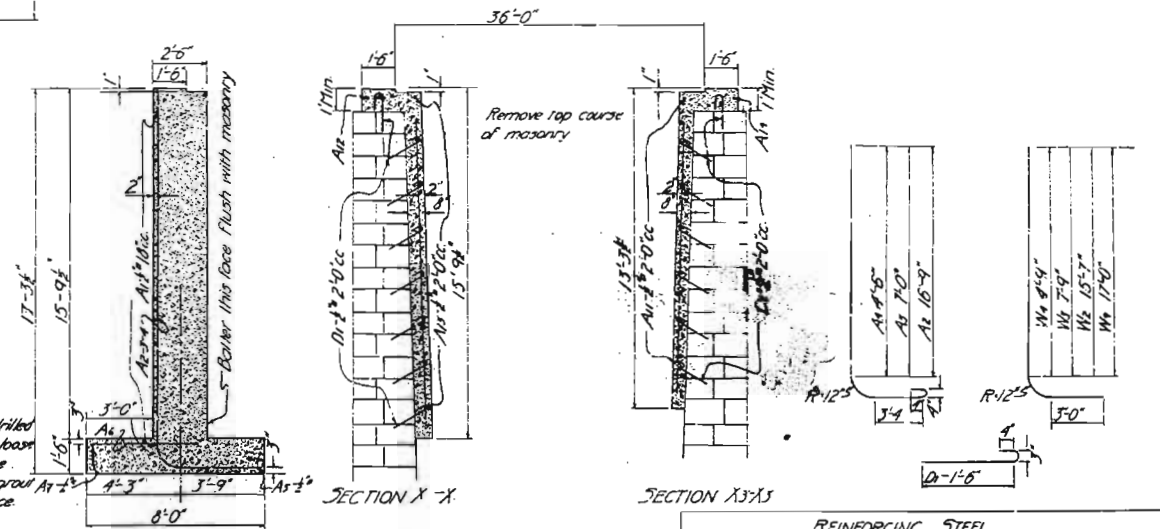
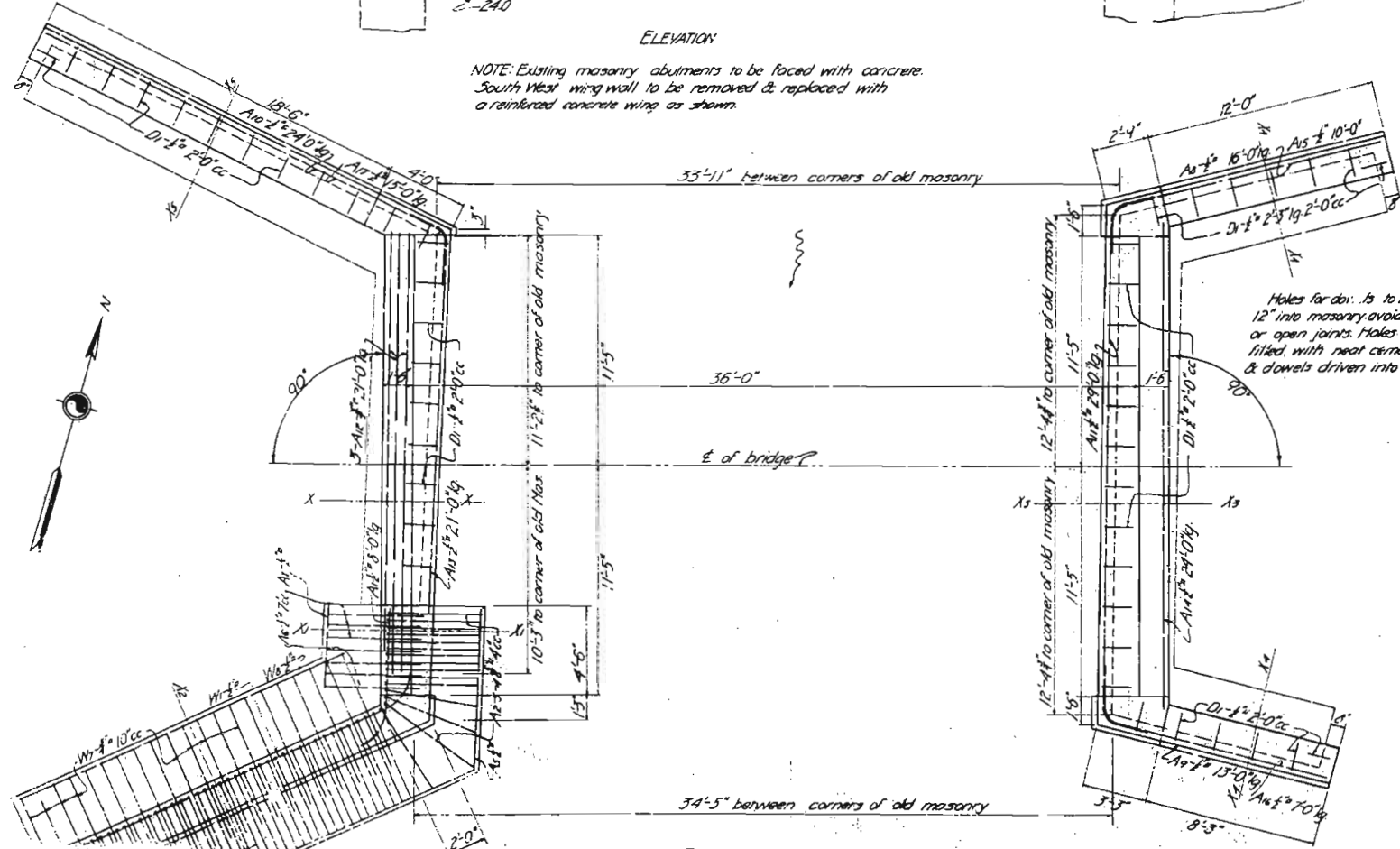
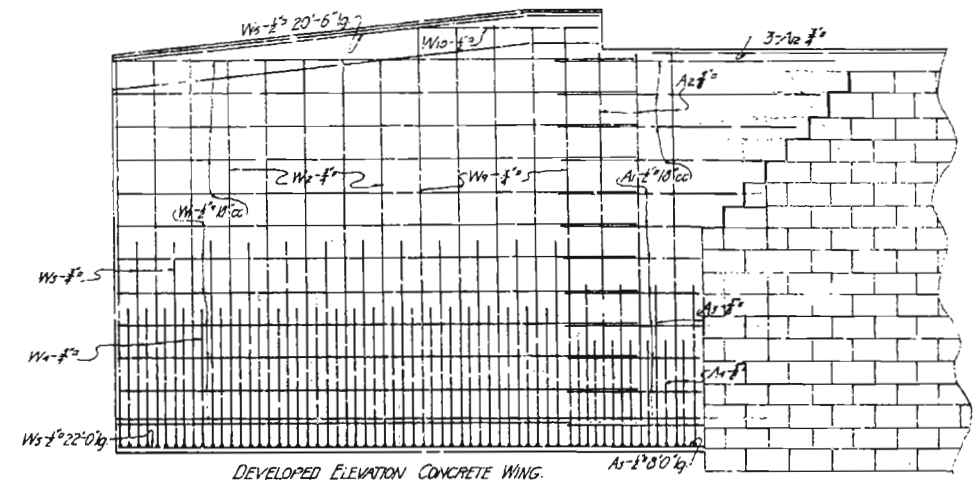
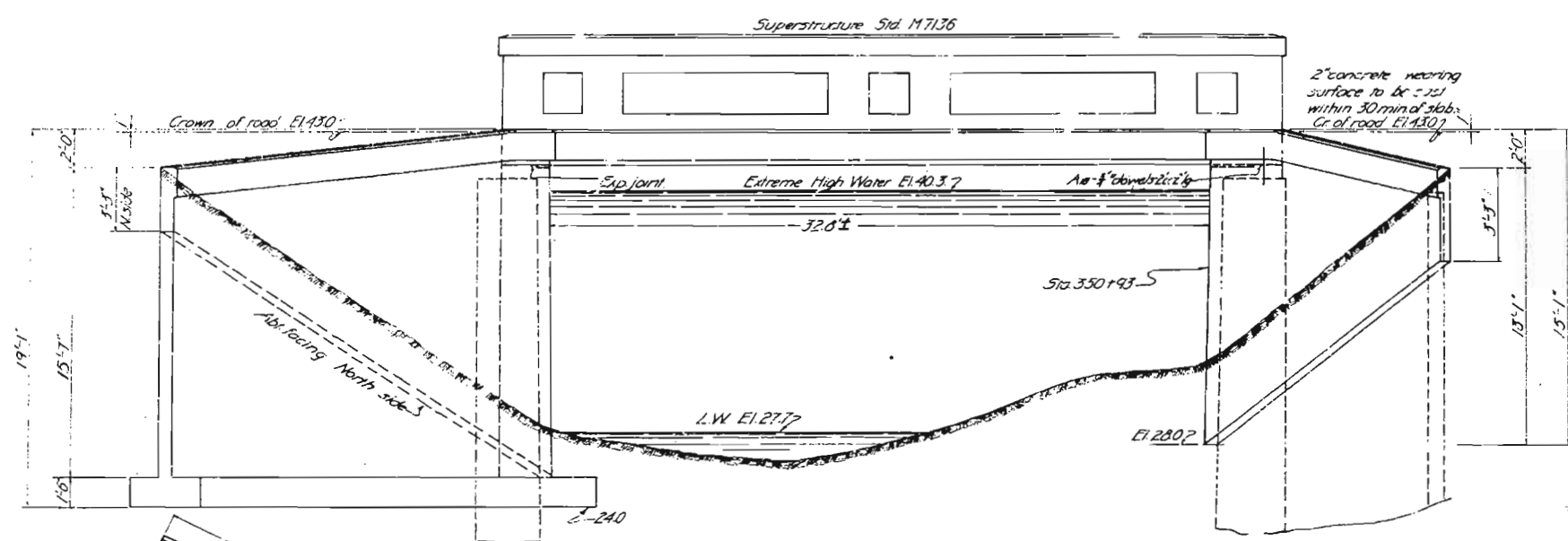
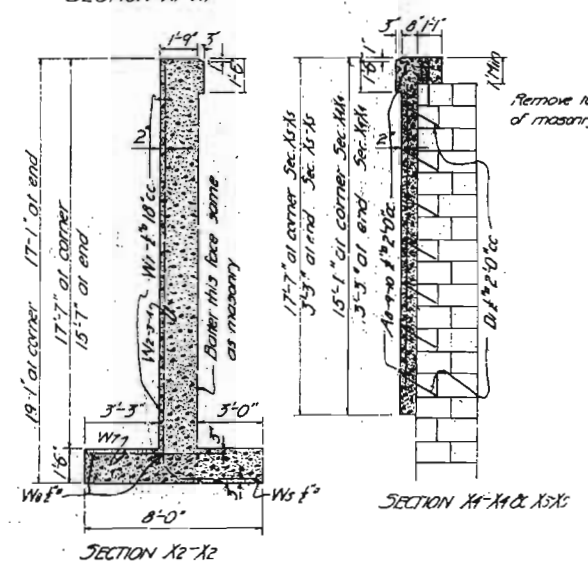


FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
6	MO.	77	1920	138	145



Mark	Size	No.	Length	Remarks	Mark	Size	No.	Length	Remarks
A1	#2	11	8'0"	Bent in place	W1	#2	11	21'0"	Bent in place
A2	#2	3	22'5"	Sketch	W2	#2	6	20'2"	Sketch
A3	#2	4	12'8"	"	W3	#2	12	12'4"	"
A4	#2	7	10'2"	"	W4	#2	23	9'4"	"
A5	#2	1	8'0"	Straight	W5	#2	1	22'0"	Straight
A6	#2	7	4'9"	"	W6	#2	1	20'5"	Bent in place
A7	#2	2	5'0"	"	W7	#2	21	6'0"	Straight
A8	#2	5	16'0"	Bent in place	W8	#2	2	19'0"	"
A9	#2	5	13'0"	"	W9	#2	5	21'7"	Sketch
A10	#2	5	24'0"	"	W10	#2	1	8'0"	Straight
A11	#2	7	24'0"	"	W11	#2	275	2'3"	Sketch
A12	#2	3	21'0"	Straight	A15	#2	3	10'0"	Bent in place
A13	#2	8	21'0"	"	A16	#2	3	8'0"	"
A14	#2	1	24'0"	"	A17	#2	3	15'0"	"
					A18	#2	11	2'0"	Straight



	ESTIMATED QUANTITIES	
Super	12.4	Steel
Abutment	12.1	10130
Wearing Surf	18.5	3390
	4.3	

GENERAL NOTES
 All general notes on Sid M7136 to apply.
 Old masonry to be cleaned of dirt, loose mortar, or spalls, and to be thoroughly drenched before placing concrete.

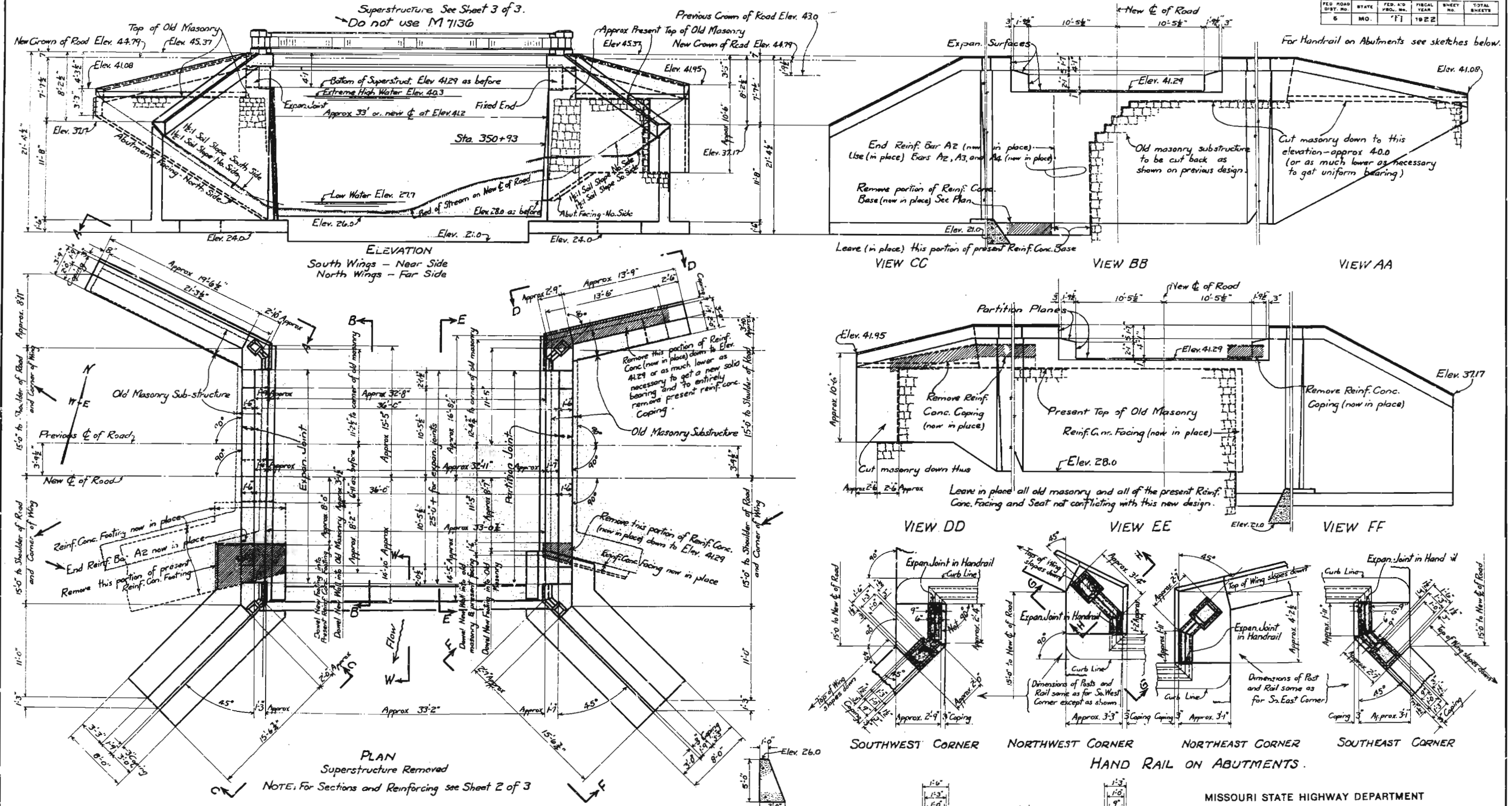
MISSOURI STATE HIGHWAY DEPARTMENT
BRIDGE OVER E BRANCH GRAND GLAZE CR.
 STATE ROAD FROM ST. LOUIS TO FRANKLIN CO. (MANCHESTER RD)
 ABOUT 2 MI. FROM BARRETT STA.
 PROJECT No. 77 (Rt. 59) STA. 350+93
 ST. LOUIS COUNTY
 Submitted by *Chas. D. Mann* BRIDGE ENGINEER
 Approved by *Chas. D. Mann* STATE HIGHWAY ENGINEER
 M7136
 F181

Drawn Nov. 27, 1920 by C.E.H.
 Ch'kd April 17, 1920 by W.M.O.

Supplemented by F181R

126

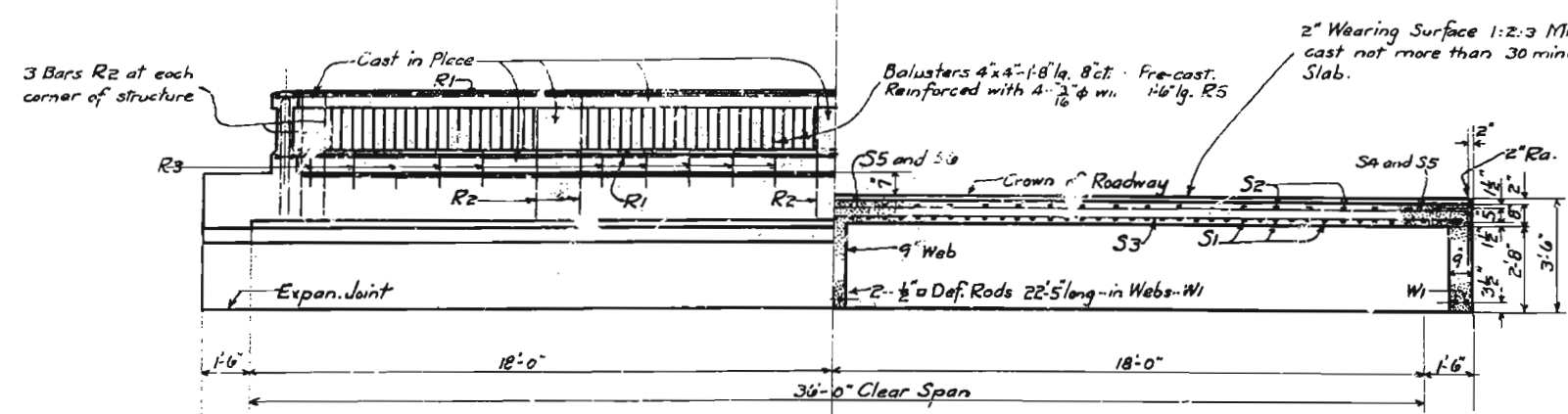
127



FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
6	MO.	71	1922		

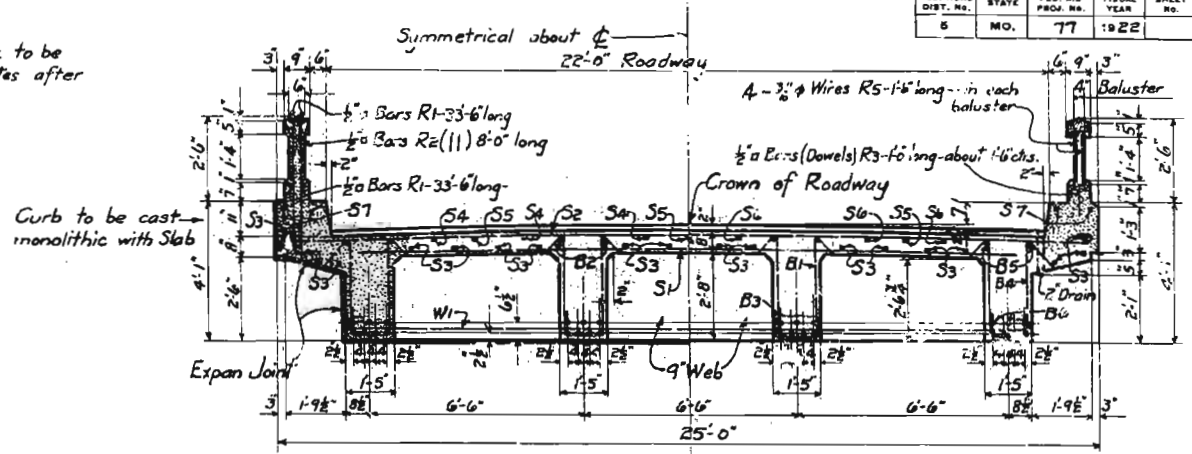
Drawn Jan., 1922 by N.H.L.
Ch'kd. Jan., 1922 by V.W.F.

01



HALF SIDE ELEVATION

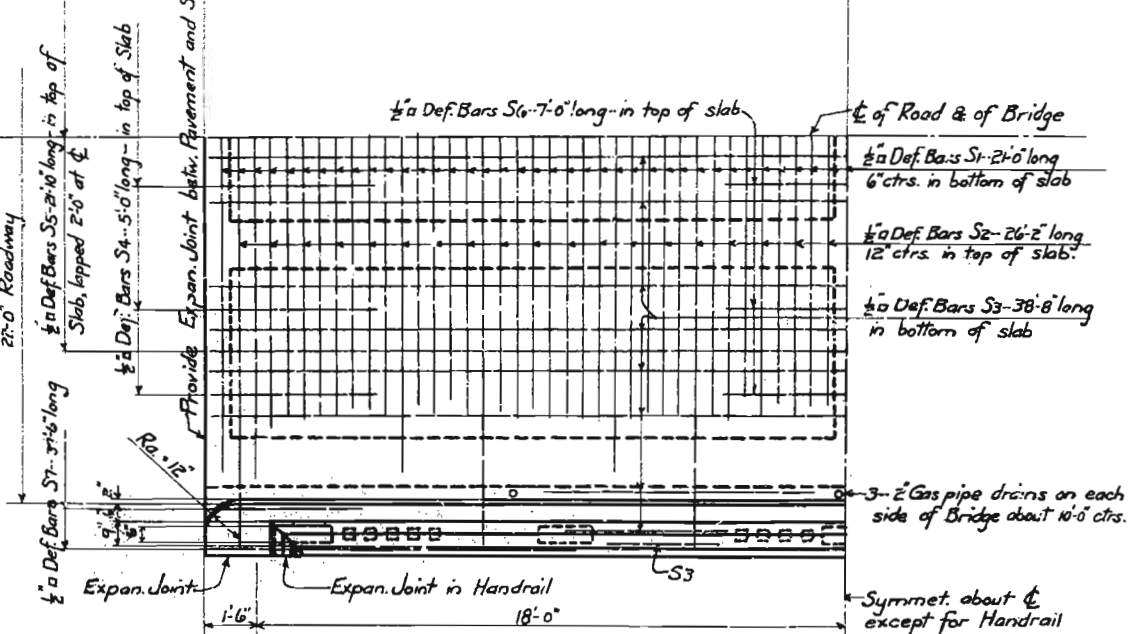
HALF LONGITUDINAL SECTION ON \bar{C}



AT ABUTMENT

AT CENTER

CROSS-SECTION



ONE QUARTER PLAN
SHOWING SLAB REINFORCEMENT

BILL OF REINFORCING STEEL					
No.	Size	Length	Mark	Remarks	Bending Sketch
8	1/2"	33'-6"	R1	Straight	
24	1/2"	8'-0"	R2	See sketch	
40	1/2"	1'-0"	R3	Straight	
308	3/8"	1'-6"	R5	Wires Straight	
77	1/2"	21'-0"	S1	Straight	
38	1/2"	26'-2"	S2	See sketch	
18	1/2"	38'-8"	S3	Straight	
12	1/2"	5'-0"	S4	See sketch	
6	1/2"	21'-10"	S5	"	
6	1/2"	7'-0"	S6	Straight	
6	1/2"	22'-5"	W1	See sketch	
68	1/2"	8'-9"	B1	"	
4	1/2"	38'-8"	B2	Straight	
14	1/2"	38'-8"	B3	"	
68	1/2"	8'-9"	B4	See sketch	
4	1/2"	38'-8"	B5	Straight	
14	1/2"	38'-8"	B6	"	
4	1/2"	37'-6"	S7	"	

Dimensions given along \bar{C} of Bar

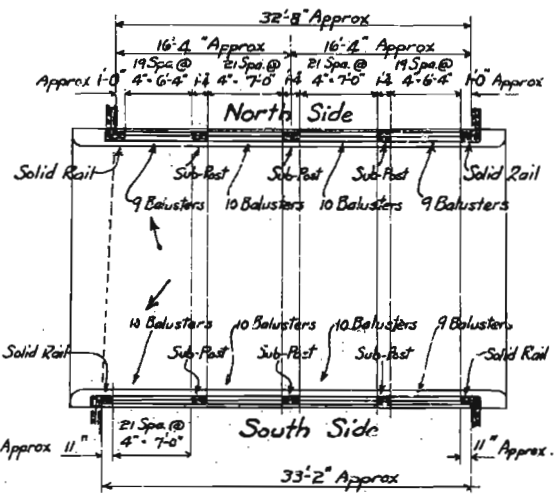
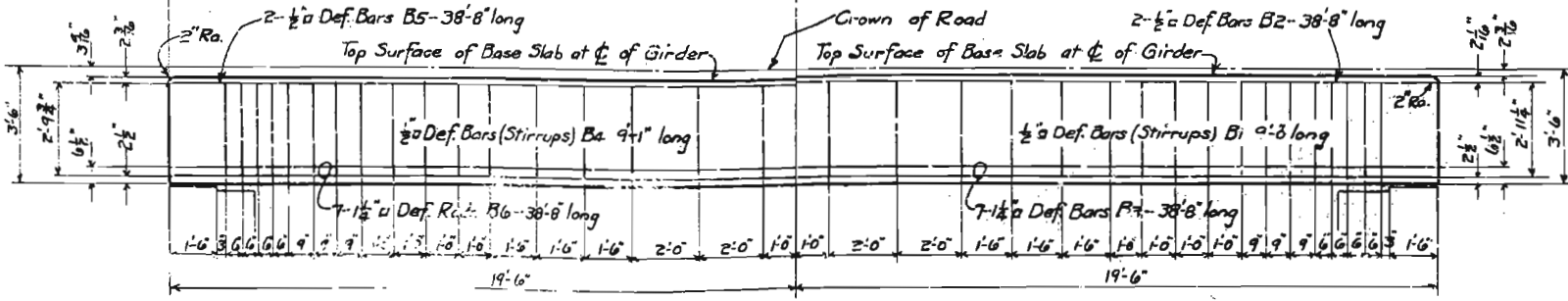


DIAGRAM
HANDRAIL ON SUPERSTRUCTURE
General Dimensions

GENERAL NOTES

Concentrated Load 15-ton tractor and 10-ton trailer with 20% impact. Steel in tension 16000 lbs. per sq. inch. Concrete in compression 6500 lbs. per sq. inch. Concrete in handrail, and in roadway wearing surface to be 1:2:3 mix. All other concrete to be 1:2:4 mix. Rub exposed surfaces free from form marks to a smooth and uniform appearance; no plastering permitted. Bevel exposed edges $\frac{1}{2}$ " where no other bevel is shown. Reinforcing rods of billet steel, structural grade, deformed type other than twisted squares. Net sectional areas not less than that of plain rods of the sizes given. Rods to be blocked to 11: proper position, wired at intersections, and positively secured against displacement. Arrangement and spacing to be approved by engineer before concrete is poured. Provide expansion joints as shown, consisting of a heavy coat of tar, or three layers of tar paper, applied on smoothly troweled surfaces. Provide about 2" of camber at center of span.

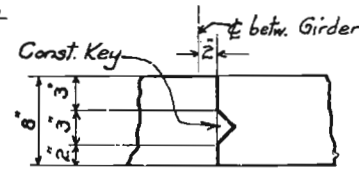
REVISED ESTIMATED QUANTITIES				
SUPERSTRUCTURE	Cu. Yds. 1:2:3 Concrete	Cu. Yds. 1:2:4 Concrete	Cu. Yds. 1:3:5 Concrete	Pounds Reinf. Steel
Hand Rail	4.3			700
Pavement (2")	5.3			
Beams & Slab		54.0		10 280
SUBSTRUCTURE				
Concrete Facing, etc.		138.0		6 510
Concrete Cut-off Wall			10.3	
TOTALS	9.6	192.0	10.3	17 490



EXTERIOR

INTERIOR

GIRDER REINFORCEMENT



CONSTRUCTION JOINT
To be located parallel to and approximately midway between girders; concrete between construction joints to be cast full length in one operation.

MISSOURI STATE HIGHWAY DEPARTMENT
BRIDGE OVER E. BRANCH OF GRAND GLAZE CR.
STATE ROAD FROM ST. LOUIS TO FRANKLIN CO. (MANCHESTER ROAD)
ABOUT 2 MILES FROM BARRETT STATION
PROJECT No. 77 STA. 350+93

COUNTY

Submitted by Chas. M. Mearns BRIDGE ENGINEER
Approved by W. H. Brown STATE HIGHWAY ENGINEER

F 181 R

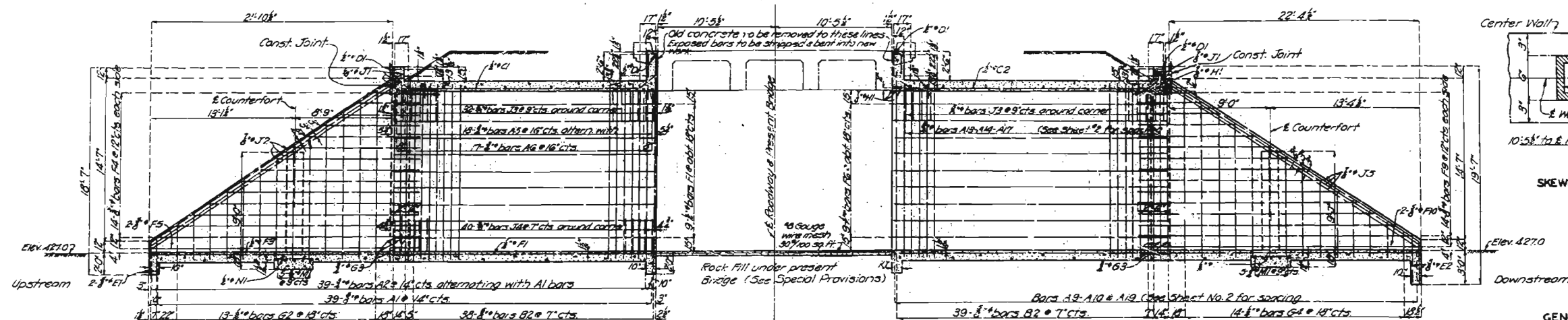
621

MISSOURI STATE HIGHWAY DEPARTMENT

Sta. 493+80.65

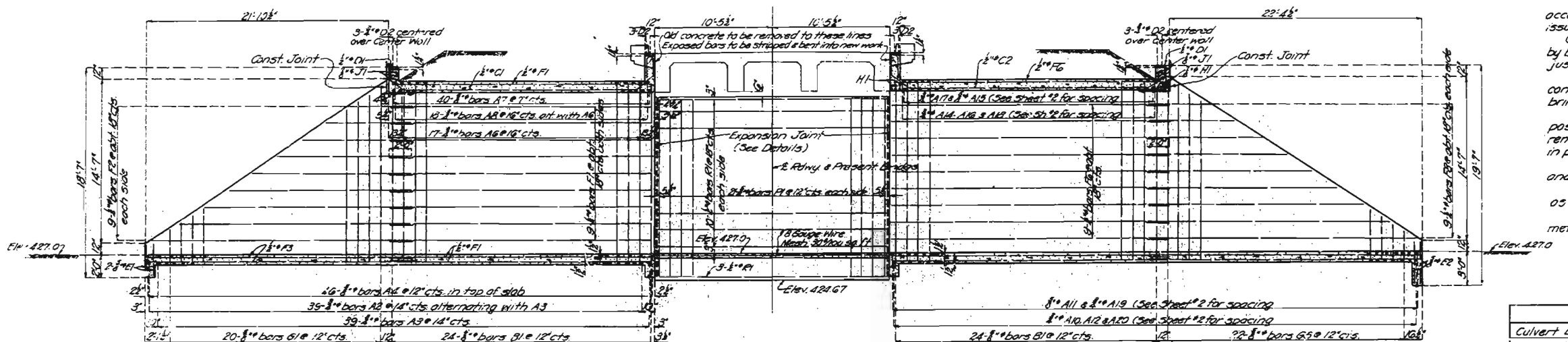
Note: Wing of old abutments to be removed to an elevation at least 2'-0" below grade.

