

MINNESOTA DEPARTMENT OF TRANSPORTATION

RAMSEY COUNTY DEPARTMENT OF PUBLIC WORKS

CONSTRUCTION PLAN: FOR BRIDGE NO. 62554
112.6 X 24.0 FOOT CONCRETE RIGID FRAME STRUCTURE

CSAH 30 LARPENTEUR AVENUE

OVER MINNESOTA DEPT. OF NATURAL RESOURCES TRAIL,
0.5 MILES EAST OF T.H. 35E IN MAPLEWOOD
FROM: A POINT 1499' EAST OF THE WEST LINE OF
SECTION 17, T29, R22
TO: A POINT 1532' EAST OF THE WEST LINE OF
SECTION 17, T29, R22

INDEX OF SHEETS

SHEET NO.	DESCRIPTION
1A	GENERAL PLAN & ELEVATION
2	BRIDGE LAYOUT
3-4	BARREL FOOTING PLAN
5	BARREL PLAN
6	HEADWALL DETAILS
7	BARREL DETAILS
8	NORTHEAST WINGWALL
9-10	NORTHWEST WINGWALL
11	SOUTHWEST WINGWALL
12	SOUTHEAST WINGWALL
13	WINGWALL DETAILS
14	BAR LIST & SUMMARY OF QUANTITIES
15	BARREL DETAILS
16	CONC. PARAPET & ORNAMENTAL METAL RAILING TYPE S-1
17	STANDARD DETAIL (B103)
18	BRIDGE SURVEY
19	BRIDGE SURVEY PLAN & PROFILE

DESIGNED BY: _____ DATE: _____
DRAWN BY: _____ DATE: _____
CHECKED BY: _____ DATE: _____
DATE 8-14-89 REG. NO. 13865 ENGR. *John P. Stenlund*

RECOMMENDED FOR APPROVAL: DES DATE 8/19/89
RECOMMENDED FOR APPROVAL: KMR DATE 8/14/89
RECOMMENDED FOR APPROVAL: DGH DATE 8/14/89
RECOMMENDED FOR APPROVAL: LKE DATE 8/14/89
RECOMMENDED FOR APPROVAL: DLR DATE 8/15/89
RECOMMENDED FOR APPROVAL: JPB DATE 8-14-89
APPROVED: *W. J. H. H. H.* DATE 8-14-89
RECOMMENDED FOR APPROVAL: *Paul K. H. H.* DATE 8/22/89
RECOMMENDED FOR APPROVAL: *James E. H. H.* DATE 8-22-89
APPROVED: *Harold A. H. H.* DATE 8-23-89
APPROVED: *Donald E. H. H.* DATE 8-23-89
APPROVED: *Kurt B. H. H.* DATE 9/22/89
APPROVED: *Donald D. H. H.* DATE 12-16-91
RECOMMENDED FOR APPROVAL: *James E. H. H.* DATE 10/21/91
APPROVED: *Daniel C. H. H.* DATE 12/23/91
RECOMMENDED FOR APPROVAL: *Paul K. H. H.* DATE 12-23-91
STATE AID PLANS & SPECS. ENGR.

DATE	SHEET NO.	BY

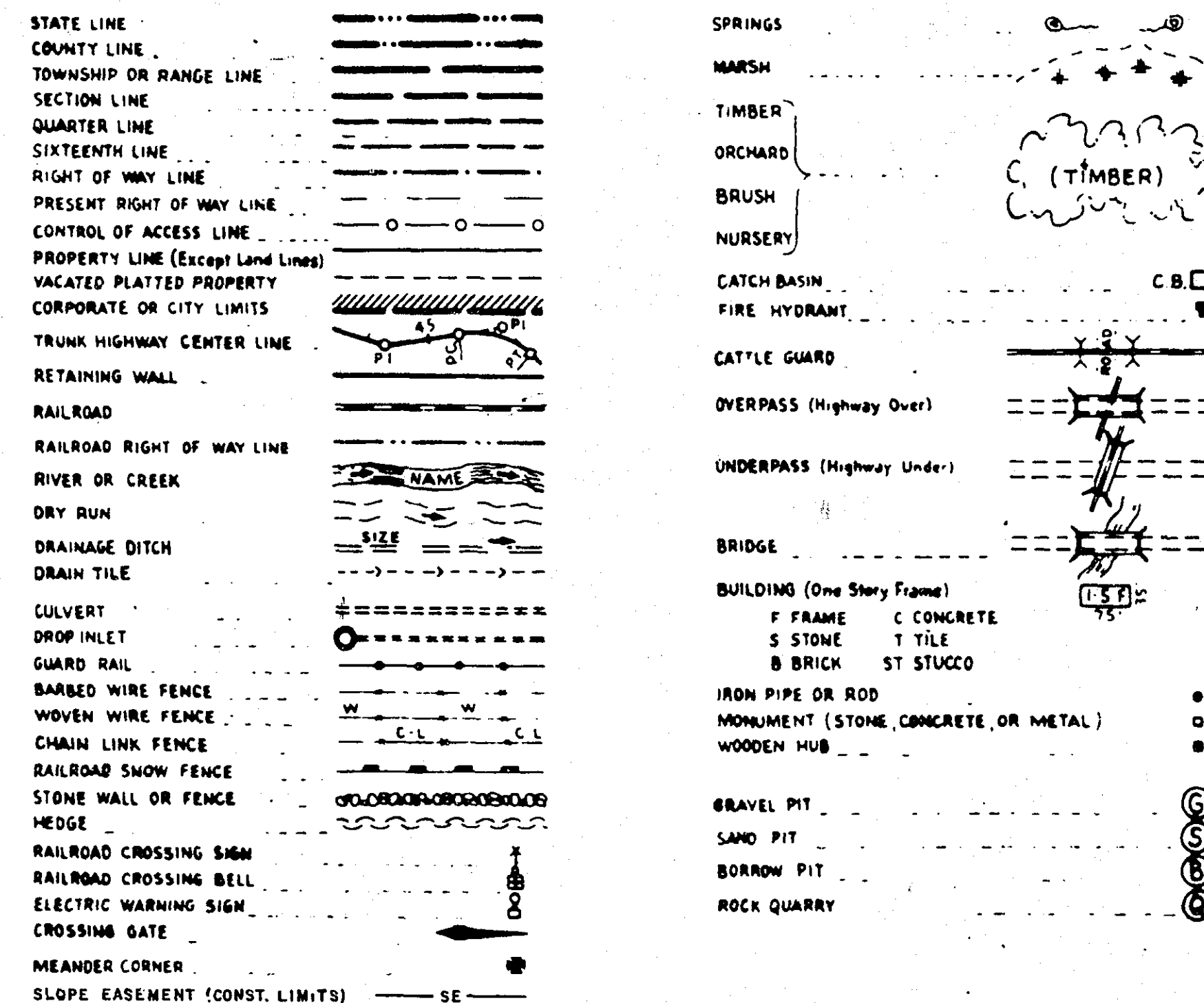
NOTE: THIS PLAN CONTAINS 20 SHEETS.

28-118

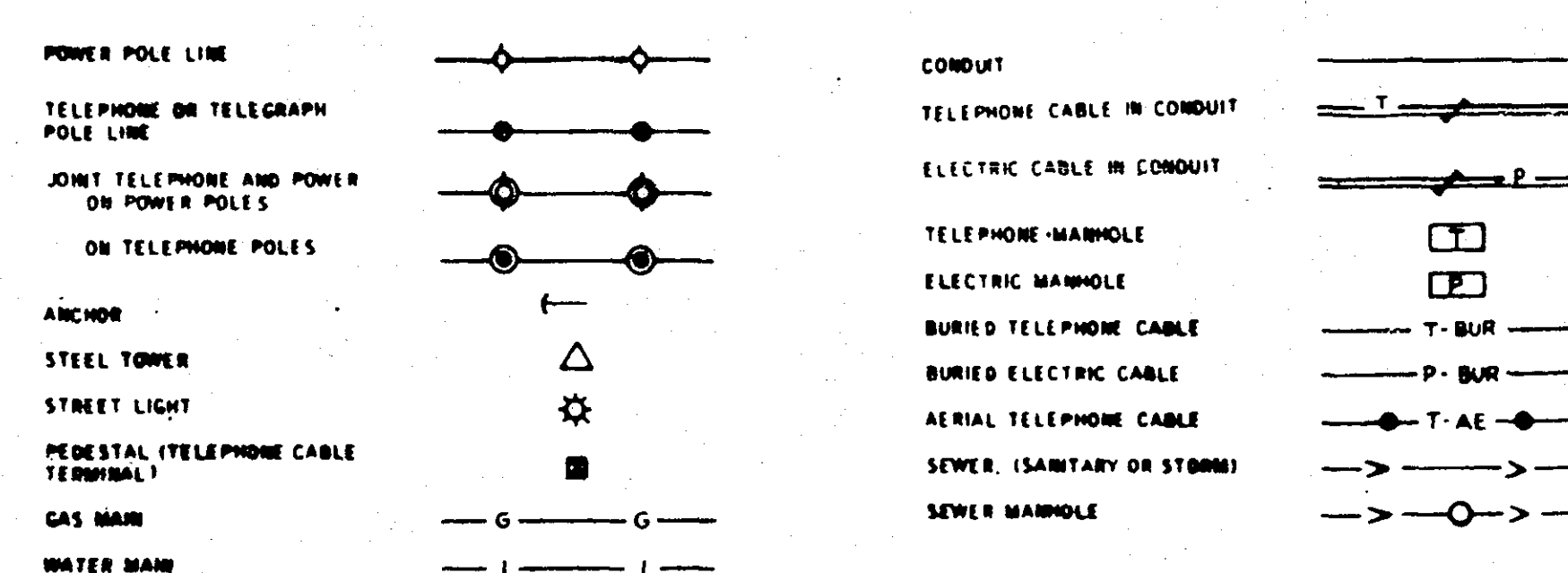
TOTAL SP 62-630-21
FEET MILES

BRIDGE LENGTH 33.36 = 0.0063

PLANS SYMBOLS



UTILITIES SYMBOLS



PIT DATA

PIT NO. _____ Located in Dead Haul
PIT NO. _____ Located in Dead Haul

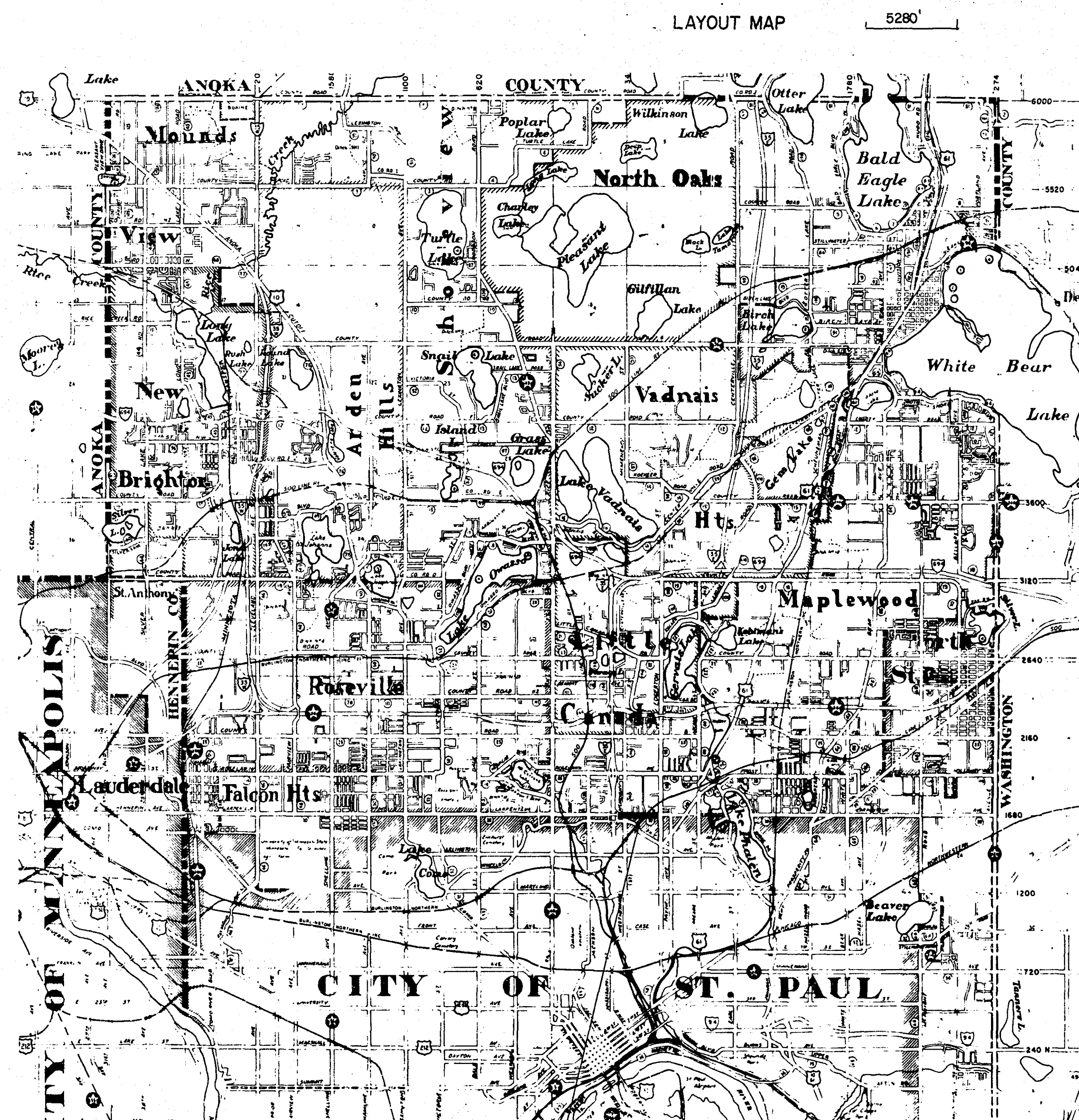
RAMSEY COUNTY ACCOUNT NO. 47321
CITY OF MAPLEWOOD PROJECT NO. 86-37

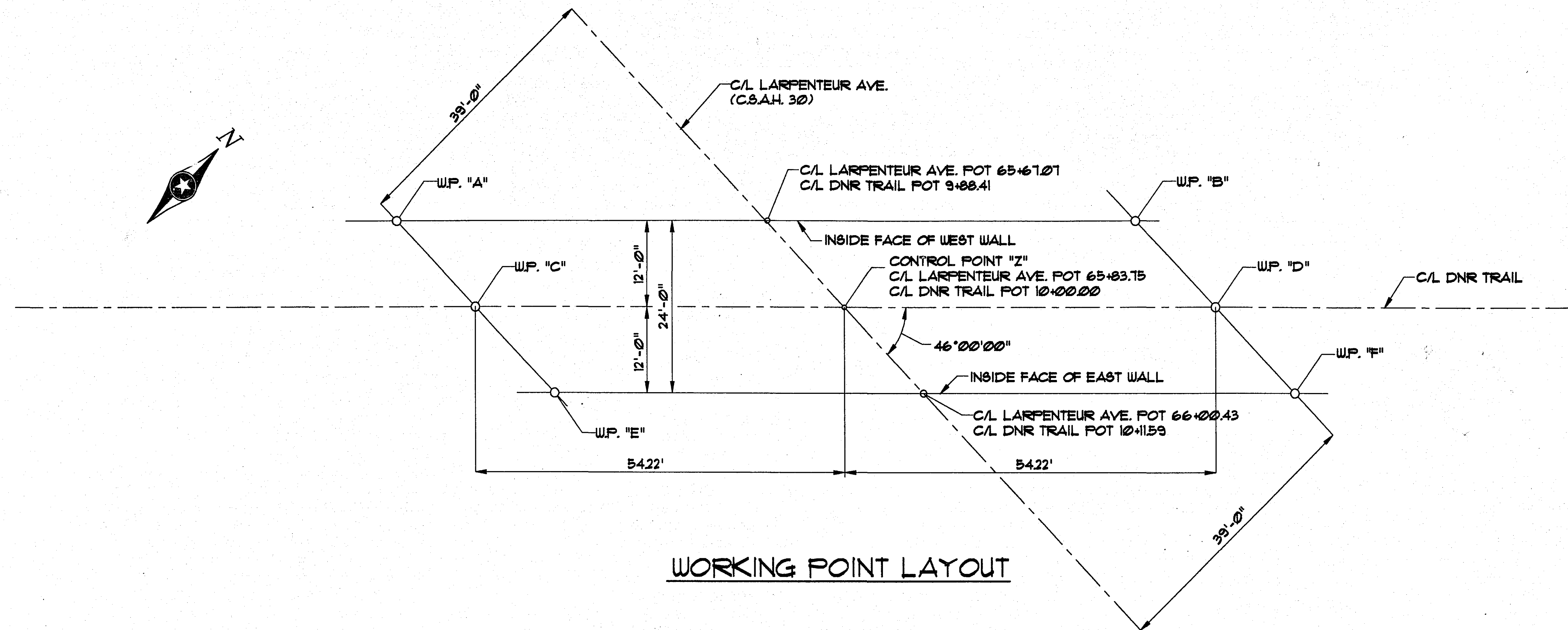
STOPPING SIGHT DISTANCE BASED ON 3.5' HEIGHT
OF EYE AND 0.5' HEIGHT OF OBJECT.

THE 1988 EDITION OF THE MINNESOTA DEPARTMENT
OF TRANSPORTATION "STANDARD SPECIFICATIONS FOR
CONSTRUCTION" AS AMENDED BY THE JAN.
2, 1991 SUPPLEMENTAL SPECIFICATIONS SHALL
GOVERN.

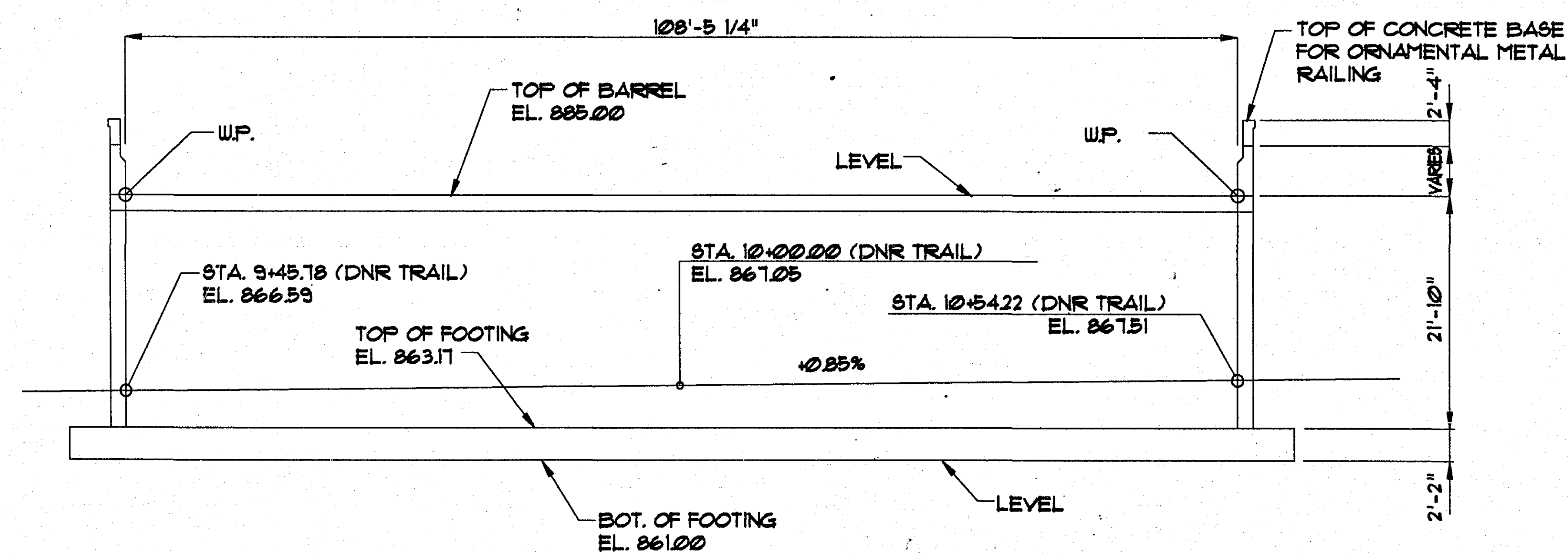
DESIGN DESIGNATION	
ADT (CURRENT YEAR) 1988	7200
ADT (FUTURE YEAR) 2008	9900
HCADT	5 %
Σ N18 (20 YEAR)	800,000
DESIGN LOAD	9 TON
STABILOMETER "R" VALUE	20
DESIGN SPEED	40 MPH
LOW DENSITY ARTERIAL	
NO. OF TRAFFIC LANES	4
NO. OF PARKING LANES	0

SP 62-630-21 BRM-M 5103 (1)
STA. 65+67.07 TO STA. 66+00.43
BRIDGE NO. 62554





WORKING POINT LAYOUT



ELEVATION OF BARREL

DIMENSIONS BETWEEN WORKING POINTS									ROADWAY		
POINT	STATION ②	A	B	C	D	E	F	TOP OF BARREL	STATION ③	ELEVATION ①	POINT
A	9+34.20							885.00	65+29.41	889.13	A
B	10+42.63	108.43						885.00	66+04.73	889.60	B
C	9+45.78	16.68	97.59					885.00	65+46.09	889.23	C
D	10+54.22	120.62	16.68	108.43				885.00	66+21.41	889.70	D
E	9+57.37	33.36	88.57	16.68	97.59			885.00	65+62.77	889.33	E
F	10+65.80	133.78	33.36	120.62	16.68	108.43		885.00	66+38.09	889.81	F
Z	10+00.00	66.89	44.28	54.22	54.22	44.28	66.89	885.00	65+83.75		Z

② STA. AT DNR TRAIL

① ELEVATION ON SIDEWALK

③ STA. AT LARPENNEUR AVE.



