROUND ANCHORS AND/OR REMOVE MATS AND TEMPORARILY STORE ON HIGH GROUND.

DEMOLITION SCHEDULE

1	REMOVE APPROX. 400.95± (TOTAL) LF (FIELD VERIFY) OF EACH EXISTING TIMBER GUARDRAIL.
2	EXISTING RCP CULVERT PIPE TO REMAIN – ADD CONCRETE COLLAR AT PENETRATION THRU NEW SHEET PILE. ADD ALTERNATE #3 PERFORM PARTIAL DEMOLITION OF ROADWAY SLAB, REMOVAL (12' LONG x FULL WIDTH) OF RIP RAP, REMOVAL OF EXISTING 36"ø x 32.5' CONCRETE CULVERT & INSTALLATION OF NEW CONCRETE ROADWAY SURFACE WITH RE-INSTALLATION OF EXISTING BACKFILL.

LEGEND

- CONCRETE DRIVE
- EXIST. CONTOUR
- BULKHEAD
- SPOT ELEVATIONS – NAVD88 DATUM
- SECTION 404 WETLANDS ~0.07 ac
- COASTAL WETLANDS ~0.20 ac
- MEAN HIGH WATER LINE
- MEAN LOW WATER LINE
- SANITARY SEWER
- WATER LINE
- 30' BUFFER
- 75' AEC OFFSET
- COASTAL WETLANDS
- 404 WETLANDS

0	Issued For Construction	02.14.22
	REVISIONS	

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 42567 JAMES R TROUTMAN

P.E.

02.14.2022 DATE

DESIGNED	JRT
DRAWN	SKS
CHECKED	JRT
PROJ. ENGR.	JRT
PATH	
FILE NAME	

CITY OF WILMINGTON NORTH CAROLINA 1739 STATE OF NORTH CAROLINA

WILMINGTON North Carolina
Development Services • Engineering Division
P.O. Box 1810 • 305 Chestnut Street • Wilmington, NC 28401 • (910) 341-7807

DATE 02.14.2022
PROJECT NUMBER S6-1015.1 CALL#2

Hawks Bill Drive
Embankment Roadway Repairs

DEMOLITION PLAN & NOTES

CRISER TROUTMAN TANNER
CRISER TROUTMAN TANNER CONSULTING ENGINEERS NC
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Firm License Number: F-0113

#8238.00

SCALE AS SHOWN

SHEET S1.0 of 9

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WILMINGTON, NC 28409

UTILITY RIGHT OF WAY
MB 26 PG. 126
MB 28 PG. 114

EXISTING 8" PVC WATER LINE

FIELD LOCATION OF EXISTING VEGETATION LINE

SECTION 404 WETLANDS

75' AEC

COASTAL WETLANDS

30' BUFFER

EXISTING 6" PVC WATER LINE

Hawks Bill Drive

SPEED LIMIT SIGN

TBM-MAG NAIL FOUND
N: 165,606.5143
E: 2,354,388.1470'
ELEV.=5.44'

TEMPORARY TIMBER OR STEEL MATTING FOR CRANE & EQUIPMENT ACCESS; LAY OVER EXISTING VEGETATION FOR DURATION OF PROJECT. SEE NOTE 15.

INSTALL TURBIDITY BARRIER CURTAIN (TYPE II)

INV. -0.57

INV. -0.72

400.95± LF

15'-0"± (TYP.)

TURTLE HALL HOME OWNERS ASSOC.
R06313-001-019-000 DEED BOOK 5611 PAGE 442 PLAT BOOK 3 PAGE 73

EDGE OF PAVEMENT

MORGAN HOBSON S, JOY O
PID: R06313-001-006-000
5601 MARSH BAY DRIVE
WILMINGTON, NC 28409

Creek

FLOOD

EBB

TURTLE HALL HARBOUR OWNERS
PID: R06313-001-017-000
1442 MILITARY CUTOFF ROAD
WILMINGTON, NC 28403

MARTIN, RICHARD L WINONA L
PID: R06313-001-007-000
6424 HAWKBILL DRIVE
WILMINGTON, NC 28409

BRIDGE SPEED LIMIT 10

2" PIPE

7'-0"

TYPICAL SIGN ELEVATION

NOT TO SCALE

LEGEND

- CONCRETE DRIVE
- EXIST. CONTOUR
- BULKHEAD
- SPOT ELEVATIONS – NAVD88 DATUM
- SECTION 404 WETLANDS ~0.07 ac
- COASTAL WETLANDS ~0.20 ac
- MHW — MEAN HIGH WATER LINE
- MLW — MEAN LOW WATER LINE
- SS — SANITARY SEWER
- W — WATER LINE
- 30' BUFFER
- 75' AEC OFFSET
- CAMA — COASTAL WETLANDS
- WET — 404 WETLANDS

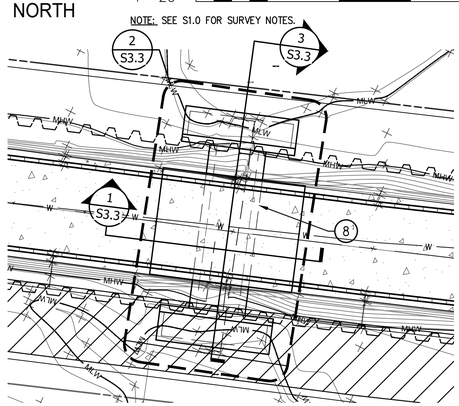
1 S2.0 PLAN - PHASE II - NEW WORK

NORTH

1"=20'

0' 20' 40' 60' 80' 100'

NOTE: SEE S1.0 FOR SURVEY NOTES.



