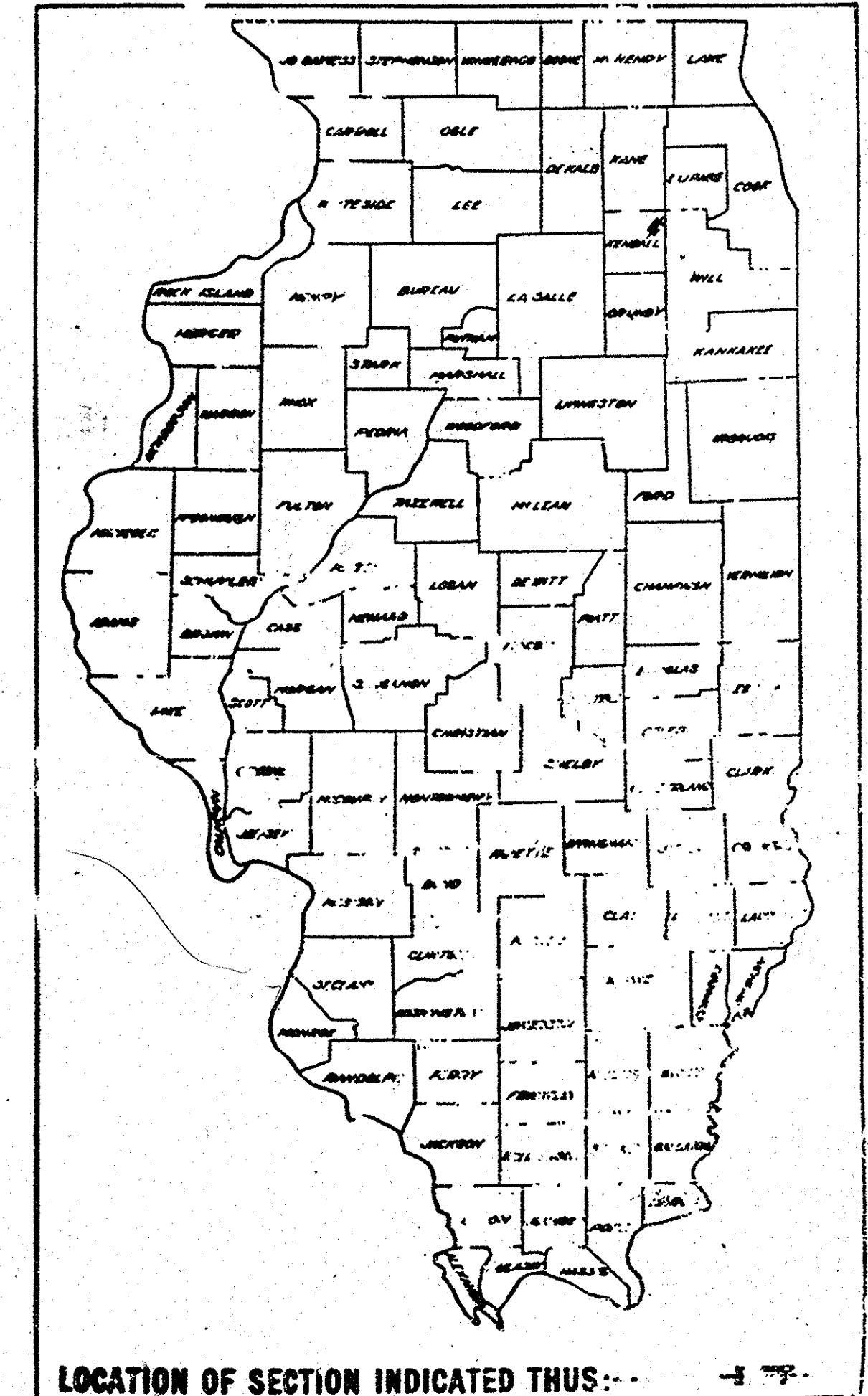


F.A. ROUTE NO.	SEC.	COUNTY	TOTAL SHEETS	SHEET NO.
311 (ILL. 71)	*	KENDALL	28	1
		ILLINOIS PROJECT		

\*(1-A)BR, (1-1)RS-2



LOCATION OF SECTION INDICATED THUS: -

1994 ADT = 6000  
 P.U. = 93% S.U. = 2% M.U. = 5%

# STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION

DIVISIONS OF HIGHWAYS

## PLANS FOR PROPOSED FEDERAL AID HIGHWAY

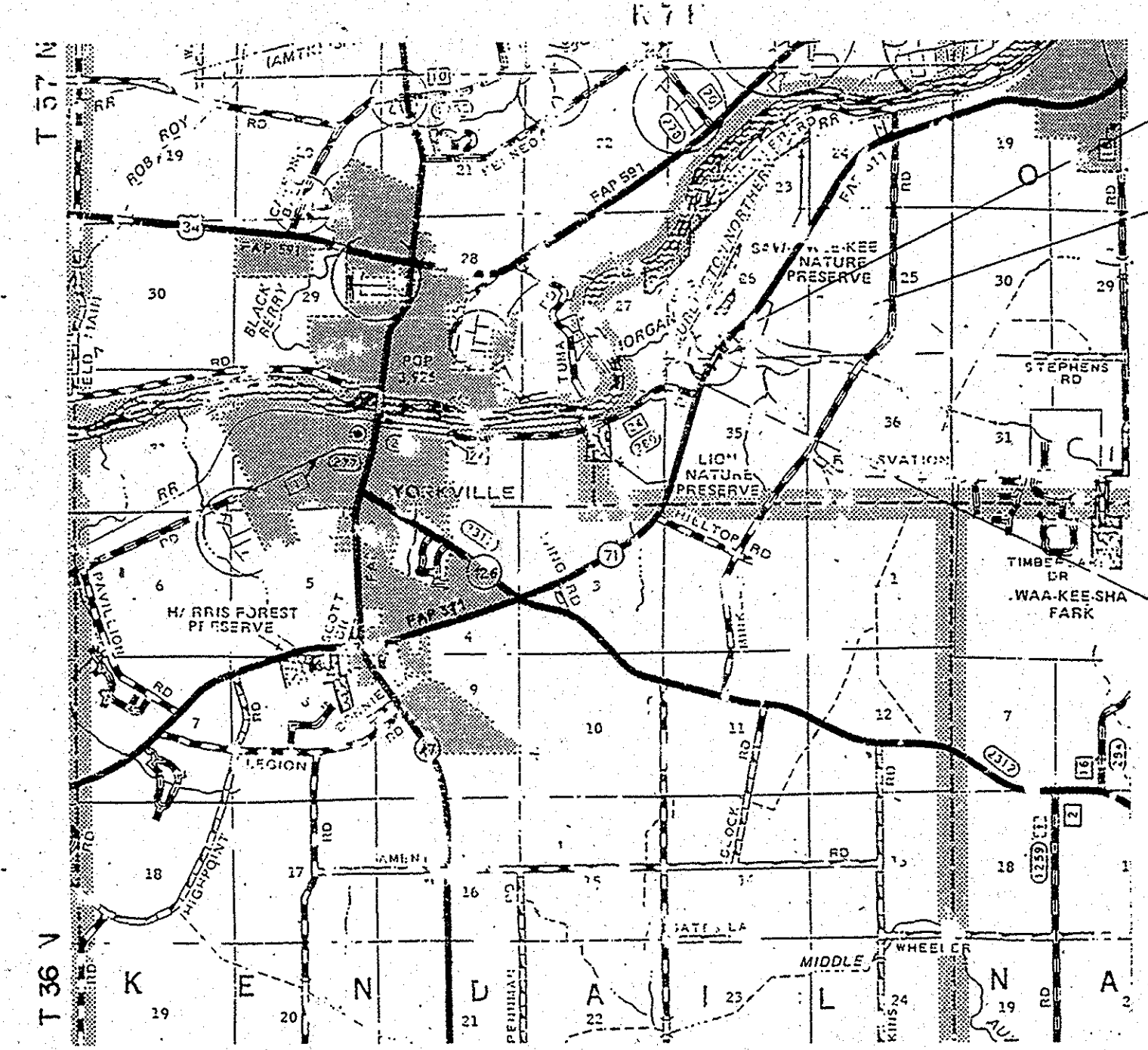
SCALES

PLAN	0 10m 20m 30m	1: 500
PROFILE HOR.	0 10m 20m 30m	1: 500
PROFILE VERT.	0 1m 2m 3m	1: 50
CROSS SECTIONS	0 1m 2m 3m	1: 50 VERT.
	0 2m 4m 5m	1: 100 HOR.

FAP ROUTE 311 (ILL. 71)  
 SECTION (1-A)BR, (1-1)RS-2

KENDALL COUNTY

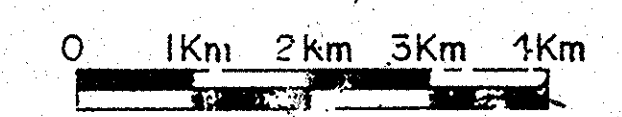
C-93-085-96



END SECTION (1-A)BR, (1-1)RS-2  
 STA. 21+360.000

STRUCT. NO. 047.169  
 STA. 20+989.190

BEGIN SECTION (1-A)BR, (1-1)RS-2  
 STA. 20+090.000



LAYOUT SCALE

NET LENGTH OF PROJECT = 770.000m = 0.770 km

INDEX OF SHEETS

SHEET NO.	ILL. NO.
1	COVER SHEET
2	TYPICAL SECTIONS & GENERAL NOTES
3	SUMMARY OF QUANTITIES & STANDARDS
4-5	SCHEDULES
6-8	PLAN AND PROFILE
9-11	MISCELLANEOUS DETAILS
12	TEMPORARY WIDTHENING DETAILS
13	MAINTENANCE OF TRAFFIC
14	EXISTING SUPPORT SYSTEM DETAILS
15-26	STRUCTURE PLANS
27-28	CROSS SECTIONS F.A.I. 311

**FOR INFORMATION ONLY**

STANDARD DRAWINGS

SEE SHEET NO. 3

DATE OF REVISION \_\_\_\_\_  
 SHEET NUMBER \_\_\_\_\_  
 AWARDED \_\_\_\_\_  
 RESIDENT ENGINEER \_\_\_\_\_

AS BUILT CHANGES WERE MADE  
 ON THE FOLLOWING SHEETS

DESIGN DESIGNATION  
 5500 (93) OTHER PRINCIPAL ARTERIAL

JULIE 1-800-892-0123

DISTRICT 3 NO. (815) 434-6131

PROJECT ENGINEER: LYLE SCHAUB  
 UNIT CHIEF: BRAD CRFSTO  
 TOWNSHIP: OSWEGO

STATE OF ILLINOIS  
 DEPARTMENT OF TRANSPORTATION  
 DIVISION OF HIGHWAYS

SUBMITTED JANUARY 17, 1997  
James J. Smith DISTRICT ENGINEER

PROJECT DEVELOPMENT AND IMPLEMENTATION SECTION  
May 9, 1997  
Bill Hunkley  
 ENGINEER OF DESIGN AND ENVIRONMENT  
May 9, 1997  
James A. Sligh  
 DIRECTOR, DIVISION OF HIGHWAYS

CONTRACT NO. 86724



B.M. #2: CHISELED 'D' ON TOP OF N.W. WINGWALL ON EXISTING BRIDGE  
6.83 m LEFT OF  $\bar{C}$  AT STA. 20+994.19; ELEV. 188.613

EXISTING STRUCTURE - 9.906m BK. TO BK. OF ABUT. 13.208m O. TO O.  
BUILT IN 1939, STRUCTURE NUMBER: 047-0021  
SUPERSTRUCTURE: SINGLE-SPAN CONCRETE T-BEAM  
SUBSTRUCTURE: CLOSED ABUTMENTS ON SPREAD FOOTINGS.  
EXISTING STRUCTURE TO BE REMOVED AND REPLACED.  
TRAFFIC TO BE MAINTAINED UTILIZING STAGE CONSTRUCTION.  
ONE LANE IS TO BE KEPT OPEN AT ALL TIMES.  
NO SALVAGE

STATION 20+989.19  
BUILT 19 BY  
STATE OF ILLINOIS  
F.A.P. RT. 311 SEC. (1-A) BR  
F.A. PROJ.  
LOADING MS18  
STR. NO. 047-0057

NAME PLATE  
(See Std. 515001)

GENERAL NOTES

REINFORCEMENT BARS SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M-31M, M-42M, OR M-53M GRADE 400.

LAYOUT OF SLOPE PROTECTION SYSTEM MAY BE VARIED IN THE FIELD TO SUIT GROUND CONDITIONS, AS DIRECTED BY THE ENGINEER.

BACKFILL BEHIND ABUTMENTS SHALL BE PLACED AFTER THE SUPERSTRUCTURE IS IN PLACE.

THE CONTRACTOR SHALL DRIVE ONE STEEL HP 310X93 TEST PILE IN A PERMANENT LOCATION AT THE SOUTH ABUTMENT AS DIRECTED BY THE ENGINEER BEFORE ORDERING THE REMAINDER OF PILES.

ALL DIMENSIONS ARE IN MILLIMETERS (mm) EXCEPT AS NOTED.

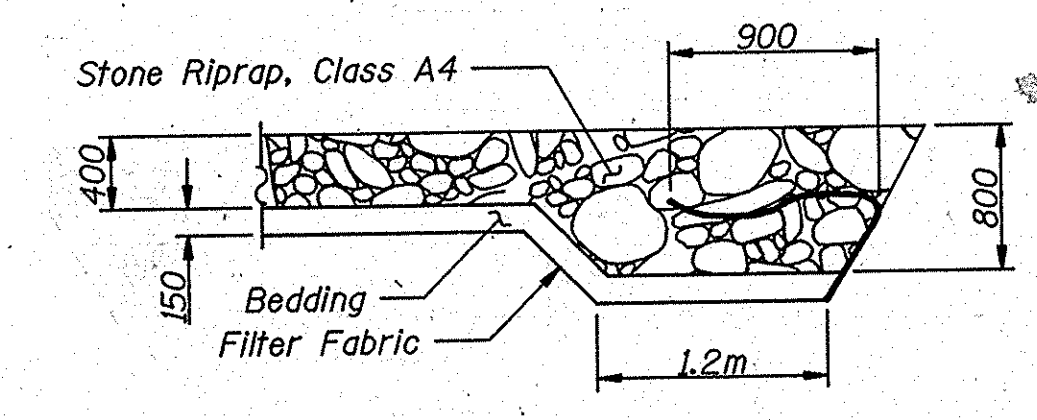
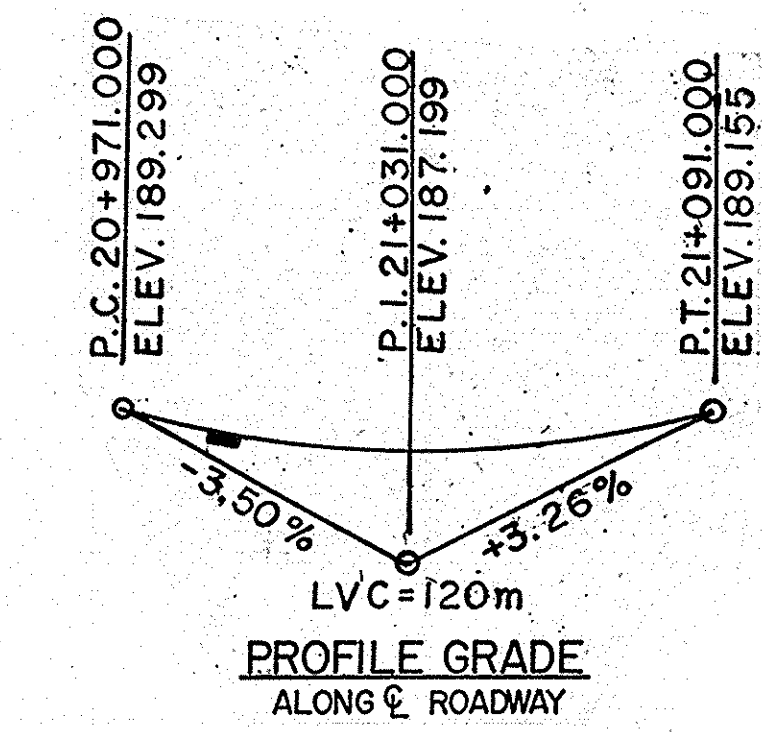
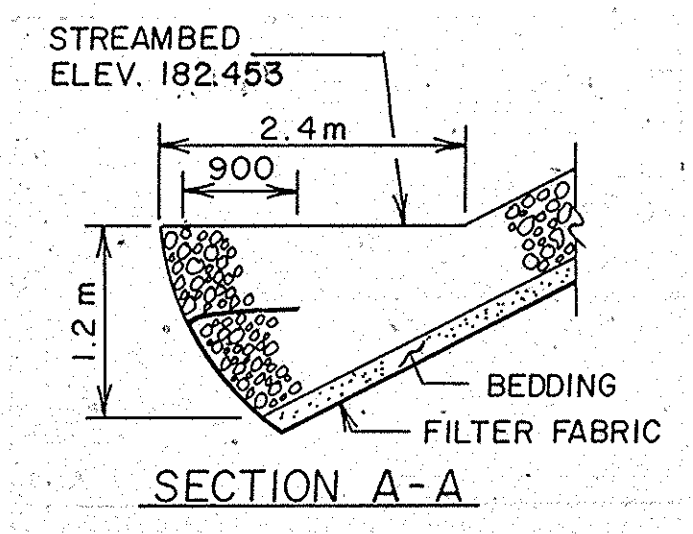
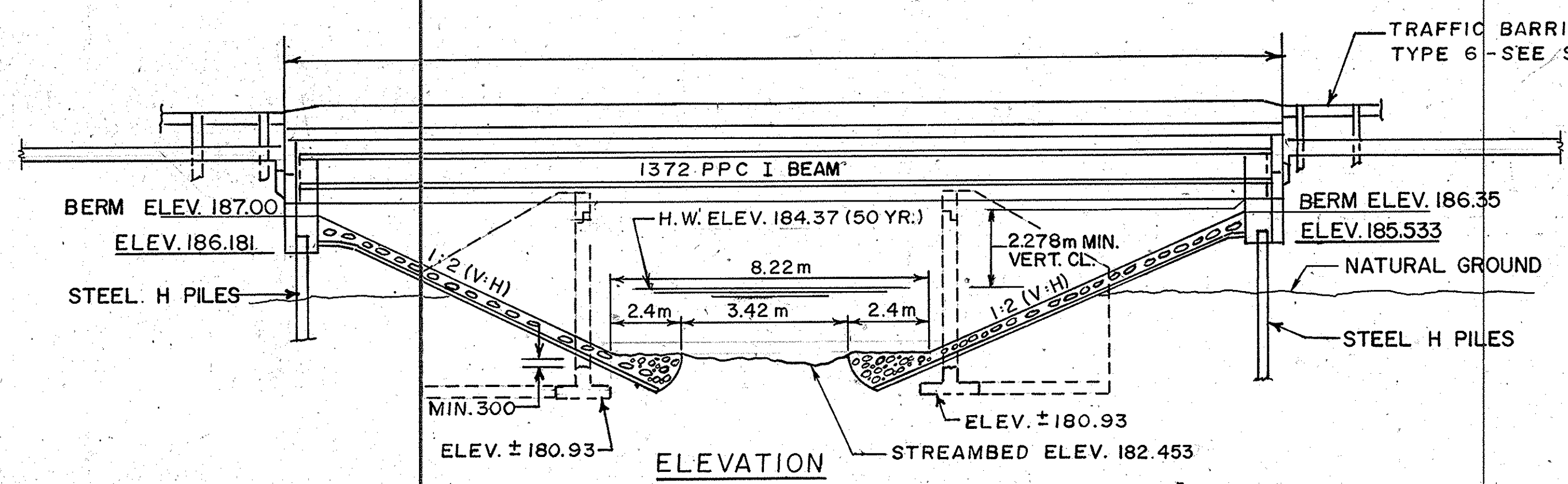
EXCAVATE BEHIND EXISTING ABUTMENTS BEFORE REMOVING SUPERSTRUCTURE.

EXISTING ABUT. WALLS SHALL BE SAW CUT AT THE STAGE REMOVAL LINE.

TOTAL BILL OF MATERIAL

Item	Unit	Super	Sub	Total
Removal of Existing Structures No. 1	Each			
Structure Excavation	m <sup>3</sup>		181	181
Concrete Superstructure	m <sup>3</sup>	122.8		122.8
Protective Coat	m <sup>2</sup>	61		61
Concrete Structures	m <sup>3</sup>		28.4	28.4
Furnishing & Erecting Precast Prestressed Concrete I Beams 1372mm	meter	159		159
Reinforcement Bars (Epoxy Coated)	Kg.	13,160	3040	16200
Steel Piles HP 310x93	meter		77	77
Test Pile Steel HP 310x93	Each			1
Temporary Sheet Piling	m <sup>2</sup>		261	261
Name Plates	Each			1
Bridge Deck Grooving	m <sup>2</sup>	324		324
Stone Riprap Class A4	m <sup>2</sup>		778	778
Filter Fabric For use with Riprap	m <sup>2</sup>		778	778
Bar Splicers	Each	365	20	385
Metal Shoes	Each		11	11

\* QUANTITY: Inside Face & Top of Parapet Only.



SECTION B-B

DESIGN SPECIFICATIONS

AASHTO (1992) AND 1993 & 1994 INTERIMS

LOADING MS 18

ALLOW 1.2 kN/m<sup>2</sup> FOR FUTURE WEARING SURFACE

DESIGN STRESSES

FIELD UNITS

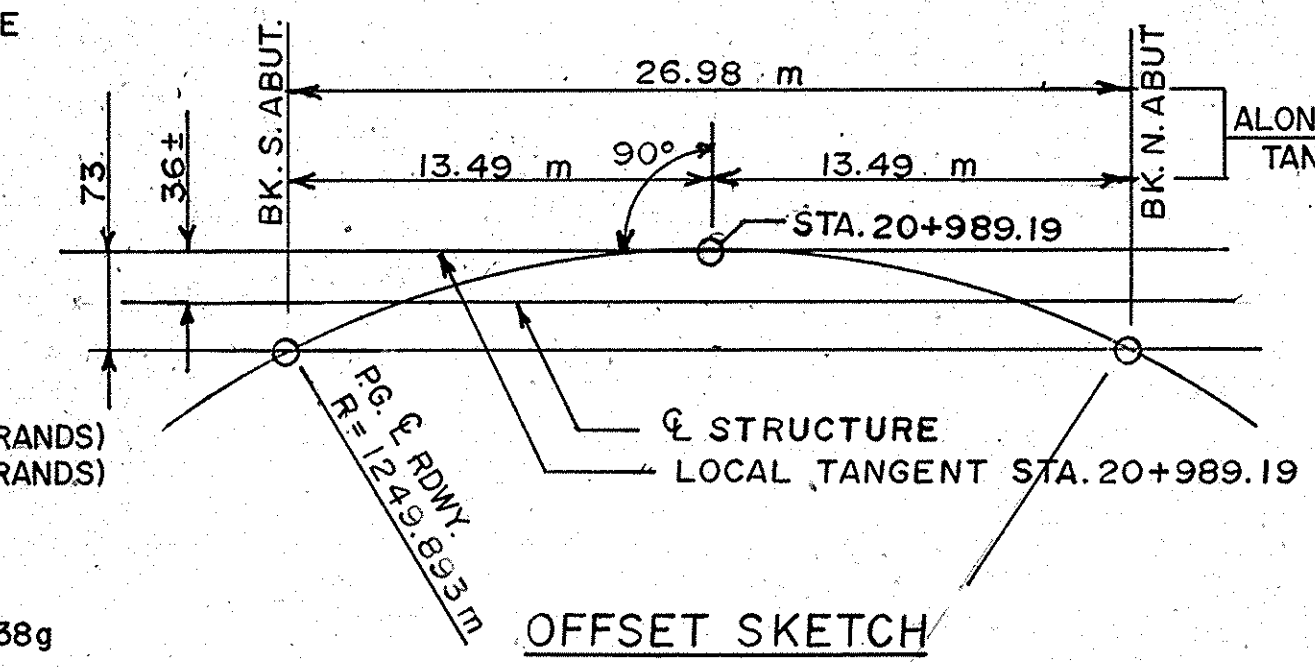
f<sub>c</sub> - 24 MPa  
f<sub>y</sub> - 400 MPa (REINF.)

