INDEX

SEE SHEET NO. 1A

REVISED: 3-29-74; CHANGED PROJECT NO. ON ALL SHEETS FROM E.B.I-240-1(94)4 TO E.A.C I-240-1(94)4.

REV. 4-9-74; CORRECTED THE FEDERAL PROJECT NUMBER IN THE PROJECT HEADING.

FED. ROAD DIST. NO.	TENN	YEAR	SHEET NO.
3		1974	1
FED. AID PROJ. NO.	EAC I-240-1(94)4		
STATE PROJ. NO.	SP 79007-3121-44		

REV. 3-29-74; ADDED SHEET NOS. 8G-A & 8G-B. MOVED THE END OF PROJECT TO STA. 410+00.25 ℄ I-240, CHANGED THE DESCRIPTION AND LENGTH.

STATE OF TENNESSEE

DEPARTMENT OF TRANSPORTATION
BUREAU OF HIGHWAYS

SHELBY COUNTY

FROM A POINT ABOUT 200' NORTH OF LEVEE ROAD TO THE I.C.R.R.

GRADING & DRAINAGE

FEDERAL AID PROJECT NO.
EAC I-240-1(94)4
STATE PROJECT NO.
79007-3121-44

INTERSTATE HIGHWAY NO. 240 F.A.H.S. NO.

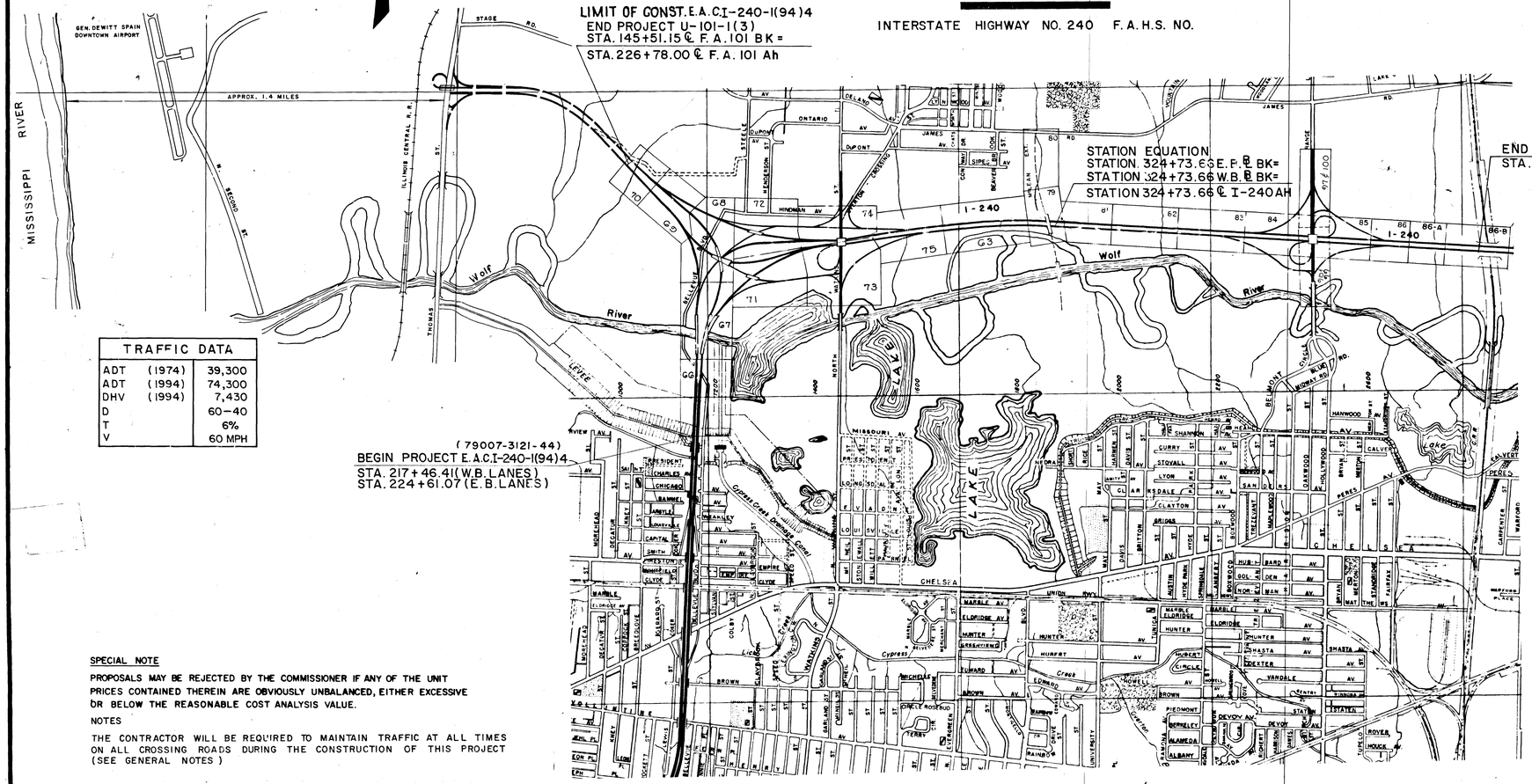
EXCLUSIONS (BRIDGES)

STA. 242+50.00 TO STA. 250+76.00 ℄ EB I-240
STA. 235+24.50 TO STA. 242+75.26 ℄ WB I-240
STA. 278+47.79 TO STA. 280+47.79 ℄ EB I-240
STA. 278+45.50 TO STA. 280+44.96 ℄ WB I-240
STA. 375+36.44 TO STA. 376+66.44 ℄ I-240

LIMIT OF CONST. E.A.C.I-240-1(94)4
END PROJECT U-101-1(3)
STA. 145+51.15 ℄ F.A. 101 BK =
STA. 226+78.00 ℄ F.A. 101 Ah

(79007-3121-44)
END PROJECT E.A.C.I-240-1(94)4
STA. 410+00.25 ℄ I-240

STATION EQUATION
STATION 324+73.66 E.P. ℄ BK =
STATION 324+73.66 W.B. ℄ BK =
STATION 324+73.66 ℄ I-240 AH



(79007-3121-44)
BEGIN PROJECT E.A.C.I-240-1(94)4
STA. 217+46.41 (W.B. LANES)
STA. 224+61.07 (E.B. LANES)

TABLE OF EQUATIONS			
STATION	= STATION	+	−
324+73.66 (BK.) E.B. ℄	= 324+73.66 (AH.) ℄	0.00	0.00
324+73.66 (BK.) W.B. ℄	= 324+73.66 (AH.) ℄	0.00	0.00
EFFECT ON ENUMERATION = 0.00			

TRAFFIC DATA		
ADT	(1974)	39,300
ADT	(1994)	74,300
DHV	(1994)	7,430
D		60−40
T		6%
V		60 MPH

LAYOUT SCALE
1" = 1/4 MI.

SPECIAL NOTE

PROPOSALS MAY BE REJECTED BY THE COMMISSIONER IF ANY OF THE UNIT PRICES CONTAINED THEREIN ARE OBVIOUSLY UNBALANCED, EITHER EXCESSIVE OR BELOW THE REASONABLE COST ANALYSIS VALUE.

NOTES

THE CONTRACTOR WILL BE REQUIRED TO MAINTAIN TRAFFIC AT ALL TIMES ON ALL CROSSING ROADS DURING THE CONSTRUCTION OF THIS PROJECT (SEE GENERAL NOTES)

THIS PROJECT TO BE CONSTRUCTED UNDER THE STANDARD SPECIFICATIONS OF THE TENNESSEE DEPARTMENT OF TRANSPORTATION FORMERLY DEPARTMENT OF HIGHWAYS DATED JANUARY 1, 1968 AND ADDITIONAL SPECIFICATIONS AND SPECIAL PROVISIONS CONTAINED IN THE PLANS AND IN THE PROPOSAL CONTRACT.

DESIGNER HARLAND BARTHOLOMEW & ASSOCIATES

Robert Woods
P.E. NO. 3747 STATE OF TENNESSEE

	E.B. LENGTH	W.B. LENGTH	AVERAGE LENGTH	
ROADWAY	3.292	3.441	3.367	MILES
BRIDGE	0.000	0.000	0.000	MILES
* EXCLUDED	0.219	0.205	0.212	MILES
PROJECT	3.292	3.441	3.367	MILES

* FUTURE BRIDGE LENGTHS

APPROVED Robert L. Adams Jr.
ROADWAY DESIGN ENGINEER
DATE

APPROVED Lewis Evans
DIRECTOR, BUREAU OF HIGHWAYS
DATE

APPROVED Robert F. Smith
COMMISSIONER

US DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

APPROVED

DIVISION ENGINEER DATE

DESIGNED:
CHECKED:
SURVEY NO.

TENN. STATE HIGHWAYS
Plans Divn.
File No. IN-316

SHEET NO.	SHEET NAME
1	TITLE SHEET
1A	INDEX SHEET
2-2D	TYPICAL ROADWAY CROSS-SECTIONS
2E-2G	GENERAL NOTES & SCOPE OF WORK
2H-2K	ESTIMATED ROADWAY QUANTITIES
2L	DITCH AND CHANNEL DETAILS
2M	DRAINAGE STRUCTURES AND TRANSITION TYPES A, B, C, &D DETAILS
2N	TYPE A HEADWALL FOR PIPE CULVERTS (12"-48")
2O	TYPE B HEADWALL FOR PIPE CULVERTS (12"-48")
2P	TYPE D HEADWALL FOR PIPE CULVERTS (54" & 66")
2Q	TYPE D HEADWALL FOR PIPE CULVERTS (60" & 72")
2R	TYPE E HEADWALL FOR PIPE CULVERTS (54" & 66")
2S	TYPE E HEADWALL FOR PIPE CULVERTS (60" & 72")
2T	MANHOLE, TYPE B SANITARY (DROP CONSTRUCTION), B, C, & D
2U	INLETS, TYPE A1 THROUGH A6
2V	INLETS, TYPES A7 THROUGH A11 AND TYPE A JUNCTION BOX
2W	INLETS, TYPES Q, R, & U
2X	INLETS, TYPES D1, D2, & D3
2Y	INLETS, TYPES D4, D5, & D6
2Z	MISCELLANEOUS DETAILS
	[illegible] & SHOULDER
2AA	TREE PROTECTION DETAILS
2BB	MANHOLE TYPE E (SANITARY)
3	PROJECT VICINITY MAP
* 4-7	PROPERTY MAPS
* 8	PROFILE PIPELINE EASEMENT
* 9-13	RIGHT OF WAY STRIP MAPS
14	REFERENCE POINT LOCATIONS
△ 14B	REFERENCE POINT LOCATION FOR CONSTRUCTION EASEMENT
15	I-240, F.A. 101, N. WATKINS SHEET INDEX
16-18	I-240, F.A. 101, N. WATKINS INTERCHANGE GEOMETRY
19	I-240 BASELINE GEOMETRY DETAILS
20-23	E.B. I-240 PROFILES
24-27	W.B. I-240 PROFILES
28-43	I-240, F.A. 101, N. WATKINS RAMP PROFILES
44-49	I-240, F.A. 101, N. WATKINS RAMP TERMINAL DETAILS
50-59	I-240, F.A. 101, N. WATKINS GRADING PLANS
60	SPUR DIKE DETAILS
61, 62	GRADING AND DRAINAGE ADJACENT TO N. WATKINS STREET
63, 64	I-240, F.A. 101, N. WATKINS PLAN SHEETS
65	I-240, F.A. 101, N. WATKINS DRAINAGE MAP
66-75	I-240, F.A. 101, N. WATKINS DRAINAGE PLANS
76, 77	NORTH WATKINS EXISTING CONDITIONS AND UTILITIES
78	NORTH WATKINS CONSTRUCTION RUNAROUND
79, 80	MCLEAN EXTENDED PLAN AND PROFILE
*** 81, 86	I-240 PLAN AND PROFILE
87	HOLLYWOOD INTERCHANGE GEOMETRY
88-93	HOLLYWOOD INTERCHANGE RAMP PROFILES
94-96	HOLLYWOOD INTERCHANGE RAMP TERMINAL DETAILS
97-100	HOLLYWOOD INTERCHANGE GRADING PLANS
101, 102	GRADING AND DRAINAGE ADJACENT TO HOLLYWOOD STREET
103	HOLLYWOOD INTERCHANGE DRAINAGE MAP
104-107	HOLLYWOOD INTERCHANGE DRAINAGE PLANS
108	HOLLYWOOD STREET EXISTING CONDITIONS AND UTILITIES
109	HOLLYWOOD STREET CONSTRUCTION RUNAROUND
110	INTERSTATE DRAINAGE MAP
111 - 118	UTILITIES
**** 119-134	CULVERT CROSS SECTIONS
135-167	ROADWAY CROSS SECTIONS

*** SHEET NOS. 86-A & 86-B (PLAN & PROFILE SHEETS) ADDED

**** SHEET NO. 134-A ADDED

* SHEET NOS. 4 THRU 13 FILED UNDER IN-181 PROJ. NO. I-240-1(83)4

△ SHEET NO 14-B FILED UNDER IN-181 PROJ. NO I-240-1 (83)4

STANDARD ROADWAY DRAWINGS

SHEET NO.	SHEET NAME
A-A-1	STANDARD LEGEND AND ABBREVIATIONS (2 SHEETS)
A-14-93	STANDARD CONCRETE BOX CULVERT, SPAN 8'-0" CLEAR HEIGHTS 3'-0" TO 6'-0"
B-6-69	STANDARD CONCRETE BOX CULVERT SPAN 10'-0" CLEAR HEIGHTS 3'-0" TO 6'-0"
C-B-2(68)	BEDDING STANDARD
C-4-141	STANDARD CONCRETE BOX CULVERT SPANS 8'-0" & 10'-0" CLEAR HEIGHTS 3'-0" TO 10'-0"
G-5-42	STANDARD CONCRETE BOX BRIDGE SPANS: 3 @ 12'-0" CLEAR HEIGHT 6'-0"
H-5-85	STANDARD CONCRETE BOX CULVERT SPANS: 2 @ 8'-0" CLEAR HEIGHT 6'-0"
H-5-117	STANDARD CONCRETE BOX BRIDGES SPANS: 3 @ 8'-0", 3 @ 10'-0" & 3 @ 12'-0" CLEAR HEIGHTS 4'-0" THRU 12'-0"
K-15-29	STANDARD CONCRETE BOX BRIDGES & CULVERTS SPANS 2 @ 8'-0" & 2 @ 10'-0" CLEAR HEIGHTS 3'-0" TO 10'-0"
K-15-128	STANDARD CONCRETE BOX BRIDGES SPAN: 3 @ 12'-0" CLEAR HEIGHTS 3'-0" TO 12'-0"
K-38-18	STANDARD CONCRETE BOX BRIDGES SPAN: 3 @ 12'-0" CLEAR HEIGHTS 3'-0" TO 12'-0"
K-38-55	STANDARD CONCRETE BOX CULVERTS SPAN 8'-0" CLEAR HEIGHTS 3'-0" to 5'-0"
K-38-122	STANDARD CONCRETE BOX CULVERTS SPANS 2 @ 8'-0" CLEAR HEIGHTS 3'-0" TO 8'-0"
K-38-123	WINGWALLS--MULTIPLE 8'-0" SPANS CLEAR HEIGHTS 3'-0" THRU 8'-0"
M-D-1(68)	EXAMPLES OF MEDIAN DRAINAGE FOR 4-LANE HIGHWAYS AND STD. NO. 31 CATCH BASIN AND TYPE "X" CONC. ENDWALL
M-D-3(68)	STANDARD NO. 36 AND NO. 37 CATCH BASIN AND CASTING
RD-F-10(68)	STANDARD RIGHT-OF-WAY STOCK FENCE AND CHAIN LINK FENCE (2 SHEETS)
RD-F-20(68)	EXAMPLES OF WATER GATES AND WATER CROSSINGS
	[illegible]
RD-L-1b	ROADSIDE DEVELOPMENT AND LANDSCAPING
RW-M-2a(68)	STANDARD CONCRETE RIGHT-OF-WAY POST
S-C-12c(68)	CASTINGS FOR NOS. 10, 12, 14, AND 15 CATCH BASINS
S-C-34	STANDARD CASTINGS FOR SPECIAL INLETS
S-CB-12c(68)	STANDARD NO. 12 CATCH BASIN
S-CB-19	STANDARD NO. 18 AND 19 CATCH BASINS AND CASTINGS
S-CB-28A(68)	STANDARD NO. 28-A CATCH BASIN
S-M-2a(68)	STANDARD NO. 2 MANHOLE, CASTINGS, & MASONARY JUNCTION
C-2 95	REVISED CONSTRUCTION DETAILS

TYPE	YEAR	PROJECT NO.	SHEET NO.
Const.	1974	I.S.I-240-1(84)4	1A

REV. 3-29-74; SHEET NOS. 86-A, 86-B & 134-A ADDED TO INDEX.

REV. 4-9-74, STANDARD ROADWAY DRAWING NOS. P.S.-11 AND P.S 11-A DELETED FROM THE INDEX. ALSO ADDED SHEET NO 14-B AND ITS FILE LOCATION.

REV. 7 - 18 - 75: SHEET NO. 14 WAS ADDED TO THE PLANS.

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
BUREAU OF HIGHWAYS

INDEX

TYPE	YEAR	PROJECT NO.	SHEET NO.
Const.	1974	IMCI-240-1(24)74	2

REV. 4-9-74
CORRECTED DETAIL OF PROPOSED FILL SECTION AND REVISED NOTES.

CONSTRUCTION ITEMS (FUTURE)

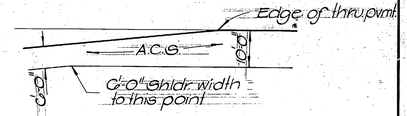
SYMBOL	ITEM NO.	DESCRIPTION
(A)	303-01	Mineral Aggregate, Type A Base, Grading D
	303-02	Calcium Choride, Type 1, Type 2 or Calcium Chloride Liquor
	203-02	Water
(B)	300-01.01	Mineral Aggregate (A-C BC)
	300-01.02	Portland Cement (A-C BC)
	300-01.08	Processing Aggregate-Cement Base Course (A-C BC)
	300-02	Bituminous Material (A-C BC) (0.20 gal/sq.yd.)
	203-02	Water
(C)	801-01.08	Portland Cement Conc. Pvm't. (Plain) 10"
(F)	307-02.01	Aggregate (BPMB-HM) Grading "B" Mixture (110±lbs/sq.yd.) 1½" Thickness
	307-02.02	Asphalt Cement (BPMB-HM) Grading "B" Mixture (11.0±lbs/sq.yd.) 1" Thickness
	402-01	Bituminous Material (RC) (0.30±0.03 gal/sq.yd.
	* 411-02.04	Mineral Aggregate (ACS) Grading "E" (110±lbs/sq.yd.)
(G)	411-02.06	Asphalt Cement (ACS) Grading "E" (11.0±lbs/sq.yd.)
	403-01	Bituminous Material (TC) (0.05 to 0.15 gal/sq.yd.)
(E)	307-01.06	Aggregate (BPMB-HM) Grading "A-S" Mixture (3½"±) 315±lbs/sq.yd.
	307-01.02	Asphalt Cement (BPMB-HM) Grading "A-S" Mixture 31.5±lbs/sq.yd.
	402-01	Bituminous Material (RC) (0.30 to 0.35 gal/sq.yd.
(V)	705-01.02	Metal Deep Bm. Single Guard Rail (Steel Post) (Post @ 6'-3")
(W)	705-05.01	Concrete Median Barrier

GRADING AND DRAINAGE WORK ONLY TO BE COMPLETED UNDER THIS CONTRACT OTHER ITEMS SHOWN ARE FOR FUTURE CONTRACT.

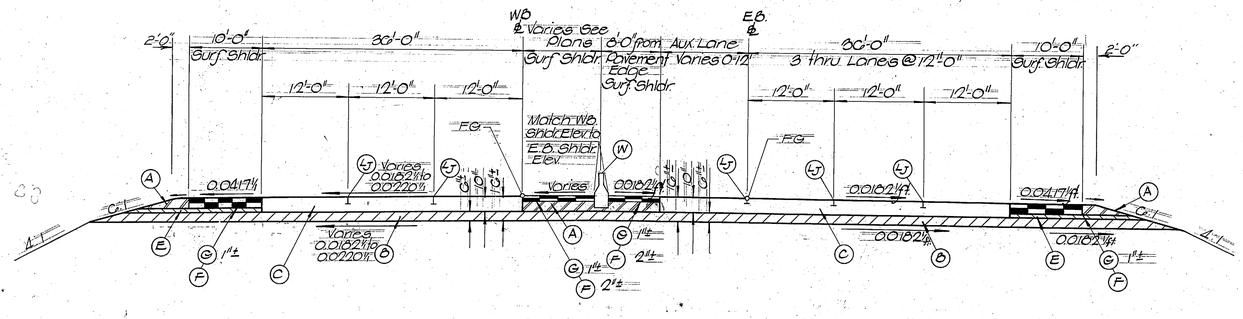
* Alternate Grading "O" (Slag Only)

Notes

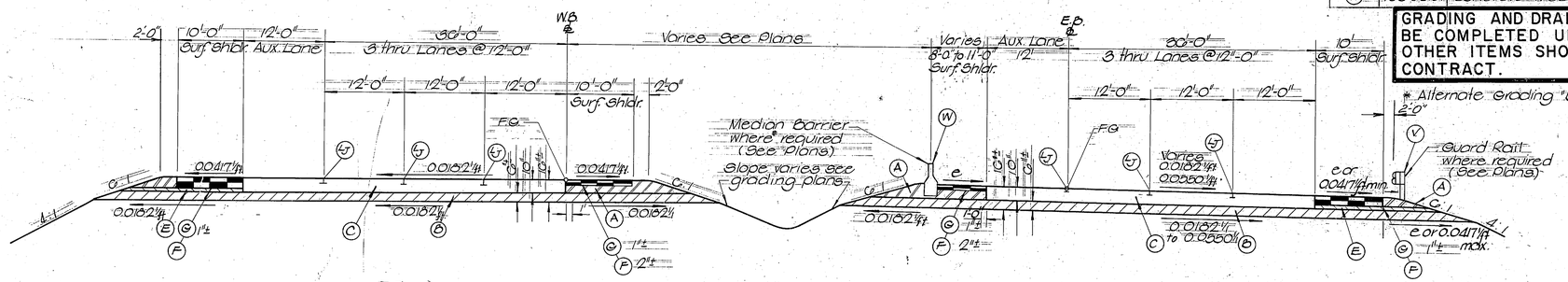
1. The finished grade line (FG) shown on the interstate cross section is the same as the finished grade line (FG) shown on the plan & profile sheets.
2. Use 4" rounding on all breaks in slope.
3. Auxiliary lanes may have cross slope other than 0.01 0.02 ft/ft in ramp entrance and exit locations. See ramp profiles for edge of pavement elevations.
4. Auxiliary lanes may have width other than 12'-0". See horizontal geometry sheet and ramp terminal detail sheets for ramp widths.
5. Underdrain for interstate & ramp roadways not to be constructed under this contract.
6. Type "M" Gutter and 2' sodded strip not to be constructed under this project.
7. For details of side ditches see Ditch & Channel detail sheet. Locations of side ditches are indicated on plans.
8. Fill slope may vary from minimum indicated on cross sections in interchange area. See interchange grading sheets.
9. (G) Longitudinal joint - see standard drawing P-E-10a and P-E-3.
10. See interchange grading sheets for additional sod to be placed under this contract.
11. In auxiliary lane taper areas where the auxiliary lane approaches 0'-0" width, 6'-0" shoulder width will control only to the point where auxiliary lane width plus 6'-0" is equal to the thru lane shoulder width.

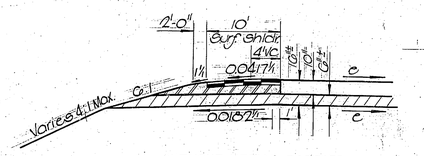


12. Sod will be placed at all locations shown on the plans and at other areas as directed by the Engineer.



STA. 224+61.07 E.B. ℄ — STA. 229+35 E.B. ℄
STA. 217+46.41 W.B. ℄ — STA. 222+20 W.B. ℄

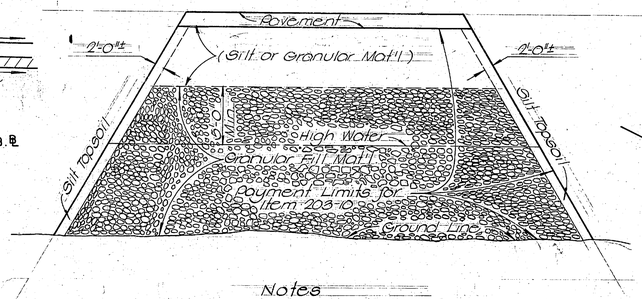




WITHOUT MEDIAN BARRIER
STA. 234+00 TO STA. 242+50 E.B. ℄

TYPICAL INTERSTATE CROSS SECTIONS

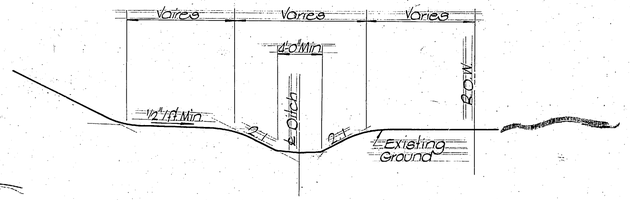
STA. 229+35 E.B. ℄ — STA. 242+50.00 E.B. ℄
STA. 222+20 W.B. ℄ — STA. 235+24.00 W.B. ℄



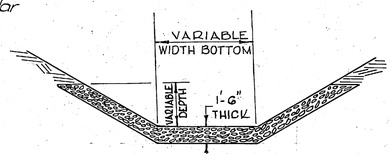
Notes

In locations where there is less than 5' between high water and the finished grade, the embankment will be made entirely of granular material.
See Special Provision Regarding Item No. 203-10.

DETAIL OF PROPOSED FILL SECTION



DETAIL OF SIDE DITCH IN FILL AREA



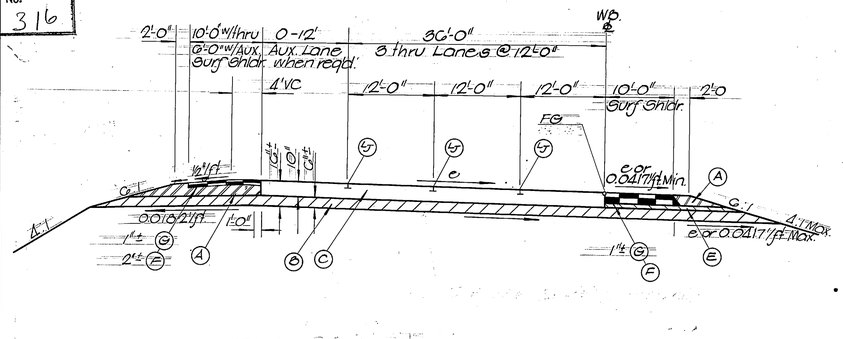
DETAIL OF RIP-RAP DITCH

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
BUREAU OF HIGHWAYS

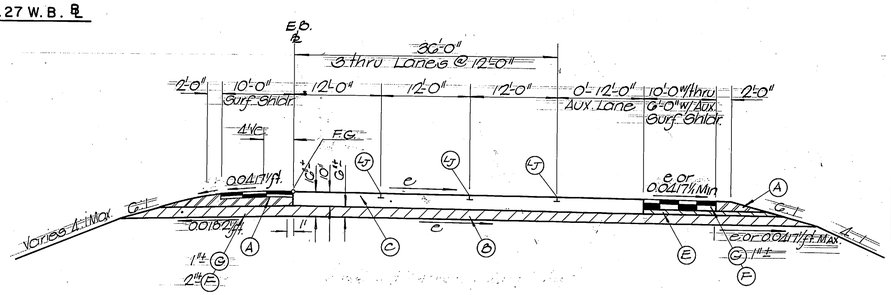
TYPICAL INTERSTATE ROADWAY CROSS SECTIONS

NO SCALE

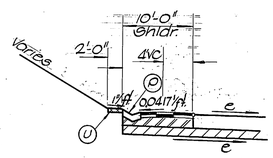
TENN. STATE HIGHWAYS	
Plans Divn.	File No. IN-316



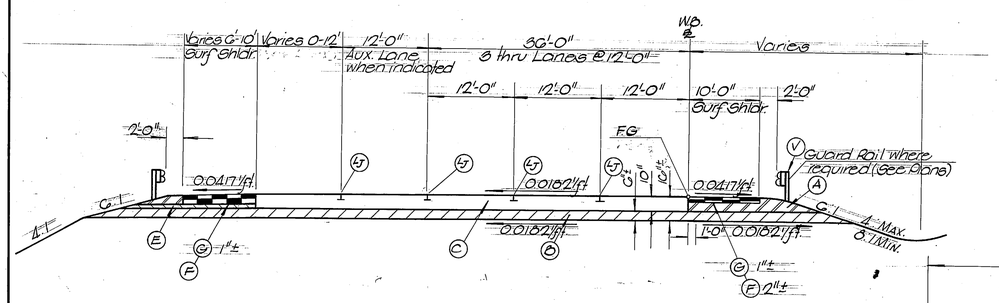
STA. 242+75.26 W.B. ℄ TO STA. 264+40.27 W. B. ℄



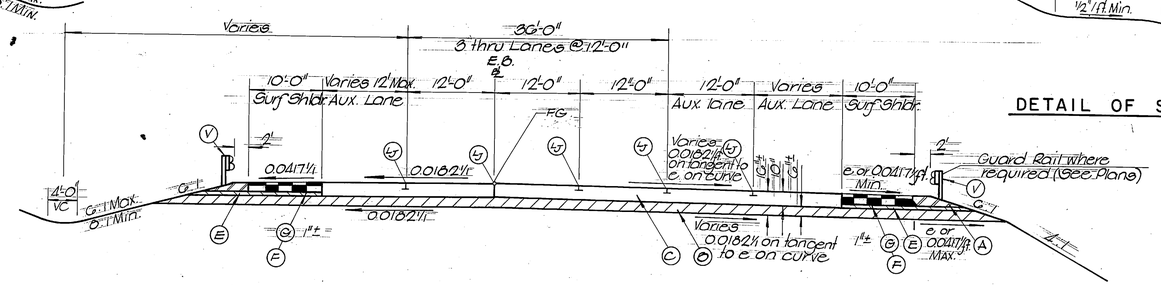
STA. 250+76 E. B. ℄ TO STA. 274+30 E. B. ℄



WITH M GUTTER
STA. 264+00 TO STA. 272+97



STA. 264+40.27 W. B. ℄ TO STA. 301+35.00 WB ℄



STA. 274+30 E.B. ℄ TO STA. 302+43 E. B. ℄

CONSTRUCTION ITEMS (FUTURE)

SYMBOL	ITEM NO.	DESCRIPTION
(A)	303-01	Mineral Aggregate, Type A Base, Grading D
	303-06	Calcium Choride, Type 1, Type 2 or Calcium Chloride Liquor
	208-06	Water
(B)	309-01.01	Mineral Aggregate (A-C BC)
	309-01.02	Portland Cement (A-C BC)
	309-01.03	Processing Aggregate-Cement Base Course (A-C BC)
	309-02	Bituminous Material (A-C BC) (0.20 gal/sq.yd.)
	208-06	Water
(C)	501-01.03	Portland Cement Conc. Pvmt. (Plain) 10"
(F)	307-02.01	Aggregate (BPMB-HM) Grading 'B' Mixture (110±lbs/sq.yd./1" Thickness
	307-02.02	Asphalt Cement (BPMB-HM) Grading 'B' Mixture (110±lbs/sq.yd./1" Thickness)
	402-01	Bituminous Material (PC) (0.30 to 0.35 gal/sq.yd.
(G)	* 411-02.04	Mineral Aggregate (ACS) Grading 'E' (110± lbs/sq.yd.)
	411-02.06	Asphalt Cement (ACS) Grading 'E' (7.40± lbs/sq.yd.)
	403-01	Bituminous Material (TC) (0.05 to 0.15 gal/sq.yd.)
	707-02	Concrete Gutter
(E)	307-01.03	Aggregate (BPMB-HM) Grading 'A-3' Mixture (3½"±) 815±lbs/sq.yd.
	307-01.04	Asphalt Cement (BPMB-HM) Grading 'A-3' Mixture (3½"±) 37.52± lbs/sq.yd.
	402-01	Bituminous Material (PC) (0.30 to 0.35 gal/sq.yd.)
(U)	803-01	Sodding (New Sod)
	801-03	Water (Seeding and Sodding)
(V)	705-01.02	Metal Deep Bm Single Guard Rail (Steel Post) (Post @ 6'-9")
(W)	705-05.01	Concrete Median Barrier

GRADING AND DRAINAGE WORK ONLY TO BE COMPLETED UNDER THIS CONTRACT OTHER ITEMS SHOWN ARE FOR FUTURE CONTRACT.

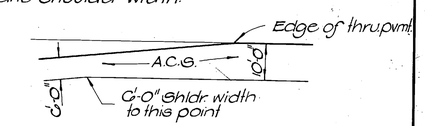
* Alternate Grading "O" (Slag Only)

REVISED 4-9-74; REVISED NOTES.

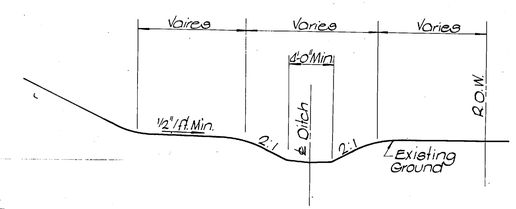
TYPE	YEAR	PROJECT NO.	SHEET NO.
Const.	1974	EAC I-240-1(04)4	2A

Notes

1. The finished grade line (FG) shown on the interstate cross section is the same as the finished grade line (FG) shown on the plan & profile sheets.
2. Use 4' rounding on all breaks in slope.
3. Auxiliary lanes may have cross slope other than 0.0162½' in ramp entrance and exit locations. See ramp profiles for edge of pavement elevations.
4. Auxiliary lanes may have width other than 12'-0" See horizontal geometry sheet and ramp terminal detail sheets for ramp widths.
5. Underdrain for interstate & ramp roadways not to be constructed under this contract.
6. Type 'M' Gutter and 2' sodded strip not to be constructed under this project.
7. For details of side ditches see Ditch & Channel detail sheet. Locations of side ditches are indicated on plans.
8. Fill slope may vary from minimum indicated on cross sections in interchange area. See interchange grading sheets.
9. Longitudinal joint - see standard drawing P-E-10a and P-E-31.
10. SEE INTERchange grading sheets for additional sod to be placed under this contract.
11. In auxiliary lane taper areas where the auxiliary lane approaches 0'-0" width the 6'-0" shoulder width will control only to the point where auxiliary lane width plus 6'-0" is equal to the thru lane shoulder width.



12. Sod will be placed at all location shown on the plans and at other areas as directed by the Engineer.



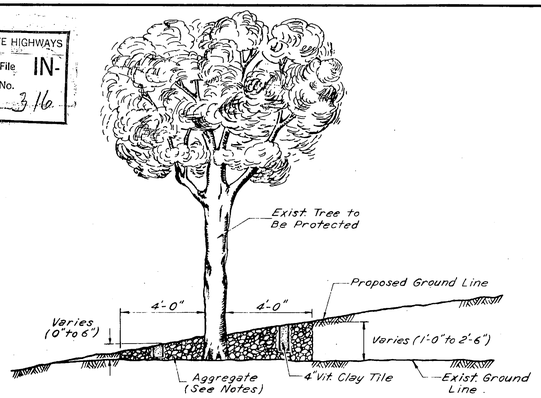
DETAIL OF SIDE DITCH IN FILL AREA

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
BUREAU OF HIGHWAYS

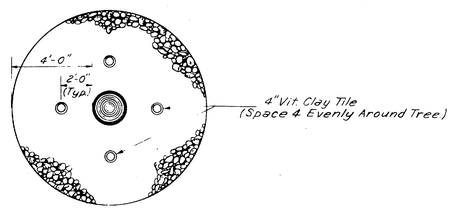
TYPICAL INTERSTATE ROADWAY
CROSS SECTIONS

NO SCALE

TYPE	YEAR	PROJECT NO.	SHEET NO.
Const.	1974	EACI-240-1(04)4	2AA



ELEVATION

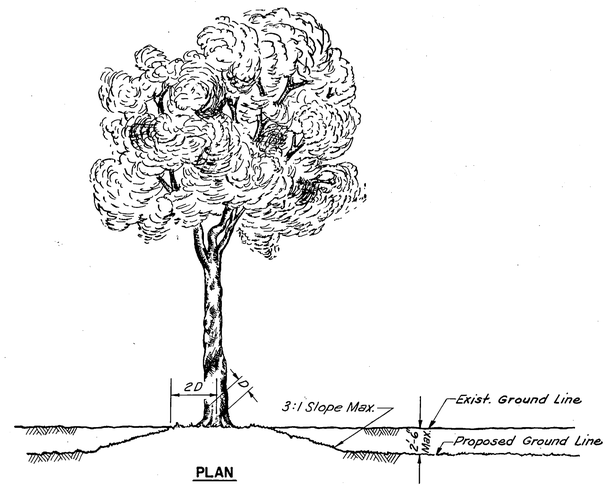


PLAN

PERMANENT PROTECTION

OF EXISTING TREE IN FILL

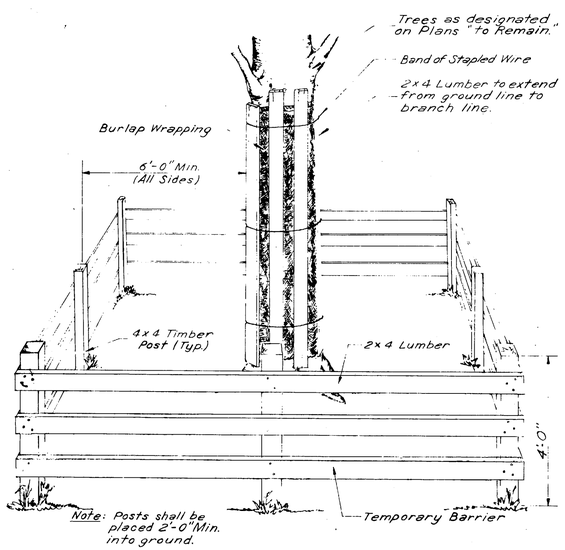
(FOR PAYMENT, SEE NOTES.)



PLAN

PERMANENT PROTECTION

OF EXISTING TREES IN CUT



TEMPORARY PROTECTION OF EXISTING TREES

DURING CONSTRUCTION

(FOR PAYMENT, SEE NOTES.)

NOTES

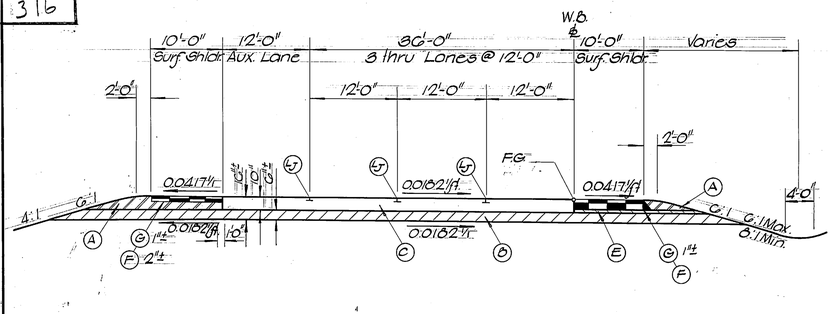
1. Permanent Protection of Existing Trees
   (a.) Gradation for aggregate to be used for Permanent Protection of Existing Trees shall conform to the gradation as established for size No. 1, Coarse Aggregate, in Section 903 of the "Standard Specification."

2. Temporary Protection of Existing trees During Construction.
   (a) Barrier to be constructed prior to starting of Clearing and Grubbing Operations.
   (b.) Barriers may be constructed to enclose several trees provided a minimum distance of 6'-0" from tree to barrier is maintained.
   (c.) Barriers not to be removed until directed by the Engineer.

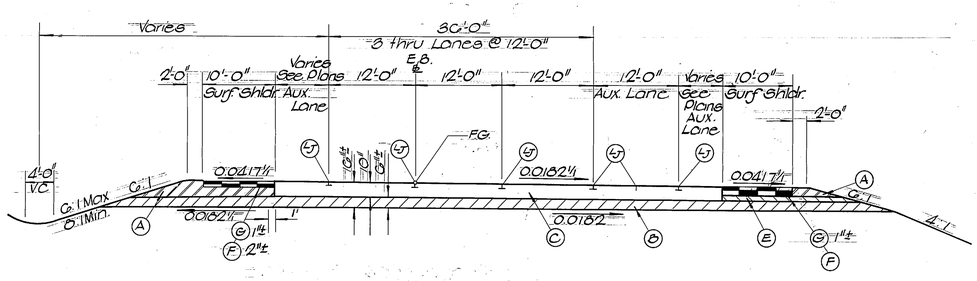
STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
BUREAU OF HIGHWAYS

TREE PROTECTION DETAILS

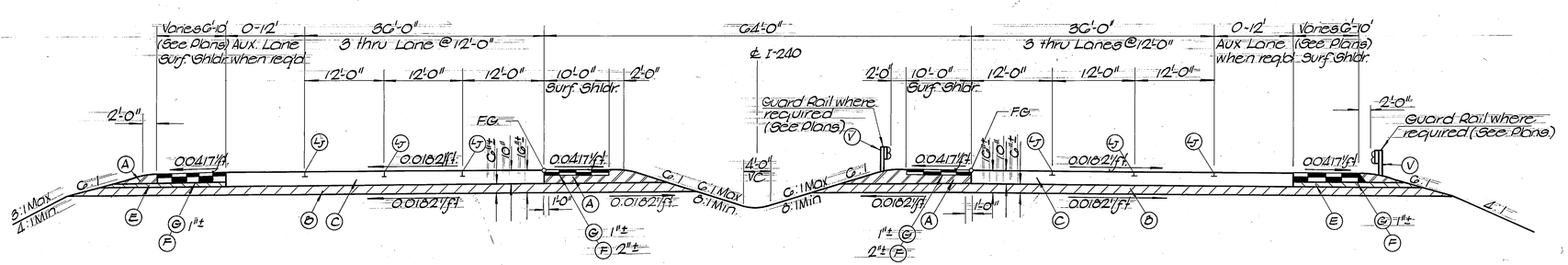
TENN. STATE HIGHWAYS	
Plans Divn.	File No. IN-316



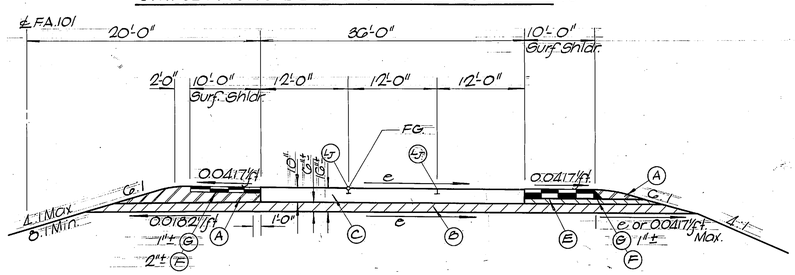
STA. 301 + 35.00 W.B. ℄ TO STA. 324+73.66 W.B. ℄



STA. 302 + 43 E. B. ℄ TO STA. 324+74 E. B. ℄



STA. 324+73.66 ℄ I-240 TO STA. 410+00.25 ℄ I-240



F. A. 101 EASTBOUND STA. 226+78 TO STA. 237+82

CONSTRUCTION ITEMS (FUTURE)

SYMBOL	ITEM NO.	DESCRIPTION
(A)	303-01	Mineral Aggregate, Type A Base, Grading D
	303-06	Calcium Choride, Type 1, Type 2 or Calcium Chloride Liquor
	203-06	Water
(B)	309-01.01	Mineral Aggregate (A-CBC)
	309-01.02	Portland Cement (A-CBC)
	309-01.03	Processing Aggregate-Cement Base Course (A-CBC)
	309-02	Bituminous Material (A-CBC) (0.20 gal/sq.yd.)
	203-06	Water
(C)	501-01.03	Portland Cement Conc. Pvmt. (Plain) 10"
(F)	307-02.01	Aggregate (BPMB-HM) Grading "B" Mixture (110± lbs/sq.yd./1" Thickness
	307-02.02	Asphalt Cement (BPMB-HM) Grading "B" Mixture (110± lbs./sq.yd./1" Thickness)
	402-01	Bituminous Material (PC) (0.30 to 0.35 gal/sq.yd.
(G)	* 411-02.04	Mineral Aggregate (ACS) Grading "E" (110± lbs/sq.yd.)
	411-02.05	Asphalt Cement (ACS) Grading "E" (110± lbs/sq.yd.)
	403-01	Bituminous Material (TC) (0.05 to 0.15 gal/sq.yd.)
(E)	307-01.03	Aggregate (BPMB-HM) Grading "A-S" Mixture (3 1/2"±) 315± lbs/sq.yd.
	307-01.04	Asphalt Cement (BPMB-HM) Grading "A-S" Mixture (3 1/2"±) 315± lbs/sq.yd.
	402-01	Bituminous Material (PC) (0.30 to 0.35 gal/sq.yd.
(V)	705-01.02	Metal Deep Bm Single Guard Rail (Steel Post) (Post @ 6'-3")
(W)	705-03.01	Concrete Median Barrier

GRADING AND DRAINAGE WORK ONLY TO BE COMPLETED UNDER THIS CONTRACT OTHER ITEMS SHOWN ARE FOR FUTURE CONTRACT.

* Alternate Grading "D" (Slag Only)

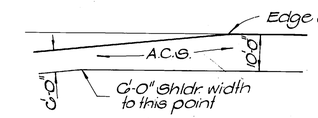
REV. 3-29-74; CHANGE THE ENDING STATION ON TYPICAL SECTION BEGINNING AT STA. 324+73.66 ℄ I-240.

REV. 4-9-74; REVISED NOTES.

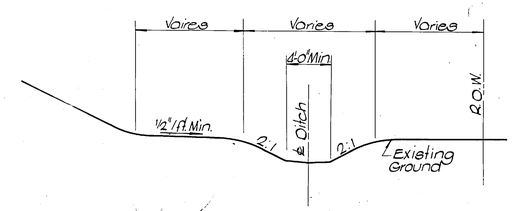
TYPE	YEAR	PROJECT NO.	SHEET NO.
Const.	1974	FAC.I-240-1(204)	215

Notes

1. The finished grade line (F.G.) shown on the interstate cross section is the same as the finished grade line (FG) shown on the plan & profile sheets.
2. Use 4' rounding on all breaks in slope.
3. Auxiliary lanes may have cross slope other than 0.0182 ft/ft in ramp entrance and exit locations. See ramp profiles for edge of pavement elevations.
4. Auxiliary lanes may have width other than 12'-0". See horizontal geometry sheet and ramp terminal detail sheets for ramp widths.
5. Underdrain for interstate & ramp roadways not to be constructed under this contract.
6. Type "M" Gutter and 2' sodded strip not to be constructed under this project.
7. For details of side ditches see Ditch & Channel detail sheet. Locations of side ditches are indicated on plans.
8. Fill slope may vary from minimum indicated on cross sections in interchange area. See interchange grading sheets.
9. Longitudinal joint - see standard drawing P-7a and P-E-3.
10. See interchange grading sheets for additional sod to be placed under this contract.
11. In auxiliary lane taper areas where the auxiliary lane approaches 0'-0" width the 6'-0" shoulder width will control only to the point where auxiliary lane width plus 6'-0" is equal to the thru lane shoulder width.



