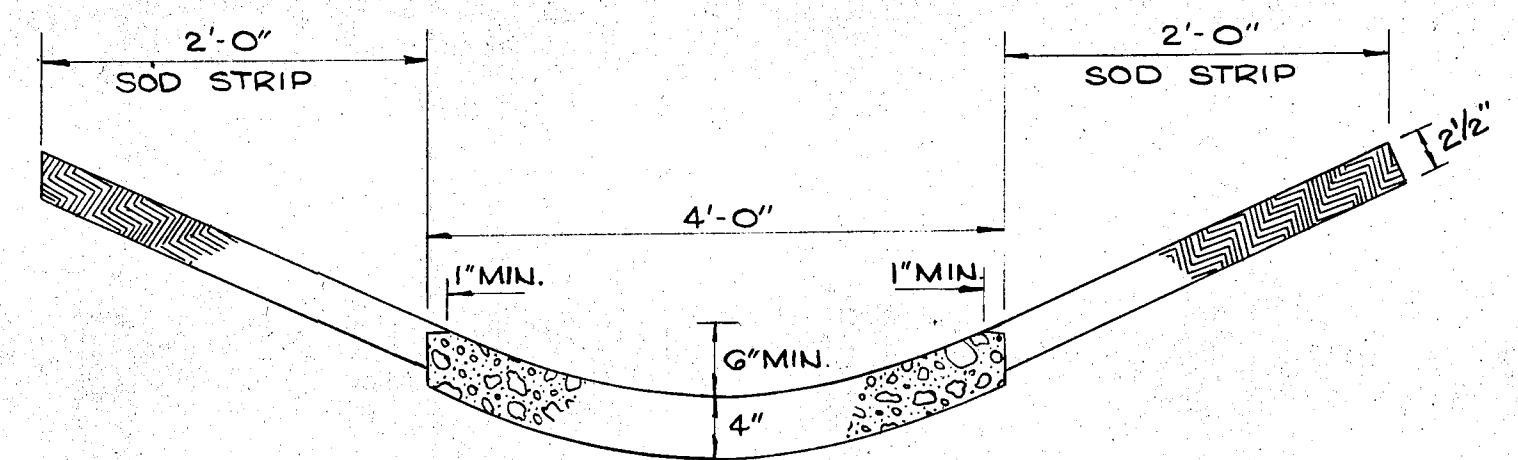


SECTION UNDER-BRIDGE - CUMMINGS ROAD & CHANNEL RELOC.

NOTE: THE EXISTING PAVEMENT ON CUMMINGS ROAD IS TO REMAIN IN PLACE, AND THE CONTRACTOR WILL BE REQUIRED TO REPAIR ALL PAVEMENT DAMAGED BY HIS EQUIPMENT OR CONSTRUCTION OPERATIONS AT HIS OWN EXPENSE, DURING THE CONSTRUCTION OF THIS PROJECT.



SODDED INTERSTATE DITCHES

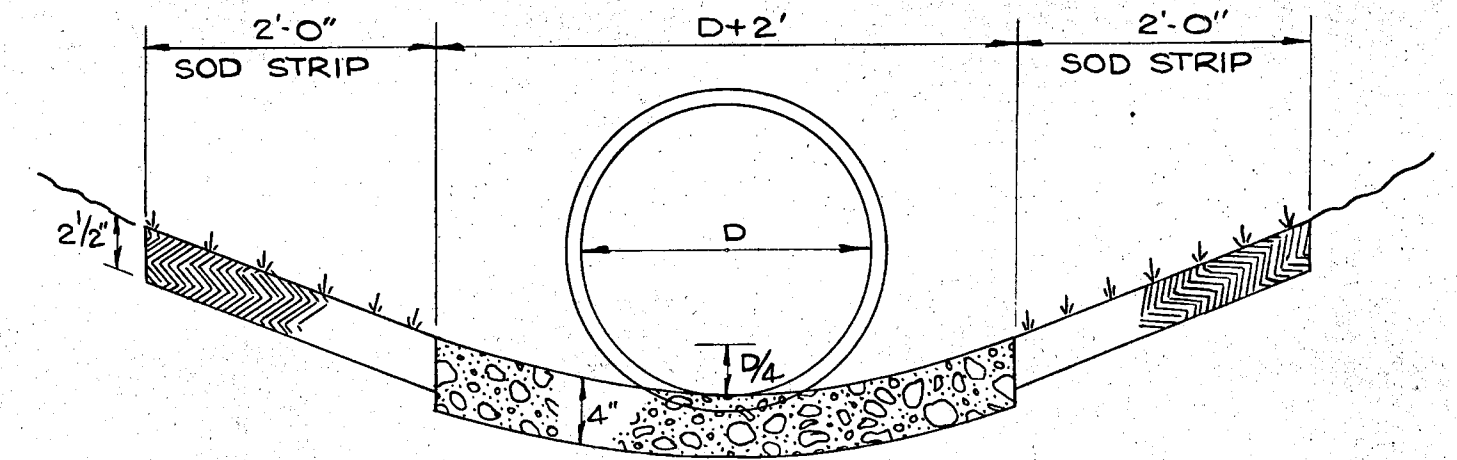
NOTES REGARDING DITCHES

ALL EARTHEN DITCHES HAVING GRADES 3% OR MORE ARE TO BE PAVED AND THOSE WITH GRADES LESS THAN 3% ARE TO BE SODDED. ALSO, THE CONTRACTOR WILL BE REQUIRED TO PAVE CERTAIN OF THE DITCHES HAVING GRADES LESS THAN 3% WHERE THE ENGINEER DEEMS NECESSARY.

ONE-HALF (1/2) INCH TRANSVERSE PREMOULDED FIBER EXPANSION JOINTS WILL BE REQUIRED AT 60-FOOT INTERVALS IN ALL CONCRETE DITCHES, COST TO BE INCLUDED IN UNIT PRICE BID FOR ITEM 135-4b, CLASS 'A' CONCRETE.

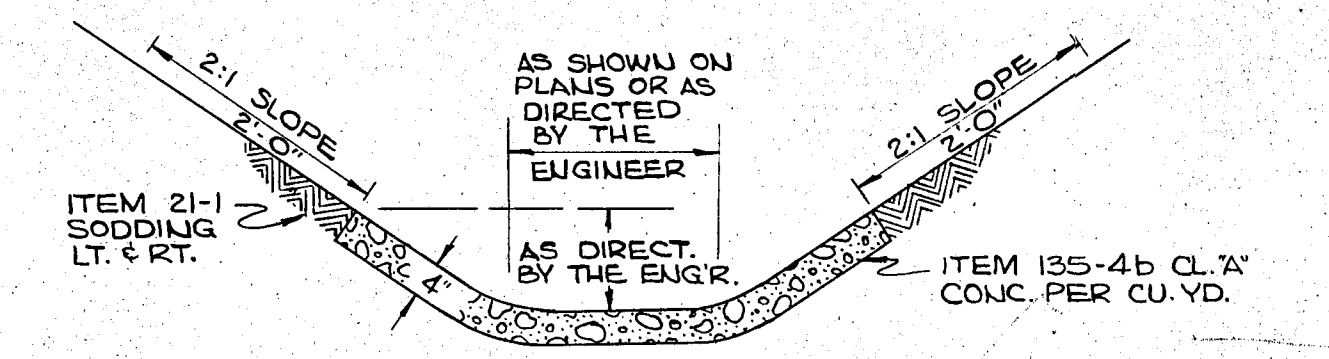
THE CONTRACTOR WILL BE REQUIRED TO SHAPE DITCHES TO THE SPECIFIED DESIGN. ALL COSTS OF SHAPING (AND FORMING, IF REQUIRED) TO BE INCLUDED IN UNIT PRICE BID FOR ITEM 135-4b, CLASS 'A' CONCRETE.

A STRIP OF SOD 2'-0" IN WIDTH WILL BE REQUIRED ON BOTH SIDES OF ALL PAVED DITCHES, TO BE PAID FOR UNDER ITEM 21-1, SODDING.



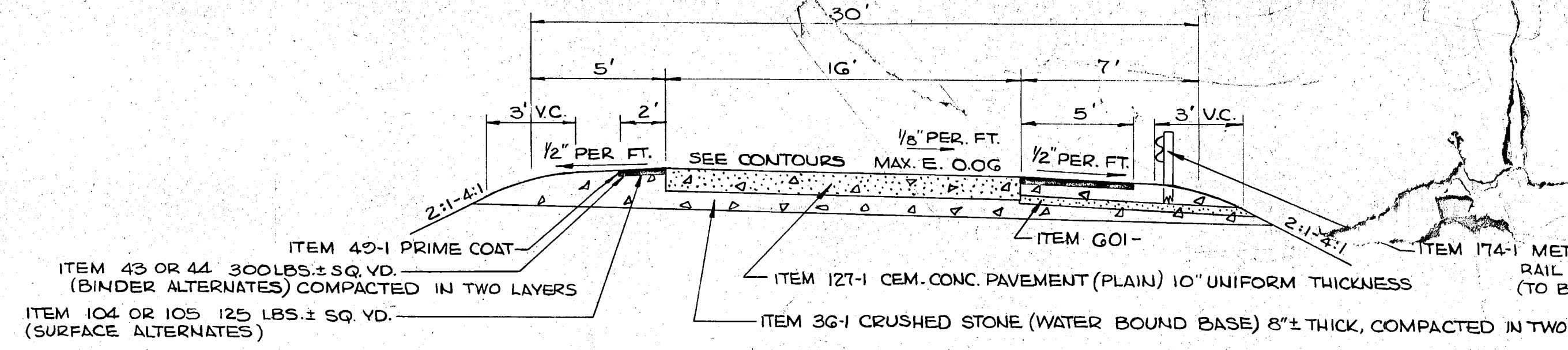
DETAIL OF FLAT BOTTOM DITCHES

NOTE: DETAIL FOR PAVED (CONC.) BERM DITCH SAME AS FOR PAVED (CONC.) ROADWAY DITCH TO BE USED ON TOP OF CUTS TO INTERCEPT WATER WHERE AND AS DIRECTED BY THE ENGINEER.

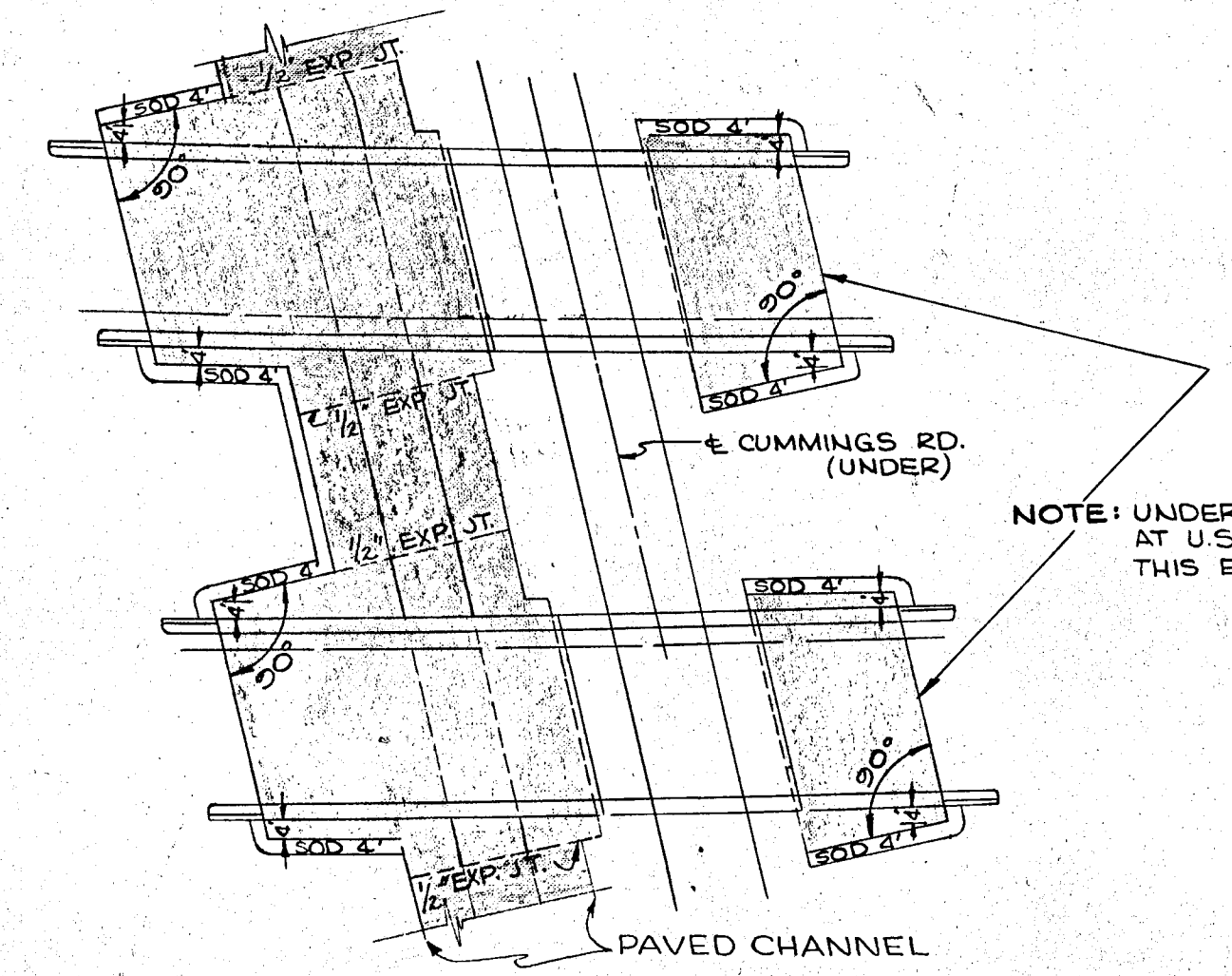


SKETCH SHOWING UNDERDRAINS

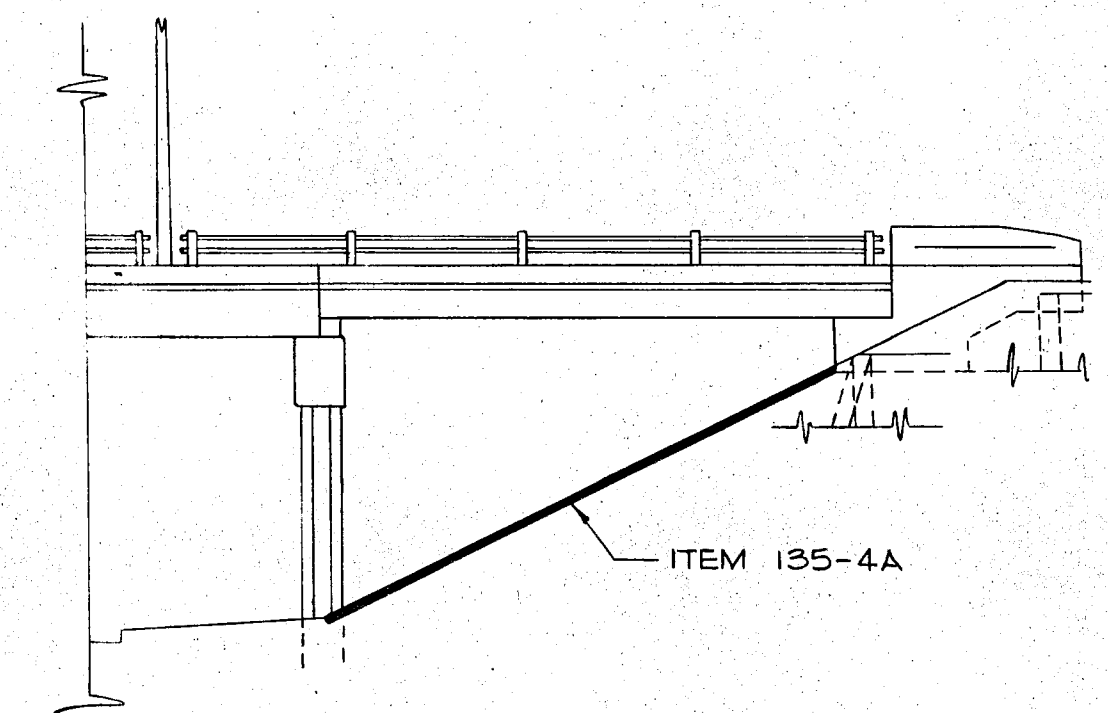
- * PIPE ALTERNATES:
- 6" PERFORATED C.M. PIPE OR
 - 6" PERFORATED ALUMINUM ALLOY C.M. PIPE (SEE SPECIAL PROVISION REGARDING SECTION 235) OR
 - 6" PERFORATED CONCRETE PIPE OR
 - 6" PERFORATED BITUMINIZED-FIBER PIPE (AASHTO M 177-60-ALL PROVISIONS OF SECTION 176 APPLY, EXCEPT FOR MATERIAL) OR
 - 6" PERFORATED CLAY PIPE OR
 - 4" SEMICIRCULAR METAL PIPE WITH CORRUGATED TOP SHIELD (SEE SPEC. PROV.)



TYPICAL RAMP SECTION



PLAN-UNDER-BRIDGE SLOPE PAVING AT CUMMINGS RD.



TYPICAL SKETCH OF PAVED SLOPES UNDER BRIDGES

(SEE TYPICAL CROSS-SECTION FOR CUMMINGS RD. SLOPE PAVING)

NOTE: REGARDING PAVED SLOPES UNDER BRIDGE

PAVE SLOPES AND EXPOSED EARTH UNDER BRIDGE WITH 4" THICK CONCRETE SLAB REINFORCED WITH WIRE FABRIC REINFORCEMENT AT 58 LBS. PER 100 SQ. FT. THE SLAB SHALL EXTEND THE WIDTH OF THE STRUCTURE PLUS 4" ON EACH SIDE AND RUN PARALLEL TO THE STRUCTURE, UNLESS OTHERWISE SHOWN.

THE WIRE FABRIC REINFORCEMENT SHALL HAVE NO.4 WIRES RUNNING BOTH TRANSVERSE AND LONGITUDINAL AT 6" CENTER. IT SHALL BE PLACED AT ONE HALF THE DEPTH OF THE SLAB, SHALL EXTEND WITHIN 3" OF THE EDGES OF THE SLAB AND A 12" LAP SHALL BE REQUIRED ON ALL SHEETS, COST TO BE INCLUDED IN UNIT PRICE BID FOR ITEM 135-4a.

1/2" PREMOULDED JOINTS WITHOUT LOAD TRANSFERS SHALL BE FORMED ABOUT ALL STRUCTURES AND FEATURES PROJECTING THROUGH, INTO OR AGAINST THE SLAB. THE SLAB SHALL BE GROOVED PARALLEL AND AT RIGHT ANGLES TO THE E OF THE ROAD UNDER THE BRIDGE.

1/2" PREMOULDED JOINTS SHALL BE REQUIRED AT 60' INTERVALS ALONG PAVED CHANNEL ADJACENT CUMMINGS ROAD.

ESTIMATED UNDER-BRIDGE SLOPE PAVING QUANTITIES

I-24 OVER CUMMINGS RD.	327.09* CU. YD.
I-24 OVER US 41	101.28 CU. YD.
TOTAL PAVING UNDER BRIDGES	428.37* CU. YD.

* INCLUDES ALL PAVEMENT FOR THE CHANNEL ADJACENT CUMMINGS ROAD. SEE SHT NO. 10.

ELECTRICAL LIGHTING SPECIFICATIONS

LIGHTING ON BRIDGE:

Lighting Standards: See Special Provisions.

All lighting standards shall provide luminaire mounting height of approximately 30 feet, measured from roadway pavement.

Brackets on lighting standards shall provide approximately 10 feet spread for two-lane bridges and 12 feet spread for all others.

All lighting standards shall have hand hole (approx. 4" x 6-1/2") with cover near base of pole, located 90° off bracket center line. Where required, drill in field suitable openings in base of lighting standards for conduits.

Luminaires, horizontal burning, 1-1/4" slipfitter for ASA H-33, 400 W. mercury vapor lamp, natural aluminum finish, IES type III light distribution, similar to G.E. Co. Type M-400, Cat. No. CT04G009 or Line Material Co., Cat. No. LM10A5. Luminaire to contain regulator or constant wattage ballast, 460 volts or 230/460 volt rating preferred, capable of maintaining lamp watts within plus or minus 2% with a plus or minus 13% variation in input voltage. The bidder shall be required to furnish with his bid, either drawings, brand name and catalog number or other such information which will definitely identify the luminaires which he proposes to furnish.

LIGHTING UNDER BRIDGE:

Luminaires to be fluorescent Form 106U, G.E. catalog No. 2F106UB1 (without ballast) and G.E. catalog No. 2F106UB5AB (with 480-volt internal 2-lamp ballast) connected in pairs; or approved equal.

Lamps to be G.E. Co. type F72T12/CW/HO; or approved equal.

GENERAL:

Conduits to be rigid hot dip galvanized steel, sizes as shown on drawings. Provide standard watertight expansion sleeve, suitably grounded, at all expansion joints in bridge deck and as otherwise called for on plans. Expansion sleeves to be Crouse-Hinds type, catalog No. XJ-44 for 1-1/4" conduit, catalog No. XJ-34 for 1" conduit, catalog No. XJ-24 for 3/4" conduit, or approved equal.

Junction boxes - Sizes shall be as shown on drawings. Boxes shall be drilled to provide the connections shown and shall be of cast iron watertight construction, with removable cover (checkered on top) fastened with brass screws. Provide galvanized bushings and lock nuts at connections of conduits to junction boxes.

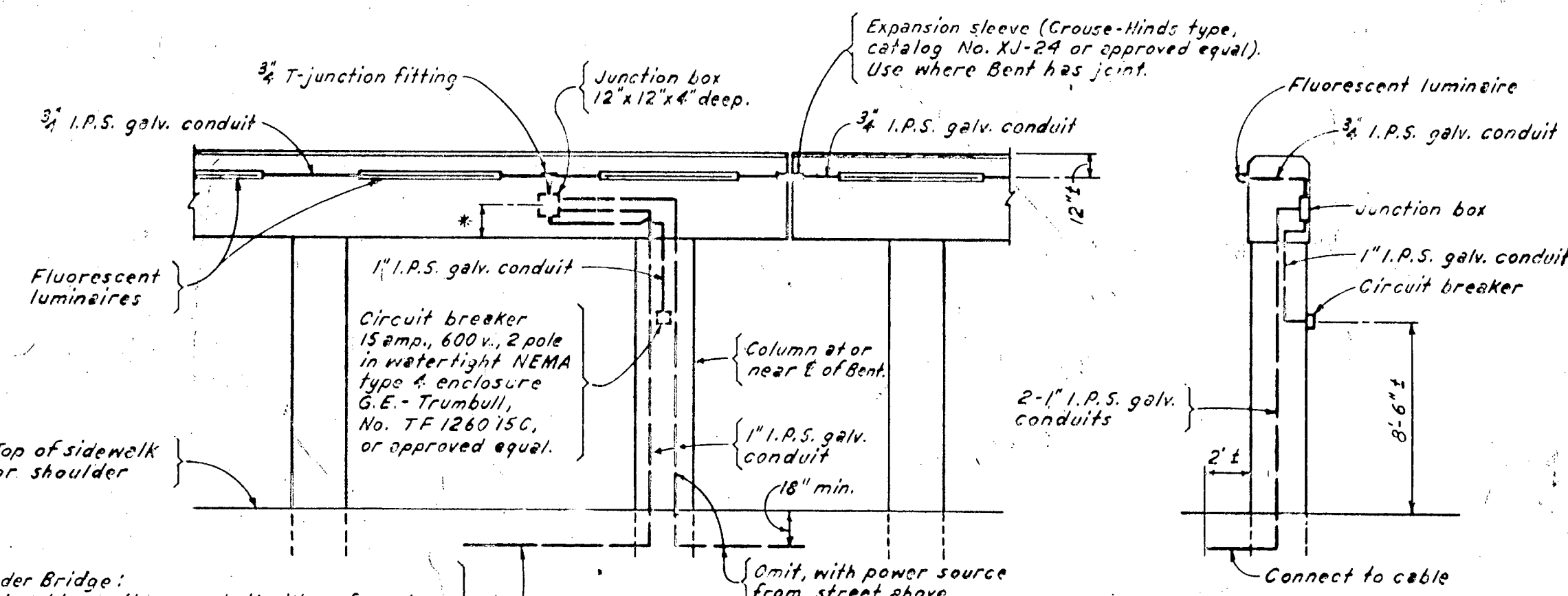
Conductors - All wiring inside the conduits and light poles shall be 600 volt, rubber insulated, General Electric Co. Versatol-Geoprene; or approved equal.

National Electric Code - Where not covered by these specifications, all other material and workmanship to be incorporated in this project shall be in strict conformance with requirements of the National Electric Code, current edition.

Fluorescent luminaires and circuit breakers shall be fastened with cinch anchors, or as approved by the Engineer.

Note:
For location of fluorescent luminaires, see drawing "Lighting, Handrailing and Drains".

* Locate approximately at E of cap.

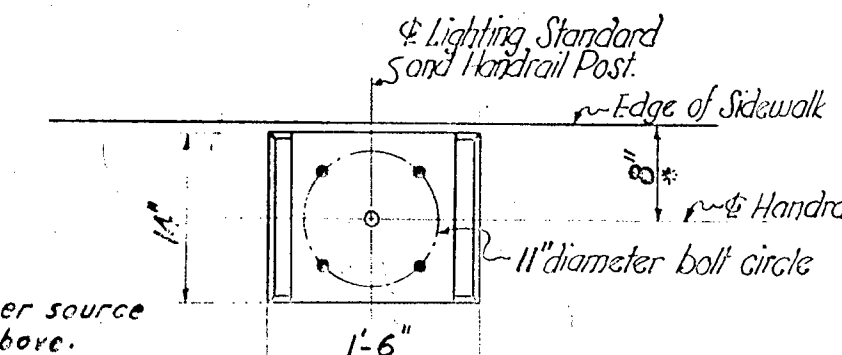
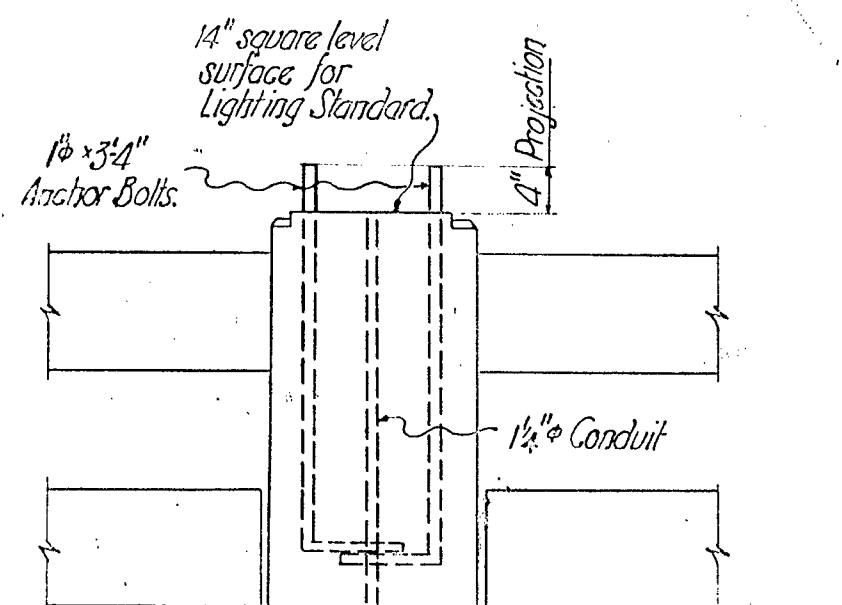
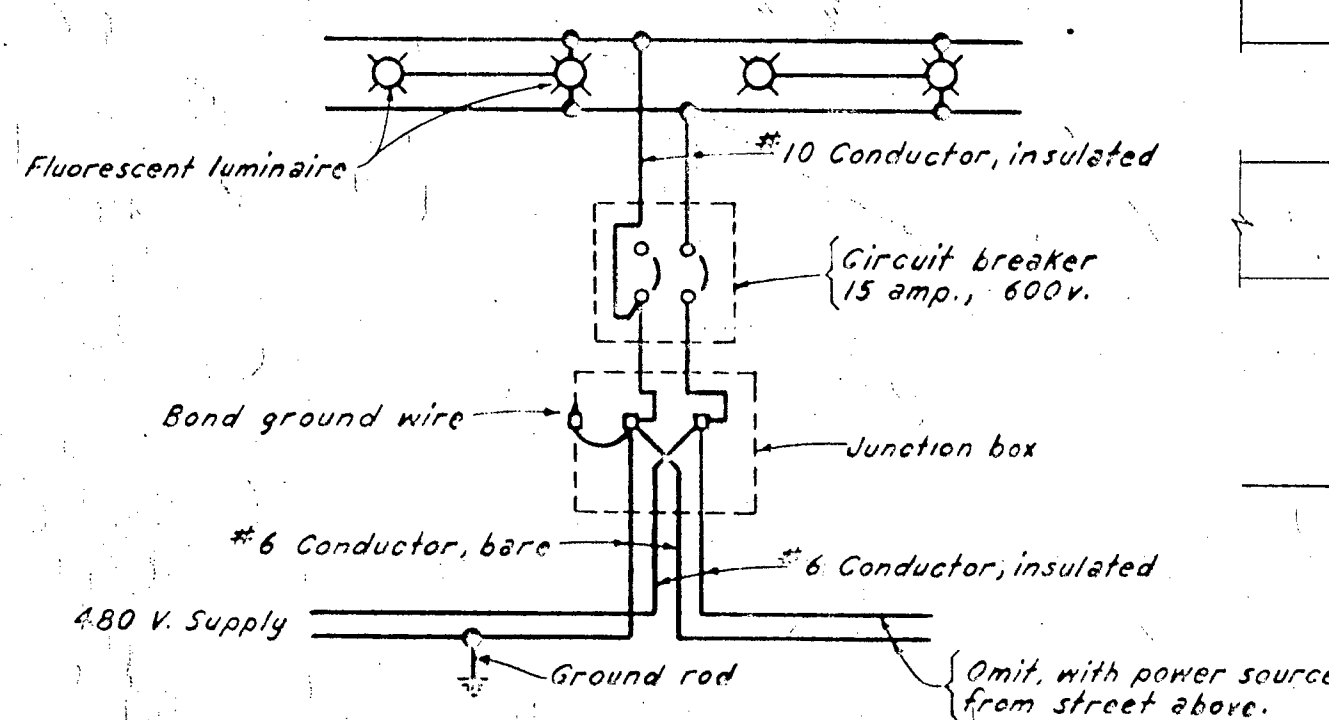


Freeway under Bridge:
Buried cable continuous on both sides of roadway.

Freeway on Bridge:
Power source from street below bridge-Buried cable continuous on one or both sides of roadway.
Power source from street above-Buried cable extends from end of bridge on top, under embankment slope to this point.
See drawing "Lighting, Handrailing and Drains".

LIGHTING DETAILS

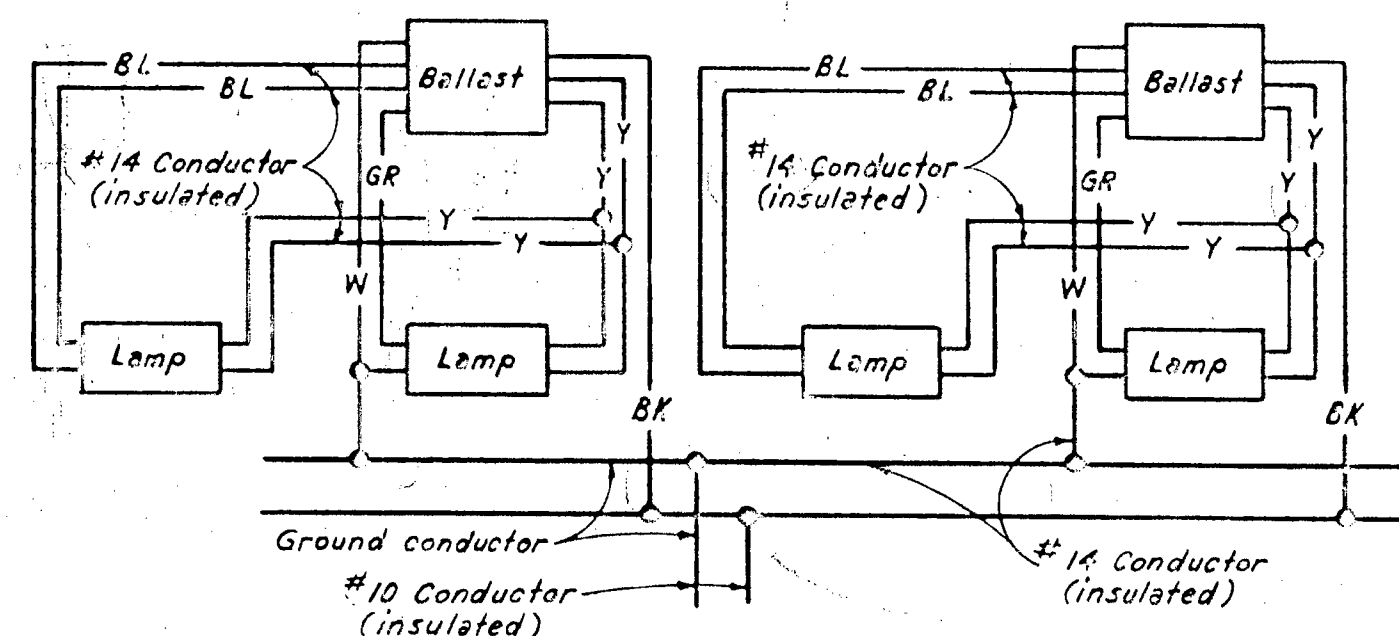
Scale: 3/8" = 1'-0"



* Except as noted on Bridge plans.

CIRCUIT DIAGRAM

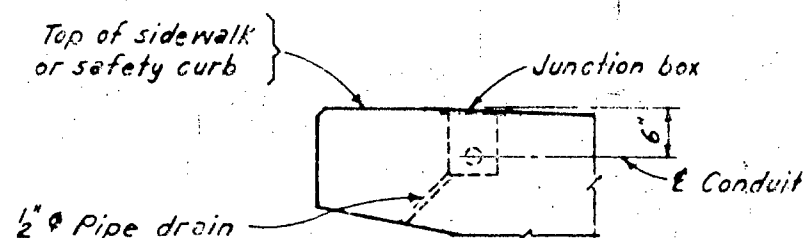
No Scale



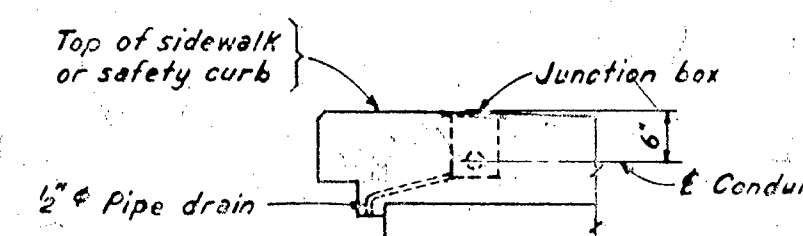
LUMINAIRE WIRING DIAGRAM

No Scale

Abbreviations:
GR = Green
W = White
BK = Black
BL = Blue
Y = Yellow



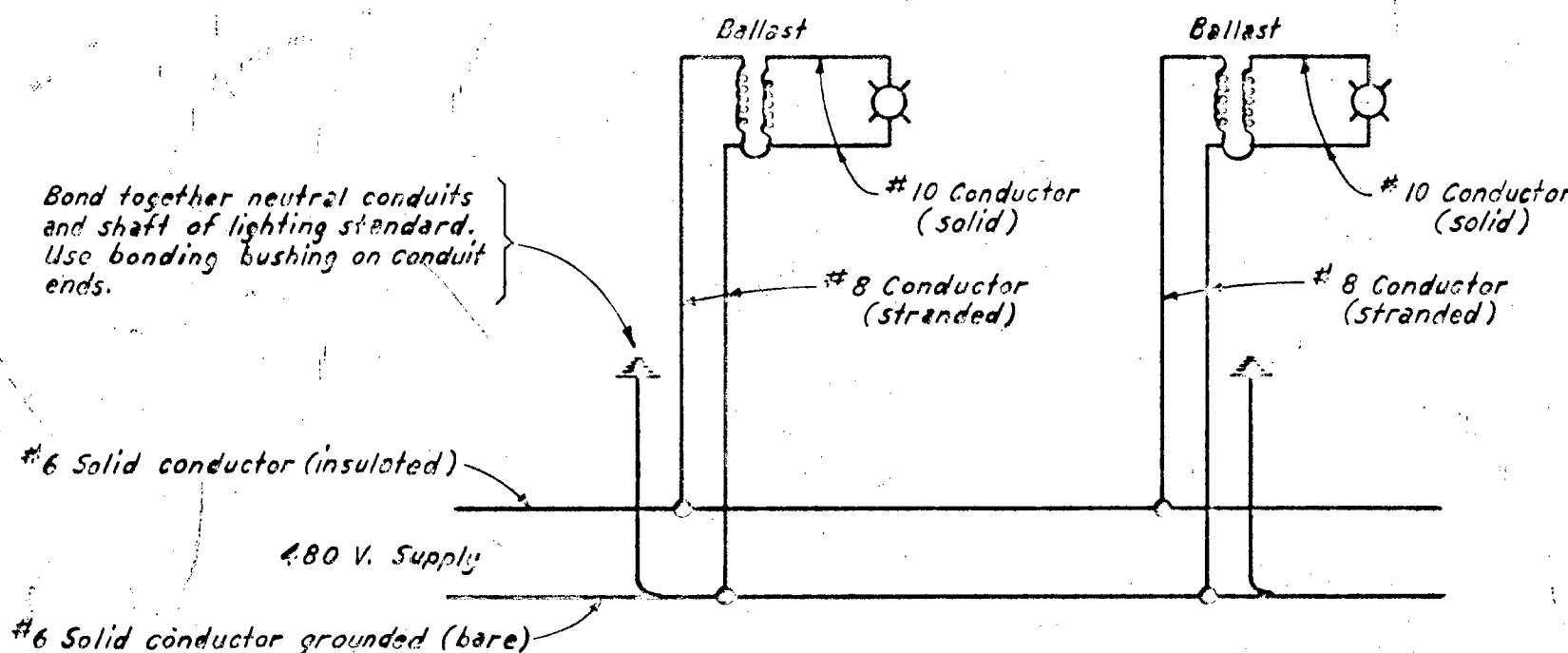
CONCRETE T-BEAM AND STEEL BEAM BRIDGES



PRESTRESSED CONCRETE BEAM BRIDGES

DETAILS AT JUNCTION BOXES

Scale: 1/2" = 1'-0"



CIRCUIT DIAGRAM

No Scale

LIGHTING ON BRIDGE

Revised July 29, 1953: Revised specifications for luminaires on bridge.
Revised May 21, 1961

PROJ. NO.	STATE	FED. AID PROJ. NO.	STATE AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
3	TENN.	124-003	117		78	161

STATE OF TENNESSEE DEPARTMENT OF HIGHWAYS AND PUBLIC WORKS CHATTANOOGA FREEWAY HAMILTON COUNTY-E.A. PROJ. NO. E-24-3 ()			
STANDARD ELECTRICAL LIGHTING DETAILS FOR BRIDGES WITH CONCRETE HANDRAILING			
SULLIVAN & HOEBEL - CONSULTING ENGINEERS - KNOXVILLE, TENN. ALAN F. HEDMAN - CONSULTING ENGINEERS - CHATTANOOGA, TENN.			
DSGN: [blank]	CHKD: AC	SCALE: AS NOTED	DATE: [blank]
CHD: [blank]	SUPV: AC	FILE NO. 57.77	SHEET NO. K-2-240

DIST. NO.	STATE	FED. AID PROJ. NO.	STATE AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
2	TENN.	I-24-203	117		76	161

SIMPLE BEAM SPANS & AT ADJUSTMENTS FOR CONT. SPANS

DIMENSIONS OF BEARINGS						Max. Reaction Basic Unit Stress D+L+I
Beams	Exp.	Fix.	a	b	c	
36 WF 230 to 36 WF 300	E-1	F-1	2'-2"	1'-5 1/2"	1'-10"	E-1 121 K F-1 176 K
36 WF 135 to 36 WF 194 33 WF 110 to 33 WF 152	E-2	F-2	1'-9 1/2"	1'-1"	1'-5 1/2"	E-2 112 K F-2 176 K
30 WF 99 to 30 WF 132 27 WF 84 to 27 WF 114	E-3	F-3	1'-0"	0'-11 1/4"	1'-5"	E-3 102 K F-3 136 K
36 WF 135 to 36 WF 194 33 WF 110 to 33 WF 152	*E-4	F-4	1'-9"	1'-1"	1'-5"	E-4 55 K F-4 115 K
30 WF 99 to 30 WF 132 27 WF 84 to 27 WF 114	*E-5	F-5	1'-4"	1'-11"	1'-5"	E-5 50 K F-5 95 K
24 WF 68 to 24 WF 94	*E-6	F-6	1'-6"	0'-10"	1'-2"	E-6 55 K F-6 82 K

* Reactions for these bearings based on 900#/sq. inch on bronze bearing plate. If reactions are exceeded, increase width of bronze bearing plate from 5" to 6".

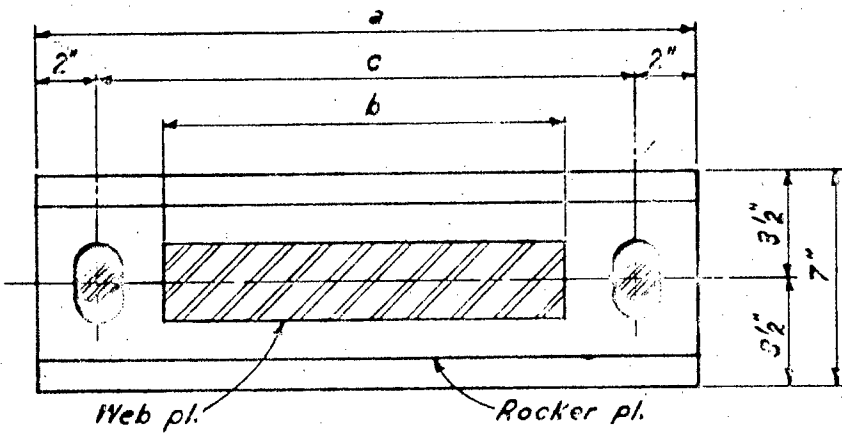
CONTINUOUS SPANS - PIERS ONLY						Max. Reaction Basic Unit Stress D+L+I
Beams	Exp.	Fix.	a	b	c	
36 WF 230 to 36 WF 300	E-7	F-7	2'-2"	1'-5 1/2"	1'-10"	E-7 165 K F-7 176 K
36 WF 135 to 36 WF 194 33 WF 110 to 33 WF 152	E-8	F-8	1'-9 1/2"	1'-1"	1'-5 1/2"	E-8 131 K F-8 164 K
30 WF 99 to 30 WF 132 27 WF 84 to 27 WF 114	E-9	F-9	1'-0"	0'-11 1/4"	1'-5"	E-9 119 K F-9 136 K

NOTE:
All steel, except for bolts, nuts and screws, shall conform to ASTM A36-62T.

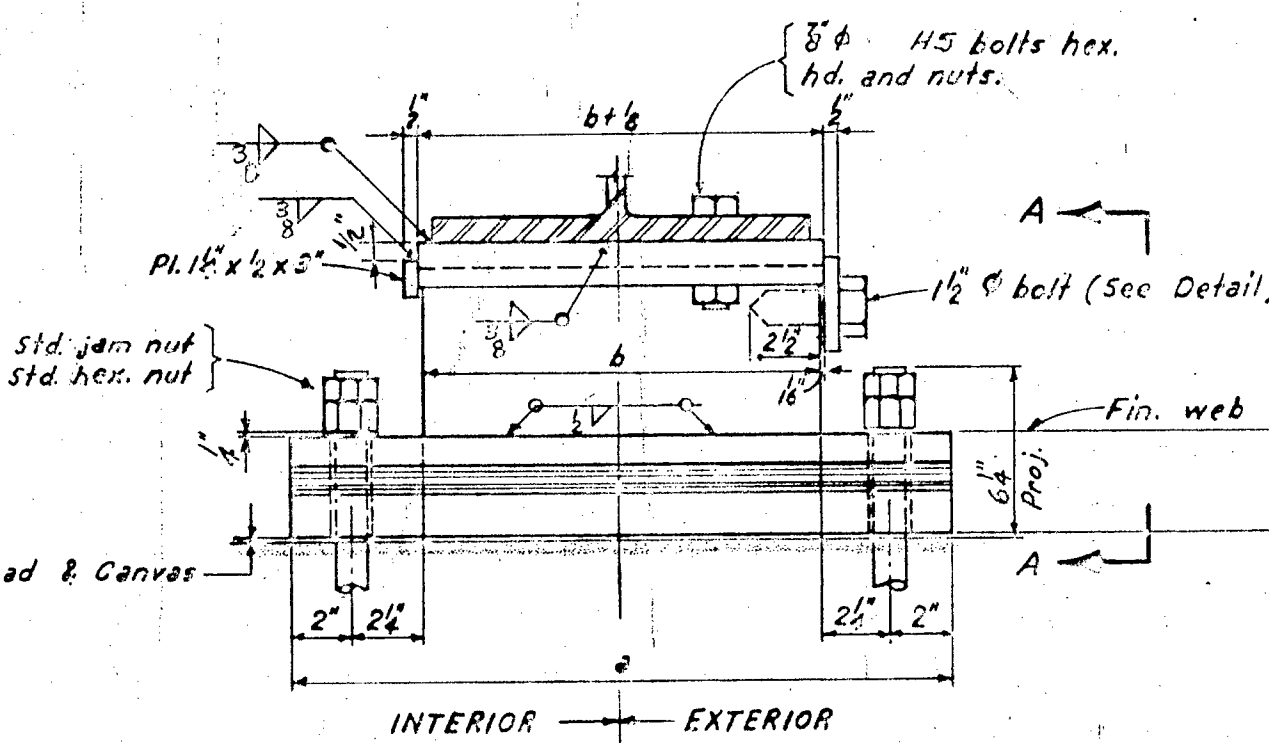
STATE OF TENNESSEE
DEPARTMENT OF HIGHWAYS AND PUBLIC WORKS
CHATTANOOGA FREEWAY
HAMILTON COUNTY - E.A. PROJ. NO. I-24-3 ()

STANDARD BEARINGS FOR STEEL BEAM BRIDGES

SULLIVAN & HOBEL - CONSULTING ENGINEERS - KNOXVILLE, TENN.
JAKE E. HEDMAN - CONSULTING ENGINEERS - CHATTANOOGA, TENN.
DSGH: AC DPM:VRA CWD: JAM SBY: AC
SCALE: 2"-1'-0" UNLESS NOTED DATE: 9-25-60
FILE NO. 5277 SHEET NO. H-7-2

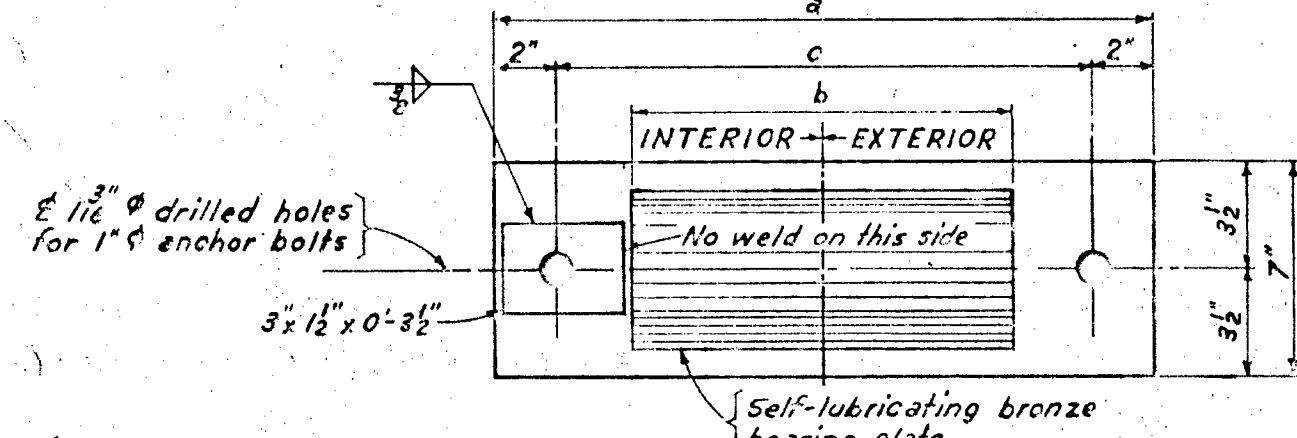


PLAN
Sole plate not shown

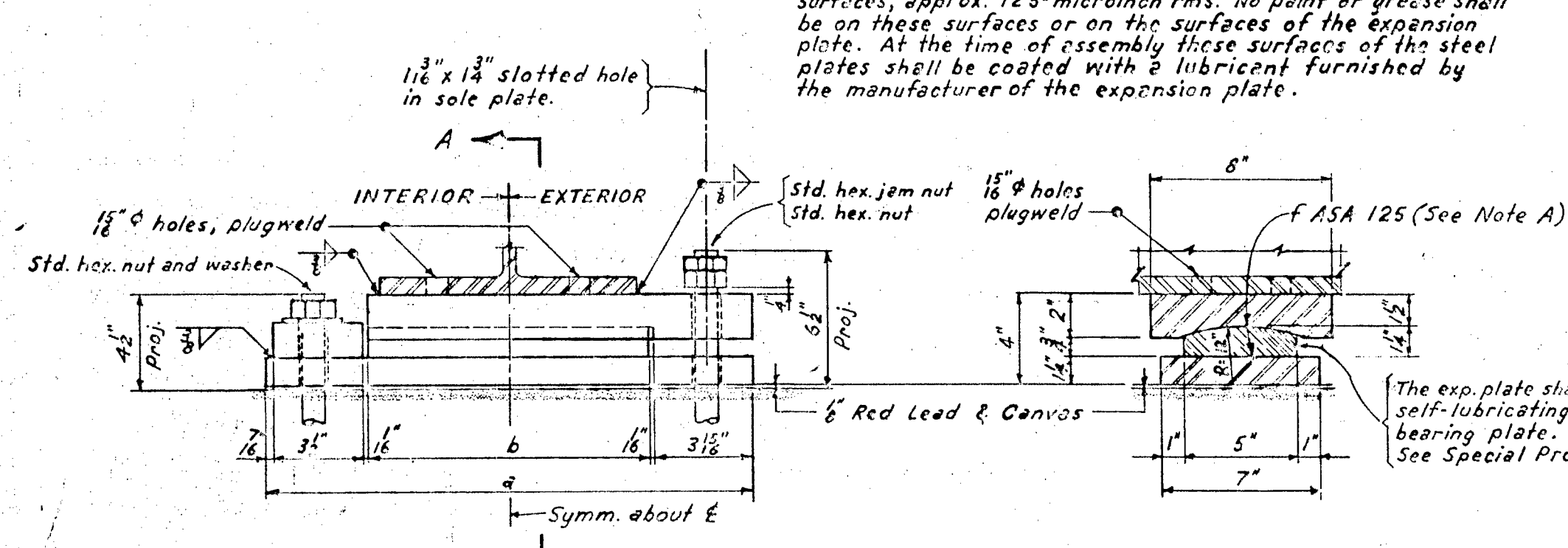


ELEVATION

EXPANSION BEARINGS E-1, E-2, E-3 E-7, E-8, E-9



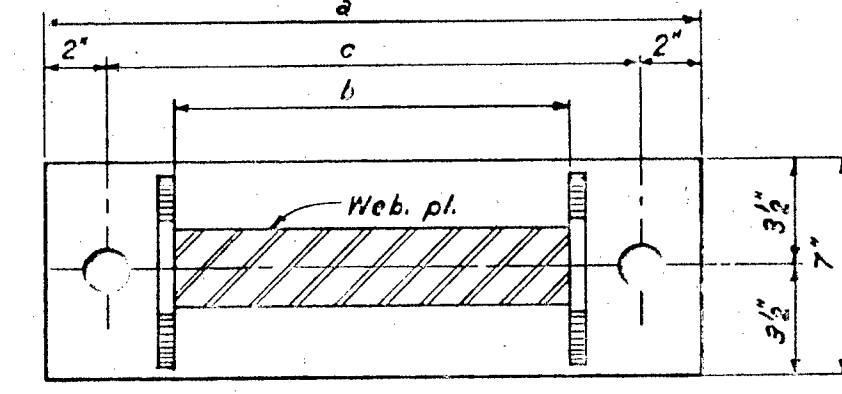
PLAN
Sole plate not shown



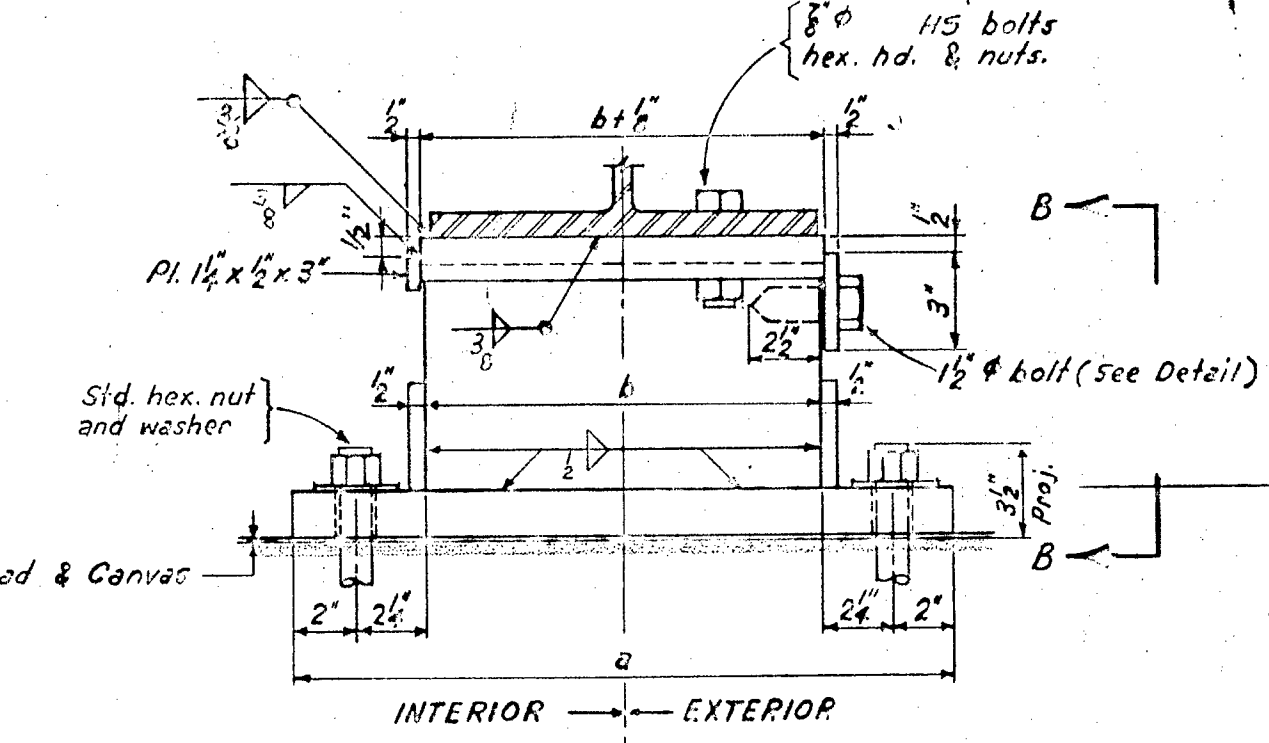
ELEVATION

EXPANSION BEARINGS E-4, E-5, E-6

SECTION A-A

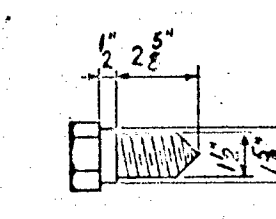


PLAN
Sole plate not shown

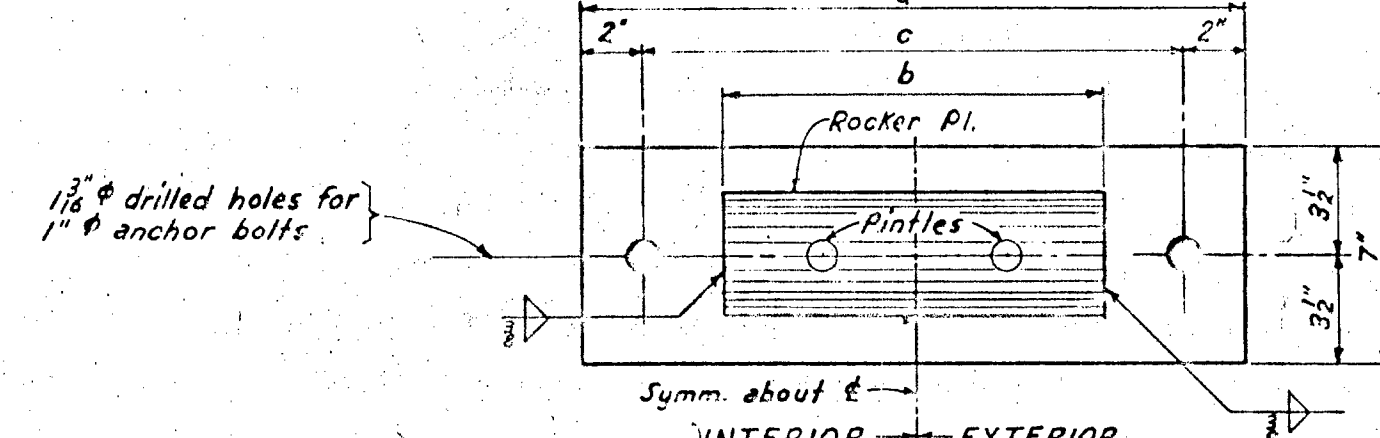


ELEVATION

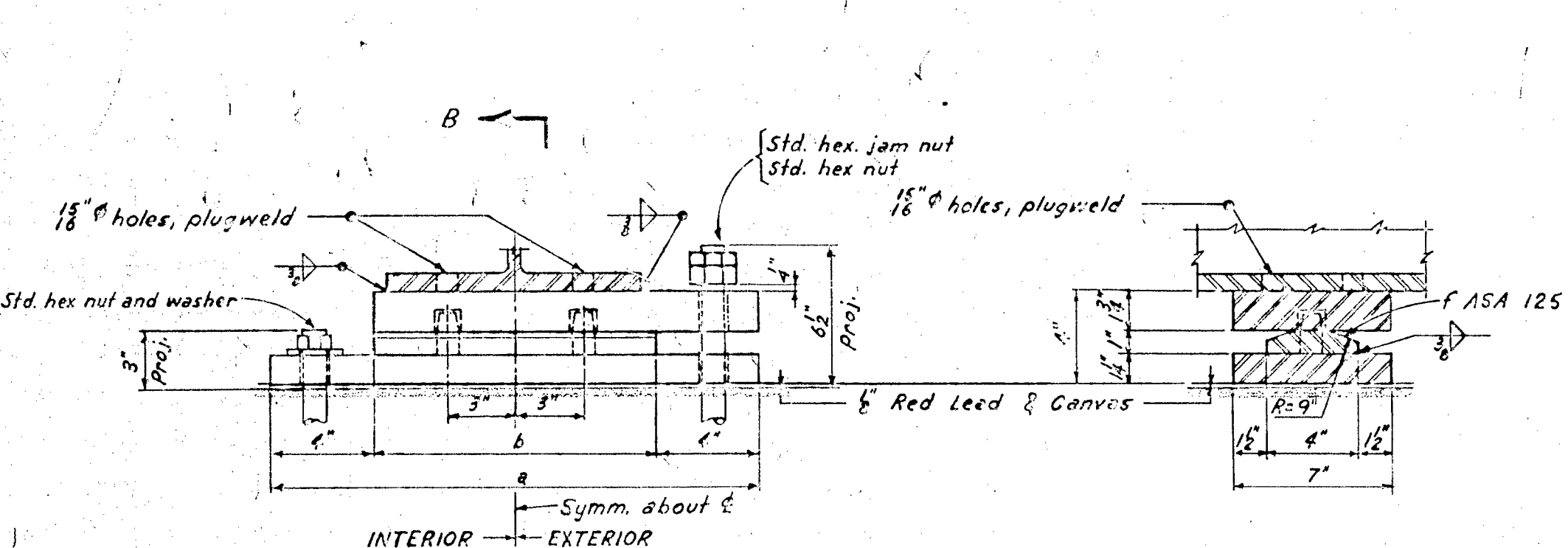
FIXED BEARINGS F-1, F-2, F-3 F-7, F-8, F-9



BOLT DETAIL



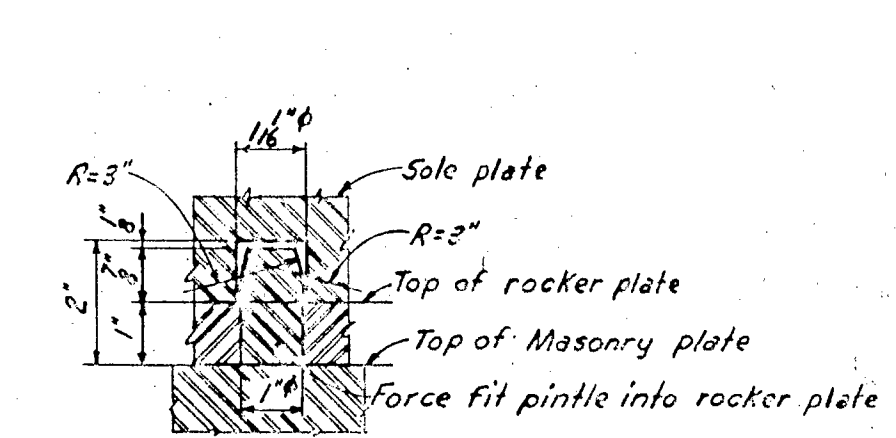
PLAN
Sole plate not shown



ELEVATION

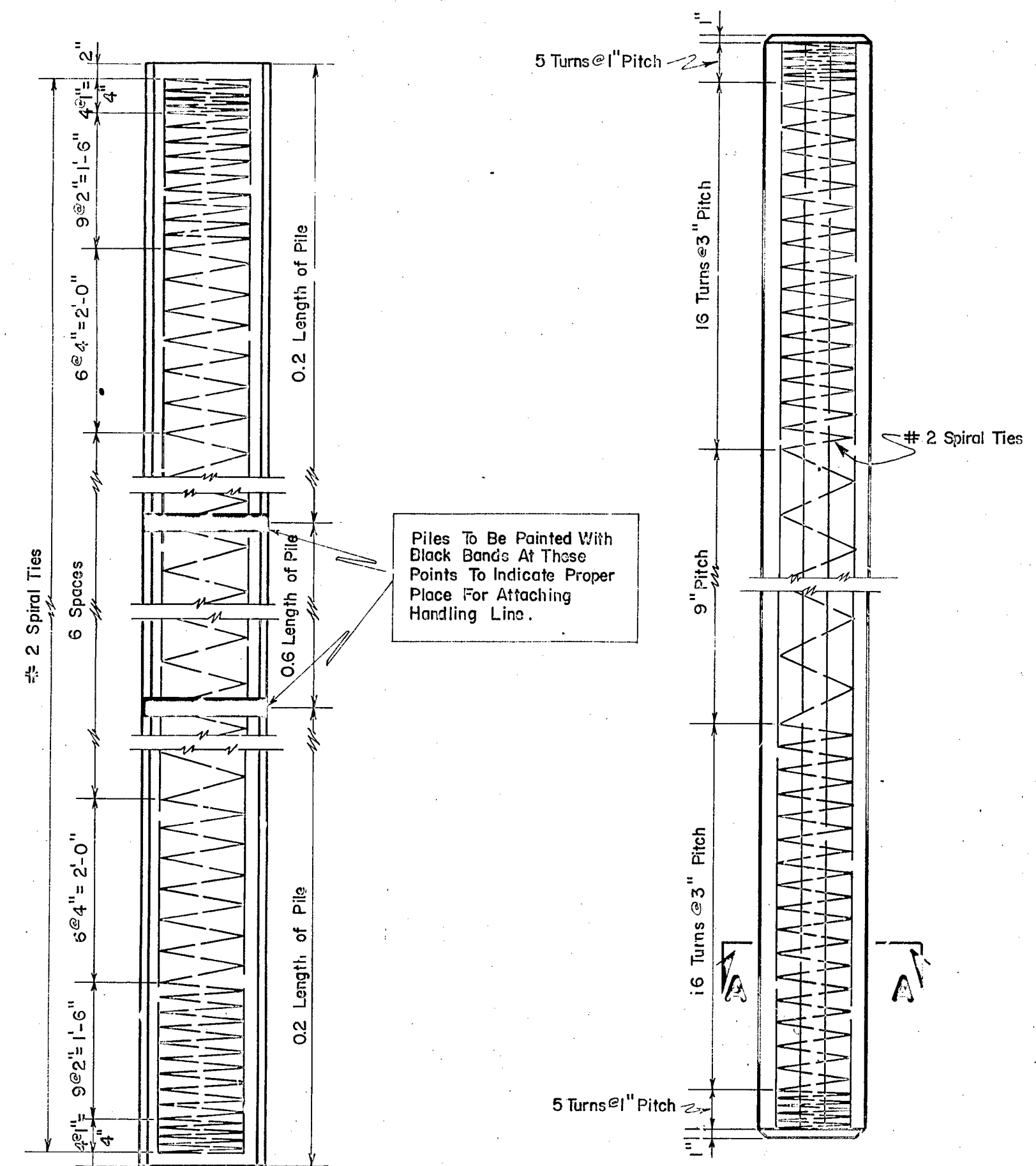
FIXED BEARINGS F-4, F-5, F-6

SECTION B-B

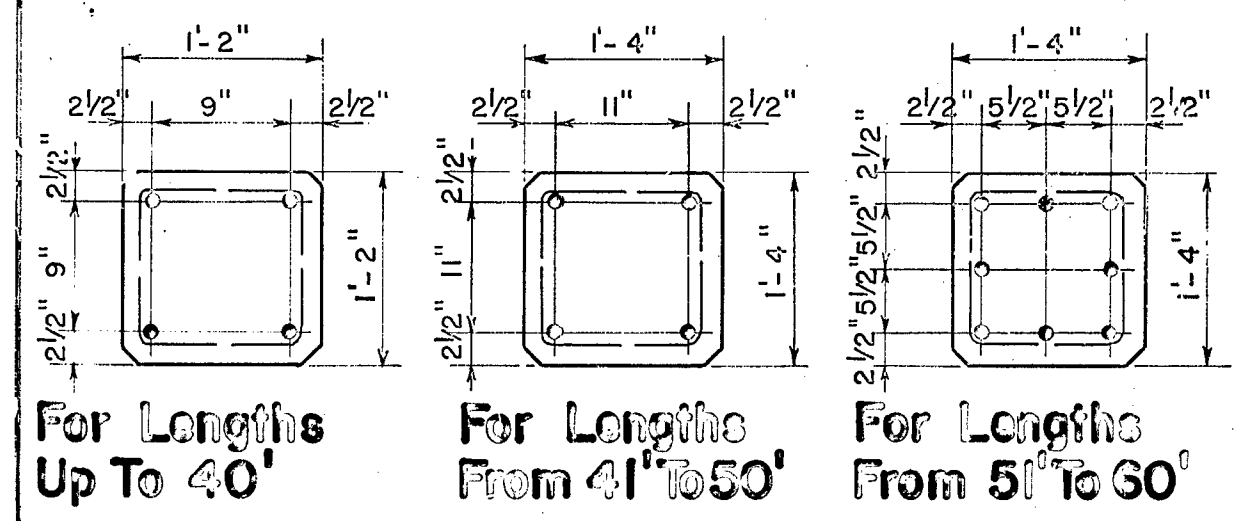


DETAIL OF PINTLE
Scale: 4"-1'-0"

Revised 3-17-64 Changed turned bolts to H.S.
Rev - 8/27/63 - Changed Note.
Revised Weld size 10-23-61



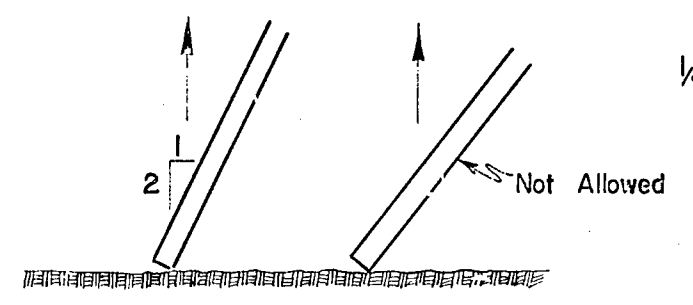
PRECAST CONCRETE PILE



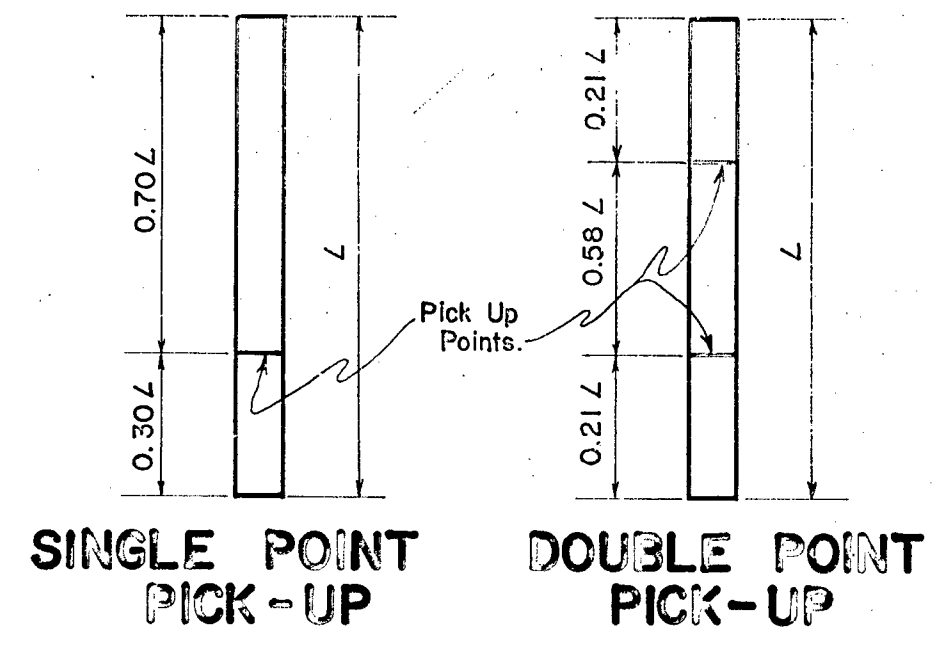
NOTE: If It Becomes Necessary To Use Size 2 Piles The Contractor Will Be Allowed An Increase In The Size 1 Bid Of 25 %.

Length Of Pile	Longitudinal Reinforcing	Weight Of Steel Per Ft.	Weight Of Pile Per Ft.
Up To 35'	4 #7 Bars	9.6 #	205.3 #
36' To 40'	4 #8 Bars	12.2 #	205.3 #
41' To 45'	4 #9 Bars	15.1 #	265.3 #
46' To 50'	4 #10 Bars	18.8 #	265.3 #
51' To 55'	8 #9 Bars	28.9 #	265.3 #
56' To 60'	8 #10 Bars	36.2 #	265.3 #

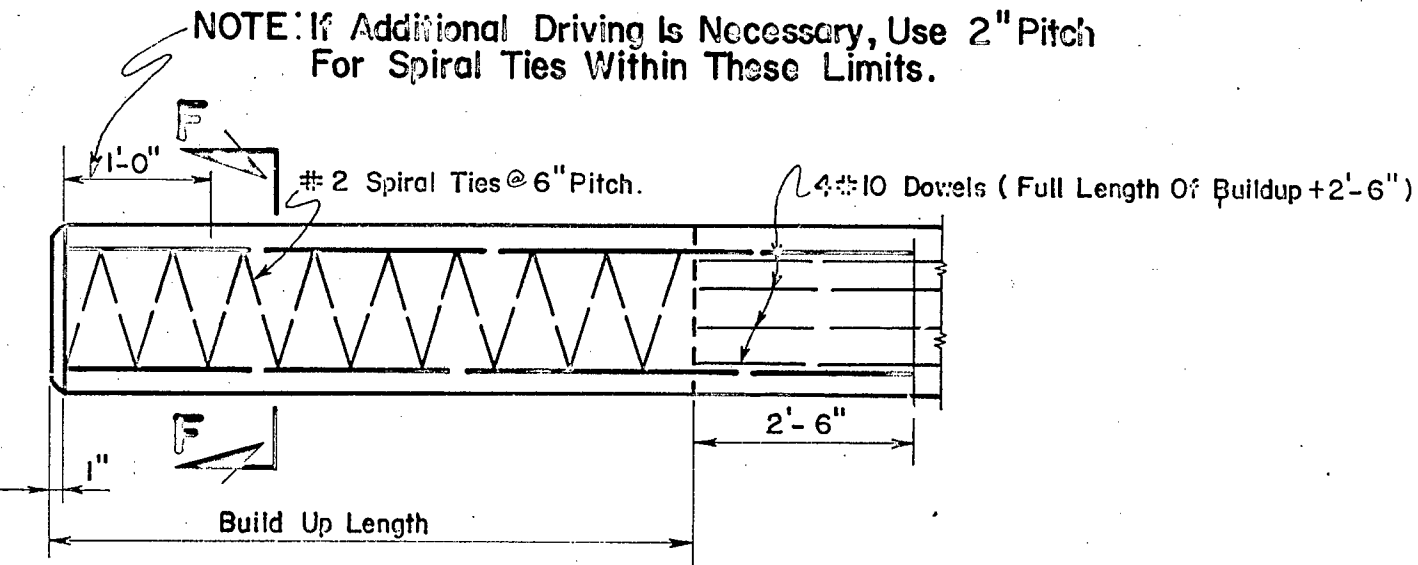
NOTE: In Handling The Piles, They Shall Be Supported At The Points Indicated. Piles To Be Picked Up By Pulling On Both Lines Uniformly. End Of Pile Not To Touch Ground Unless Piles Inclined 1:2 Or Steeper.



DETAIL "A"
Welds Typical For All End Joints And Intersections.

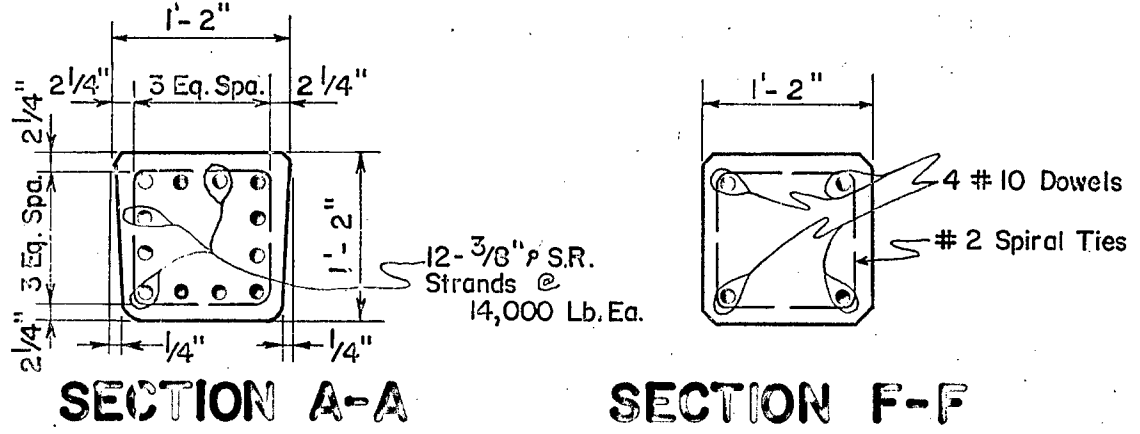


- NOTES: (1) Maximum Length Single Pick-Up Point - 60'-0"
(2) Maximum Length Double Pick-Up Point - 85'-0"
(3) Piles To Be Marked At These Points To Indicate Proper Place For Attaching Handling Lines.
(4) For Greater Lengths Three Point Pick-up Is Required.

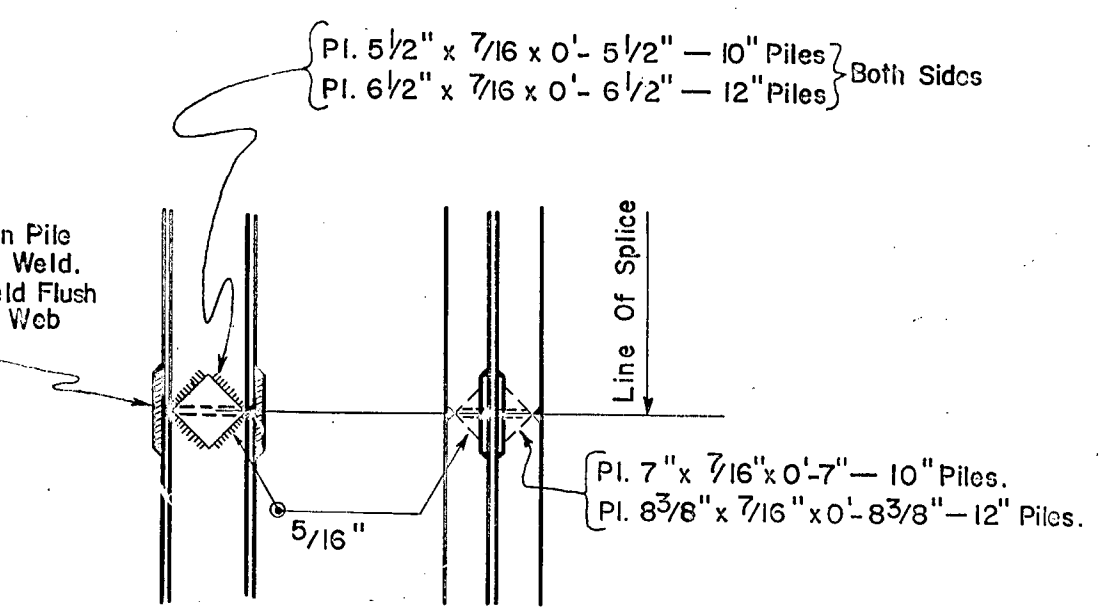


NOTE: Driving Of Built-Up Piles Shall Be Permitted Only At The Direction Of The Engineer.

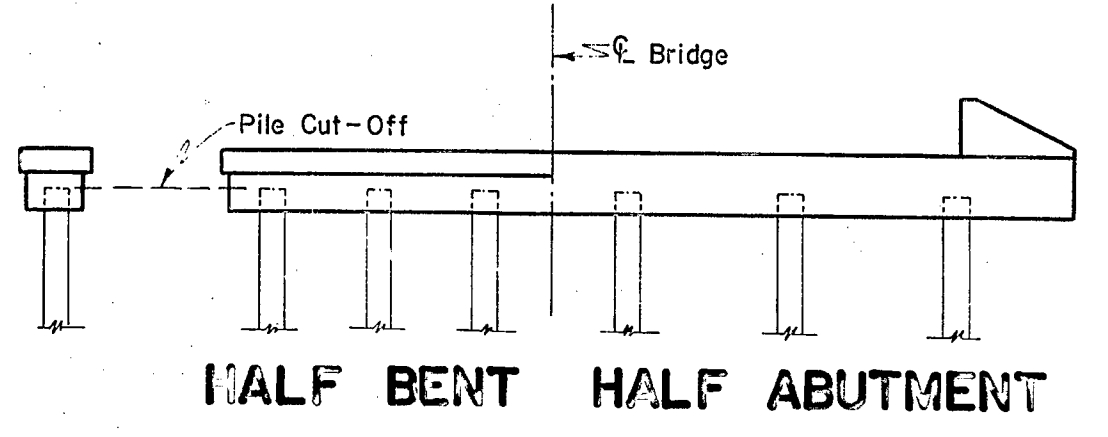
PRESTRESSED CONCRETE PILE



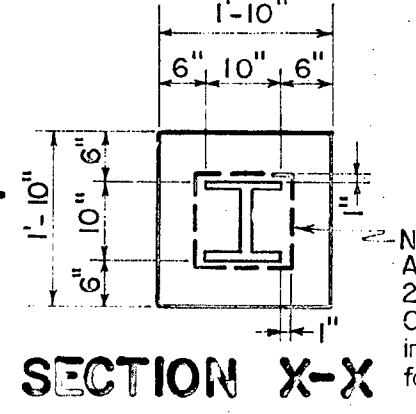
STEEL PILES



DETAIL OF PILE SPLICE

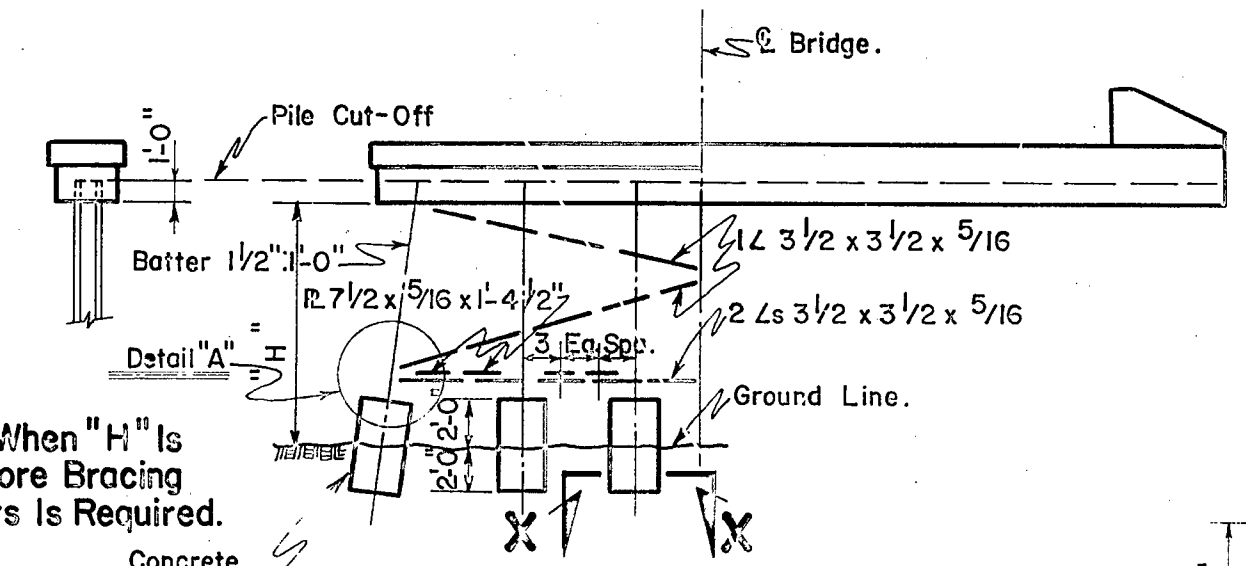


CASE II PRECAST CONCRETE FOR STEEL



SECTION X-X

CASE I STEEL FOR PRECAST CONCRETE

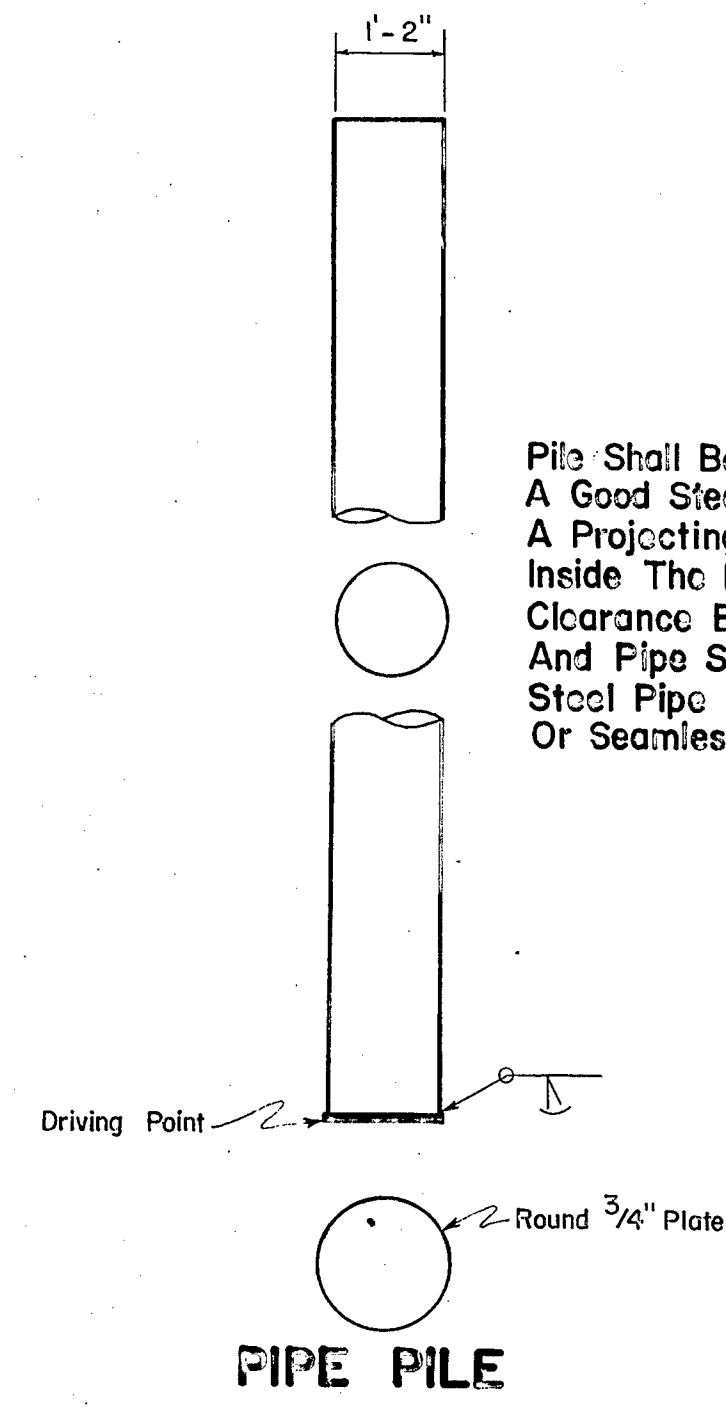


NOTE: When "H" Is 10' Or More Bracing For Bents Is Required.

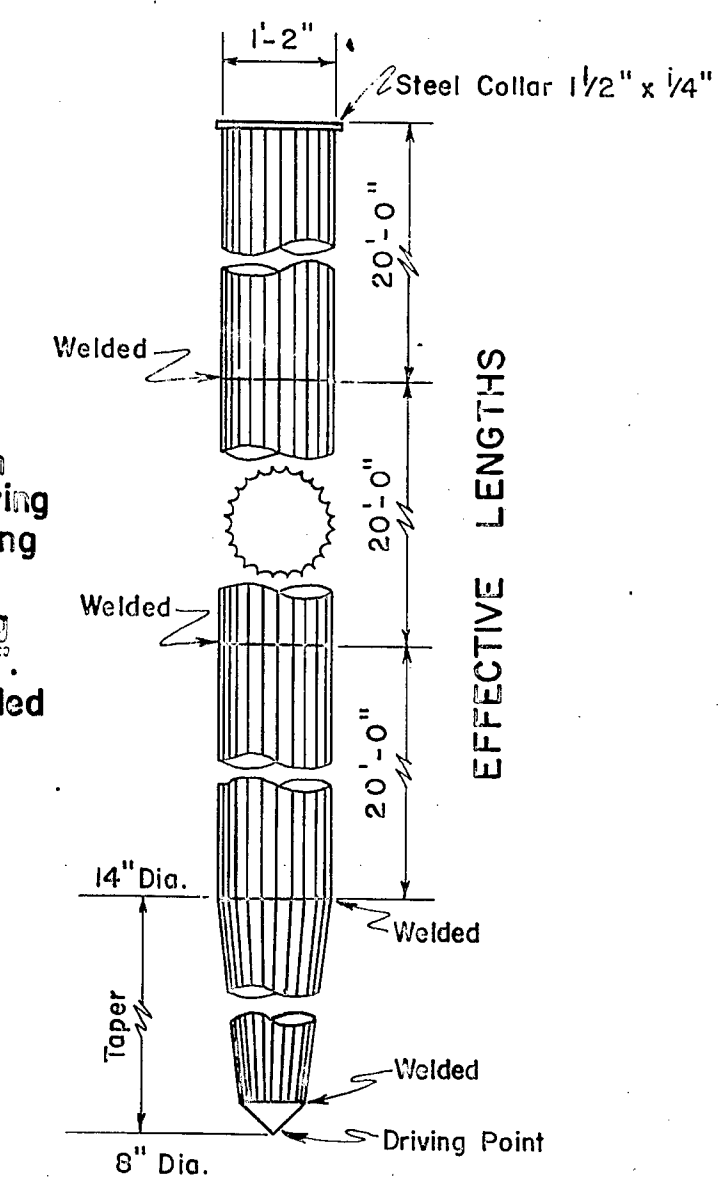
TYPICAL DETAILS

When The Substitution Of Steel For Precast Concrete Piles Or Precast Concrete For Steel Piles Is Permitted The Details Will Be As Shown Above. The Substitution Does Not Permit Changing The Number Of Piles In Either Case. Should The Contractor, When Permitted, Elect To Make The Substitution Of Case I, The Cost Of Encasing Blocks At Ground Lines And Bracing If Required Shall Be Included In The Price Per Lin. Ft. Of Piles.

Pile Shall Be Driven With A Good Steel Head Having A Projecting Ring Fitting Inside The Pipe. Clearance Between Ring And Pipe Should Be 1/8". Steel Pipe May Be Welded Or Seamless Steel.



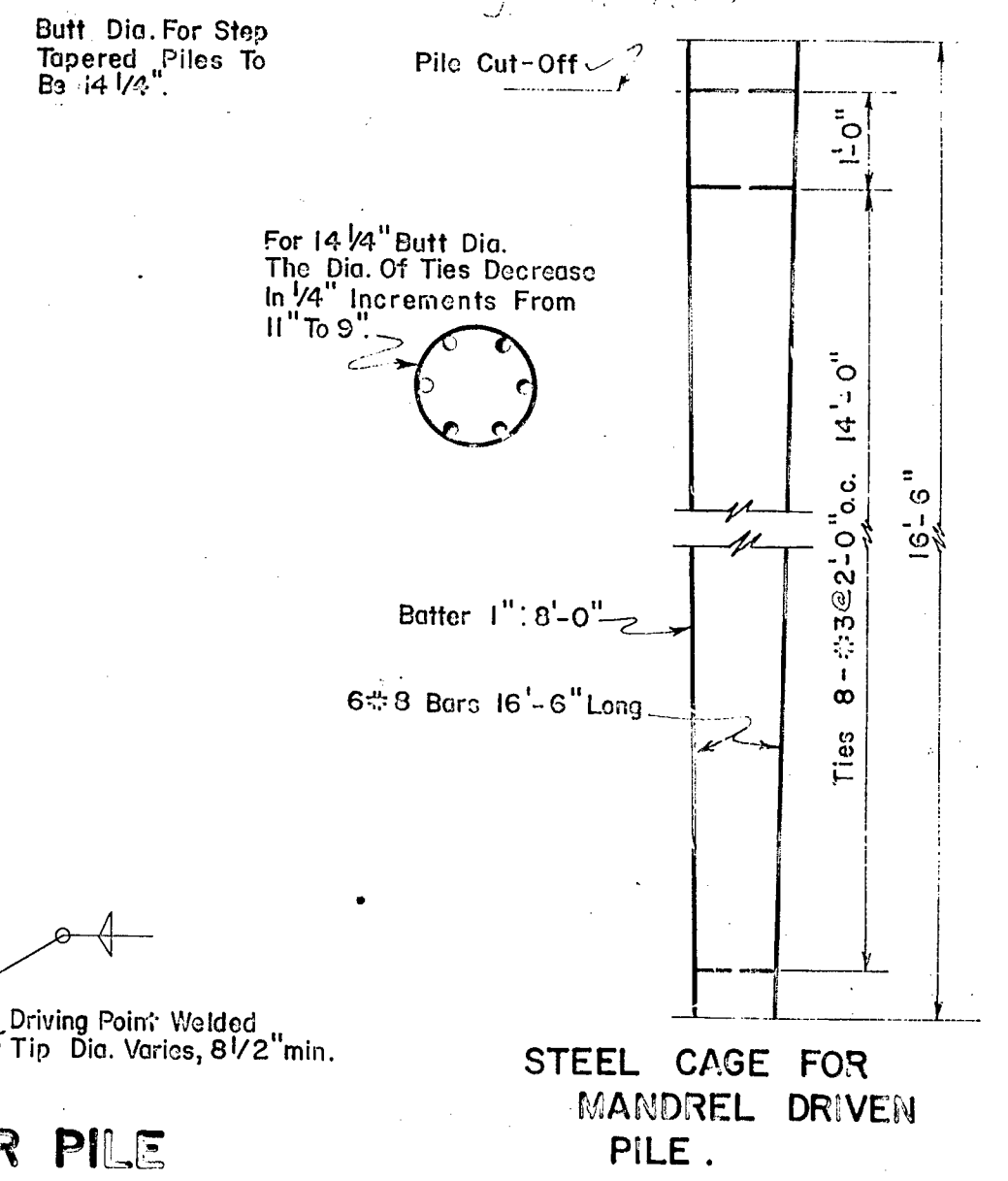
PIPE PILE



STEP TAPER PILE

CAST IN PLACE PILES

NOTE: Concrete In Cast In Place Piles To Be Class "A"



STEEL CAGE FOR MANDREL DRIVEN PILE

GENERAL NOTES

- SPECIFICATIONS: Standard Road And Bridge Specifications Of The Tennessee Department Of Highways.
- CHOICE OF PILES: To Be Specified On The Layout Sheet For Each Bridge.
- CAST IN PLACE: Pile Shells Shall Have A Minimum Thickness As Follows:
 - Piles Driven Without Mandrel - 7 Gage.
 - Piles Driven With Mandrel Shall Be Of Sufficient Strength And Thickness To Hold Its Original Form And Show No Sign Of Distortion After The Core Has Been Withdrawn.
 - Steel Pipe Shall Be Welded Or Seamless Steel Conforming To ASTM Designation A-252 Grade 2 Welded And Seamless Steel Pipe Piles.

Steel Cages For All Mandrel Driven Piles Will Be Required.

The Contractor Shall Maintain On The Job At All Time Prior To And During The Filling Of The Shells, A Light Suitable For Their Inspection. Improperly Driven, Broken Or Otherwise Defective Shells Shall Be Removed And Replaced Or Otherwise Corrected To The Satisfaction Of The Engineer By Removal And Replacement Or The Driving Of An Additional Pile At No Extra Cost.
- PRESTRESSED CONCRETE PILES: 1. Concrete Shall Have A Minimum 28 Day Strength Of 5000 PSI With A Release Strength Of 3500 PSI For 3/8" Strands.
2. Spiral Ties Shall Be Tied To Corner Strands At Intervals Adequate To Prevent Excessive Movement During Vibration. They May Be Manufactured From Stock Meeting Any Grade Of Reinforcing Steel Or Hard Drawn Wire.
- PILE POINTS: All Cast In Place Piles Shall Be Equipped With A Steel Driving Point. Driving Points Shall Be Mill Welded To The Pile Shell. Driving Points May Be Either Structural Steel, Forged Steel Or Cast Steel. Steel Piles Shall Have A Square Cut End Only. No Driving Point Is Required Unless Shown On The Bridge Plans.
- SPLICES: Splice Details For Cast In Place Piles Shall Be Made In Accordance With The Manufacturers Recommendations, Subject To The Approval Of The Engineer. Splice Details For Steel And Prestressed Concrete Piles Shall Be In Accordance With The Details Shown On This Sheet.
- DRIVING FORMULA: Piles Shall Be Driven To A Minimum Capacity As Specified On The Layout Sheet As Determined By The Driving Formulas Stipulated In The Specifications.
- MILL TEST REPORTS: Notarized Mill Test Reports Will Be Required For All Steel Piles And Cast In Place Pile Shells.
- WELDING SPECIFICATIONS: AWS for Bridges.
- STRUCTURAL STEEL: Structural Steel conforming to ASTM A-7 or ASTM A-36-62 T will be acceptable

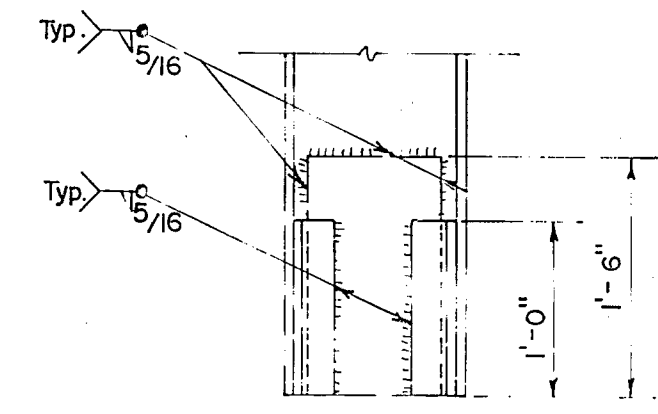
Pile	2 Rs	4 Ls
10"	6' x 1/2"	3/2" x 3/2" x 1/2"
12"	7' x 1/2"	4' x 4' x 1/2"
14"	8' x 1/2"	5' x 5' x 1/2"

STATE OF TENNESSEE
DEPARTMENT OF HIGHWAYS
NASHVILLE

STANDARD PILE DETAILS

DETAIL OF PILE DRIVING POINT

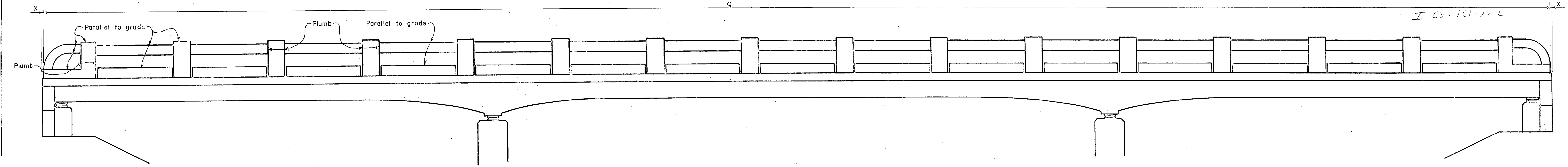
NOTE: Cost Of Driving Point To Be Included In The Unit Price Bid For Steel Piles



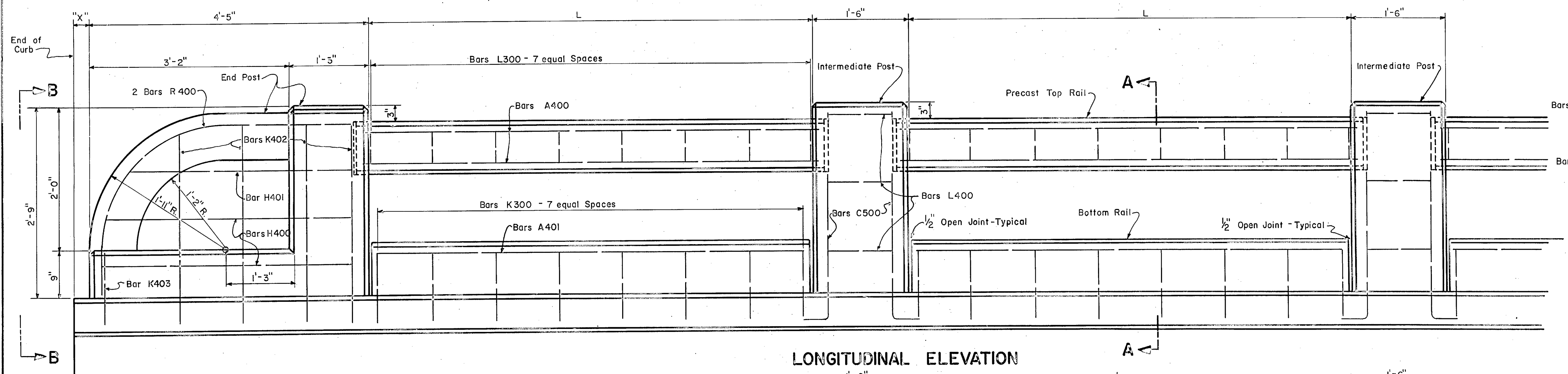
DESIGNED BY
DRAWN BY J.W. SOUTHERLAND
RETRACED BY C.E. B. CANTRELL JR.
CHECKED BY

DATE
5-27-60
2-6-62
DATE

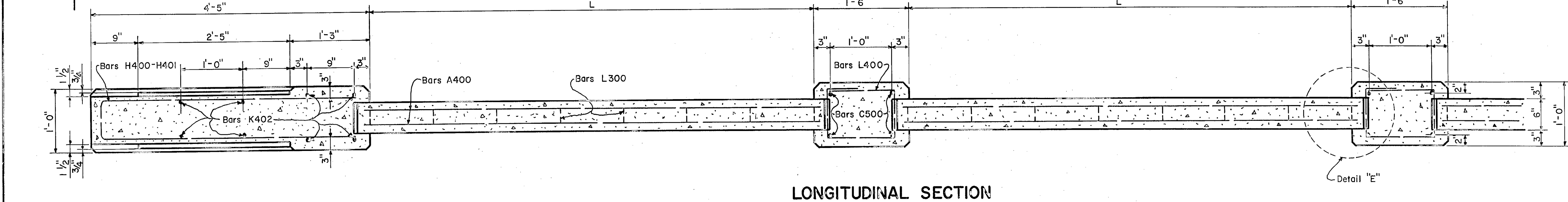
CORRECT
APPROVED
Fred Guine
BRIDGE ENGINEER
cedberg
STATE ENGINEER



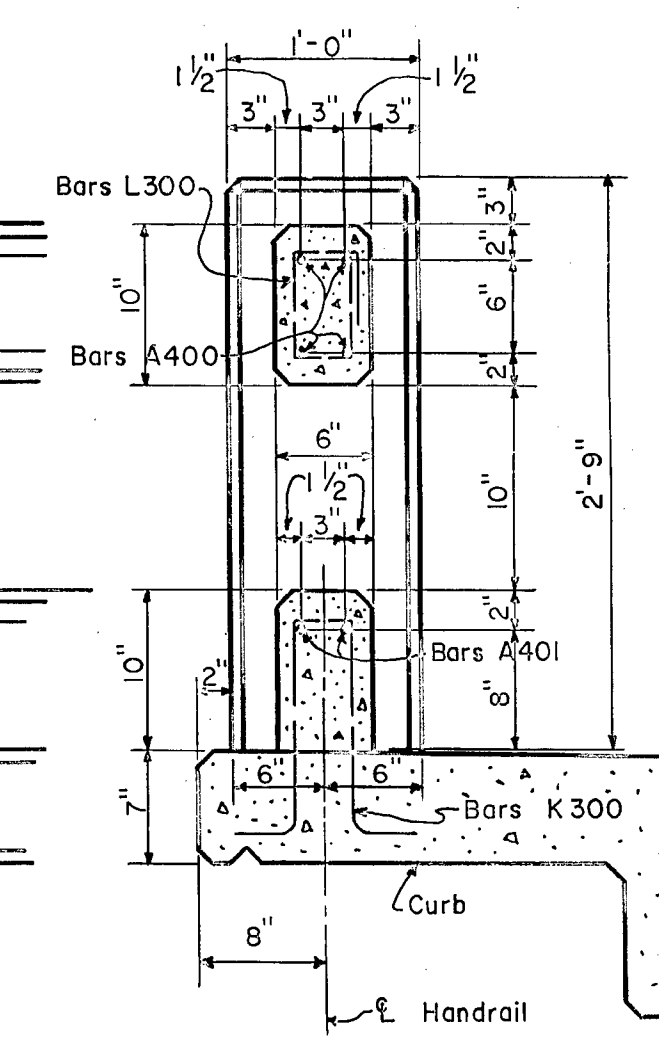
TYPICAL ELEVATION



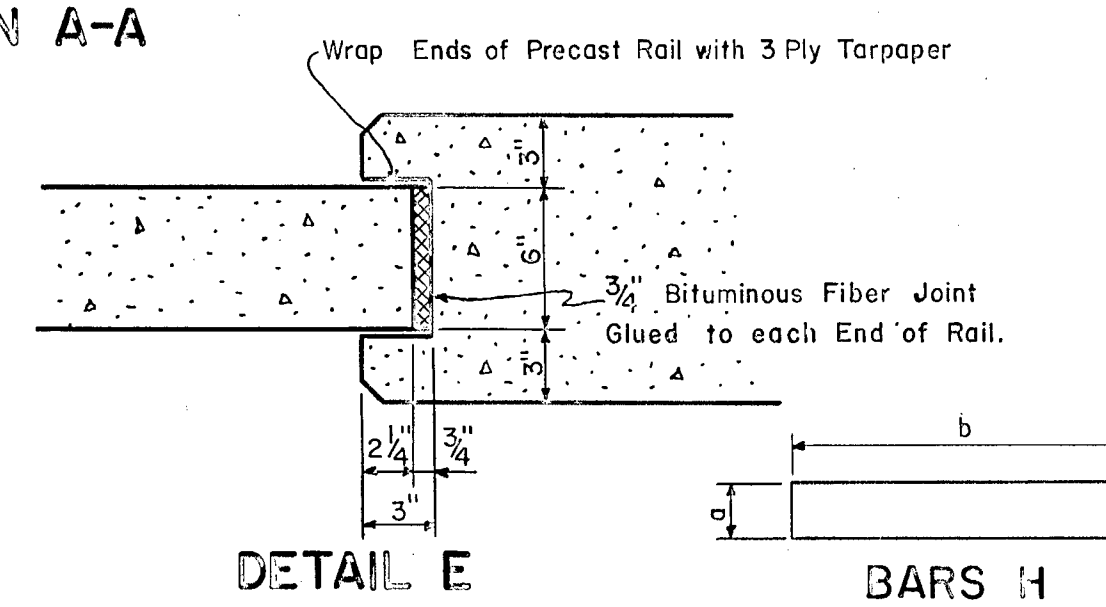
LONGITUDINAL ELEVATION



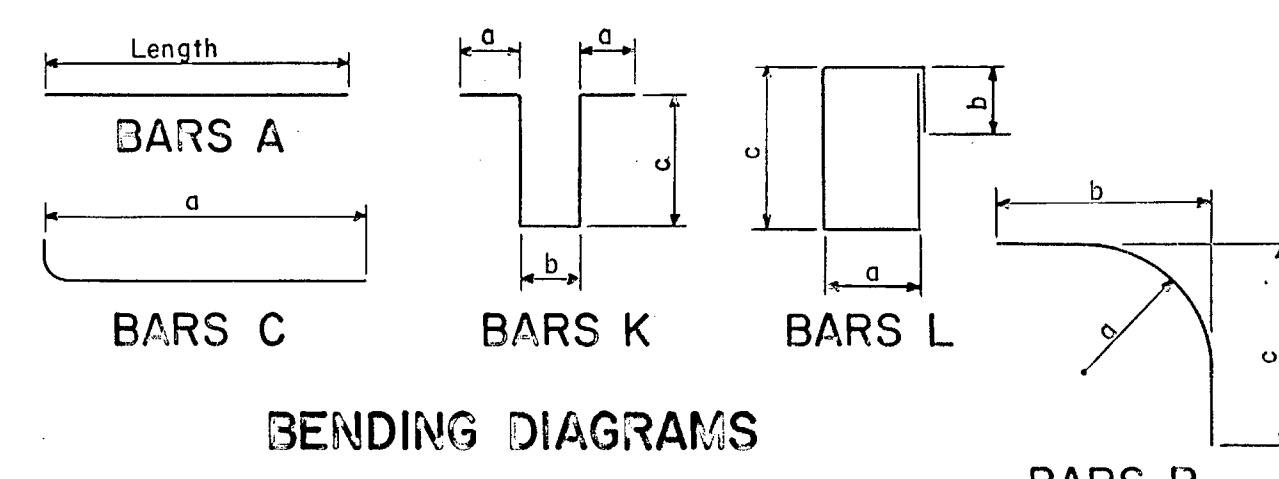
LONGITUDINAL SECTION



SECTION A-A



DETAIL E



BENDING DIAGRAMS

STATE OF TENNESSEE
DEPARTMENT OF HIGHWAYS
NASHVILLE

STANDARD
CONCRETE HANDRAIL
1960

CORRECTED: *Handwritten signature*
APPROVED: *Handwritten signature*
STATE HIGHWAY ENGINEER

H-5-110

2-Copies

END POST-LIST OF MATERIALS-EACH

Bar	Size	No. Req'd	Bending Dimensions	Length	Quantities
			a b c d		Steel Lbs. Conc. Cu. Yd.
H400	4	2	0'-6" 4'-0"	8'-6"	45.0 0.37
H401	4	1	0'-6" 3'-7"	7'-8"	
K402	4	4	0'-3" 0'-7" 2'-11"	6'-11"	
K403	4	1	0'-3" 0'-7" 1'-2"	3'-5"	
R400	4	2	1'-9" 4'-0" 2'-6"	5'-9"	

INTERMEDIATE POST
LIST OF MATERIALS-EACH

Bar	Size	No. Req'd	Bending Dimensions	Length	Quantities
			a b c d		Steel Lbs. Conc. Cu. Yd.
C500	5	4	3'-0"	3'-4"	22.6 0.15
L400	4	3	0'-9" 0'-6" 1'-2"	4'-4"	

TOP RAIL-LIST OF MATERIALS-EACH

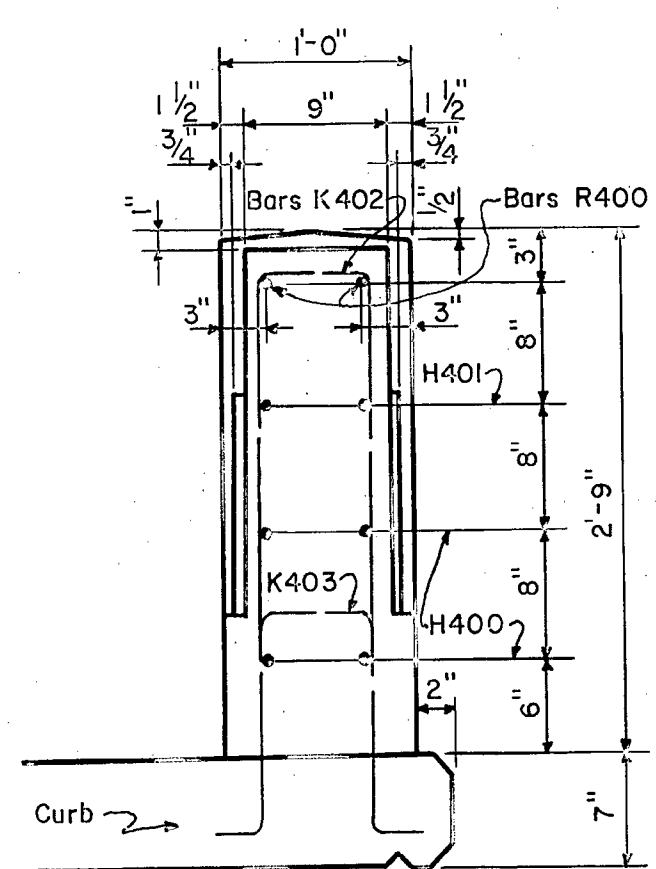
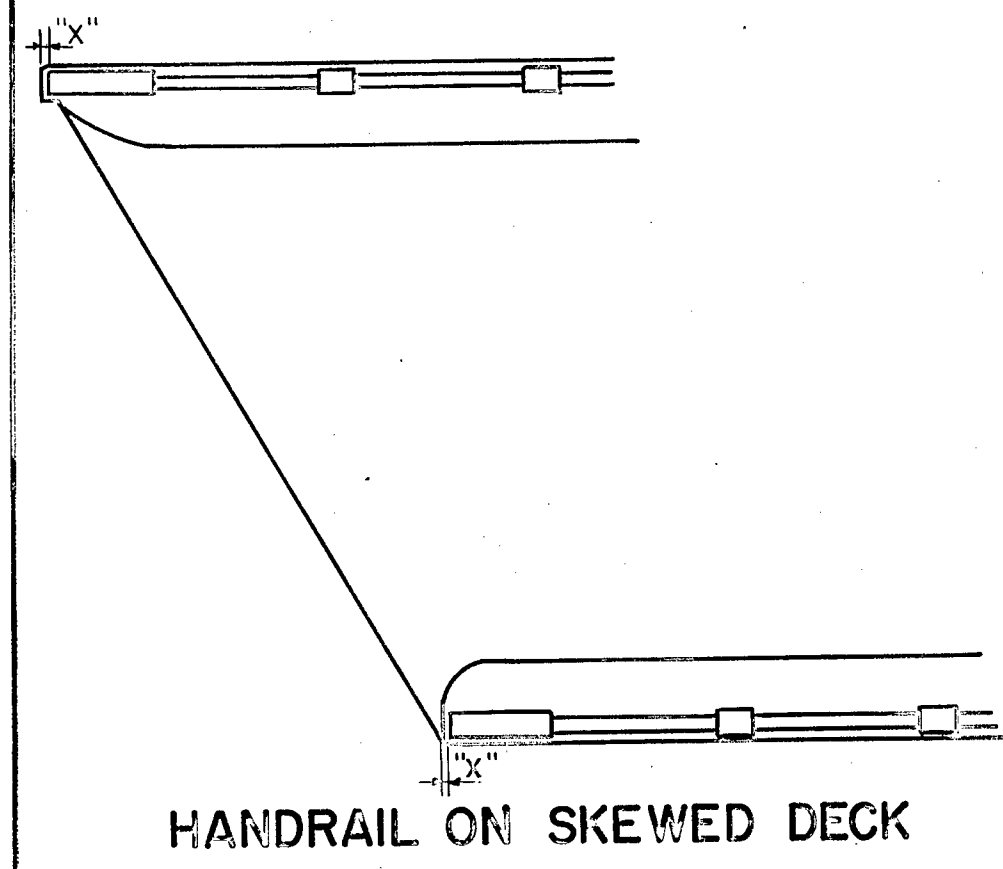
L	Bar	Size	No. Req'd	Bending Dimensions	Length	Quantities
				a b c d		Steel Lbs. Conc. Cu. Yd.
6'-0"	A400	4	4	0'-4" 0'-6" 0'-7"	6'-2"	23.6 0.10
6'-1"	L300	3	8	0'-4" 0'-6" 0'-7"	2'-4"	
6'-2"	A400	4	4	0'-4" 0'-6" 0'-7"	6'-3"	23.8 0.10
6'-3"	L300	3	8	0'-4" 0'-6" 0'-7"	2'-4"	
6'-4"	A400	4	4	0'-4" 0'-6" 0'-7"	6'-4"	24.1 0.10
6'-5"	L300	3	8	0'-4" 0'-6" 0'-7"	2'-4"	
6'-6"	A400	4	4	0'-4" 0'-6" 0'-7"	6'-5"	24.3 0.10
6'-7"	L300	3	8	0'-4" 0'-6" 0'-7"	2'-4"	
6'-8"	A400	4	4	0'-4" 0'-6" 0'-7"	6'-6"	24.5 0.10
6'-9"	L300	3	8	0'-4" 0'-6" 0'-7"	2'-4"	
6'-10"	A400	4	4	0'-4" 0'-6" 0'-7"	6'-7"	24.7 0.11
6'-11"	L300	3	8	0'-4" 0'-6" 0'-7"	2'-4"	
6'-12"	A400	4	4	0'-4" 0'-6" 0'-7"	6'-8"	25.0 0.11
6'-13"	L300	3	8	0'-4" 0'-6" 0'-7"	2'-4"	
6'-14"	A400	4	4	0'-4" 0'-6" 0'-7"	6'-9"	25.2 0.11
6'-15"	L300	3	8	0'-4" 0'-6" 0'-7"	2'-4"	
6'-16"	A400	4	4	0'-4" 0'-6" 0'-7"	6'-10"	25.4 0.11
6'-17"	L300	3	8	0'-4" 0'-6" 0'-7"	2'-4"	
6'-18"	A400	4	4	0'-4" 0'-6" 0'-7"	6'-11"	25.6 0.11
6'-19"	L300	3	8	0'-4" 0'-6" 0'-7"	2'-4"	
6'-20"	A400	4	4	0'-4" 0'-6" 0'-7"	6'-12"	25.9 0.11
6'-21"	L300	3	8	0'-4" 0'-6" 0'-7"	2'-4"	
6'-22"	A400	4	4	0'-4" 0'-6" 0'-7"	7'-0"	26.1 0.11
6'-23"	L300	3	8	0'-4" 0'-6" 0'-7"	2'-4"	

BOTTOM RAIL-LIST OF MATERIALS-EACH

L	Bar	Size	No. Req'd	Bending Dimensions	Length	Quantities
				a b c d		Steel Lbs. Conc. Cu. Yd.
5'-8"	A401	4	2	0'-4" 0'-4" 1'-2"	5'-8"	17.7 0.09
5'-9"	K300	3	8	0'-4" 0'-4" 1'-2"	3'-4"	
5'-10"	A401	4	2	0'-4" 0'-4" 1'-2"	5'-9"	17.8 0.09
5'-11"	K300	3	8	0'-4" 0'-4" 1'-2"	3'-4"	
5'-12"	A401	4	2	0'-4" 0'-4" 1'-2"	5'-10"	17.9 0.09
5'-13"	K300	3	8	0'-4" 0'-4" 1'-2"	3'-4"	
5'-14"	A401	4	2	0'-4" 0'-4" 1'-2"	5'-11"	18.1 0.10
5'-15"	K300	3	8	0'-4" 0'-4" 1'-2"	3'-4"	
5'-16"	A401	4	2	0'-4" 0'-4" 1'-2"	5'-12"	18.2 0.10
5'-17"	K300	3	8	0'-4" 0'-4" 1'-2"	3'-4"	
5'-18"	A401	4	2	0'-4" 0'-4" 1'-2"	6'-0"	18.3 0.10
5'-19"	K300	3	8	0'-4" 0'-4" 1'-2"	3'-4"	
5'-20"	A401	4	2	0'-4" 0'-4" 1'-2"	6'-1"	18.4 0.10
5'-21"	K300	3	8	0'-4" 0'-4" 1'-2"	3'-4"	
5'-22"	A401	4	2	0'-4" 0'-4" 1'-2"	6'-2"	18.5 0.10
5'-23"	K300	3	8	0'-4" 0'-4" 1'-2"	3'-4"	
5'-24"	A401	4	2	0'-4" 0'-4" 1'-2"	6'-3"	18.6 0.10
5'-25"	K300	3	8	0'-4" 0'-4" 1'-2"	3'-4"	
5'-26"	A401	4	2	0'-4" 0'-4" 1'-2"	6'-4"	18.7 0.10
5'-27"	K300	3	8	0'-4" 0'-4" 1'-2"	3'-4"	
5'-28"	A401	4	2	0'-4" 0'-4" 1'-2"	6'-5"	18.8 0.10
5'-29"	K300	3	8	0'-4" 0'-4" 1'-2"	3'-4"	
5'-30"	A401	4	2	0'-4" 0'-4" 1'-2"	6'-6"	19.0 0.11
5'-31"	K300	3	8	0'-4" 0'-4" 1'-2"	3'-4"	

Revised: 1- June - 1962
Revised: 9- September - 1960

DESIGNED BY: J.L. Parkes
DRAWN BY: J.L. Parkes
RETRACED BY: R. Reagon
CHECKED BY: _____
DATE: 4-4-63



ELEV. B-B

LOCATION	MARK	NO. UNITS	PER UNIT	TOTAL NO. REQ'D	BENDING DIMENSIONS- FEET & INCHES							LENGTH DATA FEET & INCHES	WEIGHT LBS.	
					A	B	C	D	E	F	O			
BENT 1- WEST-BOUND FREEWAY														
Footings	Same as for Bent 1, E-B Freeway												1575	
Col. 1	A501	1	10	10								27-3	927	
	Q501	1	1	1	0-3½			1-11			24-6	509-6	531	
	A301	1	4	4								24-6	37	
Col. 2	A503	1	10	10								25-0	850	
	Q503	1	1	1	0-3½			1-11			22-3	464-6	484	
	A203	1	4	4								22-3	33	
Col. 3	A505	1	10	10								23-0	782	
	Q505	1	1	1	0-3½			1-11			20-3	424-3	442	
	A305	1	4	4								20-3	30	
Col. 4	A506	1	10	10								22-0	748	
	Q506	1	1	1	0-3½			1-11			19-3	404-3	422	
	A306	1	4	4								19-3	29	
													(5315)	
Cap	Same as for Bent 1 E-B Freeway												4138	
Stop blocks	Same as for Bent 1 E-B Freeway												106	
Pedestals	Same as for Bent 1 E-B Freeway												127	
													TOTAL WEIGHT- BENT 1, W-B FREEWAY	11,261
BENT 2- WEST-BOUND FREEWAY														
Footings	Same as for Bent 1 E-B Freeway												1575	
Col. 1	A501	1	10	10								27-3	927	
	Q501	1	1	1	0-3½			1-11			24-6	509-6	531	
	A301	1	4	4								24-6	37	
Col. 2	A503	1	10	10								25-0	850	
	Q503	1	1	1	0-3½			1-11			22-3	464-6	484	
	A203	1	4	4								22-3	33	
Col. 3	A504	1	10	10								24-8	825	
	Q504	1	1	1	0-3½			1-11			21-6	449-3	469	
	A304	1	4	4								21-6	32	
Col. 4	A504	1	10	10								24-3	825	
	Q504	1	1	1	0-3½			1-11			21-6	449-3	469	
	A304	1	4	4								21-6	32	
													(5514)	
Cap	Same as for Bent 2 E-B Freeway												4177	
Stop blocks	Same as for Bent 2 E-B Freeway												169	
													TOTAL WEIGHT- BENT 2, W-B FREEWAY	11,435
BENT 3- WEST-BOUND FREEWAY														
Footings	Same as for Bent 1 E-B Freeway												1575	
Col. 1	A502	1	10	10								26-3	893	
	Q502	1	1	1	0-3½			1-11			23-6	489-6	511	
	A302	1	4	4								23-6	35	
Col. 2	A504	1	10	10								24-3	825	
	Q504	1	1	1	0-3½			1-11			21-6	449-3	469	
	A304	1	4	4								21-6	32	
Col. 3	A505	1	10	10								23-0	782	
	Q505	1	1	1	0-3½			1-11			20-3	424-3	442	
	A305	1	4	4								20-3	30	
Col. 4	A506	1	10	10								22-0	748	
	Q506	1	1	1	0-3½			1-11			19-3	404-3	422	
	A306	1	4	4								19-3	29	
													(6218)	
Cap	Same as for Bent 1 E-B Freeway												4138	
Stop blocks	Same as for Bent 1 E-B Freeway												106	
Pedestals	Same as for Bent 1 E-B Freeway												127	
													TOTAL WEIGHT- BENT 3, W-B FREEWAY	11,164

LOCATION	MARK	NO. UNITS	PER UNIT	TOTAL NO. REQ'D.	BENDING DIMENSIONS- FEET & INCHES							LENGTH BAR FEET & INCHES	WEIGHT LBS.	
					A	B	C	D	E	F	O			
SPAN 1														
Bms. 1 & 6	H1101	2	4	8								31-8	35-0	1458
	A601	2	2	4									31-9	191
	M501	2	3	6	1-7½	4-6				0-3			6-0	38
	S401	2	22	44	3-4½	1-2½	2-7½						7-9	228
	S402	2	1	2	3-6½	1-2½	2-9½						8-3	11
	S403	2	1	2	3-9	1-2½	3-0						8-6	11
	S404	2	1	2	3-11½	1-2½	3-2½						9-0	12
Bms. 2 thru. 5	E1101	4	2	8	1-0	3-0	21-4		2-1	2-1	27-6	28-9	1222	
	H1101	4	4	16							31-8	35-0	2975	
	E901	4	2	8	1-0	3-0	13-4		2-1	2-1	19-6	20-9	564	
	A601	4	2	8								31-9	382	
	S405	4	37	148	2-8	1-2½	2-7					7-0	692	
Deck Slab	A601	1	2	2								31-9	95	
	A501	1	66	66								42-3	2903	
	A502	1	66	66								42-0	2801	
	XB501	1	44	44				1-1½				8-6	350	
	XB502	1	44	44				1-0				8-6	350	
	A511	1	99	99								31-9	3278	
Fixed End	A505	1	6	6								41-0	257	
Diaphragm	A509	1	4	4								38-6	161	
	XH501	1	35	35	1-8	0-9½	1-3	0-9½			0-10½	5-0	183	
	T403	1	35	35	2-8	0-8						7-0	164	
Exp. End	A505	1	4	4								41-0	171	
Diaphragm	A506	1	4	4								10-3	43	
	A507	1	4	4								6-0	25	
	A508	1	2	2								11-6	24	
	T401	1	29	29	1-11	0-8						5-6	107	
	T402	1	8	8	1-4	0-8						4-6	24	
(394)														
TOTAL WEIGHT- SPAN 1														
18,925														
SPAN 2														
Bms. 1 & 6	H1103	2	4	8								43-6	46-9	1987
	E902	2	2	4	1-0	3-8	20-4		2-7	2-7	27-6	29-0	394	
	E903	2	2	4	1-0	3-8	27-4		2-7	2-7	34-6	36-0	450	
	A602	2	2	4								43-6	261	
	S406	2	35	70	3-10½	1-2½	3-1½					8-9	409	
Bms. 2 thru. 5	E1102	4	2	8	1-0	3-2	16-6		2-3	2-3	23-0	24-3	1031	
	E1103	4	2	8	1-0	3-2	23-0		2-3	2-3	29-6	30-9	1307	
	E1104	4	2	8	1-0	3-8	28-10		2-7	2-7	36-0	37-6	1594	
	E1105	4	2	8	1-0	3-8	34-4		2-7	2-7	41-6	43-0	1828	
	H1103	4	4	16							43-6	46-9	3974	
	A602	4	2	8								43-6	523	
	S407	4	45	180	3-2	1-2½	3-1					8-0	962	
Deck Slab	A602	1	2	2								43-6	131	
	A501	1	90	90								42-3	3966	
	A502	1	90	90								42-0	3943	
	XB501	1	48	48				1-1½				8-6	426	
	XB502	1	48	48				1-0				8-6	426	
	A512	1	99	99								43-6	4492	
	A515	1	40	40								6-0	250	
Fixed End	A505	1	8	8								41-0	342	
Diaphragm	T404	1	35	35	3-2	0-8						8-0	187	
(529)														
Exp. End	Same as for Exp. End Diaphragm, Span 1													
Diaphragm														
Interior	A505	1	6	6								41-0	257	
Diaphragm	T405	1	35	35	2-2	0-6						5-9	134	
(391)														
TOTAL WEIGHT- SPAN 2														
29,708														

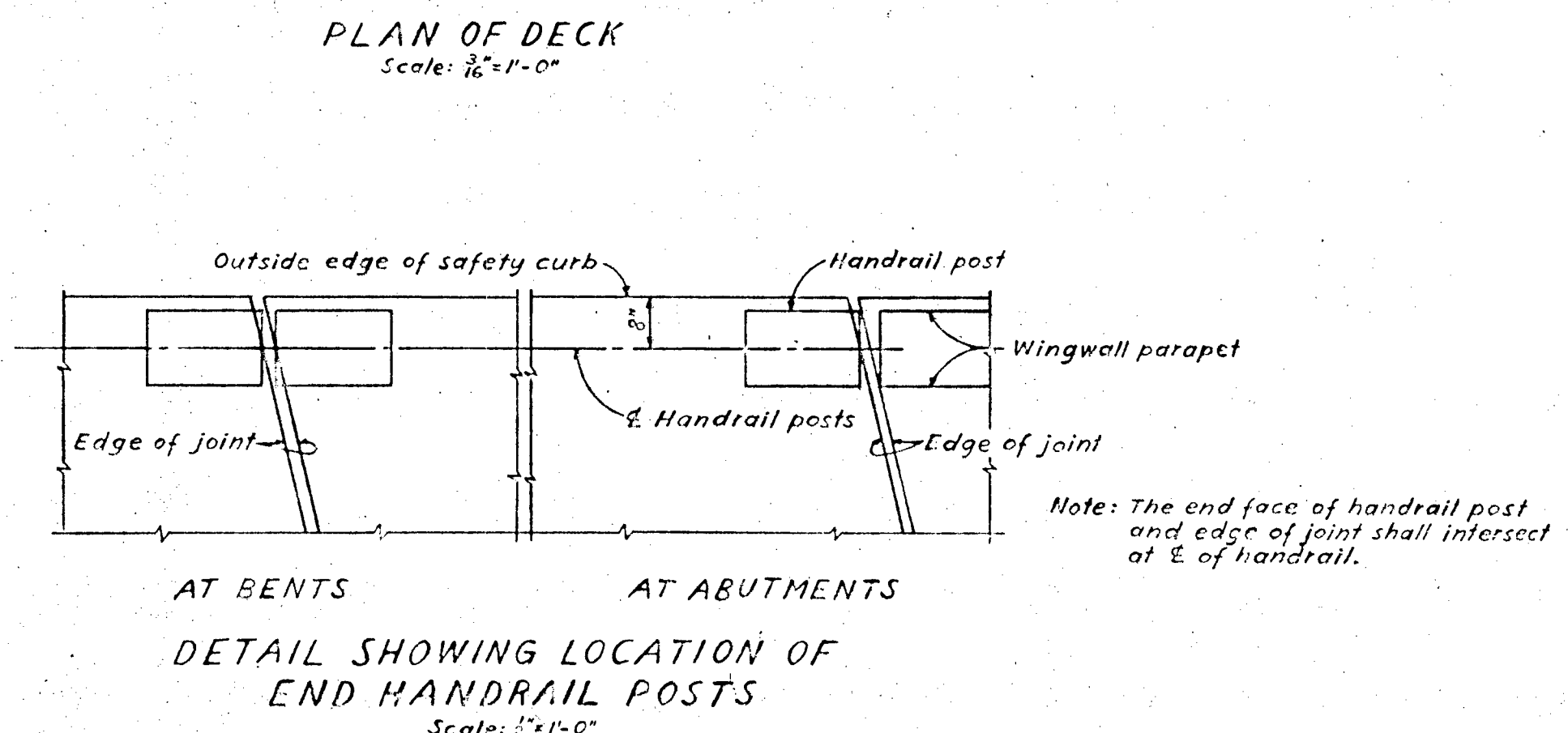
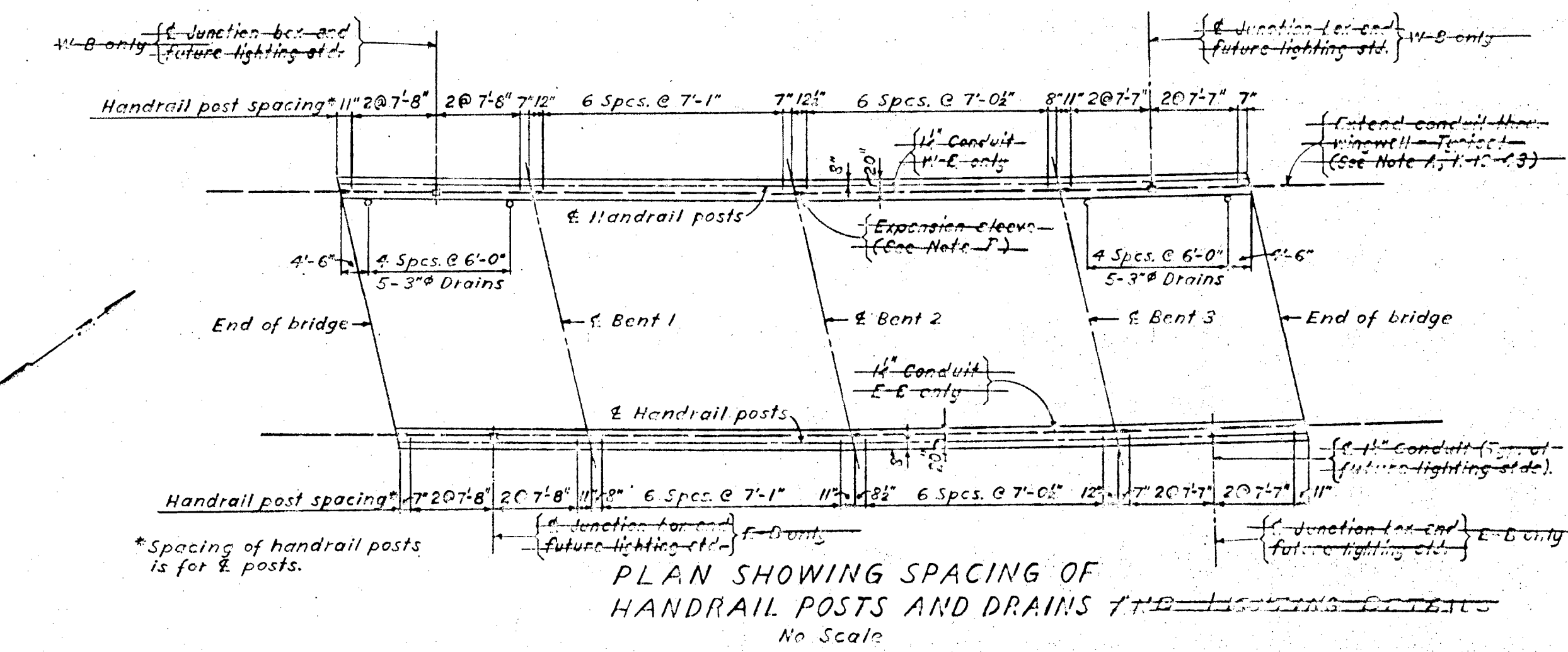
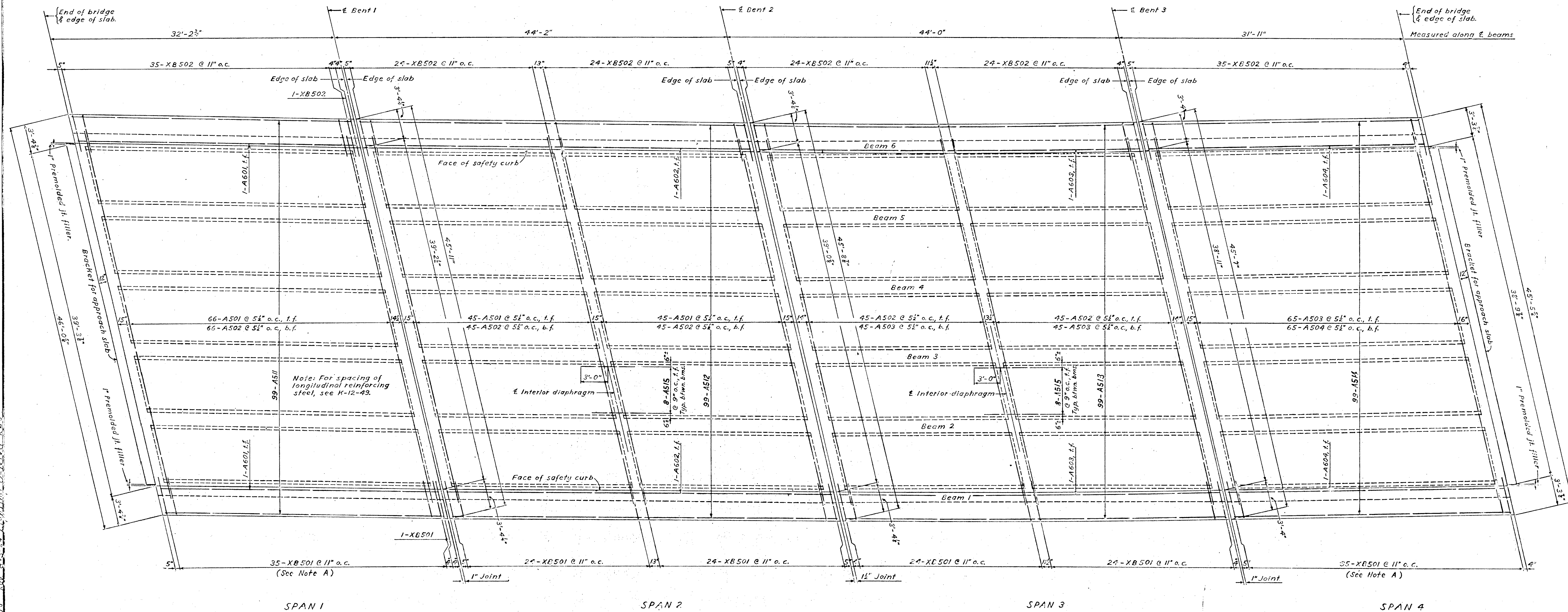
LOCATION	MARK	NO.	PER	TOTAL NO. REQ'D.	BENDING DIMENSIONS- FEET & INCHES							LENGTH BAR FEET & INCHES	WEIGHT LBS.	
					A	B	C	D	E	F	O			
SPAN 3														
Bms. 1 & 6	H1103	2	4	8								43-6	46-9	1987
	E902	2	2	4	1-0	3-6	20-4		2-7	2-7	27-6	29-0		394
	E903	2	2	4	1-0	3-8	27-4		2-7	2-7	34-6	36-0		490
	A603	2	2	4								43-3		260
	S406	2	35	70	3-10½	1-2½	3-1½					8-9		409
Bms. 2 thru. 5	E1102	4	2	8	1-0	3-2	16-6		2-3	2-3	23-0	24-3		1031
	E1103	4	2	8	1-0	3-2	23-0		2-3	2-3	29-6	30-9		1307
	E1104	4	2	8	1-0	3-6	28-10		2-7	2-7	36-0	37-6		1594
	E1105	4	2	8	1-0	3-8	34-4		2-7	2-7	41-6	43-0		1828
	H1103	4	4	16							43-6	46-9		3974
	A603	4	2	8								43-3		520
	S407	4	45	180	3-2	1-2½	3-1					8-0		962
Deck Slab	A603	1	2	2								43-3		130
	A502	1	90	90								42-0		3943
	A503	1	90	90								41-9		3919
	XB501	1	48	48					1-1½			8-6		426
	XB502	1	48	48					1-0			8-6		426
	A513	1	99	99								43-3		4466
	A515	1	40	40								6-0		250
Exp. End Diaphragm	Same as for Exp. End Diaphragm, Span 1													354
Fix. End Diaphragm	Same as for Fix. End Diaphragm, Span 2													529
Interior Diaphragm	Same as for Interior Diaphragm, Span 2													391
TOTAL WEIGHT- SPAN 3														29,630
SPAN 4														
Bms. 1 & 6	H1102	2	4	8							31-4	34-6		1466
	A604	2	2	4								31-6		189
	M501	2	3	6	1-7½	4-6			0-3			6-0		38
	S401	2	22	44	3-4½	1-2½	2-7½					7-9		228
	S402	2	1	2	3-6½	1-2½	2-9½					8-3		11
	S403	2	1	2	3-9	1-2½	3-0					8-6		11
	S404	2	1	2	3-11½	1-2½	3-2½					9-0		12
Bms. 2 thru. 5	E1101	4	2	8	1-0	3-0	21-4		2-1	2-1	27-6	28-9		1222
	H1102	4	4	16							31-4	34-6		2933
	E901	4	2	8	1-0	3-0	13-4		2-1	2-1	13-6	20-9		564
	A604	4	2	8								31-6		379
	S405	4	37	148	2-8	1-2½	2-7					7-0		692
Deck Slab	A604	1	2	2								31-6		95
	A503	1	65	65								41-9		2830
	A504	1	65	65								41-6		2814
	XB501	1	43	43					1-1½			8-6		381
	XB502	1	43	43					1-0			8-6		381
	A514	1	99	99								31-6		3253
Fix. End Diaphragm	A505	1	6	6								41-0		257
	A510	1	4	4								38-0		159
	XH501	1	35	35	1-8	0-9½	1-3	0-3½		0-10½		5-0		183
	T403	1	35	35	2-8	0-8						7-0		164
Exp. End Diaphragm	Same as for Exp. End Diaphragm, Span 1													394
TOTAL WEIGHT- SPAN 4														18,656
Deck reinforcing steel shown above is for one Bridge only. Reinforcing steel required for Two Bridges.														