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.	10-5-30-501	19		



DEVELOPED ELEVATION OF OUTSIDE WALLS

Note: Old wings to be removed down to Elev. 443.0



DEVELOPED ELEVATION OF INTERIOR WALLS

Note: Light lines indicate old work. Heavy lines indicate new work.

GENERAL NOTES:

- All concrete to be Class 'B'
- Exposed edges to be beveled 3" where no other bevel is noted.
- Where rubber compound is specified on plans for use in partition and expansion joints, the pre-molded joint shall be securely stitched to one face of concrete with copper wire.
- Excavation to be paid for as Culvert excavation in accordance with Section I of Standard Specifications issued April 1, 1930.
- Old surfaces to receive new concrete to be roughened by bush-hammering and then painted with cement wash just before pouring new concrete.
- Where concrete is to be brought to new lines the old concrete shall be removed a sufficient distance back to bring the concrete to neat lines.
- Old name plate to be carefully removed from old rail post and reset in outside face of new headwalls. Cost of removing and resetting old name plates to be included in price bid for other items.
- Dimensions given along E. of Roadway are approximate and are to be verified by contractor before ordering material.
- Concrete in present wings and footings to be removed as required to clear new construction.
- All concrete to be proportioned by the weight proportioning method. See Special Provisions.
- Design Spec. A.A. S.H.O.
- Loading H-15 A.A. S.H.O. - one lane
- Reinforcing Steel Stress 16,000 psi
- Concrete Class 'B' 6500 psi

ESTIMATED QUANTITIES	FINAL QUANT.
Culvert Excavation Cu. Yds. 380	494
Concrete Class 'B' Cu. Yds. 365.6	369.6
Reinforcing Steel Lbs. 38230	38450

Note: Weight of Reinforcing Steel includes weight of wire mesh.

Note: See Construction File for revised bar list and for changes made during construction.

B.M. Elev. 444.23 East End of Conc. Base of Gas Pumps 47' Lt. Sta. 495+66

BRIDGE OVER GRAND GLAZE CREEK

STATE ROAD FROM ROUTE 77 TO MANCHESTER
ABOUT 5.5 MILES NE. OF VALLEY PARK
PROJECT NO. PWA 74 US 50-SB STA. 493+80.65

ST. LOUIS COUNTY

FINISHED
SUBMITTED BY: *M.R. Clark* DATE: 11/27/34
APPROVED BY: *T.H. Cutler* DATE: 11/27/34
BRIDGE ENGINEER
CHIEF ENGINEER

F.A.

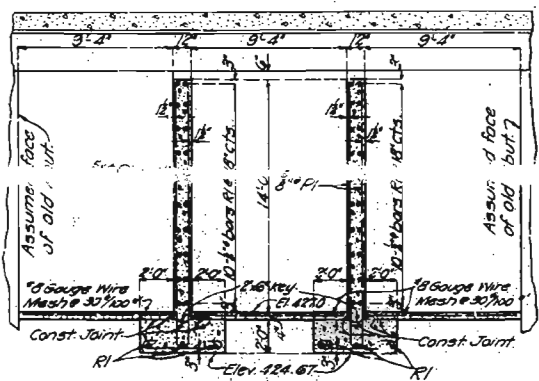
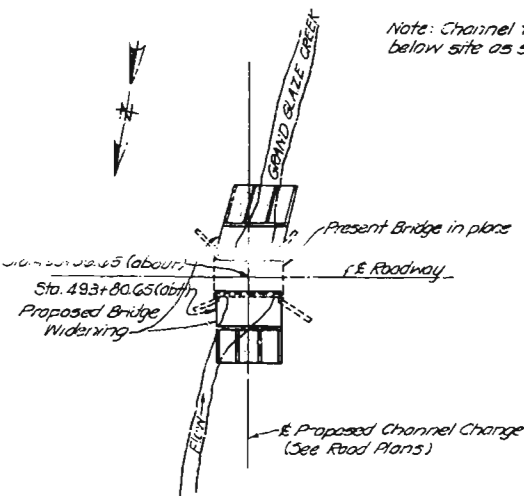
F-181R

Sheet No. 1 of 2

Note: This drawing is not to scale. Follow dimensions.

Drawn July 1933 by P.H.S.
Traced July 1933 by G.W.
Checked Sept. 1933 by P.H.S.

LOCATION SKETCH



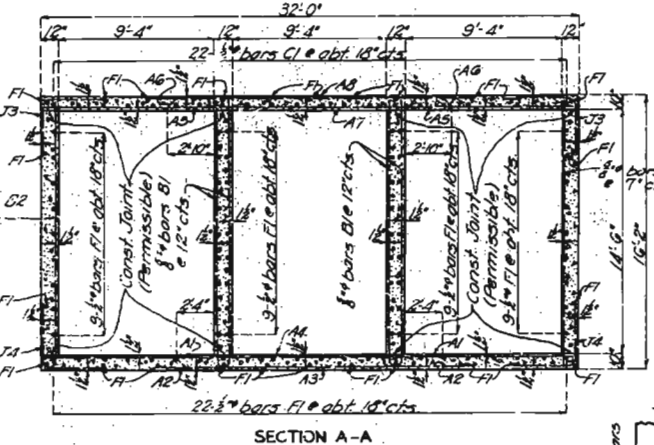
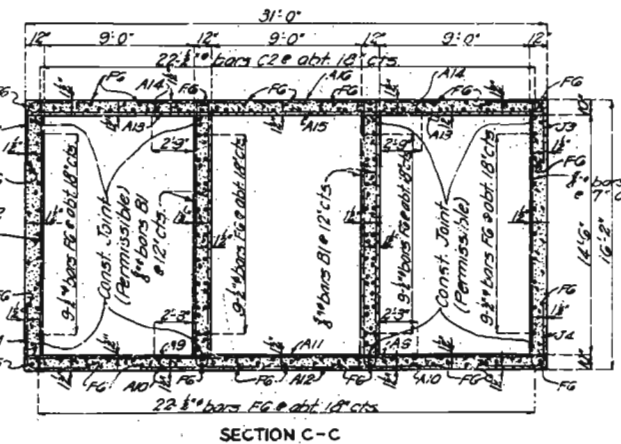
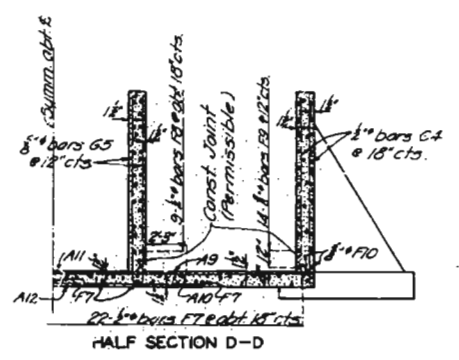
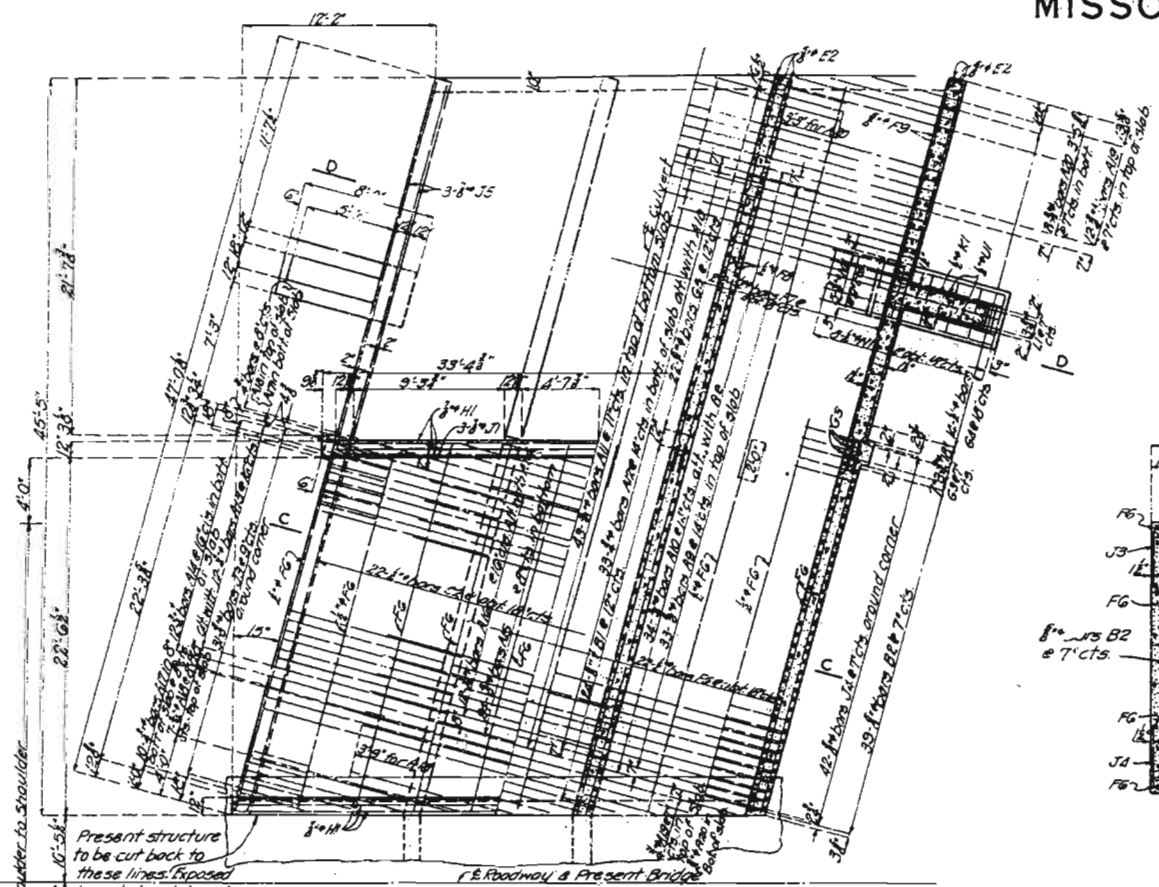
SECTION ON E. ROADWAY
Note: Rock Fill to be placed under old structure. See Special Provisions.

1302

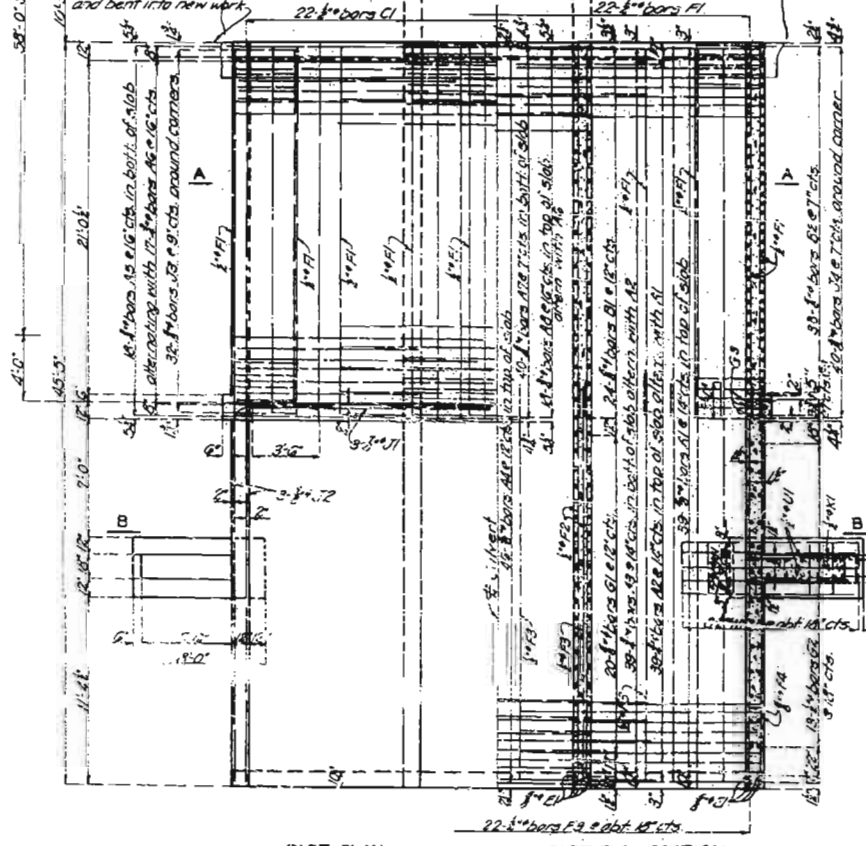
MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.	W-74 (U.S. 50-50)	19		

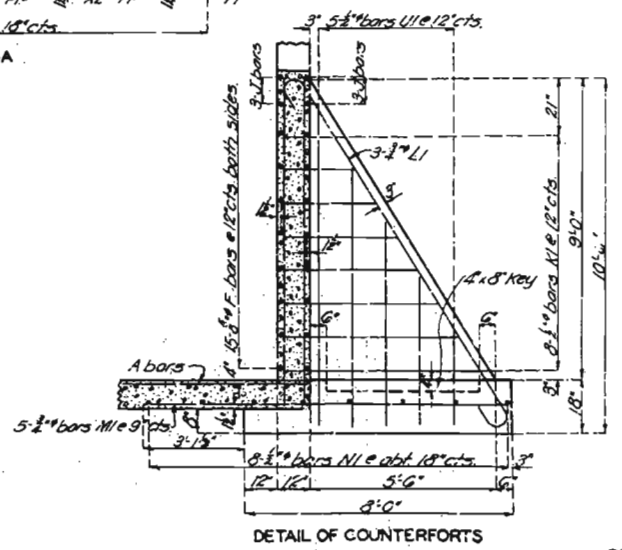
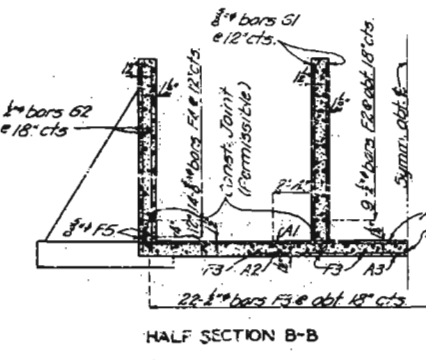
Docket #2981



COMPLETE BILL OF REINFORCING STEEL					BENDING SKETCHES & CUTTING DIAGRAMS		
No.	Size	Length	Mark	Location			
73	11#	11'-0"	A1	Butt Slab			
74	11#	14'-9"	A2				
39	15#	11'-0"	A3				
46	11#	11'-0"	A4				
36	11#	11'-0"	A5	Top Slab			
34	15#	11'-0"	A6				
40	11#	11'-0"	A7				
18	15#	11'-0"	A8				
66	10#	10'-9"	A9	Butt Slab			
68	14#	14'-6"	A10				
33	17#	17'-6"	A11				
43	10#	10'-9"	A12				
24	10#	10'-9"	A13	Top Slab			
24	10#	10'-9"	A14				
24	10#	10'-9"	A15				
12	15#	15'-6"	A16				
10	36#	3'-3"	A17				
7	31#	3'-3"	A18				
12	33#	3'-3"	A19	Butt Slab			
192	17#	17'-9"	B1	Int. Walls			
154	15#	15'-9"	B2	Out. Walls			
22	26#	2'-6"	C1	Top Slab			
22	27#	2'-6"	C2				
4	31#	3'-9"	D1	Headwalls			
24	17#	1'-0"	D2				
16	2'-9"		E1	Cut-offs			
12	3'-9"		E2				
102	23#	3'-3"	F1	Walls			
18	23#	3'-3"	F2	Int. Wings			
29	23#	3'-3"	F3	Butt Slab			
28	23#	3'-3"	F4	Out. Wings			
4	23#	3'-3"	F5				
102	20#	2'-0"	F6	Walls			
29	22#	2'-6"	F7	Butt Slab			
18	31#	3'-0"	F8	Int. Wings			
28	29#	2'-3"	F9	Out. Wings			
2	25#	2'-0"	F10				
40	22#	2'-3"	G1	Int. Wings			
26	18#	1'-6"	G2	Out. Wings			
12	15#	1'-9"	G3	Out. Wings			
28	17#	1'-9"	G4	Out. Wings			
44	21#	2'-9"	G5	Int. Wings			
6	31#	3'-9"	H1	Int. Wings			
6	30#	3'-0"	J1				
12	31#	3'-0"	J2	Wings			
126	6#	6'-9"	J3	Top Corner			
164	7#	7'-3"	J4	Butt Corner			
12	32#	3'-0"	J5	Wings			
16	20#	2'-9"	K1	Counterforts			
12	14#	1'-0"	L1				
20	11#	1'-0"	M1	Footings			
32	3#	3'-3"	N1				
84	19#	1'-6"	P1	Int. Walls			
46	20#	2'-6"	R1				
10	26#	2'-6"	U1	Counterforts			



Note: Light lines indicate old work.
Heavy lines indicate new work.



Note: Dimensions given are along & of bars and are for computed lengths.
Reinforcing bars 3/4" or over in diameter, which are bent to an angle greater than 90°, shall be of structural grade.

BRIDGE OVER GRAND GLAZE CREEK
STATE ROAD FROM ROUTE 77 TO MANCHESTER
ABOUT 5.5 MILES N.E. OF VALLEY PARK
PROJECT NO. PWA 74(CU. 550-380) STA. 493+80.85
ST. LOUIS COUNTY

Drawn July 1933 by P.H.S.
Traced July 1933 by G.W.
Checked Sept. 1933 by R.M.B.

Note: This drawing is not to scale
Follow dimensions.

Sheet No. 2 of 2

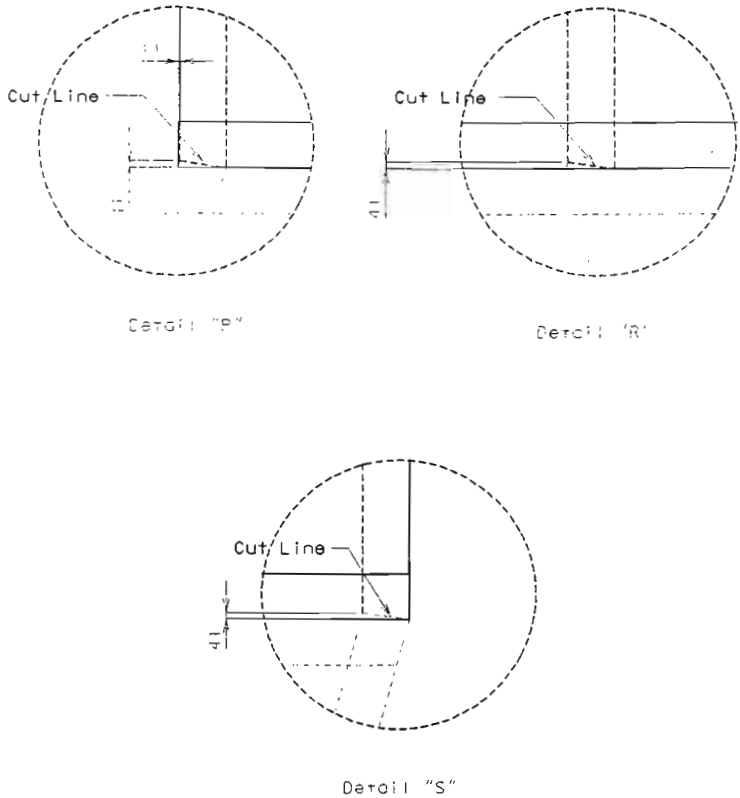
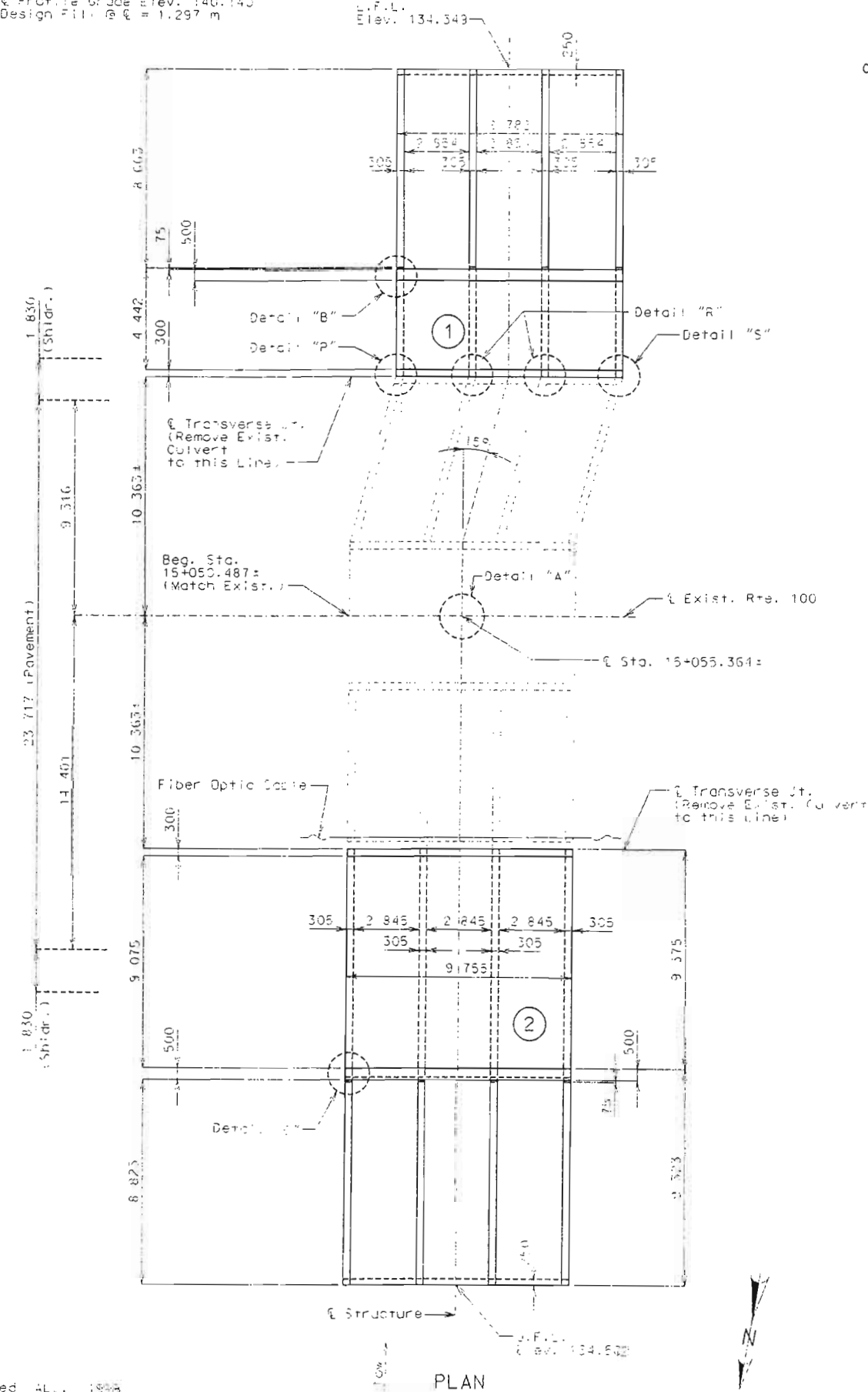
F.A.

F-181R1

MISSOURI HIGHWAY AND TRANSPORTATION COMMISSION

Sta. 15+055.364:
Profile Grade Elev. 140.140
Design Fill @ 1.297 m

State	Proj. No.	Sheet No.
MO		
Sec./Sur.	32 Twp. 45N Rge. 5E	



General Notes:

Design Specifications:
AASHTO - 1996 and Interim 1997
Load Factor Design

Design Loading:
MS18
Earth = 1900 kPa/cu. meter
Equivalent Fluid Pressure 4.71 kPa/m (12.1 = 9.42 kPa/m (Max.))

Design Unit Stresses:
Class B1 Concrete (Culverts) f'_{ci} = 28 MPa
Reinforcing Steel (Grade 420) f_y = 420 MPa

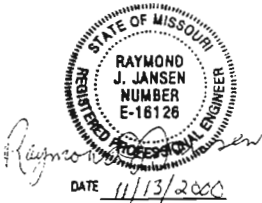
Miscellaneous:
When alternate precast box sections are used, the minimum barrel length measured along the shortest wall from the first joint to the outside of the headwall, shall be 950 mm. Reinforcement and dimensions for the wings and headwalls shall be in accordance with Missouri Standard Plans Drawings.
Minimum clearance to reinforcing steel shall be 40 mm, unless otherwise shown.
Traffic over structure to be maintained during construction.
All dimensions are shown in millimeters (mm) unless otherwise specified.
Drawings are not to scale. Follow dimensions.
All elevations are specified in meters except as noted.
For Details "B", "C" & "D", see sheet No. 2.
Outline of old work is indicated by light dashed lines. Heavy lines indicate new work.
Bottom of top slab, top of bottom slab and inside faces of walls shall be built flush with the old structure.
Clean out channel from existing ground elevation to F.L. of box within the R/W limits (Rowy. Item).
Design fill height is the height from the top of the earth fill or roadway to the bottom of the top slab.
Beveled headwall to be located at upstream end.
The box culvert meet strength requirements for military 106 kN tandem axle loading.

HYDROLOGIC DATA	
Drainage Area	= 8.5 Sq. km
Des. Discharge	= 171 cms (100 years)
Des. R.W. Elev.	= 139.900 (100 years)
Est. Backwater	= No Increase

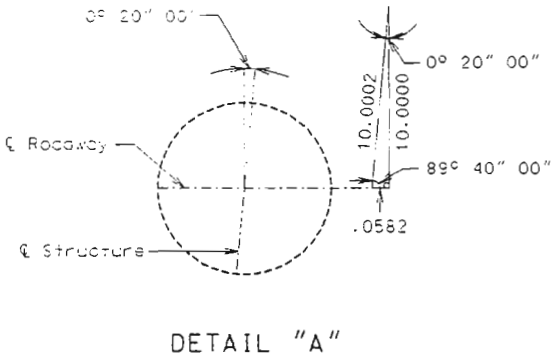
ESTIMATED QUANTITIES		Final Quantities
Partial Removal of Culvert Concrete (Bridges)	ump sum	
Class 3 Excavation	cu. meter	
Granular Backfill (Culverts-Bridge)	cu. meter	
Temporary Shoring	ump sum	
Class B1 Concrete (Culverts-Bridge)	cu. meter	
Reinforcing Steel (Culverts-Bridge)	kilogram	

NOTE: Payment for removal of existing concrete shall be considered fully covered under the pay item "Partial Removal of Culvert Concrete (Bridges)".
Payment for excavating and backfilling will be made at the contract unit bid price per cubic meter for Class 3 Excavation.

For Optional Cut Details and Removal Locations, see sheets no. 101, 101 and 101.



Added sheet 10/26/00
Sheet No. 101



B.M. Elev. 153.702 existed 10' on top concrete curb of median at entrance to Royal Acres 4.57 m S. of South Edge Manchester Rd. 16.15 m L. S-c. 14+600 survey 2 152.4 m east of Barrett Station Rd.

CONCRETE TRIPLE BOX STRUCTURE
OVER GRAND GLAIZE CREEK

STATE ROAD FROM MANCHESTER TO DES PERES
ABOUT 1.6 km WEST OF DES PERES

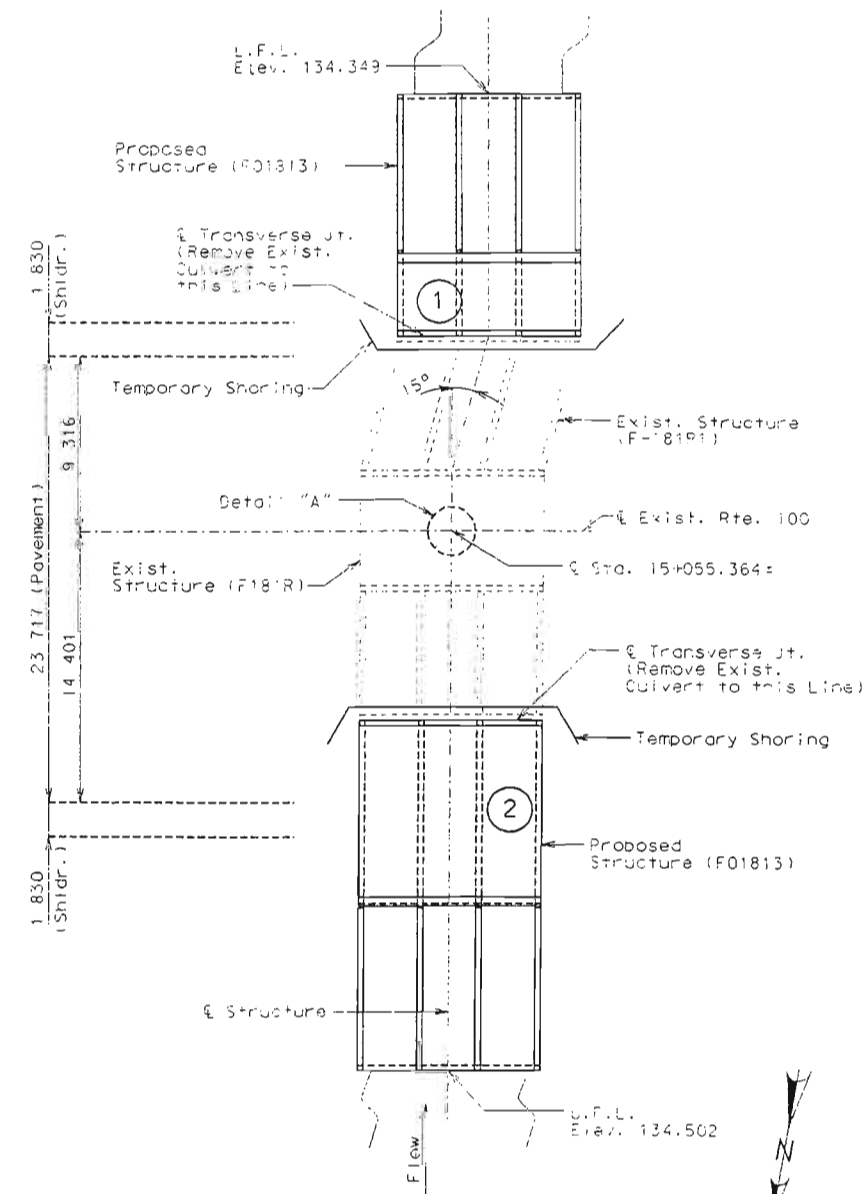
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@ R.W. (Match Exist.)
JOB. NO. J6U0132 RTE. 100

ST. LOUIS COUNTY

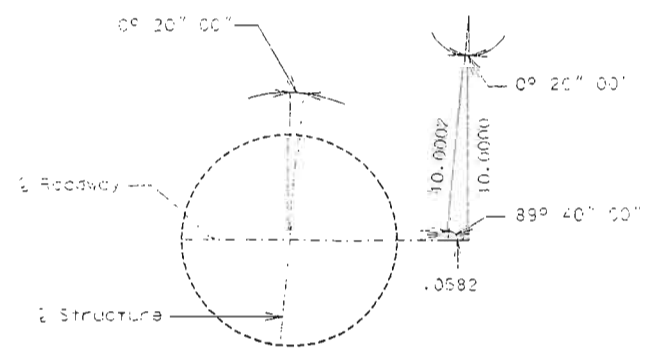
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STD.
STD.
STD. M706.35
F01813

Designed ALJ. 1998
Detailed GCL. 2000
Checked GCL. 2000

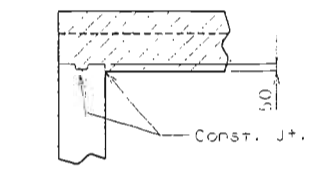
Sheet	Proj. No.	Sheet No.
10		



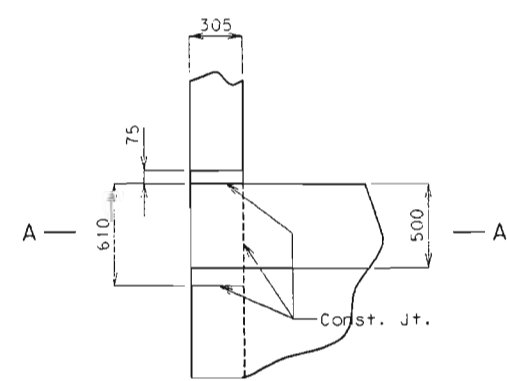
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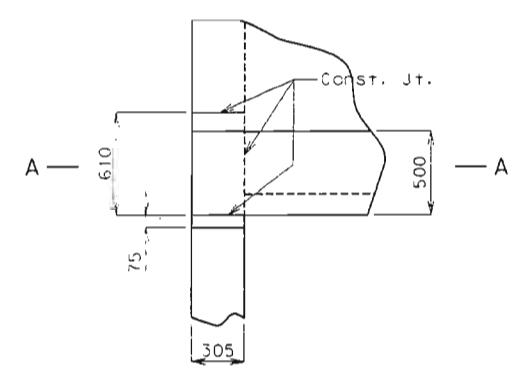
DETAIL "A"



SECTION A-A

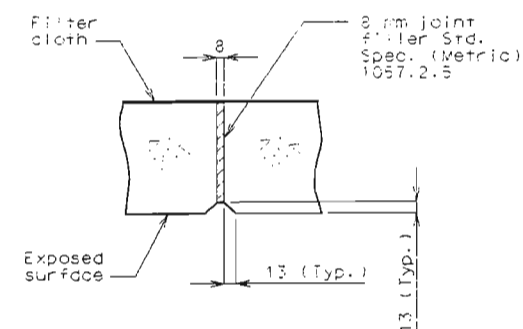


DETAIL "B"



DETAIL "C"

NOTE: For location of Details "B" & "C", see sheet No. 1a1.



