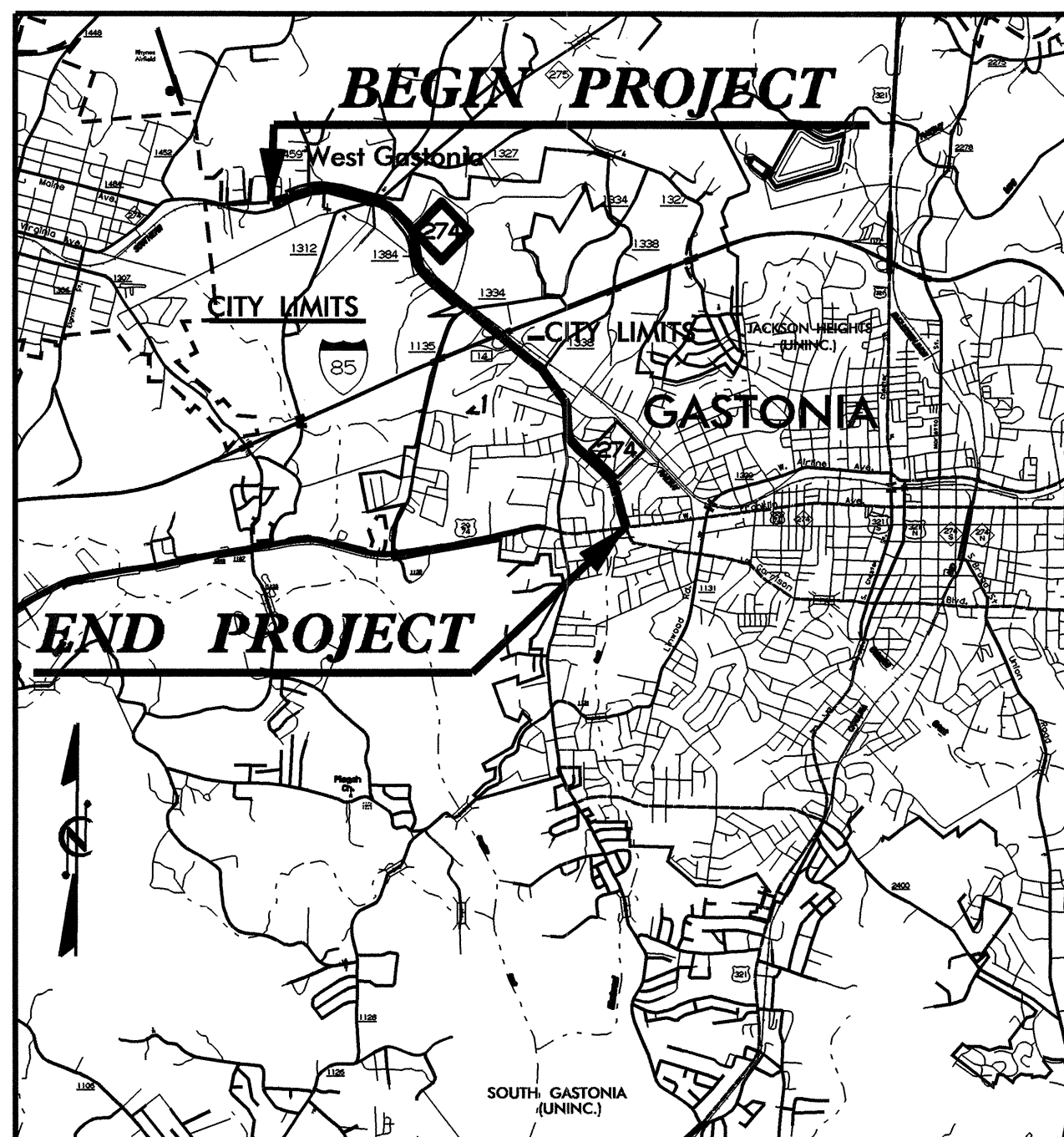


CONTRACT: C201067 TIP PROJECT: U-2408



VICINITY MAP

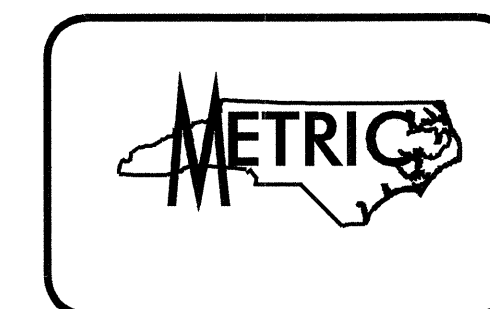
STATE OF NORTH CAROLINA DIVISION OF HIGHWAYS

GASTON COUNTY

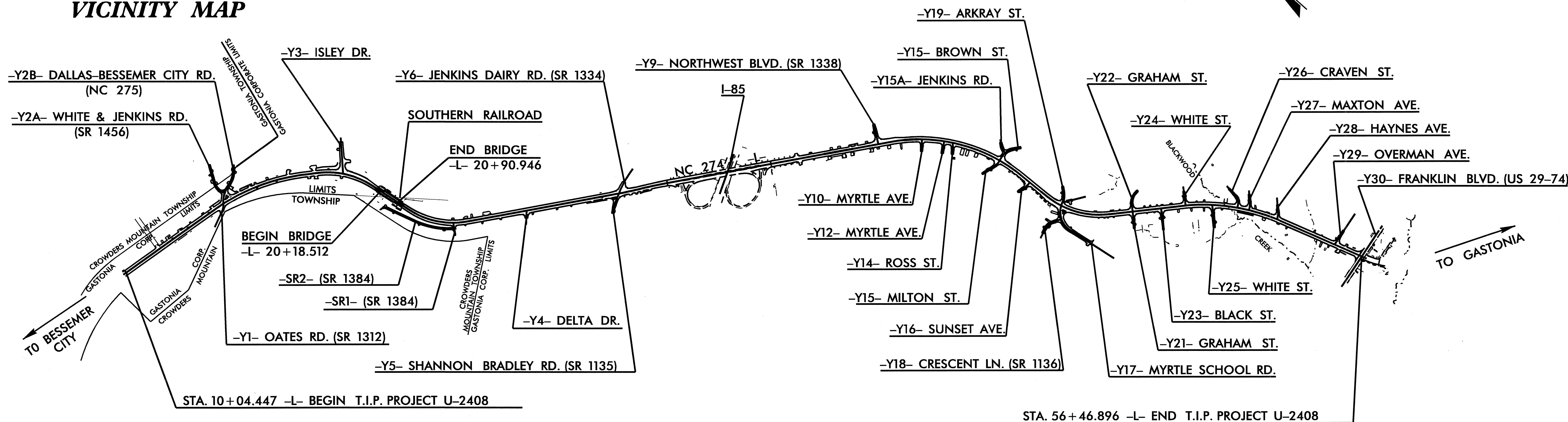
**LOCATION: NC 274 (BESSEMER CITY ROAD) FROM
NC 275 (DALLAS-BESSEMER CITY ROAD)
TO US 29-74 (FRANKLIN BOULEVARD)**

**TYPE OF WORK: GRADING, DRAINAGE, PAVING, SIGNALS,
GUARDRAIL, CURB AND GUTTER, SIGNING,
AND STRUCTURES**

STATE	STATE PROJECT REFERENCE NO.	
N.C.	U-2408	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION
34799.1.1	STPNHF-274(1)	PE
34799.2.1	STP-274(1)	RW & UTIL
34799.3.1	STP-274(4)	CONST



STRUCTURES



DESIGN DATA

ADT 2001 =	20,900
ADT 2030 =	32,400
DHV =	8 %
D =	55 %
T =	7 % *
V =	80 km/h

* TTST 3 % DUAL 4 %

PROJECT LENGTH

LENGTH OF ROADWAY T.I.P. PROJECT U-2408 =	4.570 Km
LENGTH OF STRUCTURE T.I.P. PROJECT U-2408 =	0.072 Km
TOTAL LENGTH OF T.I.P. PROJECT U-2408 =	4.642 Km

**THIS IS A PARTIAL CONTROLLED-ACCESS PROJECT WITH
ACCESS BEING LIMITED TO POINTS AS SHOWN ON THE PLANS**

Prepared In the Office of:
**DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS**
1000 Birch Ridge Drive, Raleigh, N. C. 27610

2002 STANDARD SPECIFICATIONS

<p>LETTING DATE : JANUARY 16, 2007</p>	<p>R.M. GIROLAMI, P.E. PROJECT ENGINEER</p> <hr/> <p>L.E. SUTTON, P.E. PROJECT DESIGN ENGINEER</p>
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STRUCTURE DESIGN UNIT

Gregory R. Perpeti
11.21.06

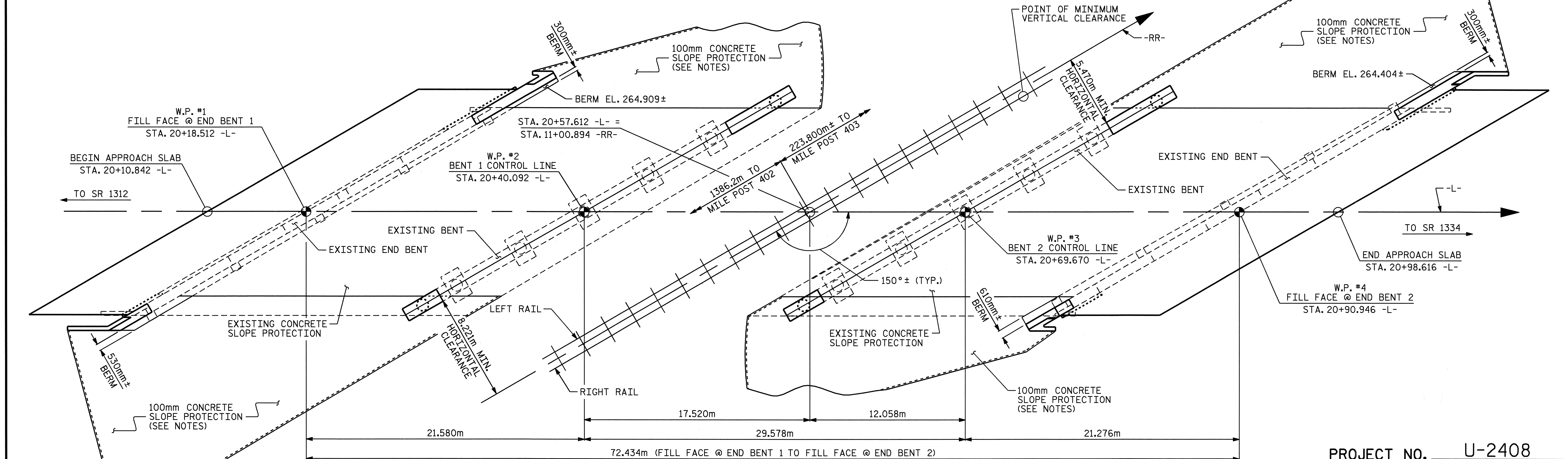
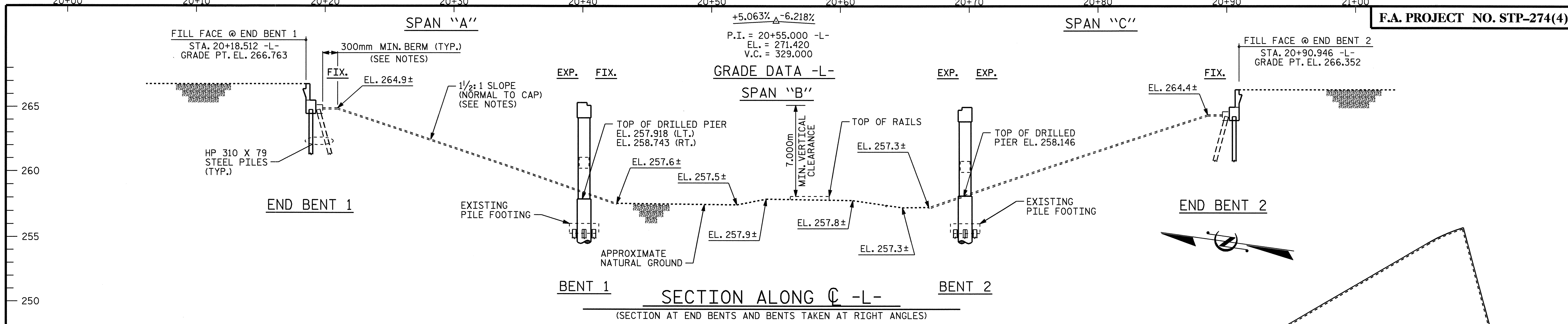
DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

P.E.
STATE HIGHWAY ENGINEER - DESIGN

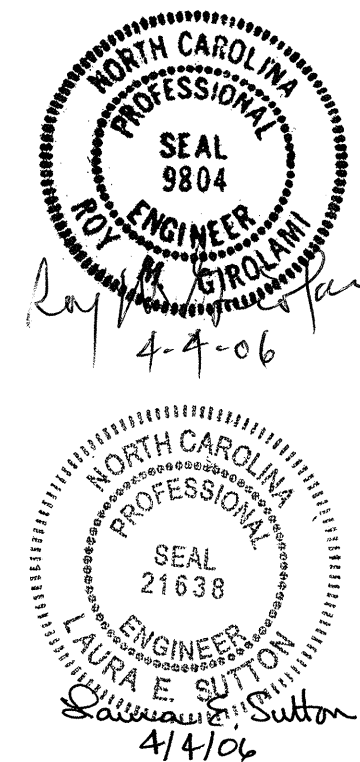
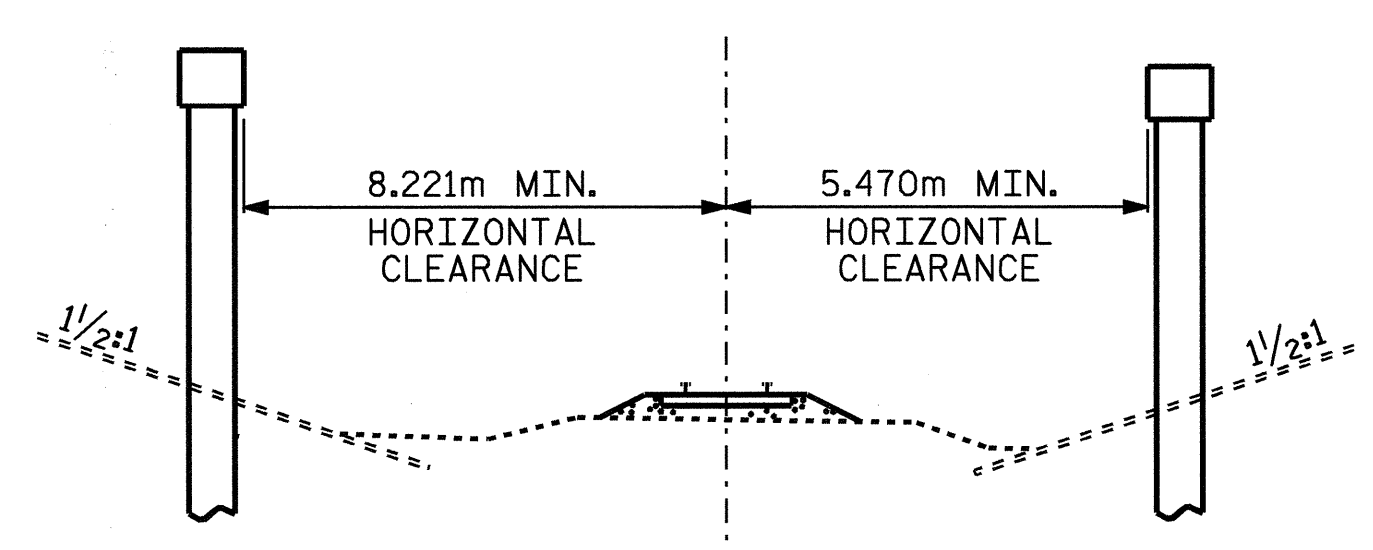
**DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION**

APPROVED FOR
DIVISION ADMINISTRATOR

DATE



TRACK PROFILE ELEVATIONS			
STATION (-RR-)	LEFT RAIL	STATION (-RR-)	RIGHT RAIL
11+74.270	257.733	11+74.930	257.739
11+55.540	257.814	11+55.800	257.822
11+35.700	257.904	11+36.500	257.903
11+16.060	258.011	11+17.110	258.010
10+97.030	258.122	10+97.680	258.120
10+77.990	258.233	10+78.150	258.238
10+58.720	258.364	10+59.010	258.364
10+39.230	258.507	10+39.140	258.509
10+18.950	258.660	10+18.940	258.659
10+00.000	258.802	10+00.060	258.797



PROJECT NO. U-2408
GASTON COUNTY

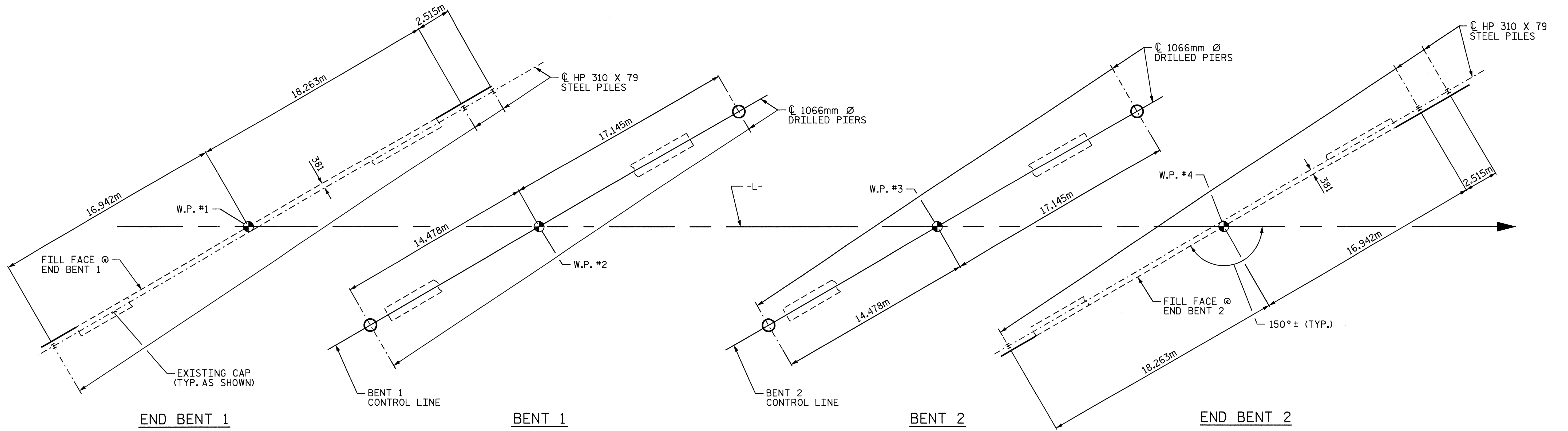
STATION: 20+57.612 -L- = 11+00.894 -RR-
SHEET 1 OF 3 WIDENING OF BRIDGE #57 MILE POST #403

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING
FOR BRIDGE ON NC 274 OVER SOUTHERN RAILWAY BETWEEN SR 1312 AND SR 1334

REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-1	
1			3			TOTAL SHEETS	55
2			4				

DRAWN BY: P.C. BREWER DATE: 7/19/05
CHECKED BY: A.S. CALLAWAY DATE: 7/25/05



FOUNDATION LAYOUT

NOTES:

DRILLED PIERS AT BENT 1 AND BENT 2 ARE DESIGNED FOR BOTH SKIN FRICTION AND END BEARING. CHECK FIELD CONDITIONS FOR THE REQUIRED END BEARING CAPACITY OF 950 kPA.

DRILLED PIERS AT BENT 1 AND BENT 2 ARE DESIGNED FOR AN APPLIED LOAD OF 1270kN EACH AT THE TOP OF THE COLUMN.

DRILLED PIERS AT BENT 1 MUST EXTEND TO AN ELEVATION NO HIGHER THAN 235.0m (LEFT) AND 237.5m (RIGHT) AND SATISFY THE REQUIRED END BEARING CAPACITY.

DRILLED PIERS AT BENT 2 MUST EXTEND TO AN ELEVATION NO HIGHER THAN 237.5m AND SATISFY THE REQUIRED END BEARING CAPACITY.

FOR DRILLED PIERS, SEE DRILLED PIERS SPECIAL PROVISION.

PERMANENT STEEL CASING MAY BE REQUIRED FOR DRILLED PIERS AT BENT 1 AND BENT 2. IF REQUIRED, DO NOT EXTEND THE CASING BELOW ELEVATION 255.0m WITHOUT PRIOR APPROVAL FROM THE ENGINEER. THE ENGINEER WILL DETERMINE THE NEED FOR PERMANENT STEEL CASING. SEE DRILLED PIERS SPECIAL PROVISION.

SPT TESTING IS NOT REQUIRED TO DETERMINE THE END BEARING CAPACITY OF THE DRILLED PIERS AT BENT 1 AND BENT 2.

SID INSPECTIONS MAY BE REQUIRED TO INSPECT THE BOTTOM CLEANLINESS OF THE DRILLED PIERS. THE ENGINEER WILL DETERMINE THE NEED FOR SID INSPECTIONS. SEE DRILLED PIERS SPECIAL PROVISION.

CSL TUBES ARE REQUIRED AND CSL TESTING MAY BE REQUIRED FOR THE DRILLED PIERS. THE ENGINEER WILL DETERMINE THE NEED FOR CSL TESTING. SEE CROSSHOLE SONIC LOGGING SPECIAL PROVISION.

DRIVE PILES AT END BENT 1 AND END BENT 2 TO A REQUIRED BEARING CAPACITY OF 900kN EACH. THE REQUIRED BEARING CAPACITY IS EQUAL TO THE ALLOWABLE BEARING CAPACITY WITH A MINIMUM FACTOR OF SAFETY OF TWO.

WHEN DRIVING PILES, DO NOT EXCEED THE MAXIMUM BLOW COUNT.

FOR STEEL H PILES, SEE SPECIAL PROVISIONS.

CONTINUED ON SHEET 3 OF 3.

PROJECT NO. U-2408

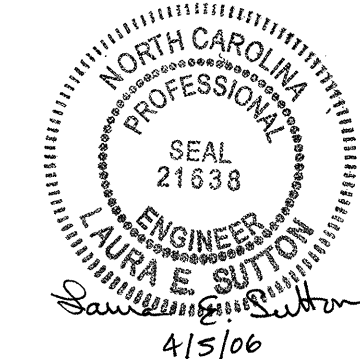
GASTON COUNTY

STATION: 20+57.612 -L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING
FOR BRIDGE ON NC 274 OVER
SOUTHERN RAILWAY BETWEEN
SR 1312 AND SR 1334



REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-2
1			3			TOTAL SHEETS
2			4			55

DRAWN BY : P.C. BREWER DATE : 7/19/05
CHECKED BY : A.S. CALLAWAY DATE : 7/25/05

TOTAL BILL OF MATERIAL

	REMOVAL OF EXISTING STRUCTURE	1066mm Ø DRILLED PIERS IN SOIL	PERMANENT STEEL CASING FOR 1066mm Ø DRILLED PIER	SID INSPECTION	CROSSHOLE SONIC LOGGING	REINFORCED CONCRETE DECK SLAB	GROOVING BRIDGE FLOORS	CLASS A CONCRETE	BRIDGE APPROACH SLABS	REINFORCING STEEL	SPIRAL COLUMN REINFORCING STEEL	STRUCTURAL STEEL	HP 310 X 79 STEEL PILES	TWO BAR METAL RAIL	810mm X 355mm CONCRETE PARAPET	100mm SLOPE PROTECTION	CLASS I SURFACE PREPARATION	CLASS II SURFACE PREPARATION	LATEX MODIFIED CONCRETE OVERLAY	PLACING AND FINISHING OF LATEX MODIFIED CONCRETE OVERLAY	
	LUMP SUM	METERS	METERS	EACH	EACH	SQ. METERS	SQ. METERS	CU. METERS	LUMP SUM	kg	kg	APPROX. kg	NO.	METERS	METERS	METERS	SQ. METERS	SQ. METERS	SQ. METERS	CU. METERS	SQ. METERS
SUPERSTRUCTURE						380.3	1,259.9		LUMP SUM			60,400			139.078	144.800		1,148	23	92	1,130
END BENT 1								9.7		820			3	54.0			457				
BENT 1		45.2	6.6	1	1			22.0		5,494	1,777										
BENT 2		41.4	6.4	1	1			22.5		5,264	1,650										
END BENT 2								9.9		826			3	54.0			444				
TOTAL	LUMP SUM	86.6	13.0	2	2	380.3	1,259.9	64.1	LUMP SUM	12,404	3,427	60,400	6	108.0	139.078	144.800	901	1,148	23	92	1,130

	SELF-LUBRICATING EXPANSION BEARING ASSEMBLIES	ELASTOMERIC BEARINGS	EVAZOTE JOINT SEALS	ELECTRICAL CONDUIT SYSTEM
	LUMP SUM	LUMP SUM	LUMP SUM	LUMP SUM
SUPERSTRUCTURE				
END BENT 1				
BENT 1				
BENT 2				
END BENT 2				
TOTAL	LUMP SUM	LUMP SUM	LUMP SUM	LUMP SUM

NOTES: (CONTINUED FROM SHEET 2 OF 3)

ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE NOTED.

ALL ELEVATIONS ARE IN METERS.

ASSUMED LIVE LOAD = MS 18 OR ALTERNATE LOADING.

FOR OTHER DESIGN DATA AND GENERAL NOTES, SEE SHEET SNSM.

FOR EROSION CONTROL MEASURES, SEE EROSION CONTROL PLANS.

THIS BRIDGE HAS BEEN DESIGNED BY THE STRENGTH DESIGN METHOD AS SPECIFIED IN AASHTO STANDARD SPECIFICATIONS.

ALL STRUCTURAL STEEL SHALL BE AASHTO M270 GRADE 345W AND PAINTED IN ACCORDANCE WITH SYSTEM 4 OF ARTICLE 442-7 OF THE STANDARD SPECIFICATIONS UNLESS OTHERWISE NOTED ON THE PLANS.

REMOVABLE FORMS MAY BE USED IN LIEU OF METAL STAY-IN-PLACE FORMS IN ACCORDANCE WITH ARTICLE 420-3 OF THE STANDARD SPECIFICATIONS.

THE LOCATION OF THE CONSTRUCTION JOINT IN THE DRILLED PIERS IS BASED ON AN APPROXIMATE GROUND LINE ELEVATION. IF THE CONSTRUCTION JOINT IS ABOVE THE ACTUAL GROUND ELEVATION, THE CONTRACTOR SHALL PLACE THE CONSTRUCTION JOINT 300mm BELOW THE GROUND LINE.

THE SUBSTRUCTURE OF THE EXISTING BRIDGE INDICATED ON THE PLANS IS FROM THE BEST INFORMATION AVAILABLE. SINCE THIS INFORMATION IS SHOWN FOR THE CONVENIENCE OF THE CONTRACTOR, THE CONTRACTOR SHALL HAVE NO CLAIM WHATSOEVER AGAINST THE DEPARTMENT OF TRANSPORTATION FOR ANY DELAYS OR ADDITIONAL COST INCURRED BASED ON DIFFERENCES BETWEEN THE EXISTING BRIDGE SUBSTRUCTURE SHOWN ON THE PLANS AND THE ACTUAL CONDITIONS AT THE PROJECT SITE.

THIS BRIDGE HAS BEEN DESIGNED IN ACCORDANCE WITH THE REQUIREMENTS OF THE AASHTO STANDARD SPECIFICATIONS FOR SEISMIC DESIGN OF HIGHWAY BRIDGES FOR SEISMIC PERFORMANCE CATEGORY A.

THE CONTRACTOR SHALL PROVIDE INDEPENDENT ASSURANCE SAMPLES OF REINFORCING STEEL AS FOLLOWS: FOR PROJECTS REQUIRING UP TO 360,000 kg OF REINFORCING STEEL, ONE 760mm SAMPLE OF EACH SIZE BAR USED, AND FOR PROJECTS REQUIRING OVER 360,000 kg OF REINFORCING STEEL, TWO 760mm SAMPLES OF EACH SIZE BAR USED. THE BARS FROM WHICH THE SAMPLES ARE TAKEN MUST THEN BE SPLICED WITH REPLACEMENT BARS OF THE SIZE AND LENGTH OF THE SAMPLE PLUS A MINIMUM LAP SPLICE OF THIRTY BAR DIAMETERS.

NEEDLE BEAMS OR OTHER ACCEPTABLE METHODS ARE TO BE EMPLOYED IN THE ACUTE CORNERS OF ALL SPANS TO PREVENT LATERAL FLANGE TRANSLATION AND GIRDER ROTATION. IN SPAN B, THE NEEDLE BEAMS SHALL NOT EXTEND WITHIN THE MINIMUM HORIZONTAL CLEARANCE OF 4.270m FROM THE CENTERLINE TRACKS. THEREFORE, OTHER METHODS TO RESIST LATERAL FLANGE TRANSLATION AND GIRDER ROTATION, SUCH AS HORIZONTAL TIMBER STRUTS, MAY BE REQUIRED. ALL TEMPORARY BRACING MUST BE DESIGNED AND SEALED BY A REGISTERED NC PROFESSIONAL ENGINEER AND SUBMITTED TO THE ENGINEER FOR REVIEW AND APPROVAL.

THE CONTRACTOR'S ATTENTION IS CALLED TO THE FACT THAT EACH SPAN MAY NEED TO BE FULLY LOADED PRIOR TO BEGINNING THE TRANSVERSE SCREEDING OPERATION FOR THAT SPAN.

DEFLECTIONS DUE TO THE SLAB POUR SHALL BE FIELD MEASURED AND SUBMITTED TO THE ENGINEER FOR TRANSMITTAL TO STRUCTURE DESIGN UNIT PRIOR TO THE SIDEWALK POUR. AFTER REVIEW BY THE STRUCTURE DESIGN UNIT, MODIFICATIONS TO THE SIDEWALK PLANS MAY BE NECESSARY TO ENSURE A 35mm DROP ACROSS THE SIDEWALK.

THE TOP OF RAIL ELEVATIONS OF THE RAILROAD TRACKS SHOWN ON THE PLANS ARE FROM THE BEST INFORMATION AVAILABLE. VERIFY THE TOP OF RAIL ELEVATIONS AND REPORT VARIATIONS TO THE ENGINEER PRIOR TO BEGINNING BRIDGE CONSTRUCTION. ANY NECESSARY PLAN REVISIONS TO ACHIEVE MINIMUM REQUIRED VERTICAL CLEARANCE WILL BE PROVIDED BY THE DEPARTMENT.

DIMENSIONS AND ELEVATIONS GIVEN FOR THE EXISTING STRUCTURE ARE FROM THE BEST INFORMATION AVAILABLE.

IF FIELD CONDITIONS VARY FROM THE PLANS, MODIFICATIONS WILL BE MADE AS NECESSARY AS DIRECTED BY THE ENGINEER.

BERM AND SLOPE PROTECTION MAY BE ADJUSTED SLIGHTLY AS REQUIRED IN ORDER TO MATCH EXISTING SITE CONDITIONS. THE CONTRACTOR SHALL PROVIDE AS SMOOTH A TRANSITION AS POSSIBLE BETWEEN EXISTING AND PROPOSED SLOPE PROTECTION AS DIRECTED BY THE ENGINEER.

FOR LIMITS OF PARTIAL REMOVAL OF EXISTING STRUCTURE, SEE APPLICABLE SUPERSTRUCTURE AND SUBSTRUCTURE PLAN SHEETS.

FOR FALSEWORK AND FORMS OVER OR ADJACENT TO TRAFFIC, SEE SPECIAL PROVISIONS.

FOR MINIMIZING RAILROAD FLAGGING SERVICE, SEE SPECIAL PROVISIONS.

FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

FOR METRIC STRUCTURAL STEEL, SEE SPECIAL PROVISIONS.

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

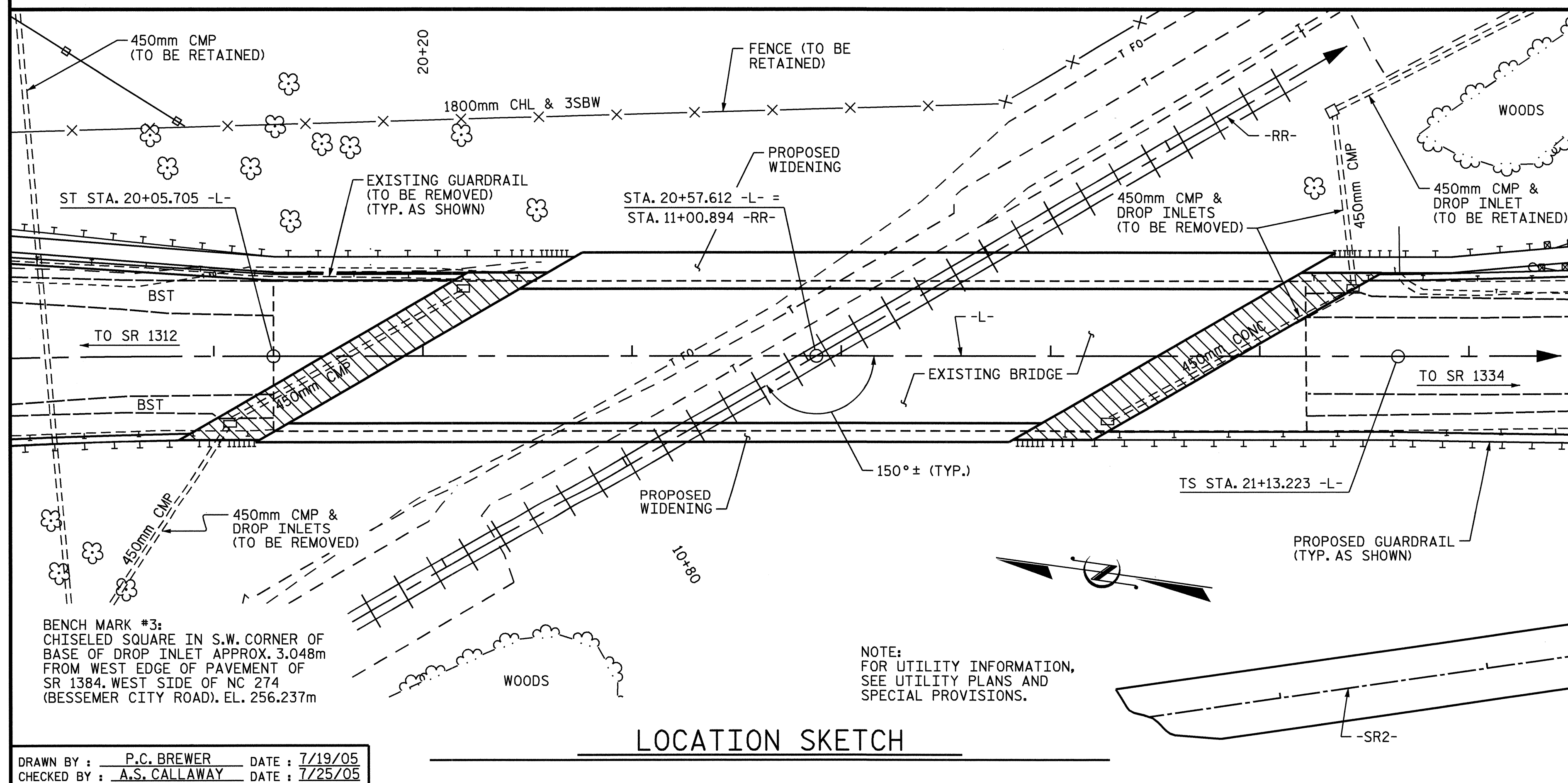
FOR CLASS I SURFACE PREPARATION AND CLASS II SURFACE PREPARATION, SEE SPECIAL PROVISION FOR REPAIR OF BRIDGE DECKS AND APPROACH PAVEMENT WITH LATEX MODIFIED CONCRETE.

FOR LATEX MODIFIED CONCRETE OVERLAY, SEE SPECIAL PROVISION FOR LATEX MODIFIED CONCRETE.

FOR SELF LUBRICATING EXPANSION BEARING ASSEMBLIES, SEE SPECIAL PROVISIONS.

FOR ELECTRICAL CONDUIT SYSTEM, SEE SPECIAL PROVISIONS.

FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.



NOTE:
FOR UTILITY INFORMATION,
SEE UTILITY PLANS AND
SPECIAL PROVISIONS.

LOCATION SKETCH

DRAWN BY : P.C. BREWER DATE : 7/19/05
CHECKED BY : A.S. CALLAWAY DATE : 7/25/05

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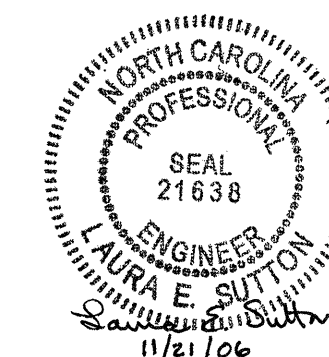
PROJECT NO. U-2408
GASTON COUNTY
STATION: 20+57.612 -L-

SHEET 3 OF 3

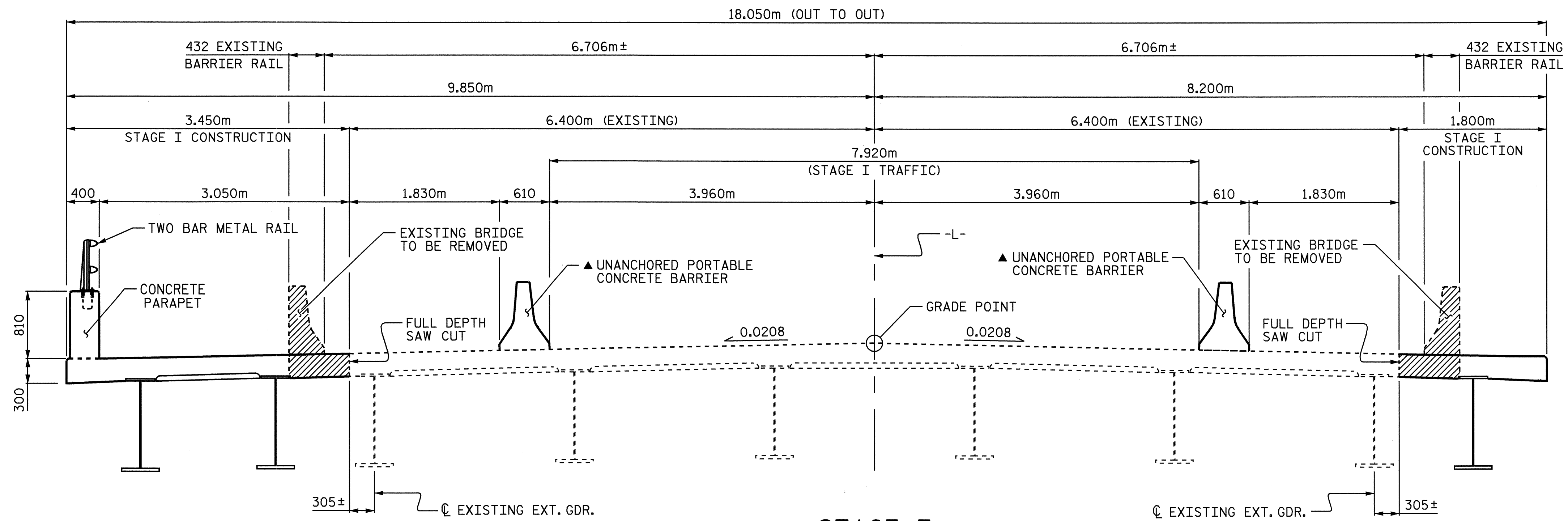
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING

FOR BRIDGE ON NC 274 OVER
SOUTHERN RAILWAY BETWEEN
SR 1312 AND SR 1334



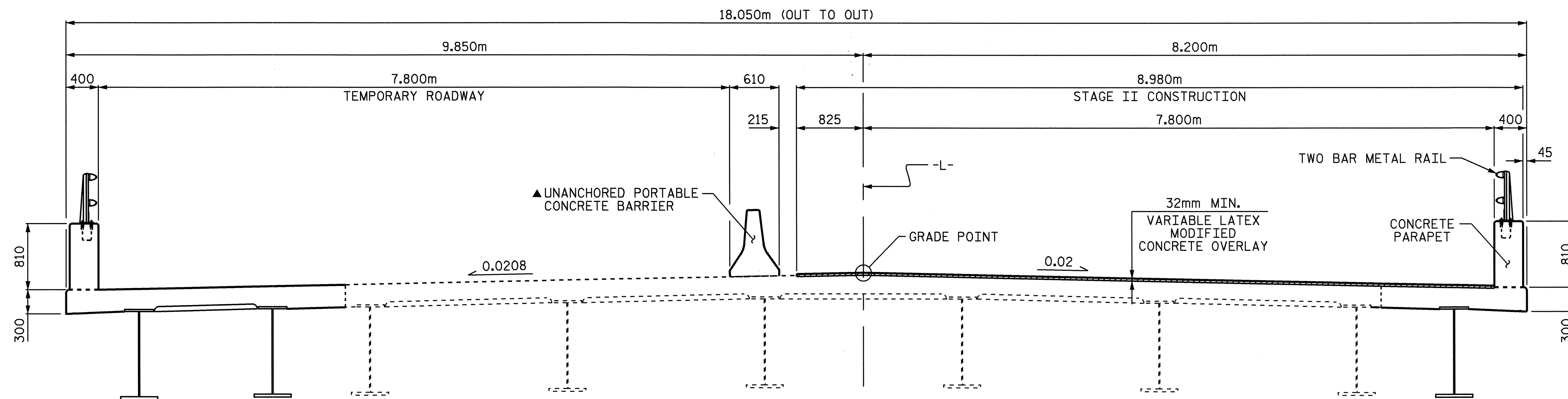
REVISIONS						SHEET NO. S-3
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 55
2			4			



STAGE I

PLACE TEMPORARY UNANCHORED PORTABLE CONCRETE BARRIER AS SHOWN. REMOVE EXISTING BARRIER RAILS AND DECK OVERHANGS TO SAW CUT LINE. CONSTRUCT PROPOSED DECK WIDENING AND LEFT SIDE PARAPET AND RAIL. PLACE TEMPORARY PAVEMENT ON LEFT SIDE ADJACENT TO SAW CUT IN APPROACH SLAB UP TO FILL FACE AT END BENTS (SEE ROADWAY AND TRAFFIC CONTROL PLANS).

▲ SEE TRAFFIC CONTROL PLANS FOR LOCATION AND PAY LIMITS OF THE UNANCHORED PORTABLE CONCRETE BARRIER.



STAGE II

RELOCATE TEMPORARY UNANCHORED PORTABLE CONCRETE BARRIER AS SHOWN. CONSTRUCT STAGE II PORTION OF APPROACH SLAB. COMPLETE NECESSARY CLASS I & II SURFACE PREPARATION. PLACE VARIABLE LATEX MODIFIED CONCRETE OVERLAY (32mm MIN.), SAW JOINTS IN PROPOSED AND EXISTING DECK, CONSTRUCT RIGHT SIDE PARAPET AND RAIL, AND INSTALL EVAZOTE JOINT SEALS FOR FULL WIDTH OF STAGE II CONSTRUCTION.

PROJECT NO. U-2408
GASTON COUNTY
 STATION: 20+57.612 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

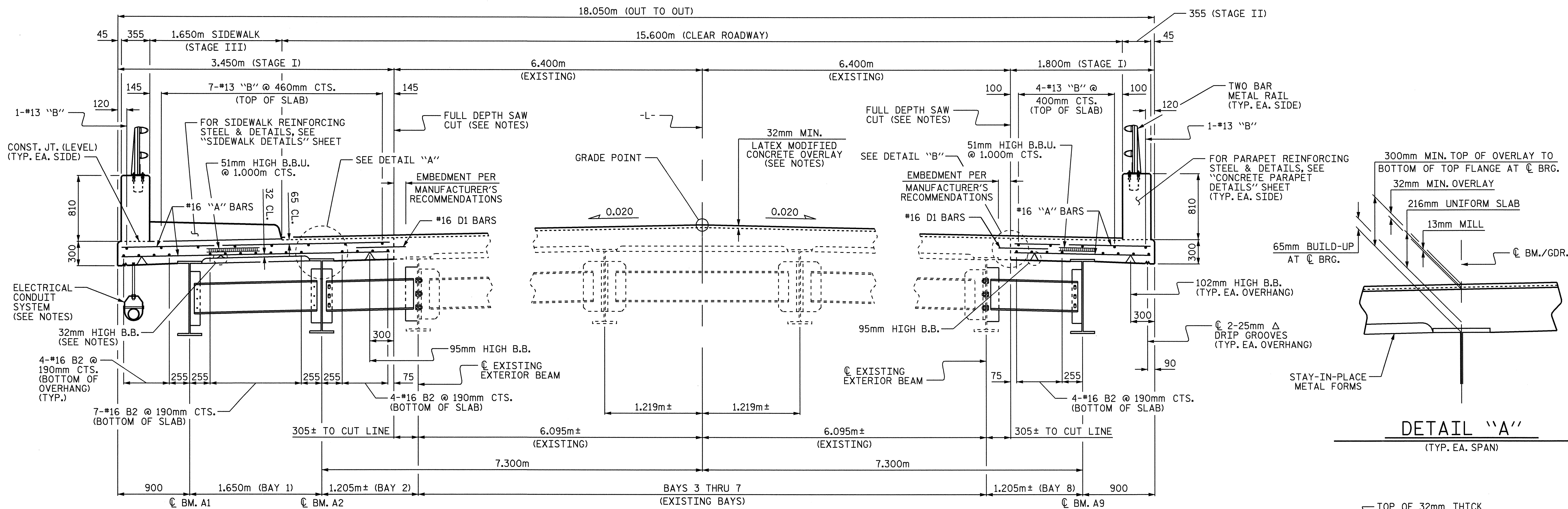
SUPERSTRUCTURE
 STAGING SEQUENCE



DRAWN BY : P.C. BREWER DATE : 4/19/05
 CHECKED BY : A.C. OUTLAW DATE : 4/27/05

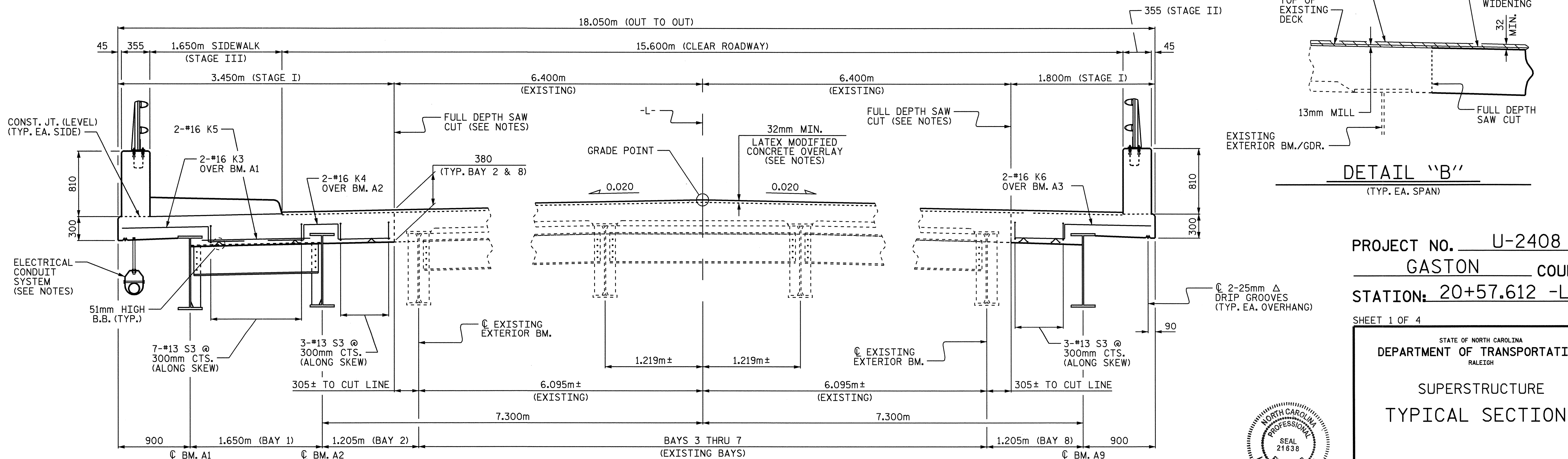
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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-4
1			3			TOTAL SHEETS
2			4			55



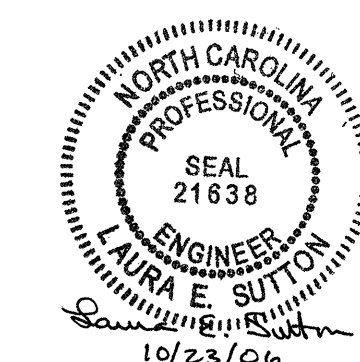
TYPICAL SECTION

(SHOWING SPAN "A" AND "C" INTERMEDIATE DIAPHRAGMS)



TYPICAL SECTION

(SHOWING SPAN "A" AND "C" BENT DIAPHRAGMS)



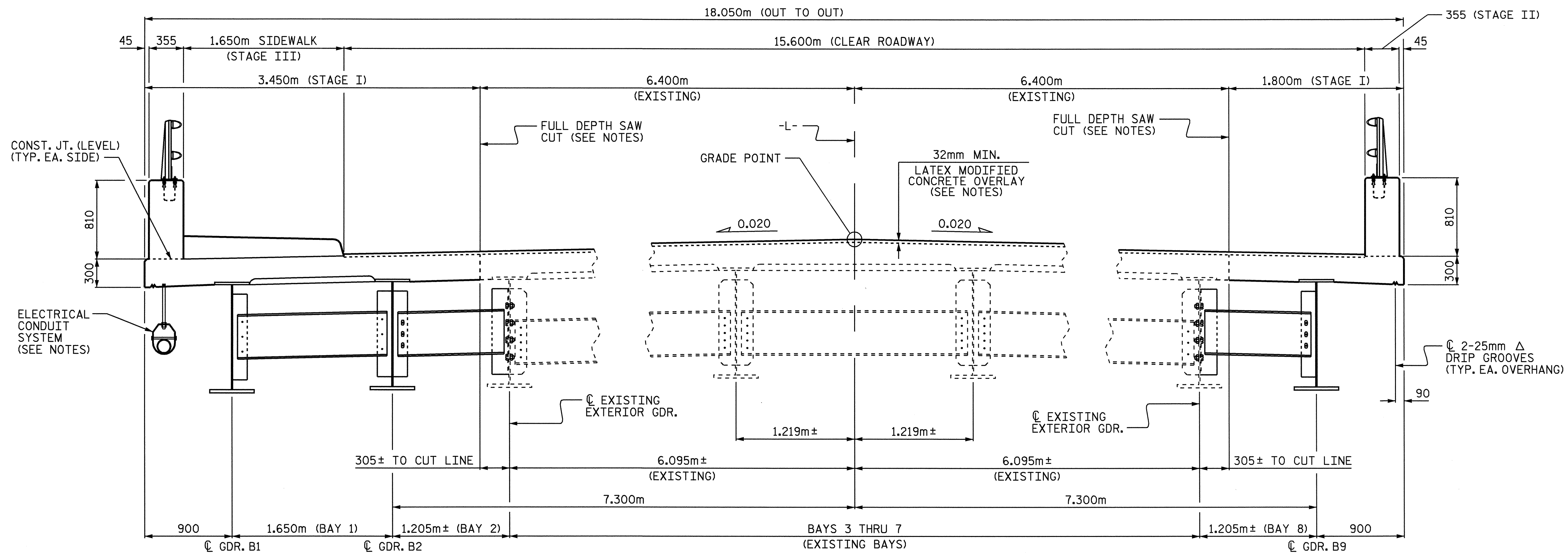
PROJECT NO. U-2408
GASTON COUNTY
 STATION: 20+57.612 -L-

SHEET 1 OF 4

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH						SHEET NO. S-6
SUPERSTRUCTURE TYPICAL SECTIONS						
REVISIONS						TOTAL SHEETS 55
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			
2			4			

DRAWN BY: P.C. BREWER DATE: 3/2/05
 CHECKED BY: A.C. OUTLAW DATE: 4/29/05

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TYPICAL SECTION

(SHOWING SPAN "B" INTERMEDIATE DIAPHRAGMS)

NOTES:

PROVIDE 32mm HIGH BEAM BOLSTERS UPPER AT 1.200m CTS. ATOP THE METAL STAY-IN-PLACE FORMS TO SUPPORT THE BOTTOM MAT OF "A" BARS. WHEN USING REMOVABLE FORMS, PROVIDE CONTINUOUS HIGH CHAIRS FOR METAL DECK (C.H.C.M.) @ 1.200m CTS. WITH A HEIGHT TO SUPPORT THE BOTTOM MAT OF "A" BARS A CLEAR DISTANCE OF 65mm ABOVE THE TOP OF THE REMOVABLE FORM.

PARAPET AND SIDEWALK IN EACH SPAN SHALL NOT BE CAST UNTIL ALL SLAB CONCRETE IN THAT SPAN HAS BEEN CAST AND HAS REACHED A MINIMUM COMPRESSIVE STRENGTH OF 20.7 MPa.

DOWELS SHALL BE PLACED AT APPROXIMATELY MID-DEPTH OF THE SLAB.

THE #16 D1 DOWELS PLACED IN THE EXISTING DECK SHALL BE INSTALLED USING AN ADHESIVE ANCHORING SYSTEM. THE YIELD LOAD OF THE #16 D1 DOWELS IS 82.7 kN. FIELD TESTING OF THE ADHESIVE BONDING SYSTEM IS NOT REQUIRED. FOR ADHESIVELY ANCHORED ANCHOR BOLTS OR DOWELS, SEE SPECIAL PROVISIONS.

A FULL DEPTH SAW CUT SHALL BE MADE AND EXISTING CONCRETE REMOVED IN ACCORDANCE WITH PLAN DETAILS.

THE EXISTING BRIDGE DECK IS TO HAVE 13mm OF THE ORIGINAL DECK MILLED AS SHOWN ON THE PLANS. SEE "DECK WIDENING AND REHABILITATION" SHEETS.

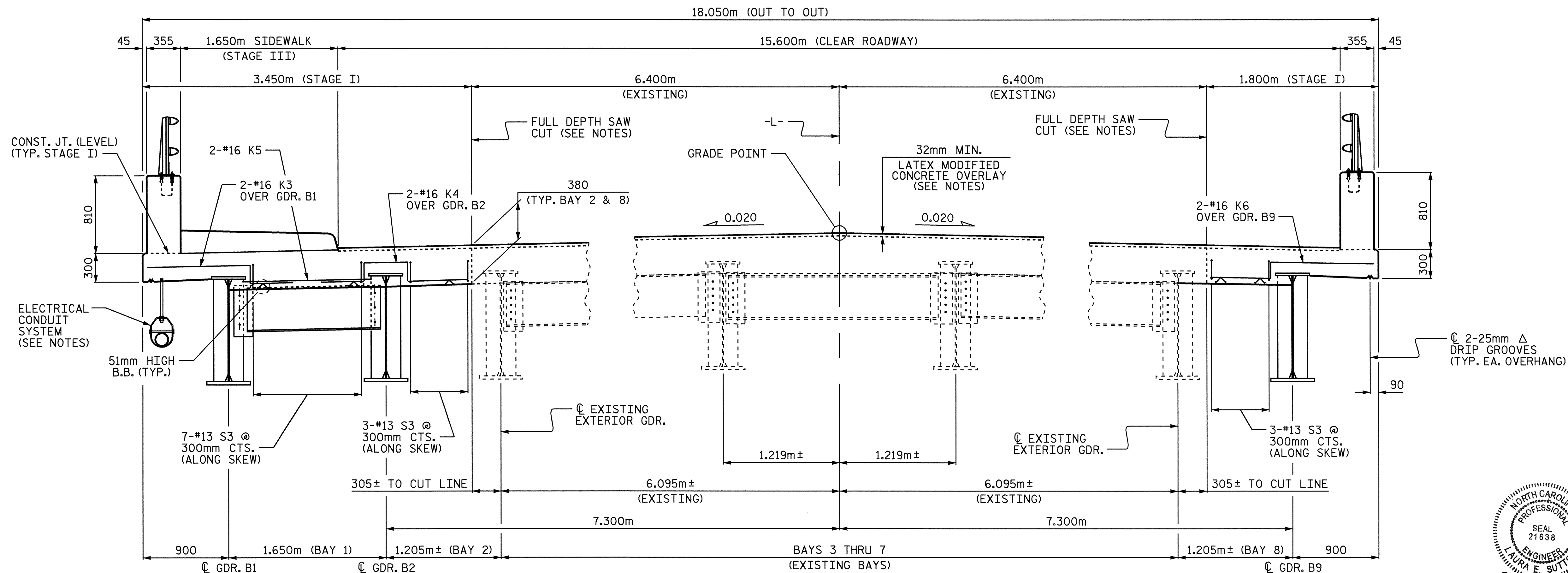
FOR LATEX MODIFIED CONCRETE, SEE SPECIAL PROVISIONS.

THE CONTRACTOR MAY, WHEN NECESSARY, PROPOSE A SCHEME FOR AVOIDING INTERFERENCE BETWEEN METAL STAY-IN-PLACE FORM SUPPORTS OR FORMS AND BEAM/GIRDER STIFFENERS OR CONNECTOR PLATES. THE PROPOSAL SHALL BE INDICATED, AS APPROPRIATE, ON EITHER THE STEEL WORKING DRAWINGS OR THE METAL STAY-IN-PLACE FORM WORKING DRAWINGS.

SIDEWALK SHALL NOT BE PLACED UNTIL STAGE III CONSTRUCTION.

FOR SIDEWALK REINFORCING STEEL AND DETAILS, SEE "SIDEWALK DETAILS" SHEET.

FOR DETAILS OF ELECTRICAL CONDUIT SYSTEM, SEE "ELECTRICAL CONDUIT SYSTEM DETAILS" SHEETS.



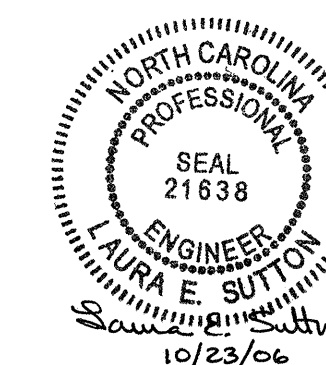
TYPICAL SECTION

(SHOWING SPAN "B" BENT DIAPHRAGMS)

PROJECT NO. U-2408
GASTON COUNTY
STATION: 20+57.612 -L-

SHEET 2 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUPERSTRUCTURE
TYPICAL SECTIONS



DRAWN BY: P.C. BREWER DATE: 3/2/05
CHECKED BY: A.C. OUTLAW DATE: 4/29/05

21-OCT-2006 12:28
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REVISIONS						SHEET NO. S-7
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 55
2			4			

NOTES:

THE STEEL PLATES SHALL CONFORM TO AASHTO M270 GRADE 250 OR APPROVED EQUAL. AFTER FABRICATION, THE PLATES SHALL BE COMMERCIALY BLAST CLEANED AND COATED WITH A MINIMUM THICKNESS OF 0.100mm (DRY) OF ZINC-RICH PAINT IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS. AT THE CONTRACTORS OPTION, THESE SURFACES MAY BE METALLIZED TO A MINIMUM THICKNESS OF 0.150mm MILS. SEE SPECIAL PROVISIONS FOR THERMAL SPRAYED COATINGS (METALLIZATION).

THE 19.05mm DIAMETER HEX HEAD BOLTS SHALL CONFORM TO ASTM F593 ALLOY 304 STAINLESS STEEL.

THE 19.05mm CONCRETE INSERTS SHALL BE CLOSED-END FERRULES WITH LOOPED WIRE STRUTS ATTACHED TO THEM. THE INSERTS SHALL CONFORM TO AASHTO M169, GRADE 12L14 AND SHALL HAVE A TENSILE WORKING LOAD CAPACITY OF 13.3 kN.

NO SEPARATE PAYMENT WILL BE MADE FOR FURNISHING AND INSTALLING THE COVER PLATE. THE ENTIRE COST OF THIS WORK SHALL BE INCLUDED IN THE LUMP SUM PRICE FOR "EVAZOTE JOINT SEALS".

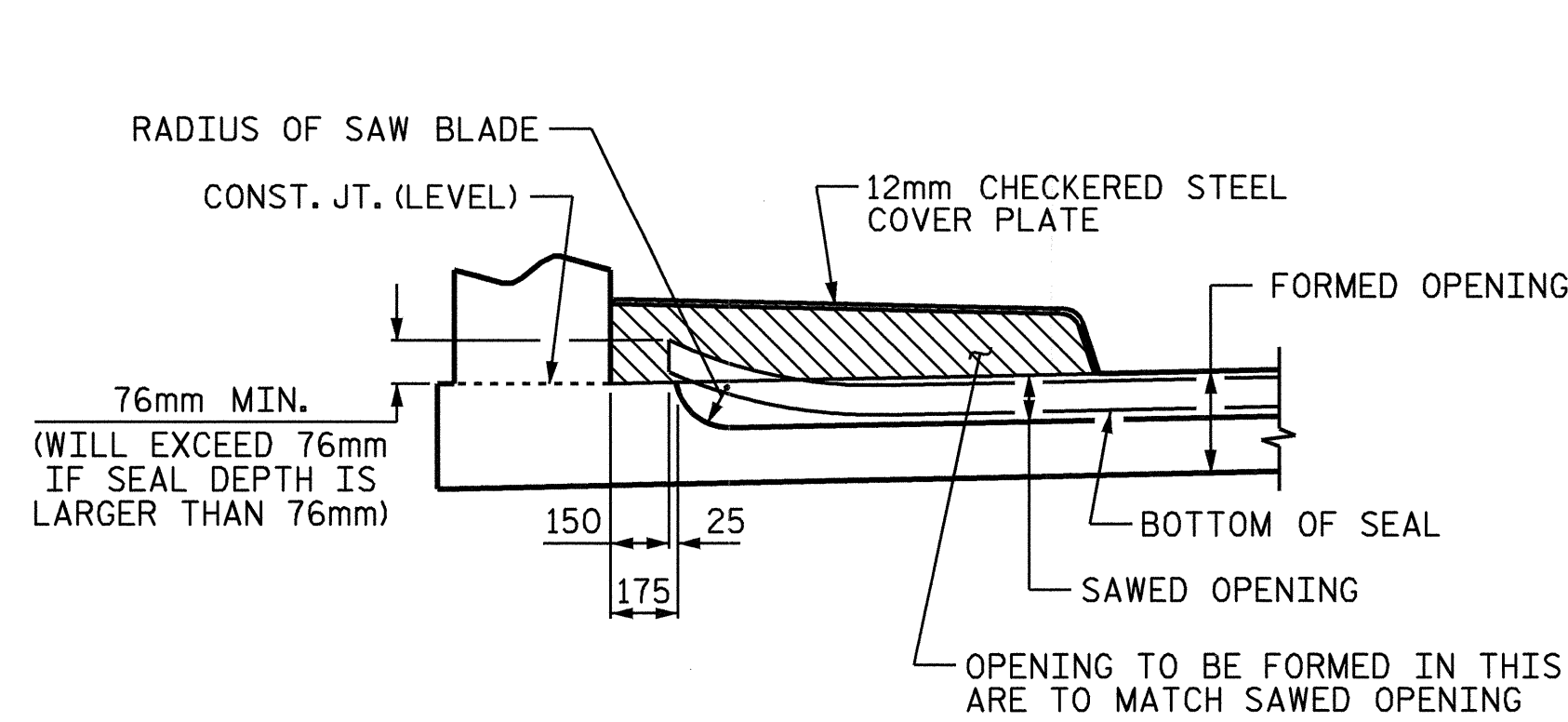
EVAZOTE JOINT SEALS SHALL BE INSTALLED IN PROPOSED AND EXISTING DECK DURING STAGE II AND STAGE III CONSTRUCTION. MAINTAIN THE 25mm FORMED OPENING ON THE LEFT SIDE DECK WIDENING DURING STAGE II CONSTRUCTION.

THE JOINT IN THE DECK SHALL BE SAWED PRIOR TO THE CASTING OF THE STAGE II PARAPET OR STAGE III SIDEWALK.

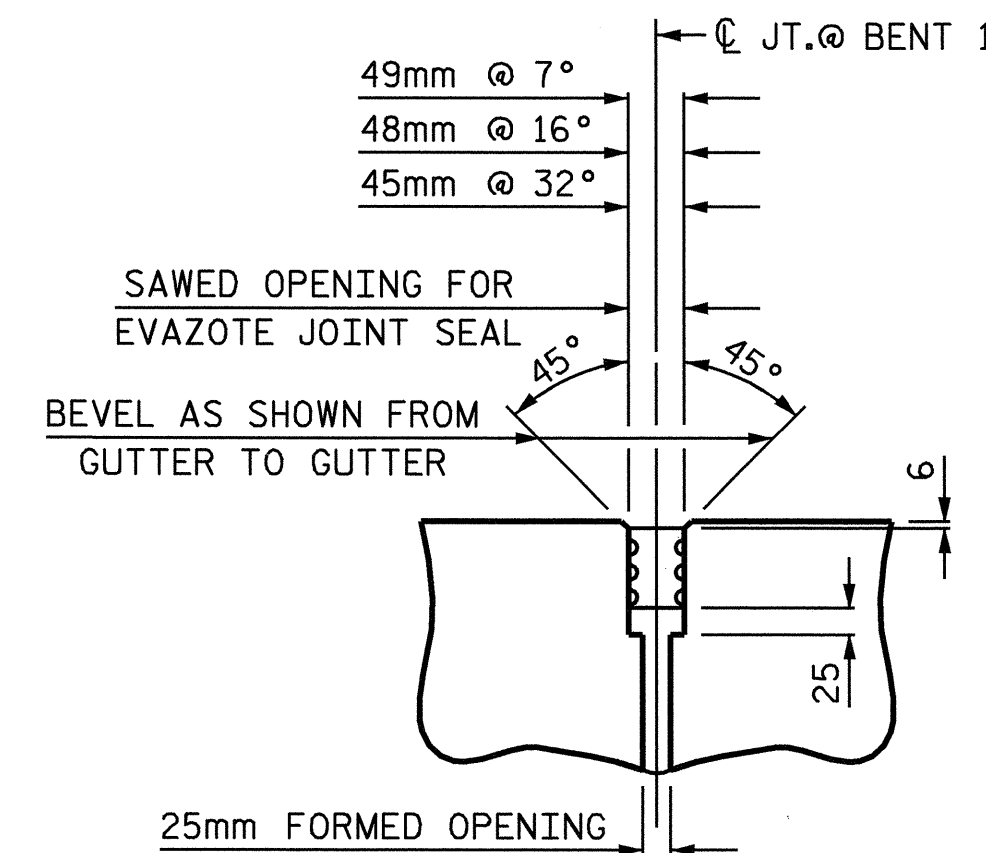
EVAZOTE JOINT SEALS SHALL BE CONTINUOUS FOR THE ENTIRE DECK WIDTH. FOR SPLICING THE JOINT SEAL BETWEEN STAGE II AND STAGE III CONSTRUCTION, SEE SPECIAL PROVISION FOR EVAZOTE JOINT SEALS.

THE NOMINAL UNCOMPRESSED SEAL WIDTH OF THE EVAZOTE JOINT SEAL SHALL BE 64mm AT BENT 1 AND BENT 2. FOR EVAZOTE JOINT SEALS, SEE SPECIAL PROVISIONS.

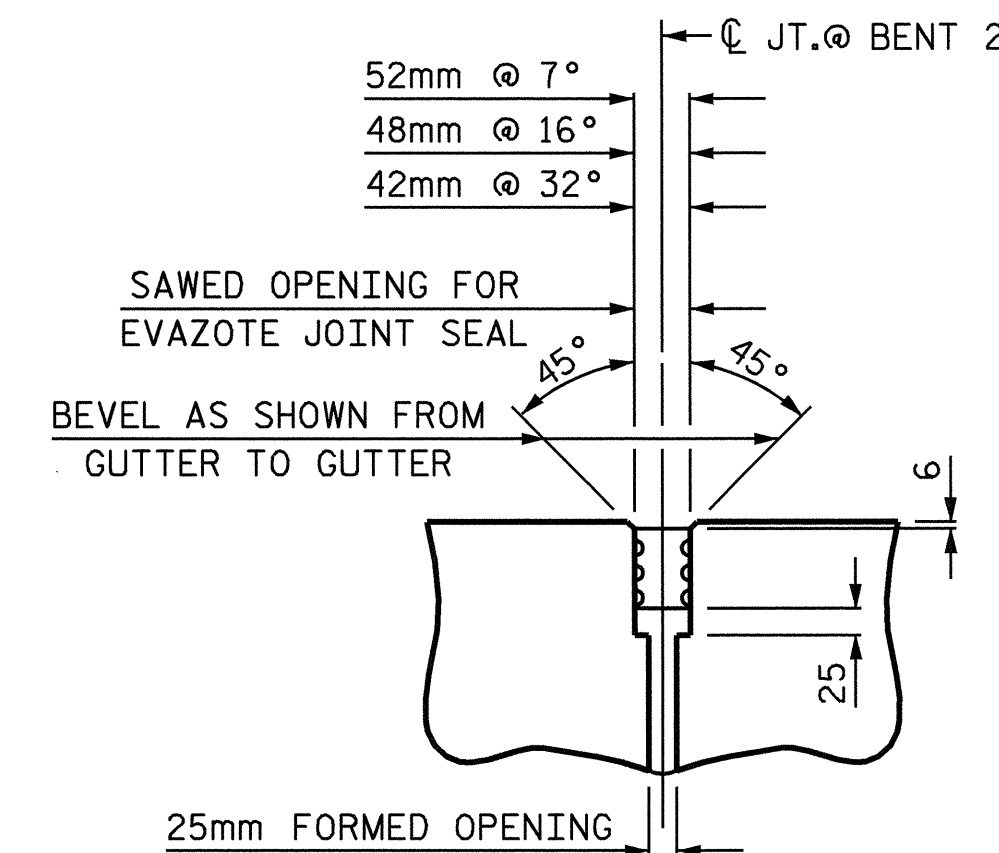
DURING THE JOINT INSTALLATION PROCEDURE, THE JOINT AND SURROUNDING AREA SHALL BE KEPT CLEAN AND FREE OF DEBRIS.



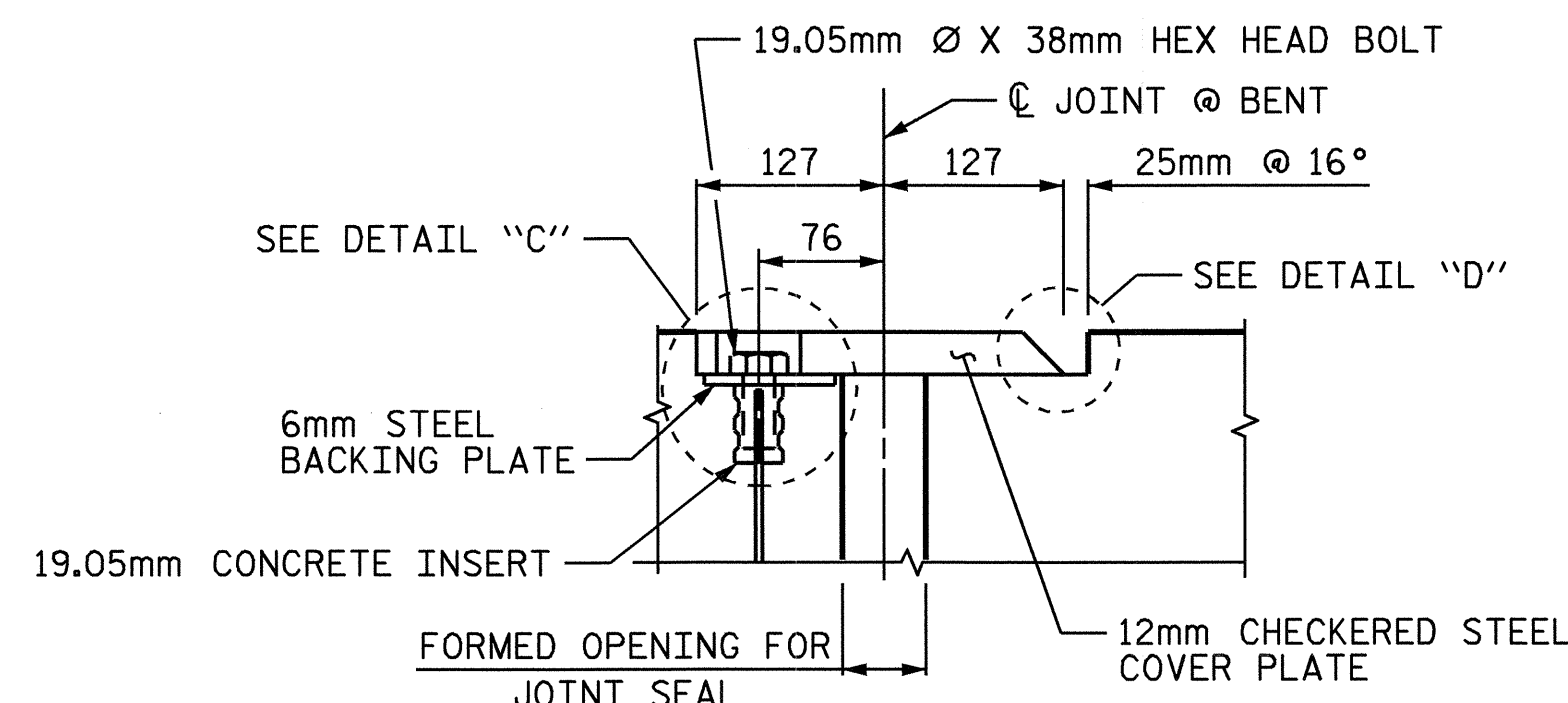
SECTION D-D



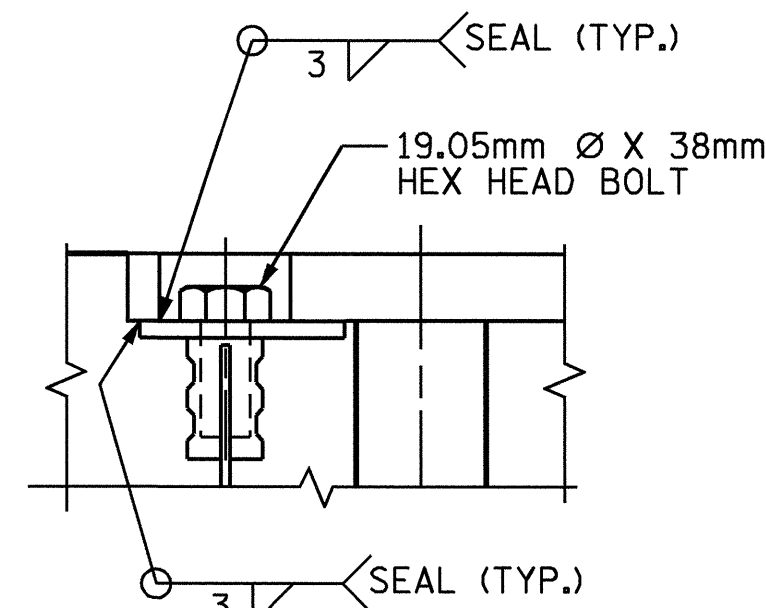
SECTION B-B
EVAZOTE JOINT SEAL



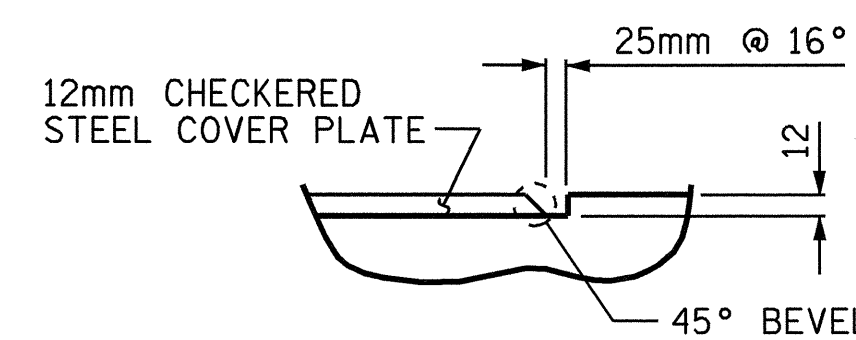
SECTION B-B
EVAZOTE JOINT SEAL



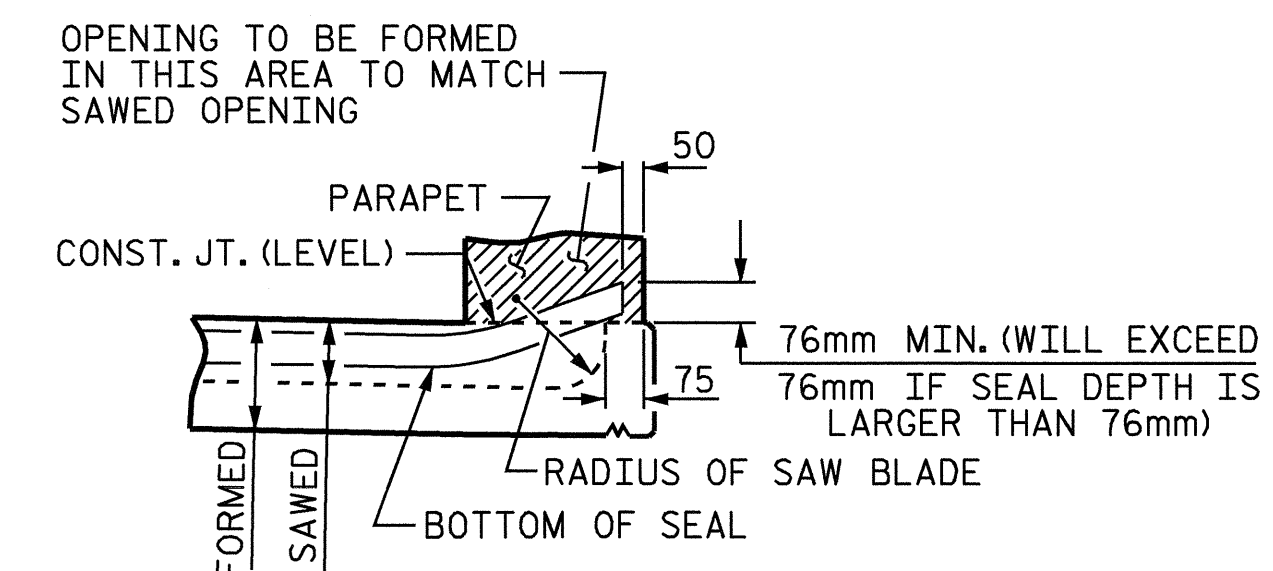
SECTION C-C



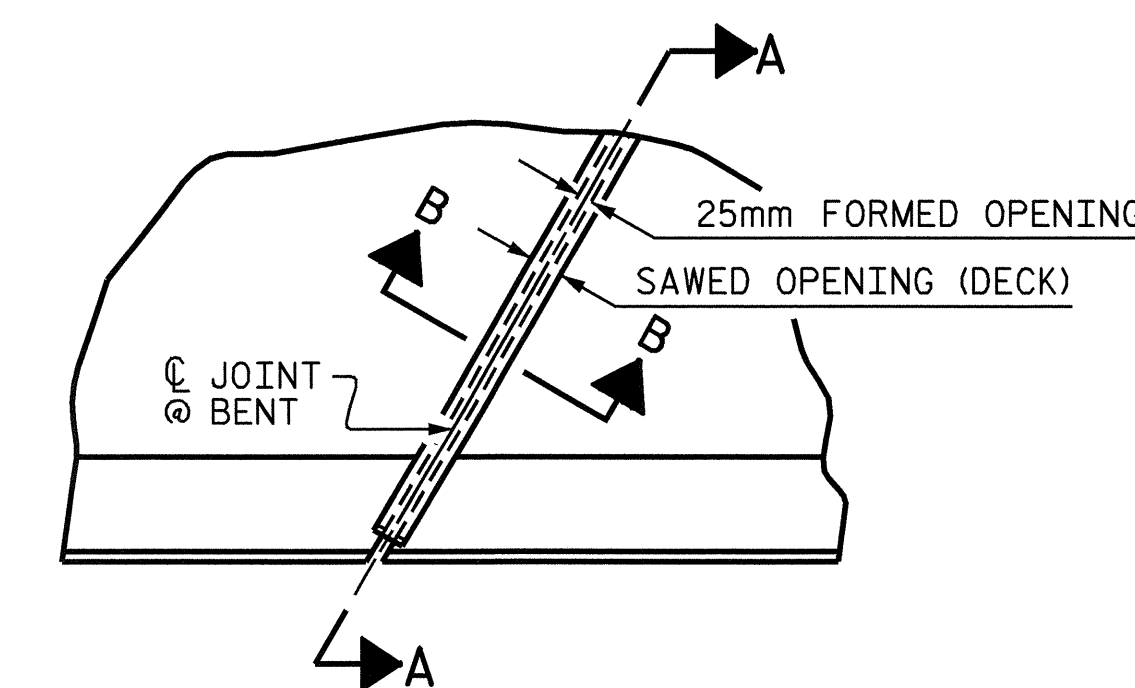
DETAIL "C"



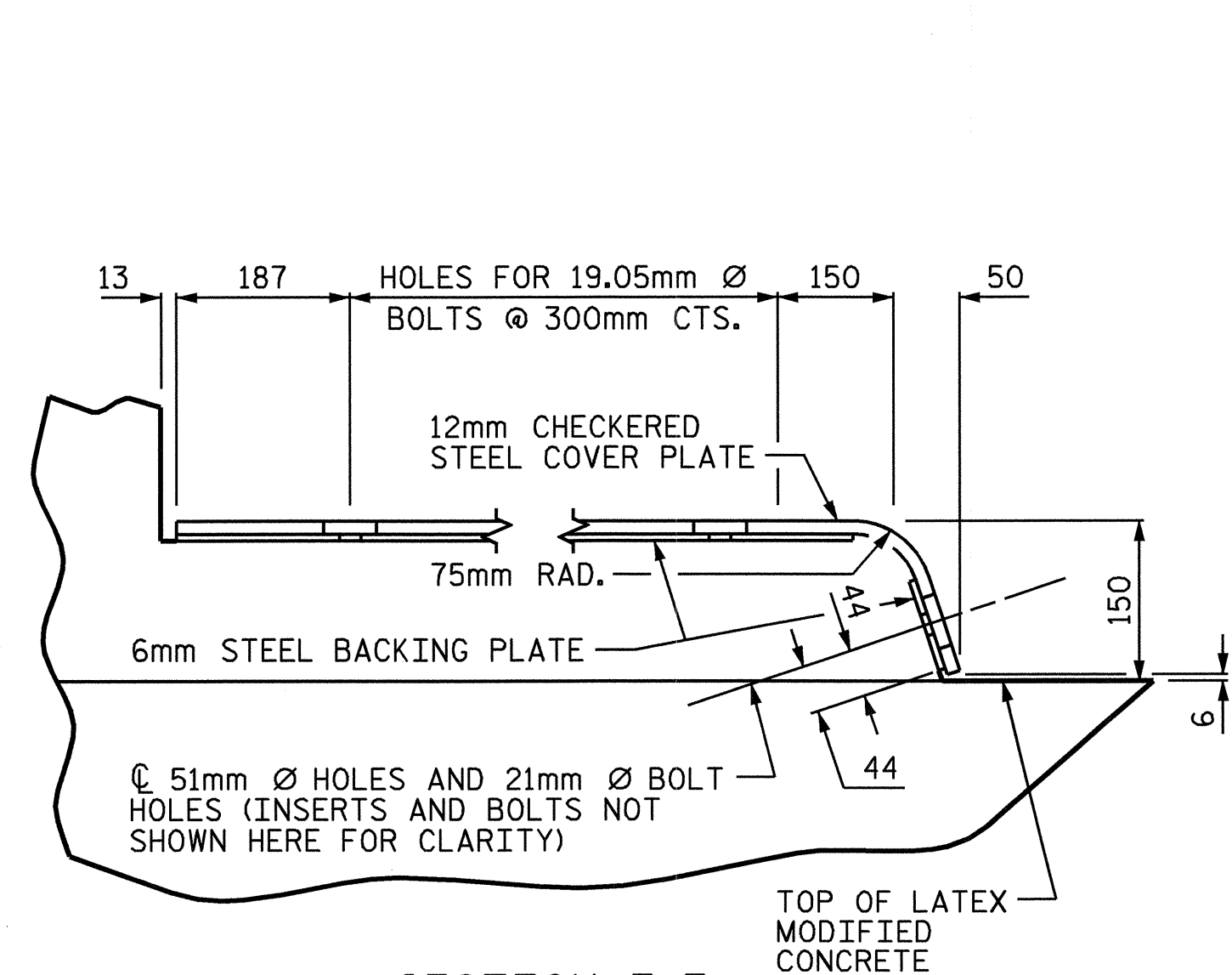
DETAIL "D"



