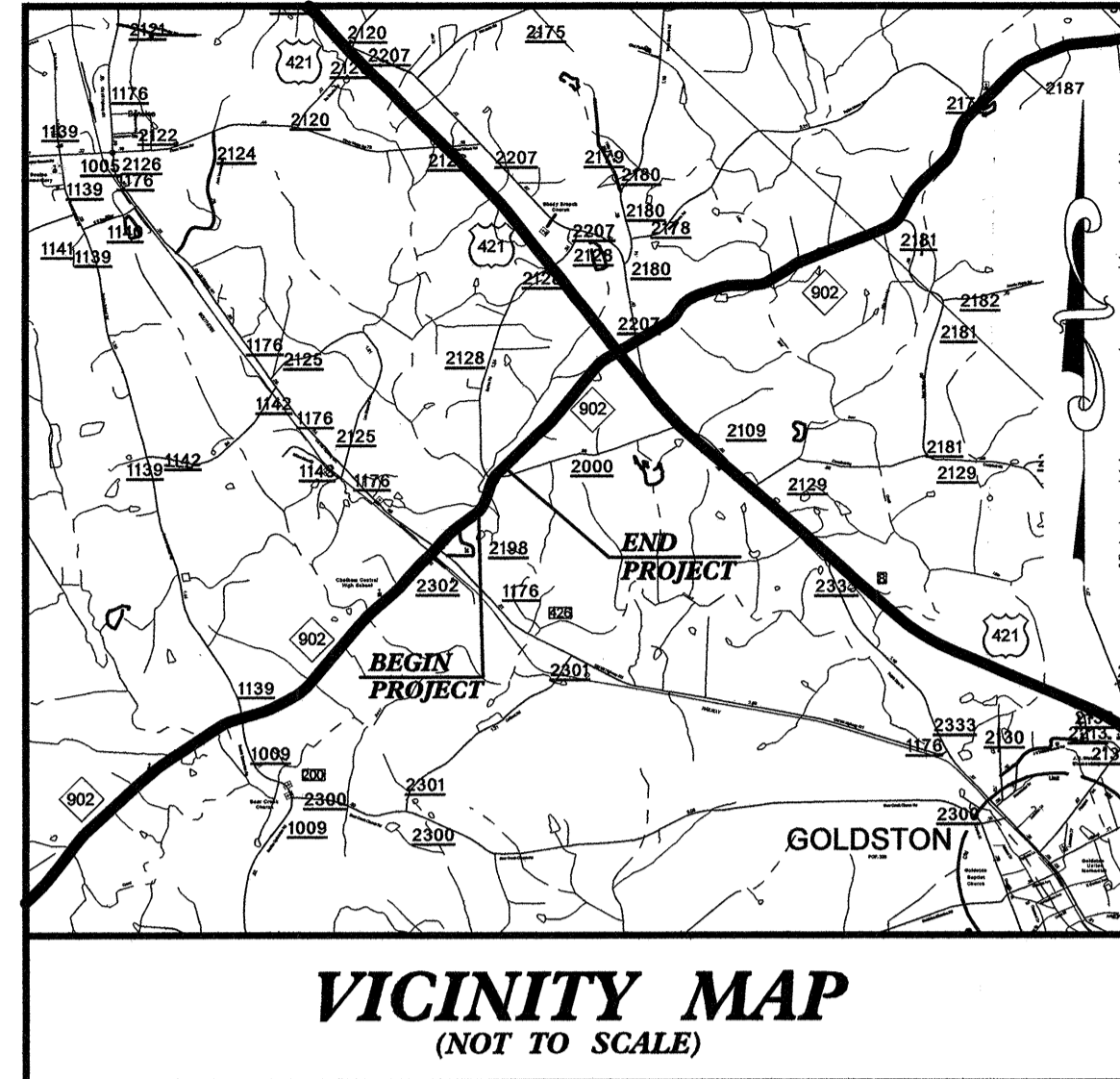


TIP: B-4063

CONTRACT: C201813

See Sheet 1-A For Index of Sheets
See Sheet 1-B For Conventional Symbols



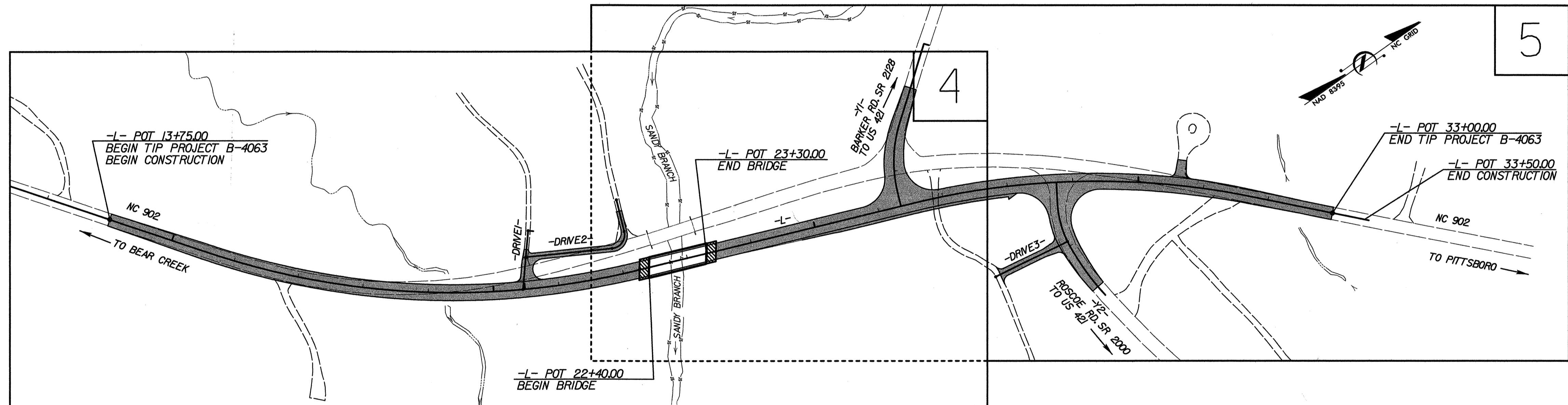
VICINITY MAP
(NOT TO SCALE)

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CHATHAM COUNTY

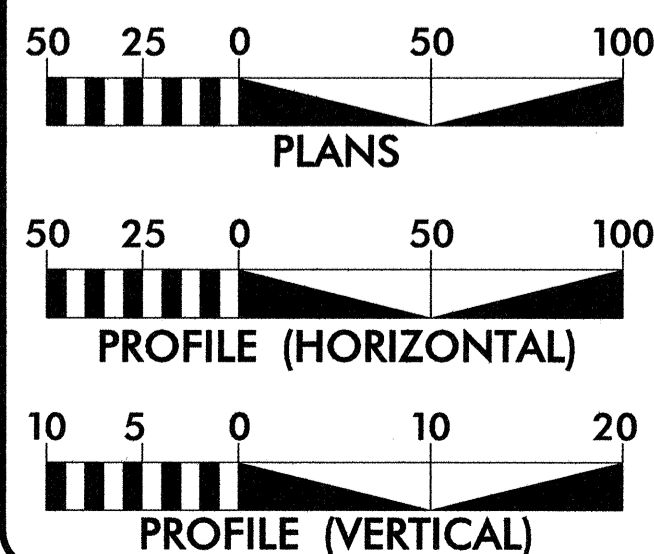
LOCATION: BRIDGE NO. 20 OVER SANDY BRANCH ON NC 902
TYPE OF WORK: GRADING, DRAINAGE, PAVING, AND STRUCTURE

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-4063	1	
WBS NO.	F.A. PROJ. NO.	DESCRIPTION	
33427.1.1	BRZ-902(3)	P.E.	
33427.2.1	BRZ-902(3)	RW, UTIL	
33427.3.1	BRZ-902(3)	CONST.	



NCDOT CONTACT : DOUG TAYLOR, PE
PROJECT ENGINEER - ROADWAY DESIGN

GRAPHIC SCALES



DESIGN DATA

ADT 2007 = 1725
ADT 2030 = 3350
DHV = 10 %
D = 60 %
T = 7 % *
V = 60 MPH
FUNCTION. = RURAL MAJOR COLLECTOR CLASS.
* (TTST 4% + DUALS 3%)

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT B-4063 = 0.348 MI
LENGTH STRUCTURE TIP PROJECT B-4063 = 0.017 MI
TOTAL LENGTH TIP PROJECT B-4063 = 0.365 MI

Prepared In the Office of:
MULKEY ENGINEERS & CONSULTANTS
FOR THE NORTH CAROLINA DEPT. OF TRANSPORTATION

2006 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
APRIL 20, 2007

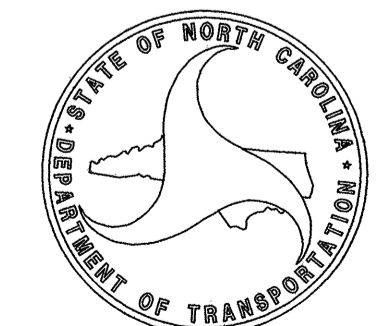
LETTING DATE:
APRIL 15, 2008

TIM S. HAYES, PE
PROJECT ENGINEER

JOHNNY R. BANKS
PROJECT MANAGER

HYDRAULICS ENGINEER

**DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA**



ART McMILLAN, P.E.
STATE HIGHWAY DESIGN ENGINEER

Index of Sheets, General Notes, and List of Standards

Sheet #	Description
1	Title Sheet
1-A	Index of Sheets, General Notes, and List of Standards
1-B	Conventional Symbols
1-C	Survey Control Sheet
2	Pavement Schedule, Wedging Detail, and Typical Sections
2-A thru 2-B	Typical Sections
2-C	Detail of Shoulder Berm Gutter Transition to Expressway Gutter
2-D	Detail of Barbed wire fence
3	Summary of Quantities
3-A	Parcel Index Sheet
3-B	List of Pipe, Endwalls, Etc. (For Pipes 48" & Under) List of Pipe, Endwalls, Etc. (For Pipes 54" & Over)
3-C	Guardrail Summary, Summary of Earthwork in Cubic Yards, Summary of Pavement Removal
4&5	Plan and Profile
6	-Y- Lines & Drive Profiles
TCP-1 thru TCP-6	Traffic Control Plans
EC-1 thru EC-7	Erosion Control Plans
RF-1	Reforestation Detail Sheet
SIGN-1 thru SIGN-3	Signing Plans
UC-1 thru UC-2	Utility Construction Plans
UO-1 thru UO-3	Utilities By Others Plans
EW-Volume-1	Cross-Section Summary Sheet
X-1 thru X-20	Cross-Sections
S-1 thru S-23	Structure Plans

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

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.

SUPERELEVATION:
ALL CURVES ON THIS PROJECT SHALL BE SUPERELEVATED IN ACCORDANCE WITH STD. NO. 225.04 USING THE RATE OF SUPERELEVATION AND RUNOFF SHOWN ON THE PLANS. SUPERELEVATION IS TO BE REVOLVED ABOUT THE GRADE POINTS SHOWN ON THE TYPICAL SECTIONS.

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.

STREET TURNOUT:
STREET TURNOUTS SHALL BE CONSTRUCTED IN ACCORDANCE WITH STD. 848.03 USING THE RADII NOTED ON PLANS.

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.

TEMPORARY SHORING:
SHORING REQUIRED FOR THE MAINTENANCE OF TRAFFIC WILL BE PAID FOR AS "EXTRA WORK" IN ACCORDANCE WITH SECTION 104-7.

END BENTS:
THE ENGINEER SHALL CHECK THE STRUCTURE END BENT PLANS, DETAILS, AND CROSS-SECTION PRIOR TO SETTING OF THE SLOPE STAKES FOR THE EMBANKMENT OR EXCAVATION APPROACHING A BRIDGE.

UTILITIES:
UTILITY OWNERS ON THIS PROJECT ARE PROGRESS ENERGY, CENTRAL ELECTRIC MEMBERSHIP CORPORATION & CAROLINA TELEPHONE, EMBARO TELEPHONE CORPORATION, CHATHAM COUNTY WATER DISTRICT. 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 CONTRACT.