LIGHTING NOTES:
 For lighting specifications and details, see K-2-246.
 All conduits shall be 1 1/2" I.P.S. galvanized conduits.
 All junction boxes shall be 6" x 6" x 8" deep.
 No lighting stds. or conductors in this contract.
 Provide anchor bolts for future light stds. See K-2-246.

HANDRAILING NOTES:
 Handrailing posts supporting lighting standards shall have vertical reinforcement consisting of 8 bars C500, 4 each face. (See H-5-110).

NOTE A:
 At the future lighting standards, add 8-XB5 bars (4 each side of 1/2" of standard) thereby making the spacing of XB5 bars 5 1/2" o.c. for 8" x 8" each side of 1/2" of standard.

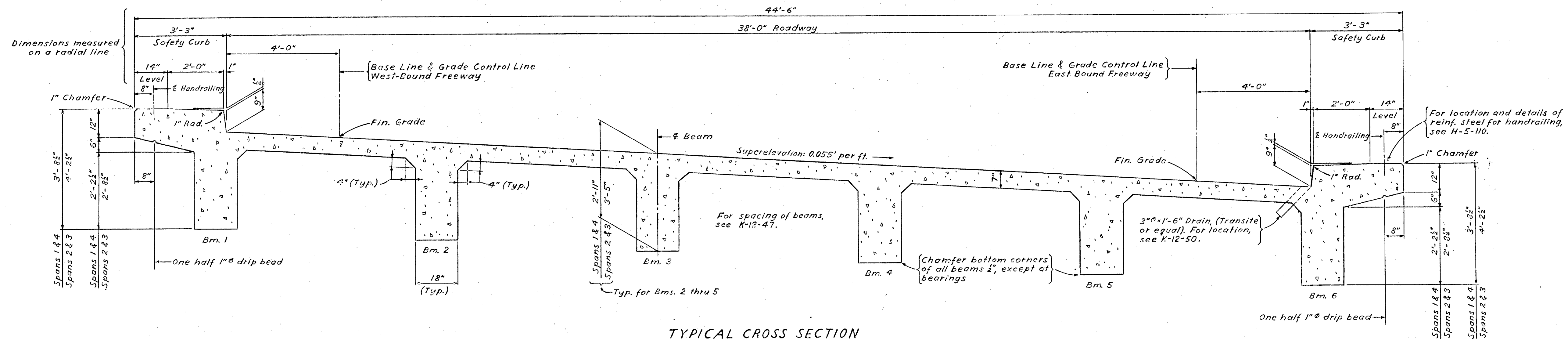
NOTE B:
 Provide expansion sleeve at E-bents and at abutments. Sleeve shall not cross expansion joint. (See K-2-246)



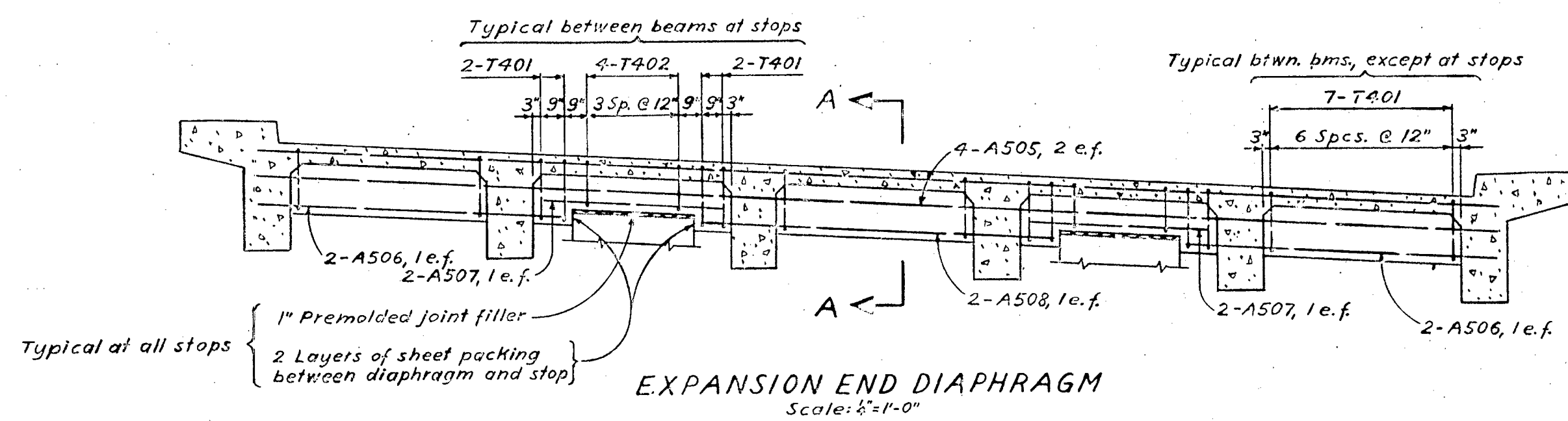
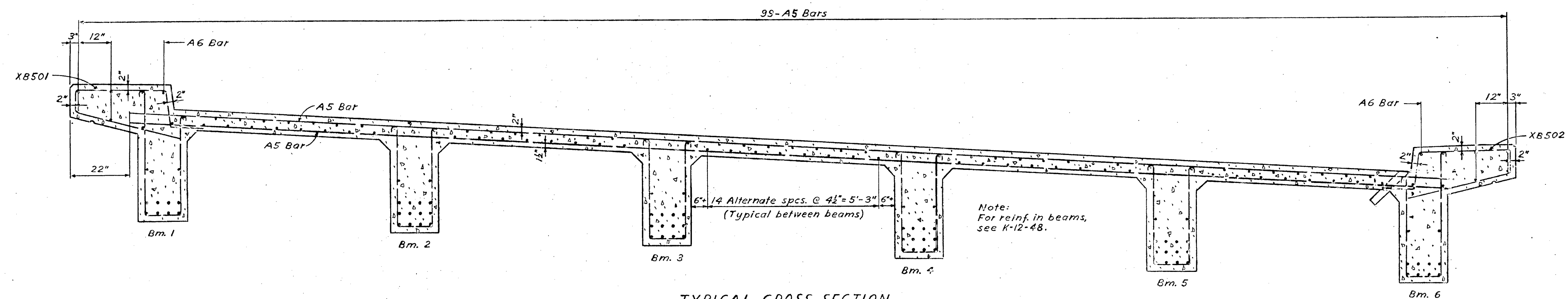
NOTES:
 For General Notes and Specifications, see K-12-1.
 For handrailing details, see H-5-110.
 For reinforcing steel and bending diagrams, see K-12-52.
 When pouring deck, provisions shall be made for setting reinforcing steel for handrailing.
 Chamfer all exposed edges 1/4", except as noted.
 All dimensions relative to spacing of reinforcing steel are to centers of bars, except as noted.
 Marks to all reinforcing steel in deck shall have suffix "D", (thus: A501-D, A502-D, etc.).
 For Deck Layout Plan, see K-12-57.

STATE OF TENNESSEE
 DEPARTMENT OF HIGHWAYS AND PUBLIC WORKS
 CHATTANOOGA FREEWAY
 HAMILTON COUNTY-E.A. PROJ. NO. 24-305 ()
 CULMINGS ROAD UNDERPASSES
 EAST-BOUND & WEST-BOUND FREEWAYS
 DECK SLAB
 SULLIVAN & HOEFLI - CONSULTING ENGINEERS - MEMPHIS, TENN.
 ALKE F. HEDMAN - CONSULTING ENGINEERS - CHATTANOOGA, TENN.
 DESIGNED BY: DJ DRAWN BY: BJ SCALE: AS NOTED DATE: 10-2-57
 CHECKED BY: AC SURETY: F.C. FILE NO. 57.77 SHEET NO. 15-12-57

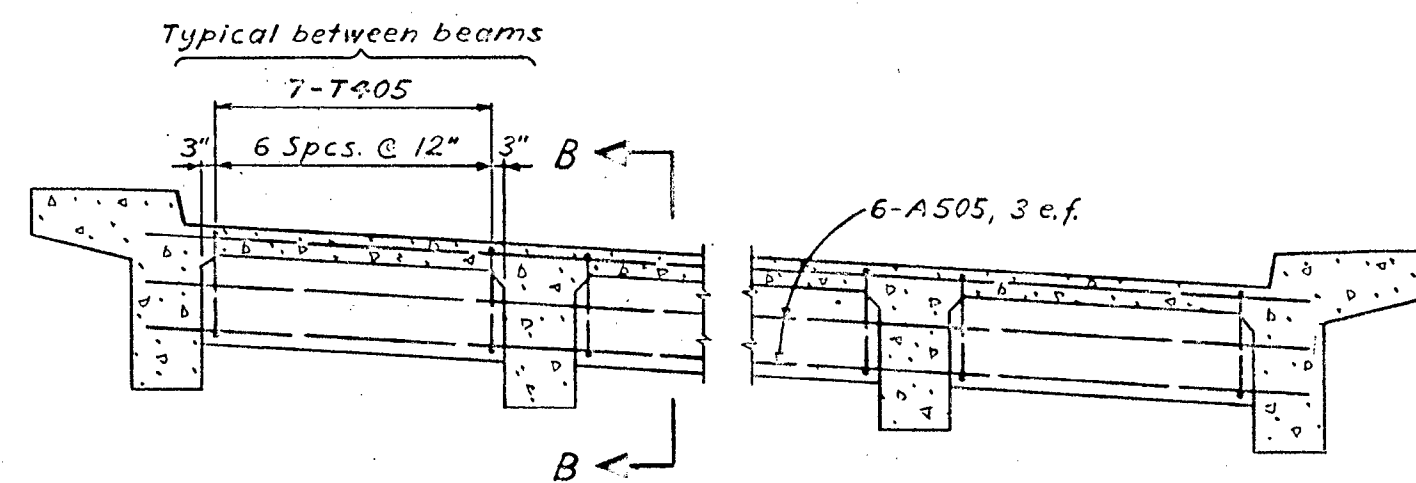
Rev 7-29-57 Add Lighting Detail Under Deck By B-5-14 Lighting Deleted R33



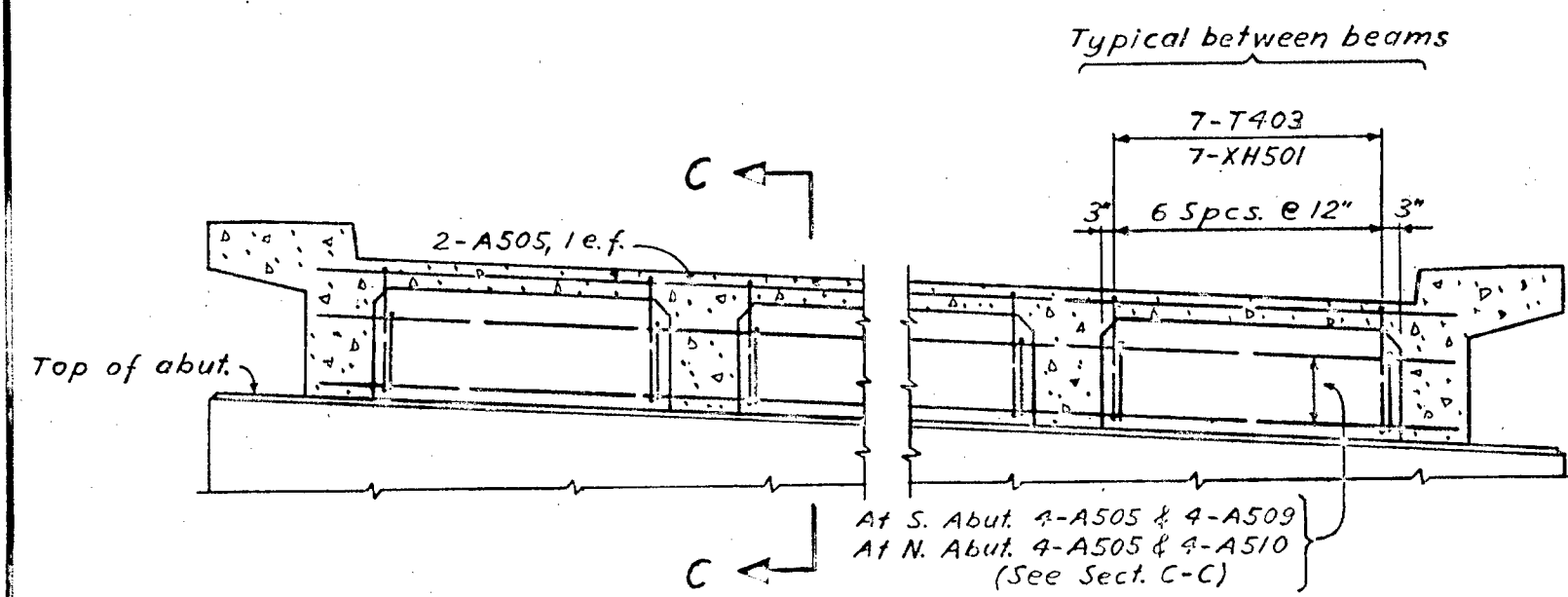
NOTE:
For elect. conduit, see K-12-50.



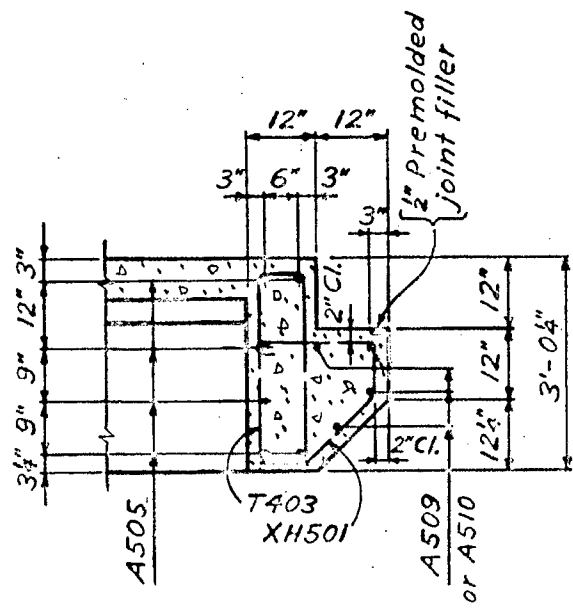
SECTION A-A
Scale: 1/2"=1'-0"



SECTION B-B
Scale: 1/2"=1'-0"



SECTION C-C
Scale: 1/2"=1'-0"



SECTION D-D
Scale: 1/2"=1'-0"

Note:
For outline of end diaphragms, see "Beam End Details", K-12-48.
For details of stops, see K-12-45.

Abbreviations:
e.f. = each face

NOTES:
For General Notes and Specifications, see K-12-1.
For Deck Layout Plan, see K-12-47.
For handrailing and drainage, see K-12-50.
For reinforcing steel and bending diagrams, see K-12-52.
All dimensions relative to spacing of reinforcing steel are to centers of bars, except as noted.
When pouring the Deck, provisions shall be made for setting reinforcing steel for concrete handrailing.
Chamfer all exposed edges 1/2", except as noted.
Marks to all reinforcing steel in the Deck shall have suffix "D", (thus: A501-D, T401-D, etc.).
Sheet packing shall be placed with graphite surfaces in contact with each other.

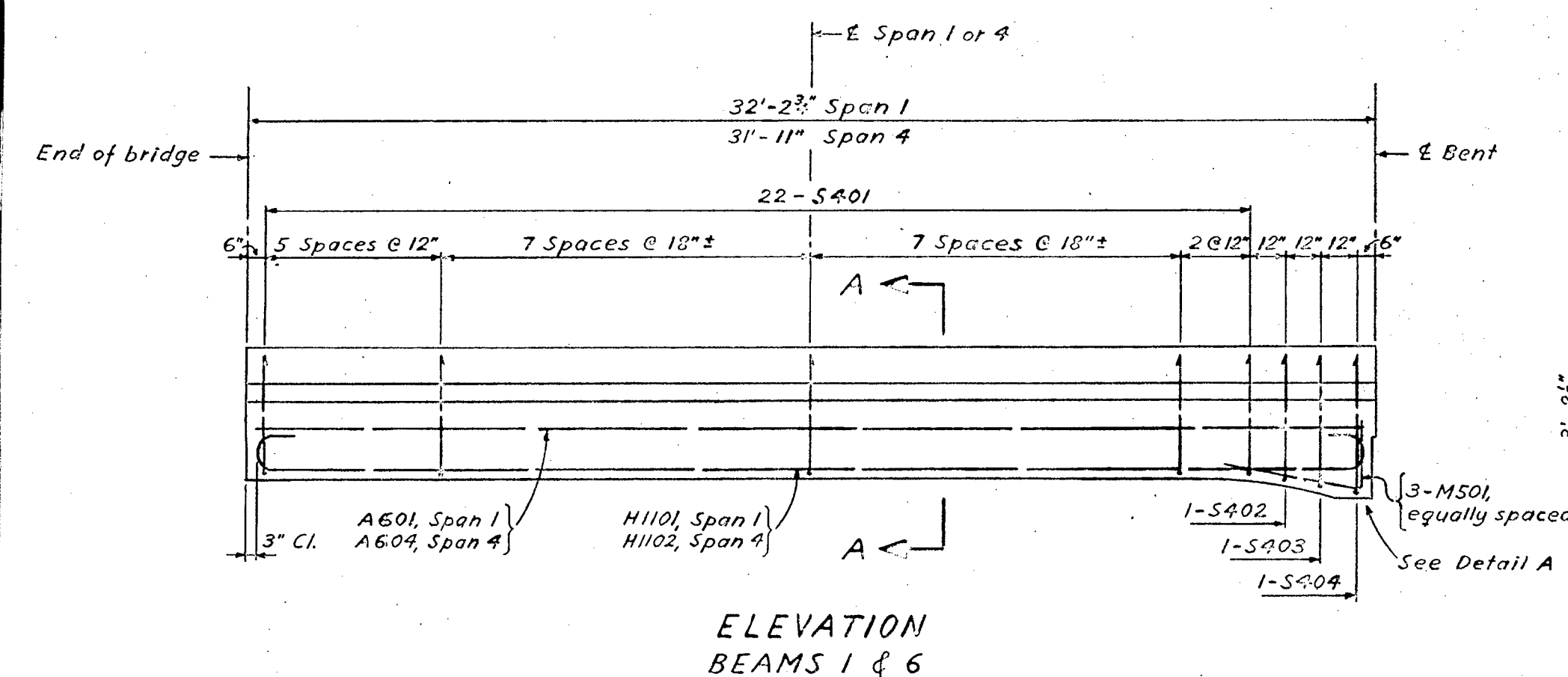
STATE OF TENNESSEE
DEPARTMENT OF HIGHWAYS AND PUBLIC WORKS
CHATTANOOGA FREEWAY
HAMILTON COUNTY-E.A. PROJ. NO. E-24-3()

CUMMINGS ROAD UNDERPASSES
EAST-BOUND & WEST-BOUND FREEWAYS
DECK CROSS SECTION AND DIAPHRAGMS

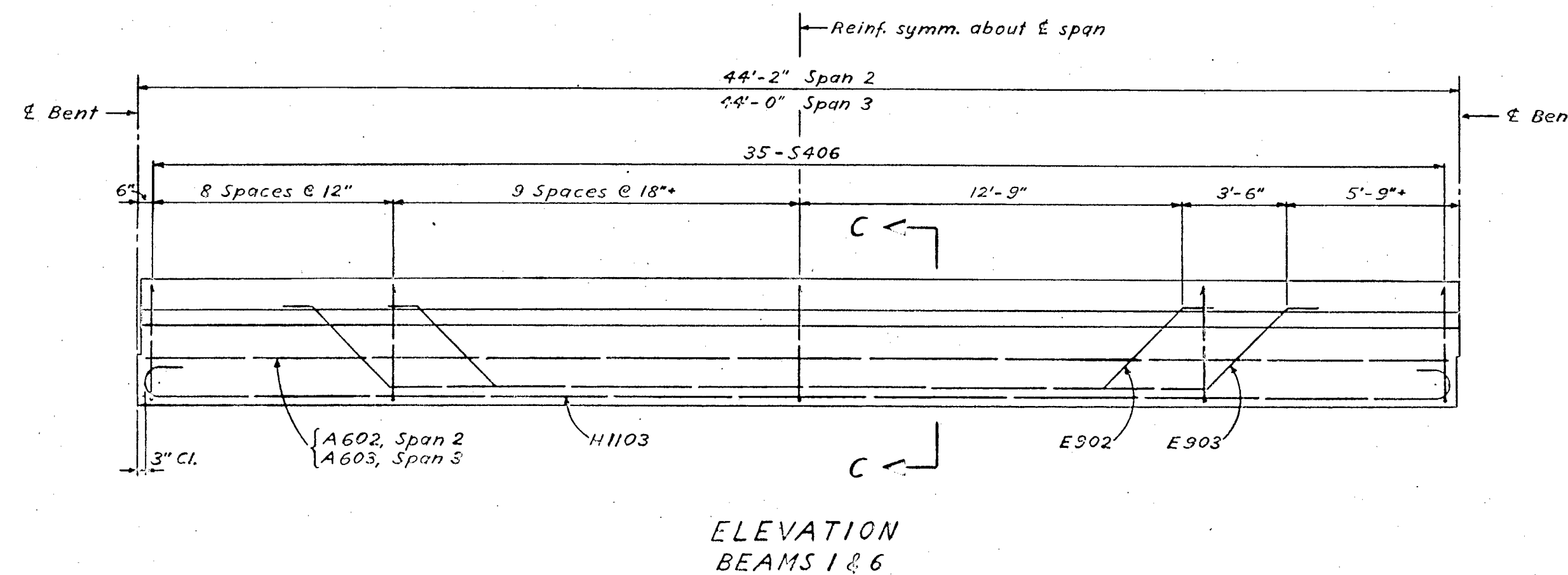
SULLIVAN & HOEBEL - CONSULTING ENGINEERS - KNOXVILLE, TENN.
AAKE F. HEDZMAN - CONSULTING ENGINEERS - CHATTANOOGA, TENN.

DSGN: BJ SCALE: AS NOTED DATE: H-5-62
CHKD: AC FILE NO. 57.77 SHEET NO. K-12-49

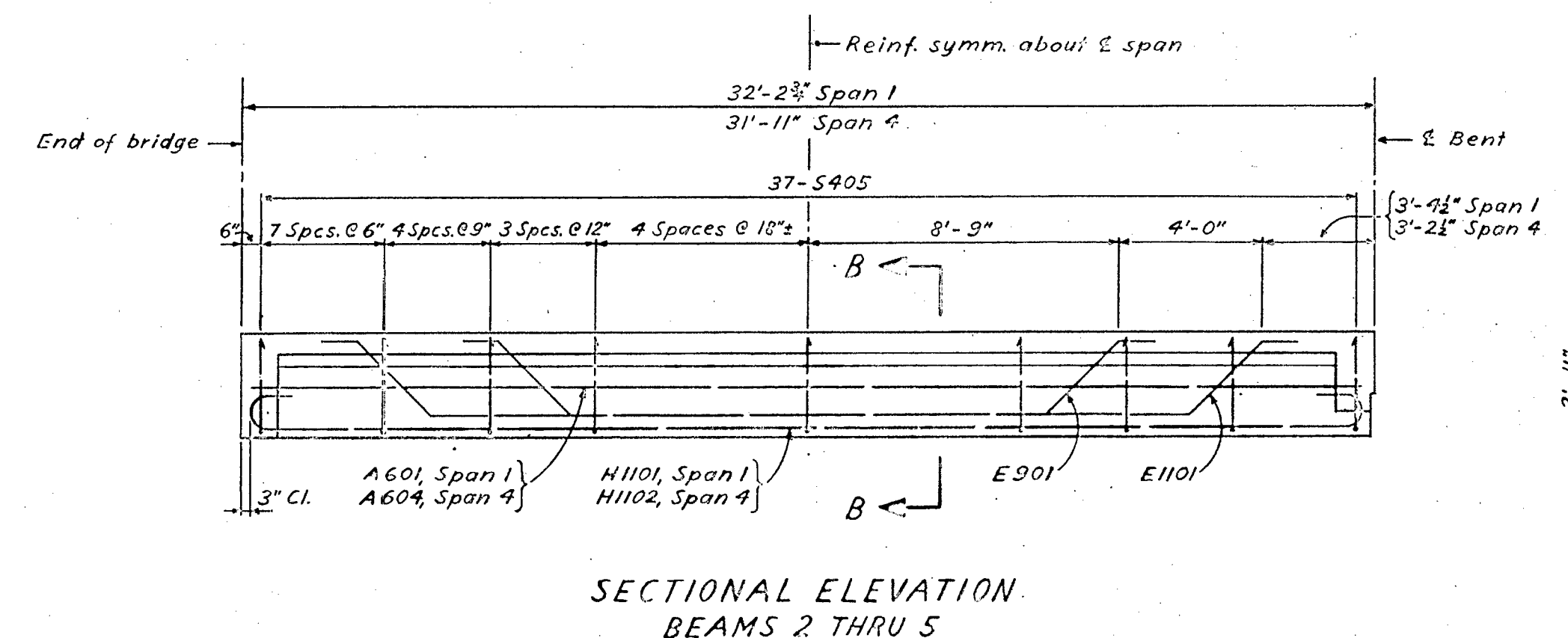
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	STATE AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
3	TENN.	24-3(1)	117		69	181



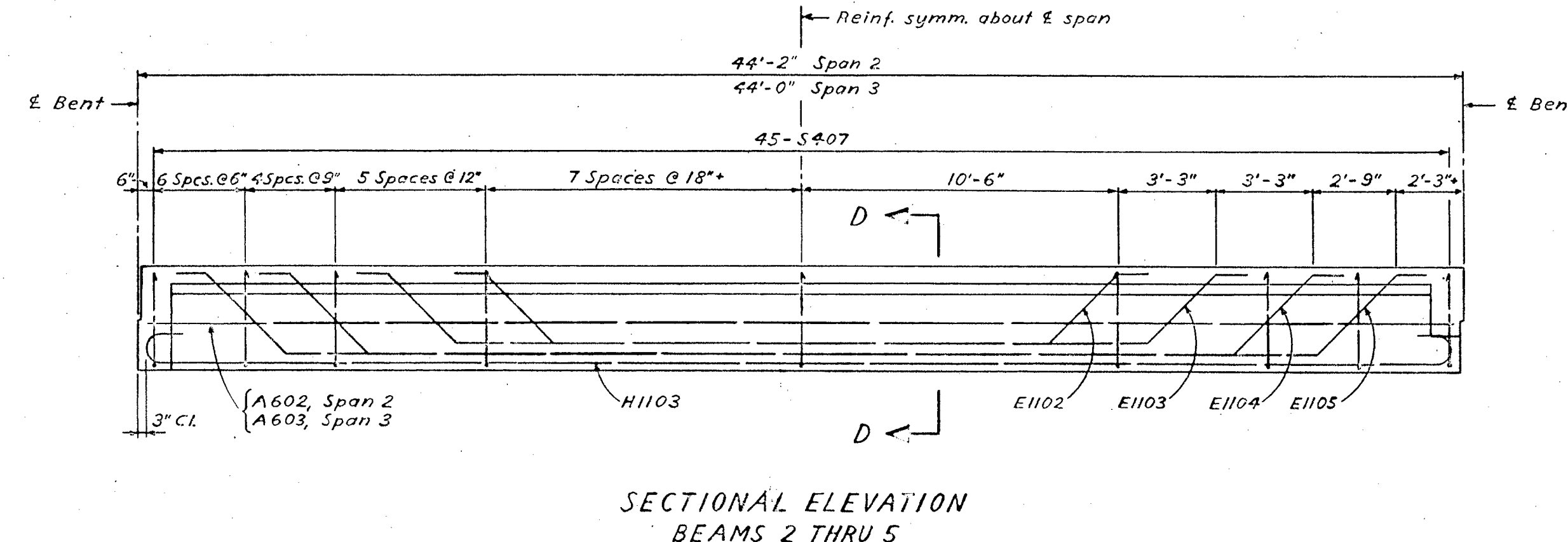
SECTION A-A



SECTION C-C



SECTION B-B



SECTION D-D

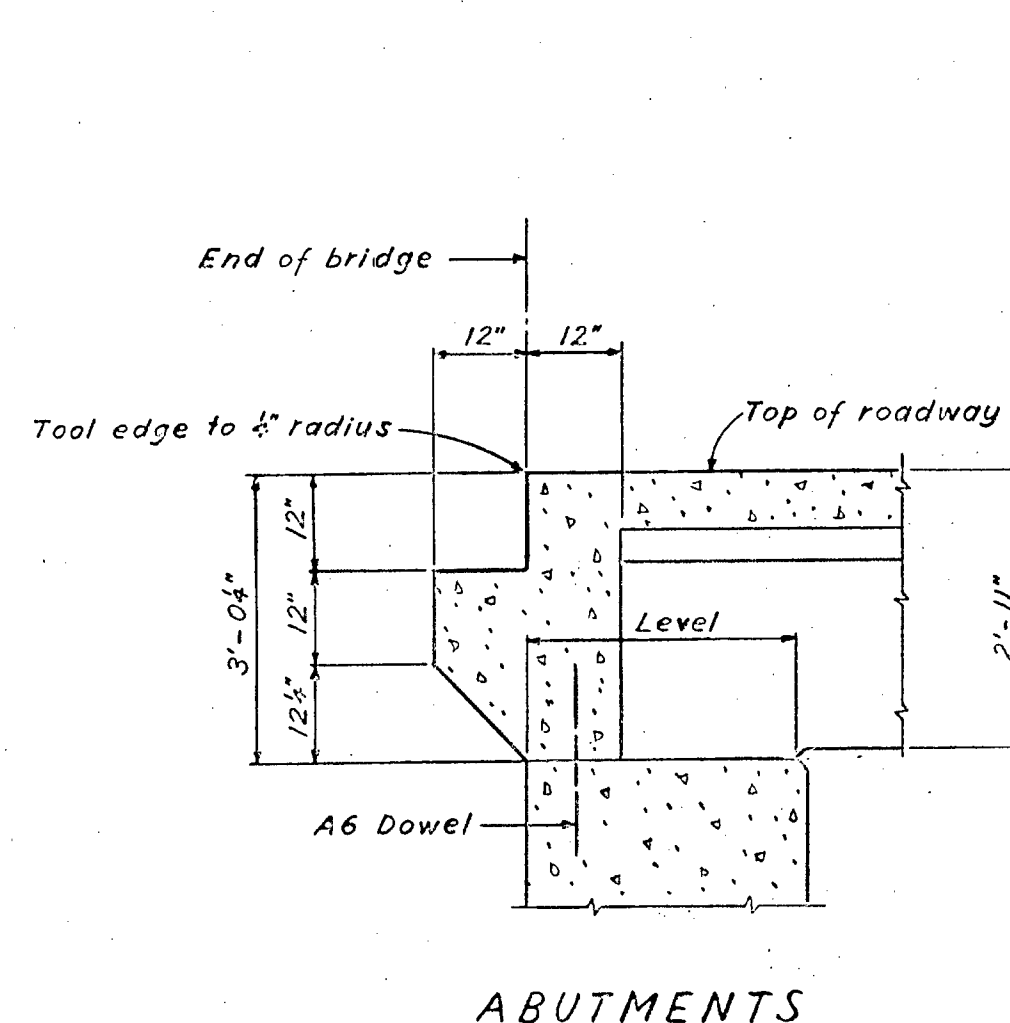
BEAM DETAILS - SPANS 1 & 4
Scale: 1/4\"/>

BEAM DETAILS - SPANS 2 & 3
(End details shown are for Span 2)
Scale: 1/4\"/>

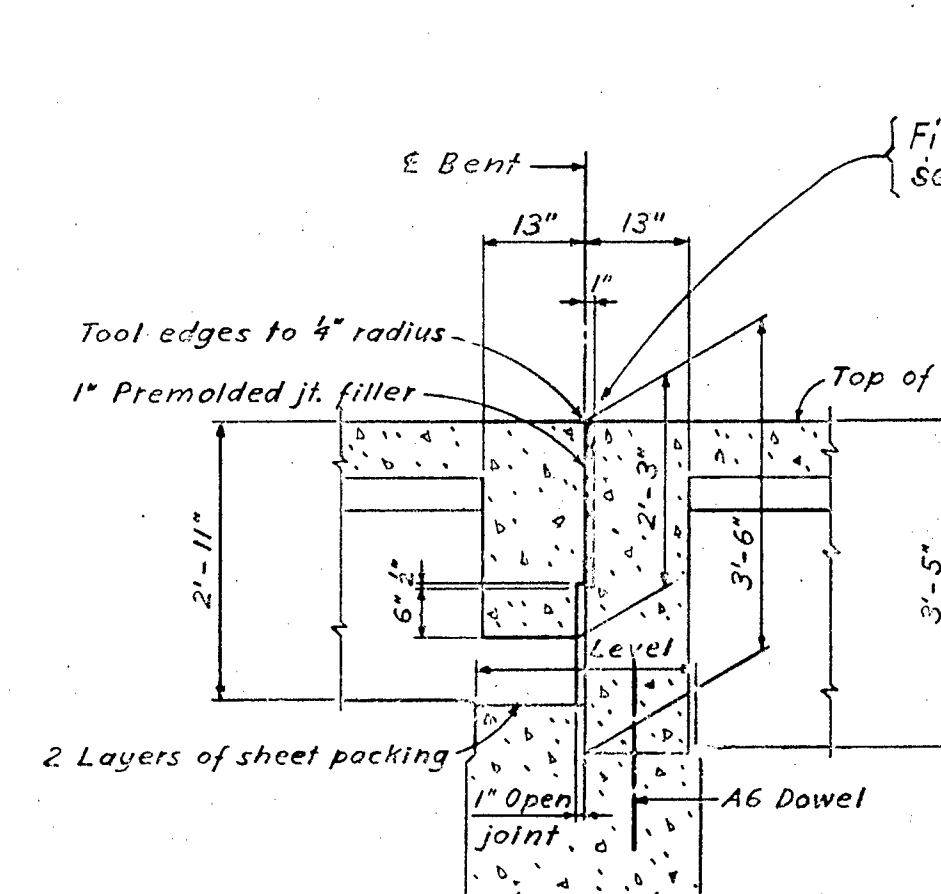
CAMBER NOTE:
Each beam shall be cambered to compensate for dead load deflection.
The dead load deflection at the center of span of each beam is as follows: Spans 1 & 4 = 5/8\"/>

Abbreviations:
e.f. = each face
i.s. = inside steel
o.s. = outside steel

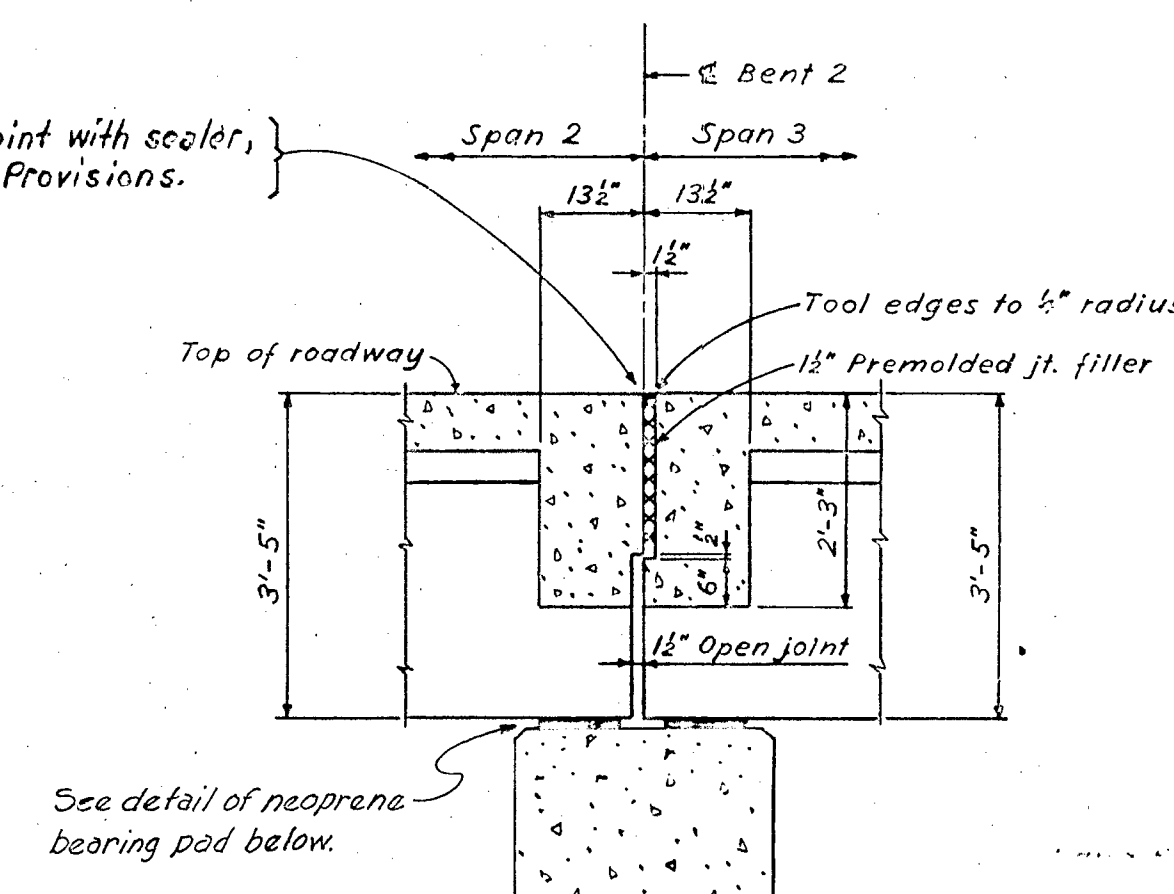
NOTES:
For General Notes and Specifications, see K-12-1.
For Deck Layout Plan, see K-12-47.
For reinforcing steel and bending diagrams, see K-12-52.
All dimensions relative to spacing of reinforcing steel are to centers of bars, except as noted.
Chamfer all exposed edges 3\"/>



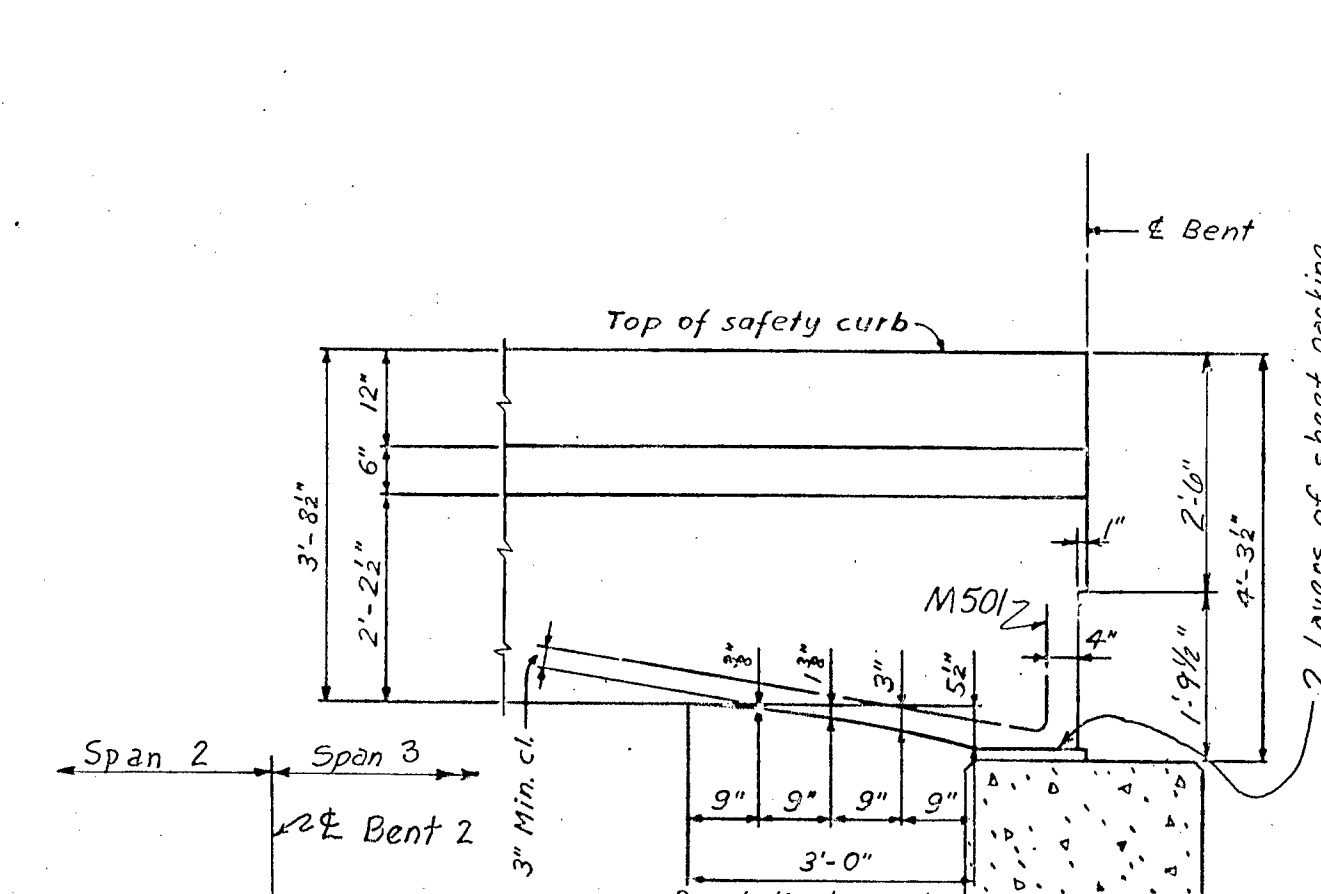
ABUTMENTS



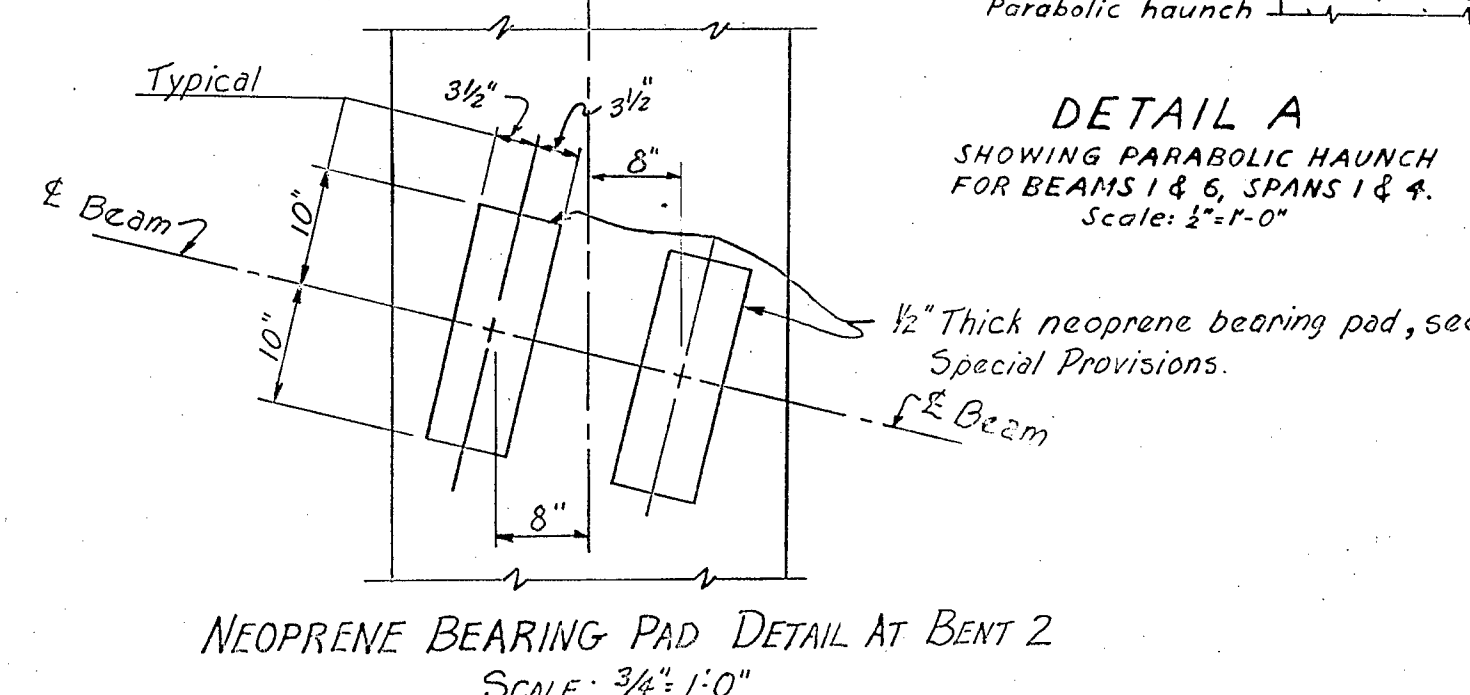
BENTS 1 & 3



BENT 2



DETAIL A
SHOWING PARABOLIC HAUNCH
FOR BEAMS 1 & 6, SPANS 1 & 4.
Scale: 1/2\"/>

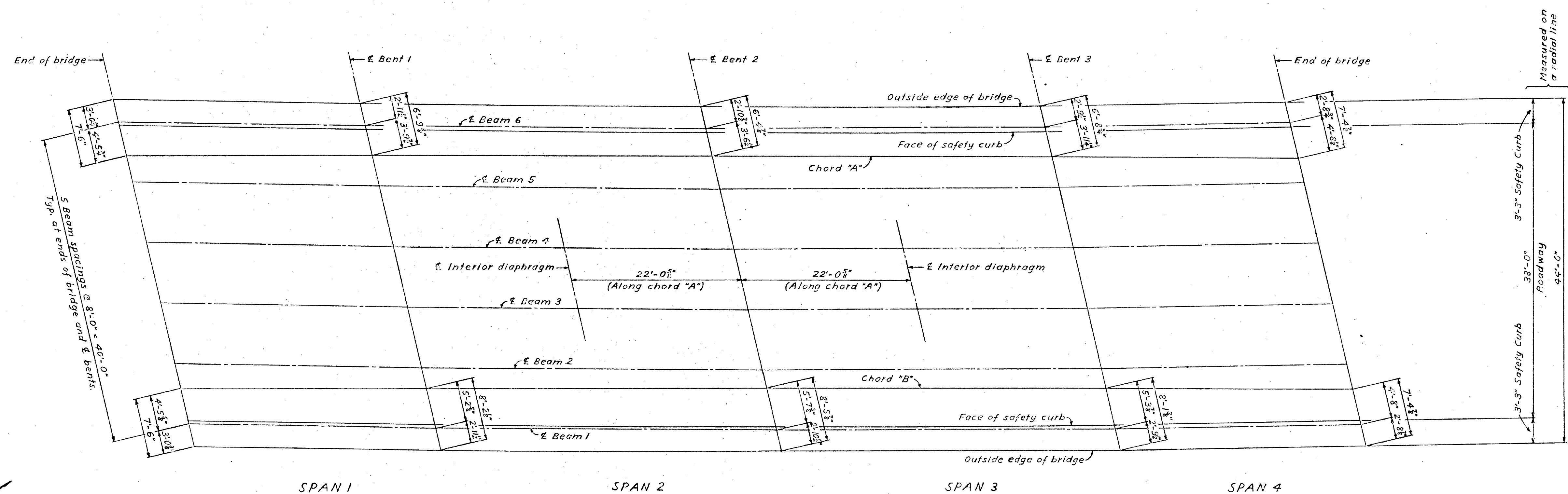


NEOPRENE BEARING PAD DETAIL AT BENT 2
Scale: 3/4\"/>

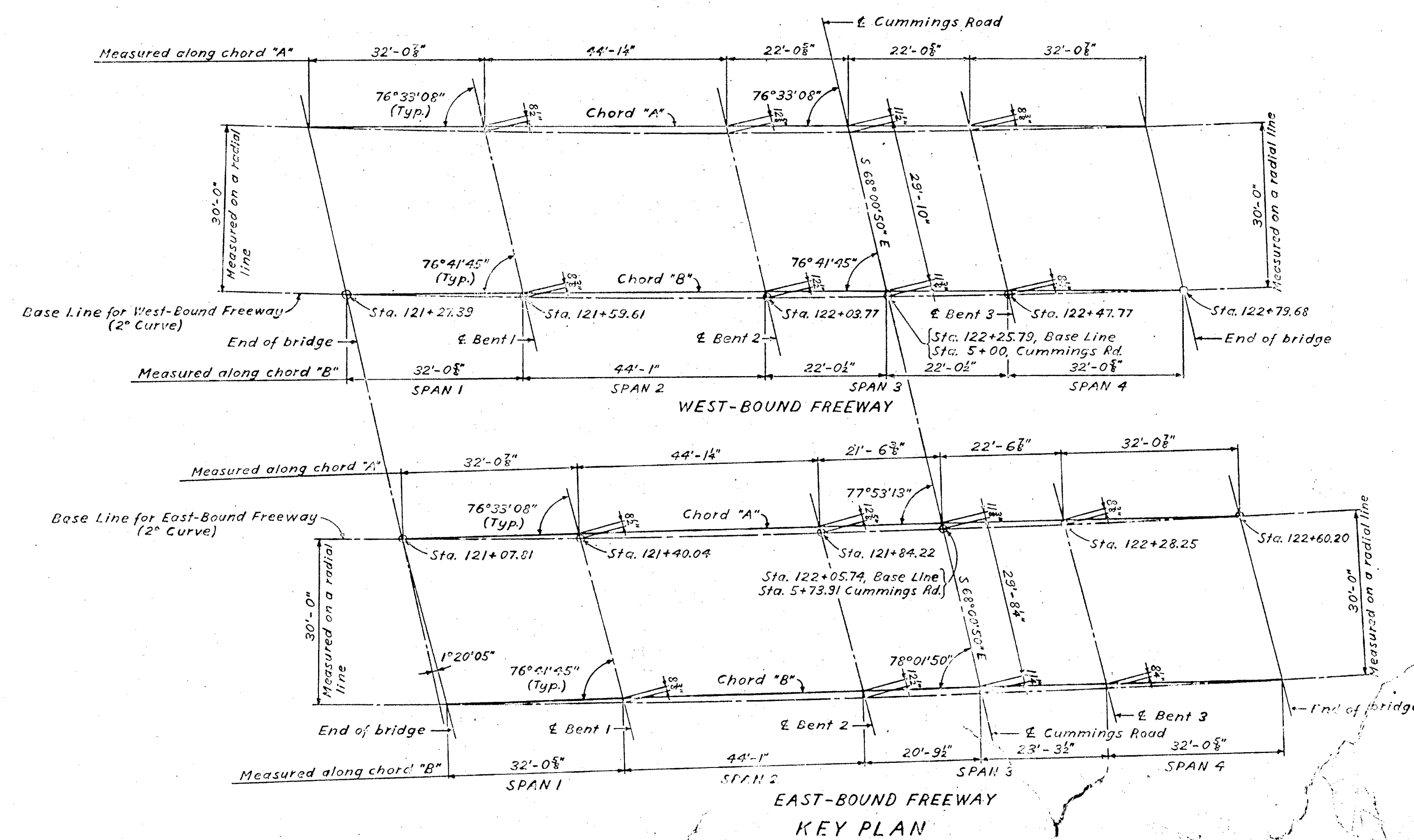
Note:
Beams shown are interior beams.
For details of diaphragms, see K-12-49.
Details shown are normal to abutments and bents.

BEAM END DETAILS
Scale: 1/2\"/>

STATE OF TENNESSEE			
DEPARTMENT OF HIGHWAYS AND PUBLIC WORKS			
CHATTANOOGA FREEWAY			
HAMILTON COUNTY - F.A. PROJ. NO. 24-3()			
CUMMINGS ROAD UNDERPASSES			
EAST-BOUND & WEST-BOUND FREEWAYS			
BEAMS			
SULLIVAN & HOEBEL - CONSULTING ENGINEERS - KNOXVILLE, TENN.			
ALKE F. HEDMAN - CONSULTING ENGINEERS - CHATTANOOGA, TENN.			
DSGN: BJ	DRWN: BJ	SCALE: AS NOTED	DATE: 1-15-62
CHKD: AC	SUPV: AC	FILE NO. 57.77	SHEET NO. K-12-40

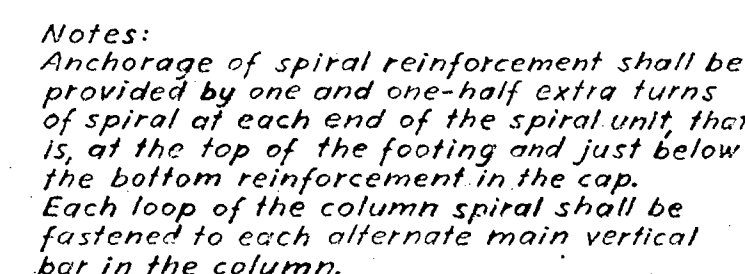


DECK LAYOUT PLAN
EAST-BOUND AND WEST-BOUND FREEWAY
Scale: 1/4" = 1'-0"



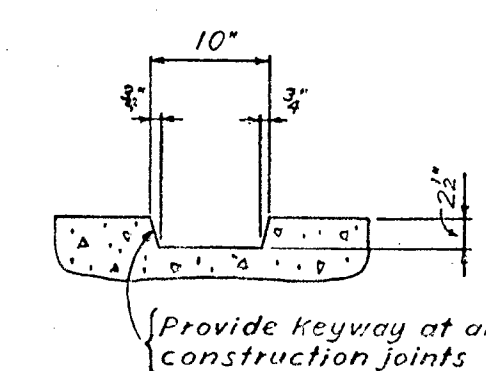
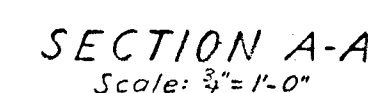
NOTES:
For General Notes and Specifications, see K-12-1.
All dimensions are measured horizontally.

STATE OF TENNESSEE
DEPARTMENT OF HIGHWAYS AND PUBLIC WORKS
CHATTANOOGA FREEWAY
HAMILTON COUNTY-E.A. PROJ. NO. I-2
CUMMINGS ROAD
EAST-BOUND

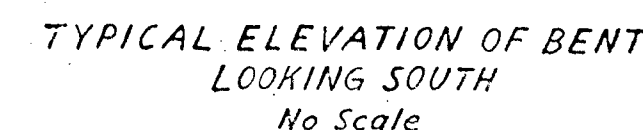


PLAN

Maximum design bearing pressure for basic unit stresses is 12,000 lbs. per sq. foot. All footings shall extend into rock 6 inches. If column heights are increased more than 3' the Engineer shall be notified.



DETAIL A
SHOWING DOWELS AND KEYWAY
Scale: $\frac{3}{8}'' = 1'-0''$



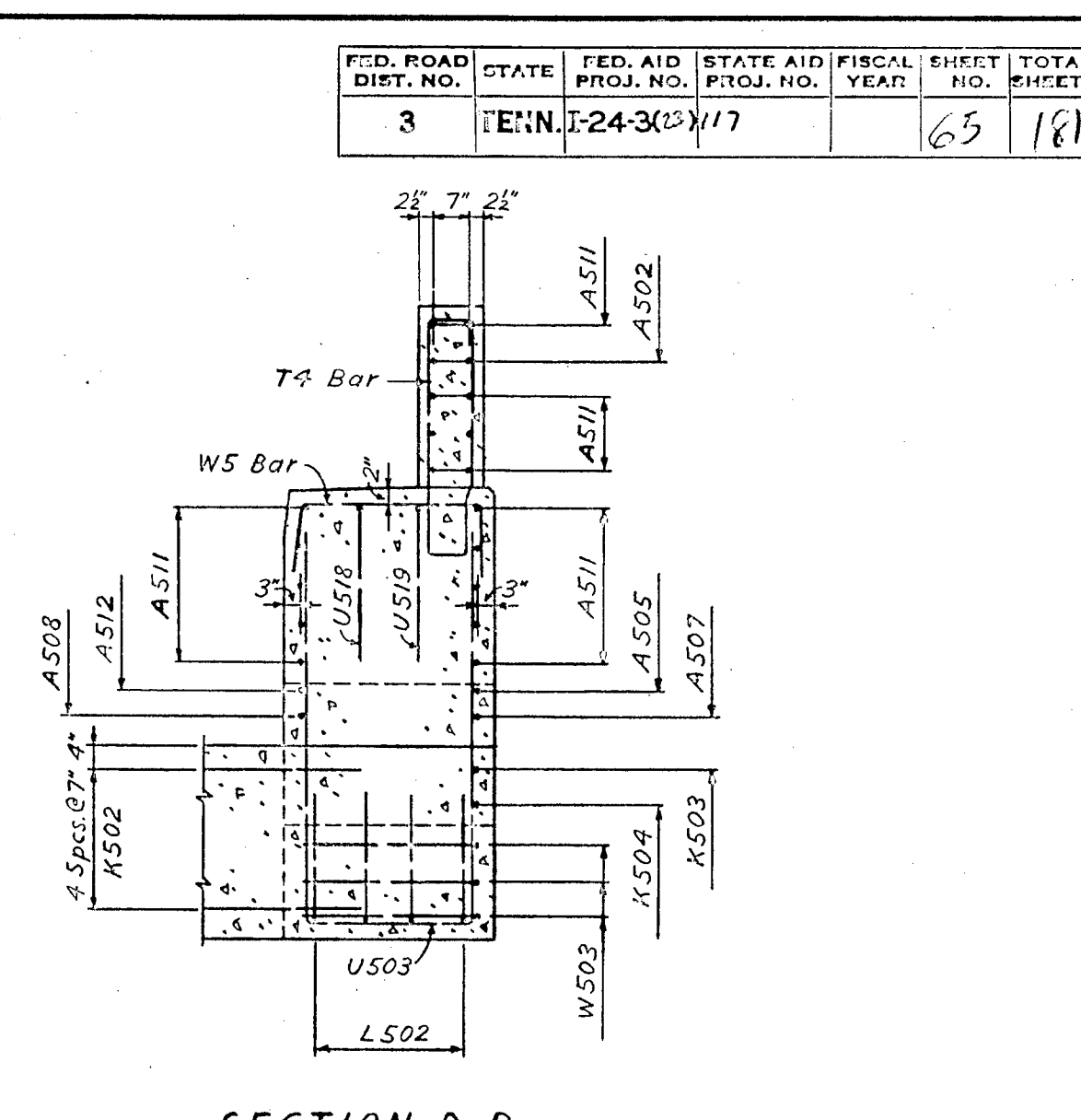
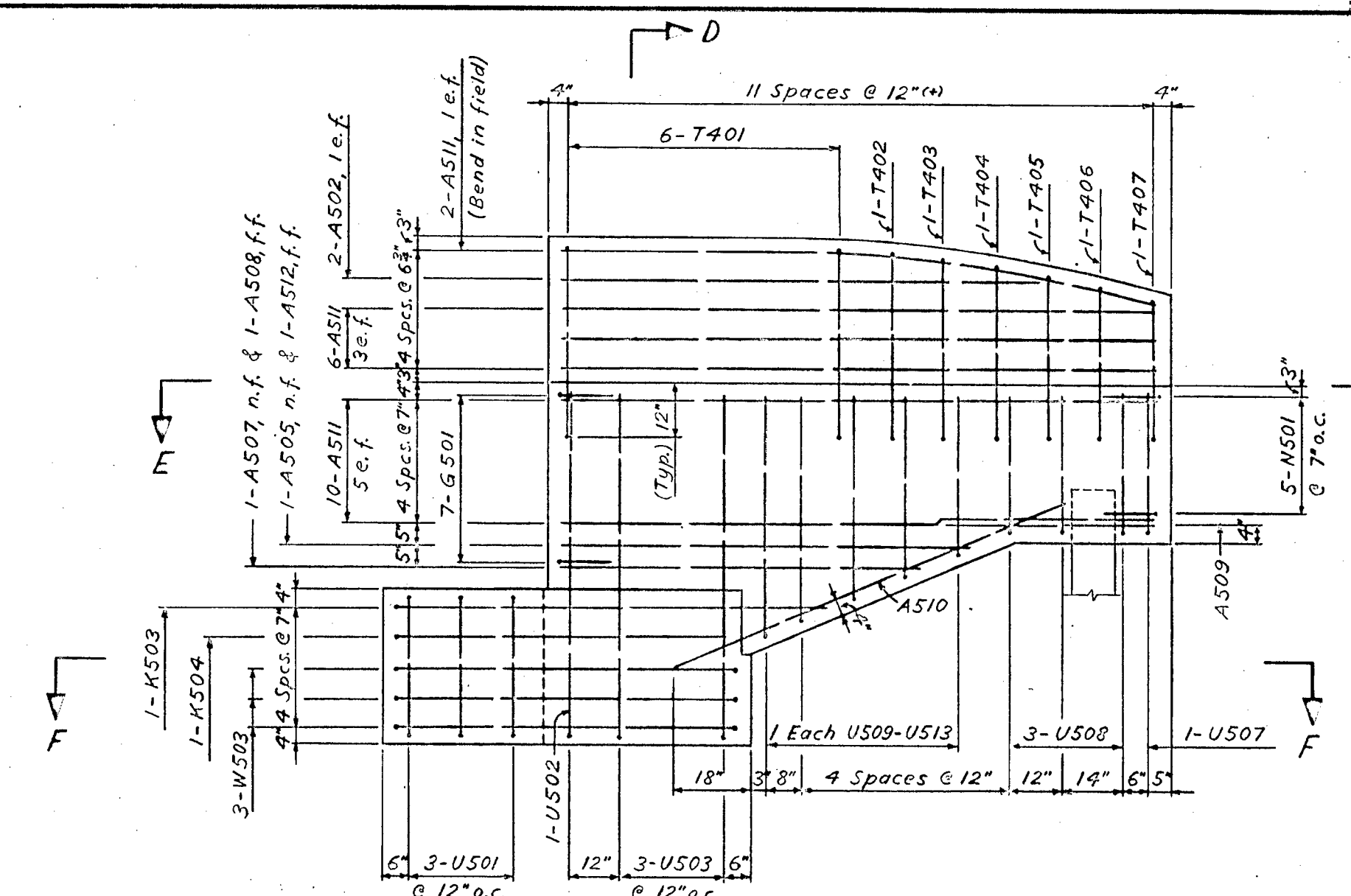
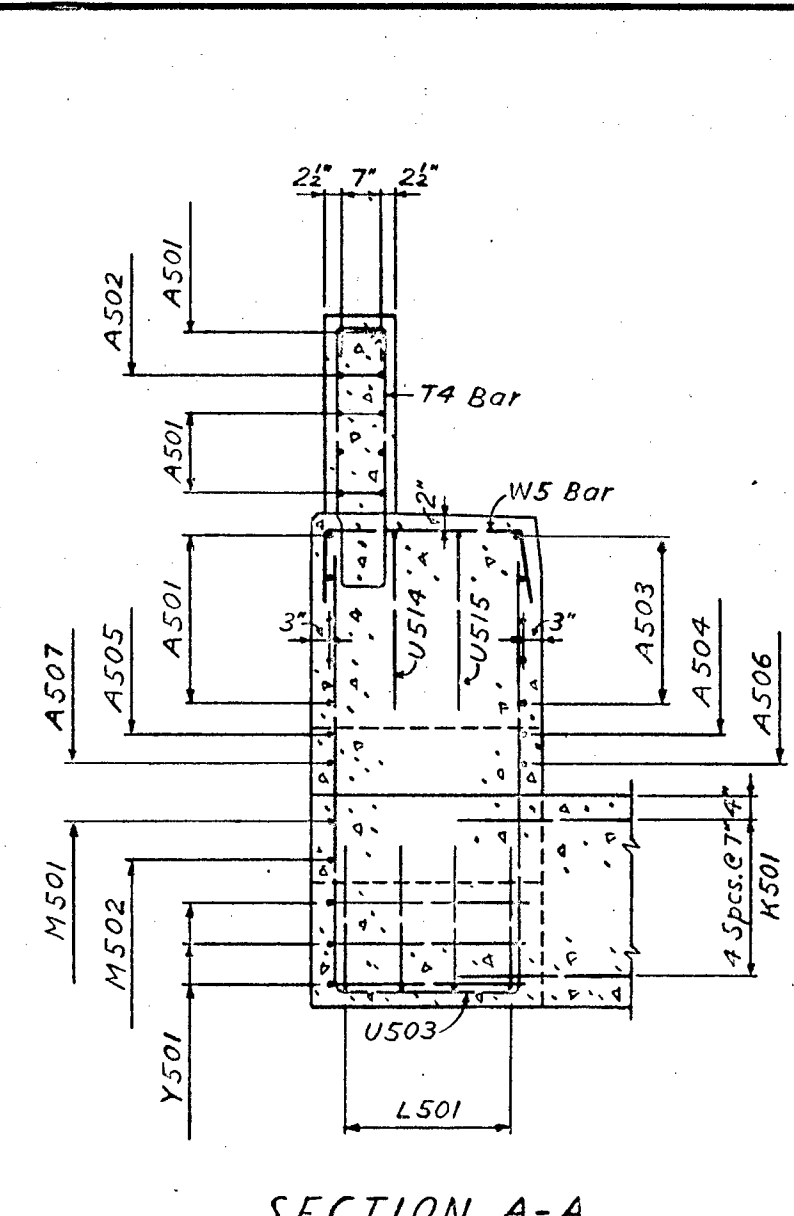
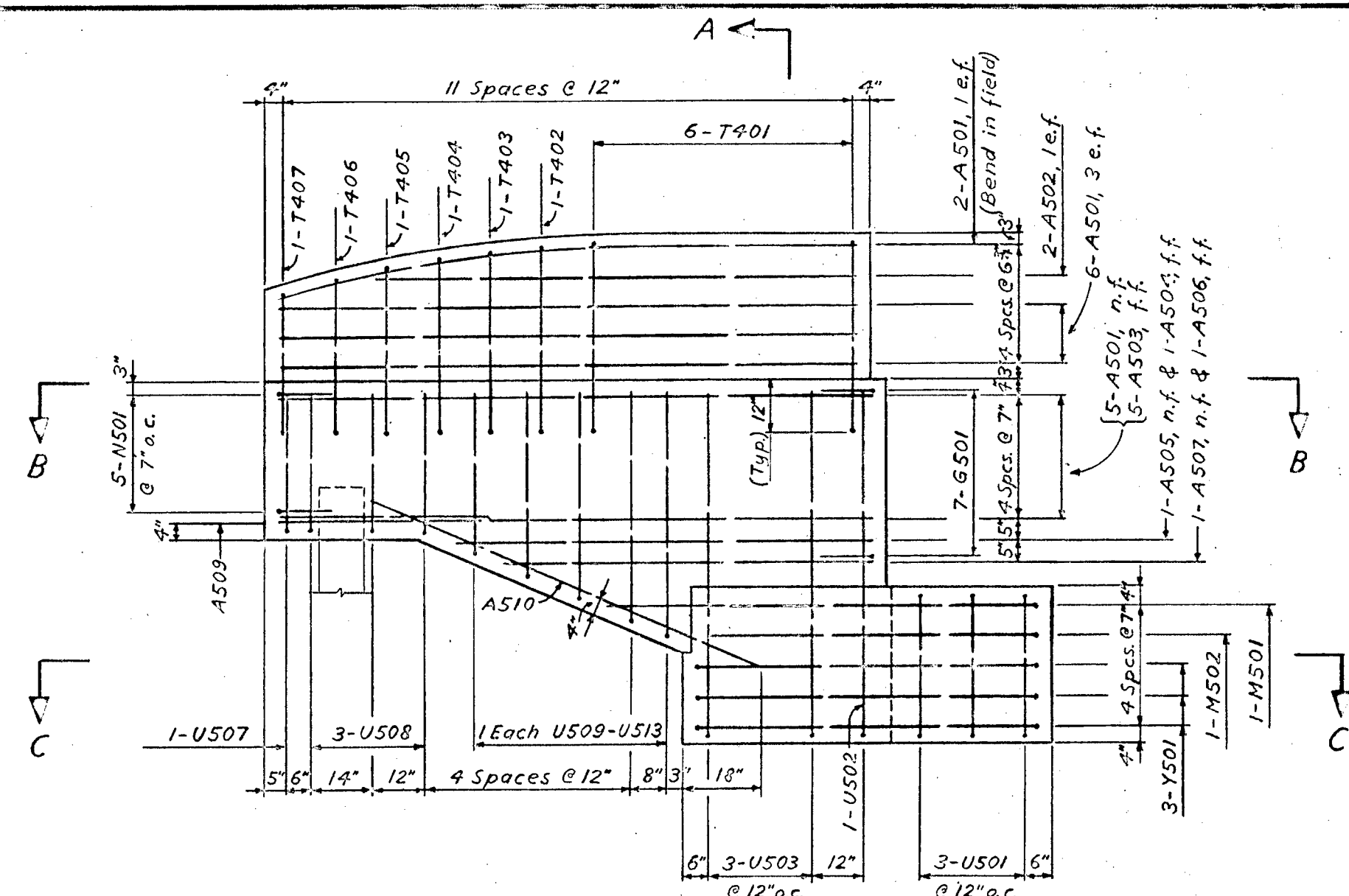
WEST-BOUND FREEWAY

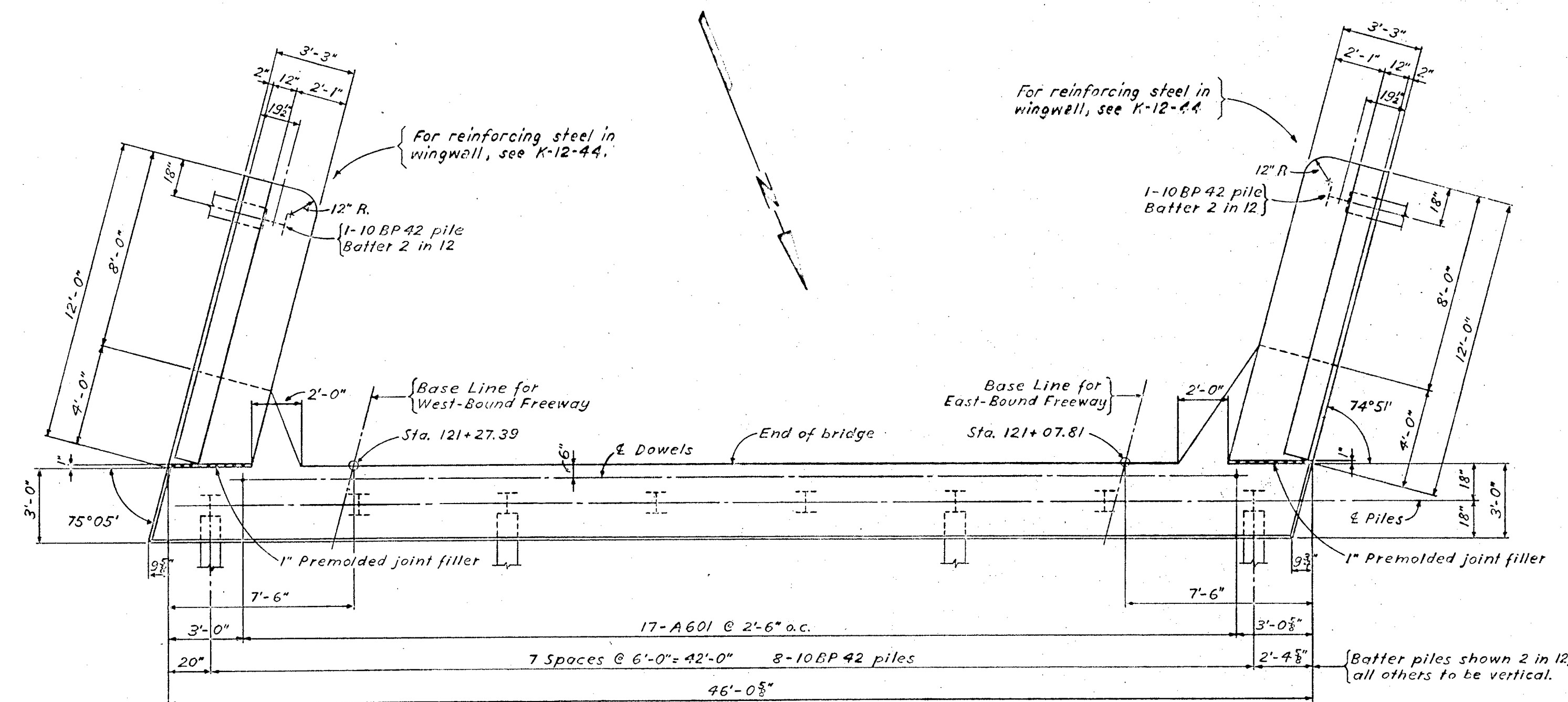
NOTES:
For General Notes and Specifications, see K-12-1.
For reinforcing steel and bending diagrams, see K-12-51 and K-12-52.
All dimensions relative to spacing of reinforcing steel are to centers of bars, except as noted.
Chamfer all exposed edges $\frac{3}{8}$ " except as noted.
Mark to all reinforcing steel in the bents shall have suffix "B";
(Thus: A301-B, A603-B, etc.).

CUMMINGS ROAD UNDERPASSES
EAST-BOUND & WEST-BOUND FREEWAYS
BENTS-COLUMNS AND FOOTINGS

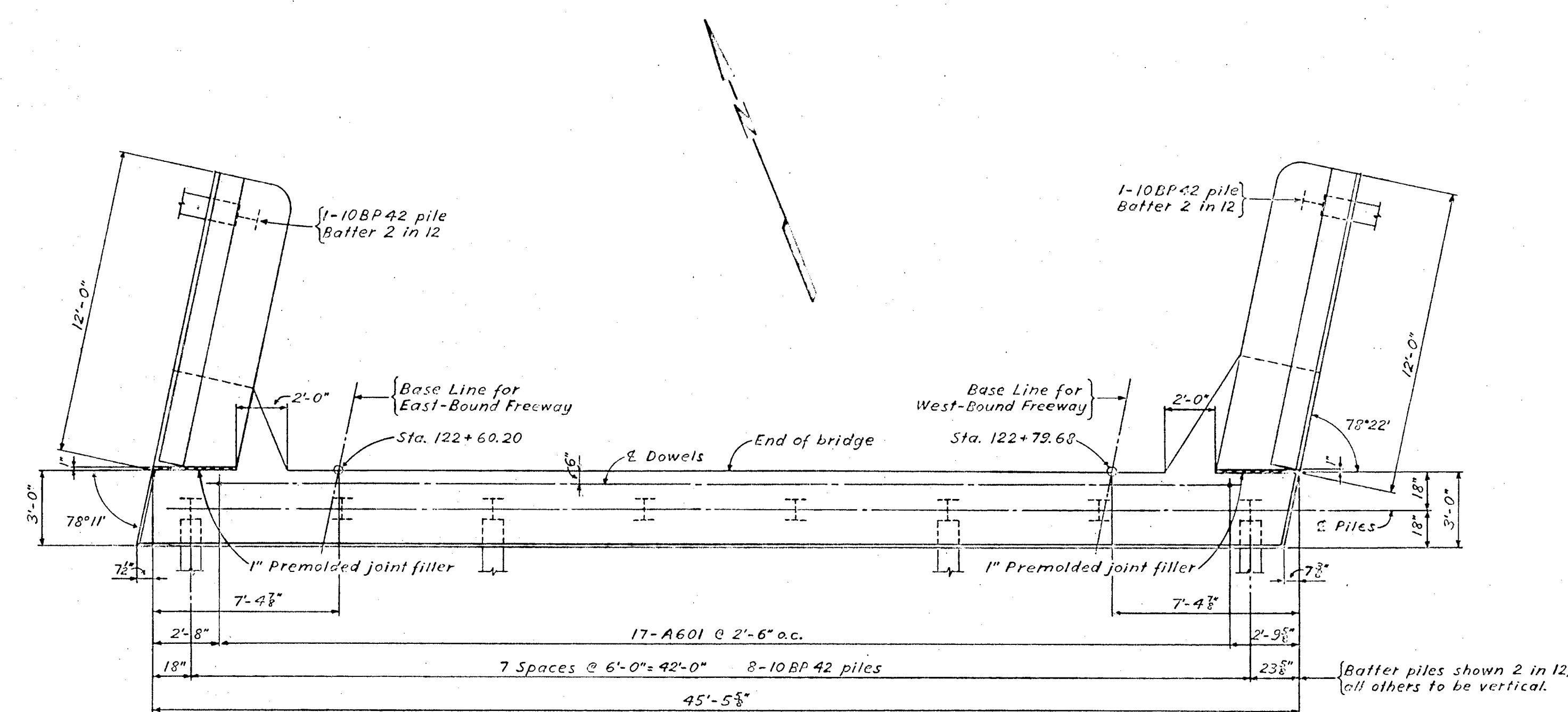
AAKE F. HEDMAN - CONSULTING ENGINEERS - CHATTANOOGA, TENN			
DSGN: BJ-JP	DRWN: BJ	SCALE: AS NOTED	DATE: H15-6
CHKD: FM-AC	CHKD: AC	FILE NO. 57.77	SHEET NO. K-12-66
	SUPV: AC		

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	STATE AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
3	TENN.	I-24-303	117		65	181



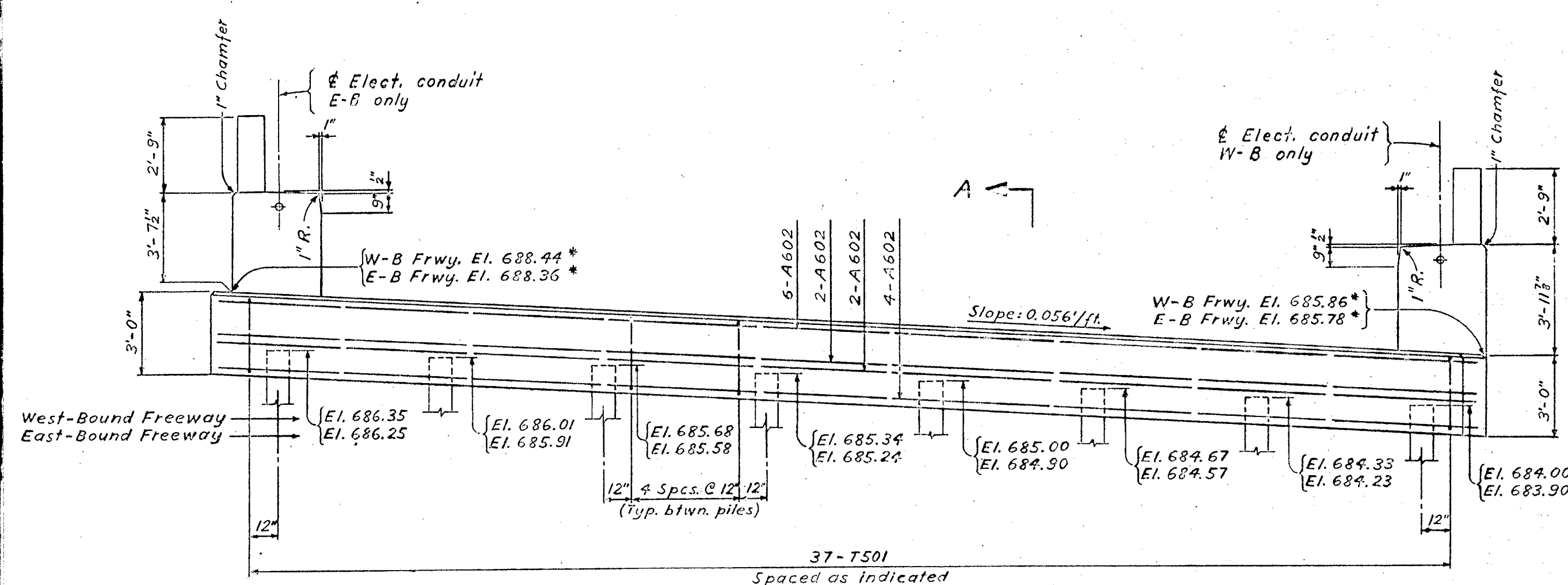


PLAN



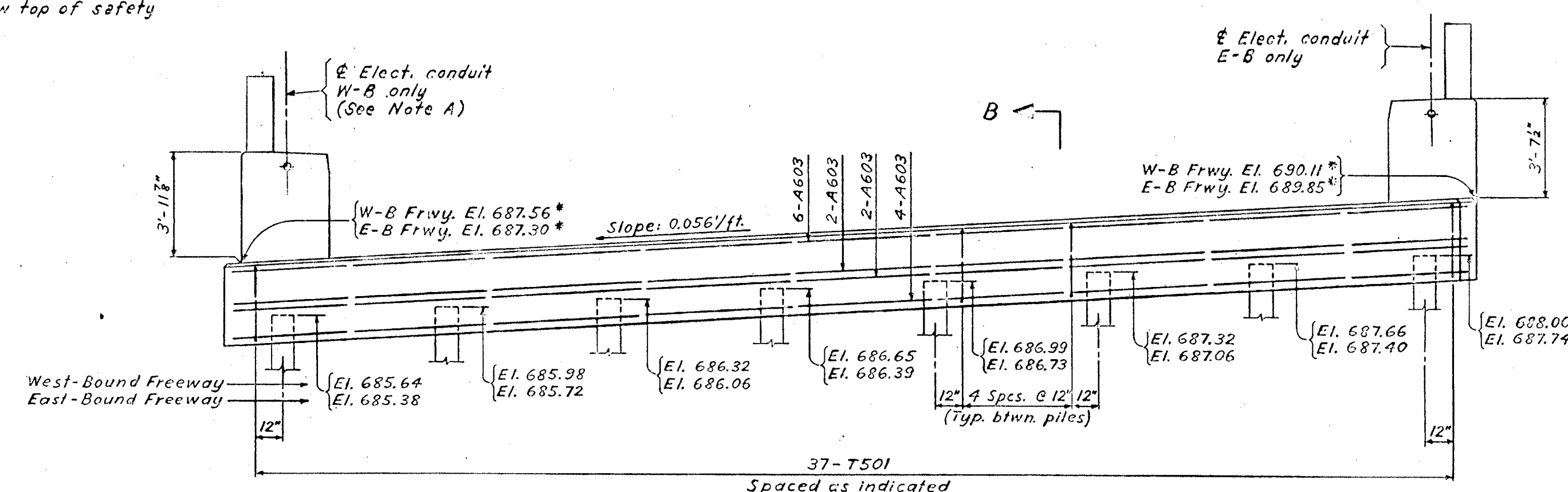
PLAN

NOTE A:
Extend the 1/4\" conduit in safety curb of deck slab to about 5' beyond end of wingwall, and cap until connection is made by others. The 1/4\" conduit shall be dropped in elevation from 6\" below top of safety curb at end of bridge to about 2'-3\" below top of safety curb at end of wingwall.



ELEVATION

SOUTH ABUTMENT
LOOKING SOUTH
EAST-BOUND & WEST-BOUND FREEWAYS
Scale: 4\"=1'-0\"

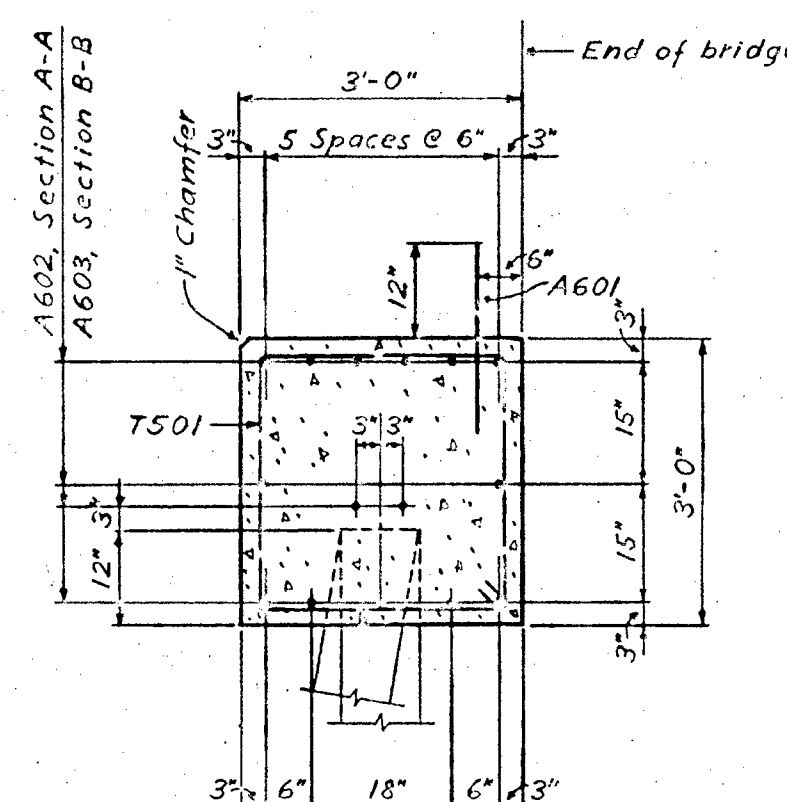


ELEVATION

NORTH ABUTMENT
LOOKING NORTH
EAST-BOUND & WEST-BOUND FREEWAYS
(Dimensions not shown same as for South Abutment)
Scale: 4\"=1'-0\"

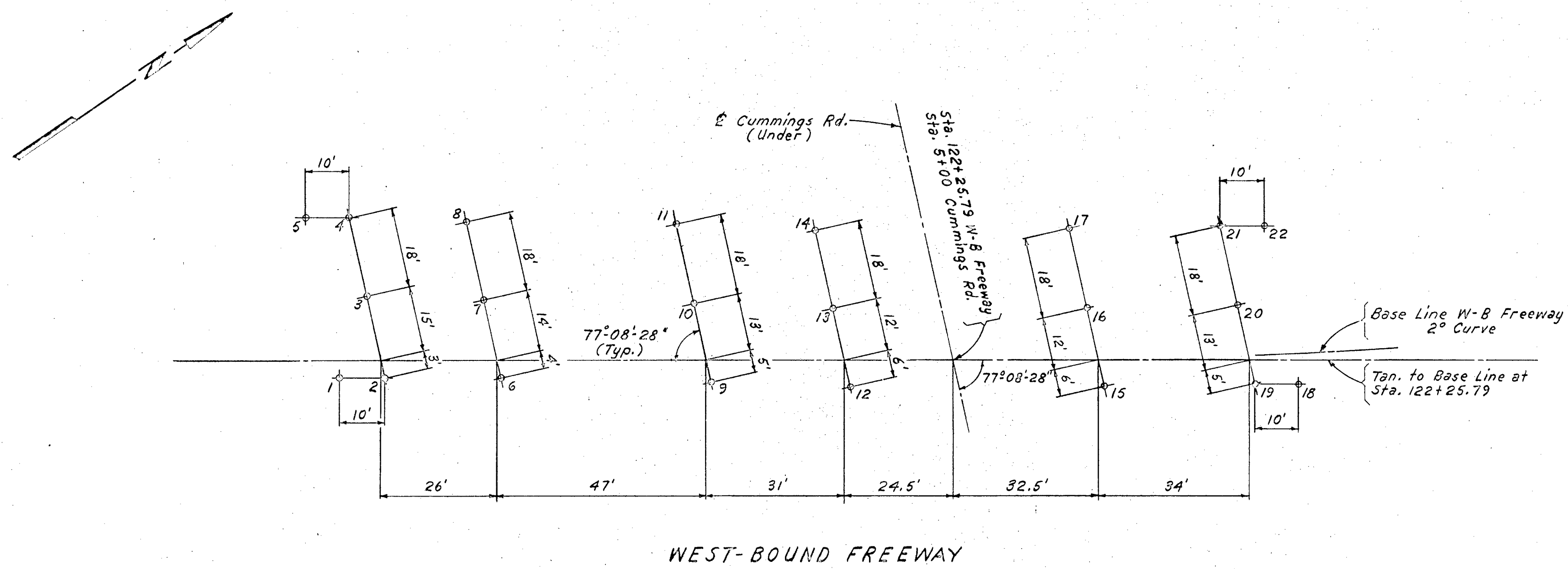
NOTES:
For General Notes and Specifications, see K-12-1.
For Deck Layout Plan, see K-12-47.
For reinforcing steel and bending diagrams, see K-12-51.
All dimensions relative to spacing of reinforcing steel are to centers of bars, except as noted.
Chamfer all exposed edges 3\", except as noted.
Marks to all reinforcing steel in the abutments shall have suffix 'A' (thus: A601-A, T501-A, etc.).

NOTES REGARDING PILES:
All piles shall be 10BP 42 with no alternates permitted, see H-5-III.
For details of piles, see H-5-III and Construction Specifications.
All piles shall be driven to refusal on rock.
The maximum design load for basic unit stresses is 37 tons per pile.



SECTIONS A-A & B-B
Scale: 1\"=1'-0\"

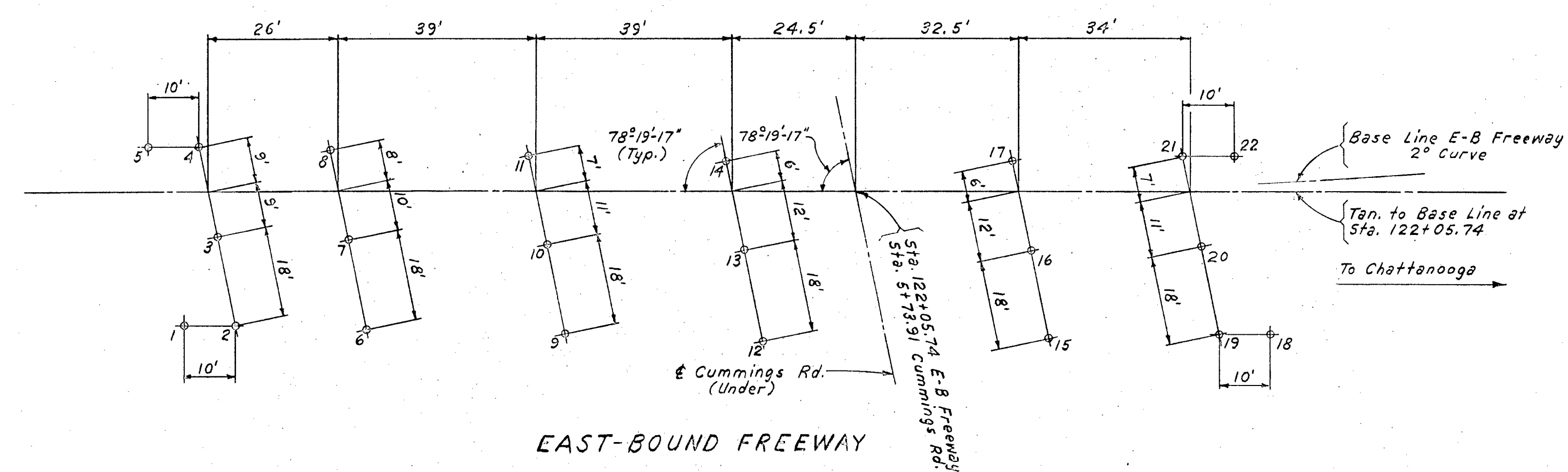
STATE OF TENNESSEE			
DEPARTMENT OF HIGHWAYS AND PUBLIC WORKS			
CHATTANOOGA FREEWAY			
HAMILTON COUNTY-EA. PROJ. NO. I-24-30			
CUMMINGS ROAD UNDERPASSES			
EAST-BOUND & WEST-BOUND FREEWAYS			
ABUTMENTS			
SULLIVAN & HOEBEL - CONSULTING ENGINEERS - KNOXVILLE, TENN.			
JAKE F. HEDMAN - CONSULTING ENGINEERS - CHATTANOOGA, TENN.			
DSGN: BJ	DRWN: BJ	SCALE: AS NOTED	DATE: 1-15-62
CHKD: AC	SUPV: AC	FILE NO. 57.77	SHEET NO. I-24-30



WEST-BOUND FREEWAY
SOUNDING DATA

Hole No.	Ground Elev.	Rock Elev.	Hole Depth
1	665.7	*	*
2	665.8	*	*
3	665.8	*	*
4	666.2	*	*
5	665.6	*	*
6	667.4	*	*
7	667.4	*	*
8	667.3	*	*
9	672.5	658.5	14'
10	672.1	661.1	11'
11	671.9	661.9	10'
12	670.7	658.7	12'
13	670.8	660.8	10'
14	671.1	660.1	11'
15	674.4	661.4	13'
16	675.4	662.4	13'
17	676.5	663.5	13'
18	673.4	659.4	14'
19	673.6	660.6	13'
20	674.8	660.8	14'
21	676.1	663.1	13'
22	675.7	662.7	13'

* Inaccessible, due to cultivation.



EAST-BOUND FREEWAY
SOUNDING DATA

Hole No.	Ground Elev.	Rock Elev.	Hole Depth
1	666.8	*	*
2	667.5	*	*
3	667.2	*	*
4	666.8	*	*
5	666.2	*	*
6	661.7	658.7	3'
7	661.4	657.4	4'
8	665.8	657.8	8'
9	669.7	658.7	11'
10	670.4	658.4	12'
11	670.8	659.8	11'
12	669.9	658.9	11'
13	670.1	658.1	12'
14	670.1	660.1	10'
15	669.3	659.3	10'
16	669.7	659.7	10'
17	670.9	659.9	11'
18	669.1	658.1	11'
19	669.1	659.1	10'
20	669.4	659.4	10'
21	670.8	659.8	11'
22	670.5	660.5	10'

* Inaccessible, due to cultivation.

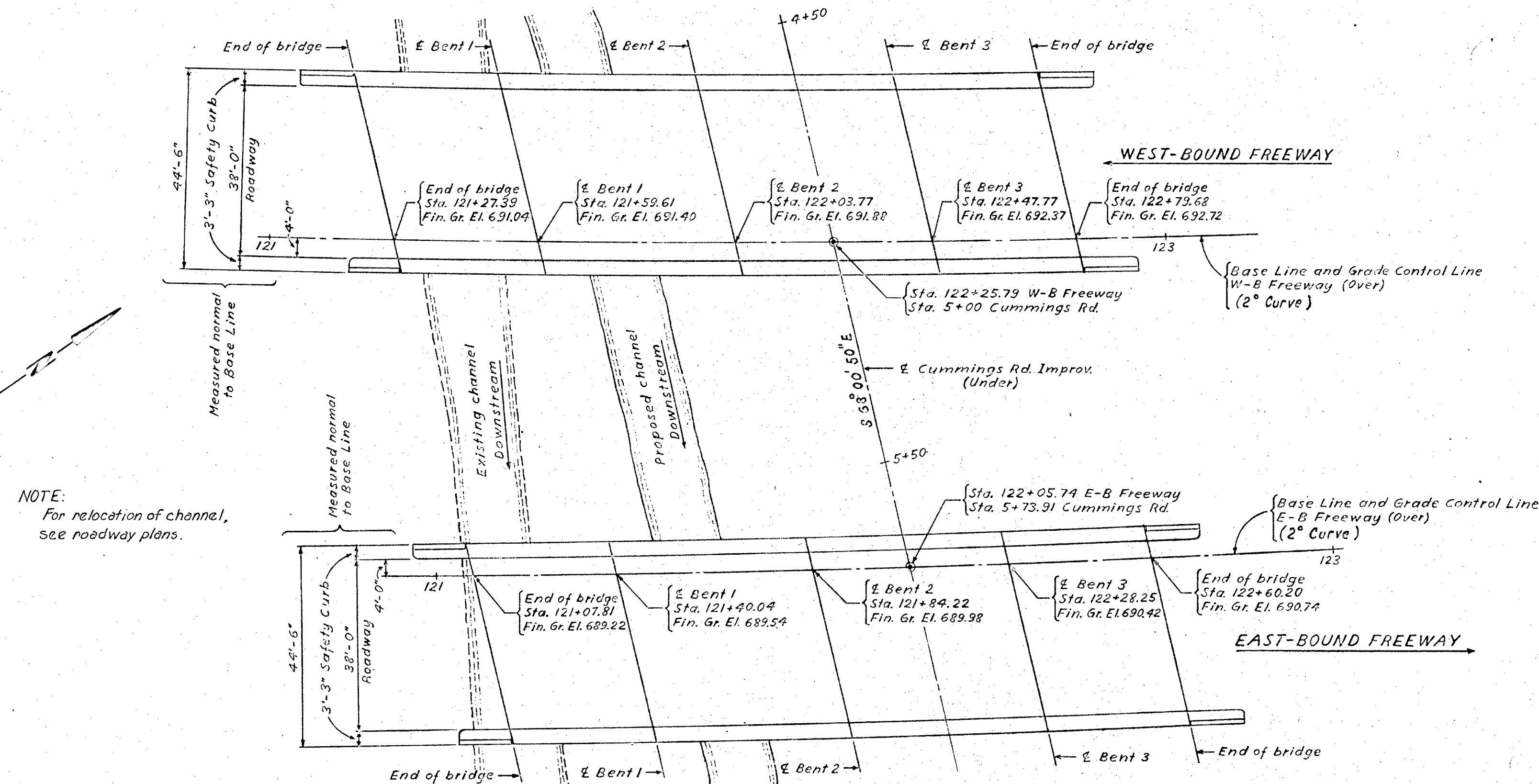
SOUNDING PLAN

STATE OF TENNESSEE
DEPARTMENT OF HIGHWAYS AND PUBLIC WORKS
CHATTANOOGA FREEWAY
HAMILTON COUNTY - E.A. PROJ. NO. E-24-3()

CUMMINGS ROAD UNDERPASSES
EAST-BOUND & WEST-BOUND FREEWAYS
SOUNDING DATA

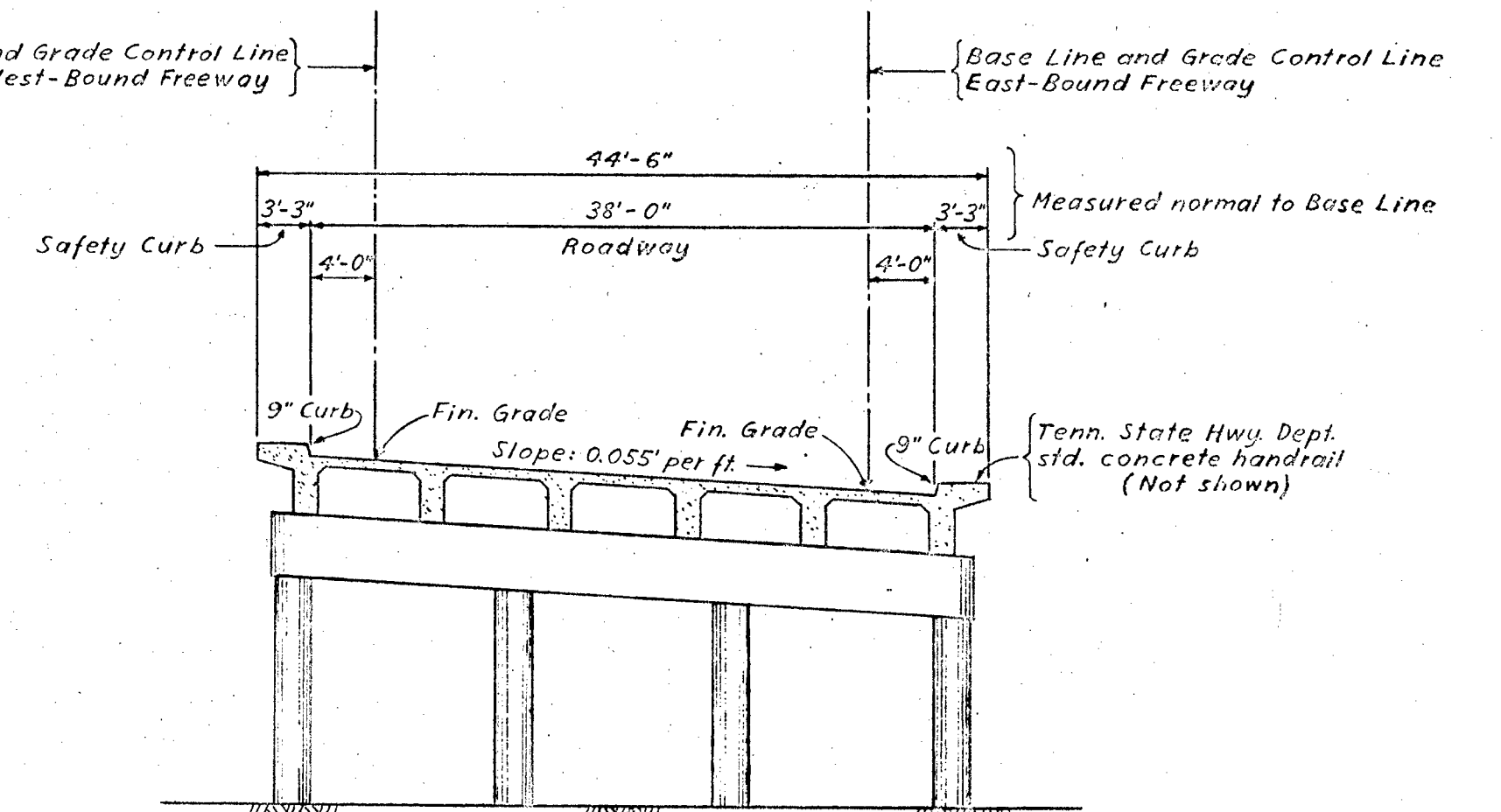
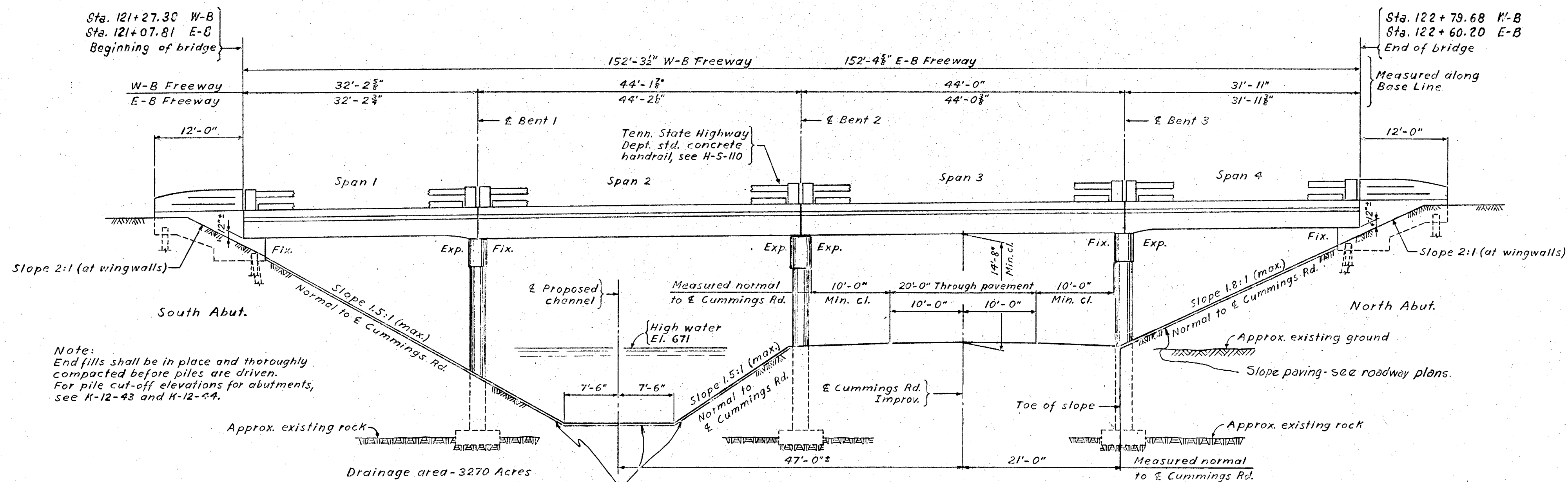
SULLIVAN & HOEDEL - CONSULTING ENGINEERS - KNOXVILLE, TENN.
AAKE F. HEDMAN - CONSULTING ENGINEERS - CHATTANOOGA, TENN.

DSGN:	DRWN: WAAB	SCALE: NONE	DATE: 1-15-62
CHKD:	CHND: AC	FILE NO. 57.77	SHEET NO. K-12-42
	SUPV: AC		



		EAST-BOUND FREEWAY								WEST-BOUND FREEWAY								E.B. Freeway	W.B. Freeway
ITEM NO.		17-2	17-4	17-5	132-1	135-4	135-12	137-3	704	17-2	17-4	17-5	132-1	135-4	135-12	137-3	704	501	501
ITEM		Dry Excav.	Rock Excav.	Rock Drill.	Struct. Steel #	Class "A" Concrete	Reinf. Steel	10 BP 42 Steel H-Piling	Concrete Handrail	Dry Excav.	Rock Excav.	Rock Drill.	Struct. Steel #	Class "A" Concrete	Reinf. Steel	10 BP 42 Steel H-Piling	Concrete Handrail	Lighting	Lighting
STRUCT.		C.Y.	C.Y.	L.F.	Lbs.	C.Y.	Lbs.	L.F.	L.F.	C.Y.	C.Y.	L.F.	Lbs.	C.Y.	Lbs.	L.F.	L.F.	Lump Sum	Lump Sum
South Abut.	29					29.9	3,056			29				29.9	3,056				
Bent 1	119	14	72			42.1	11,701			96	10	72		40.9	11,261				
Bent 2	164	15	72			44.8	11,676			154	9	72		44.1	11,435				
Bent 3	170	9	72			41.9	11,645			140	7	72		40.7	11,164				
North Abut.	29					29.7	3,045			29				29.7	3,045				
Span 1						69.2	18,925		64					69.2	18,925		64		
Span 2						1,470	100.0	29,708	88					1,470	100.0	29,708	88		
Span 3						1,470	99.7	29,630	88					1,470	99.7	29,630	88		
Span 4						68.6	18,656		64					68.6	18,656		64		
TOTALS	511	38	216		2,540	525.9	138,042	577	304	448	26	216	2,540	522.8	136,800	536	304	Lump Sum	Lump Sum

* No Light standards or conductors in this contract.



Drawing No.	Title
K-12-41	General Drawing
K-12-42	Sounding Data
K-12-43	Abutments
K-12-44	Abutment Wingwalls
K-12-45	Bents - Columns and Footings
K-12-46	Bents
K-12-47	Deck Layout Plan
K-12-48	Beams
K-12-49	Deck Cross Section and Diaphragms
K-12-50	Deck Slab
K-12-51	Reinforcing Steel - Abutments and Bents
K-12-52	Reinforcing Steel - Bents and Deck

For spacing of handrail posts, see K-12-50

NOTES:
For General Notes and Specifications, see K-12-1.

One 38' roadway with two safety curbs, per bridge

STATE OF TENNESSEE
DEPARTMENT OF HIGHWAYS AND PUBLIC WORKS
CHATTANOOGA FREEWAY
HAMILTON COUNTY - E.A. PROJ. NO. 1-24-3()

CUMMINGS ROAD UNDERPASSES
EAST-BOUND & WEST-BOUND FREEWAYS
GENERAL DRAWING

SULLIVAN & HOEBEL - CONSULTING ENGINEERS - KNOXVILLE, TENN.
AAKE F. HEDMAN - CONSULTING ENGINEERS - CHATTANOOGA, TENN.

DSCR: BJ
CHKD: AC
SUPV: AC

DRWN: BJ
CHKD: AC
SUPV: AC

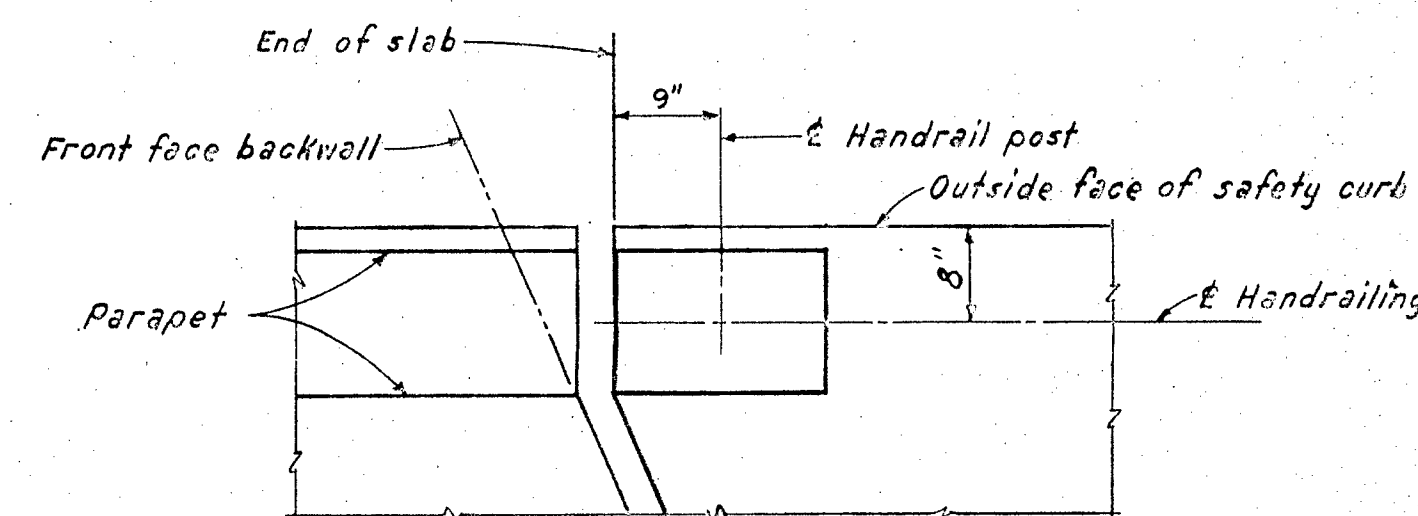
SCALE: AS NOTED
DATE: 1-16-62
FILE NO. 57.77
SHEET NO. K-12-41

FINISHED GRADE PROFILE
WEST-BOUND FREEWAY
No Scale

FINISHED GRADE PROFILE
EAST-BOUND FREEWAY
No Scale

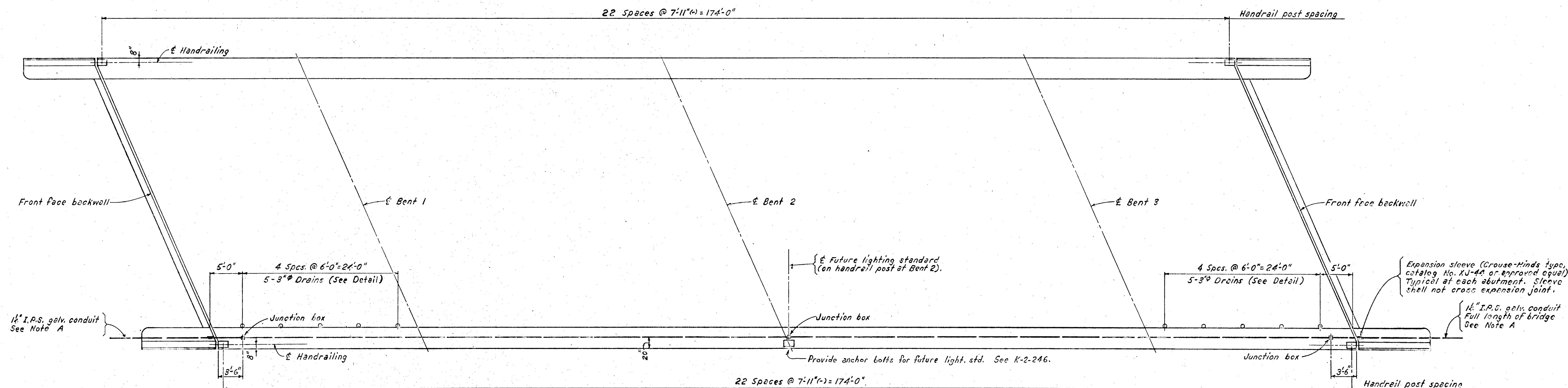
LOCATION	MARK	NO.	PER	TOTAL	BENDING DIMENSIONS- FEET & INCHES							LENGTH	WEIGHT
					A	B	C	D	E	F	G	FEET & INCHES	LBS.
WEST ABUTMENT - E-B FREEWAY													
Bridge Seat	A901	1	12	12								32-6	1326
	A601	1	2	2								48-3	145
	A604	1	6	6								19-6	176
	T501	1	47	47	2-8	3-8						13-3	650
Backwall	A501	1	17	17								44-9	793
	U501	1	42	42	5-4	0-8	5-3					11-0	482
	XD501	1	42	42	(See Bending Diagram)							5-3	230
Bridge Seat	A603	1	2	2								7-6	23
Wall	A613	1	1	1								19-3	29
	A614	1	1	1								18-0	27
	A408	1	12	12								2-6	20
	A409	1	8	8								3-6	19
Bridge Seat	A602	1	21	21								6-6	205
Wall Footing	U502	1	3	3	2-7 1/2	2-11 1/2	2-8					8-0	25
	XE501	1	11	11	4-2	6-0						9-9	112
	XE502	1	11	11	4-2	5-0						8-9	100
	A401	1	1	1								9-3	6
	A402	1	1	1								9-9	7
	A403	1	1	1								10-3	14
	A404	1	2	2								10-9	14
	A405	1	2	2								11-3	30
	A406	1	4	4								9-6	70
Bridge Seat	A902	1	16	16								7-3	394
Columns	A903	1	16	16								10-3	558
	T502	2		26	1-8	2-3						8-6	176
Bridge Seat	L901	2	16	32								5-3	571
Col. Footings	A801	2	9	18								8-6	409
	A605	2	9	18								4-6	122
West Wingwall	L801	1	12	12	1-2 1/2	3-10 1/2						5-0	160
Footing	A606	1	7	7								5-6	58
	A607	1	6	6								3-6	32
West Wingwall	A802	1	12	12								15-0	460
Column	T503	1	28	28	1-2	2-2 1/2						7-9	226
West Wingwall	A803	1	4	4								12-6	134
	A608	1	8	8								12-6	160
	A610	1	2	2								13-0	39
	A612	1	3	3								14-3	64
	K601	1	3	3	1-8	15-5			0-8	1-6	16-1	17-0	77
	L601	1	6	6	1-0	1-7 1/2						2-6	23
	M603	1	3	3	1-2	3-0			0-6			4-0	18
	N601	1	3	3	1-1	2-7	1-9 1/2	1-10	0-9	1-0 1/2		5-0	23
	A502	1	26	26								7-0	190
	A506	1	10	10								12-6	130
	A507	1	2	2								9-9	20
	U507	1	1	1	1-9	12-4	4-5					18-3	19
	U508	1	1	1	1-9	12-9	4-6					18-9	20
	T504	1	12	12	1-8	2-10						9-6	36
	T401	1	1	1	0-8 1/2	3-7						9-0	6
	T402	1	1	1	do	3-6 1/2						9-0	6
	T403	1	1	1	do	3-6						8-9	6
	T404	1	1	1	do	3-5						8-6	6
	T405	1	1	1	do	3-3 1/2						8-3	6
	T406	1	1	1	do	3-1 1/2						7-9	5
	T407	1	1	1	do	2-11						7-3	5
	T408	1	1	1	do	2-8							
East Wingwall	A608	1	5	5								12-6	54
	A609	1	5	5								11-5	44
	A610	1	5	5								13-0	59
	A611	1	1	1								7-5	12
	L601	1	3	3	1-5	16-2			0-8 1/2			17-5	60
	M602	1	1	1	1-9	15-11			0-8 1/2			17-6	25
	N601	1	5	5	1-1	2-7	1-5 1/2	1-10	0-5	1-0 1/2		5-0	50
	U601	1	3	3	1-1 1/2	2-7	1-0 1/2					4-6	20
	XE601	1	5	5	1-0	0-2	2-0	1-0	1-10	0-10		4-6	30
	A506	1	10	10								12-6	150

LOCATION	MARK	NO.	PER	TOTAL NO. REQ'D	BENDING DIMENSIONS - FEET & INCHES								LENGTH FEET & INCHES	WEIGHT LBS.
					A	B	C	D	E	F	G			
WEST ABUTMENT - E-B FREEWAY (Continued)														
East Wingwall	A507	1	2	2								9-9	20	
(Cont'd.)	A508	1	10	10								8-6	89	
	L501	1	1	1	6-2	1-8½						9-9	10	
	L502	1	2	2	4-10	4-9½						9-6	20	
	U503	1	4	4	7-2	2-9	7-1					16-9	70	
	U504	1	3	3	6-2	2-9	8-1					18-9	59	
	U505	1	1	1	4-4	12-3½	4-4½					20-9	22	
	U506	1	1	1	4-3½	11-10½	4-4					20-3	21	
	W501	1	11	11	0-3	2-9	1-0	0-1	0-9	2-10	4-3	49		
	W502	1	1	1	0-10	2-10	1-1	0-1	0-10	2-11	4-6	5		
	T401	1	6	6	0-8½	3-7						9-0	36	
	T402	1	1	1	0-8½	3-6½						9-0	6	
	T403	1	1	1	0-8½	3-6						9-0	6	
	T404	1	1	1	0-8½	3-5						8-9	6	
	T405	1	1	1	0-8½	3-3½						8-6	6	
	T406	1	1	1	0-6½	3-1½						8-3	6	
	T407	1	1	1	0-8½	2-11						7-9	5	
	T408	1	1	1	0-6½	2-8						7-3	5	
	L507	1	1	1	7-2	2-6½						9-9	10	
	L501	1	1	1	1-11	0-11	4-4	0-3	0-6			7-0	7	
TOTAL WEIGHT: WEST ABUT. E-B FREEWAY													9,718	
EAST ABUTMENT E-B FREEWAY														
EAST & WEST ABUTMENTS W-B FREEWAY														
(Quantities shown are for one abut.)														
Bridge Seat	A601	1	18	18								48-3	1304	
	T501	1	42	42	2-8	3-8						13-3	560	
Backwall	A501	1	17	17								44-9	793	
	U501	1	42	42	5-4	0-8	5-3					11-0	482	
	XD501	1	42	42	See bending diagram							5-3	230	
Wingwall (Detail A)	A504	1	4	4								9-3	39	
	A506	1	15	15								12-6	196	
	A507	1	2	2								9-9	20	
	A510	1	2	2								4-9	10	
	A511	1	5	5								11-3	59	
	A512	1	1	1								8-9	9	
	A513	1	1	1								7-6	8	
	A514	1	1	1								6-3	7	
	A515	1	1	1								9-0	7	
	A516	1	1	1								6-9	7	
	A517	1	1	1								5-6	6	
	K501	1	5	5	1-0	3-1		0-10½	0-6	3-11½	4-0	21		
	L503	1	3	3	2-0	2-4½					6-3	20		
	L504	1	1	1	2-0	6-7½					6-6	9		
	M501	1	1	1	1-0	7-11		0-5			8-9	9		
	M502	1	1	1	1-0	8-2		0-5			10-0	10		
	M501	1	5	5	1-1	2-9½	1-10	2-0½	0-5	1-1	5-3	27		



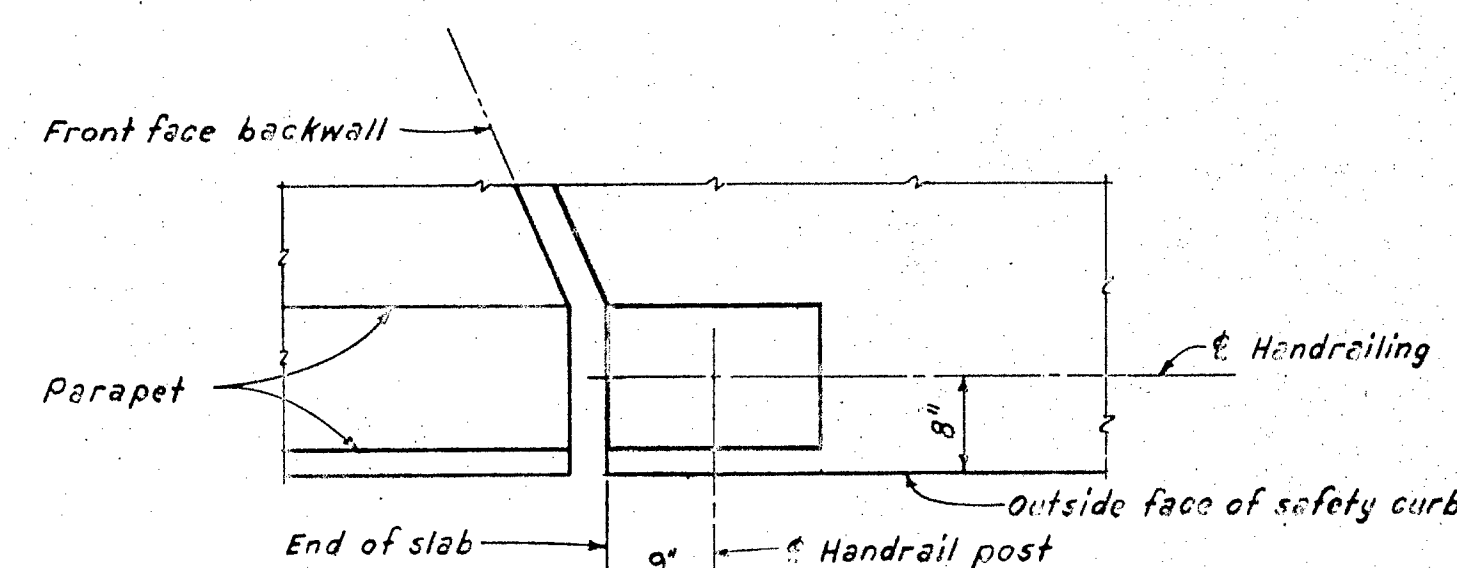
DETAIL A
Scale: $\frac{3}{4}$ "=1'-0"

EAST-BOUND FREEWAY
WEST-BOUND FREEWAY



PLAN
Scale: $\frac{1}{8}$ "=1'-0"

NOTE:
At the abutments, the conduit shall be dropped about 2" in elevation to avoid interference with the expansion dam.



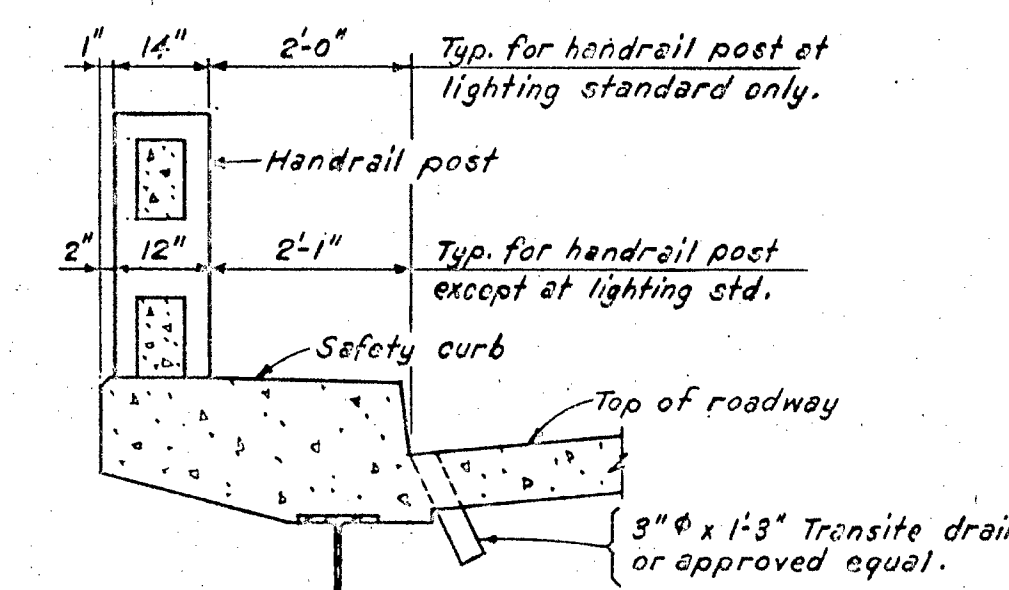
DETAIL B
Scale: $\frac{3}{4}$ "=1'-0"

LIGHTING NOTES:
For lighting specifications and details, see K-2-246.
All junction boxes shall be 6" x 6" x 8" deep.
Lighting standards and conductors not included in this contract.

HANDRAILING NOTES:
All handrailing shall be Tenn. State Hwy. Dept. standard concrete handrailing, except as noted on this dwg. see H-5-110.
Handrail posts supporting lighting standard shall have vertical reinforcement consisting of 6 bars G500, 4 each face (see H-5-110). Provide 12" square level bearing area on top of post for future lighting standard.
All handrail posts shall be vertical.

NOTE A:
Extend conduit about 5' beyond end of wingwall and cap until connection is made by others.
The 1 1/2" conduit shall be dropped in elevation from 8" below top of safety curb at front face of backwall to about 2'-3" below top of safety curb at end of wingwall.

DRAIN NOTES:
All drains shall be 3" x 1'-3" long Transite drains or approved equal.

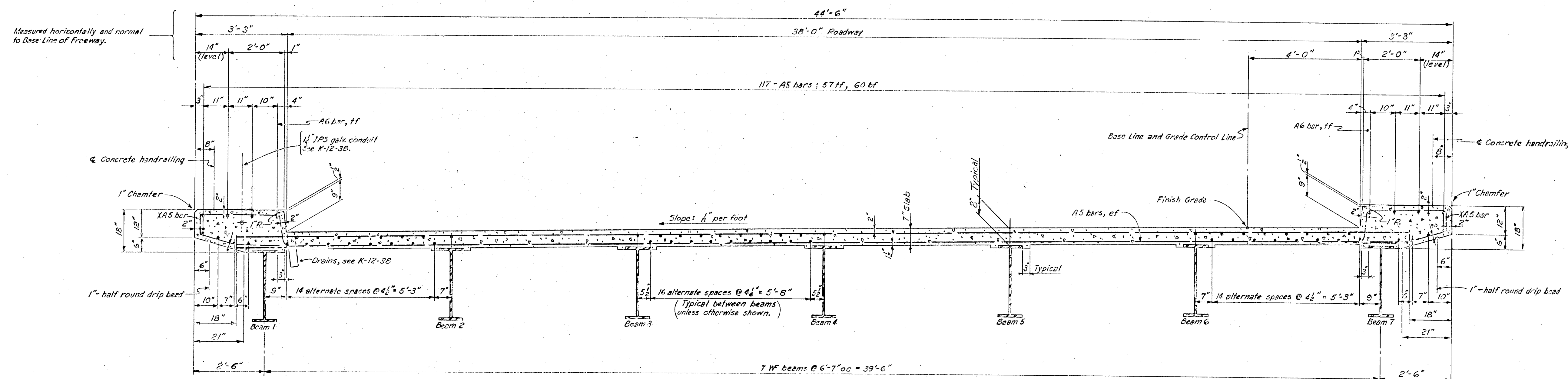


DRAIN DETAIL
Scale: $\frac{1}{2}$ "=1'-0"

NOTES:
For General Notes and Specifications, see K-12-1.
All dimensions shown in plan are measured horizontally.
Location of junction boxes and drains may be shifted slightly so as to avoid interference with reinforcing steel.

STATE OF TENNESSEE			
DEPARTMENT OF HIGHWAYS AND PUBLIC WORKS			
CHATTANOOGA FREEWAY			
HAMILTON COUNTY-E.A. PROJ. NO. 1-24-3()			
U.S. 41 TIFTONIA UNDERPASSES			
EAST-BOUND & WEST-BOUND FREEWAYS			
LIGHTING, HANDRAILING AND DRAINS			
SULLIVAN & HOFEL - CONSULTING ENGINEERS - KNOXVILLE, TENN.			
AAKE F. REDMAN - CONSULTING ENGINEERS - CHATTANOOGA, TENN.			
DSGN: RRT	DSGN-WRA	SCALE: AS NOTED	DATE: 11-5-62
CHKD: JRP	CHKD: JRP	FILE NO. 57.77 SHEET NO.	K-12-20

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	STATE AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
3	TENN.	24-3(2)	17		57	181



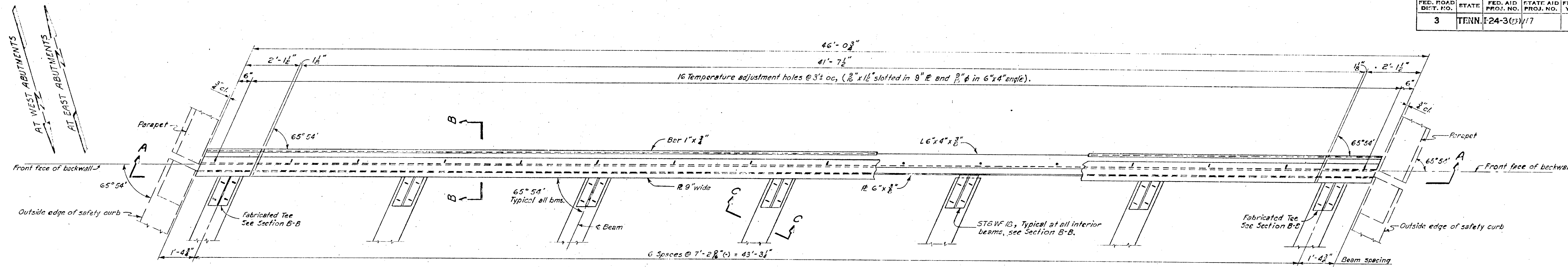
TYPICAL CROSS SECTION
EAST-BOUND FREEWAY (LOOKING WEST)
WEST-BOUND FREEWAY (LOOKING EAST)
Scale: 1/4" = 1'-0"

Abbreviations:
tf - top face
bf - bottom face
ef - each face

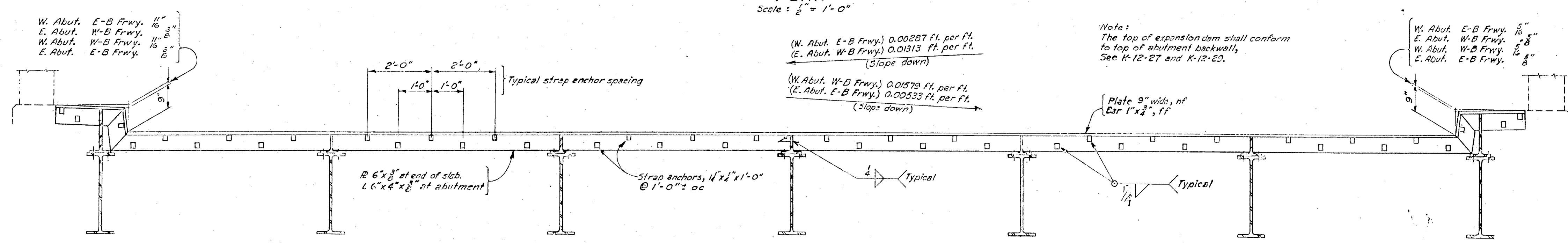
NOTES:
For General Notes and Specifications, see K-12-1.
For reinforcing steel and bending diagrams, see K-12-40.
For spacing and details of handrail posts and drains, see K-12-110 and K-12-32.
When pouring deck, provisions shall be made for setting reinforcing steel for concrete handrailing.
Chamfer all exposed edges 1/4", except as noted.
All dimensions relative to spacing of reinforcing bars are to centers of bars, except as noted.
Marks to all reinforcing steel in the deck shall have the suffix "D", (thus: A501-D, A501/D, etc.).

Revised: 7-2-67 Added slab thickness over beams.

STATE OF TENNESSEE			
DEPARTMENT OF HIGHWAYS AND PUBLIC WORKS			
CHATTANOOGA FREEWAY			
HAMILTON COUNTY-F.A. PROJ. NO. 24-2()			
U.S. 41 TIFTONIA UNDERPASSES			
EAST-BOUND & WEST-BOUND FREEWAYS			
DECK CROSS SECTION			
SULLIVAN & HOLBEI - CONSULTING ENGINEERS - KNOXVILLE, TENN.			
ALAN F. HEDMAN - CONSULTING ENGINEERS - CHATTANOOGA, TENN.			
DSGN: RRT	DRW: RRT	SCALE: AS NOTED	DATE: 11-5-62
CHKD: JRP	CHKD: JRP	FILE NO. 57.77	SHEET NO. 11-12-36
CHKD: JRP	SUPV: AC		

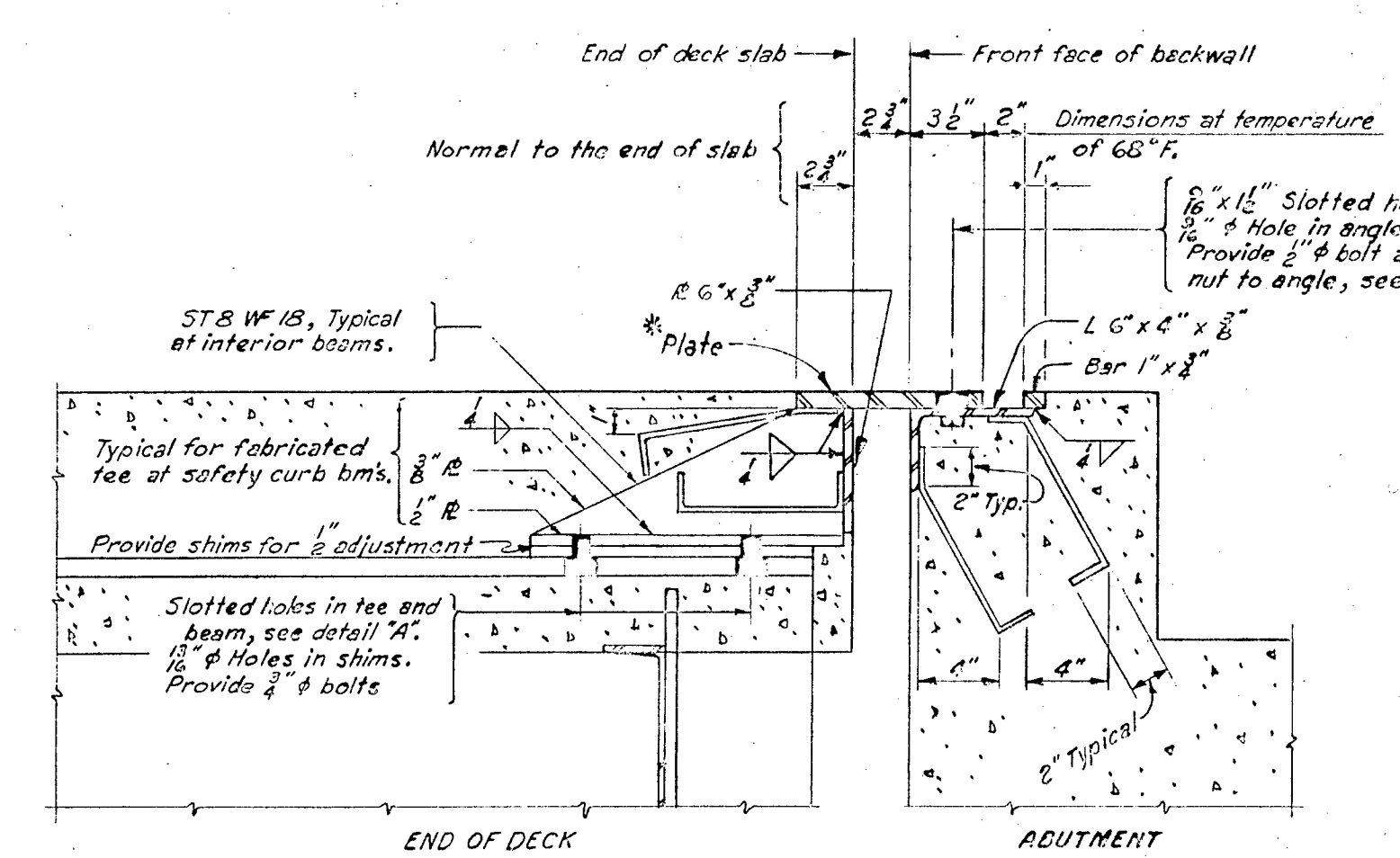


PLAN
Scale: 1/8" = 1'-0"



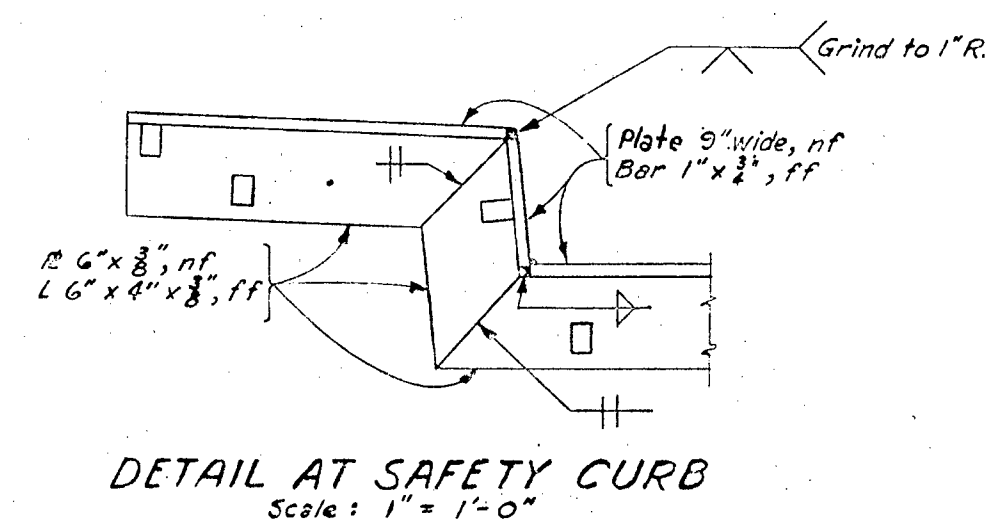
SECTION A-A
Scale: 1/8" = 1'-0"

* Beveled 9"x3"x15" (W. Abut. E-B Frwy.)
12"x3"x15" (All others)

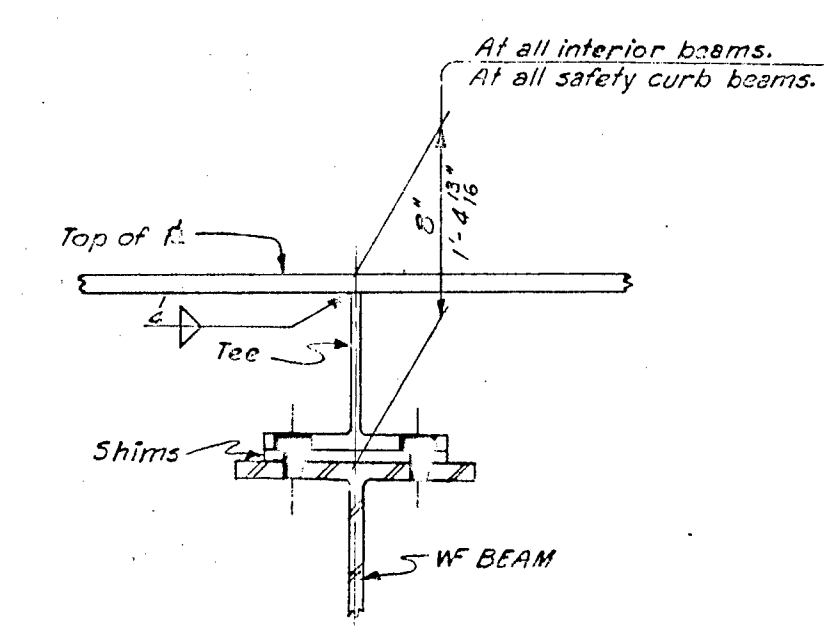


SECTION B-B
Scale: 1/8" = 1'-0"

NOTE A:
Before pouring concrete adjacent to the expansion dam, the Contractor shall adjust the expansion dam as follows:
 (1) So the 6"x4"x8" angle has its 6" leg horizontal in the direction of the beam.
 (2) So the 9" plate has full contact on the 6" leg of angle.
 (3) So the opening of the expansion joint is correct for the temperature at the time of adjustment.
 The Contractor shall tighten the 2" temporary bolts immediately before pouring the concrete adjacent to the expansion dam and shall remove them immediately after the concrete has taken its initial set.
 If the concrete on both sides of the expansion dam is not poured at the same time, the Contractor shall loosen the temporary bolts after the first pour and tighten them immediately before the second pour. He shall remove the temporary bolts immediately after the concrete has taken its initial set.



