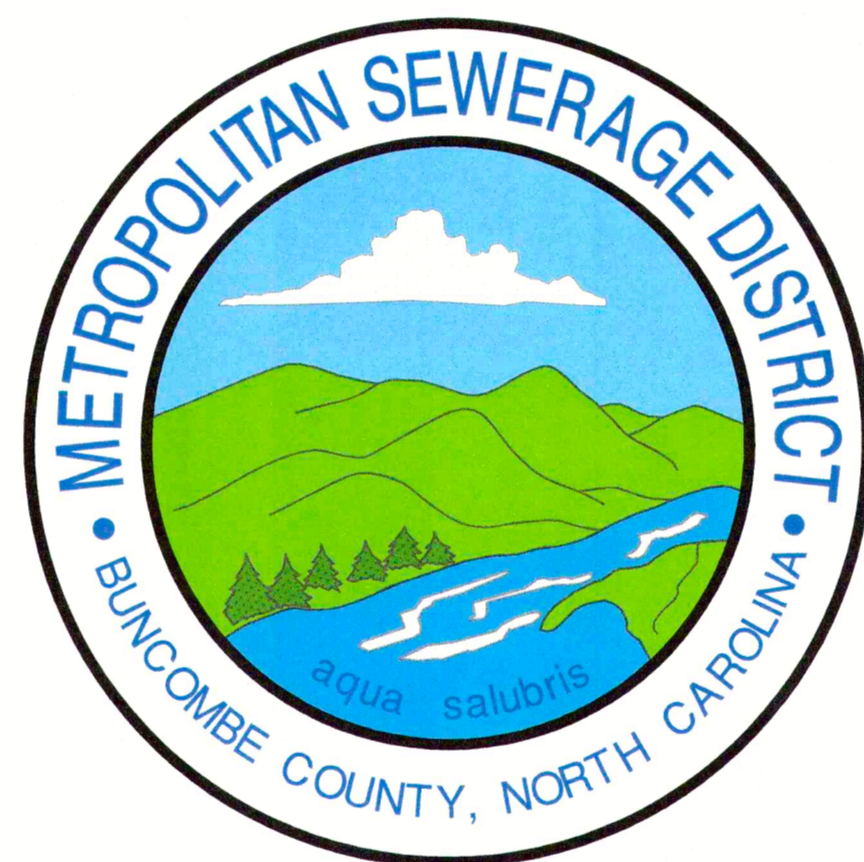


# SAND HILL RD. @ BAKER PL.

## SANITARY SEWER REHABILITATION

(PROJECT NO. 2015223)

## MSD OF BUNCOMBE COUNTY



### INDEX OF DRAWINGS

SHEET NO.	DESCRIPTION
C-1	INDEX OF DRAWINGS AND VICINITY MAP
PL-1	SANITARY SEWER PLAN
PL-2	SANITARY SEWER PROFILES
PL-3	SANITARY SEWER PROFILES
D-1	SANITARY SEWER DETAILS

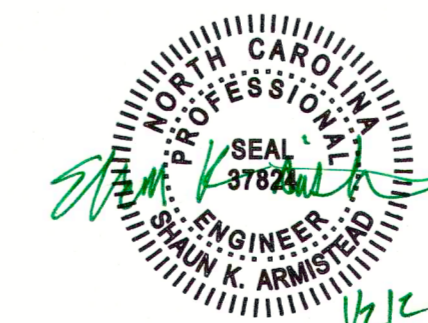
### GENERAL NOTES:

- LENGTHS SHOWN ARE NOT ACTUAL PIPE LENGTHS BUT ARE DISTANCES STATION TO STATION. SLOPES SHOWN ON THE PROFILE ARE CALCULATED USING LENGTHS FROM INSIDE EDGES OF MANHOLE.
- ALL WORK ON THIS PROJECT SHALL COMPLY WITH THE CURRENT STANDARD DETAILS AND SPECIFICATIONS OF THE METROPOLITAN SEWERAGE DISTRICT OF BUNCOMBE COUNTY. SPECIAL CONDITIONS AND SPECIAL PROVISIONS MAY APPLY TO THIS PROJECT - SEE SPECIFICATIONS.
- ALL WORK SHALL COMPLY WITH FEDERAL, STATE, AND LOCAL LAWS AND REGULATIONS, AS MAY BE APPLICABLE TO THIS PROJECT AND THE WORK DONE HEREUNDER.
- WHERE FEDERAL, STATE, OR LOCAL LAWS REQUIRE THAT A PERMIT BE ISSUED AND OBTAINED FOR WORK DONE UNDER THIS PROJECT, ALL WORK PERFORMED BY THE CONTRACTOR SHALL BE PERFORMED IN STRICT COMPLIANCE WITH THE TERMS AND CONDITIONS SET FORTH IN THE PERMIT.
- ANY MODIFICATIONS TO THESE CONSTRUCTION PLANS OR SPECIFICATIONS SHALL BE APPROVED BY THE MSD PROJECT ENGINEER.
- THE CONTRACTOR SHALL VERIFY THE LOCATION OF ALL UNDERGROUND UTILITIES PRIOR TO THE START OF CONSTRUCTION.
- THE CONTRACTOR SHALL TAKE ALL NECESSARY STEPS TO KEEP THE SEWER AND ALL OTHER UTILITIES IN SERVICE AT ALL TIMES DURING CONSTRUCTION. THE CONTRACTOR SHALL ASSUME ALL RESPONSIBILITY FOR REPAIRS OF ANY KIND FOR DAMAGES RESULTING FROM THE CONTRACTOR'S CONSTRUCTION ACTIVITIES.
- THE CONTRACTOR SHALL LOCATE ALL SERVICES CURRENTLY SERVED BY THE EXISTING SEWER AND RECONNECT TO THE NEW SEWER, INSTALLING A CLEANOUT ASSEMBLY AS REQUIRED (SEE DETAIL).
- THE CONTRACTOR SHALL RESTORE ALL STREETS, PROPERTIES, AND IMPROVEMENTS TO AS GOOD OR BETTER CONDITION THAN EXISTED PRIOR TO CONSTRUCTION.
- PROPERTY LINES SHOWN ON PLANS ARE APPROXIMATE ONLY. PROPERTY MONUMENTS DISTURBED DURING CONSTRUCTION SHALL BE RESET BY A LICENSED NC PROFESSIONAL LAND SURVEYOR.
- DESIGN BASED ON SURVEY INFORMATION PROVIDED BY COLE SURVEYING & DESIGN 828-251-7025.



VICINITY MAP

Scale: NTS



### LEGEND

◆ FFE	FINISHED FLOOR ELEVATION	⊥	PROPOSED ABANDON PLUG
■ CM	CONCRETE MONUMENT	⊙	PROPOSED MANHOLE NUMBER
▬ CMRW	CONCRETE MONUMENT RIGHT-OF-WAY	⊙	PROPOSED ABANDON SEWER MANHOLE
□ DOT	DEPT. OF TRANSPORTATION MONUMENT	⊙	PROPOSED CLEANOUT
● PK FND	PK NAIL FOUND	⊙	SANITARY SEWER MANHOLE
● REF	EXISTING IRON PIN FOUND	⊙	EXISTING CLEANOUT
● REF	REBAR FOUND	⊙	WATER VALVE
● REF	SIGN	⊙	WELL
● REF	GAS VALVE	⊙	FIRE HYDRANT
● REF	GAS METER	⊙	WATER METER
● REF	TRAVERSE	⊙	SPIGOT
● REF	CURB INLET	⊙	UTILITY POLE
● REF	STORM MANHOLE	⊙	GUY WIRE
● REF	CATCH BASIN	⊙	ELECTRIC JUNCTION BOX
● REF	SHRUB	⊙	ELECTRIC MANHOLE
● REF	TREE	⊙	LIGHT POLE
---	PROPOSED SANITARY SEWER LINE	---	EXISTING SANITARY SEWER LINE
---	EXISTING PERMANENT EASEMENT	---	PROPOSED PERMANENT EASEMENT
---	PROPOSED TEMPORARY EASEMENT	---	PROPOSED SILT FENCE LINE
---	PROPOSED ASPHALT SURFACE REPAIR	---	EXISTING PROPERTY LINE
---	EXISTING RIGHT-OF-WAY LINE	---	EXISTING WATER LINE
---	EXISTING ROCK WALL LINE	---	EXISTING STREAM/CREEK
---	EXISTING FEMA LINE (100 yr)	---	EXISTING FEMA LINE (500 yr)
---	EXISTING GAS LINE	---	EXISTING OVER HEAD UTILITY LINE
---	EXISTING UNDERGROUND UTILITY	---	EXISTING STORM DRAINAGE PIPE
---	EXISTING DITCH LINE	---	EXISTING FENCE LINE
---	EXISTING TOE/TOP OF SLOPE	---	EXISTING TREE LINE
---	EXISTING SHRUB LINE	---	EXISTING CONCRETE
---	EXISTING GRAVEL AREA (RIP-RAP)	---	EXISTING ASPHALT ROADWAY
---	EXISTING BUILDING	---	EXISTING MAJOR CONTOUR
---	EXISTING MINOR CONTOUR		