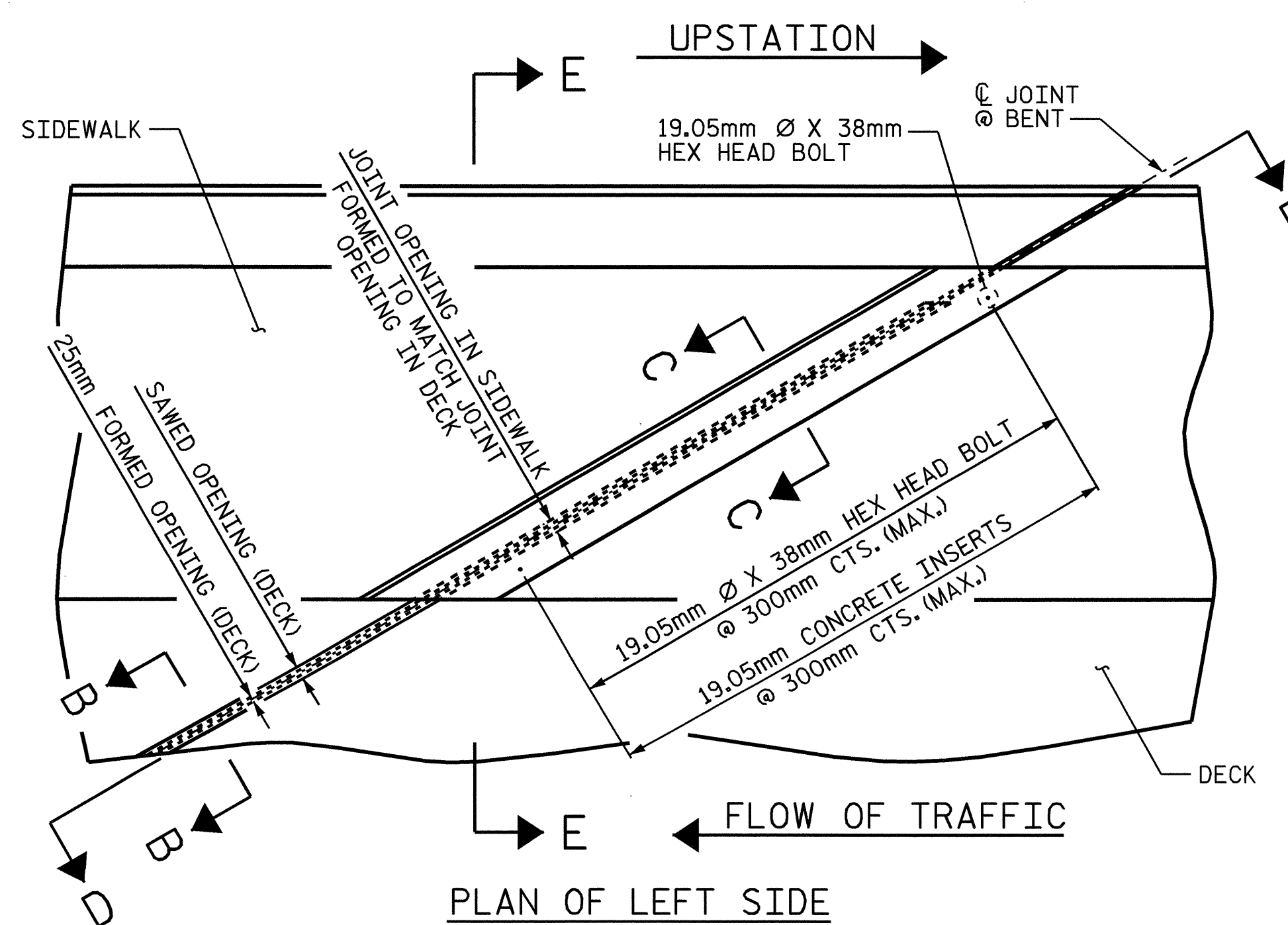
SECTION A-A



PLAN OF RIGHT SIDE



SECTION E-E



JOINT SEAL DETAILS @ BENTS

PROJECT NO. U-2408
GASTON COUNTY
 STATION: 20+57.612 -L-

SHEET 4 OF 4

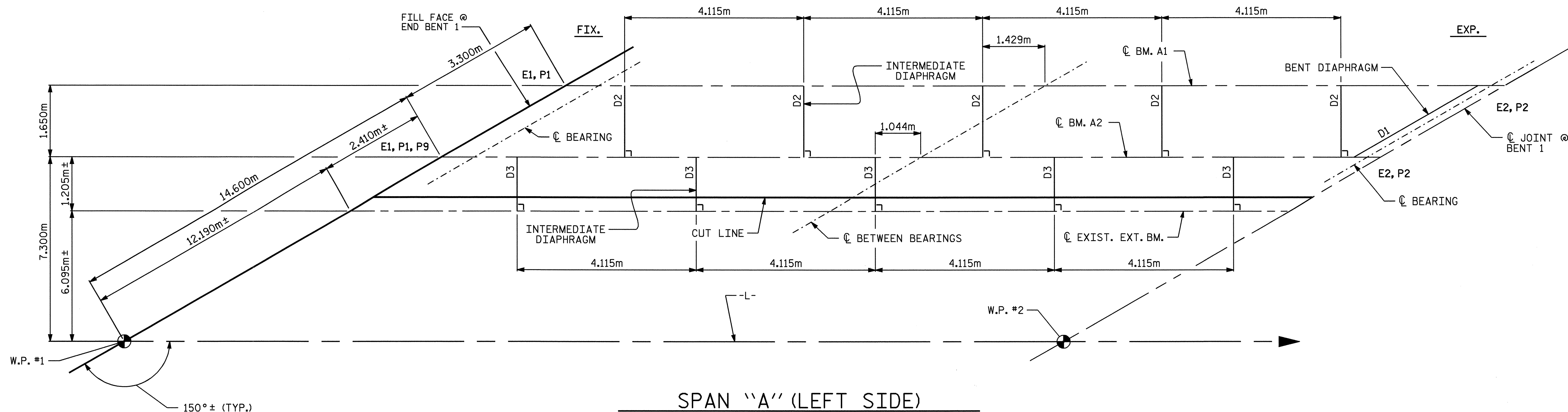
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUPERSTRUCTURE
 TYPICAL SECTION
 DETAILS

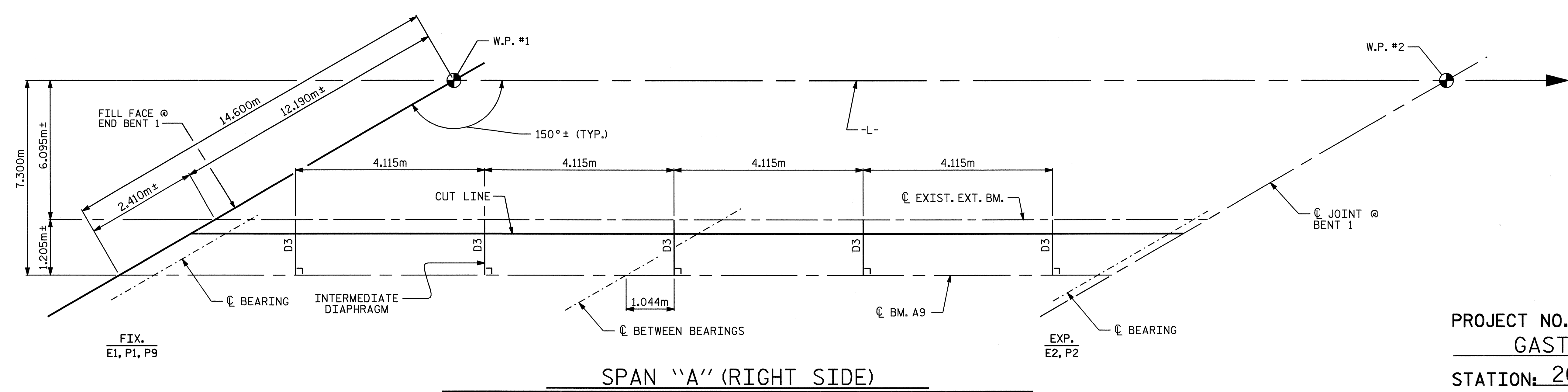


REVISIONS						SHEET NO. S-9
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 55
2			4			

DRAWN BY: P.C. BREWER DATE: 3/2/05
 CHECKED BY: A.C. OUTLAW DATE: 5/3/05



SPAN "A" (LEFT SIDE)



SPAN "A" (RIGHT SIDE)

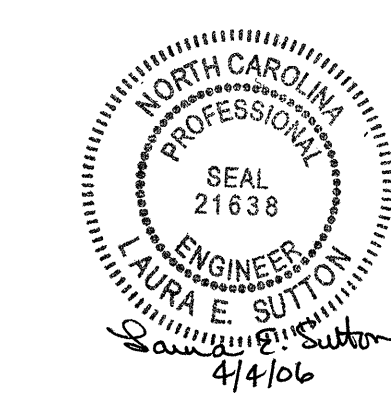
PROJECT NO. U-2408
 GASTON COUNTY
 STATION: 20+57.612 -L-

SHEET 1 OF 3

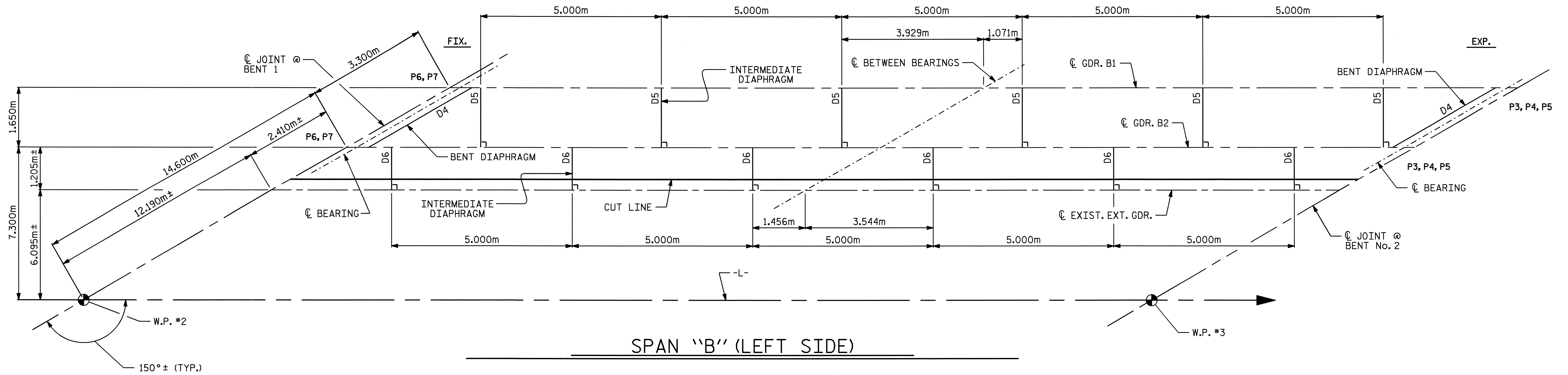
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUPERSTRUCTURE
 FRAMING PLAN

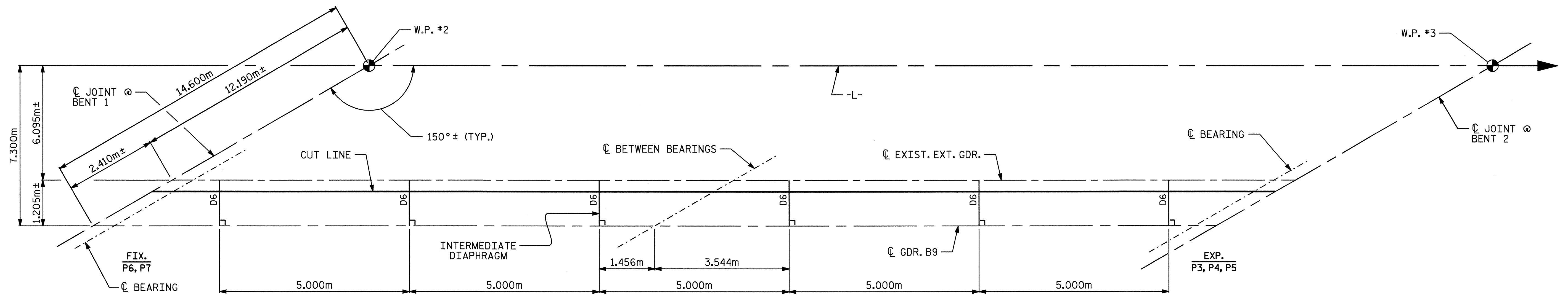
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2			4			



DRAWN BY: P.C. BREWER DATE: 4/5/05
 CHECKED BY: A.C. OUTLAW DATE: 4/28/05



SPAN "B" (LEFT SIDE)

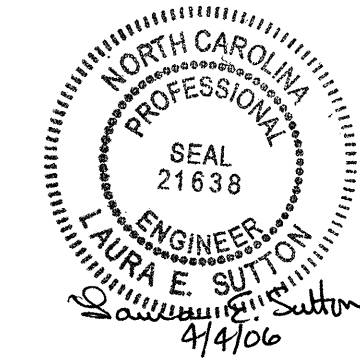


SPAN "B" (RIGHT SIDE)

PROJECT NO. U-2408
GASTON COUNTY
 STATION: 20+57.612 -L-

SHEET 2 OF 3

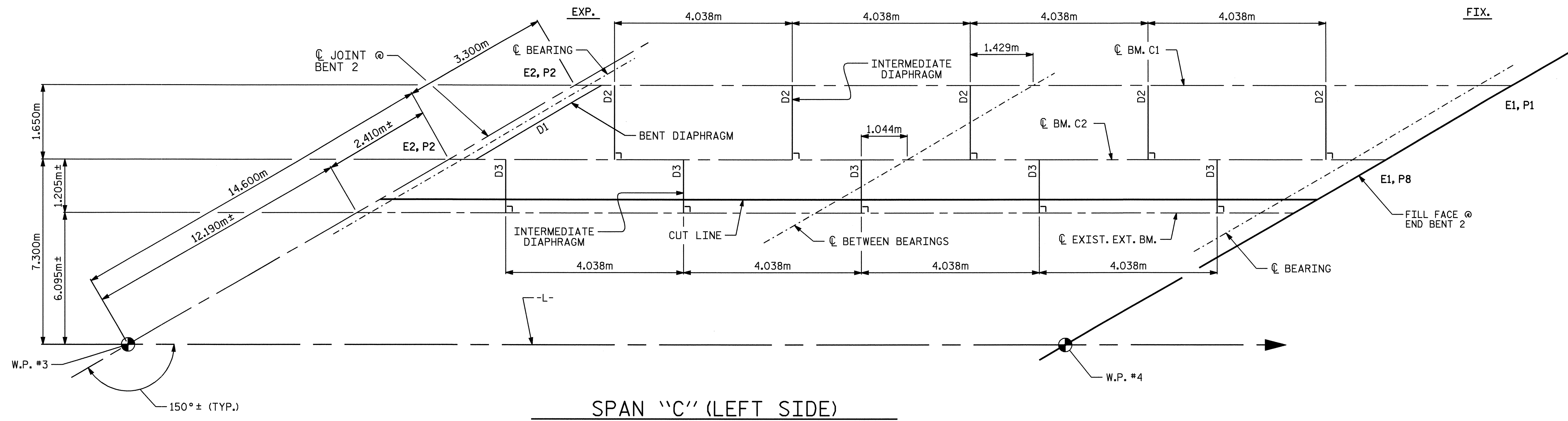
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
 FRAMING PLAN



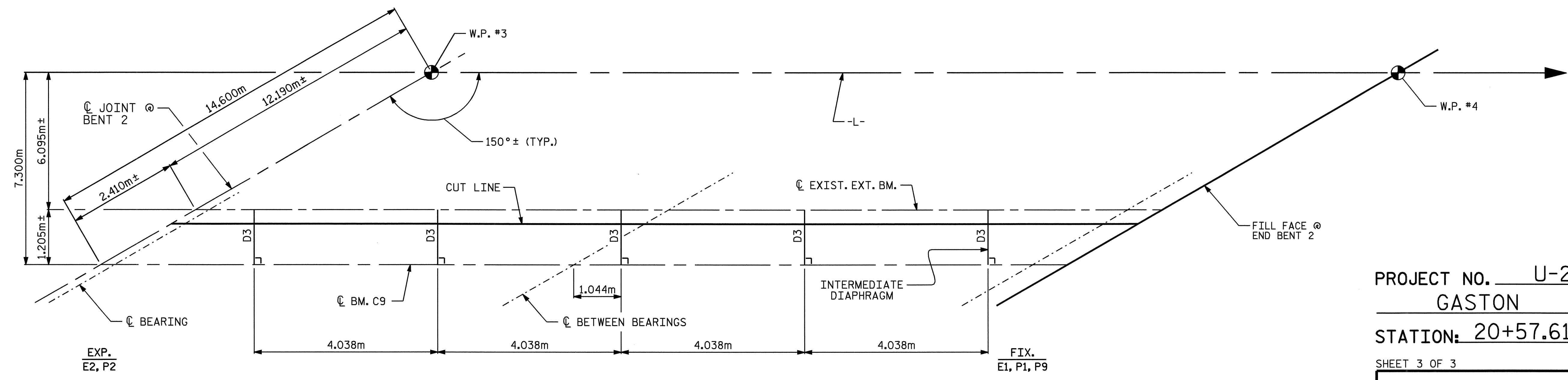
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 CHECKED BY: A.C. OUTLAW DATE: 4/28/05

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REVISIONS						SHEET NO. S-14
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2			4			55



SPAN "C" (LEFT SIDE)

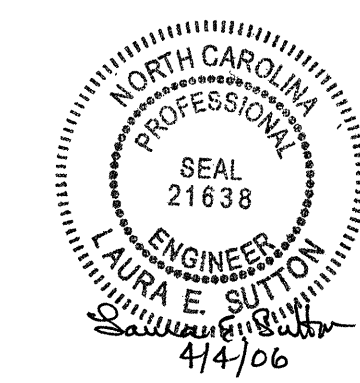


SPAN "C" (RIGHT SIDE)

PROJECT NO. U-2408
 GASTON COUNTY
 STATION: 20+57.612 -L-

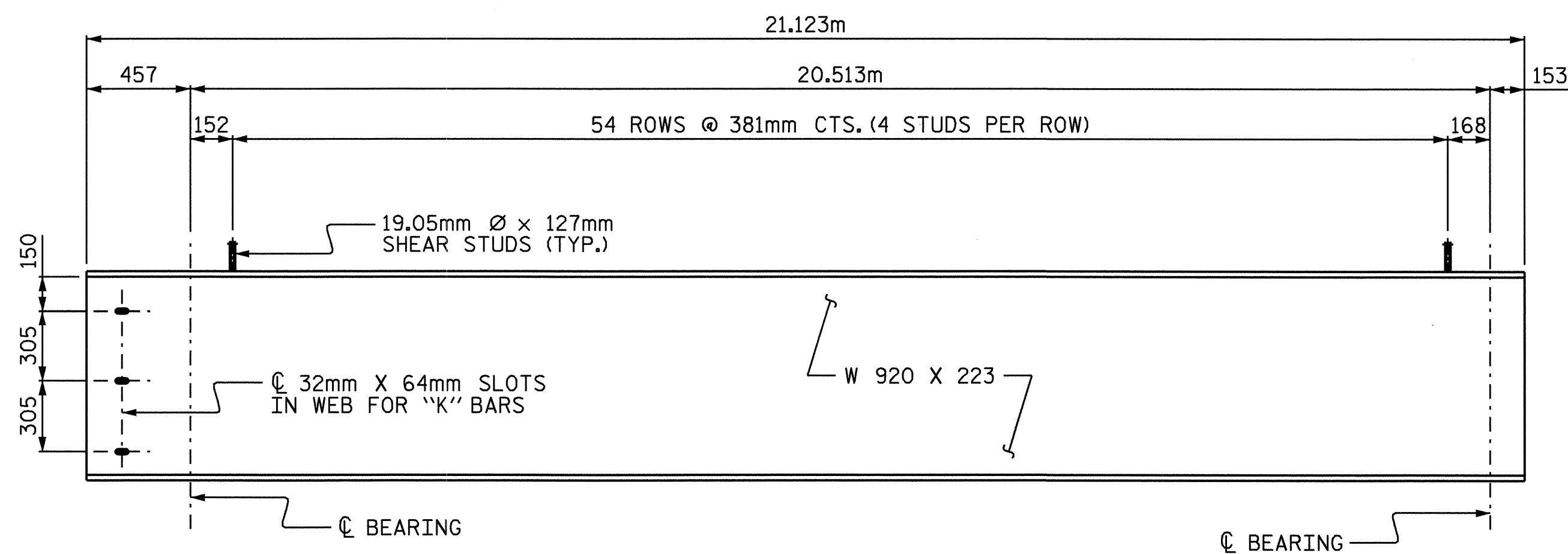
SHEET 3 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
 FRAMING PLAN

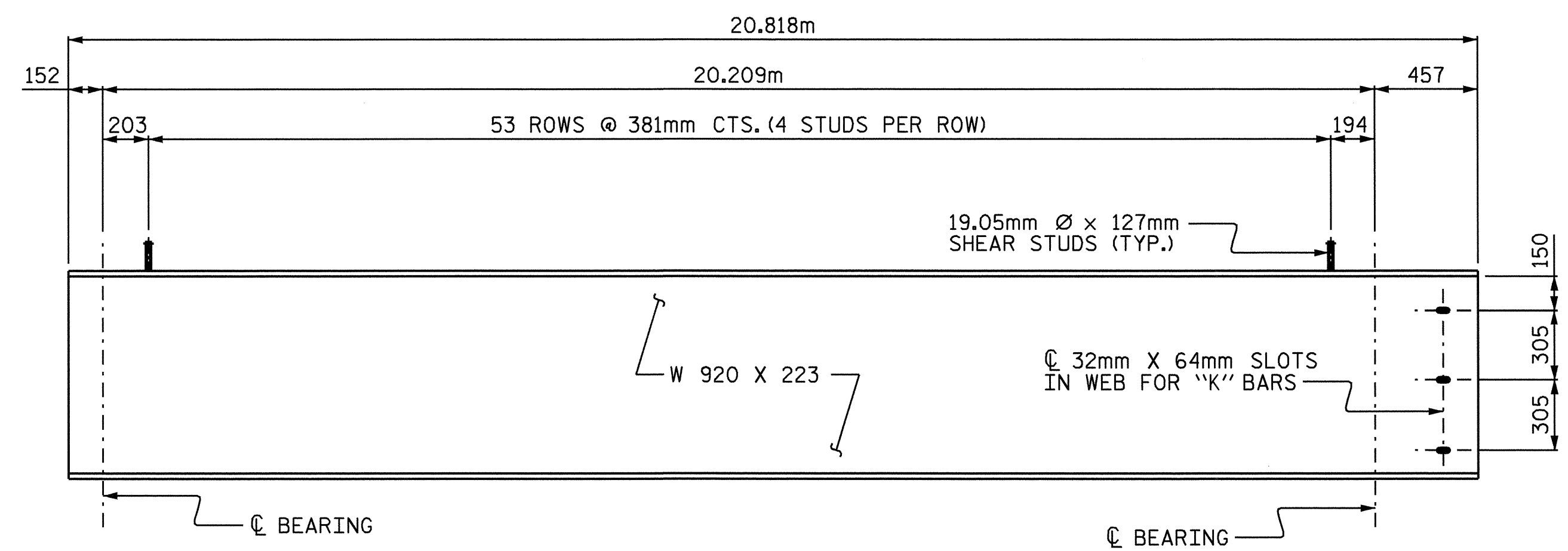


DRAWN BY: P.C. BREWER DATE: 4/5/05
 CHECKED BY: A.C. OUTLAW DATE: 4/28/05

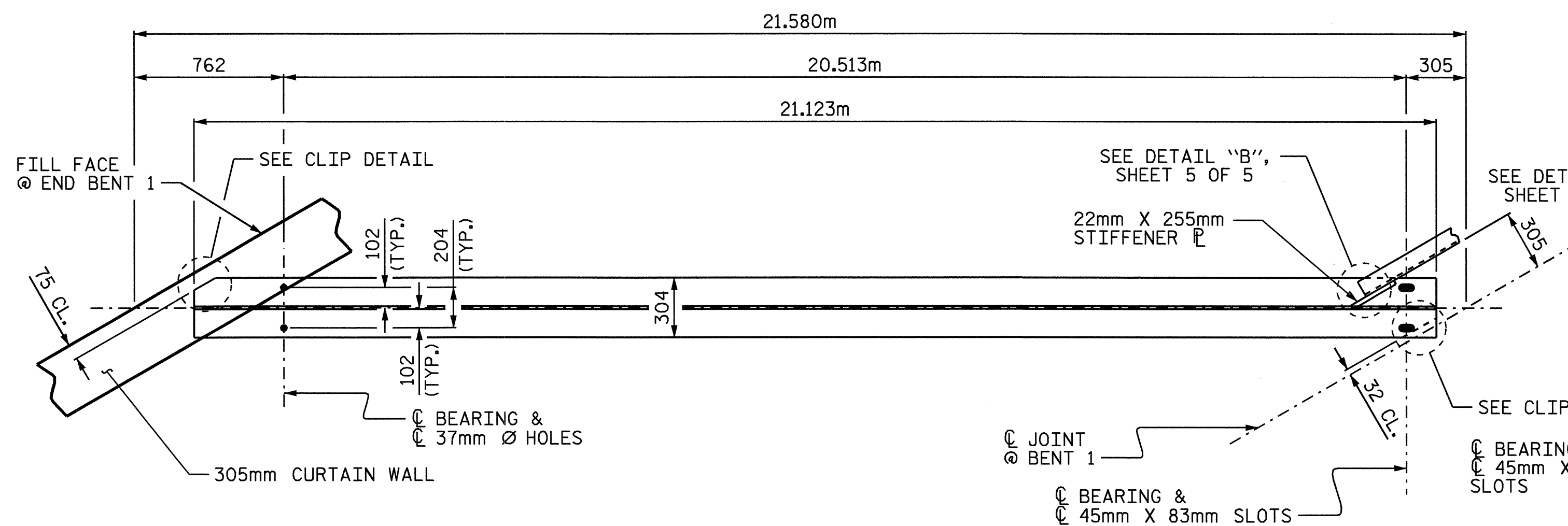
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NO.	BY:	DATE:	NO.	BY:	DATE:	
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2			4			



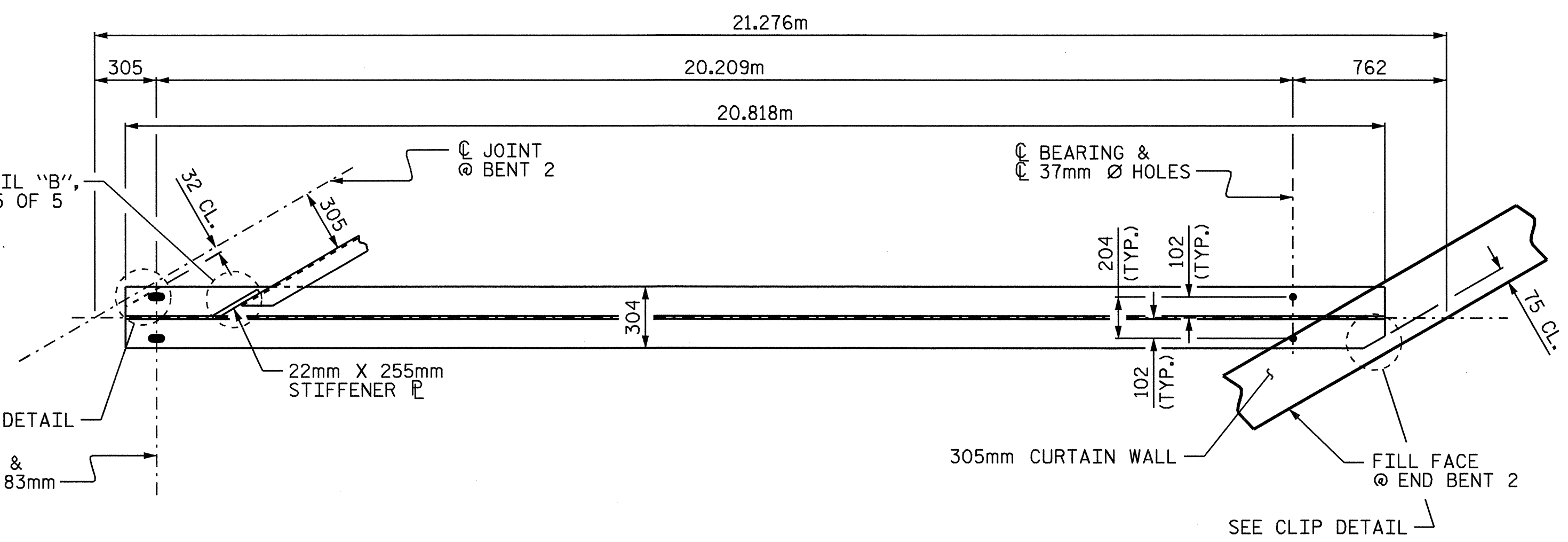
BEAM ELEVATION (SPAN "A")
(BM. A2 SHOWN, BMS. A1 AND A9 SIMILAR)



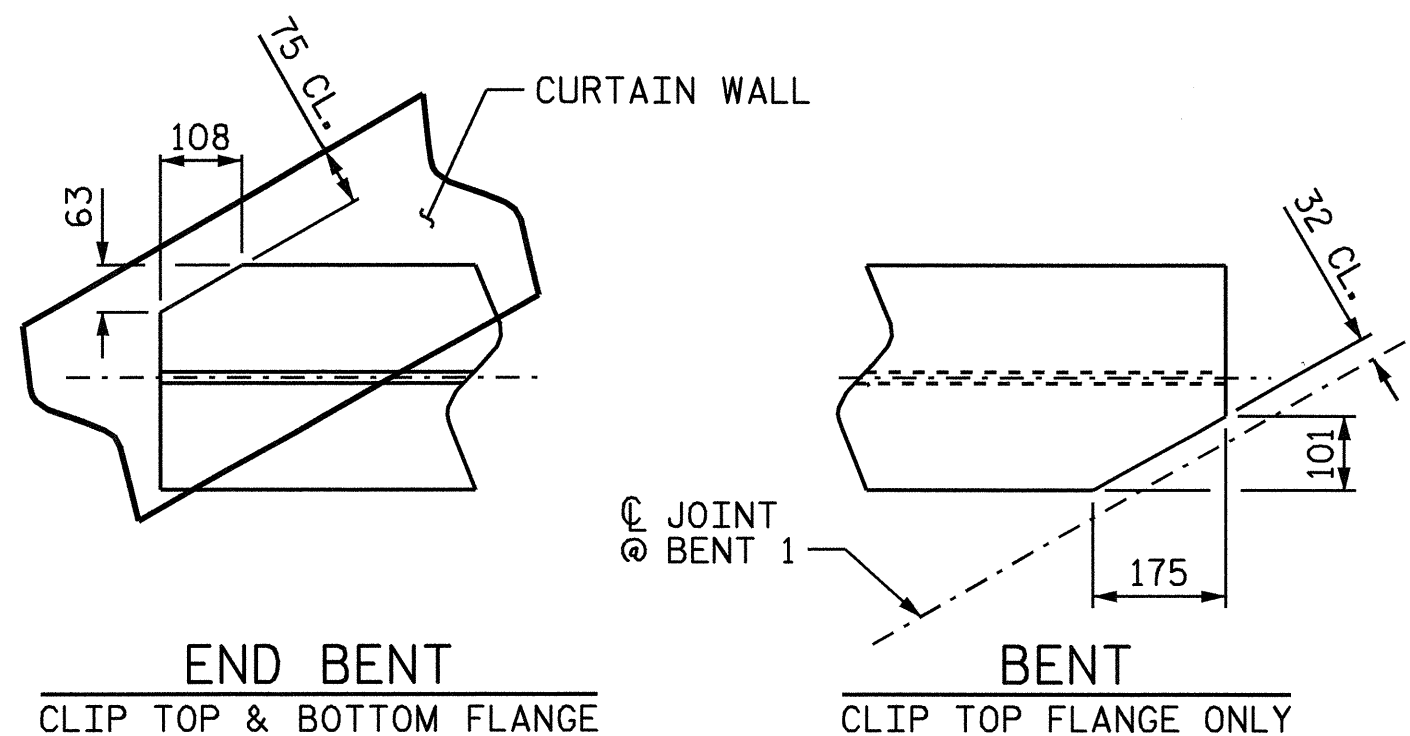
BEAM ELEVATION (SPAN "C")
(BM. C2 SHOWN, BMS. C1 AND C9 SIMILAR)



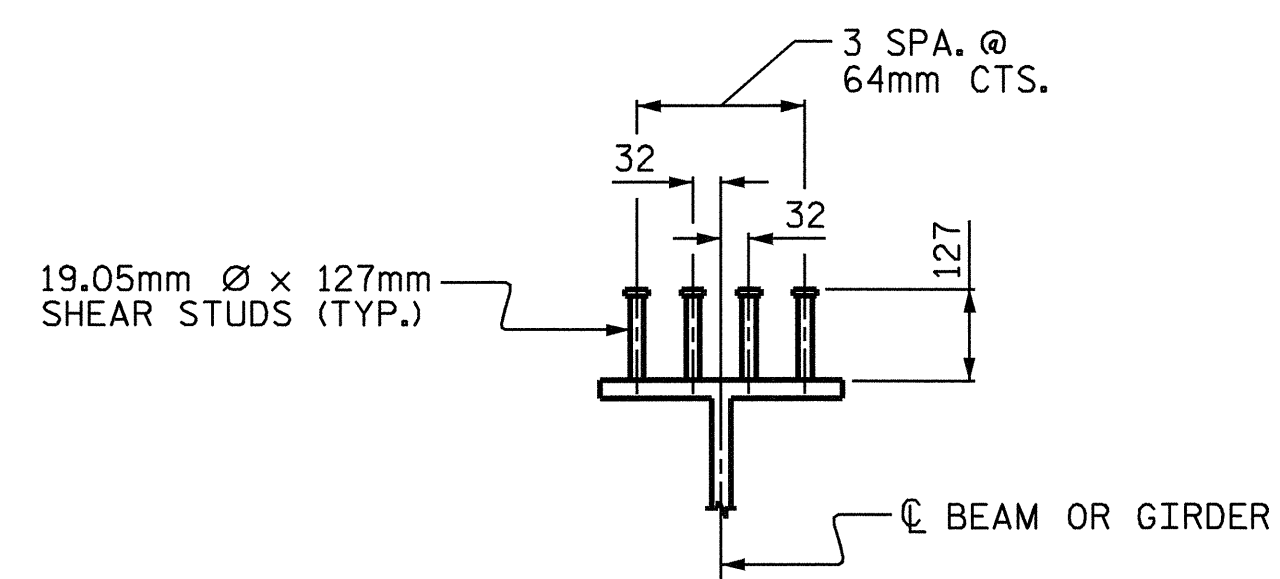
BOTTOM FLANGE DETAIL (SPAN "A")
(BM. A2 SHOWN, BMS. A1 AND A9 SIMILAR)
(FOR CLIP AT END BENT AND BENT, SEE CLIP DETAIL)



BOTTOM FLANGE DETAIL (SPAN "C")
(BM. C2 SHOWN, BMS. C1 AND C9 SIMILAR)
(FOR CLIP AT END BENT AND BENT, SEE CLIP DETAIL)



CLIP DETAIL
SPAN "A" SHOWN, SPAN "C" SIMILAR



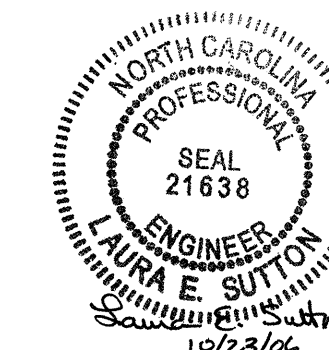
SHEAR STUD DETAILS
(TYP. EA. BEAM OR GIRDER, EA. SPAN)

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GASTON COUNTY
STATION: 20+57.612 -L-

SHEET 1 OF 5

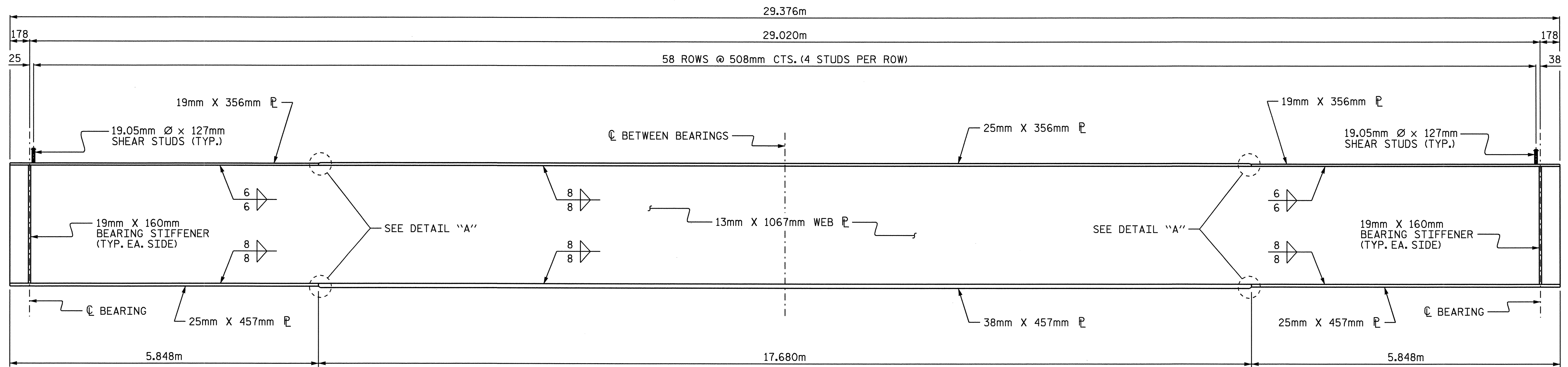
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE
STRUCTURAL STEEL
DETAILS



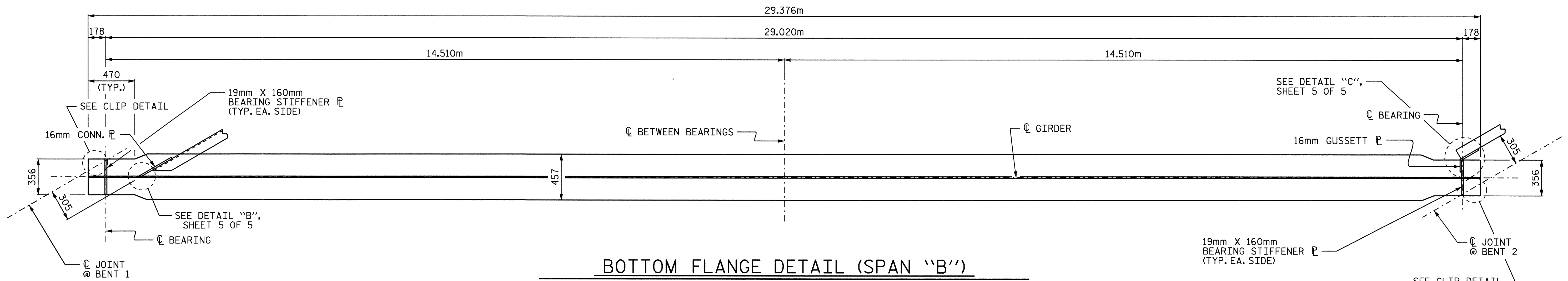
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NO.	BY:	DATE:	NO.	BY:	DATE:	S-16
1			3			TOTAL SHEETS 55
2			4			

DRAWN BY: P.C. BREWER DATE: 4/5/05
CHECKED BY: A.C. OUTLAW DATE: 4/29/05



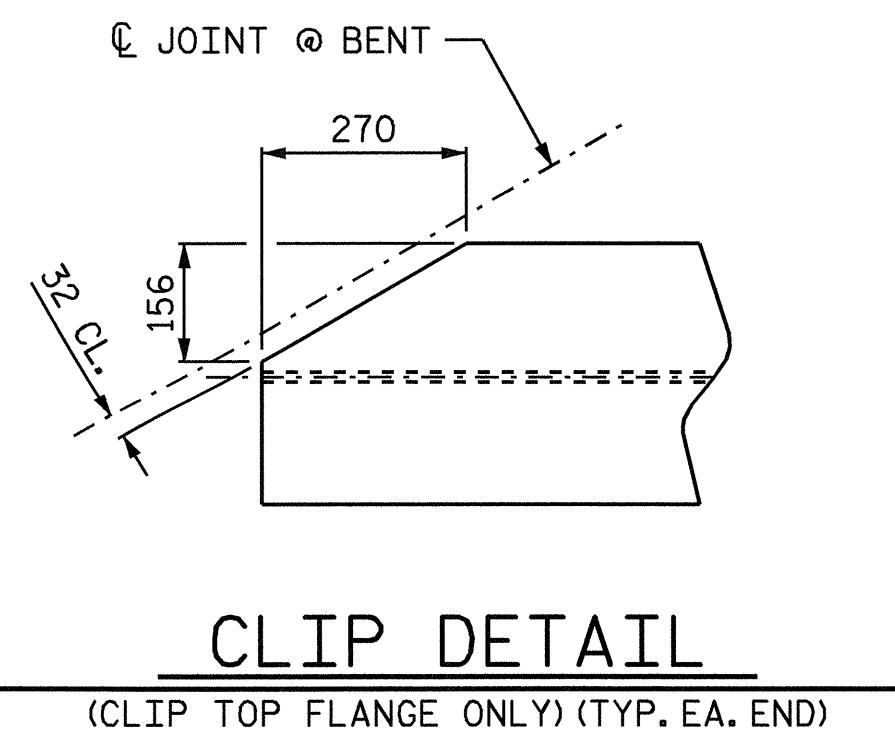
ELEVATION OF GIRDER (SPAN "B")

(GDR. B2 SHOWN, GDRS. B1 AND B9 SIMILAR)



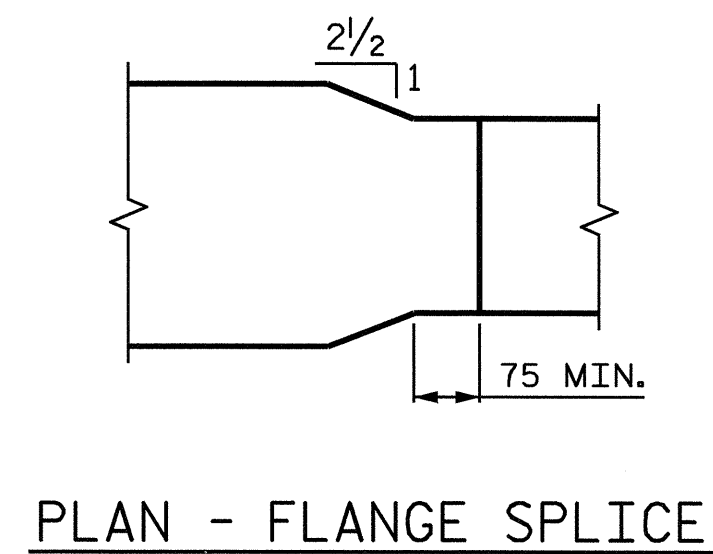
BOTTOM FLANGE DETAIL (SPAN "B")

(GDR. B2 SHOWN, GDRS. B1 AND B9 SIMILAR)
 (FOR DIAPHRAGM LOCATIONS, SEE "FRAMING PLAN")
 (FOR DIAPHRAGM DETAILS, SEE SHEET 3 OF 4)

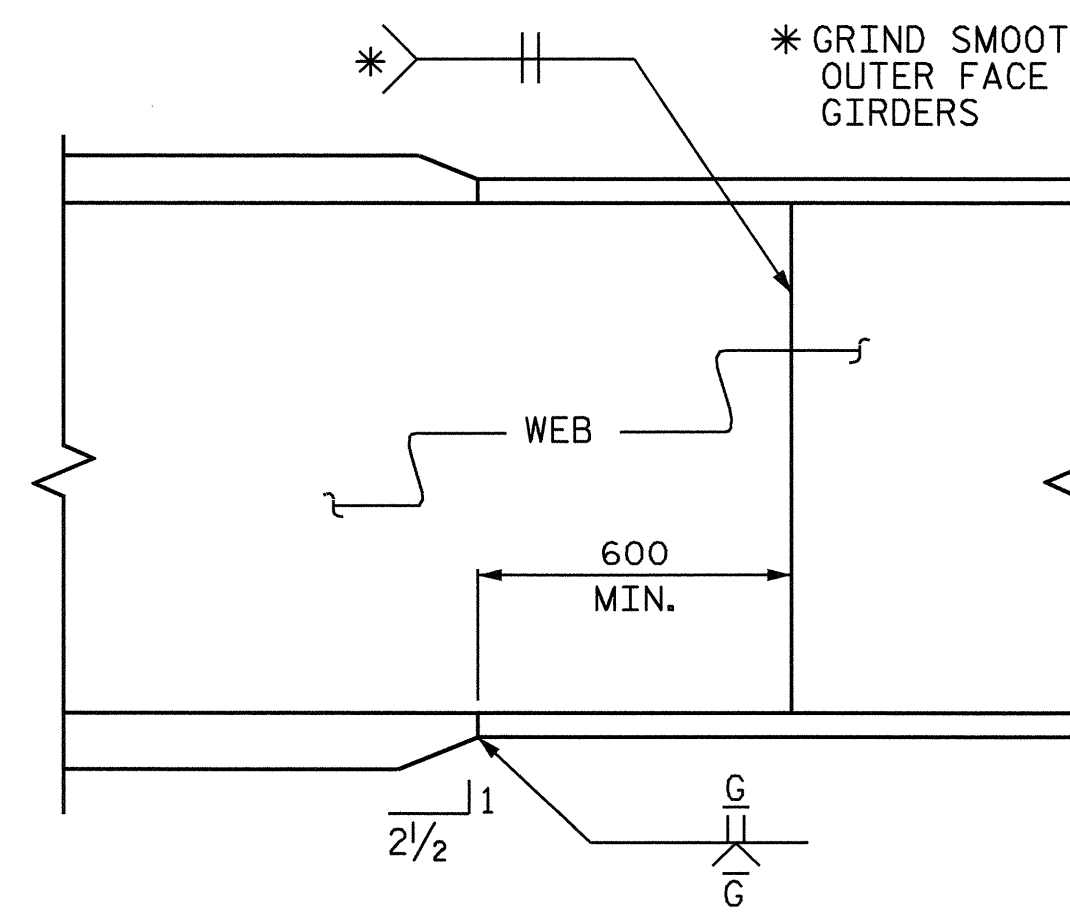


CLIP DETAIL

(CLIP TOP FLANGE ONLY) (TYP. EA. END)



PLAN - FLANGE SPLICE



ELEVATION

DETAIL "A"

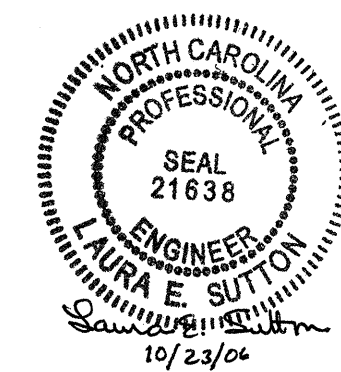
TYPICAL FLANGE AND WEB BUTT JOINT

PROJECT NO. U-2408
GASTON COUNTY
 STATION: 20+57.612 -L-

SHEET 2 OF 5

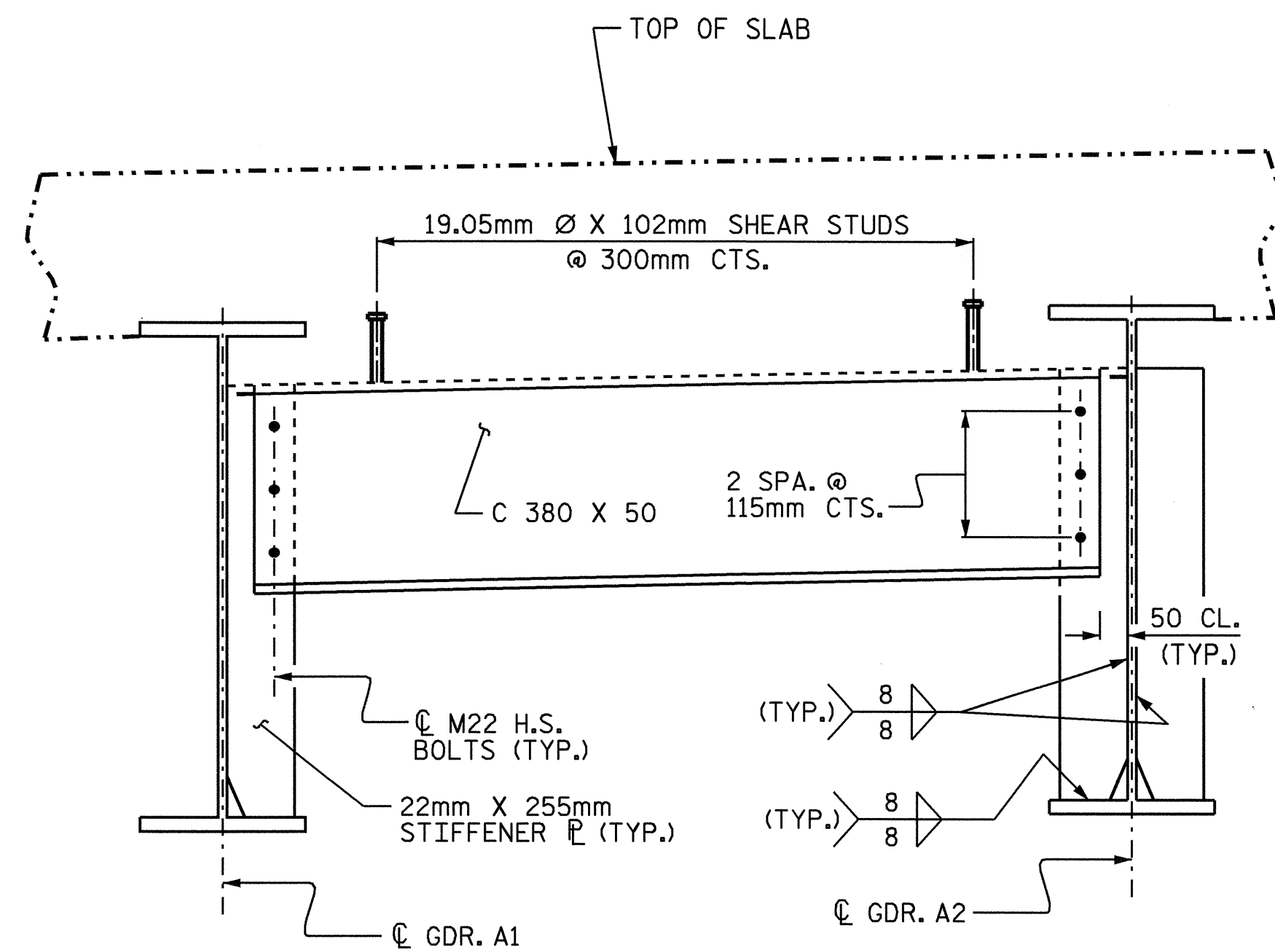
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
 STRUCTURAL STEEL
 DETAILS

REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-17	
1			3			TOTAL SHEETS 55	
2			4				

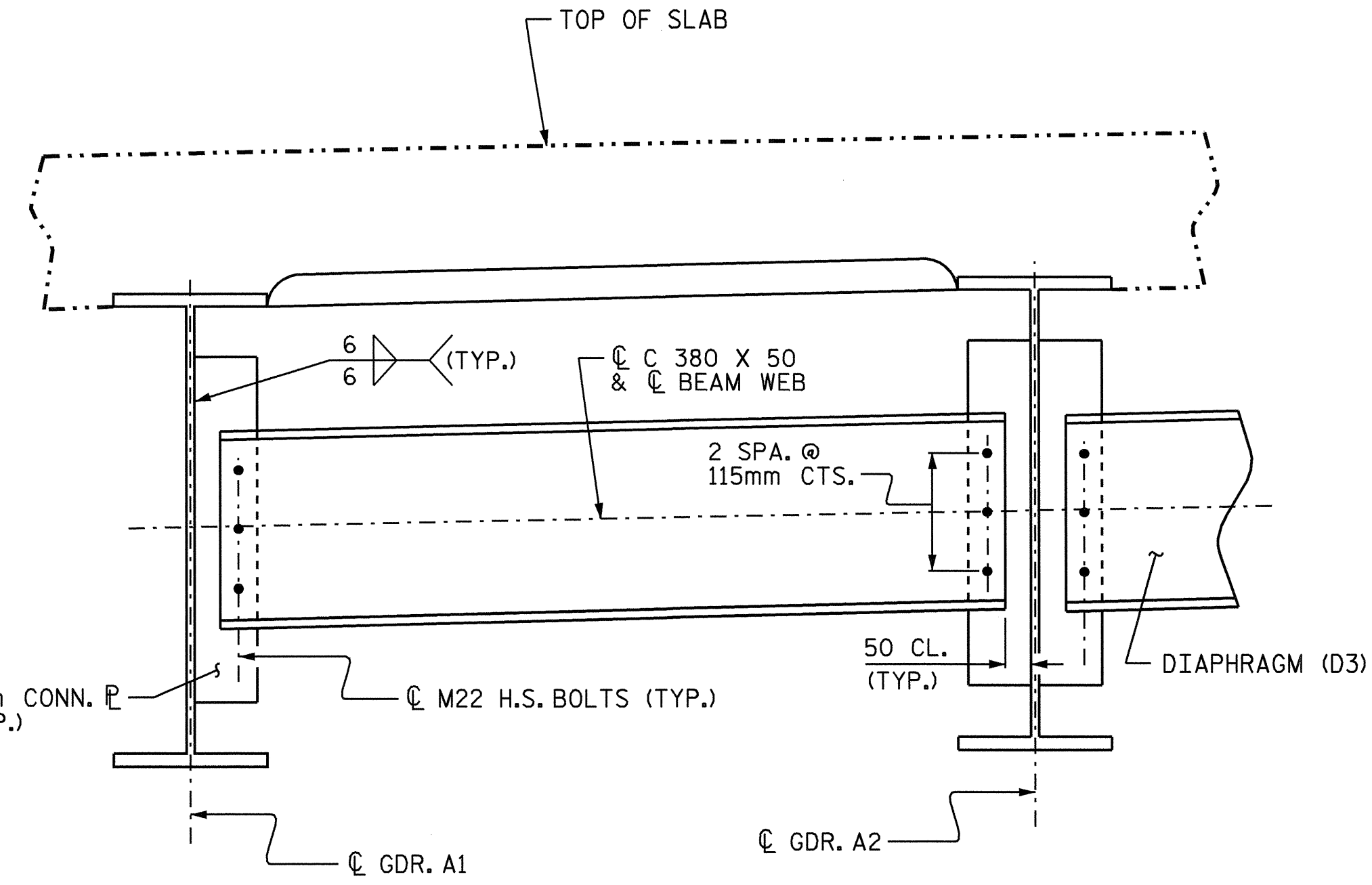


DRAWN BY : P.C. BREWER DATE : 4/5/05
 CHECKED BY : A.C. OUTLAW DATE : 4/29/05

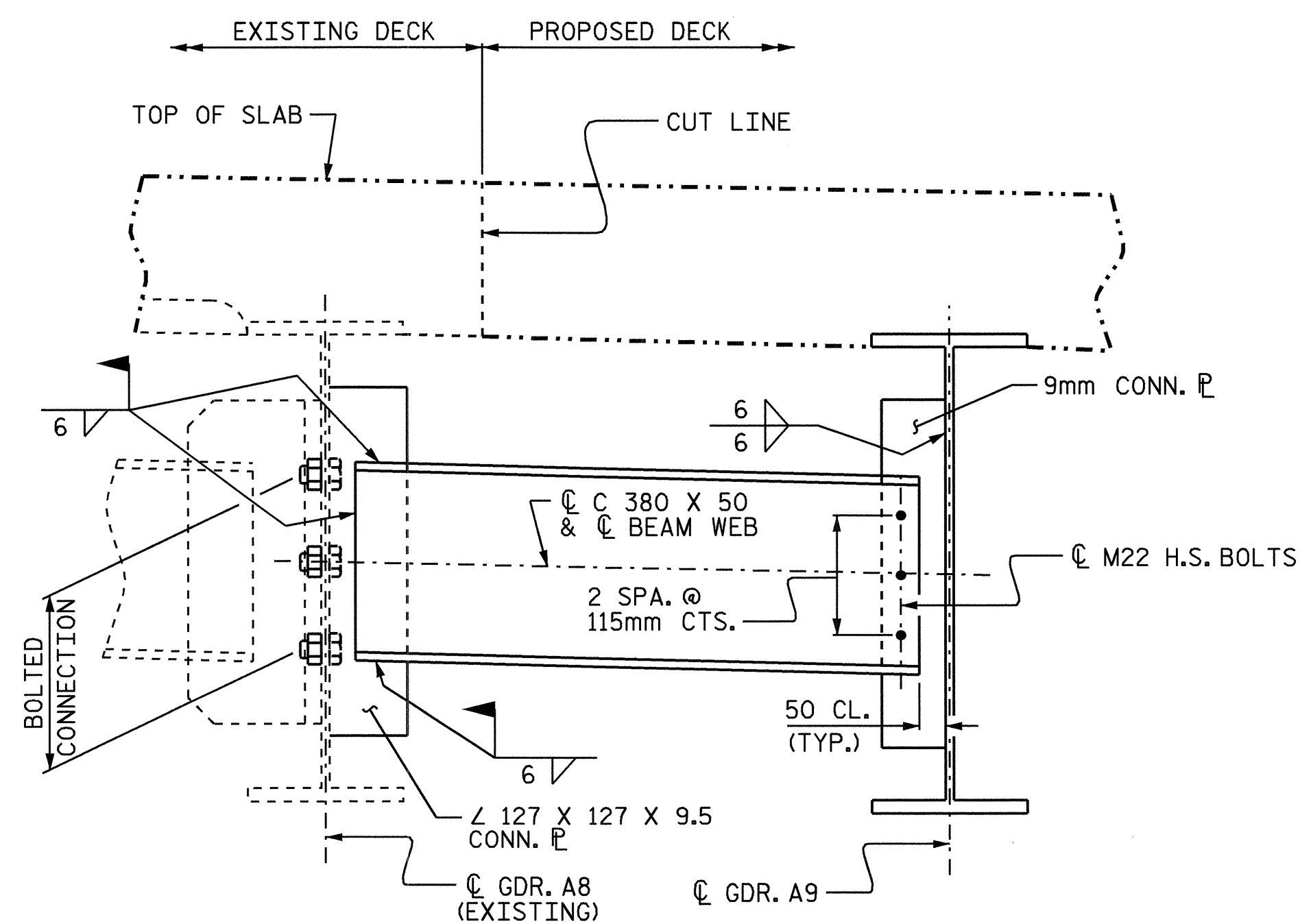
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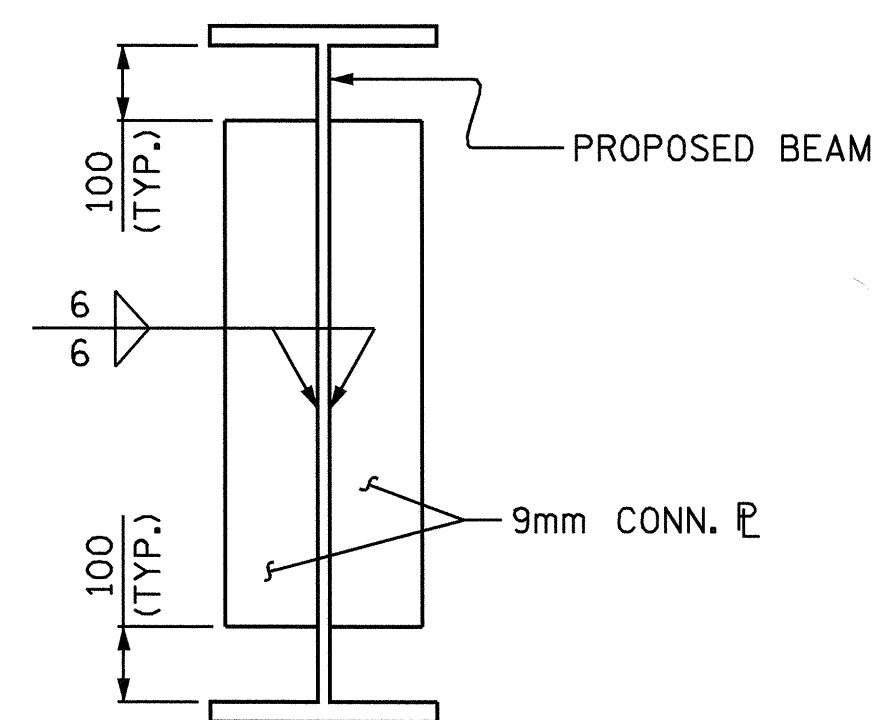
BENT DIAPHRAGM (D1)
(SPAN "A" SHOWN, SPAN "C" SIMILAR)



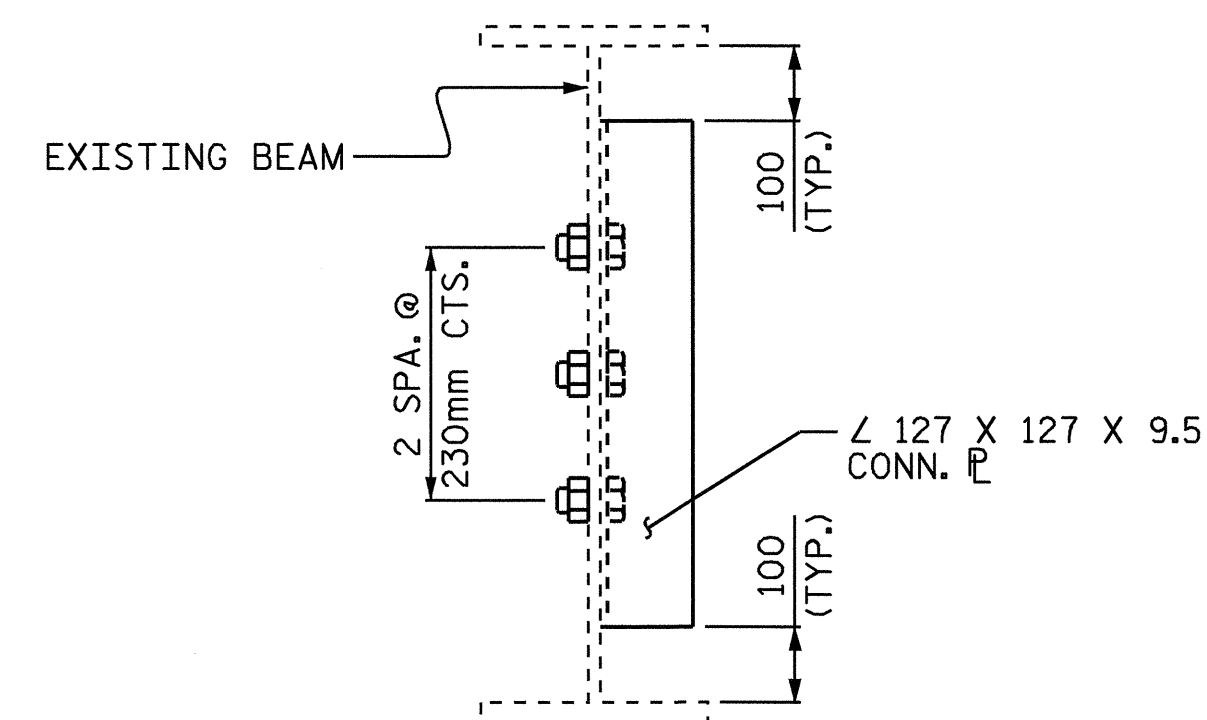
INTERMEDIATE DIAPHRAGM (D2)
(SPAN "A" SHOWN, SPAN "C" SIMILAR)



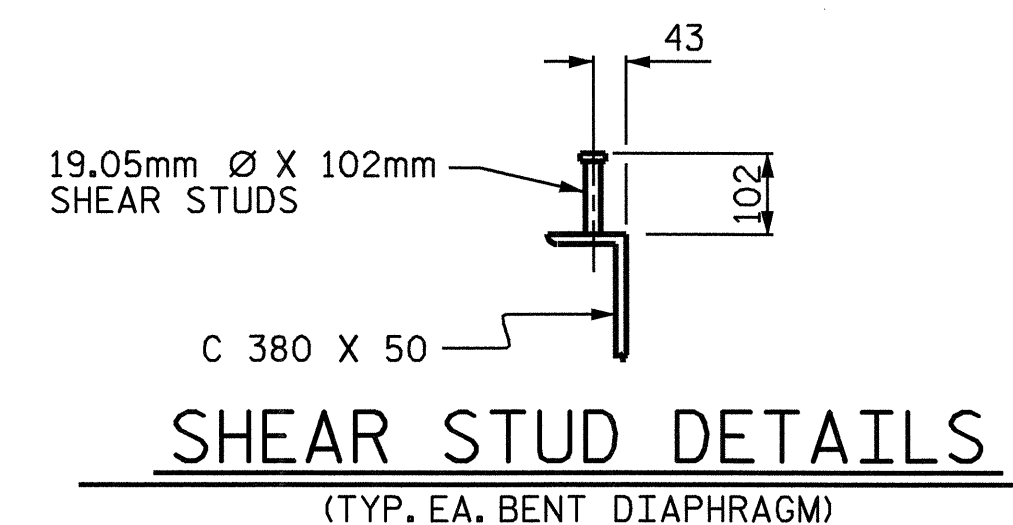
INTERMEDIATE DIAPHRAGM (D3)
(BAY 8 SHOWN, BAY 2 SIMILAR)
(SPAN "A" SHOWN, SPAN "C" SIMILAR)



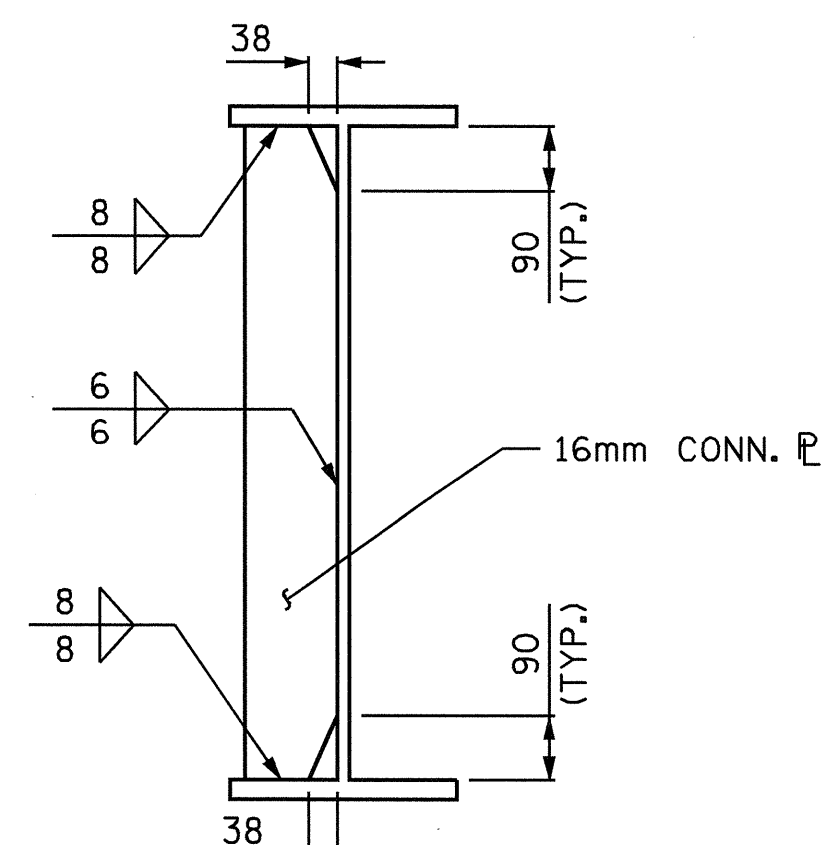
CONNECTOR PLATE DETAIL
(AT TYPE D2 AND TYPE D3 DIAPHRAGMS)



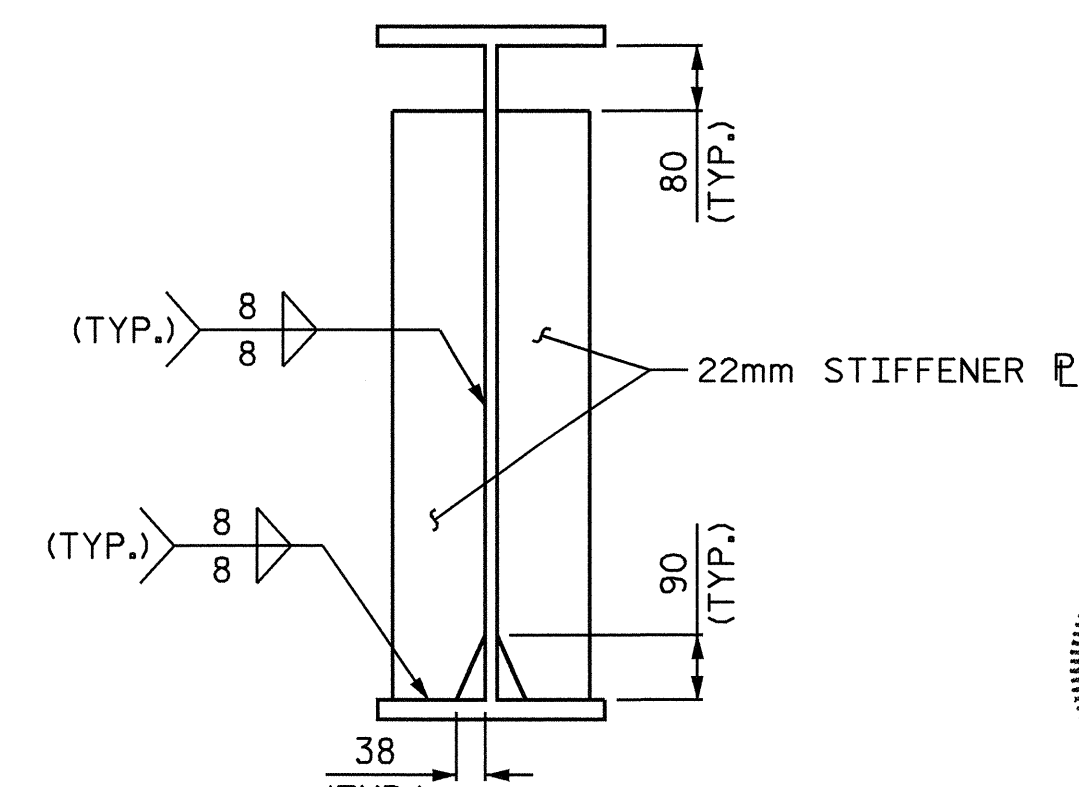
CONNECTOR PLATE DETAIL
(AT TYPE D3 DIAPHRAGMS)



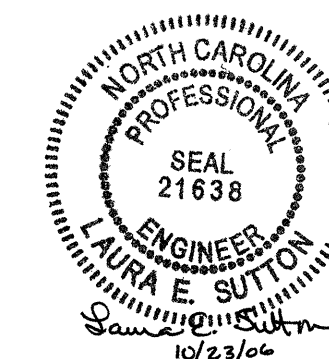
SHEAR STUD DETAILS
(TYP. EA. BENT DIAPHRAGM)



CONNECTOR PLATE DETAIL
(AT TYPE D1 DIAPHRAGMS)



STIFFENER PLATE DETAIL
(AT TYPE D1 DIAPHRAGMS)



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SHEET 3 OF 5

STATE OF NORTH CAROLINA
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SUPERSTRUCTURE
STRUCTURAL STEEL
DETAILS

REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-18	
1			3			TOTAL SHEETS	55
2			4				

DRAWN BY: P.C. BREWER DATE: 4/5/05
CHECKED BY: A.C. OUTLAW DATE: 4/29/05

NOTES:

ALL STRUCTURAL STEEL SHALL BE AASHTO M270 GRADE 345W AND PAINTED IN ACCORDANCE WITH SYSTEM 4 OF ARTICLE 442-7 OF THE STANDARD SPECIFICATIONS UNLESS OTHERWISE NOTED ON THE PLANS.

ALL DIMENSIONS SHOWN ARE HORIZONTAL OR VERTICAL, UNLESS OTHERWISE NOTED.

ALL FIELD CONNECTIONS TO BE 22.23mm DIA. HIGH STRENGTH BOLTS UNLESS OTHERWISE NOTED.

STIFFENERS ARE NOT REQUIRED ON THE OUTSIDE OF EXTERIOR BEAMS OR AT END BENT ENDS OF BEAMS.

A CHARPY V-NOTCH TEST IS REQUIRED ON ALL BEAM SECTIONS IN SPAN "A" AND SPAN "C" IN ACCORDANCE WITH ARTICLE 1072-9 OF THE STANDARD SPECIFICATIONS.

A CHARPY V-NOTCH TEST IS REQUIRED FOR WEB PLATES AND BOTTOM FLANGE PLATES IN SPAN "B" IN ACCORDANCE WITH ARTICLE 1072-9 OF THE STANDARD SPECIFICATIONS.

WHERE DIAPHRAGMS ARE TO BE BOLTED TO EXISTING STEEL BEAMS, DO NOT REMOVE PAINT FROM THE CONTACT SURFACE.

CONNECTION BOLTS FOR THE ANGLE CONNECTOR PLATES ON DIAPHRAGMS D3 & D6 ARE TO BE TIGHTENED TO A SNUG FIT PRIOR TO FIELD WELDING OPPOSITE END OF DIAPHRAGM. AFTER WELDING DIAPHRAGM TO CONNECTION ANGLE AND PRIOR TO THE POURING OF THE SLAB, TIGHTEN BOLTS AS REQUIRED BY THE STANDARD SPECIFICATIONS.

SHOP SPLICES ARE PERMITTED TO LIMIT THE MAXIMUM REQUIRED FLANGE PIECE LENGTHS TO 18 METERS AND WEB PIECE LENGTHS TO 14 METERS. PERMITTED FLANGE AND WEB SHOP SPLICES SHALL NOT BE LOCATED WITHIN 4.5 METERS OF MAXIMUM DEAD LOAD DEFLECTION. KEEP 600mm MINIMUM BETWEEN WEB AND FLANGE SHOP SPLICES. KEEP 150mm MINIMUM BETWEEN CONNECTOR PLATE OR TRANSVERSE STIFFENER WELDS AND WEB OR FLANGE SHOP SPLICES.

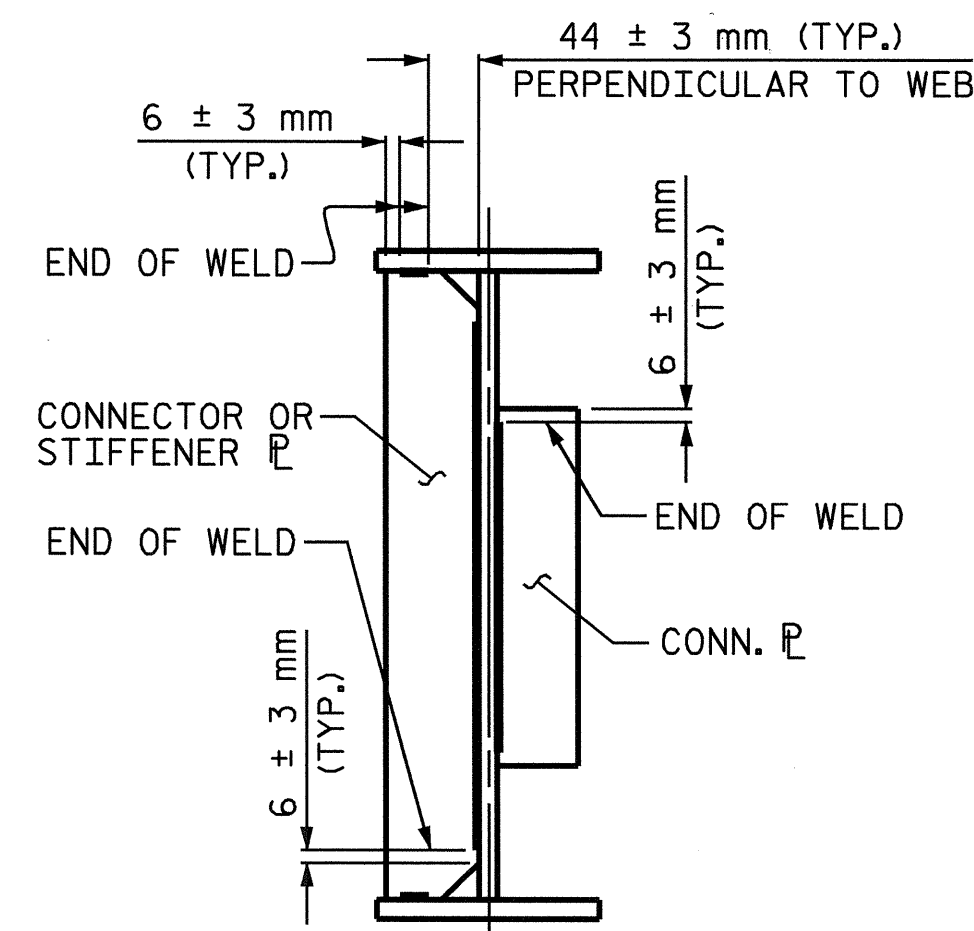
STUDS ON GIRDERS MAY BE SHIFTED UP TO 25mm IF NECESSARY TO CLEAR FLANGE SPLICE WELD.

BEARING STIFFENERS ARE TO BE PLACED NORMAL TO THE WEB OF THE GIRDER AND SHALL BE PLUMB.

TENSION ON THE AASHTO M164 BOLTS SHALL BE CALIBRATED USING DIRECT TENSION INDICATOR WASHERS IN ACCORDANCE WITH ARTICLE 440-10 OF THE STANDARD SPECIFICATIONS.

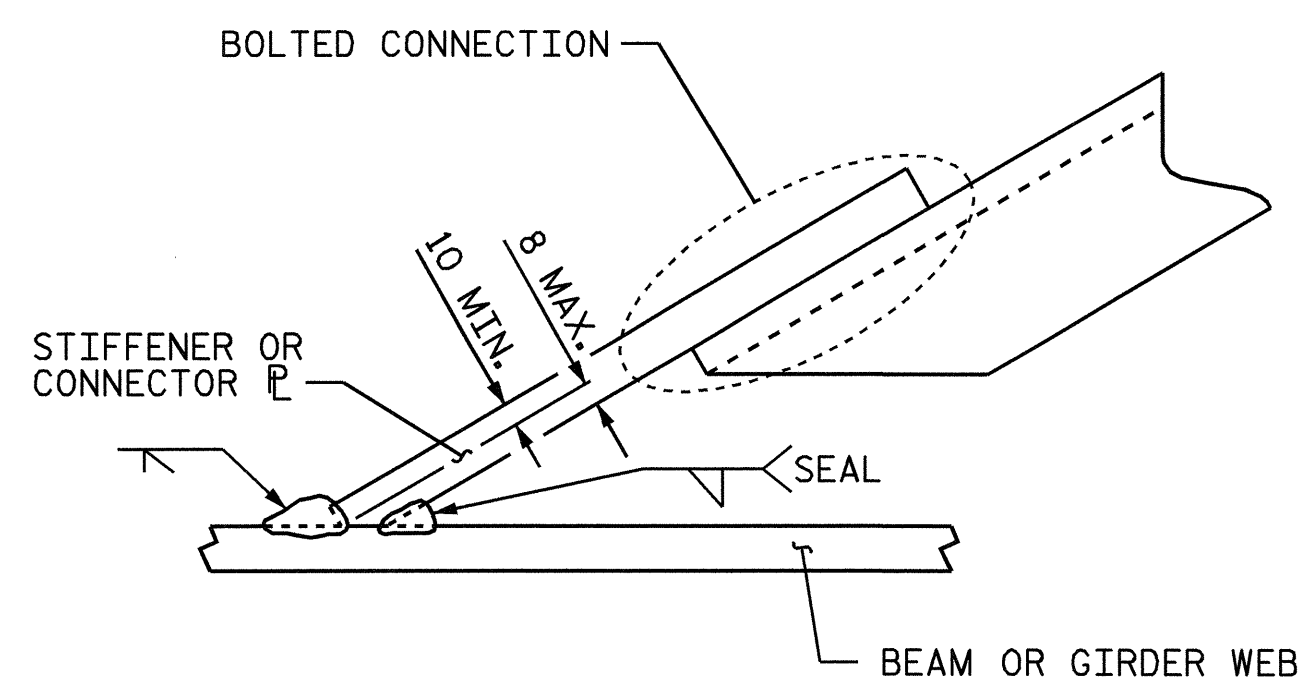
BEARING STIFFENER MAY REQUIRE COPING IF WIDER THAN BOTTOM FLANGE TO AVOID INTERFERENCE WITH THE ANCHOR BOLT.

END OF BEAMS AND GIRDERS SHALL BE PLUMB.