12. Sod will be placed at all location shown on the plans and at other areas as directed by the Engineer.



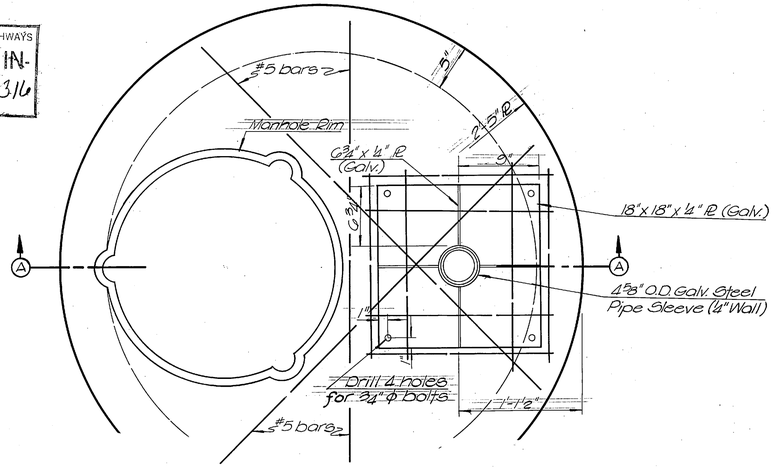
DETAIL OF SIDE DITCH IN FILL AREA

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
BUREAU OF HIGHWAYS

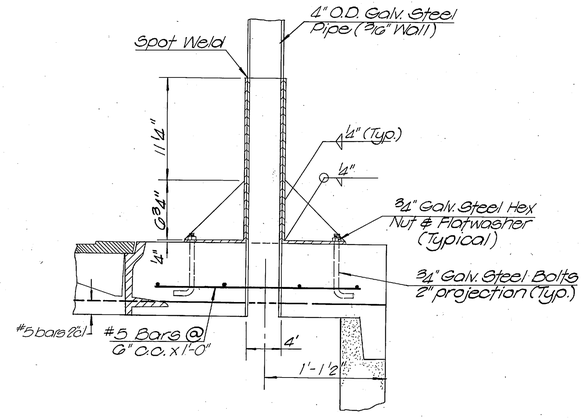
TYPICAL INTERSTATE ROADWAY CROSS SECTIONS

NO SCALE

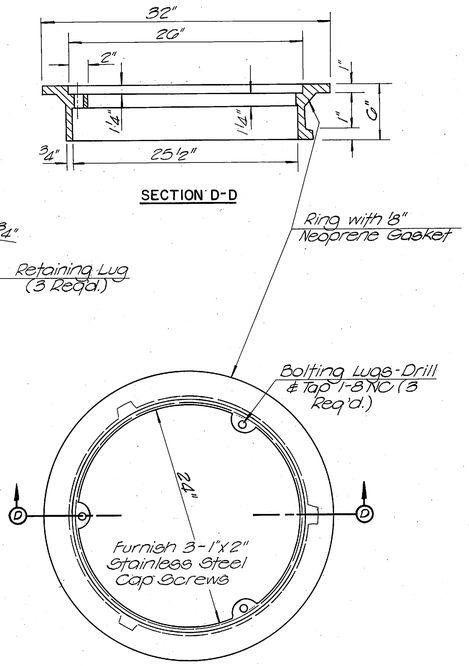
TYPE	YEAR	PROJECT NO.	SHEET NO.
Const.	1970	IAC I-240-1(20A)	286



BASE PLATE LAYOUT



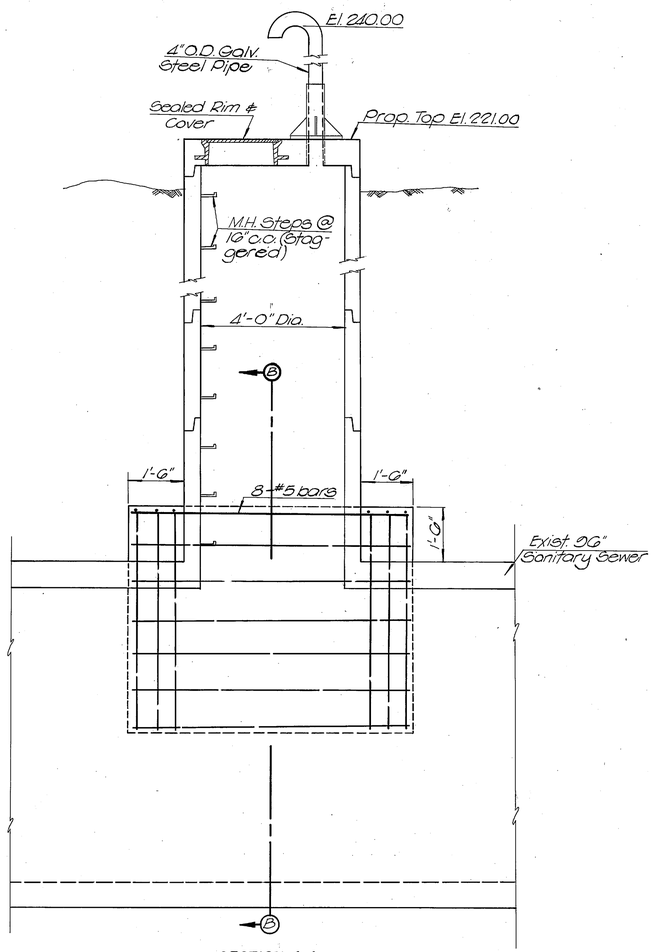
VENT DETAIL



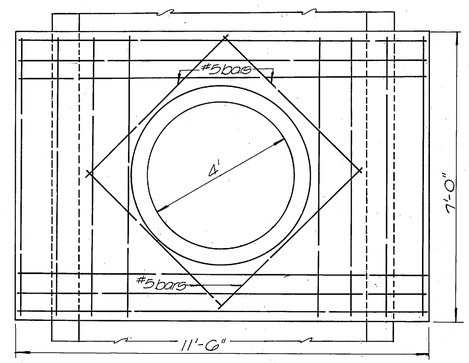
TOP PLAN
SEALED MANHOLE RING

NOTES

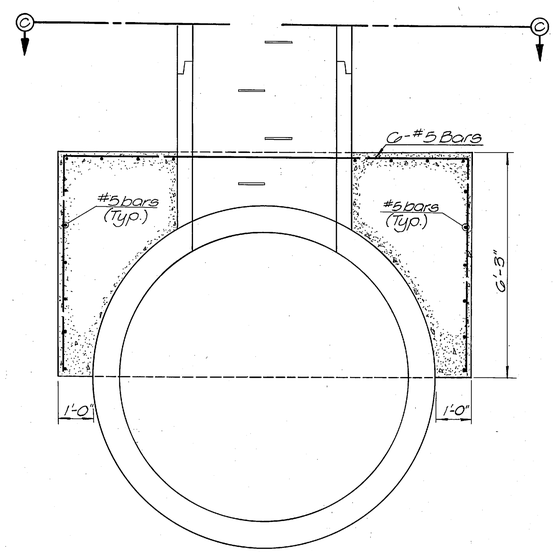
1. Manholes shall be constructed as shown on this sheet unless otherwise directed by the Engineer to meet special conditions. There will be no variation from the contract price due to such changes.
2. All work shall be in accordance with Section 611 of the Standard Specifications.
3. Manholes will be measured for payment per each.
4. Precast concrete riser sections for manholes shall conform to to ASTM Specification C478.
5. All joints in precast riser sections shall be sealed with 1" size "Ram-Nek" flexible plastic gasket.
6. The 4' riser sections shall have a protective lining meeting the City of Memphis Specifications.



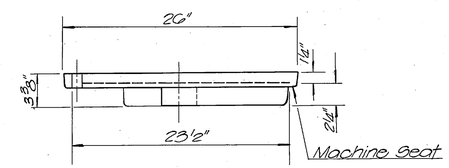
SECTION A-A



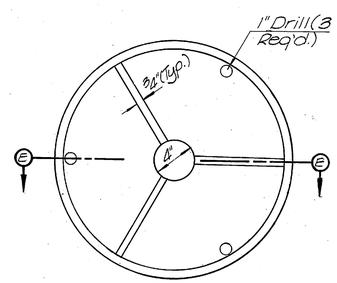
SECTION C-C



SECTION B-B



SECTION E-E

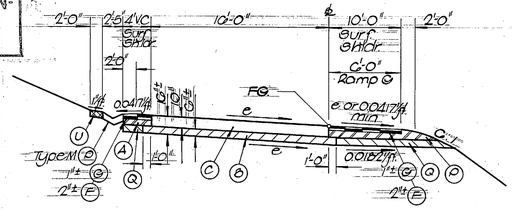


BOTTOM PLAN
SEALED MANHOLE COVER

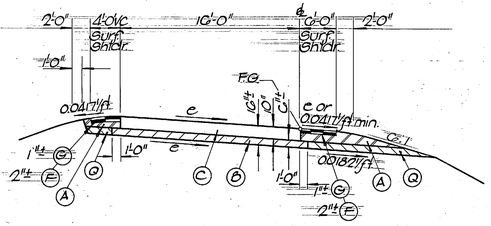
STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
BUREAU OF HIGHWAYS

MANHOLE TYPE E
(SANITARY)

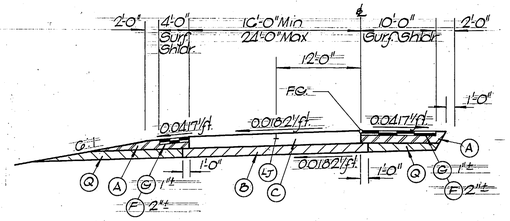
SCALE: NONE



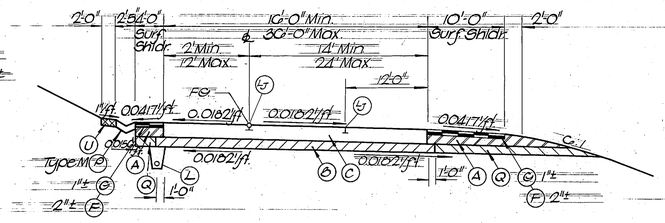
RAMP A N. WATKINS STA. 19+62 TO STA. 25+69
RAMP D N. WATKINS STA. 4+81 TO STA. 6+50
RAMP G N. WATKINS STA. 5+25 TO STA. 7+23



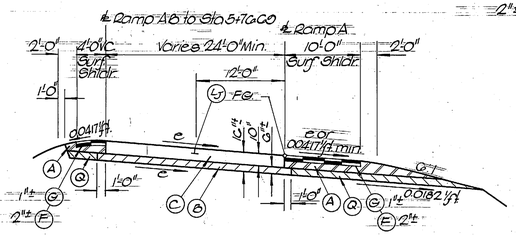
RAMP C N. WATKINS STA. 4+85 TO STA. 8+63
RAMP G N. WATKINS STA. 2+69 TO STA. 5+25
RAMP H N. WATKINS STA. 4+86 TO STA. 6+78
RAMP M N. WATKINS STA. 3+68 TO STA. 19+44
RAMP A HOLLYWOOD STA. 2+47 TO STA. 16+28
RAMP C HOLLYWOOD STA. 6+44 TO STA. 23+26
RAMP E HOLLYWOOD STA. 2+39 TO STA. 14+58



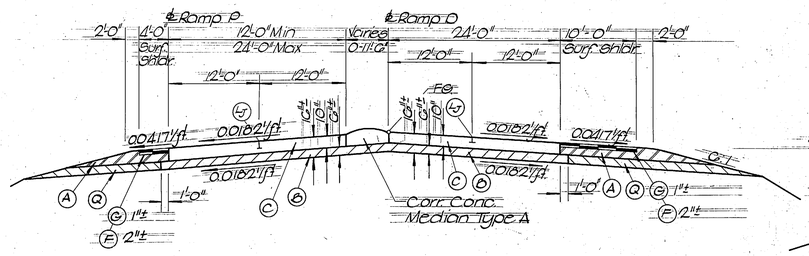
RAMP A N. WATKINS STA. 6+88 TO STA. 19+62



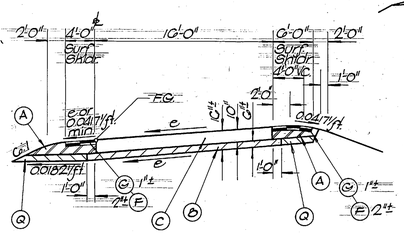
RAMP D N. WATKINS STA. 6+50 TO STA. 10+00



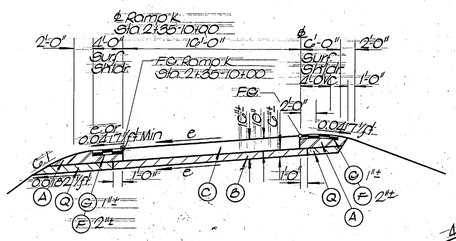
RAMP A N. WATKINS STA. 1+75 TO STA. 6+88



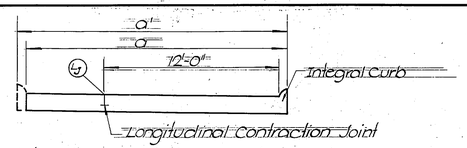
RAMP D N. WATKINS STA. 10+00 TO STA. 15+12
RAMP P N. WATKINS STA. 0+00 TO STA. 1+33



RAMP B N. WATKINS STA. 0+88 TO STA. 3+44
RAMP E N. WATKINS STA. 3+00 TO STA. 13+54

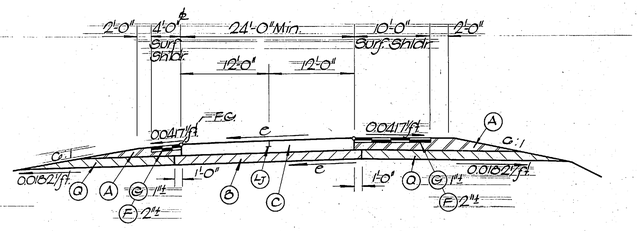


RAMP E N. WATKINS STA. 2+73 TO STA. 3+00
RAMP K N. WATKINS STA. 2+35 TO STA. 10+60
RAMP B HOLLYWOOD STA. 3+05 TO STA. 3+83

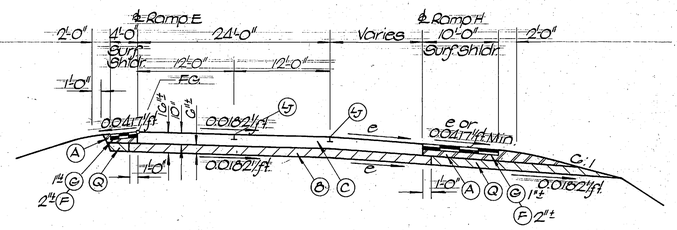


Note: When dimensions a or a' exceed 6', a longitudinal contraction joint with dowels shall be placed 12' from the right edge of pavement in the direction of traffic.

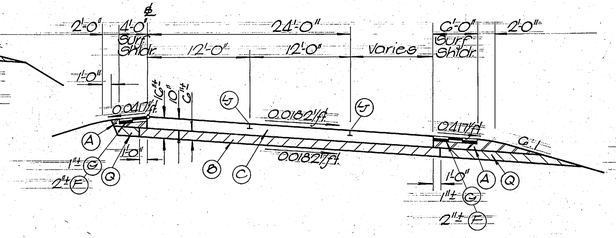
RAMP PAVEMENT DETAIL



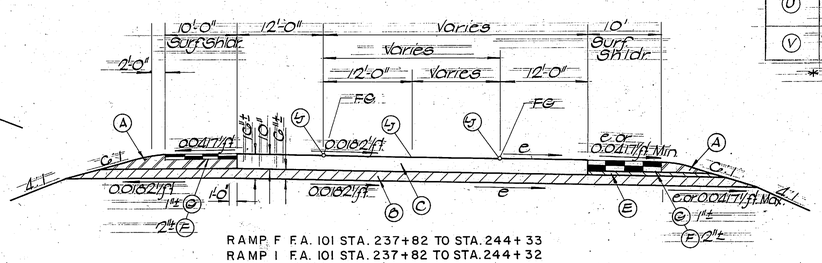
RAMP E N. WATKINS STA. 15+53 TO STA. 16+03



RAMP E N. WATKINS STA. 16+03 TO STA. 24+20
RAMP H N. WATKINS STA. 0+00 TO STA. 4+41



RAMP E N. WATKINS STA. 24+20 TO STA 26+00



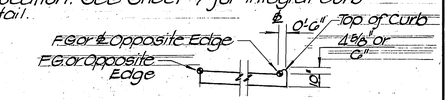
RAMP F F.A. 101 STA. 237+82 TO STA. 244+33
RAMP I F.A. 101 STA. 237+82 TO STA. 244+32

REV. 4-9-74; REVISED NOTES.

TYPE	YEAR	PROJECT NO.	SHEET NO.
Const.	1974	FACI-2404(004)A	2C

Notes

1. F.G. is located on the ℄ at the plane of the roadway surface. See geometry sheet for ℄ location. See sheet 7 for integral curb detail.



2. The F.G. (Finished Grade), Opposite Edge, and "Top of Curb" shown in note 1 are the same as presented in "Ramp Profile Sheets."
3. Use 4' roundings on all breaks in shoulder and side slopes.
4. All ramp cross sections are shown looking in the direction of traffic.
5. See Interchange Grading sheets for additional sod to be placed under this contract.
6. Longitudinal joint: See Standard Drawing Nos. P-E 10a and P-E-31.
7. For location of Type M Gutter see Interchange grading sheets.
8. See Ramp Terminal Details for location of integral curbs, combined curb and gutter, and shoulder widths.

CONSTRUCTION ITEMS (FUTURE)

SYMBOL	ITEM NO.	DESCRIPTION
A	303-01	Mineral Aggregate, Type A Base, Grading D
	303-06	Calcium Chloride, Type I, Type 2 or Calcium Chloride Liquor
	203-06	Water
B	300-01.01	Mineral Aggregate (A-CBC)
	300-01.02	Portland Cement (A-CBC)
	300-01.03	Processing Aggregate-Cement Base Course (A-CBC)
	309-02	Bituminous Material (A-CBC) (0.20 gal./sq. yd.)
	203-06	Water
C	501-01.03	Portland Cement Conc. Pvmt (Plain) 10"
F	307-02.01	Aggregate (BPMB-HM) Grading "B" Mixture (220± lbs/sq. yd.)
	307-02.02	Asphalt Cement (BPMB-HM) Grading "B" Mixture (220± lbs/sq. yd.)
	402-01	Bituminous Material (PC) (0.30 to 0.35 gal/sq. yd.)
G	* 411-02.04	Mineral Aggregate (ACS) Grading "E" (110± lbs/sq. yd.)
	411-02.05	Asphalt Cement (ACS) Grading "E" (110± lbs/sq. yd.)
	403-01	Bituminous Material (TC) (0.05 to 0.15 gal/sq. yd.)
L	710-02	Aggregate Underdrain (with pipe)
D	702-02	Concrete Gutter
Q	300-01.01	Mineral Aggregate (A-CBC)
	203-06	Water
U	803-01	Sodding (New Sod)
	801-03	Water (Seeding and Sodding)
V	705-01.02	Metal Deep Beam Single Guard Rail (Steel Posts) (Post Spacing 6'-3")

* Alternate Grading D (Slag only)

GRADING AND DRAINAGE WORK ONLY TO BE COMPLETED UNDER THIS CONTRACT. OTHER ITEMS SHOWN ARE FOR FUTURE CONTRACT.

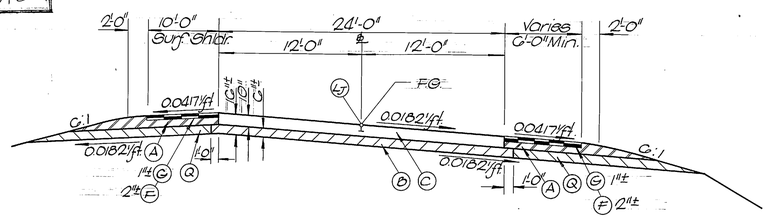
STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
BUREAU OF HIGHWAYS

TYPICAL RAMP ROADWAY CROSS SECTIONS

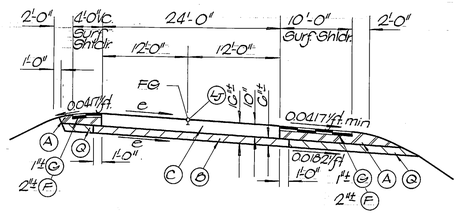
NO. SCALE

REV. 4-9-74; REVISED NOTES.

TYPE	YEAR	PROJECT NO.	SHEET NO.
Const.	1974	IM-I-2(10)-1(104)4	2D



RAMP F F. A. 101 STA. 244+33 TO STA. 247+54



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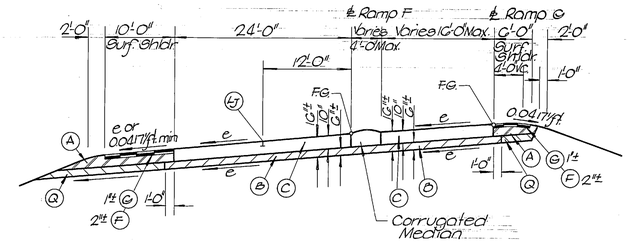
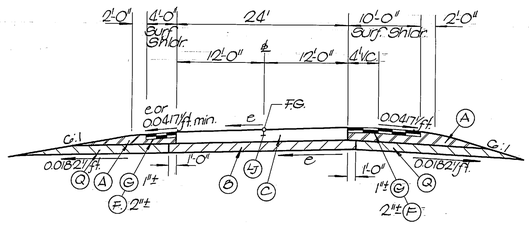
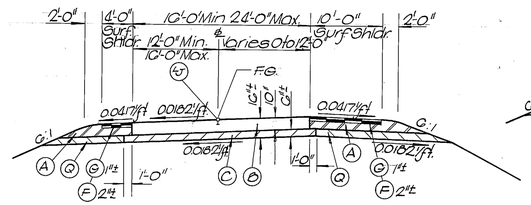


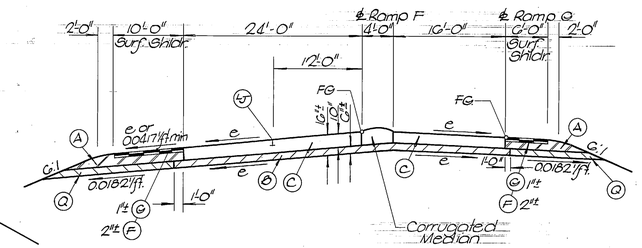
RAMP FG HOLLYWOOD STA. 11+40 TO STA. 19+04



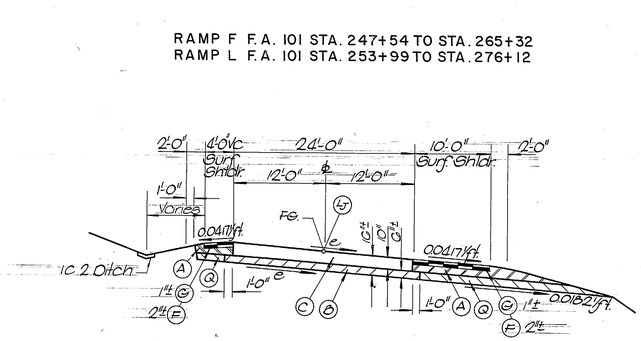
RAMP F F. A. 101 STA. 247+54 TO STA. 265+32
RAMP L F. A. 101 STA. 253+99 TO STA. 276+12



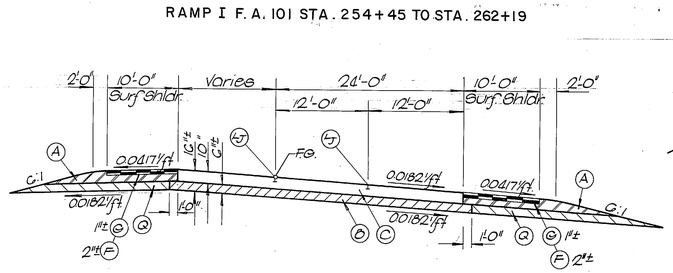
RAMP I F. A. 101 STA. 254+45 TO STA. 262+19



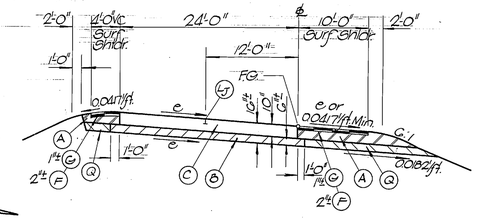
RAMP FG HOLLYWOOD STA. 19+04 TO STA. 19+69



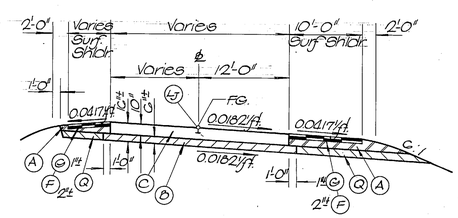
RAMP F F. A. 101 STA. 265+32 TO STA. 274+83
RAMP J F. A. 101 STA. 249+01 TO STA. 277+87



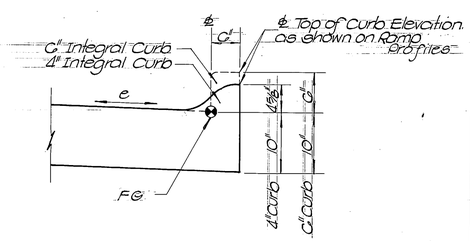
RAMP J F. A. 101 STA. 237+36 TO STA. 245+11



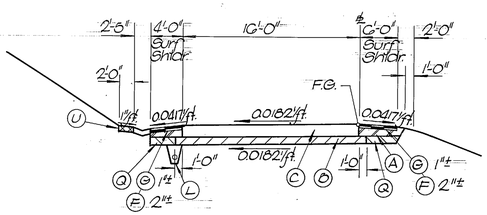
RAMP FG HOLLYWOOD STA. 4+29 TO STA. 11+40



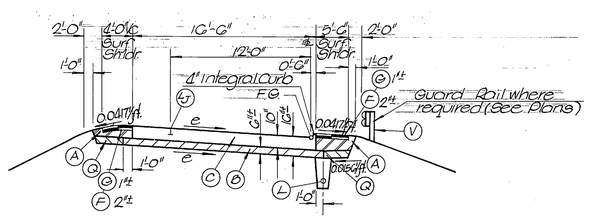
RAMP L F. A. 101 STA. 249+02 TO STA. 253+99



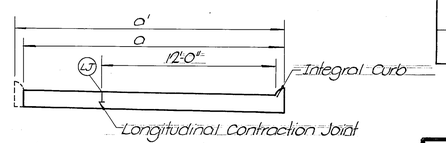
F.G.–INTEGRAL CURB RELATIONSHIP



RAMP G N. WATKINS STA. 7+23 TO STA 8+50



RAMP N N. WATKINS STA. 2+03 TO STA. 9+26
RAMP D HOLLYWOOD STA. 2+87 TO STA. 10+64
RAMP H HOLLYWOOD STA. 2+39 TO STA. 10+67

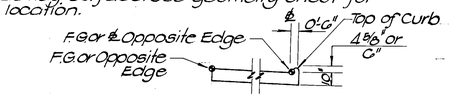


Note: When dimensions a or a' exceed 16', a longitudinal contraction joint with dowels shall be placed 12" from the right edge of pavement in the direction of traffic.

RAMP PAVEMENT DETAIL

Notes

1. F.G. is located on the ℄ at the plane of the roadway surface. See geometry sheet for ℄ location.



2. The F.G. (Finished Grade), Opposite Edge; and 'Top of Curb' shown in note 1 are the same as presented in "Ramp Profile Sheets."
3. Use 4' roundings on all breaks in shoulder and side slopes.
4. All ramp cross sections are shown looking in the direction of traffic.
5. See Interchange Grading sheets for additional sod to be placed under this contract.
6. Longitudinal joint - See Standard Drawing Nos. P-E 10a and P-E-31.
7. For location of Type M Gutter see Interchange grading sheets.
8. See Ramp Terminal Details for location of integral curbs, combined curb and gutter and shoulder widths.

CONSTRUCTION ITEMS (FUTURE)

SYMBOL	ITEM NO.	DESCRIPTION
(A)	303-01	Mineral Aggregate, Type A Base, Grading D
	303-06	Calcium Chloride, Type 1, Type 2 or Calcium Chloride Liquor
	203-06	Water
(B)	309-01.01	Mineral Aggregate (A-CBC)
	309-01.02	Portland Cement (A-CBC)
	309-01.03	Processing Aggregate-Cement Base Course (A-CBC)
	309-02	Bituminous Material (A-CBC) (0.20 gal./sq yd.)
	203-06	Water
(C)	501-01.03	Portland Cement Conc. Pvmt (Plain) 10"
(F)	307-02.01	Aggregate (BPMB-HM) Grading 'B' Mixture (220± lbs/sq yd.)
	307-02.02	Asphalt Cement (BPMB-HM) Grading 'B' Mixture (220± lbs/sq yd.)
	402-01	Bituminous Material (PC) (0.30 to 0.35 gal/sq yd.)
(G)	* 411-02.04	Mineral Aggregate (ACS) Grading 'E' (110± lbs/sq yd.)
	411-02.05	Asphalt Cement (ACS) Grading 'E' (110± lbs/sq yd.)
	408-01	Bituminous Material (TC) (0.05 to 0.15 gal/sq yd.)
(L)	710-02	Aggregate Underdrain (with pipe)
(O)	702-02	Concrete Gutter
(Q)	309-01.01	Mineral Aggregate (A-CBC)
	203-06	Water
(U)	803-01	Sodding (New Sod)
	801-03	Water (Seeding and Sodding)
(Y)	705-01.02	Metal Deep Beam Single Guard Rail (Steel Posts) (Post Spacing 6'-3")

* Alternate Grading 'D' (Slag only)

GRADING AND DRAINAGE WORK ONLY TO BE COMPLETED UNDER THIS CONTRACT OTHER ITEMS SHOWN ARE FOR FUTURE CONTRACT.

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
BUREAU OF HIGHWAYS

TYPICAL RAMP ROADWAY CROSS SECTIONS

NO SCALE

TYPE	YEAR	PROJECT NO.	SHEET NO.
Const.	1974	EACI-240-1(24)4	2E

REV. 4-9-74; MADE CORRECTIONS TO THE NOTES.

REV. 4-17-74; NOTE CONCERNING SEEDING AND SODDING ADDED

GRADE

FINISHED GRADE (FIN. GR. OR F.G.) SHOWN ON TYPICAL CROSS SECTIONS IS THE SAME AS THE GRADE SHOWN ON PROFILES. SEE SPECIAL PROVISION REGARDING EXCAVATION AND UNDERCUTTING.

DATUM PLANE

ALL ELEVATIONS ARE REFERRED TO MEAN SEA LEVEL DATUM AS DESCRIBED BY THE U. S. COAST AND GEODETIC SURVEY. CERTAIN GOVERNMENT BENCHMARKS IN THE AREA, HOWEVER, HAVE BEEN DISTURBED AND ONLY THOSE BENCHMARKS TABULATED BELOW SHOULD BE USED FOR VERTICAL CONTROL ON THIS PROJECT.

BENCHMARK	ELEVATION	DESCRIPTION
B. M. 43	231.60	SOUTH HEADBOLT OF FIRE PLUG AT NORTHWEST CORNER OF STEELE STREET AND HINDMAN AVENUE.
B. M.	243.79	BRASS CAP IN TOP OF CURB AT NORTHWEST END OF NORTH WATKINS BRIDGE OVER WOLF RIVER.
B. M.	250.76	CITY OF MEMPHIS BENCHMARK LOCATED ON THE NORTH SIDE OF JAMES ROAD 17 FEET EAST OF THE I. C. RAILROAD.

A LEVEL CIRCUIT SHOULD BE RUN BETWEEN ALL BENCHMARKS LISTED PRIOR TO THEIR USE TO ESTABLISH THAT NONE HAVE BEEN DISTURBED.

UTILITIES

EXISTING UTILITIES WHICH ARE TO REMAIN IN PLACE SHALL BE PROTECTED DURING CONSTRUCTION. ~~THE CONTRACTOR WILL BEAR THE COST OF ANY REPAIRS TO EXISTING UTILITIES WHICH HE DAMAGES. THE COST OF ANY SUCH REPAIRS WILL NOT BE PAID FOR SEPARATELY BUT SHALL BE CONSIDERED INCIDENTAL TO THE CONTRACT UNIT PRICE FOR OTHER ITEMS OF CONSTRUCTION.~~ EXISTING UTILITIES SHOWN ON THE PLANS ARE ONLY A GUIDE TO THE CONTRACTOR. FOR INFORMATION AS TO EXACT LOCATION THE CONTRACTOR SHALL CONTACT THE VARIOUS UTILITY DEPARTMENTS INVOLVED.

THE EXISTING CONDITIONS AND UTILITIES SHOWN ON THE PLANS REPRESENT THE CONDITIONS AS EXISTING IN JUNE, 1973. THE STATE ASSUMES NO RESPONSIBILITY FOR CHANGES IN CONDITIONS SUBSEQUENT TO THE ABOVE DATE.

THE CONTRACTOR'S ATTENTION IS CALLED TO THE UTILITY FACILITIES WITHIN THE RIGHT-OF-WAY LIMITS AND THE LIMITS OF CONSTRUCTION. A NUMBER OF THESE FACILITIES MUST BE ADJUSTED TO ACCOMMODATE THE WORK INCLUDED IN THIS CONTRACT. UNLESS OTHERWISE PROVIDED, THE ADJUSTMENT OF THE VARIOUS FACILITIES WILL BE PERFORMED BY OTHERS. A PORTION OF THE WORK WILL HAVE TO BE PERFORMED CONCURRENTLY WITH THE CONTRACTOR'S OPERATIONS.

THE PLANS SHOW THE GENERAL LOCATION OF EXISTING UTILITIES AND THE MANNER IN WHICH THE ADJUSTMENT WILL BE MADE. IN THE EVENT THE CONTRACTOR DESIRES MORE DETAILED INFORMATION ON THE LOCATION OF FACILITIES AND WORKING SCHEDULE FOR ADJUSTING SAME, IT IS SUGGESTED THAT IT BE OBTAINED FROM THE UTILITY COMPANIES INVOLVED. AS FAR AS CAN BE DETERMINED, THE FOLLOWING UTILITY COMPANIES HAVE FACILITIES REQUIRING ADJUSTMENTS, AND THESE UTILITY COMPANIES HAVE BEEN CONTACTED BY OR ON BEHALF OF THE STATE AND HAVE INDICATED THAT THEY WILL COOPERATE WITH THE CONTRACTOR IN THE PROPER EXECUTION OF HIS WORK.

MEMPHIS LIGHT, GAS, AND WATER DIVISION
ELECTRIC, GAS, AND WATER DEPARTMENTS
CITY OF MEMPHIS DIVISION OF PUBLIC WORKS
SOUTH CENTRAL BELL TELEPHONE COMPANY
MEMPHIS FIRE DEPARTMENT (FIRE ALARMS)

THE CONSTRUCTION OF THE 96" DIAMETER WOLF RIVER INTERCEPTOR SEWER IN THE ROUTE 101, NORTH WATKINS INTERCHANGE AREA WILL BE UNDERWAY DURING CONSTRUCTION OF THIS PROJECT. THE CONTRACTOR SHALL COOPERATE WITH THE CONTRACTOR ON THIS PROJECT AND WITH OTHER CONTRACTORS WORKING IN THE PROJECT AREA IN SCHEDULING AND PROSECUTING THE WORK. IT IS UNDERSTOOD AND AGREED THAT THE CONTRACTOR WILL RECEIVE NO ADDITIONAL COMPENSATION FOR ANY DELAYS OR INCONVENIENCE CAUSED BY UTILITY RELOCATIONS OR ADJUSTMENTS.

(UTILITY NOTES CONTINUED ON SHEET NO. 2F)

BRIDGE CONST. BY OTHERS

BRIDGE CONSTRUCTION BY OTHERS WILL BE UNDERWAY CONCURRENTLY WITH THE GRADING AND DRAINAGE PROJECT. BRIDGE APPROACH FILLS WILL BE PLACED AS DIRECTED BY THE ENGINEER TO EXPEDITE BRIDGE CONSTRUCTION. THE CONTRACTOR SHALL COORDINATE HIS WORK AND COOPERATE WITH THE BRIDGE CONSTRUCTION CONTRACTOR TO EXPEDITE THE TOTAL PROJECT.

EARTHWORK

THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL BORROW MATERIAL REQUIRED FOR THIS PROJECT. THE CONTRACTOR SHALL HAVE THE OPTION OF OBTAINING FILL MATERIAL FROM THE MISSISSIPPI RIVER OR FROM OTHER BORROW SITES SELECTED BY THE CONTRACTOR. THE STATE HAS CONDUCTED AN INVESTIGATION ON AVAILABILITY OF FILL MATERIAL FROM THE MISSISSIPPI RIVER IN THE VICINITY OF THE PROJECT SITE AND WILL MAKE THIS INFORMATION AVAILABLE TO THE CONTRACTOR. THIS INFORMATION WILL BE FURNISHED FOR THE CONTRACTOR'S ASSISTANCE ONLY AND THE STATE ASSUMES NO RESPONSIBILITY FOR THE ACCURACY OR COMPLETENESS OF THIS INVESTIGATION. THE STATE WILL MAKE AVAILBLE AN EASEMENT FOR A PIPELINE FROM THE MISSISSIPPI RIVER TO THE PROJECT SITE FOR USE IF THE HYDRAULIC FILL OPTION IS SELECTED. SEE SPECIAL PROVISION REGARDING PIPELINE EASEMENT.

THE TENNESSEE DEPARTMENT OF TRANSPORTATION HAS MADE APPLICATION TO THE CORPS. OF ENGINEERS FOR A PERMIT TO OPERATE DREDGING EQUIPMENT ON THE MISSISSIPPI RIVER BETWEEN MILE 740 AND 745 WITHIN THE BORDERS OF THE STATE OF TENNESSEE. SHOULD THE CONTRACTOR DESIRE TO DREDGE MATERIAL FROM LOCATIONS IN THE MISSISSIPPI RIVER OTHER THAN THE LOCATION SPECIFIED ABOVE, THE STATE WILL REVISE THE APPLICATION TO THE CORPS. OF ENGINEERS TO INCLUDE THOSE AREAS. HOWEVER, THE CONTRACTOR SHOULD CONTACT THE CORPS. OF ENGINEERS FOR THE PRELIMINARY APPROVAL OF DREDGING IN ANY AREA OF THE MISSISSIPPI RIVER OTHER THAN THOSE SPECIFIED ABOVE.

THE CONTRACTOR MAY ELECT TO STRIP TOPSOIL FROM WITHIN THE CONSTRUCTION LIMITS OF THE RIGHT-OF-WAY OR FROM BORROW PITS FURNISHED BY THE CONSTRUCTOR. SILT TOPSOIL IS TO BE PAID FOR UNDER ITEM 203-10, EMBANKMENT COMPLETE IN PLACE.

HYDRAULIC PLACEMENT WILL NOT BE PERMITTED SOUTH OF THE WOLF RIVER. FILL MATERIAL FOR EMBANKMENT IN THIS AREA IS TO BE PLACED BY CONVENTIONAL METHODS.

IF THE CONTRACTOR CHOOSES TO OBTAIN BORROW MATERIAL FROM SOURCES OTHER THAN THE MISSISSIPPI RIVER, PLANS FOR THE BORROW SITES AND TRANSPORTING PROCEDURE MUST BE APPROVED BY ALL APPROPRIATE GOVERNMENTAL AGENCIES INCLUDING CITY ENGINEER, COUNTY ENGINEER, PLANNING COMMISSION, PARK COMMISSION, COUNTY CONSERVATION BOARD, CHICKASAW BASIN AUTHORITY, COUNTY HEALTH DEPARTMENT AND STATE HEALTH DEPARTMENT.

(EARTHWORK NOTES CONTINUED ON SHEET NO. 2F)

MINOR STRUCTURE EXCAVATION

EXCAVATION FOR PIPE CULVERTS, BOX CULVERTS, INLETS, CATCH BASINS, MANHOLES AND OTHER MINOR DRAINAGE STRUCTURES WILL NOT BE MEASURED OR PAID FOR SEPARATELY. THE COST OF EXCAVATION FOR THESE ITEMS SHALL BE INCLUDED IN THE UNIT PRICE BID FOR THE APPROPRIATE ITEM.

SEEDING AND SODDING

SOD WILL BE PLACED AT LOCATIONS SHOWN ON THE PLANS AND OTHER LOCATIONS AS DIRECTED BY THE ENGINEER. SIDE SLOPES AND GRADED AREAS ADJACENT TO CROSS STREETS SHALL BE SODDED AS DIRECTED BY THE ENGINEER TO PREVENT EROSION OR MUD FLOW ONTO THE STREETS. ADDITIONAL SODDING PLACED AS DIRECTED BY THE ENGINEER WILL BE PAID FOR AT THE UNIT PRICE BID FOR ITEM NO. 803-01. ALL NEWLY GRADED EARTHEN AREAS, EASEMENT AREAS, OR OTHER AREAS ON THE PROJECT DESIGNATED BY THE ENGINEER THAT ARE NOT TO BE PAVED, SODDED, OR STABILIZED SHALL BE SEEDED IN ACCORDANCE TO SECTION 801 OF THE STANDARD SPECIFICATIONS.

(SEEDING AND SODDING NOTES CONTINUED ON SHEET NO. 2F)

EROSION, MUD, AND DEBRIS CONTROL

SODDING AND SEEDING PHASES OF CONSTRUCTION SHALL BE CARRIED OUT IMMEDIATELY UPON COMPLETION OF EARTHWORK (CUT OR FILL) AND/OR AS DIRECTED BY THE ENGINEER. WHERE EARTHWORK CONSTRUCTION IS SUCH AS TO INVOLVE THE POSSIBILITY OF MUD FLOW ONTO ADJACENT PROPERTY OR EXISTING CITY STREETS, THE CONTRACTOR SHALL COMPLETE THE EARTHWORK PHASES AS RAPIDLY AS POSSIBLE AND SOD OR SEED THE SLOPES IMMEDIATELY UPON COMPLETION OF THE EARTHWORK CONSTRUCTION AND/OR AS DIRECTED BY THE ENGINEER. THE CONTRACTOR WILL BE RESPONSIBLE FOR KEEPING ADJACENT PRIVATE PROPERTY AND CITY STREETS CLEAR OF MUD AND DEBRIS DURING CONSTRUCTION. ALL WORK INVOLVED IN PROMPTLY REMOVING ANY MUD OR DEBRIS SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR. THIS WORK WILL NOT BE PAID FOR SEPARATELY BUT SHALL BE CONSIDERED INCIDENTAL TO THE OTHER ITEMS OF CONSTRUCTION. IF THE CONTRACTOR FAILS TO KEEP THESE AREAS CLEAN, THE STATE OF AN AGENT OF THE STATE WILL REMOVE THE MUD OR DEBRIS, AND THE COST OF SUCH WORK WILL BE DEDUCTED FROM THE CONTRACTOR'S PAYMENT ESTIMATE.

TREE PROTECTION

THE CONTRACTOR SHALL SAVE AND PROTECT LIVING TREES AS DESIGNATED BY THE ENGINEER DURING CONSTRUCTION OF THE PROJECT IN ACCORDANCE WITH THE SPECIFICATIONS. SEE SHEET 2-AA AS SHOWN IN PLANS.

FIELD ADJUSTMENT

THE LOCATION, GRADE, AND CROSS SECTION OF PROPOSED CULVERTS, STORM SEWERS, MINOR DRAINAGE STRUCTURES, AND DITCHES SHALL BE ADJUSTED AS DIRECTED BY THE ENGINEER WHEN FIELD CONDITIONS DICTATE. INVERT ELEVATIONS OF ALL EXISTING SANITARY AND STORM SEWERS WHICH ARE TO REMAIN, BE RELOCATED, OR BE CONNECTED TO PROPOSED SEWERS SHALL BE VERIFIED IN THE FIELD PRIOR TO CONSTRUCTION; GRADES OF PROPOSED STORM AND SANITARY SEWERS SHALL BE ADJUSTED AS REQUIRED TO MEET EXISTING ELEVATIONS.

MAINTAINING TRAFFIC

VEHICULAR ACCESS TO THE RESIDENTIAL AREA WEST OF NORTH WATKINS AND NORTH OF HINDMAN ROAD SHALL BE MAINTAINED DURING CONSTRUCTION.
EXISTING NORTH WATKINS AND HOLLYWOOD STREET TRAFFIC SHALL BE MAINTAINED AT ALL TIMES BY THE CONTRACTOR WITH THE APPROVAL OF THE CITY OF MEMPHIS TRAFFIC ENGINEER.
GRADING FOR THE FUTURE RUNAROUNDS WILL BE COMPLETED UNDER THIS CONTRACT TO THE EXTENT POSSIBLE WITHOUT DISRUPTING TRAFFIC ON WATKINS ST. OR HOLLYWOOD ST.

DITCHES

EXISTING DITCHES SHALL BE FILLED OR SHAPED WITHIN THE RIGHT-OF-WAY AND DRAINAGE EASEMENTS AS DIRECTED BY THE ENGINEER OR SHOWN ON THE PLANS. THIS WORK WILL NOT BE PAID FOR SEPARATELY BUT SHALL BE CONSIDERED INCIDENTAL TO THE CONTRACT UNIT PRICE FOR ROAD AND DRAINAGE EXCAVATION (UNCLASSIFIED), ITEM NO. 203-01.
ALL DISTANCES RIGHT (RT.) OR LEFT (LT.) SHOWN ON THE PLANS AT BREAKPOINTS ARE FROM CENTERLINE OR BASELINE OF ROADWAY (AS NOTED ON THE PLANS) TO CENTERLINE OF DITCH.

PAVEMENT, CURBING, AND SIDEWALK REPLACEMENT

THE CONTRACTOR SHALL REPLACE AT HIS OWN EXPENSE ANY EXISTING PAVEMENT, CURBING, AND SIDEWALKS WHICH ARE DAMAGED BY CONSTRUCTION ACTIVITIES. NO PATCHING WILL BE ALLOWED.
PAVEMENT, CURBING, AND SIDEWALKS REPLACED DUE TO ESSENTIAL CONSTRUCTION SHALL BE OF THE SAME MATERIAL AS THE ORIGINAL AND SHALL BE CONSTRUCTED TO THE SAME CROSS SECTION. MINIMUM GUTTER THICKNESS WILL BE 8 INCHES.

CONCRETE BOX CULVERTS

CONCRETE BOX CULVERTS SHALL BE CONSTRUCTED IN ACCORDANCE WITH STATE OF TENNESSEE STANDARD DRAWINGS. THE STANDARD DRAWINGS TO BE USED ARE DESIGNATED ON THE CULVERT CROSS SECTION SHEETS.
ALL BOX CULVERTS AND BOX TYPE BRIDGES ARE TO BE PROVIDED WITH "V" BOTTOMS AS DETAILED ON THE PLANS. THE QUANTITIES SHOWN ON THE STANDARD DRAWINGS DO NOT INCLUDE THE ADDITIONAL CONCRETE REQUIRED TO FORM THE "V" BOTTOMS. HOWEVER, THE ADDITIONAL CLASS A CONCRETE IS SHOWN ON THE CULVERT CROSS SECTION SHEETS AND INCLUDED IN THE ESTIMATED ROADWAY QUANTITIES.
ALL NECESSARY CONSTRUCTION JOINTS IN CONCRETE BOX CULVERTS SHALL BE THE BUTT TYPE. LOCATION OF JOINTS SHALL BE DETERMINED BY THE ENGINEER ON CONSTRUCTION.
WHEN THE LENGTH OF A WING WALL EXCEEDS FIFTEEN FEET (15'-0"), A CONSTRUCTION JOINT SHALL BE LOCATED AS SHOWN ON STANDARD DRAWING NO. C-2-95, REVISED CONSTRUCTION DETAILS.

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
BUREAU OF HIGHWAYS

GENERAL NOTES

TYPE	YEAR	PROJECT NO.	SHEET NO.
Const.	1974	FACI-240-1(24)-4	2F

REV. 3-29-74; CHANGED THE END OF PROJECT IN THE SCOPE OF WORK.

REV. 4-9-74; CORRECTED THE EARTHWORK NOTE.

REV. 4-16-74; FENCING NOTE ADDED.

REV. 4-17-74; NOTE CONCERNING SEEDING AND SODDING ADDED.

GENERAL NOTES

ADJUSTMENT OF EXISTING MANHOLES AND INLETS

EXISTING SANITARY SEWER AND STORM SEWER MANHOLES AND EXISTING INLETS, CATCHBASINS OR OTHER DRAINAGE OR SANITARY SEWER STRUCTURES SHALL BE ADJUSTED TO PROPOSED GRADE AS SHOWN ON THE PLANS. EXISTING CASTINGS ARE TO BE UTILIZED WHERE POSSIBLE, AND ADJUSTMENT SHALL BE PERFORMED IN A MANNER SATISFACTORY TO THE ENGINEER. MANHOLE AND INLET ADJUSTMENT COSTS SHALL BE INCLUDED IN UNIT PRICE BID FOR OTHER ITEMS.

FENCING

FENCING IN THIS PROJECT INCLUDES 6 FT. CHAIN LINK FENCE (ITEM NO. 707-02.01) AND STOCK FENCE (ITEM NO. 707-03.01). LOCATION OF THE VARIOUS FENCE TYPES ARE SHOWN ON THE PLANS. LOCATION OF THE FENCES SHALL BE ONE (1) FOOT INSIDE THE RIGHT-OF-WAY LINE AND NORMALLY FOLLOW THE RIGHT-OF-WAY LINE EXCEPT WHERE SHOWN OTHERWISE ON THE PLANS.

UNDERDRAINS

A 3-FOOT LENGTH OF 6" PERFORATED PIPE UNDERDRAIN, AS INDICATED ON THE PLANS, SHALL BE INSTALLED IN MANHOLES OR INLETS WHICH ARE TO RECEIVE DRAINAGE FROM FUTURE ROADWAY UNDERDRAINS. UNLESS OTHERWISE NOTED ON PLANS, EACH 3-FOOT LENGTH OF UNDERDRAIN SHALL BE TEMPORARILY CAPPED TO PREVENT INFILTRATION OF SOIL INTO THE MANHOLE OR INLET. THE 3-FOOT LENGTH OF UNDERDRAIN WILL NOT BE PAID FOR SEPARATELY, BUT SHALL BE CONSIDERED INCIDENTAL TO THE CONTRACT UNIT PRICE FOR MANHOLES OR INLETS.

DISPOSAL OF SURPLUS MATERIAL IN THE CITY OF MEMPHIS

ALL SURPLUS MATERIAL SUCH AS DIRT, GRAVEL, BROKEN CONCRETE, TREE STUMPS, ETC. WILL BE REMOVED FROM THE SITE. SURPLUS MATERIAL SHALL BE DISPOSED OF IN ACCORDANCE WITH CITY OF MEMPHIS ORDINANCE NO. 1492 AS ADOPTED BY THE CITY COUNCIL ON OCTOBER 17, 1972. NO EXTRA COMPENSATION WILL BE ALLOWED FOR HAULING OR OTHER WORK REQUIRED BY THIS ORDINANCE.

DESIGN LOADING

ALL CONCRETE BOX AND SLAB CULVERTS AND BRIDGES ARE DESIGNED FOR HS 20 AND ALTERNATE MILITARY LOADING

GRADING AND SHAPING AROUND DRAINAGE STRUCTURES

IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO GRADE AND SHAPE AROUND DRAINAGE STRUCTURES TO PROVIDE SATISFACTORY OPERATION OF THE DRAINAGE STRUCTURES.

CONNECTIONS TO EXISTING SEWERS, CULVERTS, INLETS AND MANHOLES

WHERE PROPOSED MANHOLES, INLETS, OR OTHER APPURTENANCES ARE INDICATED ON THE PLANS OR DIRECTED BY THE ENGINEER TO BE CONSTRUCTED OVER OR ON EXISTING SEWERS OR CULVERTS, THE CONTRACTOR SHALL REMOVE PORTIONS OF THE EXISTING FACILITY AS REQUIRED AND/OR SEAL OPEN ENDS WITH CONCRETE AS DIRECTED BY THE ENGINEER. THE CONTRACTOR SHALL REMOVE PORTIONS OF THE EXISTING STRUCTURE AS REQUIRED TO ACCEPT THE PROPOSED PIPE.

