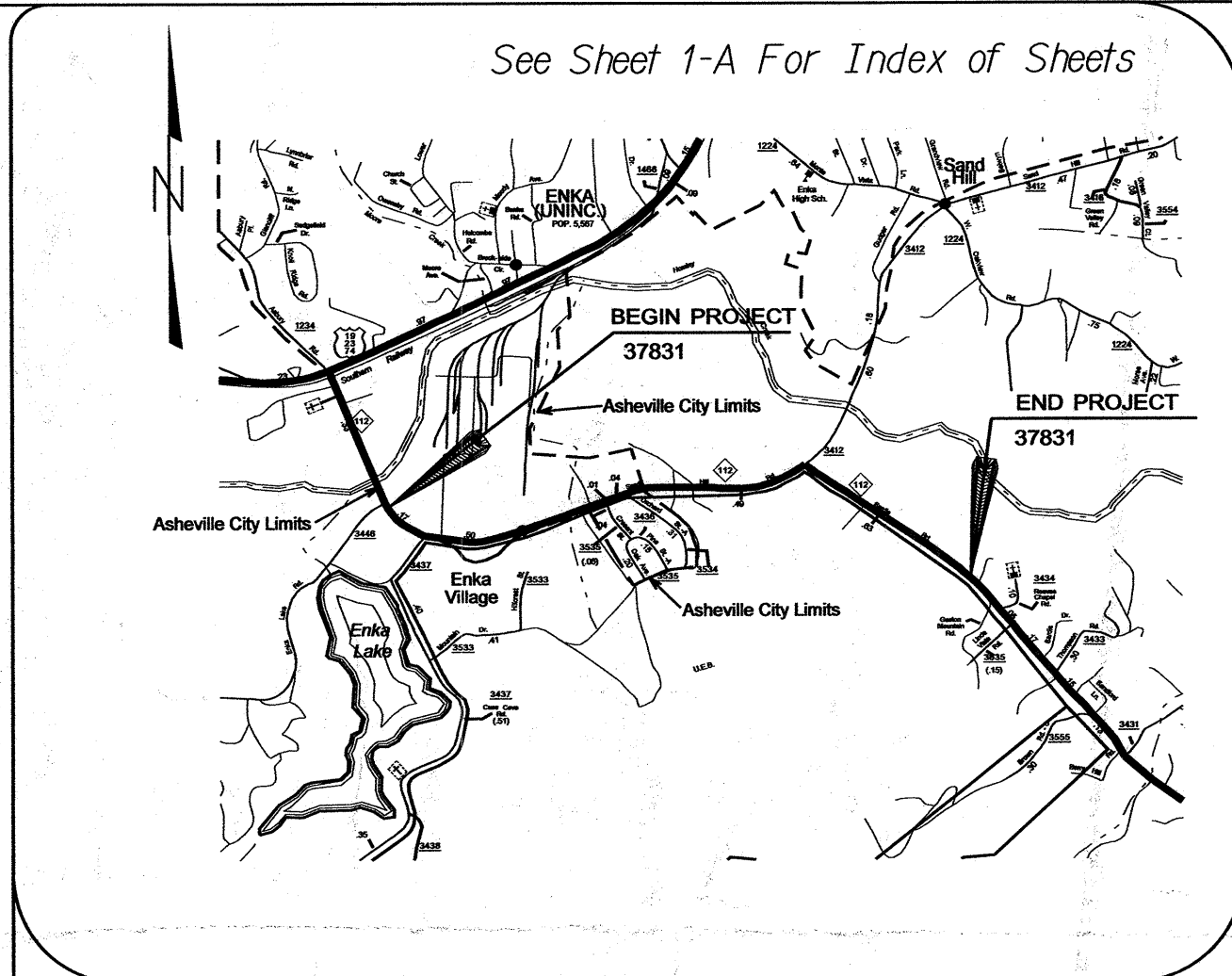


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WBS 37831

C201865

PROJECT: MAI3028R



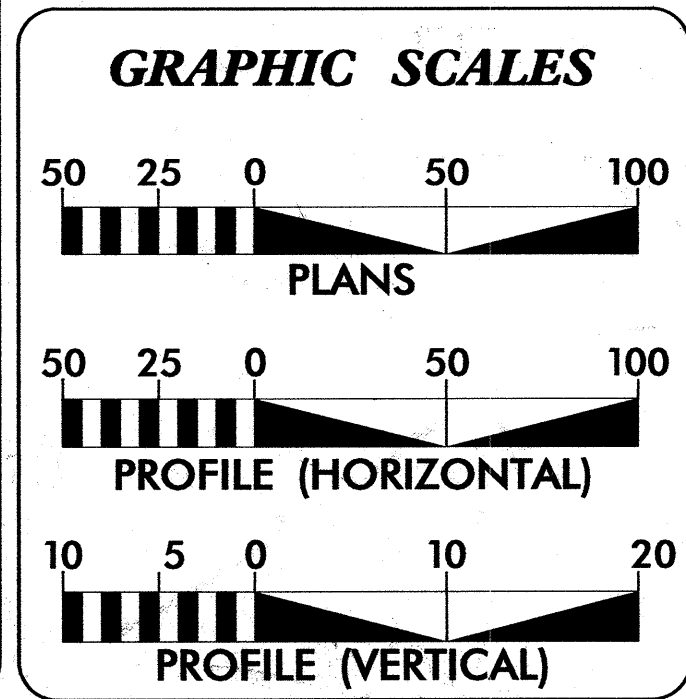
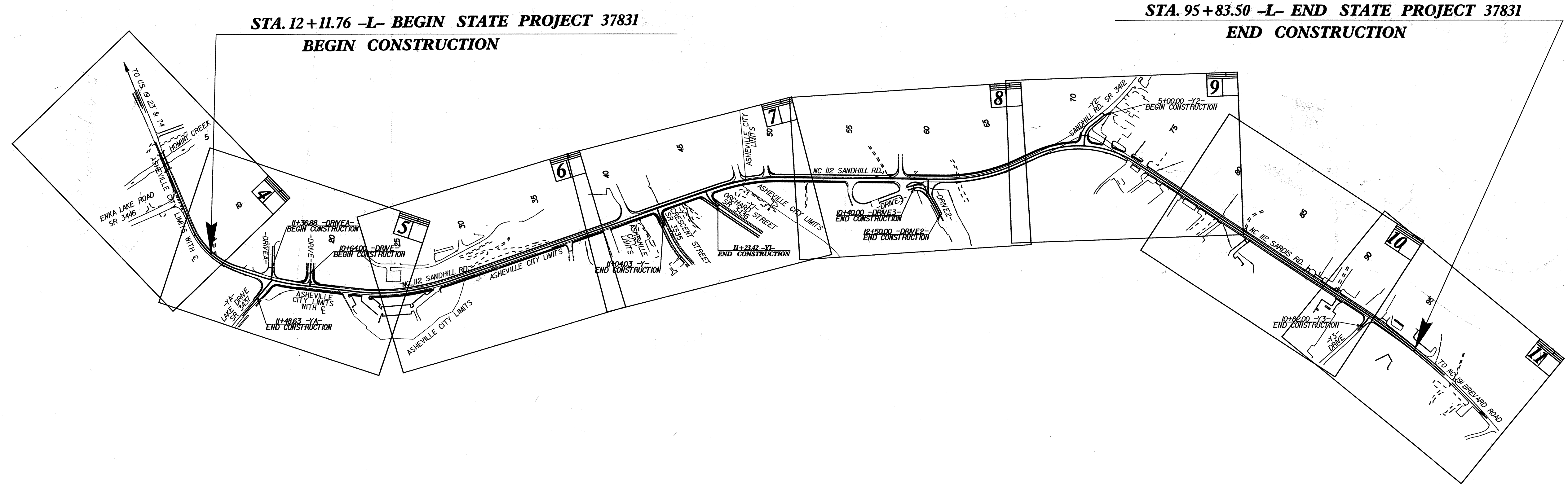
SEE SHEET 1-A FOR INDEX OF SHEETS
 PART OF JOB INSIDE ASHEVILLE CITY LIMITS

STATE OF NORTH CAROLINA
 DIVISION OF HIGHWAYS

BUNCOMBE

LOCATION: NC 112 SAND HILL ROAD AND SARDIS ROAD FROM WEST
 OF SR 3437 LAKE DRIVE TO 2500' EAST OF INTERSECTION OF
 SAND HILL RD. SR 3412 WITH SARDIS RD NC 112
 TYPE OF WORK: GRADING, DRAINAGE, WIDENING, CURB AND GUTTER,
 AND PAVING

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	37831	1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
37831		P.E., RW, UTILITY	
37831		AND CONST.	



DESIGN DATA

ADT 2002 = 12,000
 ADT 2022 = 18,000
 DHV = 10 %
 D = 10 %
 T = 5 % *
 V = 35 &
 45 MPH
 * TTST 2 DUAL 3

PROJECT LENGTH

TOTAL LENGTH OF STATE PROJECT 37831 = 1.586 MILES

Prepared in the Office of:
DIVISION OF HIGHWAYS
 55 Orange Street, Asheville, NC 28802

2006 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
 MARCH 21, 2006

LETTING DATE:
 OCTOBER 16, 2007

K. A. WILSON, PE
 OPERATIONS ENGINEER

M. K. PENLAND
 DIVISION DESIGN ENGINEER

HYDRAULICS ENGINEER

W. Robert [Signature]
 SIGNATURE: 9-5-07

DIVISION OPERATIONS ENGINEER

Kenneth A. Wilson [Signature]
 SIGNATURE: 8-31-07

**DIVISION OF HIGHWAYS
 STATE OF NORTH CAROLINA**

P.E.

STATE DESIGN ENGINEER

**DEPARTMENT OF TRANSPORTATION
 FEDERAL HIGHWAY ADMINISTRATION**

APPROVED
 DIVISION ADMINISTRATOR

DATE

PROJECT REFERENCE NO.	SHEET NO.
37831	1A
ROADWAY DESIGN ENGINEER	
8-31-07	

STATE OF NORTH CAROLINA
 DIVISION OF HIGHWAYS

INDEX OF SHEETS

BUNCOMBE COUNTY
 PROJECT : 37831 INDEX OF SHEETS

SHEET NUMBERS	SHEET
1	TITLE SHEET
1-A	INDEX OF SHEETS, GENERAL NOTES, AND LIST OF ROADWAY STANDARDS
1-B	CONVENTIONAL SYMBOLS
1-C	SURVEY CONTROL AND CENTERLINE COORDINATE LIST
2 THRU 2-C	TYPICAL SECTIONS, PAVEMENT SCHEDULE, WEDGING DETAIL, AND TRANSITION AT END OF 2'6" CONCRETE CURB AND GUTTER
2-D THRU 2-H	INTERSECTION DETAILS
2-I	CONCRETE ENDWALL FOR TAPERED INLET
2-J	DETAIL OF REINFORCED TAPERD INLET 24" THRU 72" DIAMETER
2-K	HDPE PIPE LINER INSIDE CORRUGATED STEEL PIPE
2-L THRU 2-M	DETAIL FOR EXTRA LENGTH GUARDRAIL POST
2-N THRU 2-O	DETAIL FOR LOCATION OF TELEPHONE CONDUIT ENCASEMENTS
2-P	DETAIL OF BOX EXPANSION
2-Q	DETAIL FOR APRON AROUND DROP INLETS
2-R	DETAIL TO CONVERT EXISTING DROP INLET OR CATCH BASIN TO JUNCTION BOX (MANHOLE OPTIONAL)
2-S	DETAIL OF TEMPORARY 1" STEEL COVER OVER DRAINAGE STRUCTURE
2-T	DRAINAGE STRUCTURE WITH SLUICE GATE
3	SUMMARY OF QUANTITIES
3-A THRU 3-E	SUMMARY OF DRAINAGE
3-F	SUMMARY OF GUARDRAIL
3-G	SUMMARIES OF PROPOSED RADIUS TYPE DRIVES IN C&G STAND. 848.02, SANITARY SEWER MANHOLE ADJUSTMENTS, REMOVAL OF EXISTING ASPHALT PAVEMENT, BREAKING OF EXISTING ASPHALT PAVEMENT, PIPE REMOVAL, PIPE PLUG AND FLOWABLE FILL
3-H	SUMMARY OF EARTHWORK, WHEELCHAIR RAMPS, CONCRETE APRONS FOR DROP INLETS
3-I	RIGHT OF WAY AREA DATA SHEET
3-J	PARCEL INDEX SHEET
4 THRU 11	PLAN SHEETS
12 THRU 17	GRADE AND PROFILE SHEETS
TCP-1 THRU TCP-8	TRAFFIC CONTROL PLANS
PM-1 THRU PM-4	PAVEMENT MARKING PLANS
EC-1 THRU EC-18	EROSION CONTROL PLANS
SIG-1 THRU SIG-13	SIGNAL PLANS
UC-1 THRU UC-13	UTILITY CONSTRUCTION PLANS
UO-1 THRU UO-4	UTILITIES BY OTHERS PLANS
X-A	CROSS-SECTION SUMMARY
X-1 THRU X-78	PLAN CROSS-SECTION
W-1 THRU W-8	WALL PLANS

GENERAL NOTES

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 II.

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.

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

DRIVEWAYS:
 DRIVEWAYS SHALL BE CONSTRUCTED IN ACCORDANCE WITH STD. 848.02 USING 3' RADIi OR RADII AS SHOWN ON THE PLANS. LOCATIONS OF DRIVES WILL BE AS SHOWN ON THE PLANS OR AS DIRECTED BY THE ENGINEER.

STREET TURNOUT:
 STREET RETURNS SHALL BE CONSTRUCTED IN ACCORDANCE WITH STD. NO. 848.04 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.

UTILITIES:
 UTILITY OWNERS ON THIS PROJECT ARE PROGRESS ENERGY, AT & T, BELL SOUTH, ASHEVILLE WATER AND SEWER AND STDRM, CHARTER COMMUNICATION, PUBLIC SERVICE NC ENERGY, AND METROPOLITAN SEWER 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.

WHEELCHAIR RAMPS:
 WHEELCHAIR RAMPS ARE SHOWN ON THE PLANS AT APPROXIMATE LOCATIONS. THE CONSTRUCTION OF ALL WHEELCHAIR RAMPS SHALL BE IN ACCORDANCE WITH DETAILS IN PLANS.

LIST OF STANDARDS

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

2006 ROADWAY 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	
200.02	Method of Clearing - Method II
225.02	Guide for Grading Subgrade - Secondary and Local
225.04	Method of Obtaining Superlevation - Two Lane Pavement
DIVISION 3 - PIPE CULVERTS	
300.01	Method of Pipe Installation - Method 'A'
310.10	Driveway Pipe Construction
DIVISION 5 - SUBGRADE, BASES AND SHOULDERS	
560.01	Method of Shoulder Construction - High Side of Superelevated Curve - Method I
-newgg	
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
815.03	Pipe Underdrain and Blind Drain
838.01	Concrete Endwall for Single and Double Pipe Culverts - 15" thru 48" Pipe 90 Skew
838.11	Brick Endwall for Single and Double Pipe Culverts - 15" thru 48" Pipe 90 Skew
838.21	Reinforced Concrete Endwall - for Single 54" Pipe 90 Skew
838.51	Reinforced Brick Endwall - for Single 54" Pipe 90 Skew
838.80	Precast Endwalls - 12" thru 72" Pipe 90 Skew
840.01	Brick Catch Basin - 12" thru 54" Pipe
840.02	Concrete Catch Basin - 12" thru 54" Pipe
840.03	Frame, Grates and Hood - for Use on Standard Catch Basin
840.04	Concrete Open Throat Catch Basin - 12" thru 48" Pipe
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
840.31	Concrete Junction Box - 12" thru 66" Pipe
840.32	Brick Junction Box - 12" thru 66" Pipe
840.34	Traffic Bearing Junction Box - for Use with Pipes 42" and Under
840.54	Manhole Frame and Cover
840.66	Drainage Structure Steps
840.71	Concrete and Brick Pipe Plug
840.72	Pipe Collar
-newgg	
846.01	Concrete Curb, Gutter and Curb & Gutter
848.01	Concrete Sidewalk
848.02	Driveway Turnout - Radius Type
848.04	Street Turnout
848.05	Wheelchair Ramp - Curb Cut
852.01	Concrete Islands
862.01	Guardrail Placement
862.02	Guardrail Installation
866.01	Chain Link Fence - 4', 5' and 6' High Fence
876.01	Rip Rap in Channels
876.02	Guide for Rip Rap at Pipe Outlets
876.04	Drainage Ditches with Class 'B' Rip Rap

Note: Not to Scale

*S.U.E. = Subsurface Utility Engineering

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CONVENTIONAL PLAN SHEET SYMBOLS

BOUNDARIES AND PROPERTY:

State Line	-----
County Line	-----
Township Line	-----
City Line	-----
Reservation Line	-----
Property Line	-----
Existing Iron Pin	○ EP
Property Corner	----- x
Property Monument	□ EDM
Parcel/Sequence Number	⑫③
Existing Fence Line	x-x-x-x-x
Proposed Woven Wire Fence	○
Proposed Chain Link Fence	□
Proposed Barbed Wire Fence	◇
Existing Wetland Boundary	-WLB-
Proposed Wetland Boundary	-WLB-
Existing High Quality Wetland Boundary	-HQ WLB-
Existing Endangered Animal Boundary	-EAB-
Existing Endangered Plant Boundary	-EPB-

BUILDINGS AND OTHER CULTURE:

Gas Pump Vent or UG Tank Cap	○
Sign	○ S
Well	○ W
Small Mine	⊗
Foundation	□
Area Outline	□
Cemetery	⊕
Building	□
School	□
Church	⊕
Dam	▬

HYDROLOGY:

Stream or Body of Water	-----
Hydro, Pool or Reservoir	□
River Basin Buffer	-RBB-
Flow Arrow	←
Disappearing Stream	→
Spring	○
Swamp Marsh	∨
Proposed Lateral, Tail, Head Ditch	----- FLW
False Sump	◇

RAILROADS:

Standard Gauge	-----
RR Signal Milepost	○ MILEPOST 35
Switch	□ 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	----- R/W
Proposed Right of Way Line with Iron Pin and Cap Marker	----- R/W ▲
Proposed Right of Way Line with Concrete or Granite Marker	----- R/W ▲
Existing Control of Access	○
Proposed Control of Access	○
Existing Easement Line	-E-
Proposed Temporary Construction Easement	-E-
Proposed Temporary Drainage Easement	-TDE-
Proposed Permanent Drainage Easement	-PDE-
Proposed Permanent Utility Easement	-PUE-

ROADS AND RELATED FEATURES:

Existing Edge of Pavement	-----
Existing Curb	-----
Proposed Slope Stakes Cut	-C-
Proposed Slope Stakes Fill	-F-
Proposed Wheel Chair Ramp	○ WCR
Curb Cut for Future Wheel Chair Ramp	○ CCFR
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	□ Vineyard

EXISTING STRUCTURES:

MAJOR:	
Bridge, Tunnel or Box Culvert	----- CONC
Bridge Wing Wall, Head Wall and End Wall	----- CONC WW
MINOR:	
Head and End Wall	----- CONC HW
Pipe Culvert	-----
Footbridge	-----
Drainage Box: Catch Basin, DI or JB	□ CB
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	⊗
UG Power Cable Hand Hole	□
H-Frame Pole	●
Recorded UG Power Line	----- P
Designated UG Power Line (S.U.E.*)	----- P

TELEPHONE:

Existing Telephone Pole	●
Proposed Telephone Pole	○
Telephone Manhole	⊕
Telephone Booth	□
Telephone Pedestal	□
Telephone Cell Tower	⊗
UG Telephone Cable Hand Hole	□
Recorded UG Telephone Cable	----- T
Designated UG Telephone Cable (S.U.E.*)	----- T
Recorded UG Telephone Conduit	----- TC
Designated UG Telephone Conduit (S.U.E.*)	----- TC
Recorded UG Fiber Optics Cable	----- T FO
Designated UG Fiber Optics Cable (S.U.E.*)	----- T FO

WATER:

Water Manhole	⊕
Water Meter	○
Water Valve	⊗
Water Hydrant	⊕
Recorded UG Water Line	-----
Designated UG Water Line (S.U.E.*)	-----
Above Ground Water Line	----- A/G Water

TV:

TV Satellite Dish	⊗
TV Pedestal	□
TV Tower	⊗
UG TV Cable Hand Hole	□
Recorded UG TV Cable	----- TV
Designated UG TV Cable (S.U.E.*)	----- TV
Recorded UG Fiber Optic Cable	----- TV FO
Designated UG Fiber Optic Cable (S.U.E.*)	----- TV FO

GAS:

Gas Valve	◇
Gas Meter	⊕
Recorded UG Gas Line	-----
Designated UG Gas Line (S.U.E.*)	-----
Above Ground Gas Line	----- A/G Gas

SANITARY SEWER:

Sanitary Sewer Manhole	⊕
Sanitary Sewer Cleanout	⊕
UG Sanitary Sewer Line	----- SS
Above Ground Sanitary Sewer	----- A/G Sanitary Sewer
Recorded SS Forced Main Line	----- FSS
Designated SS Forced Main Line (S.U.E.*)	----- FSS

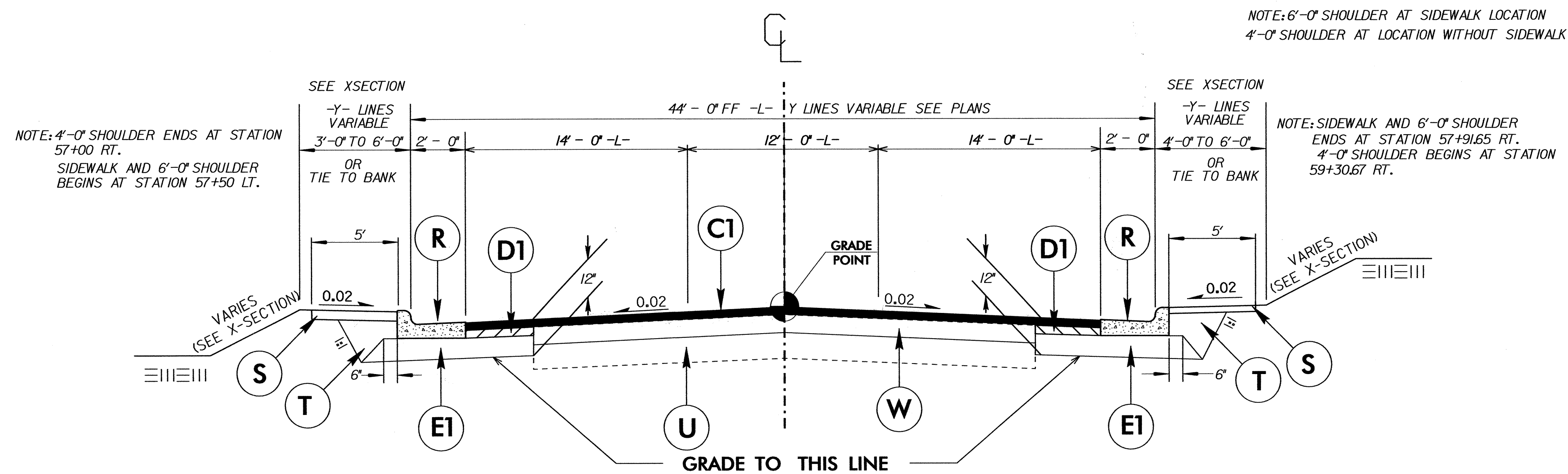
MISCELLANEOUS:

Utility Pole	●
Utility Pole with Base	□
Utility Located Object	○
Utility Traffic Signal Box	⊕
Utility Unknown UG Line	----- RUTL
UG Tank; Water, Gas, Oil	□
A/G Tank; Water, Gas, Oil	□
UG Test Hole (S.U.E.*)	⊕
Abandoned According to Utility Records	AATUR
End of Information	E.O.I.

6/2/99

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

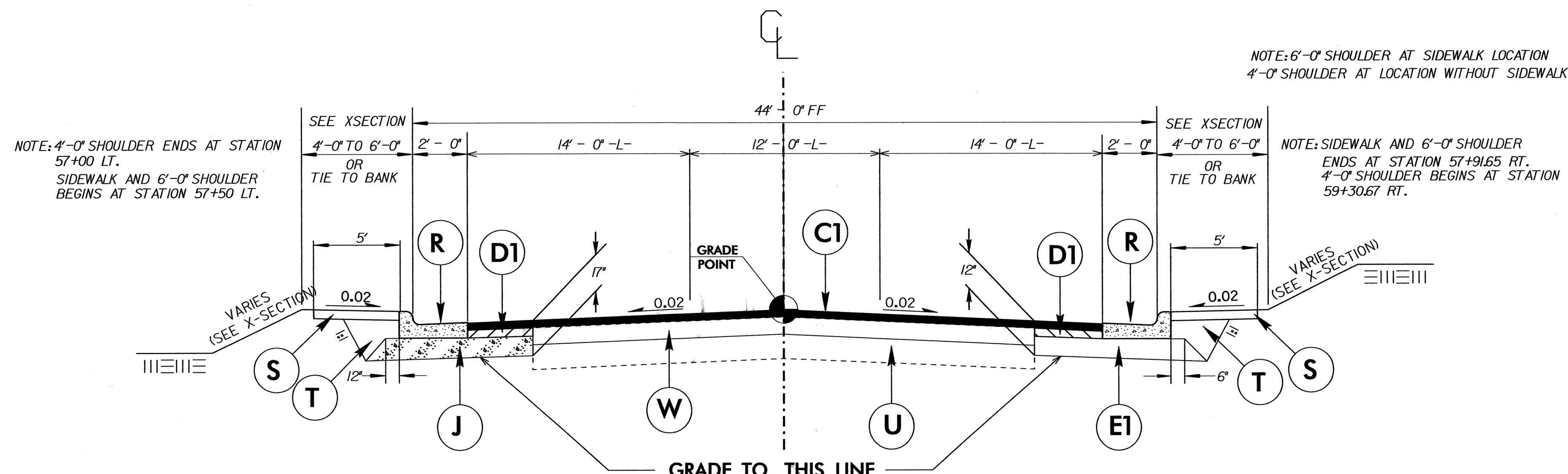
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37831	2
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER
7-19-07	



TYPICAL SECTION NO. 1

USE TYPICAL SECTION NO. 1

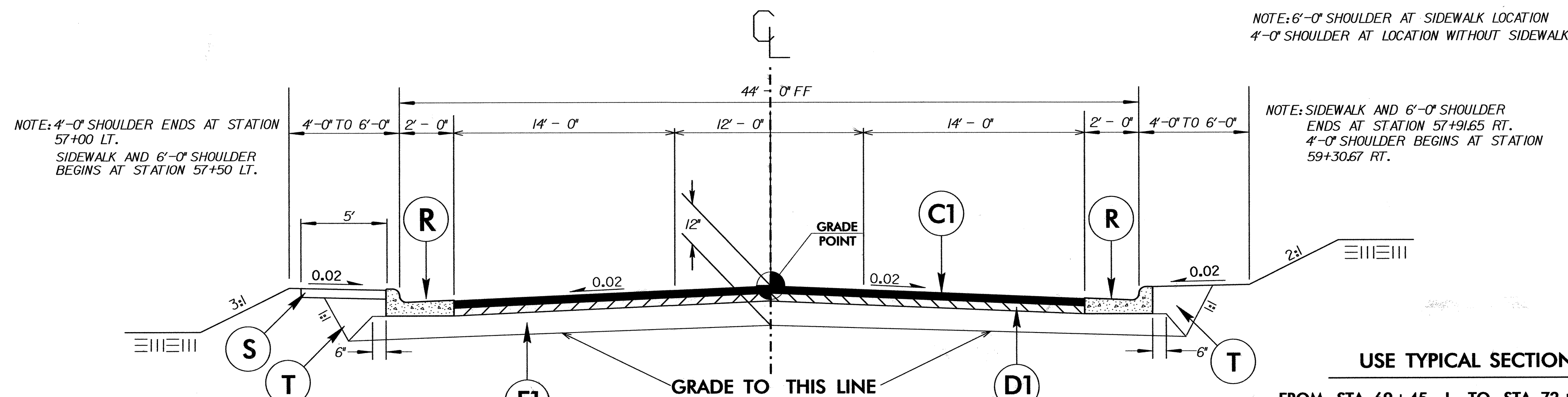
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- FROM STA. 68+00.00 -L- TO STA. 69+45.00 -L-
- FROM STA. 72+06.00 -L- TO STA. 75+40.65 -L-
- FROM STA. 10+20 -Y- TO STA. 11+04.03 -Y-
- FROM STA. 10+20.02 -Y1- TO STA. 11+23.42 -Y1-
- FROM STA. 6+76.65 -Y2- TO STA. 6+87.00 -Y2-
- FROM STA. 10+64 -DRIVE- TO STA. 11+29.42 -DRIVE-



TYPICAL SECTION NO. 2

USE TYPICAL SECTION NO. 2

- FROM STA. 40+50 -L- TO STA. 68+00 -L-



TYPICAL SECTION NO. 3

USE TYPICAL SECTION NO. 3

- FROM STA. 69+45 -L- TO STA. 72+06 -L-
- FROM STA. 6+87.00 -Y2- TO STA. 7+35.97 -Y2-

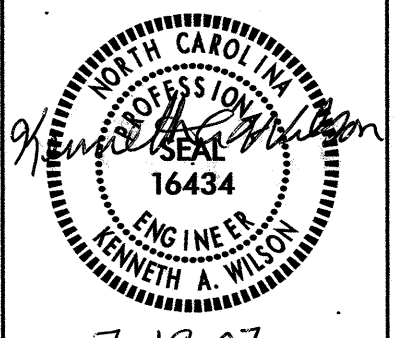
PAVEMENT SCHEDULE

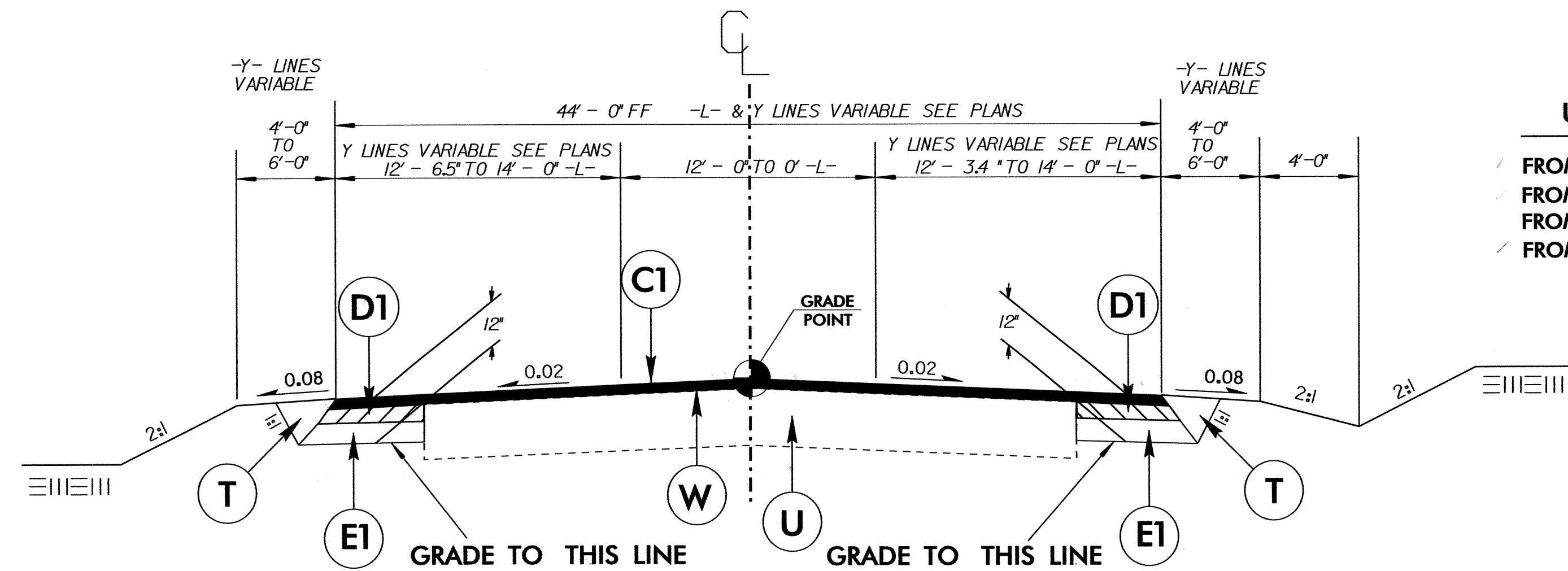
C1	PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
C2	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 112 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT TO EXCEED 1 1/2" IN DEPTH.
D1	PROP. APPROX. 4" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
D2	PROP. VAR. DEPTH ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH, TO BE PLACED IN LAYERS NOT LESS THAN 2 1/4" IN DEPTH OR GREATER THAN 4" IN DEPTH.
E1	PROP. APPROX. 5" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 570 LBS. PER SQ. YD. IN
E2	PROP. VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 3" IN DEPTH OR GREATER THAN 5 1/2" IN DEPTH.
J	PROP. 10" AGGREGATE BASE COURSE.
R	2'-6" CONCRETE CURB AND GUTTER.
S	4" CONCRETE SIDEWALK.
T	EARTH MATERIAL.
U	EXISTING PAVEMENT.
W	VARIABLE DEPTH ASPHALT PAVEMENT (SEE STANDARD WEDGING DETAIL SHEET No. 2-C)

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 \$\$\$\$SUBSERIAL\$\$\$\$

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

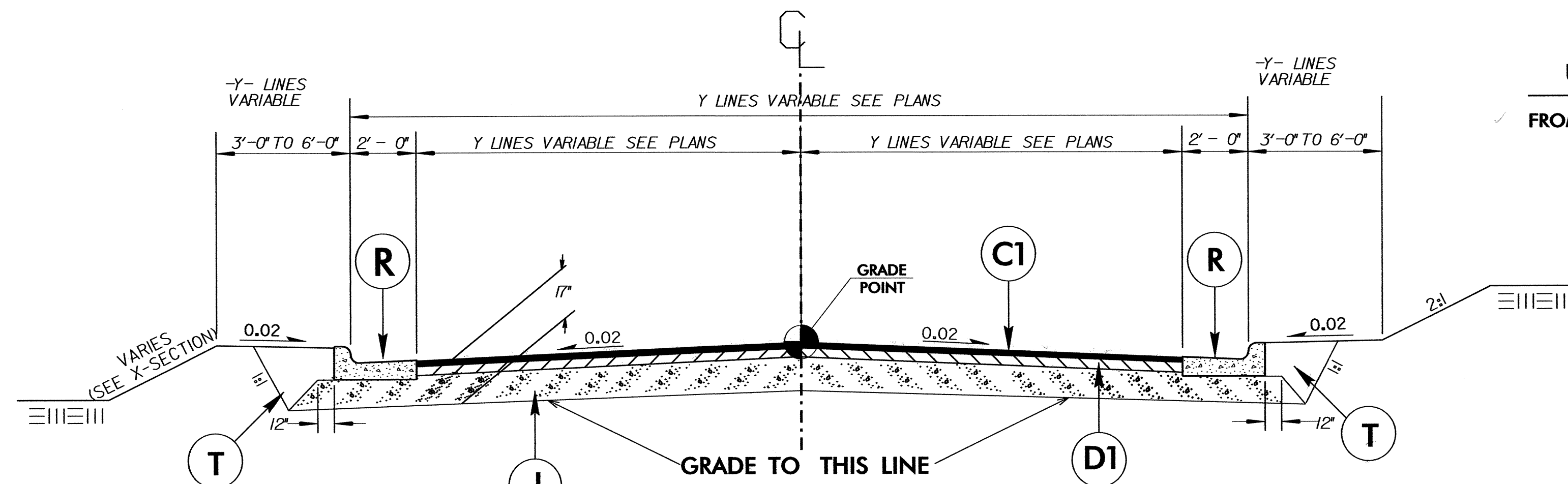
PROJECT REFERENCE NO. 37831	SHEET NO. 2-A
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER
	