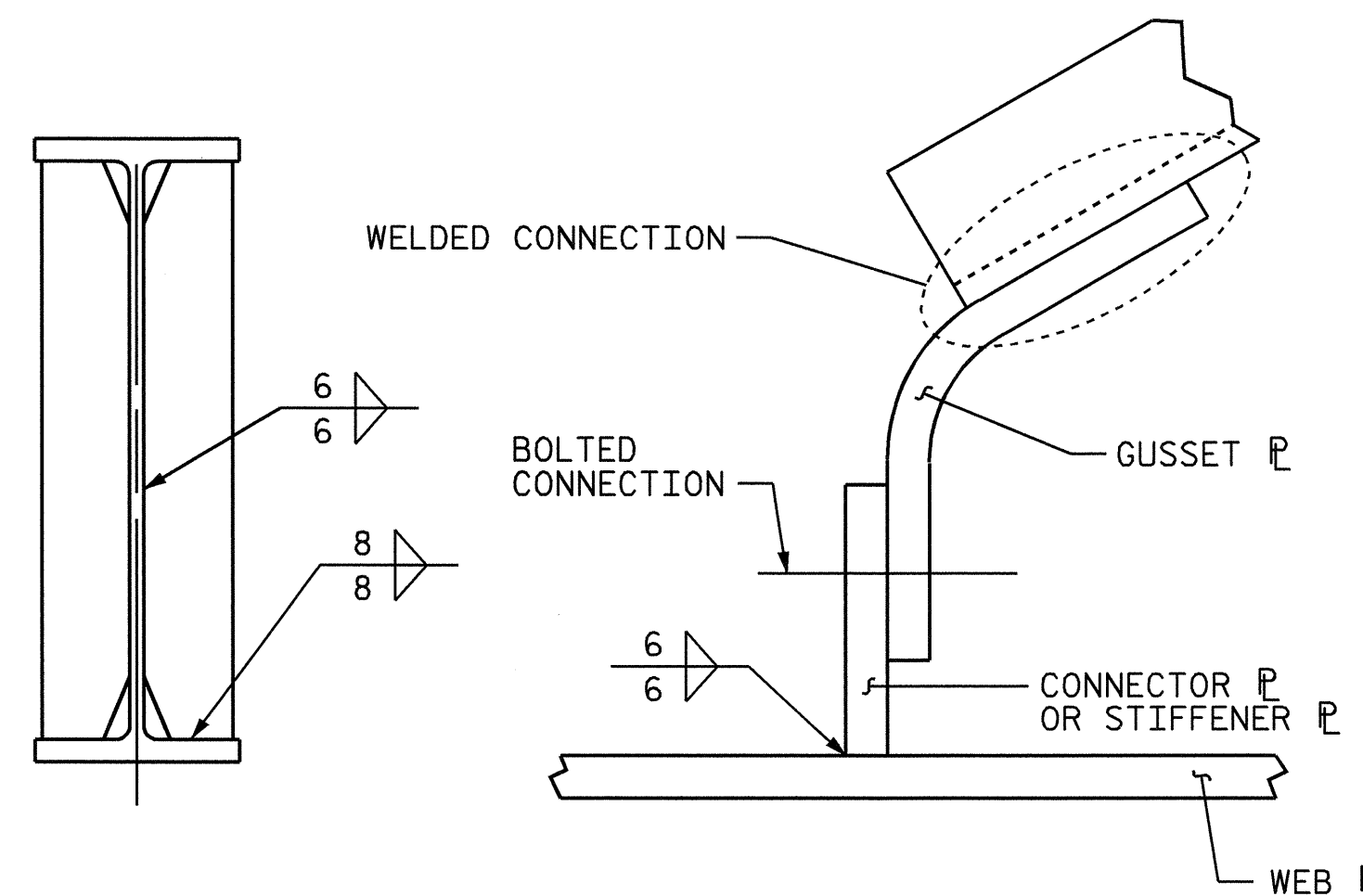


TYPICAL STIFFENER OR CONNECTOR PLATE CONNECTIONS

WELD TERMINATION DETAILS



DETAIL "B"

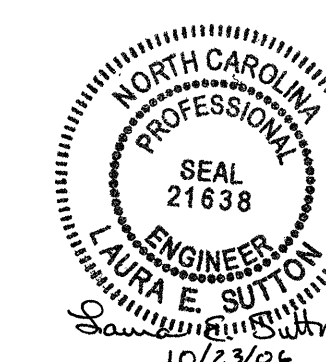


DETAIL "C"

PROJECT NO. U-2408
GASTON COUNTY
 STATION: 20+57.612 -L-

SHEET 5 OF 5

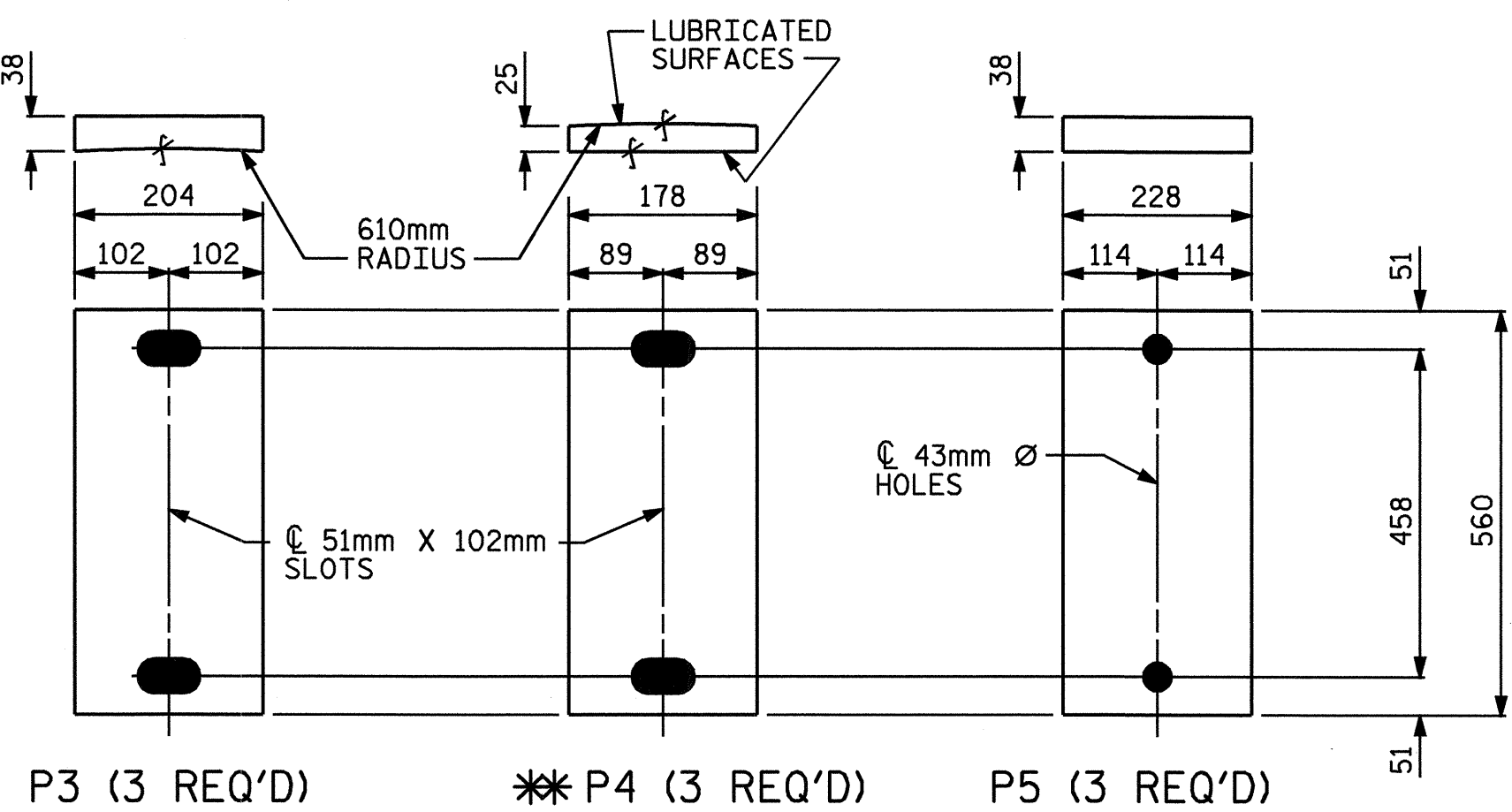
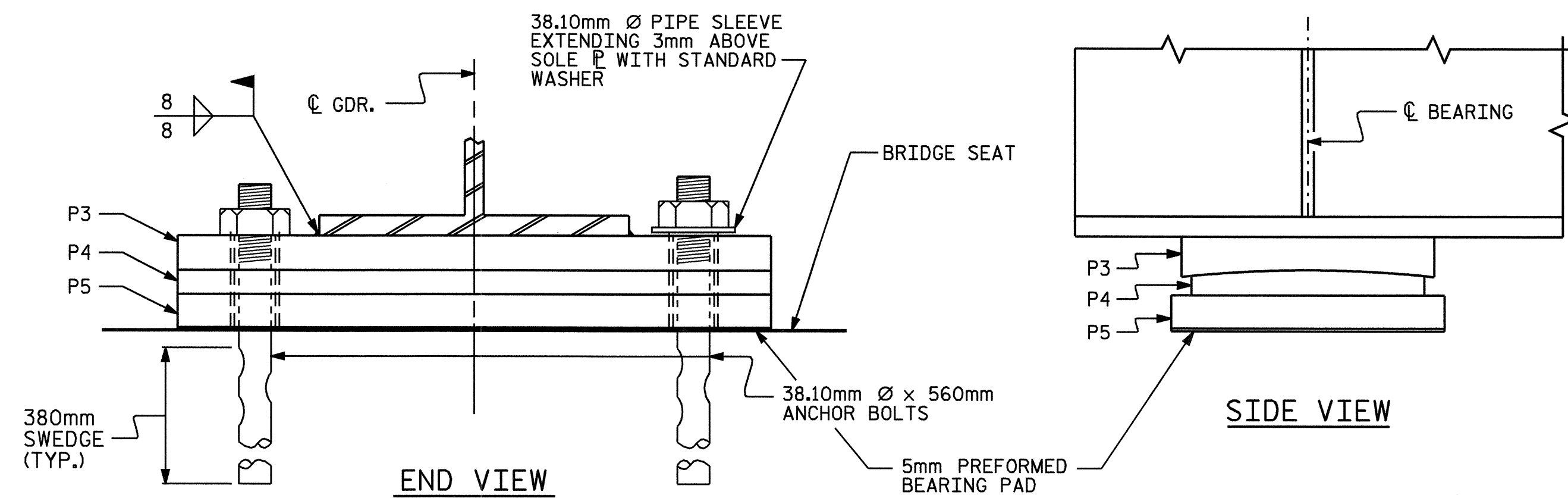
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
 STRUCTURAL STEEL
 DETAILS



DRAWN BY : P.C. BREWER DATE : 4/5/05
 CHECKED BY : A.C. OUTLAW DATE : 5/3/05

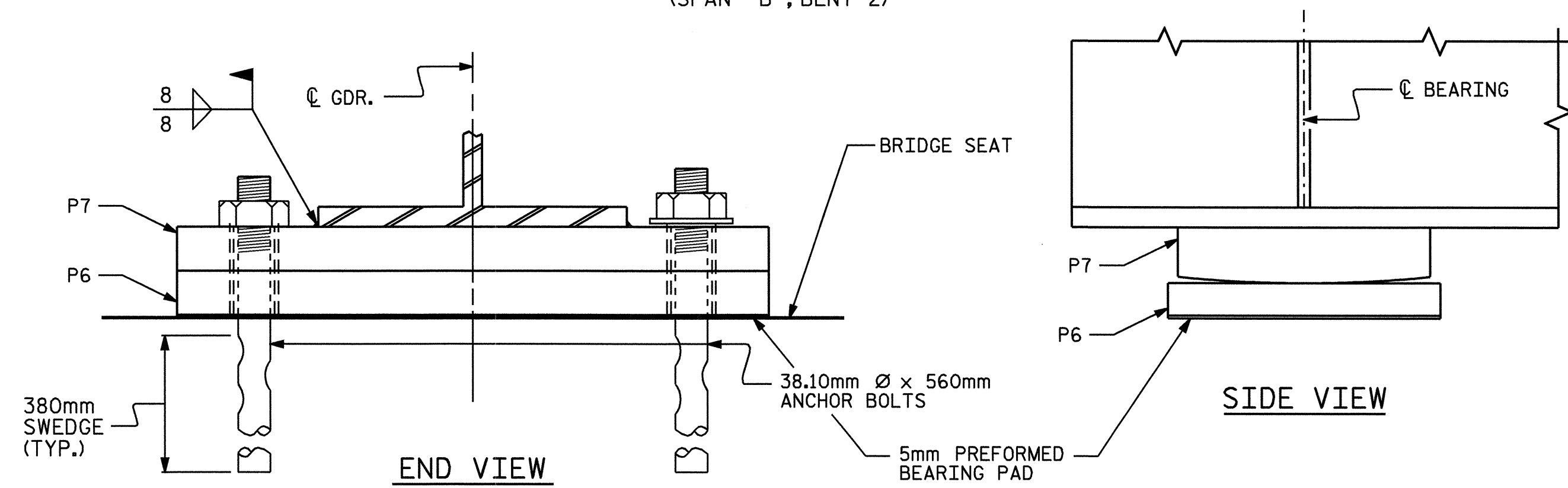
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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-20
1			3			TOTAL SHEETS
2			4			55



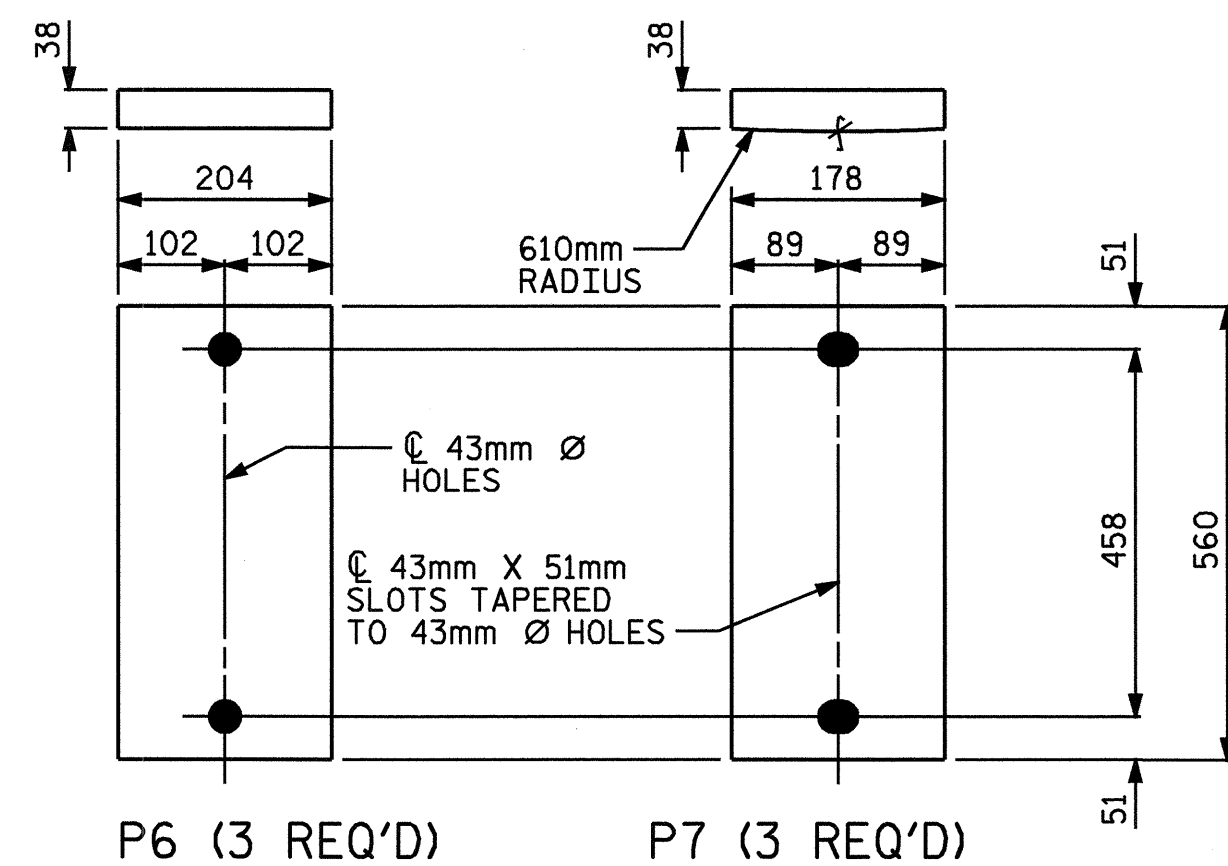
BEARING PLATE DETAILS
EXPANSION BEARING DETAILS

(SPAN "B", BENT 2)



END VIEW

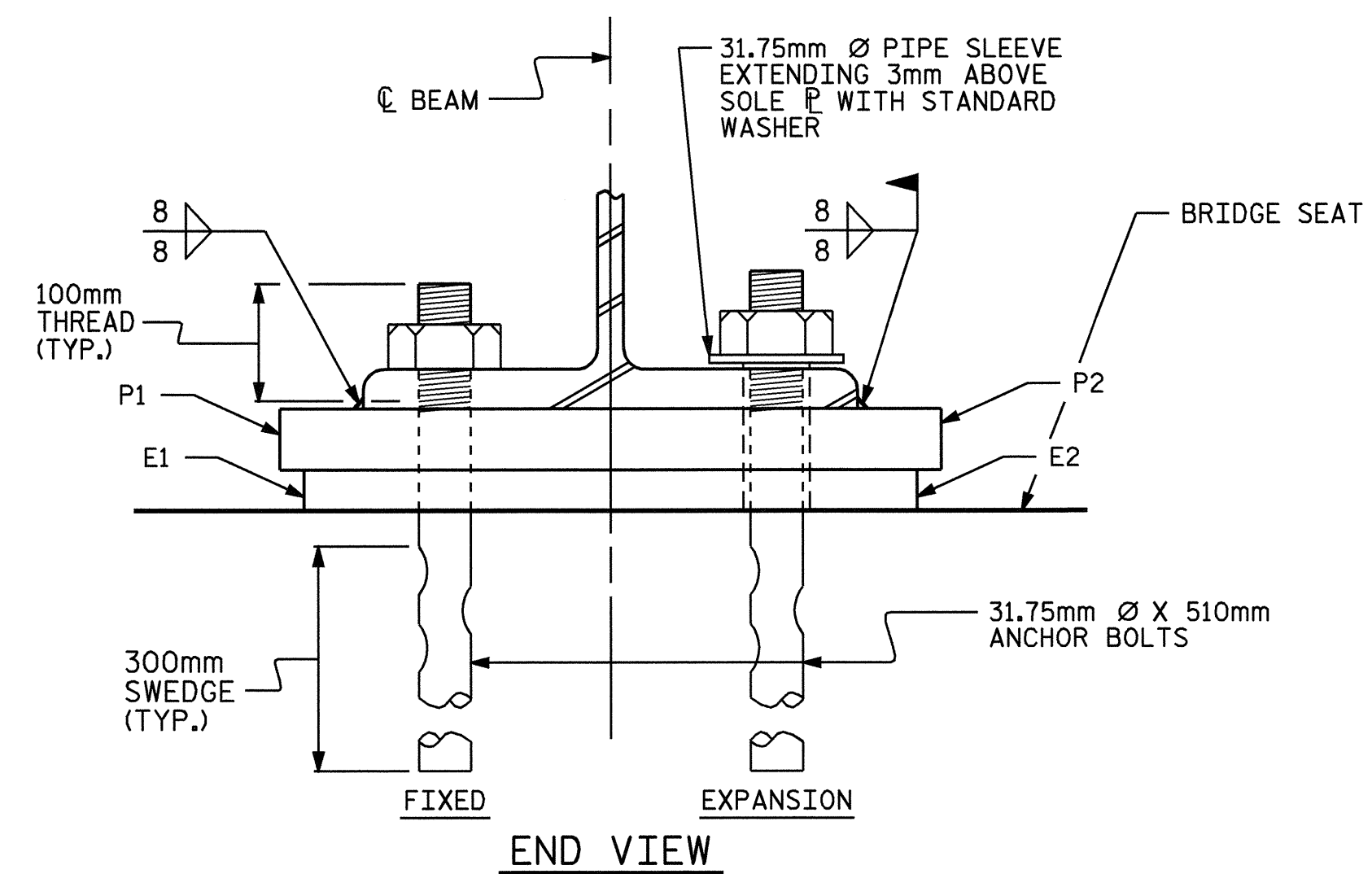
SIDE VIEW



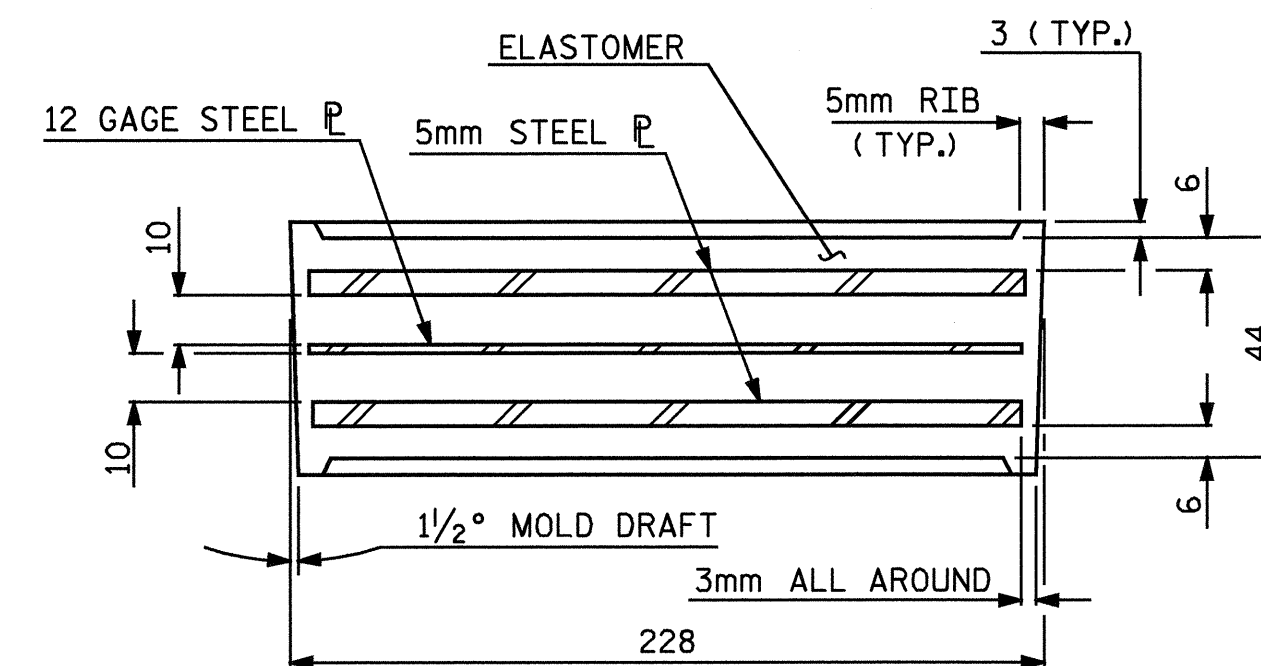
BEARING PLATE DETAILS

FIXED BEARING DETAILS

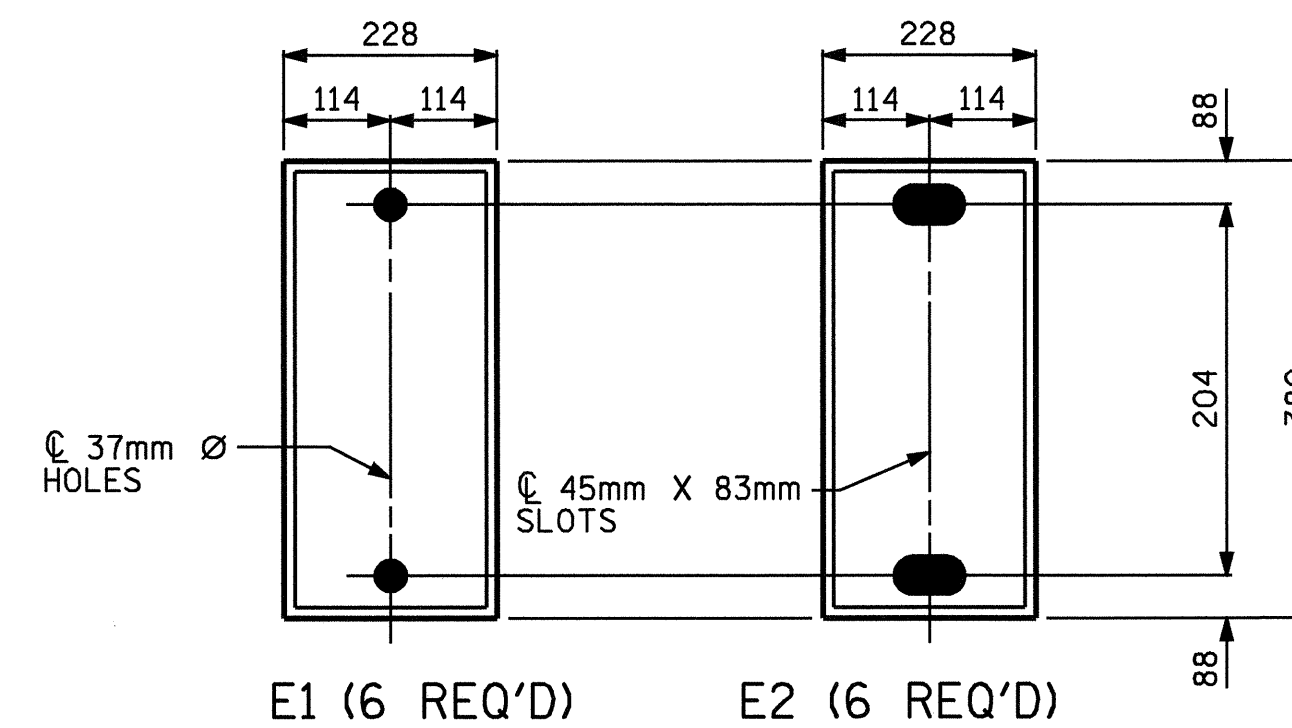
(SPAN "B", BENT 1)



END VIEW



TYPICAL SECTION OF ELASTOMERIC BEARING

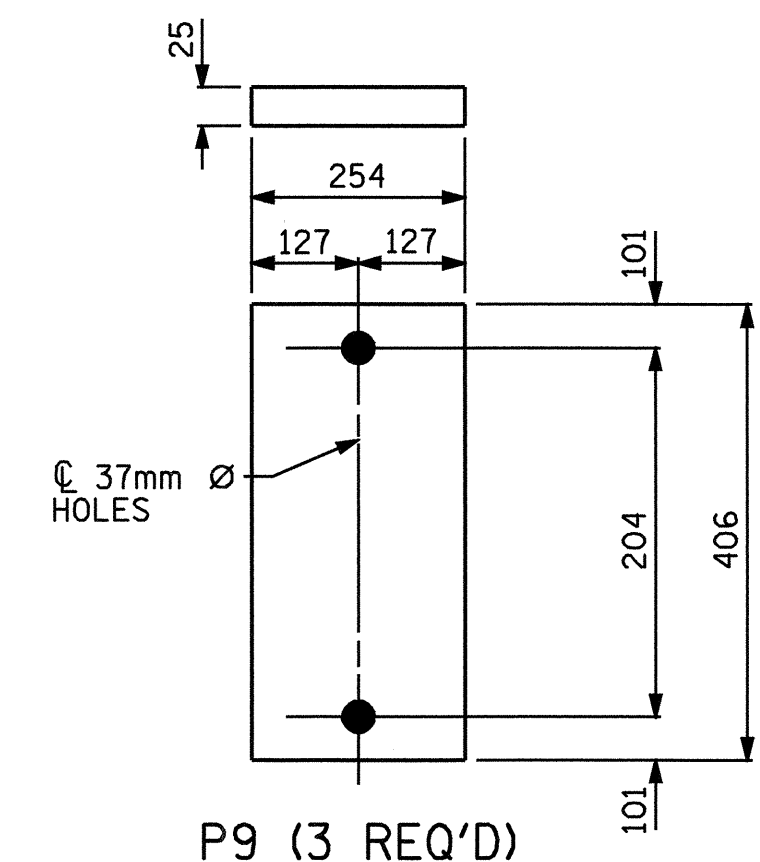


E1 (6 REQ'D) E2 (6 REQ'D)

PLAN VIEW OF ELASTOMERIC BEARING

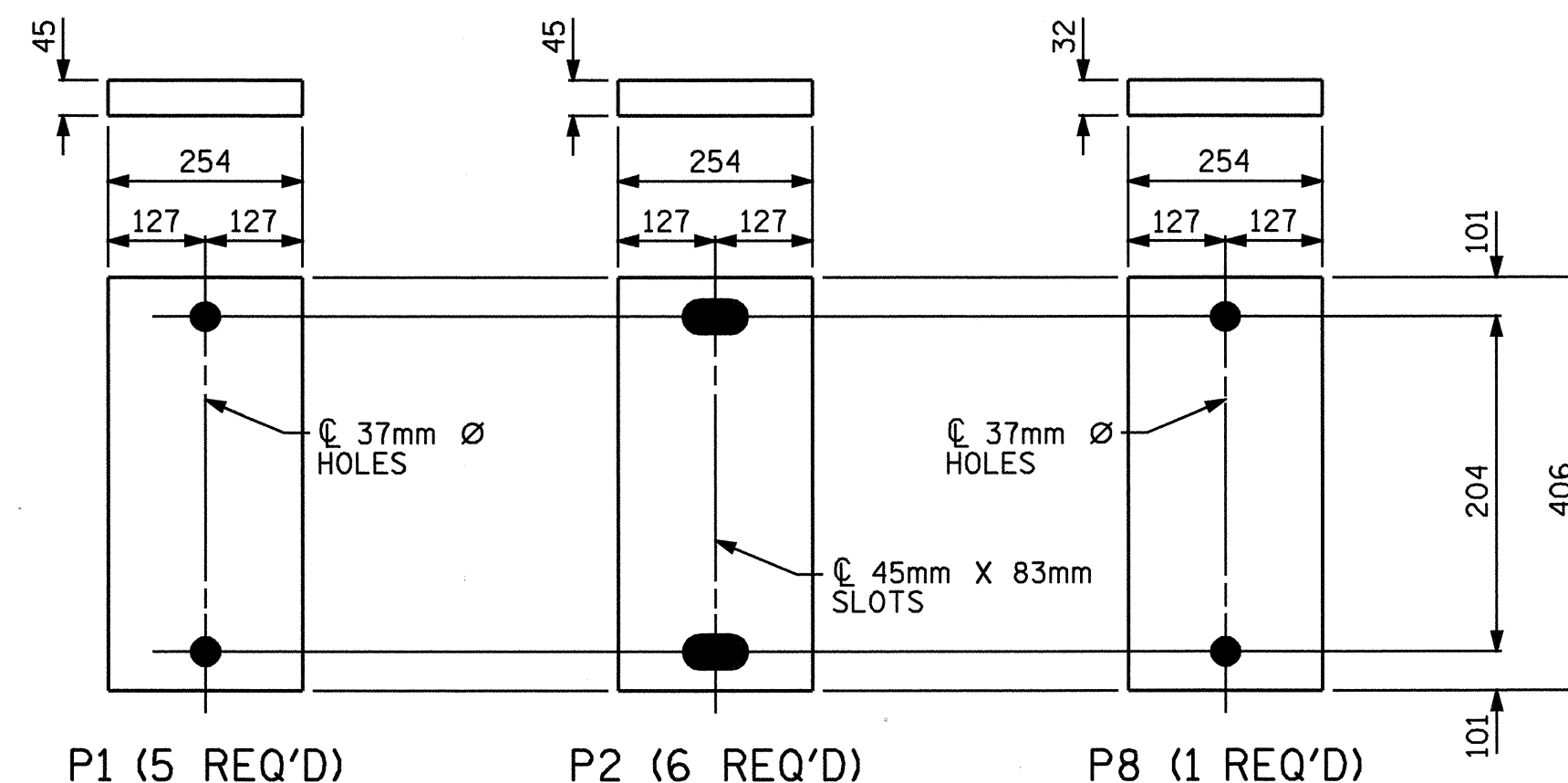
ELASTOMERIC BEARING DETAILS

(SPANS "A" AND "C")



P9 (3 REQ'D)

FILL PLATE DETAILS



P1 (5 REQ'D)

P2 (6 REQ'D)

P8 (1 REQ'D)

SOLE PLATE DETAILS

NOTES:

FOR ELASTOMERIC BEARINGS, SEE SPECIAL PROVISIONS.

FOR SELF-LUBRICATING BEARING ASSEMBLIES, SEE SPECIAL PROVISIONS.

AT ALL FIXED POINTS OF SUPPORT, NUTS FOR ANCHOR BOLTS ARE TO BE TIGHTENED FINGER TIGHT AND THEN BACKED OFF 1/2 TURN. THE THREAD OF THE NUT AND BOLT SHALL THEN BE BURRED WITH A SHARP POINTED TOOL.

THE 38.10mm diameter AND 31.75mm diameter PIPE SLEEVES SHALL BE CUT FROM SCHEDULE 40 PVC PLASTIC PIPE. THE PVC PLASTIC PIPE SHALL MEET THE REQUIREMENTS OF ASTM D1785.

THE PAYMENT FOR THE PIPE SLEEVES SHALL BE INCLUDED IN THE SEVERAL PAY ITEMS.

SOLE PLATES, ANCHOR BOLTS, NUTS, AND WASHERS SHALL BE GALVANIZED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

WHEN FIELD WELDING THE SOLE PLATE TO THE BEAM/GIRDER, USE TEMPERATURE INDICATING WAX PENS, OR OTHER SUITABLE MEANS, TO ENSURE THAT THE TEMPERATURE OF THE BEARING DOES NOT EXCEED 149°C TEMPERATURES ABOVE THIS MAY DAMAGE THE ELASTOMER.

ALL BEARING PLATES EXCEPT SELF-LUBRICATING PLATES SHALL BE AASHTO M270 GRADE 250.

ANCHOR BOLTS SHALL MEET THE REQUIREMENTS OF ASTM A449. NUTS SHALL MEET THE REQUIREMENTS OF AASHTO M291M-12 OR AASHTO M292M-2H. WASHERS SHALL MEET THE REQUIREMENTS OF AASHTO M293M. SHOP DRAWINGS ARE NOT REQUIRED FOR ANCHOR BOLTS, NUTS AND WASHERS. SHOP INSPECTION IS REQUIRED.

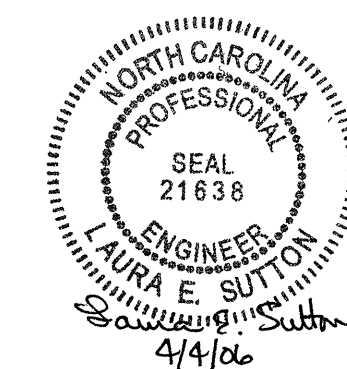
ALL SURFACES OF BEARING PLATES SHALL BE SMOOTH AND STRAIGHT.

* THIS PLATE IS TO BE AN OILESS SELF-LUBRICATING COPPER ALLOY BEARING PLATE OF APPROVED QUALITY. SEE SPECIAL PROVISIONS.

PRIOR TO FABRICATING FILL PLATES, FIELD VERIFY THE EXISTING BRIDGE SEATS AT END BENTS 1 AND 2. IF THE EXISTING BRIDGE SEAT ELEVATION IS MORE THAN 6mm HIGHER OR LOWER THAN THE ELEVATION DETAILED IN THE PLANS, INCORPORATE THAT DIFFERENCE INTO THE FILL PLATE HEIGHTS.

DRAWN BY : P.C. BREWER DATE : 4/18/05
CHECKED BY : A.C. OUTLAW DATE : 5/2/05

04-APR-2006 10:49
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pbrewer



PROJECT NO. U-2408
GASTON COUNTY
STATION: 20+57.612 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE
BEARING DETAILS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-21
1			3			TOTAL SHEETS
2			4			55

DEAD LOAD DEFLECTION TABLE FOR BEAMS/GIRDERS

	SPAN "A"																																
	BEAM A1										BEAM A2										BEAM A9												
	0	.1	.2	.3	.4	.5	.6	.7	.8	.9	0	0	.1	.2	.3	.4	.5	.6	.7	.8	.9	0	0	.1	.2	.3	.4	.5	.6	.7	.8	.9	0
TENTH POINTS	0	.1	.2	.3	.4	.5	.6	.7	.8	.9	0	0	.1	.2	.3	.4	.5	.6	.7	.8	.9	0	0	.1	.2	.3	.4	.5	.6	.7	.8	.9	0
DEFLECTION DUE TO WEIGHT OF BEAM	0.000	0.000	0.001	0.002	0.003	0.003	0.003	0.003	0.002	0.001	0.000	0.000	0.000	0.001	0.002	0.002	0.003	0.003	0.003	0.002	0.001	0.000	0.000	0.000	0.001	0.001	0.002	0.003	0.003	0.002	0.002	0.001	0.000
DEFLECTION DUE TO WEIGHT OF SLAB *	0.000	0.002	0.005	0.009	0.012	0.014	0.014	0.013	0.010	0.005	0.000	0.000	0.001	0.003	0.005	0.007	0.008	0.008	0.007	0.006	0.003	0.000	0.000	0.001	0.003	0.004	0.006	0.007	0.008	0.007	0.005	0.003	0.000
DEFLECTION DUE TO WEIGHT OF PARAPET	0.000	0.001	0.002	0.004	0.005	0.006	0.006	0.006	0.004	0.002	0.000	0.000	0.000	0.001	0.002	0.003	0.003	0.003	0.003	0.002	0.001	0.000	0.000	0.001	0.002	0.003	0.005	0.006	0.006	0.005	0.004	0.002	0.000
TOTAL DEAD LOAD DEFLECTION	0.000	0.003	0.008	0.015	0.020	0.023	0.023	0.022	0.016	0.008	0.000	0.000	0.001	0.005	0.009	0.012	0.014	0.014	0.013	0.010	0.005	0.000	0.000	0.002	0.006	0.008	0.013	0.016	0.017	0.014	0.011	0.006	0.000
VERTICAL CURVE ORDINATE	0.000	0.007	0.012	0.015	0.017	0.018	0.017	0.015	0.012	0.007	0.000	0.000	0.007	0.012	0.015	0.017	0.018	0.017	0.015	0.012	0.007	0.000	0.000	0.007	0.012	0.015	0.017	0.018	0.017	0.015	0.012	0.007	0.000
REQUIRED CAMBER	0	10	20	30	37	41	40	37	28	15	0	0	8	17	24	29	32	31	28	22	12	0	0	9	18	23	30	34	34	29	23	13	0

	SPAN "B"																																
	GIRDER B1										GIRDER B2										GIRDER B9												
	0	.1	.2	.3	.4	.5	.6	.7	.8	.9	0	0	.1	.2	.3	.4	.5	.6	.7	.8	.9	0	0	.1	.2	.3	.4	.5	.6	.7	.8	.9	0
TENTH POINTS	0	.1	.2	.3	.4	.5	.6	.7	.8	.9	0	0	.1	.2	.3	.4	.5	.6	.7	.8	.9	0	0	.1	.2	.3	.4	.5	.6	.7	.8	.9	0
DEFLECTION DUE TO WEIGHT OF GIRDER	0.000	0.006	0.010	0.014	0.016	0.017	0.016	0.014	0.010	0.006	0.000	0.000	0.005	0.009	0.013	0.015	0.015	0.015	0.013	0.009	0.005	0.000	0.000	0.005	0.009	0.012	0.015	0.015	0.015	0.013	0.009	0.005	0.000
DEFLECTION DUE TO WEIGHT OF SLAB *	0.000	0.018	0.034	0.046	0.054	0.057	0.054	0.046	0.034	0.018	0.000	0.000	0.009	0.016	0.021	0.024	0.025	0.024	0.020	0.015	0.008	0.000	0.000	0.008	0.015	0.020	0.024	0.025	0.024	0.021	0.016	0.009	0.000
DEFLECTION DUE TO WEIGHT OF PARAPET	0.000	0.008	0.015	0.020	0.024	0.025	0.024	0.020	0.015	0.008	0.000	0.000	0.004	0.007	0.009	0.010	0.010	0.010	0.009	0.006	0.003	0.000	0.000	0.006	0.012	0.016	0.018	0.019	0.018	0.016	0.012	0.007	0.000
TOTAL DEAD LOAD DEFLECTION	0.000	0.032	0.059	0.080	0.094	0.099	0.094	0.080	0.059	0.032	0.000	0.000	0.018	0.032	0.043	0.049	0.050	0.049	0.042	0.030	0.016	0.000	0.000	0.019	0.036	0.048	0.057	0.059	0.057	0.050	0.037	0.021	0.000
VERTICAL CURVE ORDINATE	0.000	0.013	0.023	0.030	0.035	0.036	0.035	0.030	0.023	0.013	0.000	0.000	0.013	0.023	0.030	0.035	0.036	0.035	0.030	0.023	0.013	0.000	0.000	0.013	0.023	0.030	0.035	0.036	0.035	0.030	0.023	0.013	0.000
REQUIRED CAMBER	0	45	82	110	129	135	129	110	82	45	0	0	31	55	73	84	86	84	72	53	29	0	0	32	59	78	92	95	92	80	60	34	0

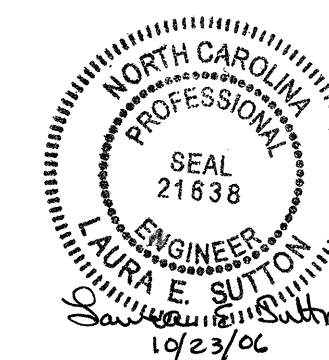
	SPAN "C"																																
	BEAM C1										BEAM C2										BEAM C9												
	0	.1	.2	.3	.4	.5	.6	.7	.8	.9	0	0	.1	.2	.3	.4	.5	.6	.7	.8	.9	0	0	.1	.2	.3	.4	.5	.6	.7	.8	.9	0
TENTH POINTS	0	.1	.2	.3	.4	.5	.6	.7	.8	.9	0	0	.1	.2	.3	.4	.5	.6	.7	.8	.9	0	0	.1	.2	.3	.4	.5	.6	.7	.8	.9	0
DEFLECTION DUE TO WEIGHT OF BEAM	0.000	0.001	0.002	0.003	0.003	0.003	0.002	0.002	0.001	0.000	0.000	0.000	0.001	0.002	0.002	0.003	0.002	0.002	0.001	0.001	0.000	0.000	0.000	0.001	0.002	0.002	0.003	0.003	0.002	0.002	0.001	0.000	0.000
DEFLECTION DUE TO WEIGHT OF SLAB *	0.000	0.005	0.009	0.012	0.013	0.013	0.011	0.008	0.005	0.001	0.000	0.000	0.003	0.005	0.006	0.007	0.006	0.005	0.004	0.002	0.001	0.000	0.000	0.003	0.006	0.007	0.008	0.008	0.007	0.005	0.003	0.001	0.000
DEFLECTION DUE TO WEIGHT OF PARAPET	0.000	0.002	0.004	0.005	0.006	0.006	0.005	0.004	0.002	0.001	0.000	0.000	0.001	0.002	0.003	0.003	0.003	0.002	0.002	0.001	0.000	0.000	0.000	0.002	0.004	0.006	0.006	0.006	0.005	0.004	0.002	0.001	0.000
TOTAL DEAD LOAD DEFLECTION	0.000	0.008	0.015	0.020	0.022	0.022	0.018	0.014	0.008	0.002	0.000	0.000	0.005	0.009	0.011	0.013	0.011	0.009	0.007	0.004	0.001	0.000	0.000	0.006	0.012	0.015	0.017	0.017	0.014	0.011	0.006	0.002	0.000
VERTICAL CURVE ORDINATE	0.000	0.006	0.011	0.015	0.017	0.018	0.017	0.015	0.011	0.006	0.000	0.000	0.006	0.011	0.015	0.017	0.018	0.017	0.015	0.011	0.006	0.000	0.000	0.006	0.011	0.015	0.017	0.018	0.017	0.015	0.011	0.006	0.000
REQUIRED CAMBER	0	14	26	35	39	40	35	29	19	8	0	0	11	20	26	30	29	26	22	15	7	0	0	12	23	30	34	35	31	26	17	8	0

* INCLUDES SLAB, BUILDUPS & STAY-IN-PLACE FORMS.
ALL VALUES ARE SHOWN IN METERS, EXCEPT "FINAL CAMBER" WHICH IS SHOWN IN MILLIMETERS.

NOTE:

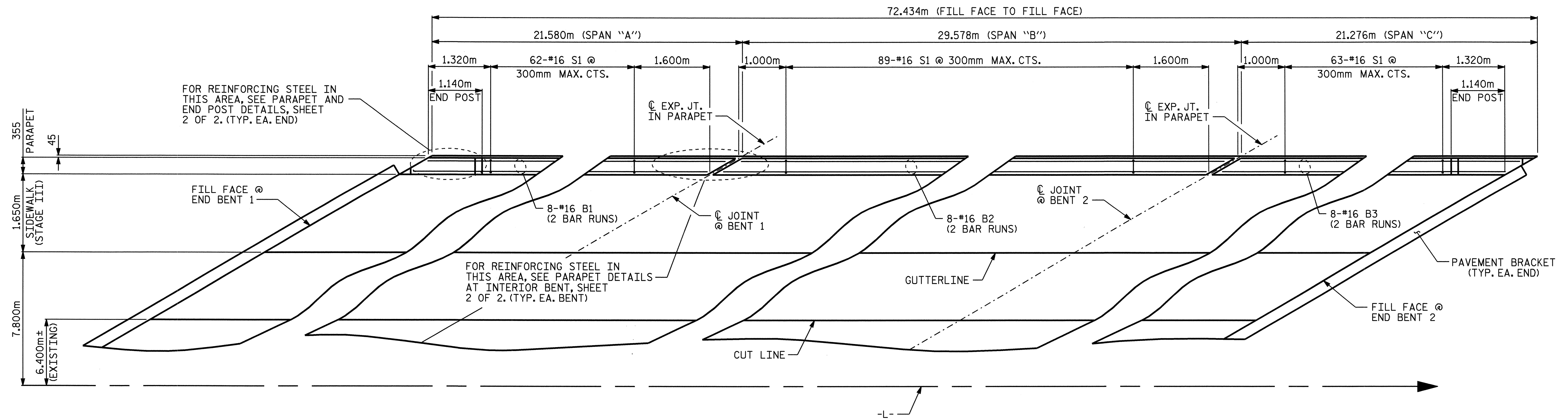
DEFLECTIONS DUE TO THE SLAB POUR SHALL BE FIELD MEASURED AND SUBMITTED TO THE ENGINEER FOR TRANSMITTAL TO STRUCTURE DESIGN UNIT PRIOR TO THE SIDEWALK POUR. AFTER REVIEW BY THE STRUCTURE DESIGN UNIT, MODIFICATIONS TO THE SIDEWALK PLANS MAY BE NECESSARY TO ENSURE A 35mm DRO.P ACROSS THE SIDEWALK.

PROJECT NO. U-2408
GASTON COUNTY
STATION: 20+57.612 -L-

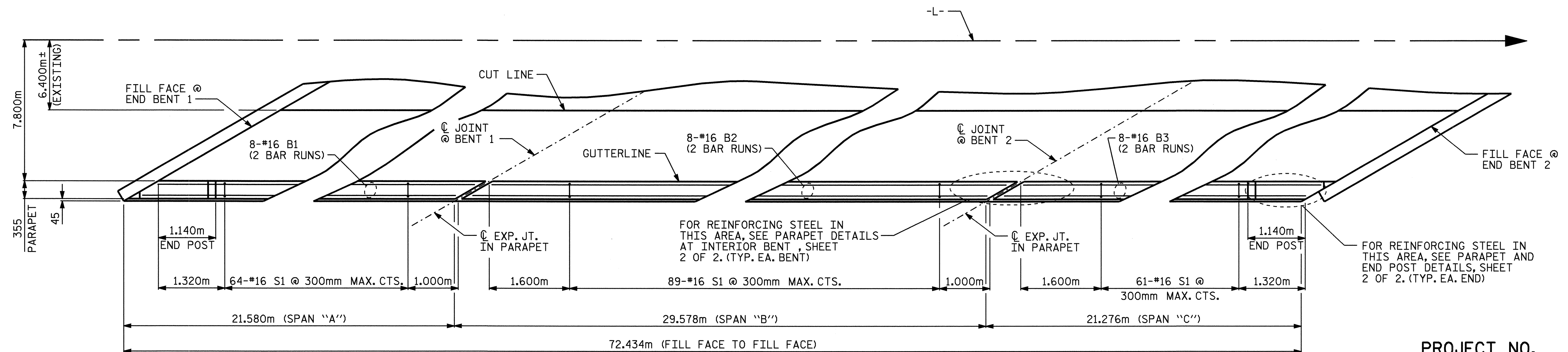


STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUPERSTRUCTURE DEAD LOAD DEFLECTIONS					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
SHEET NO.					S-22
TOTAL SHEETS					55

DRAWN BY : P.C. BREWER DATE : 4/11/05
CHECKED BY : A.C. OUTLAW DATE : 4/29/05



PLAN OF PARAPET (LEFT SIDE)
(STAGE I)



PLAN OF PARAPET (RIGHT SIDE)
(STAGE II)

NOTES:

THE PARAPET IN EACH SPAN SHALL NOT BE CAST UNTIL ALL SLAB CONCRETE IN THAT SPAN HAS BEEN CAST AND HAS REACHED A MINIMUM COMPRESSIVE STRENGTH OF 20.7 MPa.

FOR DETAIL OF CONCRETE INSERTS, SEE "RAIL POST SPACINGS AND END OF RAIL DETAILS" SHEET.

FOR DETAILS OF GUARDRAIL ANCHOR ASSEMBLIES, SEE "GUARDRAIL ANCHORAGE DETAILS FOR METAL RAILS" SHEETS.

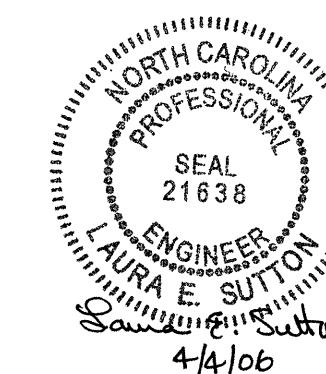
ALL REINFORCING STEEL IN THE PARAPETS SHALL BE EPOXY COATED.

THE #16 S2 BARS SHALL BE INSTALLED USING AN ADHESIVE ANCHORING SYSTEM AFTER SAWING THE JOINT. FOR ADHESIVELY ANCHORED BOLTS OR DOWELS, SEE SPECIAL PROVISIONS. THE YIELD LOAD FOR THE #16 S2 BARS IS 82.7 KN. FIELD TESTING OF THE ADHESIVE BONDING SYSTEM IS NOT REQUIRED.

LEFT SIDE PARAPET SHALL BE FORMED TO THE SAWED OPENING WIDTH FOR EVAZOTE JOINT SEALS AND SHALL BE CAST DURING STAGE I CONSTRUCTION.

RIGHT SIDE PARAPET SHALL NOT BE CAST UNTIL THE JOINTS IN THE DECK HAVE BEEN SAWED FOR STAGE II CONSTRUCTION.

GROOVED CONTRACTION JOINTS, 12mm IN DEPTH, SHALL BE TOOLED IN ALL EXPOSED FACES OF THE PARAPET IN ACCORDANCE WITH ARTICLE 825-10(B) OF THE STANDARD SPECIFICATIONS. THE CONTRACTION JOINT SHALL BE LOCATED AT A SPACING OF 2.4m TO 3.5m BETWEEN EXPANSION JOINTS. NO CONTRACTION JOINTS WILL BE REQUIRED FOR SEGMENTS LESS THAN 3.5m IN LENGTH.



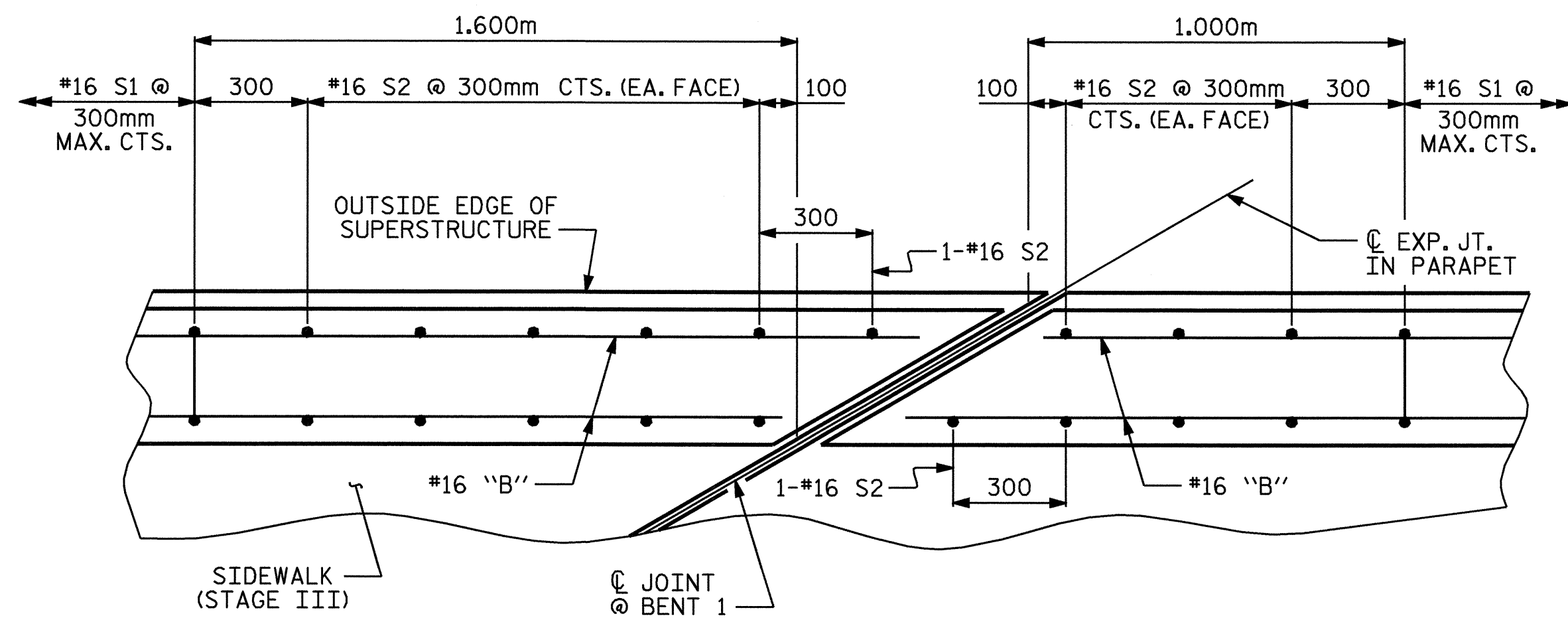
PROJECT NO. U-2408
GASTON COUNTY
STATION: 20+57.612 -L-

SHEET 1 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUPERSTRUCTURE
355mm X 810mm
CONCRETE PARAPET
DETAILS

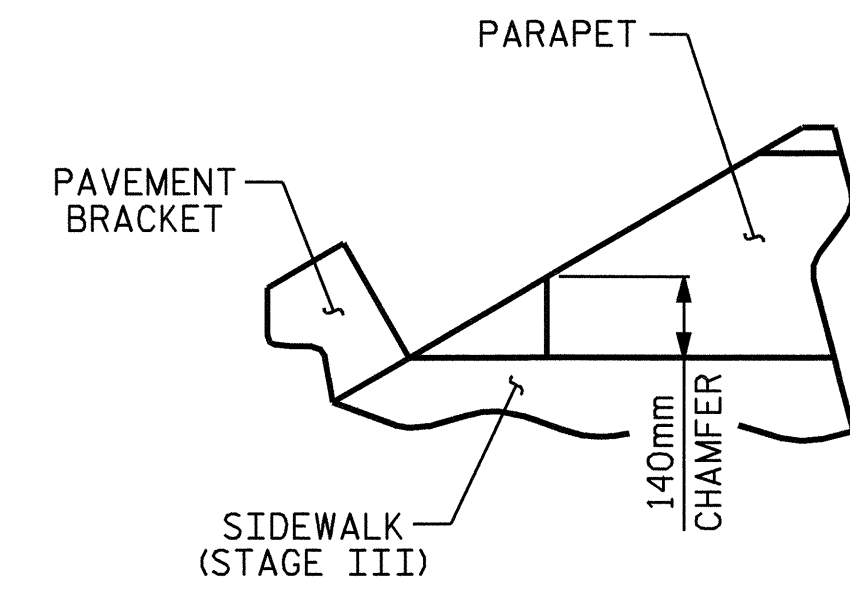
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-23
1			3			TOTAL SHEETS
2			4			55

DRAWN BY: P.C. BREWER DATE: 3/31/05
CHECKED BY: A.C. OUTLAW DATE: 5/2/05



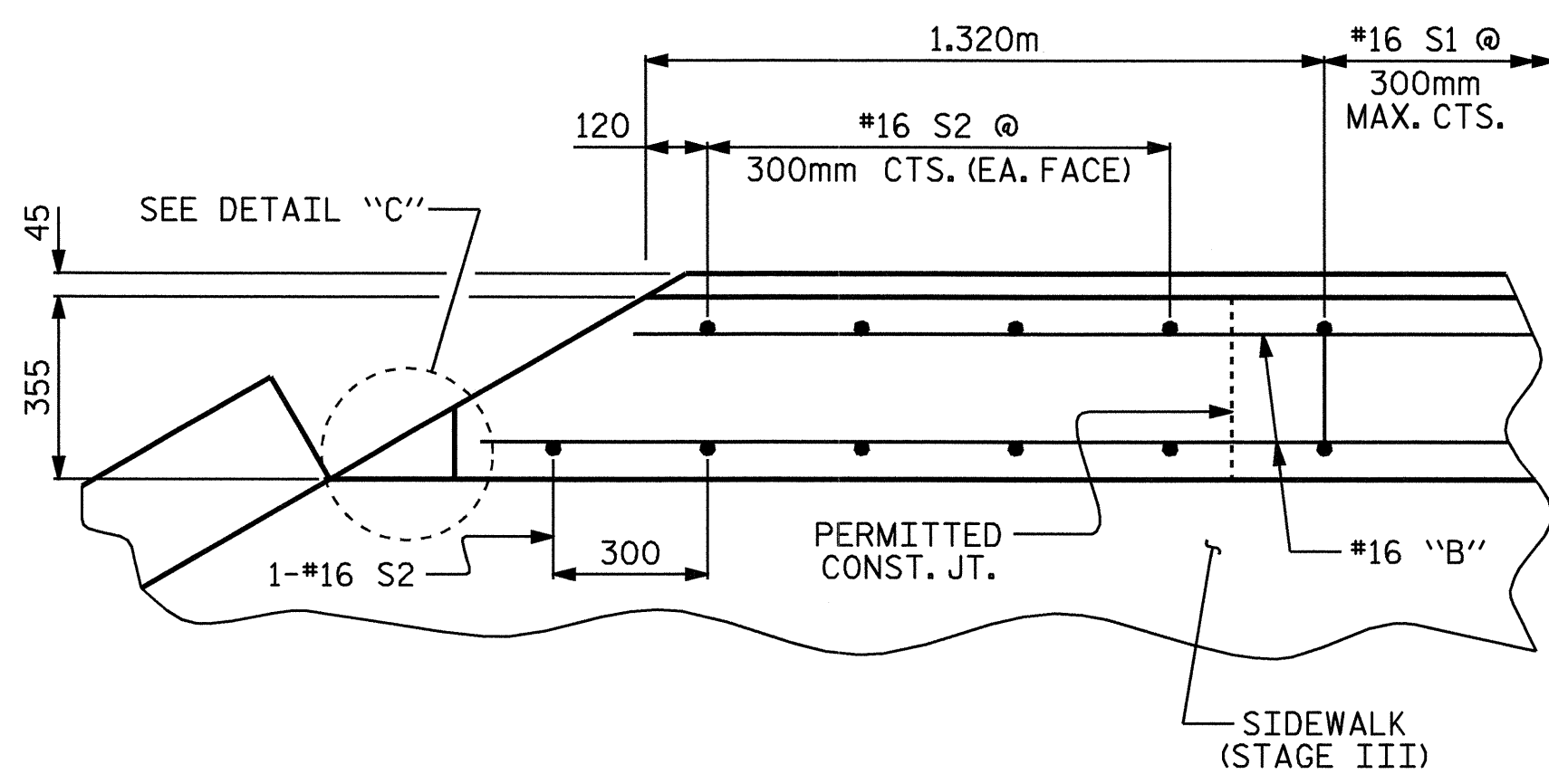
PARAPET DETAILS AT INTERIOR BENT

FOR ADHESIVE ANCHORING AT SAWED JOINTS
(BENT 1 SHOWN, BENT 2 SIMILAR)

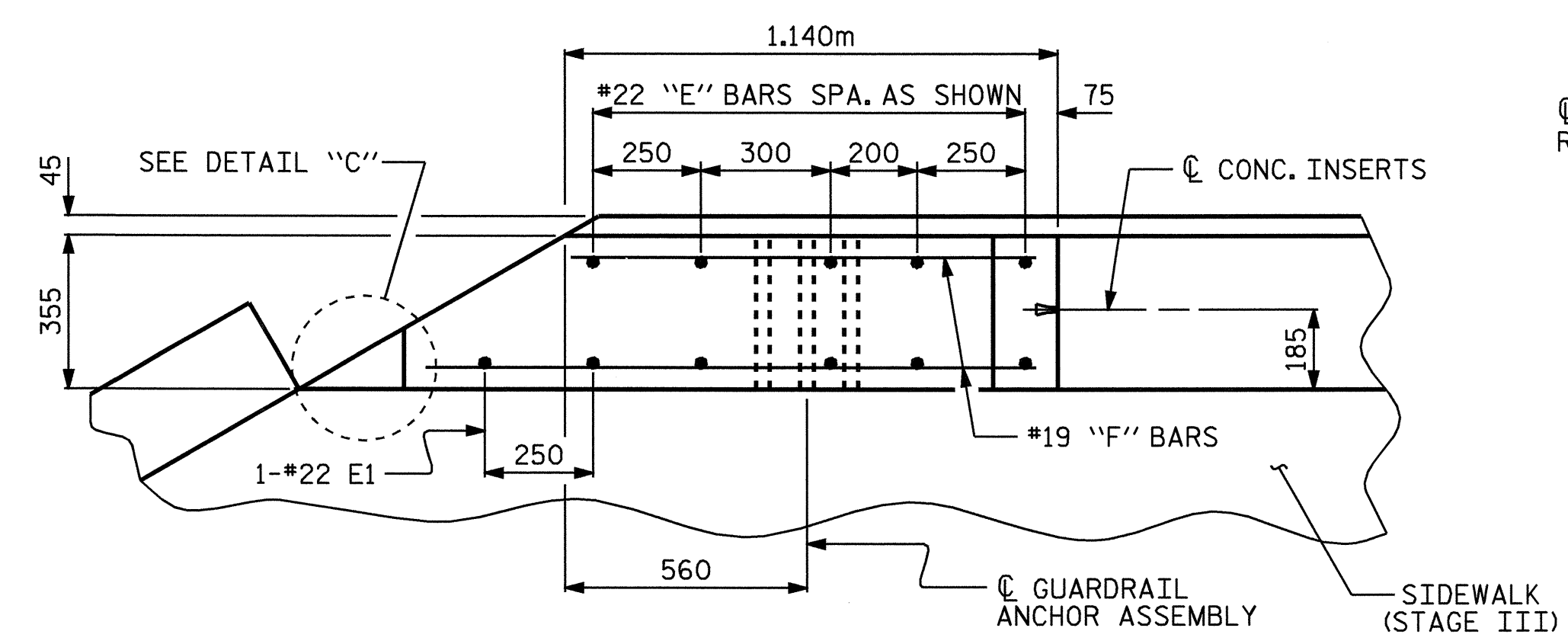


DETAIL "C"

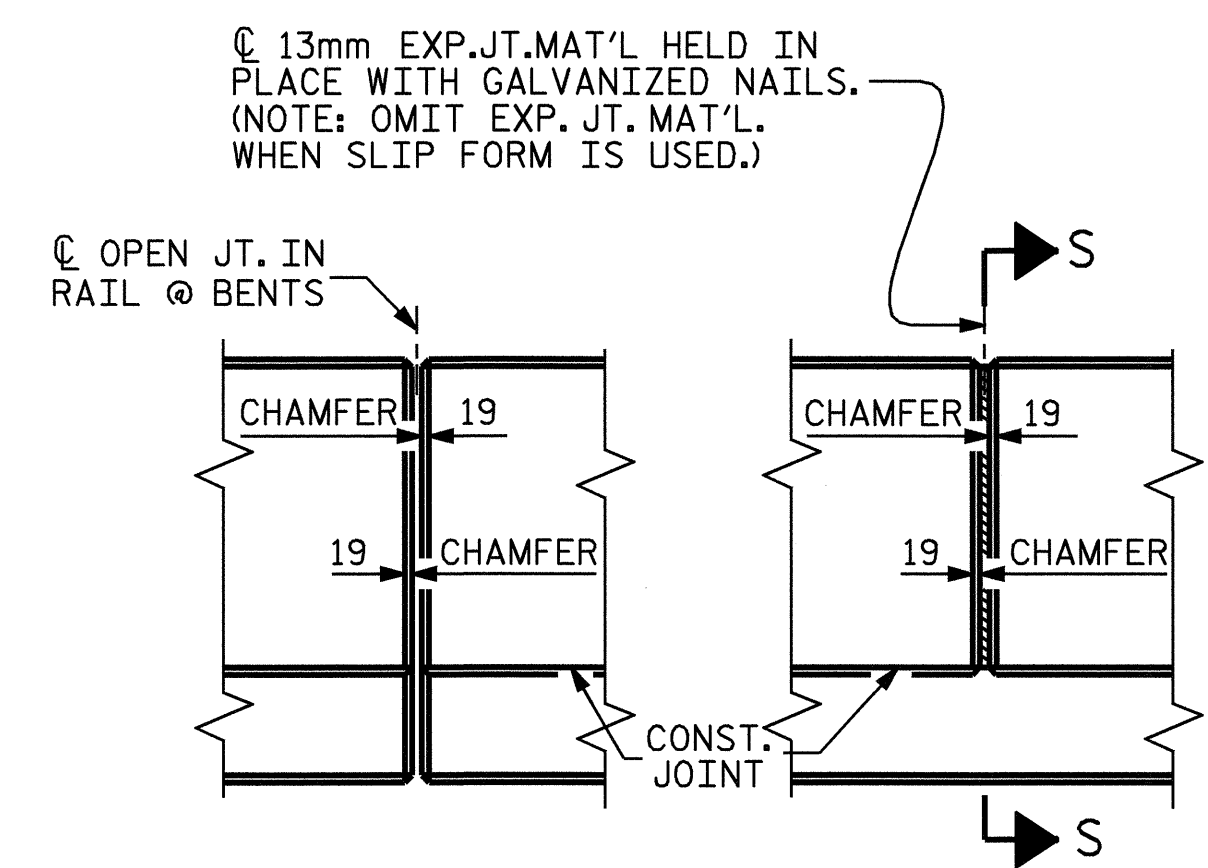
BILL OF MATERIAL					
STAGE I PARAPET AND END POST					
BAR NO.	SIZE	TYPE	LENGTH	WEIGHT	
B1	16	STR	11200	278	
B2	16	STR	15160	376	
B3	16	STR	11040	274	
E1	2	22	800	5	
E2	4	22	920	11	
E3	4	22	1040	13	
E4	4	22	1180	14	
E5	4	22	1280	16	
E6	4	22	1360	17	
F1	4	19	740	7	
F2	2	19	1060	5	
F3	2	19	1040	5	
F4	2	19	1220	5	
F5	2	19	1320	6	
S1	214	16	1	2240	744
S2	54	16	STR	960	80
EPOXY COATED REINFORCING STEEL					1,856 kg
CLASS AA CONCRETE					21.0 m ³
CONCRETE PARAPET					72.400 METERS



PLAN OF PARAPET

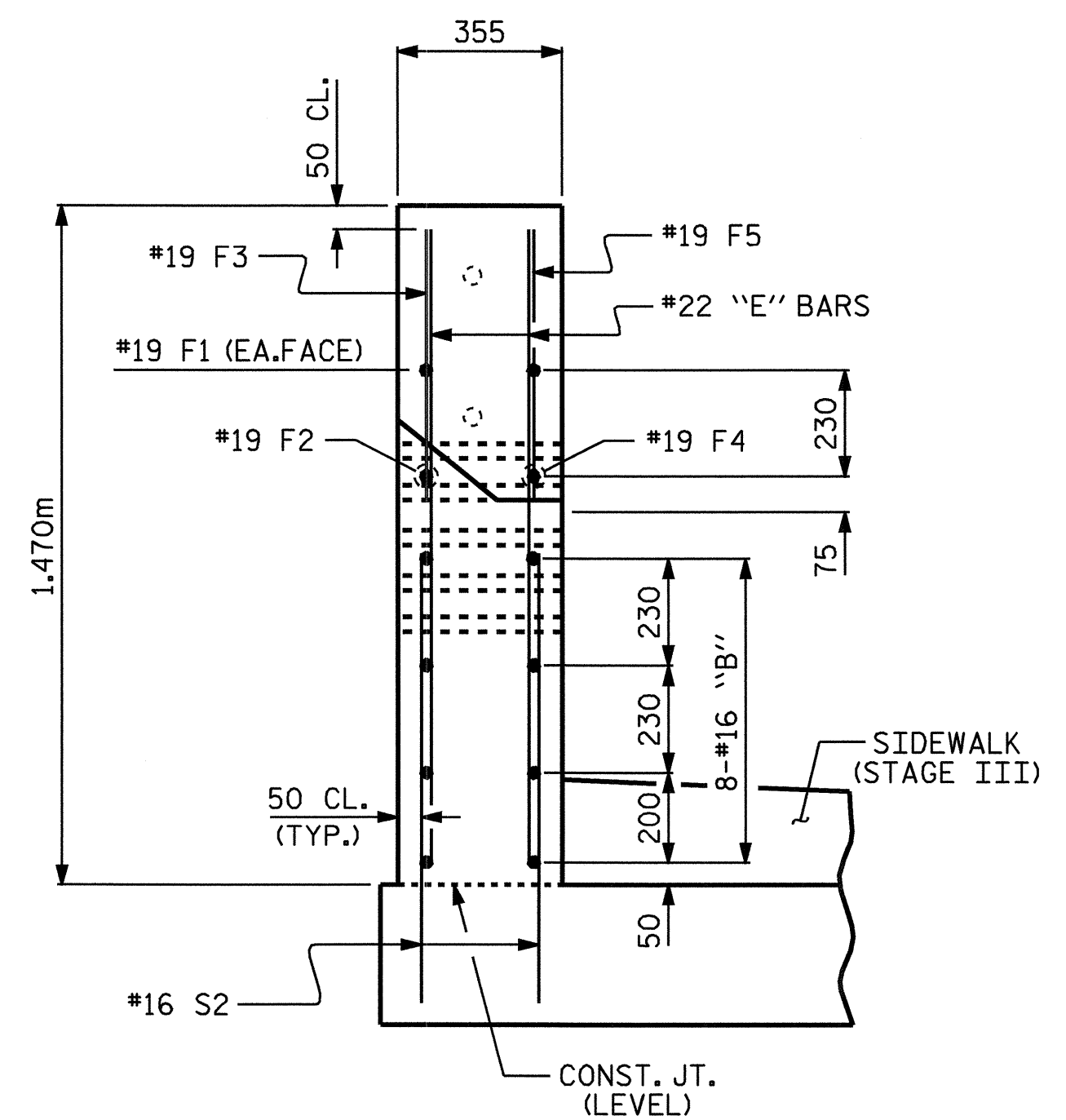


PLAN OF END POST

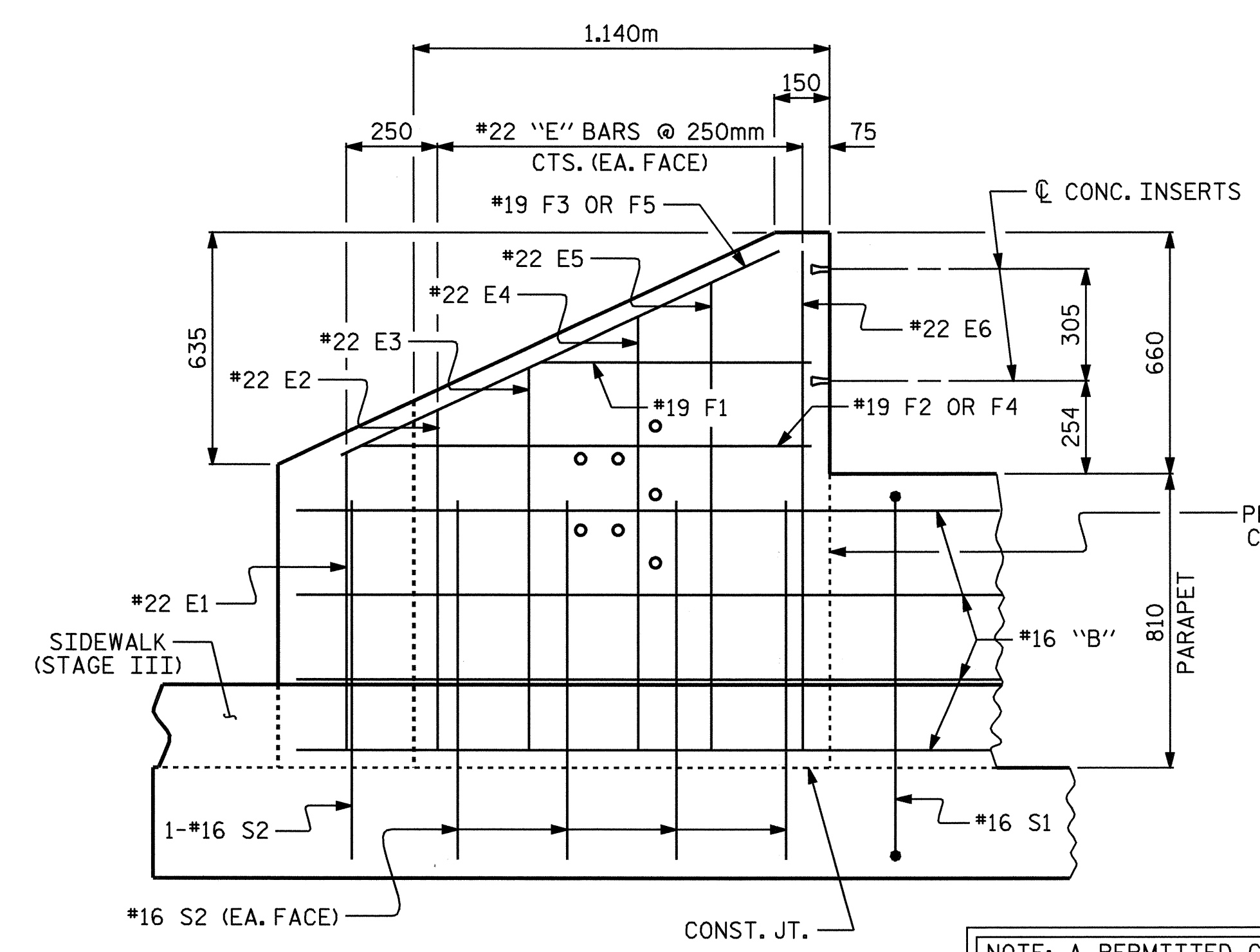


ELEVATION AT EXPANSION JOINTS

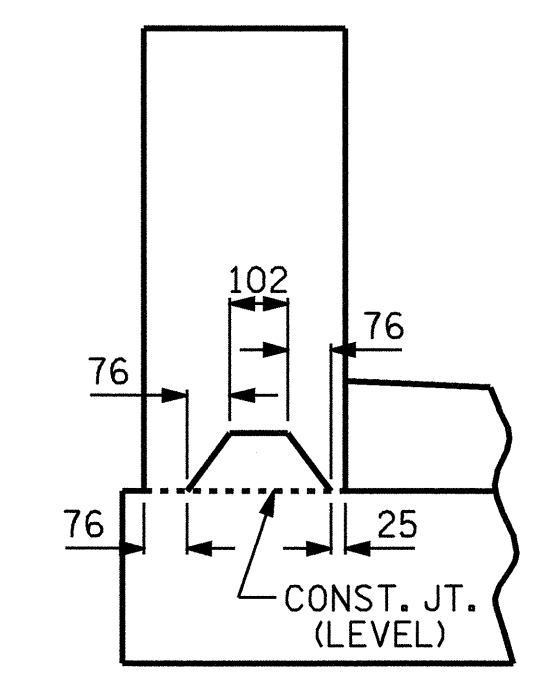
BAR TYPE	
ALL BAR DIMENSIONS ARE OUT TO OUT.	



END VIEW



ELEVATION



SECTION S-S

AT DAM IN OPEN JOINT
(THIS IS TO BE USED ONLY WHEN SLIP FORM IS USED)

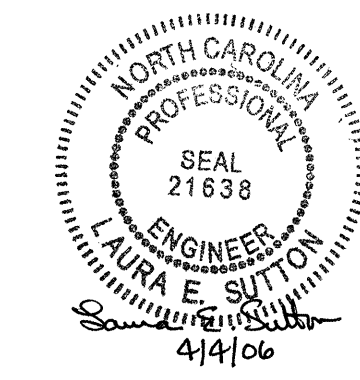
NOTE: A PERMITTED CONSTRUCTION JOINT WILL NOT BE ALLOWED IN THE END POST.

LEFT SIDE PARAPET AND END POST DETAILS

(END BENT 1 SHOWN, END BENT 2 SIMILAR)

DRAWN BY : P.C. BREWER DATE : 3/31/05
CHECKED BY : A.C. OUTLAW DATE : 5/2/05

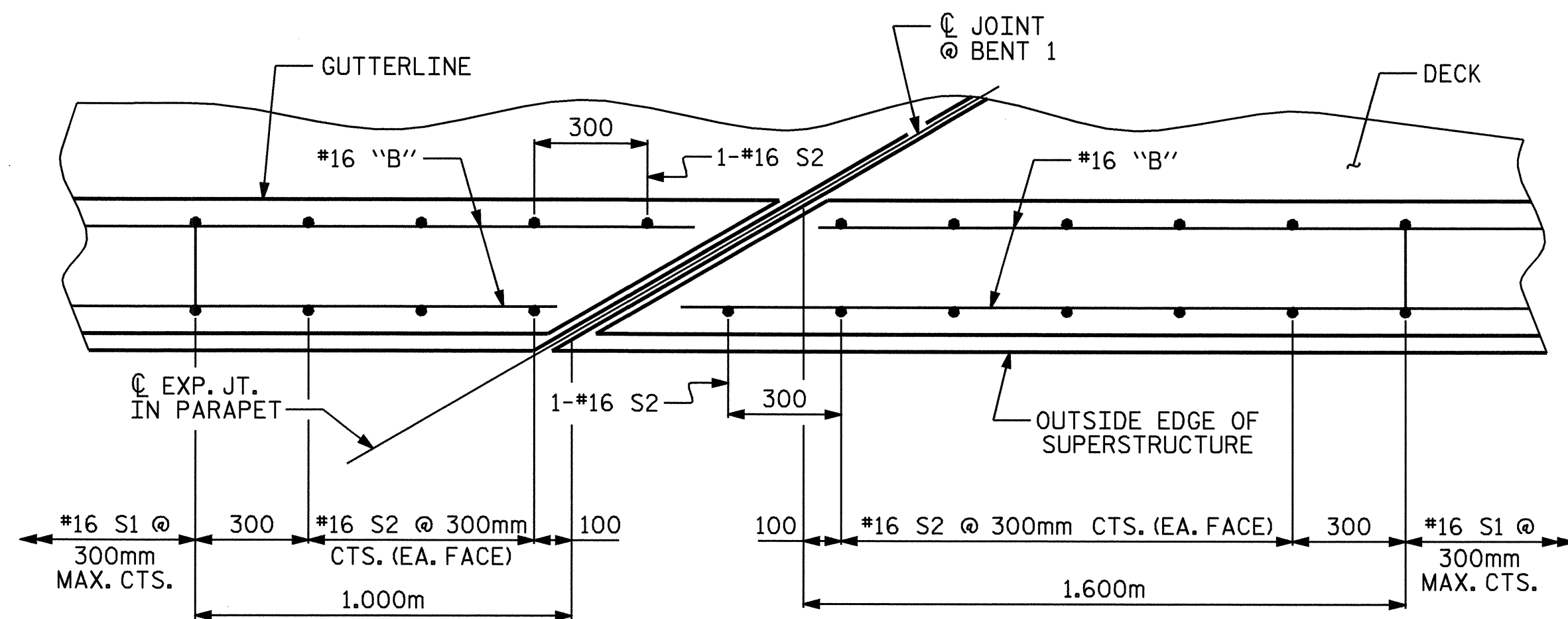
04-APR-2006 10:48
R:\Structures\str\pbrewer\Microrstation\U2408.sd_2MR.01.dgn
pbrewer



PROJECT NO. U-2408
GASTON COUNTY
STATION: 20+57.612 -L-

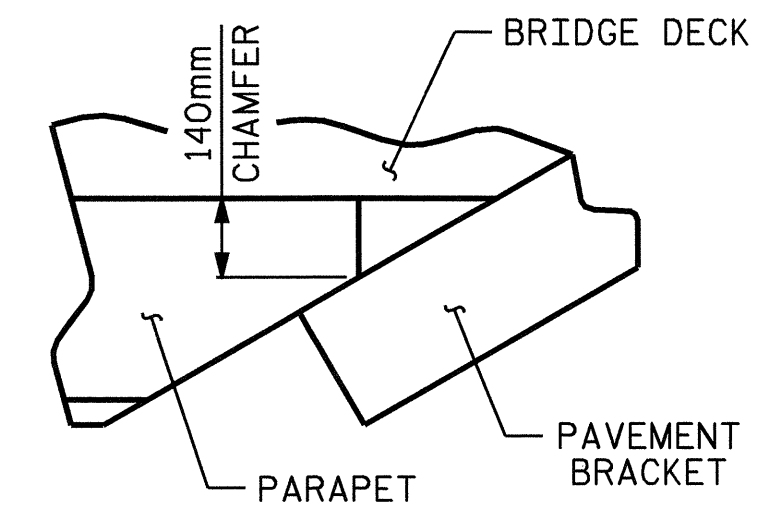
SHEET 2 OF 3

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUPERSTRUCTURE					
355mm X 810mm CONCRETE PARAPET DETAILS					
REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					S-24
					TOTAL SHEETS 55

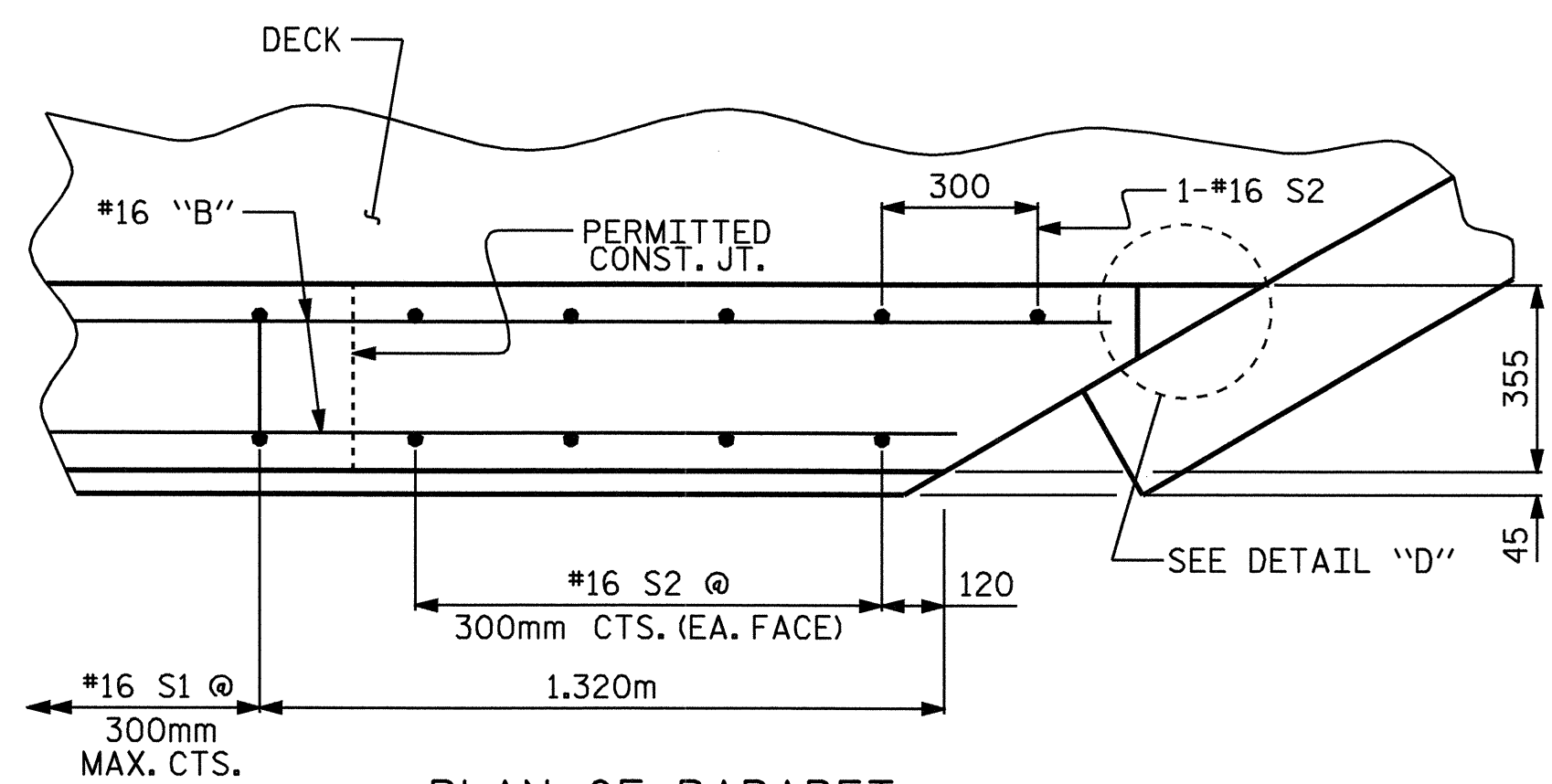


PARAPET DETAILS AT INTERIOR BENT

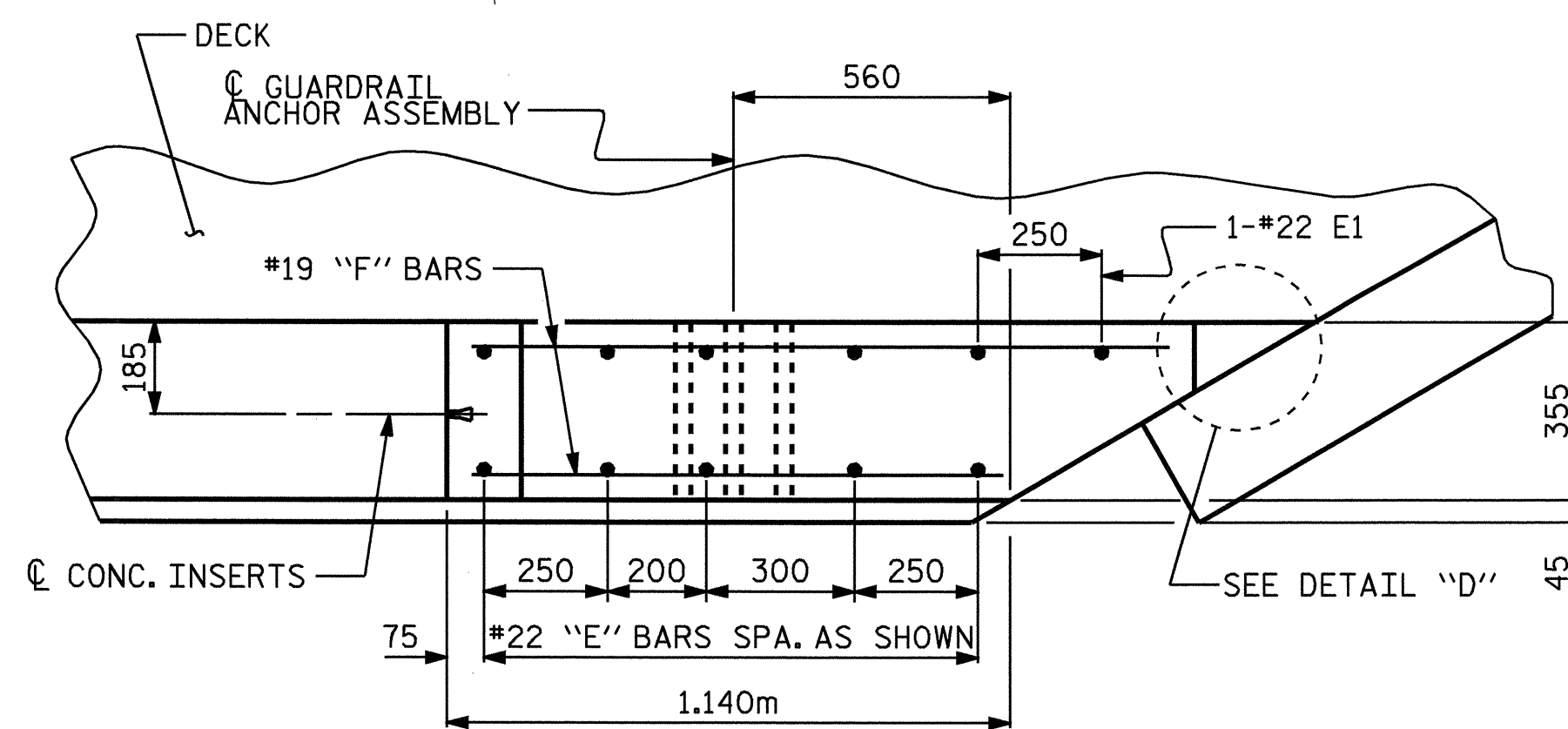
FOR ADHESIVE ANCHORING AT SAWED JOINTS
(BENT 1 SHOWN, BENT 2 SIMILAR)



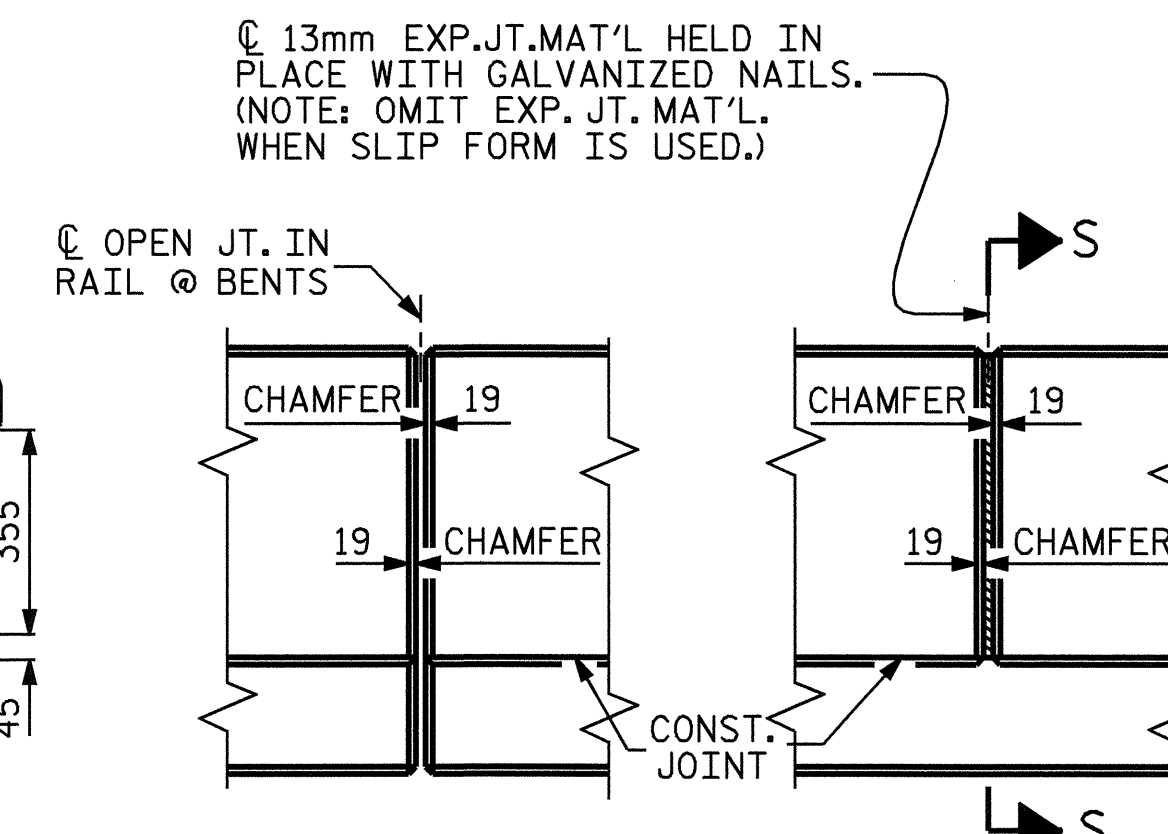
DETAIL "D"



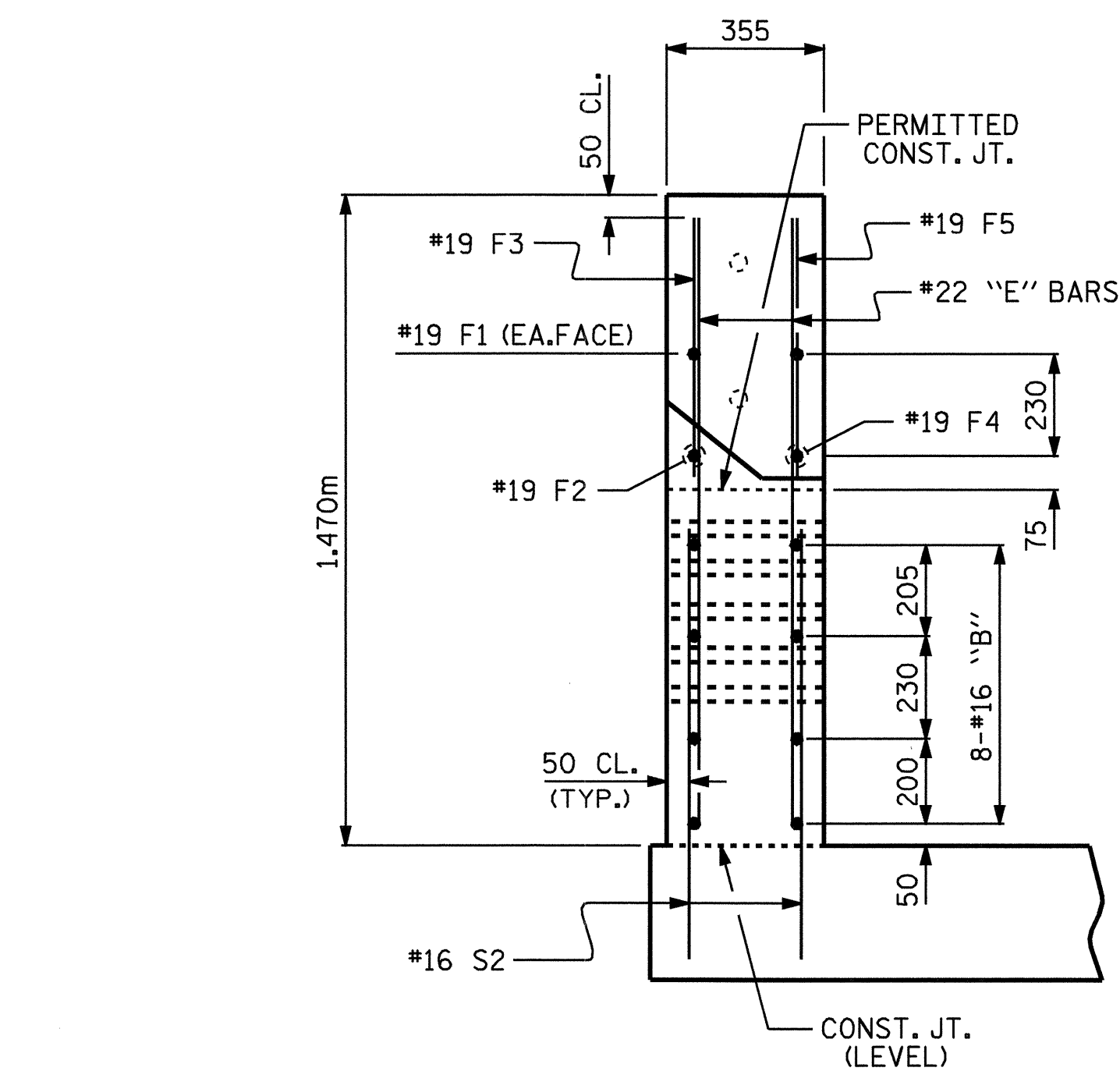
PLAN OF PARAPET



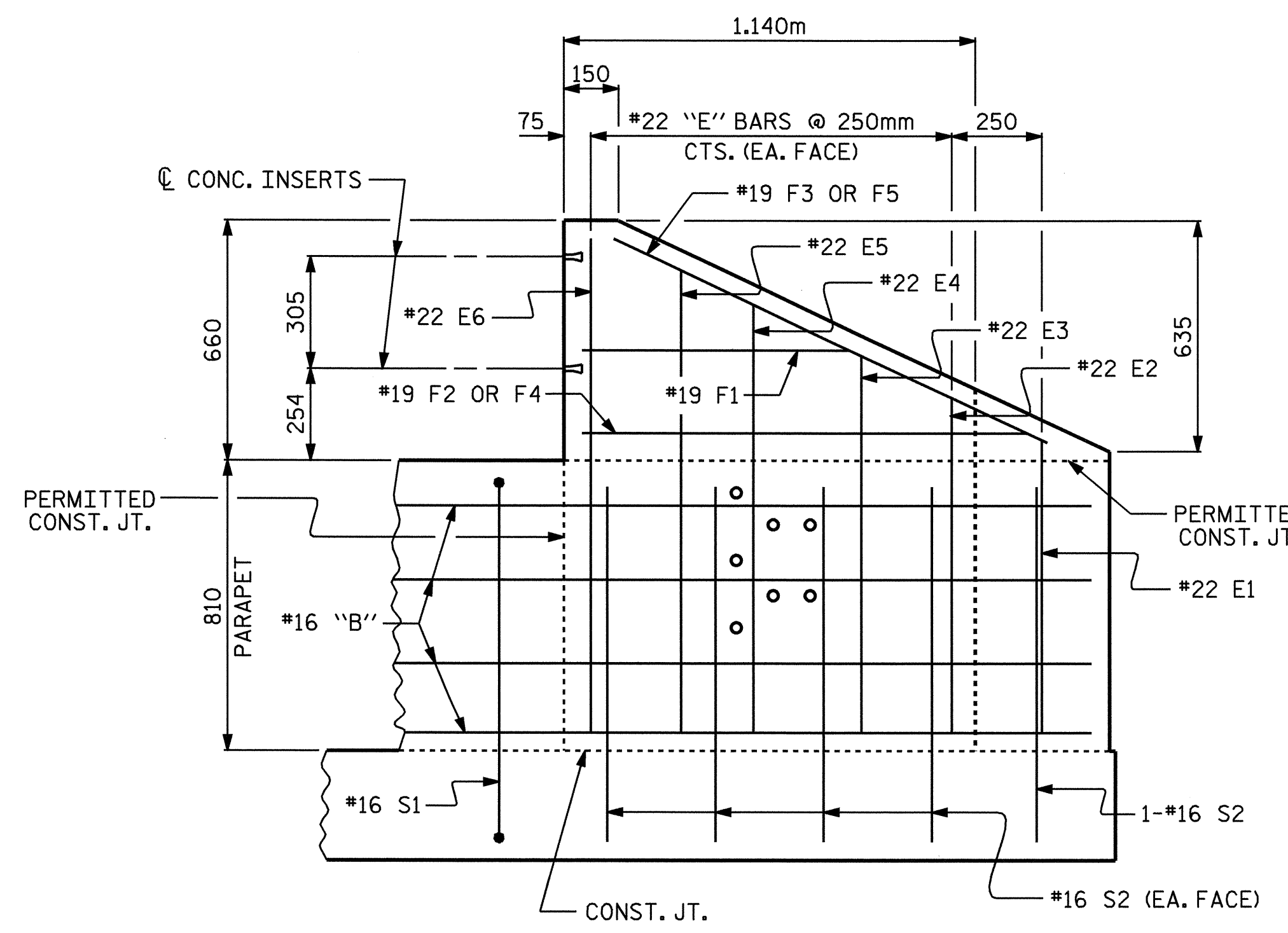
PLAN OF END POST



ELEVATION AT EXPANSION JOINTS



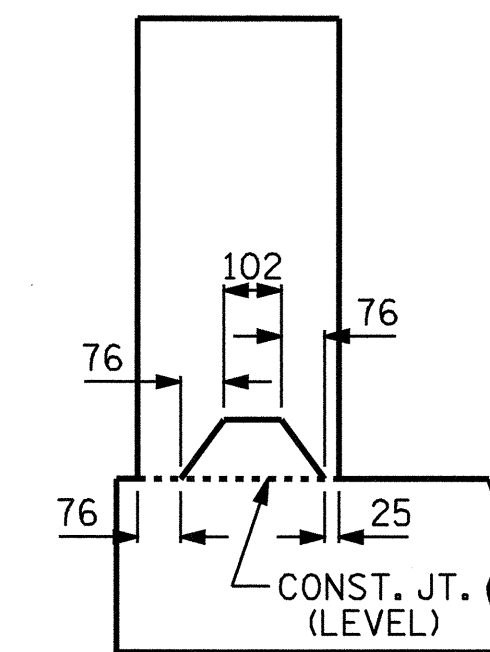
END VIEW



ELEVATION

RIGHT SIDE PARAPET AND END POST DETAILS

(END BENT 2 SHOWN, END BENT 1 SIMILAR)



SECTION S-S
AT DAM IN OPEN JOINT
(THIS IS TO BE USED ONLY
WHEN SLIP FORM IS USED)

BILL OF MATERIAL

STAGE II PARAPET AND END POST

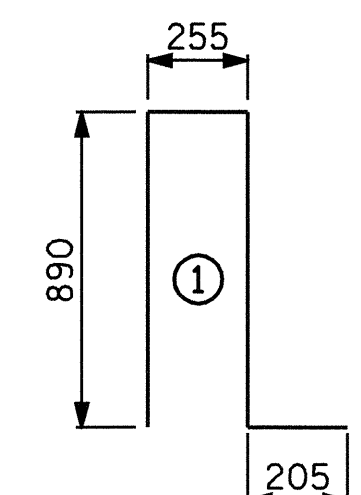
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	16	16	STR	11200	278
B2	16	16	STR	15160	376
B3	16	16	STR	11040	274
E1	2	22	STR	800	5
E2	4	22	STR	920	11
E3	4	22	STR	1040	13
E4	4	22	STR	1180	14
E5	4	22	STR	1280	16
E6	4	22	STR	1360	17
F1	4	19	STR	740	7
F2	2	19	STR	1060	5
F3	2	19	STR	1040	5
F4	2	19	STR	1220	5
F5	2	19	STR	1320	6
S1	214	16	1	2240	744
S2	54	16	STR	960	80

EPOXY COATED REINFORCING STEEL 1,856 kg

CLASS AA CONCRETE 21.0 m³

CONCRETE PARAPET 72.400 METERS

BAR TYPE



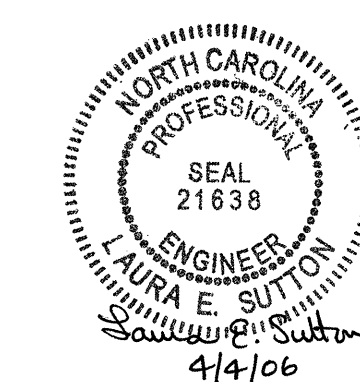
ALL BAR DIMENSIONS ARE OUT TO OUT.