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
225.04	Method of Obtaining Superelevation - Two Lane Pavement
DIVISION 3 - PIPE CULVERTS	
300.01	Method of Pipe Installation - Method 'A'
310.10	Driveway Pipe Construction
DIVISION 4 - MAJOR STRUCTURES	
422.10	Reinforced Bridge Approach Fills
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	
806.01	Concrete Right-of-Way Marker
806.02	Granite Right-of-Way Marker
838.39	Reinforced Concrete Endwall-Std. Dwg 838.21 thru 838.40
838.45	Notes for Reinforced Concrete Endwall-Std. Dwg 838.21 thru 838.40
838.69	Reinforced Brick Endwall-for Single 72" Pipe 90 Skew
838.75	Notes for Reinforced Brick Endwall-Std. Dwg 838.51 thru 838.70
840.29	Frames and Narrow Slot Flat Grates
840.35	Traffic Bearing Grated Drop Inlet-for Cast Iron Double Frame and Grates
840.46	Traffic Bearing Precast Drainage Structure
840.66	Drainage Structure Steps
840.71	Concrete and Brick Pipe Plug
840.72	Pipe Collar
846.01	Concrete Curb, Gutter and Curb & Gutter
846.02	Drop Inlet Installation in Expressway Gutter
848.04	Street Turnout
862.01	Guardrail Placement
862.02	Guardrail Installation
862.03	Structure Anchor Units
862.04	Anchoring End of Guardrail- B-77 and B-83 Anchor Units
876.01	Rip Rap Channels
876.02	Guide for Rip Rap at Pipe Outlets
876.04	Drainage Ditches with Class 'B' Rip Rap

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

REVISIONS

10/25/05
REVISIONS
02/20/08 AM:R:\Roadway\Proj\4063\rdy_tsh.dwg
1/18/2008

Note: Not to Scale

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













STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CONVENTIONAL SYMBOLS












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(919) 851-1918 FAX
WWW.MULKEYINC.COM

PROJECT REFERENCE NO. B-4063	SHEET NO. 1-B
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER












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	_____ 

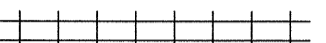

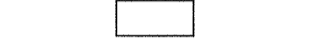
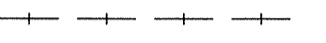
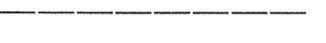
BUILDINGS AND OTHER CULTURE:

Gas Pump Vent or U/G Tank Cap	_____ 
Sign	_____ 
Well	_____ 
Small Mine	_____ 
Foundation	_____ 
Area Outline	_____ 
Cemetery	_____ 
Building	_____ 
School	_____ 
Church	_____ 
Dam	_____ 














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:

Standard Gauge	_____ 
RR Signal Milepost	_____ 
Switch	_____ 
RR Abandoned	_____ 
RR Dismantled	_____ 







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 Utility Easement	_____ 

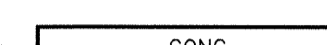

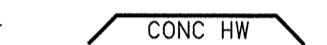


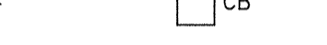



ROADS AND RELATED FEATURES:

Existing Edge of Pavement	_____ 
Existing Curb	_____ 
Proposed Slope Stakes Cut	_____ 
Proposed Slope Stakes Fill	_____ 
Proposed Wheel Chair Ramp	_____ 
Curb Cut for Future Wheel Chair Ramp	_____ 
Existing Metal Guardrail	_____ 
Proposed Guardrail	_____ 
Existing Cable Guiderail	_____ 
Proposed Cable Guiderail	_____ 
Equality Symbol	_____ 
Pavement Removal	_____ 



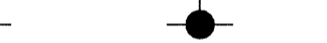

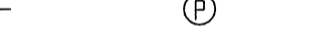
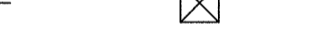
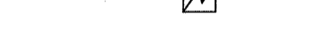




VEGETATION:

Single Tree	_____ 
Single Shrub	_____ 
Hedge	_____ 
Woods Line	_____ 
Orchard	_____ 
Vineyard	_____ 

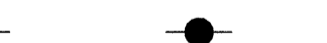

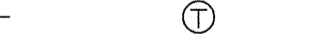
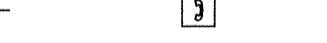
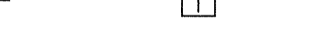
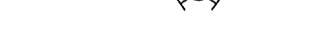





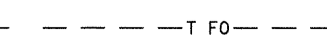

EXISTING STRUCTURES:

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:

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.*)	_____ 




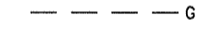
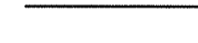
WATER:

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	_____ 




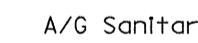


TV:

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.*)	_____ 






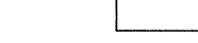
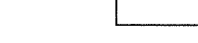



GAS:

Gas Valve	_____ 
Gas Meter	_____ 
Recorded U/G Gas Line	_____ 
Designated U/G Gas Line (S.U.E.*)	_____ 
Above Ground Gas Line	_____ 

SANITARY SEWER:

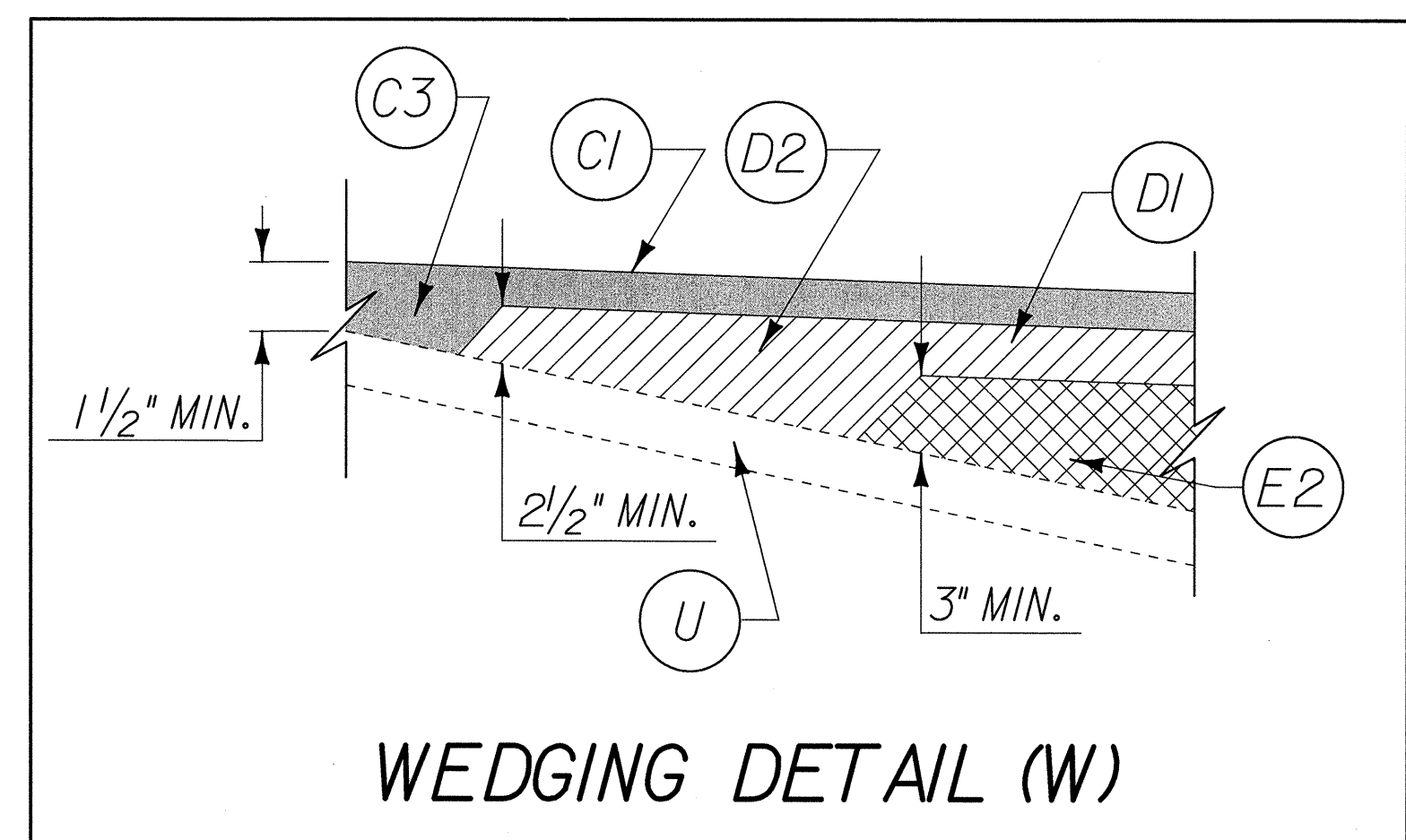
Sanitary Sewer Manhole	_____ 
Sanitary Sewer Cleanout	_____ 
U/G Sanitary Sewer Line	_____ 
Above Ground Sanitary Sewer	_____ 
Recorded SS Forced Main Line	_____ 
Designated SS Forced Main Line (S.U.E.*)	_____ 

MISCELLANEOUS:

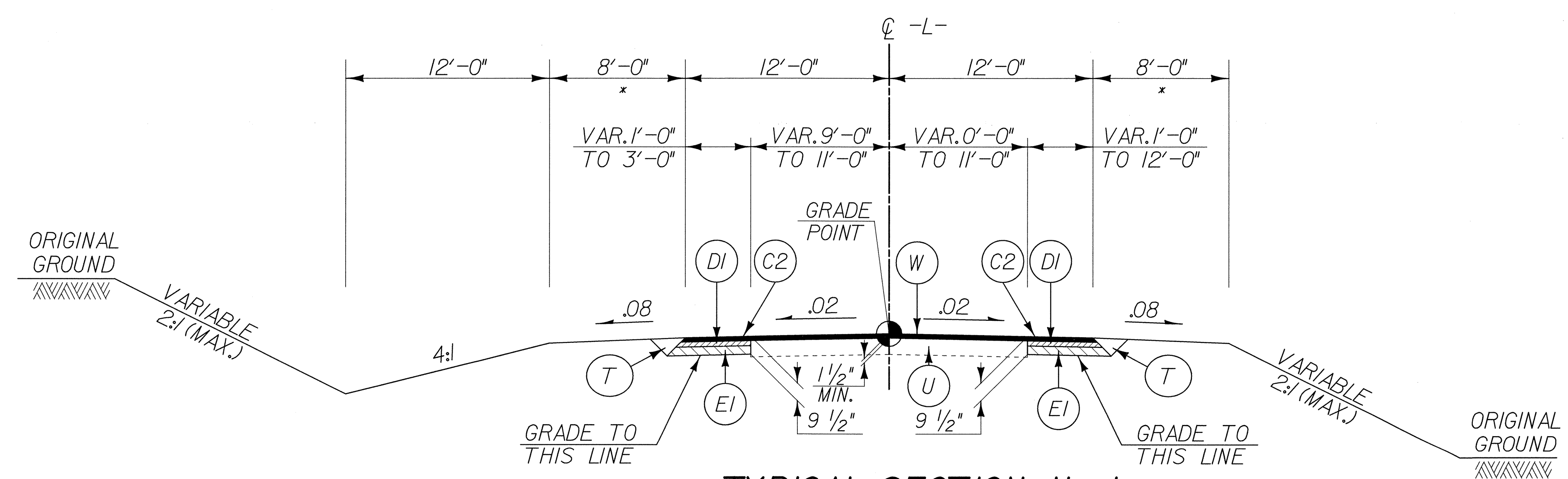
Utility Pole	_____ 
Utility Pole with Base	_____ 
Utility Located Object	_____ 
Utility Traffic Signal Box	_____ 
Utility Unknown U/G Line	_____ 
U/G Tank; Water, Gas, Oil	_____ 
A/G Tank; Water, Gas, Oil	_____ 
U/G Test Hole (S.U.E.*)	_____ 
Abandoned According to Utility Records	_____ 
End of Information	_____ 

PAVEMENT SCHEDULE

C1	PROPOSED APPROX. 1 1/2" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YARD
C2	PROPOSED APPROX. 3" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YARD IN EACH OF TWO LAYERS.
C3	PROPOSED VARIABLE DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 112 LBS. PER SQ. YARD, PER 1" DEPTH, TO BE PLACED IN LAYERS NOT LESS THAN 1 1/2" OR GREATER THAN 2" IN DEPTH.
D1	PROPOSED APPROX. 2 1/2" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 285 LBS. PER SQ. YARD
D2	PROPOSED VARIABLE DEPTH ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YARD, PER 1" DEPTH, TO BE PLACED IN LAYERS NOT LESS THAN 2 1/2" OR GREATER THAN 4" IN DEPTH.
E1	PROPOSED APPROXIMATE 4" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YARD.
E2	PROPOSED VARIABLE DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YARD, PER 1" DEPTH, TO BE PLACED IN LAYERS NOT LESS THAN 3" OR GREATER THAN 5 1/2" IN DEPTH.
J1	6" AGRREGATE BASE COURSE
R1	CONCRETE EXPRESSWAY GUTTER
T	EARTH MATERIAL
U	EXISTING PAVEMENT
W	WEDGING DETAIL



