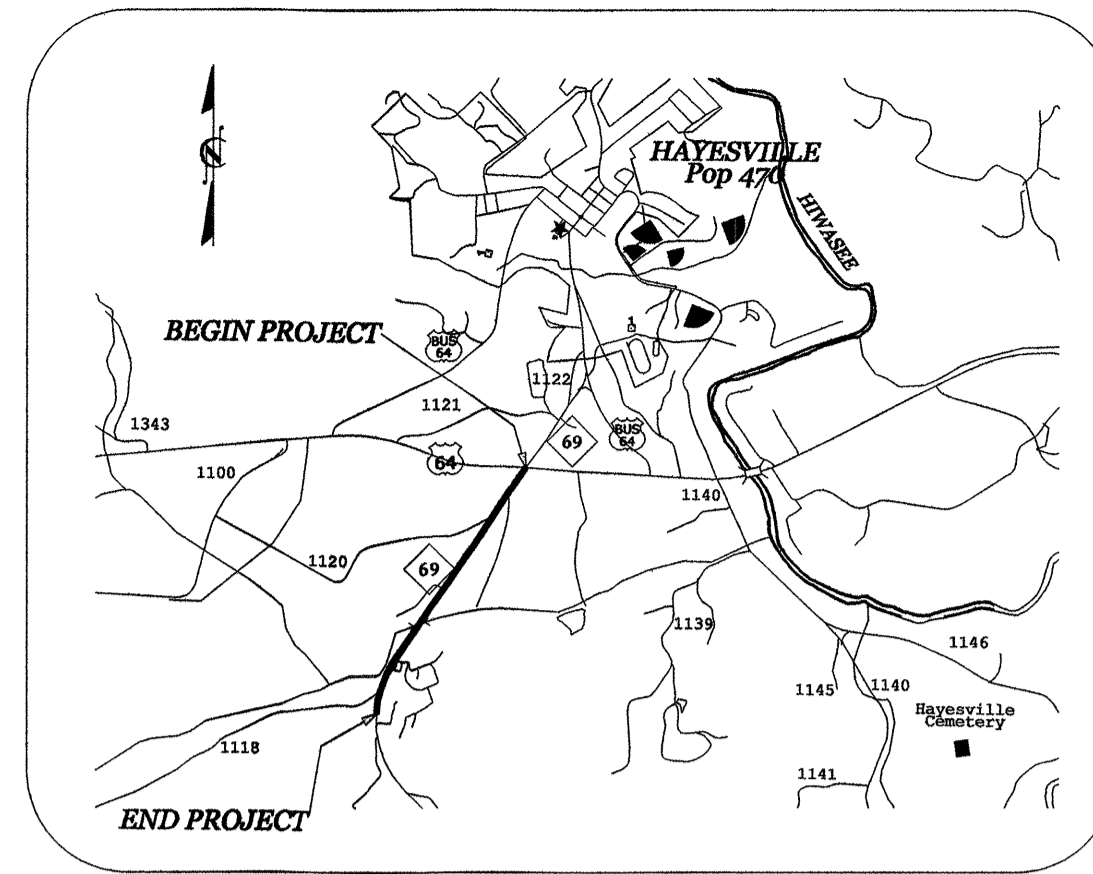


STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	R-5204	1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
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45326.2.STI	STM 00069 (6)	RW	
45326.3.STI	STM 00069 (6)	CONST	

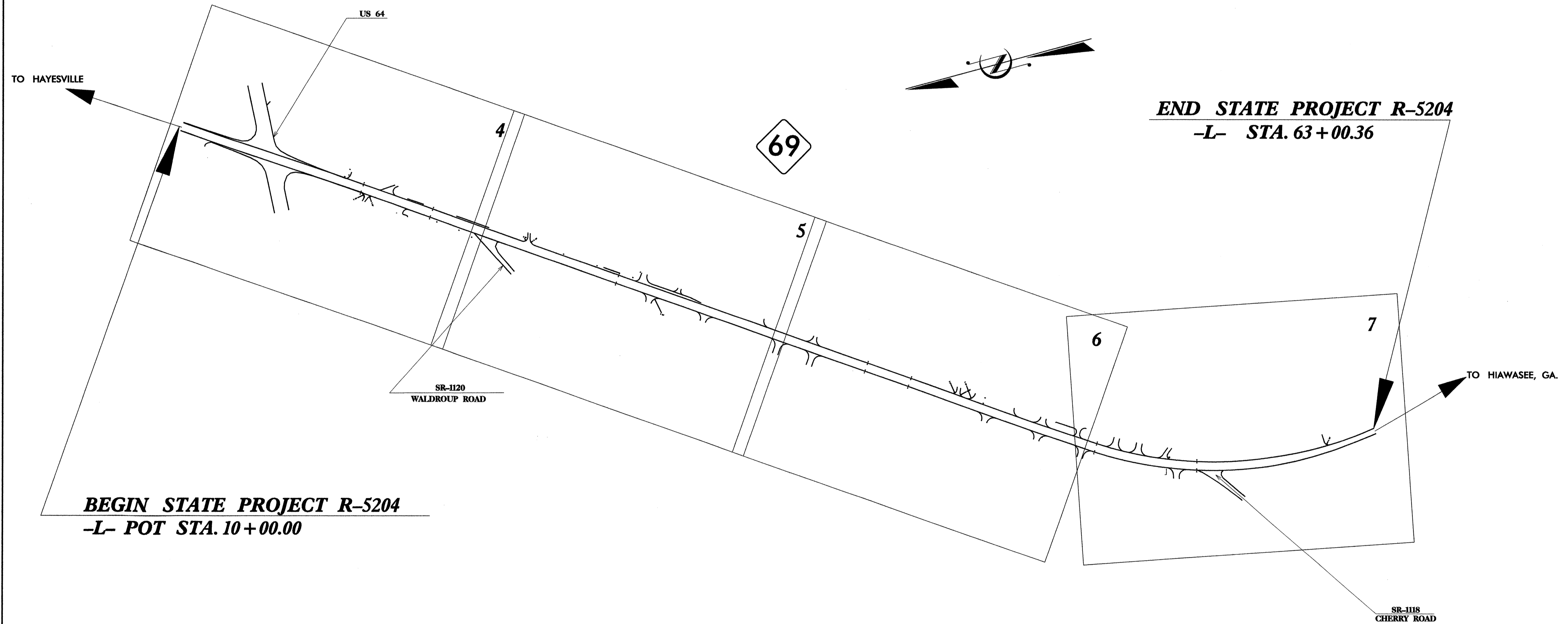
STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

**CLAY COUNTY**

LOCATION : NC 69 FROM NORTH OF US 64 TO SOUTH OF SR-1118  
TYPE OF WORK: GRADING, PAVING, DRAINAGE, ROCK PLATING, AND GUARDRAIL



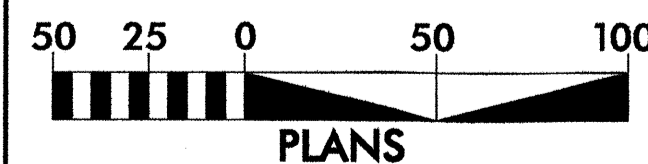
**VICINITY MAP**



**TIP PROJECT: R-5204**

**CONTRACT: C202534**

**GRAPHIC SCALES**



**PROJECT LENGTH**  
**TOTAL LENGTH STATE PROJECT R-5204**  
**1.004 MILES**

Prepared In the Office of:  
**DIVISION OF HIGHWAYS**  
191 Robbinsville Rd., Andrews NC, 28901

2006 STANDARD SPECIFICATIONS

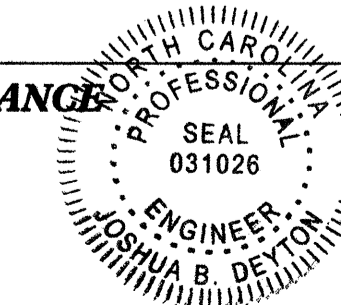
RIGHT OF WAY DATE:

JOEL B. SETZER, PE  
DIVISION ENGINEER

LETTING DATE:  
FEBRUARY 16, 2010

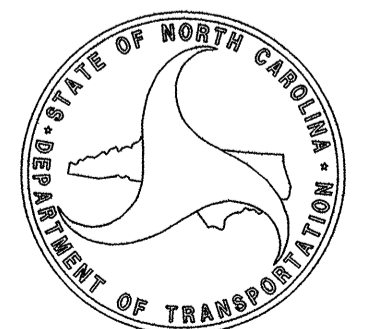
JOSHUA B. DEYTON, PE  
COUNTY MAINTENANCE ENGINEER

COUNTY MAINTENANCE ENGINEER



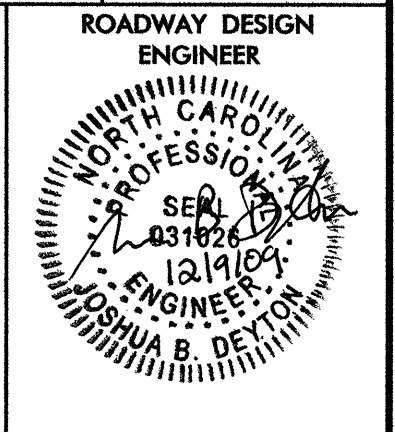
Signature: *Joel B. Setzer* 01/04/10 P.E.  
SIGNATURE:

DIVISION OF HIGHWAYS  
STATE OF NORTH CAROLINA



STATE HIGHWAY DESIGN ENGINEER P.E.

04-JAN-2010 14:54  
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jodeyton AT D:\L1231r60



# STATE OF NORTH CAROLINA DIVISION OF HIGHWAYS

## INDEX OF SHEETS

<b>1</b>	<b>TITLE SHEET</b>
<b>1-A</b>	<b>INDEX OF SHEETS, GENERAL NOTES, AND ROADWAY STANDARDS</b>
<b>1-B</b>	<b>CONVENTIONAL SYMBOLS</b>
<b>2 THRU 2A</b>	<b>TYPICAL SECTIONS, PAVEMENT SCHEDULE</b>
<b>2B</b>	<b>ANCHORAGE FOR FRAMES DETAIL</b>
<b>2C THRU 2D</b>	<b>METHOD OF PIPE INSTALLATION DETAIL</b>
<b>2E</b>	<b>ROCK PLATING DETAIL</b>
<b>3</b>	<b>SUMMARY OF QUANTITIES</b>
<b>3A-3C</b>	<b>SUMMARY OF DRAINAGE QUANTITIES</b>
<b>3D</b>	<b>SUMMARY OF GUARDRAIL</b>
<b>3E</b>	<b>SUMMARY OF EARTHWORK</b>
	<b>REMOVAL OF EXISTING ASPHALT PAVEMENT</b>
<b>4 THRU 7</b>	<b>PLAN SHEETS</b>
<b>TCP-1 THRU TCP-3</b>	<b>TRAFFIC CONTROL PLANS</b>
<b>EC-1 THRU EC-7</b>	<b>EROSION CONTROL PLANS</b>
<b>UC-1 THRU UC-6</b>	<b>UTILITIES PLANS</b>
<b>SIG-1 THRU SIG-4</b>	<b>SIGNAL PLANS</b>

## GENERAL NOTES

GENERAL NOTES: 2006 SPECIFICATIONS  
EFFECTIVE: 07-18-06  
REVISED: 07-30-08

GRADING AND SURFACING OR RESURFACING AND WIDENING:  
THE GRADE LINES SHOWN DENOTE THE FINISHED ELEVATION OF THE PROPOSED SURFACING AT GRADE POINTS SHOWN ON THE TYPICAL SECTIONS. WHERE NO GRADE LINES ARE SHOWN, THE PROFILES SHOWN DENOTE THE TOP ELEVATION OF THE EXISTING PAVEMENT ALONG THE CENTER LINE OF SURVEY ON WHICH THE PROPOSED RESURFACING WILL BE PLACED. GRADE LINES MAY BE ADJUSTED BY THE ENGINEER IN ORDER TO SECURE A PROPER TIE-IN.

CLEARING:  
CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD III.

SHOULDER CONSTRUCTION:  
ASPHALT, EARTH, AND CONCRETE SHOULDER CONSTRUCTION ON THE HIGH SIDE OF SUPERELEVATED CURVES SHALL BE IN ACCORDANCE WITH STD. NO. 560.01.