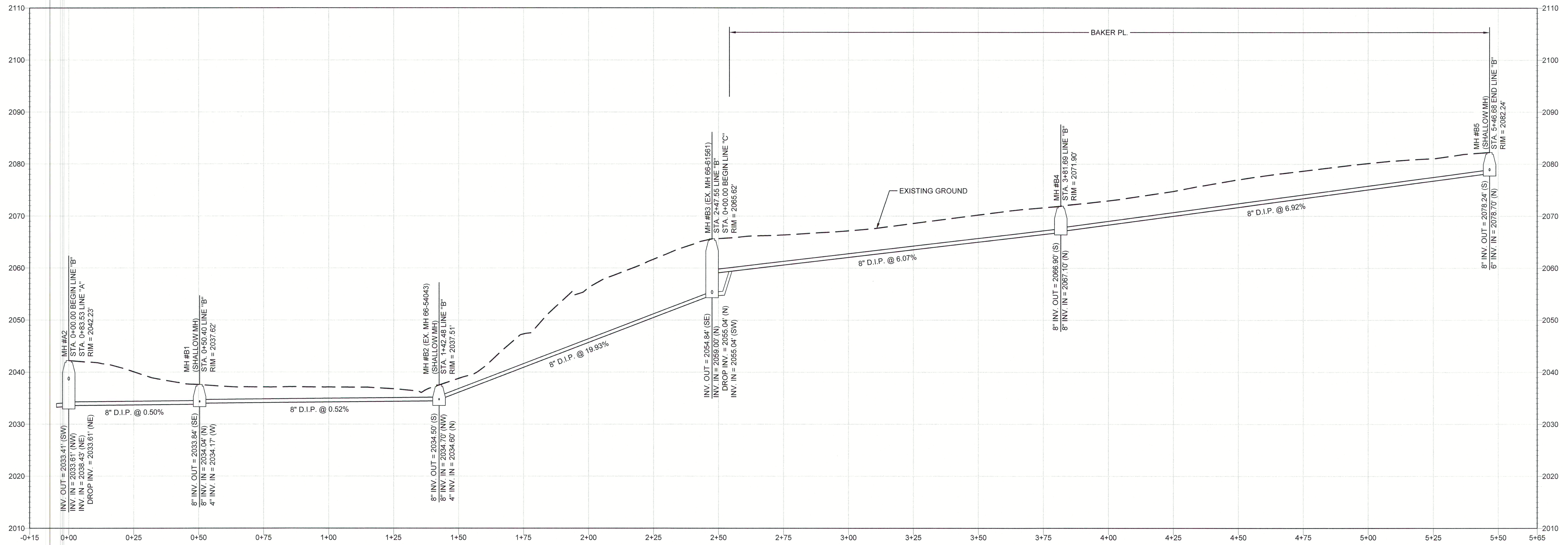
NC ONE CALL  
(TOLL FREE)