7-19-07	



TYPICAL SECTION NO. 4

USE TYPICAL SECTION NO. 4

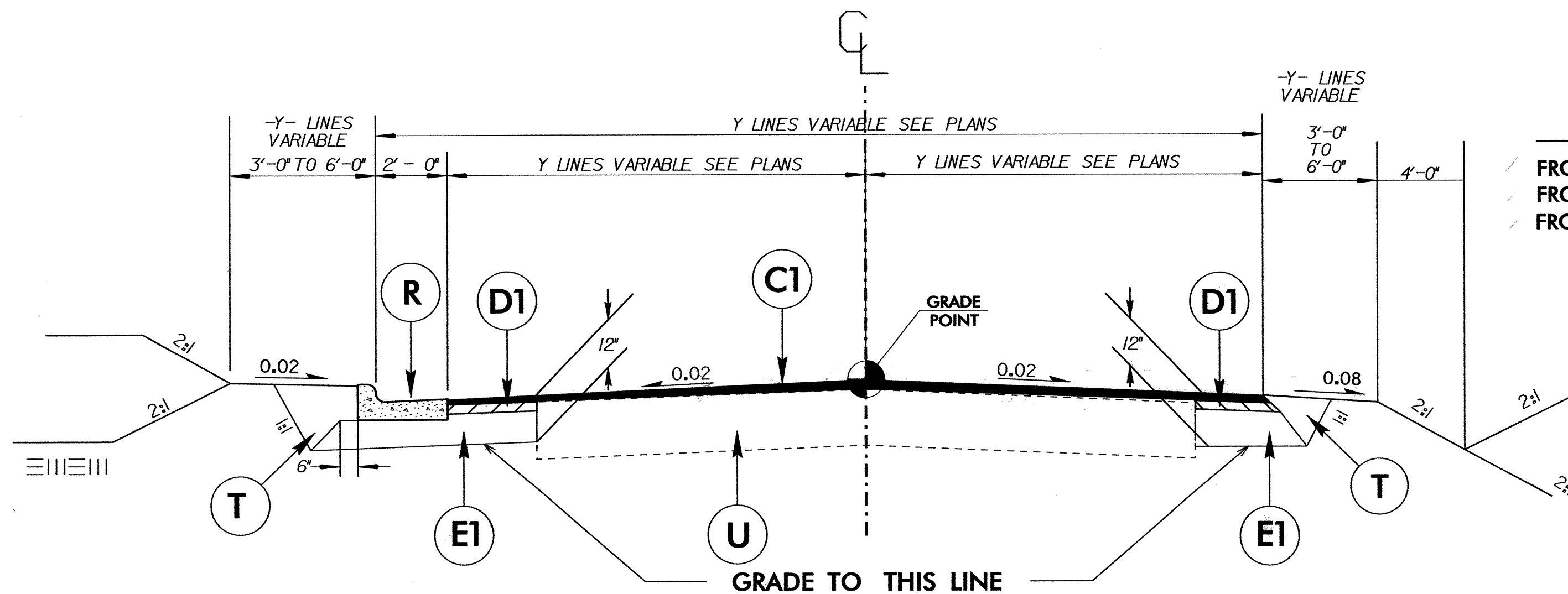
- ✓ FROM STA. 12+11.76 -L- TO STA. 16+30 -L-
- ✓ FROM STA. 11+32.57 -YA- TO STA. 11+48.63 -YA-
- ✓ FROM STA. 5+00.00 -Y2- TO STA. 6+76.65 -Y2-
- ✓ FROM STA. 11+36.88 -DRIVEA- TO STA. 11+56.88 -DRIVEA-



TYPICAL SECTION NO. 5

USE TYPICAL SECTION NO. 5

- ✓ FROM STA. 10+20 -DRIVE2- TO STA. 10+32 RT. AND 10+72.52 LT -DRIVE2-



TYPICAL SECTION NO. 6

USE TYPICAL SECTION NO. 6

- ✓ FROM STA. 10+40 -DRIVE3- TO STA. 10+80 -DRIVE3-
- ✓ FROM STA. 11+56.88 -DRIVEA- TO STA. 11+94.93 -DRIVEA-
- ✓ FROM STA. 10+22 -YA- TO STA. 11+32.57 -YA-

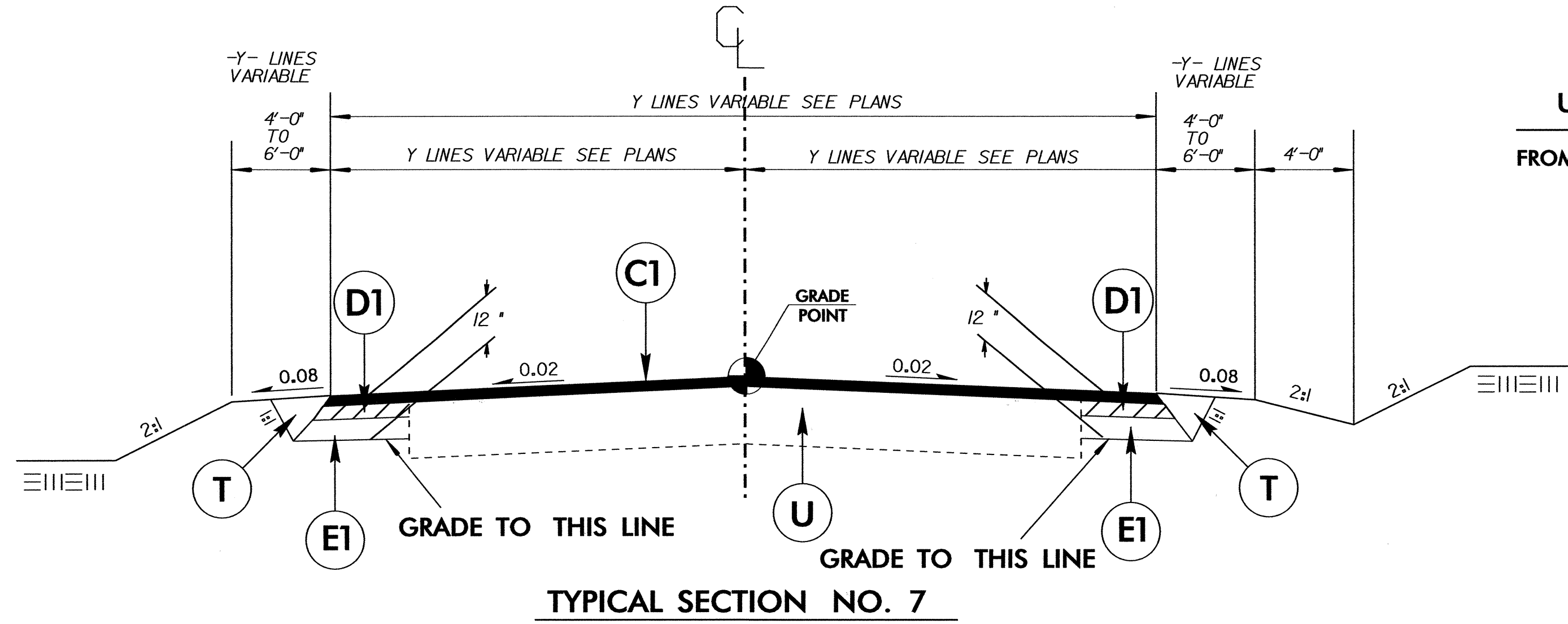
PAVEMENT SCHEDULE

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T	EARTH MATERIAL.
U	EXISTING PAVEMENT.
W	VARIABLE DEPTH ASPHALT PAVEMENT (SEE STANDARD WEDGING DETAIL SHEET No. 2-C)

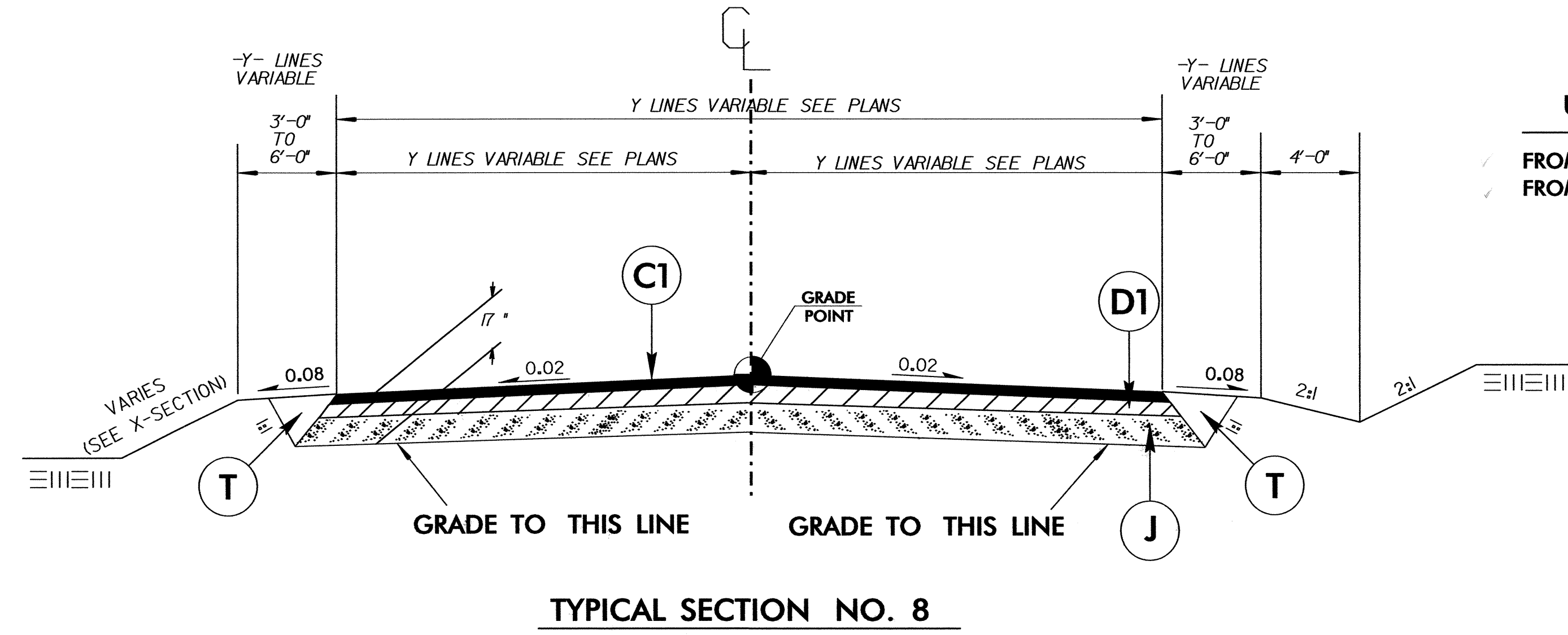
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 USER:KAWILSON

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

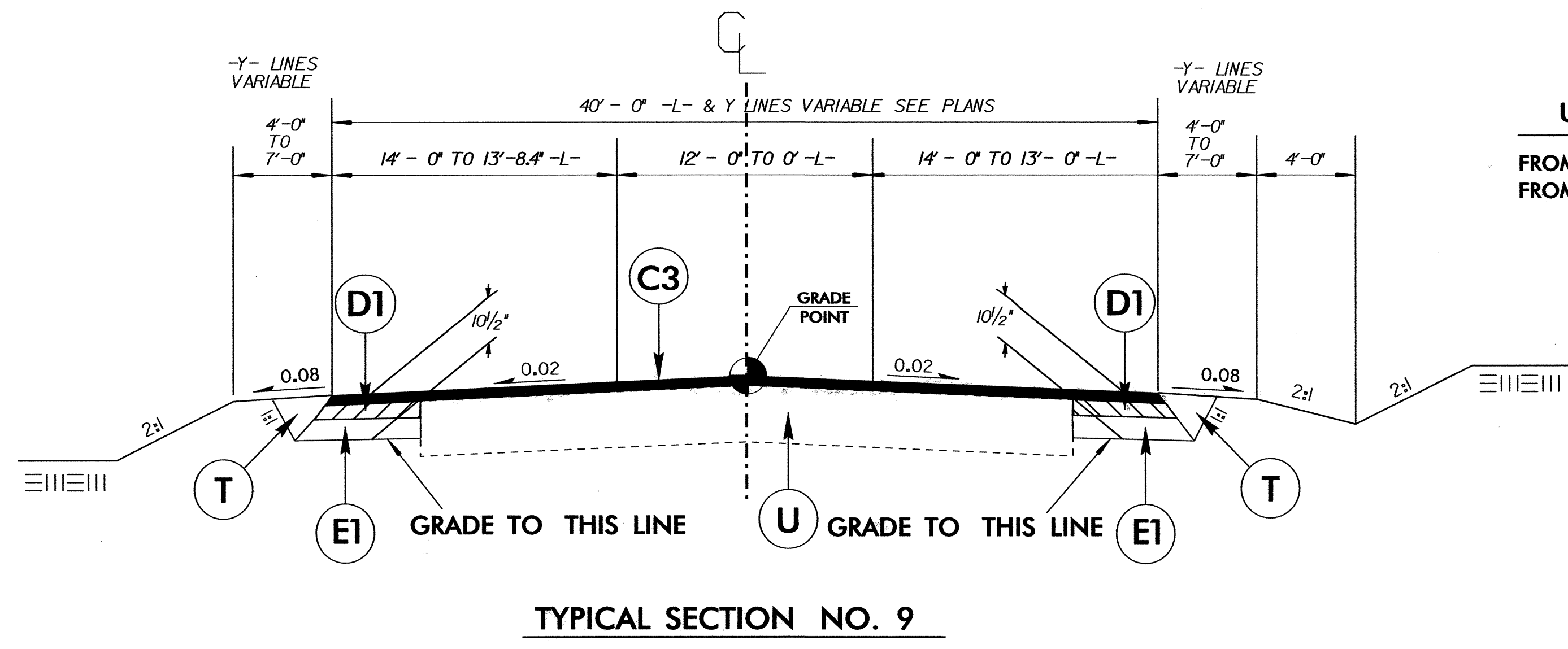
PROJECT REFERENCE NO.	SHEET NO.
37831	2-B
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER
7-19-07	



USE TYPICAL SECTION NO. 7
FROM STA. 11+70 TO 12+50 -DRIVE2-



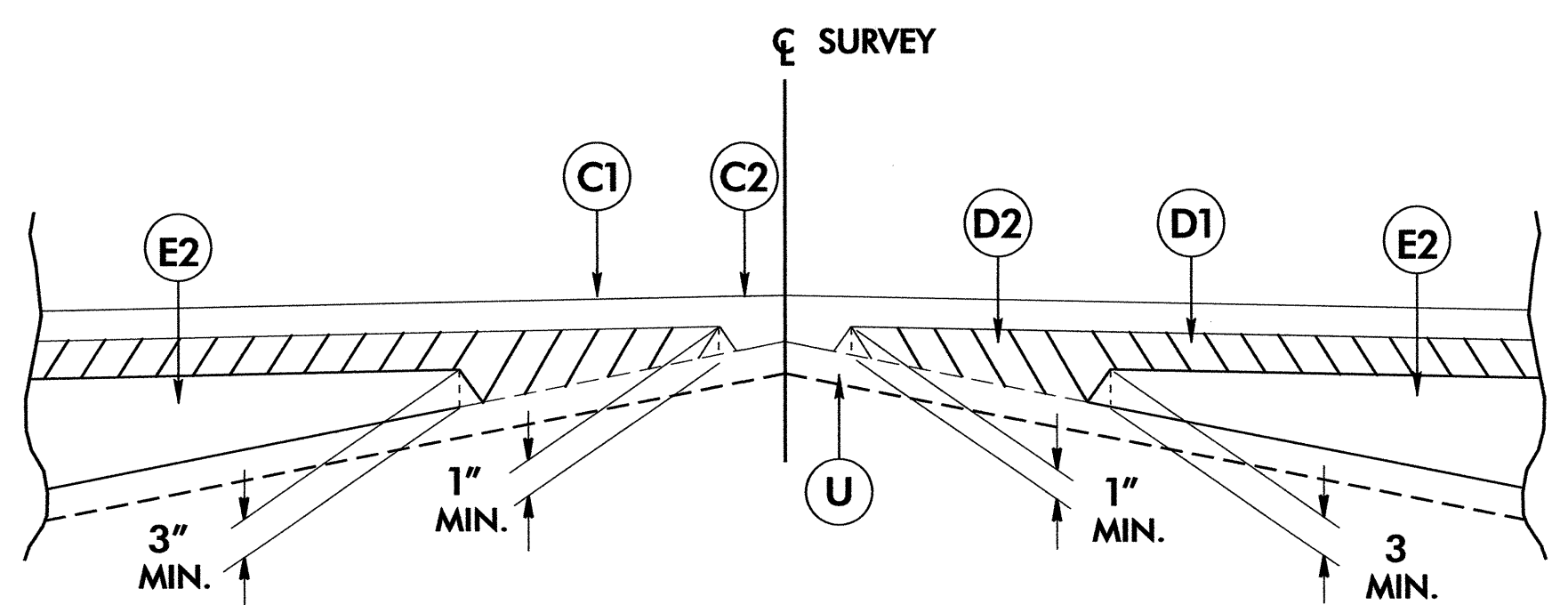
USE TYPICAL SECTION NO. 8
FROM STA. 10+32 RT -DRIVE2- AND STA. 10+72.52 LT TO 11+70 -DRIVE2-
FROM STA. 10+80 -DRIVE3- TO STA. 11+66.87 -DRIVE3-



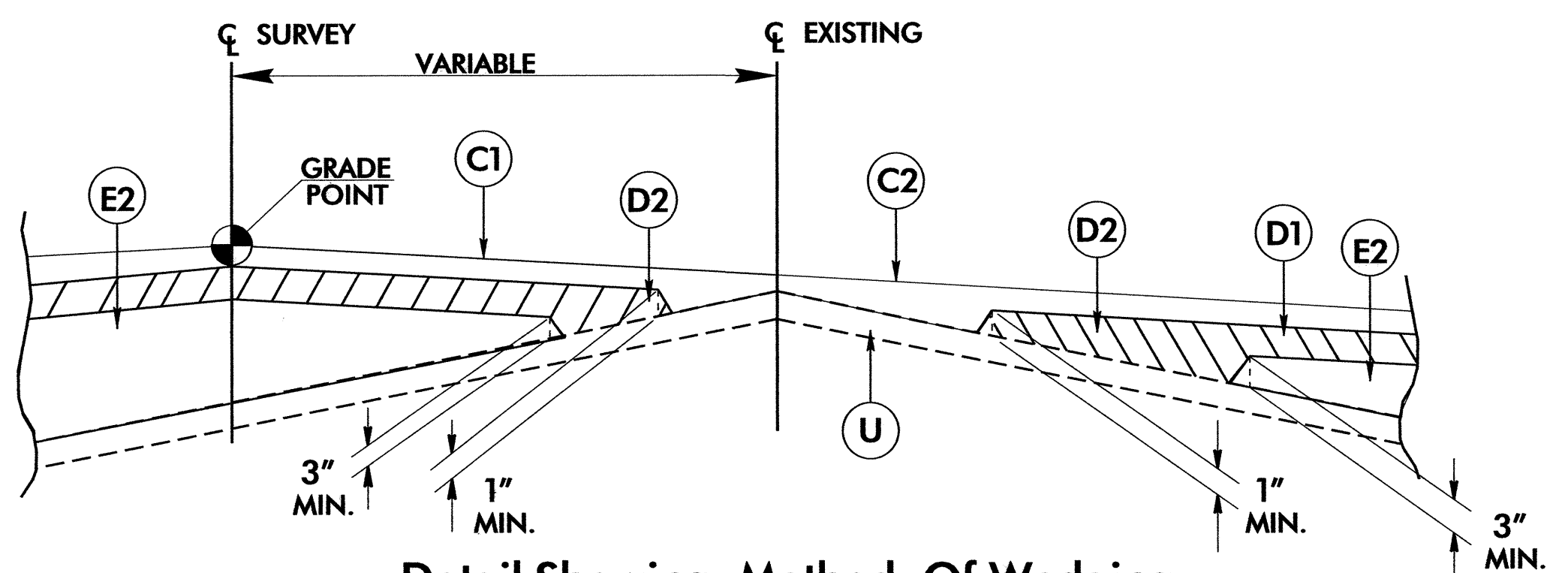
USE TYPICAL SECTION NO. 9
FROM STA. 75+40.65 -L- TO STA. 95+83.50 -L-
FROM STA. 10+20 -Y3- TO STA. 10+82.00 -Y3-

PAVEMENT SCHEDULE	
C1	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.
C2	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 112 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT TO EXCEED 1 1/2" IN DEPTH.
C3	PROP. APPROX. 1.5" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.
D1	PROP. APPROX. 4" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
D2	PROP. VAR. DEPTH ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH, TO BE PLACED IN LAYERS NOT LESS THAN 2 1/4" IN DEPTH OR GREATER THAN 4" IN DEPTH.
E1	PROP. APPROX. 5" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 570 LBS. PER SQ. YD. IN
E2	PROP. VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 3" IN DEPTH OR GREATER THAN 5 1/2" IN DEPTH.
J	PROP. 10" AGGREGATE BASE COURSE.
R	2'-6" CONCRETE CURB AND GUTTER.
S	4" CONCRETE SIDEWALK.
T	EARTH MATERIAL.
U	EXISTING PAVEMENT.
W	VARIABLE DEPTH ASPHALT PAVEMENT (SEE STANDARD WEDGING DETAIL SHEET NO. 2-C)

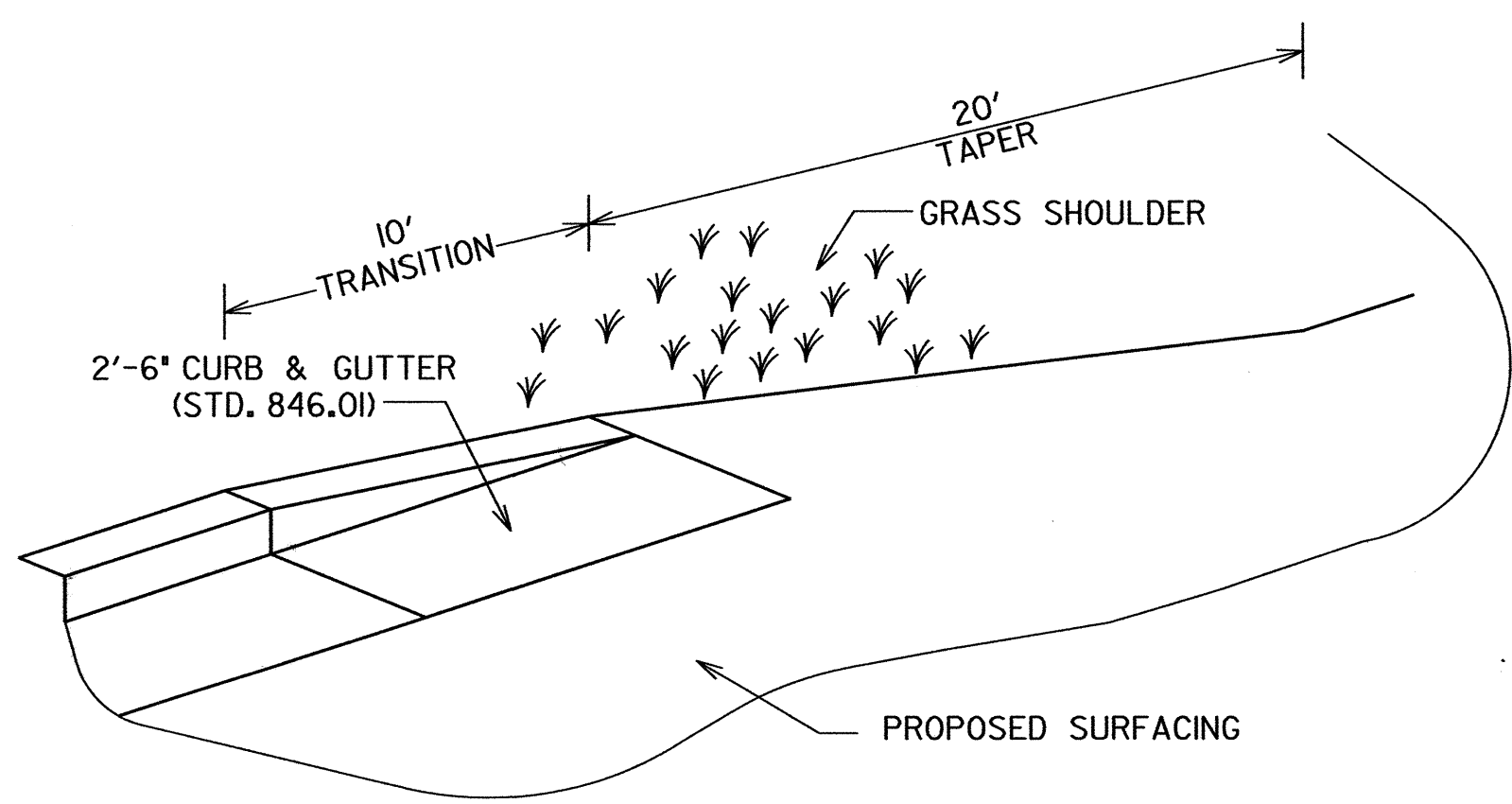
PROJECT REFERENCE NO. 37831	SHEET NO. 2-C
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER



Detail Showing Method of Wedging



Detail Showing Method Of Wedging

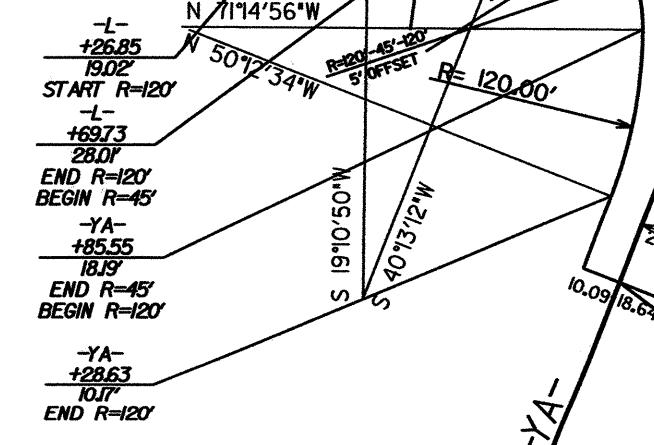
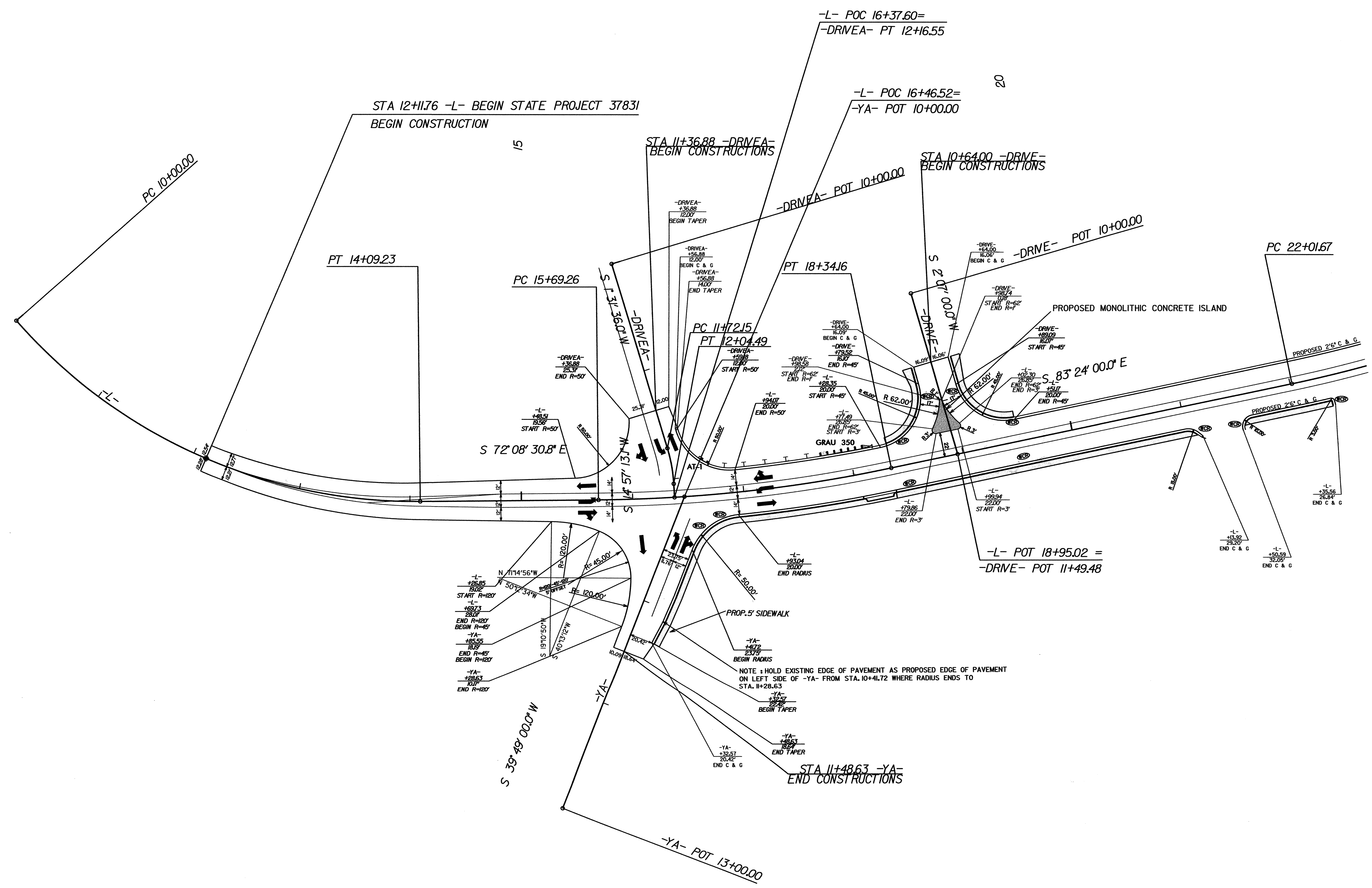


DETAIL FOR TRANSITION AT END OF 2'-6" CONCRETE CURB & GUTTER

PAVEMENT SCHEDULE	
C1	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.
C2	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 112 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT TO EXCEED 1½" IN DEPTH.
C3	PROP. APPROX. 1.5" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.
D1	PROP. APPROX. 4" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
D2	PROP. VAR. DEPTH ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH, TO BE PLACED IN LAYERS NOT LESS THAN 2¼" IN DEPTH OR GREATER THAN 4" IN DEPTH.
E1	PROP. APPROX. 5" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 570 LBS. PER SQ. YD. IN
E2	PROP. VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 3" IN DEPTH OR GREATER THAN 5½" IN DEPTH.
J	PROP. 10" AGGREGATE BASE COURSE.
R	2'-6" CONCRETE CURB AND GUTTER.
S	4" CONCRETE SIDEWALK.
T	EARTH MATERIAL.
U	EXISTING PAVEMENT.
W	VARIABLE DEPTH ASPHALT PAVEMENT (SEE STANDARD WEDGING DETAIL SHEET No. 2-C)

INTERSECTION DETAIL

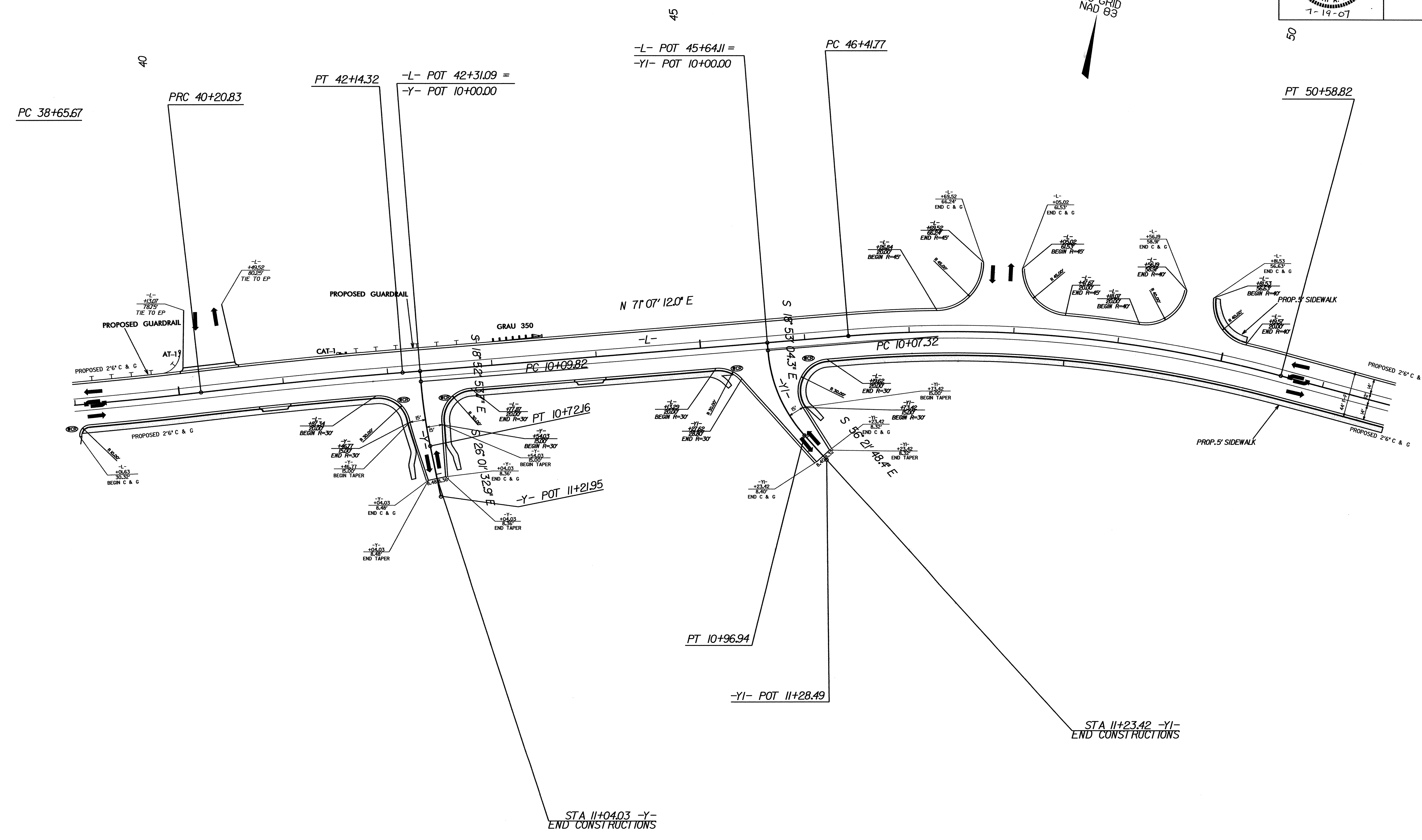
NC GRID
NAD 83



NOTE: HOLD EXISTING EDGE OF PAVEMENT AS PROPOSED EDGE OF PAVEMENT ON LEFT SIDE OF -YA- FROM STA. 10+41.72 WHERE RADIUS ENDS TO STA. 11+28.63

PROJECT REFERENCE NO.	SHEET NO.
37831	2-E
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	

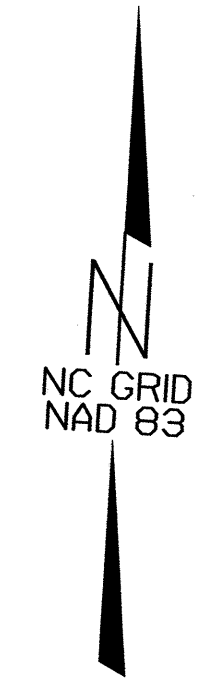
INTERSECTION DETAIL



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PROJECT REFERENCE NO.	SHEET NO.
37831	2-F
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	