1 S2.0 PLAN - PHASE II NEW WORK W/ ADD ALT #3 CULVERT

NORTH

1"=10'

0' 10' 20' 30' 40' 50'

NOTES:

1. SECTION 404 WETLANDS SURVEYED BY PARAMOUNTE ENGINEERING, INC., DATED 07/02/2021.
2. THIS PARCEL IS LOCATED IN ZONE AE 13.0 A SPECIAL FLOOD HAZARD AREA – AS SHOWN ON FEMA FLOOD MAP NO. 3720315600K BEARING AN EFFECTIVE DATE OF 8/28/2018.
3. SURVEY INFORMATION PROVIDED BY THE CITY OF WILMINGTON, SURVEYED WETLANDS PROVIDED BY PARAMOUNTE ENGINEERING, INC., DATED 07/02/2021.

NEW WORK SCHEDULE

1	NEW VINYL CUTOFF WALL (SEE 1/S3.0) – APPROX. 810± LF (FIELD VERIFY LENGTH). AFTER INSTALLATION OF TURBIDITY BARRIER.
2	NEW TIMBER GUARDRAIL SYSTEM (SEE 1/S3.0) – APPROX. 805± LF (FIELD VERIFY LENGTH).
3	PROVIDE CONCRETE COLLAR DETAIL AT EXISTING RCP WALL PENETRATION – SEE SHEET S3.2
4	CRACK REPAIRS TO DECK SLAB.
5	GROUT FILL LARGE VOIDS ALONG SIDES OF EXISTING RIPRAP BRIDGE PRIOR TO DRIVING SHEET PILES/STONES FILL – FIELD VERIFY.
6	TIMBER WALKWAY (ADD ALTERNATE #1)
7	DECK COATING (ADD ALTERNATE #2)
8	PROVIDE NEW PRECAST CULVERT BOX WITH CONCRETE HEADWALLS / APRONS (ADD ALT #3) – SEE SHEET S3.3
9	INSTALL NEW SPEED LIMIT SIGNS – TYP OF 2 EA.

Know what's below. Call before you dig.

CONTRACTOR SHALL INCLUDE IN HIS BID THE COST TO CONFIRM KNOWN AND ANY UNKNOWN UNDERGROUND UTILITIES ALONG BULKHEAD ALIGNMENT PRIOR TO INSTALLATION OF SHEET PILES.

0	Issued For Construction	02.14.22
	REVISIONS	

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 82567 KEVIN R. TROUTMAN

P.E. 02.14.2022 DATE

DESIGNED	JRT
DRAWN	SKS
CHECKED	JRT
PROJ. ENGR.	JRT

PATH

FILE NAME

CITY OF WILMINGTON NORTH CAROLINA 1739 STATE OF NORTH CAROLINA

WILMINGTON North Carolina
Development Services • Engineering Division
P.O. Box 1810 • 305 Chestnut Street • Wilmington, NC 28401 • (910) 341-7807

DATE 02.14.2022

PROJECT NUMBER S6-1015.1 CALL#2

Hawks Bill Drive
Embankment Roadway Repairs

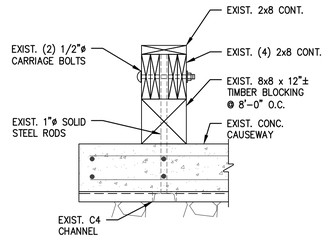
NEW PLAN & NOTES

CRISER TROUTMAN TANNER

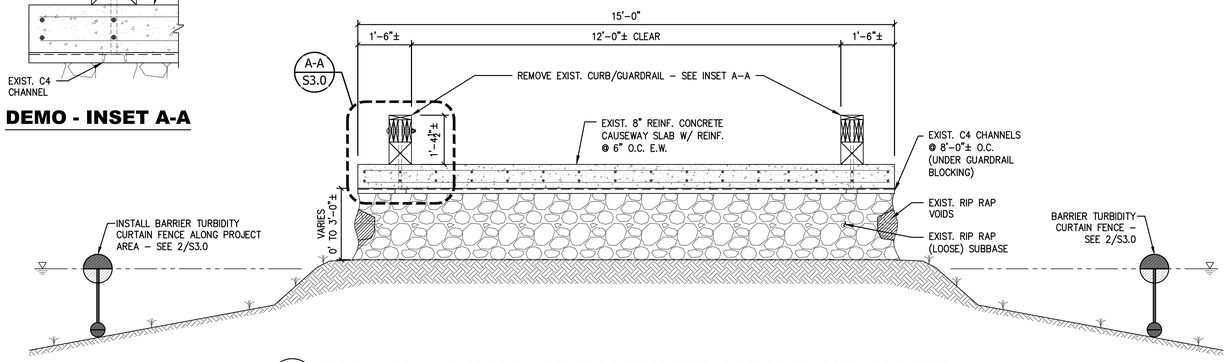
CRISER TROUTMAN TANNER CONSULTING ENGINEERS NC
3809 Peachtree Ave., Suite 102
Wilmington, NC 28403
910.397.2929 Ph.
910.397.2971 Fax
www.cttengineering.com
Firm License Number: F-0113
#8238.00