SIDE ROADS:  
THE CONTRACTOR WILL BE REQUIRED TO DO ALL NECESSARY WORK TO PROVIDE SUITABLE CONNECTIONS WITH ALL ROADS, STREETS, AND DRIVES ENTERING THIS PROJECT. THIS WORK WILL BE PAID FOR AT THE CONTRACT UNIT PRICE FOR THE PARTICULAR ITEMS INVOLVED.

UNDERDRAINS:  
UNDERDRAINS SHALL BE CONSTRUCTED IN ACCORDANCE WITH STD. NO. 815.03 AT LOCATIONS DIRECTED BY THE ENGINEER.

GUARDRAIL:  
THE GUARDRAIL LOCATIONS SHOWN ON THE PLANS MAY BE ADJUSTED DURING CONSTRUCTION AS DIRECTED BY THE ENGINEER. THE CONTRACTOR SHOULD CONSULT WITH THE ENGINEER PRIOR TO ORDERING GUARDRAIL MATERIAL.

SUBSURFACE PLANS:  
NO SUBSURFACE PLANS ARE AVAILABLE ON THIS PROJECT. THE CONTRACTOR SHOULD MAKE HIS OWN INVESTIGATION AS TO THE SUBSURFACE CONDITIONS.

UTILITIES:  
UTILITY OWNERS ON THIS PROJECT ARE  
Balsam West, Blue Ridge Mountain EMC  
Clay County Sewer and Water  
Verizon, Windstream  
ANY RELOCATION OF EXISTING UTILITIES WILL BE ACCOMPLISHED BY OTHERS, EXCEPT AS SHOWN ON THE PLANS.

RIGHT-OF-WAY MARKERS:  
ALL RIGHT-OF-WAY MARKERS ON THIS PROJECT SHALL BE PLACED BY OTHERS.

## LIST OF ROADWAY STANDARDS

EFF. 07-18-06  
REV. 01-02-07

2006 ROADWAY ENGLISH STANDARD DRAWINGS

The following Roadway Standards as appear in "Roadway Standard Drawings" Highway Design Branch - N. C. Department of Transportation - Raleigh, N. C., Dated July 18, 2006 are applicable to this project and by reference hereby are considered a part of these plans:

STD. NO.	TITLE
DIVISION 2 - EARTHWORK	
200.03	Method of Clearing - Method III
225.02	Guide for Grading Subgrade - Secondary and Local
DIVISION 5 - SUBGRADE, BASES AND SHOULDERS	
560.01	Method of Shoulder Construction - High Side of Superelevated Curve - Method I
DIVISION 6 - ASPHALT BASES AND PAVEMENTS	
654.01	Pavement Repairs
DIVISION 8 - INCIDENTALS	
815.03	Pipe Underdrain and Blind Drain
838.27	Reinforced Concrete Endwall - for Single 60" Pipe 90 Skew
838.57	Reinforced Brick Endwall - for Single 60" Pipe 90 Skew
838.75	Notes for Reinforced Brick Endwall - Std. Dwg 838.51 thru 838.70
840.14	Concrete Drop Inlet - 12" thru 30" Pipe
840.15	Brick Drop Inlet - 12" thru 30" Pipe
840.16	Drop Inlet Frame and Grates - for use with Std. Dwg 840.14 and 840.15
840.17	Concrete Grated Drop Inlet Type 'A' - 12" thru 72" Pipe
840.20	Frames and Wide Slot Flat Grates
840.24	Frames and Narrow Slot Sag Grates
840.26	Brick Grated Drop Inlet Type 'A' - 12" thru 72" Pipe
840.29	Frames and Narrow Slot Flat Grates
840.34	Traffic Bearing Junction Box - for Use with Pipes 42" and Under
840.35	Traffic Bearing Grated Drop Inlet - for Cast Iron Double Frame and Grates
840.45	Precast Drainage Structure
840.46	Traffic Bearing Precast Drainage Structure
840.54	Manhole Frame and Cover
840.66	Drainage Structure Steps
840.71	Concrete and Brick Pipe Plug
846.01	Concrete Curb, Gutter and Curb & Gutter
846.02	Drop Inlet Installation in Expressway Gutter
862.01	Guardrail Placement
862.02	Guardrail Installation
876.02	Guide for Rip Rap at Pipe Outlets

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1

Note: Not to Scale

\*S.U.E. = Subsurface Utility Engineering

STATE OF NORTH CAROLINA DIVISION OF HIGHWAYS

CONVENTIONAL PLAN SHEET SYMBOLS

BOUNDARIES AND PROPERTY:

Table listing symbols for boundaries and property: State Line, County Line, Township Line, City Line, Reservation Line, Property Line, Existing Iron Pin, Property Corner, Property Monument, Parcel/Sequence Number, Existing Fence Line, Proposed Woven Wire Fence, Proposed Chain Link Fence, Proposed Barbed Wire Fence, Existing Wetland Boundary, Proposed Wetland Boundary, Existing Endangered Animal Boundary, Existing Endangered Plant Boundary.

BUILDINGS AND OTHER CULTURE:

Table listing symbols for buildings and other culture: Gas Pump Vent or U/G Tank Cap, Sign, Well, Small Mine, Foundation, Area Outline, Cemetery, Building, School, Church, Dam.

HYDROLOGY:

Table listing symbols for hydrology: Stream or Body of Water, Hydro, Pool or Reservoir, Jurisdictional Stream, Buffer Zone 1, Buffer Zone 2, Flow Arrow, Disappearing Stream, Spring, Wetland, Proposed Lateral, Tail, Head Ditch, False Sump.

RAILROADS:

Table listing symbols for railroads: Standard Gauge, RR Signal Milepost, Switch, RR Abandoned, RR Dismantled.

RIGHT OF WAY:

Table listing symbols for right of way: Baseline Control Point, Existing Right of Way Marker, Existing Right of Way Line, Proposed Right of Way Line, Proposed Right of Way Line with Iron Pin and Cap Marker, Proposed Right of Way Line with Concrete or Granite Marker, Existing Control of Access, Proposed Control of Access, Existing Easement Line, Proposed Temporary Construction Easement, Proposed Temporary Drainage Easement, Proposed Permanent Drainage Easement, Proposed Permanent Drainage / Utility Easement, Proposed Permanent Utility Easement, Proposed Temporary Utility Easement, Proposed Permanent Easement with Iron Pin and Cap Marker.

ROADS AND RELATED FEATURES:

Table listing symbols for roads and related features: Existing Edge of Pavement, Existing Curb, Proposed Slope Stakes Cut, Proposed Slope Stakes Fill, Proposed Wheel Chair Ramp, Existing Metal Guardrail, Proposed Guardrail, Existing Cable Guiderail, Proposed Cable Guiderail, Equality Symbol, Pavement Removal.

VEGETATION:

Table listing symbols for vegetation: Single Tree, Single Shrub, Hedge, Woods Line, Orchard, Vineyard.

EXISTING STRUCTURES:

Table listing symbols for existing structures: MAJOR: Bridge, Tunnel or Box Culvert, Bridge Wing Wall, Head Wall and End Wall; MINOR: Head and End Wall, Pipe Culvert, Footbridge, Drainage Box: Catch Basin, DI or JB, Paved Ditch Gutter, Storm Sewer Manhole, Storm Sewer.

UTILITIES:

Table listing symbols for utilities: POWER: Existing Power Pole, Proposed Power Pole, Existing Joint Use Pole, Proposed Joint Use Pole, Power Manhole, Power Line Tower, Power Transformer, U/G Power Cable Hand Hole, H-Frame Pole, Recorded U/G Power Line, Designated U/G Power Line (S.U.E.\*); TELEPHONE: Existing Telephone Pole, Proposed Telephone Pole, Telephone Manhole, Telephone Booth, Telephone Pedestal, Telephone Cell Tower, U/G Telephone Cable Hand Hole, Recorded U/G Telephone Cable, Designated U/G Telephone Cable (S.U.E.\*), Recorded U/G Telephone Conduit, Designated U/G Telephone Conduit (S.U.E.\*), Recorded U/G Fiber Optics Cable, Designated U/G Fiber Optics Cable (S.U.E.\*).

WATER:

Table listing symbols for water: Water Manhole, Water Meter, Water Valve, Water Hydrant, Recorded U/G Water Line, Designated U/G Water Line (S.U.E.\*), Above Ground Water Line.

TV:

Table listing symbols for TV: TV Satellite Dish, TV Pedestal, TV Tower, U/G TV Cable Hand Hole, Recorded U/G TV Cable, Designated U/G TV Cable (S.U.E.\*), Recorded U/G Fiber Optic Cable, Designated U/G Fiber Optic Cable (S.U.E.\*).

GAS:

Table listing symbols for gas: Gas Valve, Gas Meter, Recorded U/G Gas Line, Designated U/G Gas Line (S.U.E.\*), Above Ground Gas Line.

SANITARY SEWER:

Table listing symbols for sanitary sewer: Sanitary Sewer Manhole, Sanitary Sewer Cleanout, U/G Sanitary Sewer Line, Above Ground Sanitary Sewer, Recorded SS Forced Main Line, Designated SS Forced Main Line (S.U.E.\*).

MISCELLANEOUS:

Table listing symbols for miscellaneous: Utility Pole, Utility Pole with Base, Utility Located Object, Utility Traffic Signal Box, Utility Unknown U/G Line, U/G Tank; Water, Gas, Oil, AG Tank; Water, Gas, Oil, U/G Test Hole (S.U.E.\*), Abandoned According to Utility Records, End of Information.

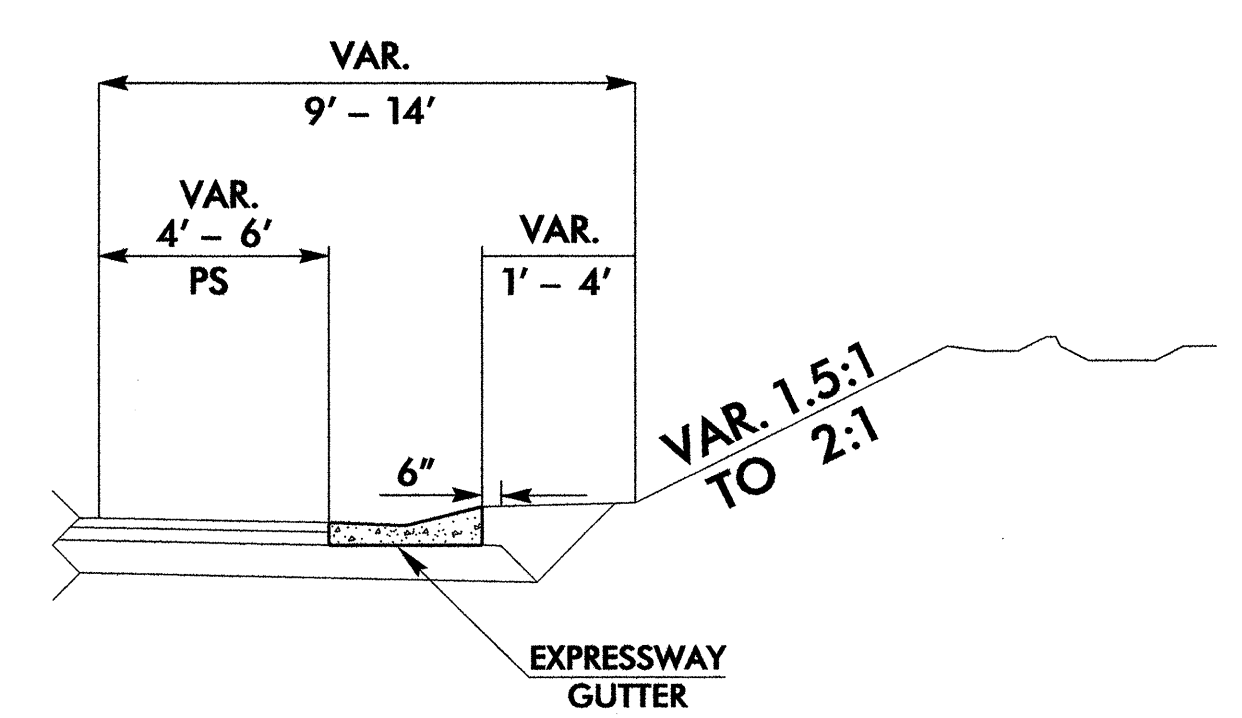
# PAVEMENT SCHEDULE

(FINAL PAVEMENT DESIGN)