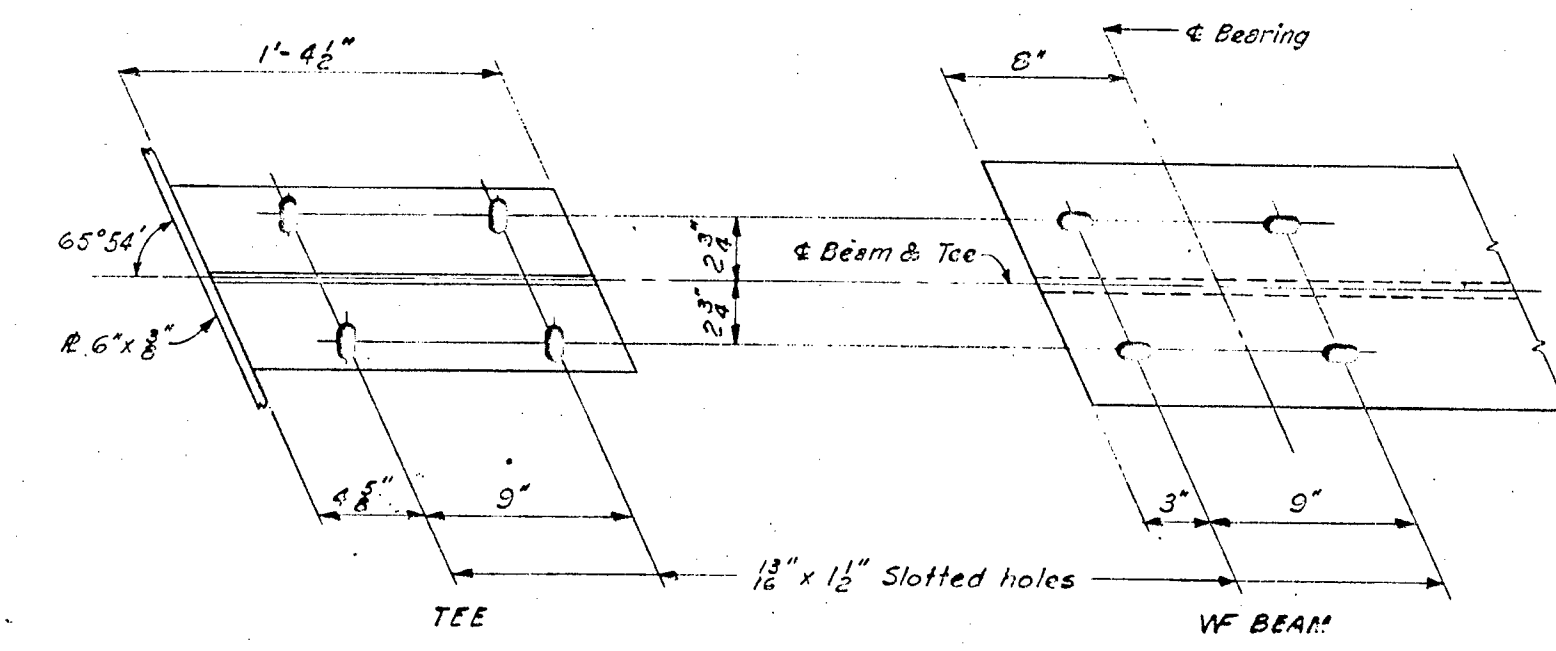
DETAIL AT SAFETY CURB
Scale: 1" = 1'-0"



PART SECTION C-C
Scale: 1/8" = 1'-0"

ABBREVIATIONS:
nf near face
ff far face
E-B East-Bound
W-B West-Bound

NOTES:
For General Notes and Specifications, see K-12-1.
The Fabricator shall set up all pieces of the expansion dam to the correct slopes of beams and roadway before welding, and shall ship the expansion dam assembled and in such a manner that it will not warp.
Provide one expansion dam at each abutment.



DETAIL "A"
Scale: 1/8" = 1'-0"

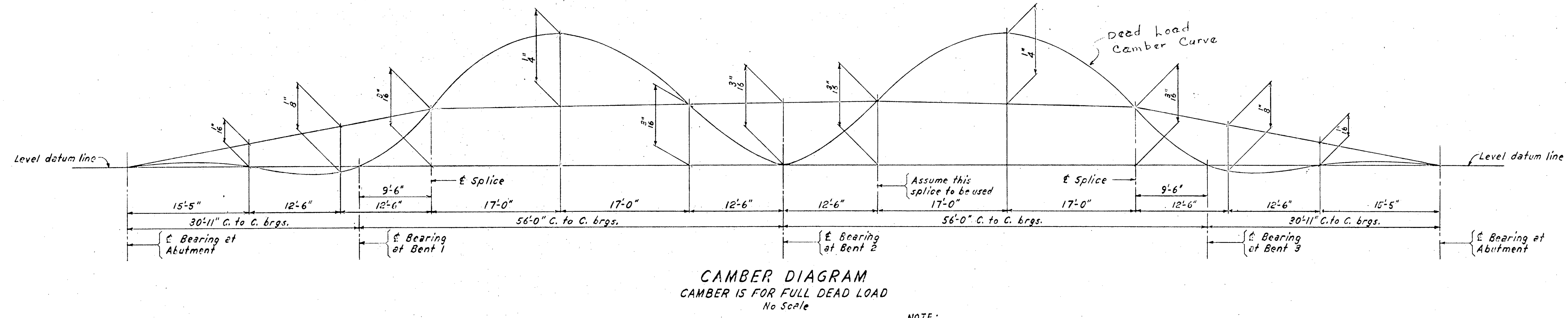
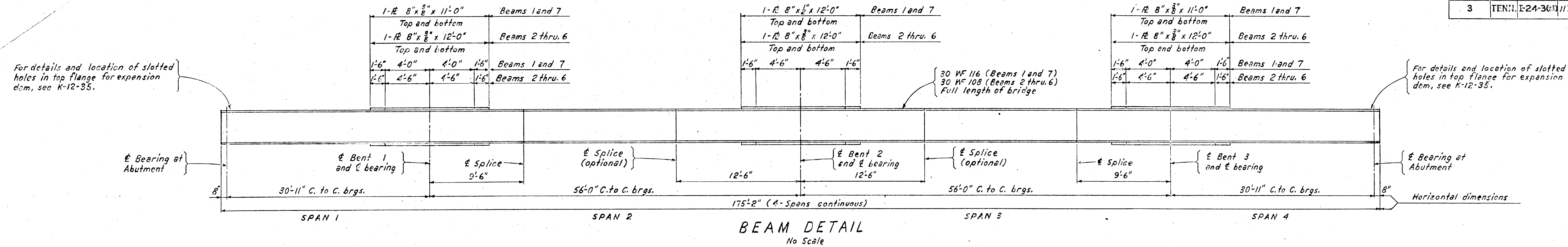
STATE OF TENNESSEE
DEPARTMENT OF HIGHWAYS AND PUBLIC WORKS
CHATTANOOGA FREEWAY
HAMILTON COUNTY-E.A. PROJ. NO. I-24-3()

U. S. 41 TIFTONIA UNDERPASSES
EAST-BOUND & WEST-BOUND FREEWAYS
EXPANSION DAM

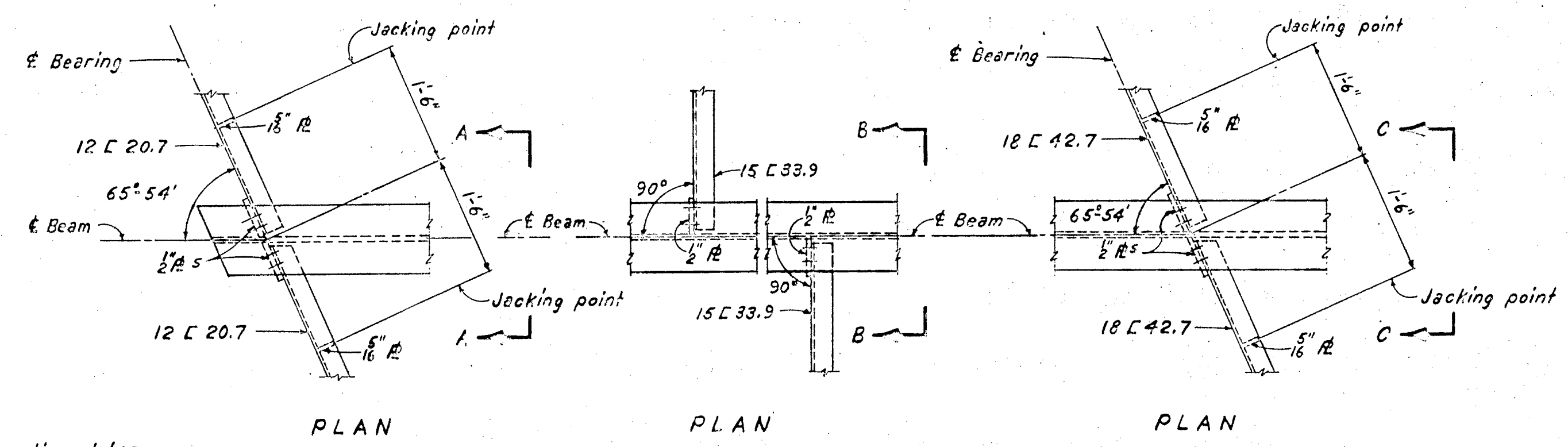
SULLIVAN & HOEBEL - CONSULTING ENGINEERS - KNOXVILLE, TENN.
ALKE F. HEDMAN - CONSULTING ENGINEERS - CHATTANOOGA, TENN.

DSGN: RRT DRW: RRT SCALE: AS NOTED DATE: 11-5-62
CHK: JRP SUP: AC FILE NO. 57.77 SHEET NO. K-12-20

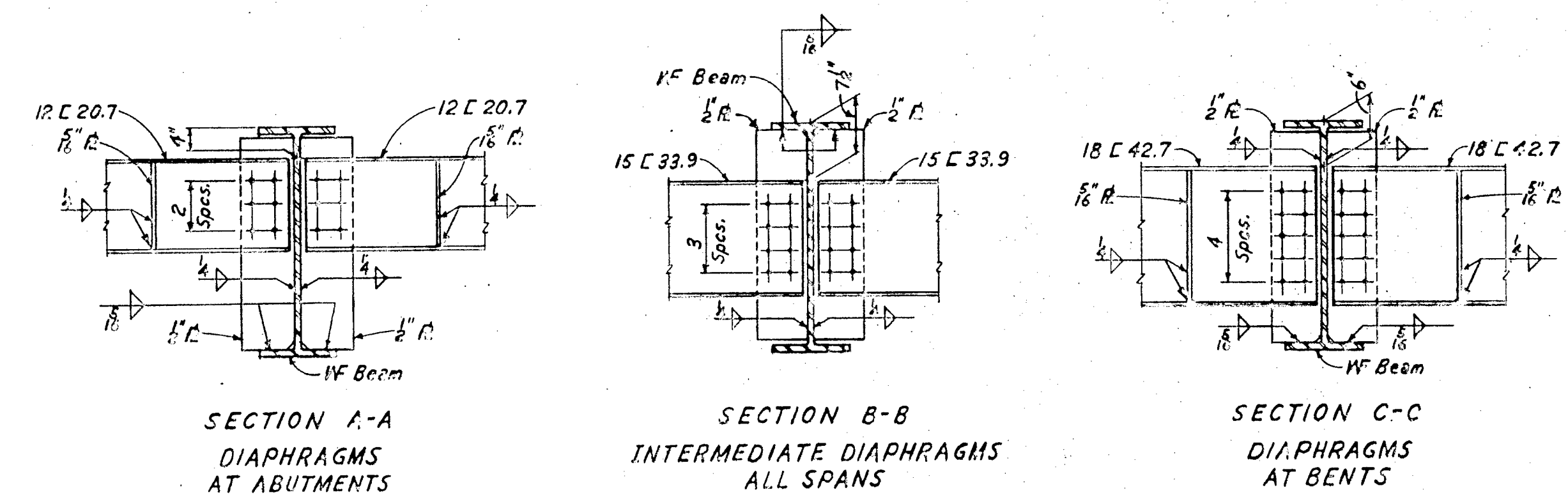
Rev. 11/24/64 Strap wall size R20



NOTE:
Each beam shall be cambered to compensate for dead load deflection (as shown above) and for vertical curvature of roadway.

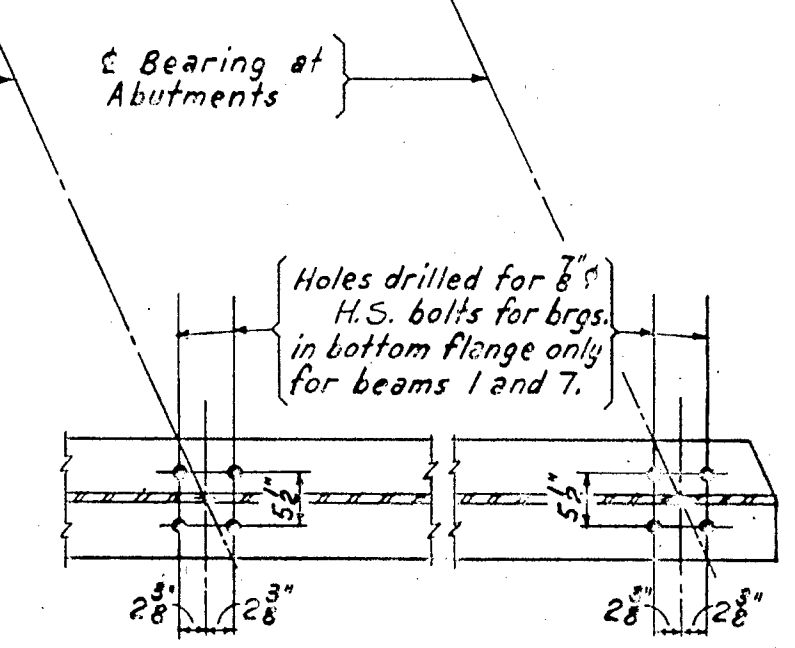
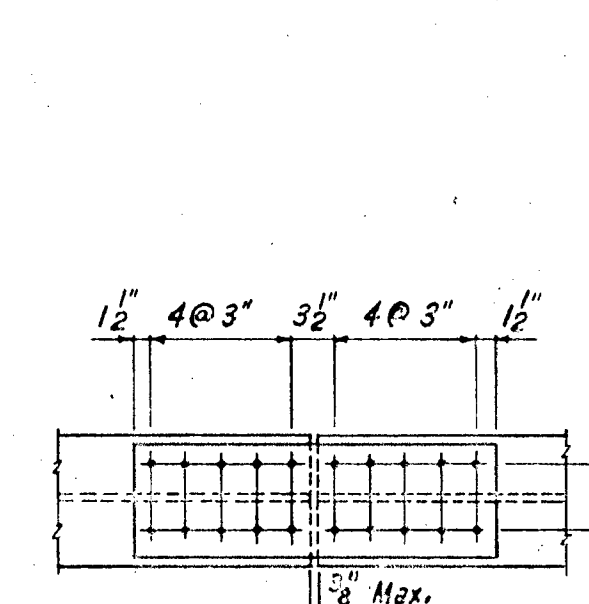


NOTE:
Omit connection plates at outside of exterior beams.

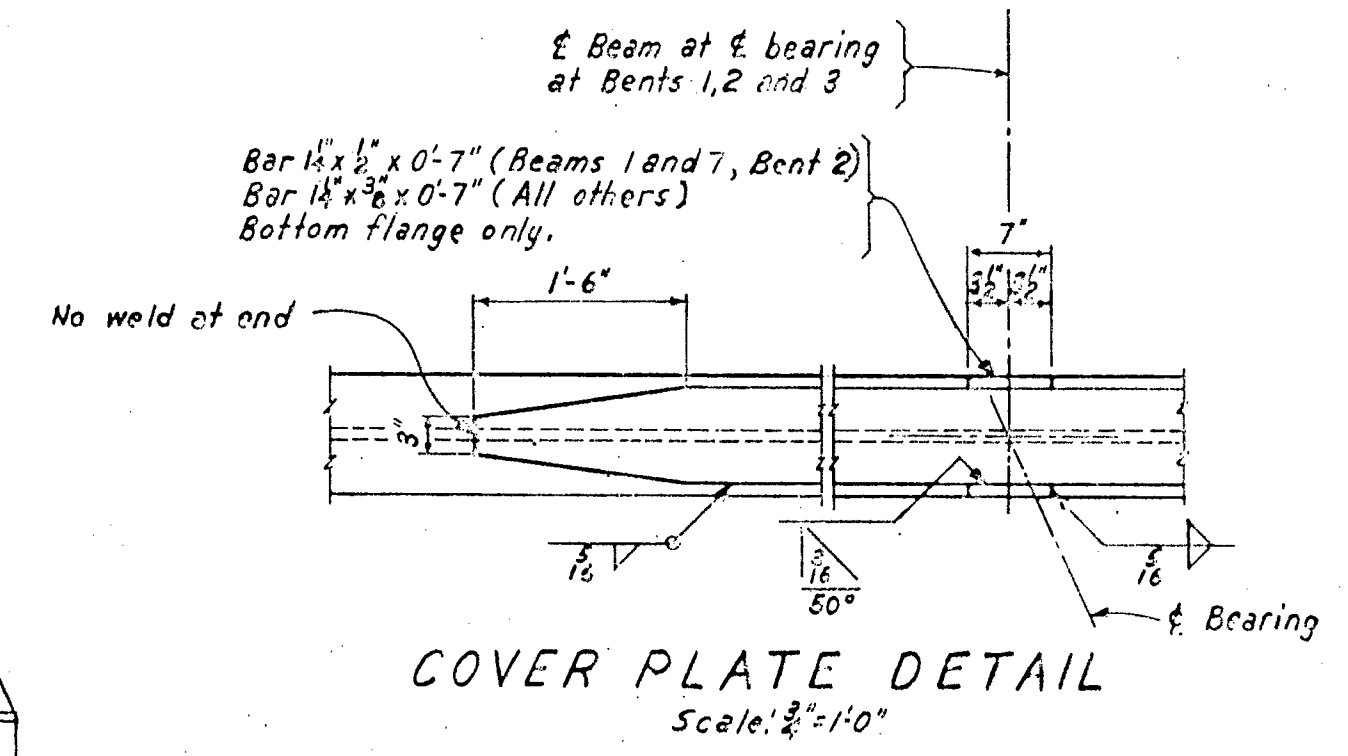


DIAPHRAGM DETAILS
Scale: 3/4" = 1'-0"

NOTE:
All field connections shall be bolted with 7/8" H.S. bolts.



BEAM END DETAIL
Scale: 3/4" = 1'-0"



NOTES:
For General Notes and Specifications, see K-12-1.
For details of bearings, see H-7-2.
For Framing Plan, see K-12-33.

STATE OF TENNESSEE
DEPARTMENT OF HIGHWAYS AND PUBLIC WORKS
CHATTANOOGA FREEWAY
HAMILTON COUNTY-E.A. PROJ. NO. E-24-363 ()

U.S. 41 TIFTONIA UNDERPASSES
EAST-BOUND & WEST-BOUND FREEWAYS
BEAMS AND DIAPHRAGMS

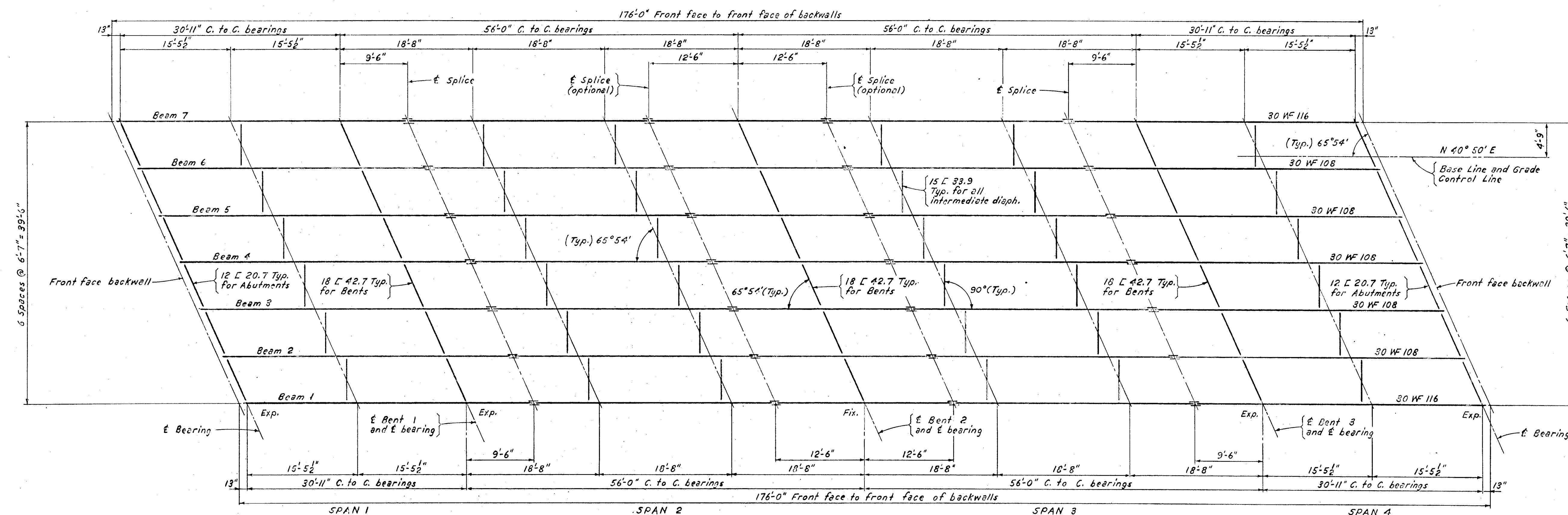
SULLIVAN & HOEBEL - CONSULTING ENGINEERS - KNOXVILLE, TENN.
A.M.E. F. HEDMAN - CONSULTING ENGINEERS - CHATTANOOGA, TENN.

DSGN: RRT DRAWN: WRA
CHKD: JRP SURV: AC
SCALE: AS NOTED
FILE NO. 57.77 SHEET NO. K-12-34

Revised: 7-6-64 Rev. 1-11-64 Camber Curve Construction R-20

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	STATE AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
3	TENN.	E-24-3(23)	117		54	181

EAST-BOUND FREEWAY
WEST-BOUND FREEWAY

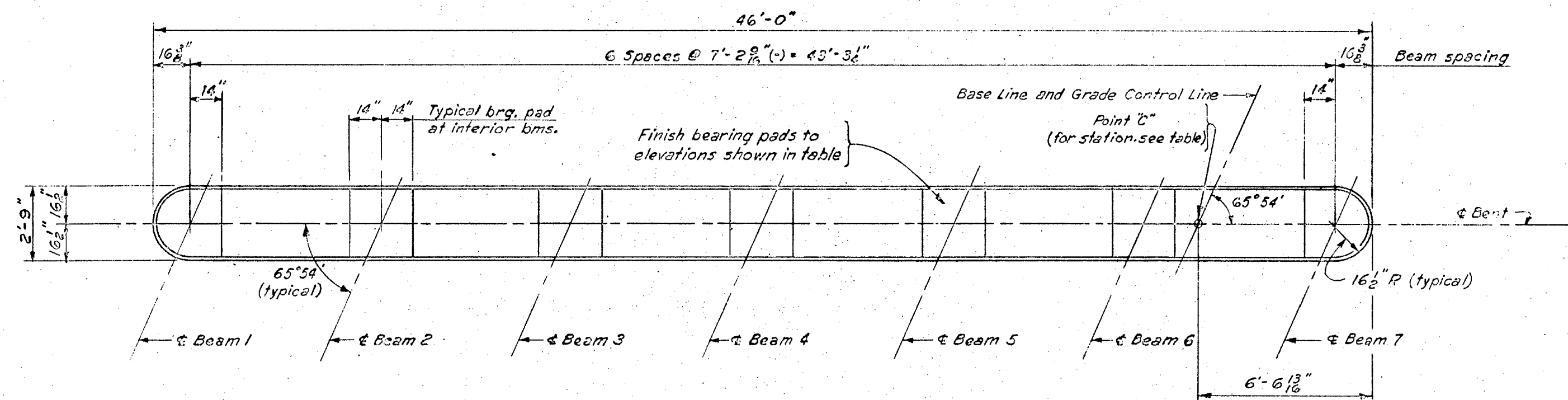


FRAMING PLAN
Scale: 1/8" = 1'-0"

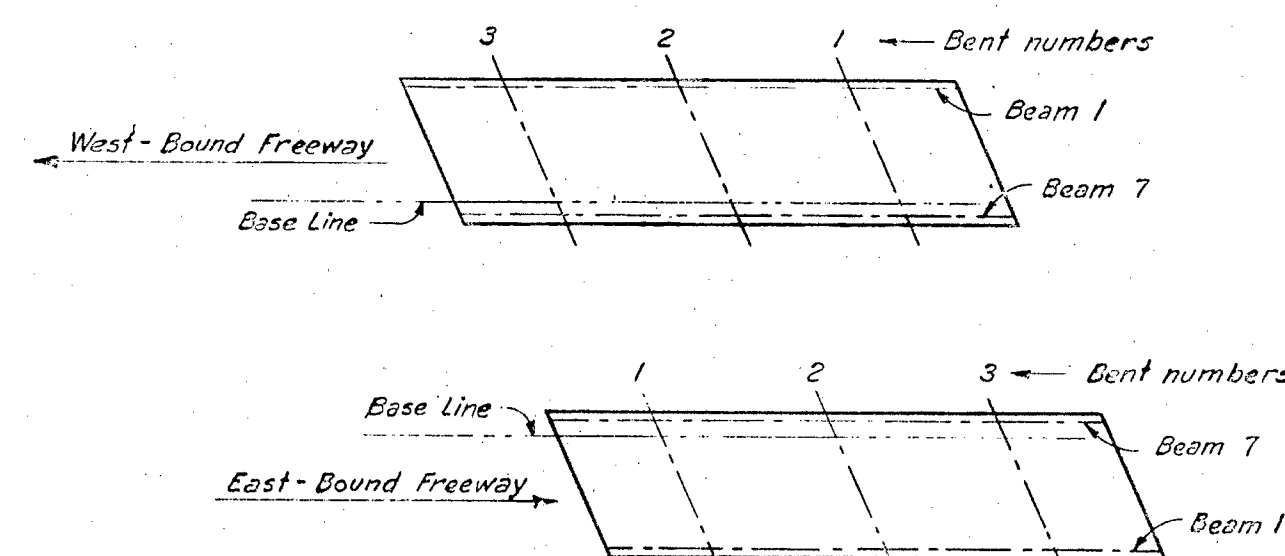
NOTES:
For General Notes and Specifications, see K-12-1.
For Anchor Bolt Plan, see K-12-26.
For details of bearings, see H-7-2.
For Beams and Diaphragms, see K-12-34.
All dimensions shown in Plan are measured horizontally.

STATE OF TENNESSEE DEPARTMENT OF HIGHWAYS AND PUBLIC WORKS CHATTANOOGA FREEWAY HAMILTON COUNTY-F.A. PROJ. NO. E-24-3()			
U. S. 41 TIFTONIA UNDERPASSES EAST-BOUND & WEST-BOUND FREEWAYS FRAMING PLAN			
SULLIVAN & HOEBEL - CONSULTING ENGINEERS - KNOXVILLE, TENN. WAKE F. MEDMAN - CONSULTING ENGINEERS - CHATTANOOGA, TENN.			
DSGN: RRT CHKD: JRP	DRWN: WRA CHKD: JRP SYN: AC	SCALE: AS NOTED FILE NO. 57.77	DATE: 1-15-62 SHEET NO. K-12-33

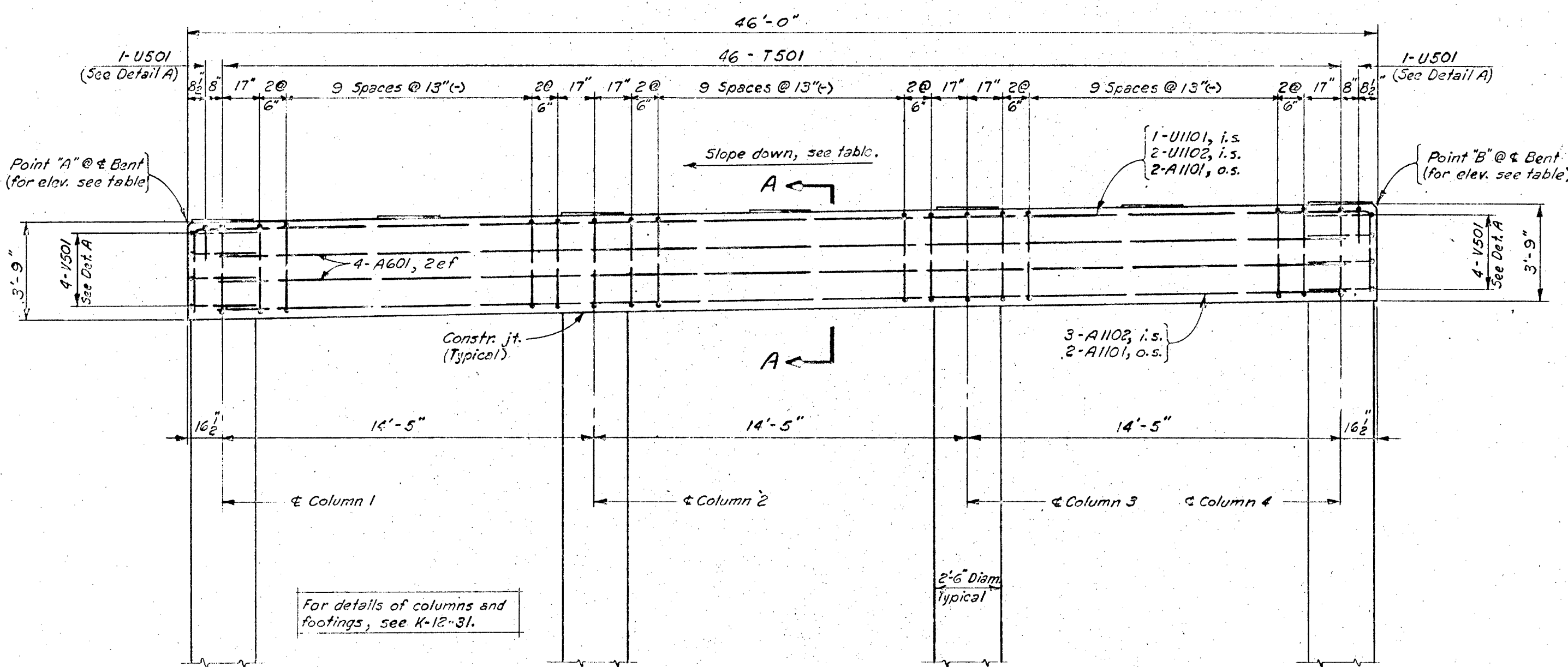
EAST-BOUND FREEWAY
WEST-BOUND FREEWAY



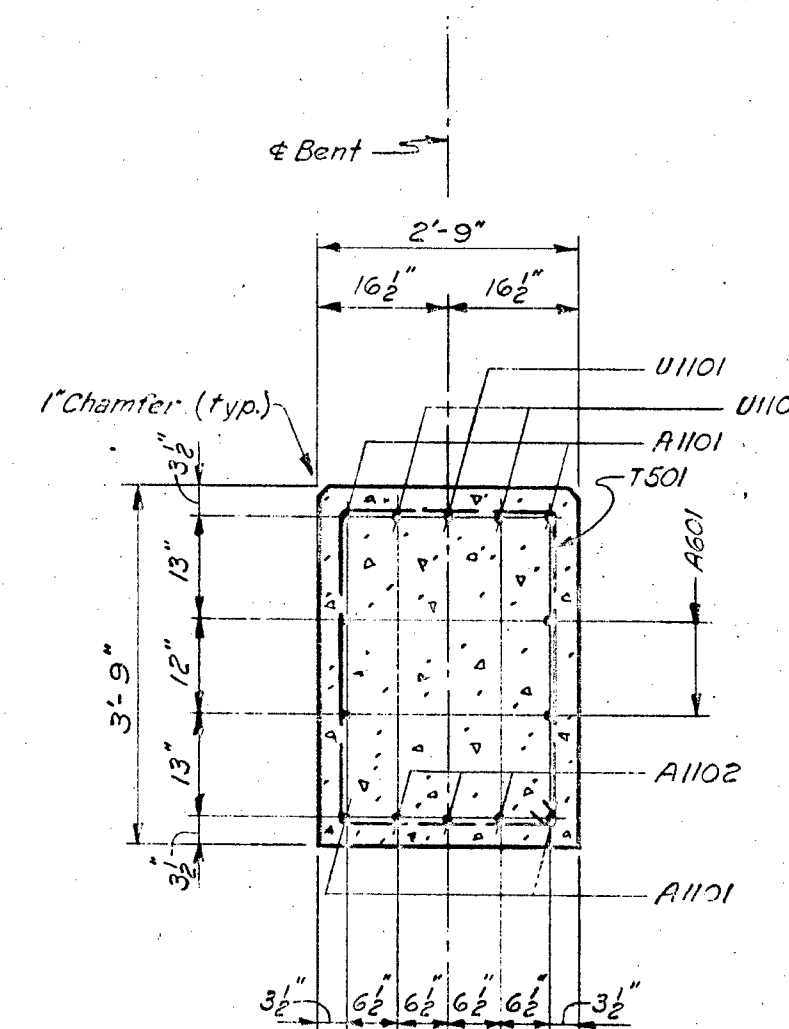
PLAN OF CAP
Scale: 1/4" = 1'-0"



PLAN OF BRIDGES
Showing Bent and Beam Numbers
No Scale



ELEVATION
BENTS 1, 2, & 3
EAST-BOUND FREEWAY, LOOKING SOUTH
WEST-BOUND FREEWAY, LOOKING NORTH
Scale: 1/4" = 1'-0"

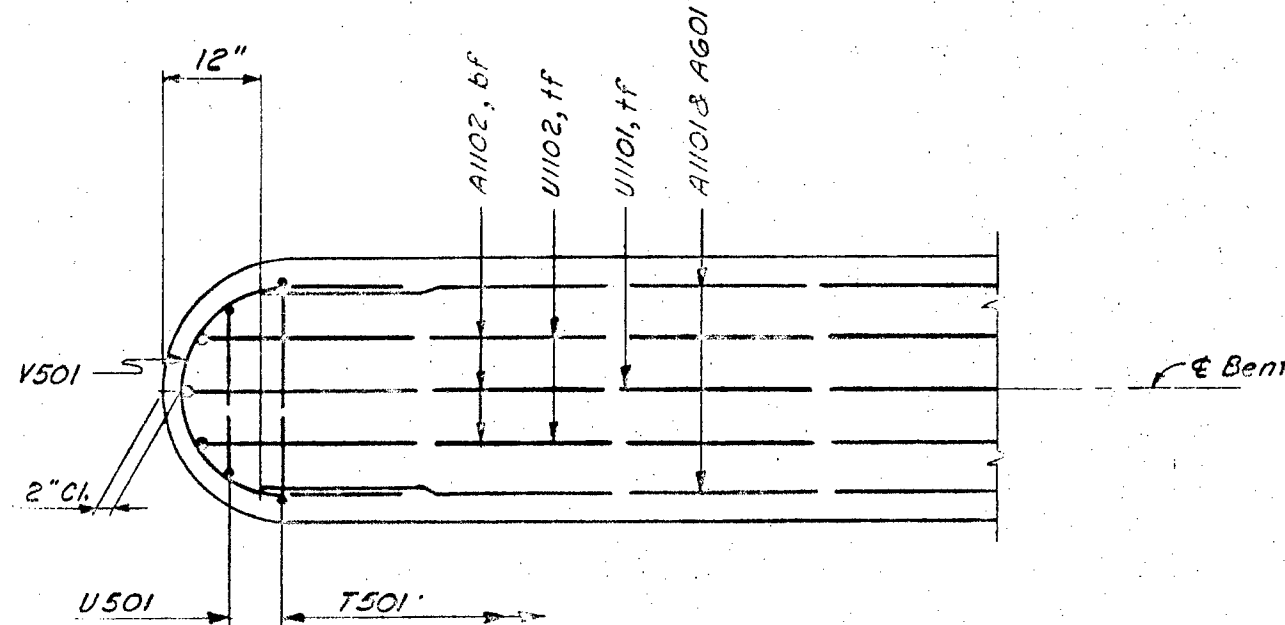


SECTION A-A
Scale: 1/2" = 1'-0"

Note:
The reinforcing steel in the cap shall be placed accurately, so as to clear the anchor bolts (for shoes) whether the bolts are set before or after concrete is placed.

ABBREVIATIONS:
tf top face
bf bottom face
ef each face
is inside steel
os outside steel

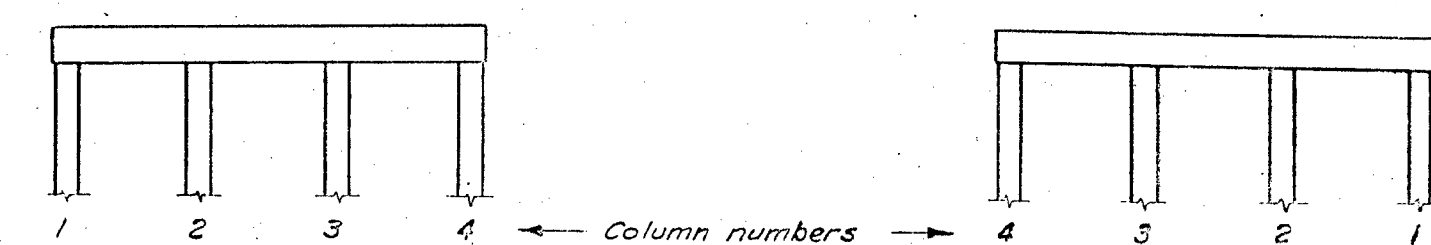
NOTES:
For General Notes and Specifications, see K-12-1.
For location of bents, see K-12-24.
For Anchor Bolt Plan, see K-12-26.
For reinforcing steel and bending diagrams, see K-12-40.
All dimensions relative to spacing of reinforcing steel are to centers of bents, except as noted.
Chamfer all exposed edges 3/4", except as noted.
Marks to all reinforcing steel in the bents shall have suffix "B"; (thus: A1101-B, T501-B, etc.)



DETAIL A
PART PLAN OF CAP SHOWING REINFORCING STEEL
Scale: 1/2" = 1'-0"

ELEVATIONS										STATION	SLOPE
	Bearing Pads							Bent Cap		Point "C"	Bent Cap (feet per foot)
	1	2	3	4	5	6	7	"A"	"B"		
EAST-BOUND FREEWAY											
Bent 1	773.13	773.13	773.16	773.18	773.20	773.22	773.25	773.06	773.20	153 + 36.68	0.00304
Bent 2	773.92	773.93	773.96	773.99	774.02	774.05	774.07	773.85	774.04	153 + 92.68	0.00413
Bent 3	774.61	774.62	774.66	774.69	774.73	774.76	774.80	774.53	774.75	154 + 48.68	0.00470
WEST-BOUND FREEWAY											
Bent 1	774.33	774.41	774.51	774.61	774.71	774.80	774.91	774.23	774.86	154 + 21.84	0.01370
Bent 2	773.67	773.77	773.87	773.98	774.08	774.18	774.28	773.58	774.25	153 + 65.84	0.01457
Bent 3	772.92	773.01	773.12	773.23	773.34	773.45	773.57	772.82	773.52	153 + 09.84	0.01522

STATE OF TENNESSEE
DEPARTMENT OF HIGHWAYS AND PUBLIC WORKS
CHATTANOOGA FREEWAY
HAMILTON COUNTY-E.A. PROJ. NO. E-24-3 ()
U. S. 41 TIFTONIA UNDERPASSES
EAST-BOUND & WEST-BOUND FREEWAYS
BENTS
SULLIVAN & HOFBEL - CONSULTING ENGINEERS - KNOXVILLE, TENN.
AAKE F. HEDMAN - CONSULTING ENGINEERS - CHATTANOOGA, TENN.
DSGN: RRT DRWN: RRT SCALE: AS NOTED DATE: 11-5-62
CHKD: JRP SUPV: AC FILE NO. 57.77 SHEET NO. K-12-22

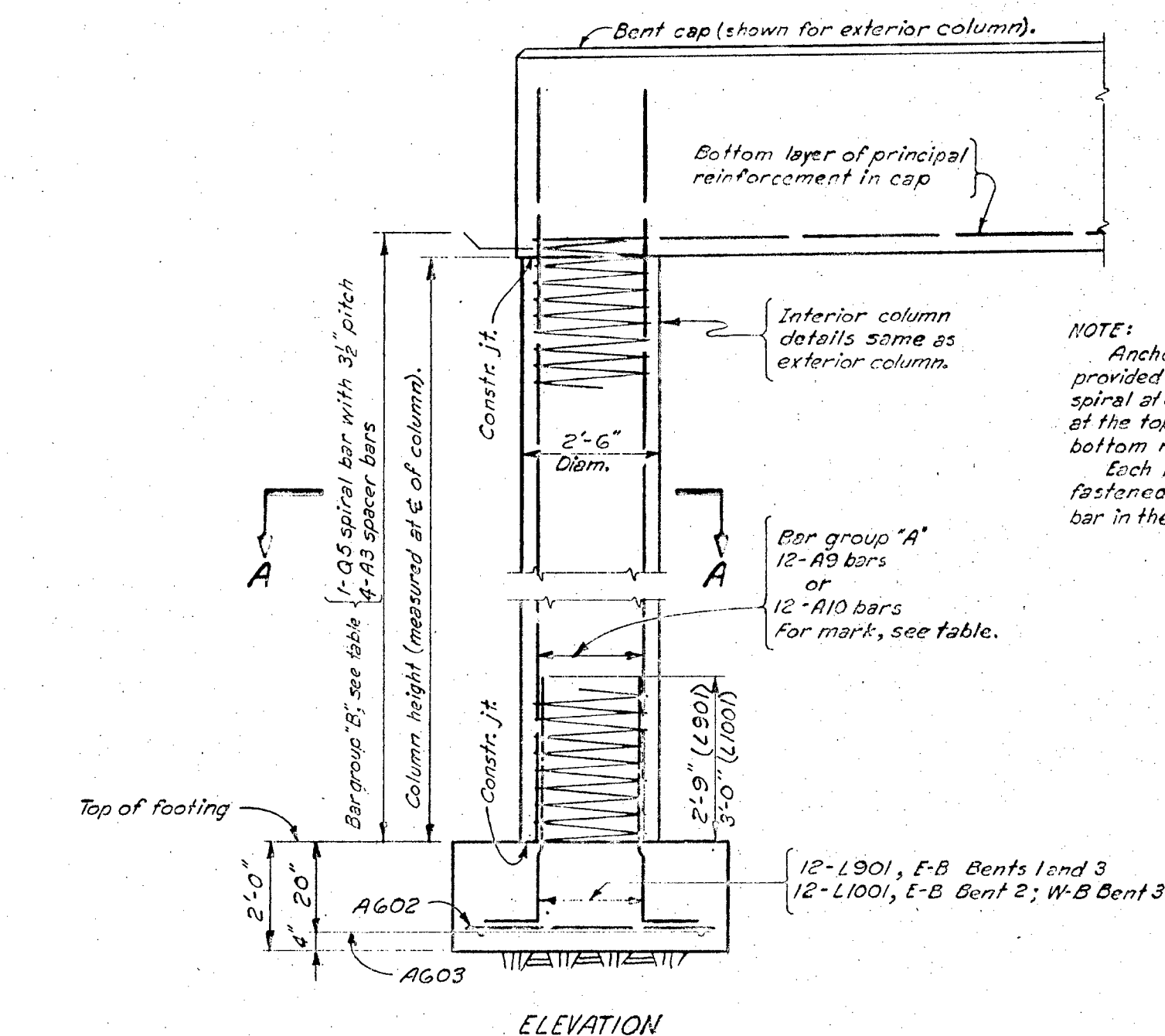


TYPICAL ELEVATION OF BENTS
LOOKING SOUTH
(Footings Not Shown)
No Scale

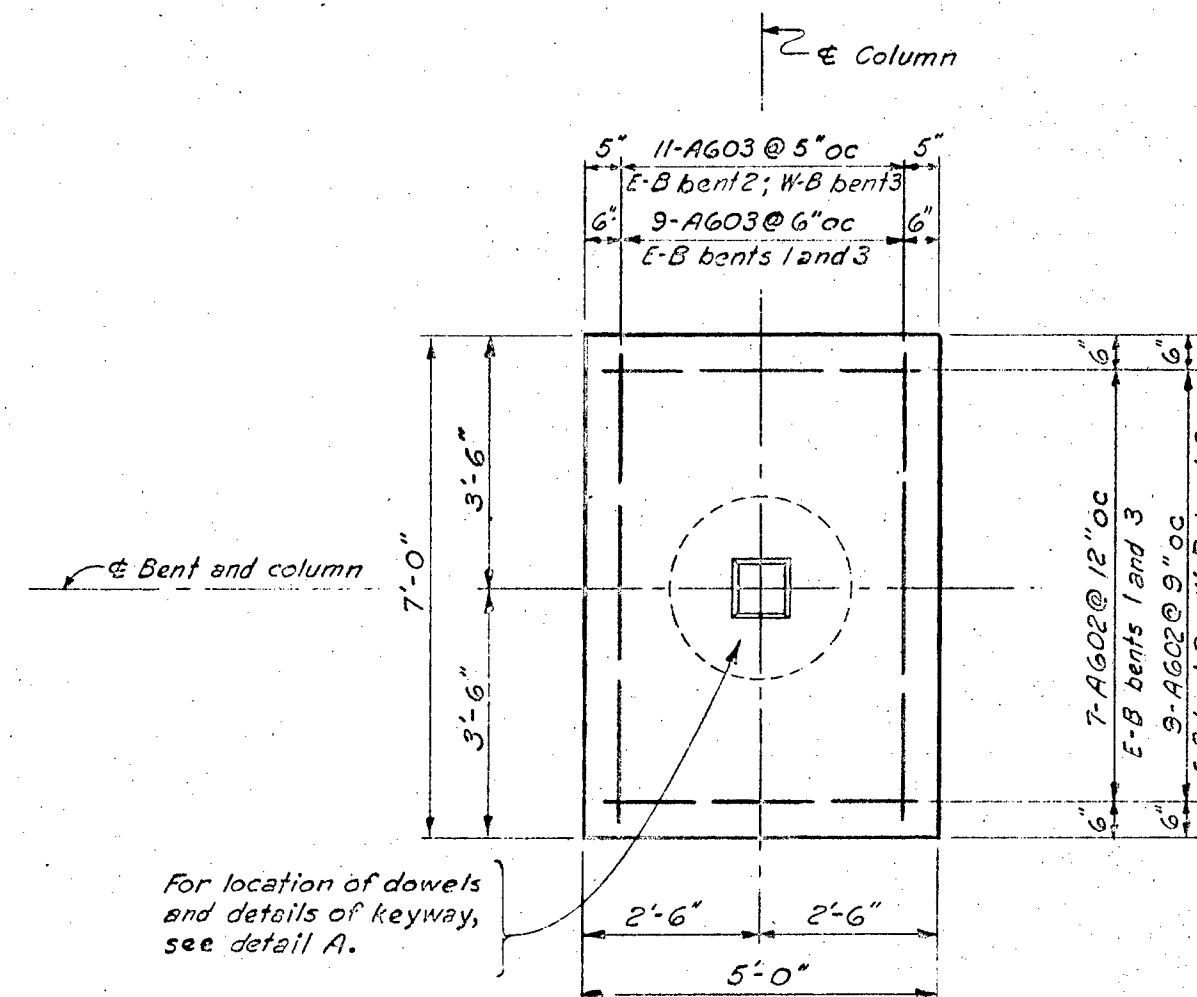
COLUMN AND FOOTING DATA									
EAST-BOUND FREEWAY					WEST-BOUND FREEWAY				
Column Number	Column Height	Elevation Top Footing	Type Footing	Reinforcing Steel Group "A" Group "B"	Column Number	Column Height	Elevation Top Footing	Type Footing	Reinforcing Steel Group "A" Group "B"
BENT 1					BENT 1				
1	11'-4"	757.90	Rock	A902 Q501	1	12'-6"	758.00	Piles	A905 Q510
2	11'-5"	757.90	Rock	A902 Q502	2	12'-8"	758.00	Piles	A905 Q511
3	11'-6"	757.90	Rock	A902 Q502	3	12'-10"	758.00	Piles	A906 Q512
4	11'-6"	757.90	Rock	A902 Q503	4	13'-16"	758.00	Piles	A906 Q513
BENT 2					BENT 2				
1	12'-0"	758.10	Rock	A1002 Q504	1	11'-7"	758.20	Piles	A1003 Q514
2	12'-0"	758.10	Rock	A1002 Q505	2	11'-10"	758.20	Piles	A1003 Q515
3	12'-12"	758.10	Rock	A1002 Q506	3	12'-0"	758.20	Piles	A1004 Q516
4	12'-24"	758.10	Rock	A1002 Q506	4	12'-38"	758.20	Piles	A1004 Q516
BENT 3					BENT 3				
1	13'-3"	757.50	Rock	A903 Q507	1	23'-7"	745.50	Rock	A1005 Q517
2	13'-4"	757.50	Rock	A903 Q507	2	19'-6"	749.60	Rock	A1006 Q518
3	13'-5"	757.50	Rock	A903 Q508	3	20'-6"	749.00	Rock	A1007 Q519
4	17'-8"	753.30	Rock	A904 Q509	4	17'-10"	751.90	Rock	A1008 Q520

ABBREVIATIONS:
E-B East-Bound Freeway
W-B West-Bound Freeway

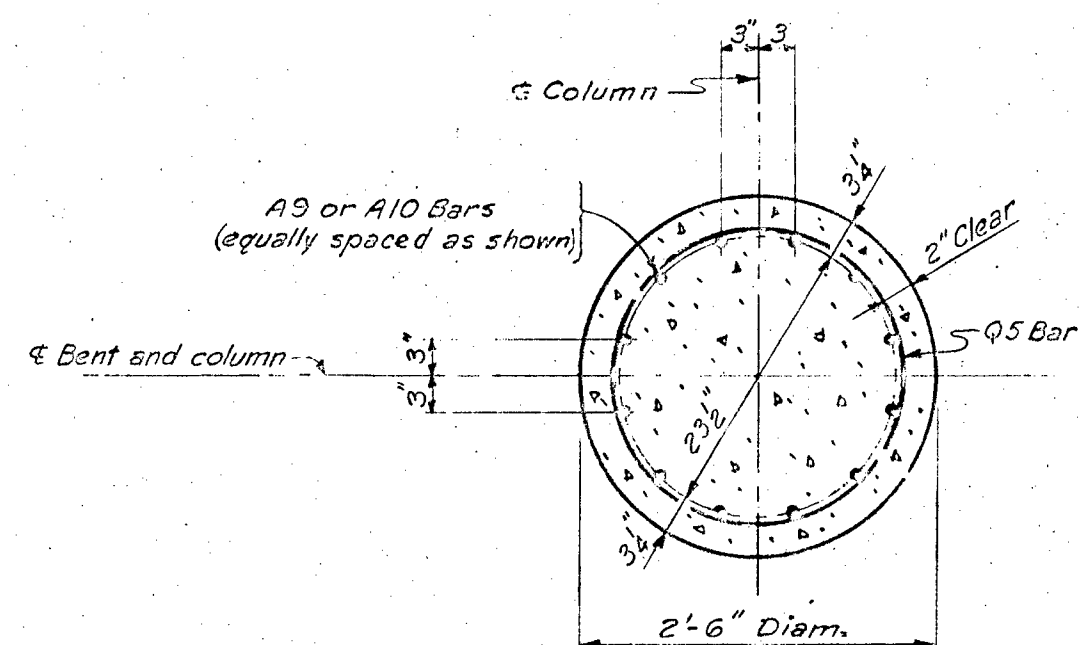
NOTES:
For General Notes and Specifications, see K-12-1.
For bent drawing, see K-12-32.
For reinforcing steel and bending diagrams, see K-12-40.
All dimensions relative to spacing of reinforcing steel are to centers of bars, except as noted.
Marks to all reinforcing steel in bents shall have the suffix "B" (thus: A903-B, Q501-B, etc.).
Chamfer all exposed edges, except as noted.



ELEVATION

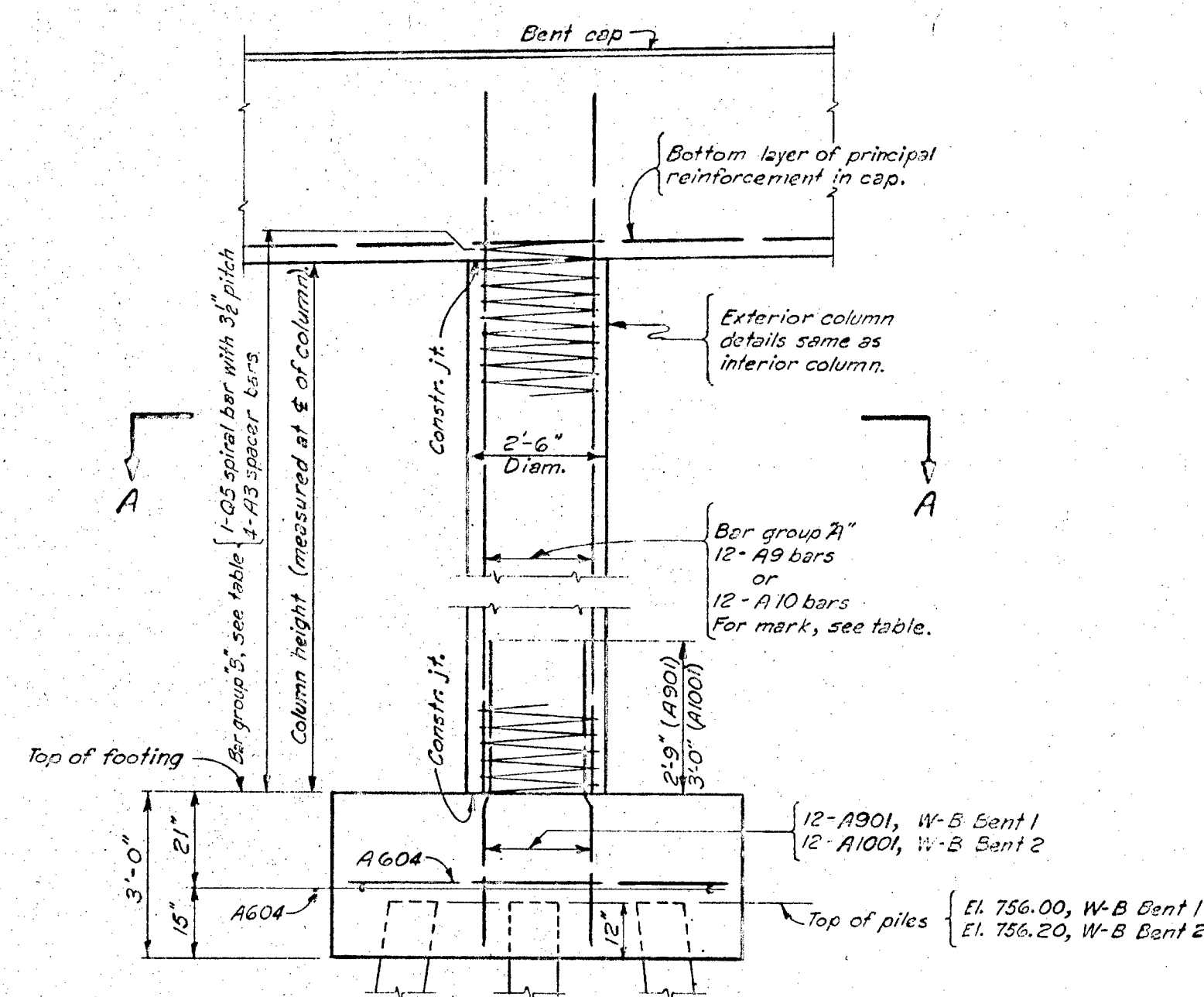


PLAN
EXTERIOR AND INTERIOR COLUMNS
WITH
FOOTINGS ON ROCK
(Exterior Column Shown)
Scale: $\frac{1}{8}'' = 1'-0''$

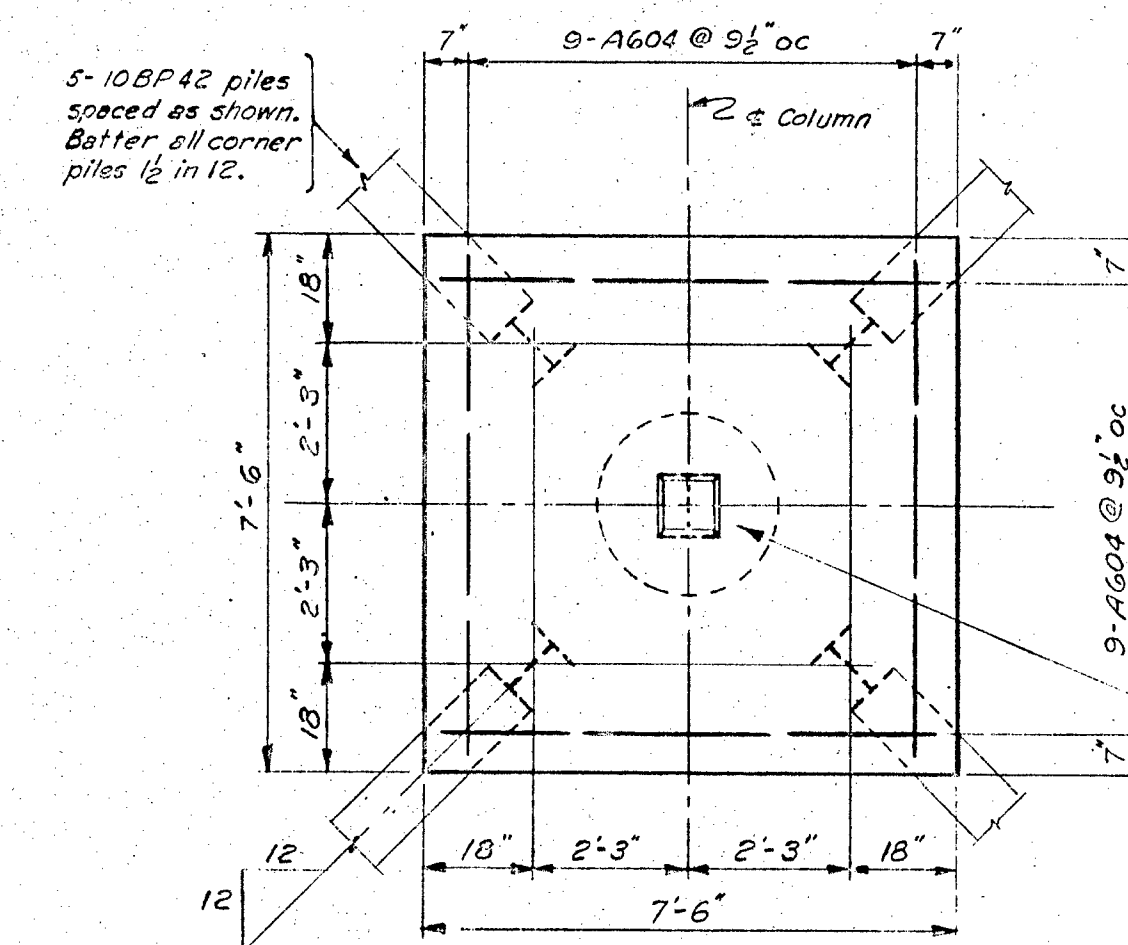


SECTION A-A
Scale: $\frac{1}{8}'' = 1'-0''$

NOTES REGARDING FOOTINGS ON ROCK:
The top of footing elevations shown in table are based upon the available sounding data furnished by the Tenn. State Highway Department. When rock has been exposed in the excavation, test holes shall be drilled as directed by the Engineer to determine the soundness of the rock. Excavation shall then be continued until a foundation approved by the Engineer is secured. All footings shall extend into rock 6 inches.
The maximum design bearing pressure for basic unit stresses is 12,000 pounds per square foot. If column heights are increased more than 3', the Engineer shall be notified.



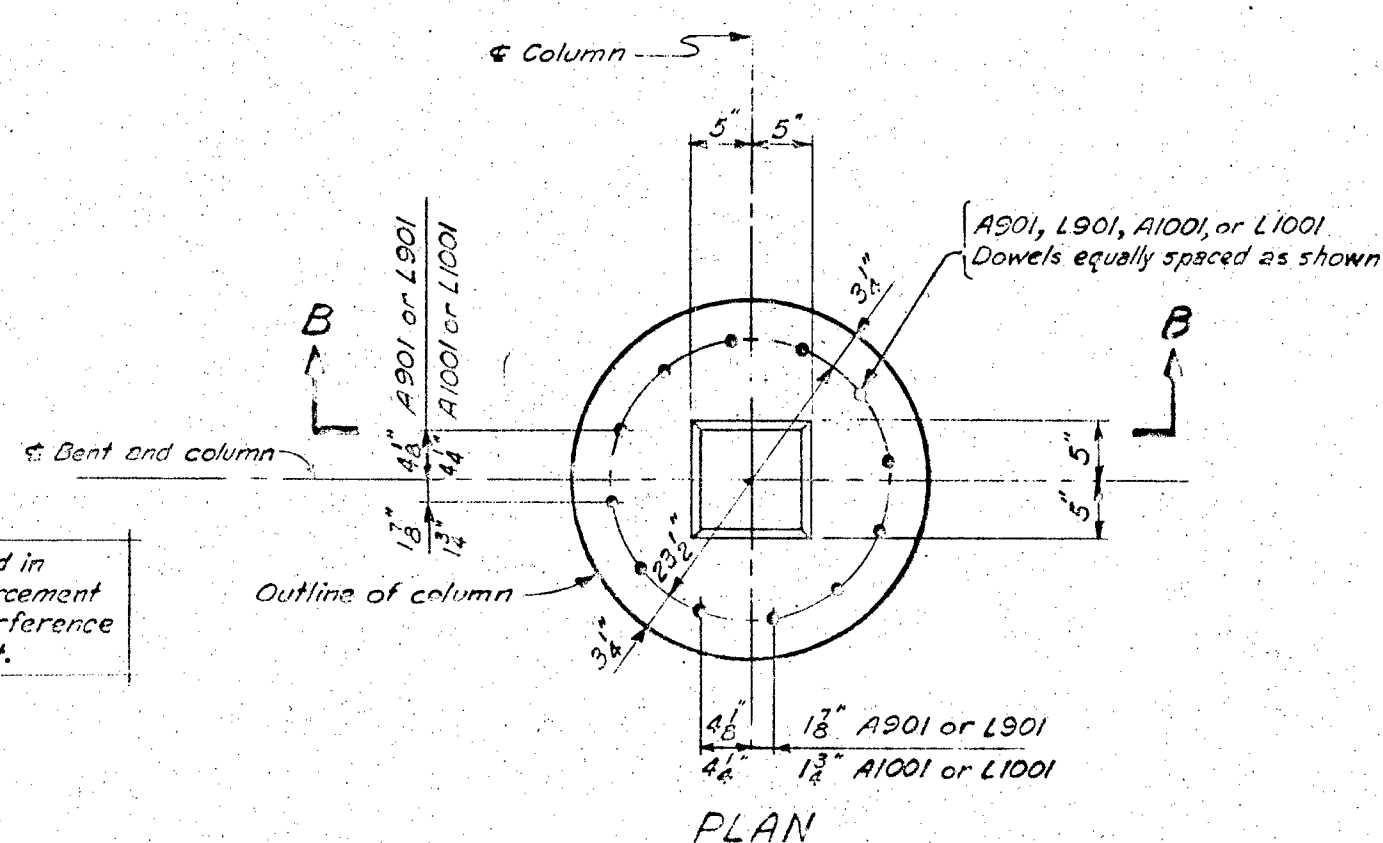
ELEVATION



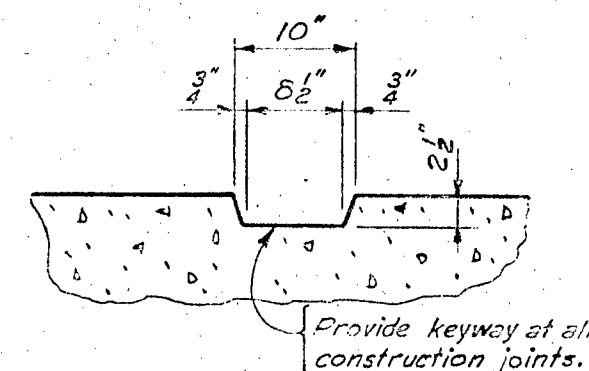
PLAN
EXTERIOR AND INTERIOR COLUMNS
WITH
FOOTINGS ON PILES
(Interior Column Shown)
Scale: $\frac{1}{8}'' = 1'-0''$

NOTES REGARDING PILES:
For details of piles, see H-5-111 and Construction Specifications.
All piles shall be 10-BP42 steel H-piling, with no alternates permitted.
All piles shall be driven to refusal on rock.
The maximum design pile load for basic unit stresses is 37 tons per pile.

For location of dowels and details of keyway, see Detail A.



DETAIL "A"
SHOWING DOWELS AND KEYWAY
Scale: $\frac{1}{8}'' = 1'-0''$

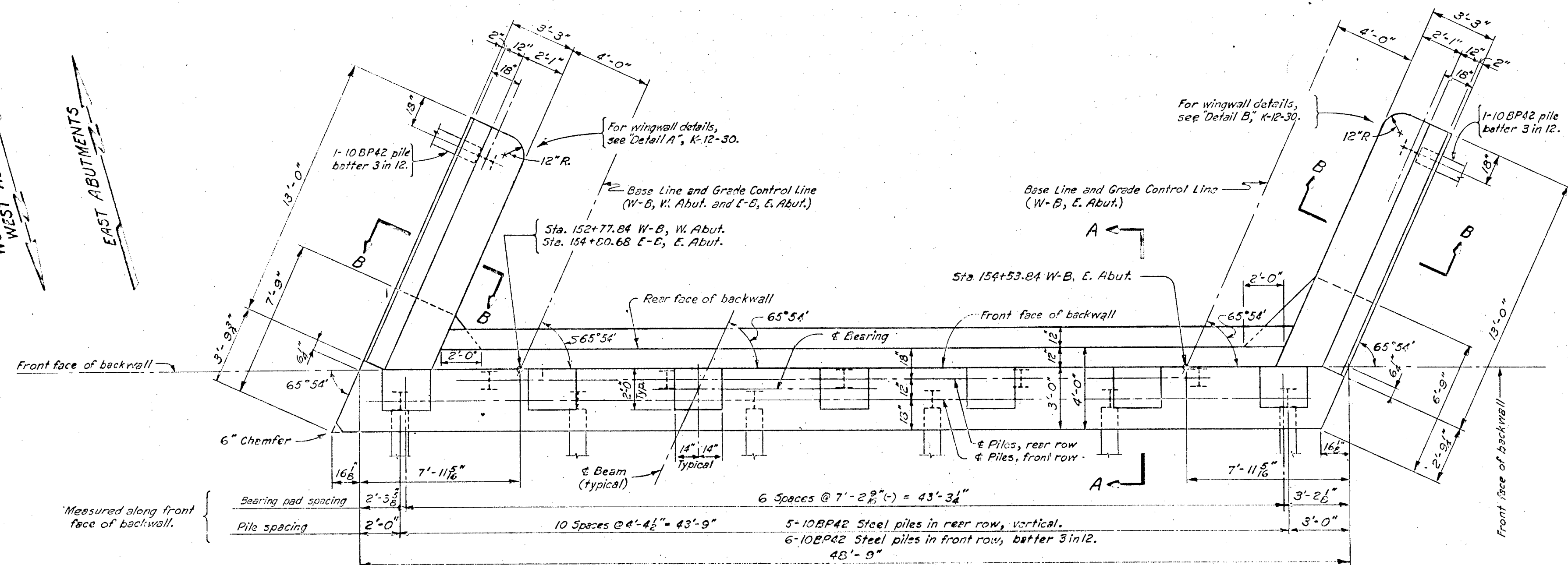


SECTION B-B

$$\begin{array}{r} 7-6 \\ 2\sqrt{73} = 3.75 \\ 2-6 \\ 2\sqrt{23} = 1.25 \\ \hline 3.75 \\ 2.50 \\ \hline 757.90 \end{array}$$

STATE OF TENNESSEE
DEPARTMENT OF HIGHWAYS AND PUBLIC WORKS
CHATTANOOGA FREEWAY
HAMILTON COUNTY-E.A. PROJ. NO. 1-24-3 ()
U. S. 41 TIFTONIA UNDERPASSES
EAST-BOUND & WEST-BOUND FREEWAYS
BENTS-COLUMNS AND FOOTINGS
SULLIVAN & HOEBEL-CONSULTING ENGINEERS-KNOXVILLE, TENN.
ALAN F. HEDMAN-CONSULTING ENGINEERS-CHATTANOOGA, TENN.
DSGN: RRT
CHKD: JRP
SCALE: AS NOTED
DATE: 11-5-62
FILE NO. 57.77, SHEET NO. K-12-31

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	STATE AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
3	TENN.	1-24-3(2)	117		50	181

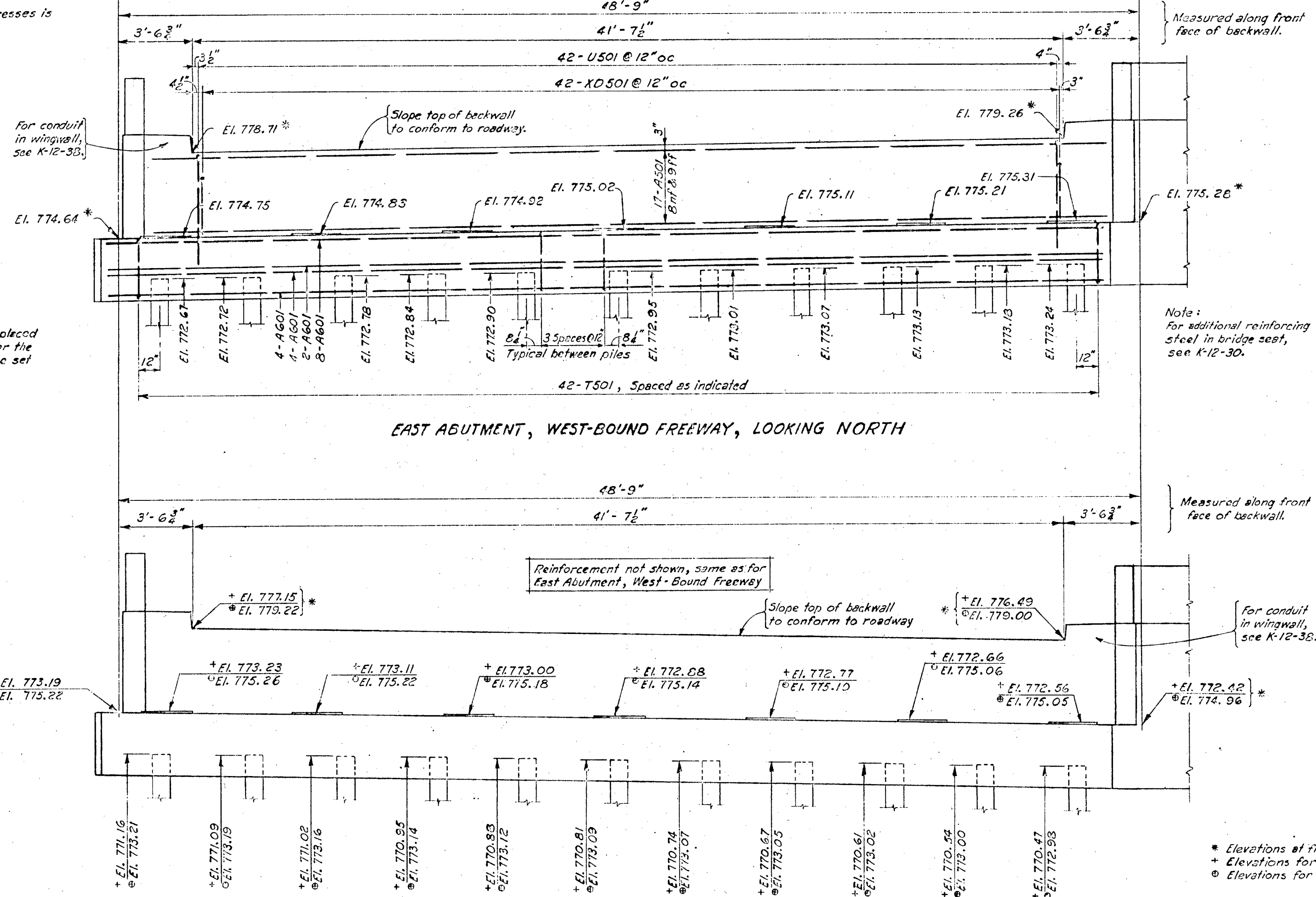


NOTES REGARDING PILES:

All piles shall be 10BP42 steel H-piling with no alternates permitted.
For details of piles, see H-5-III and Construction Specifications.
All piles shall be driven to refusal on rock.
The maximum design pile load for basic unit stresses is 37 tons per pile.

NOTE:

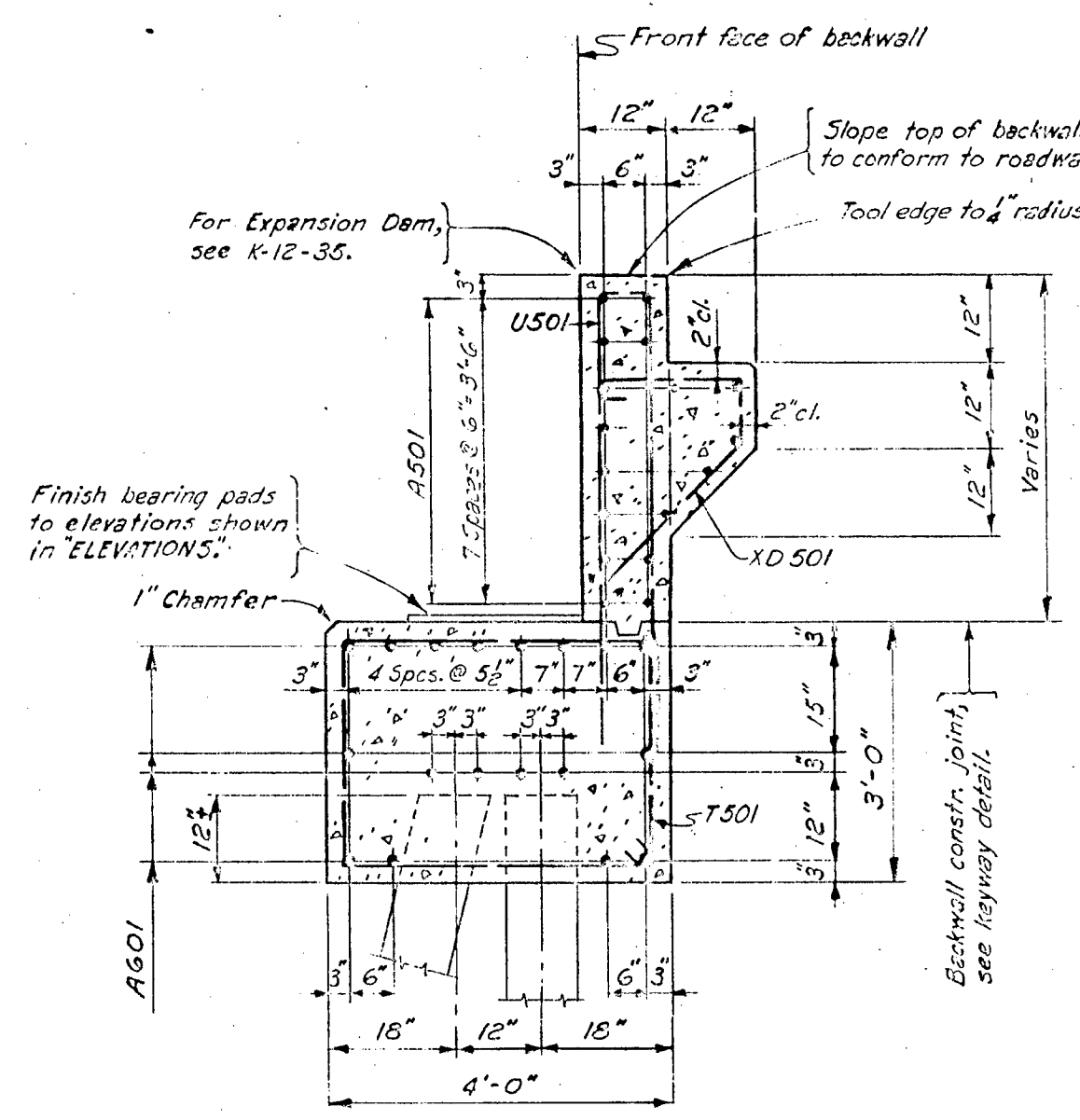
The reinforcing steel in the bridge seat shall be placed accurately as shown in Section A-A, so as to clear the anchor bolts, for bearings, whether the bolts are set before or after concrete is placed.



WEST ABUTMENT, WEST-BOUND FREEWAY, LOOKING NORTH
EAST ABUTMENT, EAST-BOUND FREEWAY, LOOKING NORTH

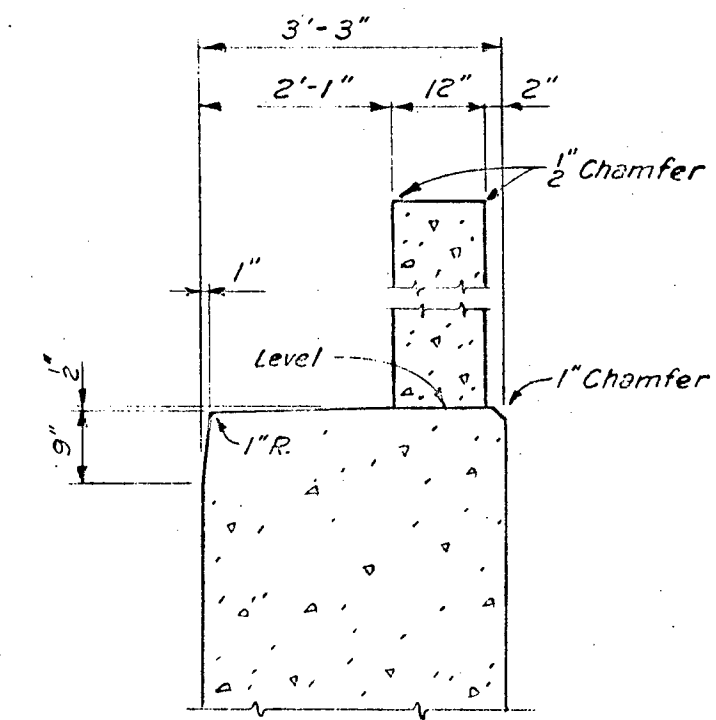
ELEVATIONS

Scale: 1/4" = 1'-0"



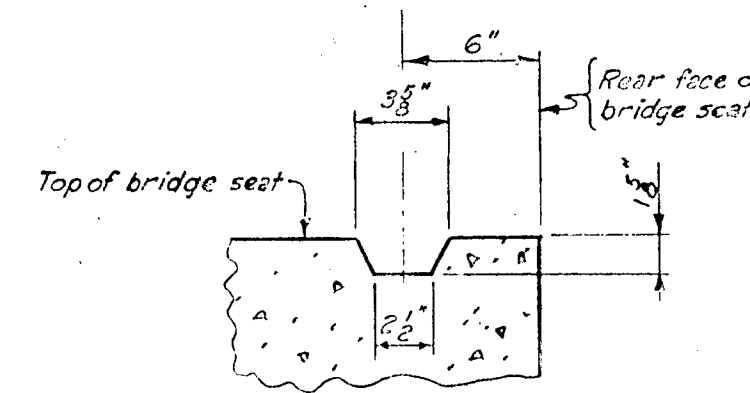
SECTION A-A

Scale: 1/2" = 1'-0"



SECTION B-B

Scale: 1/2" = 1'-0"



KEYWAY DETAIL

No Scale.

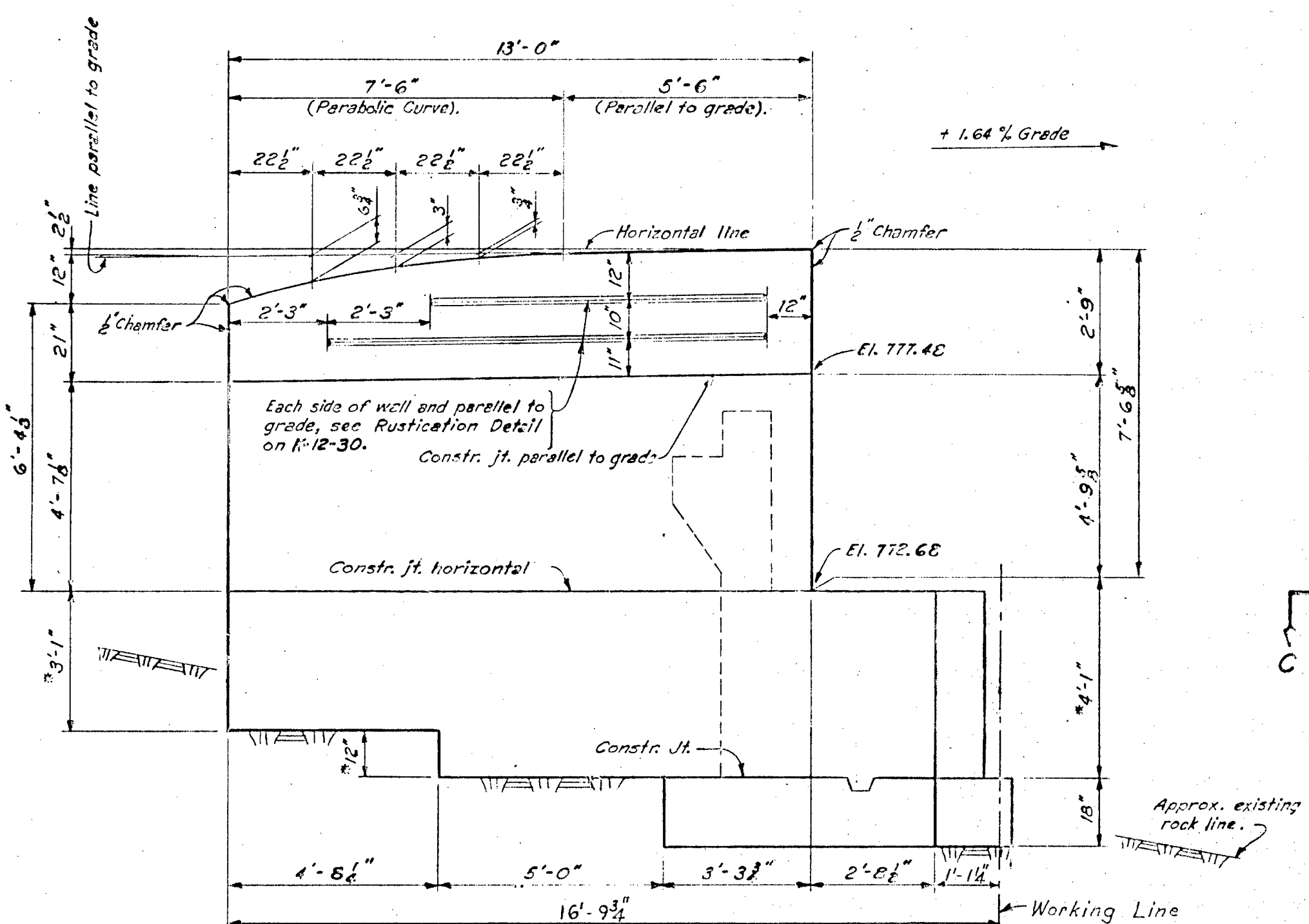
NOTE: Backwall on Abutments to be poured after Superstructure is built.

ABBREVIATIONS:
ef each face
nf near face
ff far face
E-B East-Bound Freeway
W-B West-Bound Freeway

NOTES:
For General Notes and Specifications, see K-12-1.
For location of abutments, see K-12-24.
For details of wingwalls, see K-12-30.
For Anchor Bolt Plan, see K-12-26.
For reinforcing steel and bending diagrams, see K-12-39.
Chamfer all exposed edges 1/2" except as noted.
All dimensions relative to spacing of reinforcing steel are to centers of bars, except as noted.
Marks to all reinforcing steel in the abutments shall have the suffix A, thus (A601-A, T501-A, etc.).
All dimensions shown in PLAN are measured horizontally.

STATE OF TENNESSEE DEPARTMENT OF HIGHWAYS AND PUBLIC WORKS CHATTANOOGA, FREEMAN HAMILTON COUNTY-F.A. PROJ. NO. 1-24-3(1)			
U.S. 41 TIFTONIA UNDERPASSES EAST-BOUND & WEST-BOUND FREEWAYS ABUTMENTS			
SULLIVAN & ROEBEL - CONSULTING ENGINEERS - KNOXVILLE, TENN. ALICE F. HEDMAN - CONSULTING ENGINEERS - CHATTANOOGA, TENN.			
DSGN: RRT CHKD: JRP	PRV: RRT SUD: JRP	SCALE: AS NOTED FILE NO. 57.77	DATE: 1-15-62 SHEET NO. K-12-29

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	STATE AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
3	TENN.	1-24-30	117		49	181

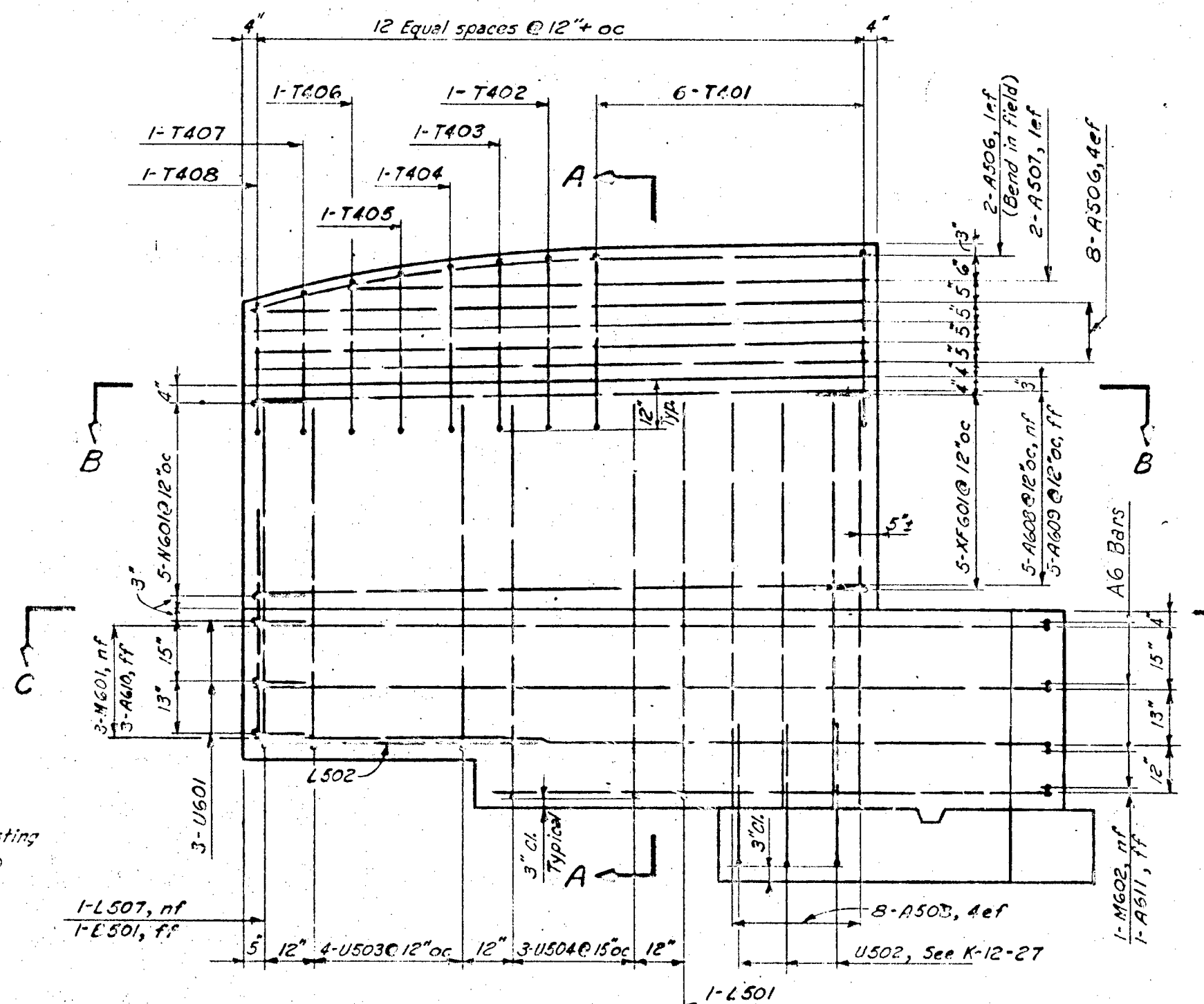


ELEVATION

OUTLINE DETAILS EAST WINGWALL

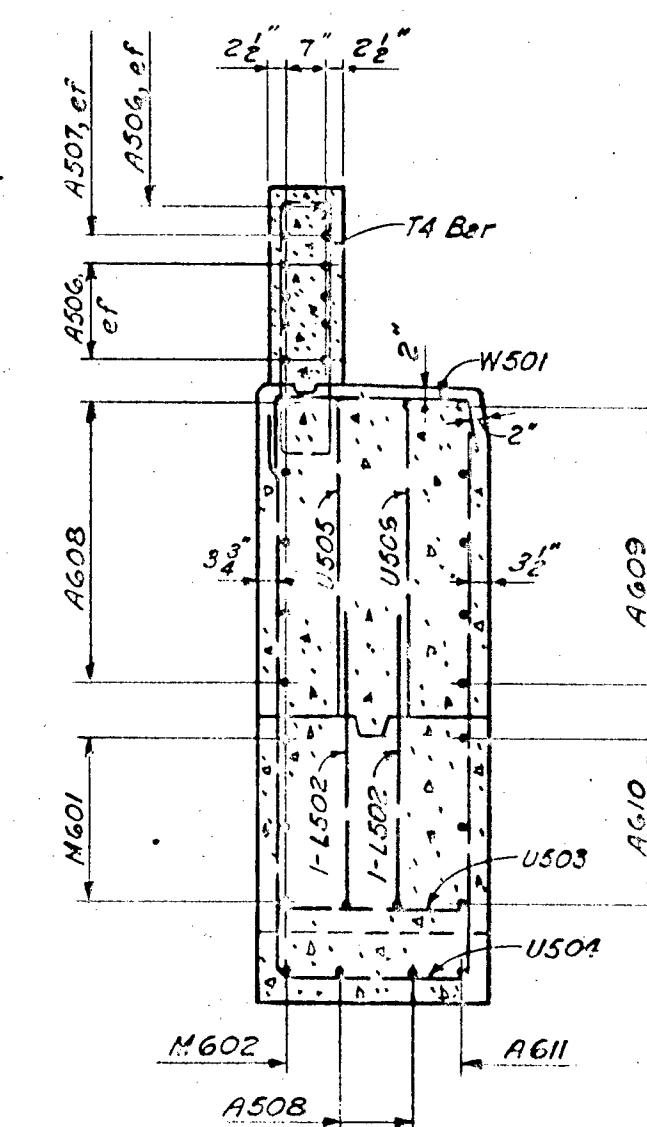
* These dimensions are based upon the available sounding data, and may be changed to suit actual conditions.

Note: For additional wingwall details, see K-12-27.

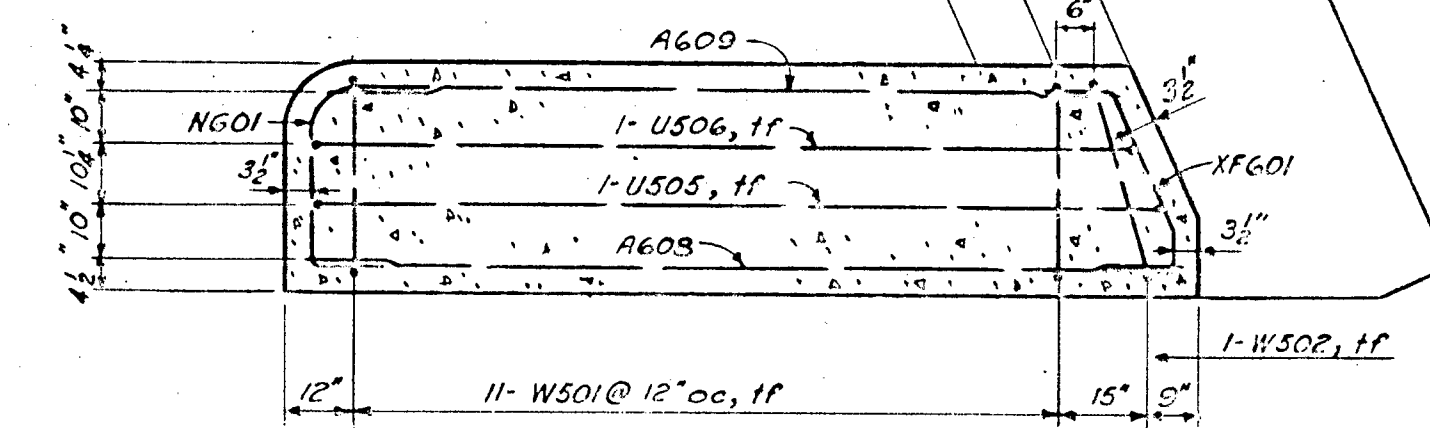


ELEVATION

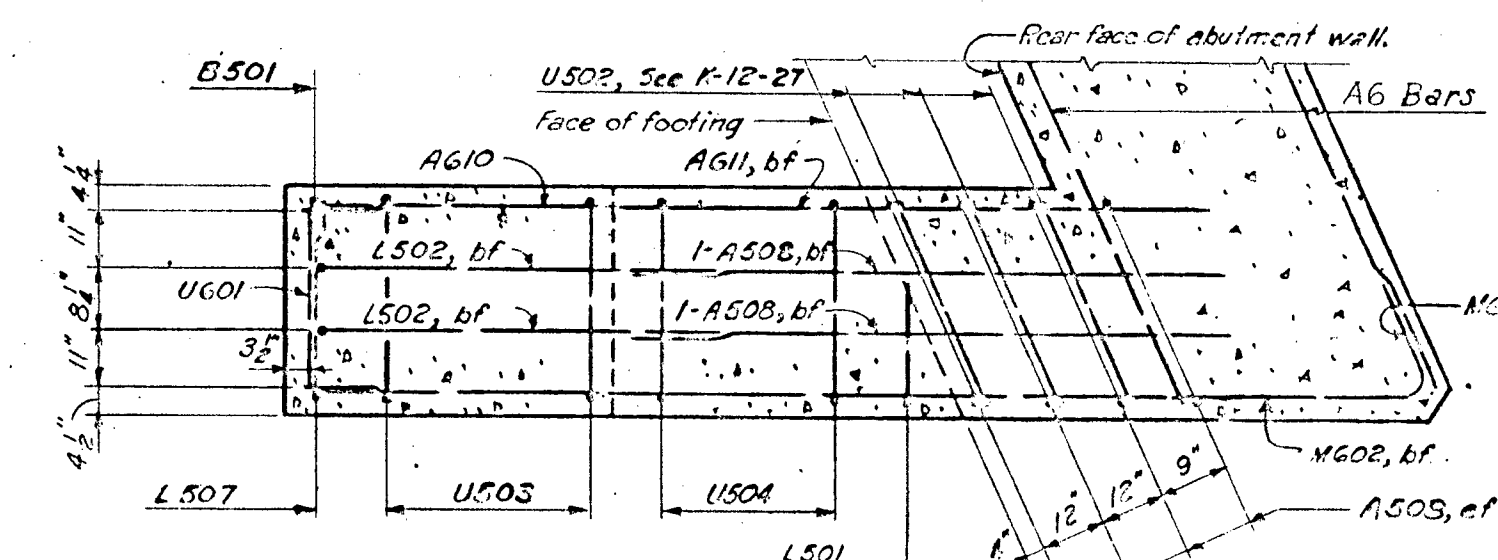
REINFORCING DETAILS EAST WINGWALL



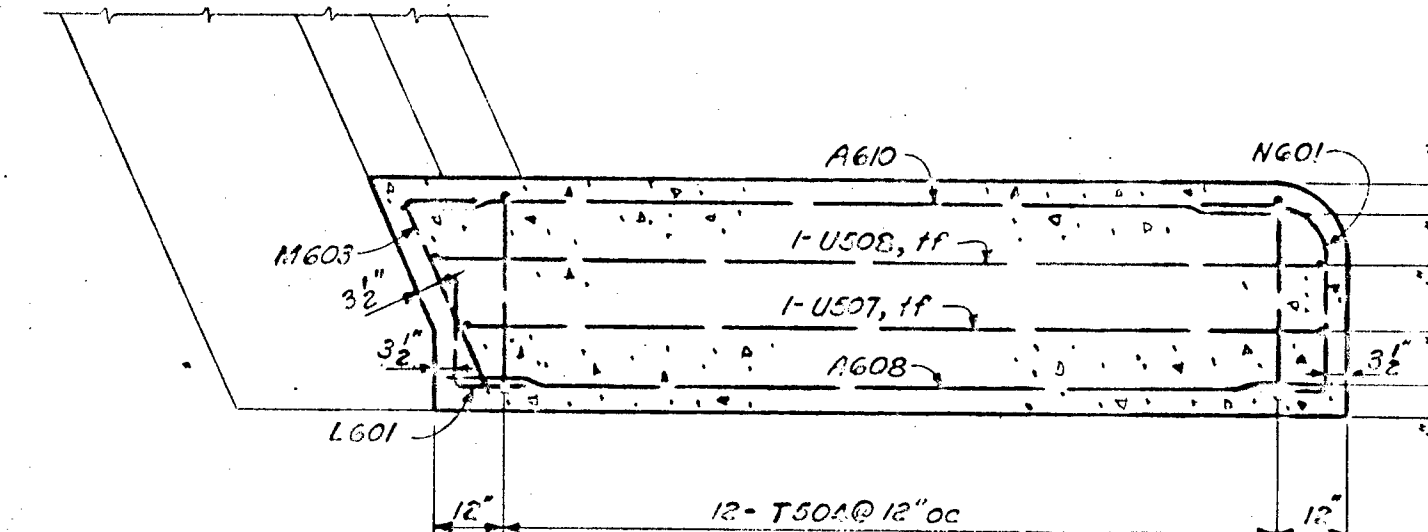
SECTION A-A



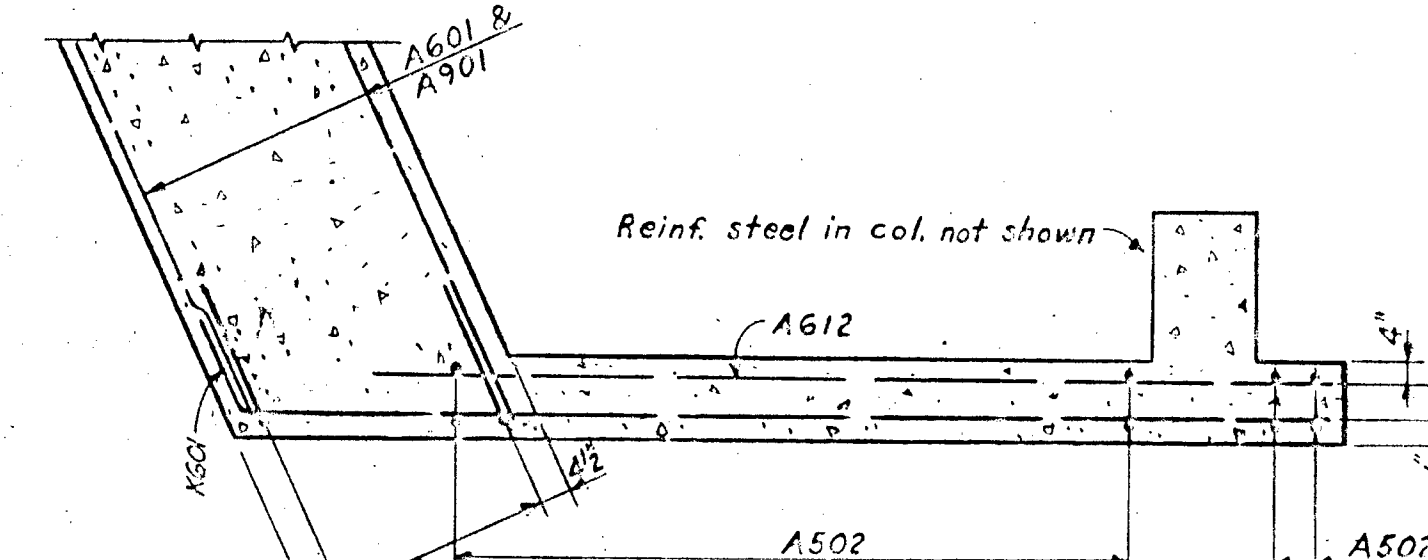
SECTION B-B



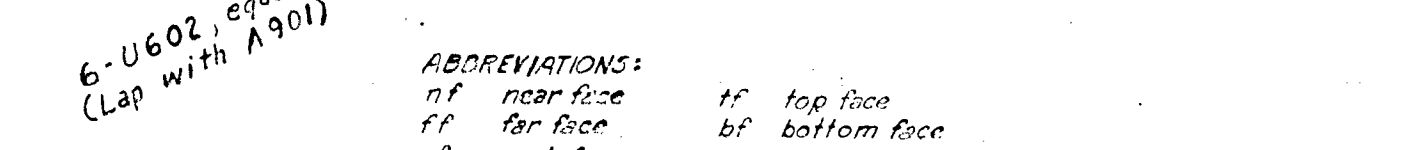
SECTION C-C



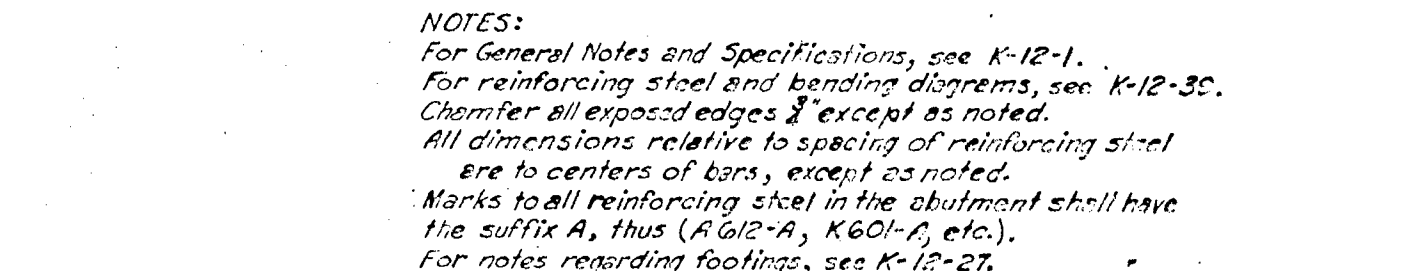
SECTION D-D



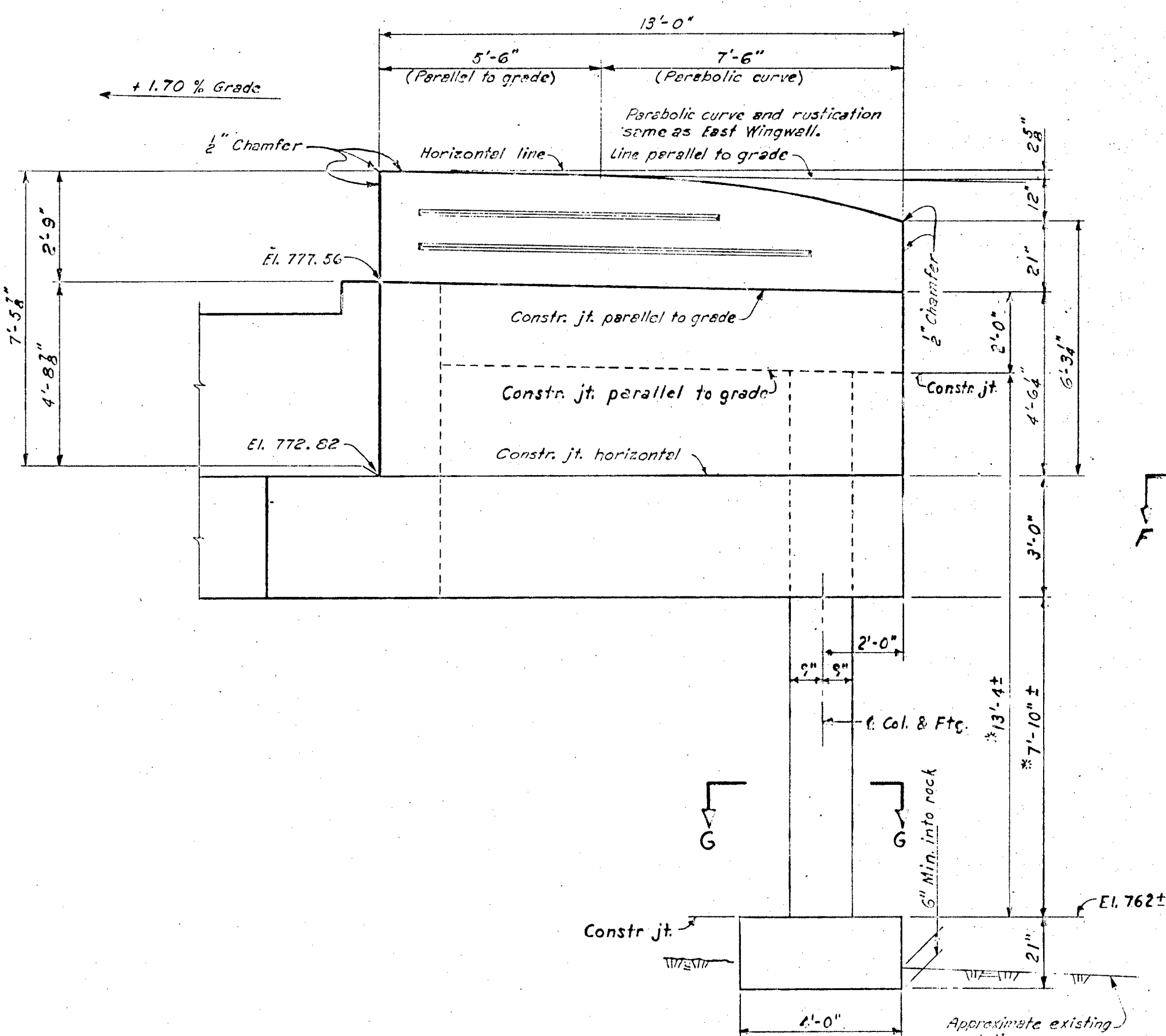
SECTION E-E



SECTION F-F

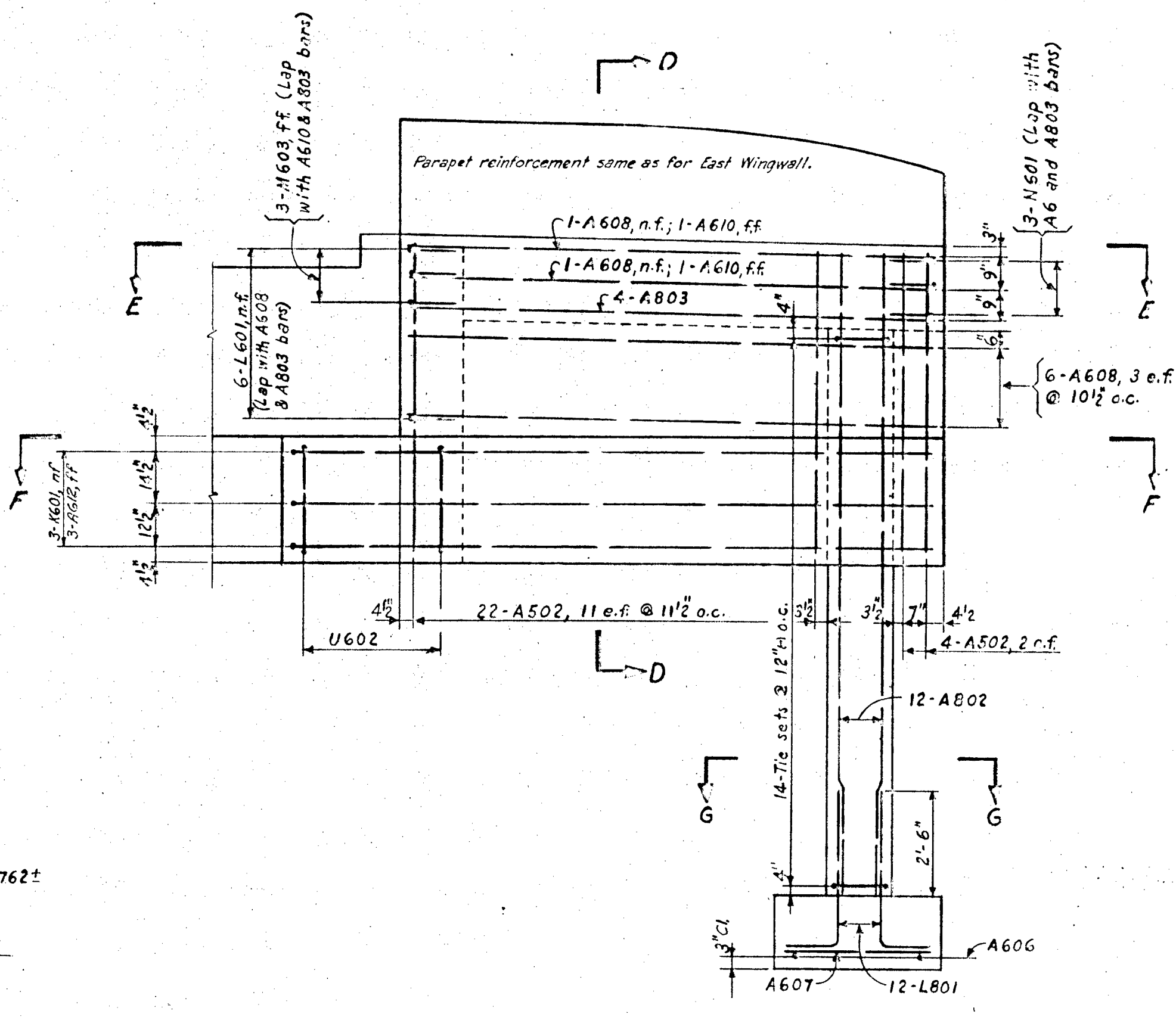


SECTION G-G



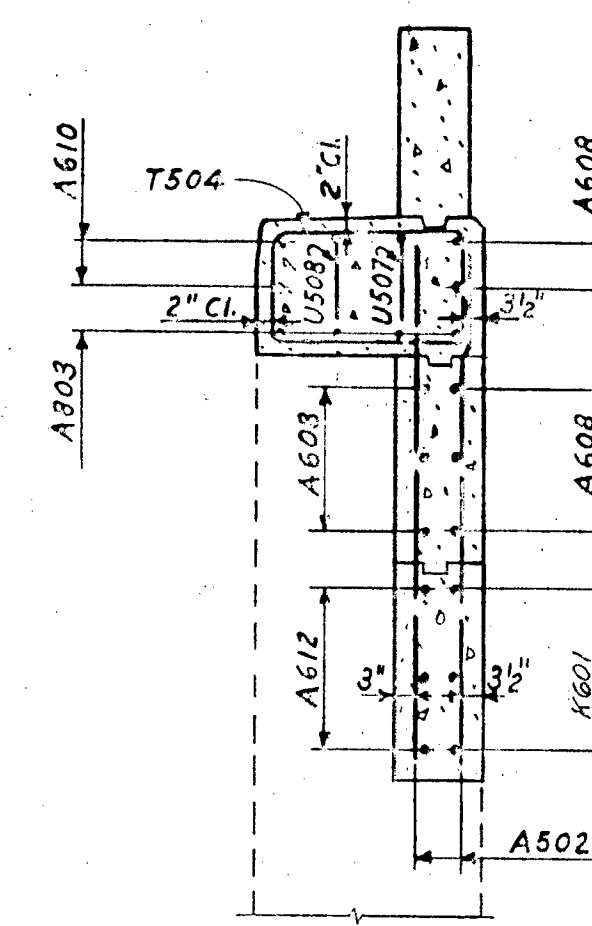
ELEVATION

OUTLINE DETAILS WEST WINGWALL

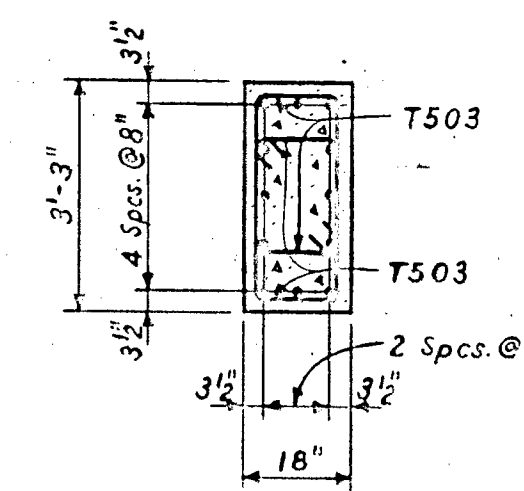


ELEVATION

REINFORCING DETAILS WEST WINGWALL



SECTION D-D



SECTION G-G

Note: 2-T503 make one tie set. Vertical bars are A802 and L801 dowels.

ABBREVIATIONS:
nf near face
ff far face
ef each face
lf top face
bf bottom face

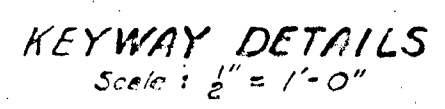
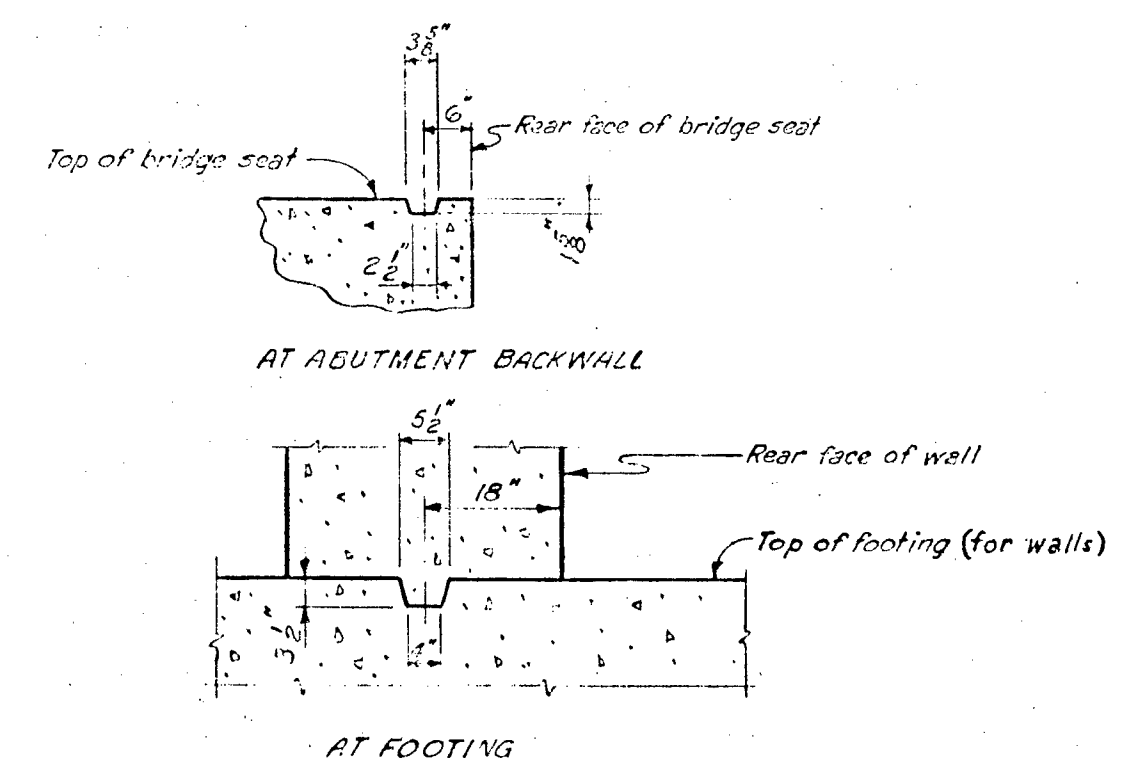
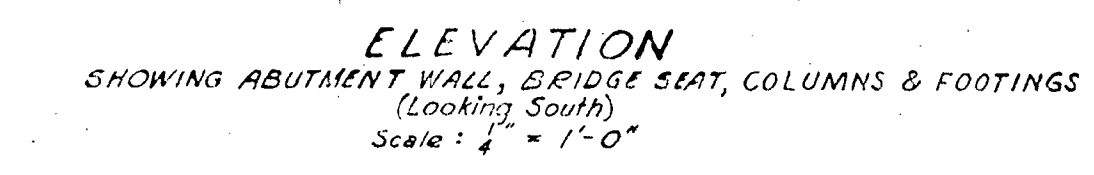
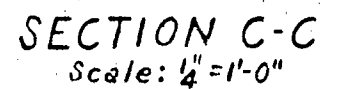
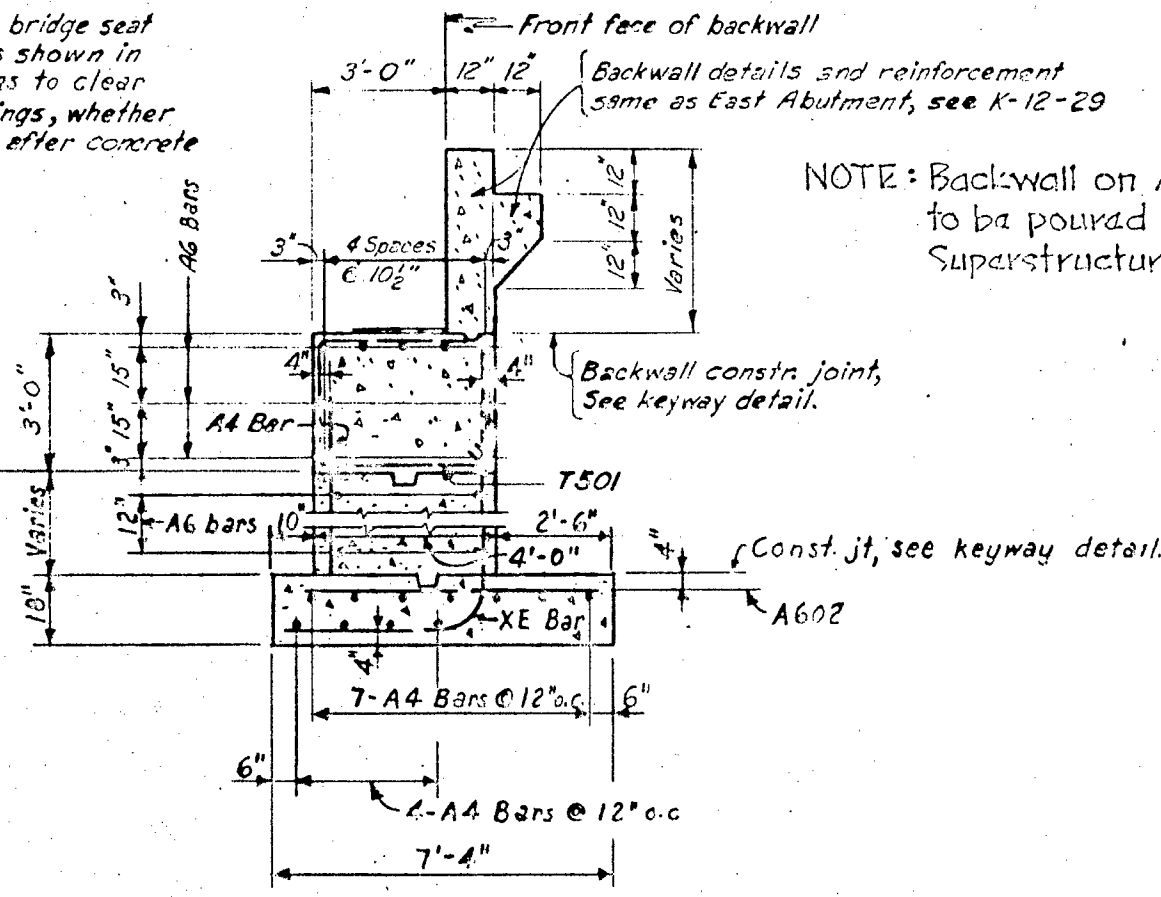
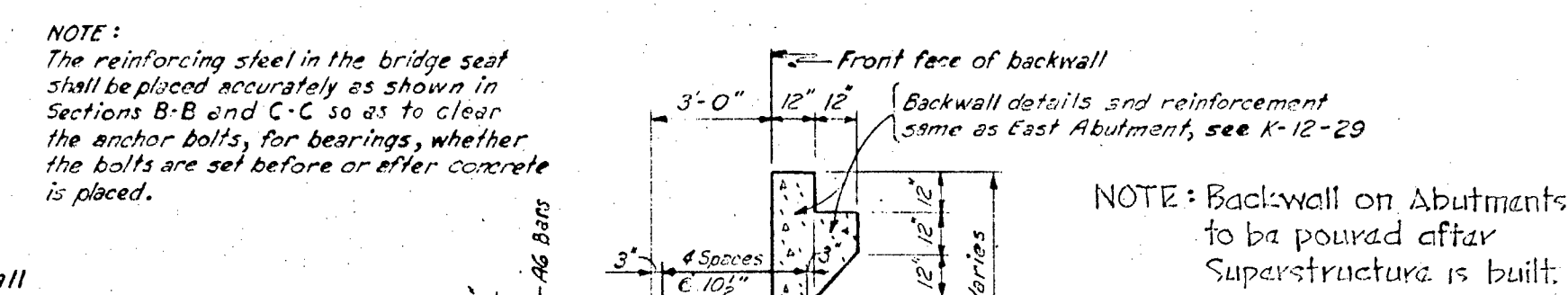
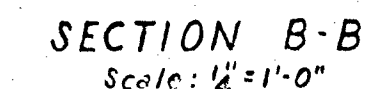
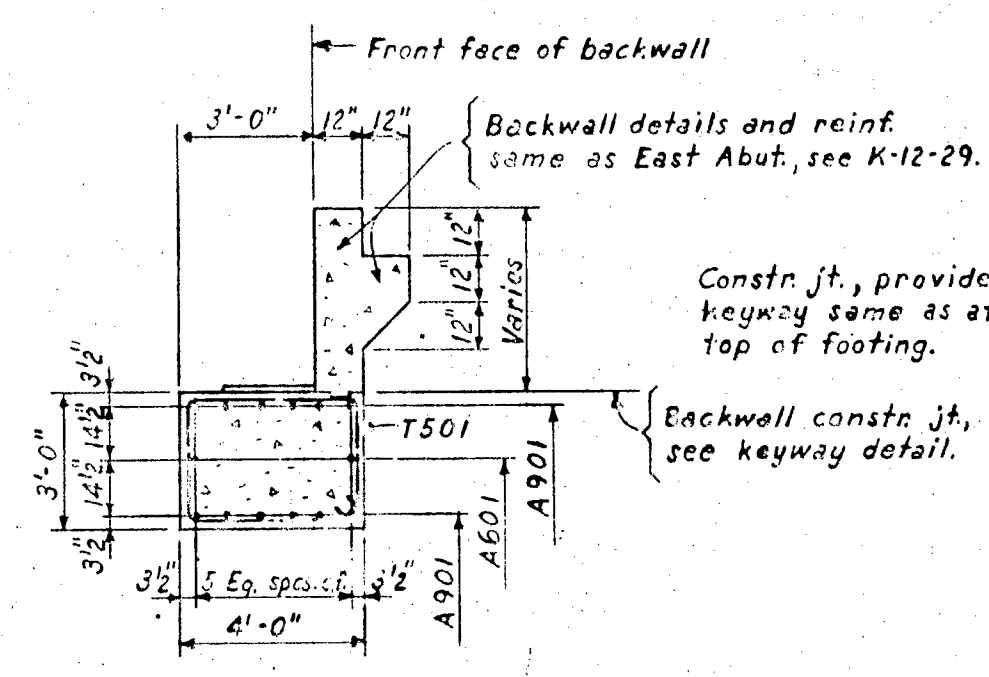
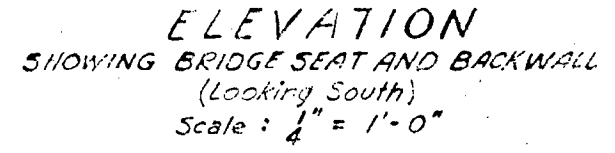
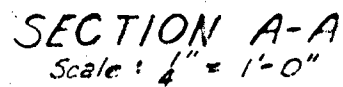
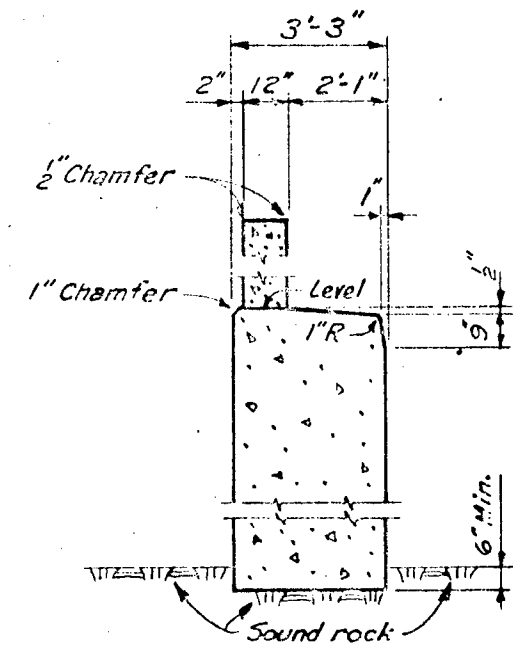
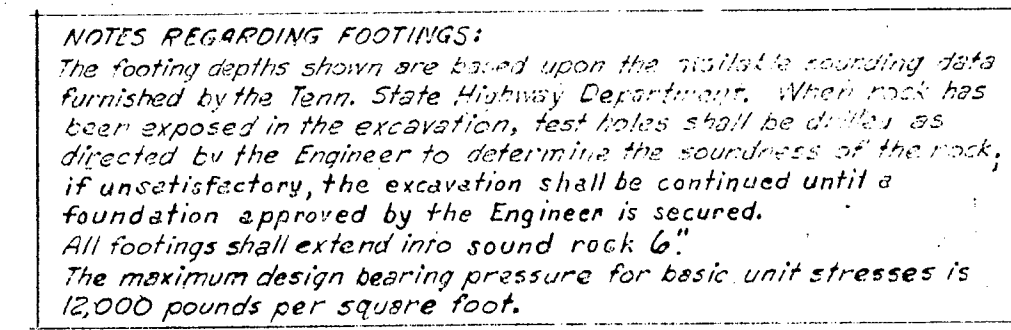
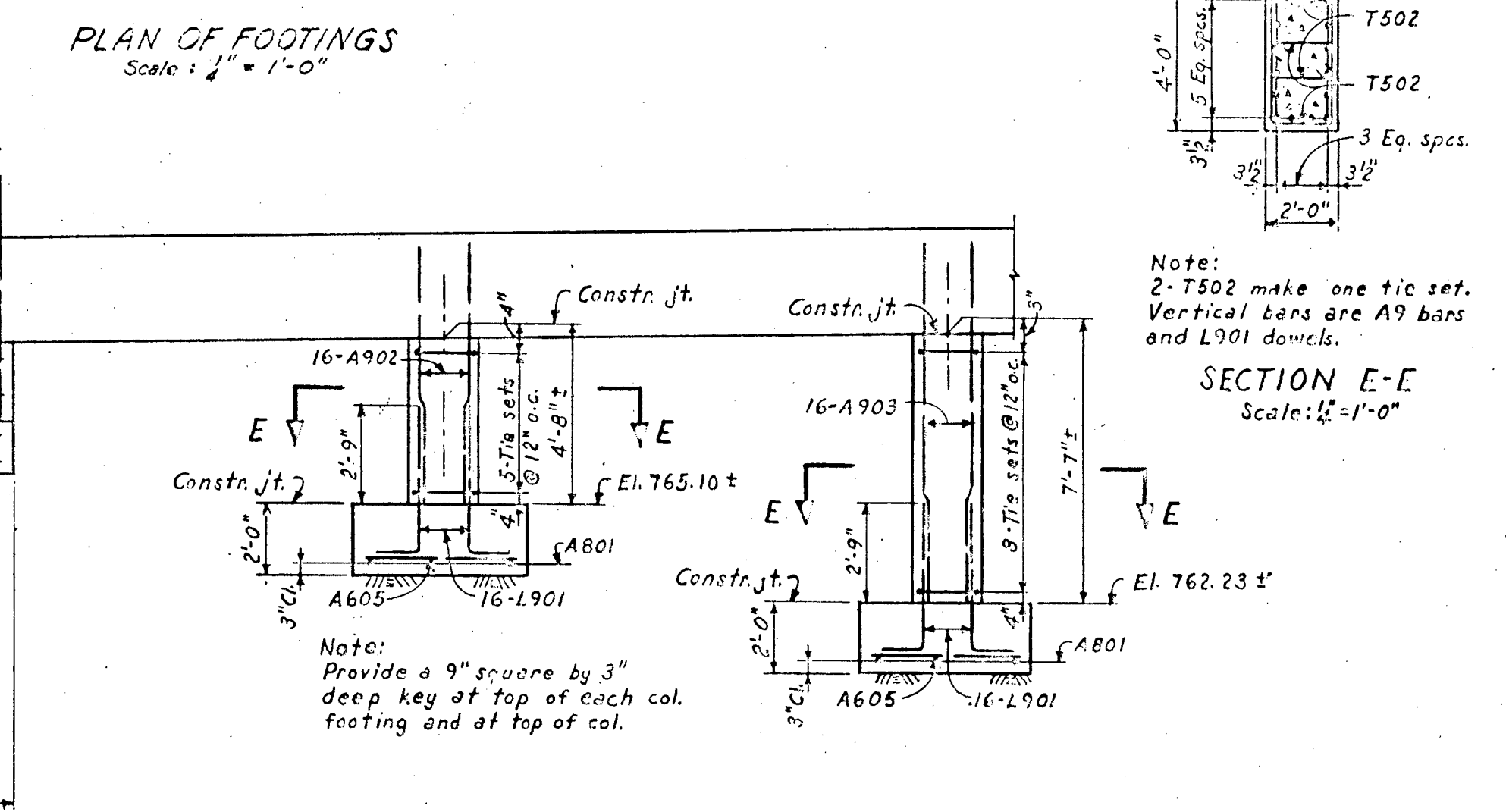
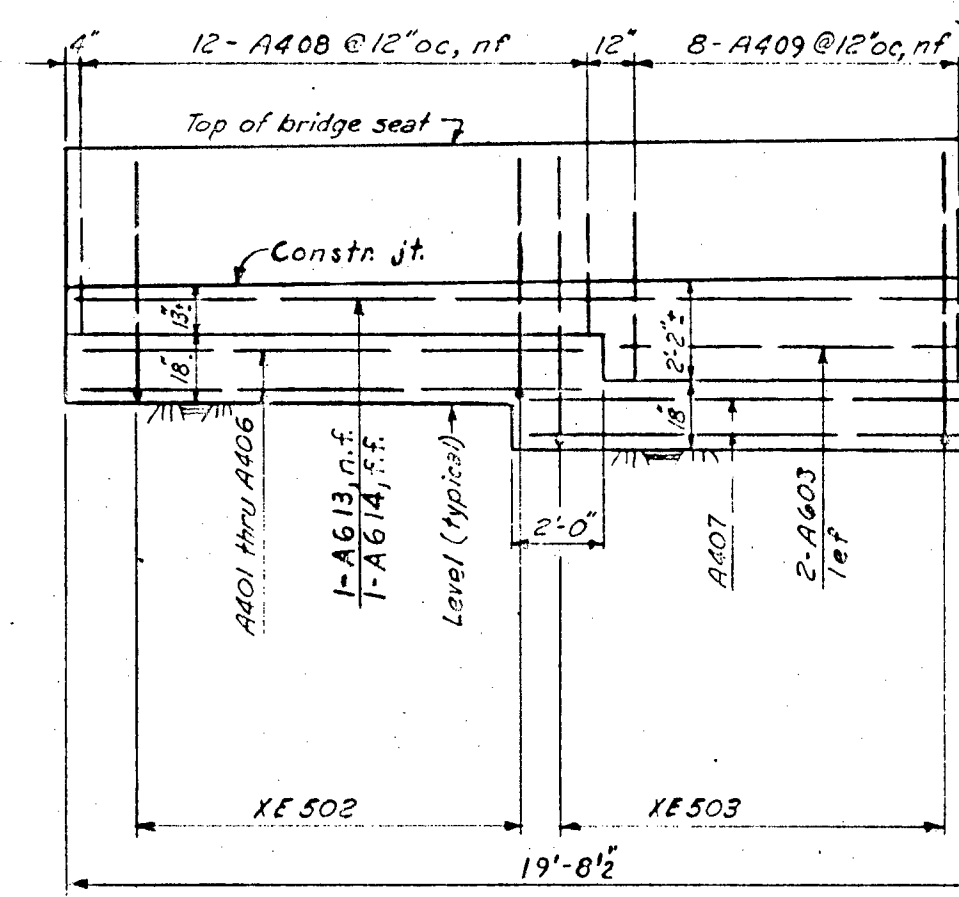
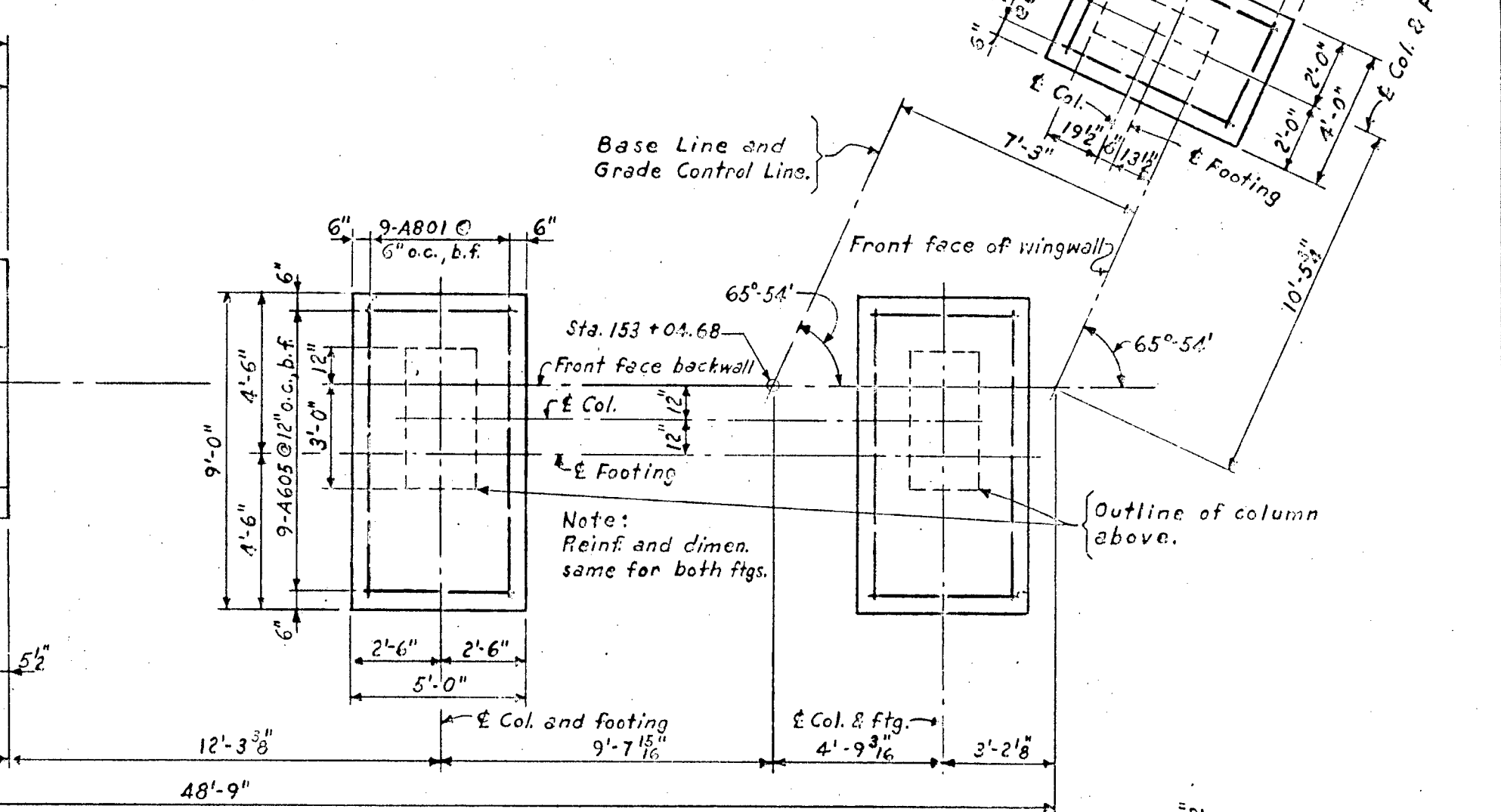
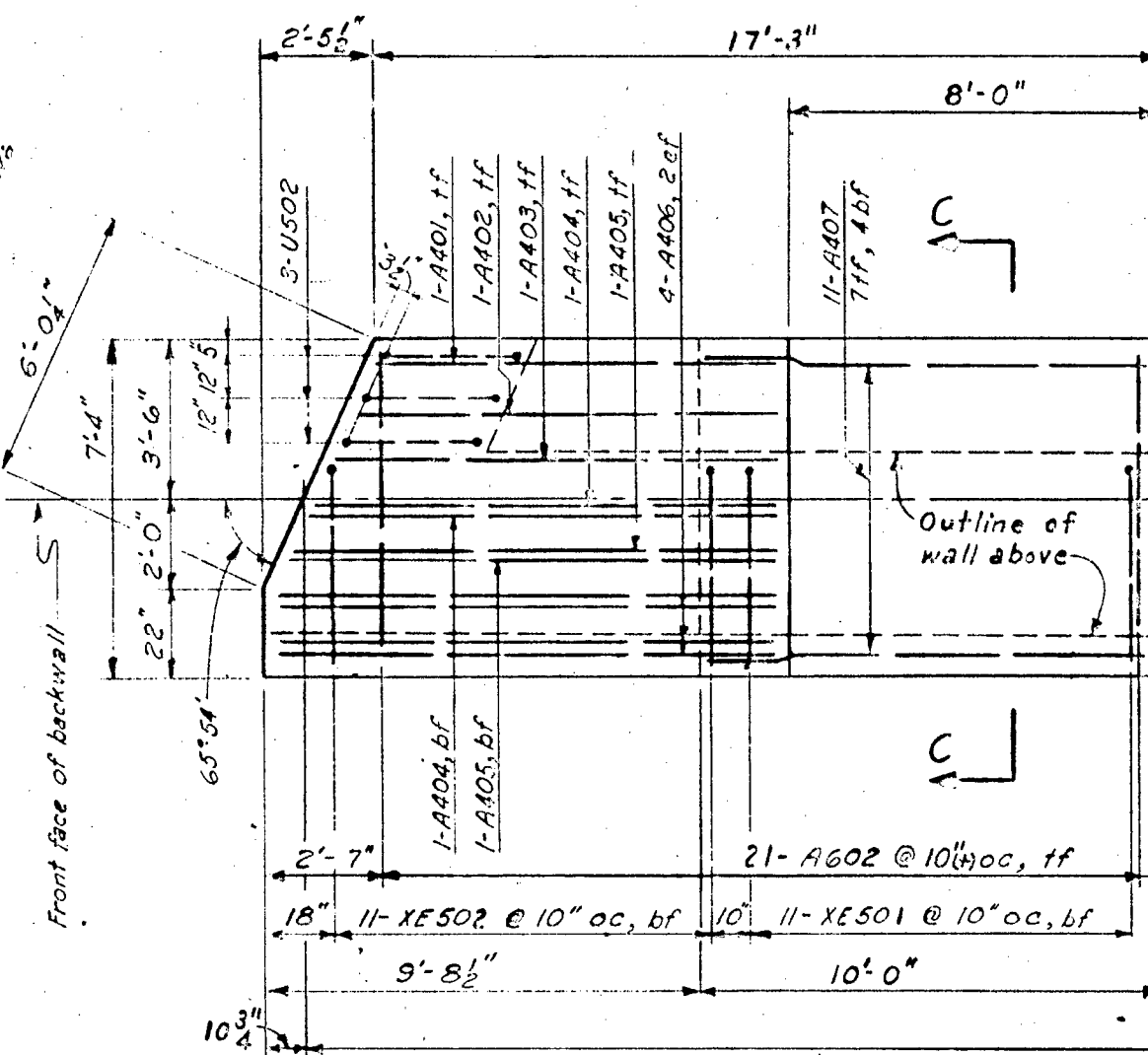
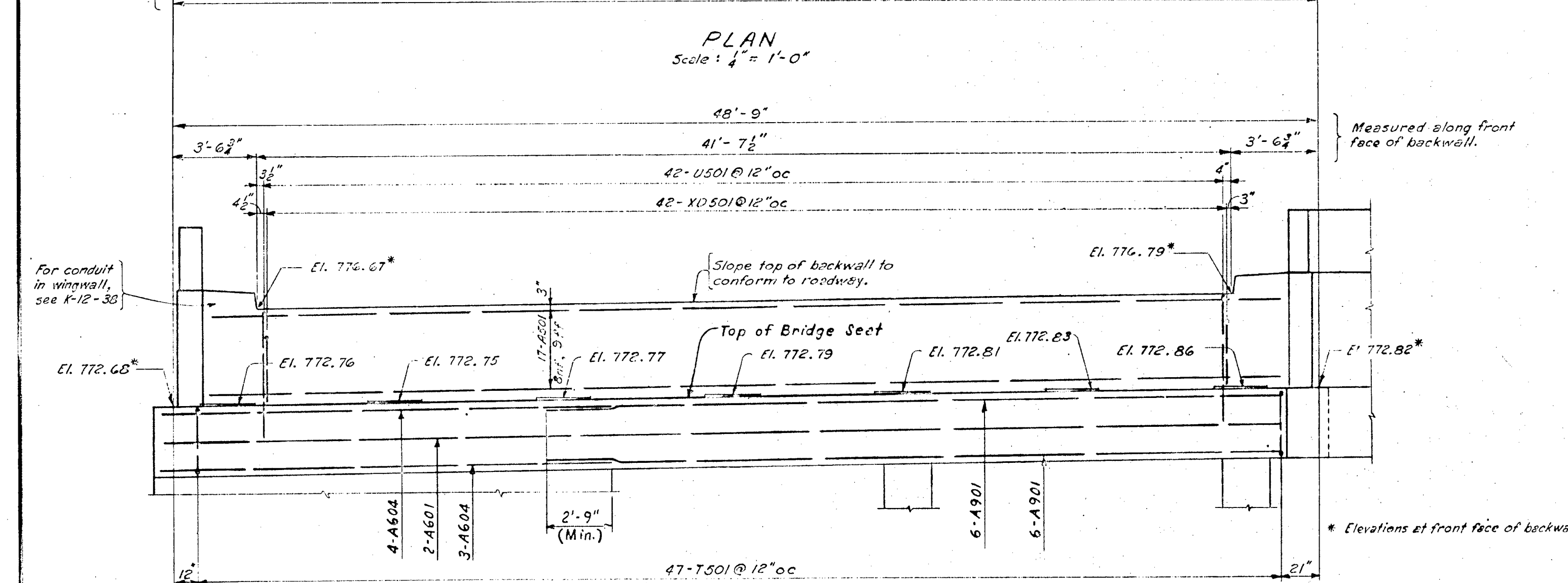
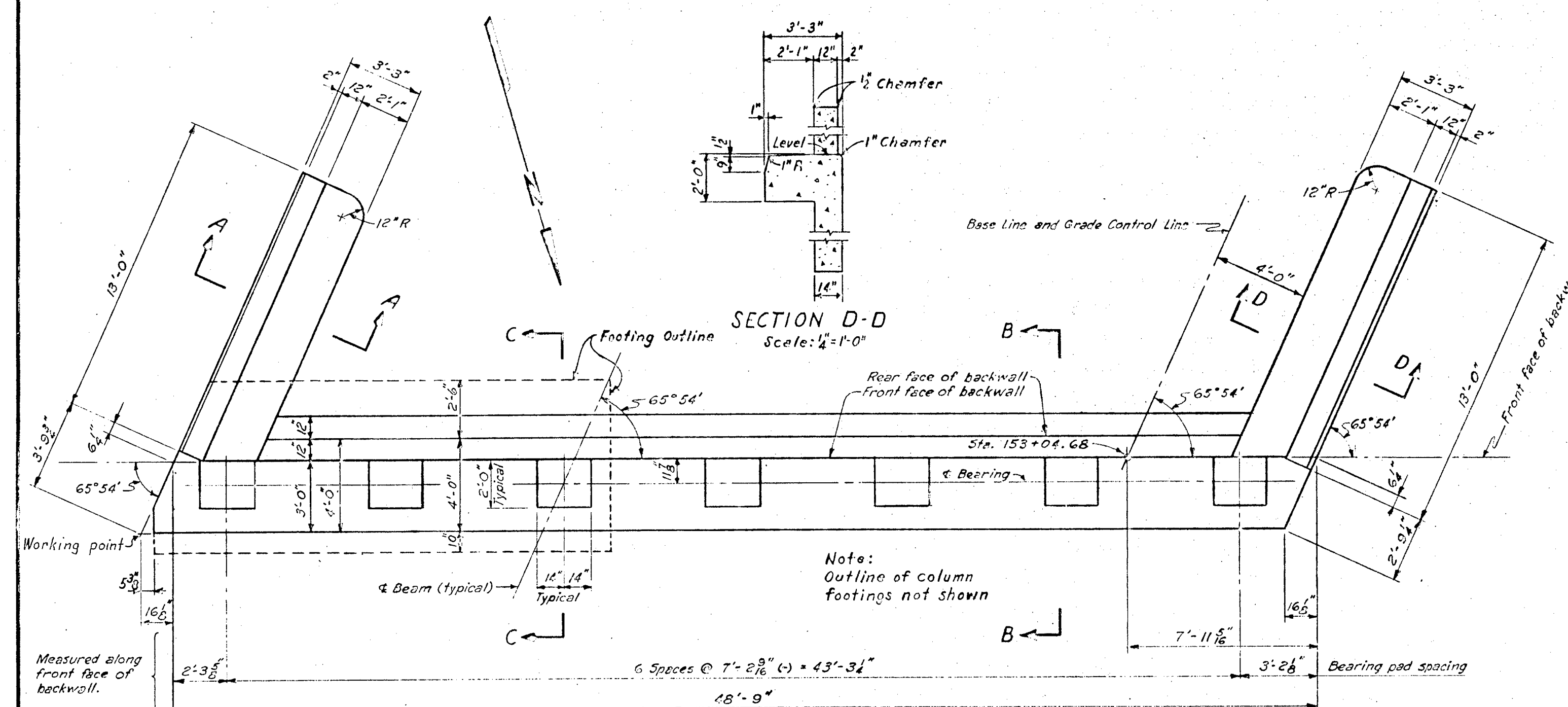
NOTES:
For General Notes and Specifications, see K-12-1.
For reinforcing steel and bending diagrams, see K-12-30.
Chamfer all exposed edges 3" except as noted.
All dimensions relative to spacing of reinforcing steel are to centers of bars, except as noted.
Marks to all reinforcing steel in the abutment shall have the suffix A, thus (A612-A, K601-A, etc.).
For notes regarding footings, see K-12-27.