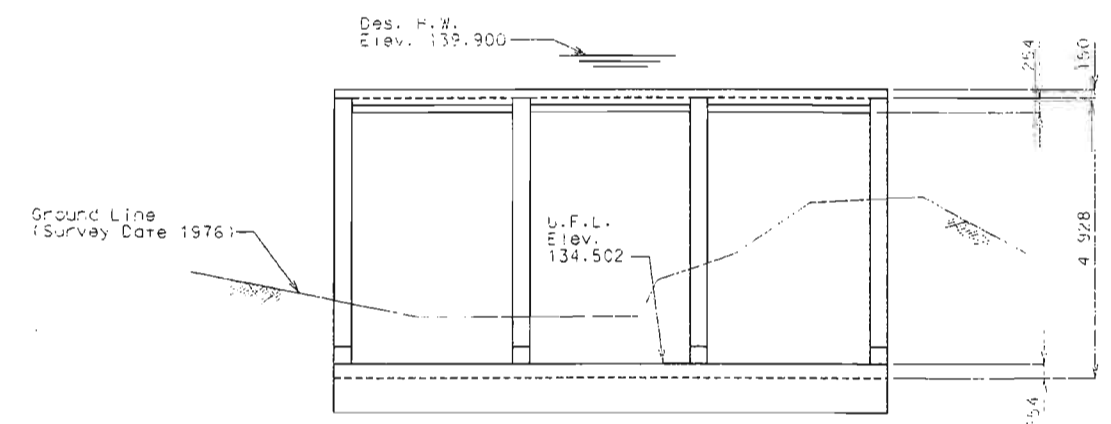
DETAIL OF FILLED TRANSVERSE JOINTS

NOTE:

A filter cloth 1 meter in width and adequate thickness shall be applied to all transverse joints in the top slab and sidewalls. The material shall be centered on the joint and the edges sealed with a mastic or two sided tape.

The filter cloth shall be geotextile meeting the approval of the engineer and having a grab tensile strength of 800 N. (ASTM D-4632) and an apparent opening size of 300 to 150 micrometers (ASTM D-4751). No direct payment will be made for furnishing and installing filter cloth.

Joint filler shall be securely stiched to one face of the concrete with 3.5 mm dia. (10 gage) copper wire or 2.8 mm dia. (12 gage) soft drawn galvanized steel wire.



END ELEVATION (UPSTREAM)

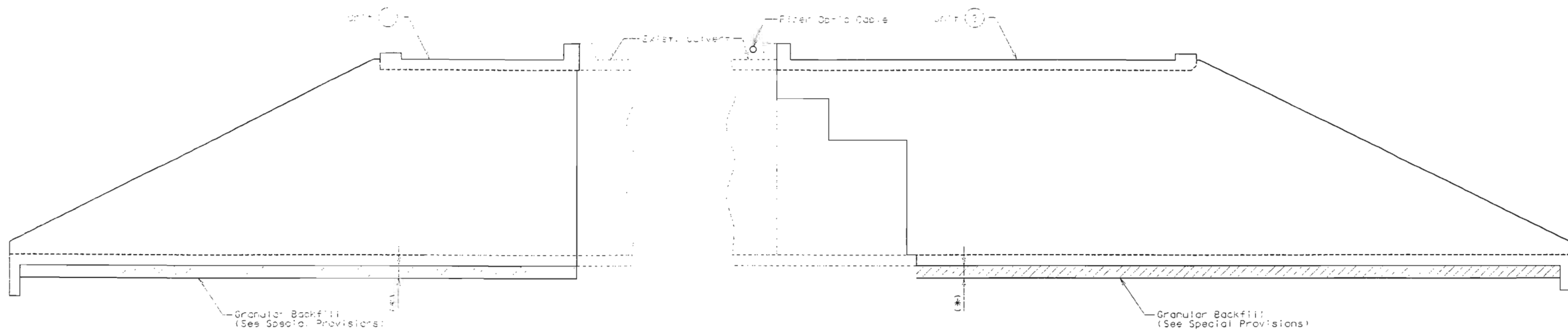
Detailed OCT. 2000
Checked OCT. 2000

Added sheet 10/12/00
Sheet No. 2a1 of 10

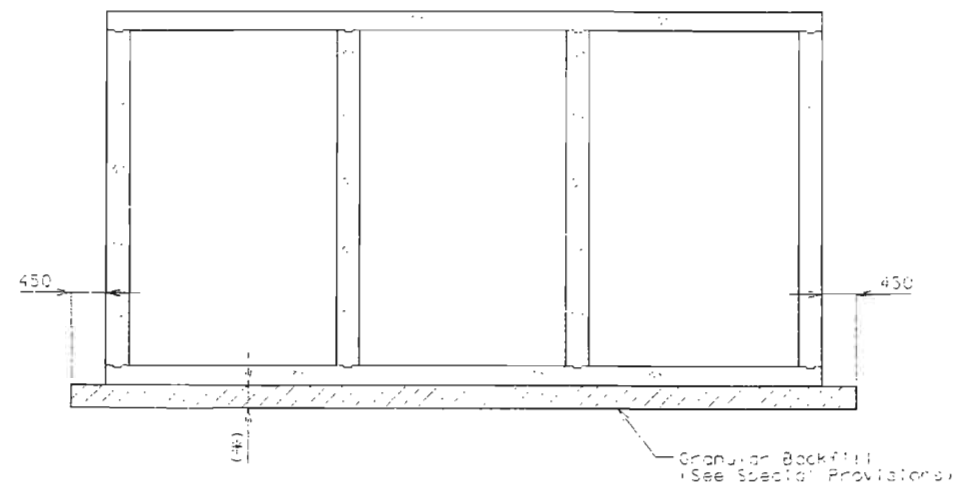
ST. LOUIS COUNTY F01813



State	Proj. No.	Sheet No.
MO		



ELEVATION SHOWING GRANULAR BACKFILL



TYPICAL SECTION THRU BOX
SHOWING GRANULAR BACKFILL

(*) Depth of granular backfill may vary.
A depth of 300 mm is used for estimated quantities.

DETAILS SHOWING GRANULAR BACKFILL (OPTIONAL CUT DETAILS)

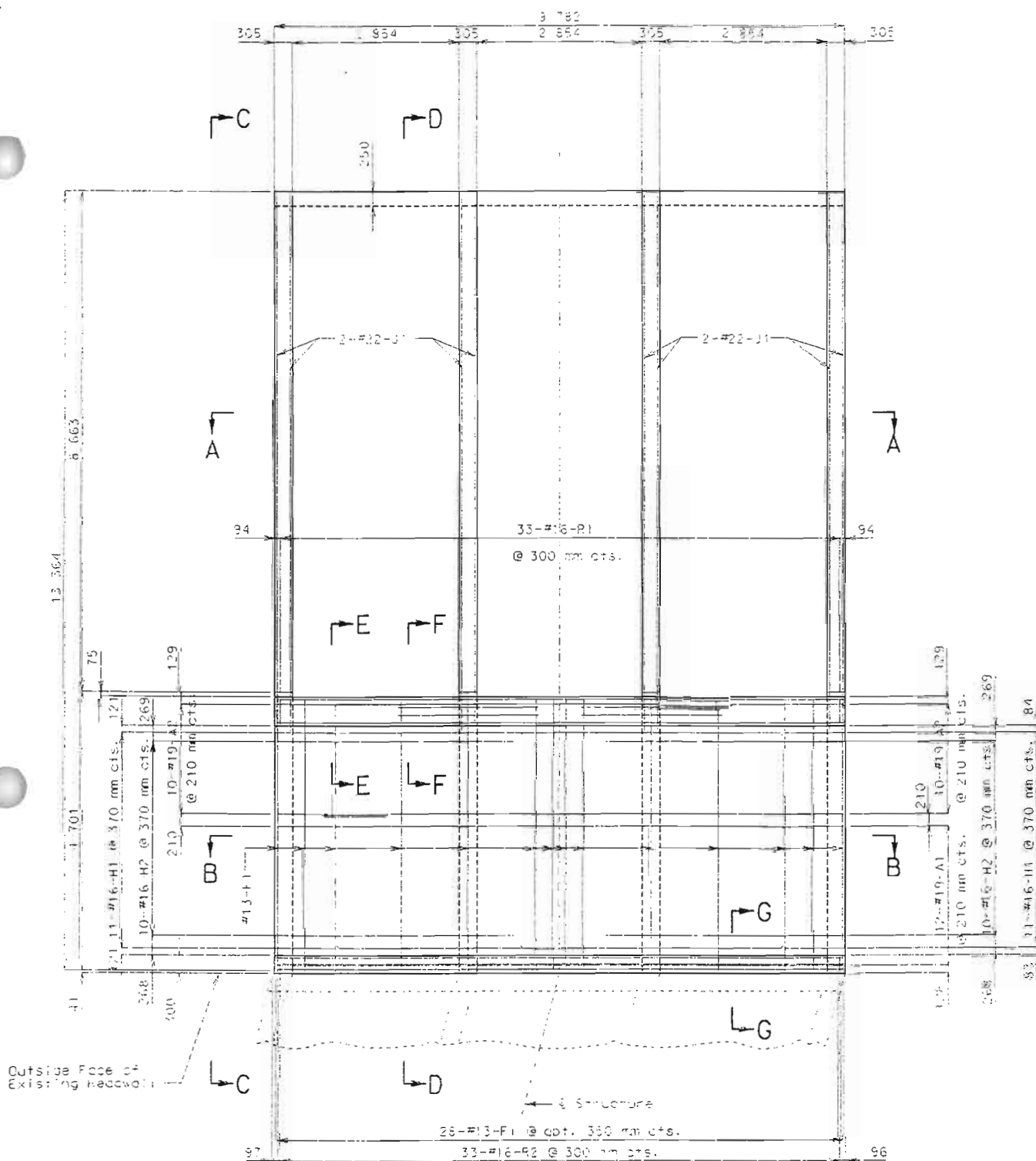
STATE OF MISSOURI
RAYMOND J. JANSEN
NUMBER E-16126
DATE 11/13/2000

Detail by 02/1/2000
Checked by 02/1/2000

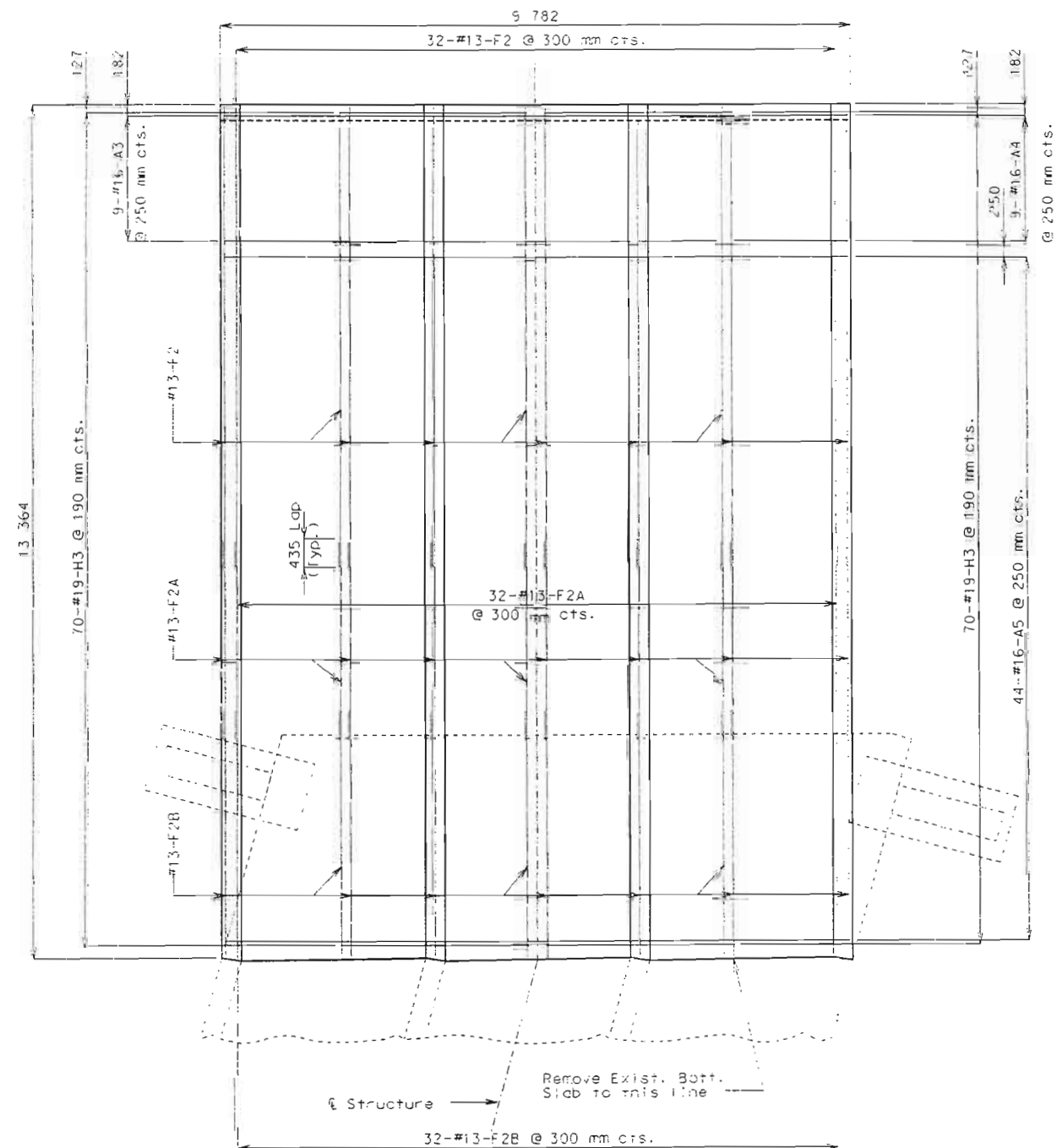
Added sheet 10/30/00
Sheet No. 1b1

ST. LOUIS COUNTY

F01813



PLAN OF TOP SLAB



PLAN OF BOTTOM SLAB

NOTE:

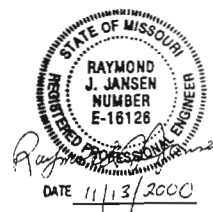
For Section A-A & B-B, see sheet No. 1e1.
 For Elevation C-C and Sections D-D, E-E, F-F & G-G, see sheet No. 1d1.
 For Details "A", "B" & "C", see sheet No. 1c1.
 For details of J & B bars, see sheet No. 1d1 & 1e1.

Note: The existing F-bars and A-bars in the bottom slab shall be cleanly stripped and encased into the new concrete where possible. If the strip is available, existing bars shall extend into new concrete at least 600 mm.

DETAILS OF UNIT ① (OPTIONAL CUT DETAILS)

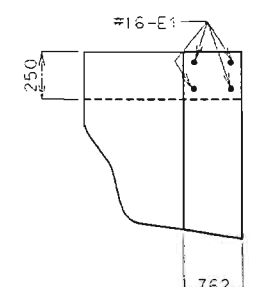
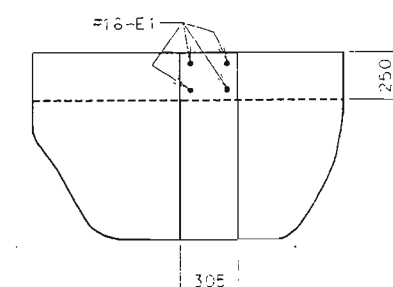
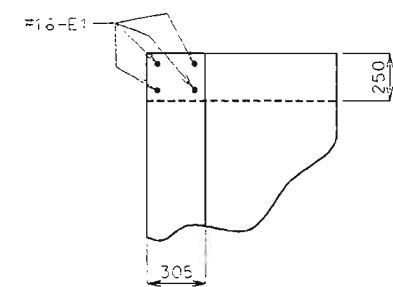
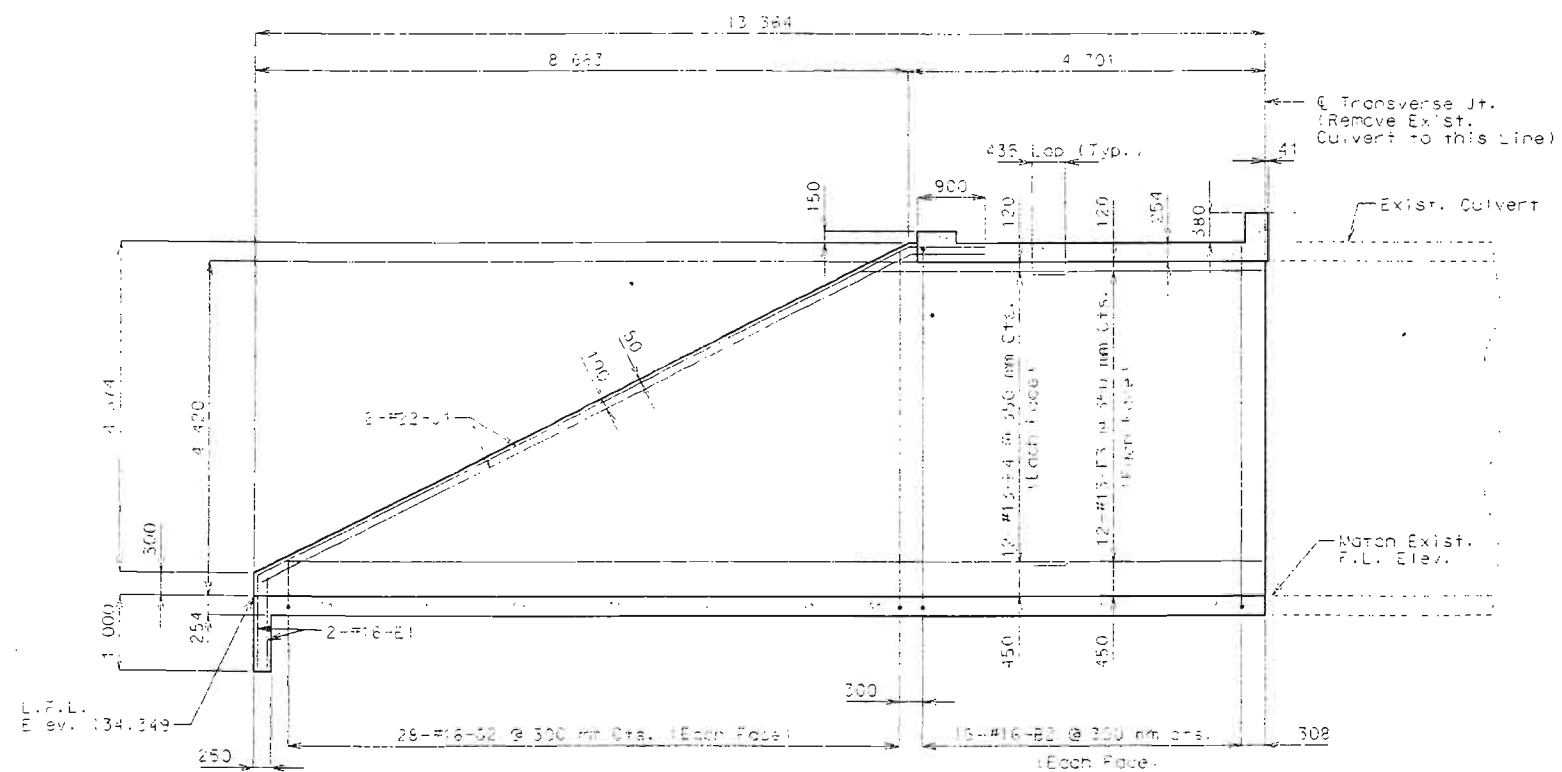
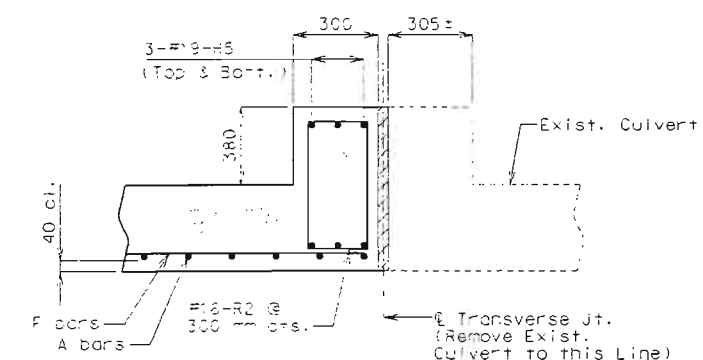
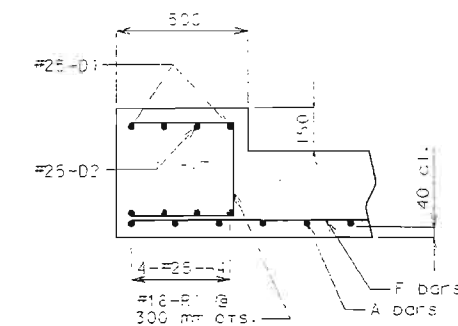
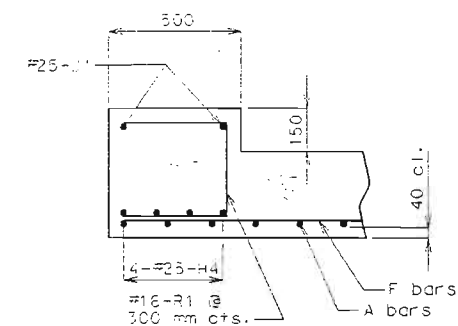
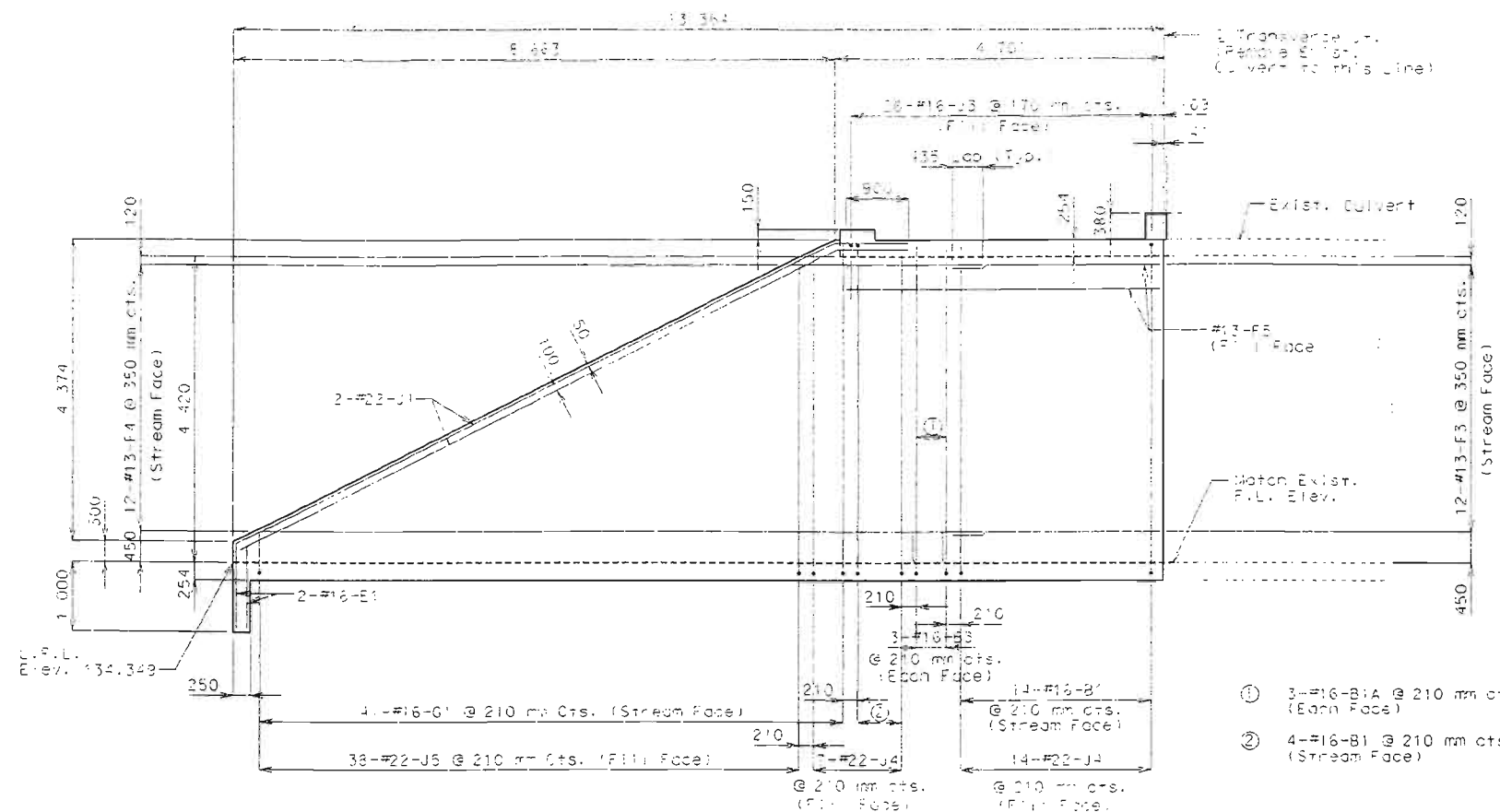
Added sheet 10/27/00
 Sheet No. 1c1

ST. LOUIS COUNTY



F01813

State	Proj. No.	Sheet No.
MO		

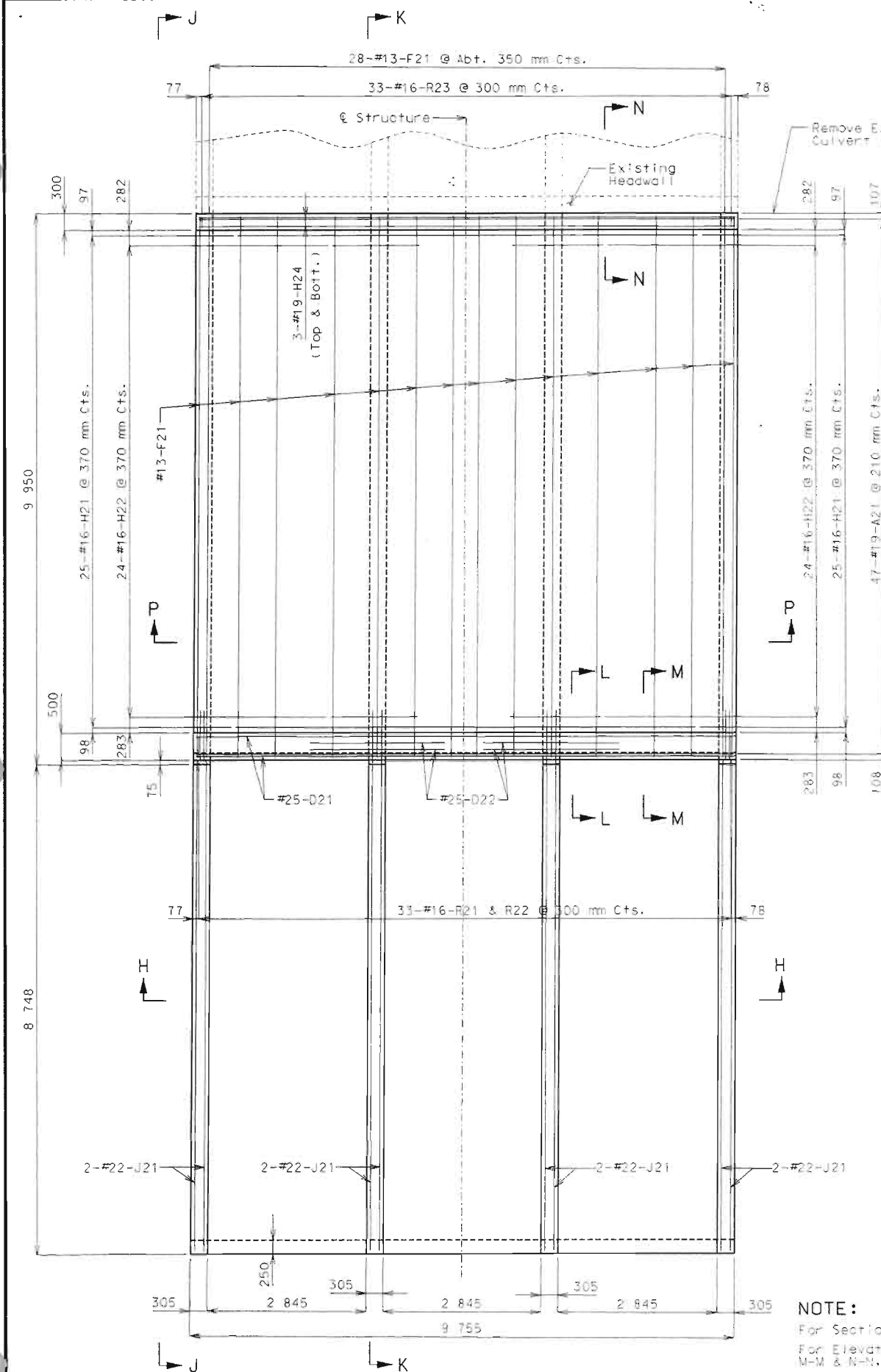


NOTE:
For location of Elevation C-C and D-D, E-E, F-F & G-G, see sheet No. 101.
For location of Details "A", "B" & "C", see sheet No. 101.
Keyed construction joint is omitted for clarity.
For details of A Bars & H Bars, see sheet No. 101.
Ji bars may be bent in field or shop.