**North Carolina 811**  
www.nc811.org

DIAL 811 BEFORE  
YOU DIG!  
(or 1-800-632-4949)  
IT'S THE LAW

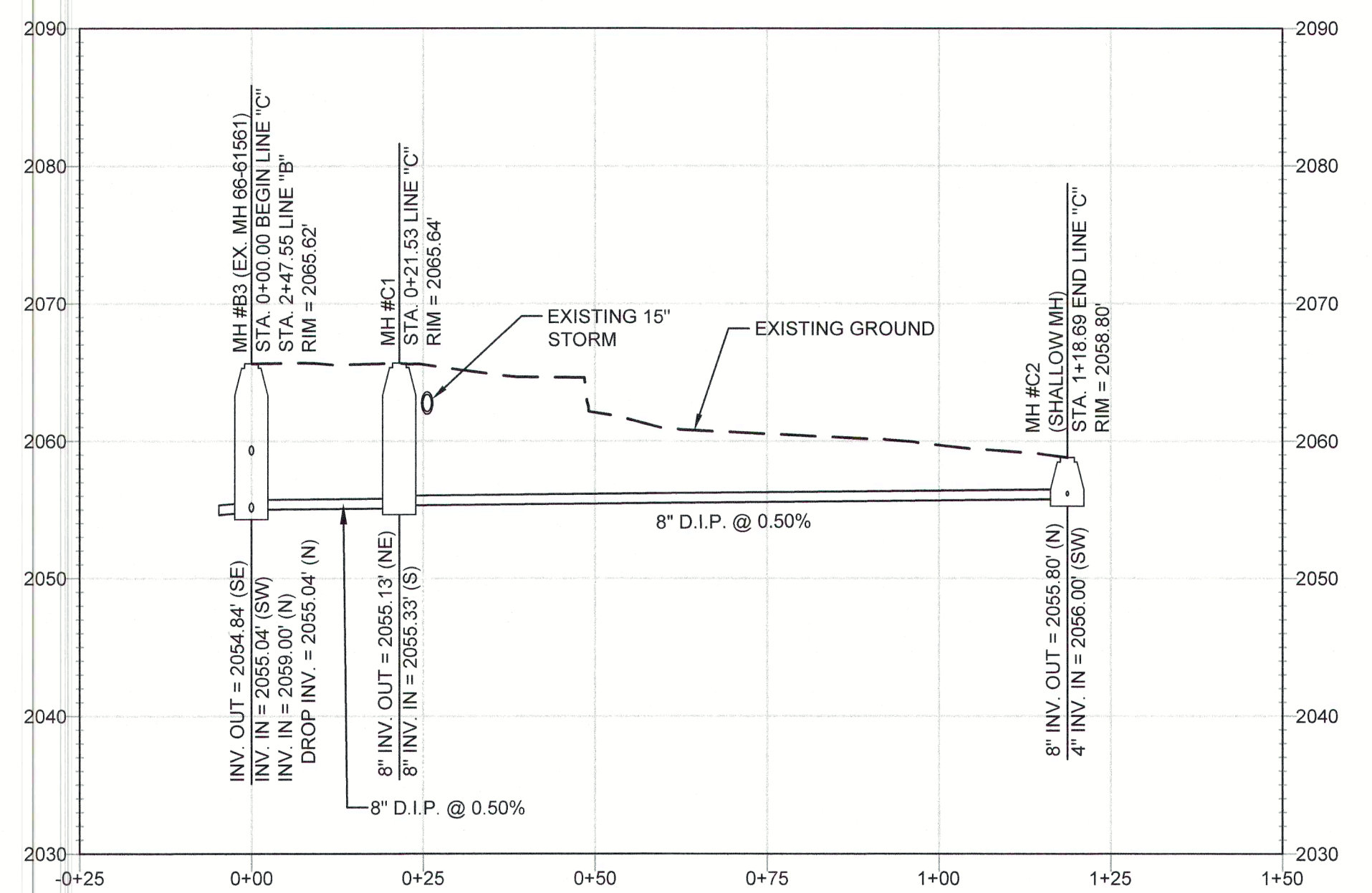






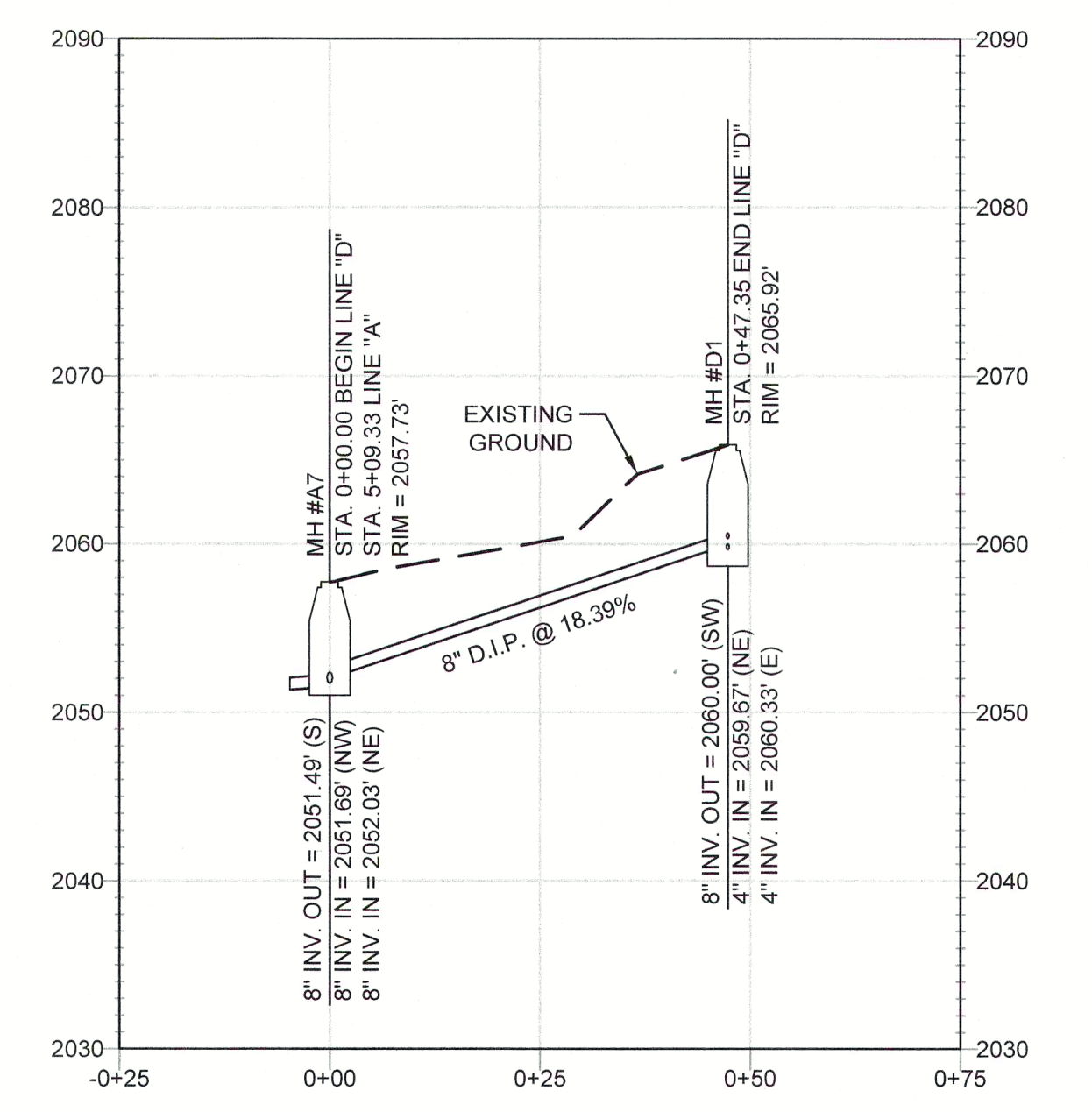
### SANITARY SEWER PROFILE LINE "B"

SCALE. HORIZ: 1"=20' ; VERT. 1"=10'



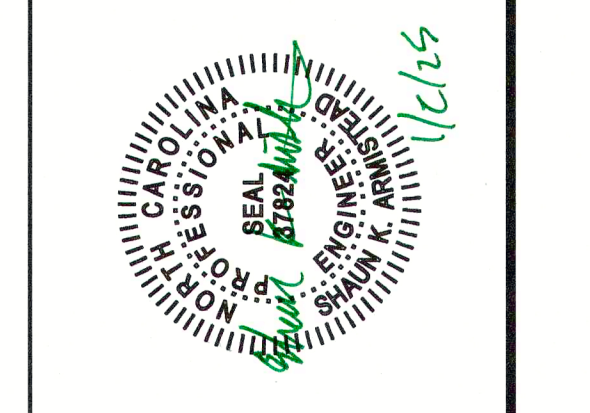
### SANITARY SEWER PROFILE LINE "C"

SCALE. HORIZ: 1"=20' ; VERT. 1"=10'



### SANITARY SEWER PROFILE LINE "D"

SCALE. HORIZ: 1"=20' ; VERT. 1"=10'



No.	DESCRIPTION	DATE
REVISIONS		

I:\Projects\2023\Sanitary Sewer Profiles\Sanitary Sewer Profiles.dwg  
 20230501 10:50:00 AM  
 R. K. Arp  
 11615  
 11/22/2023 2:48 PM



