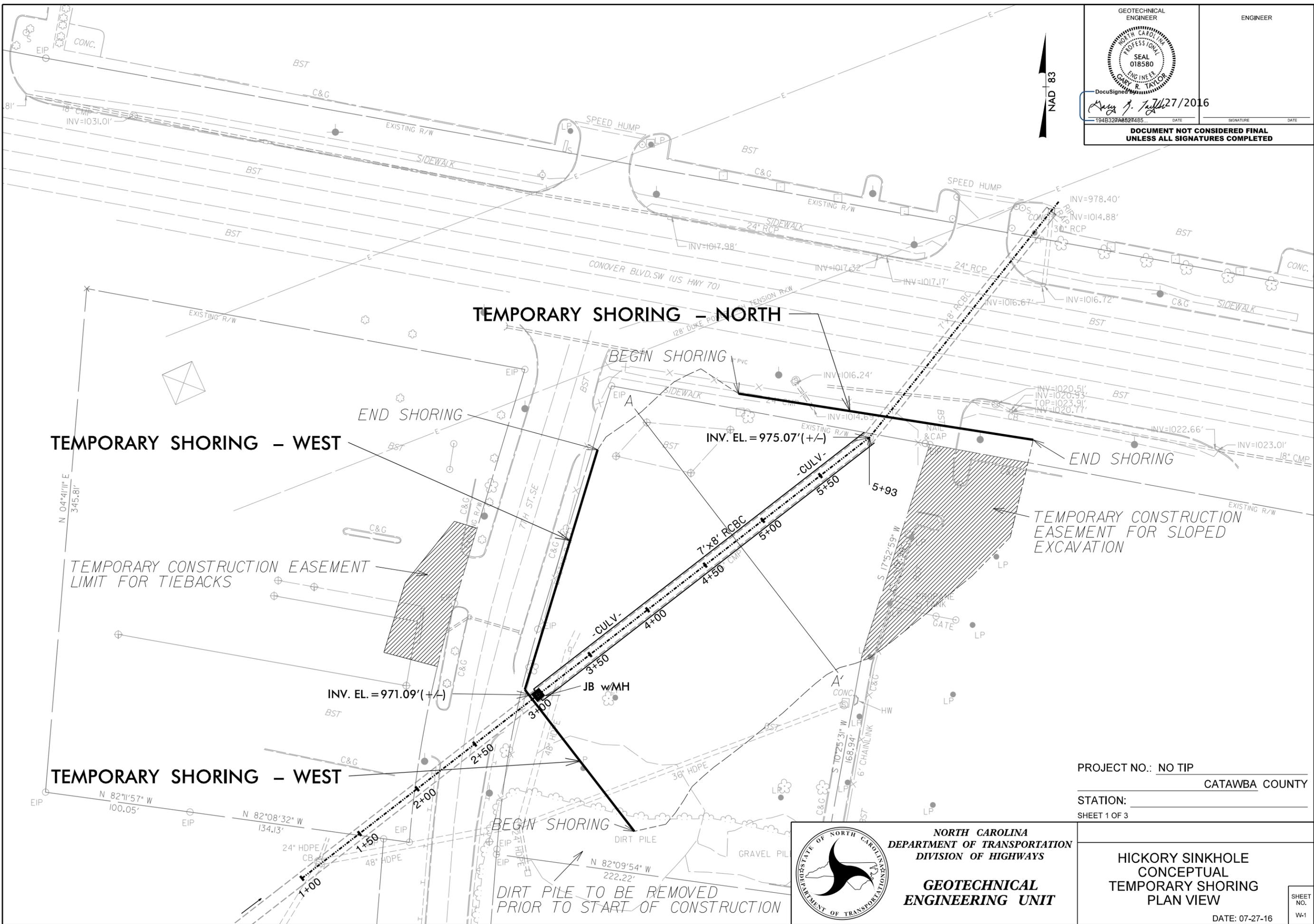


GEOTECHNICAL ENGINEER
 ENGINEER

 DocuSigned by: Gary R. Taylor
 27/2016
 194B327A8527485... DATE SIGNATURE DATE
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TEMPORARY SHORING - WEST