PRECAST PRESTRESS UNITS

f'<sub>ci</sub> - 35 MPa  
f'<sub>c</sub> - 42 MPa  
f'<sub>s</sub> - 1860 MPa (12.7mm  $\pm$  LOW RELAXATION STRANDS)  
f'<sub>si</sub> - 1395 MPa (12.7mm  $\pm$  LOW RELAXATION STRANDS)

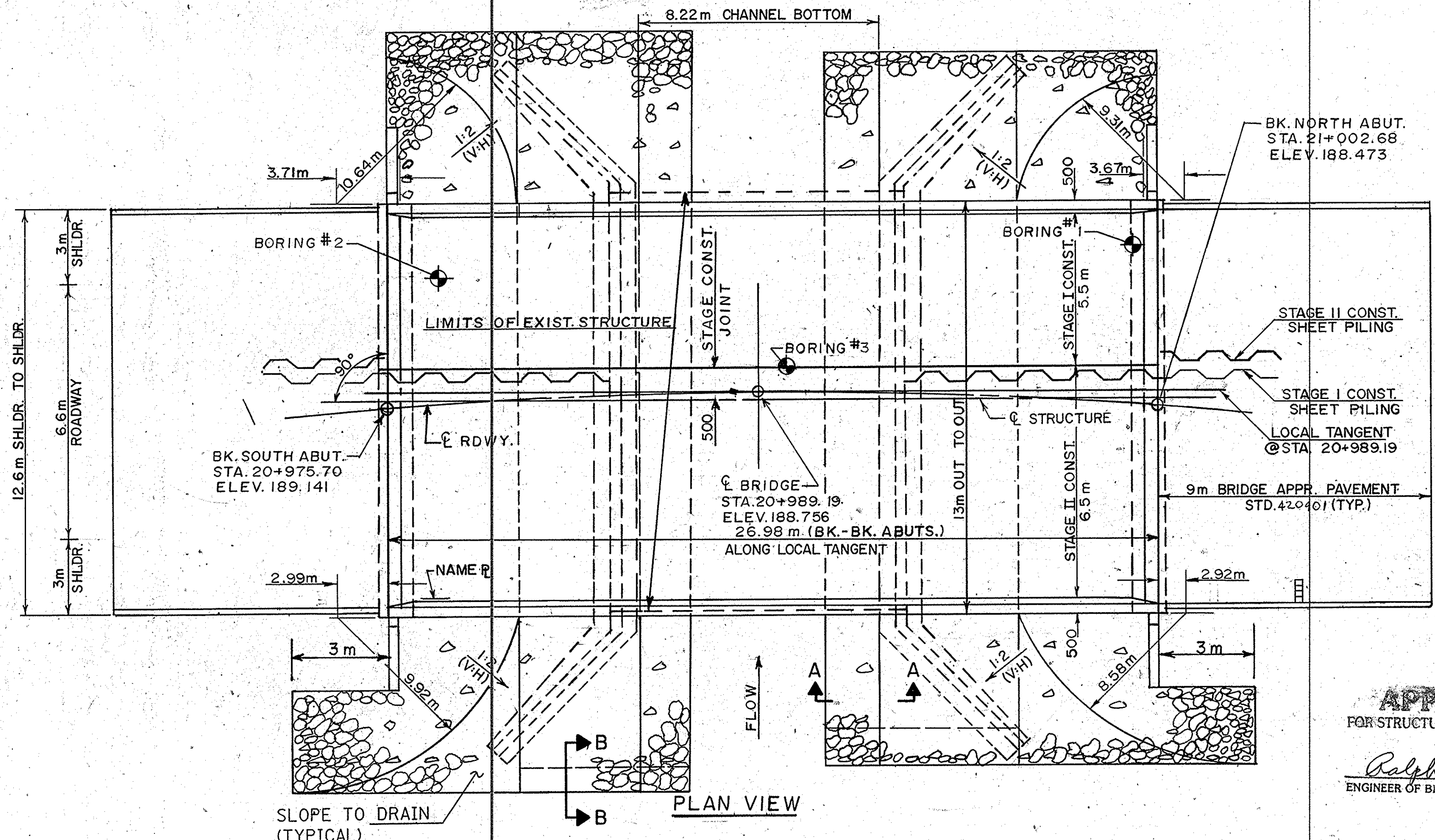
SEISMIC DATA

SEISMIC PERFORMANCE CATEGORY (S.P.C.) = A  
BEDROCK ACCELERATION COEFFICIENT (A) = 0.038g  
SITE COEFFICIENT (S) = 1.0



CURVE DATA

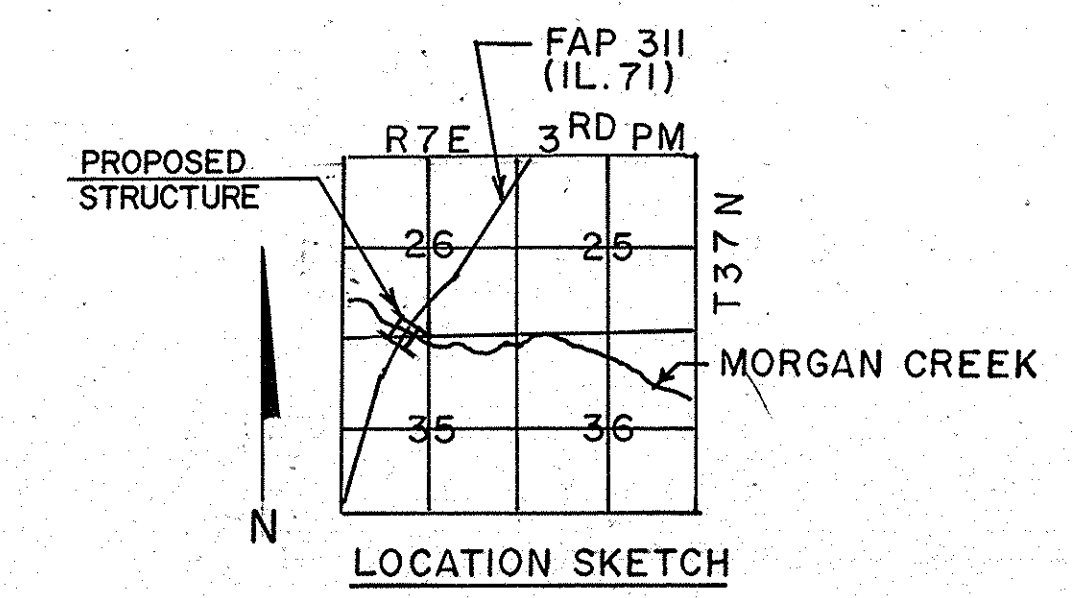
P.C. STA. 20+965.095  
 $\Delta = 27^{\circ} 05' 29''$   
R = 1249.893m  
T = 301.128m  
L = 590.993m  
E = 35.763m  
SE = 2.8%  
SE TRANSITIONS:  
ATTAIN STA. 20+615.199 TO STA. 20+688.351  
REMOVE STA. 21+230.576 TO STA. 21+303.728



WATERWAY INFORMATION TABLE

DRAINAGE AREA = 46.6 km <sup>2</sup>		LOW GRADE ELEV. 187.971 m AT STA. 21+031.242		MAX. REC. H.W.E. 184.191 m		
FLOOD	FLOOD FREQUENCY YEARS	Q m <sup>3</sup> /s	OPENING sq.m	NAT. HWE m	HEAD - m	HEADWATER EL. m
			EXIST. PROP.	EXIST. PROP.	EXIST. PROP.	EXIST. PROP.
DESIGN	50	35.4	16.5 23.2	184.37 0.18	0	184.56 184.37
BASE	100	39.6	17.4 24.7	184.47 0.18	0	184.65 184.47
MAX. CALC.	500	48.1	18.8 27.5	184.62 0.34	0	184.95 184.62

APPROVED FOR STRUCTURAL ADEQUACY ONLY  
Ralph E. Anderson  
ENGINEER OF BRIDGES AND STRUCTURES



NOTE: FOR STAGE CONSTRUCTION DETAILS, SEE SHEET 2 OF 2.

GENERAL PLAN & ELEVATION  
FAP ROUTE 311 (IL. ROUTE 71)  
OVER MORGAN CREEK  
SECTION (1-A) BR  
STATION 20+989.19  
KENDALL COUNTY  
STRUCTURE NO. 047-0059

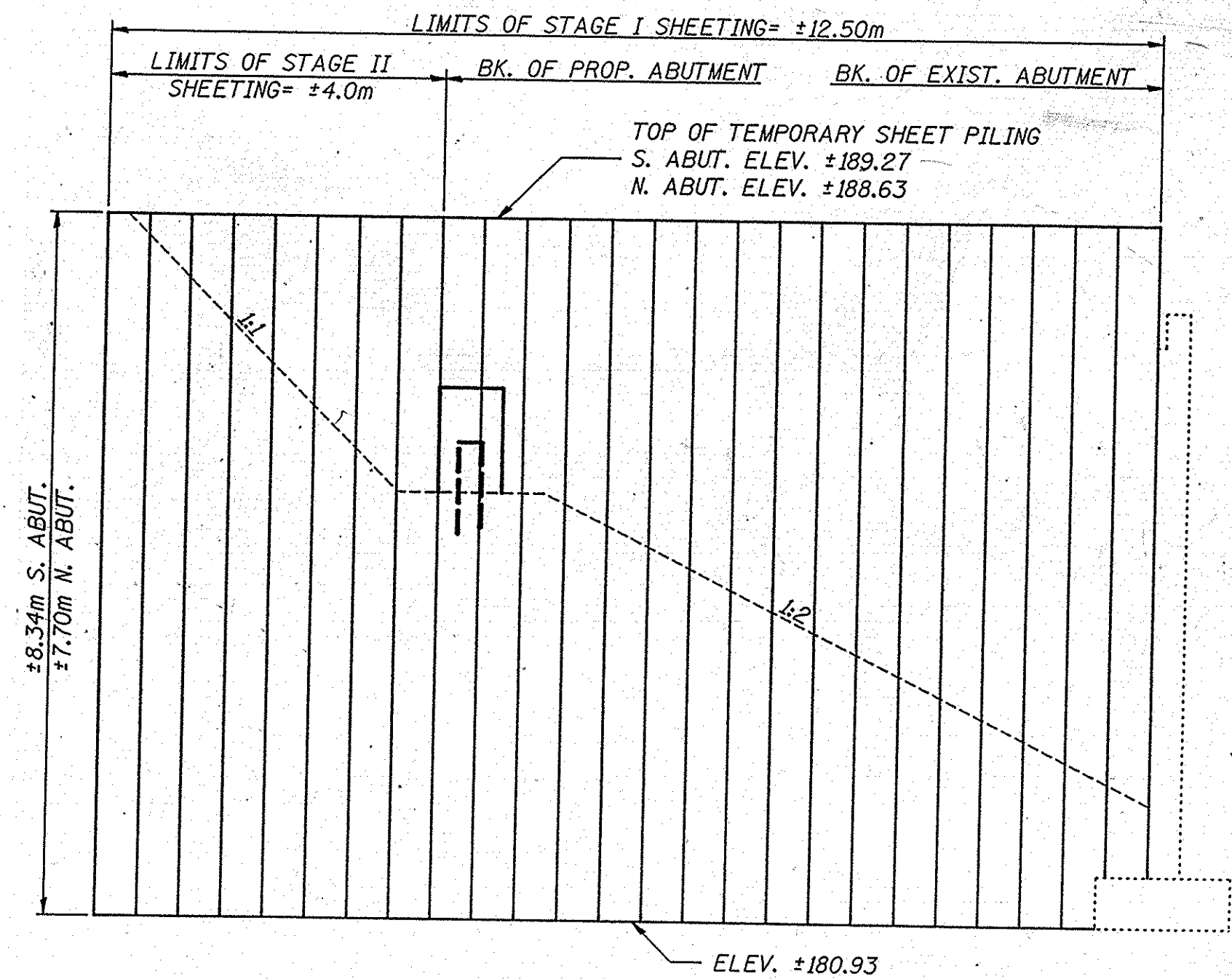
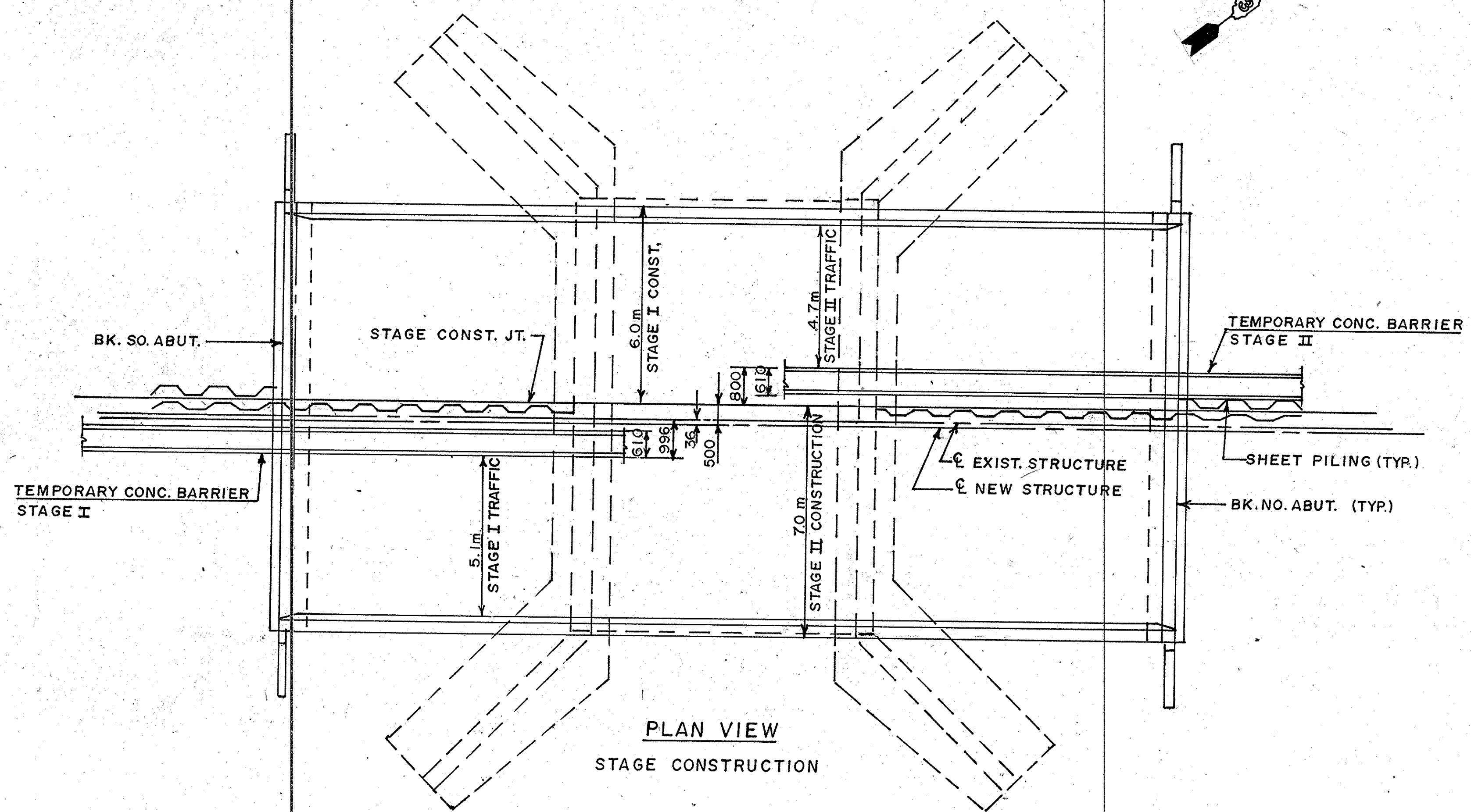
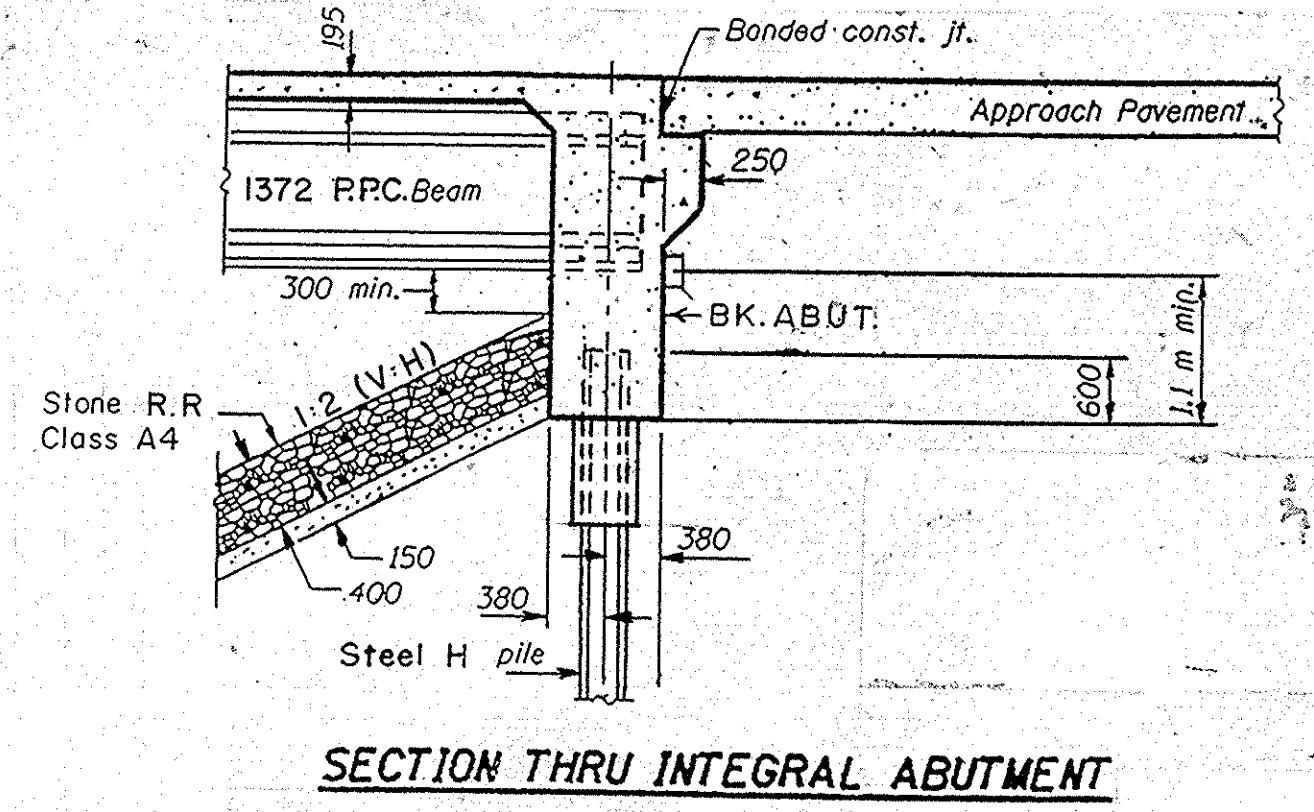
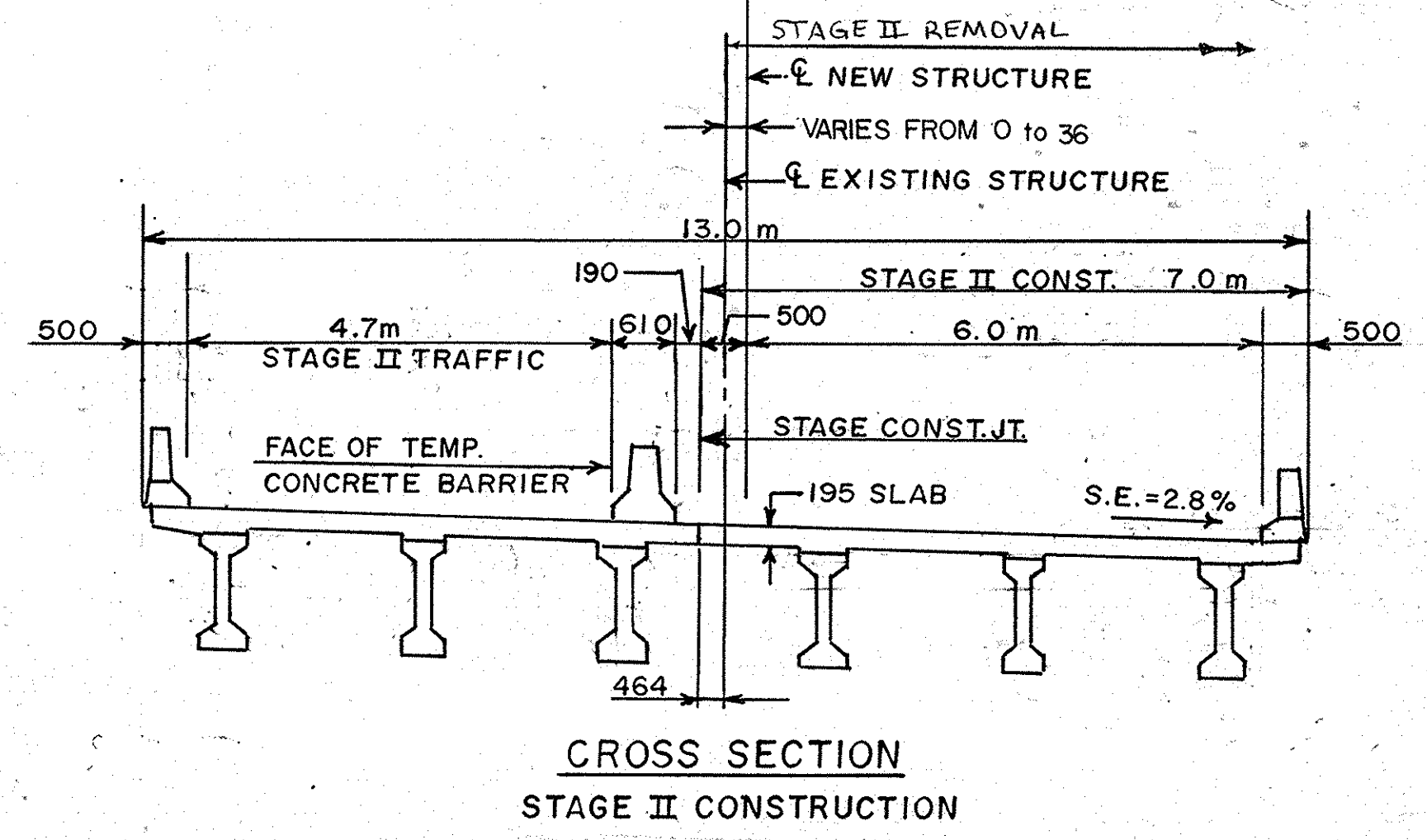
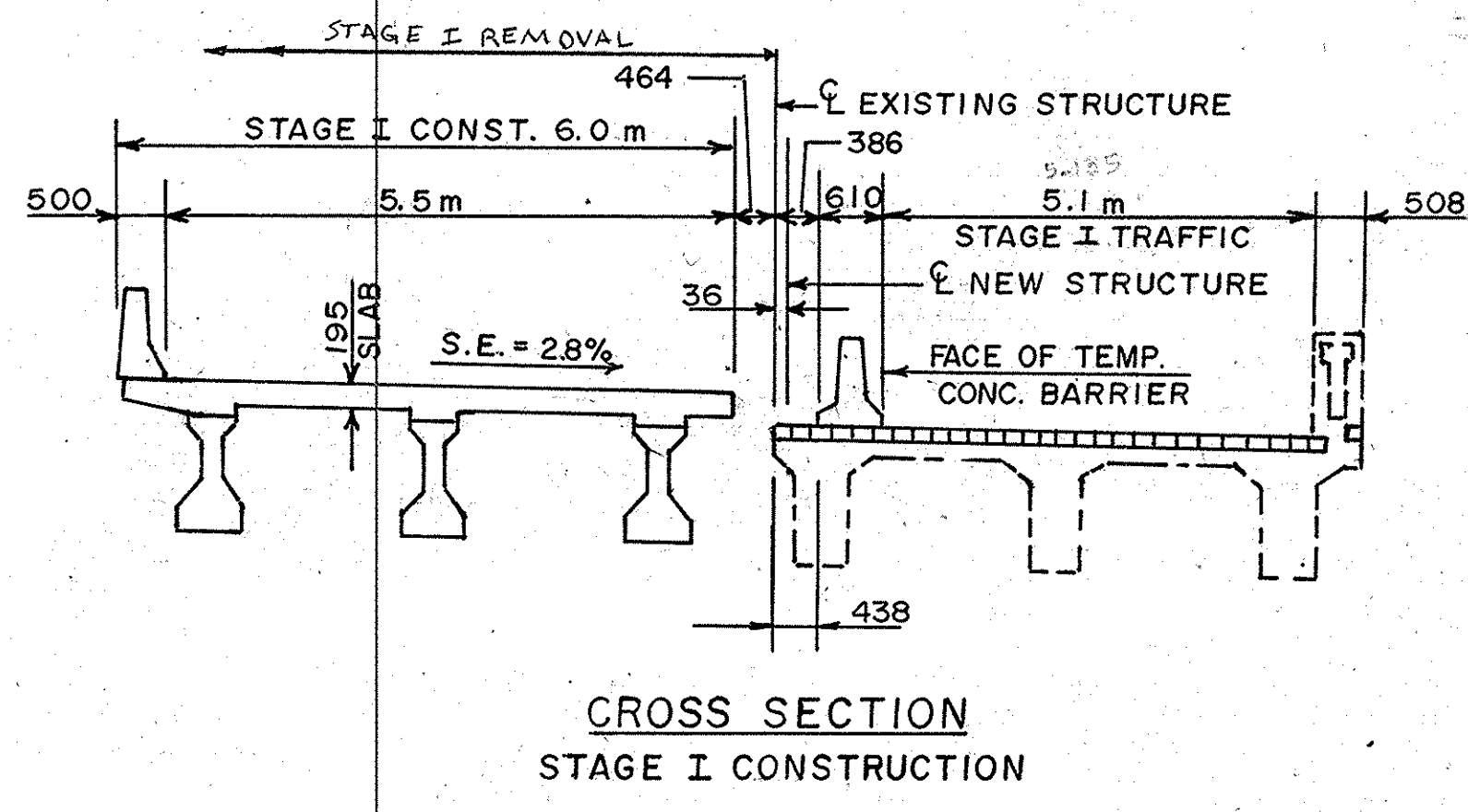
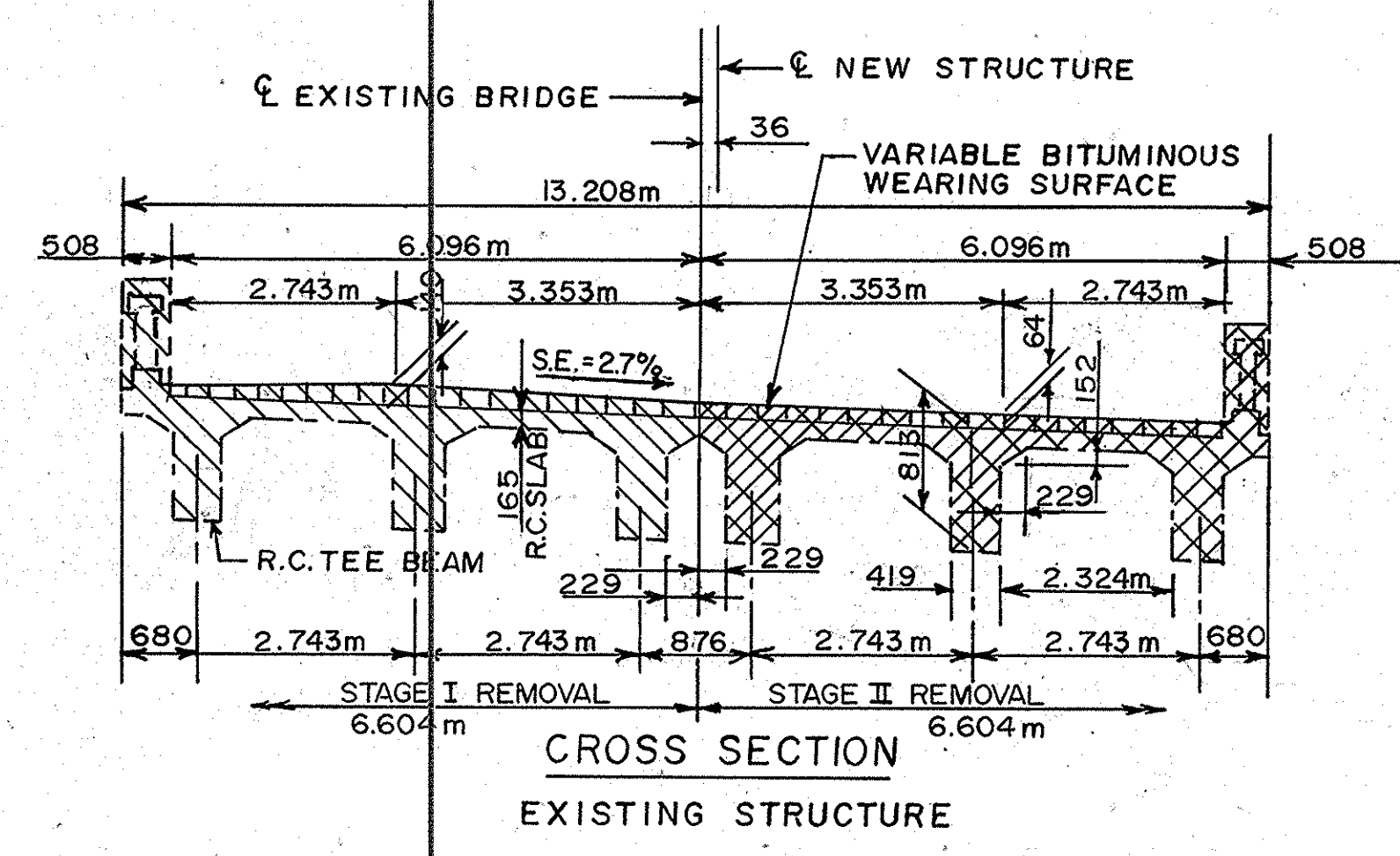
RC ENGINEERS, LTD.  
CONSULTING ENGINEERS  
DESIGNED: JWG DRAWN: SSK  
CHECKED: RMG CHECKED: JWG