STATE OF TENNESSEE
DEPARTMENT OF HIGHWAYS AND PUBLIC WORKS
CHATTANOOGA, TENN.
HAMILTON COUNTY-E.A. PROJ. NO. 1-24-30 ()

U.S. 41 TIFTONIA UNDERPASSES
EAST-BOUND FREEWAY
WEST ABUTMENT WINGWALLS

SULLIVAN & HOEBEL-CONSULTING ENGINEERS-KNOXVILLE, TENN.
ALAN F. HEDMAN-CONSULTING ENGINEERS-CHATTANOOGA, TENN.
DSG: RRT
CHKD: JRP
SCALE: 3/4" = 1'-0"
FILE NO. 57.77
SHEET NO. K-12-20

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	STATE AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
3	TENN.	I-24-3(3)	117		48	181



NOTES:

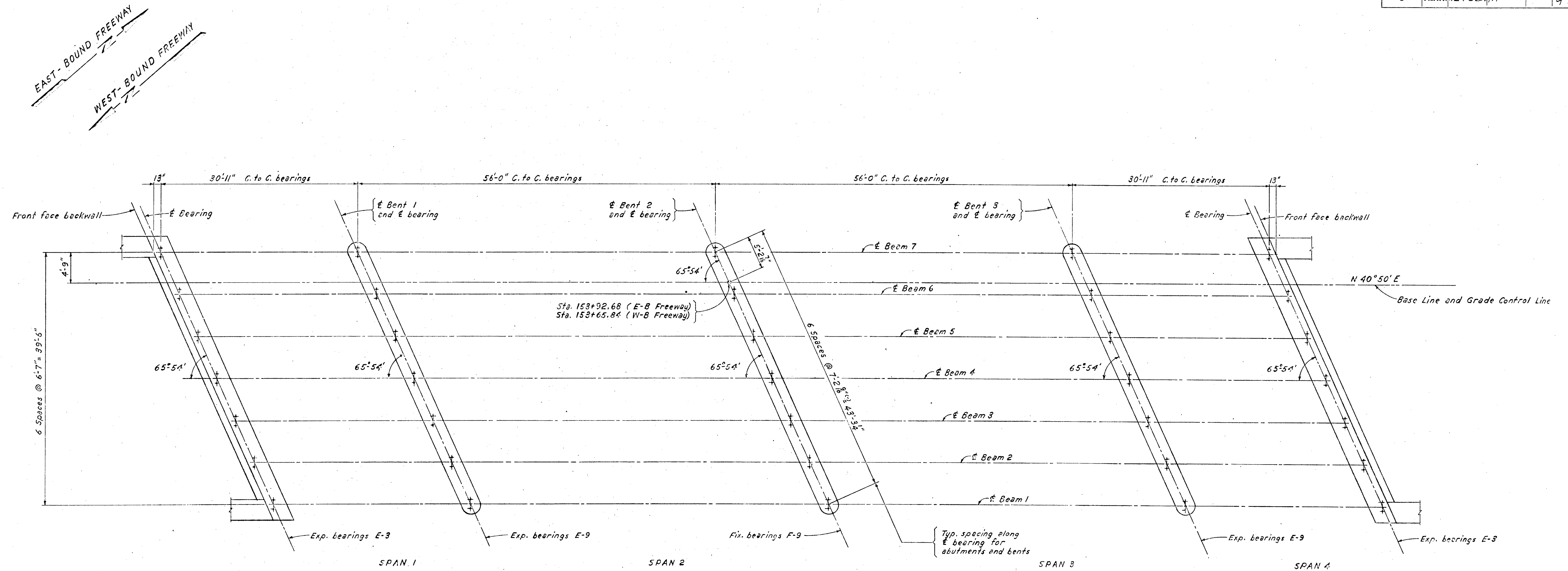
- For General Notes and Specifications, see K-12-1.
- For location of abutment, see K-12-24.
- For details of wingwalls, see K-12-28.
- For Anchor Bolt Plans, see K-12-31.
- For reinforcing steel and bending diagrams, see K-12-33. Chambers all exposed edges except as noted.
- All dimensions relative to spacing of reinforcing steel and to centers of bents, except as noted.
- Marks to all reinforcing steel in the abutment shell have the suffix A, thus (A601-A, T501-A, etc.).
- All dimensions shown in plan are measured horizontally.

ABBREVIATIONS:
bf bottom face
tf top face
nf near face
ff far face
ef each face

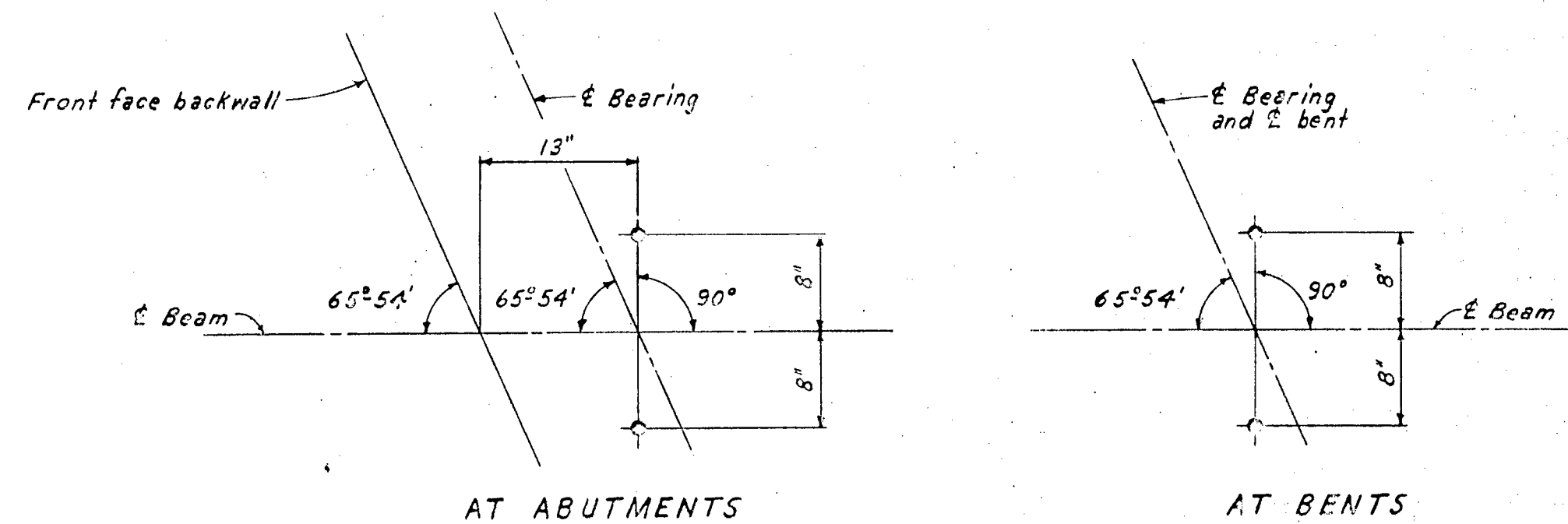
STATE OF TENNESSEE
 DEPARTMENT OF HIGHWAYS AND PUBLIC WORKS
 CHATTANOOGA FREEWAY
 HAMILTON COUNTY-E.A. PROJ. NO. I-24-2()
 U. S. 41 TIFTONIA UNDERPASSES
 EAST-BOUND FREEWAY
 WEST ABUTMENT
 SULLIVAN & HORDEL - CONSULTING ENGINEERS-KNOXVILLE, TENN.
 ALICE F. MEDMAN-CONSULTING ENGINEERS-CHATTANOOGA, TENN.

DESIGN: RRT	DRAWN: RRT	SCALE: AS NOTED	D/TE: H-5-C2
CHECK: JRP	CHECK: JRP	FILE NO. 57.77	SHEET NO. K-12-27

Rev. 1/14/64 Backwall Note - P30
Revised: July 8, 1964



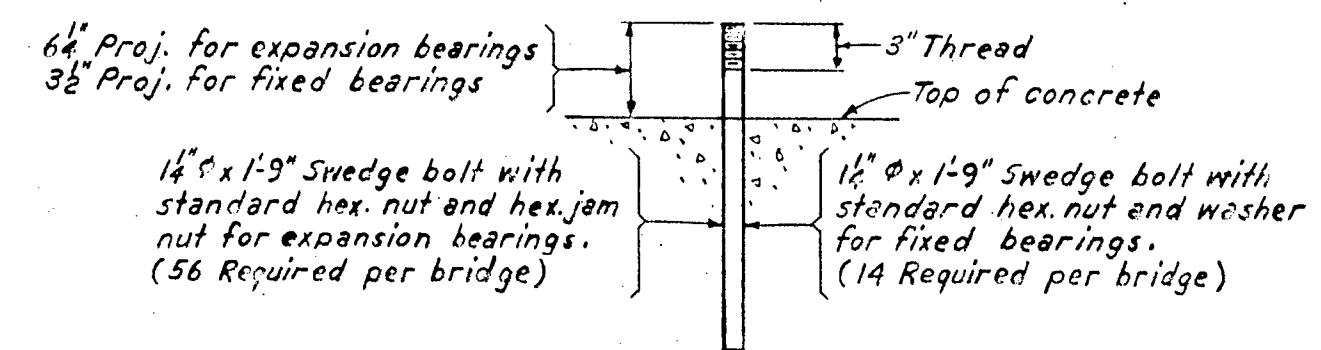
ANCHOR BOLT PLAN
Scale: 1/8" = 1'-0"



TYP. LOCATION OF ANCHOR BOLTS
Scale: 1" = 1'-0"

SUMMARY OF BEARINGS	
Type Bearing	No. Req'd. Per Bridge
E-3 Ext.	4
E-3 Int.	10
E-9 Ext.	4
E-9 Int.	10
F-9 Ext.	2
F-9 Int.	5

Use exterior-type bearings at beams 1 and 7.
Use interior-type bearings at beams 2 thru. 6.

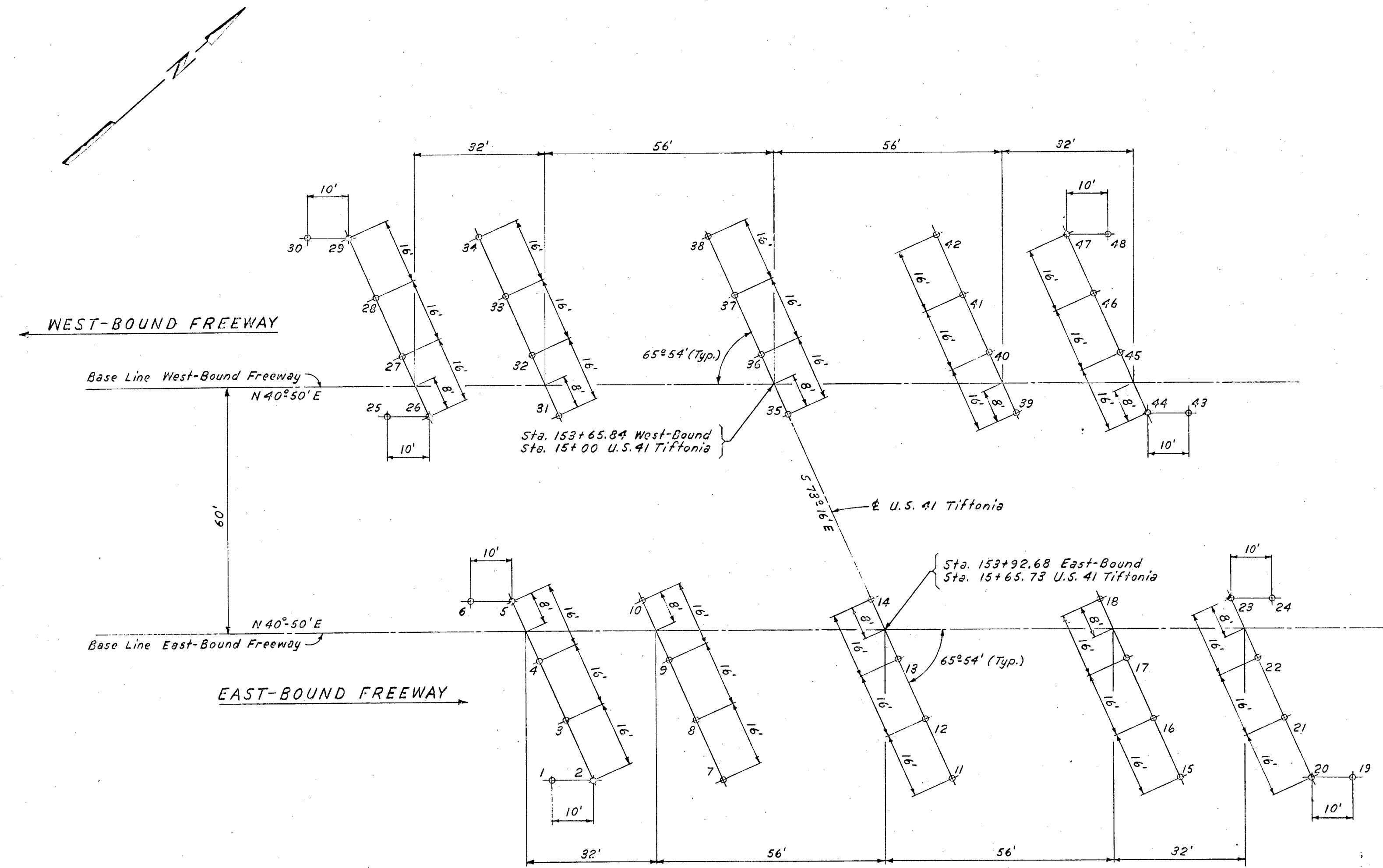


NOTE:
All exposed parts of the anchor bolt assemblies shall be coated with a heavy grease after concrete is poured.

ANCHOR BOLT DETAIL
No Scale

NOTES:
For General Notes and Specifications, see K-12-1.
For details of bearings, see H-7-2.
All dimensions shown in plan are measured horizontally.

STATE OF TENNESSEE			
DEPARTMENT OF HIGHWAYS AND PUBLIC WORKS			
CHATTANOOGA FREEWAY			
HAMILTON COUNTY-E.A. PROJ. NO. 1-24-3()			
U. S. 41 TIFTONIA UNDERPASSES			
EAST-BOUND & WEST-BOUND FREEWAYS			
ANCHOR BOLT PLAN			
SULLIVAN & HOEBEL - CONSULTING ENGINEERS - KNOXVILLE, TENN.			
JAKE F. HEDMAN - CONSULTING ENGINEERS - CHATTANOOGA, TENN.			
DSGN: RRT	DRWN: WRA	SCALE: AS NOTED	DATE: 1-15-62
CHKD: JRP	SUPV: AC	FILE NO. 57.77	SHEET NO. K-12-26



SOUNDING PLAN

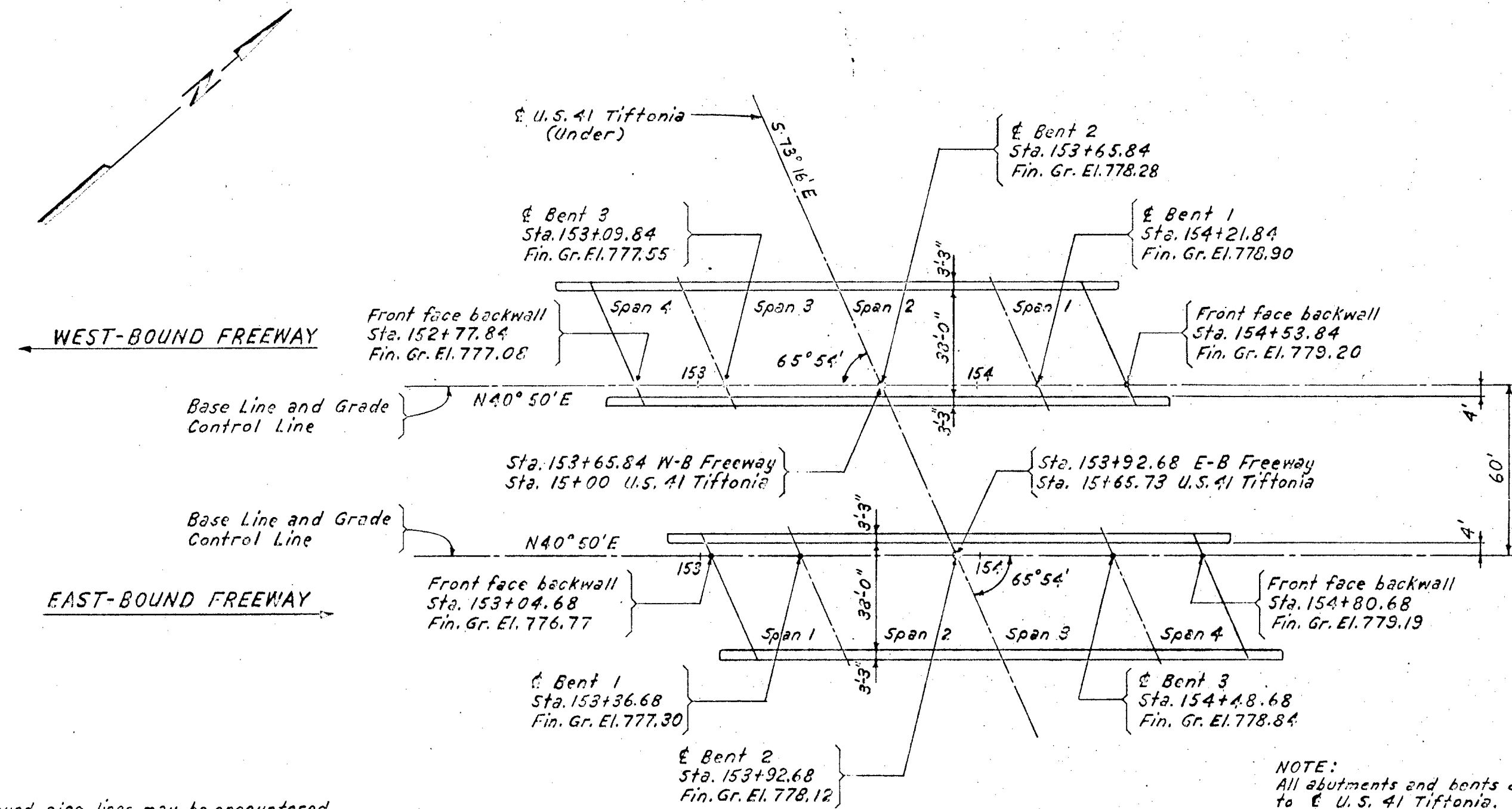
Hole No.	Ground Elev.	Rock Elev.	Hole Depth
1	782.3	770.3	12'
2	783.0	768.0	15'
3	780.5	766.5	14'
4	777.5	763.5	14'
5	774.7	760.7	14'
6	774.4	760.4	14'
7	783.3	770.3	13'
8	780.9	767.9	13'
9	778.0	765.0	13'
10	774.8	761.8	13'
11	761.1	*	*
12	761.1	*	*
13	761.1	*	*
14	761.0	*	*
15	764.6	763.6	1'
16	763.5	757.5	6'
17	762.6	757.6	5'
18	761.6	751.6	10'
19	771.7	763.7	8'
20	770.2	765.2	5'
21	768.2	758.2	10'
22	767.1	757.1	10'
23	766.1	**	**
24	763.4	**	**
25	766.4	757.4	9'
26	765.2	755.2	10'
27	763.8	753.8	10'
28	762.6	752.6	10'
29	761.0	751.0	10'
30	763.4	754.4	9'
31	761.9	751.9	10'
32	761.4	747.4	14'
33	758.7	748.7	10'
34	757.1	744.1	13'
35	760.5	*	*
36	760.2	*	*
37	759.9	*	*
38	759.5	*	*
39	759.3	741.3	18'
40	758.6	740.6	18'
41	758.1	740.1	18'
42	752.1	**	**
43	759.9	741.9	18'
44	759.1	739.1	20'
45	758.1	738.1	20'
46	753.0	**	**
47	749.8	**	**
48	747.7	**	**

* Holes not drilled - Points are along center line of U.S. 41 highway.

** Holes not drilled - Inaccessible terrain.

Note: Rock was found to consist of thick layers of shale rock.

STATE OF TENNESSEE			
DEPARTMENT OF HIGHWAYS AND PUBLIC WORKS			
CHATTANOOGA FREEWAY			
HAMILTON COUNTY-F.A. PROJ. NO. I-24-302			
U.S. 41 TIFTONIA UNDERPASSES			
EAST-BOUND & WEST-BOUND FREEWAYS			
SOUNDING DATA			
SULLIVAN & HOEBEL - CONSULTING ENGINEERS - KNOXVILLE, TENN.			
AAKE F. HEDMAN - CONSULTING ENGINEERS - CHATTANOOGA, TENN.			
DSGIR:	DRWN:VA/AB	SCALE: NONE	DATE: 1-15-62
CHKD: AC	FILE NO. 57.77	SHEET NO.	K-12-25
SUPV: AC			



PLAN
Scale: 1"=40'

		EAST-BOUND FREEWAY								WEST-BOUND FREEWAY								E. B. Freeway	W. B. Freeway
ITEM NO.		17-2	17-4	17-5	132-51	135-4	135-12	137-3	704	17-2	17-4	17-5	132-51	135-4	135-12	137-3	704	501	501
ITEM		Dry Excav.	Rock Excav.	Rock Drill.	Steel Structures	Class "A" Concrete	Reinf. Steel	10 BP42 Steel H-Piling	Concrete Handrail	Dry Excav.	Rock Excav.	Rock Drill.	Steel Structures	Class "A" Concrete	Reinf. Steel	10 BP42 Steel H-Piling	Concrete Handrail	Lighting	Lighting
STRUCT.		C.Y.	C.Y.	L.F.	Lump Sum	C.Y.	Lbs.	L.F.	L.F.	C.Y.	C.Y.	L.F.	Lump Sum	C.Y.	Lbs.	L.F.	L.F.	Lump Sum	Lump Sum
West Abut.		144	18	36		78.0	9,713			33				48.5	5,231				
Bent 1			47	72		36.1	8,379			64				51.7	8,993				
Bent 2		9	39	72		36.6	9,627			79				51.1	9,716				
Bent 3		35	28	72		38.9	9,173			130	13	72		42.6	12,192				
East Abut.		33				48.5	5,231			33				48.5	5,231				
Span 1						40.3	10,913		64					40.3	10,913		64		
Span 2						65.3	19,098		112					65.3	19,098		112		
Span 3						65.3	19,098		112					65.3	19,098		112		
Span 4						40.3	10,913		64					40.3	10,913		64		
TOTALS		221	132	252	Lump Sum	448.7	102,150	207	352	339	13	72	Lump Sum	453.6	101,415	1331	352	Lump Sum	Lump Sum

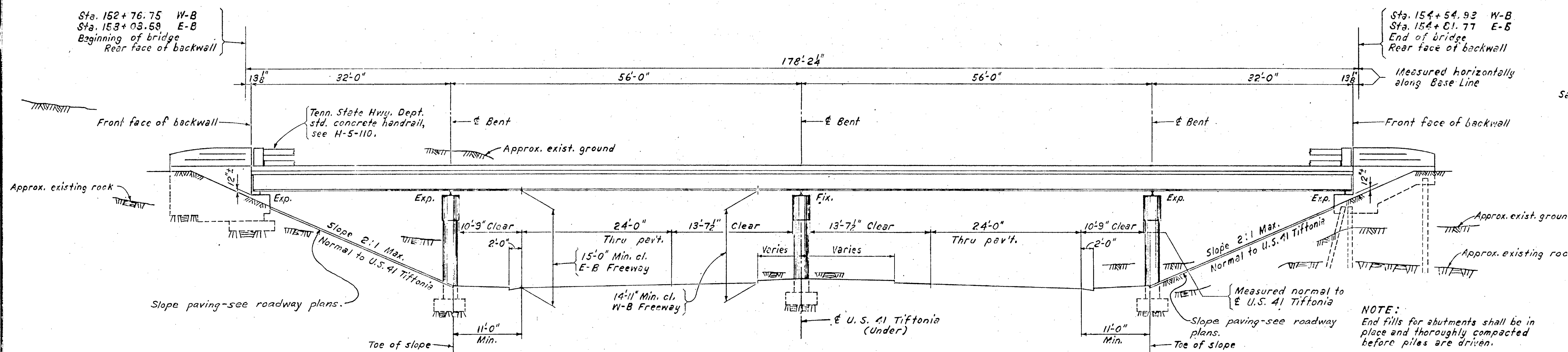
Estimated weight of steel structures for E-B Freeway is:

Span 1 - 32,670 Lbs.
Span 2 - 57,180
Span 3 - 57,180
Span 4 - 32,670
Total 179,700 Lbs.

Estimated weight of steel structures for W-B Freeway is:

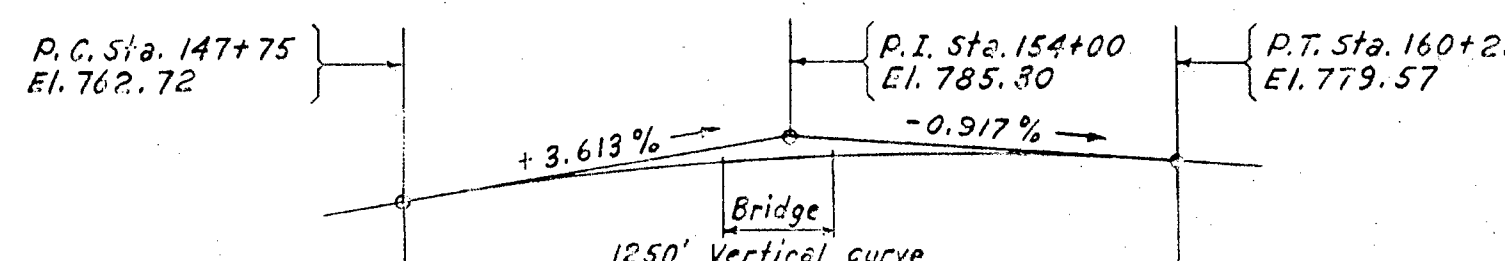
Span 1 - 32,670 Lbs.
Span 2 - 57,180
Span 3 - 57,180
Span 4 - 32,670
Total 179,700 Lbs.

* No Light Standards or conductors in this contract.

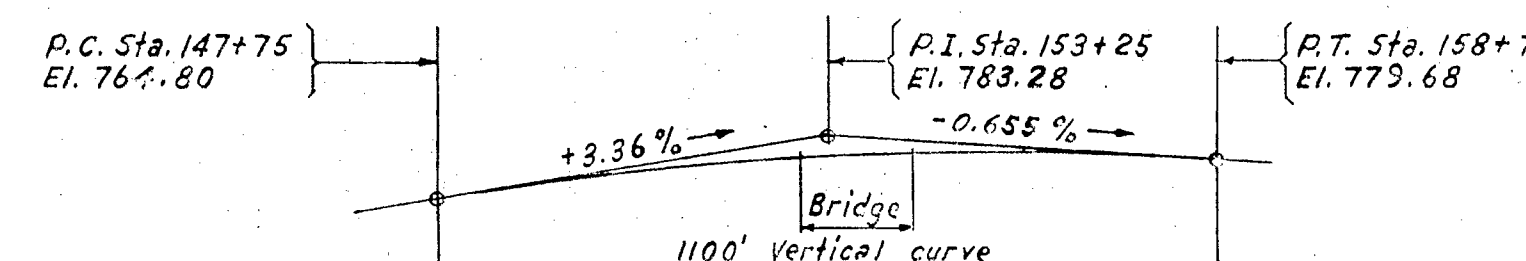


ELEVATION
LOOKING NORTH
Scale: 1"=10'

(For pile cut-off elevations, see K-12-29, K-12-30 & K-12-31)



FINISHED GRADE PROFILE
EAST-BOUND FREEWAY
LOOKING NORTH
No Scale



FINISHED GRADE PROFILE
WEST-BOUND FREEWAY
LOOKING NORTH
No Scale

LIST OF DRAWINGS

DRAWING NO.	TITLE
K-12-24	General Drawing
K-12-25	Sounding Data
K-12-26	Anchor Bolt Plan
K-12-27	East-Bound Freeway, West Abutment
K-12-28	East-Bound Freeway, West Abutment Wingwalls
K-12-29	Abutments
K-12-30	Abutment Wingwalls
K-12-31	Bents- Columns and Footings
K-12-32	Bents
K-12-33	Expansion Dem
K-12-34	Deck Cross Section
K-12-35	Deck Slab
K-12-36	Lighting Handrailing and Drains
K-12-37	Reinforcing Steel- Abutments
K-12-38	Reinforcing Steel- Bents & Deck
K-12-39	
K-12-40	

NOTES:
For General Notes and Specifications, see K-12-1.

One 38' roadway with two safety curbs, per bridge.

STATE OF TENNESSEE
DEPARTMENT OF HIGHWAYS AND PUBLIC WORKS
CHATTANOOGA FREEWAY
HAMILTON COUNTY-TEN. PROJ. NO. 24-3()

U. S. 41 TIFTONIA UNDERPASSES
EAST-BOUND & WEST-BOUND FREEWAYS
GENERAL DRAWING

SULLIVAN & HOEHL - CONSULTING ENGINEERS - KNOXVILLE, TENN.

MARK F. HEDMAN - CONSULTING ENGINEERS - CHATTANOOGA, TENN.

DSGN: RRT
CHKD: JRP
SCALE: AS NOTED
DATE: 11-15-62
FILE NO. 57.77 SHEET NO. K-12-24

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	STATE AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
3	TENN.	E-24-2(1)	117		44	161

GENERAL NOTES

CONSTRUCTION SPECIFICATIONS
Tennessee Department of Highways Standard Specifications for Road and Bridge Construction with Supplement.

DESIGN SPECIFICATIONS
AASHO, 1961 Edition as amended.
H20-S16-44 Live Load with Alternate Loading as per Sect. 4c of PPM 20-4.

MATERIALS
All references below to ASTM standard specifications are to the 1961 Book of ASTM Standards, Part 1, and to the 1962 Supplement. However, the latest revision shall apply in all cases.

Concrete-----All concrete shall be Class "A".
For materials, forms and finish, see Construction Specifications.

Reinforcing Steel---See Reinforcing Steel Schedules and Construction Specifications.

Structural Steel---Cover plates and splice plates shall be cut to correct width by a mechanically guided flame.

Except as noted below or shown elsewhere on the drawings, all shapes (including steel bearing piles), plates and bars shall be carbon structural steel conforming to-----ASTM A36-62T.

~~Steel Structures shall be fabricated in accordance with AISC Specification for Structural Steel Buildings, 9th Edition, 1950.~~

Bolts, nuts and screws, except for high strength bolts, and except as shown elsewhere on the drawings-----ASTM F307-61T.
Nuts shall be either self-locking "Stover" or "Anco", or approved equal.

High strength structural bolts, nuts and washers shall conform to AASHO Specifications, Article 2.10.20 with amendments thereto.

Weld metal. Deposited weld metal shall have all properties consistent with base metal.

Sheet Packing---- Johns Manville service sheet packing or equal. No. 60 - 1/8" thick.

~~Sheet Piling-----See Special Provisions and H-5-111 and bridge drawings.~~

Piling-----See Construction Specifications and H-5-111 and bridge drawings.

Premolded Joint Filler----- See Construction Specifications.

Joint Sealer-----See Special Provisions, Class A or B.

Roadway Drains-- All drains shall be "Transite" or approved equal.
Neoprene Bearing Pads--- See Special Provisions.

STEEL FABRICATION
All connections shall be ~~riveted~~ bolted or welded as shown on the drawings.
All ~~riveted~~ bolts shall be 7/8" diameter with 15/16" diameter holes, except as noted.
All bolts shall be high strength structural bolts.
~~Connections shall be bolted or welded as shown on the drawings.~~
General reaming is required.
Beam splices shall be reamed while assembled in correct relative position and to proper camber and shall then be match marked.
Diaphragm connections shall be reamed assembled, or to a 1" metal template.
All beams shall be cambered to compensate for dead load deflection and roadway vertical curvature as shown or noted on the drawings.

STEEL PAINTING
Basic Lead Silico Chromate.
See Special Provisions regarding Sect.132, Steel Structures (painting).
Splices and other field connections shall be cleaned and primed before forming slab.

WELDING
All welding shall conform to the current "Standard Specifications for Welded Highway and Railway Bridges" of the American Welding Society, except as noted in the Special Provisions regarding Welded Structures.

HANDRAILING
See H-5-110 and bridge drawings.

☒ No fabrication shall be started until the materials involved have been approved by the Tenn. Highway Division of test or, in the case of a railroad structure, by that company. Heat numbers on main material must be preserved or transferred during fabrication and shop painting so that they will be identifiable in the field.

ESTIMATED QUANTITIES										
ITEM NO.	17-2	17-4	17-5	132-1	132-51	135-4	135-12	137-3	704	501
ITEM	Dry Excavation C.Y.	Rock Excavation C.Y.	Rock Drilling L.F.	Structural Steel Lbs.	Steel Structures †	Class "A" Concrete ††	Reinforcing Steel Lbs.	108 P. 42 Steel H-Piling L.F.	Concrete Handrail L.F.	Lighting ⊕ ⊕
U.S. 41 TIFTONIA UNDERPASS EAST - BOUND FREEWAY	221	132	252		Lump Sum	448.7	102,150	207	352	
U.S. 41 TIFTONIA UNDERPASS WEST - BOUND FREEWAY	339	13	72		Lump Sum	453.6	101,415	1,331	352	
CUMMINGS ROAD UNDERPASS EAST - BOUND FREEWAY	511	38	216	2,940		525.9	138,042	577	304	
CUMMINGS ROAD UNDERPASS WEST - BOUND FREEWAY	448	26	216	2,940		522.8	136,880	536	304	
TOTALS	1,519	209	756	5,880	Lump Sum	1,951.0	478,487	2,651	1,312	Lump Sum

* All earth excavation shall be measured and paid for as Dry Excavation only.

~~†† Structural steel expansion bearings for concrete beams (complete with anchor bolts).~~

† Lump sum for Steel Structures is for all steel members including expansion dams and bearings (complete with anchor bolts).

Estimated weight of steel structures is as follows:
U.S. 41 Tiftonia Underpass - East-Bound----- 179,700 lbs.
U.S. 41 Tiftonia Underpass - West-Bound----- 179,700 lbs.
Total 359,400 lbs.

†† The cost of all embedded material such as joint filler, joint sealer, sheet packing, drains, neoprene bearing pads, etc. shall be included in the unit price of Class "A" Concrete.

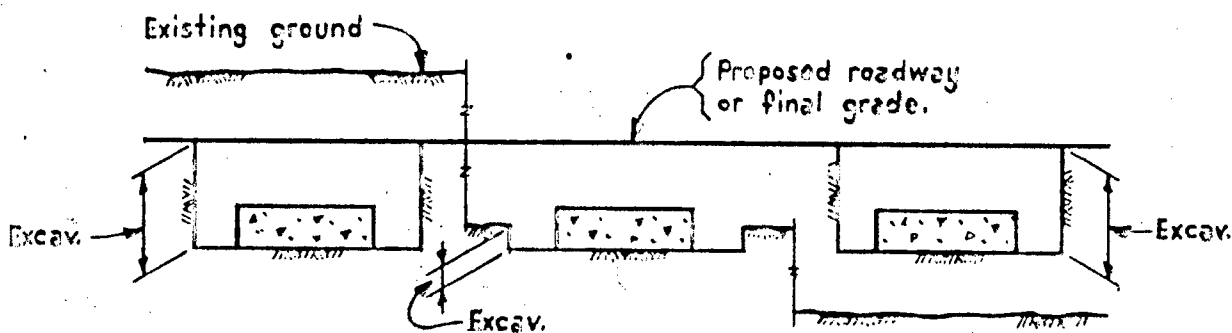
⊕ No alternates permitted for piles.

⊕ ⊕ No light standards or conductors in this contract.

LIST OF DRAWINGS

General Notes and Specifications----- Dwg. No. K-12-1
U.S. 41 Tiftonia Underpasses --
East-Bound and West-Bound Freeways----- Dwg. No. K-12-24 to K-12-40 incl.
Cummings Road Underpasses --
East-Bound and West-Bound Freeways----- Dwg. No. K-12-41 to K-12-52 incl.

Standard Concrete Handrail----- Dwg. No. H-5-110.
Standard Pile Details----- Dwg. No. H-5-111
Standard Bearings for Steel Beam Bridges----- Dwg. No. H-7-2
~~Standard Bearings for Concrete T-Pier Bridges----- Dwg. No. H-7-3~~
Standard Electrical Lighting Details----- Dwg. No. K-2-246

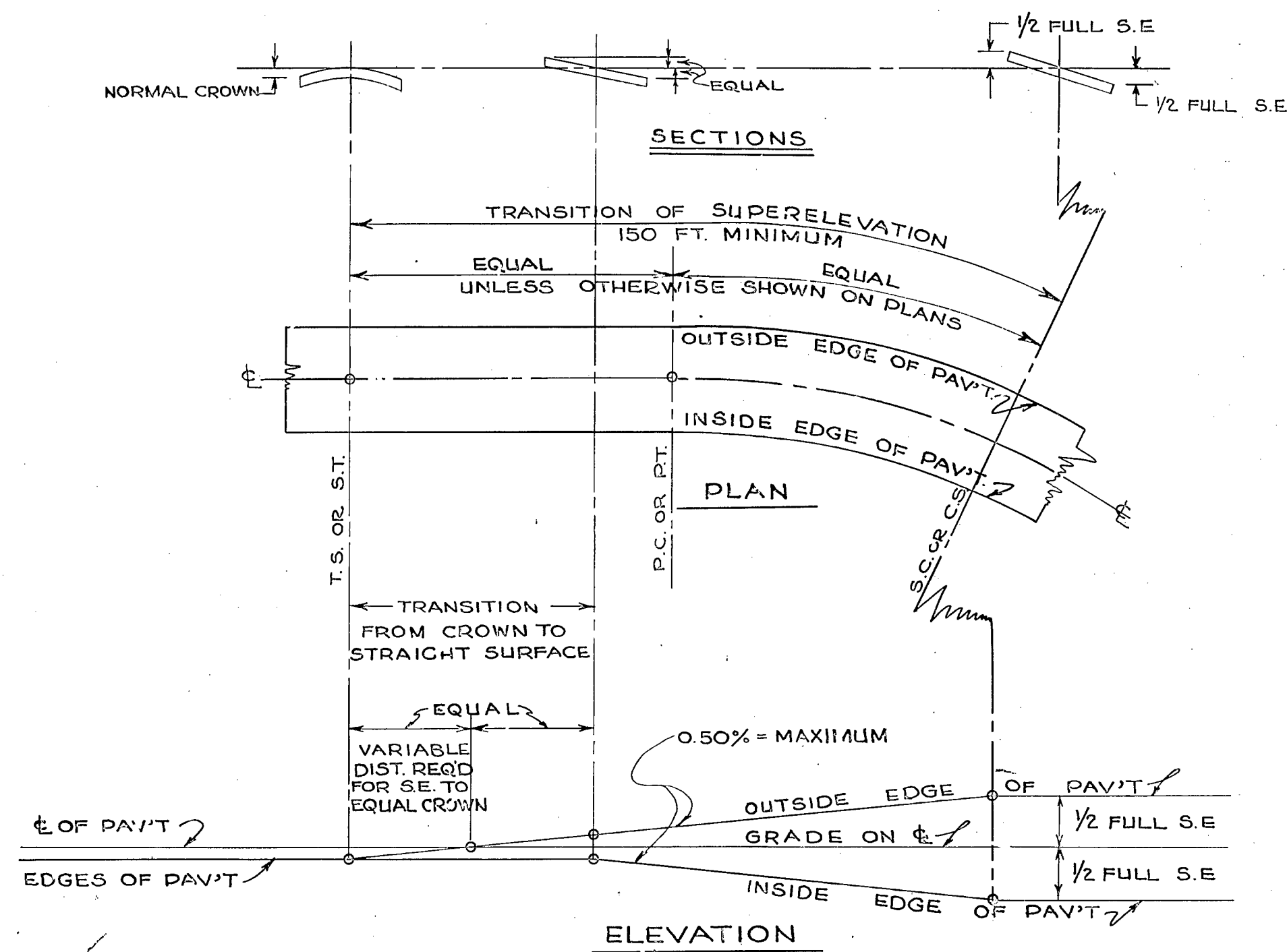


BRIDGE EXCAVATION DETAILS.

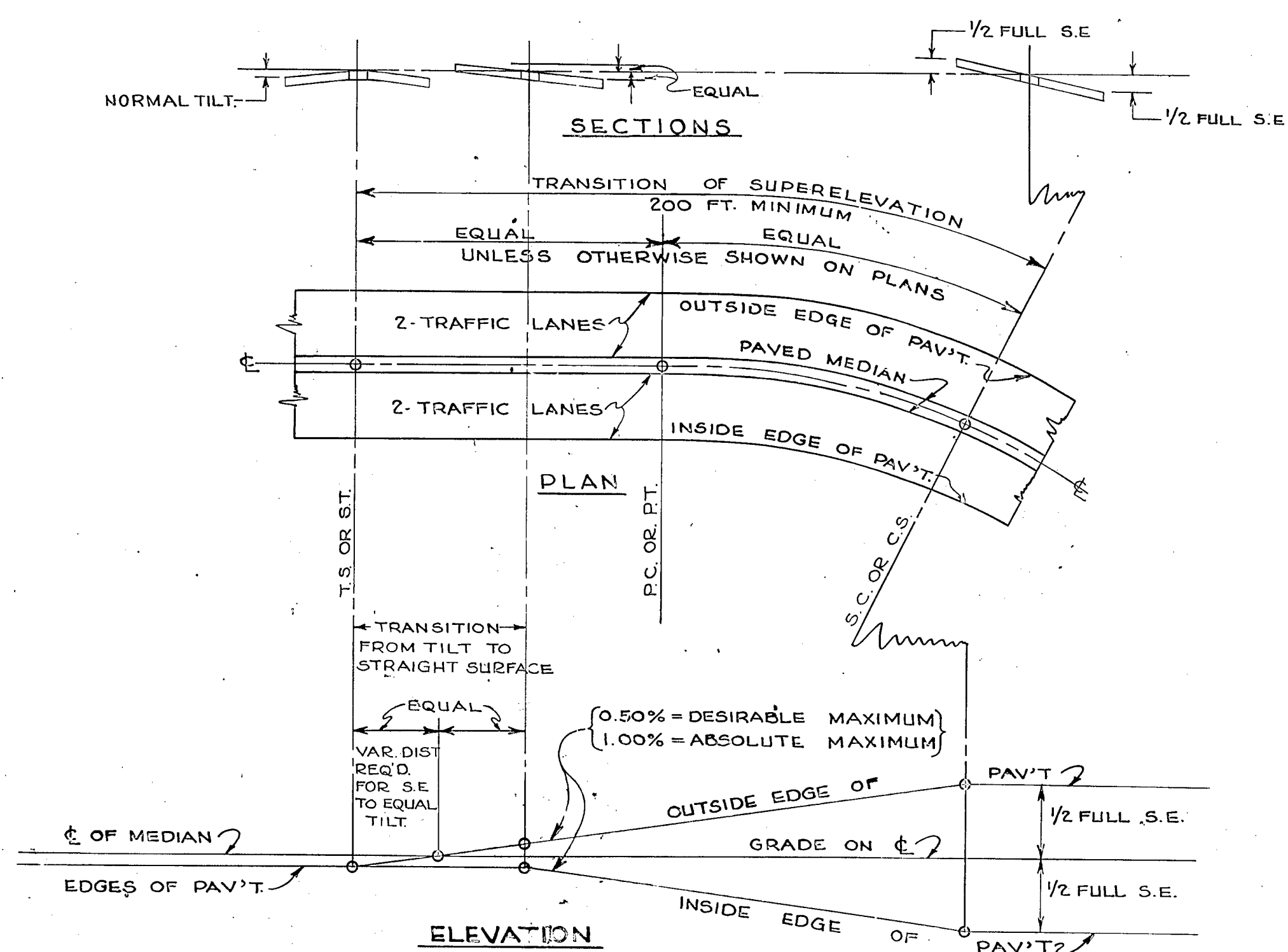
STATE OF TENNESSEE
DEPARTMENT OF HIGHWAYS AND PUBLIC WORKS
CHATTANOOGA FREEWAY
HAMILTON COUNTY-F.A. PROJ. NO. E-24-2()

GENERAL NOTES AND SPECIFICATIONS

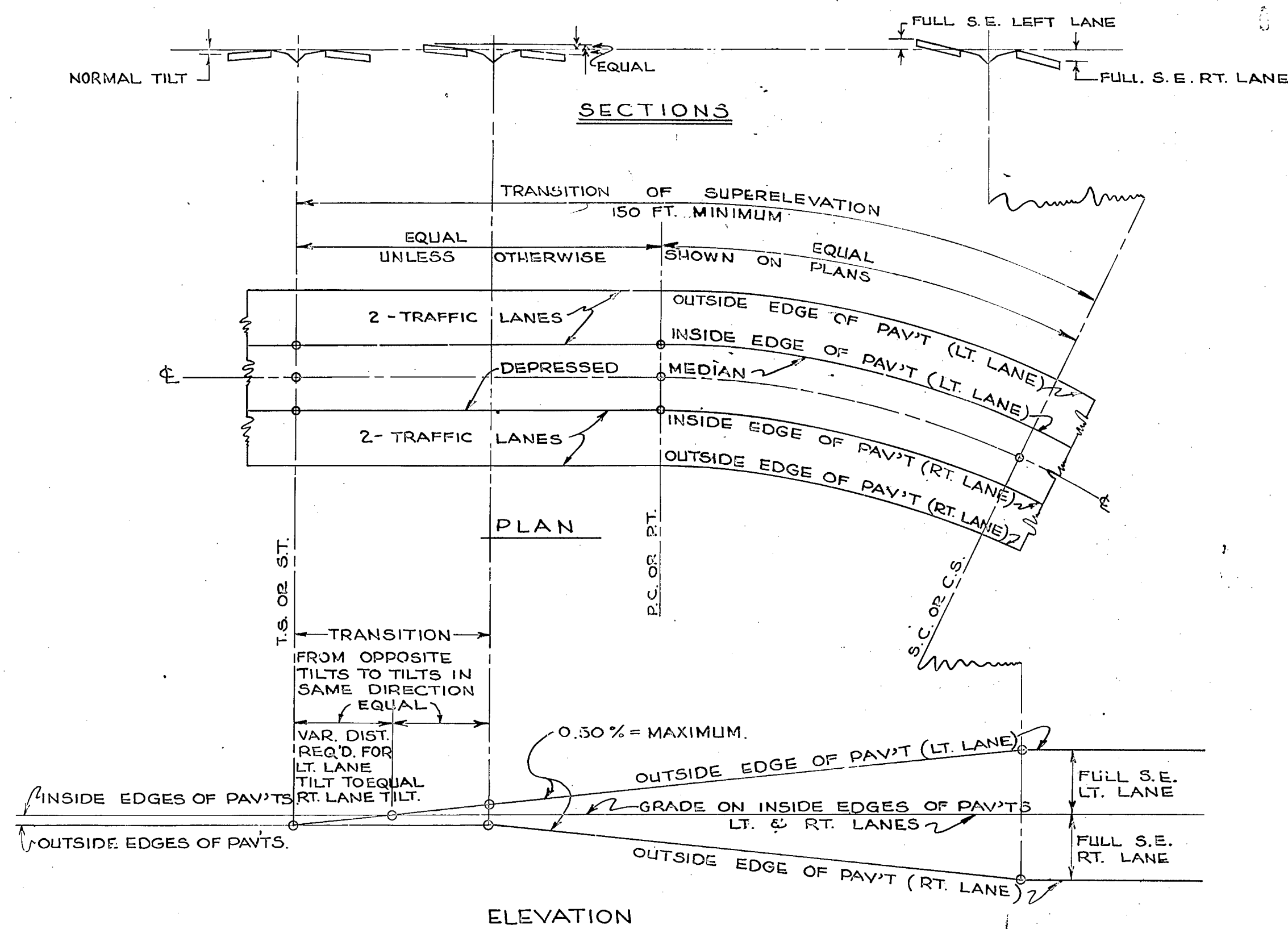
SULLIVAN & MOEBEL - CONSULTING ENGINEERS - KNOXVILLE, TENN.			
AAKE F. FREDMAN - CONSULTING ENGINEERS - CHATTANOOGA, TENN.			
DSGN:	DRWN:	SCALE: NONE	DATE:
CHKD:	CHRD:	FILE NO. 57.77	SHEET NO. K-12-1



TYPICAL TRANSITION IN SUPERELEVATION
2-LANE RURAL HIGHWAY



TYPICAL TRANSITION IN SUPERELEVATION
4-LANE RURAL HIGHWAY WITH PAVED MEDIAN



TYPICAL TRANSITION IN SUPERELEVATION
4-LANE RURAL HIGHWAY WITH DEPRESSED MEDIAN

STD. RATES OF SUPERELEVATION (FEET PER FT.)					
BASED ON $S.E. = 0.007(0.75V)^2$ WHEN V = DESIGN SPEED IN MILES PER HOUR AND R = RADIUS OF CURVE.					
THE ABOVE FORMULA ASSUMES THAT ALL CENTRIFUGAL FORCE RESULTING FROM 75% OF DESIGN SPEED IS COUNTERACTED BY THE EFFECTS OF SUPERELEVATION UP TO A MAXIMUM PRACTICAL LIMIT OF 0.1 FOOT PER FT.					
DEGREE OF CURVE	30 MPH	40 MPH	50 MPH	60 MPH	70 MPH
0°30'	0.00296	0.00526	0.00822	0.01184	0.01612
1°00'	0.00592	0.01052	0.01644	0.02368	0.03223
1°30'	0.00888	0.01579	0.02467	0.03552	0.04835
2°00'	0.01184	0.02105	0.03289	0.04736	0.06446
2°30'	0.01480	0.02631	0.04111	0.05920	0.08058
3°00'	0.01776	0.03157	0.04933	0.07104	0.09669
3°30'	0.02072	0.03684	0.05756	0.08288	0.11281
4°00'	0.02368	0.04210	0.06576	0.09472	
4°30'	0.02664	0.04736	0.07400	0.10656	
5°00'	0.02960	0.05262	0.08222		
5°30'	0.03256	0.05788	0.09044		
6°00'	0.03552	0.06315	0.09867		
6°30'	0.03848	0.06841	0.10689		
7°00'	0.04144	0.07367			
7°30'	0.04440	0.07893			
8°00'	0.04736	0.08419			
8°30'	0.05032	0.08946			
9°00'	0.05328	0.09472			
9°30'	0.05624	0.09998			
10°00'	0.05920	0.10524			
10°30'	0.06216				
11°00'	0.06512				
11°30'	0.06808				
12°00'	0.07104				
12°30'	0.07400				
13°00'	0.07696				
13°30'	0.07992				
14°00'	0.08288				
14°30'	0.08584				
15°00'	0.08880				
15°30'	0.09176				
16°00'	0.09472				
16°30'	0.09768				
17°00'	0.10064				

MAXIMUM CURVATURE		
DESIGN SPEED (M.P.H.)	DEGREE OF CURVE	
	MAXIMUM	DESIRABLE
30	25°	10°
40	14°	11°
50	9°	7°
60	6°	5°
70	4°	3°

- NOTES -

ALL HORIZONTAL CURVES SHARPER THAN 0°-30' SHALL BE SUPERELEVATED IN ACCORDANCE WITH THIS STANDARD, UNLESS OTHERWISE SHOWN ON THE PLANS. THE MAXIMUM RATE OF SUPERELEVATION SHALL BE 0.1 FT. PER FT. IN ATTAINING SUPERELEVATION, IT IS DESIRABLE THAT THE SLOPE OF THE OUTER EDGE OF PAVEMENT WITH RESPECT TO THE PROFILE OF THE CENTERLINE SHOULD BE NOT GREATER THAN 1 IN 200 (0.50%). THEREFORE, THE DESIRABLE LENGTH OF TRANSITION IN SUPERELEVATION IS THE PRODUCT OF THE TOTAL SUPERELEVATION FOR THE FULL PAVEMENT WIDTH MULTIPLIED BY 100, EXCEPT THAT ALL TRANSITIONS SHOULD BE AT LEAST 150 FT. IN LENGTH (75 FT. ON EITHER SIDE OF THE P.C. AND P.T.).

SPECIAL NOTE

THIS STANDARD DOES NOT APPLY TO URBAN HIGHWAYS. HORIZONTAL CURVES ON URBAN HIGHWAYS SHALL BE SUPERELEVATED INDIVIDUALLY RATHER THAN BY STANDARD METHODS.

STATE OF TENNESSEE
DEPARTMENT OF HIGHWAYS AND PUBLIC WORKS
PLANS DIVISION
NASHVILLE

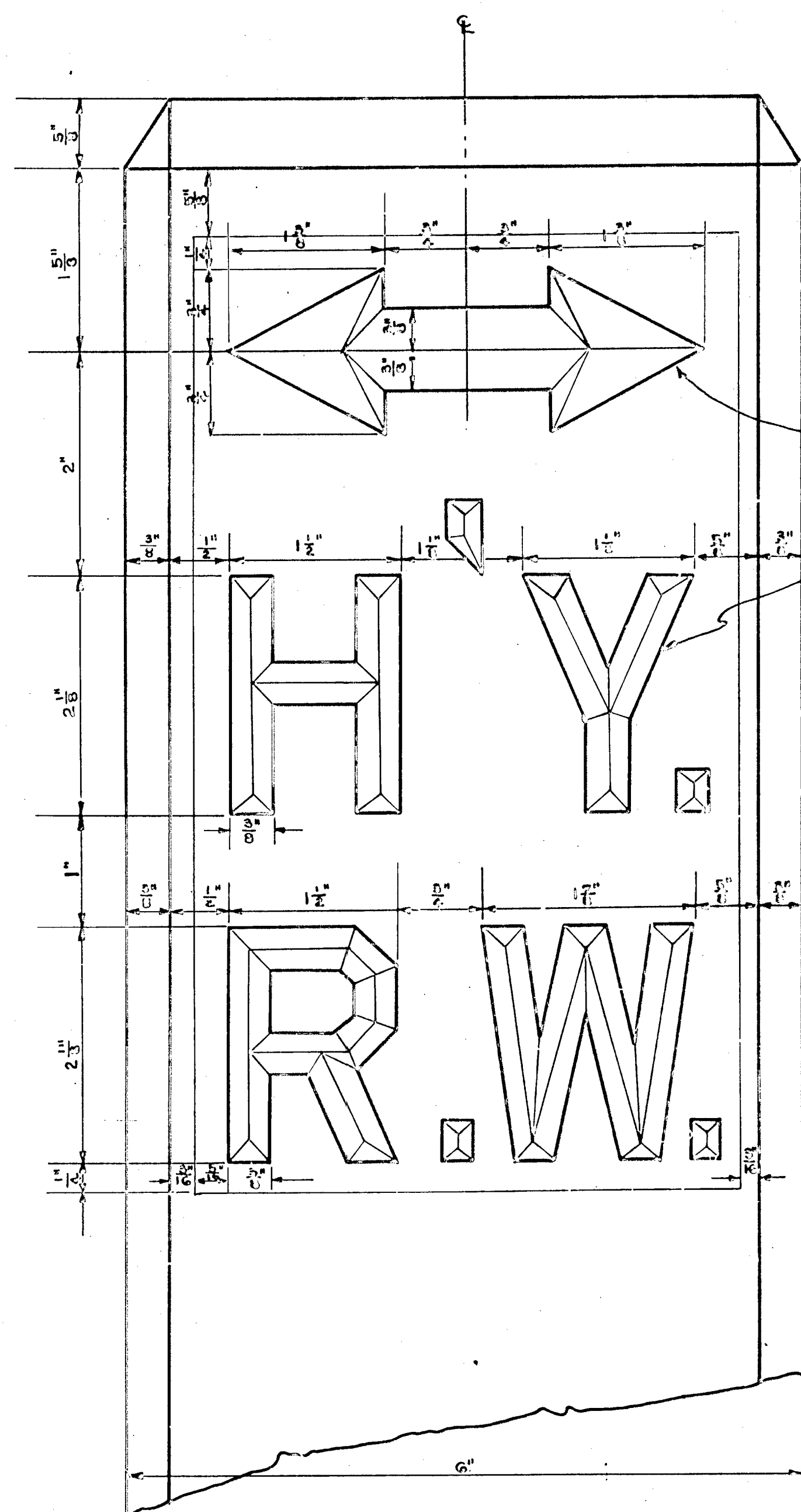
STANDARD
SUPERELEVATION DETAILS
FOR RURAL HIGHWAYS

DECEMBER, 1932

S-E-1

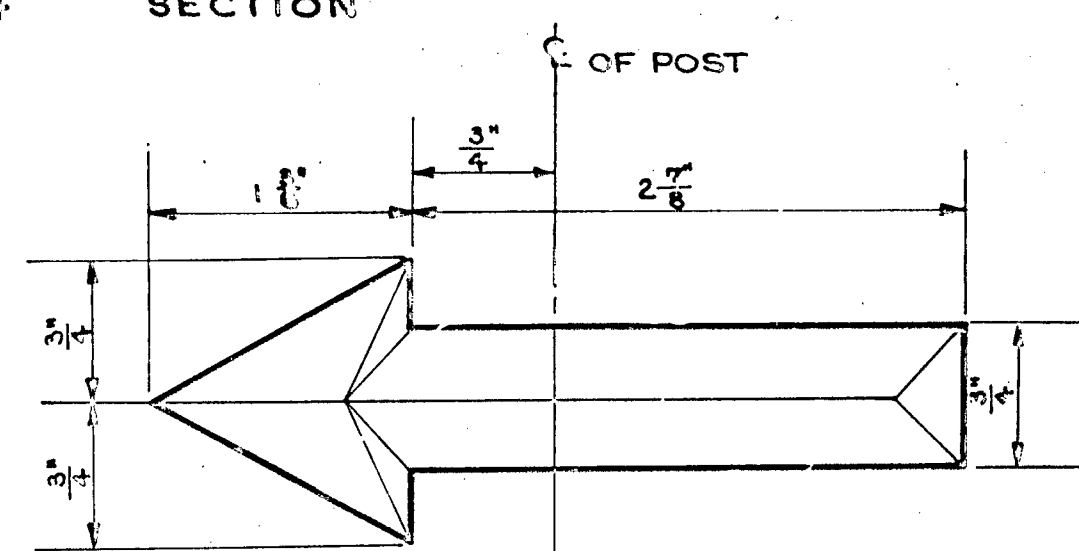
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5			19	22	

RETRACTED JUNE 7, 1954.

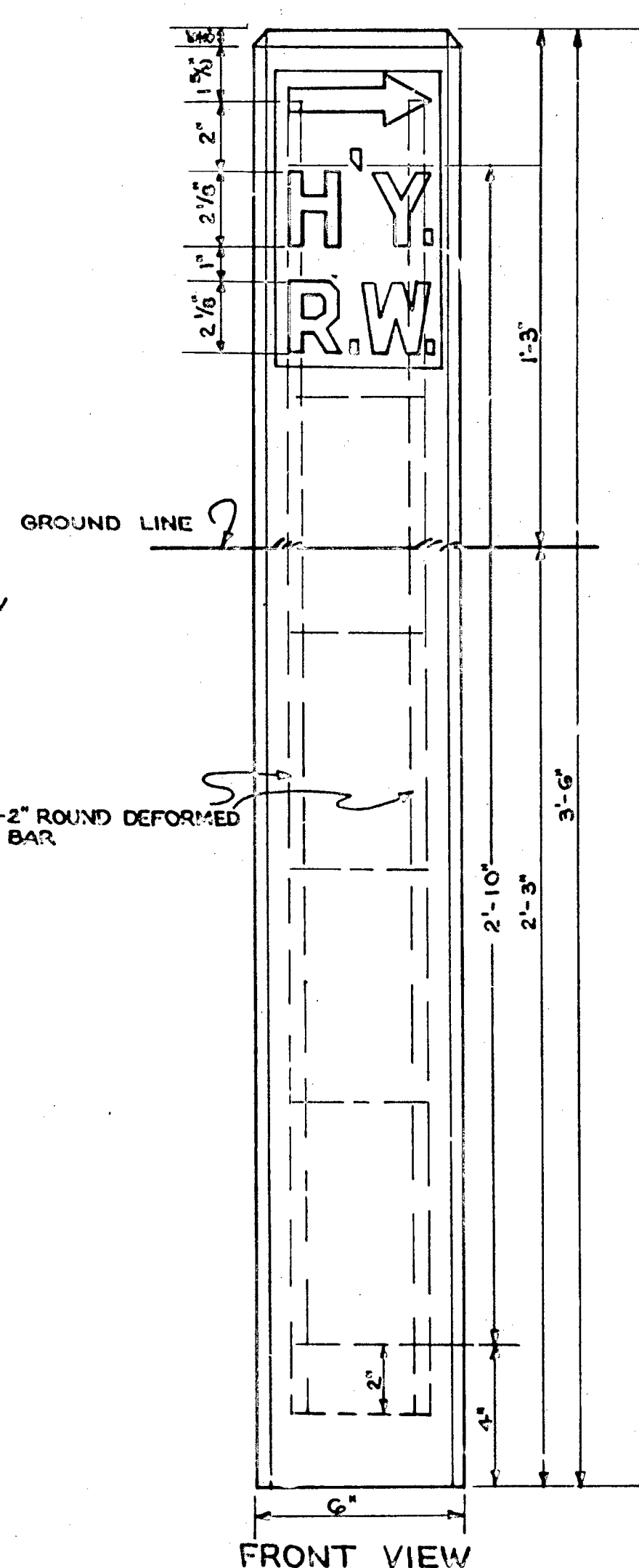


FULL SIZE DETAIL OF INSCRIPTION

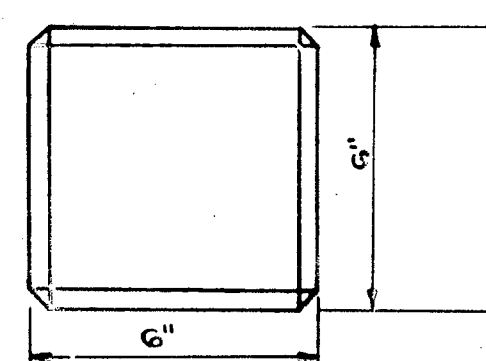
SECTION



ARROW FOR TYPE - B & C POSTS
SCALE - FULL SIZE

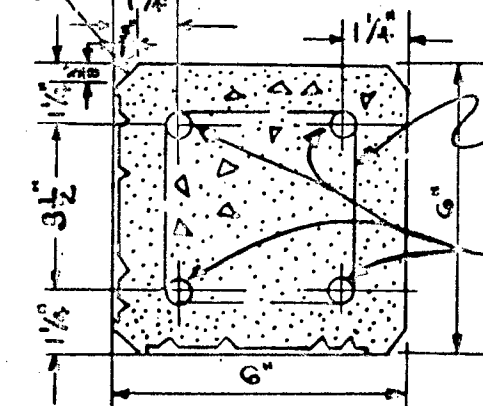


FRONT VIEW



TOP VIEW

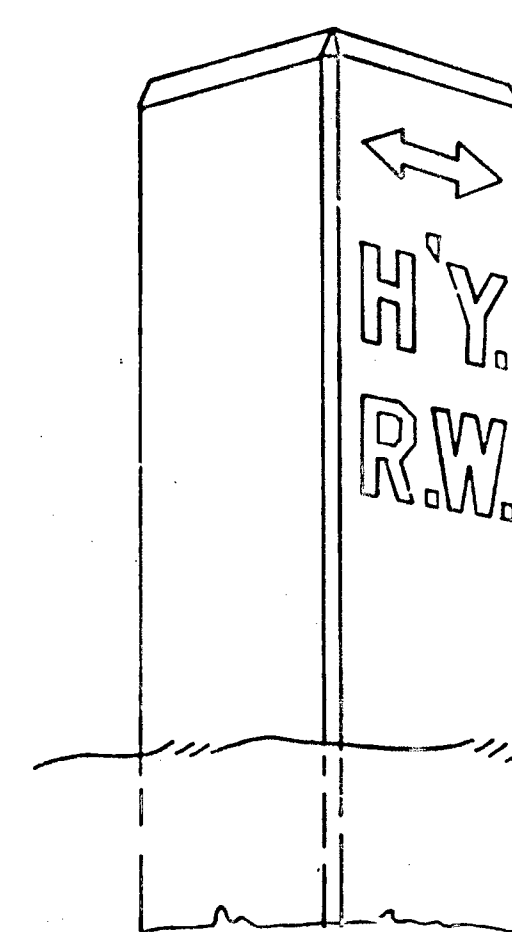
CHAMFER



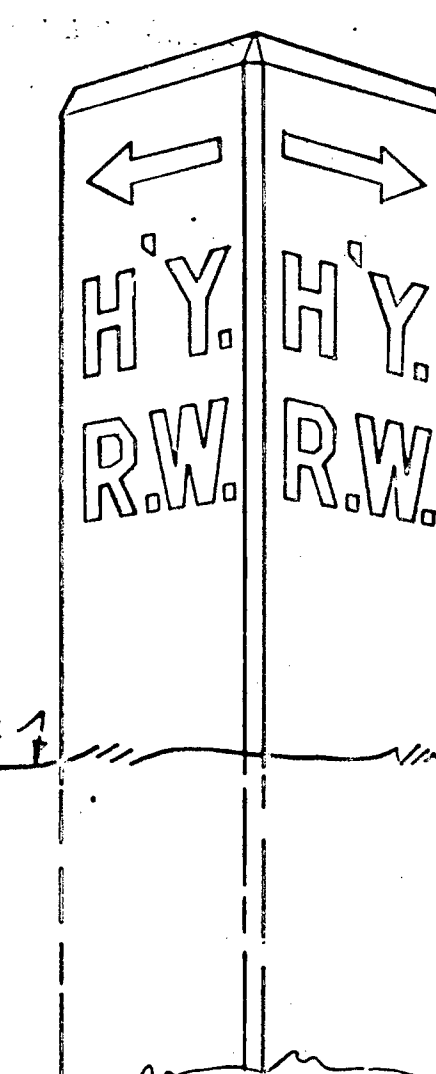
SECTION
SCALE 1/4" = 1'

BAR SHALL BE SECURELY HELD IN POSITION BY FOUR OR MORE LOOPS OF BARS OR WIRE WELDED OR TIED AT EACH BAR. (ONE LOOP SHALL BE PLACED 2" FROM EITHER END OF VERTICAL BARS.)
4-1/2" X 3-2" ROUND DEFORMED STEEL BARS.

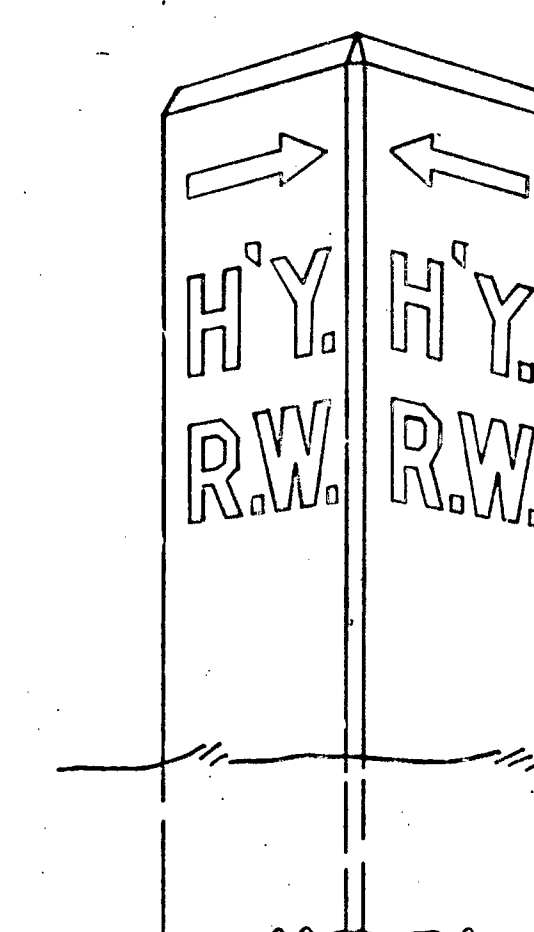
NOTE: CONCRETE R.O.W. POSTS SHALL BE CONSTRUCTED AND ERECTED IN ACCORDANCE WITH THIS DRAWING AND SECTION 174 OF THE STANDARD SPECIFICATIONS



TYPE - A
INSCRIPTION ON ONE SIDE



TYPE - B
INSCRIPTION ON TWO SIDES



TYPE - C
INSCRIPTION ON TWO SIDES

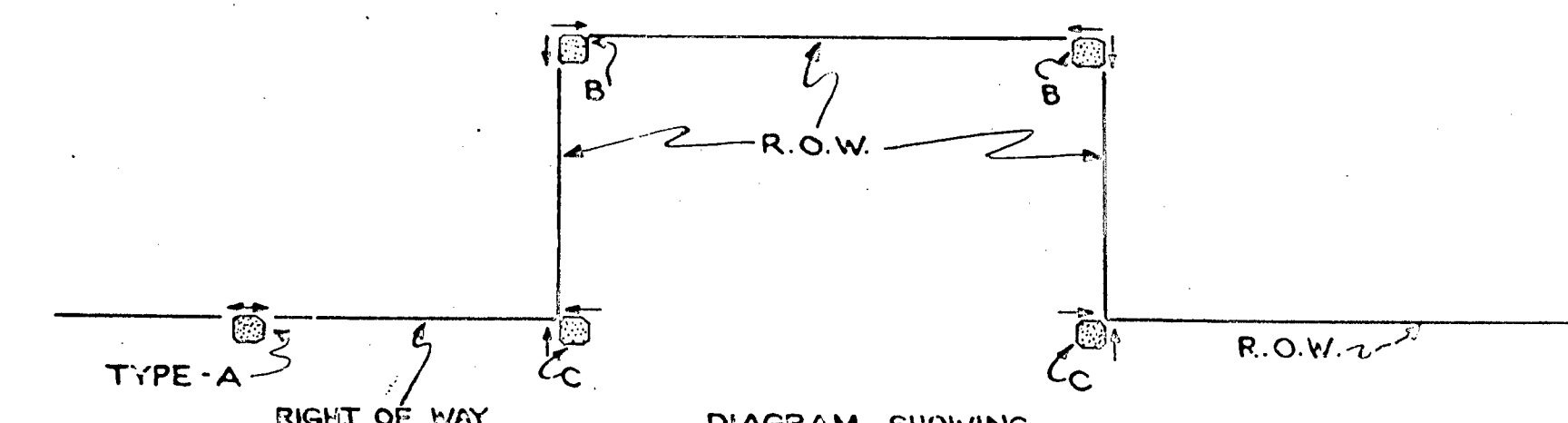
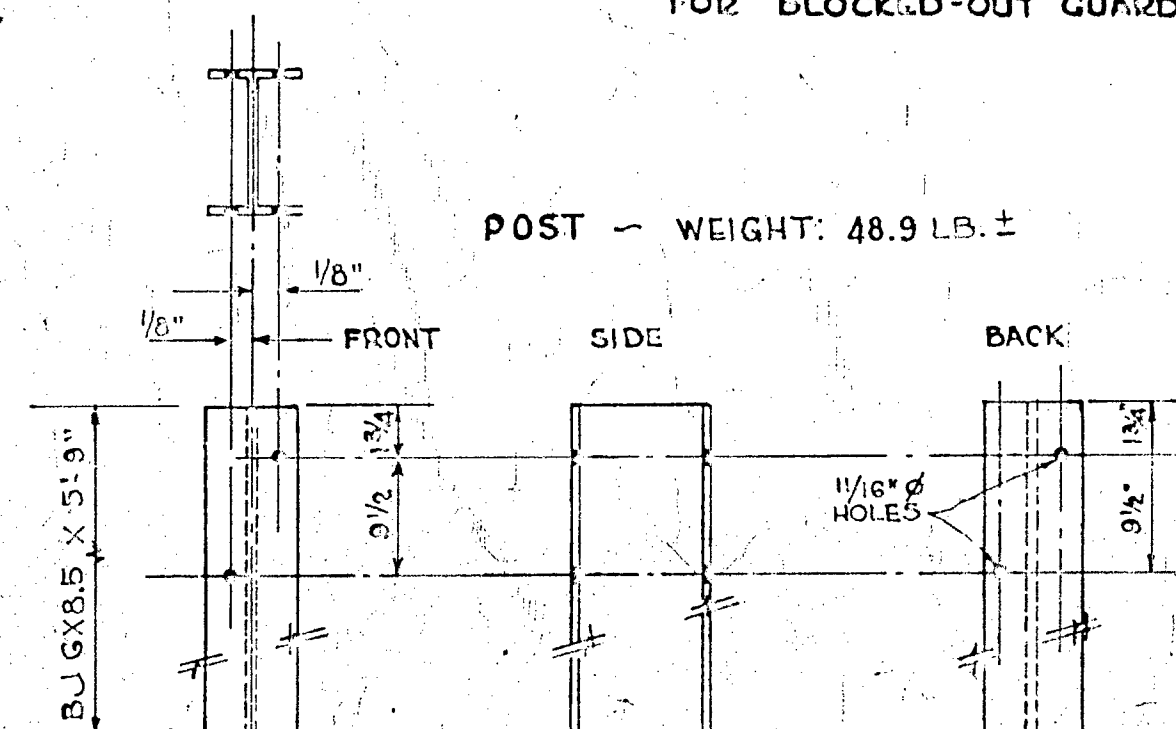
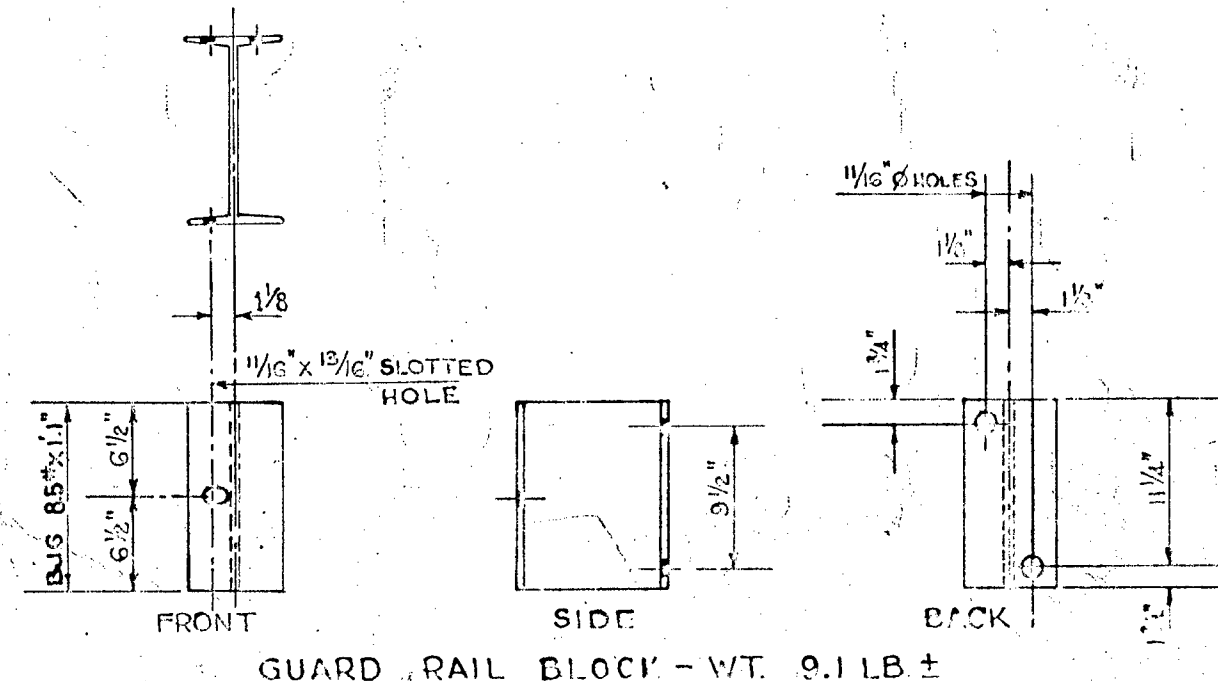
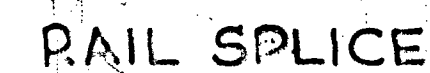
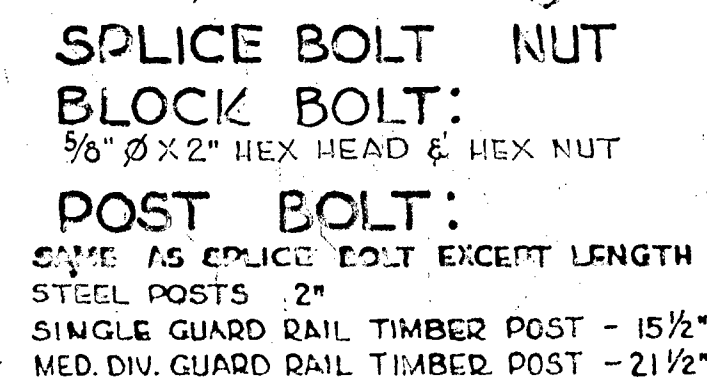
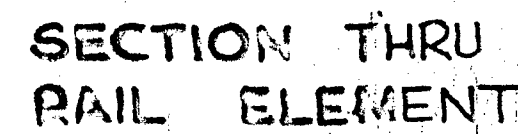
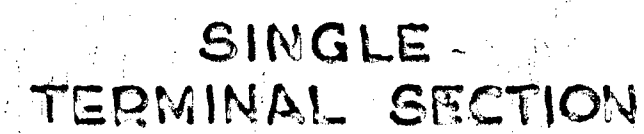
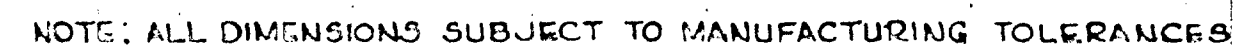


DIAGRAM SHOWING
TYPE OF POSTS TO USE

C. OF HIGHWAY

STATE OF TENNESSEE
DEPARTMENT OF HIGHWAYS AND PUBLIC WORKS
BUREAU OF ENGINEERING
NASHVILLE
STANDARD
CONCRETE RIGHT OF WAY POST
SCALE AS SHOWN
JUNE 4, 1954.

11-4-20



METHOD OF MEASUREMENT. STEEL OR ALUMINUM-ALLOY DEEP-BEAM GUARD RAIL SHALL BE MEASURED ALONG THE TOP EDGE OF THE GUARD RAIL FROM THE END INCLUDING TERMINAL SECTIONS, OR IF THE GUARD RAIL IS FASTENED TO THE END POST OF THE BRIDGE, THE MEASUREMENT SHALL BE TAKEN FROM THE FACE OF THE ANGLE OF THE END POST.

[illegible]

ARRANGEMENT AT TIMES FOR
FOR BLOCKED OUT GUARD RAIL

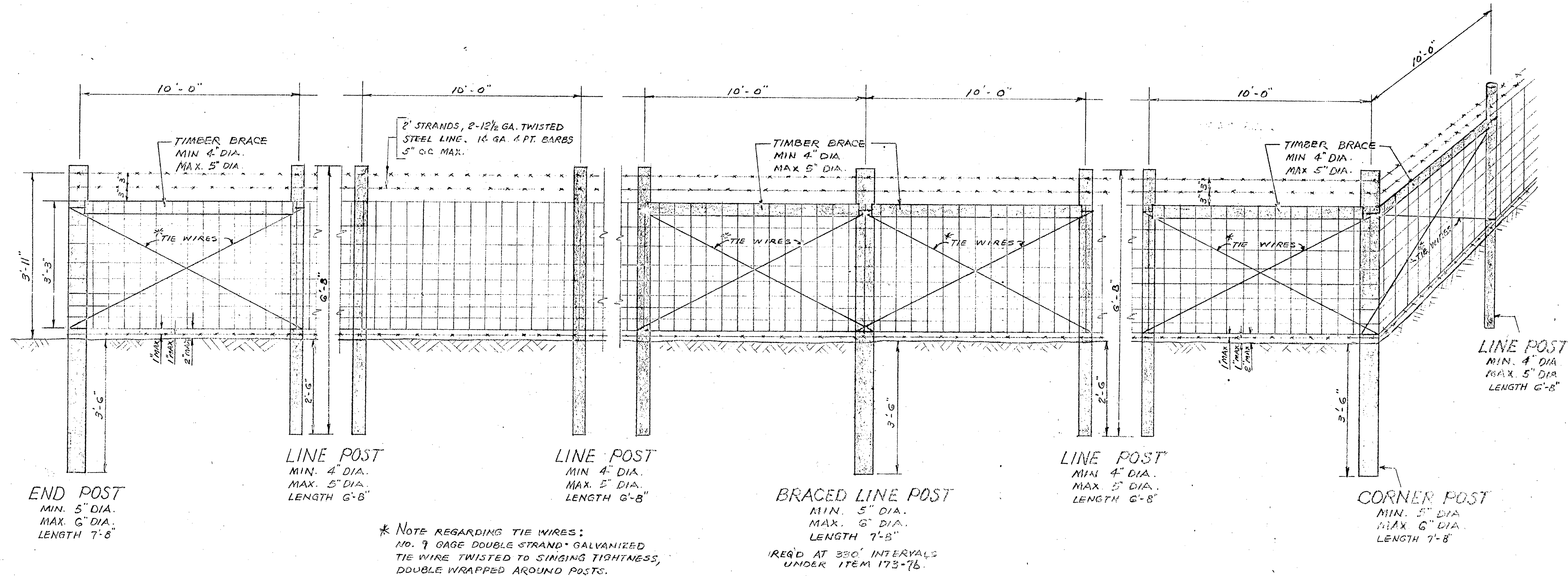
ALL TIMBER GUARD RAIL POSTS SHALL BE MANUFACTURED FROM THE SPECIES KNOWN AS SOUTHERN YELLOW PINE AND SHALL BE SAWED SQUARE. THEY SHALL BE TREATED TO 10 POUNDS FINAL RETENTION WITH CREOSOTE OIL, CONFORMING TO THE REQUIREMENTS OF ARTICLE 225.01. THESE REQUIREMENTS ARE DERIVED FROM ARTICLE 224.05 AND 224.06.

STATE OF TENNESSEE - DEPARTMENT OF HIGHWAYS
PLANS DIVISION

STANDARD NEW DEEP DEMONSTRATION

FED. ROAD DIST. NO.	T E N.	FEDERAL AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
3	N.		1964		

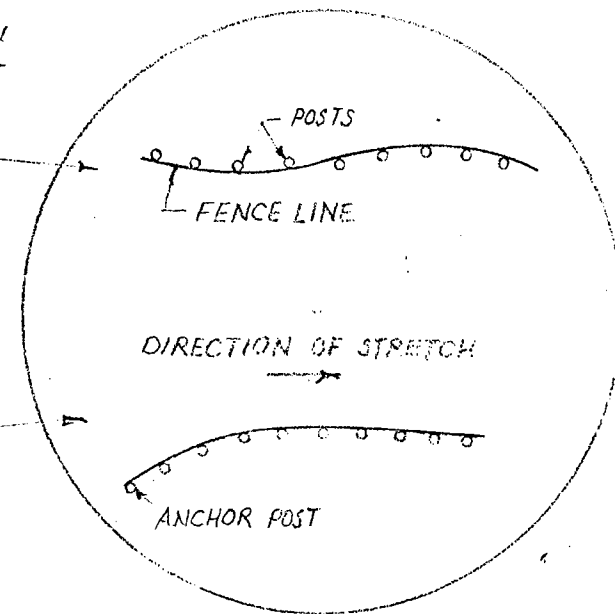
5-11-64: SHEET ADDED AS NO. 2 OF 2 OF STD. DWG. RD-F-10.
 REVISED 7-23-64: DEAD MAN DELETED. ITEM 173-76 REGARDING ADDITIONAL BRACING ADDED. DETAIL SHOWING TOP OF POST ADDED.



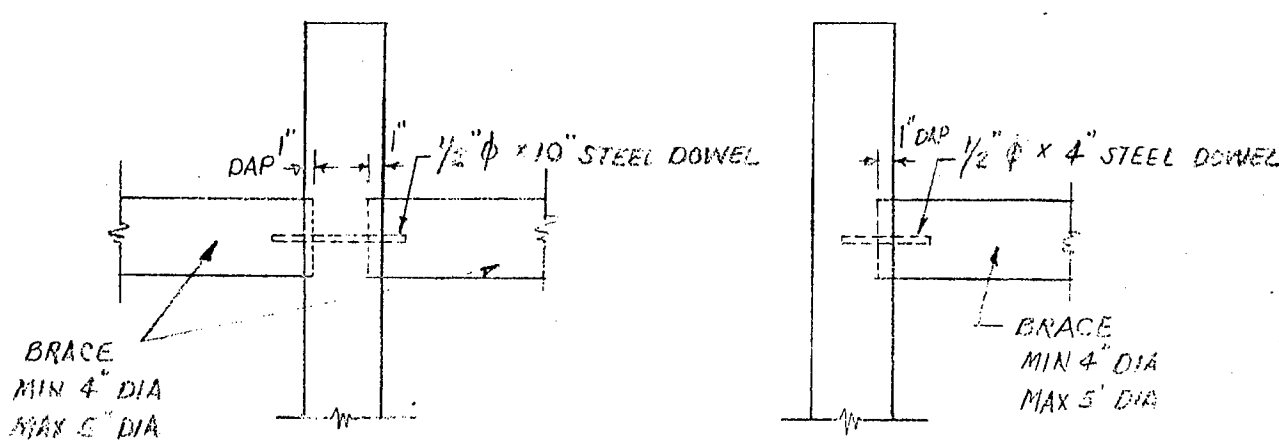
* NOTE REGARDING TIE WIRES:
 NO. 9 GAGE DOUBLE STRAND GALVANIZED TIE WIRE TWISTED TO SINGING TIGHTNESS, DOUBLE WRAPPED AROUND POSTS.

REQD AT 330' INTERVALS UNDER ITEM 173-76.

ALWAYS PUT THE WIRE ON THE OUTSIDE OF THE POST ON THE CURVE SO THAT IT PULLS AGAINST THE FENCE POSTS

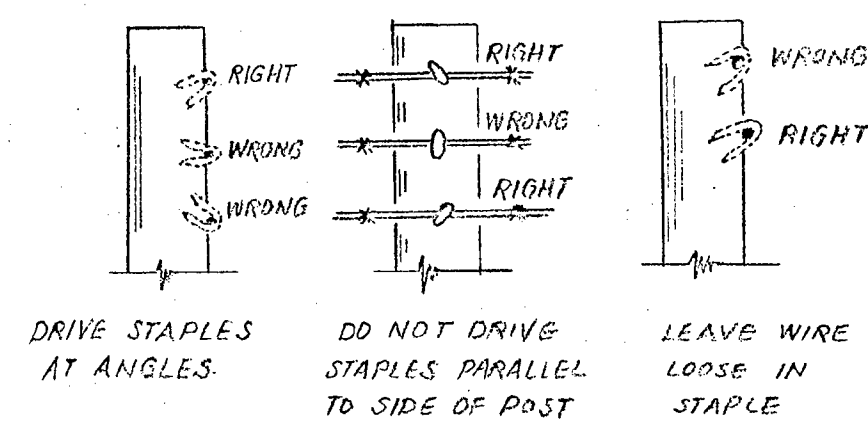


DETAIL OF FENCING ON CURVE

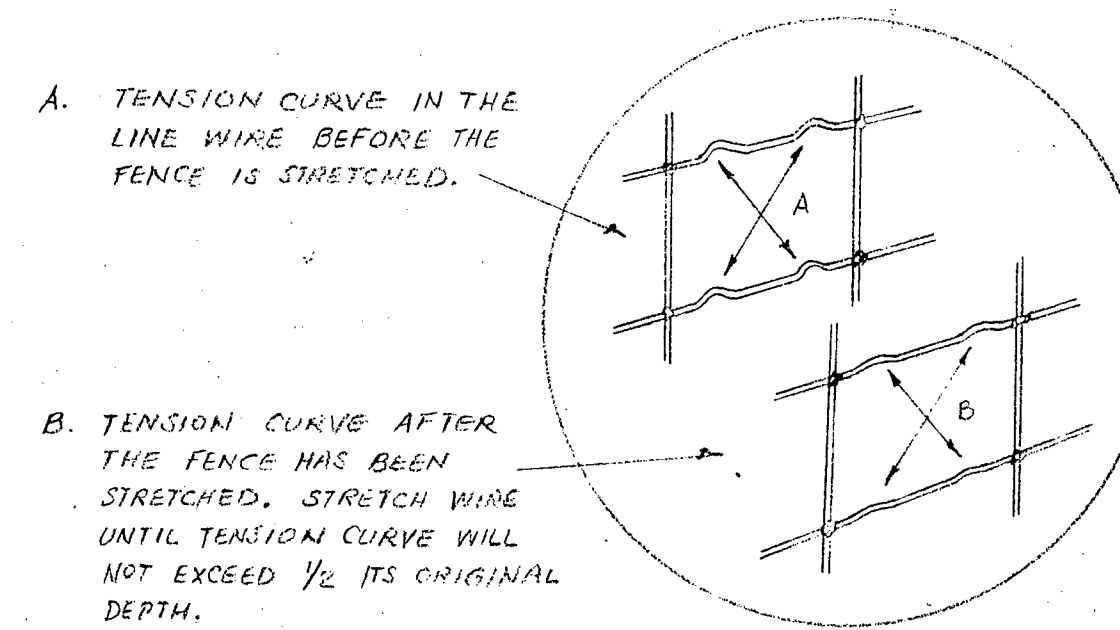


TIMBER BRACING DETAILS

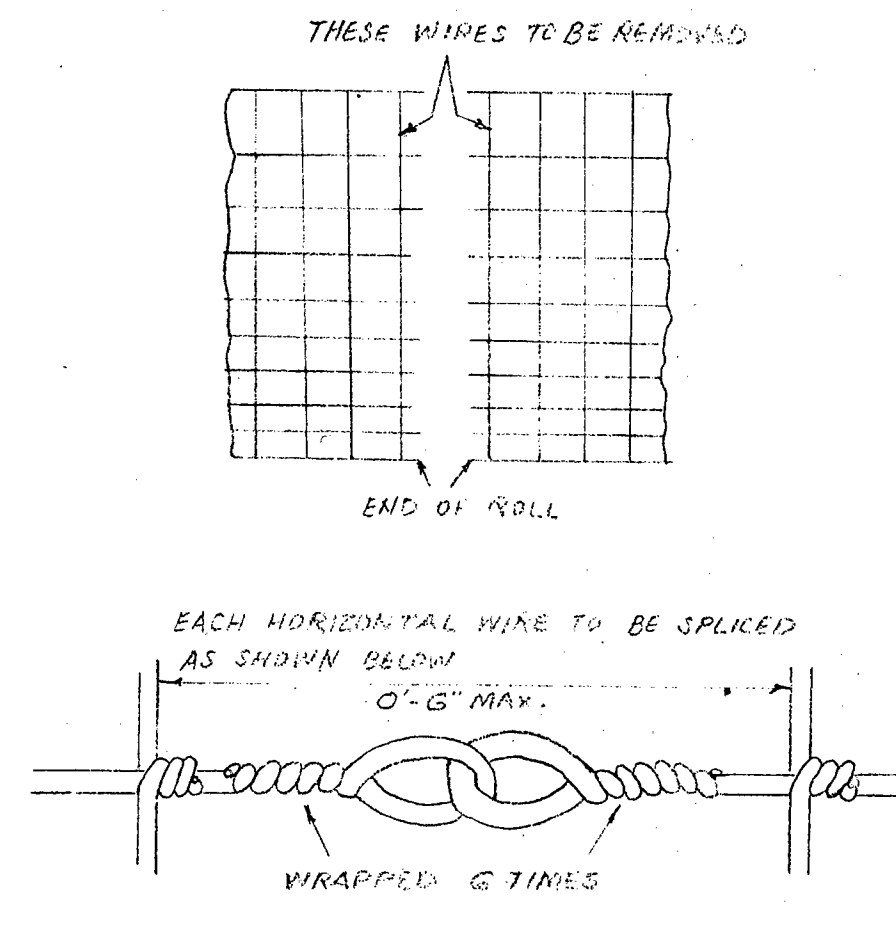
DETAIL SHOWING SLOPE AT TOPS OF POSTS



STAPLING DETAILS



DETAIL OF TENSION CURVE



SPLICE DETAIL FOR FENCE

NOTES

FENCE TO BE ANGLED TO EDGE OF CULVERTS AS SHOWN ON PLANS OR AS DIRECTED BY THE ENGINEER.

USE EITHER ROUND POST AND ROUND BRACING OR SQUARE POSTS AND SQUARE BRACING. DIMENSIONS SHOWN AS DIAMETERS OF ROUND POSTS ALSO APPLY TO EDGE WIDTH OF SQUARE POSTS.

TIMBER POSTS TO BE SET BY DRIVING OR DRILLING POST HOLES.

USE NO. 9 GAGE GALVANIZED STAPLES 1 1/2" LONG FOR TIMBER POSTS. AT ABRUPT CHANGES IN GRADE OR ALIGNMENT, STAPLE EVERY LINE WIRE. AT LINE POSTS STAPLE EVERY LINE WIRE IN TOP HALF AND ALTERNATE LINE WIRES IN BOTTOM HALF. SEE STAPLING DETAIL.

WOVEN WIRE FABRIC AND BARBED WIRE SHALL MEET THE REQUIREMENTS OF SECTION 173 OF SUPPLEMENT TO STANDARD SPECIFICATIONS, DATED AUGUST 1, 1960. SEE SPECIAL PROVISION FOR SPECIFICATIONS FOR TREATED TIMBER POSTS, BRACES, AND ANCHORS.

METHOD OF MEASUREMENT AND BASIS OF PAYMENT WILL BE AS SPECIFIED IN SECTION 173 OF SUPPLEMENT.

PAYMENT WILL BE MADE UNDER:
 ITEM 173-76 STOCK FENCE WITH TREATED TIMBER POSTS PER LINEAR FOOT

IF ADDITIONAL STOCK FENCE BRACING IS NEEDED OTHER THAN THAT REQUIRED UNDER ITEM 173-76, PAYMENT WILL BE MADE UNDER:

* ITEM 173-76 BRACED LINE POST (TREATED TIMBER) PER EACH

* TO BE USED ONLY AS DIRECTED BY THE ENGINEER AT GRADE DEPRESSIONS WHERE STRESSES TEND TO PULL THE POST FROM THE GROUND OR AT ANY OTHER PLACE NEEDED BECAUSE OF TERRAIN. UNIT PRICE BID TO INCLUDE ALL COSTS OF LABOR, MATERIALS, EQUIPMENT, ETC. TO COMPLETE BRACED LINE POSTS FOR STOCK FENCE IN ACCORDANCE WITH SECTION 173 OF THE STANDARD SPECIFICATIONS AND THE SPECIAL PROVISION REGARDING TREATED TIMBER POSTS.

STATE OF TENNESSEE
 DEPARTMENT OF HIGHWAYS
 PLANS DIVISION

STANDARD RIGHT-OF-WAY STOCK FENCE WITH TIMBER POSTS

MAY 11, 1964

SHEET 2 OF 2
 RD-F-10

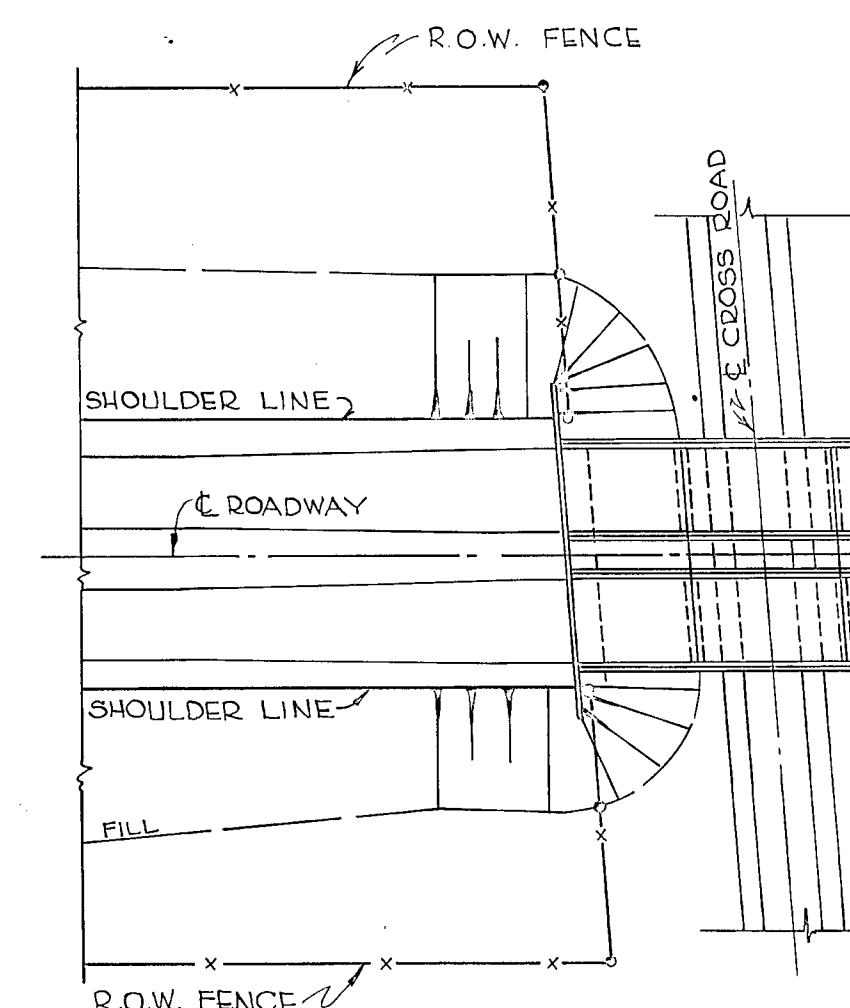
FED. ROAD DIST. NO.	T E N N.	FEDERAL AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
3			19		

REVISED 8-10-59: REVISED TO INCLUDE ALUMINUM FENCE

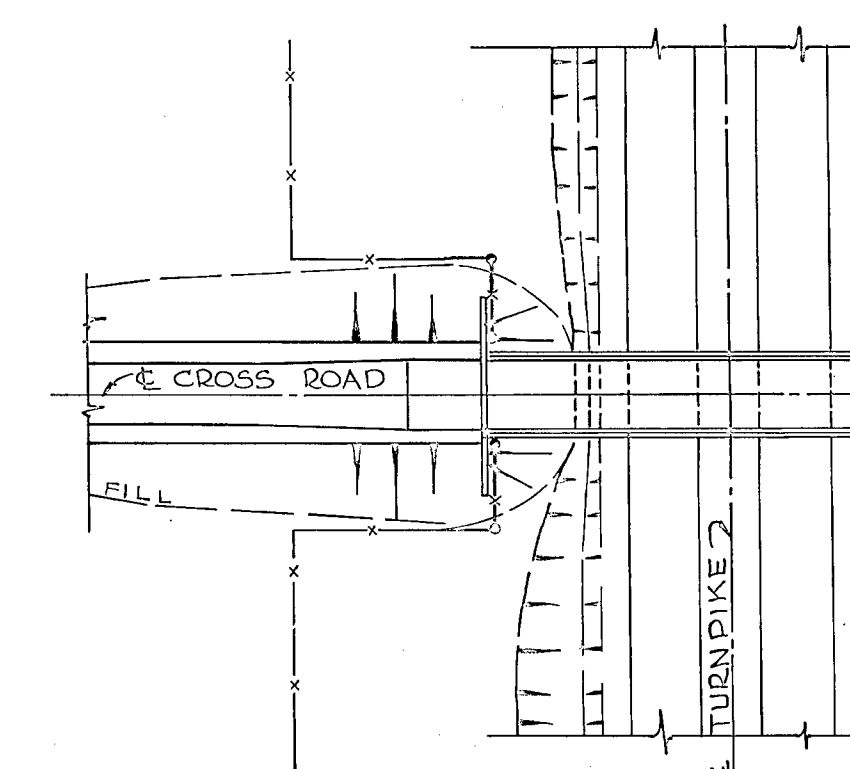
REVISED 5-1-61: REFERENCE TO STANDARD SPECIFICATIONS ADDED.

REVISED 5-11-63: STEEL POSTS SPECIFIED IN DESCRIPTION OF ITEM 173-7. DATE OF STANDARD DRAWING CHANGED AND THIS SHEET MADE 1 OF 2.

REVISED 7-22-64: ITEM 173-7c REGARDING ADDITIONAL BRACING ADDED.



PLAN
INTERSTATE OVER



PLAN
INTERSTATE UNDER

NOTE: THESE INSTALLATION SCHEMES ARE TYPICAL AND ARE NOT TO BE CONSTRUED AS REPRESENTATIVE OF ALL CONDITIONS WHICH WILL BE ENCOUNTERED. CONSTRUCTION MAY BE VARIED AS REQUIRED TO MEET FIELD CONDITIONS AND/OR AS DIRECTED BY THE ENGINEER.

SEE SECTION 173 OF SUPPLEMENT TO STANDARD SPECIFICATIONS, DATED AUGUST 1, 1960, ON MATERIAL AND CONSTRUCTION, AND FOR METHOD OF MEASUREMENT AND BASIS FOR PAYMENT.

PAYMENT WILL BE MADE UNDER:

ITEM NO. 173-4 FOUR-FOOT CHAIN LINK FENCE PER LINEAR FOOT.

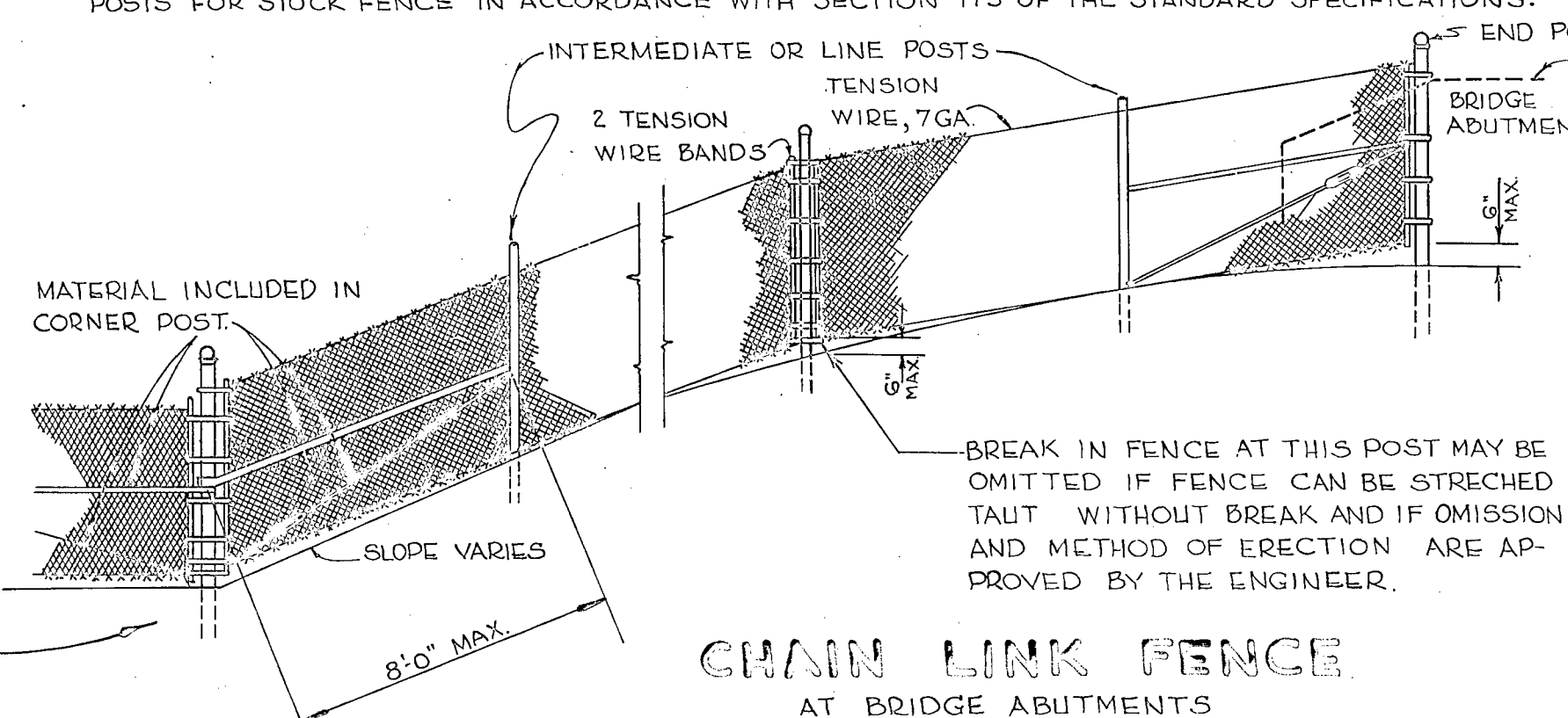
ITEM NO. 173-6 SIX-FOOT CHAIN LINK FENCE PER LINEAR FOOT.

ITEM NO. 173-7 STOCK FENCE WITH STEEL POSTS PER LINEAR FOOT.

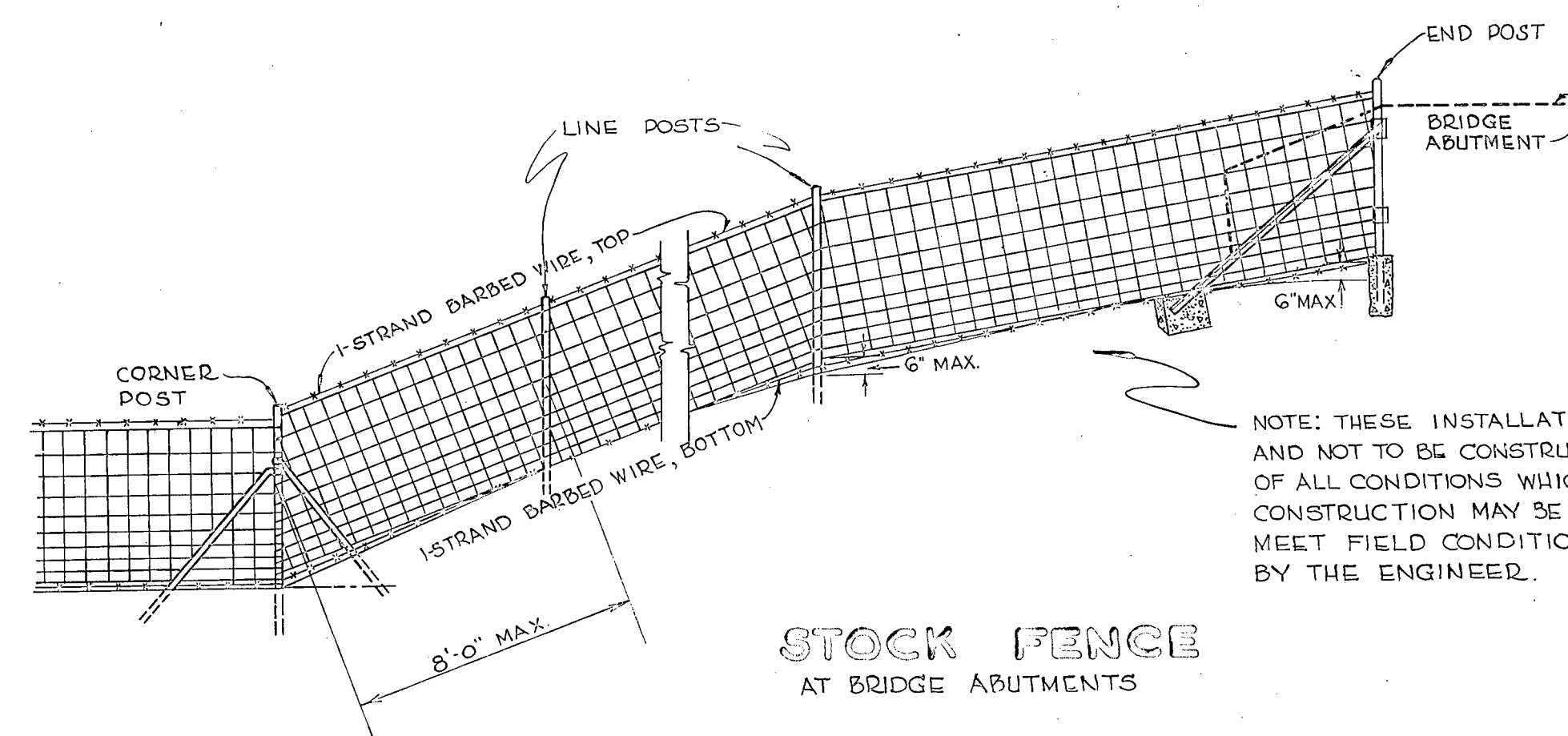
IF ADDITIONAL STOCK FENCE BRACING IS NEEDED OTHER THAN THAT REQUIRED UNDER ITEM 173-7, PAYMENT WILL BE MADE UNDER:

* ITEM 173-7a BRACED LINE POST (STEEL) PER EACH.

* TO BE USED ONLY AS DIRECTED BY THE ENGINEER AT GRADE DEPRESSIONS WHERE STRESSES TEND TO PULL THE POST FROM THE GROUND OR AT ANY OTHER PLACE NEEDED BECAUSE OF TERRAIN. UNIT PRICE BID TO INCLUDE ALL COSTS OF LABOR, MATERIALS, EQUIPMENT ETC. TO COMPLETE BRACED LINE POSTS FOR STOCK FENCE IN ACCORDANCE WITH SECTION 173 OF THE STANDARD SPECIFICATIONS.

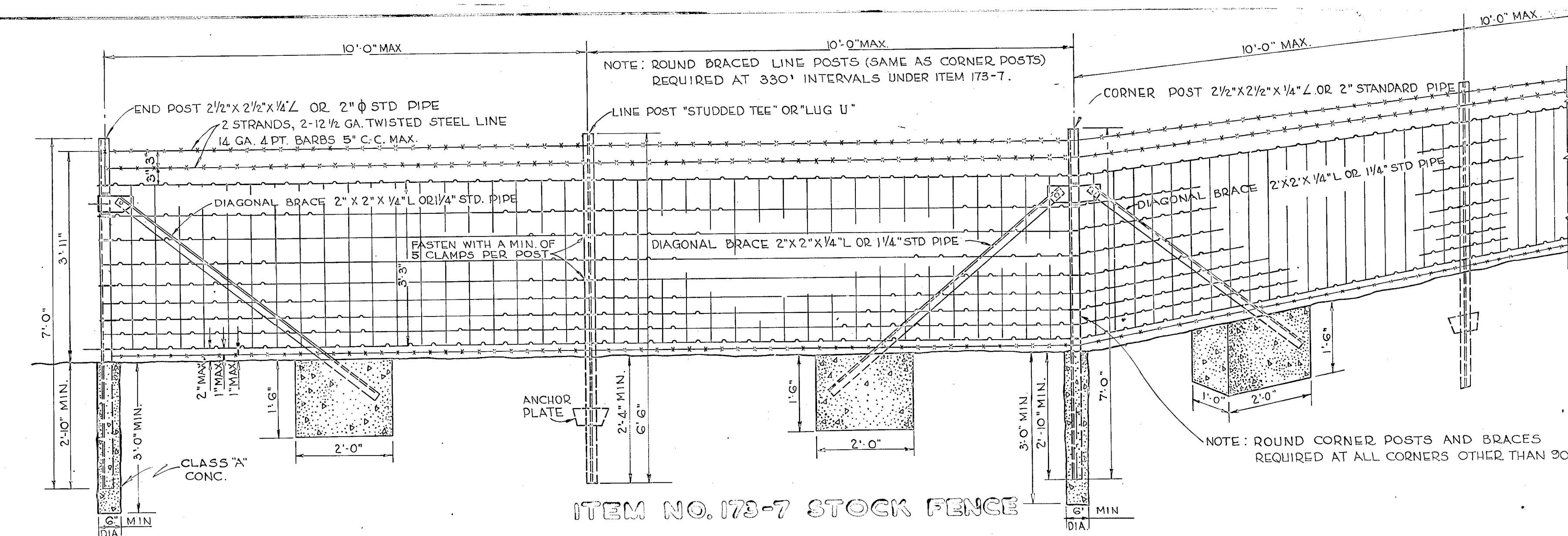


CHAIN LINK FENCE
AT BRIDGE ABUTMENTS

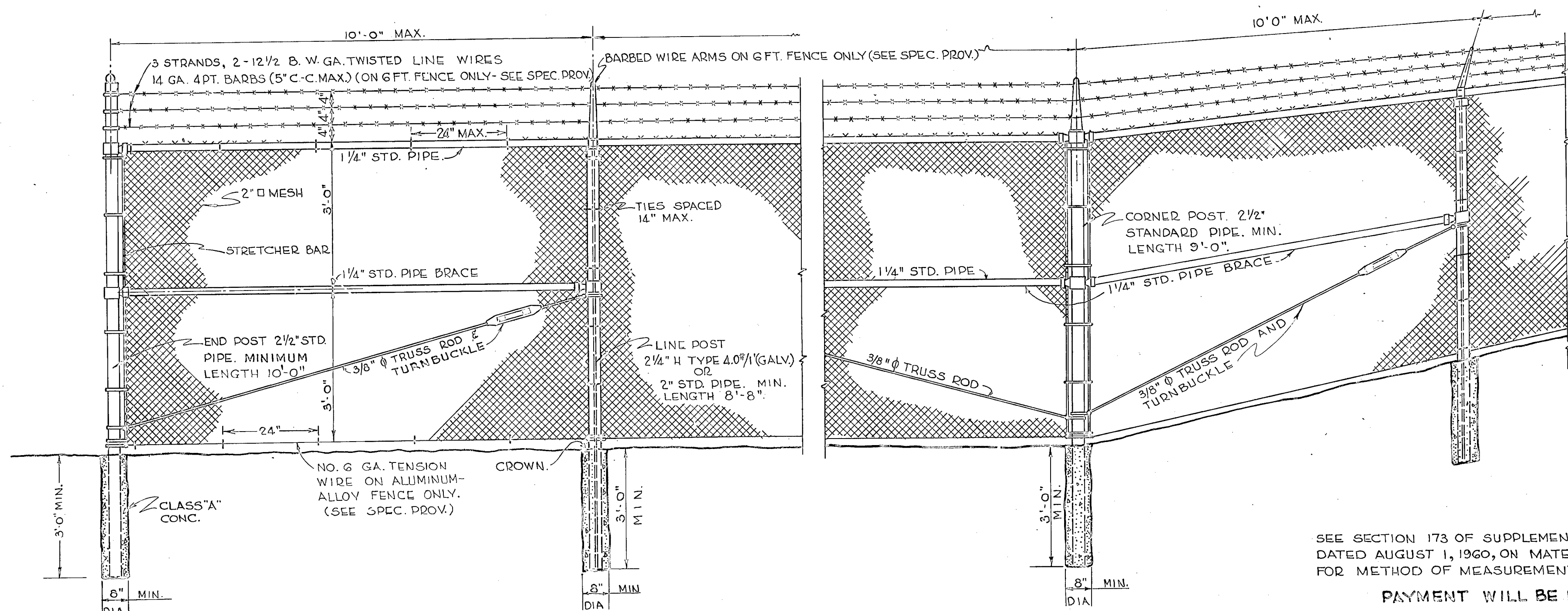


STOCK FENCE
AT BRIDGE ABUTMENTS

NOTE: THESE INSTALLATION SCHEMES ARE TYPICAL AND NOT TO BE CONSTRUED AS REPRESENTATIVE OF ALL CONDITIONS WHICH WILL BE ENCOUNTERED. CONSTRUCTION MAY BE VARIED AS REQUIRED TO MEET FIELD CONDITIONS AND/OR AS DIRECTED BY THE ENGINEER.



ITEM NO. 173-7 STOCK FENCE



ITEM NO. 173-6 6FT. CHAIN LINK FENCE
AND
ITEM NO. 173-4 4FT. CHAIN LINK FENCE

NOTE: 4 FT. CHAIN LINK FENCE SAME AS ABOVE EXCEPT FOR HEIGHT OF FENCE AND LENGTH OF POSTS, AND WITH ALL BARBED WIRE & BARBED WIRE FITTINGS OMITTED. (SEE SPEC. PROVISION)

Neat Width of Capital Letters and Digits

LETTER	LETTER AND DIGIT HEIGHTS						
	2"	2 1/2"	3"	4"	5"	6"	8"
A	2 - 3/4	2 - 1/4	2 - 5/8	3 - 1/2	4 - 1/2	5 - 1/4	7 - 1/4
B	1 - 3/8	1 - 3/4	2 - 3/8	2 - 7/8	3 - 5/8	4 - 3/4	5 - 7/8
C	1 - 3/8	1 - 3/4	2 - 1/4	2 - 7/8	3 - 5/8	4 - 5/8	5 - 7/8
D	1 - 3/8	1 - 3/4	2 - 3/8	2 - 7/8	3 - 5/8	4 - 3/4	5 - 7/8
E	1 - 1/4	1 - 5/8	2 - 1/8	2 - 5/8	3 - 3/8	4 - 1/4	5 - 1/2
F	1 - 1/4	1 - 5/8	2 - 1/8	2 - 5/8	3 - 3/8	4 - 1/4	5 - 1/2
G	1 - 3/8	1 - 3/4	2 - 3/8	2 - 7/8	3 - 5/8	4 - 3/4	5 - 7/8
H	1 - 3/8	1 - 3/4	2 - 1/4	2 - 7/8	3 - 5/8	4 - 5/8	5 - 7/8
I	1/2	1/2	5/8	7/8	1	1 - 1/4	1 - 3/4
J	1 - 5/8	1 - 3/4	2 - 1/4	2 - 3/4	3 - 3/8	4 - 5/8	5 - 1/2
K	1 - 1/2	1 - 7/8	2 - 1/4	3	3 - 3/4	4 - 5/8	5 - 7/8
L	1 - 1/4	1 - 5/8	2 - 1/8	2 - 5/8	3 - 3/8	4 - 1/4	5 - 1/2
M	1 - 5/8	2 - 1/8	2 - 5/8	3 - 1/4	4 - 1/4	5 - 1/4	6 - 3/4
N	1 - 3/8	1 - 3/4	2 - 1/4	2 - 7/8	3 - 5/8	4 - 5/8	5 - 7/8
O	1 - 1/2	1 - 5/8	2 - 1/2	3	3 - 3/4	5	6 - 1/8
P	1 - 3/8	1 - 3/4	2 - 3/8	2 - 7/8	3 - 5/8	4 - 3/4	5 - 7/8
Q	1 - 1/2	1 - 7/8	2 - 1/2	3	3 - 3/4	5	6 - 1/8
R	1 - 3/8	1 - 3/4	2 - 3/8	2 - 7/8	3 - 5/8	4 - 3/4	5 - 7/8
S	1 - 3/8	1 - 3/4	2 - 3/8	2 - 7/8	3 - 5/8	4 - 3/4	5 - 7/8
T	1 - 1/4	1 - 5/8	2 - 1/8	2 - 5/8	3 - 3/8	4 - 1/4	5 - 1/2
U	1 - 3/8	1 - 3/4	2 - 1/4	2 - 7/8	3 - 5/8	4 - 5/8	5 - 7/8
V	1 - 5/8	2	2 - 1/2	3 - 1/4	4	5	6 - 1/2
W	1 - 7/8	2 - 1/4	3 - 1/8	3 - 3/4	4 - 5/8	6 - 1/4	7 - 1/2
X	1 - 3/8	1 - 1/8	2 - 1/4	2 - 7/8	3 - 3/4	4 - 5/8	6 - 1/4
Y	1 - 3/4	2 - 1/4	2 - 3/8	3 - 1/2	4 - 1/2	5 - 1/2	7 - 1/4
Z	1 - 3/8	1 - 3/4	2 - 1/4	2 - 7/8	3 - 5/8	4 - 5/8	5 - 7/8
1	1/2	3/4	1 - 1/4	1 - 1/8	1 - 1/2	1 - 5/8	2 - 1/2
2	1 - 3/8	1 - 3/4	2 - 1/8	2 - 7/8	3 - 5/8	4 - 1/4	5 - 7/8
3	1 - 3/8	1 - 3/4	2 - 3/8	2 - 7/8	3 - 5/8	4 - 3/4	5 - 7/8
4	1 - 1/2	2	2 - 5/8	3 - 1/8	4 - 1/8	5 - 1/4	6 - 3/8
5	1 - 3/8	1 - 3/4	2 - 3/8	2 - 7/8	3 - 5/8	4 - 7/8	5 - 7/8
6	1 - 3/8	1 - 3/4	2 - 1/8	2 - 7/8	3 - 5/8	4 - 3/8	5 - 7/8
7	1 - 3/8	1 - 3/4	2 - 1/4	2 - 7/8	3 - 5/8	4 - 5/8	5 - 7/8
8	1 - 3/8	1 - 3/4	2 - 3/8	2 - 7/8	3 - 5/8	4 - 7/8	5 - 7/8
9	1 - 3/8	1 - 3/4	2 - 1/8	2 - 7/8	3 - 5/8	4 - 3/8	5 - 7/8
0	1 - 1/2	1 - 7/8	2 - 1/2	3	3 - 3/4	5	6 - 1/8

Spacing of 2" Capital Letters and Digits

COLUMN 1	COLUMN 2							
	AVW X 5	BDE FHI KLM NPRU	CG OQS 2489	J	T7	Y	Z 1	3G
AVW X 5G	1/2	5/8	1/2	3/8	1/2	1/2	5/8	1/2
B 3	1/2	3/4	1/2	1/2	1/2	1/2	5/8	5/8
CEG	1/2	3/4	1/2	1/2	1/2	1/2	5/8	5/8
DOQPR89	1/2	5/8	1/2	1/2	1/2	1/2	5/8	1/2
FT7	1/2	5/8	1/2	3/8	3/8	3/8	5/8	1/2
HIJMNUI	5/8	1	5/8	5/8	5/8	5/8	7/8	3/4
KL	3/8	5/8	1/2	3/8	3/8	3/8	5/8	1/2
SY2	3/8	5/8	1/2	3/8	3/8	1/2	5/8	1/2
Z	5/8	7/8	5/8	1/2	5/8	3/8	3/4	5/8
4	5/8	3/4	5/8	1/2	5/8	5/8	3/4	5/8

Spacing of 2 1/2" Capital Letters and Digits

COLUMN 1	COLUMN 2							
	AVW X 5	BDE FHI KLM NPRU	CG OQS 2489	J	T7	Y	Z 1	3G
AVW X 5G	1/2	7/8	5/8	1/2	1/2	5/8	5/8	5/8
B 3	5/8	1	3/4	5/8	5/8	5/8	5/8	3/4
CEG	5/8	7/8	5/8	5/8	5/8	5/8	5/8	3/4
DOQPR89	5/8	7/8	5/8	1/2	5/8	5/8	5/8	5/8
FT7	1/2	7/8	5/8	1/2	1/2	1/2	3/4	5/8
HIJMNUI	7/8	1 - 1/8	3/4	3/4	7/8	5/8	1 - 1/8	7/8
KL	1/2	3/4	1/2	1/2	1/2	1/2	3/4	5/8
SY2	1/2	7/8	5/8	1/2	1/2	1/2	3/4	5/8
Z	3/4	1 - 1/8	3/4	3/4	3/4	3/4	1	7/8
4	3/4	1 - 1/8	7/8	3/4	3/4	3/4	1	7/8

Spacing of 3" Capital Letters and Digits

COLUMN 1	COLUMN 2							
	AVW X 5	BDE FHI KLM NPRU	CG OQS 2489	J	T7	Y	Z 1	3G
AVW X 5G	5/8	1	3/4	5/8	5/8	5/8	1	3/4
B 3	3/4	1 - 1/8	3/4	5/8	3/4	3/4	1	3/4
CEG	3/4	1	3/4	5/8	5/8	3/4	1	3/4
DOQPR89	3/4	1	3/4	5/8	5/8	3/4	1	3/4
FT7	5/8	1	3/4	5/8	5/8	5/8	7/8	3/4
HIJMNUI	1	1 - 3/8	1	1	1	1	1 - 1/4	1
KL	5/8	1	5/8	1/2	1/2	1/2	7/8	5/8
SY2	5/8	1	5/8	1/2	5/8	5/8	1	3/4
Z	1	1 - 1/4	1	7/8	7/8	1	1 - 1/4	1
4	1	1 - 1/4	1	3/4	7/8	7/8	1 - 1/4	1

Spacing of 4" Capital Letters and Digits

COLUMN 1	COLUMN 2							
	AVW X 5	BDE FHI KLM NPRU	CG OQS 2489	J	T7	Y	Z 1	3G
AVW X 5G	7/8	1 - 3/8	1	3/4	7/8	7/8	1 - 1/4	1
B 3	1	1 - 1/2	1 - 1/8	7/8	1	1	1 - 3/8	1 - 1/8
CEG	1	1 - 1/2	1	7/8	7/8	1	1 - 3/8	1 - 1/8
DOQPR89	1	1 - 3/8	1	7/8	7/8	7/8	1 - 3/8	1
FT7	7/8	1 - 1/4	7/8	3/4	3/4	3/4	1 - 1/4	7/8
HIJMNUI	1 - 3/8	1 - 7/8	1 - 3/8	1 - 1/4	1 - 1/4	1 - 3/8	1 - 3/4	1 - 1/2
KL	3/4	1 - 1/4	7/8	5/8	3/4	3/4	1 - 1/8	7/8
SY2	7/8	1 - 3/8	7/8	3/4	3/4	7/8	1 - 1/4	1
Z	1 - 1/4	1 - 3/4	1 - 3/8	1 - 1/4	1 - 1/4	1 - 1/4	1 - 5/8	1 - 3/8
4	1 - 1/4	1 - 5/8	1 - 1/4	1 - 1/8	1 - 1/8	1 - 1/4	1 - 5/8	1 - 3/8

Spacing of 5" Capital Letters and Digits

COLUMN 1	COLUMN 2							
	AVW X 5	BDE FHI KLM NPRU	CG OQS 2489	J	T7	Y	Z 1	3G
AVW X 5G	1 - 1/8	1 - 5/8	1 - 1/8	1	1	1 - 1/8	1 - 5/8	1 - 1/4
B 3	1 - 1/4	1 - 7/8	1 - 3/8	1 - 1/8	1 - 5/8	1 - 1/4	1 - 3/4	1 - 3/8
CEG	1 - 1/4	1 - 7/8	1 - 3/8	1 - 1/8	1 - 1/8	1 - 1/4	1 - 5/8	1 - 3/8
DOQPR89	1 - 1/8	1 - 3/4	1 - 1/4	1	1 - 1/8	1 - 1/8	1 - 5/8	1 - 1/4
FT7	1 - 1/8	1 - 5/8	1 - 1/8	7/8	1	1	1 - 1/2	1 - 1/8
HIJMNUI	1 - 5/8	2 - 1/4	1 - 3/4	1 - 1/2	1 - 5/8	1 - 5/8	2 - 1/8	1 - 3/4
KL	1	1 - 1/2	1	7/8	7/8	1	1 - 1/2	1 - 1/8
SY2	1 - 1/8	1 - 5/8	1 - 1/8	1	1	1	1 - 1/2	1 - 1/8
Z	1 - 5/8	2 - 1/8	1 - 5/8	1 - 1/2	1 - 1/2	1 - 1/2	2	1 - 3/4
4	1 - 1/2	2 - 1/8	1 - 5/8	1 - 3/8	1 - 1/2	1 - 1/2	2	1 - 5/8

Spacing of 6" Capital Letters and Digits

COLUMN 1	COLUMN 2							
	AVW X 5	BDE FHI KLM NPRU	CG OQS 2489	J	T7	Y	Z 1	3G
AVW X 5G	1 - 3/8	2	1 - 1/2	1 - 1/4	1 - 1/4	1 - 3/8	1 - 7/8	1 - 1/2
B 3	1 - 1/2	2 - 1/4	1 - 5/8	1 - 3/8	1 - 1/2	1 - 1/2	1 - 1/8	1 - 5/8
CEG	1 - 1/2	2 - 1/8	1 - 1/2	1 - 3/8	1 - 3/8	1 - 1/2	2	1 - 5/8
DOQPR89	1 - 1/2	2 - 1/8	1 - 1/2	1 - 1/4	1 - 3/8	1 - 3/8	2	1 - 1/2
FT7	1 - 1/4	1 - 7/8	1 - 3/8	1 - 1/8	1 - 1/8	1 - 1/4	1 - 3/4	1 - 3/8
HIJMNUI	2	2 - 3/4	2 - 1/8	1 - 7/8	1 - 7/8	2	2 - 5/8	2 - 1/8
KL	1 - 1/4	1 - 7/8	1 - 1/4	1	1 - 1/8	1 - 1/8	1 - 3/4	1 - 3/8
SY2	1 - 3/8	2	1 - 3/8	1 - 1/8	1 - 1/4	1 - 1/4	1 - 7/8	1 - 1/2
Z	1 - 7/8	2 - 5/8	2	1 - 3/4	1 - 3/4	1 - 7/8	2 - 1/2	2
4	1 - 7/8	2 - 5/8	1 - 7/8	1 - 5/8	1 - 3/4	1 - 3/4	2 - 3/8	2

Spacing of 8" Capital Letters and Digits

COLUMN 1	COLUMN 2							
	AVW X 5	BDE FHI KLM NPRU	CG OQS 2489	J	T7	Y	Z 1	3G
AVW X 5G	1 - 7/8	2 - 3/4	1 - 7/8	1 - 5/8	1 - 5/8	1 - 3/4	2 - 1/2	2
B 3	2 - 1/8	3	2 - 1/8	1 - 7/8	1 - 7/8	2	2 - 3/4	2 - 1/4
CEG	2	2 - 7/8	2 - 1/8	1 - 3/4	1 - 7/8	1 - 7/8	2 - 3/4	2 - 1/8
DOQPR89	1 - 7/8	2 - 3/4	2	1 - 5/8	1 - 3/4	1 - 7/8	2 - 5/8	2 - 1/8
FT7	1 - 5/8	2 - 1/2	1 - 3/4	1 - 1/2	1 - 1/2	1 - 5/8	2 - 3/8	1 - 7/8
HIJMNUI	2 - 3/4	3 - 5/8	2 - 3/4	2 - 1/2	2 - 1/2	2 - 5/8	3 - 1/2	2 - 7/8
KL	1 - 5/8	2 - 1/2	1 - 5/8	1 - 3/8	1 - 1/2	1 - 1/2	2 - 3/8	1 - 3/4
SY2	1 - 3/4	2 - 5/8	1 - 7/8	1 - 1/2	1 - 5/8	1 - 5/8	2 - 1/2	1 - 7/8
Z	2 - 1/2	3 - 1/2	2 - 5/8	2 - 3/8	1 - 3/8	2 - 1/2	3 - 1/4	2 - 3/4
4	2 - 1/2	3 - 3/8	2 - 1/2	2 - 1/4	2 - 3/8	2 - 3/8	3 - 1/4	2 - 5/8

FED. ROAD DIST. NO.	T E	FEDERAL AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
103	1	103	1964	19	243

REVISED: JAN. 30, 1964 I-55-10310

GENERAL NOTES

TIME OF PLACEMENT

CONSTRUCTION IDENTIFICATION SIGNS SHALL BE ERECTED AT THE TIME PHYSICAL CONSTRUCTION WORK STARTS ON THIS PROJECT.

