

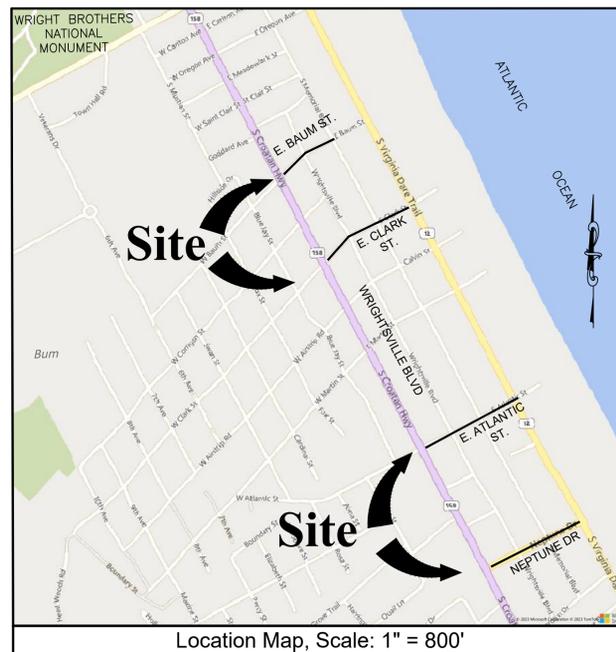
# SOUTHEAST AREA WATERMAIN IMPROVEMENTS

KILL DEVIL HILLS - DARE COUNTY, NORTH CAROLINA  
FOR THE  
**TOWN OF KILL DEVIL HILLS**

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**LEGEND**

EXISTING	PROPOSED
<b>TOPOGRAPHIC FEATURES</b>	
TOP ELEVATIONS BY OTHERS OR AERIAL	
ELEVATIONS	TC 16.35 EP 15.85 P 15.6
TOP OF BANK	
SWALE / DITCH	
TOE OF SLOPE	
EDGE OF WATER	
WOODS LINE	
TREE	
EXISTING UTILITY LOCATION & DEPTH	
BENCHMARK	
EDGE OF PAVEMENT	
CURB AND/OR GUTTER	
REVERSED OR TRANSITIONAL GUTTER PAN	
<b>UTILITIES</b>	
STORM DRAINAGE	
STORM MANHOLE	
CATCH BASIN	
DROP INLET	
LOW HEAD DROP INLET	
ITEMS TO BE REMOVED	X
MATCH PAVEMENT GRADE	P 15.6 MG
PAVEMENT	EP
TOP OF CURB	TC
TOP OF BANK	TB
SIDE SLOPE	SS
MATCH EXISTING GRADE	MG
MATCH EXISTING INVERT	MI
WATER MAIN	W
BLOW OFF VALVE	
WATER VALVE	
FIRE HYDRANT	
WATER LINE BEND	
WATER REDUCER	
WATER METER	
WATER METER VAULT	
IRRIGATION SPRINKLER	
SANITARY SEWER	SAN
SANITARY FORCE MAIN	FM
SANITARY MANHOLE	
SANITARY CLEANOUT	
FORCEMAIN MANHOLE	
FORCEMAIN VENT	
FORCEMAIN VALVE	
GAS MARKER	
GAS VENT	
GAS CONTROL BOX	
GAS METER	
GAS VALVE	
CATV INTERFACE BOX	
CATV LONG PEDESTAL	
CATV PEDESTAL	
SATELLITE DISH	
CATV SURFACE PLATE	
TELEPHONE INTERFACE BOX	
TELEPHONE MANHOLE	
TELEPHONE PEDESTAL	
FIBER OPTIC MARKER	
ELECTRIC GUY WIRE	
ELECTRIC POWER POLE	
ELECTRIC TRANSFORMER	
ELECTRIC STREET LIGHT	
ELECTRIC PARKING LIGHT	
<b>UNDERGROUND UTILITY PAINT MARKINGS</b>	
CI	COMMUNICATIONS (ORANGE PAINT)
EI	ELECTRIC (RED PAINT)
GI	GAS (YELLOW PAINT)
SI	GRAVITY SEWER (GREEN PAINT)
FMI	SEWER FORCE MAIN (GREEN PAINT)
WI	WATER (BLUE PAINT)
<b>MISCELLANEOUS</b>	
	TRAFFIC BOLLARD
	TRAFFIC SIGN
	MAILBOX
	NEWSPAPER BOX
	FLAG POLE
<b>PROPERTY MARKERS</b>	
	PIN
	PIN IN CONCRETE
	PIPE
	DRILL HOLE
	DOT MONUMENT



**UNDERGROUND UTILITIES AS MARKED BY "UTILITY LOCATORS"**  
 COMMUNICATIONS (ORANGE PAINT)  
 ELECTRIC (RED PAINT)  
 GAS (YELLOW PAINT)  
 IRRIGATION (PURPLE PAINT)  
 SEWER (GREEN PAINT)  
 WATER (BLUE PAINT)

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APPR. DATE	DATE	#	REVISION



**SOUTHEAST AREA WM REPLACEMENT  
WATER AND STORMWATER IMPROVEMENTS**  
 TOWN OF KILL DEVIL HILLS  
 DARE COUNTY, NORTH CAROLINA

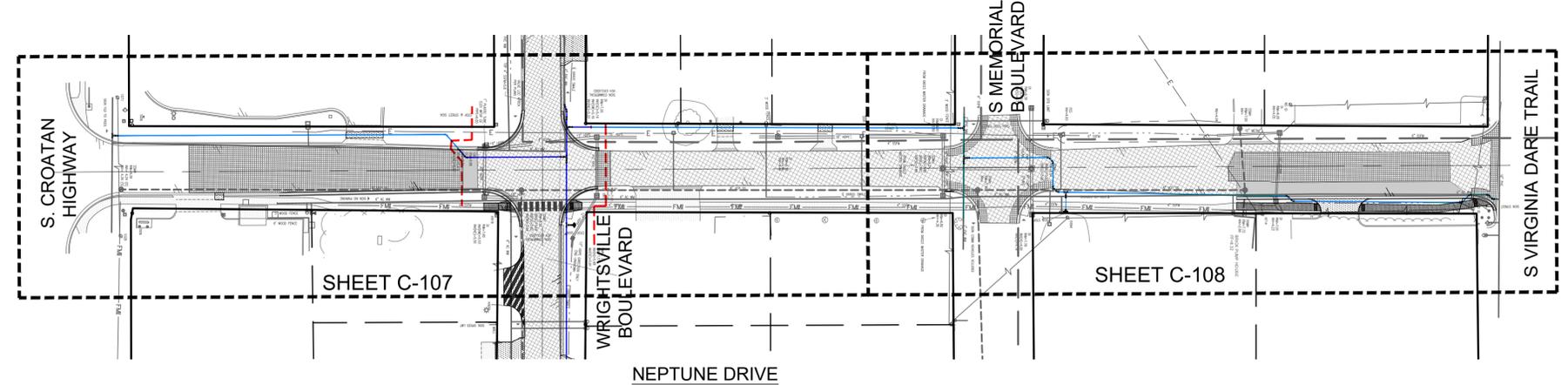
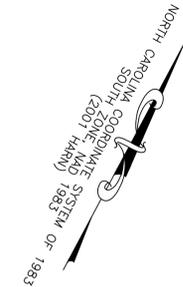
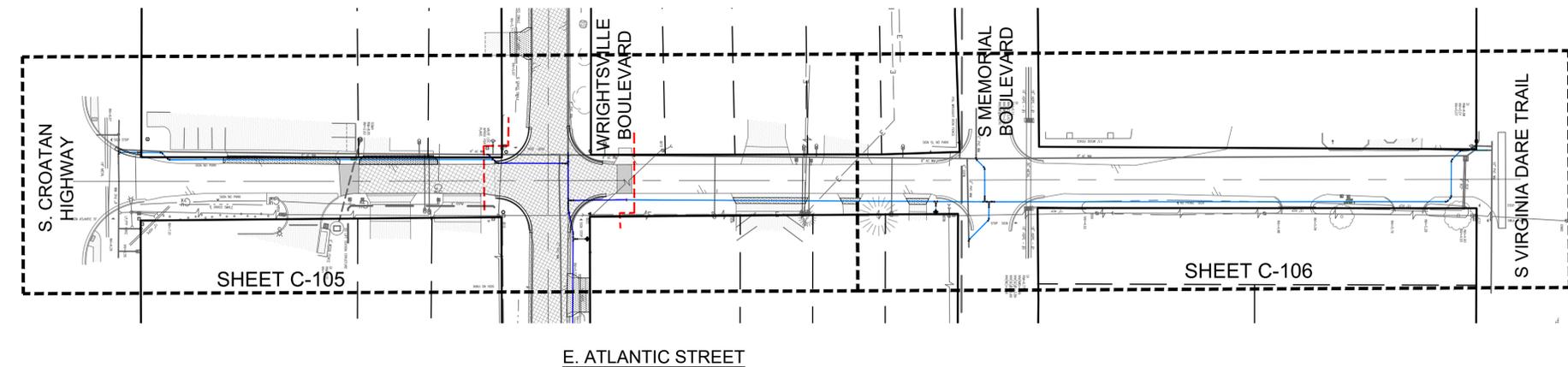
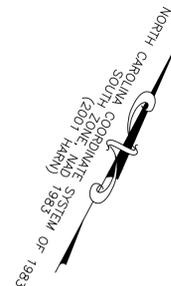
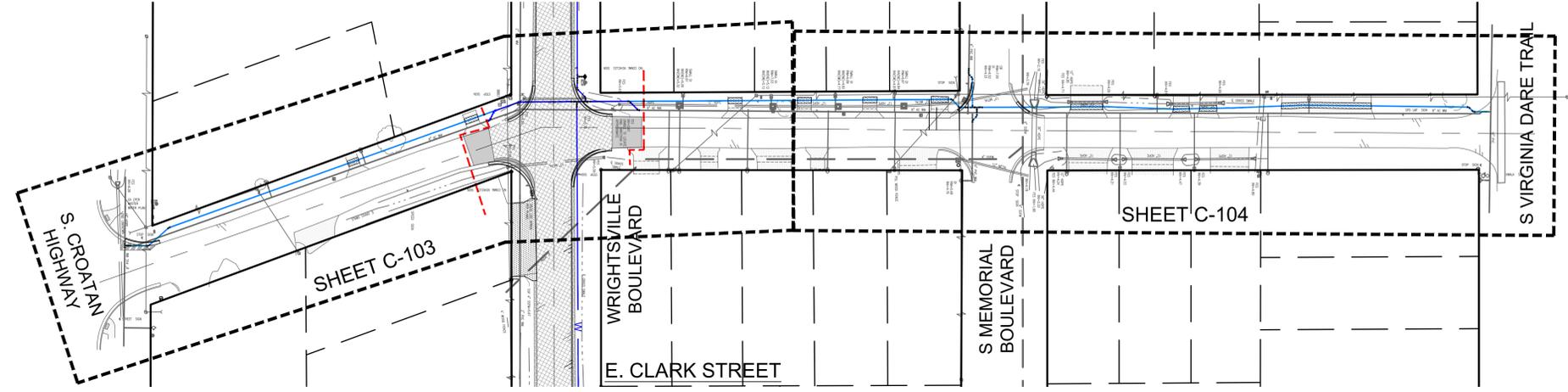
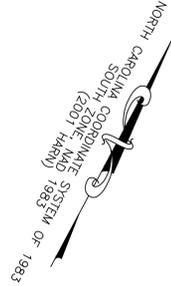
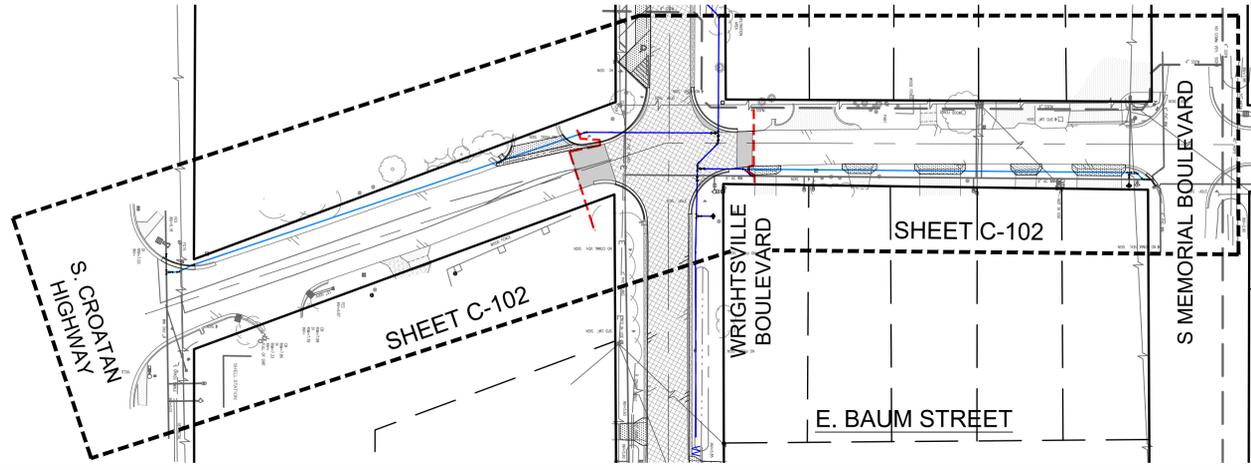
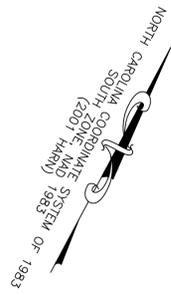
**AMERICAN  
Engineering**  
 American Engineering Associates - Southeast, P.A.  
 830 Greenbrier Circle | Suite 110  
 Chesapeake, Virginia 23320 (757) 468 - 6800

Project #	V23026	SHEET NAME	COVER SHEET
Checked by	KYD	SHEET #	G-001
Drawn by	KYD		
Submittal Date	03/01/2024		
SWaM Certification	715559		
NC Firm #	C-3881		

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V23026 - SOUTHEAST AREA WATERMAIN IMPROVEMENTS

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REVISIONS



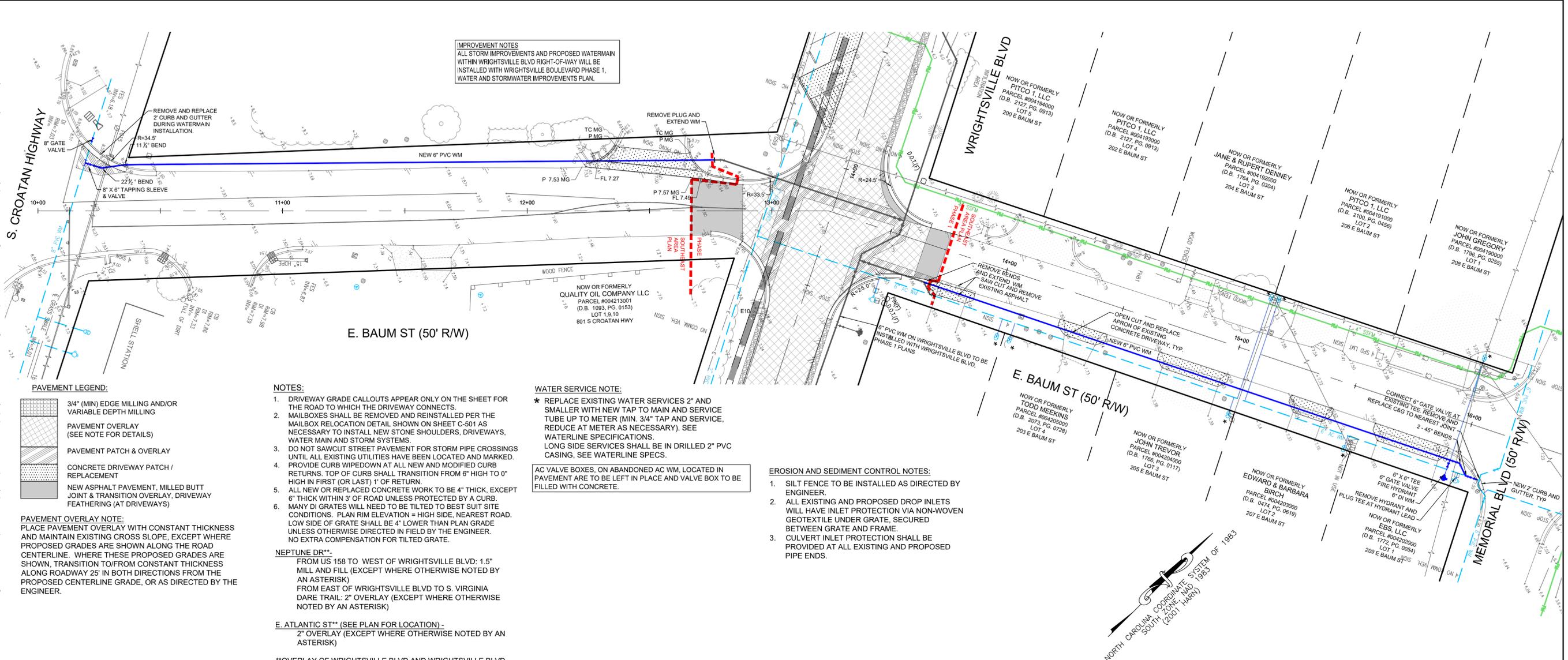

Project #	
Drawn by	
Submittal Date	
Scale	AS NOTED
SWaM Certification	715559
VA Firm #	0405001994

**SOUTHEAST AREA  
WATERMAIN IMPROVEMENTS**  
TOWN OF KILL DEVIL HILLS  
DARE COUNTY, NORTH CAROLINA

SHEET NAME  
**OVERALL  
PLAN &  
SHEET  
INDEX**

SHEET #  
**C-101**

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**IMPROVEMENT NOTES**  
ALL STORM IMPROVEMENTS AND PROPOSED WATERMAIN WITHIN WRIGHTSVILLE BLVD RIGHT-OF-WAY WILL BE INSTALLED WITH WRIGHTSVILLE BOULEVARD PHASE 1, WATER AND STORMWATER IMPROVEMENTS PLAN.

REMOVE AND REPLACE 2' CURB AND GUTTER DURING WATERMAIN INSTALLATION.

REMOVE PLUG AND EXTEND WM

REMOVE ENDS AND EXTEND DM SAW CUT AND REMOVE EXISTING ASPHALT

**PAVEMENT LEGEND:**

- 3/4" (MIN) EDGE MILLING AND/OR VARIABLE DEPTH MILLING
- PAVEMENT OVERLAY (SEE NOTE FOR DETAILS)
- PAVEMENT PATCH & OVERLAY
- CONCRETE DRIVEWAY PATCH / REPLACEMENT
- NEW ASPHALT PAVEMENT, MILLED BUTT JOINT & TRANSITION OVERLAY, DRIVEWAY FEATHERING (AT DRIVEWAYS)

**NOTES:**

- DRIVEWAY GRADE CALLOUTS APPEAR ONLY ON THE SHEET FOR THE ROAD TO WHICH THE DRIVEWAY CONNECTS.
- MAILBOXES SHALL BE REMOVED AND REINSTALLED PER THE MAILBOX RELOCATION DETAIL SHOWN ON SHEET C-501 AS NECESSARY TO INSTALL NEW STONE SHOULDERS, DRIVEWAYS, WATER MAIN AND STORM SYSTEMS.
- DO NOT SAWCUT STREET PAVEMENT FOR STORM PIPE CROSSINGS UNTIL ALL EXISTING UTILITIES HAVE BEEN LOCATED AND MARKED.
- PROVIDE CURB WIPEDOWN AT ALL NEW AND MODIFIED CURB RETURNS. TOP OF CURB SHALL TRANSITION FROM 6" HIGH TO 0" HIGH IN FIRST (OR LAST) 1' OF RETURN.
- ALL NEW OR REPLACED CONCRETE WORK TO BE 4" THICK, EXCEPT 6" THICK WITHIN 3' OF ROAD UNLESS PROTECTED BY A CURB.
- MANY DI GRATES WILL NEED TO BE TILTED TO BEST SUIT SITE CONDITIONS. PLAN RIM ELEVATION = HIGH SIDE, NEAREST ROAD. LOW SIDE OF GRATE SHALL BE 4" LOWER THAN PLAN GRADE UNLESS OTHERWISE DIRECTED IN FIELD BY THE ENGINEER. NO EXTRA COMPENSATION FOR TILTED GRATE.

**WATER SERVICE NOTE:**

- REPLACE EXISTING WATER SERVICES 2" AND SMALLER WITH NEW TAP TO MAIN AND SERVICE TUBE UP TO METER (MIN. 3/4" TAP AND SERVICE, REDUCE AT METER AS NECESSARY). SEE WATERLINE SPECIFICATIONS. LONG SIDE SERVICES SHALL BE IN DRILLED 2" PVC CASING. SEE WATERLINE SPECS.
- AC VALVE BOXES, ON ABANDONED AC WM, LOCATED IN PAVEMENT ARE TO BE LEFT IN PLACE AND VALVE BOX TO BE FILLED WITH CONCRETE.

**EROSION AND SEDIMENT CONTROL NOTES:**

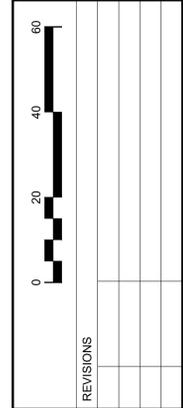
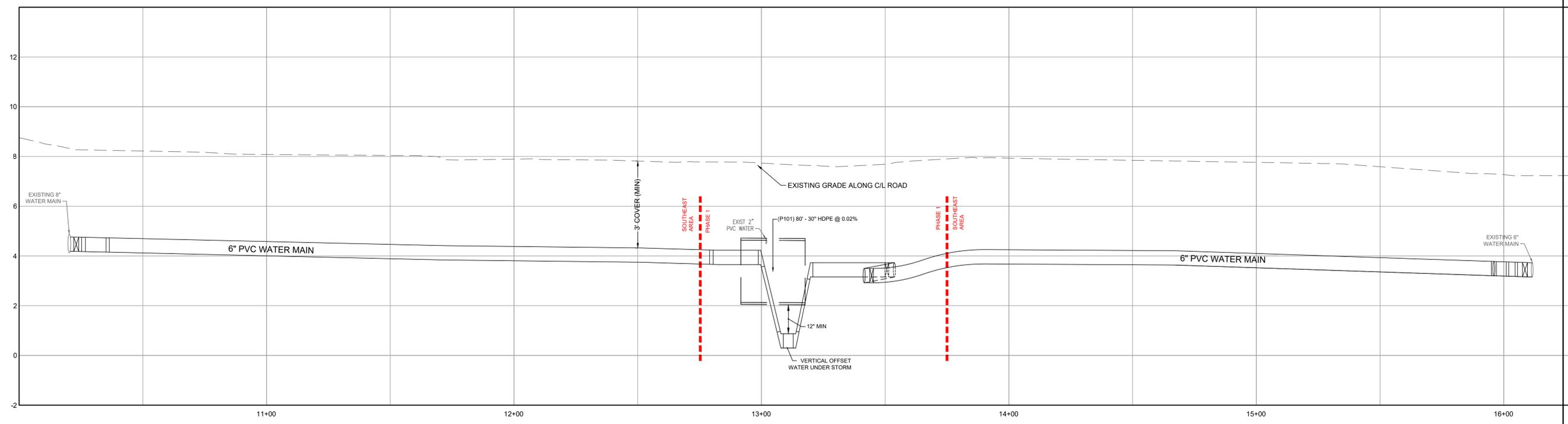
- SILT FENCE TO BE INSTALLED AS DIRECTED BY ENGINEER.
- ALL EXISTING AND PROPOSED DROP INLETS WILL HAVE INLET PROTECTION VIA NON-WOVEN GEOTEXTILE UNDER GRATE, SECURED BETWEEN GRATE AND FRAME.
- CULVERT INLET PROTECTION SHALL BE PROVIDED AT ALL EXISTING AND PROPOSED PIPE ENDS.