DETAILS OF UNIT ①

STATE OF MISSOURI
RAYMOND J. JANSEN
REGISTERED PROFESSIONAL ENGINEER
NUMBER E-16126
DATE 11/13/2000

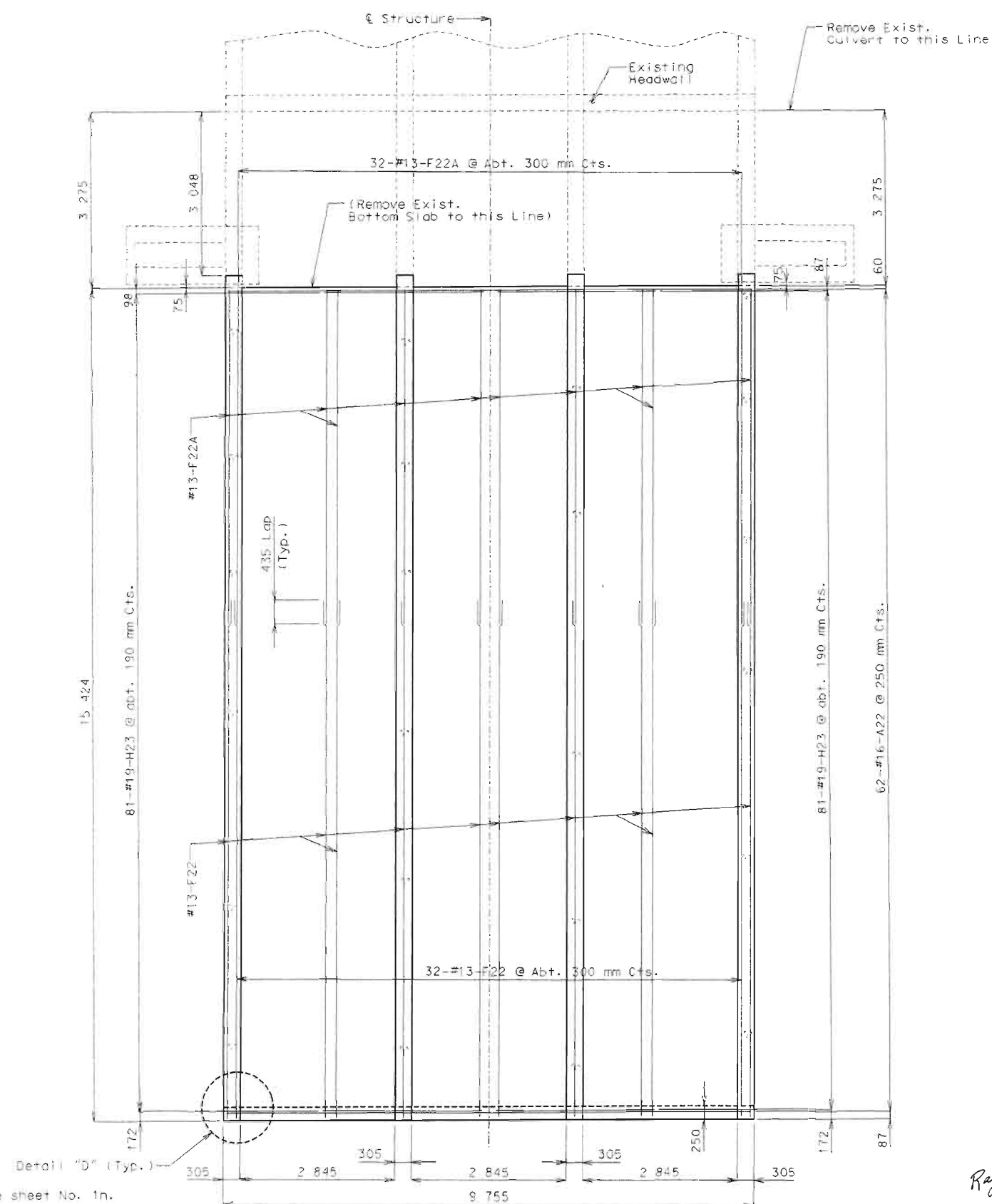
State	Proj. No.	Sheet No.
MO		



PLAN OF TOP SLAB

NOTE:

For Section F-P & H-H, see sheet No. 1n.
For Elevation J-J and Sections K-K, L-L, M-M & N-N, see sheet No. 1g.
For Detail "D", see sheet No. 1g.
For details of J & B bars, see sheet No. 1g & 1h.



PLAN OF BOTTOM SLAB

DETAILS OF UNIT ② (OPTIONAL CUT DETAILS)

Sheet No. 1f of 10

Added sheet 1/17/00

ST. LOUIS

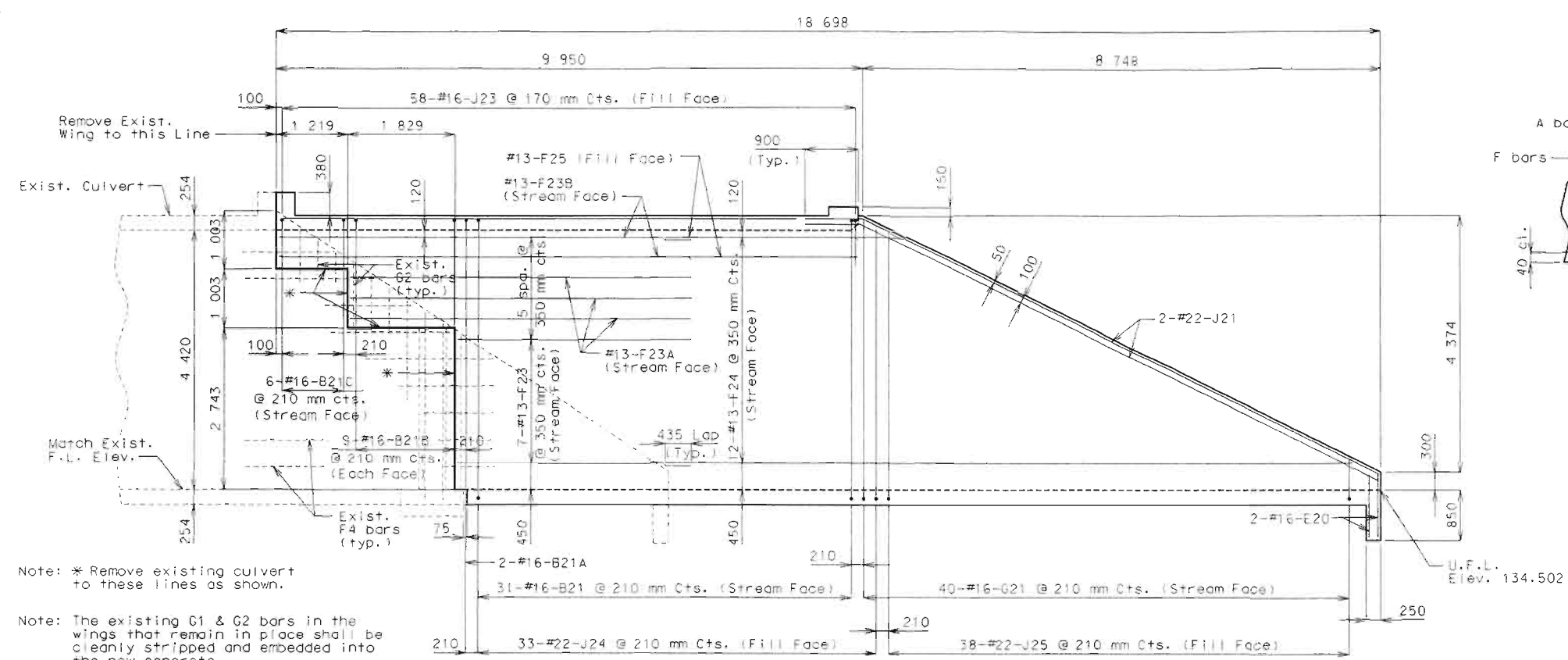
COUNTY

F01813



Raymond J. Jansen
DATE 1/26/2000

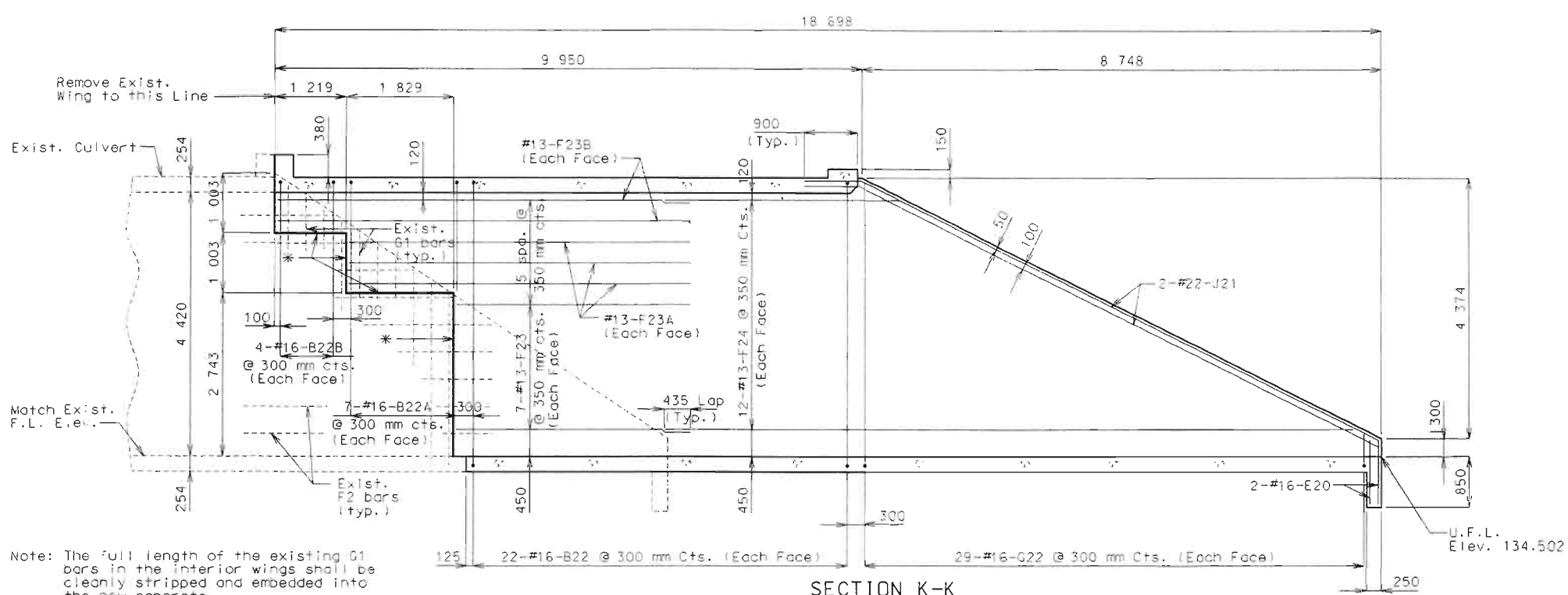
State	Proj. No.	Sheet No.
MO		



Note: * Remove existing culvert to these lines as shown.

Note: The existing G1 & G2 bars in the wings that remain in place shall be cleanly stripped and embedded into the new concrete.

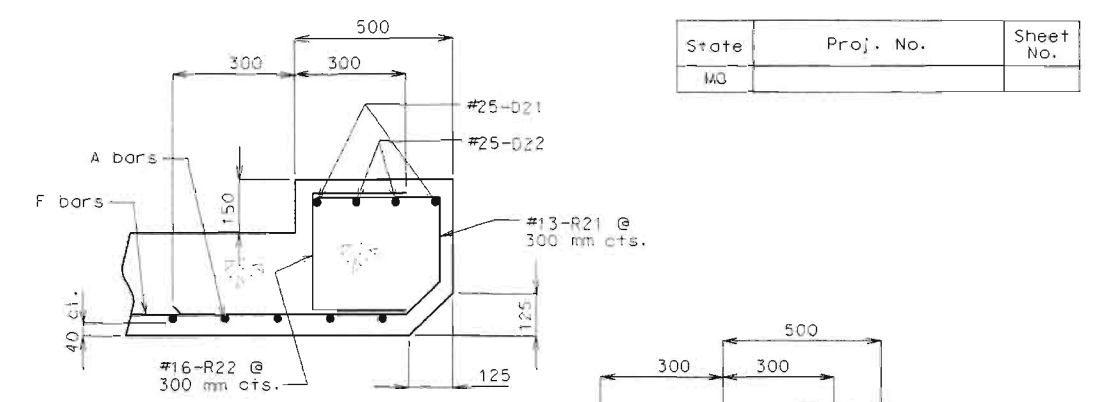
The existing F2 & F4 bars in the wings that remain in place shall be cleanly stripped and embedded into the new concrete where possible. If the length is available, existing bars shall extend into new concrete at least 600 mm.



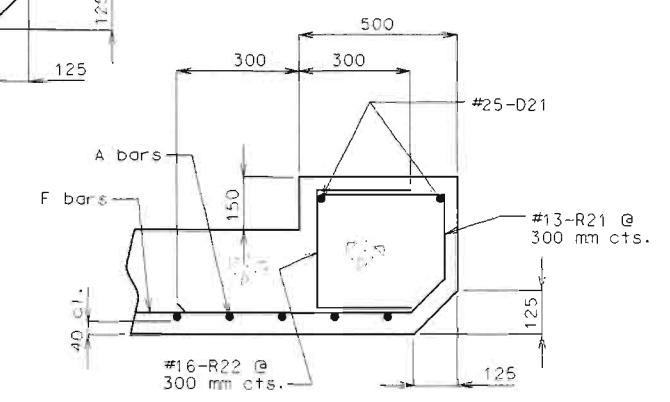
Note: The full length of the existing G1 bars in the interior wings shall be cleanly stripped and embedded into the new concrete.

The existing F2 bars in the exterior wings shall be cleanly stripped and embedded into the new concrete where possible. If the length is available, existing bars shall extend into new concrete at least 600 mm.

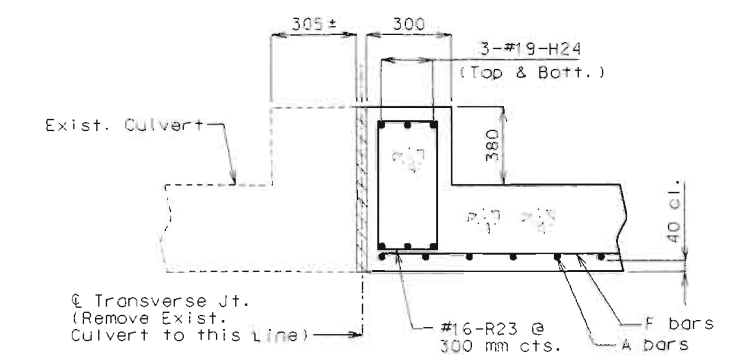
Detailed Jan. 2000
Checked Jan. 2000



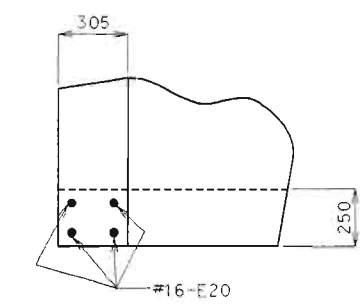
SECTION L-L



SECTION M-M



SECTION N-N



DETAIL "D" (TYP.)

NOTE:

For location of Elevation J-J and Sections K-K, L-L, N-N & M-M, see sheet No. 1f.

For location of Detail "D", see sheet No. 1f.

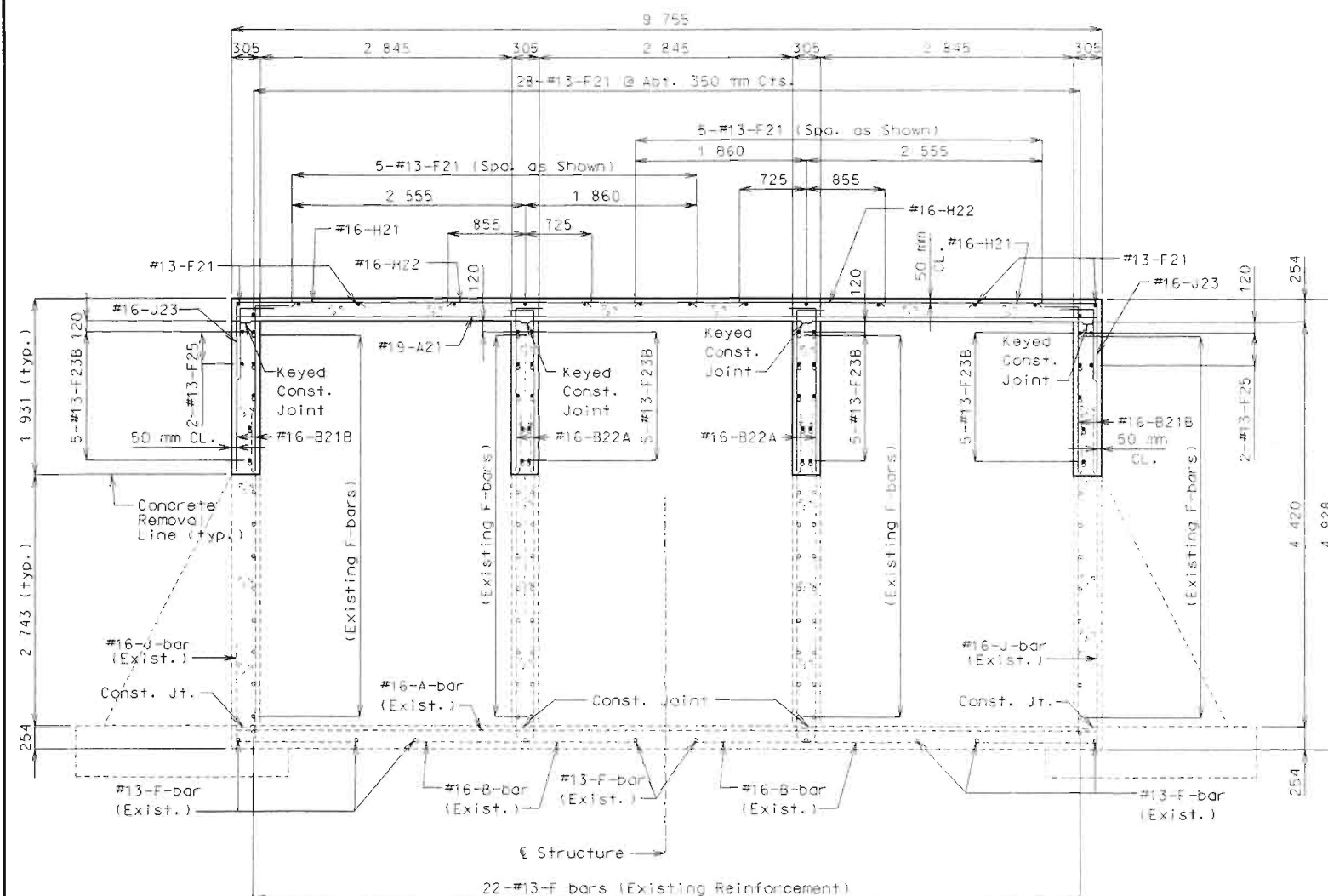
Keyed construction joint is omitted for clarity.

For details of A bars & H bars, see sheet No. 1f.

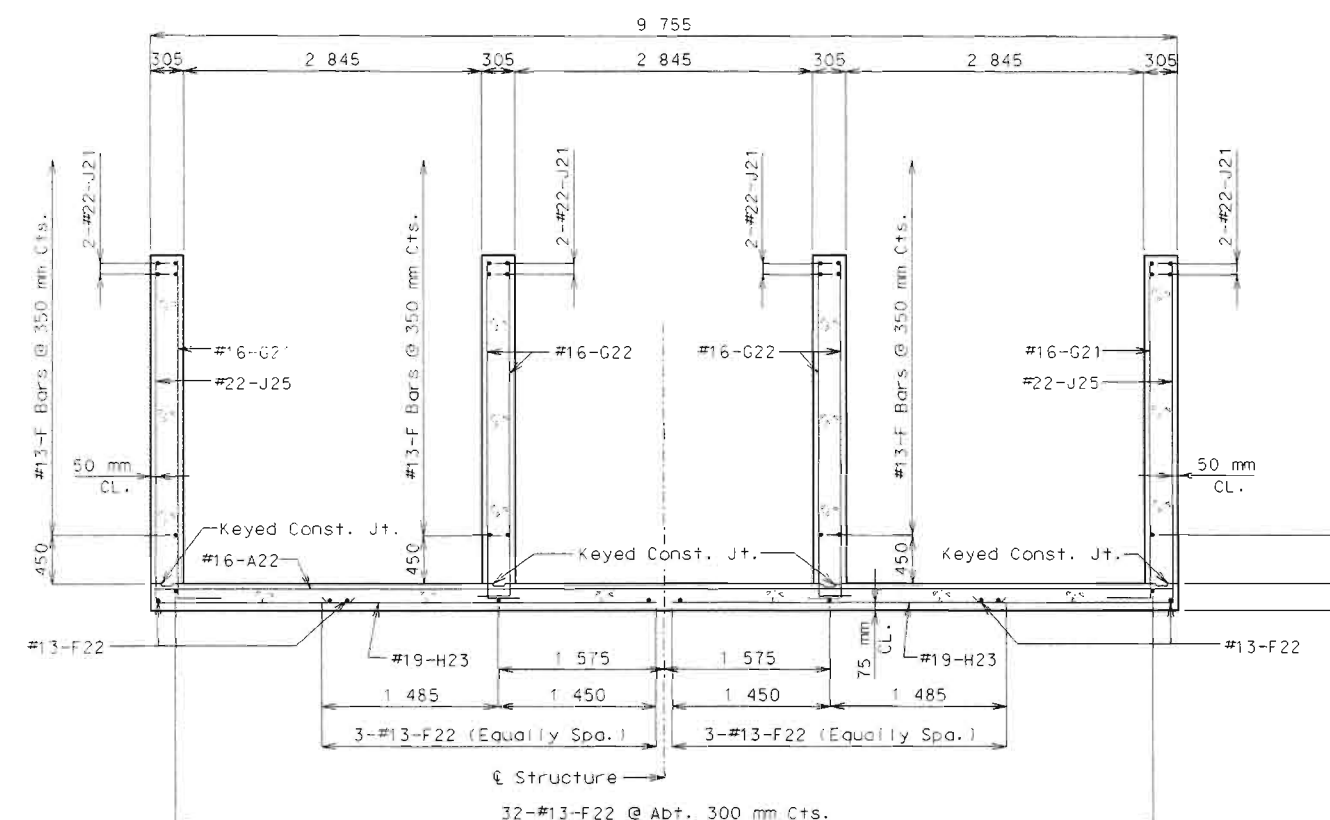
J21 bars may be bent in field or shop.

STATE OF MISSOURI
REGISTERED PROFESSIONAL ENGINEER
RAYMOND J. JANSEN
NUMBER E-18126
DATE 1/24/2000

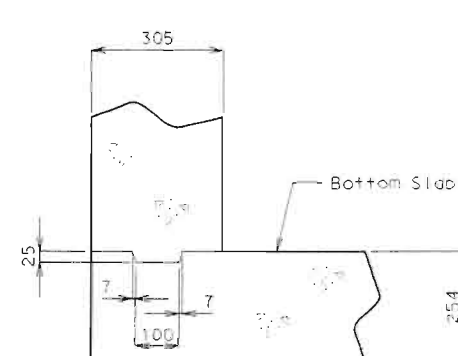
DETAILS OF UNIT ② (OPTIONAL CUT DETAILS)



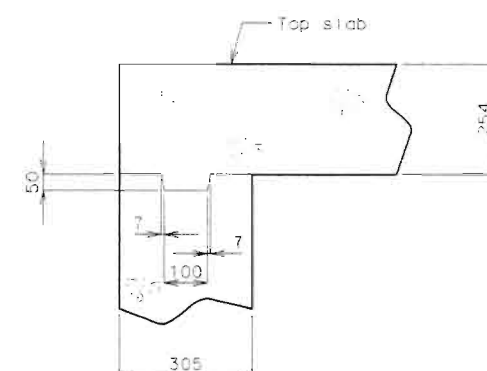
SECTION P-P



SECTION H-H



BOTTOM SLAB



TOP SLAB

DETAIL OF KEYED CONSTRUCTION JOINTS
(Exterior walls shown. Interior walls are similar.)

NOTE:

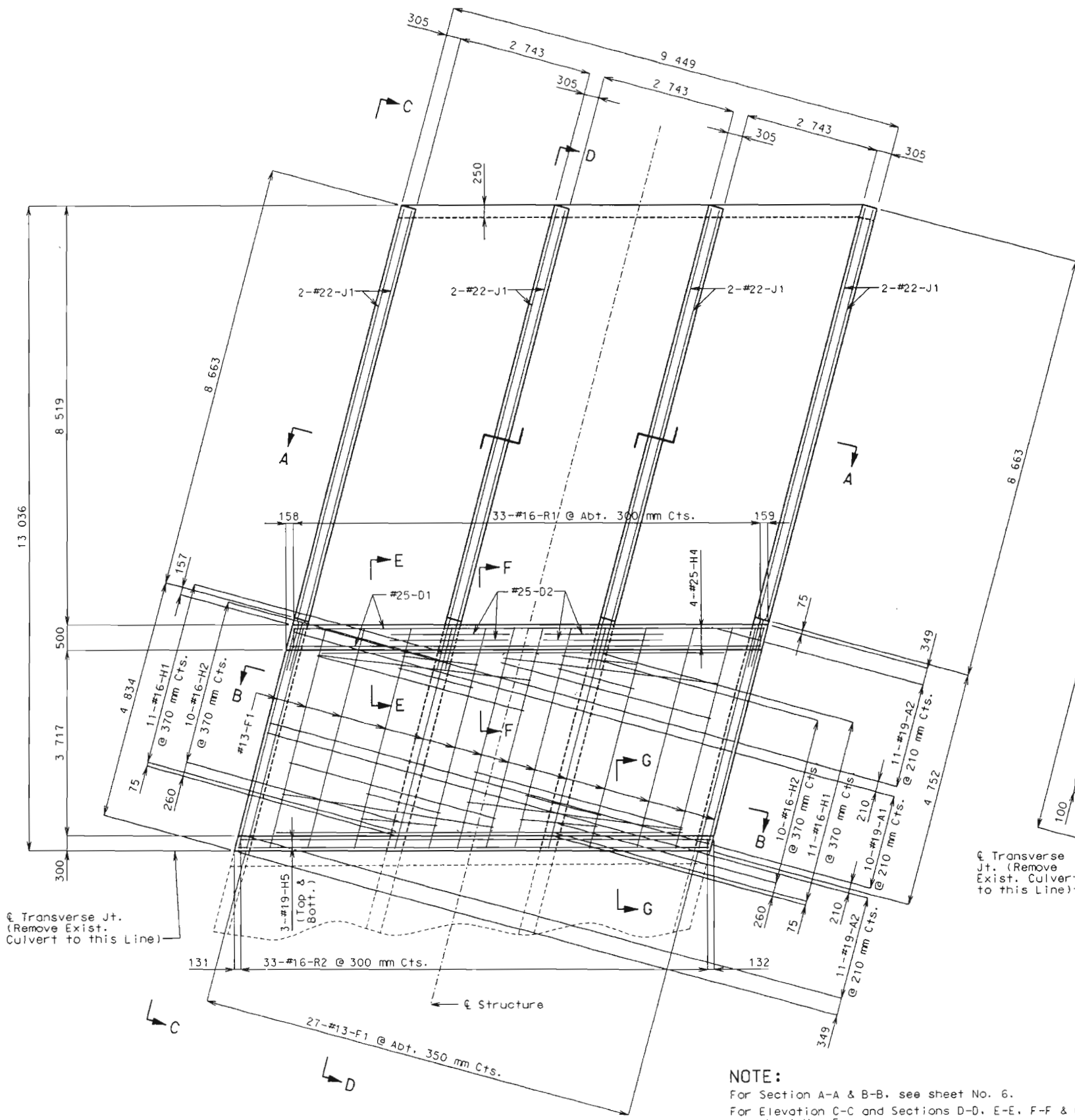
For location of Section P-P & H-H, see sheet No. 1f.

DETAILS OF UNIT ② (OPTIONAL CUT DETAILS)



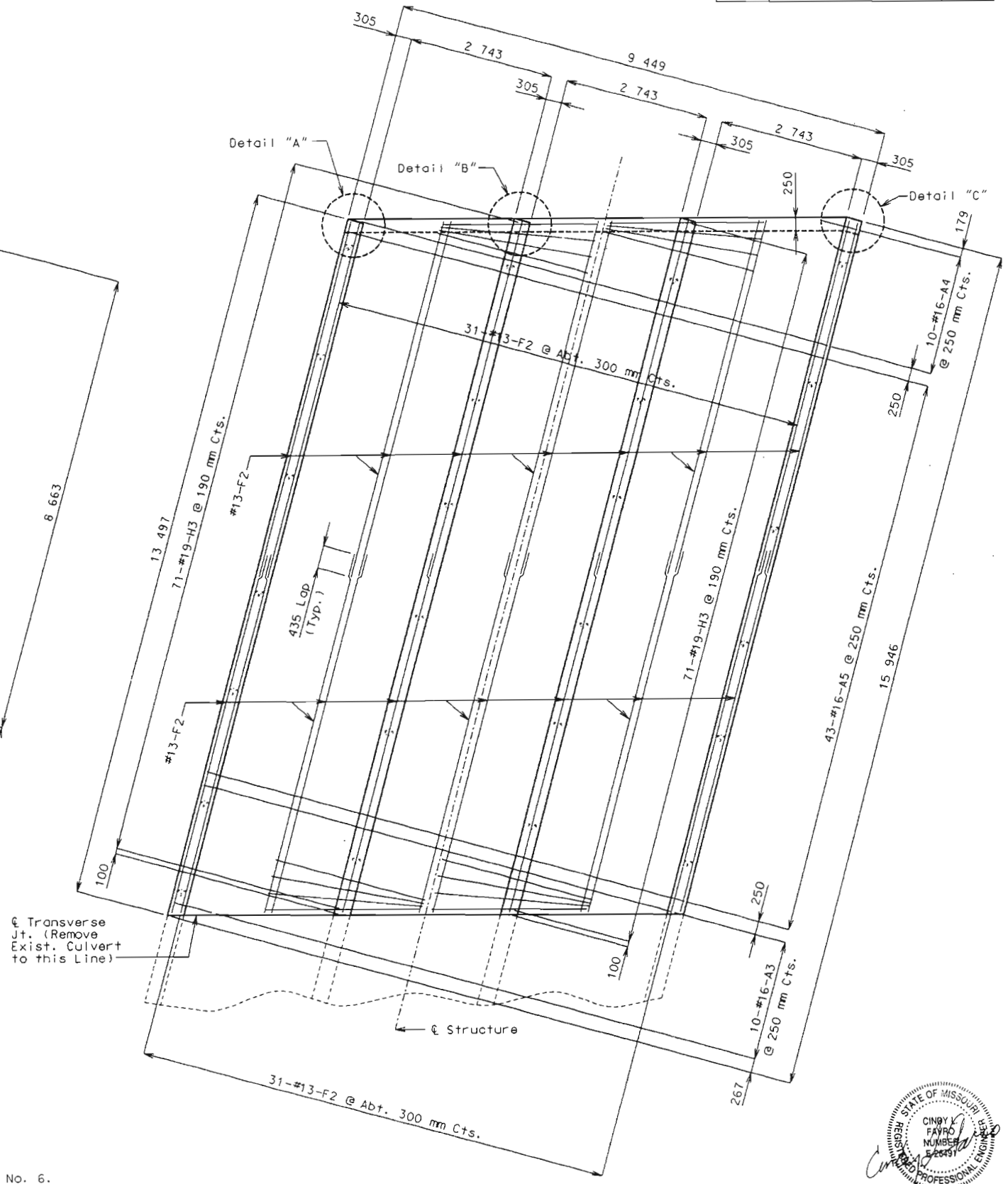
Raymond J. Jansen
DATE 1/26/2000

State	Proj. No.	Sheet No.
MO		068



PLAN OF TOP SLAB

NOTE:
For Section A-A & B-B, see sheet No. 6.
For Elevation C-C and Sections D-D, E-E, F-F & G-G, see sheet No. 5.
For Details "A", "B" & "C", see sheet No. 5.
For details of J & B bars, see sheet No. 5 & 6.