SCALE AS SHOWN

SHEET S2.0 of 9

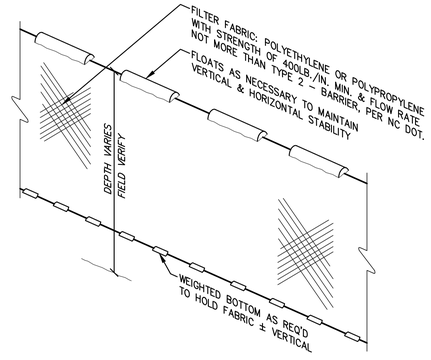


DEMO - INSET A-A



1 / S3.0 **SECTION - DEMOLITION OF EXISTING CAUSEWAY @ RAILING**

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



2 / S3.0 **DETAIL - FLOATING TURBIDITY BARRIER CURTAIN**

SCALE: NOT TO SCALE

OPTIONAL TURBIDITY BARRIER: TYPE 2 HEAVY DUTY FLOATING TURBIDITY BARRIER CAT. NO. FTB 225052 BY ACF ENVIRONMENTAL OR EQUIVALENT.

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NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 40367 JOHN R. TROUTMAN

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02.14.2022

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DATE 02.14.2022

PROJECT NUMBER S6-1015.1 CALL#2

Hawks Bill Drive
Embankment Roadway Repairs

DEMOLITION SECTIONS & DETAILS

CRISER TROUTMAN TANNER

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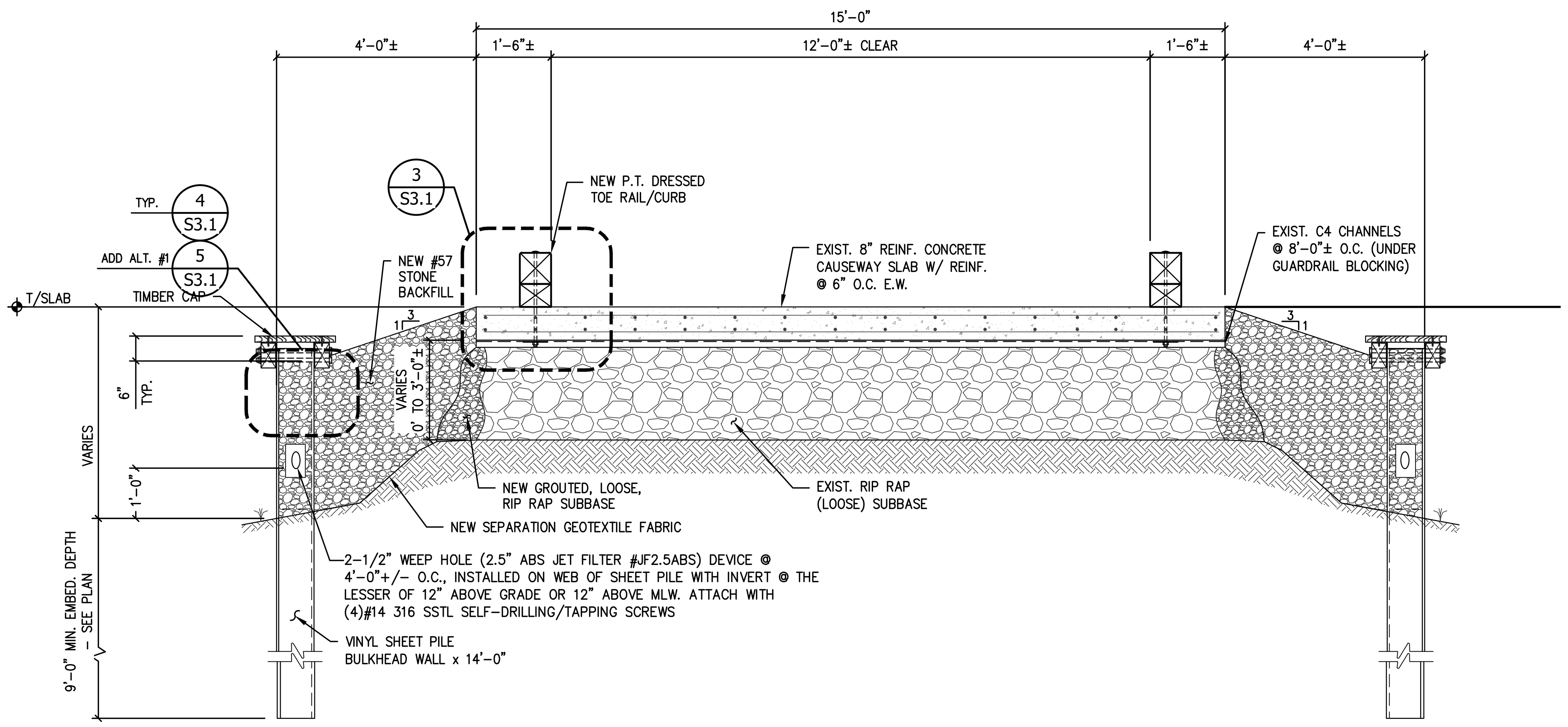
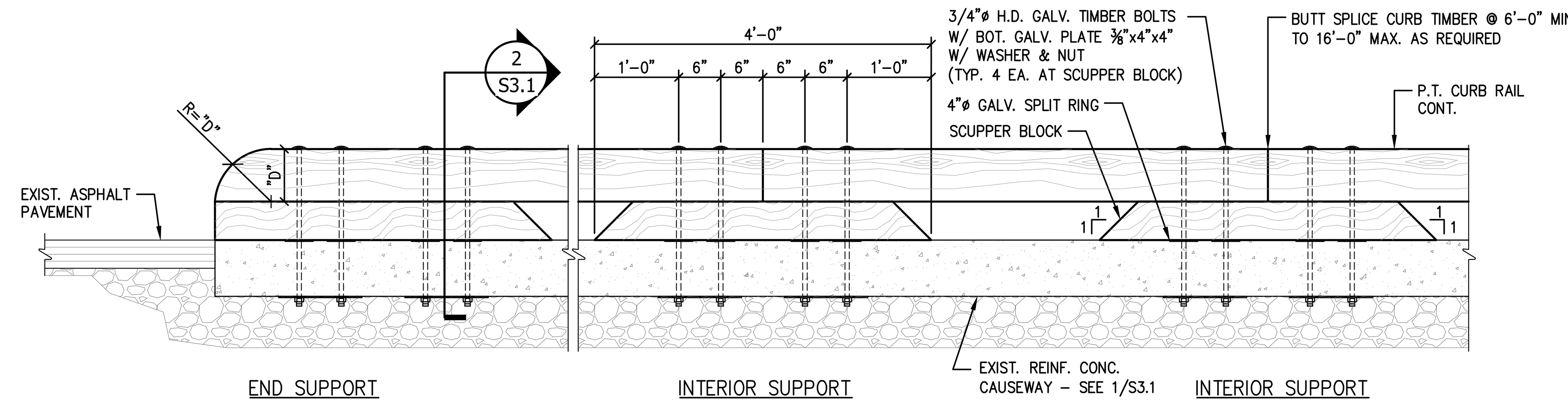
SCALE