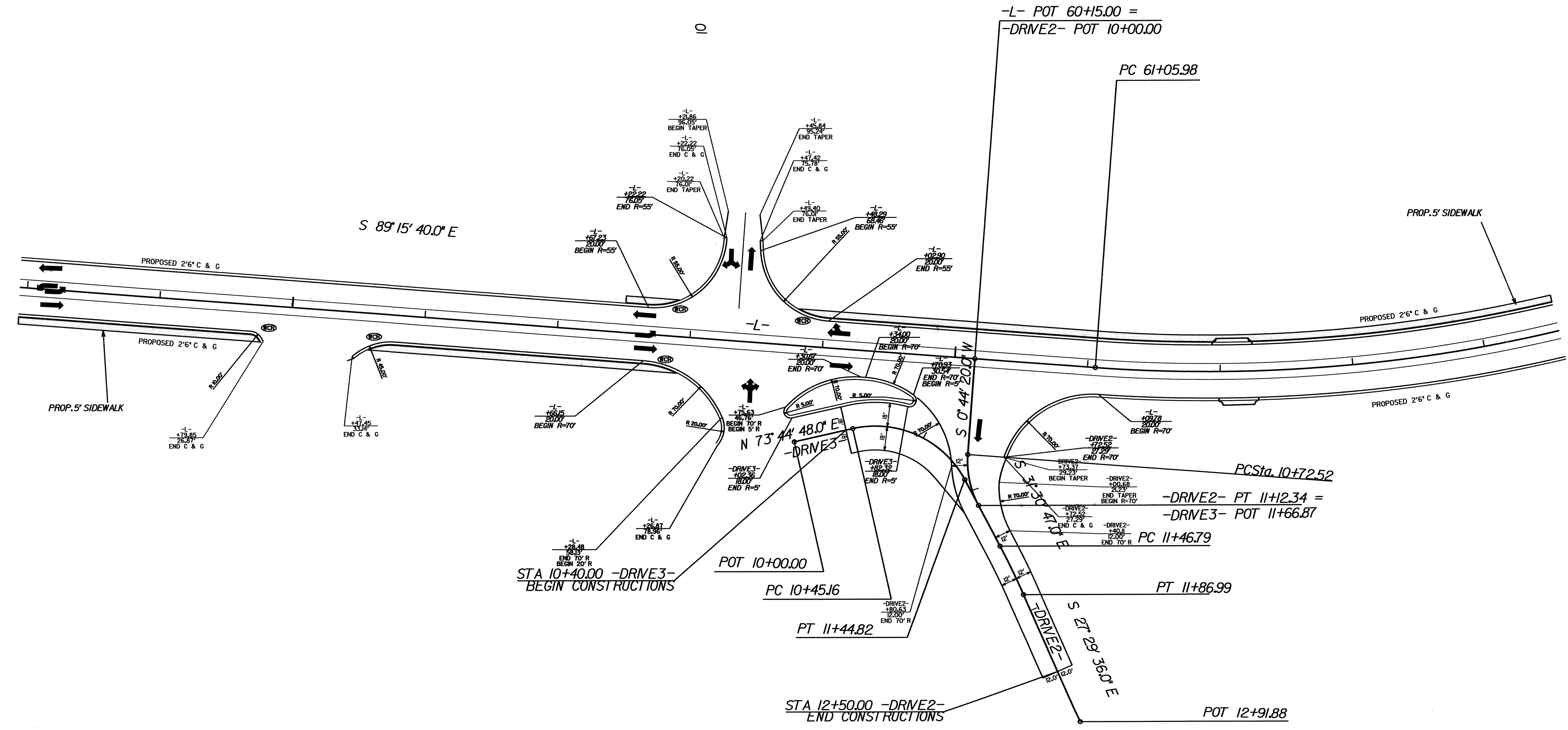
INTERSECTION DETAIL



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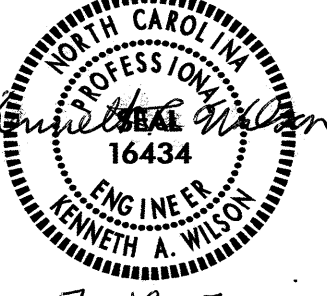
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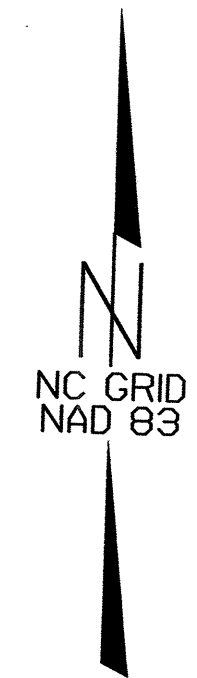
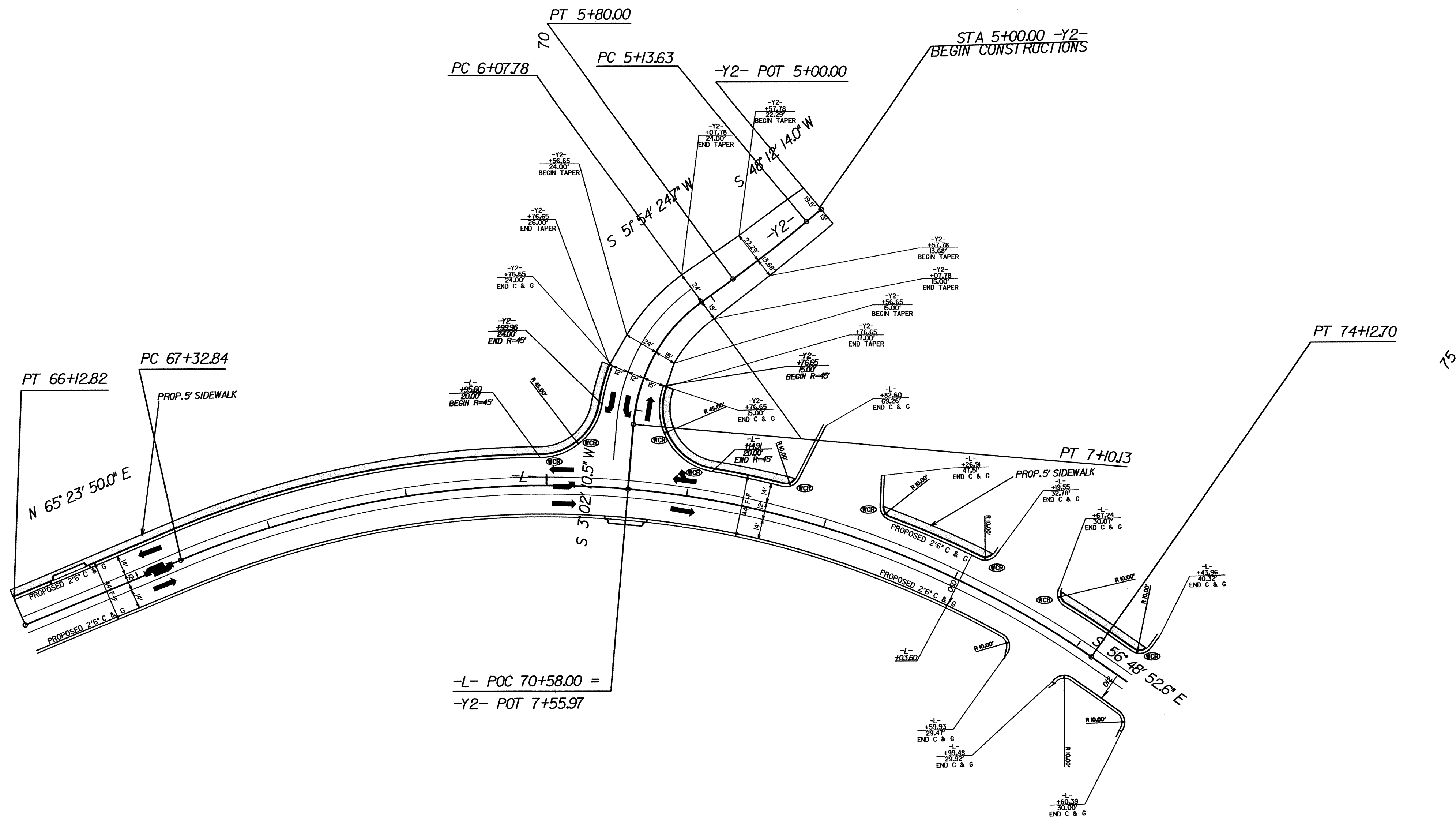
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B/17/99

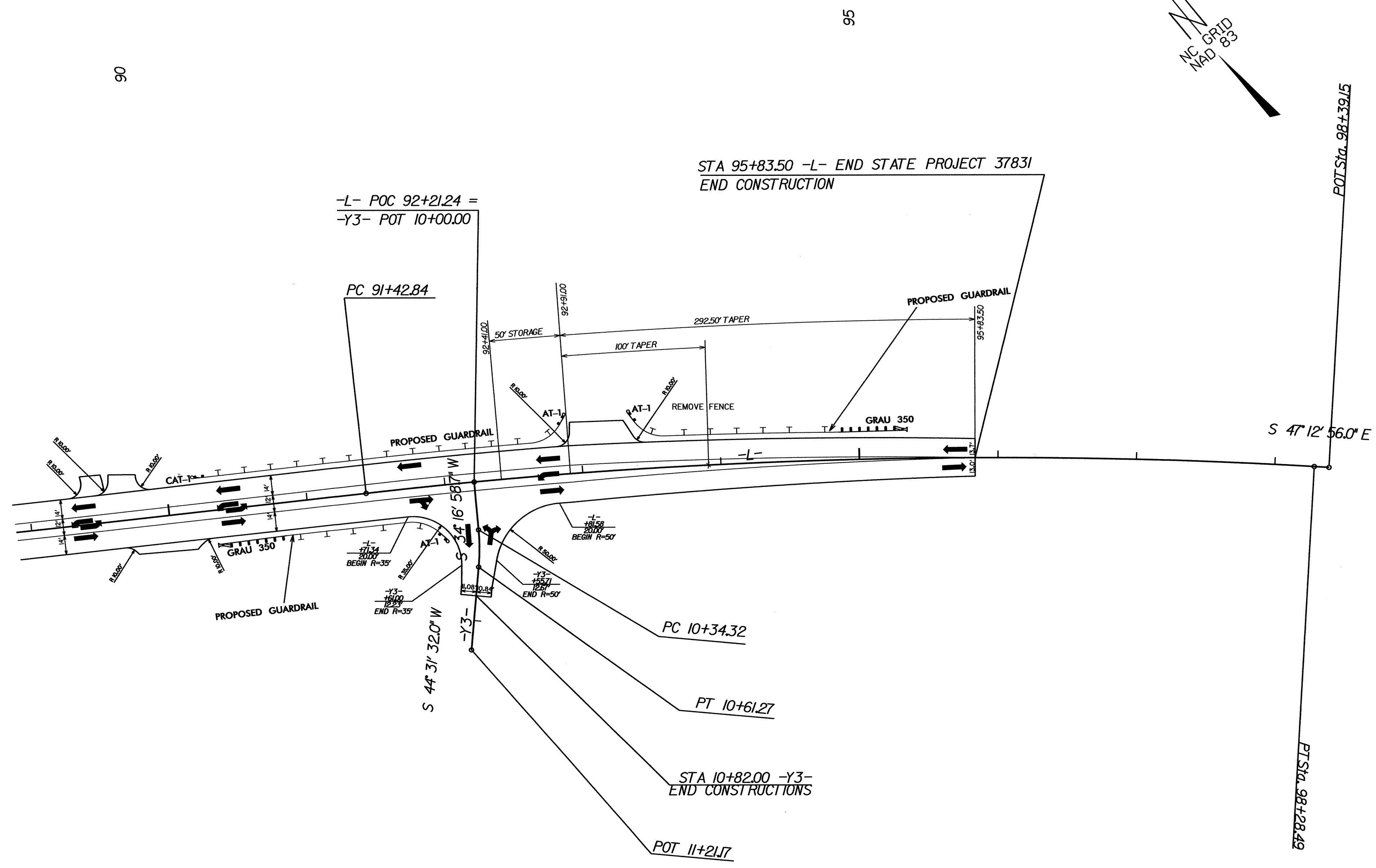
INTERSECTION DETAIL

PROJECT REFERENCE NO.	SHEET NO.
37831	2-6
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	
	
7-19-07	



PROJECT REFERENCE NO. 37831	SHEET NO. 2-H
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	

INTERSECTION DETAIL



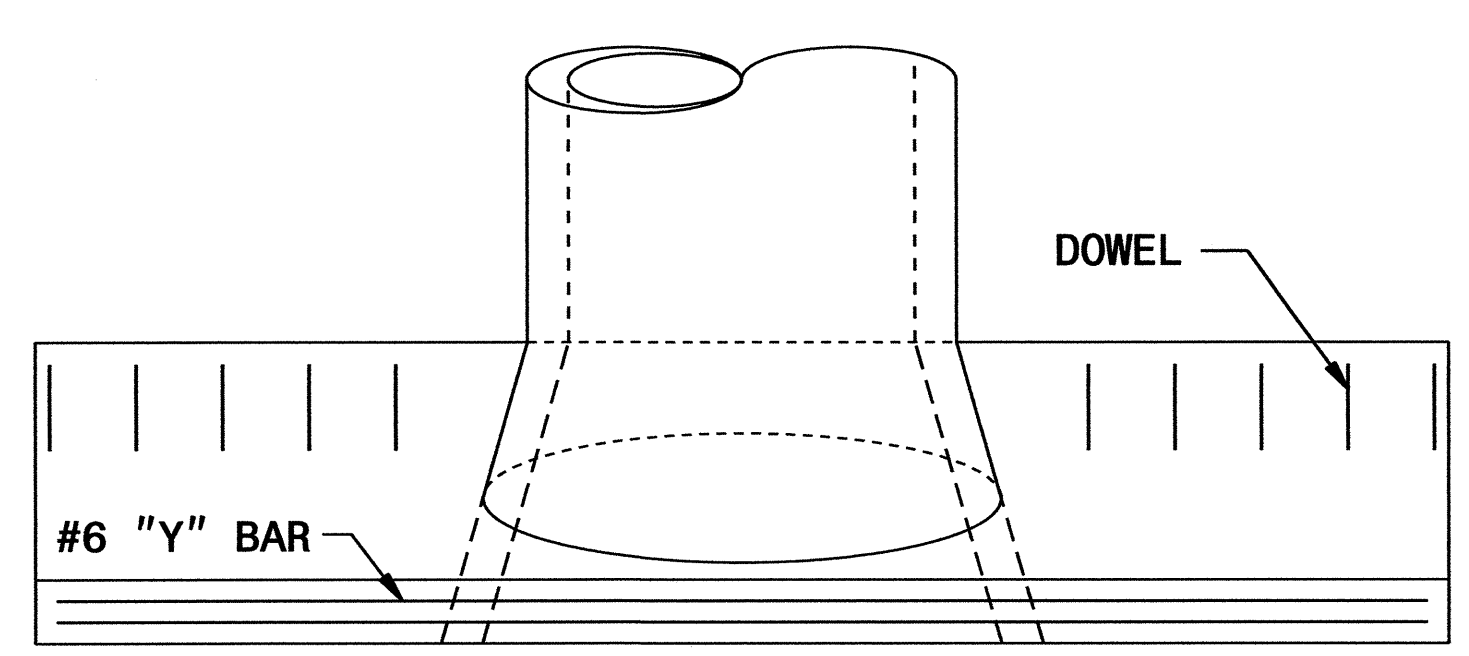
8/17/99

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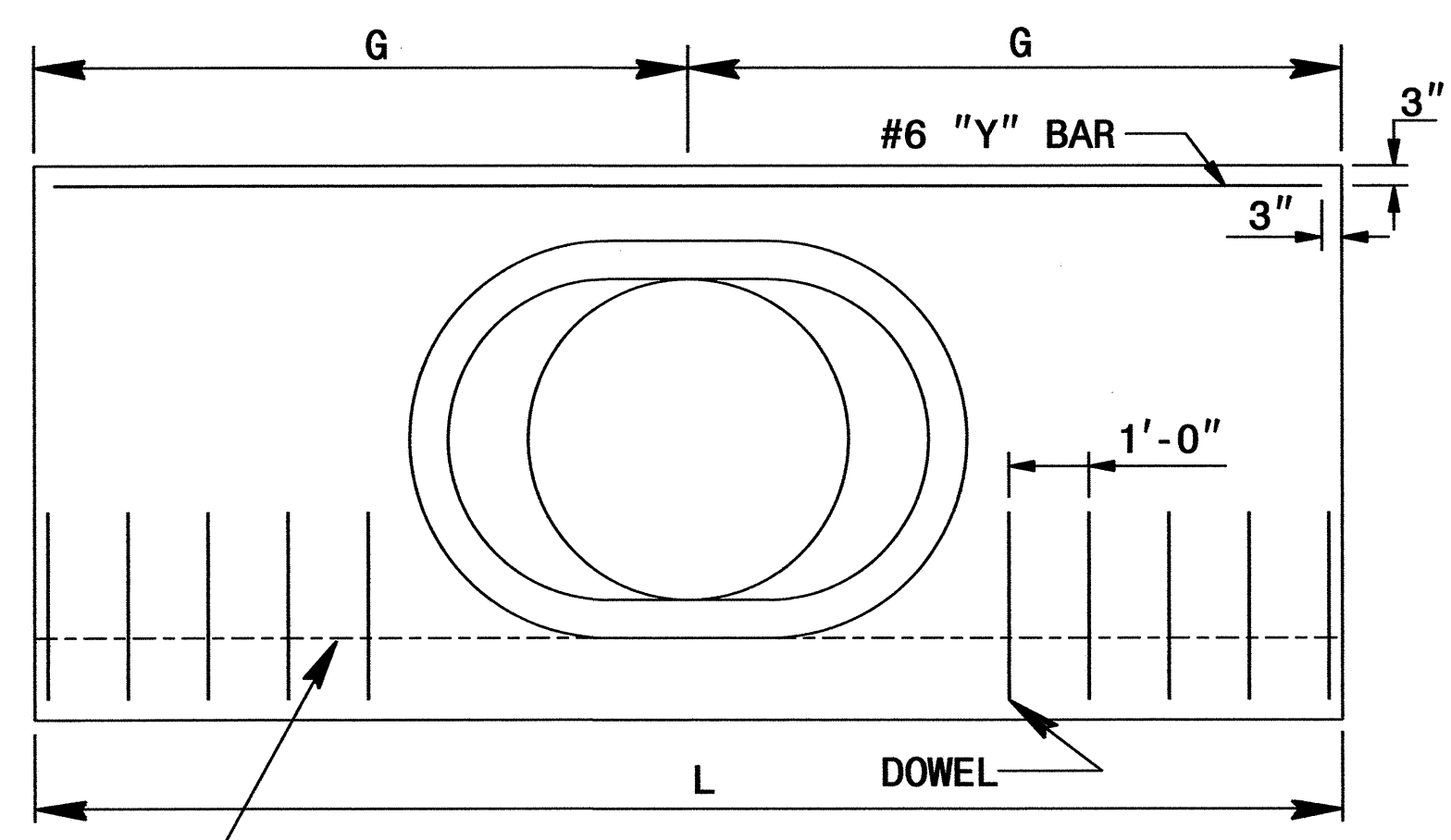
STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

ENGLISH DETAIL DRAWING FOR
CONCRETE ENDWALL FOR TAPERED INLET

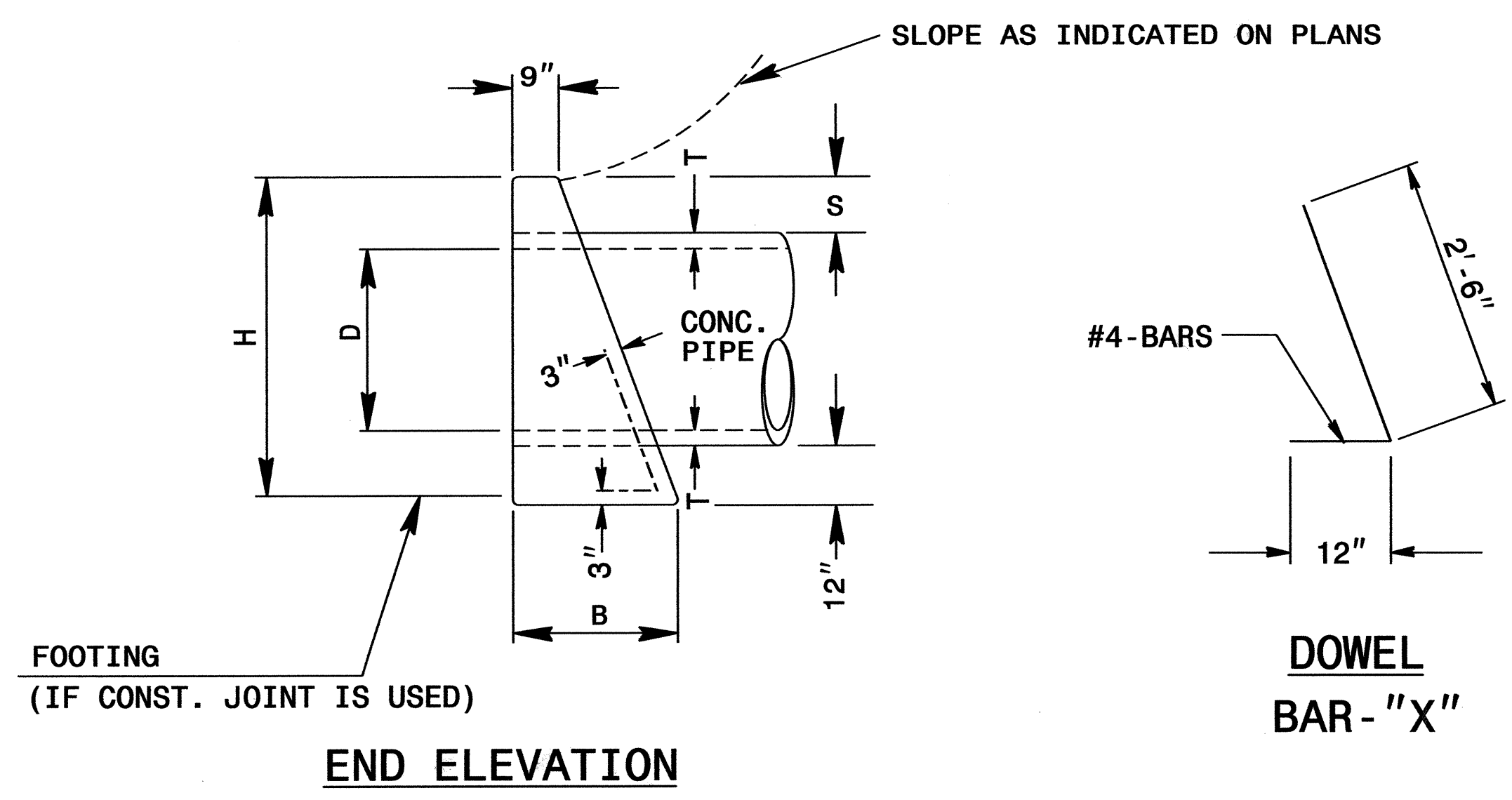
SHEET 1 OF 2
ENDTAP



PLAN



ELEVATION



END ELEVATION
(IF CONST. JOINT IS USED)

DOWEL BAR - "X"

GENERAL NOTES:

ALL EXTERIOR CORNERS SHALL BE CHAMFERED 1" OR HAVE A RADIUS OF 1".
THE CONTRACTOR WILL BE REQUIRED TO PLACE 2 #6 "Y" BARS IN THE TOP OF ALL ENDWALL FOR PIPE CULVERTS 42" AND OVER WITH A MINIMUM OF 3" COVER AND A LENGTH OF 6" LESS THAN ENDWALL LENGTH.
FORMS ARE TO BE USED FOR THE CONSTRUCTION OF THE BOTTOM SLAB.
WALL THICKNESS (T) SHOWN IS NOT TO BE INTERPRETED TO MEAN THE THICKNESS ACCEPTABLE, BUT IS USED IN COMPUTING ENDWALL QUANTITIES.
WHEN THE CONTRACTOR ELECTS TO USE A CONSTRUCTION JOINT AT THE BOTTOM OF THE PIPE, BAR X DOWELS SHALL BE PLACED IN THE BASE AS SHOWN ON PLANS. SPACING OF BARS IS TO BE APPROXIMATELY 12" CENTERS UNLESS OTHERWISE DIRECTED BY THE ENGINEER.
WHEN THE CONTRACTOR ELECTS TO USE A CONSTRUCTION JOINT AT THE BOTTOM OF THE PIPE AND POUR THE BASE SEPARATELY, THE POUR SHALL BE LEFT ROUGH.
CLASS "B" CONCRETE SHALL BE USED.

DIMENSIONS AND CONCRETE QUANTITIES							
CONCRETE PIPE	COMMON DIMENSIONS						
	D	H	B	L	G	T	S
24"x48"	4'-6"	2'-2"	9'-8"	4'-10"	3"	11½"	2.3
30"x54"	5'-1"	2'-6"	11'-4"	5'-8"	3½"	11½"	3.5
36"x60"	5'-8"	2'-10"	13'-0"	6'-6"	4"	11½"	4.9
42"x66"	6'-4"	3'-2"	14'-8"	7'-4"	5¼"	11½"	6.7
48"x72"	6'-11"	3'-6"	16'-4"	8'-2"	5¾"	11½"	9.2

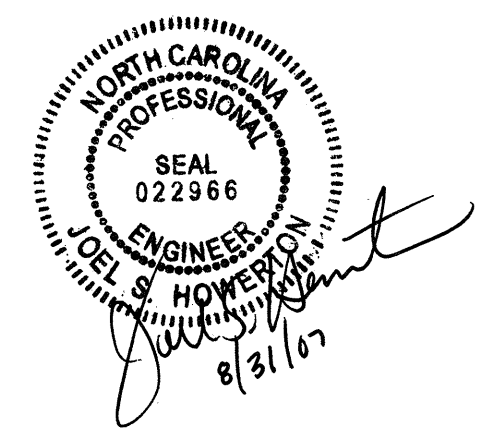
DOWELS IN ENDWALL WITH REINFORCED CONCRETE PIPE											
LOC.	PIPE DIA.	SINGLE PIPE									
		24"x48"		30"x54"		36"x60"		42"x66"		48"x72"	
	BARS	"X"	Y*	"X"	Y*	"X"	Y*	"X"	Y*	"X"	Y*
G	QTY.	3		4		4		5	2	5	2
G	QTY.	3		4		4		5	2	5	2
	TOT. LBS.	14		19		19		64		69	

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

ENGLISH DETAIL DRAWING FOR
CONCRETE ENDWALL FOR TAPERED INLET

SHEET 1 OF 2
ENDTAP

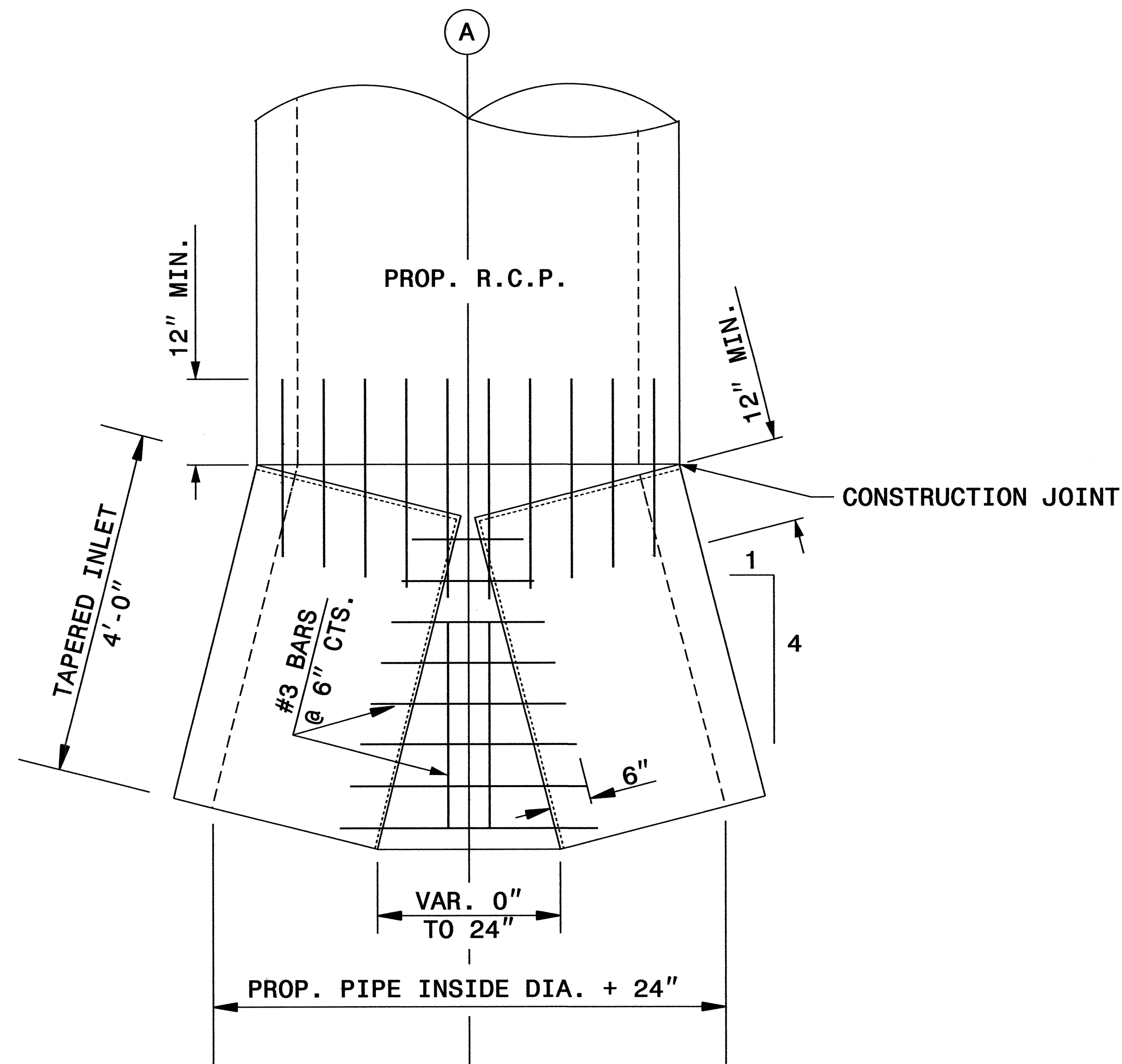
5/14/99
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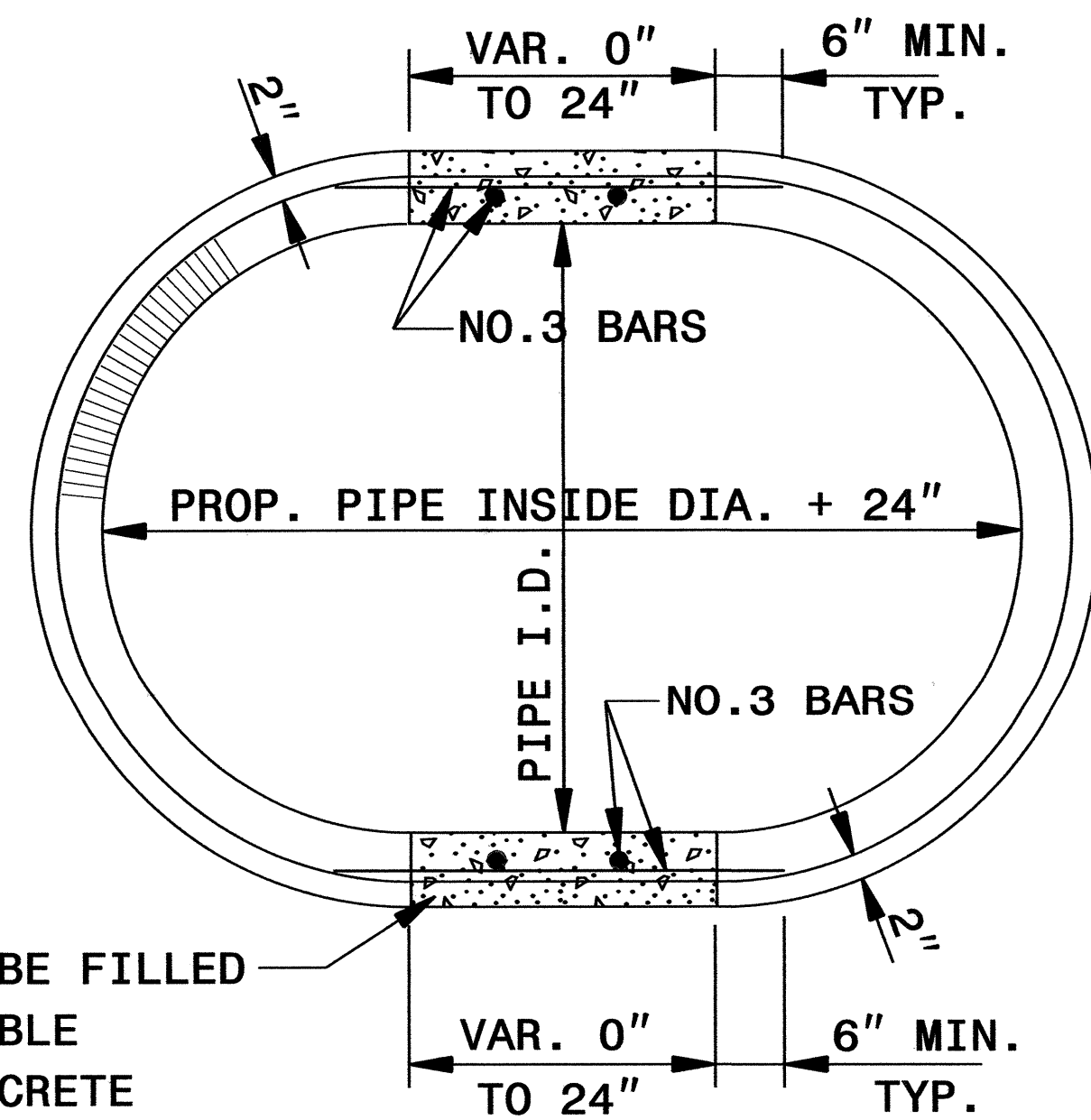
SEE PLATE FOR TITLE

ORIGINAL BY: T. SPELL DATE: 10-5-98
 MODIFIED BY: E.E. WARD DATE: 10-11-04
 CHECKED BY: DATE:
 FILE SPEC.: usr/details/stand/endwalltaper.dgn



PLAN

SHOWING PLACEMENT OF REINFORCING STEEL

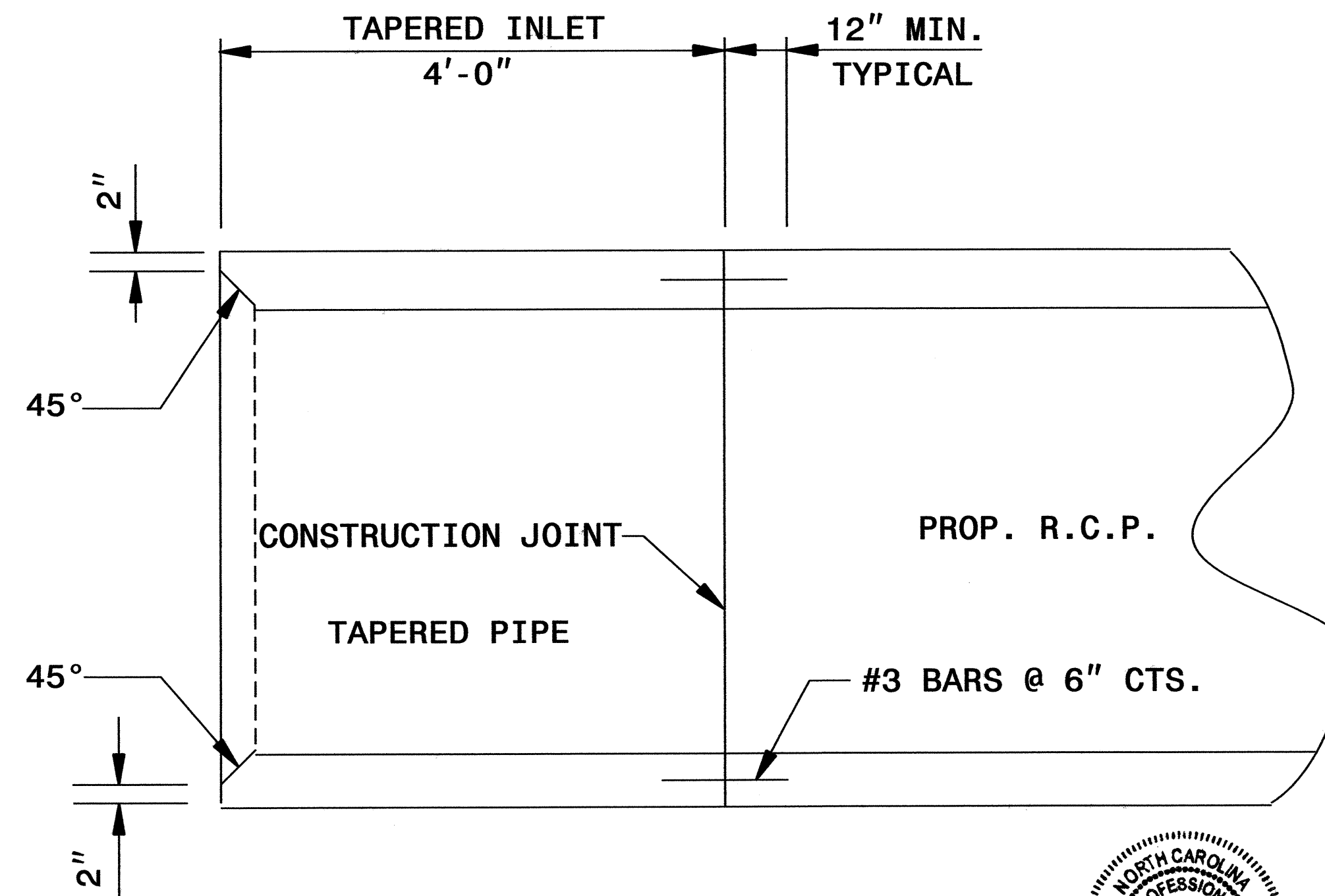


VOIDS SHALL BE FILLED WITH COMPARABLE STRENGTH CONCRETE

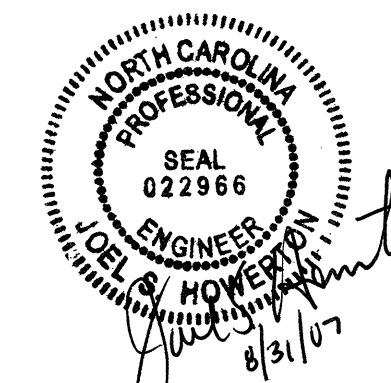
END VIEW

GENERAL NOTES:

- * CONSTRUCT SPECIAL REINFORCED CONCRETE TAPERED INLET IN ACCORDANCE WITH DETAIL AND SECTION 310 OF THE STANDARD ROADWAY SPECIFICATIONS.
- * CONSTRUCT THE TAPERED INLET FROM CLASS III REINFORCED CONCRETE PIPE.
- * EMBED ALL REINFORCING STEEL UNLESS SHOWN OTHERWISE.
- * CONSTRUCT THE TAPERED INLET AS DIRECTED BY THE ENGINEER.