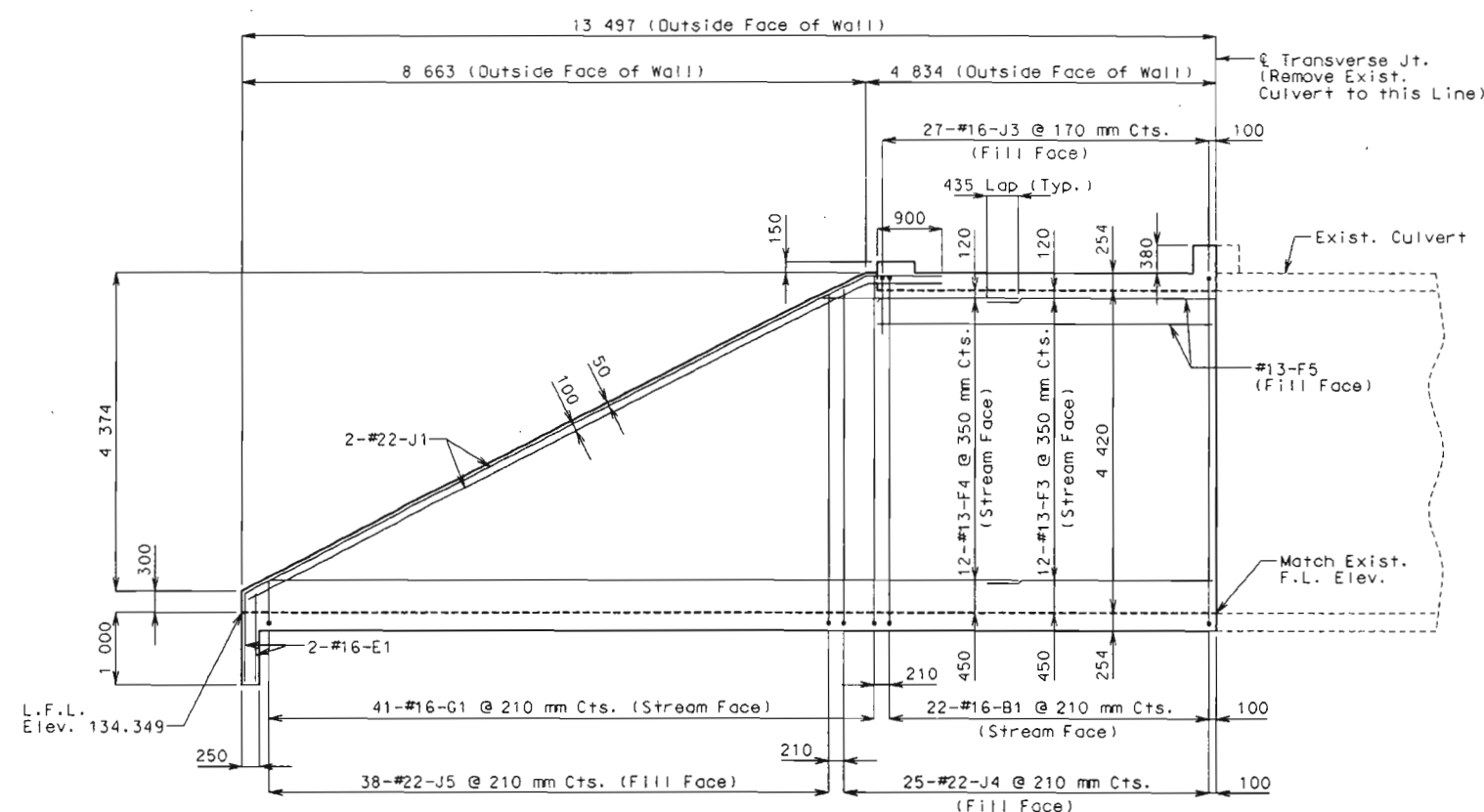


PLAN OF BOTTOM SLAB

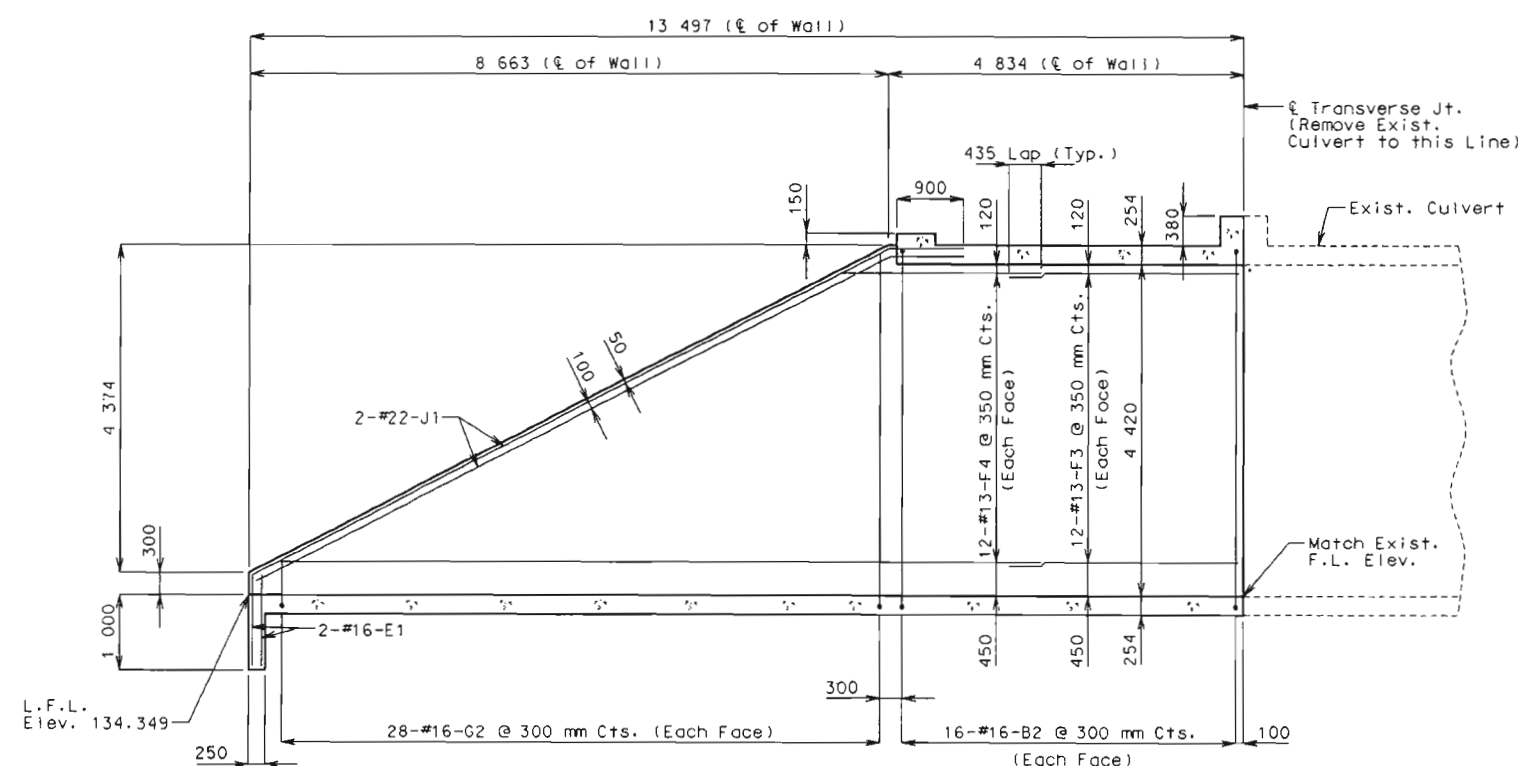
DETAILS OF UNIT ①

STATE OF MISSOURI
CIVIL ENGINEER
CINBY K. FAYO
NUMBER 52831
DATE 12/1/98

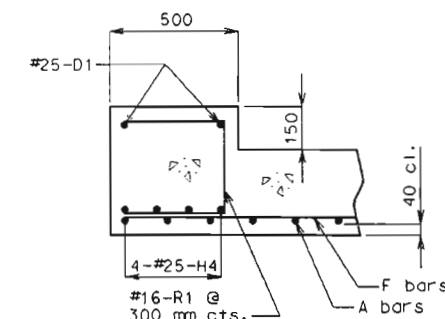
State	Proj. No.	Sheet No.
MO		869



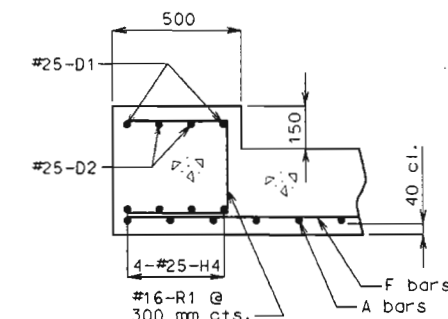
ELEVATION C-C
(Typical elevation for exterior walls)



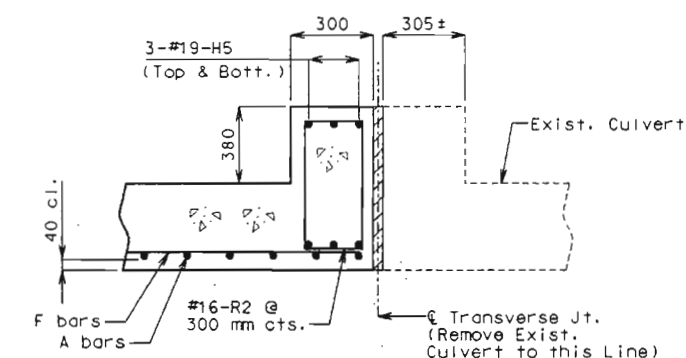
SECTION D-D
(Typical section for interior walls)



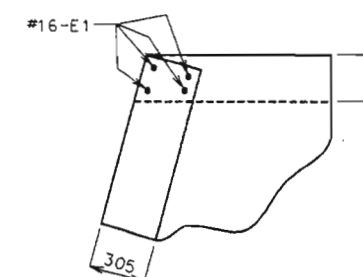
SECTION E-E



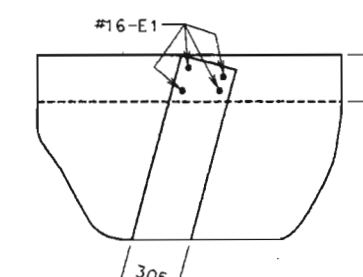
SECTION F-F



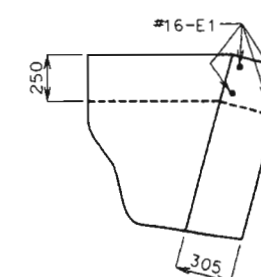
SECTION G-G



DETAIL "A"



DETAIL "B"



DETAIL "C"

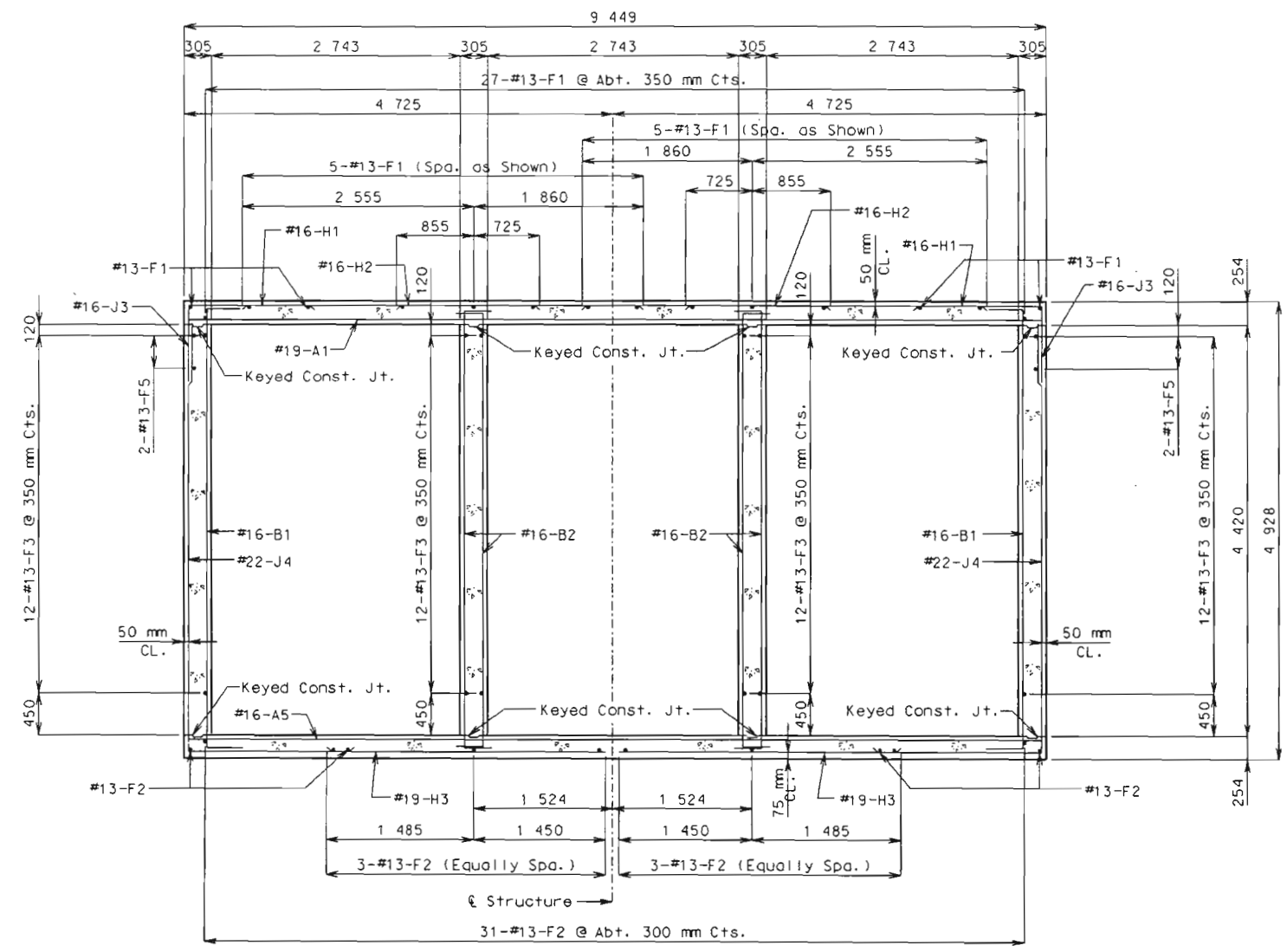
NOTE:

For location of Elevation C-C and D-D, E-E, F-F & G-G, see sheet No. 4.
For location of Details "A", "B" & "C", see sheet No. 4.
Keyed construction joint is omitted for clarity.
For details of A Bars & H Bars, see sheet No. 4.
J1 bars may be bent in field or shop.

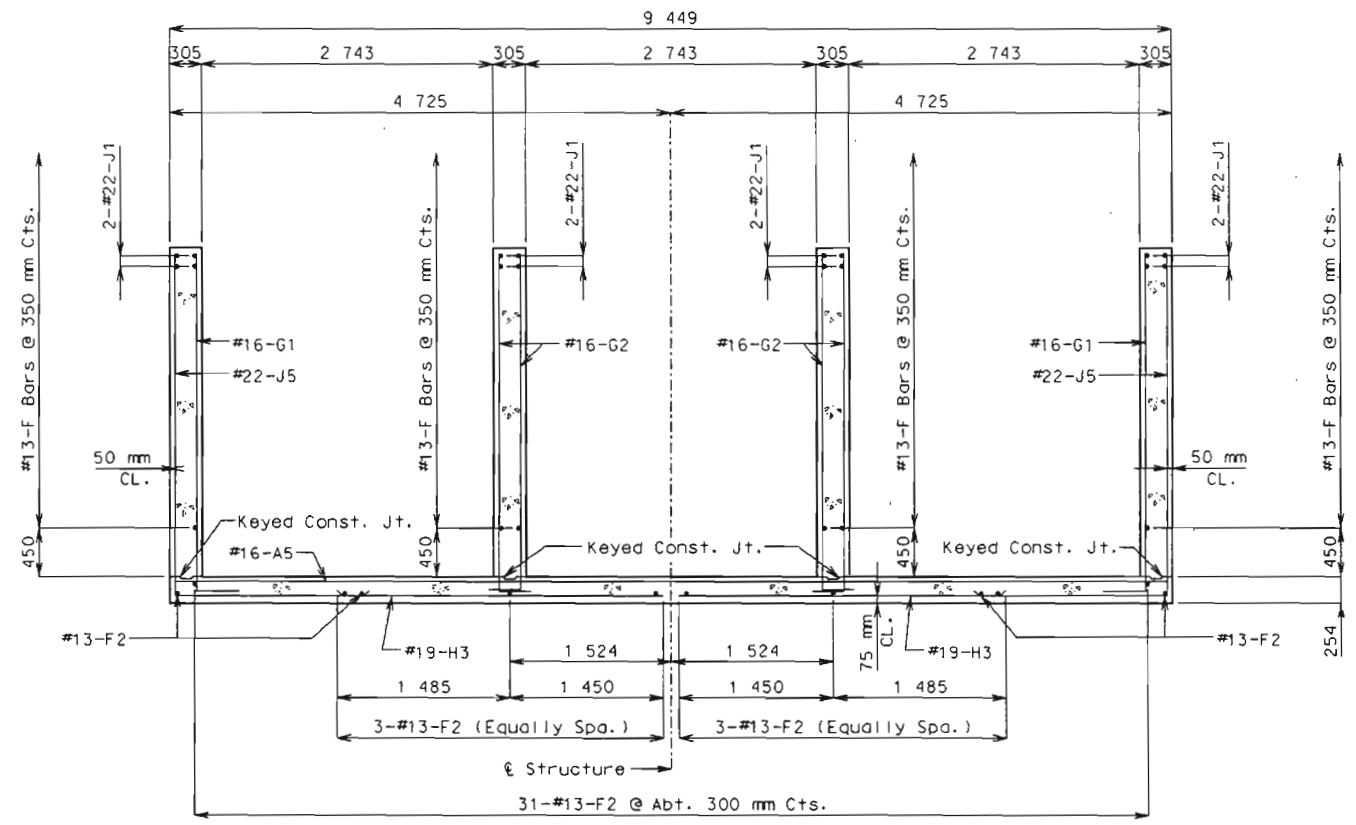
DETAILS OF UNIT ①



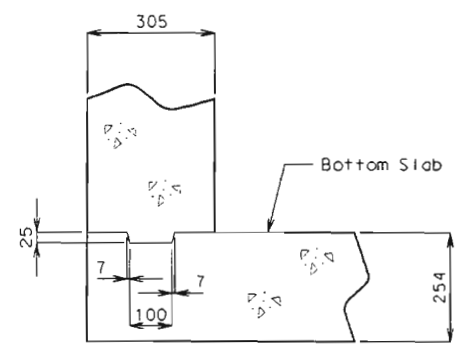
State	Proj. No.	Sheet No.
MO		670



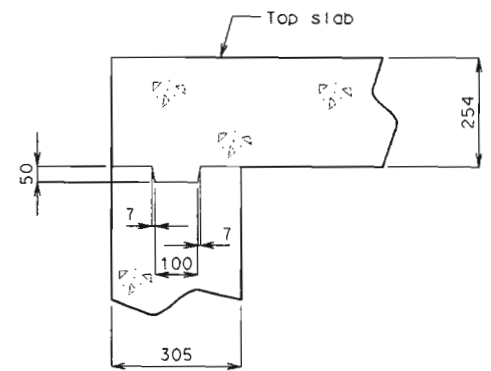
SECTION B-B



SECTION A-A



BOTTOM SLAB



TOP SLAB

DETAIL OF KEYED CONSTRUCTION JOINTS

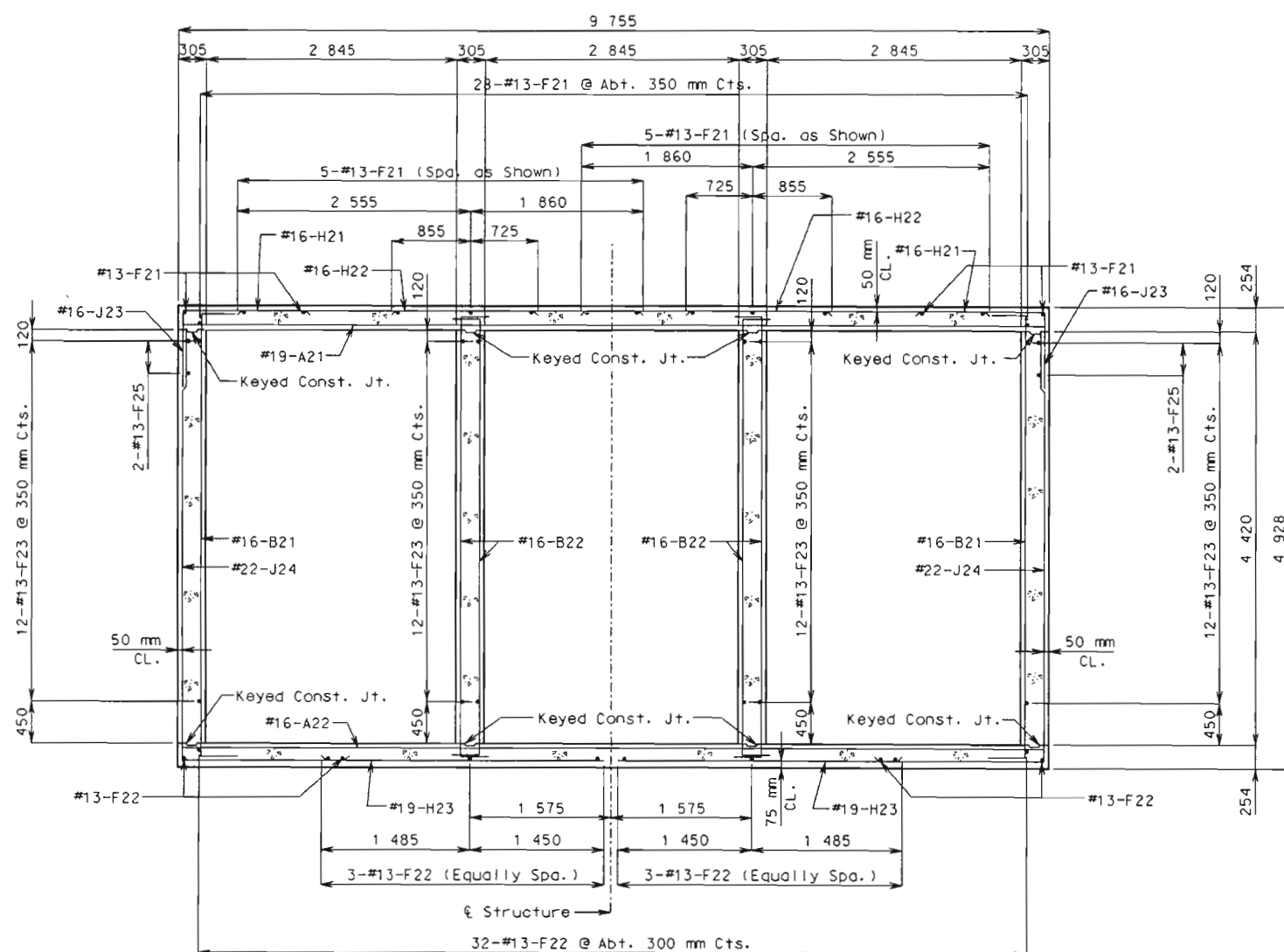
(Exterior walls shown. Interior walls are similar.)

NOTE:
For location of Section A-A & B-B, see sheet No. 4.

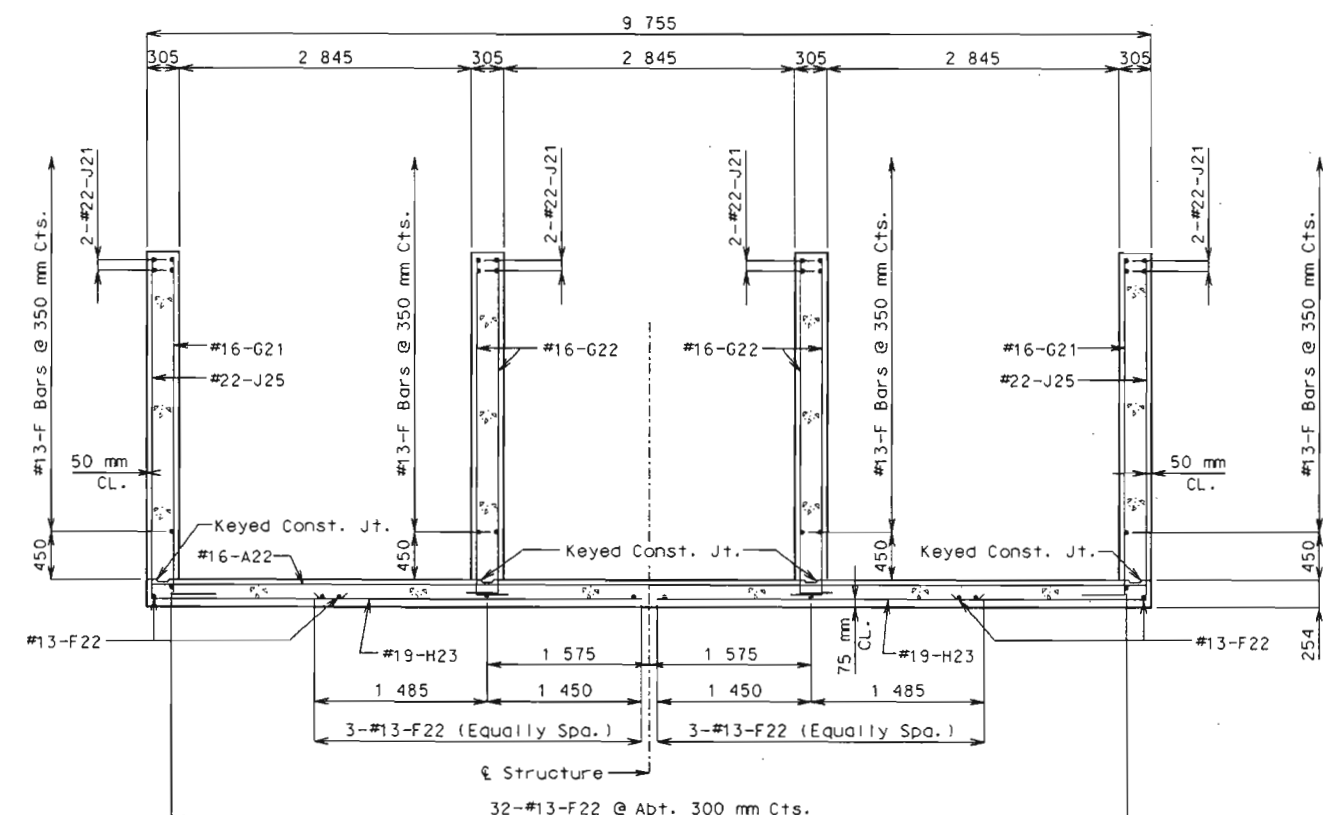
DETAILS OF UNIT ①

STATE OF MISSOURI
REGISTERED PROFESSIONAL ENGINEER
CINDY L. FAYARD
NUMBER 154491
DATE 12/8/98

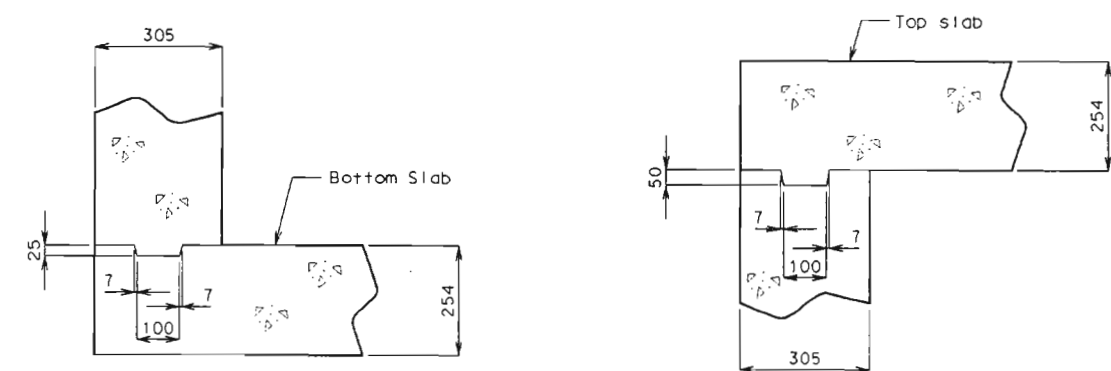
State	Proj. No.	Sheet No.
MO		B 73



SECTION P-P



SECTION H-H



BOTTOM SLAB

TOP SLAB

DETAIL OF KEYED CONSTRUCTION JOINTS

(Exterior walls shown. Interior walls are similar.)

NOTE:
For location of Section P-P & H-H, see sheet No. 7.