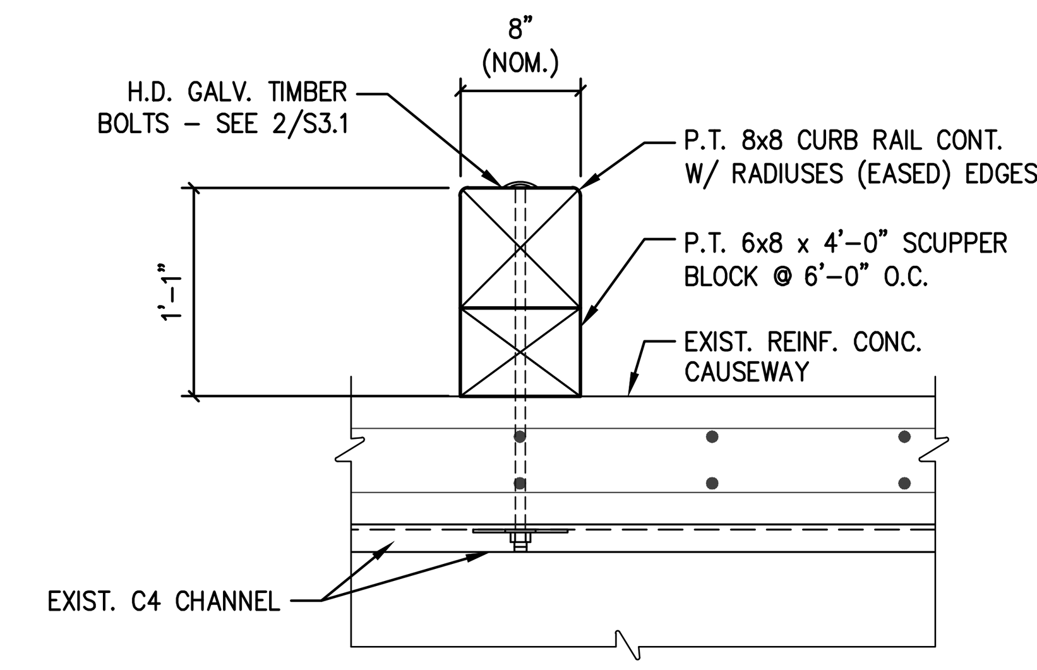
SHEET S3.0 of 9



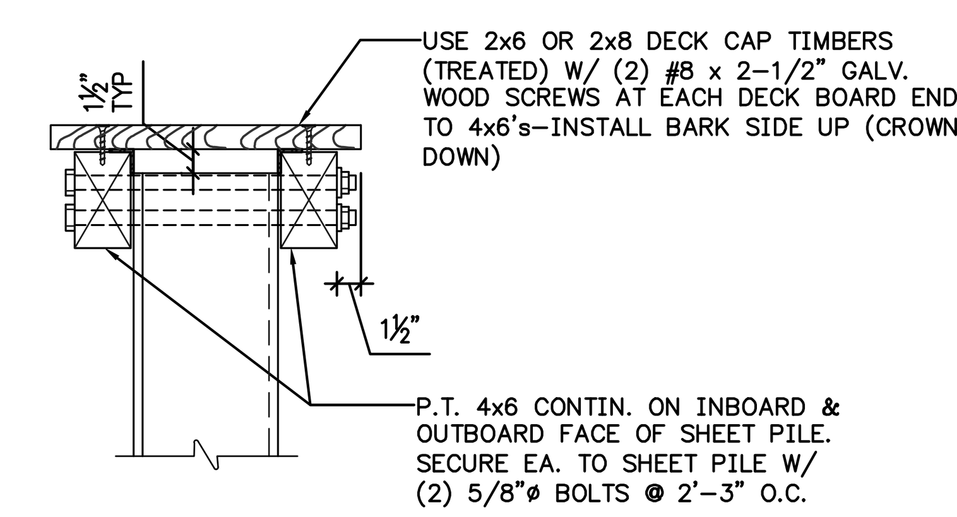
1
S3.1
SECTION - NEW CONSTRUCTION AT EXISTING CAUSEWAY SLAB
SCALE: 1/2" = 1'-0"