SECTION A-A

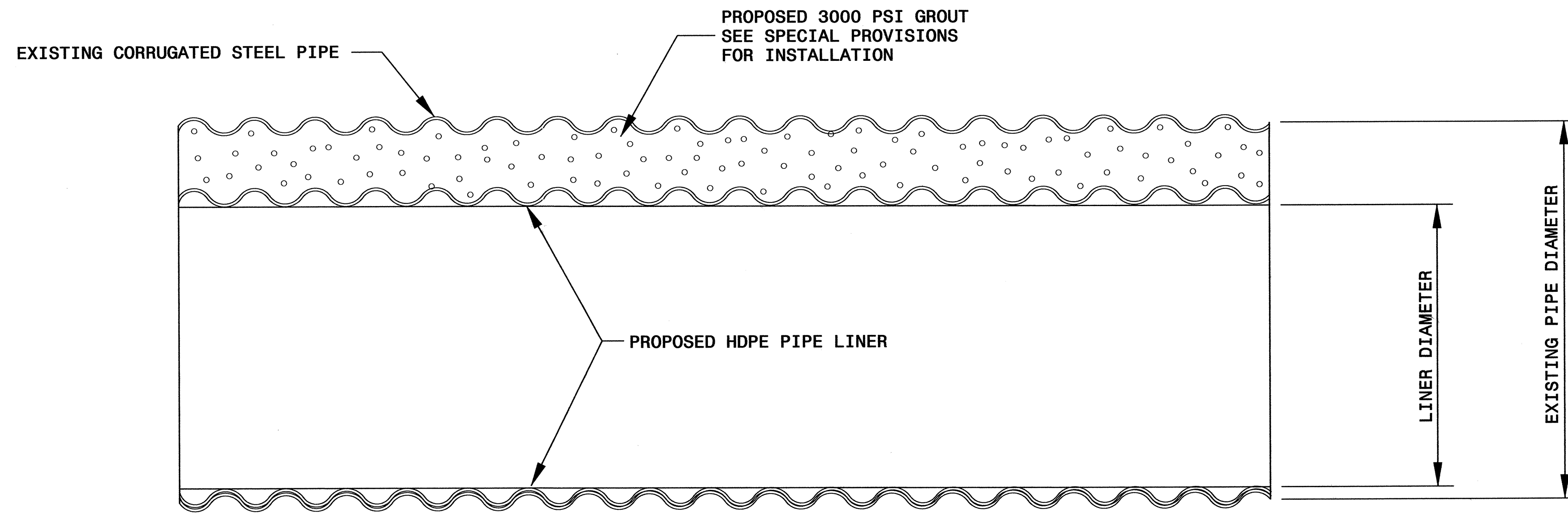


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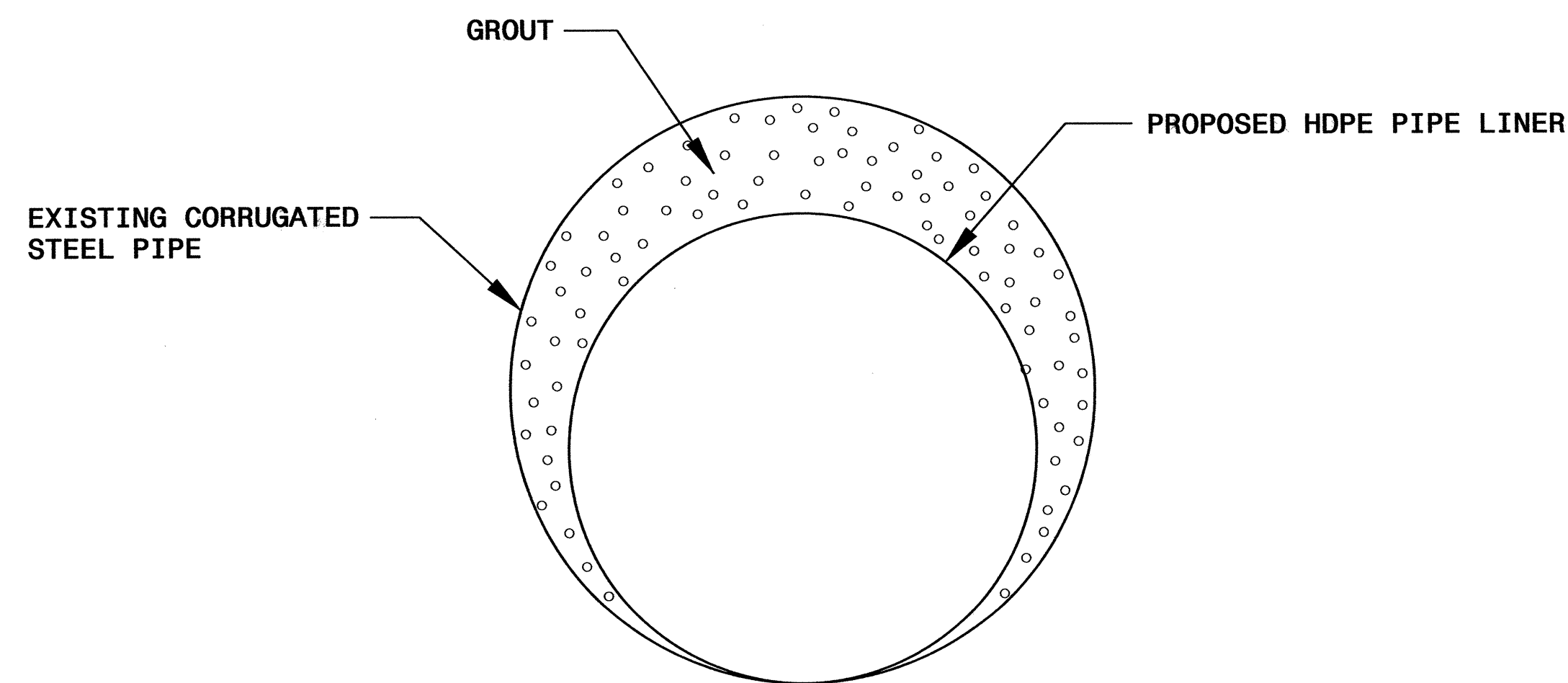
**DETAIL OF
REINFORCED TAPERD INLET
24" THRU 72" DIAMETER**

ORIGINAL BY: ERIC E. WARD DATE: 11-26-97
 MODIFIED BY: _____ DATE: _____
 CHECKED BY: _____ DATE: _____
 FILE SPEC.: ds172:/usr/details/metric/stand/tapin1.dgn

5/14/99
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ELEVATION

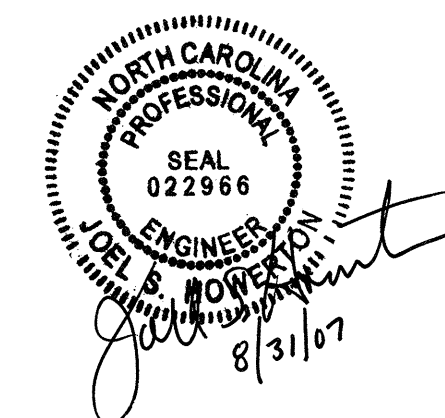


END ELEVATION

GROUT QUANTITIES PER FOOT

EXISTING CSP SIZE (IN.)	HDPE LINER SIZE (IN.)	GROUT (YDS. ³ /FT.)
48	42	0.11
60	54	0.14
66	60	0.15
96	84	0.44

NOTE: SEE PLANS FOR PIPE LENGTHS AND LOCATIONS.



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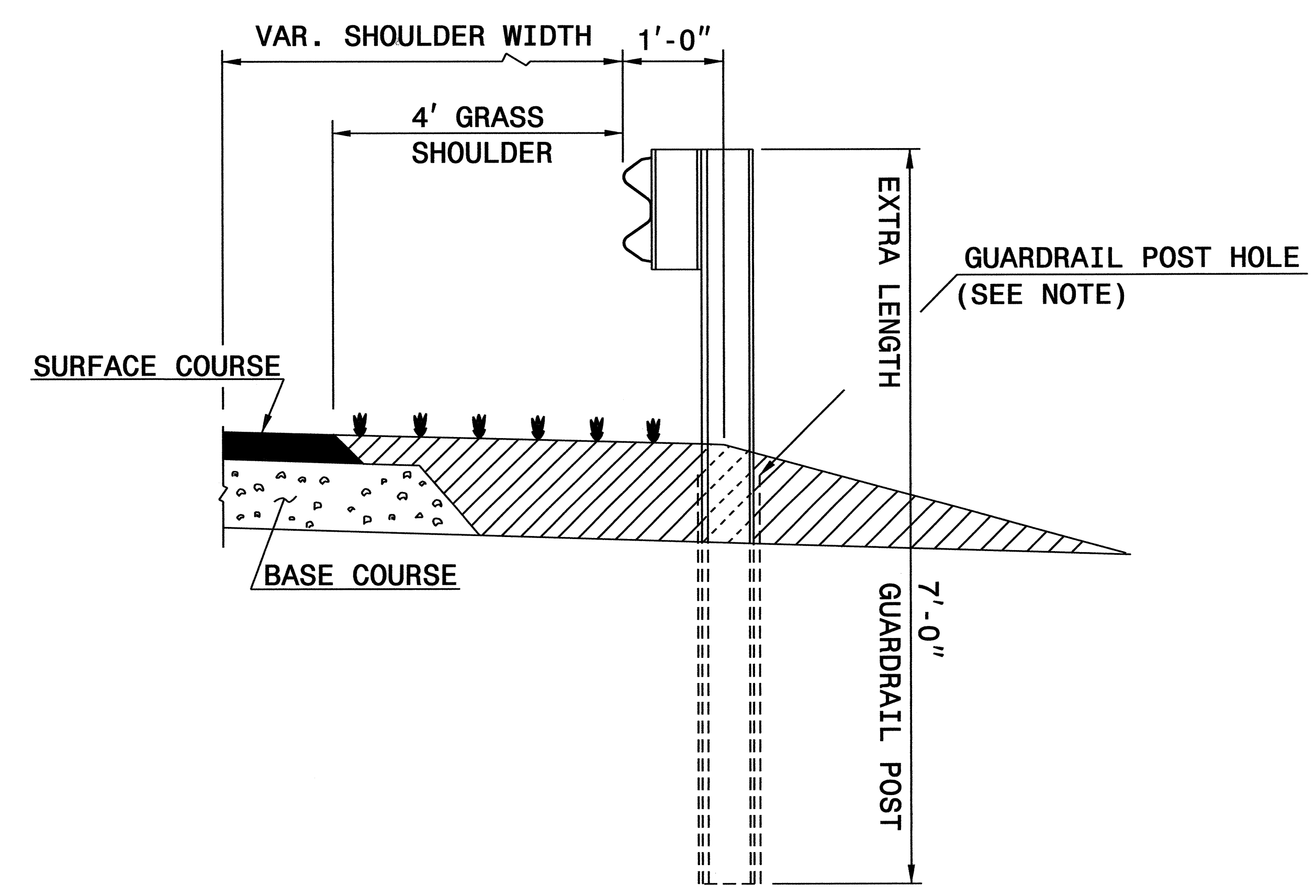
**HDPE PIPE LINER INSIDE
A CORRUGATED STEEL PIPE**

ORIGINAL BY: T. Spell DATE: May 19, 1999
 MODIFIED BY: DATE:
 CHECKED BY: DATE:
 FILE SPEC.: DS174:usr/details/metric/stand/liner.dgn

STATE OF
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DIVISION OF HIGHWAYS
RALEIGH, N.C.

ENGLISH DETAIL DRAWING FOR
**GUARDRAIL PLACEMENT FOR 1' SHOULDER
BREAK POINT BEHIND FACE OF GUARDRAIL**

SHEET 1 OF 1
7'GRPOST



FLEXIBLE PAVED SHOULDER

EARTH MATERIAL

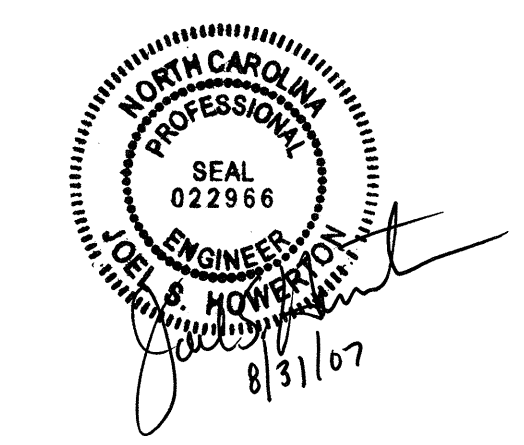
- NOTE:
- 1) WHEN WOODEN GUARDRAIL POSTS ARE USED, DRILL HOLES THROUGH EARTH MATERIAL AND BASE COURSE. THE POST MAY THEN BE DRIVEN TO THE PROPER DEPTH. DRILL HOLE TO ACCOMMODATE THE PARTICULAR POST BEING USED. BACKFILL & TAMP HOLES USING THE EXCAVATED MATERIAL.
 - 2) USE EXTRA LENGTH GUARDRAIL POST - 7'- 0" TYPICAL
 - 3) SEE ROADWAY PLANS FOR LOCATION
 - 4) REFER TO 862D01 FOR GUARDRAIL PLACEMENT DETAILS

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

ENGLISH DETAIL DRAWING FOR
**GUARDRAIL PLACEMENT FOR 1' SHOULDER
BREAK POINT BEHIND FACE OF GUARDRAIL**

SHEET 1 OF 1
7'GRPOST

I7-MAY-2007 15:03
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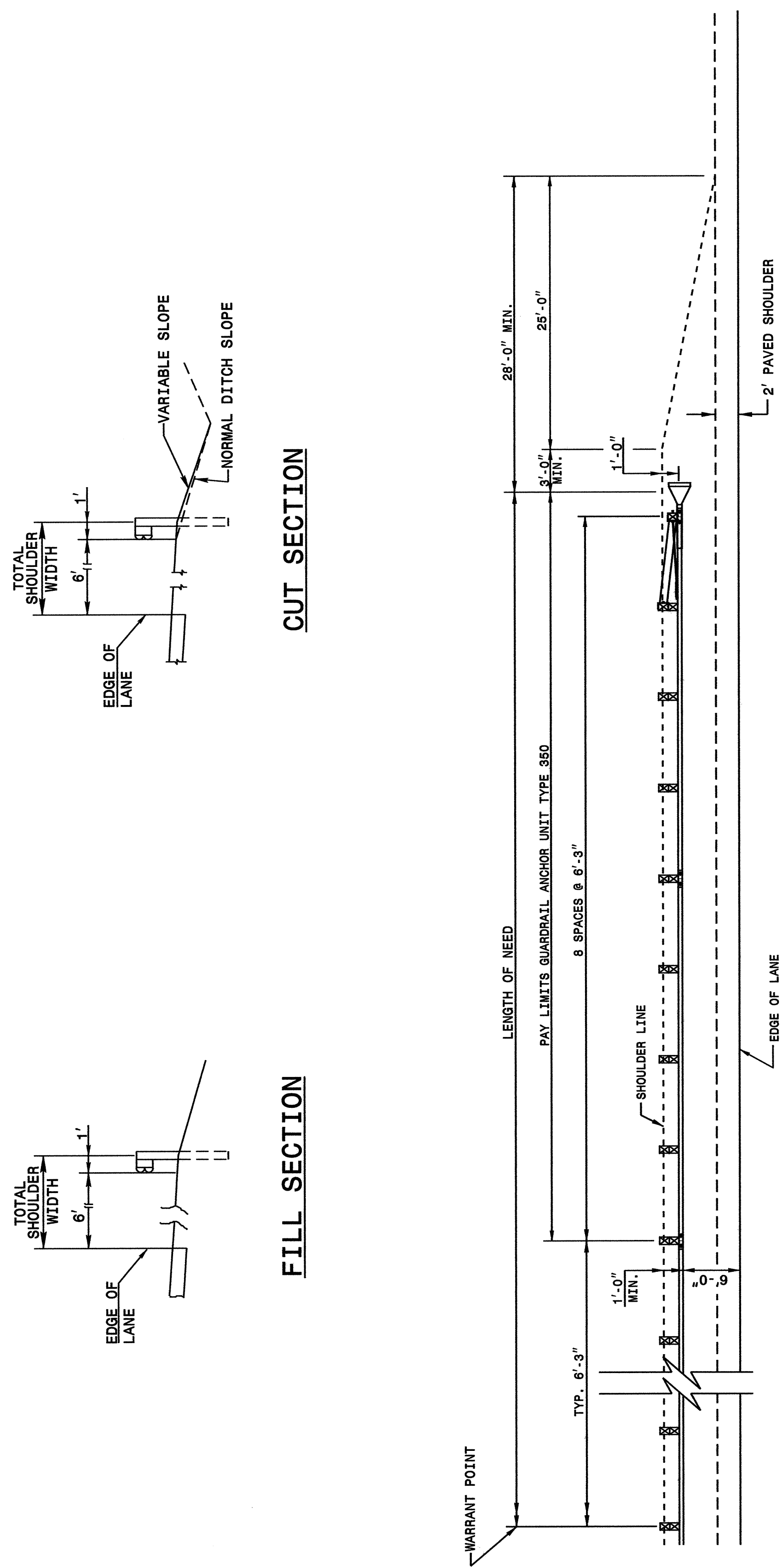
SEE PLATE FOR TITLE

ORIGINAL BY: STD. 862D01 DATE: _____
 MODIFIED BY: E.E. WARD DATE: 11-16-99
 CHECKED BY: _____ DATE: _____
 FILE SPEC.: ds172:\usr\detail\stand\862stds\862d0105.dgn

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

ENGLISH DETAIL DRAWING FOR GUARDRAIL ANCHOR UNIT TYPE 350 6' SHOULDER WITH 1' SHOULDER BREAK POINT BEHIND FACE OF GUARDRAIL (W/O 50:1 TAPER)

SHEET 1 OF 2 862D01



DETAIL OF BEGINNING/ENDING OF GUARDRAIL IN CUT OR FILL SECTION

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

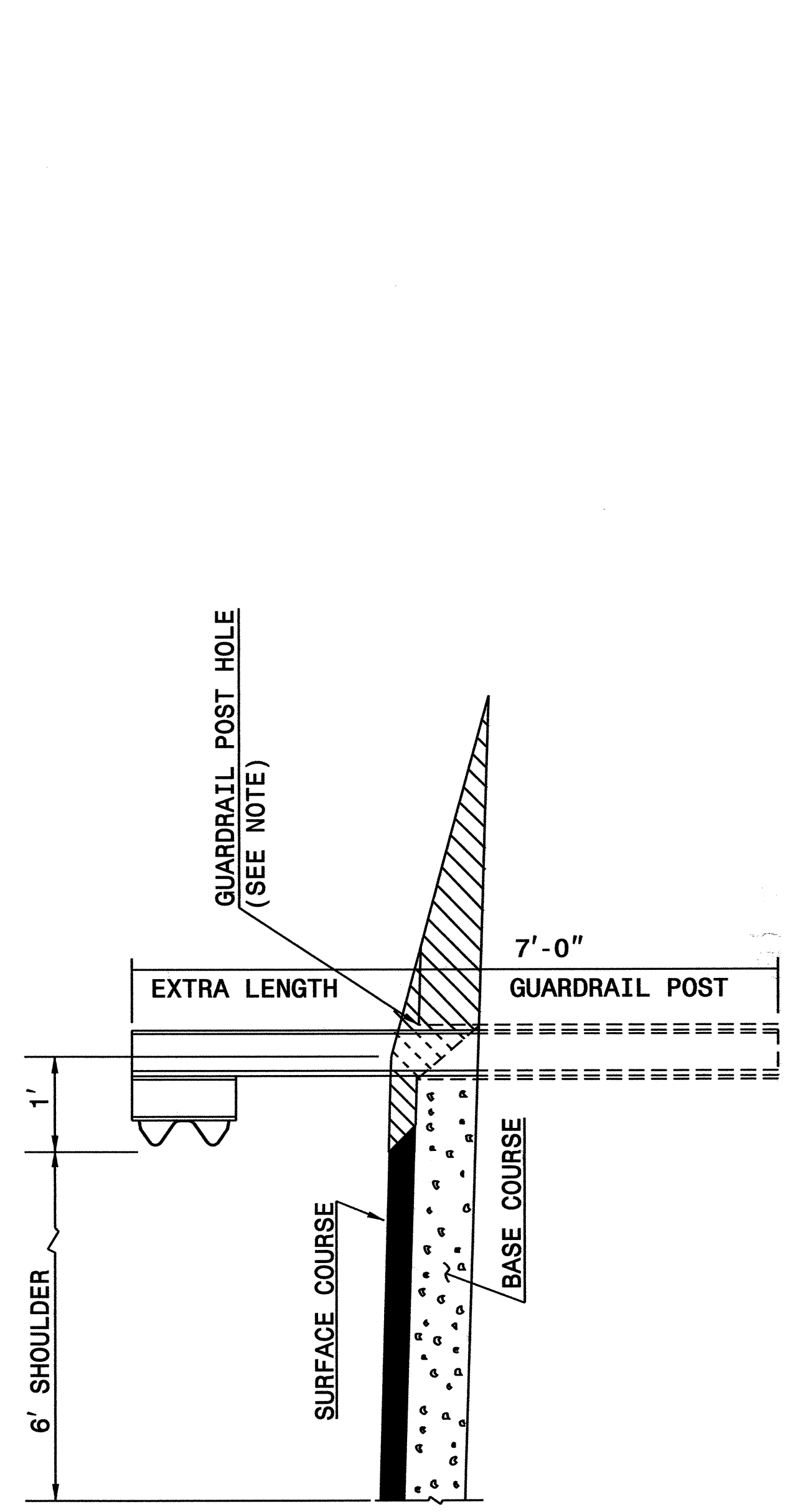
ENGLISH DETAIL DRAWING FOR GUARDRAIL ANCHOR UNIT TYPE 350 6' SHOULDER WITH 1' SHOULDER BREAK POINT BEHIND FACE OF GUARDRAIL (W/O 50:1 TAPER)

SHEET 1 OF 2 862D01

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

ENGLISH DETAIL DRAWING FOR GUARDRAIL PLACEMENT FOR 6' SHOULDER WITH 1' SHOULDER BREAK POINT BEHIND FACE OF GUARDRAIL

SHEET 2 OF 2 862D01



FLEXIBLE PAVED SHOULDER

▨ EARTH MATERIAL

- NOTE:
- 1) WHEN WOODEN GUARDRAIL POSTS ARE USED, HOLES SHALL BE DRILLED THROUGH EARTH MATERIAL AND BASE COURSE. THE POST MAY THEN BE DRIVEN TO THE PROPER DEPTH. THE HOLE SHALL BE OF SUFFICIENT SIZE TO ACCOMMODATE THE PARTICULAR POST BEING USED. HOLES SHALL BE BACKFILLED AND TAMPED USING THE EXCAVATED MATERIAL.
 - 2) USE EXTRA LENGTH GUARDRAIL POST - 7'-0" TYPICAL
 - 3) SEE ROADWAY PLANS FOR LOCATION

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

ENGLISH DETAIL DRAWING FOR GUARDRAIL PLACEMENT FOR 6' SHOULDER WITH 1' SHOULDER BREAK POINT BEHIND FACE OF GUARDRAIL

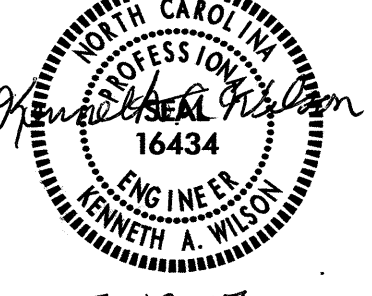
SHEET 2 OF 2 862D01



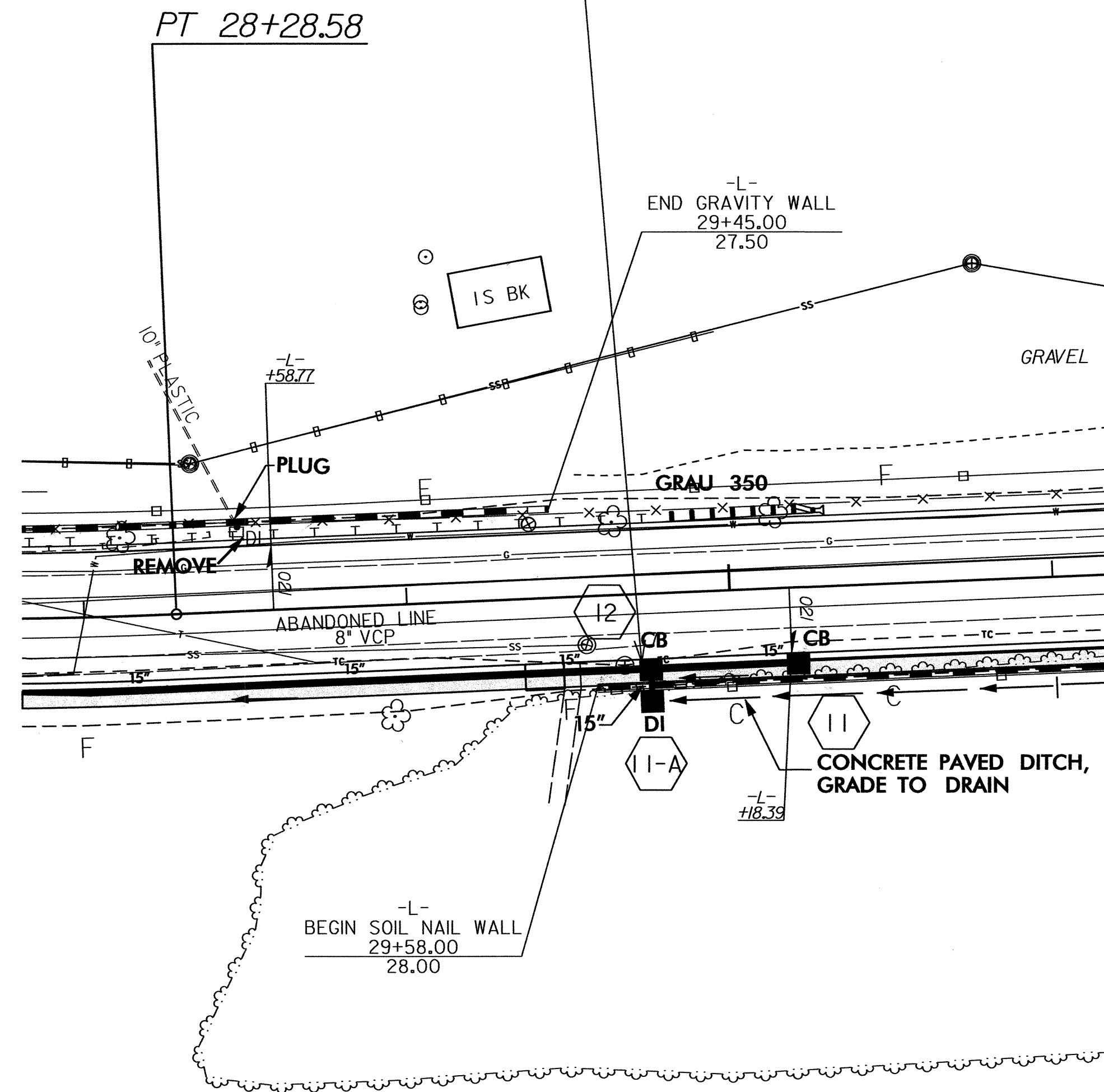
DESIGN SERVICES UNIT
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SEE PLATE FOR TITLE

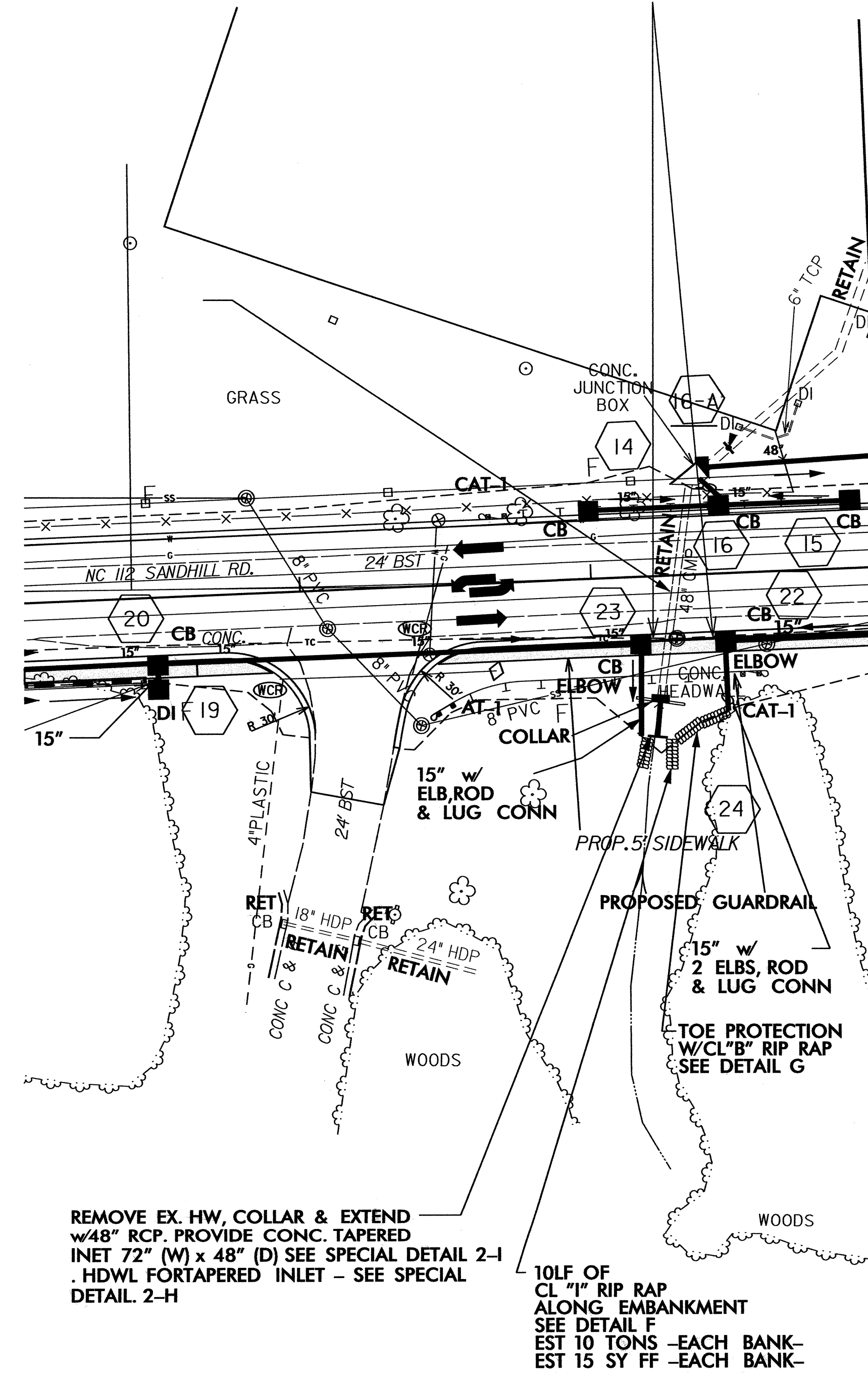
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 CHECKED BY: _____ DATE: _____
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PROJECT REFERENCE NO. 37831	SHEET NO. 2-N
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	
	
7-19-07	

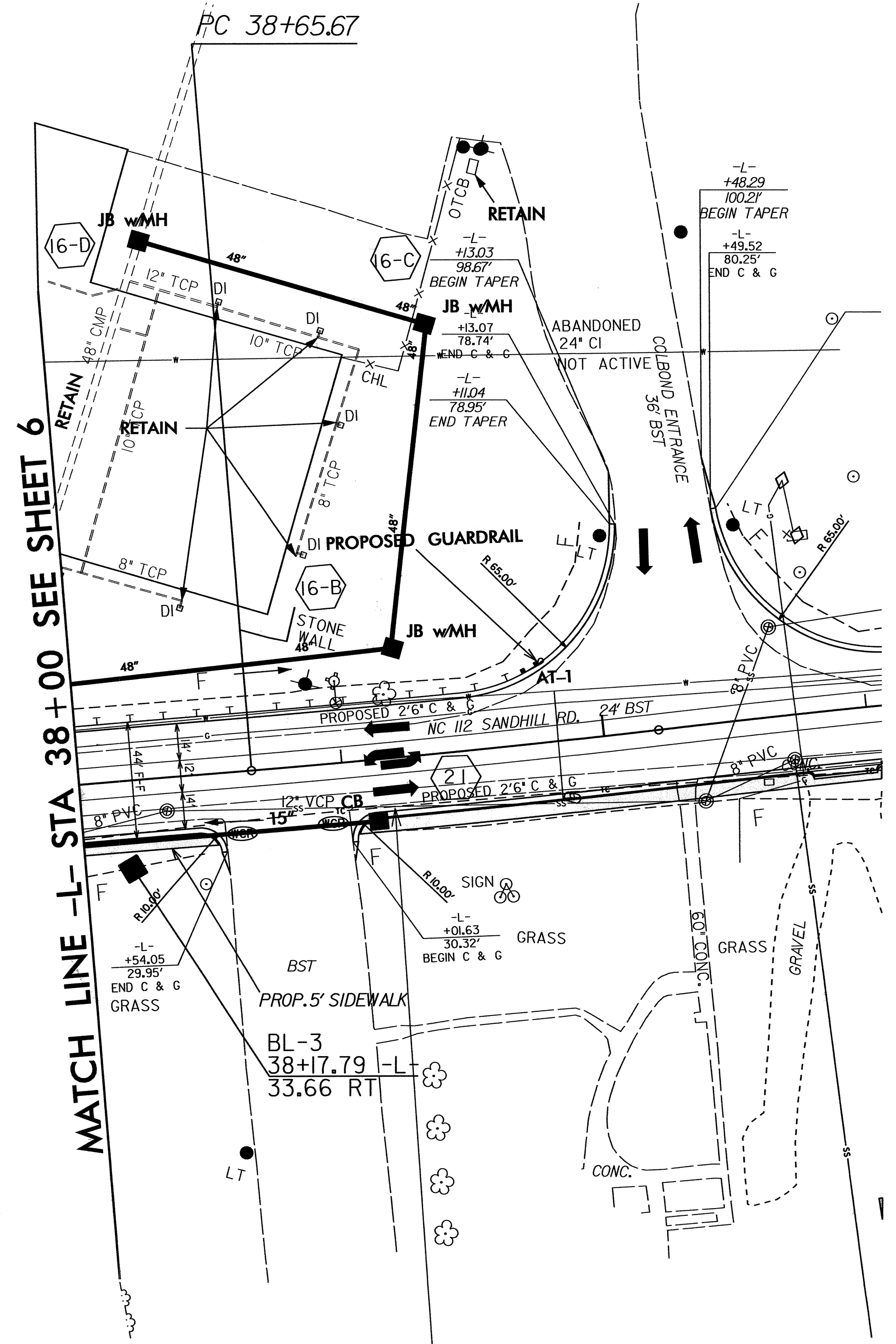
STRUCTURE 12 AREA WHERE TELEPHONE CONDUIT MAY NEED ENCASEMENT OR STRUCTURE 12 MAY NEED TO BE SUPPORTED