**NEPTUNE DR\*\***  
FROM US 158 TO WEST OF WRIGHTSVILLE BLVD: 1.5" MILL AND FILL (EXCEPT WHERE OTHERWISE NOTED BY AN ASTERISK)  
FROM EAST OF WRIGHTSVILLE BLVD TO S. VIRGINIA DARE TRAIL: 2" OVERLAY (EXCEPT WHERE OTHERWISE NOTED BY AN ASTERISK)

**E. ATLANTIC ST\*\* (SEE PLAN FOR LOCATION) -**  
2" OVERLAY (EXCEPT WHERE OTHERWISE NOTED BY AN ASTERISK)

\*\*OVERLAY OF WRIGHTSVILLE BLVD AND WRIGHTSVILLE BLVD INTERSECTIONS WITH SIDE STREETS WILL BE INSTALLED WITH WRIGHTSVILLE BLVD PHASE 1 AND PHASE 2 PLANS.

**E. BAUM ST PROFILE**



**AMERICAN Engineering**  
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830 Greenbrier Circle | Suite 110  
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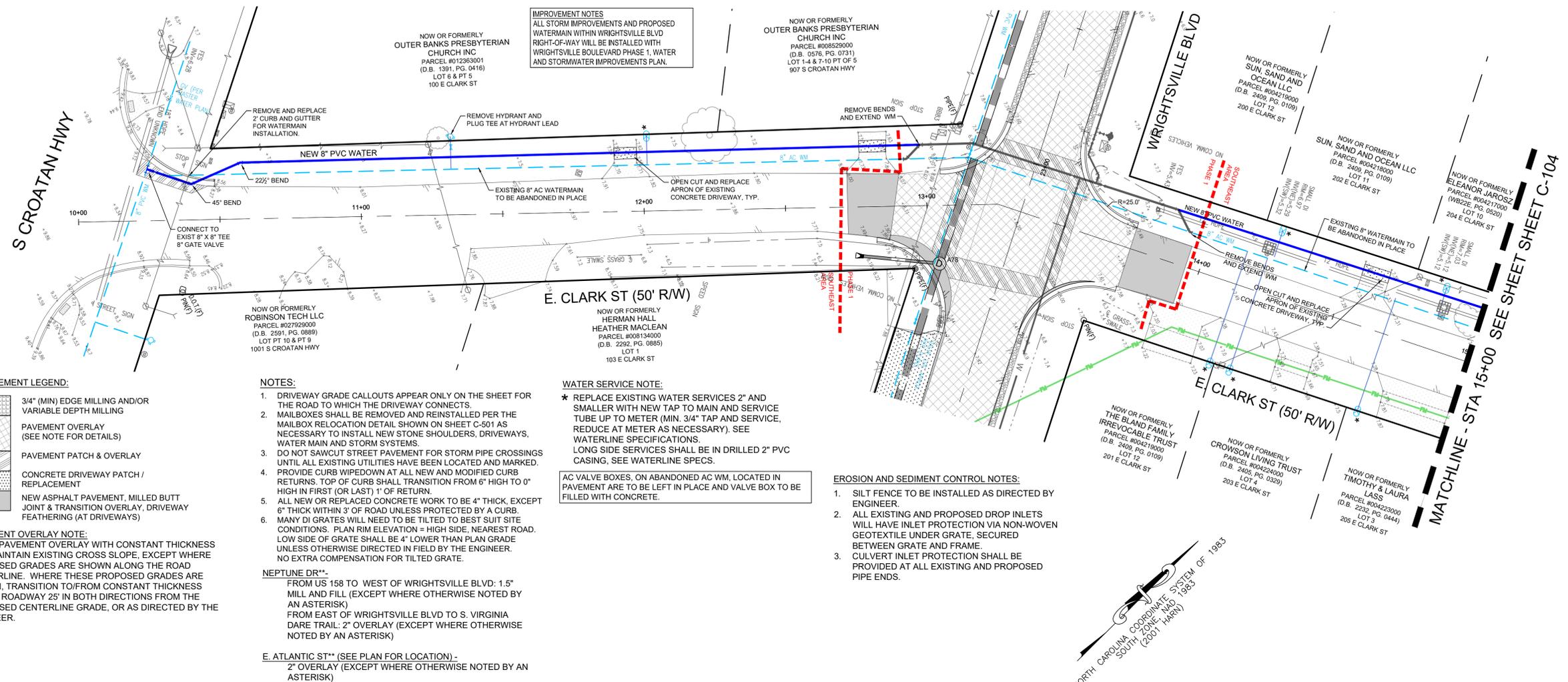
Project #	V23026
Drawn by	KYD
Submission Date	03/01/2024
Scale	AS NOTED
SWaM Certification	715559
VA Firm #	0405001994

**SOUTHEAST AREA WATERMAIN IMPROVEMENTS**  
TOWN OF KILL DEVIL HILLS  
DARE COUNTY, NORTH CAROLINA

SHEET NAME  
**PLAN & PROFILE**  
STA 10+00 - 16+15 E. BAUM STREET

SHEET #  
**C-102**

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**PAVEMENT LEGEND:**

	3/4" (MIN) EDGE MILLING AND/OR VARIABLE DEPTH MILLING
	PAVEMENT OVERLAY (SEE NOTE FOR DETAILS)
	PAVEMENT PATCH & OVERLAY
	CONCRETE DRIVEWAY PATCH / REPLACEMENT
	NEW ASPHALT PAVEMENT, MILLED BUTT JOINT & TRANSITION OVERLAY, DRIVEWAY FEATHERING (AT DRIVEWAYS)

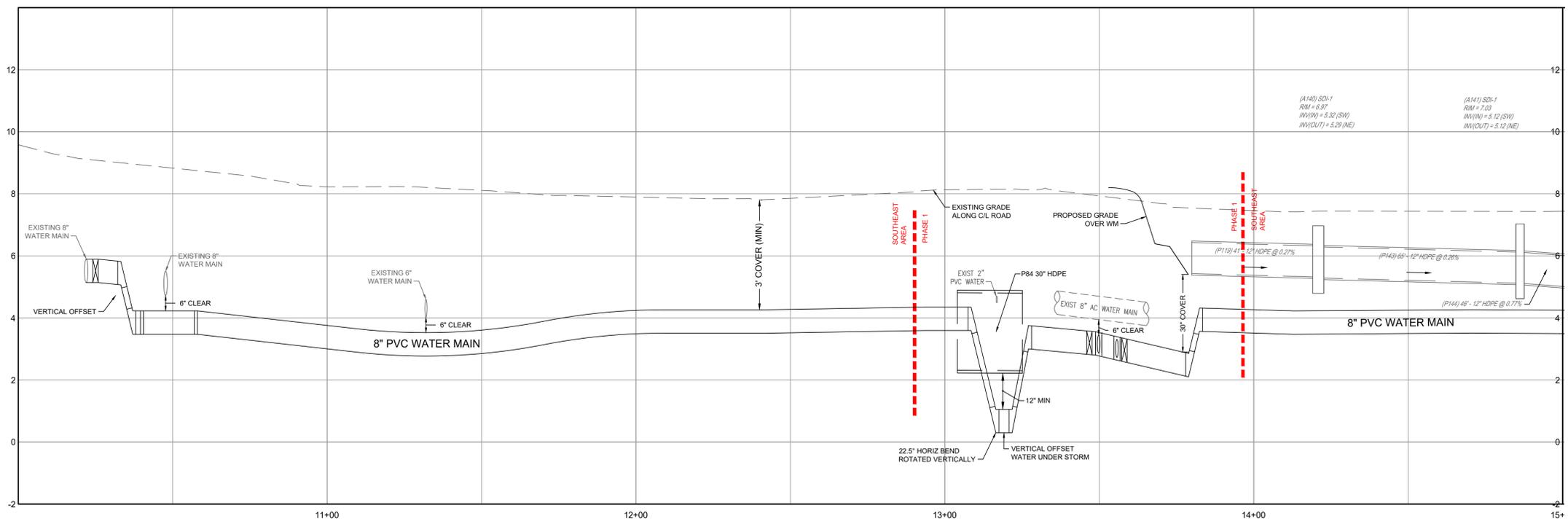
**PAVEMENT OVERLAY NOTE:**  
PLACE PAVEMENT OVERLAY WITH CONSTANT THICKNESS AND MAINTAIN EXISTING CROSS SLOPE, EXCEPT WHERE PROPOSED GRADES ARE SHOWN ALONG THE ROAD CENTERLINE. WHERE THESE PROPOSED GRADES ARE SHOWN, TRANSITION TO/FROM CONSTANT THICKNESS ALONG ROADWAY 25' IN BOTH DIRECTIONS FROM THE PROPOSED CENTERLINE GRADE, OR AS DIRECTED BY THE ENGINEER.

- NOTES:**
1. DRIVEWAY GRADE CALLOUTS APPEAR ONLY ON THE SHEET FOR THE ROAD TO WHICH THE DRIVEWAY CONNECTS.
  2. MAILBOXES SHALL BE REMOVED AND REINSTALLED PER THE MAILBOX RELOCATION DETAIL, SHOWN ON SHEET C-501 AS NECESSARY TO INSTALL NEW STONE SHOULDERS, DRIVEWAYS, WATER MAIN AND STORM SYSTEMS.
  3. DO NOT SAWCUT STREET PAVEMENT FOR STORM PIPE CROSSINGS UNTIL ALL EXISTING UTILITIES HAVE BEEN LOCATED AND MARKED.
  4. PROVIDE CURB WIPEDOWN AT ALL NEW AND MODIFIED CURB RETURNS. TOP OF CURB SHALL TRANSITION FROM 6" HIGH TO 0" HIGH IN FIRST (OR LAST) 1' OF RETURN.
  5. ALL NEW OR REPLACED CONCRETE WORK TO BE 4" THICK, EXCEPT 6" THICK WITHIN 3' OF ROAD UNLESS PROTECTED BY A CURB. MANY DI GRATES WILL NEED TO BE TILTED TO BEST SUIT SITE CONDITIONS. PLAN RIM ELEVATION = HIGH SIDE, NEAREST ROAD. LOW SIDE OF GRATE SHALL BE 4" LOWER THAN PLAN GRADE UNLESS OTHERWISE DIRECTED IN FIELD BY THE ENGINEER. NO EXTRA COMPENSATION FOR TILTED GRATE.
  6. NEPTUNE DR\*\* FROM US 158 TO WEST OF WRIGHTSVILLE BLVD: 1.5" MILL AND FILL (EXCEPT WHERE OTHERWISE NOTED BY AN ASTERISK) FROM EAST OF WRIGHTSVILLE BLVD TO S. VIRGINIA DARE TRAIL: 2" OVERLAY (EXCEPT WHERE OTHERWISE NOTED BY AN ASTERISK)

- WATER SERVICE NOTE:**
- \* REPLACE EXISTING WATER SERVICES 2" AND SMALLER WITH NEW TAP TO MAIN AND SERVICE TUBE UP TO METER (MIN. 3/4" TAP AND SERVICE, REDUCE AT METER AS NECESSARY). SEE WATERLINE SPECIFICATIONS. LONG SIDE SERVICES SHALL BE IN DRILLED 2" PVC CASING, SEE WATERLINE SPECS.
- AC VALVE BOXES, ON ABANDONED AC WM, LOCATED IN PAVEMENT ARE TO BE LEFT IN PLACE AND VALVE BOX TO BE FILLED WITH CONCRETE.

- EROSION AND SEDIMENT CONTROL NOTES:**
1. SILT FENCE TO BE INSTALLED AS DIRECTED BY ENGINEER.
  2. ALL EXISTING AND PROPOSED DROP INLETS WILL HAVE INLET PROTECTION VIA NON-WOVEN GEOTEXTILE UNDER GRATE, SECURED BETWEEN GRATE AND FRAME.
  3. CULVERT INLET PROTECTION SHALL BE PROVIDED AT ALL EXISTING AND PROPOSED PIPE ENDS.

**E. CLARK ST PROFILE**



**REVISIONS**

NO.	DATE	DESCRIPTION

**AMERICAN Engineering**  
American Engineering Associates - Southeast, P.A.  
830 Greenbrier Circle - Suite 110  
Chesapeake, Virginia 23320 (757) 468-6800



Project #	V23026
Drawn by	KYD
Submission Date	03/01/2024
Scale	AS NOTED
SWaM Certification	715559
VA Firm #	0405001994

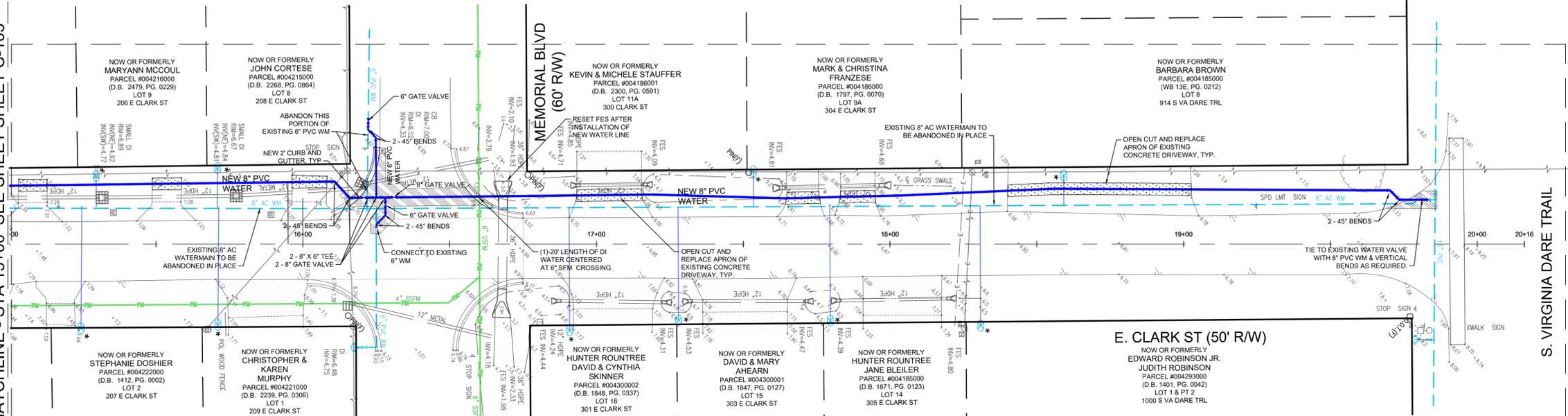
**SOUTHEAST AREA WATERMAIN IMPROVEMENTS**  
TOWN OF KILL DEVIL HILLS  
DARE COUNTY, NORTH CAROLINA

SHEET NAME  
**PLAN & PROFILE**  
STA 10+00 - STA 15+00 E. CLARK STREET

SHEET #  
**C-103**

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MATCHLINE - STA 15+00 SEE SHEET C-103



**PAVEMENT LEGEND:**

- 3/4" (MIN) EDGE MILLING AND/OR VARIABLE DEPTH MILLING
- PAVEMENT OVERLAY (SEE NOTE FOR DETAILS)
- PAVEMENT PATCH & OVERLAY
- CONCRETE DRIVEWAY PATCH / REPLACEMENT
- NEW ASPHALT PAVEMENT, MILLED BUTT JOINT & TRANSITION OVERLAY, DRIVEWAY FEATHERING (AT DRIVEWAYS)

**PAVEMENT OVERLAY NOTE:**  
PLACE PAVEMENT OVERLAY WITH CONSTANT THICKNESS AND MAINTAIN EXISTING CROSS SLOPE, EXCEPT WHERE PROPOSED GRADES ARE SHOWN ALONG THE ROAD CENTERLINE. WHERE THESE PROPOSED GRADES ARE SHOWN, TRANSITION TO/FROM CONSTANT THICKNESS ALONG ROADWAY 25' IN BOTH DIRECTIONS FROM THE PROPOSED CENTERLINE GRADE, OR AS DIRECTED BY THE ENGINEER.

**NOTES:**

1. DRIVEWAY GRADE CALLOUTS APPEAR ONLY ON THE SHEET FOR THE ROAD TO WHICH THE DRIVEWAY CONNECTS.
2. MAILBOXES SHALL BE REMOVED AND REINSTALLED PER THE MAILBOX RELOCATION DETAIL SHOWN ON SHEET C-501 AS NECESSARY TO INSTALL NEW STONE SHOULDERS, DRIVEWAYS, WATER MAIN AND STORM SYSTEMS.
3. DO NOT SAWCUT STREET PAVEMENT FOR STORM PIPE CROSSINGS UNTIL ALL EXISTING UTILITIES HAVE BEEN LOCATED AND MARKED.
4. PROVIDE CURB WIPEDOWN AT ALL NEW AND MODIFIED CURB RETURNS. TOP OF CURB SHALL TRANSITION FROM 6" HIGH TO 0" HIGH IN FIRST (OR LAST) 1' OF RETURN.
5. ALL NEW OR REPLACED CONCRETE WORK TO BE 4" THICK, EXCEPT 6" THICK WITHIN 3' OF ROAD UNLESS PROTECTED BY A CURB.
6. MANY DI GRATES WILL NEED TO BE TILTED TO BEST SUIT SITE CONDITIONS. PLAN RIM ELEVATION = HIGH SIDE, NEAREST ROAD. LOW SIDE OF GRATE SHALL BE 4" LOWER THAN PLAN GRADE UNLESS OTHERWISE DIRECTED IN FIELD BY THE ENGINEER. NO EXTRA COMPENSATION FOR TILTED GRATE.

**NEPTUNE DR\*\*:**  
FROM US 158 TO WEST OF WRIGHTSVILLE BLVD: 1.5" MILL AND FILL (EXCEPT WHERE OTHERWISE NOTED BY AN ASTERISK)  
FROM EAST OF WRIGHTSVILLE BLVD TO S. VIRGINIA DARE TRAIL: 2" OVERLAY (EXCEPT WHERE OTHERWISE NOTED BY AN ASTERISK)

**E. ATLANTIC ST\*\* (SEE PLAN FOR LOCATION) -**  
2" OVERLAY (EXCEPT WHERE OTHERWISE NOTED BY AN ASTERISK)

**\*\*OVERLAY OF WRIGHTSVILLE BLVD AND WRIGHTSVILLE BLVD INTERSECTIONS WITH SIDE STREETS WILL BE INSTALLED WITH WRIGHTSVILLE BLVD PHASE 1 AND PHASE 2 PLANS.**

**WATER SERVICE NOTE:**

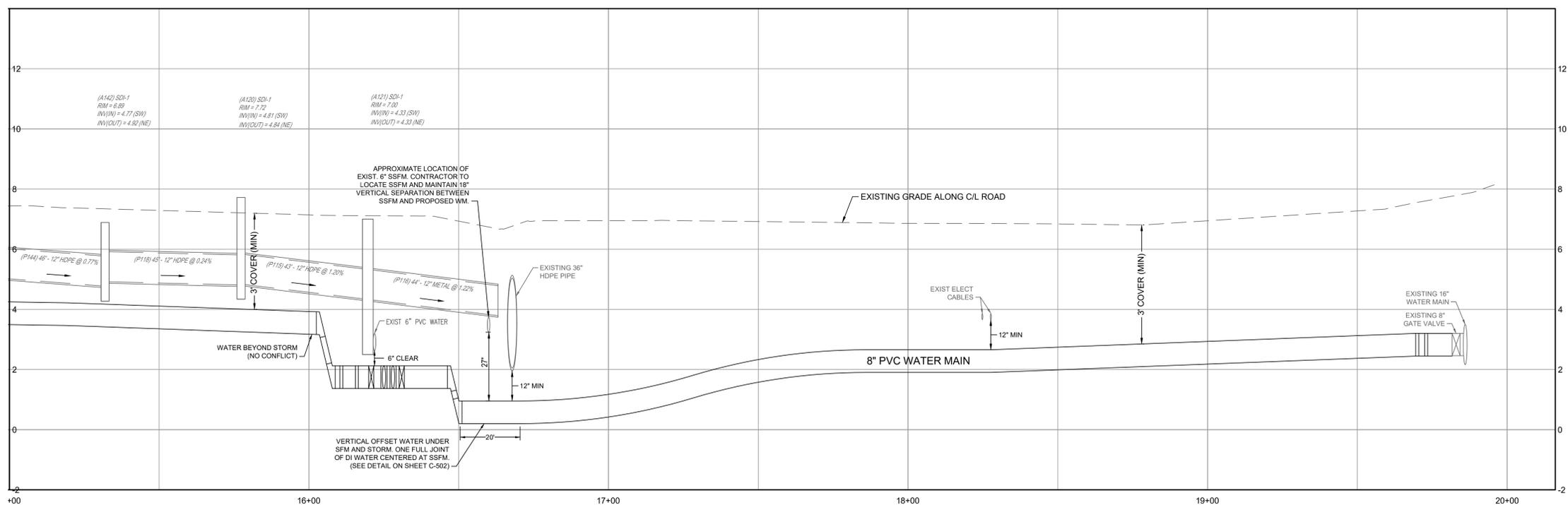
- \* REPLACE EXISTING WATER SERVICES 2" AND SMALLER WITH NEW TAP TO MAIN AND SERVICE TUBE UP TO METER (MIN. 3/4" TAP AND SERVICE, REDUCE AT METER AS NECESSARY). SEE WATERLINE SPECIFICATIONS.
- LONG SIDE SERVICES SHALL BE IN DRILLED 2" PVC CASING. SEE WATERLINE SPECS.

AC VALVE BOXES, ON ABANDONED AC WM, LOCATED IN PAVEMENT ARE TO BE LEFT IN PLACE AND VALVE BOX TO BE FILLED WITH CONCRETE.

**EROSION AND SEDIMENT CONTROL NOTES:**

1. SILT FENCE TO BE INSTALLED AS DIRECTED BY ENGINEER.
2. ALL EXISTING AND PROPOSED DROP INLETS WILL HAVE INLET PROTECTION VIA NON-WOVEN GEOTEXTILE UNDER GRATE, SECURED BETWEEN GRATE AND FRAME.
3. CULVERT INLET PROTECTION SHALL BE PROVIDED AT ALL EXISTING AND PROPOSED PIPE ENDS.

**E. CLARK ST PROFILE**



NO.	DATE	REVISIONS

**AMERICAN Engineering**  
American Engineering Associates - Southeast, P.A.  
830 Greenbrier Circle - Suite 110  
Chesapeake, Virginia 23320 (757) 468-6800



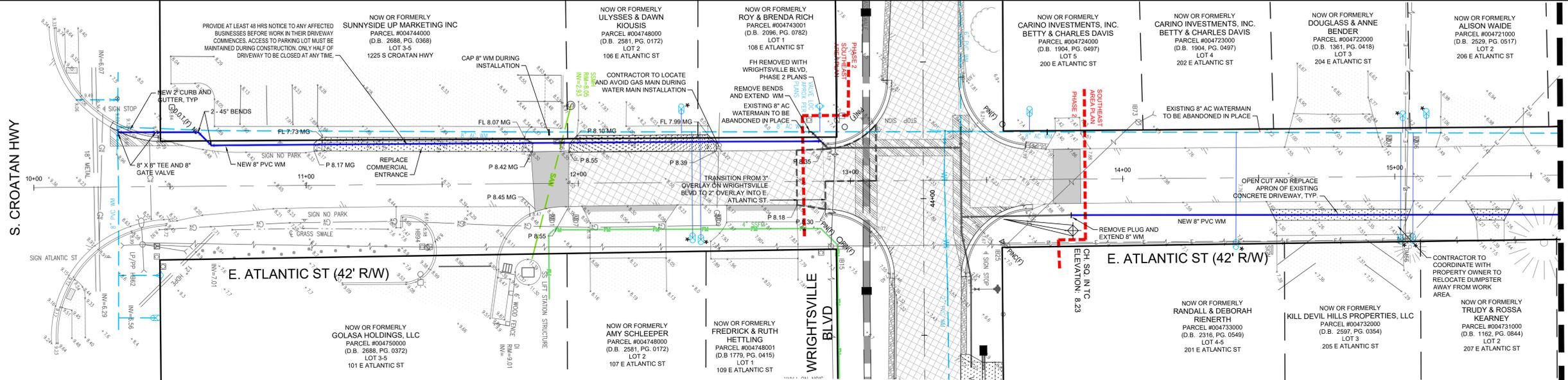
Project #	V23026
Drawn by	KYD
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Scale	AS NOTED
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TOWN OF KILL DEVIL HILLS  
DARE COUNTY, NORTH CAROLINA

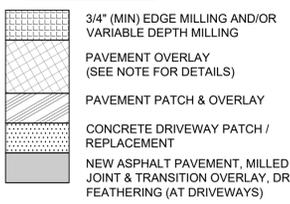
SHEET NAME  
**PLAN & PROFILE**  
STA 15+00 - STA 20+16 E. CLARK STREET

SHEET #  
**C-104**

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**PAVEMENT LEGEND:**



**PAVEMENT OVERLAY NOTE:**  
PLACE PAVEMENT OVERLAY WITH CONSTANT THICKNESS AND MAINTAIN EXISTING CROSS SLOPE, EXCEPT WHERE PROPOSED GRADES ARE SHOWN ALONG THE ROAD CENTERLINE. WHERE THESE PROPOSED GRADES ARE SHOWN, TRANSITION TO/FROM CONSTANT THICKNESS ALONG ROADWAY 25' IN BOTH DIRECTIONS FROM THE PROPOSED CENTERLINE GRADE, OR AS DIRECTED BY THE ENGINEER.