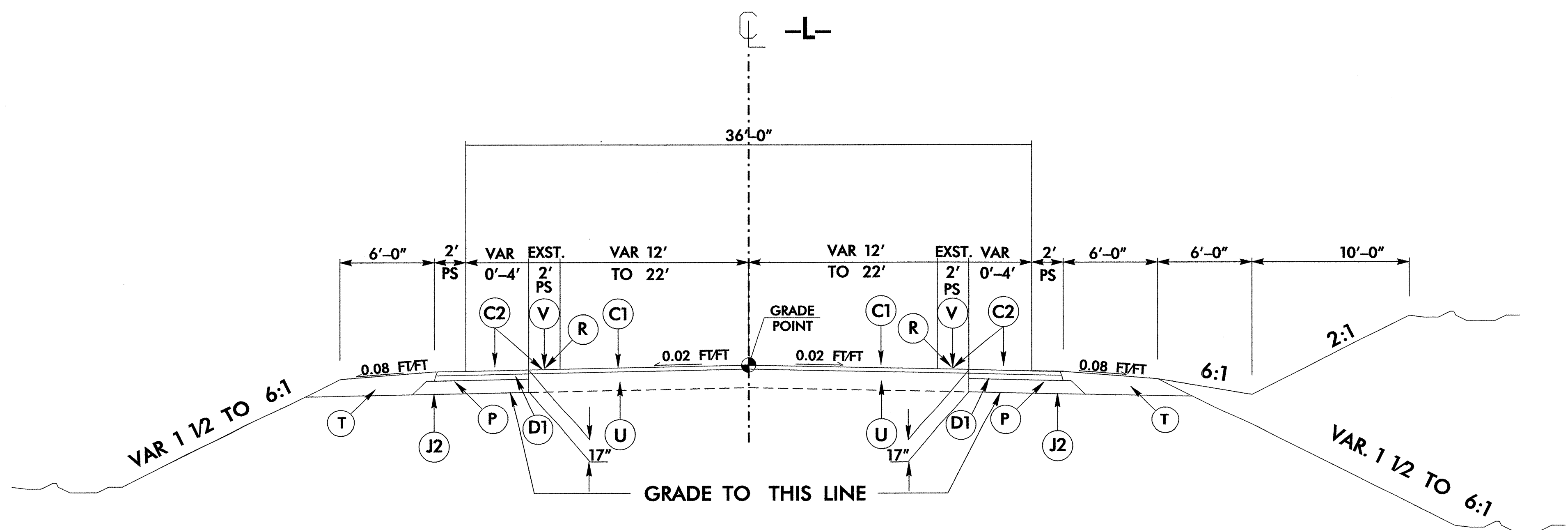
C1	PROP. APPROX. 1.5" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.	P	PRIME COAT AT THE RATE OF 0.35 GAL PER SQ. YDS.
C2	PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD. IN EACH OF TWO LAYERS	R	EXISTING MILLED RUMBLE STRIPS.
D1	PROP. APPROX. 4" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.	T	EARTH MATERIAL.
J1	PROP. 6" AGGREGATE BASE COURSE.	U	EXISTING PAVEMENT.
J2	PROP. 10" AGGREGATE BASE COURSE.	V	MILLING ASPHALT PAVEMENT 0" TO 3" TO REMOVE EXISTING RUMBLE STRIP OR AS DIRECTED BY THE ENGINEER.

NOTE: PAVEMENT EDGE SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE

## EXPRESSWAY GUTTER DETAIL



USE WITH TYPICAL 1

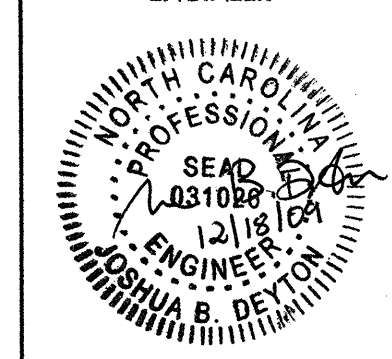


## TYPICAL SECTION NO. 1

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- L- Sta. 20+34 to Sta. 23+09 +/- RT
- L- Sta. 25+58 to Sta. 30+35 +/- LT
- L- Sta. 50+20 to Sta. 51+42 +/- LT
- L- Sta. 51+99 to Sta. 52+42 +/- LT
- L- Sta. 52+99 to Sta. 53+69 +/- LT
- L- Sta. 54+08 to Sta. 60+66 +/- LT

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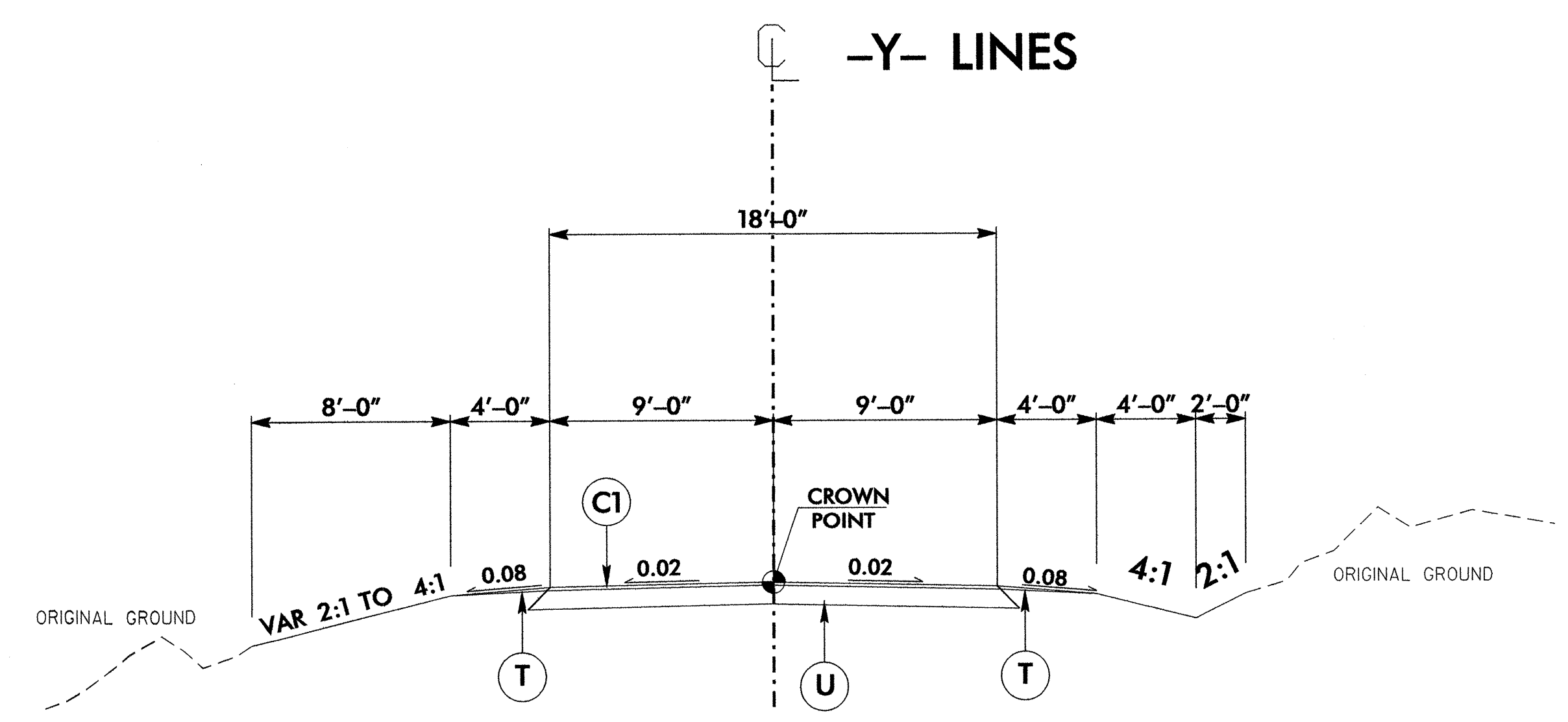


# PAVEMENT SCHEDULE

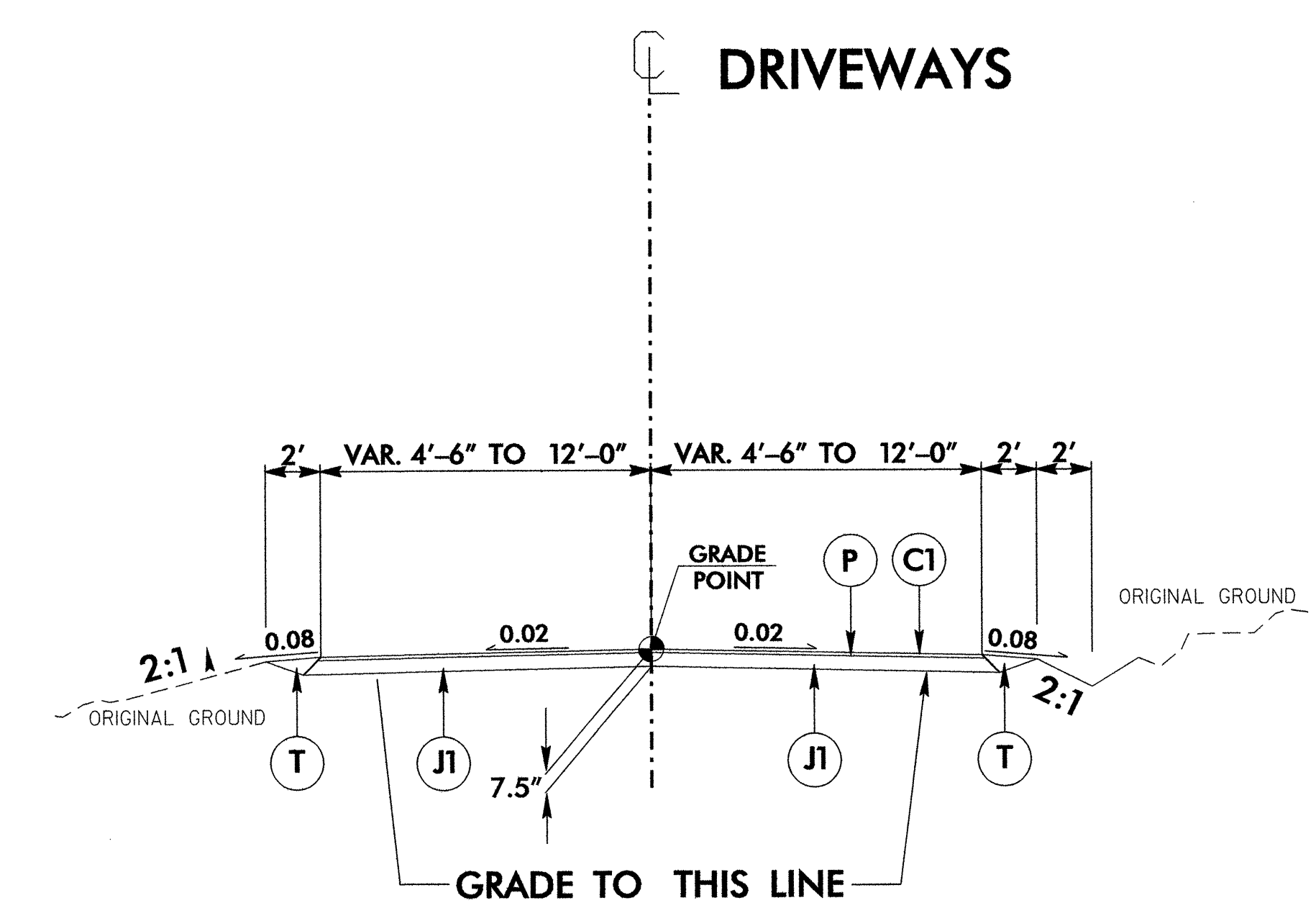
(FINAL PAVEMENT DESIGN)

<b>C1</b>	PROP. APPROX. 1.5" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.	<b>J2</b>	PROP. 10" AGGREGATE BASE COURSE.
<b>C2</b>	PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD. IN EACH OF TWO LAYERS	<b>P</b>	PRIME COAT AT THE RATE OF 0.35 GAL PER SQ. YDS.
<b>D1</b>	PROP. APPROX. 4" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.	<b>T</b>	EARTH MATERIAL.
<b>J1</b>	PROP. 6" AGGREGATE BASE COURSE.	<b>U</b>	EXISTING PAVEMENT.