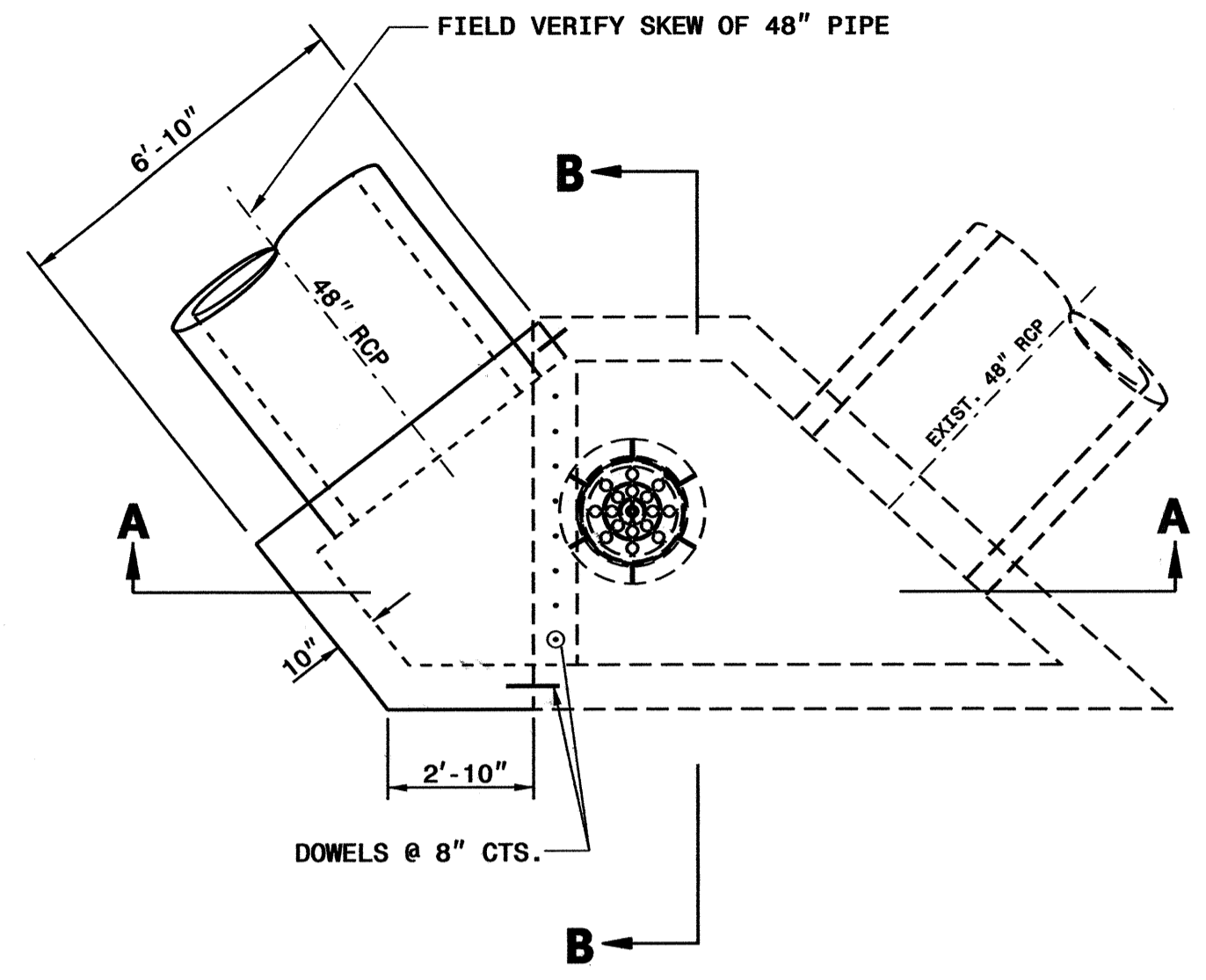
STRUCTURE 22 AND 23 AREA WHERE TELEPHONE CONDUIT MAY NEED ENCASEMENT OR STRUCTURE 22 AND 23 MAY NEED TO BE SUPPORTED



PROJECT REFERENCE NO. L-12-003-4 37831	SHEET NO. 2-0
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	
	
7-19-07	



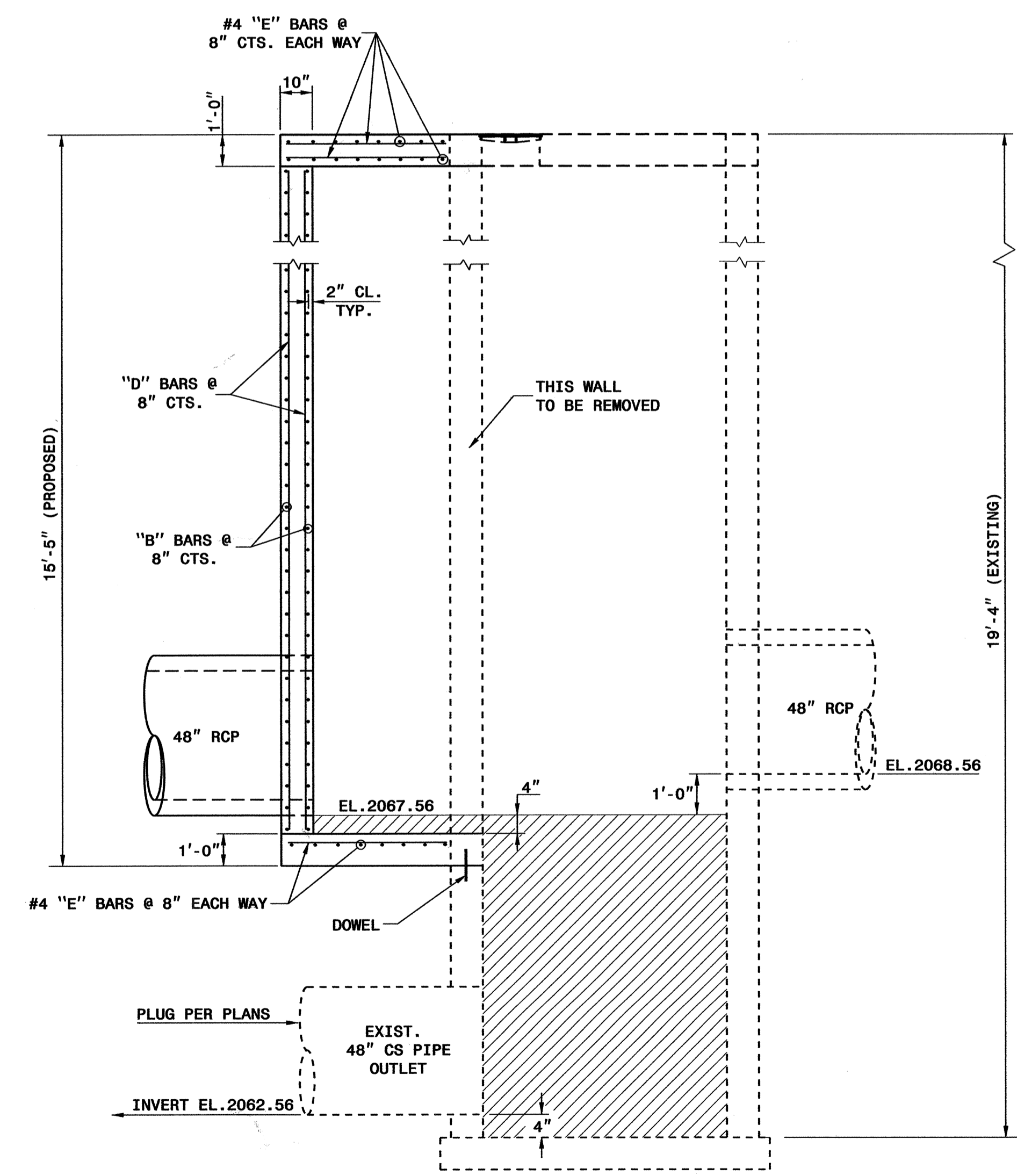
STRUCTURE 21 AREA WHERE TELEPHONE CONDUIT MAY NEED ENCASEMENT OR STRUCTURE 21 MAY NEED TO BE SUPPORTED



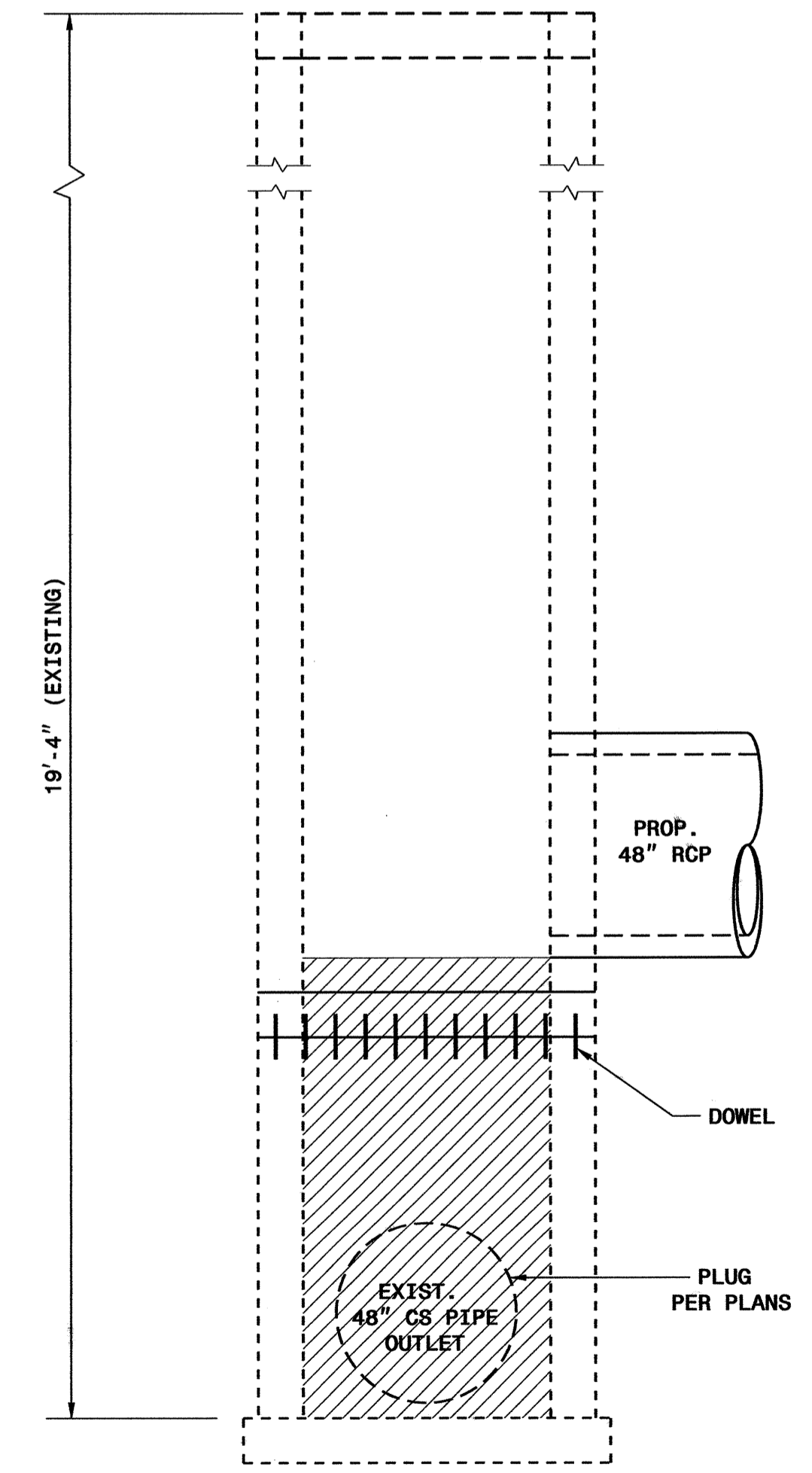
PLAN

NOTES:

1. USE CLASS "B" CONCRETE THROUGHOUT.
2. CONSTRUCT CONCRETE BOX IN ACCORDANCE WITH SECTION 825 OF THE STANDARD SPECIFICATIONS AND ADJUST TO FIT PIPE CONDITION.
3. USE FORMS TO CONSTRUCT THE BOTTOM SLAB.
4. ADJUST LENGTH OF STEEL BARS AS NEEDED TO COMPENSATE FOR PIPES AND MANHOLE OPENINGS.
5. CONFORM REINFORCING STEEL TO ASTM A 615, GRADE 60.
6. CUT OR BEND STEEL BARS AS NEEDED TO PROVIDE 2" CLEARANCE AROUND PIPES OR AS DIRECTED BY THE ENGINEER.



SECTION A-A



SECTION B-B

BILL OF MATERIALS

BAR NO.	SIZE	LENGTH	WEIGHT
A	19 #5	2'-6"	50
B	19 #4	3'-8"	72
C	19 #4	6'-6"	129
D	44 #4	14'-4"	421
E	50 #4	6'-3"	209
G	4 #4	3'-0"	8
DOWEL	11 #4	8"	5
TOTAL REINF. STEEL (LBS.)			894
TOTAL CONC. (CU. YDS.)			7.3

NO DEDUCTIONS HAVE BEEN MADE TO ACCOMMODATE PIPES.

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 \$\$\$USERNAME\$\$\$



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

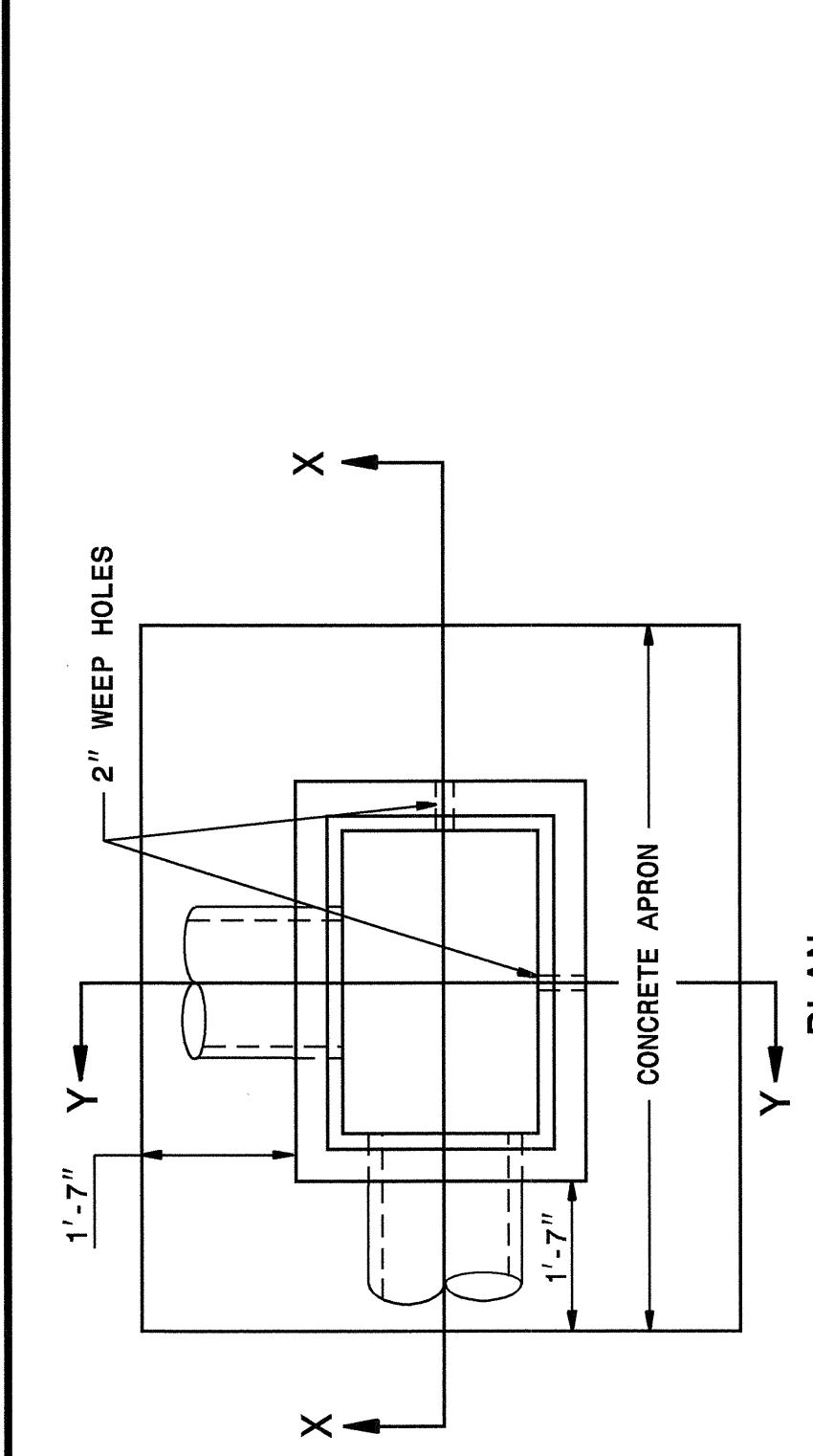
**SPECIAL
DETAIL OF BOX
EXPANSION**

ORIGINAL BY: T. Spell DATE: MAR. 15, 2007
 MODIFIED BY: DATE: _____
 CHECKED BY: DATE: _____
 FILE SPEC.: _____

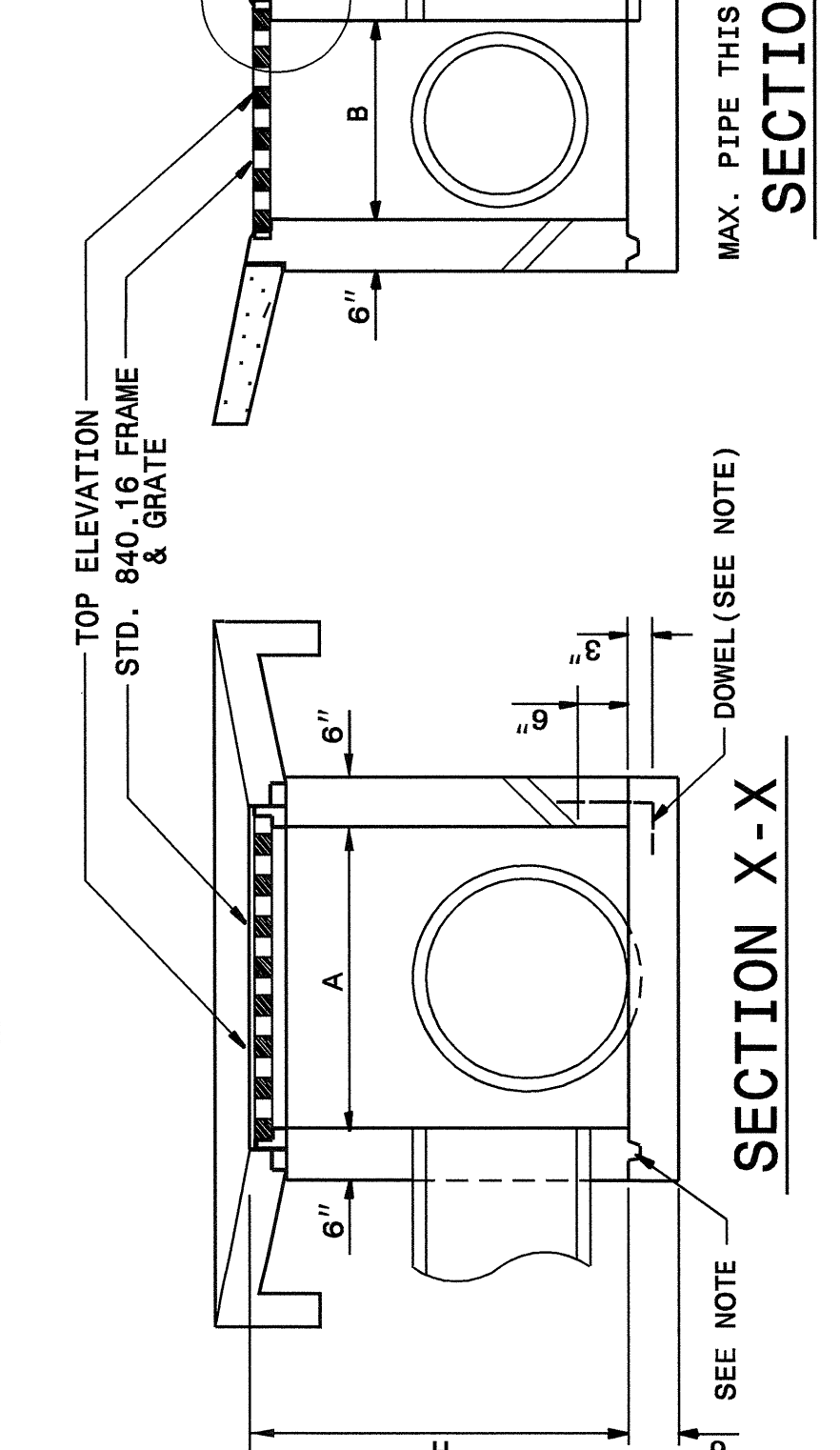
STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.

ENGLISH STANDARD DRAWING FOR CONCRETE DROP INLET 12" THRU 30" PIPE SHEET 1 OF 1 840D14

GENERAL NOTES:
 USE CLASS "B" CONCRETE THROUGHOUT.
 PROVIDE ALL DROP INLETS OVER 3'-6" IN DEPTH WITH STEPS 12" ON CENTER. USE STEPS WHICH COMPLY WITH STD. DRAWING 840.66.
 OPTIMAL CONSTRUCTION - MONOLITHIC FOUR 2" KEYWAY OR #4 BAR DOWELS AT 12" CENTERS AS DIRECTED BY THE ENGINEER.
 USE FORMS FOR THE CONSTRUCTION OF THE BOTTOM SLAB.
 IF REINFORCED CONCRETE PIPE IS SET IN BOTTOM SLAB OF BOX, ADD TO SLAB AS SHOWN ON STD. NO. 840.00.
 CONSTRUCT WITH PIPE CROWNS MATCHING.
 INSTALL 2" WEEPHOLES AS DIRECTED BY THE ENGINEER.
 INSTALL STONE DRAINS, OF A MINIMUM OF 1 CUBIC FOOT OF NO. 76M STONE IN A POROUS FABRIC BAG OR WRAP, AT EACH WEEP HOLE OR AS DIRECTED BY THE ENGINEER.
 CHAMFER ALL EXPOSED CORNERS 1".
 CONCRETE QUANTITY FOR THE APRON IS 0.111 SQ. YDS. PER SQ. FT.
 WHEN PAYMENT FOR THE DROP INLET IS MADE ON A PER EACH BASIS, THE CONCRETE APRON WILL BE CONSIDERED PART OF THE DROP INLET.
 DRAWING NOT TO SCALE.



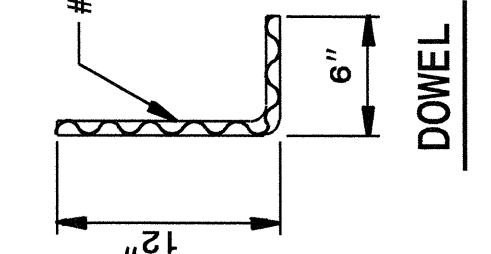
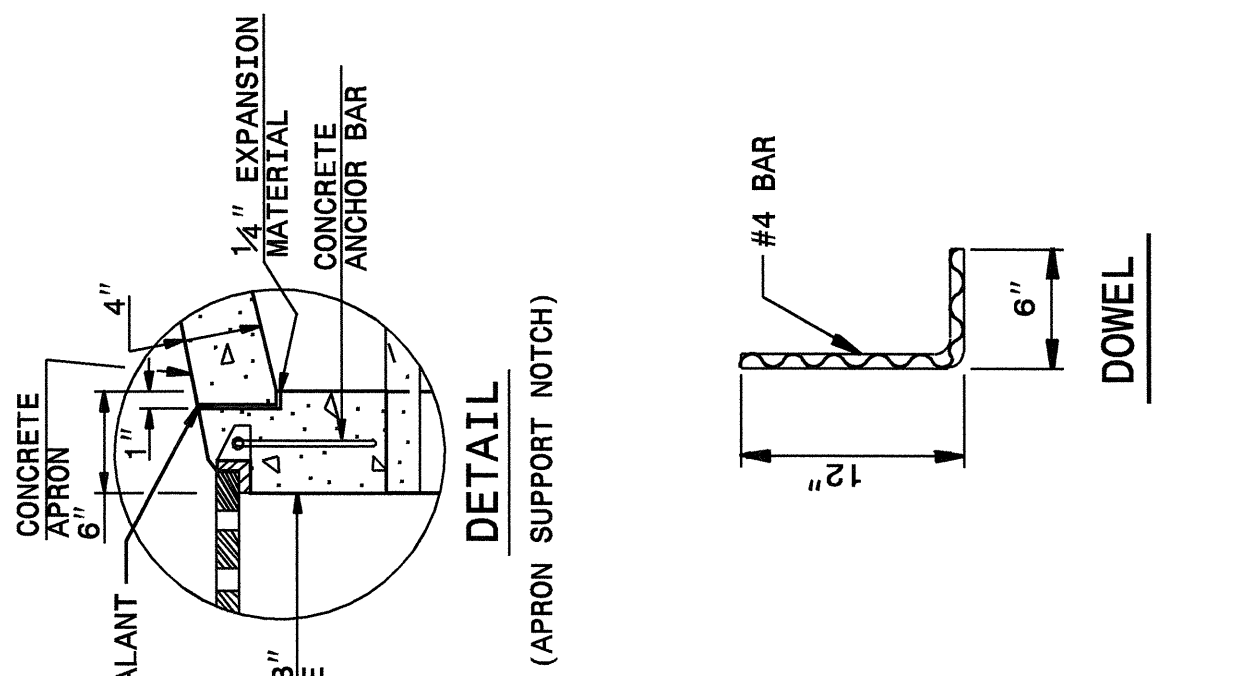
STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.



ENGLISH STANDARD DRAWING FOR CONCRETE DROP INLET 12" THRU 30" PIPE

DIMENSIONS OF BOX & PIPE		CUBIC YARDS DEDUCTIONS FOR ONE PIPE							
PIPE	SPAN	WIDTH	MIN.	HEIGHT	BOTTOM SLAB	WALL PER FT. HT.	TOTAL CONCRETE PER SQ. YD.	C.M.	R.C.
12"	3'-0"	2'-0"	2'-0"	2'-0"	0.222	0.222	0.592	0.015	0.026
15"	3'-0"	2'-3"	2'-3"	2'-3"	0.222	0.222	0.648	0.023	0.036
18"	3'-0"	2'-6"	2'-6"	2'-6"	0.222	0.222	0.703	0.033	0.049
24"	3'-0"	3'-0"	3'-0"	3'-0"	0.222	0.222	0.814	0.059	0.085
30"	3'-0"	3'-6"	3'-6"	3'-6"	0.222	0.222	0.925	0.092	0.127

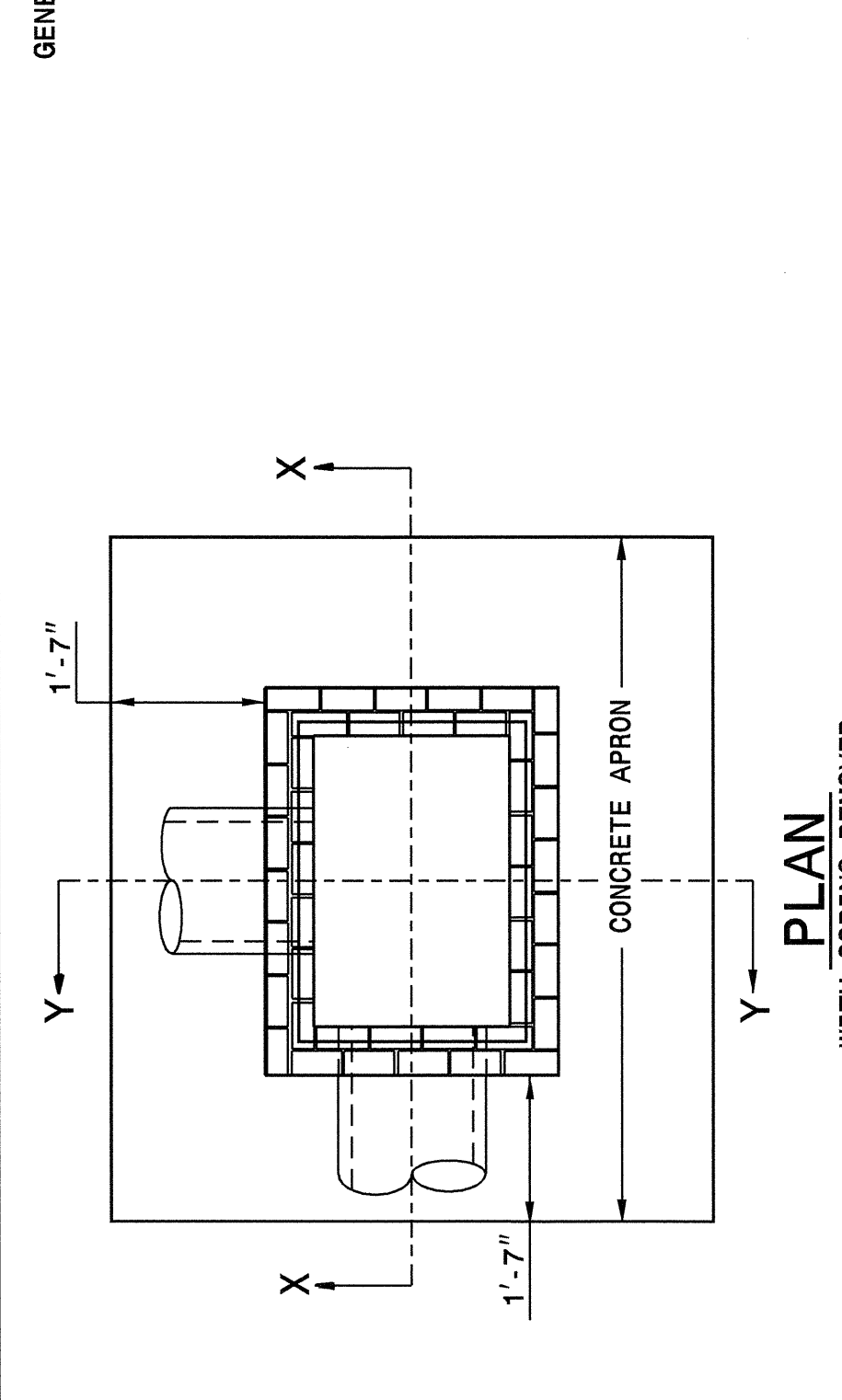
CONCRETE APRON
 2" WEEPHOLES
 1'-7" X 1'-7"



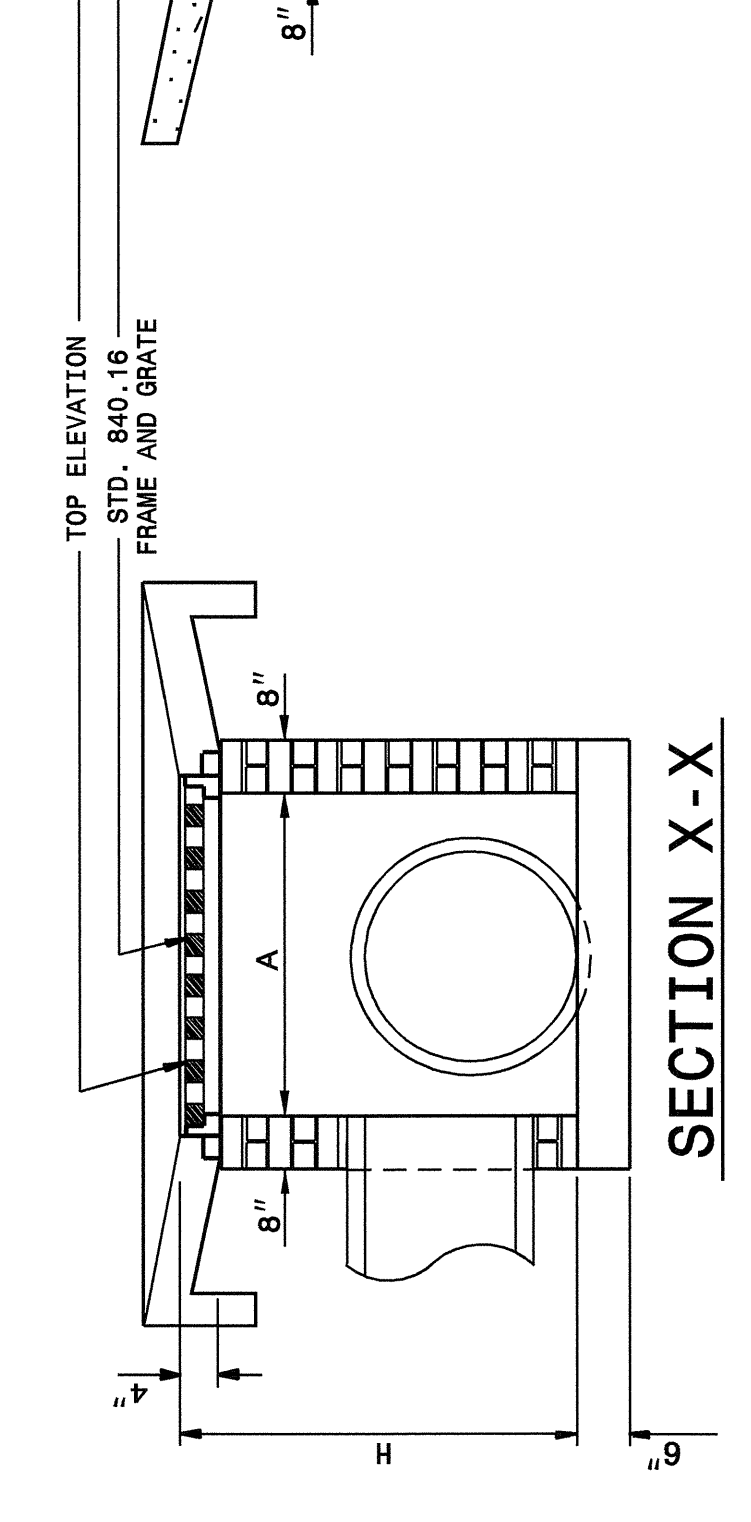
STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.

ENGLISH STANDARD DRAWING FOR BRICK DROP INLET 12" THRU 30" PIPE SHEET 1 OF 1 840D15

GENERAL NOTES:
 MORTAR JOINTS 1/2" TO 1/8" THICK.
 USE CLASS "B" CONCRETE THROUGHOUT.
 USE FORMS FOR CONSTRUCTION OF THE BOTTOM SLAB.
 DEDUCT 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" FROM TOP OF WALL AND 6" WALL FOR THE REMAINING 6'-0". QUANTITIES TO BE ADJUSTED ACCORDINGLY.
 CONSTRUCT WITH PIPE CROWNS MATCHING.
 DO NOT USE BRICK MASONRY DROP INLET IN LOCATIONS SUBJECT TO TRAFFIC.
 CHAMFER ALL EXPOSED CORNERS 1".
 WHEN PAYMENT FOR THE DROP INLET IS MADE ON A PER EACH BASIS, THE CONCRETE APRON WILL BE CONSIDERED PART OF THE DROP INLET.
 DRAWING NOT TO SCALE.

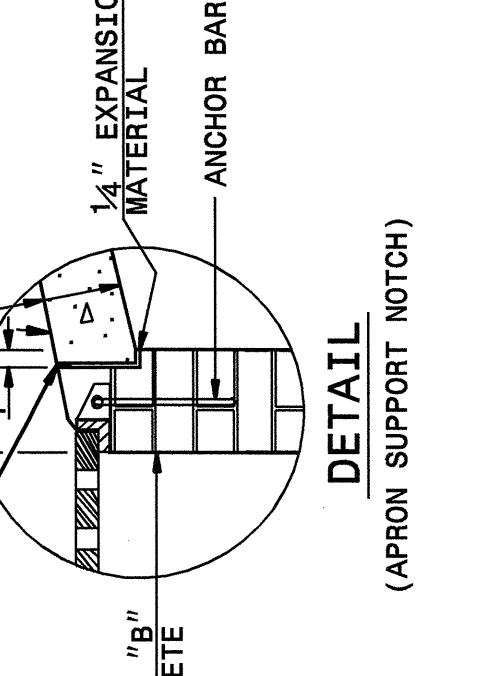


STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.