**NOTES:**

- DRIVEWAY GRADE CALLOUTS APPEAR ONLY ON THE SHEET FOR THE ROAD TO WHICH THE DRIVEWAY CONNECTS.
  - MAILBOXES SHALL BE REMOVED AND REINSTALLED PER THE MAILBOX RELOCATION DETAIL SHOWN ON SHEET C-501 AS NECESSARY TO INSTALL NEW STONE SHOULDERS, DRIVEWAYS, WATER MAIN AND STORM SYSTEMS.
  - DO NOT SAWCUT STREET PAVEMENT FOR STORM PIPE CROSSINGS UNTIL ALL EXISTING UTILITIES HAVE BEEN LOCATED AND MARKED.
  - PROVIDE CURB WIPEDOWN AT ALL NEW AND MODIFIED CURB RETURNS. TOP OF CURB SHALL TRANSITION FROM 6" HIGH TO 0" HIGH IN FIRST (OR LAST) 1' OF RETURN.
  - ALL NEW OR REPLACED CONCRETE WORK TO BE 4" THICK, EXCEPT 8" THICK WITHIN 3' OF ROAD UNLESS PROTECTED BY A CURB. MANY DI GRATES WILL NEED TO BE TILTED TO BEST SUIT SITE CONDITIONS. PLAN RIM ELEVATION = HIGH SIDE, NEAREST ROAD. LOW SIDE OF GRATE SHALL BE 4" LOWER THAN PLAN GRADE UNLESS OTHERWISE DIRECTED IN FIELD BY THE ENGINEER. NO EXTRA COMPENSATION FOR TILTED GRATE.
- NEPTUNE DR\*\*:**  
FROM US 158 TO WEST OF WRIGHTSVILLE BLVD: 1.5" MILL AND FILL (EXCEPT WHERE OTHERWISE NOTED BY AN ASTERISK)  
FROM EAST OF WRIGHTSVILLE BLVD TO S. VIRGINIA DARE TRAIL: 2" OVERLAY (EXCEPT WHERE OTHERWISE NOTED BY AN ASTERISK)
- E. ATLANTIC ST\*\* (SEE PLAN FOR LOCATION) -**  
2" OVERLAY (EXCEPT WHERE OTHERWISE NOTED BY AN ASTERISK)
- \*\*OVERLAY OF WRIGHTSVILLE BLVD AND WRIGHTSVILLE BLVD INTERSECTIONS WITH SIDE STREETS WILL BE INSTALLED WITH WRIGHTSVILLE BLVD PHASE 1 AND PHASE 2 PLANS.**

**WATER SERVICE NOTE:**

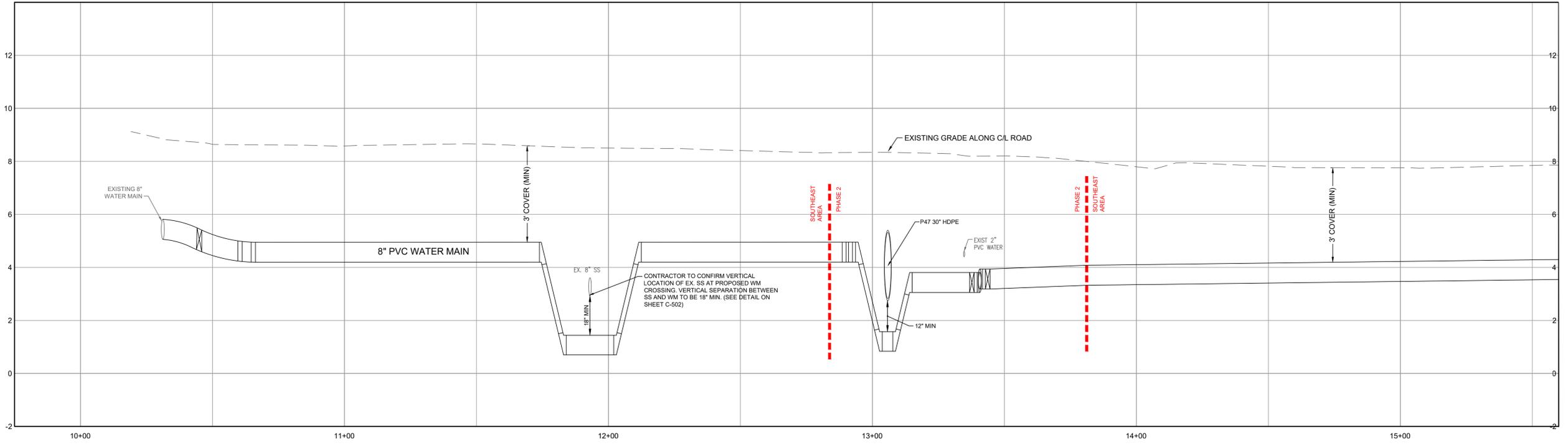
- REPLACE EXISTING WATER SERVICES 2" AND SMALLER WITH NEW TAP TO MAIN AND SERVICE TUBE UP TO METER (MIN. 3/4" TAP AND SERVICE, REDUCE AT METER AS NECESSARY). SEE WATERLINE SPECIFICATIONS. LONG SIDE SERVICES SHALL BE IN DRILLED 2" PVC CASING, SEE WATERLINE SPECS.
- AC VALVE BOXES, ON ABANDONED AC WM, LOCATED IN PAVEMENT ARE TO BE LEFT IN PLACE AND VALVE BOX TO BE FILLED WITH CONCRETE.

**EROSION AND SEDIMENT CONTROL NOTES:**

- SILT FENCE TO BE INSTALLED AS DIRECTED BY ENGINEER.
- ALL EXISTING AND PROPOSED DROP INLETS WILL HAVE INLET PROTECTION VIA NON-WOVEN GEOTEXTILE UNDER GRATE, SECURED BETWEEN GRATE AND FRAME.
- CULVERT INLET PROTECTION SHALL BE PROVIDED AT ALL EXISTING AND PROPOSED PIPE ENDS.

**IMPROVEMENT NOTES**  
ALL STORM IMPROVEMENTS AND PROPOSED WATERMAIN WITHIN WRIGHTSVILLE BLVD RIGHT-OF-WAY WILL BE INSTALLED WITH WRIGHTSVILLE BOULEVARD PHASE 1, WATER AND STORMWATER IMPROVEMENTS PLAN.

**E. ATLANTIC ST PROFILE**



NO.	REVISIONS

**AMERICAN Engineering**  
American Engineering Associates - Southeast, P.A.  
830 Greenbrier Circle | Suite 110  
Chesapeake, Virginia 23320 (757) 468-6800



Project #	V23026
Drawn by	KYD
Submittal Date	03/01/2024
Scale	AS NOTED
SWaM Certification	715559
VA Firm #	0405001994

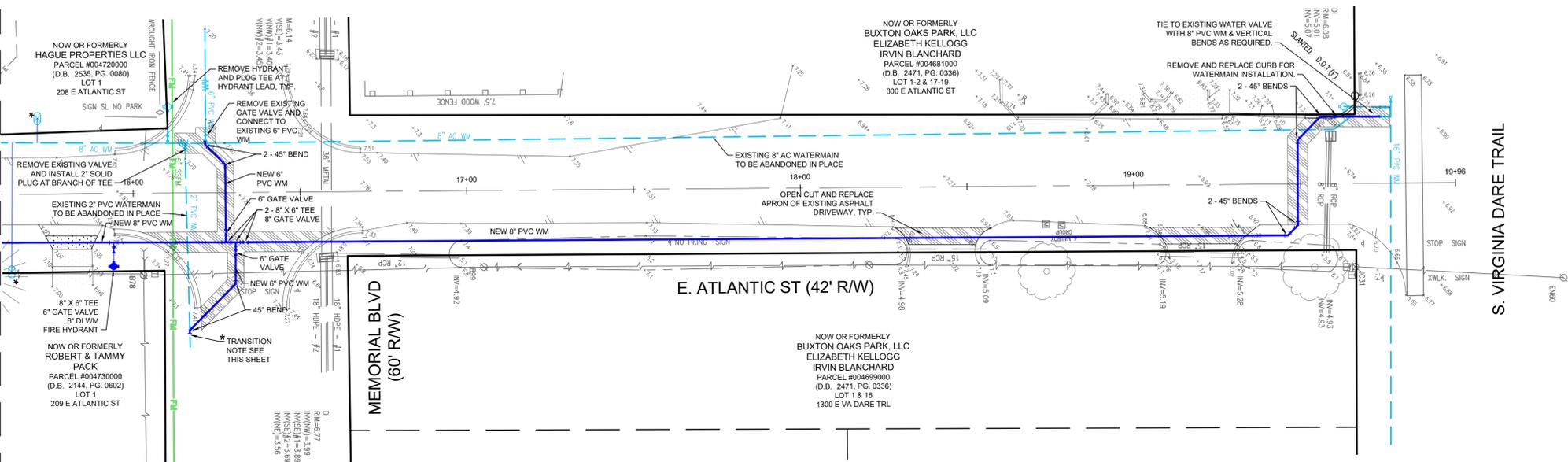
**SOUTHEAST AREA WATERMAIN IMPROVEMENTS**  
TOWN OF KILL DEVIL HILLS  
DARE COUNTY, NORTH CAROLINA

SHEET NAME  
**PLAN & PROFILE**  
STA 10+00 - STA 15+60 E. ATLANTIC STREET

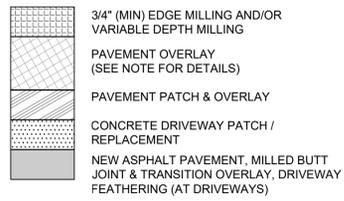
SHEET #  
**C-105**

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MATCHLINE - STA 15+60 SEE SHEET C-105



**PAVEMENT LEGEND:**



**PAVEMENT OVERLAY NOTE:**  
PLACE PAVEMENT OVERLAY WITH CONSTANT THICKNESS AND MAINTAIN EXISTING CROSS SLOPE, EXCEPT WHERE PROPOSED GRADES ARE SHOWN ALONG THE ROAD CENTERLINE. WHERE THESE PROPOSED GRADES ARE SHOWN, TRANSITION TO/FROM CONSTANT THICKNESS ALONG ROADWAY 25' IN BOTH DIRECTIONS FROM THE PROPOSED CENTERLINE GRADE, OR AS DIRECTED BY THE ENGINEER.

**NOTES:**

- DRIVEWAY GRADE CALLOUTS APPEAR ONLY ON THE SHEET FOR THE ROAD TO WHICH THE DRIVEWAY CONNECTS. MAILBOXES SHALL BE REMOVED AND REINSTALLED PER THE MAILBOX RELOCATION DETAIL SHOWN ON SHEET C-501 AS NECESSARY TO INSTALL NEW STONE SHOULDERS, DRIVEWAYS, WATER MAIN AND STORM SYSTEMS.
- DO NOT SAWCUT STREET PAVEMENT FOR STORM PIPE CROSSINGS UNTIL ALL EXISTING UTILITIES HAVE BEEN LOCATED AND MARKED. PROVIDE CURB WIPEDOWN AT ALL NEW AND MODIFIED CURB RETURNS. TOP OF CURB SHALL TRANSITION FROM 6" HIGH TO 0" HIGH IN FIRST (OR LAST) 1' OF RETURN.
- ALL NEW OR REPLACED CONCRETE WORK TO BE 4" THICK, EXCEPT 6" THICK WITHIN 3' OF ROAD UNLESS PROTECTED BY A CURB. MANY DI GRATES WILL NEED TO BE TILTED TO BEST SUIT SITE CONDITIONS. PLAN RIM ELEVATION = HIGH SIDE, NEAREST ROAD. LOW SIDE OF GRATE SHALL BE 4" LOWER THAN PLAN GRADE UNLESS OTHERWISE DIRECTED IN FIELD BY THE ENGINEER. NO EXTRA COMPENSATION FOR TILTED GRATE.

**NEPTUNE DR\*\*:**  
FROM US 158 TO WEST OF WRIGHTSVILLE BLVD: 1.5" MILL AND FILL (EXCEPT WHERE OTHERWISE NOTED BY AN ASTERISK)  
FROM EAST OF WRIGHTSVILLE BLVD TO S. VIRGINIA DARE TRAIL: 2" OVERLAY (EXCEPT WHERE OTHERWISE NOTED BY AN ASTERISK)

**E. ATLANTIC ST\*\* (SEE PLAN FOR LOCATION) -**  
2" OVERLAY (EXCEPT WHERE OTHERWISE NOTED BY AN ASTERISK)

\*\*OVERLAY OF WRIGHTSVILLE BLVD AND WRIGHTSVILLE BLVD INTERSECTIONS WITH SIDE STREETS WILL BE INSTALLED WITH WRIGHTSVILLE BLVD PHASE 1 AND PHASE 2 PLANS.

**WATER SERVICE NOTE:**

- REPLACE EXISTING WATER SERVICES 2" AND SMALLER WITH NEW TAP TO MAIN AND SERVICE TUBE UP TO METER (MIN. 3/4" TAP AND SERVICE, REDUCE AT METER AS NECESSARY). SEE WATERLINE SPECIFICATIONS. LONG SIDE SERVICES SHALL BE IN DRILLED 2" PVC CASING, SEE WATERLINE SPECS.

AC VALVE BOXES, ON ABANDONED AC WM, LOCATED IN PAVEMENT ARE TO BE LEFT IN PLACE AND VALVE BOX TO BE FILLED WITH CONCRETE.

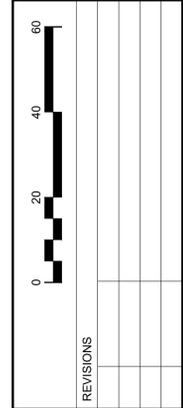
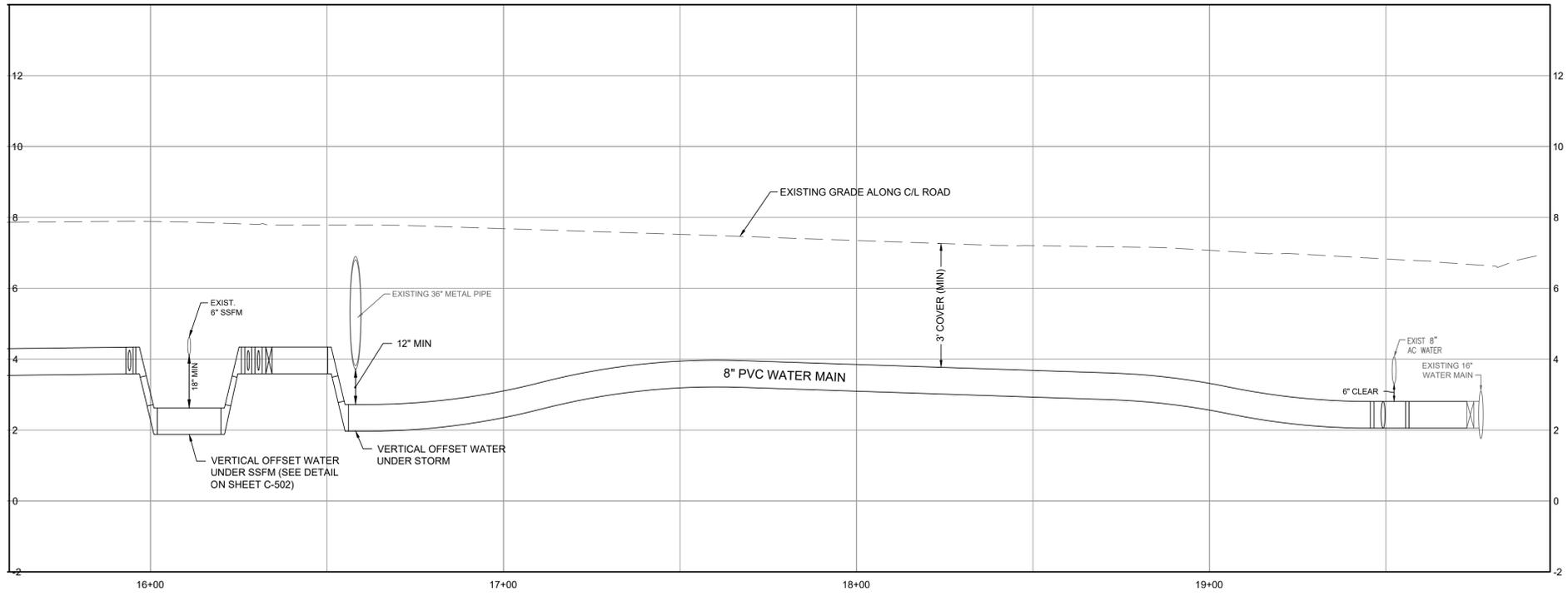
**\* TRANSITION NOTE (NEW 8"x6" OR 6"x6" TEE TO EX. 2"PVC WM)**

- 8" x 6" OR 6" x 6" TEE OR CROSS WITH BRANCH VALVE (6" GATE VALVE) AND EXTEND 6" WM AS SHOWN.
- 6" x 2" TAPPED PLUG ON 6" WM
- 2" MIP X BRASS COMPRESSION (FORD PACK JOINT COUPLING C87-77-NL)
- CONTINUE WITH 2" SCHEDULE 80 PVC, SOLVENT-WELDED WM
- (2) 2" SCHEDULE 80 BENDS AS REQ'D TO TIE TO EX. 2" PVC WM

**EROSION AND SEDIMENT CONTROL NOTES:**

- SILT FENCE TO BE INSTALLED AS DIRECTED BY ENGINEER.
- ALL EXISTING AND PROPOSED DROP INLETS WILL HAVE INLET PROTECTION VIA NON-WOVEN GEOTEXTILE UNDER GRATE, SECURED BETWEEN GRATE AND FRAME.
- CULVERT INLET PROTECTION SHALL BE PROVIDED AT ALL EXISTING AND PROPOSED PIPE ENDS.

**E. ATLANTIC ST PROFILE**



**AMERICAN Engineering**  
American Engineering Associates - Southeast, P.A.  
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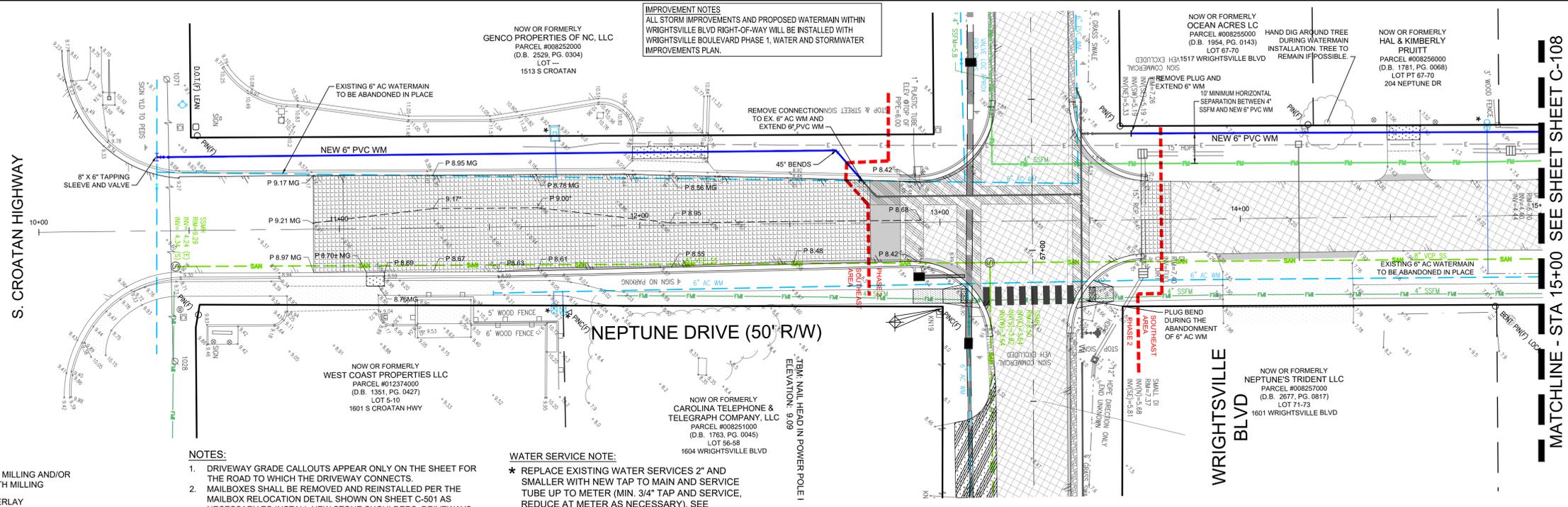
Project #	V23026
Drawn by	KYD
Submittal Date	03/01/2024
Scale	AS NOTED
SWaM Certification	715559
VA Firm #	0405001994

**SOUTHEAST AREA WATERMAIN IMPROVEMENTS**  
TOWN OF KILL DEVIL HILLS  
DARE COUNTY, NORTH CAROLINA

SHEET NAME  
**PLAN & PROFILE**  
STA 15+60 - STA 19+96 E. ATLANTIC STREET

SHEET #  
**C-106**

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**PAVEMENT LEGEND:**

- 3/4" (MIN) EDGE MILLING AND/OR VARIABLE DEPTH MILLING
- PAVEMENT OVERLAY (SEE NOTE FOR DETAILS)
- PAVEMENT PATCH & OVERLAY
- CONCRETE DRIVEWAY PATCH / REPLACEMENT
- NEW ASPHALT PAVEMENT, MILLED BUTT JOINT & TRANSITION OVERLAY, DRIVEWAY FEATHERING (AT DRIVEWAYS)

**PAVEMENT OVERLAY NOTE:**  
PLACE PAVEMENT OVERLAY WITH CONSTANT THICKNESS AND MAINTAIN EXISTING CROSS SLOPE, EXCEPT WHERE PROPOSED GRADES ARE SHOWN ALONG THE ROAD CENTERLINE. WHERE THESE PROPOSED GRADES ARE SHOWN, TRANSITION TO/FROM CONSTANT THICKNESS ALONG ROADWAY 25' IN BOTH DIRECTIONS FROM THE PROPOSED CENTERLINE GRADE, OR AS DIRECTED BY THE ENGINEER.

**NOTES:**

1. DRIVEWAY GRADE CALLOUTS APPEAR ONLY ON THE SHEET FOR THE ROAD TO WHICH THE DRIVEWAY CONNECTS.
2. MAILBOXES SHALL BE REMOVED AND REINSTALLED PER THE MAILBOX RELOCATION DETAIL SHOWN ON SHEET C-501 AS NECESSARY TO INSTALL NEW STONE SHOULDERS, DRIVEWAYS, WATER MAIN AND STORM SYSTEMS.
3. DO NOT SAWCUT STREET PAVEMENT FOR STORM PIPE CROSSINGS UNTIL ALL EXISTING UTILITIES HAVE BEEN LOCATED AND MARKED.
4. PROVIDE CURB WIPEDOWN AT ALL NEW AND MODIFIED CURB RETURNS. TOP OF CURB SHALL TRANSITION FROM 6" HIGH TO 0" HIGH IN FIRST (OR LAST) 1' OF RETURN.
5. ALL NEW OR REPLACED CONCRETE WORK TO BE 4" THICK, EXCEPT 6" THICK WITHIN 3' OF ROAD UNLESS PROTECTED BY A CURB.
6. MANY DI GRATES WILL NEED TO BE TILTED TO BEST SUIT SITE CONDITIONS. PLAN RIM ELEVATION = HIGH SIDE, NEAREST ROAD. LOW SIDE OF GRATE SHALL BE 4" LOWER THAN PLAN GRADE UNLESS OTHERWISE DIRECTED IN FIELD BY THE ENGINEER. NO EXTRA COMPENSATION FOR TILTED GRATE.