FOR INFORMATION ONLY

11/30/96 German Ronancio 10/1/95  
LICENSE EXPIRATION DATE ILLINOIS STRUCTURAL NO. 3091 DATE



ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
FAP 311	*	KENDALL	28	16
FED. ROAD DIST. NO.	ILLINOIS	PROJECT		
*(1-A) BR, (1-I) RS-2				
SHEET 2 of 12 SHEETS				



**NOTES:**  
 For details of "Temporary Concrete Barrier", See sheet 3 of 12.  
 For quantity of "Temporary Concrete Barrier", See Roadway Plans.  
 All cross sections are looking Northeast.  
 Location of Stage Removal line also applies to Substructure.

**TEMPORARY SHEET PILING ELEVATION AT ABUTMENTS**  
 Due to the presence of rock at the base of the existing footings, the contractor is cautioned that a cantilever sheet piling design may not be feasible for the Stage I retention. It will be the contractor's responsibility to provide a feasible retaining system in lieu of the cantilevered sheet piling. The contractor shall submit the design for approval as stated.

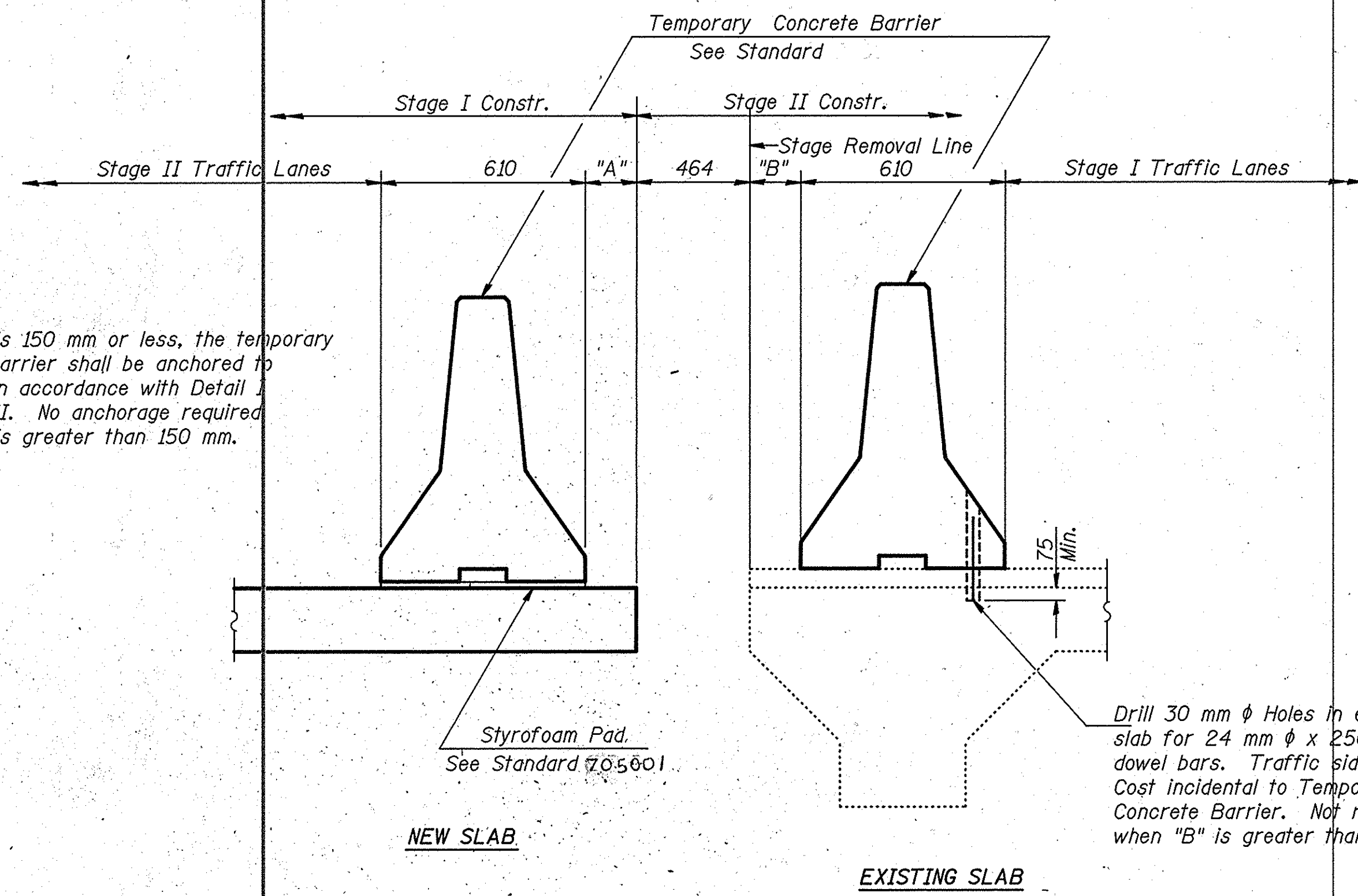
**STAGE CONSTRUCTION DETAILS**  
 F.A.P. ROUTE 311 (IL. ROUTE 71)  
 OVER MORGAN CREEK  
 SECTION (1-A) BR  
 STATION 20+989.19  
 KENDALL COUNTY  
 STRUCTURE NO. 047-0059  
 RC ENGINEERS, LTD.  
 CONSULTING ENGINEERS  
 DESIGNED: JWG DRAWN: SSK  
 CHECKED: RMG CHECKED: JWG

**FOR INFORMATION ONLY**



ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS
F.A.P. 311	*	KENDALL	28
FED. ROAD DIST. 3	ILLINOIS	PROJECT	17
			SHEET NO. 3 of 12 SHEETS

\* (I-A)BR, (I-DRS)-2



When "A" is 150 mm or less, the temporary concrete barrier shall be anchored to new slab in accordance with Detail I or Detail II. No anchorage required when "A" is greater than 150 mm.

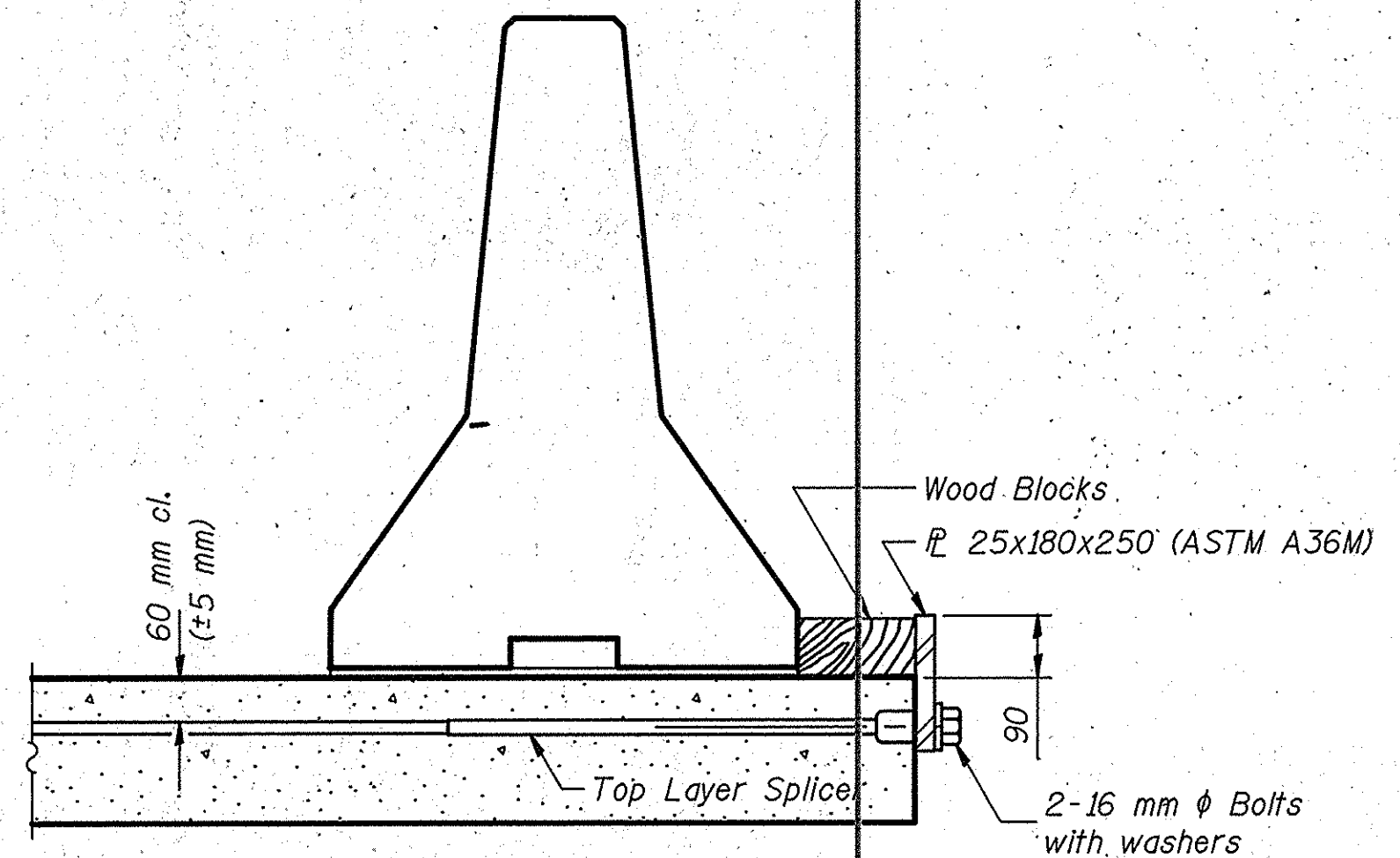
**SECTIONS THRU SLAB**

**NOTES**

Detail I - With Bar Splicer or Couplers:  
Connect one (1) 25x180x250 steel  $\bar{P}$  to the top layer of couplers with 2-16 mm  $\phi$  bolts screwed to coupler at approximate  $\bar{C}$  of each 3 m barrier panel.

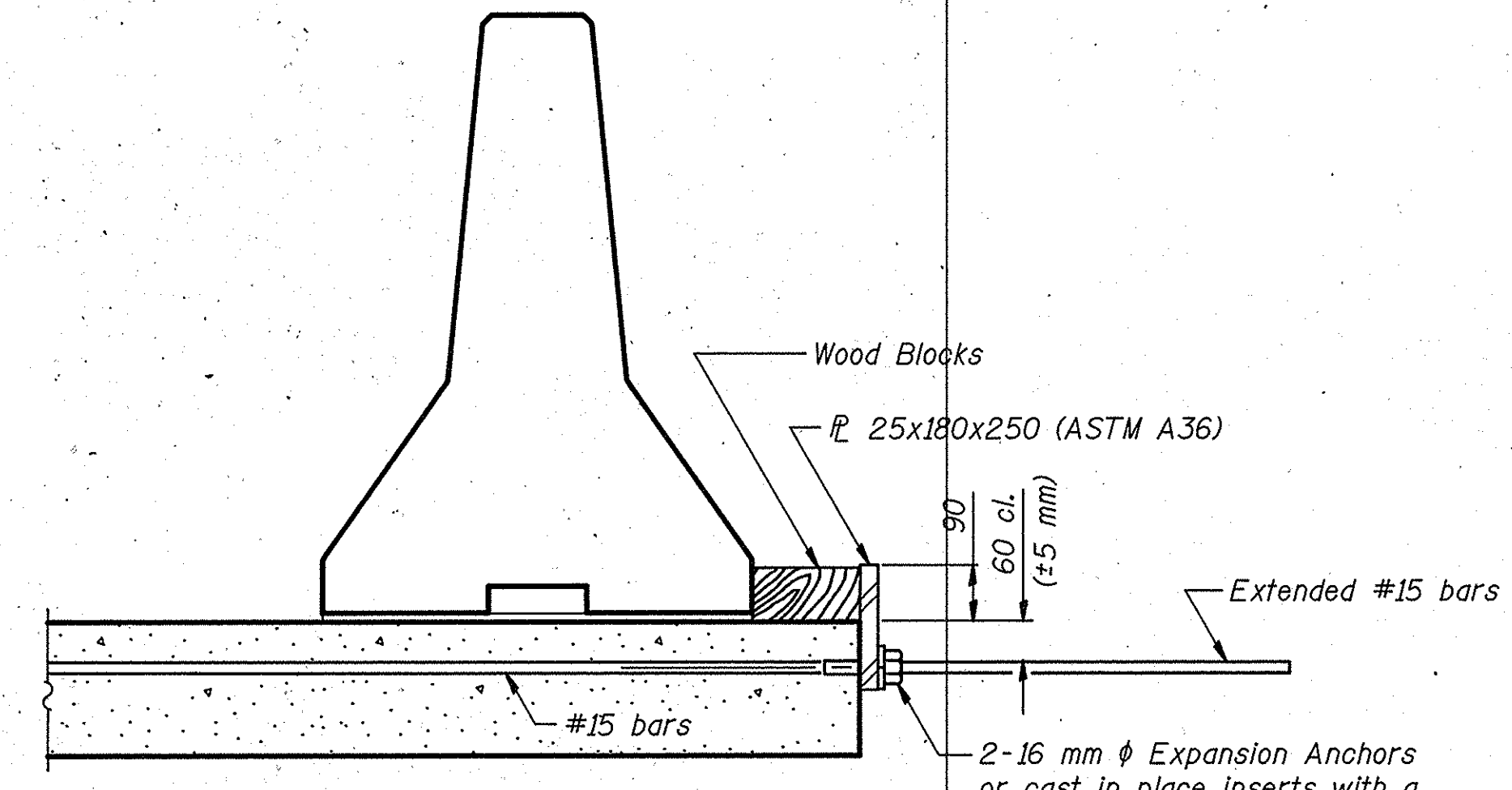
Detail II - With Extended Reinforcement Bars:  
Connect one (1) 25x180x250 steel  $\bar{P}$  to the concrete slab with 2-16 mm  $\phi$  Expansion Anchors or cast in place inserts spaced between the top layer of reinforcement at approximate  $\bar{C}$  of each 3 m barrier panel.

Cost of anchorage is incidental to Temporary Concrete Barrier.  
All dimensions are in millimeters (mm) except as noted.



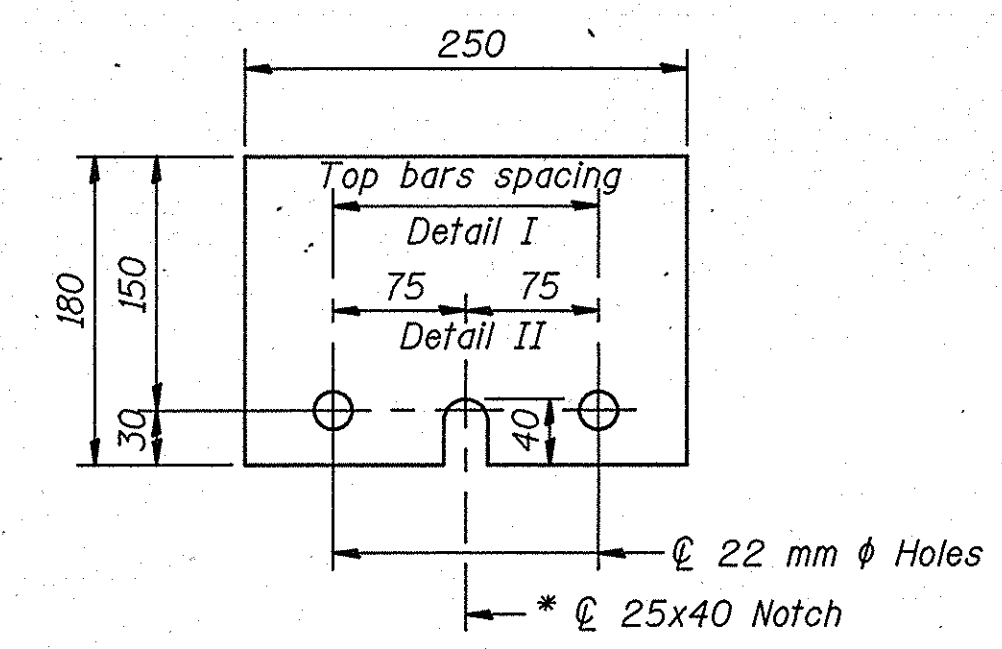
**DETAIL I**

The 25x180x250 Plate shall not be removed until Stage II Construction forms and reinforcement bars are in place.



**DETAIL II**

The 25x180x250 Plate shall not be removed until Stage II Construction forms and all reinforcement bars are in place and the concrete is ready to be placed.



**$\bar{P}$  25x180x250**

\* Required only with Detail II

**TEMPORARY CONCRETE BARRIER  
FOR STAGE CONSTRUCTION  
E.A.P. RTE. 311-SECTION (I-A)BR  
KENDALL COUNTY  
STA. 20+989.19**

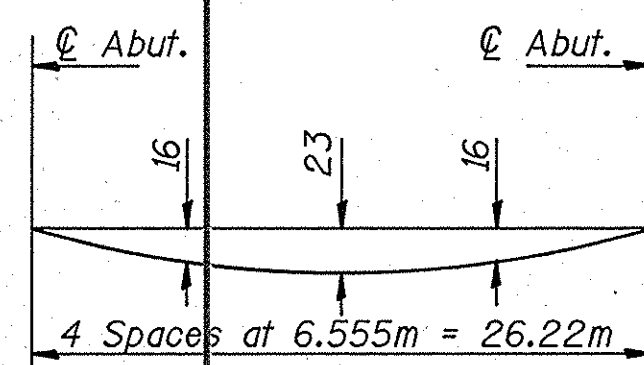
<b>RC ENGINEERS, LTD. CONSULTING ENGINEERS</b>	
DESIGNED: R.M.G.	DRAWN: C.S.W.
CHECKED: J.W.G.	CHECKED: R.M.G.

**FOR INFORMATION ONLY**



ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS
F.A.P. 311	*	KENDALL	28
FED. ROAD DISTRICT 3	ILLINOIS	PROJECT	18
SHEET NO. 4 of 12 SHEETS			

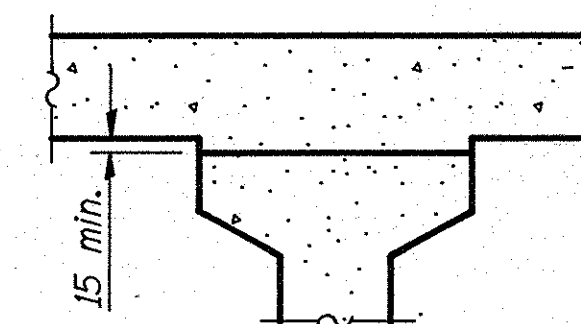
\* (1-A)BR, (1-D)RS-2



**DEAD LOAD DEFLECTION DIAGRAM**

(Includes weight of concrete, excluding beams).

Note: The above deflections are not to be used in the field if the engineer is working from the grade elevations adjusted for dead load deflections as shown below.