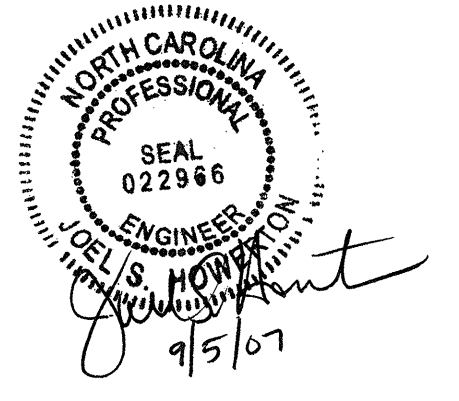
ENGLISH STANDARD DRAWING FOR BRICK DROP INLET 12" THRU 30" PIPE

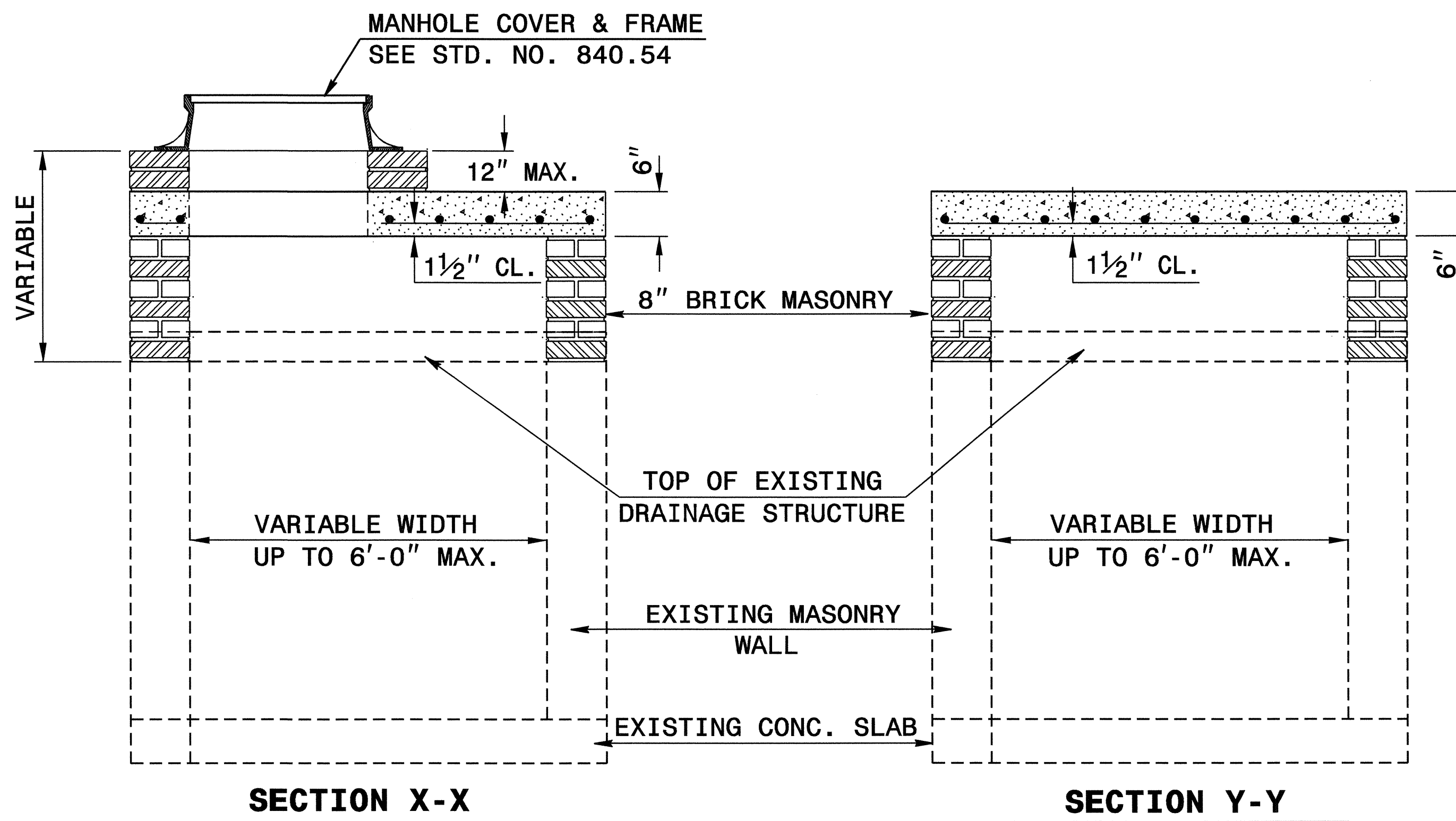
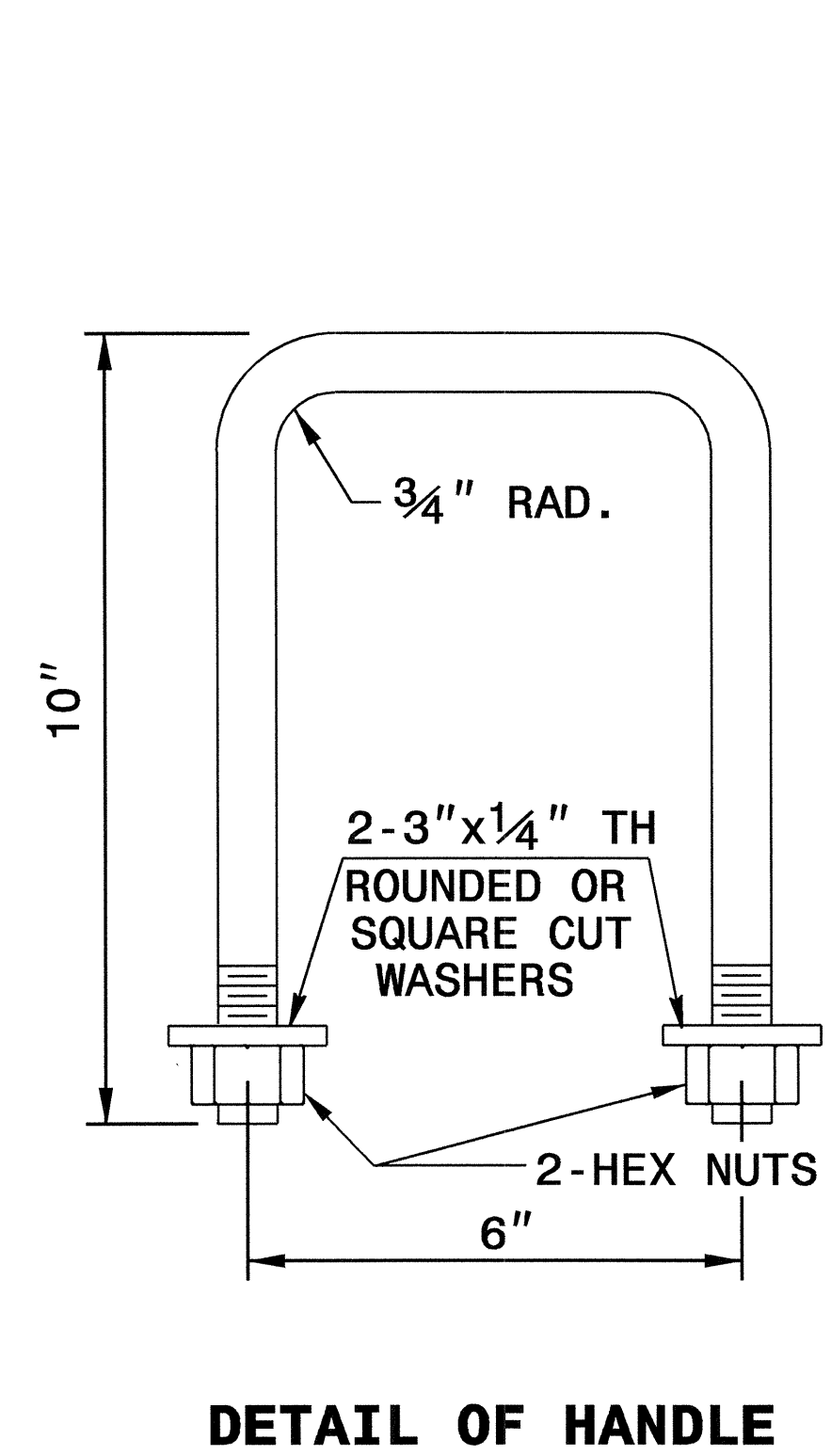
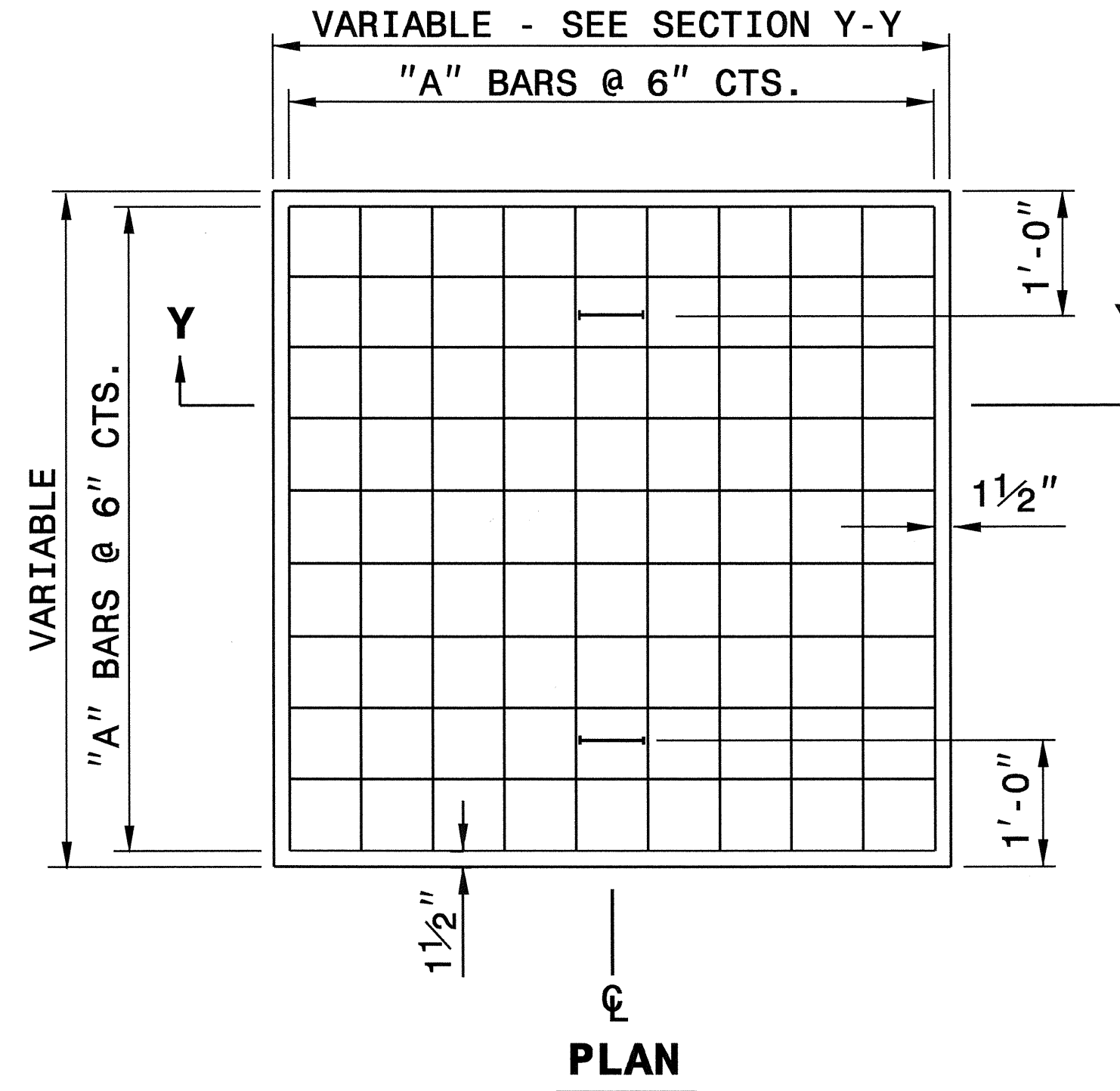
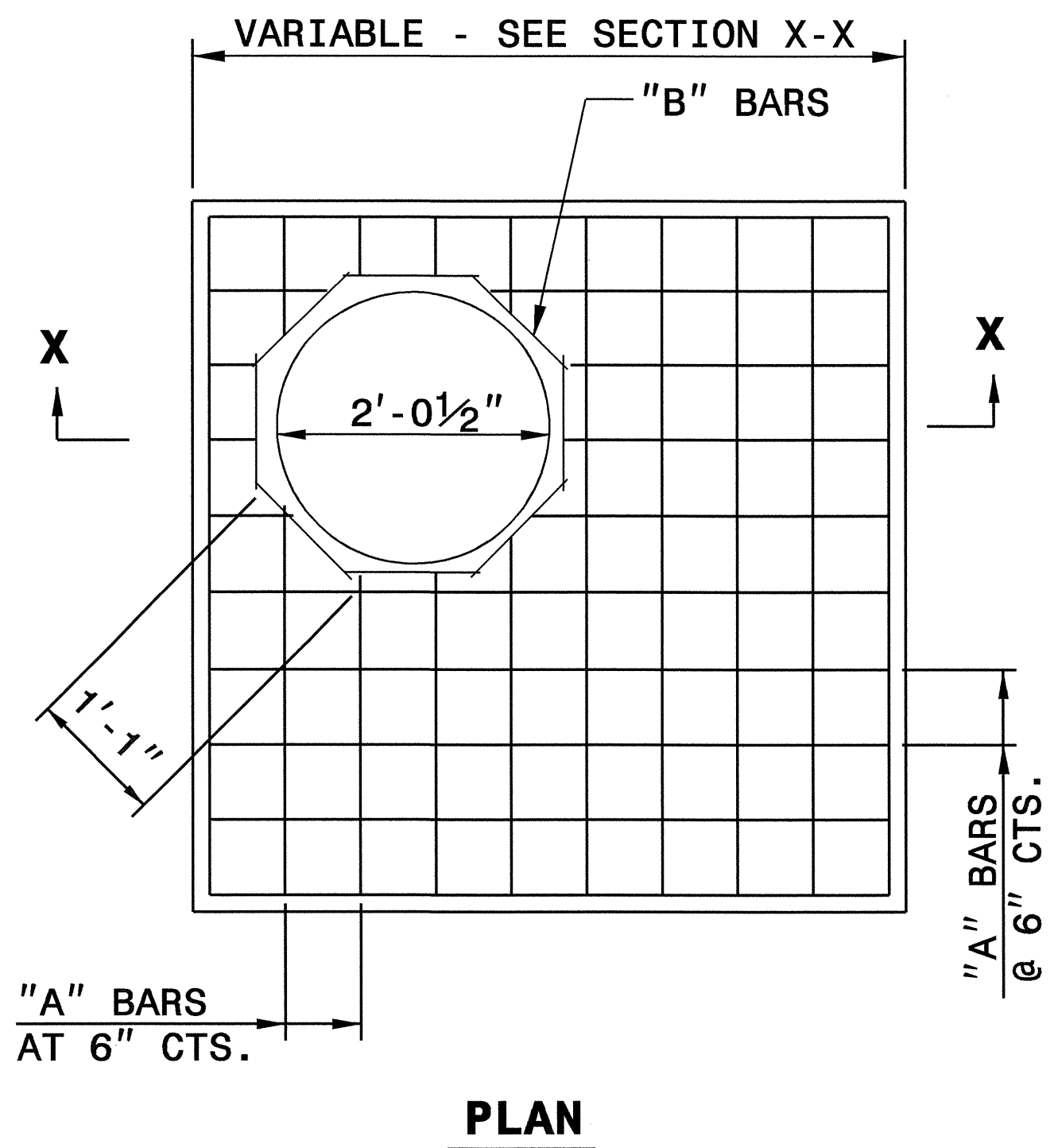
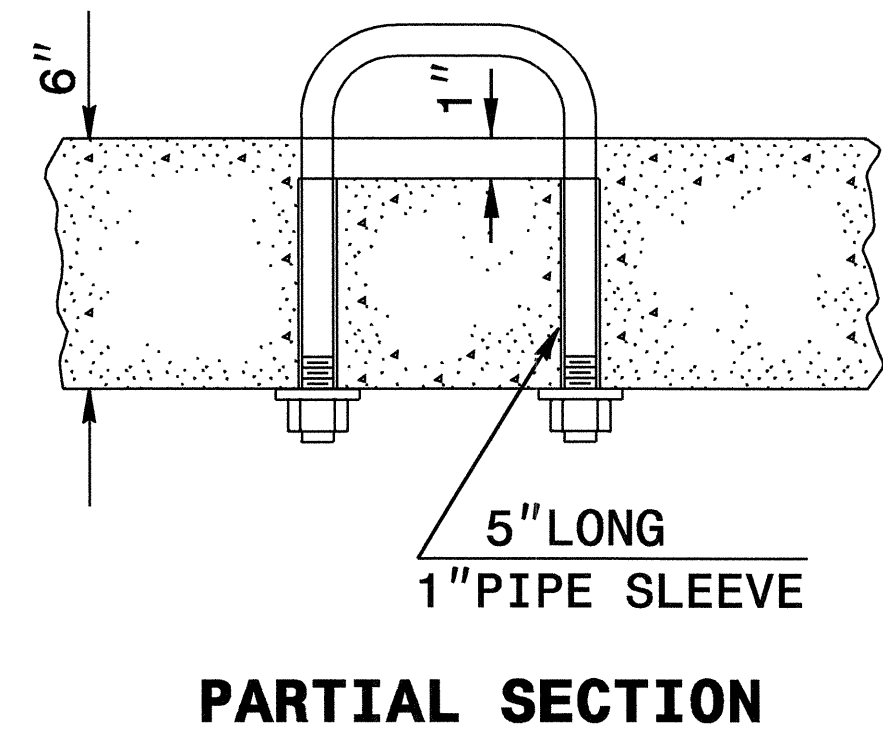
DIMENSIONS OF BOX & PIPE		CUBIC YARDS DEDUCTIONS FOR ONE PIPE							
PIPE	SPAN	WIDTH	MIN.	HEIGHT	BOTTOM CONCRETE SLAB	WALL PER FOOT FT. MIN. HEIGHT, H	TOTAL BRICK MASONRY PER FOOT FT. MIN. HEIGHT, H	C.S.	R.C.
12"	3'-0"	2'-0"	2'-0"	2'-0"	0.268	0.313	0.522	0.020	0.032
15"	3'-0"	2'-3"	2'-3"	2'-3"	0.268	0.313	0.600	0.031	0.047
18"	3'-0"	2'-6"	2'-6"	2'-6"	0.268	0.313	0.678	0.044	0.065
24"	3'-0"	3'-0"	3'-0"	3'-0"	0.268	0.313	0.835	0.078	0.113
30"	3'-0"	3'-6"	3'-6"	3'-6"	0.268	0.313	0.991	0.122	0.170



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

DESIGN SERVICES UNIT STANDARDS AND SPECIAL DESIGN
 Office 919-250-4128 FAX 919-250-4119
SEE PLATE FOR TITLE
 ORIGINAL BY: Std.No.840.14&840.15 DATE: 6-18-02
 MODIFIED BY: T.S.Spell DATE: 6-18-02
 CHECKED BY: DATE:
 FILE SPEC.: w:usr/stand/840d14&15&19.dgn





GENERAL NOTES:

CONSTRUCT IN ACCORDANCE WITH SECTION 859 OF THE STANDARD SPECIFICATIONS.

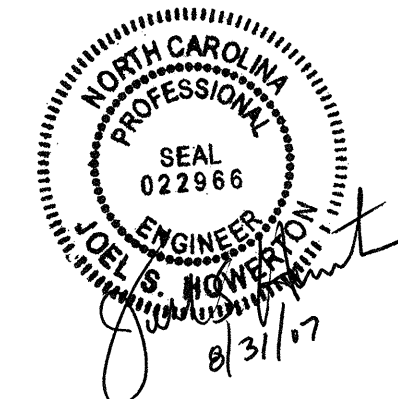
THE DIMENSIONS FOR THE EXISTING BOXES ARE APPROXIMATE AND MAY VARY SLIGHTLY.

DETAIL INTENDED FOR NON-TRAFFIC BEARING DRAINAGE STRUCTURES.

BILL OF MATERIALS

REINFORCING STEEL				
CODE	SIZE	QTY.	LENGTH	REINF. STEEL LBS.
A	#4	20	4'-6"	60.12
B	#4	8	1'-1"	5.79
TOTAL				65.91 *
MASONRY				CU YDS
TOP SLAB CONCRETE CLASS "B"				.4326 *
BRICK MASONRY PER FT HT (MIN)				.4111

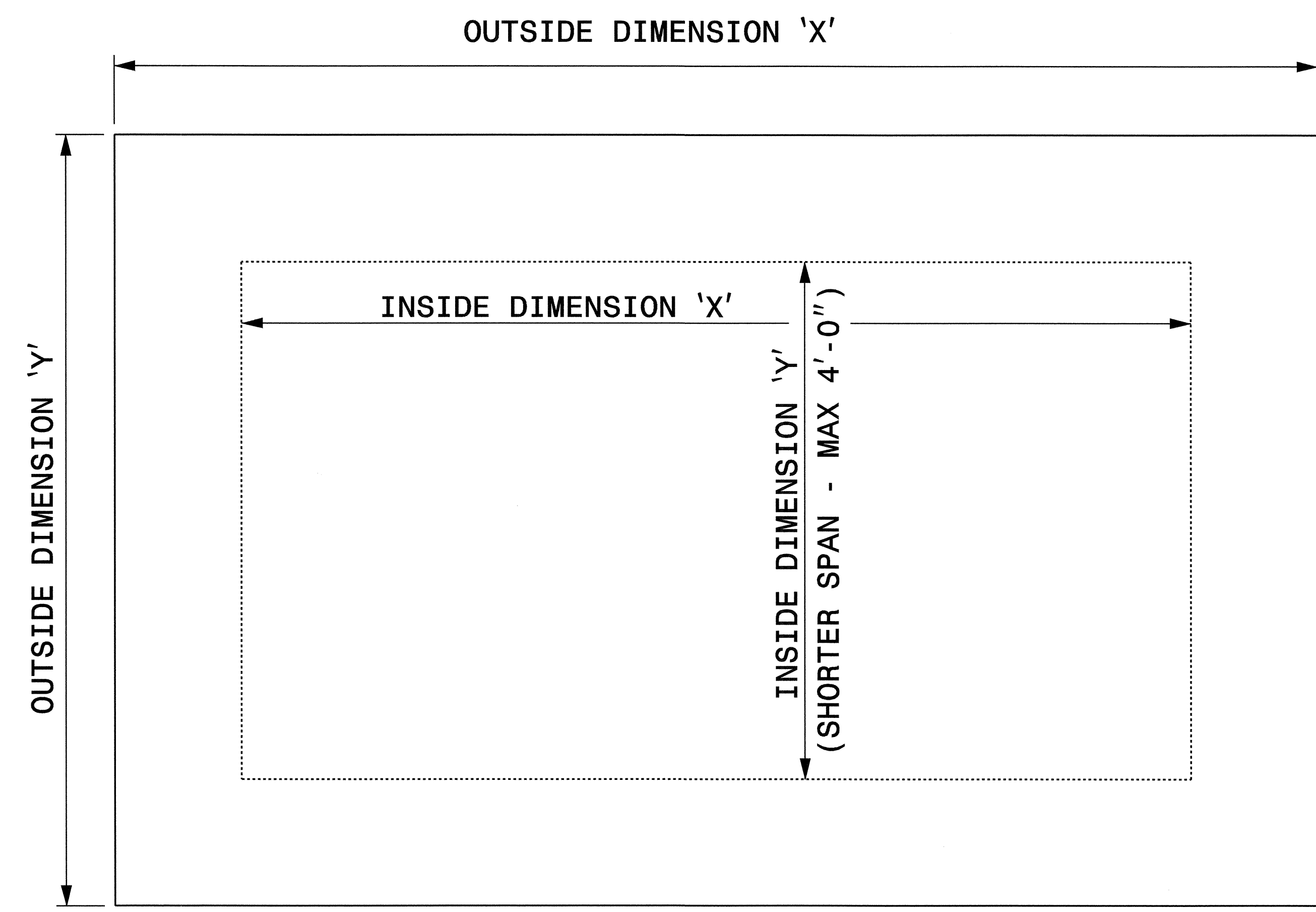
*** NOTE:**
QUANTITIES BASED ON 3'-6" X 3'-6" DRAINAGE STRUCTURE. ADJUST QUANTITIES FOR LARGER STRUCTURES AND MANHOLE CONSTRUCTION.



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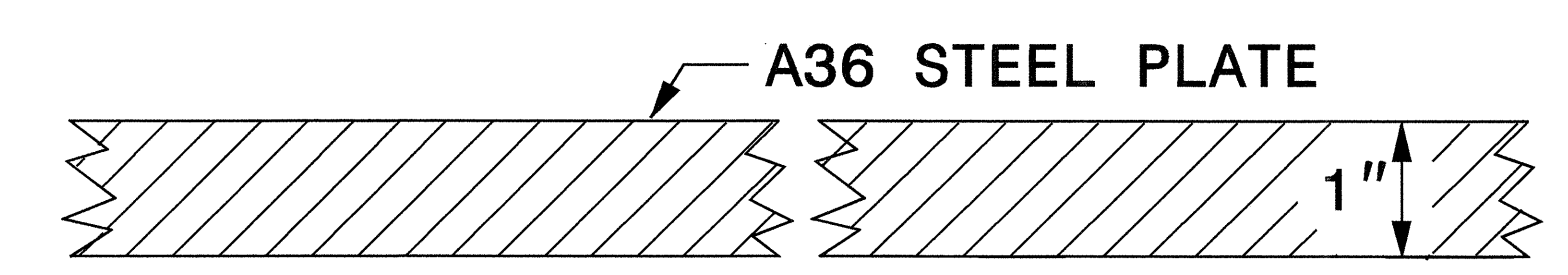
**DETAIL TO CONVERT EXISTING
DROP INLET OR CATCH BASIN
TO JUNCTION BOX
(MANHOLE OPTIONAL)**

ORIGINAL BY: T.S.S. DATE: NOV.1997
 MODIFIED BY: T.S.S. DATE: FEB.2000
 CHECKED BY: *Joel S. Howard* DATE: 8/27/07
 FILE SPEC.: ds174:\usr\details\stand\boxtoibe.dgn



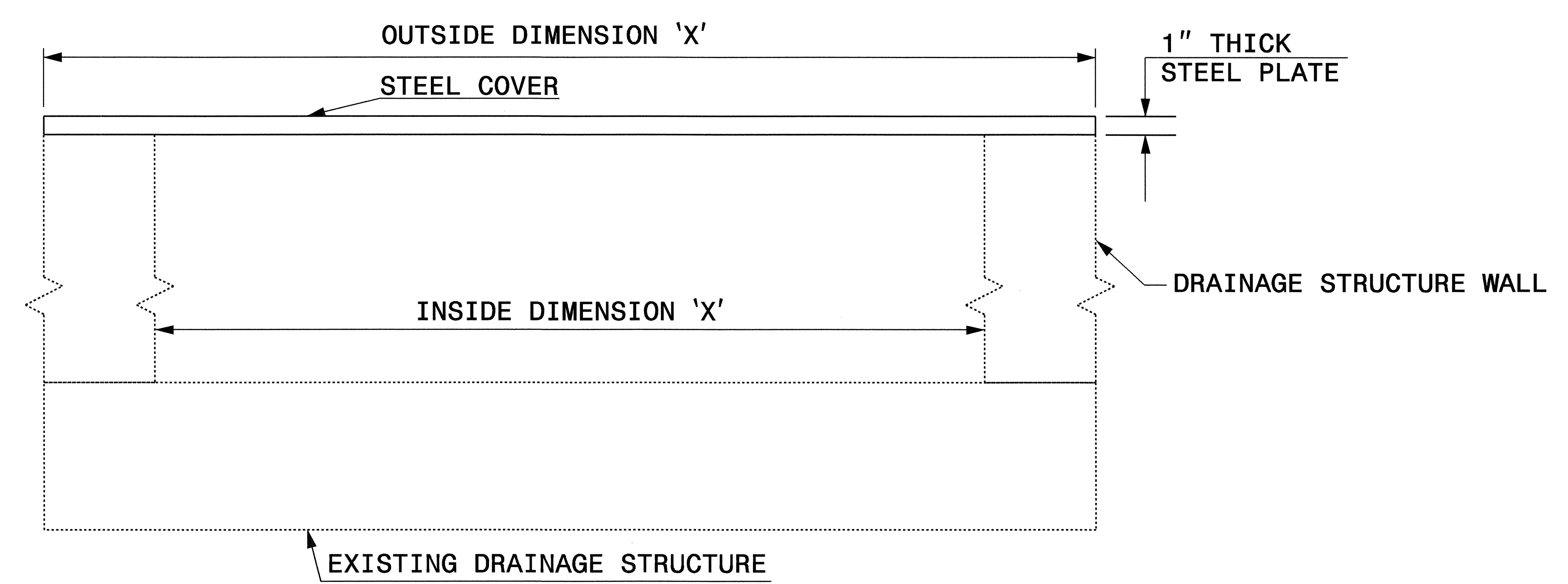
GENERAL NOTES:

- USE GRADE A36 STEEL
- STEEL COVERS ARE FOR TEMPORARY USE DURING PHASE CONSTRUCTION.
- FILL SHALL BE PLACED DIRECTLY OVER THE STEEL PLATES.
- SEE ROADWAY PLANS AND PROVISIONS FOR LOCATIONS
- QUANTITIES TO BE PAID FOR AT THE UNIT PRICE BID PER EACH.

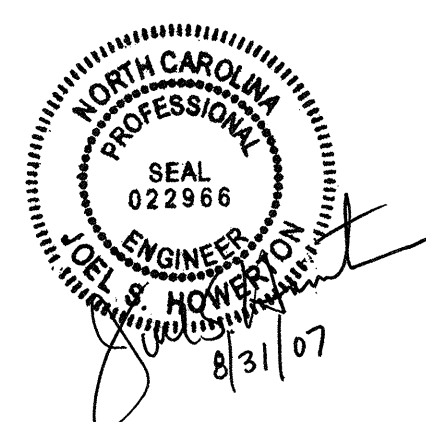


SECTION VIEW OF STEEL TOP PLATE

PLAN VIEWS



ELEVATION VIEWS



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

**DETAIL OF TEMPORARY
1" STEEL COVER
OVER DRAINAGE STRUCTURE**

ORIGINAL BY: E.E. WARD DATE: 2-2-98
 MODIFIED BY: DATE: _____
 CHECKED BY: DATE: _____
 FILE SPEC.: eric:\usr\details\metric\stand\stlcvr2.dgn

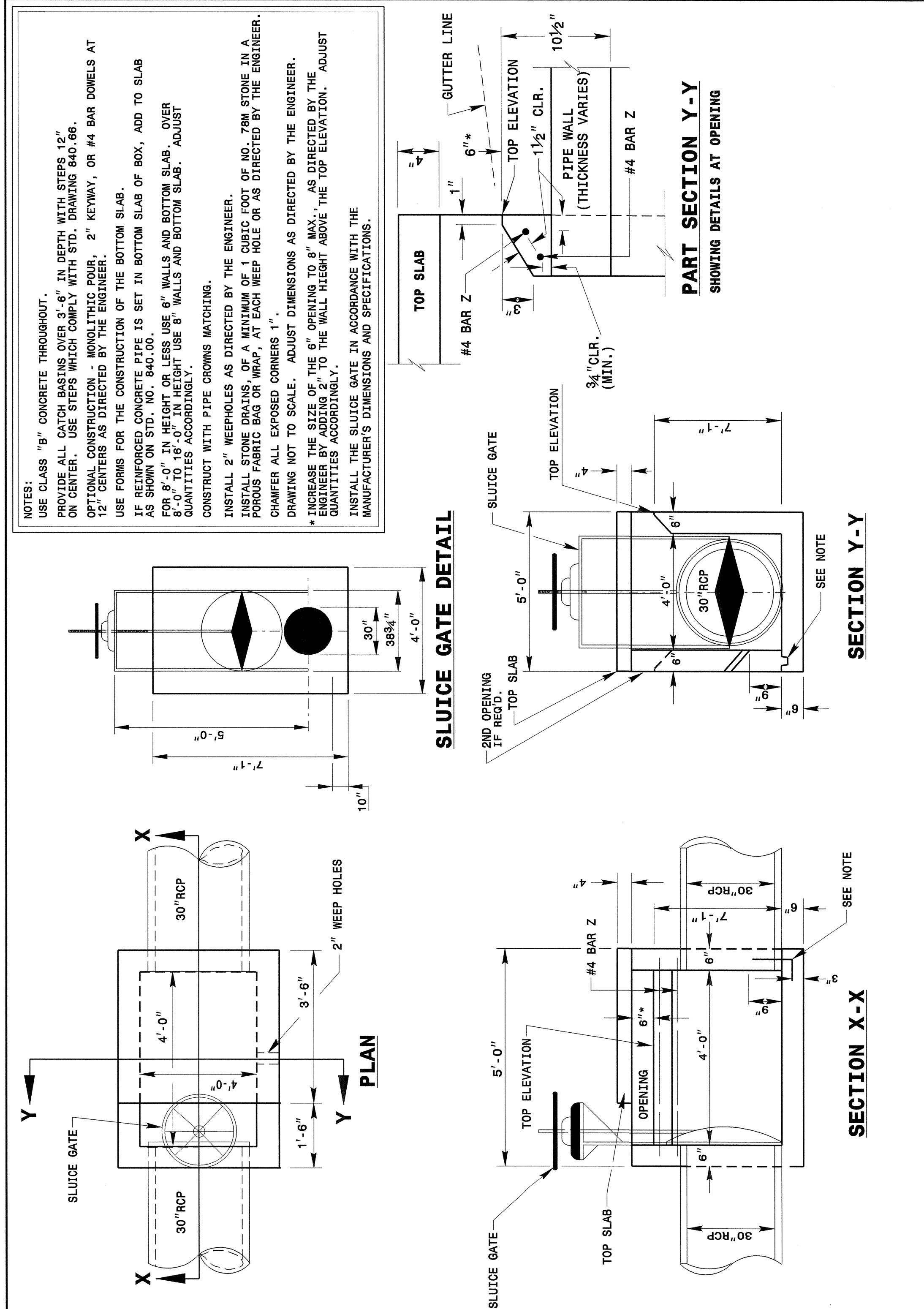
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 jhowerton
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5/14/99

STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C. 7-06

ENGLISH DETAIL DRAWING FOR CONCRETE OPEN THROAT CATCH BASIN 30" PIPE

SHEET 1 OF 2 840D04



STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C. 7-06

ENGLISH DETAIL DRAWING FOR CONCRETE OPEN THROAT CATCH BASIN 30" PIPE

SHEET 1 OF 2 840D04

NOTES:

USE CLASS "B" CONCRETE THROUGHOUT.

PROVIDE ALL GUTCH BASINS OVER 6" IN DEPTH WITH STEPS 12" ON CENTER. USE STEPS WHICH COMPLY WITH STD. DRAWING 840.66.

OPTIONAL CONSTRUCTION - MONOLITHIC FOUR, 2" KEYWAY, OR #4 BAR DOWELS AT 12" CENTERS AS DIRECTED BY THE ENGINEER.

USE FORMS FOR THE CONSTRUCTION OF THE BOTTOM SLAB.

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 6" WALLS AND BOTTOM SLAB. OVER 8'-0" TO 16'-0" IN HEIGHT USE 8" WALLS AND BOTTOM SLAB. ADJUST QUANTITIES ACCORDINGLY.

CONSTRUCT WITH PIPE CROWNS MATCHING.

INSTALL 2" WEEPHOLES AS DIRECTED BY THE ENGINEER.

INSTALL STONE DRAINS OF A MINIMUM OF 1 CUBIC FOOT OF NO. 78M STONE IN A POROUS FABRIC BAG OR WRAP, AT EACH WEEP HOLE OR AS DIRECTED BY THE ENGINEER.

CHAMFER ALL EXPOSED CORNERS 1".

DRAWING NOT TO SCALE. ADJUST DIMENSIONS AS DIRECTED BY THE ENGINEER.

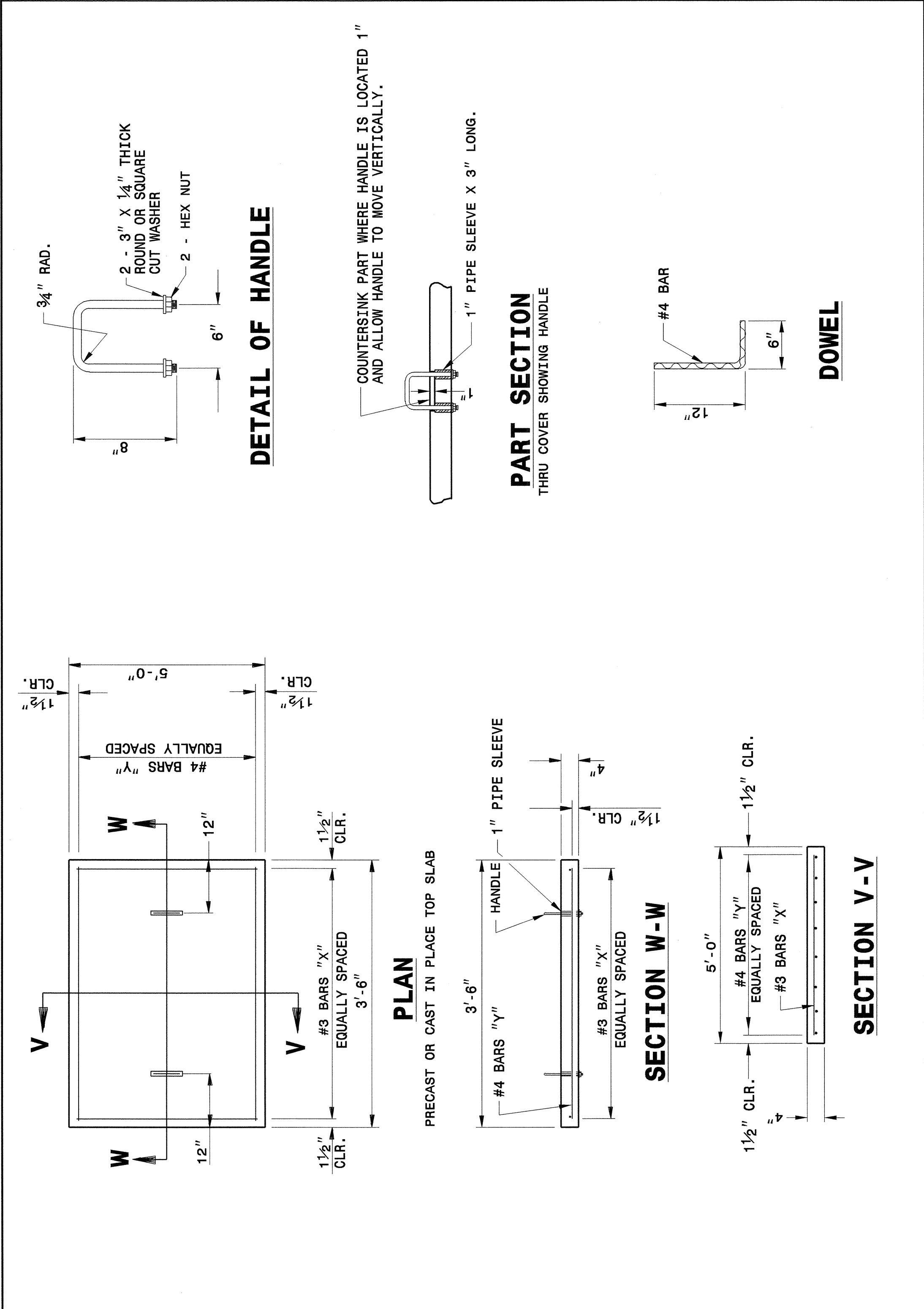
* INCREASE THE SIZE OF THE 6" OPENING TO 8" MAX. AS DIRECTED BY THE ENGINEER BY ADDING 2" TO THE WALL HEIGHT ABOVE THE TOP ELEVATION. ADJUST QUANTITIES ACCORDINGLY.