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



TYPICAL SECTION No. 1

* ADD 3'-0" FOR GUARDRAIL

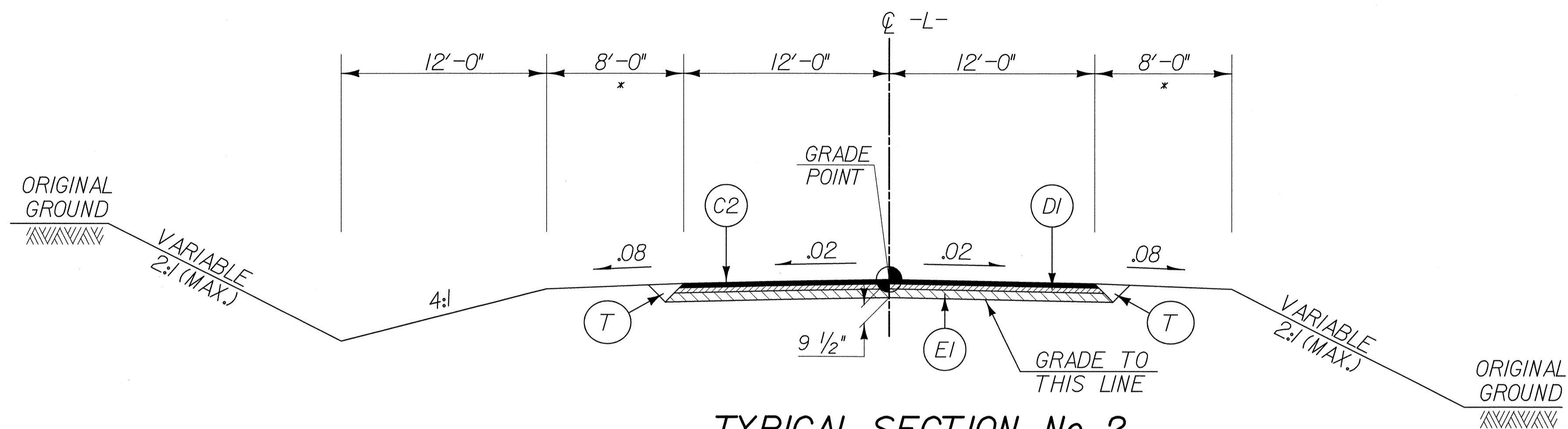
USE TYPICAL SECTION No. 1 AS FOLLOWS:
 TRANSITION FROM EXISTING TO T.S. NO. 1 FROM
 -L- STA. 13+75.00 TO STA. 14+25.00
 FROM -L- STA. 14+25.00 TO STA. 20+30.00
 FROM -L- STA. 28+50.00 TO -L- STA. 32+50.00
 TRANSITION FROM T.S. NO. 1 TO EXISTING FROM
 -L- STA. 32+50.00 TO STA. 33+00.00

REVISIONS

R/W SHEET NO.

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL ENGINEER
SCOTT
1-29-08

PAVEMENT DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL ENGINEER
CHI CHEN
1/30/08

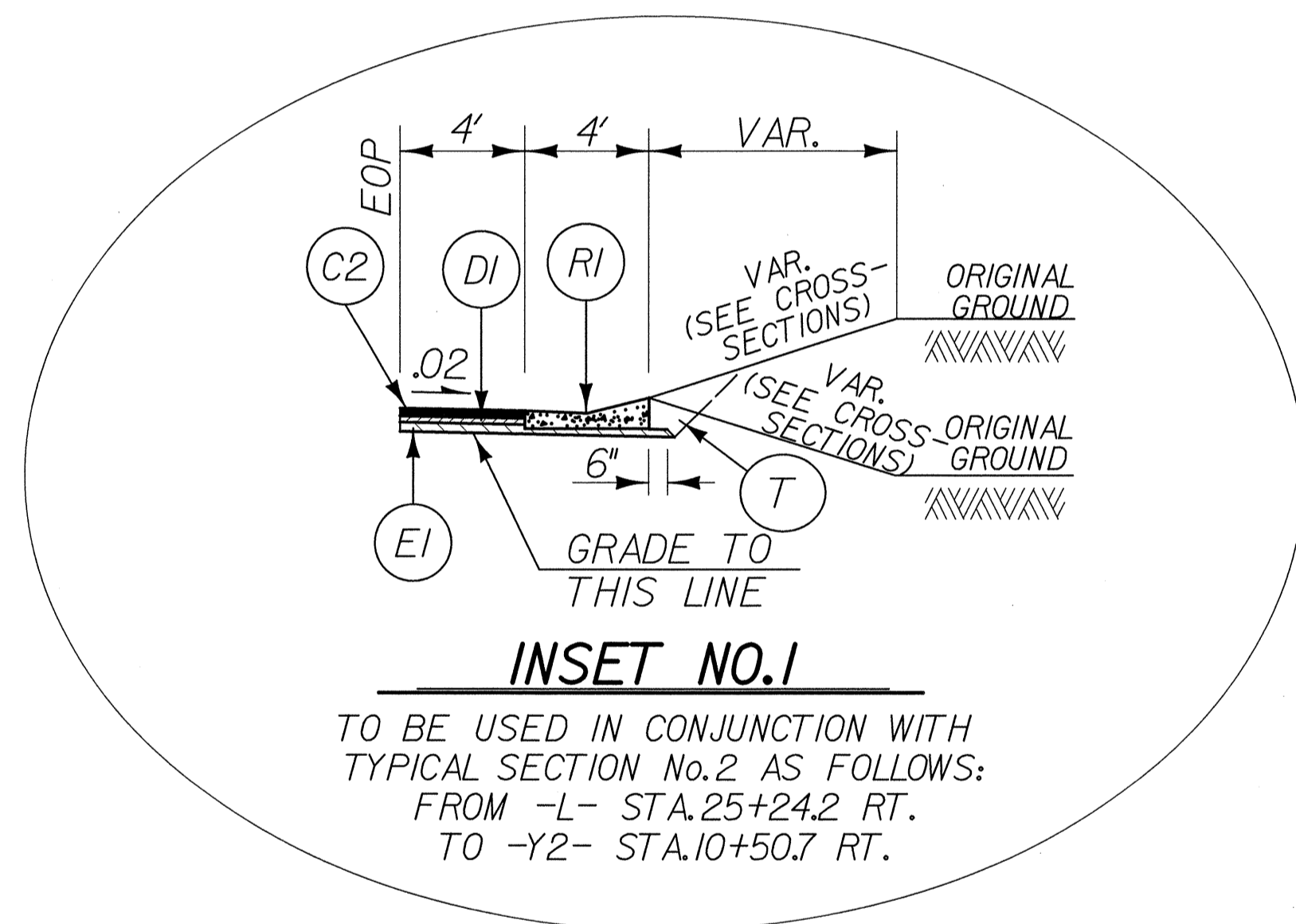


TYPICAL SECTION No. 2

* ADD 3'-0" FOR GUARDRAIL

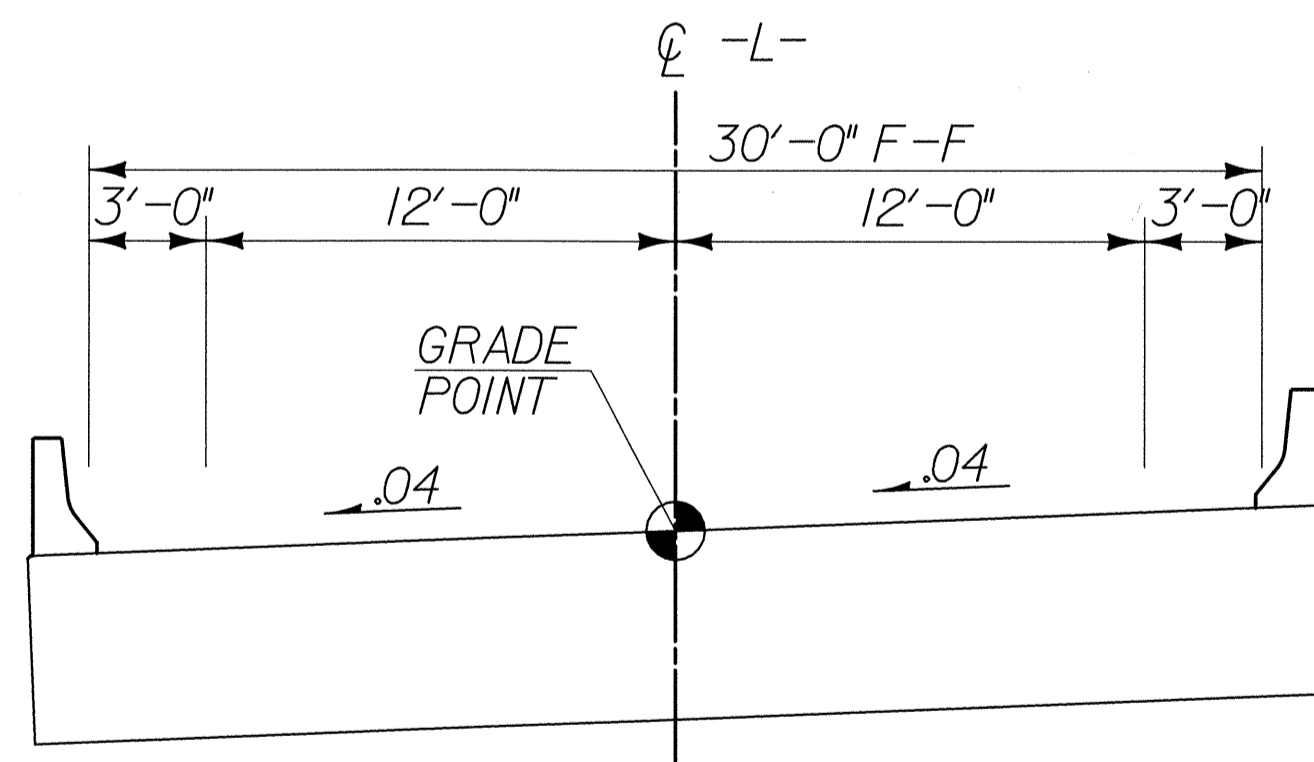
USE TYPICAL SECTION No.2 AS FOLLOWS:

FROM -L- STA.20+30 TO STA.22+40.00 (BEGIN BRIDGE)
FROM -L- STA.23+30.00 (END BRIDGE) TO -L- STA.28+50



INSET NO.1

TO BE USED IN CONJUNCTION WITH
TYPICAL SECTION No.2 AS FOLLOWS:
FROM -L- STA.25+24.2 RT.
TO -Y2- STA.10+50.7 RT.



TYPICAL SECTION No.3

USE TYPICAL SECTION No.3 AS FOLLOWS:

FROM -L- STA. 22+40.00 (BEGIN BRIDGE) TO -L- STA. 23+30.00 (END BRIDGE)

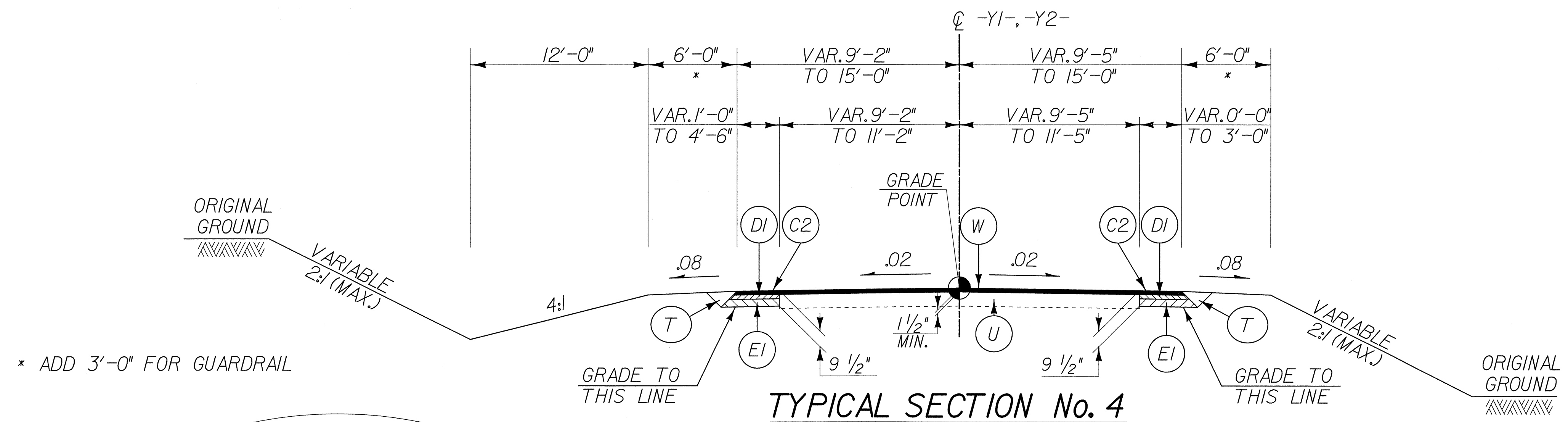
C1	1/2" S9.5B
C2	3" S9.5B
C3	VAR.DEPTH S9.5B
D1	2 1/2" 119.0B
D2	VAR.DEPTH 119.0B
E1	4" B25.0B
E2	VAR.DEPTH B25.0B
J1	6" ABC
R1	CONCRETE EXPRESS. GUTTER
T	EARTH MATERIAL
U	EXIST.PAVEMENT
W	WEDGING

NOTE:

1. SEE SHEET 2 FOR DETAILED DESCRIPTION OF PAVEMENT SCHEDULE

2. ALL PAVEMENT EDGES ARE 1:1 UNLESS OTHERWISE NOTED

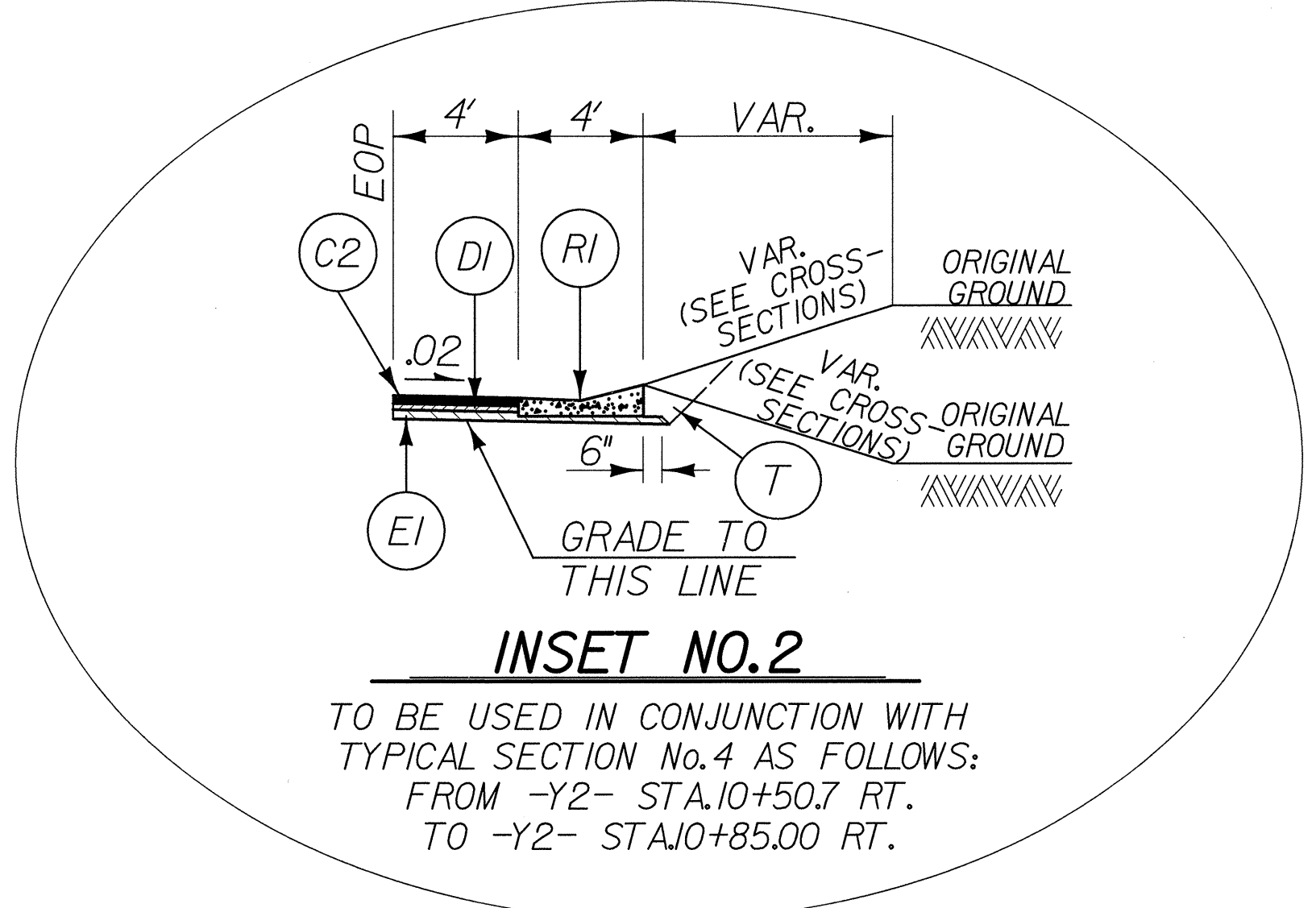
REVISIONS



* ADD 3'-0" FOR GUARDRAIL

TYPICAL SECTION No. 4

USE TYPICAL SECTION No.4 AS FOLLOWS:
TRANSITION FROM EXISTING TO T.S.NO.4 FROM
-Y1- STA.10+70.00 TO STA.10+95.00
FROM -Y1- STA.10+95.00 TO STA.11+09
FROM -Y2- STA.10+78 TO STA.11+50.00
TRANSITION FROM EXISTING TO T.S.NO.4 FROM
-Y2- STA.11+50.00 TO STA.11+75.00

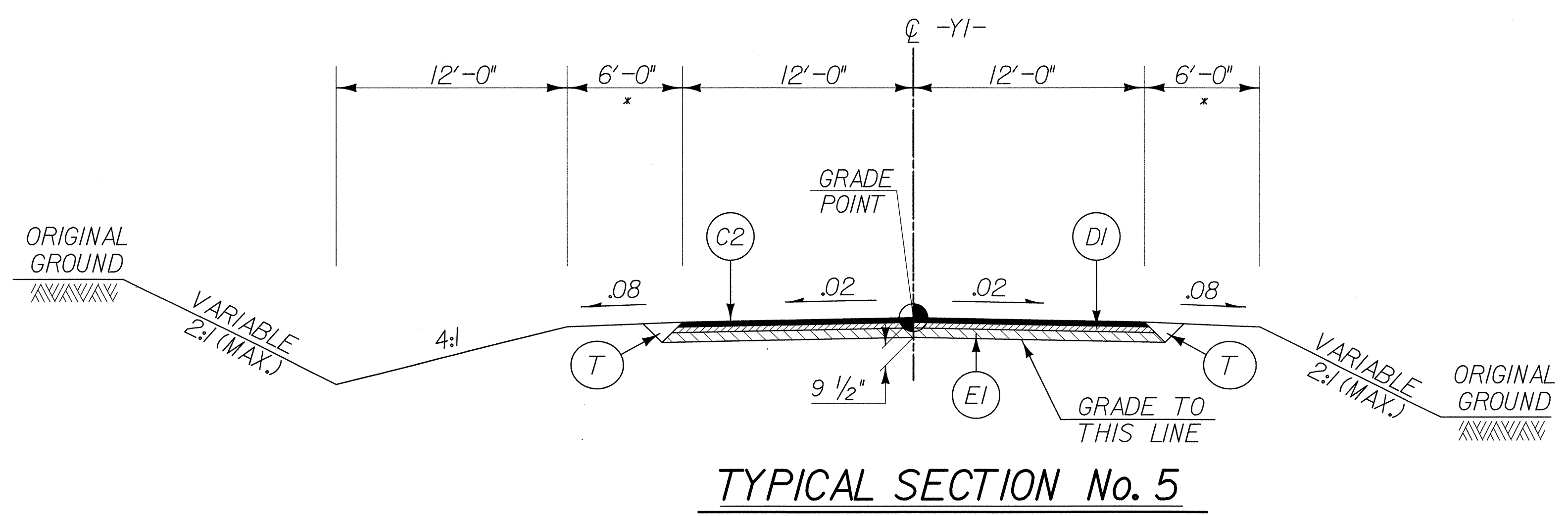


INSET NO. 2
TO BE USED IN CONJUNCTION WITH
TYPICAL SECTION No.4 AS FOLLOWS:
FROM -Y2- STA.10+50.7 RT.
TO -Y2- STA.10+85.00 RT.

C1	1 1/2" S9.5B
C2	3" S9.5B
C3	VAR. DEPTH S9.5B
D1	2 1/2" 119.0B
D2	VAR. DEPTH 119.0B
E1	4" B25.0B
E2	VAR. DEPTH B25.0B
J1	6" ABC
RI	CONCRETE EXPRESS. GUTTER
T	EARTH MATERIAL
U	EXIST. PAVEMENT
W	WEDGING

NOTE:
1. SEE SHEET 2 FOR
DETAILED DESCRIPTION
OF PAVEMENT SCHEDULE

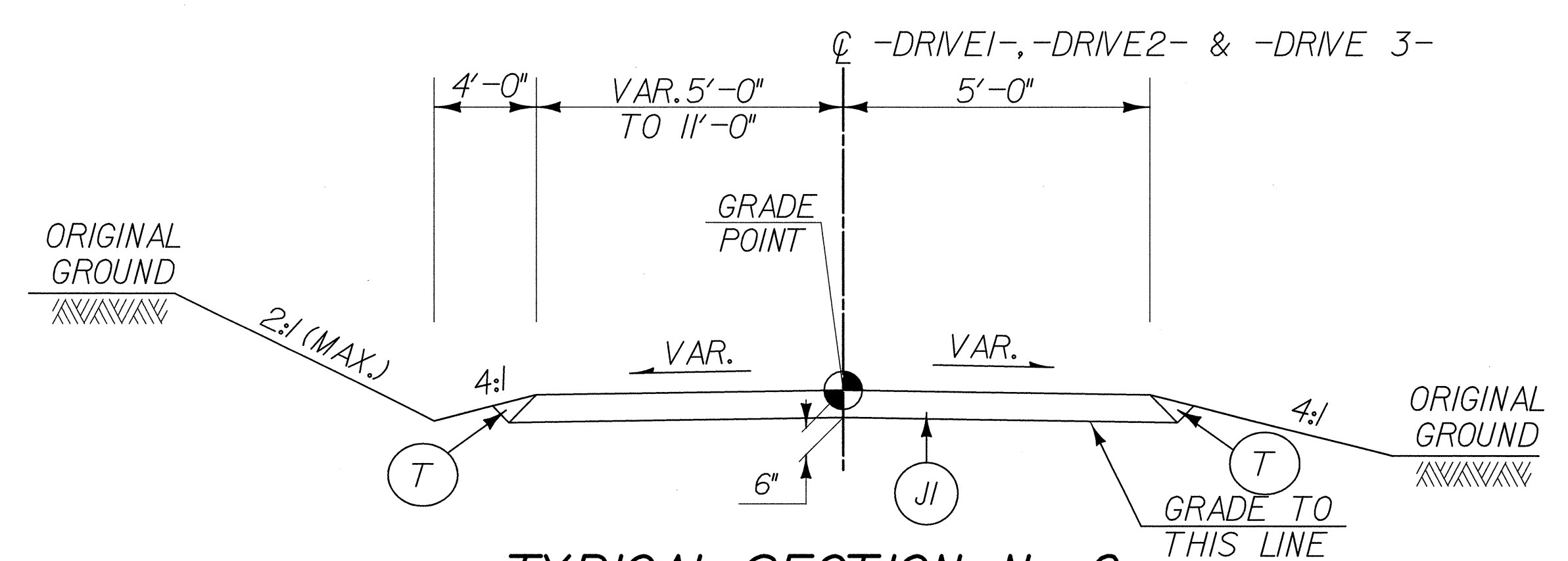
2. ALL PAVEMENT EDGES
ARE 1:1 UNLESS OTHERWISE
NOTED



* ADD 3'-0" FOR GUARDRAIL

TYPICAL SECTION No. 5

USE TYPICAL SECTION No.5 AS FOLLOWS:
FROM -Y1- STA.11+09 TO STA.11+83



TYPICAL SECTION No. 6

USE TYPICAL SECTION No.5 AS FOLLOWS:
FROM -DRIVE1- STA.10+25.00 TO STA.10+77 +/-
FROM -DRIVE2- STA.10+23 +/- TO STA.11+90.00
FROM -DRIVE3- STA.10+07.93 TO STA.11+07.36