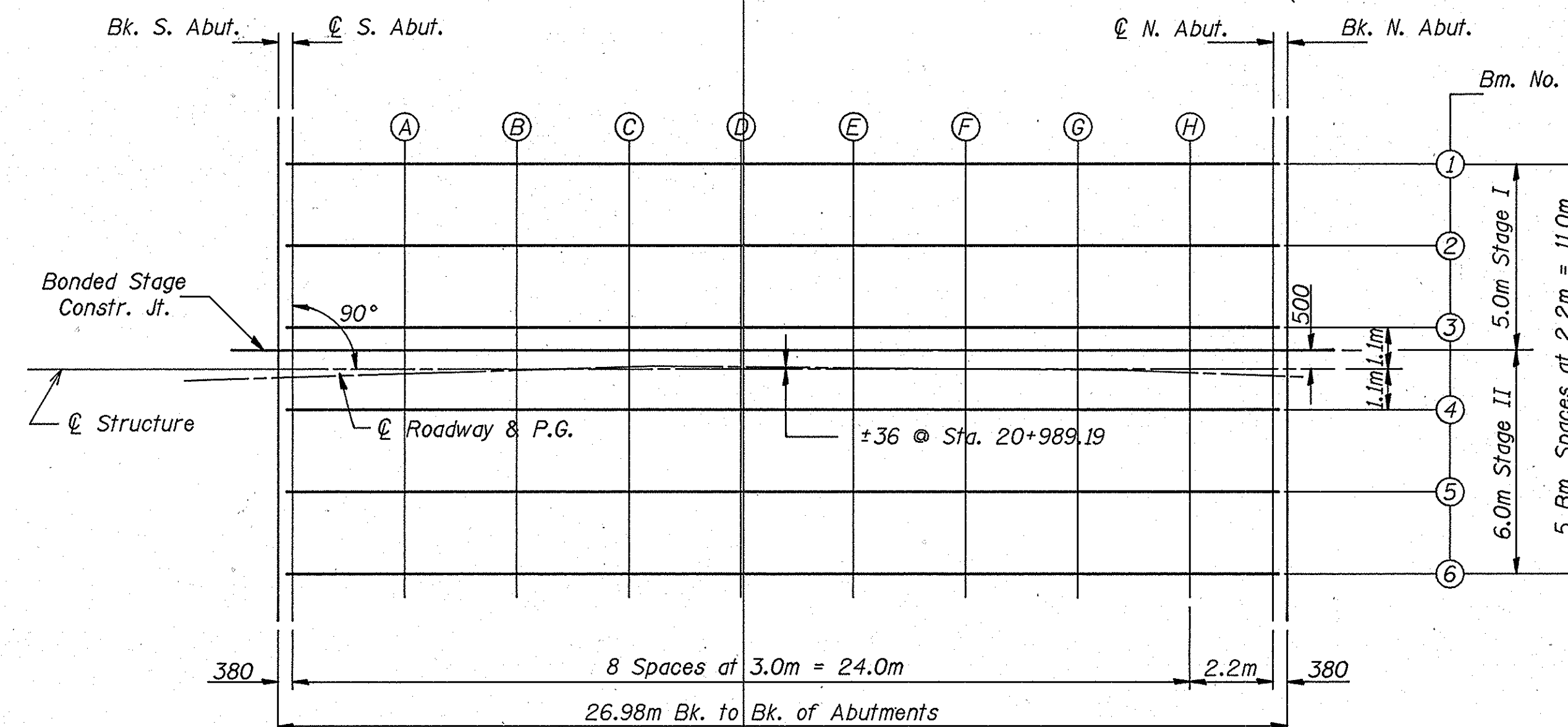
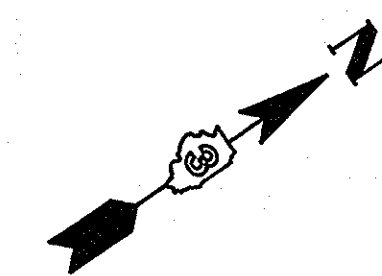
To determine "f": After all precast prestressed beams have been erected, elevations of the top flanges of the beams shall be taken at intervals shown below. These elevations subtracted from the "Theoretical Grade Elevations Adjusted For Dead Load Deflections" minus slab thickness, equals the fillet heights "f" above top flanges of beams.

**FILLET HEIGHTS**

BEAM #1					BEAM #2					BEAM #3					BONDED STAGE CONSTRUCTION JOINT				
Location	Station	Offset (m)	Theoretical Grade Elevations	Theoretical Grade Elevations Adjusted For Dead Load Deflection	Location	Station	Offset (m)	Theoretical Grade Elevations	Theoretical Grade Elevations Adjusted For Dead Load Deflection	Location	Station	Offset (m)	Theoretical Grade Elevations	Theoretical Grade Elevations Adjusted For Dead Load Deflection	Location	Station	Offset (m)	Theoretical Grade Elevations	Theoretical Grade Elevations Adjusted For Dead Load Deflection
Bk. S. Abut.	20975.759	-5.536	189.294	189.294	Bk. S. Abut.	20975.736	-3.336	189.233	189.233	Bk. S. Abut.	20975.712	-1.136	189.172	189.172	Bk. S. Abut.	20975.706	-5.36	189.156	189.156
☉ S. Abut.	20976.138	-5.532	189.282	189.282	☉ S. Abut.	20976.115	-3.332	189.221	189.221	☉ S. Abut.	20976.092	-1.132	189.160	189.160	☉ S. Abut.	20976.085	-5.32	189.143	189.143
A	20979.124	-5.504	189.187	189.194	A	20979.107	-3.304	189.126	189.133	A	20979.089	-1.104	189.065	189.072	A	20979.084	-5.04	189.049	189.056
B	20982.111	-5.484	189.098	189.113	B	20982.099	-3.284	189.037	189.052	B	20982.086	-1.084	188.976	188.991	B	20982.083	-4.84	188.959	188.974
C	20985.098	-5.470	189.015	189.034	C	20985.091	-3.270	188.953	188.972	C	20985.084	-1.070	188.892	188.911	C	20985.082	-4.70	188.875	188.894
D	20988.085	-5.464	188.936	188.958	D	20988.083	-3.264	188.875	188.897	D	20988.081	-1.064	188.813	188.835	D	20988.080	-4.64	188.796	188.818
E	20991.072	-5.465	188.863	188.884	E	20991.075	-3.265	188.801	188.822	E	20991.078	-1.065	188.740	188.761	E	20991.079	-4.65	188.723	188.744
F	20994.059	-5.473	188.795	188.813	F	20994.067	-3.273	188.733	188.751	F	20994.076	-1.073	188.671	188.689	F	20994.078	-4.73	188.655	188.673
G	20997.046	-5.488	188.732	188.745	G	20997.059	-3.288	188.670	188.683	G	20997.073	-1.088	188.608	188.621	G	20997.077	-4.88	188.592	188.605
H	21000.032	-5.511	188.675	188.680	H	21000.051	-3.311	188.613	188.618	H	21000.070	-1.111	188.551	188.556	H	21000.076	-5.11	188.534	188.539
☉ N. Abut.	21002.242	-5.532	188.635	188.635	☉ N. Abut.	21002.265	-3.332	188.573	188.573	☉ N. Abut.	21002.288	-1.132	188.511	188.511	☉ N. Abut.	21002.295	-5.32	188.494	188.494
Bk. N. Abut.	21002.621	-5.536	188.629	188.629	Bk. N. Abut.	21002.644	-3.336	188.567	188.567	Bk. N. Abut.	21002.668	-1.136	188.505	188.505	Bk. N. Abut.	21002.674	-5.36	188.488	188.488

☉ STRUCTURE					BEAM #4					BEAM #5					BEAM #6				
Location	Station	Offset (m)	Theoretical Grade Elevations	Theoretical Grade Elevations Adjusted For Dead Load Deflection	Location	Station	Offset (m)	Theoretical Grade Elevations	Theoretical Grade Elevations Adjusted For Dead Load Deflection	Location	Station	Offset (m)	Theoretical Grade Elevations	Theoretical Grade Elevations Adjusted For Dead Load Deflection	Location	Station	Offset (m)	Theoretical Grade Elevations	Theoretical Grade Elevations Adjusted For Dead Load Deflection
Bk. S. Abut.	20975.700	-0.36	189.142	189.142	Bk. S. Abut.	20975.688	1.064	189.111	189.111	Bk. S. Abut.	20975.664	3.264	189.050	189.050	Bk. S. Abut.	20975.641	5.463	188.990	188.990
☉ S. Abut.	20976.080	-0.32	189.129	189.129	☉ S. Abut.	20976.069	1.068	189.099	189.099	☉ S. Abut.	20976.045	3.268	189.038	189.038	☉ S. Abut.	20976.022	5.467	188.977	188.977
A	20979.080	-0.04	189.035	189.042	A	20979.071	1.096	189.004	189.011	A	20979.053	3.296	188.943	188.950	A	20979.035	5.495	188.882	188.889
B	20982.080	.016	188.945	188.960	B	20982.074	1.116	188.915	188.930	B	20982.061	3.316	188.853	188.868	B	20982.048	5.516	188.792	188.807
C	20985.080	.030	188.861	188.880	C	20985.076	1.130	188.831	188.850	C	20985.069	3.330	188.769	188.788	C	20985.062	5.530	188.708	188.727
D	20988.080	.036	188.782	188.804	D	20988.079	1.136	188.752	188.774	D	20988.077	3.336	188.690	188.712	D	20988.075	5.536	188.628	188.650
E	20991.080	.035	188.709	188.730	E	20991.082	1.135	188.678	188.699	E	20991.085	3.335	188.616	188.637	E	20991.088	5.535	188.555	188.576
F	20994.080	.027	188.640	188.658	F	20994.084	1.127	188.610	188.628	F	20994.093	3.327	188.548	188.566	F	20994.102	5.527	188.486	188.504
G	20997.080	.012	188.577	188.590	G	20997.087	1.112	188.547	188.560	G	20997.101	3.312	188.485	188.498	G	20997.115	5.511	188.423	188.436
H	21000.080	-0.11	188.520	188.525	H	21000.090	1.089	188.489	188.494	H	21000.109	3.289	188.427	188.432	H	21000.128	5.489	188.365	188.370
☉ N. Abut.	21002.300	-0.32	188.480	188.480	☉ N. Abut.	21002.311	1.068	188.449	188.449	☉ N. Abut.	21002.335	3.268	188.387	188.387	☉ N. Abut.	21002.358	5.467	188.325	188.325
Bk. N. Abut.	21002.680	-0.36	188.474	188.474	Bk. N. Abut.	21002.692	1.064	188.443	188.443	Bk. N. Abut.	21002.716	3.264	188.381	188.381	Bk. N. Abut.	21002.739	5.463	188.319	188.319



**PLAN**

**TOP OF SLAB ELEVATIONS**  
**F.A.P. RTE. 311-SECTION (1-A)BR**  
**KENDALL COUNTY**  
**STA. 20+989.19**

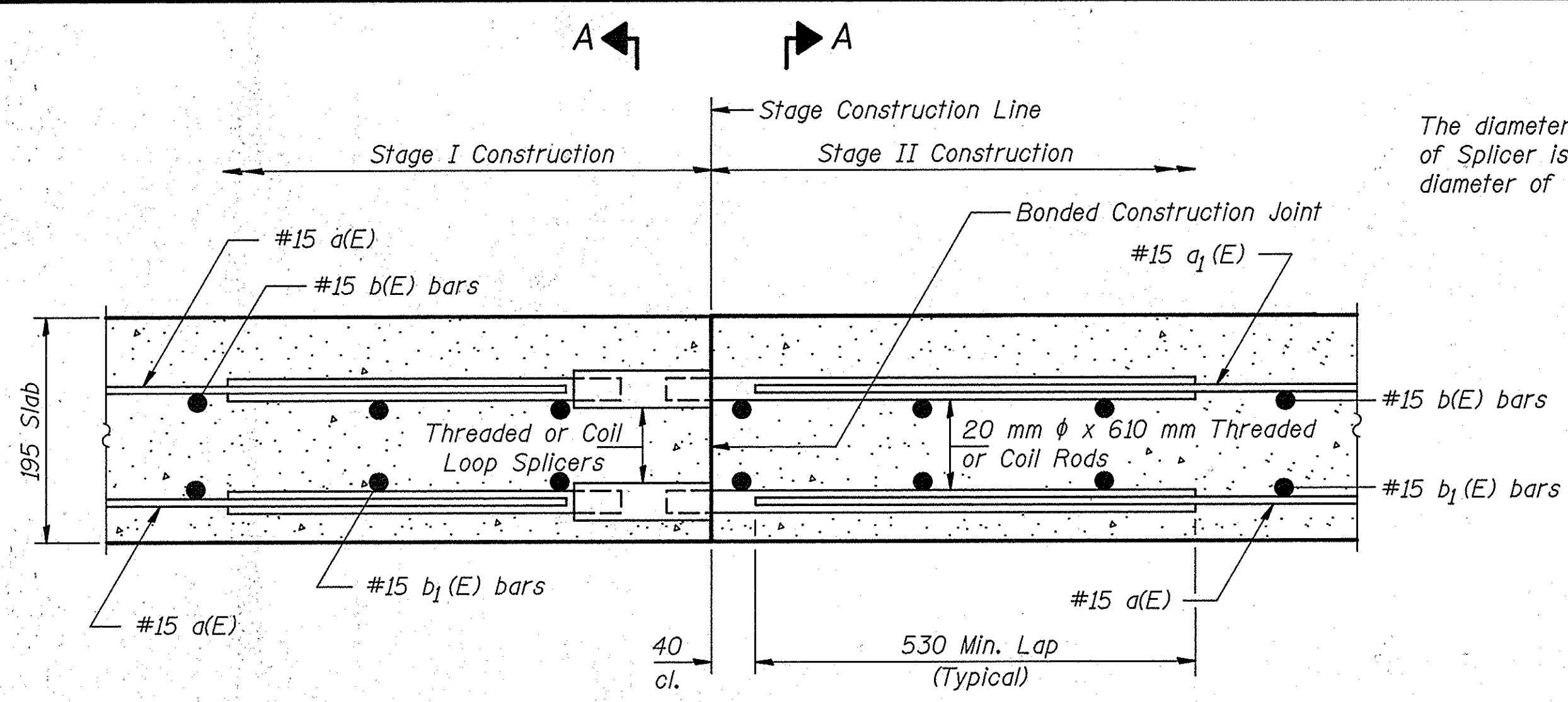
**RC ENGINEERS, LTD.**  
**CONSULTING ENGINEERS**

DESIGNED: J.W.G. DRAWN: C.S.W.  
 CHECKED: R.M.G. CHECKED: R.M.G.

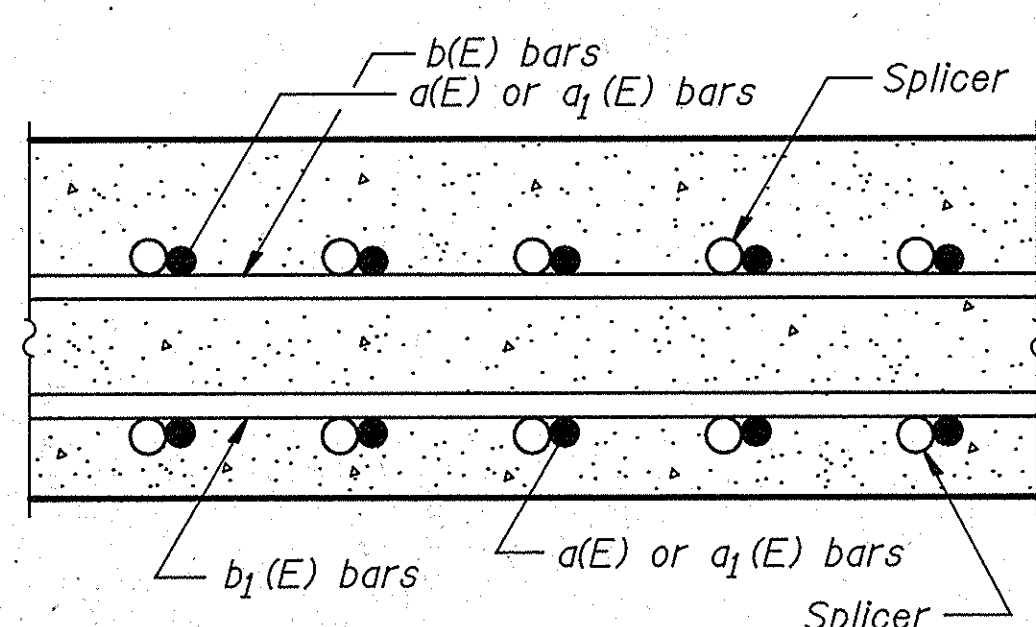
**FOR INFORMATION ONLY**



\* (I-A)BR, (I-DRS-2



**SECTION THRU SLABS**



**SECTION A-A  
SPLICER DETAILS**  
(No. Req'd. 20mm  $\phi$  = 267)

**NOTES**

Steel Splicer (Coupler) assembly shall be of an approved type and shall develop in tension at least 125 percent of the yield strength of the lapped reinforcement bars.

Steel Splicer rods shall be of minimum 400 MPa yield strength, threaded or coiled full length.

All reinforcement bars shall be lapped and tied to the splicer rods.

Splicer (coupler) assembly shall be epoxy coated in accordance with the requirements for reinforcement bars.

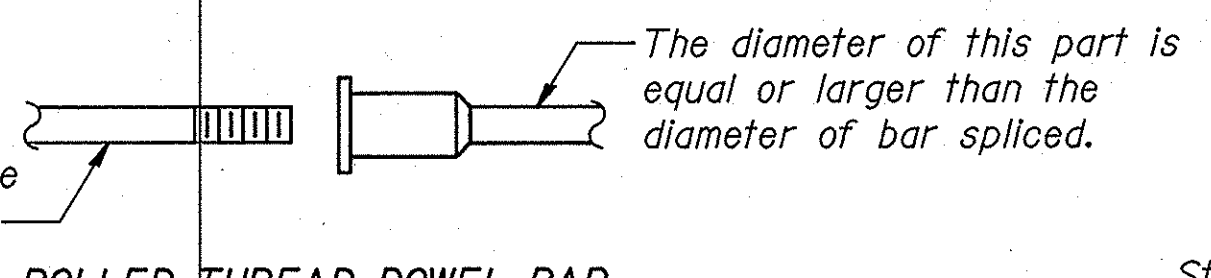
Other systems of similar design may be submitted to the Engineer for approval. Approval shall be based on certified test results from an approved testing laboratory that the proposed splicer (coupler) assembly satisfies the following requirements:

- Minimum Capacity =  $1.25 \times 10^3 \times f_y \times A_t$   
(Tension in kN)
- Minimum \*Pull-out Strength =  $1.25 \times 10^3 \times f_{s\ allow} \times A_t$   
(Tension in kN)

Where  $f_y$  = Yield strength of lapped reinforcement bars in MPa.  
 $f_{s\ allow}$  = Allowable tensile stress in lapped reinforcement bars in MPa (Service Load)  
 $A_t$  = Tensile stress area of lapped reinforcement bars ( $mm^2$ ).  
 \* = 28 day concrete

Typical Splicer (Coupler) Assembly Sizes:	Minimum Capacity =	Minimum Pull-out Strength =
#15 bar lap with 20 mm $\phi$ Splicer (Coupler) x 610 mm Splicer Rods	100 kN-tension	40 kN-tension
#20 bar lap with 25 mm $\phi$ Splicer (Coupler) x 790 mm Splicer Rods	150 kN-tension	60 kN-tension
#25 bar lap with 30 mm $\phi$ Splicer (Coupler) x 1.04 m Splicer Rods	250 kN-tension	100 kN-tension
#30 bar lap with 36 mm $\phi$ Splicer (Coupler) x 1.37 m Splicer Rods	350 kN-tension	140 kN-tension

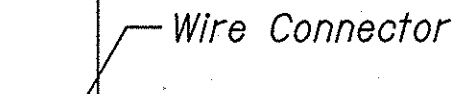
Bar splicer assemblies shall be in accordance with Section 508 of the Standard Specifications except as noted. The furnishing and installation of bar splicer assemblies will be measured and paid for at the contract unit price each for "BAR SPLICERS". All dimensions are in millimeters (mm) except as noted.



**ROLLED THREAD DOWEL BAR**



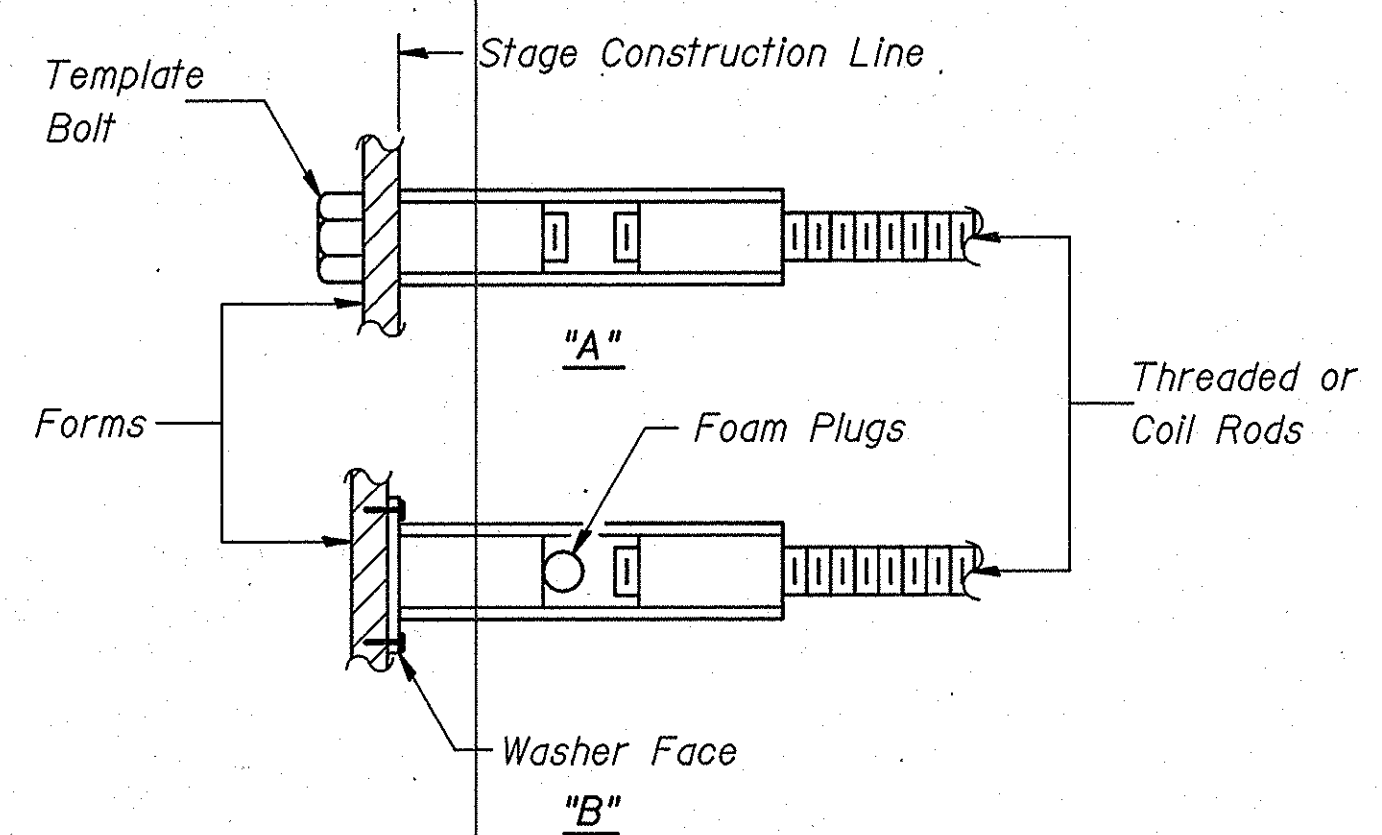
**\*\* ONE PIECE**



**WELDED SECTIONS**

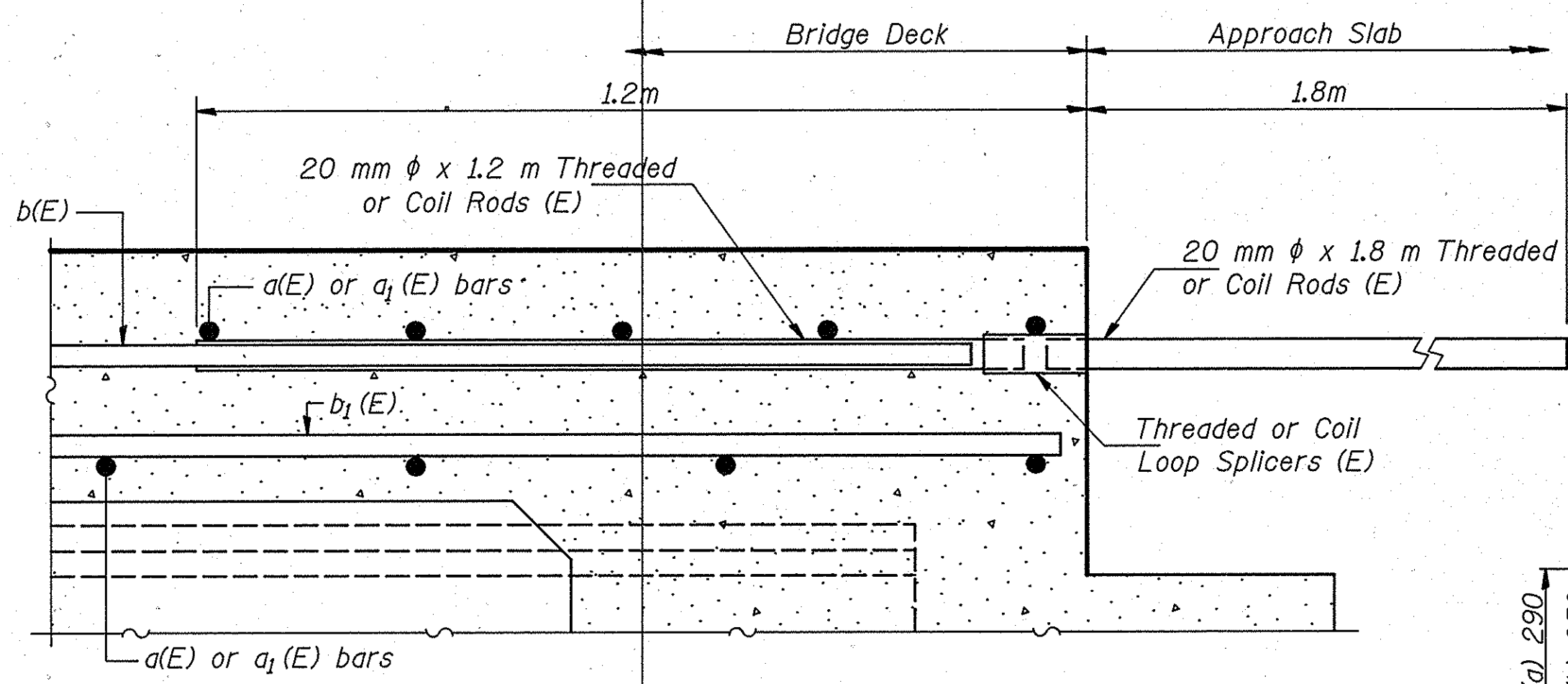
**SPLICER ALTERNATIVES**

\*\* Heavy Hex Nuts conforming to ASTM A 563M, Grade C, D or DH may be used.