PROJECT NO. U-2408
GASTON COUNTY
STATION: 20+57.612 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

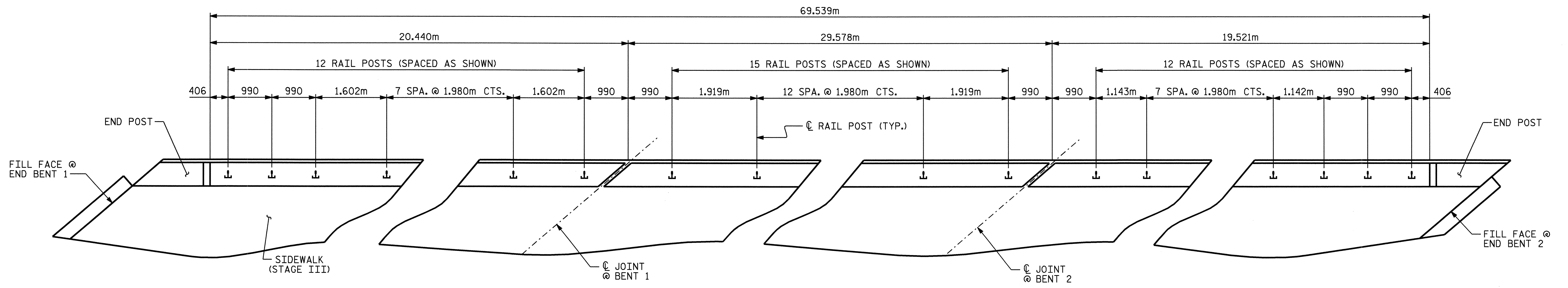
SUPERSTRUCTURE
355mm X 810mm
CONCRETE PARAPET
DETAILS



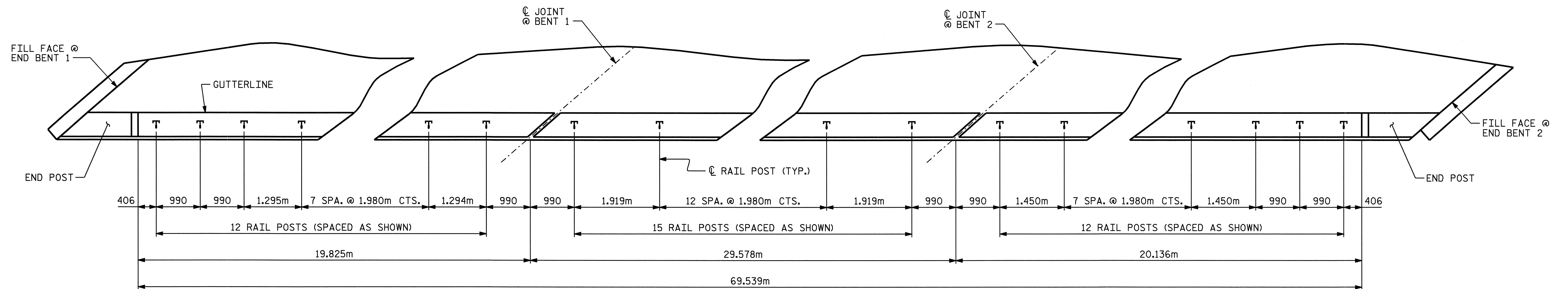
DRAWN BY : P.C. BREWER DATE : 3/31/05
CHECKED BY : A.C. OUTLAW DATE : 5/2/05

04-APR-2006 10:48
R:\Structures\str\pbrewer\Microstation\U2408_sd_2MR_01.dgn
pbrewer

REVISIONS						SHEET NO. S-25
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 55
2			4			



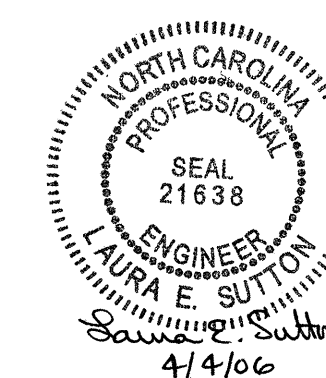
RAIL POST SPACINGS (LEFT SIDE)
(STAGE I)



RAIL POST SPACINGS (RIGHT SIDE)
(STAGE II)

PROJECT NO. U-2408
GASTON COUNTY
 STATION: 20+57.612 -L-

SHEET 1 OF 2



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

**RAIL POST SPACINGS
 AND
 END OF RAIL DETAILS
 FOR TWO BAR METAL RAILS**

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-26
1			3			TOTAL SHEETS
2			4			55

DRAWN BY : P.C. BREWER DATE : 3/31/05
 CHECKED BY : A.C. OUTLAW DATE : 5/2/05

04-APR-2006 10:48
 R:\Structures\str\pbrewer\Microstation\U2408.sd.2MR.01.dgn
 pbrewer

NOTES

STRUCTURAL CONCRETE INSERT

THE STRUCTURAL CONCRETE INSERT ASSEMBLY SHALL CONSIST OF THE FOLLOWING COMPONENTS:

- A. FERRULES SHALL BE MADE FROM STEEL MEETING THE REQUIREMENTS OF AASHTO M169, GRADE 12L14 AND SHALL HAVE A MINIMUM LENGTH OF THREADS OF 38mm.
- B. 1 - 19.05mm Ø X 41mm BOLT WITH WASHER. BOLT SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307. BOLT AND WASHER SHALL BE GALVANIZED. (AT THE CONTRACTOR'S OPTION, STAINLESS STEEL BOLT AND WASHER MAY BE USED AS AN ALTERNATE FOR THE 19.05mm Ø X 41mm GALVANIZED BOLT AND WASHER. THEY SHALL CONFORM TO OR EXCEED THE MECHANICAL REQUIREMENTS OF ASTM A307. THE USE OF THIS ALTERNATE SHALL BE APPROVED BY THE ENGINEER.)
- C. WIRE STRUT SHOWN IN THE CONCRETE INSERT ASSEMBLY DETAIL IS THE MINIMUM ALLOWABLE SIZE AND SHALL HAVE A MINIMUM TENSILE STRENGTH OF 689 MPa. AS AN OPTION, A 11mm Ø WIRE STRUT WITH A MINIMUM TENSILE STRENGTH OF 620 MPa IS ACCEPTABLE.

NOTES

METAL RAIL TO END POST CONNECTION

THE METAL RAIL TO END POST CONNECTION SHALL CONSIST OF THE FOLLOWING COMPONENTS :

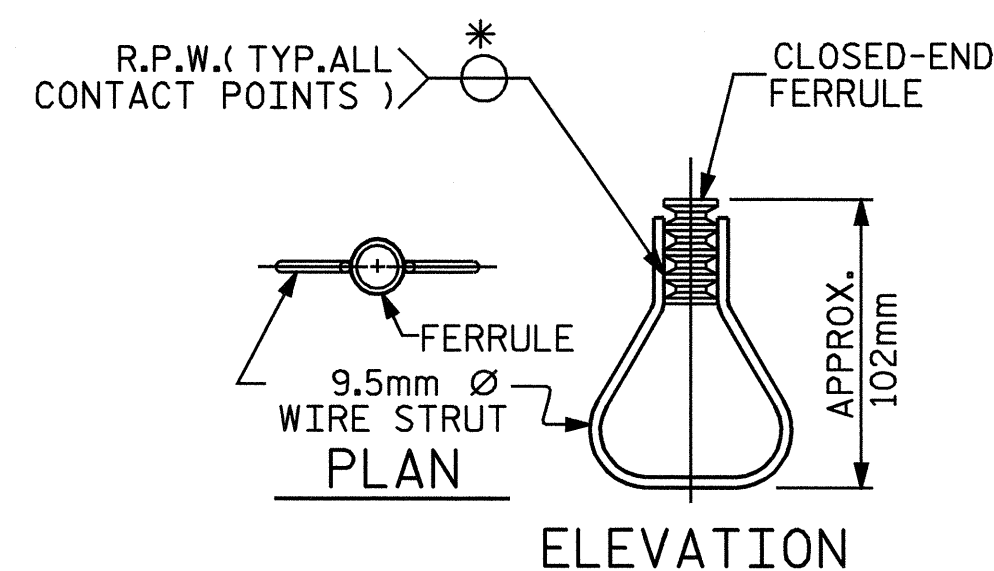
- A. 12mm PLATES SHALL CONFORM TO AASHTO M270 GRADE 250 AND SHALL BE GALVANIZED AFTER FABRICATION.
- B. 19.05mm STRUCTURAL CONCRETE INSERT SHALL HAVE A WORKING LOAD SHEAR CAPACITY OF 21.4 kN. THE FERRULES SHALL ENGAGE A 19.05mm Ø X 41mm BOLT WITH 51mm O.D. WASHER IN PLACE. THE 19.05mm Ø X 41mm BOLT SHALL HAVE N. C. THREADS.
- C. CAP SCREWS FOR RAIL ATTACHMENT TO ANGLE CONFORM TO THE REQUIREMENTS OF ASTM F593 ALLOY 305 STAINLESS STEEL. CAP SCREWS TO BE CENTERED IN SLOTS AT 16°C.
- D. STANDARD CLAMP BARS (SEE METAL RAIL SHEET).
- E. 13mm Ø PIPE SLEEVES (IF REQUIRED) TO BE GALVANIZED.

THE COST OF THE STANDARD CLAMP BARS AND CAP SCREWS USED IN THE METAL RAIL TO END POST CONNECTION SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR METERS OF 1 OR 2 BAR METAL RAILS.

THE 19.05mm STRUCTURAL CONCRETE INSERT WITH BOLT SHALL BE ASSEMBLED IN THE SHOP.

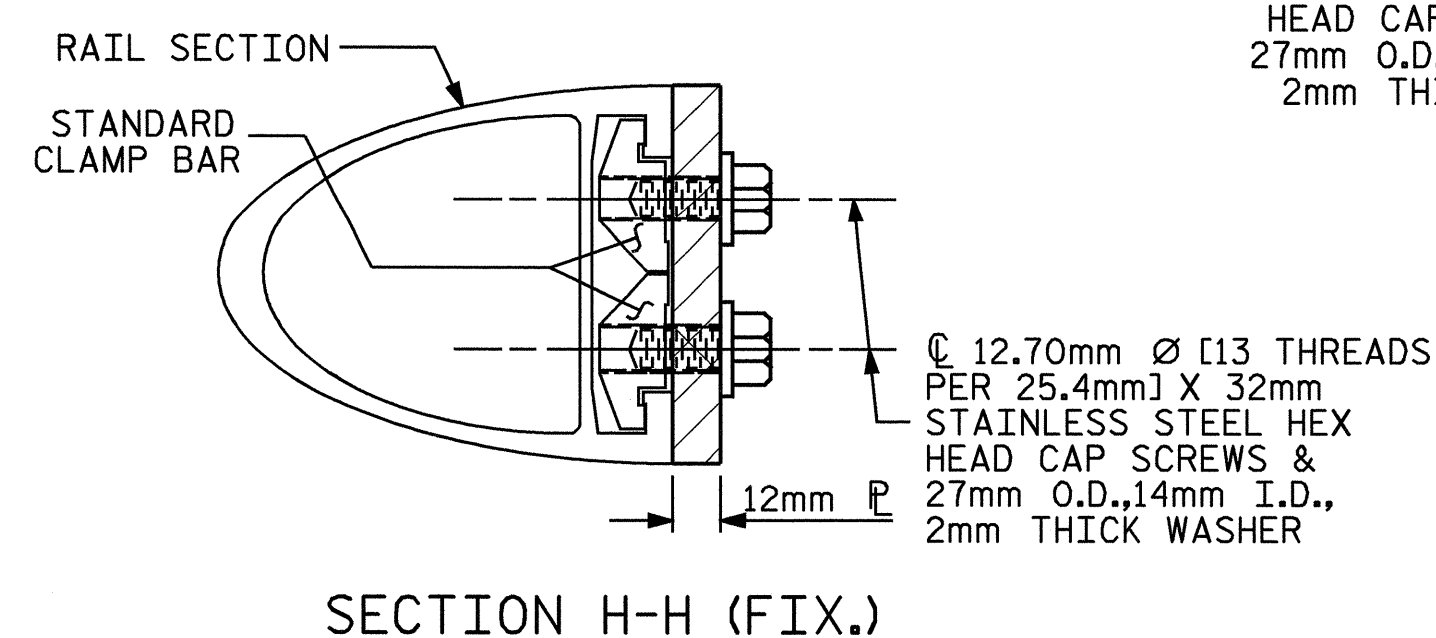
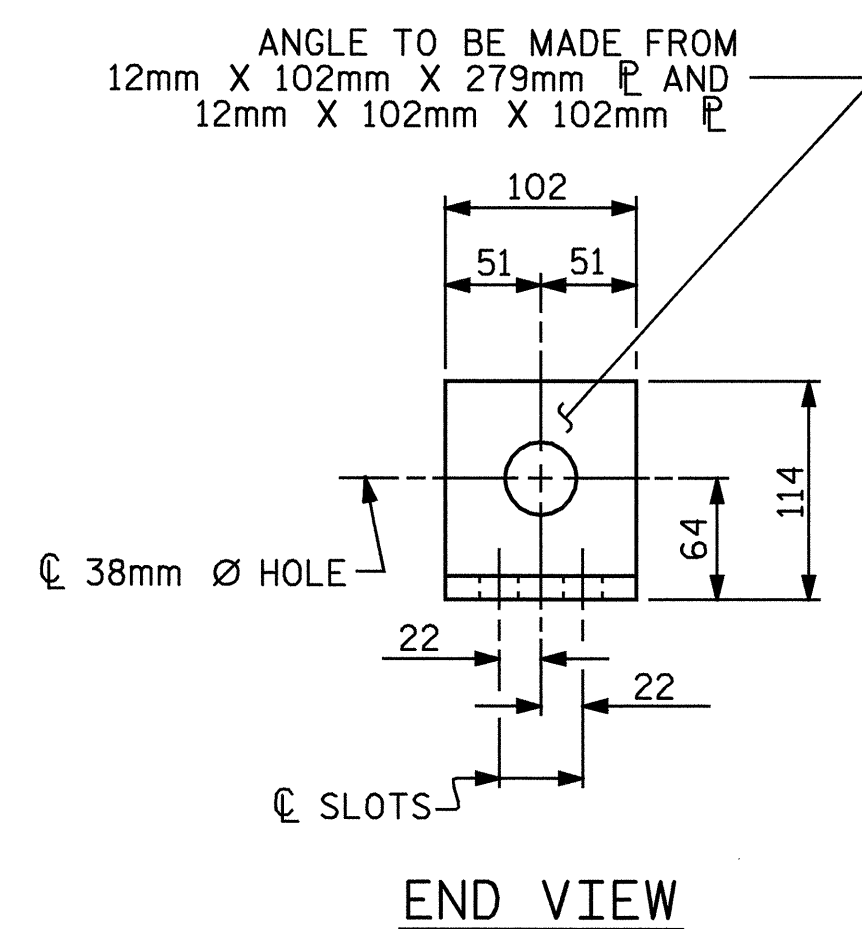
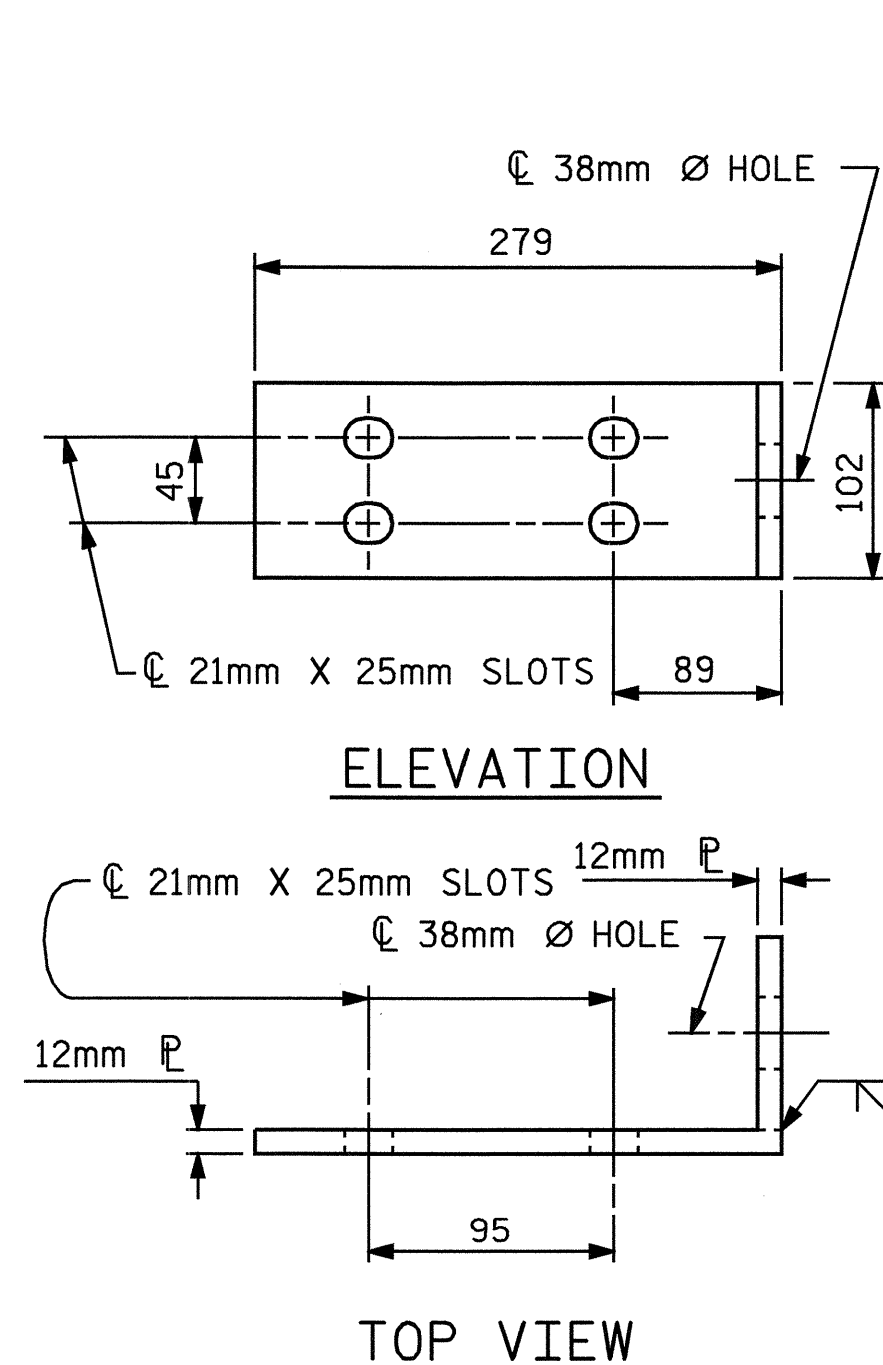
THE COST OF THE 19.05mm STRUCTURAL CONCRETE INSERT ASSEMBLY, AND THE 12mm PLATES COMPLETE IN PLACE SHALL BE INCLUDED IN THE VARIOUS PAY ITEMS.

THE CONTRACTOR, AT HIS OPTION, MAY USE AN ADHESIVE BONDING SYSTEM IN LIEU OF THE STRUCTURAL CONCRETE INSERT EMBEDDED IN THE END POST. IF THE ADHESIVE BONDING SYSTEM IS USED, THE 19.05mm Ø X 41mm BOLT WITH WASHER SHALL BE REPLACED WITH A 19.05mm Ø X 165mm BOLT AND 51mm O.D. WASHER. ALL SPECIFICATIONS THAT APPLY TO THE 19.05mm Ø X 41mm BOLT SHALL APPLY TO THE 19.05mm Ø X 165mm BOLT. SEE SPECIAL PROVISIONS FOR "ADHESIVELY ANCHORED ANCHOR BOLTS AND DOWELS". FIELD TESTING OF THE ADHESIVE BONDING SYSTEM IS NOT REQUIRED.

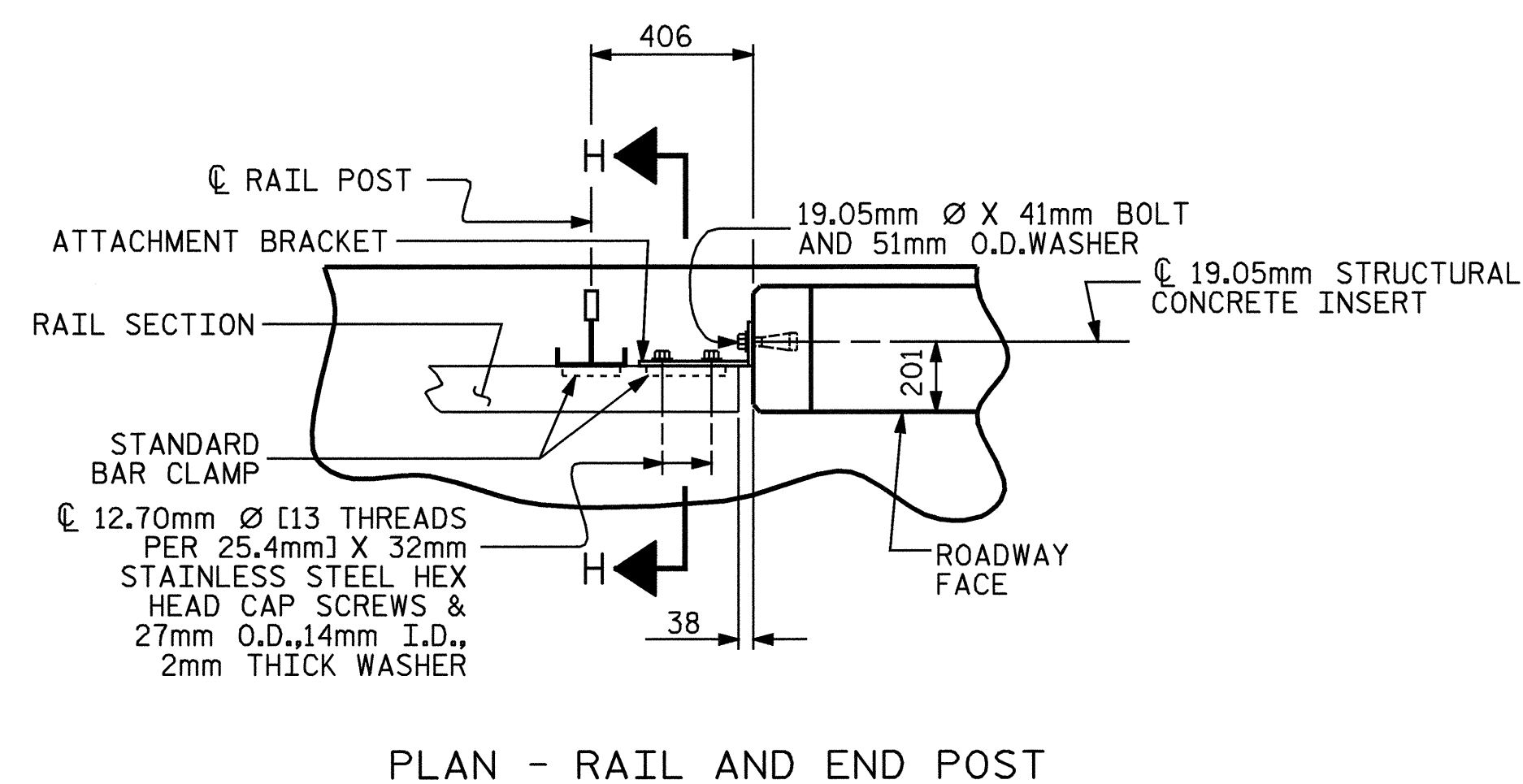


STRUCTURAL CONCRETE INSERT

* EACH WELDED ATTACHMENT OF WIRE TO FERRULE SHALL DEVELOP THE TENSILE STRENGTH OF THE WIRE.



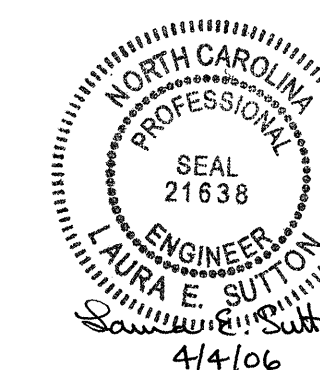
DETAILS FOR ATTACHING METAL RAIL TO END POST



PROJECT NO. U-2408
GASTON COUNTY
 STATION: 20+57.612 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
 RAIL POST SPACINGS
 AND
 END OF RAIL DETAILS
 FOR TWO BAR METAL RAILS



REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-27
1			3			TOTAL SHEETS
2			4			55

ASSEMBLED BY : P.C. BREWER	DATE : 3/31/05
CHECKED BY : A.C. OUTLAW	DATE : 5/2/05
DRAWN BY : WJH 3/89	REV. 8/16/99 RWW/LES
CHECKED BY : CRK 3/89	REV. 10/17/00 LES/RDR
	REV. 5/7/03 RWW/JTE

NOTES

AT THE CONTRACTOR'S OPTION, METAL RAIL MAY BE EITHER ALUMINUM OR GALVANIZED STEEL IN ACCORDANCE WITH THE REQUIREMENTS OF THE GENERAL NOTES AND THE FOLLOWING SPECIFICATIONS FOR THE ALTERNATE MATERIALS; HOWEVER, THE CONTRACTOR WILL BE REQUIRED TO USE THE SAME RAIL MATERIAL ON ALL STRUCTURES ON THE PROJECT FOR WHICH METAL RAIL IS DESIGNATED.

ALUMINUM RAILS

MATERIAL FOR POSTS, BASES AND RAILS, EXPANSION BARS AND CLAMP BARS SHALL BE ASTM B221 ALLOY 6061-T6. MATERIAL FOR RIVETS SHALL BE ASTM B316 ALLOY 6061-T6. RIVETS SHALL BE STANDARD BUTTON HEAD AND CONE POINT COLD DRIVEN AS PER DRAWING.

THE BASE OF RAIL POSTS, OR ANY OTHER ALUMINUM SURFACE IN CONTACT WITH CONCRETE SHALL BE THOROUGHLY COATED WITH AN ALUMINUM IMPREGNATED CAULKING COMPOUND OF APPROVED QUALITY.

MATERIAL FOR SHIMS TO BE ASTM B209 ALLOY 6061-T6.

GALVANIZED STEEL RAILS

MATERIAL AND GALVANIZING ARE TO CONFORM TO THE FOLLOWING SPECIFICATIONS:

POST, POST BASES, RAILS, EXPANSION BARS AND CLAMP BARS: AASHTO M270 GRADE 250 STRUCTURAL STEEL - GALVANIZED TO AASHTO M111.

RIVETS: RIVETS SHALL MEET THE REQUIREMENTS OF ASTM A502 FOR GRADE 1 RIVETS.

THE CUT ENDS OF GALVANIZED STEEL RAILING, AFTER GRINDING SMOOTH SHALL BE GIVEN TWO COATS OF ZINC RICH PAINT MEETING THE REQUIREMENTS OF FEDERAL SPECIFICATION MIL-P-26915 USAF TYPE 1, OR OF FEDERAL SPECIFICATIONS TT-P-641.

SHIMS: SHIMS SHALL MEET THE REQUIREMENTS OF ASTM A570M FOR GRADE 230 OR A611 FOR GRADE C AND SHALL BE GALVANIZED IN ACCORDANCE WITH AASHTO M111.

RAIL CAPS: RAIL CAPS SHALL MEET THE REQUIREMENTS OF ASTM A570M FOR GRADE 230 OR A611 FOR GRADE C AND SHALL BE GALVANIZED IN ACCORDANCE WITH AASHTO M111.

GENERAL NOTES

RAILING SHALL BE CONTINUOUS FROM END POST TO END POST OF BRIDGE. EACH JOINT IN RAIL LENGTH SHALL BE SPLICED AS DETAILED. PANEL LENGTHS OF RAIL SHALL BE ATTACHED TO A MINIMUM OF THREE POSTS.

FOR END OF RAIL TO CLEAR FACE OF CONCRETE END POST DIMENSION, SEE STANDARD NO. BMR2SM.

CAP SCREWS SHALL BE ASTM F593 ALLOY 305 STAINLESS STEEL. WASHERS SHALL MEET THE REQUIREMENTS OF ASTM F844 EXCEPT THEY SHALL BE MADE FROM ALLOY 304 STAINLESS STEEL.

CERTIFIED MILL REPORTS ARE REQUIRED FOR RAILS AND POSTS. SHOP INSPECTION IS NOT REQUIRED.

METAL RAIL POSTS SHALL BE SET NORMAL TO CURB GRADE.

METHOD OF MEASUREMENT FOR METAL RAILS: FOR LENGTH OF METAL RAILS TO BE PAID FOR, SEE THE STANDARD SPECIFICATIONS.

CURVED RAIL USAGE: WHERE RAILS ARE TO BE USED ON BRIDGES ON HORIZONTAL AND/OR VERTICAL CURVATURE THE CONTRACTOR MAY, AT HIS OPTION, HAVE THE REQUIRED CURVATURE IN THE RAIL FORMED IN THE SHOP OR IN THE FIELD. IN EITHER EVENT, THE RAIL SHALL CONFORM WITHOUT BUCKLING OR KINKING TO THE REQUIRED CURVATURE IN A UNIFORM MANNER ACCEPTABLE TO THE ENGINEER.

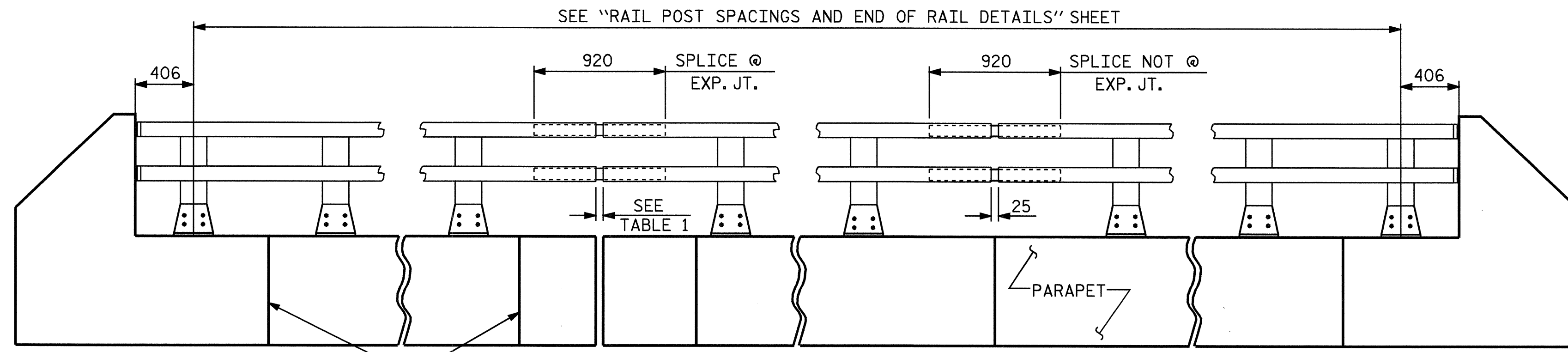
TO INSURE FUTURE IDENTIFICATION OF THE FABRICATOR, A PERMANENT IDENTIFYING MARK SHALL BE PLACED ON EACH POST. THE METHOD OF MARKING AND LOCATION SHALL BE SUCH THAT IT DOES NOT DETRACT FROM THE APPEARANCE OF THE POST, BUT REMAINS VISIBLE AFTER RAIL PLACEMENT.

SHIMS SHALL BE USED AS NECESSARY FOR POST ALIGNMENT.

ALLOY 6351-T5 MAY BE SUBSTITUTED FOR ALLOY 6061-T6 WHERE APPLICABLE.

MINOR VARIATIONS IN DETAILS OF METAL RAIL WILL BE CONSIDERED. DETAILS OF SUCH VARIATIONS, IF DESIRED, SHALL BE SUBMITTED FOR APPROVAL.

GROOVED CONTRACTION JOINTS, 12mm IN DEPTH, SHALL BE TOOLED IN ALL EXPOSED FACES OF THE PARAPET IN ACCORDANCE WITH ARTICLE 825-10(B) OF THE STANDARD SPECIFICATIONS. THE CONTRACTION JOINT SHALL BE LOCATED AT A SPACING OF 2.4m TO 3.5m BETWEEN EXPANSION JOINTS. NO CONTRACTION JOINTS WILL BE REQUIRED FOR SEGMENTS LESS THAN 3.5m IN LENGTH.

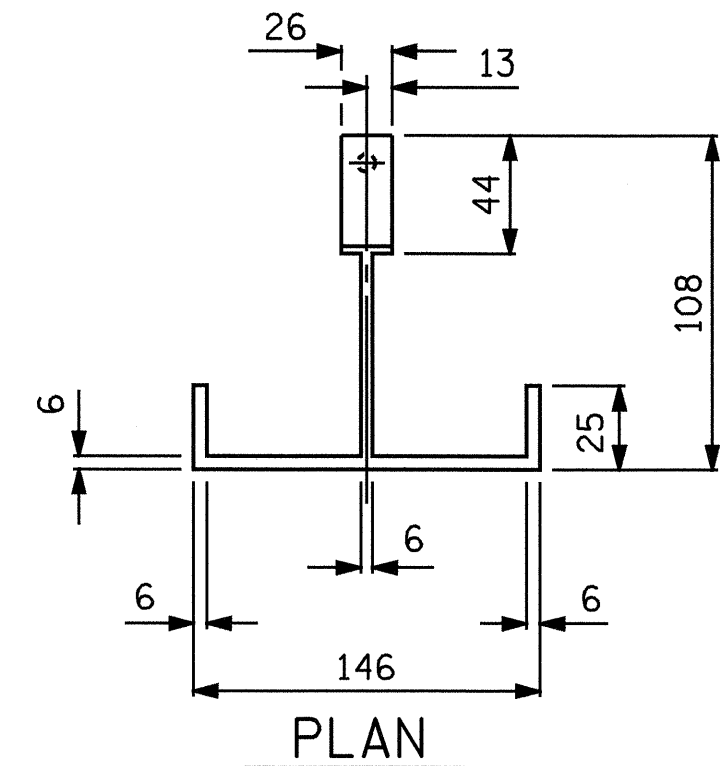


ELEVATION

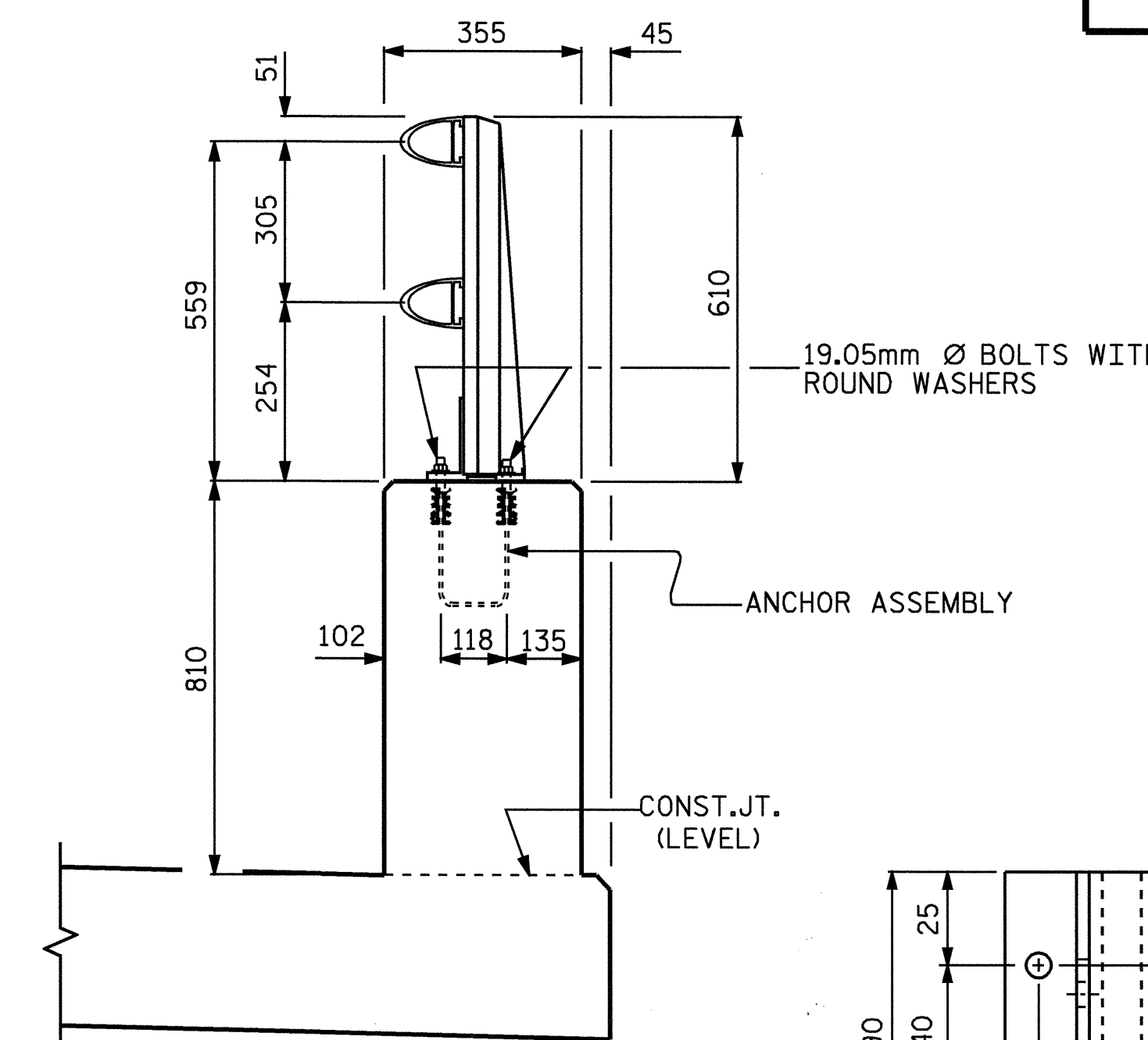
NOTE: FOR ATTACHMENT OF METAL RAIL TO END POST, SEE STANDARD No. BMR2SM

TABLE 1

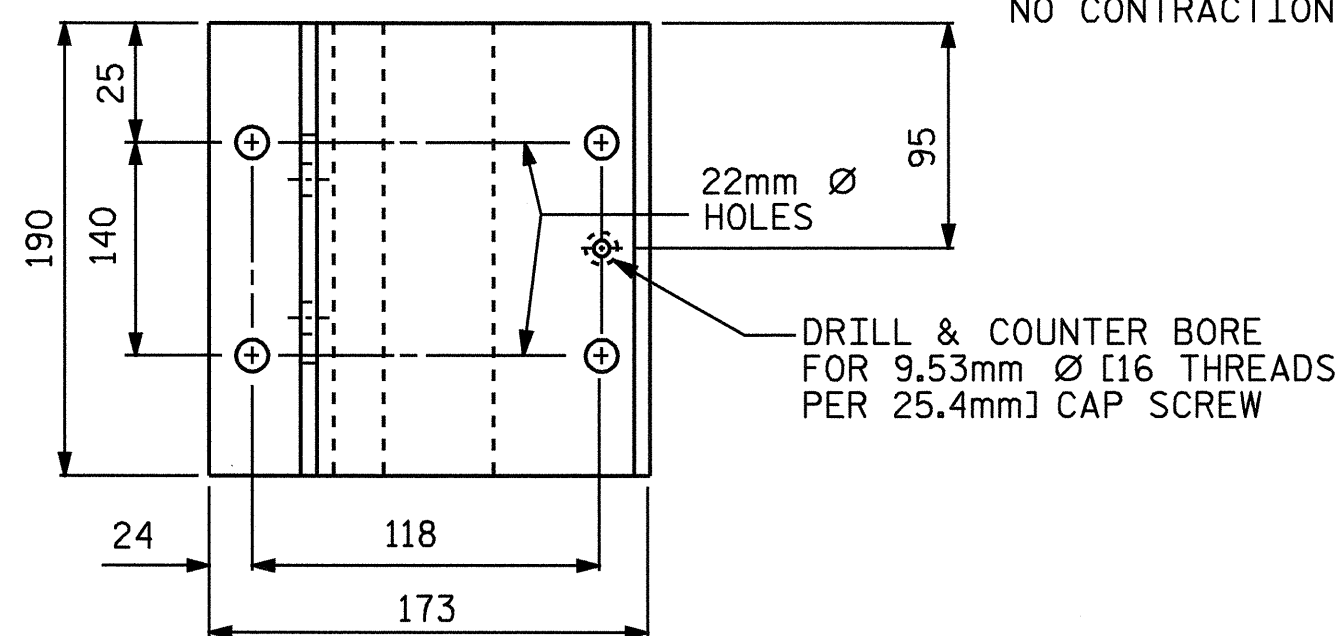
EXP. JT. @	RAIL OPENING
BENT No. 1	25mm
BENT No. 2	45mm



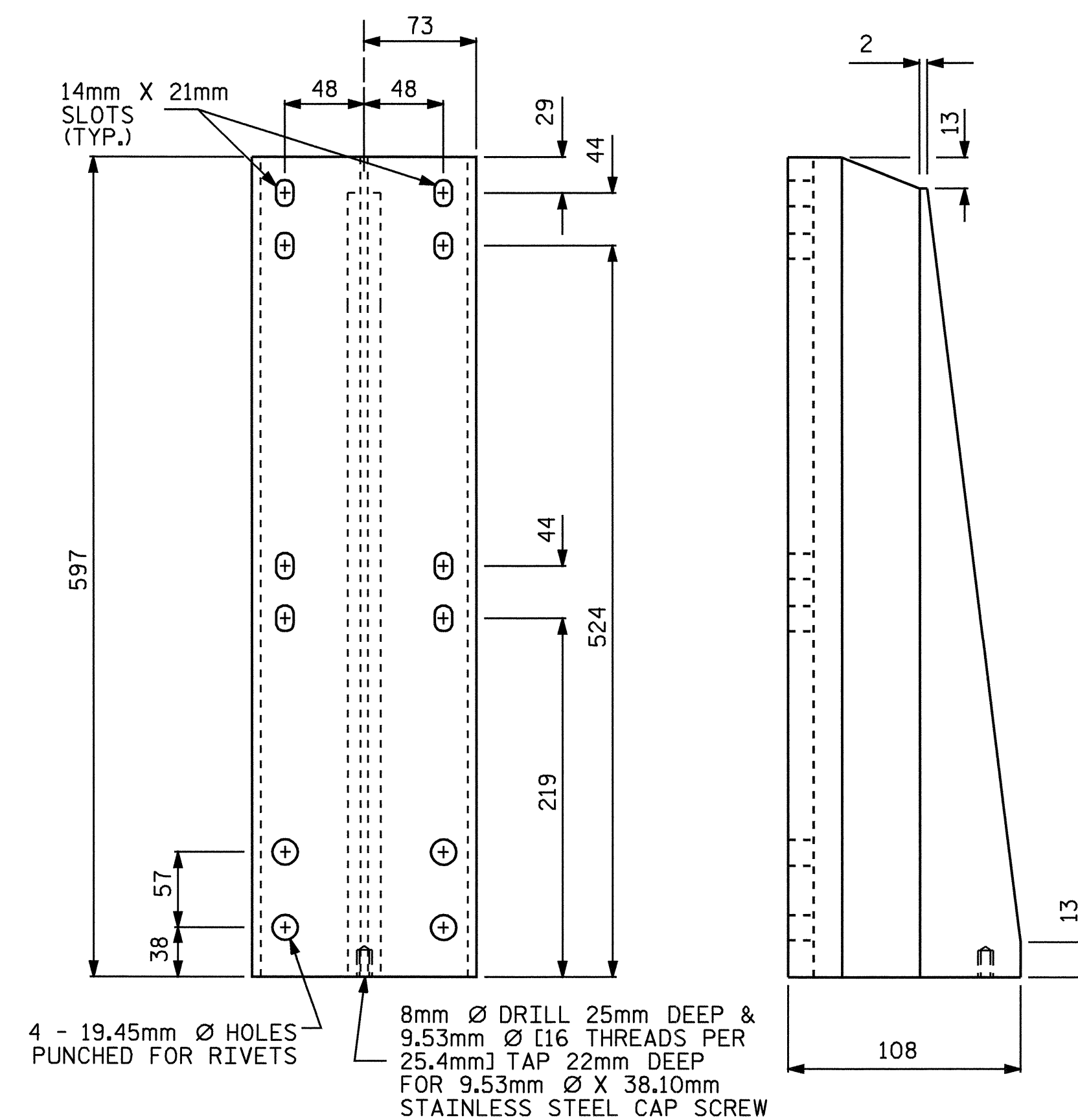
PLAN



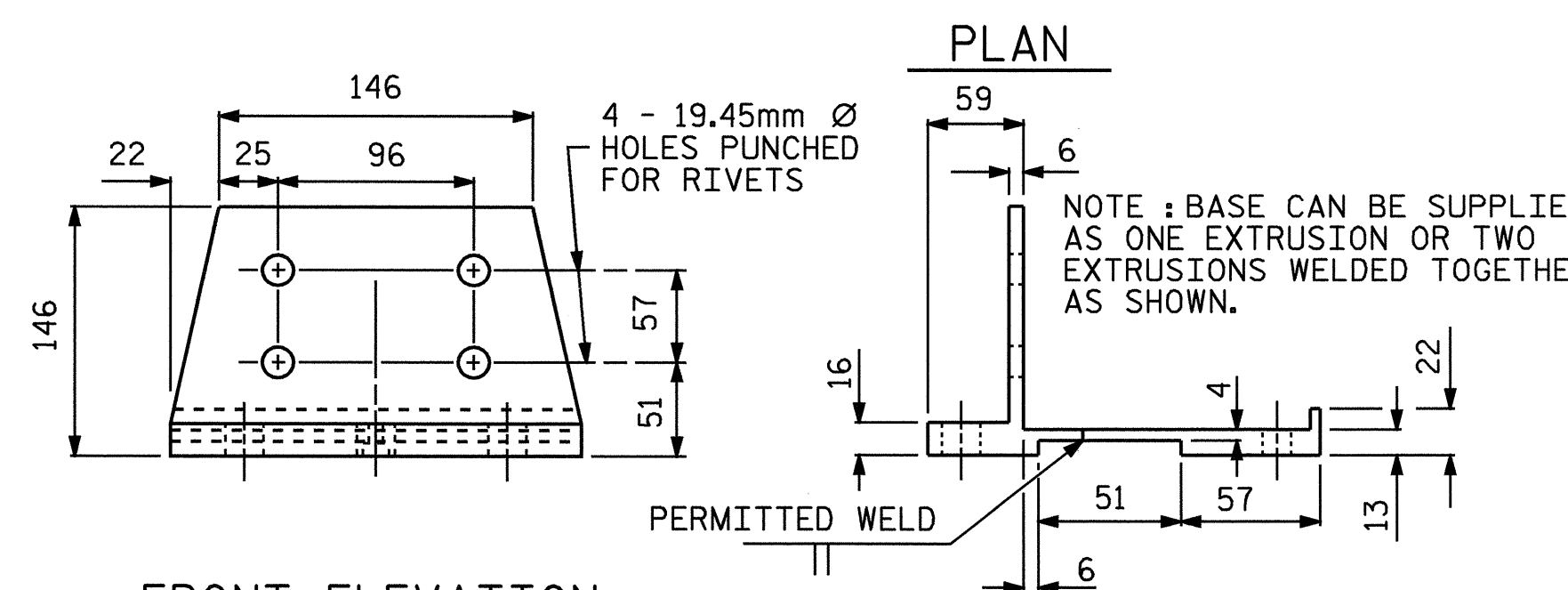
SECTION THRU PARAPET AND RAIL



STAGE	LENGTH (METERS)
STAGE I	69.536 METERS
STAGE II	69.536 METERS
TOTAL	139.078 METERS

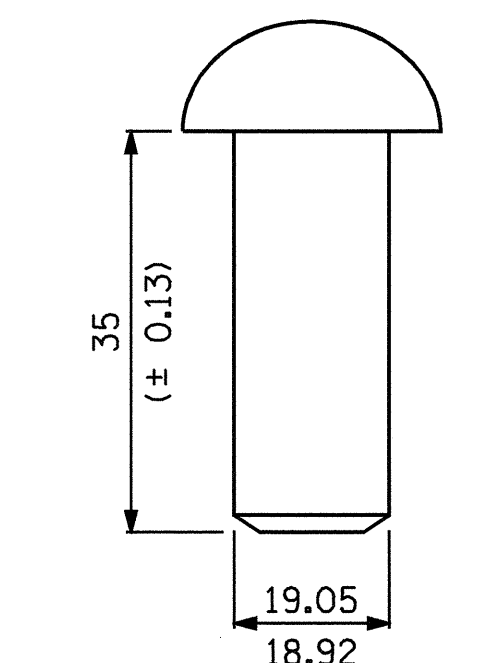


FRONT ELEVATION SIDE ELEVATION



FRONT ELEVATION SIDE ELEVATION

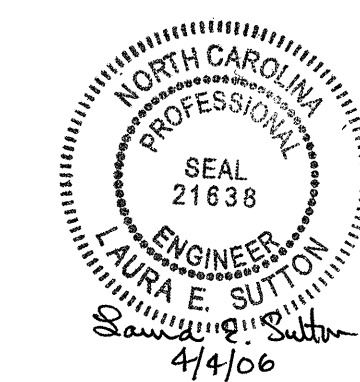
POST BASE DETAILS



RIVET DETAIL

ASSEMBLED BY : P.C. BREWER DATE : 3/31/05
 CHECKED BY : A.C. OUTLAW DATE : 5/2/05
 DRAWN BY : EEM 6/94
 CHECKED BY : RGW 6/94

REV. 8/16/99 RWW/LES
 REV. 10/17/00 LES/RDR
 REV. 5/7/03R RWW/JTE



PROJECT NO. U-2408
GASTON COUNTY
 STATION: 20+57.612 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
 2 BAR METAL RAIL

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-28
1			3			TOTAL SHEETS
2			4			55

STD. NO. BMR3SM

NOTES

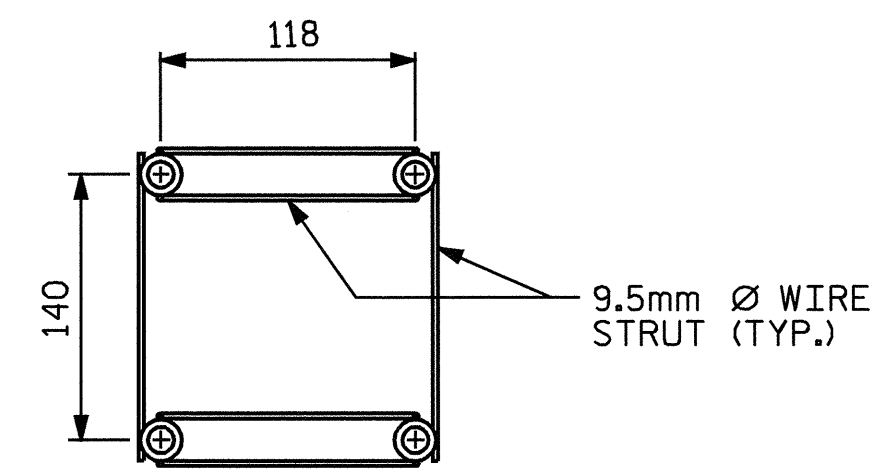
STRUCTURAL CONCRETE ANCHOR ASSEMBLY

THE STRUCTURAL CONCRETE ANCHOR ASSEMBLY SHALL CONSIST OF THE FOLLOWING COMPONENTS:

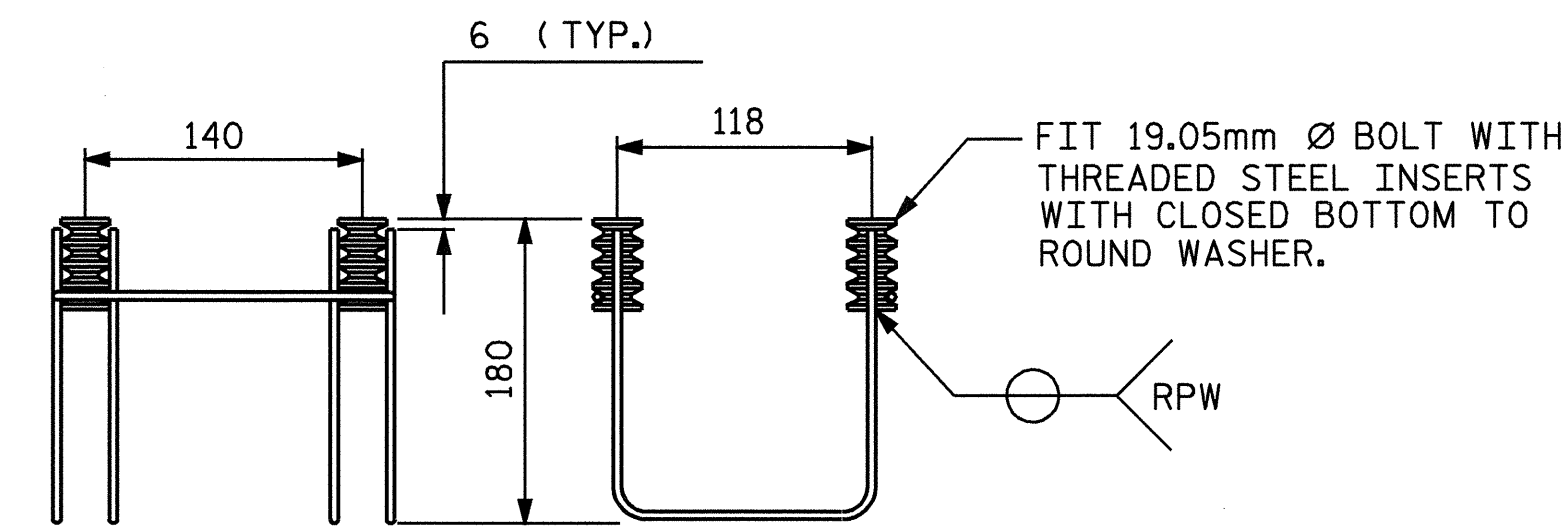
- A. FERRULES SHALL BE MADE FROM STEEL MEETING THE REQUIREMENTS OF AASHTO M169, GRADE 12L14 AND SHALL HAVE A MINIMUM LENGTH OF THREADS OF 51mm FOR 19mm FERRULES.
- B. 4 - 19.05mm Ø X 64mm BOLTS WITH WASHERS. BOLTS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307. BOLTS AND WASHERS SHALL BE GALVANIZED. AT THE CONTRACTOR'S OPTION, STAINLESS STEEL BOLTS AND WASHERS MAY BE USED AS AN ALTERNATE FOR THE 19.05mm Ø X 64mm GALVANIZED BOLTS AND WASHERS. THEY SHALL CONFORM TO OR EXCEED THE MECHANICAL REQUIREMENTS OF ASTM A307. THE USE OF THIS ALTERNATE SHALL BE APPROVED BY THE ENGINEER.
- C. WIRE STRUT SHOWN IN THE CONCRETE ANCHOR ASSEMBLY DETAIL IS THE MINIMUM ALLOWABLE SIZE AND SHALL HAVE A MINIMUM TENSILE STRENGTH OF 689 MPa. AS AN OPTION, A 11mm Ø WIRE STRUT WITH A TENSILE STRENGTH OF 620 MPa IS ACCEPTABLE.
- D. THE METAL RAIL ANCHOR ASSEMBLIES TO BE HOT DIPPED GALVANIZED TO CONFORM TO REQUIREMENTS OF AASHTO M111.
- E. THE COST OF THE METAL RAIL ANCHOR ASSEMBLY WITH BOLTS AND WASHERS COMPLETE IN PLACE SHALL BE INCLUDED IN THE PRICE BID FOR METERS OF METAL RAIL.
- F. BOLTS TO BE TIGHTENED ONE-HALF TURN WITH A WRENCH FROM A FINGER-TIGHT POSITION.

THE CONTRACTOR, AT HIS OPTION, MAY USE ADHESIVELY ANCHORED ANCHOR BOLTS IN PLACE OF THE METAL ANCHOR ASSEMBLY. THE YIELD LOAD OF THE 19.05mm Ø BOLT IS 44.5 kN. FIELD TESTING OF THE ADHESIVE BONDING SYSTEM IS REQUIRED. SEE SPECIAL PROVISIONS FOR "ADHESIVELY ANCHORED ANCHOR BOLTS OR DOWELS".

WHEN ADHESIVELY ANCHORED ANCHOR BOLTS ARE USED, BOLTS SHALL MEET THE REQUIREMENTS OF ASTM F593 ALLOY 304 STAINLESS STEEL WITH MINIMUM 517 MPa ULTIMATE STRENGTH. NUTS SHALL MEET THE REQUIREMENTS OF ASTM F594 ALLOY 304 STAINLESS STEEL AND WASHERS SHALL MEET THE REQUIREMENTS OF ASTM F844 EXCEPT THEY SHALL BE MADE FROM ALLOY 304 STAINLESS STEEL.



PLAN



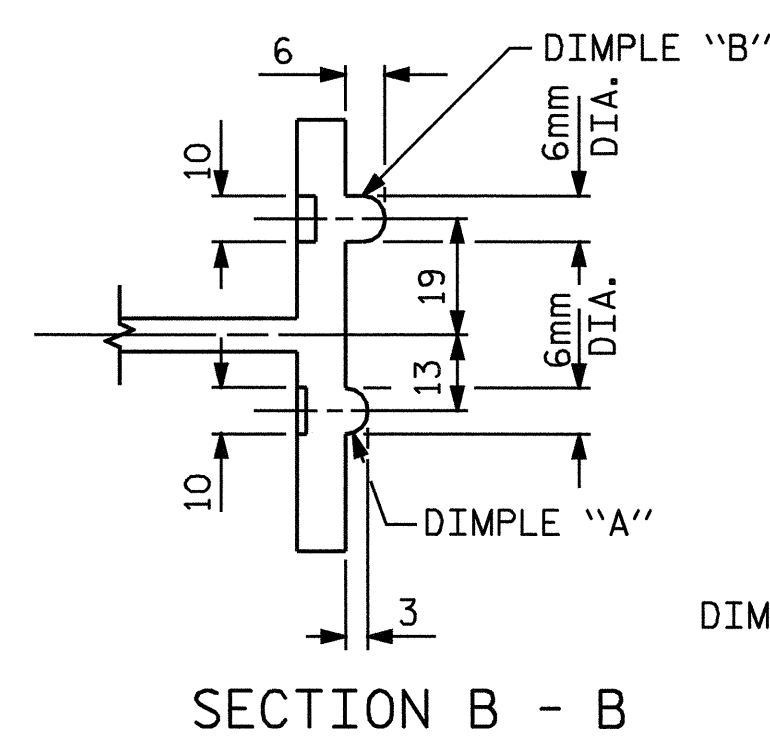
SIDE VIEW

ELEVATION

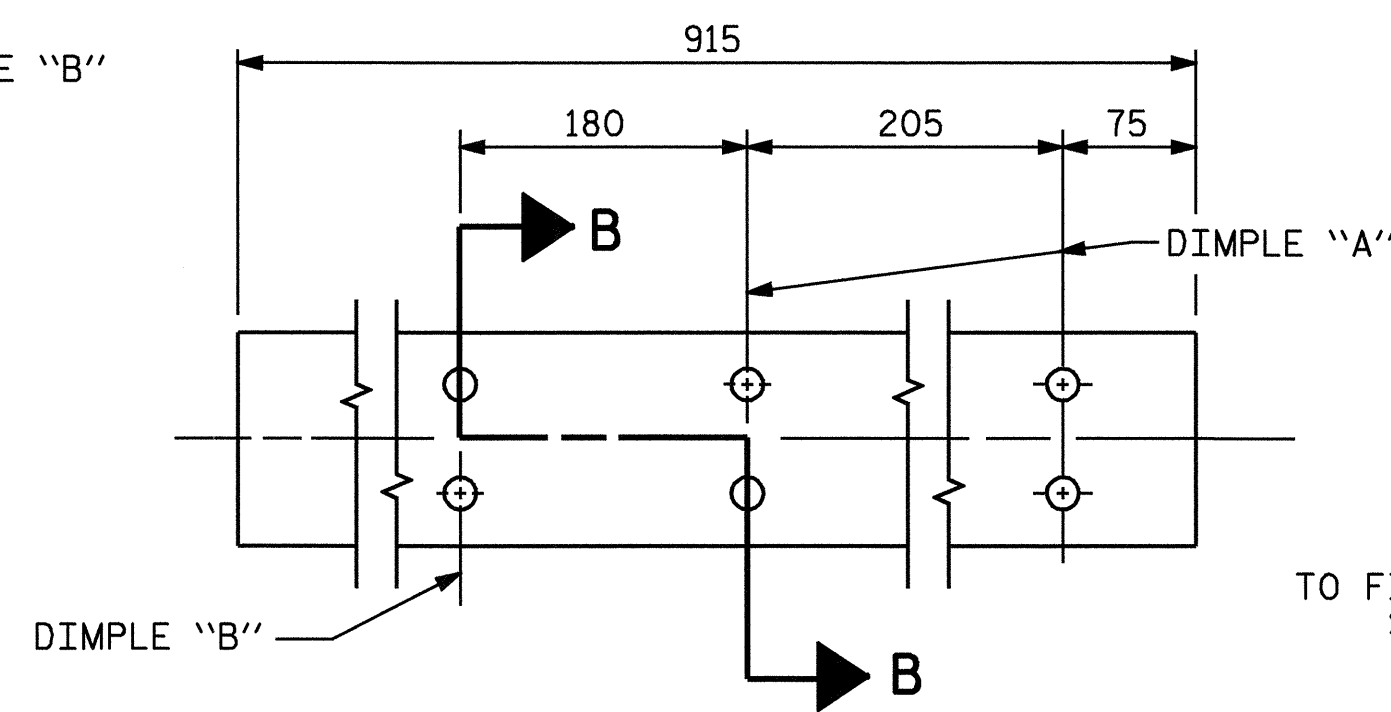
MINIMUM LENGTH OF THREADS IN INSERT (FERRULE) : 44mm

4-BOLT METAL RAIL ANCHOR ASSEMBLY

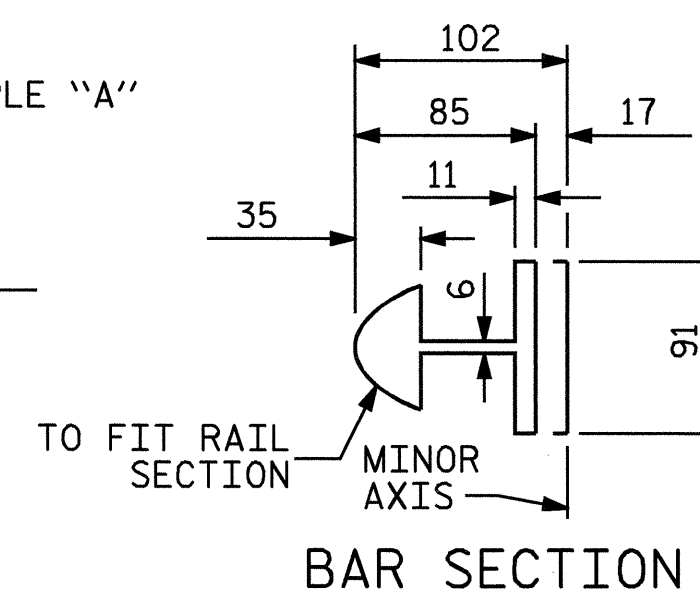
(78 ASSEMBLIES REQUIRED)



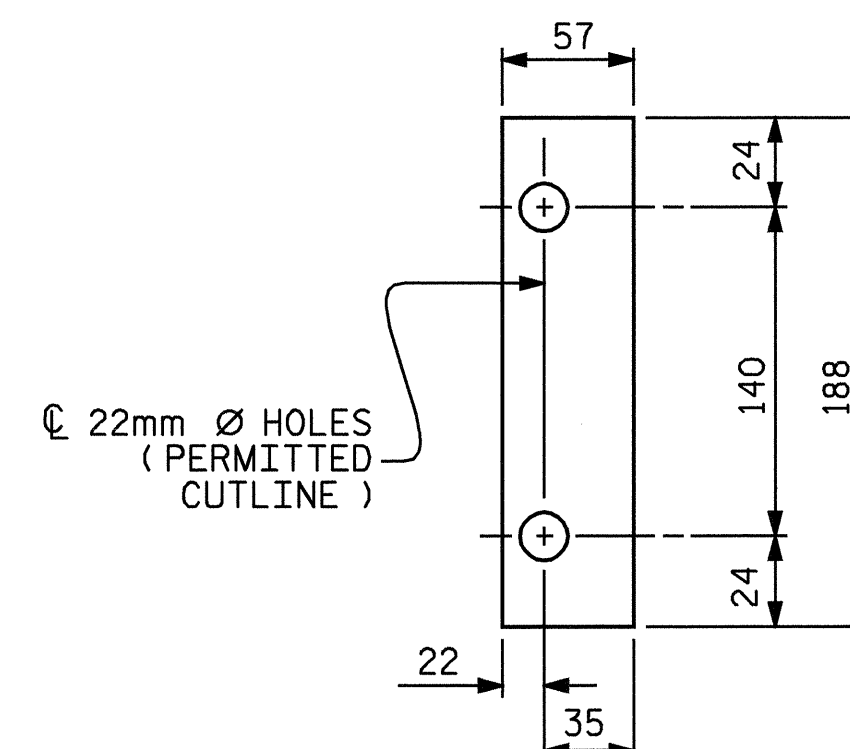
SECTION B - B



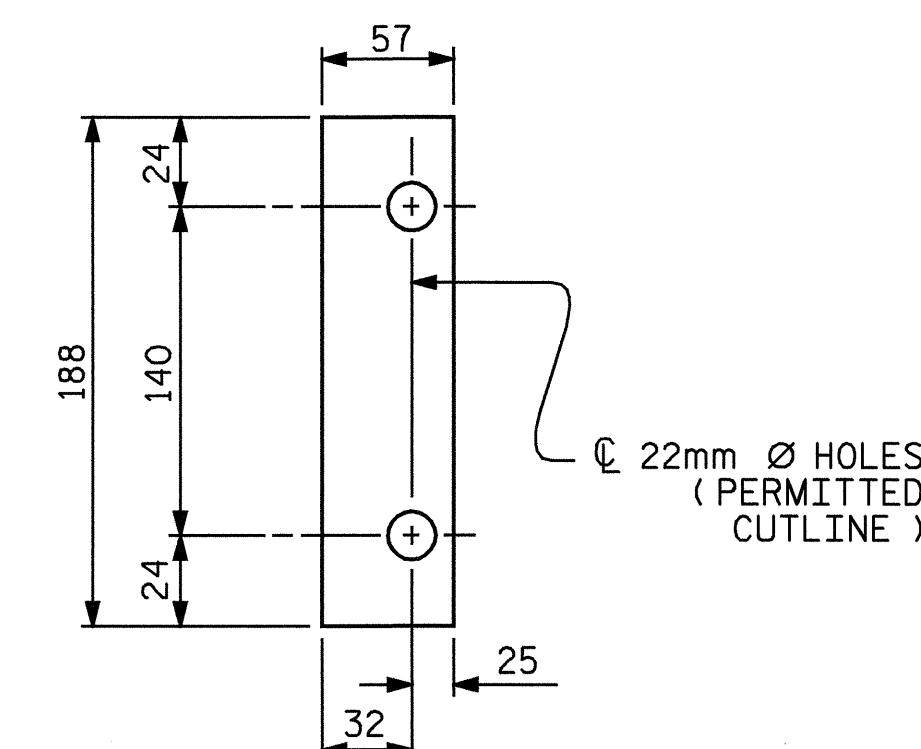
EXPANSION BAR DETAILS



BAR SECTION



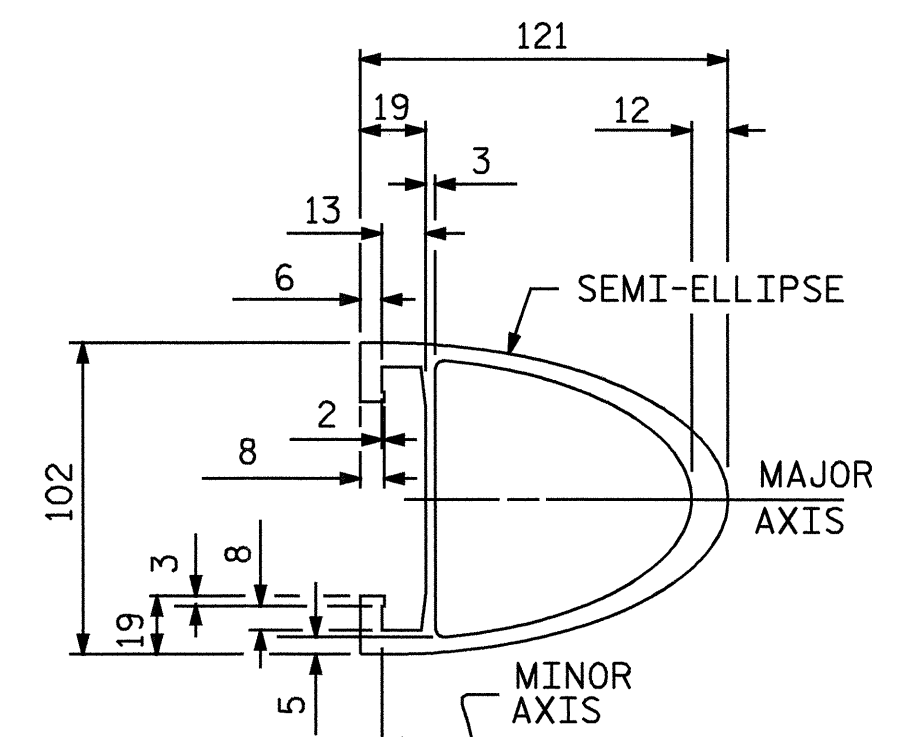
FRONT PLATE



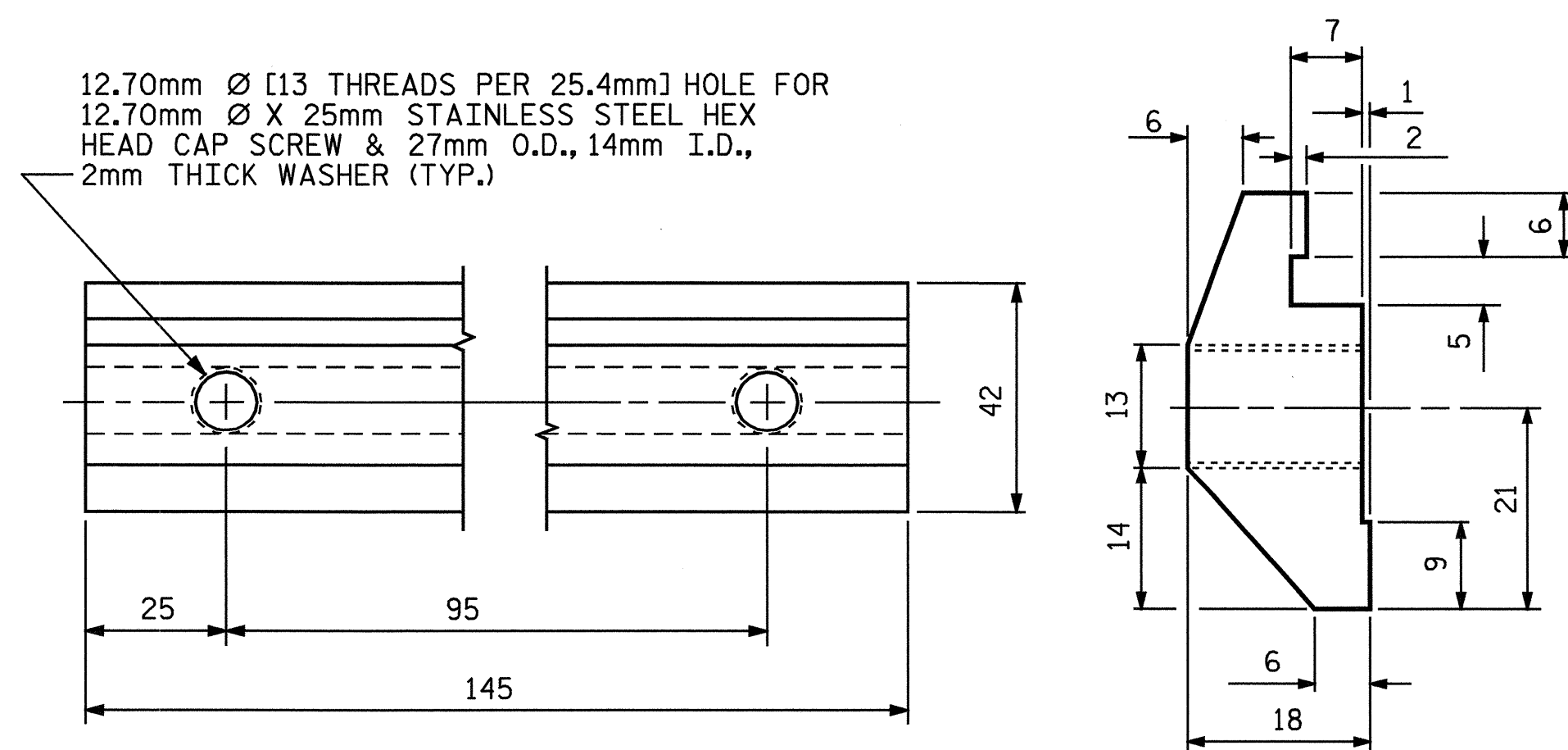
REAR PLATE

SHIM DETAILS

NOTE : SHIMS MAY BE CUT ALONG PERMITTED CUTLINE OR SLOTTED TO EDGE OF PLATE TO FACILITATE PLACEMENT.

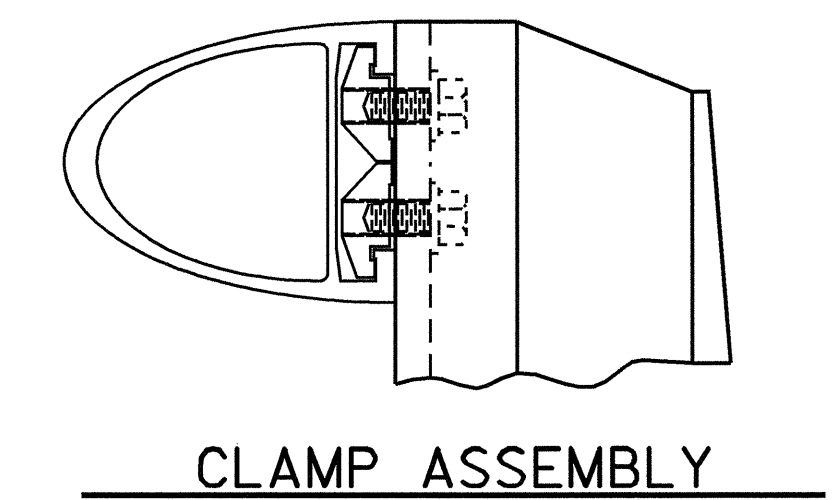


RAIL SECTION

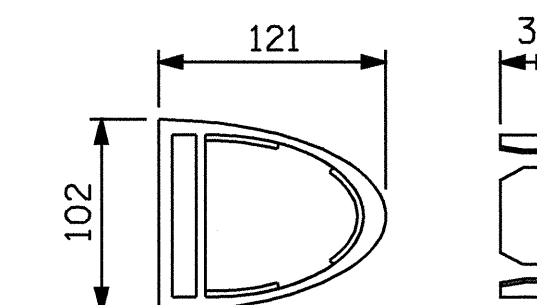


CLAMP BAR DETAIL

(4 REQUIRED PER POST)



CLAMP ASSEMBLY

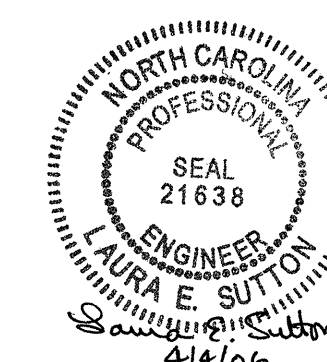


RAIL CAP

PROJECT NO. U-2408
GASTON COUNTY
 STATION: 20+57.612 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
 2 BAR METAL RAIL



ASSEMBLED BY :	P.C. BREWER	DATE :	3/31/05
CHECKED BY :	A.C. OUTLAW	DATE :	5/2/05
DRAWN BY :	EEM 6/94	REV. 8/16/99	RAL/LES
CHECKED BY :	RGW 6/94	REV. 10/17/00	LES/RDR
		REV. 5/7/03	RWN/JTE

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-29
1			3			TOTAL SHEETS
2			4			55

NOTES

THE GUARDRAIL ANCHOR ASSEMBLY SHALL CONSIST OF A 6mm HOLD DOWN PLATE AND 7 - 22.23mm Ø BOLTS WITH NUTS AND WASHERS.