**NEPTUNE DR\*\***  
FROM US 158 TO WEST OF WRIGHTSVILLE BLVD: 1.5" MILL AND FILL (EXCEPT WHERE OTHERWISE NOTED BY AN ASTERISK)  
FROM EAST OF WRIGHTSVILLE BLVD TO S. VIRGINIA DARE TRAIL: 2" OVERLAY (EXCEPT WHERE OTHERWISE NOTED BY AN ASTERISK)

**E. ATLANTIC ST\*\* (SEE PLAN FOR LOCATION)**  
2" OVERLAY (EXCEPT WHERE OTHERWISE NOTED BY AN ASTERISK)

**\*\*OVERLAY OF WRIGHTSVILLE BLVD AND WRIGHTSVILLE BLVD INTERSECTIONS WITH SIDE STREETS WILL BE INSTALLED WITH WRIGHTSVILLE BLVD PHASE 1 AND PHASE 2 PLANS.**

**WATER SERVICE NOTE:**

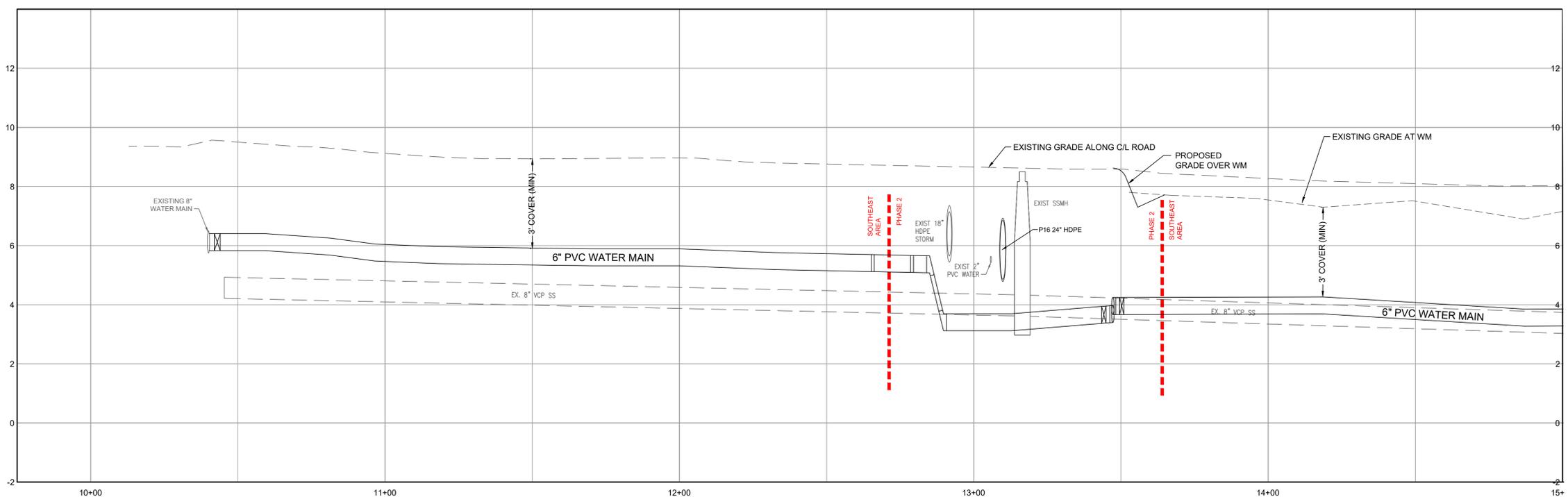
- \* REPLACE EXISTING WATER SERVICES 2" AND SMALLER WITH NEW TAP TO MAIN AND SERVICE TUBE UP TO METER (MIN. 3/4" TAP AND SERVICE, REDUCE AT METER AS NECESSARY). SEE WATERLINE SPECIFICATIONS.
- LONG SIDE SERVICES SHALL BE IN DRILLED 2" PVC CASING, SEE WATERLINE SPECS.

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**EROSION AND SEDIMENT CONTROL NOTES:**

1. SILT FENCE TO BE INSTALLED AS DIRECTED BY ENGINEER.
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3. CULVERT INLET PROTECTION SHALL BE PROVIDED AT ALL EXISTING AND PROPOSED PIPE ENDS.

**NEPTUNE DR PROFILE**



NO.	DATE	REVISIONS

**AMERICAN Engineering**  
American Engineering Associates - Southeast, P.A.  
830 Greenbrier Circle | Suite 110  
Chesapeake, Virginia 23320 (757) 468-6800



Project #	V23026
Drawn by	KYD
Submittal Date	03/01/2024
Scale	AS NOTED
SWaM Certification	715559
VA Firm #	0405001994

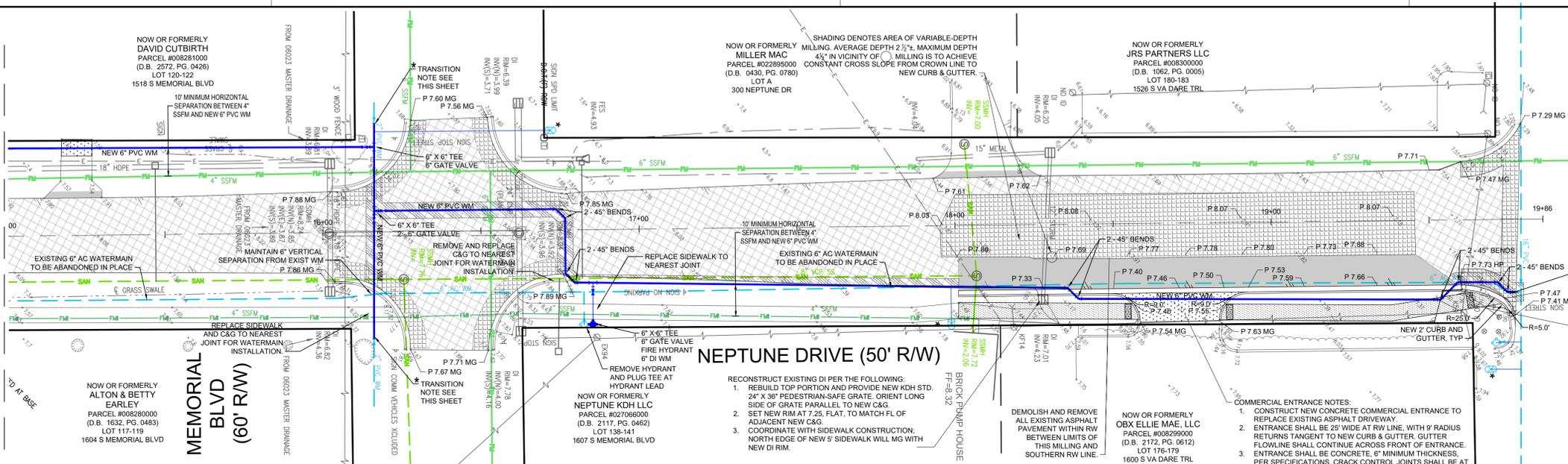
**SOUTHEAST AREA WATERMAIN IMPROVEMENTS**  
TOWN OF KILL DEVIL HILLS  
DARE COUNTY, NORTH CAROLINA

SHEET NAME  
**PLAN & PROFILE**  
STA 10+00 - STA 15+00  
NEPTUNE DRIVE

SHEET #  
**C-107**

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MATCHLINE - STA 15+00 SEE SHEET C-107



**PAVEMENT LEGEND:**

- 3/4" (MIN) EDGE MILLING AND/OR VARIABLE DEPTH MILLING
- PAVEMENT OVERLAY (SEE NOTE FOR DETAILS)
- PAVEMENT PATCH & OVERLAY
- CONCRETE DRIVEWAY PATCH / REPLACEMENT
- NEW ASPHALT PAVEMENT, MILLED BUTT JOINT & TRANSITION OVERLAY, DRIVEWAY FEATHERING (AT DRIVEWAYS)

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**NOTES:**

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- NEPTUNE DR\*\* - FROM US 158 TO WEST OF WRIGHTSVILLE BLVD: 1.5" MILL AND FILL (EXCEPT WHERE OTHERWISE NOTED BY AN ASTERISK) FROM EAST OF WRIGHTSVILLE BLVD TO S. VIRGINIA DARE TRAIL: 2" OVERLAY (EXCEPT WHERE OTHERWISE NOTED BY AN ASTERISK)
- E. ATLANTIC ST\*\* (SEE PLAN FOR LOCATION) - 2" OVERLAY (EXCEPT WHERE OTHERWISE NOTED BY AN ASTERISK)

\*\*OVERLAY OF WRIGHTSVILLE BLVD AND WRIGHTSVILLE BLVD INTERSECTIONS WITH SIDE STREETS WILL BE INSTALLED WITH WRIGHTSVILLE BLVD PHASE 1 AND PHASE 2 PLANS.

**WATER SERVICE NOTE:**

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**AC VALVE BOXES, ON ABANDONED AC WM, LOCATED IN PAVEMENT ARE TO BE LEFT IN PLACE AND VALVE BOX TO BE FILLED WITH CONCRETE.**

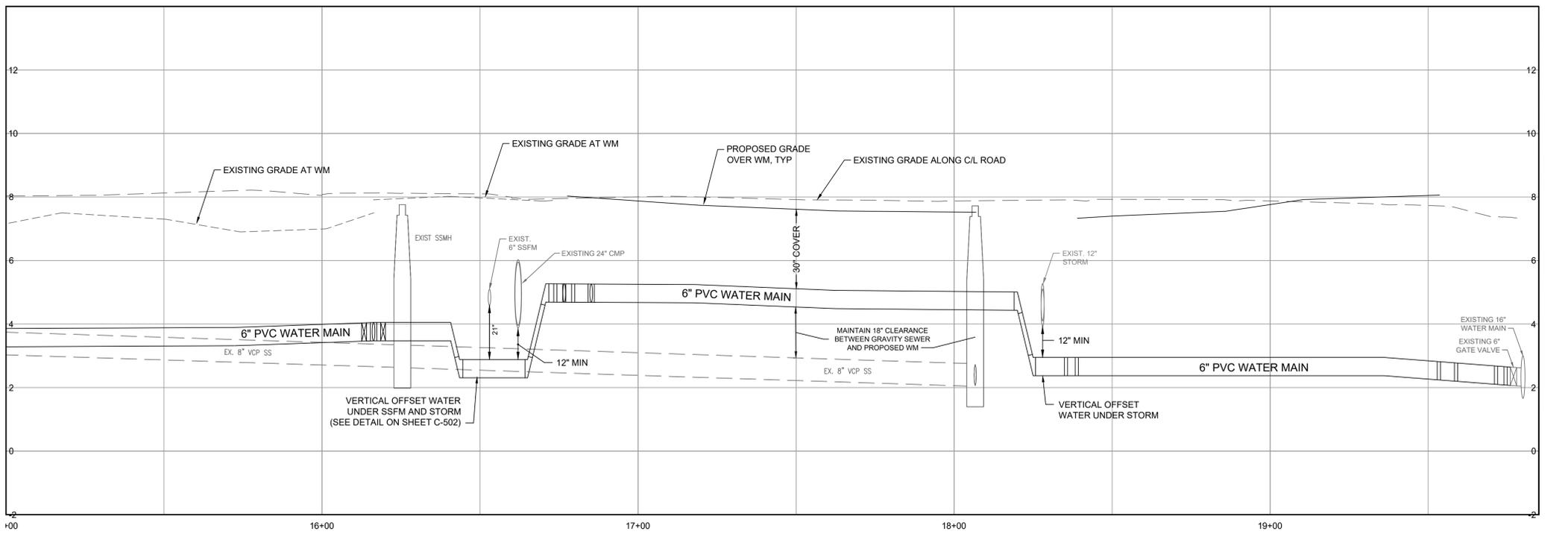
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- 2" MIP X BRASS COMPRESSION (FORD PACK JOINT COUPLING C67-77-NL)
- CONTINUE WITH 2" SCHEDULE 80 PVC, SOLVENT-WELDED WM
- (2) 2" SCHEDULE 80 BENDS AS REQ'D TO TIE TO EX. 2" PVC WM

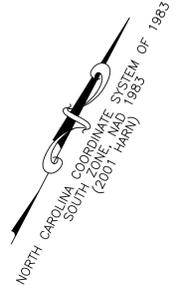
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- CULVERT INLET PROTECTION SHALL BE PROVIDED AT ALL EXISTING AND PROPOSED PIPE ENDS.

NEPTUNE DR PROFILE



SIDEWALK IMPROVEMENTS IN THIS AREA WILL BE COORDINATED WITH NCDOT SIGNAL UPGRADE PROJECT, WHICH IS EXPECTED TO BE CONCURRENT. FINAL INTERFACE BETWEEN THE TWO PROJECTS WILL BE DETERMINED SPRING 2024.



REVISIONS

NO.	DATE	DESCRIPTION

**AMERICAN Engineering**  
American Engineering Associates - Southeast, P.A.  
830 Greenbrier Circle - Suite 110  
Chesapeake, Virginia 23320 (757) 468-6800



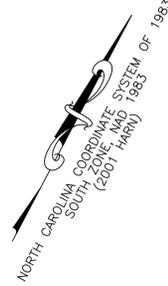
Project #	V23026
Drawn by	KYD
Submission Date	03/01/2024
Scale	AS NOTED
SWaM Certification	715559
VA Firm #	0405001994

**SOUTHEAST AREA WATERMAIN IMPROVEMENTS**  
TOWN OF KILL DEVIL HILLS  
DARE COUNTY, NORTH CAROLINA

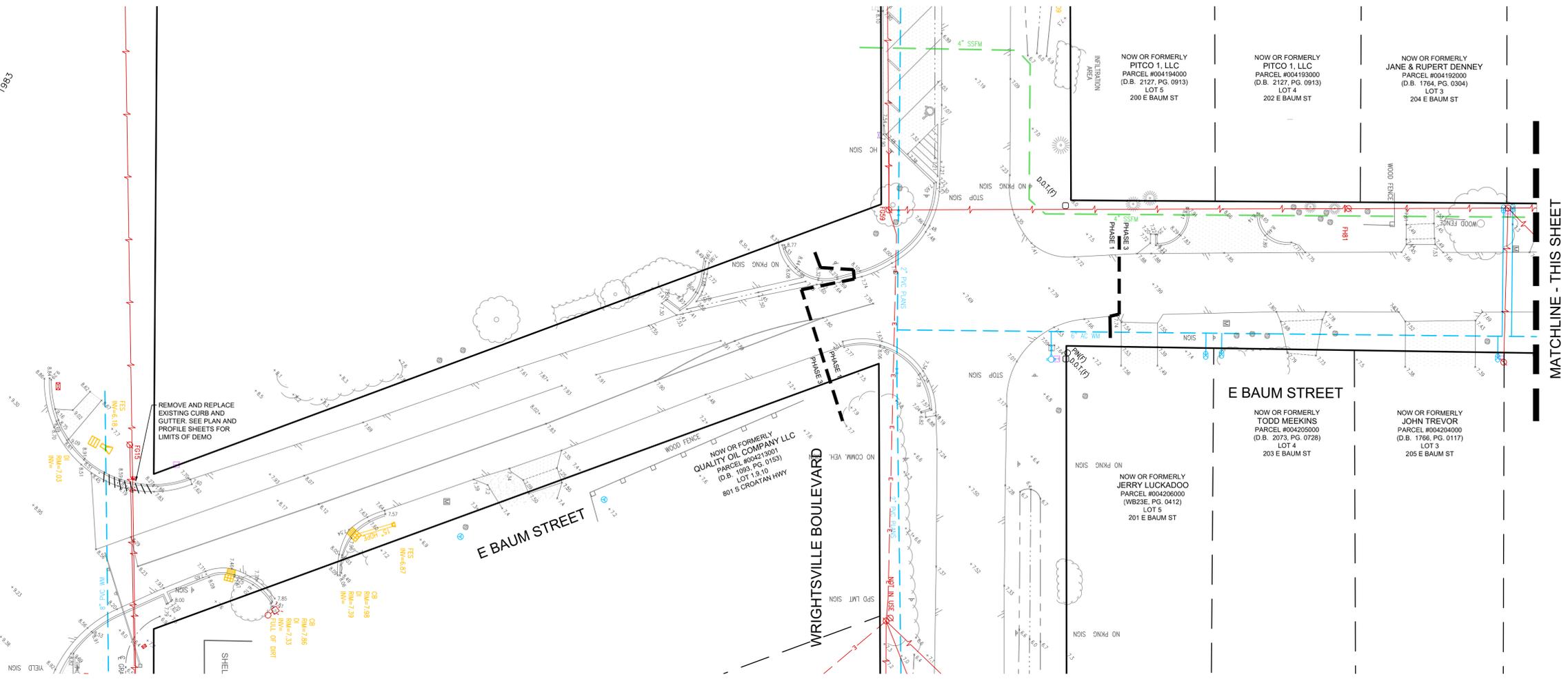
SHEET NAME  
**PLAN & PROFILE**  
STA 15+00 - STA 19+86  
NEPTUNE DRIVE

SHEET #  
**C-108**

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S. CROATAN HIGHWAY (ROUTE 158)



MATCHLINE - THIS SHEET

NO.	DATE	DESCRIPTION



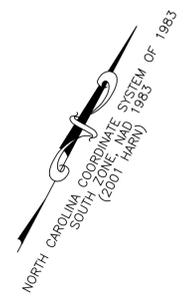
Project #	V23026
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Scale	AS NOTED
SWaM Certification	715559
VA Firm #	0405001994

**SOUTHEAST AREA  
WATERMAIN IMPROVEMENTS**  
TOWN OF KILL DEVIL HILLS  
DARE COUNTY, NORTH CAROLINA

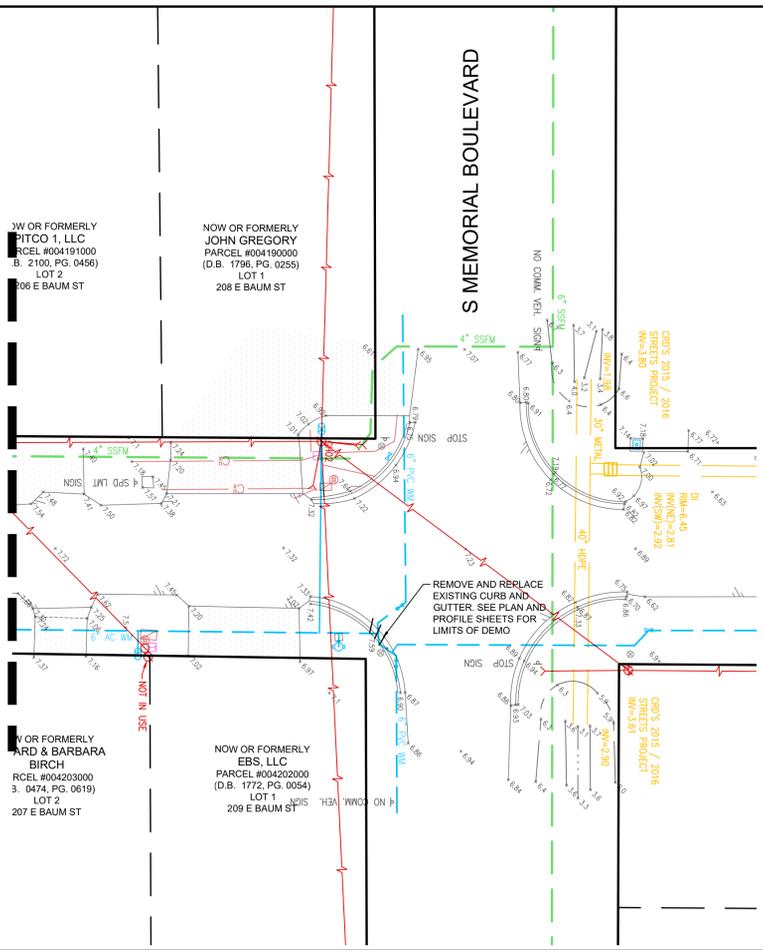
SHEET NAME  
**EXISTING  
CONDITIONS**

SHEET #  
**C-109**

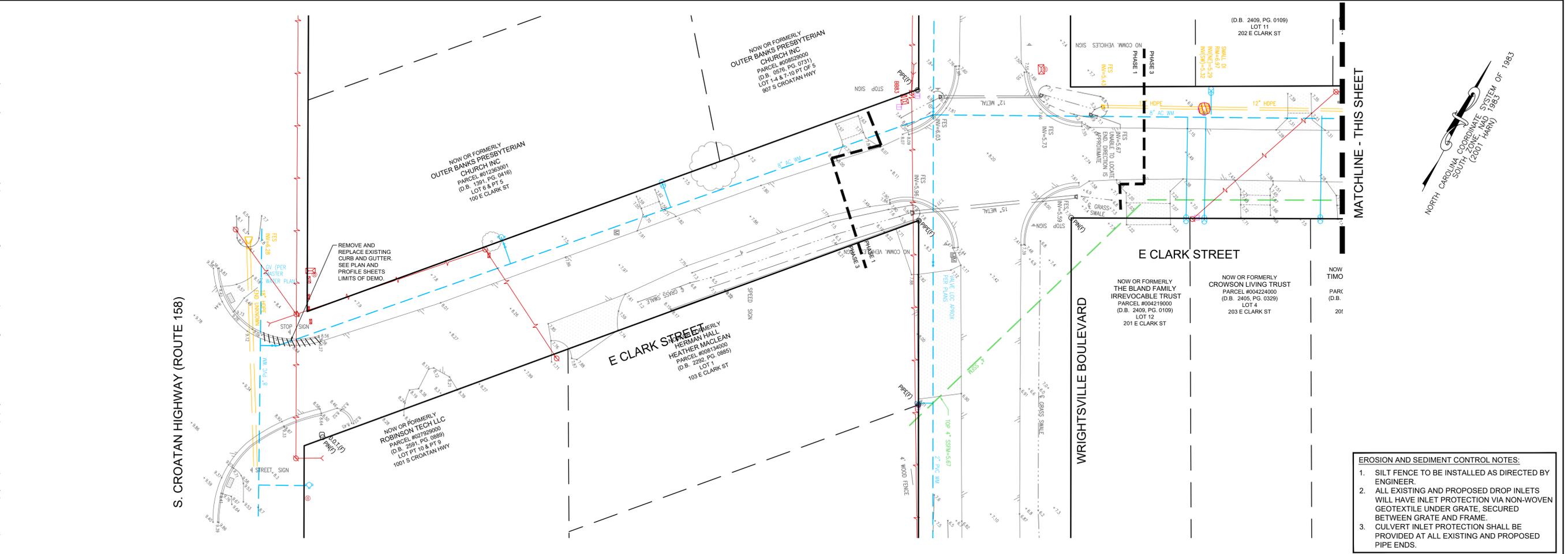
- EROSION AND SEDIMENT CONTROL NOTES:**
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MATCHLINE - THIS SHEET