2
S3.1
ELEVATION - NEW BLOCK & TOE RAIL/CURB CONNECTION
SCALE: 3/4" = 1'-0"



3
S3.1
SECTION - NEW TOE RAILING & CURB CONNECTION
SCALE: 1" = 1'-0"



4
S3.1
DETAIL - TIMBER CAP
SCALE: 1" = 1'-0"

0	Issued For Construction	02.14.22
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P.E. 02.14.2022 DATE

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DATE 02.14.2022
PROJECT NUMBER S6-1015.1 CALL#2

Hawks Bill Drive
Embankment Roadway Repairs
NEW SECTIONS & DETAILS

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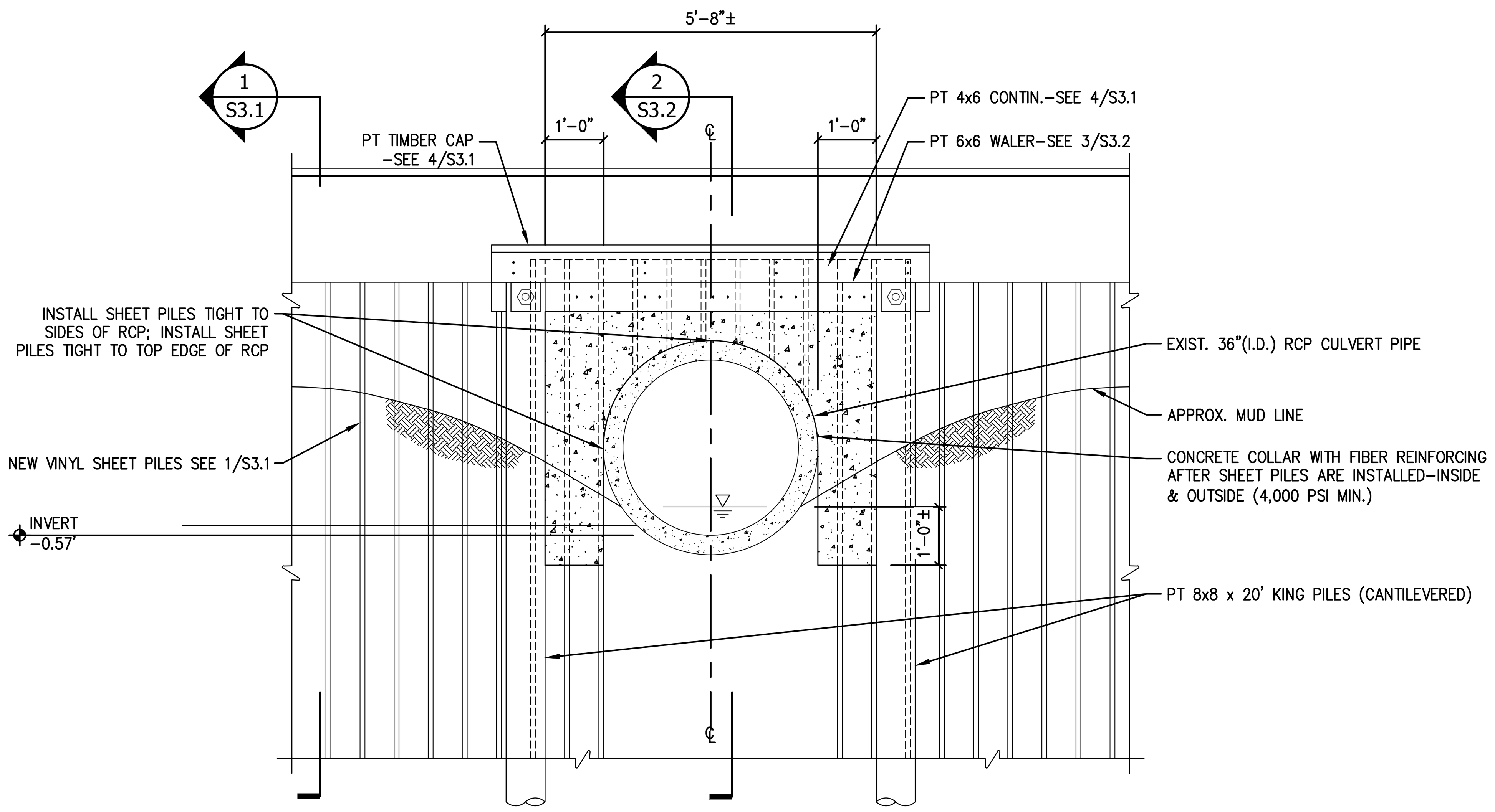
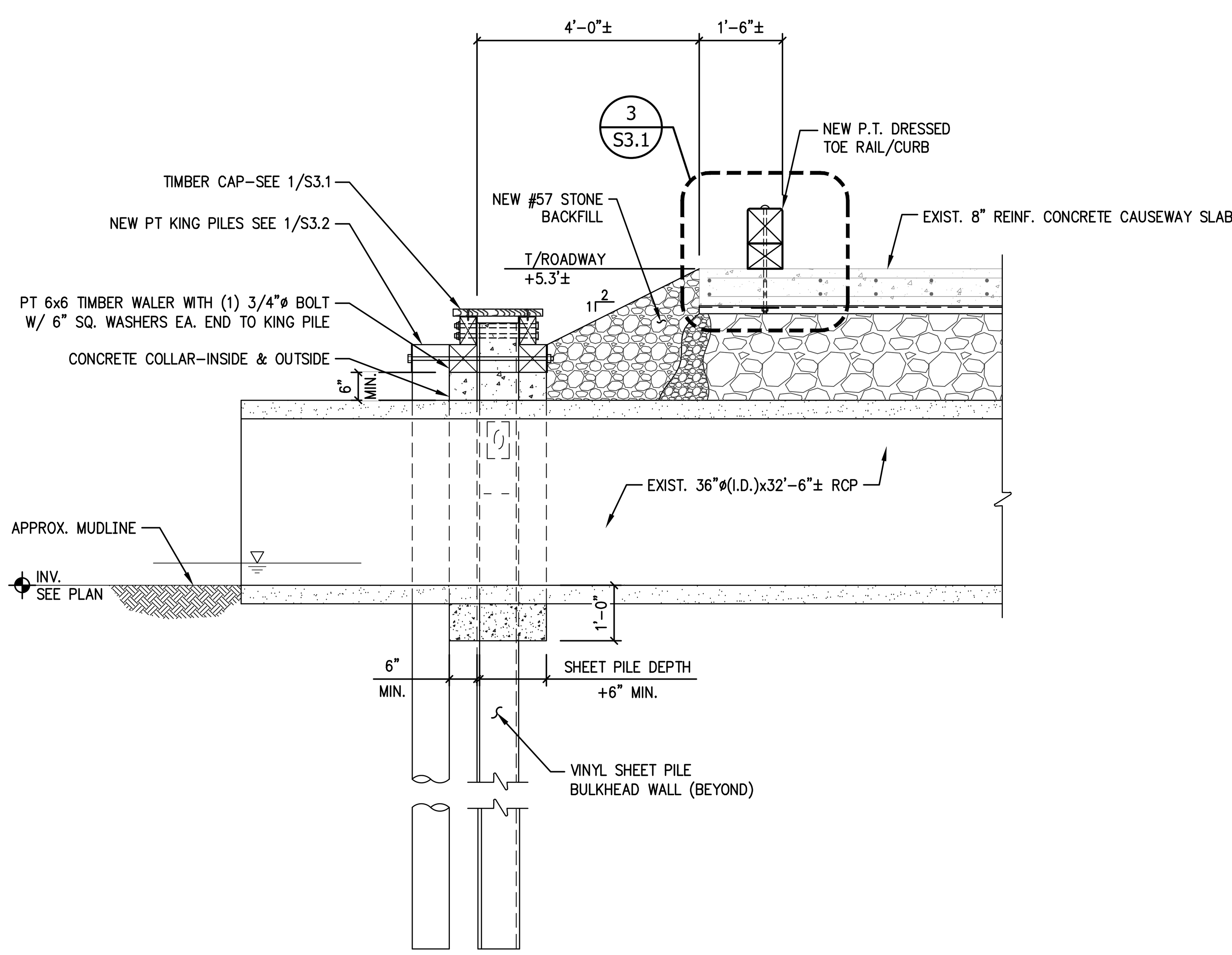
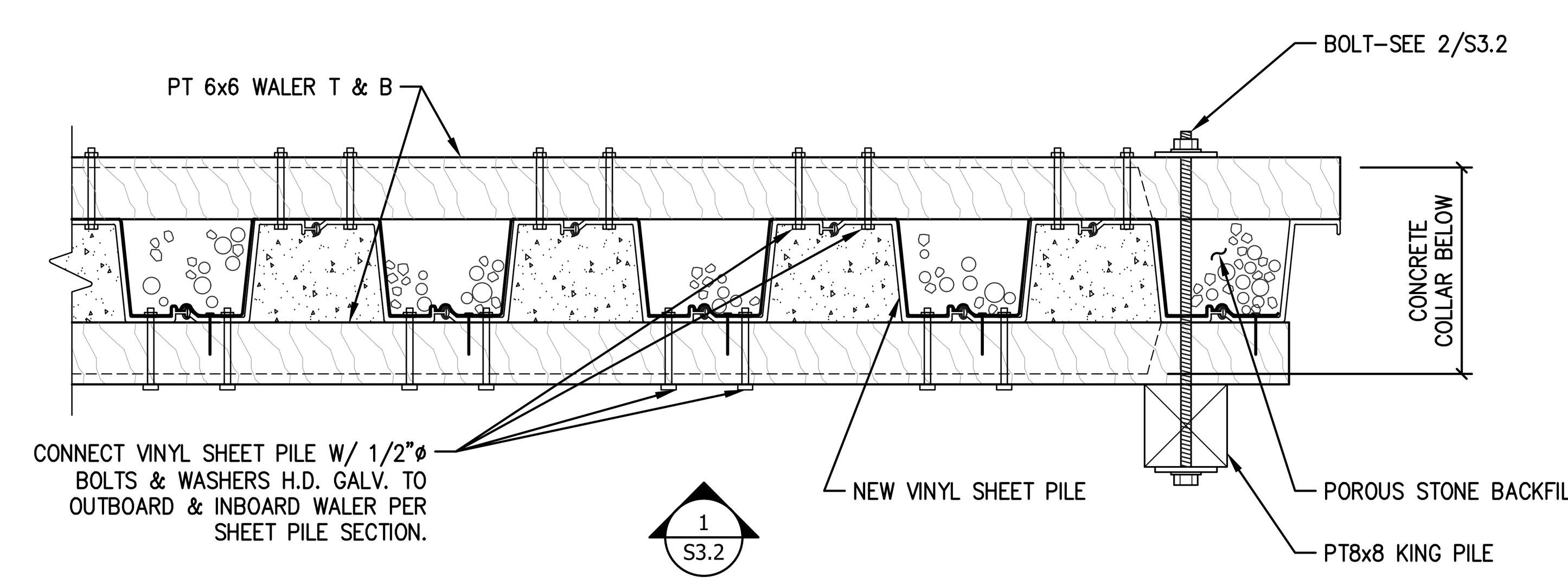
SCALE
SHEET
S3.1 of 9