STATE OF MISSOURI
REGISTERED PROFESSIONAL ENGINEER
CINDY L. HARRIS
NUMBER 16-20481
DATE 12/8/98

DETAILS OF UNIT ②

Detailed Aug. 1998
Checked Sept. 1998

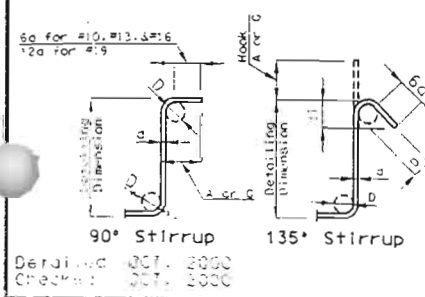
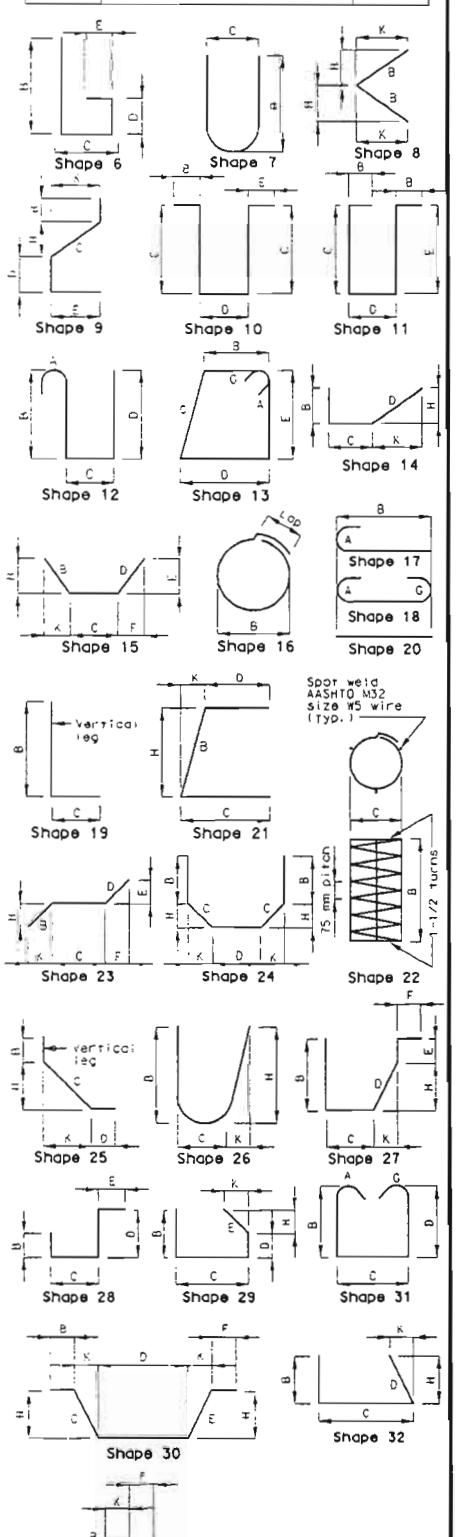
BILL OF REINFORCING STEEL

No.	Req'd.	Size	Mark No.	Location	Epoxy (E)	Shape No.	Stirrup (S)	Substr. (X)	Varies (V)	No. Each	Dimensions						Nominal Length	Actual Length	Mass
											B	C	D	E	F	H			
											mm	mm	mm	mm	mm	mm	mm	mm	kg
				UNIT 1															
12	15	A1		TOP SLAB		20					9365						9365	9365	12
20	15	A2		TOP SLAB		20			V	2	1655						9365	1395	
				INCREMENT =							5945						9365	8945	20
				785 MM															
9	16	A3		BOTT. SLAB		20			V	1	1690						1690	1690	
				INCREMENT =							9150						9150	9150	
				935 MM															
9	16	A4		BOTT. SLAB		20			V	1	1660						1660	1660	
				INCREMENT =							9125						9125	9125	
				935 MM															
44	10	A5		BOTT. SLAB		20					9365						9365	9365	60
26	18	B1		EXT. WALL		10	S					400	4600				5600	5535	20
6	16	B1A		EXT. WALL		19	S				4580		400				4080	4045	40
80	18	B2		INT. WALLS		10	S					300	4800				14000	9335	40
12	10	B3		EXT. WALLS		19	S				955	400					1355	1320	20
2	25	D1		HEADWALL		20					9700						9700	9700	
4	25	D2		HEADWALL		20					2440						2440	2440	30
16	16	E1		APRON		20					1230						1230	1230	30
42	13	F1		TOP SLAB		20					4595						4595	4595	190
42	13	F2		BOTT. SLAB		20					7145						7145	7145	290
42	13	F2A		BOTT. SLAB		20					3120						3120	3120	130
42	13	F2B		BOTT. SLAB		20					3969						3970	3970	160
2	12	F3		WALL		20					3485						3485	3485	240
2	13	F4		WING		20			V	6	2255						2250	2295	
				INCREMENT =							5915						9015	9815	40
				695 MM															
4	13	F5		WALL		20					4555						4555	4555	
82	16	G1		WING		19			V	2	560	400					1060	1020	
				INCREMENT =							4800	400					8000	4160	30
				105 MM															
112	16	G2		WING		19			V	4	700	300					000	960	
				INCREMENT =							4760	300					3060	5020	50
				150 MM															
22	16	H1		TOP SLAB		20					4415						4415	4415	150
20	16	H2		TOP SLAB		20					1580						1580	1580	40
140	16	H3		BOTT. SLAB		20					2935						2935	2935	90
4	25	H4		HEADWALL		20					9700						9700	9700	150
6	13	H5		EDGE BEAM		20					9780						9780	9780	130
16	22	J1		WING		20					10560						10560	10560	500
52	16	J3		WALL		19					820	1390					2070	2170	100
42	22	J4		WALL		19					4615	1830					6445	6290	80

BILL OF REINFORCING STEEL

No.	Req'd.	Size	Mark No.	Location	Epoxy (E)	Shape No.	Stirrup (S)	Substr. (X)	Varies (V)	No. Each	Dimensions						Nominal Length	Actual Length	Mass		
											B	C	D	E	F	H				K	
											mm	mm	mm	mm	mm	mm				mm	
78	10	J5	WING		19				V	2	660	1830					2490	2435			
			INCREMENT =								4800	1830					6630	6575	1042		
			110 MM																		
33	16	R	HEADWALL		10	S						420	290				1130	1065	5		
33	16	R2	EDGE BEAM		13	S						220	520	220	520		1760	1660	85		
			UNIT 2																		
47	19	A21	TOP SLAB		20							9675					9675	9675	1016		
62	10	A22	BOTT. SLAB		20							9675					9675	9675	931		
60	13	B01	EXT. WALL		10	S							400	4800			5600	5535	523		
4	10	B21A	EXT. WALLS		19	S						4580	400			4980	4945	31			
36	16	B21B	EXT. WALLS		19	S						1840	400			2240	2205	123			
12	10	B21C	EXT. WALLS		19	S						635	400			1235	1200	22			
44	16	B22	INT. WALLS		10	S							300	4800		5400	5335	164			
23	16	B22A	INT. WALLS		19	S						1840	300			2140	2105	91			
16	10	B22B	INT. WALLS		19	S						635	300			1135	1100	27			
2	25	D21	HEADWALL		20							9675					9675	9675	77		
4	25	D22	HEADWALL		20							2440					2440	2440	39		
16	16	E20	APRON		20							1080					1080	1080	27		
42	13	F21	TOP SLAB		20							9745					9745	9745	407		
42	13	F22	BOTT. SLAB		20							9745					9745	9745	407		
42	13	F22A	BOTT. SLAB		20							6050					6050	6050	253		
42	13	F23	WALL		20							3965					3965	3965	166		
18	13	F23A	WALL		20							5795					5795	5795	104		
12	12	F23B	WALL		20							7000					7000	7000	83		
70	13	F23C	WING		20				V	6		4145					4145	4145			
			INCREMENT =									11945					11945	11945	576		
			710 MM																		
4	13	F25	WALL		20							9625					9625	9625	39		
80	16	G21	WING		19				V	2		735	400				1135	1095			
			INCREMENT =									4830	400				5230	5190	390		
			105 MM																		
116	16	G22	WING		19				V	4		625	300				925	885			
			INCREMENT =									4820	300				5120	5080	531		
			150 MM																		
50	16	H21	TOP SLAB		20							4415					4415	4415	143		
48	16	H22	TOP SLAB		20							1580					1580	1580	118		
162	19	H23	BOTT. SLAB		20							2935					2935	2935	1063		
6	19	H24	EDGE BEAM		20							9675					9675	9675	130		
16	22	J21	WING		20							10640					10640	10640	519		
116	16	J23	WALL		19							820	1330				2210	2170	361		
86	23	J24	WALL		19							4615	1330				6445	6390	1263		
78	22	J25	WING		19				V	2		755	1330				2585	2530			
			INCREMENT =									4830	1830				6660	6605	1056		
			110 MM																		
33	16	R21	HEADWALL		27	S						420	220	100	685		70	70	1425	1375	70

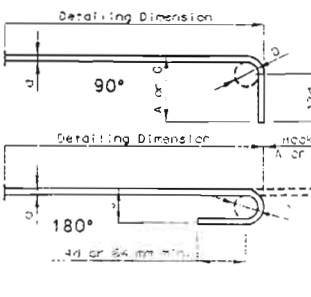
State	Proj. No.	Sheet No.
MO		



STIRRUP HOOK DIMENSIONS (mm)

Bar Size	D	90° Hook			Approx. H
		Hook A or G	Hook A or G	Hook A or G	
#13	50	115	115	80	
#16	65	155	140	95	
#19	115	305	205	115	

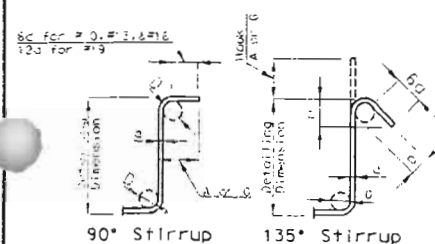
Note: Unless otherwise noted, diameter is the same for all parts and components.



END HOOK DIMENSIONS (mm)

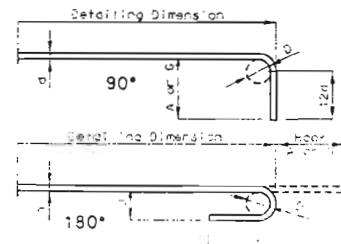
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BILL OF REINFORCING STEEL

[illegible]

Grades 300 & 420 MPa				
Bar Size	Ø	90° Hook		135° Hook
		Hook A or G	Hook A or G	Approx. H
#13	50	115	115	80
#16	65	155	140	95
#19	115	305	205	115

Note: Unless otherwise noted, diam. = 10. This is the size for all Def. and N. 10 is a bar.



END HOOK DIMENSIONS (mm)					
Bar Size	D	All Grades			
		180° Hooks		90° Hooks	
		A or C	J	A or C	J
#10	50	125	80	150	150
#13	80	150	105	200	200
#16	95	175	130	250	250
#19	115	200	155	300	300
#22	135	250	180	375	375
#25	155	275	205	425	425
#29	240	375	300	475	475
#32	275	425	335	550	550
#36	305	475	375	600	600
#43	465	675	550	775	775

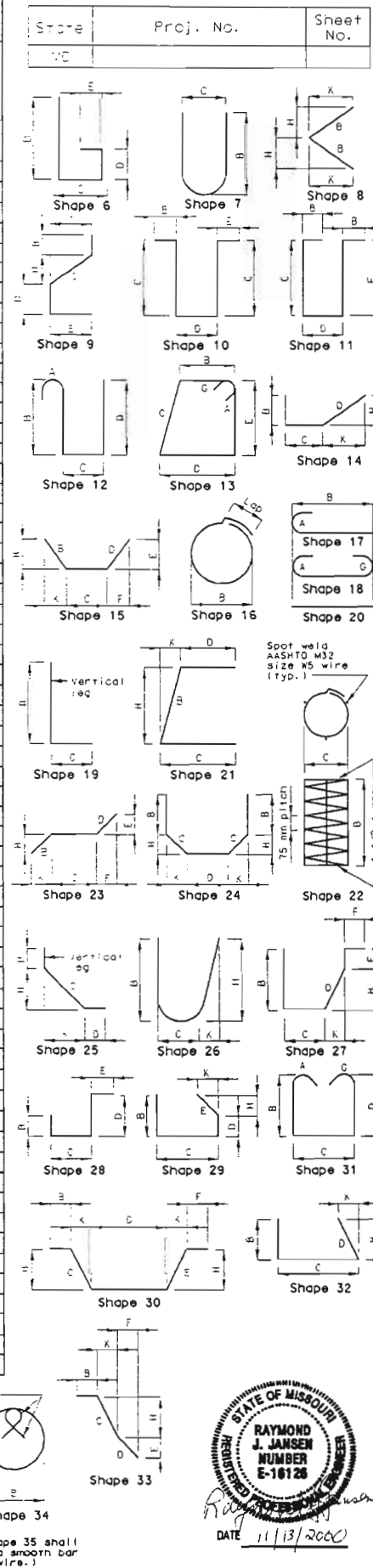
Note:

NOTE:

- A1: standard rocks and bends other than 180 degree to be bent with the same pressure as 90 degree standard rocks
- B: bends shall be in accordance with the procedures as shown on this sheet.
- E: epoxy coated reinforcement
- S: stirrup
- X: bar is included in substructure quantities
- Y: bar dimensions vary in equal increments between dimensions shown on this line and the following line
- N: N_c = number of bars of each length
- Naming: lengths are based on cut to our dimensions shown in bending diagrams and are listed for fabricator's use (nearest 5 mm).
- Actual lengths are measured along centerline for bar to the nearest 5 mm.
- Payoff lists are based on actual lengths.
- Spacers: all column spacers are designed for each column spiral. Spacers are to maintain the spiral length and mass of column spirals to meet include splices or reinforcing steel (Grade 40) = 8" x 40" and

Added sheet 0/31,00 sheet no. 111

BILL OF REINFORCING STEEL

[illegible]

BENDING DIAGRAMS

St. Louis COUNTY

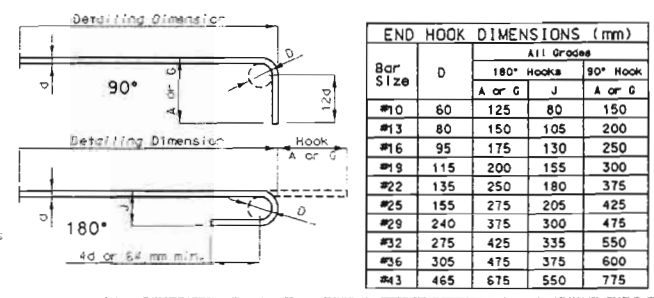
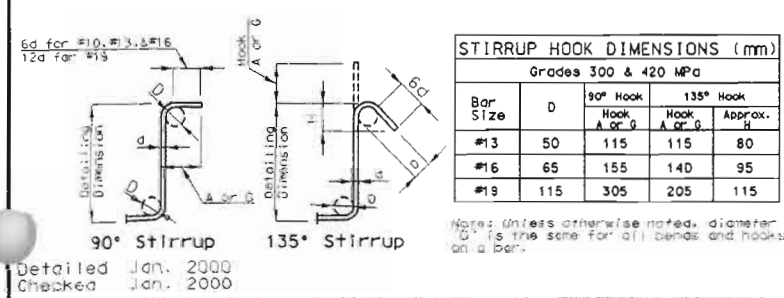
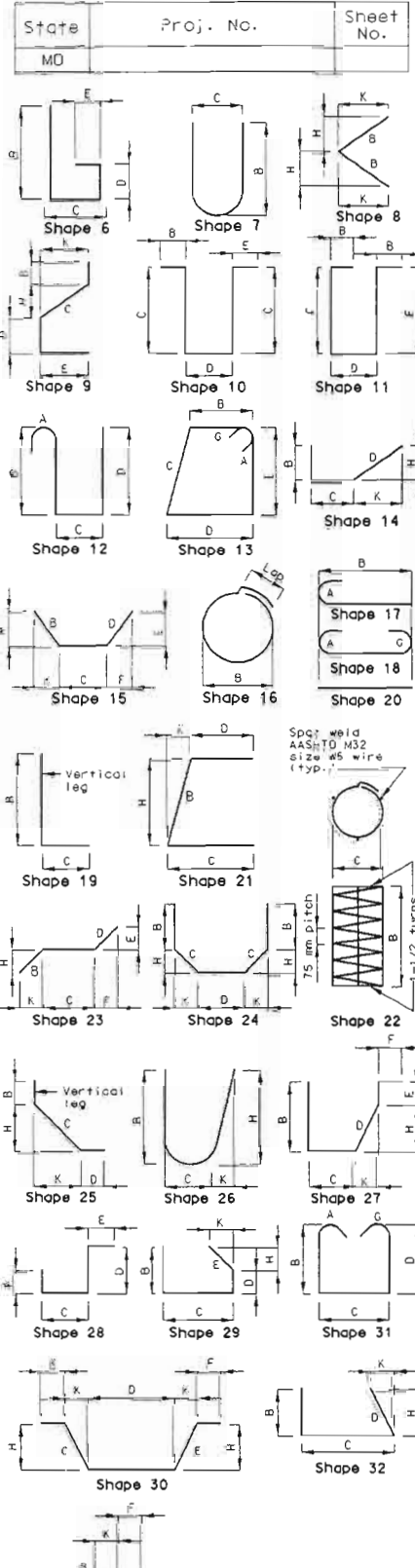
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BILL OF REINFORCING STEEL

No.	Req'd.	Mark No.	Location	Epoxy (E)	Shape No.	Stirrup (S)	Substr. (X)	Varies (V)	No. Each	Dimensions							Nominal Length	Actual Length	Mass
										B	C	D	E	F	H	K			
										mm	mm	mm	mm	mm	mm	mm	mm	mm	kg
UNIT 1																			
10	19	A1	TOP SLAB		20					9365							9365	9365	209
22	19	A2	TOP SLAB		20			V	2	1110							1110	1110	
INCREMENT = 785 MM										8945							8945	8945	247
10	16	A3	BOTT. SLAB		20			V	1	755							755	755	
INCREMENT = 935 MM										9150							9150	9150	77
10	16	A4	BOTT. SLAB		20			V	1	725							725	725	
INCREMENT = 935 MM										9125							9125	9125	76
29	16	A5	BOTT. SLAB		20					9365							9365	9365	421
8	16	B1	EXT. WALLS		10	S					400	4800					5600	5535	69
12	16	B1A	EXT. WALLS		19	S				4580	400						4980	4945	92
32	16	B1B	EXT. WALLS		19	S				1840	400						2240	2205	110
12	16	B1C	EXT. WALLS		19	S				835	400						1235	1200	22
16	16	B2	INT. WALLS		10	S					300	4800					5400	5335	132
4	16	B2A	INT. WALLS		19	S				4580	300						4880	4845	30
24	16	B2B	INT. WALLS		19	S				1840	300						2140	2105	78
20	16	B2C	INT. WALLS		19	S				835	300						1135	1100	34
2	25	D1	HEADWALL		20					9700							9700	9700	77
4	25	D2	HEADWALL		20					2440							2440	2440	39
16	16	E1	APRON		20					1230							1230	1230	31
41	13	F1	TOP SLAB		20					4595							4595	4595	187
41	13	F2	BOTT. SLAB		20					7145							7145	7145	291
41	13	F2A	BOTT. SLAB		20					3120							3120	3120	127
30	13	F3	WALL		20					3485							3485	3485	104
72	13	F4	WING		20			V	6	2295							2295	2295	
INCREMENT = 695 MM										9915							9915	9915	437
4	13	F5	WALL		20					4555							4555	4555	18
62	16	G1	WING		19			V	2	660	400						1060	1020	
INCREMENT = 105 MM										4800	400						5200	5160	393
112	16	G2	WING		19			V	4	700	300						1000	960	
INCREMENT = 150 MM										4760	300						5060	5020	520
22	16	H1	TOP SLAB		20					4415							4415	4415	151
20	16	H2	TOP SLAB		20					1580							1580	1580	49
104	19	H3	BOTT. SLAB		20					2935							2935	2935	682
4	25	H4	HEADWALL		20					9700							9700	9700	154
6	19	H5	EDGE BEAM		20					9780							9780	9780	131
16	22	J1	WING		20					10560							10560	10560	514
54	16	J3	WALL		19					820	1390						2170	2170	52
14	22	J4	WALL		19					4615	1830						6445	6390	272
76	22	J5	WING		19			V	2	660	1830						2430	2415	
INCREMENT = 110 MM										4800	1830						6630	6575	1042
33	16	R1	HEADWALL		10	S					420	290					1130	1065	55
33	16	R2	EDGE BEAM		13	S				220	520	220	520				1760	1660	85

BILL OF REINFORCING STEEL

No.	Req'd.	Mark No.	Location	Epoxy (E)	Shape No.	Stirrup (S)	Substr. (X)	Varies (V)	No. Each	Dimensions							Nominal Length	Actual Length	Mass				
										B	C	D	E	F	H	K							
										mm	mm	mm	mm	mm	mm	mm							
UNIT 2																							
47	19	A21	TOP SLAB		20					9675								9675	9675			1016	
62	16	A22	BOTT. SLAB		20					9675								9675	9675			931	
62	16	B21	EXT. WALL		10	S					400	4800						5600	5535			533	
4	16	B21A	EXT. WALLS		19	S				4580	400							4980	4945			31	
36	16	B21B	EXT. WALLS		19	S				1840	400							2240	2205			123	
12	16	B21C	EXT. WALLS		19	S				835	400							1235	1200			22	
44	16	B22	INT. WALLS		10	S					300	4800						5400	5335			364	
28	16	B22A	INT. WALLS		19	S				1840	300							2140	2105			91	
16	16	B22B	INT. WALLS		19	S				835	300							1135	1100			27	
2	25	D21	HEADWALL		20					9675								9675	9675			77	
4	25	D22	HEADWALL		20					2440								2440	2440			39	
16	16	E20	APRON		20					1080								1080	1080			27	
42	13	F21	TOP SLAB		20					9745								9745	9745			407	
42	13	F22	BOTT. SLAB		20					9745								9745	9745			407	
42	13	F22A	BOTT. SLAB		20					6050								6050	6050			253	
42	13	F23	WALL		20					3965								3965	3965			166	
18	13	F23A	WALL		20					5795								5795	5795			104	
12	13	F23B	WALL		20					7000								7000	7000			83	
72	13	F24	WING		20			V	6	4145								4145	4145				
INCREMENT = 710 MM										11945								11945	11945			576	
4	13	F25	WALL		20					9825								9825	9825			39	
80	16	G21	WING		19			V	2	735	400							1135	1095				
INCREMENT = 105 MM										4830	400							5230	5190			390	
116	16	G22	WING		19			V	4	625	300							925	885				
INCREMENT = 150 MM										4820	300							5120	5080			537	
50	16	H21	TOP SLAB		20					4415								4415	4415			343	
48	16	H22	TOP SLAB		20					1580								1580	1580			118	
162	19	H23	BOTT. SLAB		20					2935								2935	2935			1063	
6	19	H24	EDGE BEAM		20					9675								9675	9675			130	
16	22	J21	WING		20					10640								10640	10640			518	
116	16	J23	WALL		19					820	1390							2210	2170			391	
66	22	J24	WALL		19					4615	1830							6445	6390			1283	
76	22	J25	WING		19			V	2	755	1830							2585	2530				
INCREMENT = 110 MM										4830	1830							6660	6605			1056	
33	16	R21	HEADWALL		27	S				420	220	100	685		70	70		1425	1375			70	
33	16	R22	HEADWALL		10	S					260	290						810	745			38	
33	16	R23	EDGE BEAM		13	S				220	520	220	520					1760	1660			85	



MISSOURI HIGHWAY AND TRANSPORTATION COMMISSION

℄ Sta. 15+055.364±
℄ Profile Grade Elev. 140.140
Design Fill @ ℄ = 1.297 m

State	Proj. No.	Sheet No.
MO	FAF-100-1(21)	57
Sec./Sur. 32	Twp. 45N Rge. 5E	
CONTRACT NO. 990423-605		
COUNTY ST. LOUIS		
JOB NO. J6U1032		
Route 100		

General Notes:

Design Specifications:
AASHTO - 1996 and Interim 1997
Load Factor Design
Design Loading:
MS18
Earth - 1900 kg/cu. meter
Equivalent Fluid Pressure 4.71 kPa/m (Min.) - 9.42 kPa/m (Max.)

Design Unit Stresses:
Class B1 Concrete (Culverts) f'c = 28 MPa
Reinforcing Steel (Grade 420) fy = 420 MPa

Miscellaneous:
When alternate precast box sections are used, the minimum barrel length measured along the shortest wall from the first joint to the outside of the headwall, shall be 950 mm. Reinforcement and dimensions for the wings and headwalls shall be in accordance with Missouri Standard Plans Drawings.

Minimum clearance to reinforcing steel shall be 40 mm, unless otherwise shown.

Traffic over structure to be maintained during construction.

All dimensions are shown in millimeters (mm) unless otherwise specified.

Drawings are not to scale. Follow dimensions.

All elevations are specified in meters except as noted.

For Details "B", "C" & "D", see sheet No. 2.

Outline of old work is indicated by light dashed lines. Heavy lines indicate new work.

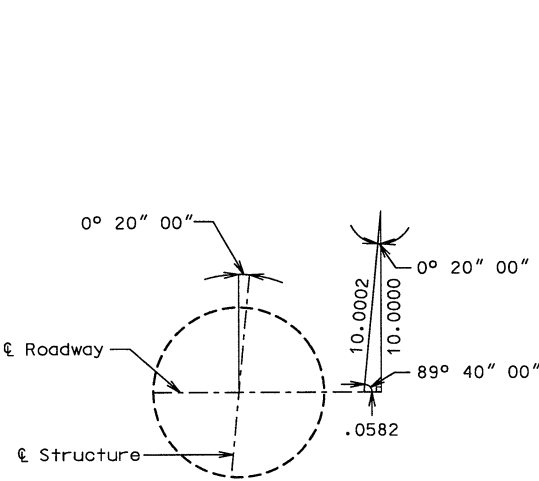
Bottom of top slab, top of bottom slab and inside faces of walls shall be built flush with the old structure.

Clean out channel from existing ground elevation to F.L. of box within the R/W limits (Rdwy. Item).

Design fill height is the height from the top of the earth fill or roadway to the bottom of the top slab.

Beveled headwall to be located at upstream end.

The box culvert meet strength requirements for military 106 kN tandem axle loading.



DETAIL "A"

HYDROLOGIC DATA	
Drainage Area	= 8.5 Sq. km
Des. Discharge	= 171 cms (100 years)
Des. H.W. Elev.	= 139.900 (100 years)
Est. Backwater	= No Increase

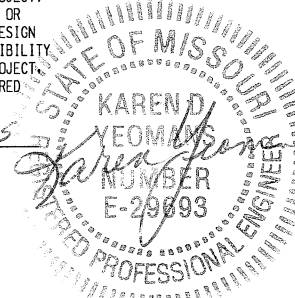
FINAL QUANTITIES		
Partial Removal of Culvert Concrete (Bridges)	lump sum	1
Class 3 Excavation - Metric	cu. meter	975
Granular Backfill (Culverts-Bridge) - Metric	cu. meter	100
Temporary Shoring	lump sum	1
Class B1 Concrete (Culverts-Bridge) - Metric	cu. meter	254.3
Reinforcing Steel (Culverts-Bridge) - Metric	kilogram	22340

NOTE: Payment for removal of existing concrete shall be considered fully covered under the pay item "Partial Removal of Culvert Concrete (Bridges)".
Payment for excavating and backfilling will be made at the contract unit bid price per cubic meter for Class 3 Excavation.

FINAL PLANS

I CERTIFY THAT THIS PLAN SHEET ACCURATELY DEPICTS THE CONFIGURATION AND LOCATION OF THE ROADWAY AND ALL ITS APPURTENANT FEATURES, TO THE BEST OF MY KNOWLEDGE, AS I AND MY STAFF HAVE OBSERVED THE CONTRACTOR'S CONSTRUCTION OF THIS PROJECT. I SPECIFICALLY DISCLAIM ANY RESPONSIBILITY FOR THE DESIGN OF THIS PROJECT, EXCEPT AS I AND MY STAFF MAY HAVE MODIFIED OR AUTHORIZED THE MODIFICATION OF THE PROJECT DESIGN DURING ITS CONSTRUCTION; AND I DISCLAIM RESPONSIBILITY FOR THE CONTRACTOR'S ACTUAL CONSTRUCTION OF THE PROJECT, EXCEPT AS I AND MY STAFF MAY HAVE DIRECTED OR ORDERED THAT THE PROJECT BE CONSTRUCTED.

SIGNATURE: *Karen D. Yeoman* DATE: 3-27-05



B.M. Elev. 139.377 chisled "D" on WBL Headwall NE corner.
Station 15+051.166, 17.5m RT centerline.

CONCRETE TRIPLE BOX STRUCTURE
OVER GRAND GLAIZE CREEK

STATE ROAD FROM MANCHESTER TO DES PERES
ABOUT 1.6 km WEST OF DES PERES

PROJECT NO. BEG. STA. 15+050.487±
@ ℄ Rdwy.
(Match Exist.)
JOB NO. J6U1032 RTE. 100

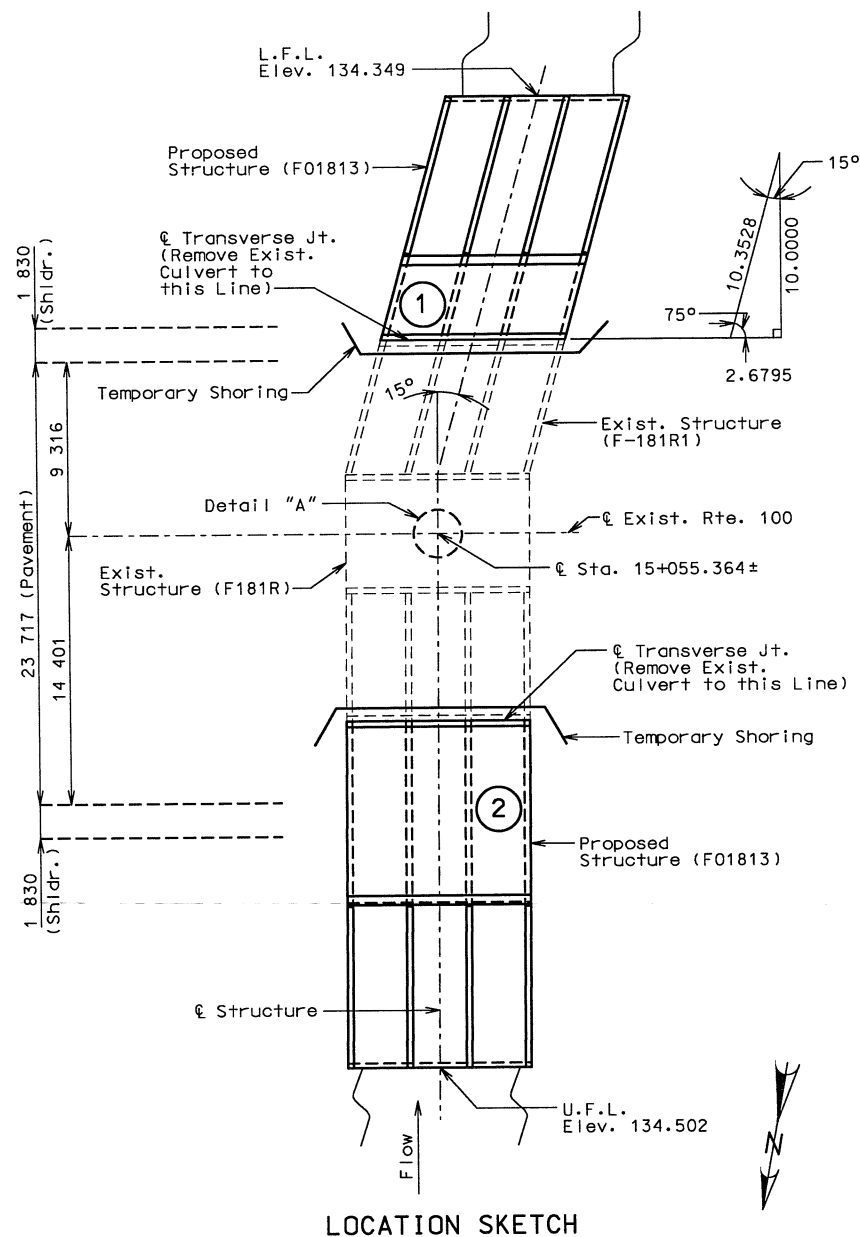
ST. LOUIS

COUNTY

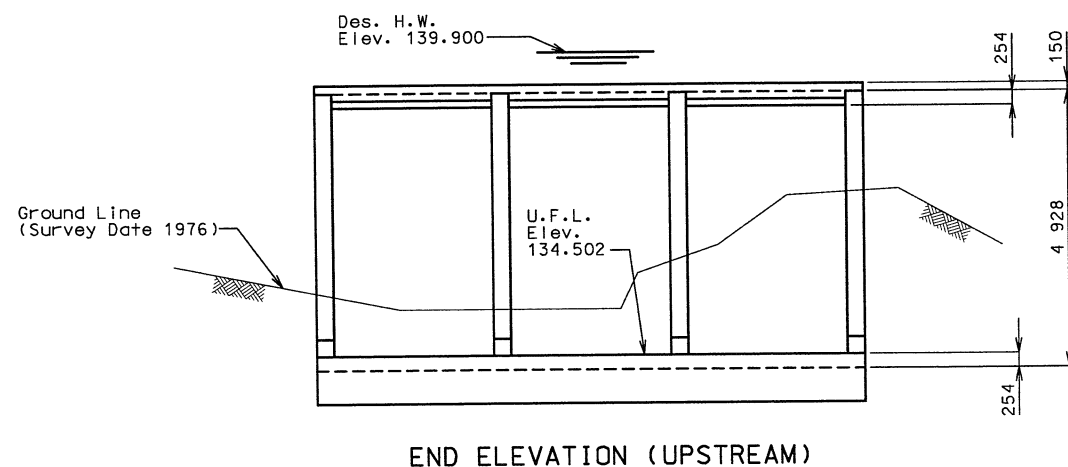
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STD. M706.35
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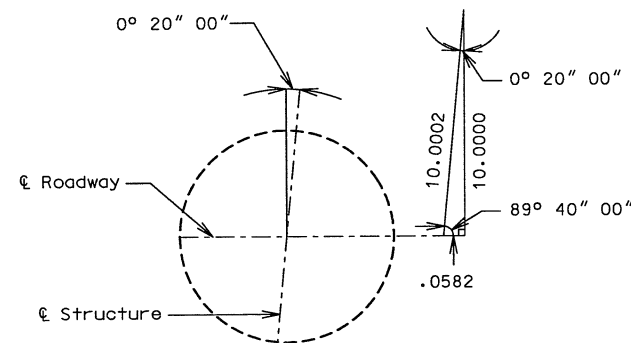
State	Proj. No.	Sheet No.
MO		58
JOB NO. J6U1032 CONTRACT NO. 990423-605 PROJECT NO. FAF-100-1(21) COUNTY ST. LOUIS ROUTE 100		



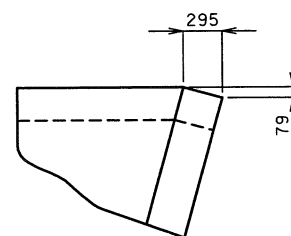
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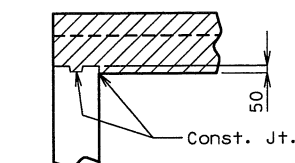
END ELEVATION (UPSTREAM)



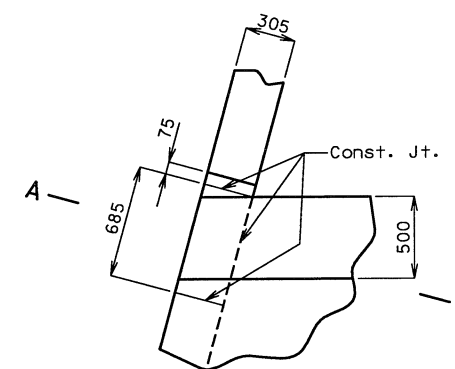
DETAIL "A"



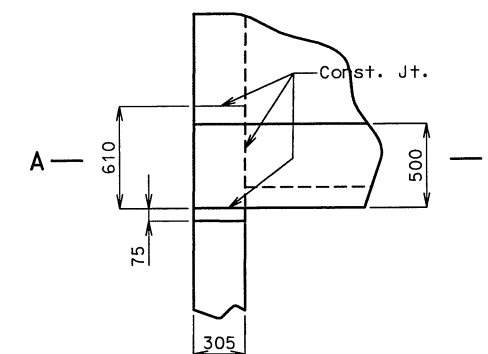
DETAIL "D"



SECTION A-A

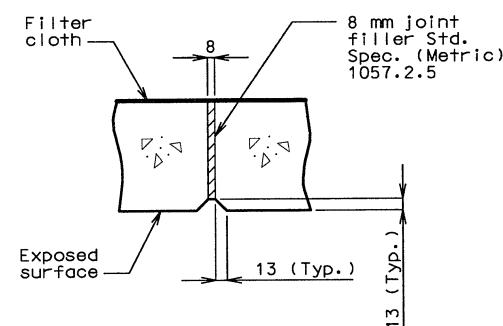


DETAIL "B"



DETAIL "C"

NOTE: For location of Details "B", "C" & "D", see sheet No. 1.