NOTE: PAVEMENT EDGE SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE



**TYPICAL SECTION NO. 2**  
 -Y1- Sta. 10+00 to Sta. 12+00  
 -Y2- Sta. 10+00 to Sta. 12+00



**TYPICAL SECTION NO. 3**

NOTE: ALL EXISTING AND PROPOSED DRIVEWAYS TO BE PAVED TO THE EXISTING R/W LINE OR AS DIRECTED BY THE ENGINEER

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

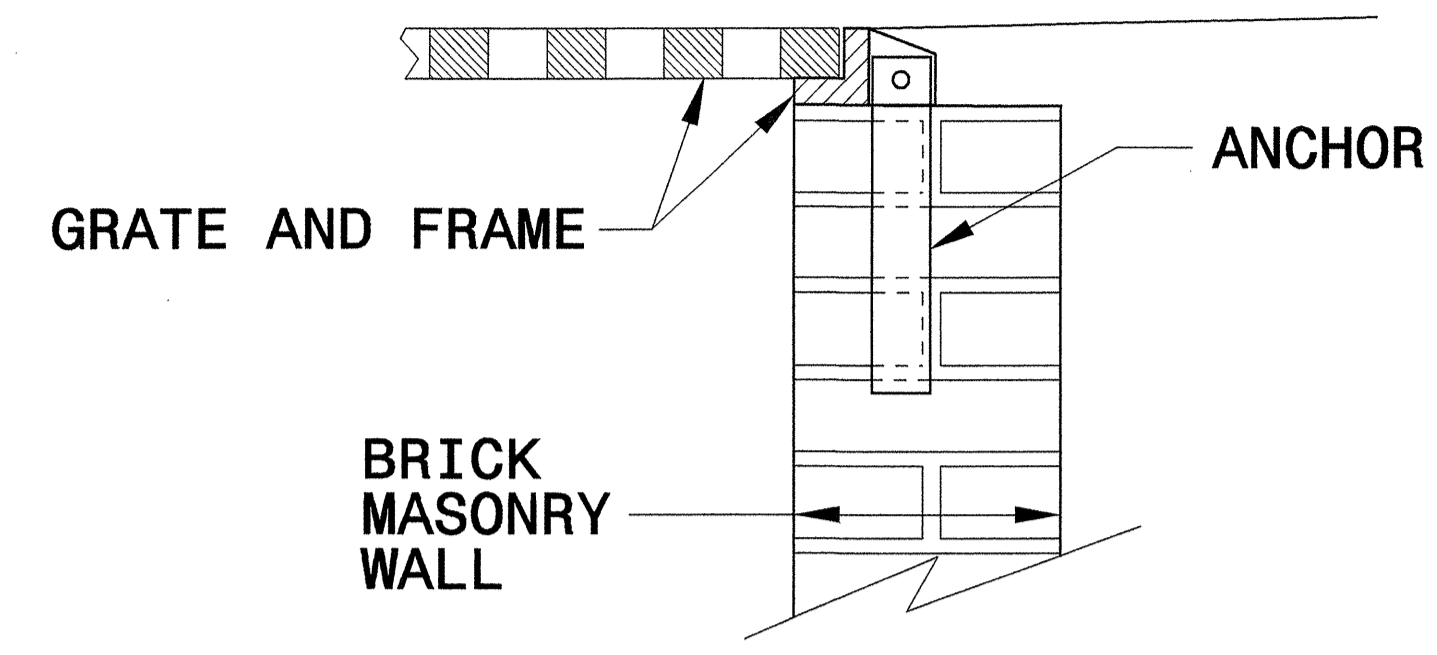
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**ANCHORAGE FOR FRAMES**  
BRICK/CONCRETE/PRECAST CONCRETE

SHEET 1 OF 1  
**840D25**

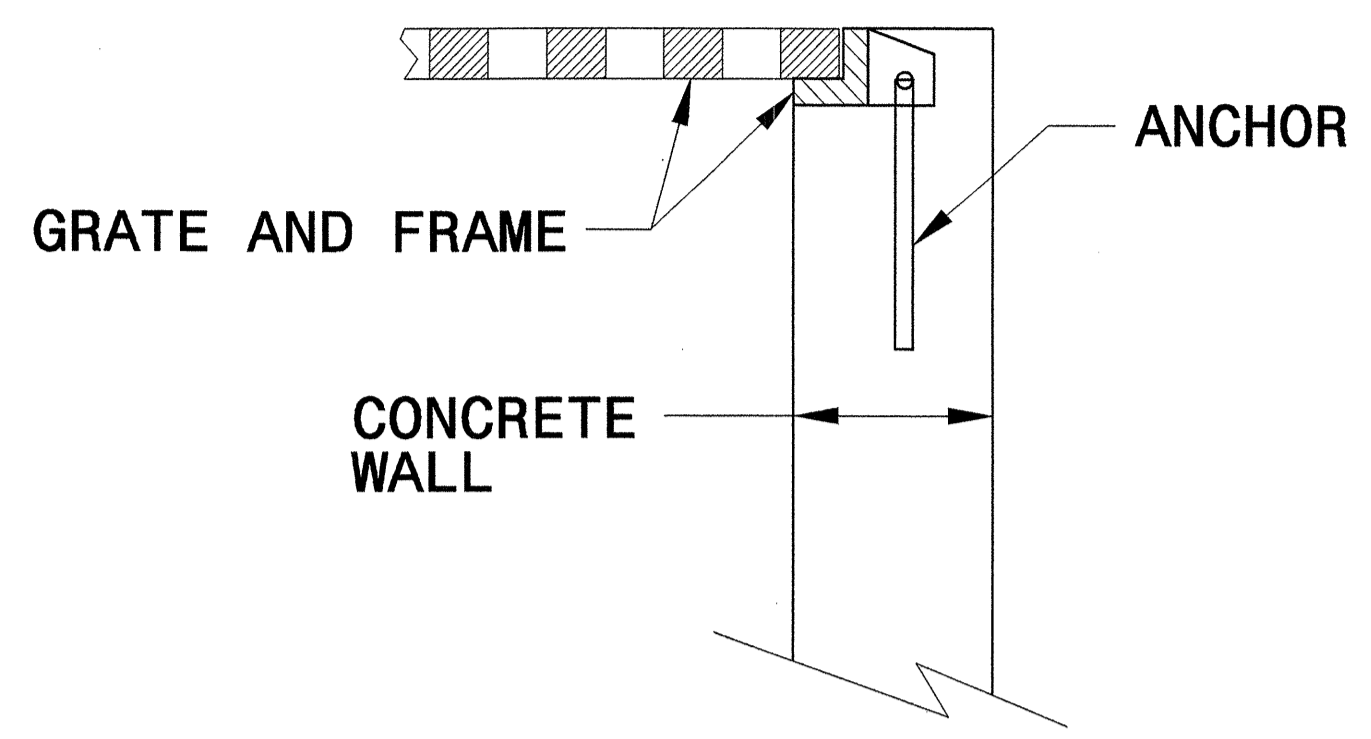
STATE OF NORTH CAROLINA  
DEPT. OF TRANSPORTATION  
DIVISION OF HIGHWAYS  
RALEIGH, N.C.

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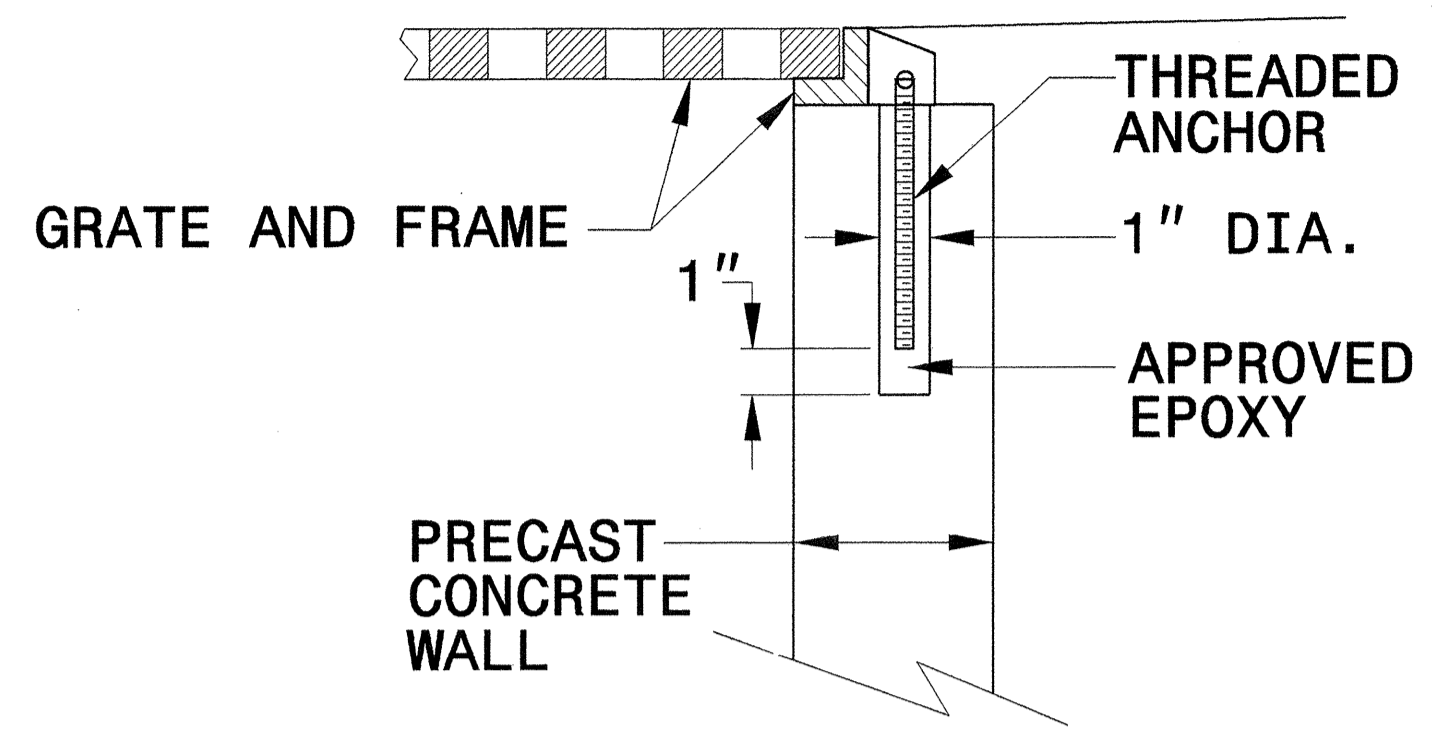
SHEET 1 OF 1  
**840D25**