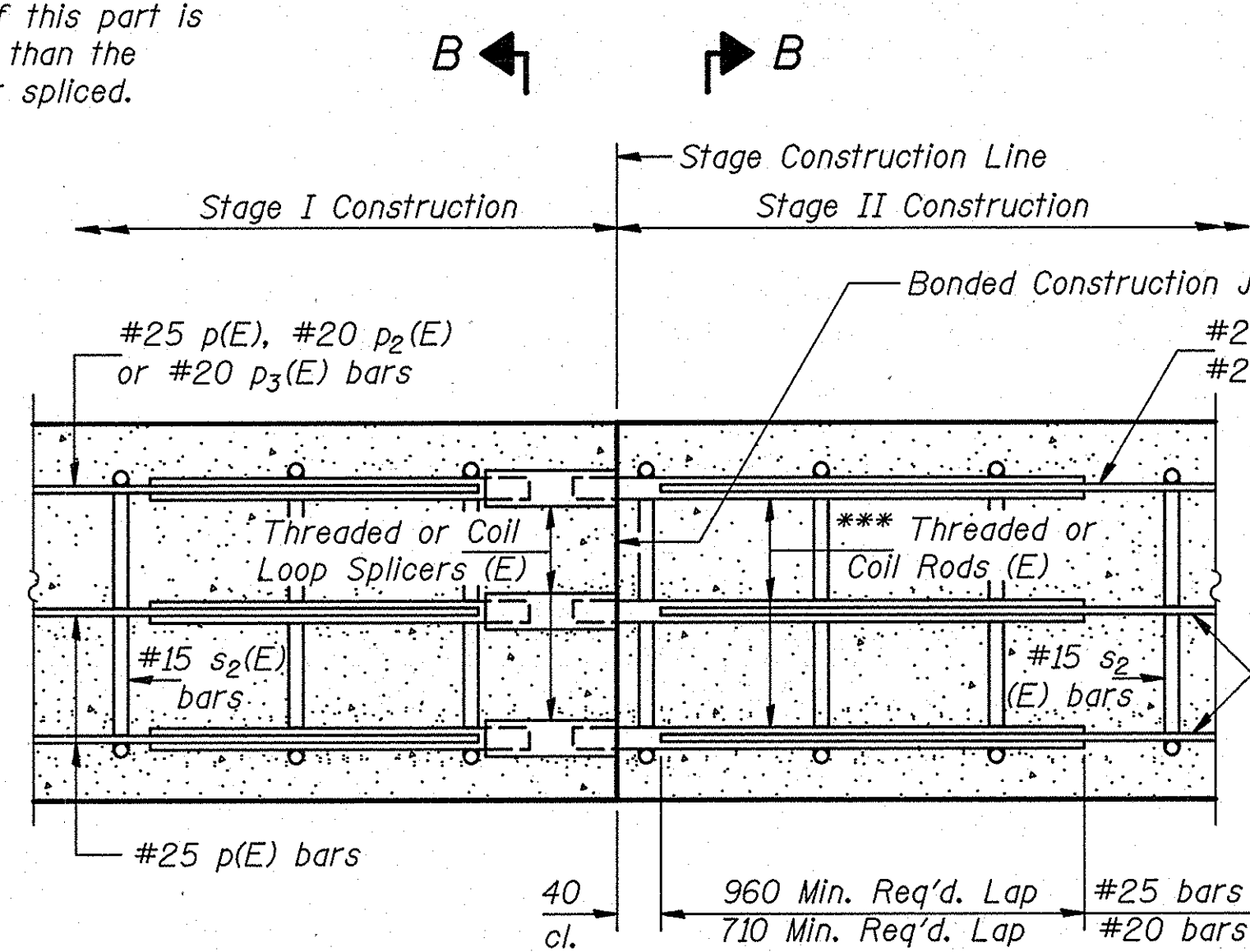
**INSTALLATION AND SETTING METHODS**

"A" : Set splicer by means of a template bolt.  
 "B" : Set splicer by nailing to wood forms or cementing to steel forms.



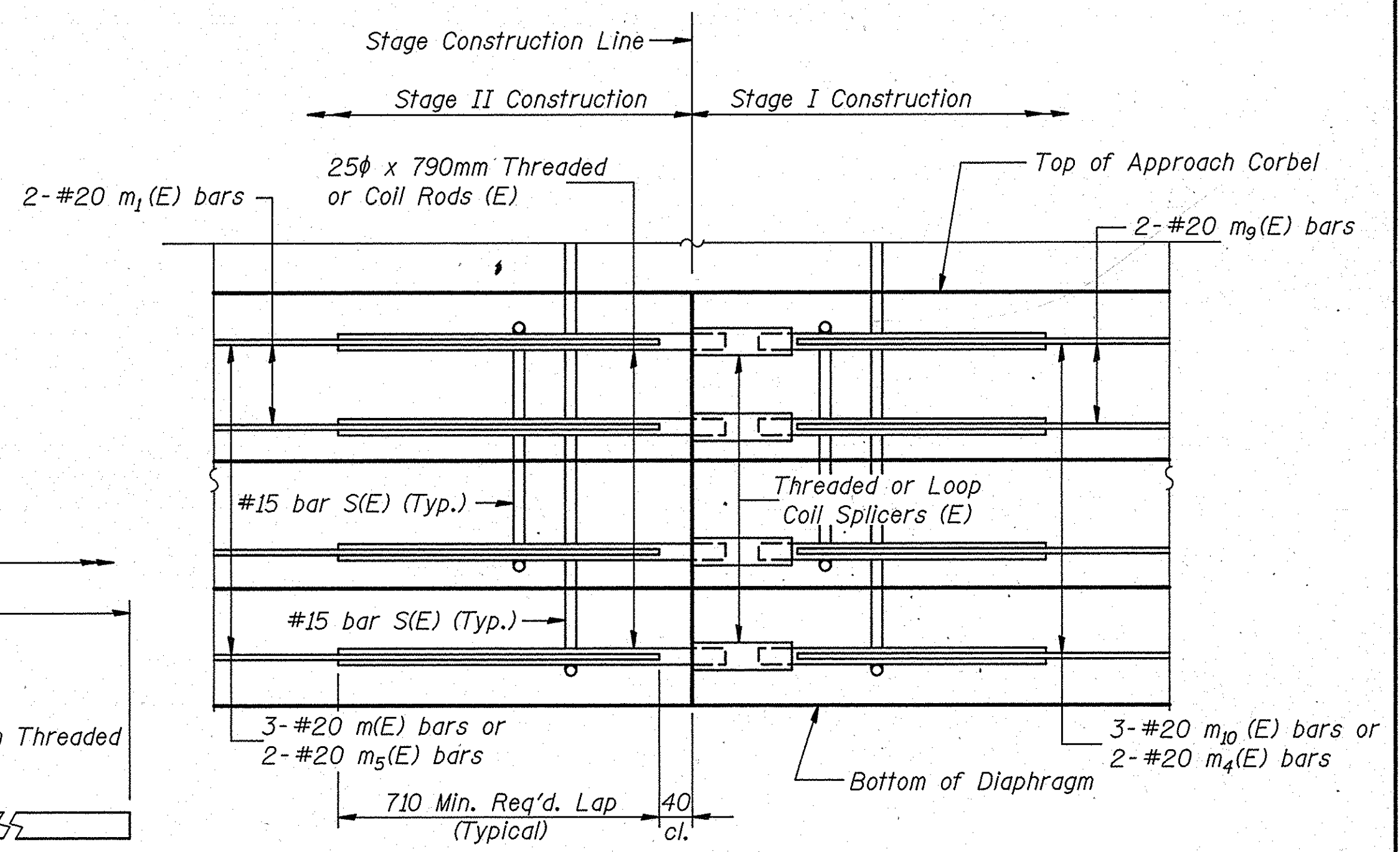
**SECTION THRU END OF DECK**

**SPLICER DETAILS**  
(No. Req'd. 20mm  $\phi$  = 82)



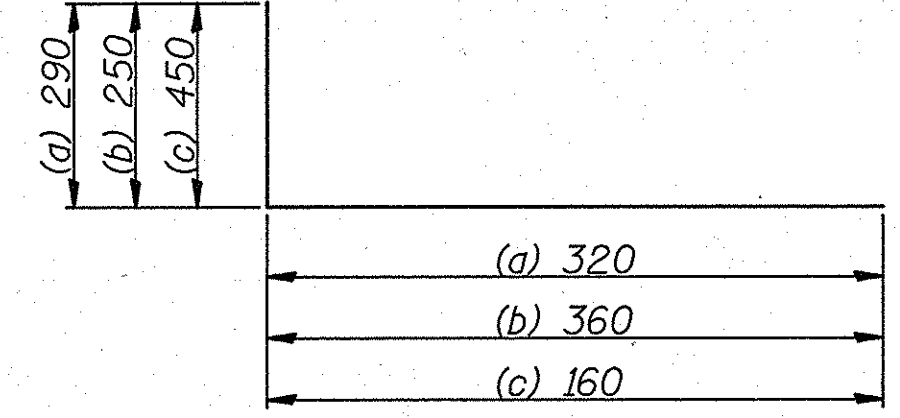
**SECTION THRU ABUTMENTS**

\*\*\* 30 $\phi$  x 1.04m for #25 bars  
 25 $\phi$  x 790mm for #20 bars



**VIEW C-C**

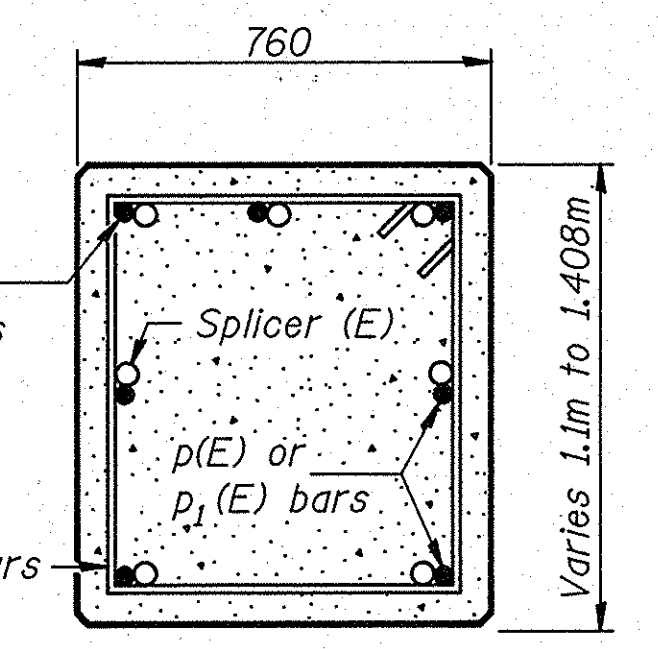
**SPLICER DETAILS**  
(No. Req'd. 25mm  $\phi$  = 10)



**BAR BENDING DETAIL**

Splicer Rods (a), (b) & (c)

**SPLICER DETAILS**  
(No. Req'd. 25mm  $\phi$  = 6)



**SECTION B-B**

**SPLICER DETAILS**

(No. Req'd. 30mm  $\phi$  = 14)  
 (No. Req'd. 25mm  $\phi$  = 6)

**BAR SPLICER (COUPLER) DETAILS FOR STAGE CONSTRUCTION**  
**F.A.P. RTE. 311-SECTION (I-A)BR**  
**KENDALL COUNTY**  
**STA. 20+989.19**

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**CONSULTING ENGINEERS**

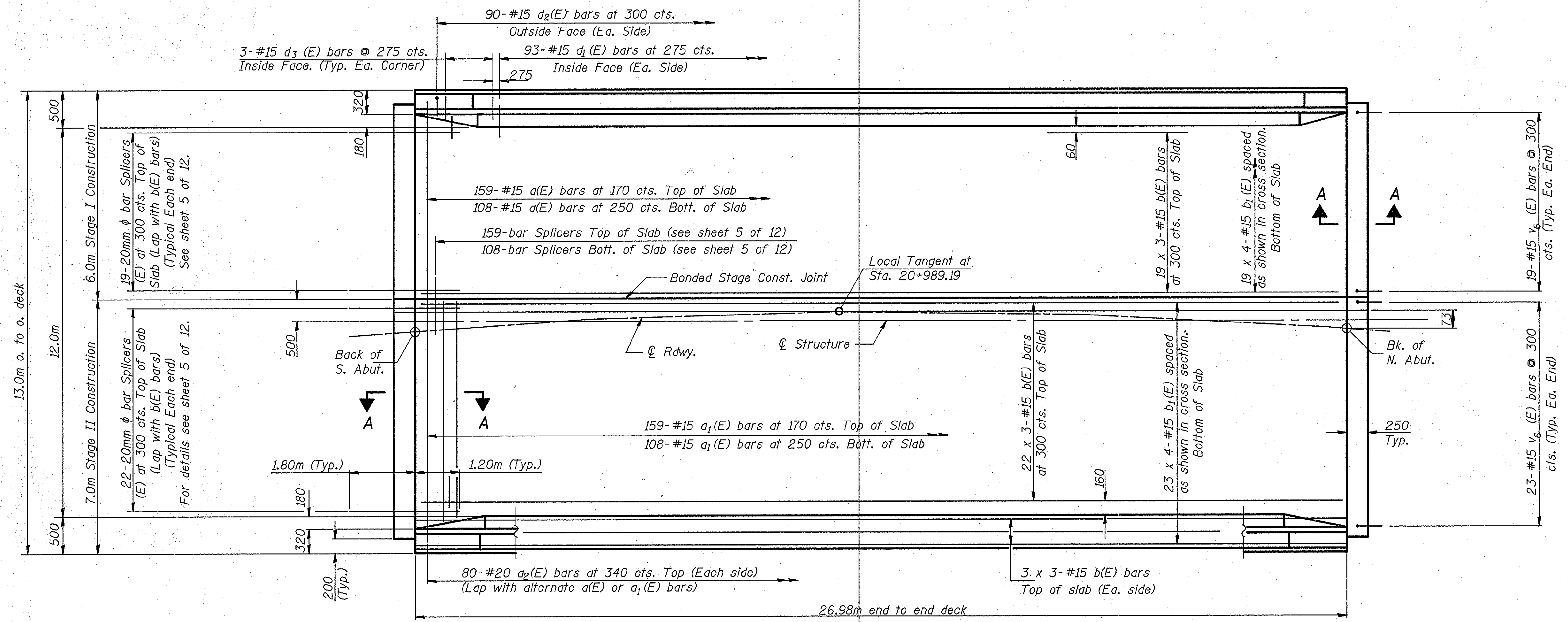
DESIGNED: J.W.G. DRAWN: C.S.W.  
 CHECKED: G.R. CHECKED: J.W.G.

**FOR INFORMATION ONLY**

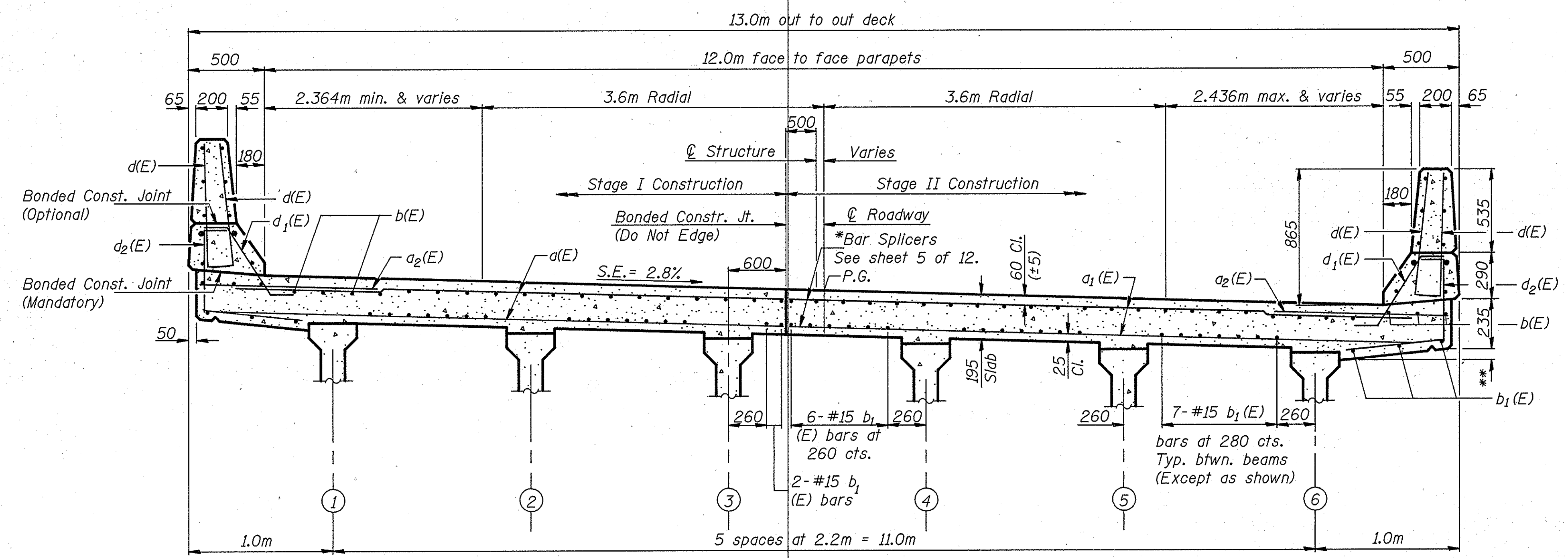


ROUTE NO.	SECTION	COUNTY	TOTAL SHEET NO.
F.A.P. 311	*	KENDALL	28
FEDERAL ROAD DISTRICT 3	ILLINOIS	PROJECT	SHEET NUMBER 6 of 12 SHEETS

\* (1-A)BR, (1-DRS-2



PLAN



CROSS SECTION  
(Looking Easterly)

Notes: See sheet #6 of 12 for superstructure details, parapet reinforcement and Bill of Material.  
See sheet #8 of 12 for Section A-A.  
Reinforcement bars designated (E) shall be epoxy coated.  
Bars indicated thus 20 x 3-#15 etc. indicates 20 lines of bars with 3 lengths per line.  
All dimensions are in millimeters (mm) except as noted.  
Min. Bar lap for #15 bar equal 640 unless otherwise noted.  
\* Align a<sub>1</sub>(E) bars with a(E) bars.  
\*\* See section thru Parapet Sheet 7 of 12.

**SUPERSTRUCTURE**  
**F.A.P. RTE. 311-SECTION (1-A)BR**  
**KENDALL COUNTY**  
**STA. 20+989.19**

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CHECKED: J.W.G. CHECKED: G.R.

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\* (I-A)BR, (I-JRS)-2

### SUPERSTRUCTURE BILL OF MATERIAL

Bar	No.	Size	Length (m)	Shape
a(E)	267	#15	5.53	—
a <sub>1</sub> (E)	267	#15	6.75	—
a <sub>2</sub> (E)	160	#20	1.20	—
b(E)	141	#15	9.40	—
b <sub>1</sub> (E)	168	#15	7.21	—
d(E)	376	#15	0.91	—
d <sub>1</sub> (E)	186	#15	0.80	┘
d <sub>2</sub> (E)	180	#15	1.26	┘
d <sub>3</sub> (E)	12	#15	0.73	┘
e(E)	60	#15	5.31	—
e <sub>1</sub> (E)	16	#15	7.21	—
e <sub>2</sub> (E)	12	#25	9.85	—
m(E)	6	#20	6.92	—
m <sub>1</sub> (E)	4	#20	6.72	—
m <sub>2</sub> (E)	8	#20	2.46	—
m <sub>3</sub> (E)	8	#20	3.00	—
m <sub>4</sub> (E)	4	#20	2.06	—
m <sub>5</sub> (E)	4	#20	3.06	—
m <sub>6</sub> (E)	4	#20	0.68	—
m <sub>7</sub> (E)	8	#20	1.56	—
m <sub>8</sub> (E)	2	#20	1.24	—
m <sub>9</sub> (E)	4	#20	5.72	—
m <sub>10</sub> (E)	6	#20	5.92	—
s(E)	82	#15	1.72	┘
s <sub>1</sub> (E)	82	#15	3.40	┘
v <sub>6</sub> (E)	84	#15	1.06	—
Reinforcement Bars Epoxy Coated		kg	13,160	
* Concrete Superstructure		m <sup>3</sup>	122.8	
Bar Splicers		Ea.	365	

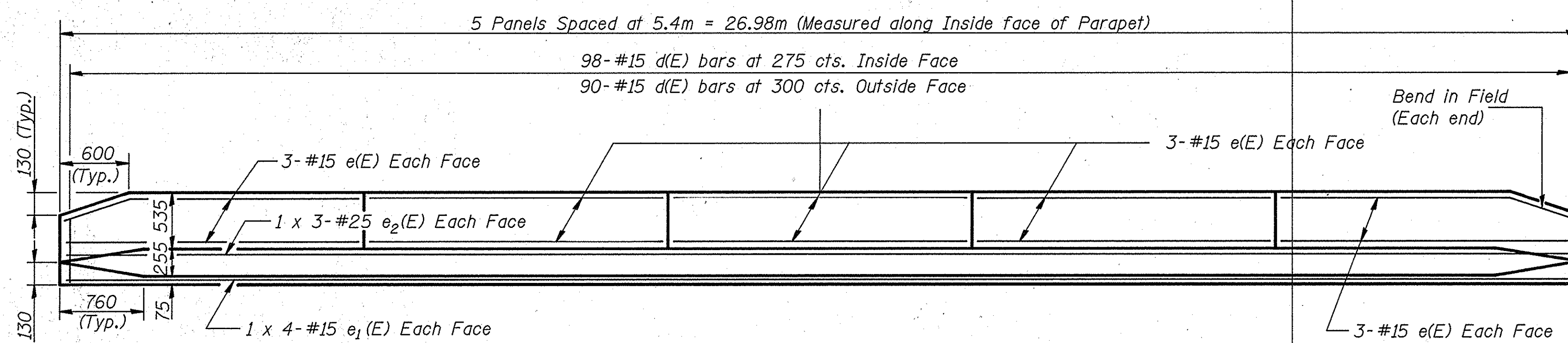
\* Includes 4.1m<sup>3</sup> for Abutment Wing Walls.

Note:  
Reinforcement bars designated (E) shall be epoxy coated.

Bars indicated thus 1X2-#5 etc.  
indicates 1 line of bars with 2 lengths per line.