THE VOID BETWEEN THE PROPOSED PIPE AND THE ROUGH OPENING IN THE STRUCTURE SHALL BE THOROUGHLY FILLED WITH CEMENT GROUT.

THE WORK MATERIALS INVOLVED IN THESE OPERATIONS WILL NOT BE PAID FOR SEPARATELY BUT SHALL BE CONSIDERED INCIDENTAL TO OTHER ITEMS OF CONSTRUCTION.

ABANDONED SEWERS, MANHOLES, AND INLETS

SEWER LINES TO BE ABANDONED AND NOT SPECIFIED ON THE PLANS "TO BE FILLED" SHALL HAVE OPEN ENDS SEALED WITH CONCRETE AS DIRECTED BY THE ENGINEER. MANHOLES AND INLETS TO BE ABANDONED SHALL HAVE THE TOPS REMOVED TO 2'-0" BELOW SUBGRADE OR 2' BELOW FINISHED GRADE OUTSIDE THE LIMITS OF THE ROADBED AND SHALL BE FILLED WITH SAND AFTER SEALING OF PIPES. ABANDONED SEWER LINES WHICH ARE SPECIFIED ON THE PLANS "TO BE FILLED" SHALL BE COMPLETELY FILLED WITH A LEAN SAND-CEMENT MIXTURE CONTAINING NOT MORE THAN 12 PARTS OF SAND TO 1 PART PORTLAND CEMENT (BY WEIGHT). THE METHOD OF PLACING SHALL BE APPROVED BY THE ENGINEER. THIS WORK WILL NOT BE PAID FOR SEPARATELY BUT SHALL BE CONSIDERED INCIDENTAL TO THE CONTRACT UNIT PRICE FOR ROAD AND DRAINAGE EXCAVATION (UNCLASSIFIED) ITEM NO. 203-01.

RIP-RAP

THE CONTRACTOR WILL BE PERMITTED TO DUMP RUBBLE-STONE RIP-RAP AND SPREAD IT BY MACHINE IN LIEU OF HAND PLACING. AFTER THE RIPRAP HAS BEEN SPREAD, THE MAIN STONES SHALL BE CHINKED AND FILLED WITH SMALLER STONES, BY HAND, TO FILL THE VOIDS. STONES PROTRUDING MORE THAN SIX INCHES ABOVE THE NORMAL SURFACE SHALL BE BROKEN DOWN TO COME WITHIN SIX INCHES OF THE NORMAL SURFACE.

SANITARY LANDFILL EXCAVATION

THE EXISTING SANITARY LANDFILL AS OUTLINED ON SHEETS 50 AND 100 IS TO BE REMOVED TO THE NATURAL GROUND LINE BY THE CONTRACTOR. THE CONTRACTOR WILL OBTAIN THE ENGINEER'S APPROVAL BEFORE ROADWAY FILL OPERATIONS ARE BEGUN IN THE AREA. ALL SURPLUS MATERIAL WILL BE REMOVED FROM THE AREA AND HAULED TO THE NEAREST CITY OF MEMPHIS SANITARY LANDFILL. THE CONTRACTOR WILL CONTACT THE CITY SANITATION DEPARTMENT TO OBTAIN THE EXACT LOCATION AND THE AMOUNT OF THE FEE CHARGED FOR DISPOSAL. ALL SANITARY LANDFILL EXCAVATION WILL BE MEASURED AND PAID FOR UNDER ITEM NO. 203-01.10 SANITARY LANDFILL EXCAVATION.

GENERAL NOTES (CONTINUED)

UTILITIES (CONTINUED)

THE CONTRACTOR'S ATTENTION IS DIRECTED TO A NOTE ON UTILITY SHEET NO. 111. THE CONTRACTOR WILL BE REQUIRED TO CONFORM TO THIS NOTE IN THE INITIAL GRADING OF THIS PROJECT AND AS DIRECTED BY THE ENGINEER.

EARTHWORK (CONTINUED)

IF THE CONTRACTOR DESIRES TO OBTAIN MATERIAL FROM THE ARKANSAS SIDE OF THE MISSISSIPPI RIVER, HE WILL BE REQUIRED TO OBTAIN A PERMIT FROM THE STATE OF ARKANSAS AT HIS OWN EXPENSE. THE CONTRACTOR WILL BE REQUIRED TO PAY APPLICABLE SEVERENCE AND ROYALTY TAX. THE CONTRACTOR MAY APPLY FOR THE PERMIT BY CONTACTING:

MR. DENO NICHOLS
MANAGER OF MISCELLANEOUS TAX
ARKANSAS DEPARTMENT OF FINANCE
AND ADMINISTRATION
JOEL Y. LEDBETTER BUILDING
LITTLE ROCK, ARKANSAS 72203
TELEPHONE: 501-371-1487

FENCING (CONTINUED)

FENCE SURROUNDING THE AIRPORT PROPERTY MUST BE MAINTAINED FOR SECURITY OF THE RUNWAY ON SUBJECT PROPERTY. THIS PROTECTION MUST BE PROVIDED DURING THE ENTIRE EASEMENT PERIOD (5 YEARS).

SEEDING & SODDING (CONTINUED)

ALL SURFACE AREA OUTSIDE FUTURE PAVING LIMITS, EXCEPT THE EMBANKMENT SIDE SLOPES AS SHOWN ON SHEET 2 OF AREAS TO RECEIVE OTHER TREATMENT AS STIPULATED ON THE PLANS, SHALL BE COVERED WITH THREE (3) INCHES OF TOPSOIL PRIOR TO SEEDING.

THE TOPSOIL SHALL BE MEASURED AND PAID FOR UNDER ITEM NO. 203-10 EMBANKMENT (COMPLETE IN PLACE)

SCOPE OF WORK

THIS PROJECT IS THE GRADING AND DRAINAGE OF A SECTION OF I-240 FROM STATION 224+61.09 (EAST BASE LINE) AND STATION 217+46.41 (WEST BASE LINE) (SOUTH OF THE WOLF RIVER) TO STATION 410+00.25 (AT THE I.C. RAILROAD). THE WORK IS TO BE AS INDICATED ON THE TYPICAL SECTIONS AND PLAN AND PROFILE SHEETS. IT INCLUDES BUT SHALL NOT BE LIMITED TO THE FOLLOWING:

THE GRADING AND DRAINAGE OF RAMPS FOR THE ROUTE 101, NORTH WATKINS STREET INTERCHANGE AND THE HOLLYWOOD STREET INTERCHANGE (THE BRIDGES WILL BE BUILT UNDER A LATER CONTRACT).

THE GRADING AND DRAINAGE OF CONSTRUCTION RUNAROUNDS FOR NORTH WATKINS STREET AND HOLLYWOOD STREET. THE GRADING AND DRAINING OF McLEAN EXTENDED FROM STATION 80+00 (414½ SOUTH OF I-240) TO STATION 95+50 (1,136½ NORTH OF I-240).

THE CONSTRUCTION OF ALL NECESSARY MISCELLANEOUS ITEMS SUCH AS FENCING, CONCRETE DITCH PAVING, SEEDING, SODDING AND ETC.

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
BUREAU OF HIGHWAYS

GENERAL NOTES
&
SCOPE OF WORK

REV. 3-29-74; CHANGED THE END OF PROJECT STATION ON THE MASS DIAGRAM AND CORRECTED THE QUANTITIES.

TYPE	YEAR	PROJECT NO.	SHEET NO.
Const.	1974	F.A.C.I-240-1(04)4	26

HORIZONTAL CURVE NOMENCLATURE

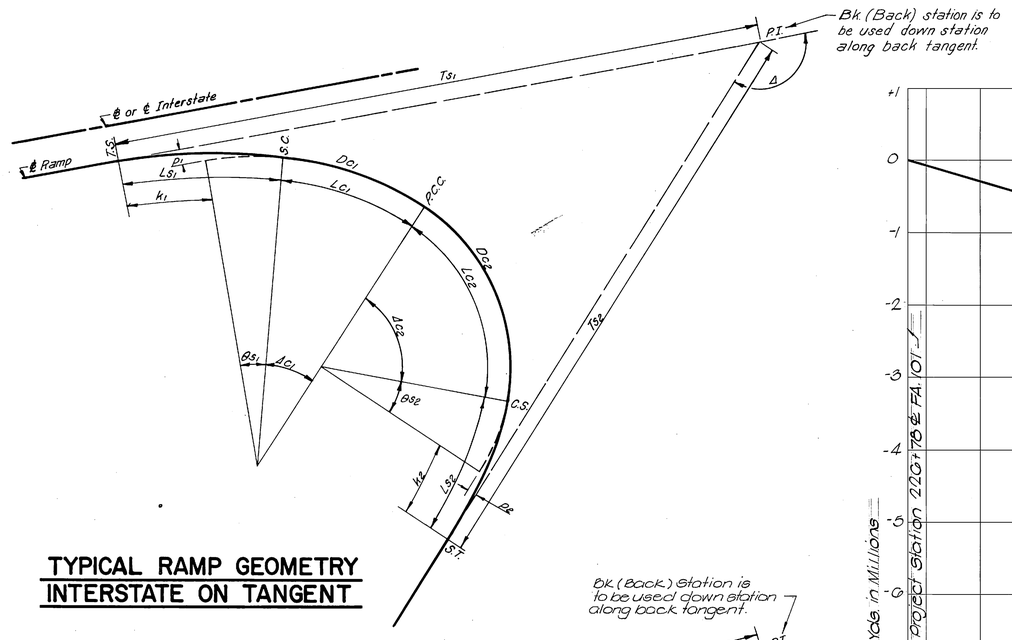
P.O.T. = Point on Tangent
P.C. = Point of Curve
P.T. = Point of Tangent
P.I. = Point of Intersection of Tangents.
P.C.C. = Point of Compound Curve
P.R.C. = Point of Reverse Curve
T.S. = Tangent to Spiral
S.C. = Spiral to Curve
C.S. = Curve to Spiral
S.T. = Spiral to Tangent
S.C.S = Spiral to Curve to Spiral
D = Degree of Curve, Unspiralled Curve
Dc = Degree of Simple Curve portion of Spiralled Curve
Δ = Deflection angle between two Tangents; also Central angle of curve.
R = Radius of Curve, Unspiralled Curve
Rc = Radius of Simple Curve Portion of Spiralled Curve
Ls = Length of Spiral
La = Length of Spiral between Compound Curves
T = Distance from P.C. or P.T. to P.I.
Ts = Distance from T.S. or S.T. to P.I.
Δc = Central Angle of Simple Curve portion of Spiralled Curve
L = Length of Simple Curve
Lc = Length of Simple Curve portion of Spiralled Curve
θs = Central Angle of Spiral.
θa = "Equivalent" Spiral Angle, as defined in "Transition Curves for Highways"
α1 & α2 = Intersection angle between the tangents at the C.S. and S.C. and the parrallel tangents of the circular curves produced at the common radius.
k = Distance from T.S. to point on tangent opposite the P.C. of the circular curve produced.
p = Offset distance from tangent of P.C. of circular curve produced.
pa = Offset distance between the circular curves produced at the common radius.

Degree of Curve is the Central Angle subtended by an arc of 100.00 ft.

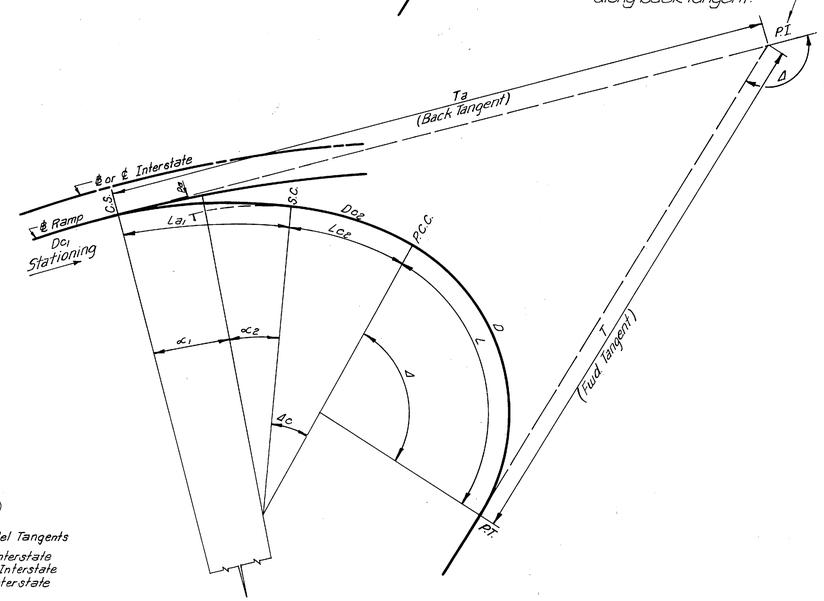
Spiral Data is computed from formulae and tables in "Transition Curves for Highways", United States Government Printing Office, 1940.

Compound Curve data subscripts increase in the direction of increasing stationing.

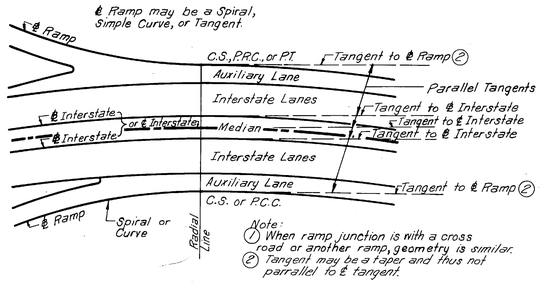
INTERSECTION ANGLES:
The angle given for the intersection of a roadway on curve (or spiral) and a tangent roadway is the angle between the tangent roadway and a tangent to the curve (or spiral) at the point of intersection.



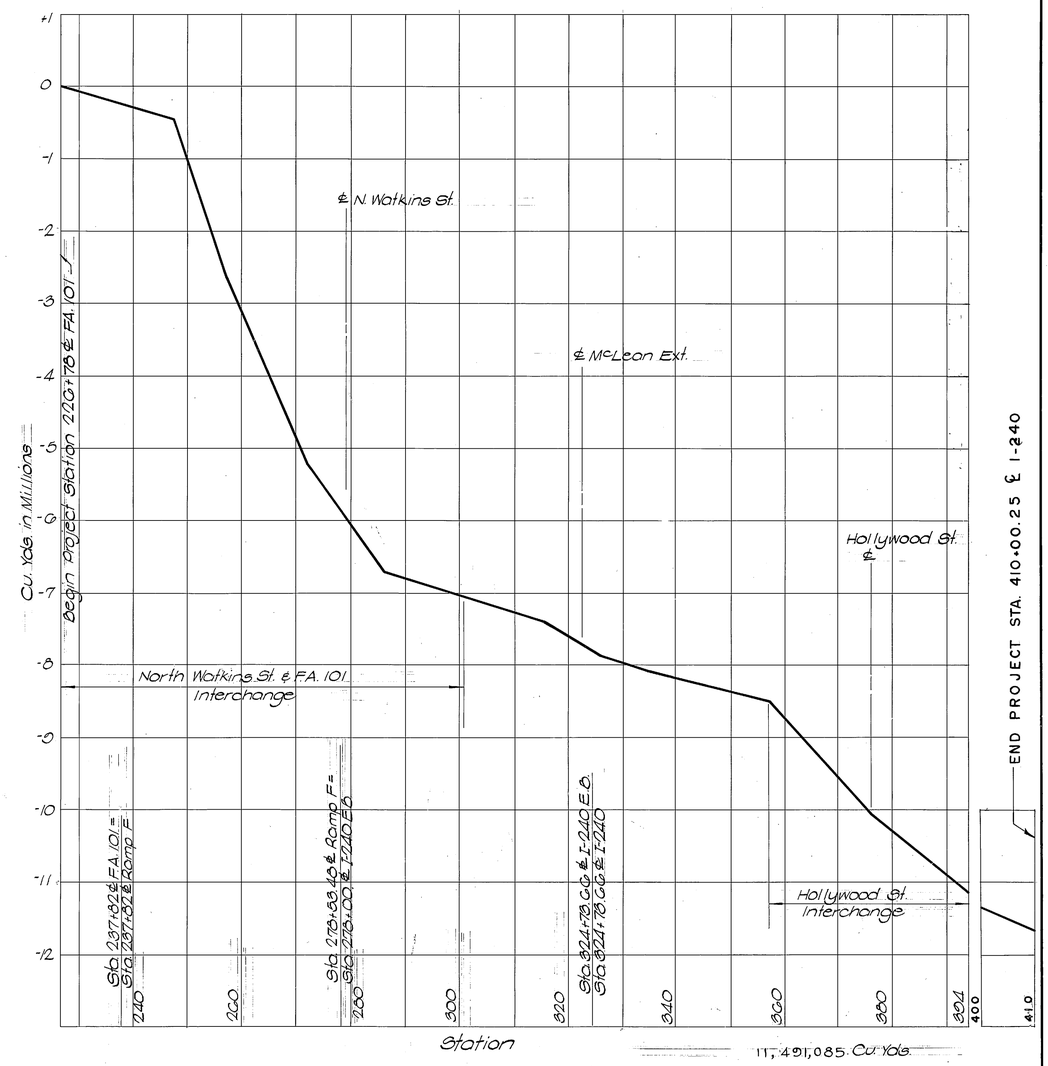
TYPICAL RAMP GEOMETRY INTERSTATE ON TANGENT



TYPICAL RAMP GEOMETRY INTERSTATE ON CURVE

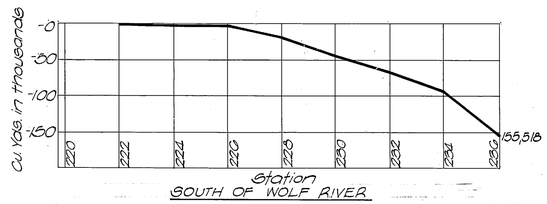


TYPICAL RAMP JUNCTION GEOMETRY INTERSTATE ON CURVE



MASS DIAGRAM

(For Information of Bidders Only)



STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
BUREAU OF HIGHWAYS

GENERAL NOTES

JOB NO.

TYPE	YEAR	PROJECT NO.	SHEET NO.
Const.	1974	EACI-240-1(94)4	24

REV. 3-29-74; CHANGED QUANTITIES ON FOOTNOTE NO. 8.

REV. 6-13-74; CORRECTED THE ITEM NUMBER ON FOOT NOTE 2, ADDED FOOT NOTE 3.

ESTIMATED ROADWAY QUANTITIES

	ITEM NO.	DESCRIPTION	UNIT	50	51	52	53	54	55	56	57	58	59	63	64	66	67	68	69	70	71	72	73	74	75			QUANTITY
	201-01	CLEARING AND GRUBBING	L. S.																									
(3)	201-02	MOBILIZATION	L. S.																									
	109-10	TRAINEE	EACH																									
	203-01	ROAD AND DRAINAGE EXCAVATION (UNCLASSIFIED)	CU. YD.	2,061	4,161	6,370	841	591	6,349	17,666	4,726	1,963	1,943	25,587	4,874													
	203-01.10	SANITARY LANDFILL EXCAVATION	CU. YD.	2514																								
(1) & (8)	203-06	WATER	M. GAL.	210	2,003	3,509	821	437	4,447	2,073	2,733	1,506	640	804	654				6		5	14	1		4			
(2)	203-10	EMBANKMENT (COMPLETE IN PLACE)	CU. YD.	86,752	829,037	1,389,118	325,017	172,875	1,761,027	870,038	884,576	596,808	336,360	354,160	288,016													
	204-07	BEDDING MATERIAL (PIPE) CLASS B	CU. YD.																367		322	943	55		273			
	204-08	FOUNDATION FILL MATERIAL	CU. YD.											141	78					117								
	206-01	FINAL DRESSING	PER STA.	16	12	12	11	7	17	15	7	8	15	14	11													
	604-01.01	CLASS A CONCRETE (ROADWAY)	CU. YD.					526.7						743	535.5													
	604-01.02	STEEL BAR REINFORCEMENT (ROADWAY)	LB.					87,080						121,705	71,088													
	607-02.02	15" CONCRETE PIPE CULVERT (CLASS III)	LIN. FT.											428	286	128		324	125	30	384	434		484	688			
	607-03.02	18" CONCRETE PIPE CULVERT (CLASS III)	LIN. FT.																		253	58	40	375				
	607-05.02	24" CONCRETE PIPE CULVERT (CLASS III)	LIN. FT.														80	205	110		320	160	210	143				
	607-05.04	24" CONCRETE PIPE CULVERT (CLASS V)	LIN. FT.																		235	277	205					
	607-06.02	30" CONCRETE PIPE CULVERT (CLASS III)	LIN. FT.																				175	485				
	607-07.02	36" CONCRETE PIPE CULVERT (CLASS III)	LIN. FT.																				350	355				
	607-08.02	42" CONCRETE PIPE CULVERT (CLASS III)	LIN. FT.																					820				
	607-08.04	42" CONCRETE PIPE CULVERT (CLASS V)	LIN. FT.																						618			
	607-09.04	48" CONCRETE PIPE CULVERT (CLASS V)	LIN. FT.																			826						

(1) WATER FOR EMBANKMENT INCLUDED ONLY IF EMBANKMENT PLACED BY CONVENTIONAL METHOD.

(2) MEASURED IN FINAL POSITION (EMBANKMENT MEASUREMENT), SEE SPECIAL PROVISION REGARDING SECTION 203-10

(8) 29,407 M.G. WATER FOR EMBANKMENT.
50 M.G. WATER FOR GRANULAR BACKFILL MATERIAL.

(3) SEE SPECIAL PROVISION.

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
BUREAU OF HIGHWAYS

QUANTITIES
ROADWAY

TYPE	YEAR	PROJECT NO.	SHEET NO.
Const.	1974	EACI-240-1(24)4	2T

REV. 3-29-74; CHANGED QUANTITIES ON FOOTNOTE NO. 5.

REV. 4-9-74; CORRECTED QUANTITIES ON ITEM NOS. G11-06.10 AND G11-06.12 ON SHEET NO. 74.

ESTIMATED ROADWAY QUANTITIES

ITEM NO.	DESCRIPTION	UNIT	50	51	52	53	54	55	56	57	58	59	63	64	66	67	68	69	70	71	72	73	74	75			QUANTITY
607-10.04	54" CONCRETE PIPE CULVERT (CLASS V)	LIN. FT.																640			780						
607-12.05	66" CONCRETE PIPE CULVERT (CLASS V)	LIN.FT.																			445						
607-13.05	72" CONCRETE PIPE CULVERT (CLASS V)	LIN.FT.																		328							
607-18.01	CORRUGATED METAL PIPE CULVERT (15")	LIN. FT.																				185					
607-18.04	CORRUGATED METAL PIPE CULVERT (24")	LIN. FT.																									
611-02.33	MANHOLE, TYPE B-48" (OVER 18' DEPTH)	EA.																			1						
611-02.35	MANHOLE, TYPE B - 54" (12' - 18' DEPTH)	EA.																1									
611-02.36	MANHOLE, TYPE B - 54" (OVER 18' DEPTH)	EA.																			1						
611-02.43	MANHOLE, TYPE B - 66" (OVER 18' DEPTH)	EA.																			1						
611-02.46	MANHOLE, TYPE B - 72" (OVER 18' DEPTH)	EA.																		2							
611-02.51	MANHOLE, TYPE C - 4' DIA. (8' - 12' DEPTH)	EA.																					1				
611-02.52	MANHOLE, TYPE C - 4' DIA. (12' - 18' DEPTH)	EA.																					1				
611-02.74	MANHOLE, TYPE E SANITARY (OVER 18' DEPTH)	EA.												1													
611-04.01	CATCHBASINS, TYPE 36	EA.													1				1					1			
611-04.02	CATCHBASINS, TYPE 37	EA.											3	2						2	2	3	6	2			
611-06.10	INLET, TYPE A 1	EA.																					2				
611-06.11	INLET, TYPE A 2	EA.																									
611-06.12	INLET, TYPE A 3	EA.																					1				
611-06.13	INLET, TYPE A 4	EA.																				1					
611-06.17	INLET, TYPE A 8	EA.																				1					
611-06.41	INLET, TYPE D 2	EA.																									
611-06.43	INLET, TYPE D 4	EA.																			1						
611-06.80	INLET, TYPE Q	EA.																		1							
611-06.81	INLET, TYPE R	EA.														1				2	1		1	1			
611-06.82	INLET, TYPE U	EA.														1	1				1						
G11-06.83	INLET, TYPE DS	EACH																									
611-07.01	CLASS A CONCRETE (PIPE ENDWALL)	CU.YD.											1.8	0.9	0.9	3.1	5.7	10.6		13.8	5.9	7.7	7.2	15.8			
611-07.02	STEEL BAR REINFORCING (PIPE ENDWALLS)	LB.											150	65	65	100	365	1,177		605	370	410	405	736			
703-01	CEMENT CONCRETE DITCH PAVING	CU.YD.	33	144	120	56	27	188	122	175	36	22	6	9													
703-02	CEMENT CONCRETE DITCH PAVING (REINFORCED)	CU.YD.				11	12	6					5	16													
707-02.00	END AND CORNER POST ASSEMBLIES (CHAIN LINK FENCE - 6 FOOT)	EA.			3						9	1		8													
(3) 707-02.01	CHAIN LINK FENCE (6 FOOT)	LIN.FT.			280				1416		1,237	1084		612													
707-03.00	END BRACED LINE AND CORNER POST ASSEMBLIES (STOCK FENCE)	EA.			4	7	6					3	12	9													
707-03.01	STOCK FENCE	LIN. FT.			582	896	730					305	1464	860													
707-04	WATER CROSSING	LIN.FT.		65		100	30			50		50	40	40													
(4) 708-02.01	MARKERS (R.O.W. POSTS)	EA.	4	12						2	2	2	6	7													
709-01	RUBBLE STONE (PLAIN) OR SACK. SAND-CEM. RIP-RAP	CU.YD.		3.13	13	8	32			17	22	15	230	106													
(6) & (7) 707-06	FENCE (FOUR STRAND BARBED WIRE)	LIN.FT.	2,575	1,765	618	1,348	685	1,484		1,210		1,300	1,548	872													
(3) 713-20	TRAFFIC CONTROL DEVICES (CONSTRUCTION)	L.S.																									
(3) 801-01	SEEDING (WITH MULCH)	UNITS	299	635	1052	631	316	1040	881	882	513	496	306	380													
(5) 801-03	WATER (SEEDING AND SODDING)	M.G.	158	321	537	321	159	531	441	452	259	251	201	172													
801-07	SEED (SUPPLEMENTAL APPLICATION)	LB.	67	143	237	142	71	234	167	199	115	112	80	76													
801-08	FERTILIZER (SUPPLEMENTAL APPLICATION)	TON	.5	1.1	1.8	1.1	.5	1.8	1.4	1.5	.9	.9	.7	.6													
802-05	TREE PROTECTION	EA.																									
803-01	SODDING (NEW SOD)	SQ.YD.	802	373	1,130	584	76	1130	2520	1,137	263	316	249	264													

(3) SEE SPECIAL PROVISION.

(6) FOR POST SPACING, HEIGHT, AND TYPE SEE DWG. NO. RD-F-10 (68).

(7) THE COST OF ALL LINE, CORNER, AND BRACED LINE POSTS TO BE INCLUDED IN THE UNIT PRICE BID FOR ITEM NO. 707-06.

(4) 34 TYPE A, 6 TYPE B, 7 TYPE C

(5) 5837 M.G. FOR SEEDING
141 M.G. FOR SODDING

QUANTITIES MAY BE INCREASED OR DECREASED AS DIRECTED BY THE ENGINEER.

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
BUREAU OF HIGHWAYS

QUANTITIES
ROADWAY

TYPE	YEAR	PROJECT NO.	SHEET NO.
Const.	1974	FACI-2401(204)4	2J

REV. 3-29-74; ADDED SHEET NOS. 8G-A & 8G-B AND CHANGED QUANTITIES ACCORDINGLY.

REV. 6-13-74; CORRECTED THE ITEM NUMBER ON FOOTNOTE 2, ADDED FOOT NOTE 3.

ESTIMATED ROADWAY QUANTITIES

	ITEM NO.	DESCRIPTION	UNIT	70	80	81	82	83	97	98	99	100	104	105	106	107	8G-A	8G-B	QUANTITY
	201-01	CLEARING AND GRUBBING	L. S.																90 %
(3)	201-02	MOBILIZATION	L. S.																90 %
	109-10	TRAINEE	EACH																13
	203-01	ROAD AND DRAINAGE EXCAVATION (UNCLASSIFIED)	CU. YD.	301	170	2050	1484	1677	2310	2280	461	2011					625	979	20,899
	203-01.10	SANITARY LANDFILL EXCAVATION	CU. YD.									15,428							17,037
(1) & (8)	203-06	WATER	M. GAL.	474	84	498	704	440	1557	1025	2,550	1,445		2		15	225	673	29,457
(2)	203-10	EMBANKMENT (COMPLETE IN PLACE)	CU. YD.	157,775	38428	197,474	278,723	174,183	616,707	408,770	1,002,955	572,325					89,286	265,064	11,646,603
	204-07	BEDDING MATERIAL (PIPE) CLASS B	CU. YD.											153		971		254	3,338
	204-08	FOUNDATION FILL MATERIAL	CU. YD.		44	60	60	70					306						984
	206-01	FINAL DRESSING	PER STA.			9	13	9	8	10	11	9					6	10	230
(9)	604-01.01	CLASS A CONCRETE (ROADWAY)	CU. YD.		260.3	425.2	389.9	620.1					2,481.8						5042
	604-01.02	STEEL BAR REINFORCEMENT (ROADWAY)	LB.		35,542	636,15	50,268	76,905					437,398						944,505
	607-02.02	15" CONCRETE PIPE CULVERT (CLASS III)	LIN. FT.		98	358	352	254					310	216	290	72	144	368	5,710
	607-03.02	18" CONCRETE PIPE CULVERT (CLASS III)	LIN. FT.		204								40	225	560			136	1,891
	607-05.02	24" CONCRETE PIPE CULVERT (CLASS III)	LIN. FT.										460		70	150			1,027
	607-05.04	24" CONCRETE PIPE CULVERT (CLASS V)	LIN. FT.																717
	607-06.02	30" CONCRETE PIPE CULVERT (CLASS III)	LIN. FT.																660
	607-07.02	36" CONCRETE PIPE CULVERT (CLASS III)	LIN. FT.										270						975
	607-08.02	42" CONCRETE PIPE CULVERT (CLASS III)	LIN. FT.																320
	607-08.04	42" CONCRETE PIPE CULVERT (CLASS V)	LIN. FT.											346					964
	607-09.04	48" CONCRETE PIPE CULVERT (CLASS V)	LIN. FT.																826

(1) WATER FOR EMBANKMENT INCLUDED ONLY IF EMBANKMENT PLACED BY CONVENTIONAL METHOD.

(2) MEASURED IN FINAL POSITION (EMBANKMENT MEASUREMENT), SEE SPECIAL PROVISION REGARDING SECTION 203-10

(8) 29,407 M.G. WATER FOR EMBANKMENT.
50 M.G. WATER FOR GRANULAR BACKFILL MATERIAL.

(9) TOTAL QUANTITY ROUNDED UP TO NEXT HIGHEST NUMBER.

(3) SEE SPECIAL PROVISION.

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
BUREAU OF HIGHWAYS

QUANTITIES
ROADWAY

TYPE	YEAR	PROJECT NO.	SHEET NO.
Const.	1974	EAC I-240-1(04)	4 2K

REV. 3-29-74; ADDED SHEET NOS. 8G-A & 8G-B AND CHANGED QUANTITIES ACCORDINGLY.

REV. 4-9-74; CORRECTED TOTAL QUANTITIES ON ITEM NOS. G11-06.10 & G11-06.12.

ESTIMATED ROADWAY QUANTITIES

	ITEM NO.	DESCRIPTION	UNIT	70	80	81	82	83	97	98	99	100	104	105	106	107	8G-A	8G-B	QUANTITY
	607-10.04	54" CONCRETE PIPE CULVERT (CLASS V)	LIN. FT.																870
	607-12.05	66" CONCRETE PIPE CULVERT (CLASS V)	LIN. FT.																445
	607-13.05	72" CONCRETE PIPE CULVERT (CLASS V)	LIN. FT.													1220		324	1,881
	607-18.01	CORRUGATED METAL PIPE CULVERT 15"	LIN. FT.													225			225
	607-18.04	CORRUGATED METAL PIPE CULVERT 24"	LIN. FT.											200		135			520
	611-02.33	MANHOLE, TYPE B- 48" (OVER 18' DEPTH)	EA.																1
	611-02.35	MANHOLE, TYPE B - 54" (12' - 18' DEPTH)	EA.																1
	611-02.36	MANHOLE, TYPE B - 54" (OVER 18' DEPTH)	EA.																1
	611-02.43	MANHOLE, TYPE B - 66" (OVER 18' DEPTH)	EA.																1
	611-02.46	MANHOLE, TYPE B - 72" (OVER 18' DEPTH)	EA.																2
	611-02.51	MANHOLE, TYPE C - 4' DIA. (8' - 12' DEPTH)	EA.																1
	611-02.52	MANHOLE, TYPE C - 4' DIA. (12' - 18' DEPTH)	EA.		1								1		1				4
	611-02.74	MANHOLE, TYPE SANITARY (OVER 18' DEPTH)	EA.																1
	611-04.01	CATCHBASINS, TYPE 36	EA.				2	2						1	1			1	10
	611-04.02	CATCHBASINS, TYPE 37	EA.			2											1		23
	611-06.10	INLET, TYPE A 1	EA.		4									1		1			6
	611-06.11	INLET, TYPE A 2	EA.										1		1				2
	611-06.12	INLET, TYPE A 3	EA.																1
	611-06.13	INLET, TYPE A 4	EA.										1						2
	611-06.17	INLET, TYPE A 8	EA.																1
	611-06.41	INLET, TYPE D 2	EA.										3	1	1	1			6
	611-06.43	INLET, TYPE D 4	EA.																1
	611-06.80	INLET, TYPE O	EA.															2	3
	611-06.81	INLET, TYPE R	EA.															2	8
	611-06.82	INLET, TYPE U	EA.												1				4
	611-06.83	INLET, TYPE D5	EACH												1				1
(9)	611-07.01	CLASS A CONCRETE (PIPE ENDWALL)	CU. YD.			1.8	1.8	0.9					9.8	14.6	11.8	12.4	1	17	153
	611-07.02	STEEL BAR REINFORCING (PIPE ENDWALLS)	LB.			130	130	65					540	645	742	817	65	1,282	9,224
	703-01	CEMENT CONCRETE DITCH PAVING	CU. YD.			35	31	53	36	71	66	15					1	38	1,284
	703-02	CEMENT CONCRETE DITCH PAVING (REINFORCED)	CU. YD.			7	6	9	9	11	2	7						71	172
	707-02.00	END AND CORNER POST ASSEMBLIES (CHAIN LINK FENCE - 6 FOOT)	EACH						6	2	2	9						2	42
(3)	707-02.01	CHAIN LINK FENCE (6 FOOT)	LIN. FT.						1584	200		1342						40	7,765
	707-03.00	END BRACED LINE AND CORNER POST ASSEMBLIES (STOCK FENCE)	EA.			7	7	9			2	3					6	10	85
	707-03.01	STOCK FENCE	LIN. FT.			905	1,300	946			300	380					800	1,064	10,532
	707-04	WATER CROSSING	LIN. FT.			40	40	80		70		60						15	680
(4)	708-02.01	MARKERS (R.O.W. POSTS)	EA.					4	2	2	2	2							47
	709-01	RUBBLE STONE (PLAIN) OR SACK, SAND-CEM. RIP-RAP	CU. YD.			16	18	5	121	163	80						5	111	4,738
(6) & (7)	707-06	FENCE (FOUR STRAND BARBED WIRE)	LIN. FT.			900	1,300	952		1,785	1,978								20,720
(3)	713-20	TRAFFIC CONTROL DEVICES (CONSTRUCTION)	L.S.																90 %
(3)	801-01	SEEDING (WITH MULCH)	UNITS	110	62	251	328	226	598	504	623	817					189	335	11,673
(5)	801-03	WATER (SEEDING AND SODDING)	M.G.	55	31	120	160	117	304	253	421	432					96	168	5,978
	801-07	SEED (SUPPLEMENTAL APPLICATION)	LB.	25	14	56	74	51	135	113	188	184					43	75	2,627
(9)	801-08	FERTILIZER (SUPPLEMENTAL APPLICATION)	TON	.2	.1	.4	.6	.4	1.0	.9	1.4	1.4					.3	.6	21
	802-05	TREE PROTECTION	EA.																50
	803-01	SODDING (NEW SOD)	SQ. YD.			285	446	300	530	144	906	2343					105	99	14,062

(3) SEE SPECIAL PROVISION.

(6) FOR POST SPACING, HEIGHT, AND TYPE, SEE DWG. NO. RD-F-10(68).

(7) THE COST OF ALL LINE, CORNER, AND BRACED LINE POSTS TO BE INCLUDED IN THE UNIT PRICE BID FOR ITEM NO. 707-06.

(9) TOTAL QUANTITY ROUNDED UP TO NEXT HIGHEST NUMBER.

(4) 34 TYPE A, 6 TYPE B, 7 TYPE C

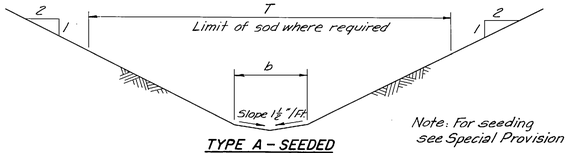
(5) 5837 M.G. FOR SEEDING
141 M.G. FOR SODDING

QUANTITIES MAY BE INCREASED OR DECREASED AS DIRECTED BY THE ENGINEER.

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
BUREAU OF HIGHWAYS

QUANTITIES
ROADWAY

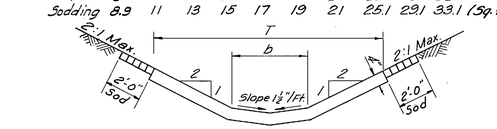
TYPE	YEAR	PROJECT NO.	SHEET NO.
Const.	1974	EACI-240-1(04)4	2L



Note: For seeding see Special Provision

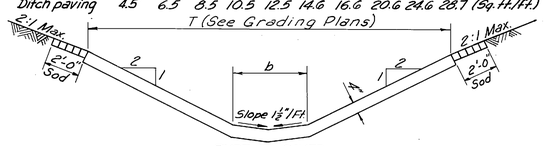
TYPE A – SEEDED
TYPE B – SODDED

Type	A0	A2	A4	A6	A8	A10	A12	A16	A20	A24
Type	B0	B2	B4	B6	B8	B10	B12	B16	B20	B24
b	0'	2'	4'	6'	8'	10'	12'	16'	20'	24'
T	8'	10'	12'	14'	16'	18'	20'	24'	28'	32'
Sodding	8.9	11	13	15	17	19	21	25.1	29.1	33.1 (Sq. ft./ft.)



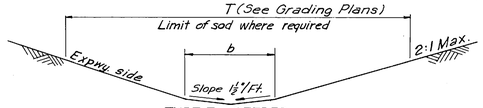
TYPE C PAVED (PARTIALLY)

Type	C0	C2	C4	C6	C8	C10	C12	C16	C20	C24
b	0'	2'	4'	6'	8'	10'	12'	16'	20'	24'
T	4'	6'	8'	10'	12'	14'	16'	20'	24'	28'
Ditch paving	4.5'	6.5	8.5	10.5	12.5	14.6	16.6	20.6	24.6	28.7 (Sq. ft./ft.)



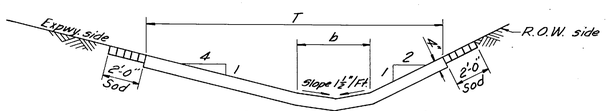
TYPE D – PAVED

Type	D0	D2	D4	D6	D8	D10	D12	D16	D20
b	0'	2'	4'	6'	8'	10'	12'	16'	20'



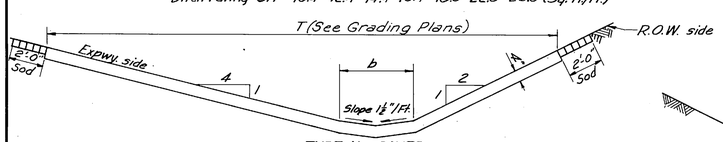
TYPE E – SEEDED
TYPE F – SODDED

Type	E2	E4	E6	E8	E10	E12	E16	E20
Type	F2	F4	F6	F8	F10	F12	F16	F20
b	2'	4'	6'	8'	10'	12'	16'	20'



TYPE G – PAVED (PARTIALLY)

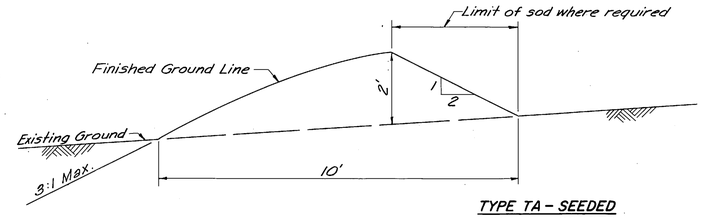
Type	G2	G4	G6	G8	G10	G12	G16	G20
b	2'	4'	6'	8'	10'	12'	16'	20'
T	8'	10'	12'	14'	16'	18'	22'	26'
Ditch Paving	8.4	10.4	12.4	14.4	16.4	18.5	22.5	26.5 (Sq. ft./ft.)



TYPE H – PAVED

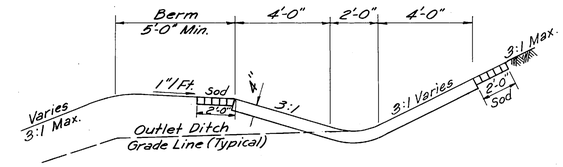
Type	H2	H4	H6	H8	H10	H12	H16	H20
b	2'	4'	6'	8'	10'	12'	16'	20'

SIDE DITCHES



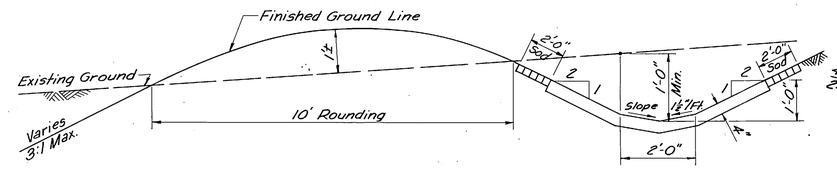
TYPE TA – SEEDED
TYPE TB – SODDED

Sodding - 4.5 (Sq. ft./ft.)



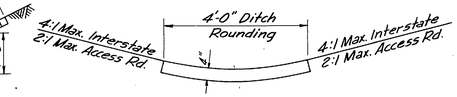
TYPE MC – PAVED
MID-SLOPE DITCH

Ditch Paving - 10.44 (Sq. ft./ft.)



TYPE TC – PAVED

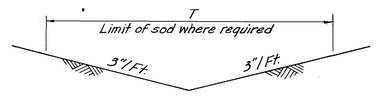
Ditch Paving - 6.5 (Sq. ft./ft.)



PAVED – MEDIAN

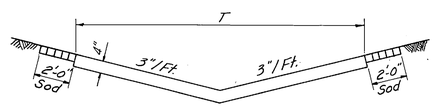
Ditch Paving - 4.0 (Sq. ft./ft.)

TOP OF SLOPE DITCHES



TYPE IA – SEEDED
TYPE IB – SODDED

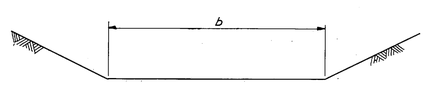
Type	IA4	IA6	IA8	IA10	IA12
Type	IB4	IB6	IB8	IB10	IB12
T	4'	6'	8'	10'	12'
Sodding	4.1	6.2	8.2	10.3	12.4 (Sq. ft./ft.)



TYPE IC – PAVED

Type	IC2	IC4	IC6	IC8	IC10	IC12
T	2'	4'	6'	8'	10'	12'
Ditch Paving	2.1	4.1	6.2	8.2	10.3	12.4 (Sq. ft./ft.)

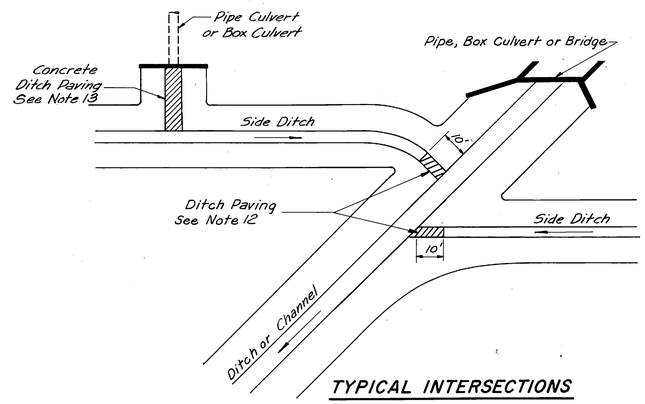
SIDE DITCHES



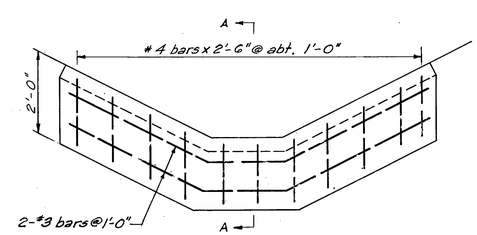
TYPE RC

Type	RC2	RC4	RC8	RC16	RC20	RC30	RC40
b	2'	4'	8'	16'	20'	30'	40'

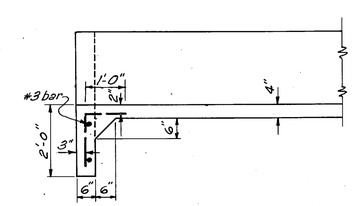
CHANNEL



TYPICAL INTERSECTIONS



END ELEVATION



SECTION A-A

END CUTOFF WALL - PAVED DITCH

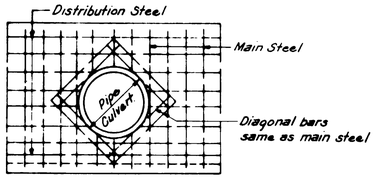
NOTES

1. DITCH TYPE, GRADE LINES, AND LOCATION ARE SHOWN ON INDIVIDUAL PLAN SHEETS.
2. CONCRETE DITCH PAVING SHALL BE CLASS A CONCRETE.
3. DITCH EXCAVATION SHALL BE INCLUDED IN AND PAID FOR AS ITEM 203.01 "ROAD & DRAINAGE EXCAVATION (UNCLASSIFIED)"
4. CHANNEL EXCAVATION SHALL BE PAID FOR AS ITEM 203-08 "CHANNEL EXCAVATION (UNCLASSIFIED).
5. SODDING WHERE REQUIRED SHALL BE PAID FOR AS ITEM 803-01"SODDING".
6. DITCH PAVING SHALL BE PAID FOR AS ITEM 703-01 "CONCRETE DITCH PAVING (PLAIN)" OR ITEM 703-02 "CONCRETE DITCH PAVING (REINFORCED)--PER SQ. FT.
7. UNLESS OTHERWISE INDICATED ON THE PLANS, ALL DITCH PAVING SHALL BE 4" PLAIN CONCRETE. WHEN REINFORCED CONCRETE DITCH PAVING IS INDICATED ON THE PLANS, IT SHALL BE 6" THICK AND REINFORCED WITH 6"x6"--10/10 WELDED STEEL WIRE FABRIC.
8. THE EXISTING CHANNEL OF RELOCATED CHANNELS SHALL BE FILLED TO EXTENT OF INSURING COMPLETE DIVERSION OF FLOW INTO RELOCATED CHANNEL. CONTRACTOR SHALL PROVIDE RIP-RAP TO PROTECT CHANNEL SIDES AT POINT OF DIVERSION AS DIRECTED BY ENGINEER, THE COST OF WHICH SHALL BE PAID FOR AS RIP RAP, ITEM NO. 709-01
9. ALL RELOCATED CHANNELS SHALL MEET EXISTING CHANNEL FLOW LINES UNLESS OTHERWISE NOTED AND SHALL BE PROVIDED WITH SMOOTH TRANSITION TO CROSS SECTION OF EXISTING CHANNEL AT EACH END OF RELOCATION.
10. A 10-FOOT VERTICAL CURVE SHALL BE USED AS TRANSITION BETWEEN CHANGE IN DITCH GRADES.
11. ALL EARTH SLOPES SHALL BE AS SHOWN ON GRADING PLANS.
12. AN EARTH OR SODDED DITCH WHICH INTERSECTS A PAVED DITCH OR CHANNEL SHALL BE PAVED TO A DEPTH OF 1' FOR A LENGTH OF 10' UPSTREAM OF THE EDGE OF PAVING ON THE PAVED DITCH OR CHANNEL. THIS 10' LENGTH OF PAVING IS DESIGNATED ON THE PLANS AS "DITCH PAVING" AND IS INCLUDED IN THE QUANTITIES.
13. C-2 DITCHES SHALL BE PROVIDED AT THE HEADWALLS OF PIPES WHICH DRAIN INLETS. THESE DITCHES ARE NOT SHOWN ON THE PLANS BUT ARE INCLUDED IN THE QUANTITIES FOR CONCRETE DITCH PAVING (PLAIN). GRADES OF THESE DITCHES SHALL BE SET TO MEET THE INSIDE EDGE OF THE BOTTOM OF THE SIDE DITCH OR, IF THERE IS NO SIDE DITCH, A 0.2' DROP SHALL BE PROVIDED BETWEEN THE HEADWALL AND THE TOE OF SLOPE.
14. END CUT-OFF WALL SHALL BE PROVIDED AT ENDS OF ALL PAVED DITCHES. QUANTITIES FOR STEEL BAR REINFORCEMENT AND CLASS A CONCRETE WILL NOT BE PAID FOR SEPARATELY, BUT SHALL BE CONSIDERED INCIDENTAL TO THE UNIT PRICE BID FOR CONCRETE DITCH PAVING ITEM 703-01 OR ITEM 703-02.
15. *Formed or sawed contraction joints (1/4" wide & 1" deep) will be required at a maximum of 20' intervals and one half (1/2) inch transverse premoulded fiber expansion joints will be required at 60' intervals in all concrete paved ditches, cost to be included in the unit price bid for the pay item for paved ditches.*

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
BUREAU OF HIGHWAYS

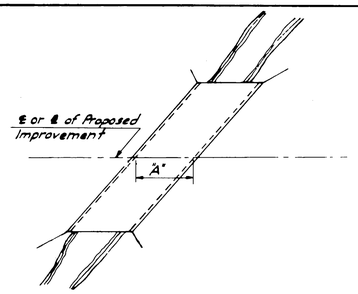
DITCH AND CHANNEL DETAILS

TYPE	YEAR	PROJECT NO.	SHEET NO.
Const.	1974	EACI-240-1(04)	2M



Note:
Reinforcing steel to be field cut. Diagonal bars are same size as main steel and cost shall be incidental to other items.