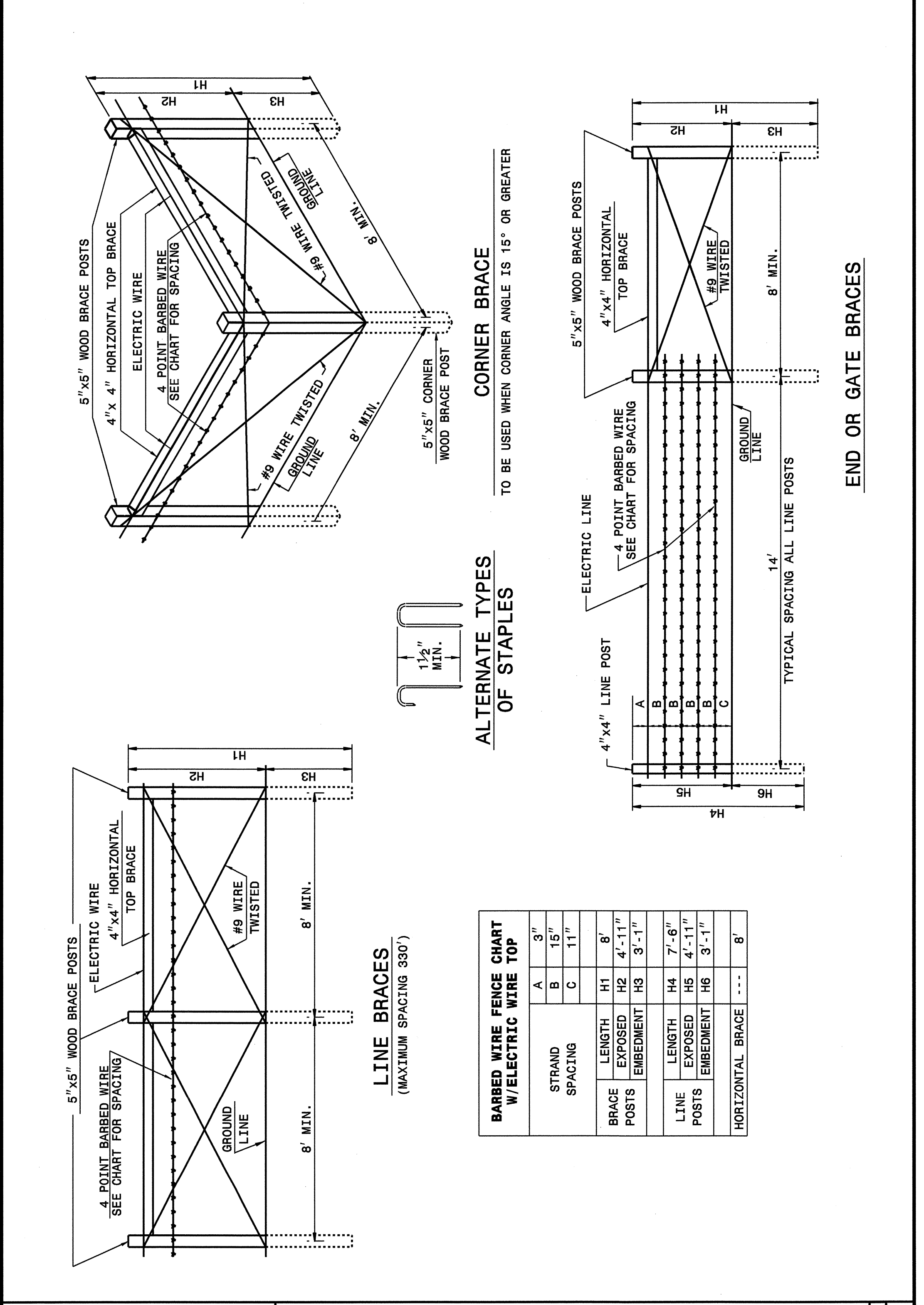
REVISIONS

1/23/2008 11:40:23 AM R:\Roadway\Proj\B4063_rdy_typ.dwg

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

ENGLISH STANDARD DRAWING FOR
4 STRAND BARBED WIRE FENCE WITH 1 STRAND ELECTRIC FENCE
 WITH WOOD POSTS

SHEET 1 OF 2
866D04



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

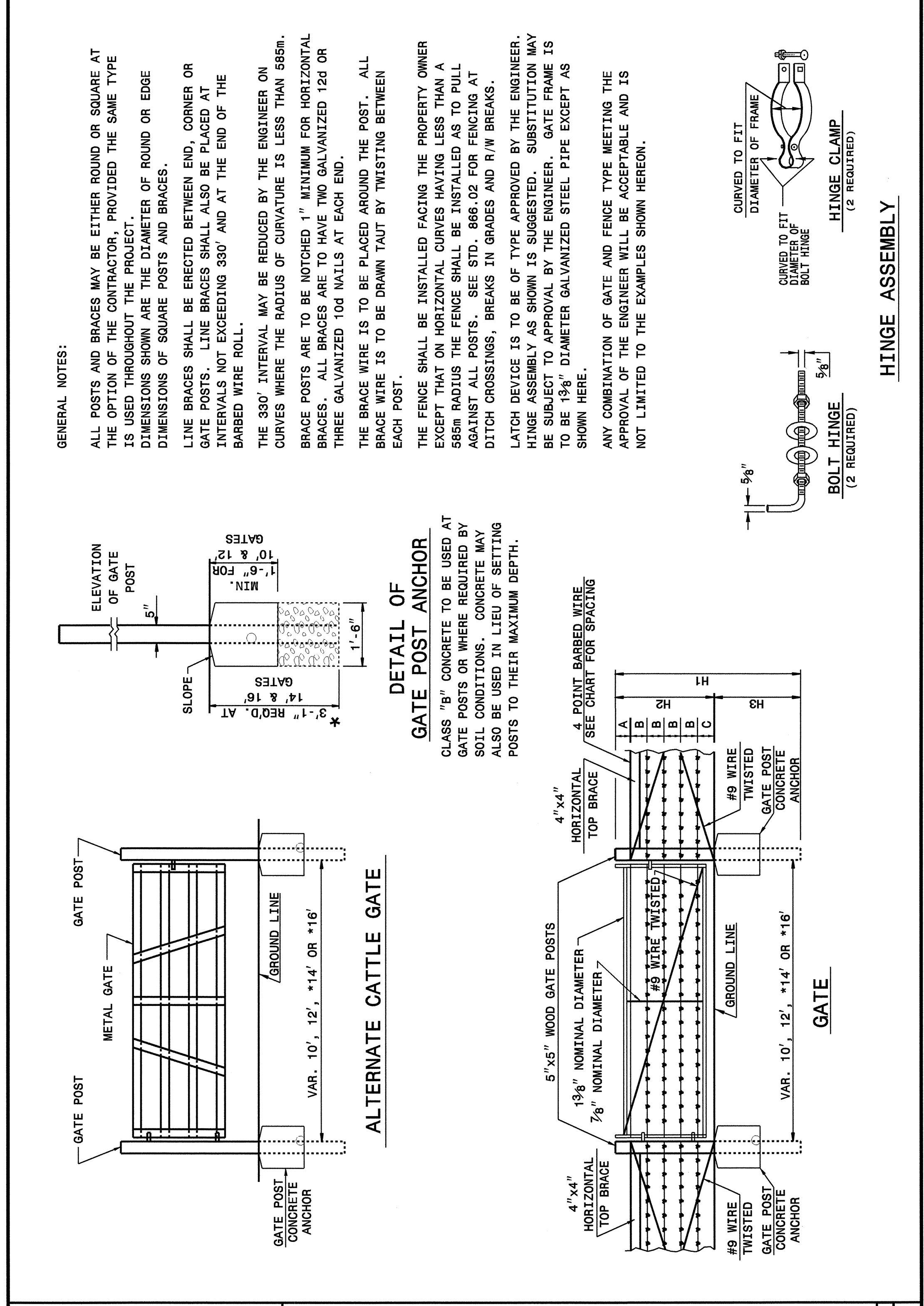
ENGLISH STANDARD DRAWING FOR
4 STRAND BARBED WIRE FENCE WITH 1 STRAND ELECTRIC FENCE
 WITH WOOD POSTS

SHEET 1 OF 2
866D04

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

ENGLISH STANDARD DRAWING FOR
4 STRAND BARBED WIRE FENCE WITH 1 STRAND ELECTRIC FENCE
 WITH WOOD POSTS

SHEET 2 OF 2
866D04



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

ENGLISH STANDARD DRAWING FOR
4 STRAND BARBED WIRE FENCE WITH 1 STRAND ELECTRIC FENCE
 WITH WOOD POSTS

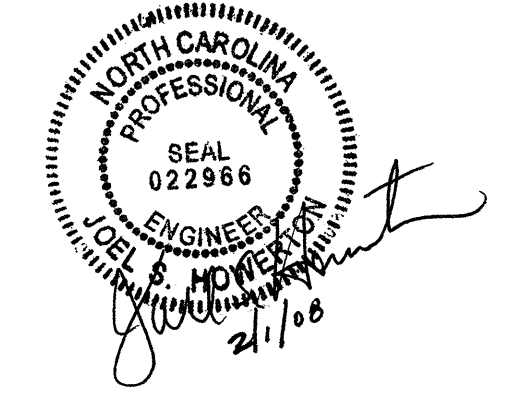
SHEET 2 OF 2
866D04

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

SEE PLATE FOR TITLE

ORIGINAL BY: ERIC WARD DATE: 5-97
 MODIFIED BY: J.S. Spell DATE: 1-08
 CHECKED BY: J.S. Spell DATE: 2/1/08
 FILE SPEC.: D:\37\usr\details\metric\stand\866d04.dgn

01-FEB-2008 09:07
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Summary of Quantities

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS
ROADWAY SUMMARY OF QUANTITIES FOR CONTRACT - C201813

ItemNumber	Sec #	Quantity	Unit	Description
000100000-N	800	Lump Sum		MOBILIZATION
002200000-E	225	5,900	CY	UNCLASSIFIED EXCAVATION
002900000-N	SP	Lump Sum		REINFORCED BRIDGE APPROACH FILL, STATION ***** (22+85.00)
005000000-E	226	1	ACR	SUPPLEMENTARY CLEARING & GRUB-BING
005700000-E	226	250	CY	UNDERCUT EXCAVATION
006300000-N	SP	Lump Sum		GRADING
013400000-E	240	400	CY	DRAINAGE DITCH EXCAVATION
031800000-E	300	82	TON	FOUNDATION CONDITIONING MATERIAL, MINOR STRS
034300000-E	310	128	LF	15" RC PIPE CULVERTS, CLASS III
039000000-E	310	140	LF	36" RC PIPE CULVERTS, CLASS III
042600000-E	310	100	LF	72" RC PIPE CULVERTS, CLASS III
099500000-E	340	72	LF	PIPE REMOVAL
112100000-E	520	175	TON	AGGREGATE BASE COURSE
122000000-E	545	50	TON	INCIDENTAL STONE BASE
148900000-E	610	970	TON	ASPHALT CONC BASE COURSE, TYPE B25.0B
149800000-E	610	740	TON	ASPHALT CONC INTERMEDIATE COURSE, TYPE 119.0B
151900000-E	610	850	TON	ASPHALT CONC SURFACE COURSE, TYPE S9.5B
156000000-E	620	132	TON	ASPHALT BINDER FOR PLANT MIX, GRADE PG 64-22
169300000-E	654	12	TON	ASPHALT PLANT MIX, PAVEMENT REPAIR
200000000-N	806	34	EA	RIGHT OF WAY MARKERS
222000000-E	838	7.1	CY	REINFORCED ENDWALLS
225300000-E	840	0.6	CY	PIPE COLLARS
226400000-E	840	1	CY	PIPE PLUGS
227500000-E	SP	39	CY	FLOWABLE FILL
228600000-N	840	5	EA	MASONRY DRAINAGE STRUCTURES
230800000-E	840	5.8	LF	MASONRY DRAINAGE STRUCTURES
236700000-N	840	5	EA	FRAME WITH TWO GRATES, STD 840.29
255600000-E	846	207	LF	SHOULDER BERM GUTTER
257700000-E	846	374	LF	CONCRETE EXPRESSWAY GUTTER
303000000-E	862	987.5	LF	STEEL BM GUARDRAIL
304500000-E	862	68.75	LF	STEEL BM GUARDRAIL, SHOP CURVED
315000000-N	862	5	EA	ADDITIONAL GUARDRAIL POSTS
319500000-N	862	1	EA	GUARDRAIL ANCHOR UNITS, TYPE AT-1
327000000-N	SP	5	EA	GUARDRAIL ANCHOR UNITS, TYPE 350
331700000-N	862	4	EA	GUARDRAIL ANCHOR UNITS, TYPE B-77
357400000-E	867	160	LF	GENERIC FENCING ITEM 4 STRAND BARBED WIRE FENCE WITH POSTS (& 1 STRAND ELECTRIC) (TEMP)
357400000-E	867	70	LF	GENERIC FENCING ITEM TEMP 4 STRAND BARBED WIRE FENCE WITH POSTS (& 1 STRAND ELECTRIC)
362800000-E	876	110	TON	RIP RAP, CLASS I
364200000-E	876	40	TON	RIP RAP, CLASS A
364900000-E	876	200	TON	RIP RAP, CLASS B
365600000-E	876	1,260	SY	FILTER FABRIC FOR DRAINAGE
402500000-E	901	47.25	SF	CONTRACTOR FURNISHED, TYPE *** SIGN (E)
402500000-E	901	6	SF	CONTRACTOR FURNISHED, TYPE *** SIGN (F)
407200000-E	903	147	LF	SUPPORTS, 3-LB STEEL U-CHANNEL
410200000-N	904	7	EA	SIGN ERECTION, TYPE E
410800000-N	904	1	EA	SIGN ERECTION, TYPE F
415500000-N	907	15	EA	DISPOSAL OF SIGN SYSTEM, U-CHANNEL