GROUNDWATER CONDITION (SEE NOTE 6)	H SHORING HEIGHT (FT)	SLOPE OR SURCHARGE CASE WITH NO TRAFFIC IMPACT					SURCHARGE CASE WITH TRAFFIC IMPACT				
		SHEET PILES		H-PILES WITH TIMBER LAGGING			SHEET PILES		H-PILES WITH TIMBER LAGGING		
		MINIMUM REQUIRED EMBEDMENT (FT)	MINIMUM REQUIRED SECTION MODULUS (IN <sup>3</sup> /FT)	MINIMUM REQUIRED EMBEDMENT* (FT) (SEE NOTE 10)			MINIMUM REQUIRED EMBEDMENT (FT)	MINIMUM REQUIRED SECTION MODULUS (IN <sup>3</sup> /FT)	MINIMUM REQUIRED EMBEDMENT* (FT) (SEE NOTE 10)		
			HP 10x42	HP 12x53	HP 14x73			HP 10x42	HP 12x53	HP 14x73	
GROUNDWATER ELEVATION BETWEEN BOTTOM OF SHORING AND PILE TIP	< 6	11.5	4.5	11.5	11.5	11.5	16.0	12.0	13.0	13.0	13.0
	7	13.0	7.0	13.0	13.0	13.0	17.0	14.5	14.5	14.5	14.5
	8	15.0	10.0	--	15.0	15.0	18.0	17.0	--	15.5	15.5
	9	17.0	14.0	--	17.0	17.0	19.0	20.0	--	17.0	17.0
	10	18.5	19.5	--	--	18.5	20.0	23.5	--	--	18.5
	11	20.5	26.0	--	--	--	21.0	28.0	--	--	20.0
	12	22.5	33.0	--	--	--	22.0	33.0	--	--	21.5
GROUNDWATER ELEVATION BELOW PILE TIP	< 6	7.5	3.0	8.0	8.0	8.0	11.0	10.0	9.5	9.5	9.5
	7	8.5	4.5	9.5	9.5	9.5	12.0	12.0	10.5	10.5	10.5
	8	10.0	6.5	10.5	10.5	10.5	12.5	14.0	11.5	11.5	11.5
	9	11.0	9.5	--	12.0	12.0	13.5	16.5	--	12.5	12.5
	10	12.5	13.0	--	--	13.5	14.0	19.5	--	13.5	13.5
	11	13.5	17.0	--	--	14.5	15.0	22.5	--	--	14.5
	12	15.0	21.5	--	--	16.0	16.0	25.5	--	--	15.5

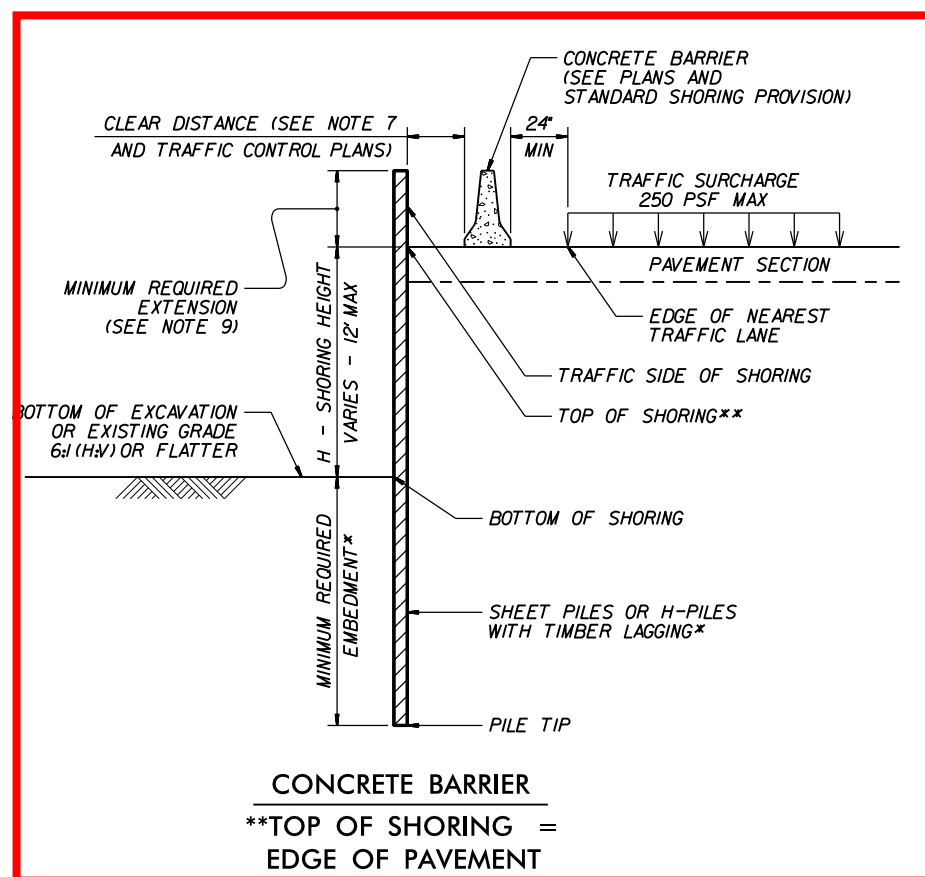
**MINIMUM REQUIRED EMBEDMENT AND SECTION MODULUS**

\*DO NOT USE H-PILES WITH TIMBER LAGGING FOR GROUNDWATER CONDITION, SHORING HEIGHT AND H-PILE SIZE SHOWN IF MINIMUM REQUIRED EMBEDMENT IS "--".