DETAIL OF FILLED TRANSVERSE JOINTS

NOTE:

A filter cloth 1 meter in width and double thickness shall be applied to all transverse joints in the top slab and sidewalls. The material shall be centered on the joint and the edges sealed with a mastic or two sided tape.

The filter cloth shall be geotextile meeting the approval of the engineer and having a grab tensile strength of 800 N. (ASTM D-4632) and an apparent opening size of 300 to 150 micrometers (ASTM D-4751). No direct payment will be made for furnishing and installing filter cloth.

Joint filler shall be securely stitched to one face of the concrete with 3.5 mm dia. (10 gage) copper wire or 2.8 mm dia. (12 gage) soft drawn galvanized steel wire.

FINAL PLANS

I CERTIFY THAT THIS PLAN SHEET ACCURATELY DEPICTS THE CONFIGURATION AND LOCATION OF THE ROADWAY AND ALL ITS APPURTENANT FEATURES, TO THE BEST OF MY KNOWLEDGE, AS I AND MY STAFF HAVE OBSERVED THE CONTRACTOR'S CONSTRUCTION OF THIS PROJECT. I SPECIFICALLY DISCLAIM ANY RESPONSIBILITY FOR THE DESIGN OF THIS PROJECT, EXCEPT AS I AND MY STAFF MAY HAVE MODIFIED OR AUTHORIZED THE MODIFICATION OF THE PROJECT DESIGN DURING ITS CONSTRUCTION; AND I DISCLAIM RESPONSIBILITY FOR THE CONTRACTOR'S ACTUAL CONSTRUCTION OF THE PROJECT, EXCEPT AS I AND MY STAFF MAY HAVE DIRECTED OR ORDERED THAT THE PROJECT BE CONSTRUCTED.

STATE OF MISSOURI
KAREN D. YEOMANS
REGISTERED PROFESSIONAL ENGINEER
NUMBER E-29693

3-27-05
DATE

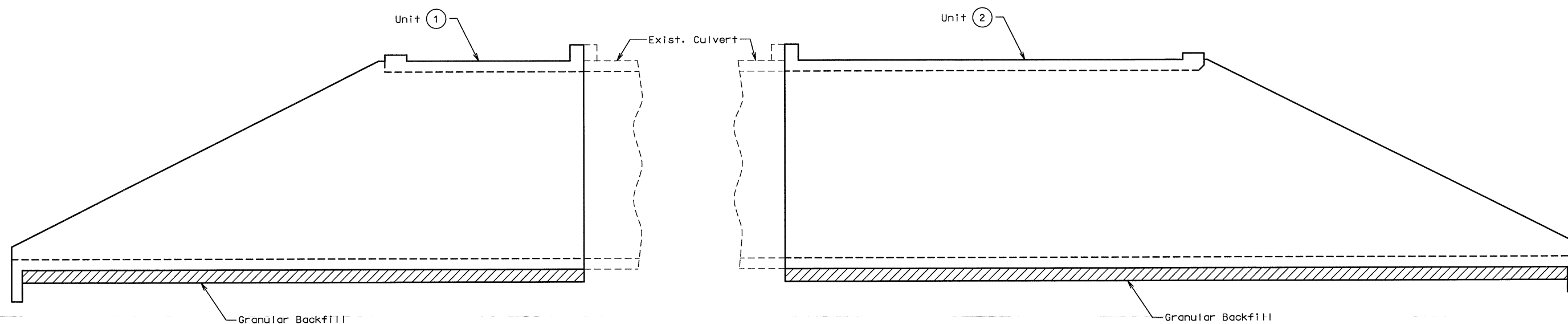
ST. LOUIS

COUNTY

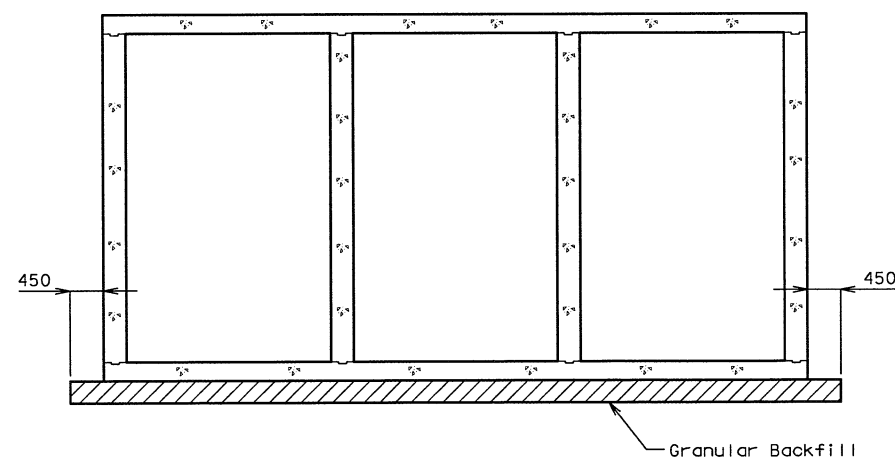
F01813

State	Proj. No.	Sheet No.
MO		59

JOB NO. J6U1032
 CONTRACT NO. 990423-605
 PROJECT NO. FAF-100-1(21)
 COUNTY ST. LOUIS
Route 100



ELEVATION SHOWING GRANULAR BACKFILL



TYPICAL SECTION THRU BOX
 SHOWING GRANULAR BACKFILL

DETAILS SHOWING GRANULAR BACKFILL

FINAL PLANS

I CERTIFY THAT THIS PLAN SHEET ACCURATELY DEPICTS THE CONFIGURATION AND LOCATION OF THE ROADWAY AND ALL ITS APPURTENANT FEATURES, TO THE BEST OF MY KNOWLEDGE, AS I AND MY STAFF HAVE OBSERVED THE CONTRACTOR'S CONSTRUCTION OF THIS PROJECT. I SPECIFICALLY DISCLAIM ANY RESPONSIBILITY FOR THE DESIGN OF THIS PROJECT, EXCEPT AS I AND MY STAFF MAY HAVE MODIFIED OR AUTHORIZED THE MODIFICATION OF THE PROJECT DESIGN DURING ITS CONSTRUCTION; AND I DISCLAIM RESPONSIBILITY FOR THE CONTRACTOR'S ACTUAL CONSTRUCTION OF THE PROJECT, EXCEPT AS I AND MY STAFF MAY HAVE DIRECTED OR ORDERED THAT THE PROJECT BE CONSTRUCTED.

SIGNATURE *Karen D. Yeomans*
 KAREN D. YEOMANS
 NUMBER E-29693
 REGISTERED PROFESSIONAL ENGINEER

DATE *3-27-05*

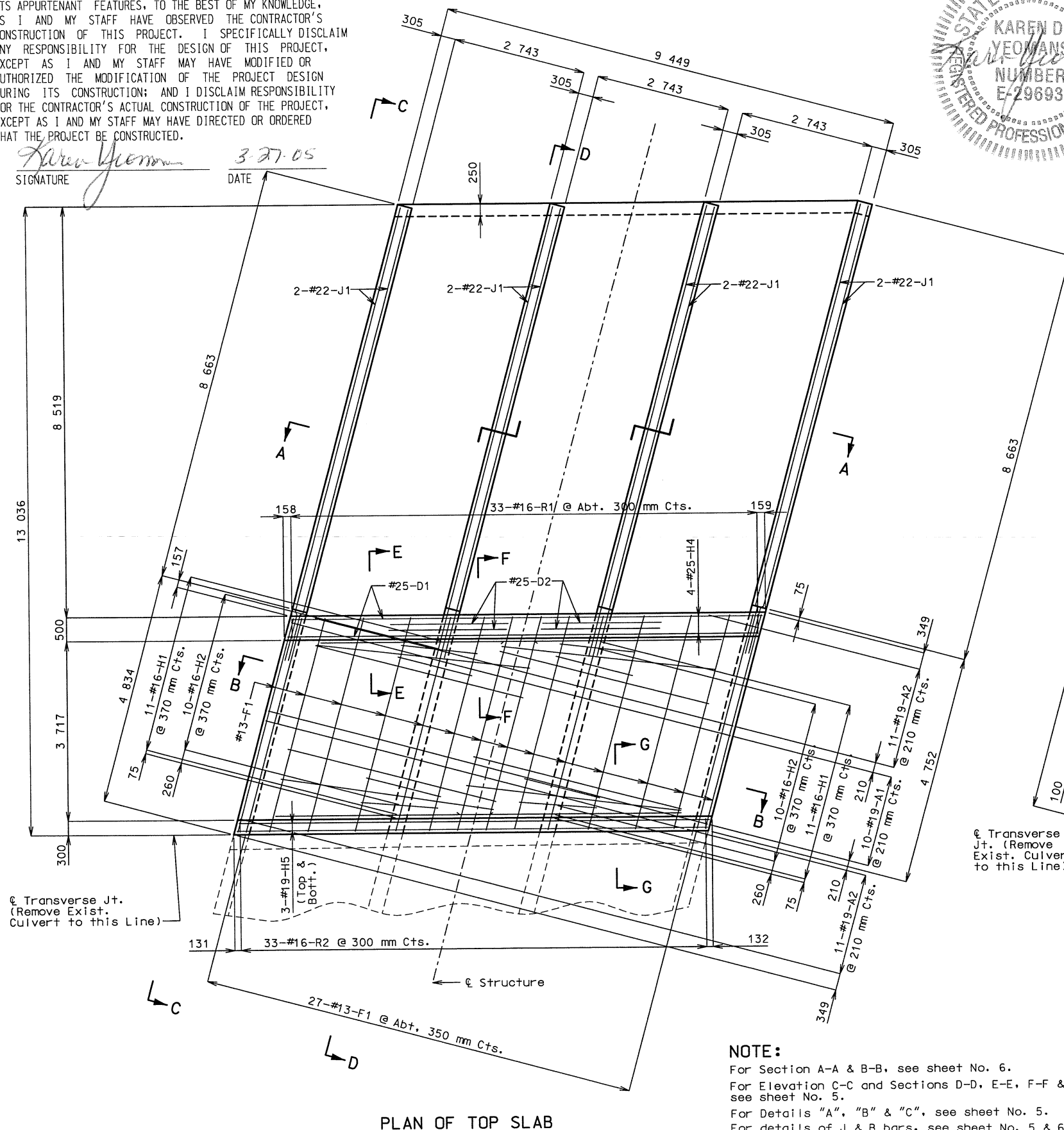
I CERTIFY THAT THIS PLAN SHEET ACCURATELY DEPICTS THE CONFIGURATION AND LOCATION OF THE ROADWAY AND ALL ITS APPURTENANT FEATURES, TO THE BEST OF MY KNOWLEDGE, AS I AND MY STAFF HAVE OBSERVED THE CONTRACTOR'S CONSTRUCTION OF THIS PROJECT. I SPECIFICALLY DISCLAIM ANY RESPONSIBILITY FOR THE DESIGN OF THIS PROJECT, EXCEPT AS I AND MY STAFF MAY HAVE MODIFIED OR AUTHORIZED THE MODIFICATION OF THE PROJECT DESIGN DURING ITS CONSTRUCTION; AND I DISCLAIM RESPONSIBILITY FOR THE CONTRACTOR'S ACTUAL CONSTRUCTION OF THE PROJECT, EXCEPT AS I AND MY STAFF MAY HAVE DIRECTED OR ORDERED THAT THE PROJECT BE CONSTRUCTED.

3-27-05
DATE

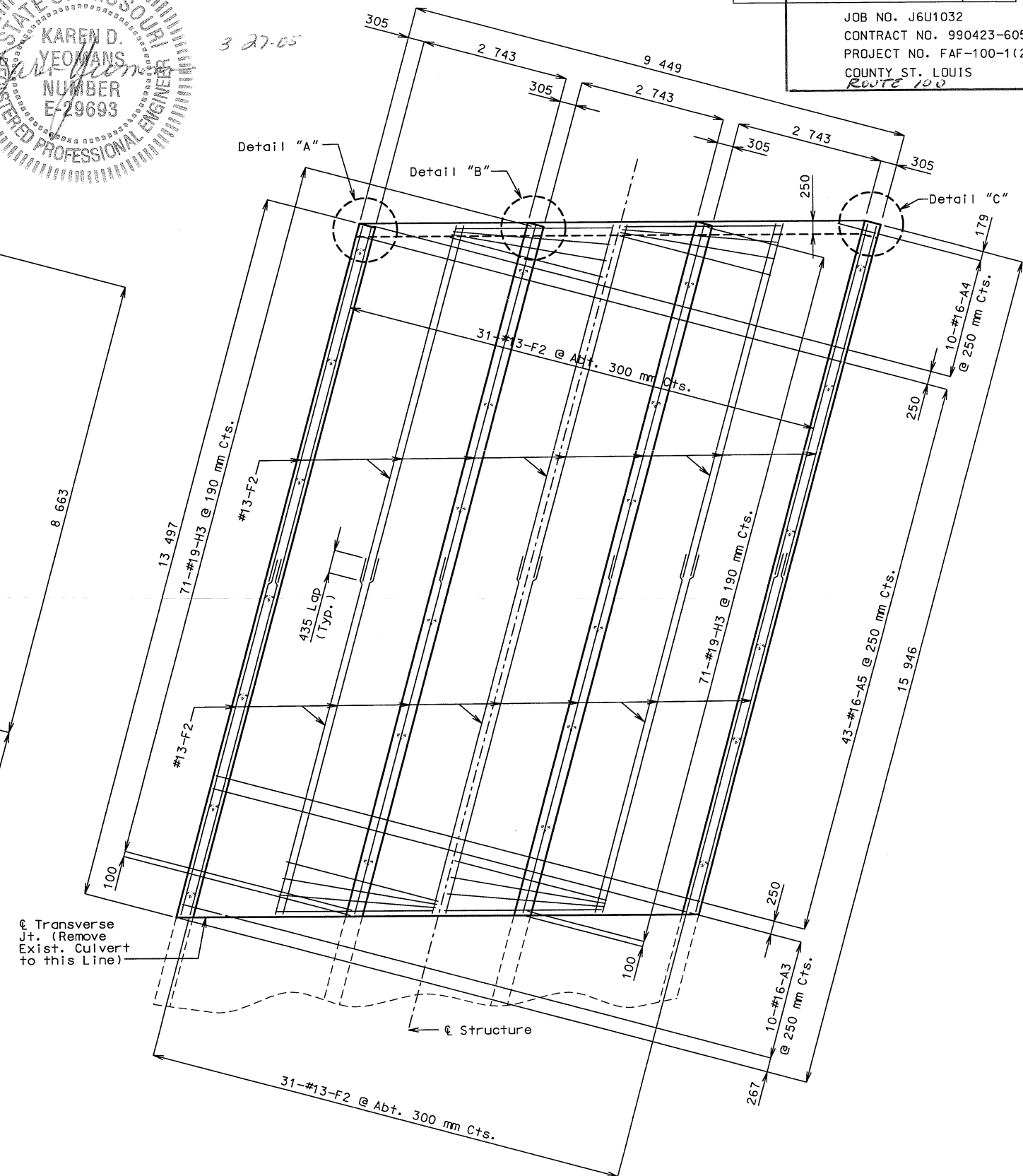


State	Proj. No.	Sheet No.
MO		60

JOB NO. J6U1032
 CONTRACT NO. 990423-60S
 PROJECT NO. FAF-100-1(1)
 COUNTY ST. LOUIS
 ROUTE 100



NOTE:
For Section A-A & B-B, see sheet No. 6.
For Elevation C-C and Sections D-D, E-E, F-F & G-G, see sheet No. 5.
For Details "A", "B" & "C", see sheet No. 5.
For details of J & B bars, see sheet No. 5 & 6.



PLAN OF BOTTOM SLAB

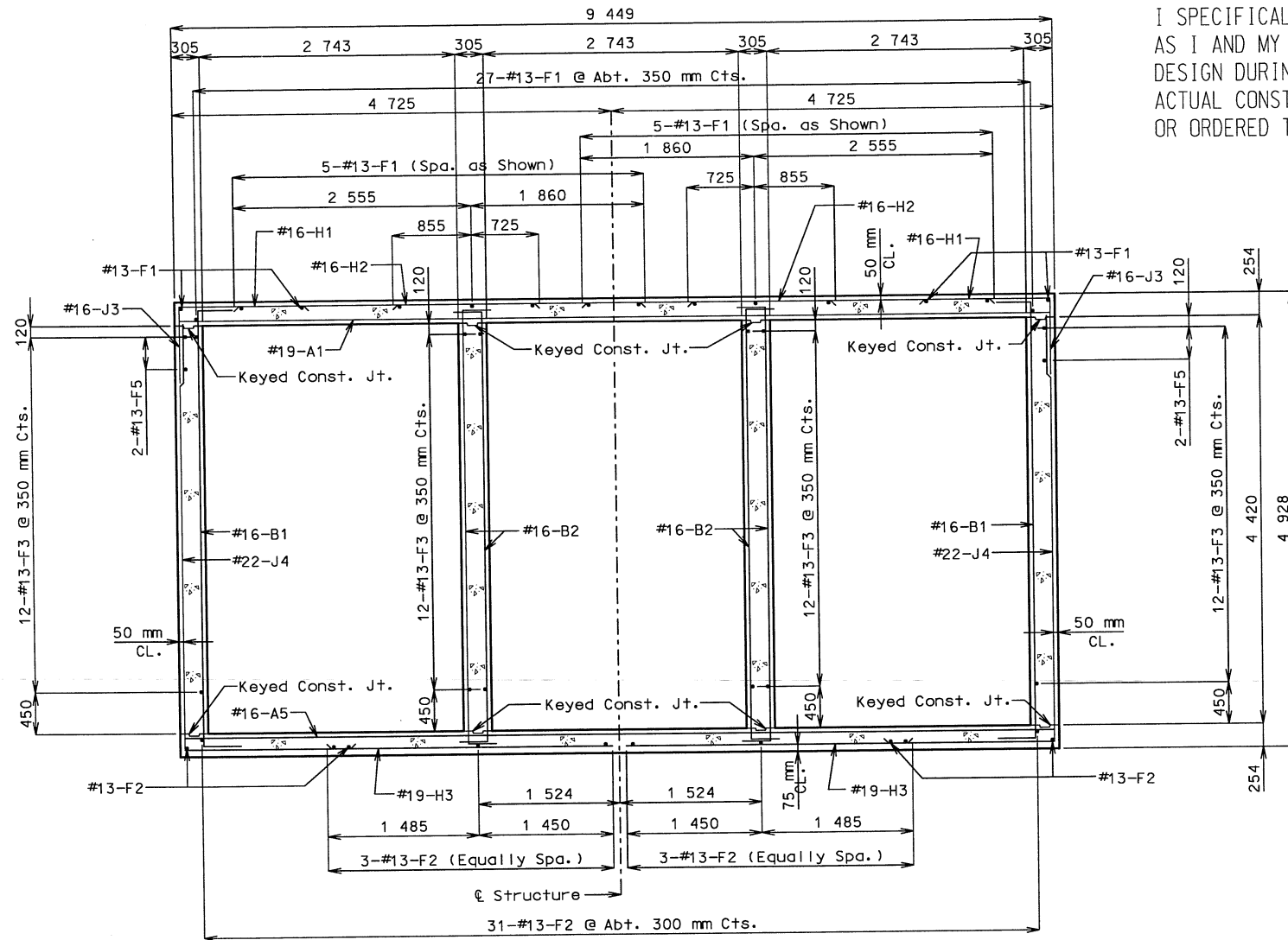
DETAILS OF UNIT ①

FINAL PLANS

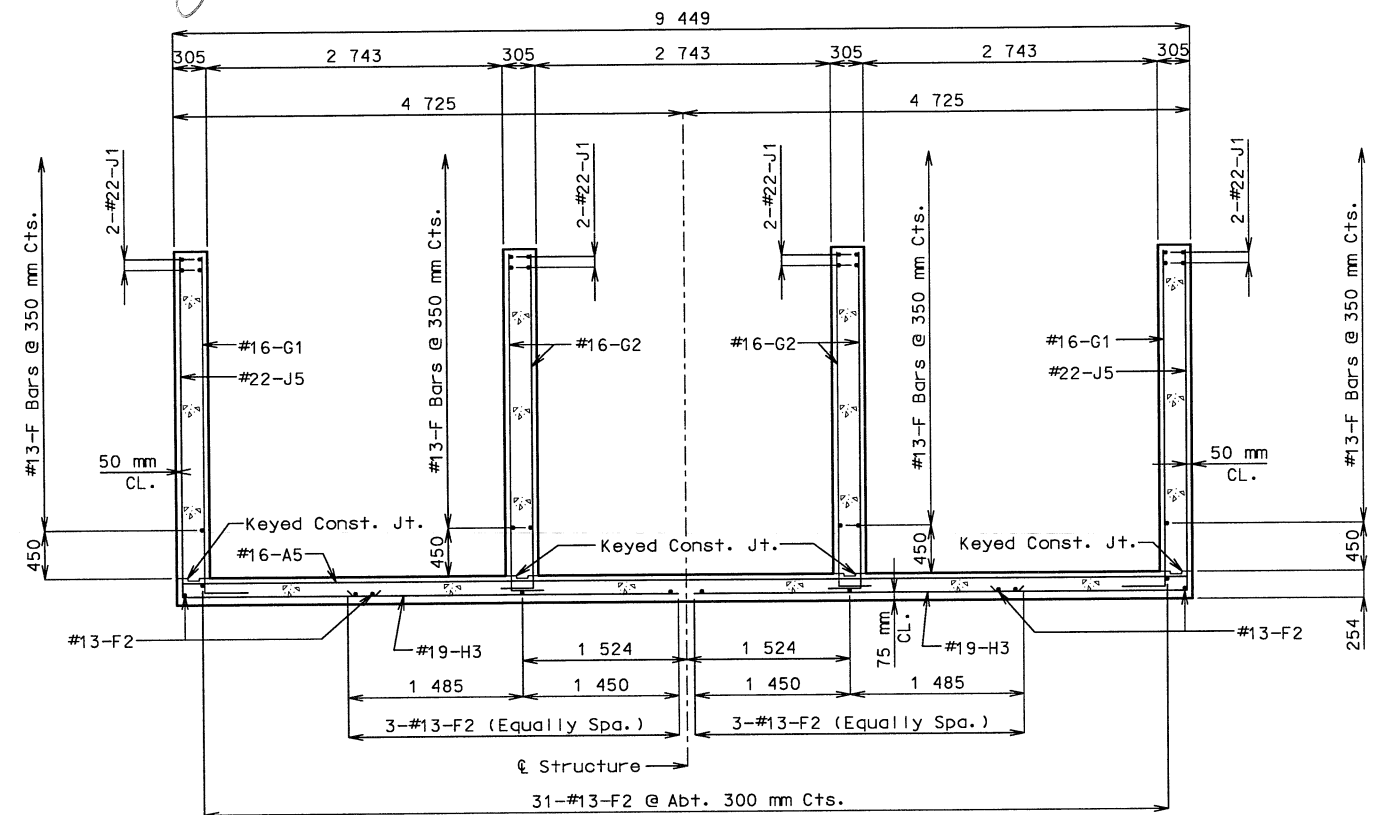
I CERTIFY THAT THIS PLAN SHEET ACCURATELY DEPICTS THE CONFIGURATION AND LOCATION OF THE ROADWAY AND ALL ITS APPURTENANT FEATURES, TO THE BEST OF MY KNOWLEDGE, AS I AND MY STAFF HAVE OBSERVED THE CONTRACTOR'S CONSTRUCTION OF THIS PROJECT. I SPECIFICALLY DISCLAIM ANY RESPONSIBILITY FOR THE DESIGN OF THIS PROJECT, EXCEPT AS I AND MY STAFF MAY HAVE MODIFIED OR AUTHORIZED THE MODIFICATION OF THE PROJECT DESIGN DURING ITS CONSTRUCTION; AND I DISCLAIM RESPONSIBILITY FOR THE CONTRACTOR'S ACTUAL CONSTRUCTION OF THE PROJECT, EXCEPT AS I AND MY STAFF MAY HAVE DIRECTED OR ORDERED THAT THE PROJECT BE CONSTRUCTED.

State	Proj. No.	Sheet No.
MO		62
JOB NO. J6U1032 CONTRACT NO. 990423-605 PROJECT NO. FAF-100-1(21) COUNTY ST. LOUIS ROUTE 100		

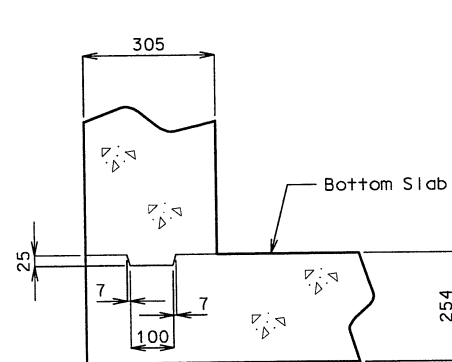
Karen Yeomans
SIGNATURE
3-27-05
DATE



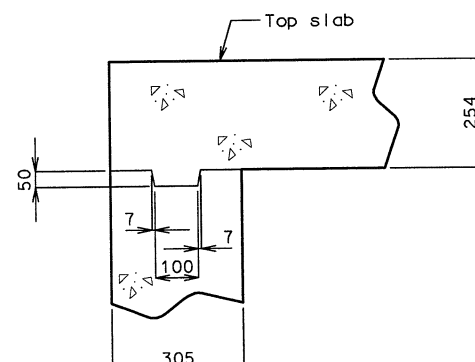
SECTION B-B



SECTION A-A



BOTTOM SLAB



TOP SLAB

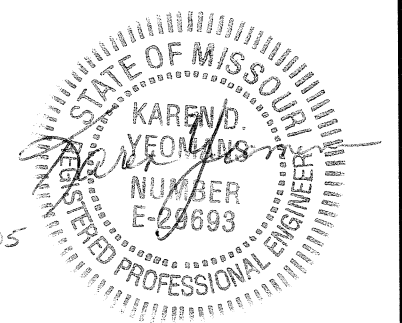
DETAIL OF KEYED CONSTRUCTION JOINTS

(Exterior walls shown. Interior walls are similar.)

NOTE:

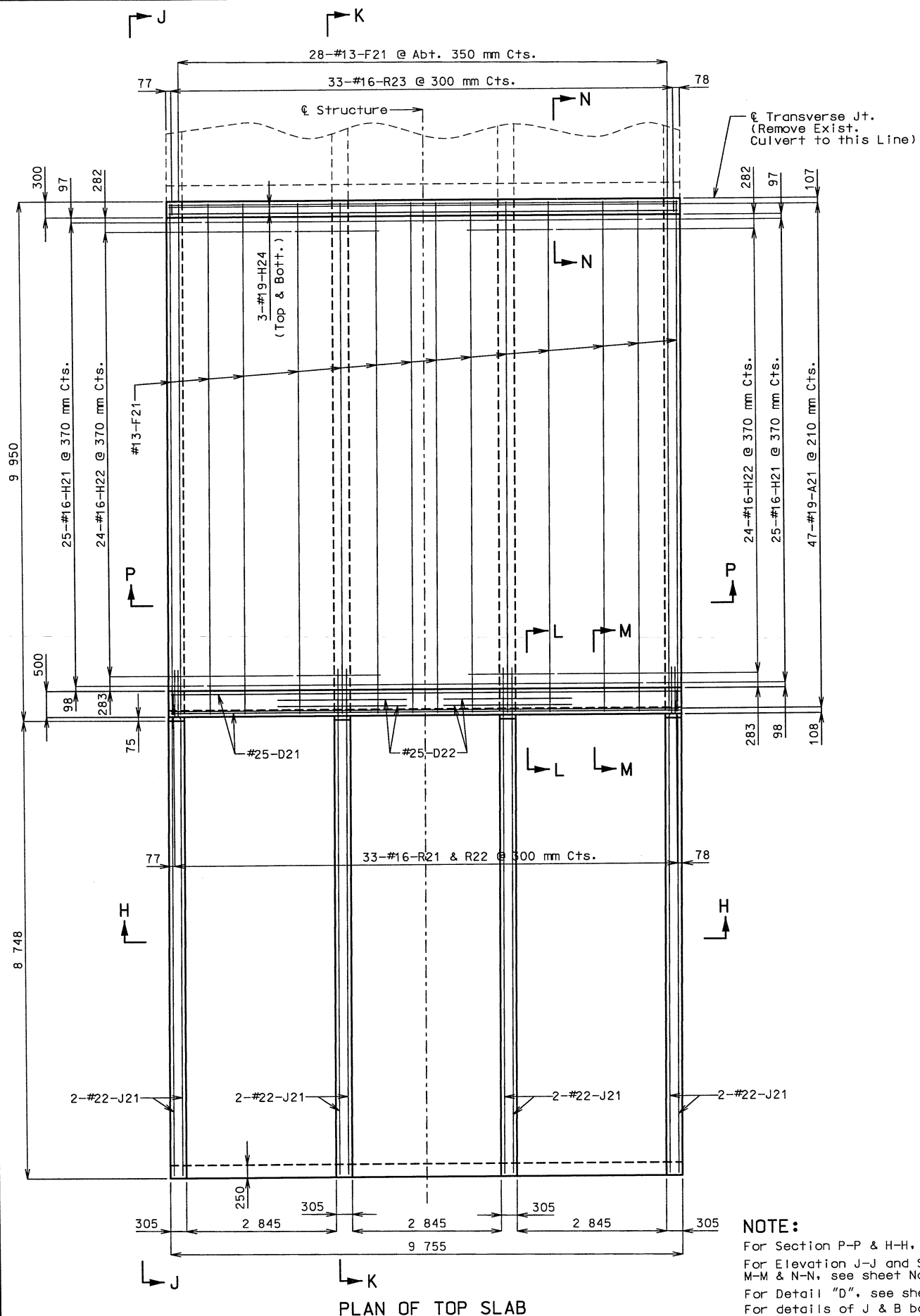
For location of Section A-A & B-B, see sheet No. 4.