**BRICK MASONRY CONSTRUCTION**



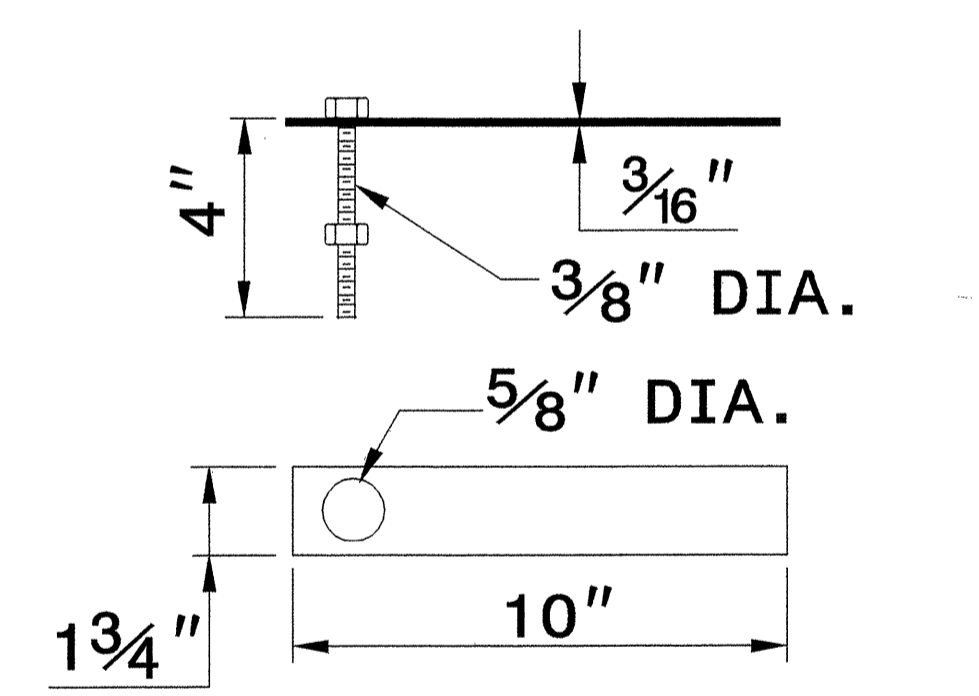
**CONCRETE CONSTRUCTION**



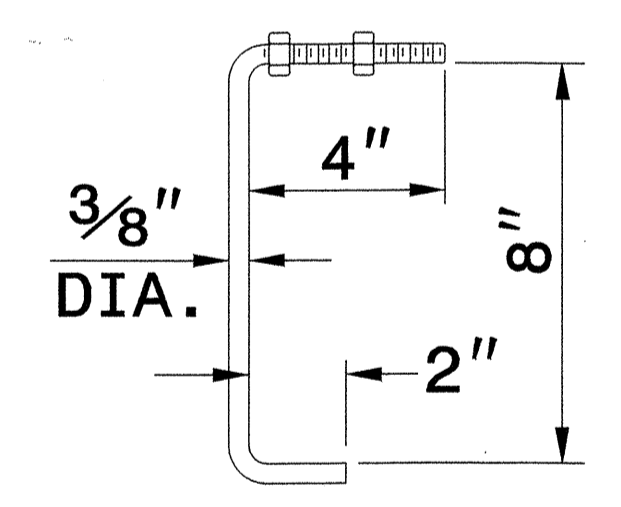
**PRECAST CONCRETE CONSTRUCTION**

**DETAIL SHOWING ANCHORAGE OF FRAME FOR GRATED DROP INLET**

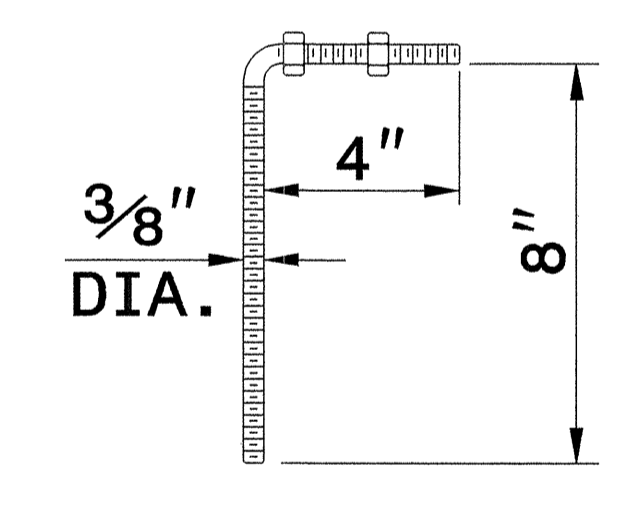
NOTE:  
CONSTRUCT GRATED DROP INLET TO COINCIDE WITH NORMAL OR SUPERELEVATED SHOULDER OR PAVEMENT SLOPE.



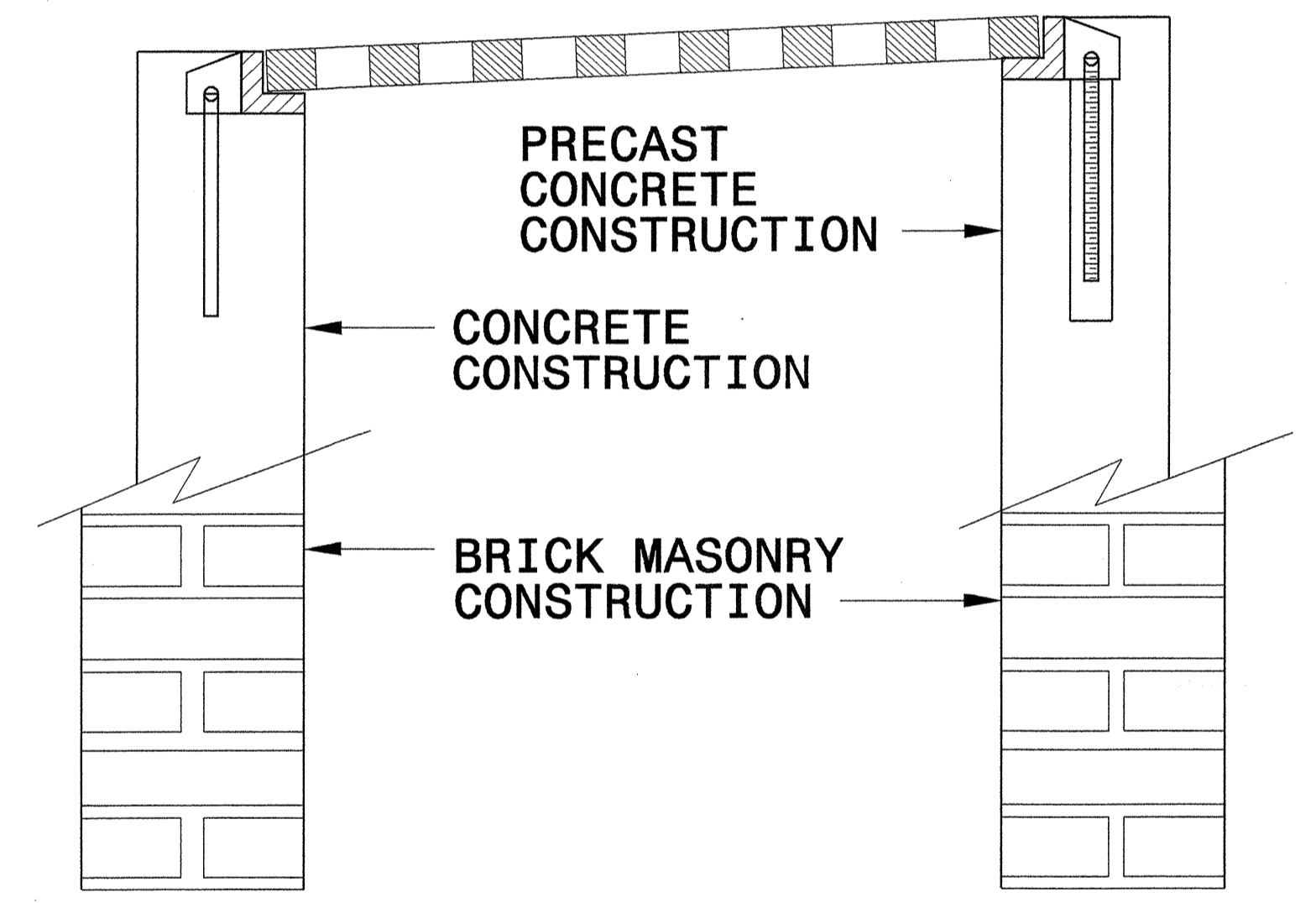
**MASONRY ANCHOR**  
3/8" DIA. BOLT WITH PLATE



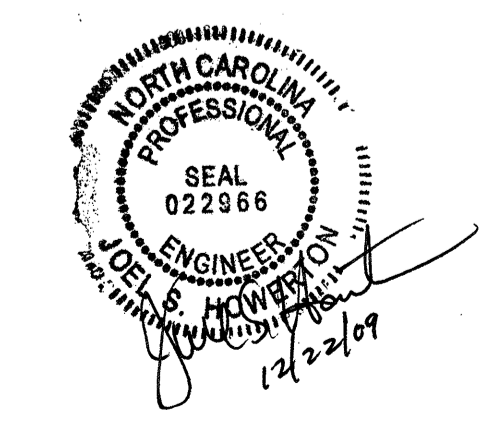
**CONCRETE ANCHOR**  
3/8" DIA. BENT BAR



**PRECAST CONCRETE ANCHOR**  
3/8" DIA. BENT BAR



**FRAME AND GRATE INSTALLATION FOR NORMAL CROWN AND SUPERELEVATED SECTIONS**



PROJECT SERVICES UNIT  
STANDARDS AND SPECIAL DESIGN  
Office 919-250-4128 FAX 919-250-4119

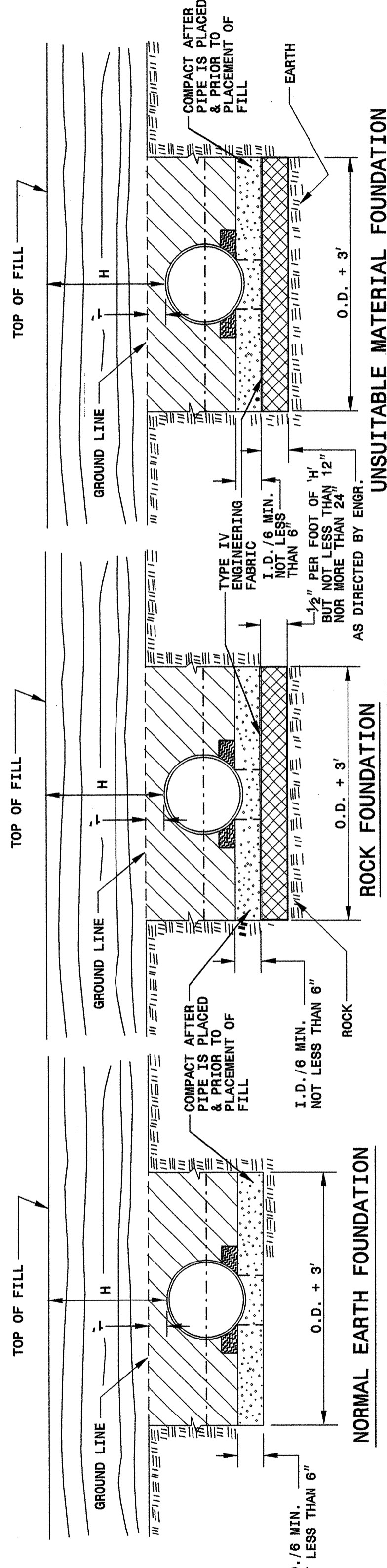
**SEE PLATE FOR TITLE**

ORIGINAL BY: 2006 STD 840.25 DATE: 07/18/06  
 MODIFIED BY: E.E. WARD DATE: 9/25/06  
 CHECKED BY: [Signature] DATE: 11/13/06  
 FILE SPEC.: [Signature]

SYSTEMS DESIGN SUPERNAME

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

7-06

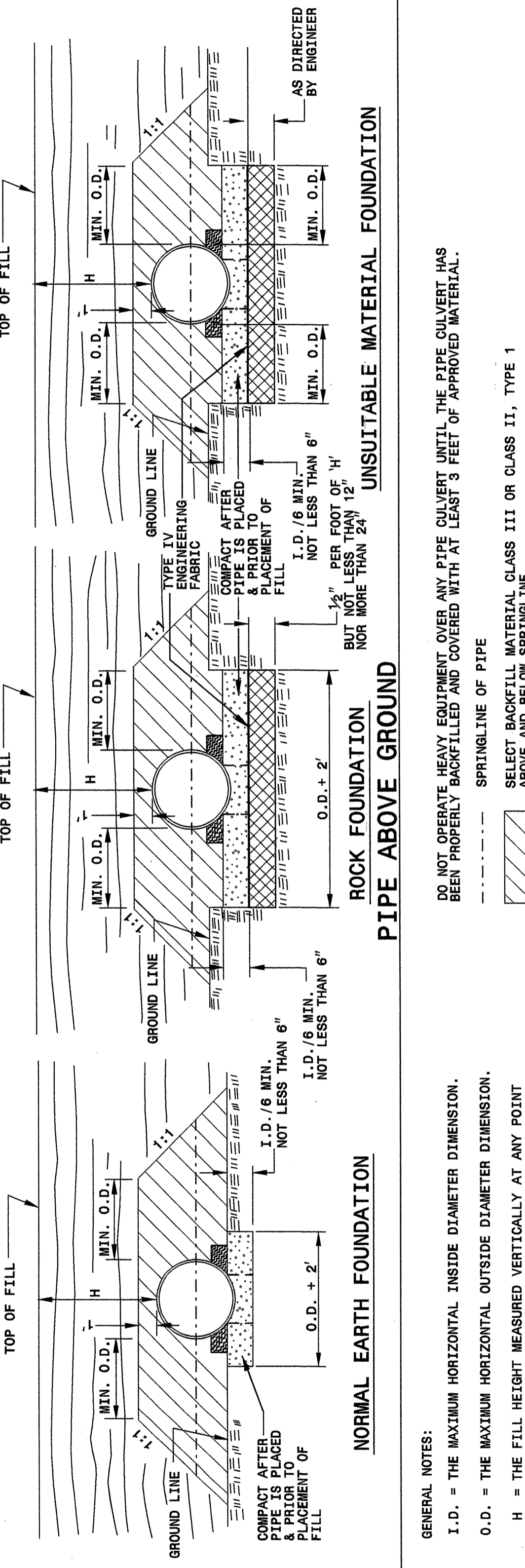


ENGLISH DETAIL DRAWING FOR  
 METHOD OF PIPE INSTALLATION  
 FLEXIBLE PIPE

300D01

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

7-06



GENERAL NOTES:  
 I.D. = THE MAXIMUM HORIZONTAL INSIDE DIAMETER DIMENSION.  
 O.D. = THE MAXIMUM HORIZONTAL OUTSIDE DIAMETER DIMENSION.  
 H = THE FILL HEIGHT MEASURED VERTICALLY AT ANY POINT ALONG THE PIPE FROM THE TOP OF THE PIPE TO THE TOP OF THE EMBANKMENT AT THAT POINT.