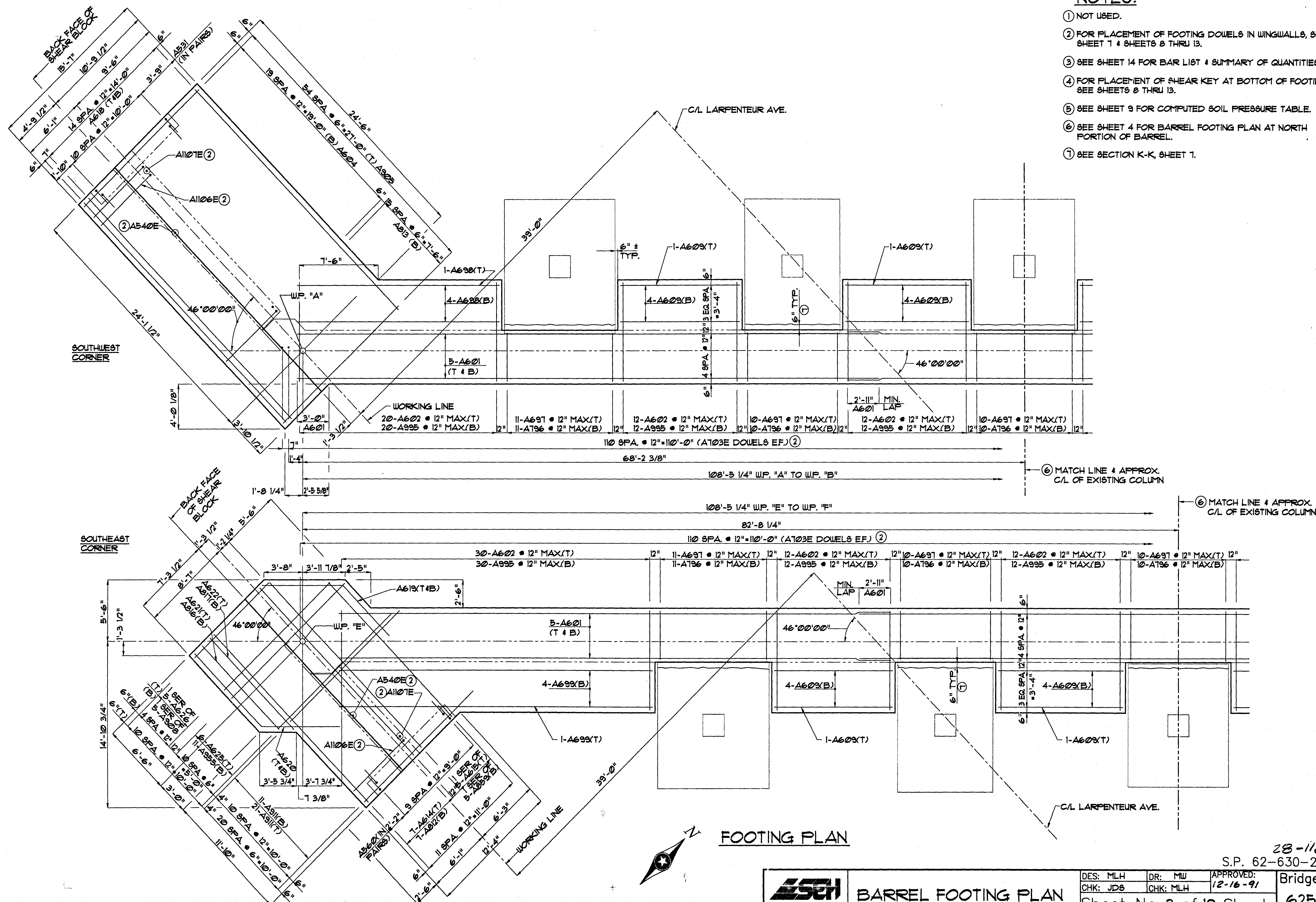
BRIDGE LAYOUT

DES: MW	DR: MW	APPROVED:	Bridge No.
CHK: MLH	CHK: MLH	12-16-91	
Sheet No. 2 of 19 Sheets			62554

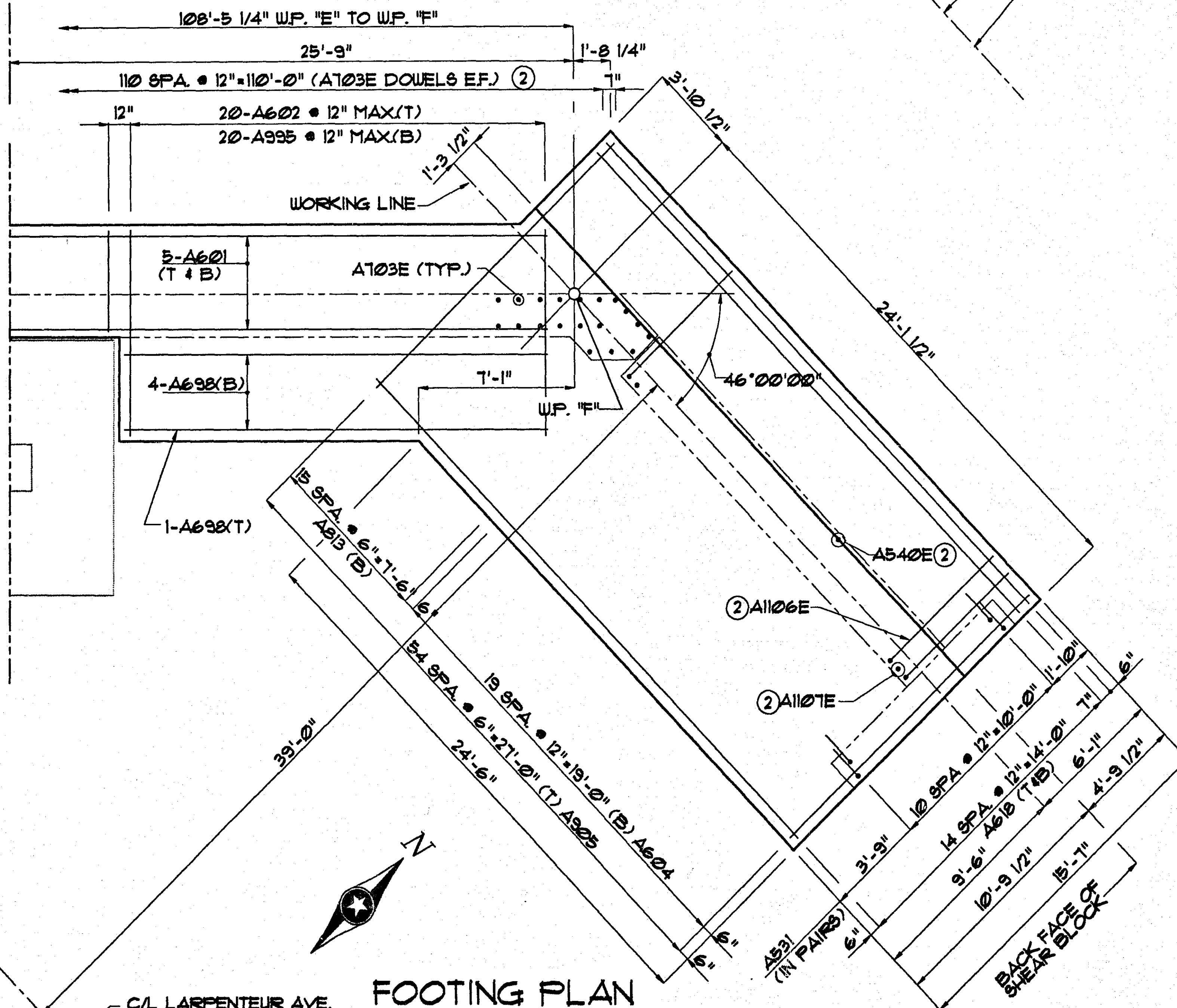
28-118
S.P. 62-630-21

NOTES:

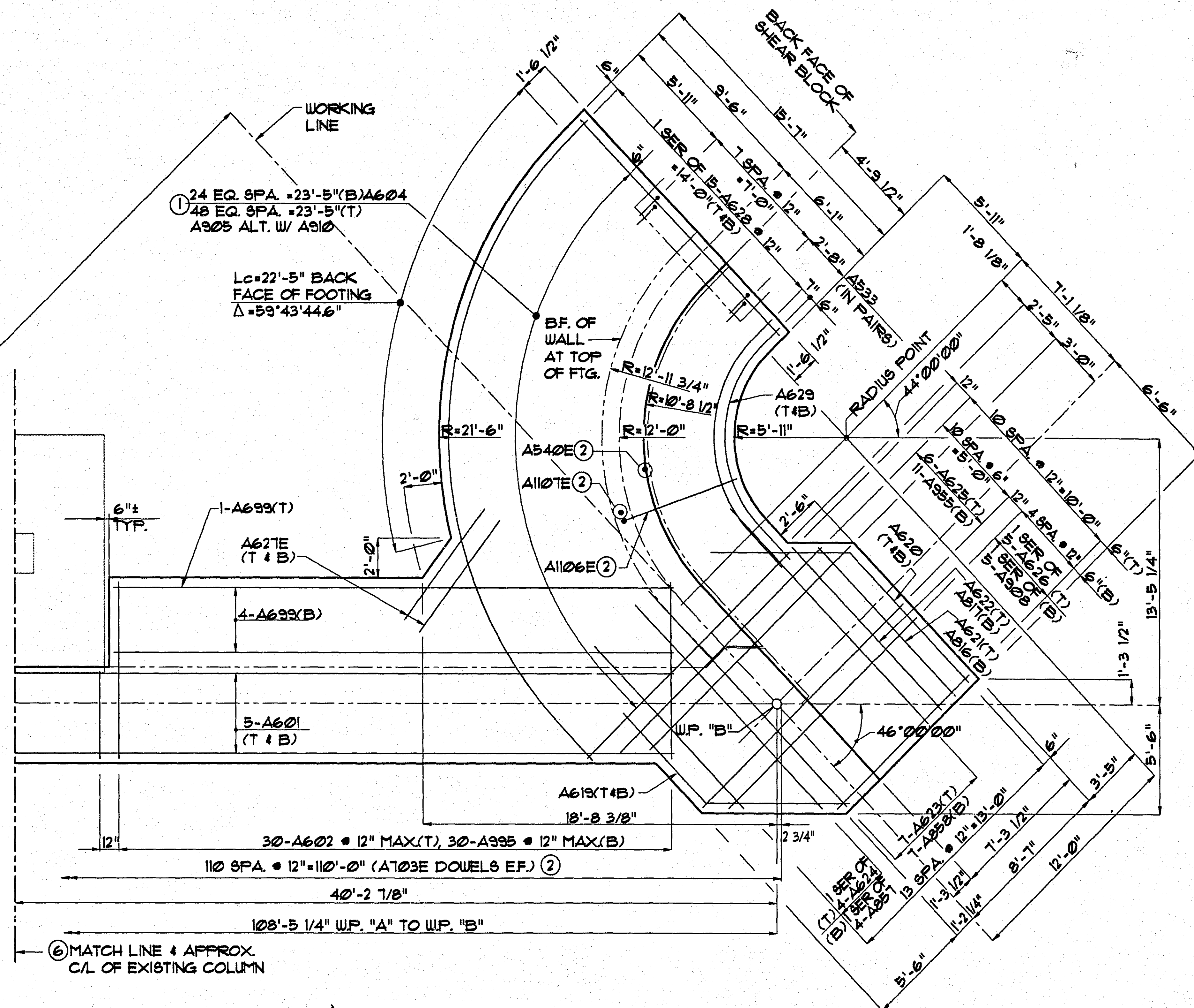
- ① NOT USED.
- ② FOR PLACEMENT OF FOOTING DOVELS IN WINGWALLS, SEE SHEET 1 & SHEETS 2 THRU 13.
- ③ SEE SHEET 14 FOR BAR LIST & SUMMARY OF QUANTITIES.
- ④ FOR PLACEMENT OF SHEAR KEY AT BOTTOM OF FOOTING, SEE SHEETS 2 THRU 13.
- ⑤ SEE SHEET 9 FOR COMPUTED SOIL PRESSURE TABLE.
- ⑥ SEE SHEET 4 FOR BARREL FOOTING PLAN AT NORTH PORTION OF BARREL.
- ⑦ SEE SECTION K-K, SHEET 1.



⑥ MATCH LINE & APPROX.
C/L OF EXISTING COLUMN



FOOTING PLAN
NORTHEAST
CORNER



FOOTING PLAN
NORTHWEST
CORNER

NOTES:

- ① MEASURED ALONG BACKFACE OF WALL.
- ② FOR PLACEMENT OF FOOTING DOUELS IN WINGWALLS, SEE SHEET 7 & SHEETS 8 THRU 13.
- ③ SEE SHEET 14 FOR BAR LIST & SUMMARY OF QUANTITIES.
- ④ FOR PLACEMENT OF SHEAR KEY AT BOTTOM OF FOOTING, SEE SHEETS 8 THRU 13.
- ⑤ SEE SHEET 9 FOR COMPUTED SOIL PRESSURE TABLE.
- ⑥ SEE SHEET 3 FOR BARREL FOOTING PLAN AT SOUTH PORTION OF BARREL.



BARREL FOOTING PLAN

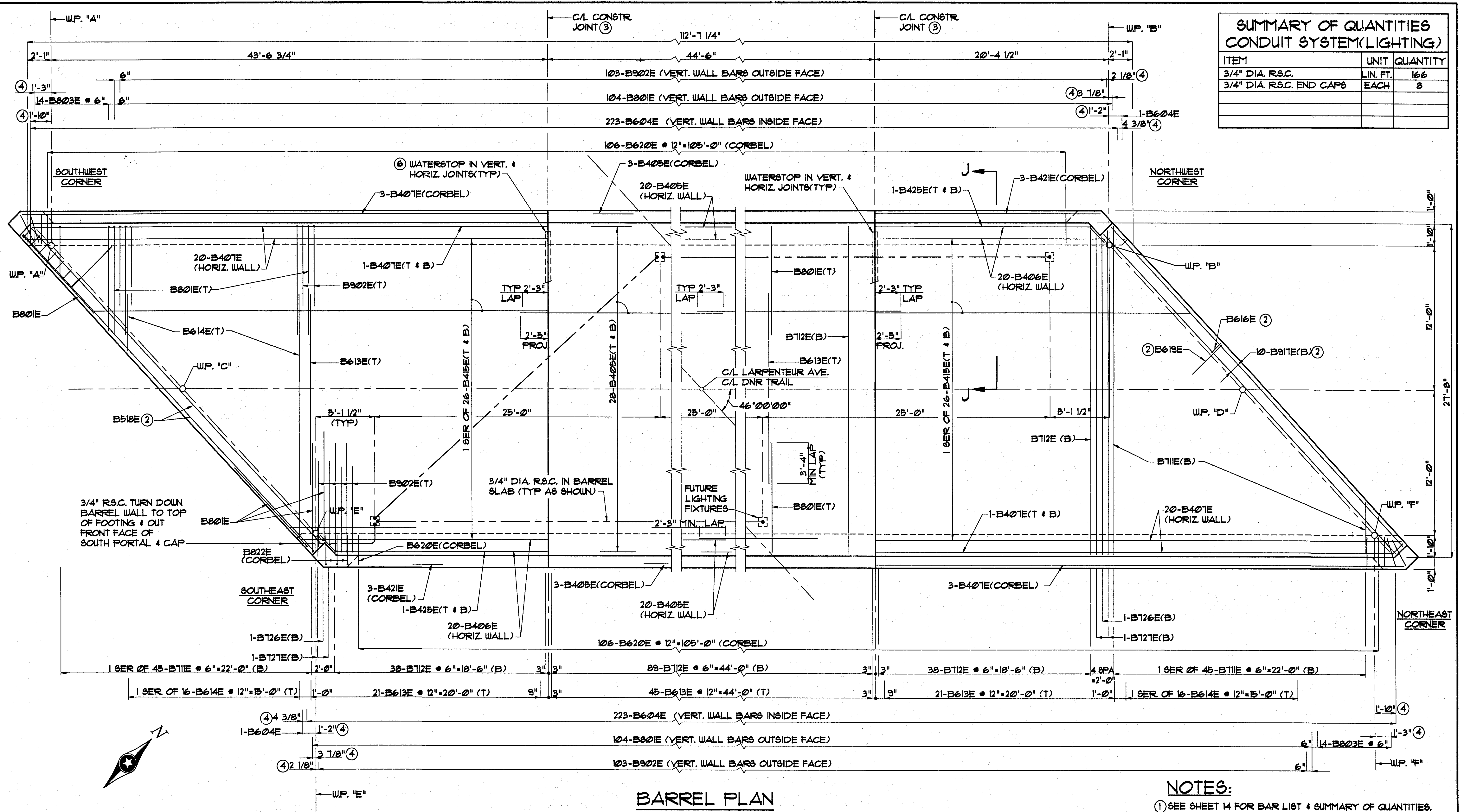
DES: MLH	DR: MW	APPROVED:	Bridge No. 62554
CHK: JDS	CHK: MLH	12-16-91	

Sheet No. 4 of 19 Sheets

28-118
S.P. 62-630-21

SUMMARY OF QUANTITIES CONDUIT SYSTEM(LIGHTING)

ITEM	UNIT	QUANTITY
3/4" DIA. R.S.C.	LIN. FT.	166
3/4" DIA. R.S.C. END CAPS	EACH	8



BARREL PLAN

NOTES:

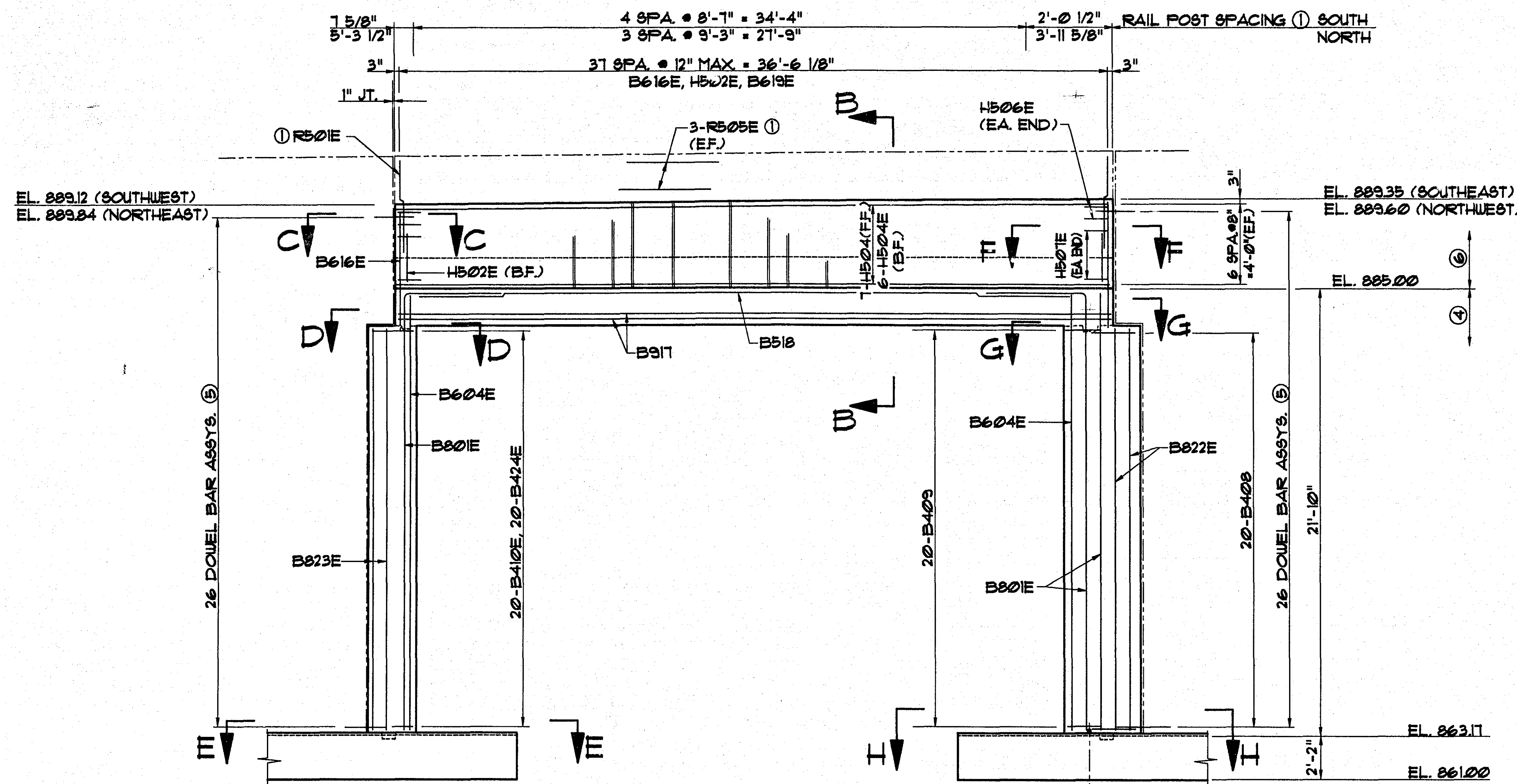
- SEE SHEET 14 FOR BAR LIST & SUMMARY OF QUANTITIES.
- SEE SHEET 6 FOR DETAILS OF HEADWALL.
- 12 HOUR TIME DELAY BETWEEN ADJACENT CONCRETE POURS TO ALLOW FOR SHRINKAGE. USE 2x8 KEY.
- SEE SECTIONS C-C THRU H-H ON SHEET 7.
- SEE SHEETS 7 & 15 FOR SECTION J-J.
- SEE DETAIL SHEET 7.



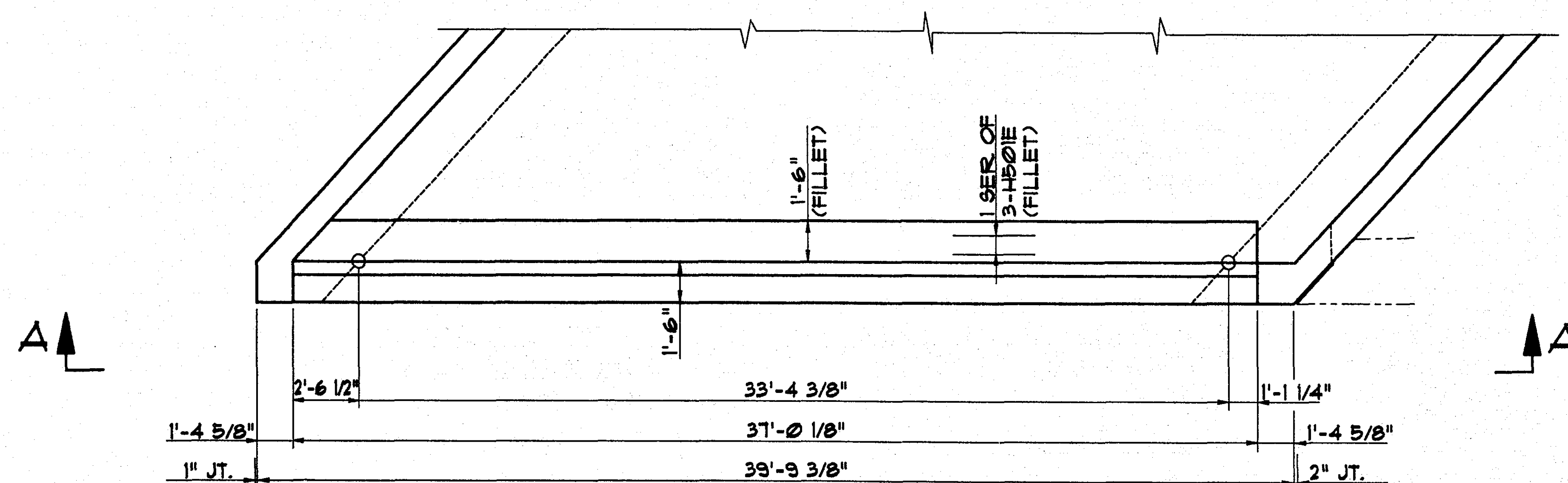
BARREL PLAN

DES: MLH	DR: MW	APPROVED: 12-16-91	Bridge No. 62554
CHK: JDS	CHK: MLH		
Sheet No. 5 of 19 Sheets			

S.P. 62-630-21



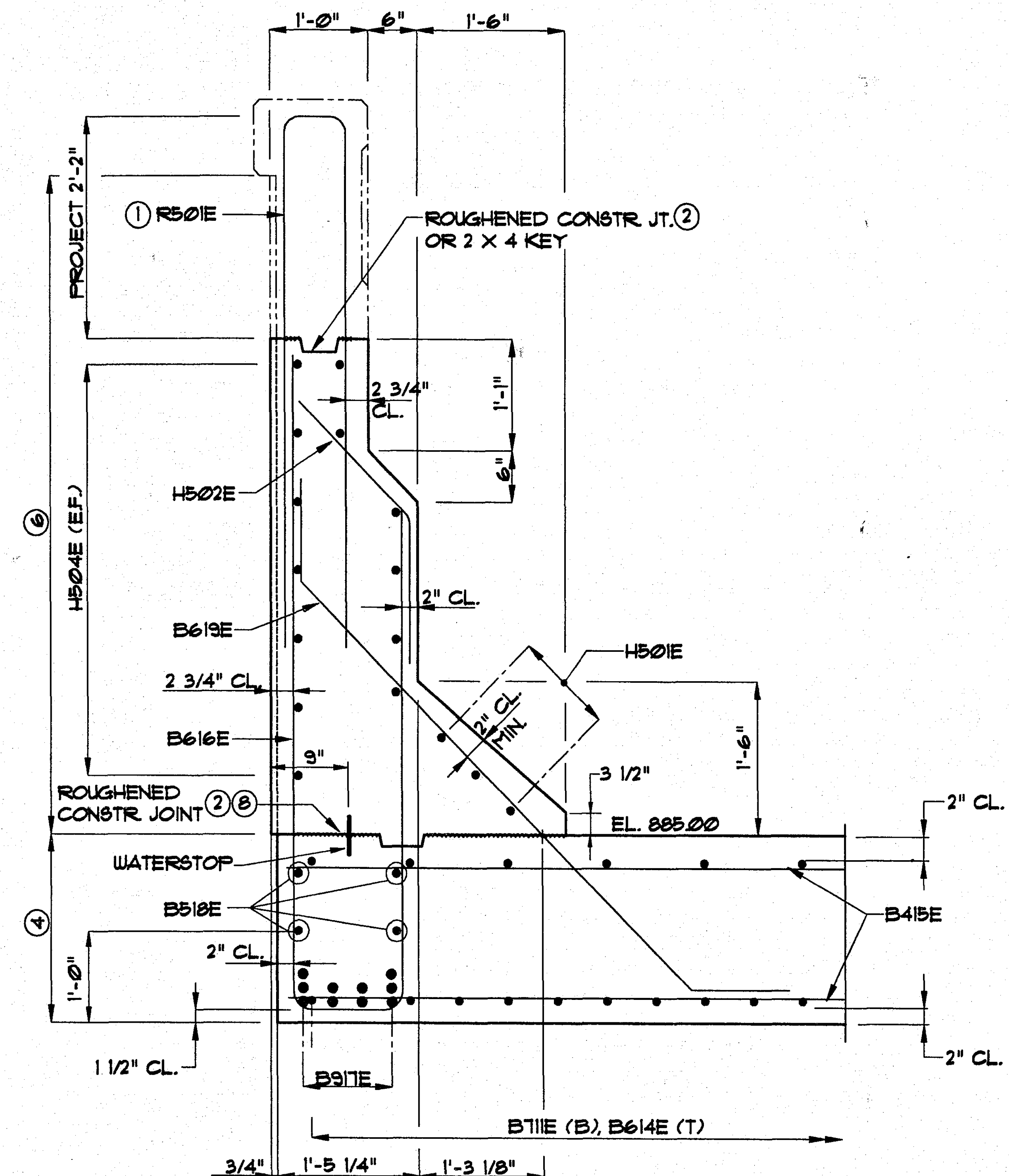
ELEVATION A-A ①



PLAN

PREFORMED JOINT FILLER LIST ③

TYPE	NO.	SIZE	LOCATION
CORK	1	1" x 4'-6" x 29'-6"	VERT. WALL JT. (CUT 2 FROM 1) (NW, SE)
CORK	1	1" x 2'-6" x 28'-2"	VERT. WALL JT. (CUT 2 FROM 1) (NE, SW)
CORK	1	1" x 5'-0" x 19'-0"	VERT. WALL JT. (CUT 3 FROM 1)
CORK	10	1" x 1'-2" x 2'-4"	RAILING JOINTS
CORK	1	1" x 5'-10" x 26'-10"	VERT. WALL JTS. (CUT 3 FROM 1)



HEADWALL SECTION B-B

NOTES:

- SEE SHEET 16 FOR RAILING DETAILS & R501E SPACING.
- TROWEL EDGES APPROX. 2" IN FOR SMOOTH FINISH. TYPICAL FOR FULL LENGTH OF WALL.
- SEE SHEET 14 FOR BAR LIST & SUMMARY OF QUANTITIES.
- 3/4" INSET SURFACE ON EXTERIOR WALL FACE. SURFACE TO RECEIVE BUSH-HAMMERED SURFACE TREATMENT. FINISH W/ CLEAR HIGH GLOSS ACRYLIC CONCRETE SEALER.
- SEE SHEET 13 FOR DOWEL BAR ASSEMBLY DETAILS.
- REVERSE BATTEN SURFACE TREATMENT. SEE SHEET 8 FOR DETAILS.
- SEE SHEET 7 FOR SECTIONS C-C THRU H-H.
- ROUGH JOINT W/ 2 X 6 CONTINUOUS KEY CRITICAL AT THIS LOCATION. JOINT SHALL BE INTENTIONALLY ROUGHENED TO A MAGNITUDE OF AT LEAST 1/4 INCH OVER A WIDTH OF AT LEAST 2'-0" ALONG ITS FULL LENGTH. SURFACE SHALL BE CLEANED IMMEDIATELY BEFORE POURING HEADWALL.
- INCLUDED IN PRICE BID FOR OTHER ITEMS.