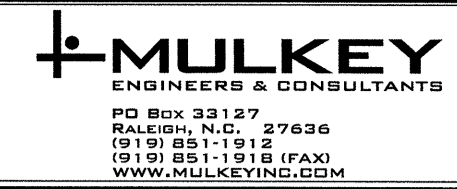
ItemNumber	Sec #	Quantity	Unit	Description
440000000-E	1110	550	SF	WORK ZONE SIGNS (STATIONARY)
440500000-E	1110	100	SF	WORK ZONE SIGNS (PORTABLE)
441000000-E	1110	130	SF	WORK ZONE SIGNS (BARRICADE MOUNTED)
443000000-N	1130	100	EA	DRUMS
443500000-N	1135	100	EA	CONES
444500000-E	1145	120	LF	BARRICADES (TYPE III)
445500000-N	1150	200	MD	FLAGGER
465000000-N	1251	30	EA	TEMPORARY RAISED PAVEMENT MARKERS
468500000-E	1205	4,000	LF	THERMOPLASTIC PAVEMENT MARKING LINES (4", 90 MILS)
468600000-E	1205	4,000	LF	THERMOPLASTIC PAVEMENT MARKING LINES (4", 120 MILS)
481000000-E	1205	20,000	LF	PAINT PAVEMENT MARKING LINES (4")
483500000-E	1205	180	LF	PAINT PAVEMENT MARKING LINES (24")
490000000-N	1251	30	EA	PERMANENT RAISED PAVEMENT MARKERS
532520000-E	1510	874	LF	2" WATER LINE
553600000-E	1515	1	EA	2" VALVE
587110000-E	1550	35	LF	TRENCHLESS INSTALLATION OF 2" IN SOIL
600000000-E	1605	1,250	LF	TEMPORARY SILT FENCE
600600000-E	1610	165	TON	STONE FOR EROSION CONTROL, CLASS A
600900000-E	1610	565	TON	STONE FOR EROSION CONTROL, CLASS B
601200000-E	1610	205	TON	SEDIMENT CONTROL STONE
601500000-E	1615	5	ACR	TEMPORARY MULCHING
601800000-E	1620	200	LB	SEED FOR TEMPORARY SEEDING
602100000-E	1620	0.75	TON	FERTILIZER FOR TEMPORARY SEEDING
602400000-E	1622	60	LF	TEMPORARY SLOPE DRAINS
602700000-N	1622	2	EA	INLET PROTECTION AT TEMPORARY SLOPE DRAINS
602900000-E	SP	730	LF	SAFETY FENCE
603000000-E	1630	2,350	CY	SILT EXCAVATION
603600000-E	1631	2,150	SY	MATting FOR EROSION CONTROL
603700000-E	SP	70	SY	COIR FIBER MAT
603800000-E	SP	150	SY	PERMANENT SOIL REINFORCEMENT MAT
604200000-E	1632	170	LF	1/4" HARDWARE CLOTH
6071030000-E	SP	720	LF	COIR FIBER BAFFLES
6071050000-E	SP	10	EA	*** SKIMMER (1-1/2")
6071050000-E	SP	1	EA	*** SKIMMER (2")
608400000-E	1660	5	ACR	SEEDING & MULCHING
608700000-E	1660	3	ACR	MOWING
609000000-E	1661	50	LB	SEED FOR REPAIR SEEDING
609300000-E	1661	0.25	TON	FERTILIZER FOR REPAIR SEEDING
609600000-E	1662	125	LB	SEED FOR SUPPLEMENTAL SEEDING
610800000-E	1665	3.75	TON	FERTILIZER TOPDRESSING
611400000-N	SP	3	HR	SPECIALIZED HAND MOWING
611700000-N	SP	12	EA	RESPONSE FOR EROSION CONTROL
612300000-E	1670	0.15	ACR	REFORESTATION

ItemNumber	Sec #	Quantity	Unit	Description
***** BEGIN SCHEDULE AA *****				
***** (3 ALTERNATES) *****				
036600000-E	310	232	LF	15" RC PIPE CULVERTS, CLASS III
AA1				
037800000-E	310	164	LF	24" RC PIPE CULVERTS, CLASS III
AA1				
*** OR ***				
036600000-E	310	120	LF	15" RC PIPE CULVERTS, CLASS III
AA2				
037800000-E	310	140	LF	24" RC PIPE CULVERTS, CLASS III
AA2				

ItemNumber	Sec #	Quantity	Unit	Description
053600000-E	SP	112	LF	**** HDPE PIPE CULVERTS (15")
AA2				
053600000-E	SP	24	LF	**** HDPE PIPE CULVERTS (24")
AA2				
*** OR ***				
036600000-E	310	120	LF	15" RC PIPE CULVERTS, CLASS III
AA3				
037800000-E	310	140	LF	24" RC PIPE CULVERTS, CLASS III
AA3				
054000000-E	SP	112	LF	**** ALUMINIZED CORRUGATED STEEL PIPE CULVERTS, **** THICK (15", 0.064")
AA3				
054000000-E	SP	24	LF	**** ALUMINIZED CORRUGATED STEEL PIPE CULVERTS, **** THICK (24", 0.064")
AA3				
***** END SCHEDULE AA *****				

COMPUTED BY: J.B. DATE: 11/07
 CHECKED BY: T.H. DATE: 11/07

STATE OF NORTH CAROLINA
 DIVISION OF HIGHWAYS



PROJECT REFERENCE NO. B-4063	SHEET NO. 3-C
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

GUARDRAIL SUMMARY

"N" = DISTANCE FROM EDGE OF LANE TO FACE OF GUARDRAIL.
 TOTAL SHOULDER WIDTH = DISTANCE FROM EDGE OF TRAVEL LANE TO SHOULDER BREAK POINT.
 FLARE LENGTH = DISTANCE FROM LAST SECTION OF PARALLEL GUARDRAIL TO END OF GUARDRAIL.
 W = TOTAL WIDTH OF FLARE FROM BEGINNING OF TAPER TO END OF GUARDRAIL.

SURVEY LINE	BEG. STA.	END STA.	LOCATION	LENGTH			WARRANT POINT		"N" DIST. FROM E.O.L.	TOTAL SHOUL. WIDTH	FLARE LENGTH		W		ANCHORS					IMPACT ATTENUATOR TYPE 350			REMARKS			
				STRAIGHT	SHOP CURVED	DOUBLE FACED	APPROACH END	TRAILING END			APPROACH END	TRAILING END	APPROACH END	TRAILING END	XI MOD	B-77	GRAU-350	CAT-1	AT-1	EA	G	NG				
-L-	17+50.00	20+25.00	LT	275.00'			18+85.00	19+00.00	8.00'	11.00'	50.00'	50.00'	1.00'	1.00'												
-L-	17+85.98	22+35.98	RT	450.00'			19+35.00	22+35.98	3.00	11.00'	50.00'	50.00'	1.00'	1.00'		1	1									
-L-	21+06.52	22+44.02	LT	137.50'				22+44.02	3.00'	11.00'		50.00'		1.00'		1	1									
-L-	23+25.98	25+25.98	RT	200.00'				23+25.98	3.00'	11.00'		50.00'		1.00'		1	1									
-L-	23+34.02	-Y1- 11+92.07	LT	250.00'	75.00'		23+34.02		3.00'	11.00'					1											
			SUB-TOTAL	1312.50'												4	5			1						
			GRAU-350 - 5 @ 50.00' EA.	-250.00'																						
			B-77 -4 @ 18.75' EA.	-75.00'																						
			AT-1 -1 @ 6.25' EA.		-6.25'																					
			TOTAL	987.50'	68.75'											4	5			1						
			SAY	987.50'	68.75'											4	5			1						

ADDITIONAL GUARDRAIL POST = 5 EA.

REVISIONS

**SUMMARY OF EARTHWORK
 IN CUBIC YARDS**

SURVEY LINE	STATION	STATION	UNCLASSIFIED EXCAVATION	UNDERCUT	EMBANKMENT + %	BORROW	WASTE
-L-	14+00.00	22+40.00	672		1,988	1,316	0
BRIDGE							
SUBTOTAL			672		1,988	1,316	0
BRIDGE							
-L-	23+30.00	33+00.00	4,767		1,675	0	3,092
-Y1-	10+70.00	12+00.00	391		22	0	369
-Y2-	10+50	11+75	376		173	0	203
SUBTOTAL			5,534		1,870	0	3,664
PROJECT TOTALS			6,206		3,858	1,316	3,664
LOSS DUE TO CLEARING AND GRUBBING			-500				-500
EARTH WASTE TO REDUCE BORROW						-1,316	-1,316
GRAND TOTAL			5,706			0	1,848
SAY			5,900				2,000

NOTE: APPROXIMATE QUANTITIES ONLY.
 FINE GRADING, CLEARING AND GRUBBING, AND REMOVAL OF EXISTING PAVEMENT WILL BE PAID FOR AT THE CONTRACT LUMP SUM PRICE FOR "GRADING". (SEE PROJECT SPECIAL PROVISIONS.)

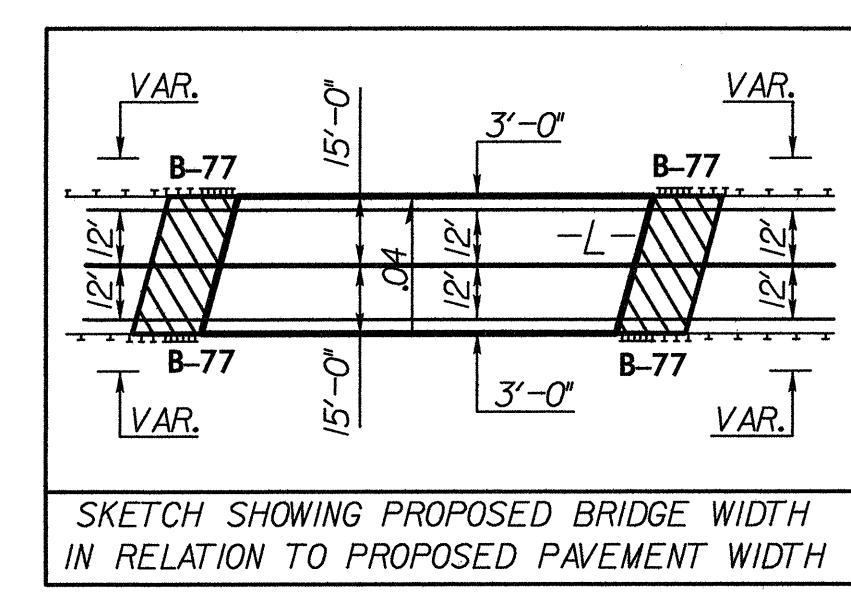
NOTE: EARTHWORK QUANTITIES ARE CALCULATED BY THE ROADWAY DESIGN UNIT. THESE EARTHWORK QUANTITIES ARE BASED IN PART ON SUBSURFACE DATA PROVIDED BY THE GEOTECHNICAL ENGINEERING UNIT.

**SUMMARY OF PAVEMENT REMOVAL
 IN SQUARE YARDS**

LOCATION	ASPHALT REMOVAL	ASPHALT BREAK UP	CONCRETE REMOVAL	CONCRETE BREAK UP
-L- 18+36 TO 22+50	636.23			
-L- 23+20 TO 30+87	1941.69			
TOTAL	2,577.92			
SAY	2,630			

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MULKEY
 ENGINEERS & CONSULTANTS
 10119 S. 1918 (P.O.)
 RALEIGH, N.C. 27636
 (919) 881-1918 (FAX)
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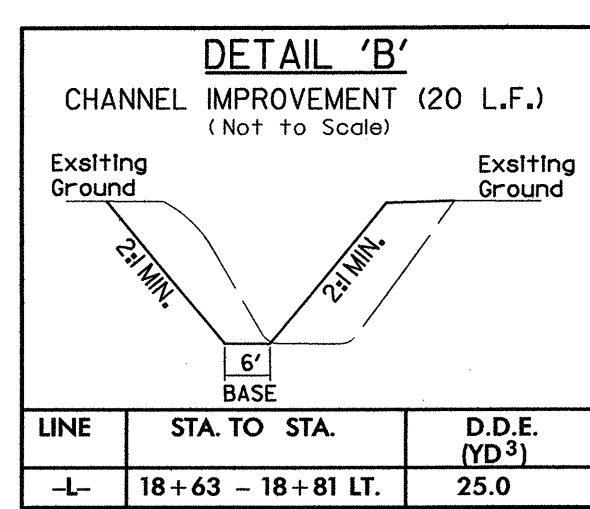


DETAIL 'A' SPECIAL CUT DITCH (Not to Scale)

Min. D = 1.5 Ft.
 Max. d = 1 Ft.

Type of Liner = Class 'A' Rip-Rap

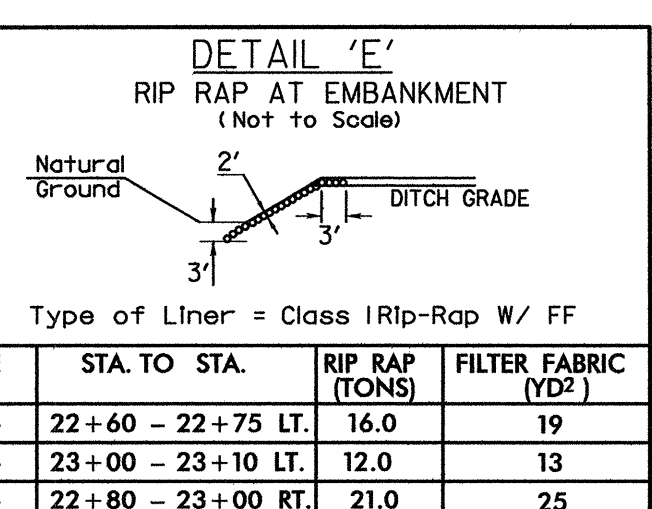
LINE	STA. TO STA.	RIP RAP (TONS)	FILTER FABRIC (YD ²)
-L-	13+75 - 15+00 LT.	40	197



DETAIL 'B' CHANNEL IMPROVEMENT (20 L.F.) (Not to Scale)

Min. D = 1.5 Ft.