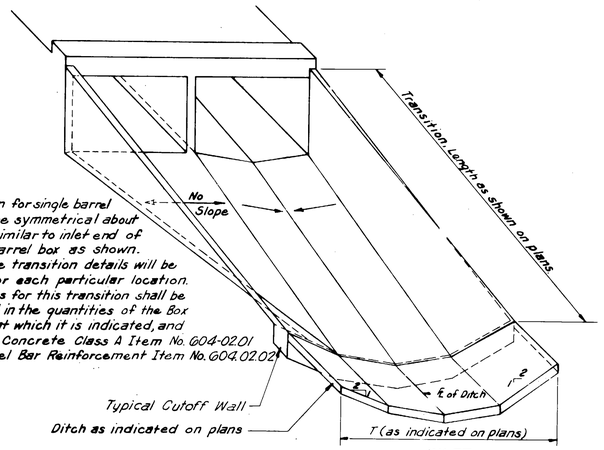
TYPICAL DETAIL FOR PIPE ENTERING WALL



Any box drainage structure, having a clear span or multiple of spans, the length of which is more than 20 feet (dimension "A"), measured along the center line or base line of the proposed improvement and between the faces of end supports shall be considered as a "Box Type Bridge."
The location, description and estimated construction quantities for all "Box Type Bridges" in this project are given on the "Estimated Bridge Quantities" sheet.

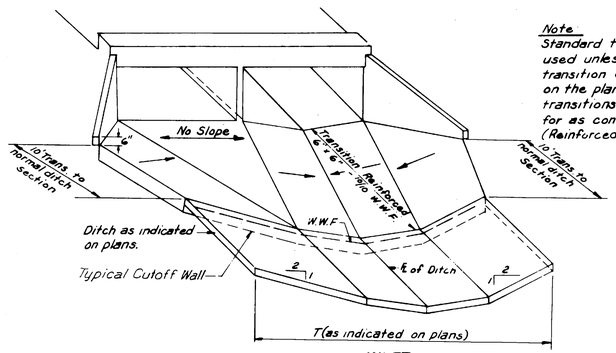
BOX TYPE BRIDGE

Note
Transverse expansion joints of ¾" Bituminous fiber joint material shall be placed at 30' intervals and at junctions with culvert headwalls.
Cost of transverse expansion joints is incidental to class A concrete.



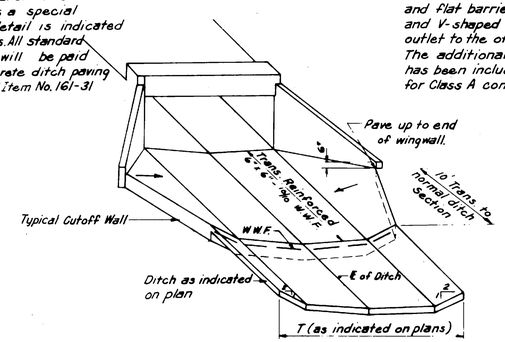
Note:
Transition for single barrel box to be symmetrical about ℄ and similar to inlet end of double barrel box as shown. Separate transition details will be made for each particular location. Quantities for this transition shall be included in the quantities of the Box Culvert at which it is indicated, and shall be Concrete Class A Item No. 604-02.01 and Steel Bar Reinforcement Item No. 604.02.02.

INLET



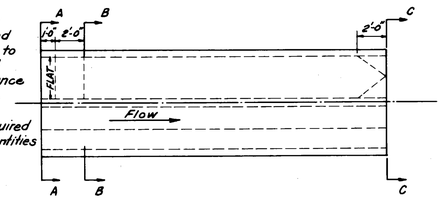
INLET

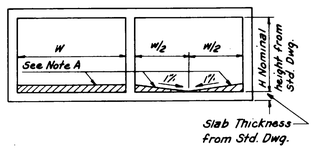
Note
Standard transition shall be used unless a special transition detail is indicated on the plans. All standard transitions will be paid for as concrete ditch paving (Reinforced) Item No. 161-31



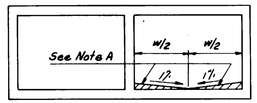
STANDARD TRANSITION DETAILS AT INLET AND OUTLET ENDS OF SINGLE BARREL BOX CULVERTS WITH WINGWALLS.
TYPE "C"

NOTE A:
Cross hatched areas (Sec. A-A, B-B & C-C) below show Class A concrete to be poured monolithic with slab of box to form V-bottom in one barrel and flat barrier at the entrance and V-shaped fillets at the outlet to the other.
The additional concrete required has been included in the quantities for Class A concrete.

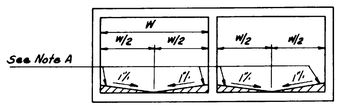




SECTION A-A

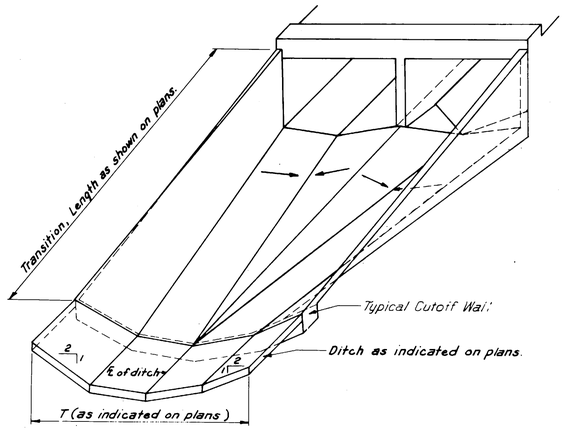


SECTION B-B

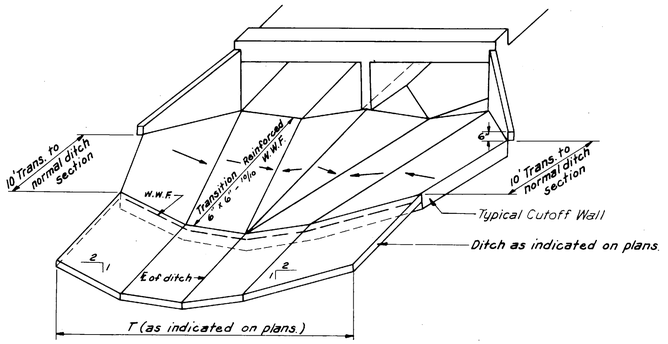


SECTION C-C

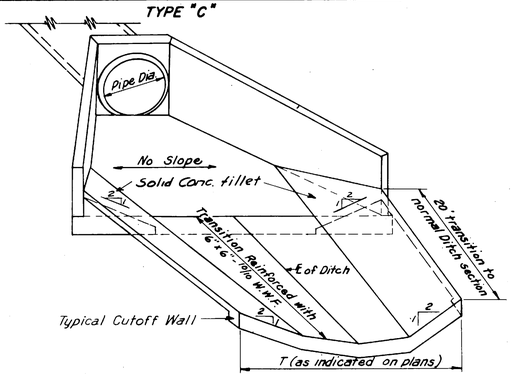
INVERT MODIFICATION FOR STANDARD BOX CULVERTS AND BOX TYPE BRIDGES



OUTLET
TRANSITION FROM VERTICAL WALL TO PAVED DITCH AT INLET AND OUTLET OF DOUBLE BARREL BOX CULVERTS
TYPE A



OUTLET
STANDARD TRANSITION DETAIL AT INLET AND OUTLET ENDS OF DOUBLE BARREL BOX CULVERT WITH WINGWALLS
TYPE B



STANDARD TRANSITION FROM TYPE D AND TYPE E HEADWALL TO PAVED DITCH AT INLET AND OUTLET OF PIPE CULVERTS
TYPE "D"

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
BUREAU OF HIGHWAYS

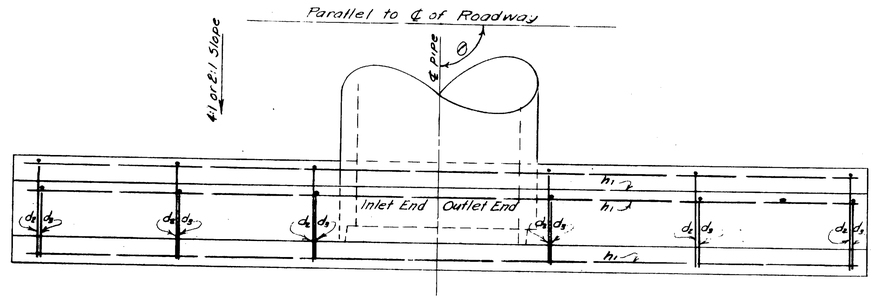
DRAINAGE STRUCTURE AND TRANSITION TYPES A, B, C & D DETAILS

JOB NO.

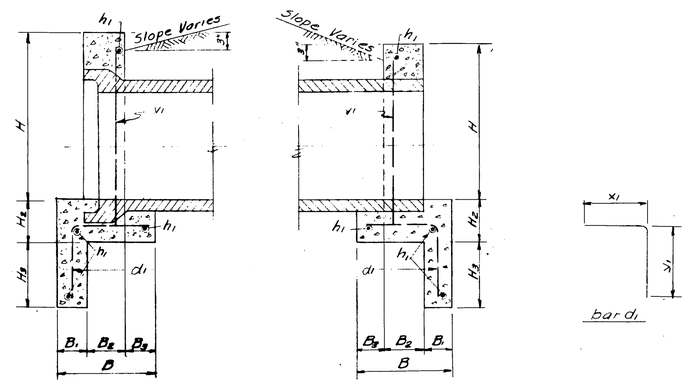
TYPE	YEAR	PROJECT NO.	SHEET NO.
Const	1974	EAC I-240-1(24)4	2N

θ = 90°

	Pipe Diam.	L	B	B_1	B_2	B_3	H	H_2	H_3	#5 h_1 bar No.	Len.	#5 h_2 bar No.	Len.	#5 v_1 bar No.	Len.	#5 d_1 bar No.	X_1	Y_1	Len.	#5 d_2 bar No.	X_2	Y_2	Len.	#5 d_3 bar No.	X_3	Y_3	Len.	Conc. C.Y.	Steel lbs.
Slope 4:1	A-12-4	3'-1"	1'-9"	6"	9"	6"	1'-9"	9"	1'-3"	4	3'-9"	0	0	4	2'-3"	4	1'-6"	1'-5"	2'-11"									0.70	40
	A-15-4	3'-9"	1'-9"	6"	9"	6"	2'-1"	9"	1'-3"	4	7'-3"	0	0	6	2'-6"	6	1'-6"	1'-5"	2'-11"									0.90	65
	A-18-4	4'-5"	1'-9"	6"	9"	6"	2'-4"	9"	1'-3"	4	8'-6"	0	0	6	2'-9"	6	1'-6"	1'-5"	2'-11"									1.10	70
	A-24-4	5'-10"	1'-9"	6"	9"	6"	2'-11"	9"	1'-3"	4	11'-3"	0	0	8	3'-3"	9	1'-6"	1'-5"	2'-11"									1.60	100
	A-30-4	7'-1"	2'-0"	6"	12"	6"	3'-6"	9"	1'-3"	6	13'-0"	2	5'-6"	0	0					9	1'-9"	1'-0"	2'-9"	8	1'-3"	5'-0"	0.33	3.30	170
	A-36-4	8'-4"	3'-0"	1'-0"	12"	1'-0"	4'-0"	1'-0"	1'-3"	6	14'-3"	2	6'-6"	0	0					11	2'-9"	1'-0"	3'-9"	10	1'-9"	6'-0"	7'-9"	5.00	240
	A-42-4	9'-9"	3'-6"	1'-3"	12"	1'-3"	4'-6"	1'-0"	1'-3"	6	19'-3"	2	7'-9"	0	0					11	3'-3"	1'-0"	4'-3"	10	2'-0"	6'-6"	8'-6"	6.80	230
	A-48-4	11'-2"	4'-0"	1'-6"	12"	1'-6"	5'-1"	1'-6"	1'-6"	6	22'-0"	2	8'-10"	0	0					13	3'-9"	1'-3"	5'-0"	12	2'-3"	7'-9"	10'-0"	9.70	350
Slope 2:1	A-12-2	3'-0"	1'-9"	6"	9"	6"	1'-9"	9"	1'-3"	4	5'-9"	0	0	4	2'-6"	4	1'-6"	1'-5"	2'-11"									0.70	50
	A-15-2	3'-6"	1'-9"	6"	9"	6"	2'-1"	9"	1'-3"	4	6'-3"	0	0	4	2'-6"	4	1'-6"	1'-5"	2'-11"									0.80	50
	A-18-2	4'-0"	1'-9"	6"	9"	6"	2'-4"	9"	1'-3"	4	7'-9"	0	0	6	2'-9"	6	1'-6"	1'-5"	2'-11"									1.10	70
	A-24-2	5'-4"	1'-9"	6"	9"	6"	2'-11"	9"	1'-3"	4	10'-3"	0	0	6	3'-3"	7	1'-6"	1'-5"	2'-11"									1.50	90
	A-30-2	6'-7"	2'-0"	6"	12"	6"	3'-6"	9"	1'-3"	6	13'-0"	2	5'-0"	0	0					9	1'-9"	1'-0"	2'-9"	8	1'-3"	[illegible]	[illegible]	3.00	[illegible]
	A-36-2	7'-10"	3'-0"	1'-0"	12"	1'-0"	4'-0"	1'-0"	1'-3"	6	15'-3"	2	6'-0"	0	0					11	2'-9"	1'-0"	3'-9"	10	1'-9"	6'-0"	7'-9"	4.75	240
	A-42-2	9'-2"	3'-6"	1'-3"	12"	1'-3"	4'-6"	1'-0"	1'-3"	6	18'-0"	2	7'-0"	0	0					11	3'-3"	1'-0"	4'-3"	10	2'-0"	6'-6"	8'-6"	6.30	[illegible]
	A-48-2	10'-6"	4'-0"	1'-6"	12"	1'-6"	5'-1"	1'-6"	1'-6"	6	20'-9"	2	8'-0"	0	0					13	3'-9"	1'-3"	5'-0"	12	2'-3"	7'-9"	10'-0"	9.10	340



PLAN θ = 90°

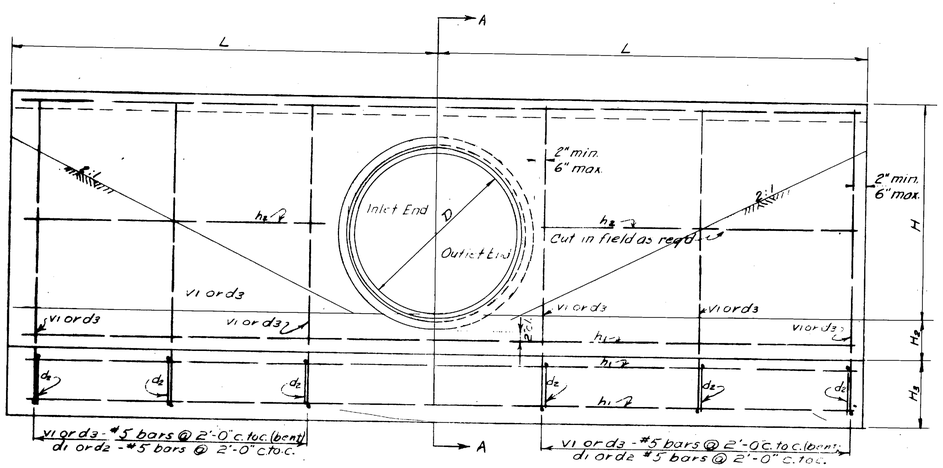


SECTION AA

END DETAILS FOR PIPE UNDER 30" DIAMETER

GENERAL NOTES

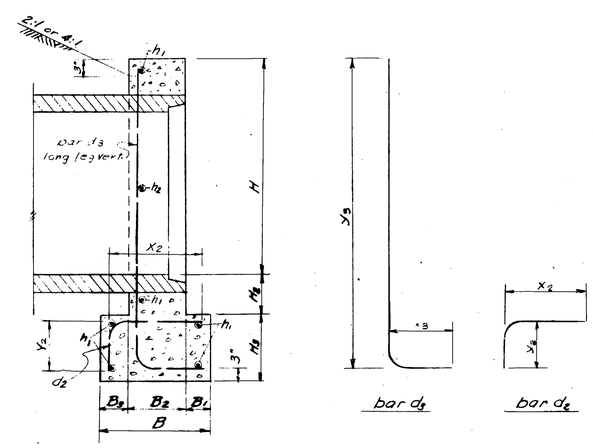
1. Specifications are the Standard Road & Bridge Specifications of the Tennessee Dept. of Highways & Public Works.
2. Class "A" Concrete shall be used throughout
3. Reinforcing steel: see specifications; all dimensions are to center of bar unless otherwise noted.
4. All excavation and backfill necessary for the conc. of the concrete pipe culverts headwalls shall be considered incidental to the contract; and no additional compensation will be allowed.
5. Field adjustments: the location, grade and size of pipe culvert may be modified at the direction of the Engineer to better meet conditions in the field.
6. Forms and Finish: see specifications.
7. All reinforcing steel shall clear face of concrete by 2" except as noted.
8. Chamfer all exposed corners with ¾" bevel.
9. Basis of Payment: Item No. 611-07.01 Class "A" Conc.-Cu. Yds.
   Item No. 611-07.02 Steel Bar Reinf.-lbs.
10. Quantities are Bar List are for one Headwall only.



Elevation θ = 90°

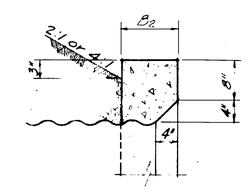
Dimensions are for pipe sizes 48" & under.
Steel shown for pipes 30 to 48" diameter

TYPE A HEADWALL



SECTION AA

END DETAILS FOR PIPE 30" TO 40' DIAMETER.



SECTION

END DETAILS FOR CORRUGATED METAL PIPE

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
BUREAU OF HIGHWAYS

TYPE A HEADWALL
CONCRETE PIPE CULVERTS
12" - 48"

PROJECT DETAIL DWG. NO. 5

TYPE	YEAR	PROJECT NO.	SHEET NO.
Const.	1974	EAC I-240-1(94)4	20"

θ = 30°

	Pipe Diam	L	L_1	L_2	W	Z	B	B_1	B_2	B_3	H	H_1	H_2	H_3	#5 h_1 bar				#5 h_2 bar				#5 h_3 bar				#5 v_1 bar		#5 d_1 bar				#5 d_2 bar				#5 d_3 bar				Conc.	Steel
															No.	w	l	Len.	No.	w	l	Len.	No.	w	l	Len.	No.	Len.	No.	r	s	Len.	No.	r	s	Len.	No.	x	y	Len.	Cu.Yd.	lbs.
Slope 4:1	B12-4	3'-2"	8"	1'-4"	5'-3"	2'-7"	1'-9"	6"	9"	6"	1'-9"	1'-4"	9"	1'-3"	2	4'-11"	2'-10"	7'-9"	1	5'-5"	3'-4"	8'-9"	1	5'-9"	3'-8"	9'-5"	6	2'-3"	6	1'-6"	1'-3"	2'-9"									.98	66
	B15-4	3'-4"	11"	1'-7"	6'-0"	3'-0"	1'-9"	6"	9"	6"	2'-1"	1'-4"	9"	1'-3"	2	5'-8"	3'-0"	8'-8"	1	6'-2"	3'-6"	9'-8"	1	6'-6"	3'-10"	10'-4"	6	2'-6"	6	1'-6"	1'-3"	2'-9"									1.15	72
	B18-4	3'-10"	1'-1"	1'-10"	7'-0"	3'-6"	1'-9"	6	9"	6"	2'-4"	1'-5"	9"	1'-3"	2	6'-8"	3'-6"	10'-2"	1	7'-2"	4'-0"	11'-2"	1	7'-6"	4'-4"	11'-10"	7	2'-9"	7	1'-6"	1'-3"	2'-9"									1.39	87
	B24-4	5'-1"	1'-5"	2'-6"	9'-0"	4'-6"	1'-9"	6"	9"	6"	2'-11"	1'-9"	9"	1'-3"	2	8'-8"	4'-9"	13'-5"	1	9'-2"	5'-3"	14'-5"	1	9'-6"	5'-7"	15'-1"	9	3'-3"	9	1'-6"	1'-3"	2'-9"									1.99	112
	B30-4	6'-0"	1'-7"	2'-10"	11'-0"	5'-6"	2'-0"	6"	1'-0"	6"	3'-6"	2'-1"	9"	1'-3"	2	10'-8"	5'-6"	16'-2"	3	11'-2"	6'-2"	17'-4"	2	11'-6"	6'-6"	18'-0"							11	1'-9"	1'-0"	2'-9"	10	1'-3"	5'-0"	6'-3"	4.00	232
	B36-4	7'-1"	1'-10"	3'-4"	13'-0"	6'-6"	3'-0"	1'-0"	1'-0"	1'-0"	4'-0"	2'-4"	1'-0"	1'-3"	2	12'-4"	6'-5"	18'-9"	3	13'-4"	7'-4"	20'-8"	2	13'-10"	7'-11"	21'-9"							12	2'-9"	1'-0"	3'-9"	11	1'-9"	5'-9"	7'-6"	6.18	290
	B42-4	8'-4"	2'-2"	3'-11"	15'-2"	7'-7"	3'-6"	1'-3"	1'-0"	1'-3"	4'-6"	2'-8"	1'-0"	1'-3"	2	14'-6"	7'-8"	22'-2"	3	15'-6"	8'-8"	24'-2"	2	16'-0"	9'-2"	25'-2"							13	3'-3"	1'-0"	4'-3"	12	2'-0"	6'-9"	8'-9"	8.27	334
	B48-4	9'-6"	2'-5"	4'-6"	17'-6"	8'-9"	4'-0"	1'-6"	1'-0"	1'-6"	5'-1"	3'-0"	1'-6"	1'-6"	2	16'-7"	8'-7"	25'-2"	3	17'-10"	9'-10"	27'-8"	2	18'-8"	10'-8"	29'-4"							15	3'-9"	1'-3"	5'-0"	13	2'-3"	7'-6"	9'-9"	11.97	410
Slope 2:1	B12-2	2'-8"	8"	1'-4"	4'-6"	2'-3"	1'-9"	6"	9"	6"	1'-9"	1'-6"	9"	1'-3"	2	4'-2"	2'-4"	6'-6"	1	4'-8"	2'-10"	7'-6"	1	5'-0"	3'-2"	8'-2"	6	2'-3"	6	1'-6"	1'-3"	2'-9"									.81	60
	B15-2	3'-0"	11"	1'-7"	4'-10"	2'-5"	1'-9"	6"	9"	6"	2'-1"	1'-5"	9"	1'-3"	2	4'-6"	2'-8"	7'-2"	1	5'-0"	3'-2"	8'-2"	1	5'-4"	3'-6"	8'-10"	6	2'-6"	6	1'-6"	1'-3"	2'-9"									.92	65
	B18-2	3'-6"	1'-1"	1'-10"	5'-8"	2'-10"	1'-9"	6"	9"	6"	2'-4"	1'-7"	9"	1'-3"	2	5'-4"	3'-2	8'-6"	1	5'-10"	3'-8"	9'-6"	1	6'-2"	4'-0"	10'-2"	6	2'-9"	6	1'-6"	1'-3"	2'-9"									1.13	71
	B24-2	4'-8"	1'-5"	2'-6"	7'-10"	3'-11"	1'-9"	6"	9"	6"	2'-11"	1'-10"	9"	1'-3"	2	7'-6"	4'-4"	11'-10"	1	8'-0"	4'-10"	12'-10"	1	8'-4"	5'-2"	13'-6"	8	3'-3"	8	1'-6"	1'-3"	2'-9"									1.66	93
	B30-2	5'-6"	1'-7"	2'-10"	10'-0"	5'-0"	2'-0"	6"	1'-0"	6"	3'-6"	2'-2"	9"	1'-3"	2	9'-6"	5'-2"	14'-8"	3	10'-2"	5'-8"	15'-10"	2	10'-6"	6'-0"	16'-6"							10	1'-9"	1'-0"	2'-9"	9	1'-3"	5'-0"	6'-3"	3.60	176
	B36-2	6'-8"	1'-10"	3'-4"	12'-0"	6'-0"	3'-0"	1'-0"	1'-0"	1'-0"	4'-0"	2'-6"	1'-0"	1'-3"	2	11'-4"	6'-0"	17'-4"	3	12'-4"	7'-2	19'-6"	2	12'-10"	7'-8"	20'-4"							11	2'-9"	1'-0"	3'-9"	10	1'-9"	5'-9"	7'-6"	5.74	261
	B42-2	7'-8"	2'-2"	3'-11"	14'-0"	7'-0"	3'-6"	1'-3"	1'-0"	1'-3"	4'-6"	2'-10"	1'-0"	1'-3"	2	13'-6"	7'-0"	20'-6"	3	14'-4"	8'-0"	22'-4"	2	14'-10"	8'-6"	23'-4"							11	3'-3"	1'-0"	4'-3"	11	2'-0"	6'-9"	8'-9"	7.61	309
	B48-2	8'-9"	2'-5"	4'-6"	16'-2"	8'-1"	4'-0"	1'-6"	1'-0"	1'-6"	5'-1"	3'-2"	1'-6"	1'-6"	2	15'-3"	7'-10"	23'-1"	3	16'-6"	9'-1"	25'-7"	2	17'-4"	9'-10"	27'-2"							14	3'-9"	1'-3"	5'-0"	13	2'-3"	7'-6"	9'-9"	11.01	392

θ = 45°

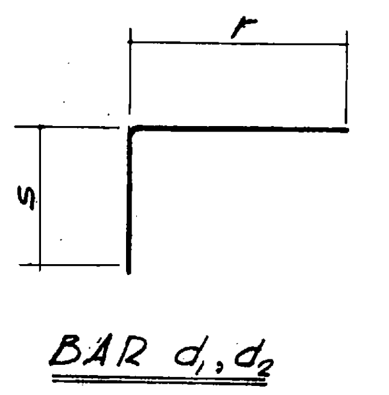
	Pipe Diam.	L	L_1	L_2	W	Z	B	B_1	B_2	B_3	H	H_1	H_2	H_3	#5 h_1 bar				#5 h_2 bar				#5 h_3 bars				#5 v_1 bars		#5 d_1 bars				#5 d_2 bars				#5 d_3 bars				Conc.	Steel
															No.	w	l	Len	No	w	l	Len	No.	w	l	Len	No.	Len.	No.	r	s	Len	No.	r	s	Len.	No	x	y	Len	cu.yd.	lbs.
Slope 4:1	B12-4	3'-3"	8"	1'-4"	3'-8"	2'-7"	1'-9"	6"	9"	6"	1'-9"	1'-5"	9"	1'-3"	2	3'-5"	3'-0"	6'-5"	1	3'-10"	3'-5"	7'-3"	1	4'-0"	3'-7"	7'-7"	6	2'-3"	6	1'-6"	1'-3"	2'-9"									0.81	62
	B15-4	3'-6"	11"	1'-7"	4'-0"	3'-0"	1'-9"	6"	9"	6"	2'-1"	1'-5"	9"	1'-3"	2	3'-9"	3'-3"	7'-0"	1	4'-2"	3'-8"	7'-10"	1	4'-4"	3'-10"	8'-2"	6	2'-6"	6	1'-6"	1'-3"	2'-9"									0.91	64
	B18-4	4'-0"	1'-1"	1'-10"	5'-0"	3'-6"	1'-9"	6"	9"	6"	2'-4"	1'-7"	9"	1'-3"	2	4'-9"	3'-9"	8'-6"	1	5'-2"	4'-2"	9'-4"	1	5'-4"	4'-4"	9'-8"	6	2'-9"	6	1'-6"	1'-3"	2'-9"									1.14	72
	B24-4	5'-5"	1'-5"	2'-6"	6'-4"	4'-6"	1'-9"	6"	9"	6"	2'-11"	1'-11"	9"	1'-3"	2	6'-1"	5'-2"	11'-3"	1	6'-6"	5'-7"	12'-1"	1	6'-8"	5'-9"	12'-5"	7	3'-3"	7	1'-6"	1'-3"	2'-9"									1.62	114
	B30-4	6'-5"	1'-7"	2'-10"	7'-9"	5'-6"	2'-0"	6"	1'-0"	6"	3'-6"	2'-4"	9"	1'-3"	2	7'-6"	6'-2"	13'-8"	3	7'-11"	6'-7"	14'-6"	2	8'-1"	6'-9"	14'-10"							9	1'-9"	1'-0"	2'-9"	8	1'-3"	5'-0"	6'-3"	3.30	183
	B36-4	7'-6"	1'-10"	3'-4"	9'-3"	6'-6"	3'-0"	1'-0"	1'-0"	1'-0"	4'-0"	2'-7"	1'-0"	1'-3"	2	8'-9"	7'-0"	15'-9"	3	9'-5"	7'-8"	17'-1"	2	9'-10"	8'-1"	17'-11"							10	2'-9"	1'-0"	3'-9"	9	1'-9"	5'-9"	7'-6"	5.06	237
	B42-4	8'-10"	2'-2"	3'-11"	10'-9"	7'-7"	3'-6"	1'-3"	1'-0"	1'-3"	4'-6"	3'-0"	1'-0"	1'-3"	2	10'-3"	8'-4"	18'-7"	3	10'-11"	9'-0"	19'-11"	2	11'-4"	9'-5	19'-9"							12	3'-3"	1'-0"	4'-3"	11	2'-0"	6'-9"	8'-9"	6.78	290
	B48-4	10'-0"	2'-5"	4'-6"	12'-4"	8'-9"	4'-0"	1'-6"	1'-0"	1'-6"	5'-1"	3'-4"	1'-6"	1'-6"	2	11'-8"	9'-4"	21'-0"	3	12'-7"	10'-3"	22'-10"	2	13'-2"	10'-10"	24'-0"							12	3'-9"	1'-3"	5'-0"	11	2'-3"	7'-6"	9'-9"	9.68	340
Slope 2:1	B12-2	2'-8"	8"	1'-4"	3'-2"	2'-3"	1'-9"	6"	9"	6"	1'-9"	1'-3"	9"	1'-3"	2	2'-11"	2'-5"	5'-4"	1	3'-4"	2'-10"	6'-2"	1	3'-6"	3'-0"	6'-6"	5	2'-3"	5	1'-6"	1'-3"	2'-9"									0.65	50
	B15-2	3'-0"	11"	1'-7"	3'-5"	2'-5"	1'-9"	6"	9"	6"	2'-1"	1'-5"	9"	1'-3"	2	3'-2"	2'-9"	5'-11"	1	3'-7"	3'-2"	6'-9"	1	3'-9"	3'-4"	7'-1"	6	2'-6"	6	1'-6"	1'-3"	2'-9"									0.74	54
	B18-2	3'-6"	1'-1"	1'-10"	4'-0"	2'-10"	1'-9"	6"	9"	6"	2'-4"	1'-7"	9"	1'-3"	2	3'-9"	3'-3"	7'-0"	1	4'-2"	3'-8"	7'-10"	1	4'-4"	3'-10"	8'-2"	5	2'-9"	5	1'-6"	1'-3"	2'-9"									0.90	77
	B24-2	4'-8"	1'-5"	2'-6"	5'-6"	3'-11"	1'-9"	6"	9"	6"	2'-11"	1'-10"	9"	1'-3"	2	5'-3"	4'-5"	9'-8"	1	5'-8"	4'-10"	10'-6"	1	5'-10"	5'-0"	10'-10"	6	3'-3"	6	1'-6"	1'-3"	2'-9"									1.30	85
	B30-2	5'-6"	1'-7"	2'-10"	7'-1"	5'-0"	2'-0"	6"	1'-0"	6"	3'-6"	2'-2"	9"	1'-3"	2	6'-10"	5'-3"	12'-1"	3	7'-3"	5'-8"	12'-11"	2	7'-5"	5'-10"	13'-3"							9	1'-9"	1'-0"	2'-9"	8	1'-3"	5'-0"	6'-3"	2.94	171
	B36-2	6'-8"	1'-10"	3'-4"	8'-6"	6'-0"	3'-0"	1'-0"	1'-0"	1'-0"	4'-0"	2'-6"	1'-0"	1'-3"	2	8'-0"	6'-2"	14'-2"	3	8'-8"	6'-10"	15'-6"	2	9'-4"	7'-3"	16'-7"							9	2'-9"	1'-0"	3'-9"	8	1'-9"	5'-9"	7'-6"	4.57	210
	B42-2	7'-8"	2'-2"	3'-11"	9'-10"	7'-0"	3'-6"	1'-3"	1'-0"	1'-3"	4'-6"	2'-10"	1'-0"	1'-3"	2	9'-4"	7'-2"	16'-6"	3	10'-0"	7'-10"	17'-10"	2	10'-5"	8'-3"	18'-8"							10	3'-3"	1'-0"	4'-3"	9	2'-0"	6'-9"	8'-9"	5.95	251
	B48-2	8'-9"	2'-5"	4'-6"	11'-5"	8'-1"	4'-0"	1'-6"	1'-0"	1'-6"	5'-1"	3'-2"	1'-6"	1'-6"	2	10'-9"	8'-1"	18'-10"	3	11'-8"	9'-0"	20'-8"	2	12'-3"	9'-7"	21'-10"							11	3'-9"	1'-3"	5'-0"	10	2'-3"	7'-6"	9'-9"	8.73	308

θ = 60°

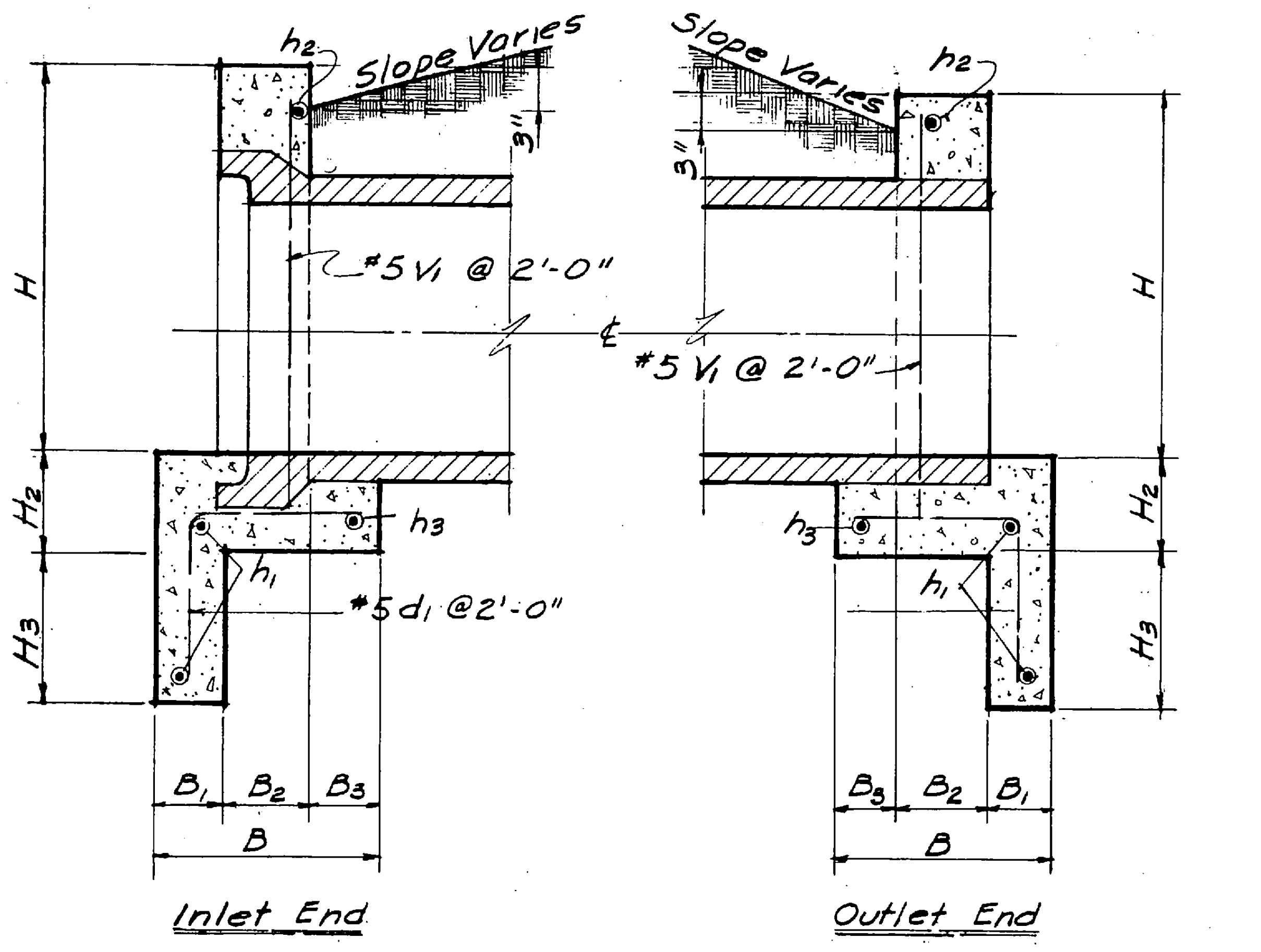
	Pipe Diam.	L	L_1	L_2	W	Z	B	B_1	B_2	B_3	H	H_1	H_2	H_3	#5 h_1 bars				#5 h_2 bars				#5 h_3 bars				#5 v_1 bars		#5 d_1 bars				#5 d_2 bars				#5 d_3 bars				Conc.	Steel
															No.	w	l	Len.	No.	w	l	Len.	No.	w	l	Len.	No.	Len	No	r	s	Len	No.	r	s	Len.	No.	x	Y	Len.	Cu.Yd.	lbs.
Slope 4:1	B12-4	3'-5"	8"	1'-4"	3'-0"	2'-7"	1'-9"	6"	9"	6"	1'-9"	1'-6"	9"	1'-3"	2	2'-9"	3'-2"	5'-11"	1	2'-11"	3'-4"	6'-4"	1	3'-1"	3'-6"	6'-7"	5	2'-3"	5	1'-6"	1'-3"	2'-9"									0.75	52
	B15-4	3'-9"	11"	1'-7"	3'-6"	3'-0"	1'-9"	6"	9"	6"	2'-1"	1'-7"	9"	1'-3"	2	3'-3"	3'-6"	6'-9"	1	3'-5"	3'-8"	7'-1"	1	3'-7"	3'-10"	7'-5"	5	2'-6"	5	1'-6"	1'-3"	2'-9"									0.87	57
	B18-4	4'-4"	1'-1"	1'-10"	4'-0"	3'-6"	1'-9"	6"	9"	6"	2'-4"	1'-10"	9"	1'-3"	2	3'-9"	4'-1"	7'-10"	1	3'-11"	4'-3"	8'-2"	1	4'-1"	4'-5"	8'-6"	6	2'-9"	6	1'-6"	1'-3"	2'-9"									1.04	68
	B24-4	5'-10"	1'-5"	2'-6"	5'-3"	4'-6"	1'-9"	6"	9"	6"	2'-11"	2'-2"	9"	1'-3"	2	5'-0"	5'-7"	10'-7"	1	5'-2"	5'-9"	10'-11"	1	5'-4"	5'-11"	11'-3"	7	3'-3"	7	1'-6"	1'-3"	2'-9"									1.52	89
	B30-4	6'-11"	1'-7"	2'-10"	6'-6"	5'-6"	2'-0"	6"	1'-0"	6"	3'-6"	2'-8"	9"	1'-3"	2	6'-3"	6'-8"	12'-11"	3	6'-5"	6'-10"	13'-3"	2	6'-7"	7'-0"	13'-7"							9	1'-9"	1'-0"	2'-9"	8	1'-3"	5'-0"	6'-3"	3.07	176
	B36-4	8'-2"	1'-10"	3'-4"	7'-6"	6'-6"	3'-0"	1'-0"	1'-0"	1'-0"	4'-0"	3'-0"	1'-0"	1'-3"	2	7'-2"	7'-10"	15'-0"	3	7'-7"	8'-3"	15'-10"	2	7'-10"	8'-5"	16'-3"							10	2'-9"	1'-0"	3'-9"	9	1'-9"	5'-9"	7'-6"	4.68	[illegible]
	B42-4	9'-6"	2'-2"	3'-11"	8'-9"	7'-7"	3'-6"	1'-3"	1'-0"	1'-3"	4'-6"	3'-4"	1'-0"	1'-3"	2	8'-5"	9'-2"	17'-7"	3	8'-10"	9'-7"	18'-5"	2	9'-1"	9'-10"	18'-11"							11	3'-3"	1'-0"	4'-3"	9	2'-0"	6'-9"	8'-9"	6.25	[illegible]
	B48-4	11'-0"	2'-5"	4'-6"	10'-0"	8'-9"	4'-0"	1'-6"	1'-0"	1'-6"	5'-1"	3'-10"	1'-6"	1'-6"	2	9'-6"	10'-6"	20'-0"	3	10'-0"	11'-0"	21'-0"	2	10'-5"	11'-5"	21'-10"							11	3'-9"	1'-3"	5'-0"	10	2'-3"	7'-6"	9'-9"	9.08	312
Slope 2:1	B12-2	2'-8"	8"	1'-4"	2'-7"	2'-3"	1'-9"	6"	9"	6"	1'-9"	1'-3"	9"	1'-3"	2	2'-4"	2'-5"	4'-9"	1	2'-6"	2'-7"	5'-1"	1	2'-8"	2'-9"	5'-5"	5	2'-3"	5	1'-6"	1'-3"	2'-9"									0.58	47
	B15-2	3'-0"	11"	1'-7"	2'-9"	2'-5"	1'-9"	6"	9"	6"	2'-1"	1'-5"	9"	1'-3"	2	2'-6"	2'-9"	5'-3"	1	2'-8"	2'-11"	5'-7"	1	2'-10"	3'-1"	5'-11"	5	2'-6"	5	1'-6"	1'-3"	2'-9"									0.67	50
	B18-2	3'-6"	1'-1"	1'-10"	3'-4"	2'-10"	1'-9"	6"	9"	6"	2'-4"	1'-7"	9"	1'-3"	2	3'-1"	3'-3"	6'-4"	1	3'-3"	3'-5"	6'-8"	1	3'-5"	3'-7"	7'-0"	5	2'-9"	5	1'-6"	1'-3"	2'-9"									0.81	56
	B24-2	4'-8"	1'-5"	2'-6"	4'-6"	3'-11"	1'-9"	6"	9"	6"	2'-11"	1'-10"	9"	1'-3"	2	4'-3"	4'-5"	8'-8"	1	4'-5"	4'-7"	9'-0"	1	4'-7"	4'-9"	9'-4"	6	3'-3"	6	1'-6"	1'-3"	2'-9"									1.16	84
	B30-2	5'-6"	1'-7"	2'-10"	5'-9"	5'-0"	2'-0"	6"	1'-0"	6"	3'-6"	2'-2"	9"	1'-3"	2	5'-6"	5'-3"	10'-9"	3	5'-8"	5'-5"	11'-1"	2	5'-10"	5'-7"	11'-5"							8	1'-9"	1'-0"	2'-9"	7	1'-3"	5'-0"	6'-3"	2.53	[illegible]
	B36-2	6'-8"	1'-10"	3'-4"	6'-11"	6'-0"	3'-0"	1'-0"	1'-0"	1'-0"	4'-0"	2'-6"	1'-0"	1'-3"	2	6'-7"	6'-4"	12'-11"	3	7'-0"	6'-9"	13'-9"	2	7'-3"	7'-0"	14'-3"							9	2'-9"	1'-0"	3'-9"	8	1'-9"	5'-9"	7'-6"	4.01	217
	B42-2	7'-8"	2'-2"	3'-11"	8'-0"	7'-0"	3'-6"	1'-3"	1'-0"	1'-3"	4'-6"	2'-10"	1'-0"	1'-3"	2	7'-8"	7'-4"	15'-0"	3	8'-1"	7'-9"	15'-10"	2	8'-4"	8'-0"	16'-4"							9	3'-3"	1'-0"	4'-3"	8	2'-0"	6'-9"	8'-9"	5.29	224
	B48-2	8'-9"	2'-5"	4'-6"	9'-4"	8'-1"	4'-0"	1'-6"	1'-0"	1'-6"	5'-1"	3'-2"	1'-6"	1'-6"	2	8'-10"	8'-3"	17'-1"	3	9'-4"	8'-9"	18'-1"	2	9'-9"	9'-2"	18'-11"							10	3'-9"	1'-3"	5'-0"	9	2'-3"	7'-6"	9'-9"	7.22	276

θ = 75°

	Pipe Diam.	L	L_1	L_2	W	Z	B	B_1	B_2	B_3	H	H_1	H_2	H_3	#5 h_1 bar				#5 h_2 bar				#5 h_3 bar				#5 v_1 bar		#5 d_1 bar				#5 d_2 bar				#5 d_3 bar				Conc.	Steel
															No.	w	l	Len.	No.	w	l	Len	No.	w	l	Len	No.	Len	No	r	s	Len.	No.	r	s	Len	No.	r	s	Len	Cu.Yd	Lbs
Slope 4:1	B12-4	3'-8"	8"	1'-4"	2'-9"	2'-7"	1'-9"	6"	9"	6"	1'-9"	1'-7"	9"	1'-3"	2	2'-6"	3'-5"	5'-11"	1	2'-7"	3'-6"	6'-1"	1	2'-8"	3'-7"	6'-3"	5	2'-3"	5	1'-6"	1'-3"	2'-9"									0.74	51
	B15-4	4'-2"	11"	1'-7"	3'-0"	3'-0"	1'-9"	6"	9"	6"	2'-1"	1'-10"	9"	1'-3"	2	2'-9"	3'-11"	6'-8"	1	2'-10"	4'-0"	6'-10"	1	2'-11"	4'-1"	7'-0"	5	2'-6"	5	1'-6"	1'-3"	2'-9"									0.86	58
	B18-4	4'-10"	1'-1"	1'-10"	3'-8"	3'-6"	1'-9"	6"	9"	6"	2'-4"	2'-0"	9"	1'-3"	2	3'-5"	4'-7"	8'-0"	1	3'-6"	4'-8"	8'-2"	1	3'-7"	4'-9"	8'-4"	6	2'-9"	6	1'-6"	1'-3"	2'-9"									1.05	68
	B24-4	6'-6"	1'-5"	2'-6"	4'-8"	4'-6"	1'-9"	6"	9"	6"	2'-11"	2'-6"	9"	1'-3"	2	4'-5"	6'-3"	10'-8"	1	4'-6"	6'-4"	10'-10"	1	4'-7"	6'-5"	11'-0"	7	3'-3"	7	1'-6"	1'-3"	2'-9"									1.53	79
	B30-4	7'-8"	1'-7"	2'-10"	5'-9"	5'-6"	2'-0"	6"	1'-0"	6"	3'-6"	3'-0"	9"	1'-3"	2	5'-6"	7'-5"	12'-11"	3	5'-7"	7'-6"	13'-1"	2	5'-8"	7'-7"	13'-3"							8	1'-9"	1'-0"	2'-9"	7	1'-3"	5'-0"	6'-3"	3.06	154
	B36-4	9'-0"	1'-10"	3'-4"	6'-9"	6'-6"	3'-0"	1'-0"	1'-0"	1'-0"	4'-0"	3'-5"	1'-0"	1'-3"	2	6'-6"	8'-9"	15'-3"	3	6'-9"	9'-0"	15'-9"	2	6'-10"	9'-1"	15'-11"							10	2'-9"	1'-0"	3'-9"	9	1'-9"	5'-9"	7'-6"	4.66	227
	B42-4	10'-7"	2'-2"	3'-11"	7'-10"	7'-7"	3'-6"	1'-3"	1'-0"	1'-3"	4'-6"	3'-11"	1'-0"	1'-3"	2	7'-7"	10'-4"	17'-11"	3	7'-10"	10'-7"	18'-5"	2	7'-11"	10'-8"	18'-7"							10	3'-3"	1'-0"	4'-3"	9	2'-0"	6'-9"	8'-9"	6.32	255
	B48-4	12'-0"	2'-5"	4'-6"	9'-0"	8'-9"	4'-0"	1'-6"	1'-0"	1'-6"	5'-1"	4'-4"	1'-6"	1'-6"	2	8'-9"	11'-8"	20'-5"	3	9'-0"	11'-0"	20'-0"	2	9'-2"	12'-2"	21'-4"							11	3'-9"	1'-3"	5'-0"	10	2'-3"	7'-6"	9'-9"	9.08	309
Slope 2:1	B12-2	2'-8"	8"	1'-4"	2'-4"	2'-3"	1'-9"	6"	9"	6"	1'-9"	1'-7"	9"	1'-3	2	2'-1"	2'-5"	4'-6"	1	2'-2"	2'-6"	4'-8"	1	2'-3"	2'-7"	4'-10"	5	2'-3"	5	1'-6"	1'-3"	2'-9"									0.55	45
	B15-2	3'-0"	11"	1'-7"	2'-6"	2'-5"	1'-9"	6"	9"	6"	2'-1"	1'-5"	9"	1'-3"	2	2'-3"	2'-9"	5'-0"	1	2'-4"	2'-10"	5'-2"	1	2'-5"	2'-11"	5'-4"	5	2'-6"	5	1'-6"	1'-3"	2'-9"									0.63	48
	B18-2	3'-6"	1'-1"	1'-10"	3'-0"	2'-10"	1'-9"	6"	9"	6"	2'-4"	1'-7"	9"	1'-3"	2	2'-9"	3'-3"	6'-0"	1	2'-10"	3'-4"	6'-2"	1	2'-11"	3'-5"	6'-4"	5	2'-9"	5	1'-6"	1'-3"	2'-9"									0.77	58
	B24-2	4'-8"	1'-5"	2'-6"	4'-1"	3'-11"	1'-9"	6"	9"	6"	2'-11"	1'-10"	9"	1'-3"	2	3'-10"	4'-5"	8'-3"	1	3'-11"	4'-6"	8'-5"	1	4'-0"	4'-7"	8'-7"	6	3'-3"	6	1'-6"	1'-3"	2'-9"									1.10	717
	B30-2	5'-6"	1'-7"	2'-10"	5'-2"	5'-0"	2'-0"	6"	1'-0"	6"	3'-6"	2'-2"	9"	1'-3"	2	4'-11"	5'-3"	10'-2"	3	5'-0"	5'-4"	10'-4"	2	5'-1"	5'-5"	10'-6"							8	1'-9"	1'-0"	2'-9"	7	1'-3"	5'-0"	6'-3"	233	145
	B36-2	6'-8"	1'-10"	3'-4"	6'-3"	6'-0"	3'-0"	1'-0"	1'-0"	1'-0"	4'-0"	2'-6"	1'-0"	1'-3"	2	6'-0"	6'-5"	12'-5"	3	6'-3"	6'-8"	12'-11"	2	6'-4"	6'-9"	13'-1"							9	2'-9"	1'-0"	3'-9"	8	1'-9"	5'-9"	7'-6"	3.75	191
	B42-2	7'-8"	2'-2"	3'-11"	7'-3"	7'-0"	3'-6"	1'-3"	1'-0"	1'-3"	4'-6"	2'-10"	1'-0"	1'-3"	2	7'-0"	7'-5"	14'-5"	3	7'-3"	7'-8"	14'-11"	2	7'-4"	7'-9"	15'-1"							9	3'-3"	1'-0"	4'-3"	8	2'-0"	6'-9"	8'-9"	4.96	218
	B48-2	8'-9"	2'-5"	4'-6"	8'-4"	8'-1"	4'-0"	1'-6"	1'-0"	1'-6"	5'-1"	3'-2"	1'-6"	1'-6"	2	8'-0"	8'-5"	16'-5"	3	8'-4"	8'-9"	17'-1"	2	8'-6"	8'-11"	17'-5"							10	3'-9"	1'-3"	5'-0"	9	2'-3"	7'-6"	9'-9"	7.19	269