THE HOLD-DOWN PLATE SHALL CONFORM TO AASHTO M270 GRADE 250. AFTER FABRICATION, THE HOLD-DOWN PLATE SHALL BE HOT-DIP GALVANIZED IN ACCORDANCE WITH AASHTO M111.

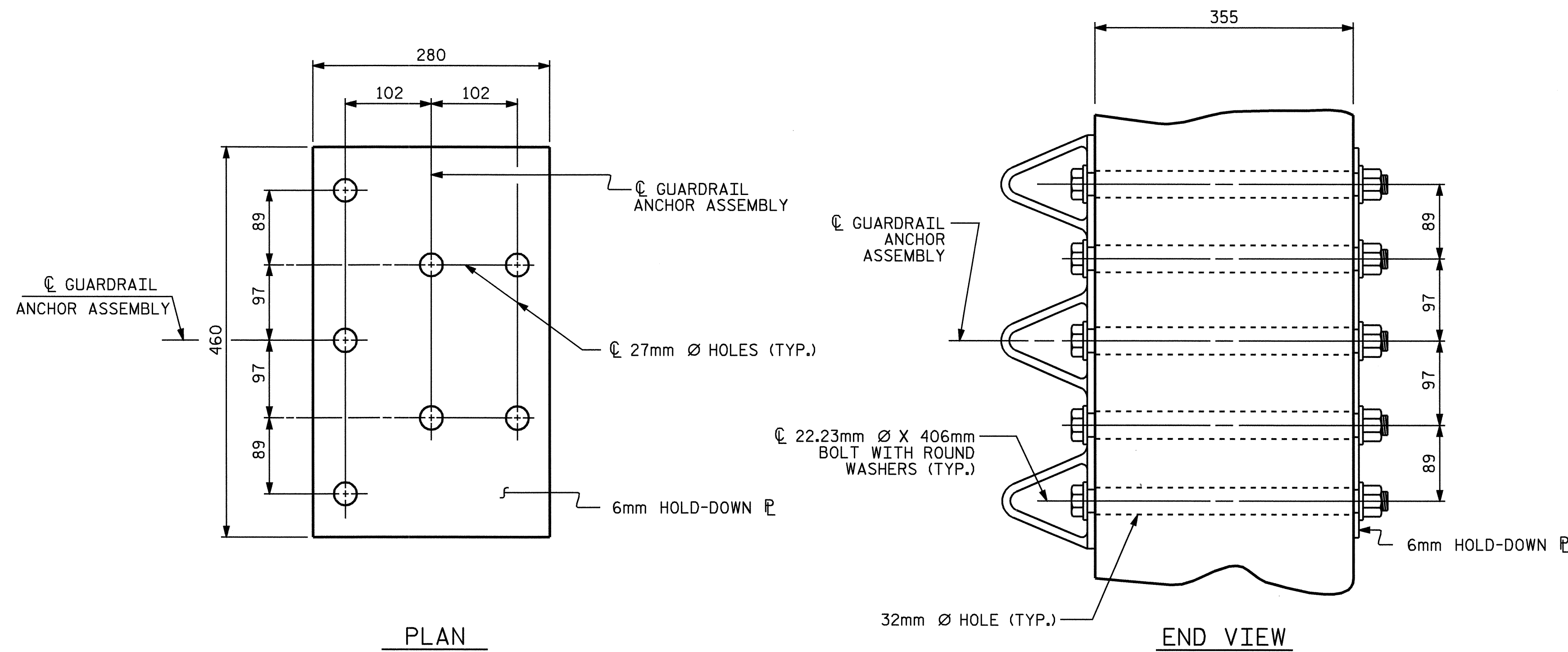
BOLTS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307 AND NUTS SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M291M. BOLTS, NUTS AND WASHERS SHALL BE GALVANIZED. AT THE CONTRACTOR'S OPTION, STAINLESS STEEL BOLTS, NUTS AND WASHERS MAY BE USED AS AN ALTERNATE FOR THE 22.23mm Ø GALVANIZED BOLTS, NUTS AND WASHERS. THEY SHALL CONFORM TO OR EXCEED THE MECHANICAL REQUIREMENTS OF ASTM A307. THE USE OF THIS ALTERNATE SHALL BE APPROVED BY THE ENGINEER.

AFTER INSTALLATION, THE EXPOSED THREAD OF THE BOLT SHALL BE BURRED WITH A SHARP POINTED TOOL.

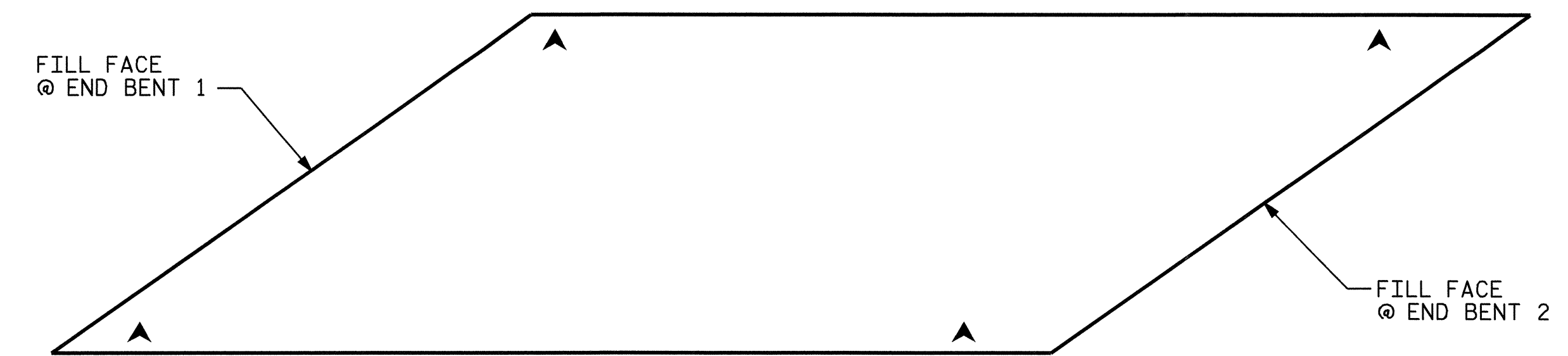
THE COST OF THE GUARDRAIL ANCHOR ASSEMBLIES WITH BOLTS, NUTS AND WASHERS COMPLETE IN PLACE, SHALL BE INCLUDED IN THE VARIOUS PAY ITEMS.

THE VERTICAL REINFORCING BARS MAY BE SHIFTED SLIGHTLY IN THE END POST TO CLEAR ASSEMBLY BOLTS.

THE 32mm Ø HOLES SHALL BE FORMED OR DRILLED WITH A CORE BIT. IMPACT TOOLS WILL NOT BE PERMITTED. ANY CONCRETE DAMAGED BY THIS WORK SHALL BE REPAIRED TO THE SATISFACTION OF THE ENGINEER.

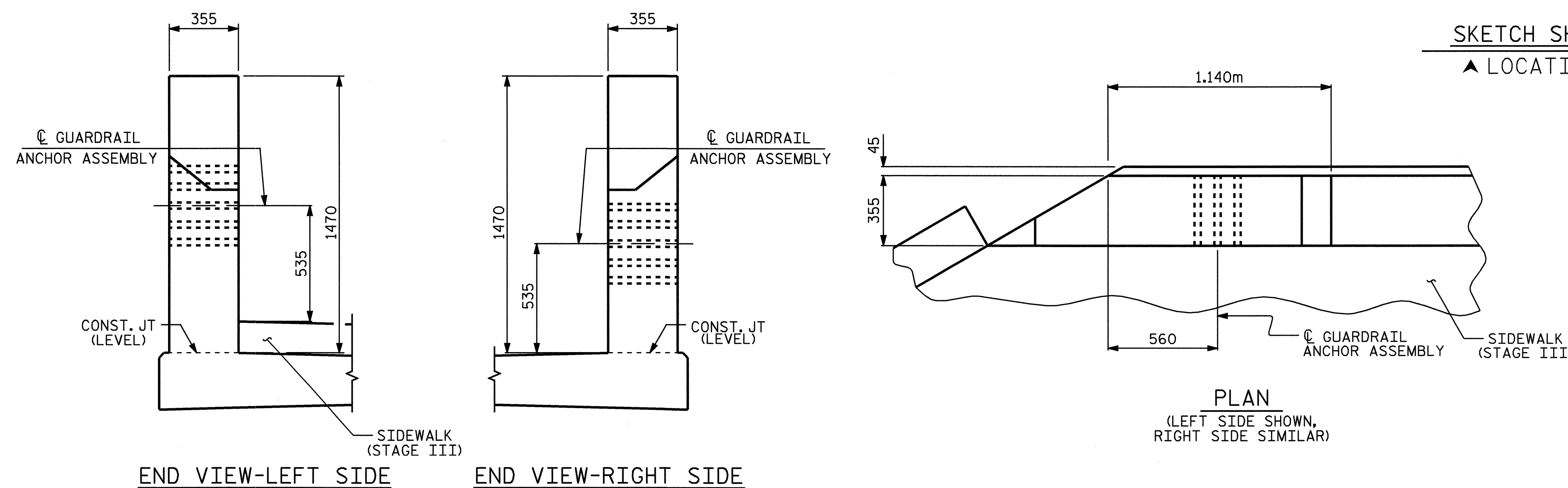


GUARDRAIL ANCHOR ASSEMBLY DETAILS



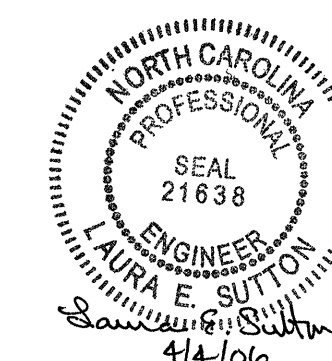
SKETCH SHOWING POINTS OF ATTACHMENT

▲ LOCATION OF GUARDRAIL ATTACHMENT



LOCATION OF GUARDRAIL ANCHOR AT END POST

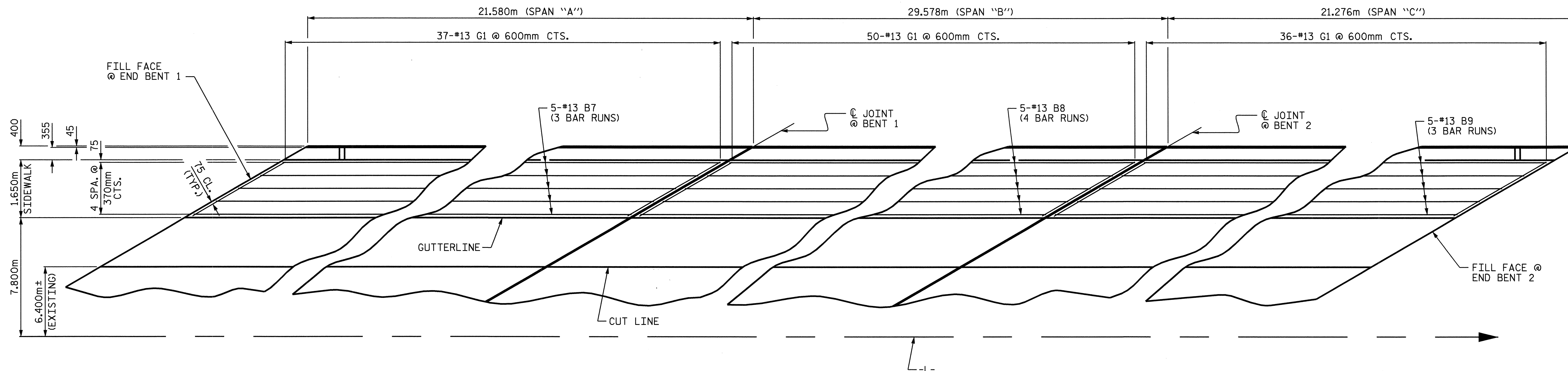
PROJECT NO. U-2408
GASTON COUNTY
 STATION: 20+57.612 -L-



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
 GUARDRAIL ANCHORAGE
 DETAILS
 FOR METAL RAILS

ASSEMBLED BY :	P.C. BREWER	DATE :	3/31/05
CHECKED BY :	A.C. OUTLAW	DATE :	5/2/05
DRAWN BY :	EEM 6/94	REV. 8/16/99	RWW/LES
CHECKED BY :	RGW 6/94	REV. 10/17/00	RWW/LES
		REV. 5/7/03	RWW/JTE

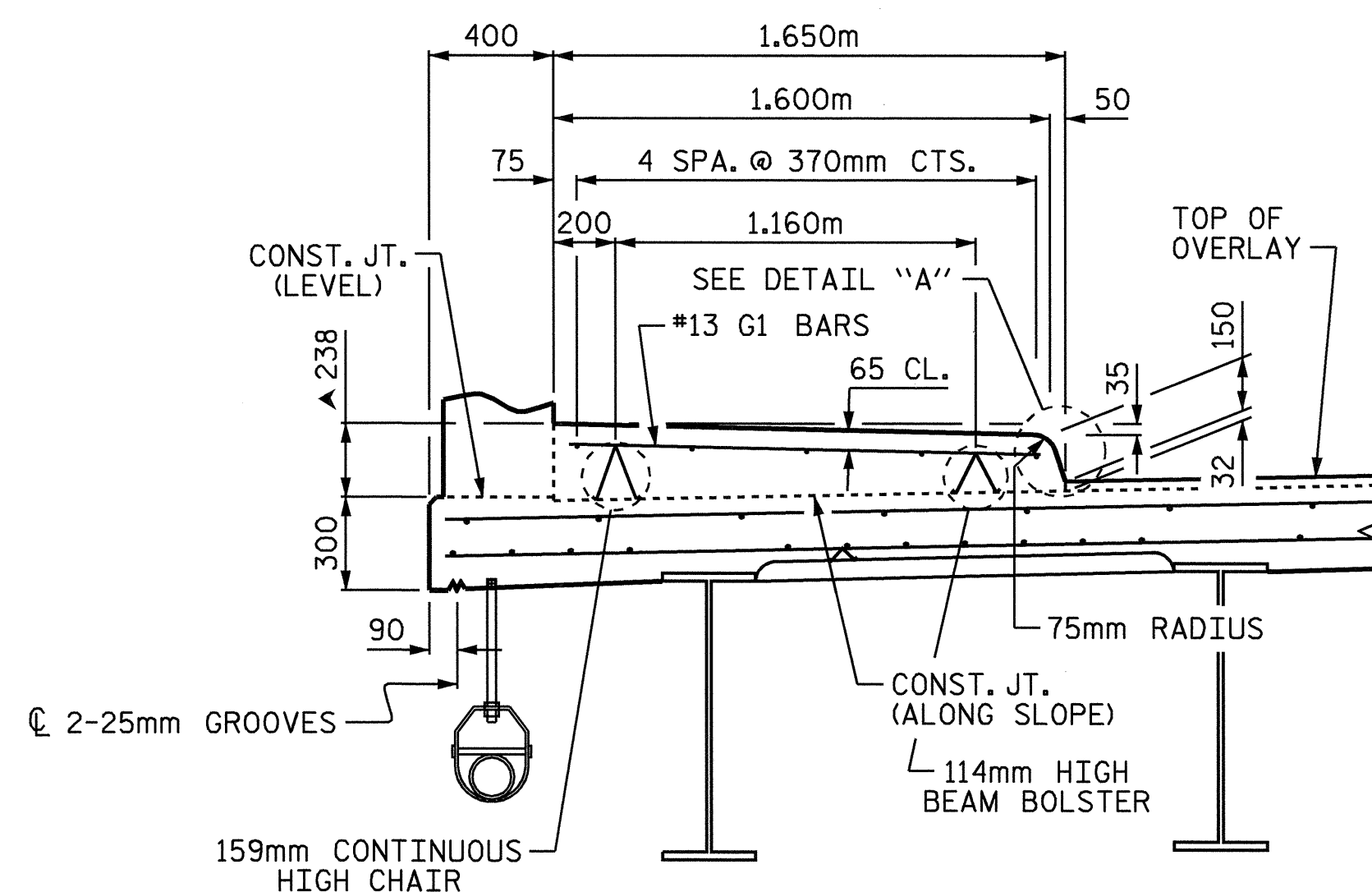
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-30
1			3			TOTAL SHEETS
2			4			55



PLAN OF SIDEWALK

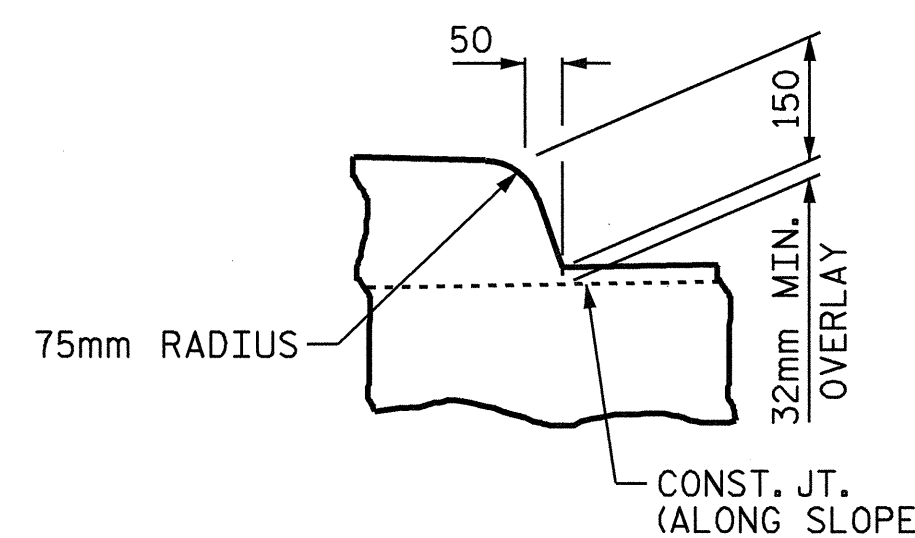
NOTES:

- ALL REINFORCING STEEL IN SIDEWALK SHALL BE EPOXY COATED.
- FOR SIDEWALK QUANTITIES, SEE "SUPERSTRUCTURE-BILL OF MATERIAL" SHEET. THE PAYMENT FOR THE SIDEWALK SHALL BE INCLUDED IN THE SQUARE METER PRICE BID FOR REINFORCED CONCRETE DECK SLAB.
- FOR SIDEWALK COVER PLATE DETAILS AT BENT 1 AND BENT 2, SEE "TYPICAL SECTION DETAILS" SHEET 4 OF 4.
- FOR SIDEWALK COVER PLATE DETAILS AT END BENTS, SEE "BRIDGE APPROACH SLAB DETAILS" SHEET 4 OF 4.
- GROOVED CONTRACTION JOINTS 12mm IN DEPTH, SHALL BE TOOLED IN ALL EXPOSED FACES OF SIDEWALK IN ACCORDANCE WITH ARTICLE 825-10(B) OF THE STANDARD SPECIFICATIONS. THE CONTRACTION JOINTS SHALL BE LOCATED AT A SPACING OF 2.4 METERS TO 3.5 METERS BETWEEN EXPANSION JOINTS. NO CONTRACTION JOINTS WILL BE REQUIRED FOR SEGMENTS LESS THAN 3.5 METERS IN LENGTH.



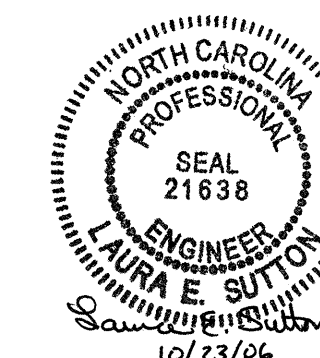
SECTION THRU SIDEWALK

▲ THIS DIMENSION IS BASED ON MILLING 12mm OF CONCRETE DECK AND A 32mm LATEX MODIFIED CONCRETE OVERLAY. ADJUST THIS HEIGHT IN THE FIELD, IF NECESSARY, TO ENSURE 35mm DROP ACROSS THE SIDEWALK.



DETAIL "A"

PROJECT NO. U-2408
 GASTON COUNTY
 STATION: 20+57.612 -L-



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
 SIDEWALK DETAILS
 (STAGE III)

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			55
2			4			

DRAWN BY: P.C. BREWER DATE: 3/29/05
 CHECKED BY: A.C. OUTLAW DATE: 4/29/05

REINFORCING BAR SCHEDULE

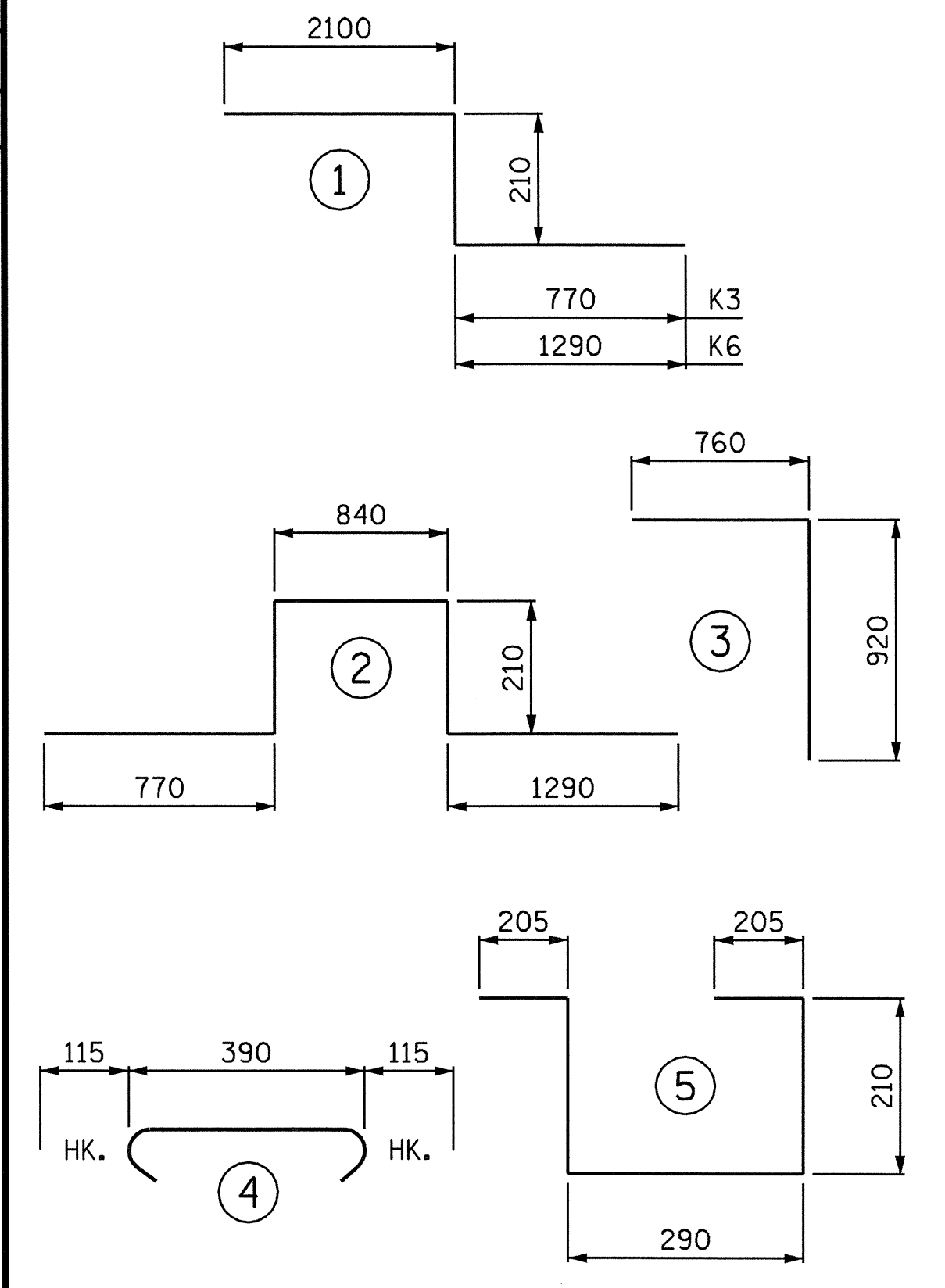
STAGE I											STAGE III												
SPAN "A"						SPAN "B"					SPAN "C"					SIDEWALK							
BAR NO.	NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR NO.	NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR NO.	NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR NO.	NO.	SIZE	TYPE	LENGTH	WEIGHT
A1	166	16	STR	3340	860	A1	250	16	STR	3340	1296	A1	162	16	STR	3340	840	*B7	15	13	STR	7540	112
A2	196	16	STR	1700	517	A2	280	16	STR	1700	739	A2	192	16	STR	1700	507	*B8	20	13	STR	7820	155
A101	8	16	STR	3120	39	A101	8	16	STR	3120	39	A101	8	16	STR	3120	39	*B9	15	13	STR	7440	111
A102	8	16	STR	2900	36	A102	8	16	STR	2900	36	A102	8	16	STR	2900	36	*G1	123	13	STR	3000	367
A103	8	16	STR	2680	33	A103	8	16	STR	2680	33	A103	8	16	STR	2680	33	* EPOXY COATED REINFORCING STEEL 745 kg					
A104	8	16	STR	2460	31	A104	8	16	STR	2460	31	A104	8	16	STR	2460	31						
A105	8	16	STR	2240	28	A105	8	16	STR	2240	28	A105	8	16	STR	2240	28						
A106	8	16	STR	2020	25	A106	8	16	STR	2020	25	A106	8	16	STR	2020	25						
A107	8	16	STR	1800	22	A107	8	16	STR	1800	22	A107	8	16	STR	1800	22						
A108	8	16	STR	1580	20	A108	8	16	STR	1580	20	A108	8	16	STR	1580	20						
A109	8	16	STR	1360	17	A109	8	16	STR	1360	17	A109	8	16	STR	1360	17						
A110	8	16	STR	1140	14	A110	8	16	STR	1140	14	A110	8	16	STR	1140	14						
A111	8	16	STR	920	11	A111	8	16	STR	920	11	A111	8	16	STR	920	11						
A112	8	16	STR	700	9	A112	8	16	STR	700	9	A112	8	16	STR	700	9						
A113	8	16	STR	680	8	A113	8	16	STR	680	8	A113	8	16	STR	680	8						
A201	8	16	STR	1480	18	A201	8	16	STR	1480	18	A201	8	16	STR	1480	18						
A202	8	16	STR	1260	16	A202	8	16	STR	1260	16	A202	8	16	STR	1260	16						
A203	8	16	STR	1040	13	A203	8	16	STR	1040	13	A203	8	16	STR	1040	13						
A204	8	16	STR	820	10	A204	8	16	STR	820	10	A204	8	16	STR	820	10						
A205	8	16	STR	600	7	A205	8	16	STR	600	7	A205	8	16	STR	600	7						
A206	8	16	STR	580	7	A206	8	16	STR	580	7	A206	8	16	STR	580	7						
B1	39	13	STR	7480	290	B3	52	13	STR	7740	400	B5	39	13	STR	7380	286						
B2	46	16	STR	11000	785	B4	46	16	STR	15000	1071	B6	46	16	STR	10860	775						
D1	96	16	STR	620	92	D1	118	16	STR	620	114	D1	96	16	STR	620	92						
K1	5	13	STR	6700	33	K3	4	16	1	3080	19	K1	5	13	STR	6700	33						
K2	2	19	STR	6700	30	K4	4	16	2	3320	21	K2	2	19	STR	6700	30						
K3	2	16	1	3080	10	K5	4	16	STR	2500	16	K3	2	16	1	3080	10						
K4	2	16	2	3320	10	K6	4	16	1	3600	22	K4	2	16	2	3320	10						
K5	2	16	STR	2500	8	S3	26	13	5	1120	29	K5	2	16	STR	2500	8						
K6	2	16	1	3600	11							K6	2	16	1	3600	11						
K7	5	13	STR	3400	17							K7	5	13	STR	3400	17						
K8	2	19	STR	3400	15							K8	2	19	STR	3400	15						
S1	30	13	4	620	18							S1	30	13	4	620	18						
S2	34	13	3	1680	57							S2	34	13	3	1680	57						
S3	13	13	5	1120	14							S3	13	13	5	1120	14						
REINFORCING STEEL 3,131 kg					REINFORCING STEEL 4,091 kg					REINFORCING STEEL 3,087 kg													

SUPERSTRUCTURE REINFORCING STEEL LENGTHS ARE BASED ON THE FOLLOWING MINIMUM SPLICE LENGTHS

BAR SIZE	SUPERSTRUCTURE EXCEPT APPROACH SLABS, PARAPET, AND BARRIER RAIL		APPROACH SLABS		PARAPET AND BARRIER RAIL
	EPOXY COATED	UNCOATED	EPOXY COATED	UNCOATED	
#13	610	540	610	540	840
#16	770	660	770	660	1050
#19	920	790	1190	790	1330
#22	1580	1060			
#25	2080	1390			

GROOVING BRIDGE FLOORS		
		SQ. METERS
STAGE II	BRIDGE DECK	585.6
	APPROACH SLAB	115.2
STAGE III	BRIDGE DECK	467.2
	APPROACH SLAB	91.9
TOTAL		1,259.9

BAR TYPES

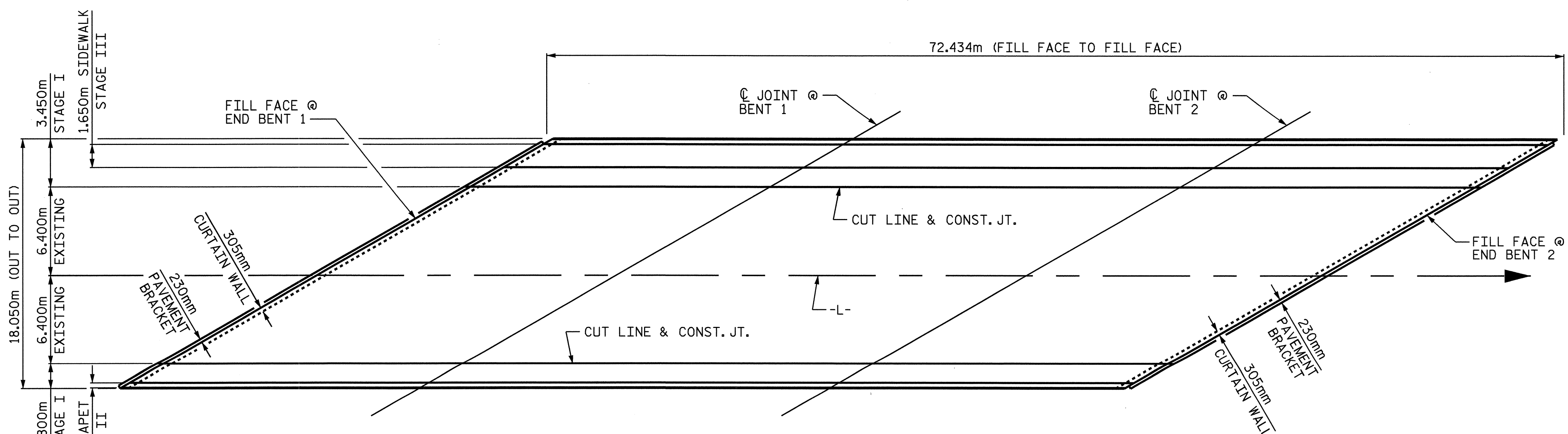


ALL BAR DIMENSIONS ARE OUT TO OUT.

SUPERSTRUCTURE BILL OF MATERIAL

	CLASS AA CONCRETE	REINFORCING STEEL	EPOXY COATED REINFORCING STEEL
STAGE I	(m ³)	(kg)	(kg)
SPAN "A"	35.6	3,131	—
SPAN "B"	45.2	4,091	—
SPAN "C"	35.2	3,087	—
STAGE II			
SIDEWALK	19.8	—	745
TOTALS	135.8	10,309	745

PARAPET AND END POST QUANTITIES ARE NOT INCLUDED.



LAYOUT FOR COMPUTING AREA OF REINFORCED CONCRETE DECK SLAB (SQ. METER = 380.3)

PROJECT NO. U-2408
GASTON COUNTY
STATION: 20+57.612 -L-

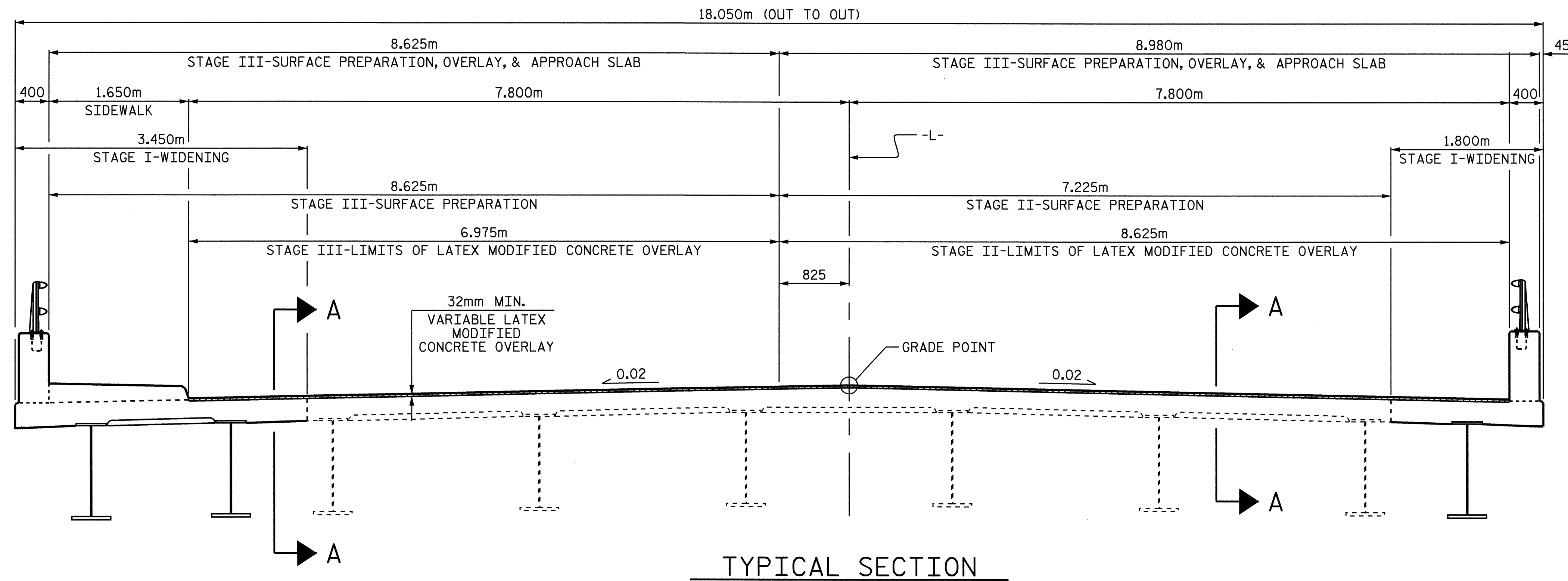


STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE
BILL OF MATERIAL

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			S-32
2			4			TOTAL SHEETS 55

DRAWN BY: P.C. BREWER DATE: 4/7/05
CHECKED BY: A.C. OUTLAW DATE: 5/4/05



NOTES:

QUANTITIES FOR CLASS II SURFACE PREPARATION ARE ESTIMATED. THE QUANTITIES TO BE PAID FOR WILL BE THE ACTUAL NUMBER OF SQUARE METERS OF CLASS II SURFACE PREPARATION COMPUTED BY THE ENGINEER FROM MEASUREMENTS OF THE AREAS THAT ARE PREPARED TO RECEIVE THE OVERLAY.

FOR CLASS I AND II SURFACE PREPARATION, SEE SPECIAL PROVISION FOR REPAIR OF BRIDGE DECKS AND APPROACH PAVEMENT WITH LATEX MODIFIED CONCRETE.

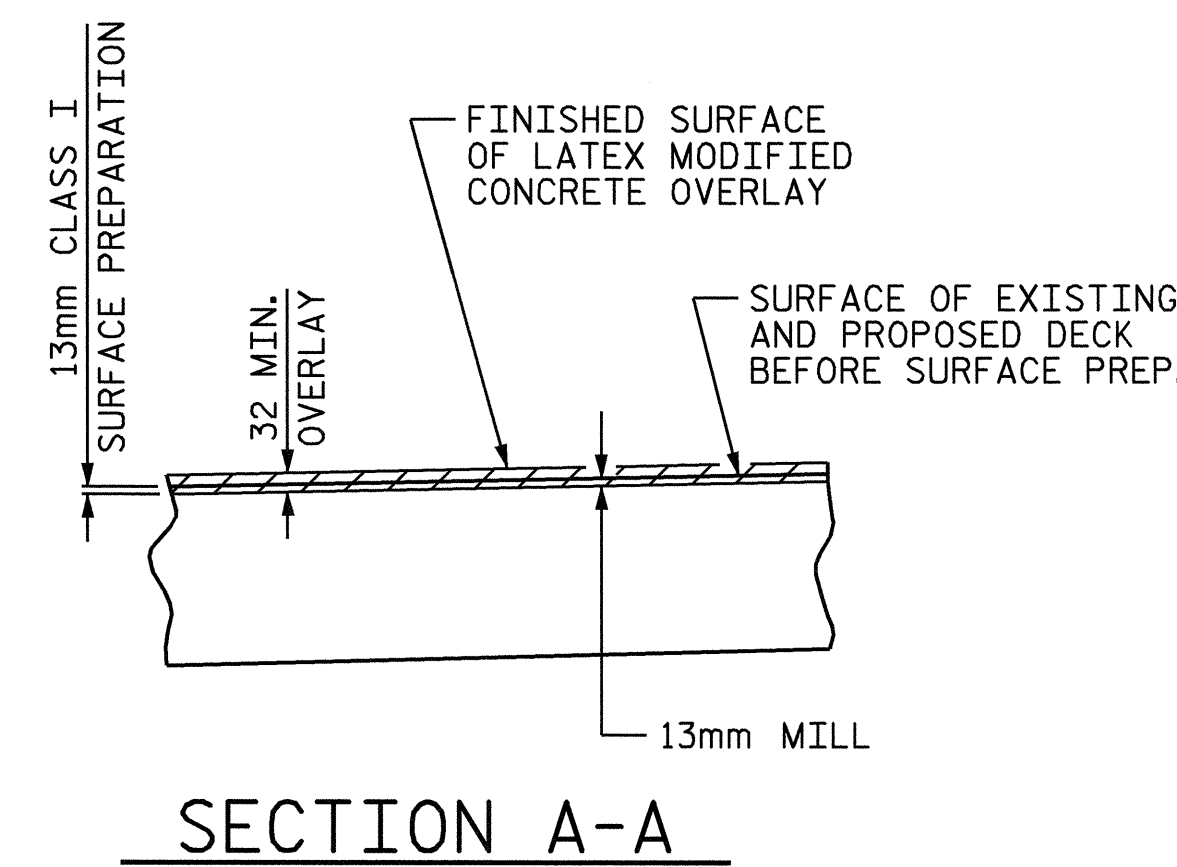
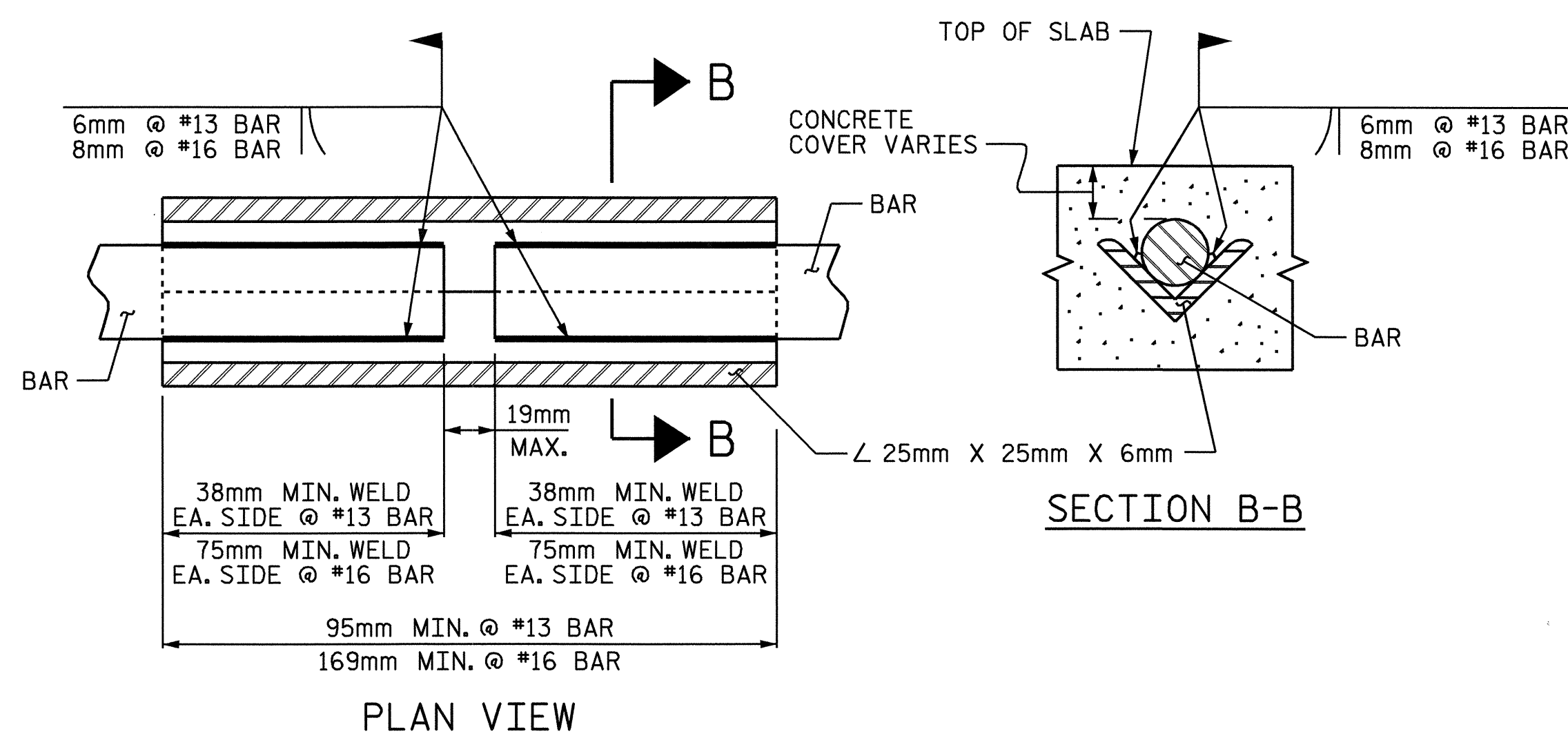
FOR LATEX MODIFIED CONCRETE AND PLACING AND FINISHING OF LATEX MODIFIED CONCRETE, SEE SPECIAL PROVISION FOR LATEX MODIFIED CONCRETE.

SPLICES FOR REINFORCING STEEL SHALL BE WELDED AS DETAILED AND ALL WELDING SHALL CONFORM TO THE LATEST EDITION OF THE AMERICAN WELDING SOCIETY REINFORCING STEEL CODE (AWS D12.1). CHEMICAL ANALYSIS OF THE EXISTING REINFORCING STEEL WILL NOT BE REQUIRED.

FOR PLACING SEQUENCE OF THE LATEX MODIFIED CONCRETE OVERLAY, SEE "STAGING SEQUENCE" SHEETS.

CLASS I SURFACE PREPARATION SHALL BE PERFORMED ON THE EXISTING DECK AND STAGE I WIDENING PORTION OF THE DECK. THE APPROACH SLABS SHALL NOT HAVE CLASS I SURFACE PREPARATION OR LATEX MODIFIED CONCRETE OVERLAY BUT SHALL BE GROOVED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

FOR GROOVING BRIDGE FLOORS QUANTITIES, SEE "BILL OF MATERIAL" SHEET.



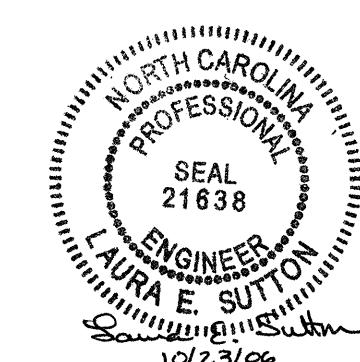
BILL OF MATERIAL				
	CLASS I SURFACE PREPARATION	CLASS II SURFACE PREPARATION	LATEX MODIFIED CONCRETE OVERLAY	PLACING AND FINISHING OF LATEX MODIFIED CONCRETE OVERLAY
	SQ. METERS	SQ. METERS	CU. METERS	SQ. METERS
STAGE II	523.3	11.5	48.5	1,130.0
STAGE III	624.7	11.5	43.5	
TOTAL	1,148.0	23.0	92.0	1,130.0

PROJECT NO. U-2408
GASTON COUNTY
 STATION: 20+57.612 -L-

SHEET 1 OF 2

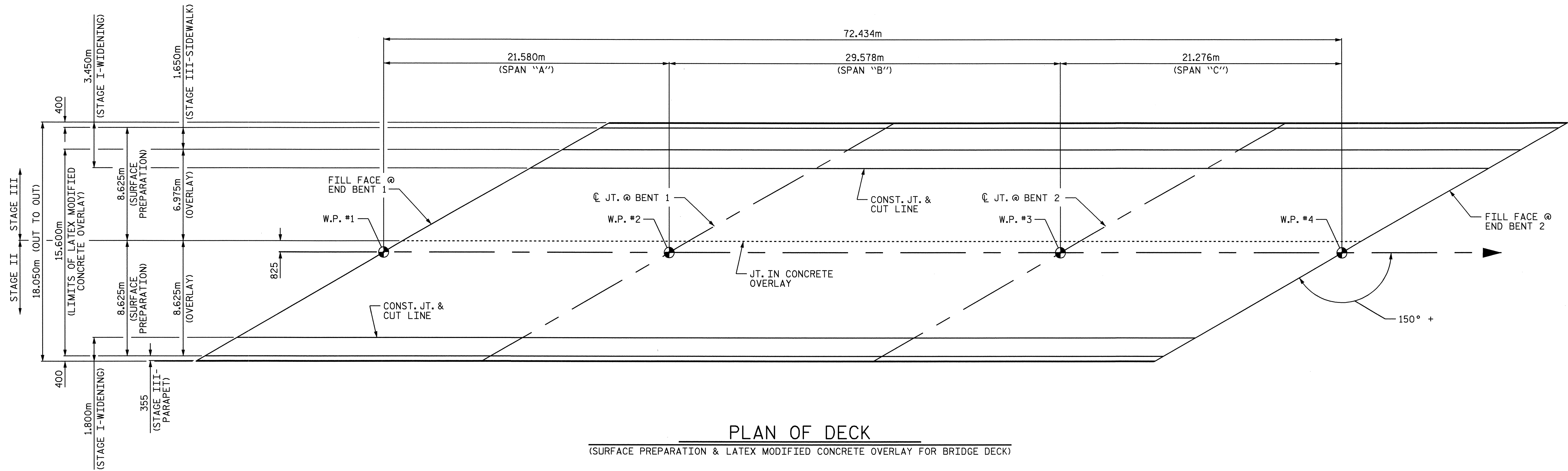
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUPERSTRUCTURE
 DECK WIDENING AND
 REHABILITATION



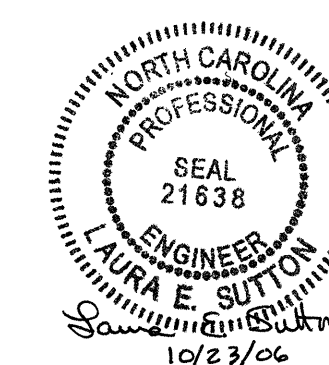
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			55
2			4			

DRAWN BY : P.C. BREWER DATE : 8/10/05
 CHECKED BY : L.E. SUTTON DATE : 8/21/05



DRAWN BY : P.C. BREWER DATE : 8/10/05
 CHECKED BY : L.E. SUTTON DATE : 8/21/05

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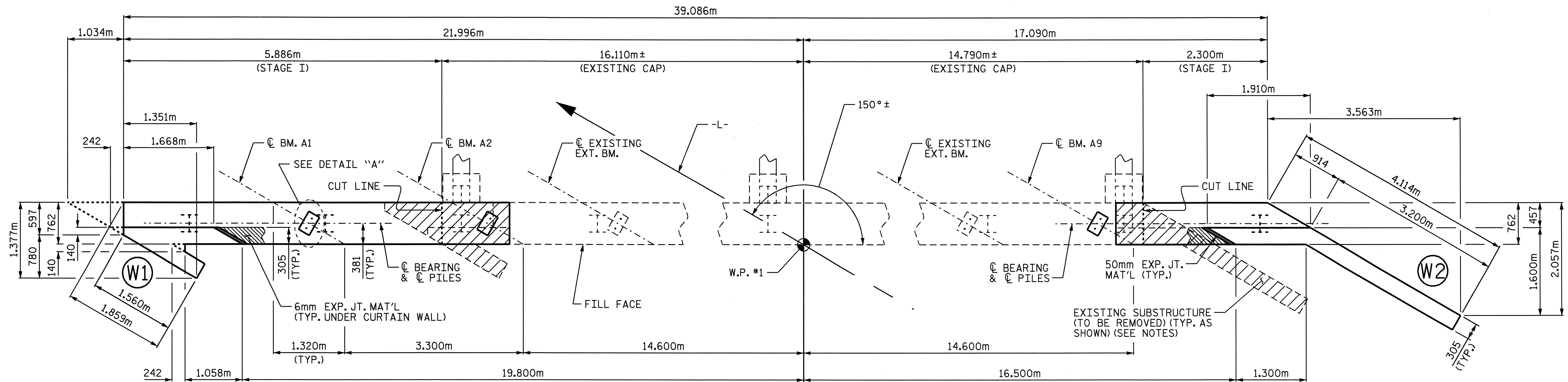


PROJECT NO. U-2408
GASTON COUNTY
 STATION: 20+57.612 -L-

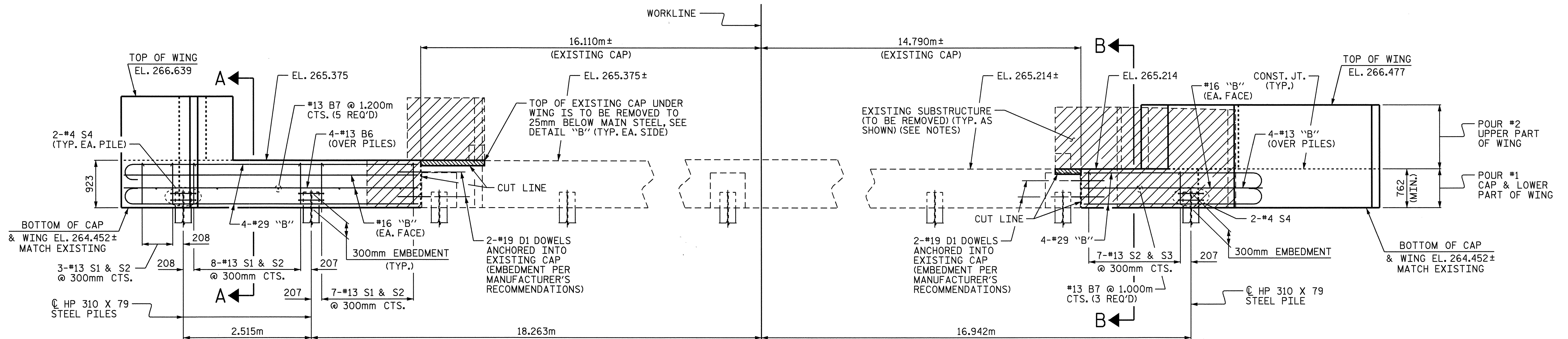
SHEET 2 OF 2

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
 DECK WIDENING AND
 REHABILITATION

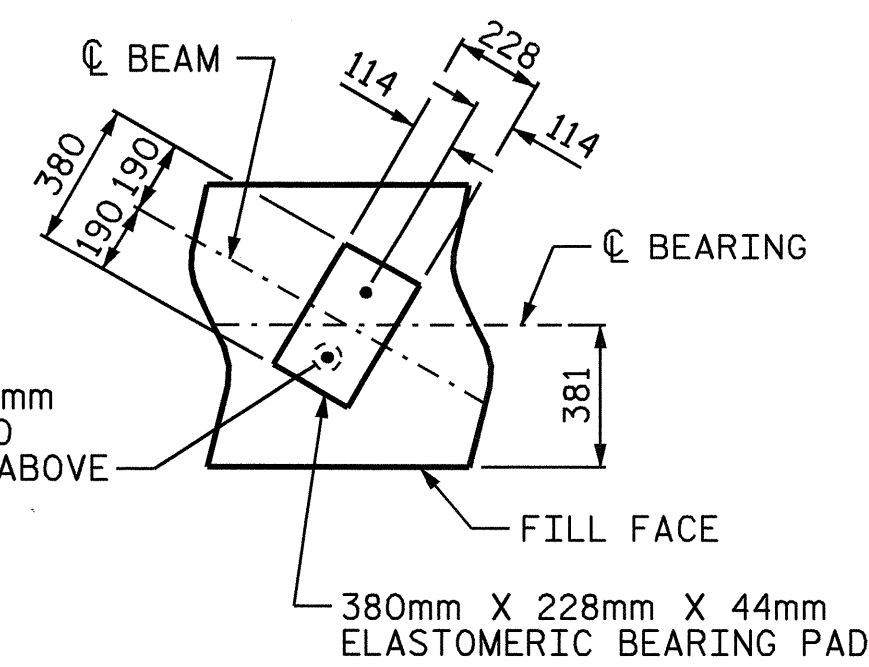
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-34
1			3			TOTAL SHEETS
2			4			55



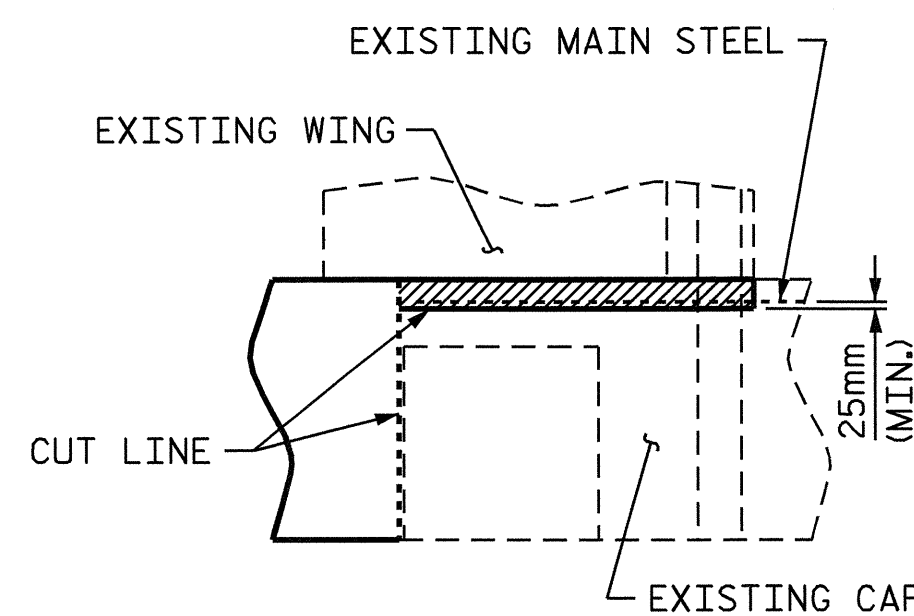
PLAN



ELEVATION



DETAIL "A"
(TYP. EA. BEAM)



DETAIL "B"
(LEFT SIDE SHOWN, RIGHT SIDE SIMILAR)

NOTES:

STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.

FOR EPOXY PROTECTIVE COATING, SEE SPECIAL PROVISIONS. THE CONTRACTOR MAY, BUT IS NOT REQUIRED TO COAT THE TOP SURFACE AREA COVERED BY THE CURTAIN WALL.

THE TOP SURFACE AREAS OF THE END BENT CAPS SHALL BE CURED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS EXCEPT THE MEMBRANE CURING COMPOUND METHOD SHALL NOT BE USED.

THE CONTRACTOR SHALL PROVIDE FOR INSTALLATION OF THE 102mm DIAMETER DRAIN PIPE THROUGH THE WING WALL AS REQUIRED FOR REINFORCED BRIDGE APPROACH FILLS, SEE THE ROADWAY PLANS. REINFORCING STEEL IN THE WING WALL MAY BE SHIFTED AS NECESSARY TO CLEAR THE DRAIN PIPE.

EXISTING EXTERIOR BRIDGE SEAT ELEVATIONS SHALL BE VERIFIED BY THE ENGINEER PRIOR TO FABRICATION OF THE FILL PLATES. IF THE EXISTING BRIDGE SEAT ELEVATION IS MORE THAN 6mm HIGHER OR LOWER THAN THE ELEVATION DETAILED IN THE PLANS, INCORPORATE THAT DIFFERENCE INTO THE FILL PLATE HEIGHT AND ANCHOR BOLT LENGTH.

EXISTING CAP AND WINGS SHALL BE REMOVED IN ACCORDANCE WITH PLAN DETAILS. THE CONTRACTOR MAY BUT IS NOT REQUIRED TO RETAIN EXISTING STEEL. THE REMOVAL SHALL BE INCLUDED IN THE LUMP SUM PRICE BID FOR "REMOVAL OF EXISTING STRUCTURE AT STA. 20+57.612 -L-".

USE CARE WHEN REMOVING EXISTING WINGS SO AS NOT TO DAMAGE EXISTING CAP THAT WILL REMAIN IN PLACE. TO ENSURE A LEVEL BRIDGE SEAT, REMOVE THE TOP SURFACE OF THE CAP AT THESE LOCATIONS TO 25mm MINIMUM BELOW THE EXISTING MAIN STEEL. FOR BONDING NEW CONCRETE TO OLD, SEE ARTICLE 420-11 OF THE STANDARD SPECIFICATIONS.

DOWELS IN THE EXISTING CAP SHALL BE INSTALLED USING AN ADHESIVE ANCHORING SYSTEM. THE YIELD LOAD OF THE DOWELS IS 117.4KN. FIELD TESTING OF THE ANCHORING SYSTEM IS REQUIRED. FOR ADHESIVELY ANCHORED ANCHOR BOLTS OR DOWELS, SEE SPECIAL PROVISIONS.

PROJECT NO. U-2408
GASTON COUNTY
 STATION: 20+57.612 -L-

SHEET 1 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

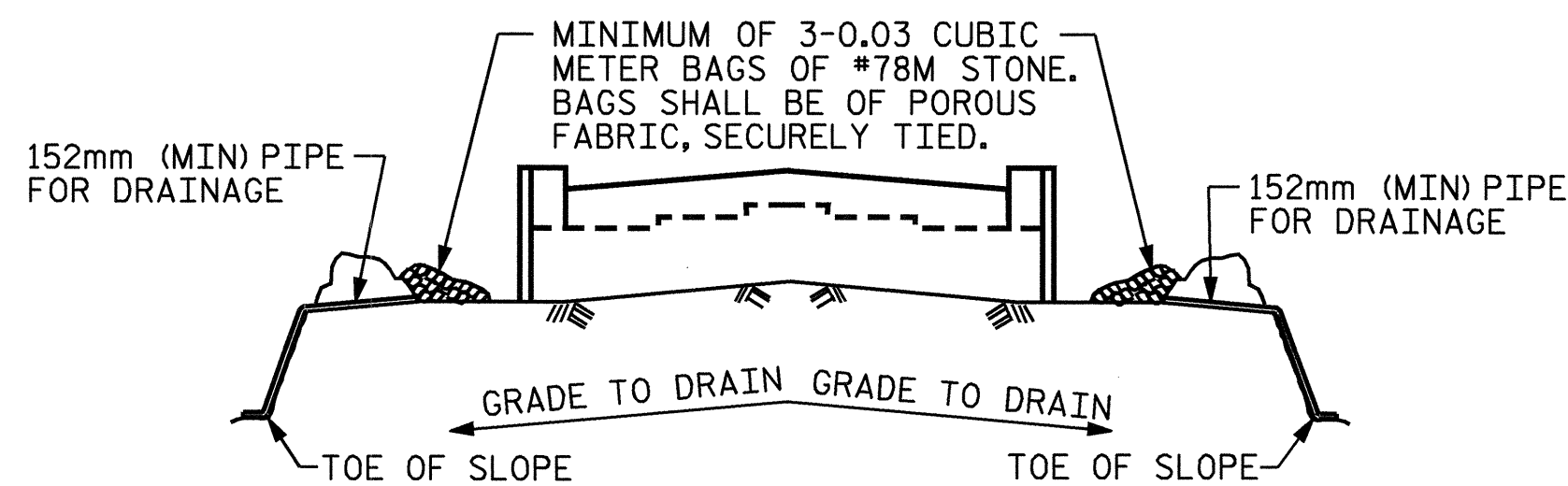
SUBSTRUCTURE
 END BENT 1



REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-35	
1			3			TOTAL	55
2			4			SHEETS	

DRAWN BY: P.C. BREWER DATE: 5/5/05
 CHECKED BY: A.S. CALLAWAY DATE: 7/16/05

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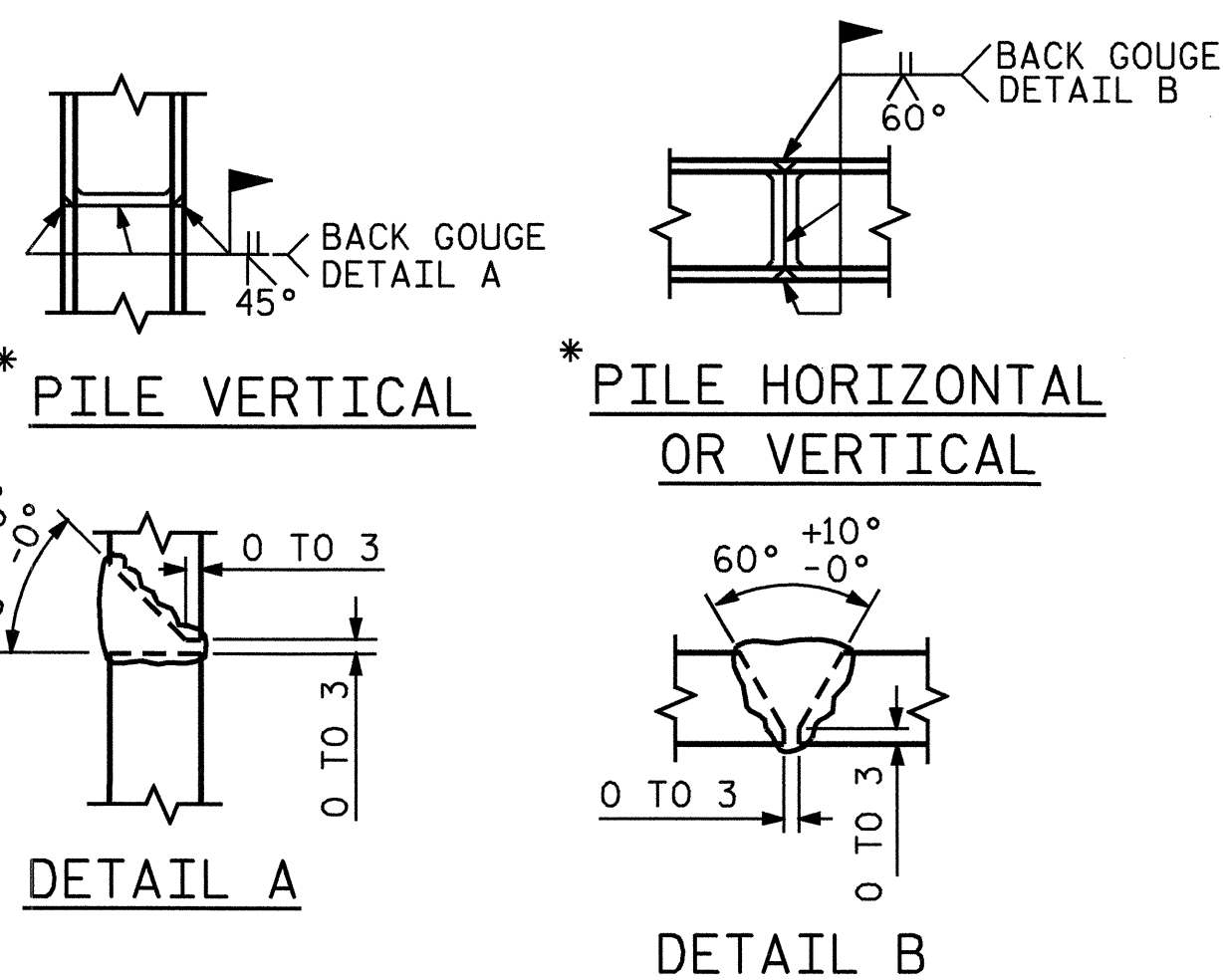


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

BAGGED STONE SHALL REMAIN IN PLACE UNTIL THE ENGINEER DIRECTS THAT IT BE REMOVED. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF SILT ACCUMULATIONS AT BAGGED STONE WHEN SO DIRECTED BY THE ENGINEER. BAGS SHALL BE REMOVED AND REPLACED WHENEVER THE ENGINEER DETERMINES THAT THEY HAVE DETERIORATED AND LOST THEIR EFFECTIVENESS.

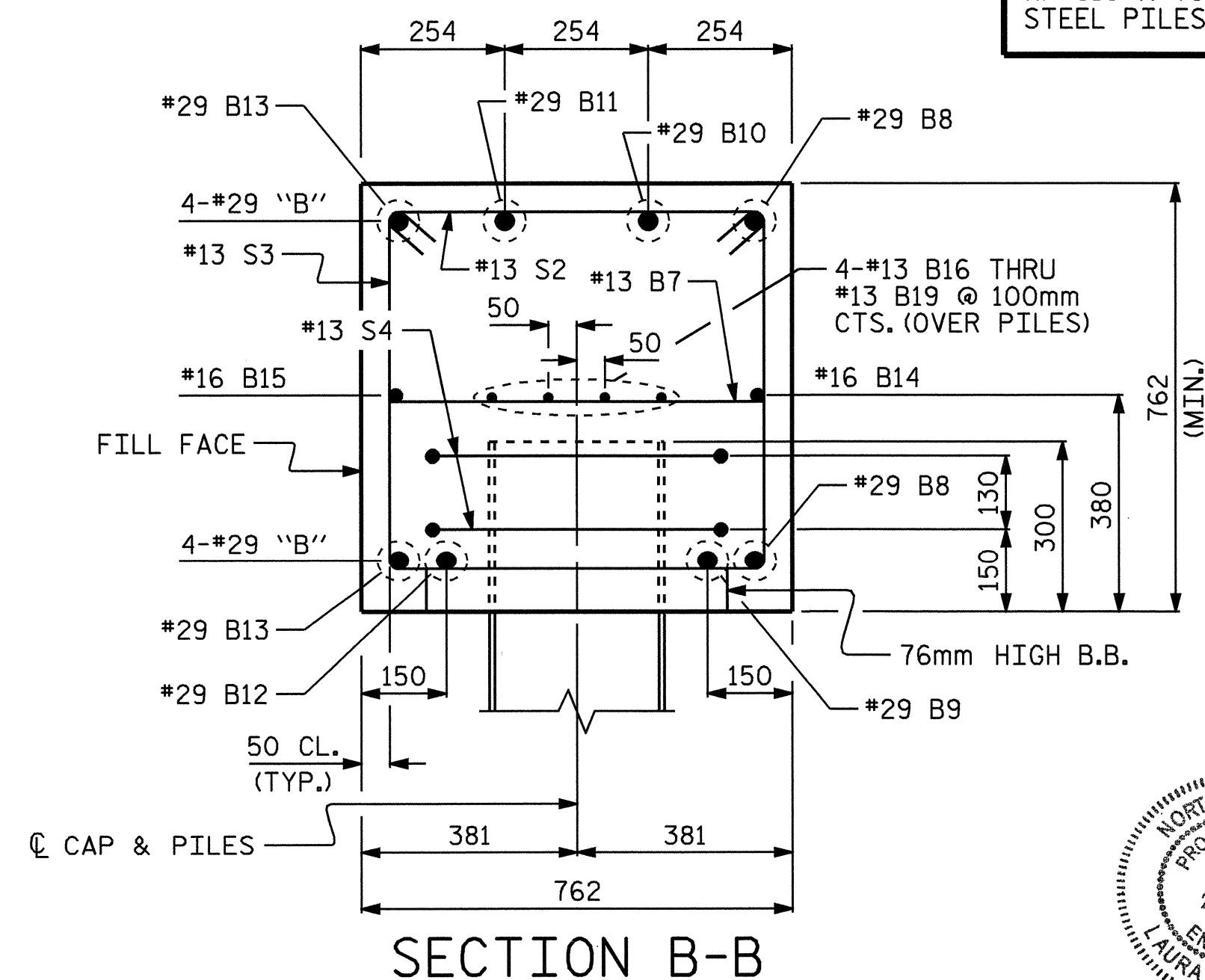
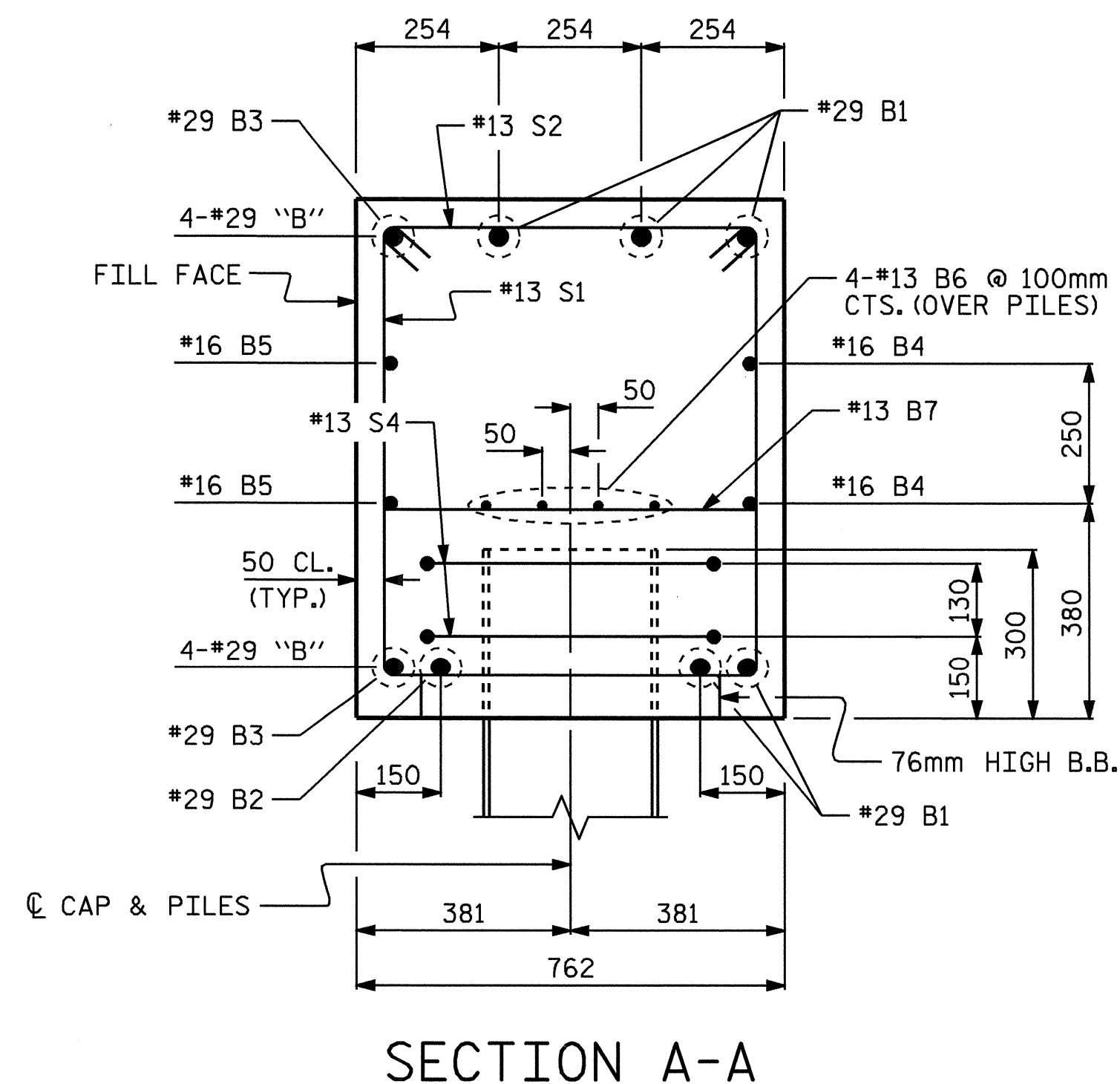
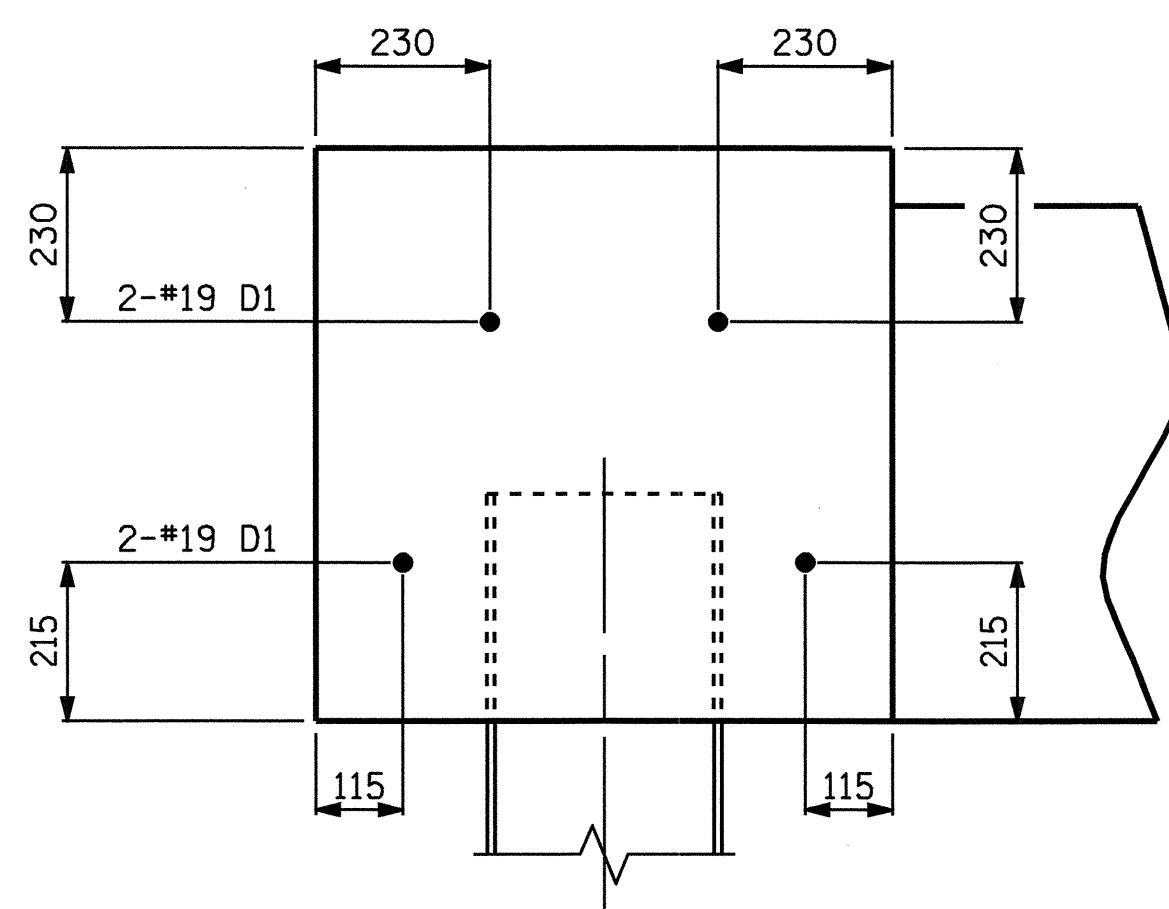
NO SEPARATE PAYMENT WILL BE MADE FOR THIS WORK AND THE ENTIRE COST OF THIS WORK SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE FOR THE SEVERAL PAY ITEMS.

TEMPORARY DRAINAGE AT END BENT



* POSITION OF PILE DURING WELDING.

PILE SPLICE DETAILS

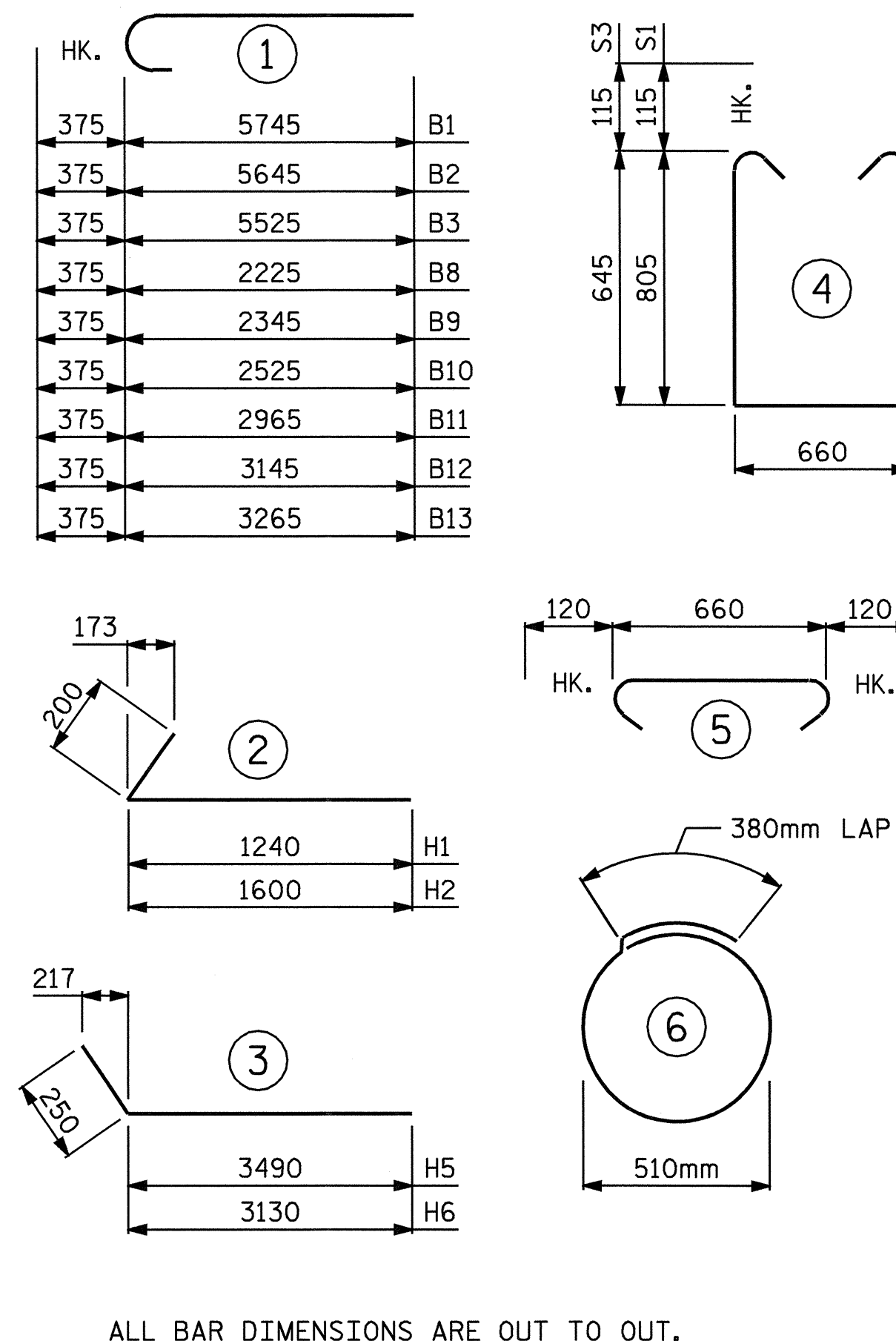


BILL OF MATERIAL

END BENT 1 - STAGE I

LEFT SIDE						RIGHT SIDE					
BAR NO.	SIZE	TYPE	LENGTH	WEIGHT		BAR NO.	SIZE	TYPE	LENGTH	WEIGHT	
B1	5	#29	1	6120	155	B7	3	#13	STR	660	2
B2	1	#29	1	6020	30	B8	2	#29	1	2600	26
B3	2	#29	1	5900	60	B9	1	#29	1	2720	14
B4	2	#16	STR	5780	18	B10	1	#29	1	2900	15
B5	2	#16	STR	5560	17	B11	1	#29	1	3340	17
B6	4	#13	STR	5780	23	B12	1	#29	1	3520	18
B7	5	#13	STR	660	3	B13	2	#29	1	3640	37
D1	4	#19	STR	660	6	B14	1	#16	STR	2280	4
H1	9	#13	2	1440	13	B15	1	#16	STR	3320	5
H2	9	#13	2	1800	16	B16	1	#13	STR	2540	3
H3	5	#13	STR	1700	8	B17	1	#13	STR	2720	3
H4	5	#13	STR	1660	8	B18	1	#13	STR	2880	3
S1	18	#13	4	2500	44	B19	1	#13	STR	3060	3
S2	18	#13	5	900	16	D1	4	#19	STR	660	6
S4	4	#13	6	1980	8	H3	10	#13	STR	1700	17
V1	21	#13	STR	2060	43	H5	8	#16	3	3740	46
						H6	8	#16	3	3380	42
						S2	7	#13	5	900	6
						S3	7	#13	4	2180	15
						S4	2	#13	6	1980	4
						V2	35	#13	STR	1900	66
REINFORCING STEEL 468 kg						REINFORCING STEEL 352 kg					
CLASS A CONCRETE BREAKDOWN						CLASS A CONCRETE BREAKDOWN					
POUR #1 CAP & LOWER PART OF WING W1				4.4 m ³		POUR #1 CAP & LOWER PART OF WING W2				2.4 m ³	
POUR #2 UPPER PART OF WING W1				1.1 m ³		POUR #2 UPPER PART OF WING W2				1.8 m ³	
TOTAL CLASS A CONCRETE				5.5 m ³		TOTAL CLASS A CONCRETE				4.2 m ³	
HP 310 X 79 STEEL PILES						HP 310 X 79 STEEL PILES					
			NO. 2	METERS 36.0					NO. 1	METERS 18.0	

BAR TYPES



TOTAL BILL OF MATERIAL

ITEM	LEFT SIDE	RIGHT SIDE	STAGE I TOTAL
REINFORCING STEEL	468 kg	352 kg	820 kg
CLASS A CONCRETE	5.5 m ³	4.2 m ³	9.7 m ³
HP 310 X 79 STEEL PILES	NO. 2 METERS 36.0	NO. 1 METERS 18.0	NO. 3 METERS 54.0

PROJECT NO. U-2408

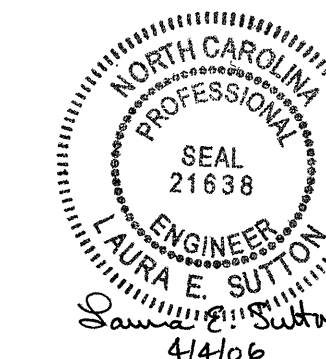
GASTON COUNTY

STATION: 20+57.612 -L-

SHEET 3 OF 3

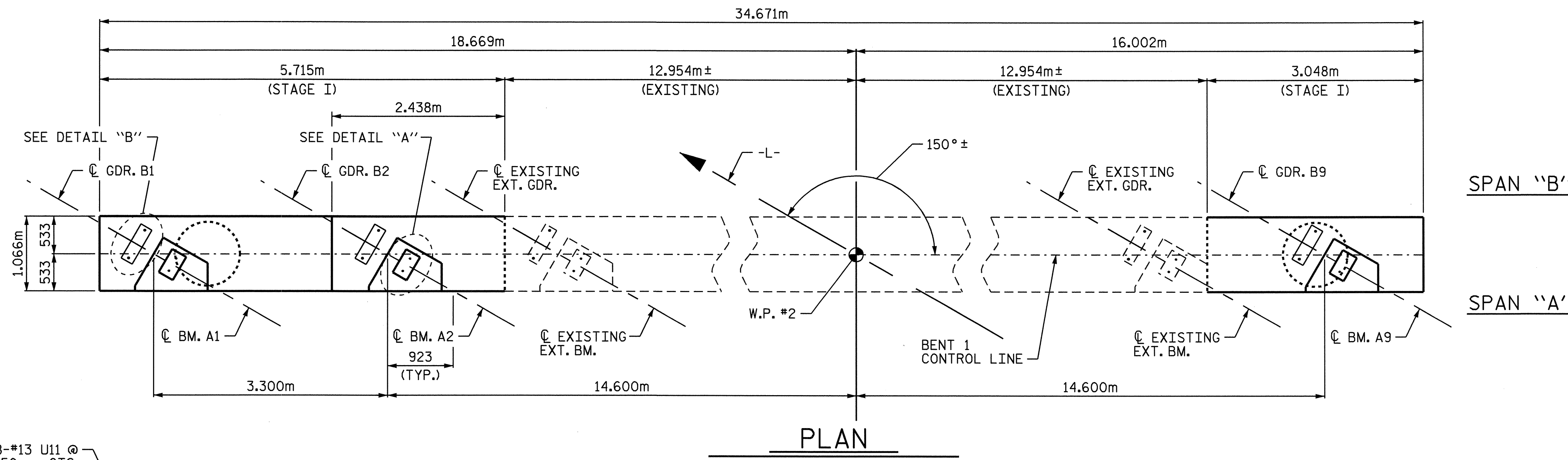
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
END BENT 1



REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-37
1			3			TOTAL SHEETS 55
2			4			

DRAWN BY: P.C. BREWER DATE: 5/5/05
CHECKED BY: A.S. CALLAWAY DATE: 7/16/05



NOTES:

STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.

HOOKS ON "V" BARS MAY BE TURNED AS NECESSARY FOR PLACING REINFORCING STEEL.

FOR EPOXY PROTECTIVE COATING, SEE SPECIAL PROVISIONS.

THE TOP SURFACE AREAS OF THE BENT CAPS SHALL BE CURED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS EXCEPT THE MEMBRANE CURING COMPOUND METHOD SHALL NOT BE USED.

FOR DRILLED PIERS, SEE SPECIAL PROVISIONS.

FOR PERMANENT STEEL CASING, SEE DRILLED PIERS SPECIAL PROVISION.