1 S3.2 **ELEVATION - EXISTING RCP COLLAR**
SCALE: 1/2" = 1'-0"



2 S3.2 **SECTION - NEW WALL AT EXISTING CULVERT**
SCALE: 1/2" = 1'-0"



3 S3.2 **CONNECTION - SHEET PILE TO WALER @ CULVERT**
SCALE: 3/4" = 1'-0"

0	Issued For Construction	02.14.22
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DATE 02.14.2022
PROJECT NUMBER S6-1015.1 CALL#2

Hawks Bill Drive
Embankment Roadway Repairs
RCP WALL PENETRATION
CULVERT SECTIONS

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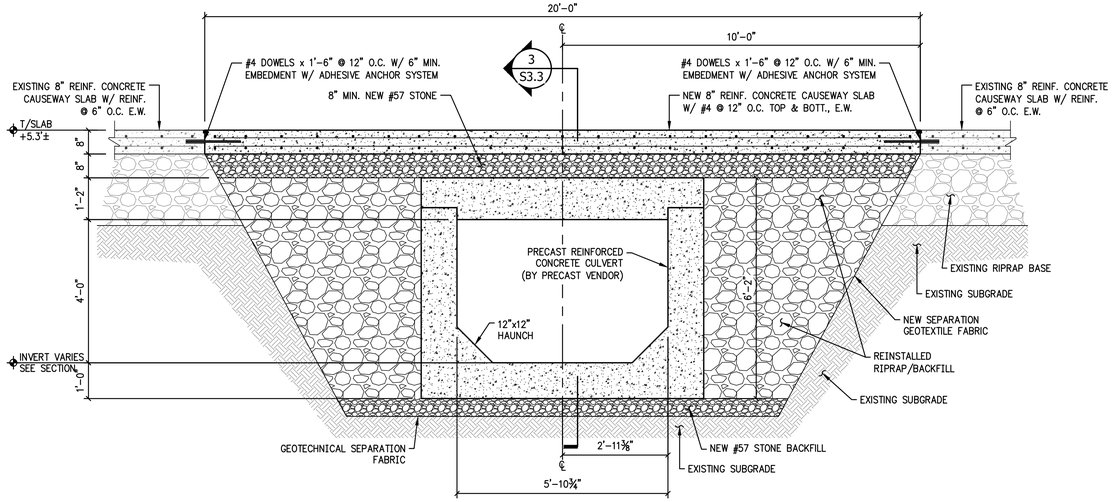
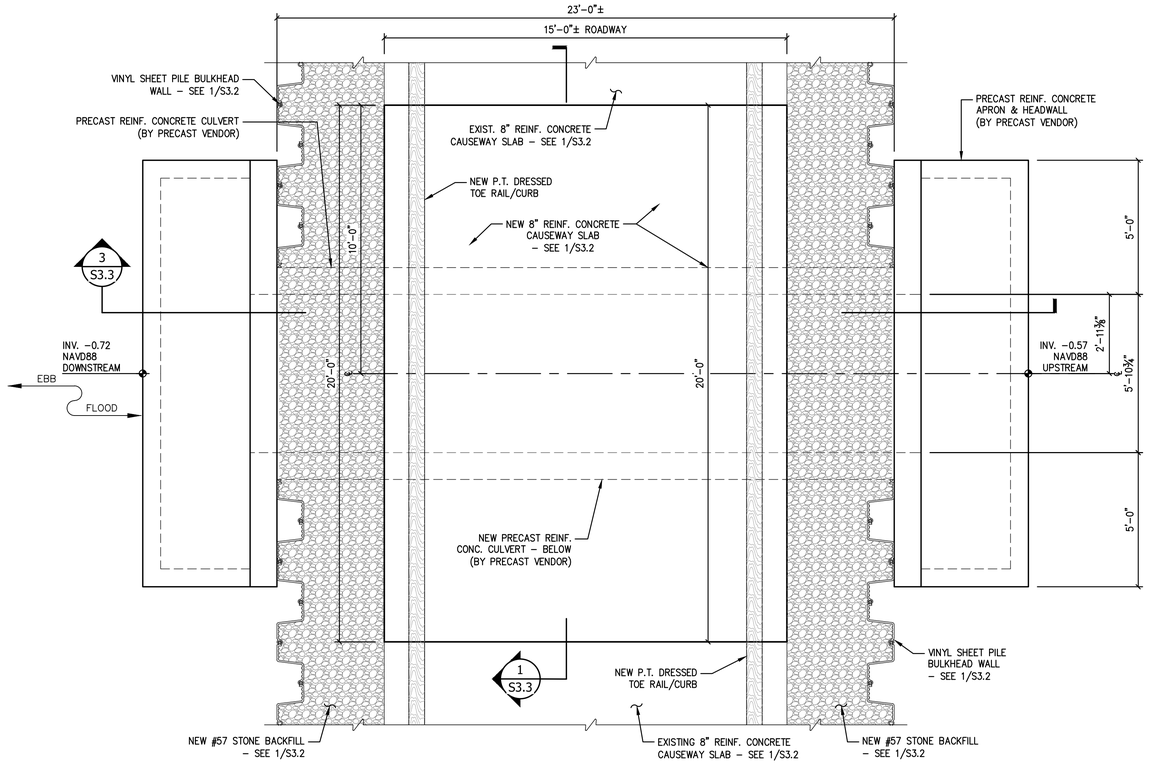
SCALE