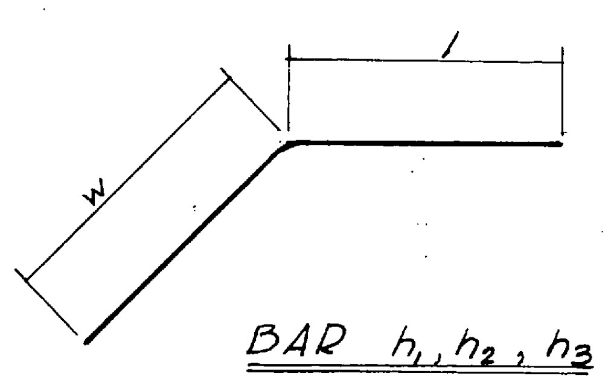


BAR d_1, d_2

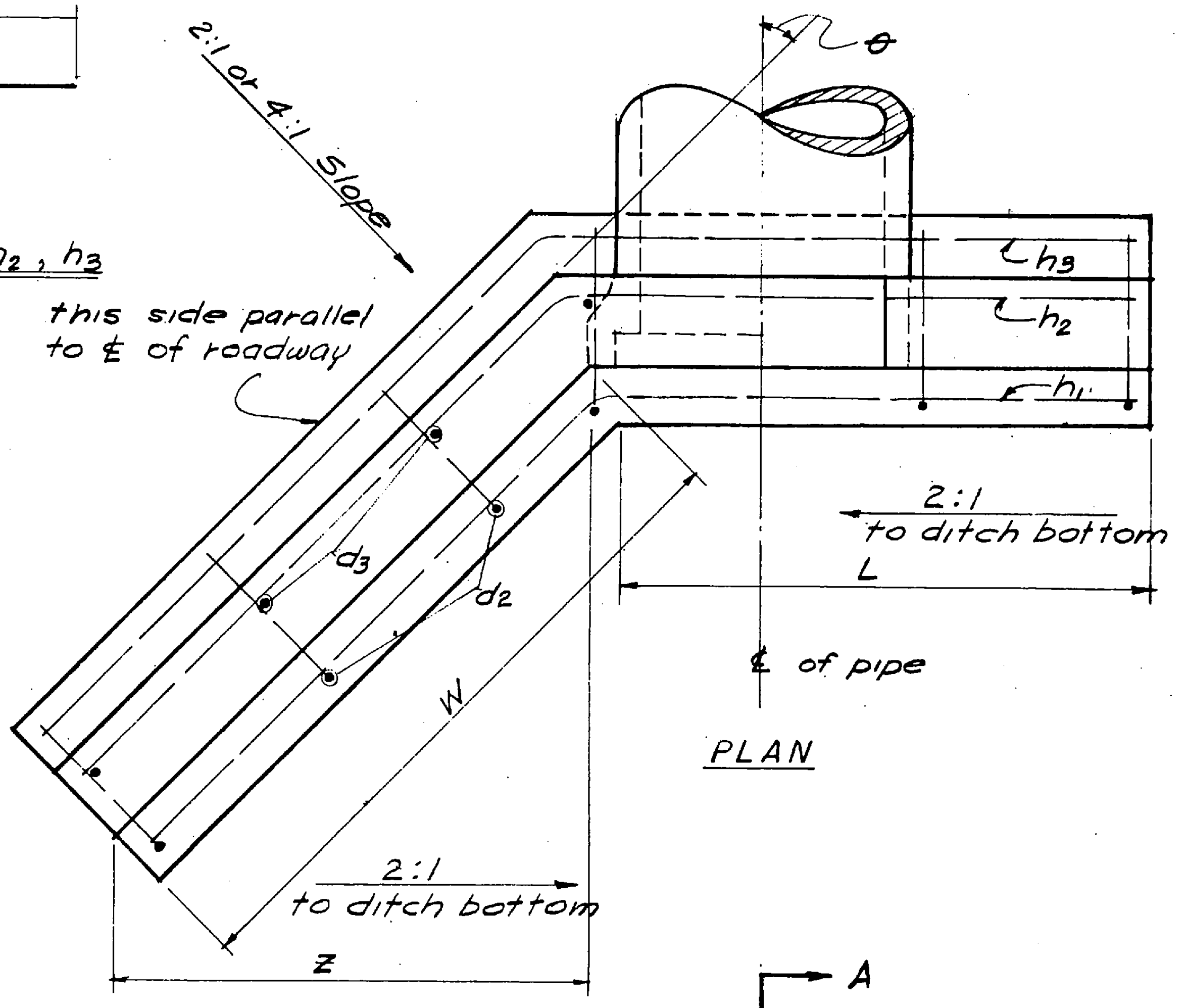


END DETAILS FOR PIPE UNDER 30"

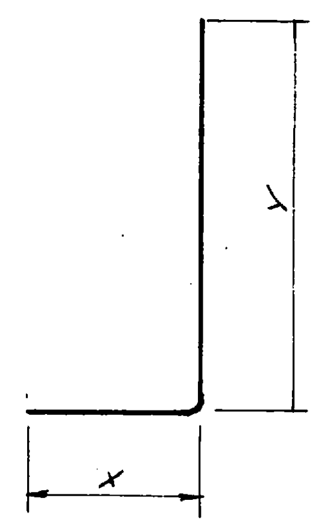
SECTION A-A



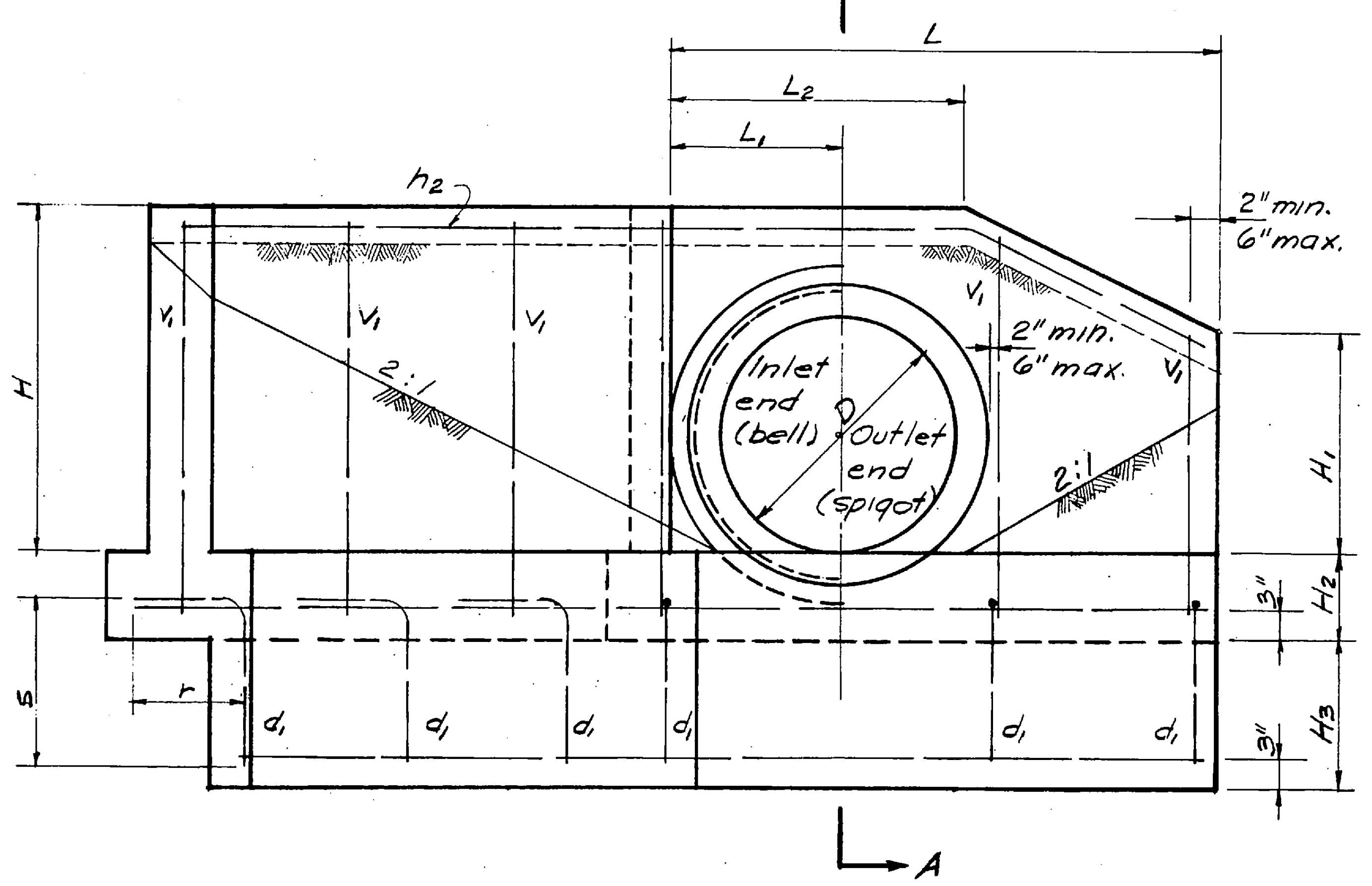
BAR h_1, h_2, h_3



PLAN



BAR d_3

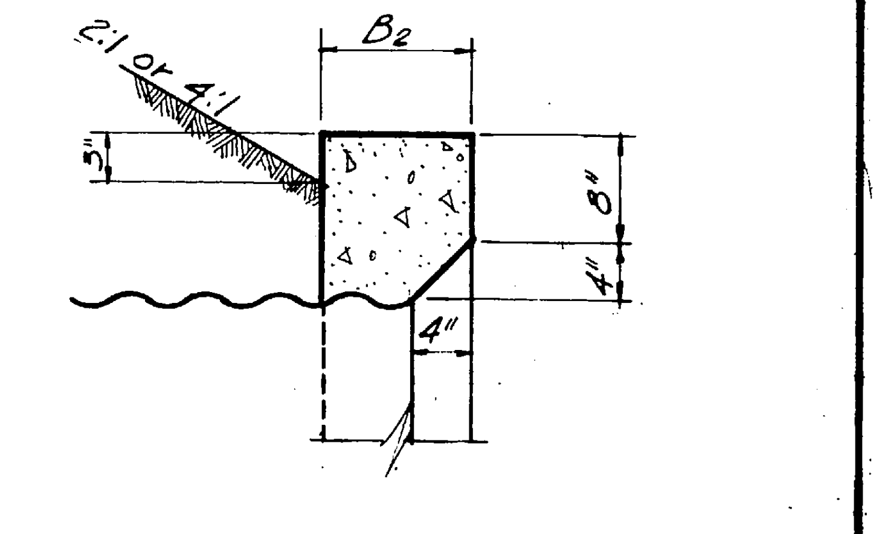


ELEVATION

NOTE: REINFORCING SHOWN FOR PIPE UNDER 30"

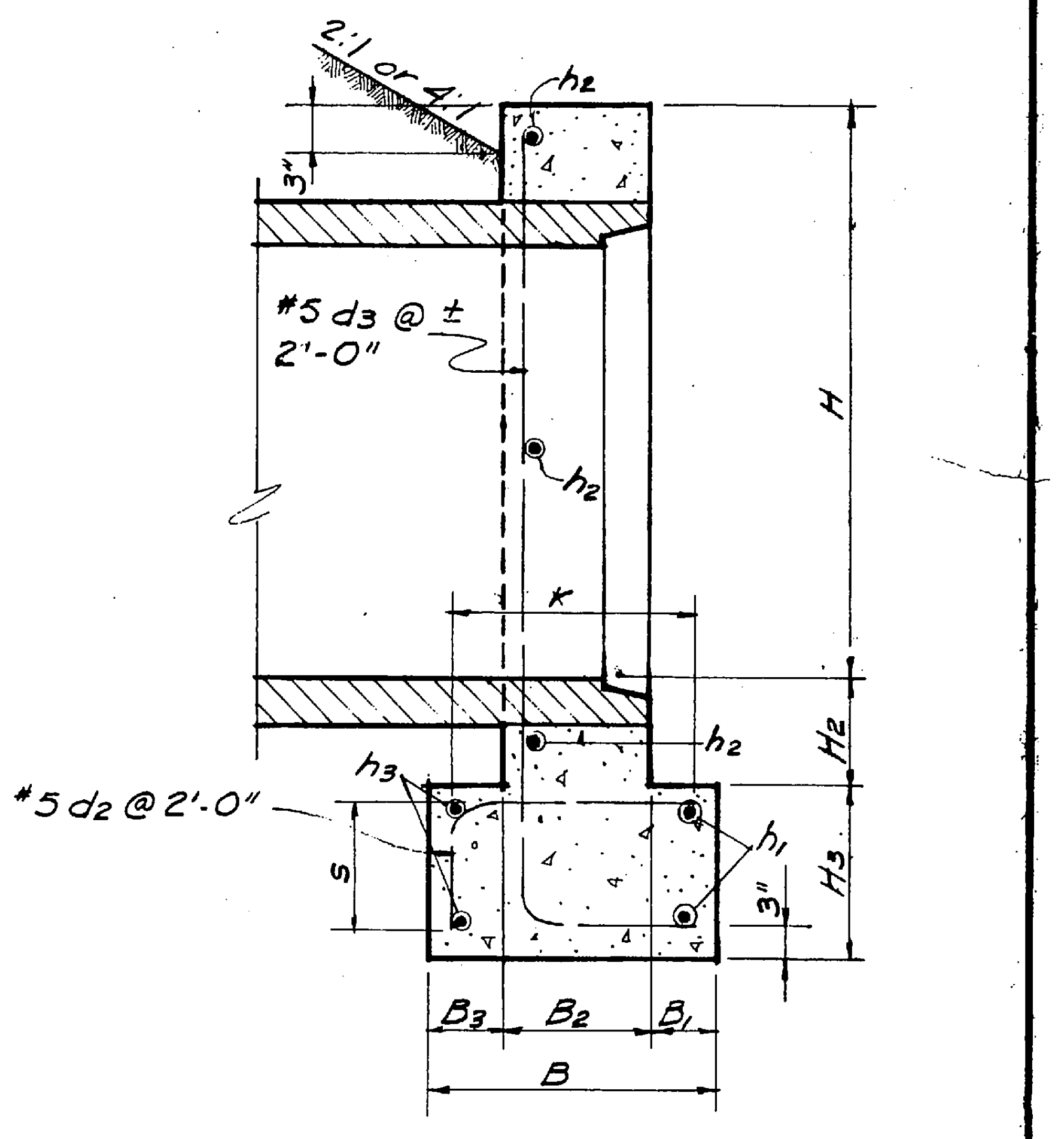
GENERAL NOTES

1. Specifications are the Standard Road and Bridge Specifications of the Tennessee Department of Highways and Public Works.
2. Class A concrete shall be used throughout.
3. Reinforcing steel: see specifications; all dimensions are to center of bar unless otherwise noted.
4. All excavation and backfill necessary for the construction of the concrete pipe culvert headwalls shall be considered incidental to the contract, and no additional compensation will be allowed.
5. Field adjustment: the location, grade, and size of pipe culvert may be modified at the direction of the Engineer to better meet conditions in the field.
6. Forms & Finish: see Specifications.
7. All reinforcing steel shall clear face of concrete by 2" except as noted.
8. Chamfer all exposed corners with ¾" bevel
9. Basis of payment:
   Item No. 611-07.01 - Class A concrete, cu. yds.
   Item No. 611-07.02 - Steel bar reinforcing, lbs.
10. Quantities & Bar List are for one headwall only.



SECTION

END DETAIL FOR CORRUGATED METAL PIPE



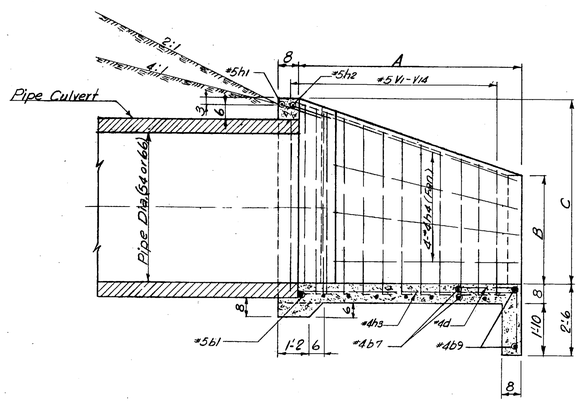
SECTION A-A

END DETAILS FOR PIPE WITH 30" TO 48" DIAMETER

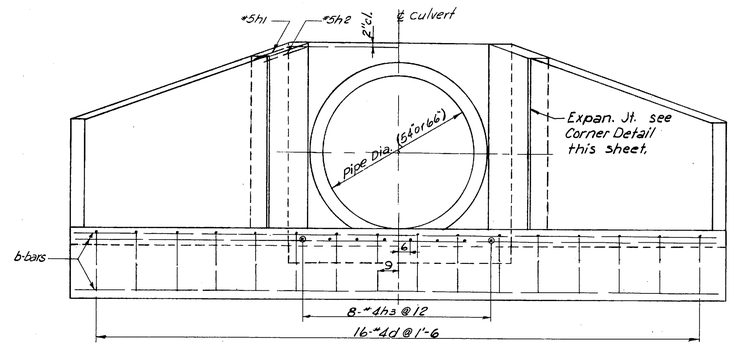
STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
BUREAU OF HIGHWAYS

TYPE B HEADWALL FOR PIPE CULVERTS 12" - 48"

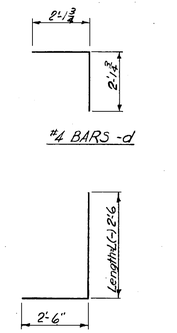
TYPE	YEAR	PROJECT NO.	SHEET NO.
Const.	1974	EACI-240-1(004)4	2P

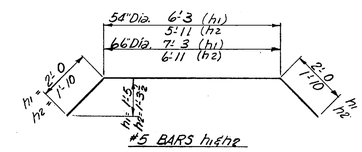


SECTION A-A



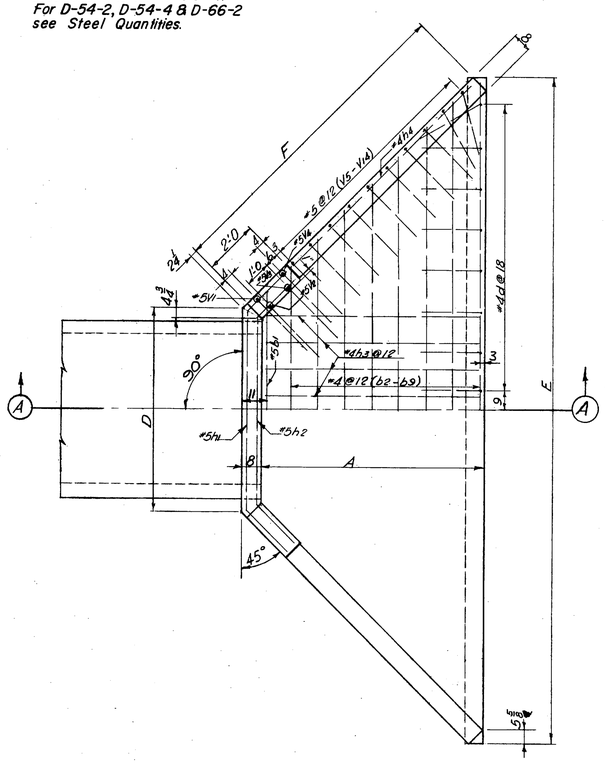
END ELEVATION





BENDING DIAGRAMS

NOTE:
Steel shown is for D-66-4.
For D-54-2, D-54-4 & D-66-2
see Steel Quantities.



PLAN

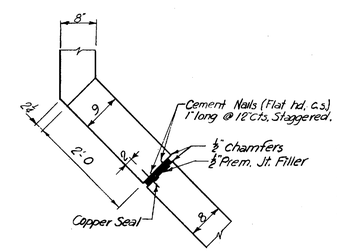
STEEL QUANTITY - ONE HEADWALL

D-54-2					D-54-4					D-66-2					D-66-4				
54" Pipe 2:1 Slope					54" Pipe 4:1 Slope					66" Pipe 2:1 Slope					66" Pipe 4:1 Slope				
Bar	Size	No.	Length	Shape	Bar	Size	No.	Length	Shape	Bar	Size	No.	Length	Shape	Bar	Size	No.	Length	Shape
b1	#5	1	7'-10	—	b1	#5	1	7'-10	—	b1	#5	1	8'-10	—	b1	#5	1	8'-10	—
b2	#4	1	9'-10	—	b2	#4	1	8'-4	—	b2	#4	1	10'-10	—	b2	#4	1	10'-4	—
b3	#4	2	11'-10	—	b3	#4	1	10'-4	—	b3	#4	1	12'-10	—	b3	#4	1	12'-4	—
b4	#4	1	13'-10	—	b4	#4	1	12'-4	—	b4	#4	2	14'-10	—	b4	#4	1	14'-4	—
b5	#4	2	15'-6	—	b5	#4	1	14'-4	—	b5	#4	1	16'-10	—	b5	#4	1	16'-4	—
					b6	#4	2	16'-4	—	b6	#4	2	18'-6	—	b6	#4	1	18'-4	—
					b7	#4	1	18'-4	—						b7	#4	2	20'-0	—
					b8	#4	2	20'-0	—						b8	#4	1	22'-4	—
															b9	#4	2	24'-0	—
d	#4	11	4'-3	⌉	d	#4	14	4'-3	⌉	d	#4	12	4'-3	⌉	d	#4	16	4'-3	⌉
h1	#5	1	10'-3	⌒	h1	#5	1	10'-3	⌒	h1	#5	1	11'-3	⌒	h1	#5	1	11'-3	⌒
h2	#5	1	9'-7	⌒	h2	#5	1	9'-7	⌒	h2	#5	1	10'-7	⌒	h2	#5	1	10'-7	⌒
h3	#4	7	4'-2	—	h3	#4	7	6'-5	—	h3	#4	8	5'-2	—	h3	#4	8	7'-11	—
h4	#4	8	4'-0	—	h4	#4	8	7'-3	—	h4	#4	8	5'-6	—	h4	#4	8	9'-4	—
V1	#5	2	8'-3	⌋	V1	#5	2	8'-3	⌋	V1	#5	2	9'-3	⌋	V1	#5	2	9'-3	⌋
V2	#5	2	8'-2	⌋	V2	#5	2	8'-2	⌋	V2	#5	2	9'-2	⌋	V2	#5	2	9'-2	⌋
V3	#5	2	7'-10	⌋	V3	#5	2	7'-11	⌋	V3	#5	2	8'-10	⌋	V3	#5	2	8'-11	⌋
V4	#5	2	7'-9	⌋	V4	#5	2	7'-10	⌋	V4	#5	2	8'-9	⌋	V4	#5	2	8'-10	⌋
V5	#5	2	7'-7	⌋	V5	#5	2	7'-9	⌋	V5	#5	2	8'-7	⌋	V5	#5	2	8'-9	⌋
V6	#5	2	7'-3	⌋	V6	#5	2	7'-6	⌋	V6	#5	2	8'-3	⌋	V6	#5	2	8'-6	⌋
V7	#5	2	6'-11	⌋	V7	#5	2	7'-4	⌋	V7	#5	2	7'-11	⌋	V7	#5	2	8'-4	⌋
V8	#5	2	6'-7	⌋	V8	#5	2	7'-1	⌋	V8	#5	2	7'-7	⌋	V8	#5	2	8'-1	⌋
V9	#5	2	6'-2	⌋	V9	#5	2	6'-10	⌋	V9	#5	2	7'-2	⌋	V9	#5	2	7'-10	⌋
					V10	#5	2	6'-8	⌋	V10	#5	2	6'-10	⌋	V10	#5	2	7'-8	⌋
					V11	#5	2	6'-5	⌋						V11	#5	2	7'-5	⌋
					V12	#5	2	6'-2	⌋						V12	#5	2	7'-2	⌋
															V13	#5	2	7'-0	⌋
															V14	#5	2	6'-9	⌋

GENERAL NOTES

1. SPECIFICATIONS - STANDARD ROAD AND BRIDGE SPECIFICATIONS OF THE TENNESSEE DEPARTMENT OF HIGHWAYS AND PUBLIC WORKS.
2. CONCRETE - SHALL BE CLASS "A". SEE SPECIFICATIONS. ALL EXPOSED CORNERS SHALL BE BROKEN WITH A 3/4" CHAMFER.
3. REINFORCING STEEL - SEE SPECIFICATIONS. THE MINIMUM LAP FOR STEEL SHALL BE 20 DIAMETERS UNLESS OTHERWISE SHOWN. ALL DIMENSIONS ARE TO THE CENTERS OF BARS UNLESS OTHERWISE INDICATED. ALL REINFORCING BAR BENDS AND HOOKS SHALL BE THOSE RECOMMENDED BY THE A.C.I. IN THEIR "MANUAL OF STANDARD PRACTICE FOR DETAILING REINFORCED CONCRETE STRUCTURES."

   ALL BARS SHALL HAVE A MINIMUM CLEARANCE OF 2" UNLESS OTHERWISE NOTED.
4. FORMS AND FINISH - SEE SPECIFICATIONS.
5. ALL EXCAVATION AND BACKFILL NECESSARY FOR CONSTRUCTION OF THE PIPE CULVERT HEADWALLS SHALL BE CONSIDERED INCIDENTAL TO THE CONTRACT PRICE BID FOR CLASS "A" CONCRETE.
6. FIELD ADJUSTMENT: THE LOCATION AND GRADE OF PIPE CULVERT MAY BE MODIFIED AT THE DIRECTION OF THE ENGINEER TO BETTER MEET FIELD CONDITIONS.



CORNER DETAIL

Design No.	Dia. of Pipe	Slope of Fill	DIMENSIONS A	B	C	D	E	F	Class A Conc. Cu. Yds.	Reinf. Bars Lbs.
D54-2	54"	2:1	4'-6	3'-6	5'-9	6'-6	15'-10 1/2"	6'-5 1/4"	4.2	292
D54-4	54"	4:1	6'-9	3'-6	5'-9	6'-6	20'-4 1/2"	9'-7 1/2"	6.2	412
D66-2	66	2:1	5'-6	4'-0	6'-9	7'-6	18'-10 1/4"	7'-10 1/4"	5.7	366
D66-4	66	4:1	8'-3	4'-0	6'-9	7'-6	28'-4 1/2"	11'-9	8.5	529

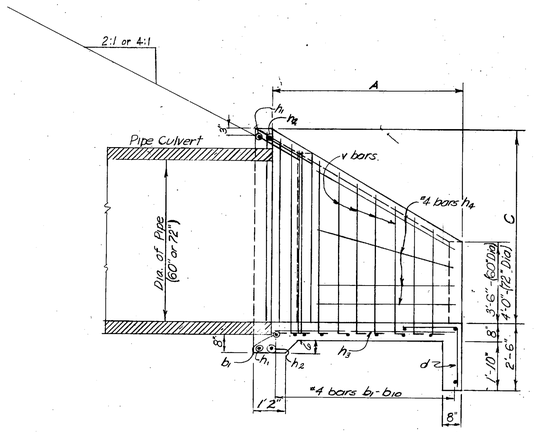
Note: Quantities shown are for one headwall.

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
BUREAU OF HIGHWAYS

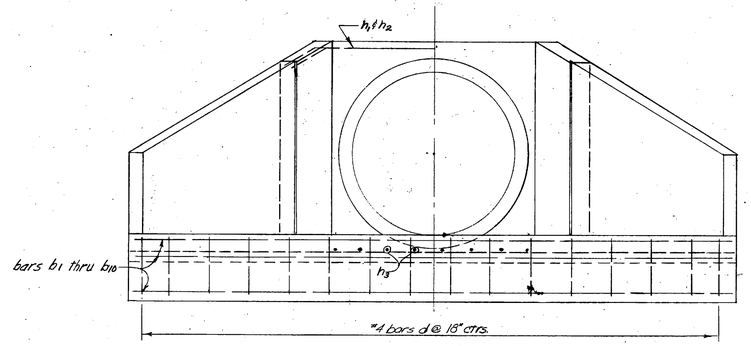
TYPE D HEADWALL
FOR PIPE CULVERTS
54" & 66"

JOB NO.

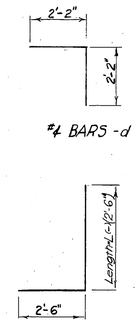
TYPE	YEAR	PROJECT NO.	SHEET NO.
Const.	1974	E.A.C.I-240-1(104)	20

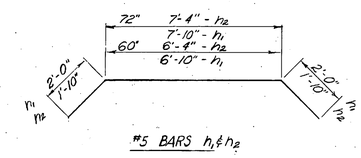


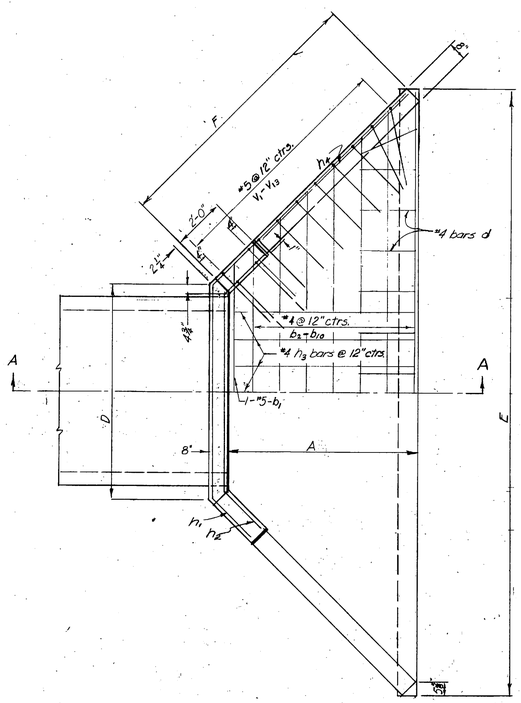
SECTION A-A



END ELEVATION



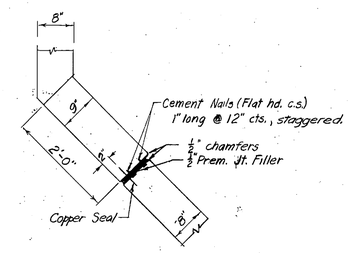




PLAN

STEEL QUANTITY - ONE HEADWALL

D-60-2					D-60-4					D-72-2					D-72-4				
60" Pipe 2:1 Slope					60" Pipe 4:1 Slope					72" Pipe 2:1 Slope					72" Pipe 4:1 Slope				
Bar	Size	No.	Length	Shape	Bar	Size	No.	Length	Shape	Bar	Size	No.	Length	Shape	Bar	Size	No.	Length	Shape
d	#4	13	4'-4"	⌐	d	#4	15	4'-4"	⌐	d	#4	14	4'-4"	⌐	d	#4	16	4'-4"	⌐
b_1	#5	1	8'-4"	—	b_1	#5	1	8'-4"	—	b_1	#5	1	9'-3"	—	b_1	#5	1	9'-3"	—
b_2	#4	1	9'-8"	—	b_2	#4	1	9'-2"	—	b_2	#4	1	10'-9"	—	b_2	#4	1	10'-0"	—
b_3	#4	1	11'-8"	—	b_3	#4	1	11'-2"	—	b_3	#4	1	12'-9"	—	b_3	#4	1	12'-0"	—
b_4	#4	1	13'-8"	—	b_4	#4	1	13'-2"	—	b_4	#4	1	14'-9"	—	b_4	#4	1	14'-0"	—
b_5	#4	1	15'-8"	—	b_5	#4	1	15'-2"	—	b_5	#4	1	16'-9"	—	b_5	#4	1	16'-0"	—
b_6	#4	1	17'-6"	—	b_6	#4	1	17'-2"	—	b_6	#4	1	18'-9"	—	b_6	#4	1	18'-0"	—
b_7	#4	2	18'-9"	—	b_7	#4	1	19'-2"	—	b_7	#4	1	20'-9"	—	b_7	#4	1	20'-0"	—
					b_8	#4	1	21'-2"	—	b_8	#4	2	22'-0"	—	b_8	#4	1	21'-10"	—
					b_9	#4	2	22'-10"	—						b_9	#4	1	23'-8"	—
															b_{10}	#4	2	25'-4"	—
V_1	#5	4	8'-10"	⌐	V_1	#5	4	9'-0"	⌐	V_1	#5	4	10'-0"	⌐	V_1	#5	4	10'-0"	⌐
V_2	#5	4	8'-6"	⌐	V_2	#5	4	8'-8"	⌐	V_2	#5	4	9'-6"	⌐	V_2	#5	4	9'-6"	⌐
V_3	#5	2	8'-4"	⌐	V_3	#5	2	8'-7"	⌐	V_3	#5	2	9'-4"	⌐	V_3	#5	2	9'-6"	⌐
V_4	#5	2	8'-0"	⌐	V_4	#5	2	8'-4"	⌐	V_4	#5	2	9'-0"	⌐	V_4	#5	2	9'-3"	⌐
V_5	#5	2	7'-8"	⌐	V_5	#5	2	8'-1"	⌐	V_5	#5	2	8'-8"	⌐	V_5	#5	2	9'-0"	⌐
V_6	#5	2	7'-4"	⌐	V_6	#5	2	7'-10"	⌐	V_6	#5	2	8'-4"	⌐	V_6	#5	2	8'-9"	⌐
V_7	#5	2	7'-0"	⌐	V_7	#5	2	7'-7"	⌐	V_7	#5	2	8'-0"	⌐	V_7	#5	2	8'-6"	⌐
V_8	#5	2	6'-8"	⌐	V_8	#5	2	7'-4"	⌐	V_8	#5	2	7'-8"	⌐	V_8	#5	2	8'-3"	⌐
V_9	#5	2	6'-4"	⌐	V_9	#5	2	7'-1"	⌐	V_9	#5	2	7'-4"	⌐	V_9	#5	2	8'-0"	⌐
					V_{10}	#5	2	6'-10"	⌐	V_{10}	#5	2	7'-0"	⌐	V_{10}	#5	2	7'-9"	⌐
					V_{11}	#5	2	6'-7"	⌐	V_{11}	#5	2	6'-11"		V_{11}	#5	2	7'-6"	⌐
					V_{12}	#5	2	6'-4"	⌐						V_{12}	#5	2	7'-3"	⌐
															V_{13}	#5	2	7'-0"	⌐
h_1	#5	2	10'-10"	⌒	h_1	#5	2	10'-10"	⌒	h_1	#5	2	11'-10"	⌒	h_1	#5	2	11'-10"	⌒
h_2	#5	2	10'-0"	⌒	h_2	#5	2	10'-0"	⌒	h_2	#5	2	11'-0"	⌒	h_2	#5	2	11'-0"	⌒
h_3	#4	7	5'-6"	—	h_3	#4	7	7'-6"	—	h_3	#4	8	6'-6"	—	h_3	#4	8	8'-3"	—
h_4	#4	8	6'-0"	—	h_4	#4	8	9'-6"	—	h_4	#4	8	7'-9"	—	h_4	#4	8	10'-0"	—



CORNER DETAIL

Design No.	Dia. of Pipe	Slope of Fill	DIMENSIONS A	C	D	E	F	Class A Conc. Cu. Yds.	Reinf. Bars Lbs.
D60 2	60"	2:1	6'-0"	6'-3"	7'-0"	19'-1½"	8'-6"	5.5	400
D60 4	60"	4:1	8'-0"	6'-3"	7'-0"	23'-1½"	11'-3½"	7.4	510
D 72 2	72"	2:1	7'-1"	7'-3"	8'-0"	22'-3½"	10'-0"	7.2	500
D 72 4	72"	4:1	8'-9"	7'-3"	8'-0"	25'-7½"	12'-4"	9.0	595

Note: Quantities shown are for one headwall only.

GENERAL NOTES

1. Specifications are the Standard Road and Bridge Specifications of the Tennessee Department of Highways and Public Works.
2. Class "A" concrete shall be used throughout.
3. Reinforcing steel: See Specifications. All dimensions are to center of the bar unless otherwise noted.
4. All excavation and backfill necessary for construction of the concrete pipe culvert headwalls shall be considered incidental to the contract and no additional compensation shall be allowed.
5. All reinforcing steel shall clear face of concrete by 2 inches except as noted.
6. Chamfer all exposed corners with ¾" bevel, except as noted.
7. Form and Finish: See Specifications.
8. Basis of Payment:
   Item No. G11-07.01 Class "A" concrete - cu. yds.
   Item No. G11-07.02 Steel Bar Reinf. - lbs.

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
BUREAU OF HIGHWAYS

TYPE D HEADWALL FOR PIPE CULVERTS 60" & 72"

TYPE	YEAR	PROJECT NO.	SHEET NO.
Const.	1974	EACI-240-1(04)4	2.R.

BARS IN HEADWALL 75° SKEW

E 54-2

Bar	Size	No.	Length	Shape
a1	5	2	6'-8	
b1	5	1	7'-7	
b2	4	1	9'-8	
b3	4	1	11'-9	
b4	4	2	13'-10	
b5	4	1	15'-11	
b6	4	2	17'-6	
d1	4	12	4'-3	
d2	5	4	9'-2	
d3	5	2	7'-4	
h1	5	1	13'-2	
h2	5	1	11'-5	
h3	4	2	8'-9	
h4	4	2	6'-8	
V1	5	1-Set	Varies	
V2	5	1-Set	Varies	
W1	4	1	8'-6	
W2	4	1	6'-6	

E 54-4

Bar	Size	No.	Length	Shape
a1	5	2	6'-8	
b1	5	1	7'-7	
b2	4	1	9'-5	
b3	4	1	11'-6	
b4	4	1	13'-7	
b5	4	1	15'-8	
b6	4	2	17'-9	
b7	4	1	19'-10	
b8	4	2	21'-6	
d1	4	14	4'-3	
d2	5	4	9'-2	
d3	5	2	7'-4	
h1	5	1	16'-2	
h2	5	1	13'-8	
h3	4	2	11'-10	
h4	4	2	9'-1	
V1	5	1-Set	Varies	
V2	5	1-Set	Varies	
W1	4	1	11'-6	
W2	4	1	9'-0	

E 66-2

Bar	Size	No.	Length	Shape
a1	5	2	7'-2	
b1	5	1	8'-7	
b2	4	1	11'-0	
b3	4	1	13'-1	
b4	4	1	15'-2	
b5	4	2	17'-3	
b6	4	1	19'-4	
b7	4	2	21'-0	
d1	4	14	4'-3	
d2	5	4	10'-8	
d3	5	2	8'-6	
h1	5	1	16'-0	
h2	5	1	16'-2	
h3	4	2	10'-7	
h4	4	2	8'-0	
V1	5	1-Set	Varies	
V2	5	1-Set	Varies	
W1	4	1	10'-6	
W2	4	1	8'-0	

E 66-4

Bar	Size	No.	Length	Shape
a1	5	2	7'-2	
b1	5	1	8'-7	
b2	4	1	9'-3	
b3	4	1	11'-4	
b4	4	1	13'-5	
b5	4	1	15'-6	
b6	4	1	17'-7	
b7	4	1	19'-8	
b8	4	2	21'-9	
b9	4	1	23'-10	
b10	4	2	25'-5	
d1	4	17	4'-3	
d2	5	4	10'-0	
d3	5	2	8'-6	
h1	5	1	19'-3	
h2	5	1	16'-2	
h3	4	2	14'-2	
h4	4	2	10'-10	
V1	5	1-Set	Varies	
V2	5	1-Set	Varies	
W1	4	1	14'-0	
W2	4	1	10'-6	

BARS IN HEADWALL 60° SKEW

E 54-2

Bar	Size	No.	Length	Shape
a1	5	2	6'-9	
b1	5	1	8'-5	
b2	4	1	10'-8	
b3	4	1	13'-0	
b4	4	2	15'-4	
b5	4	1	17'-8	
b6	4	2	19'-5	
d1	4	13	4'-3	
d2	5	4	9'-2	
d3	5	4	7'-4	
h1	5	1	15'-3	
h2	5	1	11'-3	
h3	4	2	10'-9	
h4	4	2	6'-1	
V1	5	1-Set	Varies	
V2	5	1-Set	Varies	
W1	4	1	10'-6	
W2	4	1	6'-0	

E 54-4

Bar	Size	No.	Length	Shape
a1	5	2	6'-9	
b1	5	1	8'-5	
b2	4	1	10'-5	
b3	4	1	12'-9	
b4	4	1	15'-1	
b5	4	1	17'-5	
b6	4	2	19'-9	
b7	4	1	22'-1	
b8	4	2	23'-10	
d1	4	16	4'-3	
d2	5	4	9'-2	
d3	5	4	7'-4	
h1	5	1	19'-0	
h2	5	1	13'-4	
h3	4	2	14'-7	
h4	4	2	8'-3	
V1	5	1-Set	Varies	
V2	5	1-Set	Varies	
W1	4	1	14'-6	
W2	4	1	8'-0	

E 66-2

Bar	Size	No.	Length	Shape
a1	5	2	7'-11	
b1	5	1	9'-7	
b2	4	1	12'-1	
b3	4	1	14'-5	
b4	4	1	16'-9	
b5	4	2	19'-1	
b6	4	1	21'-5	
b7	4	2	23'-2	
d1	4	15	4'-3	
d2	5	4	10'-8	
d3	5	4	8'-6	
h1	5	1	18'-4	
h2	5	1	13'-6	
h3	4	2	13'-1	
h4	4	2	7'-4	
V1	5	1-Set	Varies	
V2	5	1-Set	Varies	
W1	4	1	13'-0	
W2	4	1	7'-0	

E 66-4

Bar	Size	No.	Length	Shape
a1	5	2	7'-11	
b1	5	1	9'-7	
b2	4	1	10'-2	
b3	4	1	12'-6	
b4	4	1	14'-10	
b5	4	1	17'-2	
b6	4	1	19'-6	
b7	4	1	21'-10	
b8	4	2	24'-2	
b9	4	1	26'-6	
b10	4	2	28'-3	
d1	4	19	4'-3	
d2	5	4	10'-8	
d3	5	4	8'-6	
h1	5	1	22'-7	
h2	5	1	15'-9	
h3	4	2	17'-5	
h4	4	2	9'-11	
V1	5	1-Set	Varies	
V2	5	1-Set	Varies	
W1	4	1	17'-0	
W2	4	1	10'-0	

BARS IN HEADWALL 45° SKEW

E 54-2

Bar	Size	No.	Length	Shape
a1	5	2	8'-3	
b1	5	1	10'-3	
b2	4	1	13'-0	
b3	4	1	15'-10	
b4	4	2	18'-8	
b5	4	1	21'-6	
b6	4	2	23'-8	
d1	4	16	4'-3	
d2	5	4	9'-2	
d3	5	4	7'-4	
h1	5	1	19'-1	
h2	5	1	11'-9	
h3	4	2	14'-1	
h4	4	2	5'-8	
V1	5	1-Set	Varies	
V2	5	1-Set	Varies	
W1	4	1	14'-0	
W2	4	1	5'-6	

E 54-4

Bar	Size	No.	Length	Shape
a1	5	2	8'-3	
b1	5	1	10'-3	
b2	4	1	12'-9	
b3	4	1	15'-7	
b4	4	1	18'-5	
b5	4	1	21'-3	
b6	4	2	24'-1	
b7	4	1	26'-11	
b8	4	2	29'-0	
d1	4	19	4'-3	
d2	5	4	9'-2	
d3	5	4	7'-4	
h1	5	1	24'-1	
h2	5	1	13'-8	
h3	4	2	19'-1	
h4	4	2	7'-9	
V1	5	1-Set	Varies	
V2	5	1-Set	Varies	
W1	4	1	19'-0	
W2	4	1	7'-6	

E 66-2

Bar	Size	No.	Length	Shape
a1	5	2	9'-7	
b1	5	1	11'-8	
b2	4	1	14'-11	
b3	4	1	17'-9	
b4	4	1	20'-7	
b5	4	2	23'-5	
b6	4	1	26'-3	
b7	4	2	28'-5	
d1	4	19	4'-3	
d2	5	4	10'-8	
d3	5	4	8'-6	
h1	5	1	23'-1	
h2	5	1	14'-0	
h3	4	2	17'-0	
h4	4	2	6'-11	
V1	5	1-Set	Varies	
V2	5	1-Set	Varies	
W1	4	1	17'-0	
W2	4	1	7'-0	

E 66-4

Bar	Size	No.	Length	Shape
a1	5	2	9'-7	
b1	5	1	11'-8	
b2	4	1	12'-6	
b3	4	1	15'-4	
b4	4	1	18'-2	
b5	4	1	21'-0	
b6	4	1	23'-10	
b7	4	1	26'-8	
b8	4	2	29'-6	
b9	4	2	16'-8	
b10	4	4	17'-9	
d1	4	23	4'-3	
d2	5	4	10'-8	
d3	5	4	8'-6	
h1	5	1	28'-8	
h2	5	1	16'-1	
h3	4	2	22'-9	
h4	4	2	9'-3	
V1	5	1-Set	Varies	
V2	5	1-Set	Varies	
W1	4	1	22'-6	
W2	4	1	9'-0	

BARS IN HEADWALL 30° SKEW

E 54-2

Bar	Size	No.	Length	Shape
a1	5	2	11'-5	
b1	5	1	14'-4	
b2	4	1	18'-3	
b3	4	1	22'-3	
b4	4	2	26'-3	
b5	4	2	15'-8	
b6	4	4	17'-2	
d1	4	22	4'-3	
d2	5	4	9'-2	
d3	5	8	7'-4	
d4	5	6	5'-6	
h1	5	1	27'-6	
h2	5	1	13'-2	
h3	4	2	21'-0	
h4	4	2	5'-5	
V1	5	1-Set	Varies	
V2	5	1-Set	Varies	
W1	4	1	21'-0	
W2	4	1	5'-6	

E 54-4

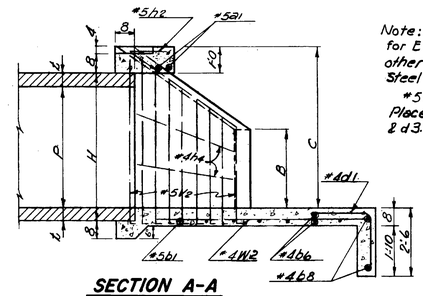
Bar	Size	No.	Length	Shape
a1	5	2	11'-5	
b1	5	1	14'-4	
b2	4	1	18'-0	
b3	4	1	22'-0	
b4	4	1	26'-0	
b5	4	1	30'-0	
b6	4	4	17'-6	
b7	4	2	19'-6	
b8	4	4	21'-0	
d1	4	27	4'-3	
d2	5	4	9'-2	
d3	5	8	7'-4	
d4	5	6	5'-6	
h1	5	1	34'-10	
h2	5	1	15'-0	
h3	4	2	28'-4	
h4	4	2	7'-5	
V1	5	1-Set	Varies	
V2	5	1-Set	Varies	
W1	4	1	28'-0	
W2	4	1	7'-0	

E 66-2

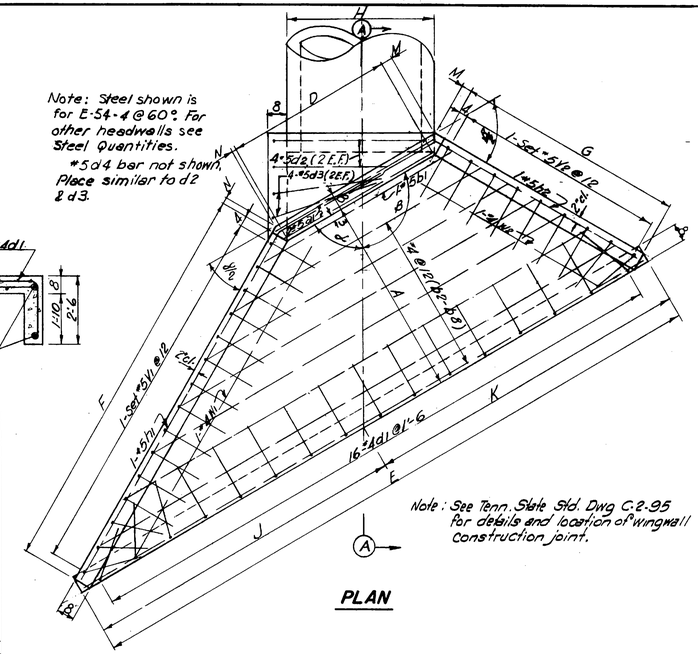
Bar	Size	No.	Length	Shape
a1	5	2	13'-5	
b1	5	1	16'-4	
b2	4	1	21'-0	
b3	4	1	25'-0	
b4	4	1	29'-0	
b5	4	4	17'-0	
b6	4	2	19'-0	
b7	4	4	20'-6	
d1	4	26	4'-3	
d2	5	4	10'-8	
d3	5	8	8'-6	
d4	5	8	6'-4	
h1	5	1	33'-1	
h2	5	1	15'-9	
h3	4	2	25'-6	
h4	4	2	6'-7	
V1	5	1-Set	Varies	
V2	5	1-Set	Varies	
W1	4	1	25'-0	
W2	4	1	6'-6	

E 66-4

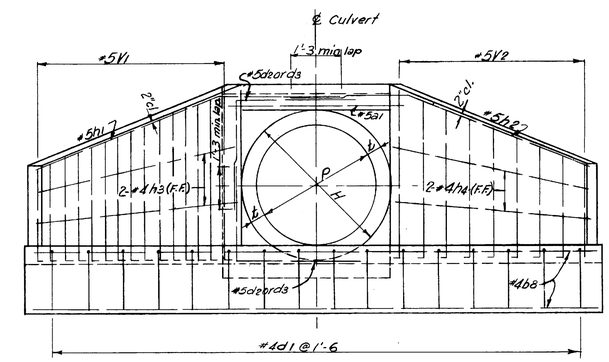
Bar	Size	No.	Length	Shape
a1	5	2	13'-5	
b1	5	1	16'-4	
b2	4	1	17'-8	
b3	4	1	21'-8	
b4	4	1	25'-8	
b5	4	1	29'-8	
b6	4	2	17'-4	
b7	4	2	19'-4	
b8	4	4	21'-4	
b9	4	2	23'-4	
b10	4	4	24'-10	
d1	4	32	4'-3	
d2	5	4	10'-8	
d3	5	8	8'-6	
d4	5	8	6'-4	
h1	5	1	41'-5	
h2	5	1	17'-9	
h3	4	2	33'-9	
h4	4	2	8'-9	
V1	5	1-Set	Varies	
V2	5	1-Set	Varies	
W1	4	1	33'-6	
W2	4	1	8'-6	



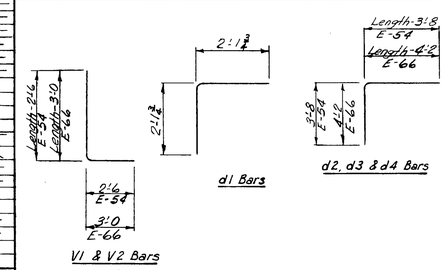
SECTION A-A



PLAN



FRONT ELEVATION



BENDING DIAGRAMS

Note: Quantities shown are for one headwall only.