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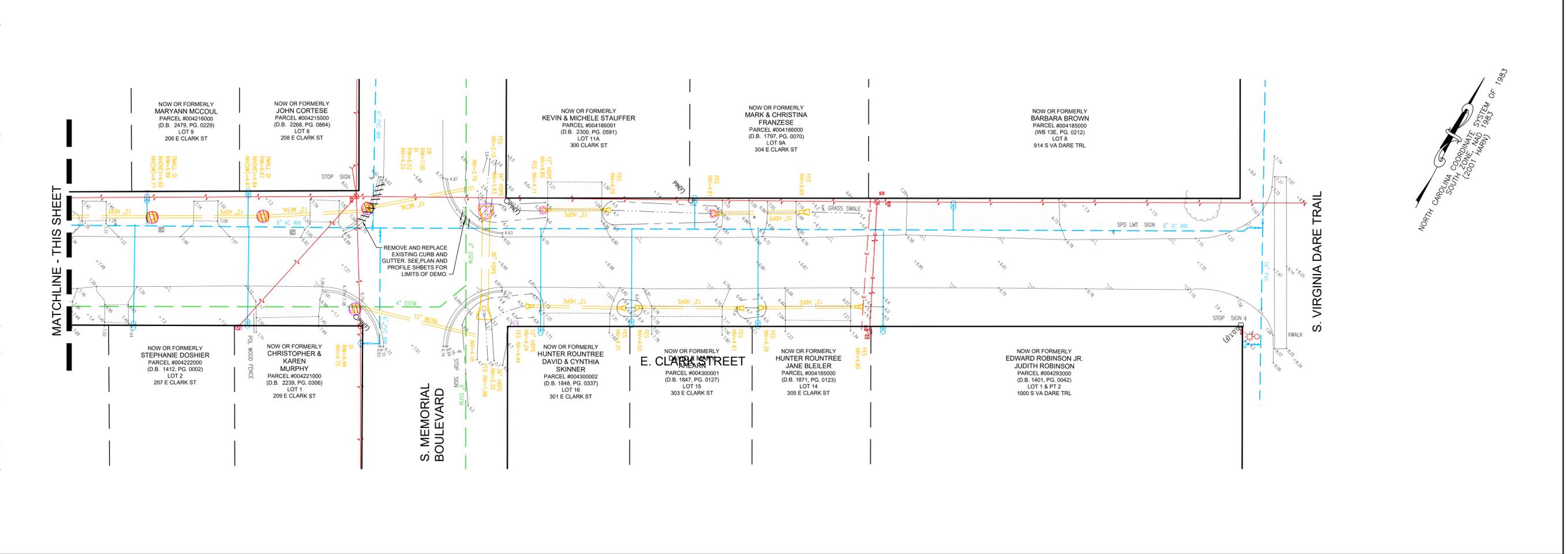


- EROSION AND SEDIMENT CONTROL NOTES:**
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NO.	DATE	DESCRIPTION



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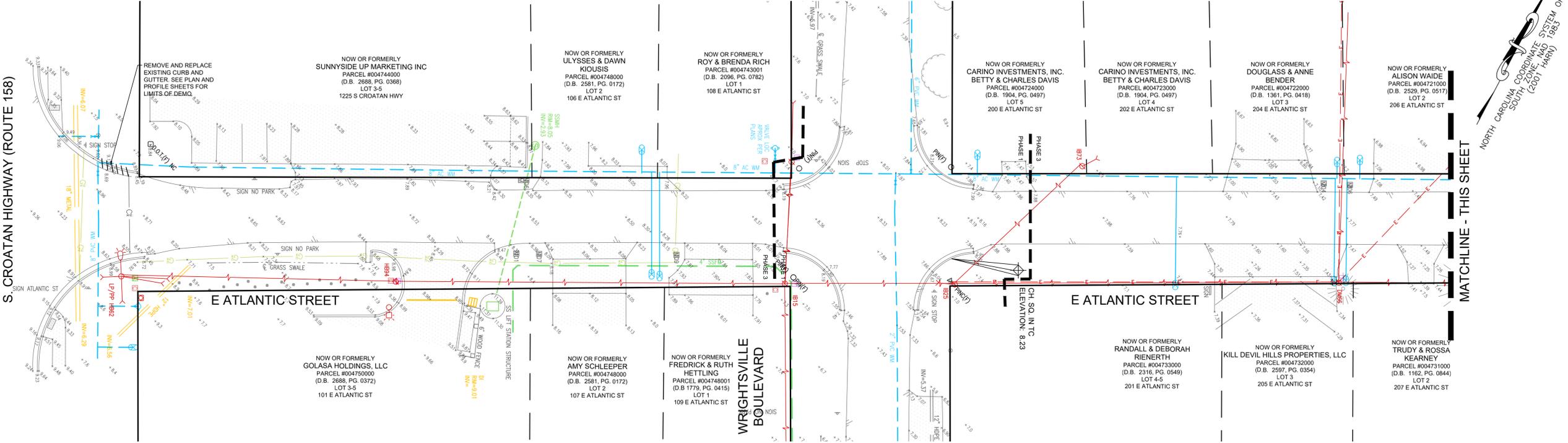


**SOUTHEAST AREA WATERMAIN IMPROVEMENTS**  
TOWN OF KILL DEVIL HILLS  
DARE COUNTY, NORTH CAROLINA

SHEET NAME	EXISTING CONDITIONS
SHEET #	C-110

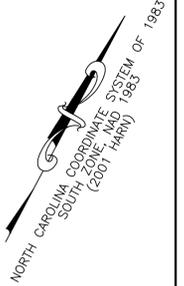
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S CROATAN HIGHWAY (ROUTE 158)



**EROSION AND SEDIMENT CONTROL NOTES:**

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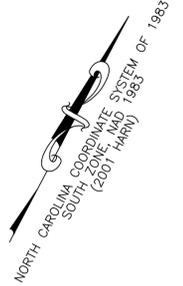
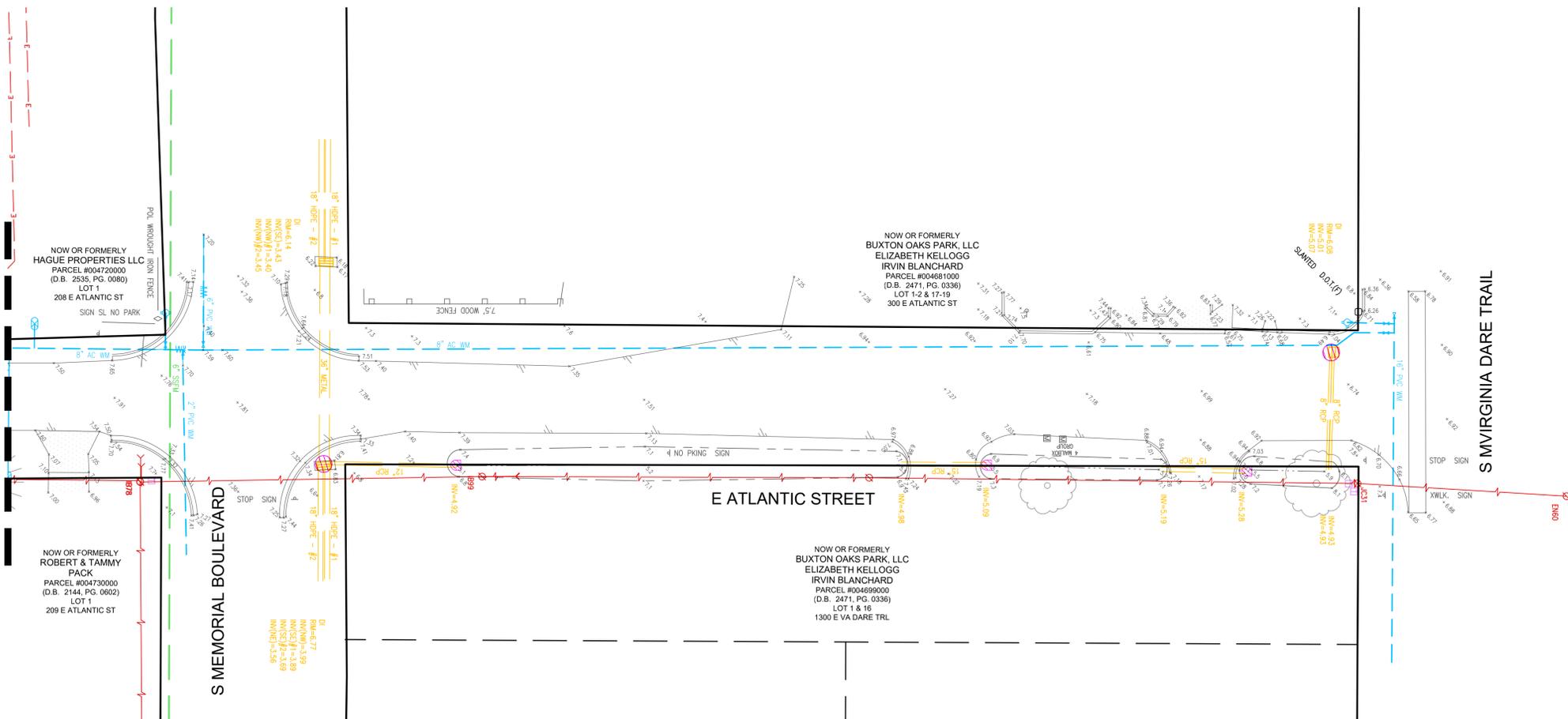


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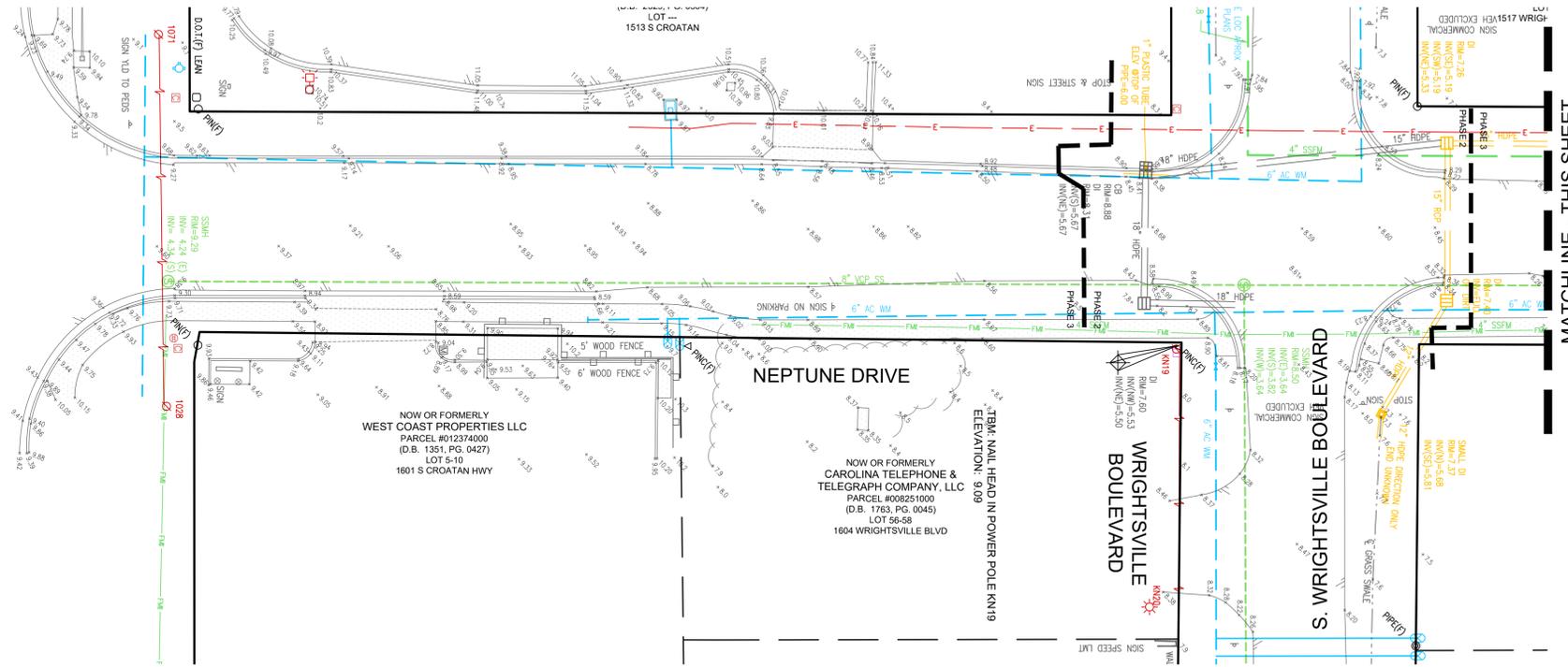
**SOUTHEAST AREA  
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DARE COUNTY, NORTH CAROLINA

SHEET NAME  
**EXISTING  
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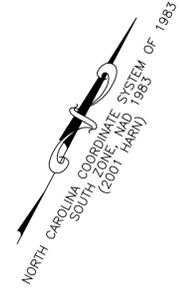
SHEET #  
**C-111**

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S. CROATAN HIGHWAY (ROUTE 158)



MATCHLINE - THIS SHEET



- EROSION AND SEDIMENT CONTROL NOTES:**
1. SILT FENCE TO BE INSTALLED AS DIRECTED BY ENGINEER.
  2. ALL EXISTING AND PROPOSED DROP INLETS WILL HAVE INLET PROTECTION VIA NON-WOVEN GEOTEXTILE UNDER GRATE, SECURED BETWEEN GRATE AND FRAME.
  3. CULVERT INLET PROTECTION SHALL BE PROVIDED AT ALL EXISTING AND PROPOSED PIPE ENDS.

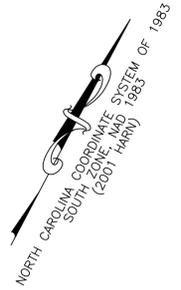
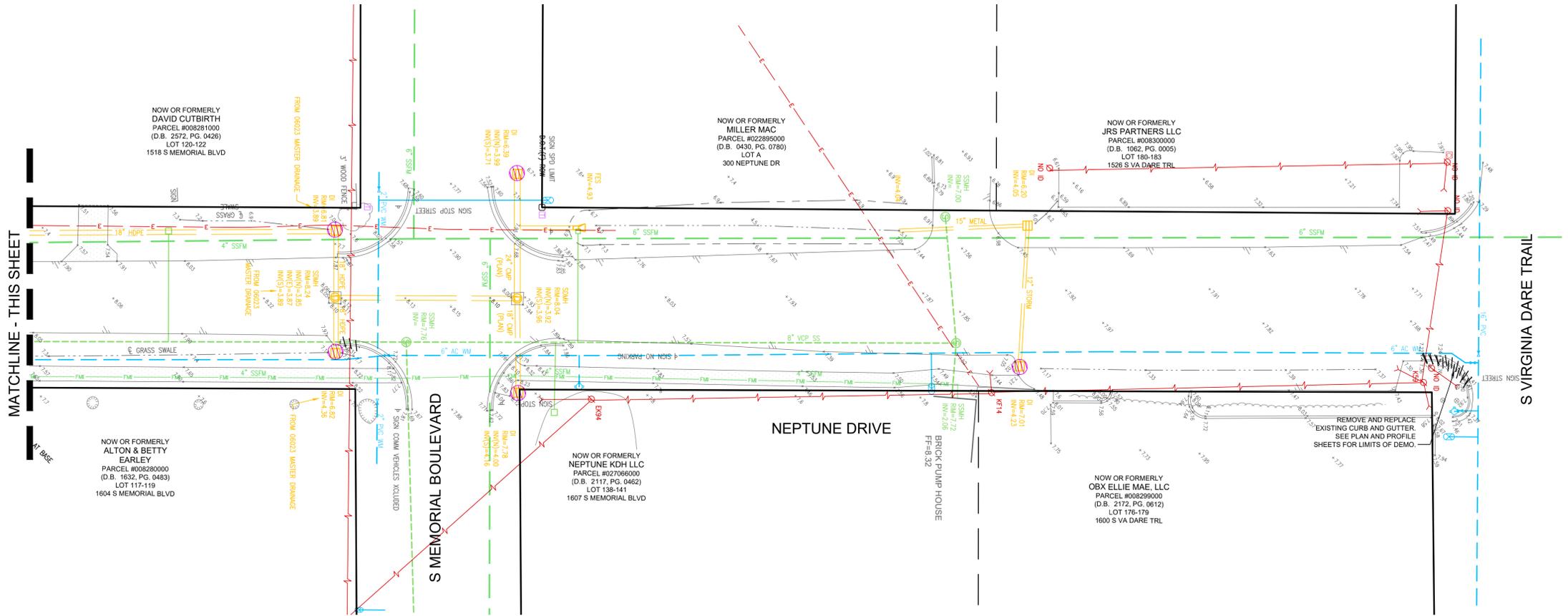
REVISIONS

NO.	DATE	DESCRIPTION



Project #	V23026
Drawn by	KYD
Submittal Date	03/01/2024
Scale	AS NOTED
SWaM Certification	715559
VA Firm #	0405001994

MATCHLINE - THIS SHEET



**SOUTHEAST AREA  
WATERMAIN IMPROVEMENTS**  
TOWN OF KILL DEVIL HILLS  
DARE COUNTY, NORTH CAROLINA

SHEET NAME  
**EXISTING  
CONDITIONS**

SHEET #  
**C-112**

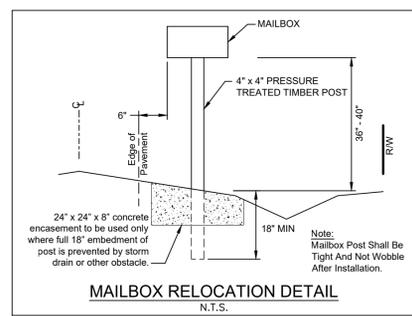
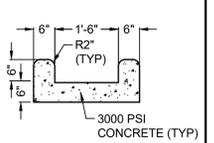
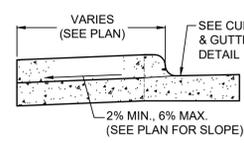
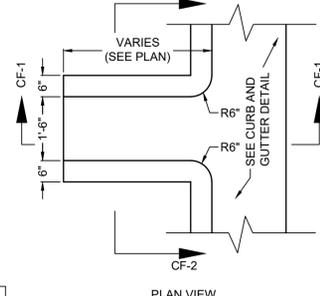
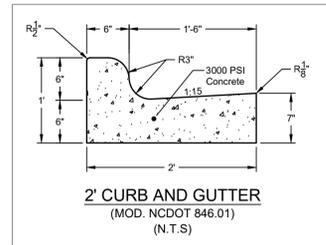
**GENERAL NOTES:**

- The safety of the general public and of the Contractor's workers is of paramount concern on this project. The contractor and all subcontractors shall read carefully and comply with the provisions set forth in the Contract Documents, including, but not limited to Article 4 of the General Conditions.
- The horizontal and vertical location and size of the existing underground utilities shown on the plans is approximate only, with the exception of locations where existing water mains & sanitary sewer force mains were test-pitted by Town forces. The contractor is responsible for contacting the utility owner and "NC One-call" to verify the location and size of all utilities prior to commencing construction activities. Contractors shall take all necessary precautions to protect the health and safety of its crews and the general public. See also Section 3.01, Paragraph A of the Technical Specifications. Hand-digging to verify depth of existing utilities is required for utilities of all depths, even for those installed to non-standard, excessively shallow depths.
- The proposed alignment of the new pipelines and structures may be adjusted in the field to minimize conflicts with existing structures, utilities, etc. The Town must approve all alignment changes. Adjustments of structure tops or risers, from those indicated on the plans, may also be required. See Section 3.08, subparagraph B.4 of the Technical Specifications.
- Contractor shall temporarily remove existing signs, mail boxes, fences, storm sewer pipe and other structures as required for the installation of the utility. Items shall be reinstalled to their original condition. Traffic control signage shall be replaced as soon as work proceeds past their location. In no case shall traffic control signs be taken out of service overnight. All mail boxes are to be replaced daily, include cost in the cost of the work necessitating mailbox removal.
- Contractor shall support existing power poles, fences, culverts, pavement, curbing and other structures during construction; damaged items shall be repaired to their condition before work begin, or better. All such supporting, protecting and repair shall be at no additional cost.
- Removal of concrete driveways needed to install the new line will begin at the edge of the street (except where clearly shown otherwise) and extend back as indicated on these drawings for each driveway; generally, the indicated limit of removal is at an existing joint. Where Contractor finds it necessary to extend cut and replacement shall be without additional compensation. If such additional cut would leave a section of driveway less than 2' long back to the next existing joint or crack, the additional cut shall be extended to that existing joint or crack rather than leave the existing less than 2' section in place. Where the limits of removal do not coincide with an existing joint, the entire width of the driveway shall be sawcut. Replaced concrete drives shall be 6" thick for the first 3' adjacent to the roadway and then may taper to 4" thick. Asphalt drive repairs shall be to the same standard as street pavement repairs as shown on the project details. Contractor shall finish new driveway to match existing. Contractor will photograph all driveways, pavement conditions in areas of work, and well point discharge locations prior to beginning work in order to document all pre-existing conditions. Contractor shall provide electronic copy of photographs to Town prior to construction. See also Roadside Restoration Notes, this sheet.
- Contractor shall install Inlet Protection and Silt Fence as shown in Plan to protect drainage facilities and prevent migration of sediment-laden runoff onto private property. If Contractor elects to have a project-specific "yard" or staging area within or near the project area, he shall prepare and submit for approval to the Engineer and Erosion and Sediment Control Plan, which shall include as a minimum the following:
  - A Temporary Gravel Construction Entrance/Exit as detailed on Sheet C-504.
  - Silt Barrier Fence for Inlet Protection as detailed on Sheet C-504 to protect any storm drainage drop inlets in the vicinity.
  - Gravel Inlet Sediment Control Plan as detailed on Sheet C-504 to protect any curb inlets in the vicinity.
  - Appropriate and effective perimeter protection to protect any sediment-laden runoff from the area from migrating onto adjacent property or entering any ditch or swale. This may be in the form of Silt Fence as detailed on Sheet C-504 or the preservation of an undisturbed, vegetated filter strip not less than 10' in width, or a combination, as deemed effective by the Engineer.
- There will be no direct payments for replacement of storm drainage lines and/or structures disturbed during construction. The cost of replacement, including the provision of new material where needed, shall be included in the other various unit prices of the contract. The existing pipe and structures may be re-used if they have not been damaged during construction and are otherwise structurally sound. The Town, or its designated representative, shall make final determination as to whether or not a section of pipe or structure is suitable to re-use.
- Contractor is responsible for all required traffic control including appropriate signage for temporary detours in accordance with NCDOT and MUTCD standards.
- Prior to any planned water outages the contractor shall notify all affected businesses 48 hours in advance. Contractor shall distribute door hangers approved by the Town for notification of planned water outage. A Town of Kill Devil Hills Department of Public Services staff member shall accompany contractor for all notifications at affected properties. Contractor shall notify the Engineer 7 days in advance of any planned water outages. The Kill Devil Hills Fire Department shall be notified if fire hydrants are affected by the outage.
- Well point discharge water may be released only at locations approved by the Engineer or other Town official. No discharge permitted on private property or where there is no drainage swale, ditch or pipe. Contractor shall extend discharge hose as needed to reach approved release site without additional compensation. Pre-approved sites include the existing stormwater manholes, and at each new MH as it is constructed, provided that the mortar has fully set so as not to be damaged by hose discharge.