TEMPORARY SHORING - NORTH

TEMPORARY SHORING - WEST

PROJECT NO.: NO TIP
 CATAWBA COUNTY
 STATION:
 SHEET 1 OF 3


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

**HICKORY SINKHOLE
 CONCEPTUAL
 TEMPORARY SHORING
 PLAN VIEW**
 DATE: 07-27-16
 SHEET NO. W-1

DIRT PILE TO BE REMOVED PRIOR TO START OF CONSTRUCTION

GEOTECHNICAL ENGINEER

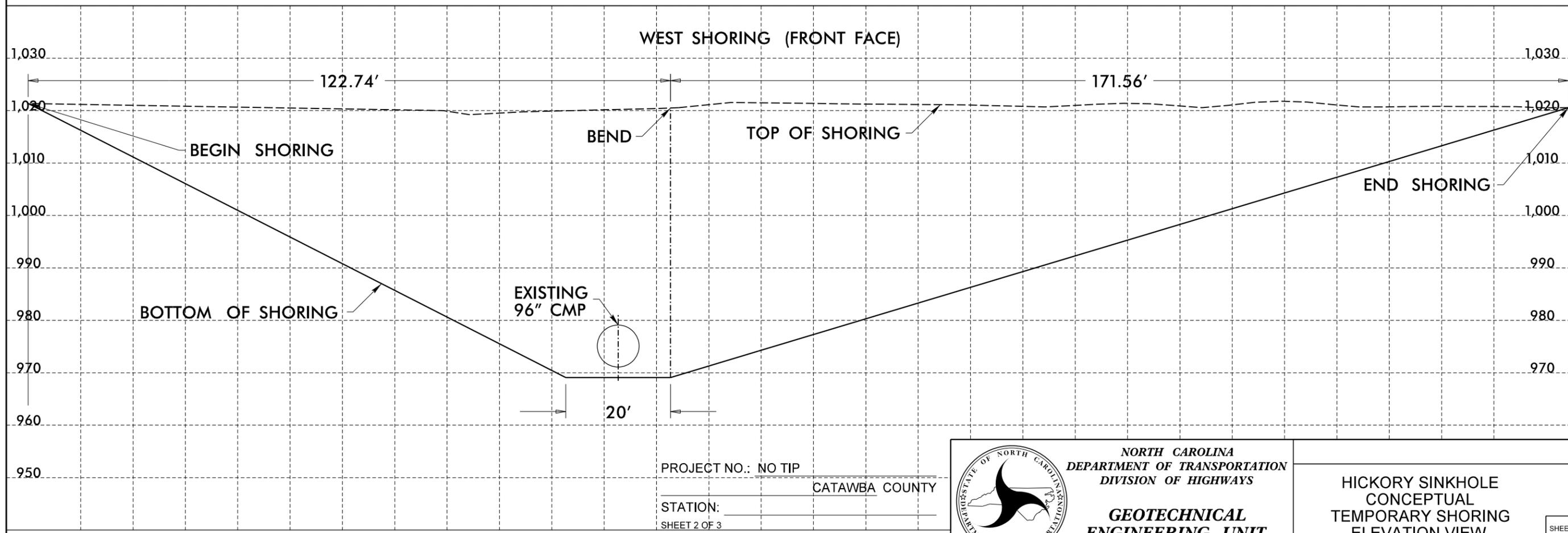
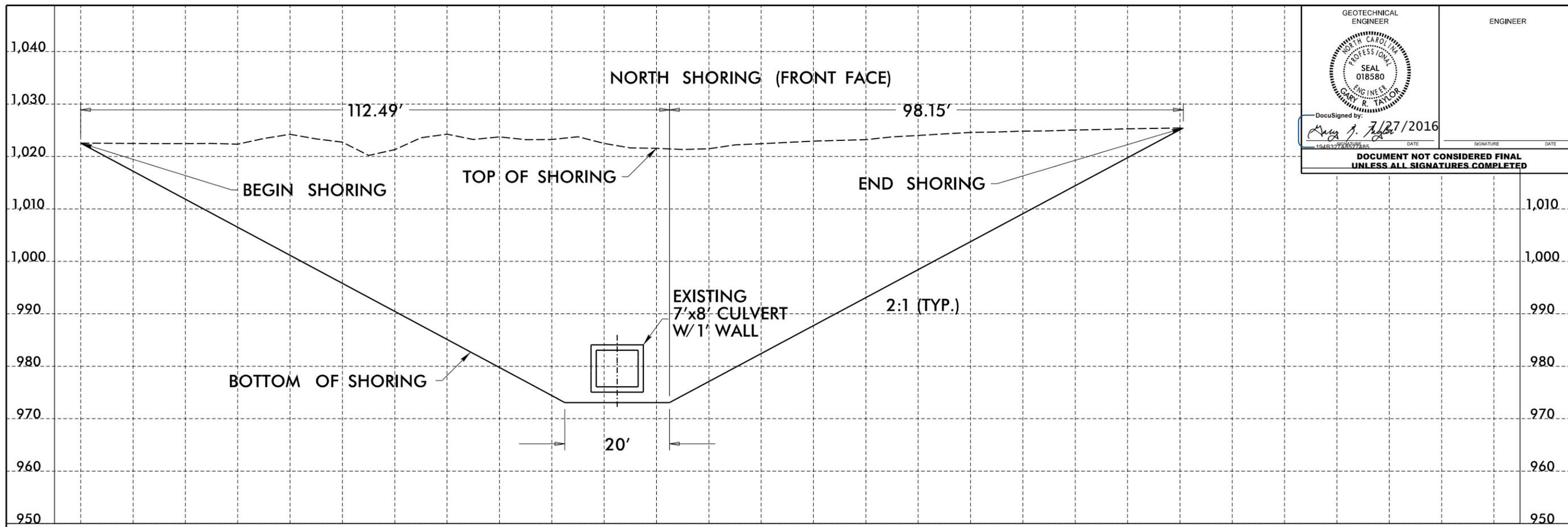
ENGINEER