28-118

S.P. 62-630-21



HEADWALL DETAILS

DES: MLH DR: MW-AB APPROVED: 12-16-91
CHK: JDS CHK: MLH
Sheet No. 6 of 19 Sheets Bridge No. 62554

SECTION C-C

SECTION F-F

SECTION G-G

SECTION D-D

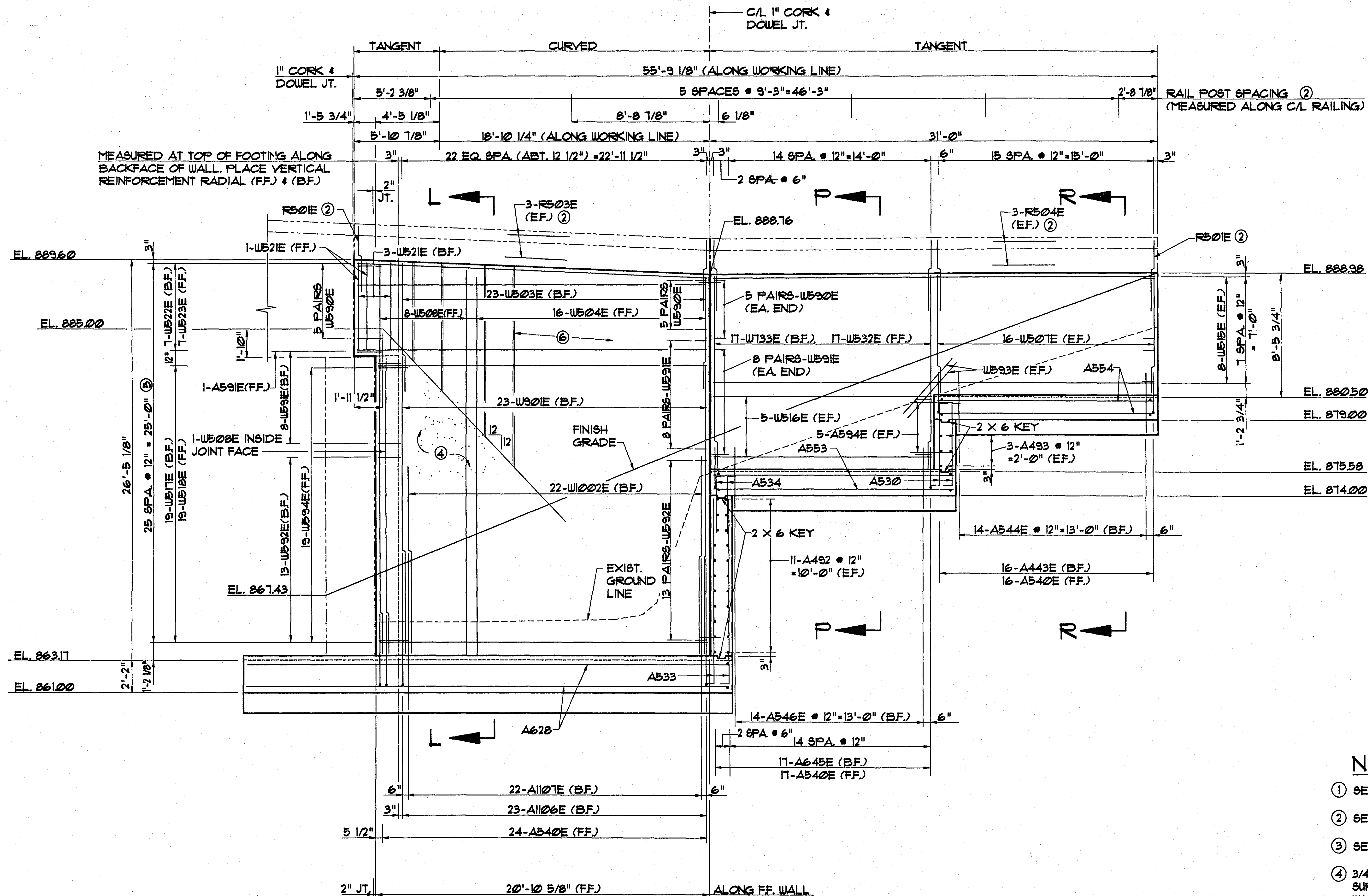
SECTION H-H
NORTHWEST CORNER DETAILS
SOUTHEAST SIMILAR BY ROTATION

SECTION J-J

SECTION K-K
AT EXISTING PIER FOOTINGS

NOTES:

- ① SEE SHEET 14 FOR BAR LIST & SUMMARY OF QUANTITIES.
- ② SEE SHEET 15 FOR BACKFILL REQUIREMENTS UNDER FOOTINGS AND FOR DRAINAGE SYSTEM.
- ③ SEE SHEET 13 FOR SPLICING INFORMATION.



NOTES:

- ① SEE SHEET 14 FOR BAR LIST & SUMMARY OF QUANTITIES.
- ② SEE SHEET 16 FOR RAILING DETAILS & R501E SPACING.
- ③ SEE SHEET 3 & 4 FOR FOOTING REINFORCEMENT DETAILING.
- ④ 3/4" INSET ON EXTERIOR WALL FACE. EXTEND 2'-0" MIN. BELOW GRADE. SURFACE TO RECEIVE BUSH-HAMMERED SURFACE TREATMENT. FINISH W/ CLEAR HIGH GLOSS ACRYLIC CONCRETE SEALER.
- ⑤ SPACE DOUEL BAR ASSEMBLIES WITH HORIZ. WALL REINF. SEE SHEET 13 FOR DOUEL BAR ASSEMBLY DETAILS.
- ⑥ REVERSE BATTEN SURFACE TREATMENT. SEE SHEET 8 FOR DETAILS. EXTEND 2'-0" MIN. BELOW FINISH GRADE.
- ⑦ SEE SHEETS 13 & 15 FOR DRAINAGE SYSTEM & CONSTR. JT. DETAILS.
- ⑧ SEE SHEET 13 FOR SECTIONS L-L, P-P, & R-R.

28-118

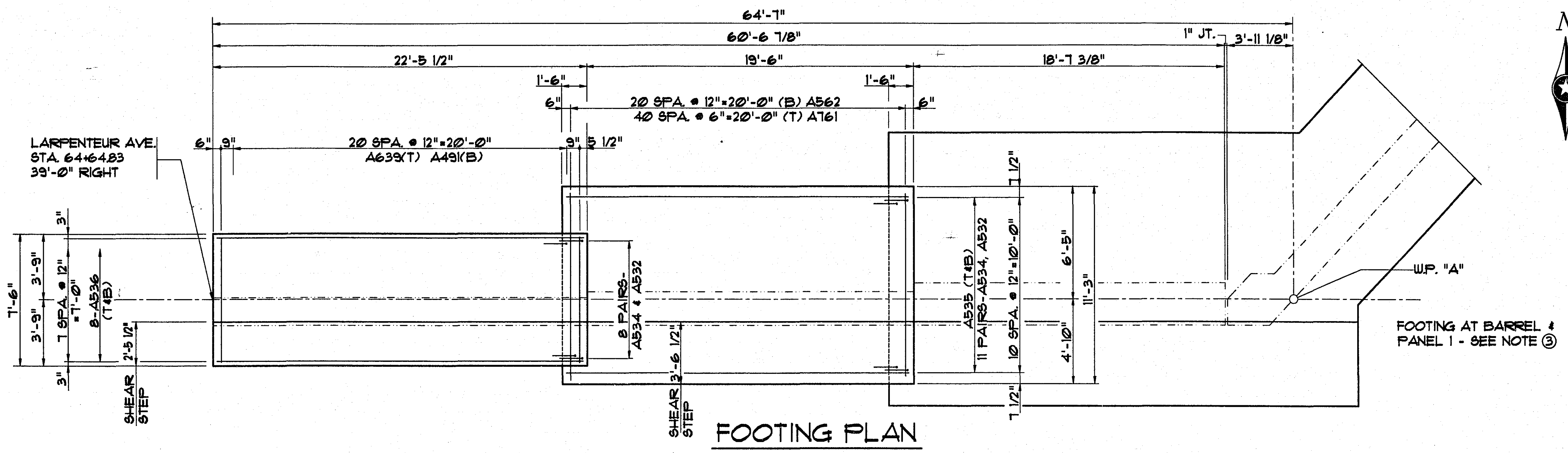
S.P. 62-630-21



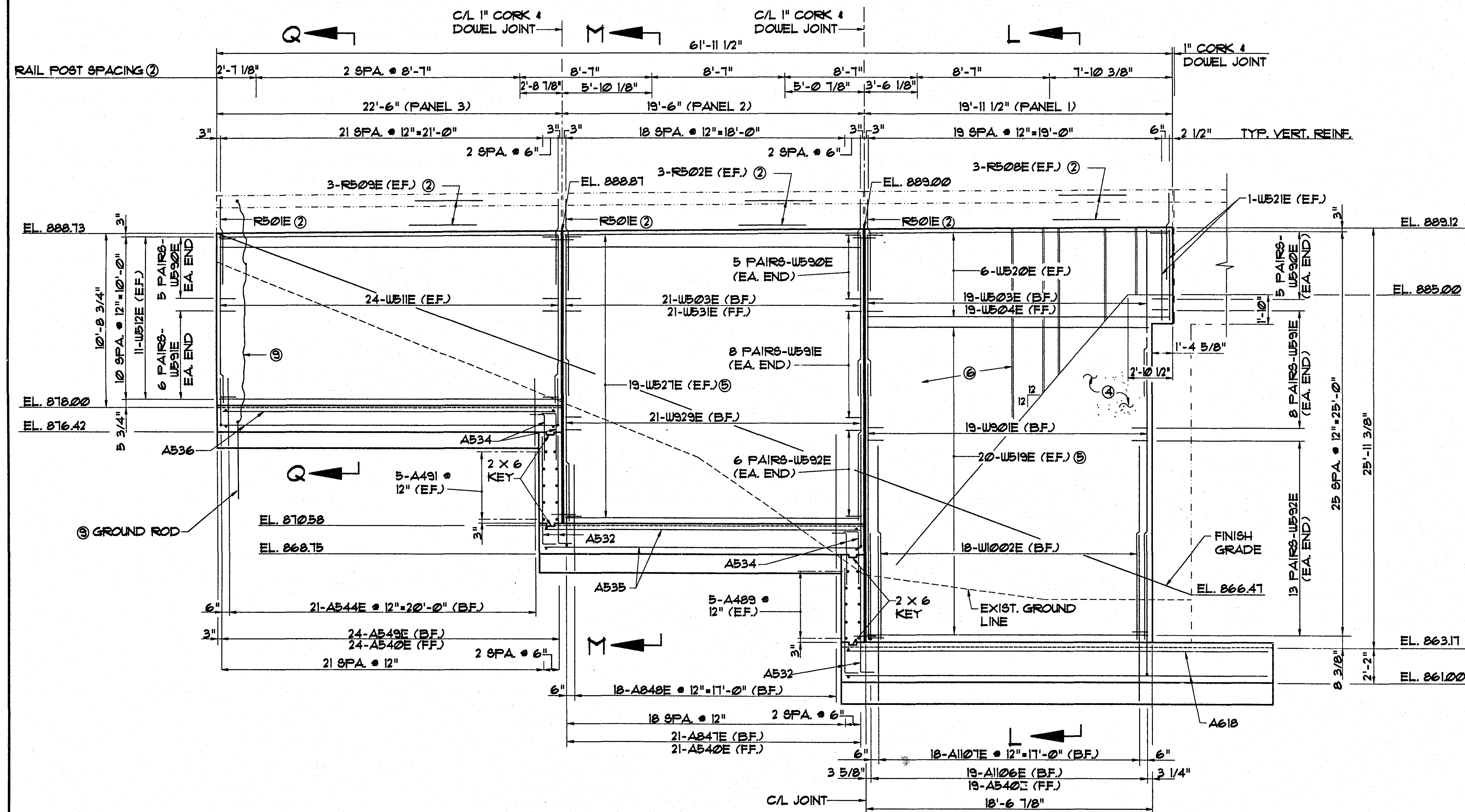
NORTHWEST WINGWALL

DES: JDS/MW DR: MU-AB
CHK: MLH CHK: MLH
APPROVED: 12-16-91
Sheet No. 10 of 19 Sheets

Bridge No.
62554



FOOTING PLAN



SOUTHWEST WINGWALL ELEVATION



NOTES:

- ① SEE SHEET 14 FOR BAR LIST & SUMMARY OF QUANTITIES.
- ② SEE SHEET 16 FOR RAILING DETAILS & R501E SPACING.
- ③ SEE SHEETS 3 & 4 FOR FOOTING REINFORCEMENT DETAILING.
- ④ 3/4" INSET ON EXTERIOR WALL FACE. EXTEND 2'-0" MIN. BELOW GRADE. SURFACE TO RECEIVE BUSH-HAMMERED SURFACE TREATMENT. FINISH W/ CLEAR HIGH GLOSS ACRYLIC CONCRETE SEALER.
- ⑤ SPACE DOWEL BAR ASSEMBLIES WITH HORIZ. WALL REINF. SEE SHEET 13 FOR DOWEL BAR ASSEMBLY DETAILS.
- ⑥ REVERSE BATTEN SURFACE TREATMENT. SEE SHEET 8 FOR DETAILS. EXTEND 2'-0" MIN. BELOW FINISH GRADE.
- ⑦ SEE SHEETS 13 & 15 FOR DRAINAGE SYSTEM & CONSTR. JT. DETAILS.
- ⑧ SEE SHEET 13 FOR SECTIONS L-L, M-M, & Q-Q.
- ⑨ ORNAMENTAL METAL RAILING SHALL BE ELECTRICALLY GROUNDED AS FOLLOWS: A COPPER COATED STEEL ROD HAVING A NOMINAL DIAMETER OF 5/8" OR MORE AND A MINIMUM LENGTH OF 8 FEET SHALL BE INSTALLED AT THE LOCATION SHOWN. THE TOP OF GROUND ROD SHALL PROJECT APPROX. ONE FOOT INTO FOOTING. ATTACH RAIL ANCHORAGE TO GROUNDING ROD WITH A SOLID NO. 6 GAGE COPPER WIRE WITH APPROVED TYPE METAL CLAMPS. SEE SHEET 16 FOR FURTHER DETAILS.
- ⑩ SEE SHEET 9 FOR COMPUTED SOIL PRESSURE TABLE.