TAKE CARE TO FULLY COMPACT HAUNCH ZONE OF PIPE BACKFILL.  
 LOOSELY PLACED SELECT MATERIAL CLASS III OR CLASS II, TYPE 1 FOR PIPE BEDDING. LEAVE SECTION DIRECTLY BENEATH PIPE UNCOMPACTED AS PIPE SEATING AND BACKFILL WILL ACCOMPLISH COMPACTION.

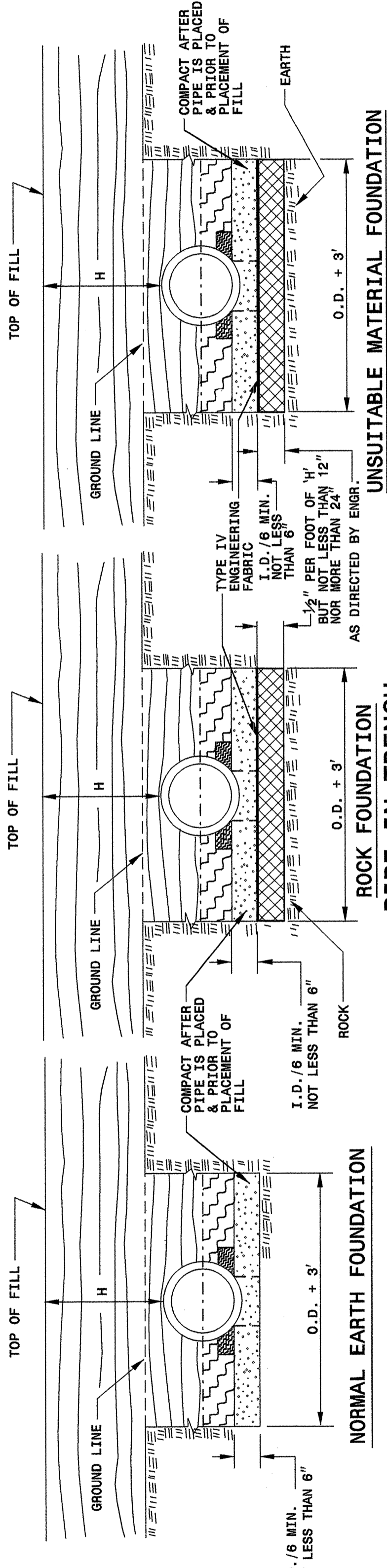
DO NOT OPERATE HEAVY EQUIPMENT OVER ANY PIPE CULVERT UNTIL THE PIPE CULVERT HAS BEEN PROPERLY BACKFILLED AND COVERED WITH AT LEAST 3 FEET OF APPROVED MATERIAL.

SPRINGLINE OF PIPE  
 APPROVED SUITABLE LOCAL MATERIAL.  
 UNDISTURBED EARTH MATERIAL  
 SELECT MATERIAL CLASS V OR VI FOR FOUNDATION CONDITIONING. ENCAPSULATE WITH ENGINEERING FABRIC AS DIRECTED BY THE ENGINEER.

SHEET 1 OF 3  
 300D01

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

7-06

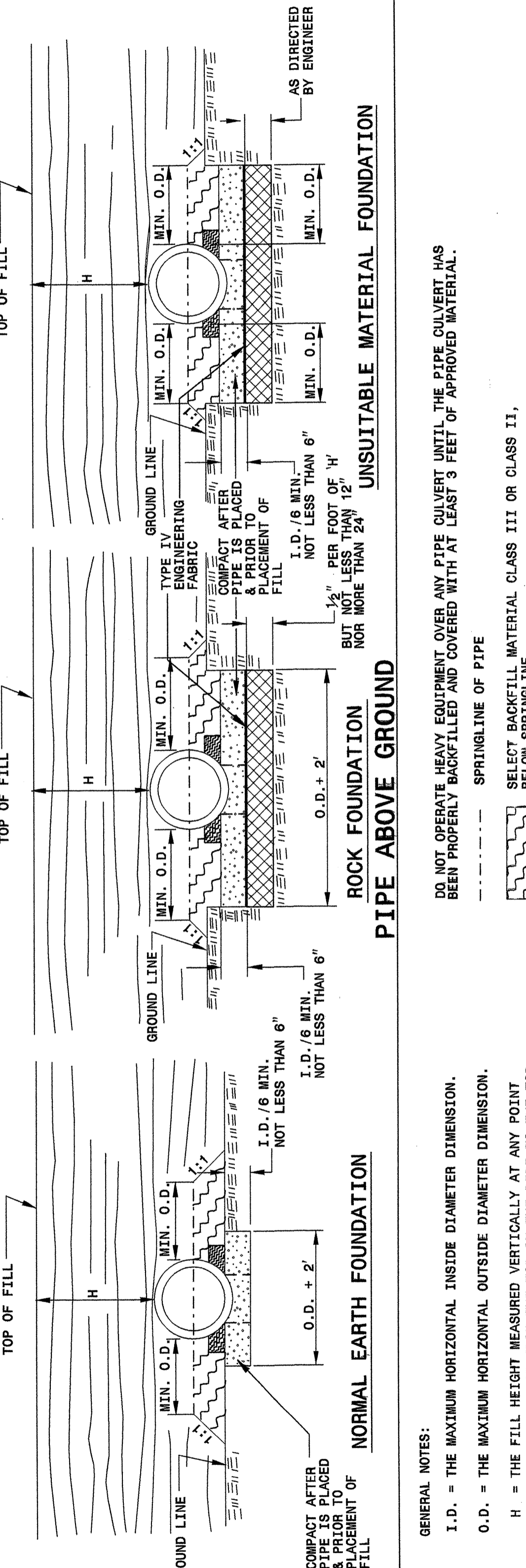


ENGLISH DETAIL DRAWING FOR  
 METHOD OF PIPE INSTALLATION  
 RIGID PIPE

300D01

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

7-06



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 O.D. = THE MAXIMUM HORIZONTAL OUTSIDE DIAMETER DIMENSION.  
 H = THE FILL HEIGHT MEASURED VERTICALLY AT ANY POINT ALONG THE PIPE FROM THE TOP OF THE PIPE TO THE TOP OF THE EMBANKMENT AT THAT POINT.

TAKE CARE TO FULLY COMPACT HAUNCH ZONE OF PIPE BACKFILL.  
 LOOSELY PLACED SELECT MATERIAL CLASS III OR CLASS II, TYPE 1 FOR PIPE BEDDING. LEAVE SECTION DIRECTLY BENEATH PIPE UNCOMPACTED AS PIPE SEATING AND BACKFILL WILL ACCOMPLISH COMPACTION.

DO NOT OPERATE HEAVY EQUIPMENT OVER ANY PIPE CULVERT UNTIL THE PIPE CULVERT HAS BEEN PROPERLY BACKFILLED AND COVERED WITH AT LEAST 3 FEET OF APPROVED MATERIAL.

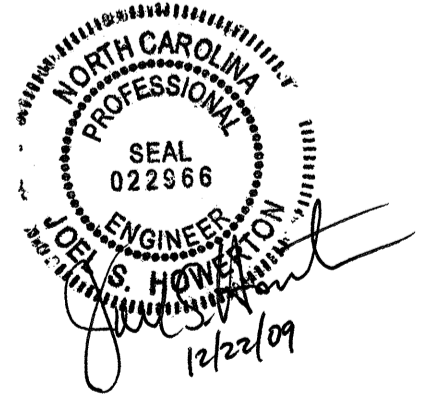
SPRINGLINE OF PIPE  
 APPROVED SUITABLE LOCAL MATERIAL ABOVE SPRINGLINE.  
 UNDISTURBED EARTH MATERIAL  
 SELECT MATERIAL CLASS V OR VI FOR FOUNDATION CONDITIONING. ENCAPSULATE WITH ENGINEERING FABRIC AS DIRECTED BY THE ENGINEER.

SHEET 2 OF 3  
 300D01

PROJECT SERVICES UNIT  
 STANDARDS AND SPECIAL DESIGN  
 Office 919-250-4128 FAX 919-250-4119

**SEE PLATE FOR TITLE**

ORIGINAL BY: KKempf DATE: 5-15-09  
 MODIFIED BY: [Signature] DATE: 7/20/09  
 CHECKED BY: [Signature] DATE: 7/20/09  
 FILE SPEC: c:\projects\special details\stds\stdstodetails\30001\0300d01.dgn



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

7-06

ENGLISH DETAIL DRAWING FOR  
**METHOD OF PIPE INSTALLATION**

FILL HEIGHT TABLES

SHEET 3 OF 3  
**300D01**

**FLEXIBLE PIPE**

Round Corrugated Steel Pipe 2 2/3 x 1/2 corrugation **				
Diameter (inches)	Minimum cover (inches)	Maximum Height of Cover (feet)		
		16 (Ga)	14	12
12	12	204	256	
15	12	162	204	
18	12	135	169	239
21	12	115	145	204
24	12	100	128	178
30	12	79	100	142
36	12	65	83	117
42	12	55	70	100
48	12	48	61	87
54	12	44	54	77
60	12		49	69
66	12			61
72	12			54
78	12			47
84	12			40

- HDPE - \* (Minimum fill) 2' for pipe diameters ≥ 12" and ≤ 60"
- \* (Maximum fill) 20' for pipe diameters ≤ 24" and ≤ 60"
- 17' for pipe diameters ≥ 30" and ≤ 60"
- PVC - \* (Minimum fill) 2' for pipe diameters ≥ 12" and ≤ 36"
- \* (Maximum fill) 30' for pipe diameters ≥ 12" and ≤ 36"

\* FILL HEIGHT IS MEASURED FROM THE TOP OF THE PIPE TO THE BOTTOM OF THE PAVEMENT STRUCTURE

**RIGID PIPE**

- RCP - \* (Minimum fill) 1' for Class IV & CLASS V
- 2' for Class III & Class II
- \* (Maximum fill) 10' - Class II pipe
- 20' - Class III pipe
- 30' - Class IV pipe
- 40' - Class V pipe

(For fills > 40' & < 80' use LRFD Direct Design Method)

\* FILL HEIGHT IS MEASURED FROM THE TOP OF THE PIPE TO THE BOTTOM OF THE PAVEMENT STRUCTURE

Round Corrugated Aluminum Pipe 2 2/3 x 1/2 corrugation **				
Diameter (inches)	Minimum cover (inches)	Maximum Height of Cover (feet)		
		16 (Ga)	14	12
12	12	123	155	218
15	12	98	123	174
18	12	81	102	144
21	12	69	87	123
24	12	60	76	108
27	12	53	67	95
30	12	47	60	85
36	12	42	50	71
42	12	38	46	60
48	12	34	42	52
54	12	31	39	48
60	12	28	36	44
66	12	26	34	41
72	12	24	32	39
78	12	22	30	37
84	12	21	29	36

\*\* FOR DIFFERENT CORRUGATIONS AND ARCH PIPES REFER TO ROADWAY DESIGN MANUAL OR MANUFACTURERS SPECIFICATION.