DocuSigned by: *Gary R. Taylor* 7/27/2016

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PROJECT NO.: NO TIP
 CATAWBA COUNTY
 STATION: _____
 SHEET 2 OF 3

NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 DIVISION OF HIGHWAYS

**GEOTECHNICAL
 ENGINEERING UNIT**

HICKORY SINKHOLE
 CONCEPTUAL
 TEMPORARY SHORING
 ELEVATION VIEW

DATE: 07-27-16

SHEET NO. W-2

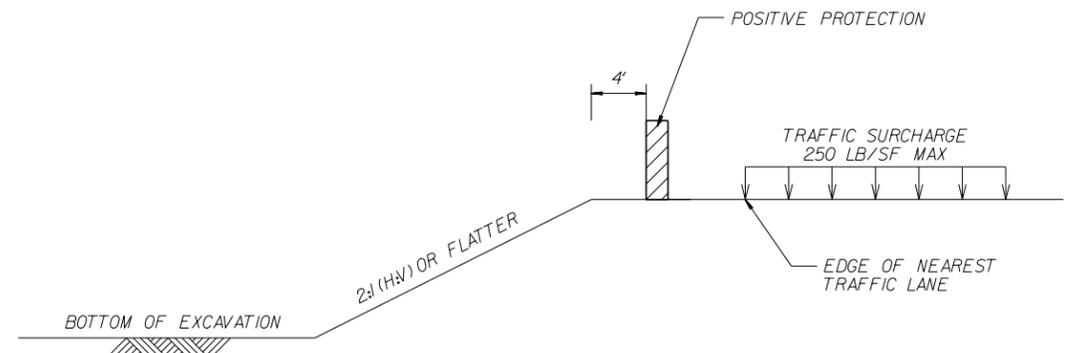
ENGINEER



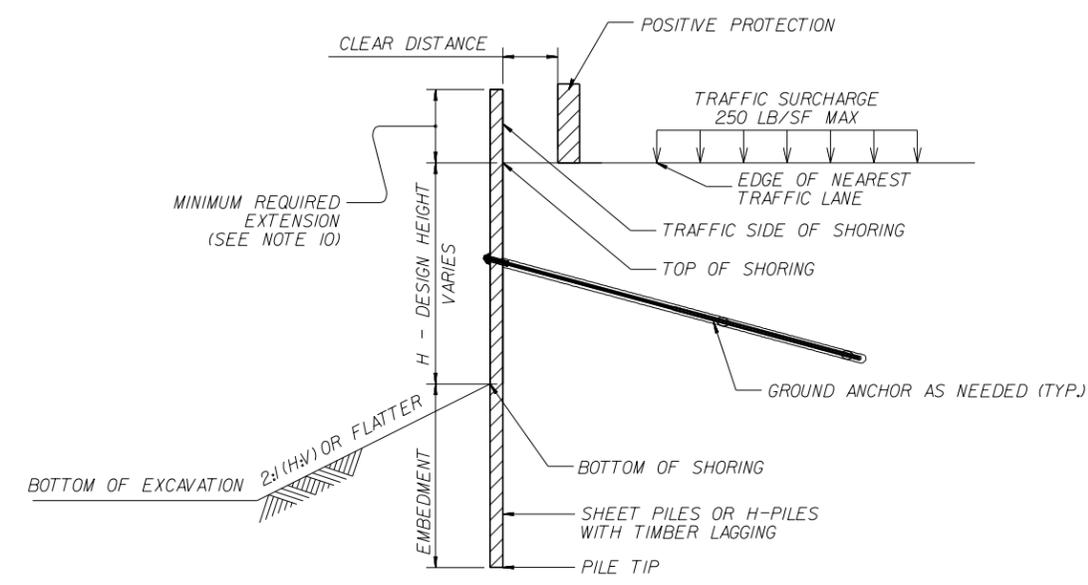
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Gary R. Taylor
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DATE: 7/27/2016

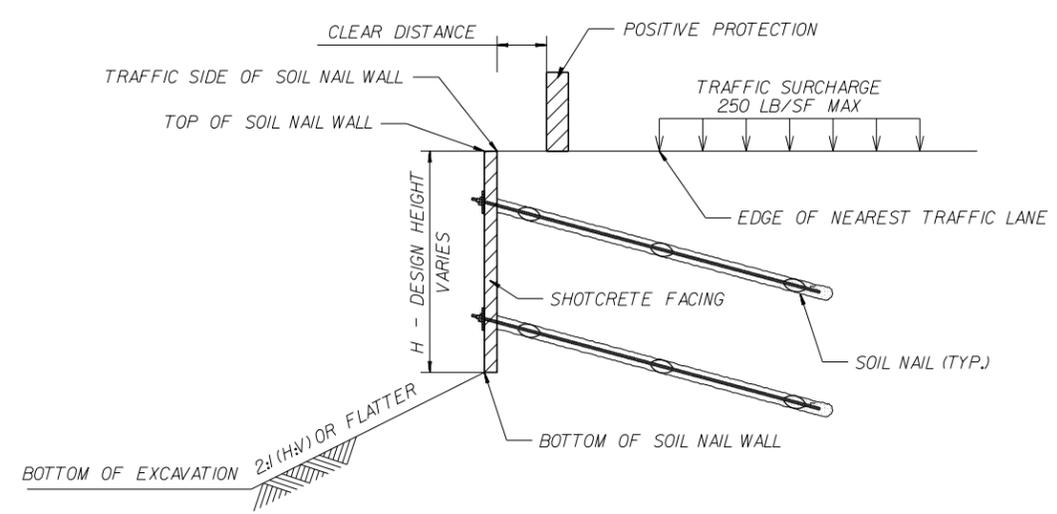
**DOCUMENT NOT CONSIDERED FINAL
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TEMPORARY EXCAVATION SLOPE
STA 4+40 TO 5+40 -CULV- LT
STA 3+08 TO 6+62 -CULV- RT