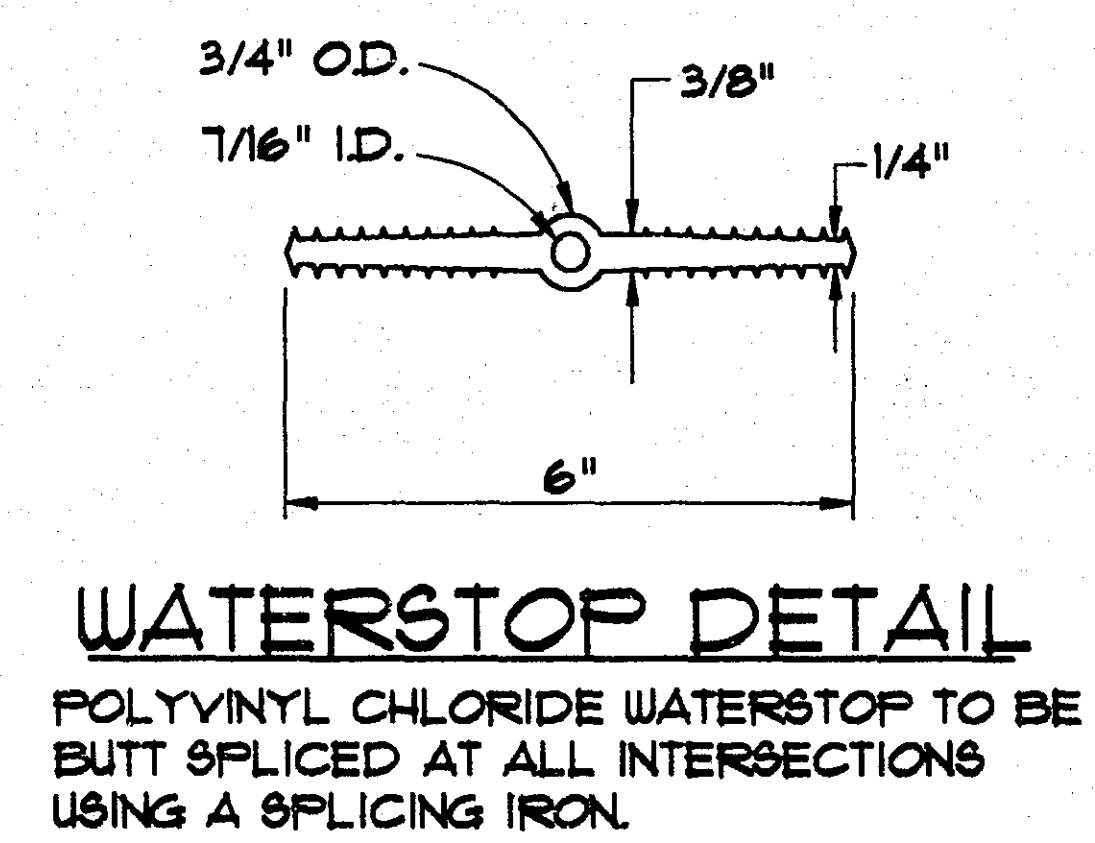
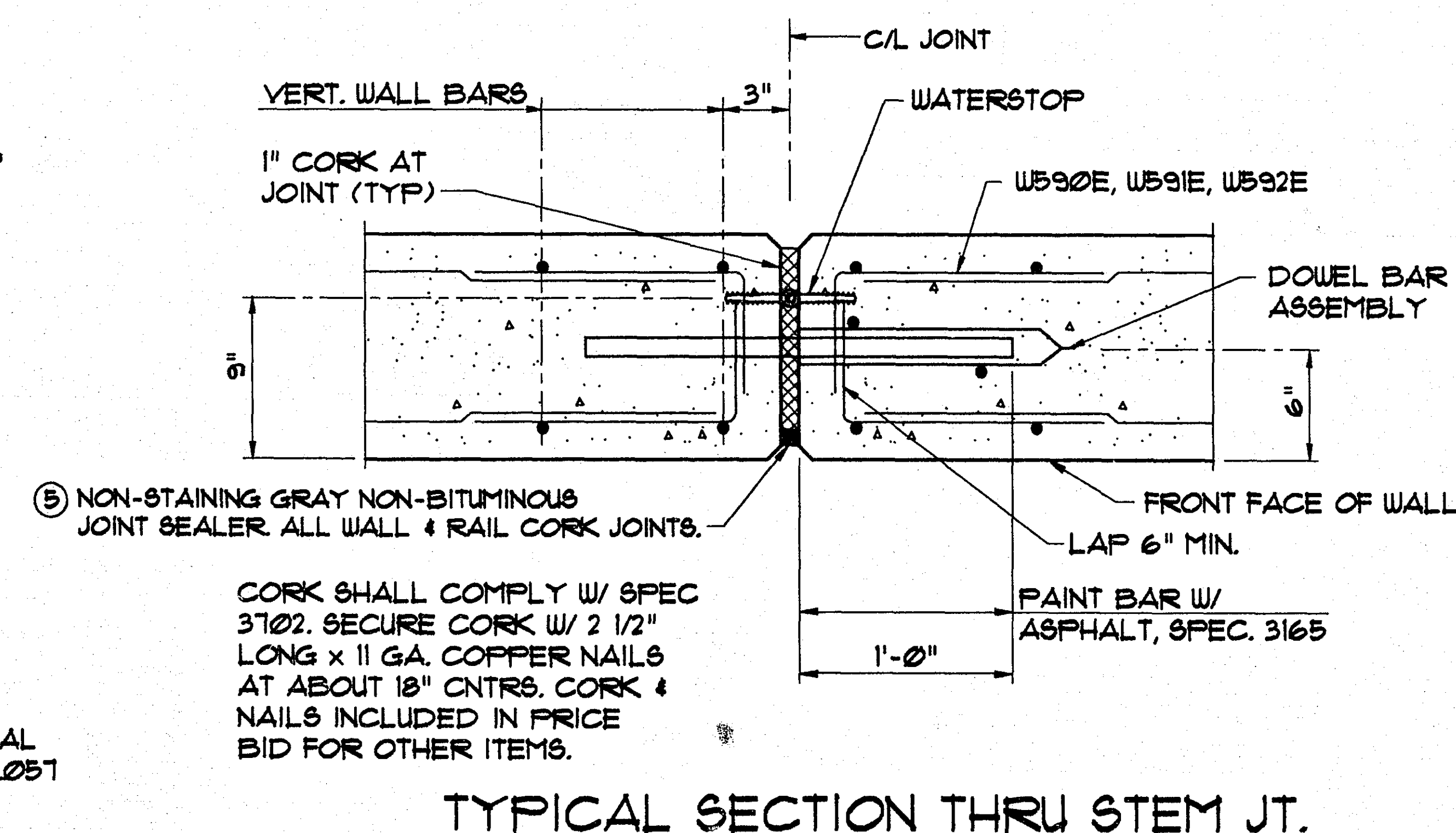
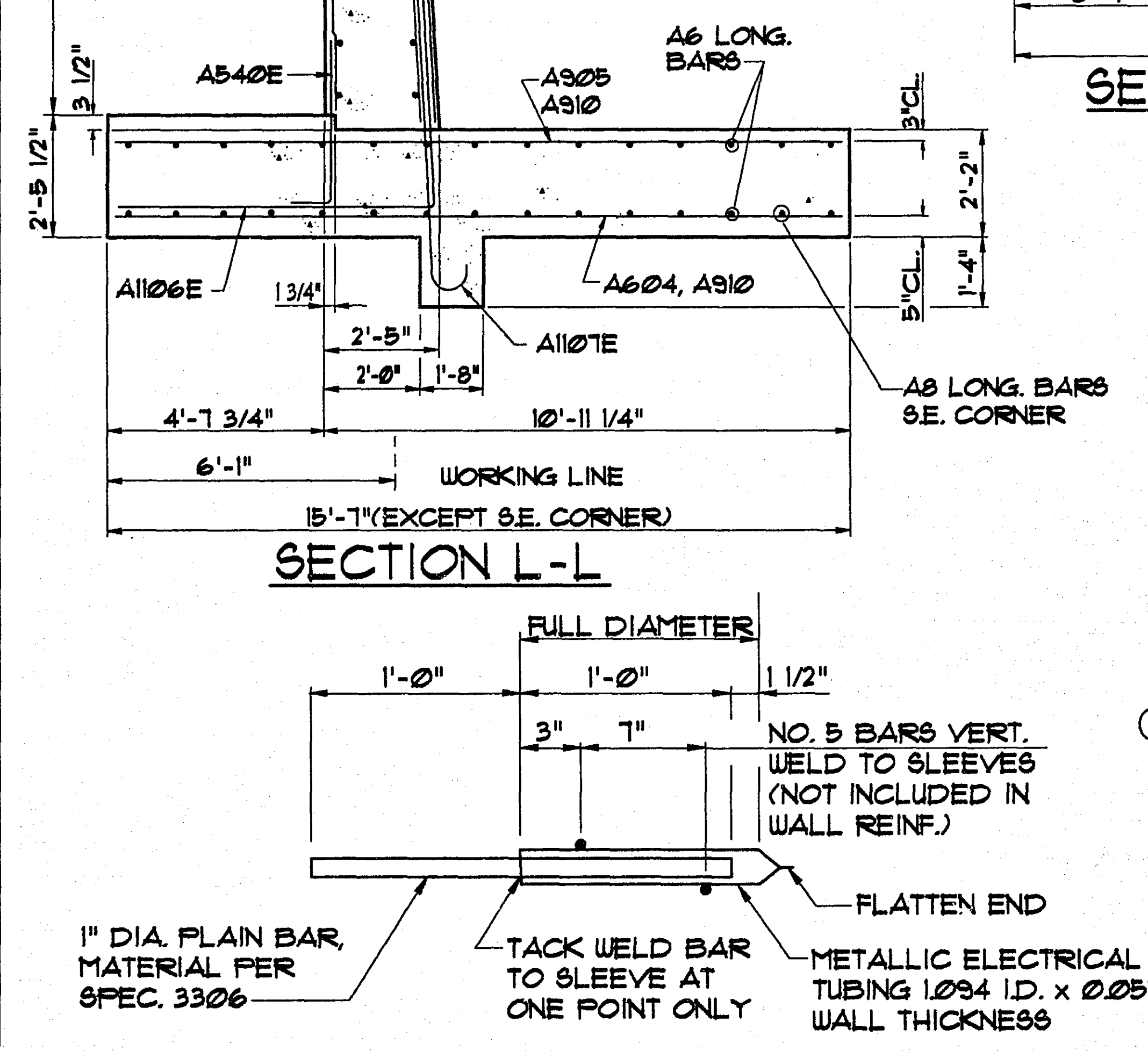
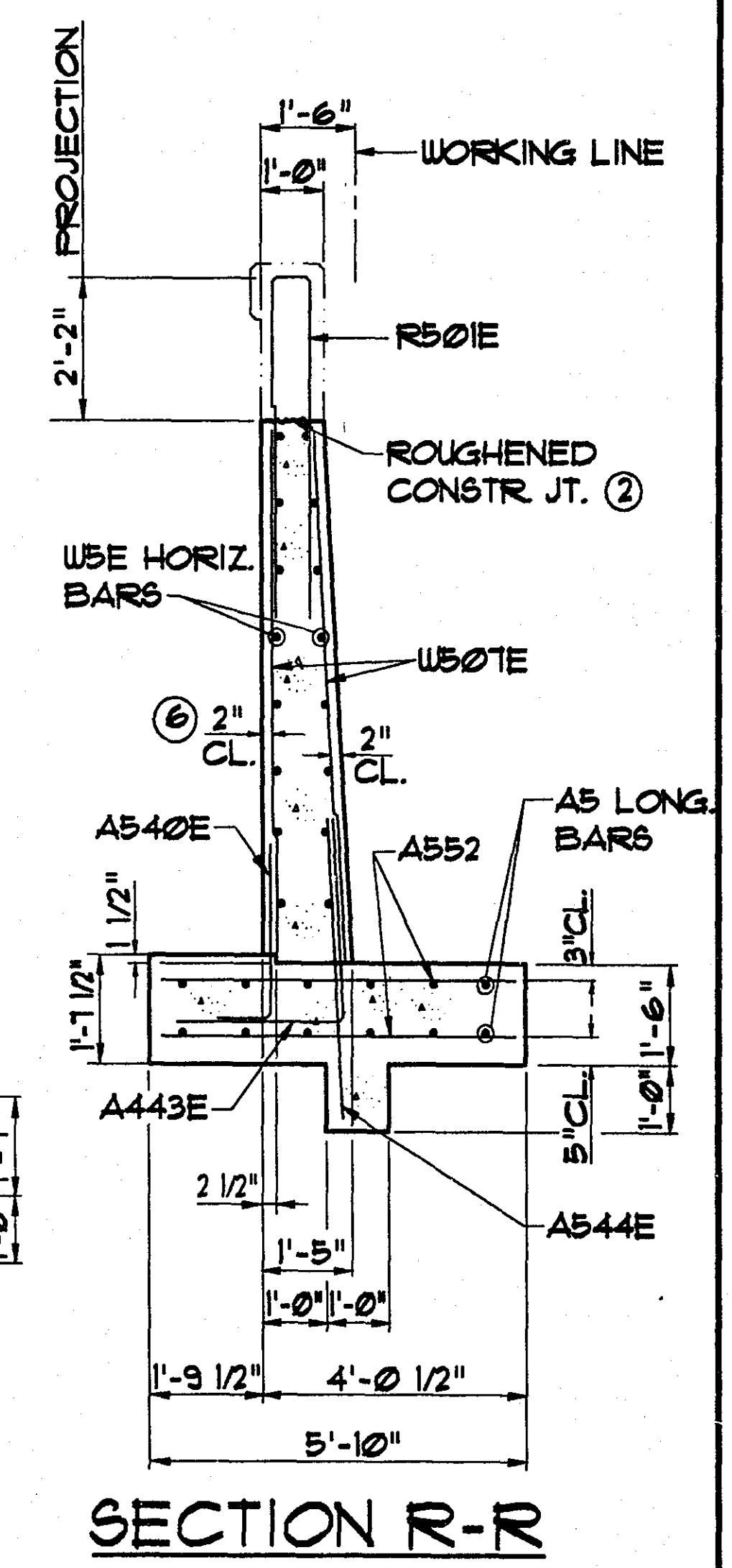
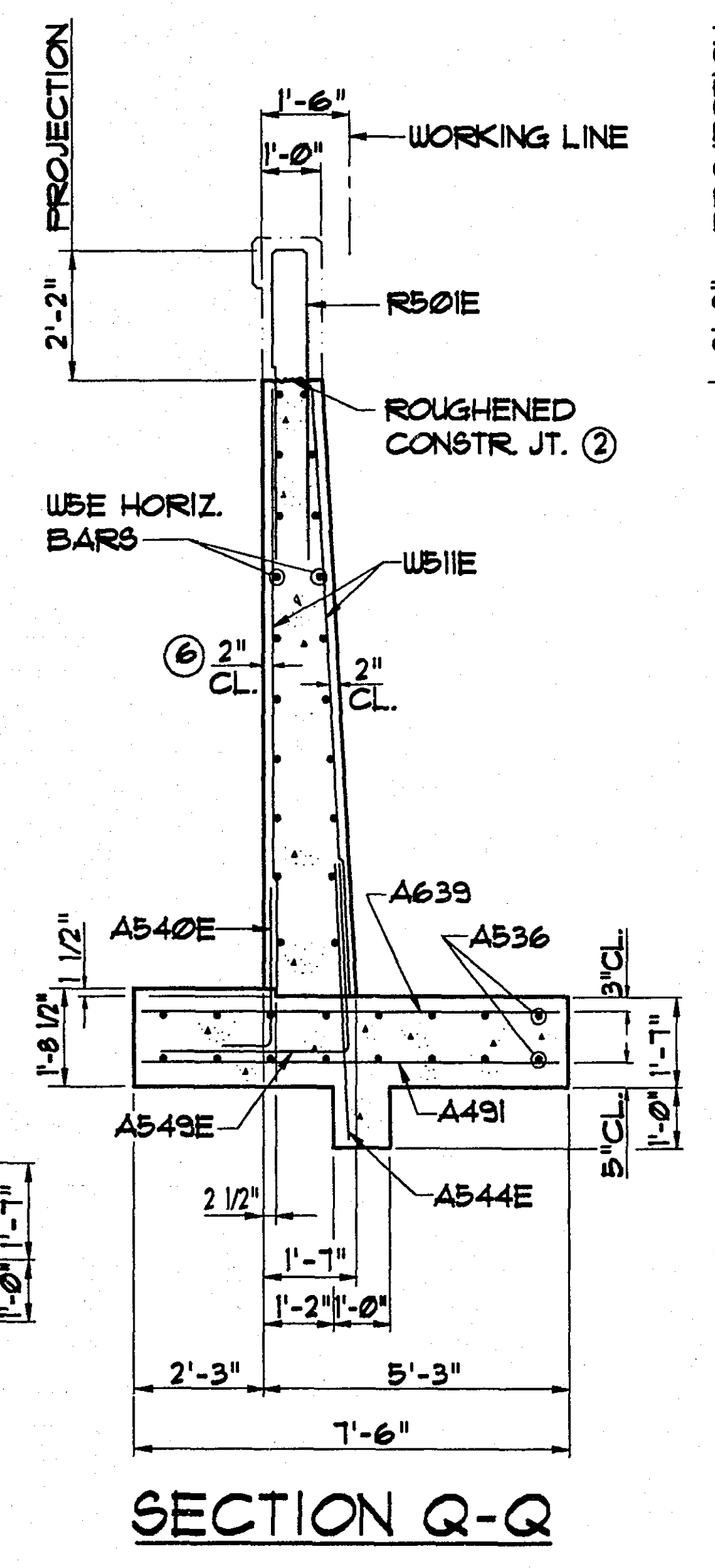
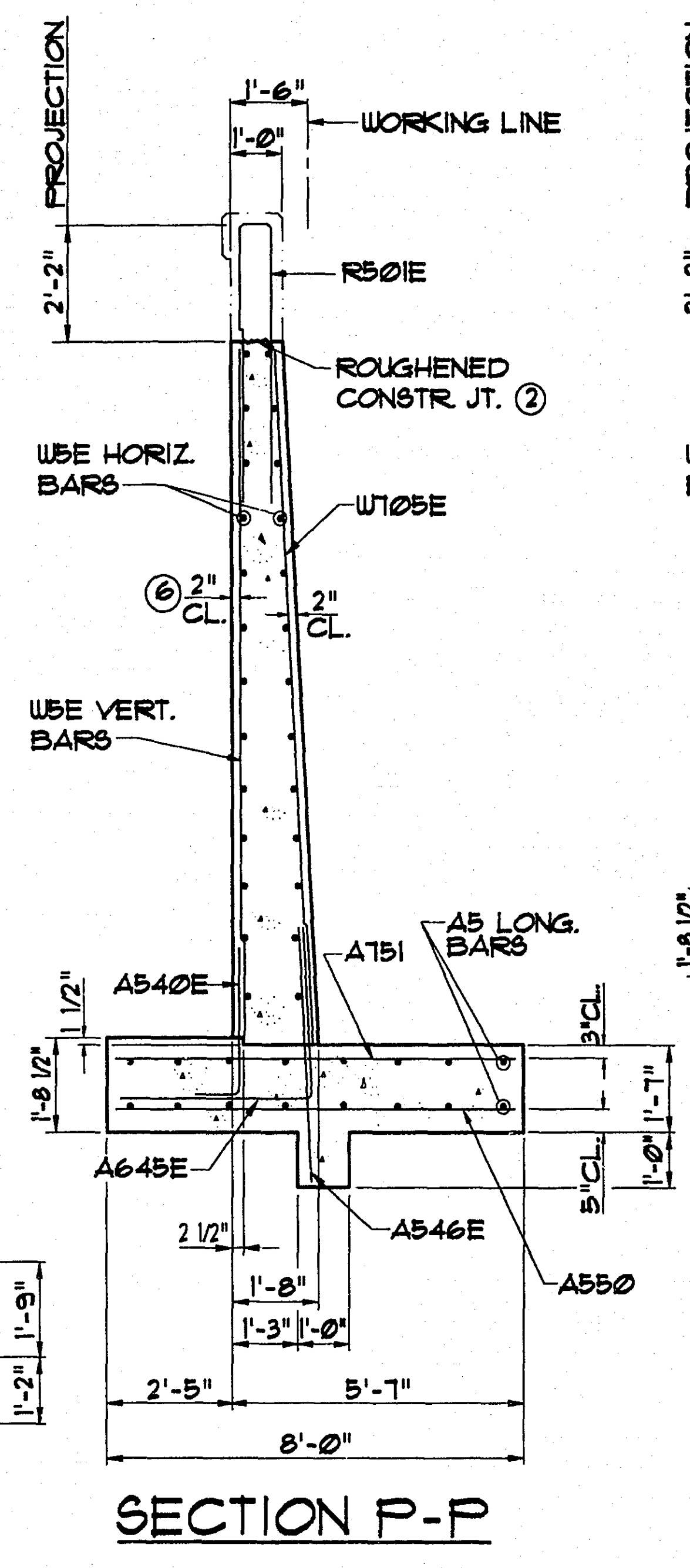
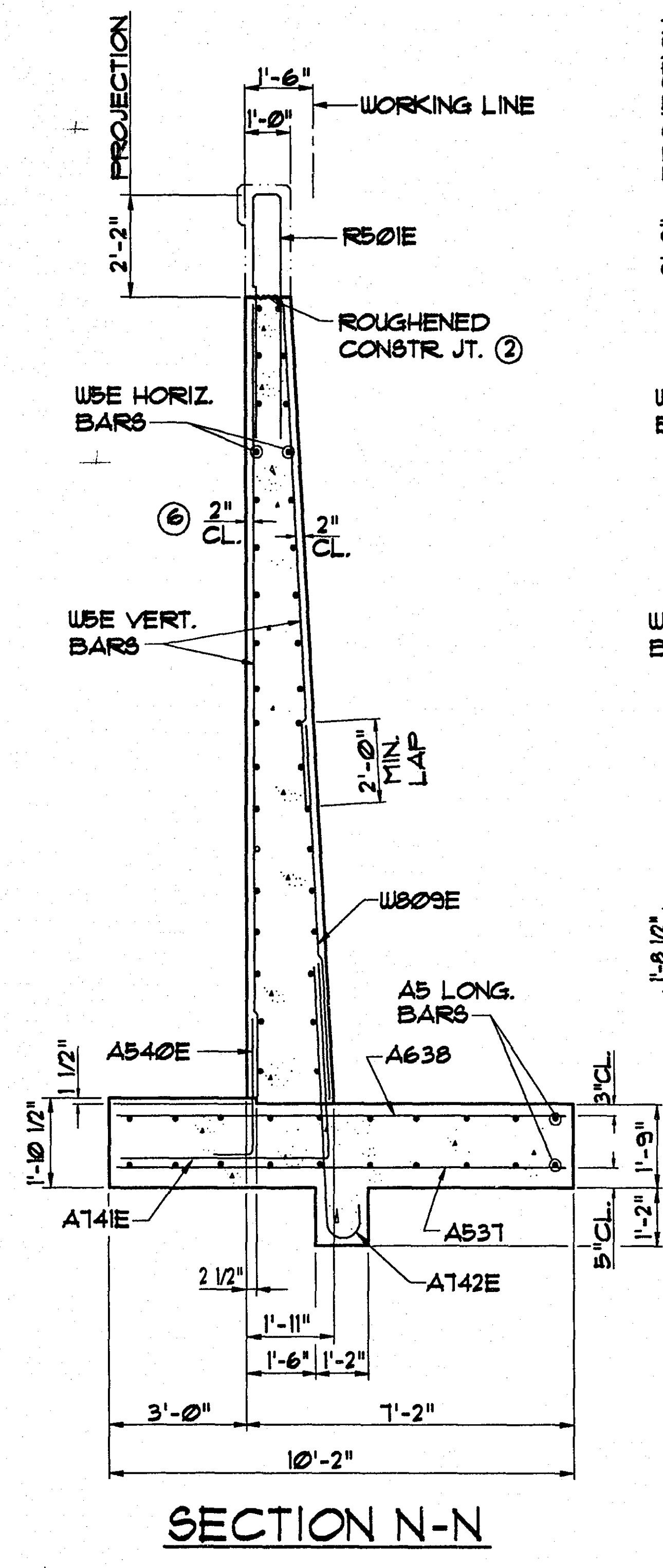
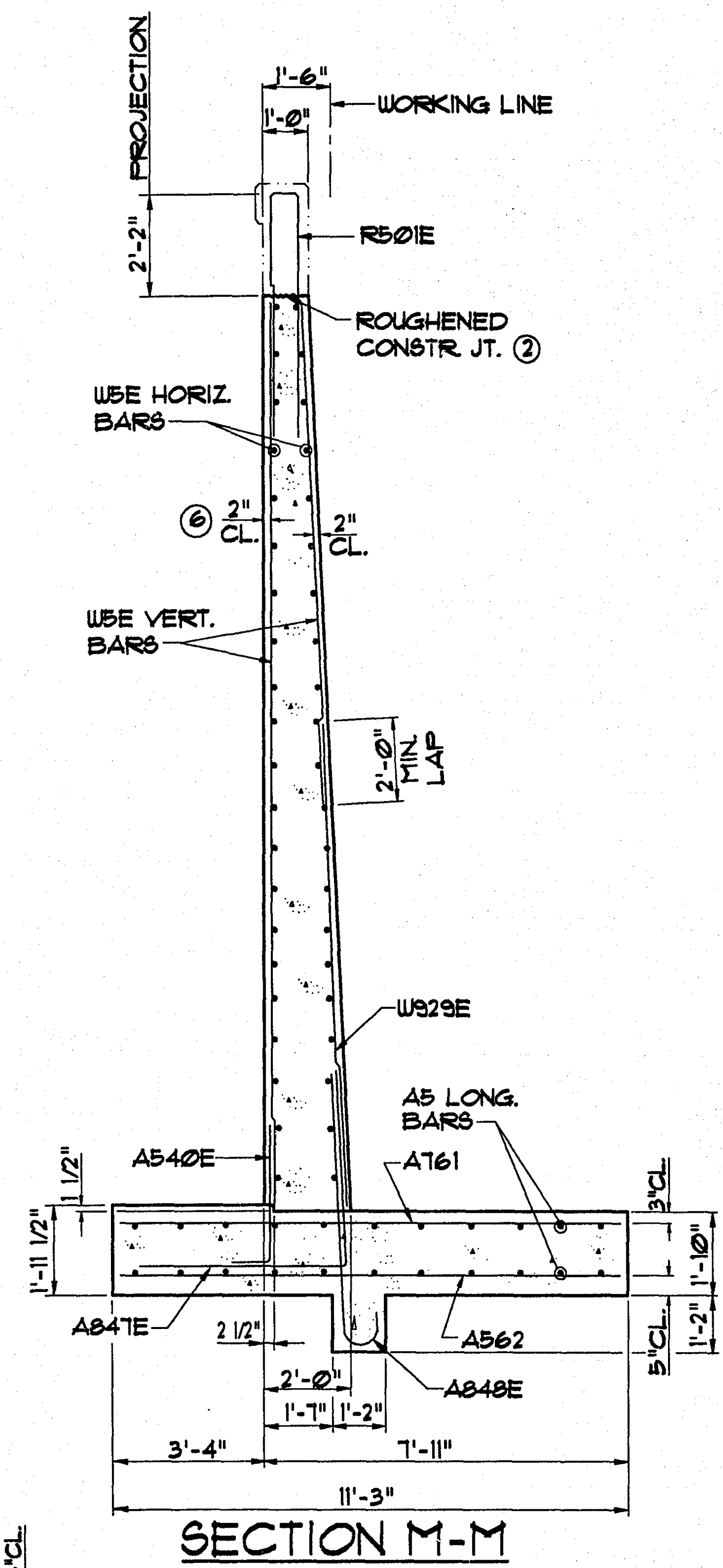
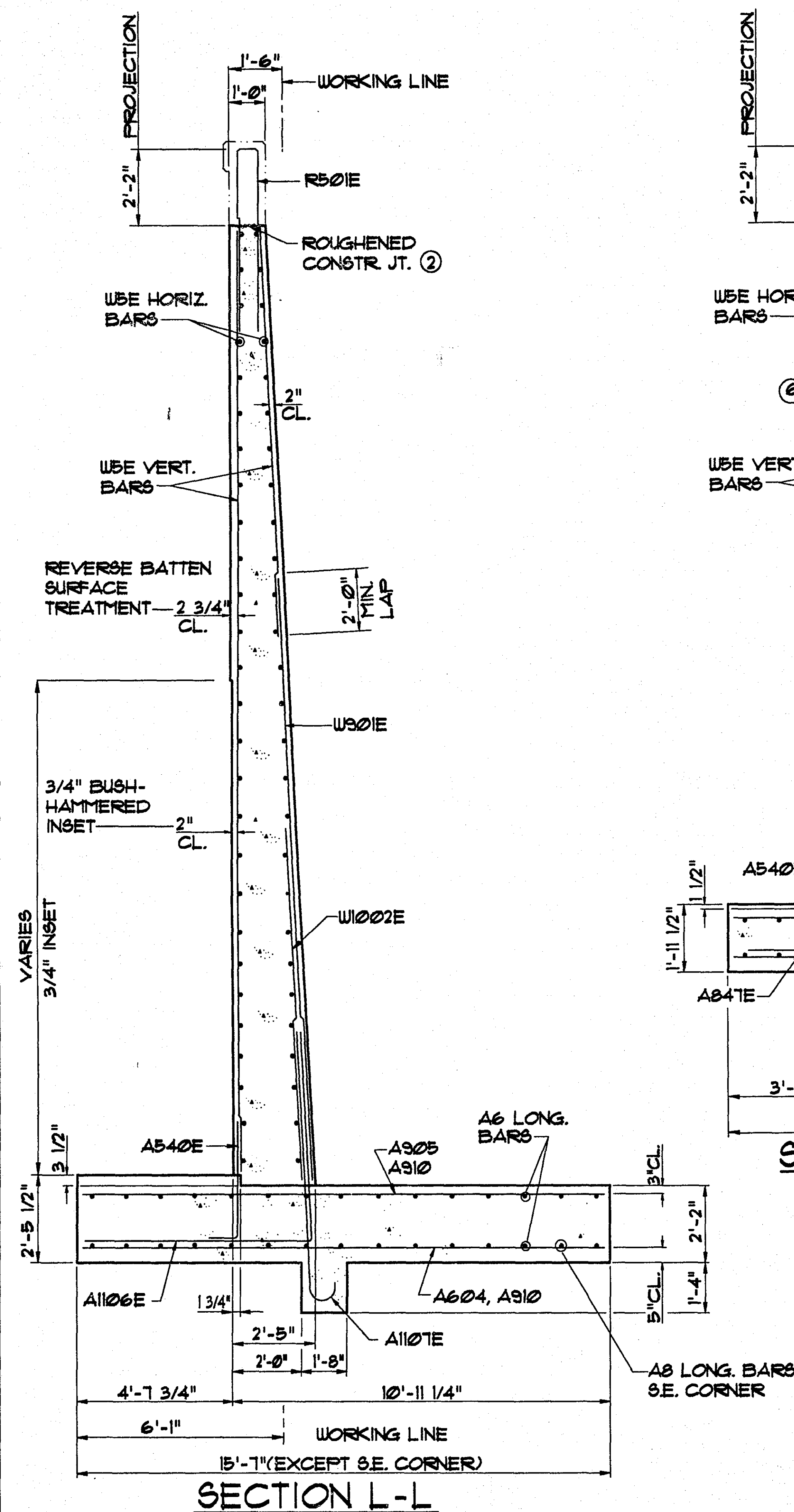
28-118

S.P. 62-630-21



SOUTHWEST WINGWALL

DES: JDS/MW	DR: JWS/AB	APPROVED: 12-16-91	Bridge No.
CHK: MLH	CHK: MLH		62554
Sheet No. 11 of 19 Sheets			



NOTES:

- SEE SHEET 15 FOR ADDITIONAL NOTES & DETAILS.
- TROWEL EDGES APPROX. 2" IN FOR SMOOTH FINISH. TYPICAL FOR LENGTH OF WALL.
- SEE SHEET 9 FOR COMPUTED SOIL PRESSURE TABLE.
- SEE SHEET 14 FOR BAR LIST & SUMMARY OF QUANTITIES.
- JOINT SEALER SHALL CONFORM TO THE REQUIREMENTS OF FEDERAL SPEC. TT-8-230, TYPE 2, SINGLE COMPONENT.
- MOVE VERTICAL BARS INSIDE HORIZ. BARS AS NEEDED AT BATTENS TO MAINTAIN 2" CLEAR COVER.