Skew Angle	Design No.	Bar	No. Per Set	Description of Length
75°	E-54-2	V1	9	1 ea. 8'-8 to 6'-0 in 4" increments
		V2	7	1 ea. 8'-7 to 6'-1 in 5" increments
	E-54-4	V1	12	1 ea. 8'-8 to 5'-11 in 3" increments
		V2	8	1 ea. 8'-8 to 6'-0 in 4" increments
	E-66-2	V1	11	1 ea. 10'-2 to 6'-0 in 5" increments
		V2	8	1 ea. 10'-1 to 6'-7 in 6" increments
	E-66-4	V1	15	1 @ 10'-2, 2 ea. 9'-11 to 6'-11 in 7" increments
		V2	11	1 @ 10'-2, 2 ea. 9'-5 to 6'-5 in 9" increments
60°	E-54-2	V1	11	1 @ 8'-8, 2 ea. 8'-1 to 5'-9 in 7" increments
		V2	7	1 ea. 8'-7 to 5'-7 in 6" increments
	E-54-4	V1	15	1 @ 8'-8, 2 ea. 8'-3 to 5'-9 in 5" increments
		V2	9	1 @ 8'-8, 2 ea. 7'-11 to 5'-8 in 9" increments
	E-66-2	V1	13	1 ea. 10'-2 to 6'-2 in 4" increments
		V2	8	1 ea. 10'-1 to 6'-0 in 7" increments
	E-66-4	V1	18	1 ea. 10'-2 to 5'-11 in 3" increments
		V2	10	1 ea. 10'-2 to 6'-5 in 5" increments
45°	E-54-2	V1	15	1 @ 8'-8, 2 ea. 8'-3 to 5'-9 in 5" increments
		V2	6	1 ea. 8'-7 to 6'-1 in 6" increments
	E-54-4	V1	19	1 ea. 8'-8 to 5'-8 in 2" increments
		V2	8	2 ea. 8'-3 to 6'-0 in 9" increments
	E-66-2	V1	18	1 ea. 10'-2 to 5'-11 in 3" increments
		V2	8	1 ea. 10'-1 to 6'-0 in 7" increments
	E-66-4	V1	23	1 ea. 10'-2 to 6'-6 in 2" increments
		V2	10	1 ea. 10'-1 to 6'-4 in 5" increments
30°	E-54-2	V1	21	3 ea. 8'-4 to 5'-10 in 5" increments
		V2	6	1 ea. 8'-6 to 6'-0 in 6" increments
	E-54-4	V1	29	2 @ 8'-7, 3 ea. 8'-3 to 5'-7 in 4" increments
		V2	8	1 ea. 8'-8 to 5'-9 in 5" increments
	E-66-2	V1	26	1 ea. 10'-2 to 6'-0 in 2" increments
		V2	7	1 ea. 10'-1 to 6'-7 in 7" increments
	E-66-4	V1	34	2 ea. 10'-0 to 6'-0 in 3" increments
		V2	9	1 ea. 10'-1 to 6'-1 in 6" increments

Skew Angle	Design No.	DIMENSIONS OF CONCRETE A	B	C	D	E	F	G	H	J	K	M	N	P	t	α	B	Conc. Class A Cu.Yd.	Reinf. Bars Lbs.
75°	E-54-2	5'-6	3'-0	6'-0	5'-8 3/8	18'-0 1/4	9'-0 3/8	6'-11 3/4	5'-6	8'-11 3/8	9'-0 7/8	4	2 3/4	4'-6	6	75°	105°	5.3	350
	E-54-4	7'-5	3'-0	6'-0	5'-8 3/8	21'-11 3/4	12'-2 1/4	9'-4 1/8	5'-6	10'-11 1/8	11'-0 3/8	4	2 3/4	4'-6	6	75°	105°	7.1	450
	E-66-2	6'-8	3'-0	7'-0	6'-8 3/4	21'-5 3/8	10'-1 7/8	8'-4 1/8	6'-6	10'-8 1/8	10'-9 1/2	4	2 3/4	5'-6	6	75°	105°	7.1	450
	E-66-4	8'-10	3'-0	7'-0	6'-8 3/4	25'-11 3/4	14'-6 1/8	11'-1 7/8	6'-6	12'-11 3/8	13'-0 1/2	4	2 3/4	5'-6	6	75°	105°	9.4	580
60°	E-54-2	5'-6	3'-0	6'-0	6'-4 1/4	19'-11 1/8	11'-0	6'-4 1/4	5'-6	9'-10 1/4	10'-1 1/8	4 3/8	2 1/8	4'-6	6	60	120°	6.3	400
	E-54-4	7'-5	3'-0	6'-0	6'-4 1/4	24'-4 3/8	14'-10	8'-6 3/4	5'-6	12'-0 3/4	12'-3 3/4	4 3/8	2 1/8	4'-6	6	60°	120°	8.3	500
	E-66-2	6'-8	3'-0	7'-0	7'-6	23'-8 3/4	13'-4	7'-6 3/8	6'-6	11'-9 3/4	12'-0 7/8	4 3/8	2 1/8	5'-6	6	60°	120°	8.4	500
	E-66-4	8'-10	3'-0	7'-0	7'-6	28'-9 3/4	17'-8	10'-2 7/8	6'-6	14'-3 7/8	14'-6 3/8	4 3/8	2 1/8	5'-6	6	60°	120°	11.0	640
45°	E-54-2	5'-6	3'-0	6'-0	7'-9 3/4	24'-2 1/2	14'-4 1/4	5'-11 3/8	5'-6	11'-11 1/8	12'-3 3/8	5 3/8	1 3/8	4'-6	6	45°	135°	8.1	480
	E-54-4	7'-5	3'-0	6'-0	7'-9 3/4	29'-7 1/2	19'-4 5/8	8'-0 3/8	5'-6	14'-7 5/8	14'-11 1/2	5 3/8	1 3/8	4'-6	6	45°	135°	10.5	600
	E-66-2	6'-8	3'-0	7'-0	9'-2 1/4	28'-1	17'-5	7'-2 3/8	6'-6	14'-3 3/8	14'-7 3/8	5 3/8	1 3/8	5'-6	6	45°	135°	10.9	620
	E-66-4	8'-10	3'-0	7'-0	9'-2 1/4	35'-0 7/8	23'-1	9'-6 3/4	6'-6	17'-4 1/8	17'-8 1/2	5 3/8	1 3/8	5'-6	6	45°	135°	14.2	790
30°	E-54-2	5'-6	3'-0	6'-0	11'-0	33'-5 3/4	21'-3	5'-5 3/4	5'-6	16'-8	17'-1 3/4	6 1/8	1	4'-6	6	30°	150°	11.8	660
	E-54-4	7'-5	3'-0	6'-0	11'-0	41'-5 3/8	28'-7 1/8	7'-8 1/8	5'-6	20'-0 1/8	21'-1 3/4	6 1/8	1	4'-6	6	30°	150°	15.1	840
	E-66-2	6'-8	3'-0	7'-0	13'-0	40'-5 1/8	25'-9 7/8	6'-10 1/8	6'-6	20'-0 1/8	20'-5 3/8	6 1/8	1	5'-6	6	30°	150°	15.9	860
	E-66-4	8'-10	3'-0	7'-0	13'-0	49'-1 7/8	34'-1 1/2	9'-1 1/4	6'-6	24'-4 7/8	24'-9 3/4	6 1/8	1	5'-6	6	30°	150°	20.1	1080

GENERAL NOTES

1. SPECIFICATIONS - STANDARD ROAD AND BRIDGE SPECIFICATIONS OF THE TENNESSEE DEPARTMENT OF HIGHWAYS AND PUBLIC WORKS.
2. CONCRETE - SHALL BE CLASS "A". SEE SPECIFICATIONS. ALL EXPOSED CORNERS SHALL BE BROKEN WITH A 3/4" CHAMFER.
3. REINFORCING STEEL - SEE SPECIFICATIONS. THE MINIMUM LAP FOR STEEL SHALL BE 20 DIAMETERS UNLESS OTHERWISE SHOWN. ALL DIMENSIONS ARE TO THE CENTERS OF BARS UNLESS OTHERWISE INDICATED. ALL REINFORCING BAR BENDS AND HOOKS SHALL BE THOSE RECOMMENDED BY THE A.C.I. IN THEIR "MANUAL OF STANDARD PRACTICE FOR DETAILING REINFORCED CONCRETE STRUCTURES."

   ALL BARS SHALL HAVE A MINIMUM CLEARANCE OF 2" UNLESS OTHERWISE NOTED.
4. FORMS AND FINISH - SEE SPECIFICATIONS.
5. ALL EXCAVATION AND BACKFILL NECESSARY FOR CONSTRUCTION OF THE PIPE CULVERT HEADWALLS SHALL BE CONSIDERED INCIDENTAL TO THE CONTRACT PRICE BID FOR CLASS "A" CONCRETE.
6. FIELD ADJUSTMENT: THE LOCATION AND GRADE OF PIPE CULVERT MAY BE MODIFIED AT THE DIRECTION OF THE ENGINEER TO BETTER MEET FIELD CONDITIONS.

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
BUREAU OF HIGHWAYS

TYPE E HEADWALL
FOR PIPE CULVERT
54" & 66"

TYPE	YEAR	PROJECT NO.	SHEET NO.
Const.	1974	EACI-240-1(24)4	28

DIMENSIONS OF CONCRETE

Skew Angle	Design No.	A	B	C	D	E	F	G	H	J	K	M	N	α	Conc. (Hdwl.) Cu.Yd.	Reinf. Bars lbs.
75°	EG0-2	6'-4½"	3'-0"	6'-6"	6'-2⅜"	20'-5⅛"	10'-6"	8'-2"	5'-0"	10'-2"	10'-3¼"	0'-3¾"	0'-2⅜"	75°	6.4	410
	EG0-4	8'-8"	3'-0"	6'-6"	6'-2⅜"	25'-1⅜"	14'-3"	10'-11"	5'-0"	12'-6⅛"	12'-7⅛"	0'-3¾"	0'-2⅜"	75°	8.8	530
	E72-2	7'-5"	3'-0"	7'-6"	7'-3"	23'-6"	12'-2"	9'-4"	6'-0"	11'-8⅛"	11'-9⅜"	0'-3¾"	0'-2⅜"	75°	8.3	509
	E72-4	10'-0"	3'-0"	7'-6"	7'-3"	28'-10"	16'-5"	12'-7⅛"	6'-0"	14'-4⅛"	14'-5⅜"	0'-3¾"	0'-2⅜"	75°	11.1	654
60°	EG0-2	6'-5"	3'-0"	6'-6"	6'-11"	22'-7⅜"	12'-10⅛"	7'-5"	5'-0"	11'-2⅛"	11'-5⅛"	0'-4⅜"	0'-2½"	60°	7.8	454
	EG0-4	8'-8"	3'-0"	6'-6"	6'-11"	27'-9⅜"	17'-4"	10'-0"	5'-0"	13'-9⅛"	14'-0⅛"	0'-4⅜"	0'-2½"	60°	10.3	591
	E72-2	7'-5"	3'-0"	7'-6"	8'-1"	26'-1⅛"	14'-10"	8'-6⅜"	6'-0"	12'-1⅛"	13'-2⅜"	0'-4⅜"	0'-2½"	60°	10.0	572
	E72-4	10'-0"	3'-0"	7'-6"	8'-1"	32'-0⅜"	20'-0"	11'-6⅛"	6'-0"	15'-11"	16'-1⅜"	0'-4⅜"	0'-2½"	60°	13.2	734
45°	EG0-2	6'-5"	3'-0"	6'-6"	8'-6"	27'-6⅜"	16'-9"	6'-11⅛"	5'-0"	13'-7"	13'-11⅛"	0'-5⅛"	0'-1¾"	45°	9.9	566
	EG0-4	8'-8"	3'-0"	6'-6"	8'-6"	33'-10⅜"	22'-7⅛"	9'-5"	5'-0"	16'-9"	17'-1⅜"	0'-5⅛"	0'-1¾"	45°	13.0	722
	E72-2	7'-5"	3'-0"	7'-6"	9'-10⅜"	31'-3⅛"	19'-4⅜"	8'-0⅛"	6'-0"	15'-8⅛"	16'-0⅜"	0'-5⅛"	0'-1¾"	45°	12.6	702
	E72-4	10'-0"	3'-0"	7'-6"	9'-10⅜"	39'-1"	26'-2"	10'-10"	6'-0"	19'-1⅛"	19'-8⅜"	0'-5⅛"	0'-1¾"	45°	16.4	917

BARS IN ONE HEADWALL — 45° SKEW

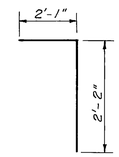
E 60 - 2					E 60 - 4					E 72 - 2					E 72 - 4				
Bar	Size	No.	Length	Shape	Bar	Size	No.	Length	Shape	Bar	Size	No.	Length	Shape	Bar	Size	No.	Length	Shape
a	#5	2	6'-8"	—	a	#5	2	6'-8"	—	a	#5	2	7'-8"	—	a	#5	2	7'-8"	—
d	#4	18	4'-3"	┐	d	#4	22	4'-3"	┐	d	#4	19	4'-3"	┐	d	#4	25	4'-3"	┐
d_1	#5	4	7'-6"	┐	d_1	#5	4	7'-6"	┐	d_1	#5	6	8'-6"	┐	d_1	#5	6	8'-6"	┐
d_2	#5	6	6'-6"	┘	d_2	#5	6	6'-6"	┘	d_2	#5	6	7'-6"	┘	d_2	#5	6	7'-6"	┘
b	#5	2	11'-0"	—	b	#5	2	11'-0"	—	b	#5	2	12'-8"	—	b	#5	2	12'-7"	—
b_1	#4	1	14'-7"	—	b_1	#4	1	15'-0"	—	b_1	#4	1	15'-7"	—	b_1	#4	1	14'-5"	—
b_2	#4	1	17'-3"	—	b_2	#4	1	17'-10"	—	b_2	#4	1	18'-6"	—	b_2	#4	1	17'-4"	—
b_3	#4	1	20'-0"	—	b_3	#4	1	20'-3"	—	b_3	#4	1	21'-4"	—	b_3	#4	1	20'-2"	—
b_4	#4	1	22'-9"	—	b_4	#4	1	23'-3"	—	b_4	#4	1	24'-1"	—	b_4	#4	1	23'-0"	—
b_5	#4	1	25'-6"	—	b_5	#4	1	26'-0"	—	b_5	#4	1	26'-9"	—	b_5	#4	1	25'-9"	—
b_6	#4	2	27'-0"	—	b_6	#4	1	29'-0"	—	b_6	#4	1	29'-9"	—	b_6	#4	1	28'-6"	—
h	#5	2	21'-6"	╱	b_7	#4	1	31'-6"	—	b_7	#4	2	31'-0"	—	b_7	#4	1	31'-3"	—
h_1	#5	2	11'-8"	╱	b_8	#4	2	33'-6"	—	h	#5	2	24'-9"	╱	b_8	#4	1	34'-3"	—
h_2	#4	2	16'-5"	—	h	#5	2	27'-4"	╱	h_1	#5	2	13'-5"	╲	b_9	#4	1	36'-11"	—
h_3	#4	2	6'-7"	—	h_1	#5	2	14'-2"	╲	h_2	#4	2	19'-0"	—	b_{10}	#4	2	38'-9"	—
V_1	#5	4	8'-8"	┘	h_2	#4	2	22'-3"	—	h_3	#4	2	7'-8"	—	h	#5	2	31'-7"	╱
V_2	#5	4	7'-9"	┘	h_3	#4	2	9'-1"	—	V_1	#5	5	9'-11"	┘	h_1	#5	2	16'-3"	╲
V_3	#5	4	6'-11"	┘	V_1	#5	6	8'-7"	┘	V_2	#5	5	8'-9"	┘	h_2	#4	2	25'-10"	—
V_4	#5	6	5'-9"	┘	V_2	#5	6	7'-7"	┘	V_3	#5	5	7'-6"	┘	h_3	#4	2	10'-6"	—
V_5	#5	3	8'-3"	┘	V_3	#5	6	6'-7"	┘	V_4	#5	5	6'-3"	┘	V_1	#5	7	10'-0"	┘
V_6	#5	3	6'-8"	┘	V_4	#5	6	5'-7"	┘	V_5	#5	3	9'-9"	┘	V_2	#5	7	8'-8"	┘
V_7	#5	2	5'-6"	┘	V_5	#5	4	8'-3"	┘	V_6	#5	3	8'-0"	┘	V_3	#5	7	7'-4"	┘
W_1	#4	1	6'-3"	—	V_6	#5	3	7'-0"	┘	V_7	#5	3	6'-4"	┘	V_4	#5	6	6'-4"	┘
W_2	#4	1	12'-2"	—	V_7	#5	3	5'-10"	┘	W_1	#4	1	7'-4"	—	V_5	#5	4	9'-10"	┘
					W_1	#4	1	8'-9"	—	W_2	#4	1	15'-6"	—	V_6	#5	4	8'-0"	┘
					W_2	#4	1	19'-0"	—						V_7	#5	4	6'-4"	┘
															W_1	#4	1	10'-2"	—
															W_2	#4	1	22'-3"	—

BARS IN ONE HEADWALL — 60° SKEW

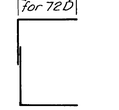
E 60 - 2					E 60 - 4					E 72 - 2					E 72 - 4				
Bar	Size	No.	Length	Shape	Bar	Size	No.	Length	Shape	Bar	Size	No.	Length	Shape	Bar	Size	No.	Length	Shape
a	#5	2	6'-8"	—	a	#5	2	6'-8"	—	a	#5	2	7'-8"	—	a	#5	2	7'-8"	—
d	#4	14	4'-9"	┐	d	#4	18	4'-3"	┐	d	#4	17	4'-3"	┐	d	#4	21	4'-3"	┐
d_1	#5	2	7'-6"	┐	d_1	#5	2	7'-6"	┐	d_1	#5	2	8'-6"	┐	d_1	#5	2	8'-6"	┐
d_2	#5	4	6'-0"	┘	d_2	#5	4	6'-0"	┘	d_2	#5	4	7'-0"	┘	d_2	#5	4	7'-0"	┘
b	#5	2	9'-0"	—	b	#5	2	9'-3"	—	b	#5	2	10'-0"	—	b	#5	2	10'-0"	—
b_1	#4	1	11'-6"	—	b_1	#4	1	12'-0"	—	b_1	#4	1	12'-4"	—	b_1	#4	1	11'-6"	—
b_2	#4	1	13'-6"	—	b_2	#4	1	14'-3"	—	b_2	#4	1	14'-9"	—	b_2	#4	1	14'-0"	—
b_3	#4	1	16'-0"	—	b_3	#4	1	16'-9"	—	b_3	#4	1	17'-2"	—	b_3	#4	1	16'-3"	—
b_4	#4	1	18'-3"	—	b_4	#4	1	19'-0"	—	b_4	#4	1	19'-6"	—	b_4	#4	1	18'-6"	—
b_5	#4	1	20'-6"	—	b_5	#4	1	21'-6"	—	b_5	#4	1	21'-9"	—	b_5	#4	1	20'-9"	—
b_6	#4	2	22'-0"	—	b_6	#4	1	23'-6"	—	b_6	#4	1	24'-0"	—	b_6	#4	1	23'-2"	—
h	#5	2	16'-6"	╱	b_7	#4	1	26'-0"	—	b_7	#4	2	25'-9"	—	b_7	#4	1	25'-9"	—
h_1	#5	2	11'-6"	╱	b_8	#4	2	26'-9"	—	h	#5	2	19'-4"	╱	b_8	#4	1	28'-0"	—
h_2	#4	2	12'-7"	—	h	#5	2	21'-0"	╱	h_1	#5	2	12'-6"	╲	b_9	#4	1	30'-3"	—
h_3	#4	2	7'-2"	—	h_1	#5	2	14'-0"	╲	h_2	#4	2	14'-6"	—	b_{10}	#4	2	31'-0"	—
V_1	#5	4	8'-6"	┘	h_2	#4	2	17'-0"	—	h_3	#4	2	8'-2"	—	h	#5	2	24'-6"	╱
V_2	#5	3	7'-6"	┘	h_3	#4	2	9'-8"	—	V_1	#5	3	10'-4"	┘	h_1	#5	2	16'-0"	╲
V_3	#5	4	6'-6"	┘	V_1	#5	5	8'-6"	┘	V_2	#5	4	9'-3"	┘	h_2	#4	2	19'-8"	—
V_4	#5	3	5'-6"	┘	V_2	#5	5	7'-6"	┘	V_3	#5	4	8'-0"	┘	h_3	#4	2	11'-2"	—
V_5	#5	3	8'-3"	┘	V_3	#5	4	6'-6"	┘	V_4	#5	5	6'-6"	┘	V_1	#5	5	10'-0"	┘
V_6	#5	3	7'-0"	┘	V_4	#5	4	5'-8"	┘	V_5	#5	3	9'-10"	┘	V_2	#5	6	8'-9"	┘
V_7	#5	2	5'-9"	┘	V_5	#5	3	8'-8"	┘	V_6	#5	3	8'-3"	┘	V_3	#5	5	7'-5"	┘
W_1	#4	1	6'-5"	—	V_6	#5	4	7'-6"	┘	V_7	#5	4	6'-7"	┘	V_4	#5	5	6'-3"	┘
W_2	#4	1	9'-6"	—	V_7	#5	4	6'-0"	┘	W_1	#4	1	8'-0"	—	V_5	#5	4	9'-10"	┘
					W_1	#4	1	9'-3"	—	W_2	#4	1	12'-3"	—	V_6	#5	4	8'-2"	┘
					W_2	#4	1	15'-0"	—						V_7	#5	4	6'-6"	┘
															W_1	#4	1	10'-3"	—
															W_2	#4	1	16'-6"	—

BARS IN ONE HEADWALL — 75° SKEW

E 60 - 2					E 60 - 4					E 72 - 2					E 72 - 4				
Bar	Size	No.	Length	Shape	Bar	Size	No.	Length	Shape	Bar	Size	No.	Length	Slope	Bar	Size	No.	Length	Shape
a	#5	2	6'-8"	—	a	#5	2	6'-8"	—	a	#5	2	7'-8"	—	a	#5	2	7'-8"	—
d	#4	19	4'-9"	┐	d	#4	16	4'-3"	┐	d	#4	15	4'-3"	┐	d	#4	19	4'-3"	┐
d_1	#5	2	7'-6"	┐	d_1	#5	2	7'-6"	┐	d_1	#5	2	8'-6"	┐	d_1	#5	2	8'-6"	┐
d_2	#5	2	6'-0"	┘	d_2	#5	2	6'-0"	┘	d_2	#5	2	7'-0"	┘	d_2	#5	2	7'-0"	┘
b	#5	2	8'-2"	—	b	#5	2	8'-2"	—	b	#5	2	9'-6"	—	b	#5	2	9'-6"	—
b_1	#4	2	12'-0"	—	b_1	#4	2	11'-6"	—	b_1	#4	1	11'-6"	—	b_1	#4	2	14'-0"	—
b_2	#4	1	15'-2"	—	b_2	#4	2	15'-3"	—	b_2	#4	2	16'-6"	—	b_2	#4	1	16'-3"	—
b_3	#4	2	18'-2"	—	b_3	#4	1	19'-3"	—	b_3	#4	1	17'-9"	—	b_3	#4	2	20'-0"	—
b_4	#4	2	20'-2"	—	b_4	#4	2	21'-6"	—	b_4	#4	2	21'-6"	—	b_4	#4	1	22'-9"	—
h	#5	2	13'-10"	╱	b_5	#4	2	24'-6"	—	b_5	#4	2	22'-6"	—	b_5	#4	2	26'-0"	—
h_1	#5	2	11'-10"	╱	h	#5	2	17'-7"	╱	h	#5	2	16'-6"	╱	b_6	#4	2	28'-6"	—
h_2	#4	2	10'-4"	—	h_1	#5	2	14'-9"	╱	h_1	#5	2	14'-0"	╱	h	#5	2	20'-6"	╱
h_3	#4	2	8'-0"	—	h_2	#4	2	14'-1"	—	h_2	#4	2	12'-0"	—	h_1	#5	2	17'-0"	╱
V_1	#5	2	8'-9"	┘	h_3	#4	2	10'-9"	—	h_3	#4	2	9'-2"	—	h_2	#4	2	16'-9"	—
V_2	#5	3	7'-9"	┘	V_1	#5	3	8'-9"	┘	V_1	#5	4	9'-9"	┘	h_3	#4	2	12'-5"	—
V_3	#5	3	6'-9"	┘	V_2	#5	4	7'-9"	┘	V_2	#5	3	8'-6"	┘	V_1	#5	5	9'-9"	┘
V_4	#5	3	5'-9"	┘	V_3	#5	4	6'-9"	┘	V_3	#5	3	7'-3"	┘	V_2	#5	4	8'-6"	┘
V_5	#5	3	8'-6"	┘	V_4	#5	4	5'-9"	┘	V_4	#5	3	6'-3"	┘	V_3	#5	4	7'-6"	┘
V_6	#5	3	7'-3"	┘	V_5	#5	3	8'-9"	┘	V_5	#5	4	9'-9"	┘	V_4	#5	4	6'-3"	┘
V_7	#5	3	5'-9"	┘	V_6	#5	3	7'-9"	┘	V_6	#5	3	7'-9"	┘	V_5	#5	4	9'-9"	┘
W_1	#4	1	7'-0"	—	V_7	#5	3	6'-9"	┘	V_7	#5	3	6'-6"	┘	V_6	#5	4	8'-3"	┘
W_2	#4	1	8'-6"	—	V_8	#5	3	5'-9"	┘	W_1	#4	1	8'-6"	—	V_7	#5	5	6'-9"	┘
					W_1	#4	1	9'-0"	—	W_2	#4	1	10'-6"	—	W_1	#4	1	12'-0"	—
					W_2	#4	1	12'-0"	—						W_2	#4	1	15'-3"	—



d BARS



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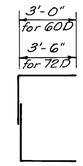
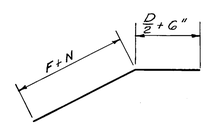
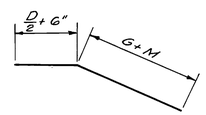


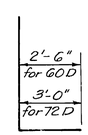
d_2 BARS



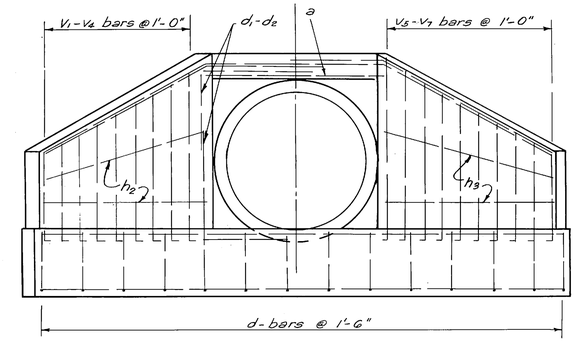
h BARS



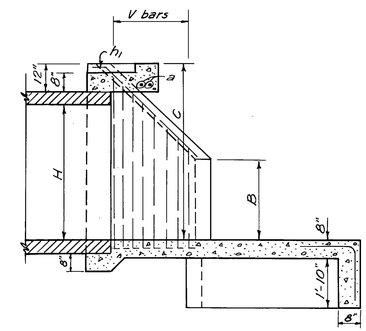
h_1 BARS



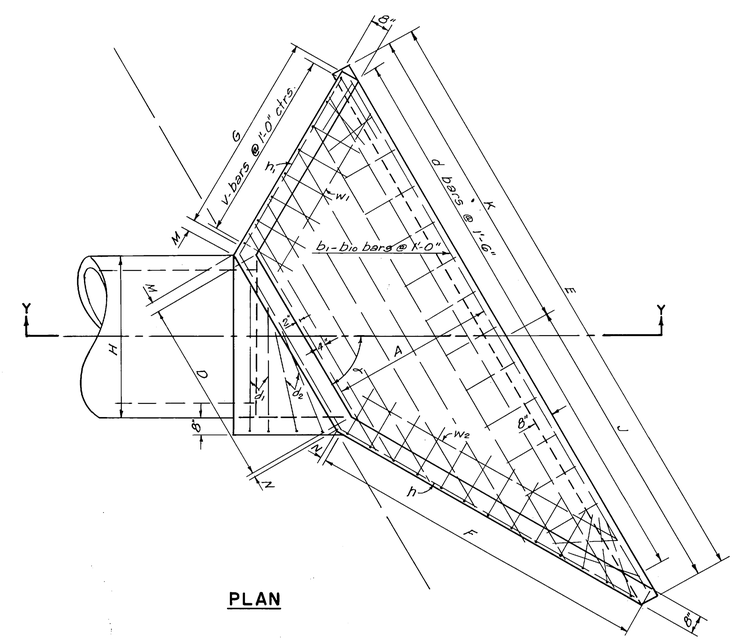
V BARS



FRONT ELEVATION



SECTION YY



PLAN

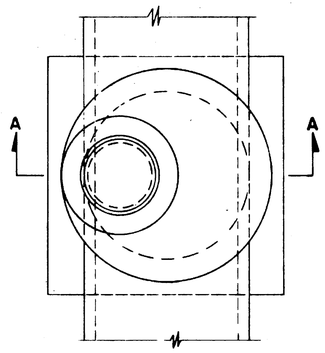
GENERAL NOTES

1. Specification are the standard Road and Bridge Specifications.
2. Class A concrete shall be used throughout.
3. Reinforcing steel: see specifications. all dimensions are to center of bar unless otherwise noted.
4. All excavation and backfill necessary for the construction of the concrete pipe culvert headwalls shall be considered incidental to the contract and no additional compensation will be allowed.
5. Field adjustment: the location, grade and size of pipe culvert may be modified at the direction of the Engineer to better meet conditions in the field.
6. Forms and Finish: See Specifications.
7. All reinforcing steel shall clear face of concrete by 2" except as noted.
8. Chamfer all exposed corners with ¾" bevel.
9. Quantities and bar list are for one headwall only.

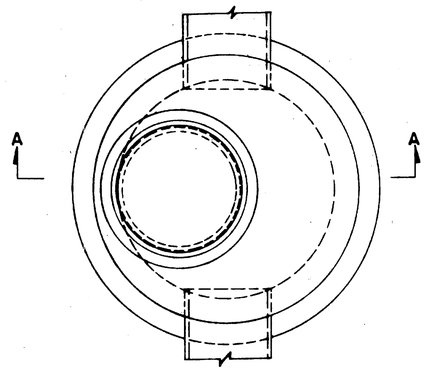
STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
BUREAU OF HIGHWAYS

TYPE E HEADWALL
PIPE CULVERTS 60" & 72"

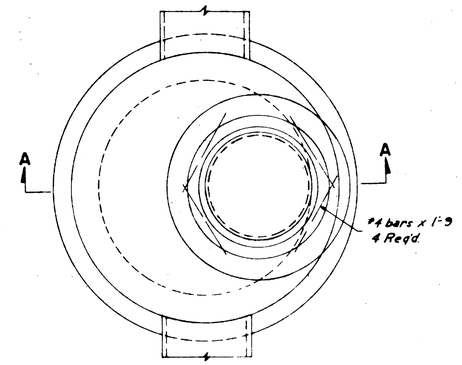
TYPE	YEAR	PROJECT NO.	SHEET NO.
Const.	1974	ECI-240-1(04)4	2T



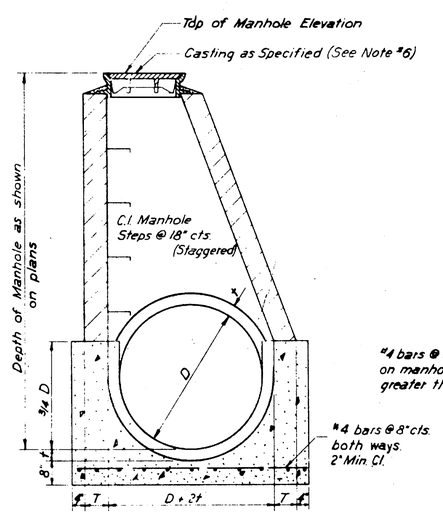
PLAN



PLAN



PLAN



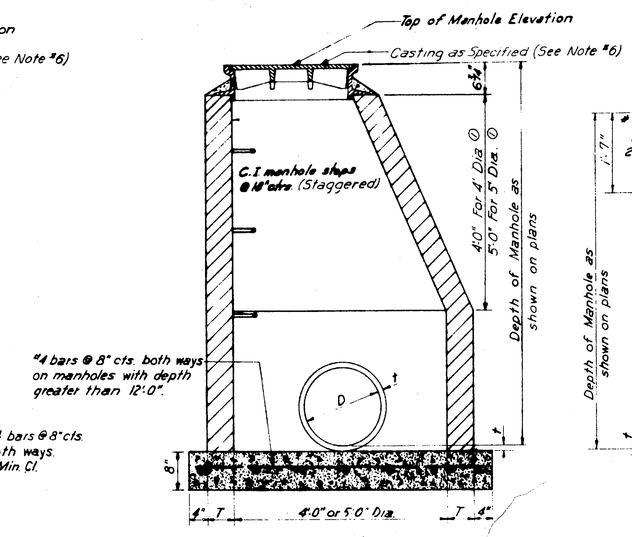
TYPICAL SECTION A-A

ESTIMATED QUANTITIES 6" WALLS

D Pipe Dia.	Cu Yds. Class "A" Concrete 8'-0" Depth	1'-0" Additional	Reinf. Steel Lbs.
48"	4.040	0.228	82
54"	4.731	0.242	95
60"	5.530	0.262	118
66"	6.427	0.280	137
72"	7.399	0.300	150

Notes: No deductions made for pipe openings.
Base of manhole to be made square.

TYPE B MANHOLE



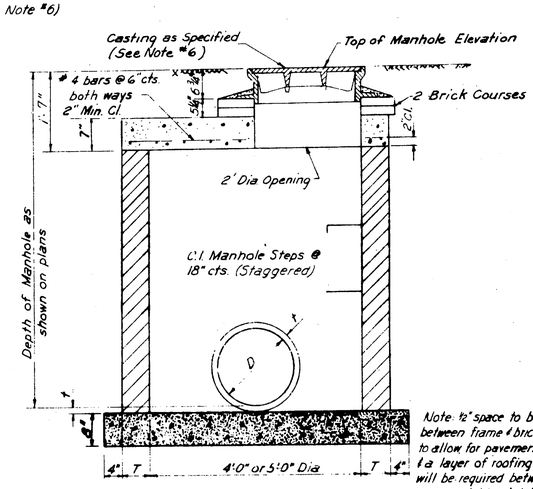
TYPICAL SECTION A-A

ESTIMATED QUANTITIES 6" WALLS

Manhole Dia.	Cu. Yds. Class "A" Concrete 6'-0" Depth	1'-0" Additional	Reinf. Steel Lbs.
4'-0"	1.878	0.262	43 #
5'-0"	2.246	0.320	63 #

Notes: No deductions made for pipe openings.
Fillets not included in the above quantities.
#For manhole depth greater than 12'-0".
① 3'-0" min may be used for offset cone used with precast concrete risers.

TYPE C MANHOLE



Note: 1/2" space to be left between frame & brick work to allow for pavement expansion & a layer of roofing paper will be required between pavement & top brick course

TYPICAL SECTION A-A

ESTIMATED QUANTITIES 6" WALLS

Manhole Dia.	Cu Yds. Class "A" Concrete 4'-0" Depth	1'-0" Additional	Reinf. steel Lbs.
4'-0"	1.705	0.262	38
5'-0"	2.295	0.320	58

Notes: No deductions made for pipe openings.
Fillets not included in the above quantities.

TYPE D MANHOLE

GENERAL NOTES

1. Manholes shall be constructed as shown on this sheet unless otherwise directed by the Engineer to meet special conditions. There will be no variation from the contract price due to such changes; in all cases manholes must be constructed large enough to accomodate inlet & outlet pipes.

   See plans for pipe sizes and elevations of top and inverts of manholes.

2. All work shall be in accordance with Section G11 of the "Standard Specifications.

3. Alternate materials for walls (Types B, C & D)

	T
Monolithic Concrete	6"*
Brick Masonry	8"*
Precast Reinforced Concrete Risers	5"
Concrete Masonry Units	5"*

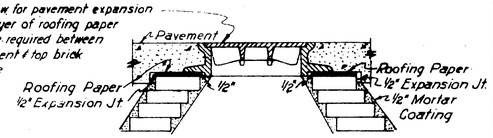
   * The wall Thickness on portions of manholes deeper than 12' shall be as follows: 12' to 18'; T+4"; 18' to 28'; T+8"; over 28'; T+12".

   Brick and concrete masonry unit walls shall be plastered inside and outside with a mortar coat 1/2" thick. Brick and concrete masonry units are to be laid in full mortar beds with struck joints. See Specifications.

   Concrete masonry units shall conform to the requirements of the Specifications for concrete masonry units for construction of catch basins and manholes. ASTM designation C-139-39.

   Precast reinforced concrete risers shall conform to the tentative specifications for precast reinforced concrete manhole risers & tops, ASTM designation C478-61T.

4. All concrete shall be Class "A".
5. Reinforcing steel shall be in accordance with Article G04.08 of the "Standard Specifications".
6. Manhole Rims, Covers and Steps shall be identical to Rims, Covers and Steps detailed on Tennessee Highway Dept. Dwg. "Details of Standard No. 2 Manhole Casting & Masonry Junction", (No. 5-M-2a). Covers are designated as Types A, B & C as shown on Dwg. No. 5-M-2a.
7. Manhole frames to be firmly anchored by mortar.
8. When monolithic concrete is used for walls, finishing with one course of brick will be allowed to aid final adjustment to grade.
9. All manholes to be provided with standard fillets.
10. Manholes will be measured for payment per each, complete in place, including casting.

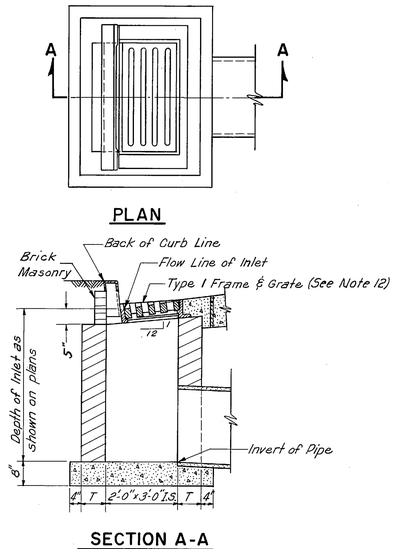


MANHOLE EXPANSION JOINT DETAIL
(For all manholes placed in concrete pavement)

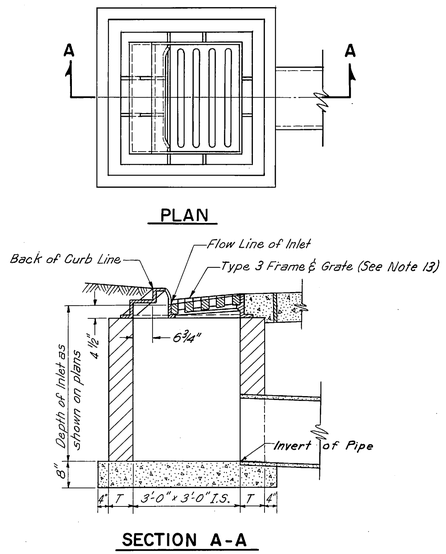
STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
BUREAU OF HIGHWAYS

MANHOLES TYPE B
SANITARY DROP
CONSTRUCTION, B, C, & D

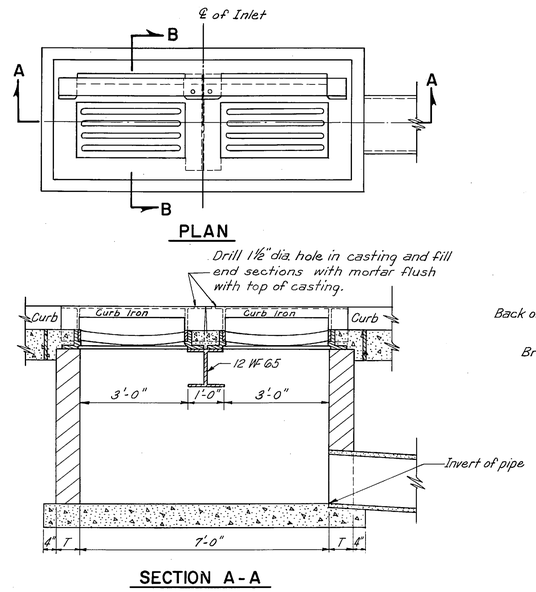
TYPE	YEAR	PROJECT NO.	SHEET NO.
Const.	1974	EAC I-240-1(104)	2U

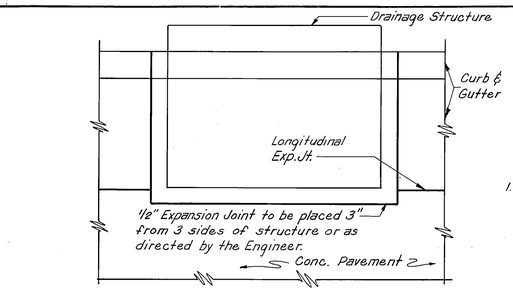


TYPE A1 INLET

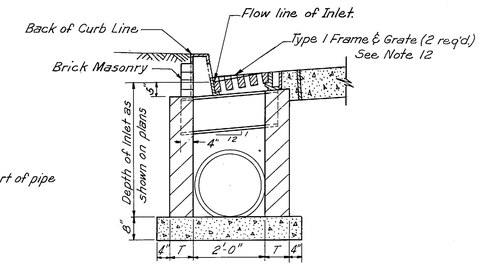


TYPE A2 INLET

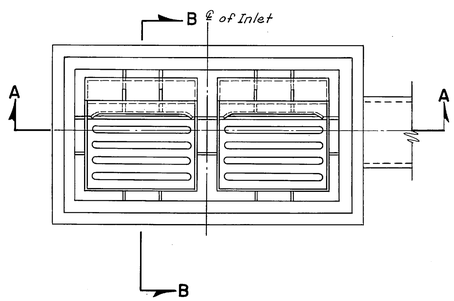


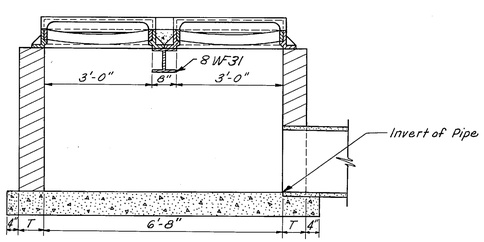


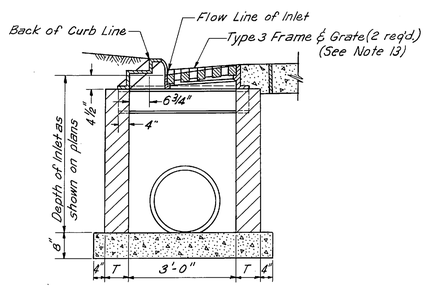
INLET EXPANSION JOINT DETAIL



TYPE A3 INLET







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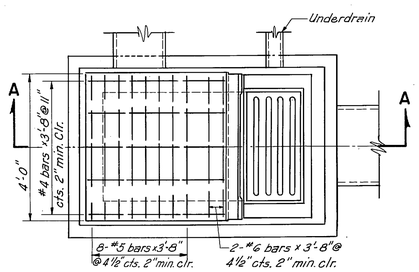
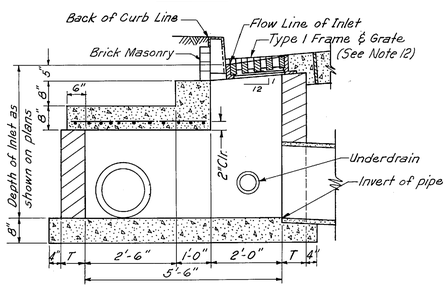
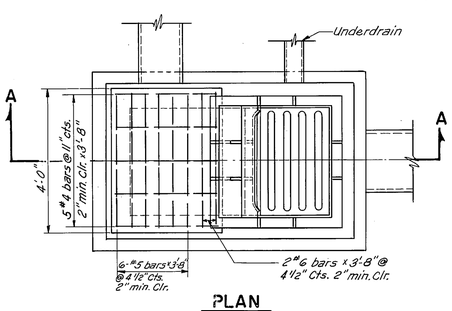
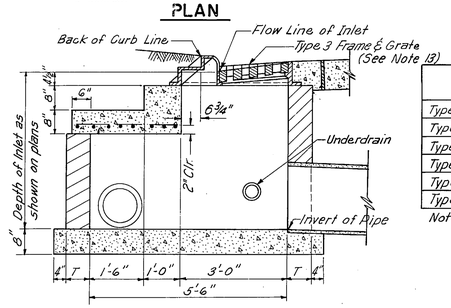




TYPE A5 INLET





TYPE A6 INLET

GENERAL NOTES

1. Inlets shall be constructed as shown on this sheet unless otherwise directed by the Engineer to meet special conditions. There will be no variation from the contract price due to such changes; in all cases inlets must be constructed large enough to accomodate inlet and outlet pipes. See plans for pipe sizes and elevations of flow lines and inverts of inlets.
2. ALL work shall be in accordance with Section G11 of the "Standard Specifications".
3. Alternate material for walls — T
   - Monolithic Concrete — 6"
   - Brick Masonry — 8"
4. All concrete shall be Class "A"
5. Reinforcing steel and structural steel shall be in accordance with Articles G04.03 and G11.10 of the "Standard Specifications."
6. All inlets with depths greater than 3 feet to have manhole steps at 18" cts. Steps to be identical to those shown on Tennessee Highway Dept. Dwg. "Details of Standard No. 2 Manhole Castings & Masonry Junction" Dwg. No. S-M-2a.
7. Inlet frames shall be firmly anchored to inlet box by mortar.
8. When monolithic concrete is used for walls, finishing with one course of brick will be allowed to aid final adjustment to grade.
9. All inlets to be provided with standard fillets.
10. Inlets will be measured for payment per each, complete in place, including casting. See Special Provisions.
11. Expansion joints shall be provided around all inlets. Material and construction of this joint will not be paid for separately but shall be considered incidental to the contract unit price for other items. Expansion joints to be ½" premoulded Bituminous Fiber and shall be in accordance with Article 00501 of the "Standard Specifications".
12. Type 1 Frame & Grate shall be identical to castings shown on Tennessee Highway Dept. Dwg. "Castings for No's. 12, 14 & 15 Catch Basins (with type C grate)" (No. S-C-12c).
13. Type 3 Frame & Grate shall be identical to castings shown on Tennessee Highway Dept. Dwg. "Standard No. 28-A Catch Basin" (S-CB-28-A).
14. Types A1, A3 & A5 inlets shall have depressed gutter sections identical to Sump Diagrams shown on Tenn. Hwy. Dept. Dwg. "Standard No. 12 Catch Basins" (S-CB-12c).