PLACEMENT

THE SIGNS SHALL BE PLACED AT LOCATIONS DESIGNATED ON THE PLANS. THESE SIGNS ARE TO BE IN ADDITION TO THE NORMAL WARNING AND REGULATORY SIGNS PROVIDED ON EXISTING OR DETOUR HIGHWAYS AND ARE NOT TO BE USED AS A PART OF SUCH CONTROL MEASURES. THE CONSTRUCTION IDENTIFICATION SIGNS SHALL BE LOCATED SO AS NOT TO OBSCURE OR DETRACT FROM THE EFFECTIVENESS OF OTHER OFFICIAL SIGNS.

SIGN CONTENT

EACH SIGN SHALL BE IN ACCORDANCE WITH THE APPLICABLE DRAWING. ON PROJECTS WITH 100% STATE FUNDS THE LENGTH IN MILES SHALL BE THE PROJECT LENGTH AS SHOWN ON THE PLANS. THE PROJECT COST SHALL BE THE TOTAL CONTRACT BID PRICE, ROUNDED TO THE NEAREST \$1,000. ON INTERSTATE PROJECTS, THE STANDARD THREE COLOR INTERSTATE SHIELD WITH ROUTE NUMBER SHALL BE USED. ON OTHER PROJECTS, THE US SHIELD OR APPROPRIATE ROUTE NUMBER SHALL BE USED. NO HIGHWAY NAMES OR OTHER INFORMATION MAY BE INDICATED ON THESE SIGNS.

SIGN CONSTRUCTION

THE CONSTRUCTION IDENTIFICATION SIGN SHALL BE OF 3/4" PLYWOOD, EXTERIOR GRADE WITH SEALED EDGES, MOUNTED ON 6" X 6" POSTS. THE LUMBER COMPRISING POSTS, STRINGERS AND BATTENS SHALL CONFORM TO SECTION 224.01-STRUCTURAL TIMBER, UNTREATED AND/OR SECTION 224.05-TIMBER POSTS, UNTREATED, AS COVERED IN THE STANDARD SPECIFICATIONS. ALL EXPOSED LUMBER, BOLTS, POSTS, ETC. SHALL BE GIVEN THREE COATS OF A GOOD COMMERCIAL GRADE OF WHITE PAINT. THE LEGEND SHALL BE OF GOOD GRADE COMMERCIAL BLACK ENAMEL PAINT FOR LETTERS AND BORDER ON WHITE BACKGROUND. THE SIGNS ARE NOT TO BE REFLECTORIZED OR LIGHTED. MOUNTING, TRANSVERSE LOCATION, HEIGHT AND SIMILAR FEATURES SHALL BE CONSISTENT WITH OTHER INFORMATIONAL SIGNS, AS DIRECTED BY THE ENGINEER. THE THICKNESS AND SPACING OF THE LETTERS COMPRISING THE LEGEND SHALL BE OBTAINED FROM THE TABLES SHOWN. THESE TABLES ARE BASED ON INFORMATION GIVEN IN A.G.A. SIGN DESIGN STANDARDS BULLETIN NO. S-4C.

PAYMENT

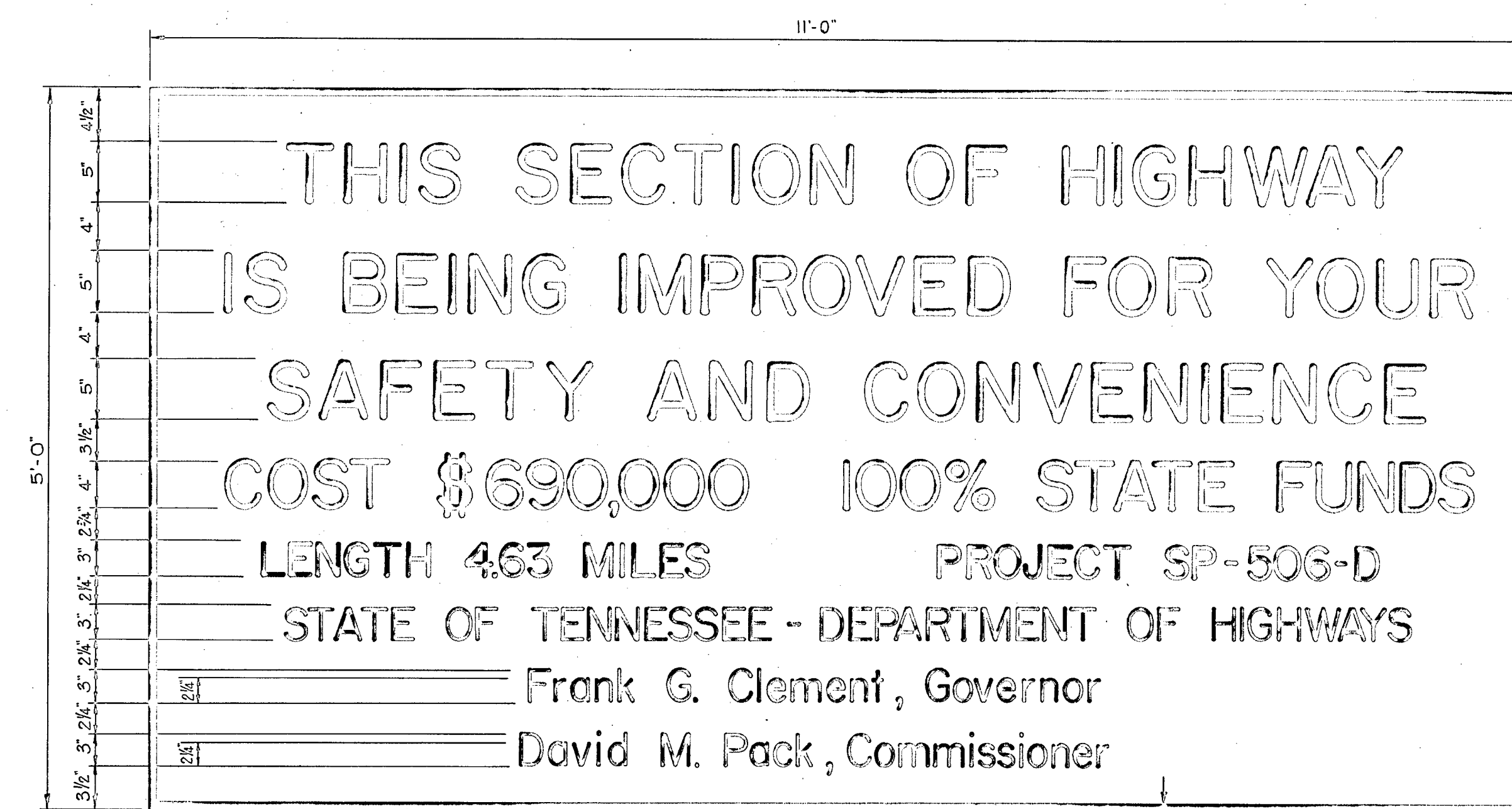
THE CONTRACTOR SHALL FURNISH, ERECT AND MAINTAIN CONSTRUCTION IDENTIFICATION SIGNS AS HEREIN SPECIFIED AT EACH LOCATION SHOWN ON THE PLANS. HE SHALL REMOVE THEM UPON COMPLETION AND ACCEPTANCE OF THIS PROJECT. ALL COSTS OF THIS WORK AND INCIDENTALS THERETO ARE TO BE INCLUDED IN THE UNIT PRICES BID FOR OTHER CONSTRUCTION ITEMS.

STATE OF TENNESSEE
DEPARTMENT OF HIGHWAYS
PLANS DIVISION
CONSTRUCTION IDENTIFICATION SIGNS
STANDARD

NOVEMBER 1960

FED. ROAD DIST. NO.	T E N N.	FEDERAL AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
3				292	293

I-55-105110



NOTE: For Mounting Details
See Sheet 1 of 3

TYPICAL SIGN - STATE PROJECT

STATE OF TENNESSEE
DEPARTMENT OF HIGHWAYS
PLANS DIVISION

CONSTRUCTION IDENTIFICATION SIGNS

STANDARD

MAY 1964

SHEET 2 OF 5

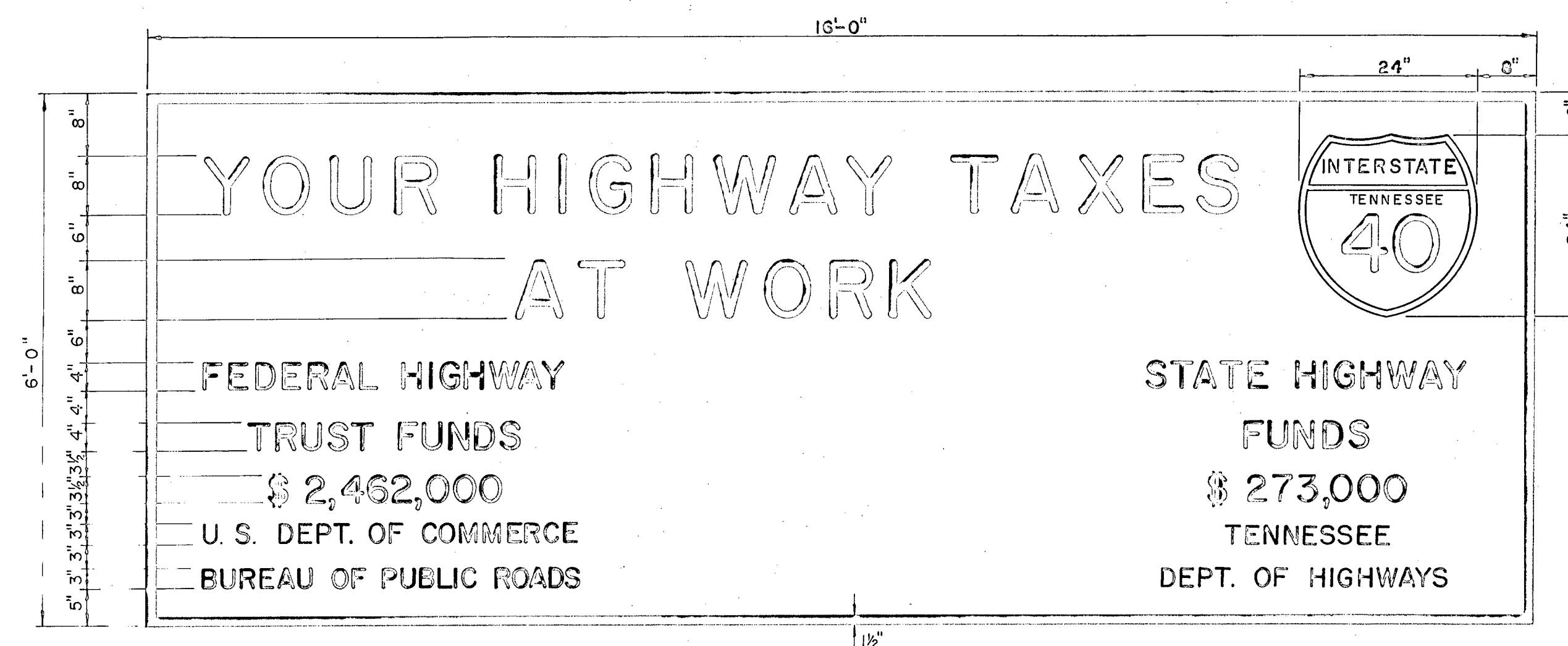
RD-S-1

REV. JAN. 30, 1964
REV. FEB. 5, 1964
Note pertaining to Forest
Highways.

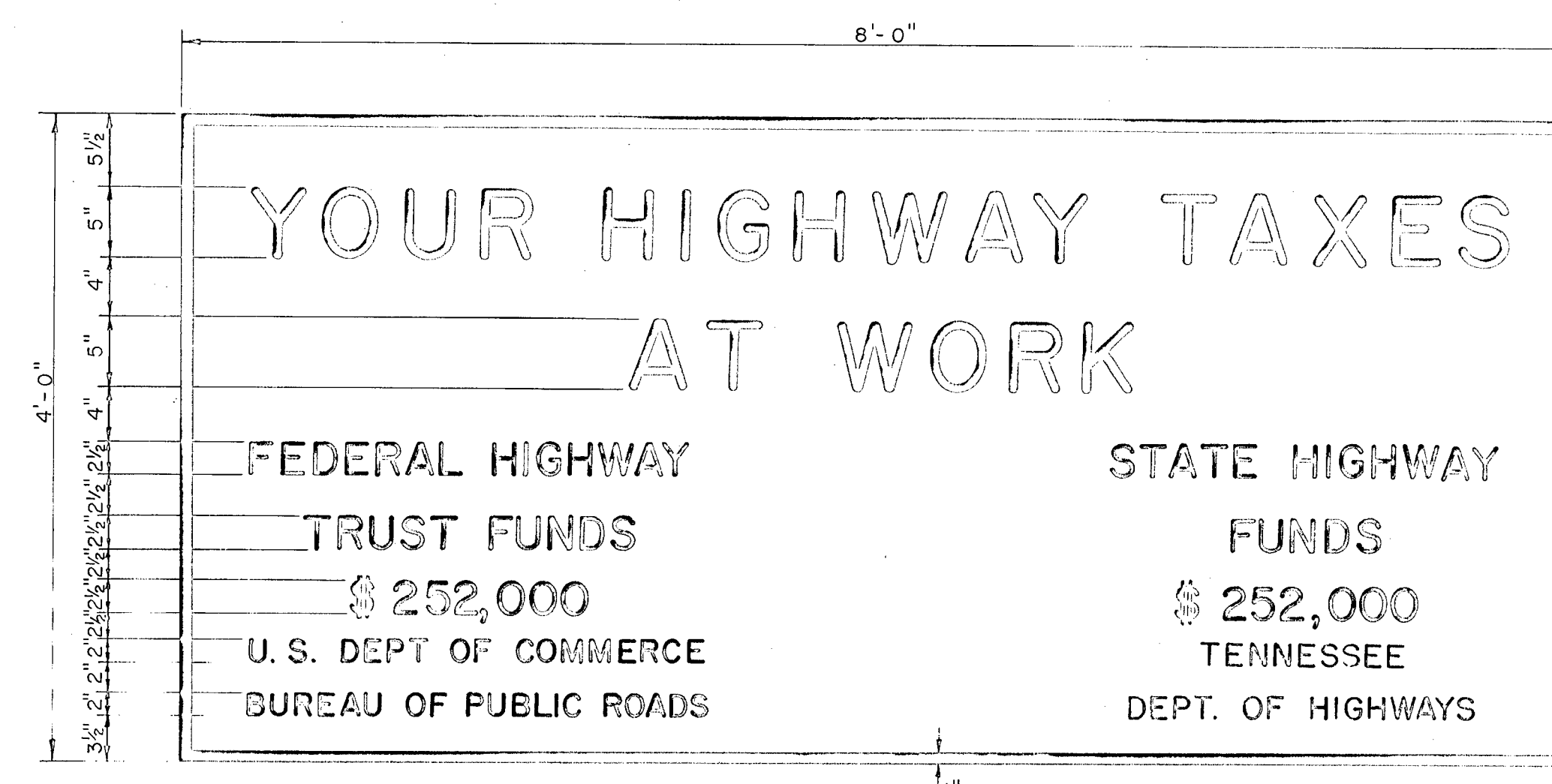
FED. ROAD DIST. NO.	TENN.	FEDERAL AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
3			19	211	212

I-25 115110

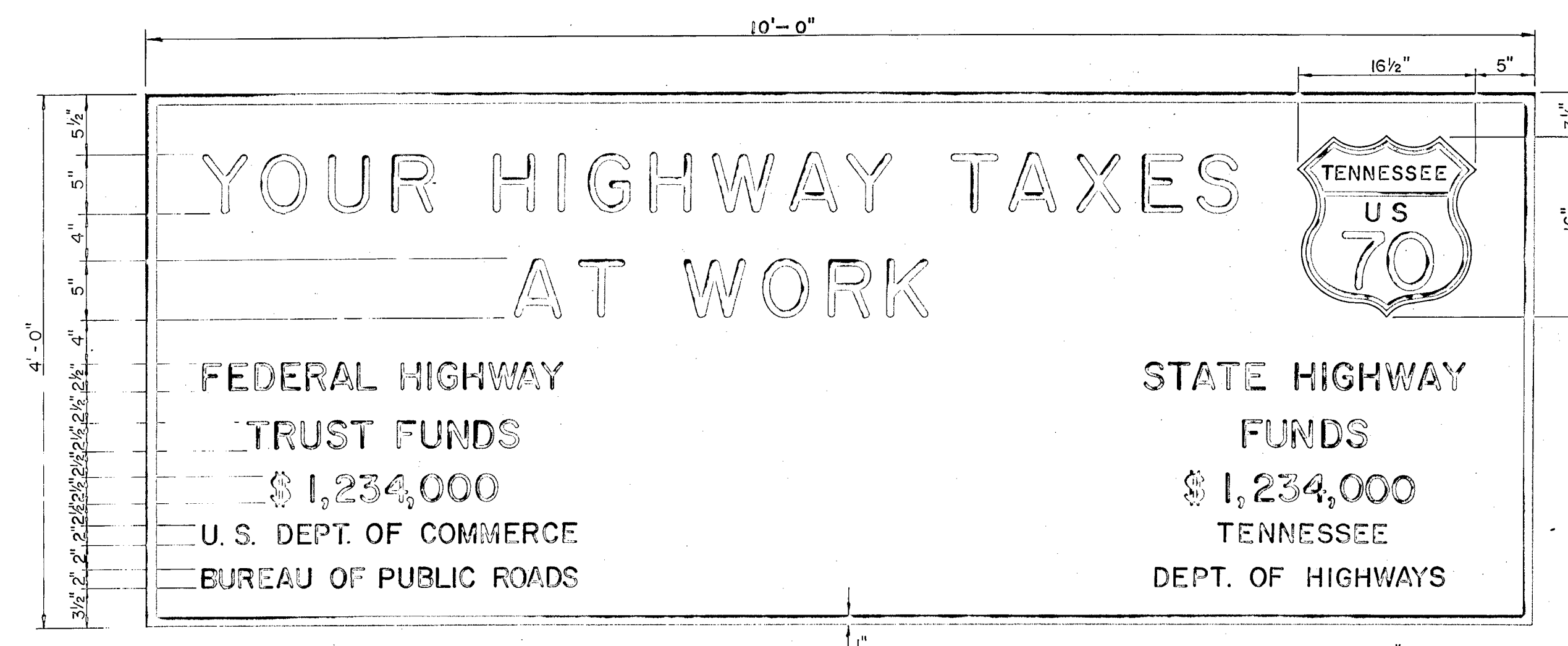
NOTE: On Forest Highways, F H Projects, substitute "FOREST HIGHWAY FUNDS" in place of "FEDERAL HIGHWAY TRUST FUNDS."



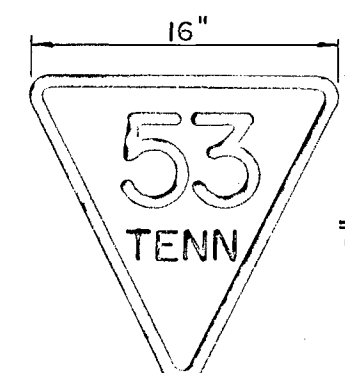
TYPICAL SIGN — INTERSTATE PROJECT



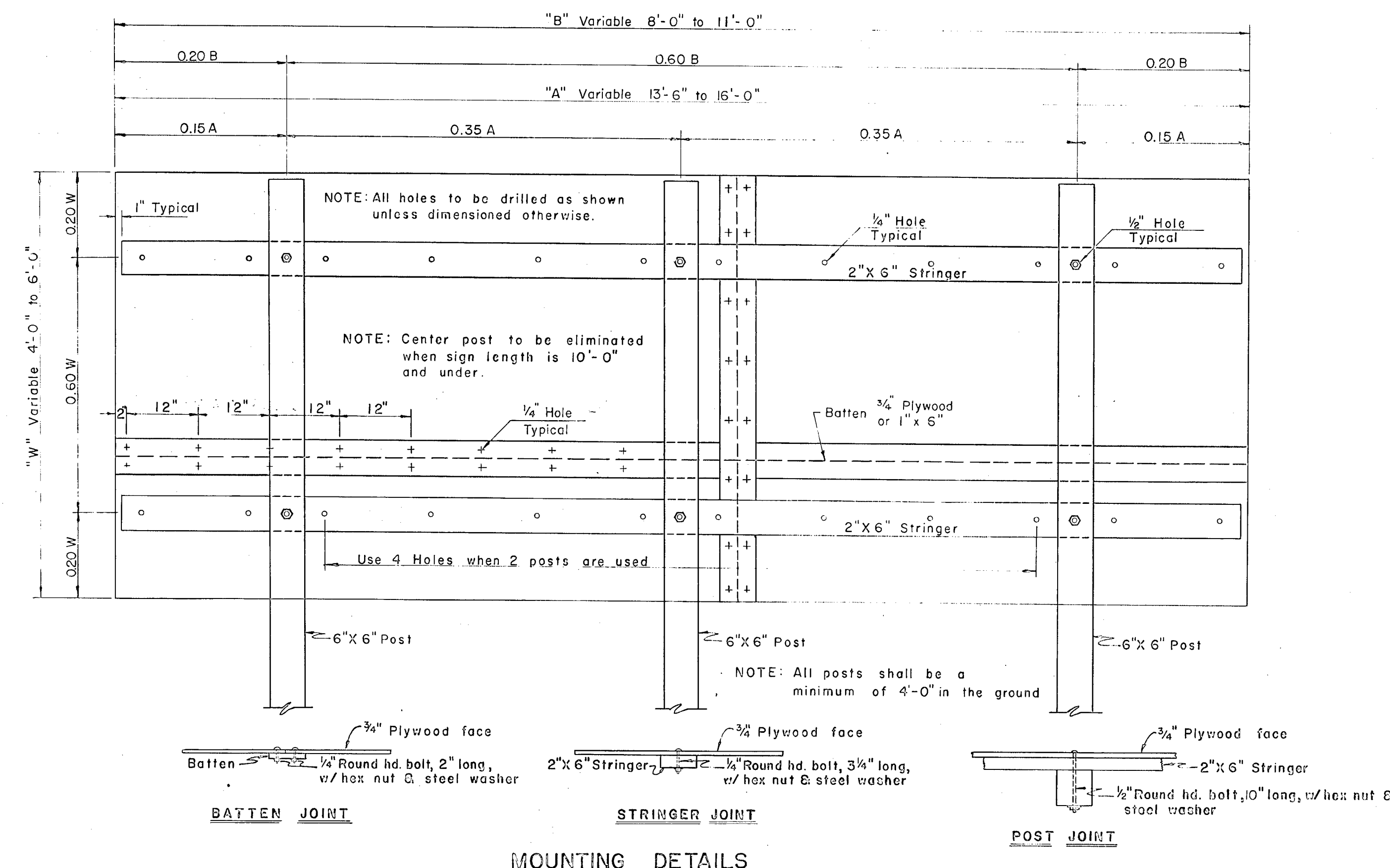
TYPICAL SIGN — SECONDARY PROJECT



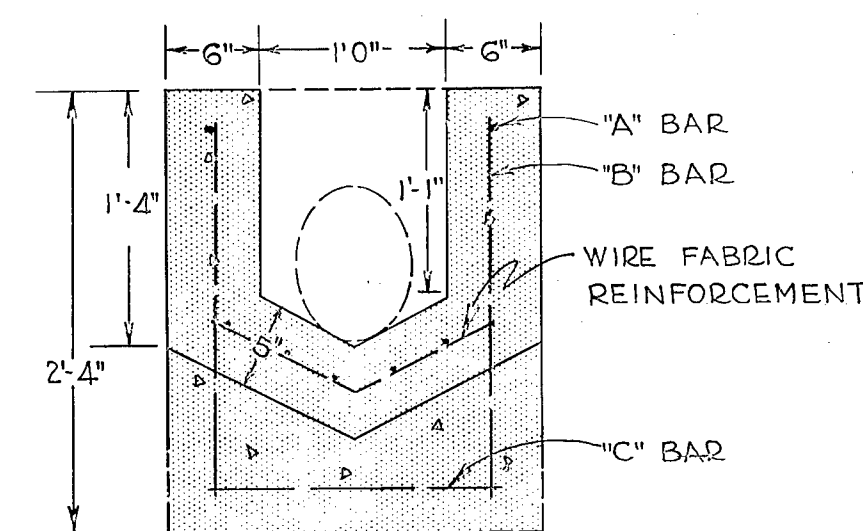
TYPICAL SIGN — PRIMARY PROJECT
URBAN PROJECT



NOTE: Use State Route Marker when not a U.S. Route



MOUNTING DETAILS

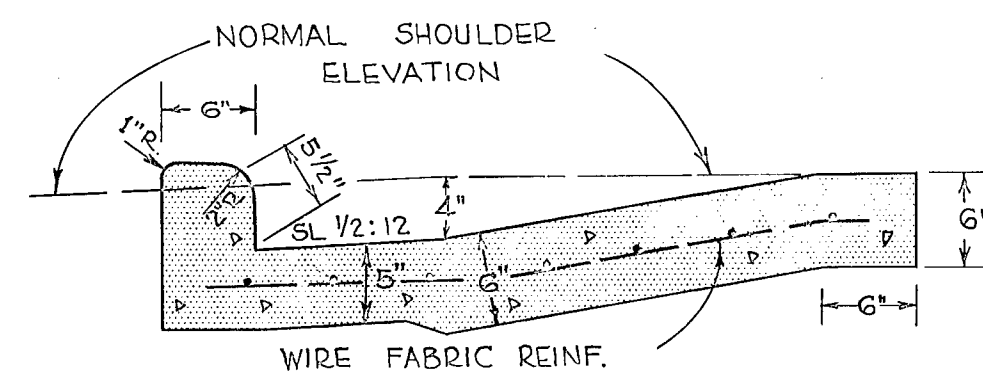


SECTION "B-B"

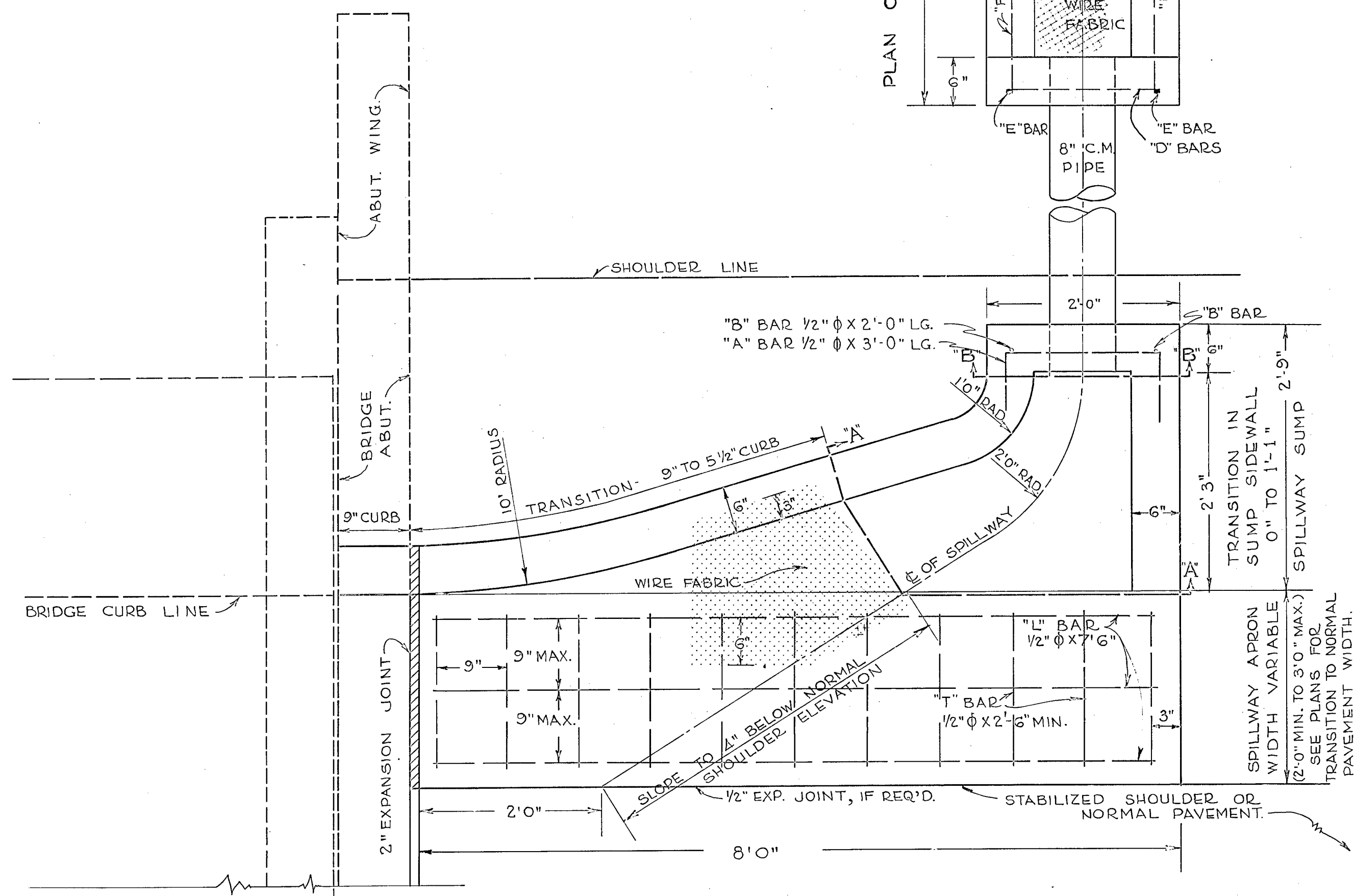
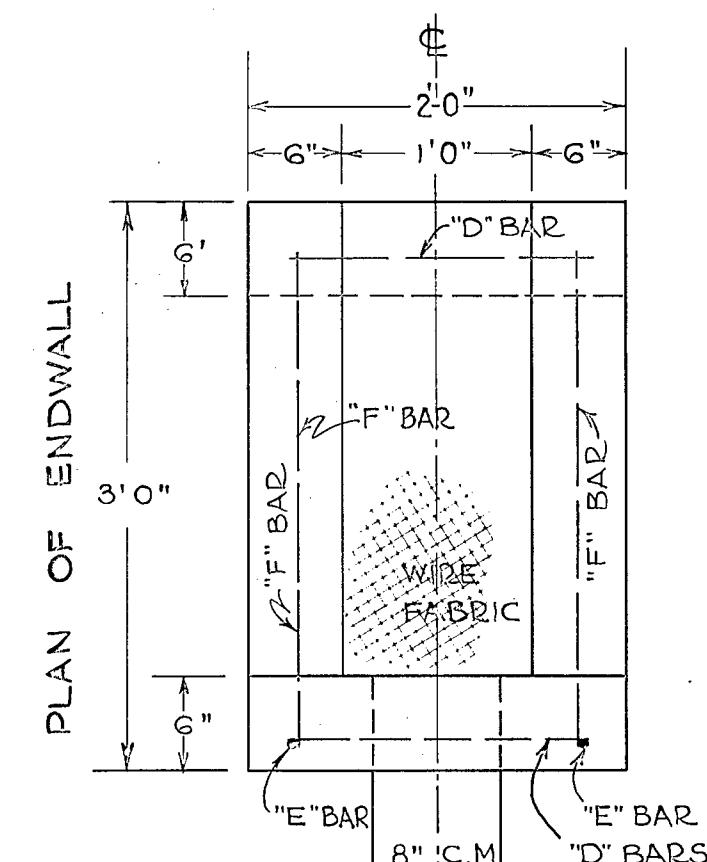
	BARS	2' APRON		3' APRON	
		QUAN.	LGTH.	QUAN.	LGTH.
APRON	L	3	7'-6"	4	7'-6"
	T	11	2'-6"	11	3'-6"
SUMP	A	1	3'-0"	1	3'-0"
	B	2	2'-0"	2	2'-0"
	C	1	1'-8"	1	1'-8"
ENDWALL	D	3	1'-8"	3	1'-8"
	E	2	3'-4"	2	3'-4"
	F	2	4'-4"	2	4'-4"

SPILLWAY QUANTITIES			
DESCRIPTION	CL. A. CONC. CU. YD.	REINF. STEEL LB.	WIRE FABRIC SQ. FT.
SUMP W/ 2' APRON	0.85	39	15
SUMP W/ 3' APRON	1.00	52	15
ENDWALL	0.33	14	4

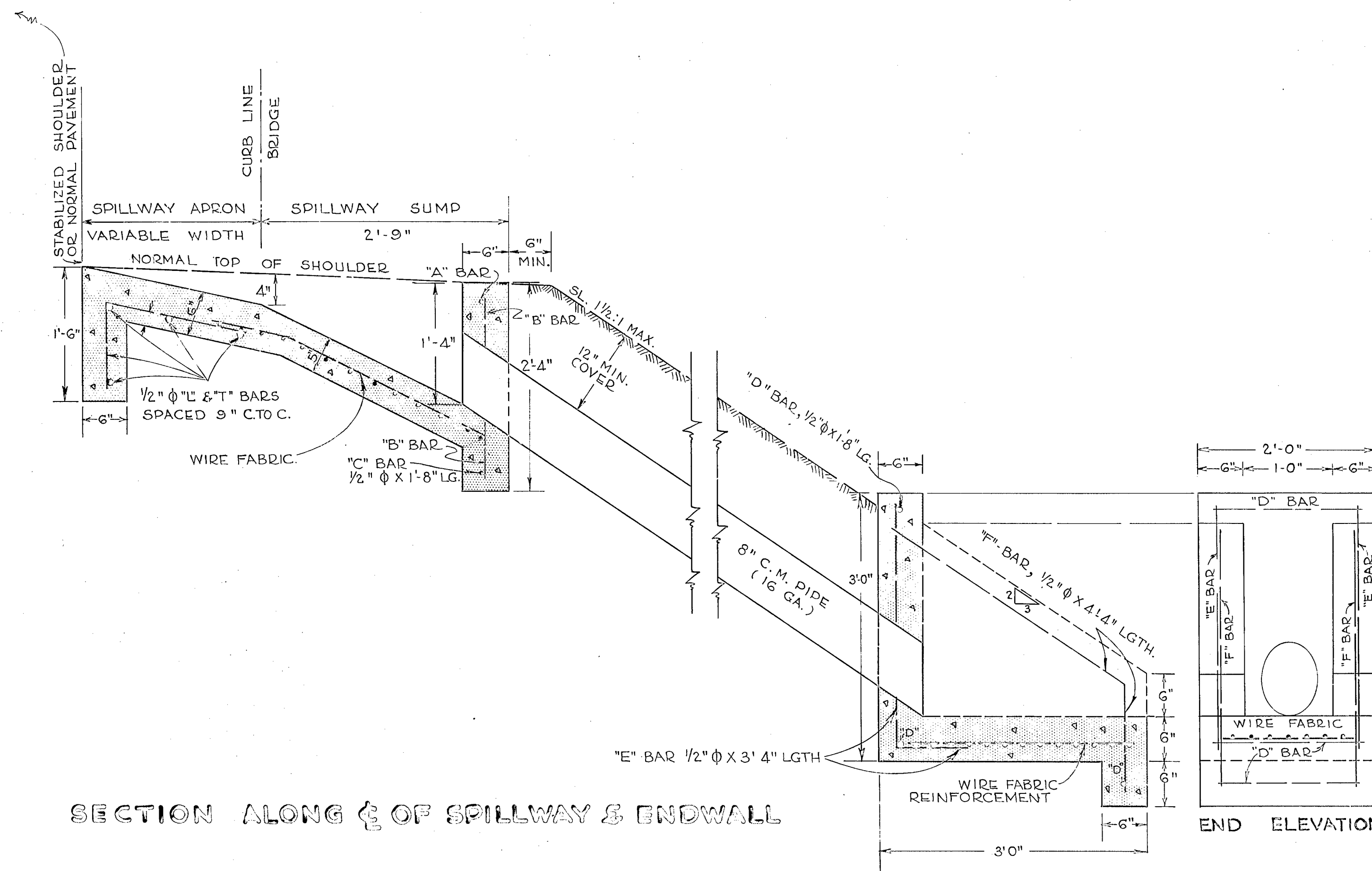
Φ INCLUDED IN COST OF CONCRETE



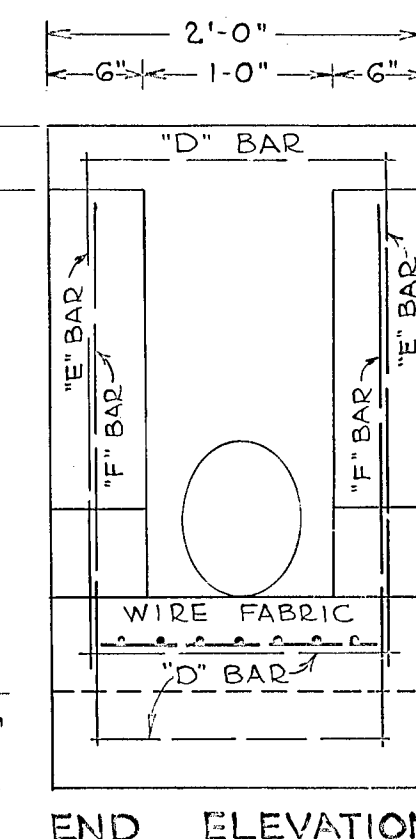
SECTION "A-A"



PLAN OF SPILLWAY



SECTION ALONG & OF SPILLWAY & ENDWALL



END ELEVATION

NOTES

WIRE FABRIC REINFORCEMENT: SHALL BE OF NO. 4 GAUGE (0.2253" Φ) STEEL WIRE SPACED 6" C. TO C. LONGITUDINALLY AND TRANSVERSELY, WEIGHING 58 LBS. PER 100 SQ. FT. THE FABRIC SHALL BE PLACED WITH A 12" LAP BETWEEN SHEETS, AND WITH A 6" OVERLAP ON STEEL BAR REINFORCEMENTS LYING IN THE SAME PLANE. THE FABRIC SHALL BE PLACED AT ONE-HALF DEPTH OF CONCRETE SLAB, AND SHALL EXTEND TO WITHIN 3" OF THE EDGES OF THE SLABS. COST OF WIRE FABRIC REINFORCEMENT SHALL BE INCLUDED IN UNIT PRICE BID FOR ITEM 135-4, CLASS "A" CONCRETE.

REINFORCING STEEL SHALL BE 1/2" Φ DEFORMED BARS OF STRUCTURAL OR INTERMEDIATE GRADE ONLY, AND SHALL BE PAID FOR AT THE UNIT PRICE BID, PER LB., FOR ITEM 135-12, STEEL BAR REINFORCEMENT.

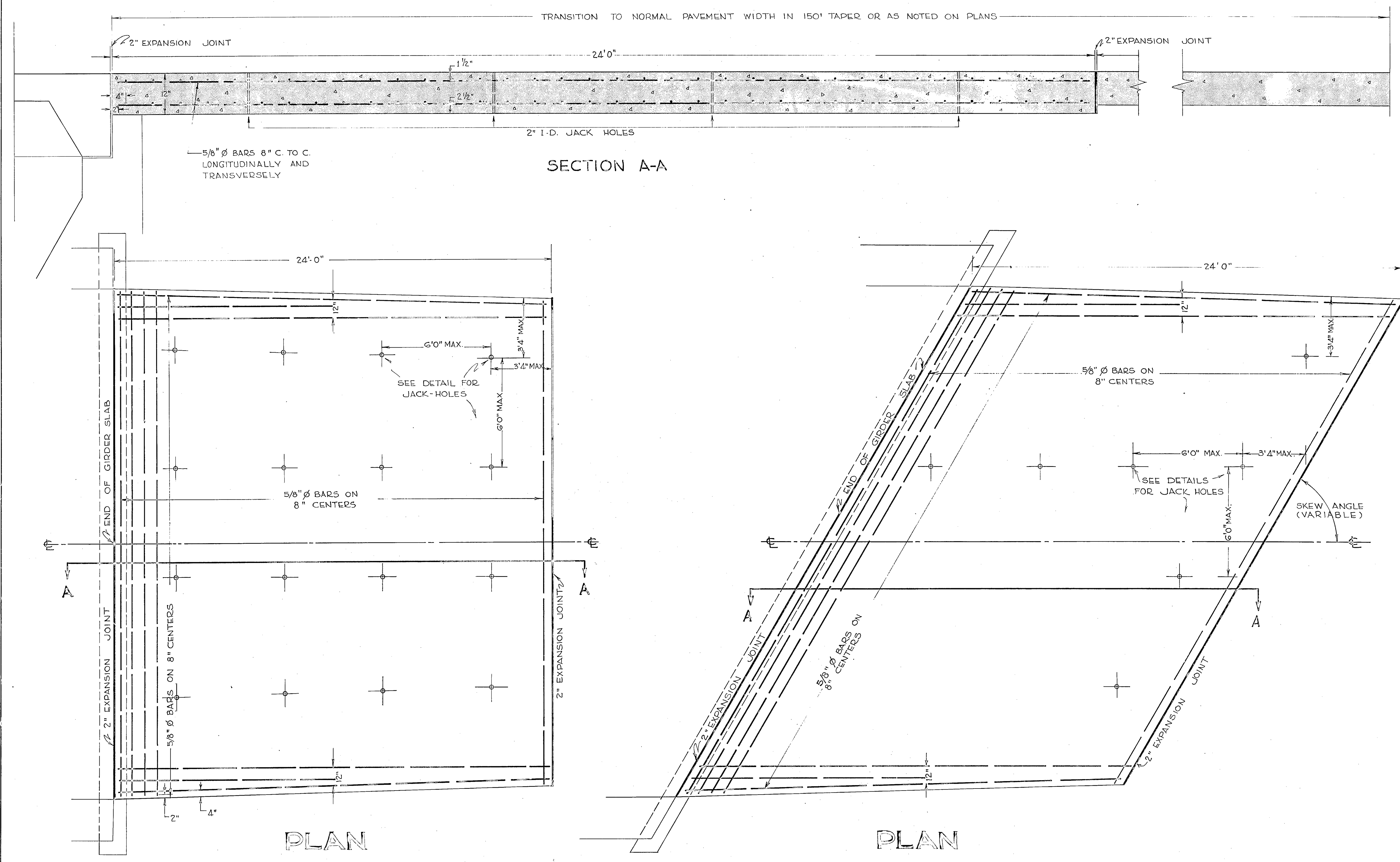
THE COST OF EXCAVATION REQUIRED FOR THE CONSTRUCTION OF THE SPILLWAY SHALL BE INCLUDED IN THE UNIT PRICE BID FOR ITEM 135-4, CLASS "A" CONCRETE, PER CU. YD.

PIPE TO BE PAID FOR AT THE UNIT PRICE BID FOR ITEM 148-44, CORRUGATED METAL PIPE DRAINS, PER. LIN. FT.

ALL CONCRETE SHALL BE CLASS "A", AND WILL BE PAID FOR AT THE UNIT PRICE BID FOR ITEM 135-4, CLASS "A" CONCRETE, PER CU. YD.

THE COST OF EXPANSION JOINTS, WHEN REQUIRED, SHALL BE INCLUDED IN THE UNIT PRICE BID FOR CLASS "A" CONCRETE.

785-16
 I 90 100367
 REVISED 4-11-63.
 REVISED 4-9-64.



DETAILS OF JACK HOLES
 JACK HOLES SHALL BE CONSTRUCTED IN A MANNER APPROVED BY THE ENGINEER.
 JACK HOLES MAY BE FORMED, OR NON-STAINING PIPE OR TUBING MAY BE CAST IN THE SLAB.
 LOCATION AND NUMBER OF HOLES MAY BE VARIED AS DIRECTED BY THE ENGINEER.

GENERAL NOTES

2" TRANSVERSE EXPANSION JOINTS WITHOUT LOAD TRANSFERS SHALL BE REQUIRED AT BRIDGE ENDS. FOR DETAILS, SEE DWG. P-E-30.

DO NOT FLARE PAVEMENT AT BRIDGE ENDS UNLESS SPECIFIED IN PLANS.

LONGITUDINAL CONSTRUCTION AND CONTRACTION JOINTS SHALL BE MADE IN ACCORDANCE WITH DWG. P-E-31 AND SHALL BE LOCATED AS SHOWN ON THE PLANS OR AS DIRECTED BY THE ENGINEER.

BASIS FOR PAYMENT:
 THIS ITEM WILL BE PAID FOR AT THE CONTRACT UNIT PRICE PER SQUARE YARD FOR CEMENT CONCRETE PAVEMENT (REINFORCED), WHICH PRICE SHALL BE FULL COMPENSATION FOR THE PAVEMENT IN PLACE, AS INDICATED OR DIRECTED, INCLUDING ALL MATERIALS, EQUIPMENT, TOOLS, LABOR AND INCIDENTALS REQUIRED TO COMPLETE THE ITEM.

PAYMENT WILL BE MADE UNDER:
 ITEM 127-21 CEMENT CONCRETE PAVEMENT (REINFORCED).....PER SQ. YD.

STATE OF TENNESSEE
 DEPARTMENT OF HIGHWAYS

**REINFORCED CONCRETE
 PAVEMENT AT BRIDGE ENDS**

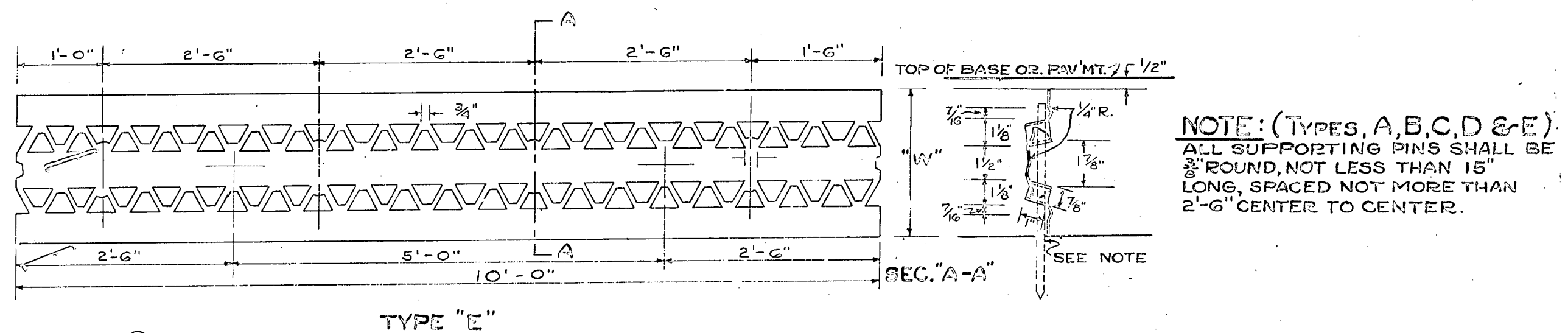
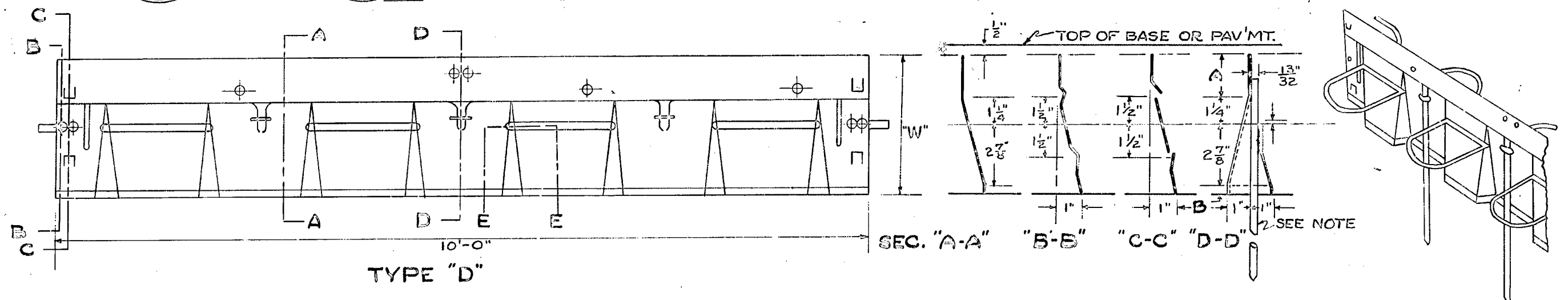
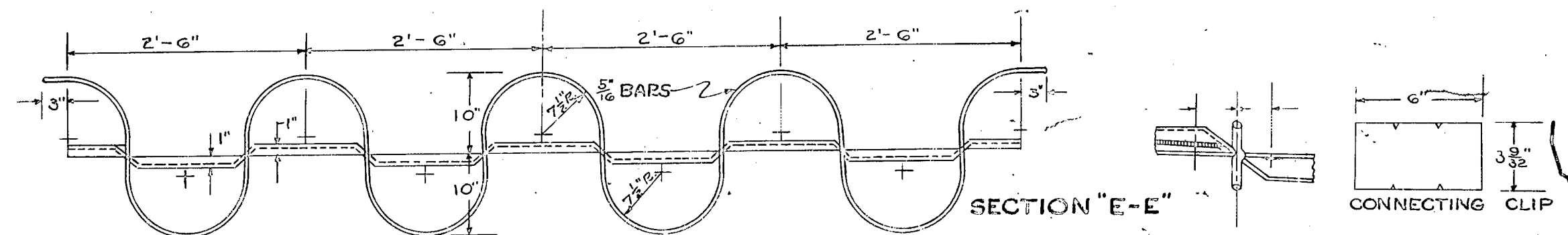
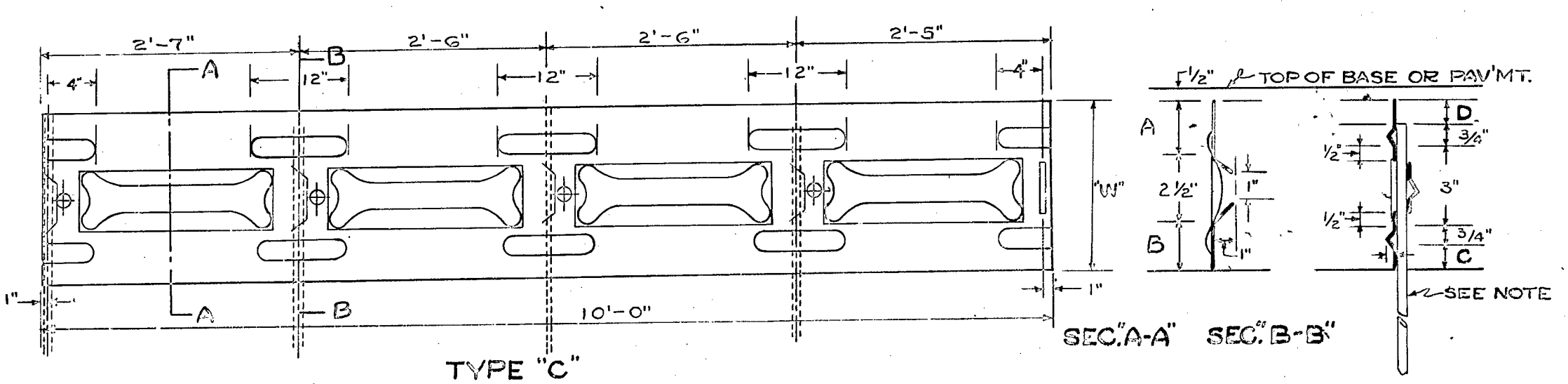
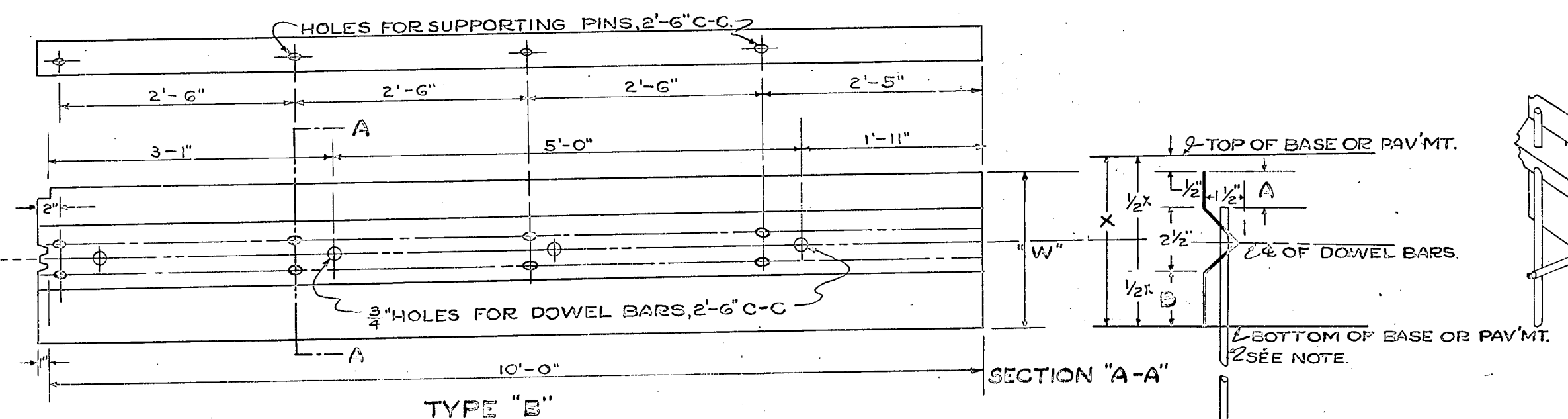
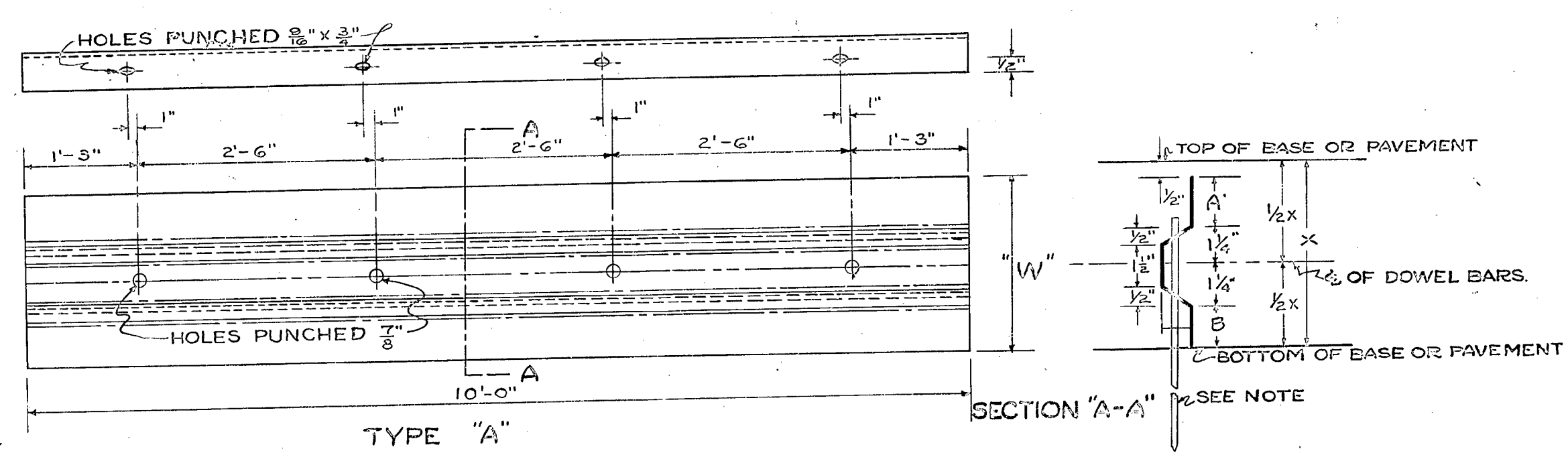
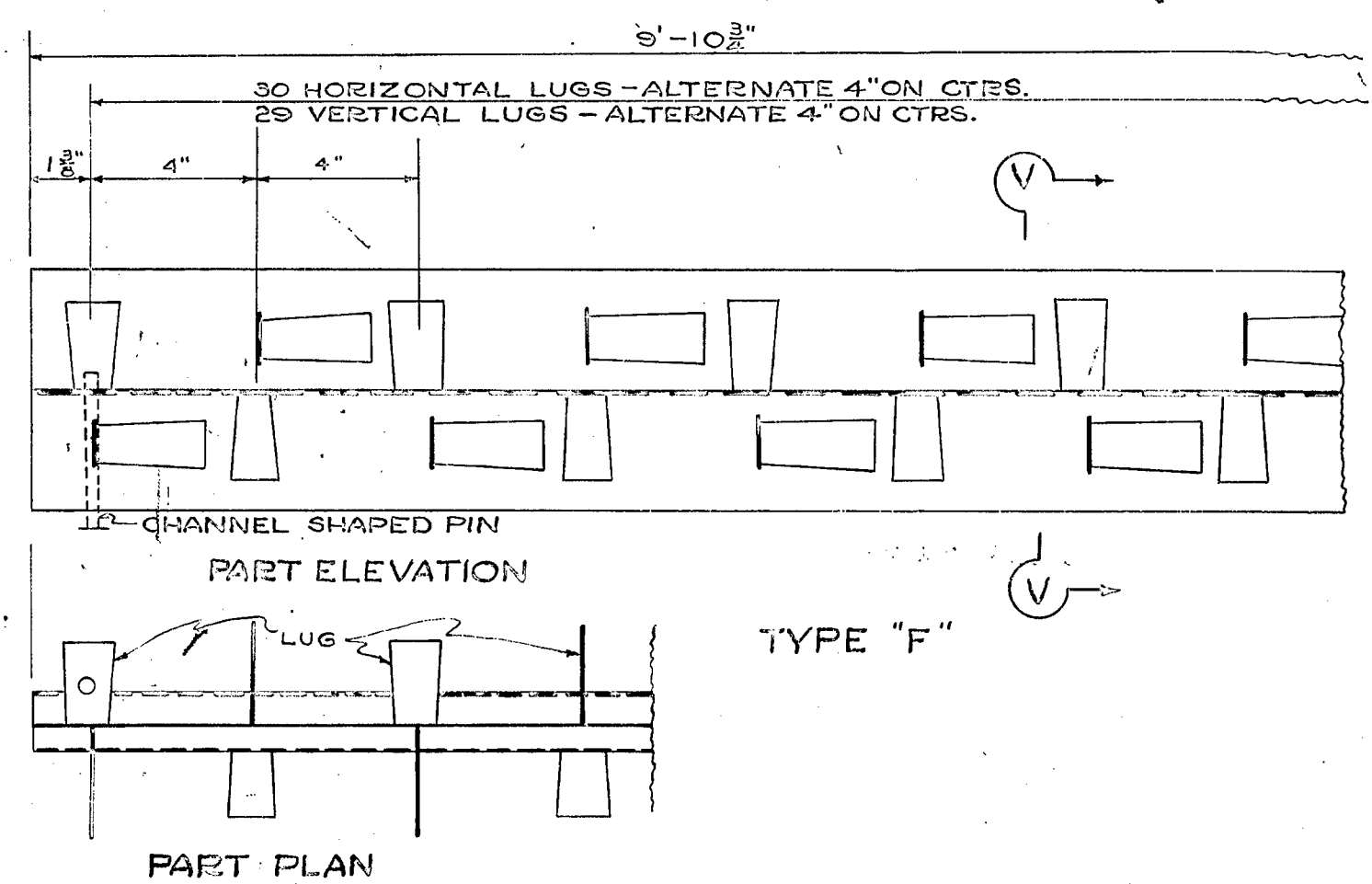
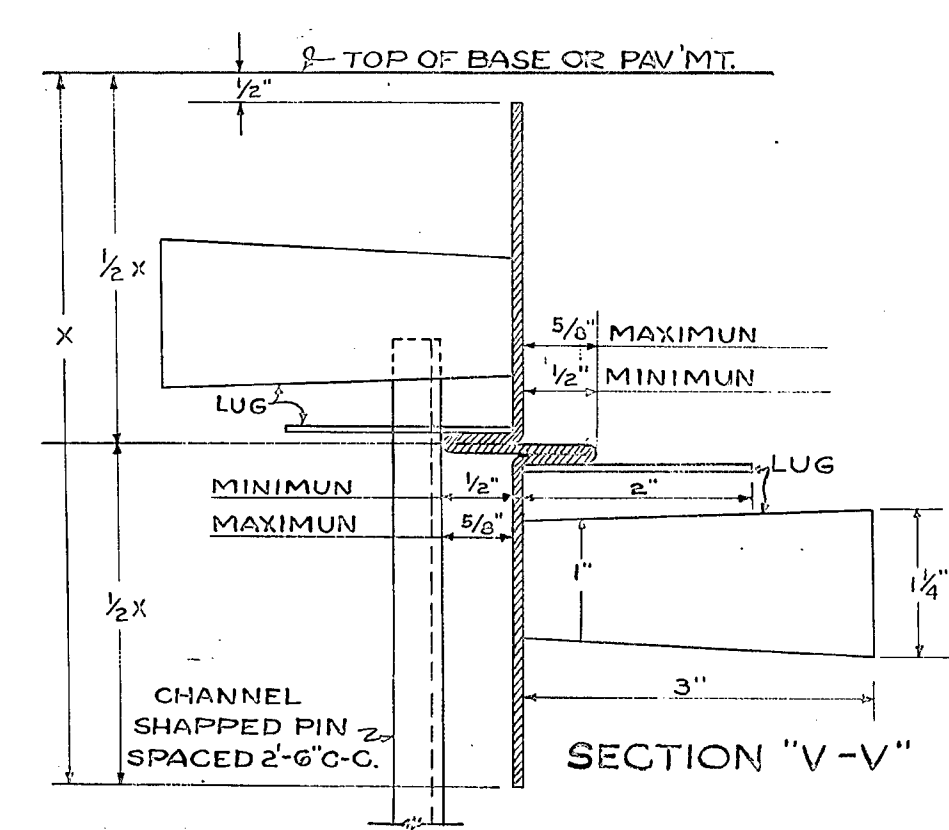
OCTOBER 1960

P-R-6

I 34 4 15-41
 Interchange

NOTE REGARDING SIZE OF DOWEL BARS ADDED.

REVISED 8-2-55
NOTE REGARDING TYPES "A" & "B" ADDED.



NOTE: (TYPES A, B, C, D & E)
ALL SUPPORTING PINS SHALL BE 3" ROUND, NOT LESS THAN 15" LONG, SPACED NOT MORE THAN 2'-6" CENTER TO CENTER.

GENERAL NOTES
THE CONTRACTOR WILL BE REQUIRED TO FURNISH CENTER STRIPS COMPLETE IN PLACE. THE COST TO BE INCLUDED IN THE UNIT PRICE BID FOR PAVEMENT OR BASE.
CENTER STRIPS WILL BE PLACED WHERE INDICATED ON THE PLANS OR DIRECTED BY THE ENGINEER. THE CENTER STRIP MUST BE PLACED IN THE CENTER OF THE PAVEMENT ON ALL WIDENED CURVES. WHEN THE PAVEMENT IS LAID IN HALF SECTIONS, GROOVED METAL CENTER STRIPS WILL BE REQUIRED TO PROVIDE A PLACE FOR BENDING DOWEL BARS. THESE DOWEL BARS MUST BE OF STRUCTURAL GRADE STEEL.
DOWEL BARS USED IN TYPES "A" "B" "C" & "E" 2'-0" LONG SPACED 2'-6" CENTER TO CENTER.
DOWEL BARS SHALL BE 1/2" ϕ DEFORMED STEEL BARS.

SPECIAL NOTE
(REGARDING TYPES "A" & "B" CENTER STRIPS)
PERMISSION WILL BE GRANTED TO RE-USE TYPES "A" & "B" METAL CENTER STRIPS OR A GROOVE MAY BE FORMED BY OTHER METHODS WHICH WILL PRODUCE A GROOVE SATISFACTORY TO THE ENGINEER.

STATE OF TENNESSEE
DEPARTMENT OF HIGHWAYS
AND PUBLIC WORKS
NASHVILLE
DETAILS OF
STANDARD

METAL LONGITUDINAL JOINTS

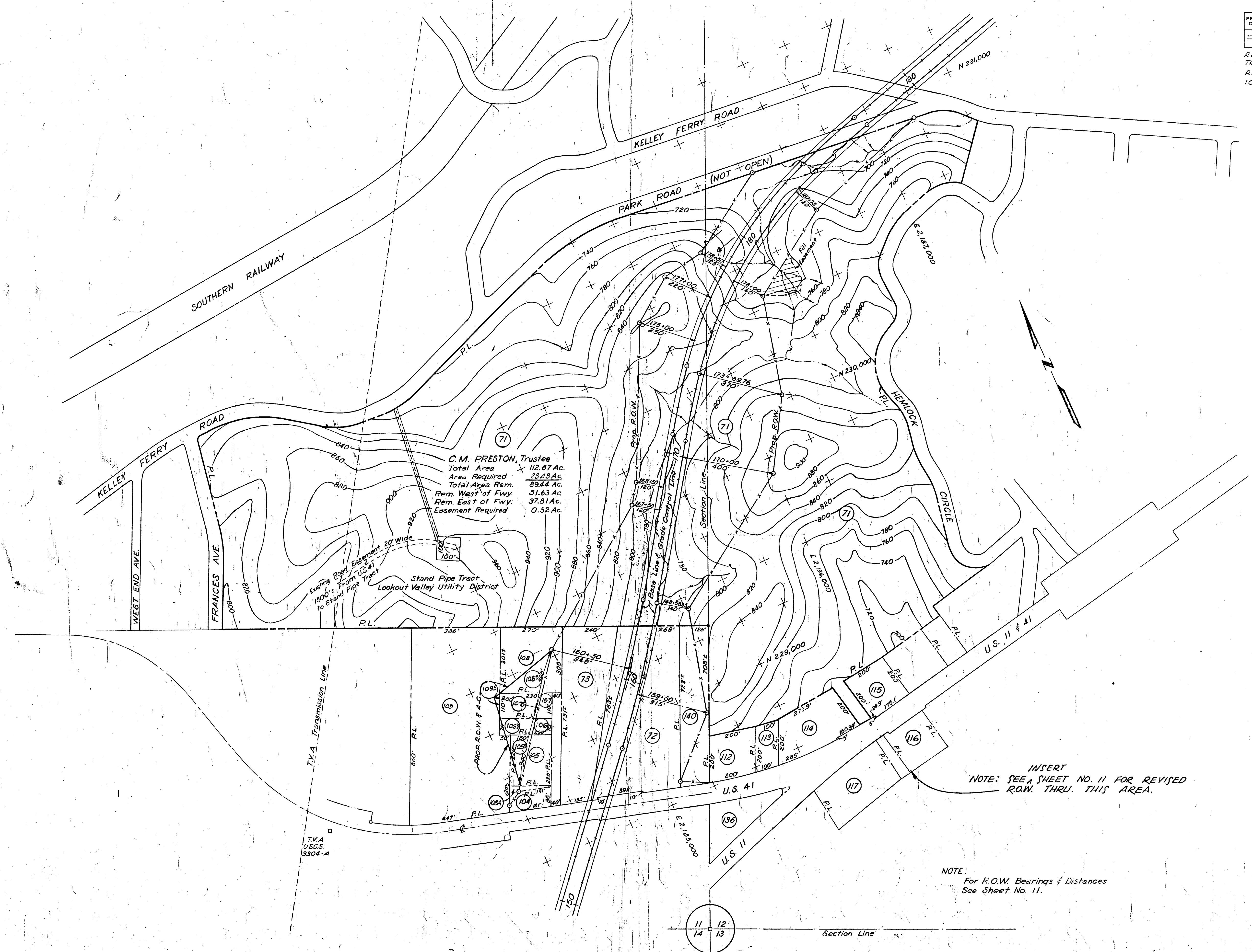
JULY 1935

FILE IN
DIST. NO. 14

R.O.W.				
FED. ROAD DIST. NO.	T E N	FEDERAL AID PROJECT NO.	FISCAL YEAR	SHEET NO. TOTAL SHEETS
3	N	124-3(1)117	1966	39 41
(R.O.W.)				

REV. 6-30-66 REV. R.O.W. THRU TR. # 118, SEE INSERT SHT. NO. 11.
REV. 9-18-67: ADDED TRACTS 1055, 1063, 1075, 1085 & 1095.

124-3(1)117-64 4 181
3



INSERT
NOTE: SEE SHEET NO. 11 FOR REVISED
R.O.W. THRU THIS AREA.

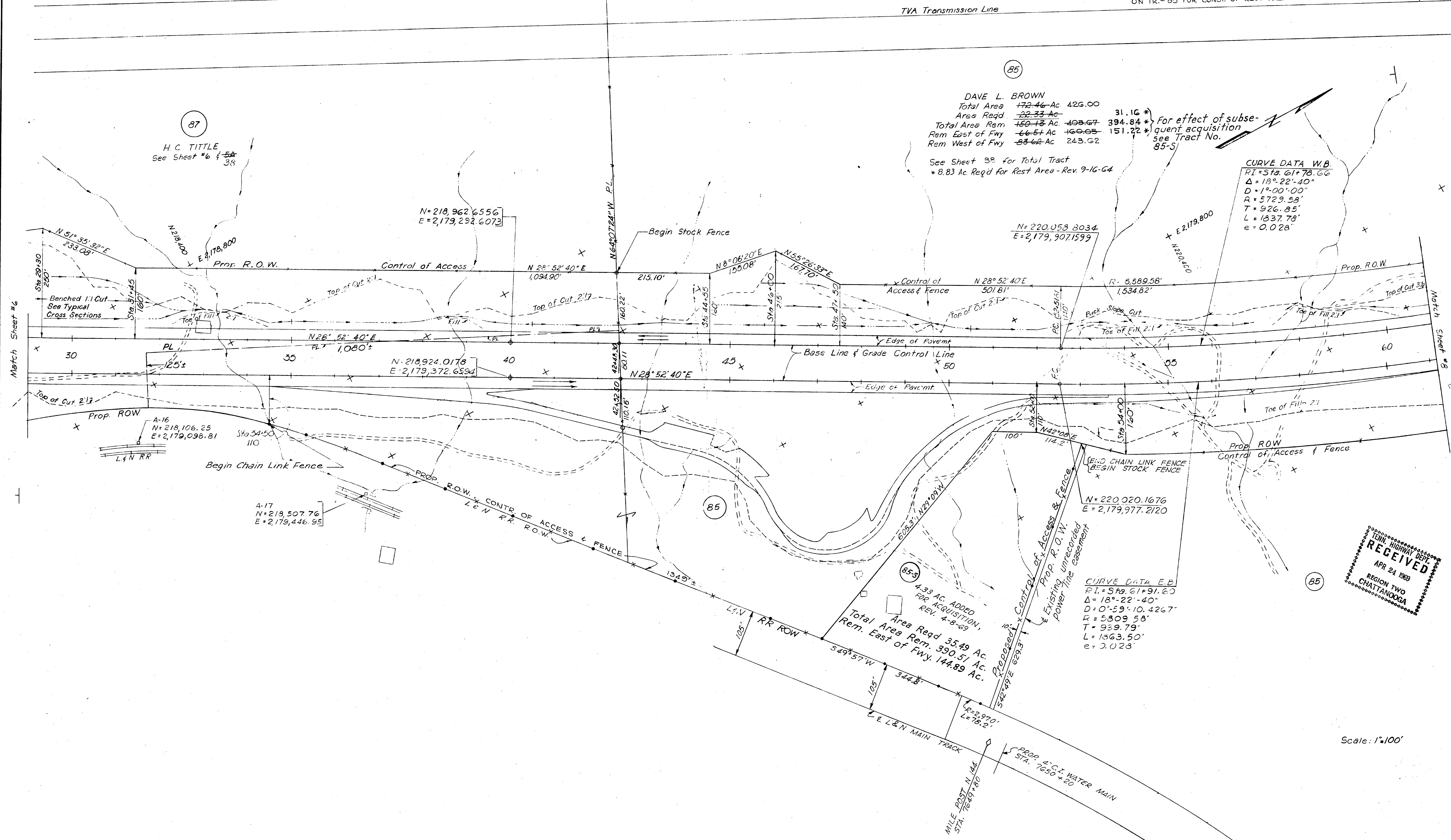
NOTE:
For R.O.W. Bearings & Distances
See Sheet No. 11.

Scale: 1" = 200'
Contour Interval: 20'

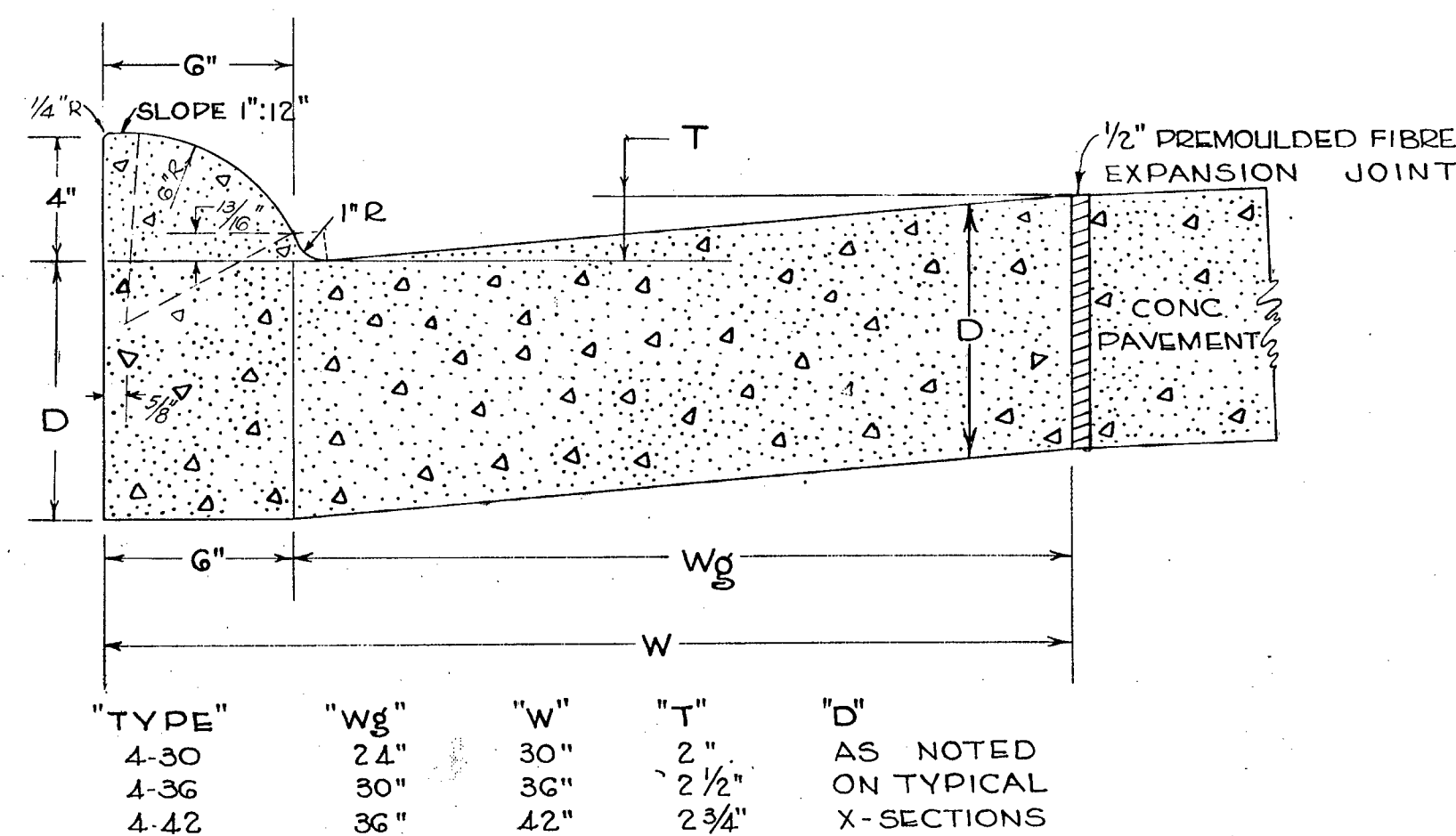
REV. 4-21-69: 4.33 AC. ADDED ON TRACT NO. 85 BY REV. 4-8-69 CUT OUT AND ASSIGNED NO. 85-S

R.O.W.				
FED. ROAD DIST. NO.	TENN.	FEDERAL AID PROJECT NO.	FISCAL YEAR	SHEET NO. TOTAL SHEETS
3	N.	I-24-3(1)117 (R.O.W.)	1962	7 41

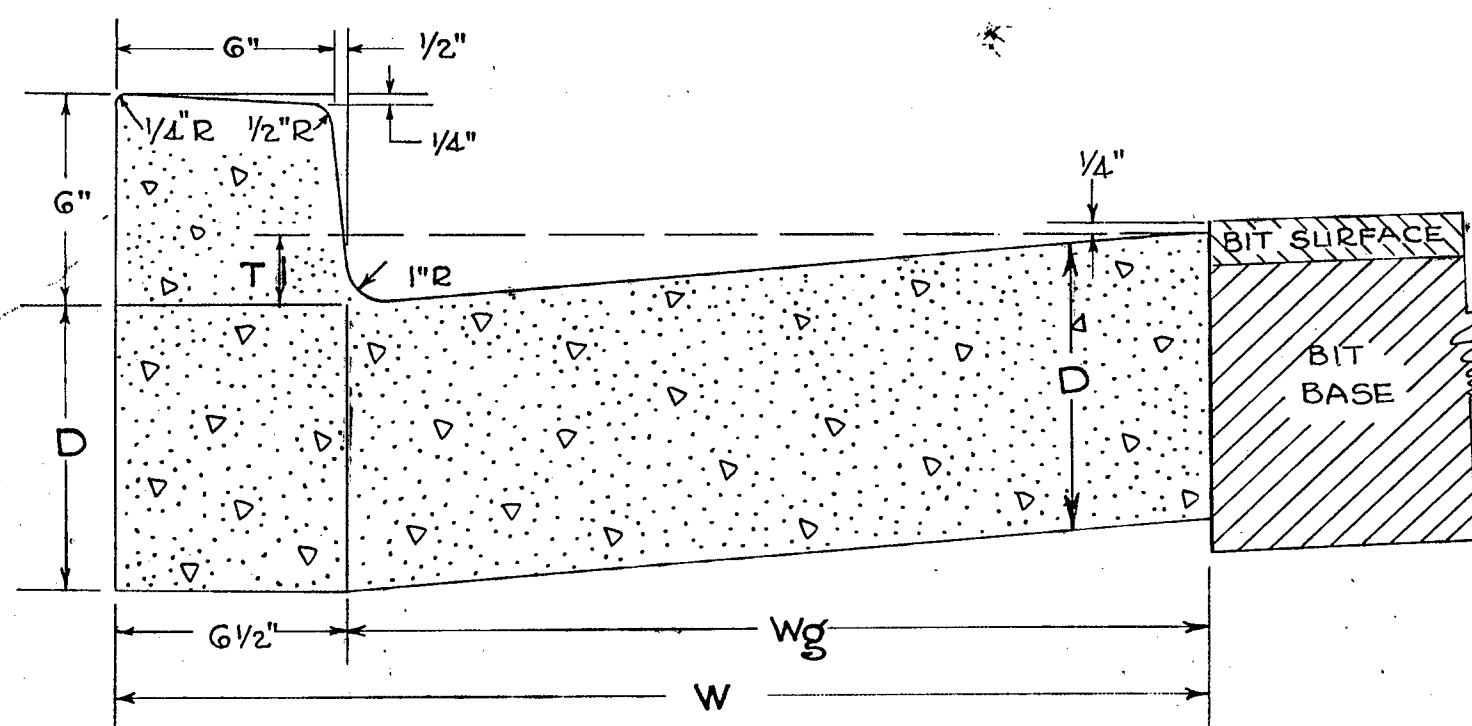
REV. 5-16-64: ADD'L. 8.83 AC. TAKEN ON TR. # 85, FOR CONST. OF REST AREA
REV. 4-8-69: ADD'L. 4.33 AC. TAKEN ON TR. # 85 FOR CONST. OF REST AREA.
REV. 1-21-64: TRACT NO. 85 EAST REM. INCREASED BY 53.54 AC. & WEST REM. INCREASED BY 100.00 AC.



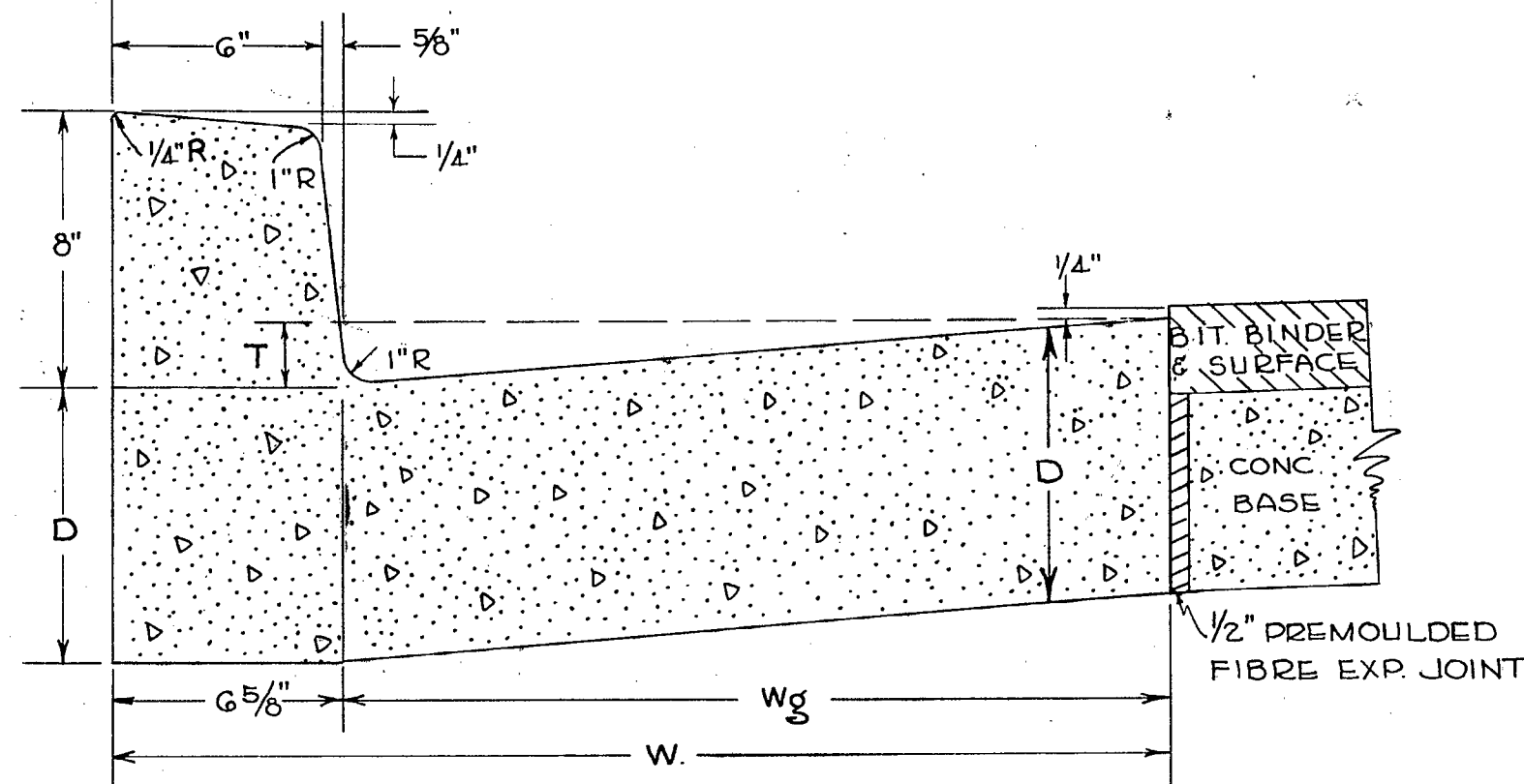
RECEIVED
 APR 24 1969
 REGION TWO
 CHATTANOOGA



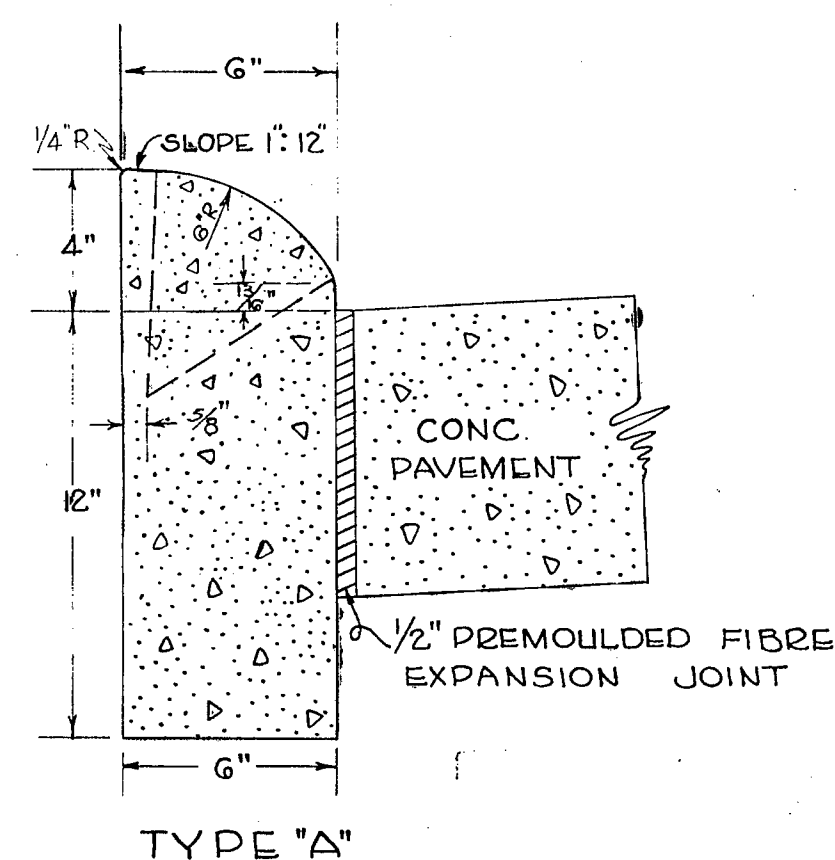
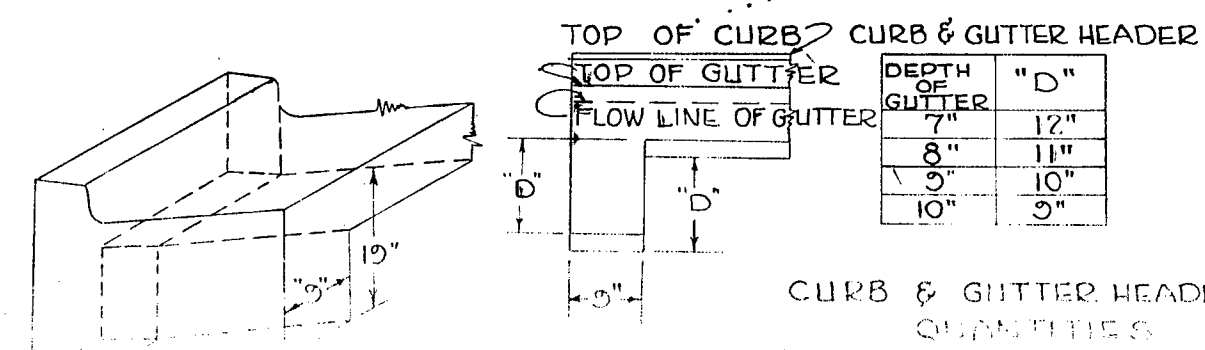
4" MOUNTABLE CONC. COMBINED CURB & GUTTER



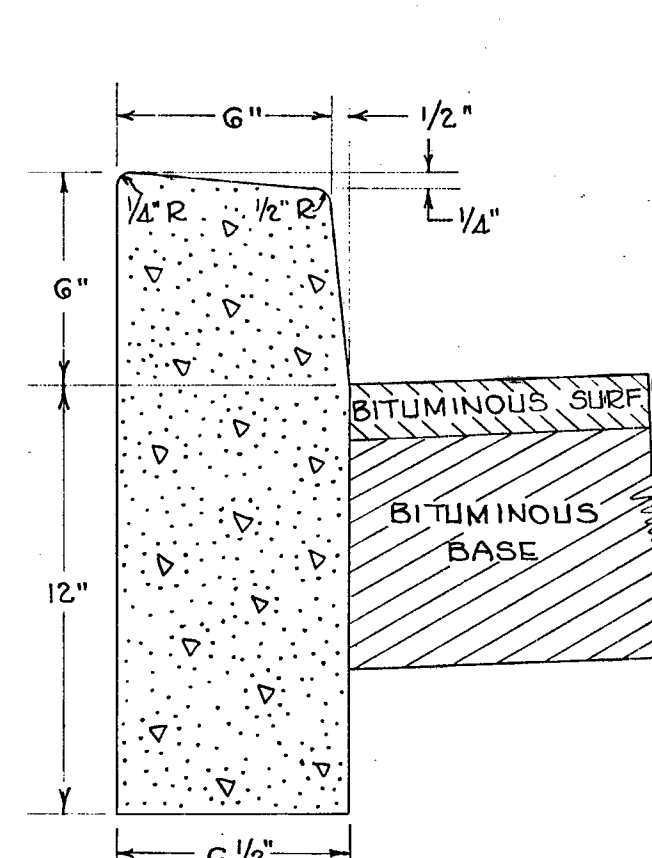
6" CONC. COMBINED CURB & GUTTER



8" CONC. COMBINED CURB & GUTTER

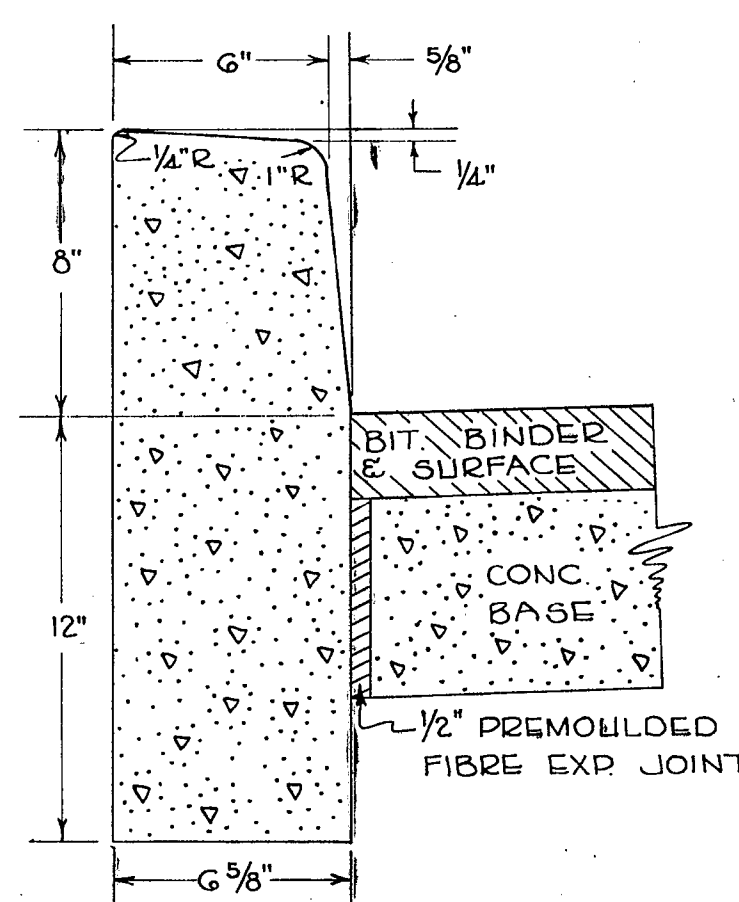


4" MOUNTABLE DETACHED CONCRETE CURBS



TYPE "A"

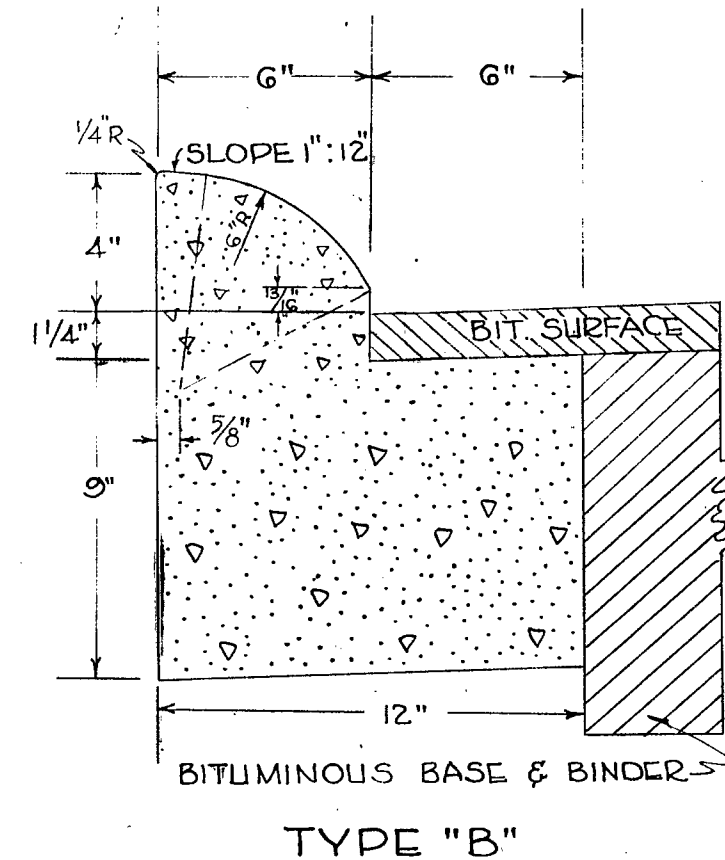
6" DETACHED CONCRETE CURBS



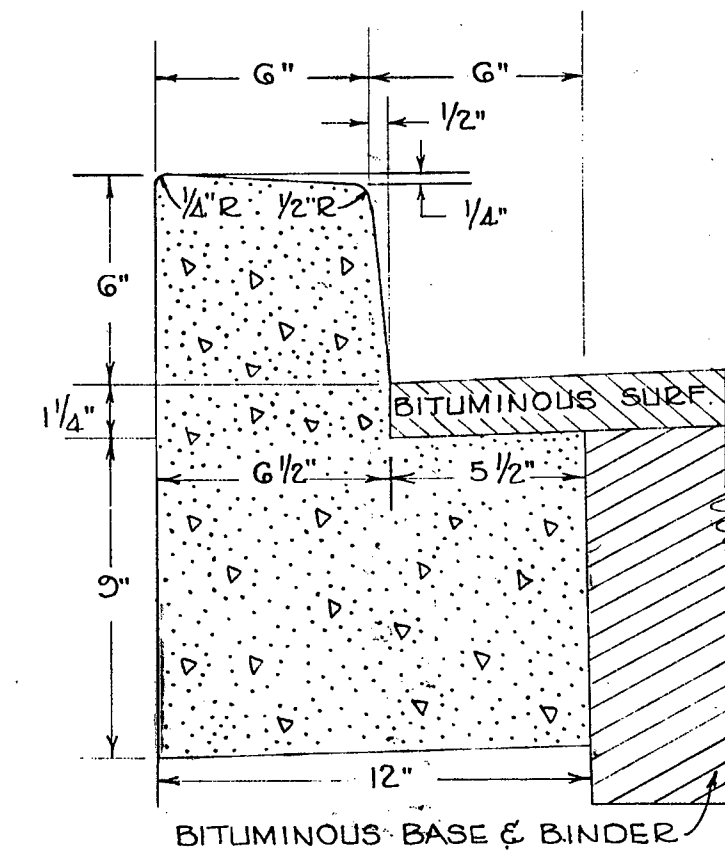
TYPE "A"

8" DETACHED CONCRETE CURBS

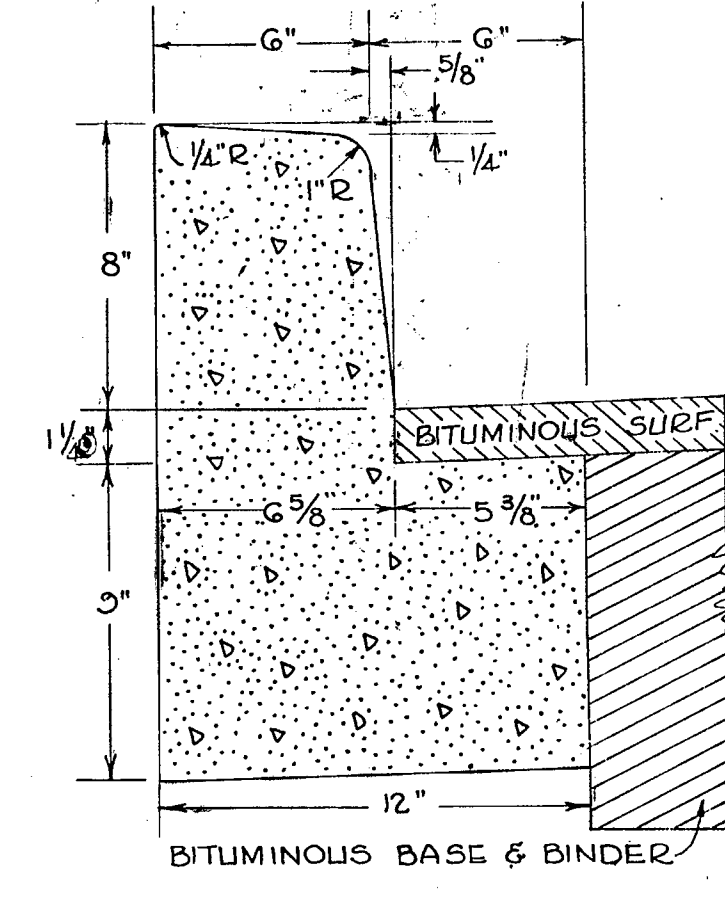
QUANTITIES FOR COMBINED CURB & GUTTER								
HEIGHT OF CURB	DEPTH BY WIDTH OF GUTTER	CU. YDS PER LIN. FT.	DEPTH BY WIDTH OF GUTTER	CU. YDS PER LIN. FT.	DEPTH BY WIDTH OF GUTTER	CU. YDS PER LIN. FT.	DEPTH BY WIDTH OF GUTTER	CU. YDS PER LIN. FT.
LOWERED	7"X 30"	0.05717	8" X 30"	0.06488	9"X 30"	0.07260	10"X 30"	0.08033
	X 36"	0.06800	X 36"	0.07723	X 36"	0.08645	X 36"	0.09575
	X 42"	0.07877	X 42"	0.08957	X 42"	0.10037	X 42"	0.11118
4"	7"X 30"	0.05204	8"X 30"	0.06076	9"X 30"	0.06948	10"X 30"	0.07820
	X 36"	0.06384	X 36"	0.07410	X 36"	0.08536	X 36"	0.09662
	X 42"	0.07624	X 42"	0.08722	X 42"	0.09820	X 42"	0.10918
MOUNTAIN	7"X 30"	0.05717	8" X 30"	0.06488	9"X 30"	0.07260	10"X 30"	0.08033
	X 36"	0.06800	X 36"	0.07723	X 36"	0.08645	X 36"	0.09575
	X 42"	0.07877	X 42"	0.08957	X 42"	0.10037	X 42"	0.11118



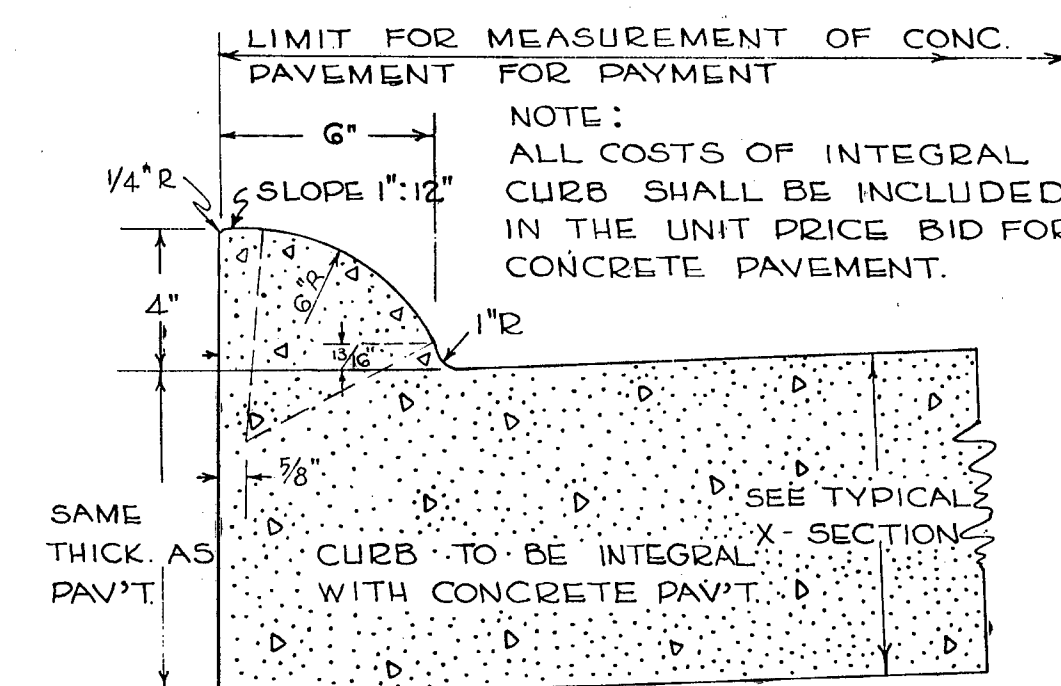
TYPE "B"



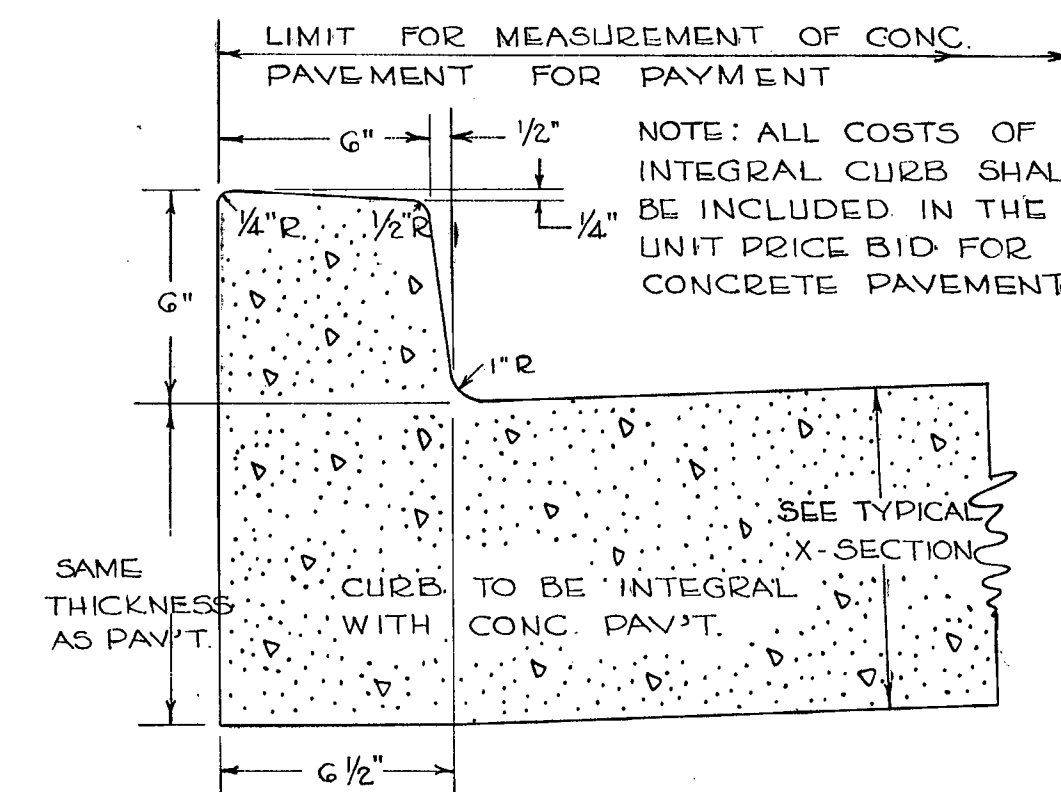
TYPE "B"



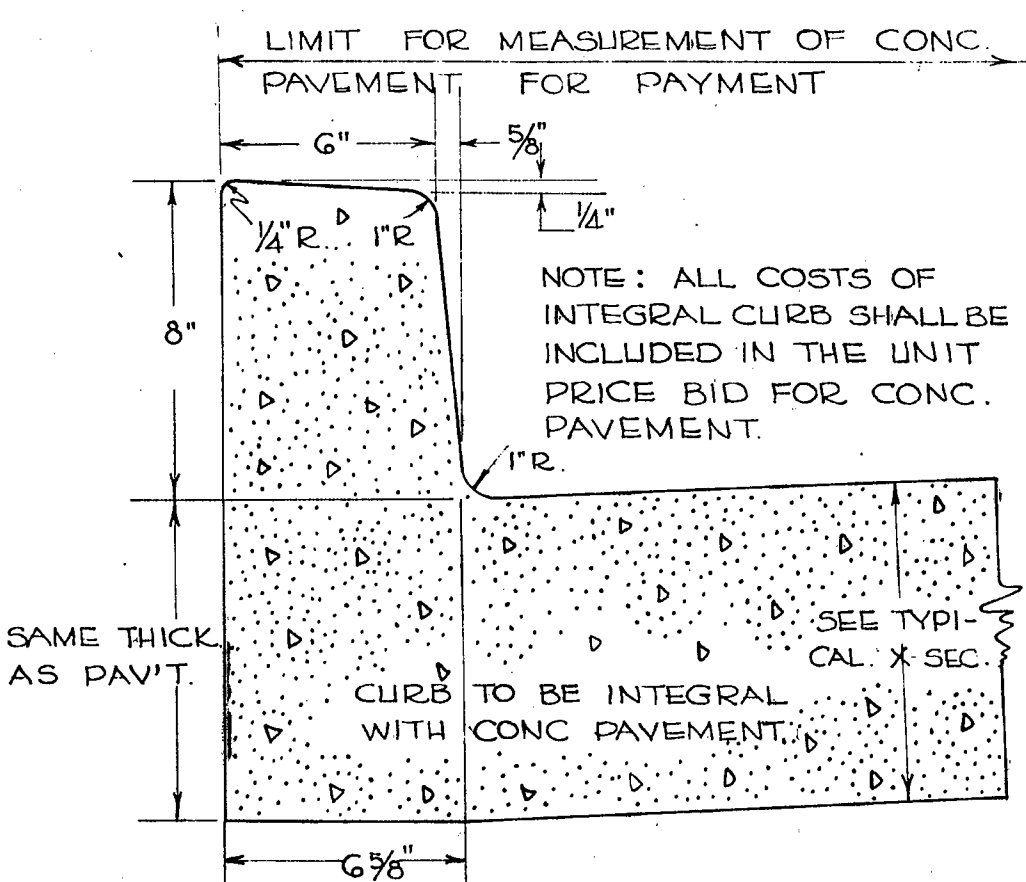
TYPE "B"



4" MOUNTABLE INTEGRAL CONC. CURB



6" INTEGRAL CONC. CURB



8" INTEGRAL CONC. CURB

QUANTITIES FOR DETACHED CURB		
HEIGHT OF CURB	CU. YDS PER LIN. FT.	TYPE "B"
4" MOUNTABLE	0.02360	0.03349
6"	0.02950	0.03973
8"	0.03322	0.04312

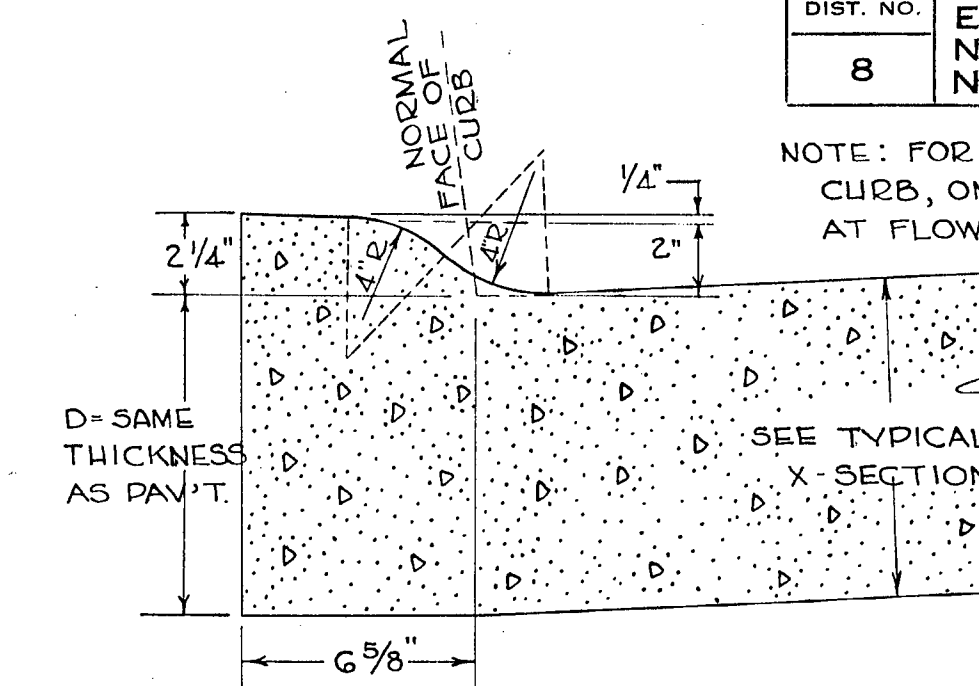
NOTES

THE UNIT PRICE BIDS ON CONCRETE CURB, CONC. CURB AND GUTTER AND CONCRETE PAVEMENT WILL INCLUDE ANY CURVED SECTION REQUIRED TO BE BUILT CONFORMING TO SECTIONS SHOWN ON THIS SHEET.

REVISED 7-1-64: SPECIAL NOTE ADDED.

FED. ROAD DIST. NO.	TENN. PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
8	1924	1924	21	51

NOTE: FOR DETACHED CURB, OMIT RADIUS AT FLOW LINE.



TO BE BUILT AS COMBINED CURB AND GUTTER, DETACHED CURB OR INTEGRAL CURB AS NOTED ON THE PLANS OR AS DIRECTED BY THE ENGINEER.

MEASUREMENT & PAYMENT OF LOWERED INTEGRAL CURB SHALL BE THE SAME AS FOR NORMAL HEIGHT INTEGRAL CURB.

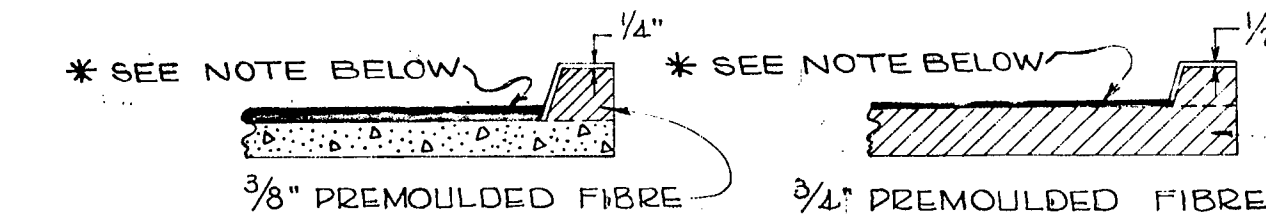
CURB DRAIN

CURB DRAINS SHALL BE PLACED WHERE AND AS DIRECTED BY THE ENGINEER. COSTS OF PROVIDING OPENINGS TO BE INCLUDED IN UNIT PRICE BID FOR CURB & GUTTER, OR DETACHED CURB, OR CONC. PAVEMENT.

JOINT DETAILS

CONCRETE COMBINED CURB & GUTTER & DETACHED CURB. A 1/2" PREMOULDED EXPANSION JOINT SHALL BE PLACED AT 60' INTERVALS IN ALL DETACHED CURBS & COMBINED CURBS AND GUTTERS. ADDITIONAL JOINTS ARE TO BE PLACED AT TANGENT POINTS OF CIRCULAR CURBS AND AT OTHER PLACES WHERE STRESSES MAY DEVELOP AS DIRECTED BY THE ENGINEER. EXPANSION JOINTS IN CURB SHALL BE SPACED SO AS TO LINE UP WITH JOINTS IN ADJACENT PAVEMENT. EDGES OF JOINTS SHALL BE FINISHED ON 1/4" RADIUS. ALL COSTS OF JOINTS SHALL BE INCLUDED IN THE UNIT PRICE BID FOR CURBS AND GUTTERS.

JOINT DETAILS INTEGRAL CONCRETE CURB



CONTRACTION (DUMMY) JOINT EXPANSION JOINT. EXPANSION AND CONTRACTION (DUMMY) JOINTS SHALL BE PLACED IN INTEGRAL CURB AT ALL LOCATIONS WHERE EXPANSION AND CONTRACTION (DUMMY) JOINTS ARE REQUIRED IN THE ADJACENT PAVEMENT. EDGES OF JOINTS SHALL BE FINISHED ON 1/4" RADIUS. ALL COSTS OF JOINTS SHALL BE INCLUDED IN THE UNIT PRICE BID FOR CONCRETE PAVEMENT.

SEAL IN ACCORDANCE WITH SPECIAL PROVISION "REGARDING PAVEMENTS JOINTS"

SPECIAL NOTE

THE FRONT FACE OF THE CURBS FOR ALL DEGREES OF CURVATURE SHALL CONFORM TO THE CONTOUR OF THE CURVE AND NO CHORD SECTIONS WILL BE PERMITTED.

STATE OF TENNESSEE
DEPARTMENT OF HIGHWAYS AND PUBLIC WORKS
DIVISION OF PLANS
NASHVILLE

REV. 5-10-54
SPECIFICATIONS FOR JOINT SEALING COMPOUND REVISED.
REV. 5-2-55
ALTERNATE FOR JOINT SEALING COMPOUND ADDED.
REV. 2-25-56
CHANGED 4" CURB DETAIL

REVISED 10-24-56
SPEC. FOR JOINT SEALING COMPOUND REVISED.

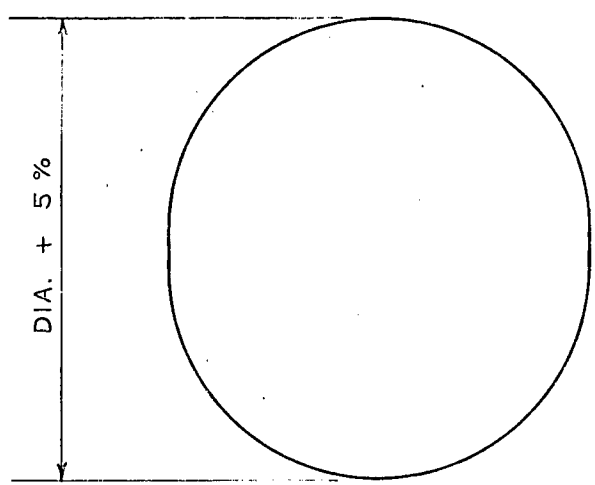
REVISED 3-6-56
SPEC. FOR HOT APPLIED SEALING COMPOUND CHANGED.
REVISED 4-8-59: SPEC. FOR JOINT SEALING COMPOUND REVISED.

ALTERNATE METHODS OF STRUTTING
FOR
ROUND CORR. METAL RIVETED & STR. PLATE PIPE

NOTE: DO NOT STRUT PIPE ARCHES
(SEE NOTE ON DWG. CM-1-4 REGARDING PROPS)

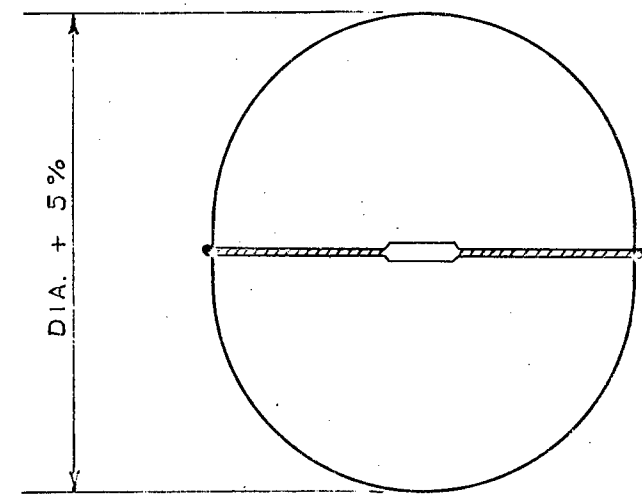
FED. ROAD DIST. NO.	TENN.	FEDERAL AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
8	N.		1958	11	17

REVISED 8-12-58
ADDED SPECIAL NOTE REGARDING
ADDITIONAL ALTERNATE METHOD
OF STRUTTING.



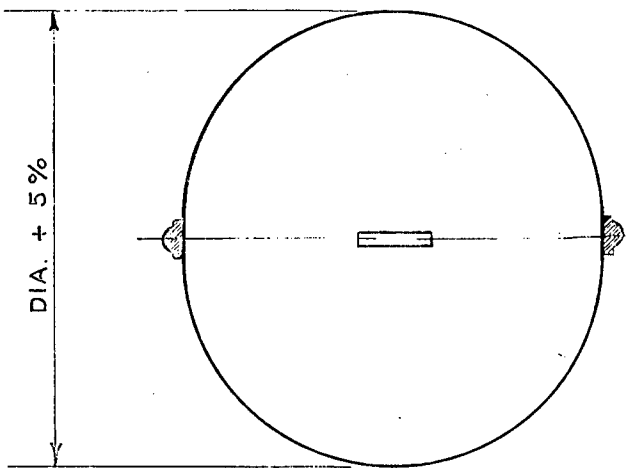
FACTORY FORMED ELLIPTICAL SHAPE
FOR
STRUCTURAL PLATE AND RIVETED PIPE

NOTE:
FACTORY FORMED 5% ELLIPTICAL PIPES CAN BE INSTALLED WITHOUT TIMBER STRUTS UP THROUGH 108 INCH DIAMETER TO 30 FEET OF COVER AND OVER 108 INCH DIAMETER TO 20 FEET OF COVER, WHEN WELL COMPACTED GRANULAR MATERIAL IS USED AS BACKFILL. IF BACKFILL IS PLASTIC MATERIAL, SUCH 5% ELLIPSES CAN BE USED WITH TIMBER STRUTS WEDGED IN PLACE WITHOUT FURTHER ELONGATION.



WIRE STRUTS
FOR
RIVETED PIPE ONLY

NOTE:
WIRES SHALL BE PLACED AT 2-FOOT INTERVALS ON THE HORIZONTAL DIAMETERS OF PIPE TO BE WIRE-STRUTTED. AT LEAST FOUR NO. 9 WIRES SHALL BE USED AT EACH POINT. THE WIRES SHALL BE TWISTED TO HOLD THE PIPE TO THE REQUIRED DEFORMED SHAPE AND SHALL BE OF SUFFICIENT LENGTH SO THAT WHEN UNTWISTED THEY WILL PERMIT THE PIPE TO ASSUME ITS NORMAL SHAPE WITHOUT BREAKING THE WIRES.

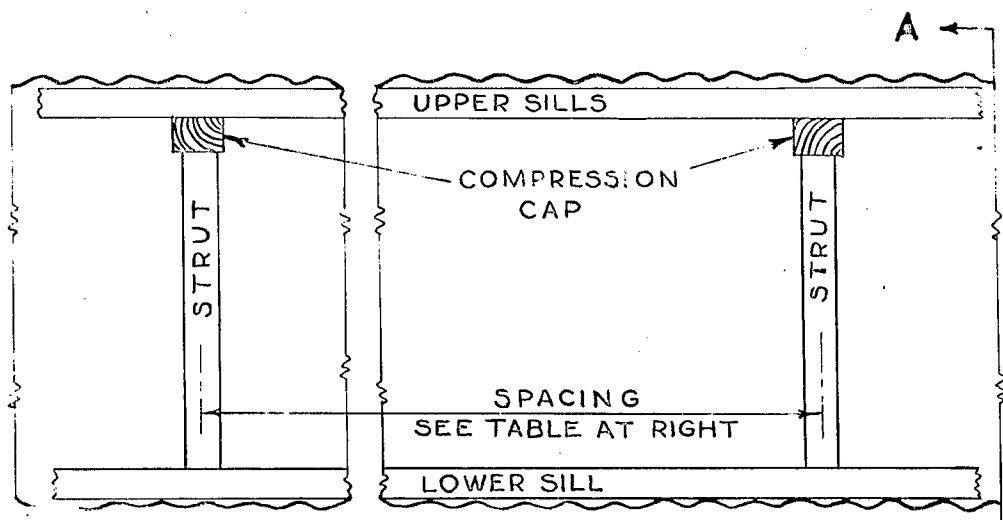


ROD & TURNBUCKLE STRUTS
FOR
RIVETED PIPE ONLY

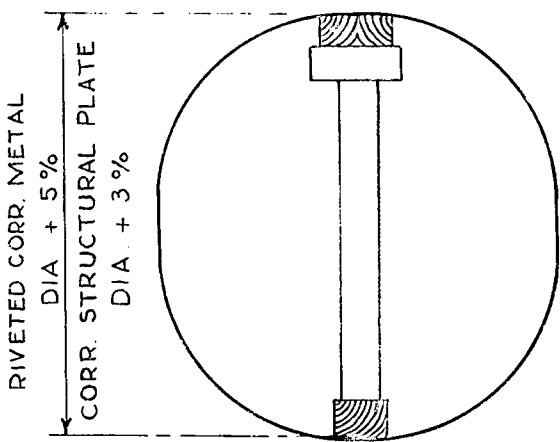
NOTE:
RODS SHALL BE PLACED AT 2-FOOT INTERVALS ON THE HORIZONTAL DIAMETERS OF PIPE TO BE ROD-STRUTTED. THE DIAMETER OF EACH ROD SHALL NOT BE LESS THAN 1/2 INCH. EACH ROD OR ROD ASSEMBLY IF TURNBUCKLES ARE USED, SHALL BE THREADED ON EACH END AND SHALL BE OF SUFFICIENT LENGTH TO ACCOMMODATE A NUT AND WASHER AND A 3/4"x18" WOOD BLOCK OR A 2"x2"x18" (MIN) ANGLE ON EACH END, IN ADDITION TO SPANNING THE DIAMETER OF THE PIPE. THE WOOD BLOCKS OR ANGLES SHALL BE PLACED ON THE OUTSIDE OF THE PIPE AND BETWEEN THE PIPE AND WASHERS.

WITH ROD AND TURNBUCKLE STRUTS, A SCHEDULE SHALL BE SET TO BACK OFF THE TURNBUCKLES AS THE FILL IS PLACED. ALL TURNBUCKLES IN EACH LINE OF PIPE SHALL BE RELEASED UNIFORMLY, A TURN OR TWO AT A TIME. ALLOW SOME TENSION TO REMAIN IN THE RODS UNTIL THE FILL HAS BEEN COMPLETED.

TIMBER STRUTS
FOR
STRUCTURAL PLATE AND RIVETED PIPE



LONGITUDINAL SECTION



END VIEW A-A

SPACING IN FEET OF TIMBER STRUTS FOR CORR. METAL AND CORR. STRUCTURAL PLATE PIPE

PIPE DIA. (IN)	STRUT SIZE (IN)	HEIGHT OF COVER IN FEET										
		5	10	15	20	30	40	50	60	70	80	100
48	4 x 4	6.0					5.0	3.5				
	4 x 6						6.0	5.0	4.0	3.5	3.0	
	6 x 6							6.0	5.0	4.5	4.0	3.5
	8 x 8										6.0	5.0
60	4 x 4	6.0	6.0	6.0	6.0	4.0	3.0					
	4 x 6					6.0	4.5	3.5	3.0			
	6 x 6						5.5	4.5	4.0	3.5	3.0	
	8 x 8								5.5	4.5	4.0	
72	4 x 4	6.0	6.0	6.0	5.0	3.0						
	4 x 6				6.0	5.0	3.5	3.0				
	6 x 6						6.0	4.5	4.0	3.5	3.0	3.0
	8 x 8								5.0	4.5	4.0	3.5
84	4 x 4	6.0	6.0	5.5	4.0							
	4 x 6				5.5	4.0	3.0					
	6 x 6					6.0	5.0	4.0	3.5	3.0		
	8 x 8							5.0	4.5	4.0	3.5	3.0
96	4 x 4	6.0	5.5	4.0	3.0							
	4 x 6				6.0	4.5	3.0					
	6 x 6					5.5	4.5	3.5	3.0			
	8 x 8							5.5	4.5	4.0	3.5	3.0
108	4 x 4	6.0	4.0	3.0								
	4 x 6				6.0	4.5	3.0					
	6 x 6					6.0	5.0	4.0	3.5	3.0		
	8 x 8									4.5	4.0	3.5
120	4 x 4	6.0	4.0	3.0								
	4 x 6				6.0	6.0	4.0	3.0				
	6 x 6					6.0	5.5	4.0	3.5	3.0		
	8 x 8							5.0	4.0	3.5	3.0	
132	4 x 4	6.0	3.0									
	4 x 6				6.0	6.0	5.0	3.5				
	6 x 6					6.0	6.0	4.5	3.5	3.0		
	8 x 8							5.5	4.5	4.0	3.5	3.0
144	4 x 4	4.5										
	4 x 6				6.0	6.0	4.5	3.0				
	6 x 6					6.0	6.0	5.5	4.0	3.0		
	8 x 8							5.0	4.0	3.5	3.0	
156	4 x 4	6.0	6.0	5.0	3.5							
	4 x 6				6.0	6.0	4.5	3.0				
	6 x 6					6.0	4.5	3.5	3.0			
	8 x 8											
168	4 x 4	6.0	5.0	3.5								
	4 x 6				6.0	6.0	5.0	3.5				
	6 x 6					6.0	5.0	4.0	3.0			
	8 x 8											
180	4 x 4	6.0	4.0	3.0								
	4 x 6				6.0	5.5	4.0	3.0				
	6 x 6					6.0	4.5	3.5				
	8 x 8											

NOTE:
TRANSVERSE CAPS AND SILLS SHOULD BE OF SAME SIZE TIMBER AS STRUTS AND PLACED WITH LEAST DIMENSION VERTICAL. LENGTH OF STRUTS SHOULD BE DIAMETER OF PIPE TIMES 1.03 MINUS (3) THREE TIMES THE LEAST DIMENSION OF STRUT. STRUT SPACING COMPUTED FOR FULL DIMENSION (NOT NOMINAL). SOUND STRUCTURAL TIMBER BASED ON A.A.S.H.O. TIMBER COLUMN FORMULA $\frac{P}{A} = C(1 - \frac{F}{C})^2$ USING $C = 3500$, $F = 16 \times 10^6$ LB. FOR TEMPORARY CONSTRUCTION. FOR PIPE DIAMETERS NOT SHOWN ABOVE, INTERPOLATE OR USE NEXT LARGER DIMENSION. TIMBER STRUTS SHALL BE LEFT IN PLACE UNTIL FILL IS CONSOLIDATED OR SHALL BE REMOVED AT THE DIRECTION OF THE ENGINEER.

GENERAL NOTES

THE NOMINAL HORIZONTAL DIAMETER SHALL BE REDUCED APPROXIMATELY 5 PER CENT BY THE USE OF ROD OR WIRE STRUTS OR BY TIMBERS EXCEPT BITUMINOUS COATED AND PAVED INVERT PIPE SHALL NOT BE STRUTTED WITH TIMBERS. A TOLERANCE OF 20 PER CENT IN THE 5 PER CENT DIAMETER REDUCTION WILL BE PERMITTED. IF THE METHOD OF STRUTTING AS USED HAS CAUSED ANY DAMAGE TO THE PIPE, THE CONTRACTOR SHALL, AT HIS EXPENSE, REPLACE SUCH PIPE OR REPAIR IT TO THE SATISFACTION OF THE ENGINEER.

STRUTS SHALL BE LEFT IN PLACE UNTIL THE FILL IS COMPACTED, AFTER WHICH THE STRUTS SHALL BE REMOVED AS DIRECTED.

HOLES FOR ROD OR WIRE STRUTS SHALL NOT BE LARGER THAN NECESSARY.

SPECIAL NOTE

FACTORY FORMED 5% ELLIPTICAL RIVETED PIPE HELD IN ELLIPTICAL SHAPE BY HIGH TENSILE STRENGTH WIRES UNTIL FILL IS COMPLETED MAY BE USED IN LIEU OF OTHER METHODS SHOWN ON THIS DRAWING FOR STRUTTED RIVETED PIPE. FACTORY FORMED 5% ELLIPTICAL STRUCTURAL PLATE PIPE HELD IN ELLIPTICAL SHAPE BY TIMBER STRUTS WEDGED IN PLACE UNTIL FILL IS COMPLETED MAY BE USED IN LIEU OF OTHER METHODS SHOWN ON THIS DRAWING FOR STRUTTED STRUCTURAL PLATE PIPE HAVING A DIAMETER OF 60" OR MORE. SPACING & SIZE OF TIMBER STRUTS TO BE IN ACCORDANCE WITH TABLE ON THIS DRAWING.

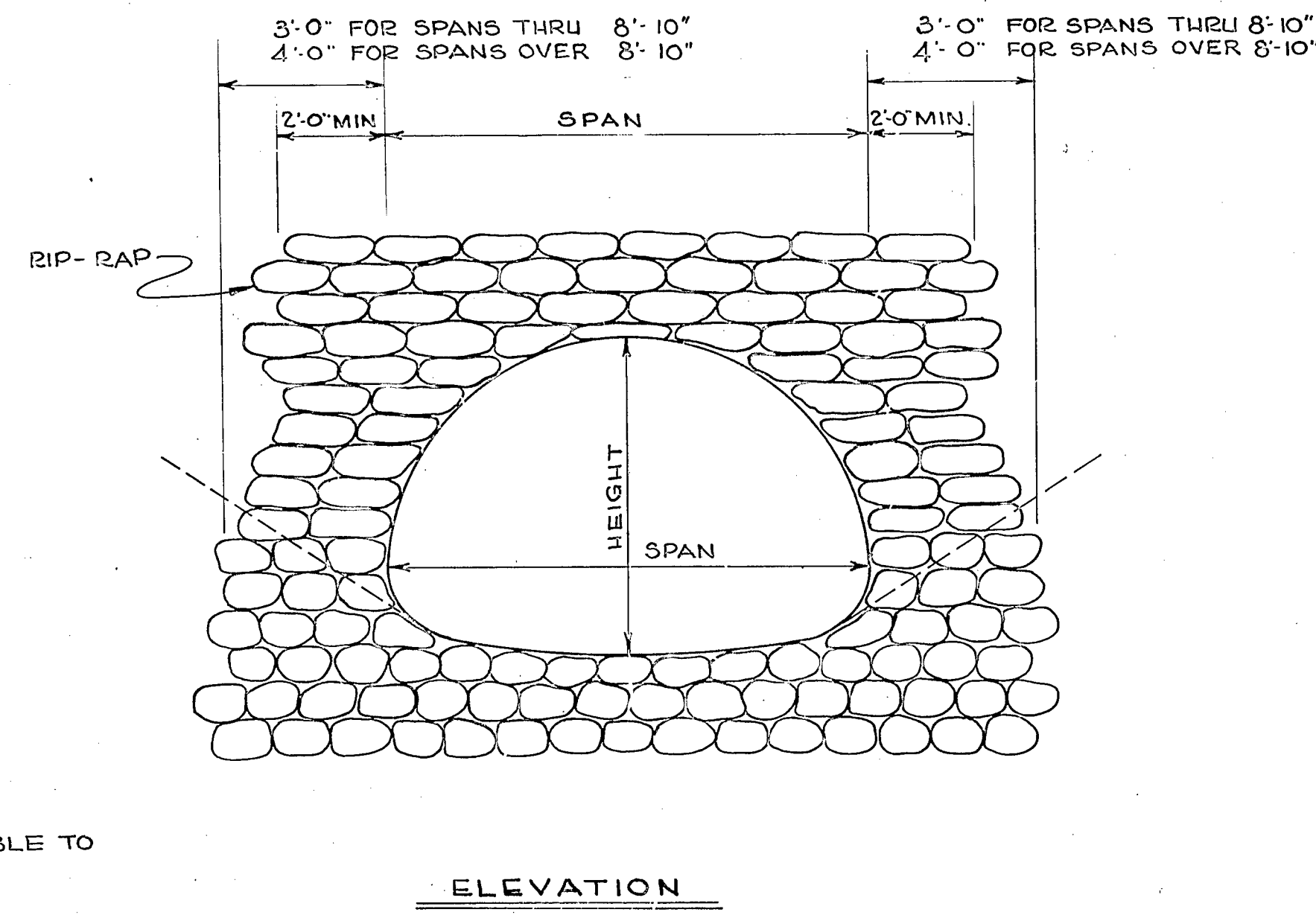
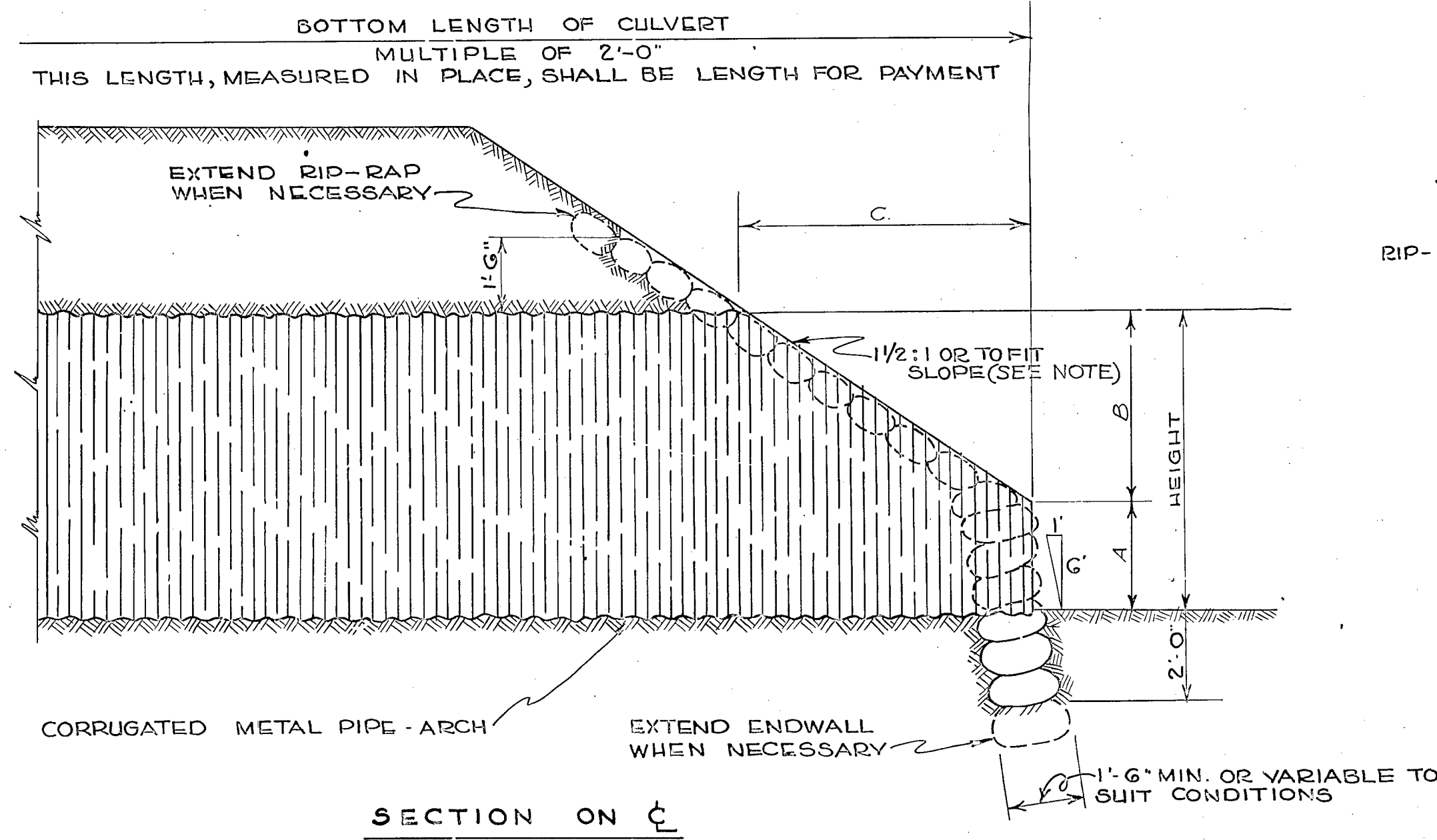
STATE OF TENNESSEE
DEPARTMENT OF HIGHWAYS & PUBLIC WORKS
DIVISION OF PLANS
STRUTTING DETAILS
FOR
CORRUGATED METAL AND
STRUCTURAL PLATE ROUND PIPE
H-20 LOADING

NOTE: SEE DWG. CM-1-4 & CM-1-5 FOR OTHER DETAILS

JANUARY 14, 1957

CM-1-7

REVISED: MARCH 5, 1964 - NOTE ADDED REGARDING MINIMUM SLOPE (2 1/2:1) TO BEVEL PIPES & PIPE-ARCHES.