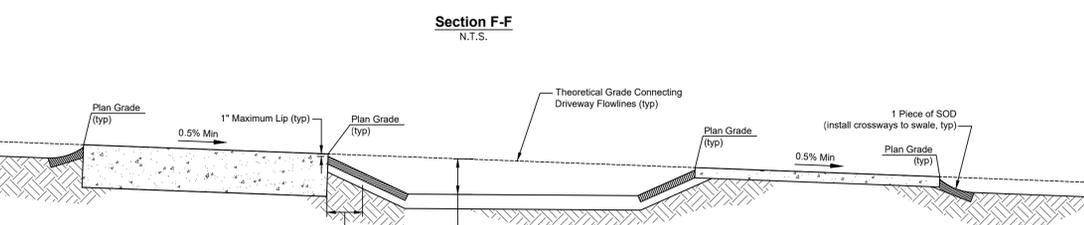
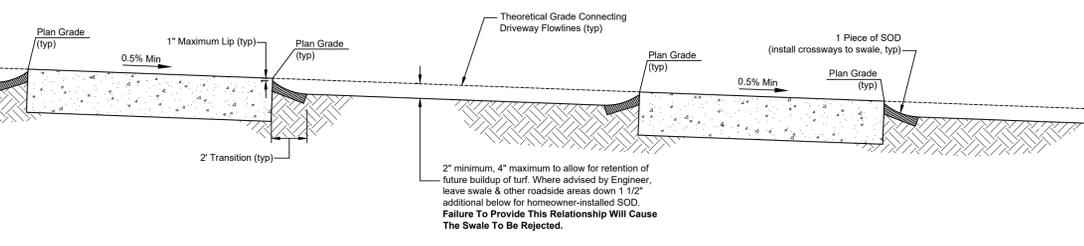
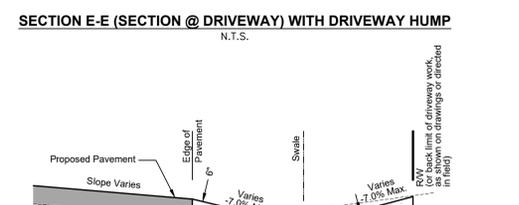
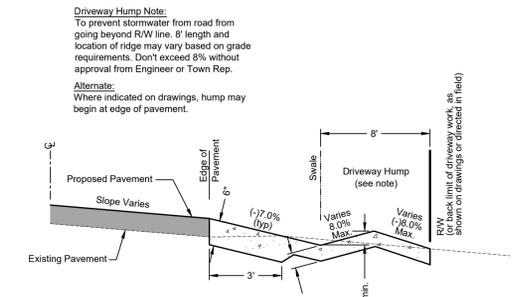
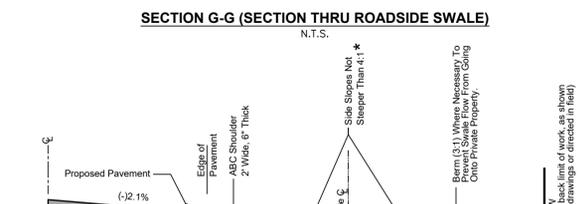
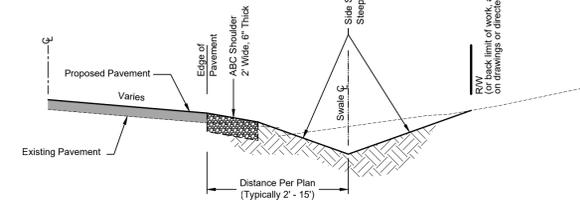
- All work is to be conducted within the street right of way as shown. Contractor shall assure that no improvement installed as part of this project is on private property. No work or other Contractor activity, storage, etc. shall be conducted on private property, or public property outside the street right of way, except with express written permission of the property owner as provided in the Contract Documents.
- If any existing water lines are offset in the proposed work, the existing pipe may be Asbestos-Cement (AC) pipe. The contractor shall verify pipe, material and size prior to ordering fittings.
- AC pipe shall be cut with a chain cutter. Pipe ends shall be cleaned as necessary with a hand saw using the wet method. Only properly trained and certified personnel may work on AC pipe.
- Thrust restraint in the form of concrete and Romac grip rings (or approved equal) shall be used at all tees, bends, and fittings. Thrust blocks shall be used behind Fire Hydrants.
- Contractor shall assure that no Fire Hydrant or other Water Main appurtenance, or portion of same, is on private property.
- Existing pipe, structures, frames and/or grates, fittings and other materials to be removed in performing the work shall be removed with care and delivered to the Town's yard or other facility as directed by the Town's representative, unless said representative advises contractor in writing that such materials are not wanted, in which case they may be salvaged by the contractor or shall be disposed of properly.
- Stub that receives flow shall have a female/bell factory end. Stub that discharges flow shall have a male/spigot factory end.

**ROADSIDE RESTORATION NOTES:**

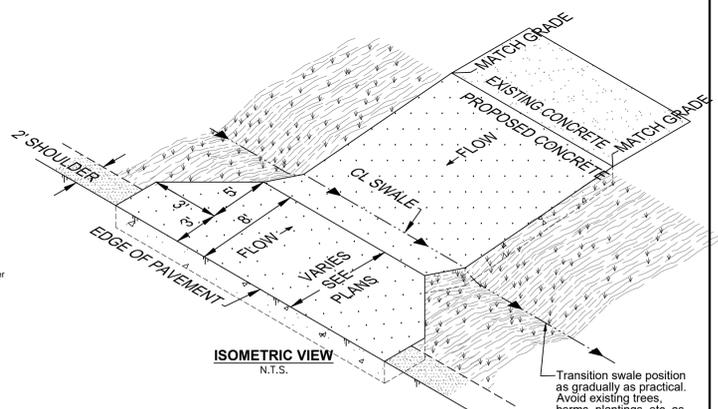
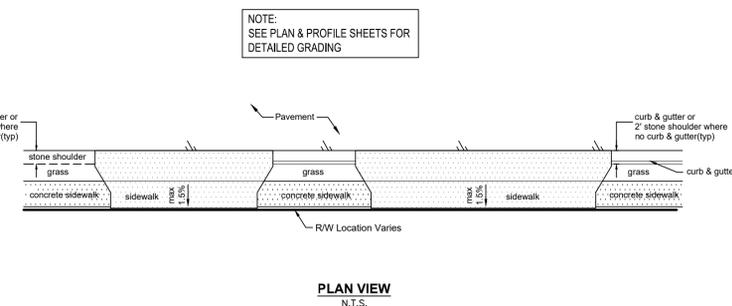
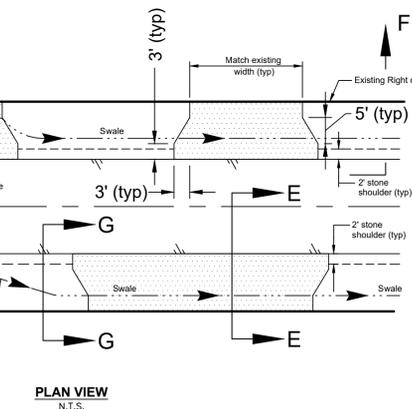
- Except where otherwise directed by the Engineer or the Owner, the contractor shall restore the roadside area subject to the following:
- Driveways shall be replaced in accordance with General Note 6 on this sheet and details provided elsewhere in these Drawings, and in the Technical Specifications. In addition, driveways, and portions of driveways, being removed and replaced with this work shall have a positively-graded flowline established where feasible. Generally, it shall be considered feasible to establish such a flowline unless the driveway (or portion) has a strong (>2%) slope toward the street. The Engineer or his representative will, upon Contractor's request, provide guidance in establishing flowline grades.
  - The formwork for all driveways and entrances shall be inspected and approved by the Engineer or his representative, or by Town staff, before placement of driveway materials.
  - Except where waived by the Engineer or his representative, or by Town staff, earthen areas between driveways shall be graded to form a swale, see details on this sheet. Unless otherwise noted on the drawings, the grade of such swale shall be established by connecting the grades of the driveway flowlines described above, but lowered by 2" as an allowance for the natural buildup of turf. Generally, the requirement to establish such swales shall not be waived except in cases where the prevailing grade in the vicinity of the work makes it impossible to attain a swale without excessive cuts or excessively steep side slopes. The removal and disposal of any excess material generated by establishment of such swales shall be incidental to the work.
  - Generally, where adjacent property owners have plantings, landscape materials, ornamental objects, etc. within the right of way, those items will be removed by such owners in response to notice by the Town. Any remaining items not removed shall generally be deemed abandoned by their owner and shall be removed as necessary to enable installation of the work, and disposed of in a lawful manner. In case of any doubt as to the status of any such item, Contractor shall ask the Engineer or Owner's representative for a determination.
  - All roadside areas which are disturbed by the Contractor's work, but which are not to be replaced with concrete, asphalt or other hard surface, shall have turf established in accordance with the provisions of these Drawings and the other Contract Documents.
  - The Contractor shall use great care to avoid damage to the pavement of existing roadways, paved shoulders, driveways and bike/multipurpose lanes. Such care may include the selection of the type of equipment (wheeled or tracked, type of track, etc.) used, the placement of protective materials over such surfaces, and/or other measures. Contractor shall be responsible for all damage caused during construction. Cracked or otherwise damaged concrete pavement shall be cut out and replaced, with finish matching as nearly as practical, to the extent set by the representative of the Engineer or Owner. Cracked, scarred, gouged or damaged asphalt surfaces shall be repaired or replaced if, in the determination of the Engineer, the damage is more than superficial or cosmetic. Generally, scars or gouges deeper than 1/16" will not be deemed superficial or cosmetic. The method of repair or replacement shall be submitted to the Engineer for consideration and approval.



\*Minimize disturbed area during swale construction, leaving existing vegetation where feasible, without exceeding maximum slope of 4:1.



- NOTES:**
- CENTERLINE OF DRIVEWAY SWALE SHALL BE A MINIMUM OF 2" LOWER THAN PROPOSED EP GRADE OR EXISTING DRIVEWAY MATCH GRADE ELEVATION.
  - ALL NEW DRIVEWAYS, WHERE NONE EXIST OF CONCRETE OR ASPHALT, SHALL BE CONCRETE AND EXTEND FROM THE ROAD SURFACE TO THE TOWN RIGHT OF WAY. CONCRETE DRIVEWAYS SHALL BE A MINIMUM OF TEN FEET (10') IN WIDTH AND FOUR INCHES (4") IN DEPTH, EXCEPT FOR THE FIRST THREE FEET (3') ADJACENT TO THE PAVED ROAD SURFACE WHICH SHALL BE SIX INCHES (6") IN DEPTH, 3000 PSI CONCRETE. ASPHALT SHALL BE TWO INCHES (2") IN DEPTH WITH FOUR INCHES (4") OF A.B.C. WIDTHS OR LENGTHS EXCEEDING THESE SHALL BE THE RESPONSIBILITY OF THE PROPERTY OWNER EXCEPT WHERE AN EXISTING CONCRETE OR ASPHALT DRIVEWAY IS WIDER THAN TEN FEET (10'), IT SHALL BE REPLACED IN KIND.
  - AT RIGHT OF WAY LINE, LONGITUDINAL SLOPE OF DRIVEWAY SHALL BE TOWARD THE STREET, NEVER TOWARD THE DWELLING.
  - FORM AND PLACE DRIVEWAYS WITH SWALES AT PLAN GRADE, BY SURVEY.
  - DRIVEWAYS NOT WITHIN REASONABLE TOLERANCE, AS DETERMINED BY ENGINEER, OF PLAN GRADE WILL BE REJECTED.
  - IN ALL CASES, DRIVEWAY SWALES SHALL HAVE A STRAIGHT, CONTINUOUS FALL ACROSS ENTIRE DRIVEWAY. SWALES WITH PONDING DEEPER THAN 1/2" IMMEDIATELY AFTER RAIN AND/OR FLOW STOPS WILL BE REJECTED.
  - WHERE FIELD CONDITIONS ARE FOUND WHICH APPEAR TO MAKE COMPLIANCE WITH DESIGN GRADES AND THESE STANDARDS IMPOSSIBLE, OR WHICH APPEAR TO RESULT IN EXCESSIVE OR INAPPROPRIATE SLOPES, CONTACT ENGINEER IMMEDIATELY.
  - ALL DRIVEWAYS SHALL BE BROOM-FINISHED EXCEPT EXISTING EXPOSED AGGREGATE SHALL BE PATCHED OR REPLACED, AS APPLICABLE, WITH EXPOSED AGGREGATE.



**ENTRANCE / ROADSIDE SWALE DETAILS**

**ENTRANCE WITH SIDEWALK DETAIL**

REVISIONS			

**AMERICAN Engineering**  
 American Engineering Associates - Southeast, P.A.  
 830 Greenbrier Circle - Suite 110  
 Chesapeake, Virginia 23320 (757) 468-6800

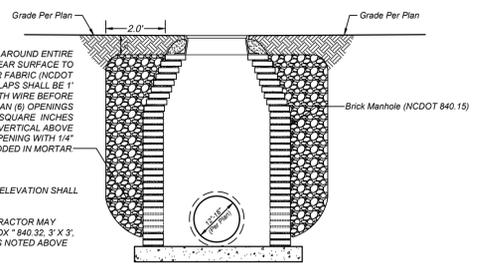
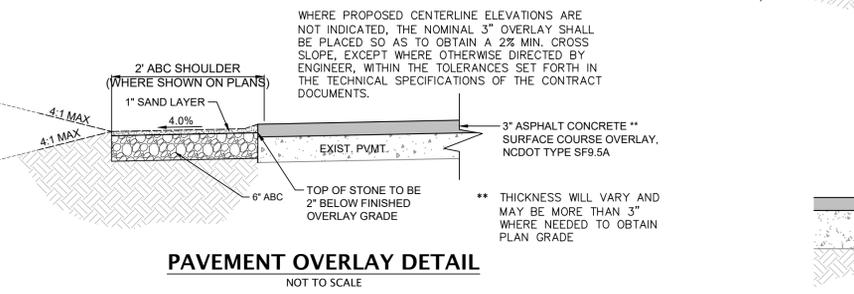
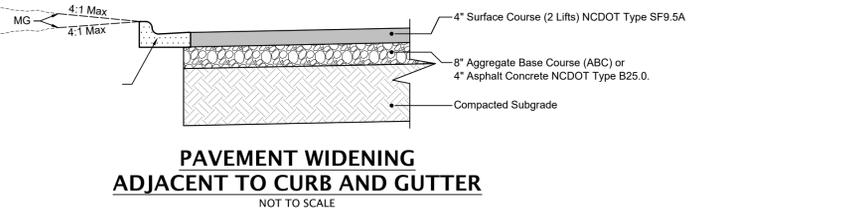
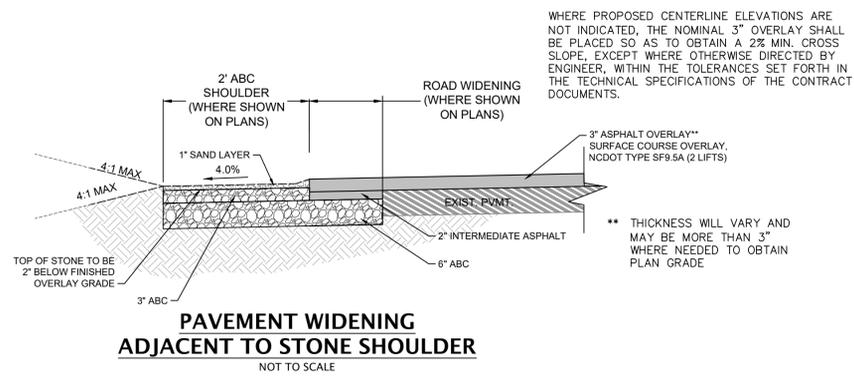


Project #	V23026
Drawn by	KYD
Submit Date	03/01/2024
Scale	AS NOTED
SWaM Certification	715559
VA Firm #	0405001994

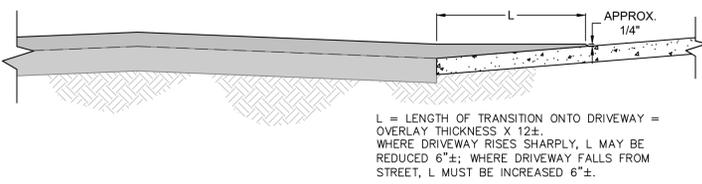
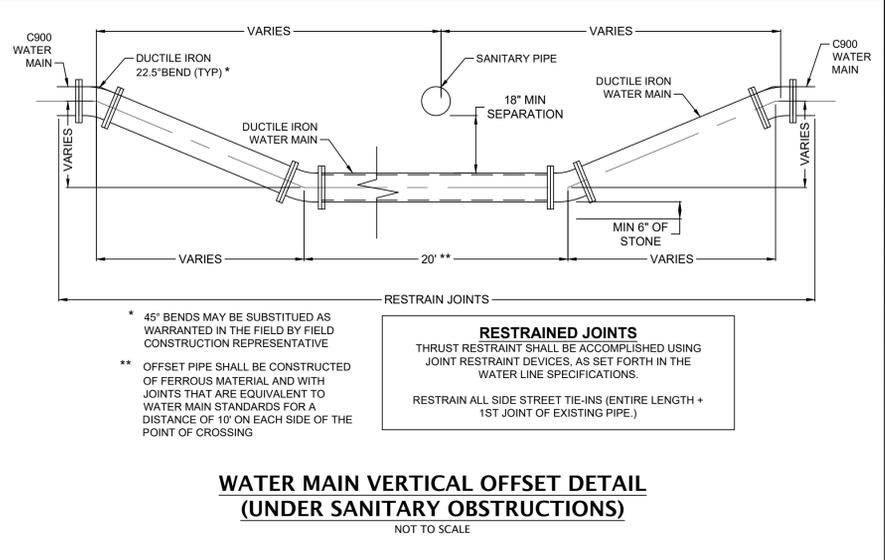
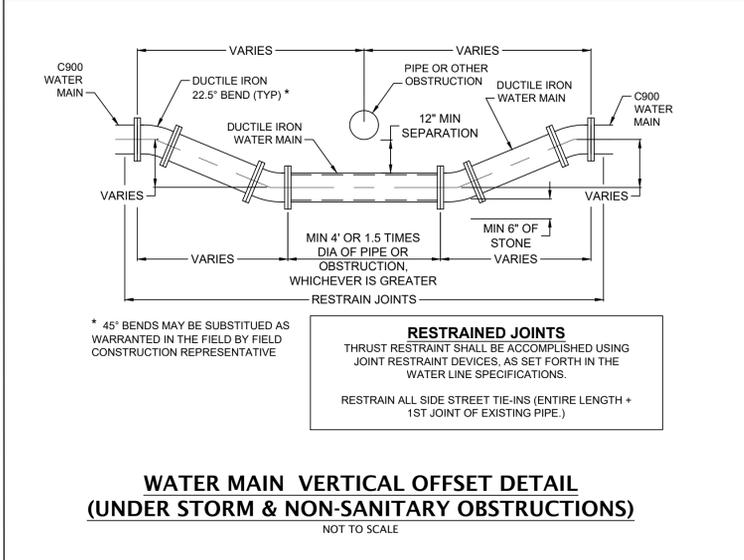
**SOUTHEAST AREA WATERMAIN IMPROVEMENTS**  
 TOWN OF KILL DEVIL HILLS  
 DARE COUNTY, NORTH CAROLINA

SHEET NAME	DETAILS
SHEET #	C-501

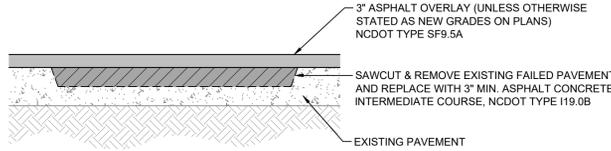
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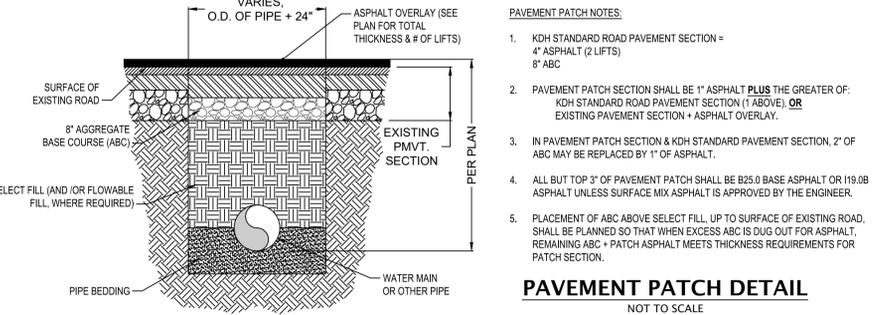
**MANHOLE PLUS (MH+)**



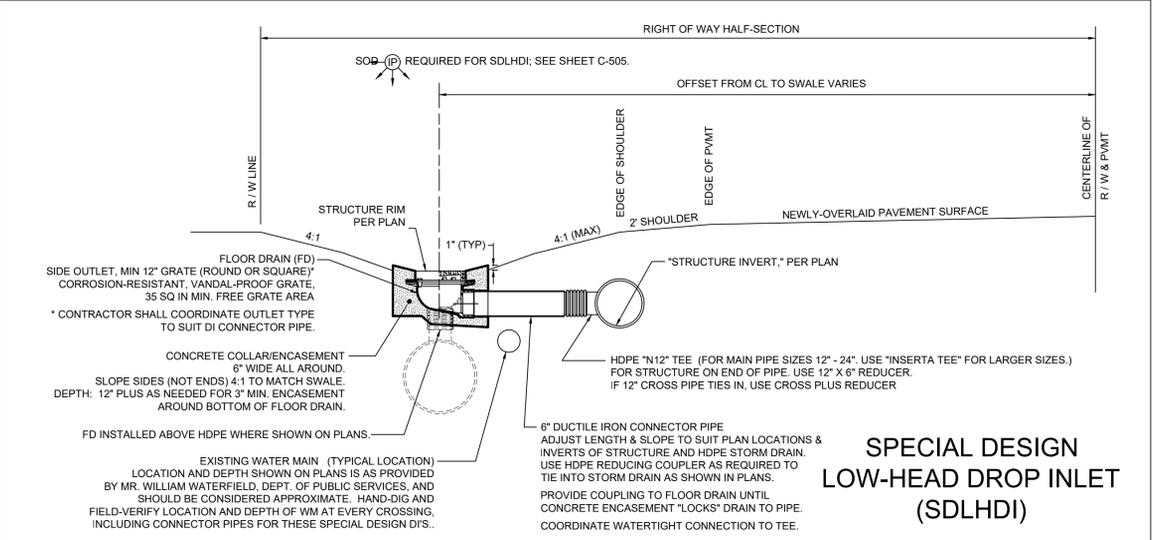
**DRIVEWAY FEATHERING DETAIL**



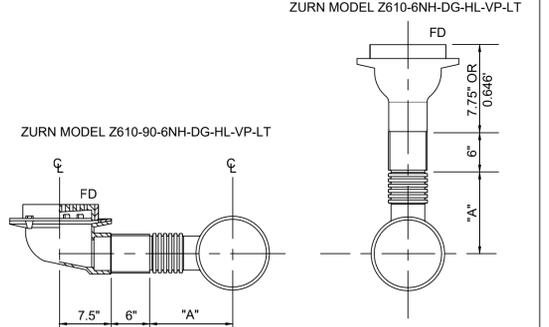
**SPOT PATCH REPAIR DETAIL (WHERE NOTED ON PLAN OR DIRECTED BY ENGINEER)**



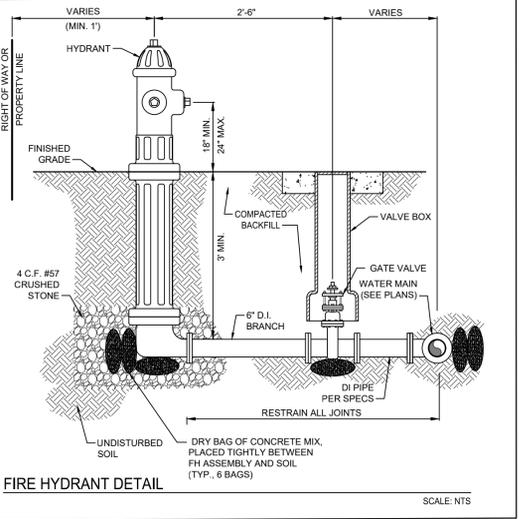
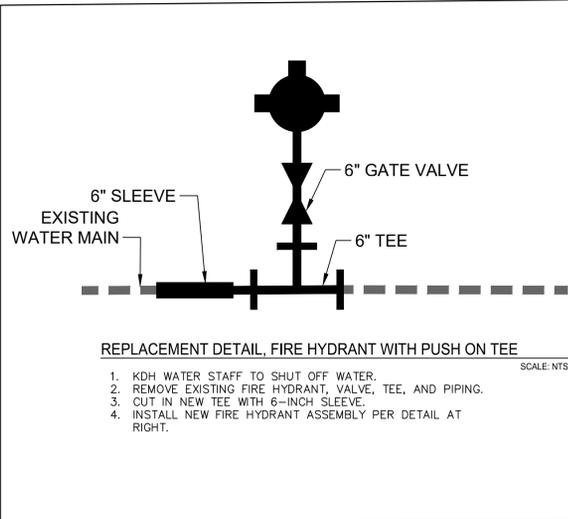
**PAVEMENT PATCH DETAIL**



**DETAIL FOR ROAD CROSSING TO SDLHDI**



TEE SIZE	"A"	DI CONNECTOR	TO FD	CL TO CL FD	INVERT TO RIM FD
24" X 6" TEE	21.0"	6" (MIN)	7.75"	34.75" OR 2.90'	46.75" OR 3.90'
18" X 6" TEE	17.8"	6" (MIN)	7.75"	31.55" OR 2.63'	40.55" OR 3.38'
15" X 6" TEE	16.1"	6" (MIN)	7.75"	29.85" OR 2.49'	37.35" OR 3.11'
12" X 6" TEE	14.5"	6" (MIN)	7.75"	28.25" OR 2.35'	34.25" OR 2.85'



NO.	REVISIONS

**AMERICAN Engineering**  
American Engineering Associates - Southeast, P.A.  
830 Greenbrier Circle - Suite 110  
Chesapeake, Virginia 23320 (757) 468-6800



Project #	V23026
Drawn by	KYD
Submit Date	03/01/2024
Scale	AS NOTED
SWaM Certification	715559
VA Firm #	0405001994

**SOUTHEAST AREA WATERMAIN IMPROVEMENTS**  
TOWN OF KILL DEVIL HILLS  
DARE COUNTY, NORTH CAROLINA

SHEET NAME	DETAILS
SHEET #	C-502

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**NOTES:** MORTAR JOINTS 1/2" +/- 1/8" THICK. USE CLASS "B" CONCRETE THROUGHOUT. USE FORMS FOR CONSTRUCTION OF THE BOTTOM SLAB. DUCT FOR PIPE(S) FROM TOTAL CU. YDS. OF BRICK MASONRY. USE #4 BAR DOWELS AT 12" CENTERS FOR ALL PIPE SIZES. PROVIDE ALL CATCH BASINS OVER 3'-6" IN DEPTH WITH STEPS 12" ON CENTER. USE STEPS WHICH COMPLY WITH STD. DRAWING 840.66. USE TYPE "E", "F", AND "G" GRATES UNLESS OTHERWISE INDICATED. USE BRICK OR CONCRETE BLOCK WHICH COMPLIES WITH THE REQUIREMENTS OF SECTION 840 OF THE STANDARD SPECIFICATIONS. IF REINFORCED CONCRETE PIPE IS SET IN BOTTOM SLAB OF BOX, ADD TO SLAB AS SHOWN ON STD. NO. 840.00. FOR 8'-0" IN HEIGHT OR LESS, USE 8" WALL, OVER 8'-0" IN HEIGHT, USE 12" WALL TO 6'-0" FROM TOP OF WALL AND 8" WALL FOR THE REMAINING 6'-0". QUANTITIES TO BE ADJUSTED ACCORDINGLY. CONSTRUCT WITH PIPE CROWNS MATCHING. CHAMFER ALL EXPOSED CORNERS 1". DRAWING NOT TO SCALE.