ESTIMATED QUANTITIES 6" WALLS

ITEM	Cu. Yds. Class "A" Concrete 3'-0" Depth	1'-0" Additional	Steel (Lbs)	Frame & Grate Wt.
Type A1 Inlet	1.027	.222	——	785
Type A2 Inlet	1.218	.259	——	860
Type A3 Inlet	1.778	.370	173	1570
Type A4 Inlet	1.997	.394	114	1720
Type A5 Inlet	1.993	.351	54	785
Type A6 Inlet	1.918	.351	46	860

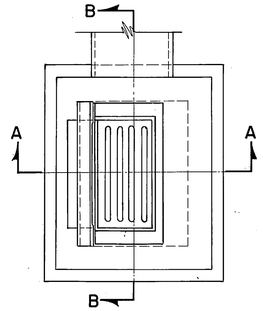
Notes: Quantities for fillets not included.
No deductions for pipe openings.

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
BUREAU OF HIGHWAYS

INLETS TYPE A1 THRU TYPE A6

JOB NO.

TYPE	YEAR	PROJECT NO.	SHEET NO.
Const.	1974	IACI-2(10)-1(204)4	2V

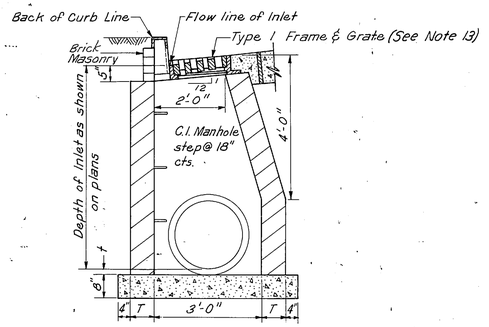


PLAN

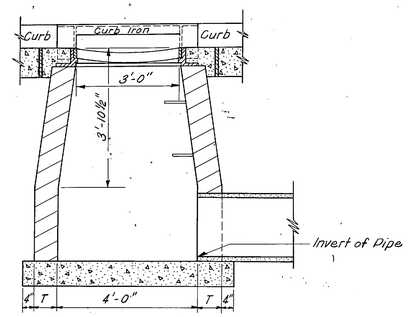
ESTIMATED QUANTITIES 6" WALLS

INLET TYPE	Cu. Yds. Glass "A Concrete 6'-0" Depth	1'-0" Additional	Frame & Grate Wt. (Lbs.)	Reinf. Steel
A 7	2.210	0.296	785	—
A 8	2.241	0.296	860	—
A 9 4' Dia.	2.071	0.262	785	43
A 9 5' Dia.	2.533	0.320	785	63
A10 4' Dia.	2.145	0.262	860	43
A10 5' Dia.	2.607	0.320	860	63
All	0.627 ①	0.142	360	—

① Quantities are for a 3'-0" Depth

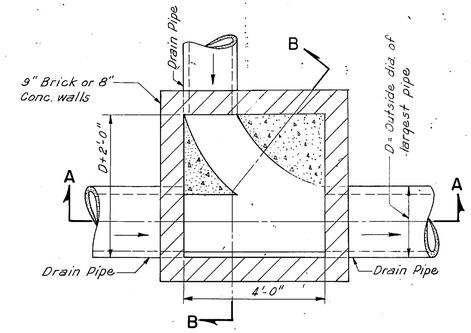


SECTION A-A

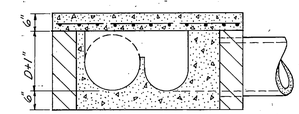


SECTION B-B

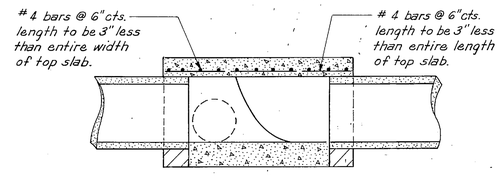
TYPE A7 INLET (See Special Note Below)



PLAN



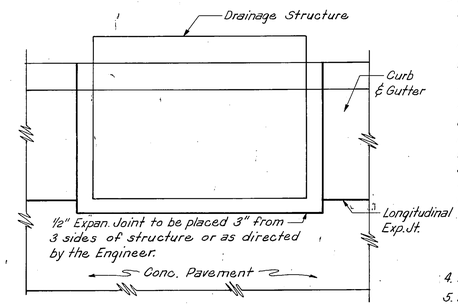
SECTION B-B



SECTION A-A

Note: Shape & dimensions to be altered to meet special conditions

TYPE A JUNCTION BOX



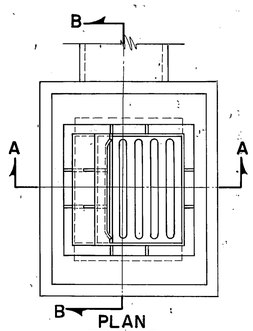
INLET EXPANSION JOINT DETAIL

GENERAL NOTES

1. Inlets shall be constructed as shown on this sheet unless otherwise directed by the Engineer to meet special conditions. There will be no variation from the contract price due to such changes; in all cases inlets must be constructed large enough to accomodate inlet and outlet pipes.
   See plans for pipe sizes and elevations of flow lines and inverts of inlets.
2. All work shall be in accordance with Section C11 of the Standard Specifications.
3. Alternate Material for walls T
   - Monolithic Concrete 6" *
   - Brick Masonry 8" *
   - Precast Reinforced Concrete Risers 5"
   - Concrete Masonry 5" *

* The wall thickness on portions of inlets deeper than 12' shall be as follows; 12'-18', T+4", 18'-28', T+8", over 28', T+12".
Brick and concrete masonry unit walls shall be plastered inside and outside with a mortar coat ½" thick. Brick and concrete masonry units are to be laid in full mortar beds with struck joints. See Specifications.
Concrete masonry units shall conform to the requirements of the specifications for concrete masonry units for construction of catch basins and manholes. ASTM designation C-139-39.
Precast reinforced concrete risers shall conform to the.

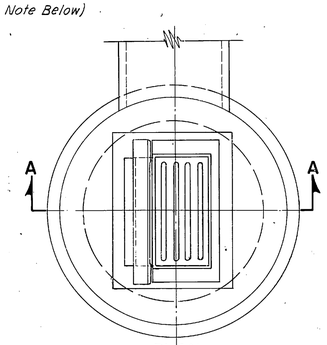
4. All concrete to be Class "A".
5. Reinforcing steel shall be in accordance with Article 604.08 of the "Standard Specifications."
6. All inlets with depths greater than 3 feet to have C.I. Manhole steps @ 18" cts. Manhole steps to be identical to steps shown on Tenn. Highway Dept. Dwg. "Details of Standard No. 2 Manhole, Castings & Masonry Junction" (S-M-2a).
7. Inlet frames shall be firmly anchored by mortar.
8. When monolithic concrete is used for walls, finishing with one course of brick will be allowed to aid final adjustment to grade.
9. All inlets to be provided with standard fillets.
10. Inlets will be measured for payment per each, complete in place, including casting. See Special Provisions.
11. Type A Junction Box will be measured for payment per each, complete in place. See Special Provisions.
12. Expansion joints shall be provided around all inlets. Material and construction of this joint will not be paid for separately but shall be considered incidental to the contract unit price of other items. Expansion joints to be ½" premoulded Bituminous Fiber and shall be in accordance with 905.01 of the Standard Specifications.
13. Type 1 F & G. shall be identical to castings shown on Tenn. Highway Dept. Dwg. "Castings For No's. 12, 14 & 15 Catch Basins (with Type "C" Grate)- Dwg. No. S-C-12c.
14. Type 3 F & G. shall be identical to castings shown on Tenn. Highway Dept. Dwg. "No. 28A Catch Basin"-Dwg. No. S-CB-28A.
15. Type 2 F & G. shall be identical to Type 2 F & G. shown on Tenn. Highway Dept. Dwg. "Castings for Special Inlets"- Dwg. No. S-C-34.



PLAN

SPECIAL NOTE

Types A7 and A9 inlets shall have depressed gutter sections identical to Sump Diagrams shown on Tenn. Highway Dept. Dwg. "Standard No. 12 Catch Basin"- Dwg. No. S-CB-12c.



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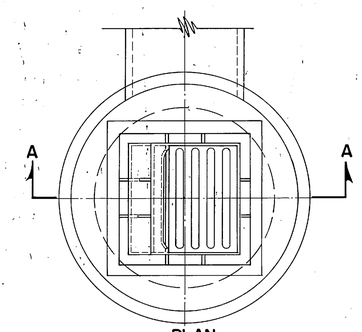

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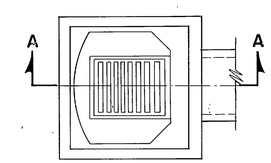

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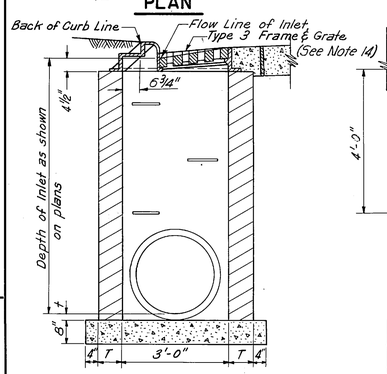
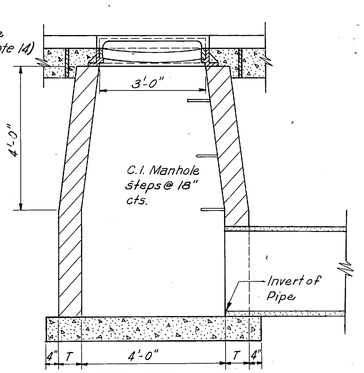
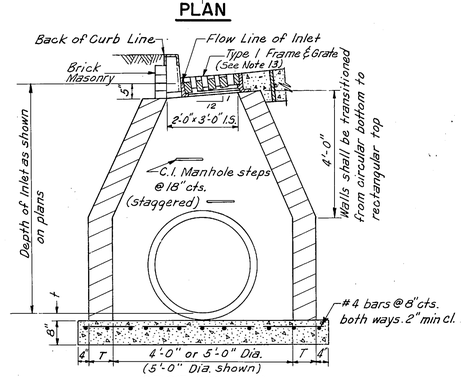


SECTION A-A



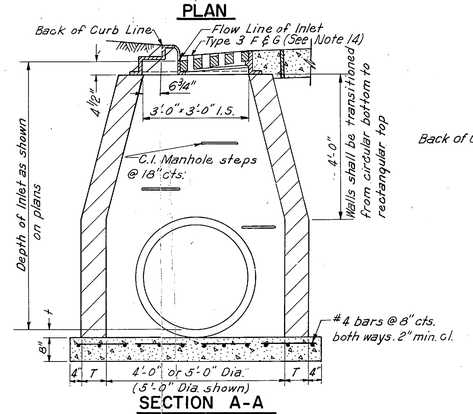
SECTION B-B

TYPE A8 INLET



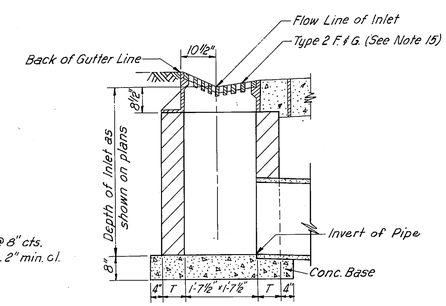
SECTION A-A

TYPE A9 INLET (See Special Note Above)



SECTION A-A

TYPE A10 INLET



SECTION A-A

TYPE A11 INLET

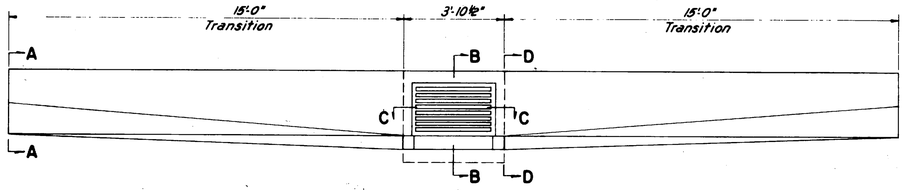
STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
BUREAU OF HIGHWAYS

INLETS TYPE A7 THRU TYPE A11 AND TYPE A JUNCTION BOX

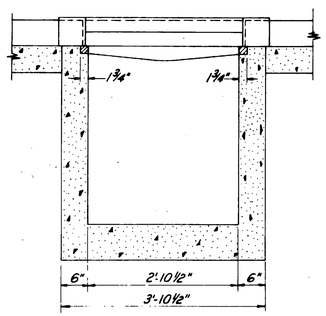
JOB NO.

EDCO 127

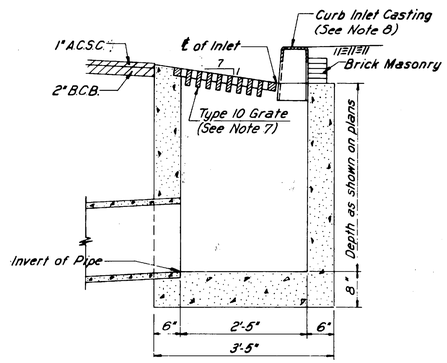
TYPE	YEAR	PROJECT NO.	SHEET NO.
Const.	1974	EACI-240-1(24)4	2W



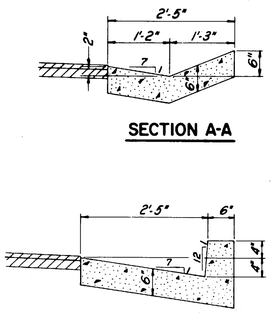
PLAN



SECTION C-C



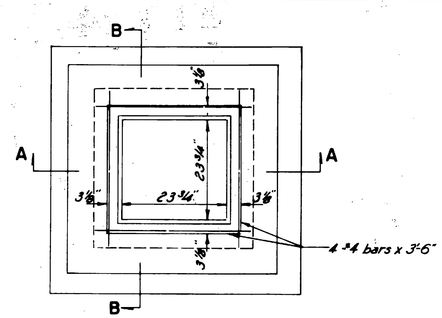
SECTION B-B



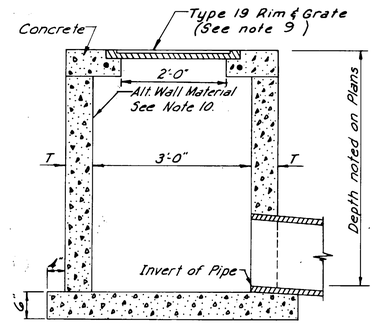
SECTION A-A

SECTION D-D

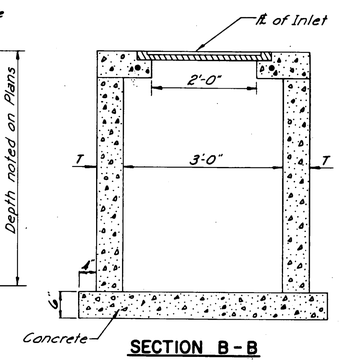
TYPE Q INLET



PLAN

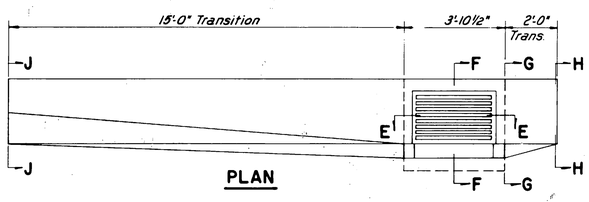


SECTION A-A

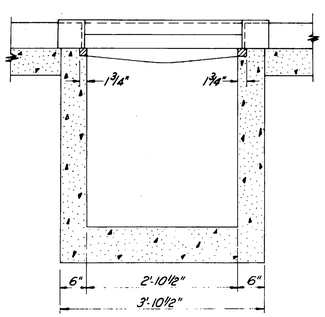


SECTION B-B

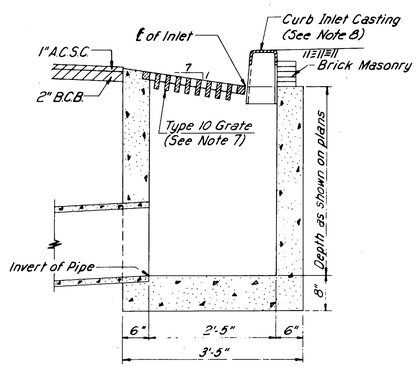
TYPE U INLET



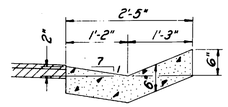
PLAN



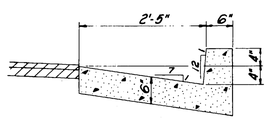
SECTION E-E



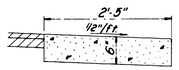
SECTION F-F



SECTION J-J



SECTION G-G



SECTION H-H

TYPE R INLET

GENERAL NOTES

1. Inlets shall be constructed as shown on this sheet unless otherwise directed by the Engineer to meet special conditions. There will be no variation from the contract price due to such changes; in all cases inlets must be constructed large enough to accomodate inlet and outlet pipes.

   See plans for pipe sizes and elevations of flow lines and inverts of inlets.

2. All work shall be in accordance with Section 611 of the "Standard Specifications".

3. All concrete shall be Class "A".

4. All inlets with depths greater than 3 feet to have C.I. Manhole Steps at 18" cts. These steps shall be identical to steps shown on Tenn. Highway Dept. Dwg. "Details of Standard No. 2 Manhole, Castings & Masonry Junction" - Dwg. No. S-M-2a.

5. All inlets to be provided with standard fillets.

6. Inlets will be measured for payment per each, complete in place, including casting and gutter transitions. See Special Provisions.

7. Type 10 Grate shall be identical to the Casting of the same designation shown on Tenn. Highway Dept. Dwg. "Castings for Special Inlets" - Dwg. No. S-C-34.

8. Curb Inlet Casting shall be identical to the casting of the same designation shown on Tenn. Highway Dept. Dwg. "Standard Casting for Nos. 10, 12, 14 & 15 Catch Basins (With Type C Grate) - Dwg. No. S-C-12c.

9. Type 19 Rim & Grate shall be indentical to the rim & grate of the same designation shown on Tenn. Highway Dept. Dwg. "Standard No. 18 & 19 Catch Basins & Casting Dwg. No. S-CB-19.

10. Alternate Wall Material for Type U Inlet.
    Monolithic Concrete 6"
    Brick Masonry 8"

ESTIMATED QUANTITIES 6" WALLS

ITEM	Class "A" Concrete			Casting Weight
	3'-0" Depth	1'-0" Additional	Transition	
TYPE Q INLET	1.075 Cu Yds.	0.233 Cu Yds.	1.668 Cu Yds.	460 lbs.
TYPE R INLET	1.075 Cu Yds.	0.233 Cu Yds.	0.945 Cu Yds.	460 lbs.
TYPE U INLET	1.377 Cu Yds.	0.259 Cu Yds.	———	322 lbs.

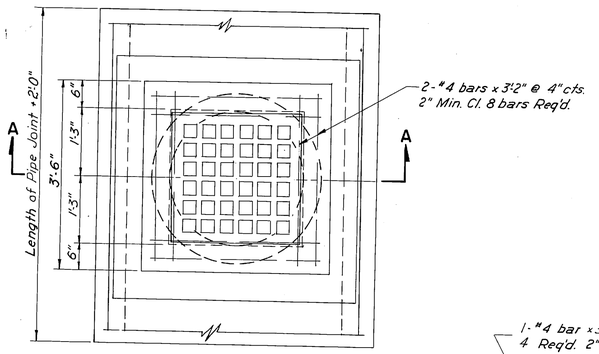
Notes: Fillets not included in the above quantities.
No deductions made for pipe openings.

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
BUREAU OF HIGHWAYS

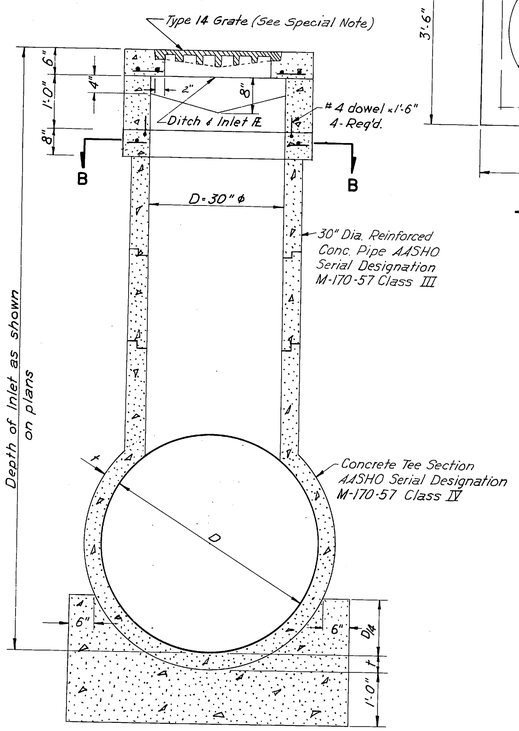
INLETS Q, R & U

JOB NO. 429 A

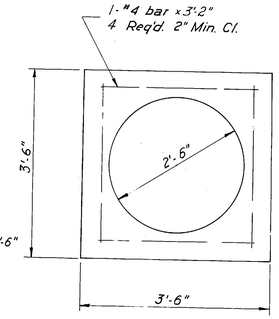
TYPE	YEAR	PROJECT NO.	SHEET NO.
Const.	1974	IMCI-240-1(04)4	2X



PLAN



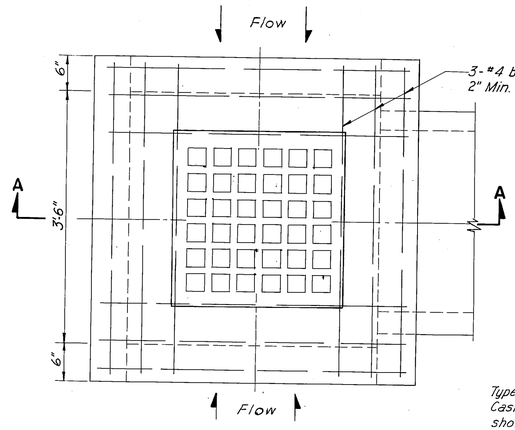
SECTION A-A



SECTION B-B

TYPE D1 INLET

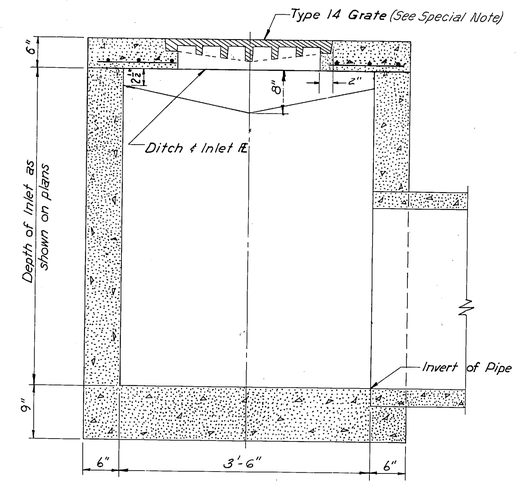
Note: The contract unit for Type D1 Inlet does not include the Concrete Tee Section. This Concrete Tee Section shall be considered as part of the storm sewer pipe.



PLAN

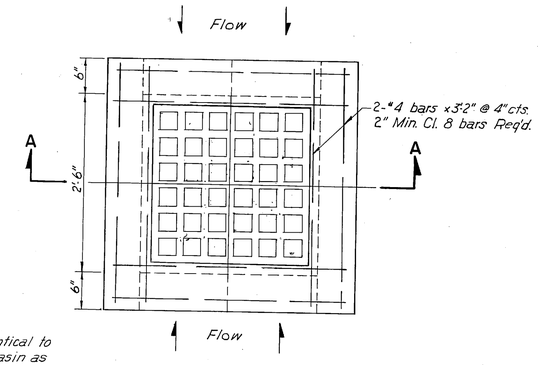
SPECIAL NOTE

Type 14 Grate shall be identical to Casting for No. 31 Catch Basin as shown on Tenn. Highway Dept. Dwg. "Examples of Median Drainage For 4 Lane Highways and Std. No. 31 Catch Basin & Type X Conc. Endwall" Dwg. No. M-D-1.

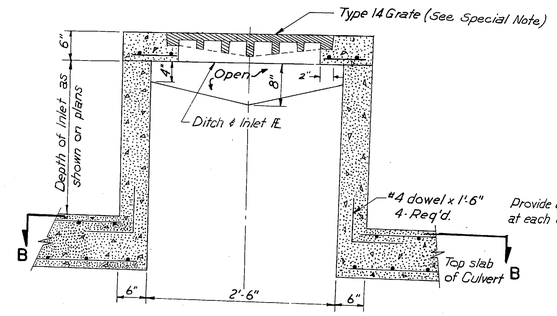


SECTION A-A

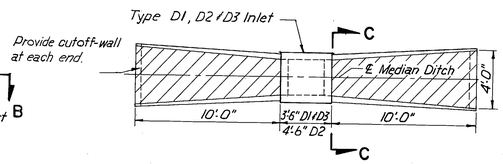
TYPE D2 INLET



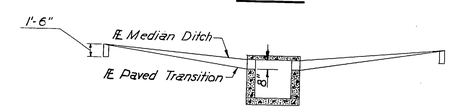
PLAN



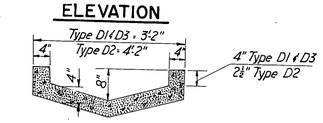
SECTION A-A



PLAN



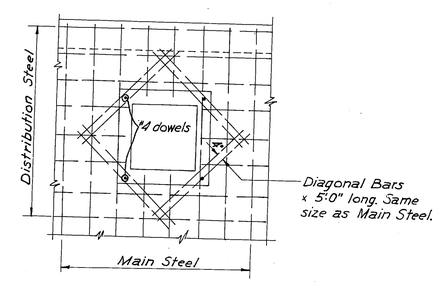
ELEVATION



SECTION C-C

MEDIAN DITCH TRANSITION

(Used With Type D1, D2 & D3 Inlets)



TYPICAL SECTION B-B

TYPE D3 INLET

Note: Culvert steel to be field cut. Cost of installation will be included in cost of culvert.

ESTIMATED QUANTITIES 6" WALLS

ITEM	Reinforcing Steel	Class "A" Concrete 3'-0" Depth	Class "A" Concrete 1'-0" Additional	Transition	Grate Wt.
*TYPE D1 INLET	25 Lbs.	2.258 Cu. Yds.	———	1.17 Cu. Yds.	223 Lbs.
TYPE D2 INLET	33 Lbs.	1.687 Cu. Yds.	0.296 Cu. Yds.	1.23 Cu. Yds.	223 Lbs.
TYPE D3 INLET	21 Lbs.	0.766 Cu. Yds.	0.222 Cu. Yds.	1.17 Cu. Yds.	223 Lbs.

Note: Fillets Not Included In The Above Quantities.
* Quantities calculated for D=48". Does not include Riser Pipe.
No deductions made for pipe openings.

GENERAL NOTES

1. Inlets shall be constructed as shown on this sheet unless otherwise directed by the Engineer to meet special conditions. There will be no variation from the contract price due to such changes; in all cases inlets must be constructed large enough to accomodate inlet and outlet pipes.

   See plans for pipe sizes and elevations of flow lines and inverts of inlets.
2. All work shall be in accordance with Section 611 of the "Standard Specifications."
3. All concrete shall be Class "A".
4. Reinforcing steel shall be in accordance with Article 602.06 of the "Standard Specifications."
5. D2 inlets with depths greater than 3 feet to have manhole steps at 18" cts. These steps shall be identical to steps shown on Tenn. Highway Dept. Dwg. "Details of Standard No. 2 Manhole, Castings & Masonry Junction" - Dwg. No. 5-M-28A
6. Top slab shall be formed to allow grate to be removed for access to inlet box. Opening shall be constructed to provide smooth seat for the grate.
7. Type D2 inlet to be provided with standard fillets.
8. A paved transition from median ditch to inlet shall be provided for Type D1, D2 & D3 inlets. The cost of the transition shall be included in the contract unit price per inlet. A transition shall be provided only on the upstream side of the inlet when median ditch drains away from inlet on one side.
9. Inlets will be measured for payment per each, complete in place, including casting. See Special Provisions.

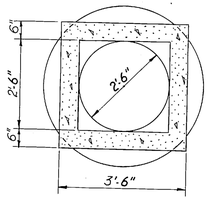
STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
BUREAU OF HIGHWAYS

INLETS, D1, D2 & D3

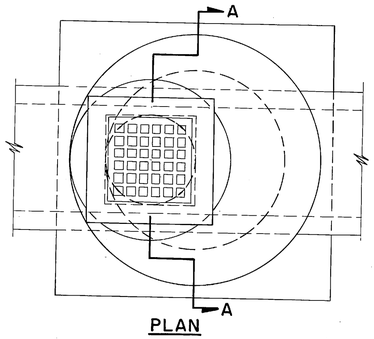
JOB NO.

EDCO 127

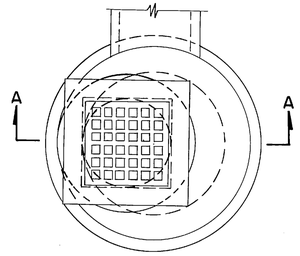
TYPE	YEAR	PROJECT NO.	SHEET NO.
Const.	1974	EACI-240-1(04)4	2Y



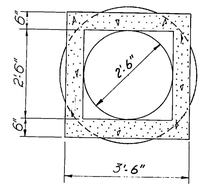
SECTION B-B



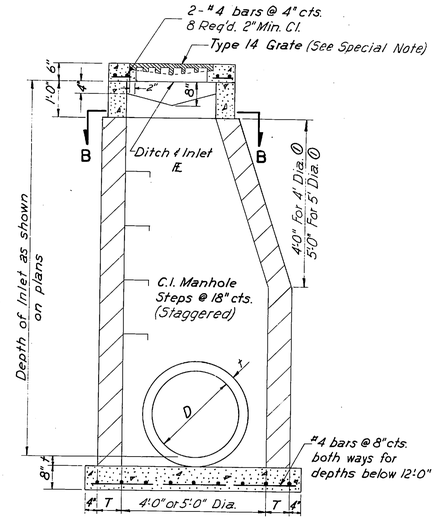
PLAN



PLAN



SECTION B-B



SECTION A-A

① 3'-0" min. may be used for offset cone used with precast concrete risers.

SPECIAL NOTE

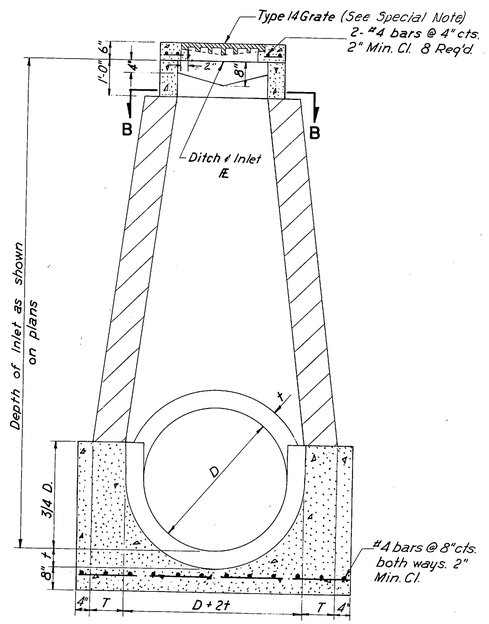
Type 14 grate shall be identical to Casting for No. 31 Catch Basin as shown on Tenn. Highway Dept. Dwg. "Examples of Median Drainage For 4 Lane Highways and Std. No. 31 Catch Basin & Type X Conc. Endwall" Dwg. No. M-D-1.

GENERAL NOTES

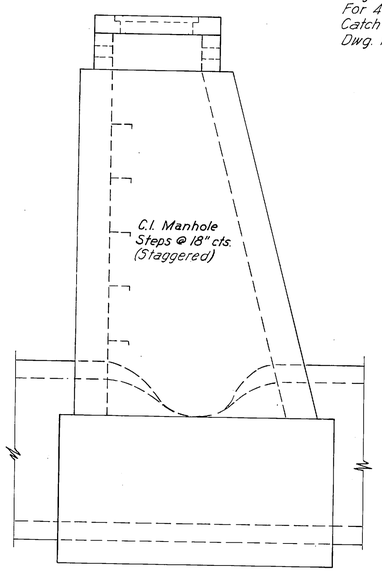
1. Inlets shall be constructed as shown on this sheet unless otherwise directed by the Engineer to meet special conditions. There will be no variation from the contract price due to such changes; in all cases inlets must be constructed large enough to accomodate inlet and outlet pipes.
   See plans for pipe sizes and elevations of flow lines and inverts of pipe.
2. All work shall be in accordance with Section 611 of the "Standard Specifications".
3. Alternate materials for walls

	T
Monolithic Concrete	6"*
Brick Masonry	8"*
Precast Reinforced Concrete Risers	5"
Concrete Masonry	5"*

   *The wall thickness on portions of inlets deeper than 12' shall be as follows: 12'-18', T+4"; 18'-28', T+8"; over 28' T +12".
   Brick and concrete masonry units walls shall be plastered inside and outside with a mortar coat 1/2" thick. Brick and concrete masonry units are to be laid in full mortar beds with struck joints. See Specifications.
   Concrete masonry units shall conform to the requirements of the Specifications for concrete masonry units for construction of catch basins and manholes. ASTM designation C-139-39.
   Precast reinforced concrete risers shall conform to the tentative specifications for precast reinforced concrete manholes & taps, ASTM designation C478-61T.
4. Reinforcing steel shall be in accordance with Section 604.08 of the "Standard Specifications." All concrete shall be Class "A".
5. All inlets with depths greater than 3 feet to have C.I. Manhole Steps at 18" cts. These steps shall be identical to steps shown on Tenn. Highway Dept. Dwg. "Details of Standard No. 2 Manhole, Castings & Masonry Junction"- Dwg. No. S-M-2a.
6. All inlets to be provided with standard fillets.
7. Inlets will be measured for payment per each, complete in place, including casting. See Special Provisions.



SECTION A-A



ELEVATION

TYPE D4 INLET

ESTIMATED QUANTITIES 6" WALLS

D Pipe Dia.	Cu. Yds. Class "A" Concrete 8'-0" Depth	1'-0" Additional	Transition	Reinforcing Steel (Lbs)	Grate Wt. (Lbs)
48"	4.326	0.244	1.170	99	223
54"	4.998	0.259	1.170	116	223
60"	5.782	0.276	1.170	135	223
66"	6.668	0.294	1.170	154	223
72"	7.624	0.313	1.170	176	223

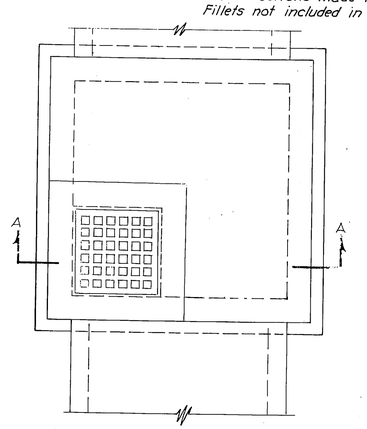
Notes: No deductions made for pipe openings.
Base of inlet to be made square.

TYPE D5 INLET

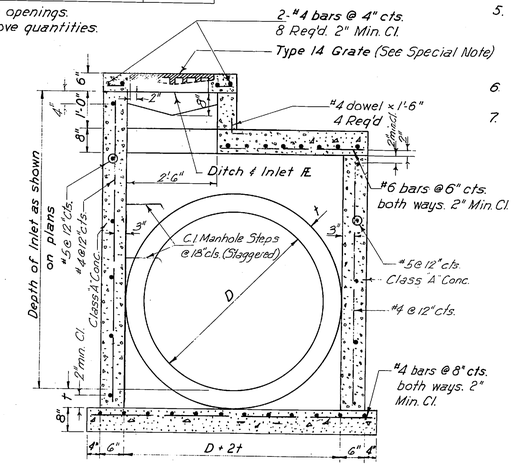
ESTIMATED QUANTITIES 6" WALLS

D Inlet Dia.	Cu. Yds. Class "A" Concrete 6'-0" Depth	1'-0" Additional	Transition	Reinforcing Steel (Lbs.)	Grate Wt. (Lbs.)
4'-0"	2.083	0.262	1.170	59	223
5'-0"	2.425	0.320	1.170	80	223

Notes: No deductions made for pipe openings.
Fillets not included in the above quantities.



PLAN



SECTION A-A

TYPE D6 INLET

ESTIMATED QUANTITIES 6" WALLS

D Pipe Dia.	Cu. Yds. Class "A" Concrete 6'-0" Depth	1'-0" Additional	Transition	Reinforcing Steel (Lbs.)	Grate Wt. (Lbs.)	1'-0" Additional Steel (Lbs.)
48"	3.578	0.364	1.170	380	223	32
	8'-0" Depth					
54"	4.625	0.386	1.170	481	223	34
60"	4.939	0.407	1.170	518	223	36
66"	5.264	0.429	1.170	558	223	39
72"	5.588	0.451	1.170	590	223	40
	10'-0" Depth					
84"	7.222	0.494	1.170	762	223	44

Notes: No deductions made for Pipe Openings. Fillets not included in the above quantities.

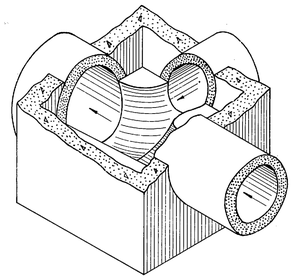
STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
BUREAU OF HIGHWAYS

INLETS TYPE
D4, D5 & D6

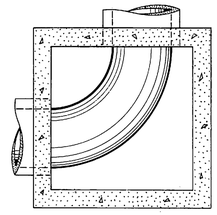
JOB NO.

EDCO 127

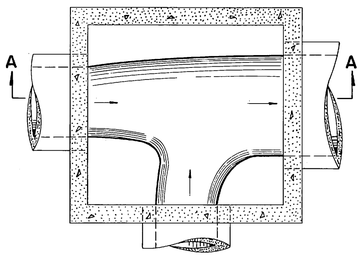
TYPE	YEAR	PROJECT NO.	SHEET NO.
Const.	1974	EAC I-240-1(204)	22



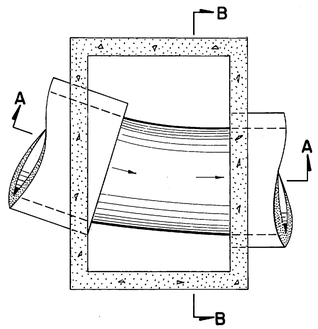
SECTIONAL VIEW (EXAMPLE I)
Showing Floor Shaping



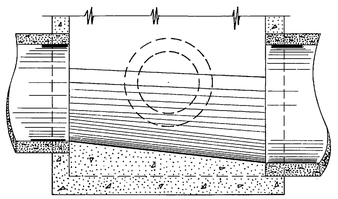
FLOOR PLAN (EXAMPLE II)



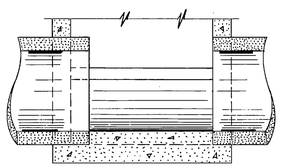
FLOOR PLAN (EXAMPLE I)



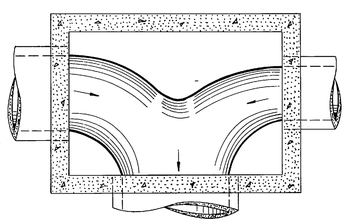
FLOOR PLAN (EXAMPLE IV)



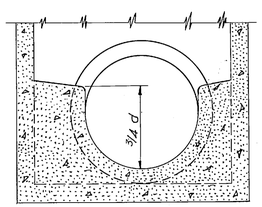
SECTION A-A (EXAMPLE I)



SECTION A-A (EXAMPLE IV)



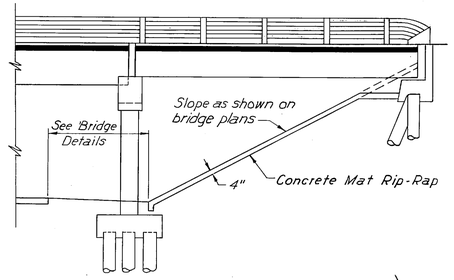
FLOOR PLAN (EXAMPLE III)

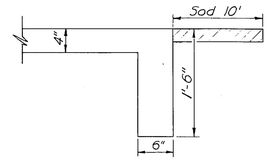


SECTION B-B (EXAMPLE IV)

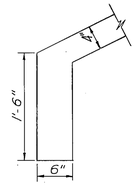
TYPICAL FILLET DETAILS

TO BE USED FOR SHAPING FLOOR OF MANHOLES & INLETS



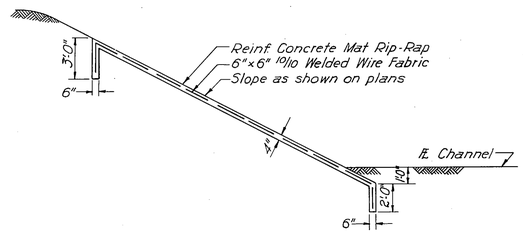


SECTION THRU SIDE TOE WALL

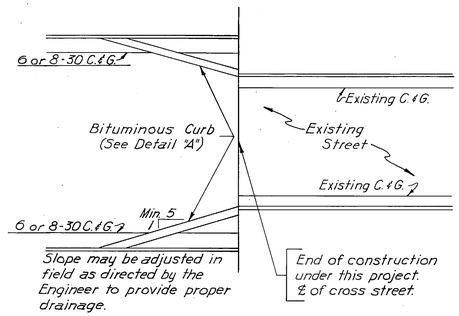


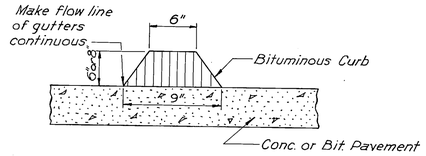
SECTION THRU BOTTOM TOE WALL

CONCRETE MAT RIP-RAP



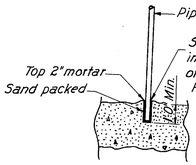
REINFORCED CONCRETE MAT RIP-RAP



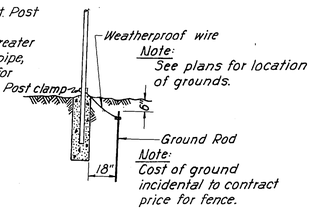


DETAIL "A"

TYPICAL TRANSITION TO EXISTING STREET



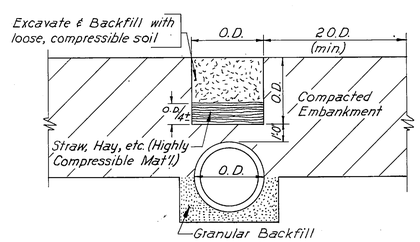
FENCE MOUNTING ON CONCRETE WALL DETAIL



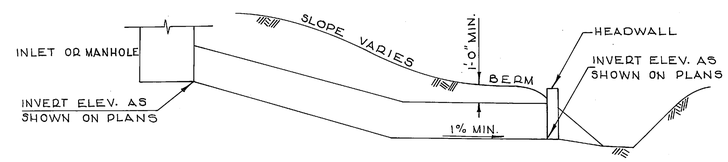
FENCE GROUNDING DETAIL

GENERAL NOTES

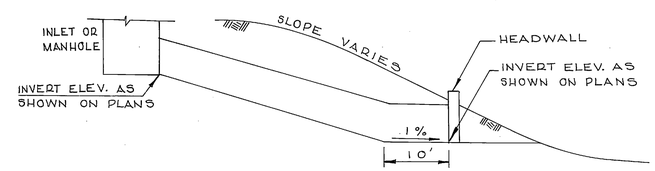
1. Concrete fillets shall be provided for all manholes, inlets and junction boxes. Fillets will not be paid for separately, but shall be considered incidental to the contract unit price for manholes, inlets or junction boxes.
2. Concrete Mat Rip-Rap and Reinforced Concrete Mat Rip-Rap shall conform to Section 709 of the "Standard Specifications" and the "Special Provisions" and will be paid for under Items
3. Bituminous curb transition will not be paid for separately but shall be incidental to other items of construction.
4. Imperfect trench construction shall conform to the "Special Provisions" regarding imperfect trench construction.
5. The contractor shall plug the sleeve shown in detail for mounting a fence on a concrete wall to prevent collection of water in the hole during the interval between the construction of the wall and the mounting of the fence.



IMPERFECT TRENCH CONSTRUCTION



TYPE "A"



TYPE "B"

PIPE GRADES IN EMBANKMENT SECTION

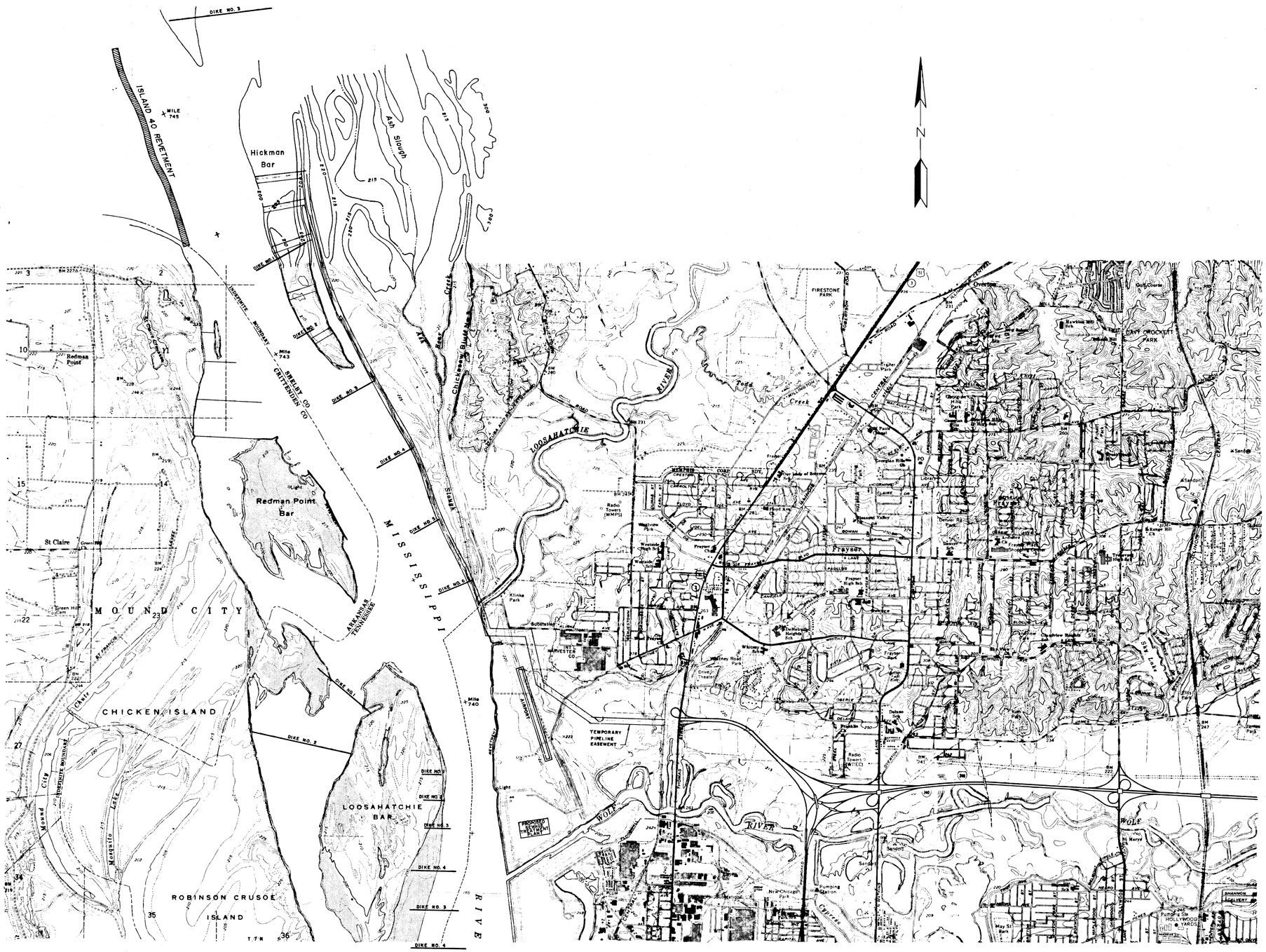
TYPICAL MANHOLE & INLET FILLETS
RIP-RAP
TYPICAL TRANSITION TO EXISTING STREET
IMPERFECT TRENCH CONSTRUCTION
FENCE MOUNTING ON CONCRETE WALL
ELECTRIC FENCE GROUND
PIPE GRADES IN EMBANKMENT SECTIONS

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
BUREAU OF HIGHWAYS

MISCELLANEOUS DETAILS

JOB NO.