INSTALL THE SLUICE GATE IN ACCORDANCE WITH THE MANUFACTURER'S DIMENSIONS AND SPECIFICATIONS.

STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C. 7-06

ENGLISH DETAIL DRAWING FOR CONCRETE OPEN THROAT CATCH BASIN 30" PIPE

SHEET 2 OF 2 840D04



STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C. 7-06

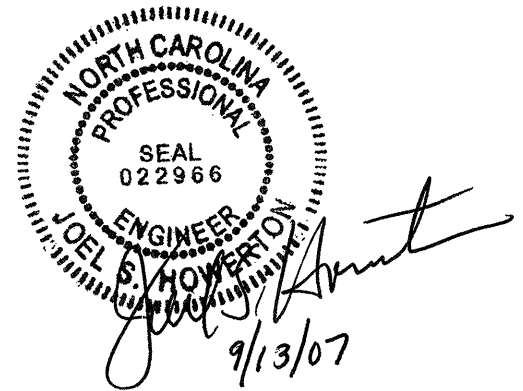
ENGLISH DETAIL DRAWING FOR CONCRETE OPEN THROAT CATCH BASIN 30" PIPE

SHEET 2 OF 2 840D04

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

DETAIL OF CONCRETE
OPEN THROAT CATCH BASIN
30" PIPE

ORIGINAL BY: _____ DATE: _____
 MODIFIED BY: rnbritt DATE: 09-13-07
 CHECKED BY: _____ DATE: _____
 FILE SPEC: details/rnbritt/english/hydro/open throat sluice.dgn



STATE OF NORTH CAROLINA DIVISION OF HIGHWAYS SUMMARY OF QUANTITIES

STATE OF NORTH CAROLINA DIVISION OF HIGHWAYS ROADWAY SUMMARY OF QUANTITIES FOR CONTRACT - C201865

Table with columns: ItemNumber, Sec #, Quantity, Unit, Description. Includes rows for Mobilization, Construction Surveying, Grading, etc.

Table with columns: ItemNumber, Sec #, Quantity, Unit, Description. Includes rows for Flowable Fill, Masonry Drainage Structures, Frame with Grates, etc.

Table with columns: ItemNumber, Sec #, Quantity, Unit, Description. Includes rows for Thermoplastic Pavement Marking Lines, Paint Pavement Marking Lines, etc.

5/28/99

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STATE OF NORTH CAROLINA
SUMMARY OF QUANTITIES

ItemNumber	Sec #	Quantity	Unit	Description
6021000000-E	1620	2	TON	FERTILIZER FOR TEMPORARY SEED-ING
6029000000-E	SP	200	LF	SAFETY FENCE
6030000000-E	1630	6,500	CY	SILT EXCAVATION
6036000000-E	1631	6,520	SY	MATTING FOR EROSION CONTROL
6038000000-E	SP	225	SY	PERMANENT SOIL REINFORCEMENT MAT
6042000000-E	1632	1,320	LF	1/4" HARDWARE CLOTH
6070000000-N	SP	4	EA	SPECIAL STILLING BASINS
6084000000-E	1660	14	ACR	SEEDING & MULCHING
6087000000-E	1660	8.5	ACR	MOWING
6090000000-E	1661	150	LB	SEED FOR REPAIR SEEDING
6093000000-E	1661	0.5	TON	FERTILIZER FOR REPAIR SEEDING
6096000000-E	1662	350	LB	SEED FOR SUPPLEMENTAL SEEDING
6108000000-E	1665	10.5	TON	FERTILIZER TOPDRESSING
6111000000-E	SP	120	LF	IMPERVIOUS DIKE
6114000000-N	SP	4.5	HR	SPECIALIZED HAND MOWING
6117000000-N	SP	24	EA	RESPONSE FOR EROSION CONTROL
7000000000-E	1705	4	EA	PEDESTRIAN SIGNAL HEAD (***, ** SECTION) (16", 1 SECTION W/COUNTDOWN)
7060000000-E	1705	2,950	LF	SIGNAL CABLE
7120000000-E	1705	14	EA	VEHICLE SIGNAL HEAD (12", 3 SECTION)
7132000000-E	1705	1	EA	VEHICLE SIGNAL HEAD (12", 4 SECTION)
7144000000-E	1705	4	EA	VEHICLE SIGNAL HEAD (12", 5 SECTION)
7264000000-E	1710	980	LF	MESSENGER CABLE (3/8")
7288000000-E	1715	485	LF	PAVED TRENCHING (*****) (2", 1 CONDUIT)
7300000000-E	1715	510	LF	UNPAVED TRENCHING (*****) (2", 1 CONDUIT)
7324000000-N	1716	13	EA	JUNCTION BOX (STANDARD SIZE)

ItemNumber	Sec #	Quantity	Unit	Description
7360000000-N	1720	3	EA	WOOD POLE
7372000000-N	1721	8	EA	GUY ASSEMBLY
7408000000-E	1722	1	EA	1" RISER WITH WEATHERHEAD
7420000000-E	1722	6	EA	2" RISER WITH WEATHERHEAD
7444000000-E	1725	2,830	LF	INDUCTIVE LOOP SAWCUT
7456000000-E	1726	2,370	LF	LEAD-IN CABLE (*****) (18-2)
7456000000-E	1726	850	LF	LEAD-IN CABLE (*****) (18-2, DIRECT BURY)
7456000000-E	1726	1,280	LF	LEAD-IN CABLE (*****) (18-4)
7576000000-N	SP	4	EA	METAL STRAIN SIGNAL POLE
7613000000-N	SP	4	EA	SOIL TEST
7614100000-E	SP	32	CY	DRILLED PIER FOUNDATION
7636000000-N	1745	3	EA	SIGN FOR SIGNALS
7684000000-N	1750	2	EA	SIGNAL CABINET FOUNDATION
7756000000-N	1751	2	EA	CONTROLLER WITH CABINET (TYPE 2070L, BASE MOUNTED)
7780000000-N	1751	9	EA	DETECTOR CARD (TYPE 2070L)
7901000000-N	1753	2	EA	CABINET BASE EXTENDER
7980000000-N	SP	4	EA	GENERIC SIGNAL ITEM POWDER COAT FOR METAL STRAIN POLE
8436000000-E	453	2,250	SF	GRAVITY RETAINING WALLS
8832000000-N	SP	Lump Sum		GENERIC RETAINING WALL ITEM SOIL NAIL RETAINING WALL AT STA 29+58 TO 35+46
***** BEGIN SCHEDULE AA ***** ***** (3 ALTERNATES) *****				
0366000000-E	310	2,284	LF	15" RC PIPE CULVERTS, CLASS III
0372000000-E	310	40	LF	18" RC PIPE CULVERTS, CLASS III
0378000000-E	310	564	LF	24" RC PIPE CULVERTS, CLASS III
*** OR ***				

ItemNumber	Sec #	Quantity	Unit	Description
0366000000-E	310	2,176	LF	15" RC PIPE CULVERTS, CLASS III
0378000000-E	310	252	LF	24" RC PIPE CULVERTS, CLASS III
0536000000-E	SP	108	LF	**** HDPE PIPE CULVERTS (15")
0536000000-E	SP	40	LF	**** HDPE PIPE CULVERTS (18")
0536000000-E	SP	312	LF	**** HDPE PIPE CULVERTS (24")
*** OR ***				
0366000000-E	310	2,176	LF	15" RC PIPE CULVERTS, CLASS III
0378000000-E	310	252	LF	24" RC PIPE CULVERTS, CLASS III
0540000000-E	SP	108	LF	**** ALUMINIZED CORRUGATED STEEL PIPE CULVERTS, ***** THICK (15", 0.064")
0540000000-E	SP	40	LF	**** ALUMINIZED CORRUGATED STEEL PIPE CULVERTS, ***** THICK (18", 0.064")
0540000000-E	SP	312	LF	**** ALUMINIZED CORRUGATED STEEL PIPE CULVERTS, ***** THICK (24", 0.064")
***** END SCHEDULE AA *****				

COMPUTED BY: MKP DATE: 3/14/2006
CHECKED BY: JPF DATE: 3/15/2007

PROJECT NO. SHEET NO.
37831 3-A

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

NOTE:
1. ALL ELEVATIONS ON THIS SHEET ARE FOR COST ESTIMATING ONLY AND SHALL NOT BE USED FOR FIELD STAKING.
2. CONTRACTOR SHALL FIELD VERIFY ALL ELEVATIONS, IN ADVANCE OF CONSTRUCTION, AND MAKE ANY OBSERVATIONS THAT AFFECT CONSTRUCTION KNOWN TO THE RESIDENT ENGINEER AND PROVIDE PROPOSED ADJUSTMENTS.

LIST OF PIPES, ENDWALLS, ETC. (FOR PIPES 48" & UNDER)

Table with columns for STATION, LOCATION (LT, RT, OR C/L), STRUCTURE NO., TOP ELEVATION, INVERT ELEVATION, SLOPE CRITICAL, CLASS III R.C. PIPE (UNLESS NOTED OTHERWISE), BITUMINOUS COATED C.S. PIPE TYPE B (UNLESS NOTED OTHERWISE), CLASS III R.C. PIPE OR C.S. PIPE, TYPE IR, ALUMINIZED OR HDPE PIPE, TYPE S OR D, WELDED STEEL, ENDWALLS, QUANTITIES FOR DRAINAGE STRUCTURES, FRAME, GRATES, AND HOOD STANDARD 840.03, TYPE OF GRATE, and REMARKS. Includes a summary row at the bottom labeled SHEET TOTALS.

COMPUTED BY: MKP DATE: 3/14/2006
CHECKED BY: JPF DATE: 3/15/2007

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PROJECT NO. 37831 SHEET NO. 3-C

NOTE:
1. ALL ELEVATIONS ON THIS SHEET ARE FOR COST ESTIMATING ONLY AND SHALL NOT BE USED FOR FIELD STAKING.
2. CONTRACTOR SHALL FIELD VERIFY ALL ELEVATIONS, IN ADVANCE OF CONSTRUCTION, AND MAKE ANY OBSERVATIONS THAT AFFECT CONSTRUCTION KNOWN TO THE RESIDENT ENGINEER AND PROVIDE PROPOSED ADJUSTMENTS.

LIST OF PIPES, ENDWALLS, ETC. (FOR PIPES 48" & UNDER)

Table with columns: STATION, LOCATION, STRUCTURE NO., TOP ELEVATION, INVERT ELEVATION, SLOPE CRITICAL, CLASS III R.C. PIPE, BITUMINOUS COATED C.S. PIPE TYPE B, CLASS III R.C. PIPE OR C.S. PIPE, ENDWALLS, QUANTITIES FOR DRAINAGE STRUCTURES, FRAME, GRATES, AND HOOD STANDARD, TYPE OF GRATE, REMARKS.

COMPUTED BY: MKP DATE: 3/15/2006
 CHECKED BY: JPF DATE: 3/15/2007

PROJECT NO. SHEET NO.
 37831 3-E

STATE OF NORTH CAROLINA
 DIVISION OF HIGHWAYS

NOTE:
 1. ALL ELEVATIONS ON THIS SHEET ARE FOR COST ESTIMATING ONLY AND SHALL NOT BE USED FOR FIELD STAKING.
 2. CONTRACTOR SHALL FIELD VERIFY ALL ELEVATIONS, IN ADVANCE OF CONSTRUCTION, AND MAKE ANY OBSERVATIONS THAT AFFECT CONSTRUCTION KNOWN TO THE RESIDENT ENGINEER AND PROVIDE PROPOSED ADJUSTMENTS.

LIST OF PIPES, ENDWALLS, ETC. (FOR PIPES 54" & OVER)

STATION	LOCATION (L, T, RT, OR CL)	STRUCTURE NO.	TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	SLOPE CRITICAL	CLASS III R.C. PIPE (UNLESS NOTED OTHERWISE)					BITUMINOUS COATED C.S. PIPE TYPE B (UNLESS NOTED OTHERWISE)				STRUCTURAL PLATE PIPE			REINFORCED ENDWALLS STD. 838.21 OR STD. 838.51 (UNLESS NOTED OTHERWISE)	WITH R.C. - C.Y.	WITH C.S. - C.Y.	MASONRY DRAINAGE STRUCTURES CUBIC YARDS	C.B. STD. 840.01 OR 840.02	FRAMES, GRATES & HOOD STANDARD 840.03			REINFORCING STEEL LBS FOR REINFORCING ENDWALL														REINF. CONC. FLARED END SECTIONS NO. & SIZE	CORR. STEEL FLARED END SECTIONS NO. & Size	BIT COAT CS PIPE ELBOWS TYPE B NO. & SIZE	CONC. COLLARS CL. "B" C.Y. STD. 840.72	PIPE REMOVAL LIN. FT.	ABBREVIATIONS		REMARKS								
							54"	60"	66"	72"	78"	84"	54"	60"	66"	72"	60"	66"						72"	TYPE OF GRATE																					C.B.	N.D.I.		D.I.	M.D.I.	M.D.I.(N.S.)	J.B.	M.H.	T.B.D.I.	T.B.J.B.	
													SHOP ELON. GATED				12	10						12	10	E																				F	G		E	F	G					
80+67-L-	LT	64 OUT		2047.00	2044.79							20																																			1@54		BAND AND EXTEND 54" CMP WITH 54" BCCS							
81+06-L-	RT	59 PIPE		2052.30	2052.00							36								5.2																								1@54		BAND AND EXTEND 54" CMP WITH 54" BCCS REMOVE HW										
SHEET TOTALS													56									5.2																				2@54														

D13CAD226332

**SUMMARY OF EARTHWORK
IN CUBIC YARDS**

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

LOCATION	UNCLASSIFIED EXCAVATION	EMBT+%	BORROW	WASTE	UNDERCUT
SUMMARY NO. 1 12+11.76 - 42+00.00					
LEFT SIDE OF -L-					
-L- 12+11.76 TO 42+00 LT	578	987	409		
-DRIVEA- 11+36.88 TO 12+16.55 LT /RT	4	57	53		
RIGHT SIDE OF -L-					
-L- 12+11.76 TO 42+00 RT	1783	1489		294	
-YA- 10+00.00 TO 11+48.63 LT /RT	20	61	41		
SUMMARY NO. 1 TOTAL	2385	2594	503	294	
SUMMARY NO. 2 42+00.00 - 72+00.00					
LEFT SIDE OF -L-					
-L- 42+00.00 TO 72+00.00 LT	1629	3148	1519		
-Y2- 5+00.00 TO 7+55.97 LT /RT	62	1010	948		
RIGHT SIDE OF -L-					
-L- 42+00.00 TO 72+00.00 RT	940	5644	4704		
-Y- 10+00.00 TO 11+21.95 LT /RT	48	29		19	
-YI- 10+00.00 TO 11+23.42 LT /RT	24	27	3		
-DRIVE2- 10+00.00 TO 12+50.00 LT /RT	9	1489	1480		
-DRIVE3- 10+40.00 TO 11+66.87 LT /RT	4	169	165		
SUMMARY NO. 2 TOTAL	2716	11516	8819	19	
SUMMARY NO. 3 72+00.00 - 95+83.50					
LEFT SIDE OF -L-					
-L- 72+00.00 - 95+83.50 LT	5592	2934		2658	
RIGHT SIDE OF -L-					
-L- 72+00.00 - 95+83.50 RT	1506	1961	455		90
-Y3- 10+00.00 TO 10+82.00 LT /RT	58	5		53	
SUMMARY NO. 3 TOTAL	7156	4900	455	2711	90
SUMMARIES TOTAL	12257	19010	9777	3024	90
LOSS DUE TO CLEAR & GRUB.	-620		620		
USE SUITABLE WASTE IN LIEU OF BARROW			-3024	-3024	
PROJECT TOTAL	11637	19010	7373		90
EST. 5% TO REPLACE TOPSOIL ON BORROW PIT			369		
PROJECT GRAND TOTAL	11637		7742		90

LOCATION	UNCLASSIFIED EXCAVATION	EMBT+%	BORROW	WASTE	UNDERCUT
SAY	11700		7800		90
	DDE=850				

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

WHEELCHAIR RAMPS

LOCATION	LT /RT	NUMBER OF RAMPS
16+57 -L-	RT	1
16+77 -L-	RT	1
18+48 -L-	RT	1
18+49 -L-	LT	1
18+77 -L-	LT	1
19+05 -L-	LT	1
19+49 -L-	LT	1
19+52 -L-	RT	1
21+17 -L-	RT	1
21+44 -L-	RT	1
22+42 -L-	RT	1
22+78 -L-	RT	1
27+03 -L-	RT	1
27+34 -L-	RT	1
35+88 -L-	RT	1
36+39 -L-	RT	1
38+60 -L-	RT	1
38+95 -L-	RT	1
42+13 -L-	RT	1
42+53 -L-	RT	1
45+33 -L-	RT	1
46+02 -L-	RT	1
54+83 -L-	RT	1
55+63 -L-	RT	1
57+83 -L-	RT	1
57+91 -L-	LT	1
58+84 -L-	LT	1
70+04 -L-	LT	1
70+31 -L-	LT	1
70+76 -L-	LT	1
71+05 -L-	LT	1
71+80 -L-	LT	1
72+26 -L-	LT	1
73+23 -L-	LT	1
73+63 -L-	LT	1
74+41 -L-	LT	1
PROJECT TOTAL		36

**CONCRETE APRONS FOR
DROP INLETS**

LOCATION	LT /RT	STRUCTURE NO.
44+15 -L-	RT	DS 31
71+67 -L-	LT	DS 51
PROJECT TOTAL		2

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COMPUTED BY: JPF DATE: 10/10/05
CHECKED BY: DATE:

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PROJECT REFERENCE NO. 37831
SHEET NO. 3-1

RIGHT OF WAY AREA DATA SHEET

PARCEL NO.	PROPERTY OWNERS NAME	TOTAL ACREAGE	AREA TAKEN	AREA REMAINING RIGHT	AREA REMAINING LEFT	CONSTR. EASEMENT	PERMANENT DRAINAGE EASEMENT	TEMPORARY DRAINAGE EASEMENT	PERMANENT UTILITY EASEMENT	PARCEL NO.	PROPERTY OWNERS NAME	TOTAL ACREAGE	AREA TAKEN	AREA REMAINING RIGHT	AREA REMAINING LEFT	CONSTR. EASEMENT	PERMANENT DRAINAGE EASEMENT	TEMPORARY DRAINAGE EASEMENT
1	THE TRUSTEES OF A-B TECH COMMUNITY COLLEGE	7.9 ACRES	0.39 ACRES		7.51 ACRES		0.72 ACRES											
2	FLETCHER PARTNERS INC	2.05 ACRES	564.41 SQ FT	2.04 ACRES		1451.94 SQ FT												
3	COLBOND INC.	141.21 ACRES	1.02ACRES		140.45 ACRES	0.98 ACRES	0.23 ACRES	0.34 ACRES										
4	FLETCHER PARTNERS INC	4.06 ACRES	3091.75 SQ FT	3.99 ACRES		0.20 ACRES	3163.53 SQ FT											
5	COUNTY OF BUNCOMBE	35719.20 SQ FT	2296.15 SQ FT	33423.05 SQ FT		2678.12 SQ FT	237.88 SQ FT											
6	FLETCHER PARTNERS INC	3.42 ACRES	0.17 ACRES	3.25 ACRES		0.19 ACRES	646.81 SQ FT											
7	BILTMORE LAKE ASSOC., INC.	56.54 ACRES	1.50 ACRES	55.04 ACRES		139.50 SQ FT												
8	ENKA BAPTIST CHURCH	2.17 ACRES	395.85 SQ FT	2.16 ACRES		3395.56 SQ FT												
9	FLETCHER PARTNERS INC	84.33 ACRES	0.16 ACRES		84.17 ACRES	0.35 ACRES												
10	BRENDA O. REESE	23086.80 SQ FT	87.65 SQ FT	22999.15 SQ FT		671.71 SQ FT												
11	ENKA PARK COMMONS	19166.40 SQ FT	112.82 SQ FT	19053.58 SQ FT		3267.06 SQ FT												
12	LAUADA J. PACE	17424 SQ FT	0.0 SQ FT	17424 SQ FT		636.17 SQ FT	154.35 SQ FT											
13	T & N ENTERPRISES	7.0 ACRES	0.17 ACRES		6.83 ACRES	0.17 ACRES												
14	AUDREY ANN ELDERS	14374.80 SQ FT	713.33 SQ FT	13661.47 SQ FT		3473.86 SQ FT												
15	STEPHEN THOMAS POOLE	56628.00 SQ FT	282.81 SQ FT	56345.19 SQ FT		0.16 ACRES												
16	JACOB HOLM INDUSTRIES INC.	22.72 ACRES	0.40 ACRES		22.32 ACRES	0.38 ACRES	256.00 SQ FT											
17	SOUTHEASTERN CONTAINER INC.	7.64 ACRES	0.12 ACRES	7.52 ACRES		0.24 ACRES	0.12 ACRES											
18	SCHWAN'S HOME SERVICES INC	5.16 ACRES	0.22 ACRES		4.94 ACRES	0.21 ACRES												
19	FLETCHER PARTNERS INC	10.46 ACRES	2572.26 SQ FT	10.40 ACRES		0.27 ACRES												
20	BANK-WEST INVESTMENTS LLC	17.34 ACRES	0.41 ACRES	16.93 ACRES		0.59 ACRES			0.21 ACRES									
21	BANK-WEST INVESTMENTS LLC	61.07 ACRES	0.0 ACRES		61.07 ACRES	0.26 ACRES	445.86 SQ FT	0.13 ACRES										
22	CHARLES A. LYNCH	2.23 ACRES	0.0 ACRES	2.23 ACRES				1241.50 SQ FT										

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STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

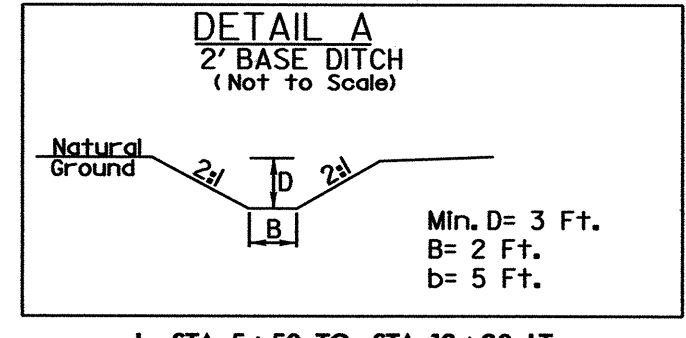
PARCEL INDEX SHEET

PARCEL NO.	SHEET NO.	PROPERTY OWNERS NAME
1	4	THE TRUSTEES OF A-B TECH COMMUNITY COLLEGE
2	5	FLETCHER PARTNERS INC
3	5,6,7	COLBOND INC.
4	5	FLETCHER PARTNERS INC
5	5	COUNTY OF BUNCOMBE
6	6	FLETCHER PARTNERS INC
7	6,7	BILTMORE LAKE ASSOC., INC.
8	7	ENKA BAPTIST CHURCH
9	7,9	FLETCHER PARTNERS INC
10	7	BRENDA O. REESE
11	7	ENKA PARK COMMONS
12	7	LAUADA J. PACE
13	7	T & N ENTERPRISES
14	7	AUDREY ANN ELDERS
15	7	STEPHEN THOMAS POOLE
16	7,8	JACOB HOLM INDUSTRIES INC.
17	8	SOUTHEASTERN CONTAINER INC.
18	8	SCHWAN'S HOME SERVICES INC
19	8	FLETCHER PARTNERS INC
20	9	BANK-WEST INVESTMENTS LLC
21	10,11	BANK-WEST INVESTMENTS LLC
22	10	CHARLES A. LYNCH

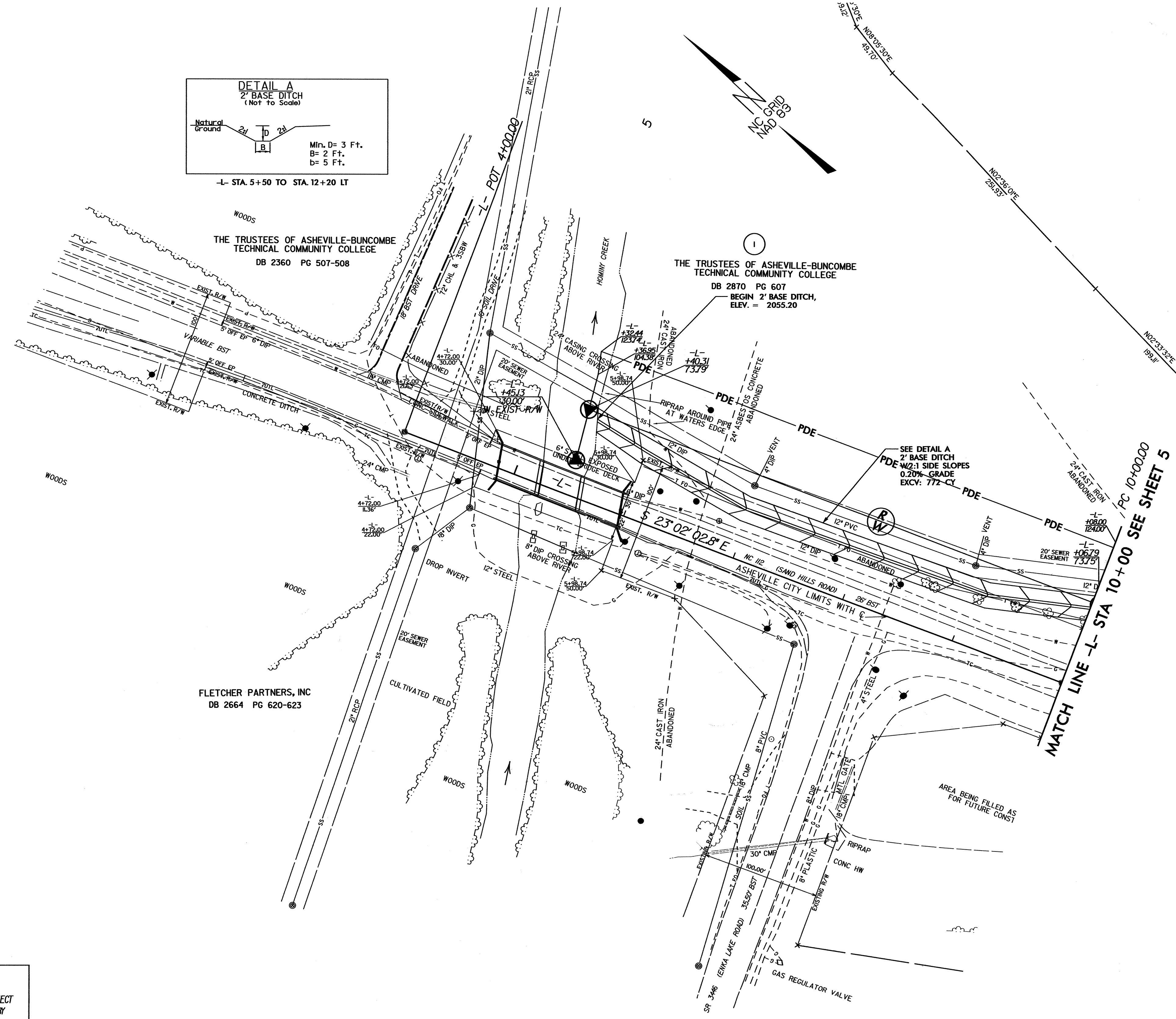
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PROJECT REFERENCE NO.	SHEET NO.
37831	4
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER



-L- STA. 5+50 TO STA. 12+20 LT



MATCH LINE -L- STA 10+00 SEE SHEET 5

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCGS FOR MONUMENT "DEWEESE"

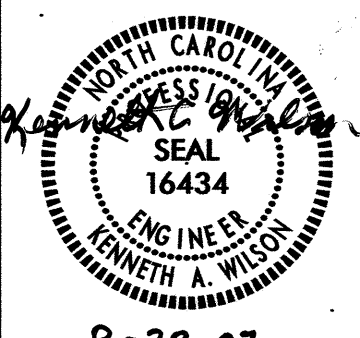
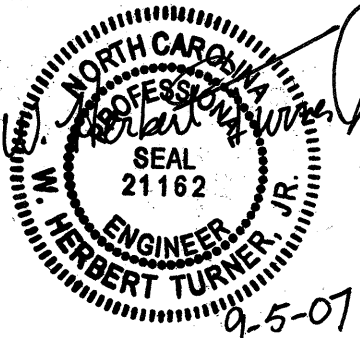
WITH NAD 83 STATE PLANE GRID COORDINATES OF
NORTHING: 673169.352(11) EASTING: 911534643(11)

THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.999783068

THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL DISTANCE FROM "DEWEESE" TO -L- STATION 12+1176 IS
S 36°10'02" E 2,174.33'

ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NAD 88

8/17/99

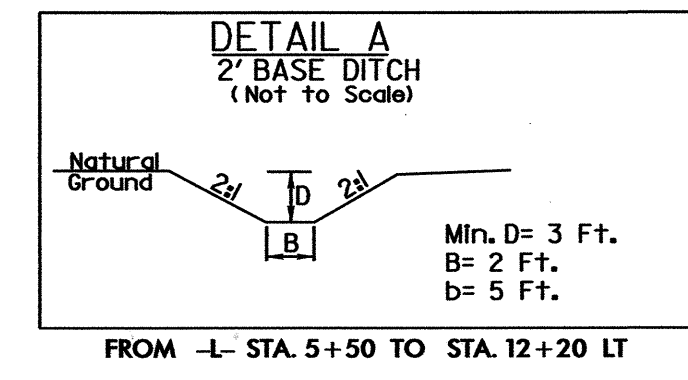
PROJECT REFERENCE NO. 37831	SHEET NO. 5
RW SHEET NO.	
ROADWAY DESIGN ENGINEER 	HYDRAULICS ENGINEER 
8-28-07	

-L-

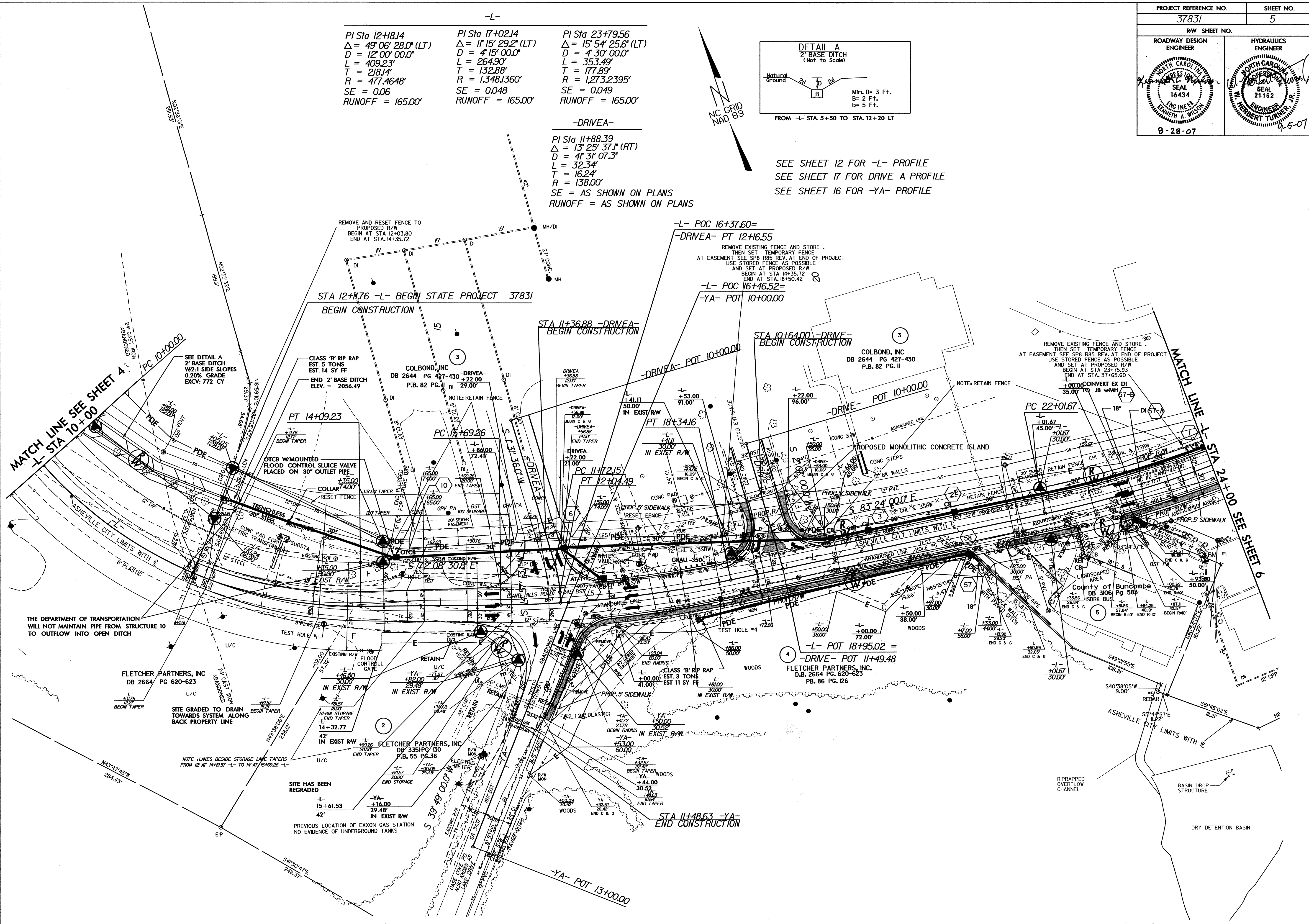
PI Sta 12+18.14 Δ = 49° 06' 28.0" (LT) D = 12° 00' 00.0" L = 409.23' T = 218.14' R = 477.4648' SE = 0.06 RUNOFF = 165.00'	PI Sta 17+02.14 Δ = 11° 15' 29.2" (LT) D = 4° 15' 00.0" L = 264.90' T = 132.88' R = 1,348.1360' SE = 0.048 RUNOFF = 165.00'	PI Sta 23+79.56 Δ = 15° 54' 25.6" (LT) D = 4° 30' 00.0" L = 353.49' T = 177.89' R = 1,273.2395' SE = 0.049 RUNOFF = 165.00'
--	--	--

-DRIVEA-

PI Sta 11+88.39
Δ = 13° 25' 37.1" (RT)
D = 4° 31' 07.3"
L = 32.34'
T = 16.24'
R = 138.00'
SE = AS SHOWN ON PLANS
RUNOFF = AS SHOWN ON PLANS