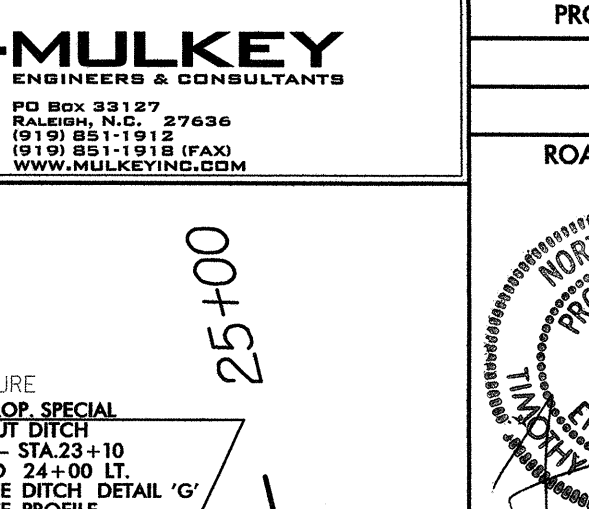
LINE	STA. TO STA.	D.D.E. (YD ³)
-L-	18+63 - 18+81 LT.	25.0



DETAIL 'D' CUT DITCH (Not to Scale)

Min. D = 1.5 Ft.

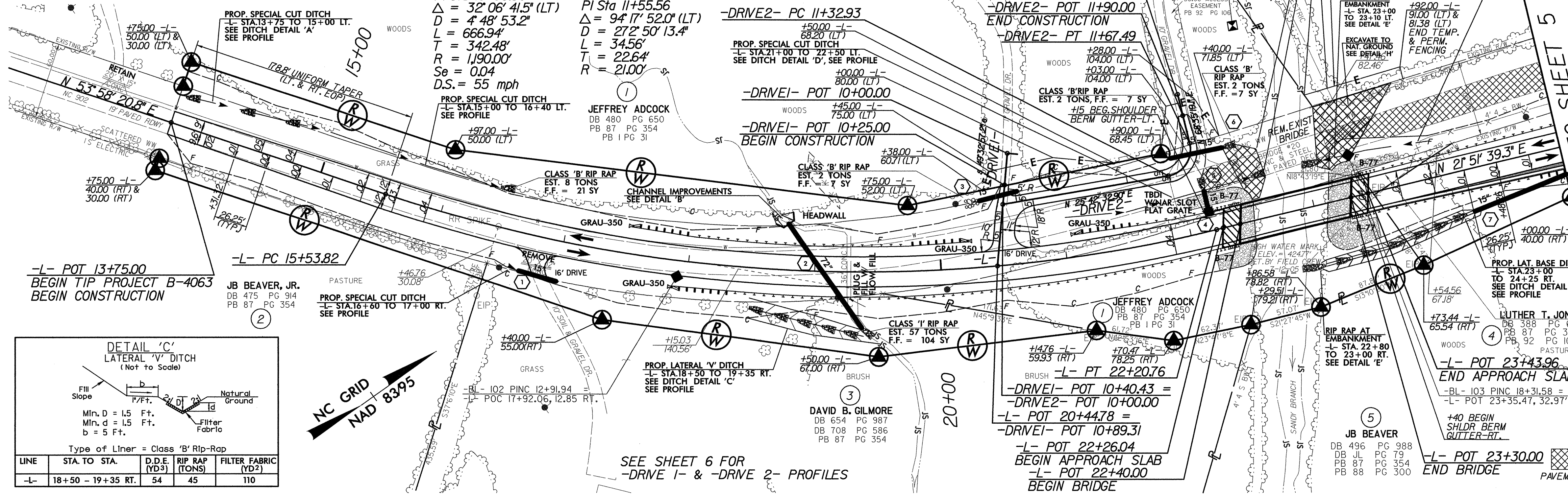
LINE	STA. TO STA.	RIP RAP (TONS)	FILTER FABRIC (YD ²)
-L-	21+00 - 22+50 LT.		



DETAIL 'E' RIP RAP AT EMBANKMENT (Not to Scale)

Type of Liner = Class 'B' Rip-Rap W/ FF

LINE	STA. TO STA.	RIP RAP (TONS)	FILTER FABRIC (YD ²)
-L-	22+60 - 22+75 LT.	16.0	19
-L-	23+00 - 23+10 LT.	12.0	13
-L-	22+80 - 23+00 RT.	21.0	25

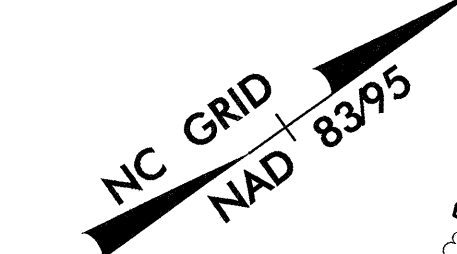


DETAIL 'C' LATERAL 'V' DITCH (Not to Scale)

Min. D = 1.5 Ft.
 Min. d = 1.5 Ft.
 b = 5 Ft.

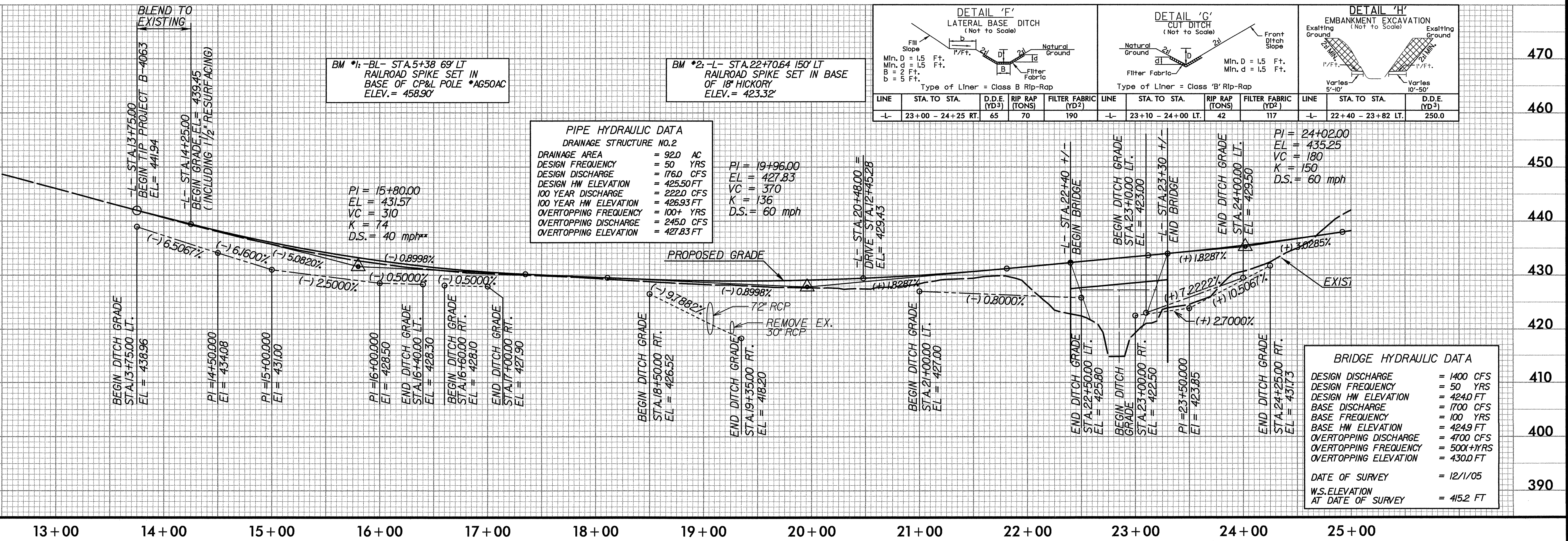
Type of Liner = Class 'B' Rip-Rap

LINE	STA. TO STA.	D.D.E. (YD ³)	RIP RAP (TONS)	FILTER FABRIC (YD ²)
-L-	18+50 - 19+35 RT.	54	45	110



SEE SHEET 6 FOR
 -DRIVE 1- & -DRIVE 2- PROFILES

SEE SHEETS S-1 THRU S-23 FOR STRUCTURE PLANS



PIPE HYDRAULIC DATA
 DRAINAGE STRUCTURE NO. 2

DRAINAGE AREA = 92.0 AC
 DESIGN FREQUENCY = 50 YRS
 DESIGN DISCHARGE = 176.0 CFS
 DESIGN HW ELEVATION = 425.50 FT
 100 YEAR DISCHARGE = 222.0 CFS
 100 YEAR HW ELEVATION = 426.93 FT
 OVERTOPPING FREQUENCY = 100+ YRS
 OVERTOPPING DISCHARGE = 245.0 CFS
 OVERTOPPING ELEVATION = 427.83 FT

PI = 15+80.00
 EL = 431.57
 VC = 310
 K = 14
 D.S. = 40 mph

PI = 19+96.00
 EL = 427.83
 VC = 370
 K = 136
 D.S. = 60 mph

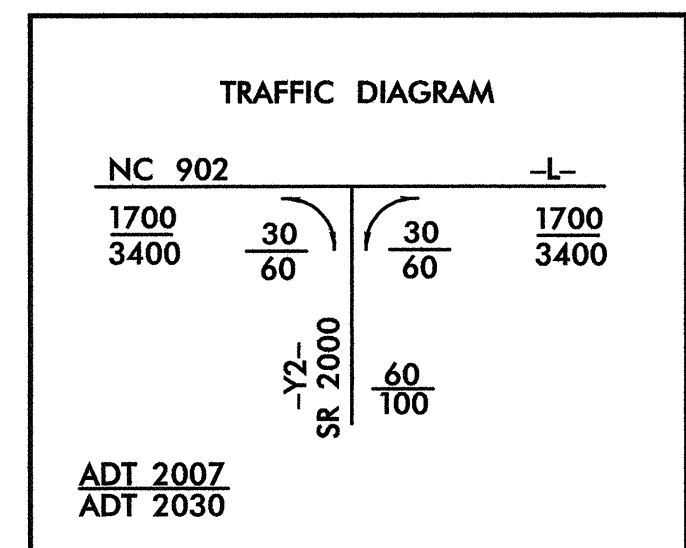
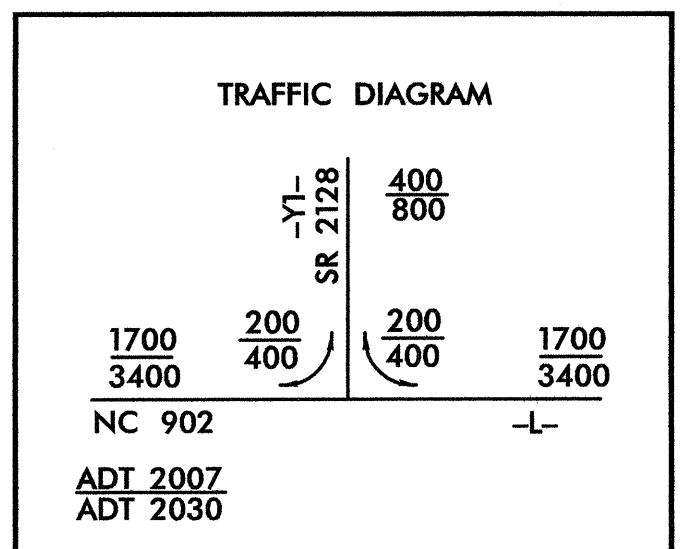
BRIDGE HYDRAULIC DATA

DESIGN DISCHARGE = 1400 CFS
 DESIGN FREQUENCY = 50 YRS
 DESIGN HW ELEVATION = 424.0 FT
 BASE DISCHARGE = 1700 CFS
 BASE FREQUENCY = 100 YRS
 BASE HW ELEVATION = 424.9 FT
 OVERTOPPING DISCHARGE = 4700 CFS
 OVERTOPPING FREQUENCY = 500+ YRS
 OVERTOPPING ELEVATION = 430.0 FT