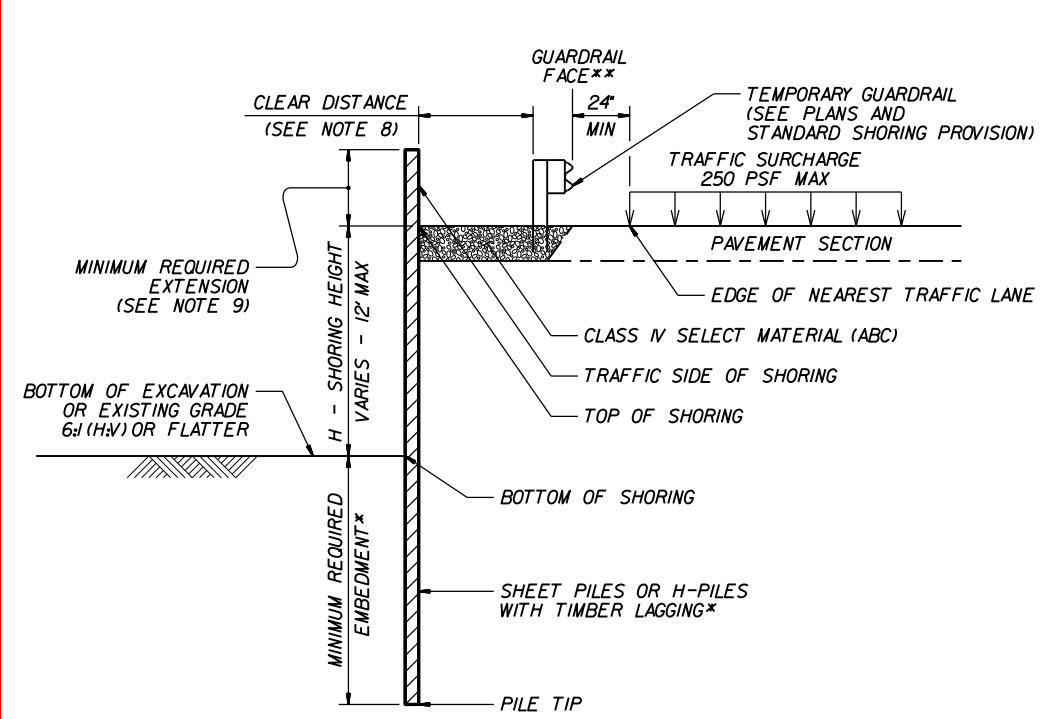
**NOTES:**

1. AT THE CONTRACTOR'S OPTION, USE STANDARD TEMPORARY SHORING AS NOTED IN THE PLANS.
2. FOR STANDARD TEMPORARY SHORING, SEE STANDARD SHORING PROVISION.
3. STANDARD TEMPORARY SHORING IS BASED ON THE FOLLOWING IN-SITU ASSUMED SOIL PARAMETERS:  
UNIT WEIGHT,  $\gamma = 120$  PCF  
FRICTION ANGLE,  $\phi = 30$  DEGREES  
COHESION,  $c = 0$  PSF
4. DO NOT USE STANDARD TEMPORARY SHORING IF ASSUMED SOIL PARAMETERS ARE NOT APPLICABLE.
5. DO NOT USE STANDARD TEMPORARY SHORING WHEN VERY LOOSE OR SOFT SOIL OR MUCK IS WITHIN THE EMBEDMENT DEPTH.
6. USE GROUNDWATER ELEVATION NOTED IN THE PLANS. IF NO GROUNDWATER ELEVATION IS SHOWN IN THE PLANS, USE "GROUNDWATER ELEVATION BETWEEN BOTTOM OF SHORING AND PILE TIP" FOR GROUNDWATER CONDITION. DO NOT USE STANDARD TEMPORARY SHORING IF GROUNDWATER IS ABOVE BOTTOM OF SHORING.
7. AT THE CONTRACTOR'S OPTION OR IF AVAILABLE CLEAR DISTANCE IS LESS THAN THE MINIMUM REQUIRED FOR CONCRETE BARRIER, SET BARRIER NEXT TO AND UP AGAINST TRAFFIC SIDE OF PILES AND USE "SURCHARGE CASE WITH TRAFFIC IMPACT".
8. AT THE CONTRACTOR'S OPTION OR IF AVAILABLE CLEAR DISTANCE IS LESS THAN 4' FOR TEMPORARY GUARDRAIL, ATTACH GUARDRAIL TO TRAFFIC SIDE OF PILES AS SHOWN IN THE PLANS AND USE "SURCHARGE CASE WITH TRAFFIC IMPACT".