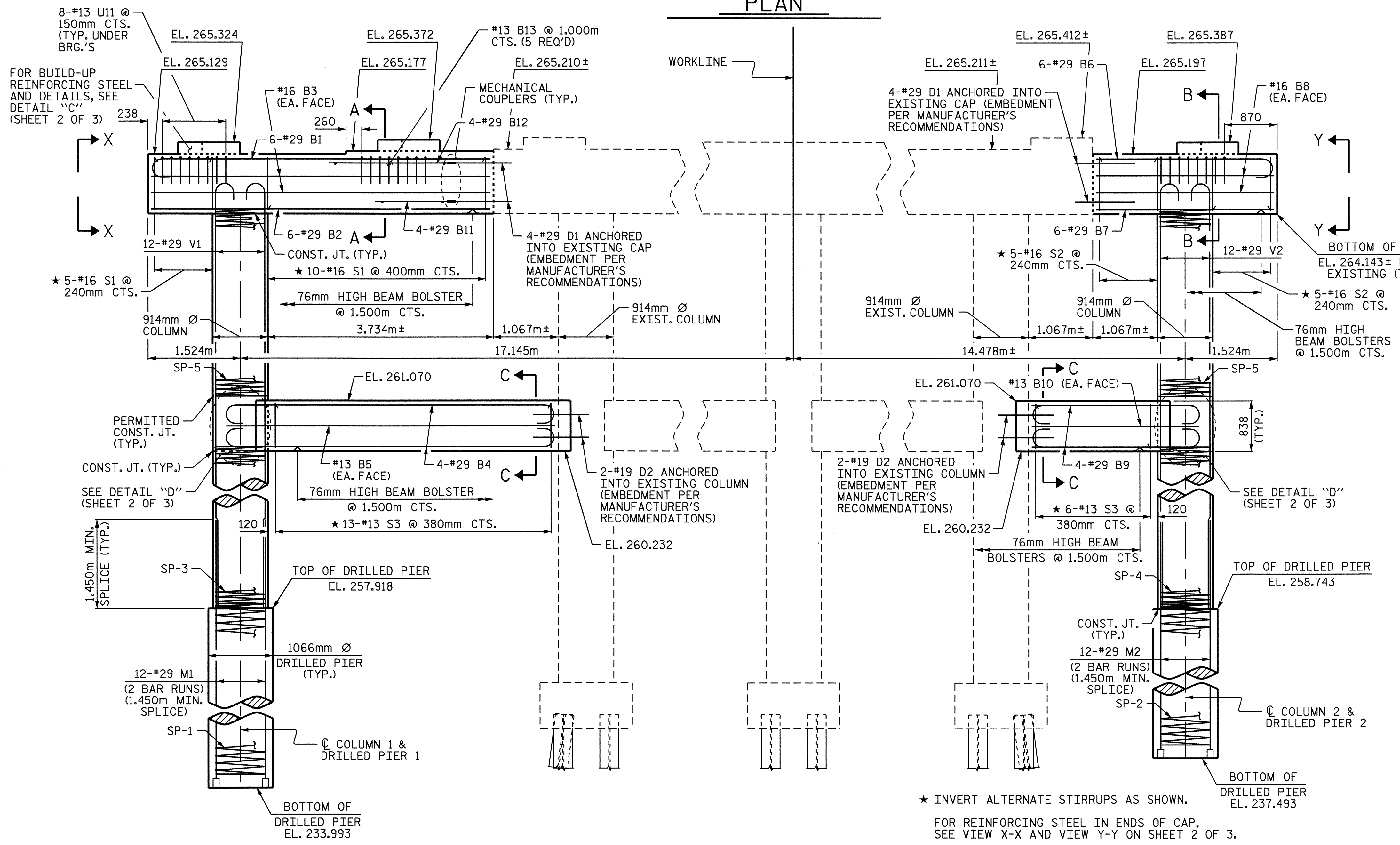
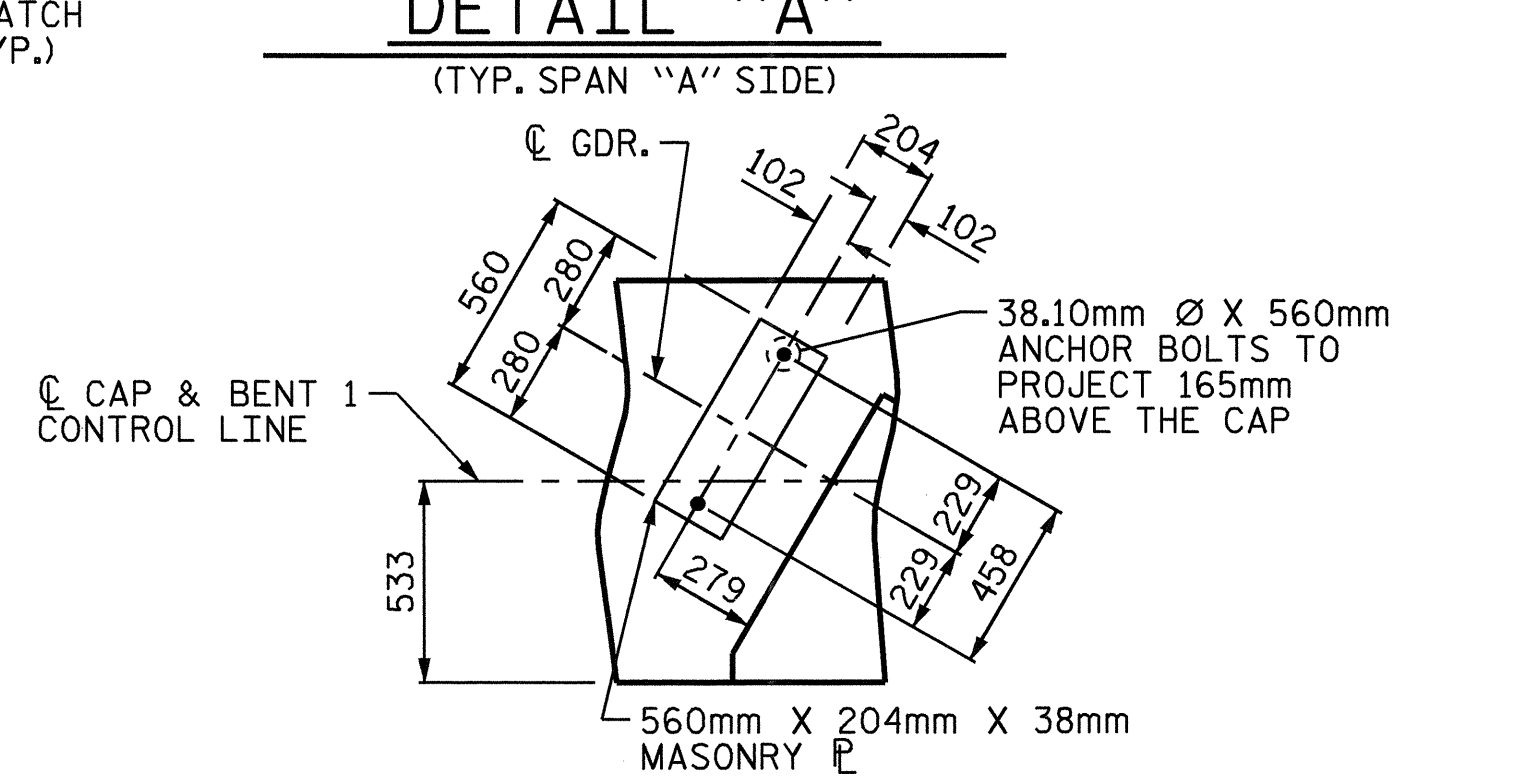
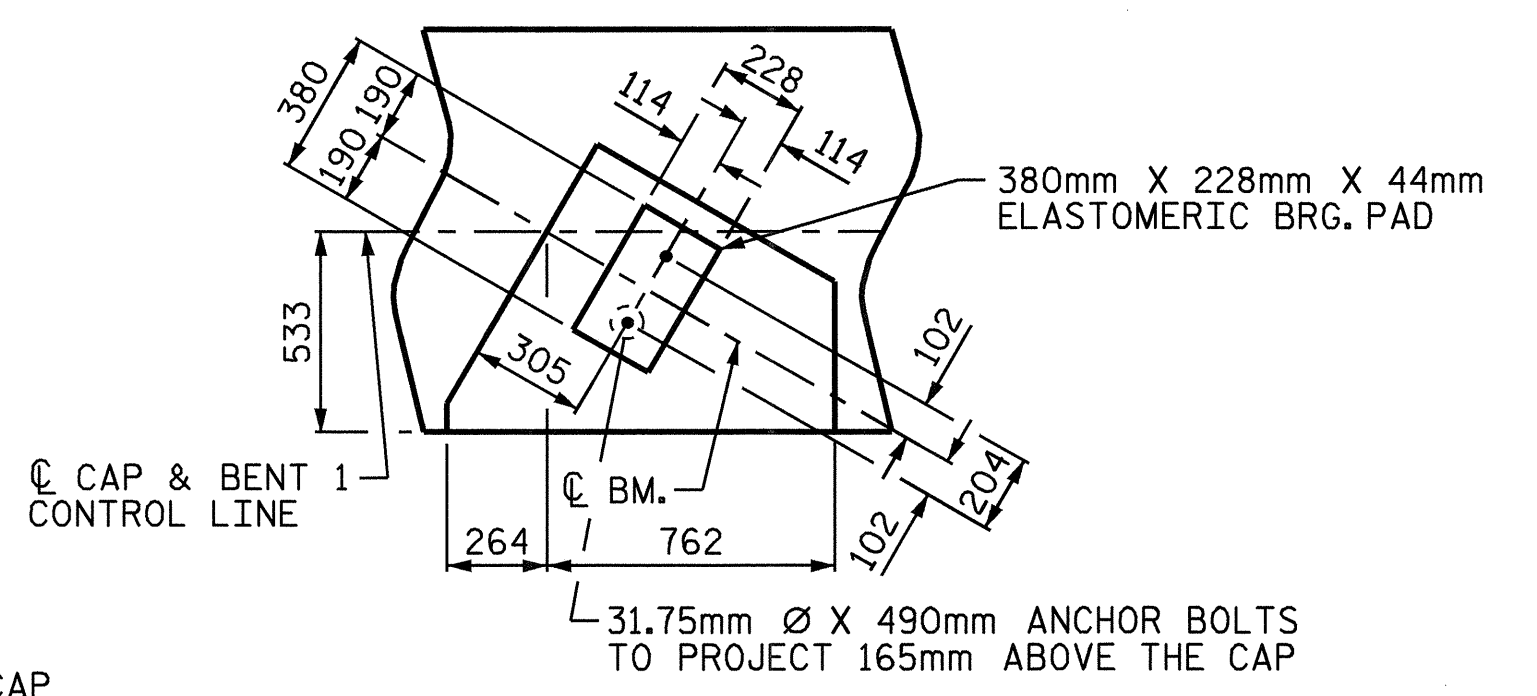
ALL STEEL IN THE DRILLED PIERS IS INCLUDED IN THE PAY ITEMS FOR "REINFORCING STEEL" AND "SPIRAL COLUMN REINFORCING STEEL".

THE CONTRACTOR'S ATTENTION IS CALLED TO THE FACT THAT THE LONGITUDINAL REINFORCEMENT FOR THE DRILLED PIERS IS DETAILED WITH ONE METER OF EXTRA LENGTH.

THE LOCATION OF THE CONSTRUCTION JOINT IN THE DRILLED PIERS IS BASED ON AN APPROXIMATE GROUND LINE ELEVATION, IF THE CONSTRUCTION JOINT IS ABOVE THE ACTUAL GROUND LINE ELEVATION, THE CONTRACTOR SHALL PLACE THE CONSTRUCTION JOINT 300mm BELOW THE GROUND LINE.

FOR MECHANICAL BUTT SPLICES FOR REINFORCING STEEL, SEE SPECIAL PROVISIONS.

THE D1 & D2 DOWELS SHALL BE INSTALLED USING AN ADHESIVE ANCHORING SYSTEM. THE YIELD LOADS ARE 266.9kN FOR #29 D1 AND 117.4kN FOR #19 D2. FIELD TESTING FOR THE ANCHORING SYSTEM IS REQUIRED. FOR ADHESIVELY ANCHORED ANCHOR BOLTS OR DOWELS, SEE SPECIAL PROVISIONS.



* INVERT ALTERNATE STIRRUPS AS SHOWN.

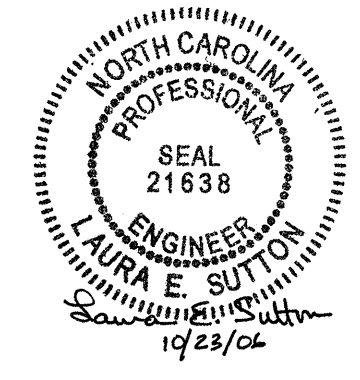
FOR REINFORCING STEEL IN ENDS OF CAP, SEE VIEW X-X AND VIEW Y-Y ON SHEET 2 OF 3.

FOR DOWEL LOCATION, SEE SHEET 3 OF 3.

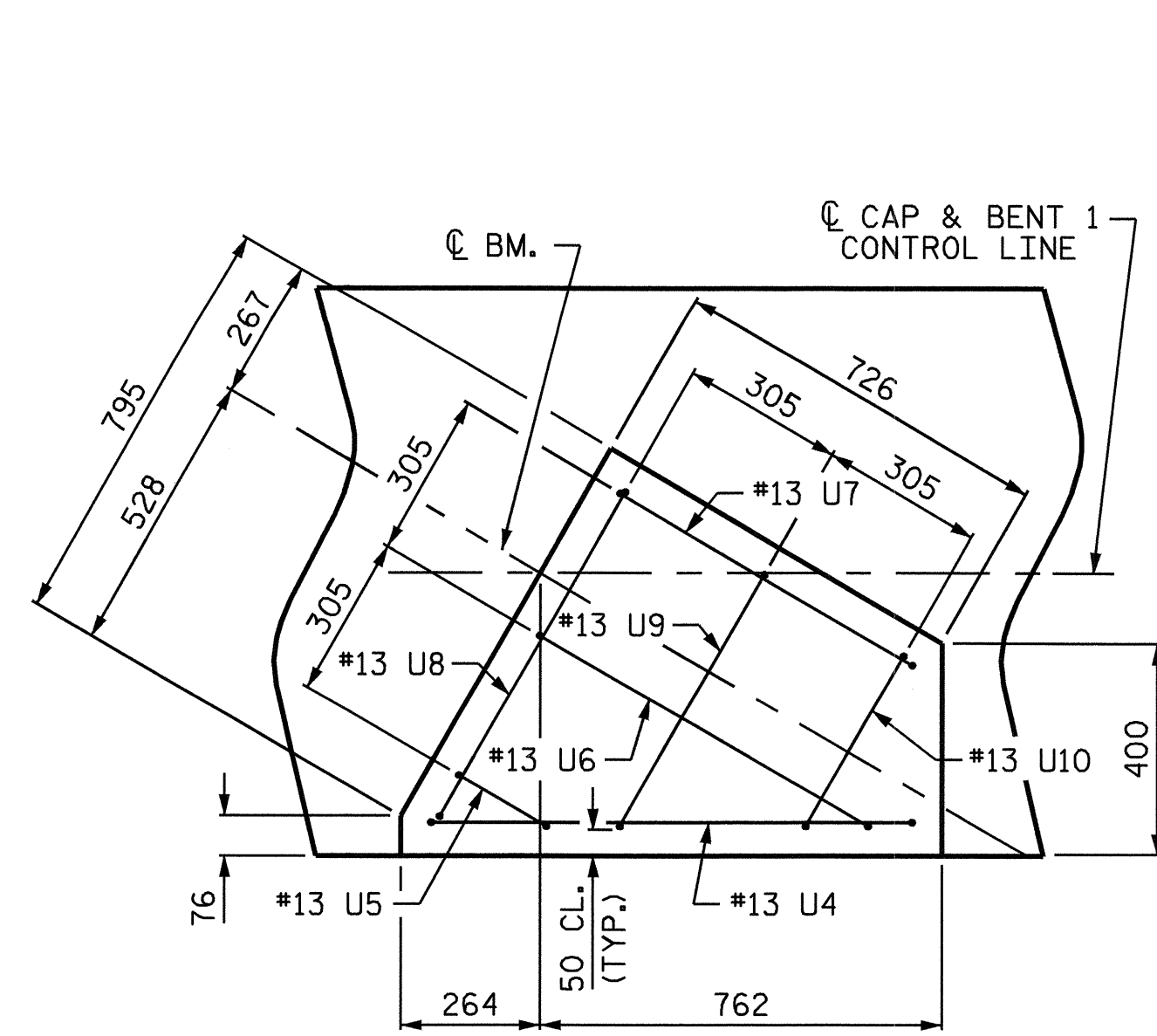
PROJECT NO. U-2408
GASTON COUNTY
 STATION: 20+57.612 -L-

SHEET 1 OF 3

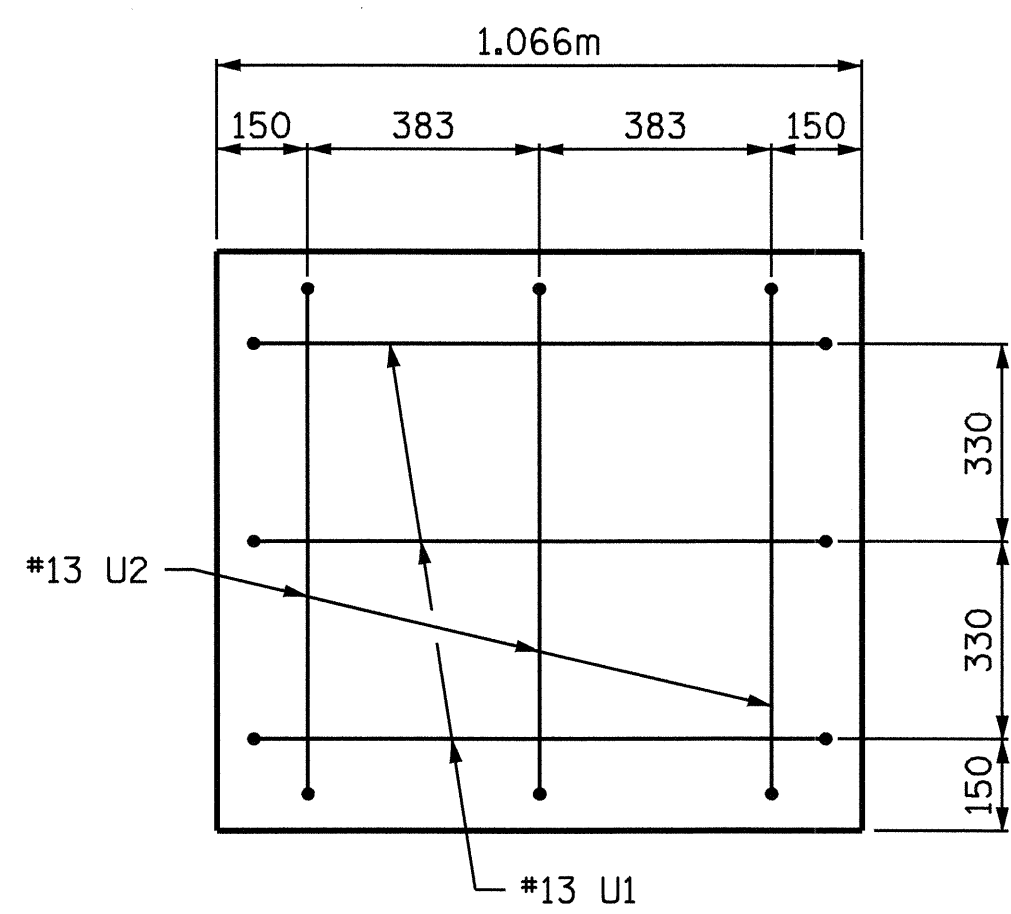
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-38
1			3			TOTAL SHEETS
2			4			55



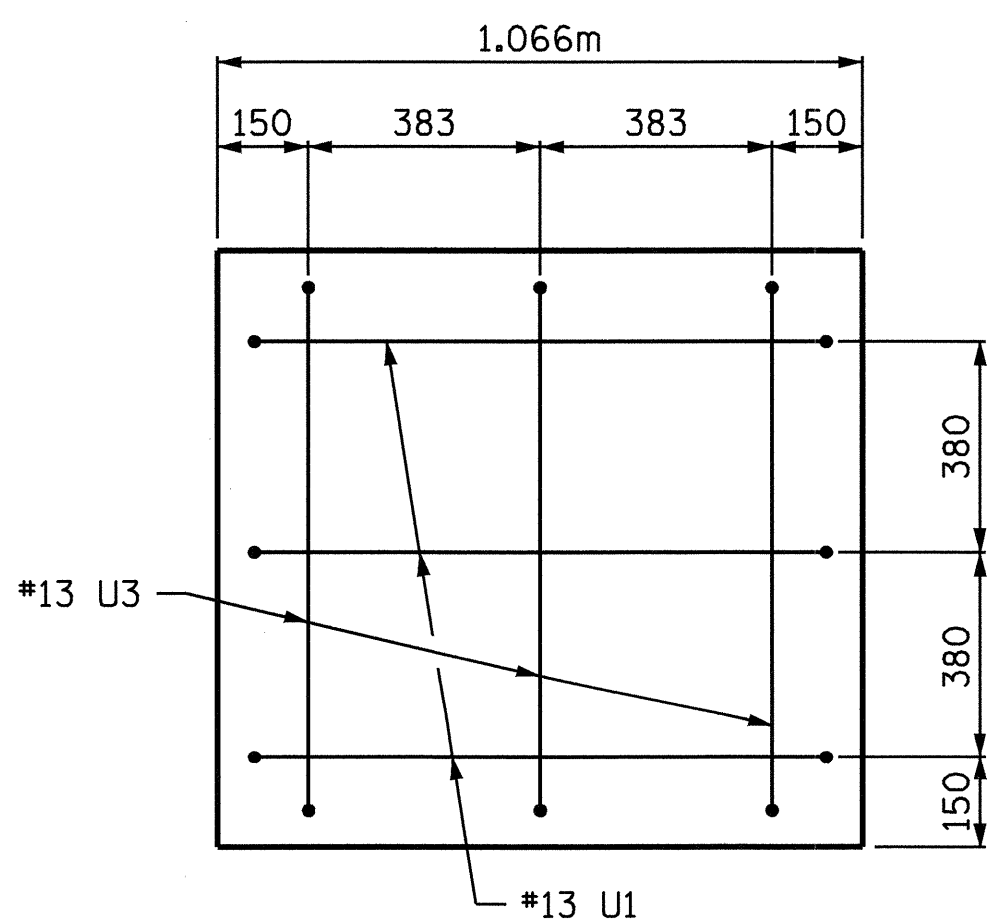
DRAWN BY: P.C. BREWER DATE: 7/7/05
 CHECKED BY: A.S. CALLAWAY DATE: 7/19/05



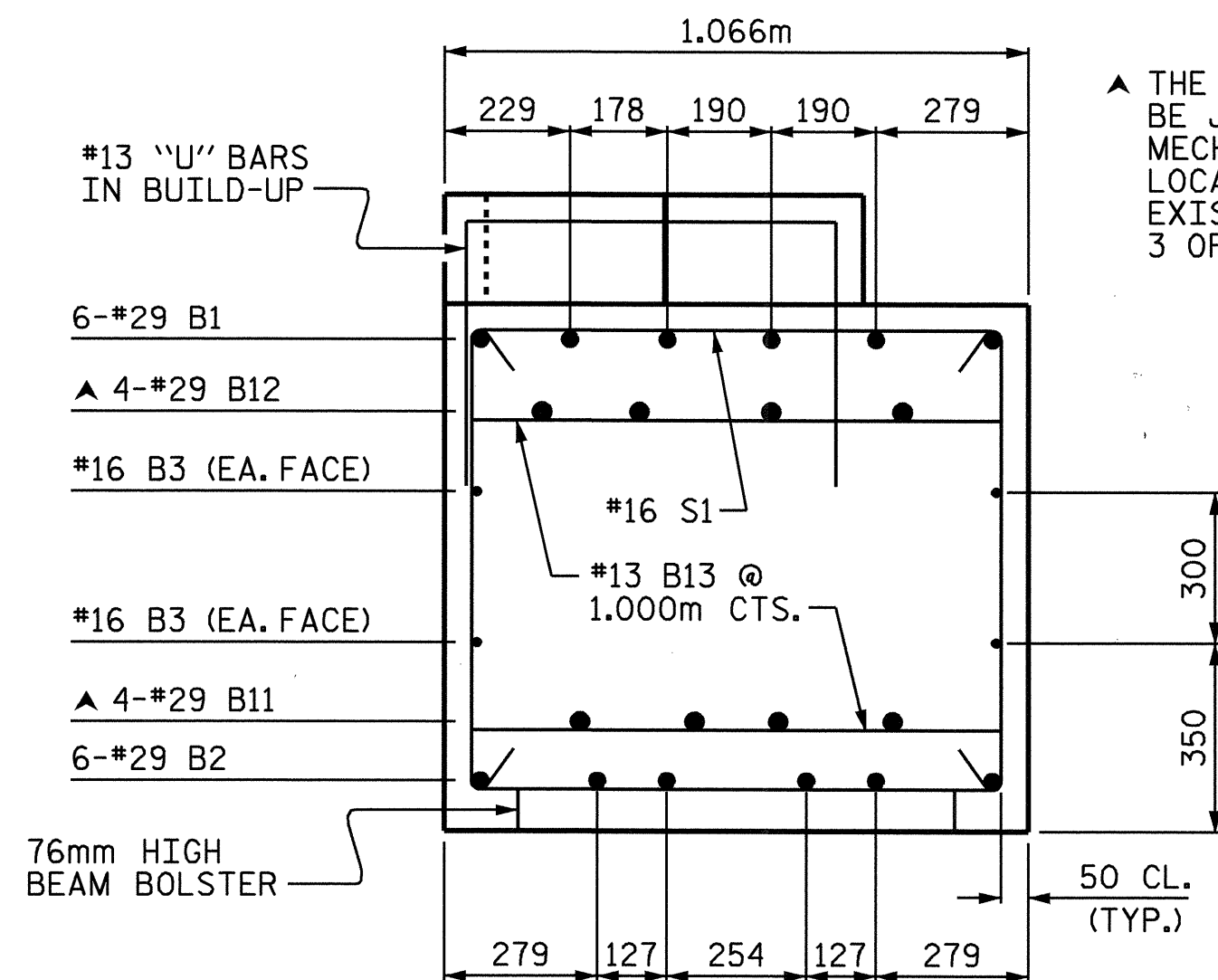
DETAIL "C"



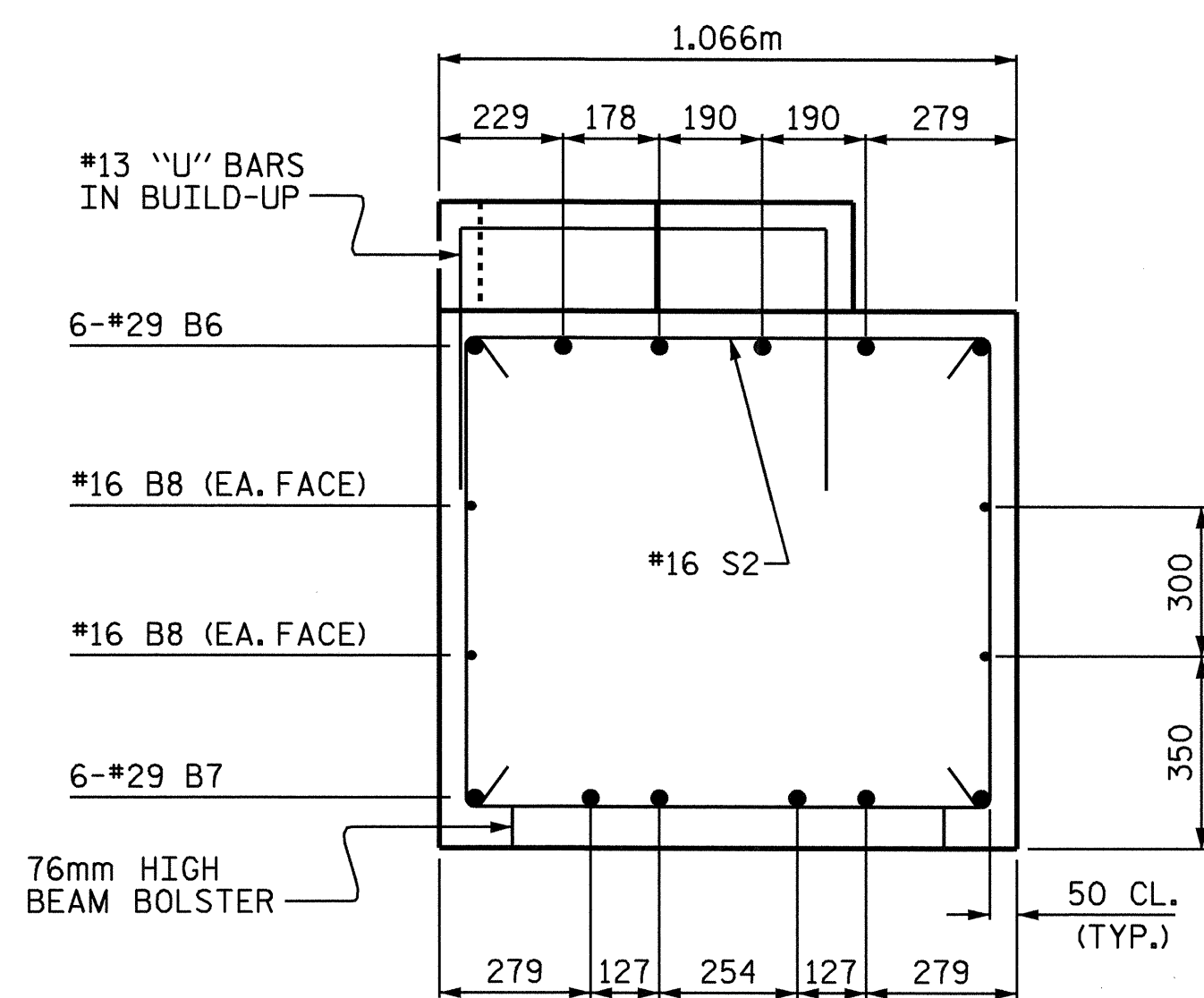
VIEW X-X



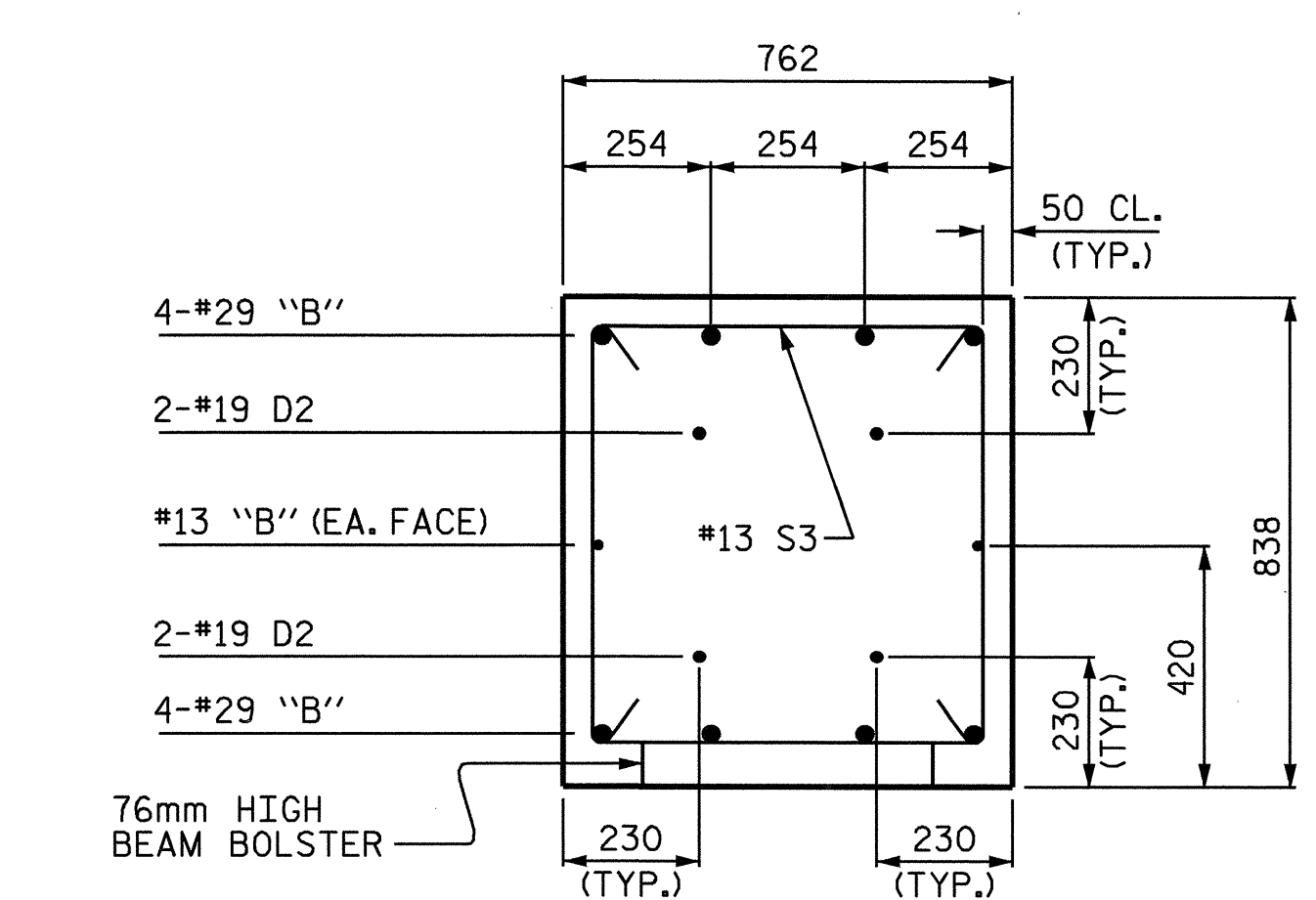
VIEW Y-Y



SECTION A-A

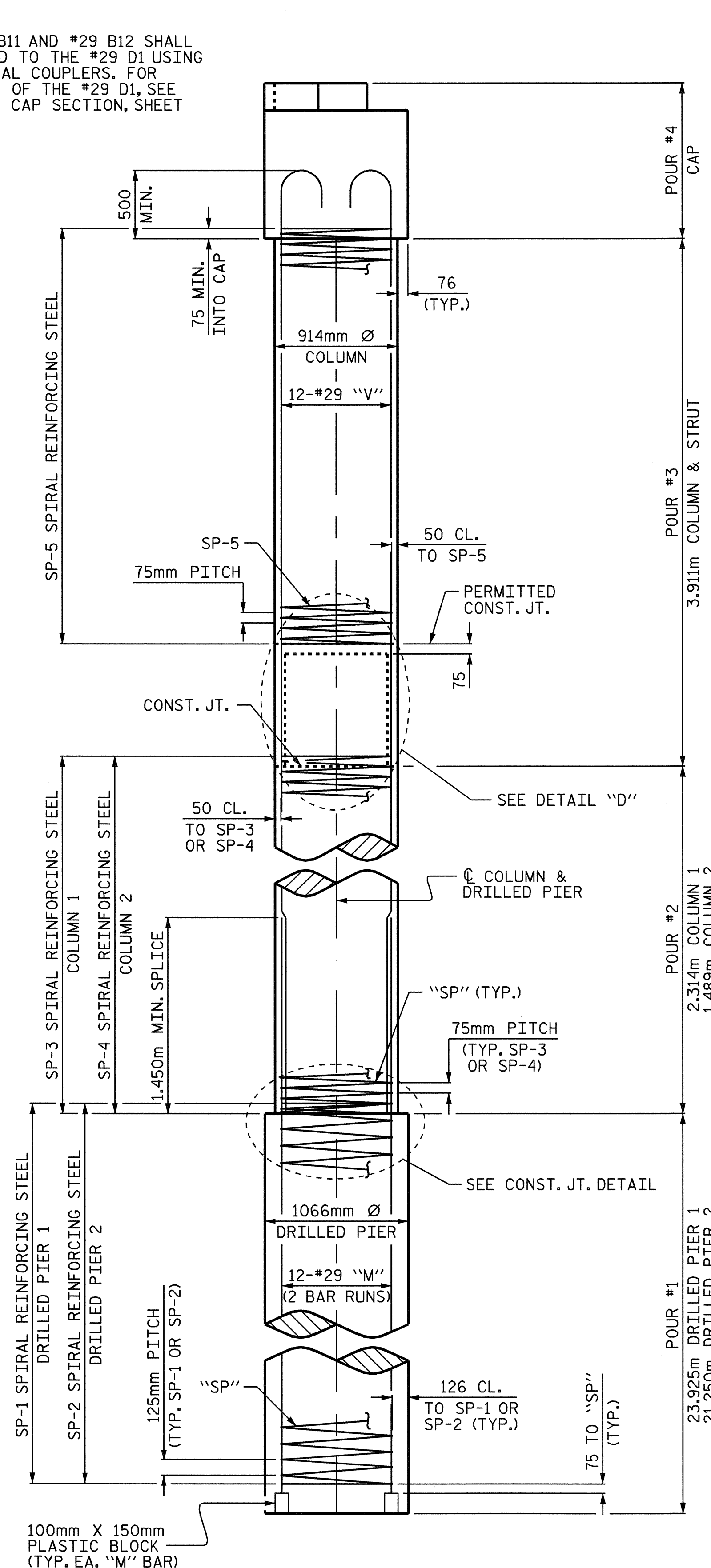


SECTION B-B

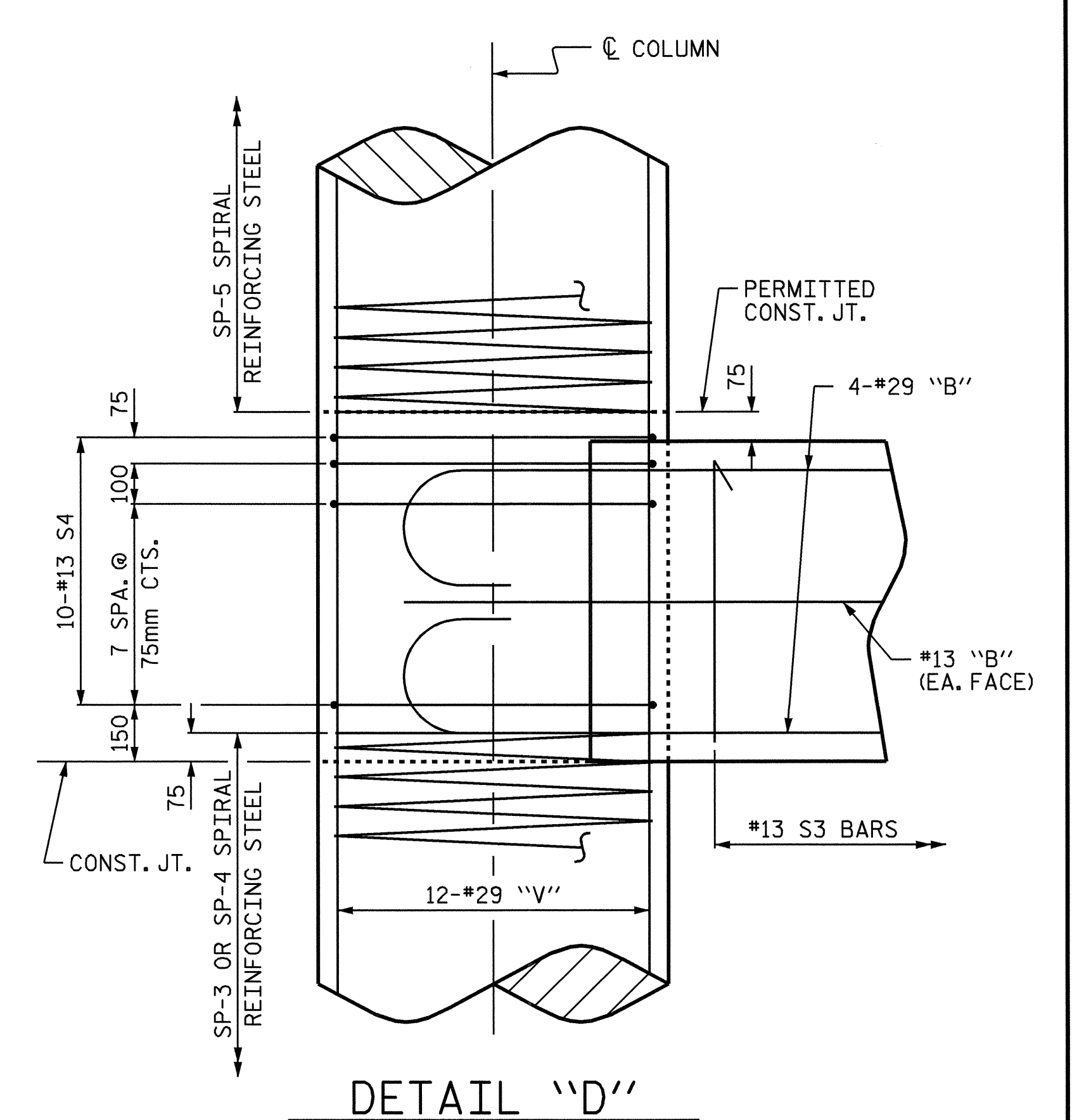


SECTION C-C

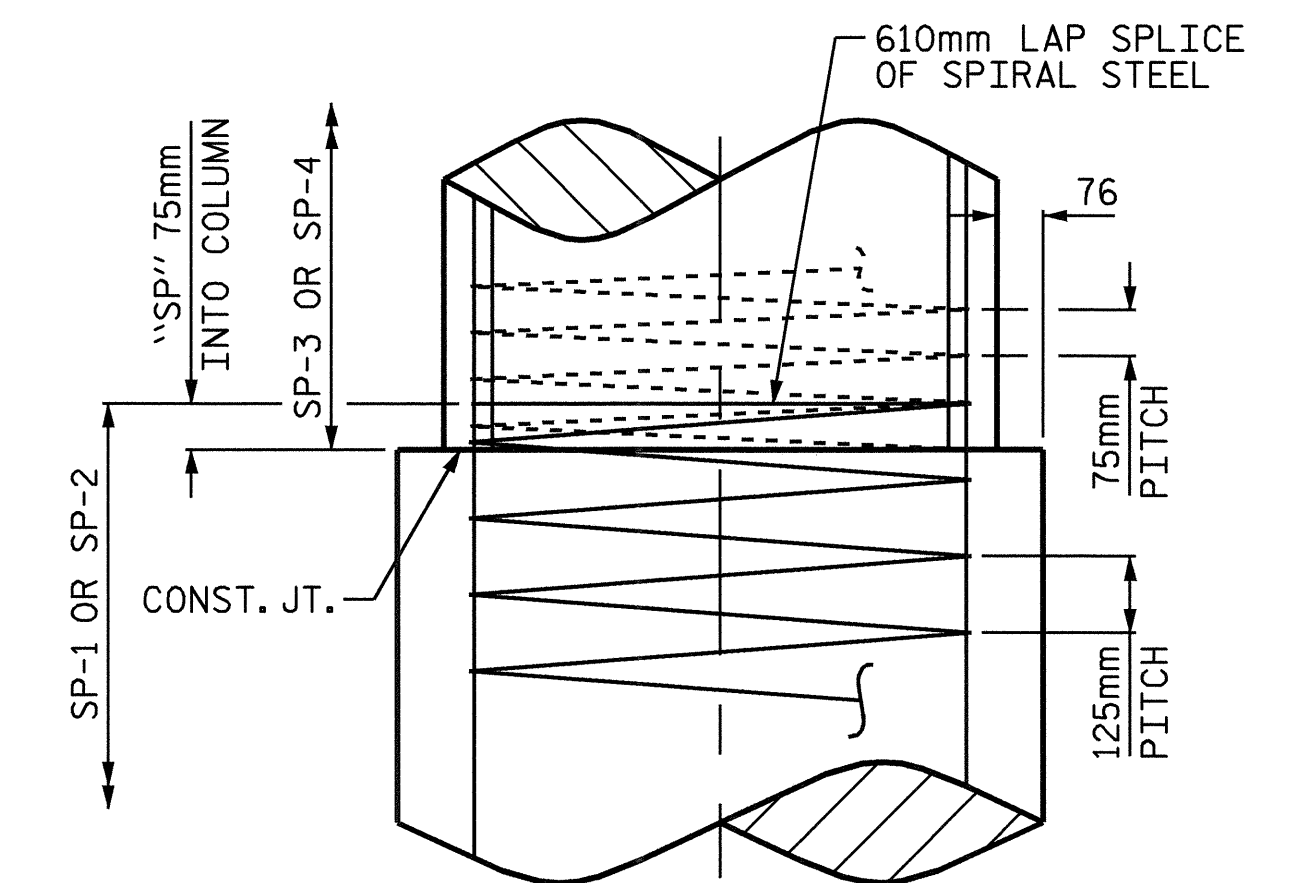
▲ THE #29 B11 AND #29 B12 SHALL BE JOINED TO THE #29 D1 USING MECHANICAL COUPLERS. FOR LOCATION OF THE #29 D1, SEE EXISTING CAP SECTION, SHEET 3 OF 3.



END ELEVATION



DETAIL "D"



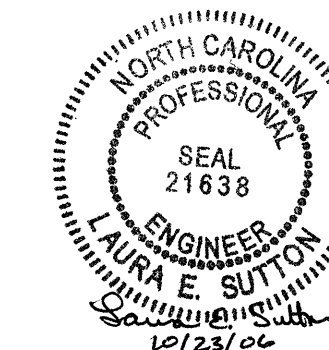
CONSTRUCTION JOINT DETAIL

PROJECT NO. U-2408
 GASTON COUNTY
 STATION: 20+57.612 -L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE
 BENT 1

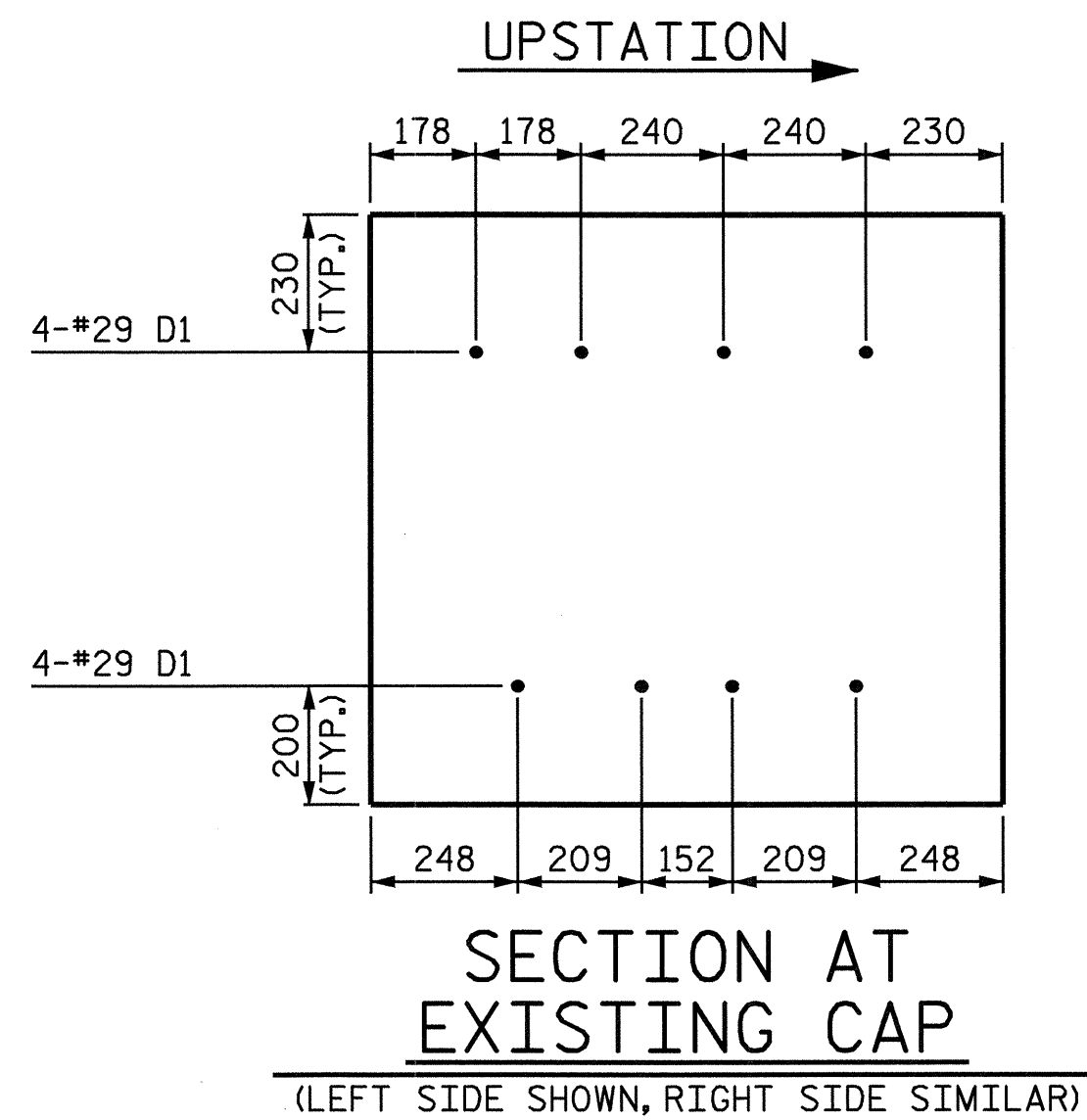


REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-39	
1			3			TOTAL SHEETS 55	
2			4				

DRAWN BY: P.C. BREWER DATE: 7/7/05
 CHECKED BY: A.S. CALLAWAY DATE: 7/19/05

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TOTAL BILL OF MATERIAL			
ITEM	LEFT SIDE	RIGHT SIDE	STAGE I TOTAL
REINFORCING STEEL	3066 kg	2428 kg	5494 kg
SPIRAL COLUMN REINFORCING STEEL	943 kg	834 kg	1777 kg
CLASS A CONCRETE	13.5 m ³	8.5 m ³	22.0 m ³
DRILLED PIER CONCRETE	21.4 m ³	19.0 m ³	40.4 m ³
1066mm Ø DRILLED PIER IN SOIL	23.9m	21.3m	45.2m
PERMANENT STEEL CASING FOR 1066mm Ø DRILLED PIER	2.9m	3.7m	6.6m
CSL TUBES	99.1m	88.4m	187.5m
SID INSPECTION			1
CROSSHOLE SONIC LOGGING			1

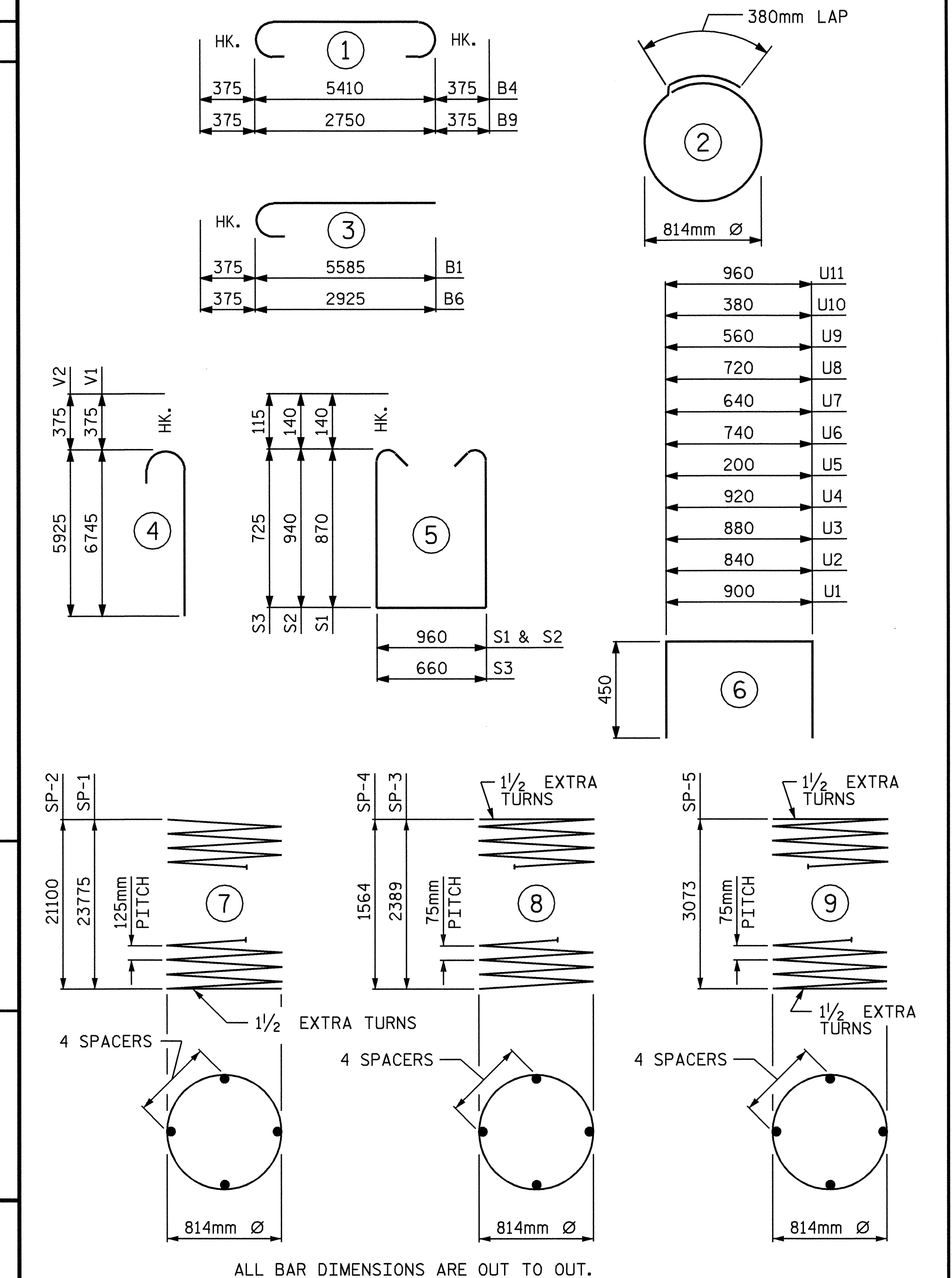


(LEFT SIDE SHOWN, RIGHT SIDE SIMILAR)

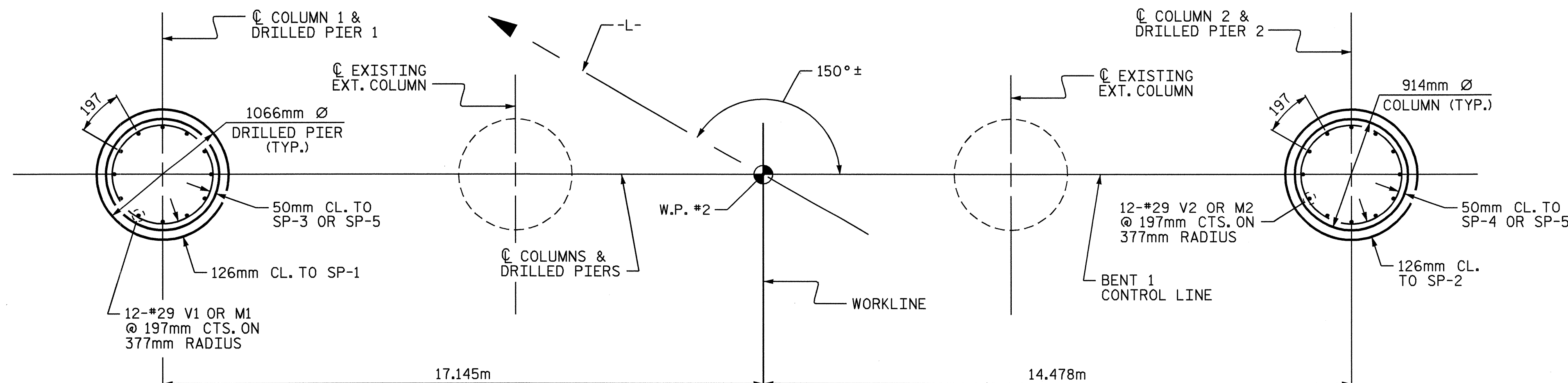
BILL OF MATERIAL											
BENT 1 - STAGE I											
LEFT SIDE					RIGHT SIDE						
BAR NO.	NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR NO.	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	6	#29	3	5960	181	B6	6	#29	3	3300	100
B2	6	#29	STR	5600	170	B7	6	#29	STR	2940	89
B3	4	#16	STR	5600	35	B8	4	#16	STR	2940	18
B4	8	#29	1	6160	249	B9	8	#29	1	3500	142
B5	2	#13	STR	5440	11	B10	2	#13	STR	2760	5
B11	4	#29	STR	1260	26	D1	8	#29	STR	1000	40
B12	4	#29	STR	2020	41	D2	4	#19	STR	660	6
B13	5	#13	STR	960	5	M2	24	#29	STR	12500	1518
D1	8	#29	STR	1000	40	S2	10	#16	5	3120	48
D2	4	#19	STR	660	6	S3	6	#13	5	2340	14
M1	24	#29	STR	13840	1681	S4	10	#13	2	2940	29
S1	15	#16	5	2980	69	U1	3	#13	6	1800	5
S3	13	#13	5	2340	30	U3	3	#13	6	1780	5
S4	10	#13	2	2940	29	U4	1	#13	6	1820	2
U1	3	#13	6	1800	5	U5	1	#13	6	1100	1
U2	3	#13	6	1740	5	U6	1	#13	6	1640	2
U4	2	#13	6	1820	4	U7	1	#13	6	1540	2
U5	2	#13	6	1100	2	U8	1	#13	6	1620	2
U6	2	#13	6	1640	3	U9	1	#13	6	1460	1
U7	2	#13	6	1540	3	U10	1	#13	6	1280	1
U8	2	#13	6	1620	3	U11	8	#13	6	1860	15
U9	2	#13	6	1460	3	V2	12	#29	4	6300	383
U10	2	#13	6	1280	3						
U11	16	#13	6	1860	30						
V1	12	#29	4	7120	432						
REINFORCING STEEL					3066 kg	REINFORCING STEEL					2428 kg
SP-1	1	*	7	482020	748	SP-2	1	*	7	429300	666
SP-3	1	**	8	85640	85	SP-4	1	**	8	57940	58
SP-5	1	**	9	110820	110	SP-5	1	**	9	110820	110
SPIRAL COLUMN REINFORCING STEEL					943 kg	SPIRAL COLUMN REINFORCING STEEL					834 kg
CLASS A CONCRETE BREAKDOWN						CLASS A CONCRETE BREAKDOWN					
POUR #2 (LOWER PART OF COLUMN)					1.5 m ³	POUR #2 (LOWER PART OF COLUMN)					1.0 m ³
POUR #3 (UPPER PART OF COLUMN AND STRUT)					5.7 m ³	POUR #3 (UPPER PART OF COLUMN AND STRUT)					4.0 m ³
POUR #4 (CAP)					6.3 m ³	POUR #4 (CAP)					3.5 m ³
TOTAL CLASS A CONCRETE					13.5 m ³	TOTAL CLASS A CONCRETE					8.5 m ³
DRILLED PIERS:						DRILLED PIERS:					
DRILLED PIER CONCRETE POUR #1 (DRILLED PIER)					21.4 m ³	DRILLED PIER CONCRETE POUR #1 (DRILLED PIER)					19.0 m ³
1066mm Ø DRILLED PIER IN SOIL					23.9m	1066mm Ø DRILLED PIER IN SOIL					21.3m
PERMANENT STEEL CASING FOR 1066mm Ø DRILLED PIER					2.9m	PERMANENT STEEL CASING FOR 1066mm Ø DRILLED PIER					3.7m
CSL TUBES					99.1m	CSL TUBES					88.4m

* THE SP-1 AND SP-2 SPIRAL REINFORCING STEEL SHALL BE W31 OR D-31 COLD DRAWN WIRE OR #16 PLAIN OR DEFORMED BAR.

** THE SP-3, SP-4, AND SP-5 SPIRAL REINFORCING STEEL SHALL BE W20 OR D-20 COLD DRAWN WIRE OR #13 PLAIN OR DEFORMED BAR.



ALL BAR DIMENSIONS ARE OUT TO OUT.



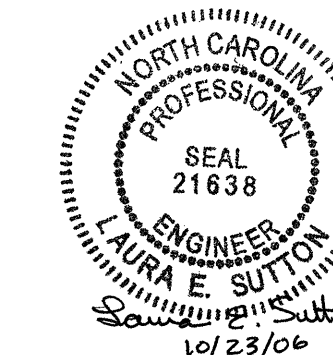
PLAN OF DRILLED PIERS

PROJECT NO. U-2408
GASTON COUNTY
STATION: 20+57.612 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

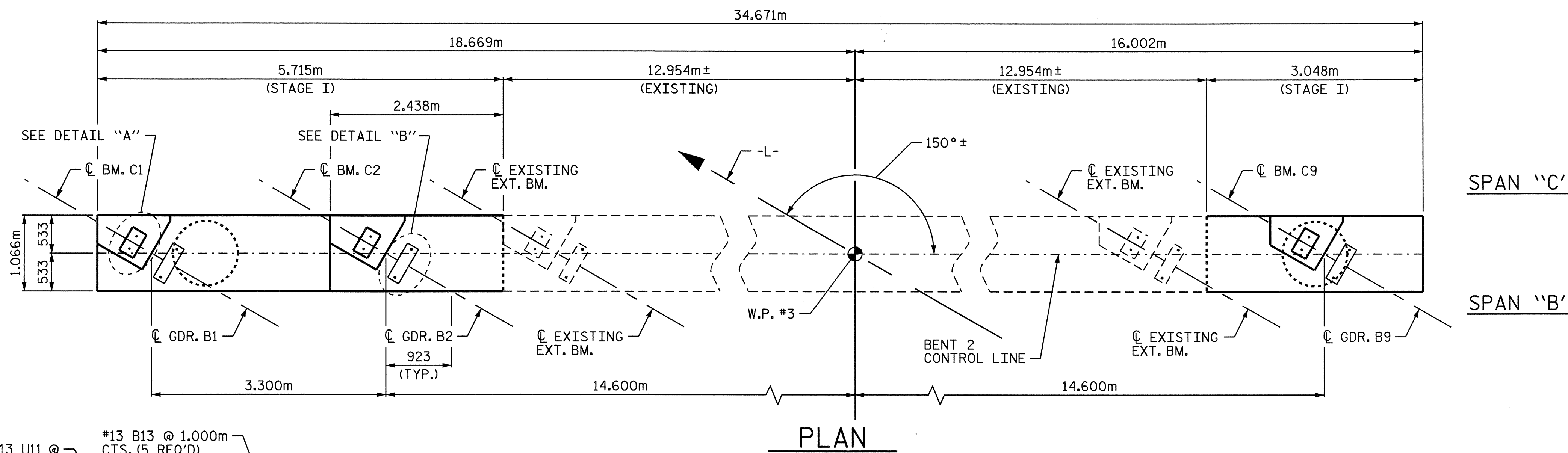
SUBSTRUCTURE
BENT 1



DRAWN BY: P.C. BREWER DATE: 7/7/05
CHECKED BY: A.S. CALLAWAY DATE: 7/19/05

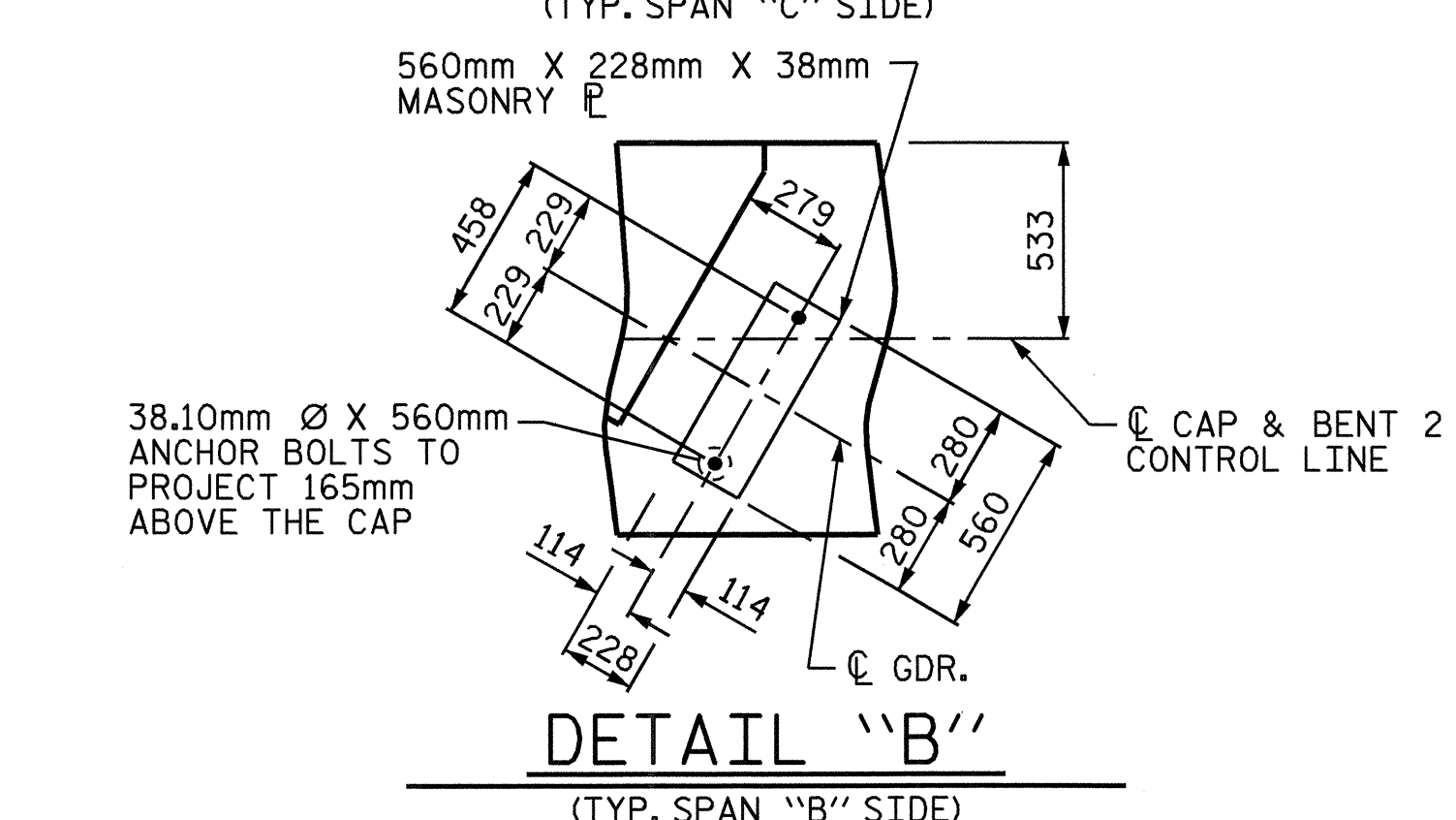
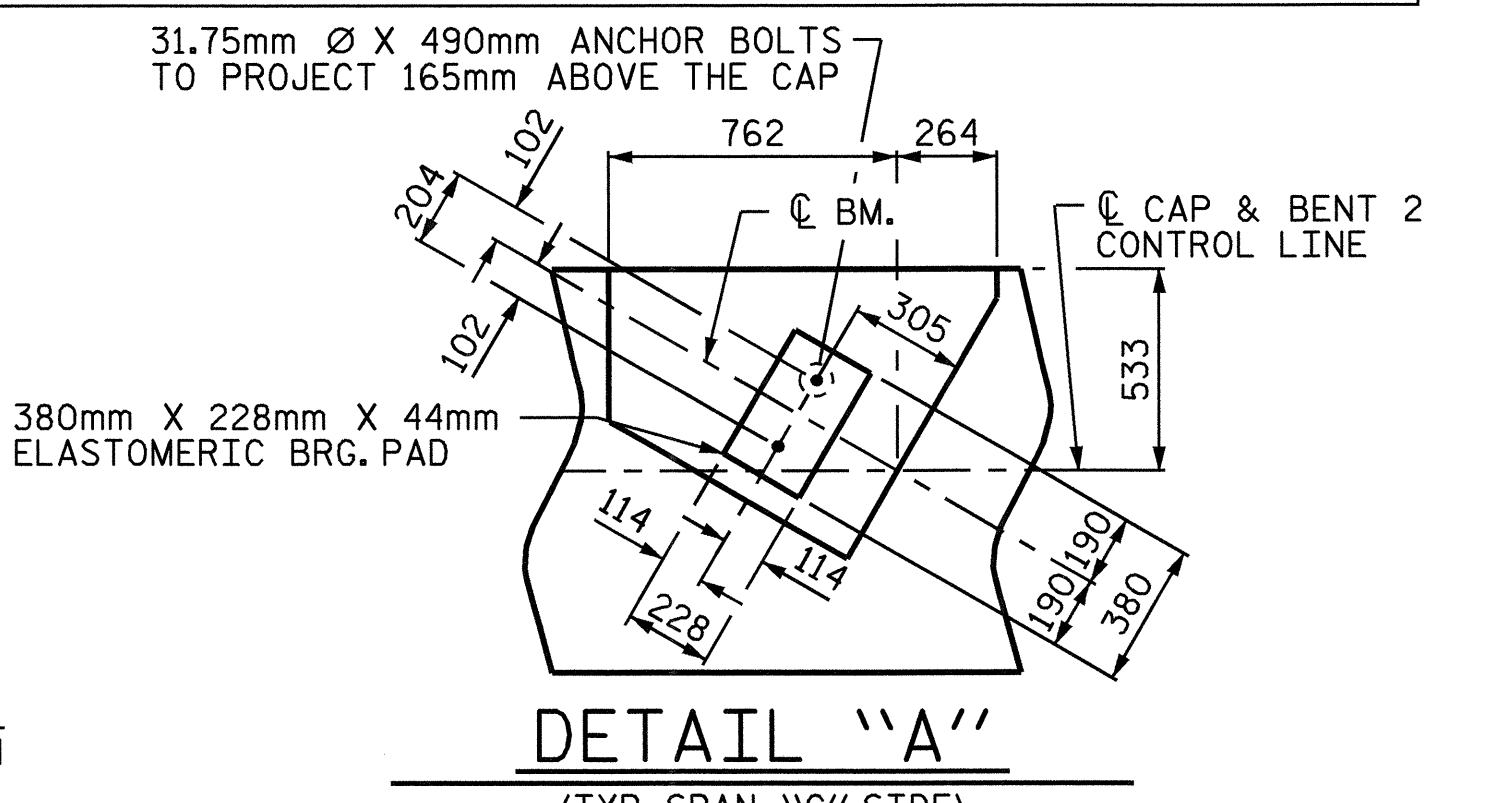
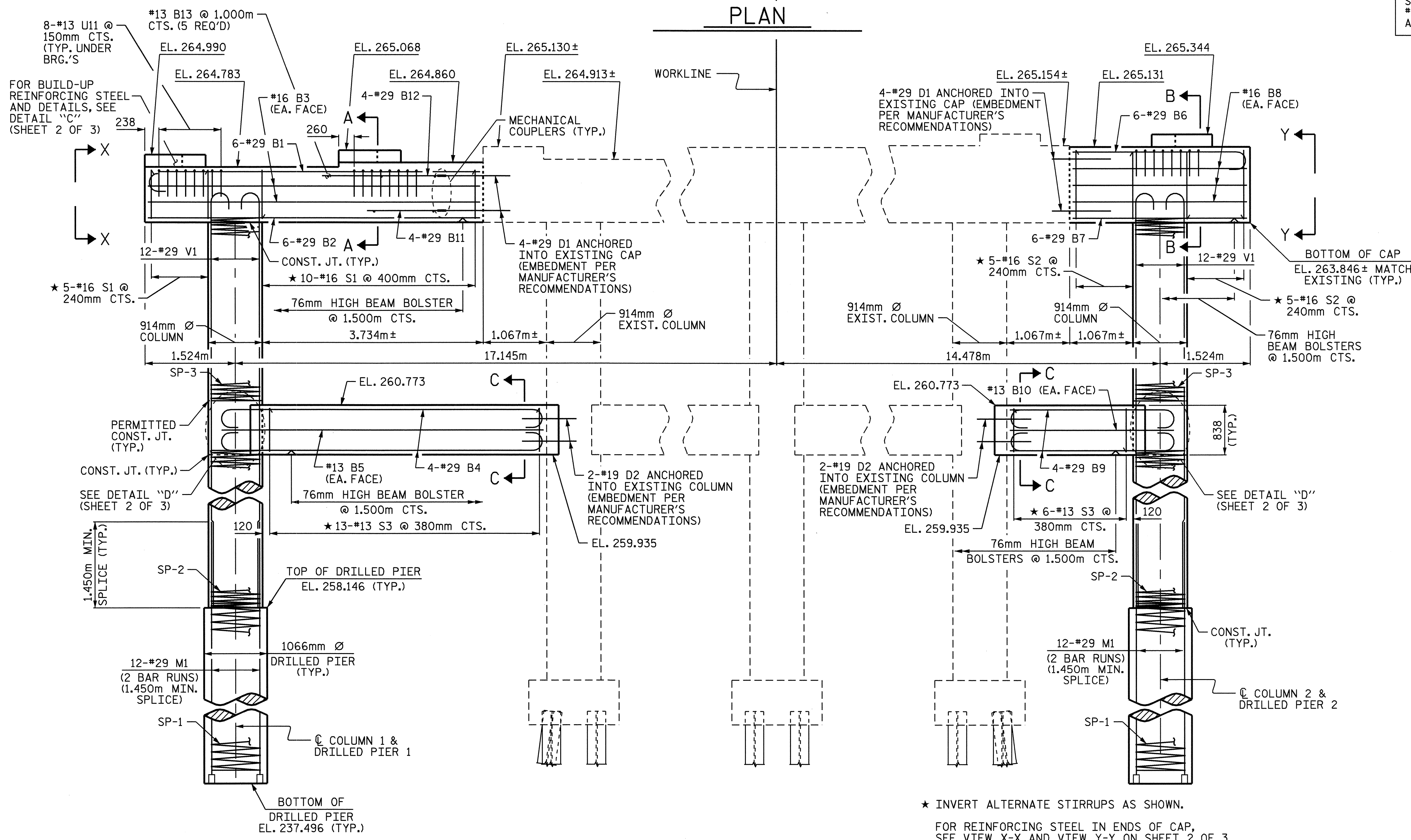
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REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-40	
1			3			TOTAL	
2			4			55	



NOTES:
 STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.
 HOOKS ON "V" BARS MAY BE TURNED AS NECESSARY FOR PLACING REINFORCING STEEL.
 FOR EPOXY PROTECTIVE COATING, SEE SPECIAL PROVISIONS.
 THE TOP SURFACE AREAS OF THE BENT CAPS SHALL BE CURED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS EXCEPT THE MEMBRANE CURING COMPOUND METHOD SHALL NOT BE USED.
 FOR DRILLED PIERS, SEE SPECIAL PROVISIONS.
 FOR PERMANENT STEEL CASING, SEE DRILLED PIERS SPECIAL PROVISION.
 ALL STEEL IN THE DRILLED PIERS IS INCLUDED IN THE PAY ITEMS FOR "REINFORCING STEEL" AND "SPIRAL COLUMN REINFORCING STEEL".
 THE CONTRACTOR'S ATTENTION IS CALLED TO THE FACT THAT THE LONGITUDINAL REINFORCEMENT FOR THE DRILLED PIERS IS DETAILED WITH ONE METER OF EXTRA LENGTH.
 THE LOCATION OF THE CONSTRUCTION JOINT IN THE DRILLED PIERS IS BASED ON AN APPROXIMATE GROUND LINE ELEVATION. IF THE CONSTRUCTION JOINT IS ABOVE THE ACTUAL GROUND LINE ELEVATION, THE CONTRACTOR SHALL PLACE THE CONSTRUCTION JOINT 300mm BELOW THE GROUND LINE.
 FOR MECHANICAL BUTT SPLICES FOR REINFORCING STEEL, SEE SPECIAL PROVISIONS.

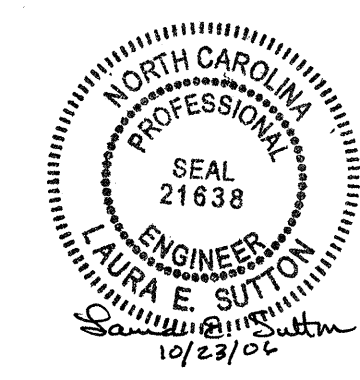
THE D1 & D2 DOWELS SHALL BE INSTALLED USING AN ADHESIVE ANCHORING SYSTEM. THE YIELD LOADS ARE 266.9kN FOR #29 D1 AND 117.4kN FOR #19 D2. FIELD TESTING FOR THE ANCHORING SYSTEM IS REQUIRED. FOR ADHESIVELY ANCHORED ANCHOR BOLTS OR DOWELS, SEE SPECIAL PROVISIONS.



DRAWN BY: P.C. BREWER DATE: 7/11/05
 CHECKED BY: A.S. CALLAWAY DATE: 7/20/05

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★ INVERT ALTERNATE STIRRUPS AS SHOWN.
 FOR REINFORCING STEEL IN ENDS OF CAP, SEE VIEW X-X AND VIEW Y-Y ON SHEET 2 OF 3.
 FOR DOWEL LOCATION, SEE SHEET 3 OF 3.



PROJECT NO. U-2408
 GASTON COUNTY
 STATION: 20+57.612 -L-

SHEET 1 OF 3

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-41
1			3			TOTAL SHEETS
2			4			55

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE
 BENT 2

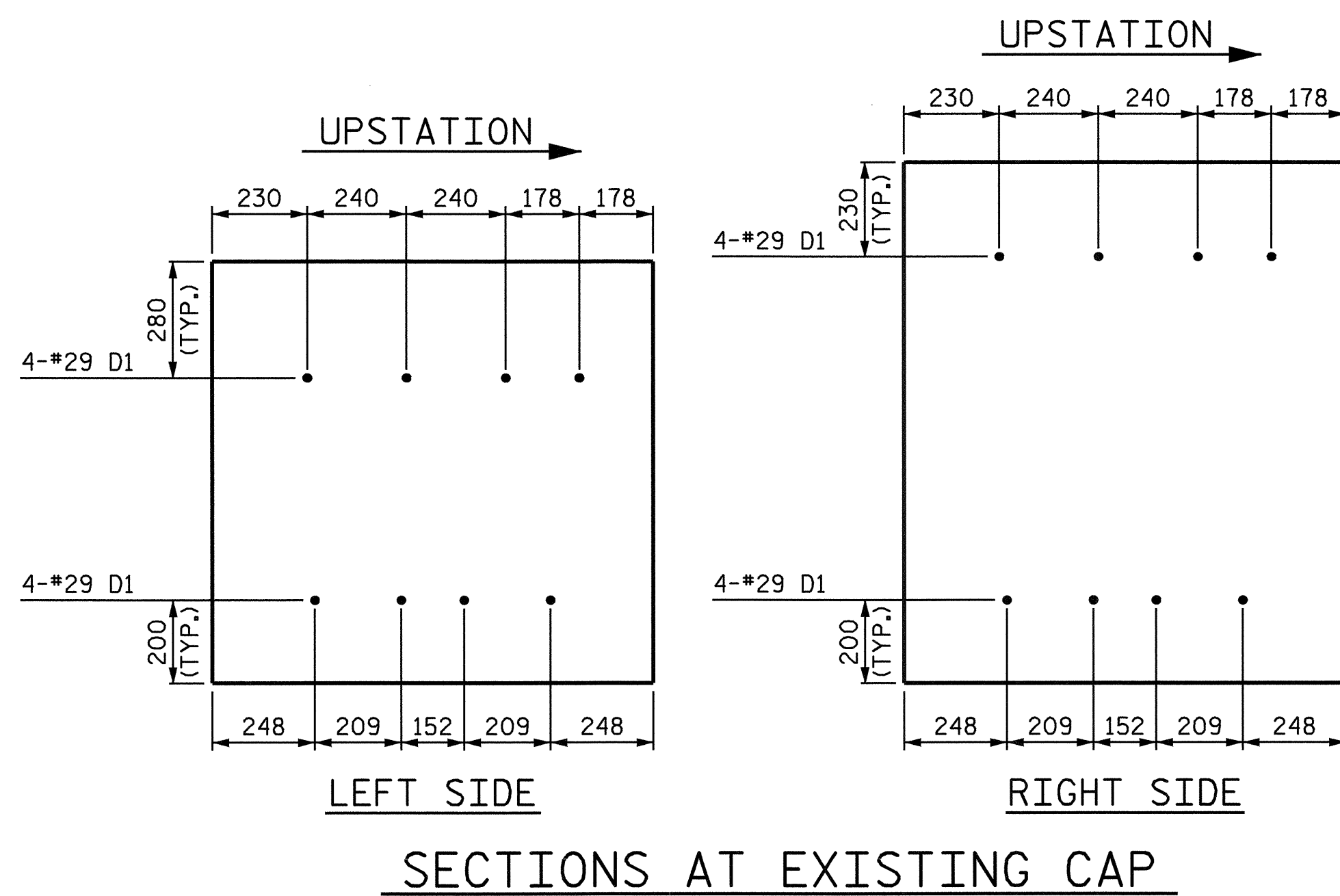
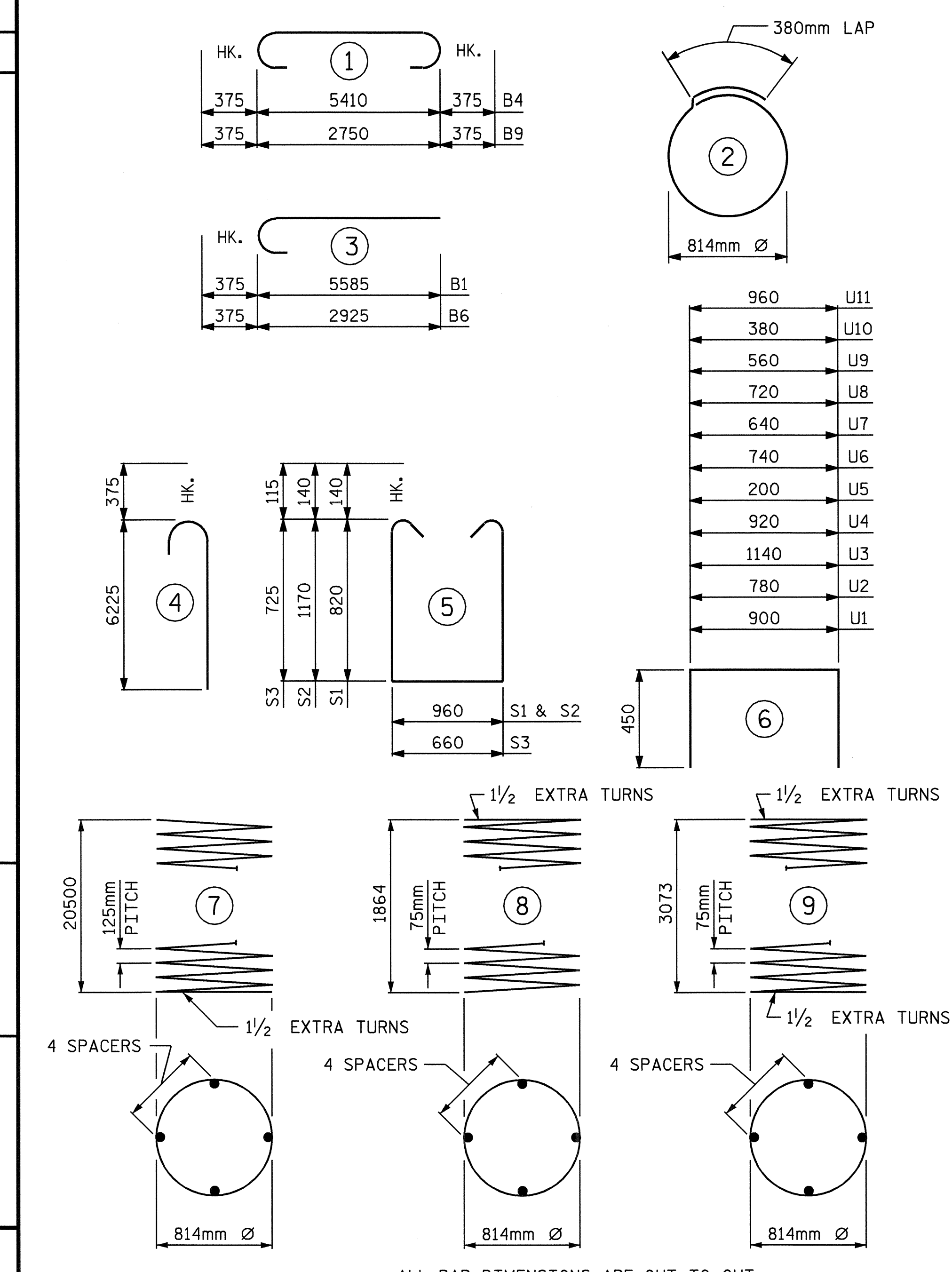
TOTAL BILL OF MATERIAL			
ITEM	LEFT SIDE	RIGHT SIDE	STAGE I TOTAL
REINFORCING STEEL	2834 kg	2430 kg	5264 kg
SPIRAL COLUMN REINFORCING STEEL	825 kg	825 kg	1650 kg
CLASS A CONCRETE	13.0 m ³	9.5 m ³	22.5 m ³
DRILLED PIER CONCRETE	18.4 m ³	18.4 m ³	36.8 m ³
1066mm Ø DRILLED PIER IN SOIL	20.7m	20.7m	41.4m
PERMANENT STEEL CASING FOR 1066mm Ø DRILLED PIER	3.2m	3.2m	6.4m
CSL TUBES	86.0m	86.0m	172.0m
SID INSPECTION			1
CROSSHOLE SONIC LOGGING			1

BILL OF MATERIAL

BENT 2 - STAGE I

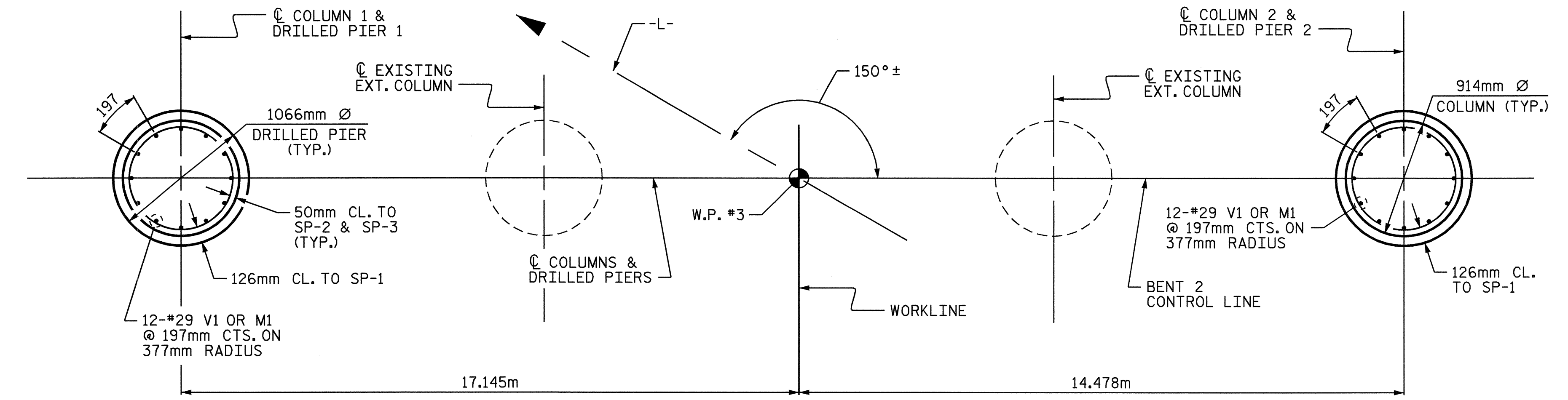
LEFT SIDE					RIGHT SIDE						
BAR NO.	NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR NO.	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	6	#29	3	5960	181	B6	6	#29	3	3300	100
B2	6	#29	STR	5600	170	B7	6	#29	STR	2940	89
B3	4	#16	STR	5600	35	B8	6	#16	STR	2940	27
B4	8	#29	1	6160	249	B9	8	#29	1	3500	142
B5	2	#13	STR	5440	11	B10	2	#13	STR	2760	5
B11	4	#29	STR	1260	26	D1	8	#29	STR	1000	40
B12	4	#29	STR	2020	41	D2	4	#19	STR	660	6
B13	5	#13	STR	960	5	M1	24	#29	STR	12200	1482
D1	8	#29	STR	1000	40	S2	10	#16	5	3580	56
D2	4	#19	STR	660	6	S3	6	#13	5	2340	14
M1	24	#29	STR	12200	1482	S4	10	#13	2	2940	29
S1	15	#16	5	2880	67	U1	4	#13	6	1800	7
S3	13	#13	5	2340	30	U3	3	#13	6	2040	6
S4	10	#13	2	2940	29	U4	1	#13	6	1820	2
U1	3	#13	6	1800	5	U5	1	#13	6	1100	1
U2	3	#13	6	1680	5	U6	1	#13	6	1640	2
U4	2	#13	6	1820	4	U7	1	#13	6	1540	2
U5	2	#13	6	1100	2	U8	1	#13	6	1620	2
U6	2	#13	6	1640	3	U9	1	#13	6	1460	1
U7	2	#13	6	1540	3	U10	1	#13	6	1280	1
U8	2	#13	6	1620	3	U11	8	#13	6	1860	15
U9	2	#13	6	1460	3	V1	12	#29	4	6600	401
U10	2	#13	6	1280	3						
U11	16	#13	6	1860	30						
V1	12	#29	4	6600	401						
REINFORCING STEEL					2834 kg	REINFORCING STEEL					2430 kg
SP-1	1	*	7	416740	647	SP-1	1	*	7	416740	647
SP-2	1	**	8	68000	68	SP-2	1	**	8	68000	68
SP-3	1	**	9	110820	110	SP-3	1	**	9	110820	110
SPIRAL COLUMN REINFORCING STEEL					825 kg	SPIRAL COLUMN REINFORCING STEEL					825 kg
CLASS A CONCRETE BREAKDOWN						CLASS A CONCRETE BREAKDOWN					
POUR #2 (LOWER PART OF COLUMN)					1.2 m ³	POUR #2 (LOWER PART OF COLUMN)					1.2 m ³
POUR #3 (UPPER PART OF COLUMN AND STRUT)					5.7 m ³	POUR #3 (UPPER PART OF COLUMN AND STRUT)					4.0 m ³
POUR #4 (CAP)					6.1 m ³	POUR #4 (CAP)					4.3 m ³
TOTAL CLASS A CONCRETE					13.0 m ³	TOTAL CLASS A CONCRETE					9.5 m ³
DRILLED PIERS:						DRILLED PIERS:					
DRILLED PIER CONCRETE POUR #1 (DRILLED PIER)					18.4 m ³	DRILLED PIER CONCRETE POUR #1 (DRILLED PIER)					18.4 m ³
1066mm Ø DRILLED PIER IN SOIL					20.7m	1066mm Ø DRILLED PIER IN SOIL					20.7m
PERMANENT STEEL CASING FOR 1066mm Ø DRILLED PIER					3.2m	PERMANENT STEEL CASING FOR 1066mm Ø DRILLED PIER					3.2m
CSL TUBES					86.0m	CSL TUBES					86.0m

BAR TYPES



* THE SP-1 SPIRAL REINFORCING STEEL SHALL BE W31 OR D-31 COLD DRAWN WIRE OR #16 PLAIN OR DEFORMED BAR.
 ** THE SP-2 AND SP-3 SPIRAL REINFORCING STEEL SHALL BE W20 OR D-20 COLD DRAWN WIRE OR #13 PLAIN OR DEFORMED BAR.