TEMPORARY SHORING



TEMPORARY SOIL NAIL WALL

NOTES:

1. FOR TEMPORARY SHORING AND POSITIVE PROTECTION FOR TEMPORARY SHORING, SEE TEMPORARY SHORING PROVISION.
2. AT THE CONTRACTOR'S OPTION A TEMPORARY SOIL NAIL WALL MAY BE USED FOR TEMPORARY SHORING. FOR TEMPORARY SOIL NAIL WALL, SEE TEMPORARY SOIL NAIL WALL PROVISION.
3. FOR CONCEPTUAL TEMPORARY SHORING AND TEMPORARY EXCAVATION SLOPE LOCATIONS, SEE PLAN VIEW.
4. ANALYSES OF CONCEPTUAL TEMPORARY 2:1 (H:V) SLOPES YIELDED A MINIMUM FACTOR OF SAFETY OF 1.25.
5. BEFORE BEGINNING TEMPORARY SHORING DESIGN OR CONSTRUCTION, SURVEY EXISTING GROUND ELEVATIONS IN THE VICINITY OF SHORING LOCATIONS TO DETERMINE ACTUAL SHORING HEIGHTS.
6. DESIGN TEMPORARY SHORING FOR THE FOLLOWING ASSUMED SOIL PARAMETERS AND GROUNDWATER ELEVATION:
 UNIT WEIGHT (γ) = 120 LB/CF
 FRICTION ANGLE (ϕ) = 30 DEGREES
 COHESION (c) = 0 LB/SF
 GROUNDWATER ELEVATION = 995 FT
7. DESIGN TEMPORARY SHORING FOR A LIVE LOAD (TRAFFIC) SURCHARGE OF 250 PSF
8. DRIVEN PILING FOR TEMPORARY SHORING WILL NOT PENETRATE BELOW VERY DENSE OR HARD SOIL, BOULDERS, WEATHERED OR HARD ROCK, OR BURIED CONSTRUCTION DEBRIS. THE ELEVATION OF VERY DENSE OR HARD SOIL AND WEATHERED ROCK VARIES BETWEEN 949 AND 992 FT WITHIN THE SITE BOUNDARY.
9. AT THE CONTRACTOR'S OPTION, POSITIVE PROTECTION MAY CONSIST OF CONCRETE BARRIER OR TEMPORARY GUARDRAIL.
10. EXCEPT FOR TEMPORARY SOIL NAIL WALLS, MINIMUM REQUIRED EXTENSION IS 6' WITH NO TRAFFIC IMPACT AND 32" WITH TRAFFIC IMPACT.
11. CLEAR DISTANCE SHALL MEET THE FOLLOWING REQUIREMENTS. SEE TEMPORARY SHORING AND TEMPORARY SOIL NAIL WALL PROVISIONS.

| | MINIMUM CLEAR DISTANCE (FEET) | | | |
|---------------------|-------------------------------|----------------|---------------------|-------------------|
| | NO TRAFFIC IMPACT | | WITH TRAFFIC IMPACT | |
| POSITIVE PROTECTION | TEMP SNW | OTHER SHORING | TEMP SNW | OTHER SHORING |
| UNANCHORED PCB | 4 | 4 | DO NOT USE | AGAINST SHORING |
| ANCHORED PCB | 2 (IN ASPHALT) | 2 (IN ASPHALT) | DO NOT USE | DO NOT USE |
| GUARDRAIL | 4 | 4 | 2.5 (8' POSTS) | ATTACH TO SHORING |

| CONCEPTUAL SHORING QUANTITIES | |
|-------------------------------|----------|
| TEMPORARY SHORING - NORTH | 5,676 SF |
| TEMPORARY SHORING - WEST | 7,778 SF |

PROJECT NO.: NO TIP
 CATAWBA COUNTY
 STATION:
 SHEET 3 OF 3



**NORTH CAROLINA
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**GEOTECHNICAL
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**HICKORY SINKHOLE
CONCEPTUAL
TEMPORARY SHORING
DETAILS AND NOTES**

DATE: 07-27-16