9. MINIMUM REQUIRED EXTENSION IS 6' FOR "SLOPE OR SURCHARGE CASE WITH NO TRAFFIC IMPACT" AND 32' FOR "SURCHARGE CASE WITH TRAFFIC IMPACT".
10. MINIMUM REQUIRED EMBEDMENT FOR H-PILES WITH TIMBER LAGGING IS BASED ON DRIVEN H-PILES AT MAXIMUM 6' SPACING. AT THE CONTRACTOR'S OPTION, EMBEDMENT DEPTHS MAY BE REDUCED BY 25% FOR DRILLED-IN H-PILES.
11. SUBMIT A "STANDARD TEMPORARY SHORING SELECTION FORM" AT LEAST 7 DAYS BEFORE STARTING TEMPORARY SHORING CONSTRUCTION. UP TO 3 SHORING LOCATIONS MAY BE INCLUDED ON EACH FORM. STANDARD SHORING SELECTION FORMS ARE AVAILABLE FROM: [connect.ncdot.gov/resources/Geological/Pages/Geotech\\_Forms\\_Details.aspx](http://connect.ncdot.gov/resources/Geological/Pages/Geotech_Forms_Details.aspx)
12. CONTACT THE ENGINEER IF PILES DO NOT ATTAIN THE MINIMUM REQUIRED EMBEDMENT.

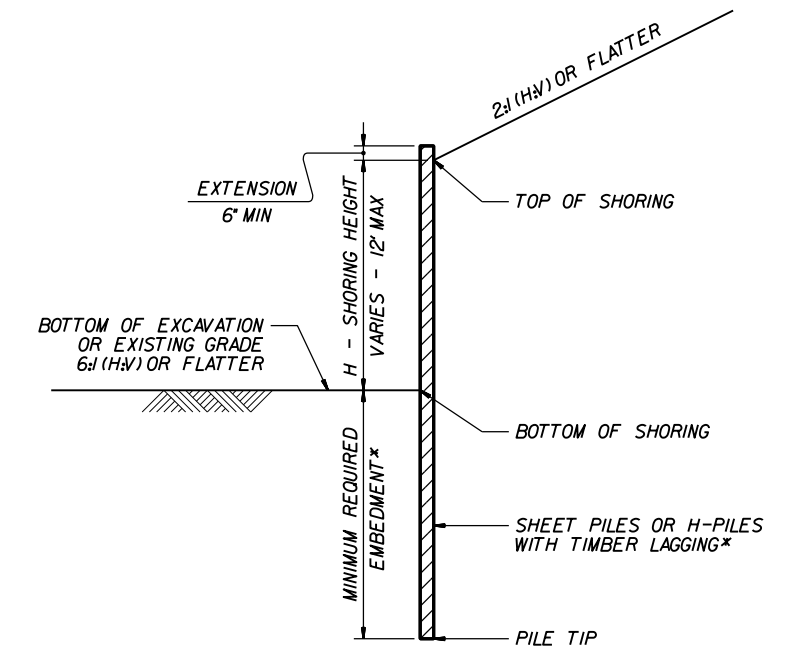
GEOTECHNICAL ENGINEER	ENGINEER
SIGNATURE	SIGNATURE
DATE	DATE
<b>DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</b>	



**CONCRETE BARRIER**  
\*\*TOP OF SHORING = EDGE OF PAVEMENT




**TEMPORARY GUARDRAIL**  
\*\*GUARDRAIL FACE = EDGE OF PAVEMENT



**STANDARD TEMPORARY SHORING (SLOPE CASE)**  
\*SEE TABLE ABOVE.

**STANDARD TEMPORARY SHORING (SURCHARGE CASE)**  
\*SEE TABLE ABOVE.


  
 NORTH CAROLINA DEPARTMENT OF TRANSPORTATION  
 DIVISION OF HIGHWAYS  
**GEOTECHNICAL ENGINEERING UNIT**

STANDARD DETAIL NO. 1801.01  
**STANDARD TEMPORARY SHORING**  
 DATE: 11-19-13