ALL BAR DIMENSIONS ARE OUT TO OUT



PLAN OF DRILLED PIERS

PROJECT NO. U-2408
 GASTON COUNTY
 STATION: 20+57.612 -L-

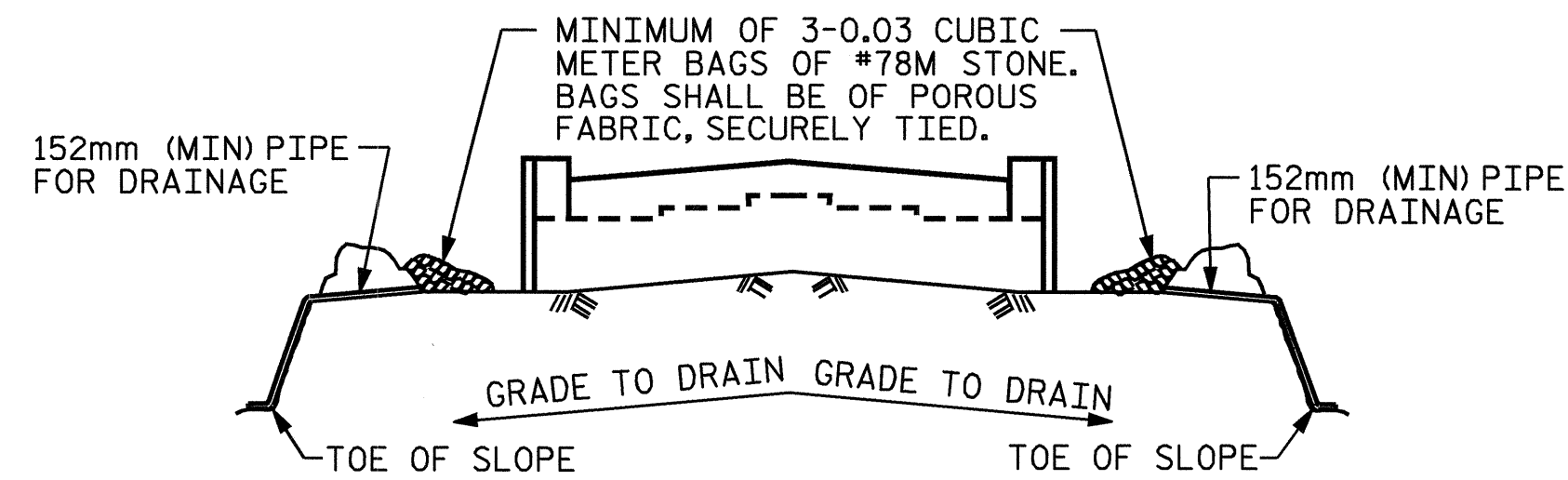
SHEET 3 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE
 BENT 2

REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-43	
1			3			TOTAL SHEETS	
2			4			55	

DRAWN BY: P.C. BREWER DATE: 7/11/05
 CHECKED BY: A.S. CALLAWAY DATE: 7/20/05

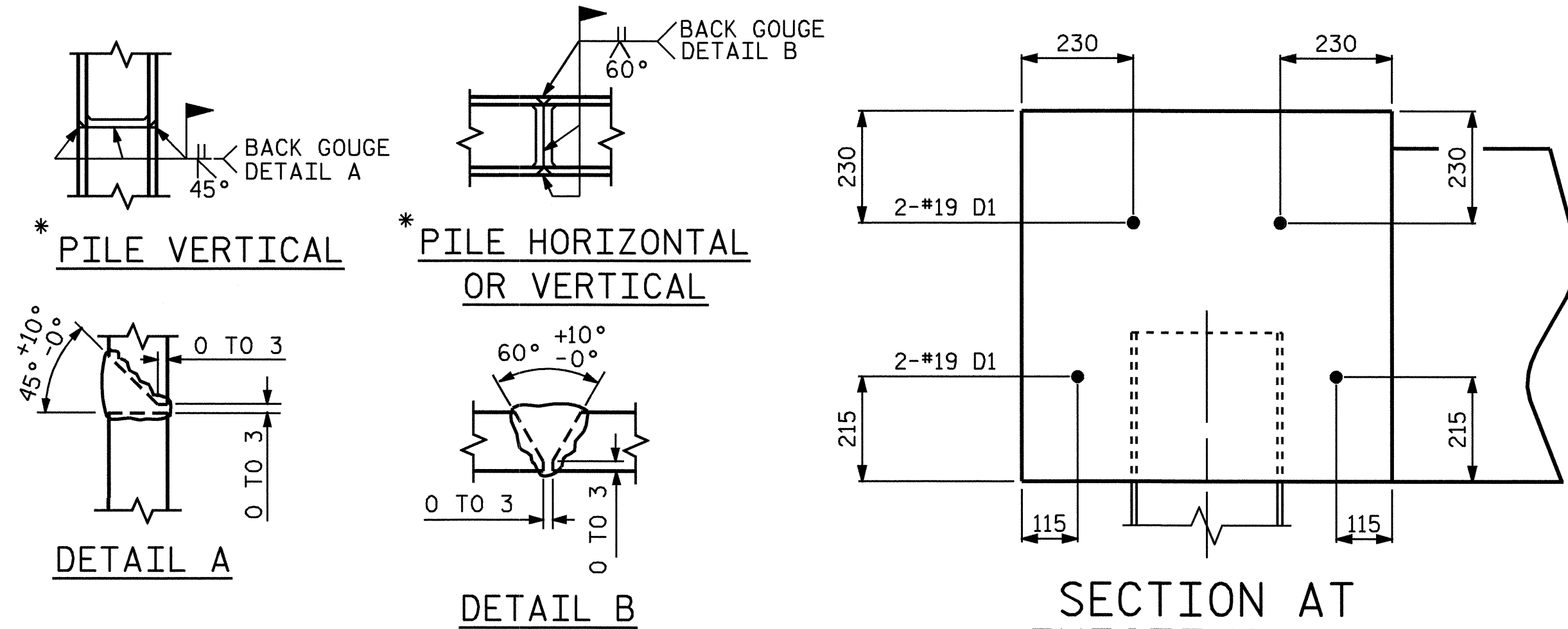


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

BAGGED STONE SHALL REMAIN IN PLACE UNTIL THE ENGINEER DIRECTS THAT IT BE REMOVED. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF SILT ACCUMULATIONS AT BAGGED STONE WHEN SO DIRECTED BY THE ENGINEER. BAGS SHALL BE REMOVED AND REPLACED WHENEVER THE ENGINEER DETERMINES THAT THEY HAVE DETERIORATED AND LOST THEIR EFFECTIVENESS.

NO SEPARATE PAYMENT WILL BE MADE FOR THIS WORK AND THE ENTIRE COST OF THIS WORK SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE FOR THE SEVERAL PAY ITEMS.

TEMPORARY DRAINAGE AT END BENT

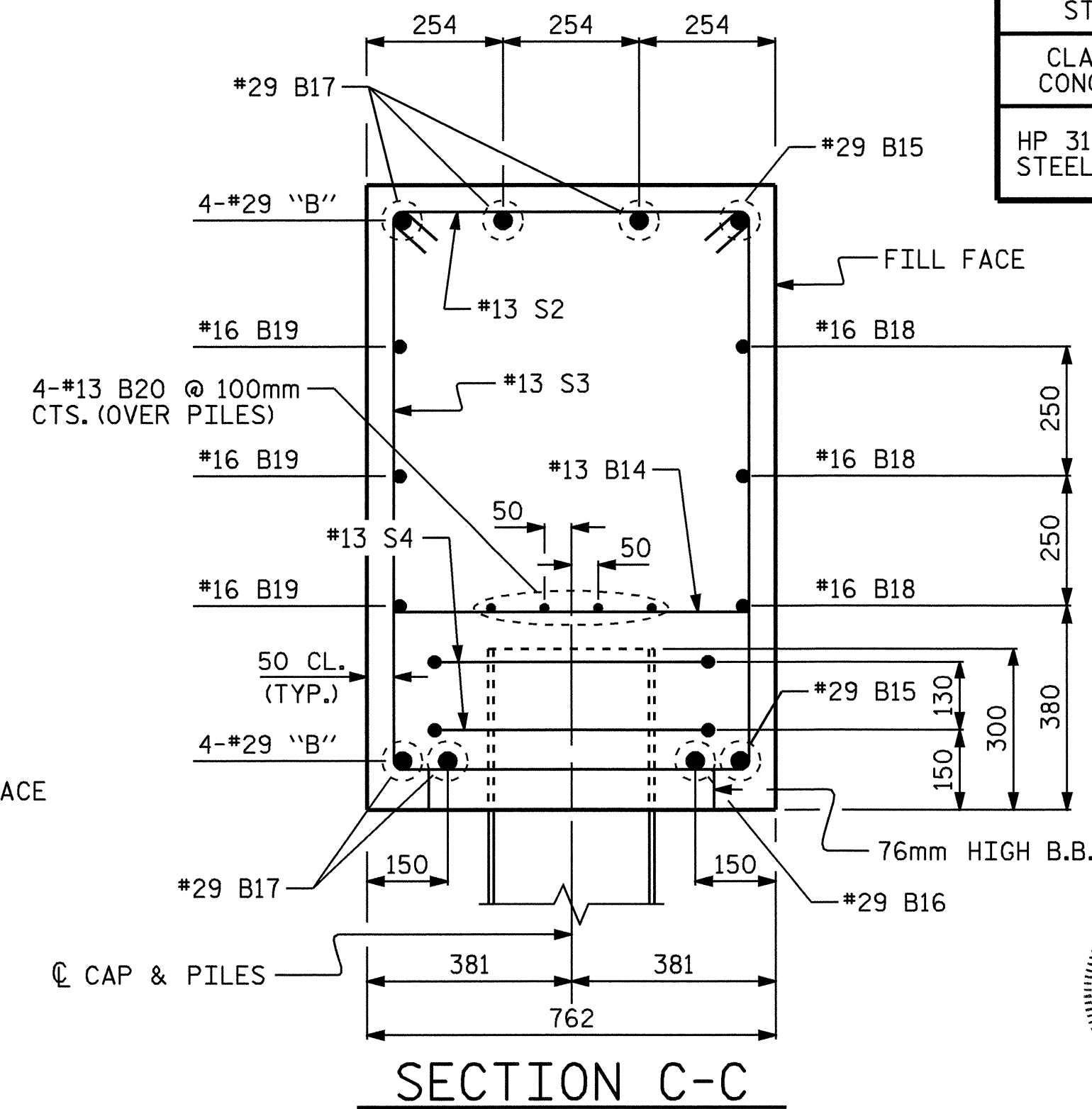
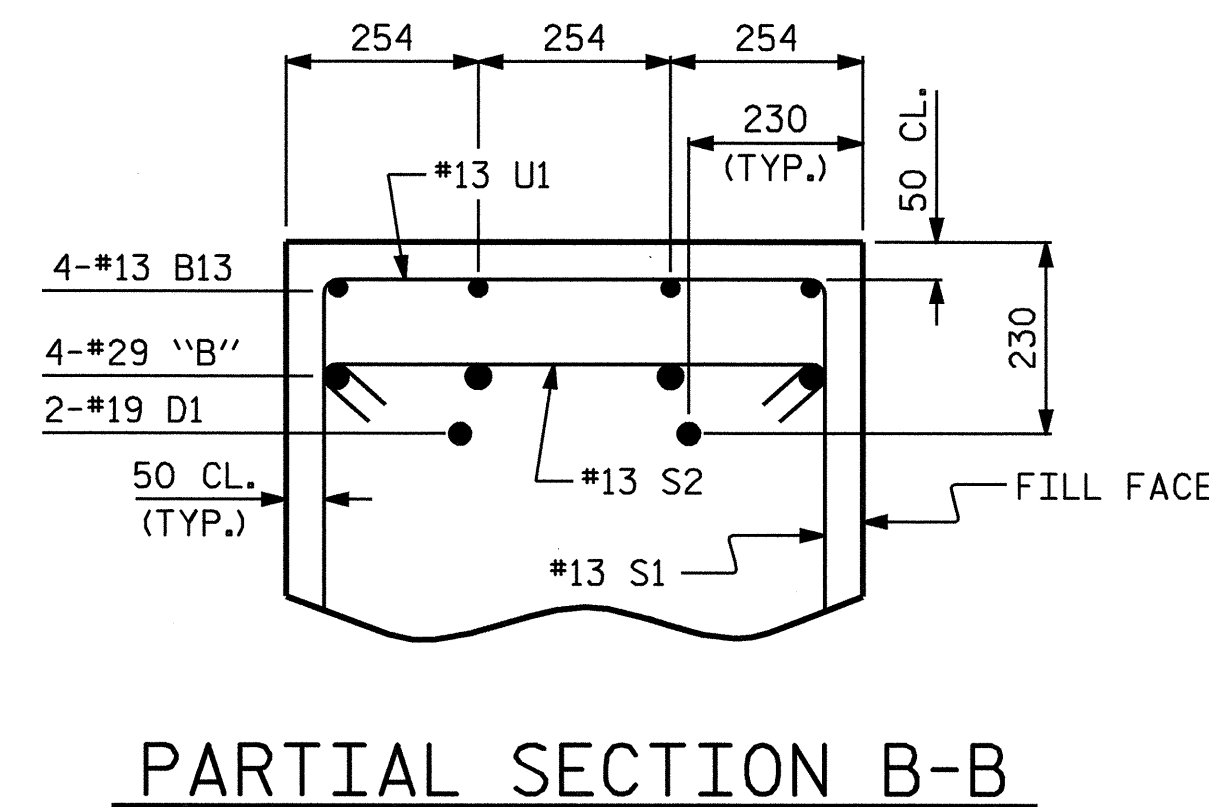
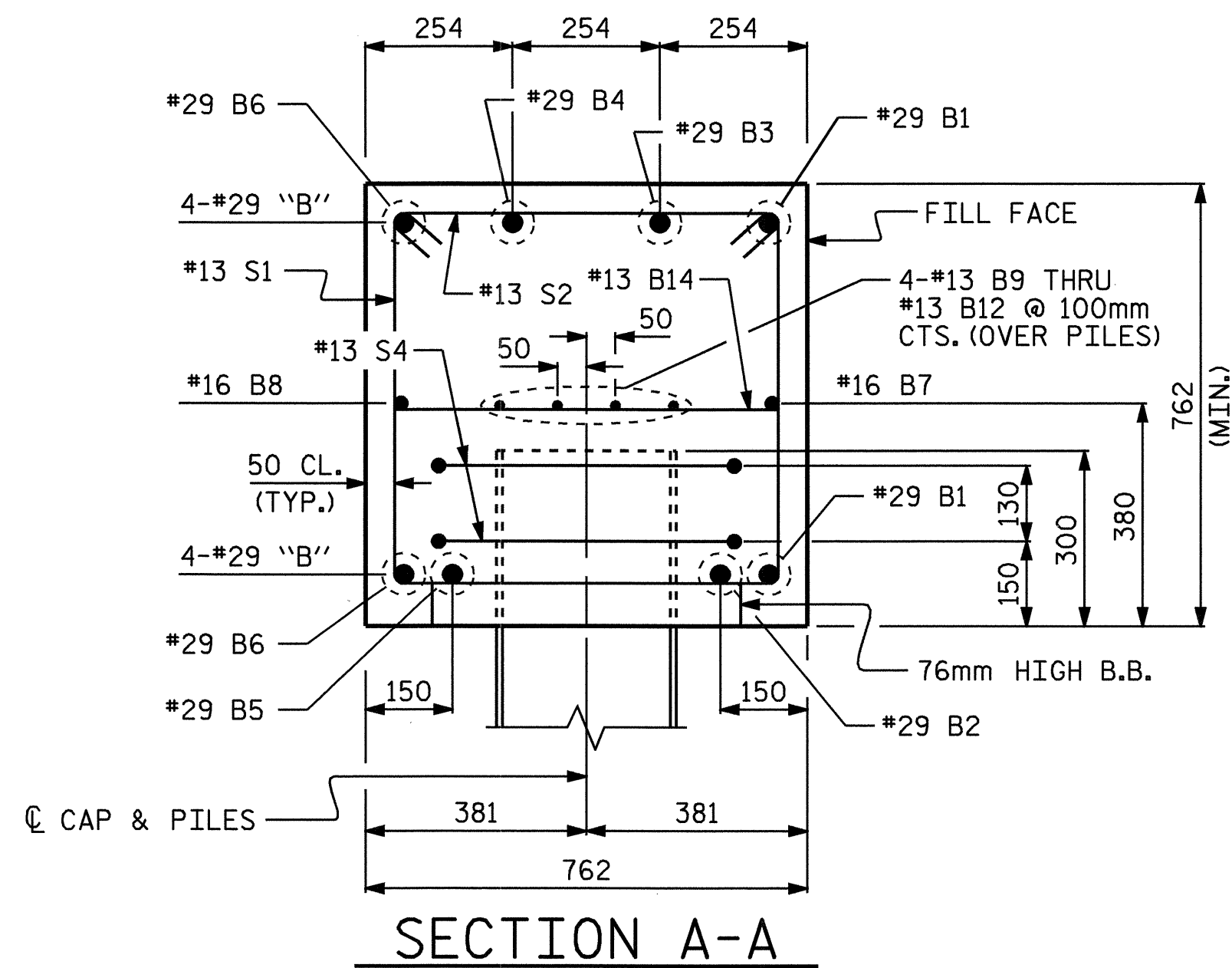


PILE SPLICE DETAILS

* POSITION OF PILE DURING WELDING.

SECTION AT EXISTING CAP

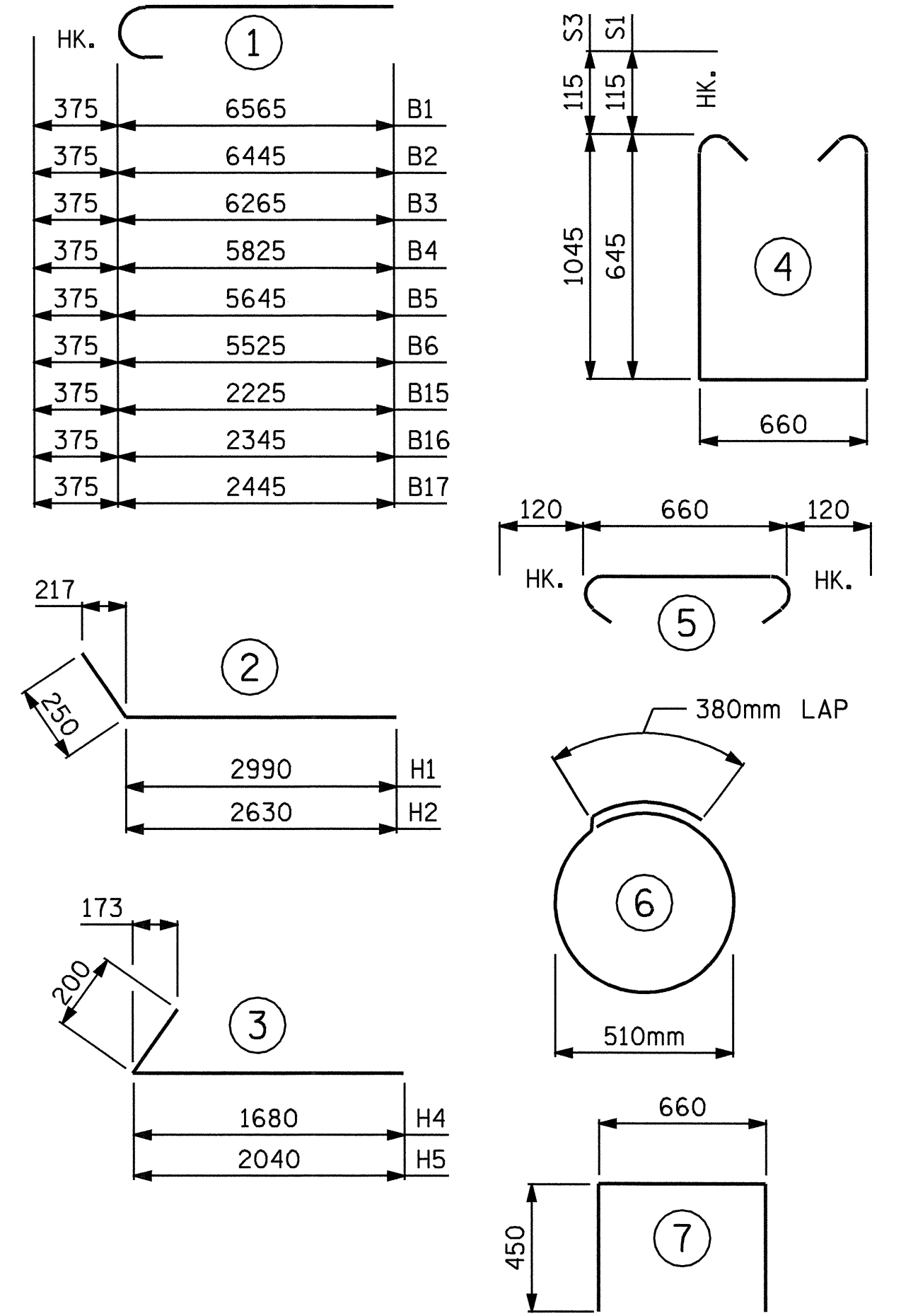
(LEFT SIDE SHOWN, RIGHT SIDE SIMILAR)



BILL OF MATERIAL

END BENT 2 - STAGE I

LEFT SIDE						RIGHT SIDE					
BAR NO.	NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR NO.	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	2	#29	1	6940	70	B14	3	#13	STR	660	2
B2	1	#29	1	6820	35	B15	2	#29	1	2600	26
B3	1	#29	1	6640	34	B16	1	#29	1	2720	14
B4	1	#29	1	6200	31	B17	5	#29	1	2820	71
B5	1	#29	1	6020	30	B18	3	#16	STR	2260	11
B6	2	#29	1	5900	60	B19	3	#16	STR	2480	12
B7	1	#16	STR	6640	10	B20	4	#13	STR	2480	10
B8	1	#16	STR	5560	9	D1	4	#19	STR	660	6
B9	1	#13	STR	6360	6	H3	5	#13	STR	1700	8
B10	1	#13	STR	6180	6	H4	9	#13	3	1880	17
B11	1	#13	STR	6020	6	H5	9	#13	3	2240	20
B12	1	#13	STR	5840	6	H6	5	#13	STR	1660	8
B13	4	#13	STR	1100	4	S2	7	#13	5	900	6
B14	5	#13	STR	660	3	S3	7	#13	4	2980	21
D1	4	#19	STR	660	6	S4	2	#13	6	1980	4
H1	8	#16	2	3240	40	V3	25	#13	STR	2340	58
H2	8	#16	2	2880	36						
H3	10	#13	STR	1700	17						
S1	18	#13	4	2180	39						
S2	18	#13	5	900	16						
S4	4	#13	6	1980	8						
U1	3	#13	7	1560	5						
V1	17	#13	STR	1740	29						
V2	14	#13	STR	1840	26						
REINFORCING STEEL						REINFORCING STEEL					
532 kg						294 kg					
CLASS A CONCRETE BREAKDOWN						CLASS A CONCRETE BREAKDOWN					
POUR #1 CAP & LOWER PART OF WING W1						POUR #1 CAP & LOWER PART OF WING W1					
4.3 m ³						2.8 m ³					
POUR #2 UPPER PART OF WING W1						POUR #2 UPPER PART OF WING W1					
1.5 m ³						1.3 m ³					
TOTAL CLASS A CONCRETE						TOTAL CLASS A CONCRETE					
5.8 m ³						4.1 m ³					
HP 310 X 79 STEEL PILES						HP 310 X 79 STEEL PILES					
NO. 2 METERS 36.0						NO. 1 METERS 18.0					



ALL BAR DIMENSIONS ARE OUT TO OUT.

TOTAL BILL OF MATERIAL

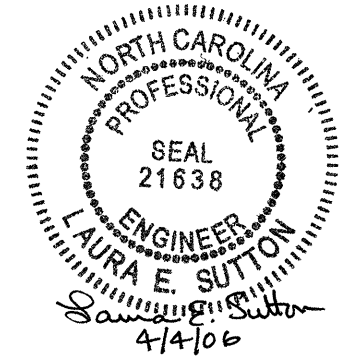
ITEM	LEFT SIDE	RIGHT SIDE	STAGE I TOTAL
REINFORCING STEEL	532 kg	294 kg	826 kg
CLASS A CONCRETE	5.8 m ³	4.1 m ³	9.9 m ³
HP 310 X 79 STEEL PILES	NO. 2 METERS 36.0	NO. 1 METERS 18.0	NO. 3 METERS 54.0

PROJECT NO. U-2408
 GASTON COUNTY
 STATION: 20+57.612 -L-

SHEET 3 OF 3

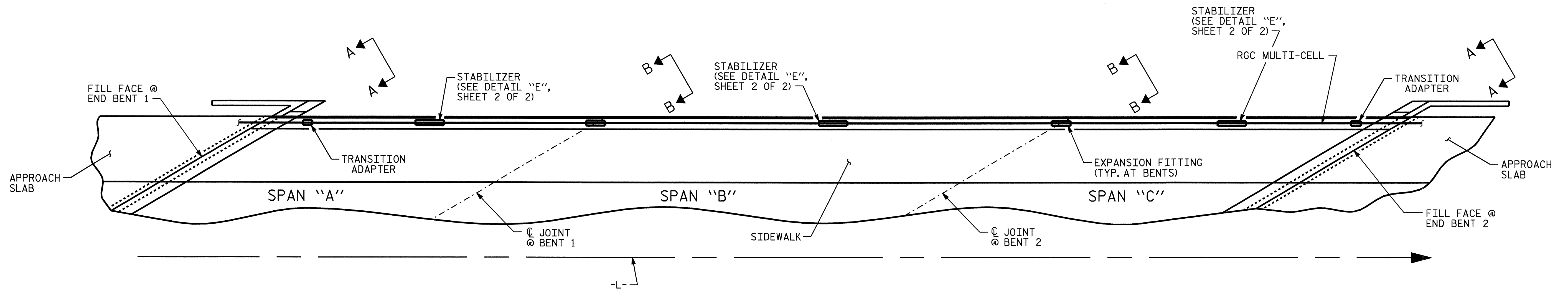
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE END BENT 2

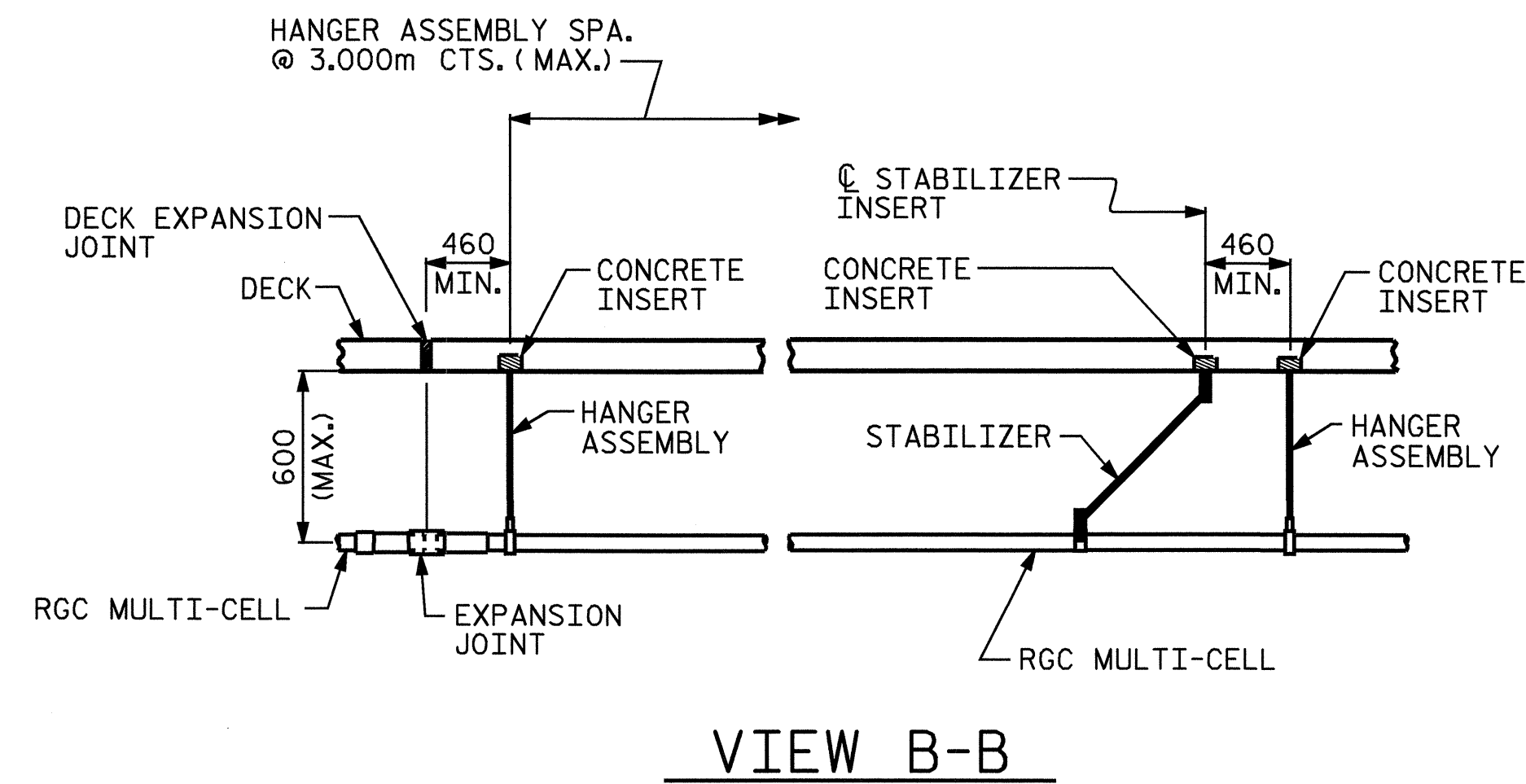


REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S-46
1			3			TOTAL SHEETS
2			4			55

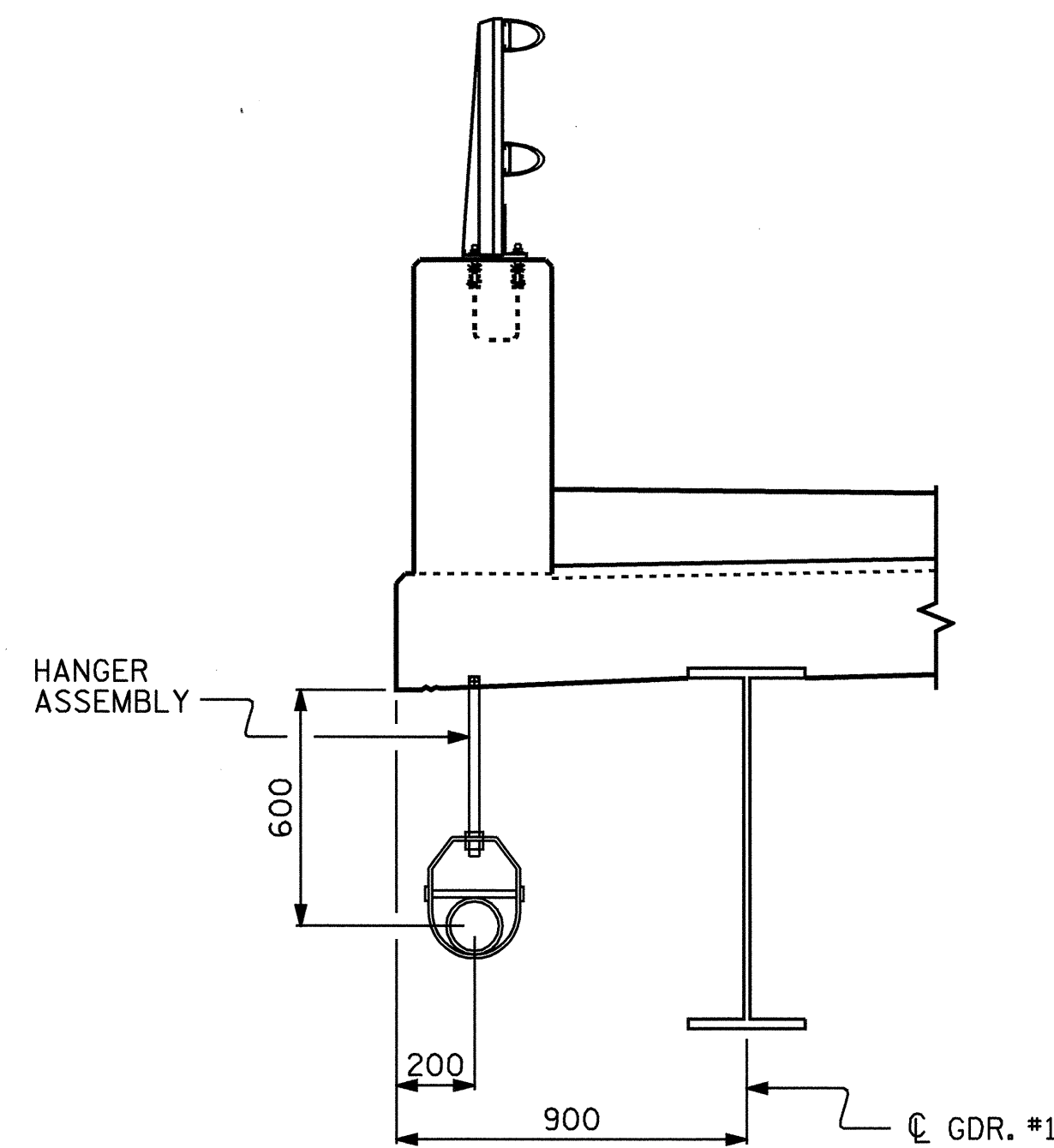
DRAWN BY: P.C. BREWER DATE: 5/9/05
 CHECKED BY: A.S. CALLAWAY DATE: 7/16/05



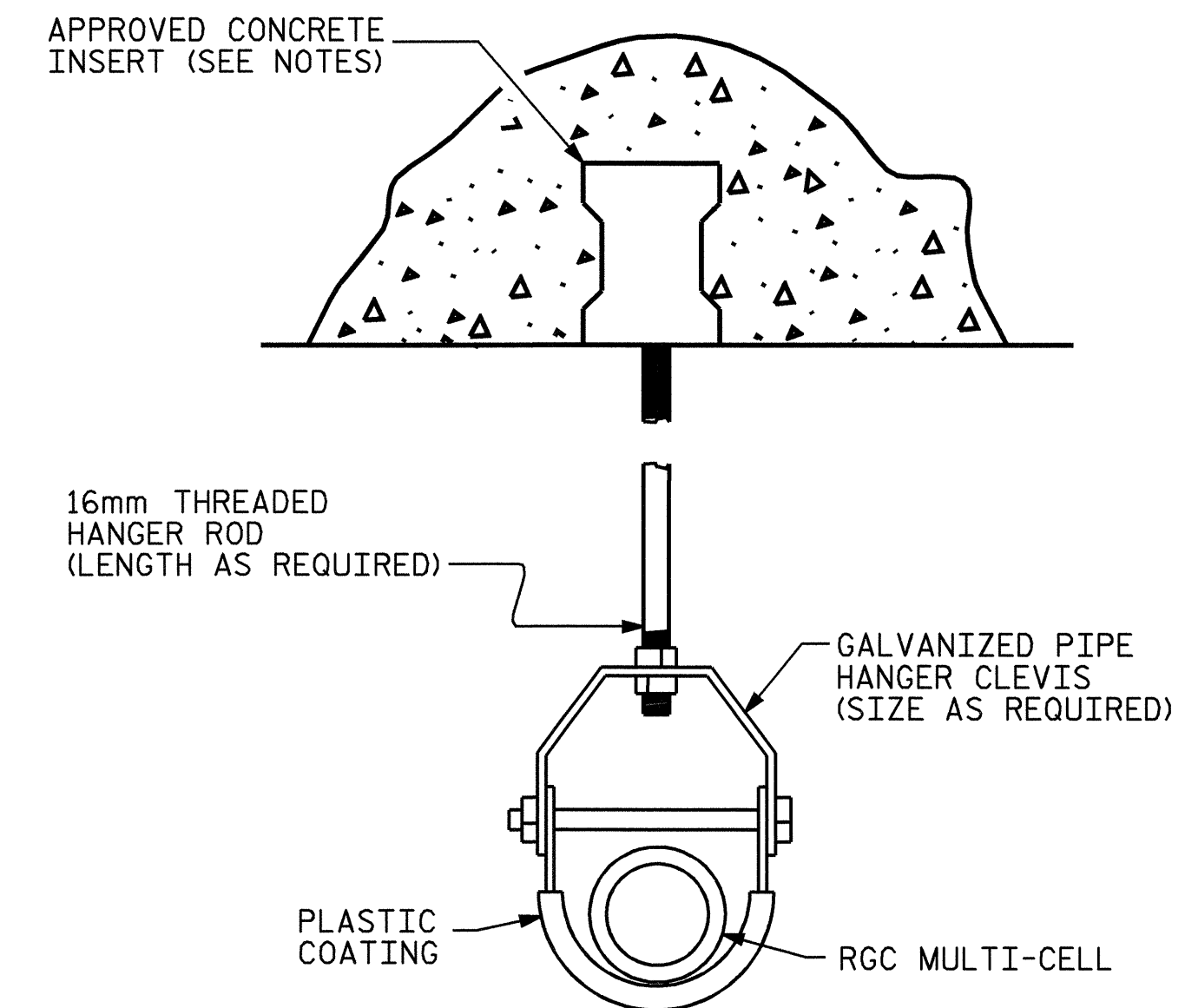
ELECTRICAL CONDUIT LAYOUT



VIEW B-B



CONDUIT LOCATION



HANGER ASSEMBLY

PROJECT NO. U-2408
GASTON COUNTY
 STATION: 20+57.612 -L-

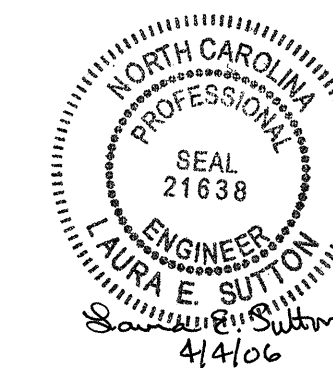
SHEET 1 OF 2

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

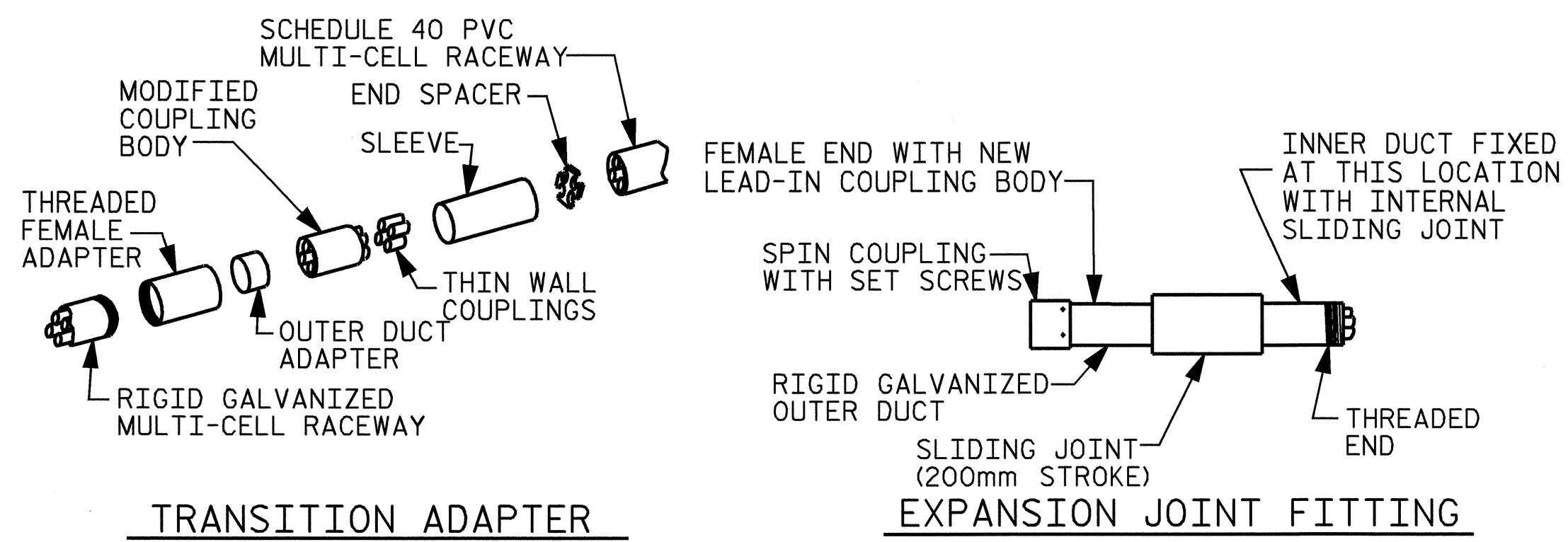
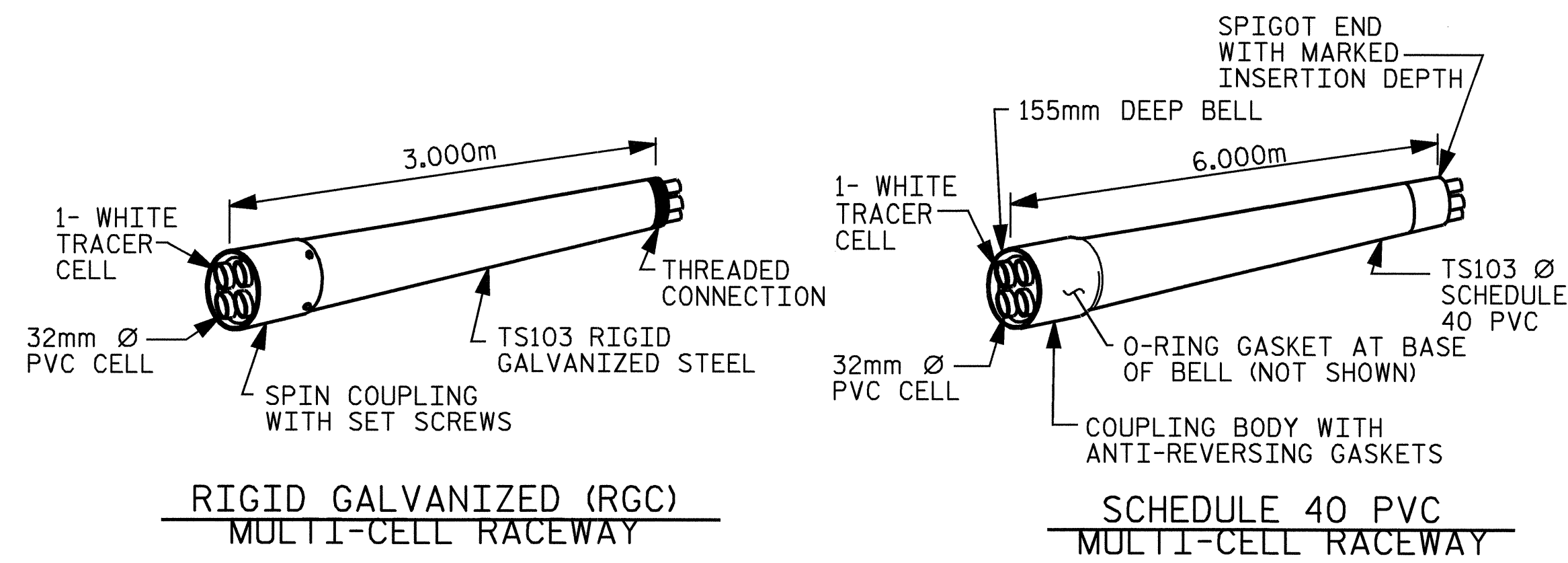
ELECTRICAL CONDUIT SYSTEM DETAILS

DRAWN BY : P.C. BREWER DATE : 4/4/05
 CHECKED BY : A.C. OUTLAW DATE : 5/3/05

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REVISIONS						SHEET NO. S-47
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 55
2			4			



DETAIL "D"

TS103 MULTI-CELL COMPONENTS

NOTES:

THE CONTRACTOR SHALL BE RESPONSIBLE FOR DETERMINING THE TOTAL QUANTITY OF CONDUIT NEEDED TO COMPLETE THE WORK AND THAT THE CONDUIT(S) ARE PLACED AT THE NOTED DIMENSION AND ABOVE THE BOTTOM OF THE GIRDER.

THE INSTALLATION OF THE CONDUIT SYSTEM SHALL BE PAID FOR AS LUMP SUM. THE PRICE SHALL INCLUDE ALL CONDUIT, HANGERS, STABILIZERS, EXPANSION JOINTS, CONCRETE INSERTS, PVC SLEEVES AND ALL NECESSARY HARDWARE TO COMPLETE THE WORK.

THE CONTRACTOR SHALL FIELD VERIFY THAT THE CONDUIT SYSTEM IS NOT IN CONFLICT WITH THE GUARDRAIL POSTS.

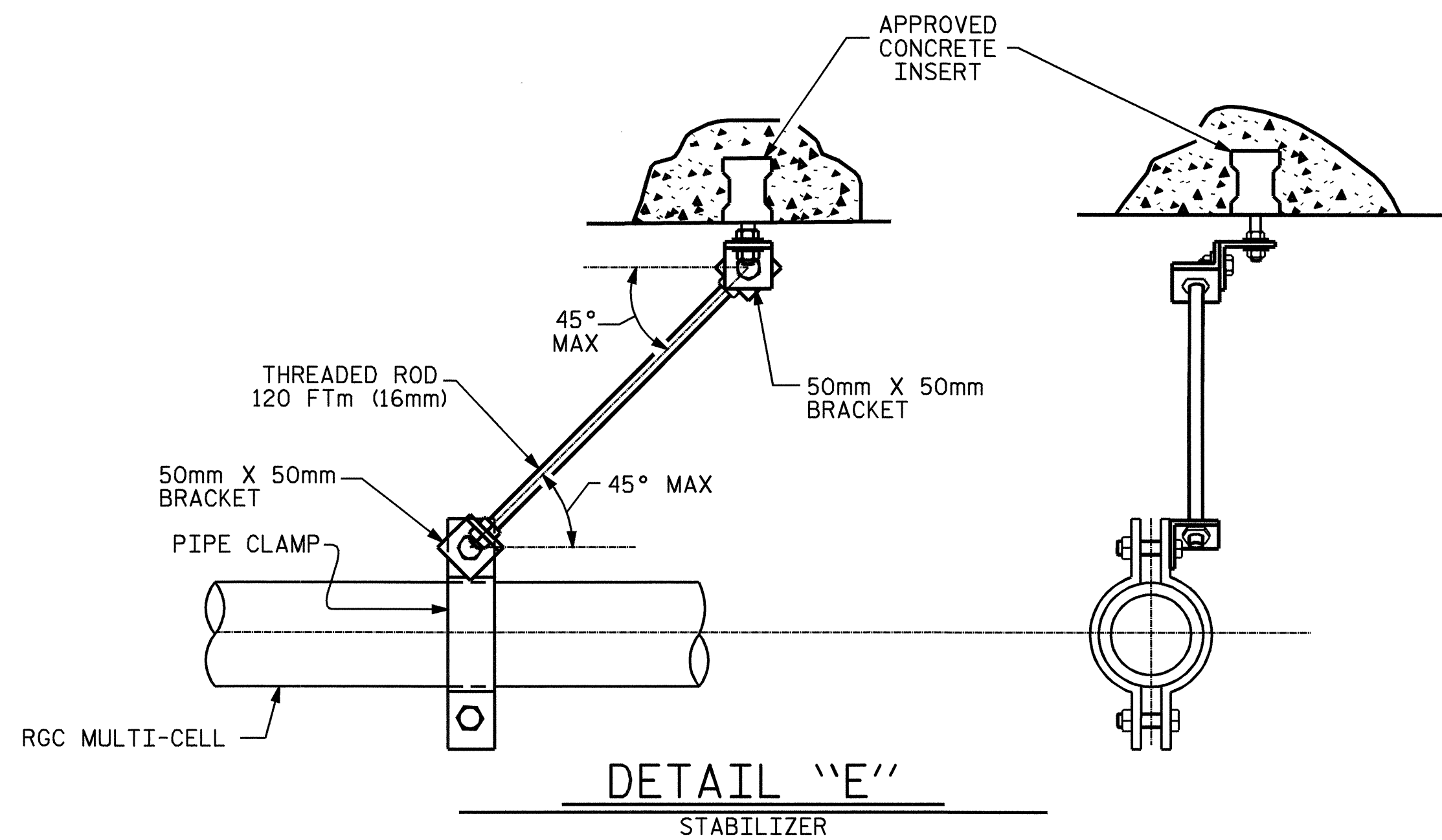
INSTALL SLEEVES PARALLEL TO GIRDERS. SEE DETAIL "B" FOR SLEEVE INSTALLATION.

PROVIDE TRANSITION ADAPTOR FOR CONDUIT AT END BENT 1 AND END BENT 2.

INSTALL STABILIZER'S MIDWAY BETWEEN DECK EXPANSION JOINTS. STABILIZERS CAN NOT BE USED INSTEAD OF HANGER ASSEMBLY.

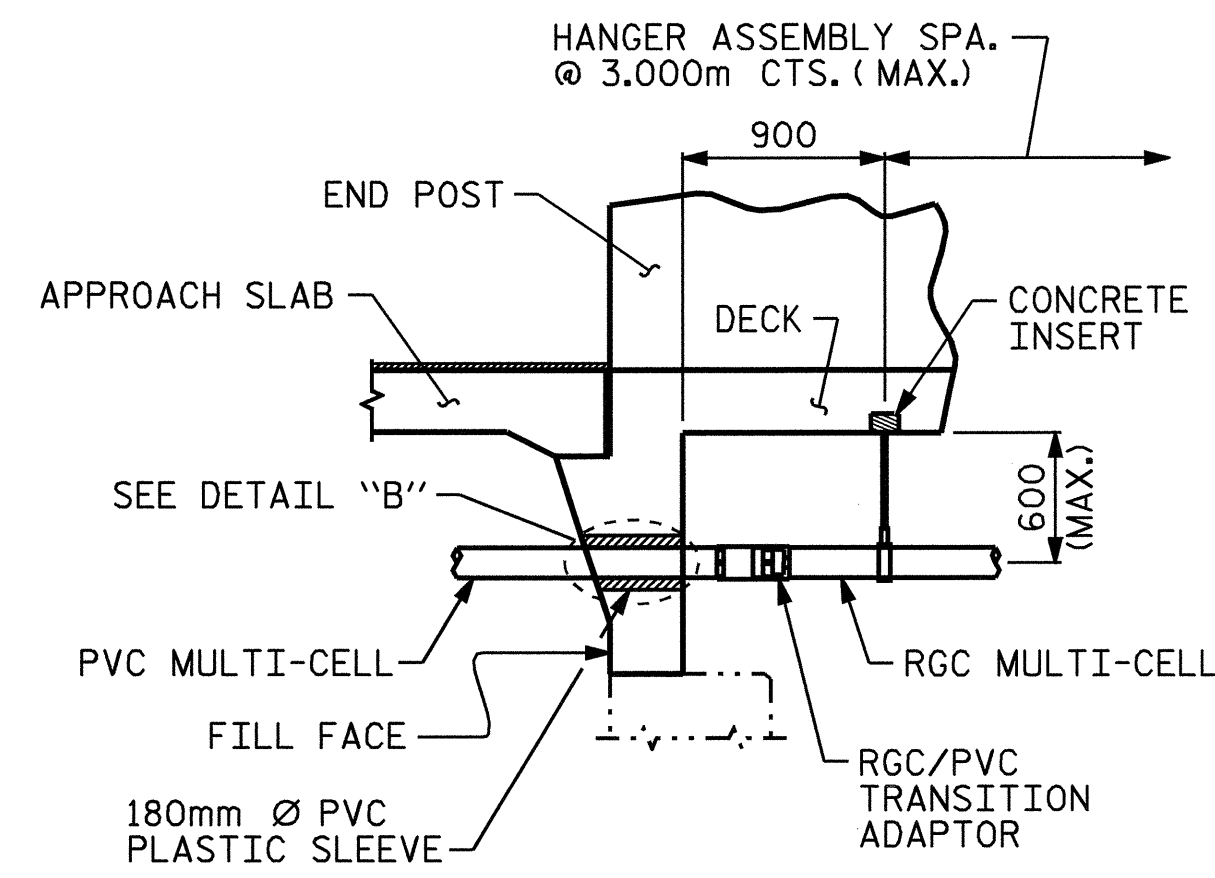
INSTALL EXPANSION JOINTS AT BENT 1 AND BENT 2.

THE CONCRETE SCREW INSERT SHALL HAVE A ROD SIZE OF 15.875mm AND A PULL FORCE OF 580 kg.



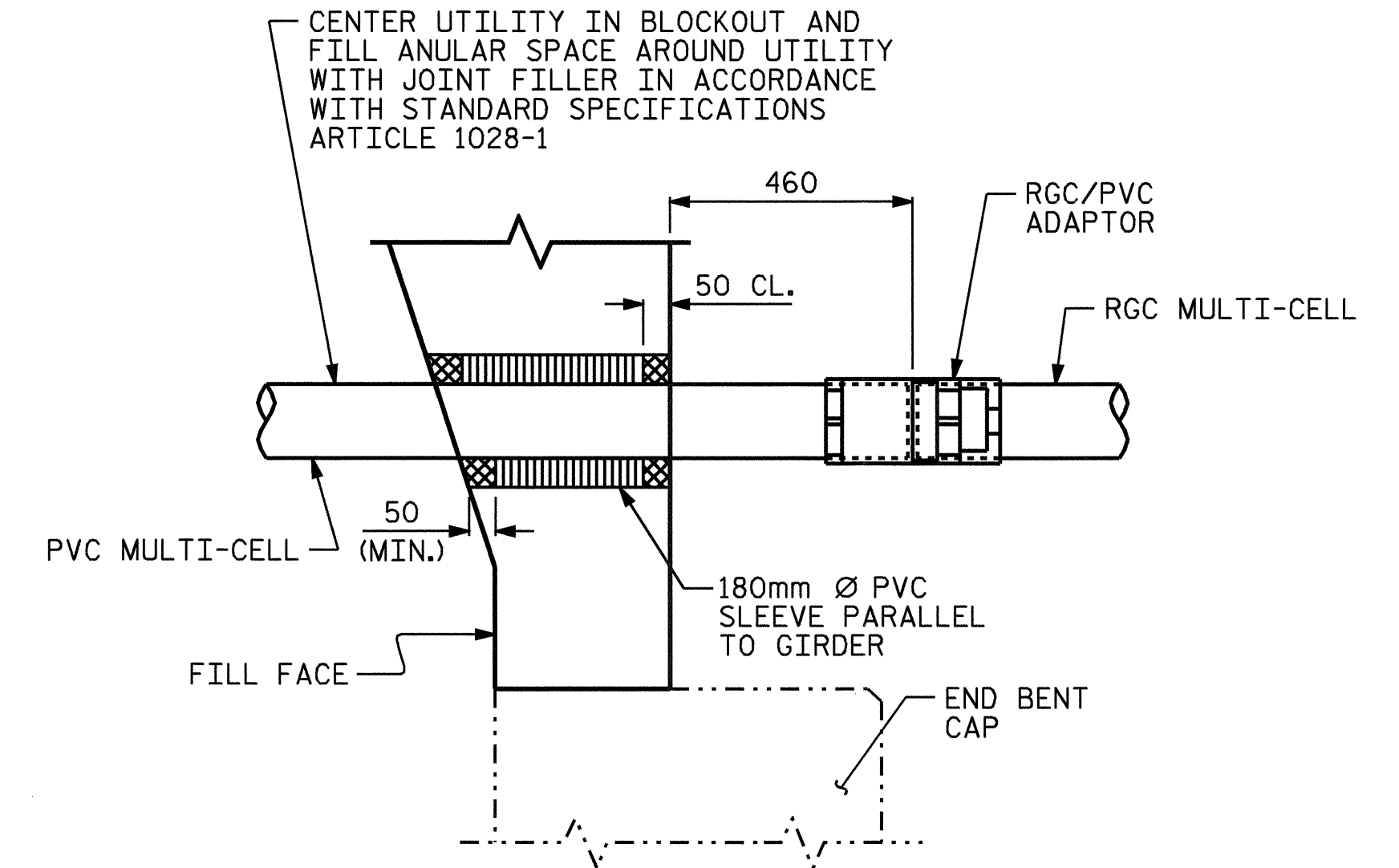
DETAIL "E"

STABILIZER



VIEW A-A

(END BENT 2 SHOWN, END BENT 1 SIMILAR)



DETAIL "B"

PVC SLEEVE INSTALLATION & RGC/PVC ADAPTOR AT BACKWALL.

DRAWN BY : P.C. BREWER DATE : 4/4/05
 CHECKED BY : A.C. OUTLAW DATE : 5/3/05

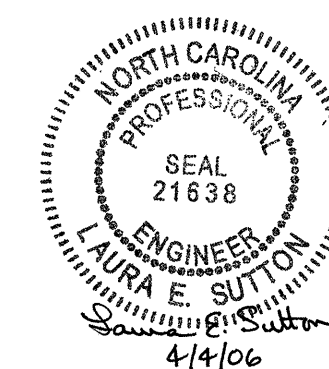
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PROJECT NO. U-2408
 GASTON COUNTY
 STATION: 20+57.612 -L-

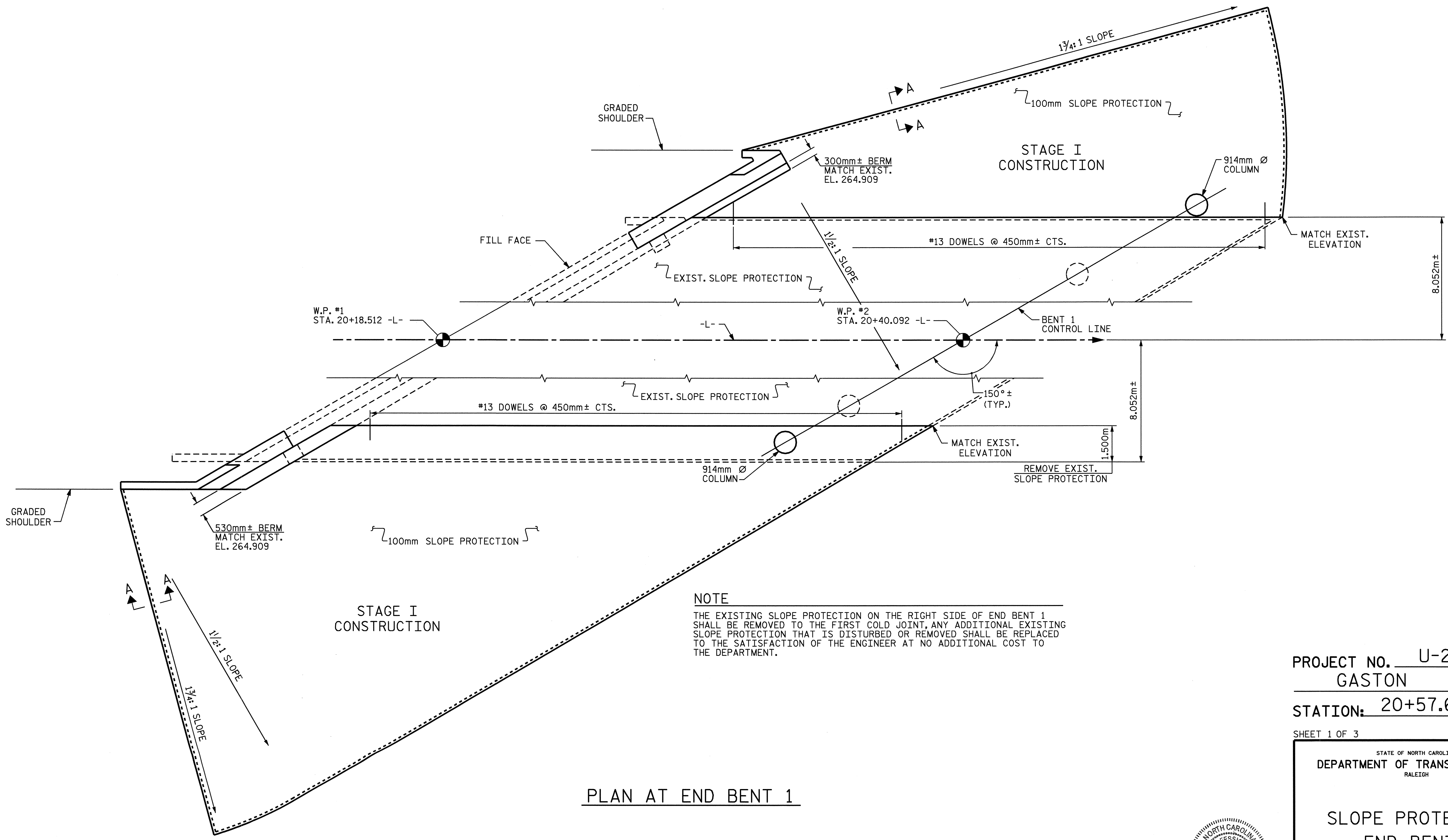
SHEET 2 OF 2

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

ELECTRICAL CONDUIT SYSTEM DETAILS



REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-48
1			3			TOTAL SHEETS
2			4			55

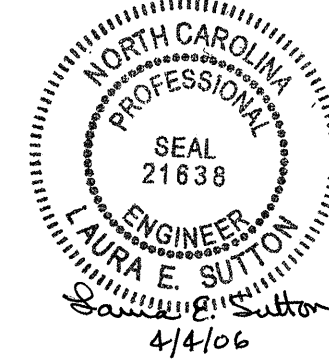


PLAN AT END BENT 1

NOTE
 THE EXISTING SLOPE PROTECTION ON THE RIGHT SIDE OF END BENT 1 SHALL BE REMOVED TO THE FIRST COLD JOINT, ANY ADDITIONAL EXISTING SLOPE PROTECTION THAT IS DISTURBED OR REMOVED SHALL BE REPLACED TO THE SATISFACTION OF THE ENGINEER AT NO ADDITIONAL COST TO THE DEPARTMENT.

PROJECT NO. U-2408
GASTON COUNTY
 STATION: 20+57.612 -L-

SHEET 1 OF 3
 STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SLOPE PROTECTION
 END BENT 1

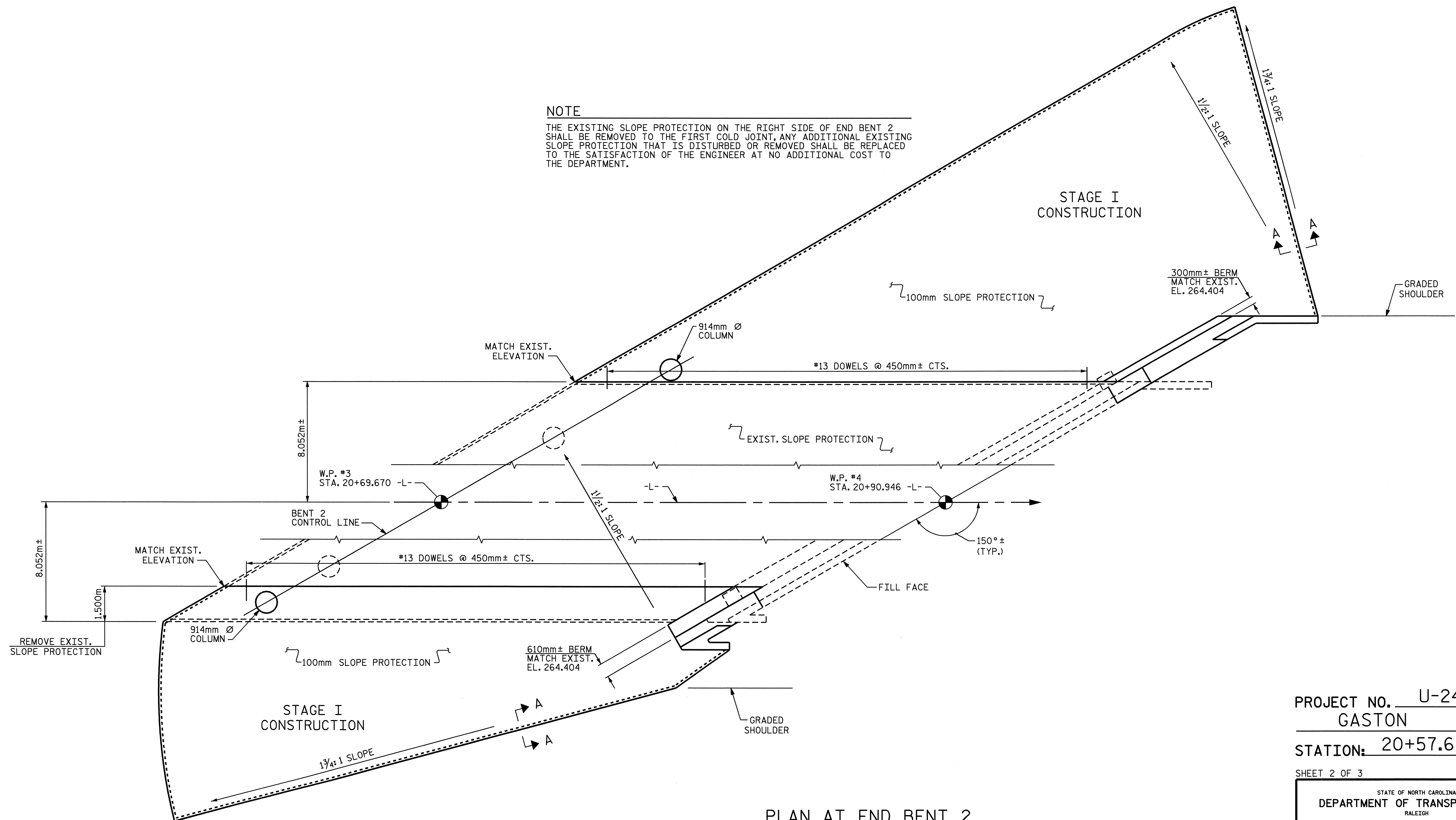


DRAWN BY : A.S. CALLAWAY DATE : 4/18/05
 CHECKED BY : P.C. BREWER DATE : 5/26/05

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-49
1			3			TOTAL SHEETS
2			4			55

NOTE

THE EXISTING SLOPE PROTECTION ON THE RIGHT SIDE OF END BENT 2 SHALL BE REMOVED TO THE FIRST COLD JOINT, ANY ADDITIONAL EXISTING SLOPE PROTECTION THAT IS DISTURBED OR REMOVED SHALL BE REPLACED TO THE SATISFACTION OF THE ENGINEER AT NO ADDITIONAL COST TO THE DEPARTMENT.



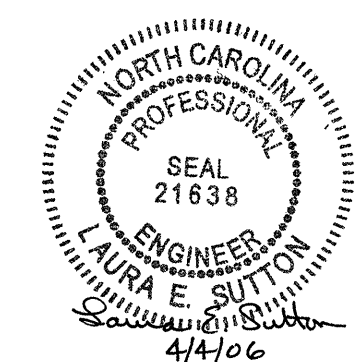
PLAN AT END BENT 2

PROJECT NO. U-2408
GASTON COUNTY
 STATION: 20+57.612 -L-

SHEET 2 OF 3

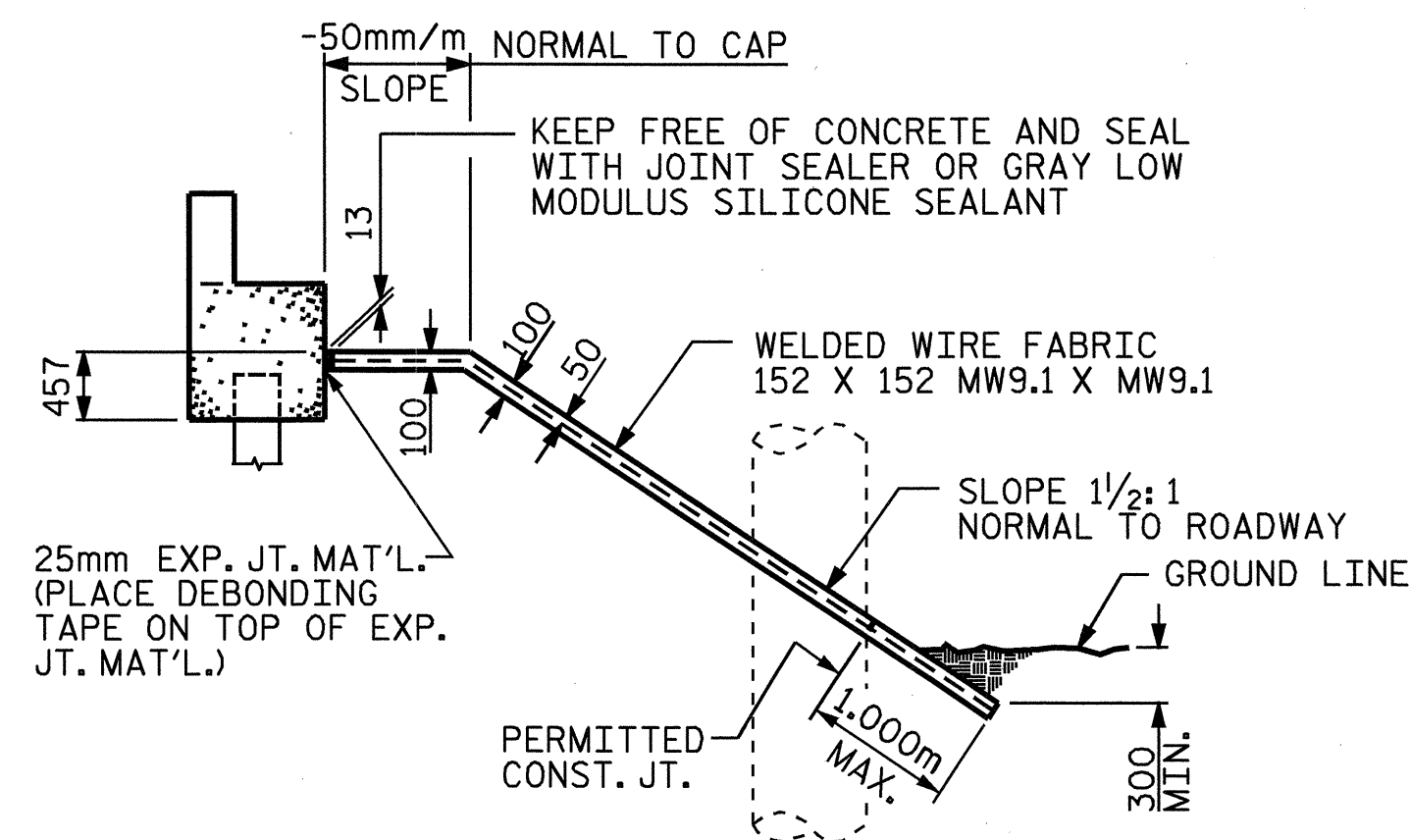
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SLOPE PROTECTION
 END BENT 2

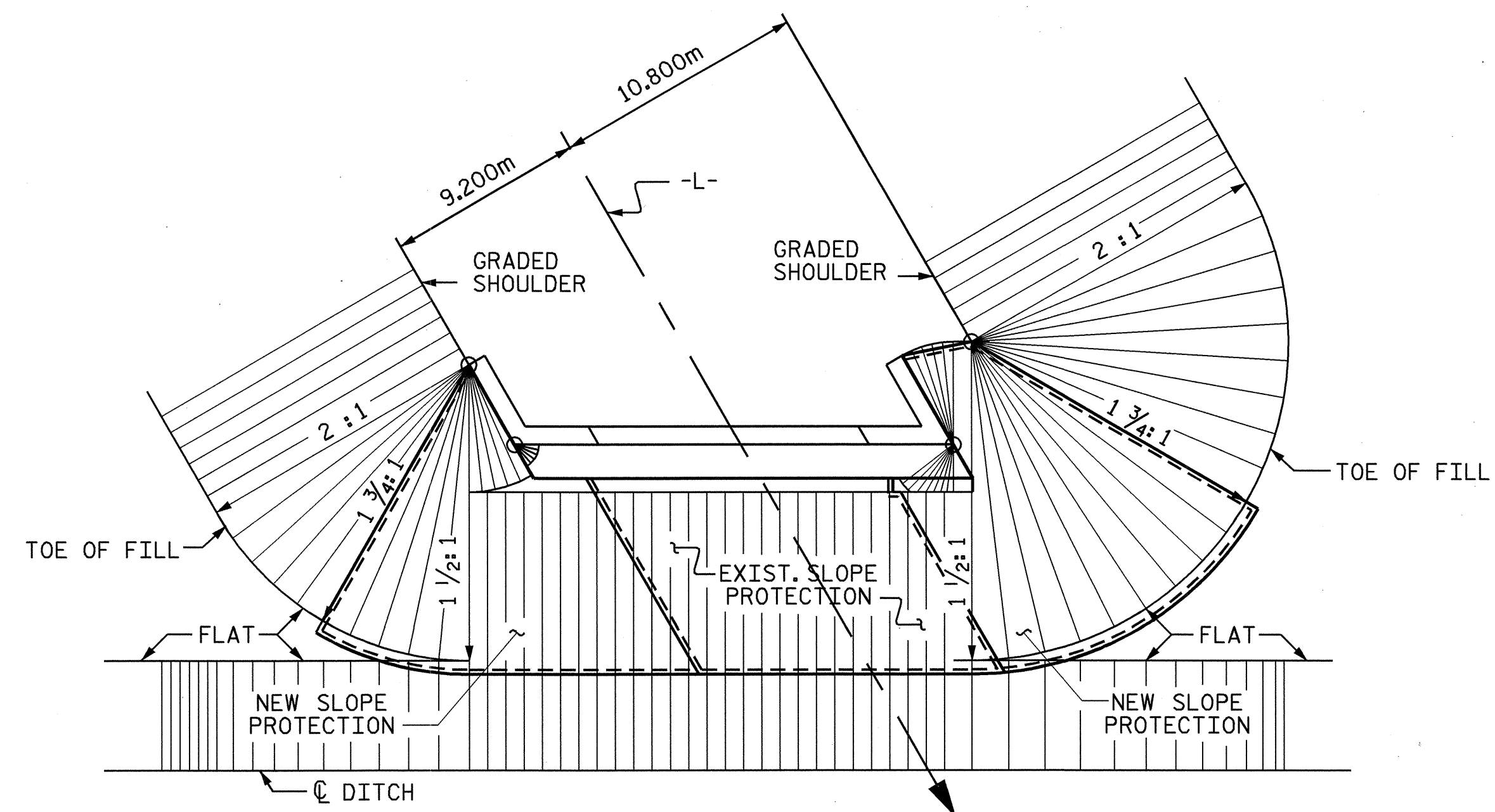


DRAWN BY : A.S. CALLAWAY DATE : 4/18/05
 CHECKED BY : P.C. BREWER DATE : 5/26/05

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-50
1			3			TOTAL SHEETS
2			4			55



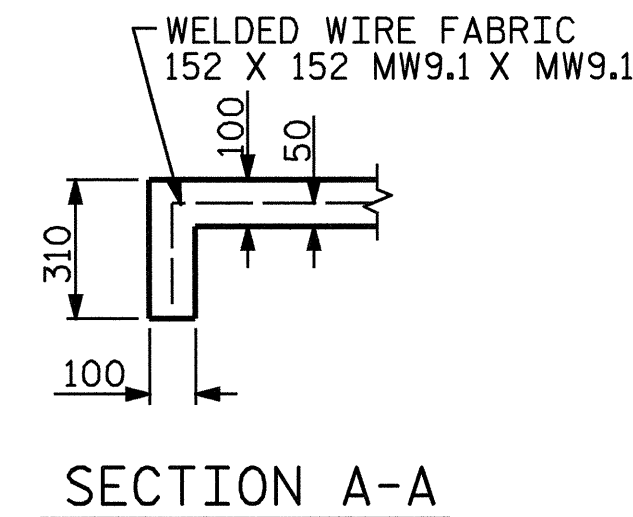
SECTION ALONG Q ROADWAY
WHEN DITCH IS NOT PROVIDED



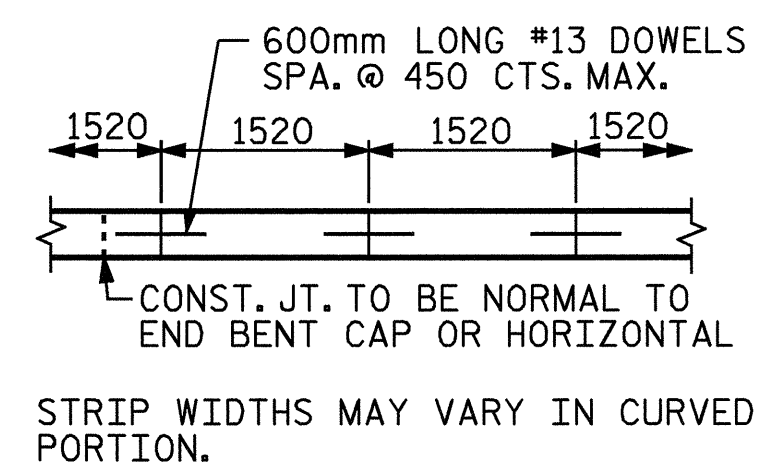
PLAN - END BENT WITH SWEEPED BACK WINGS - SKEWED

(1 1/2:1 SLOPE)

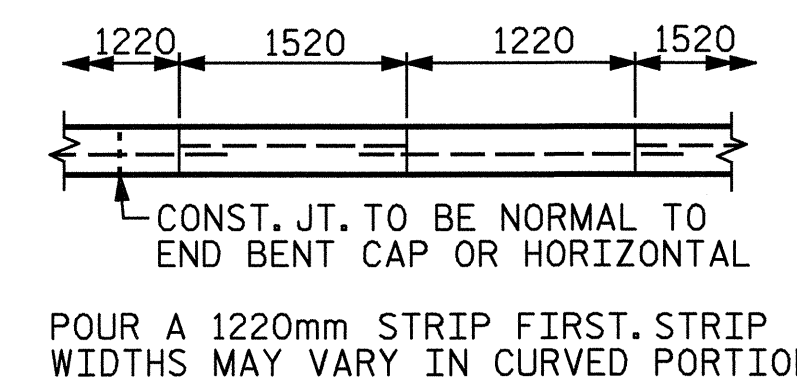
END BENT 1 SHOWN, END BENT 2 SIMILAR BY ROTATION



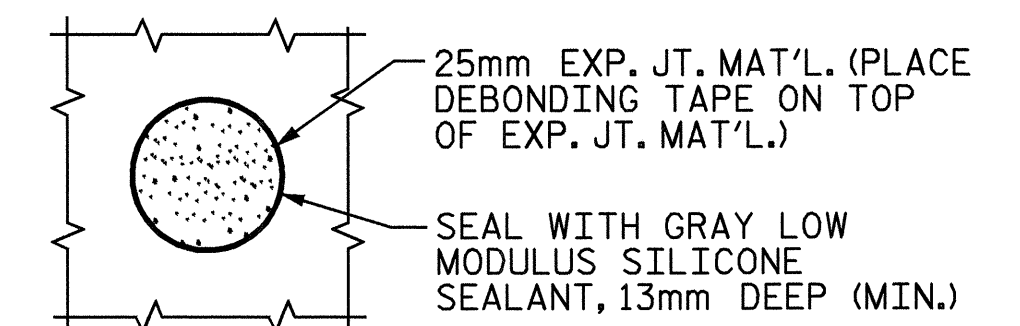
SECTION A-A



POURING DETAIL



OPTIONAL POURING DETAIL



PLAN WHERE CONCRETE
SLOPE PROTECTION MUST
BE PLACED AROUND A
BENT COLUMN

NOTES

SLOPE PROTECTION SHALL BE PLACED UNDER THE ENDS OF THE BRIDGE AS SHOWN IN THE DETAILS. STRAIGHT EDGING WILL NOT BE REQUIRED UNLESS, IN THE OPINION OF THE ENGINEER, VISUAL INSPECTION INDICATES A NEED FOR IT. METHOD OF MEASUREMENT AND BASIS OF PAYMENT SHALL BE AS PRESCRIBED IN SECTION 462 OF THE STANDARD SPECIFICATIONS. FOR BERM WIDTH, SEE GENERAL DRAWING.

SLOPE PROTECTION SHALL CONSIST OF 100mm POURED-IN-PLACE CONCRETE PAVING AS SHOWN IN THE DETAILS. CONCRETE SHALL BE CLASS "B". THE CONCRETE SURFACE SHALL BE FLOATED WITH A WOODEN FLOAT AND FINISHED. WELDED WIRE FABRIC REINFORCING SHALL BE 152 X 152 - W9.1 X W9.1, 1520mm WIDE. SLOPE PROTECTION SHALL BE POURED IN 1520mm STRIPS AS SHOWN IN THE "POURING DETAIL" WITH 600mm LONG #13 BARS PLACED ALONG THE SLOPE BETWEEN STRIPS AT 450mm MAXIMUM SPACING. SLOPE PROTECTION MAY BE POURED IN ALTERNATE 1220mm AND 1520mm STRIPS AS SHOWN IN THE "OPTIONAL POURING DETAIL" WITH ADJACENT RUNS OF WELDED WIRE FABRIC LAPPING AT LEAST 152mm. THE COST OF THE WELDED WIRE FABRIC AND #13 BARS, IF USED, SHALL BE INCLUDED IN THE CONTRACT UNIT PRICE BID PER SQUARE METER FOR SLOPE PROTECTION.

THE COST OF THE #13 DOWELS BETWEEN THE NEW AND EXISTING SLOPE PROTECTION SHALL BE INCLUDED IN THE CONTRACT UNIT PRICE BID PER SQUARE METER FOR SLOPE PROTECTION.