STATE OF NORTH CAROLINA  
DEPT. OF TRANSPORTATION  
DIVISION OF HIGHWAYS  
RALEIGH, N.C.

ROADWAY STANDARD DRAWING FOR  
**BRICK CATCH BASIN**  
12' THRU 54' PIPE

SHEET 1 OF 2  
**840.01**

**GENERAL NOTES:** MORTAR JOINTS 1/2" +/- 1/8" THICK. USE CLASS "B" CONCRETE THROUGHOUT. USE FORMS FOR CONSTRUCTION OF THE BOTTOM SLAB. DUCT FOR PIPE(S) FROM TOTAL CU. YDS. OF BRICK MASONRY. PROVIDE ALL CATCH BASINS OVER 3'-6" IN DEPTH WITH STEPS 12" ON CENTER. USE STEPS WHICH COMPLY WITH STD. DRAWING 840.66. USE BRICK OR CONCRETE BLOCK WHICH COMPLIES WITH THE REQUIREMENTS OF SECTION 840 OF THE STANDARD SPECIFICATIONS. IF REINFORCED CONCRETE PIPE IS SET IN BOTTOM SLAB OF BOX, ADD TO SLAB AS SHOWN ON STD. NO. 840.00. FOR 8'-0" IN HEIGHT OR LESS, USE 8" WALL, OVER 8'-0" IN HEIGHT, USE 12" WALL TO 6'-0" FROM TOP OF WALL AND 8" WALL FOR THE REMAINING 6'-0". QUANTITIES TO BE ADJUSTED ACCORDINGLY. CONSTRUCT WITH PIPE CROWNS MATCHING. SEE STANDARD DRAWING 840.25 FOR ATTACHMENT OF FRAMES AND GRATES. DO NOT USE BRICK MASONRY DROP INLET IN LOCATIONS SUBJECT TO TRAFFIC. CHAMFER ALL EXPOSED CORNERS 1". DRAWING NOT TO SCALE.

STATE OF NORTH CAROLINA  
DEPT. OF TRANSPORTATION  
DIVISION OF HIGHWAYS  
RALEIGH, N.C.

ROADWAY STANDARD DRAWING FOR  
**BRICK DROP INLET**  
12' THRU 30' PIPE

SHEET 1 OF 1  
**840.15**

PIPE	DIMENSIONS OF BOX & PIPE			CUBIC YARDS CONCRETE	CUBIC YARDS BRICK MASONRY	DEDUCTIONS FOR ONE PIPE	
	D	A	B			WALL PER FOOT HT.	TOTAL BRICK MASONRY FOR MIN. HEIGHT, H
12"	3'-0"	2'-2"	2'-0"	0.268	0.313	0.020	0.032
15"	3'-0"	2'-2"	2'-3"	0.268	0.313	0.000	0.047
18"	3'-0"	2'-2"	2'-6"	0.268	0.313	0.078	0.065
24"	3'-0"	2'-2"	3'-0"	0.268	0.313	0.835	0.113
30"	3'-0"	2'-2"	3'-6"	0.268	0.313	0.991	0.170

EXPANSION JOINTS  
4'-8" 4'-6"

CURB AND GUTTER WITH CATCH BASIN ON STEEP GRADES

EXPANSION JOINT  
3'-0" 3'-0"

DEPRESSED GUTTER LINE

NORMAL CURB AND GUTTER ON LIGHT GRADES

EXPANSION JOINT  
1'-0" 1'-0"

DEPRESSED GUTTER LINE

NORMAL CURB AND GUTTER ON STEEP GRADES

STATE OF NORTH CAROLINA  
DEPT. OF TRANSPORTATION  
DIVISION OF HIGHWAYS  
RALEIGH, N.C.

ROADWAY STANDARD DRAWING FOR  
**BRICK CATCH BASIN**  
12' THRU 54' PIPE

SHEET 2 OF 2  
**840.01**

PIPE	DIMENSIONS OF BOX AND PIPE			TOP SLAB DIMENSIONS			CU. YDS. CONC. IN BOX			BRICK MASONRY			DEDUCTIONS ONE PIPE				
	D	A	B	E	F	H	NO.	LENGTH	NO.	LENGTH	NO.	LENGTH	TOTAL	WALL AND CHAMFER	C.S.	R.C.	
12"	3'-0"	2'-2"	2'-0"	2'-9"	2'-9"	2'-9"	1	2'-9"	1	2'-9"	1	2'-9"	0.281	0.883	1.164	0.020	0.042
15"	3'-0"	2'-2"	2'-3"	3'-0"	3'-0"	3'-0"	1	3'-0"	1	3'-0"	1	3'-0"	0.281	0.969	1.244	0.031	0.047
18"	3'-0"	2'-2"	2'-6"	3'-3"	3'-3"	3'-3"	1	3'-3"	1	3'-3"	1	3'-3"	0.281	1.043	1.324	0.044	0.065
24"	3'-0"	2'-2"	3'-0"	3'-9"	3'-9"	3'-9"	1	3'-9"	1	3'-9"	1	3'-9"	0.281	1.204	1.485	0.078	0.121
30"	3'-0"	2'-2"	3'-6"	4'-3"	4'-3"	4'-3"	1	4'-3"	1	4'-3"	1	4'-3"	0.281	1.365	1.766	0.113	0.164
36"	3'-0"	2'-2"	4'-0"	4'-9"	4'-9"	4'-9"	1	4'-9"	1	4'-9"	1	4'-9"	0.281	1.526	1.947	0.148	0.211
42"	3'-0"	2'-2"	4'-6"	5'-3"	5'-3"	5'-3"	1	5'-3"	1	5'-3"	1	5'-3"	0.281	1.687	2.128	0.183	0.261
48"	3'-0"	2'-2"	5'-0"	5'-9"	5'-9"	5'-9"	1	5'-9"	1	5'-9"	1	5'-9"	0.281	1.848	2.309	0.218	0.300
54"	3'-0"	2'-2"	5'-6"	6'-3"	6'-3"	6'-3"	1	6'-3"	1	6'-3"	1	6'-3"	0.281	2.009	2.490	0.253	0.351

\* RISER HAS .321 CUBIC YARDS OF BRICK MASONRY PER FOOT HEIGHT

**CAPITOL FOUNDRY OF VA, INC.**  
2856 CRUSADER CIRCLE  
VIRGINIA BEACH, VA 23453  
PHONE: (757) 427-9431  
FAX: (757) 427-9308  
www.capitolfoundry.net

ALSO AVAILABLE IN  
2-1/2" TALL STD FRAME

PLAN  
11/16" (Typ)

SECTION-Y-Y (GRATE)  
1/2" max. (Typ)

SECTION-X-X (FRAME)  
1 1/2"

'ADA' COMPLIANT 24" X 36" X 4" TALL GRATE & REVERSIBLE FRAME  
MATERIAL SPEC: ASTM A-48 CLASS 35B ITEM #CB-2436\*SH-PED

PEDESTRIAN / BIKE SAFE GRATE

- Nominal Size 24" x 36" x 4".
- Traffic (HS20) Rated.
- No Opening Wider Than 5/8".
- Openings > 35% of Grate area.

Sta. 10+00, 12.00'L  
€ of Structure Both Ways

Sta. 10+00, 12.00'L  
€ of Structure Both Ways

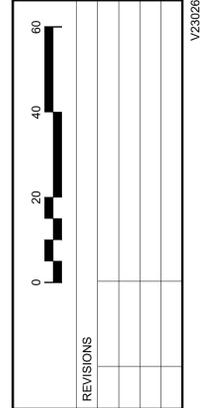
Sta. 10+00, 12.00'L  
Face of Curb € of Hood € of Structure  
Perpendicular to Face of Curb/Hood

Sta. 10+00, 12.00'L  
€ of MH Cover

CATCH BASIN (CB)  
NCDOT 840.04 & 840.02

MANHOLE (MH)  
NCDOT 840.51 & 840.53

**STORM STRUCTURE STATION AND OFFSET REFERENCE CHART**



**AMERICAN Engineering**  
American Engineering Associates - Southeast, P.A.  
830 Greenbrier Circle - Suite 110  
Chesapeake, Virginia 23320 (757) 468-6800



Project #	V23026
Drawn by	KYD
Submission Date	03/01/2024
Scale	AS NOTED
SWaM Certification	715559
VA Firm #	0405001994

**SOUTHEAST AREA WATERMAIN IMPROVEMENTS**  
TOWN OF KILL DEVIL HILLS  
DARE COUNTY, NORTH CAROLINA

SHEET NAME  
**DETAILS**

SHEET #  
**C-503**

**SOIL EROSION AND SEDIMENTATION CONTROL NOTES:**

- PROPOSED AREA TO BE DISTURBED CONSISTS OF AREA WITHIN R/W OF THE FOLLOWING STREETS:  
E. BAUM ST FROM US 158 TO MEMORIAL BLVD.  
E. CLARK ST FROM US 158 TO S. VIRGINIA DARE TRAIL  
E. ATLANTIC ST FROM US 158 TO S. VIRGINIA DARE TRAIL  
NEPTUNE DR FROM US 158 TO S. VIRGINIA DARE TRAIL
- AFTER ACCEPTANCE OF ALL PROJECT WORK, AND FULL ESTABLISHMENT OF PERMANENT VEGETATION, CONTINUED MAINTENANCE OF PERMANENT VEGETATION SHALL BE THE RESPONSIBILITY OF OWNER.
- PROVIDE A GROUND COVER (TEMPORARY OR PERMANENT) ON EXPOSED SLOPES, FOLLOWING COMPLETION OF ANY PHASE OF GRADING, AND, A PERMANENT GROUND COVER FOR ALL DISTURBED AREAS WITHIN THE TIME FRAMES SET FORTH IN THE GROUND STABILIZATION TIME REQUIREMENTS PROVISIONS ON THIS SHEET. IF SAID ACTIVITIES OCCUR OUTSIDE TEMPORARY VEGETATION SEEDING DATES (APRIL 1 THRU SEPT 30) THE TEMPORARY VEGETATION SEEDING SPECIFICATIONS SHALL BE FOLLOWED FOR PLANTING UNTIL THE NEXT APPROPRIATE PERMANENT SEEDING PERIOD, AT WHICH TIME PERMANENT VEGETATION SHALL BE ESTABLISHED ACCORDING TO PERMANENT VEGETATION SEEDING SPECIFICATIONS (SEE PERM AND TEMP SEEDING SPECIFICATIONS THIS SHEET).
- IF EXCESSIVE WIND EROSION OR STORM WATER RUNOFF EROSION DEVELOPS DURING TIME OF CONSTRUCTION IN ANY LOCATION ON THE PROJECT SITE, ADDITIONAL SAND OR SILT FENCING SHALL BE INSTALLED AS DIRECTED BY THE ENGINEER OR LOCAL GOVERNING OFFICIAL SO AS TO PREVENT DAMAGE TO ADJACENT PROPERTY. SEE SAND AND FENCE DETAIL THIS SHEET.
- SOIL EROSION AND SEDIMENTATION CONTROLS TO BE INSPECTED, MAINTAINED AND REPAIRED AS NECESSARY UNTIL PERMANENT VEGETATION OR OTHER EFFECTIVE STABILIZATION IS ESTABLISHED.

**CONSTRUCTION SCHEDULE**

- OBTAIN PLAN APPROVAL AND OTHER APPLICABLE PERMITS. NOTIFY ALL UTILITY COMPANIES (BY CONTRACTOR) AND PROPERTY OWNERS (BY OWNER).
- FLAG AND / OR ROUGH STAKE WORK LIMITS.
- HOLD PRE-CONSTRUCTION CONFERENCE (OWNER, CONTRACTOR, ENGINEER, AND APPROPRIATE GOVERNMENT OFFICIALS) AT LEAST ONE WEEK PRIOR TO START OF CONSTRUCTION ACTIVITIES.
- INSTALL SILT FENCE AS NEEDED.
- COMPLETE CLEARING AND GRUBBING PROCEDURES.
- INSTALL WATER IMPROVEMENTS.
- INSTALL STORM DRAINAGE PIPES AND STRUCTURES. INSTALL INLET PROTECTION ON NEW STRUCTURES. CUT DRIVEWAYS TO SUIT PIPE AND SWALE INSTALLATION.
- INSTALL NEW ROADSIDE SWALES BY CUTTING, OR BY PARTIALLY FILLING EXISTING DITCHES, AS APPROPRIATE. LEAVE SWALES 2" TO 4" LOW (PER SECTION F-F, SHEET C-501) AS ALLOWANCE FOR SEDIMENT DEPOSITION.
- REPLACE DRIVEWAYS AS SHOWN.
- INSTALL OVERLAY FOR ROADWAYS. FINE-GRADE SWALE AREAS. SEED AND MULCH ALL DISTURBED AREAS.
- ALL EROSION & SEDIMENTATION CONTROL PRACTICES WILL BE INSPECTED WEEKLY AND AFTER HEAVY RAINFALL EVENTS, NEEDED REPAIRS WILL BE MADE IMMEDIATELY.
- ONCE PROJECT AREA IS FULLY STABILIZED, REMOVE EROSION AND SEDIMENT CONTROL MEASURES.

SEEDING SPECIFICATIONS			
PERMANENT VEGETATION		TEMPORARY VEGETATION	
SEEDING DATES: APRIL 1 - SEPTEMBER 30		SEEDING DATES: OCTOBER 1 - MARCH 31	
SEED MIXTURE	APPLICATION RATES / ACRE	SEED MIXTURE	APPLICATION RATES / ACRE
BAHIA	50 LBS	RYE GRAIN	175 LBS
COMMON BERMUDA (UN HULLED)	50 LBS	FERTILIZER	10-10-10 @ 1,000 LB/ACRE
GERMAN MILLETT	15 LBS	MULCH	
FESCUE	20 LBS		APPLY 4,000 LB/ACRE STRAW. ANCHOR STRAW BY TACKLING WITH ASPHALT, NETTING, OR A MULCH ANCHORING TOOL. A DISK WITH BLADES SET NEARLY STRAIGHT CAN BE USED AS A MULCH ANCHORING TOOL.
FERTILIZER	26-13-13 @ 500 LB/ACRE		
MULCH	APPLY 4,000 LB/ACRE STRAW. ANCHOR STRAW BY TACKLING WITH ASPHALT, NETTING, OR A MULCH ANCHORING TOOL. A DISK WITH BLADES SET NEARLY STRAIGHT CAN BE USED AS A MULCH ANCHORING TOOL.		

**GENERAL:**  
FERTILIZER:  
RATES SHOWN ARE GENERAL RECOMMENDATIONS. FREQUENCY AND AMOUNT OF FERTILIZATION CAN BEST BE DETERMINED THROUGH SITE SPECIFIC SOIL TESTING.  
MAINTENANCE:  
SATISFACTORY STABILIZATION AND EROSION CONTROL REQUIRES A COMPLETE VEGETATIVE COVER. EVEN SMALL BREACHES IN VEGETATIVE COVER CAN EXPAND RAPIDLY AND, IF LEFT UNATTENDED, CAN ALLOW SERIOUS SOIL LOSS FROM AN OTHERWISE STABLE SURFACE. A SINGLE HEAVY RAIN IS OFTEN SUFFICIENT TO GREATLY ENLARGE BARE SPOTS, AND THE LONGER REPAIRS ARE DELAYED, THE MORE COSTLY THEY BECOME. PROMPT ACTION WILL KEEP SEDIMENT LOSS AND REPAIR COST DOWN. NEW SEEDLINGS SHOULD BE INSPECTED FREQUENTLY AND MAINTENANCE PERFORMED AS NEEDED. IF RILLS AND GULLIES DEVELOP, THEY MUST BE FILLED IN, RE-SEED, AND MULCHED AS SOON AS POSSIBLE. DIVERSIONS MAY BE NEEDED UNTIL NEW PLANTS TAKE HOLD.

MAINTENANCE REQUIREMENTS EXTEND BEYOND THE SEEDING PHASE. (UNTIL FULL COMPLETION IS DECLARED)

WEAK OR DAMAGED SPOTS MUST BE RE- LIMED, FERTILIZED, MULCHED, AND RE SEEDED AS PROMPTLY AS POSSIBLE. REFERTILIZATION AND/OR WATERING MAY BE NEEDED TO FULLY ESTABLISH VEGETATIVE COVER.

- E & S MEASURES, EXCEPT WHERE OTHERWISE NOTED, ARE TO BE INSTALLED BEFORE WORK BEGINS AND MAINTAINED UNTIL WORKSITE IS FULLY STABILIZED.
- MEASURE REQUIRED DURING PHASE 1 ONLY.
- MEASURE NOT TO BE PROVIDED UNTIL PHASE 2.

**GROUND STABILIZATION TIME REQUIREMENTS**

FROM THE NC DENR/DWQ  
GENERAL PERMIT - NCG 010000  
TO DISCHARGE STORMWATER UNDER THE  
NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM  
FOR  
CONSTRUCTION ACTIVITIES

**SECTION II.B. - STORMWATER POLLUTION PREVENTION REQUIREMENTS IN THE NC CONSTRUCTION GENERAL PERMIT**

**GROUND STABILIZATION**

- A) SOIL STABILIZATION SHALL BE ACHIEVED ON ANY AREA OF A SITE WHERE LAND-DISTURBING ACTIVITIES HAVE TEMPORARILY OR PERMANENTLY CEASED ACCORDING TO THE FOLLOWING SCHEDULE:
- ALL PERIMETER DIKES, SWALES, DITCHES, PERIMETER SLOPES AND ALL SLOPES STEEPER THAN 3 HORIZONTAL TO 1 VERTICAL (3: 1) SHALL BE PROVIDED TEMPORARY OR PERMANENT STABILIZATION WITH GROUND COVER AS SOON AS PRACTICABLE BUT IN ANY EVENT WITHIN 7 CALENDAR DAYS FROM THE LAST LAND-DISTURBING ACTIVITY. ALL OTHER DISTURBED AREAS SHALL BE PROVIDED TEMPORARY OR PERMANENT STABILIZATION WITH GROUND COVER AS SOON AS PRACTICABLE BUT IN ANY EVENT WITHIN 14 CALENDAR DAYS FROM THE LAST LAND-DISTURBING ACTIVITY.
  - CONDITIONS - IN MEETING THE STABILIZATION REQUIREMENTS ABOVE, THE FOLLOWING CONDITIONS OR EXEMPTIONS SHALL APPLY:
    - EXTENSIONS OF TIME MAY BE APPROVED BY THE PERMITTING AUTHORITY BASED ON WEATHER OR OTHER SITE-SPECIFIC CONDITIONS THAT MAKE COMPLIANCE IMPRACTICABLE.
    - ALL SLOPES 50' IN LENGTH OR GREATER SHALL APPLY THE GROUND COVER WITHIN 7 DAYS EXCEPT WHEN THE SLOPE IS FLATTER THAN 4: 1. SLOPES LESS THAN 50' SHALL APPLY GROUND COVER WITHIN 14 DAYS EXCEPT WHEN SLOPES ARE STEEPER THAN 3: 1, THE 7 DAY-REQUIREMENT APPLIES.
    - ANY SLOPED AREA FLATTER THAN 4: 1 SHALL BE EXEMPT FROM THE 7-DAY GROUND COVER REQUIREMENT.
    - SLOPES 10' OR LESS IN LENGTH SHALL BE EXEMPT FROM THE 7-DAY GROUND COVER REQUIREMENT EXCEPT WHEN THE SLOPE IS STEEPER THAN 2: 1.
    - ALTHOUGH STABILIZATION IS USUALLY SPECIFIED AS GROUND COVER, OTHER METHODS, SUCH AS CHEMICAL STABILIZATION, MAY BE ALLOWED ON A CASE-BY-CASE BASIS.
    - FOR PORTIONS OF PROJECTS WITHIN THE SEDIMENT CONTROL COMMISSION-DEFINED "HIGH QUALITY WATER ZONE" (ISA NCAC 04A. 0105) , STABILIZATION WITH GROUND COVER SHALL BE ACHIEVED AS SOON AS PRACTICABLE BUT IN ANY EVENT ON ALL AREAS OF THE SITE WITHIN 7 CALENDAR DAYS FROM THE LAST LAND DISTURBING ACT. PORTIONS OF A SITE THAT ARE LOWER IN ELEVATION THAN ADJACENT DISCHARGE LOCATIONS AND ARE NOT EXPECTED TO DISCHARGE DURING CONSTRUCTION MAY BE EXEMPT FROM THE TEMPORARY GROUND COVER REQUIREMENTS IF IDENTIFIED ON THE APPROVED E&S PLAN OR ADDED BY THE PERMITTING AUTHORITY.