DATE OF SURVEY = 12/1/05
 W.S. ELEVATION AT DATE OF SURVEY = 415.2 FT

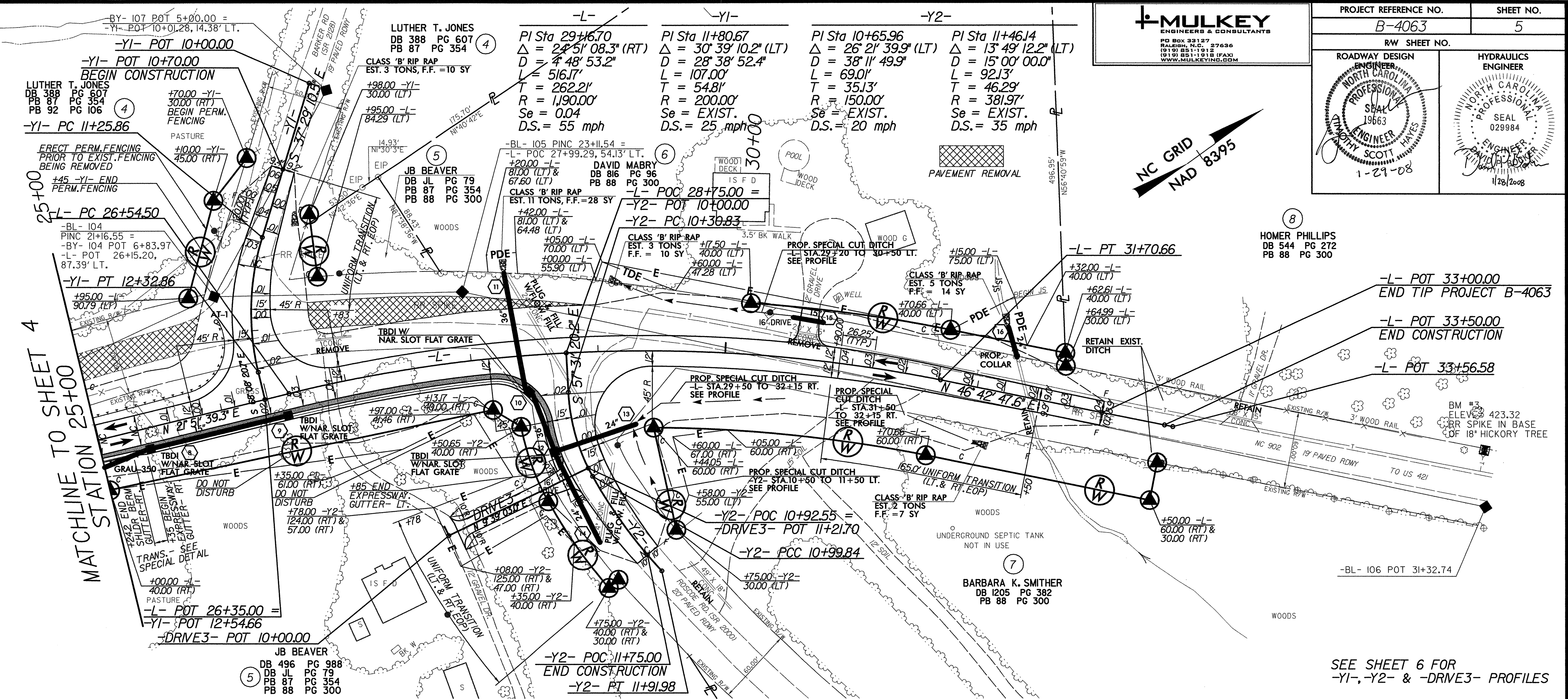
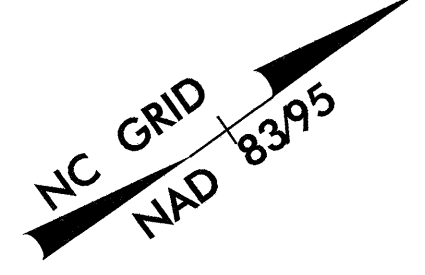
REVISIONS

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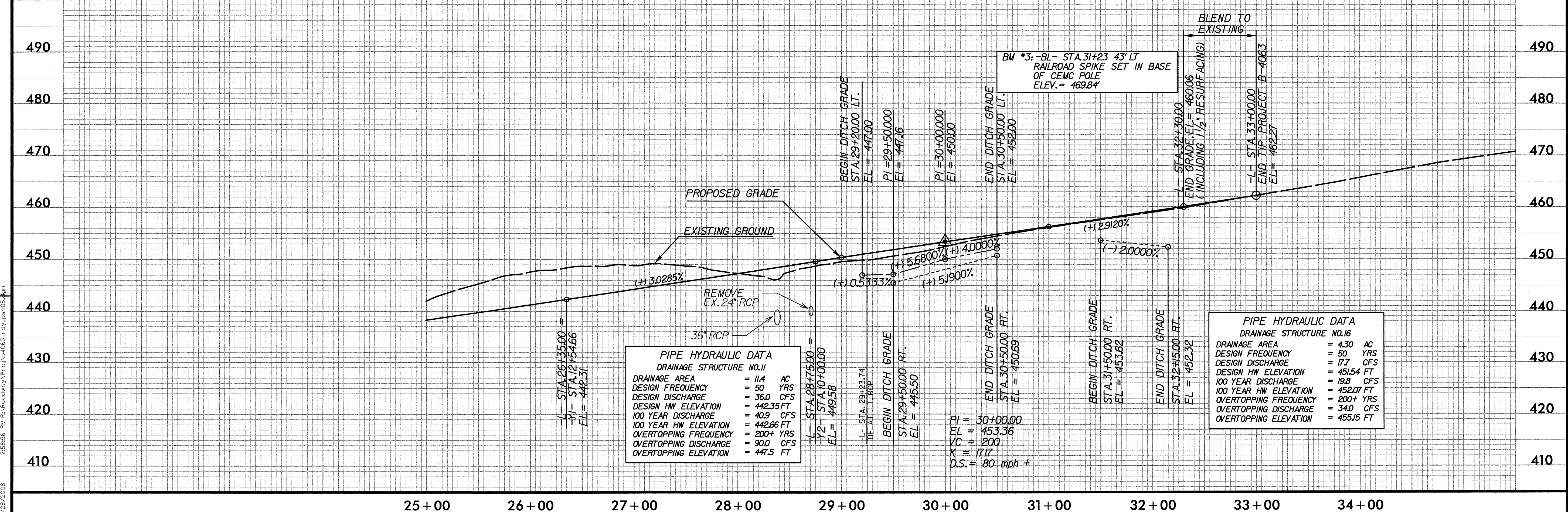


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PROJECT REFERENCE NO. B-4063	SHEET NO. 5
ROADWAY DESIGN ENGINEER SCOTT HAYES 1-29-08	HYDRAULICS ENGINEER DAVID MABRY 1/28/2008



REVISIONS



PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO. 11

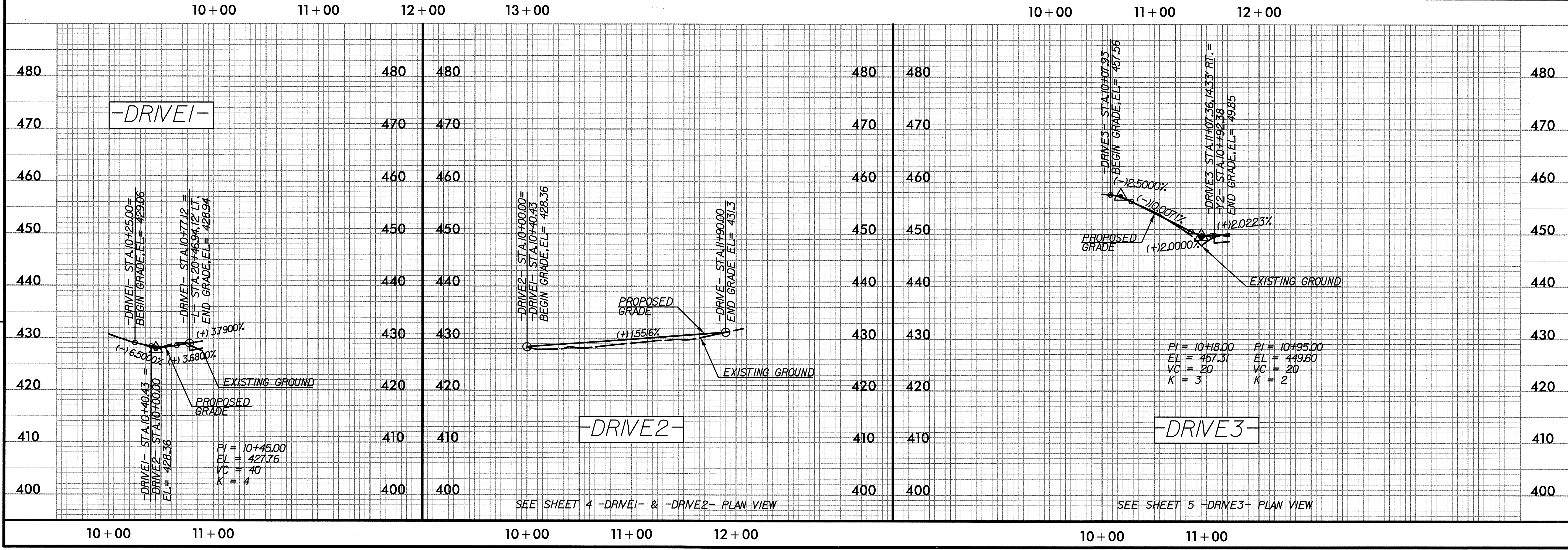
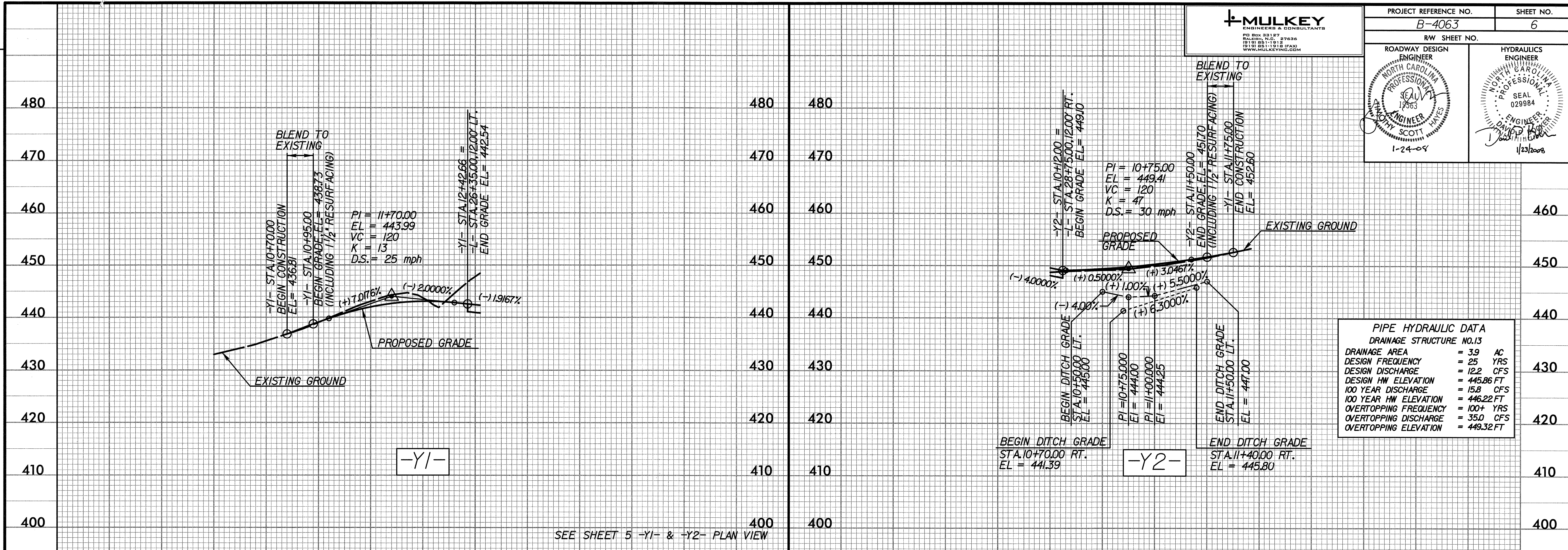
DRAINAGE AREA	= 11.4 AC
DESIGN FREQUENCY	= 50 YRS
DESIGN DISCHARGE	= 36.0 CFS
DESIGN HW ELEVATION	= 442.35 FT
100 YEAR DISCHARGE	= 40.9 CFS
100 YEAR HW ELEVATION	= 442.66 FT
OVERTOPPING FREQUENCY	= 200+ YRS
OVERTOPPING DISCHARGE	= 90.0 CFS
OVERTOPPING ELEVATION	= 447.5 FT

PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO. 16

DRAINAGE AREA	= 4.30 AC
DESIGN FREQUENCY	= 50 YRS
DESIGN DISCHARGE	= 17.7 CFS
DESIGN HW ELEVATION	= 451.54 FT
100 YEAR DISCHARGE	= 19.8 CFS
100 YEAR HW ELEVATION	= 452.07 FT
OVERTOPPING FREQUENCY	= 200+ YRS
OVERTOPPING DISCHARGE	= 34.0 CFS
OVERTOPPING ELEVATION	= 455.15 FT

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PIPE HYDRAULIC DATA	
DRAINAGE STRUCTURE NO.13	
DRAINAGE AREA	= 3.9 AC
DESIGN FREQUENCY	= 25 YRS
DESIGN DISCHARGE	= 122 CFS
DESIGN HW ELEVATION	= 445.86 FT
100 YEAR DISCHARGE	= 15.8 CFS
100 YEAR HW ELEVATION	= 446.22 FT
OVERTOPPING FREQUENCY	= 100+ YRS
OVERTOPPING DISCHARGE	= 35.0 CFS
OVERTOPPING ELEVATION	= 449.32 FT



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