SHEET S3.2 of 9



1 S3.3 **SECTION - SLAB REPAIR AT BOX CULVERT (ADD ALT #3)**

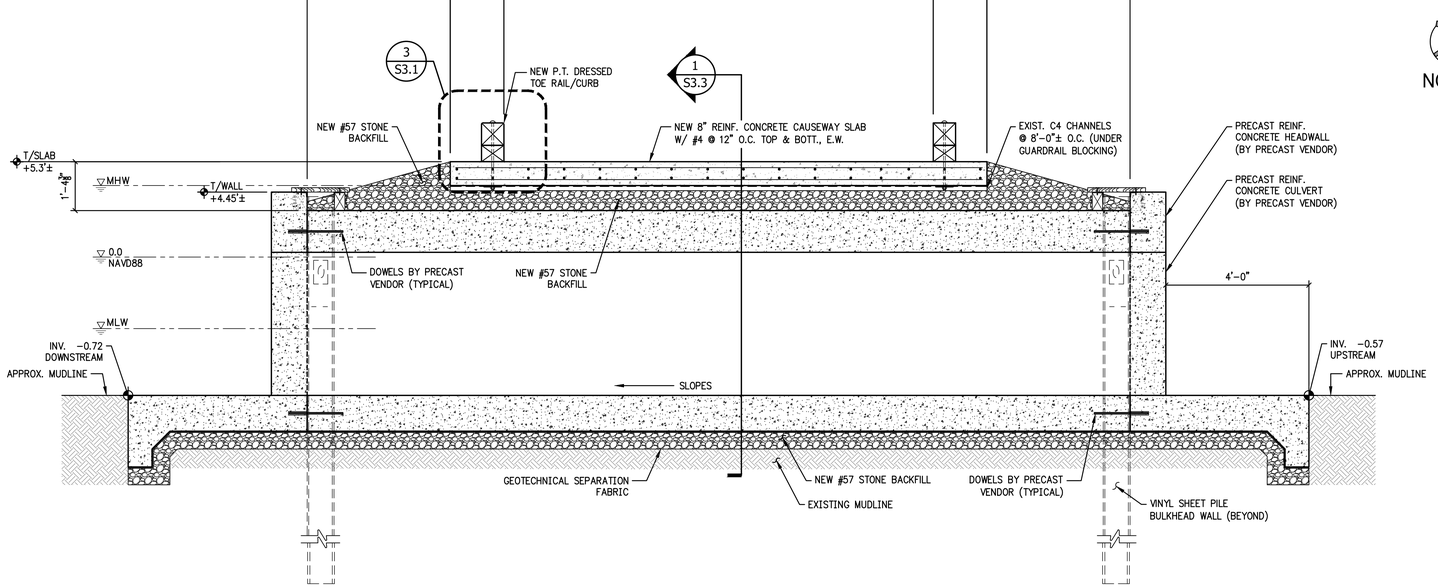
SCALE: 1/2" = 1'-0"



2 S3.3 **ENLARGED PLAN - BOX CULVERT (ADD ALT #3)**

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

NORTH



3 S3.3 **SECTION - NEW CONSTRUCTION AT NEW BOX CULVERT (ADD ALT #3)**

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

0	Issued For Construction	02.14.22
	REVISIONS	

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 042367 STEVEN R. TROUTMAN

P.E.

02.14.2022

DATE

DESIGNED	JRT
DRAWN	SKS
CHECKED	JRT
PROJ. ENGR.	JRT

PATH

FILE NAME

CITY OF WILMINGTON – INCORPORATED – STATE OF NORTH CAROLINA – 1739

WILMINGTON North Carolina

Development Services • Engineering Division

P.O. Box 1810 • 305 Chestnut Street • Wilmington, NC 28401 • (910) 341-7807

DATE 02.14.2022

PROJECT NUMBER S6-1015.1 CALL#2

Hawks Bill Drive
Embankment Roadway Repairs
PLAN & CULVERT SECTIONS
(ADD ALT #3)

CRISER TROUTMAN TANNER

CRISER TROUTMAN TANNER CONSULTING ENGINEERS NC
3809 Peachtree Ave., Suite 102
Wilmington, NC 28403
910.397.2929 Ph.
910.397.2971 Fax
www.cttengineering.com
Firm License Number: F-0113
#8238.00

SCALE

SHEET S3.3 of 9