DOWEL BAR ASSEMBLY
MATERIAL AND PLACING TO BE INCLUDED IN PRICE BID FOR OTHER ITEMS

TYPICAL SECTION THRU STEM JT.

WATERSTOP DETAIL
POLYVINYL CHLORIDE WATERSTOP TO BE BUTT SPliced AT ALL INTERSECTIONS USING A SPlicing IRON.



WINGWALL DETAILS

DES: JDS/MW	DR: MW/AB	APPROVED: 12-16-91	Bridge No. 28-118
CHK: MLH	CHK: MLH		62554
Sheet No.13 of 19 Sheets			

S.P. 62-630-21

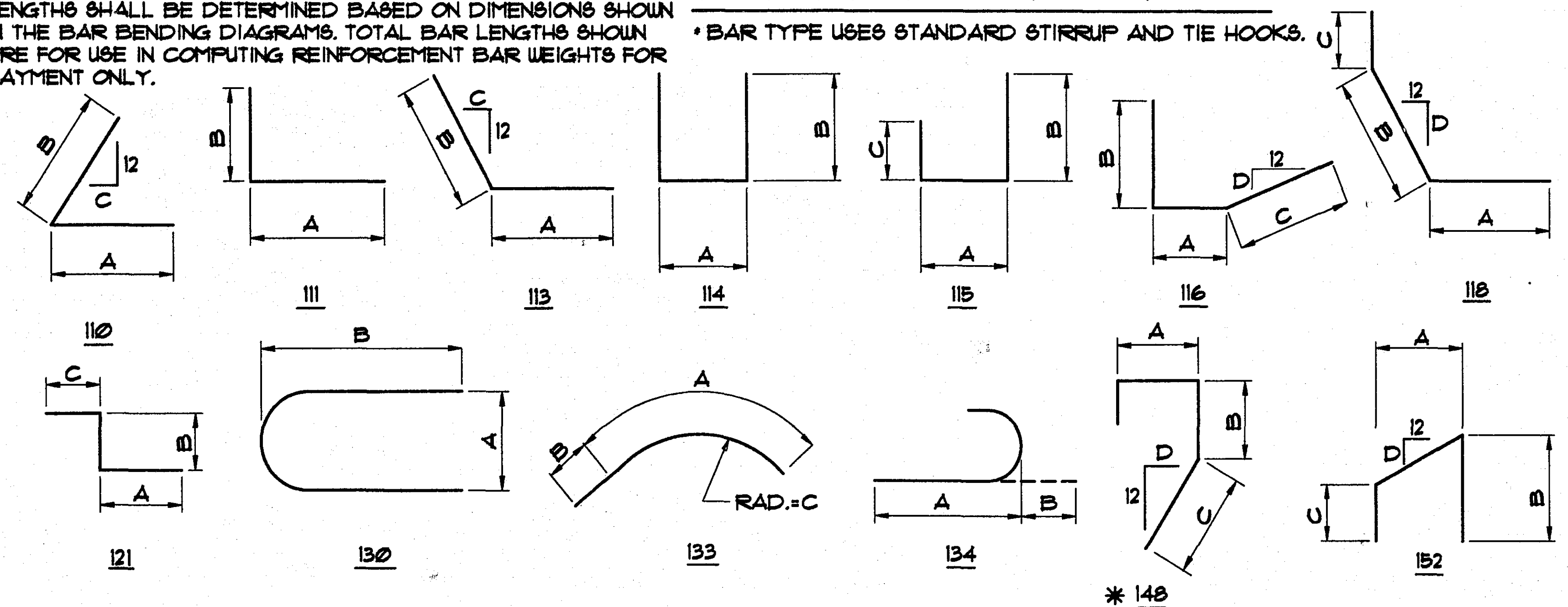
BAR MARK	# OF SERIES	# OF BARS	LENGTH	TYPE	DIMENSION				LOCATION
					A	B	C	D	
FOOTINGS									
UNCOATED BARS									
A601		40	55'- 0"	STR					LONG. BARREL
A602		148	8'-10"	STR					TRANS BARREL
A604		65	15'- 1"	STR					TRANS(NE NW SW)
A905		135	15'- 1"	STR					TRANS(NE NW SW)
A908	2	5	9'- 8"	STR					TRANS/NW SE/BRL
			13'- 9"						
A609		20	11'- 3"	STR					LONGIT BRL
A910		24	11'- 0"	STR					TRANS(SE)/BRL
A911		32	14'- 3"	STR					TRANS(NW)/BRL
A912		7	20'-10"	STR					LONG(SE)/BRL
A913		32	15'- 1"	STR					TRANS(NE SW)/BRL
A614		7	20'-10"	STR					LONG(SE)/BRL
A615	1	5	16'- 7"	STR					LONG(SE)/BRL
			20'- 6"						
A916		2	10'- 3"	STR					LONG/NW SE/BRL
A917		2	11'- 3"	STR					LONG/NW SE/BRL
A618		64	27'- 6"	STR					LONG/NE SW/BRL
A619		4	13'-10"	113	7'-7"	6'-3"		12	LONG/NW SE/BRL
A620		4	16'- 4"	113	9'-0"	7'-4"		12	LONG/NW SE/BRL
A621		2	10'- 3"	STR					LONG/NW SE/BRL
A622		2	11'- 3"	STR					LONG/NW SE/BRL
A623		7	15'- 0"	STR					LONG(NW)/BRL
A624	1	4	11'- 3"	STR					LONG(NW)/BRL
			14'- 3"						
A625		12	14'- 9"	STR					TRANS(NW SE)/BRL
A626	2	5	9'- 8"	STR					TRANS(NW SE)/BRL
			13'- 9"						
A627		4	7'- 0"	STR					FILLET(NW)/BRL
A628	2	15	14'- 7"	133	12'-3"	2'-4"	7'-0"		LONG(NW)/BRL
			36'- 6"		34'-2"	2'-4"	21'-0"		
A629		2	13'- 8"	133	11'-4"	2'-4"	6'-5"		LONG(NW)/BRL
A530		12	7'- 6"	121	0'-10"	5'-10"	0'-10"		DOVEL(NW)
A531		38	8'- 4"	111	0'-10"	7'-6"			DOVEL(NE SW)
A532		38	7'-10"	111	0'-10"	7'-0"			DOVEL(NE SW)
A533		16	13'- 1"	111	0'-10"	12'-3"			DOVEL(NW)
A534		112	4'- 0"	111	0'-10"	3'-2"			DOVEL(EA WALL)
A535		44	20'- 6"	STR					LONG(NE SW)
A536		32	22'- 0"	STR					LONG(NE SW)
A537		12	9'- 8"	STR					TRANS(SE)
A638		22	9'- 8"	STR					TRANS(SE)
A639		46	7'- 0"	STR					TRANS(SW NE)
A547		28	7'- 2"	121	0'-10"	5'-6"	0'-10"		DOVEL(SE)
A548		36	11'- 0"	STR					LONG(SE)
A549		12	10'- 9"	STR					LONG(SE)
A550		29	7'- 6"	STR					TRANS(NW SE)
A751		29	7'- 6"	STR					TRANS(NW SE)
A552		54	5'- 6"	STR					TRANS(NW SE)
A553		16	16'- 6"	STR					LONG(NW)
A554		12	15'- 0"	STR					LONG(NW)
A955		22	14'- 9"	STR					TRANS(NW SE)/BRL
A957	1	4	11'- 3"	STR					LONG(NW)/BRL
			14'- 3"						
A958		7	15'- 0"	STR					LONG(NW)/BRL
A959	1	5	16'- 7"	STR					LONG(SE)/BRL
			20'- 6"						
A560		20	9'- 8"	111	0'-10"	8'-10"			DOVEL(SE)
A761		82	10'- 9"	STR					TRANS(NE SW)
A562		42	10'- 9"	STR					TRANS(NE SW)
A489		22	10'- 9"	STR					HORIZ STEP
A490		14	9'-10"	STR					HORIZ STEP
A491		68	7'- 0"	STR					HORIZ STEP
A492		28	7'- 8"	STR					HORIZ STEP
A493		14	5'- 0"	STR					HORIZ STEP
A995		148	8'-10"	STR					TRANS BRL
A796		62	5'- 6"	111	1'-2"	4'-4"			TRANS BRL
A697		62	4'- 4"	STR					TRANS BRL
A698		10	20'- 0"	STR					LONG BRL
A699		10	30'- 0"	STR					LONG BRL
HEADWALL									
EPOXY COATED BARS									
H501E	2	3	35'- 0"	STR					LONG. FILLET
			36'- 6"						
H502E		76	3'- 0"	113	1'-6"	1'-6"		12	VERTICAL
H504E		26	36'- 8"	STR					HORIZ.
H506E		8	4'- 6"	114	0'-6"	2'-0"			END HORIZ.
H507E		20	5'- 0"	114	1'-0"	2'-0"			END HORIZ.

BAR MARK	# OF SERIES	# OF BARS	LENGTH	TYPE	DIMENSION				LOCATION
					A	B	C	D	
BARREL									
EPOXY COATED BARS									
B801E		210	30'- 0"	111	21'-8"	8'-4"			WALLS VERT.
B902E		206	23'- 0"	111	16'-0"	7'-0"			WALLS VERT.
B803E	2	14	23'- 8"	111	21'-8"	2'-0"			WALLS VERT.
			29'- 8"		21'-8"	8'-0"			
B604E		448	21'- 6"	STR					WALLS VERT.
B405E		284	26'- 2"	STR					WALL/SLAB LONG
B406E		80	20'- 0"	STR					WALL HORIZ.
B407E		180	23'- 9"	STR					WALL HORIZ.
B408E		40	4'- 9"	113	3'-0"	1'-9"	12		WALL END
B409E		40	7'-11"	152	2'-2"	3'-0"	1'-9"	12	WALL END
B410E		40	5'- 4"	118	1'-0"	1'-7"	2'-9"	12	WALL END
B711E	2	45	4'- 2"	STR					TRANSV. BOT.
			27'- 2"						
B712E		165	27'- 4"	STR					TRANSV. BOT.
B613E		87	17'- 4"	STR					TRANSV. TOP
B614E	2	16	5'- 4"	STR					TRANSV. TOP
			20'-10"						
B415E	2	26	21'- 8"	STR					LONG. SLAB
			45'- 9"						
B616E		76	10'- 9"	115	1'-1"	5'-8"	4'-0"		HEADWALL
B917E		20	36'- 8"	STR					HEADWALL
B518E		8	36'- 8"	STR					HEADWALL
B619E		76	7'- 9"	118	1'-0"	5'-9"	1'-0"	12	HEADWALL FILLET
B620E		212	8'- 3"	148	2'-6"	0'-8"	4'-6"	6	CORBEL
B421E		6	19'- 3"	STR					CORBEL
B822E		14	24'- 2"	111	21'-8"	2'-6"			END COLUMNS
B823E		4	21'- 8"	STR					END COLUMNS
B424E		40	5'- 0"	116	2'-0"	1'-0"	2'-0"	12	END COLUMNS
B425E		4	20'- 0"	113	18'-6"	1'-6"	12		LONG. SLAB
B726E		2	26'- 2"	STR					TRANSV SLAB BOT
B727E		4	26'- 7"	STR					TRANSV SLAB BOT
WINGWALLS									
EPOXY COATED BARS									
W501E		71	18'- 4"	STR					VERT(EA WALL)
W1002E		67	11'- 0"	STR					VERT(EA WALL)
W503E		123	10'- 3"	STR					VERT(EA WALL)
W504E		46	25'- 5"	STR					VERT(EA WALL)
W1005E		10	12'- 4"	STR					VERT(NW SE)
W506E		10	12'- 3"	STR					VERT(NW SE)
W507E		56	7'- 8"	STR					VERT(NW SE)
W508E		28	26'- 2"	STR					VERT(NW SE)
W509E		10	9'- 0"	STR					VERT(NE)
W510E		10	17'- 0"	STR					VERT(NE)
W511E		96	10'- 6"	STR					VERT(NE SW)
W512E		44	22'- 1"	STR					HORIZ(NE SW)
W513E		16	20'-10"	STR					HORIZ(NE)
W514E		10	9'- 6"	STR					HORIZ(NE)
W515E		16	30'- 6"	STR					HORIZ(NW)
W516E		10	15'- 2"	STR					HORIZ(NW)
W517E	1	19	21'- 6"	133	18'-8"	2'-10"	12'-1"		HORIZ(NW)
			22'- 9"		19'-11"	2'-10"	12'-1"		
W518E		19	20'- 6"	133	16'-6"	4'-0"	10'-8"		HORIZ(NW)
W519E		80	18'- 2"	STR					HORIZ(NE SW)
W520E		26	19'- 7"	STR					HORIZ(NE SW)
W521E		18	5'- 6"	STR					VERT(EA WALL)
W522E		7	23'- 2"	133	17'-6"	5'-8"	11'-3"		HORIZ(NW)
W523E		7	22'- 2"	133	16'-6"	5'-8"	10'-8"		HORIZ(NW)
W524E		9	10'- 0"	STR					HORIZ(NE)
W525E		9	9'- 0"	STR					HORIZ(NE)
W526E		10	20'- 0"	STR					HORIZ(NE)
W527E		86	18'-11"	STR					HORIZ(NE NE SW)
W528E		14	21'- 9"	STR					HORIZ(NE)
W529E		42	10'- 6"	STR					VERT(NE SW)
W530E		21	18'- 8"	STR					VERT(NE)
W531E		21	18'- 1"	STR					VERT(SW)
W532E		17	13'- 0"	STR					VERT(NW)
W733E		17	13'- 0"	STR					VERT(NW)
W530E		200	2'- 4"	111	0'-7"	1'-9"			WALL END(ALL)
W531E		230	2'- 8"	111	0'-11"	1'-9"			WALL END(ALL)
W532E		234	3'- 1"	111	1'-4"	1'-9"			WALL END(ALL)
W533E		12	4'- 0"	STR					DIAG(NW SE)
W534E		38	2'- 9"	110	0'-9"	2'-0"	12		WALL END(NW SE)

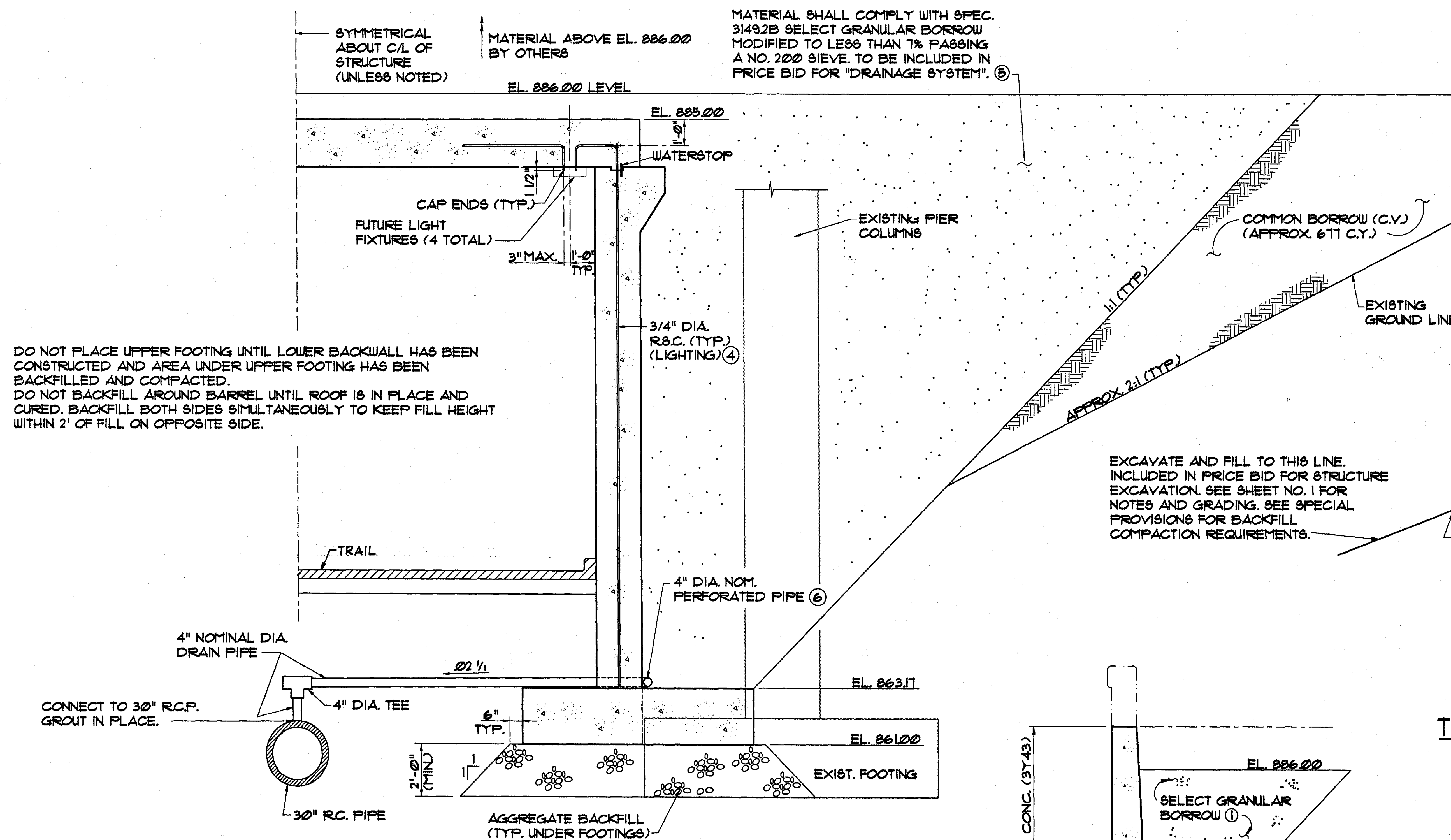
NOTE:
BENT BAR DIMENSIONS GIVEN ARE OUT-TO-OUT. ACTUAL BAR LENGTHS SHALL BE DETERMINED BASED ON DIMENSIONS SHOWN IN THE BAR BENDING DIAGRAMS. TOTAL BAR LENGTHS SHOWN ARE FOR USE IN COMPUTING REINFORCEMENT BAR WEIGHTS FOR PAYMENT ONLY.

BAR BENDING DIAGRAMS

* BAR TYPE USES STANDARD STIRRUP AND TIE HOOKS.

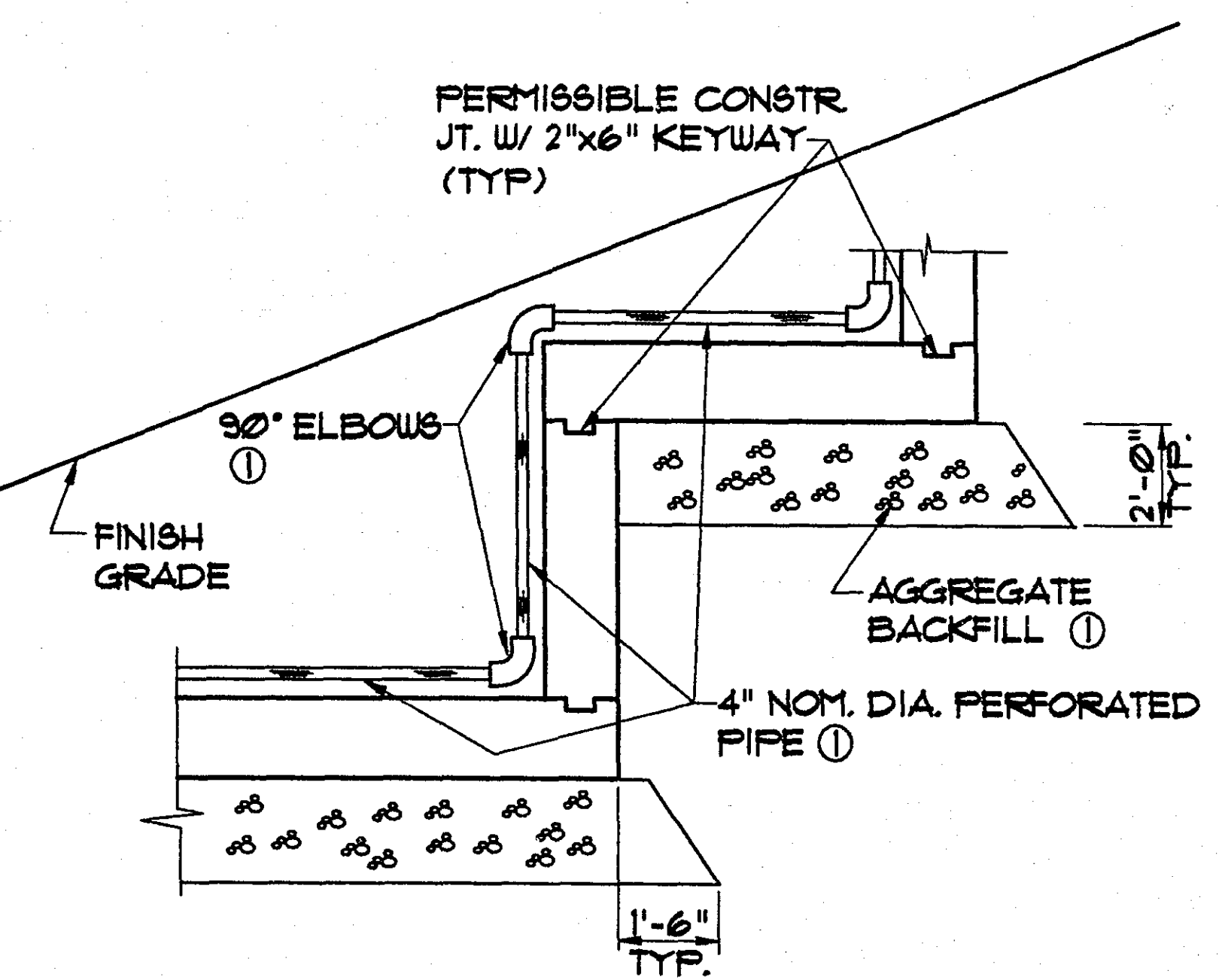


SUMMARY OF QUANTITIES									
	ITEM	UNIT	BARREL	HEADWALL	NE WINGWALL	NW WINGWALL	SW WINGWALL	SE WINGWALL	TOTAL
	STRUCTURE CONCRETE (1A43)	CU. YD.	264(9)	—	36	20	35	25	380
	STRUCTURE CONCRETE (3Y43)	CU. YD.	571	20	64	54	62	37	808
⑧	TYPE "F" RAILING, CONC. (3Y46)	LIN. FT.							296
	REINFORCEMENT BARS (EPOXY COATED)	POUND	104 530(5)	1600	31 670(6)	—	—	—	137 860
	REINFORCEMENT BARS	POUND	41 320(5)	—	—	—	—	—	41 320
③	STRUCTURE EXCAVATION	LUMP SUM							1
	ORNAMENTAL METAL RAILING, TYPE 91	LIN. FT.							296
③	AGGREGATE BACKFILL (C.V.)	CU. YD.	300	—	40	24	40	28	432
④	DRAINAGE SYSTEM	LUMP SUM							1
①	WATERSTOP	LIN. FT.	550	—	46	25	44	17	682
③ ② ①	PREFORMED JOINT FILLER								
①	DOWEL BAR ASSEMBLIES	LIN. FT.	103	—	45	26	45	17	236
⑩	REVERSE BATTEN SURFACE TREATMENT	SQ. FT.	—	450	720	670	720	460	3020
③ ③	BUSH HAMMERED SURFACE TREATMENT	SQ. FT.	379	—	150	122	156	110	917
⑦	BENCH MARK DISK	UNIT							
	AGGREGATE SURFACING CLASS 2	TON	104						104