STAGE I CONSTRUCTION						
BRIDGE @ STA. 20+57.612 -L-	100mm SLOPE PROTECTION			* WELDED WIRE FABRIC 1520mm WIDE		
	SQUARE METERS			APPROX. METERS		
	RIGHT SIDE	LEFT SIDE	TOTAL	RIGHT SIDE	LEFT SIDE	TOTAL
END BENT 1	319	138	457	232	101	333
END BENT 2	166	278	444	121	203	324
STAGE I TOTAL			901			657

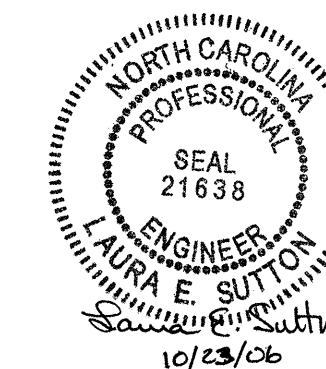
* QUANTITY SHOWN IS BASED ON 1520mm POURS.

PROJECT NO. U-2408
GASTON COUNTY
STATION: 20+57.612 -L-

SHEET 3 OF 3

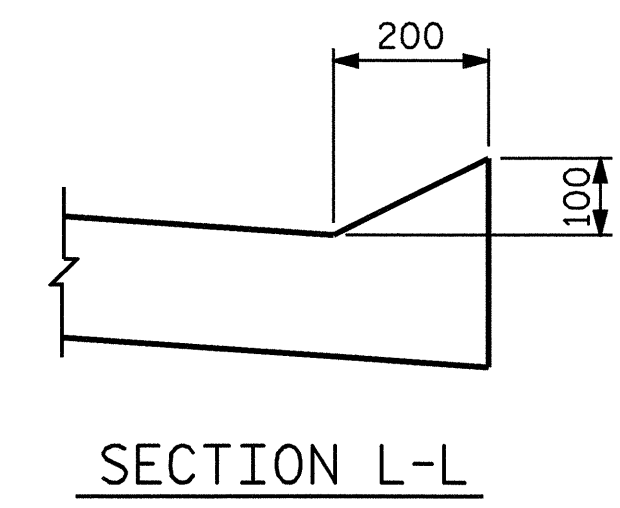
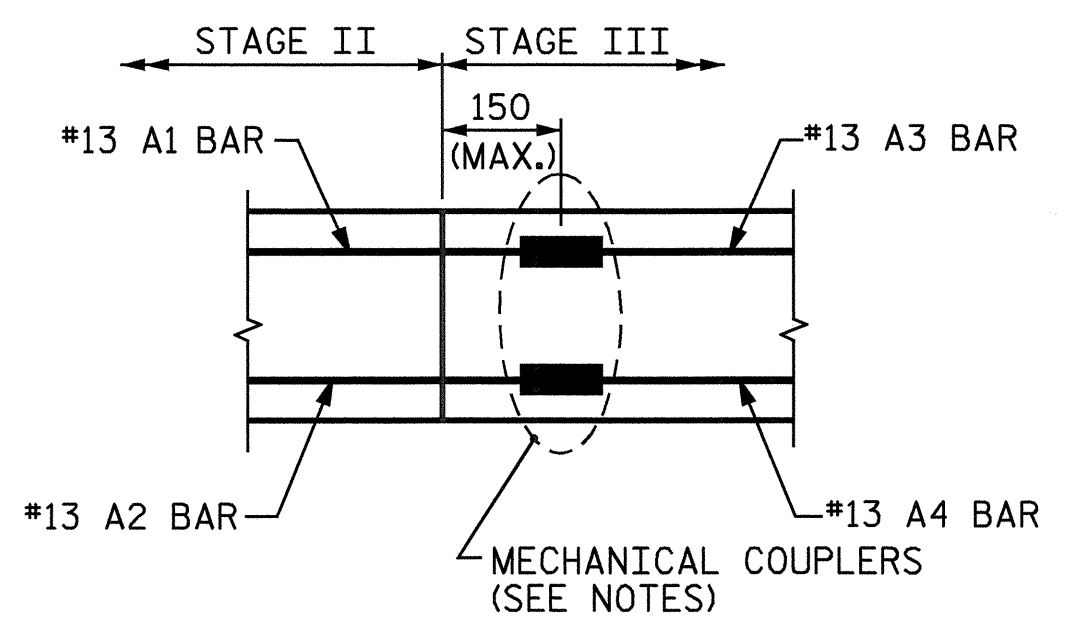
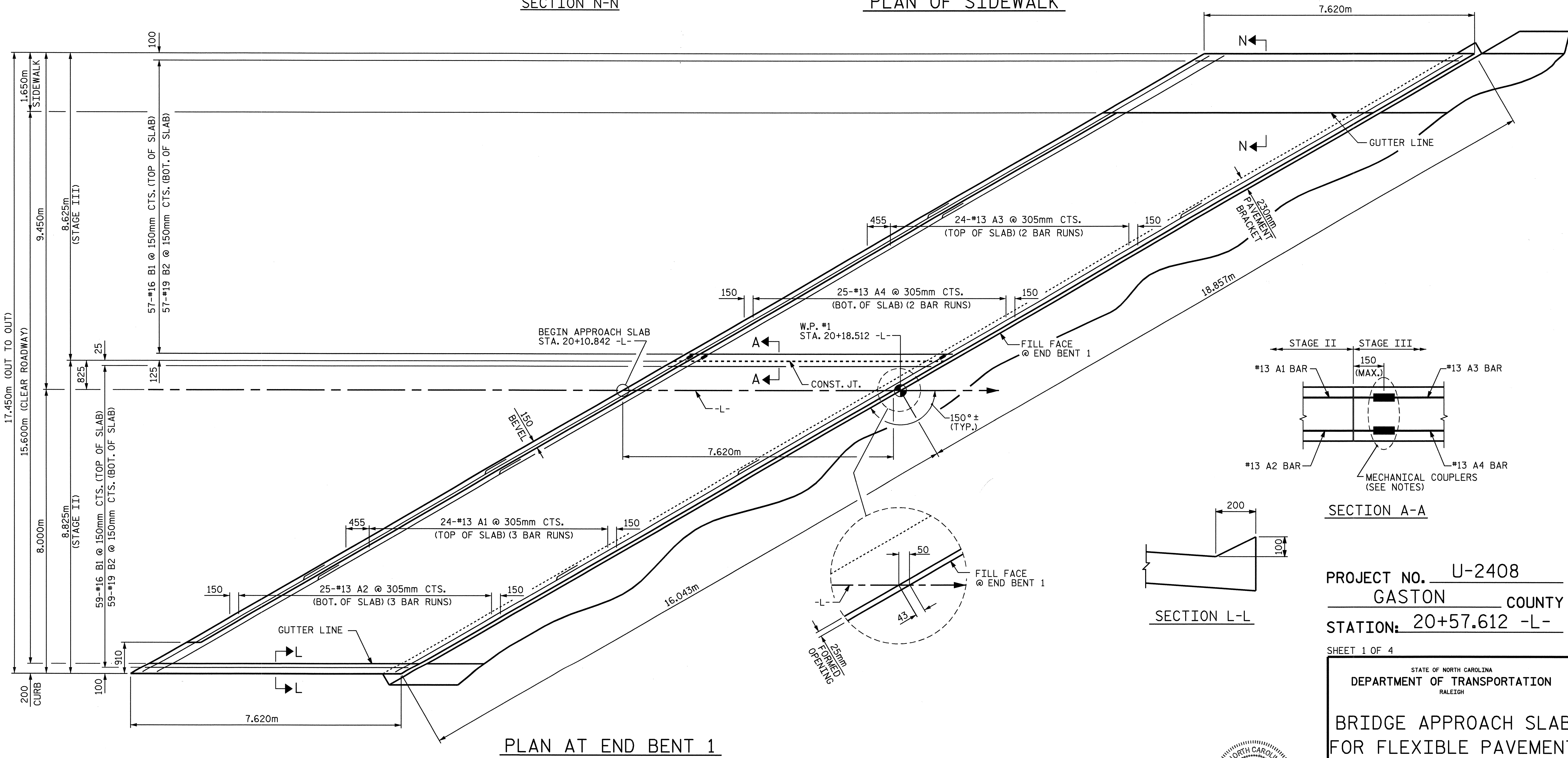
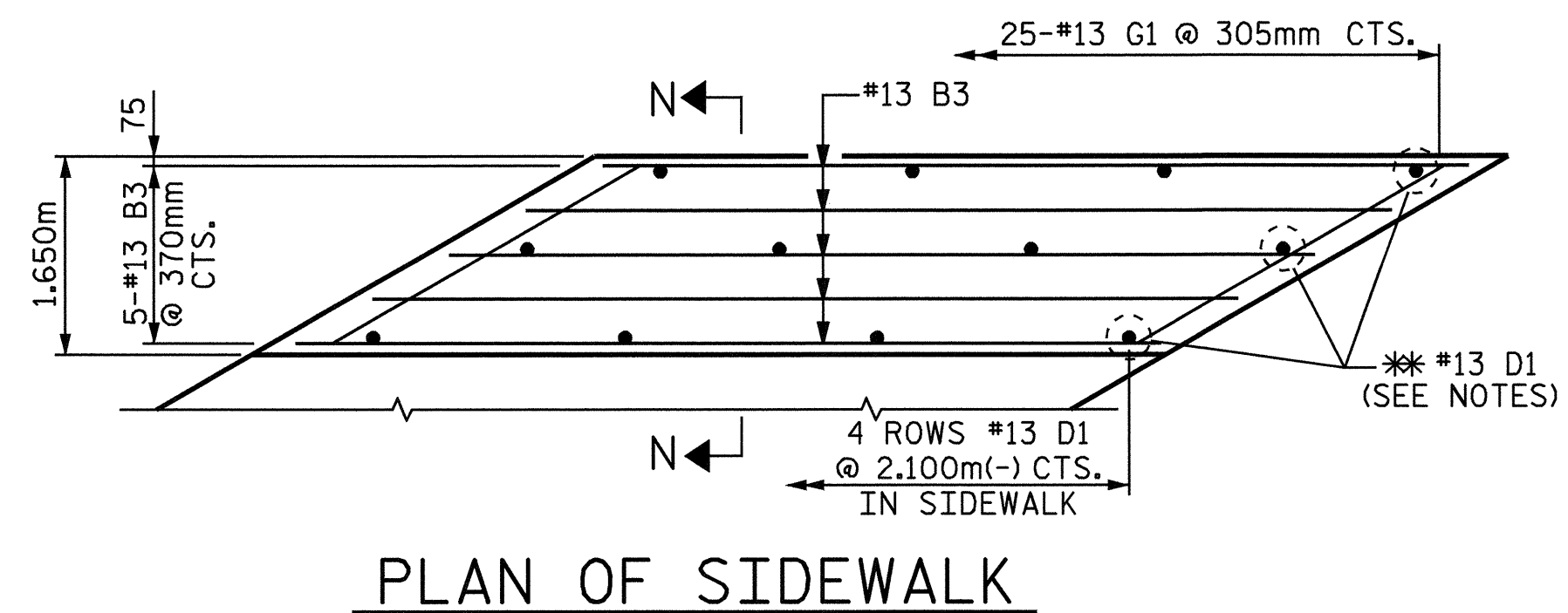
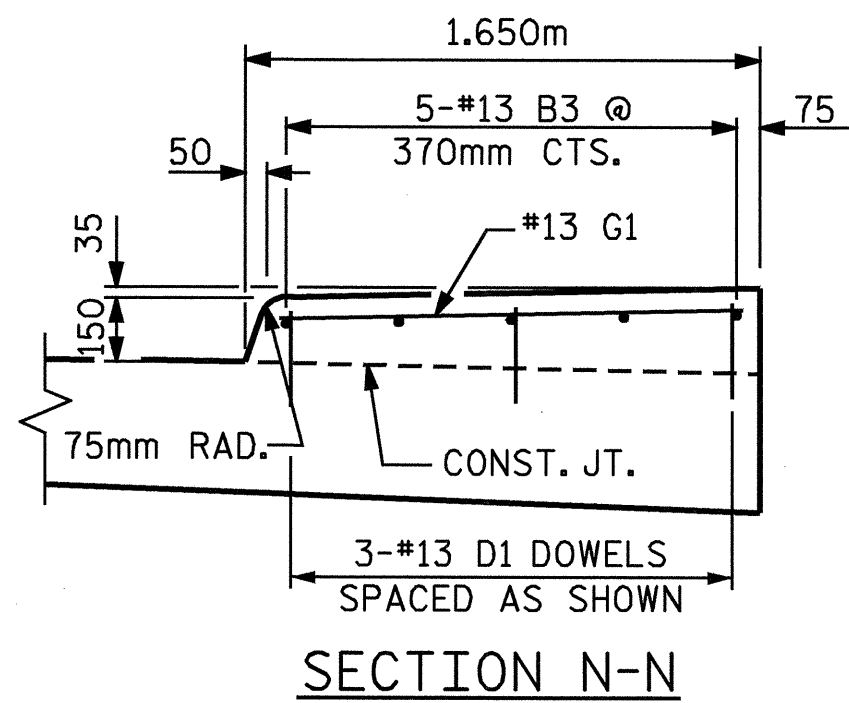
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD
SLOPE PROTECTION
DETAILS



REVISIONS						SHEET NO. S-51
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 55
2			4			

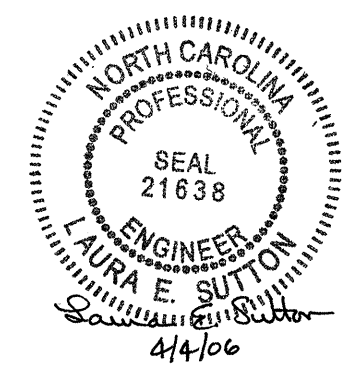
ASSEMBLED BY : A.S. CALLAWAY DATE : 4/15/05
CHECKED BY : P.C. BREWER DATE : 5/26/05
DRAWN BY : ELR 5/92 REV. 10/17/00 RWW/LES
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REV. 5/7/03 RWW/JTE



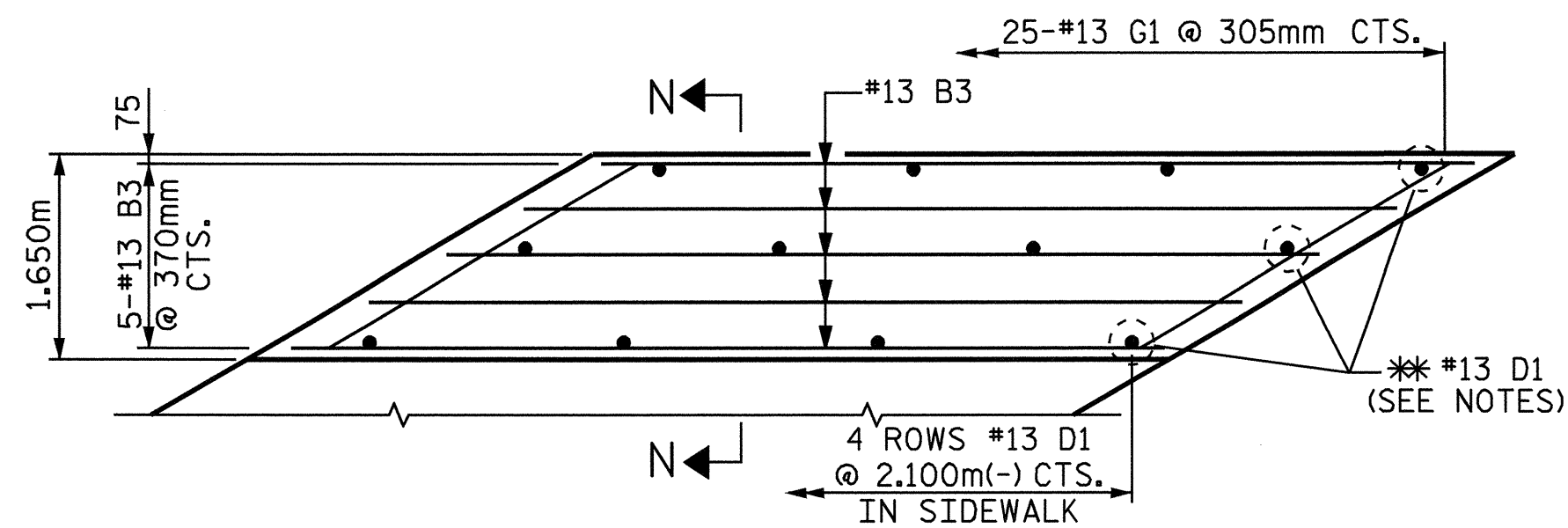
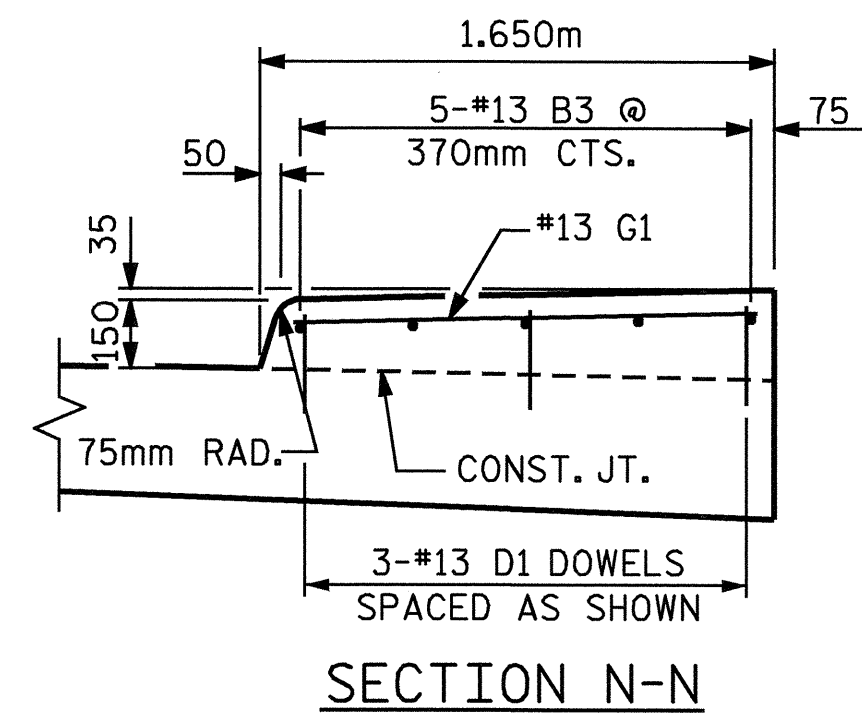
PROJECT NO. U-2408
 GASTON COUNTY
 STATION: 20+57.612 -L-

SHEET 1 OF 4

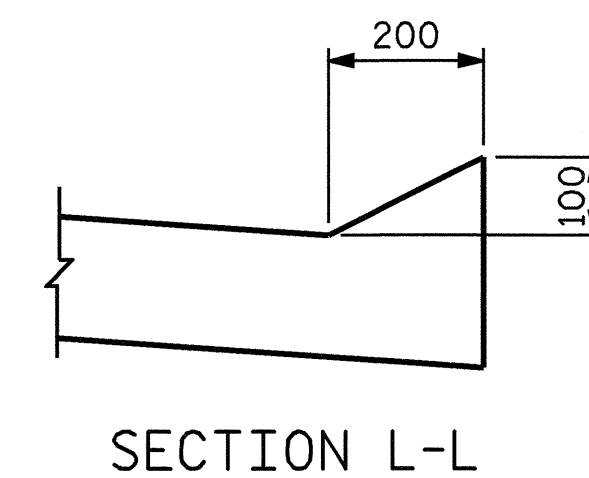
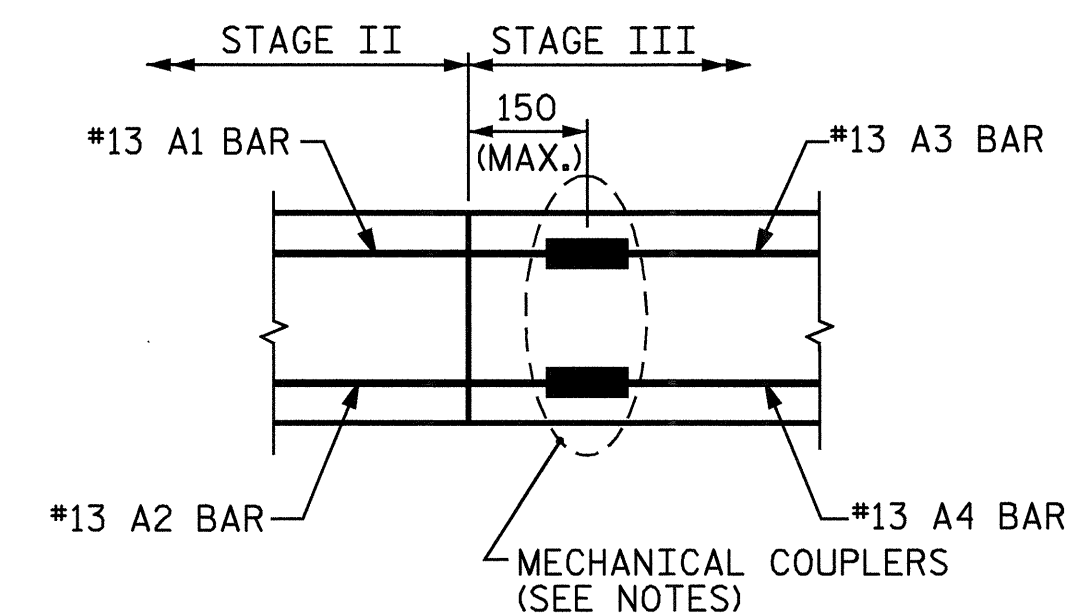
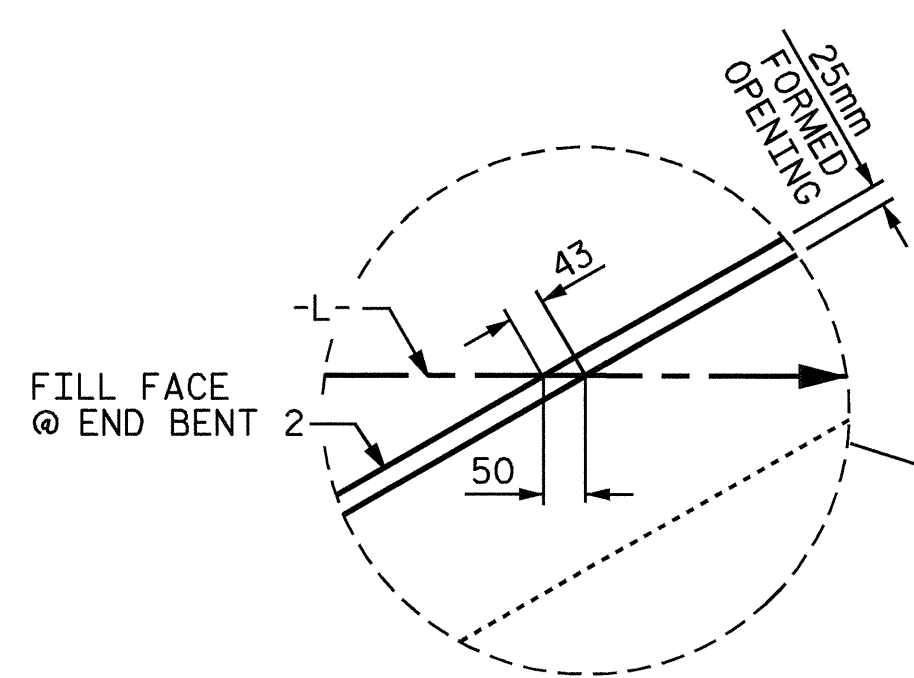
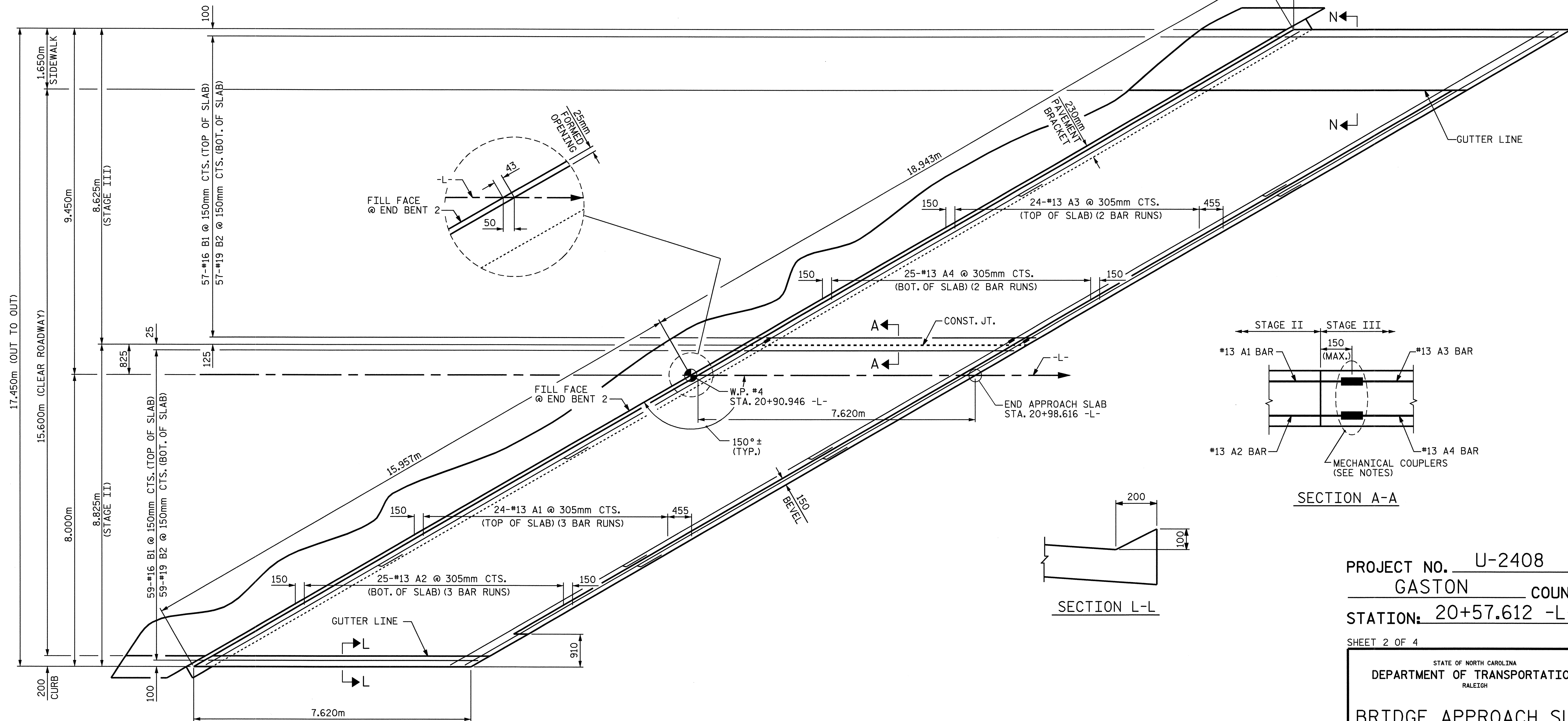
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH						SHEET NO.
BRIDGE APPROACH SLAB FOR FLEXIBLE PAVEMENT						S-52
REVISIONS						TOTAL SHEETS
NO.	BY:	DATE:	NO.	BY:	DATE:	55
1			3			
2			4			



DRAWN BY: A.S. CALLAWAY DATE: 4/6/05
 CHECKED BY: P.C. BREWER DATE: 4/19/05



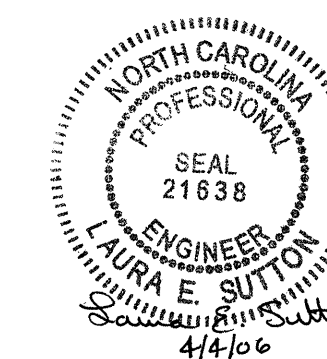
* THESE DOWELS SHALL BE INSTALLED USING AN ADHESIVE ANCHORING SYSTEM AFTER SAWING THE JOINT.



PROJECT NO. U-2408
 GASTON COUNTY
 STATION: 20+57.612 -L-

SHEET 2 OF 4

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 BRIDGE APPROACH SLAB
 FOR FLEXIBLE PAVEMENT



DRAWN BY: A.S. CALLAWAY DATE: 4/6/05
 CHECKED BY: P.C. BREWER DATE: 4/19/05

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 pbrewer

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			55
2			4			

NOTES

APPROACH SLAB SHALL NOT BE CONSTRUCTED PRIOR TO COMPLETION OF THE BRIDGE DECK.

FOR REINFORCED BRIDGE APPROACH FILL INCLUDING FABRIC, IMPERMEABLE GEOMEMBRANE, 102mm Ø DRAINAGE PIPE, #78M STONE, AND SELECT MATERIAL, SEE ROADWAY PLANS.

TEMPORARY DRAINAGE AND TEMPORARY BERM AND SLOPE DRAINS WILL BE PAID FOR UNDER THE LUMP SUM PRICE FOR BRIDGE APPROACH SLAB.

AREA BETWEEN THE WINGWALL AND APPROACH SLAB SHALL BE GRADED TO DRAIN THE WATER AWAY FROM THE FILL FACE OF THE BRIDGE AND SHALL BE PAVED. SEE ROADWAY PLANS.

THE 150mm COMP. A.B.C. SHALL EXTEND 3m BEYOND THE END OF THE APPROACH SLAB AND 300mm OUTSIDE OF EACH EDGE OF THE SLAB.

THE CONTRACTOR MAY USE 100mm TYPE B-25.0B ASPHALT CONCRETE COURSE IN LIEU OF 150mm COMP. A.B.C. IF THIS OPTION IS USED, THE BASE COURSE SHALL EXTEND 300mm BEYOND THE END OF THE APPROACH SLAB AND THE WIDTH SHALL BE THE SAME AS THAT OF THE APPROACH SLAB.

THE CONTRACTOR MAY USE 125mm CLASS "A" CONCRETE BASE IN LIEU OF 150mm COMP. A.B.C. IF THIS OPTION IS USED, THE CONCRETE BASE SHALL EXTEND 300mm BEYOND THE END OF THE APPROACH SLAB AND THE WIDTH SHALL BE THE SAME AS THAT OF THE APPROACH SLAB. THE CONCRETE SHALL BE FINISHED TO A SMOOTH SURFACE AND A LAYER OF 13.6 kg ROOFING FELT SHALL BE PLACED BETWEEN THE CONCRETE BASE AND THE APPROACH SLAB TO PREVENT BOND. THE APPROACH SLAB SHALL NOT BE CAST UNTIL THE CONCRETE BASE HAS REACHED AN AGE OF THREE CURING DAYS.

DOWELS MAY BE PUSHED INTO GREEN CONCRETE AFTER APPROACH SLAB HAS BEEN SCREEDDED OFF. AT THE CONTRACTOR'S OPTION, ALL DOWELS MAY BE INSTALLED USING AN ADHESIVE ANCHORING SYSTEM. FOR ADHESIVELY ANCHORED ANCHOR BOLTS OR DOWELS, SEE SPECIAL PROVISIONS. THE YIELD LOAD FOR THE #13 D1 DOWELS IS 53.4 KN. FIELD TESTING OF THE ADHESIVE BONDING SYSTEM IS NOT REQUIRED.

MECHANICAL COUPLERS SHALL BE USED TO JOIN THE TRANSVERSE REINFORCING STEEL BETWEEN STAGES. FOR MECHANICAL COUPLERS, SEE SPECIAL PROVISIONS FOR MECHANICAL BUTT SPlicing FOR REINFORCING STEEL.

WITH EVAZOTE JOINT SEAL

FOR EVAZOTE JOINT SEALS, SEE SPECIAL PROVISIONS.

THE NOMINAL UNCOMPRESSED SEAL WIDTH OF THE EVAZOTE JOINT SEAL SHALL BE 64mm.

BILL OF MATERIAL

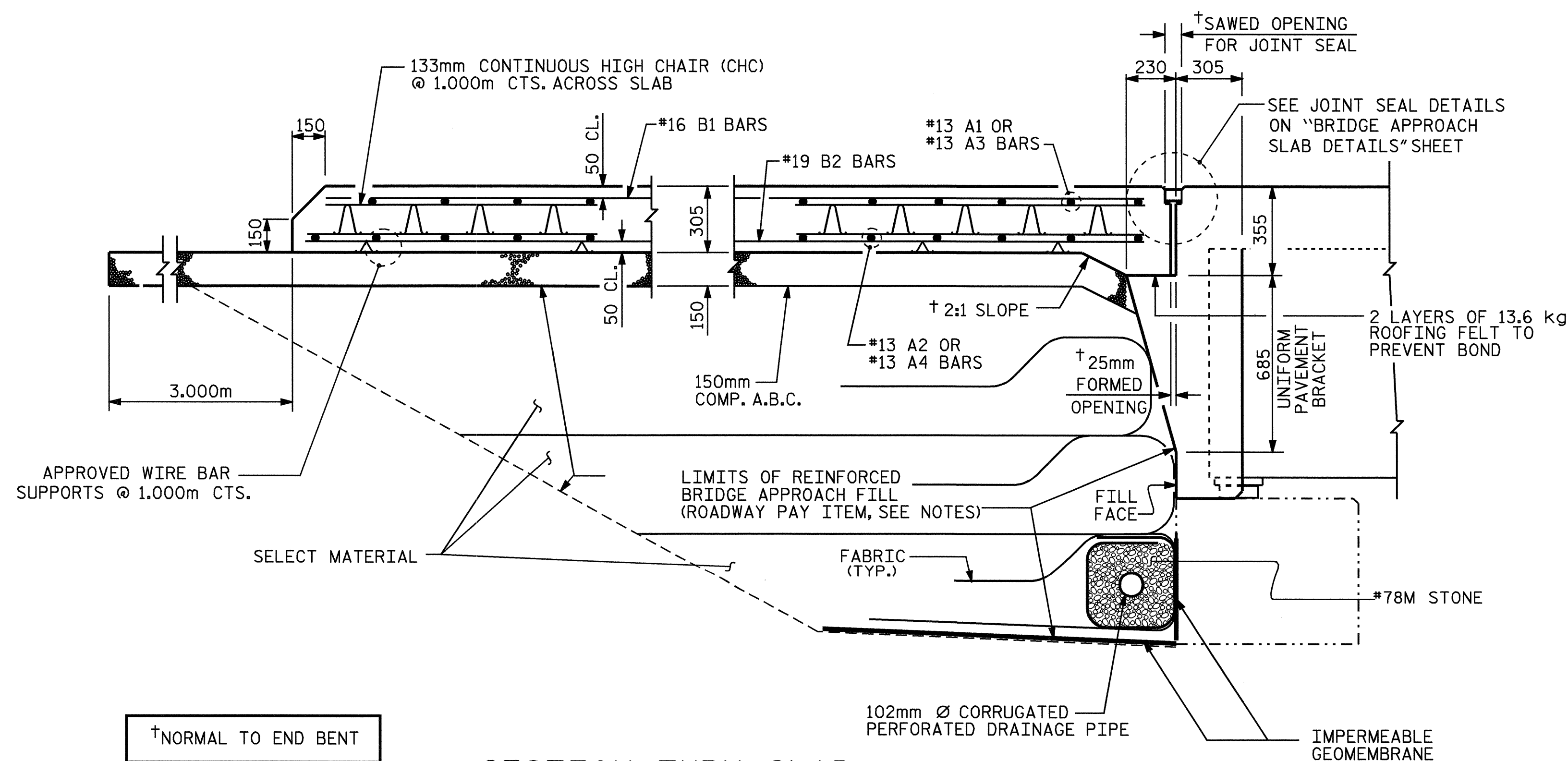
APPROACH SLAB-END BENT 1						APPROACH SLAB-END BENT 2					
STAGE II CONSTRUCTION						STAGE II CONSTRUCTION					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* A1	72	#13	STR	6360	455	* A1	72	#13	STR	6360	455
A2	75	#13	STR	6320	471	A2	75	#13	STR	6320	471
* B1	59	#16	STR	7160	656	* B1	59	#16	STR	7160	656
B2	59	#19	STR	7420	978	B2	59	#19	STR	7420	978
REINFORCING STEEL						REINFORCING STEEL					
kg. 1449						kg. 1449					
* EPOXY COATED REINFORCING STEEL						* EPOXY COATED REINFORCING STEEL					
kg. 1111						kg. 1111					
CLASS AA CONCRETE						CLASS AA CONCRETE					
m ³ 20.6						m ³ 20.6					
STAGE III CONSTRUCTION						STAGE III CONSTRUCTION					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* A3	48	#13	STR	8740	417	* A3	48	#13	STR	8740	417
A4	50	#13	STR	8700	432	A4	50	#13	STR	8700	432
* B1	57	#16	STR	7160	633	* B1	57	#16	STR	7160	633
B2	57	#19	STR	7420	945	B2	57	#19	STR	7420	945
* B3	5	#13	STR	7160	36	* B3	5	#13	STR	7160	36
* D1	12	#13	STR	200	2	* D1	12	#13	STR	200	2
* G1	25	#13	STR	3000	75	* G1	25	#13	STR	3000	75
REINFORCING STEEL						REINFORCING STEEL					
kg. 1377						kg. 1377					
* EPOXY COATED REINFORCING STEEL						* EPOXY COATED REINFORCING STEEL					
kg. 1163						kg. 1163					
CLASS AA CONCRETE						CLASS AA CONCRETE					
m ³ 22.5						m ³ 22.5					

TOTAL QUANTITIES

	REINFORCING STEEL (kg.)	EPOXY COATED REINFORCING STEEL (kg.)	CLASS AA CONCRETE (m ³)
STAGE II	2898	2222	41.2
STAGE III	2754	2326	45.0
TOTAL	5652	4548	86.2

SPlice LENGTH CHART

BAR	SIZE	SPlice LENGTH
* A1 & * A3	#13	610
A2 & A4	#13	540

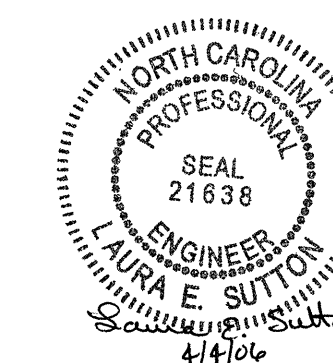


SECTION THRU SLAB

PROJECT NO. U-2408
GASTON COUNTY
 STATION: 20+57.612 -L-

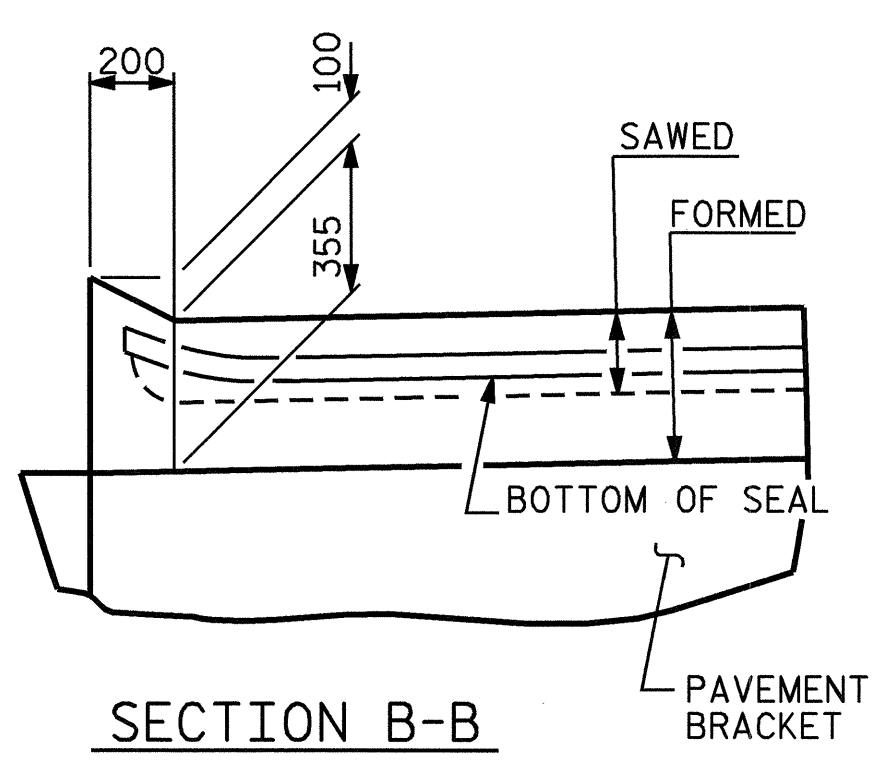
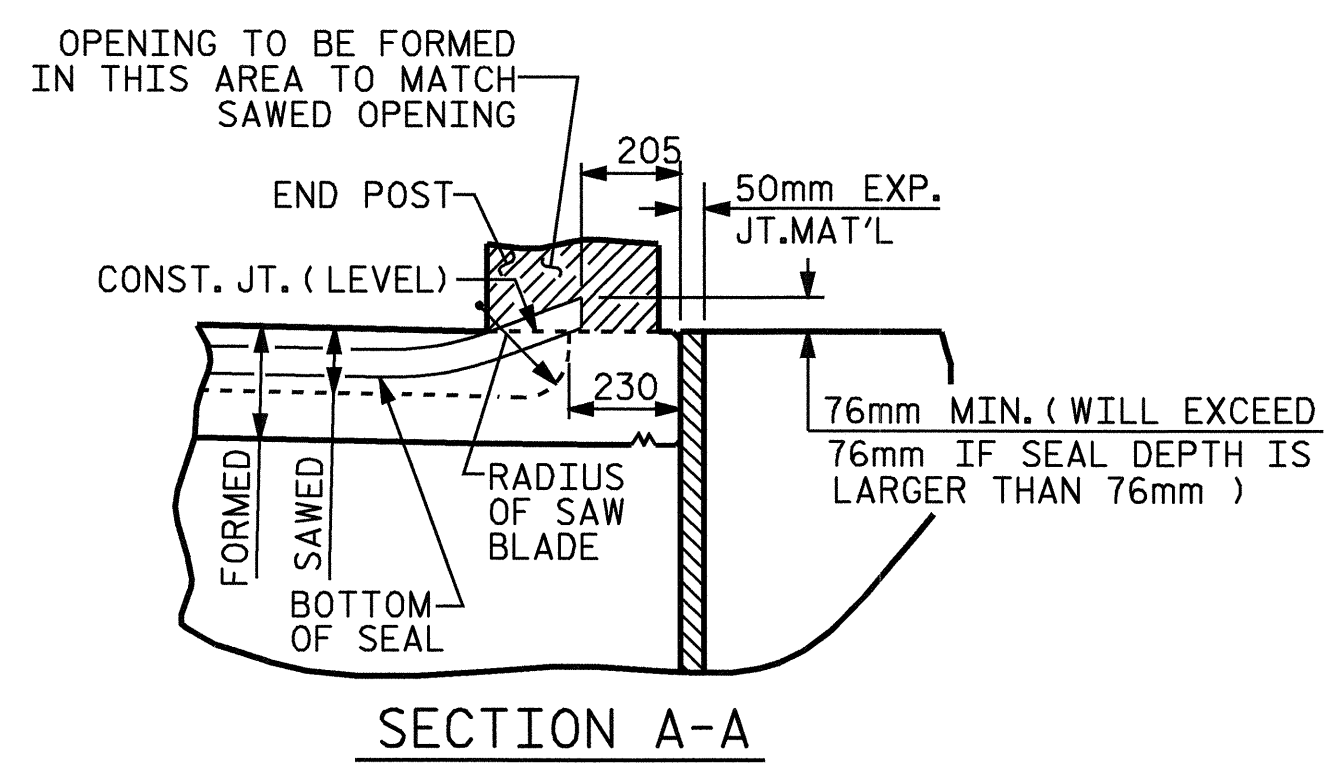
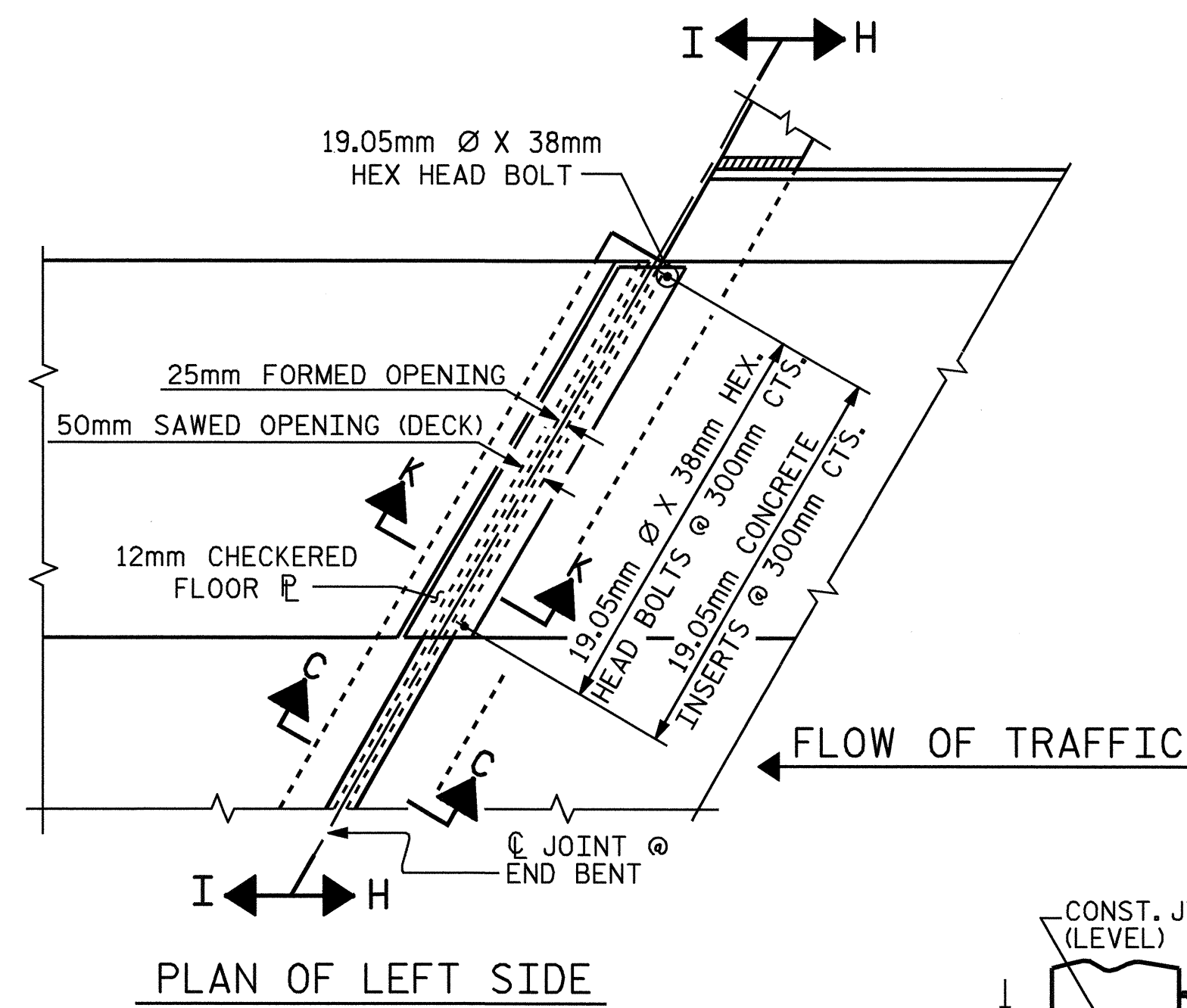
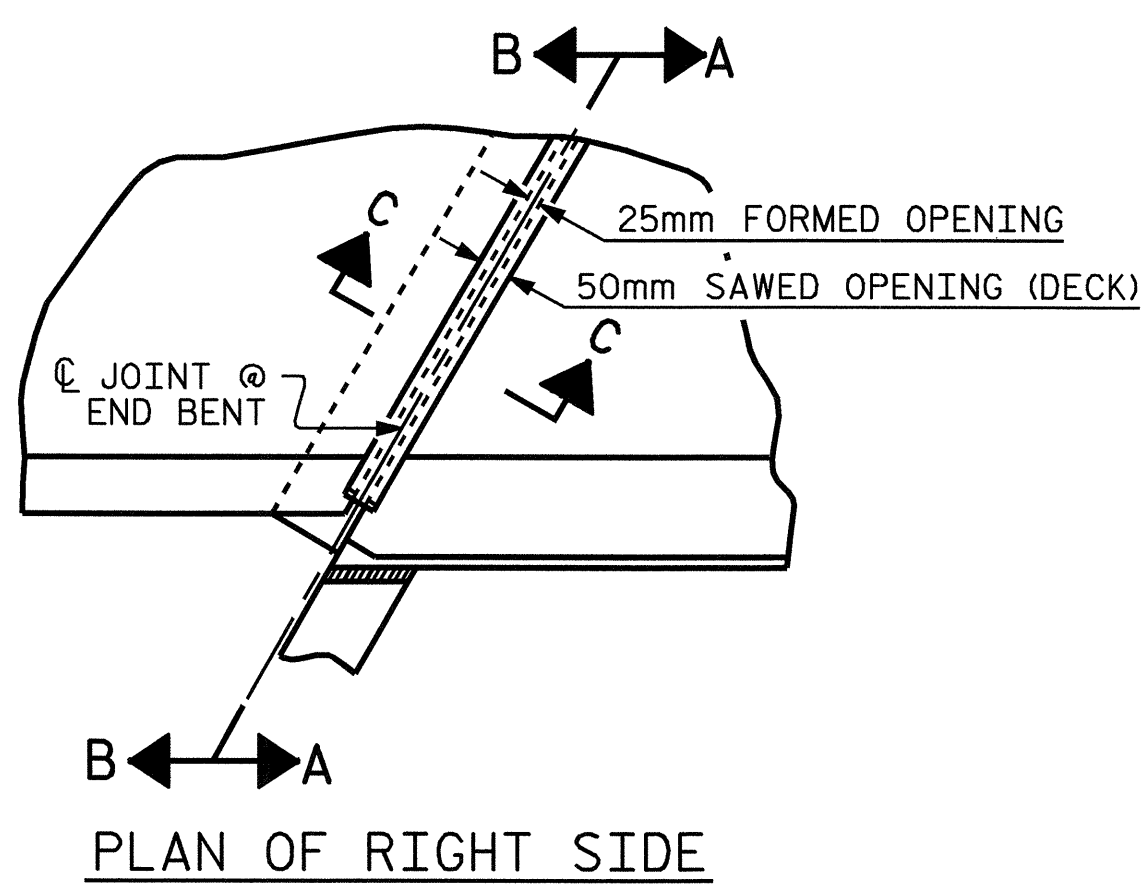
SHEET 3 OF 4

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
 BRIDGE APPROACH SLAB
 FOR FLEXIBLE PAVEMENT

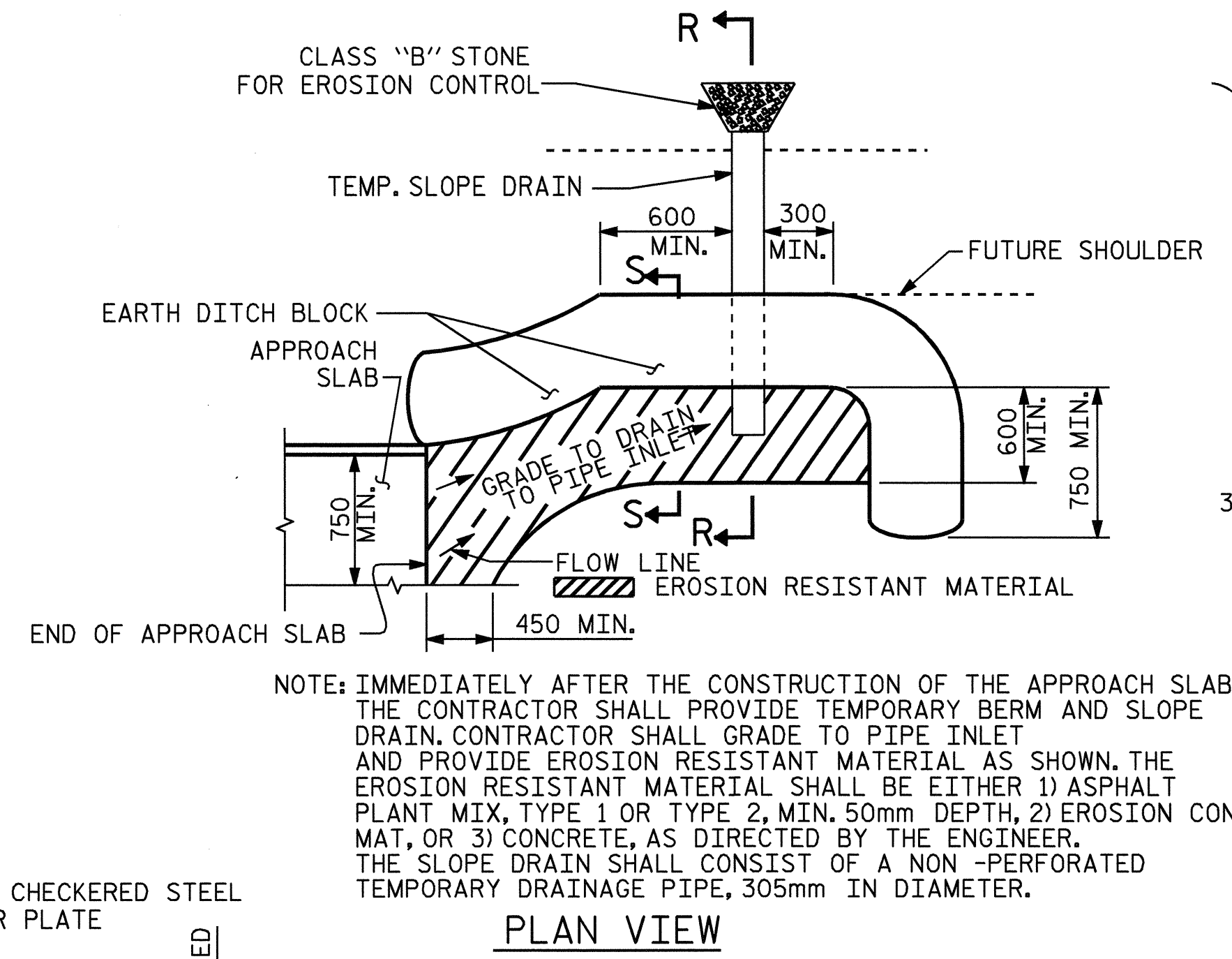
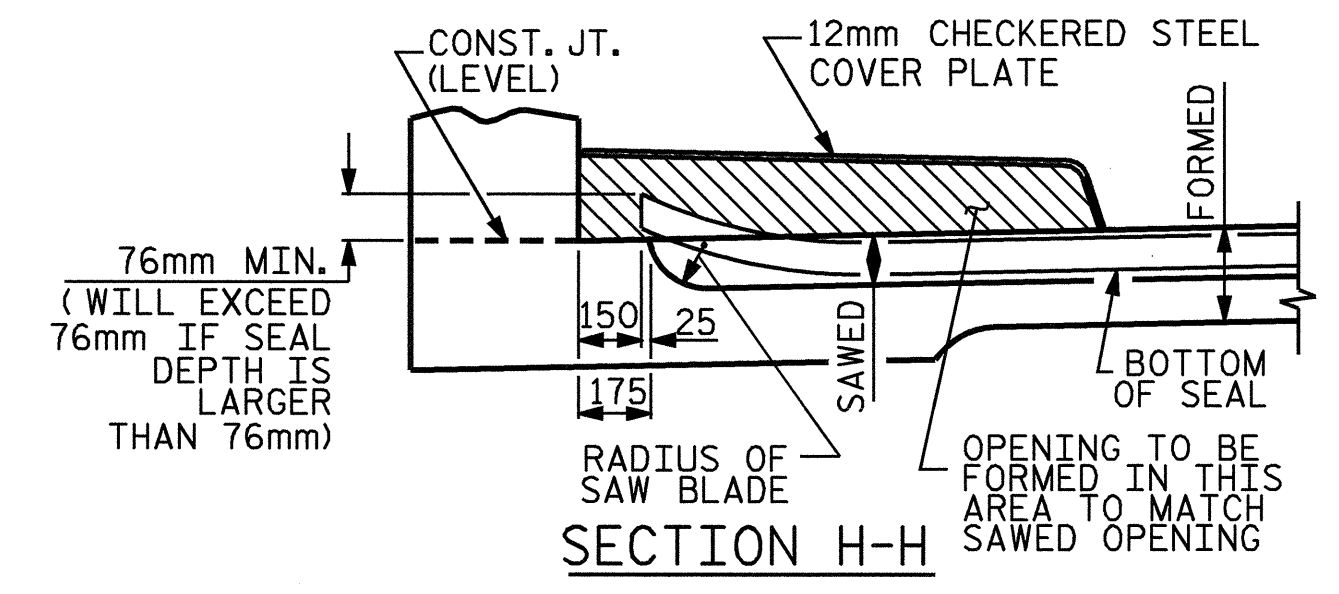
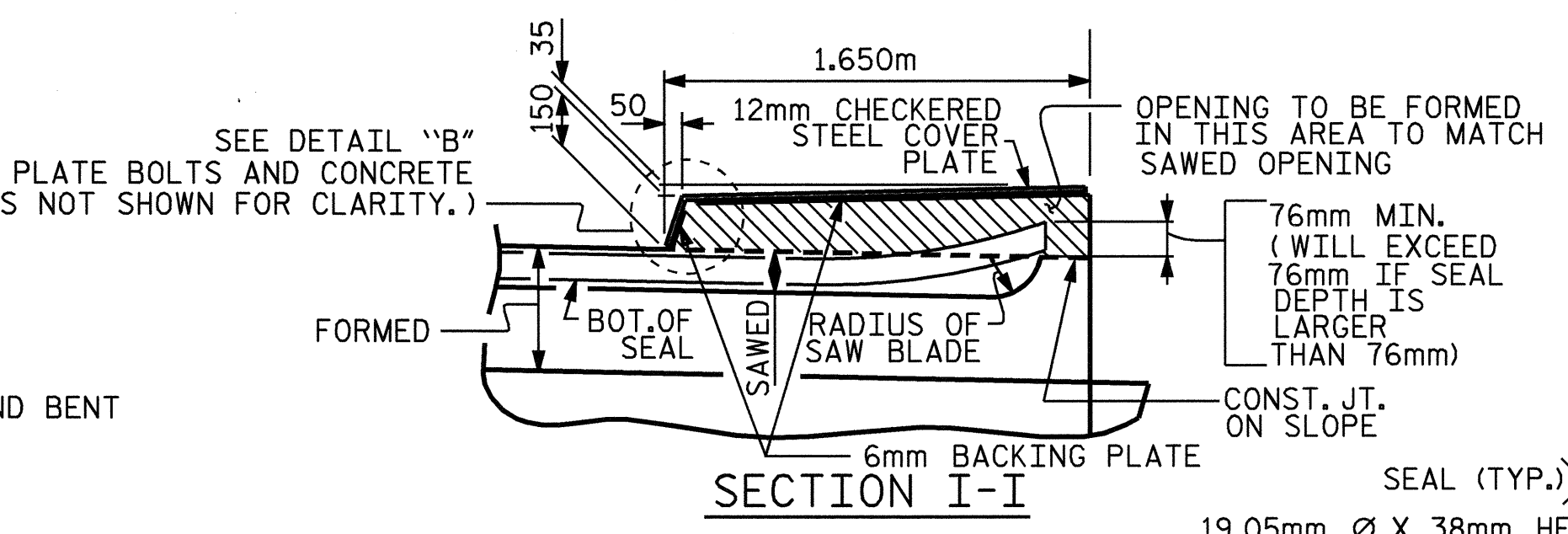
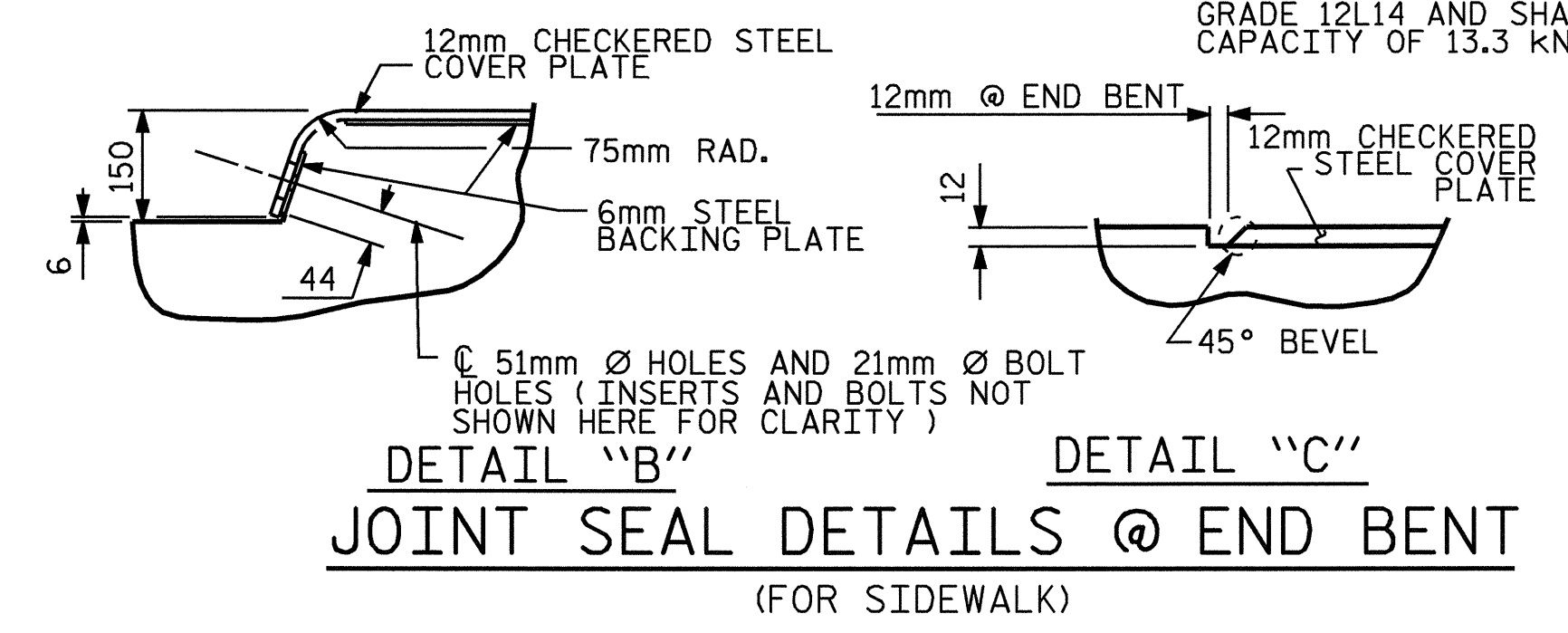
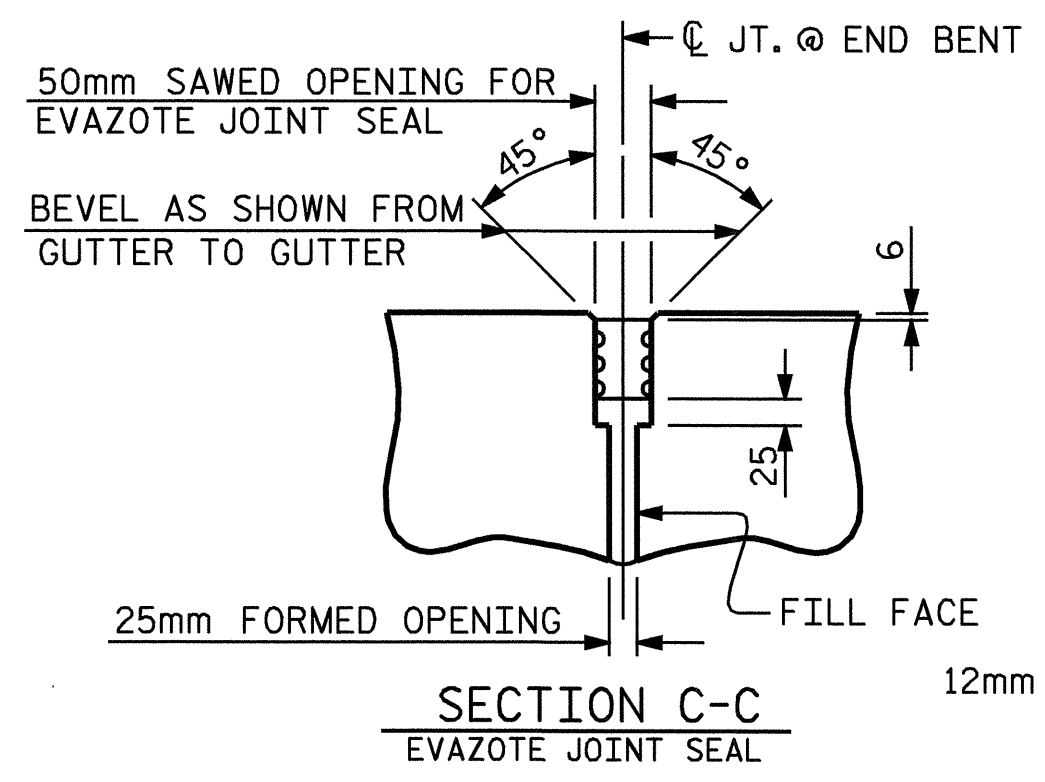


REVISIONS						SHEET NO. S-54
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 55
2			4			

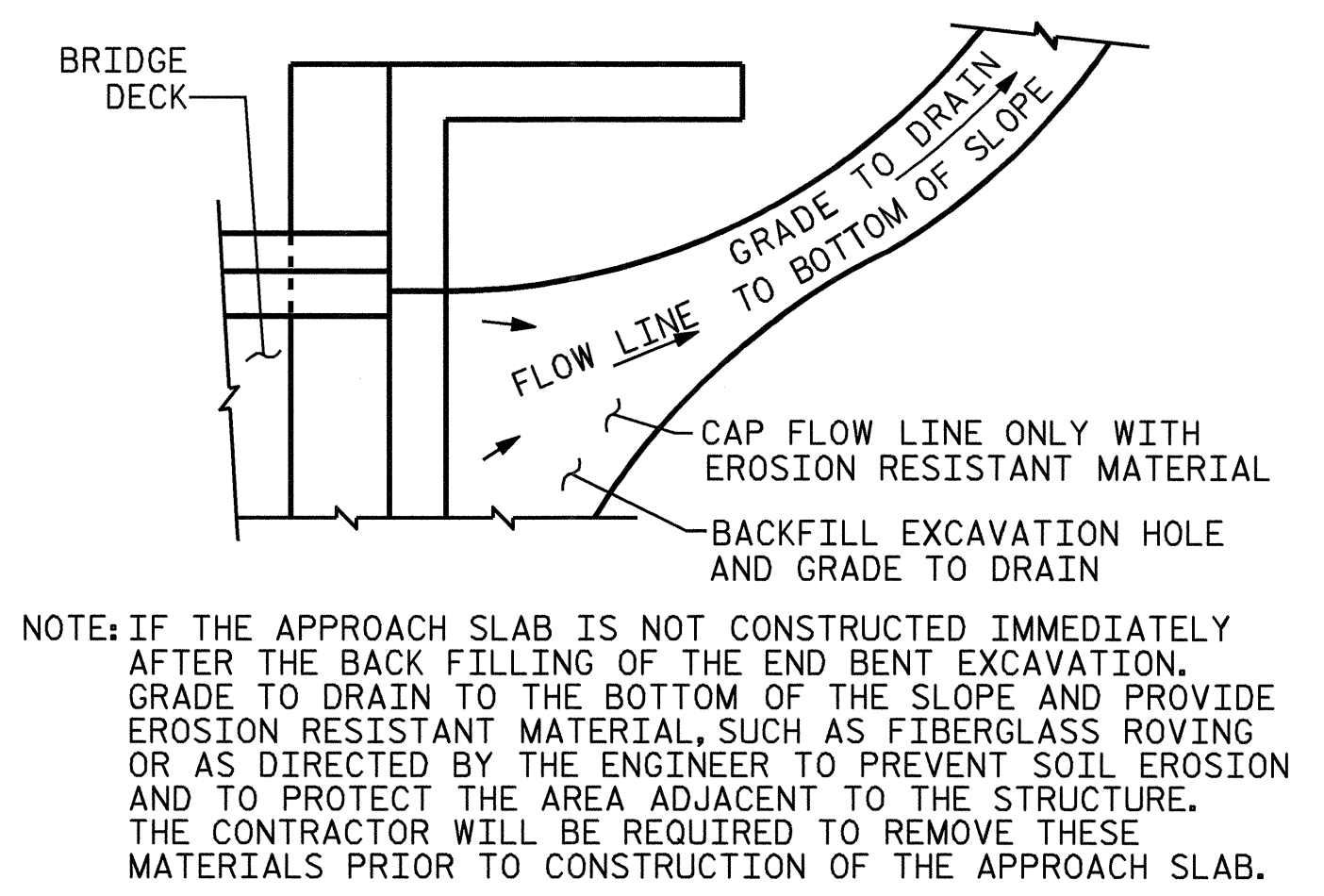
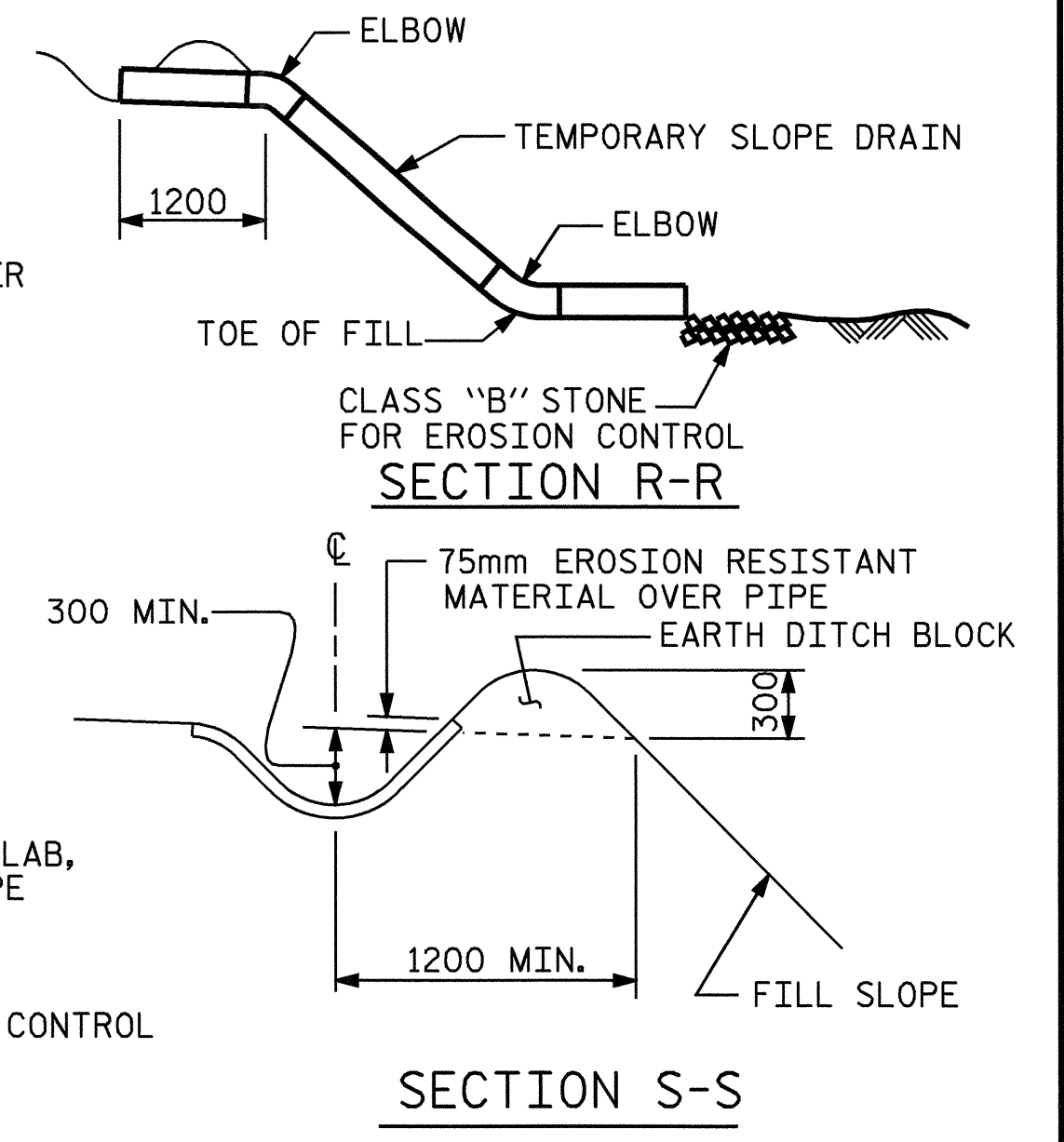
ASSEMBLED BY : A.S. CALLAWAY	DATE : 4/6/05
CHECKED BY : P.C. BREWER	DATE : 4/19/05
DRAWN BY : FCJ 6/87	REV. 10/17/00 RWW/LES
CHECKED BY : EGA 6/87	REV. 7/10/01 RWW/LES
	REV. 5/7/03R RWW/JTE



JOINT SEAL DETAILS @ END BENTS
(FOR METAL RAILS WITH CURB)



TEMPORARY BERM AND SLOPE DRAIN DETAILS
(TO BE USED WHEN SHOULDER BERM GUTTER IS REQUIRED)

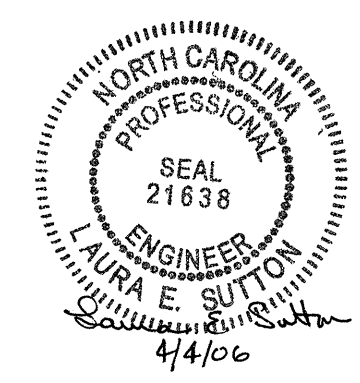


NOTE: IF THE APPROACH SLAB IS NOT CONSTRUCTED IMMEDIATELY AFTER THE BACK FILLING OF THE END BENT EXCAVATION, GRADE TO DRAIN TO THE BOTTOM OF THE SLOPE AND PROVIDE EROSION RESISTANT MATERIAL, SUCH AS FIBERGLASS ROVING OR AS DIRECTED BY THE ENGINEER TO PREVENT SOIL EROSION AND TO PROTECT THE AREA ADJACENT TO THE STRUCTURE. THE CONTRACTOR WILL BE REQUIRED TO REMOVE THESE MATERIALS PRIOR TO CONSTRUCTION OF THE APPROACH SLAB.

PROJECT NO. U-2408
GASTON COUNTY
STATION: 20+57.612 -L-

SHEET 4 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
**STANDARD
BRIDGE APPROACH
SLAB DETAILS**



ASSEMBLED BY: A.S. CALLAWAY	DATE: 4/6/05
CHECKED BY: P.C. BREWER	DATE: 4/19/05
DRAWN BY: FCJ 11/88	REV. 8/16/95 RAL/LES
CHECKED BY: ARB 11/88	REV. 10/17/00 RWW/LES
	REV. 5/17/03 RWW/JTE

REVISIONS						SHEET NO. S-55
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 55
2			4			

STANDARD NOTES

DESIGN DATA:

SPECIFICATIONS	-----	A.A.S.H.T.O. (CURRENT)
LIVE LOAD	-----	SEE PLANS
IMPACT ALLOWANCE	-----	SEE A.A.S.H.T.O.
STRESS IN EXTREME FIBER OF		
STRUCTURAL STEEL - AASHTO M270 GRADE 36	-	20,000 LBS. PER SQ. IN.
- AASHTO M270 GRADE 50W	-	27,000 LBS. PER SQ. IN.
- AASHTO M270 GRADE 50	-	27,000 LBS. PER SQ. IN.
REINFORCING STEEL IN TENSION		
GRADE 60	--	24,000 LBS. PER SQ. IN.
CONCRETE IN COMPRESSION	-----	1,200 LBS. PER SQ. IN.
CONCRETE IN SHEAR	-----	SEE A.A.S.H.T.O.
STRUCTURAL TIMBER - TREATED OR		
UNTREATED - EXTREME FIBER STRESS	-----	1,800 LBS. PER SQ. IN.
COMPRESSION PERPENDICULAR TO GRAIN OF TIMBER	-----	375 LBS. PER SQ. IN.
EQUIVALENT FLUID PRESSURE OF EARTH	-----	30 LBS. PER CU. FT. (MINIMUM)

MATERIAL AND WORKMANSHIP:

EXCEPT AS MAY OTHERWISE BE SPECIFIED ON PLANS OR IN THE SPECIAL PROVISIONS, ALL MATERIAL AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH THE 2002 STANDARD SPECIFICATIONS "FOR ROADS AND STRUCTURES" OF THE N. C. DEPARTMENT OF TRANSPORTATION.

STEEL SHEET PILING FOR PERMANENT OR TEMPORARY APPLICATIONS SHALL BE HOT ROLLED.

CONCRETE:

UNLESS OTHERWISE REQUIRED ON PLANS, CLASS A CONCRETE SHALL BE USED FOR ALL PORTIONS OF ALL STRUCTURES WITH THE EXCEPTION THAT: CLASS AA CONCRETE SHALL BE USED IN BRIDGE SUPERSTRUCTURES, ABUTMENT BACKWALLS, AND APPROACH SLABS; CLASS B CONCRETE SHALL BE USED FOR SLOPE PROTECTION AND RIP RAP; AND CLASS S SHALL BE USED FOR UNDERWATER FOOTING SEALS.

CONCRETE CHAMFERS:

UNLESS OTHERWISE NOTED ON THE PLANS, ALL EXPOSED CORNERS ON STRUCTURES SHALL BE CHAMFERED 3/4" WITH THE FOLLOWING EXCEPTIONS: TOP CORNERS OF CURBS MAY BE ROUNDED TO 1-1/2" RADIUS WHICH IS BUILT INTO CURB FORMS; CORNERS OF TRANSVERSE FLOOR EXPANSION JOINTS SHALL BE ROUNDED WITH A 1/4" FINISHING TOOL UNLESS OTHERWISE REQUIRED ON PLANS; AND CORNERS OF EXPANSION JOINTS IN THE ROADWAY FACES AND TOPS OF CURBS AND SIDEWALKS SHALL BE ROUNDED TO A 1/4" RADIUS WITH A FINISHING STONE OR TOOL UNLESS OTHERWISE REQUIRED ON PLANS.

DOWELS:

DOWELS WHEN INDICATED ON PLANS AS FOR CULVERT EXTENSIONS, SHALL BE EMBEDDED AT LEAST 12" INTO THE OLD CONCRETE AND GROUTED INTO PLACE WITH 1:2 CEMENT MORTAR.

ALLOWANCE FOR DEAD LOAD DEFLECTION, SETTLEMENT, ETC. IN CASTING SUPERSTRUCTURES:

BRIDGES SHALL BE BUILT ON THE GRADE OR VERTICAL CURVE SHOWN ON PLANS. SLABS, CURBS AND PARAPETS SHALL CONFORM TO THE GRADE OR CURVE.

ALL DIMENSIONS WHICH ARE GIVEN IN SECTION AND ARE AFFECTED BY DEAD LOAD DEFLECTIONS ARE DIMENSIONS AT CENTER LINE OF BEARING UNLESS OTHERWISE NOTED ON PLANS. IN SETTING FORMS FOR STEEL BEAM BRIDGES AND PRESTRESSED CONCRETE GIRDER BRIDGES, ADJUSTMENTS SHALL BE MADE DUE TO THE DEAD LOAD DEFLECTIONS FOR THE ELEVATIONS SHOWN. WHERE BLOCKS ARE SHOWN OVER BEAMS FOR BUILDING UP TO THE SLAB, THE VERTICAL DIMENSIONS OF THE BLOCKS SHALL BE ADJUSTED BETWEEN BEARINGS TO COMPENSATE FOR DEAD LOAD DEFLECTIONS, VERTICAL CURVE ORDINATE, AND ACTUAL BEAM CAMBER. WHERE BOTTOM OF SLAB IS IN LINE WITH BOTTOM OF TOP FLANGES, DEPTH OF SLAB BETWEEN BEARINGS SHALL BE ADJUSTED TO COMPENSATE FOR DEAD LOAD DEFLECTION, VERTICAL CURVE ORDINATE, AND ACTUAL BEAM CAMBER.

IN SETTING FALSEWORK AND FORMS FOR REINFORCED CONCRETE SPANS, AN ALLOWANCE SHALL BE MADE FOR DEAD LOAD DEFLECTIONS, SETTLEMENT OF FALSEWORK, AND PERMANENT CAMBER WHICH SHALL BE PROVIDED FOR IN ADDITION TO THE ELEVATIONS SHOWN. AFTER REMOVAL OF THE FALSEWORK, THE FINISHED STRUCTURES SHALL CONFORM TO THE PROFILE AND ELEVATIONS SHOWN ON THE PLANS AND CONSTRUCTION ELEVATIONS FURNISHED BY THE ENGINEER.

DETAILED DRAWINGS FOR FALSEWORK OR FORMS FOR BRIDGE SUPERSTRUCTURE AND ANY STRUCTURE OR PARTS OF A STRUCTURE AS NOTED ON THE PLANS SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL BEFORE CONSTRUCTION OF THE FALSEWORK OR FORMS IS STARTED.

REINFORCING STEEL:

ALL REINFORCING STEEL SHALL BE DEFORMED WITH THE EXCEPTION OF #2 BARS WHICH MAY BE FABRICATED FROM COLD DRAWN STEEL WIRE. DIMENSIONS RELATIVE TO PLACEMENT OF REINFORCING ARE TO CENTERS OF BARS UNLESS OTHERWISE INDICATED IN THE PLANS. DIMENSIONS ON BAR DETAILS ARE TO CENTERS OF BARS OR ARE OUT TO OUT AS INDICATED ON PLANS.

WIRE BAR SUPPORTS SHALL BE PROVIDED FOR REINFORCING STEEL WHERE INDICATED ON THE PLANS. WHEN BAR SUPPORT PIECES ARE PLACED IN CONTINUOUS LINES, THEY SHALL BE SO PLACED THAT THE ENDS OF THE SUPPORTING WIRES SHALL BE LAPPED TO LOCK LEGS ON ADJOINING PIECES.

STRUCTURAL STEEL:

AT THE CONTRACTOR'S OPTION, HE MAY SUBSTITUTE 7/8" Ø SHEAR STUDS FOR THE 3/4" Ø STUDS SPECIFIED ON THE PLANS. THIS SUBSTITUTION SHALL BE MADE AT THE RATE OF 3 - 7/8" Ø STUDS FOR 4 - 3/4" Ø STUDS, AND STUD SPACING CHANGES SHALL BE MADE AS NECESSARY TO PROVIDE THE SAME EQUIVALENT NUMBER OF 7/8" Ø STUDS ALONG THE BEAM AS SHOWN FOR 3/4" Ø STUDS BASED ON THE RATIO OF 3 - 7/8" Ø STUDS FOR 4 - 3/4" Ø STUDS. STUDS OF THE LENGTH SPECIFIED ON THE PLANS MUST BE PROVIDED. THE MAXIMUM SPACING SHALL BE 2'-0".

EXCEPT AT THE INTERIOR SUPPORTS OF CONTINUOUS BEAMS WHERE THE COVER PLATE IS IN CONTACT WITH BEARING PLATE, THE CONTRACTOR MAY, AT HIS OPTION, SUBSTITUTE FOR THE COVER PLATES DESIGNATED ON THE PLANS COVER PLATES OF THE EQUIVALENT AREA PROVIDED THESE PLATES ARE AT LEAST 5/16" IN THICKNESS AND DO NOT EXCEED A WIDTH EQUAL TO THE FLANGE WIDTH LESS 2" OR A THICKNESS EQUAL TO 2 TIMES THE FLANGE THICKNESS. THE SIZE OF FILLET WELDS SHALL CONFORM TO THE REQUIREMENTS OF THE CURRENT ANSI/AASHTO/AWS "BRIDGE WELDING CODE". ELECTROSLAG WELDING WILL NOT BE PERMITTED.

PLACEMENT OF BEAM OR GIRDER MEMBERS ON TRUCKS FOR HAULING SHALL BE DONE IN COMPLIANCE WITH LIMITS SHOWN ON SKETCHES PROVIDED TO THE MATERIALS AND TEST UNIT APPROVED BY THE STRUCTURE DESIGN UNIT DATED MAY 8, 1991. THESE SKETCHES PRIMARILY LIMIT THE UNSUPPORTED CANTILEVER LENGTH OF MEMBERS. WHEN THE CONTRACTOR WISHES TO PLACE MEMBERS ON TRUCKS NOT IN ACCORDANCE WITH THESE LIMITS, TO SHIP BY RAIL, TO ATTACH SHIPPING RESTRAINTS TO THE MEMBERS OR TO INVERT MEMBERS, HE SHALL SUBMIT A SKETCH FOR APPROVAL PRIOR TO SHIPPING. SEE ALSO ARTICLE 1072-11.

WITH THE SOLE EXCEPTION OF EDGES AT SURFACES WHICH BEAR ON OTHER SURFACES, ALL SHARP EDGES AND ENDS OF SHAPES AND PLATES SHALL BE SLIGHTLY ROUNDED BY SUITABLE MEANS TO A RADIUS OF APPROXIMATELY 1/16 INCH OR EQUIVALENT FLAT SURFACE AT A SUITABLE ANGLE PRIOR TO PAINTING, GALVANIZING, OR METALLIZING.

HANDRAILS AND POSTS:

METAL STANDARDS AND FACES OF THE CONCRETE END POSTS FOR THE METAL RAIL SHALL BE SET NORMAL TO THE GRADE OF THE CURB, UNLESS OTHERWISE SHOWN ON PLANS. THE METAL RAIL AND TOPS OF CONCRETE POSTS USED WITH THE ALUMINUM RAIL SHALL BE BUILT PARALLEL TO THE GRADE OF THE CURB.

METAL HANDRAILS SHALL BE IN ACCORDANCE WITH THE PLANS. RAILS SHALL BE AS MANUFACTURED FOR BRIDGE RAILING. CASTINGS SHALL BE OF A UNIFORM APPEARANCE. FINIS AND OTHER DEFORMATIONS RESULTING FROM CASTING OR OTHERWISE SHALL BE REMOVED IN A MANNER SO THAT A UNIFORM COLORING OF THE COMPLETED CASTING SHALL BE OBTAINED. CASTINGS WITH DISCOLORATIONS OR OF NON-UNIFORM COLORING WILL NOT BE ACCEPTED. CERTIFIED MILL REPORTS ARE REQUIRED FOR METAL RAILS AND POSTS.

SPECIAL NOTES:

GENERALLY, IN CASE OF DISCREPANCY, THIS STANDARD SHEET OF NOTES SHALL GOVERN OVER THE SPECIFICATIONS, BUT THE REMAINDER OF THE PLANS SHALL GOVERN OVER NOTES HEREON, AND SPECIAL PROVISIONS SHALL GOVERN OVER ALL. SEE SPECIFICATIONS ARTICLE 105-4.

ENGLISH

JANUARY, 1990

STD. NO. SN