**PARAPET DETAILS**  
F.A.P. RTE. 311-SECTION (I-A)BR  
KENDALL COUNTY  
STA. 20+989.19

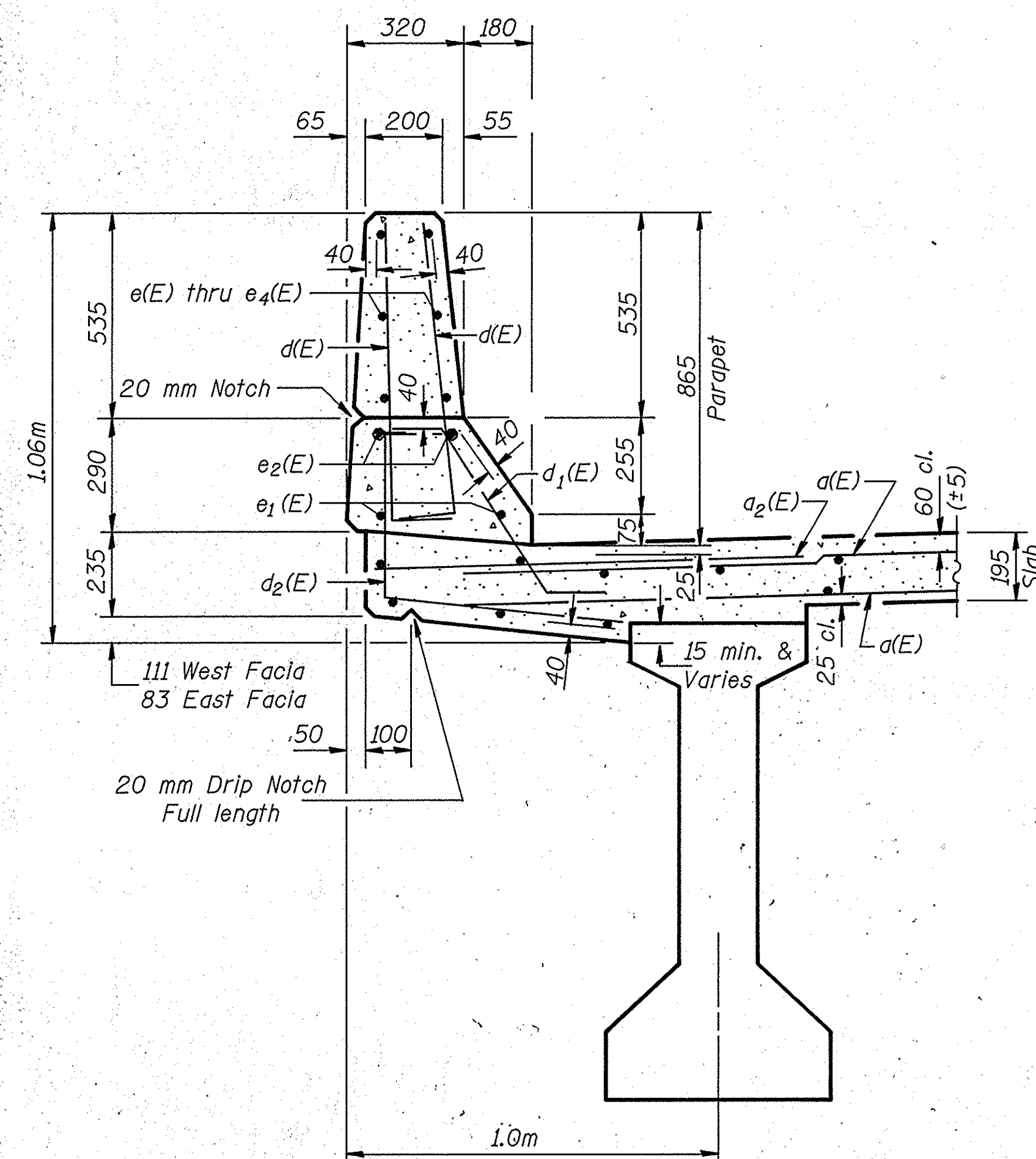
**RC ENGINEERS, LTD.**  
CONSULTING ENGINEERS  
DESIGNED: G.R. DRAWN: C.S.W.  
CHECKED: J.W.G. CHECKED: G.R.



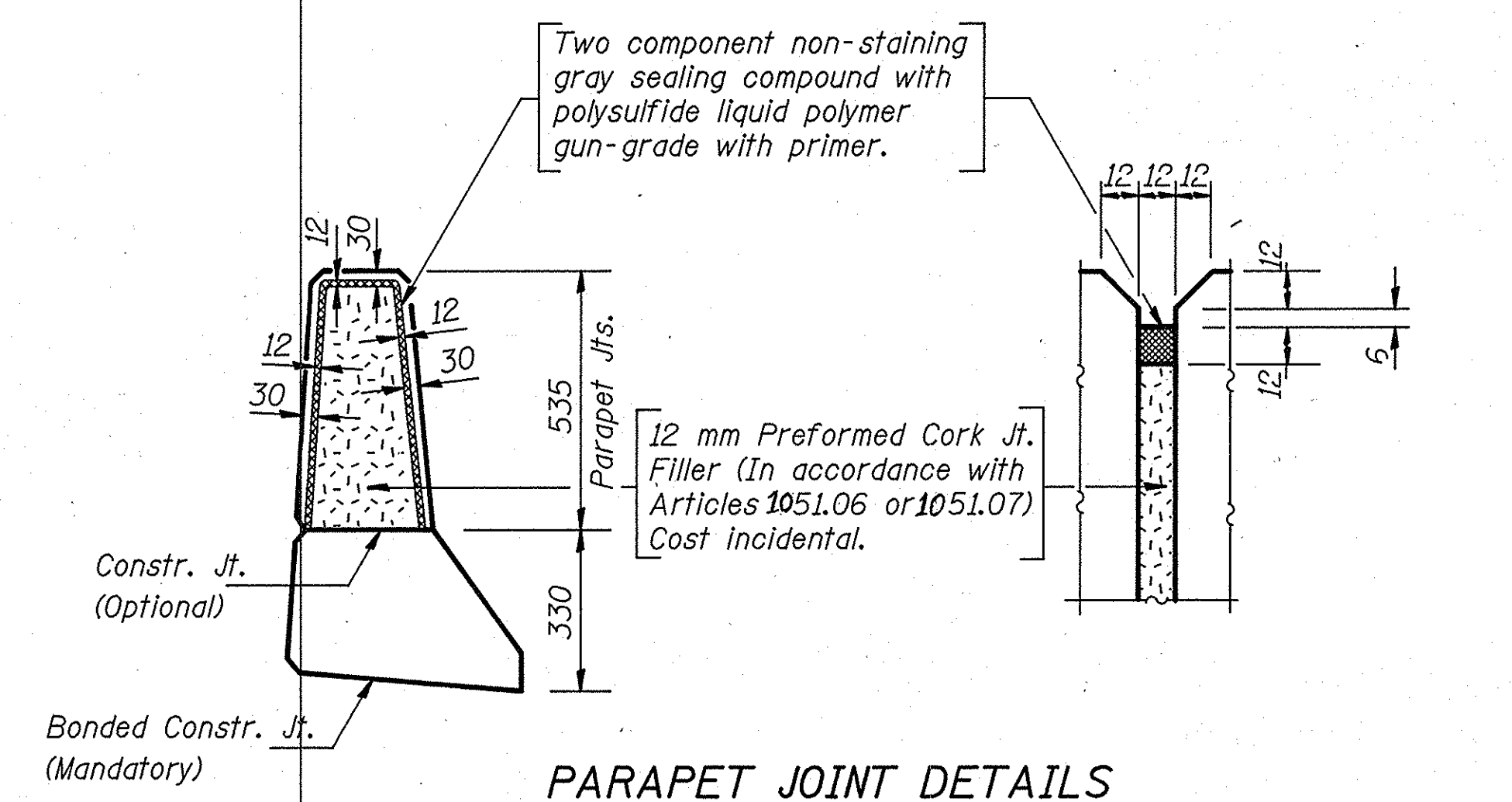
**INSIDE ELEVATION OF PARAPET**

**Min. Bar Laps**

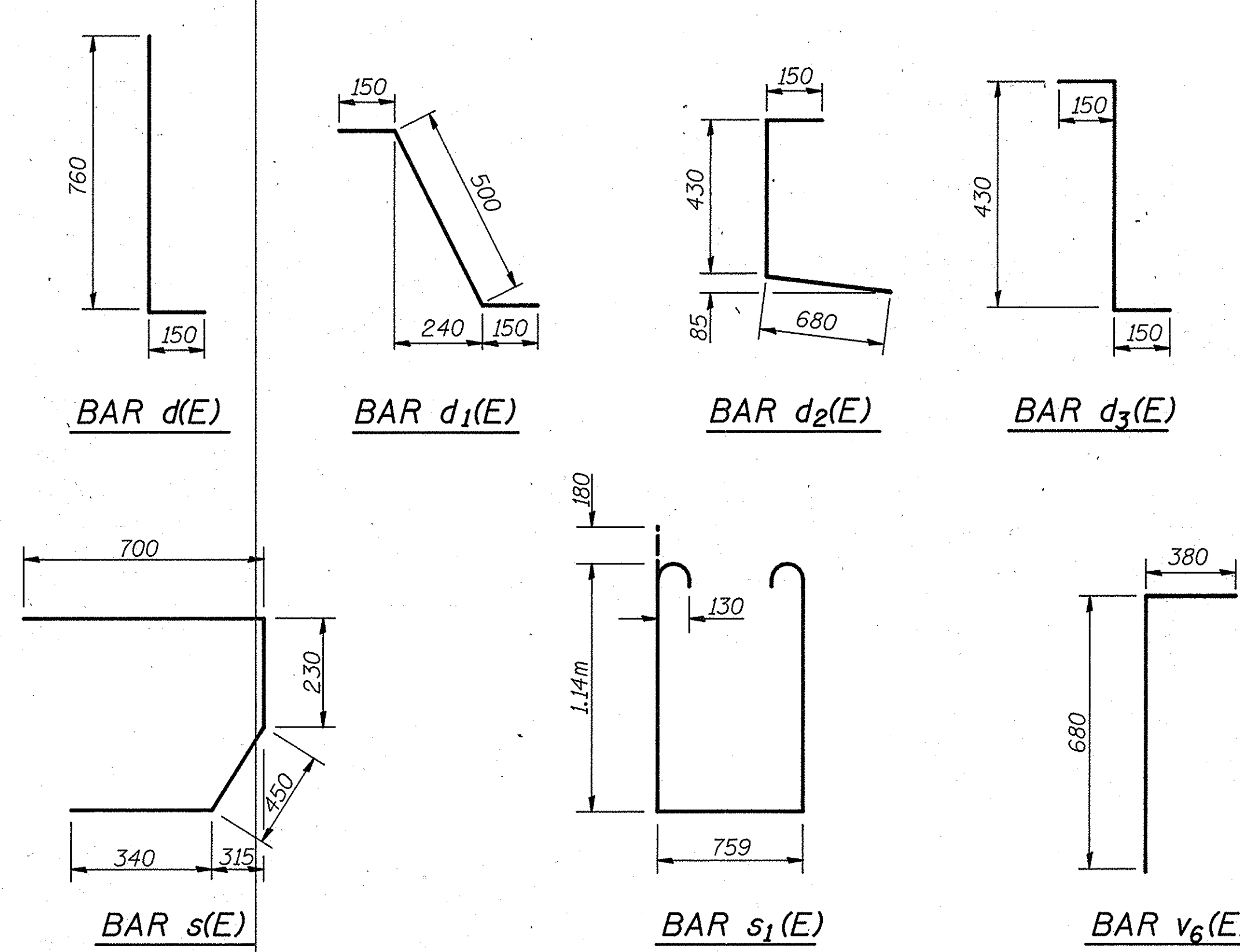
#15 bar = 640  
#25 bar = 1.32m



**SECTION THRU PARAPET**  
(EAST PARAPET SHOWN)



**PARAPET JOINT DETAILS**

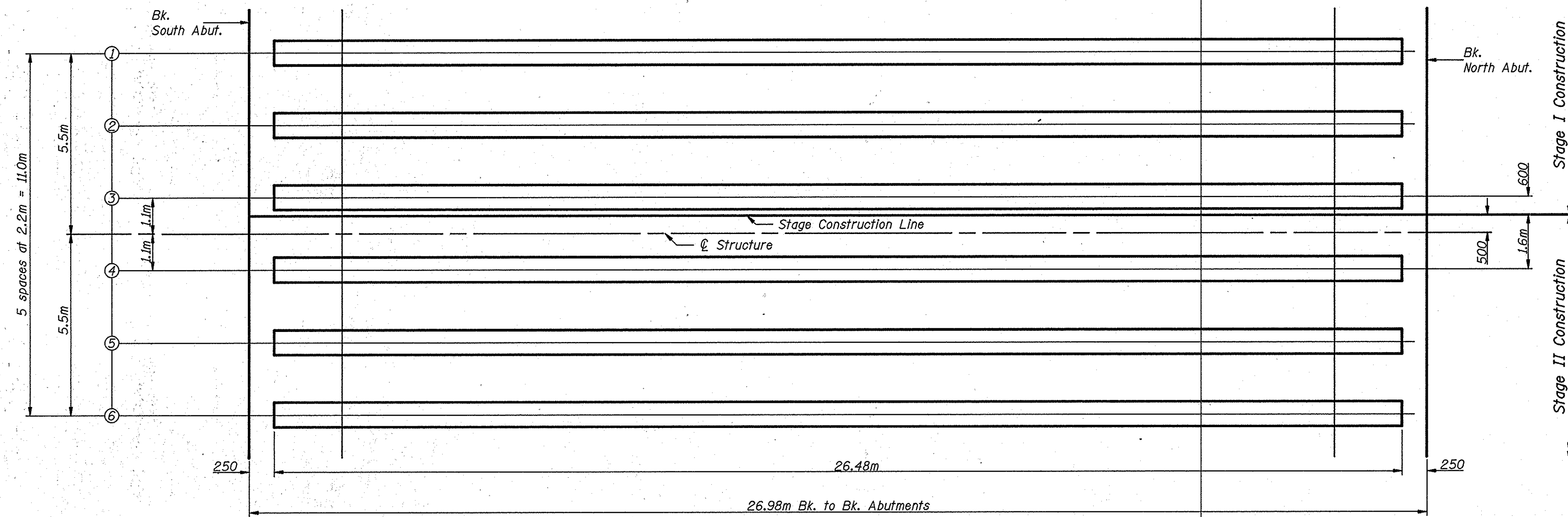


**FOR INFORMATION ONLY**

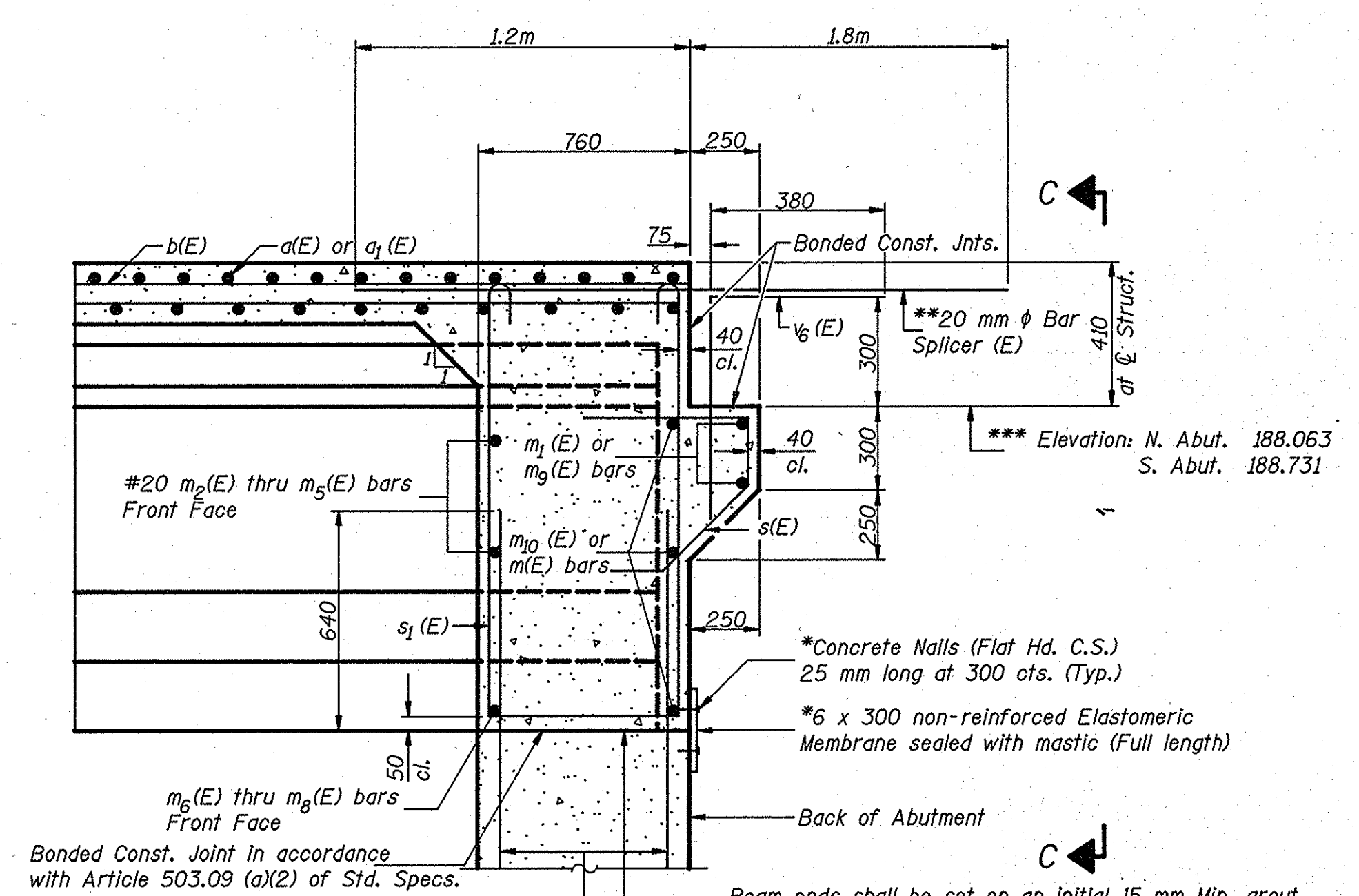


ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
F.A.P. 311	*	KENDALL	28	22
FEDERAL ROAD DISTRICT 3	ILLINOIS	PROJECT	SHEET NUMBER 8 of 12 SHEETS	

\* (I-A)BR, (I-D)RS-2

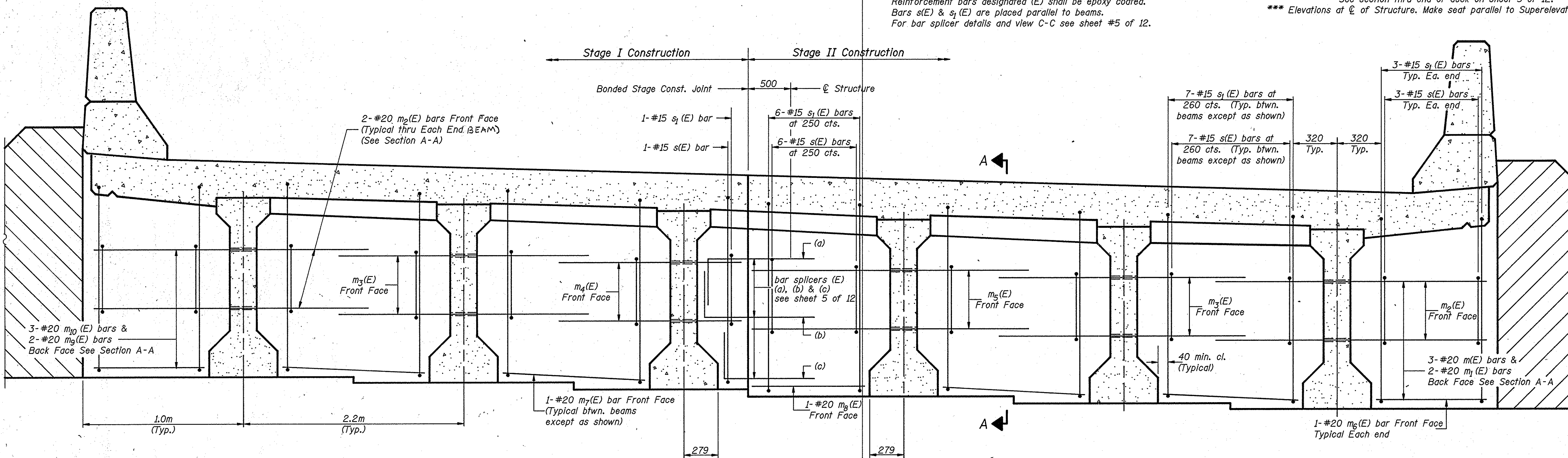


**FRAMING PLAN**



**SECTION A-A AT ABUTMENT**  
(Dimensions at Rt. <'s)

NOTES: Reinforcement bars in diaphragm are billed with Superstructure on sheet #7 of 12. Concrete in diaphragm is included with Concrete Superstructure on sheet #7 of 12. For details of bars s(E), s<sub>1</sub>(E) & v<sub>1</sub>(E) see sheet #7 of 12. Hatched area to be poured with Superstructure after beams are in place. Reinforcement bars designated (E) shall be epoxy coated. Bars s(E) & s<sub>1</sub>(E) are placed parallel to beams. For bar splicer details and view C-C see sheet #5 of 12.



**ELEVATION**

**DIAPHRAGM AT ABUTMENTS**  
Looking Northeast

Min. Bar Lap  
#15 Bars = 490  
#20 Bars = 610

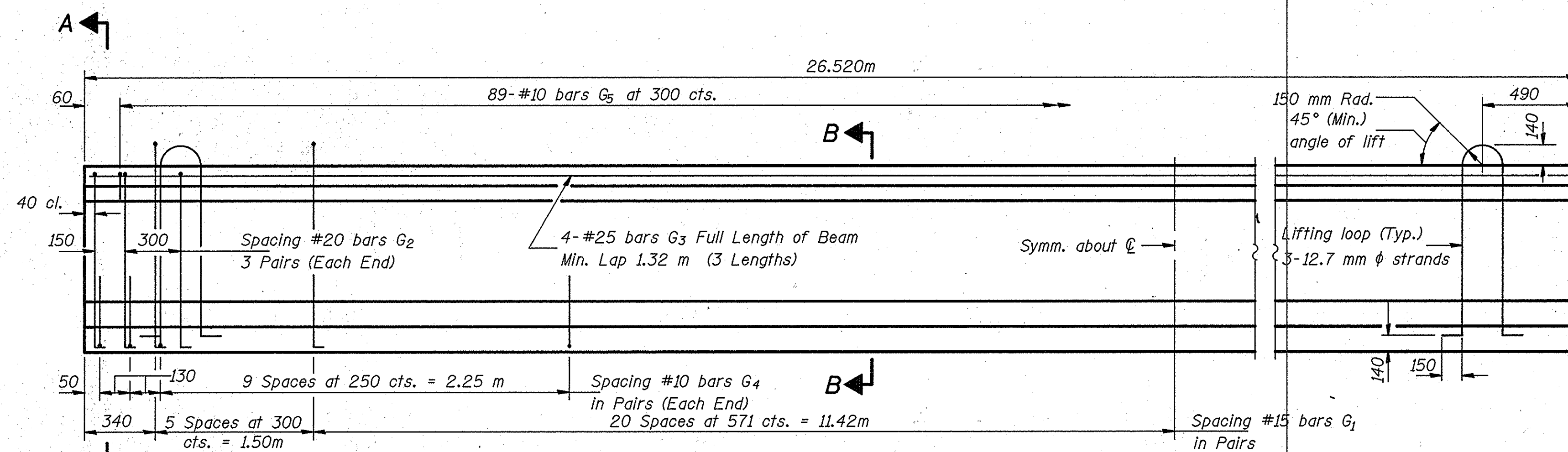
**DIAPHRAGM DETAIL**  
F.A.P. RTE. 311-SECTION (I-A)BR  
KENDALL COUNTY  
STA. 20+989.19

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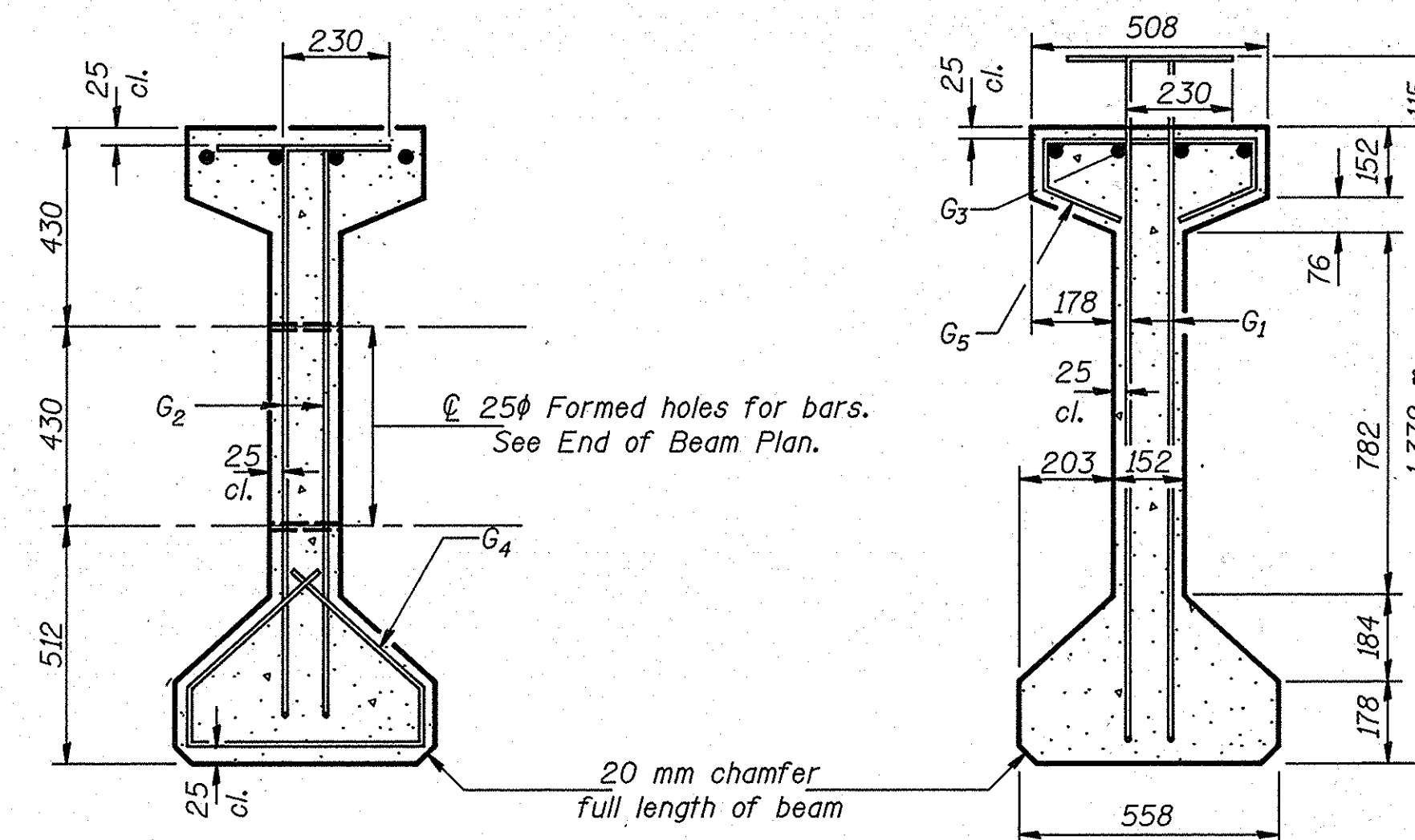
**FOR INFORMATION ONLY**