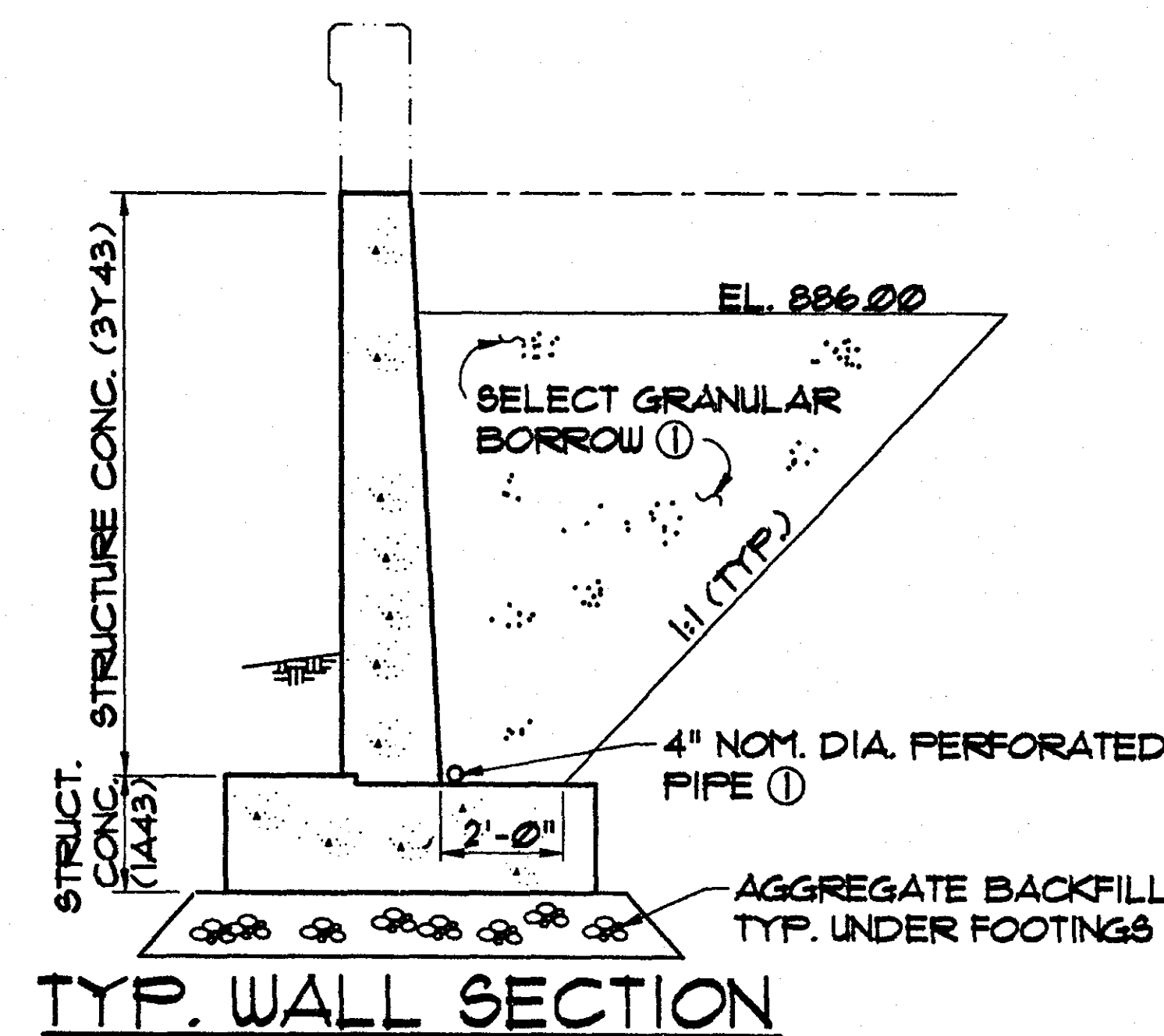


DO NOT PLACE UPPER FOOTING UNTIL LOWER BACKWALL HAS BEEN CONSTRUCTED AND AREA UNDER UPPER FOOTING HAS BEEN BACKFILLED AND COMPACTED.
DO NOT BACKFILL AROUND BARREL UNTIL ROOF IS IN PLACE AND CURED. BACKFILL BOTH SIDES SIMULTANEOUSLY TO KEEP FILL HEIGHT WITHIN 2' OF FILL ON OPPOSITE SIDE.

MATERIAL SHALL COMPLY WITH SPEC. 3149.2B SELECT GRANULAR BORROW MODIFIED TO LESS THAN 1% PASSING A NO. 200 SIEVE. TO BE INCLUDED IN PRICE BID FOR "DRAINAGE SYSTEM". ⑤



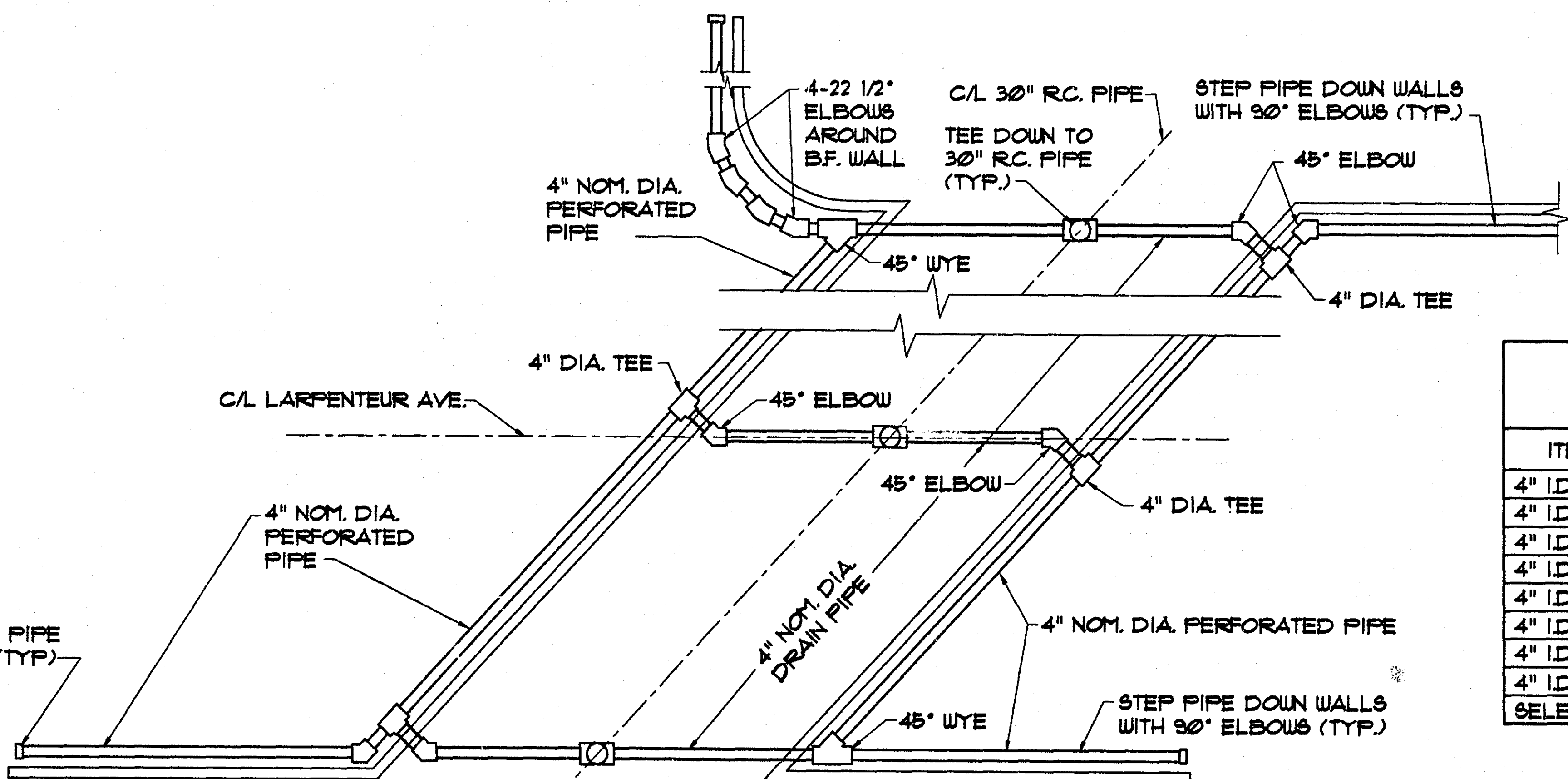
TYP. BACKFILL UNDER FTG. STEPS



TYP. WALL SECTION

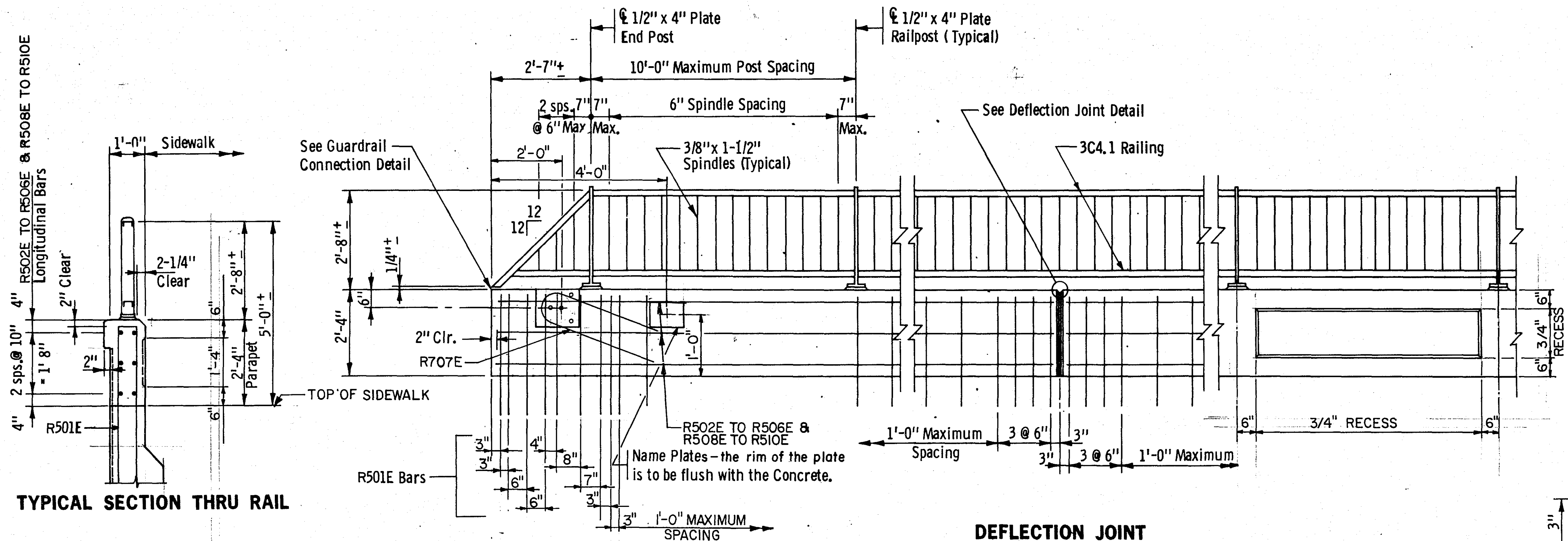
NOTES:

- ① SEE SHEET 6 FOR DETAILS OF HEADWALL.
- ② ALL PIPE SHALL BE AS PER SPEC. 3245.
- ③ THE SUMMARY OF QUANTITIES FOR DRAINAGE SYSTEM SHOWN IS FOR CONTRACTORS CONVENIENCE ONLY. ANY ADDITIONAL MINOR ITEMS AND SLIGHT CHANGES OF QUANTITIES REQ'D. SHALL BE FURNISHED BY THE CONTRACTOR WITH NO ADDITIONAL COMPENSATION. PAYMENT WILL BE INCLUDED IN SINGLE LUMP SUM PRICE.
- ④ SEE SHEET 5 FOR ADDITIONAL DETAILS & SUMMARY OF QUANTITIES FOR CONDUIT SYSTEM (LIGHTING).
- ⑤ 1. NO BACKFILL SHALL BE PLACED UNTIL FILL INSIDE CULVERT IS PLACED AND COMPACTED TO APPROX. THE FINISHED GRADE.
2. NO BACKFILL SHALL BE PLACED UNTIL THE CULVERT IS SUBSTANTIALLY COMPLETE, EXCLUDING CONSTRUCTION OF HEADWALL.
3. PLACEMENT OF BACKFILL SHALL PROGRESS UNIFORMLY FROM END TO END AND ON EITHER SIDE OF THE CULVERT. ELEVATION OF BACKFILL BEING PLACED AT ANY POINT SHALL NOT EXCEED THE BACKFILL ELEVATION AT ANY OTHER POINT BY MORE THAN TWO FEET.
- ⑥ WRAP PERFORATED PIPE WITH GEOTEXTILE AS PER SPEC. 3133, TYPE I. ATTACH TO PIPE AS PER SPEC. 2502.

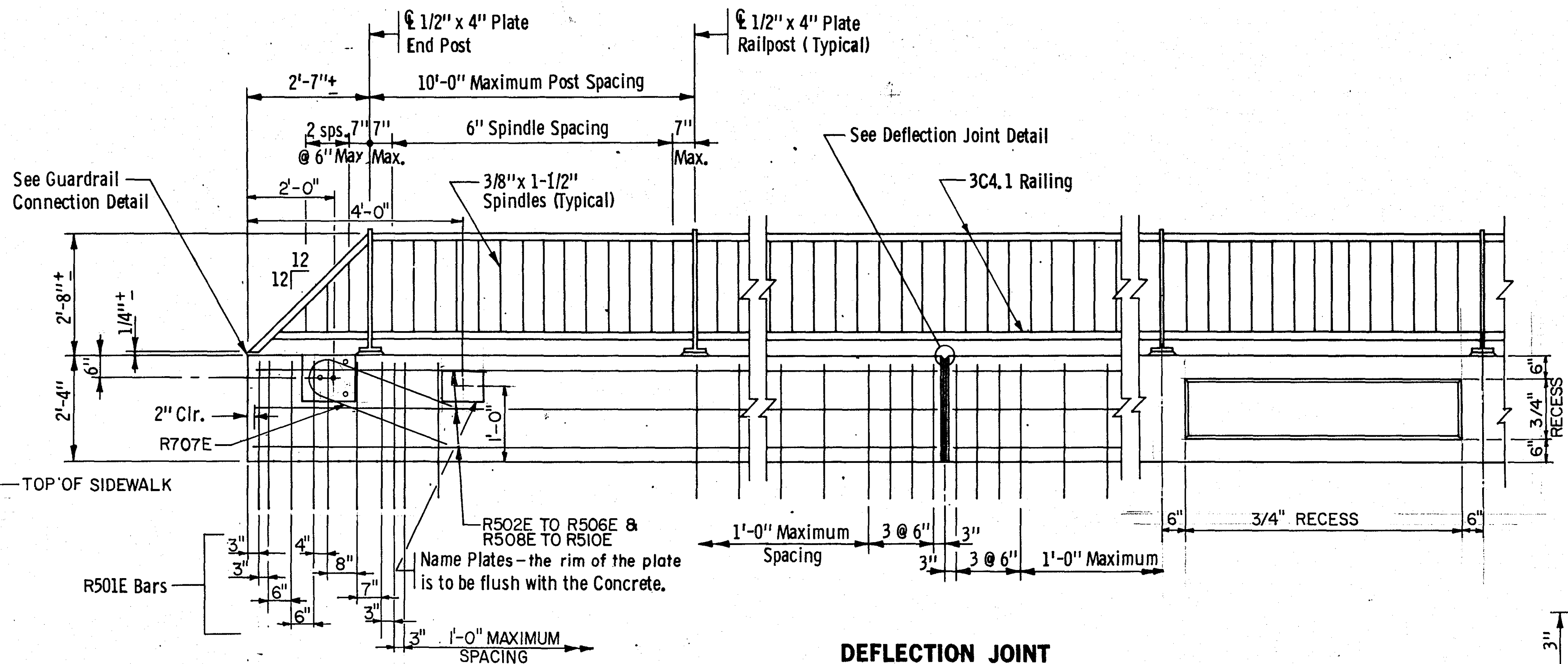


DRAINAGE SCHEMATIC

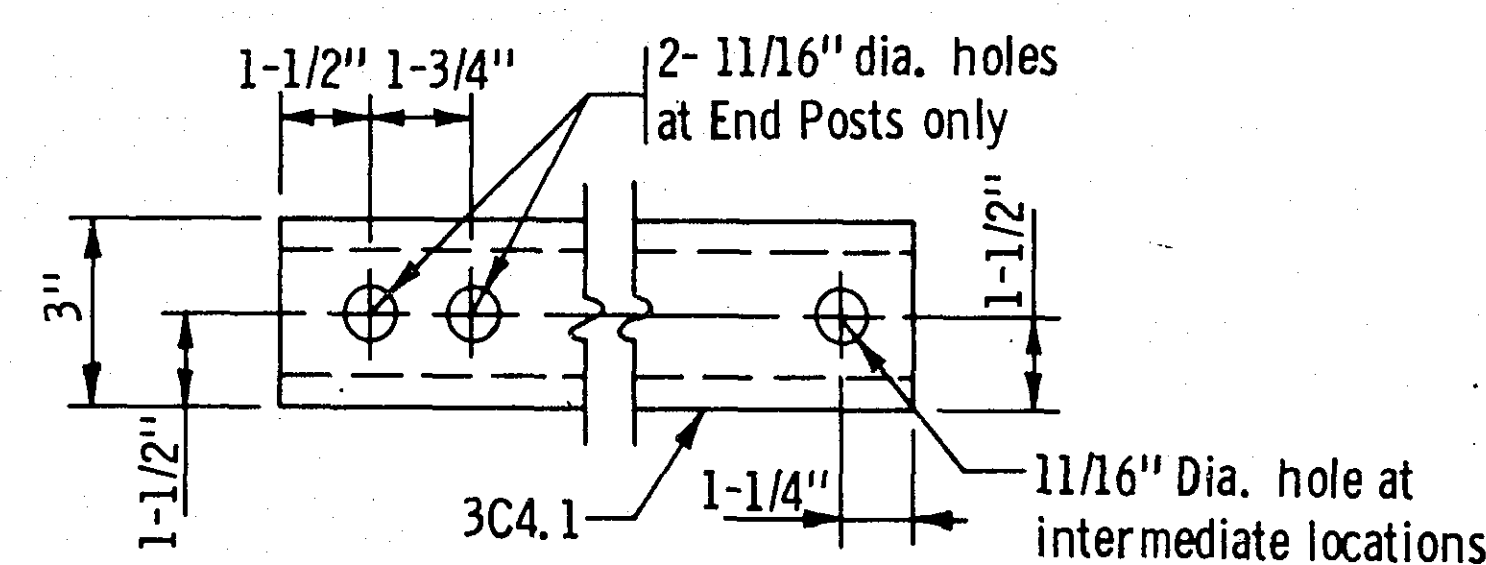
SUMMARY OF QUANTITIES DRAINAGE SYSTEM ③		
ITEM	UNIT	QUANTITY
4" I.D. PERFORATED DRAIN PIPE	L.F.	506
4" I.D. DRAIN PIPE	L.F.	120
4" I.D. PIPE CAPS	EA.	4
4" I.D. 90° ELBOW	EA.	18
4" I.D. 22 1/2° ELBOWS	EA.	4
4" I.D. 45° ELBOW	EA.	6
4" I.D. TEE	EA.	7
4" I.D. 45° WYE	EA.	2
SELECT GRANULAR BORROW (C.V.)	CU. YD.	4300