REFER TO THE FOLLOWING FOR PIPE SPECIFICATIONS

- CSP - AASHTO M36
- CAAP - AASHTO M196
- HDPE - AASHTO M294
- PVC - ASTM F949 or AASHTO M804

NOTES: FILL HEIGHTS SHOWN WERE CALCULATED USING AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS

1' MINIMUM COVER FOR ALL SIDE DRAIN PIPE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS

REFER TO THE FOLLOWING FOR PIPE SPECIFICATIONS

- RCP - AASHTO M170

NOTES: FILL HEIGHTS SHOWN WERE CALCULATED USING AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS

1' MINIMUM COVER FOR ALL SIDE DRAIN PIPE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS

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

7-06

ENGLISH DETAIL DRAWING FOR  
**METHOD OF PIPE INSTALLATION**

FILL HEIGHT TABLES

SHEET 3 OF 3  
**300D01**

**PROJECT SERVICES UNIT  
 STANDARDS AND SPECIAL DESIGN**  
 Office 919-250-4128 FAX 919-250-4119

**SEE PLATE FOR TITLE**

ORIGINAL BY: KKempf DATE: 5-15-09  
 MODIFIED BY: DATE:   
 CHECKED BY: DATE: 7/30/09  
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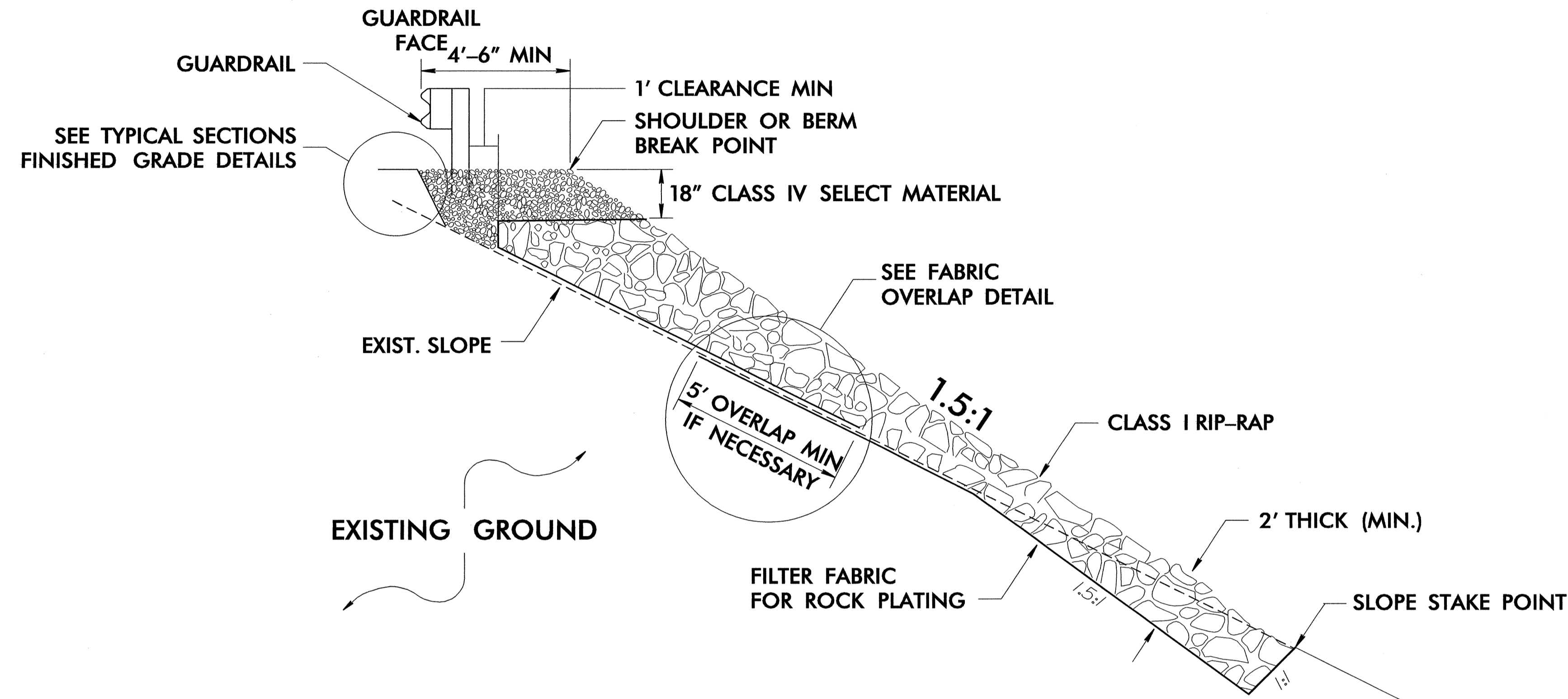
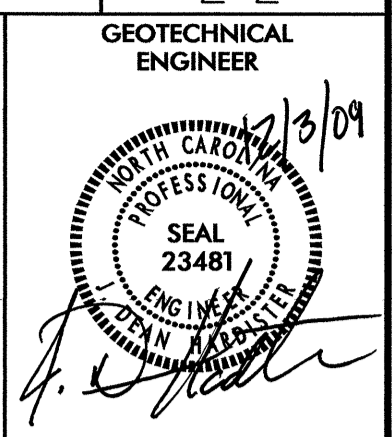


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STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

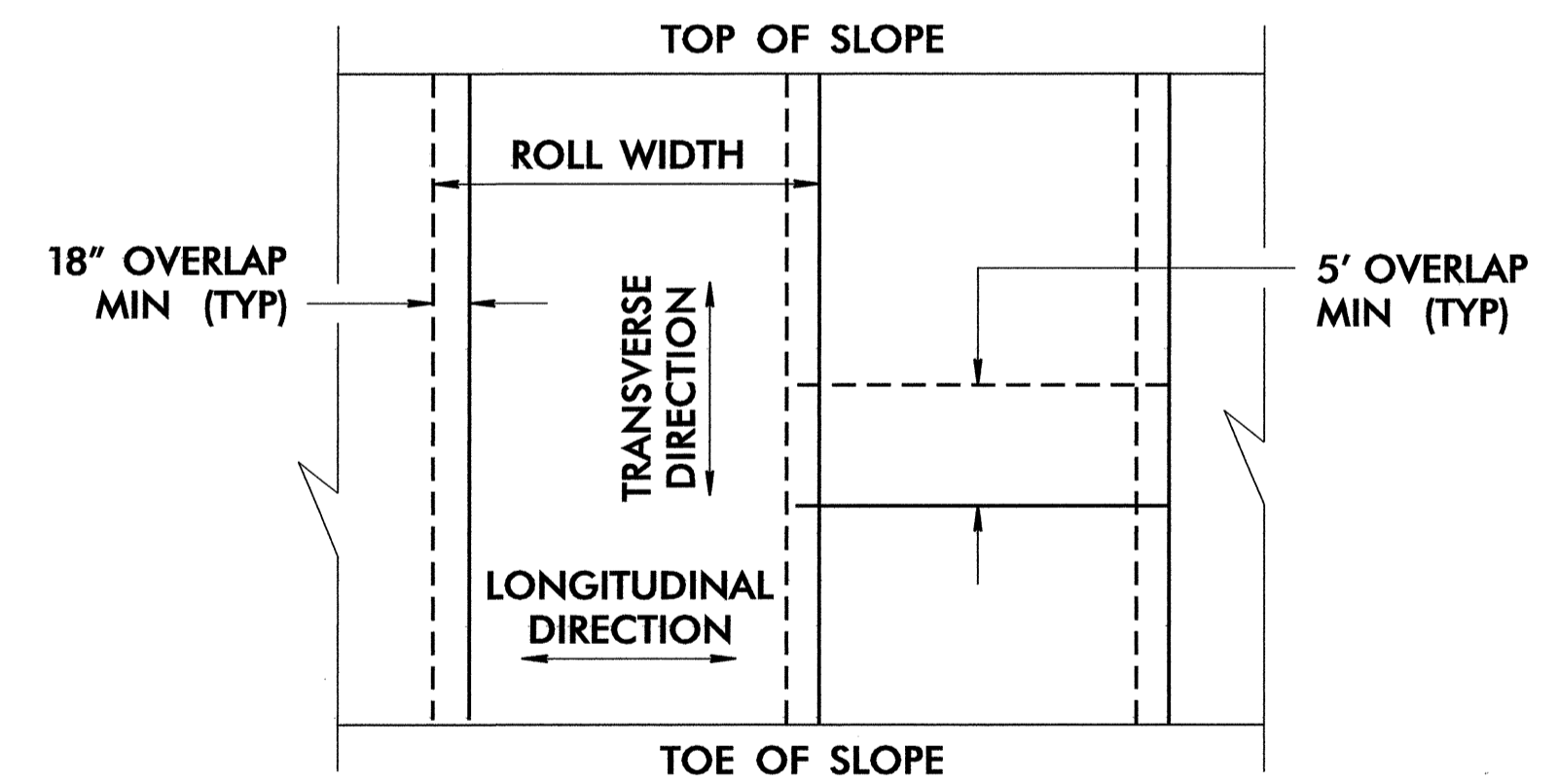
# ROCK PLATING DETAILS

PROJECT REFERENCE NO. R-5204	SHEET NO. 2-E
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## ROCK PLATING DETAIL NO. 1

-L- Sta. 51+65 to Sta. 53+90 RT. 670 Sq. Yds.



## FABRIC OVERLAP DETAIL (PLAN VIEW)

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DIVISION OF HIGHWAYS  
 STATE OF NORTH CAROLINA

**SUMMARY OF EARTHWORK**  
 IN CUBIC YARDS

LOCATION	UNCLASSIFIED EXCAVATION	UNDERCUT	EMBT + %	BORROW	WASTE
<b>SUMMARY No. 1 LT</b>					
-L- STA. 10+00 to 35+00 LT.	1,084		95	0	989
<b>SUMMARY No. 1 LT TOTAL</b>	<b>1,084</b>		<b>95</b>	<b>0</b>	<b>989</b>
<b>SUMMARY No. 2 LT</b>					
-L- STA. 35+00 to 63+00 LT.	1,200		116	0	1,084
<b>SUMMARY No. 2 LT TOTAL</b>	<b>1,200</b>		<b>116</b>	<b>0</b>	<b>1,084</b>
<b>SUMMARY No. 3 RT</b>					
-L- STA. 10+00 to 35+00 RT.	1,085		23	0	1,062
<b>SUMMARY No. 3 RT TOTAL</b>	<b>1,085</b>		<b>23</b>	<b>0</b>	<b>1,062</b>
<b>SUMMARY No. 4 RT</b>					
-L- STA. 35+00 to 63+00 RT.	1,230		81	0	1,150
<b>SUMMARY No. 4 RT TOTAL</b>	<b>1,230</b>		<b>81</b>	<b>0</b>	<b>1,150</b>
<b>SUMMARY No. 5 RT</b>					
-Y1- STA. 10+00 to 11+00 RT.	35		6	0	29
<b>SUMMARY No. 5 RT TOTAL</b>	<b>35</b>		<b>6</b>	<b>0</b>	<b>29</b>
<b>SUMMARY No. 6 RT</b>					
-Y2- STA. 10+00 to 11+00 RT.	35		6	0	29
<b>SUMMARY No. 6 RT TOTAL</b>	<b>35</b>		<b>6</b>	<b>0</b>	<b>29</b>
<b>PROJECT GRAND TOTAL</b>	<b>4,669</b>		<b>327</b>	<b>0</b>	<b>4,342</b>
<b>SHOULDER BORROW</b>	<b>2,400</b>				
<b>UNDERCUT EXCAVATION</b>	<b>500</b>				

**PAVEMENT REMOVAL SUMMARY**

SURVEY LINE	STATION	STATION	LOCATION LT/RT/CL	YD <sup>2</sup>
L	20+00	20+35	R	70.56
L	31+15	31+45	R	81.00
L	32+50	33+00	R	76.67
L	36+95	37+70	R	248.44
L	45+80	46+00	R	12.89
L	46+25	46+55	R	50.33
L	47+20	47+65	L	82.00
L	48+55	49+95	L	235.00
L	50+50	51+55	L	243.44
L	51+80	52+00	L	16.11
L	52+80	53+90	L	231.56
			<b>TOTAL:</b>	<b>1,348.00</b>
			<b>SAY:</b>	<b>1,350</b>

Note: Approximate quantities only. Unclassified excavation, shoulder borrow, fine grading, clearing and grubbing and removal of existing pavement will be paid for at the lump sum price of "Grading".