SEE SHEET 12 FOR -L- PROFILE
SEE SHEET 17 FOR DRIVE A PROFILE
SEE SHEET 16 FOR -YA- PROFILE



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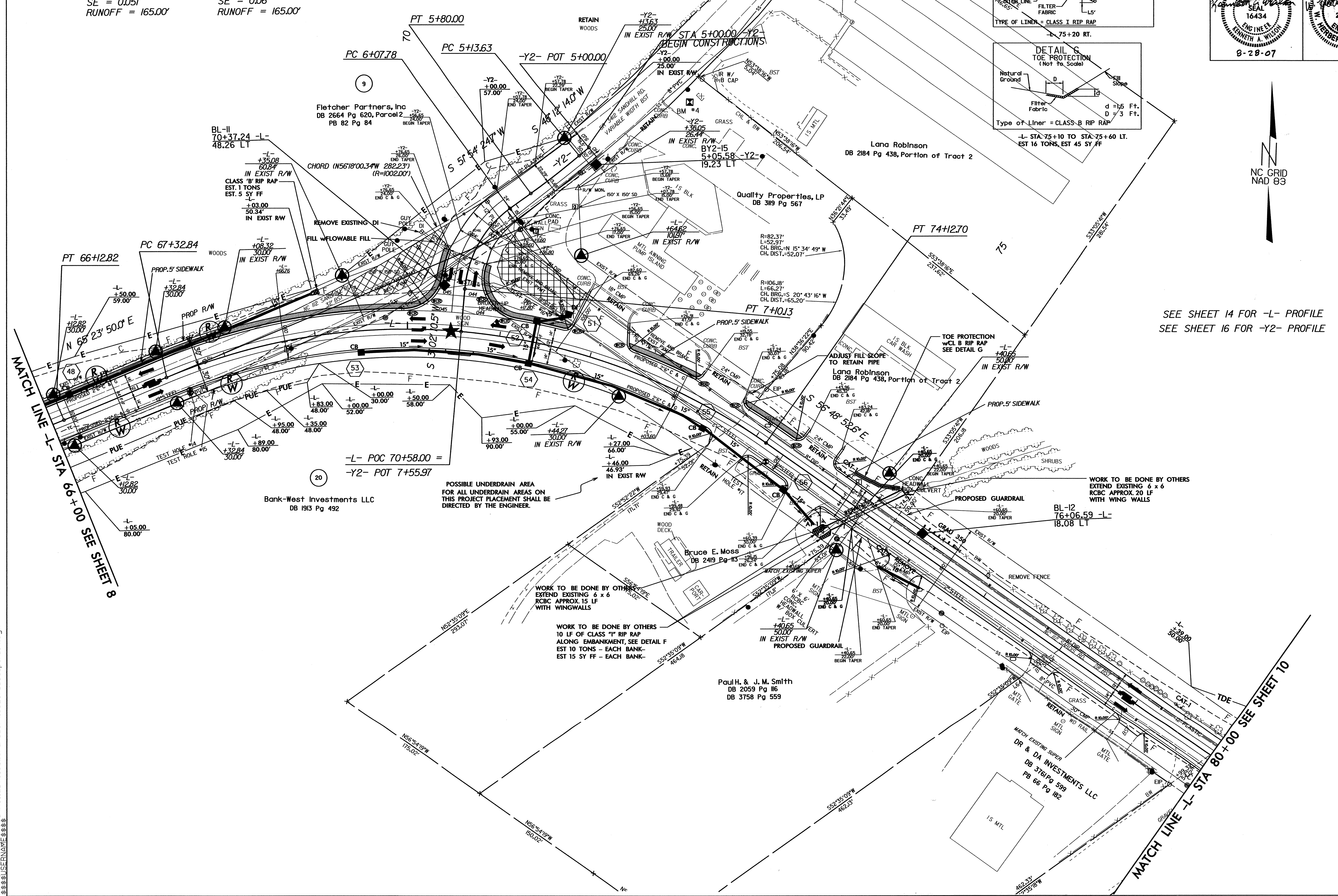
PI Sta 63+63.61
 $\Delta = 25^\circ 20' 30.0''$ (LT)
 $D = 5' 00.00''$
 $L = 506.83'$
 $T = 257.63'$
 $R = 1,145.9156'$
 $SE = 0.051$
 $RUNOFF = 165.00'$

PI Sta 71+04.85
 $\Delta = 57^\circ 47' 17.4''$ (RT)
 $D = 8' 30.00''$
 $L = 679.86'$
 $T = 372.01'$
 $R = 674.0680'$
 $SE = 0.06$
 $RUNOFF = 165.00'$

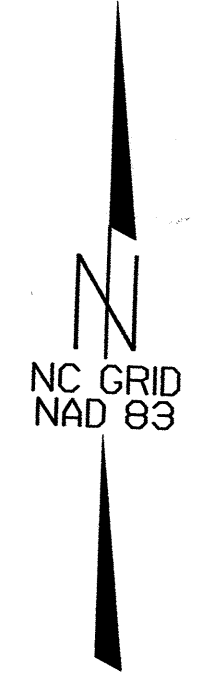
PI Sta 6+62.30
 $\Delta = 48^\circ 52' 14.2''$ (LT)
 $D = 4' 45.00''$
 $L = 102.35'$
 $T = 54.52'$
 $R = 119.99'$

PI Sta 5+46.82
 $\Delta = 3^\circ 42' 10.6''$ (RT)
 $D = 5' 34.44''$
 $L = 66.37'$
 $T = 33.20'$
 $R = 1,027.00'$

PROJECT REFERENCE NO. 37831	SHEET NO. 9
ROADWAY DESIGN ENGINEER K. W. WILSON 16434 8-28-07	HYDRAULICS ENGINEER W. ROBERT TURNER, JR. 21162 9-5-07

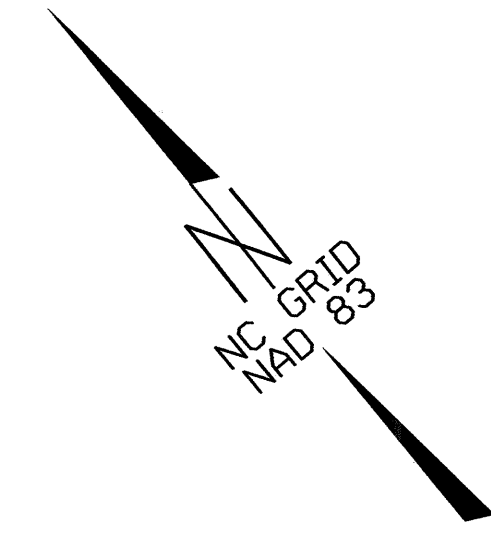
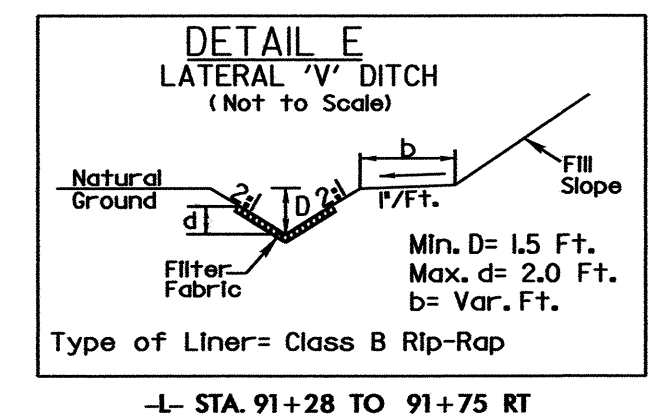


SEE SHEET 14 FOR -L- PROFILE
 SEE SHEET 16 FOR -Y2- PROFILE



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PROJECT REFERENCE NO.	SHEET NO.
37831	11
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER



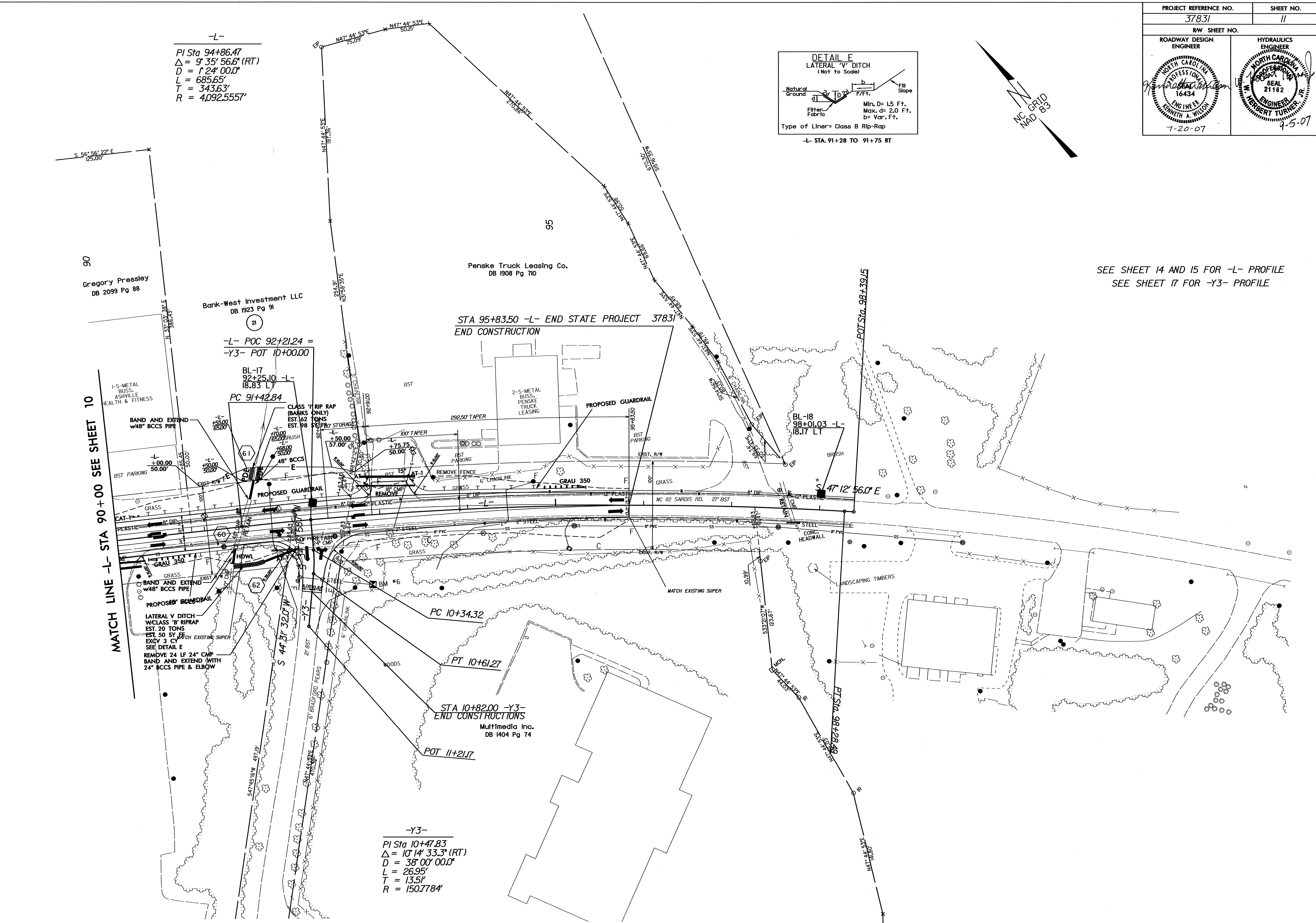
-L-
PI Sta 94+86.47
 $\Delta = 9' 35'' 56.6''$ (RT)
D = 1' 24'' 00.0"
L = 685.65'
T = 343.63'
R = 4,092.5557'

-Y3-
PI Sta 10+47.83
 $\Delta = 10' 14'' 33.3''$ (RT)
D = 38' 00'' 00.0"
L = 26.95'
T = 13.5'
R = 150.7784'

MATCH LINE -L- STA 90+00 SEE SHEET 10

SEE SHEET 14 AND 15 FOR -L- PROFILE
SEE SHEET 17 FOR -Y3- PROFILE

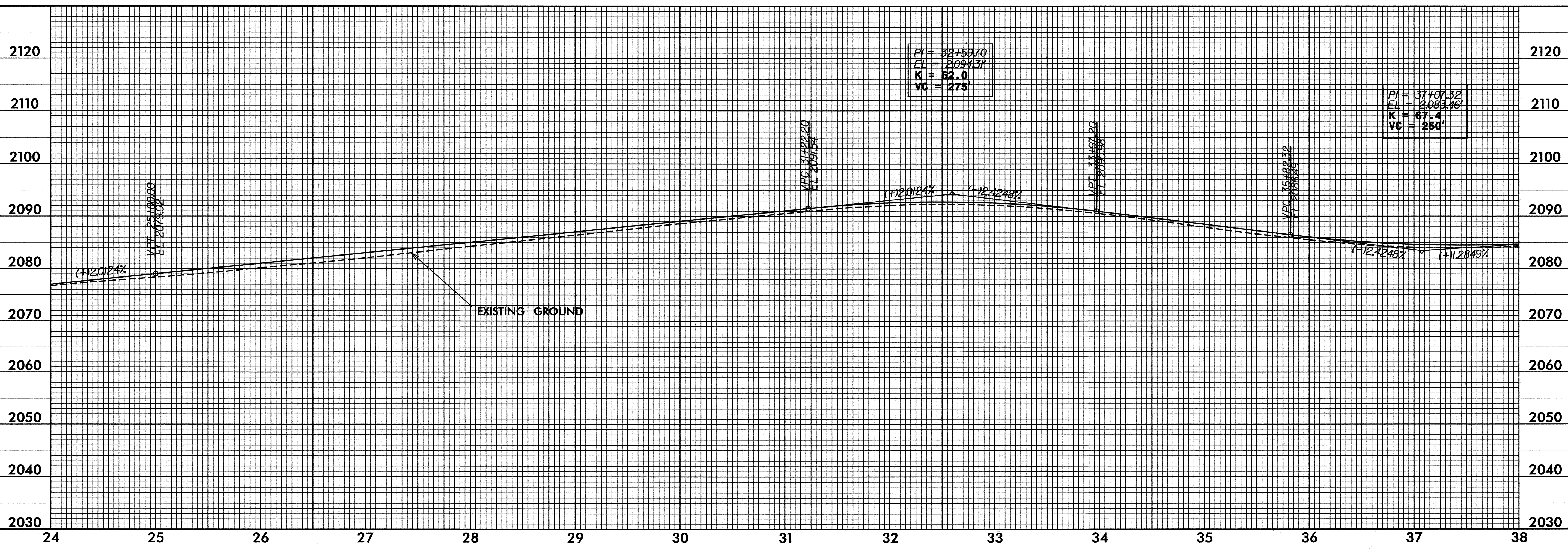
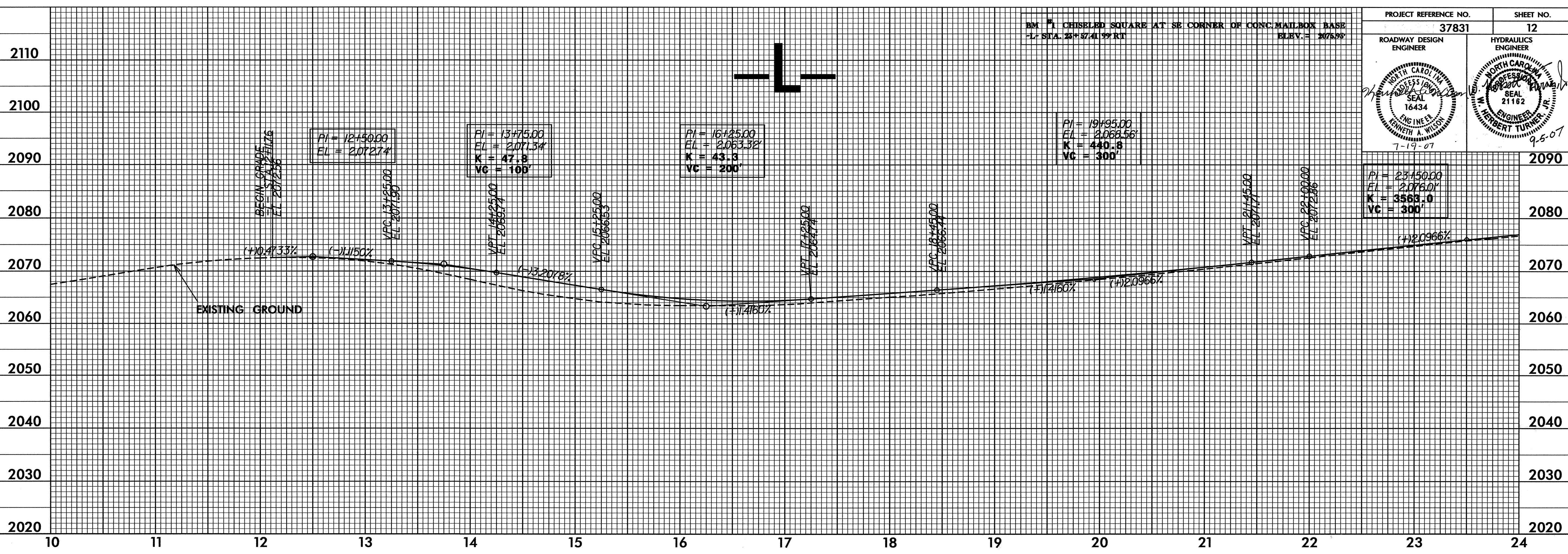
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5/28/99

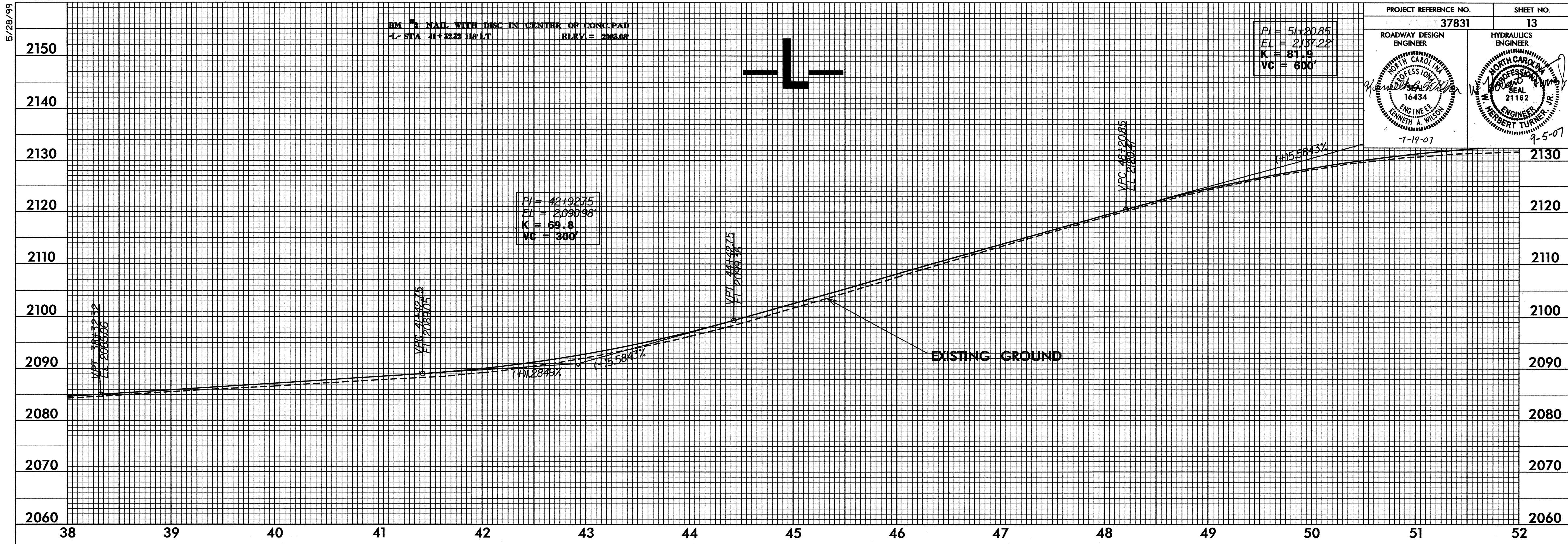
BM CHISELED SQUARE AT SE CORNER OF CONC. MAILBOX BASE
-L- STA. 22+47.19 RT
ELEV. = 2075.99

PROJECT REFERENCE NO. 37831	SHEET NO. 12
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER



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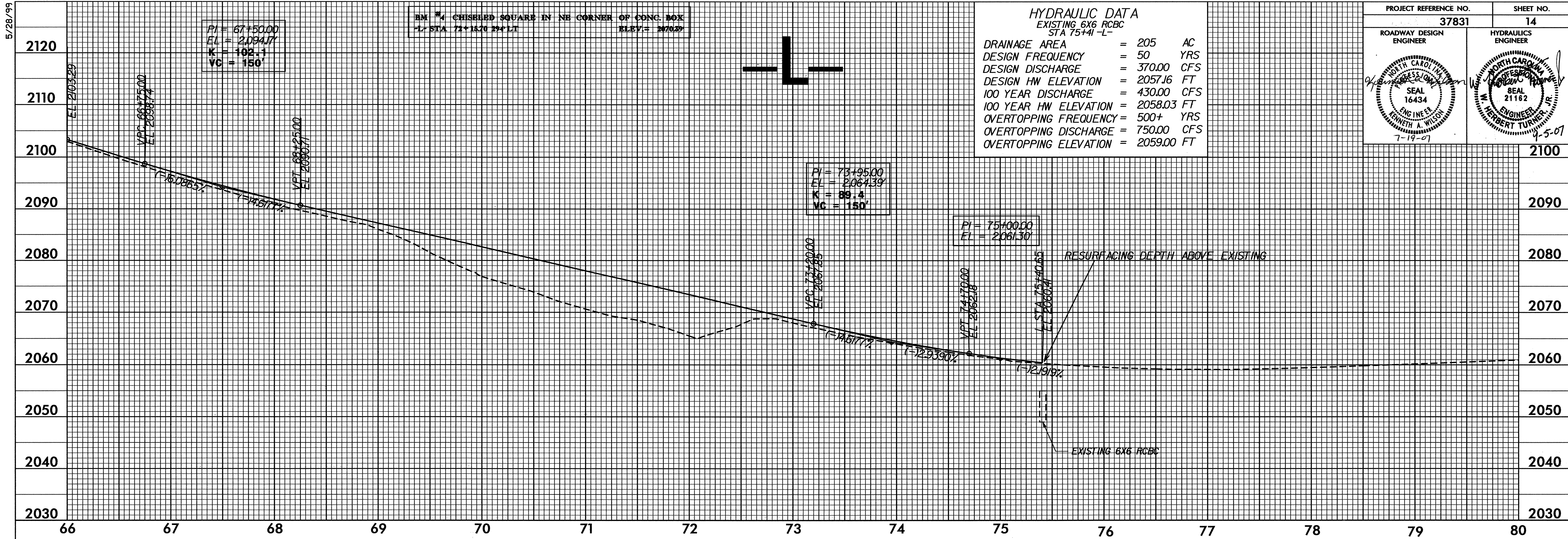


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PROJECT REFERENCE NO. 37831	SHEET NO. 13
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
<i>Handwritten Signature</i> KENNETH A. WILSON 16434 ENGINEER 1-19-07	<i>Handwritten Signature</i> HERBERT TURNER 21162 ENGINEER 9-5-07

PI = 51+20.85
 EL = 2137.22'
 K = 81.9
 VC = 600'

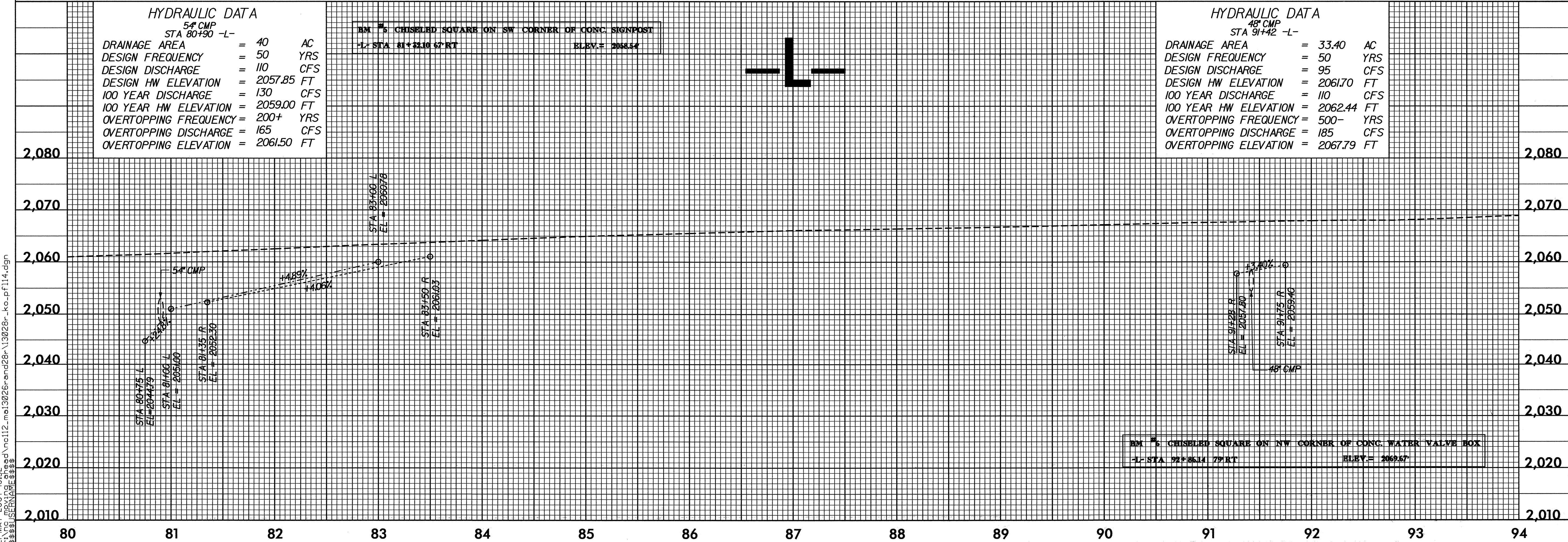
5/28/99



HYDRAULIC DATA
EXISTING 6X6 RCBC
STA 75+41 -L-

DRAINAGE AREA	= 205	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 370.00	CFS
DESIGN HW ELEVATION	= 2057.16	FT
100 YEAR DISCHARGE	= 430.00	CFS
100 YEAR HW ELEVATION	= 2058.03	FT
OVERTOPPING FREQUENCY	= 500+	YRS
OVERTOPPING DISCHARGE	= 750.00	CFS
OVERTOPPING ELEVATION	= 2059.00	FT

PROJECT REFERENCE NO.	37831	SHEET NO.	14
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	



HYDRAULIC DATA
5\"/>

DRAINAGE AREA	= 40	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 110	CFS
DESIGN HW ELEVATION	= 2057.85	FT
100 YEAR DISCHARGE	= 130	CFS
100 YEAR HW ELEVATION	= 2059.00	FT
OVERTOPPING FREQUENCY	= 200+	YRS
OVERTOPPING DISCHARGE	= 165	CFS
OVERTOPPING ELEVATION	= 2061.50	FT

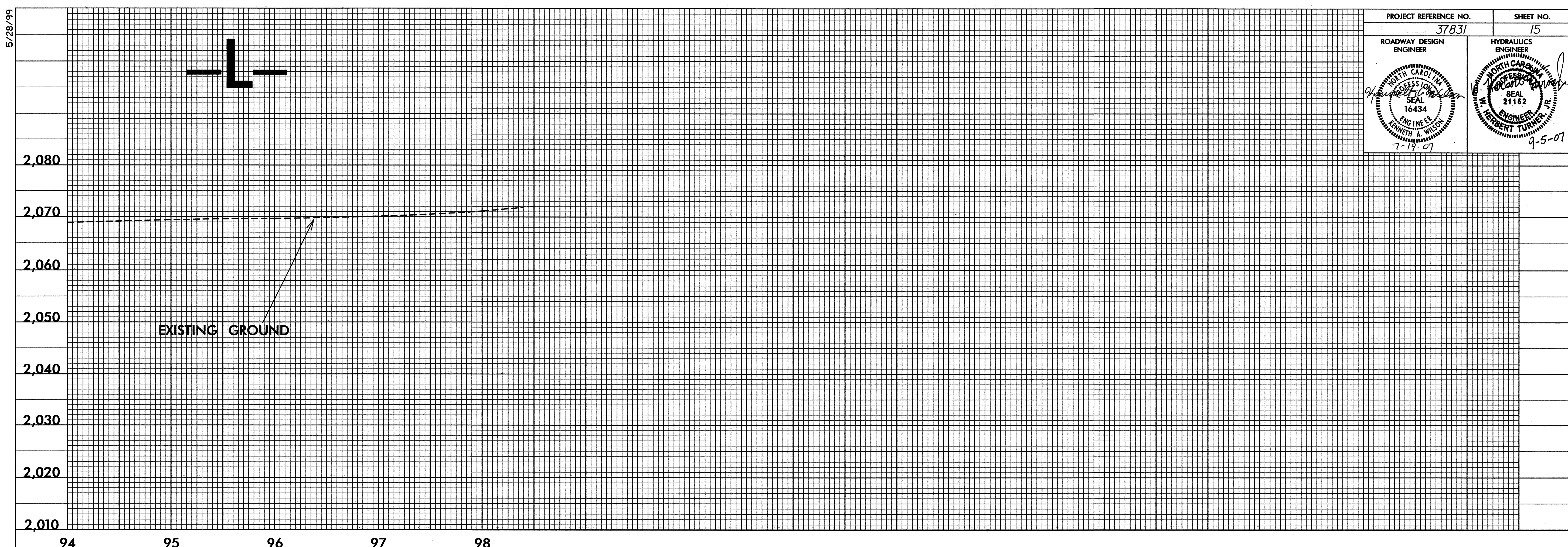
HYDRAULIC DATA
48\"/>

DRAINAGE AREA	= 33.40	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 95	CFS
DESIGN HW ELEVATION	= 2061.70	FT
100 YEAR DISCHARGE	= 110	CFS
100 YEAR HW ELEVATION	= 2062.44	FT
OVERTOPPING FREQUENCY	= 500-	YRS
OVERTOPPING DISCHARGE	= 185	CFS
OVERTOPPING ELEVATION	= 2067.79	FT

BM #6 CHISELED SQUARE ON NW CORNER OF CONC. WATER VALVE BOX
-L- STA 92+86.14 79+RT ELEV = 2063.67

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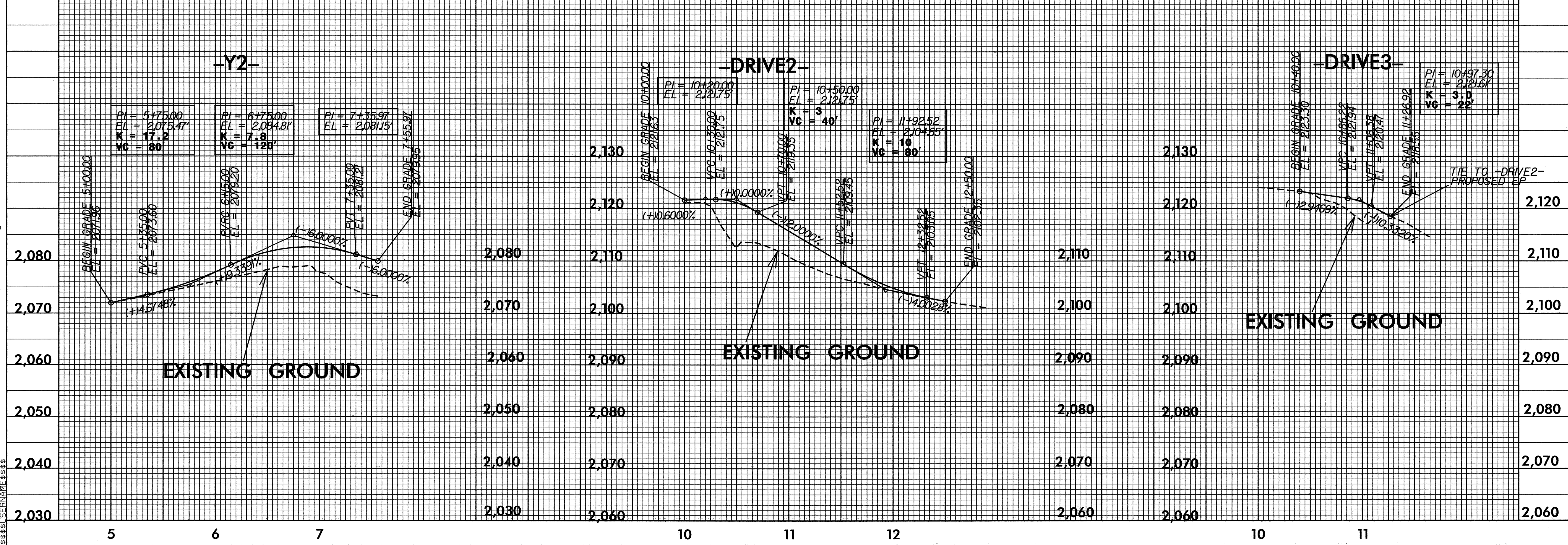
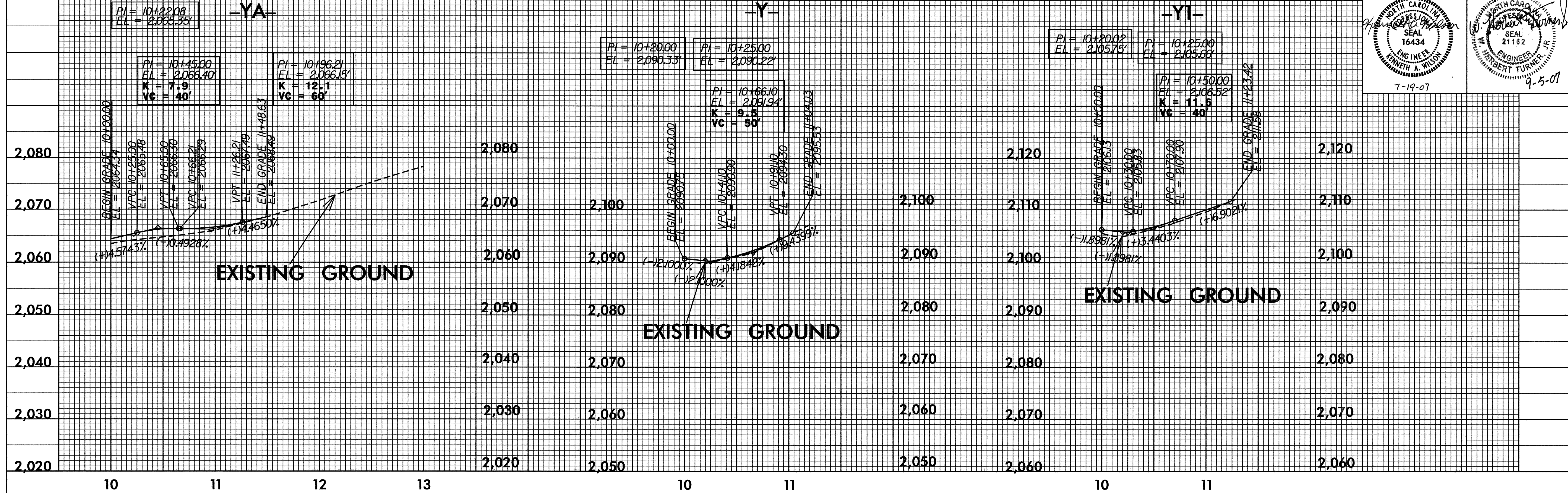
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ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

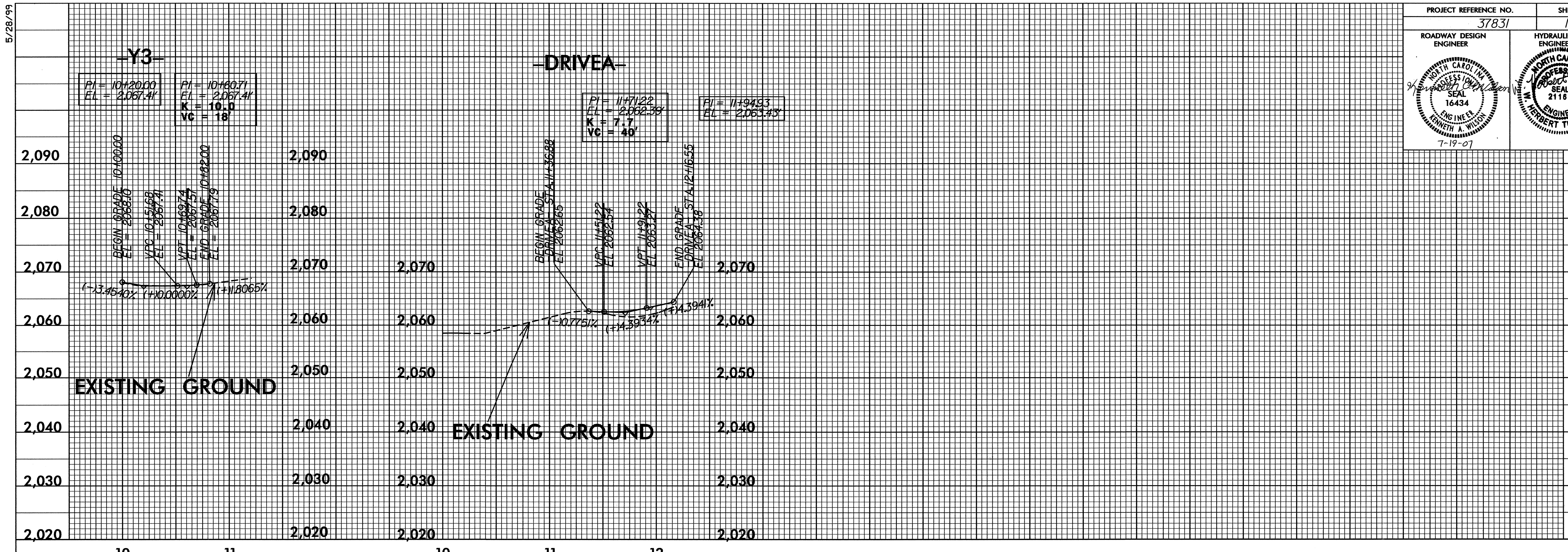
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