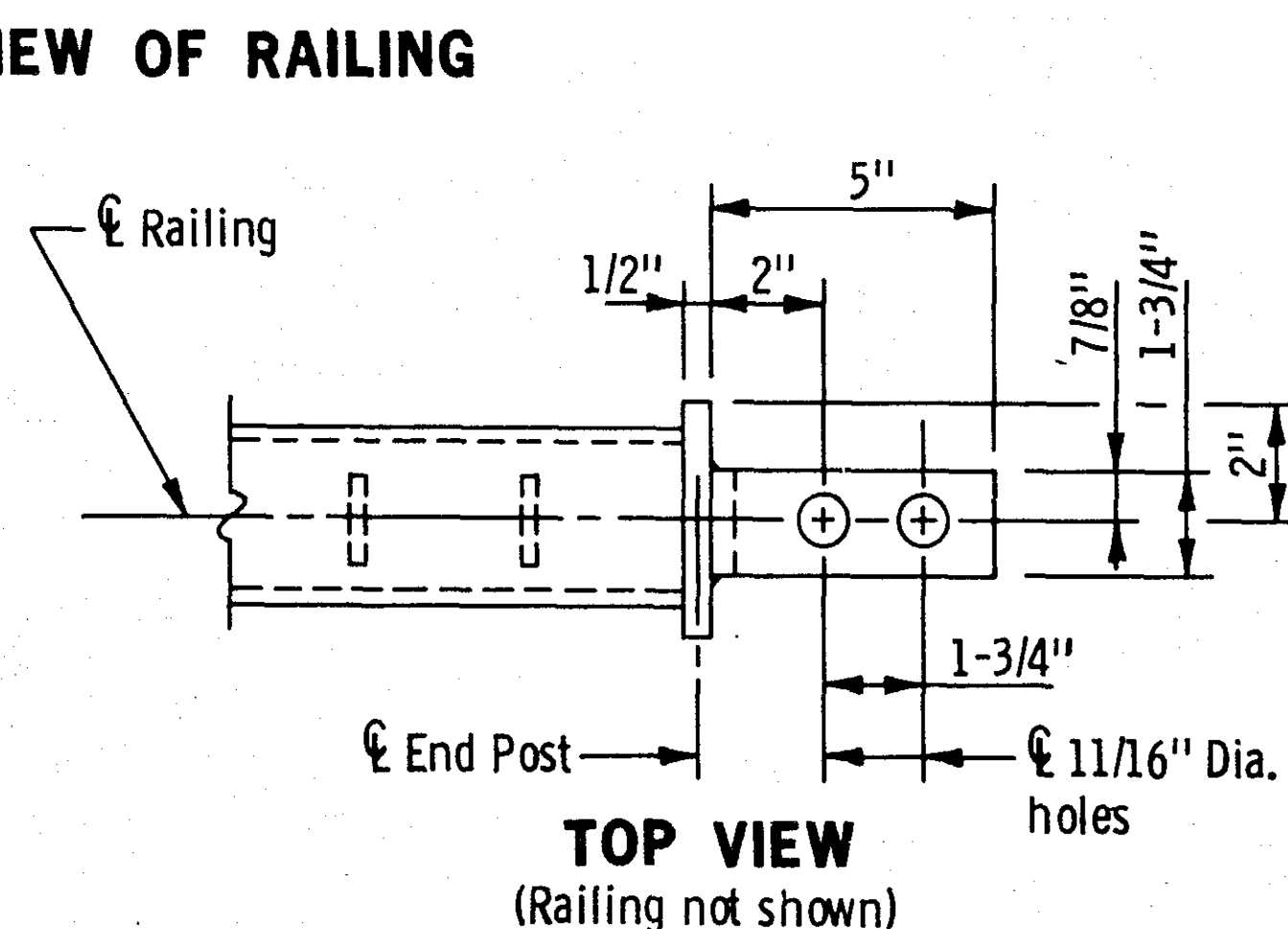
TYPICAL SECTION THRU RAIL



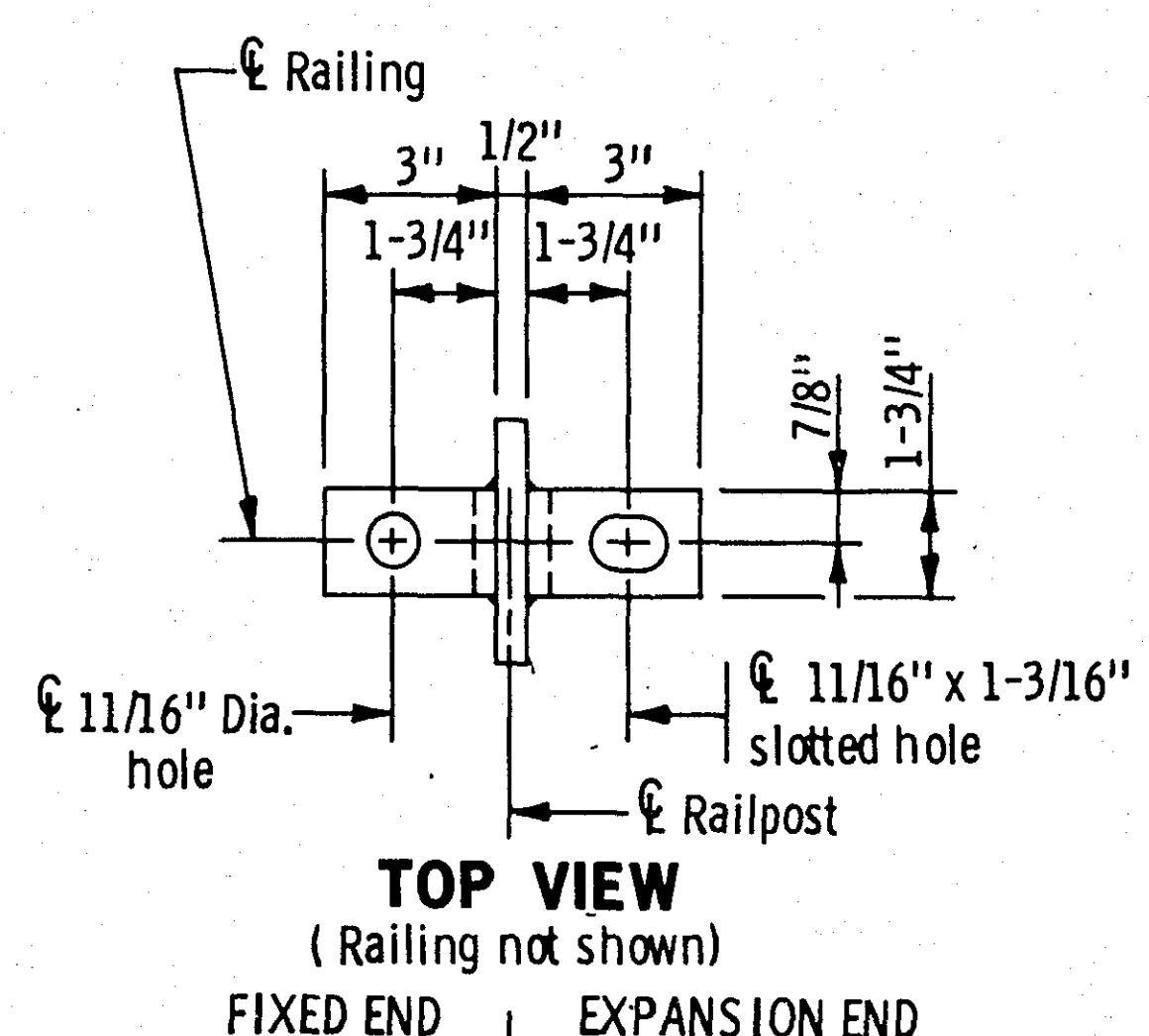
DEFLECTION JOINT



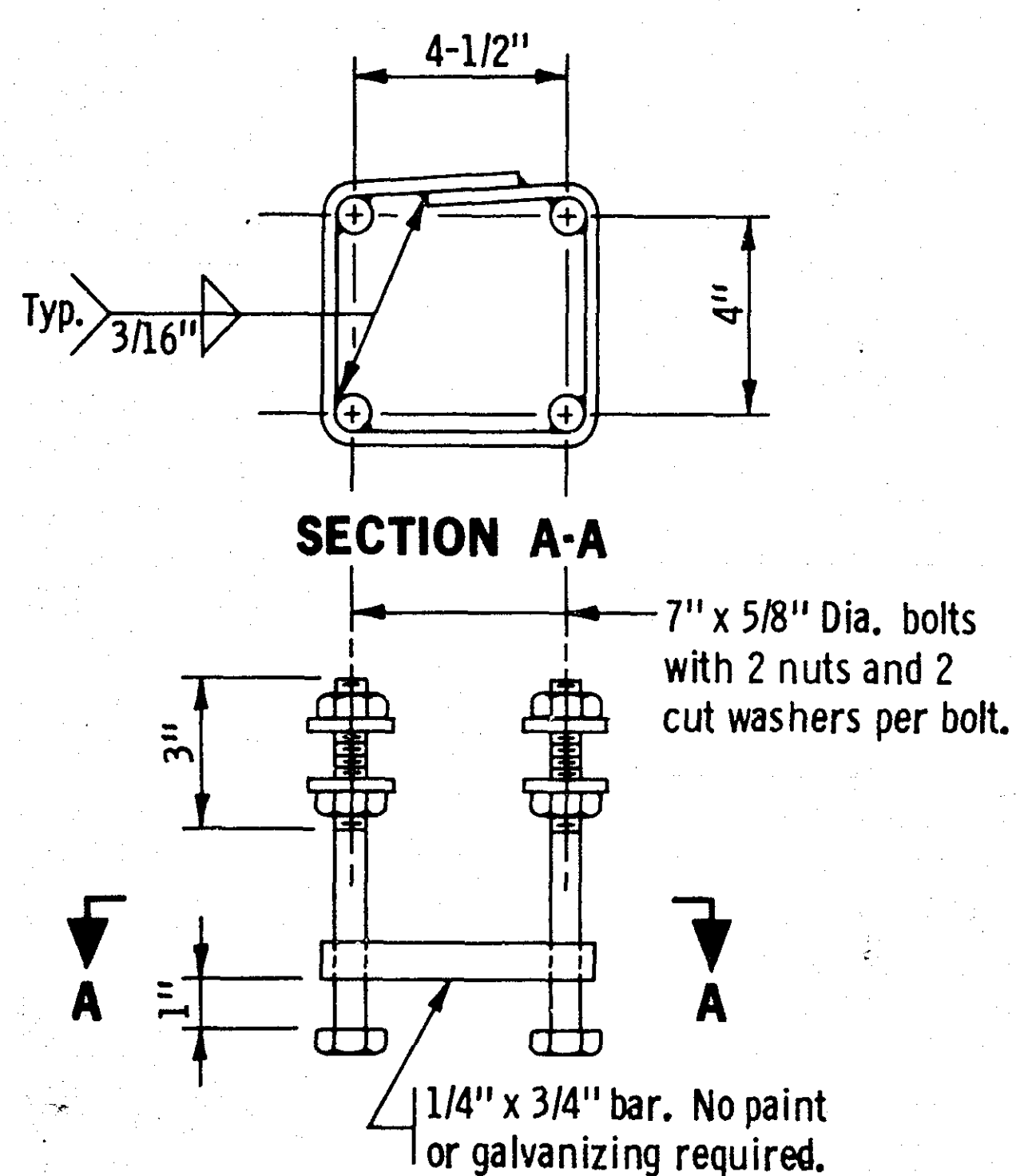
PLAN VIEW OF RAILING



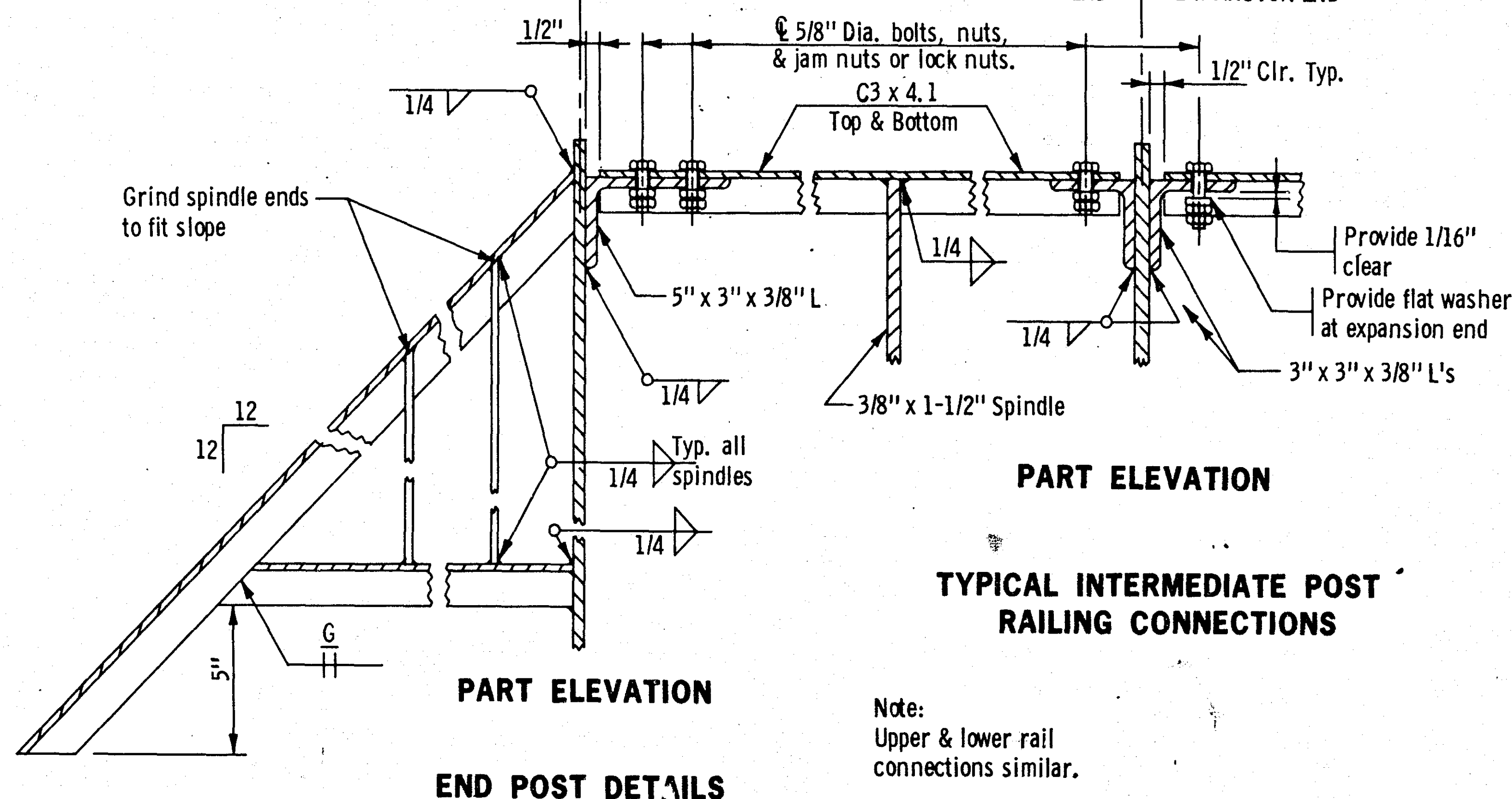
TOP VIEW
(Railing not shown)



TOP VIEW
(Railing not shown)
FIXED END EXPANSION END



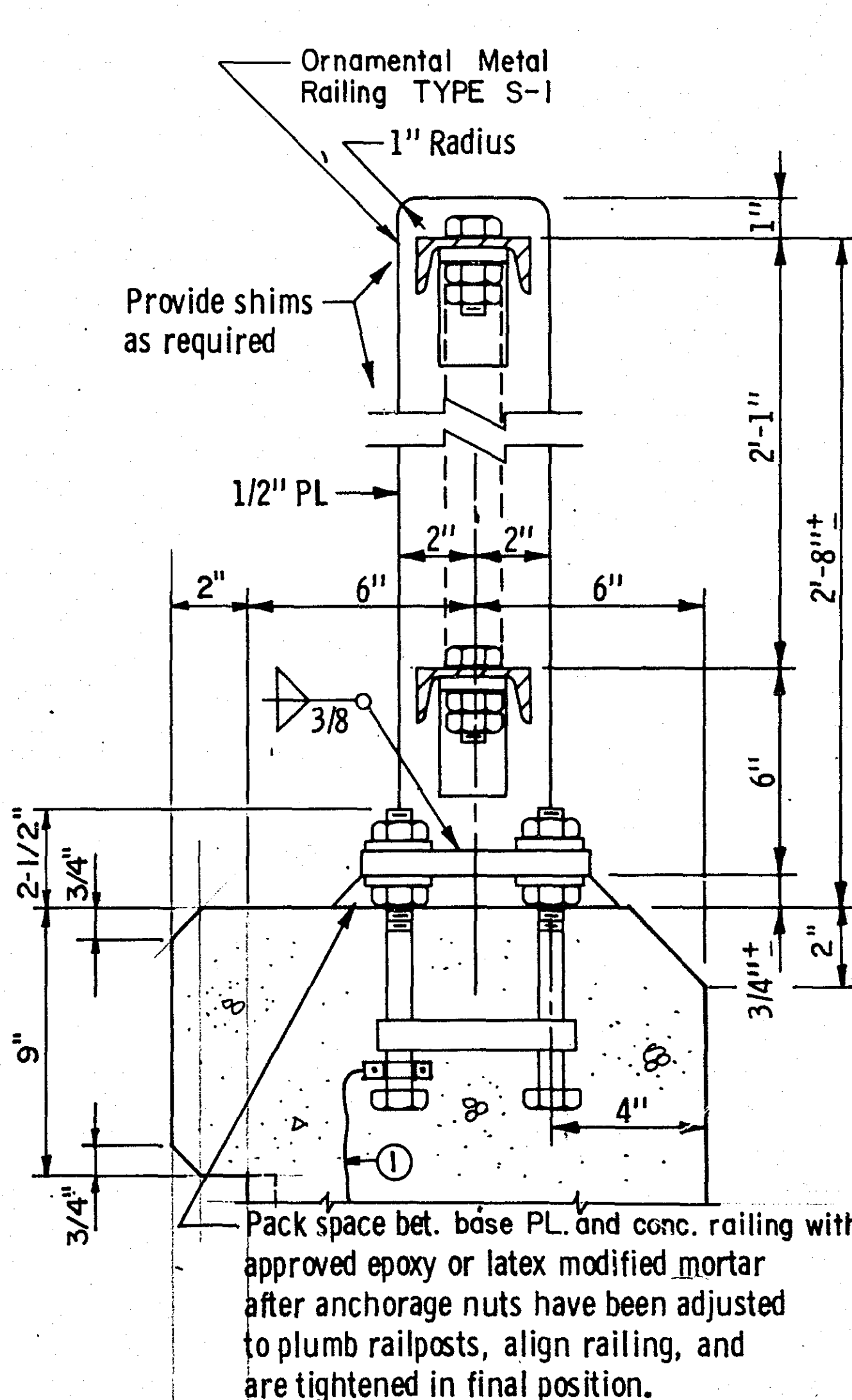
RAILPOST ANCHORAGE



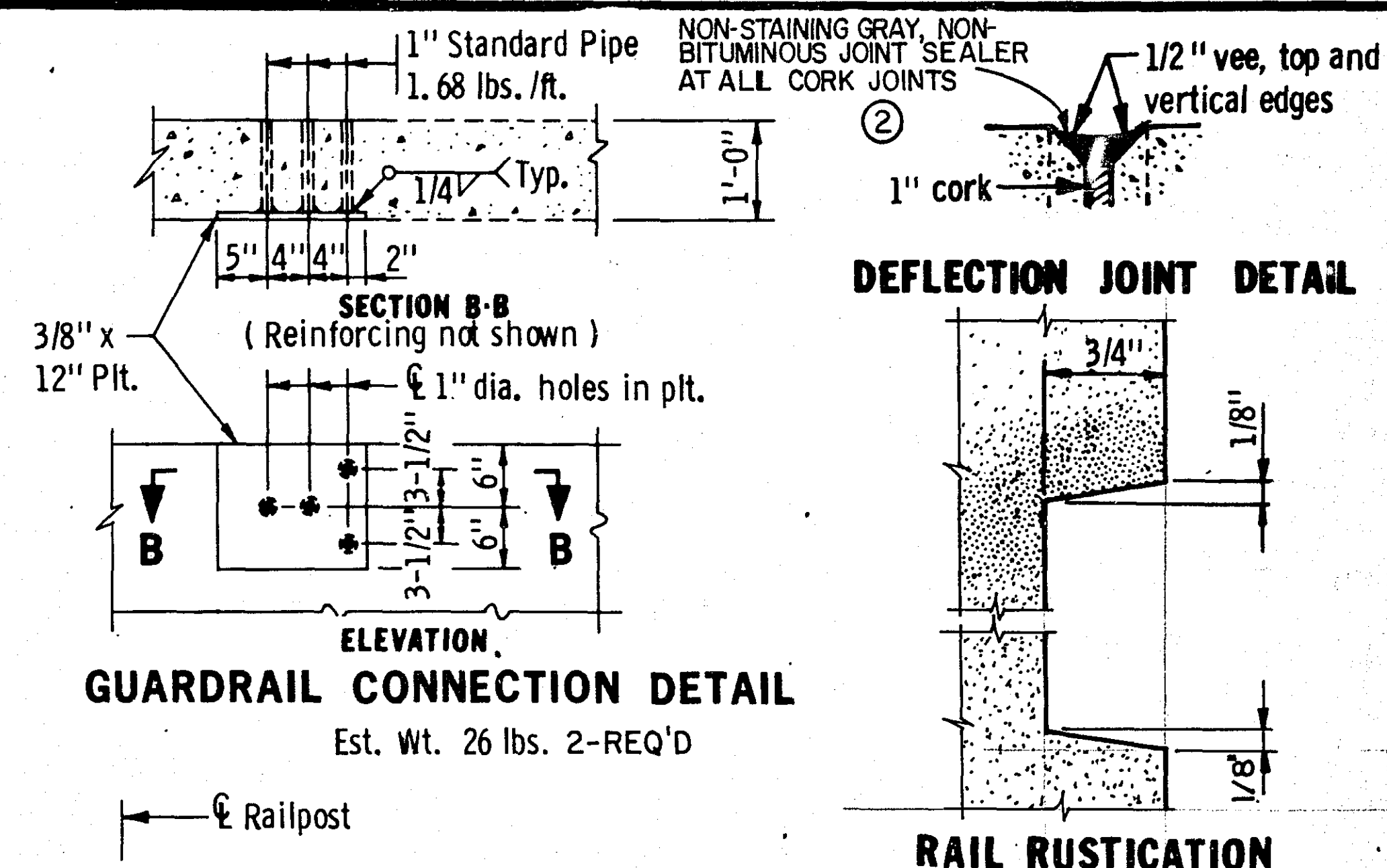
PART ELEVATION

TYPICAL INTERMEDIATE POST
RAILING CONNECTIONS

Note:
Upper & lower rail
connections similar.



TYPICAL RAILPOST



DEFLECTION JOINT DETAIL

GUARDRAIL CONNECTION DETAIL
Est. Wt. 26 lbs. 2-REQ'D

RAIL RUSTICATION

② JOINT SEALER SHALL CONFORM TO THE
REQUIREMENTS OF FEDERAL SPEC. TT-S-230,
TYPE 2, SINGLE COMPONENT.

① ATTACH RAIL ANCHORAGES AT LOCATIONS SHOWN ON SHEETS
8 & 11 TO GROUNDING RODS WITH A SOLID NO. 6 GAGE COPPER
WIRE WITH APPROVED TYPE METAL CLAMPS.

CONCRETE BASE=0.091 CUBIC YARDS PER FT.
CONCRETE BASE=369 POUNDS PER FOOT
GENERAL NOTES:
CONC. IN THE RAIL BASE SHALL BE MIX NO. 3Y46

THE GUARDRAIL CONNECTION IS INCLUDED IN THE PRICE BID FOR
OTHER ITEMS.

Bars marked with the suffix "E" shall be Epoxy Coated.
SEE SHEET 14 FOR RAILING BAR LIST & SUMMARY OF
QUANTITIES.

Length of concrete and "Ornamental Metal Railing" for payment is
measured between the outside faces of concrete parapet.

All railposts normal to grade.

Anchorage shall be accurately placed to provide correct alignment
of railing. Set normal to grade. SEE HEADWALL SHEETS & ALL
WINGWALL SHEETS FOR RAIL POST SPACING.

All structural steel material shall comply with Mn/DOT 3306.

Galvanize bolts, nuts, and washers per Mn/DOT 3392.

ORNAMENTAL METAL RAILING TO BE PAINTED BLACK AS PER
SPECIAL PROVISIONS.

GALVANIZE METAL RAILING AFTER FABRICATION PER MN/DOT
3394.

ALL FASTENERS PER SPEC. 3391.2A. FASTENERS & BRACKETS
TO BE GALVANIZED PER SPEC. 3392 AND COATED WITH A
POLYESTER COATING AS PER SPEC. 3529-5.

ALL METAL RAILING TO BE GROUNDED.
Price bid for "Ornamental Metal Railing" includes the
railpost anchorage, grounding system (2 locations) and all
material above top of concrete parapet.