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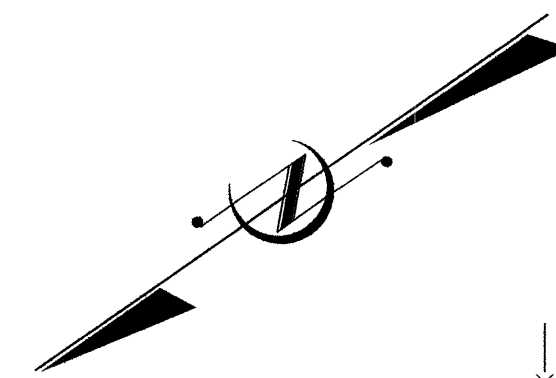
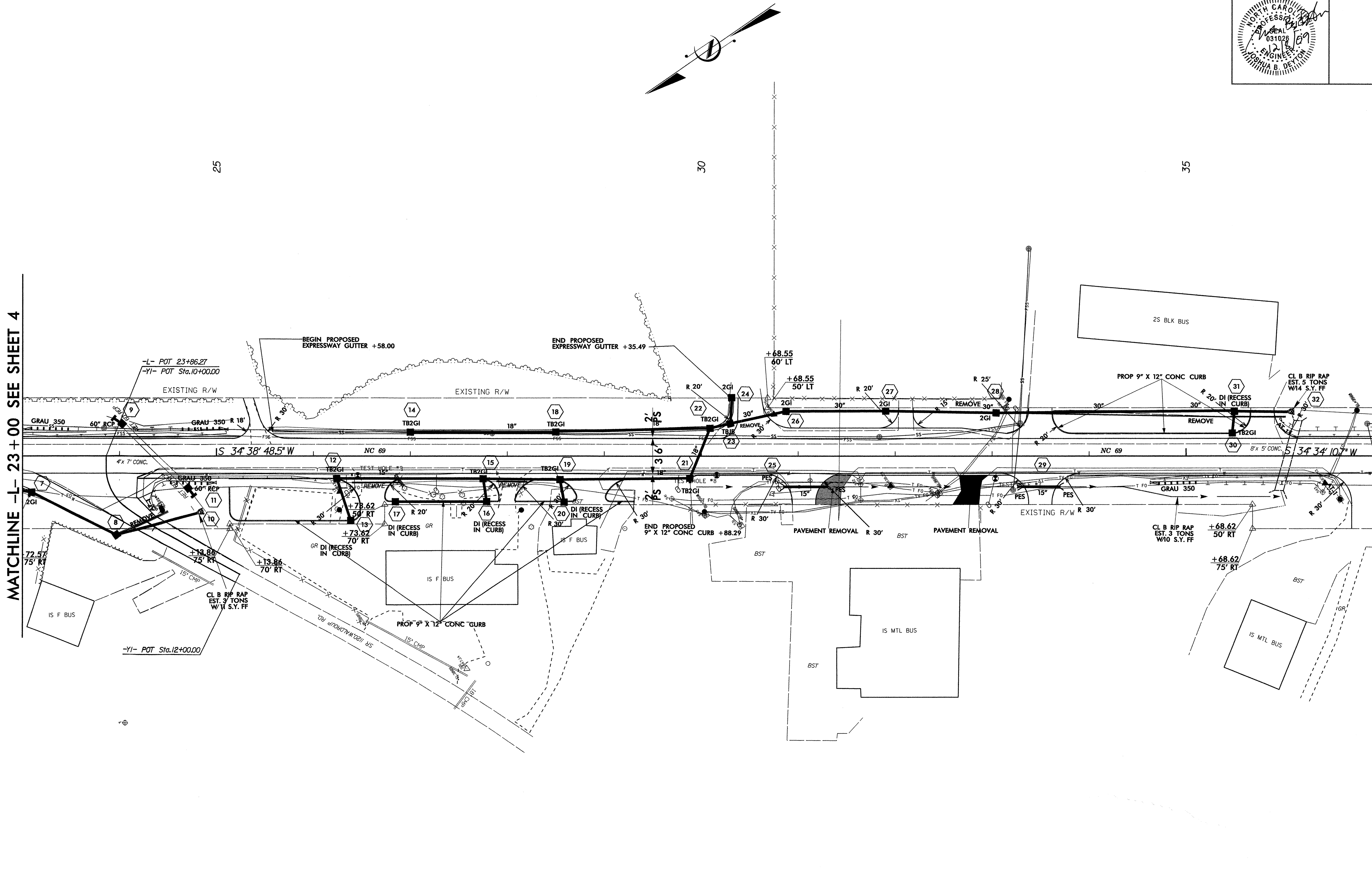




PROJECT REFERENCE NO. R-5204	SHEET NO. 5
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	

MATCHLINE -L- 23+00 SEE SHEET 4

MATCHLINE -L- 37+00 SEE SHEET 6




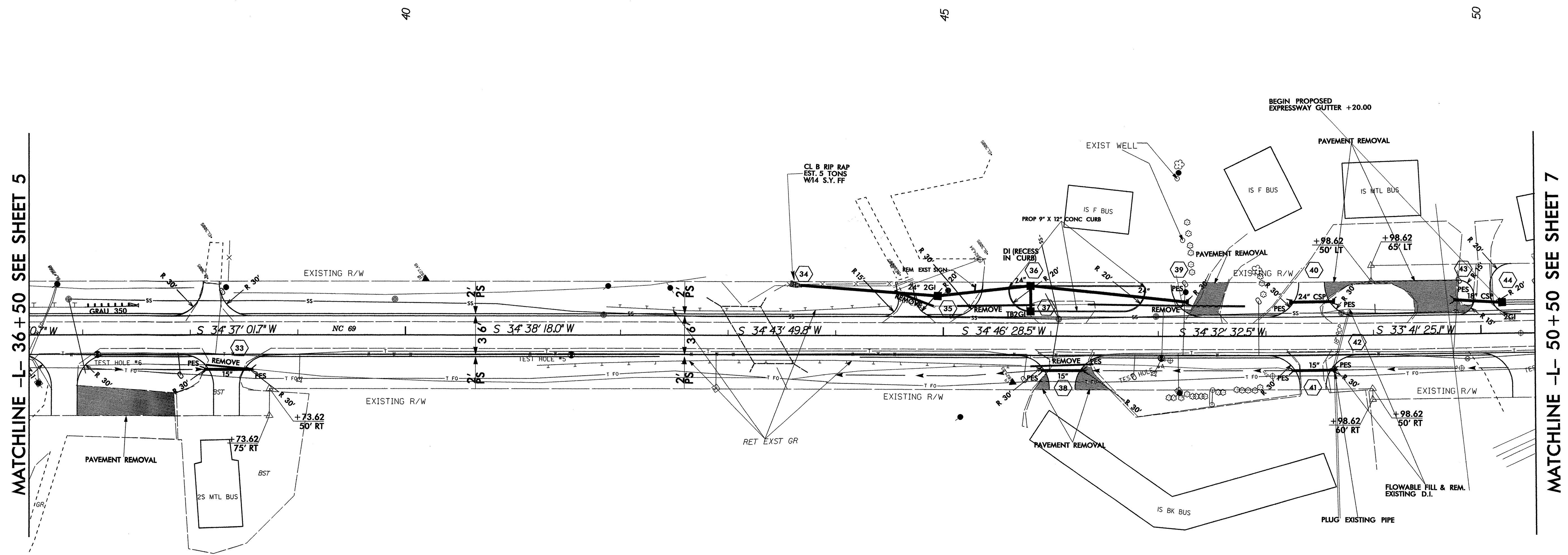
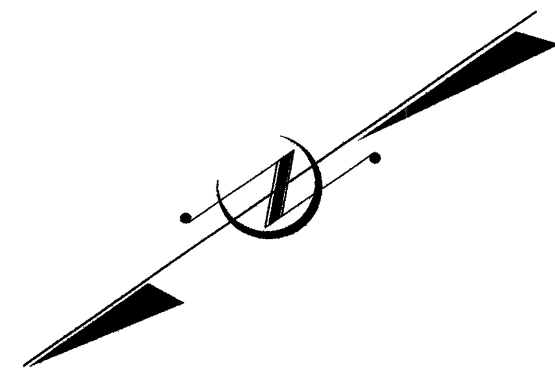
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PROJECT REFERENCE NO. R-5204	SHEET NO. 6
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	
	



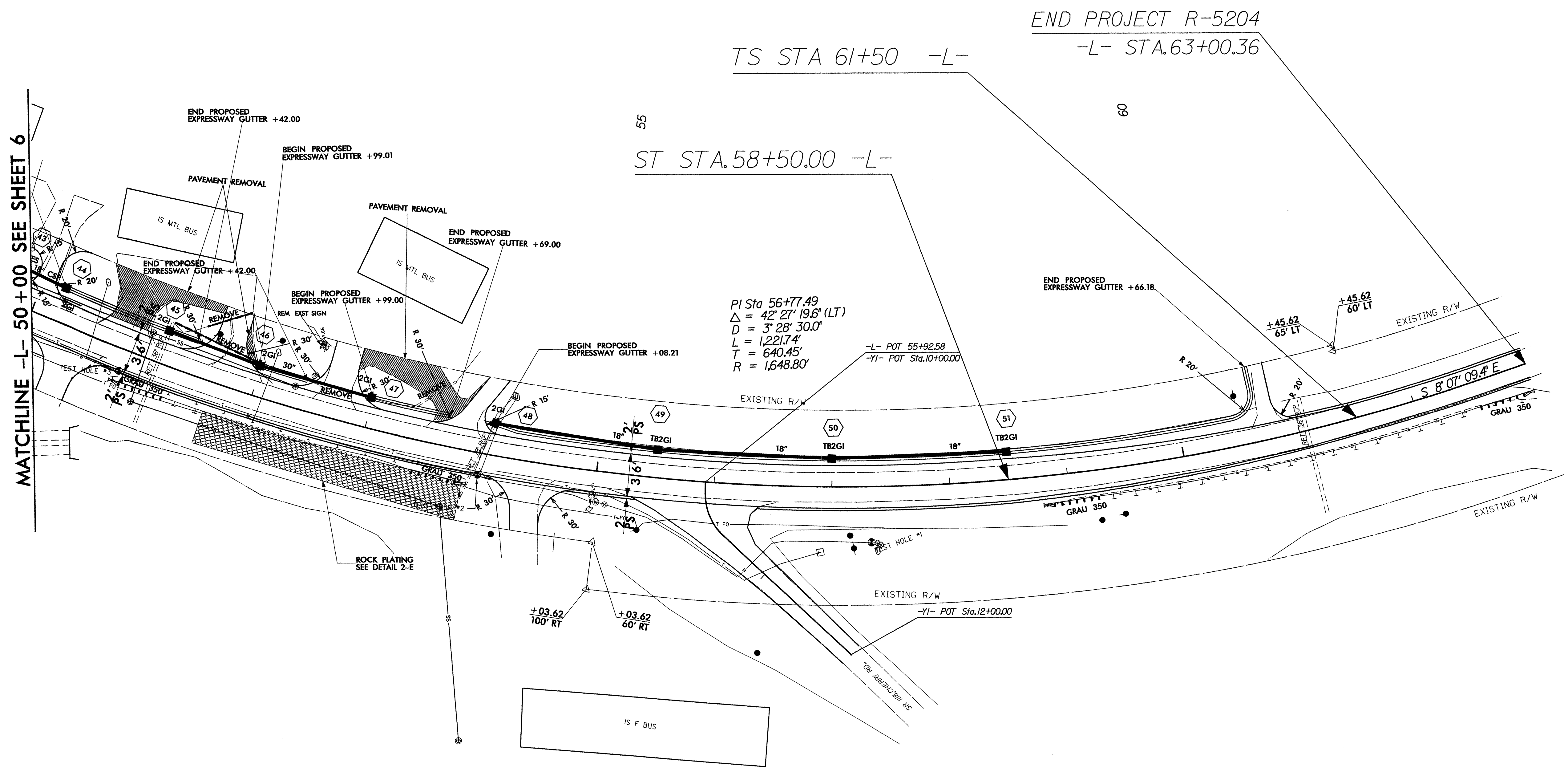
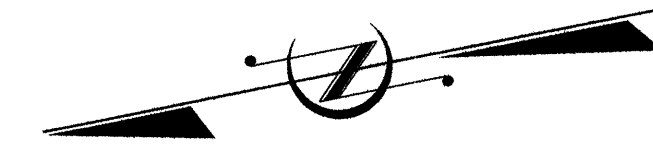
MATCHLINE -L- 36+50 SEE SHEET 5

MATCHLINE -L- 50+50 SEE SHEET 7

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PROJECT REFERENCE NO. R-5204	SHEET NO. 7
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	

5/14/99



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