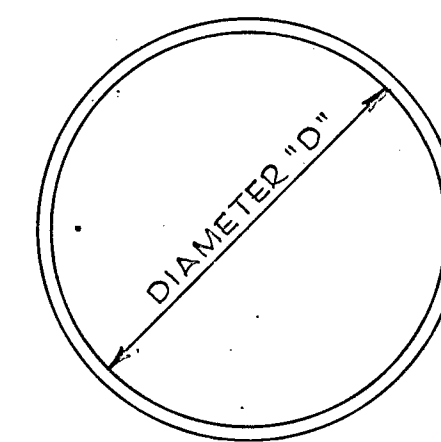
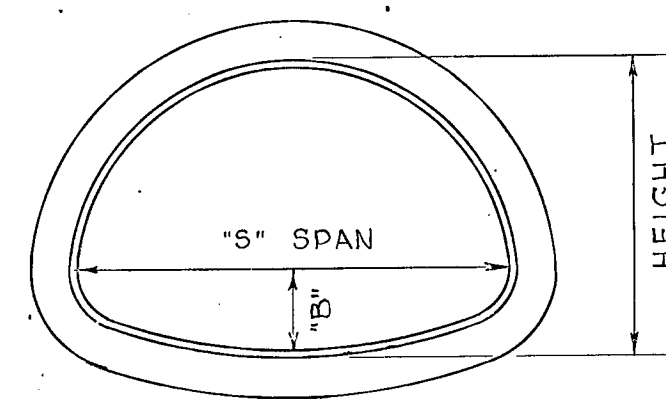


PIPE - ARCH CULVERTS						
SPAN	HEIGHT	RIP-RAP (ONE END) CY		A	B	C
		ONE LINE	TWO LINES			
5'-8"	3'-6"	2.7	4.2	1'-0"	2'-0"	3'-0"
6'-0"	4'-0"	2.9	4.4	1'-0"	2'-4"	3'-6"
6'-2"	4'-2"	3.1	4.6	1'-0"	2'-8"	4'-0"
6'-4"	4'-4"	3.3	4.8	2'-4"	2'-4"	4'-0"
6'-6"	4'-6"	3.3	5.4	2'-1"	2'-8"	4'-0"
6'-8"	4'-11"	3.4	5.6	2'-5"	3'-0"	3'-0"
7'-0"	5'-1"	3.5	5.8	2'-5"	2'-10"	4'-0"
7'-5"	5'-3"	3.6	6.0	2'-1"	3'-2"	4'-9"
7'-8"	5'-5"	3.7	6.2	2'-5"	3'-17"	4'-7 1/2"
7'-11"	5'-7"	3.9	6.2	2'-6"	3'-5"	4'-7 1/2"
8'-2"	5'-9"	4.0	6.9	2'-0"	3'-9"	5'-7 1/2"
8'-7"	5'-11"	4.1	7.1	2'-4"	3'-7"	5'-4 1/2"
8'-10"	6'-1"	4.3	7.5	2'-2"	3'-11"	5'-10 1/2"
9'-4"	6'-3"	4.3	8.5	2'-5"	3'-10"	5'-9"
9'-6"	6'-5"	4.4	9.0	2'-5"	3'-10"	6'-1 1/2"
9'-9"	6'-7"	5.2	8.9	2'-2"	4'-5"	6'-7 1/2"
10'-3"	6'-9"	5.3	9.2	2'-5"	4'-4"	6'-6"
10'-8"	6'-11"	5.4	9.4	2'-9"	4'-2"	6'-3"
10'-11"	7'-1"	5.6	9.9	2'-7"	4'-6"	6'-9"
11'-3"	7'-5"	5.7	10.1	2'-10"	4'-5"	6'-7 1/2"
11'-9"	7'-5"	6.0	10.5	2'-9"	4'-9"	7'-1 1/2"
11'-10"	7'-7"	6.1	11.0	2'-6"	5'-1"	7'-7 1/2"
12'-4"	7'-9"	6.2	11.2	2'-10"	4'-11"	7'-4 1/2"
12'-6"	7'-11"	6.3	11.4	2'-8"	5'-3"	7'-10 1/2"
13'-8"	8'-1"	6.5	11.7	2'-6"	5'-7"	8'-4 1/2"
12'-10"	8'-3"	6.7	12.1	2'-11"	5'-0"	8'-0"
13'-5"	8'-5"	6.9	12.5	2'-7"	5'-10"	8'-9"
13'-11"	8'-7"	7.0	12.7	2'-11"	5'-8"	8'-6"
14'-1"	8'-9"	7.1	12.8	2'-8"	6'-0"	9'-0"
14'-3"	8'-11"	7.3	13.2	2'-7"	6'-4"	9'-6"
14'-10"	9'-1"	7.5	13.6	2'-11"	6'-2"	9'-7 1/2"
15'-4"	9'-3"	7.6	13.6	2'-8"	6'-17"	9'-1 1/2"
15'-6"	9'-5"	7.8	14.2	3'-0"	6'-5"	9'-7 1/2"
15'-10"	9'-7"	7.9	14.9	2'-8"	6'-9"	10'-1 1/2"
15'-16"	9'-10"	8.2	14.9	2'-10"	7'-2"	10'-9"
16'-18"	9'-11"	8.3	15.1	3'-0"	6'-11"	10'-4 1/2"
16'-7"	10'-1"	8.5	15.5	2'-10"	7'-3"	10'-10 1/2"

HIGHWAY (H-20) LOADING -ALUMINUM CORRUGATED PIPE & PIPE-ARCHES

FED. ROAD DIST. NO.	TENN.	FEDERAL AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
3			10		12

REVISED 2-25-63 GAGE CORRECTED FROM #11 TO #12 FOR 48" X 27" PIPE ARCH, FILL 0' TO 5'



FIELD TIMBER STRUTTED

STRUTTED ALUMINUM CORRUGATED METAL PIPE GAGE TABLE FOR H-20 LIVE LOAD											
AREA (SQ. FT.)	DIAMETER (INCHES)	HEIGHT OF COVER (FEET)									
		1-5	6-8	9-12	13-16	17-20	21-25	26-30	31-35	36-40	41-50
12.6	4.8			12							
15.9	5.4	USE 5% VERTICALLY ELONGATED FOR THESE TABULAR VALUES									
19.6	6.0			10	10						
23.8	6.6			10							
28.3	7.2			10	10						
33.2	7.8			10							
38.5	8.4		8	8							

ALUMINUM CORRUGATED METAL PIPE-ARCHES GAGE TABLE FOR H-20 LIVE LOAD									
AREA SQ. FT.	DIAMETER OF PIPE OF EQ. PER.	SPAN (INCHES)	HEIGHT (INCHES)	"B" (INCHES)	HEIGHT OF COVER (FEET)				
					1	2-5	6-8	9-12	
1.1	15	18	11	4 1/2	16	16	16	16	
1.6	18	22	13	4 3/4	16	16	16	14	
2.2	21	25	16	5 1/4	16	16	16		
2.8	24	29	18	5 1/2	14	14	14		
4.4	30	36	22	6 1/4	14	14	14		
6.4	36	43	27	7	12	12	12		
8.7	42	50	31	8	12	12			

ALUMINUM CORRUGATED METAL PIPE GAGE TABLE FOR H-20 LIVE LOAD									
AREA (SQ. FT.)	DIAMETER (INCHES)	HEIGHT OF COVER ABOVE TOP OF CULVERT (FEET)							
		1-5	6-8	9-12	13-16	17-20	21-25	26-30	MINIMUM COVER (INCHES)
1.2	15	16	16	16	16	16	16		12
1.8	18	16	16	16	16	16			12
2.4	21	16	16	16	16				12
3.1	24	16	16	14	14	14			12
4.9	30	14	14	14	14				12
7.1	36	12	12	12					12
9.6	42	12	12	12					12
USE 5% VERTICALLY ELONGATED OR TIMBER STRUTTED ALUMINUM CORRUGATED METAL PIPE FOR THESE TABULAR VALUES. TIMBER STRUTTING SHALL BE DONE IN ACCORDANCE WITH DETAIL ON DWG. CM-1-7.									

5% VERTICALLY ELONGATED ALUMINUM CORRUGATED PIPE GAGE TABLE FOR H-20 LIVE LOAD											
AREA (SQ. FT.)	DIAMETER (INCHES)	MIN. COVER (INCHES)	HEIGHT OF COVER (FEET)								
			1-5	6-8	9-12	13-16	17-20	21-25	26-30	31-35	36-40 41-50
1.2	15	6								16	16 16
1.8	18	7	USE FULL CIRCLE (UNSTRUTTED) FOR THESE TABULAR VALUES							16	16 16
2.4	21	7								16	16
3.1	24	8								14	14 14
4.9	30	9						12	12	12	
7.1	36	12					12	12			
9.6	42	12					12		USE FIELD TIMBER STRUTTING FOR THESE TABULAR VALUES		
12.6	48	12	12	12							
15.9	54	12	12	12	10	10					
19.6	60	21	10	10	10						
23.8	66	24	10	10							

* MANUFACTURING TOLERANCE = PLUS OR MINUS 2% OF THE DIMENSION PLUS ONE (1) INCH

RECOMMENDED MINIMUM HEIGHT OF COVER					
LOAD	SURFACE	BASE OF MEASUREMENT	ROUND PIPE TO 66"	PIPE OVER 66"	PIPE ARCHES
HIGHWAY H-20	UNPAVED AND FLEXIBLE PAVEMENTS	TOP OF SURFACE	1/3 DIA. 12" MIN.	1/3 DIA. 24" MIN.	1/10 SPAN 12" MIN.
	RIGID PAVEMENTS	TOP OF SLAB	1/7 DIA. MIN. OF 6" CUSHION BELOW SLAB	18" MIN.	1/4 SPAN

GENERAL NOTES

MATERIALS & SPECIFICATIONS SHALL BE IN ACCORDANCE WITH SPECIAL PROVISION REGARDING SECTION 234, ALUMINUM ALLOY CORRUGATED PIPE OR PIPE-ARCH CULVERT.

GAGES ARE FOR FINISHED CONSTRUCTION ; DURING CONSTRUCTION ADEQUATE COVER SHALL BE PROVIDED TO PROTECT THE STRUCTURE FROM DAMAGE.

PIPE AND PIPE-ARCH DIMENSIONS ARE TO INSIDE CRESTS AND ARE SUBJECT TO MANUFACTURING TOLERANCES.

BEVELED AND /OR SKEWED ENDS: PIPE CULVERTS LESS THAN 42" IN DIAMETER AND PIPE-ARCH CULVERTS WITH SPAN LESS THAN 56" ARE NOT TO BE BEVELED OR CUT TO SKEW. MINIMUM SKEW ANGLE FOR BEVELED PIPE AND PIPE-ARCHES IS 70°.

SEE DWG. CM-1-5 FOR METHOD OF MEASUREMENT FOR PAYMENT, DETAILS OF BEVELED ENDS AND RID-RAP PROTECTION.

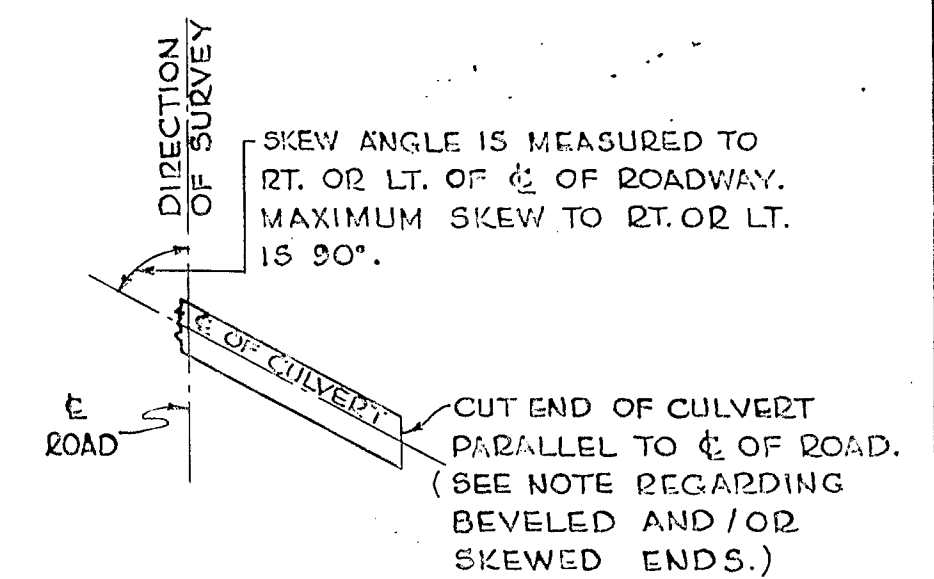
LENGTH OF PIPE AND PIPE-ARCHES SHALL BE IN INCREMENTS OF 2 FEET.

FACTORY PREFORMING & STRUTTING: UNSTRUTTED PIPE SHALL BE USED, UNLESS STRUTTED PIPE IS CALLED FOR IN THE PLANS OR BY SPECIAL PROVISION. VERTICALLY ELONGATED PIPE, WHEN CALLED FOR, WILL BE FACTORY PREFORMED AND SHALL BE HELD IN ELONGATED SHAPE BY TIMBER STRUTS WEDGED IN PLACE UNTIL FILL IS COMPLETED. ALL PIPE 48" AND MORE IN DIAMETER SHALL BE VERTICALLY ELONGATED.

STRUTTING SHALL BE BY THE TIMBER METHOD ONLY, IN ACCORDANCE WITH STANDARD DWG. CM-1-7.

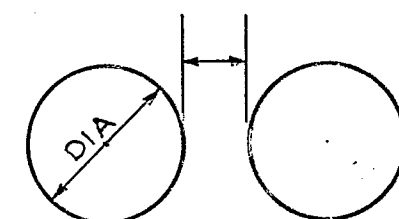
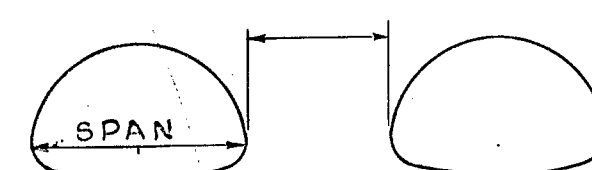
PAYMENT WILL BE MADE UNDER :

- ITEM 234 (SIZE) ALUMINUM ALLOY CORRUGATED PIPE OR PIPE-ARCH CULVERT.....LIN. FT.
- ITEM 234 (SIZE) ALUMINUM ALLOY CORRUGATED PIPE OR PIPE-ARCH CULVERT (BITUMINOUS COATED).....LIN. FT.
- ITEM 234 (SIZE) ALUMINUM ALLOY CORRUGATED PIPE OR PIPE-ARCH CULVERT (PAVED BITUMINOUS COATED).....LIN. FT.
- ITEM 234 (SIZE) ALUMINUM ALLOY CORRUGATED PIPE OR PIPE-ARCH CULVERT (PAVED INVERT).....LIN. FT.



SKEW DETAIL FOR PIPE OR PIPE-ARCH CULVERTS

MULTIPLE INSTALLATIONS



SPAN	MINIMUM SPACE BETWEEN PIPE-ARCHES
UP TO 36"	12"
36" TO 42"	ONE - HALF (1/2") SPAN OF PIPE-ARCH

DIAMETER	MINIMUM SPACE BETWEEN PIPE
UP TO 24"	12"
24" TO 64"	ONE - HALF (1/2) DIAMETER OF PIPE

STATE OF TENNESSEE
DEPARTMENT OF HIGHWAYS
DIVISION OF PLANS

ALUMINUM ALLOY CORRUGATED PIPE & PIPE-ARCH CULVERTS (H-20 LOADING)

NOTE: SEE DWGS. CM-1-5 AND CM-1-7 FOR OTHER DETAILS

FEB. 1963

SHEET 2 OF 2
CM-1-6

(FERROUS) HIGHWAY (H-20) LOADING ~ CORR. METAL AND CORR. STRUCTURAL PLATE PIPE AND PIPE-ARCHES

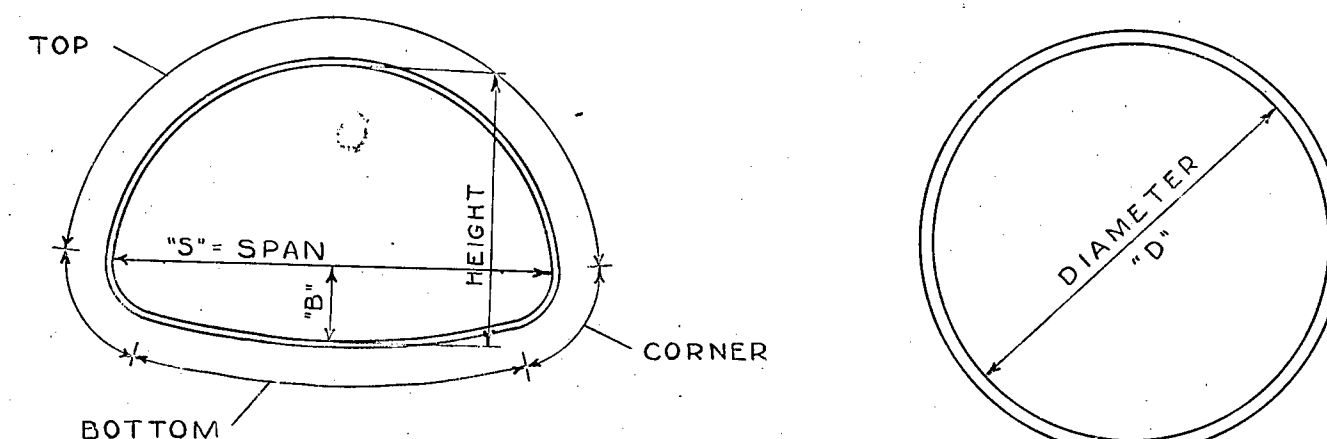
FED. ROAD DIST. NO.	T E N N.	FEDERAL AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
8			19		

REVISED 3-29-63: GAGE CORRECTED FROM #14 TO #16 FOR 24" PIPE, AND FROM #12 TO #14 FOR 36" PIPE - FILL 1' TO 15'.

REVISED 1-7-57: TRANSFERRED TIMBER STRUTTING DETAILS TO NEW DWG. CM-1-7. NOTES REVISED.

REVISED 3-5-63: DATA SHOWN SPECIFIED FOR FERROUS METALS ONLY; SHEET NUMBER SPECIFIED.

CORRUGATED METAL PIPE-ARCHES (FERROUS) GAGE TABLE FOR H-20 LIVE LOAD									
AREA (SQ. FT.)	DIA. OF PIPE (INCHES)	SPAN (FEET)	HEIGHT (INCHES)	"B" (INCHES)	HEIGHT OF COVER (FEET)				
					1	2-4	5-9	10-15	16-20
1.1	15	18	11	4 1/2	16	16	16	16	16
1.6	18	22	13	4 3/4	16	16	16	16	16
2.2	21	25	16	5 1/2	16	16	16	16	16
2.8	24	29	18	5 3/4	14	14	14	14	14
4.4	30	36	22	6 1/2	14	14	14	14	14
6.4	36	43	27	7	12	12	12	12	12
8.7	42	50	31	8	12	12	12	12	10
11.4	48	58	36	9 1/4	10	12	12	10	10
14.3	54	65	40	10 1/2	10	12	12	10	8
17.6	60	72	44	11 3/4	8	10	10	8	-



UNSTRUTTED

STRUTTED

CORRUGATED METAL PIPE (FERROUS) GAGE TABLE FOR H-20 LIVE LOAD														
AREA (SQ. FT.)	DIAMETER (INCHES)	HEIGHT OF COVER ABOVE TOP OF CULVERT (FEET)												
		1-10	11-15	16-20	21-25	26-30	31-35	36-40	41-45	46-50	51-60	61-70	71-80	81-100
1.2	15	16	16	16	16	16	16	16	16	16	14	14	12	12
1.8	18	16	16	16	16	16	16	16	14	14	14	12	12	12
2.4	21	16	16	16	16	16	16	14	14	14	12	12	12	10
3.1	24	16	16	14	14	14	14	14	12	12	12	10	10	
4.9	30	14	14	14	14	14	12	12	10	10	10	8	8	
7.1	36	14	14	12	12	12	10	10	8	8	8	8	8	
9.6	42	12	12	12	12	10	10	8	8	8	8	8	8	
12.6	48	12	12	12	10	8	8	8	8	8	8	8	8	
15.9	54	12	12	10	8	8								
19.6	60	10	10	8	8									
23.8	66	10	10	8										
33.2	78	8	8											
38.5	84	8												

* TRENCH ONE (1) DIAMETER

STRUTTED CORRUGATED METAL PIPE (FERROUS)													
GAGE TABLE FOR H-20 LIVE LOAD													
AREA (SQ. FT.)	DIAMETER (INCHES)	HEIGHT OF COVER (FEET)											
		1-20	21-25	26-30	31-35	36-40	41-45	46-50	51-60	61-70	71-80	81-100	
1.8	18												
2.4	21												
3.1	24												
4.9	30												
7.1	36												
9.6	42												
12.6	48												
15.9	54	12	10	10	10	10	10	10	8	8	8	8	8
19.6	60	10	10	10	10	10	10	8	8	8	8	8	8
23.8	66	10	10	10	10	8	8	8	8	8	8	8	8
28.3	72	10	10	8	8	8	8	8	8	8	8	8	8
33.2	78	8	8										
38.5	84	8											
USE UNSTRUTTED CORRUGATED METAL PIPE FOR THESE TABULAR VALUES													
USE STRUCTURAL PLATE PIPE FOR THESE TABULAR VALUES													

NOTE: SEE DWG. CM-1-7 FOR STRUTTING DETAILS.

CORRUGATED STRUCTURAL PLATE PIPE-ARCHES (FERROUS)																	
GAGE TABLE FOR H-20 LIVE LOAD																	
AREA SQ.FT.	SPAN	HEIGHT	PI INCHES	HEIGHT OF COVER - FEET													
				1	2	3	4	5	6	7	8	9	10	11	12	13	14
2.2	6'-1"	4'-7"	66	12	12	12	12	12	12	12	12	12	12	12	12	12	12
2.4	6'-4"	4'-9"	63	12	12	12	12	12	12	12	12	12	12	12	12	12	12
2.6	6'-5"	4'-11"	72	12	12	12	12	12	12	12	12	12	12	12	12	12	12
2.8	7'-0"	5'-1"	75	10	12	12	12	12	12	12	12	12	12	12	12	12	10
3.1	7'-3"	5'-3"	78	10	10	12	12	12	12	12	12	12	12	12	12	10	10
3.3	7'-8"	5'-5"	81	10	10	12	12	12	12	12	12	12	12	12	12	10	10
3.5	7'-11"	5'-7"	84	10	10	10	12	12	12	12	12	12	12	12	10	10	10
3.8	8'-2"	5'-9"	87	10	10	10	12	12	12	12	12	12	12	12	10	10	10
4.0	8'-7"	5'-11"	93	10	10	10	10	10	10	10	10	10	10	10	10	10	8
4.3	8'-10"	6'-1"	93	10	10	10	10	10	10	10	10	10	10	10	10	10	8
4.6	9'-4"	6'-3"	96	8	10	10	10	10	10	10	10	10	10	10	10	8	8
4.9	9'-6"	6'-5"	99	8	10	10	10	10	10	10	10	10	10	10	10	8	8
5.2	9'-9"	6'-7"	102	8	10	10	10	10	10	10	10	10	10	10	10	8	8
5.5	10'-3"	6'-9"	105	8	8	10	10	10	10	10	10	10	10	10	10	8	8
5.8	10'-6"	6'-11"	108	8	8	10	10	10	10	10	10	10	10	10	10	8	8
6.1	10'-11"	7'-1"	111	8	8	8	10	10	10	10	10	10	10	8	8	7	5
6.4	11'-5"	7'-3"	114	7	8	8	10	10	10	10	10	10	10	8	8	7	5
6.7	11'-7"	7'-5"	117	7	8	8	10	10	10	10	10	10	10	8	8	7	5
7.1	11'-10"	7'-7"	120	7	8	8	8	8	8	8	8	8	8	8	7	5	3
7.4	12'-4"	7'-9"	123	7	7	8	8	8	8	8	8	8	8	8	7	5	3
7.8	12'-6"	7'-11"	126	7	7	8	8	8	8	8	8	8	8	8	7	5	3
8.1	12'-8"	8'-1"	129	7	7	8	8	8	8	8	8	8	8	8	7	5	3
8.5	12'-10"	8'-4"	132	5	7	8	8	8	8	8	8	8	8	7	7	5	3
8.9	13'-5"	8'-5"	135	5	5	7	8	8	8	8	8	8	8	7	5	5	3
9.3	13'-11"	8'-7"	138	5	5	7	7	8	8	8	8	8	8	7	5	5	3
9.7	14'-1"	8'-9"	141	5	5	7	7	8	8	8	8	8	8	7	5	5	3
10.1	14'-3"	8'-11"	144	3	5	5	7	7	7	7	7	7	7	7	5	5	3
10.5	14'-10"	9'-1"	147	3	5	5	7	7	7	7	7	7	7	7	5	5	3
10.9	15'-4"	9'-3"	150	3	5	5	7	7	7	7	7	7	7	7	5	3	3
11.3	15'-6"	9'-5"	153	3	3	5	5	7	7	7	7	7	7	7	5	3	3
11.8	15'-8"	9'-7"	156	3	3	5	5	7	7	7	7	7	7	7	5	3	3
12.2	15'-10"	9'-10"	159	1	3	5	5	7	7	7	7	7	7	5	3	3	3
12.6	16'-5"	9'-11"	162	1	3	3	5	5	5	5	5	5	5	3	3	3	3
13.1	16'-7"	10'-1"	165	1	3	3	5	5	5	5	5	5	5	3	3	3	3

CORRUGATED STRUCTURAL PLATE PIPE (FERROUS)																	
GAGE TABLE FOR H-20 LIVE LOAD																	
AREA (SQ. FT.)	DIA. (INCHES)	HEIGHT OF COVER - FEET															
		1-5	6-10	11-15	16-20	21-25	26-30	31-35	36-40	41-45	46-50	51-55	56-60	61-70	71-80	81-90	91-100
20	60	12	12	12	12	12	10	10	10	10	10	8	8	8	7	5	5
24	66	12	12	12	12	12	10	10	10	10	10	8	8	8	7	5	3
28	72	12	12	12	10	10	10	10	10	8	8	8	7	7	5	3	1
33	78	12	12	12	10	10	10	10	8	8	8	7	7	5	3	1	-
38	84	10	12	10	10	10	8	8	8	8	7	7	5	5	3	1	-
44	90	10	12	10	10	8	8	8	7	7	7	5	5	3	1	-	-
50	96	10	12	10	10	8	8	8	7	7	5	5	5	3	1	-	-
57	102	10	10	10	8	8	8	7	7	5	5	5	5	3	1	-	-
64	108	10	10	10	8	8	7	7	5	5	5	5	5	3	1	-	-
71	114	10	10	10	8	8	7	5	5	5	3	3	3	3	1	-	-
78	120	8	10	8	8	7	5	5	5	3	3	3	3	3	1	-	-
87	126	8	10	8	7	7	5	5	3	3	3	3	3	3	1	-	-
95	132	8	10	8	7	5	5	5	3	3	3	3	3	3	1	-	-
104	138	8	10	8	7	5	5	3	3	3	3	3	3	3	1	-	-
113	144	8	8	8	7	5	5	3	3	3	3	3	3	3	1	-	-
123	150	7	8	7	5	5	3	3	3	3	3	3	3	3	1	-	-
133	156	7	8	7	5	5	3	3	3	3	3	3	3	3	1	-	-
143	162	7	8	7	5	3	3	3	3	3	3	3	3	3	1	-	-
154	168	5	8	5	5	3	3	3	3	3	3	3	3	3	1	-	-
165	174	5	7	5	3	3	3	3	3	3	3	3	3	3	1	-	-
177	180	5	7	5	3	3	3	3	3	3	3	3	3	3	1	-	-

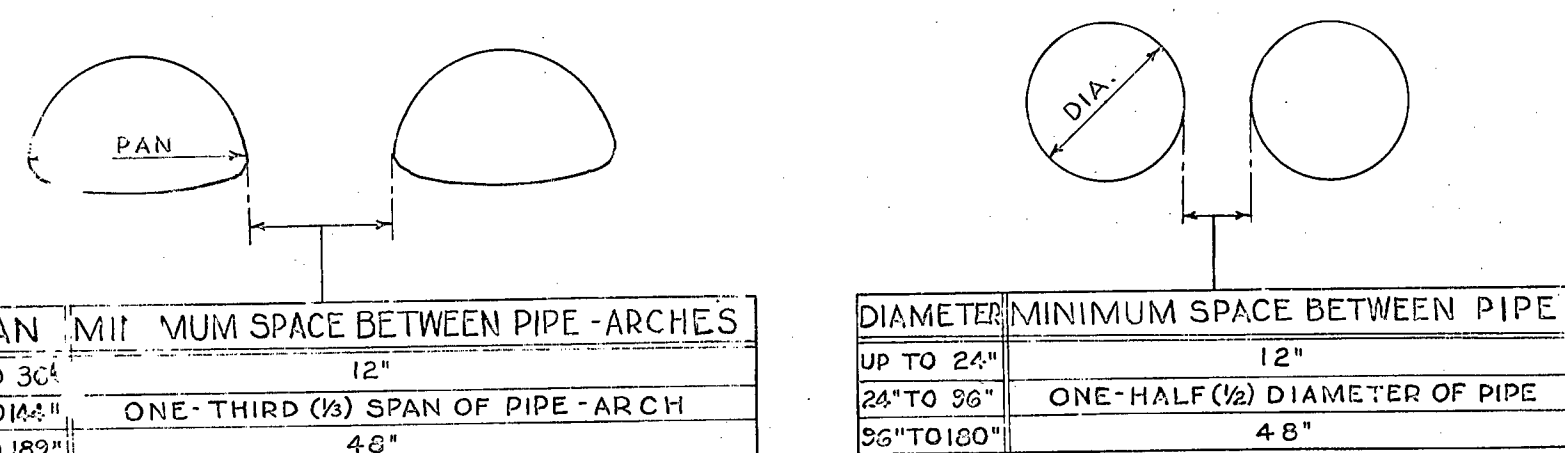
UNSTRUTTED

STRUTTED

* MANUFACTURING TOLERANCE = PLUS OR MINUS 2% OF THE DIMENSION PLUS ONE (1) INCH.

RECOMMENDED MINIMUM HEIGHT OF COVER				
LOAD	SURFACE	BASE OF MEASUREMENT	ROUND PIPE TO 120" OVER 120"	PIPE-ARCHES
H-20	UNPAVED AND FLEXIBLE PAVEMENTS	TOP OF SURFACE	1/2 DIA. 12" MIN.	24" MIN. 1/2 SPAN 12" MIN.
	RIGID PAVEMENTS	TOP OF SLAB	1/2 DIA. MINIMUM OF 6" CUSHION BELOW SLAB	18" MIN. 1/2 SPAN

MULTIPLE INSTALLATIONS

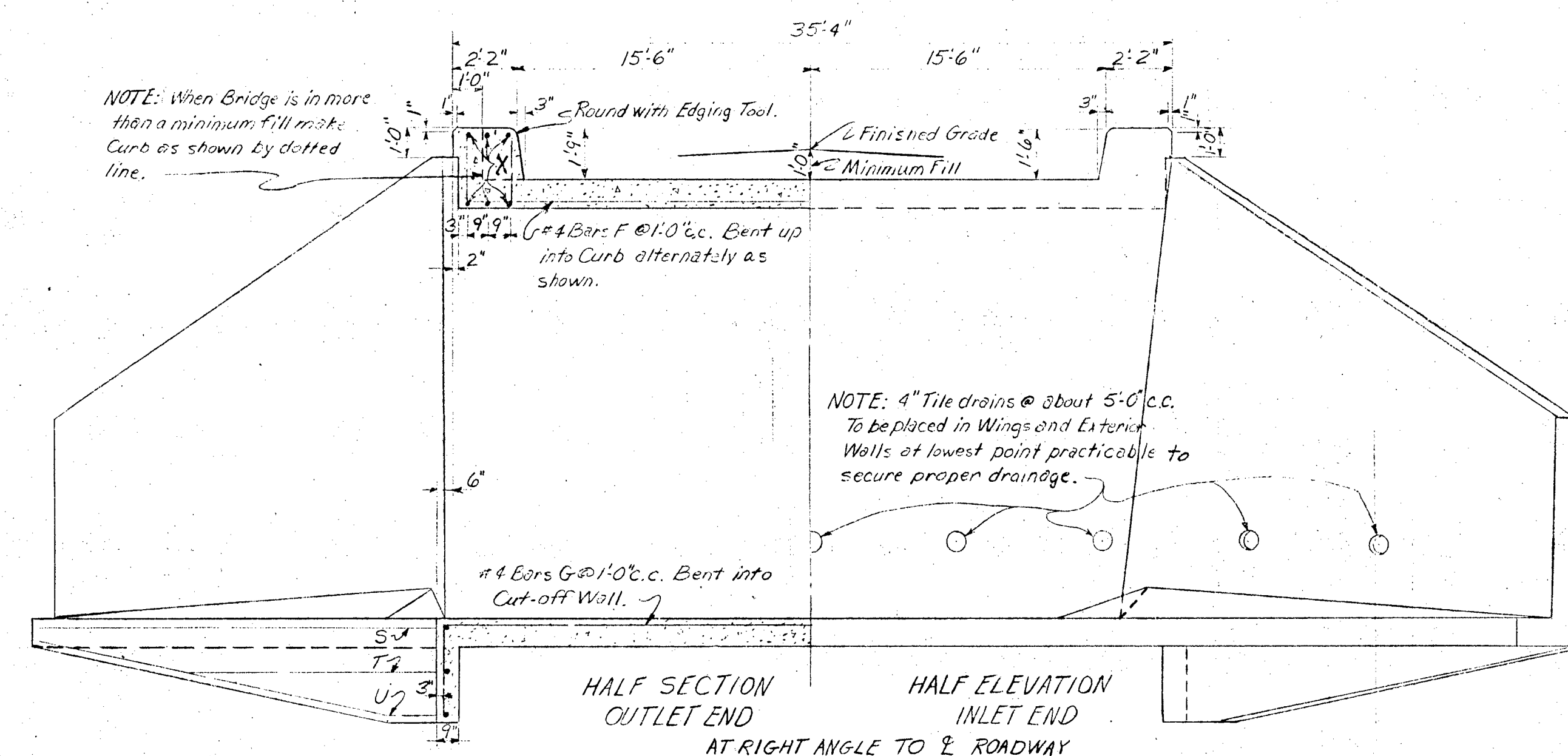
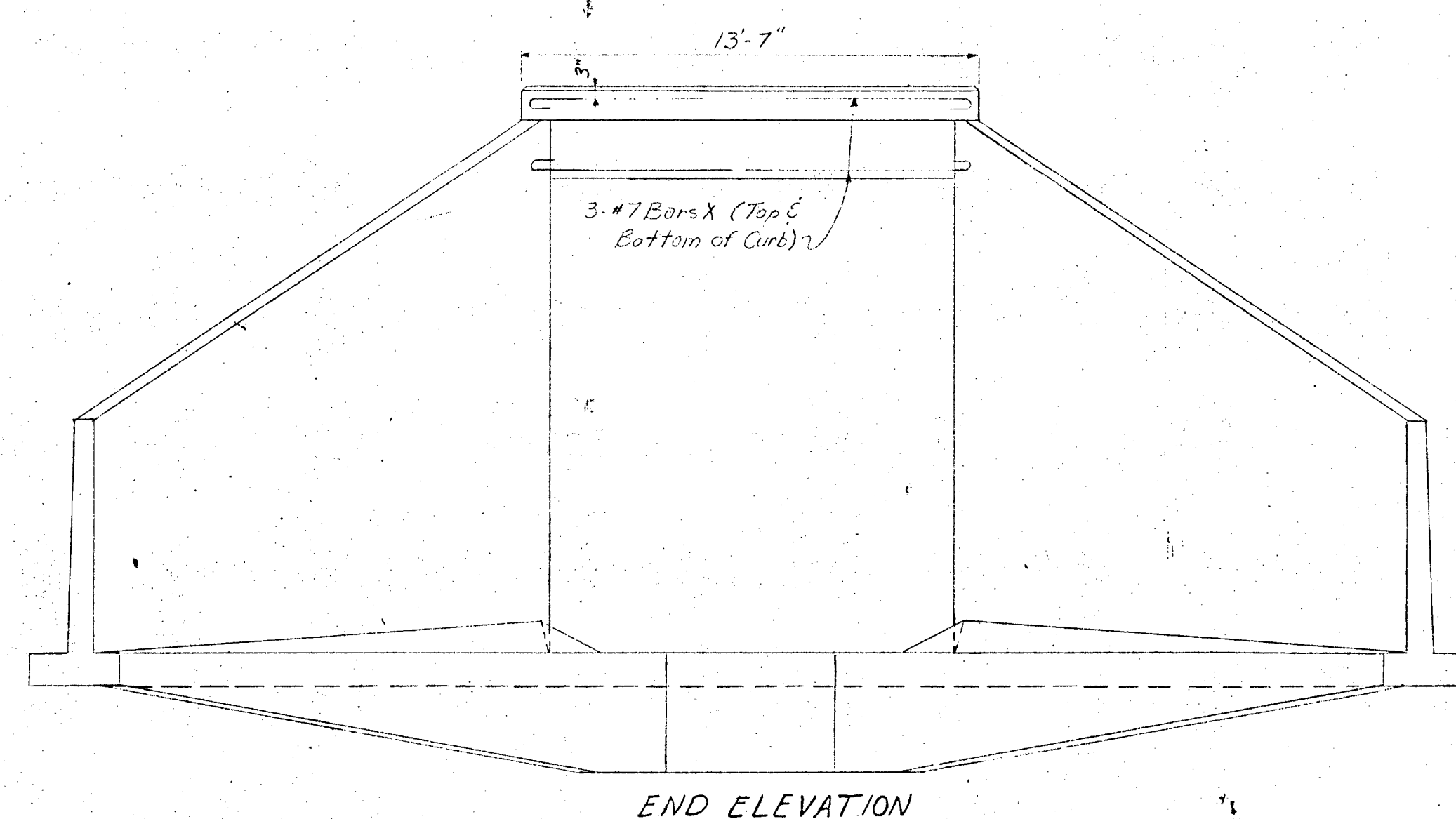


GENERAL NOTES

GAGES ARE FOR FINISHED CONSTRUCTION; DURING CONSTRUCTION ADEQUATE COVER SHALL BE PROVIDED TO PROTECT THE STRUCTURE FROM DAMAGE.

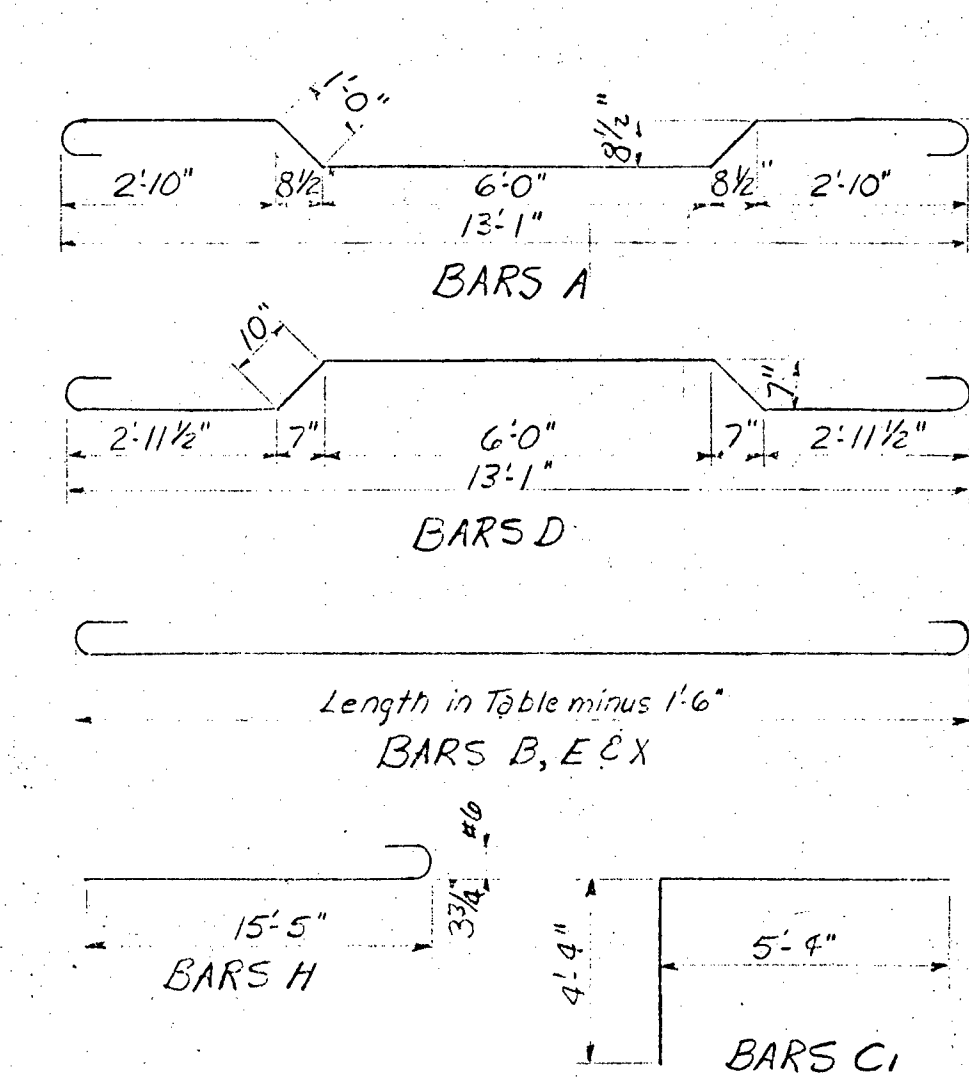
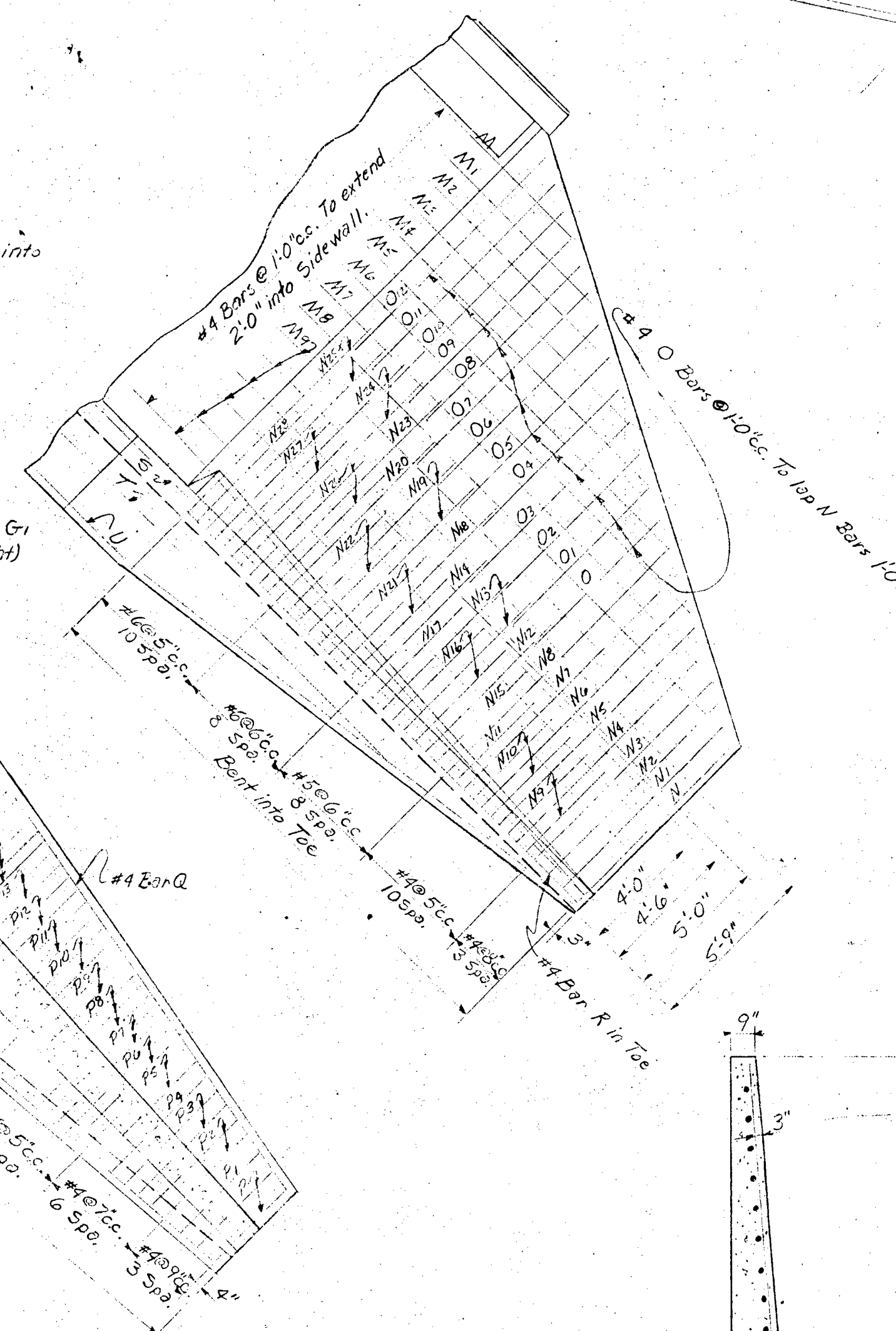
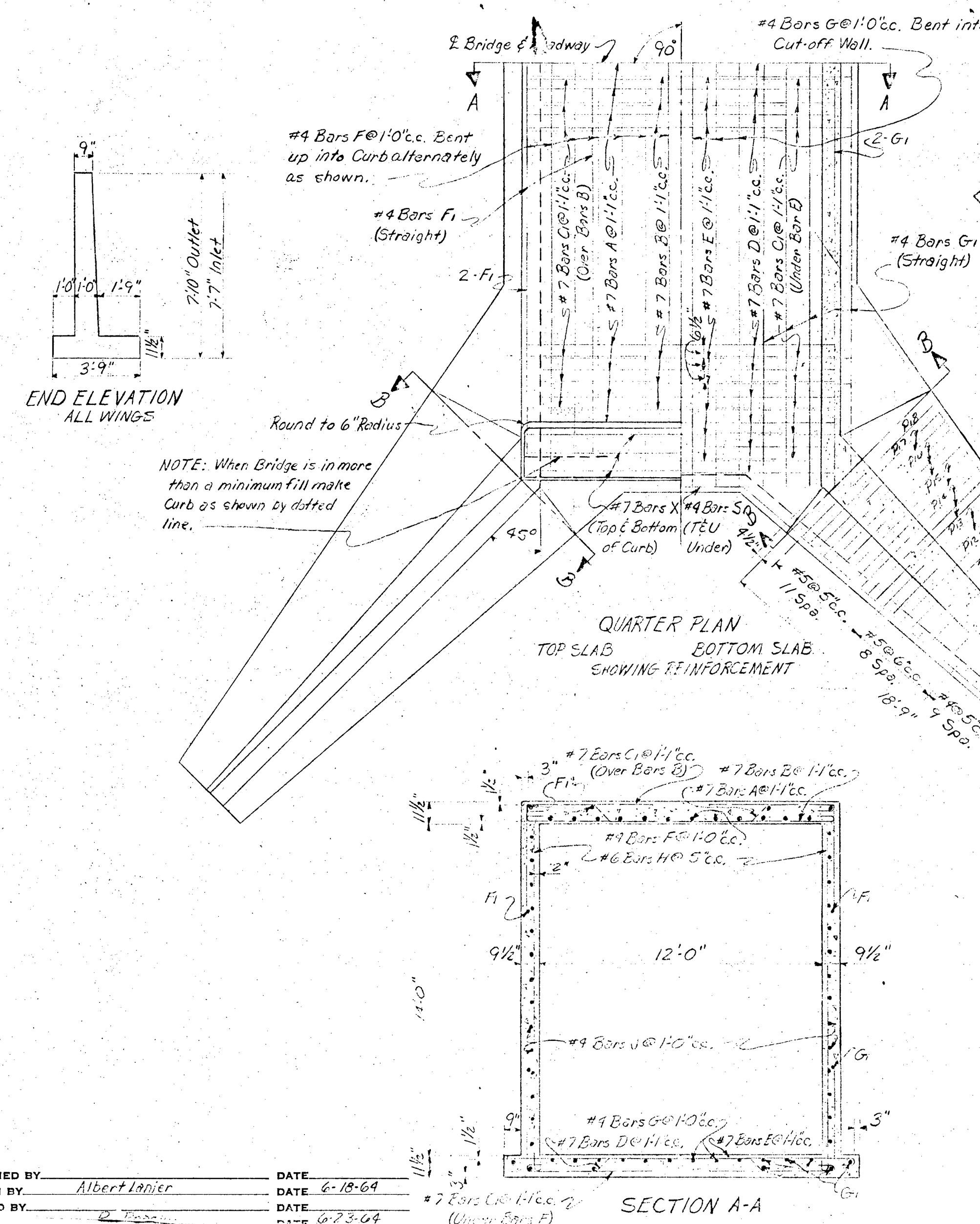
PLATES FOR STRUCTURAL PLATE STRUCTURES ARE STANDARD

I-24-3(23)/117



BILL OF STEEL

Slabs, Curb & Cut-off Walls	Bar Size	No.	Length
A #7	29	15'-2"	
B #7	28	14'-7"	
C #7	120	9'-8"	
D #7	33	15'-1"	
E #7	32	16'-1"	
F #4	12	37'-3"	
G #4	6	33'-0"	
H #4	14	41'-9"	
I #4	14	35'-9"	
J #4	28	34'-9"	
K #7	12	14'-7"	
L #4	2	47'-6"	
M #4	2	32'-0"	
N #4	2	48'-0"	



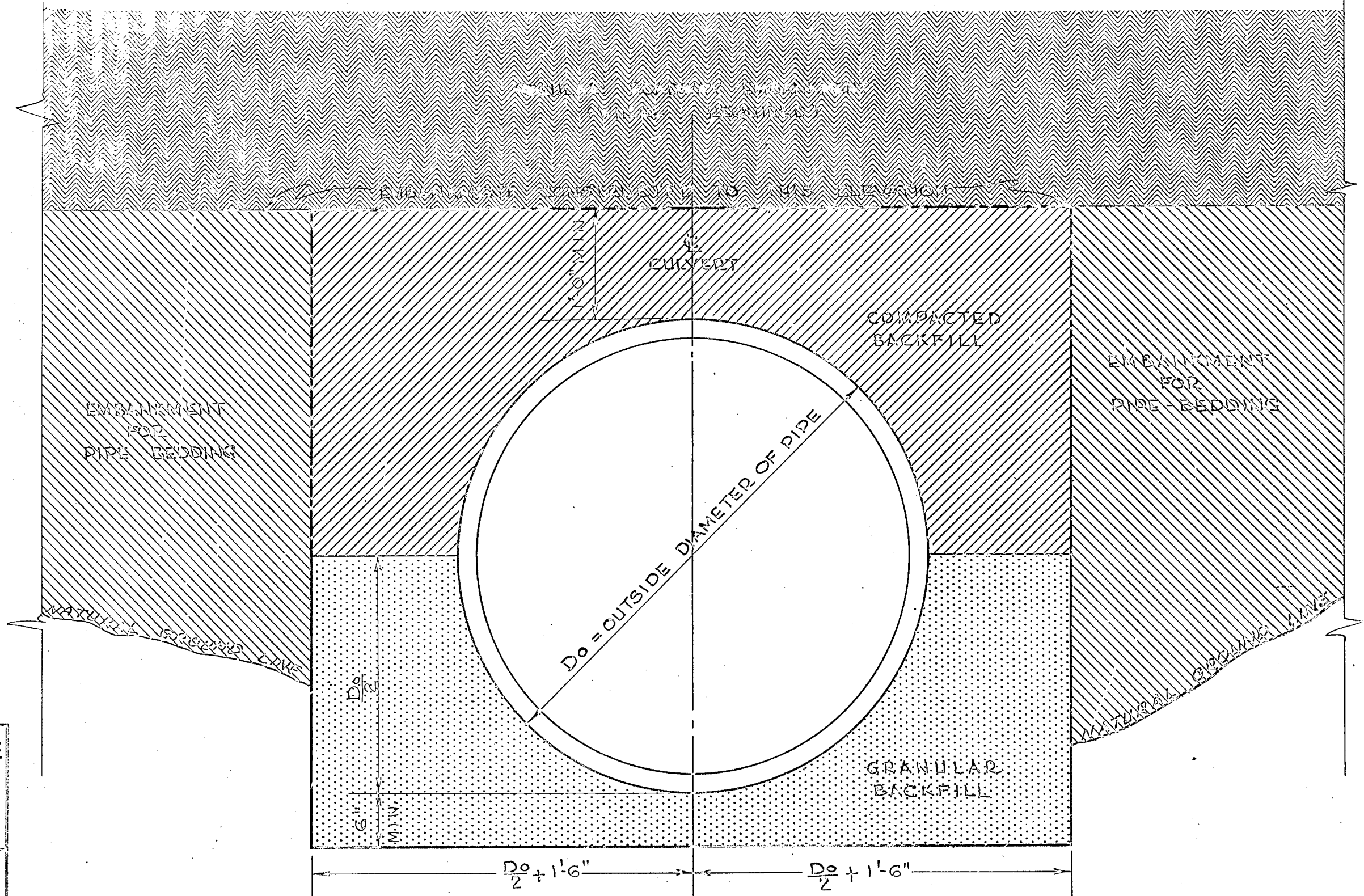
BILL OF STEEL - WING-WALLS

BAR	SIZE	NO.	LENGTH	BAR	SIZE	NO.	LENGTH
M1	#4	2	4'-3"	N18	#6	2	9'-3"
M2	#4	2	4'-6"	N19	#4	2	5'-6"
M3	#4	2	8'-3"	N20	#4	2	4'-3"
M4	#4	2	10'-3"	N21	#4	2	4'-6"
M5	#4	2	12'-0"	N22	#4	2	4'-9"
M6	#4	2	14'-0"	N23	#4	2	4'-6"
M7	#4	2	16'-0"	N24	#4	2	4'-3"
M8	#4	2	18'-0"	N25	#4	2	4'-6"
M9	#4	2	19'-9"	N26	#4	2	4'-9"
M10	#4	2	20'-6"	N27	#4	2	4'-6"
M11	#4	2	20'-6"	N28	#4	2	4'-9"
M12	#4	2	20'-6"	N29	#4	2	4'-6"
M13	#4	2	20'-6"	N30	#4	2	4'-9"
M14	#4	2	20'-6"	N31	#4	2	4'-6"
M15	#4	2	20'-6"	N32	#4	2	4'-9"
M16	#4	2	20'-6"	N33	#4	2	4'-6"
M17	#4	2	20'-6"	N34	#4	2	4'-9"
M18	#4	2	20'-6"	N35	#4	2	4'-6"
M19	#4	2	20'-6"	N36	#4	2	4'-9"
M20	#4	2	20'-6"	N37	#4	2	4'-6"
M21	#4	2	20'-6"	N38	#4	2	4'-9"
M22	#4	2	20'-6"	N39	#4	2	4'-6"
M23	#4	2	20'-6"	N40	#4	2	4'-9"
M24	#4	2	20'-6"	N41	#4	2	4'-6"
M25	#4	2	20'-6"	N42	#4	2	4'-9"
M26	#4	2	20'-6"	N43	#4	2	4'-6"
M27	#4	2	20'-6"	N44	#4	2	4'-9"
M28	#4	2	20'-6"	N45	#4	2	4'-6"
M29	#4	2	20'-6"	N46	#4	2	4'-9"
M30	#4	2	20'-6"	N47	#4	2	4'-6"
M31	#4	2	20'-6"	N48	#4	2	4'-9"
M32	#4	2	20'-6"	N49	#4	2	4'-6"
M33	#4	2	20'-6"	N50	#4	2	4'-9"
M34	#4	2	20'-6"	N51	#4	2	4'-6"
M35	#4	2	20'-6"	N52	#4	2	4'-9"
M36	#4	2	20'-6"	N53	#4	2	4'-6"
M37	#4	2	20'-6"	N54	#4	2	4'-9"
M38	#4	2	20'-6"	N55	#4	2	4'-6"
M39	#4	2	20'-6"	N56	#4	2	4'-9"
M40	#4	2	20'-6"	N57	#4	2	4'-6"
M41	#4	2	20'-6"	N58	#4	2	4'-9"
M42	#4	2	20'-6"	N59	#4	2	4'-6"
M43	#4	2	20'-6"	N60	#4	2	4'-9"
M44	#4	2	20'-6"	N61	#4	2	4'-6"
M45	#4	2	20'-6"	N62	#4	2	4'-9"
M46	#4	2	20'-6"	N63	#4	2	4'-6"
M47	#4	2	20'-6"	N64	#4	2	4'-9"
M48	#4	2	20'-6"	N65	#4	2	4'-6"
M49	#4	2	20'-6"	N66	#4	2	4'-9"
M50	#4	2	20'-6"	N67	#4	2	4'-6"
M51	#4	2	20'-6"	N68	#4	2	4'-9"
M52	#4	2	20'-6"	N69	#4	2	4'-6"
M53	#4	2	20'-6"	N70	#4	2	4'-9"
M54	#4	2	20'-6"	N71	#4	2	4'-6"
M55	#4	2	20'-6"	N72	#4	2	4'-9"
M56	#4	2	20'-6"	N73	#4	2	4'-6"
M57	#4	2	20'-6"	N74	#4	2	4'-9"
M58	#4	2	20'-6"	N75	#4	2	4'-6"
M59	#4	2	20'-6"	N76	#4	2	4'-9"
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M61	#4	2	20'-6"	N78	#4	2	4'-9"
M62	#4	2	20'-6"	N79	#4	2	4'-6"
M63	#4	2	20'-6"	N80	#4	2	4'-9"
M64	#4	2	20'-6"	N81	#4	2	4'-6"
M65	#4	2	20'-6"	N82	#4	2	4'-9"
M66	#4	2	20'-6"	N83	#4	2	4'-6"
M67	#4	2	20'-6"	N84	#4	2	4'-9"
M68	#4	2	20'-6"	N85	#4	2	4'-6"
M69	#4	2	20'-6"	N86	#4	2	4'-9"
M70	#4	2	20'-6"	N87	#4	2	4'-6"
M71	#4	2	20'-6"	N88	#4	2	4'-9"
M72	#4	2	20'-6"	N89	#4	2	4'-6"
M73	#4	2	20'-6"	N90	#4	2	4'-9"
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M77	#4	2	20'-6"	N94	#4	2	4'-9"
M78	#4	2	20'-6"	N95	#4	2	4'-6"
M79	#4	2	20'-6"	N96	#4	2	4'-9"
M80	#4	2	20'-6"	N97	#4	2	4'-6"
M81	#4	2	20'-6"	N98	#4	2	4'-9"
M82	#4	2	20'-6"	N99	#4	2	4'-6"
M83	#4	2	20'-6"	N100	#4	2	4'-9"
M84	#4	2	20'-6"	N101	#4	2	4'-6"
M85	#4	2	20'-6"	N102	#4	2	4'-9"
M86	#4	2	20'-6"	N103	#4	2	4'-6"
M87	#4	2	20'-6"	N104	#4	2	4'-9"
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M89	#4	2	20'-6"	N106	#4	2	4'-9"
M90	#4	2	20'-6"	N107	#4	2	4'-6"
M91	#4	2	20'-6"	N108	#4	2	4'-9"
M92	#4	2	20'-6"	N109	#4	2	4'-6"
M93	#4	2	20'-6"	N110	#4	2	4'-9"
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M96	#4	2	20'-6"	N113	#4	2	4'-6"
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M98	#4	2	20'-6"	N115	#4	2	4'-6"
M99	#4	2	20'-6"	N116	#4	2	4'-9"
M100	#4	2	20'-6"	N117	#4	2	4'-6"
M101	#4	2	20'-6"	N118	#4	2	4'-9"
M102	#4	2	20'-6"	N119	#4	2	4'-6"
M103	#4	2	20'-6"	N120	#4	2	4'-9"
M104	#4	2	20'-6"	N121	#4	2	4'-6"
M105	#4	2	20'-6"	N122	#4	2	4'-9"
M106	#4	2	20'-6"	N123	#4	2	4'-6"
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M114	#4	2	20'-6"	N131	#4	2	4'-6"
M115	#4	2	20'-6"	N132	#4	2	4'-9"
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M131	#4	2	20'-6"	N148	#4	2	4'-9"
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M146	#4	2	20'-6"	N163	#4	2	4'-6"
M147	#4	2	20'-6"	N164	#4	2	4'-9"
M148	#4	2	20'-6"	N165	#4	2	4'-6"
M149	#4	2	20'-6"	N166	#4	2	4'-9"
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M162	#4	2	20'-6"	N179	#4	2	4'-6"
M163	#4	2	20'-6"	N180	#4	2	4'-9"
M164	#4	2	20'-6"	N181	#4	2	4'-6"
M165	#4	2	20'-6"	N182	#4	2	4'-9"
M166	#4	2	20'-6"	N183	#4	2	4'-6"
M167	#4	2	20'-6"	N184	#4	2	4'-9"
M168	#4	2	20'-6"	N185	#4	2	4'-6"
M169	#4	2	20'-6"	N186	#4	2	4'-9"
M170	#4	2	20'-6"	N187	#4	2	4'-6"
M171	#4	2	20'-6"	N188	#4	2	4'-9"
M172	#4	2	20'-6"	N189	#4	2	4'-6"

GRANULAR AGGREGATE FOR CONC. & C.M. PIPE CULV.		
NOMINAL DIAMETER	CU. YD. PER LIN. FT. CONC. PIPE	C.M. PIPE
12	0.162	0.140
15	0.187	0.161
18	0.212	0.183
24	0.266	0.227
30	0.321	0.273
36	0.380	0.322
42	0.442	0.372
48	0.507	0.424
54	0.573	0.479
60	0.643	0.535
66	0.716	0.593
72	0.790	0.653
78	0.868	
84	0.949	
90	1.032	
96	1.118	
102	1.206	
108	1.298	

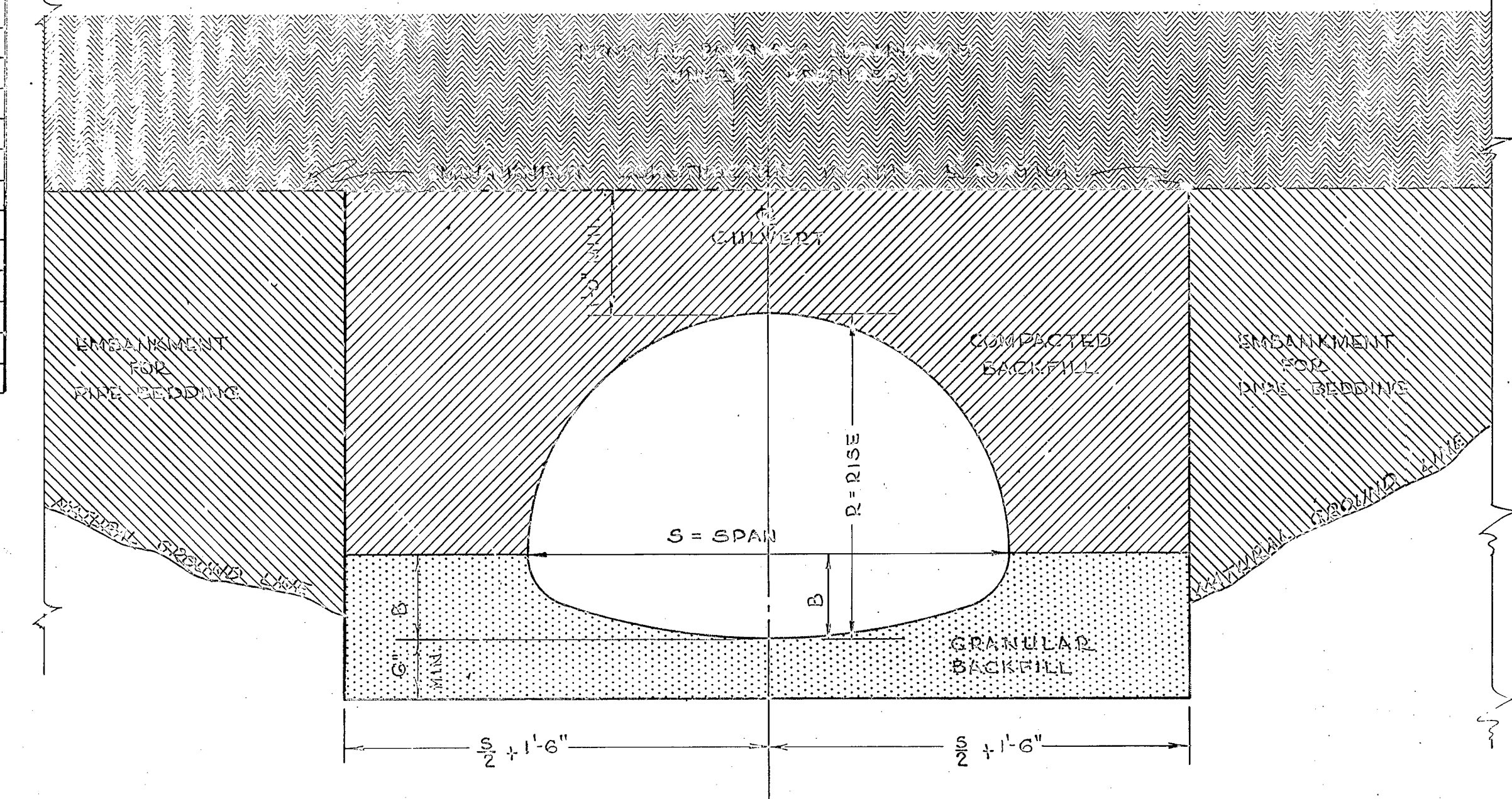
GRANULAR AGGREGATE FOR PIPE-ARCH CULVERTS		
SPAN X RISE	"B"	CU. YD. PER LIN. FT.
16" X 11"	4 1/2"	0.133
22" X 13"	4 3/4"	0.143
23" X 16"	5 1/4"	0.154
29" X 18"	5 1/2"	0.163
36" X 22"	6 1/4"	0.185
43" X 27"	7"	0.206
50" X 31"	8"	0.233
58" X 36"	9 1/4"	0.265
65" X 40"	10 1/2"	0.297
72" X 44"	11 3/4"	0.331
6' 1" X 4' 7"	21.0"	0.427
6' 4" X 4' 9"	20.5"	0.422
6' 9" X 4' 11"	22.0"	0.461
7' 0" X 5' 1"	21.4"	0.456
7' 3" X 5' 3"	20.8"	0.451
7' 8" X 5' 5"	22.4"	0.496
7' 11" X 5' 7"	21.7"	0.487
8' 2" X 5' 9"	20.9"	0.473
8' 7" X 5' 11"	22.7"	0.525
8' 10" X 6' 1"	21.9"	0.510
9' 4" X 6' 3"	23.8"	0.569
9' 6" X 6' 5"	22.9"	0.554
9' 9" X 6' 7"	21.9"	0.581
10' 3" X 6' 9"	24.0"	0.599
10' 8" X 6' 11"	26.1"	0.664
10' 11" X 7' 1"	25.1"	0.649
11' 5" X 7' 3"	27.4"	0.723
11' 7" X 7' 5"	26.3"	0.700
11' 10" X 7' 7"	25.2"	0.677
12' 4" X 7' 9"	27.5"	0.758
12' 6" X 7' 11"	26.4"	0.731
12' 8" X 8' 1"	25.2"	0.701
12' 10" X 8' 4"	24.0"	0.672
13' 5" X 8' 5"	26.4"	0.759
13' 11" X 8' 7"	28.9"	0.856
14' 1" X 8' 9"	27.6"	0.817
14' 3" X 8' 11"	26.3"	0.785
14' 10" X 9' 1"	28.9"	0.851
15' 4" X 9' 3"	31.6"	0.955
15' 6" X 9' 5"	30.2"	0.953
15' 8" X 9' 7"	28.8"	0.873
15' 10" X 9' 10"	27.5"	0.875
16' 5" X 9' 11"	30.1"	0.986
16' 7" X 10' 1"	28.7"	0.942

GRANULAR AGGREGATE FOR STRUCT. PLATE PIPE CULVERTS		
NOMINAL DIAMETER	CU. YD. PER LIN. FT.	
60"	0.564	
66"	0.623	
72"	0.684	
78"	0.747	
84"	0.813	
90"	0.880	
96"	0.949	
102"	1.020	
108"	1.093	
114"	1.168	
120"	1.245	
126"	1.324	
132"	1.406	
138"	1.489	
144"	1.574	
150"	1.661	
156"	1.750	
162"	1.841	
168"	1.934	
174"	2.029	
180"	2.126	



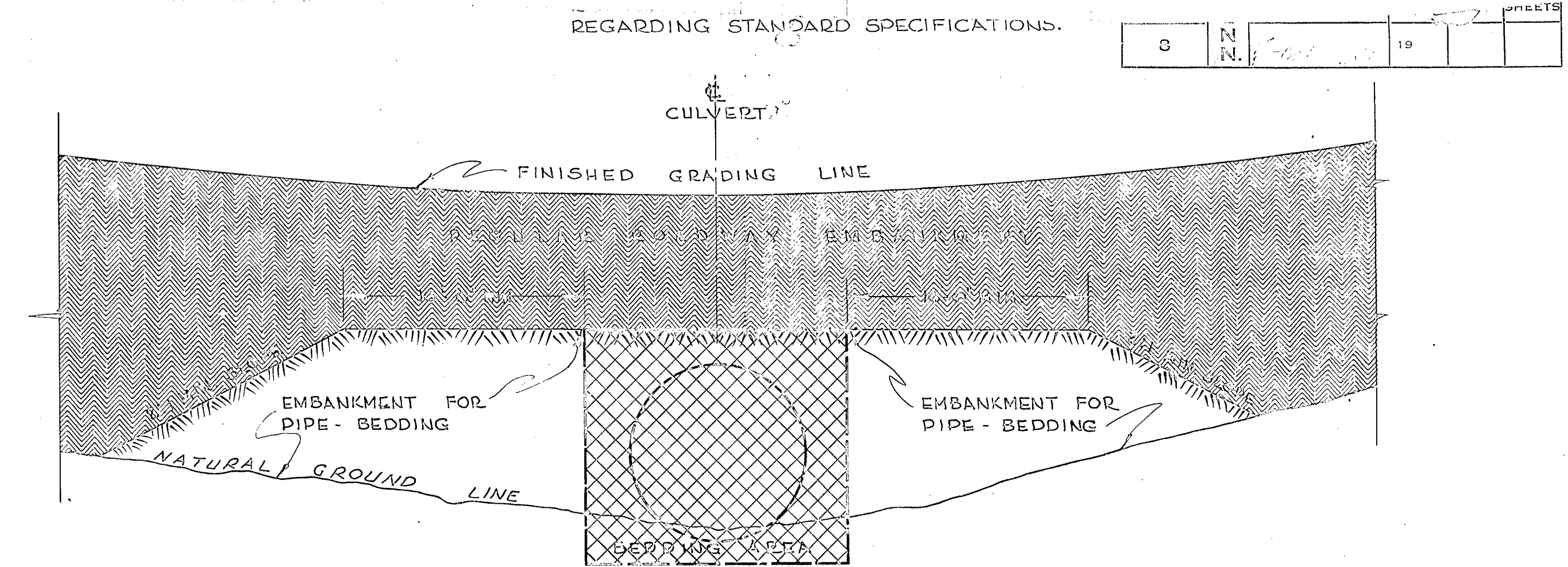
TYPICAL SECTION SHOWING BEDDING FOR PIPE CULVERTS

THE COST OF EXCAVATION FOR THIS TYPE OF CONSTRUCTION SHALL BE INCLUDED IN UNIT PRICE BID FOR OTHER ITEMS.

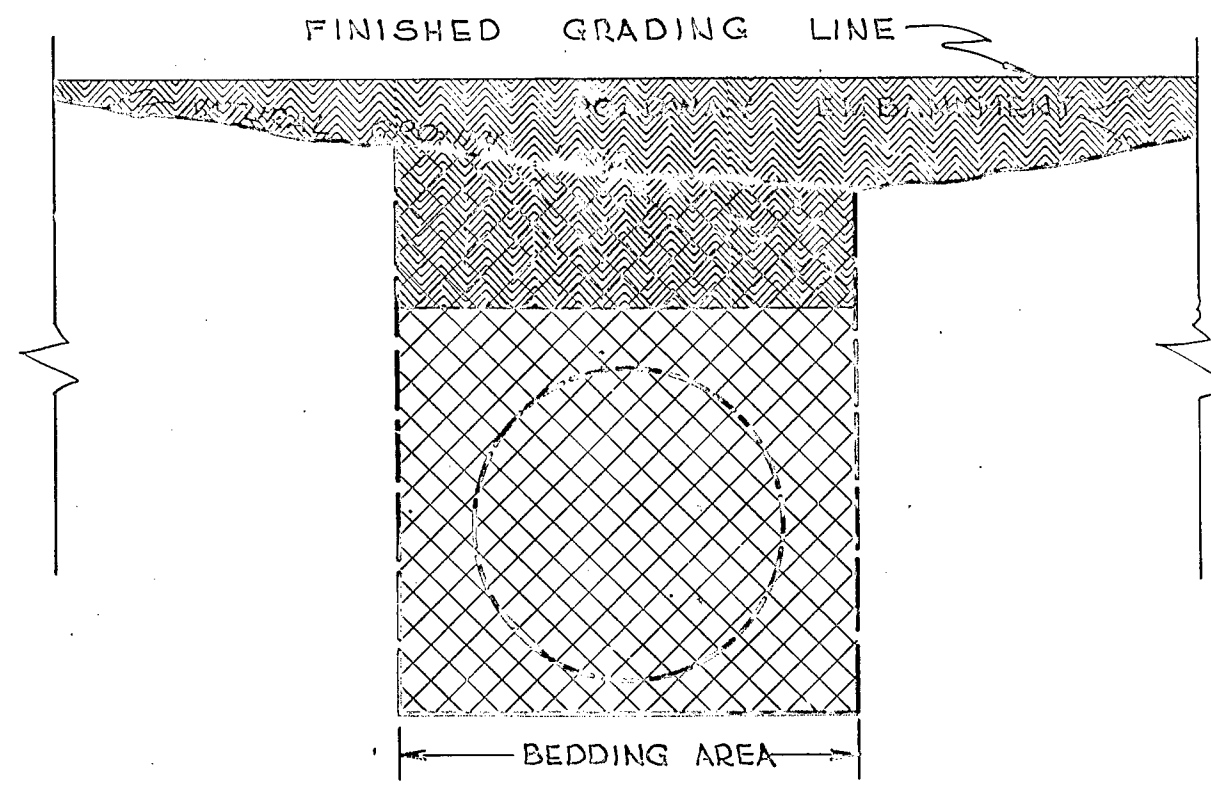


TYPICAL SECTION SHOWING BEDDING FOR PIPE-ARCH CULVERTS

THE COST OF EXCAVATION FOR THIS TYPE OF CONSTRUCTION SHALL BE INCLUDED IN UNIT PRICE BID FOR OTHER ITEMS.

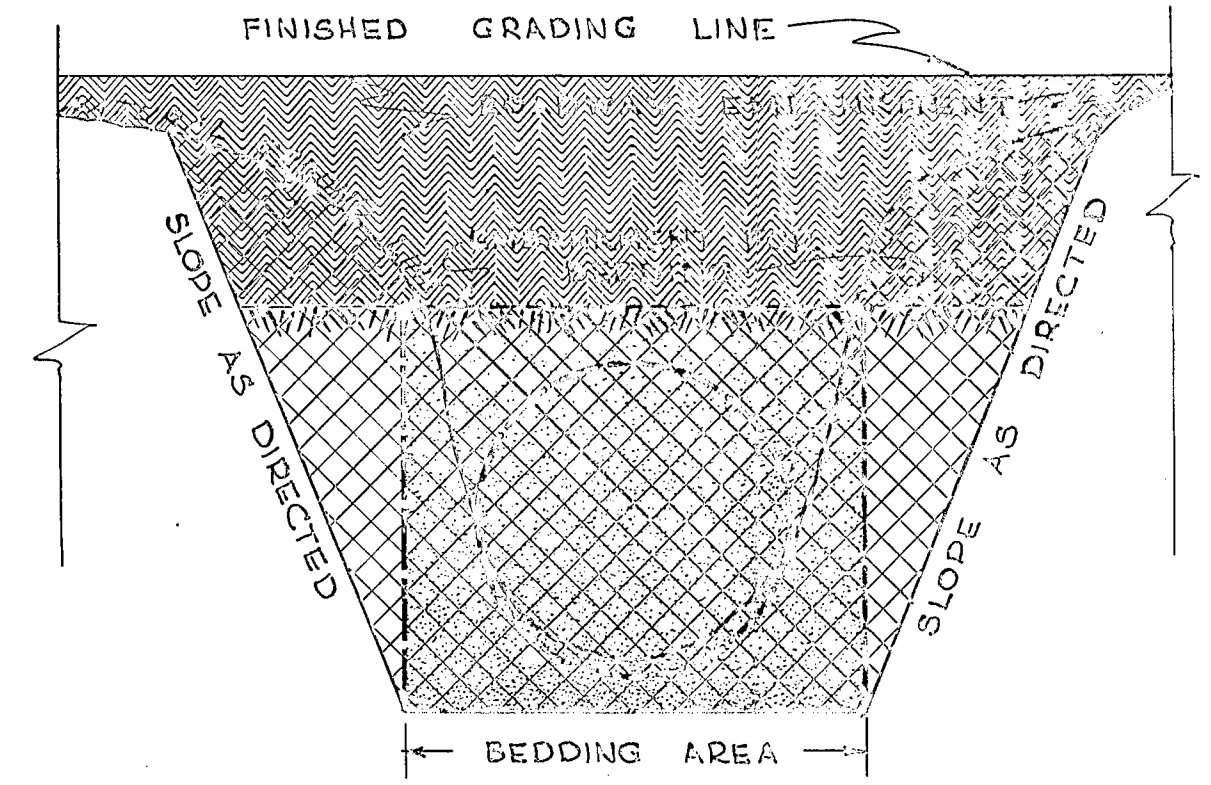


TYPICAL SECTION OF EMBANKMENT CONSTRUCTION FOR BEDDING IN FILLS



TYPICAL SECTION OF CONSTRUCTION IN CUT SECTION

(EXCAVATION INDICATED IN CROSS-HATCHING. COST INCLUDED IN OTHER ITEMS)



TYPICAL SECTION OF EMBANKMENT CONSTRUCTION IN RAVINE SECTION

(EXCAVATION INDICATED IN CROSS-HATCHING. COST INCLUDED IN OTHER ITEMS)

GENERAL NOTES

THIS TYPE OF CONSTRUCTION REQUIRED FOR ALL CROSS-DRAINS IN RURAL-TYPE ROADWAYS. THIS METHOD DOES NOT APPLY TO SIDE-DRAINS, PIPES LYING PARALLEL TO ROADWAY IN MEDIAN STRIPS, PIPES OUTSIDE OF NORMAL SLOPE LINES OR SEWER LINES IN MUNICIPAL TYPE CONSTRUCTION.

THE GRANULAR BACKFILLING SHALL EXTEND THE FULL LENGTH OF THE PIPE OR PIPE-ARCH.

GRANULAR MATERIAL FOR BACKFILLING SHALL MEET THE REQUIREMENTS OF THE FOLLOWING SPECIFICATIONS:

- CRUSHED STONE.....ARTICLE NO. 203.01
- SIZE 33C.....ARTICLE NO. 33C.02
- SIZE 12.....ARTICLE NO. 211.01
- GRAVEL OR CHERT.....ARTICLE NO. 34A.02
- SIZE 2 OR 3.....ARTICLE NO. 34A.02
- CRUSHED SLAG, SIZE 33C.....ARTICLE NO. 33C.02
- SUBGRADE INSULATION COURSE, ITEM NO. 360

PAYMENT WILL BE MADE UNDER:
ITEM 33C-10 GRANULAR BACKFILLING FOR PIPE AND PIPE-ARCH CULVERTS-PER CU. YD.

FOR OTHER DETAILS REGARDING GRANULAR BACKFILLING FOR PIPE AND PIPE-ARCH CULVERTS, SEE SPECIAL PROVISION.

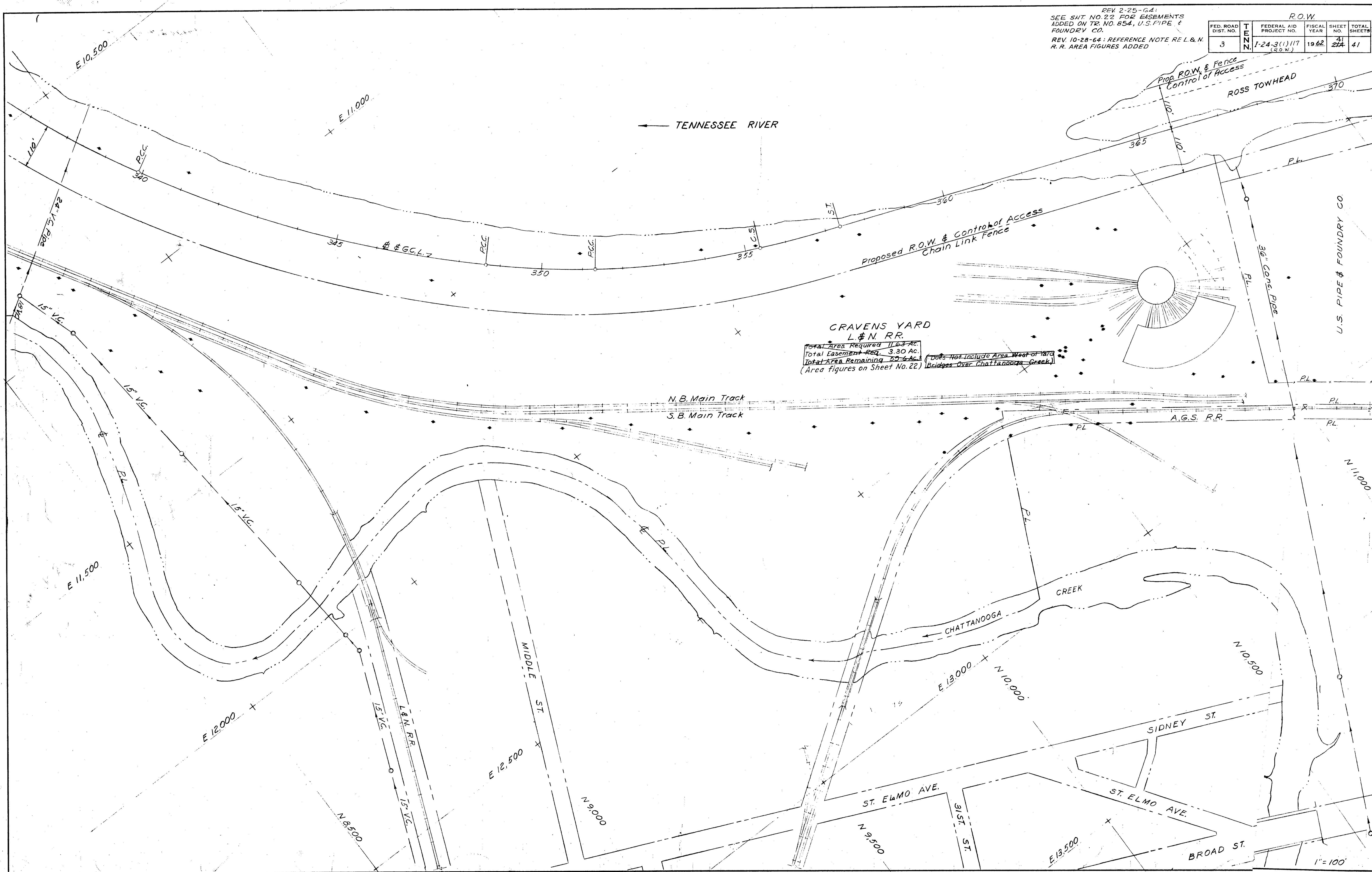
APPLICABLE TO ALL PROJECTS WHICH WERE ADVERTIZED FOR BIDS PRIOR TO MAY 1, 1961.

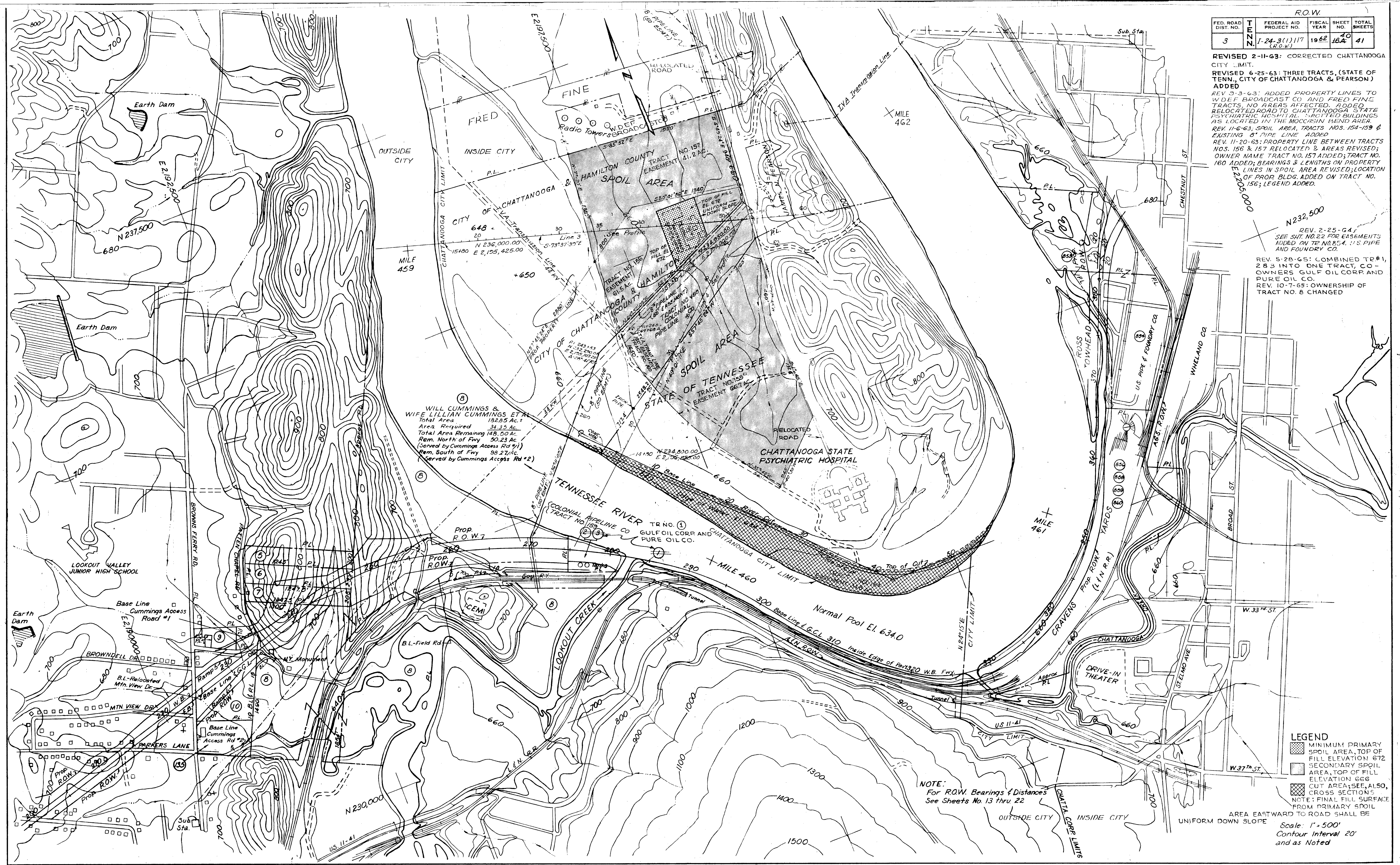
NOTE: SEE SECTIONS 141, 144 & 147 OF SUPPLEMENT TO STANDARD SPECIFICATIONS, DATED AUG. 1, 1960, FOR OTHER DETAILS AND SPECIFICATIONS WHICH ARE APPLICABLE AFTER MAY 1, 1961.

STATE OF TENNESSEE
DEPARTMENT OF HIGHWAYS AND PUBLIC WORKS
PLANS DIVISION
BEDDING STANDARD
FOR PIPE AND PIPE-ARCH CULVERTS

REV. 2-25-64:
SEE SHT. NO. 22 FOR EASEMENTS
ADDED ON TR. NO. 854, U.S. PIPE &
FOUNDRY CO.
REV. 10-28-64: REFERENCE NOTE RE L & N
R.R. AREA FIGURES ADDED

FED. ROAD DIST. NO.		TENN.		R.O.W.		FEDERAL AID PROJECT NO.		FISCAL YEAR	SHEET NO.	TOTAL SHEETS
3		N		1-24-3(1)117 (R.O.W.)		1962		21	41	41





R.O.W.				
FED. ROAD DIST. NO.	TENN. PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
3	1-24-3(1)117	1962	40	41

REVISED 2-11-63: CORRECTED CHATTANOOGA CITY LIMIT.

REVISED 6-25-63: THREE TRACTS, (STATE OF TENN., CITY OF CHATTANOOGA & PEARSON) ADDED

REV 9-3-63: ADDED PROPERTY LINES TO W.D.E.F. BROADCAST CO. AND FRED FINE TRACTS; NO AREAS AFFECTED. ADDED RELOCATED ROAD TO CHATTANOOGA STATE PSYCHIATRIC HOSPITAL; ADDED BUILDINGS AS LOCATED IN THE MOCCASIN BEND AREA

REV 11-6-63: SPOIL AREA, TRACTS NOS. 154-159 & EXISTING 8" PIPE LINE ADDED

REV. 11-20-63: PROPERTY LINE BETWEEN TRACTS NOS. 156 & 157 RELOCATED & AREAS REVISED; OWNER NAME TRACT NO. 157 ADDED; TRACT NO. 160 ADDED; BEARINGS & LENGTHS ON PROPERTY LINES IN SPOIL AREA REVISED; LOCATION OF PROP. BLDG. ADDED ON TRACT NO. 156; LEGEND ADDED.

REV. 2-25-64: SEE SHT. NO. 22 FOR EASEMENTS ADDED ON TR. NO. 854; U.S. PIPE AND FOUNDRY CO.

REV. 5-28-65: COMBINED TR. #1, 2 & 3 INTO ONE TRACT, CO-OWNERS GULF OIL CORP AND PURE OIL CO.

REV. 10-7-65: OWNERSHIP OF TRACT NO. 8 CHANGED

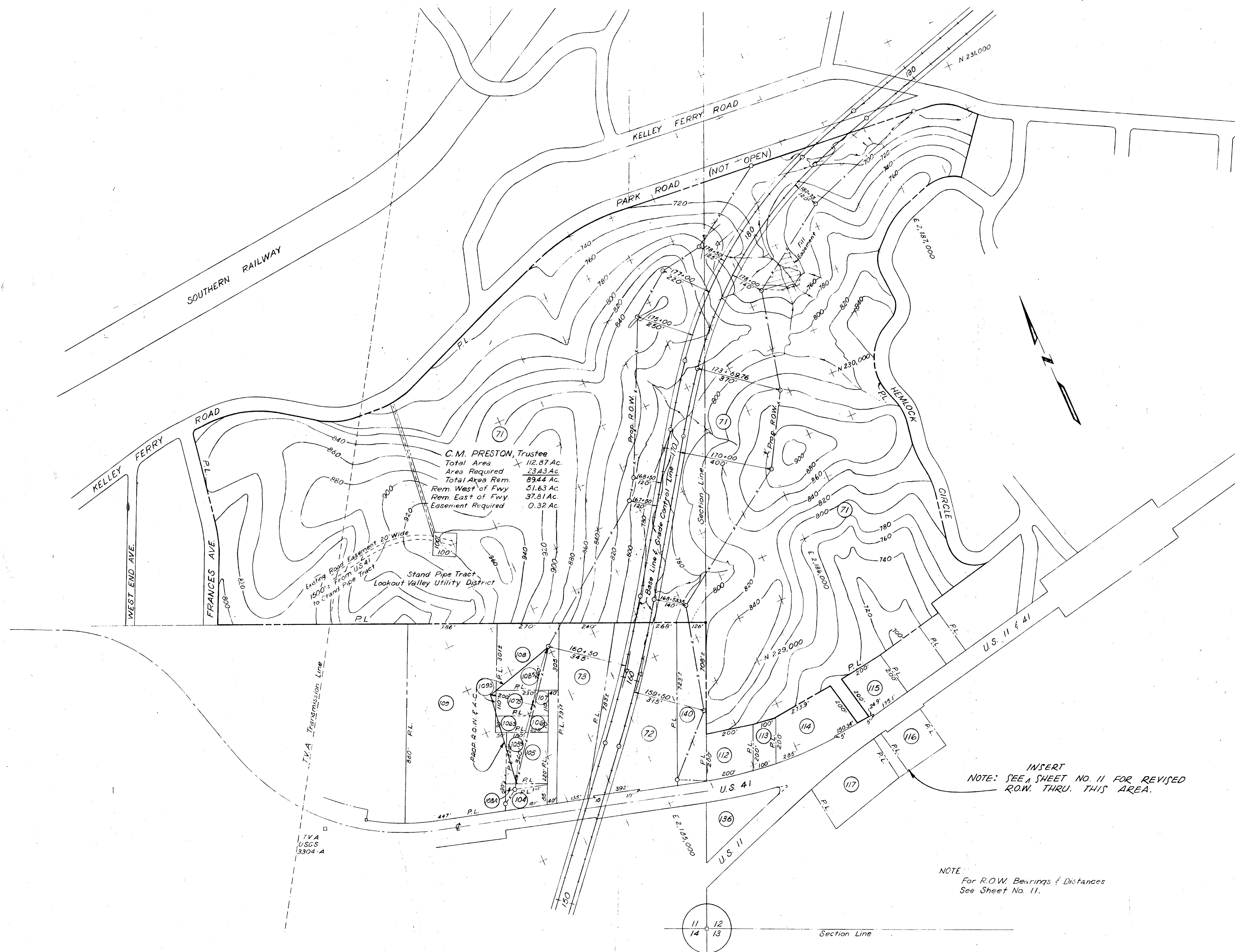
LEGEND
MINIMUM PRIMARY SPOIL AREA, TOP OF FILL ELEVATION 672
SECONDARY SPOIL AREA, TOP OF FILL ELEVATION 666
CUT AREA; SEE, ALSO, CROSS SECTIONS
NOTE: FINAL FILL SURFACE FROM PRIMARY SPOIL AREA EASTWARD TO ROAD SHALL BE UNIFORM DOWN SLOPE

Scale: 1" = 500'
Contour Interval 20'
and as Noted

NOTE:
For R.O.W. Bearings & Distances See Sheets No. 13 thru 22

R.O.W.				
FED. ROAD DIST. NO.	T E N	FEDERAL AID PROJECT NO.	FISCAL YEAR	SHEET NO. TOTAL SHEETS
3	N	1-24-3(1)117	1968	39 41
(R.O.W.)				

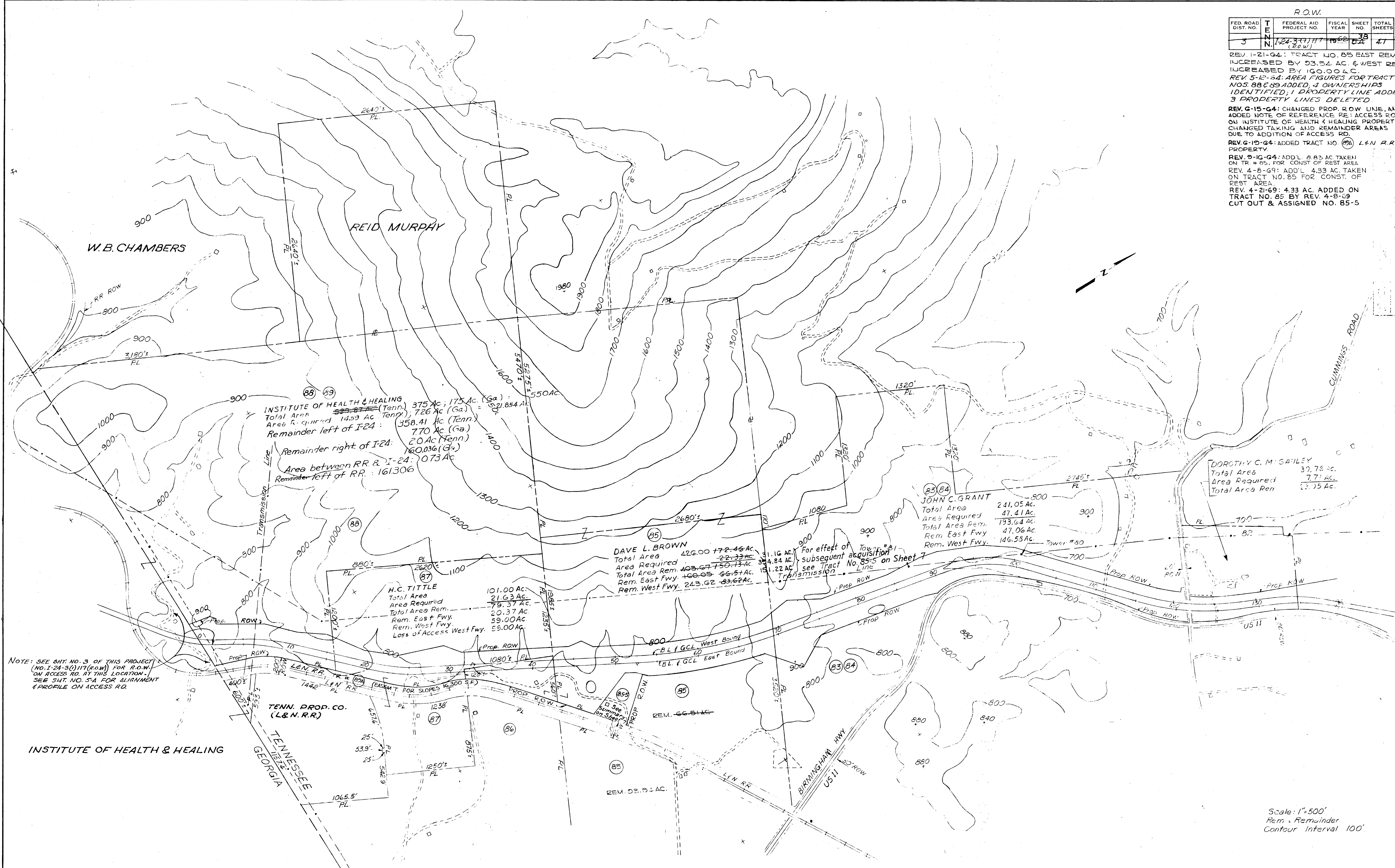
REV. 6-30-66 REV. R.O.W. THRU TR. # 113, SEE INSERT SHEET NO. 11.
REV. 9-18-67: ADDED TRACTS 1055, 1065, 1075, 1085 & 1095.



3 N 1-24-3(2)117 G4 4 181

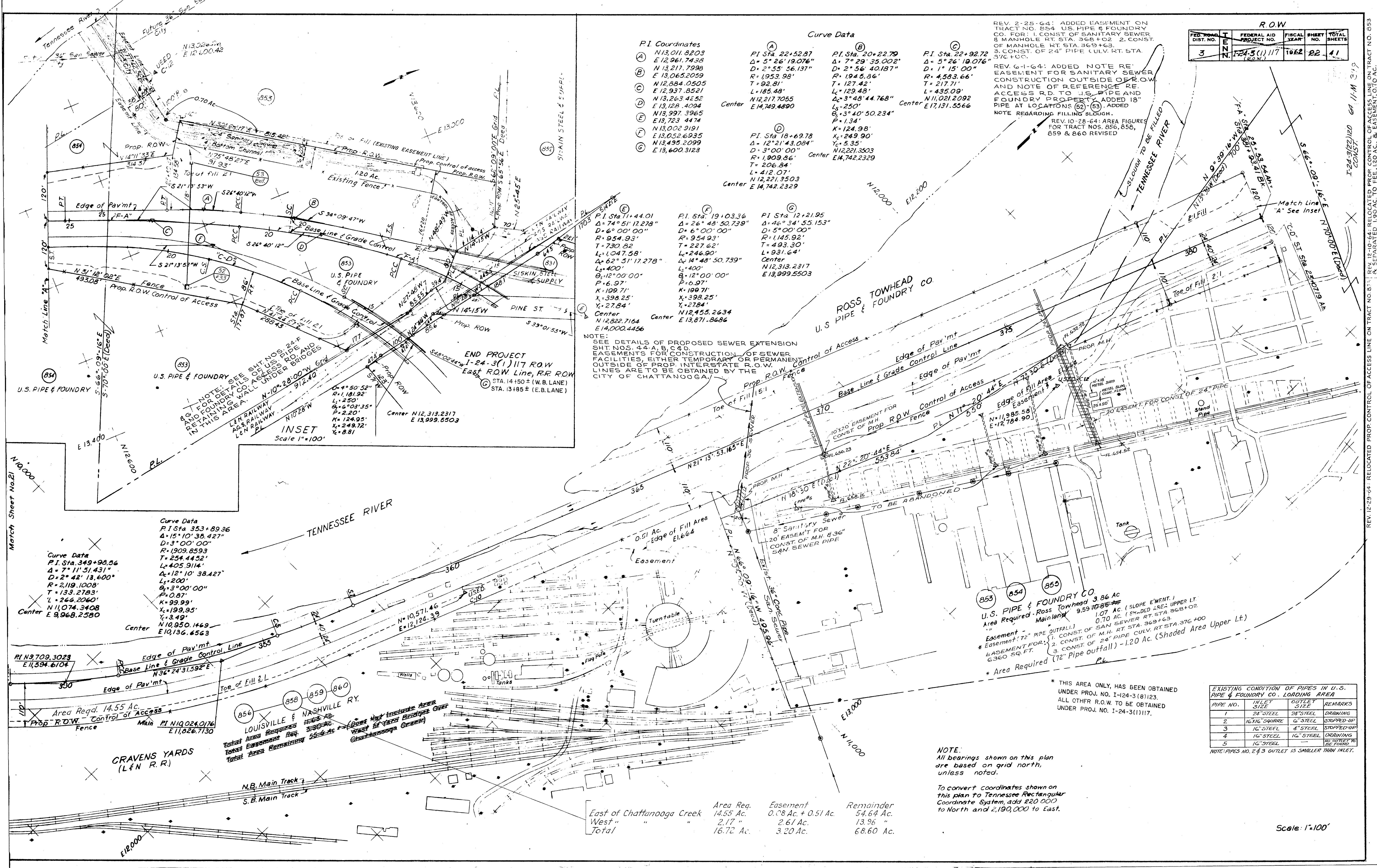
R.O.W.					
FED. ROAD DIST. NO.	T E N	FEDERAL AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
3	N	124-3(1)117	1962	38	47
		(R.O.W.)			

REV. 1-21-64: TRACT NO. 85 EAST REM. INCREASED BY 53.54 AC. & WEST REM. INCREASED BY 160.00 AC.
 REV. 5-12-64: AREA FIGURES FOR TRACT NOS. 88 & 89 ADDED, 4 OWNERSHIP IDENTIFIED, 1 PROPERTY LINE ADDED, 3 PROPERTY LINES DELETED
 REV. 9-15-64: CHANGED PROP. ROW LINE, AND ADDED NOTE OF REFERENCE RE: ACCESS ROAD ON INSTITUTE OF HEALTH & HEALING PROPERTY; CHANGED TAKING AND REMAINDER AREAS DUE TO ADDITION OF ACCESS RD.
 REV. 9-15-64: ADDED TRACT NO. 85A L&N R.R. PROPERTY.
 REV. 9-15-64: ADD'L 8.83 AC TAKEN ON TR. # 85, FOR CONST. OF REST AREA
 REV. 4-8-69: ADD'L 4.33 AC TAKEN ON TRACT NO. 85 FOR CONST. OF REST AREA
 REV. 4-21-69: 4.33 AC. ADDED ON TRACT NO. 85 BY REV. 4-8-69 CUT OUT & ASSIGNED NO. 85-5



NOTE: SEE SHT. NO. 3 OF THIS PROJECT (NO. 1-24-3(1)117 (R.O.W.)) FOR R.O.W. ON ACCESS RD. AT THIS LOCATION. SEE SHT. NO. 5-A FOR ALIGNMENT & PROFILE ON ACCESS RD.

Scale: 1"=500'
 Rem. - Remainder
 Contour Interval 100'



P.I. Coordinates		Curve Data	
(A)	N13,011.8203 E12,961.7438	PI Sta 22+52.87 Δ=5°26'19.076"	PI Sta 20+22.79 Δ=7°29'35.002"
(B)	N13,217.7998 E13,065.2059	D=2°55'56.137"	D=2°56'40.187"
(C)	N12,884.0505 E12,937.8521	R=1,953.98'	R=1,945.86'
(D)	N13,263.4852 E13,128.4094	T=92.81'	T=127.42'
(E)	N13,997.3965 E13,723.4474	L=185.48'	L=129.48'
(F)	N13,002.9191 E13,052.6935	Center E14,749.4890	Center E17,131.5566
(G)	N13,495.2099 E13,600.3123		

R.O.W.				
FED. ROAD DIST. NO.	FEDERAL AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
3	1-24-3(1)117	1962	22	41

REV. 2-25-64: ADDED EASEMENT ON TRACT NO. 854 U.S. PIPE & FOUNDRY CO. FOR: 1. CONST. OF SANITARY SEWER 8" MANHOLE RT. STA. 368+02 2. CONST. OF 24" PIPE (CULV. RT. STA. 376+00).

REV. 6-1-64: ADDED NOTE RE: EASEMENT FOR SANITARY SEWER CONSTRUCTION OUTSIDE OF R.O.W. AND NOTE OF REFERENCE RE: ACCESS RD. TO U.S. PIPE AND FOUNDRY PROPERTY ADDED 18" PIPE AT LOCATIONS (52)-(53). ADDED NOTE REGARDING FILLING SLOUGH.

REV. 10-28-64: AREA FIGURES FOR TRACT NOS. 856, 858, 859 & 860 REVISED

PI Sta 11+44.01 Δ=74°51'17.278"	PI Sta 19+03.36 Δ=26°48'50.739"	PI Sta 12+21.95 Δ=46°34'55.153"
D=6°00'00"	D=6°00'00"	D=5°00'00"
R=954.93'	R=954.93'	R=1,145.92'
T=730.82'	T=227.62'	T=493.30'
L=1,047.58'	L=246.90'	L=931.64'
Δ=62°51'17.278"	Δ=14°48'50.739"	Δ=12°21'43.084"
Ls=400'	Ls=400'	Ls=400'
θ=12°00'00"	θ=12°00'00"	θ=12°00'00"
P=6.97'	P=6.97'	P=6.97'
K=199.71'	K=199.71'	K=199.71'
X=398.25'	X=398.25'	X=398.25'
Y=27.84'	Y=27.84'	Y=27.84'
Center N12,822.7164 E14,000.4456	Center N12,455.2634 E13,871.8686	Center N12,313.2317 E13,999.5503

NOTE: SEE DETAILS OF PROPOSED SEWER EXTENSION SHIT NOS. 4-4-A, B, C & D. EASEMENTS FOR CONSTRUCTION OF SEWER FACILITIES, EITHER TEMPORARY OR PERMANENT, OUTSIDE OF PROP. INTERSTATE R.O.W. LINES ARE TO BE OBTAINED BY THE CITY OF CHATTANOOGA.

Curve Data	
PI Sta 349+98.56 Δ=7°11'51.431"	PI Sta 353+89.36 Δ=15°10'38.427"
D=2°42'13.600"	D=3°00'00"
R=2,119.1008'	R=1,909.8593'
T=133.2783'	T=254.4452'
L=266.2060'	L=405.9114'
Center N11,074.3408 E9,968.2580	Center N10,950.1469 E10,136.6563

Curve Data	
PI Sta 349+98.56 Δ=7°11'51.431"	PI Sta 353+89.36 Δ=15°10'38.427"
D=2°42'13.600"	D=3°00'00"
R=2,119.1008'	R=1,909.8593'
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Curve Data	
PI Sta 349+98.56 Δ=7°11'51.431"	PI Sta 353+89.36 Δ=15°10'38.427"
D=2°42'13.600"	D=3°00'00"
R=2,119.1008'	R=1,909.8593'
T=133.2783'	T=254.4452'
L=266.2060'	L=405.9114'
Center N11,074.3408 E9,968.2580	Center N10,950.1469 E10,136.6563

	Area Req.	Easement	Remainder
East of Chattanooga Creek	14.55 Ac.	0.08 Ac. + 0.51 Ac.	54.64 Ac.
West "	2.17 "	2.61 Ac.	13.96 "
Total	16.72 Ac.	3.20 Ac.	68.60 Ac.

NOTE: All bearings shown on this plan are based on grid north, unless noted.

To convert coordinates shown on this plan to Tennessee Rectangular Coordinate System, add 820,000 to North and 2,190,000 to East.

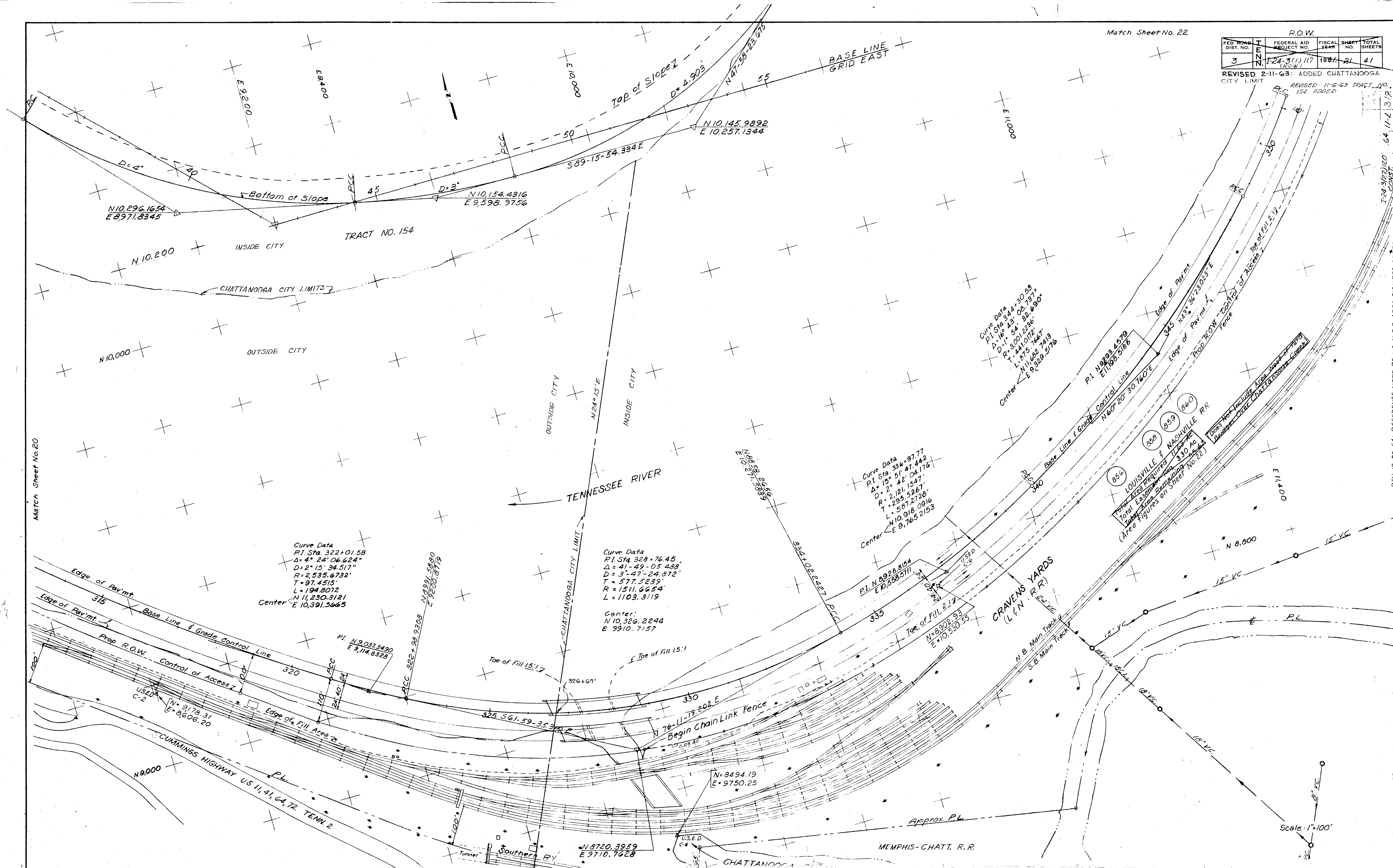
* THIS AREA ONLY, HAS BEEN OBTAINED UNDER PROJ. NO. I-24-3(8)123. ALL OTHER R.O.W. TO BE OBTAINED UNDER PROJ. NO. I-24-3(1)117.

EXISTING CONDITION OF PIPES IN U.S. PIPE & FOUNDRY CO. LOADING AREA			
PIPE NO.	INLET SIZE	OUTLET SIZE	REMARKS
1	24" STEEL	24" STEEL	DRAINING
2	16" X 16" SQUARE	6" STEEL	STOPPED-UP
3	16" STEEL	4" STEEL	STOPPED-UP
4	16" STEEL	16" STEEL	DRAINING
5	16" STEEL		NO OUTLET TO THE FOUNDRY

NOTE: PIPES NO. 2 & 3 OUTLET IS SMALLER THAN INLET.

Scale: 1"=100'

R.O.W.				
FED. ROAD DIST. NO.	FEDERAL AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
3	1-24-3(1) 117 (R.O.W.)	1961	21	41
REVISED 2-11-63: ADDED CHATTANOOGA CITY LIMIT				
REVISED 11-6-63 TRACT NO. 154 ADDED				



REV. 10-28-64: REFERENCE NOTE RE L & N R.R. AREA FIGURES ADDED

I-24-3(22)1:0
CONST. 64 11-1-19

R.O.W.				
FED. ROAD DIST. NO.	FEDERAL AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
3	124-3(1)117 (R.O.W.)	1962	20	41

REV. 5-28-65: TRACT NO. 1 REVISED TO SHOW CO-OWNERSHIP OF GULFOIL CORP. AND PURE OIL CO.

REVISED 2-11-63: ADDED CHATTANOOGA CITY LIMIT.
REVISED 11-6-63: TRACT NO. 154 ADDED

CHATTANOOGA STATE PSYCHIATRIC HOSPITAL

N 11,477.7576
E 7,871.8692

Top of Slope 1

BASE LINE

S 45° 00' E

S 46° 07' 03.659 E

D = 0.50

S 42° 57' 03.659 E

Bottom of Slope 1

S 77° 15' 54.334 E

N 10,296.1654
E 8,971.8345

TRACT NO. 154

Area Required Between Top of Slope & Edge of Water - 34.5 Acres

INSIDE CITY

CHATTANOOGA CITY LIMIT

OUTSIDE CITY

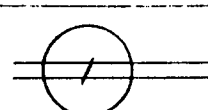
TENNESSEE RIVER

CO-OWNERS, GULF OIL CORP. & PURE OIL CO.
TRACT NO. ①

Curve Data
PI Sta. 293+18.98
Δ = 17° 16' 03.629"
D = 1° 30' 00"
R = 3,819.7186'
T = 579.9857'
L = 1,151.1783'
Center
N 8,211.6741
E 4,446.047

PL N 11,050.7271
E 7,066.3983

Curve Data
PI Sta 311+65.45
Δ = 18° 55' 53.376"
D = 0° 59' 56.922"
R = 5,734.4815'
T = 956.0992'
L = 1,894.7695'
Center
N 13,930.8951
E 12,105.9837


SOUTHEASTERN PIPELINE CO.
Total Area 1.05 Ac
Area Req'd. All

Edge of Pav't
Base Line & Grade Control Line
Edge of Pav't

305

310

315

S 36° 39' 35.31" E

N 9,907.83
E 7,806.16

PI N 9,602.0047
E 8,225.3762

S 57° 35' 28.686 E

NOTE:
All bearings shown on this plan are based on grid north.
To convert coordinates show on this plan to Tennessee Rectangular Coordinate System add 220,000 to North and 2,190,000 to East.

Scale 1" = 100'

Match Sheet No. 19

Match Sheet No. 21

FED. ROAD DIST. NO.	T E N N.	FEDERAL AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
3		124-3(1)117 (R.O.W.)	1962	19	41

I-24-3(22)120 CONST.	64	11-J	319.
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REVISED 2-11-63: ADDED CHATTANOOGA CITY LIMIT.

TR. # (1)
CO-OWNERS, GULF OIL CORP. & PURE OIL CO.

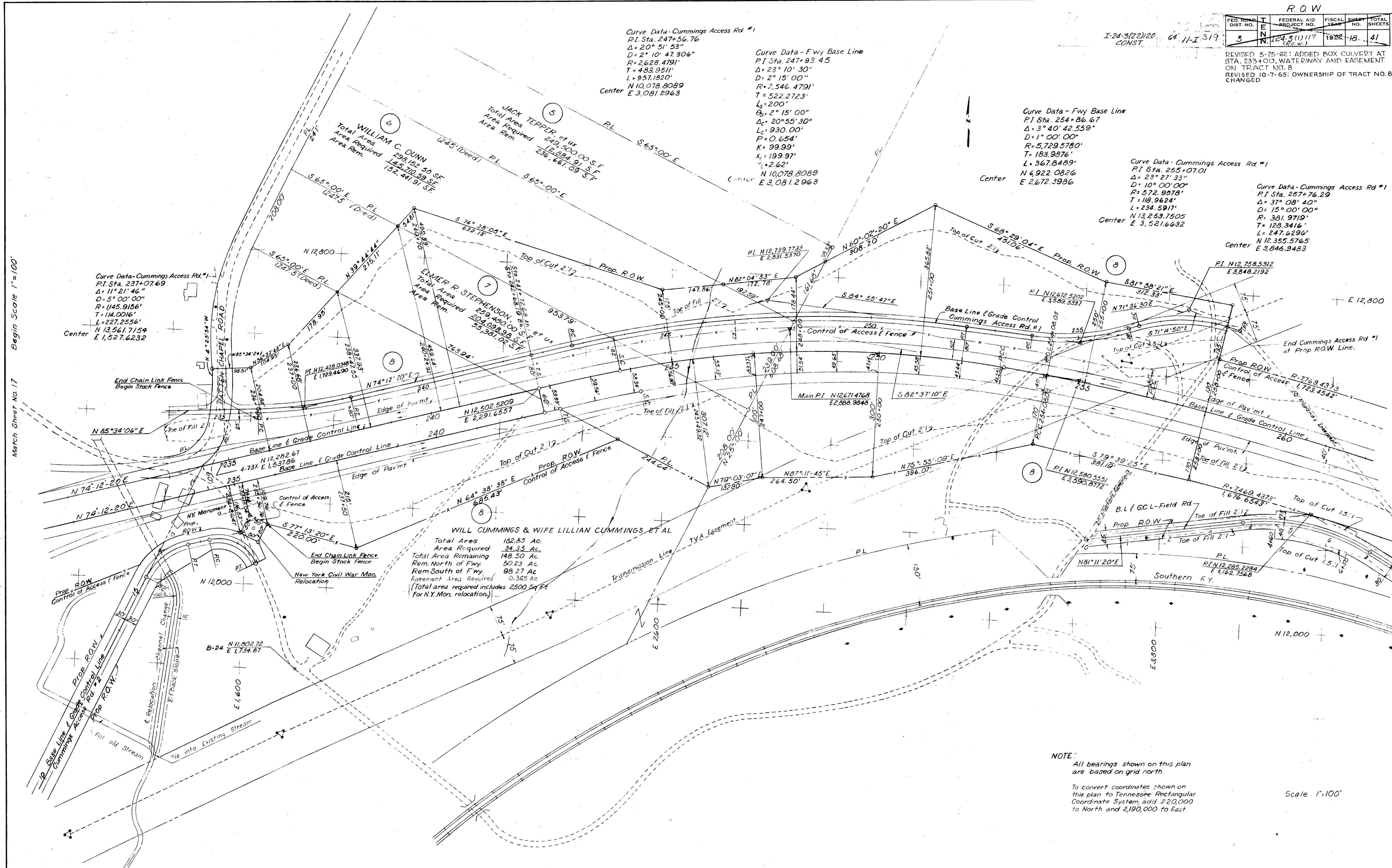
~~SOUTHEASTERN PIPELINE CO~~
Total Area 0.138 Ac.
Area Req'd All

To convert coordinates shown on this plan to Tennessee Rectangular Coordinate System, add 220,000 to North and 2,190,000 to East.

Scale: 1" = 100'

R.O.W.				
FED. ROAD DIST. NO.	FED. AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
3	124.3(1)117 (R.O.W.)	1982	18	41

REVISED 5-25-62: ADDED BOX CULVERT AT STA. 233+00, WATERWAY AND EASEMENT ON TRACT NO. 8
 REVISED 10-7-65: OWNERSHIP OF TRACT NO. 8 CHANGED

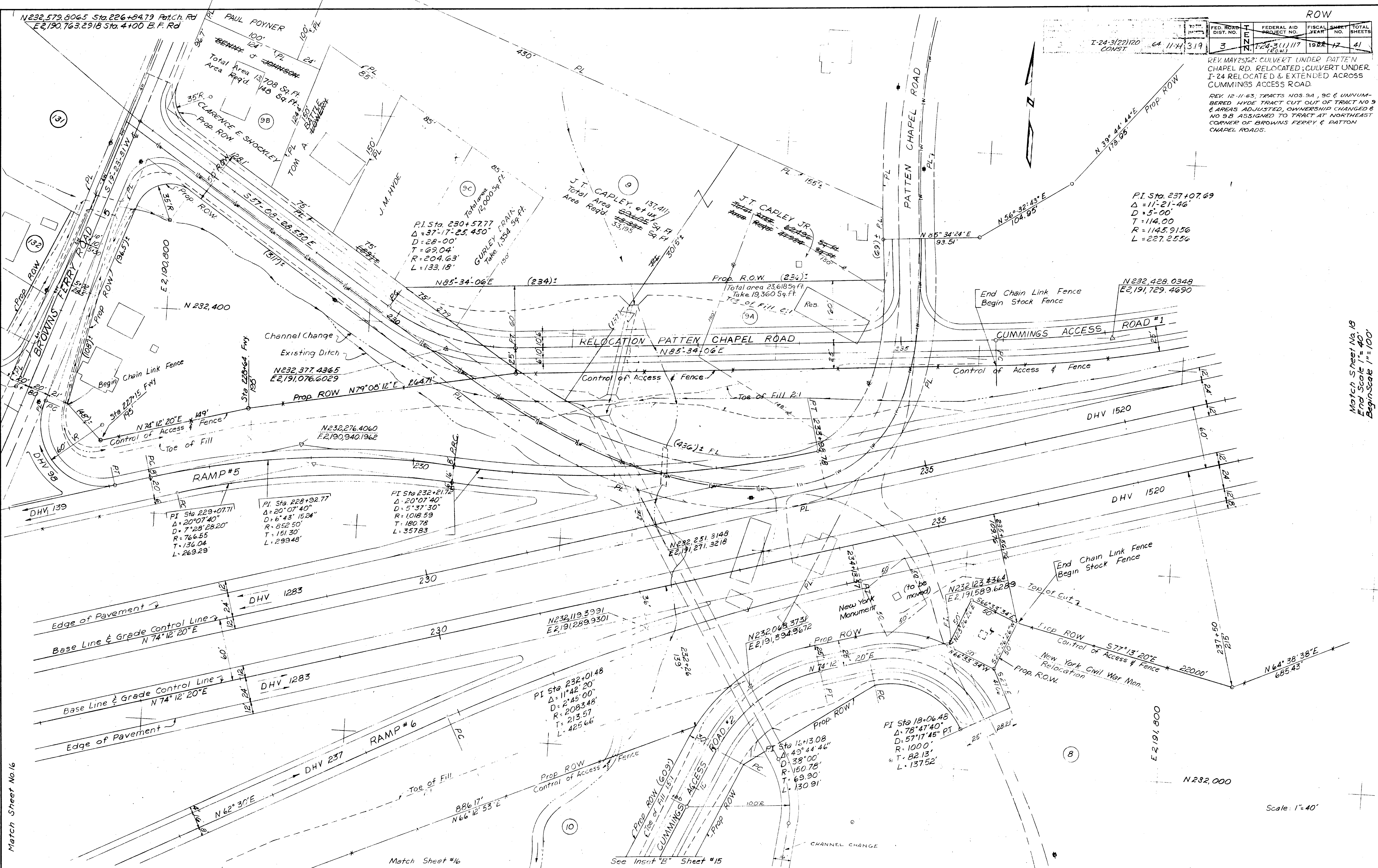


NOTE:
 All bearings shown on this plan are based on grid north.
 To convert coordinates shown on this plan to Tennessee Rectangular Coordinate System, add 220,000 to North and 2,190,000 to East.

Scale 1"=100'

Match Sheet No. 17
 Begin Scale 1"=100'

Match Sheet No. 19



ROW				TOTAL SHEETS			
FED. ROAD DIST. NO.	TENN. PROJECT NO.	FISCAL YEAR	SHEET NO.	3	17	41	
1-24-3(22)120 CONST.	64 11-4 319	1982	17	41			

REV. MAY 25, 82: CULVERT UNDER PATTEN CHAPEL RD. RELOCATED; CULVERT UNDER I-24 RELOCATED & EXTENDED ACROSS CUMMINGS ACCESS ROAD.

REV. 12-11-83: TRACTS NOS 94, 9C & UNNUMBERED HYDE TRACT CUT OUT OF TRACT NO 9 & AREAS ADJUSTED, OWNERSHIP CHANGED & NO 9B ASSIGNED TO TRACT AT NORTHEAST CORNER OF BROWNS FERRY & PATTEN CHAPEL ROADS.

PI Sta. 237+07.69
Δ = 11°-21'-46"
D = 5'-00"
T = 114.00
R = 1145.9156
L = 227.2556

N232,428.0348
E2,191,729.4690

PI Sta 229+07.71
Δ = 20°07'40"
D = 7'28'28.20"
R = 766.55
T = 136.04
L = 263.29

PI Sta 228+32.77
Δ = 20°07'40"
D = 6'43'15.24"
R = 652.50
T = 151.30
L = 293.48

PI Sta 232+21.70
Δ = 20°07'40"
D = 5'37'30"
R = 1018.59
T = 180.78
L = 357.83

PI Sta 232+01.48
Δ = 11°42'20"
D = 2'45'00"
R = 2083.48
T = 213.57
L = 425.66

PI Sta 16+3.08
Δ = 43°44'46"
D = 38'00"
R = 150.78
T = 69.90
L = 130.91

PI Sta 18+06.48
Δ = 78°47'40"
D = 57'17'45" PT
R = 1000'
T = 82.13'
L = 137.52'

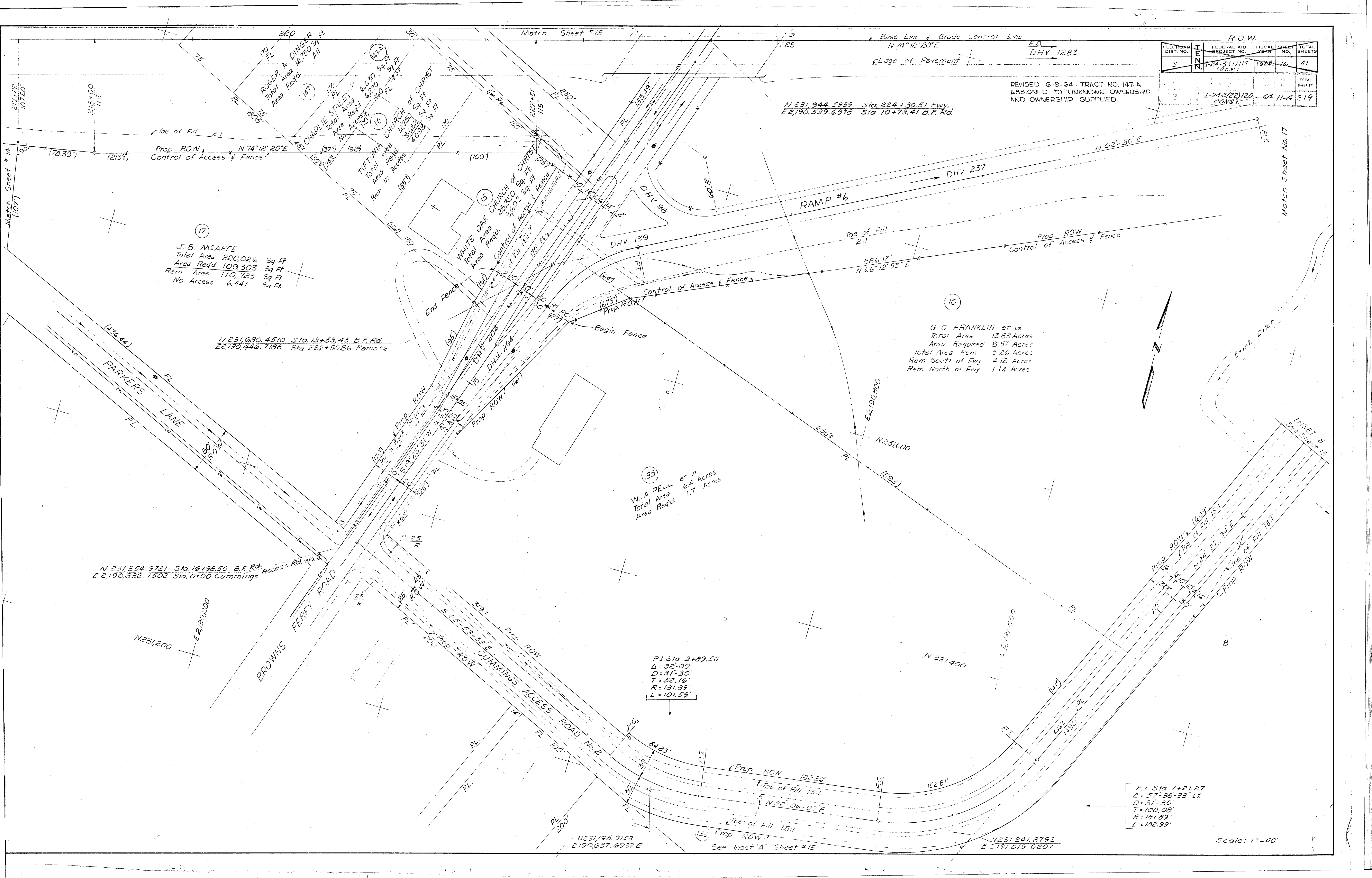
Match Sheet No 16

Match Sheet #16

See Inset "B" Sheet #15

Match Sheet No 18
End Scale 1"=40'
Begin Scale 1"=100'

Scale: 1"=40'



FED. ROAD DIST. NO.		FEDERAL AID PROJECT NO.		FISCAL YEAR	SHEET NO.	TOTAL SHEETS
3		I-24-3(1)117 (R.O.W.)		1988	16	41
3		I-24-3(2)120 CONST.		GA 11-G	319	

REVISED G-9-G4 TRACT NO. 147-A
ASSIGNED TO "UNKNOWN" OWNERSHIP
AND OWNERSHIP SUPPLIED.

P.I. Sta. 7+21.27
Δ = 57°35'33" LT.
D = 31'-30"
T = 100.08'
R = 181.89'
L = 182.99'

Scale: 1"=40'

114

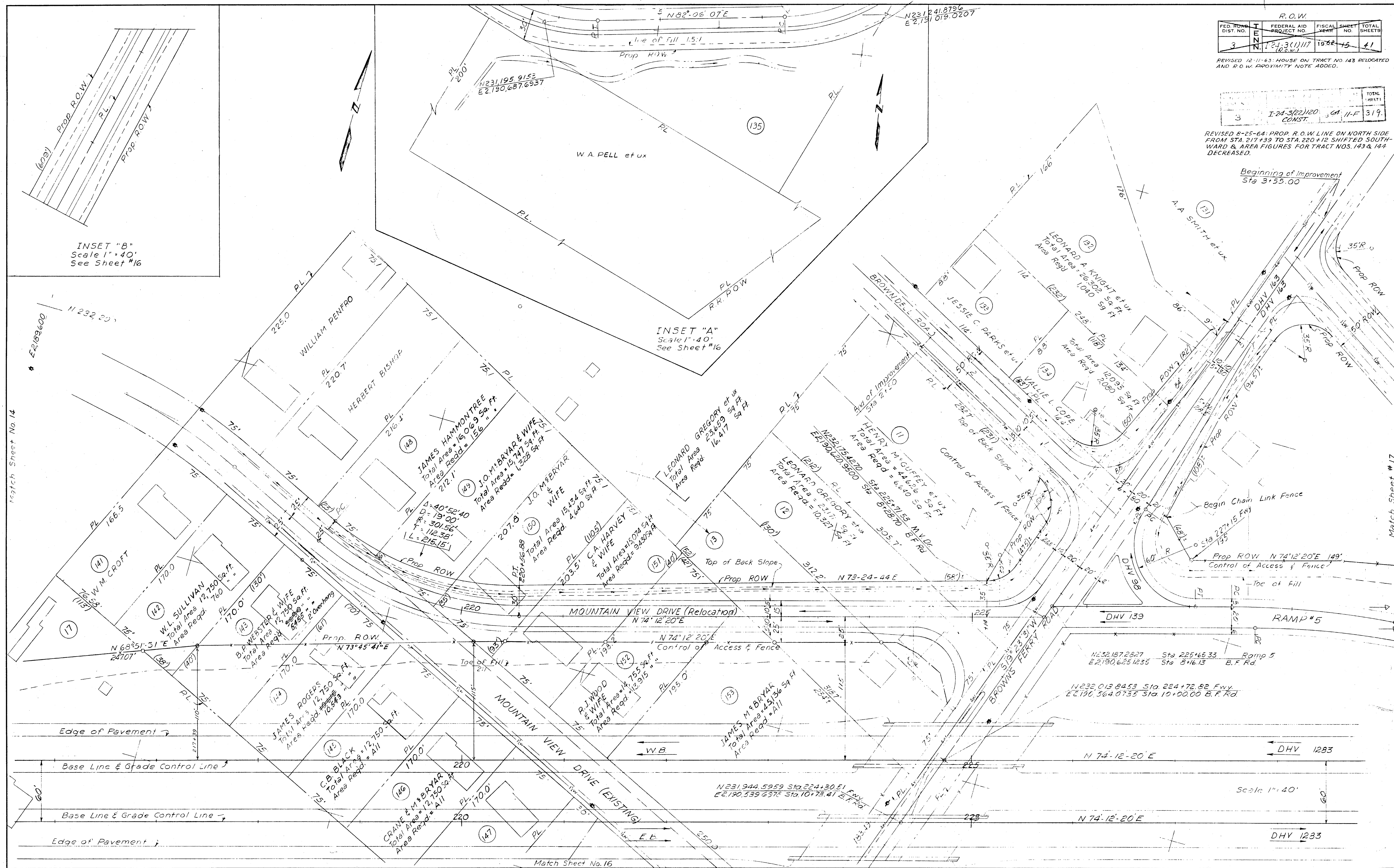
R.O.W.				
FED. ROAD DIST. NO.	TEN.	FEDERAL AID PROJECT NO.	FISCAL YEAR	TOTAL SHEETS
3	N	124-3(1)117 (20.00)	1962	41

REVISED 12-11-63: HOUSE ON TRACT NO. 143 RELOCATED AND R.O.W. PROXIMITY NOTE ADDED.

TOTAL SHEETS			
3	124-3(2)120 CONST.	11-F	319

REVISED 8-25-64: PROP. R.O.W. LINE ON NORTH SIDE FROM STA. 217+39 TO STA. 220+12 SHIFTED SOUTHWARD & AREA FIGURES FOR TRACT NOS. 143 & 144 DECREASED.