S.P. 62-630-21

Revised: June 10, 1983

Approved: May 15, 1980

TITLE:
CONCRETE PARAPET & ORNAMENTAL
METAL RAILING TYPE S-1

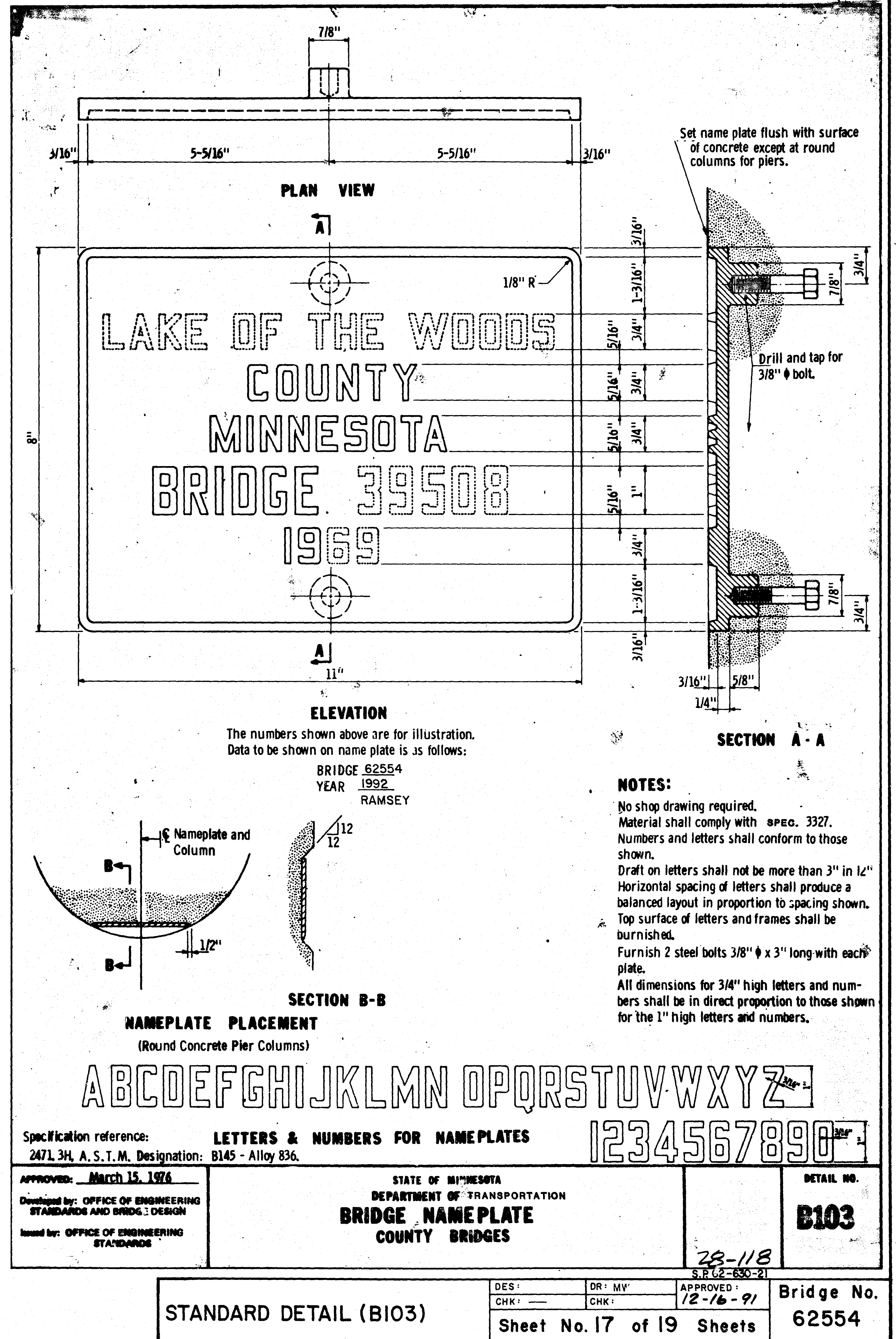
DES: — DR: MW
CHK: — CHK: —
APPROVED: 12-16-91
Sheet No. 16 of 19 Sheets

Bridge No.
62554

(MODIFIED)

FIG. 5-397.154

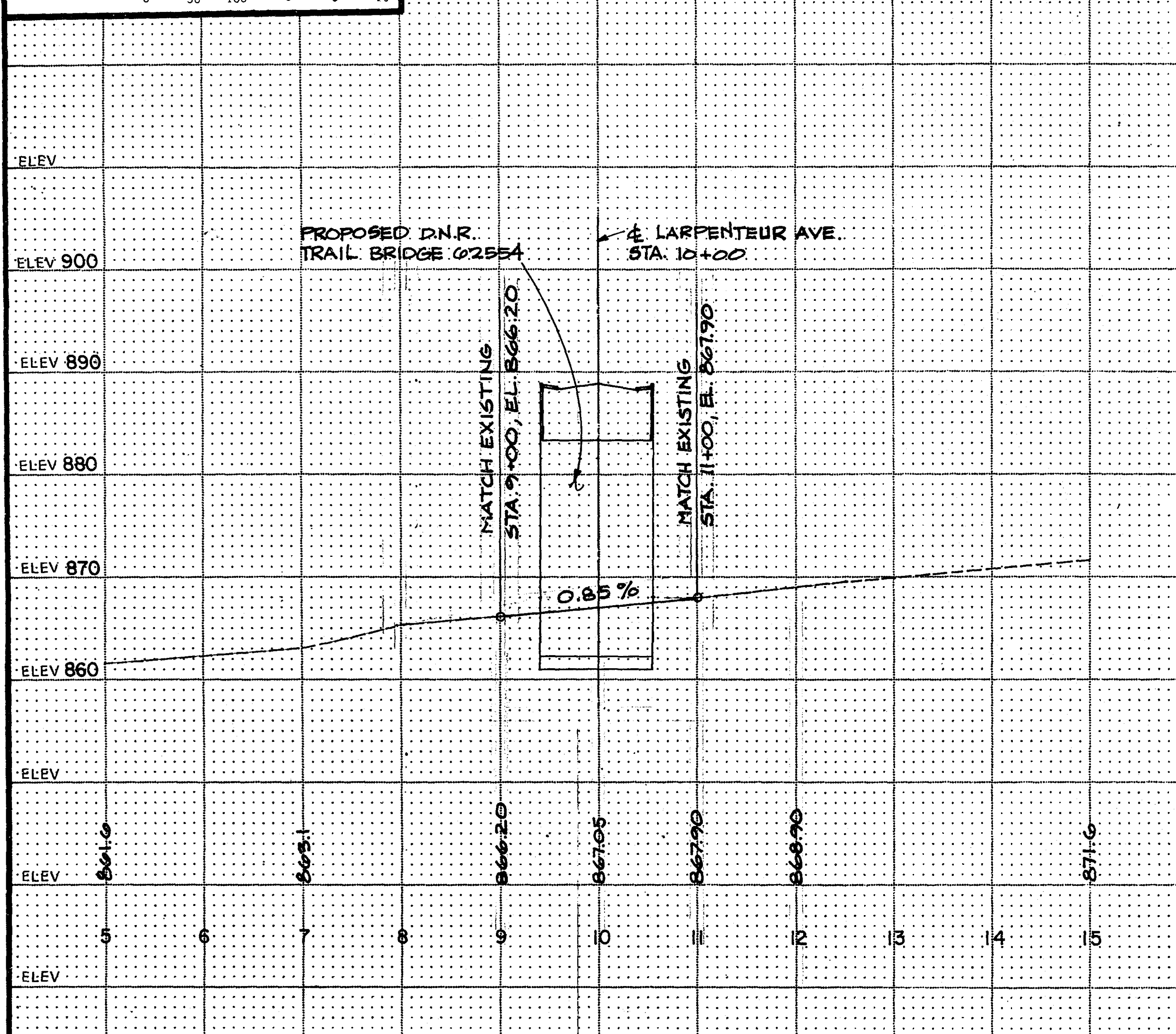
28-118



CONTRACTED PROFILE

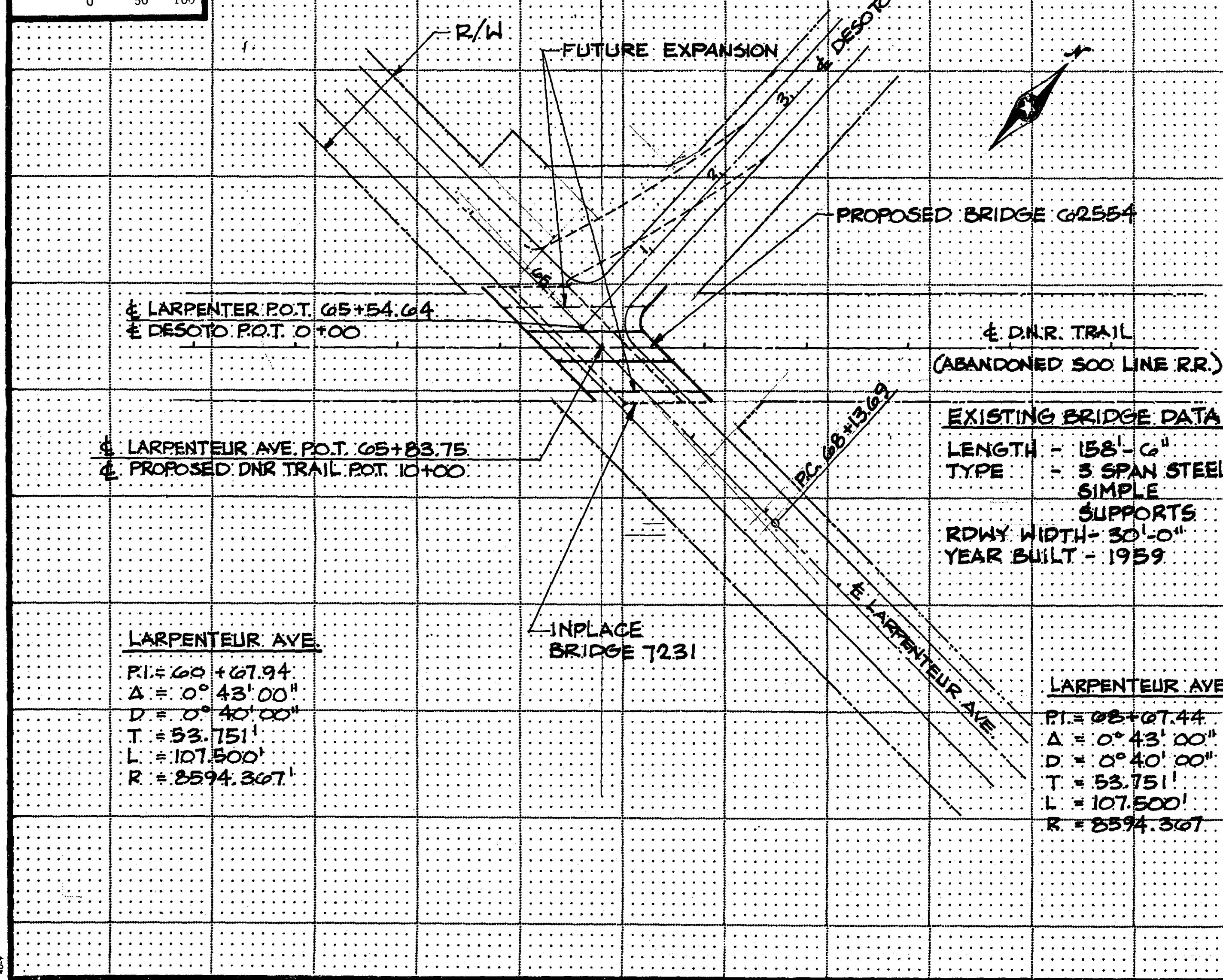
SCALE: HOR. 1"=100' VER. 1"=10'

CENTERLINE PROPOSED D.N.R. TRAIL



PLAT

SCALE: 1"=100'

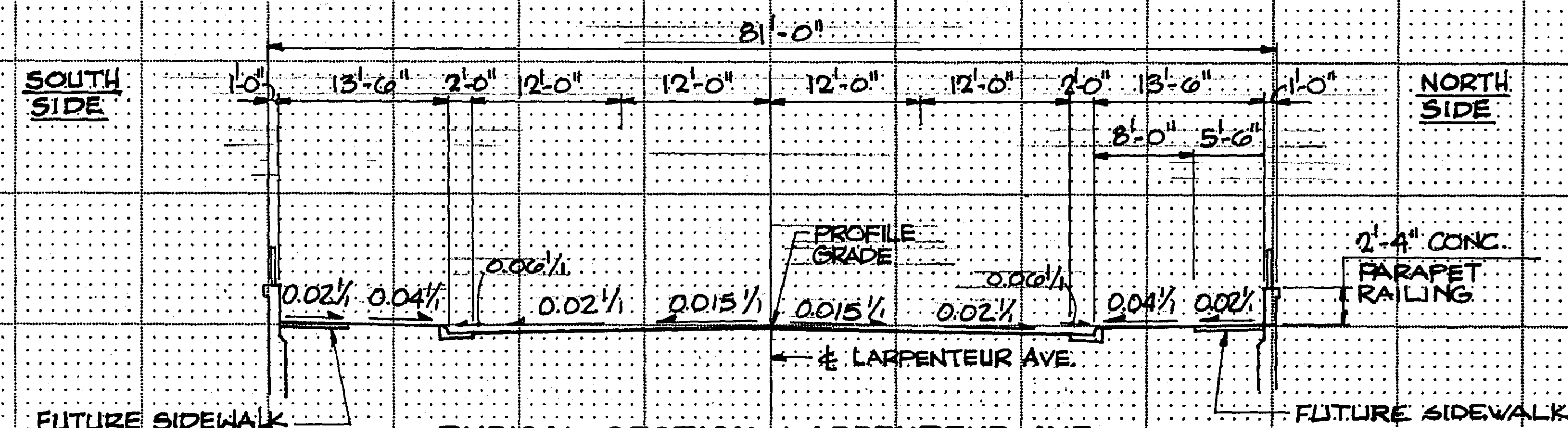
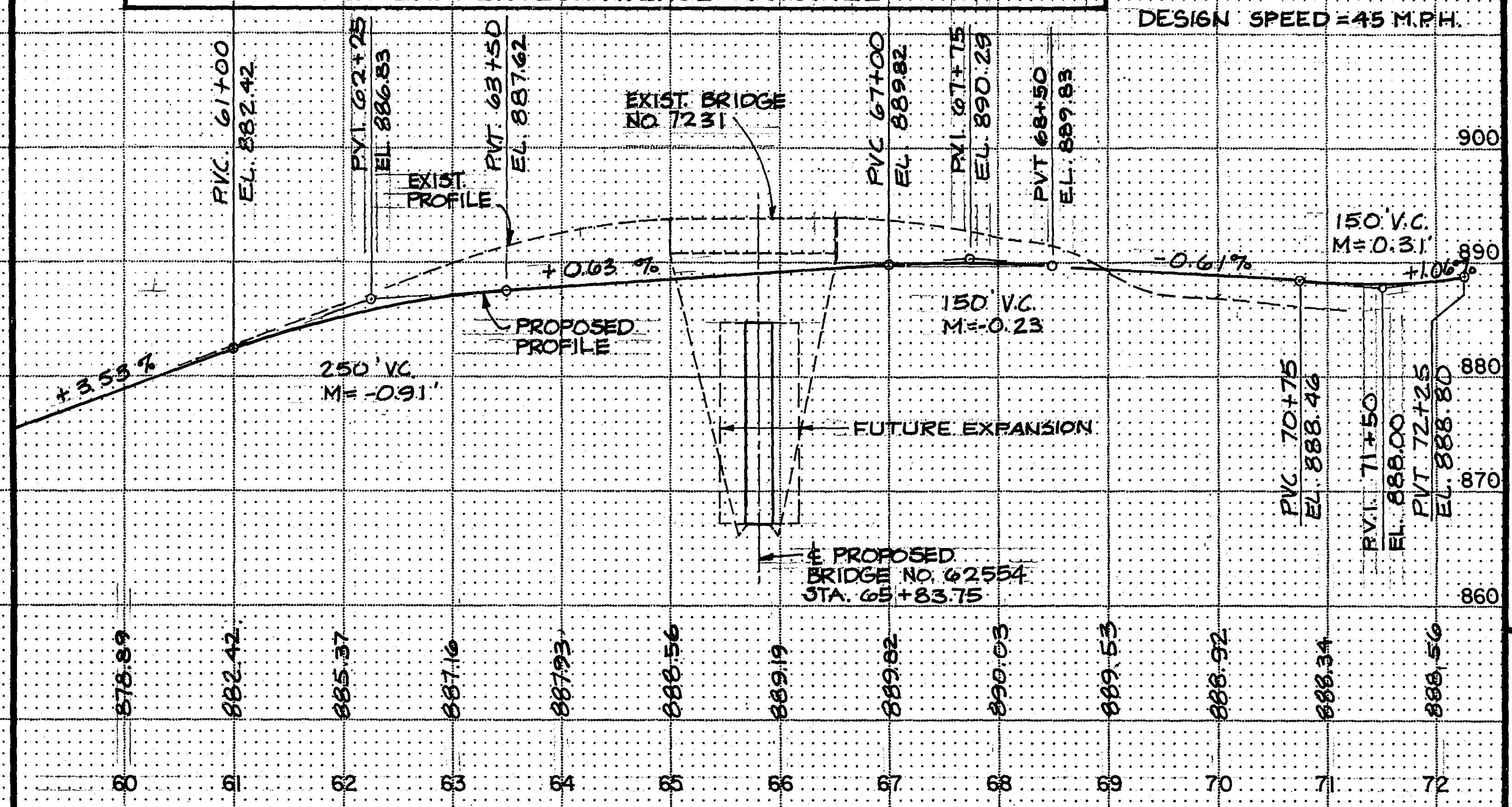


TYPICAL SECTIONS & PERTINENT DATA

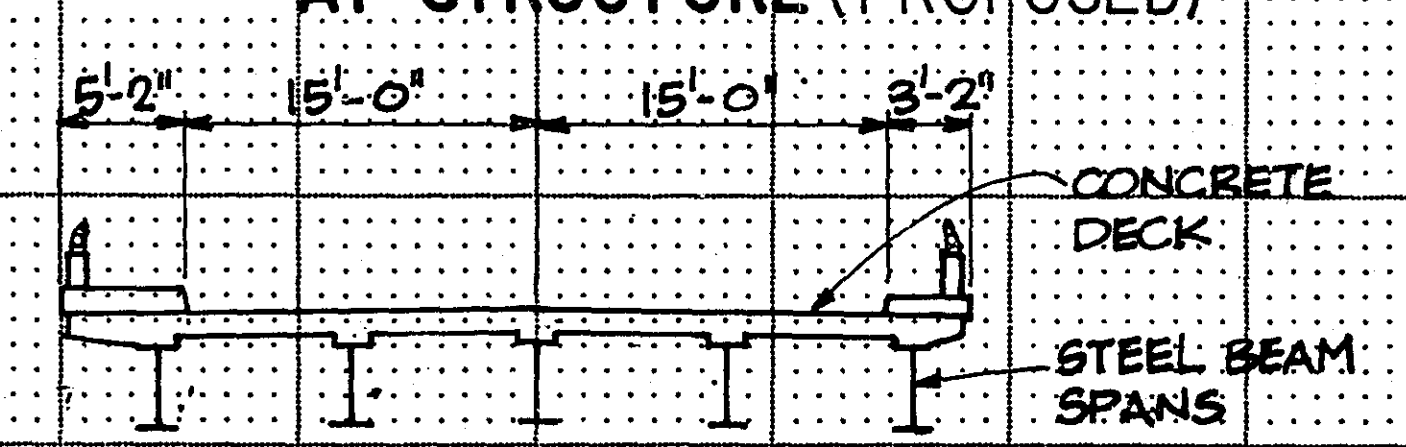
SCALES AS SHOWN

CENTER LARPENLEUR AVENUE PROFILE

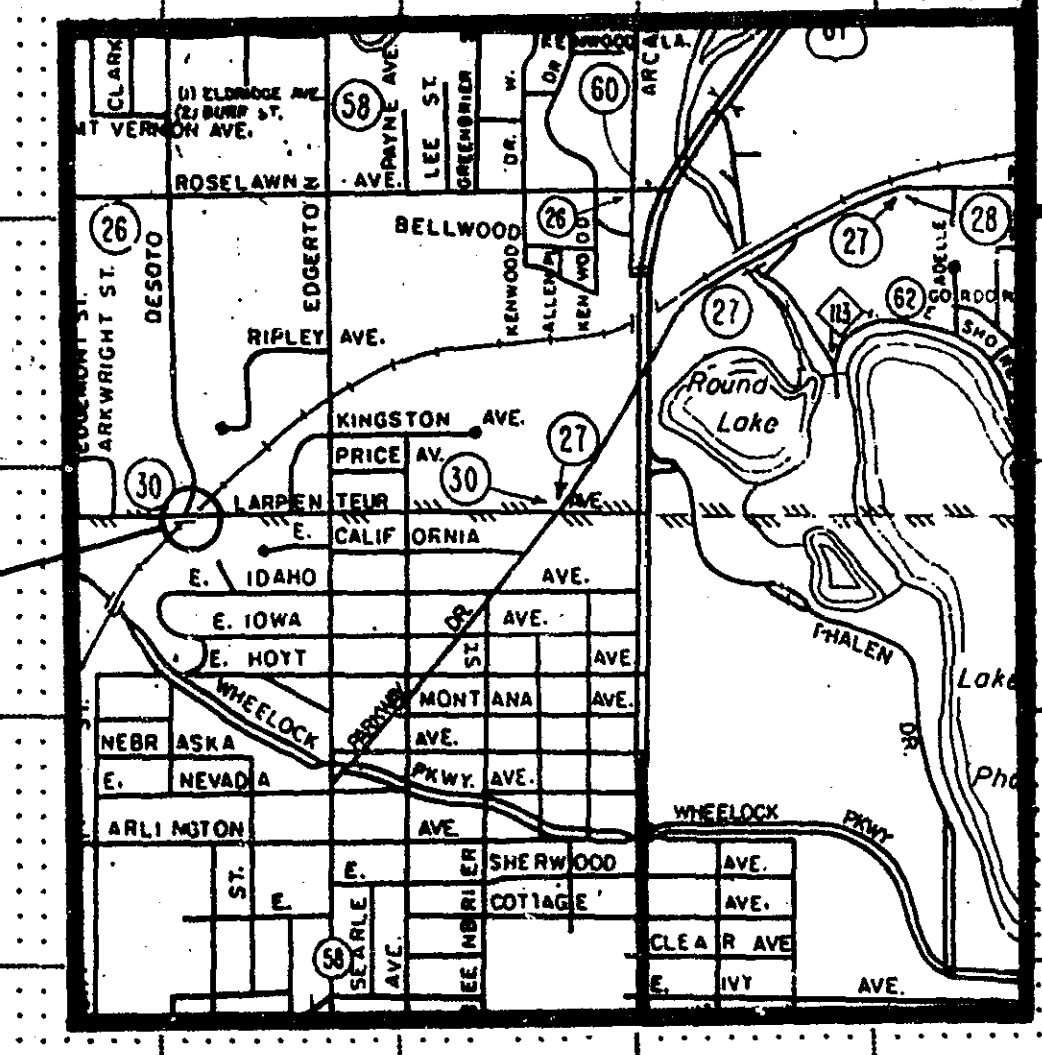
DESIGN SPEED = 45 M.P.H.



TYPICAL SECTION LARPENLEUR AVE. AT STRUCTURE (PROPOSED)



SECTION AT LARPENLEUR AVE. (EXISTING)



MN Proj. No. BRM M 5103 (1)

LOCATION ENGINEER'S OBSERVATIONS AT BRIDGE SITE

- Special features: Waterfalls, dams, floods, ice, debris, sliding banks, recreational boating.
- Other bridges or culverts over the same stream (particularly structures which carry high water without overflow of roadway): Given location, type, length, height above high water, cross-sectional area etc.
- Apparent highwater elevation..... Obtained from.....
- Other data: Approx. velocity of water at time of survey.....

HYDRAULIC ENGINEERS RECOMMENDATION

DATE

Stream or ditch designation
 Drainage area
 Max. flood on record Design flood (..... yr. freq.) C.F.S.
 Max. observed highwater elevation Design highwater elevation.....
 Design mean velocity through structure F.P.S.
 Low superstructure at or above elevation
 Flowline elevation Skew angle.....
 Waterway area req'd. below elevation = ... Sq. Ft. at Rt. angles to channel
 In the interest of flood plain zoning the regional flood (100 yr. freq.) is C.F.S. at stage and mean velocity of F.P.S. with Ft. swellhead.
 The above recommendation will provide a structure of adequate waterway to pass the regional flood within criteria established by the Dept. of Natural Resources.

FOUNDATION ENGINEERS RECOMMENDATION

DATE

SEE SUBSURFACE INVESTIGATION SP87-159
 DATED 9-10-87

Bridge survey sheets made from: FIELD SURVEY DATA TAKEN ON
 9-2-87, 10-21-87

Bench mark elevation 894.27 (M.S.L. 1929 Adj.)
 Location: DISK S.E. WINGWALL BRIDGE 7231
 LARPENLEUR AVE. OVER SOO LINE RR.

MINNESOTA
 DEPARTMENT OF TRANSPORTATION

BRIDGE SURVEY

AT MILE POINT ON C.S.A.H. 30
 (T.H., C.S.A.H., C.R. etc.)
 PROPOSED BRIDGE LOCATED 0.5 MILES EAST OF
 JCT. TH. 35E & LARPENLEUR AVE.
 SEC. 17 TWP. 29 R. 22
 CITY OF ST. PAUL / COUNTY RAMSEY
 MAPLEWOOD

BRIDGE NO. 62554
 12-16-91 28-118

Area No.

Job No.

State Proj. No. S.P. 62-630-21

Sheet No. 18 of 19 Sheets