\* (I-A)BR, (I-DRS)-2

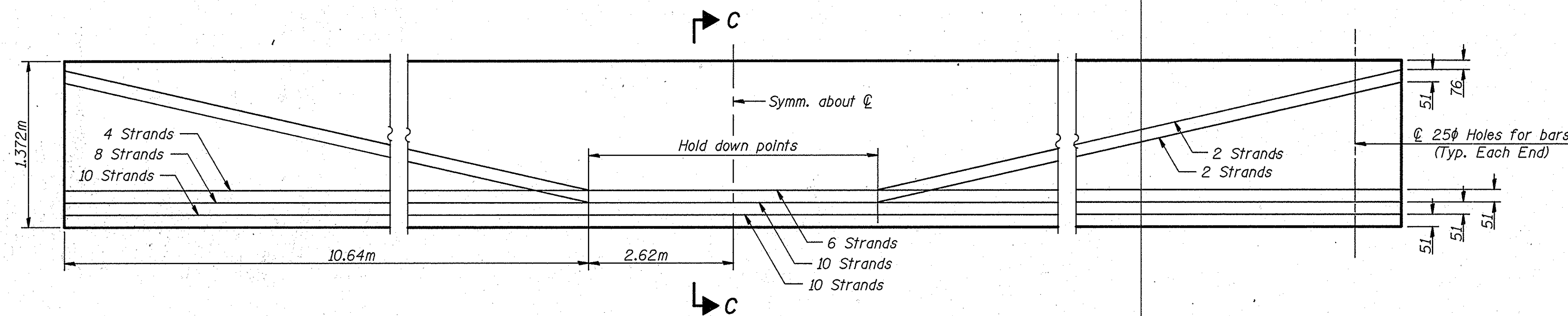


**ELEVATION OF BEAM**  
(Showing Reinforcement & Dimensions)

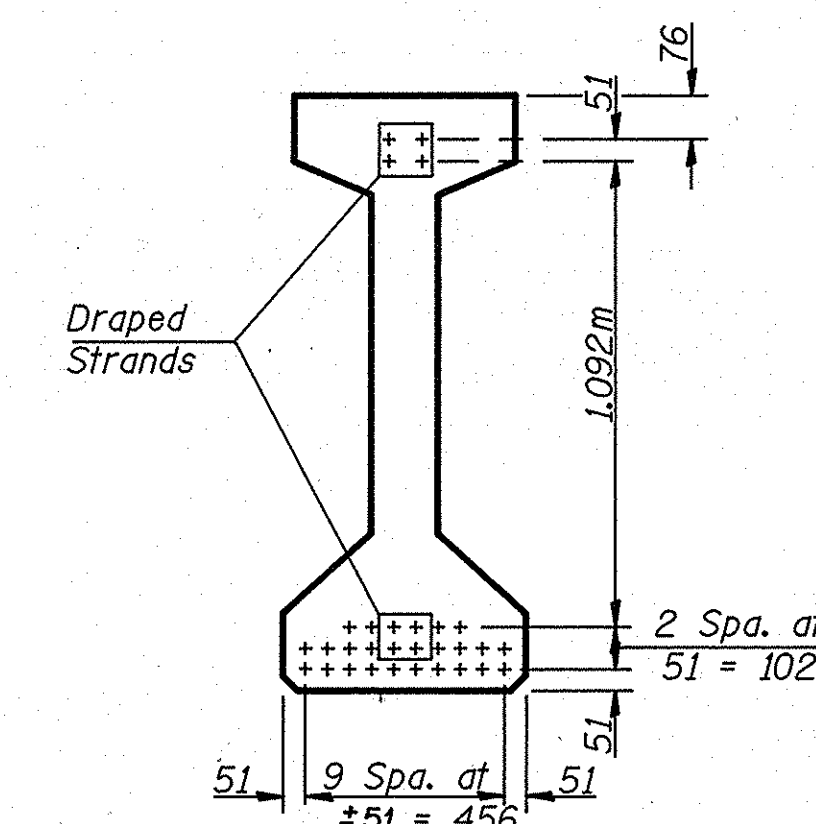


**SECTION A-A**

**SECTION B-B**



**ELEVATION OF BEAM**  
(Showing Prestressing Steel)



**SECTION C-C**

**NOTES**

All reinforcing and Prestressing Steel, and other items which are cast into the Precast Concrete I-Beams shall be included in the contract unit price per meter of "Furnishing and Erecting Precast Prestressed Concrete I-Beams, 1372 mm." Prestressing steel shall be uncoated high strength, low relaxation 7-wire strand (Fu=1860 MPa). The nominal diameter shall be 12.7 mm and the nominal cross-sectional area shall be 98.71 mm<sup>2</sup>. Non-prestressing steel shall conform to AASHTO designation M-31M, M-42M or M-53M Grade 400. Lifting loops shall be 3-12.7 mm  $\phi$  strands (Fu=1860 MPa), as shown. Required release strength, f'ci, shall be 35 MPa. Reinforcement bars designated (E) shall be epoxy coated. All dimensions are in millimeters (mm) except as noted.

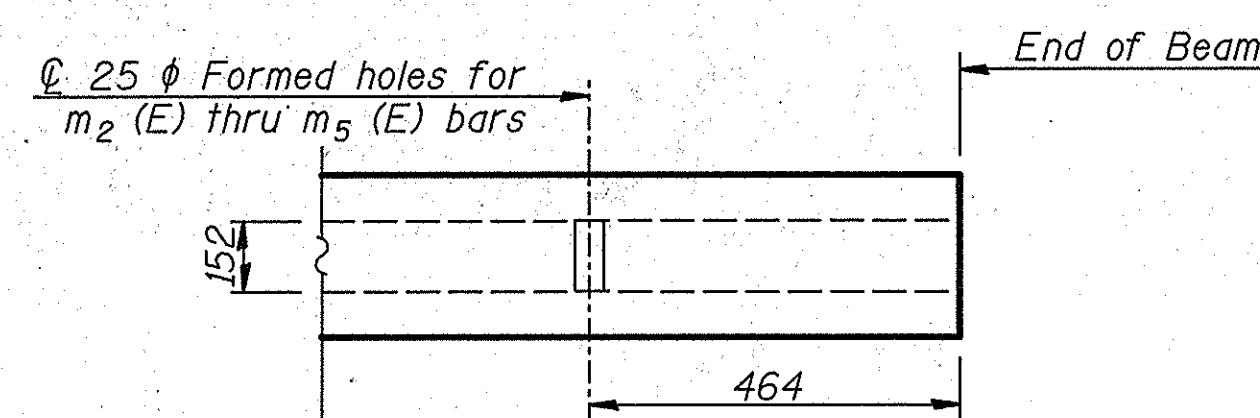
**\* BAR LIST**

Bar	No.	Size	Length (m)	Shape
G <sub>1</sub>	102	#15	1.91	TL
G <sub>2</sub>	12	#20	1.61	TL
G <sub>3</sub>	12	#25	9.70	TL
G <sub>4</sub>	48	#10	1.02	TL
G <sub>5</sub>	89	#10	1.03	TL

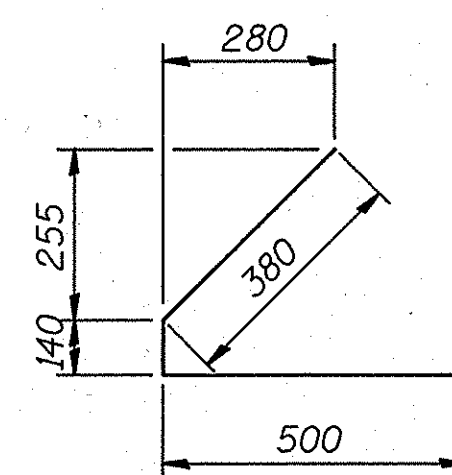
\* For one beam only.

**BILL OF MATERIAL**

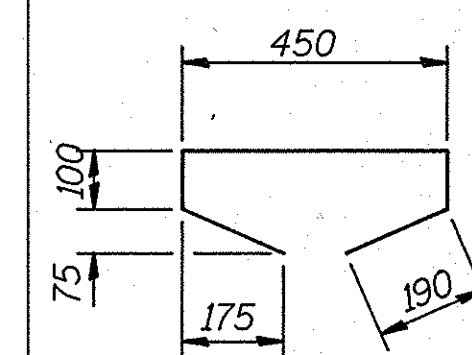
Item	Unit	Total
Furnishing and Erecting Precast Prestressed Concrete I-Beams, 1372 mm	m	159



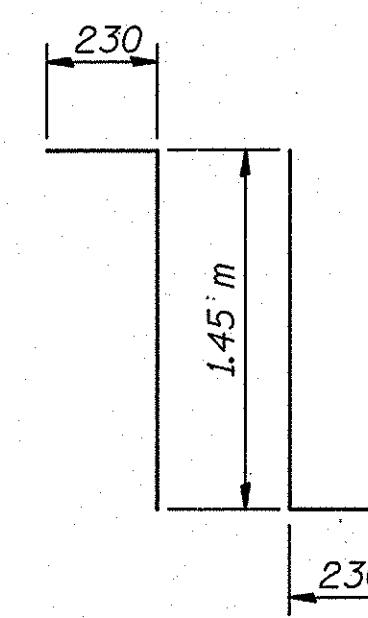
**END OF BEAM PLAN**



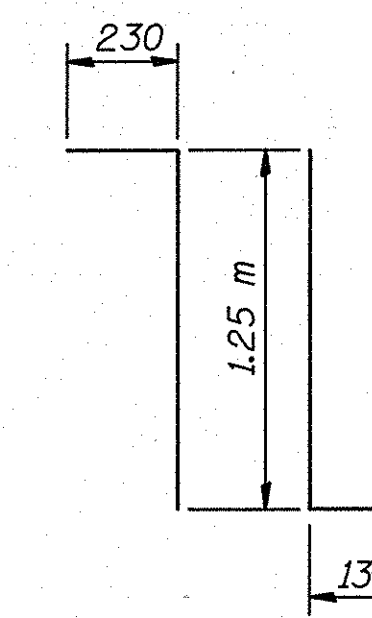
**BAR G<sub>4</sub>**



**BAR G<sub>5</sub>**



**BAR G<sub>1</sub>**



**BAR G<sub>2</sub>**

**FOR INFORMATION ONLY**

**BEAM DETAILS**  
F.A.P. RTE. 311-SECTION (I-A)BR  
KENDALL COUNTY  
STA. 20+989.19

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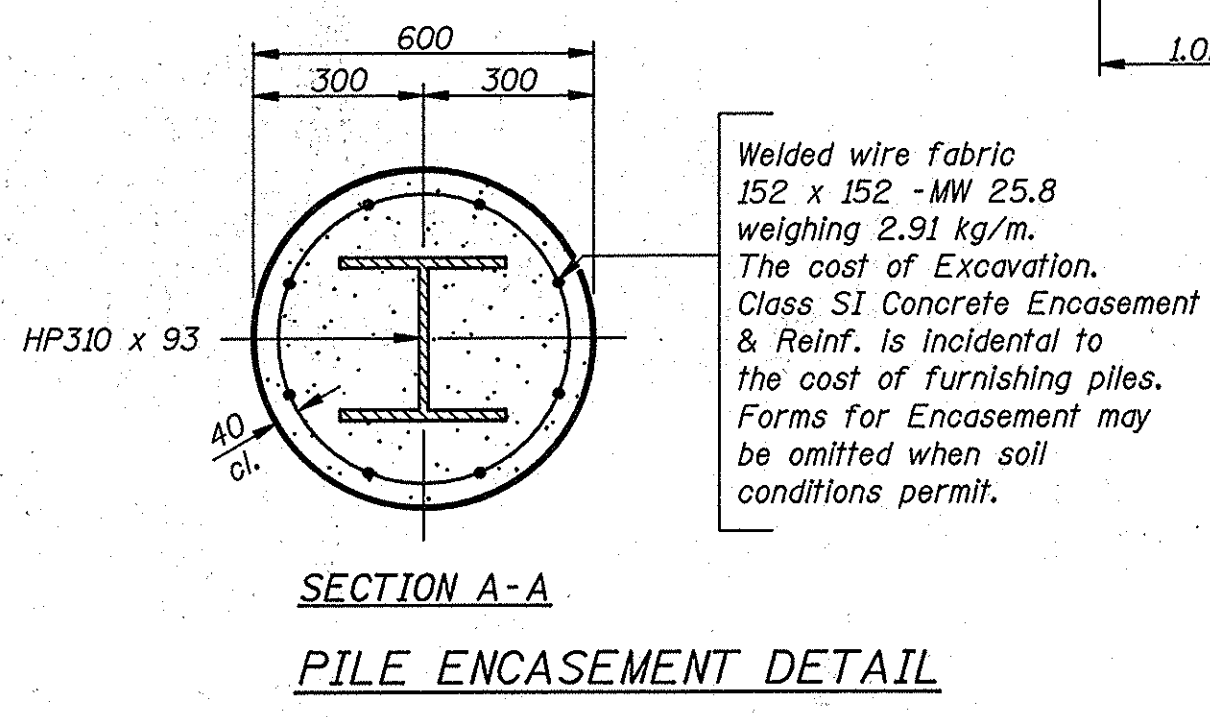
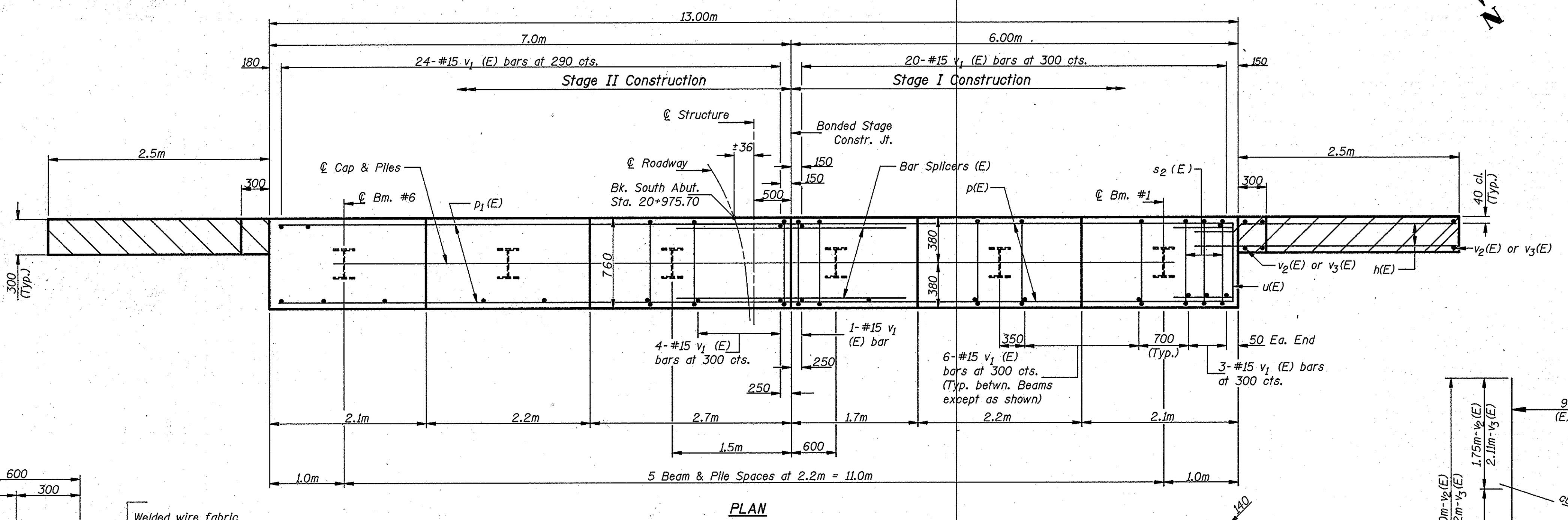
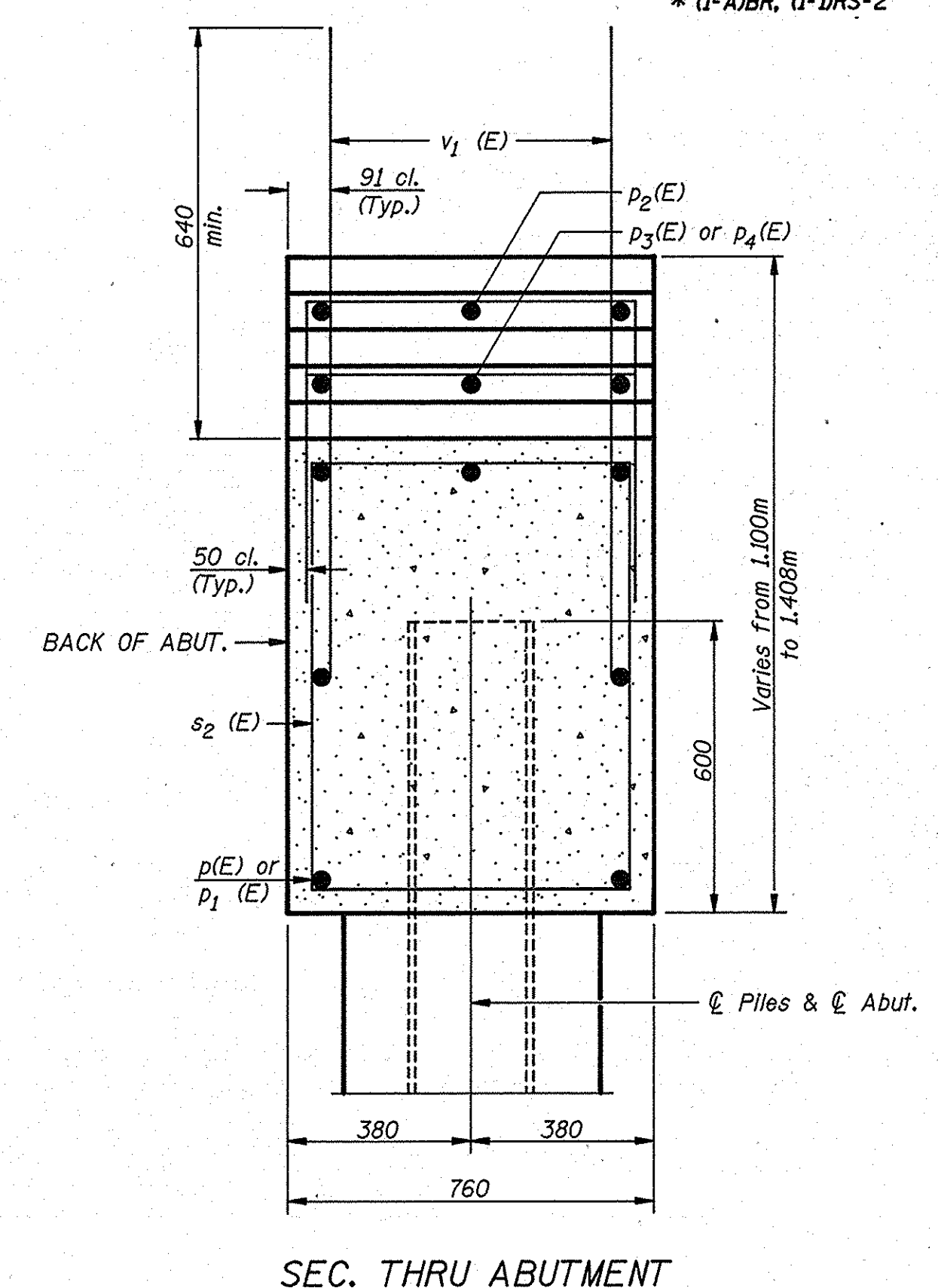
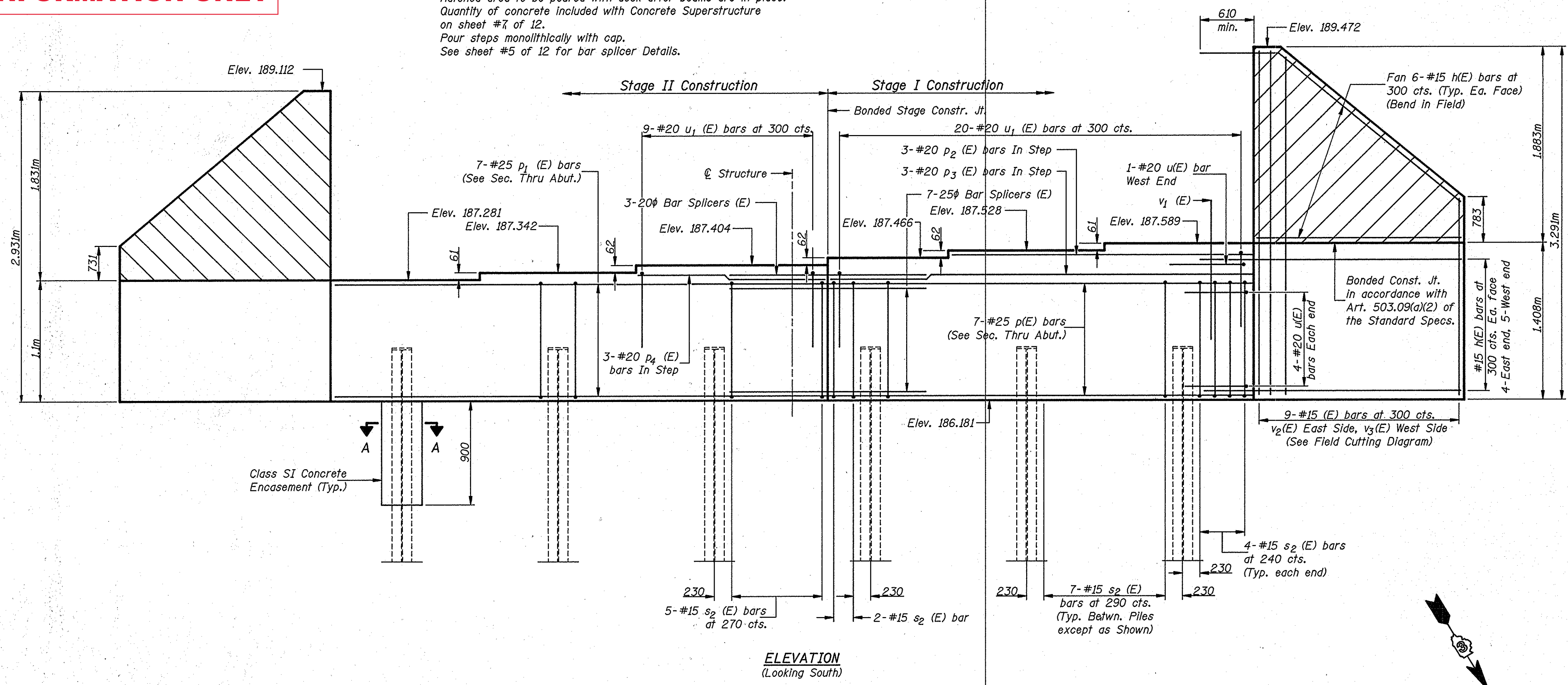
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CHECKED: J.W.G. CHECKED: J.W.G.