Beginning of Improvement Sta 3+55.00



Match Sheet No. 14

Match Sheet #17

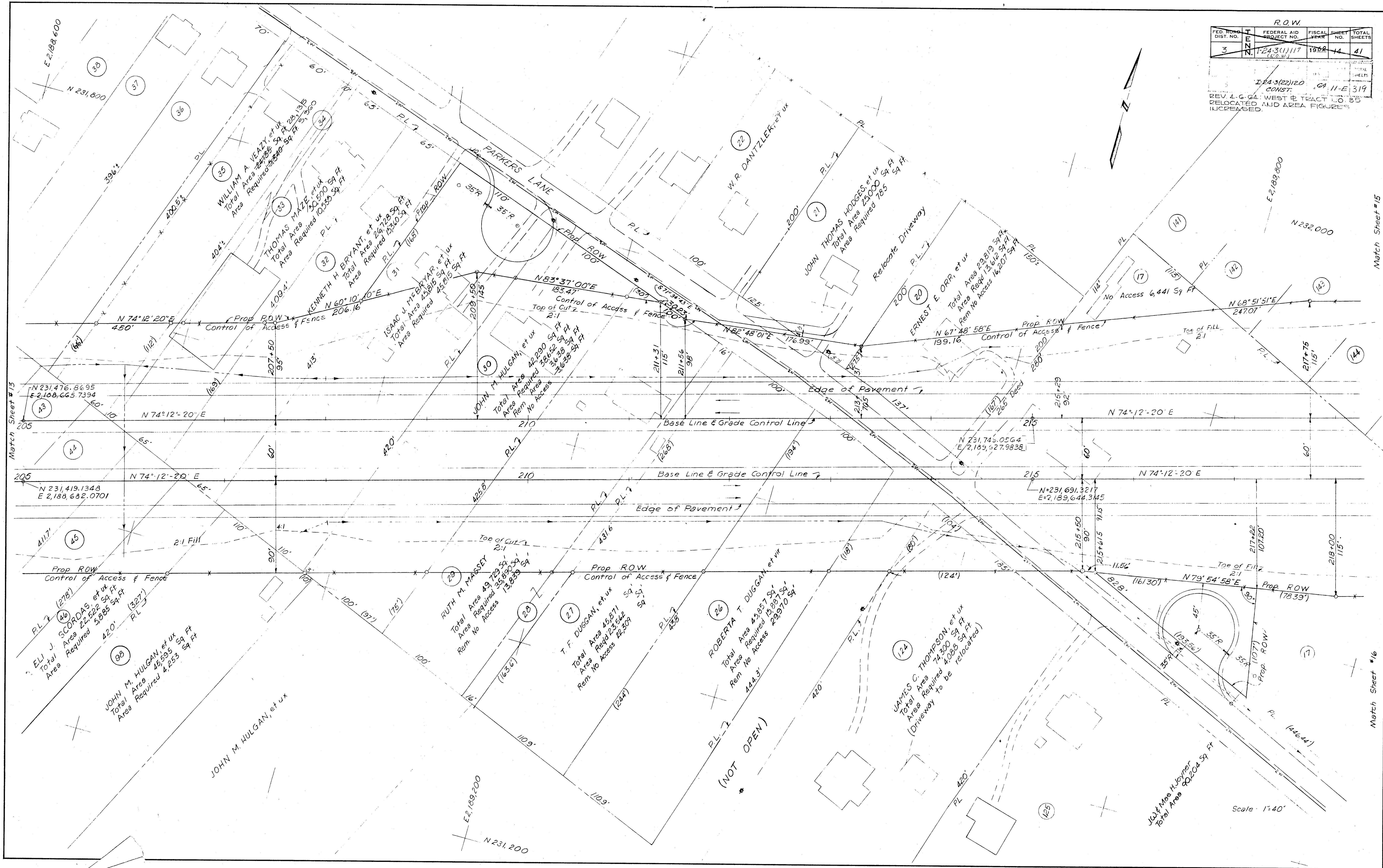
INSET "A"
Scale 1" = 40'
See Sheet #16

INSET "B"
Scale 1" = 40'
See Sheet #16

Scale 1" = 40'

Match Sheet No. 16

R.O.W.				
FED. ROAD DIST. NO.	TEN.	FEDERAL AID PROJECT NO.	FISCAL YEAR	SHEET NO.
3	N	1-24-3(1)117	1962	41
CONST.				
REV. 4-G-64 WEST 1/2 TRACT 10-35				
RELOCATED AND AREA FIGURES INCREASED.				



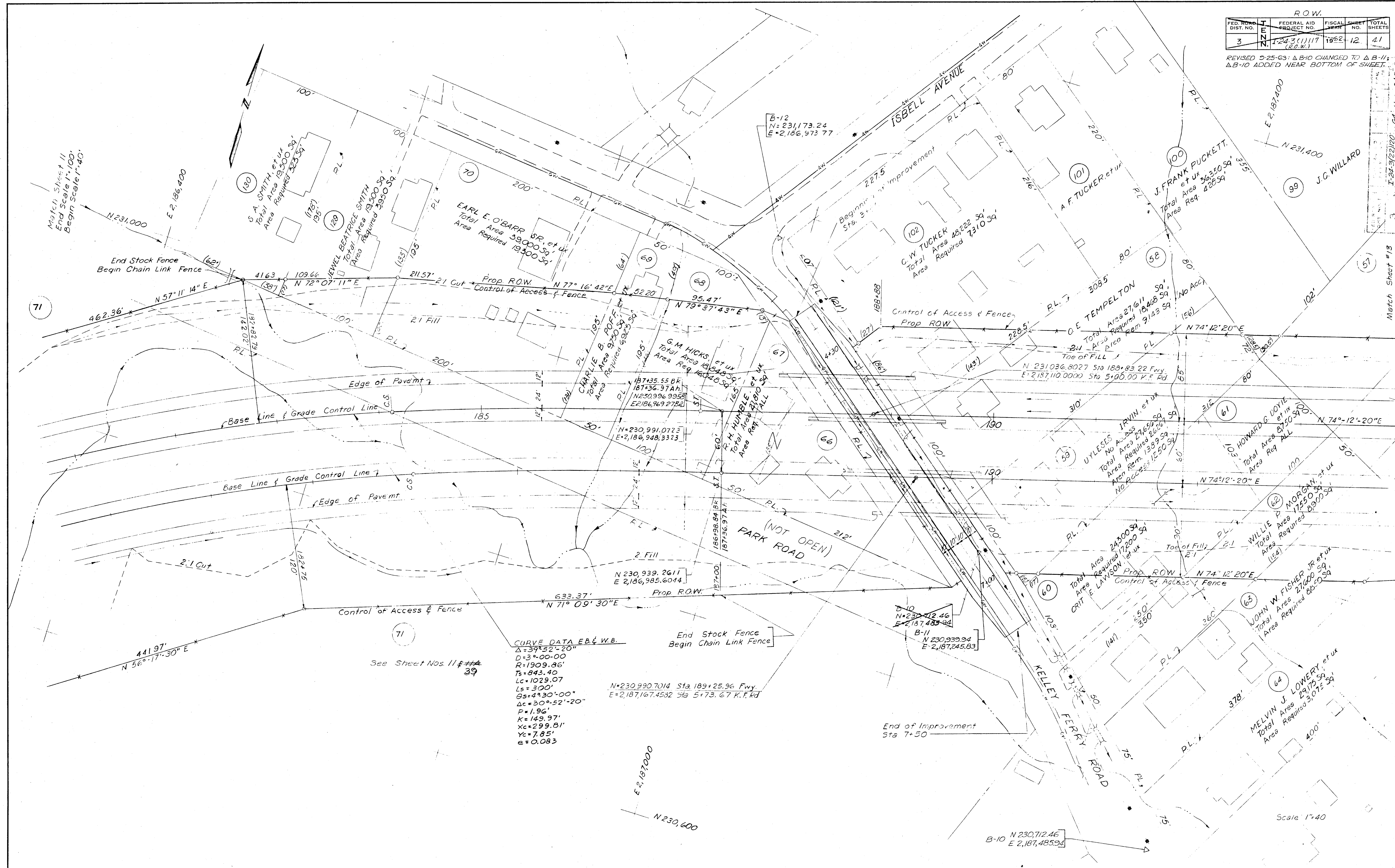
Match Sheet #15

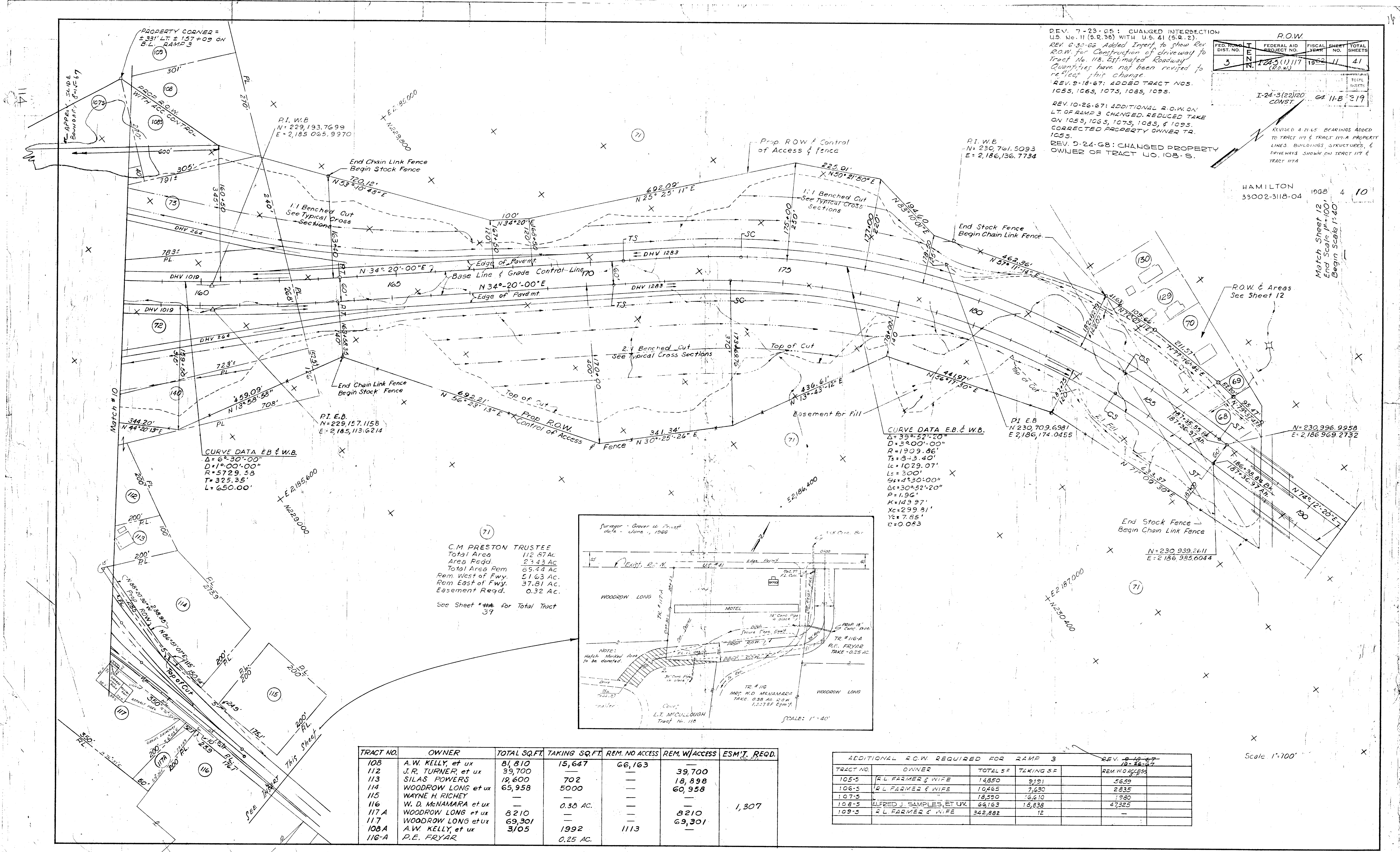
Match Sheet #16

Scale: 1"=40'

FED. ROAD DIST. NO.	TENN.	FEDERAL AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
3	TENN.	1-243(1)117 (R.O.W.)	1962	12	4

REVISED 9-25-63: Δ B-10 CHANGED TO Δ B-
Δ B-10 ADDED NEAR BOTTOM OF SHEET





REV. 7-23-65: CHANGED INTERSECTION U.S. No. 11 (S.R. 38) WITH U.S. 41 (S.R. 2).

REV. 6-30-66: Added Inset to show Rev. R.O.W. for Construction of driveway to Tract No. 118. Estimated Roadway Quantities have not been revised to reflect this change.

REV. 9-18-67: ADDED TRACT NOS. 1055, 1065, 1075, 1085, 1095.

REV. 10-26-67: ADDITIONAL R.O.W. ON LT. OF RAMP 3 CHANGED. REDUCED TAKE ON 1055, 1065, 1075, 1085, & 1095. CORRECTED PROPERTY OWNER TR. 1055.

REV. 9-24-68: CHANGED PROPERTY OWNER OF TRACT NO. 108-S.

REVISED 4 21.65' BEARINGS ADDED TO TRACT 117 & TRACT 117-A PROPERTY LINES. BUILDINGS, STRUCTURES, & DRIVEWAYS SHOWN ON TRACT 117 & TRACT 117-A

FED. ROAD DIST. NO.	TEN.	FEDERAL AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
3	N	1245(1)117 (R.O.W.)	1962	11	41

I-24-3(22)20 CONST. G4 11-B 319

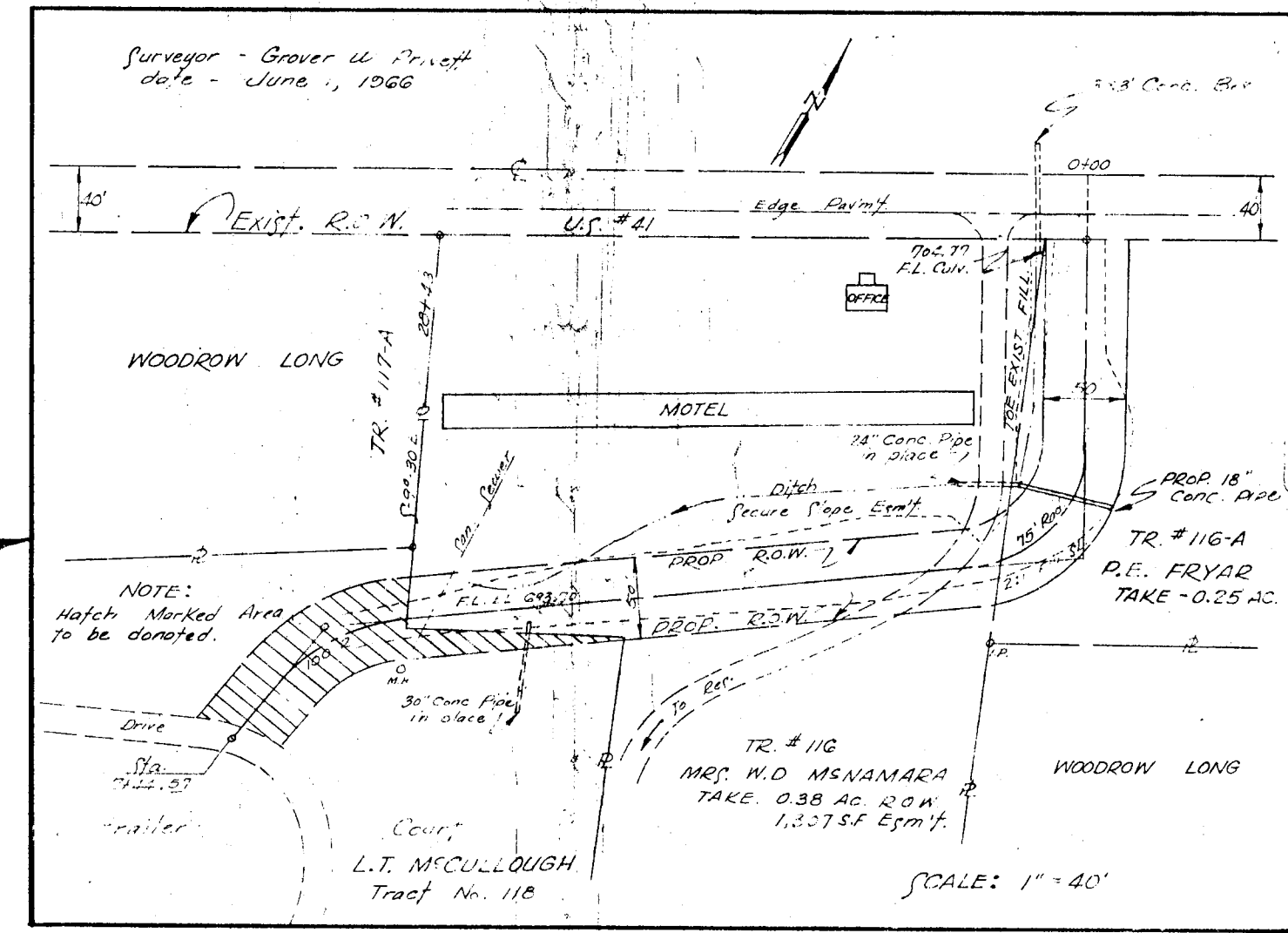
HAMILTON 33002-3118-04 1968 4 10

Match Sheet 12 End Scale 1"=100' Begin Scale 1"=40'

CURVE DATA E.B. & W.B.
Δ = 6° 30' 00"
D = 1° 00' 00"
R = 5729.58
T = 325.35'
L = 650.00'

CURVE DATA E.B. & W.B.
Δ = 33° 52' 20"
D = 39.00' 00"
R = 1909.86'
Ts = 8+3.40'
Ls = 1029.07'
Ls = 300'
Δs = 4° 30' 00"
Δc = 30° 52' 20"
P = 1.96'
K = 149.97'
Xc = 299.81'
Yc = 7.85'
C = 0.083

C.M. PRESTON TRUSTEE
Total Area 112.87 Ac.
Area Reqd. 23.43 Ac.
Total Area Rem. 89.44 Ac.
Rem. West of Fwy. 21.63 Ac.
Rem. East of Fwy. 37.81 Ac.
Easement Reqd. 0.32 Ac.
See Sheet #11A for Total Tract 37



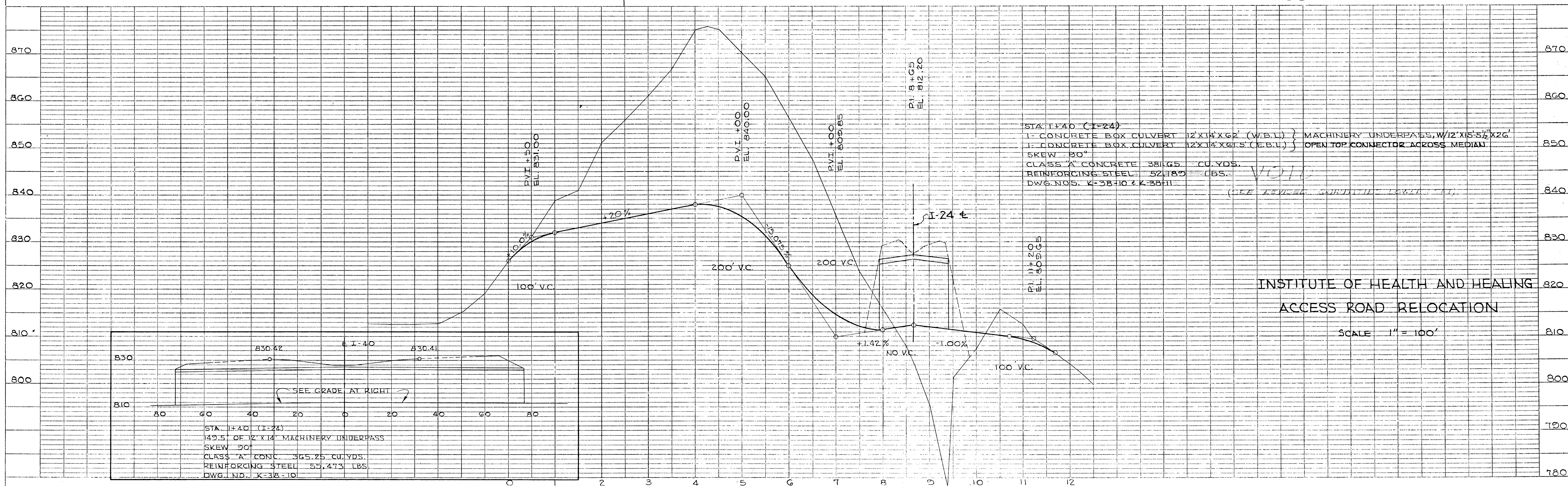
TRACT NO.	OWNER	TOTAL SQ.FT.	TAKING SQ.FT.	REM. NO ACCESS	REM. W/ACCESS	ESM'T. REQD.
108	A.W. KELLY, et ux	81,810	15,647	66,163	39,700	
112	J.R. TURNER, et ux	39,700			18,898	
113	SILAS POWERS	19,600	702		60,958	
114	WOODROW LONG et ux	65,958	5000			
115	WAYNE H. RICHEY					
116	W. D. McNAMARA et ux		0.38 AC.		8210	1,307
117A	WOODROW LONG et ux	8210			69,301	
117	WOODROW LONG et ux	69,301				
108A	A.W. KELLY, et ux	3,105	1992	1113		
116-A	P.E. FRYAR		0.25 AC.			

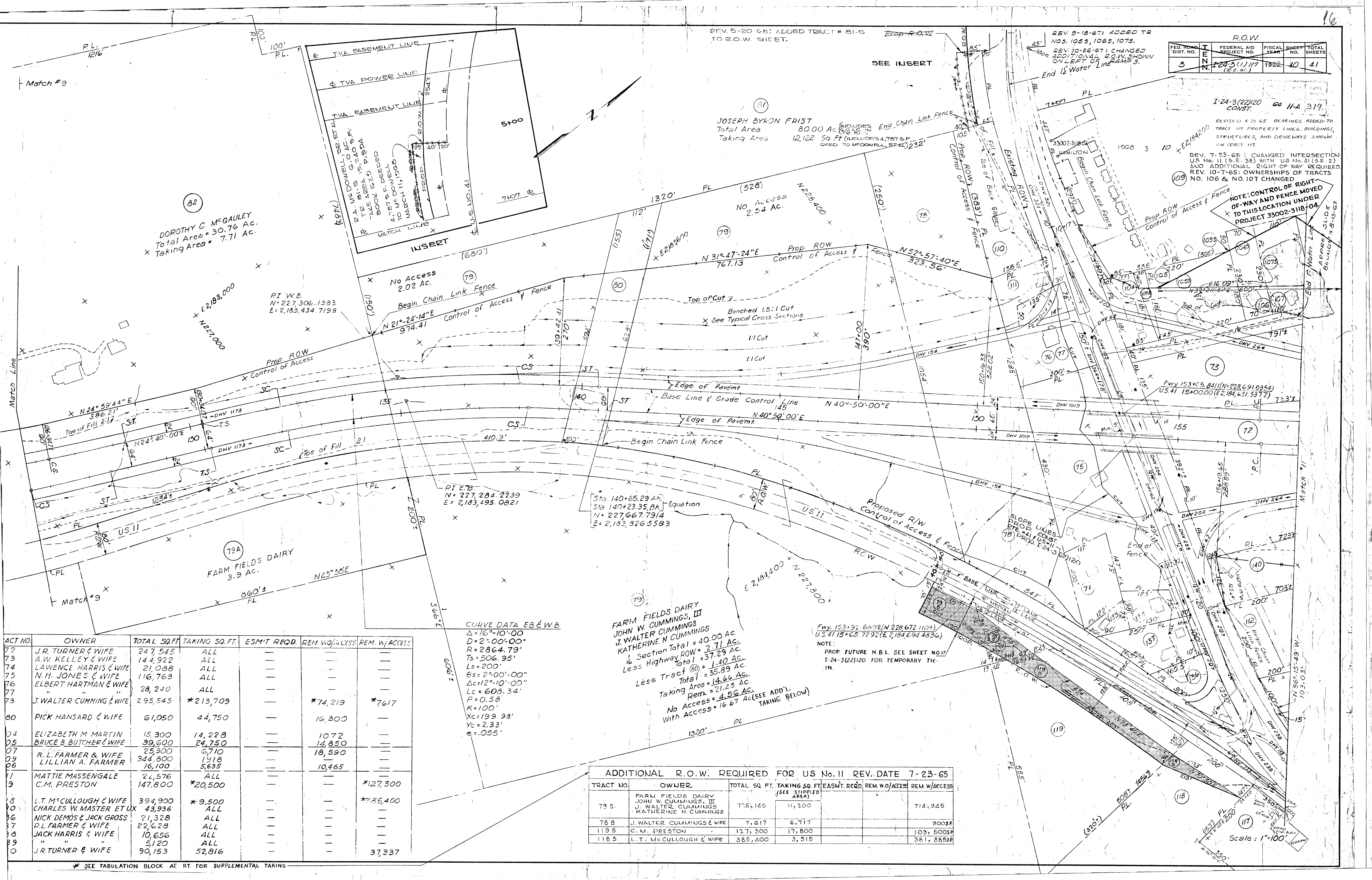
ADDITIONAL R.O.W. REQUIRED FOR RAMP 3

TRACT NO.	OWNER	TOTAL SF	TAKING SF	REM. NO ACCESS
105-5	R.L. FARMER & WIFE	14850	9191	5659
106-5	R.L. FARMER & WIFE	10465	7630	2835
107-5	"	18590	16610	1980
108-5	ALFRED J. SAMPLES, ET UX	66163	18,838	47325
109-5	R.L. FARMER & WIFE	342,882	12	

PROFILE	SURVEYED _____ PLOTTED _____ NOTES CHECKED _____ 2 M.S. PLOTTED _____ NO. _____ STRUCTURE MOVED AS ORDERED _____	DATE _____
----------------	---	------------

SERVICE ROAD RELOC
P.I. = STA. 0+22.58
Δ 37° 02' 53" RT.
Dc 48° 00' 00"
T 40.00'
Lc 77.18'
R 119.36G'
S.E. 0.08/FT.
EW 4.00'
PC. 0+52.58
PT. 10+29.76





FED. ROAD DIST. NO.		R.O.W.		FEDERAL AID PROJECT NO.		FISCAL YEAR		SHEET NO.		TOTAL SHEETS	
3		EN		124-3(1)117		1962		40		41	

I-24-3(22)120 CONST. 64 11-A 319

REVISED 4-21-65 BEARINGS ADDED TO TRACT 117 PROPERTY LINES, BUILDINGS, STRUCTURES, AND DRIVEWAYS SHOWN ON TRACT 117.

REV. 7-23-65: CHANGED INTERSECTION US No. 11 (S.E. 38) WITH US No. 41 (S.E. 2) AND ADDITIONAL RIGHT-OF-WAY REQUIRED. REV. 10-7-65: OWNERSHIP OF TRACTS NO. 106 & NO. 107 CHANGED.

NOTE: CONTROL OF RIGHT-OF-WAY AND FENCE MOVED TO THIS LOCATION UNDER PROJECT 33002-3118-04.

REV. 10-26-67: CHANGED MOR. ADDITION 2.5 IN. SHOWN ON LEFT OF LINE 3.

REV. 9-18-67: ADDED TR NOS. 1055, 1065, 1075.

REV. 5-20-68: ADDED TRACT # 81-S TO R.O.W. SHEET.

Prop. R.O.W.

SEE INSERT

JOSEPH BYRON FRIST
Total Area 80.00 Ac.
Taking Area 12,122 Sq. Ft. (INCLUDES 4,787 SF DEED TO McDOWELL, ET AL.)

NO ACCESS 2.54 AC.

NO ACCESS 2.02 AC.

PI W.B.
N=227,306.1383
E=2,183,434.7198

PI E.B.
N=227,284.2239
E=2,183,495.0821

Sta. 140+65.29 A.H.
Sta. 140+23.35 B.K.
N=227,667.7914
E=2,183,326.5583

FARM FIELDS DAIRY
JOHN W. CUMMINGS, III
J. WALTER CUMMINGS
KATHERINE N. CUMMINGS
16 Section Total = 40.00 AC.
Total = 37.29 AC.
Less Highway ROW = 1.40 AC.
Total = 35.89 AC.
Taking Area = 14.66 AC.
Rem. = 21.23 AC.
No Access = 4.56 AC.
With Access = 16.67 AC (SEE ADD'L TAKING BELOW)

FWY 153+92.6402 (N 228.672 1108)
US 41 15+65.7292 (E 2,184,694.4336)

NOTE:
PROP. FUTURE N.B.L. SEE SHEET NO. 17
I-24-3(22)120 FOR TEMPORARY TIE-IN.

Scale: 1"=100'

ADDITIONAL R.O.W. REQUIRED FOR US No. 11 REV. DATE 7-23-65						
TRACT NO.	OWNER	TOTAL SQ. FT.	TAKING SQ. FT. (SEE STIPPLED AREA)	EASMT. REQD.	REM. W/O ACCESS	REM. W/ ACCESS
79 S.	FARM FIELDS DAIRY JOHN W. CUMMINGS, III J. WALTER CUMMINGS KATHERINE N. CUMMINGS	776,145	11,200			714,945
78 S.	J. WALTER CUMMINGS & WIFE	7,617	6,717			900 SF
119 S.	C.M. PRESTON	127,300	17,800			109,500 SF
118 S.	L.T. McCULLOUGH & WIFE	385,400	3,515			381,885 SF

CURVE DATA EB & WB
Δ=16°-10'-00"
D=2°-00'-00"
R=2864.79'
Ts=506.95'
Ls=200'
Bs=2°-00'-00"
Δc=12°-10'-00"
Lc=608.34'
P=0.58
K=100'
Xc=199.98'
Yc=2.33'
e=.055'

ACT NO.	OWNER	TOTAL SQ. FT.	TAKING SQ. FT.	ESMT REQD.	REM. W/O ACCESS	REM. W/ ACCESS
72	J.R. TURNER & WIFE	247,545	ALL			
73	A.W. KELLEY & WIFE	144,922	ALL			
74	LAWENCE HARRIS & WIFE	21,088	ALL			
75	N.H. JONES & WIFE	116,763	ALL			
76	ELBERT HARTMAN & WIFE	28,240	ALL			
77	J. WALTER CUMMING & WIFE	295,545	*213,709		*74,219	*76,17
80	PICK HANSARD & WIFE	61,050	44,750		16,300	
04	ELIZABETH M. MARTIN	15,300	14,228		1072	
05	BRUCE B. BUTCHER & WIFE	39,600	24,750		14,850	
07	R.L. FARMER & WIFE	25,300	6,710		18,590	
09	LILLIAN A. FARMER	344,800	1,918		10,465	
06		16,100	5,635			
11	MATTIE MASSENGALE	21,576	ALL			
9	C.M. PRESTON	147,800	*20,500			*127,300
8	L.T. McCULLOUGH & WIFE	394,900	*3,500			*385,400
10	CHARLES W. MASTER ET UX	43,936	ALL			
36	NICK DEMOS & JACK GROSS	21,328	ALL			
7	R.L. FARMER & WIFE	22,628	ALL			
3	JACK HARRIS & WIFE	10,656	ALL			
9	"	5,120	ALL			
0	J.R. TURNER & WIFE	90,153	52,816			37,337

* SEE TABULATION BLOCK AT RT. FOR SUPPLEMENTAL TAKING

ROW					
FED. ROAD DIST. NO.	T E N	FEDERAL AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
3	N	E-243(1117 (R.O.W.))	1962	9	41

83 84

JOHN C. GRANT

See Sheet #8 & 5A
38

CURVE DATA EB & WB

$\Delta = 36^{\circ}-30'-00''$
 $D = 3^{\circ}-30'-00''$
 $R = 1637.02$
 $T_s = 741.05$
 $L_s = 400'$
 $\theta_s = 7^{\circ}-00'-00''$
 $\Delta_c = 22^{\circ}-30'-00''$
 $L_c = 642.66$
 $P = 4.07$
 $K = 199.90$
 $X_c = 399.40'$
 $Y_c = 16.27'$
 $e = 0.096'$

P.I. W.B.
 $N = 224,316.8750$
 $E = 2,180,993.5412$
 P.I. WB Sta 96+67.91
 P.I. EB Sta 96+41.53

CURVE DATA EB & WB

$\Delta = 22^{\circ}-20'-00''$
 $D = 2^{\circ}-00'-00''$
 $R = 2864.79$
 $T_s = 665.63$
 $L_s = 200'$
 $\theta_s = 2^{\circ}-00'-00''$
 $\Delta_c = 18^{\circ}-20'-00''$
 $L_c = 916.67$
 $P = 0.58$
 $K = 100'$
 $X_c = 199.98'$
 $Y_c = 2.33'$
 $e = 0.055'$

P.I. WB Sta 121+83.67
 P.I. EB Sta 121+04.60

82
 DOROTHY C. McGAULEY
 See Sheet #10

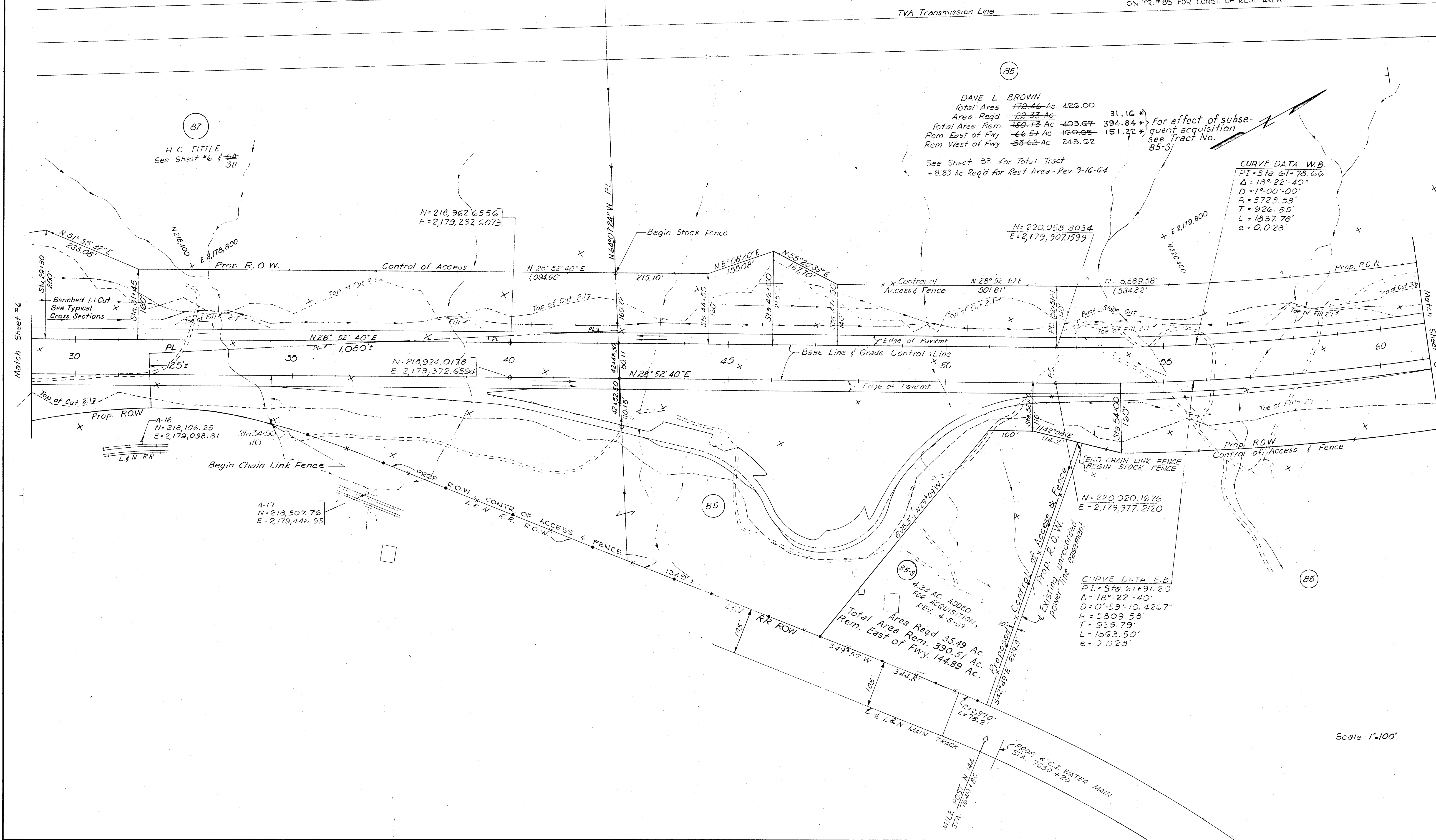
P.I. E.B.
 $N = 225,932.9333$
 $E = 2,182,897.4723$
 Scale 1"=100'

REV. 4-21-69: 4.33 AC. ADDED ON TRACT NO. 85 BY REV. 4-8-69 CUT OUT AND ASSIGNED NO. 85-S

R.O.W.				
FED. ROAD DIST. NO.	TENN. PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
3	1-24-3(1)117 (R.O.W.)	1962	7	41

REV. 2-16-64: ADD'L 8.83 AC. TAKEN ON TR. #85, FOR CONST. OF REST AREA
REV. 4-8-69: ADD'L 4.33 AC. TAKEN ON TR. #85 FOR CONST. OF REST AREA.

REV. 1-21-64: TRACT NO. 85 EAST REM. INCREASED BY 53.54 AC. & WEST REM. INCREASED BY 160.00 AC.



DAVE L. BROWN
Total Area 172.46 Ac 426.00
Area Req'd 22.33 Ac
Total Area Rem. 150.13 Ac 403.67
Rem. East of Fwy 66.54 Ac 160.05
Rem. West of Fwy 83.62 Ac 243.62
See Sheet 38 for Total Tract
* 8.83 Ac Req'd for Rest Area - Rev. 9-16-64

For effect of subsequent acquisition see Tract No. 85-S

CURVE DATA W.B.
PI = Sta. 61+78.66
Δ = 18°-22'-40"
D = 1°-00'-00"
R = 5729.58'
T = 926.85'
L = 1837.78'
e = 0.028'

CURVE DATA E.B.
PI = Sta. 81+91.20
Δ = 18°-22'-40"
D = 0°-59'-10.4267"
R = 5309.58'
T = 939.79'
L = 1863.50'
e = 2.028'

4.33 AC. ADDED FOR ACQUISITION, REV. 4-8-69
Total Area Req'd 35.49 Ac.
Area Rem. 390.51 Ac.
Rem. East of Fwy 144.89 Ac.

Scale: 1"=100'

88 89

INSTITUTE of HEALTH & HEALING
See Sheet #88 for Total Tract
See Sheet #89 for Total Tract

87

H. C. TITTLE
Total Area 101.0 Ac.
Area Reqd. 21.63 Ac.
Total Area Rem. 79.37 Ac.
Rem. East of Fwy 20.37 Ac.
Rem. West of Fwy 59.00 Ac. (Loss of Access)

REV. 5-12-64, TRACT NOS. 88 & 89
MERGED, RR R.O.W. LINE & TERRAIN
PROPERTIES CO. OWNERSHIP ADDED
REV. 6-10-64: ADDED TRACT NO. 89A,
L&N R.R. PROPERTY.

FED. ROAD DIST. NO.		T	FEDERAL AID PROJECT NO.		FISCAL YEAR	SHEET NO.	TOTAL SHEETS
			I-24-3(1)/17		1962	6	41
3	ZZ		(R.O.W.)				

CURVE DATA EB & WB
 $\Delta: 10^{\circ}07'20''$
 $D: 3^{\circ}00'00''$
 $R: 1909.86'$
 $TS: 420.74$
 $LS: 300'$
 $BS: 4^{\circ}30'00''$
 $\Delta S: 7^{\circ}07'20''$
 $LC: 237.41$
 $P: 1196'$
 $K: 149.97$
 $Xc: 295.81$
 $Yc: 7.85'$
 $e: 0.083$
PI WB Sta. 23+63.79
PI EB Sta. 23+57.76

N=217,228.8352
E=2,173,212.9401

Match Sheet #5

Match Sheet #7

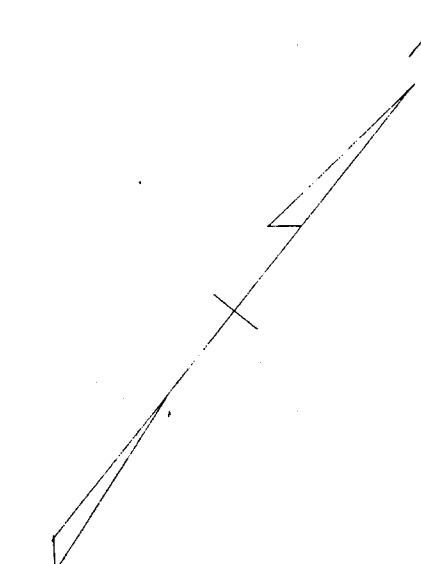
TENNESSEE PROPERTIES COMPANY

Scale: 1"=100'

FED. ROAD DIST. NO.	TENN.	FEDERAL AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
8	N.	E-24-3(1) 117	1963	4	
		R.O.W.			

REV. 8-27-63: THIS SHEET ADDED TO PLANS

NOTE:
FOR LEGEND SEE SHEET NO. 3
SCALE: 1" = 200'



INSTITUTE OF HEALTH
AND HEALING, INC.

MATCH LINE SHEET NO. 3A

MATCH LINE

MATCH LINE SHEET NO. 3

TENN.
GEORGIA

L&N RR. (POSSIBLE TRUCK)

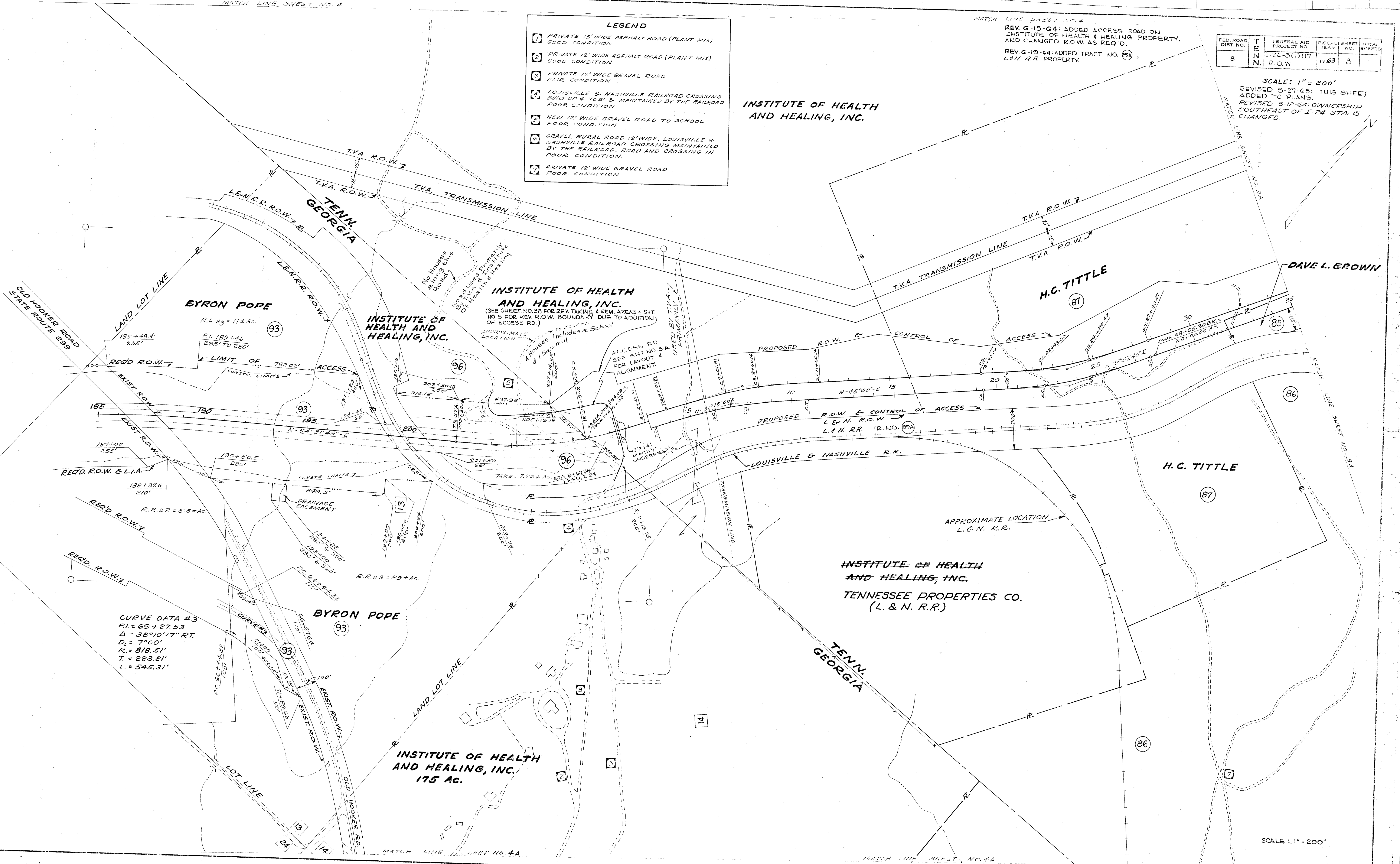
- LEGEND**
- 1 PRIVATE 15' WIDE ASPHALT ROAD (PLANT MIX) GOOD CONDITION
 - 2 PRIVATE 12' WIDE ASPHALT ROAD (PLANT MIX) GOOD CONDITION
 - 3 PRIVATE 10' WIDE GRAVEL ROAD FAIR CONDITION
 - 4 LOUISVILLE & NASHVILLE RAILROAD CROSSING BUILT UP 4' TO 5' & MAINTAINED BY THE RAILROAD POOR CONDITION
 - 5 NEW 12' WIDE GRAVEL ROAD TO SCHOOL POOR CONDITION
 - 6 GRAVEL RURAL ROAD 12' WIDE, LOUISVILLE & NASHVILLE RAILROAD CROSSING MAINTAINED BY THE RAILROAD, ROAD AND CROSSING IN POOR CONDITION
 - 7 PRIVATE 12' WIDE GRAVEL ROAD POOR CONDITION

REV. G-15-64: ADDED ACCESS ROAD ON INSTITUTE OF HEALTH & HEALING PROPERTY, AND CHANGED R.O.W. AS REQ'D.
REV. G-19-64: ADDED TRACT NO. 87A, L&N R.R. PROPERTY.

FED. ROAD DIST. NO.	TENN. R.O.W.	FEDERAL AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
8	N.	I-24-3(1)117	1963	3	

SCALE: 1" = 200'
REVISED 8-27-65: THIS SHEET ADDED TO PLANS.
REVISED 5-12-64: OWNERSHIP SOUTHEAST OF I-24 STA. 15 CHANGED.

INSTITUTE OF HEALTH AND HEALING, INC.



CURVE DATA #3
P.I. = 69+27.53
 $\Delta = 38^{\circ}10'17''$ RT.
 $D_c = 7^{\circ}00'$
 $R = 818.51'$
 $T = 283.21'$
 $L = 545.31'$

INSTITUTE OF HEALTH AND HEALING, INC.
175 AC.

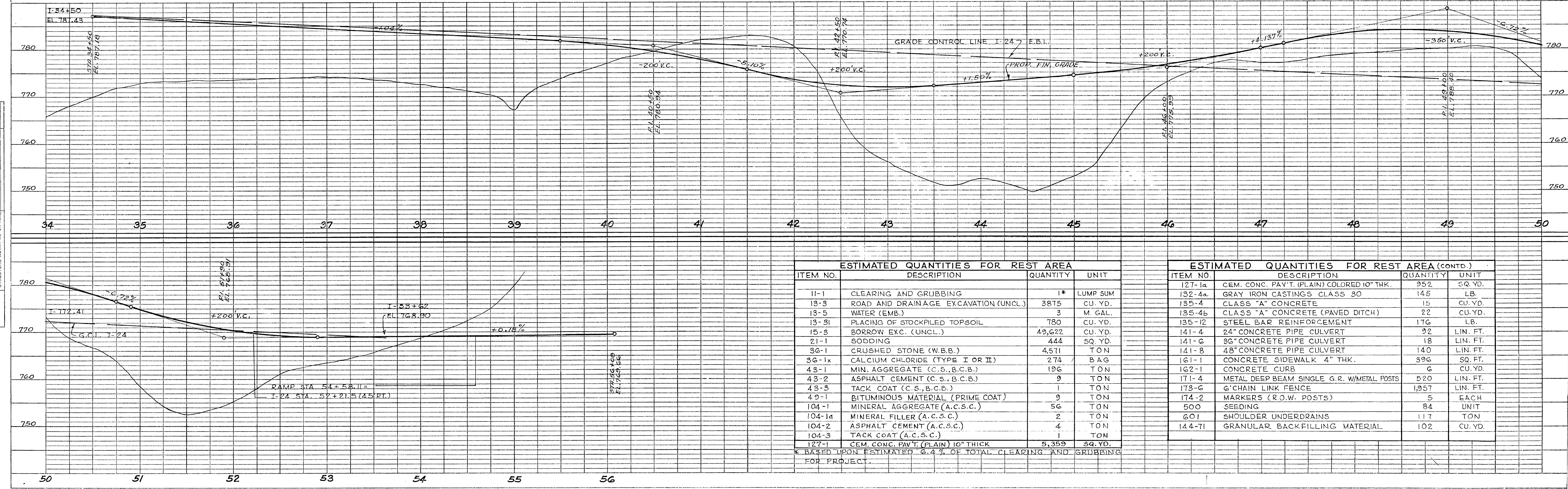
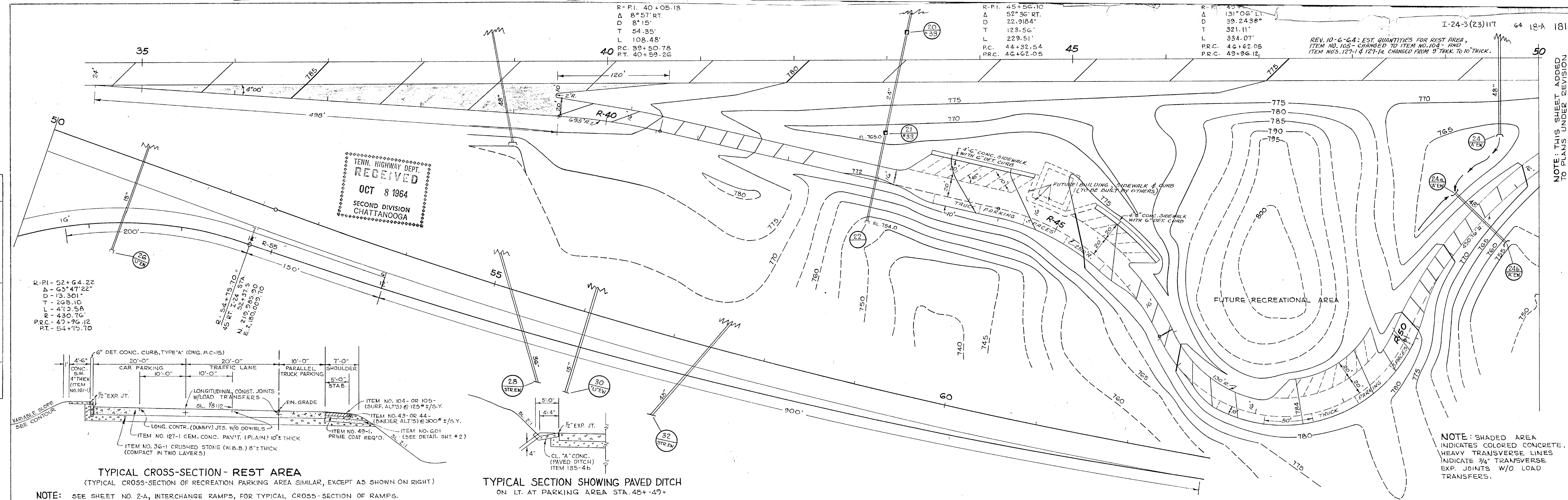
INSTITUTE OF HEALTH AND HEALING, INC.
TENNESSEE PROPERTIES CO.
(L. & N. R.R.)

IN-143

I-24-3(23)117 64 18-A 181

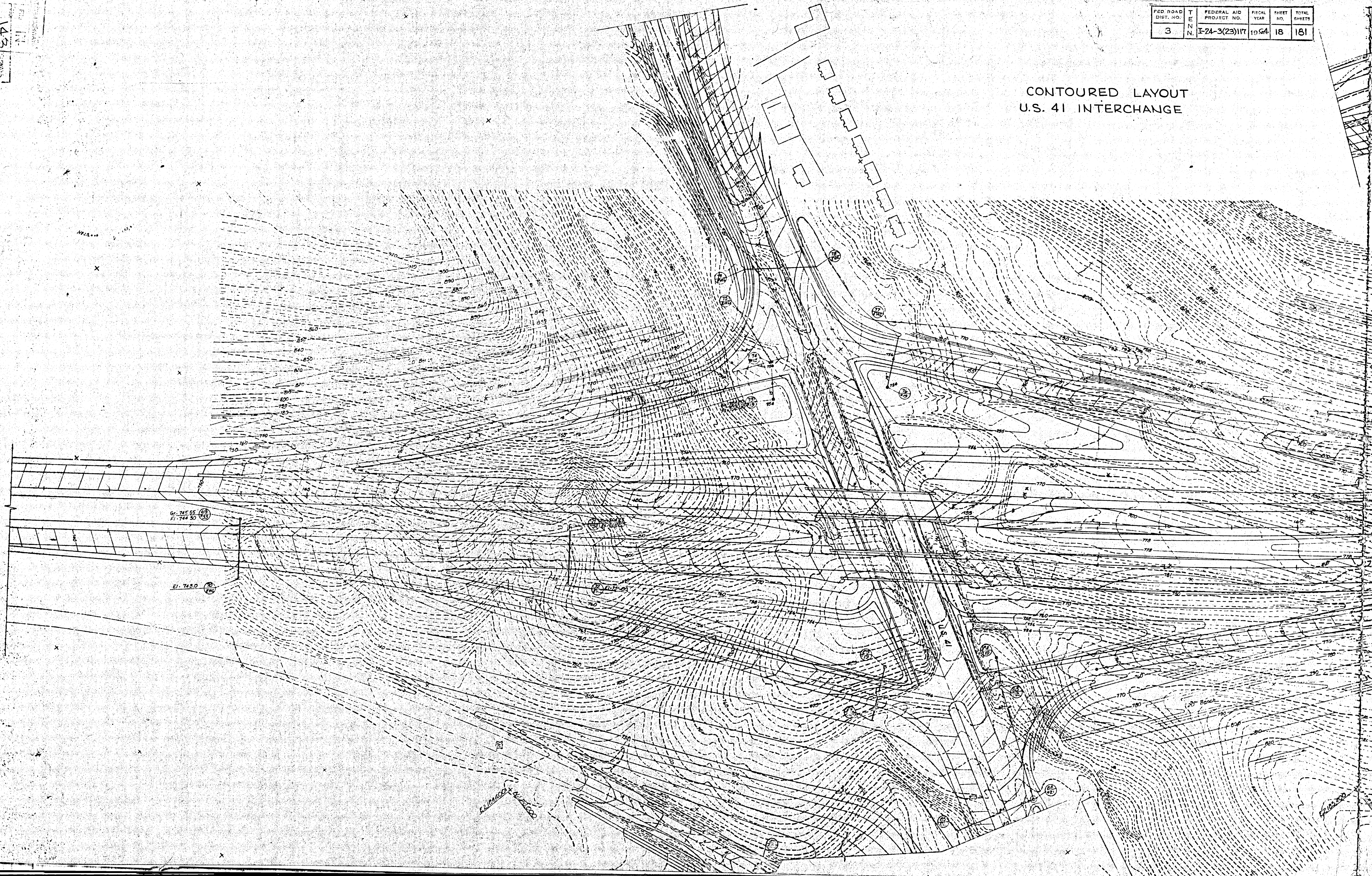
PLAN	DATE	BY
SURVEYED		
PLOTTED		
NOTED		
NO.		

PROFILE	DATE	BY
SURVEYED		
PLOTTED		
NOTED		
NO.		

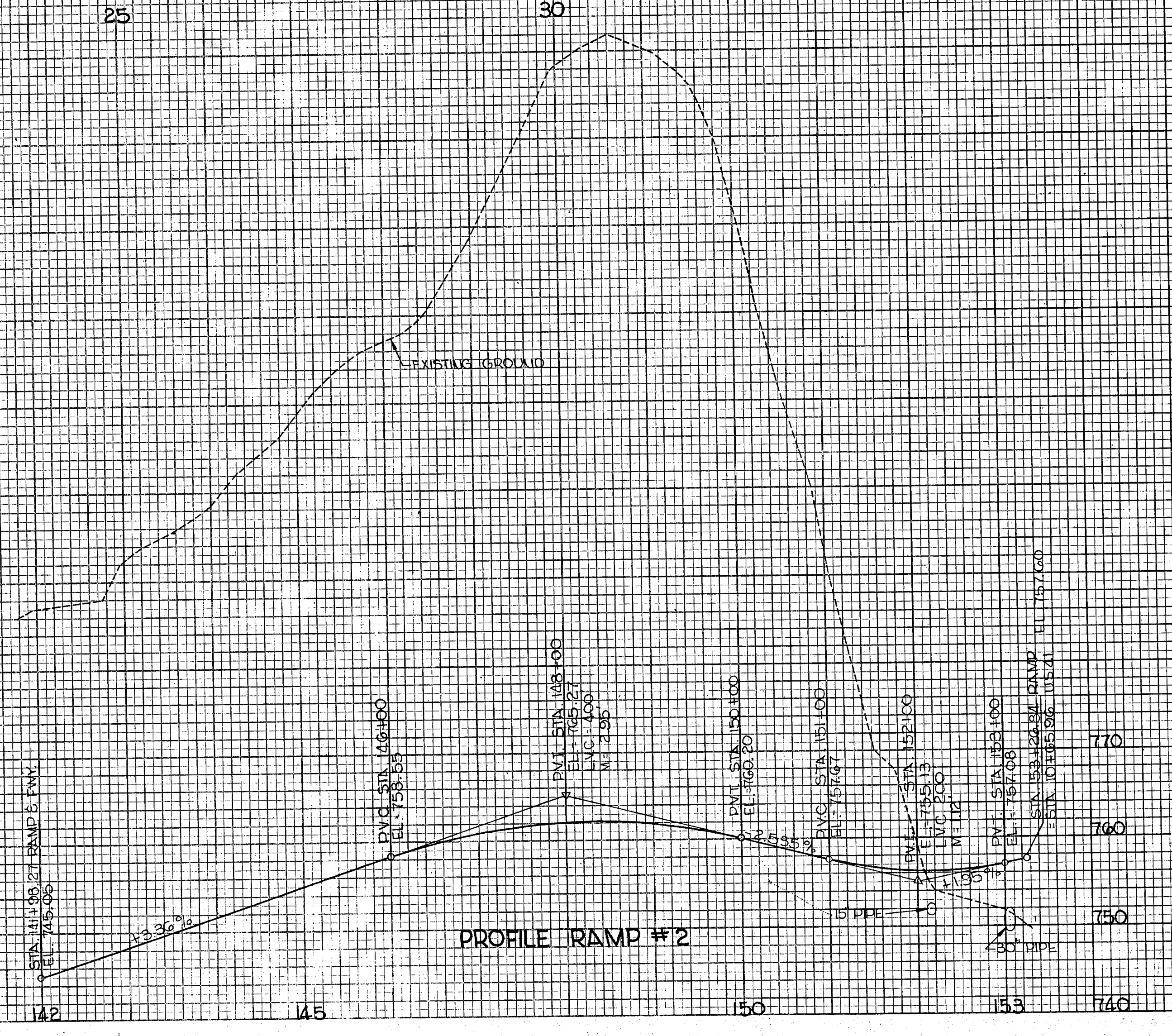
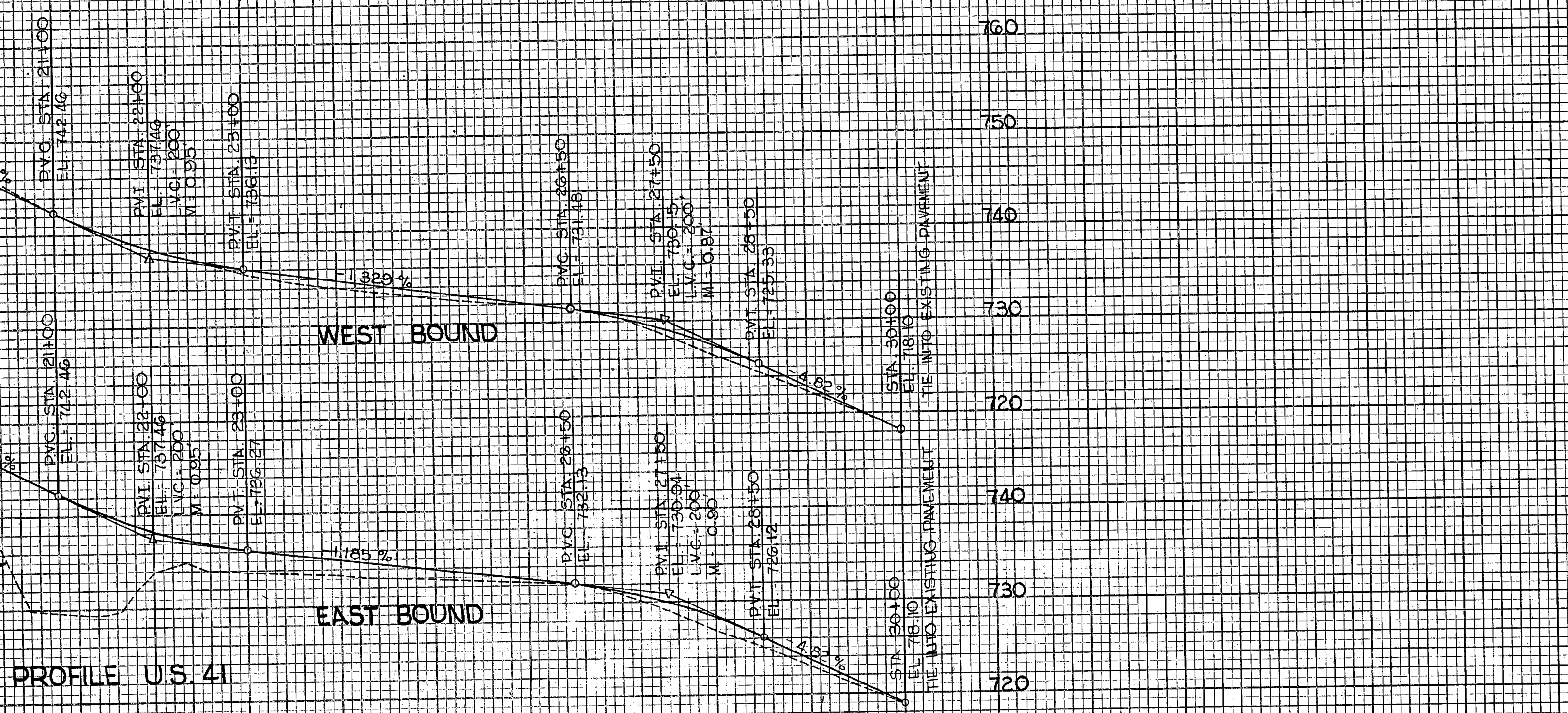
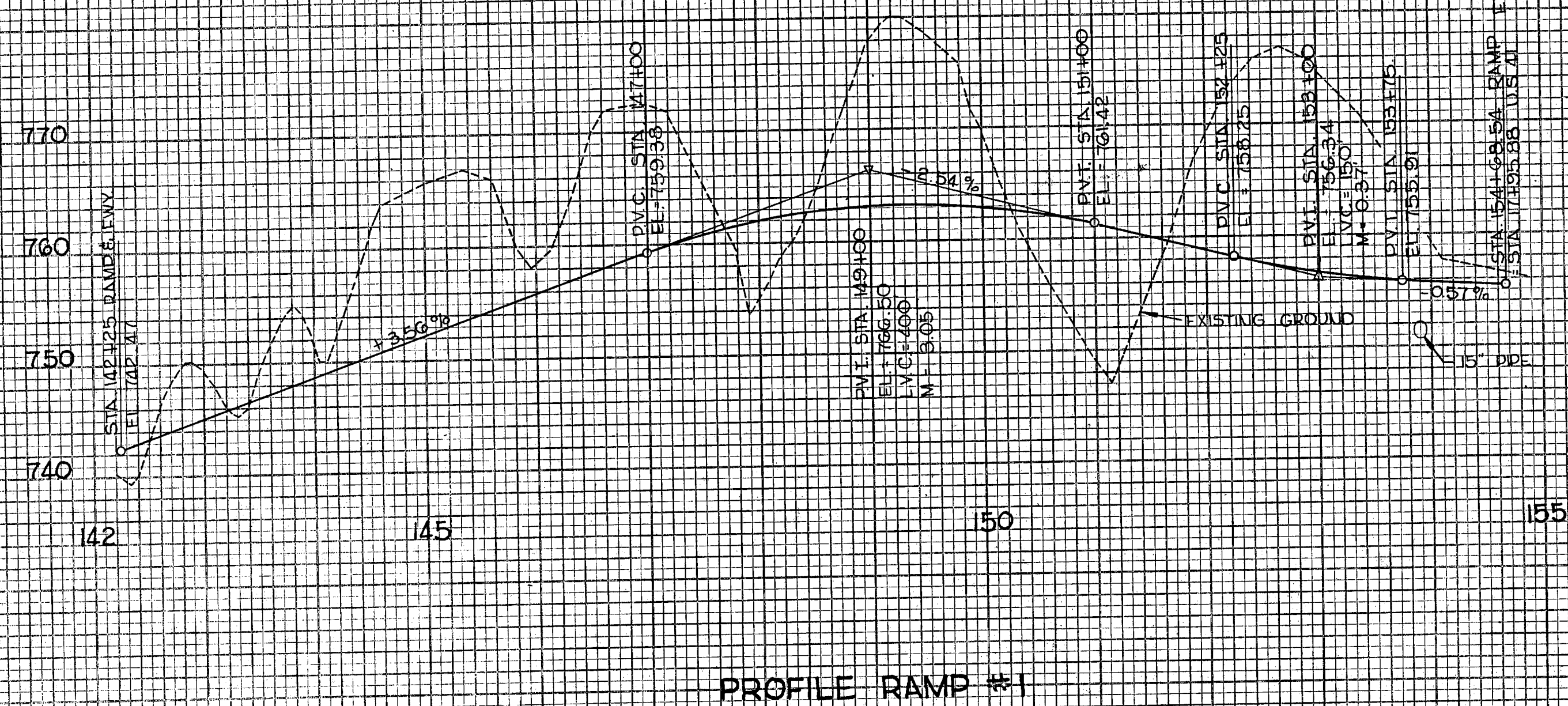
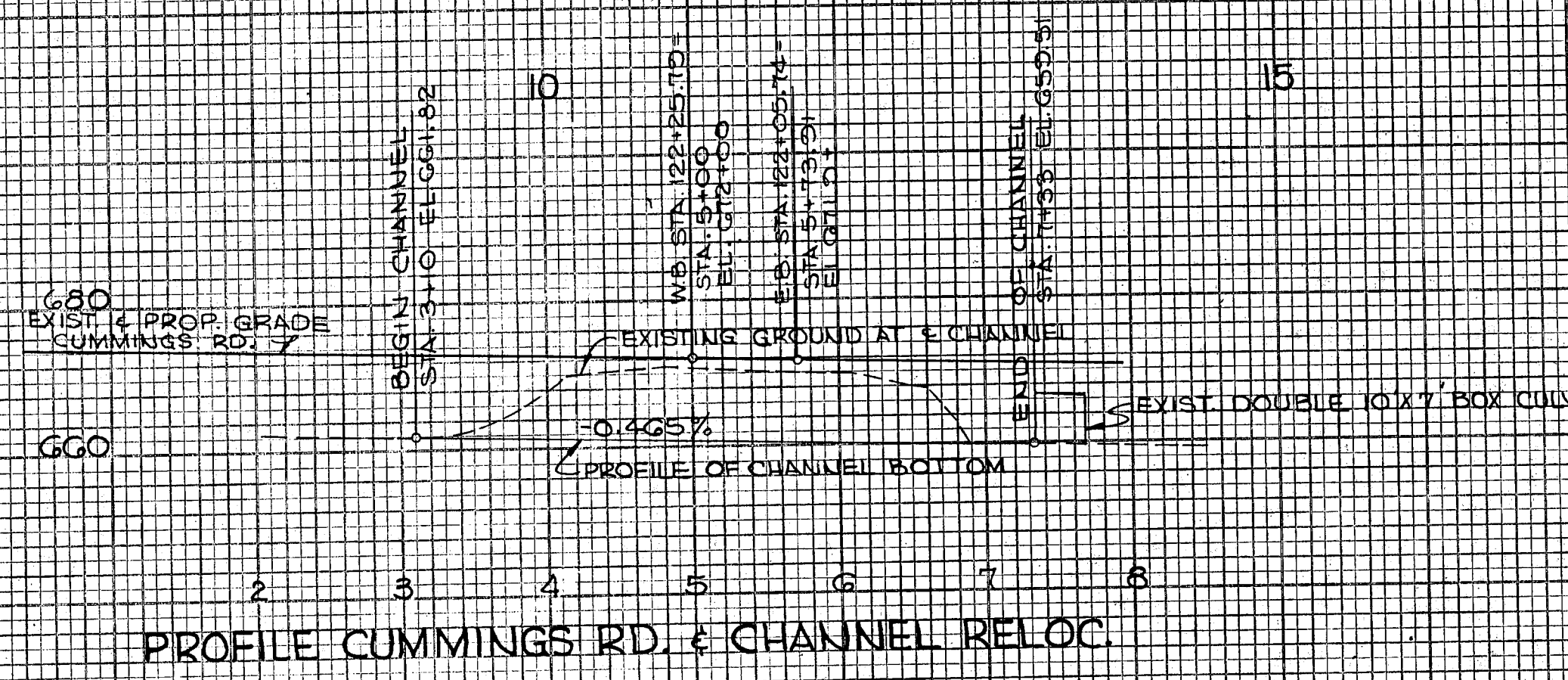


FED. ROAD DIST. NO.	TENN.	FEDERAL AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
3		I-24-3(23)117	1964	18	181

CONTOURED LAYOUT U.S. 41 INTERCHANGE

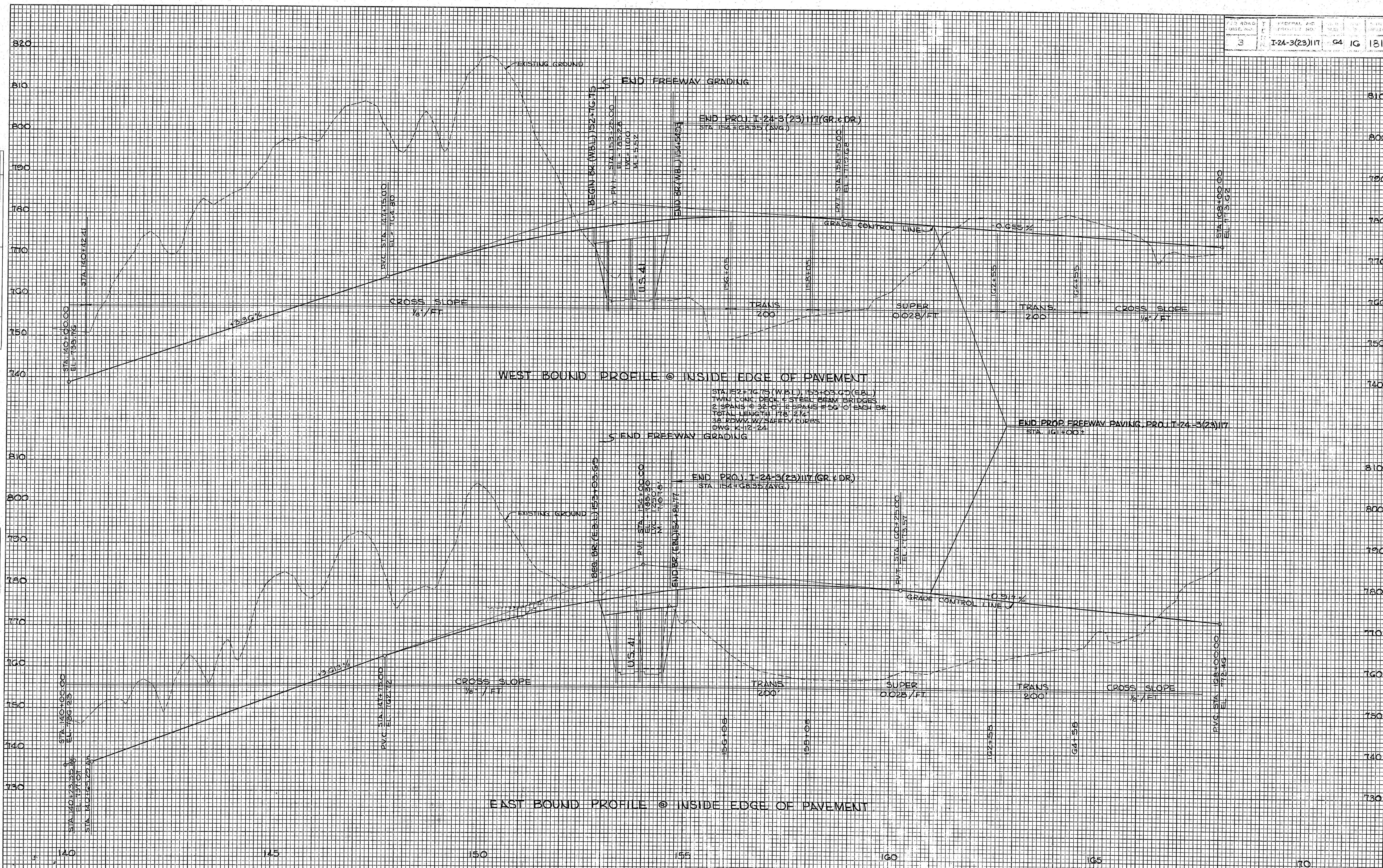


NO. AREAS CHECKED



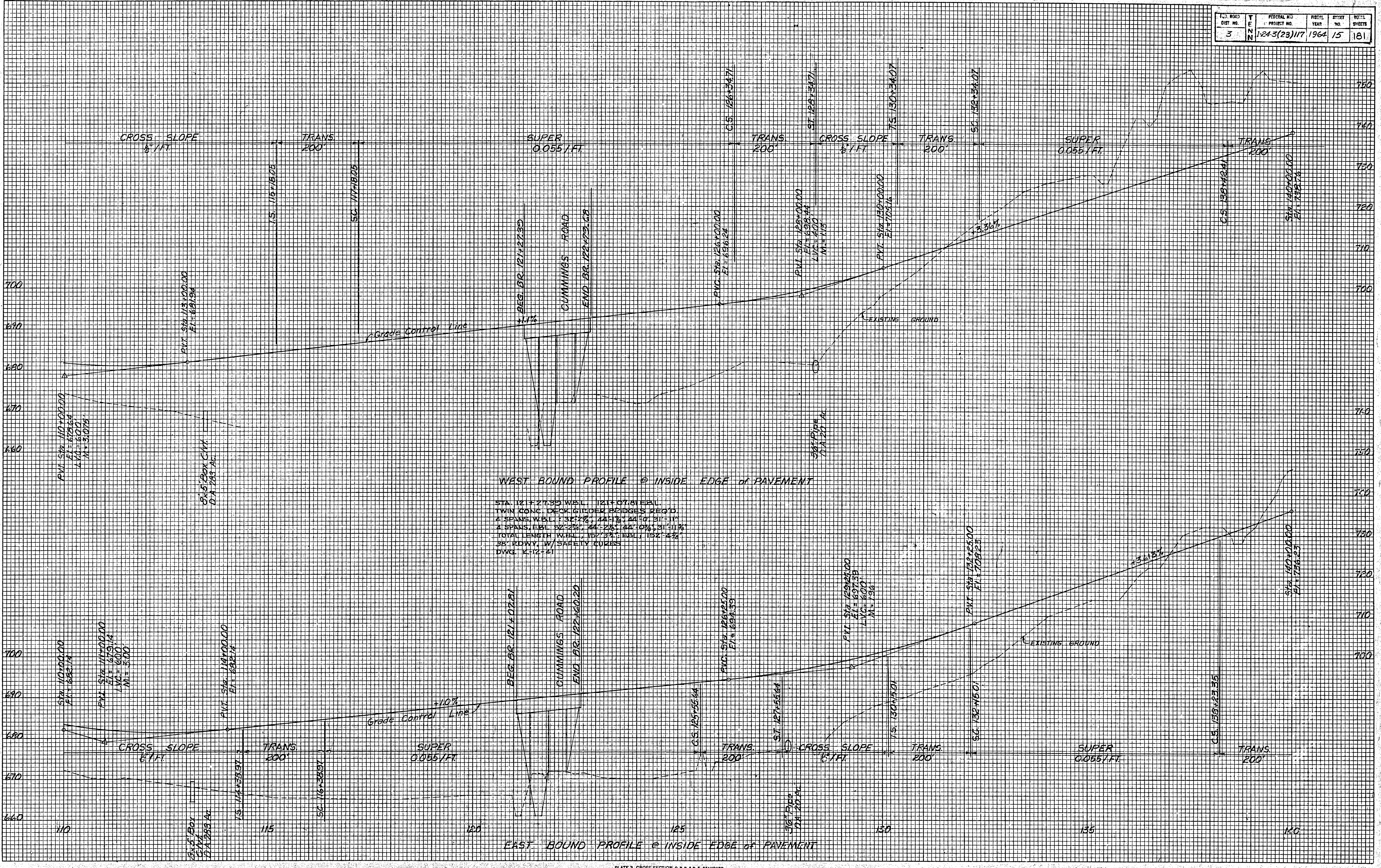
FINAL SURVEY	DATE	
	BY	
	SURVEYED	
	NO. BOOK	
	PLATTED	
	NOTE BOOK	
	AREAS CHECKED	

ORIGINAL SURVEY	DATE	
	BY	
	SURVEYED	
	NO. BOOK	
	PLATTED	
	NOTE BOOK	
	AREAS CHECKED	



FINAL SURVEY	DATE
NOTE BOOK	BY
AREAS CHECKED	

ORIGINAL SURVEY	DATE
NOTE BOOK	BY
AREAS CHECKED	

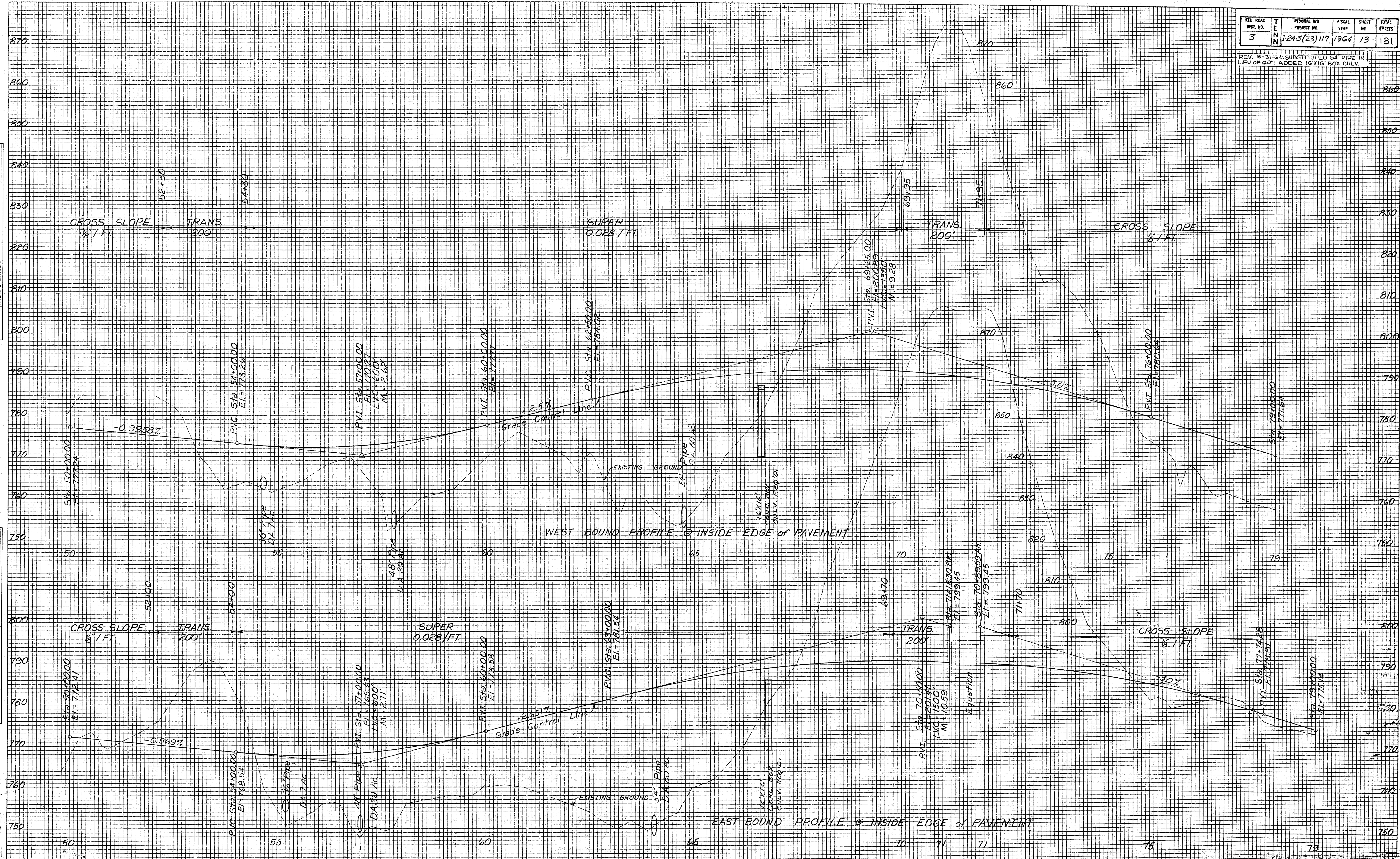


FED. ROAD DIST. NO.	FED. AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
3	1-243(23)117	1964	13	181

REV. 8-31-64: SUBSTITUTED 54" PIPE IN LIEU OF 60"; ADDED 16"x16" BOX CULV.

FINAL SURVEY	BY	DATE
SURVEYED		
PLOTTED		
TEMPERATURE		
NO. AREAS CHECKED		

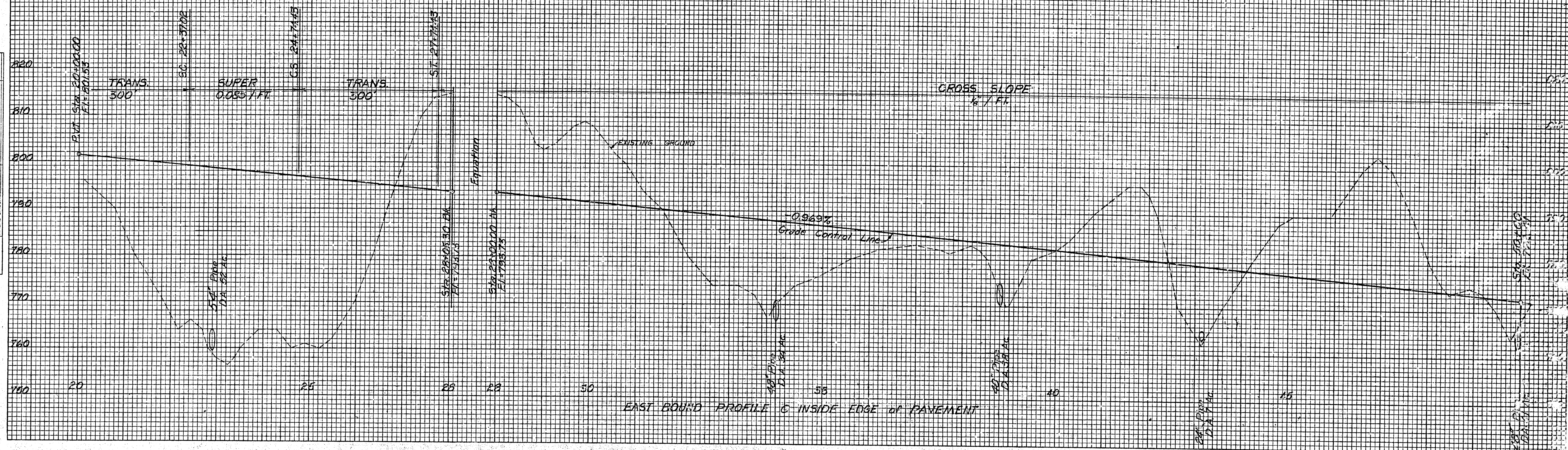
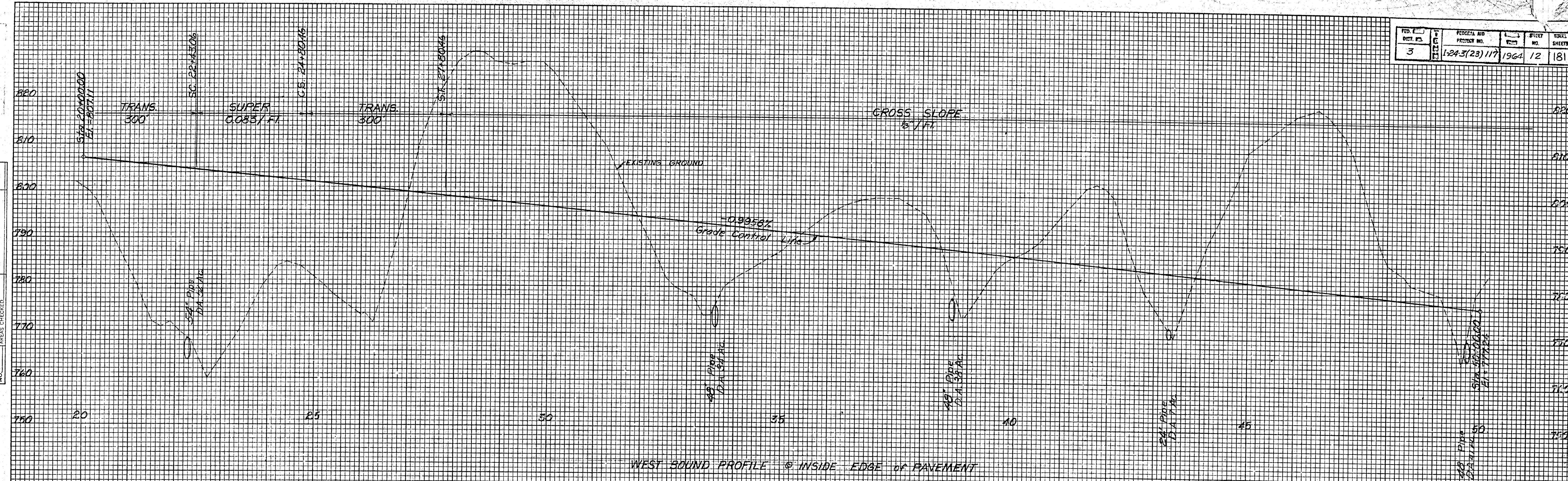
ORIGINAL SURVEY	BY	DATE
SURVEYED		
PLOTTED		
TEMPERATURE		
NO. AREAS CHECKED		



FED. DIST. NO.	FEDERAL AID PROJECT NO.	SHEET NO.	TOTAL SHEETS
3	1243(23)117	12	181

FINAL SURVEY	DATE
NO.	BY
NO.	BY
NO.	BY
NO.	BY

ORIGINAL SURVEY	DATE
NO.	BY
NO.	BY
NO.	BY
NO.	BY



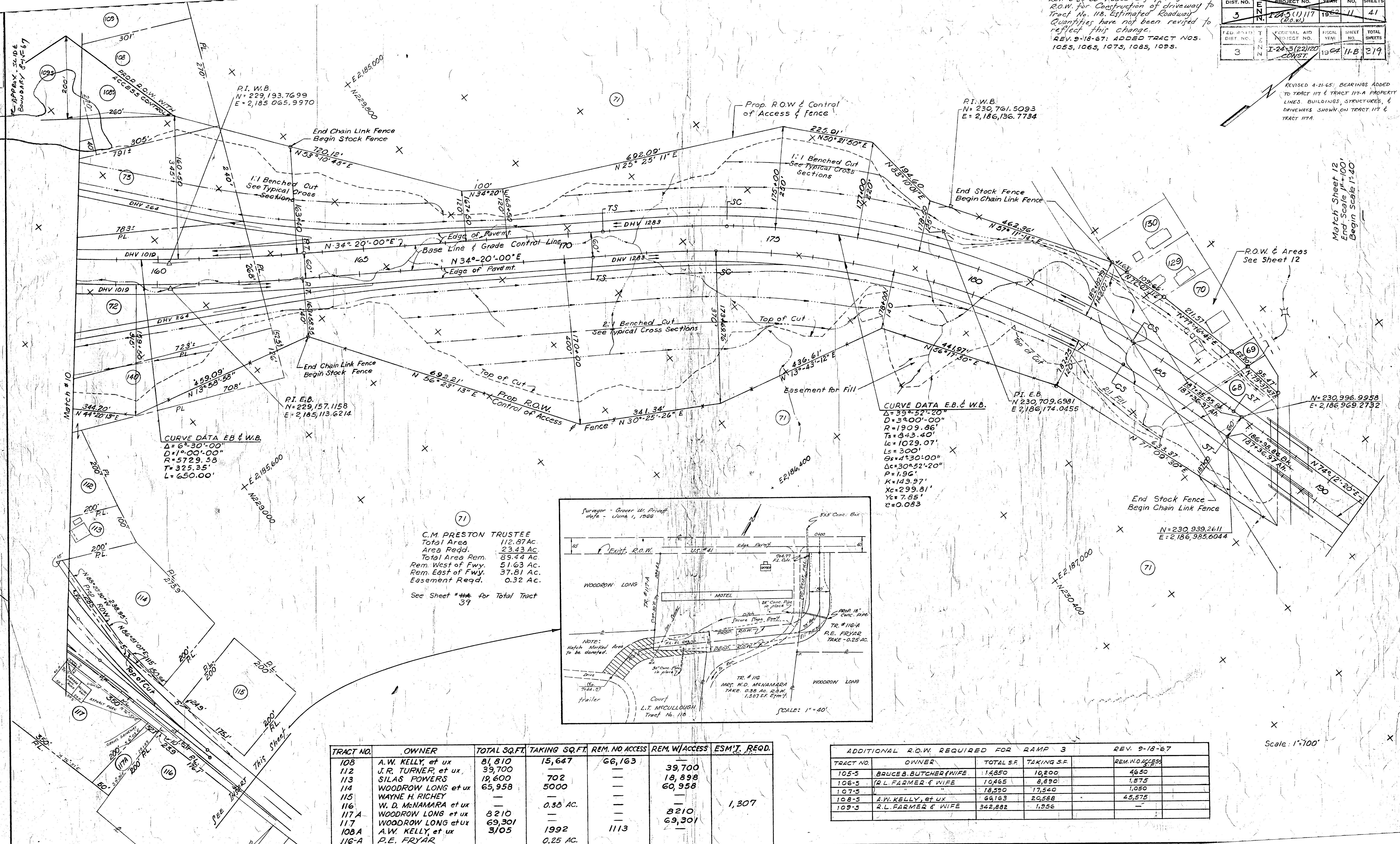
REV. 7-23-65: CHANGED INTERSECTION
U.S. No. 11 (S.R. 38) WITH U.S. 41 (S.R. 2).
REV. 6-30-66 Added Inset to show Rev.
R.O.W. for Construction of driveway to
Tract No. 118. Estimated Roadway
Quantities have not been revised to
reflect this change.
REV. 9-18-67: ADDED TRACT NOS.
1055, 1065, 1075, 1085, 1095.

FED. ROAD DIST. NO.	T	FEDERAL AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
3	N	1-24-3(1)117 (R.O.W.)	1964	11	41
FED. ROAD DIST. NO.	T	FEDERAL AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
3	N	1-24-3(2)120 CONST.	1964	11-B	219

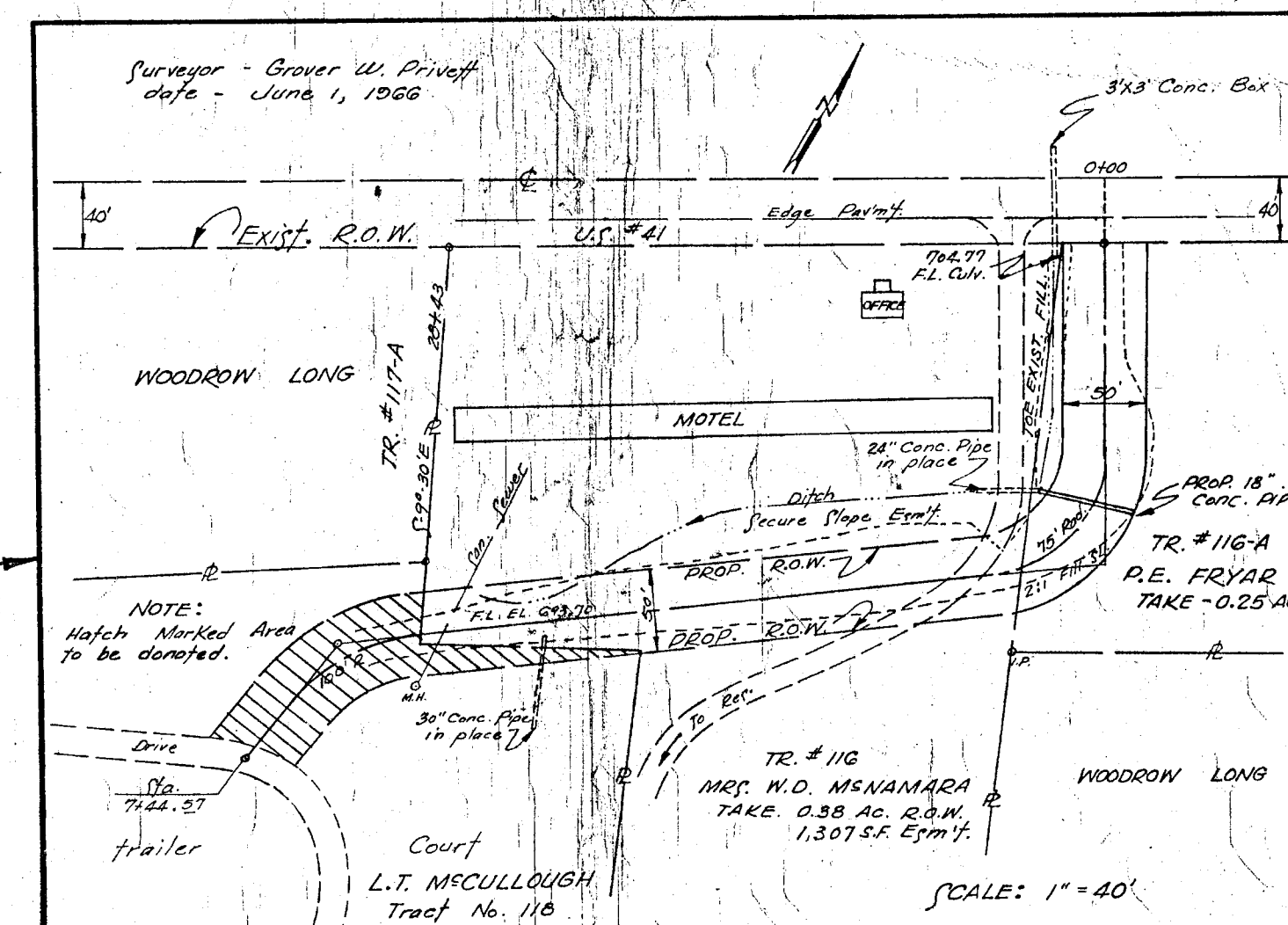
REVISED 4-21-65: BEARINGS ADDED
TO TRACT 117 & TRACT 117-A PROPERTY
LINES, BUILDINGS, STRUCTURES, &
DRIVEWAYS SHOWN ON TRACT 117 &
TRACT 117-A.

Match Sheet 12
End Scale 1"=100'
Begin Scale 1"=40'

Scale: 1"=100'



71
C.M. PRESTON TRUSTEE
Total Area 112.87 Ac.
Area Reqd. 23.43 Ac.
Total Area Rem. 89.44 Ac.
Rem. West of Fwy. 51.63 Ac.
Rem. East of Fwy. 37.81 Ac.
Easement Reqd. 0.32 Ac.
See Sheet #114 for Total Tract 39



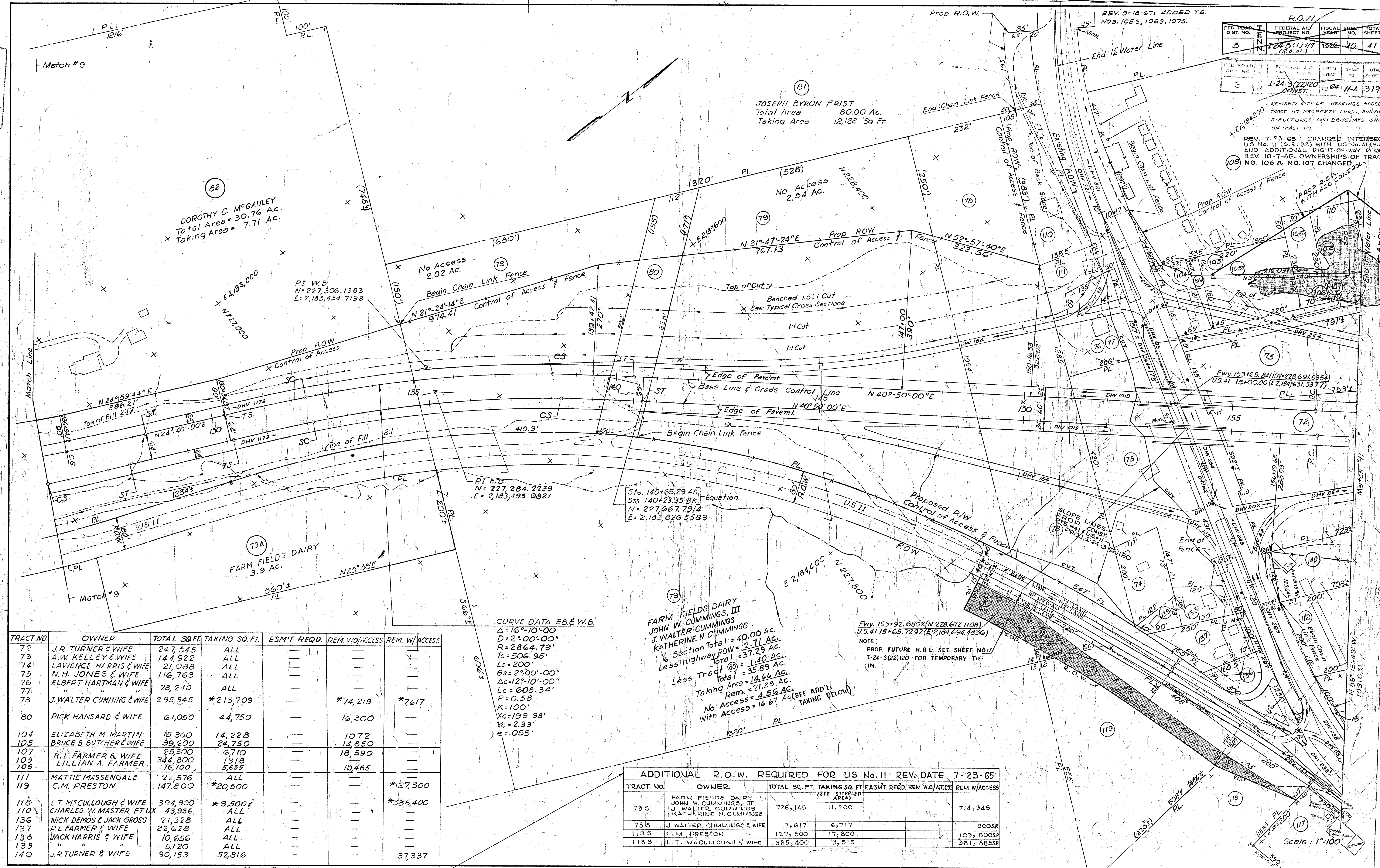
TRACT NO.	OWNER	TOTAL SQ.FT.	TAKING SQ.FT.	REM. NO ACCESS	REM. W/ACCESS	ESM'T. REQD.
108	A.W. KELLY, et ux	81,810	15,647	66,163	39,700	
112	J.R. TURNER, et ux	39,700	702	—	18,898	
113	SILAS POWERS	19,600	5000	—	60,958	
114	WOODROW LONG et ux	65,958	—	—	—	
115	WAYNE H. RICHEY	—	0.38 AC.	—	—	1,307
116	W. D. McNAMARA et ux	8,210	—	—	8,210	
117 A	WOODROW LONG et ux	69,301	—	—	69,301	
117	WOODROW LONG et ux	3,105	1992	1113	—	
108 A	A.W. KELLY, et ux	—	—	—	—	
116-A	P.E. FRYAR	—	—	—	—	

TRACT NO.	OWNER	TOTAL S.F.	TAKING S.F.	REM. NO ACCESS
105-5	BRUCE B. BUTCHER & WIFE	14,850	10,200	4,650
106-5	R.L. FARMER & WIFE	10,465	8,890	1,575
107-5	—	18,590	17,540	1,050
108-5	A.W. KELLY, et ux	66,163	20,588	45,575
109-5	R.L. FARMER & WIFE	342,882	1,956	—

FED. ROAD DIST. NO.	FED. AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
3	1-24-3(1)117 (R.O.W.)	1962	40	41
3	1-24-3(2)120 CONST.	1964	11A	319

REVISED 7-23-65: BEARINGS ADDED TO TRACT 117 PROPERTY LINES, BUILDING STRUCTURES, AND DRIVEWAYS SHOWN ON TRACT 117.

REV. 7-23-65: CHANGED INTERSECT US No. 11 (S.R. 38) WITH US No. 41 (S.R. 15) AND ADDITIONAL RIGHT-OF-WAY BEQUIN REV. 10-7-65: OWNERSHIP OF TRACT NO. 106 & NO. 107 CHANGED



TRACT NO.	OWNER	TOTAL SQ. FT.	TAKING SQ. FT.	ESMT REQD.	REM. W/O ACCESS	REM. W/ ACCESS
72	J.R. TURNER & WIFE	247,545	ALL			
73	A.W. KELLEY & WIFE	144,922	ALL			
74	LAWRENCE HARRIS & WIFE	21,088	ALL			
75	N.H. JONES & WIFE	116,768	ALL			
76	ELBERT HARTMAN & WIFE	28,240	ALL			
77	J. WALTER CUMMING & WIFE	295,545	*213,709		*74,219	*7617
80	PICK HANSARD & WIFE	61,050	44,750		16,300	
104	ELIZABETH M. MARTIN	15,300	14,228		1072	
105	BRUCE B. BUTCHER & WIFE	39,600	24,750		14,850	
107	R.L. FARMER & WIFE	25,300	2,710		18,590	
109	LILLIAN A. FARMER	344,800	1918		10,465	
111	MATTIE MASSENGALE	21,576	ALL			
119	C.M. PRESTON	147,800	*20,500			*127,300
118	L.T. McCULLOUGH & WIFE	394,900	*9,500			*385,400
110	CHARLES W. MASTER ET UX	43,936	ALL			
136	NICK DEMOS & JACK GROSS	21,328	ALL			
137	R.L. FARMER & WIFE	22,628	ALL			
138	JACK HARRIS & WIFE	10,656	ALL			
139	"	5,120	ALL			
140	J.R. TURNER & WIFE	90,153	52,816			37,337

CURVE DATA EB & WB
 $\Delta = 16^\circ - 10' - 00''$
 $D = 2^\circ - 00' - 00''$
 $R = 2864.79'$
 $T_s = 506.95'$
 $L_s = 200'$
 $\theta_s = 2^\circ - 00' - 00''$
 $\Delta c = 12^\circ - 10' - 00''$
 $L_c = 608.34'$
 $P = 0.58'$
 $K = 100'$
 $X_c = 199.98'$
 $Y_c = 2.33'$
 $e = 0.55'$

FARM FIELDS DAIRY
 JOHN W. CUMMINGS, III
 J. WALTER CUMMINGS
 KATHERINE N. CUMMINGS
 Section Total = 40.00 AC.
 Section ROW = 2.71 AC.
 Less Highway ROW = 37.29 AC.
 Total = 1.40 AC.
 Less Tract 80 = 1.40 AC.
 Total = 35.89 AC.
 Taking Area = 14.66 AC.
 Rem. = 21.23 AC.
 No Access = 4.56 AC.
 With Access = 16.67 AC. (SEE ADD'L TAKING BELOW)

FWY. 153+92.6802 (N 228.672.1108)
 U.S. 41 15+65.7292 (E 7,184,694.4836)
 NOTE:
 PROP. FUTURE N.B.L. SEE SHEET NO. 11
 1-24-3(2)120 FOR TEMPORARY TIE-IN.

ADDITIONAL R.O.W. REQUIRED FOR US No. 11 REV. DATE 7-23-65						
TRACT NO.	OWNER	TOTAL SQ. FT.	TAKING SQ. FT. (SEE STIPPLED AREA)	EASMT. REQD.	REM. W/O ACCESS	REM. W/ ACCESS
79 S	FARM FIELDS DAIRY JOHN W. CUMMINGS, III J. WALTER CUMMINGS KATHERINE N. CUMMINGS	726,145	11,200			714,945
78 S	J. WALTER CUMMINGS & WIFE	7,617	6,717			900 S.F.
119 S	C.M. PRESTON	127,300	17,800			109,500 S.F.
118 S	L.T. McCULLOUGH & WIFE	385,400	3,515			381,885 S.F.

* SEE TABULATION BLOCK AT RT. FOR SUPPLEMENTAL TAKING

Scale: 1"=100'

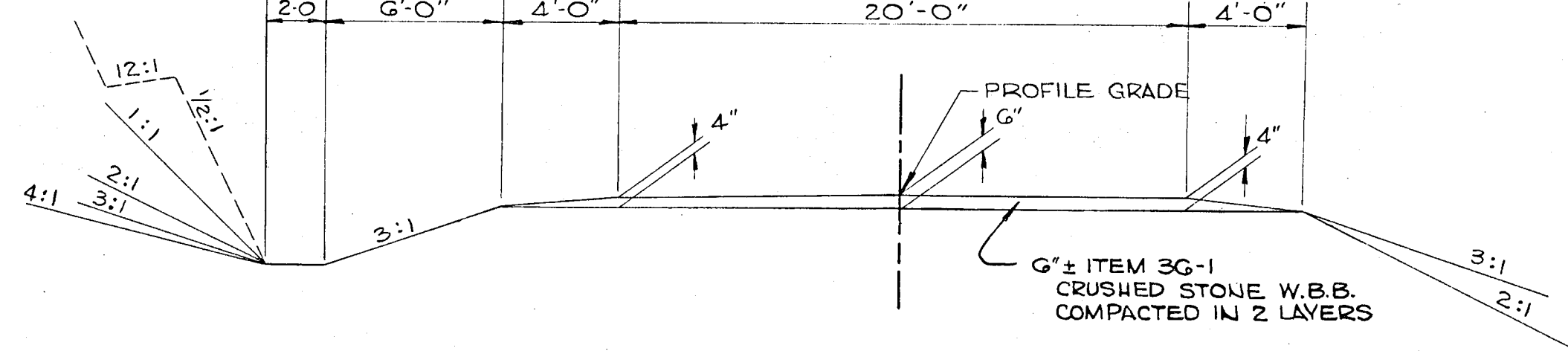
SERVICE ROAD RELOC.
P.I. = STA. 1+27.00
Δ 117° 01' 04" LT.
Dc 25° 23' 35"
T 27.55'
Lc 122.54'
R 60.000'
SE. 0.08'/FT.
EW. 4.0'
PC. 0+29.95
PT. 1+52.49

SERVICE ROAD RELOC.
P.I. = STA. 4+23.06
Δ 26° 16' 15" LT.
Dc 24° 00' 00"
T 55.71'
Lc 112.85'
R 238.732'
SE. 0.06'/FT.
EW. 3.00'
PC. 3+67.35
PT. 4+80.20

SERVICE ROAD RELOC.
P.I. = STA. 7+16.64
Δ 100° 30' 44" RT
Dc 25° 23' 35"
T 72.16'
Lc 105.26'
R 60.000'
SE. 0.08'/FT.
EW. 4.00'
PC. 6+44.48
PT. 7+42.74

SERVICE ROAD RELOC.
P.I. = STA. 9+22.58
Δ 37° 02' 53" RT.
Dc 48° 00' 00"
T 40.00'
Lc 77.18'
R 113.366'
SE. 0.08'/FT.
EW. 4.00'
PC. 9+52.58
PT. 10+29.76

ROCK CUTS BENCHED VAR. 10'-15'
AT 20' VERT. INTERVALS

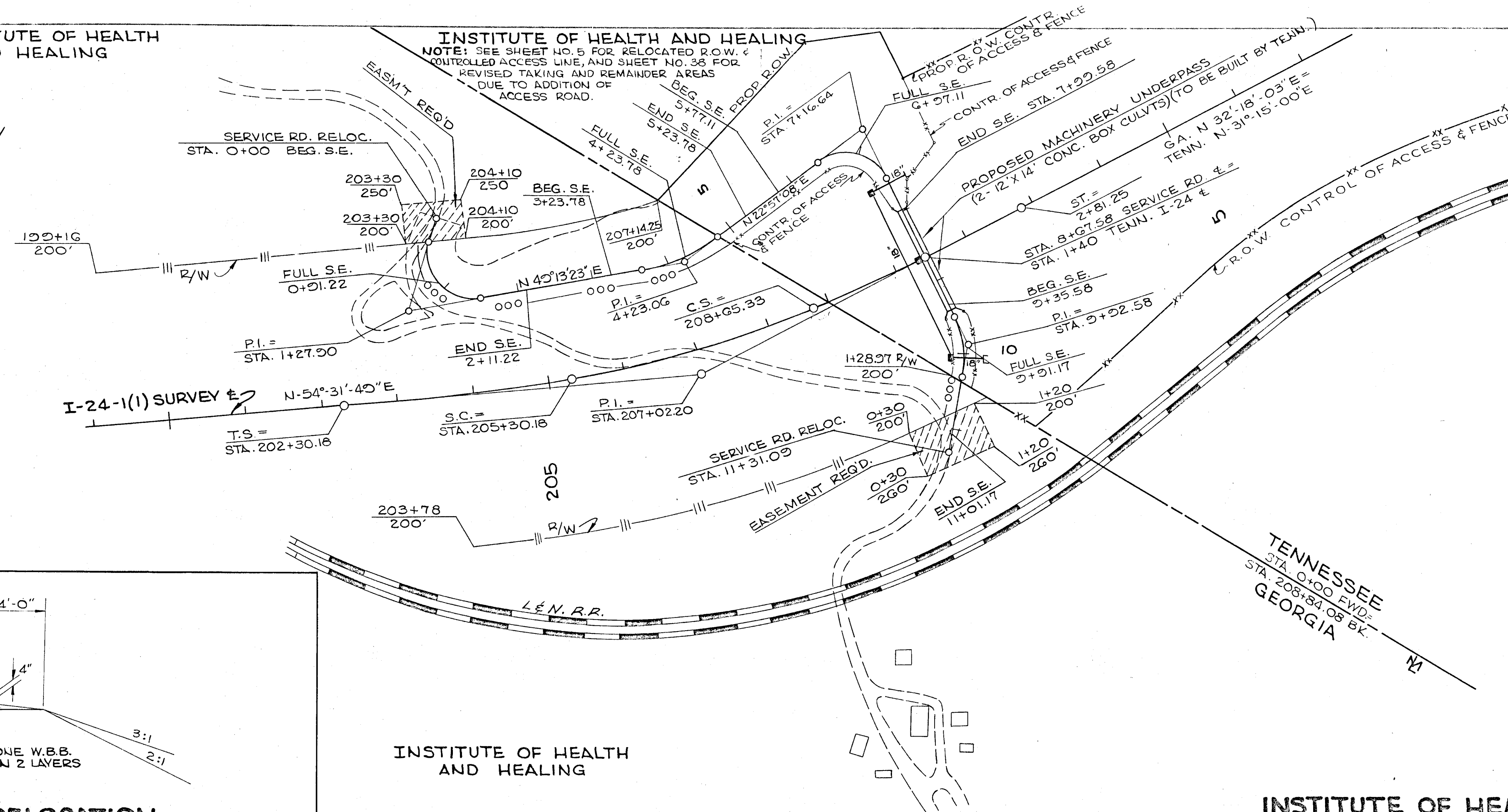


TYPICAL SECTION FOR SERVICE ROAD RELOCATION

INSTITUTE OF HEALTH
AND HEALING

INSTITUTE OF HEALTH AND HEALING

NOTE: SEE SHEET NO. 5 FOR RELOCATED R.O.W. & CONTROLLED ACCESS LINE, AND SHEET NO. 38 FOR REVISED TAKING AND REMAINDER AREAS DUE TO ADDITION OF ACCESS ROAD.

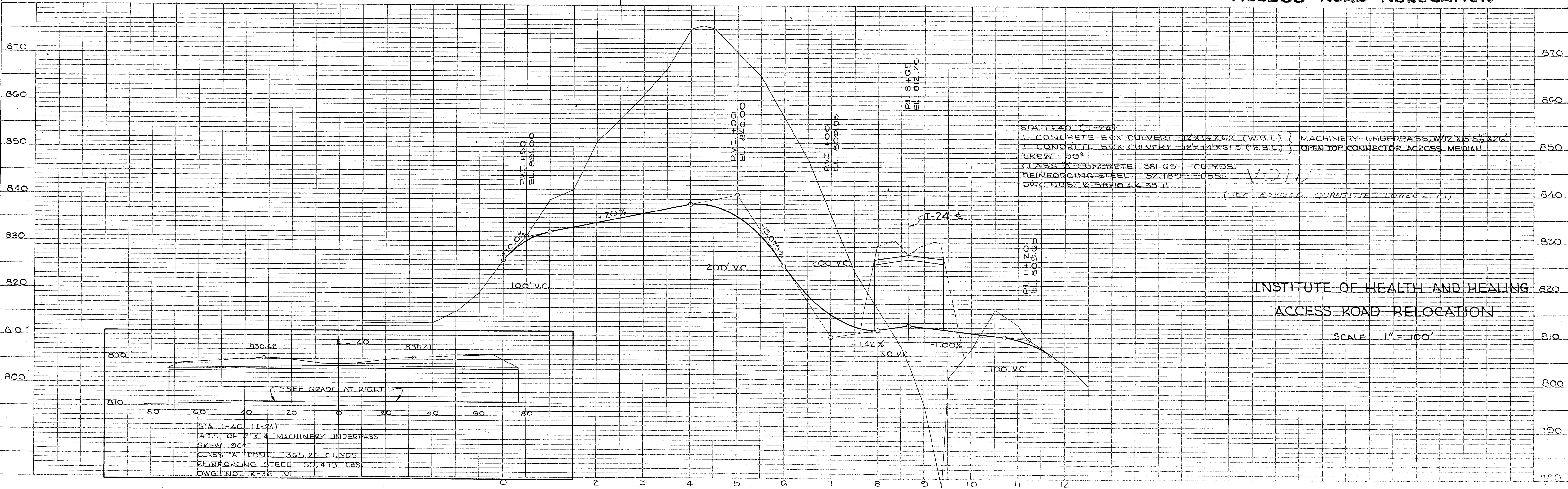


NOTE: THIS SHEET ADDED TO PLANS UNDER REVISION DATED 6-15-64.
REV. 2-19-65: ELIMINATED OPENING IN 12' X 14' CONCRETE BOX CULVERT AT STATION 1+40 AND REVISED QUANTITIES ACCORDINGLY.

NOTE: ALL WORK ON GEORGIA SIDE OF STATE LINE TO BE DONE BY GEORGIA. WORK ON TENNESSEE SIDE TO BE DONE BY TENNESSEE.

MAINLINE E
P.I. = STA. 207+02.20
Δ 22° 13' 46" LT.
Dc 3° 30' 00"
R 1637.022'
Ts 472.02
Ls 300'
Δs 5° 15' 00"
Δc 11° 43' 46"
Lc 335.13'
IP 2.23
K 142.06
Xc 229.75'
Yc 9.16'
LT. 200.09'
ST. 100.08
Y 1,814,912.60
X 127,723.56

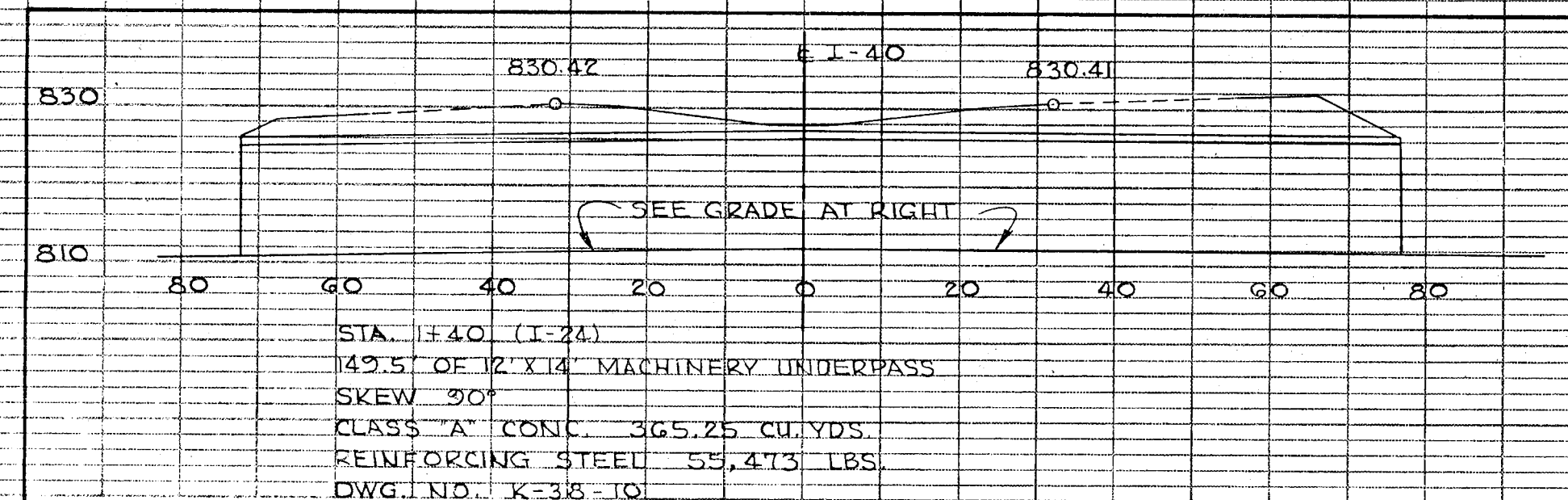
INSTITUTE OF HEALTH AND HEALING
ACCESS ROAD RELOCATION



STA. 1+40 (I-24)
1- CONCRETE BOX CULVERT 12' X 14' X 62' (W.B.L.) } MACHINERY UNDERPASS, W/12' X 15' 5 1/2' X 26'
2- CONCRETE BOX CULVERT 12' X 14' X 61.5' (E.B.L.) } OPEN TOP CONNECTOR ACROSS MEDIAN
SKEW 30°
CLASS 'A' CONCRETE 381.65 CU. YDS.
REINFORCING STEEL 52,183 LBS.
DWG. NOS. K-38-10 & K-38-11
VOID
(SEE REVISED QUANTITIES LOWER LEFT)

INSTITUTE OF HEALTH AND HEALING
ACCESS ROAD RELOCATION

SCALE 1" = 100'



FINAL	SURVEYED	BY	DATE
SURVEY	PLOTTED		
NOTE BOOK	AREA'S		
NO.	CHECKED		

ORIGINAL	SURVEYED	BY	DATE
SURVEY	PLOTTED		
NOTE BOOK	AREA'S		
NO.	CHECKED		



FED. ROAD DIST. NO.	T E N	FEDERAL AID PROJECT NO.	YEAR	SHEET	TOTAL SHEETS
3	N	I-24-3(23)117	1964	2-E	181

43

REV. 8-5-64: DELETED NOTATION REGARDING END OF STOCK FENCE AND BEGINNING OF CHAIN LINK FENCE, LT. OF STA. 135 ±.

FED. ROAD DIST. NO.	TOWN	FEDERAL AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	122	I-24-3(23)117	1964	7	181

CURVE DATA

PI*6 Sta 121+83.67 WB
PI*6 Sta 121+04.60 EB
Δ: 22°20'00"
D: 2°00'00"
R: 2864.79'
T: 665.63'
L: 200'
G: 2°00'00"
Δ: 18°20'00"
L: 916.67'
P: 0.58'
K: 100'
X: 199.98'
Y: 2.33'
e: 0.055'

DETAIL "A"

See Sheet #10

CURVE DATA

PI*5 Sta 135+41.02 WB
PI*5 Sta 135+21.97 EB
Δ: 16°10'00"
D: 2°00'00"
R: 2864.79'
T: 506.95'
L: 200'
G: 2°00'00"
Δ: 12°10'00"
L: 600.34'
P: 0.58'
K: 100'
X: 199.98'
Y: 2.33'
e: 0.055'

NOTE: HATCHED AREAS AT BRIDGE ENDS INDICATE REINFORCED CONCRETE REQUIREMENTS. SEE DWG. P-R-G.

Scale: 1"=100'

CULVERT DRAINAGE				
Sta WB	Size	Type	Skew	Lin Ft.
113+45	8'x5'	Box Cvt	75°Rt	206
128+35	36"	Box Cvt	57°Lt	242
187+88	24"	Box Cvt	59°	172
188+200	36"	Box Cvt	59°	172
190+80	36"	Box Cvt	59°	172

DISREGARD ALL BELOW THIS LINE FOR PROJ. I-24-3(23)117-8

MEDIAN DRAINAGE		
Sta WB	C.C.	Ln. Ft.
111+50	35	85
117+00	35	116
123+50	35	116
129+00	35	105
134+00	35	92
171+00	35	23
177+00	35	20
185+00	35	66
188+00	35	100
194+00	35	51
199+50	35	72

CURVE DATA

PI*3 Sta 179+28.11 WB
PI*3 Sta 173+12.16 EB
Δ: 65°52'20"
D: 3°00'00"
R: 1909.84'
T: 643.40'
L: 300'
G: 4°30'00"
Δ: 30°52'20"
L: 1029.07'
P: 1.36'
K: 149.97'
X: 299.81'
Y: 7.85'
e: 0.083'

NOTE: Shaded areas indicate colored concrete requirement.
Cross Hatched areas at bridge ends indicate reinforced concrete requirements. See dwg. P-R-6.

DETAIL "C"

See Sheet #18

Scale: 1"=100'

CURVE DATA

PI. #8 Sta. 61+73.66
 $\Delta = 13^\circ 22' 40''$
 $D = 1^\circ 00' 00''$
 $R = 5729.58'$
 $T = 926.85'$
 $L = 1837.78'$
 $e = 0.028$

CURVE DATA

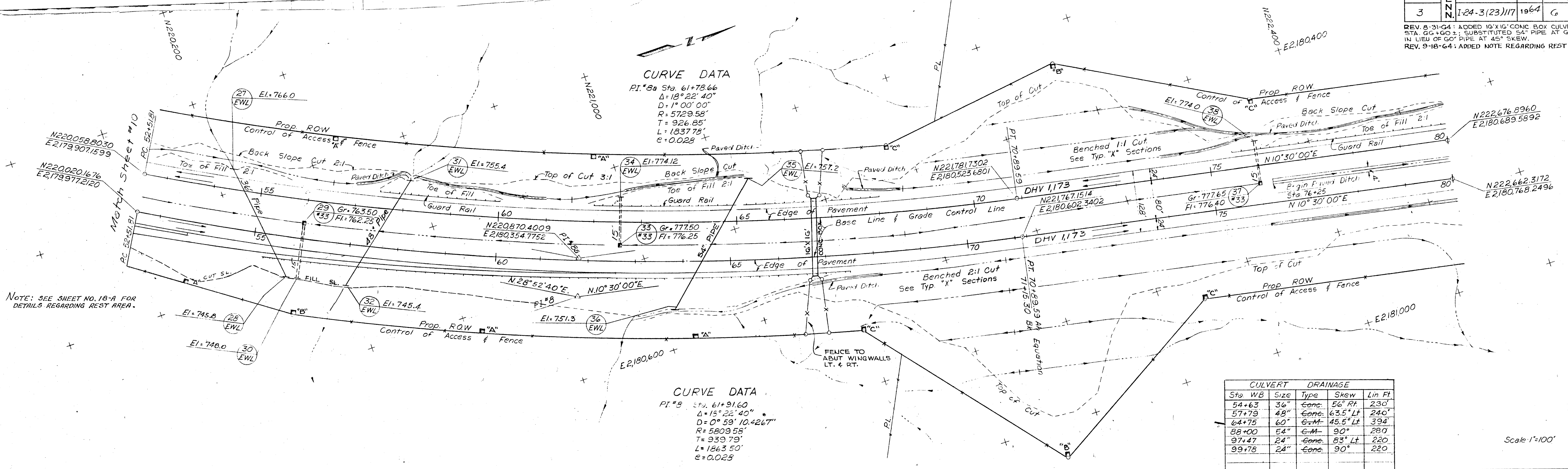
PI. #9 Sta. 61+91.60
 $\Delta = 15^\circ 22' 40''$
 $D = 0^\circ 59' 10.4267''$
 $R = 5809.58'$
 $T = 933.73'$
 $L = 1863.50'$
 $e = 0.028$

CURVE DATA

PI. #7a Sta. 96+67.91 WB
PI. #7 Sta. 96+41.53 EB
 $\Delta = 36^\circ 30' 00''$
 $D = 3^\circ 30' 00''$
 $R = 1637.02'$
 $T_1 = 741.05'$
 $T_2 = 400'$
 $Q_1 = 7^\circ 00' 00''$
 $Q_2 = 22^\circ 30' 00''$
 $L_1 = 642.86'$
 $P = 4.07'$
 $K = 19990'$
 $X_0 = 399.40'$
 $Y_0 = 16.27'$
 $e = 0.096$

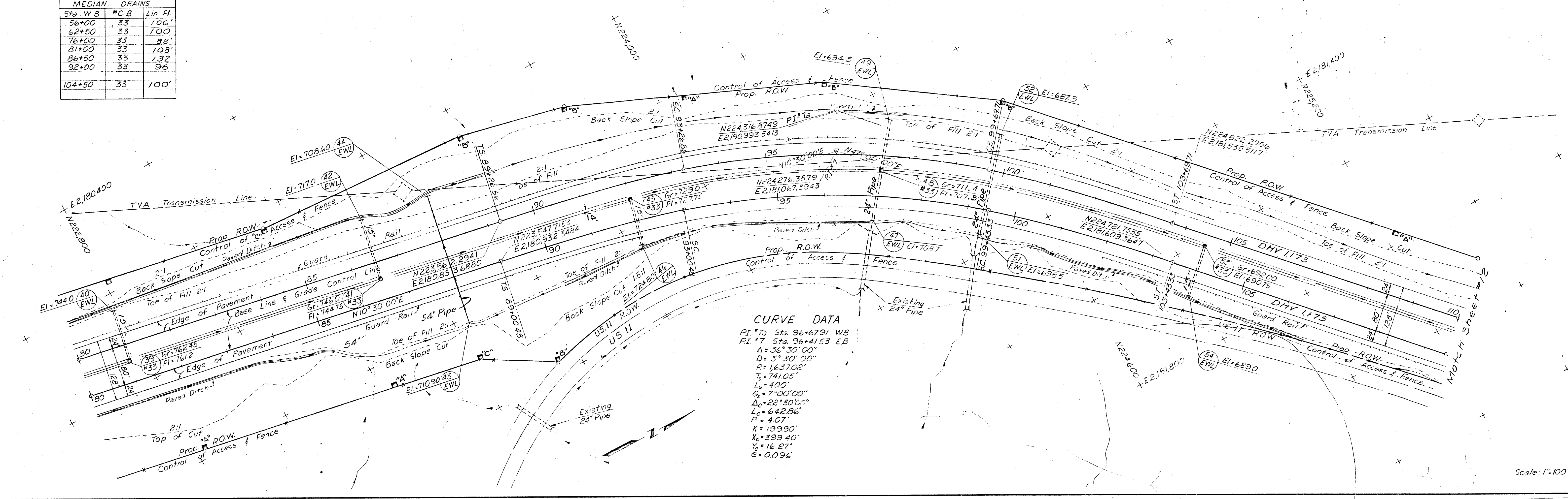
CULVERT		DRAINAGE			
Sta	WB	Size	Type	Shew	Lin Ft
54+63	36"	conc.	56° Rt	230'	
57+79	48"	conc.	63.5° Lt	240'	
64+75	60"	C-M	45.5° Lt	394'	
88+00	54"	C-M	90°	280'	
97+47	24"	conc.	83° Lt	220'	
99+78	24"	conc.	90°	220'	

Scale: 1"=100'



NOTE: SEE SHEET NO. 18-A FOR DETAILS REGARDING REST AREA.

MEDIAN	DRAINS
Sta W.B	#C.B
56+00	33
62+50	33
76+00	33
81+00	33
86+50	33
92+00	33
104+50	33



Scale: 1"=100'

REVISED 5-18-64: ADDED REST AREA AND REVISED ALL INVOLVED DRAINAGE.
REV. 2-19-65: ELIMINATED OPENING IN 12"X14" CONCRETE BOX CULVERT AT STATION 1+40 AND REV. QUANTITIES ACCORDINGLY.

FED. ROAD DIST. NO.	TENN.	FEDERAL AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
3	N	1-24-3(23)117	1964	5	181

CURVE DATA

PI*9 Sta 23+63.79 WB
PI*9 Sta 23+57.76 EB
Δ: 16°07'20"
D: 3°00'00"
R: 1909.86'
T: 420.74'
L: 300'
O: 4°30'00"
Δc: 7°07'20"
Lc: 237.41'
P: 196'
K: 149.97'
Xc: 299.81'
Yc: 7.85'
e: 0.053'

CURVE DATA

PI*10 Sta 7+82.29 WB
PI*10 Sta 7+07.26 EB
Δ: 13°45'00"
D: 3°00'00"
R: 1909.86'
T: 380.48'
L: 300'
O: 4°30'00"
Δc: 4°45'00"
Lc: 158.33'
P: 196'
K: 149.97'
Xc: 299.81'
Yc: 7.85'
e: 0.053'

Sta. WB	#C.B.	Lin. Ft.
2+50	33	80
10+00	33	90
19+00	33	80
26+50	33	94
34+50	33	102
43+50	33	100
51+00	33	84

Sta. WB	Size	Type	Skew	Lin. Ft.
4+84	42"	C-M	75° Lt	410'
22+27	54"	C-M	48° Rt	404'
33+60	48"	C-M	64° Rt	248'
39+67	48"	Cone	80° Rt	192'
43+32	24"	Cone	78° Lt	212'
49+72	48"	Cone	75° Rt	184'

CURVE DATA

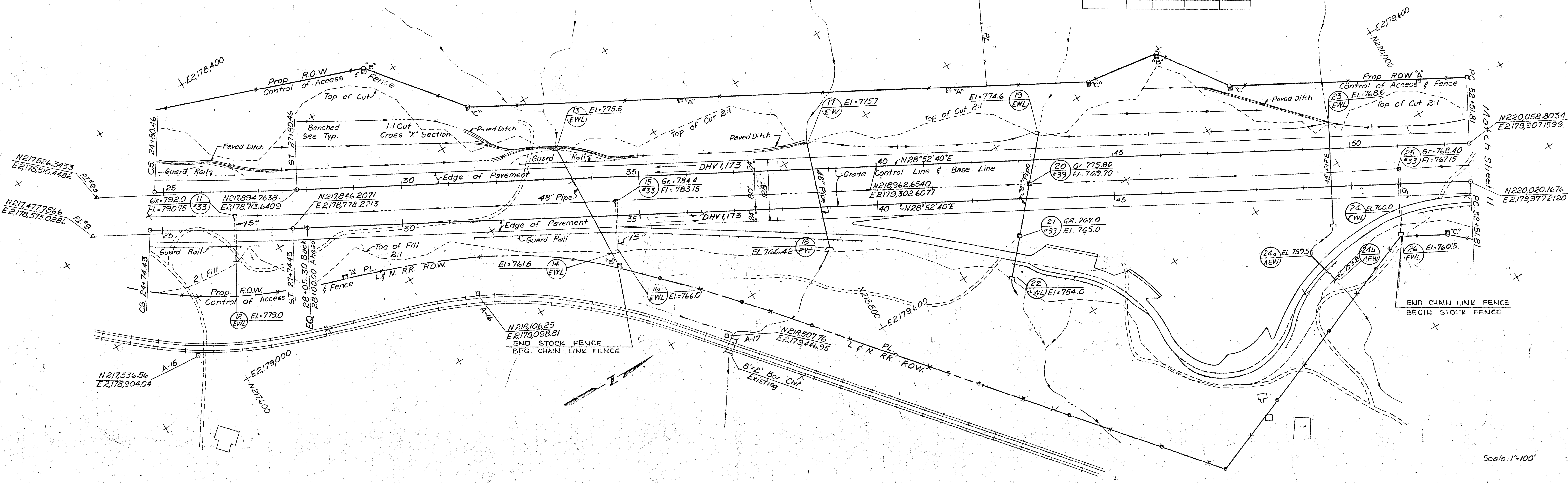
PI Sta 207+02.20
Δ: 22°13'46.1176"
D: 3°30'00"
R: 1637.02'
T: 472.02'
L: 300'
O: 5°15'00"
Δc: 11°43'46.1176"
Lc: 335.13'
P: 2.29'
K: 149.96'
Xc: 299.75'
Yc: 9.16'
e: 0.080

BEGIN PROJ. I-24-3(23)117 (CONST.)

STA. 208+84.08=0+00

Scale: 1"=100'

Existing 3'x3' Box Clvt.



Scale: 1"=100'

DRAINAGE STRUCTURES

FED. ROAD DIST. NO.	TENN.	FEDERAL AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
3	N.	I-24-3(23)117	1964	2-D	181

REV. 8-31-64: CORRECTED QUANTITIES AT LOC. 35-36 FOR 54" PIPE @ 60° SKEW IN LIEU OF 60" PIPE @ 45° SKEW.
REV. 9-18-64: ADDED *** REGARDING REST AREA.

LOC. CODE	KIND OF STRUCTURE	DWG. NO.	GRATE ELEV.	APPROX DEPTH	BRICK MASONRY "M"	CLASS "A" CONCRETE CU. YDS.	GRAY IRON CASTINGS-POUNDS RIP-RAP (CU. YD.)	CULV. EXCAV. CU. YDS.	REINF. STEEL LBS.
1	"L" ENDWALL	D-0-13	8092		-	.97			
1a	25-3pc eib.								
2	DROP INLET	D-0-13	*816.0	1.5	-	1.19	-	-	-
3	RIP-RAP	CM-I-485	*758.0	-	-	-	3	-	-
4	RIP-RAP	CM-I-485	*748.19	-	-	-	3	-	-
5	#33 C.B.	M-D-2	814.25	1.25	-	1.43	145	-	-
6	"U" Endwall	D-0-13	*811.0	-	-	0.58	-	20	-
7	#33 C.B.	M-D-2	799.25	1.25	-	1.43	145	-	-
8	"U" Endwall	D-0-13	*796.0	-	-	0.58	-	20	-
9	"A" Endwall	G-10-41	*769.0	-	-	9.6	-	136	-
10	"A" Endwall	G-10-41	*753.5	-	-	9.6	-	136	-
11	#33 C.B.	M-D-2	792.0	1.25	-	1.43	145	-	-
11a	25-3pc eib.								
12	"U" Endwall	D-0-13	*779.0	-	-	0.58	-	20	-
13	"A" ENDWALL	G-10-41	*775.5	-	-	6.6	-	100	-
14	"A" ENDWALL	G-10-41	*761.8	-	-	6.6	-	100	-
15	#33 C.B.	M-D-2	784.4	1.25	-	1.43	145	-	-
15a	25-3pc eib.								
16	"U" Endwall	D-0-13	*766.0	-	-	0.58	-	20	-
17	"A" ENDWALL	G-10-41	*775.7	-	-	6.05	-	20	-
18	"A" ENDWALL	G-10-41	*768.6	-	-	6.05	-	20	-
19	St. Endwall	D-0-13	*774.6	-	-	1.62	-	-	-
20	St. Endwall	D-0-13	*756.98	-	-	1.62	-	-	-
21	#33 C.B.	M-D-2	775.50	1.25	-	1.43	145	-	-
21a	25-3pc eib.								
22	"U" Endwall	D-0-13	*759.50	-	-	0.58	-	20	-
23	"A" Endwall	G-10-41	*768.6	-	-	6.05	-	92	-
24	"A" Endwall	G-10-41	*759.5	-	-	6.05	-	92	-
25	#33 C.B.	M-D-2	768.4	1.25	-	1.43	145	-	-
26	"U" Endwall	D-0-13	*765.0	-	-	0.58	-	20	-
27	St. Endwall	A-4-83	*766.0	-	-	5.08	-	-	-
28	St. Endwall	A-4-83	*747.9	-	-	5.08	-	-	-
29	#33 C.B.	M-D-2	763.5	1.25	-	1.43	145	-	-
29a	25-3pc eib.								
30	"U" Endwall	D-0-13	*748.0	-	-	0.58	-	20	-
31	"A" Endwall	G-10-41	*755.4	-	-	6.6	-	100	-
32	"A" Endwall	G-10-41	*745.9	-	-	6.6	-	100	-
33	#33 C.B.	M-D-2	777.5	1.25	-	1.43	145	-	-
34	"U" Endwall	D-0-13	*774.12	-	-	0.58	-	20	-
35	"A" Endwall	G-10-41	*757.2	-	-	8.13	-	114	-
36	"A" Endwall	G-10-41	*751.3	-	-	8.13	-	114	-
37	#33 C.B.	M-D-2	777.65	1.25	-	1.43	145	-	-
38	"U" Endwall	D-0-13	*774.0	-	-	0.58	-	20	-
39	#33 C.B.	M-D-2	762.45	1.25	-	1.43	145	-	-
39a	25-3pc eib.								
40	"U" Endwall	D-0-13	*744.0	-	-	0.58	-	20	-
41	#33 C.B.	M-D-2	746.0	1.25	-	1.43	145	-	-
41a	25-3pc eib.								
42	"U" Endwall	D-0-13	*717.0	-	-	0.58	-	20	-
43	RIP-RAP	CM-I-485	*710.9	-	-	-	3.5	-	-
44	RIP-RAP	CM-I-485	*708.6	-	-	-	3.5	-	-
45	#33 C.B.	M-D-2	729.0	1.25	-	1.43	145	-	-
46	"U" Endwall	D-0-13	*724.8	-	-	0.58	-	20	-
47	St. Endwall	D-0-13	*708.7	-	-	1.62	-	-	-
48	#33 C.B.	M-D-2	711.4	3.9	-	2.48	145	-	-
49	St. Endwall	D-0-13	*694.5	-	-	1.62	-	-	-
51	St. Endwall	D-0-13	*698.5	-	-	1.62	-	-	-
52	"U" Endwall	D-0-13	*687.9	-	-	0.58	-	20	-
53	#33 C.B.	M-D-2	692.0	1.25	-	1.43	145	-	-
54	"U" Endwall	D-0-13	*689.0	-	-	0.58	-	20	-
55	#33 C.B.	M-D-2	677.0	1.25	-	1.43	145	-	-
56	"U" Endwall	D-0-13	*669.3	-	-	0.58	-	20	-
57	#33 C.B.	M-D-2	681.4	1.25	-	1.43	145	-	-
57a	25-3pc eib.								
58	"U" Endwall	D-0-13	*665.0	-	-	0.58	-	20	-
59	#33 C.B.	M-D-2	686.5	1.25	-	1.43	145	-	-
59a	25-3pc eib.								
60	"U" Endwall	D-0-13	*668.0	-	-	0.58	-	20	-
61	St. Endwall	A-4-83	*682.3	-	-	5.37	-	-	-
62	St. Endwall	A-4-83	*672.88	-	-	5.37	-	-	-
63	#33 C.B.	M-D-2	694.55	1.25	-	1.43	145	-	-
63a	25-3pc eib.								
64	"U" Endwall	D-0-13	*675.5	-	-	0.58	-	20	-
20	#33 C.B.	M-D-2	826.0	1.25	-	1.43	-	-	-
20b	"U" CONN.				-	-	-	-	-
20c	DROP INLET	D-0-13	801.0	1.5	-	1.19	-	-	-
24	"U" ENDWALL	D-0-13	*8005	-	-	0.69	-	20	-

*** QUANTITIES AND STRUCTURES AT THESE LOCATIONS HAVE BEEN REVISED DUE TO ADDITION OF REST AREA. THESE REVISIONS AND ADDITIONAL QUANTITIES INVOLVED ARE REFLECTED ON SHEET NOS. 5, 6 AND 18-A.