DETAILS OF UNIT ①



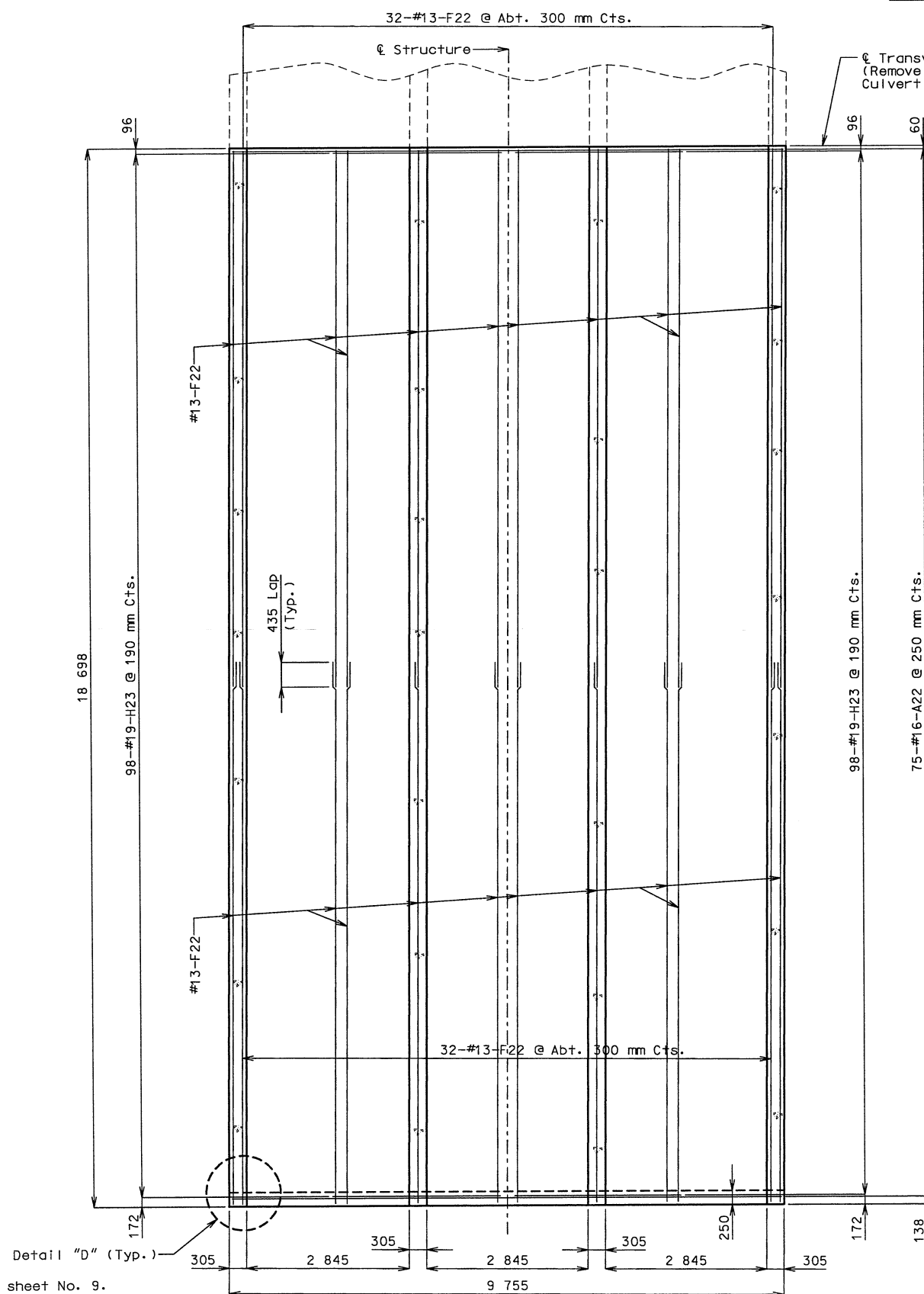
3-27-05

Detailed Aug. 1998
Checked Sept. 1998



PLAN OF TOP SLAB

NOTE:
For Section P-P & H-H, see sheet No. 9.
For Elevation J-J and Sections K-K, L-L,
M-M & N-N, see sheet No. 8.
For Detail "D", see sheet No. 8.
For details of J & B bars, see sheet No. 8 & 9.



PLAN OF BOTTOM SLAB

DETAILS OF UNIT ②

Sheet No. 7 of 10

State	Proj. No.	Sheet No.
MO		63

JOB NO. J6U1032
CONTRACT NO. 990423-605
PROJECT NO. FAF-100-1(21)
COUNTY ST. LOUIS
Route 100

FINAL PLANS
I CERTIFY THAT THIS PLAN SHEET ACCURATELY DEPICTS THE CONFIGURATION AND LOCATION OF THE ROADWAY AND ALL ITS APPURTENANT FEATURES, TO THE BEST OF MY KNOWLEDGE, AS I AND MY STAFF HAVE OBSERVED THE CONTRACTOR'S CONSTRUCTION OF THIS PROJECT. I SPECIFICALLY DISCLAIM ANY RESPONSIBILITY FOR THE DESIGN OF THIS PROJECT, EXCEPT AS I AND MY STAFF MAY HAVE MODIFIED OR AUTHORIZED THE MODIFICATION OF THE PROJECT DESIGN DURING ITS CONSTRUCTION; AND I DISCLAIM RESPONSIBILITY FOR THE CONTRACTOR'S ACTUAL CONSTRUCTION OF THE PROJECT, EXCEPT AS I AND MY STAFF MAY HAVE DIRECTED.

DATE 3-27-05

SIGNATURE

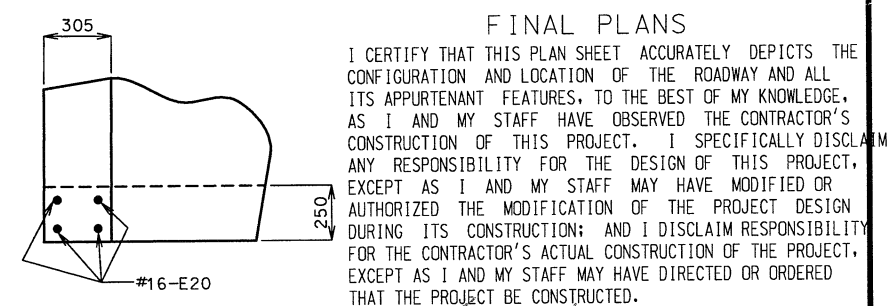
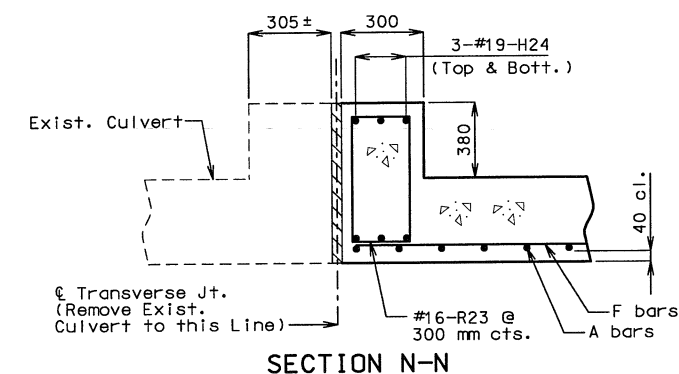
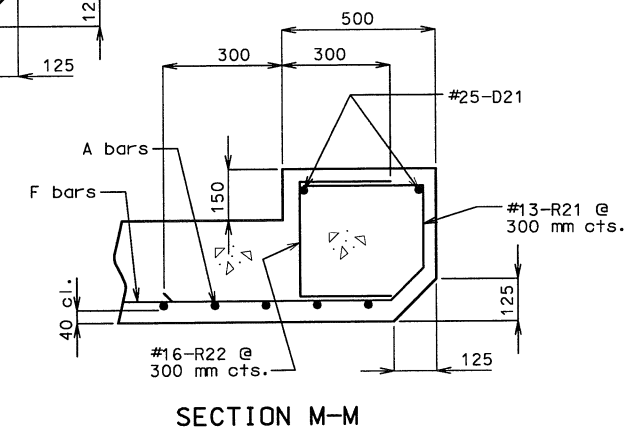
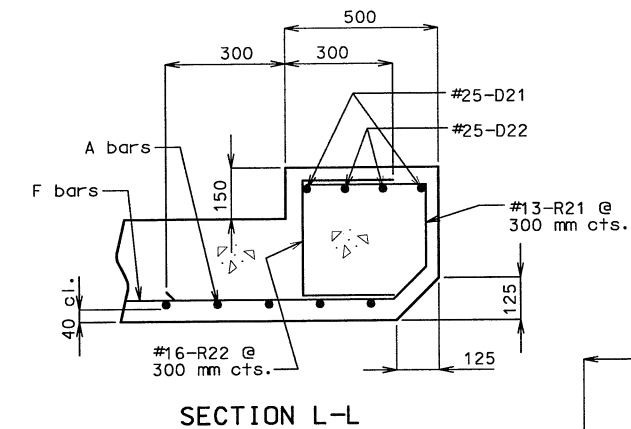
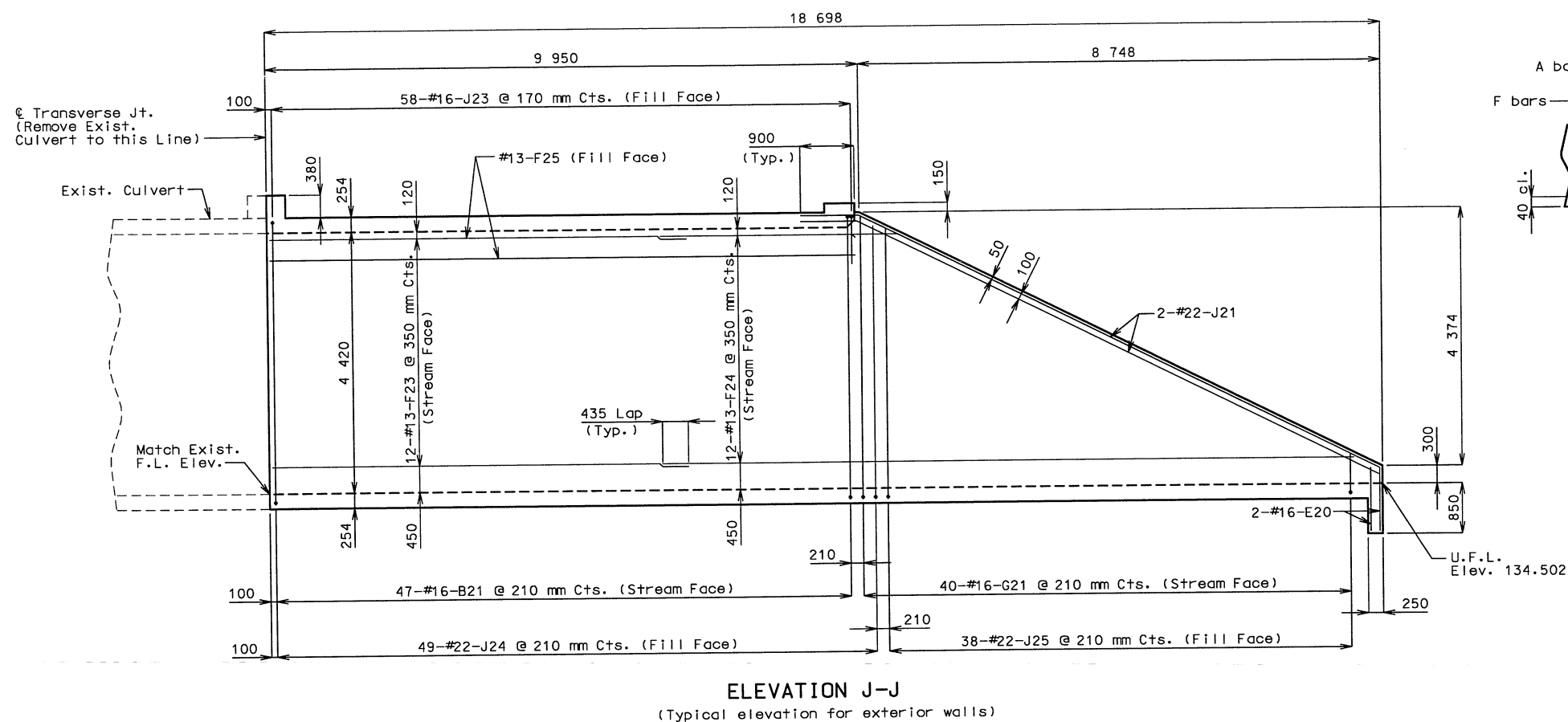
KAREN D. YEOMANS
STATE OF MISSOURI
REGISTERED PROFESSIONAL ENGINEER
NUMBER E-29663

ST. LOUIS COUNTY

F01813

State	Proj. No.	Sheet No.
MO		64

JOB NO. J6U1032
CONTRACT NO. 990423-605
PROJECT NO. FAF-100-1(21)
COUNTY ST. LOUIS
Route 100



DETAIL "D" (TYP.)

SIGNATURE *Karen D. Yeomans* 3-27-05

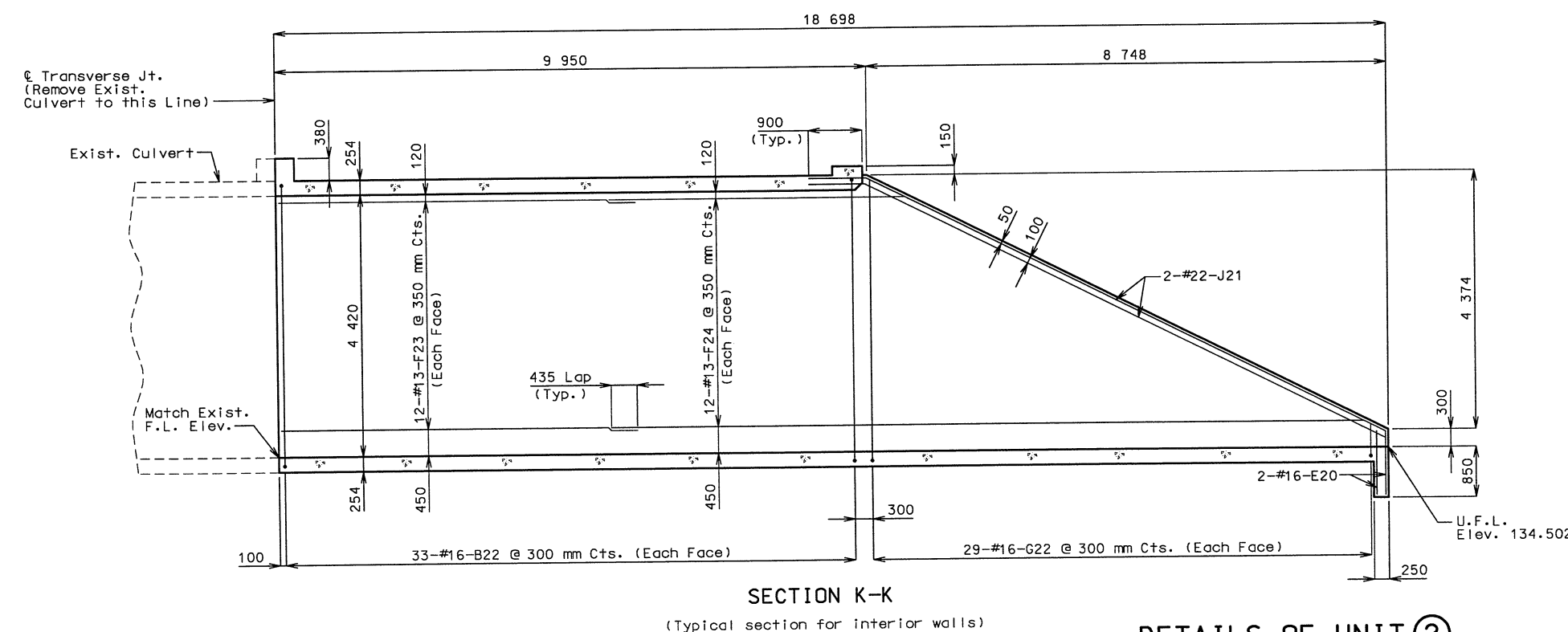
NOTE:

For location of Elevation J-J and Sections K-K, L-L, N-N & M-M, see sheet No. 7.
For location of Detail "D", see sheet No. 7.
Keyed construction joint is omitted for clarity.
For details of A bars & H bars, see sheet No. 7.
J21 bars may be bent in field or shop.

FINAL PLANS

I CERTIFY THAT THIS PLAN SHEET ACCURATELY DEPICTS THE CONFIGURATION AND LOCATION OF THE ROADWAY AND ALL ITS APPURTENANT FEATURES, TO THE BEST OF MY KNOWLEDGE, AS I AND MY STAFF HAVE OBSERVED THE CONTRACTOR'S CONSTRUCTION OF THIS PROJECT. I SPECIFICALLY DISCLAIM ANY RESPONSIBILITY FOR THE DESIGN OF THIS PROJECT, EXCEPT AS I AND MY STAFF MAY HAVE MODIFIED OR AUTHORIZED THE MODIFICATION OF THE PROJECT DESIGN DURING ITS CONSTRUCTION; AND I DISCLAIM RESPONSIBILITY FOR THE CONTRACTOR'S ACTUAL CONSTRUCTION OF THE PROJECT, EXCEPT AS I AND MY STAFF MAY HAVE DIRECTED OR ORDERED THAT THE PROJECT BE CONSTRUCTED.

KAREN D. YEOMANS
REGISTERED PROFESSIONAL ENGINEER
NUMBER E-29693
STATE OF MISSOURI



DETAILS OF UNIT ②

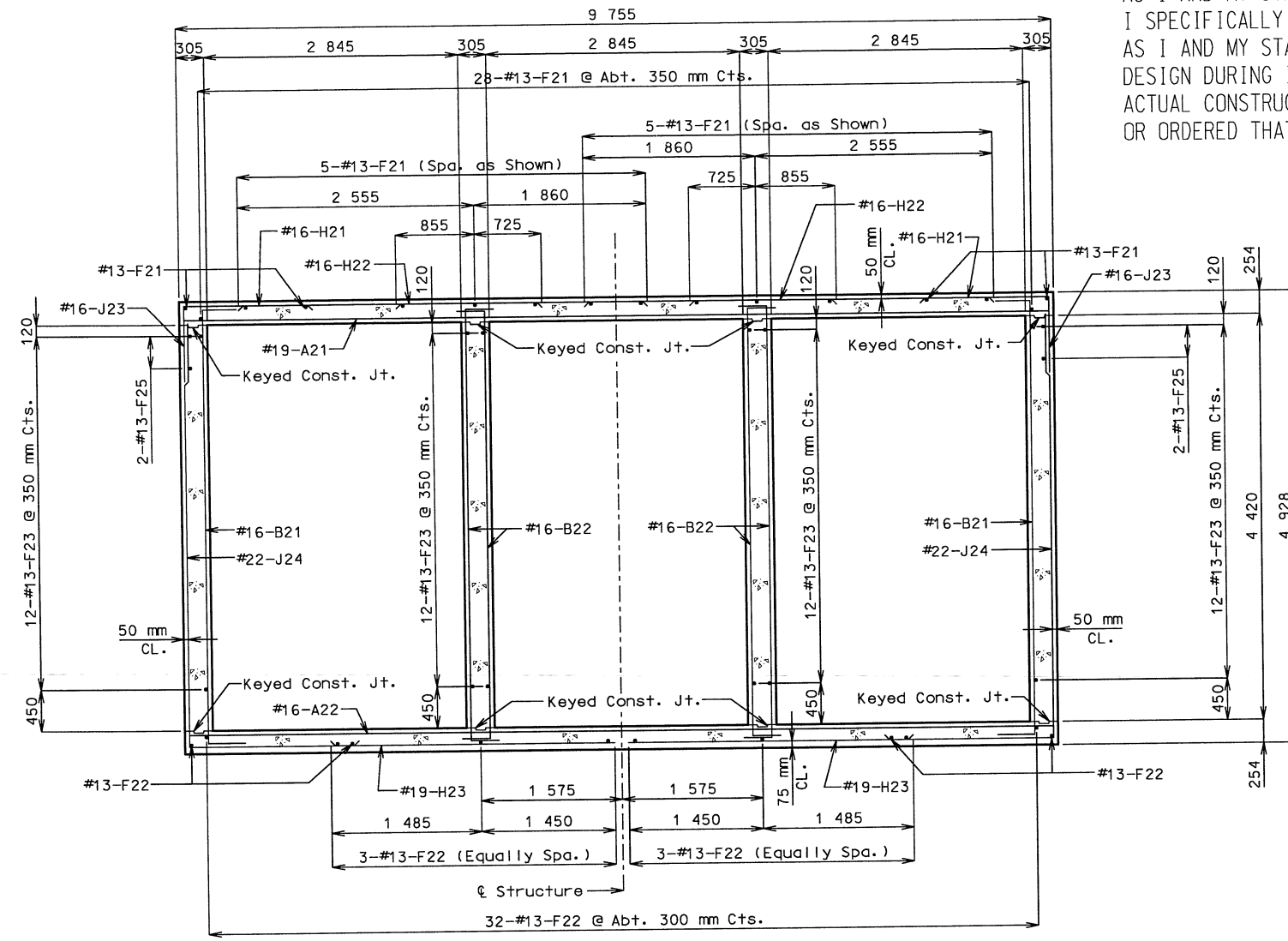
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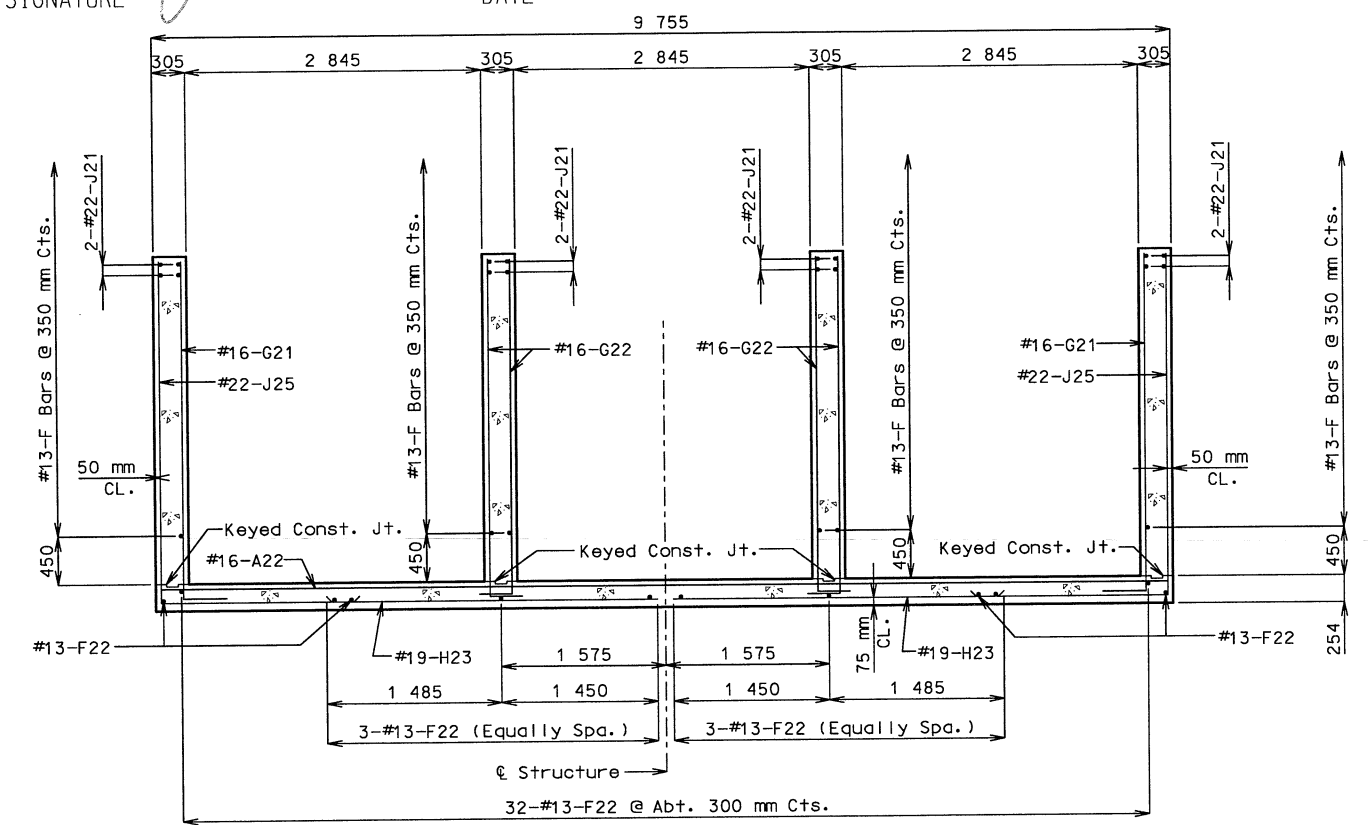
State	Proj. No.	Sheet No.
MO		65

JOB NO. J6U1032
 CONTRACT NO. 990423-605
 PROJECT NO. FAF-100-1(21)
 COUNTY ST. LOUIS
Route 100

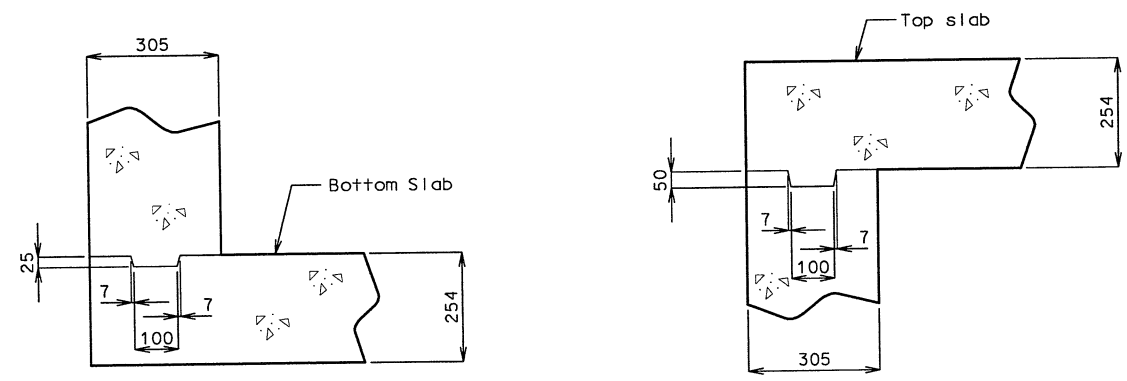
Karen Yeomans
 SIGNATURE DATE 3-27-05



SECTION P-P



SECTION H-H



BOTTOM SLAB

TOP SLAB

DETAIL OF KEYED CONSTRUCTION JOINTS
 (Exterior walls shown. Interior walls are similar.)

DETAILS OF UNIT ②

NOTE:
 For location of Section P-P & H-H, see sheet No. 7.

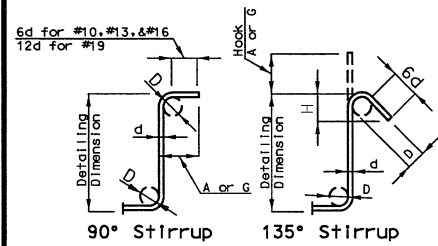


BILL OF REINFORCING STEEL																					
No.	Req'd.	Mark No.		Location	Epoxy (E)	Shape No.	Stirrup (S)	Substit. (X)	Varies (V)	No. Each	Dimensions						Nominal Length	Actual Length	Mass		
		Size	Mark								B	C	D	E	F	H				K	
																					mm
				UNIT 1																	
10	19	A1		TOP SLAB		20					9365						9365	9365		209	
22	19	A2		TOP SLAB		20			V	2	1110						1110	1110			
				INCREMENT =							8945						8945	8945		247	
				785 MM																	
10	16	A3		BOTT. SLAB		20			V	1	755						755	755			
				INCREMENT =							9150						9150	9150		77	
				935 MM																	
10	16	A4		BOTT. SLAB		20			V	1	725						725	725			
				INCREMENT =							9125						9125	9125		76	
				935 MM																	
43	16	A5		BOTT. SLAB		20					9365						9365	9365		625	
44	16	B1		WALL		10	S					400	4800				5600	5535		378	
64	16	B1		WALL		10	S					300	4800				5400	5335		530	
2	25	D1		HEADWALL		20					9700						9700	9700		77	
4	25	D2		HEADWALL		20					2440						2440	2440		39	
16	16	E1		APRON		20					1230						1230	1230		31	
41	13	F1		TOP SLAB		20					4595						4595	4595		187	
82	13	F2		BOTT. SLAB		20					7145						7145	7145		582	
72	13	F3		WALL		20					3120						3120	3120		223	
72	13	F4		WING		20			V	6	2740						2740	2740			
				INCREMENT =							10365						10365	10365		469	
				695 MM																	
4	13	F5		WALL		20					4750						4750	4750		19	
82	16	G1		WING		19			V	2	660	400					1060	1020			
				INCREMENT =							4800	400					5200	5160		393	
				105 MM																	
112	16	G2		WING		19			V	4	700	300					1000	960			
				INCREMENT =							4760	300					5060	5020		520	
				150 MM																	
22	16	H1		TOP SLAB		20					4415						4415	4415		151	
20	16	H2		TOP SLAB		20					1580						1580	1580		49	
142	19	H3		BOTT. SLAB		20					2935						2935	2935		931	
4	25	H4		HEADWALL		20					9700						9700	9700		154	
6	19	H5		EDGE BEAM		20					9780						9780	9780		131	
16	22	J1		WING		20					10560						10560	10560		514	
54	16	J3		WALL		19					820	1390					2210	2170		182	
50	22	J4		WALL		19					4615	1830					6445	6390		972	
76	22	J5		WING		19			V	2	660	1830					2490	2435			
				INCREMENT =							4800	1830					6630	6575		1042	
				110 MM																	
33	16	R1		HEADWALL		10	S					420	290				1130	1065		55	
33	16	R2		EDGE BEAM		13	S				220	520	220	520			1760	1660		85	
				UNIT 2																	
47	19	A21		TOP SLAB		20					9675						9675	9675		1016	
75	16	A22		BOTT. SLAB		20					9675						9675	9675		1126	
94	16	B21		WALL		10	S					400	4800				5600	5535		807	
132	16	B22		WALL		10	S					300	4800				5400	5335		1093	

BILL OF REINFORCING STEEL																				
No.	Req'd.	Mark No.		Location	Epoxy (E)	Shape No.	Stirrup (S)	Substit. (X)	Varies (V)	No. Each	Dimensions						Nominal Length	Actual Length	Mass	
		Size	Mark								B	C	D	E	F	H				K
2	25	D21		HEADWALL		20					9675						9675	9675	77	
4	25	D22		HEADWALL		20					2440						2440	2440	39	
16	16	E20		APRON		20					1080						1080	1080	27	
42	13	F21		TOP SLAB		20					9745						9745	9745	407	
84	13	F22		BOTT. SLAB		20					9745						9745	9745	814	
72	13	F23		WALL		20					7000						7000	7000	501	
72	13	F24		WING		20			V	6	4145						4145	4145		
				INCREMENT =							11945						11945	11945	576	
				710 MM																
4	13	F25		WALL		20					9825						9825	9825	39	
80	16	G21		WING		19			V	2	735	400					1135	1095		
				INCREMENT =							4830	400					5230	5190	390	
				105 MM																
116	16	G22		WING		19			V	4	625	300					925	885		
				INCREMENT =							4820	300					5120	5080	537	
				150 MM																
50	16	H21		TOP SLAB		20					4415						4415	4415	343	
48	16	H22		TOP SLAB		20					1580						1580	1580	118	
196	19	H23		BOTT. SLAB		20					2935						2935	2935	1286	
6	19	H24		EDGE BEAM		20					9675						9675	9675	130	
16	22	J21		WING		20					10640						10640	10640	518	
116	16	J23		WALL		19					820	1390					2210	2170	391	
98	22	J24		WALL		19					4615	1830					6445	6390	1905	
76	22	J25		WING		19			V	2	755	1830					2585	2530		
				INCREMENT =							4830	1830					6660	6605	1056	
				110 MM																
33	16	R21		HEADWALL		27	S				420	220	100	685		70	70	1425	1375	70
33	16	R22		HEADWALL		10	S					260	290					810	745	38
33	16	R23		EDGE BEAM		13	S				220	520	220	520				1760	1660	85
										</										

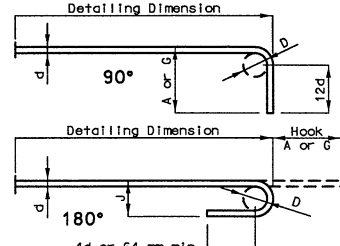
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SIGNATURE _____ DATE 3-27-05
KAREN D. YEOMANS
REGISTERED PROFESSIONAL ENGINEER
NUMBER E-29693



STIRRUP HOOK DIMENSIONS (mm)				
Grades 300 & 420 MPa				
Bar Size	D	90° Hook A or G	135° Hook A or G	Approx. H
#13	50	115	115	80
#16	65	155	140	95
#19	115	305	205	115

Note: Unless otherwise noted, diameter D is the same for all bends and hooks on a bar.



END HOOK DIMENSIONS (mm)				
All Grades				
Bar Size	D	180° Hook A or G	90° Hook A or G	
#10	60	125	80	150
#13	80	150	105	200
#16	95	175	130	250
#19	115	200	155	300
#22	135	250	180	375
#25	155	275	205	425
#29	240	375	300	475
#32	275	425	335	550
#36	305	475	375	600
#43	465	675	550	775

Note:
All standard hooks and bends other than 180 degree to be bent with the same procedure as for 9