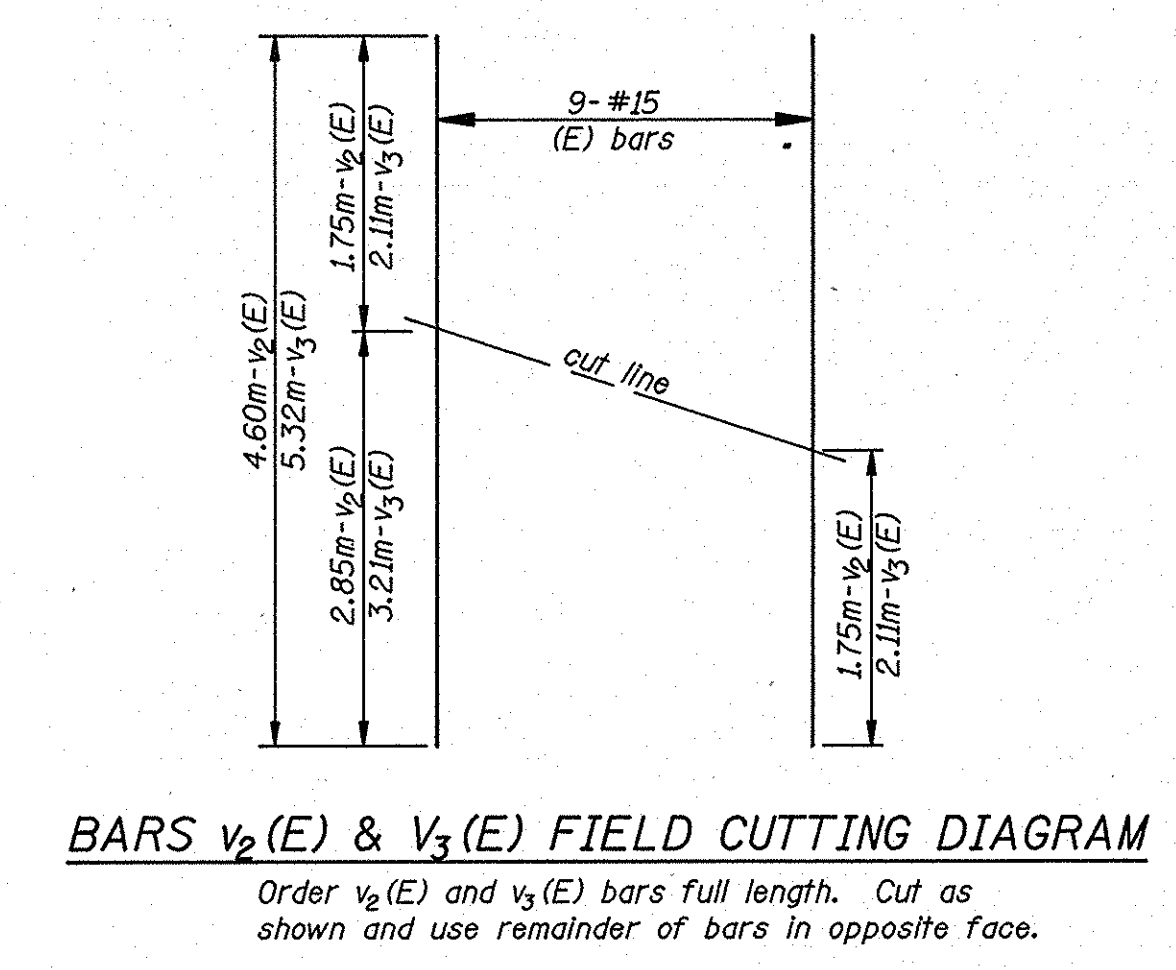
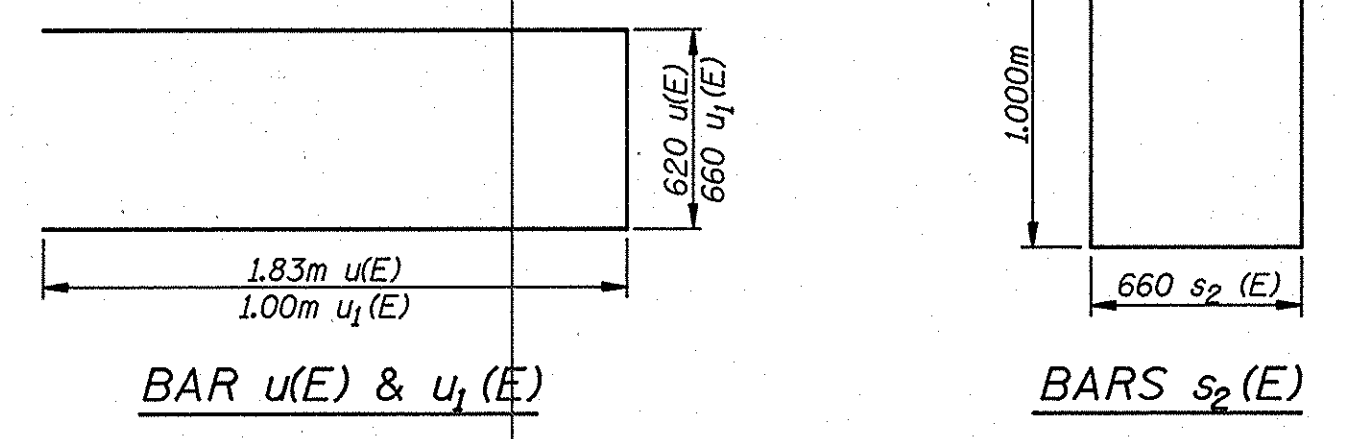
**FOR INFORMATION ONLY**

Notes: All edges shall have standard 20 chamfers.  
 Hatched area to be poured with deck after beams are in place.  
 Quantity of concrete included with Concrete Superstructure on sheet #7 of 12.  
 Pour steps monolithically with cap.  
 See sheet #5 of 12 for bar splicer Details.

ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS
F.A.P. 311	*	KENDALL	28
FEDERAL ROAD DIST. 3	ILLINOIS	PROJECT	24
			SHEET NO. 10 of 12 SHEETS



**PILE DATA**  
 Type: HP310 x 93  
 Capacity: Driven to Refusal  
 Est. Length: 7m  
 No. Required: 5 + 1 Test Pile  
 Metal Shoes: 5



**BILL OF MATERIALS**

Bar	No.	Size	Length	Shape
h(E)	42	#15	3.33	
p(E)	7	#25	5.92	
p1(E)	7	#25	6.92	
p2(E)	3	#20	4.22	
p3(E)	3	#20	5.92	
p4(E)	3	#20	2.62	
s2(E)	43	#15	3.60	
u(E)	9	#20	4.28	
u1(E)	29	#20	2.66	
v1(E)	79	#15	1.60	
v2(E)	9	#15	4.60	
v3(E)	9	#15	5.32	
Concrete Structures		m <sup>3</sup>	14.2	
Reinforcement Bars (Epoxy Coated)		Kg.	1520	
Steel Piles HP310 x 93		meter	35	
Test Pile Steel HP310 x 93		Ea.	1	
Metal Shoes		Ea.	5	
Structure Excavation		m <sup>3</sup>	90	

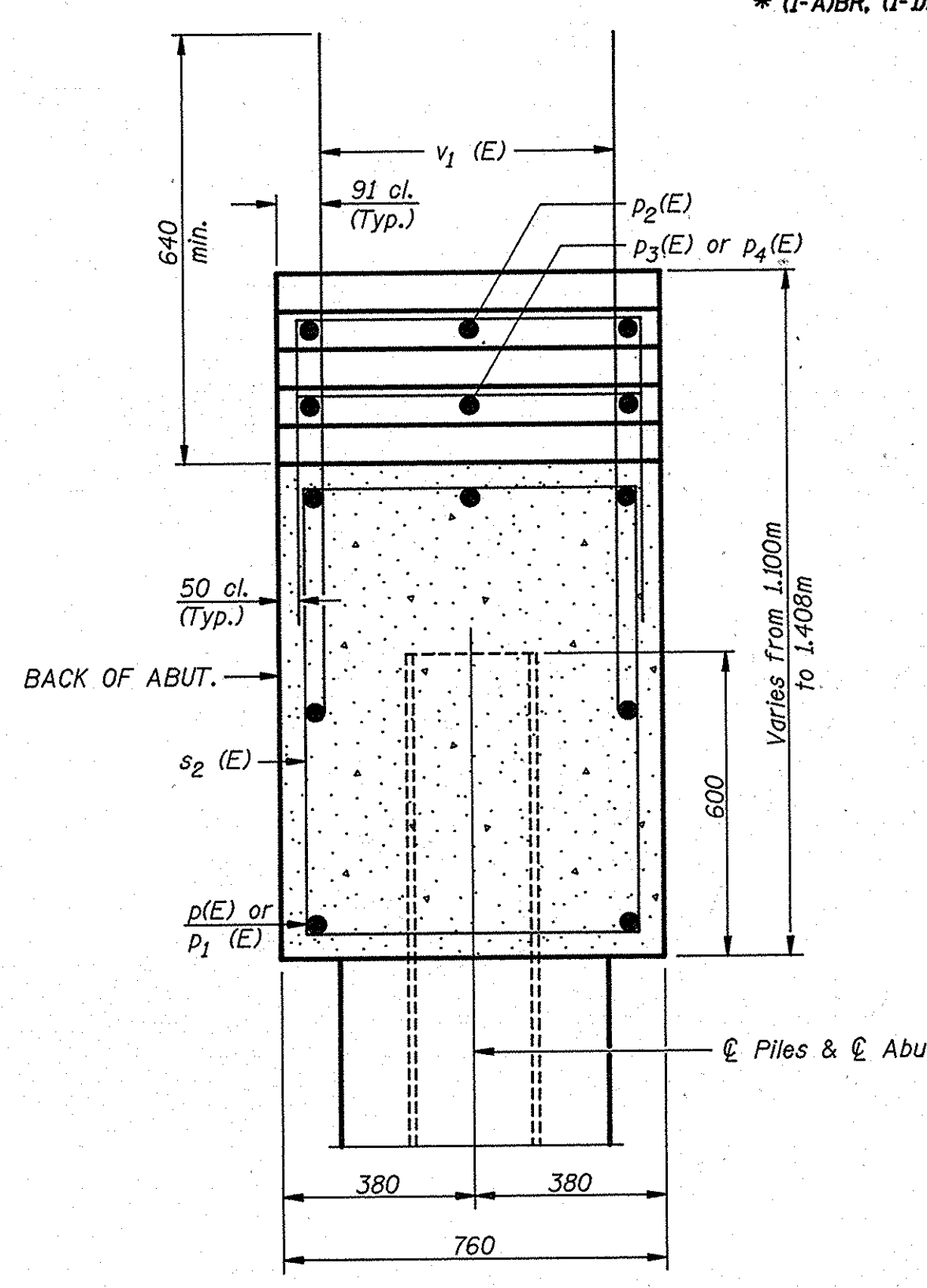
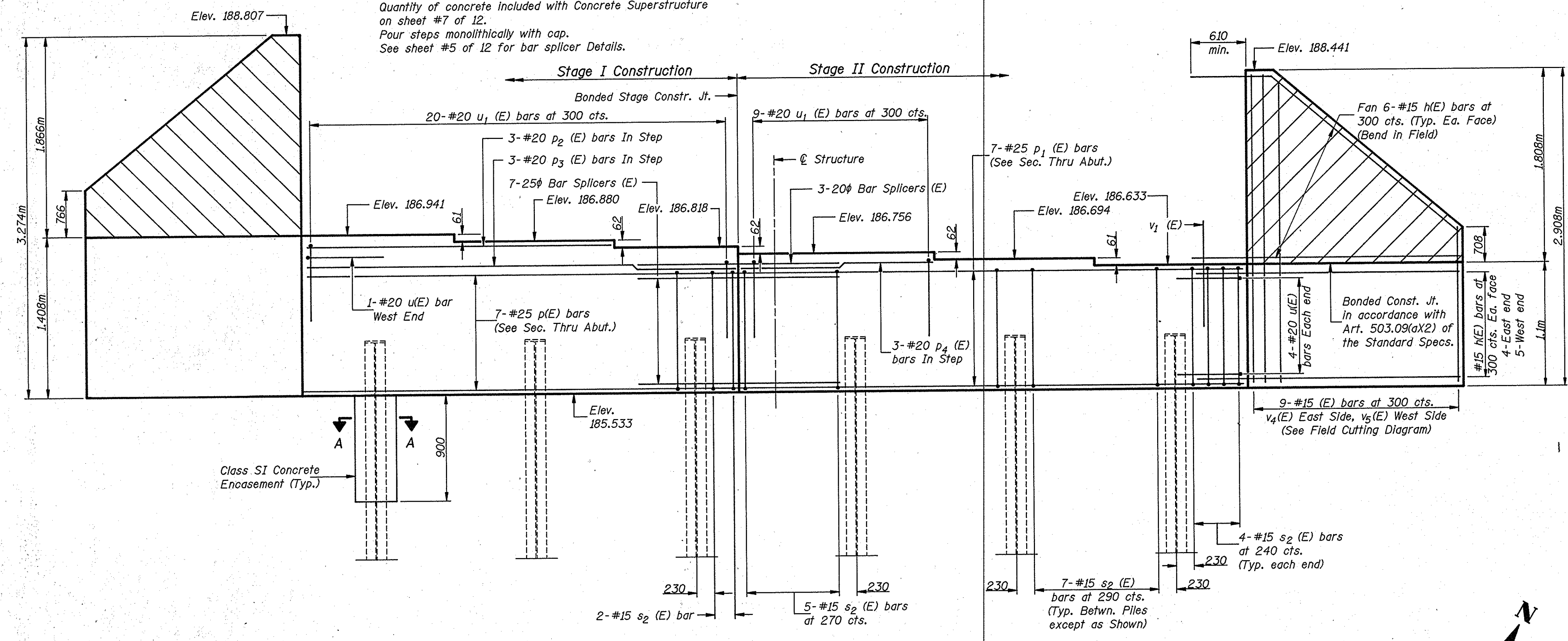
**SOUTH ABUTMENT**  
**F.A.P. RTE. 311-SECTION (1-A)BR**  
**KENDALL COUNTY**  
**STA. 20+989.19**

**RC ENGINEERS, LTD.**  
**CONSULTING ENGINEERS**  
 DESIGNED: J.W.G. DRAWN: C.S.W.  
 CHECKED: G.R. CHECKED: J.W.G.



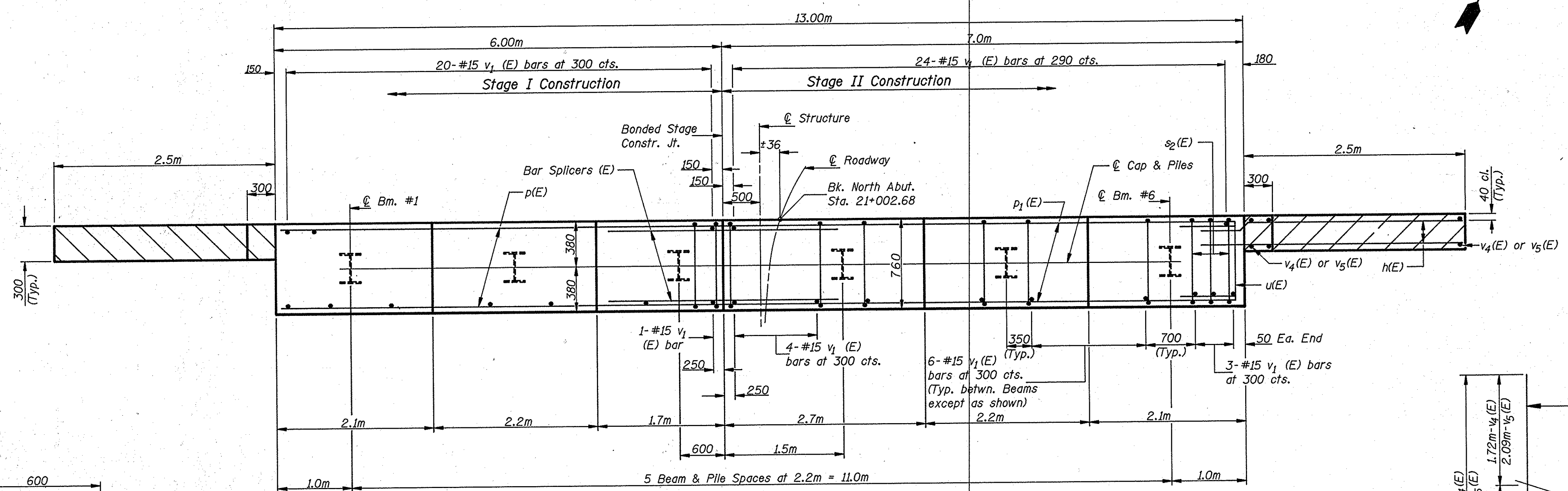
\* (I-A)BR, (I-JRS-2

Notes: All edges shall have standard 20 chamfers.  
 Hatched area to be poured with deck after beams are in place.  
 Quantity of concrete included with Concrete Superstructure on sheet #7 of 12.  
 Four steps monolithically with cap.  
 See sheet #5 of 12 for bar splicer Details.

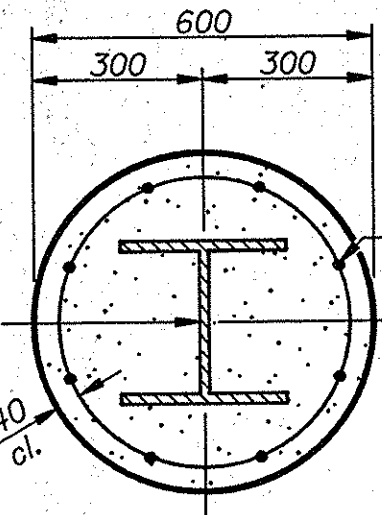


SEC. THRU ABUTMENT

ELEVATION  
(Looking North)



PLAN



SECTION A-A  
PILE ENCASEMENT DETAIL

Welded wire fabric 152 x 152 - MW 25.8 weighing 2.91 kg/m. The cost of Excavation, Class SI Concrete Encasement & Reinf. is incidental to the cost of furnishing piles. Forms for Encasement may be omitted when soil conditions permit.

PILE DATA  
 Type: HP310 x 93  
 Capacity: Driven to Refusal  
 Est. Length: 7m  
 No. Required: 6  
 Metal Shoes: 6

BARS u(E) & u1(E)

BAR s2(E)

BARS v4(E) & v5(E) FIELD CUTTING DIAGRAM

Order v4(E) and v5(E) bars full length. Cut as shown and use remainder of bars in opposite face.

BILL OF MATERIALS

Bar	No.	Size	Length	Shape
h(E)	42	#15	3.33	
p(E)	7	#25	5.92	
p1(E)	7	#25	6.92	
p2(E)	3	#20	4.22	
p3(E)	3	#20	5.92	
p4(E)	3	#20	2.62	
s2(E)	43	#15	3.60	
u(E)	9	#20	4.28	
u1(E)	29	#20	2.66	
v1(E)	79	#15	1.60	
v4(E)	9	#15	4.54	
v5(E)	9	#15	5.28	
Concrete Structures				m <sup>3</sup> 14.2
Reinforcement Bars (Epoxy Coated)				Kg. 1520
Steel Piles HP310 x 93				meter 42
Metal Shoes				Ea. 6
Structure Excavation				m <sup>3</sup> 91

NORTH ABUTMENT  
 F.A.P. RTE. 311-SECTION (I-A)BR  
 KENDALL COUNTY  
 STA. 20+989.19

RC ENGINEERS, LTD.  
 CONSULTING ENGINEERS  
 DESIGNED: J.W.G. DRAWN: C.S.W.  
 CHECKED: G.R. CHECKED: J.W.G.

FOR INFORMATION ONLY



ILLINOIS DEPARTMENT OF TRANSPORTATION  
District Six Materials  
SE1/4 SW1/4 SECTION 26 T37N R7E 3PM

Bridge Foundation Boring Log  
Depth Increment = 152.5mm

PROJECT BRIDGE 047-0021(EXIST.) Date 09/24/93  
ROUTE FAP 311(IL71) OVER MORGAN CREEK Bored By K Whittington  
SEC. (1-A)BR STA. 20+990.0 Checked By D. Lindeman

COUNTY Kendall

Boring No. 1  
Sta 21+002.19  
O/S 5.18m LT

Surf Wat El. Grndwater El. at Compl	El.	N	Qu kPa	W %	At Hrs	El.	N	Qu kPa	W %
182.64									
Ground Surface	187.817	0m							
Medium Brown SILTY CLAY with GRAVEL (FILL)									
	186.44								
Soft Brown SILTY CLAY LOAM (FILL)									
	185.38								
Medium Brown SAND & GRAVEL (FILL)									
	184.92								
Stiff Brown SILTY CLAY LOAM with GRAVEL Pebbles (FILL)									
	183.40								
Medium Brown SILTY CLAY with Pebbles									
	182.64								
Medium Dark Gray to Black LOAMY SAND & GRAVEL; Angular DOLOMITE mixed with SILTY LOAM TILL									
	181.11								
FREE WATER									
Dense Gray SHALE									

Dense Gray SHALE  
N 50 mm OD Sampler, Driven 305mm  
63.5Kg Hammer, 760 mm Fall (Fall. B-Bulge S-Shear E-Estimated P-Penetrometer)

ILLINOIS DEPARTMENT OF TRANSPORTATION  
District Six Materials  
SE1/4 SW1/4 SECTION 26 T37N R7E 3PM

Bridge Foundation Boring Log  
Depth Increment = 152.5mm

PROJECT BRIDGE 047-0021(EXIST.) Date 09/24/93  
ROUTE FAP 311(IL71) OVER MORGAN CREEK Bored By K Whittington  
SEC. (1-A)BR STA. 20+990.0 Checked By D. Lindeman

COUNTY Kendall

Boring No. 2  
Sta 20+977.81  
O/S 4.77m

Surf Wat El. Grndwater El. at Compl	El.	N	Qu kPa	W %	At Hrs	El.	N	Qu kPa	W %
Ground Surface	188.518	0m							
BURIED CONCRETE, GRAVEL & SILTY CLAY LOAM									
	186.99								
Soft Brown SILTY CLAY LAOM & GRAVEL mixed (FILL)									
	184.86								
Dark Gray & Black SILTY CLAY Mixed with GRAVEL (FILL)									
	184.25								
Medium Gray LOAMY GRAVEL (FILL)?									
	183.34								
Soft Black SILTY CLAY (Some GRAVEL Pieces)									
	182.57								
Dense Wet Gray SAND & GRAVEL with Gray SILTY LOAM TILL & DOLOMITE Pieces									
	181.81								
Dense SIL TILL									

Dense SIL TILL  
N 50 mm OD Sampler, Driven 305mm  
63.5Kg Hammer, 760 mm Fall (Fall. B-Bulge S-Shear E-Estimated P-Penetrometer)

ILLINOIS DEPARTMENT OF TRANSPORTATION  
District Six Materials  
SE1/4 SW1/4 SECTION 26 T37N R7E 3PM

Bridge Foundation Boring Log  
Depth Increment = 152.5mm

PROJECT BRIDGE 047-0021(EXIST.) Date 09/28/93  
ROUTE FAP 311(IL71) OVER MORGAN CREEK Bored By K Whittington  
SEC. (1-A)BR STA. 20+990.0 Checked By D. Lindeman

COUNTY Kendall

Boring No. 3  
Sta 20+990.0  
O/S 1.68m LT

Surf Wat El. Grndwater El. at Compl	El.	N	Qu kPa	W %	At Hrs	El.	N	Qu kPa	W %
Ground Surface	188.183	0m							
AUGER SAMPLE									
	182.24								
TOP OF WATER									
	182.09								
STREAM BED									
AUGER SAMPLE									
	179.19								
180.72	180.44								
180.44	180.32								
180.32	177.82								

SILTSTONE, FINE, BLACK TO GRAY, CONTAINS FOSSILS, ARGILLACEOUS WITH DOLOMITE CEMENT

SHALE, GRAY, MUDSTONE, CALCAREOUS

DOLOMITE, DARK GRAY, DENSE, CONTAINS MANY FRAGMENTED FOSSILS AND CRYSTALLINE CALCITE CEMENT, VUGGY & VESICULAR WITH CALCITE AND PYRITE CRYSTALS, OCCASIONAL AREAS OF WAVY SHALE PARTINGS

FORT ATKINSON FORMATION  
MAQUOKETA GROUP  
ORDOVICIAN SYSTEM

Qu = 2800kPa  
ELEV. = 179.28

Qu = 2110kPa  
ELEV. = 178.37

N 50 mm OD Sampler, Driven 305mm  
63.5Kg Hammer, 760 mm Fall (Fall. B-Bulge S-Shear E-Estimated P-Penetrometer)

(BORLOGS) ZM470021.DGN  
 OCT. 14, 1994

FOR INFORMATION ONLY

**SOIL BORINGS**  
**F.A.P. RTE. 311-SECTION (1-A)BR**  
**KENDALL COUNTY**  
**STA. 20+989.19**

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