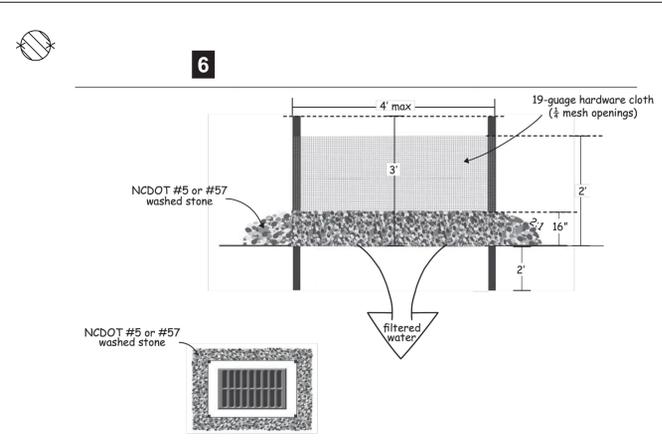


Figure 6.51a Hardware cloth and gravel inlet protection

- Construction Specifications**
- Uniformly grade a shallow depression approaching the inlet.
  - Drive 5-foot steel posts 2 feet into the ground surrounding the inlet. Space posts evenly around the perimeter of the inlet, a maximum of 4 feet apart.
  - Surround the posts with wire mesh hardware cloth. Secure the wire mesh to the steel posts at the top, middle, and bottom. Placing a 2-foot flap of the wire mesh under the gravel for anchoring is recommended.
  - Place clean gravel (NC DOT #5 or #57 stone) on a 2:1 slope with a height of 16 inches around the wire, and smooth to an even grade.
  - Once the contributing drainage area has been stabilized, remove accumulated sediment, and establish final grading elevations.
  - Compact the area properly and stabilize it with groundcover.
- Maintenance**  
Inspect inlets at least weekly and after each significant (1/2 inch or greater) rainfall event. Clear the mesh wire of any debris or other objects to provide adequate flow for subsequent rains. Take care not to damage or undercut the wire mesh during sediment removal. Replace stone as needed.
- References**  
Inlet Protection  
6.52, Block and Gravel Inlet Protection  
6.54, Rock Doughnut Inlet Protection  
North Carolina Department of Transportation  
Standard Specifications for Roads and Structures

**6.51.2 HARDWARE CLOTH AND GRAVEL INLET PROTECTION**

Rev. 6/06  
SCALE: NTS

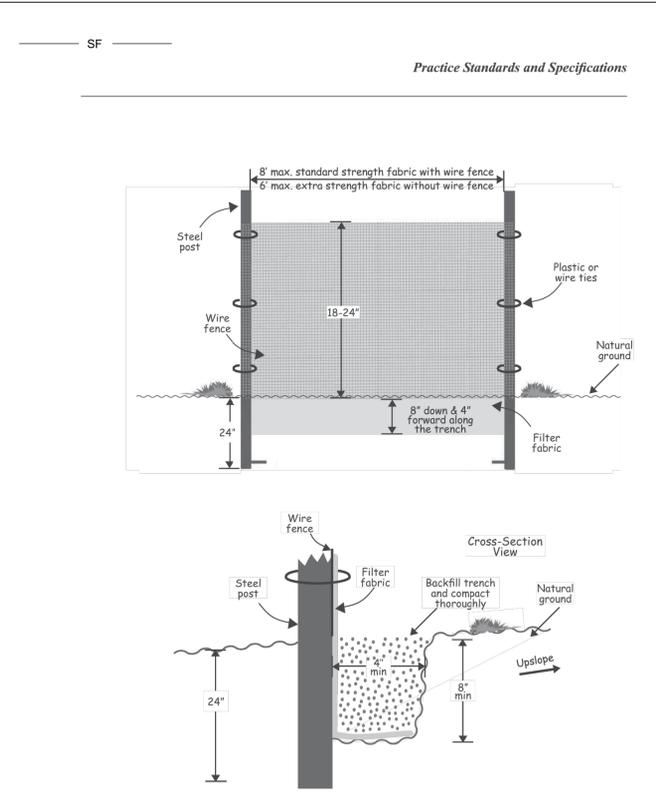


Figure 6.62a Installation detail of a sediment fence.

**6.62.5 SEDIMENT FENCE (SILT FENCE)**

Rev. 5/13  
SCALE: NTS

**STAGING AREAS**

A CONSTRUCTION ENTRANCE SHALL BE INSTALLED AT ALL STAGING / STORAGE AREAS THAT WILL HAVE CONSTRUCTION VEHICLES ENTERING / EXITING ALL PAVED STREETS.

**6.06 TEMPORARY GRAVEL CONSTRUCTION ENTRANCE/EXIT**

**Definition**  
A gravelled area or pad located at points where vehicles enter and leave a construction site.

**Purpose**  
To provide a buffer area where vehicles can drop their mud and sediment to avoid transporting it onto public roads, to control erosion from surface runoff, and to help control dust.

**Conditions Where Practice Applies**  
Whenever traffic will be leaving a construction site and moving directly onto a public road or other paved off-site area. Construction plans should limit traffic to properly constructed entrances.

**Design Criteria**  
Aggregate Size—Use 2-3 inch washed stone.  
Dimensions of gravel pad—  
Thickness: 6 inches minimum  
Width: 12-foot minimum or full width at all points of the vehicular entrance and exit area, whichever is greater  
Length: 50-foot minimum  
Location—Locate construction entrances and exits to limit sediment from leaving the site and to provide for maximum utility by all construction vehicles (Figure 6.06a). Avoid steep grades, and entrances at curves in public roads.

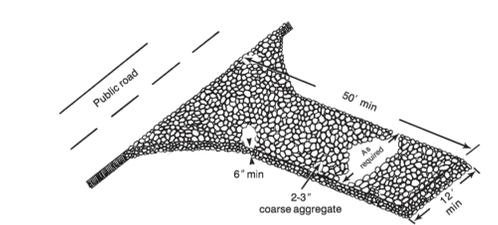


Figure 6.06a Gravel entrance/exit keeps sediment from leaving the construction site (modified from Va SWCC).

**CONSTRUCTION ENTRANCE**

SCALE: NTS

**6.06.2 CONSTRUCTION ENTRANCE NOTES**

- 6.06.2**  
**Washing**—If conditions at the site are such that most of the mud and sediment are not removed by vehicles traveling over the gravel, the tires should be washed. Washing should be done on an area stabilized with crushed stone that drains into a sediment trap or other suitable disposal area. A wash rack may also be used to make washing more convenient and effective.
- Construction Specifications**
- Clear the entrance and exit area of all vegetation, roots, and other objectionable material and properly grade it.
  - Place the gravel to the specific grade and dimensions shown on the plans, and smooth it.
  - Provide drainage to carry water to a sediment trap or other suitable outlet.
  - Use geotextile fabrics because they improve stability of the foundation in locations subject to seepage or high water table.
- Maintenance**  
Maintain the gravel pad in a condition to prevent mud or sediment from leaving the construction site. This may require periodic topdressing with 2-inch stone. After each rainfall, inspect any structure used to trap sediment and clean it out as necessary. Immediately remove all objectionable materials spilled, washed, or tracked onto public roadways.
- References**  
Runoff Conveyance Measures  
6.30, Grass-lined Channels  
Sediment Traps and Barriers  
6.60, Temporary Sediment Trap

**6.06.2 CONSTRUCTION ENTRANCE NOTES**

SCALE: NTS

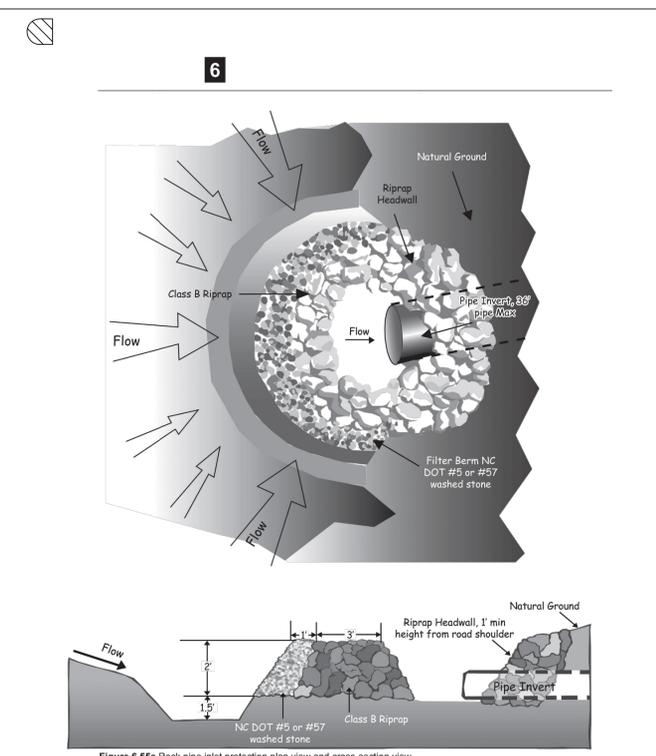


Figure 6.55a Rock pipe inlet protection plan view and cross-section view

**6.55.2 ROCK PIPE INLET PROTECTION**

Rev. 6/06  
SCALE: NTS

REVISIONS	DATE	DESCRIPTION

**AMERICAN Engineering**  
American Engineering Associates - Southeast, P.A.  
830 Greenbrier Circle - Suite 110  
Chesapeake, Virginia 23320 (757) 468-6800



Project #	V23026
Drawn by	KYD
Submit Date	03/01/2024
Scale	AS NOTED
SWaM Certification	715559
VA Firm #	0405001994

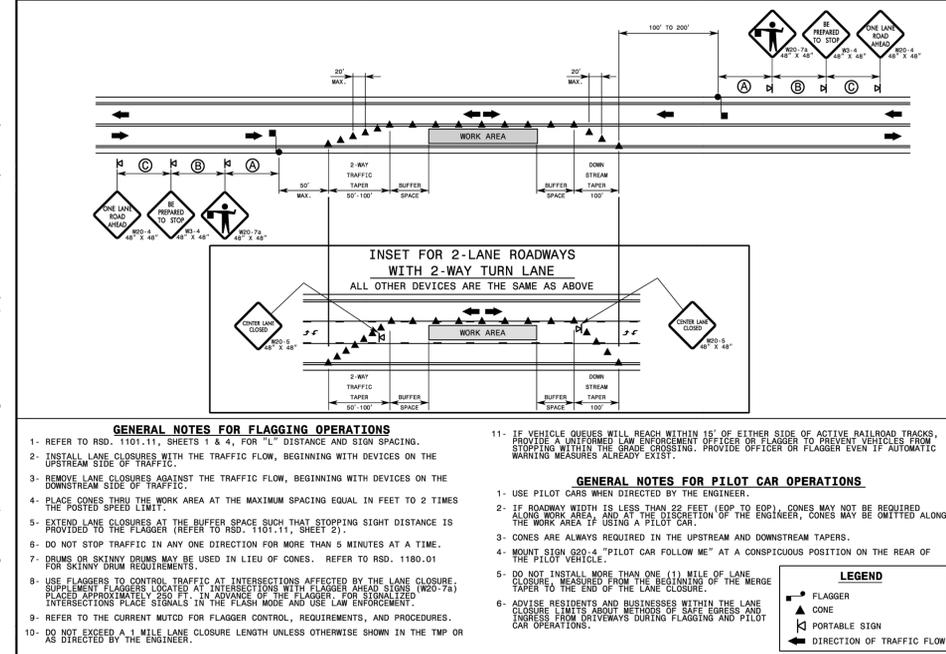
**SOUTHEAST AREA WATERMAIN IMPROVEMENTS**  
TOWN OF KILL DEVIL HILLS  
DARE COUNTY, NORTH CAROLINA

SHEET NAME  
**E AND S NOTES**

SHEET #  
**C-504**

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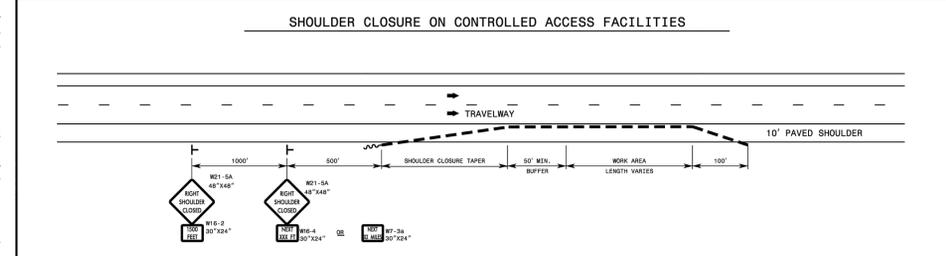
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STATE OF NORTH CAROLINA  
DEPT. OF TRANSPORTATION  
DIVISION OF HIGHWAYS  
RALEIGH, N. C.

ROADWAY STANDARD DRAWING FOR  
**TEMPORARY LANE CLOSURES**  
2-LANE, 2-WAY ROADWAY - 1 LANE CLOSED

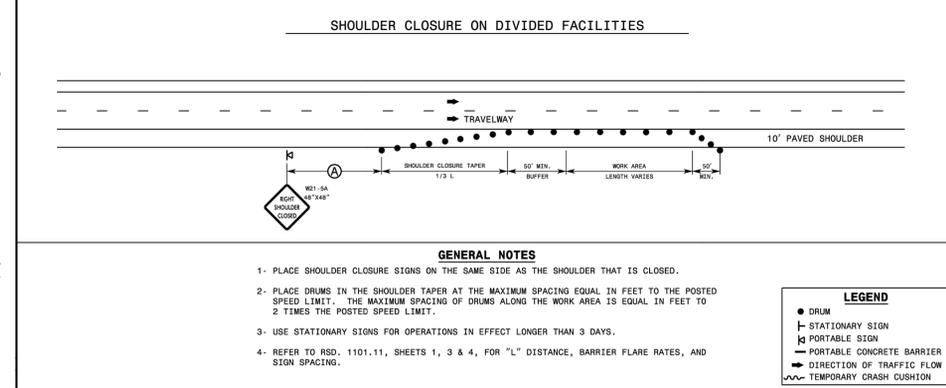
SHEET 1 OF 14  
**1101.02**



STATE OF NORTH CAROLINA  
DEPT. OF TRANSPORTATION  
DIVISION OF HIGHWAYS  
RALEIGH, N. C.

ROADWAY STANDARD DRAWING FOR  
**TEMPORARY SHOULDER CLOSURES**

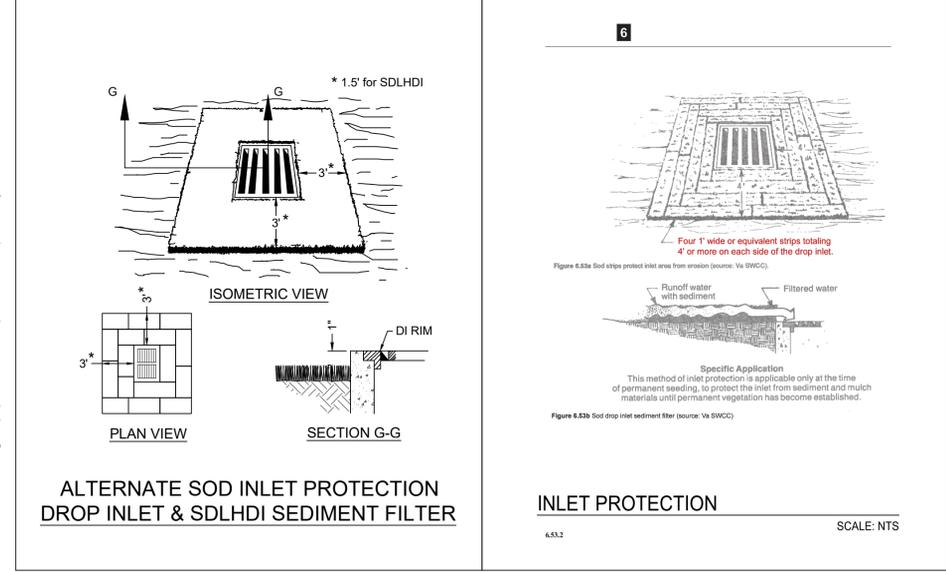
SHEET 1 OF 1  
**1101.04**



STATE OF NORTH CAROLINA  
DEPT. OF TRANSPORTATION  
DIVISION OF HIGHWAYS  
RALEIGH, N. C.

ROADWAY STANDARD DRAWING FOR  
**TEMPORARY SHOULDER CLOSURES**

SHEET 1 OF 1  
**1101.04**



STATE OF NORTH CAROLINA  
DEPT. OF TRANSPORTATION  
DIVISION OF HIGHWAYS  
RALEIGH, N. C.

ROADWAY STANDARD DRAWING FOR  
**TEMPORARY SHOULDER CLOSURES**

SHEET 1 OF 1  
**1101.04**

**6.55**

**ROCK PIPE INLET PROTECTION**

**Practice Standards and Specifications**

**Definition**  
A horseshoe shaped rock dam structure at a pipe inlet with a sediment storage area around the outside perimeter of the structure.

**Purpose**  
To prevent sediment from entering, accumulating in and being transferred by a culvert or storm drainage system prior to stabilization of the disturbed drainage area. This practice allows early use of the storm drainage system.

**Conditions Where Practice Applies**  
Rock pipe inlet protection may be used at pipes with a maximum diameter of 36 inches. This inlet protection may be used to supplement additional sediment traps or basins at the pipe outlet, or used in combination with an excavated sediment storage area to serve as a temporary sediment trap. Pipe inlet protection should be provided to protect the storm drainage system and downstream areas from sedimentation until permanent stabilization of the disturbed drainage area.

**Do not install this measure in an intermittent or perennial stream.**

**Design Criteria**  
When used in combination with an excavated sediment storage area to serve as a temporary sediment trap, the design criteria for temporary sediment traps must be satisfied. The maximum drainage area should be 5 acres, and 3600 cubic feet of sediment storage per acre of disturbed drainage area should be provided.

The minimum stone height should be 2 feet, with side slopes no steeper than 2:1. The stone "horseshoe" around the pipe inlet should be constructed of Class B or Class 1 riprap, with a minimum crest width of 3 feet. The outside face of the riprap should be covered with a 12-inch thick layer of #5 or #57 washed stone.

In preparing plans for rock pipe inlet protection, it is important to protect the embankment over the pipe from overtopping. The top of the stone should be a minimum of 1 foot below the top of the fill over the pipe. The stone should tie into the fill on both sides of the pipe. The inside toe of the stone should be no closer than 2 feet from the culvert opening to allow passage of high flows.

The sediment storage area should be excavated upstream of the rock pipe inlet protection, with a minimum depth of 18 inches below grade.

**Construction Specifications**

- Clear the area of all debris that might hinder excavation and disposal of spoil.
- Install the Class B or Class 1 riprap in a semi-circle around the pipe inlet. The stone should be built up higher on each end where it ties into the embankment. The minimum crest width of the riprap should be 3 feet, with a minimum bottom width of 11 feet. The minimum height should be 2 feet, but also 1 foot lower than the shoulder of the embankment or diversions.
- A 1 foot thick layer of NC DOT #5 or #57 stone should be placed on the outside slope of the riprap.
- The sediment storage area should be excavated around the outside of the stone horseshoe 18 inches below natural grade.
- When the contributing drainage area has been stabilized, fill depression and establish final grading elevations, compact area properly, and stabilize with ground cover.

**Maintenance**  
Inspect rock pipe inlet protection at least weekly and after each significant (1/2 inch or greater) rainfall event and repair immediately. Remove sediment and restore the sediment storage area to its original dimensions when the sediment has accumulated to one-half the design depth of the trap. Place the sediment that is removed in the designated disposal area and replace the contaminated part of the gravel facing.

Check the structure for damage. Any riprap displaced from the stone horseshoe must be replaced immediately.

After all the sediment-producing areas have been permanently stabilized, remove the structure and all the unstable sediment. Smooth the area to blend with the adjoining areas and provide permanent ground cover (Surface Stabilization).

**References**

*Inlet Protection*  
6.52, Block and Gravel Inlet Protection (Temporary)

*Sediment Trap and Barriers*  
6.60, Temporary Sediment Trap

*Surface Stabilization*  
6.15, Riprap

*North Carolina Department of Transportation*  
Erosion & Sedimentation Guidelines for Division Maintenance Operation, 1993.

*Virginia Erosion and Sediment Control Handbook*, 1992. STD & SPEC 3.08, Culvert Inlet Protection, pages III-46 - III-51 (Culvert Inlets Sediment Trap).

Rev. 6/06 6.55.1

Rev. 6/06 6.55.3

**ROCK PIPE INLET PROTECTION NOTES** SCALE: NTS

**ROCK PIPE INLET PROTECTION NOTES** SCALE: NTS

**6.53**

**SOD DROP INLET PROTECTION**

**Practice Standards and Specifications**

**Definition**  
A permanent grass sod filter area around a storm drain drop inlet in a stabilized, well-vegetated area.

**Purpose**  
To limit sediment from entering storm drainage systems as a permanent protection measure.

**Conditions Where Practice Applies**  
Where the drainage area of the drop inlet has been permanently seeded and the immediate surrounding area is to remain in dense vegetation. This practice is well suited for lawns adjacent to large buildings.

**Design Criteria**  
Keep velocity of design flow over the sod area at all points less than 5 ft/sec. Place sod to form a turf mat completely covering the soil surface for a minimum distance of 4 feet from each side of the drop inlet where runoff will enter. Maintain the slope of the sodded area no greater than 4:1. Keep the drainage area no greater than 2 acres; maintain this area undisturbed or stabilize it.

**Construction Specifications**

- Bring the area to be sodded to final grade elevation with top soil. Add fertilizer and lime, and install sod according to Practice 6.12, Sodding.
- Lay all sod strips perpendicular to the direction of flows.
- Keep the width of the sod at least 4 ft in the direction of flows.
- Stagger sod strips so that adjacent strip ends are not aligned.

**Maintenance**  
During the first 4 weeks, water sod as often as necessary to maintain moist soil to a minimum depth of 2 inches. Maintain grass height at least 2 inches with no more than one-third the shoot height (grass leaf) removed in any mowing. Apply fertilizer as necessary to maintain the desired growth and sod density. Add lime as needed to maintain the proper pH.

**References**

*Surface Stabilization*  
6.12, Sodding

**Construction Specifications**

- Clear the area of all debris that might hinder excavation and disposal of spoil.
- Install the Class B or Class 1 riprap in a semi-circle around the pipe inlet. The stone should be built up higher on each end where it ties into the embankment. The minimum crest width of the riprap should be 3 feet, with a minimum bottom width of 11 feet. The minimum height should be 2 feet, but also 1 foot lower than the shoulder of the embankment or diversions.
- A 1 foot thick layer of NC DOT #5 or #57 stone should be placed on the outside slope of the riprap.
- The sediment storage area should be excavated around the outside of the stone horseshoe 18 inches below natural grade.
- When the contributing drainage area has been stabilized, fill depression and establish final grading elevations, compact area properly, and stabilize with ground cover.

**Maintenance**  
Inspect rock pipe inlet protection at least weekly and after each significant (1/2 inch or greater) rainfall event and repair immediately. Remove sediment and restore the sediment storage area to its original dimensions when the sediment has accumulated to one-half the design depth of the trap. Place the sediment that is removed in the designated disposal area and replace the contaminated part of the gravel facing.

Check the structure for damage. Any riprap displaced from the stone horseshoe must be replaced immediately.

After all the sediment-producing areas have been permanently stabilized, remove the structure and all the unstable sediment. Smooth the area to blend with the adjoining areas and provide permanent ground cover (Surface Stabilization).

**References**

*Inlet Protection*  
6.52, Block and Gravel Inlet Protection (Temporary)

*Sediment Trap and Barriers*  
6.60, Temporary Sediment Trap

*Surface Stabilization*  
6.15, Riprap

*North Carolina Department of Transportation*  
Erosion & Sedimentation Guidelines for Division Maintenance Operation, 1993.

*Virginia Erosion and Sediment Control Handbook*, 1992. STD & SPEC 3.08, Culvert Inlet Protection, pages III-46 - III-51 (Culvert Inlets Sediment Trap).

Rev. 6/06 6.53.1

Rev. 6/06 6.53.3

**INLET PROTECTION** SCALE: NTS

**INLET PROTECTION** SCALE: NTS

**ROCK PIPE INLET PROTECTION NOTES** SCALE: NTS

**ROCK PIPE INLET PROTECTION NOTES** SCALE: NTS

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**SOUTHEAST AREA WATERMAIN IMPROVEMENTS**  
TOWN OF KILL DEVIL HILLS  
DARE COUNTY, NORTH CAROLINA

Project # V23026  
Drawn by KYD  
Submittal Date 03/01/2024  
Scale AS NOTED  
SWaM Certification 715559  
VA Firm # 0405001994

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SHEET #  
**C-505**

V23026