- ① BEVELED & 85° SKEWED ENDS (SKEWED LT.)
② SKEW 45° RT.
③ SKEW 60° RT.
④ SKEW 75° RT.
⑤ SKEW 50° RT.
⑥ SKEW 60° LT.

- ⑦ SKEW 60° LT.
⑧ SKEW 30°, BEVELED ENDS

LOC. CODE	KIND OF STRUCTURE	DWG. NO.	GRATE ELEV.	APPROX DEPTH	BRICK MASONRY "M"	CLASS "A" CONCRETE CU. YDS.	GRAY IRON CASTINGS-LBS. CL. 30	CULV. EXCAV. CU. YDS.	REINF. STEEL LBS.
65	#33 C.B.	M-D-2	711.0	1.25	-	1.43	145	-	-
65a	25-3pc eib.								
66	"U" Endwall	D-0-13	*696.0	-	-	0.58	-	-	20
67	#33 C.B.	M-D-2	727.0	1.25	-	1.43	145	-	-
68	"U" Endwall	D-0-13	*721.0	-	-	0.58	-	-	20
69	#33 C.B.	M-D-2	745.55	1.25	-	1.43	145	-	-
70	"U" Endwall	D-0-13	*743.0	-	-	0.58	-	-	20
71	#33 C.B.	M-D-2	764.25	1.25	-	1.43	145	-	-
72	"U" Endwall	D-0-13	*756.0	-	-	0.58	-	-	20
73	#33 C.B.	M-D-2	754.0	2.00	-	0.98	145	-	-
74	#32 C.B.	S-CB-32	755.8	4.40	O.G.II	1.14	600	-	-
75	St. Endwall	D-0-13	*751.1	-	-	0.77	-	-	-
75a	Apron Spway	P-S-9	*688.9	-	-	0.85	-	-	39
75b	"U" Endwall	P-S-9	*666.0	-	-	0.33	-	-	14
75c	Apron Spway	P-S-9	*688.9	-	-	0.85	-	-	39
75d	"U" Endwall	P-S-9	*685.0	-	-	0.33	-	-	14
80	#33 C.B.	M-D-2	753.0	2.00	-	0.98	145	-	-
81	"U" Endwall	D-0-13	*750.6	-	-	0.58	-	-	20
75e	Apron Spway	P-S-9	*776.3	-	-	0.85	-	-	39
75f	"U" Endwall	P-S-9	*755.0	-	-	0.33	-	-	14
75g	Apron Spway	P-S-9	*776.5	-	-	0.85	-	-	39
75h	"U" Endwall	P-S-9	*754.0	-	-	0.33	-	-	14
80b	CONNECTION TO PIPE UNDER PROJECT I-24-3(22)120				O.G.II	174.07	13	4080	1,268
TOTALS									

* Flow Line Elevation
** Elevation At Front Of Apron
NOTE: Elevation shown on #33 Catch Basin is at bottom of side opening. Add 10" for elev. of top.

TABULATION OF GUARD-RAIL LOCATIONS

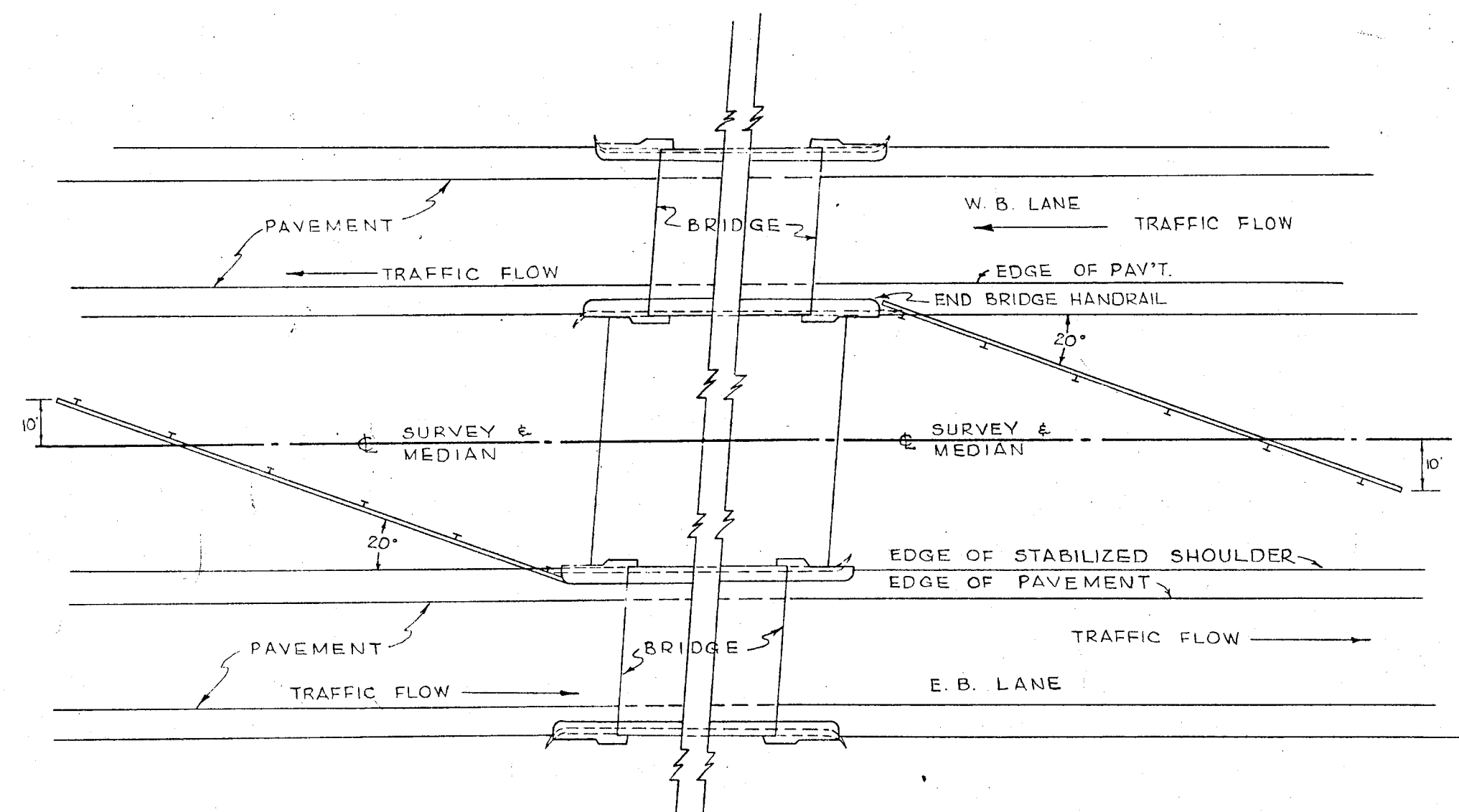
STA. TO STA.	LOC.	LINFT.(ft)
1+00	10+78	LT. 378'
0+45	27+00	RT. 2,655'
OPENING AT MACHINERY UNDERPASS STA. 1+45		
20+30	26+50	LT. 620'
32+50	34+50	LT. 200'
31+50	39+20	RT. 770'
57+50	60+00	LT. 250'
55+25	67+50	RT. 1,235'
75+50	104+50	LT. 2,900'
84+50	92+00	RT. 750'
102+00	121+12	RT. 1,912'
112+00	121+22	LT. 922'
ENDS OF CUMMING ROAD BRIDGE		
122+78	130+00	LT. 722'
122+65	137+00	RT. 1,435'
ENDS OF U.S. 41 BRIDGE		
TOTAL		16,089'

R.O.W. MARKERS

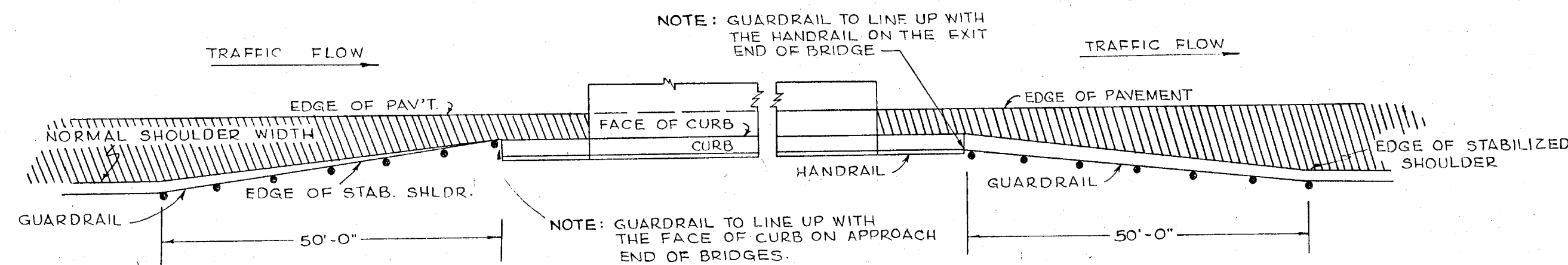
A	22
B	25
C	28
TOTAL	75

FED. ROAD DIST. NO.	TENN.	FEDERAL AID PROJECT NO.	FISCAL YEAR	SHEET NO.
3	N	I-24-3(23)117	1964	2-C

REV. 7-20-64: CORRECTED STRUTTING DESIGN ON PIPE, LOC. 2, 35 AND 43
REV. 8-31-64: DELETED 60" PIPE AT LOC. 3 AND SUBSTITUTED 54" IN LIEU THEREOF; ADDED 16' X 16' CONCRETE BOX, STA. GG+60±, CORRECTED QUANTITIES ACCORDINGLY.
REV. 9-18-64: DECREASED 15" PIPE QUANTITY, ADDITION OF REST AREA, SEE SHEET NO. 18-A, CORRECTED PRELIMINARY ESTIMATED QUANTITIES, 16' X 16' CONCRETE BOX CULVERT AT STA. GG+60±, ADDED DWG. NO. FOR SAME.



TYPICAL DETAIL OF GUARD RAIL IN MEDIAN AT BRIDGE APPROACHES



TYPICAL DETAIL OF STABILIZED SHOULDER AND GUARD RAIL TRANSITION AT BRIDGES ON OUTSIDE SHOULDERS

CONCRETE BOX CULVERTS

STATION	SPAN	HEIGHT	LENGTH	SKW	CL. W. CONC.	STEEL BAR REINF.	DWG.	REMARKS
* I-24 1+40	* 12'	14'	22' W.B. 615' E.B.	90°	374.25	46,490	K-38-10	OMIT WINGWALLS & CUT-OFF WALLS IN MEDIAN
I-24 113+45	8'	5'	206'	75° RT.	240.19	32,733	A-14-23 K-4-141	OPEN TOP CONNECTION ACROSS MED IN LIEU OF WINGW. & CUTOFF W.
** I-24 (W.B.L.) GG+60±	16'	16'	152.5'	90°	565.9	33,084	K-38-65	
TOTAL ESTIMATED QUANTITIES					1066.64	107,307		

* NOTE: STEEL GUARD RAIL POSTS SHALL BE PROVIDED ON BOTH ENDS OF STRUCTURE UNDER EACH ROADWAY AS DIRECTED BY THE ENGINEER. BEFORE BACKFILL OVER STRUCTURES IS PLACED, ALL COSTS OF WELDING, FLANGES, BOLTS, LABOR, ETC. REQUIRED IN THE PROVISION OF GUARD RAIL POSTS, SHALL BE INCLUDED IN THE UNIT PRICE BID FOR CLASS "A" CONCRETE.

** QUANTITIES SHOWN ARE APPROXIMATE AND FOR ESTIMATING PURPOSES ONLY. DETAILS OF THIS STRUCTURE WILL BE FURNISHED AT A LATER DATE. THE LOCATION OF THIS STRUCTURE MAY BE SHIFTED TO SUIT EXISTING CONDITIONS AS DIRECTED BY THE ENGINEER.

NOTE: ALL COSTS OF EXCAVATION FOR CONCRETE BOX CULVERTS WILL BE INCLUDED IN THE UNIT PRICE BID FOR CLASS "A" CONCRETE PER CU. YD.

I-24 1+40	12'	14'	142.5'	90°	365.25	55,473	K-38-10	OPENING ELIMINATED
TOTAL QUANTITIES					1111.34	181,220		

REV. 2-19-65

DRAINAGE PIPE

FROM		TO		GRADE %	PIPE SIZES & LENGTHS										GRANULAR BACKFILL CU. YDS.	TYPE OF CULV.		
LOC.	ELEV.	LOC.	ELEV.		18"	8"	15"	24"	36"	42"	48"	54"	60"			CLASS CONC. PIPE	GAGE FERROUS PIPE	GAGE ALUM. C.M. PIPE
1	809.2	2	806.5	5.4	50'										9	III		16
3	758.0	4	748.9	2.39						416'					153		106' 12.42-10, 2688	16 ALT.
5	813.0	6	811.0	2.22			90'								14	III		16
7	798.0	8	796.0	2.50			80'								13	III		16
9	769.0	10	753.5	3.84								404'			194		(2)	16 ALT.
11	790.75	12	779.0	12.5			34'								11	III		16
13	775.5	14	761.8	5.52								248'			105	III		16 ALT.
15	783.15	16	766.0	15.8			102'								17	III		16
17	775.7	18	768.6	3.70											81	III		16
19	774.6	20	756.98	8.31				212'							48	III		12-STRUT.
21	774.25	22	759.5	14.75			100'								16	III		16
23	768.60	24	759.5	4.95								184'			78	III		12-5% V.E.
25	767.15	26	765.0	2.56			84'								14	III		16
27	766.0	28	747.3	7.99					230'						75	III		12-5% V.E.
29	762.25	30	748.0	13.9			106'								18	III		16
31	755.4	32	745.9	3.96								240'			102	III		16 ALT.
33	776.25	34	774.12	2.15			100'								16	III		16
35	757.2	36	751.3	1.94								304'			146		(3)	16 ALT.
37	776.4	38	774.0	2.73						88'					14	III		16
39	761.2	40	744.0	15.6			110'								18	III		16
41	744.75	42	717.0	21.3			130'								22	III		16
43	710.9	44	708.6	0.82								288'			134		(4)	16 ALT.
45	727.75	46	724.8	3.07			96'								15	III		16
47	708.7	48	707.6	1.02				108'							25	III		52' 10.52-14
48	707.5	49	694.5	11.61				112'							25	III		43' 10.72-14
51	698.5	52	687.9	4.82				220'							50	III		38' 10.182-14
53	690.75	54	689.0	1.75				100'							16	III		16
55	675.75	56	669.3	6.72				96'							15	III		16
57	680.15	58	665.0	13.1				116'							20	III		16
59	685.25	60	668.0	14.8				116'							20	III		16
61	682.30	62	672.88	3.89					242'						78	III		12-5% V.E.
63	693.3	64	675.5	16.8				106'							17	III		16
65	709.75	66	696.00	14.9				92'							15	III		16
67	725.75	68	721.00	6.60				72'							12	III		16
69	744.3	70	743.0	1.48				88'							14	III		16
71	763.0	72	756.0	7.78				90'							14	III		16
73	752.0	74	751.64	1.64				52'							8	III		16
74	751.41	75	751.1	0.39				80'							13	III		16
75G	687.4	75H	666.0	44.6			48'								-		16	NO ALT.
75E	687.4	75F	685.0	7.5			32'								-		16	NO ALT.
80	751.0	81	750.6	0.50				80'							13	III		16
75A	774.8	75B	755.0	29.1				68'							-		16	NO ALT.
75C	775.0	75D	754.0	29.2				72'							-		16	NO ALT.
RT. STA. 4+00±, CUMMINS RD.				30'														
2	806.4	2C	801.0	2.3			236'								50	III		
2A	826.0	2B	803.1	82			28								5	III		
2C	801.0	2D	800.5	1.04			48'								21	III		
80B	752.8	80	751.0				20'								4	III		
TOTAL GRANULAR B.F.															1748			
TOTAL CONC. PIPE						364'		236'	652'	472'	870'							
TOTAL C.M. PIPE							220'			416'	336'							

- ① SIDE DRAIN
② 108' OF #12 GA., 5% ELONG.
56' OF #10 GA., 5% ELONG.
240' OF #10 GA., STRUTTED

- ③ 208' OF #10 GA., 5% ELONG.
96' OF #12 GA., 5% ELONG.
* SEE TABULATION OF QUANTITIES FOR REST AREA ON SHEET NO. 18-A FOR ADDITIONAL QUANTITIES ON THESE PIPE.
** 15" PIPE QUANTITIES REDUCED DUE TO ADDITION OF REST AREA.

- ④ 90' OF #12 GA., 5% ELONG.
130' OF #10 GA., 5% ELONG.
68' OF #10 GA., STRUTTED

- ① FOR MEDIAN SHOULDERS - SEE TYPICAL SECTIONS.
② QUANTITY MAY BE DECREASED, INCREASED OR ELIMINATED AS DEEMED NECESSARY BY THE ENGINEER.
③ TO BE USED ON ALL UNPAVED DITCHES & EMBANKMENTS AT BRIDGE ENDS, AND AS DIRECTED.
④ TAR OR CUT-BACK OR EMULSIFIED ASPHALT.
⑤ SEE STANDARD DRAWING NO. P-R-6.
⑥ FOR DETAIL OF PAVING BRIDGE SLOPES, SEE SHEET NO. 2-A.
⑦ TO BE USED AS SHOWN ON PLANS AND AS DIRECTED BY THE ENGINEER, SEE DETAIL ON SHEET NO. 2-A.
⑧ GRADE M.A. ARTICLE 226.02.
⑨ FOR SPILLWAYS AT BRIDGE ENDS.
⑩ PIPE UNDERDRAIN ALTERNATES, SEE SHEET NO. 2-A. CONTINGENCY ITEM, TO BE USED WHERE DIRECTED.
⑪ THIS QUANTITY TO BE USED ONLY AFTER QUANTITIES OBTAINED AS DESCRIBED IN THE "SPECIAL PROVISIONS REGARDING STRIPPING, STOCKPILING, AND PLACING TOPSOIL" ARE EXHAUSTED.
⑫ FENCE SHALL BE INSTALLED AS SHOWN ON LAYOUT UNLESS OTHERWISE DIRECTED BY THE ENGINEER. STOCK FENCE INDICATED THUS ———, CHAIN LINK FENCE THUS ———.
⑬ RUBBLE-STONE (PLAIN), OR SACKED SAND-CEMENT.
⑭ FOR CHANNEL RELOCATION ADJACENT CUMMINGS RD. SEE SHT. #10.
⑮ CONTINGENCY ITEM, TO BE USED WHERE AND AS DIRECTED BY THE ENG.
⑯ STA. 154+68.35 TO STA. 161+00.

SPECIAL NOTE REGARDING PAVEMENT JOINTS

LONGITUDINAL CONTRACTION JOINTS WITH DOWELS WILL BE REQUIRED AS SHOWN ON TYPICAL CROSS-SECTIONS, DET. P-E-31 AND P-E-10a.

TRANSVERSE CONTRACTION JOINTS WILL BE REQUIRED IN ALL TRAFFIC LANES, AUXILIARY LANES AND RAMPS AS SHOWN ON DET. P-E-31. DOWELS WILL BE REQD. ONLY IN RAMPS & AUX. LANES.
TRANSVERSE CONSTRUCTION JOINTS WITH DOWELS WILL BE REQUIRED WHERE DIRECTED AND AS SHOWN ON DET. P-E-31.

TRANSVERSE EXPANSION JOINTS WITH DOWELS WILL BE REQUIRED WHERE SHOWN ON PLANS AND DET. P-E-30 AND/OR WHERE DIRECTED.

NOTES

FINISHED GRADE ON TYPICAL CROSS SECTION SAME AS GRADE ON PROFILES.

ALL NEWLY GRADED EARTHEN CUT & FILL SLOPES TO BE SEEDDED.

THE CONTRACTOR WILL BE REQUIRED TO ADJUST GRADES OF INTERSECTING STREETS, ALLEYS, AND DRIVEWAYS AS DIRECTED BY THE ENGINEER.

THE COST OF REMOVAL AND DISPOSAL OF EXISTING BITUMINOUS PAVEMENT OR BASE, EXISTING SIDEWALKS CURB AND GUTTER, STEPS AND EVERYTHING ENCOUNTERED IN THE PROGRESS OF THE WORK NOT EMBRACED BY OTHER ITEMS SHALL BE PAID FOR AT THE UNIT PRICE BID FOR ITEM 13-3 PER CU. YD.

THE COST OF EXCAVATION FOR ALL PIPE CULVERTS, BOX CULVERTS, CATCH BASINS, ENDWALLS, ETC. SHALL BE INCLUDED IN THE UNIT PRICES BID PER LIN. FT. OF PIPE, AND/OR PER CU. YD. OF CLASS "A" CONCRETE.

EXISTING STORM AND SANITARY SEWER LINES NOT REQUIRED IN THE PROPOSED IMPROVEMENT ARE TO BE REMOVED IF WITHIN THREE FEET OF FINISHED GRADE OR IF IN THE OPINION OF THE ENGINEER ARE DETRIMENTAL TO THE SUBGRADE. PIPES LEFT IN PLACE ARE GENERALLY TO BE PLUGGED AT BOTH ENDS WITH MASONRY.

COST OF CONNECTING STORM AND SANITARY SEWER PIPES TO EXISTING SEWERS OR STRUCTURES SHALL BE INCLUDED IN THE UNIT PRICE BID FOR SEWER PIPE OR PIPE CULVERT.

ALL OLD FOUNDATIONS, STEPS, STONE FENCES, ETC. SHALL BE REMOVED TO A DEPTH OF 18" BELOW ANY SUBGRADE UPON WHICH ANY CONSTRUCTION IS TO BE SUPERIMPOSED. ALL OLD CONSTRUCTION FORMING CAVITIES MUST BE REMOVED. ALL CELLARS, WELLS, CISTERNS, EXCAVATIONS, ETC. SHALL BE BACKFILLED IN LAYERS NOT TO EXCEED 6" IN DEPTH WITH EARTH MATERIAL AT THE OPTIMUM MOISTURE CONTENT AND THOROUGHLY COMPACTED BY HAND TAMPING IF NOT PRACTICABLE TO COMPACT WITH A SHEEPSFOOT ROLLER. COST OF ABOVE TO BE INCLUDED IN ITEMS OF CONSTRUCTION.

ALL CONC. BOX CULVS. ON THIS PROJECT ARE DESIGNED FOR H20-SIG-44 AND ALTERNATE MILITARY LOADING.

THE CONTRACTOR SHALL CO-OPERATE WITH OPERATORS OF PUBLIC UTILITIES IN MAKING NECESSARY ADJUSTMENTS IN THEIR FACILITIES DURING CONSTRUCTION OF THIS PROJECT.

ALL WATER AND GAS MAINS, METERS, VALVES, TELEPHONE POLES, POWER POLES, CONDUITS, MANHOLES AND OTHER PUBLIC UTILITIES, SERVICE CONNECTIONS, ETC. TO BE REMOVED OR ADJUSTED TO THE PROPOSED IMPROVEMENT BY THEIR RESPECTIVE OWNERS.

TOP SOIL TO BE SPREAD TO A 3" THICKNESS ON ALL AREAS TO BE SEEDDED.

AT BEGINNING AND END OF TRANSITIONS IN CURB HEIGHT OR IN GUTTER WIDTH, ALL CORNERS TO BE ROUNDED FOR PLEASING APPEARANCE AS DIRECTED BY THE ENGINEER.

SODDING WILL BE REQUIRED AS SHOWN ON TYPICAL CROSS SECTIONS AND IN INTERCHANGE VALLEYS OR OTHER AREAS WHERE DEEMED NECESSARY BY THE ENGINEER.

FERTILIZER, CHEMICAL ANALYSIS 6-12-12 OR EQUIVALENT AT 12 LBS. PER 1,000 SQ. FT., AND AGRICULTURAL LIMESTONE AT 75 LBS. PER 1,000 SQ. FT. WILL BE REQUIRED ON ALL AREAS TO BE SODDED. COST TO BE INCLUDED IN UNIT PRICE BID FOR ITEM 21-1. (SEE SPECIAL PROVISION.)

GUARD RAILS TO BE INSTALLED ON ALL FILLED SLOPES OVER 10' HEIGHT, EXCEPT SLOPES OCCURRING AT BACK OF SIDEWALKS, OR AS DIRECTED BY THE ENGINEER.

EXCAVATION FOR ALL DRAINAGE DITCHES ON THIS PROJECT IS INCLUDED IN, AND WILL BE PAID FOR UNDER ITEM NO. 13-3, ROAD AND DRAINAGE EXCAVATION (UNCLASSIFIED), EXCEPT CHANNEL @ CUMMINGS ROAD.

WHERE A CULVERT IS MOVED TO A NEW LOCATION OTHER THAN SHOWN ON PLANS THEREBY INCREASING OR DECREASING THE AMOUNT OF CULVERT EXCAVATION, NO INCREASE OR DECREASE IN PAYMENT FOR THE ITEM IN WHICH CULVERT EXCAVATION IS INCLUDED WILL BE ALLOWED DUE TO SUCH A CHANGE.

STRIPPING, STOCKPILING AND PLACING TOPSOIL WILL BE GOVERNED BY SPECIAL PROVISIONS REGARDING SECTION 13 OF STANDARD STATE HIGHWAY DEPARTMENT SPECIFICATIONS

THE CONTRACTOR WILL BE REQUIRED TO LOCATE AND FURNISH SUITABLE BORROW MATERIAL FROM A SITE APPROVED BY THE ENGINEER. ALL COSTS OF SAME TO BE INCLUDED IN THE UNIT PRICE BID FOR ITEM NUMBER 15-1. THE BORROW MATERIAL SHALL BE TAKEN IN A MANNER SO THAT IT MAY BE READILY MEASURED. IF BORROW EXCAVATION IN EXCESS OF QUANTITY SHOWN ON THE PLANS AND/OR IN BALANCES OTHER THAN SHOWN ON PLANS IS REQUIRED, IT SHALL BE FURNISHED BY THE CONTRACTOR AT THE UNIT PRICE BID FOR ITEM NUMBER 15-1.

SPECIAL NOTE:

ONE PROJECT NO. I-24-3(22)120, IS NOW UNDER CONTRACT AND UNFINISHED IN THE VICINITY OF U.S. 41 INTERCHANGE, WITH A PORTION OF THE WORK TO BE PERFORMED UNDER THAT PROJECT OVERLAPPING A PORTION OF THE WORK TO BE PERFORMED UNDER THIS (I-24-3(23)117) PROJECT.

THE CONTRACTOR SHALL COORDINATE HIS WORK IN SUCH MANNER AS TO NOT RESTRICT IN ANY WAY THE WORK ON PROJECT NO. I-24-3(22)120.

NO CLAIMS FOR DAMAGES DUE TO DELAYS OR INCONVENIENCES RESULTING FROM THE FOREGOING WILL BE ALLOWED THE CONTRACTOR ON THIS (I-24-3(23)117) PROJECT.

†† The cost of all embedded material such as joint filler, joint sealer, sheet packing, drains, expansion joints, etc., and the cost of crushed stone drains shall be included in the unit price of Class "A" Concrete.

⓪ No alternates permitted for piles.

ESTIMATED ROADWAY QUANTITIES

ITEM NO.	DESCRIPTION	UNIT	TOTAL QUANT.
11-1	CLEARING & GRUBBING	LUM SUM	1
13-3	ROAD & DRAINAGE EXCAVATION (UNCLASS.)	CU. YD.	1,641,628
13-5	WATER (EMBANKMENT)	M. GAL.	326
13-31	PLACING OF STOCKPILED TOPSOIL	CU. YD.	31,264
13-32	UNDERCUTTING	CU. YD.	70,000
15-1	BORROW EXCAVATION (COMMON)	CU. YD.	8,700
23-1	SUB-GRADE PREPARATION	STATION	5.5
20-1	FINAL DRESSING	STATION	151
21-1	SODDING	SQ. YD.	3,441
36-1	CRUSHED STONE (W.B.B.)	TON	94,676
36-1X	CALCIUM CHLORIDE TYPE I OR II	BAG	5,681
43-1	MINERAL AGGREGATE (C.S., B.C.B.)	TON	7,219
43-2	ASPHALT CEMENT (C.S., B.C.B.)	TON	340
43-3	TACK COAT (C.S., B.C.B.)	TON	22
44-1	MINERAL AGGREGATE (C.G., B.C.B.)	TON	7,219
44-2	ASPHALT CEMENT (C.G., B.C.B.)	TON	340
44-3	TACK COAT (C.G., B.C.B.)	TON	22
13-4	CHANNEL EXCAVATION	CU. YD.	896
49-1	BITUMINOUS MATERIAL (PRIME COAT)	TON	87
13-5a	WATER (SODDING & SEEDING)	M. GAL.	3,446
104-1	MINERAL AGGREGATE (A.C.S.C.)	TON	2,787
104-1a	MINERAL FILLER (A.C.S.C.)	TON	125
104-2	ASPHALT CEMENT (A.C.S.C.)	TON	202
104-3	TACK COAT (A.C.S.C.)	TON	6
105-1	MINERAL AGGREGATE (S.A. OR S., A.S.C.)	TON	2,912
105-2	ASPHALT CEMENT (S.A. OR S., A.S.C.)	TON	202
105-3	TACK COAT (S.A. OR S., A.S.C.)	TON	6
127-1	CEMENT CONCRETE PAVEMENT (PLAIN) 10" THICK	SQ. YD.	87,236
127-1a	CEMENT CONCRETE PAVEMENT (COLORED) 10" THICK	SQ. YD.	2,332
127-21	CEMENT CONCRETE PAVEMENT (REINF.) 12" THICK	SQ. YD.	512
132-4a	GRAY IRON CASTINGS CLASS 30	LB.	4,080
135-4	CLASS "A" CONCRETE - DRAINAGE STRUCTURES & BOX CULVERTS	CU. YD.	805
135-4a	CLASS "A" CONCRETE - BRIDGE SLOPES	CU. YD.	428
135-4b	CLASS "A" CONCRETE - PAVED DITCHES	CU. YD.	107
135-12	STEEL BAR REINFORCEMENT	LB.	86,966
141-2	15" CONCRETE PIPE CULVERT	LIN. FT.	2,316
141-3	18" CONCRETE PIPE CULVERT	LIN. FT.	364
141-4	24" CONCRETE PIPE CULVERT	LIN. FT.	652
173-7a	BRACED LINE POST (STEEL)	EACH	30
173-7c	BRACED LINE POST (TREATED TIMBER)	EACH	30
141-6	36" CONCRETE PIPE CULVERT	LIN. FT.	472
171-4	METAL DEEP BEAM SINGLE GUARD RAIL (STEEL POST)	LIN. FT.	16,080
171-5b	METAL DEEP BEAM SINGLE GUARD RAIL WITH TIMBER POSTS (TREATED)	LIN. FT.	16,080
144	42" FERROUS C.M. PIPE CULV. (BITUMINOUS COATED & PAVED INVERT)	LIN. FT.	416
141-8	48" CONCRETE PIPE CULVERT	LIN. FT.	870
173-7	STOCK FENCE (WITH METAL POSTS)	LIN. FT.	28,722
173-7b	STOCK FENCE (WITH TIMBER POSTS)	LIN. FT.	28,722
144	54" FERROUS C.M. PIPE CULV. (BITUMINOUS COATED & PAVED INVERT)	LIN. FT.	996
144	60" FERROUS C.M. PIPE CULV. (BITUMINOUS COATED & PAVED INVERT)	LIN. FT.	300
144-71	GRAVULAR BACKFILL	CU. YD.	1,813
148	8" CORRUGATED METAL DRAINS	LIN. FT.	220
152-2	BRICK MASONRY	"M"	0.611
162-1	CONCRETE CURB	CU. YD.	8
173-10	GATE FOR DITCH	SQ. FT.	500
173-6	SIX FOOT CHAIN LINK FENCE	LIN. FT.	3,644
173-12	WATER CROSSING	LIN. FT.	200
176	UNDERDRAINS W/G" PIPE	LIN. FT.	2,500
189-1	TOP SOIL	CU. YD.	5,000
500	SEEDING WITH MULCH	UNITS	3,377
176-1	RIP-RAP	CU. YD.	13
174-2	MARKERS (R.O.W. POSTS)	EACH	75
601	SHOULDER UNDERDRAINS	TON	6,401

⑪ FOR ADDITIONAL STOCK FENCE BRACING WHERE NEEDED BECAUSE OF TERRAIN, TO BE PLACED WHERE DIRECTED BY THE ENGINEER. UNIT PRICE BID TO INCLUDE ALL COSTS OF LABOR, MATERIALS, EQUIPMENT, ETC. TO COMPLETE THE ITEM IN ACCORDANCE WITH SECTION 173 OF THE STANDARD SPECIFICATIONS, AND DWG. RD-F-10.

SPECIAL NOTE: SEE SHEET NO. 18-A FOR ADDITIONAL ROADWAY QUANTITIES REQUIRED FOR REST AREA.

PARALLEL BRIDGES
CONC. DECK
W/STEEL BEAM
2 SPANS
16' 32' 32' 10'
6' SPANS
16' 32' 32' 10'
56' 0" 0"
TOTAL LENGTH
178' 2 1/4"
38' RDWY W/5"
SAFETY CURBS
DWG. K-12-24

PARALLEL BR'S
CONC. DECK
GIRDER
DWG. K-12-41

4 SPANS: 1 @ 32'-2 3/4"
1 @ 31'-1 1/8"
1 @ 44'-2 1/2"
1 @ 44'-2 1/2"
TOTAL LENGTH 152'-4 3/8"
4 SPANS: 1 @ 32'-2 3/4"
1 @ 31'-1 1/8"
1 @ 44'-2 1/2"
1 @ 44'-2 1/2"
TOTAL LENGTH 152'-3 3/8"

ESTIMATED QUANTITIES (BRIDGES)

ITEM NO.	17-2	17-4	17-5	501	132-51	135-4	135-12	137-3	704
ITEM	Dry Excavation * C.Y.	Rock Excavation C.Y.	Rock Drilling L.F.	Bridge Lighting ** LUM SUM	Steel Structures † Lump Sum	Class "A" Concrete †† C.Y.	Reinforcing Steel Lbs.	10BP42 Steel H-Piling L.F.	Concrete Handrail L.F.
U.S. 41 TIFTONIA UNDERPASS EAST-BOUND FREEWAY (STA. 153+03.53)	221	132	252	LUM SUM	Lump Sum	448.7	102,150	207	352
U.S. 41 TIFTONIA UNDERPASS WEST-BOUND FREEWAY (STA. 152+76.75)	339	13	72		Lump Sum	453.6	101,415	1,331	352
CUMMINGS ROAD UNDERPASS EAST-BOUND FREEWAY (STA. 121+07.81)	511	38	216			525.9	138,042	577	304
CUMMINGS ROAD UNDERPASS WEST-BOUND FREEWAY (STA. 121+27.33)	448	26	216			522.8	136,880	536	304
TOTALS	1,519	209	756	LUM SUM	Lump Sum	1,951.0	478,487	2,651	1,312

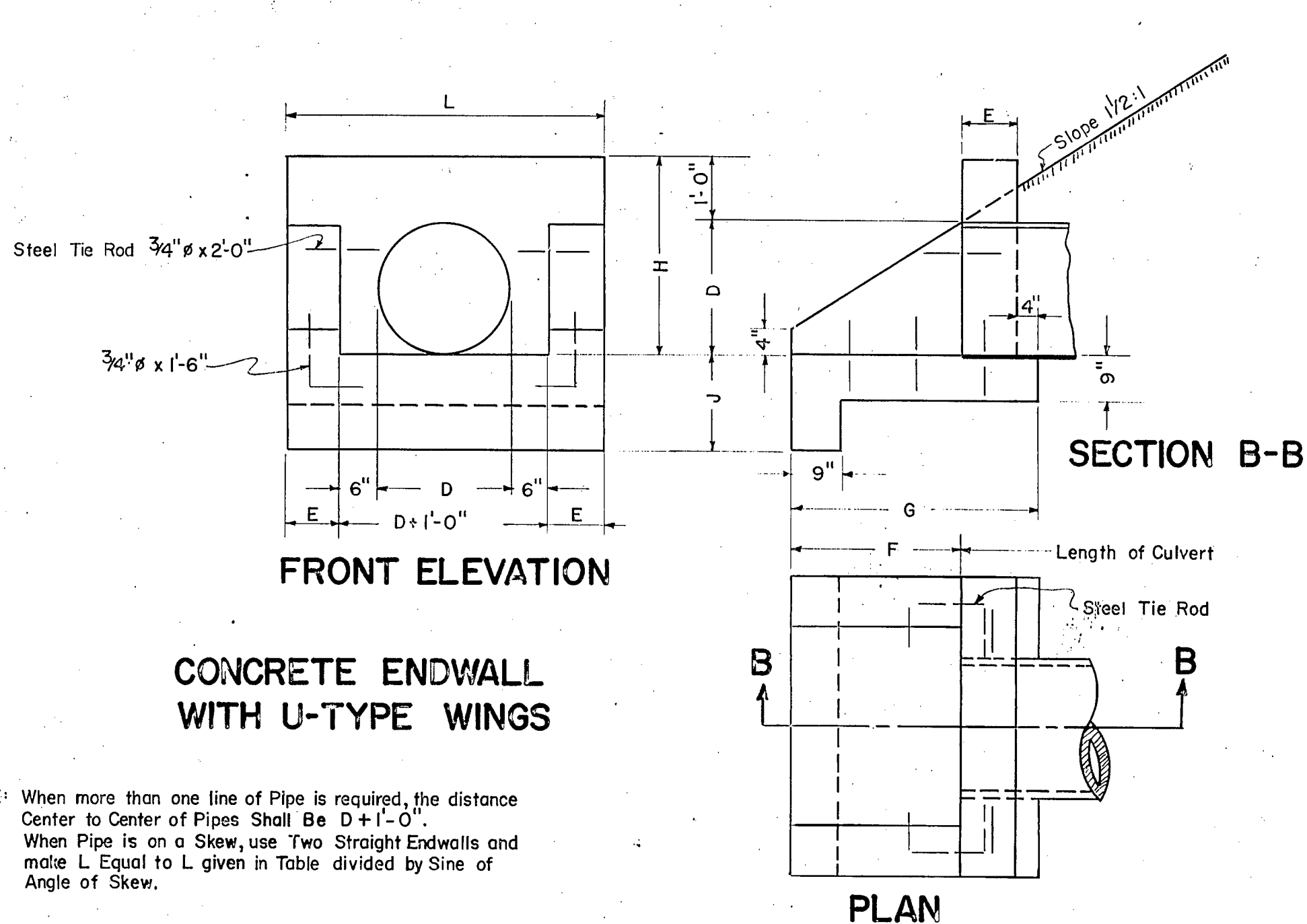
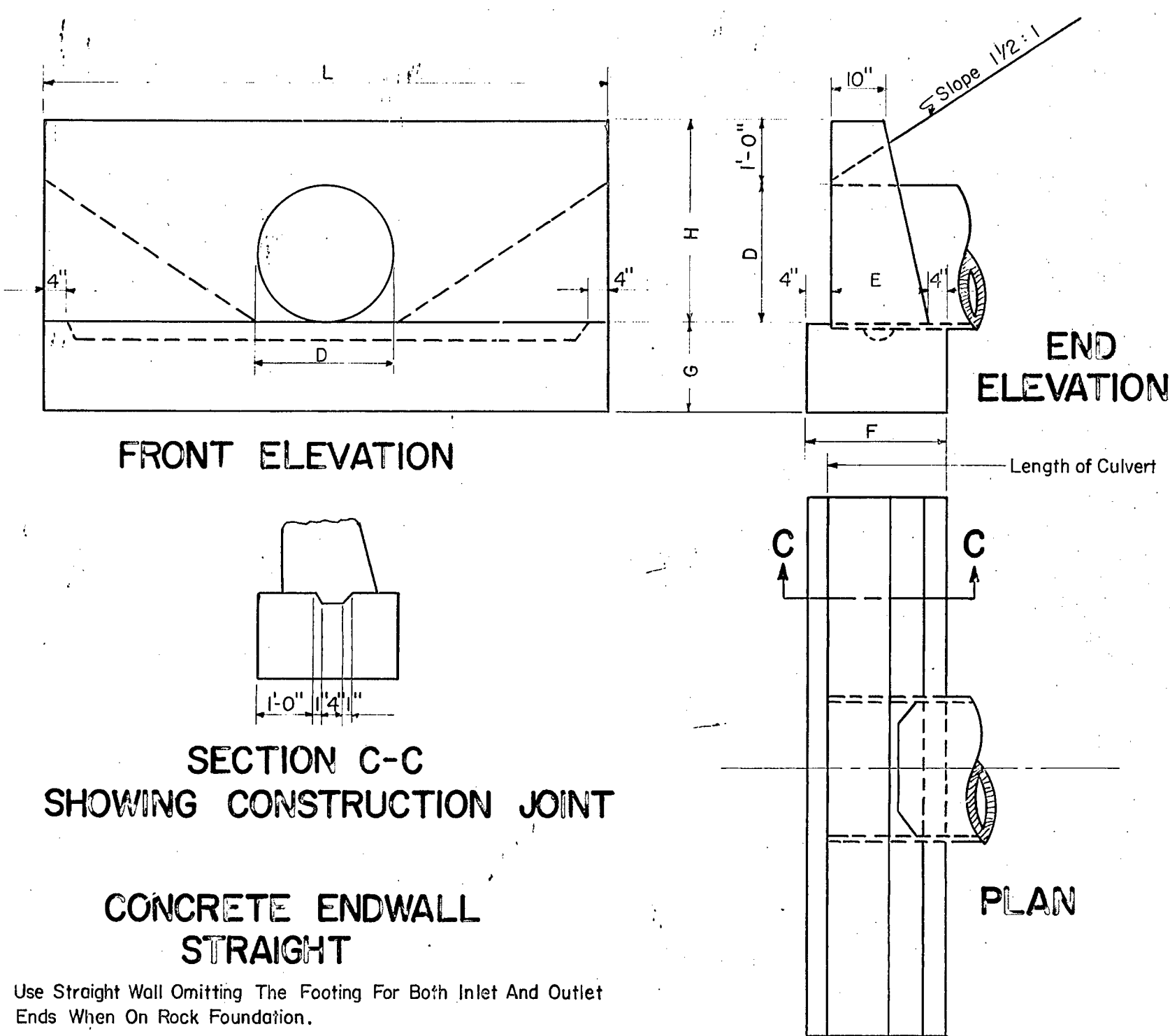
* All earth excavation shall be measured and paid for as Dry Excavation only.

** LUMP SUM BID SHALL INCLUDE ALL ELEMENTS OF BRIDGE LIGHTING AS INDICATED ON PLANS FOR EACH BRIDGE.

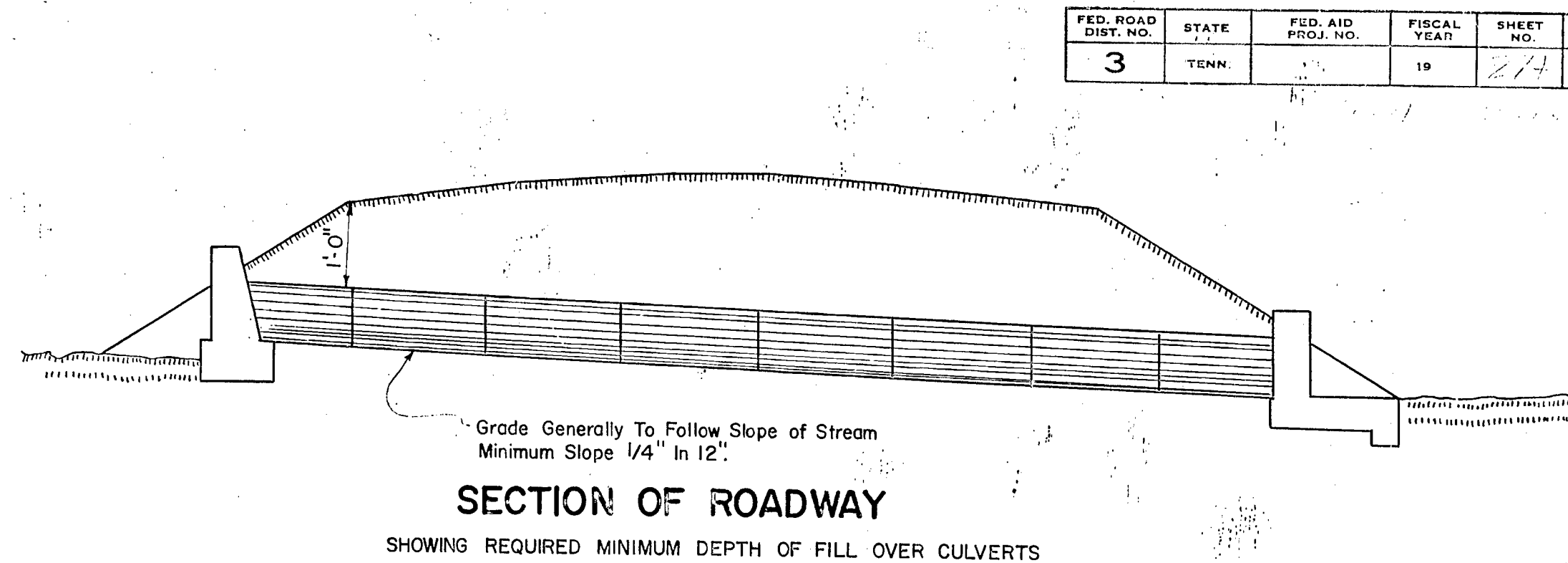
† Lump sum for Steel Structures is for all steel members including expansion dams and bearings (complete with bronze alloy plates and anchor bolts).

Estimated weight of steel structures is as follows:

U.S. 41 Tiftonia Underpass - East-Bound----- 179,700 lbs.
U.S. 41 Tiftonia Underpass - West-Bound----- 179,700 lbs.
Total 359,400 lbs.



NOTE: When more than one line of Pipe is required, the distance Center to Center of Pipes Shall Be $D + 1'-0"$.
When Pipe is on a Skew, use Two Straight Endwalls and make L Equal to L given in Table divided by Sine of Angle of Skew.



GENERAL NOTES:

SPECIFICATIONS: Standard Road and Bridge Specifications of the Tennessee Department of Highways.
CONCRETE: Shall be Class "A".
FORMS AND FINISH: See Specifications.
A Good Foundation Shall Be Provided Under All Pipes, Using Concrete If Natural Conditions Are Very Bad. The Embankment Slopes And Bed Of The Stream Shall Be Protected With Rip-Rap Or Paving Where Necessary, Especially At The Outlets. Paving Where Used, Shall Be Laid In Cement Mortar Or Grouted.

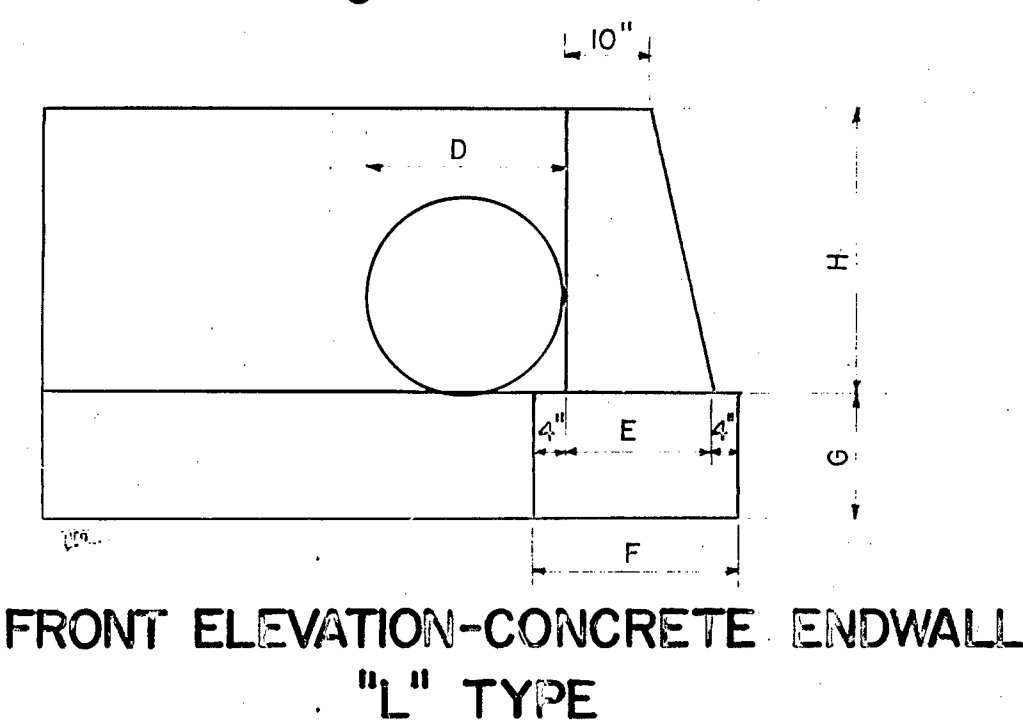
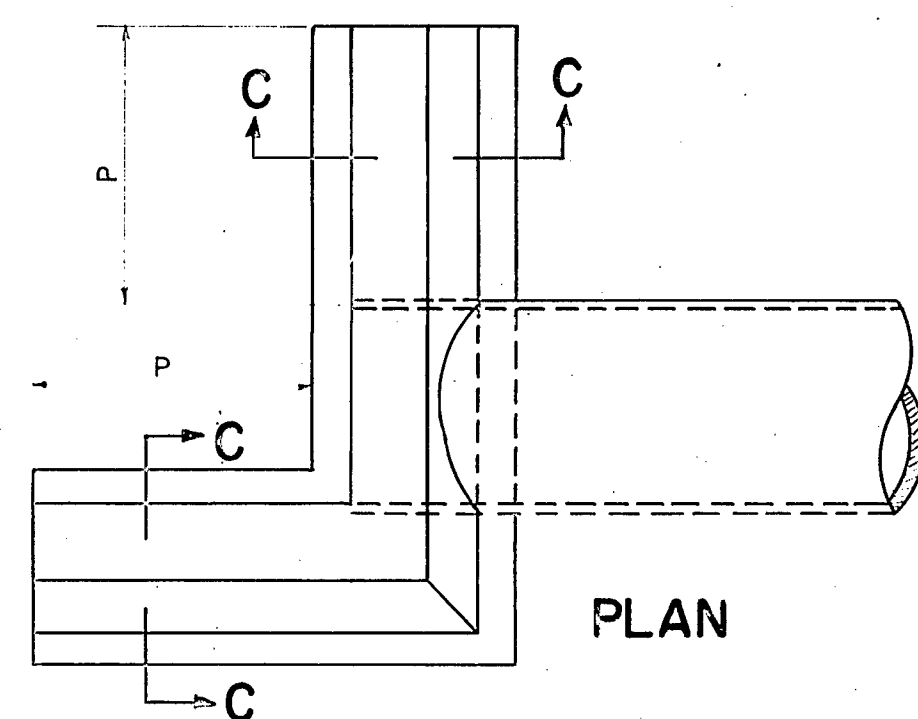
TABLE OF DIMENSIONS AND ESTIMATED QUANTITIES (STRAIGHT)

DIMENSIONS							CONCRETE IN ONE WALL			CU. YDS. FOR EACH ADDITIONAL LINE OF PIPE	CU. YDS. PER FOOT OF LENGTH L		
OPENING	Area	WALL	FOOTING	WALL	FOOTING	TOTAL	WALL	FOOTING	TOTAL		Wall	Footing	Total
3'-0"	7.07	12'-0"	4'-0"	1'-10"	2'-6"	1'-8"	1.81	1.85	3.66	0.86	0.197	0.154	0.351
3'-6"	9.62	14'-0"	4'-6"	2'-1"	2'-9"	1'-10"	2.62	2.61	5.23	1.14	0.243	0.186	0.429
4'-0"	12.57	16'-0"	5'-0"	2'-4"	3'-0"	2'-0"	3.57	3.55	7.12	1.46	0.293	0.222	0.515
4'-6"	15.90	18'-0"	5'-6"	2'-7"	3'-3"	2'-2"	4.74	4.70	9.44	1.84	0.349	0.261	0.610
5'-0"	19.64	20'-0"	6'-0"	2'-10"	3'-6"	2'-4"	6.16	6.04	12.20	2.27	0.407	0.302	0.709
5'-6"	23.76	22'-0"	6'-6"	3'-1"	3'-9"	2'-6"	8.03	7.64	15.67	3.01	0.472	0.347	0.819
6'-0"	28.27	24'-0"	7'-0"	3'-4"	4'-0"	2'-8"	9.87	9.49	19.36		0.539	0.396	0.935

TABLE OF DIMENSIONS AND ESTIMATED QUANTITIES (U-TYPE)

DIMENSIONS								CONCRETE IN ONE WALL			CU. YDS. FOR EACH ADDITIONAL LINE OF PIPE	CU. YDS. PER FOOT OF LENGTH L
OPENING	Area	WALL	FOOTING	WALL	FOOTING	WALL	FOOTING	WALL	FOOTING	TOTAL		
3'-0"	7.07	5'-8"	4'-0"	10"	4'-0"	1'-8"	5'-2"	0.800	0.959	1.759	0.863	0.292
3'-6"	9.62	6'-4"	4'-6"	11"	4'-9"	1'-10"	6'-0"	1.130	1.245	2.375	1.119	0.350
4'-0"	12.57	7'-0"	5'-0"	1'-0"	5'-6"	2'-0"	6'-10"	1.534	1.671	3.205	1.404	0.409
4'-6"	15.90	7'-8"	5'-6"	1'-1"	6'-3"	2'-2"	7'-8"	2.024	1.937	3.961	1.727	0.473
5'-0"	19.64	8'-4"	6'-0"	1'-2"	7'-0"	2'-4"	8'-6"	2.626	2.333	4.959	2.083	0.540

NOTE: Add 20 Lbs. For Steel Rods In Each Wall.



DIMENSIONS NOT SHOWN SAME AS FOR STRAIGHT WALL

DIMENSIONS & ESTIMATED QUANTITIES FOR ONE "L" TYPE ENDWALL

DIAMETER	P	CONCRETE CLASS "A" Cu. Yds.
3'-0"	4'-6"	4.51

DESIGNED BY
DRAWN BY
RETRACED BY
CHECKED BY

E. Hall

DATE
DATE
DATE
DATE

5-23-62

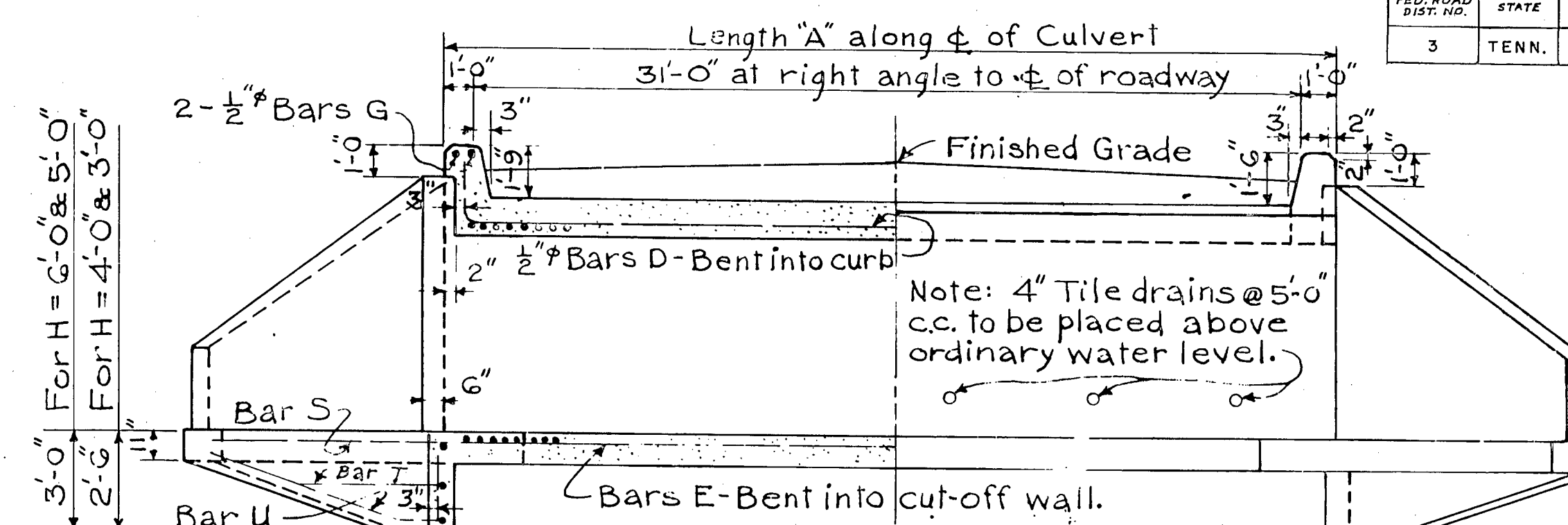
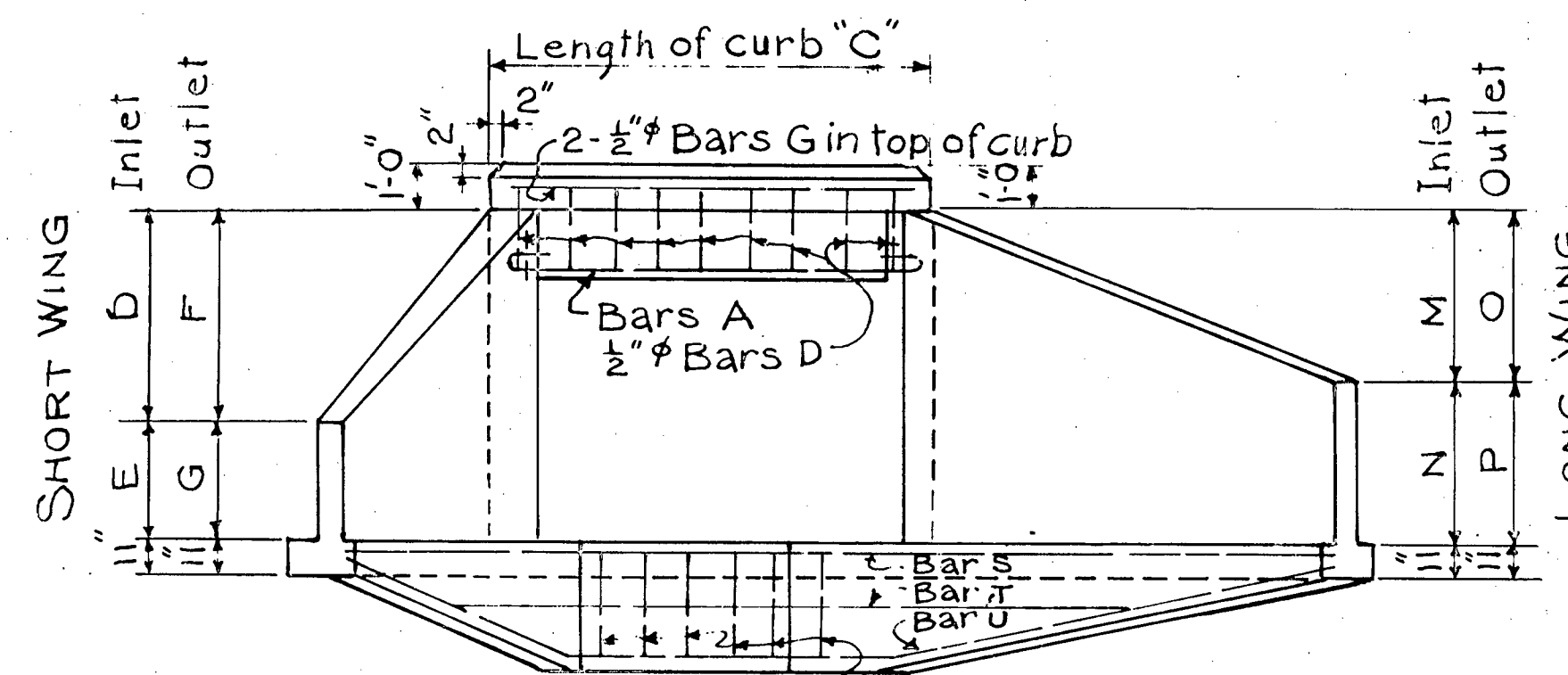
CORRECT

APPROVED

STATE ENGINEER

STATE HIGHWAY ENGINEER

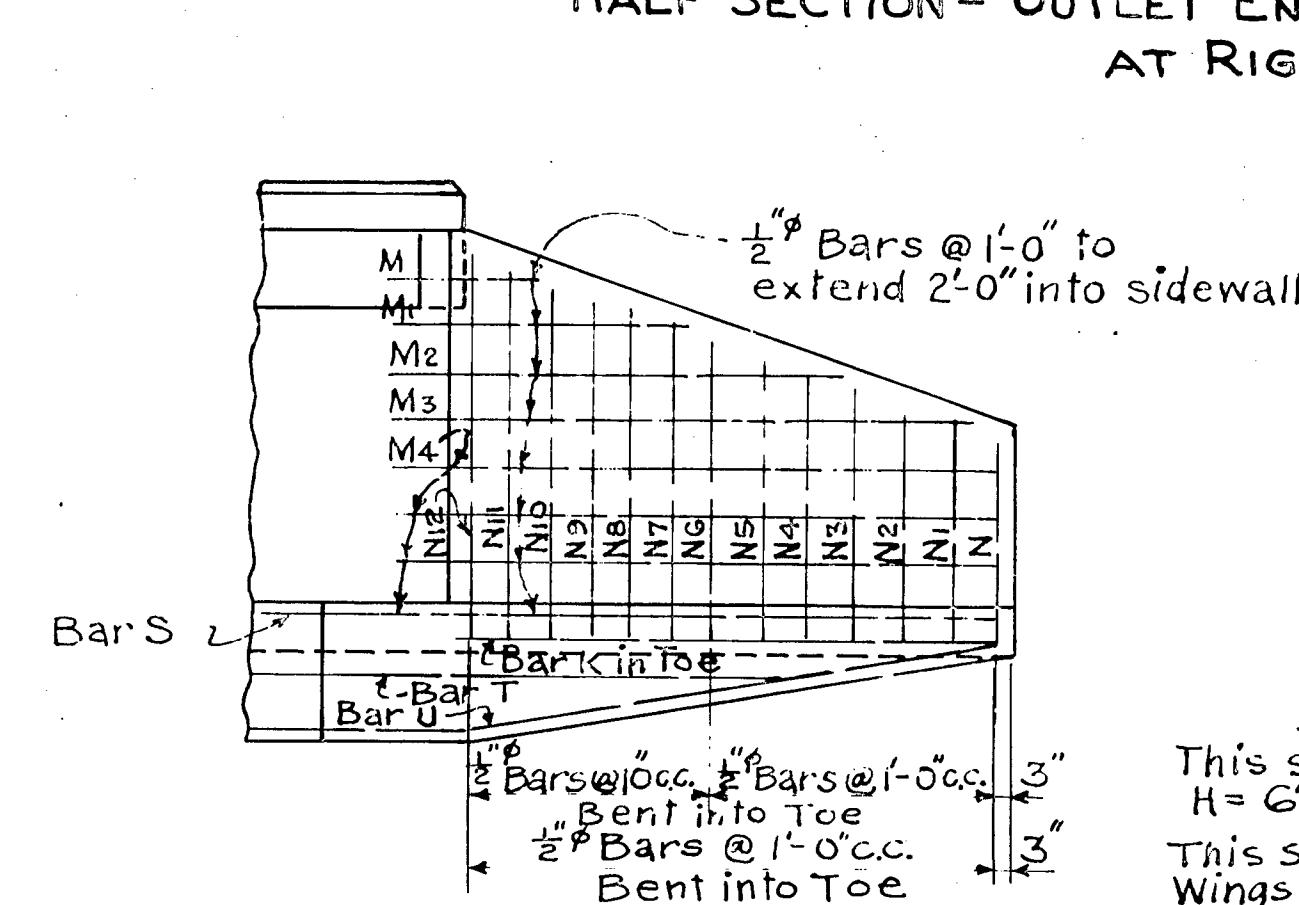
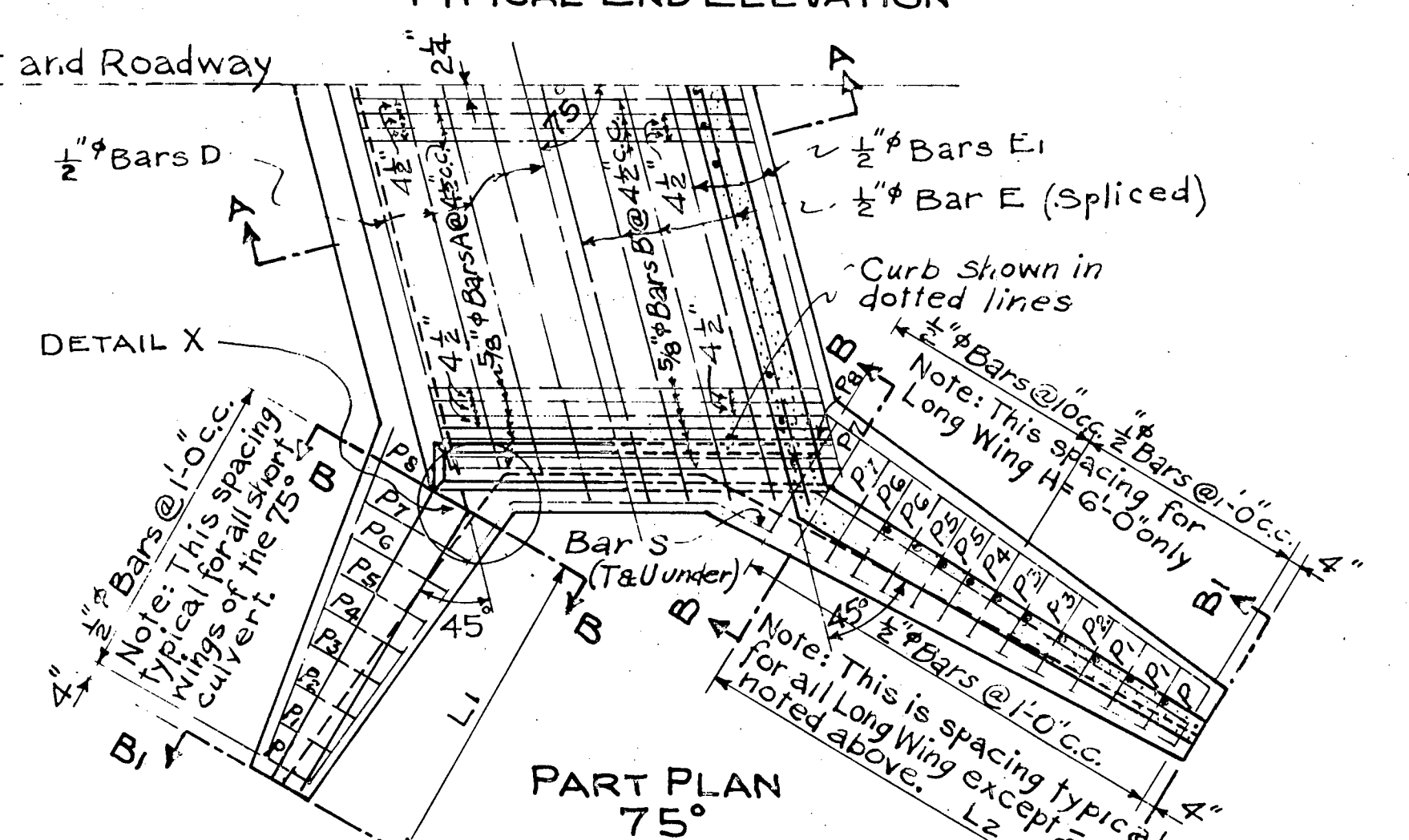
STATE OF TENNESSEE
DEPARTMENT OF HIGHWAYS
NASHVILLE
STANDARD
DETAILS OF CONCRETE
ENDWALLS & DROP INLETS
FOR PIPE CULVERTS
DIAMETER 3'-0" TO 6'-0"
1962



TYPICAL END ELEVATION

HALF SECTION - OUTLET END
AT RIGHT

HALF ELEVATION-INLET END
TO & OF ROADWAY



TYPICAL WINGWALL ELEVATION

DIMENSIONS AND ESTIMATED QUANTITIES FOR ONE BLOCK

Skew	Length B	Reinforcing Steel						Reinf. Steel Lbs.	Conc. Ct. %
		Bars K			Bars L				
		No.	Size	Lgt.	No.	Size	Lgt.		
90°	9'-4"	9	½"	5'-0"	2	½"	8'-0"	41	0.36
75°	9'-4"	9	½"	5'-0"	2	½"	9'-0"	41	0.36

Note: These blocks are to be used when grade of culvert is 10% or more. In all cases they are to be placed parallel to $\frac{1}{2}$ of roadway.

SHOWING REINFORCEMENT
IN BOTTOM SLAB

REINFORCING STEEL FOR WINGWALLS

[illegible]

TABLE OF DIMENSIONS AND ESTIMATED QUANTITIES BASED ON CULVERT LENGTH "A"

[illegible]

Note: Culvert as detailed is for Right Skew.
Left Skew same but opposite hand.

GENERAL NOTES

Specifications: Standard Road and Bridge Specifications
of the Tennessee Department of Highways.
Concrete shall be Class "A".
Reinforcing Steel: See Specifications.
Forms and Finish: See Specifications.

STATE OF TENNESSEE
DEPARTMENT OF HIGHWAYS
NASHVILLE

STANDARD CONCRETE BOX CULVERT

SPAN: 8'-0" HEIGHTS: 3'-0", 4'-0", 5'-0" & 6'-0"
SKEW: 90° & 75° RT. & LT. MAXIMUM FILL: 10'-0"

1947

CORRECT Fred Grene
BRIDGE ENGINEER
APPROVE

APPROVED Chen Chang

A-14-9

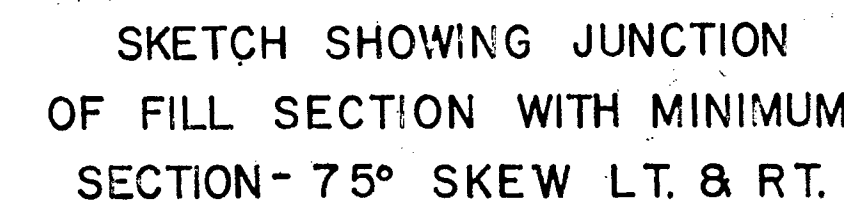
I-65-K(14)22

DESIGNED BY	DATE
DRAWN BY <u>Wm. Medley</u>	DATE <u>6-18-52</u>
RE TRACED BY <u>V.C. Conatser</u>	DATE <u>10-24-63</u>
CHECKED BY	DATE

NOTE: Estimated Quantities for Concrete and Reinforcing Steel are per ft. of length

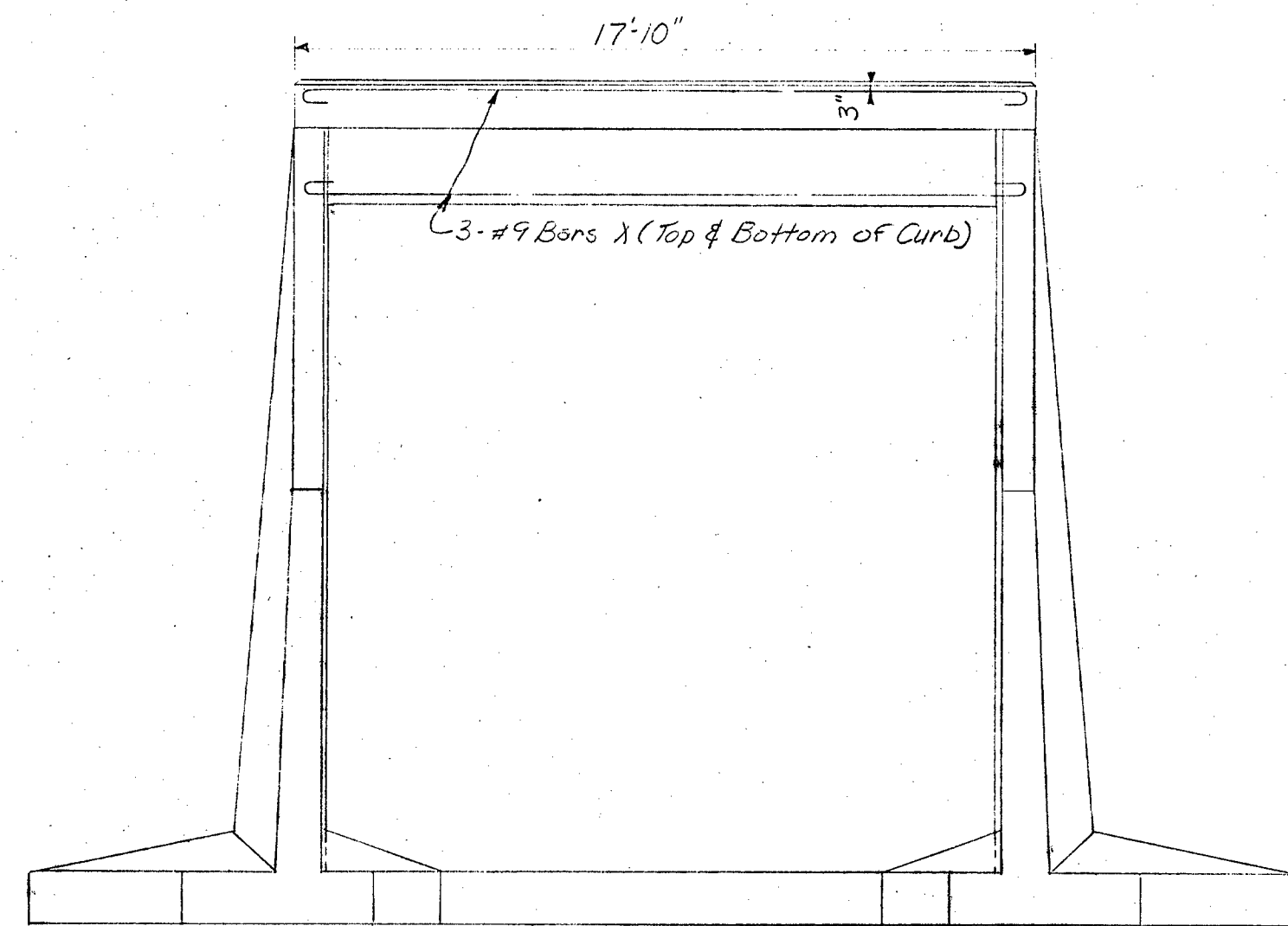
SPECIFICATIONS: Standard Road and Bridge Specifications of the Tennessee Department of Highways and Public Works.

Concrete: To be Class "A",
Reinforcing Steel: See Specifications.
Forms and Finish: See Specifications.

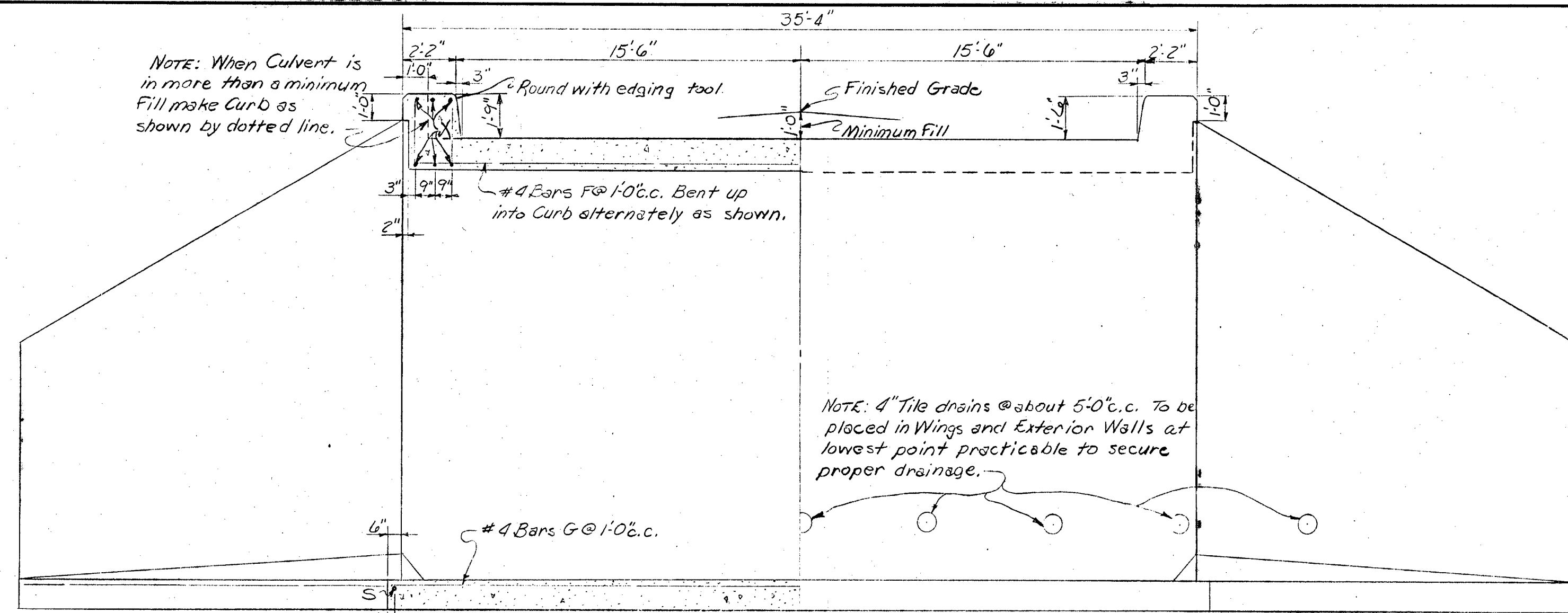


CORRECT Fred Gene
BRIDGE ENGINEER

APPROVED W. B. Dunlap
STATE HIGHWAY ENGINEER



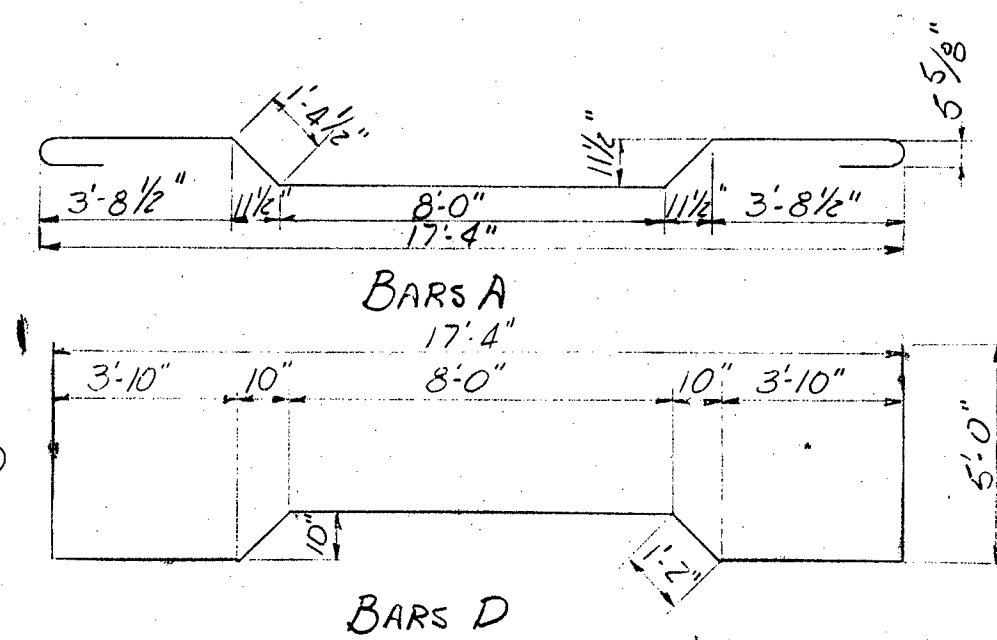
END ELEVATION



HALF SECTION
OUTLET END

HALF ELEVATION
INLET END

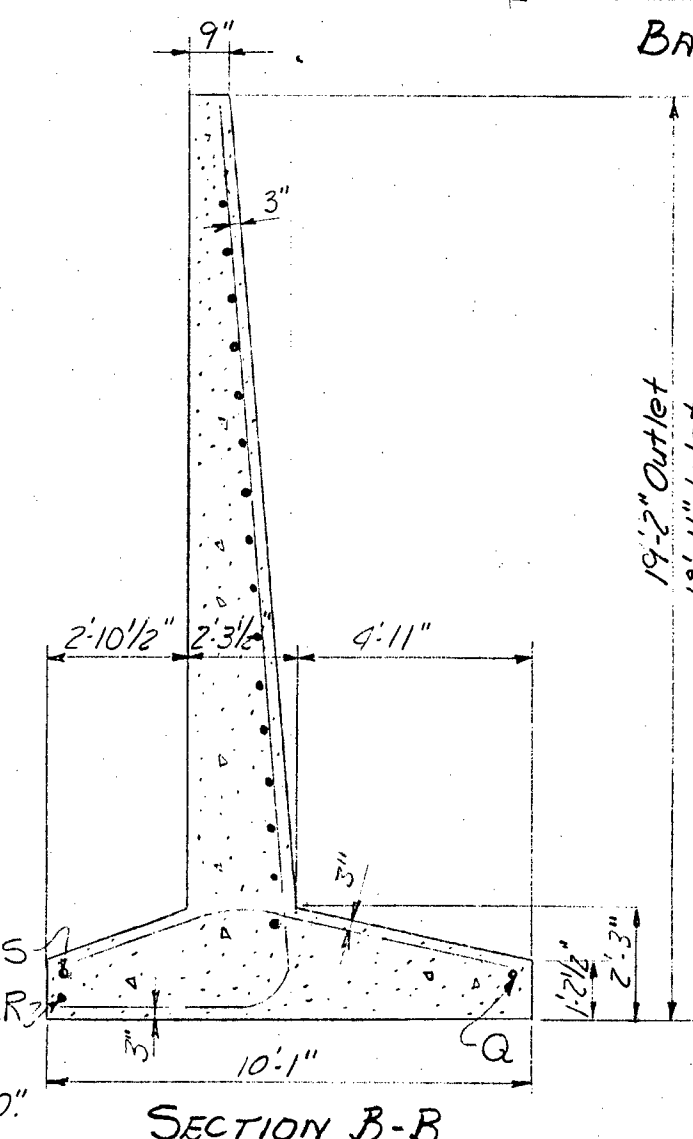
AT RIGHT ANGLE TO ROADWAY



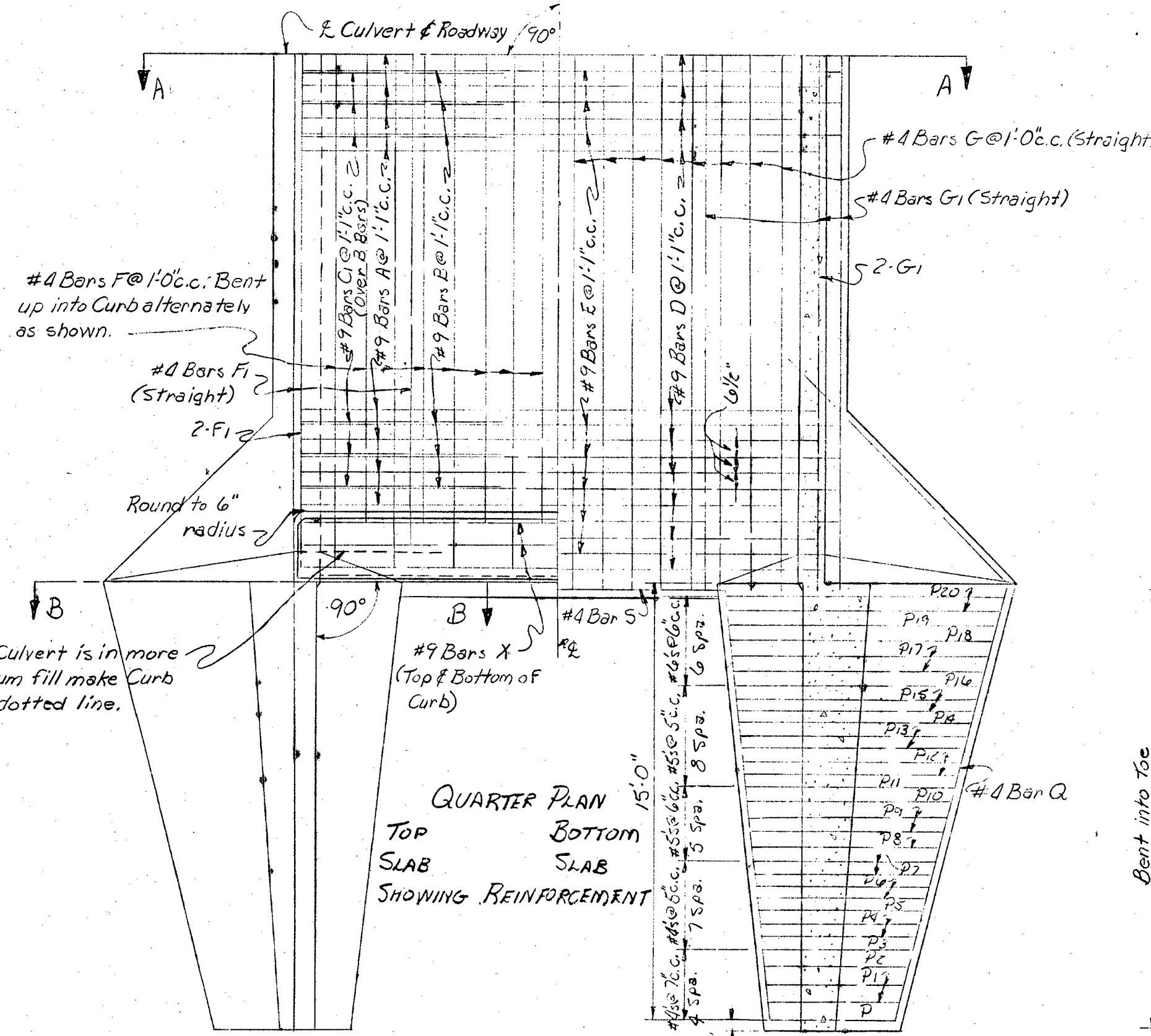
BAR H

BAR C1

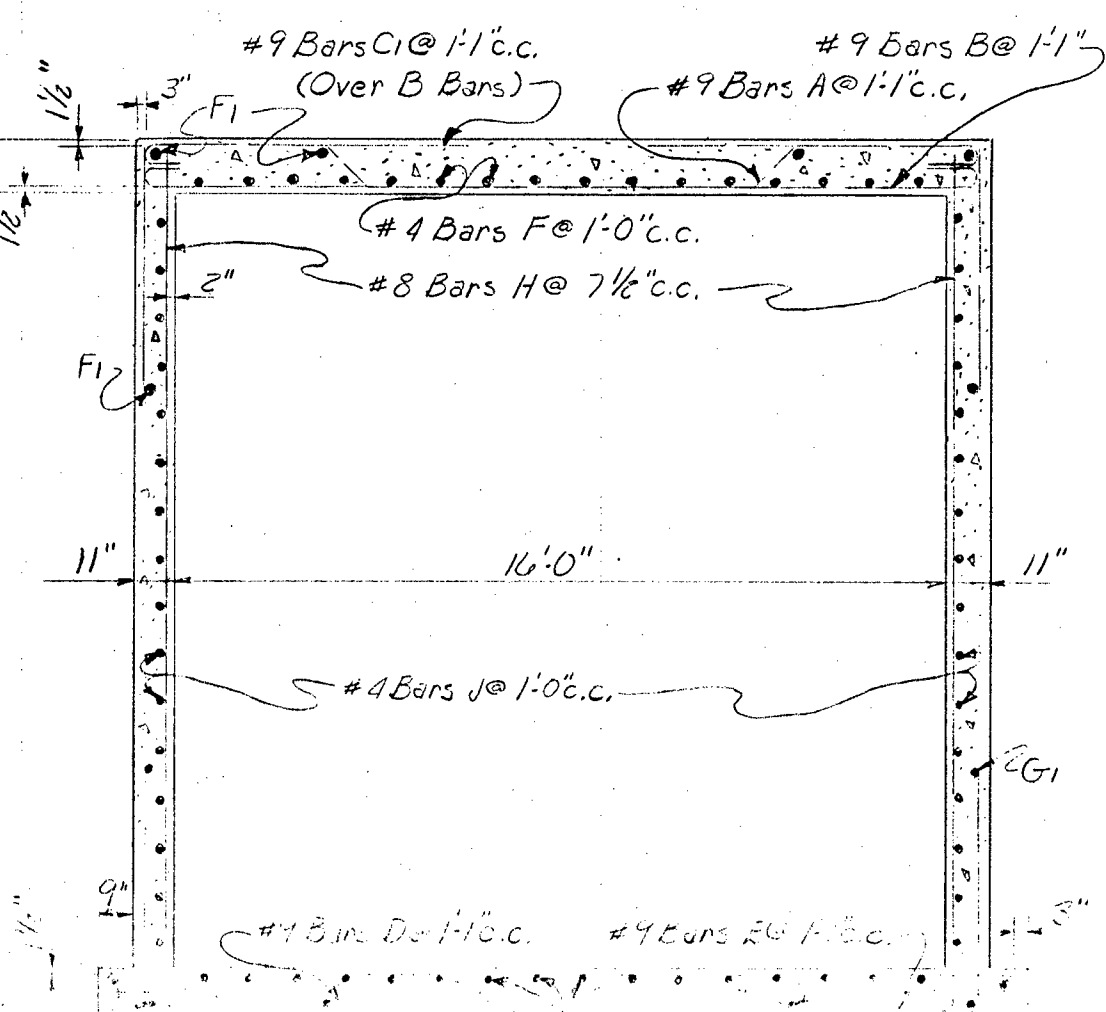
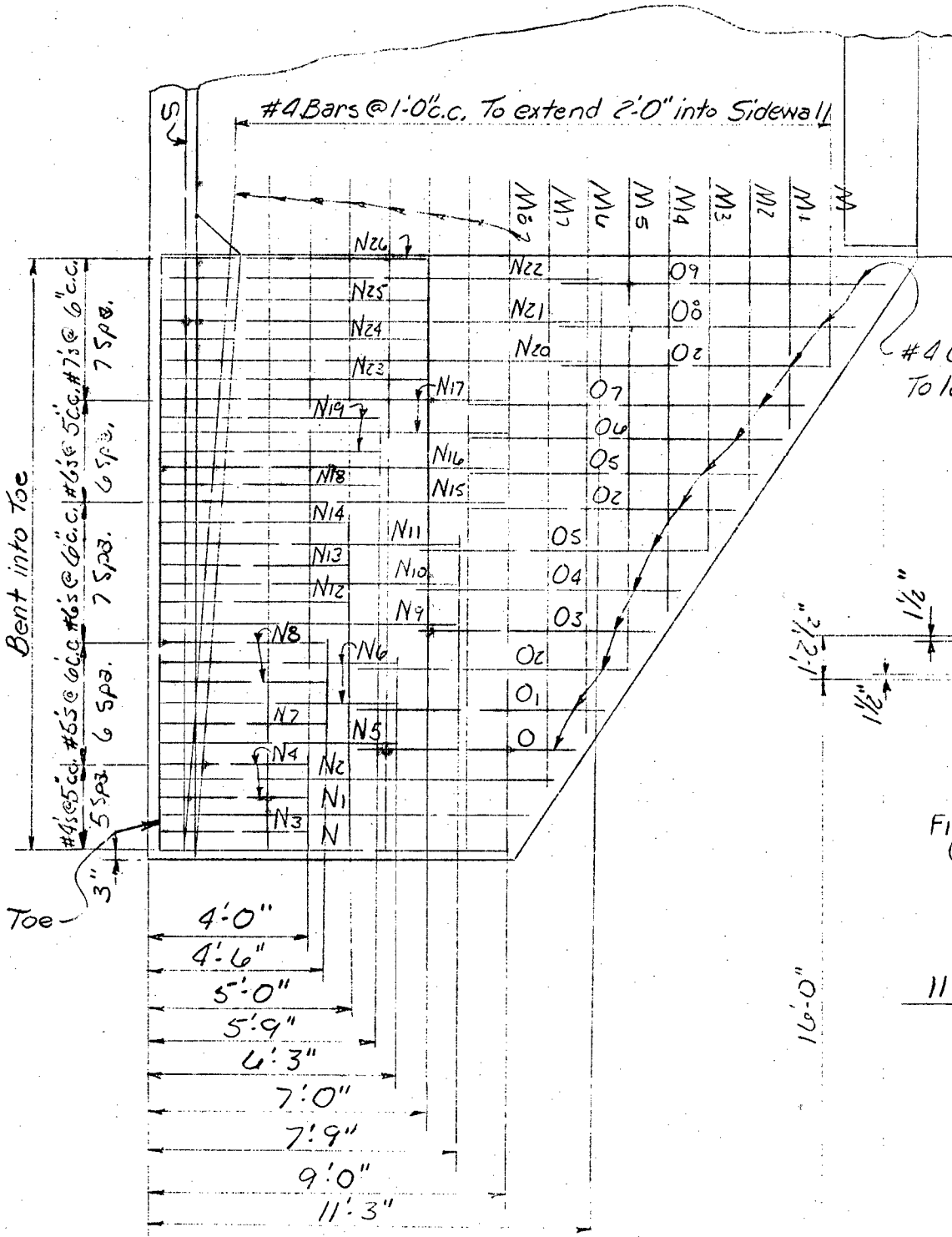
BAR B, E & X



SECTION B-B



QUARTER PLAN
TOP SLAB
BOTTOM SLAB
SHOWING REINFORCEMENT



ESTIMATED QUANTITIES

ITEM	Concrete		Reinforcing	
	Class "A" Cu. Yds.	Per Ft. Total	Steel - Lbs.	Total
Box & Curbs	2.76	105.5	561.33	19,745
Wingwalls-Inlet		30.2		1,814
Wingwalls-Outlet		30.4		1,825
Totals	2.76	166.1	561.33	23,384

NOTE: When Culvert is in more than a minimum fill deduct 2.9 cu. yds. of Class "A" Concrete from Box & Curbs. Same dimensions and quantities as given for Inlet End apply to Outlet End.

BILL OF STEEL

Bar Size	No.	Length
A #4	29	19'-10"
B #4	28	19'-0"
C1 #4	56	11'-11"
D #4	33	28'-0"
E #4	32	60'-6"
F #4	16	37'-9"
G1 #4	6	38'-0"
G2 #4	16	35'-9"
H #4	8	55'-9"
I #4	114	18'-9"
J #4	32	55'-0"
K #4	12	19'-0"

BILL OF STEEL - WING WALLS

Bar Size	No.	Length	Bar Size	No.	Length
M #4	2	4'-3"	O #4	2	5'-3"
M1 #4	2	5'-9"	O1 #4	2	6'-0"
M2 #4	2	7'-3"	O2 #4	2	6'-0"
M3 #4	2	8'-9"	O3 #4	2	5'-9"
M4 #4	2	10'-3"	O4 #4	2	6'-3"
M5 #4	2	11'-9"	O5 #4	2	7'-0"
M6 #4	2	13'-6"	O6 #4	2	7'-9"
M7 #4	2	15'-3"	O7 #4	2	8'-6"
M8 #4	2	16'-9"	O8 #4	2	9'-3"
N #4	2	10'-3"	P #4	2	8'-0"
N1 #4	2	11'-0"	P1 #4	2	8'-3"
N2 #4	2	11'-9"	P2 #4	2	8'-6"
N3 #4	2	12'-6"	P3 #4	2	8'-9"
N4 #4	2	13'-3"	P4 #4	2	9'-0"
N5 #4	2	14'-0"	P5 #4	2	9'-3"
N6 #4	2	14'-9"	P6 #4	2	9'-6"
N7 #4	2	15'-6"	P7 #4	2	9'-9"
N8 #4	2	16'-3"	P8 #4	2	10'-0"
N9 #4	2	17'-0"	P9 #4	2	10'-3"
N10 #4	2	17'-9"	P10 #4	2	10'-6"
N11 #4	2	18'-6"	P11 #4	2	10'-9"
N12 #4	2	19'-3"	P12 #4	2	11'-0"
N13 #4	2	20'-0"	P13 #4	2	11'-3"
N14 #4	2	20'-9"	P14 #4	2	11'-6"
N15 #4	2	21'-6"	P15 #4	2	11'-9"
N16 #4	2	22'-3"	P16 #4	2	12'-0"
N17 #4	2	23'-0"	P17 #4	2	12'-3"
N18 #4	2	23'-9"	P18 #4	2	12'-6"
N19 #4	2	24'-6"	P19 #4	2	12'-9"
N20 #4	2	25'-3"	P20 #4	2	13'-0"
N21 #4	2	26'-0"	P21 #4	2	13'-3"
N22 #4	2	26'-9"	P22 #4	2	13'-6"
N23 #4	2	27'-6"	P23 #4	2	13'-9"
N24 #4	2	28'-3"	P24 #4	2	14'-0"
N25 #4	2	29'-0"	P25 #4	2	14'-3"
N26 #4	2	29'-9"	P26 #4	2	14'-6"
N27 #4	2	30'-6"	P27 #4	2	14'-9"
N28 #4	2	31'-3"	P28 #4	2	15'-0"
N29 #4	2	31'-9"	P29 #4	2	15'-3"
N30 #4	2	32'-6"	P30 #4	2	15'-6"
N31 #4	2	33'-3"	P31 #4	2	15'-9"
N32 #4	2	34'-0"	P32 #4	2	16'-0"
N33 #4	2	34'-9"	P33 #4	2	16'-3"
N34 #4	2	35'-6"	P34 #4	2	16'-6"
N35 #4	2	36'-3"	P35 #4	2	16'-9"
N36 #4	2	37'-0"	P36 #4	2	17'-0"
N37 #4	2	37'-9"	P37 #4	2	17'-3"
N38 #4	2	38'-6"	P38 #4	2	17'-6"
N39 #4	2	39'-3"	P39 #4	2	17'-9"
N40 #4	2	40'-0"	P40 #4	2	18'-0"
N41 #4	2	40'-9"	P41 #4	2	18'-3"
N42 #4	2	41'-6"	P42 #4	2	18'-6"
N43 #4	2	42'-3"	P43 #4	2	18'-9"
N44 #4	2	43'-0"	P44 #4	2	19'-0"
N45 #4	2	43'-9"	P45 #4	2	19'-3"
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N48 #4	2	46'-0"	P48 #4	2	20'-0"
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N50 #4	2	47'-6"	P50 #4	2	20'-6"
N51 #4	2	48'-3"	P51 #4	2	20'-9"
N52 #4	2	49'-0"	P52 #4	2	21'-0"
N53 #4	2	49'-9"	P53 #4	2	21'-3"
N54 #4	2	50'-6"	P54 #4	2	21'-6"
N55 #4	2	51'-3"	P55 #4	2	21'-9"
N56 #4	2	52'-0"	P56 #4	2	22'-0"
N57 #4	2	52'-9"	P57 #4	2	22'-3"
N58 #4	2	53'-6"	P58 #4	2	22'-6"
N59 #4	2	54'-3"	P59 #4	2	22'-9"
N60 #4	2	55'-0"	P60 #4	2	23'-0"
N61 #4	2	55'-9"	P61 #4	2	23'-3"
N62 #4	2	56'-6"	P62 #4	2	23'-6"
N63 #4	2	57'-3"	P63 #4	2	23'-9"
N64 #4	2	58'-0"	P64 #4	2	24'-0"
N65 #4	2	58'-9"	P65 #4	2	24'-3"
N66 #4	2	59'-6"	P66 #4	2	24'-6"
N67 #4	2	60'-3"	P67 #4	2	24'-9"
N68 #4	2	61'-0"	P68 #4	2	25'-0"
N69 #4	2	61'-9"	P69 #4	2	25'-3"
N70 #4	2	62'-6"	P70 #4	2	25'-6"
N71 #4	2	63'-3"	P71 #4	2	25'-9"
N72 #4	2	64'-0"	P72 #4	2	26'-0"
N73 #4	2	64'-9"	P73 #4	2	26'-3"
N74 #4	2	65'-6"	P74 #4	2	26'-6"
N75 #4	2	66'-3"	P75 #4	2	26'-9"
N76 #4	2	67'-0"	P76 #4	2	27'-0"
N77 #4	2	67'-9"	P77 #4	2	27'-3"
N78 #4	2	68'-6"	P78 #4	2	27'-6"
N79 #4	2	69'-3"	P79 #4	2	27'-9"
N80 #4	2	70'-0"	P80 #4	2	28'-0"
N81 #4	2	70'-9"	P81 #4	2	28'-3"
N82 #4	2	71'-6"	P82 #4	2	28'-6"
N83 #4	2	72'-3"	P83 #4	2	28'-9"
N84 #4	2	73'-0"	P84 #4	2	29'-0"
N85 #4	2	73'-9"	P85 #4	2	29'-3"
N86 #4	2	74'-6"	P86 #4	2	29'-6"
N87 #4	2	75'-3"	P87 #4	2	29'-9"
N88 #4	2	76'-0"	P88 #4	2	30'-0"
N89 #4	2	76'-9"	P89 #4	2	30'-3"
N90 #4	2	77'-6"	P90 #4	2	30'-6"
N91 #4	2	78'-3"	P91 #4	2	30'-9"
N92 #4	2	79'-0"	P92 #4	2	31'-0"
N93 #4	2	79'-9"	P93 #4	2	31'-3"
N94 #4	2	80'-6"	P94 #4	2	31'-6"
N95 #4	2	81'-3"	P95 #4	2	31'-9"
N96 #4	2	82'-0"	P96 #4	2	32'-0"
N97 #4	2	82'-9"	P97 #4	2	32'-3"
N98 #4	2	83'-6"	P98 #4	2	32'-6"
N99 #4	2	84'-3"	P99 #4	2	32'-9"
N100 #4	2	85'-0"	P100 #4	2	33'-0"

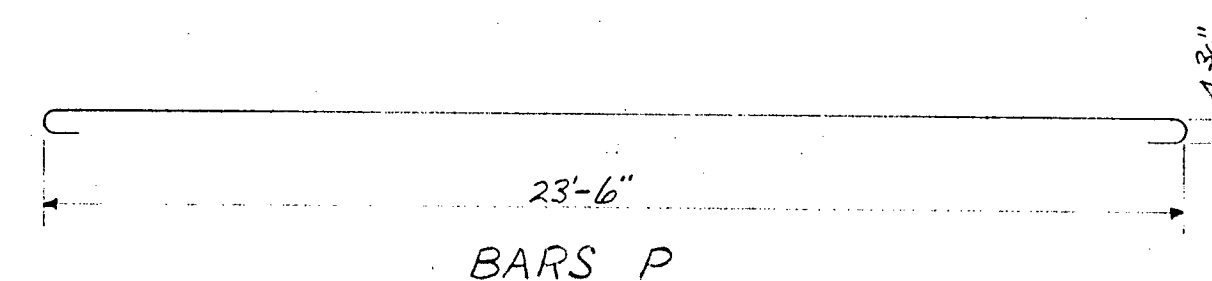
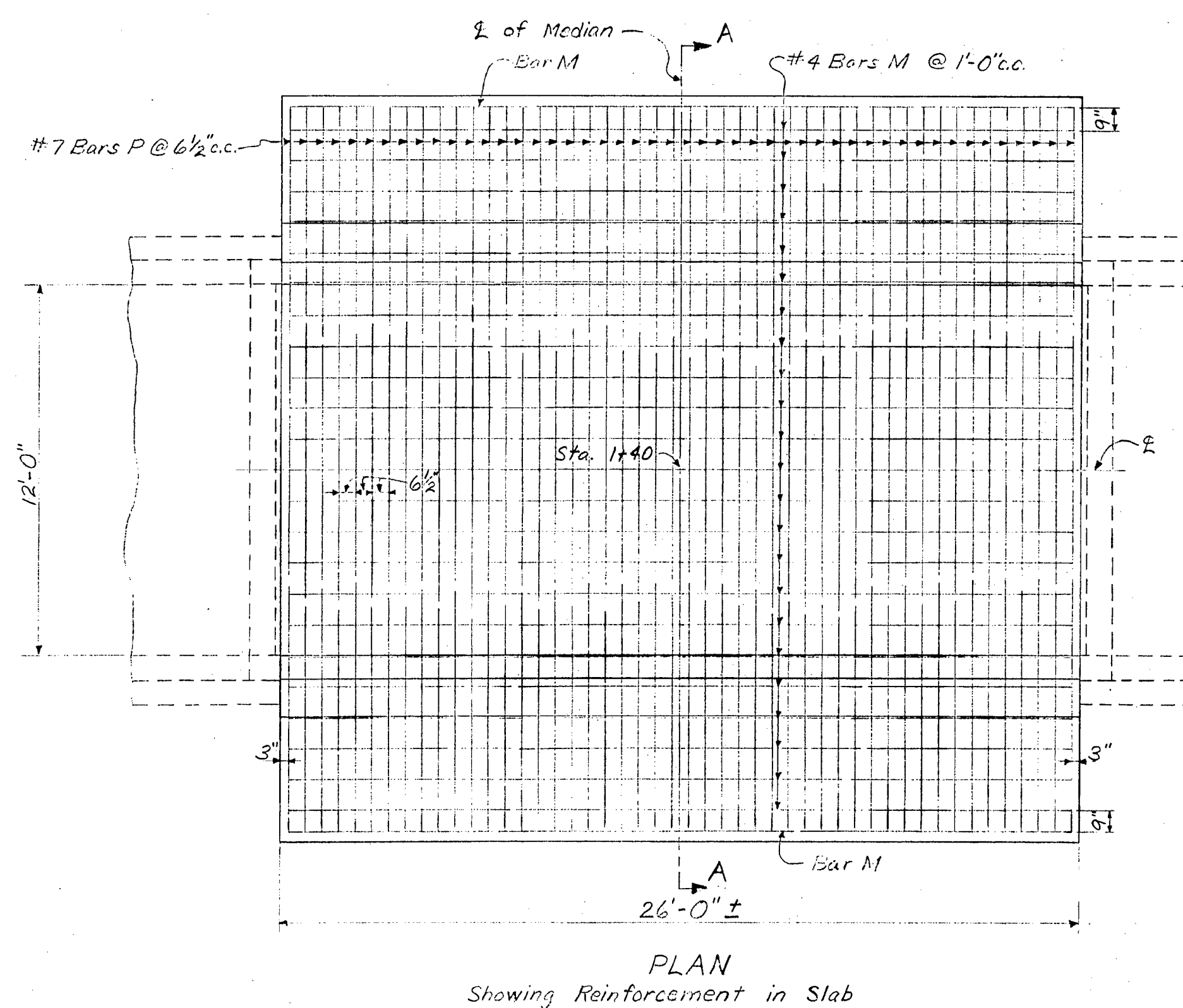
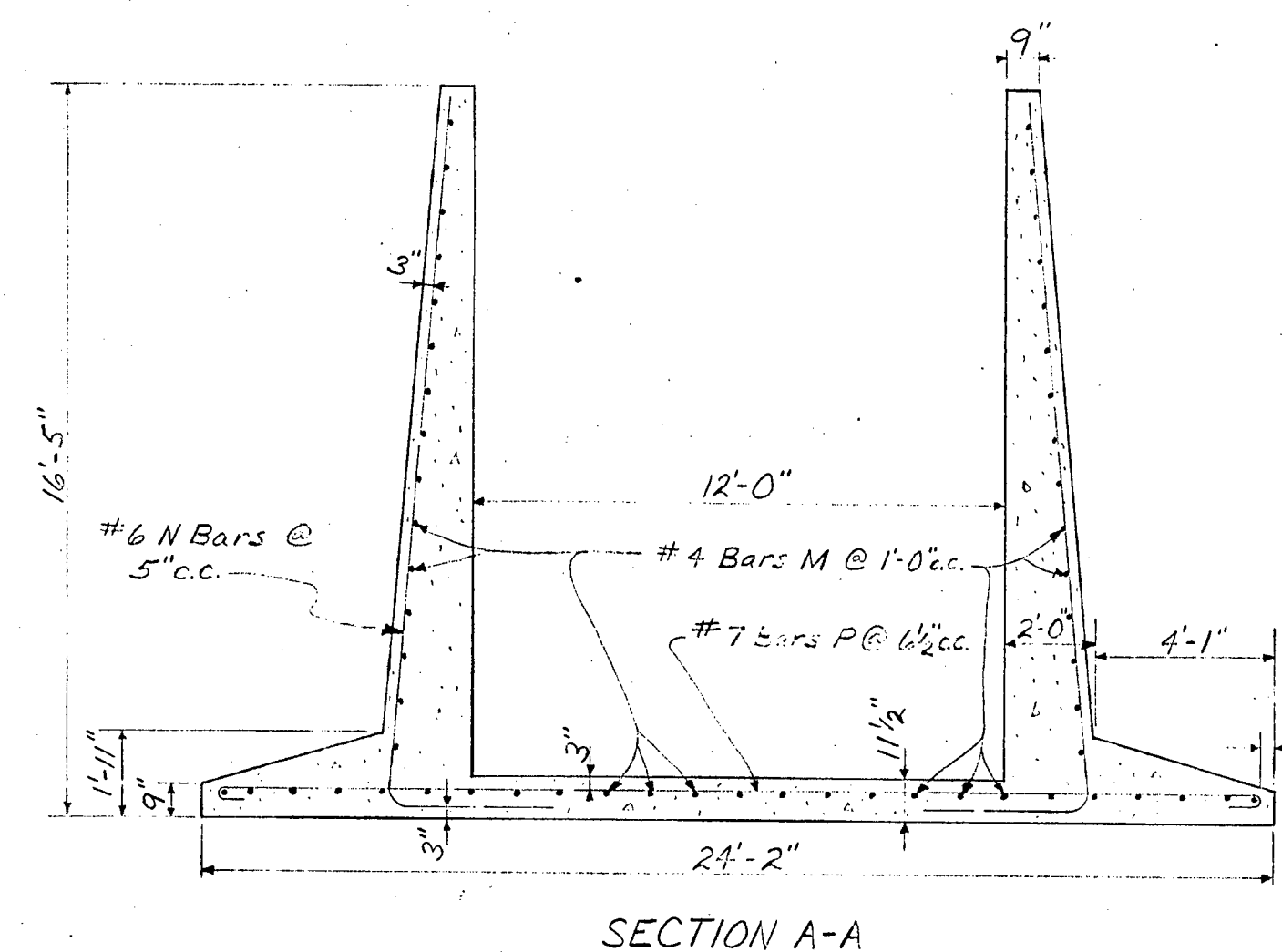
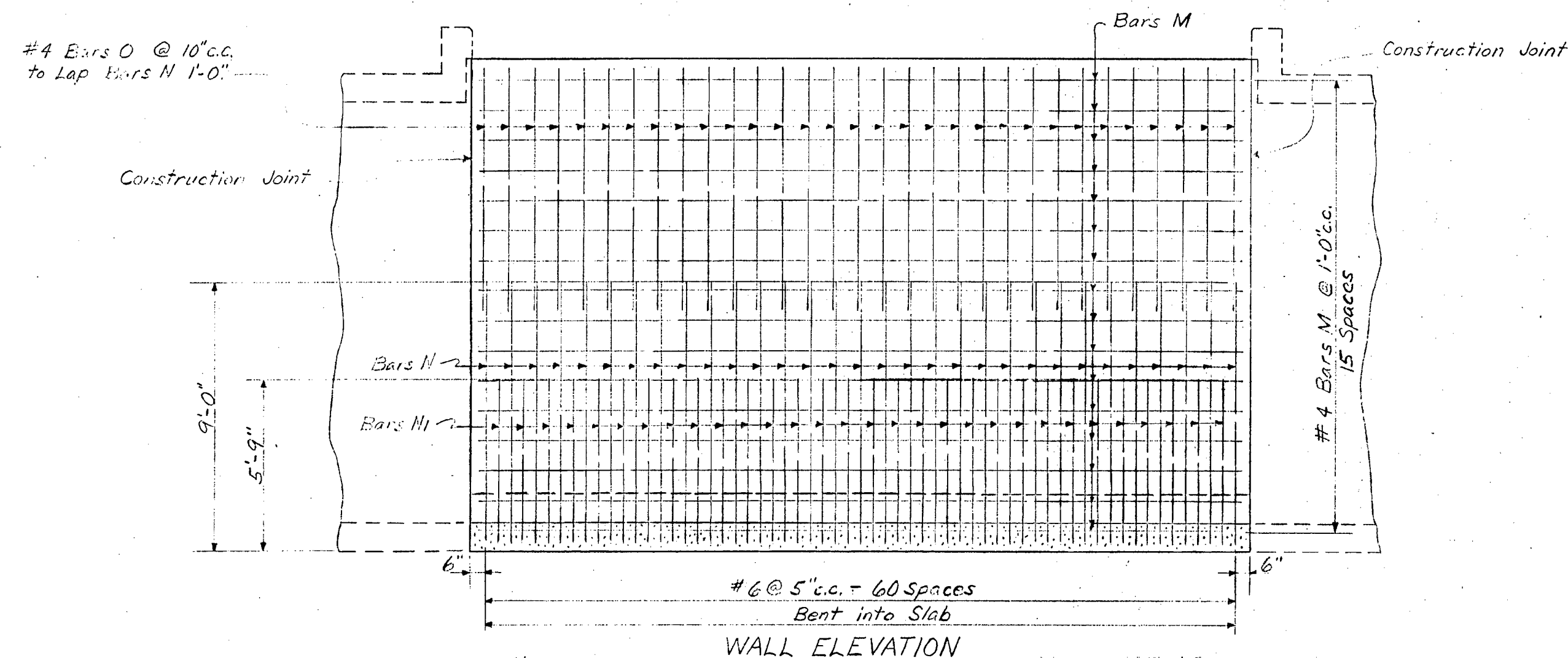
SPECIFICATIONS: Standard Road & Bridge Specifications of The Tennessee Department of Highways.
CONCRETE: Shall be Class "A".
REINFORCING STEEL: Intermediate or Hard Grade.
DESIGN: AASHTO Specifications, 1961.

STATE OF TENNESSEE
DEPARTMENT OF HIGHWAYS
NASHVILLE

STANDARD
CONCRETE BOX CULVERT
STRAIGHT WALLS

SPAN 16'-0" CLEAR HEIGHT 10'-0"

NOTE: 12'X14' Box as shown by dotted lines to join at both ends.
Omit Wingwalls and Cut-off Walls at Juncures.



BILL OF STEEL

Bar	Size	No.	Length
M	#4	55	25'-6"
N	#6	62	12'-6"
N1	#6	60	9'-3"
O	#4	62	8'-0"
P	#7	48	25'-0"

NOTE: 4" Tile Drains @ about 5'-0" c.c. to be placed in Side Walls at lowest point practicable to secure proper drainage.

NOTE: For details of Construction Joints See Drawing C-2-95.

ESTIMATED QUANTITIES

Concrete Class "A" - 62.4 Cu.Yds.

Reinforcing Steel - 5,719 lbs.

GENERAL NOTES

SPECIFICATIONS: Standard Road and Bridge Specifications of the Tennessee Department of Highways.
CONCRETE: Shall be Class "A".
REINFORCING STEEL: Intermediate or Hard Grade.
DESIGN: AASHO Specifications - 1961.

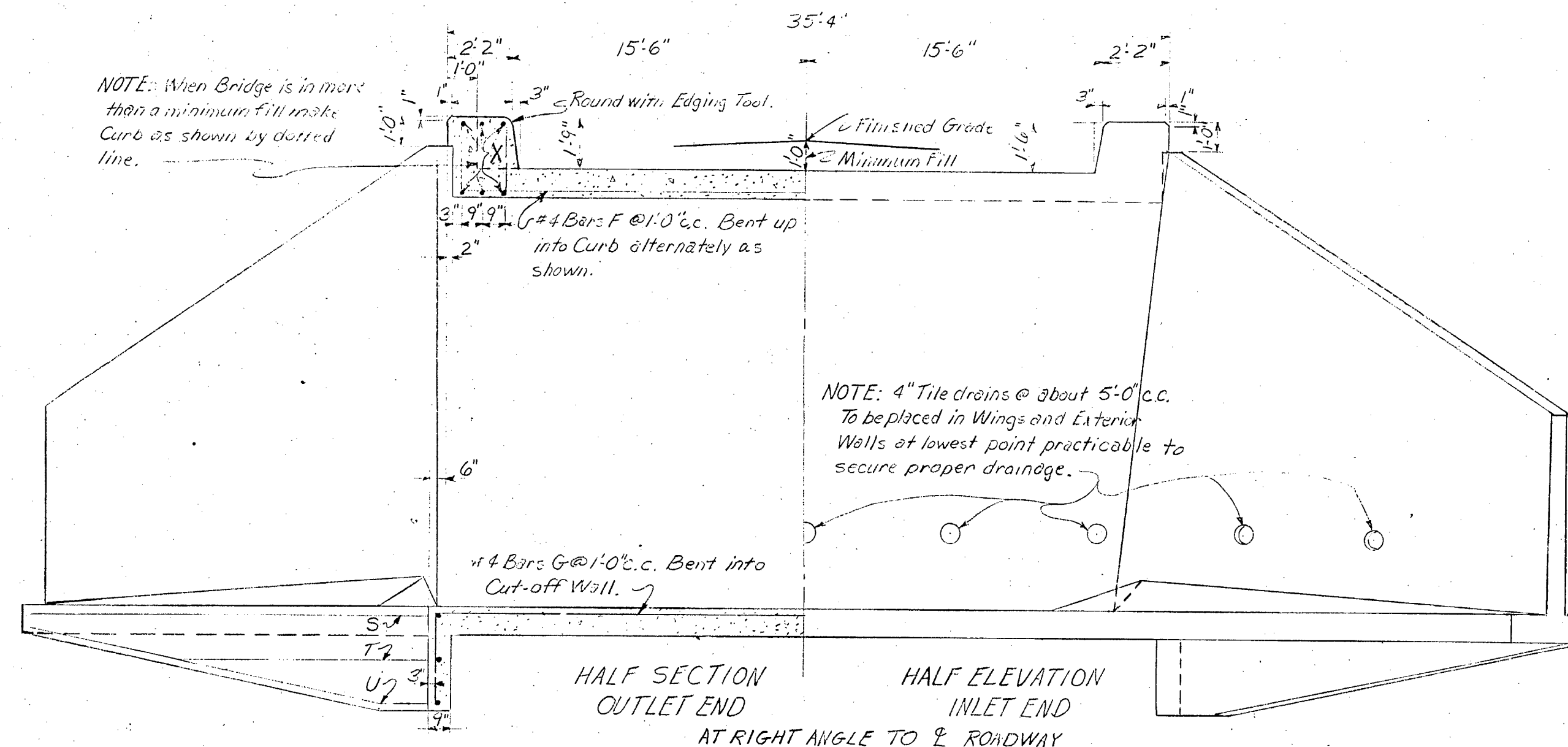
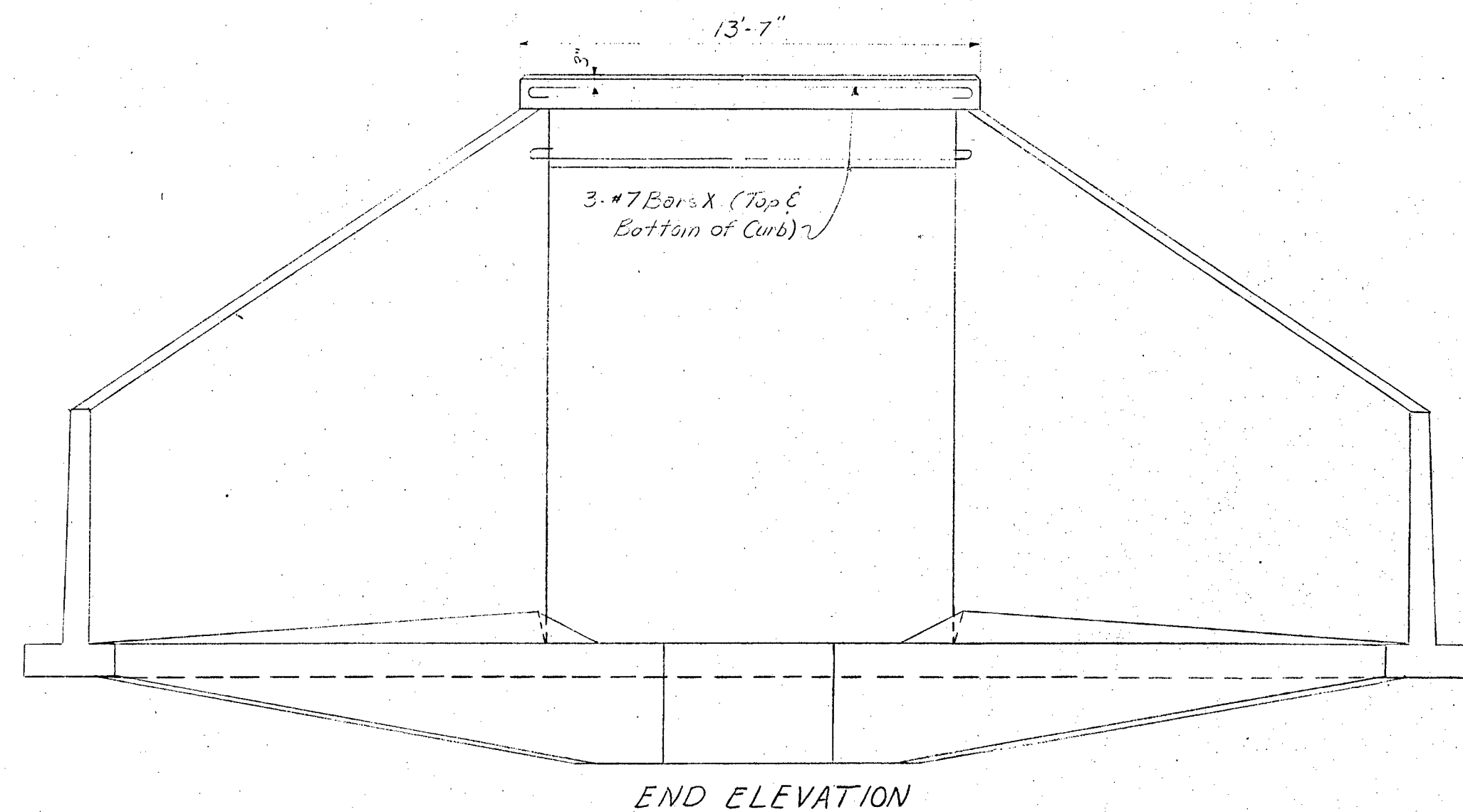
STATE OF TENNESSEE
DEPARTMENT OF HIGHWAYS
NASHVILLE

CONCRETE CONNECTOR
FOR
12'X14' BOX UNDERPASS
STATION 1+40
HAMILTON CO.
1964

DESIGNED BY: R. Reagan DATE: 6-18-64
DRAWN BY: A. Lanier DATE: 6-23-64
CHECKED BY: A. Lanier DATE: 6-23-64

CORRECT: Fred G. Gledhill
BRIDGE ENGINEER
APPROVED: [Signature]
STATE HIGHWAY ENGINEER

I-24-3(23)117



BILL OF STEEL

Slabs, Curb & Cut-off Walls	Bar Size	No.	Length
A #7	29	15'-2"	
B #7	28	14'-7"	
C #7	120	9'-8"	
D #7	33	15'-1"	
E #7	52	16'-1"	
F #4	12	37'-3"	
G #4	6	33'-0"	
H #4	6	41'-9"	
I #4	14	35'-9"	
J #4	168	16'-1"	
K #4	28	34'-9"	
L #7	12	14'-7"	
Cut-off			
S #4	2	47'-0"	
T #4	2	32'-0"	
U #4	2	48'-0"	

BILL OF STEEL - WING WALLS

BAR	SIZE	NO.	LENGTH		BAR	SIZE	NO.	LENGTH	
			INLET	OUTLET				INLET	OUTLET
M	#4	2	4'-3"	4'-9"	N	#6	2	9'-3"	9'-3"
M1	"	2	4'-6"	7'-0"	O	#4	2	5'-6"	5'-9"
M2	"	2	8'-3"	8'-9"	O1	"	2	6'-3"	6'-6"
M3	"	2	10'-3"	10'-9"	O2	"	2	6'-9"	7'-0"
M4	"	2	12'-0"	12'-6"	O3	"	2	7'-3"	7'-6"
M5	"	2	14'-0"	14'-6"	O4	"	2	6'-3"	6'-6"
M6	"	2	16'-0"	16'-6"	O5	"	2	6'-9"	7'-0"
M7	"	2	18'-0"	18'-6"	O6	"	2	7'-3"	7'-6"
M8	"	2	19'-9"	20'-3"	O7	"	2	7'-9"	8'-0"
M9	#4	12	20'-6"	20'-6"	O8	"	2	7'-0"	7'-3"
N	#4	2	8'-6"	8'-9"	O9	"	2	7'-6"	7'-9"
N1	"	2	9'-0"	9'-3"	O10	"	2	8'-0"	8'-3"
N2	"	2	9'-3"	9'-6"	O11	"	2	8'-3"	8'-6"
N3	"	2	9'-6"	10'-0"	O12	#4	2	5'-9"	9'-0"
N4	"	2	10'-3"	10'-6"	P	#4	9	3'-6"	3'-6"
N5	"	2	10'-9"	11'-0"	P1	"	2	3'-9"	3'-9"
N6	"	2	11'-6"	11'-9"	P2	"	4	4'-0"	4'-0"
N7	"	2	12'-0"	12'-3"	P3	"	4	4'-3"	4'-3"
N8	"	2	12'-6"	12'-9"	P4	"	4	4'-6"	4'-6"
N9	"	4	5'-6"	5'-9"	P5	"	4	4'-9"	4'-9"
N10	"	4	5'-9"	5'-0"	P6	"	4	5'-6"	5'-0"
N11	#4	2	6'-0"	6'-0"	P7	"	4	5'-3"	5'-3"
N12	#5	2	8'-3"	8'-3"	P8	"	6	5'-6"	5'-6"
N13	"	4	8'-6"	8'-6"	P9	#4	4	5'-9"	5'-9"
N14	"	2	8'-9"	8'-9"	P10	#5	4	6'-0"	6'-0"
N15	"	2	6'-6"	6'-6"	P11	"	9	6'-3"	6'-3"
N16	"	4	6'-9"	6'-9"	P12	"	4	6'-6"	6'-6"
N17	#5	2	7'-0"	7'-0"	P13	"	4	6'-9"	6'-9"
N18	#6	2	10'-3"	10'-3"	P14	"	6	7'-0"	7'-0"
N19	"	4	10'-6"	10'-6"	P15	"	9	7'-3"	7'-3"
N20	"	2	10'-9"	10'-9"	P16	"	6	7'-6"	7'-6"
N21	"	4	7'-6"	7'-6"	P17	"	9	7'-9"	7'-9"
N22	"	4	7'-9"	7'-9"	P18	#5	2	8'-0"	8'-0"
N23	"	2	12'-0"	12'-0"	Q	#4	2	27'-3"	27'-3"
N24	"	9	12'-3"	12'-3"	R	#4	2	18'-6"	18'-6"
N25	"	4	12'-6"	12'-6"					
N26	"	4	8'-9"	8'-9"					
N27	#6	4	9'-0"	9'-0"					

GENERAL NOTES:

SPECIFICATIONS: Standard Road and Bridge Specifications of The Tennessee Department of Highways.
 CONCRETE: Shall be Class "A".
 REINFORCING STEEL: Intermediate or Hard Grade.
 DESIGN: AASHTO Specifications-1961.

ESTIMATED QUANTITIES

ITEM	CONCRETE CLASS "A" CU. YDS.		REINFORCING STEEL - LBS.	
	Per Ft.	Total	Per Ft.	Total
Box & Curb	2.05	72.5	311.2	12,123
Wingwalls - Inlet		28.2		1,719
Wingwalls - Outlet		28.6		1,732
Cut-off Walls - Inlet & Outlet		4.2		170
Totals	2.05	133.5	311.2	15,744

NOTE: When Bridge is in more than a minimum fill deduct 2.3 cu. yds. of Class "A" Concrete from Box and Curb. Same dimensions and quantities as given for Inlet End apply to Outlet End.

STATE OF TENNESSEE
 DEPARTMENT OF HIGHWAYS
 NASHVILLE

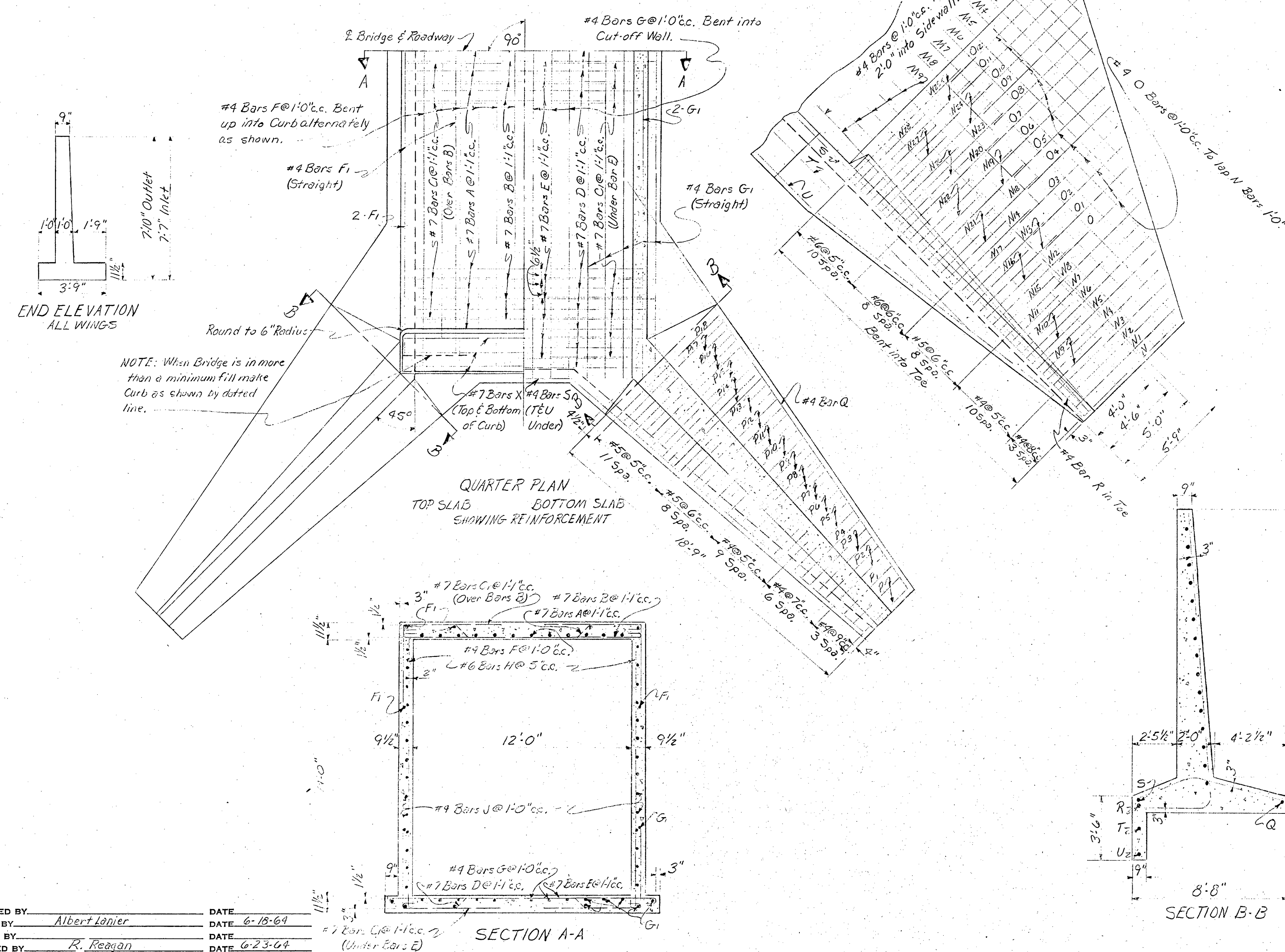
STANDARD CONCRETE BOX CULVERT

SPAN: 10'12'-0" CLEAR HEIGHT: 14'-0"
 31'-0" ROADWAY MAXIMUM FILL: 10'-0"
 SKEW 90°
 1964

CORRECT *Fred Graw*
 BRIDGE ENGINEER
 APPROVED *J. D. Smith*
 STATE HIGHWAY ENGINEER

K-38-10

DESIGNED BY Albert Lanier DATE 6-18-64
 TRACED BY R. Reagan DATE 6-23-64
 CHECKED BY R. Reagan DATE 6-23-64



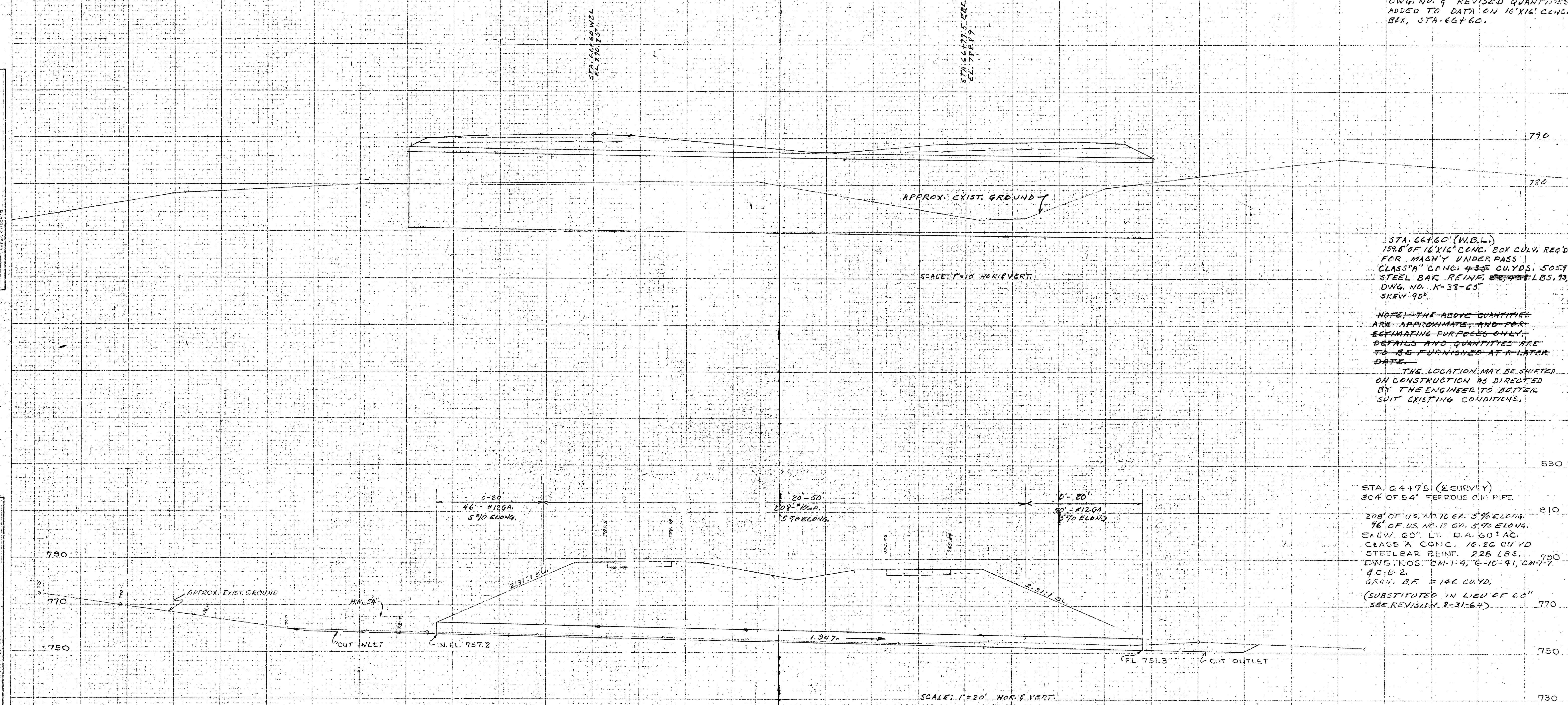
IN-143

FINAL	DATE	BY
SURVEY	10-1-64	W. J. H. / J. H. W.
NOTED		
NO.		

ORIGINAL	DATE	BY
SURVEY	10-1-64	W. J. H. / J. H. W.
NOTED		
NO.		

PROJECT NO.	FEDERAL AID PROJECT NO.	STATE AID PROJECT NO.	SHEET NO.	TOTAL SHEETS
2	1-24-3(23)117	1-64	82A	181

8-31-64. THIS SH. ADDED TO PLANS UNDER REVISION, THIS DATE.
REV. 9-18-64:
DWG. NO. 9. REVISED QUANTITIES ADDED TO DATA ON 16'X16' CONC. BOX, STA. 66+60.



STA. 66+60 (W.B.L.)
15.8' OF 16'X16' CONC. BOX CULV. REQ'D.
FOR MAINT. UNDER PASS
CLASS 'A' CONC. 4.35 CU. YDS. 505.7
STEEL BAR REINF. 226 LBS. 73.08A
DWG. NO. K-38-65
SKEW 90°

NOTE: THE ABOVE QUANTITIES ARE APPROXIMATE, AND FOR ESTIMATING PURPOSES ONLY. DETAILS AND QUANTITIES ARE TO BE FURNISHED AT A LATER DATE.
THE LOCATION MAY BE SHIFTED ON CONSTRUCTION AS DIRECTED BY THE ENGINEER TO BETTER SUIT EXISTING CONDITIONS.

STA. 64+75 (E.SURVEY)
30' OF 54\"/>