TYPE	YEAR	PROJECT NO.	SHEET NO.
CONST.	1974	EAC I-240-1(94)4	3



STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
BUREAU OF HIGHWAYS

PROJECT VICINITY MAP

SCALE: 1" = 2000'

TENN. STATE HIGHWAYS
Plans Divn.
File No. IN-316

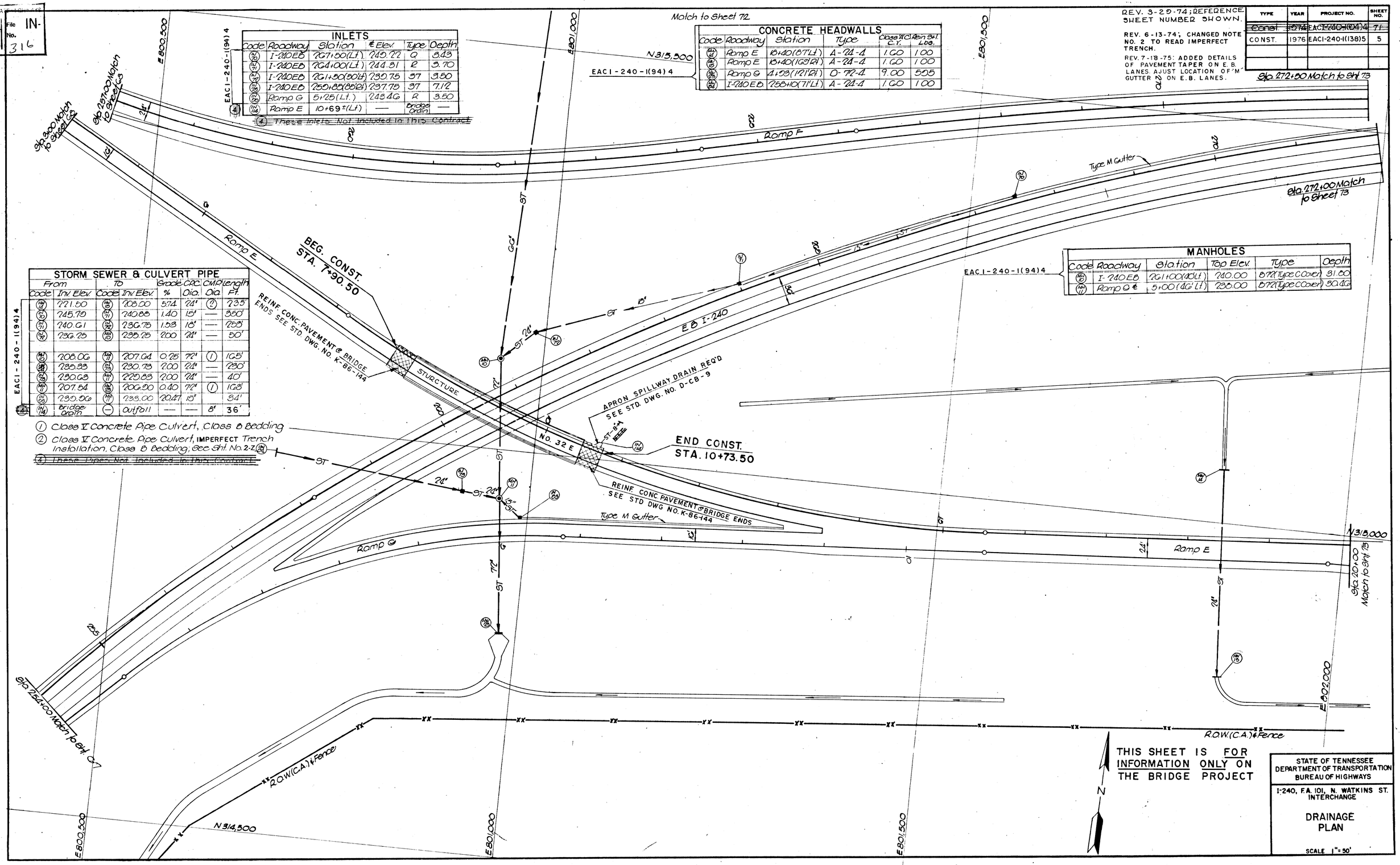
MICROFILMED

TYPE	YEAR	PROJECT NO.	SHEET NO.
~~Const.~~	~~1974~~	~~EACI-240-1(124)4~~	~~71~~
CONST.	1976	EACI-240-1(138)5	5

REV. 3-29-74; REFERENCE SHEET NUMBER SHOWN.

REV. 6-13-74; CHANGED NOTE NO. 2 TO READ IMPERFECT TRENCH.

REV. 7-18-75: ADDED DETAILS OF PAVEMENT TAPER ON E.B. LANES. AJUST LOCATION OF 'M' GUTTER ON E.B. LANES.



INLETS

Code	Roadway	Station	℄ Elev.	Type	Depth
(Inl/72)	I-240 EB	267+50(Lt.)	245.72	Q	3.43
(Inl/71)	I-240 EB	264+00(Lt.)	244.31	R	3.70
(Inl/70)	I-240 EB	261+50(50'Lt)	239.75	37	3.50
(Inl/69)	I-240 EB	259+85(85'Rt.)	237.75	37	7.12
(Inl/68)	Ramp G	5+25(Lt.)	248.46	R	3.50
(Inl/144)	Ramp E	10+69 ±(Lt)	—	Bridge Drain	—

EACI-240-1(94)4

(4) ~~These Inlets Not Included In This Contract~~

CONCRETE HEADWALLS

Code	Roadway	Station	Type	Class "A" C.Y.	Rein Stl. Lbs.
(Hdw/74)	Ramp E	10+40(57'Lt)	A-24-4	1.60	100
(Hdw/75)	Ramp E	10+40(162'Rt.)	A-24-4	1.60	100
(Hdw/76)	Ramp G	4+58(121'Rt.)	D-72-4	9.00	505
(Hdw/64)	I-240 E.B.	258+10(71'Lt.)	A-24-4	1.60	100

EACI-240-1(94)4

MANHOLES

Code	Roadway	Station	Top Elev.	Type	Depth
(Mh/70)	I-240 E.B.	261+00(80'Lt)	240.00	B72(Type C Cover)	31.80
(Mh/71)	Ramp G ℄	5+00(46'Lt)	238.00	B72(Type C Cover)	30.46

EACI-240-1(94)4

STORM SEWER & CULVERT PIPE

From Code	From Inv. Elev.	To Code	To Inv. Elev.	Grade %	CRC Dia.	CMP Dia.	Length Ft.
(Mh/69)	271.50	(Mh/70)	268.00	5.74	24"	(2)	235'
(Mh/70)	245.70	(Mh/71)	240.88	1.40	15"	—	350'
(Mh/71)	240.61	(Mh/72)	236.75	1.58	18"	—	258'
(Mh/72)	236.25	(Mh/73)	235.25	2.00	24"	—	50'
(Mh/70)	268.06	(Mh/71)	267.64	0.25	72"	(1)	165'
(Mh/69)	285.88	(Mh/73)	280.75	2.00	24"	—	280'
(Mh/70)	280.68	(Mh/70)	279.88	2.00	24"	—	40'
(Mh/71)	267.54	(Mh/68)	266.90	0.40	72"	(1)	168'
(Inl/70)	285.06	(Mh/69)	283.00	2.047	15"		84'
(Inl/144)	Bridge Drain	(—)	Outfall	—	—	8"	36'

EACI-240-1(94)4

(1) Class V Concrete Pipe Culvert, Class B Bedding
(2) Class V Concrete Pipe Culvert, IMPERFECT Trench Installation, Class B Bedding; See Sht. No. 2-2 (Pp/29)
(4) ~~These Pipes Not Included In This Contract~~

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
BUREAU OF HIGHWAYS

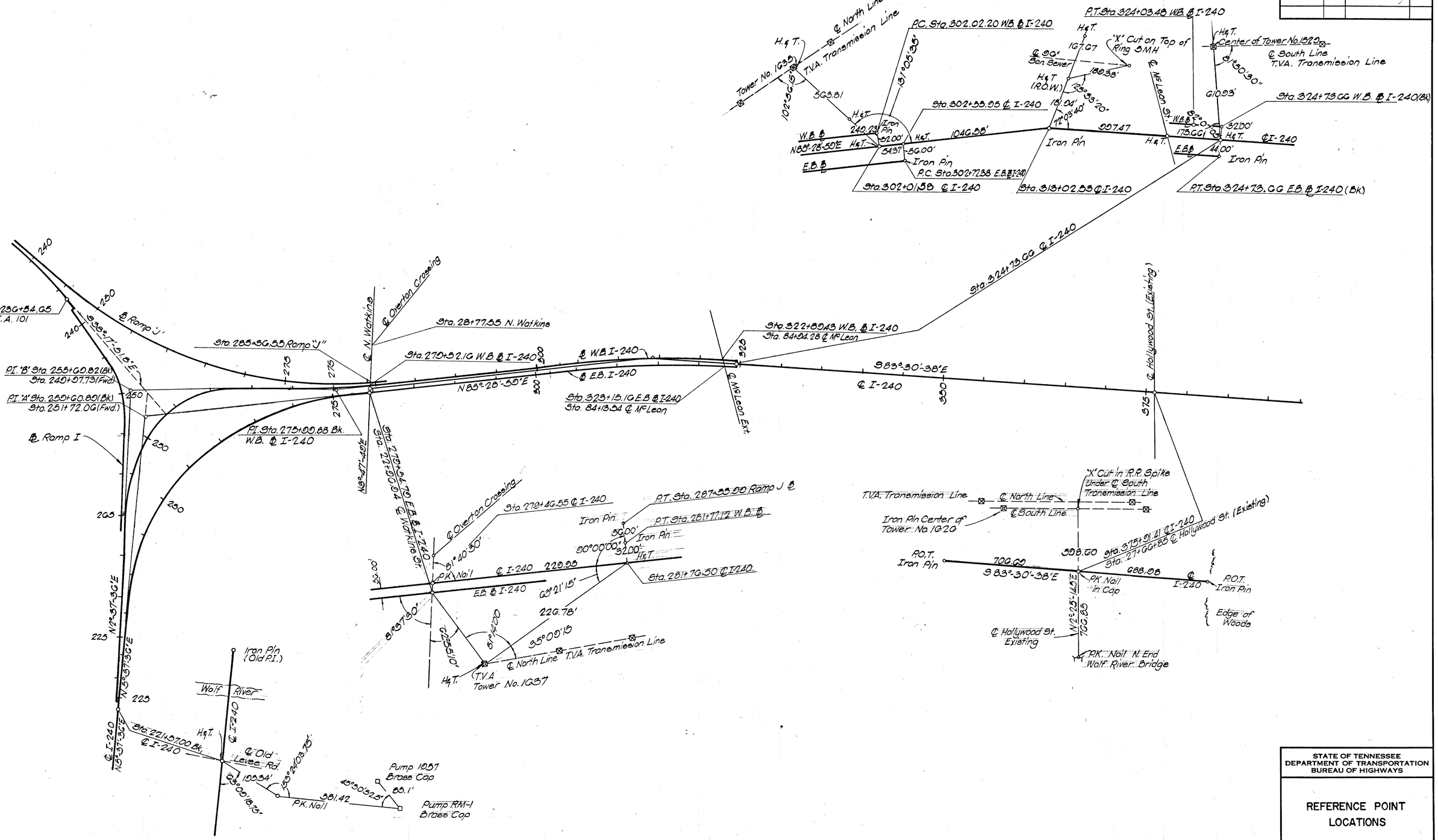
I-240, F.A. 101, N. WATKINS ST. INTERCHANGE

DRAINAGE PLAN

SCALE 1" = 50'

REV. 7-18-75: THIS SHEET WAS ADDED TO THE PLANS.

TYPE	YEAR	PROJECT NO.	SHEET NO.
CONST.	1974	E.B. I-240-1(94)4	14



STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
BUREAU OF HIGHWAYS

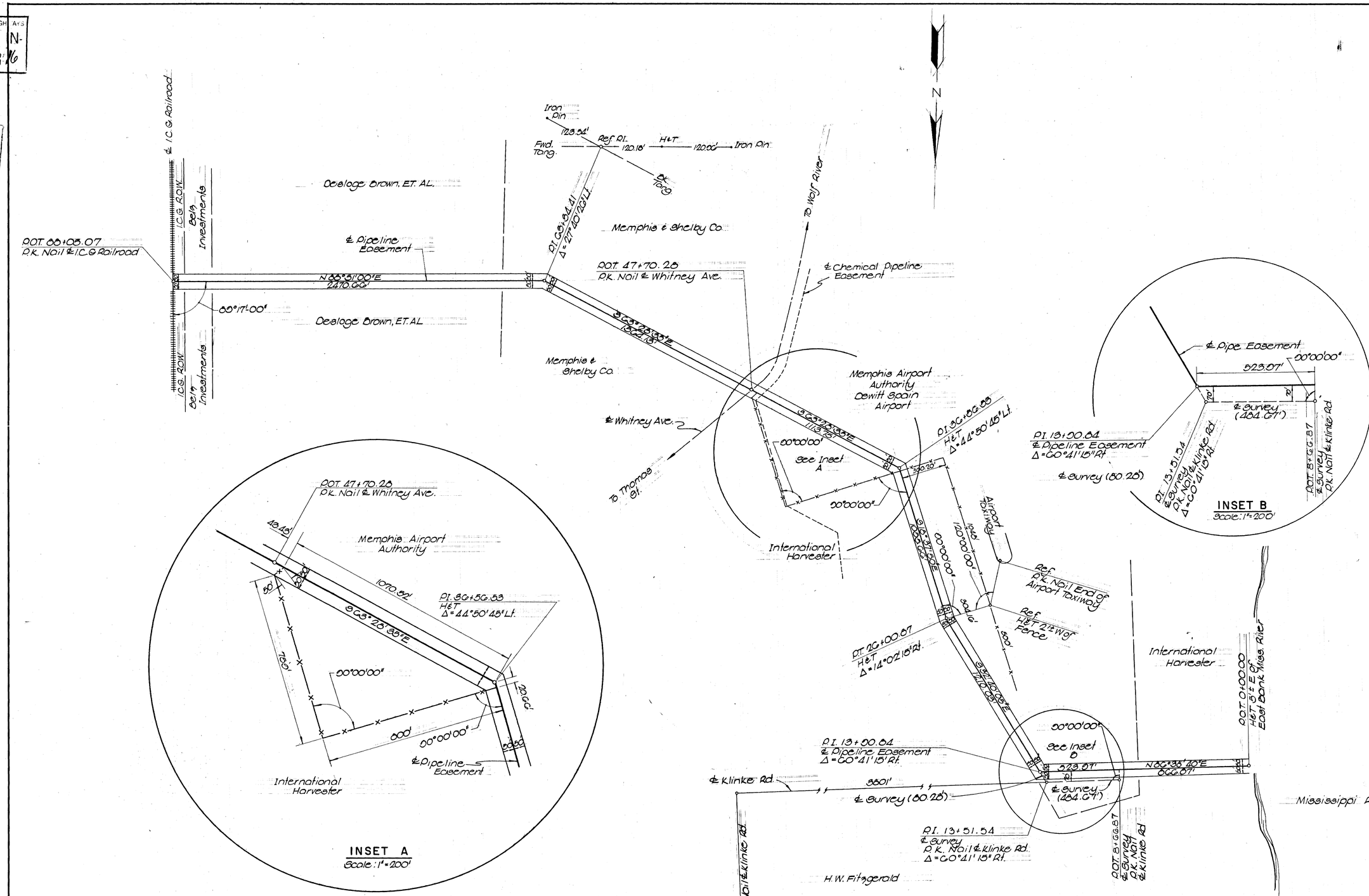
REFERENCE POINT LOCATIONS

SCALE: NONE

TYPE	YEAR	PROJECT NO.	SHEET NO.
R.O.W.	1973	I-240-1(83)4	4D
CONST.	1974	E.A.C. I-240-1(94)4	14-B

REV. 4-8-74; THIS SHEET ADDED TO R.O.W. PLANS.

REV. 4-9-74; THIS SHEET ADDED TO CONSTRUCTION PLANS.

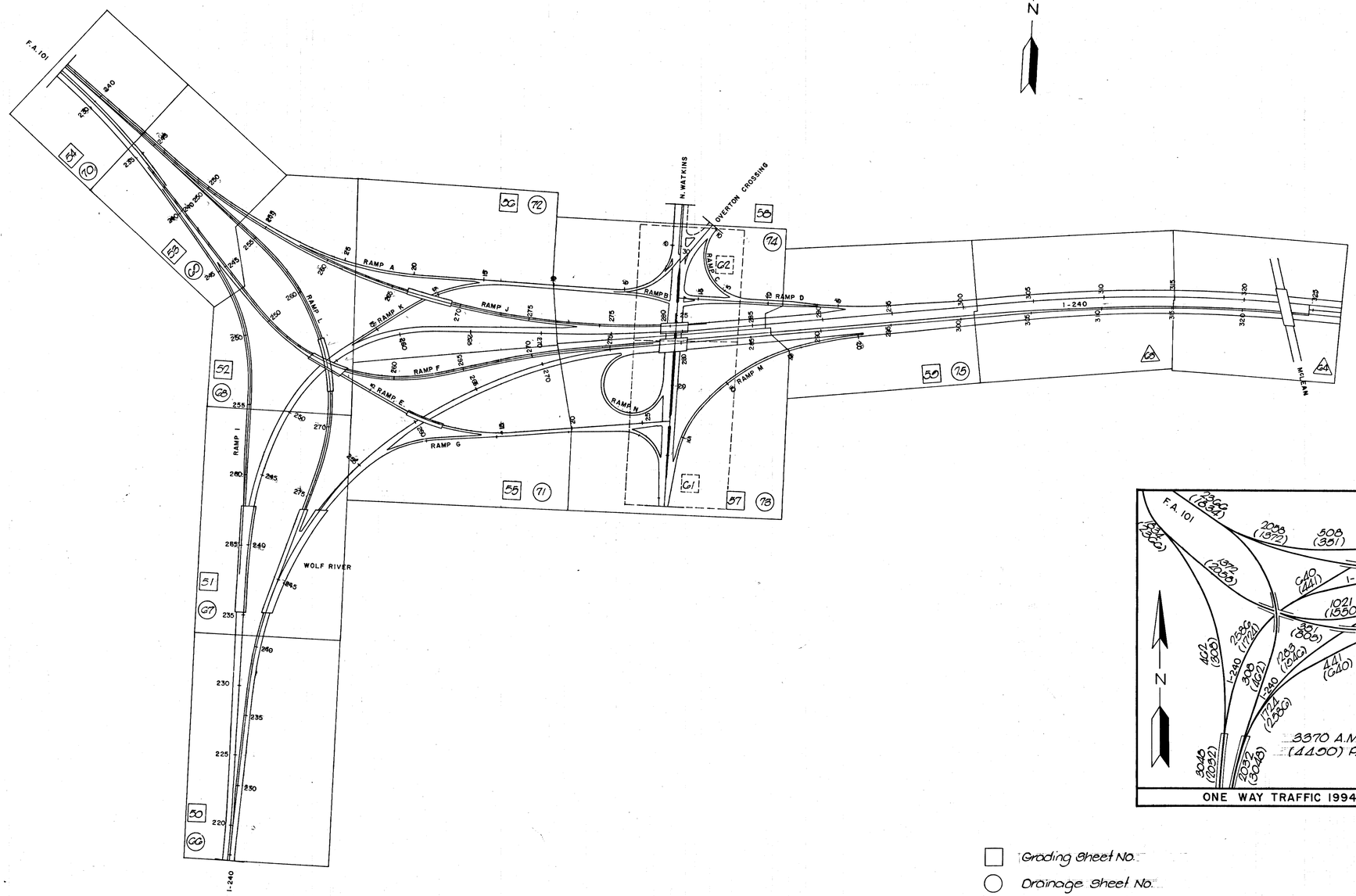


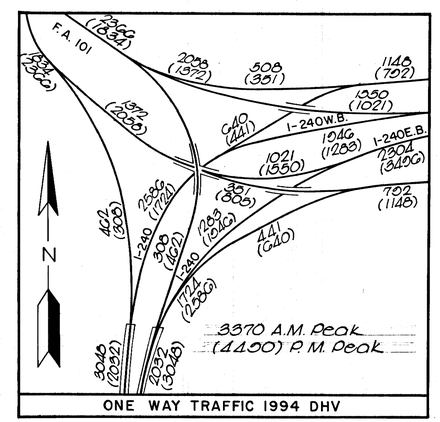
STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
BUREAU OF HIGHWAYS

REFERENCE POINT LOCATION FOR CONSTRUCTION EASEMENT

SCALE: 1"=300'

TYPE	YEAR	PROJECT NO.	SHEET NO.
Const.	1974	EACI-240-1(24)4	15





ONE WAY TRAFFIC 1994 DHV

□ Grading Sheet No.
○ Drainage Sheet No.
△ Plan Sheet No.
⬚ Grading and Drainage adjacent to N. Watkins

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
BUREAU OF HIGHWAYS

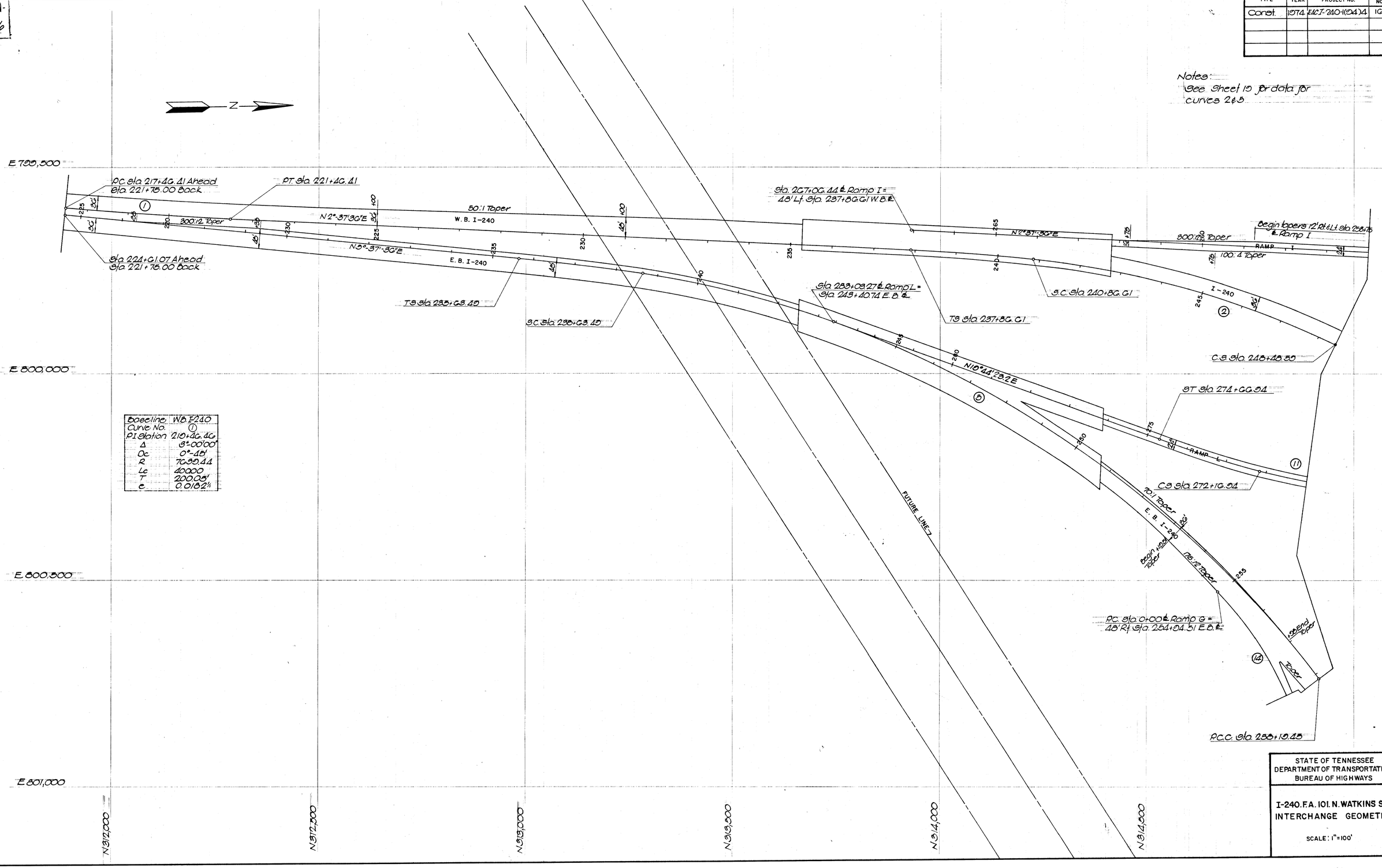
I-240, F.A. 101, N. WATKINS ST. INTERCHANGE

SHEET INDEX

SCALE 1" = 400'

TYPE	YEAR	PROJECT NO.	SHEET NO.
Const.	1974	EICI-240-1(204)4	16

Notes:
See Sheet 19 for data for curves 2 & 5



Baseline:	WB I-240
Curve No.	1
P.I. Station	210+46.46
Δ	8°-00'00"
Dc	0°-48'
R	716.90.44
Lc	400.00
T	200.05'
e	0.0162½

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
BUREAU OF HIGHWAYS

I-240. F.A. 101. N. WATKINS ST.
INTERCHANGE GEOMETRY

SCALE: 1" = 100'

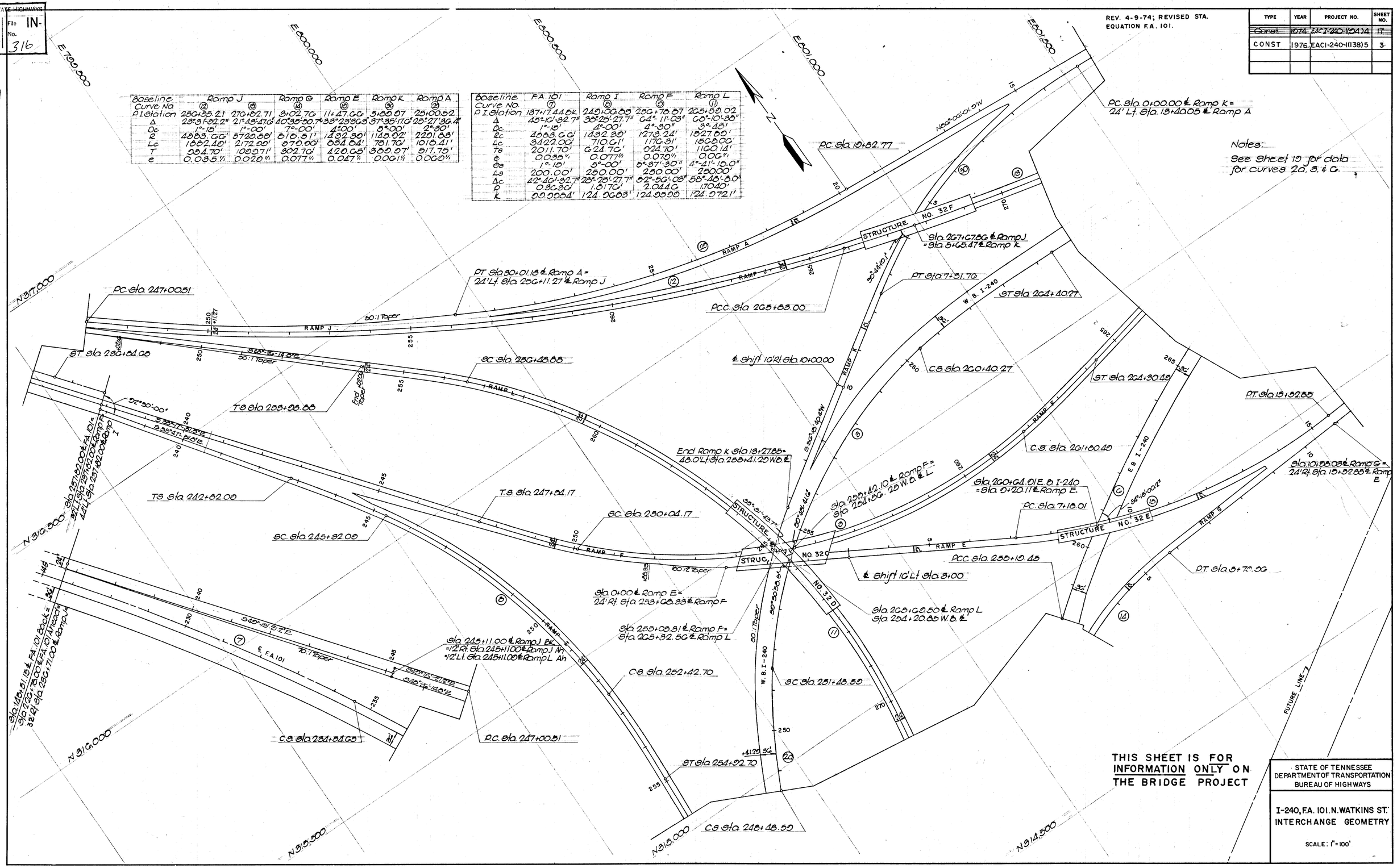
TENN. STATE HIGHWAYS
Plans Divn. | File No. IN-316

REV. 4-9-74; REVISED STA. EQUATION F.A. 101.

TYPE	YEAR	PROJECT NO.	SHEET NO.
~~Const~~	~~1974~~	~~EAC I-240-1(64)24~~	~~17~~
CONST	1976	EACI-240-1(138)5	3

Baseline	Ramp J		Ramp G	Ramp E	Ramp K	Ramp A
Curve No	12	14	16	24	22	20
PI Station	280+55.21	270+82.71	3+02.70	11+47.66	5+80.07	25+00.52
Δ	28°31'52.2"	21°45'47.6"	40°35'50.7"	33°23'06.8"	37°35'17.6"	25°27'36.4"
Dc	1°-15'	1°-00'	7°-00'	4°-00'	5°-00'	2°-30'
R	4583.66'	5729.58'	818.51'	1432.39'	1145.92'	2291.83'
Lc	1282.10'	2172.00'	870.00'	834.84'	751.76'	1016.41'
T	654.70'	1109.71'	502.76'	420.65'	395.07'	517.75'
e	0.035 ft	0.020 ft	0.077 ft	0.047 ft	0.061 ft	0.060 ft

Baseline	F.A. 101	Ramp I	Ramp F	Ramp L
Curve No.	7	18	19	11
PI Station	187+17.44 BK	240+06.55	256+76.57	265+50.02
Δ	45°-16'-52.7"	38°-25'-27.7"	64°-11'-08"	66°-10'-38"
Dc	1°-15'	4°-00'	4°-30"	3°-45'
Rc	4583.66'	1432.39'	1273.24'	1527.60'
Lc	3422.00'	710.61'	1170.31'	1506.00'
Tc	2011.70'	624.76'	924.70'	1160.14'
e	0.035 ft	0.077 ft	0.070 ft	0.061 ft
ecs	1°-15'	5°-00'	5°-37'-30"	4°-41'-15.0"
Ls	200.00'	250.00'	250.00'	250.00'
Δc	42°-46'-52.7"	28°-25'-27.7"	52°-36'-08"	58°-46'-8.0"
p	0.836'	1.817'	2.044'	1.704'
k	0.000064'	124.0688'	124.0590	124.0721'

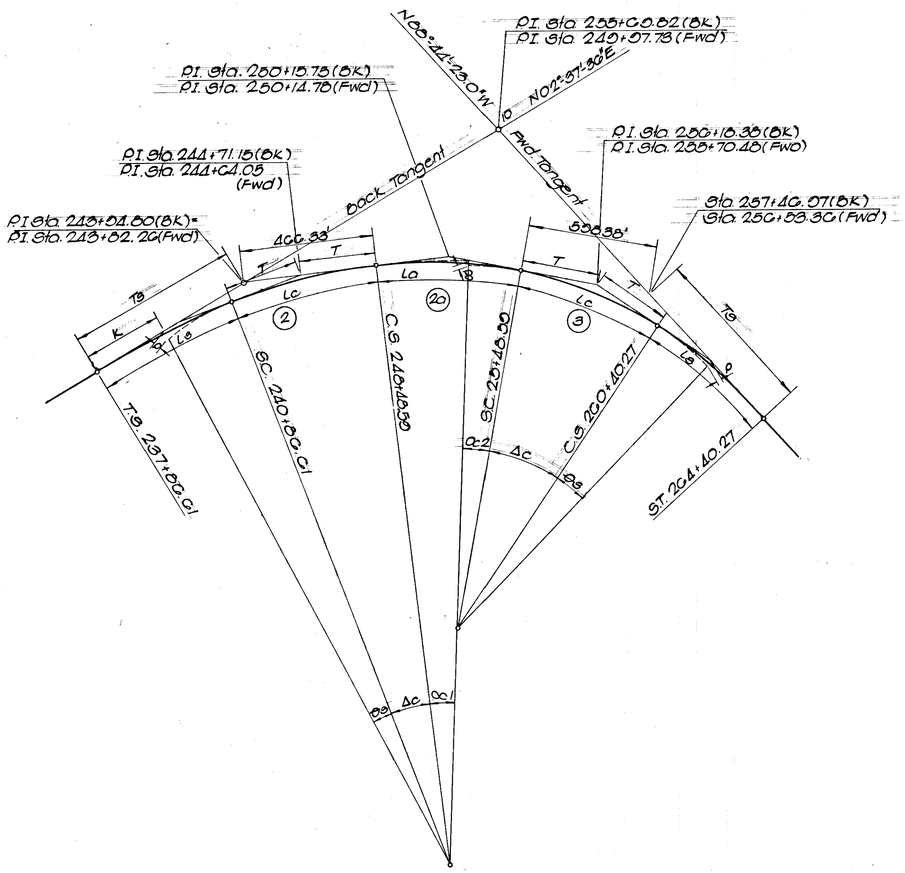


STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
BUREAU OF HIGHWAYS

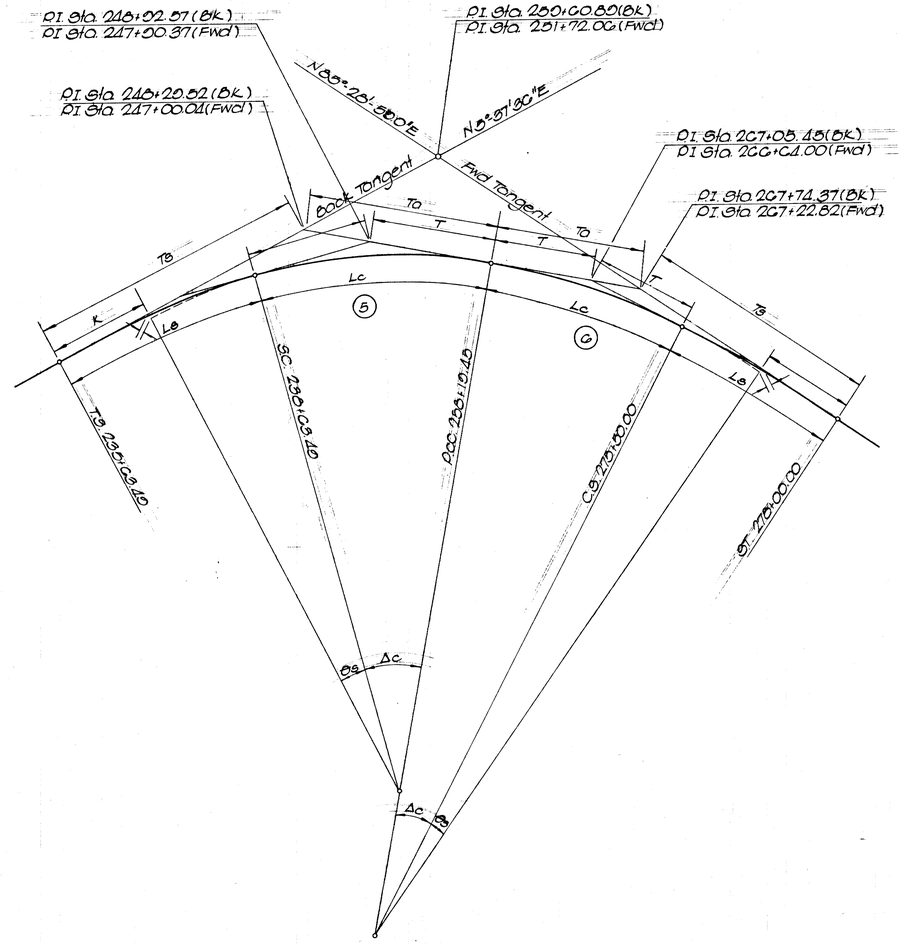
I-240, F.A. 101 N. WATKINS ST.
INTERCHANGE GEOMETRY

SCALE: 1" = 100'

TYPE	YEAR	PROJECT NO.	SHEET NO.
Const.	1974	EACI-240-1(54)A	10



WEST BOUND BASELINE GEOMETRY



EAST BOUND BASELINE GEOMETRY

Compound Curve Data					
Curve No.	2	2a	3	5	6
Δ	22°47'58.5"	11°15'00"	84°35'02.5"	47°23'08.0"	32°28'20"
Dc	2°-30'		5°-00'	2°-15'	1°-45'
Rc	2291.83'		1145.92'	2546.48	3274.04
Lc	761.98		861.68'	1205.06	1730.55
T	384.54		460.70	1020.08	886.00
Le	300.00		400.00	300.00	250.00
Lo		300.00			
θs	3°45'0.0"		10°00'00"	5°22'30.0"	2°11'15.0"
θc1		3°45'00"			
θc2		7°30'00"			
p	1.636		5.811	1.472	0.705
Po		1.636			
Δc	19°02'58.5"		44°35'02.5"	44°00'58.0"	30°17'05"
k	149.98		199.80	149.98	124.99
To			1119.41	954.02	
Ts	608.19		786.01	1266.03	1077.18
e	0.060 ft	Varies	0.080 ft	0.055 ft	0.045 ft

STATE OF TENNESSEE
DEPARTMENT OF HIGHWAYS

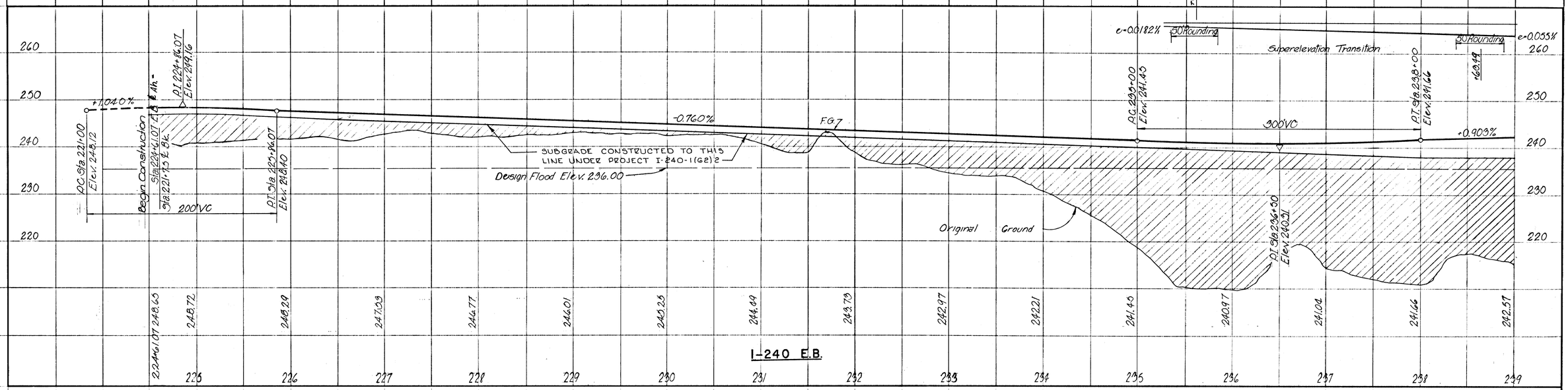
I-240

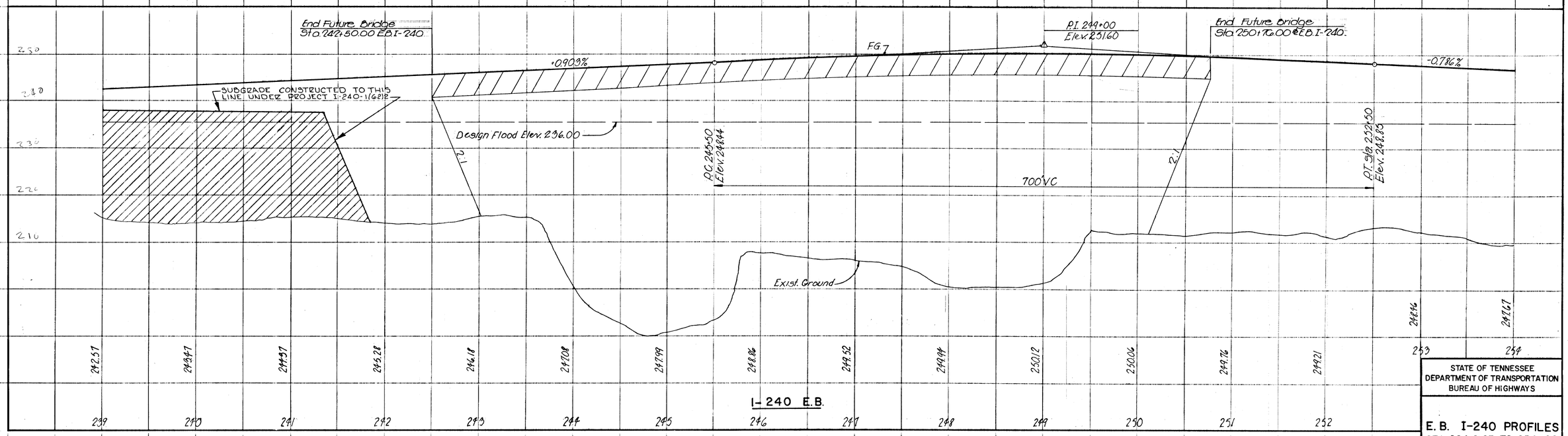
BASELINE GEOMETRY DETAILS

NO SCALE

REV. 4-9-74; SHOWED THE SUBGRADE LINE AS BUILT UNDER A PREVIOUS CONTRACT.

TYPE	YEAR	PROJECT NO.	SHEET NO.
Const.	1974	ACI-240-1(104)	20





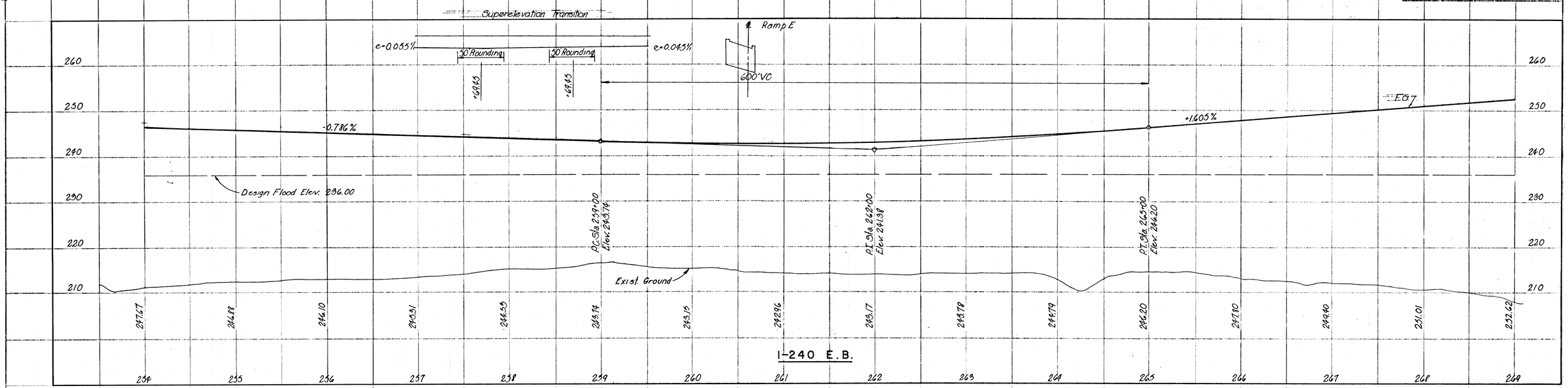
STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
BUREAU OF HIGHWAYS

E. B. I-240 PROFILES
STA. 224+61.07 TO 254+00

HOR. SCALE 1"=50'
VERT. SCALE 1"=10'

REV. 4-9-74; SHOWED BRIDGE ABUTMENT FILLS ARE TO BE CONSTRUCTED TO TIE TO EXISTING STREET.
REVISED 10-2-75; E.B. I-240 DRAFTING OF PROFILE CHANGED.

TYPE	YEAR	PROJECT NO.	SHEET NO.
Const.	1974	EAC I-240-1(94)	4 21

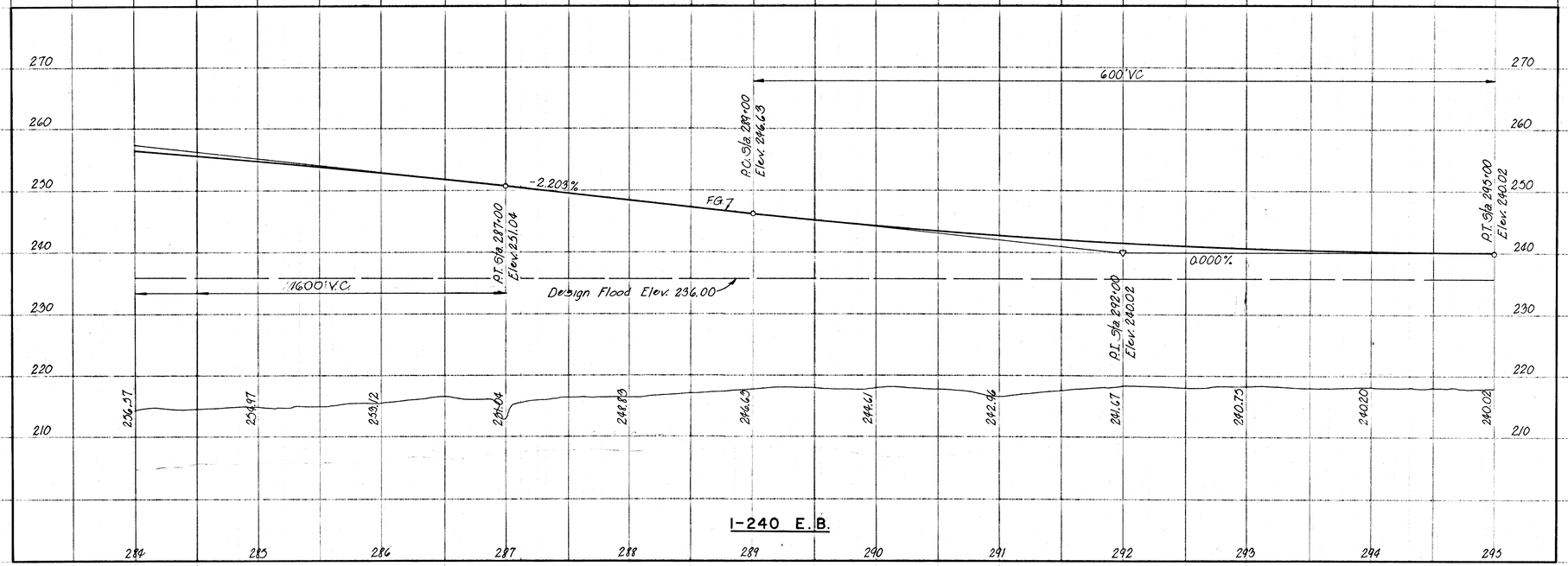


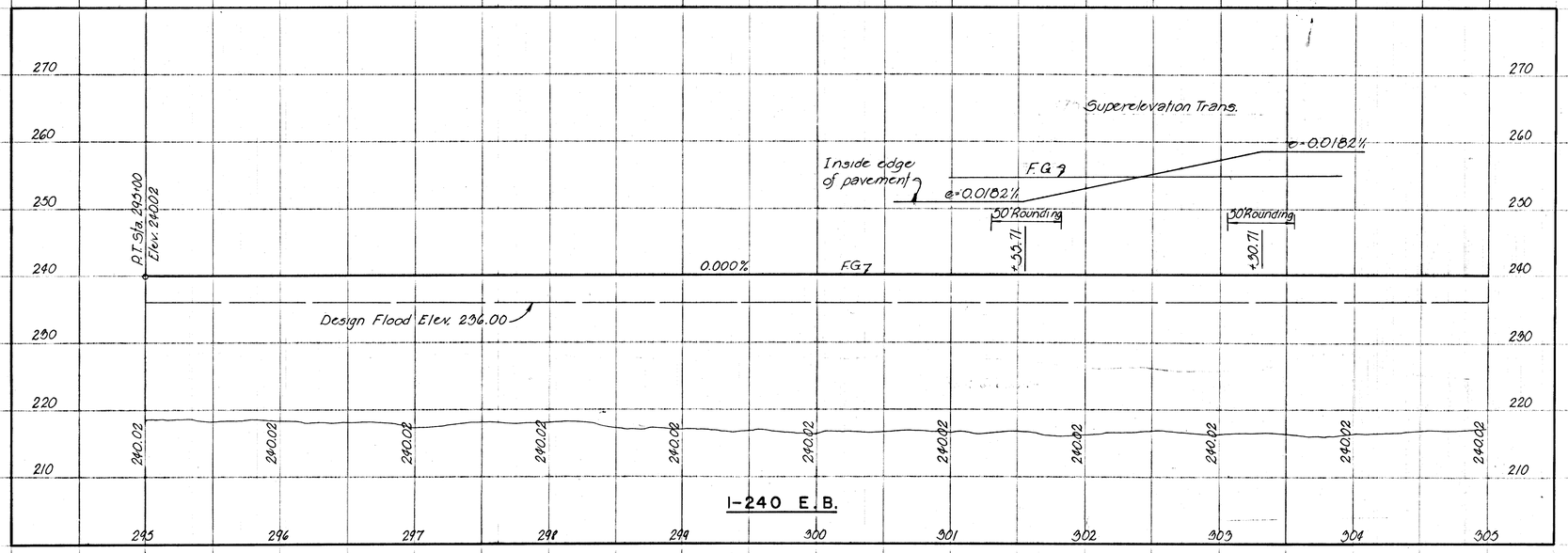
STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
BUREAU OF HIGHWAYS

E. B. I-240 PROFILES
STA. 254+00 TO 284+00

HOR. SCALE 1"=50'
VERT. SCALE 1"=10'

TYPE	YEAR	PROJECT NO	SHEET NO
Const.	1974	Eac I-240-1(24)	4 22



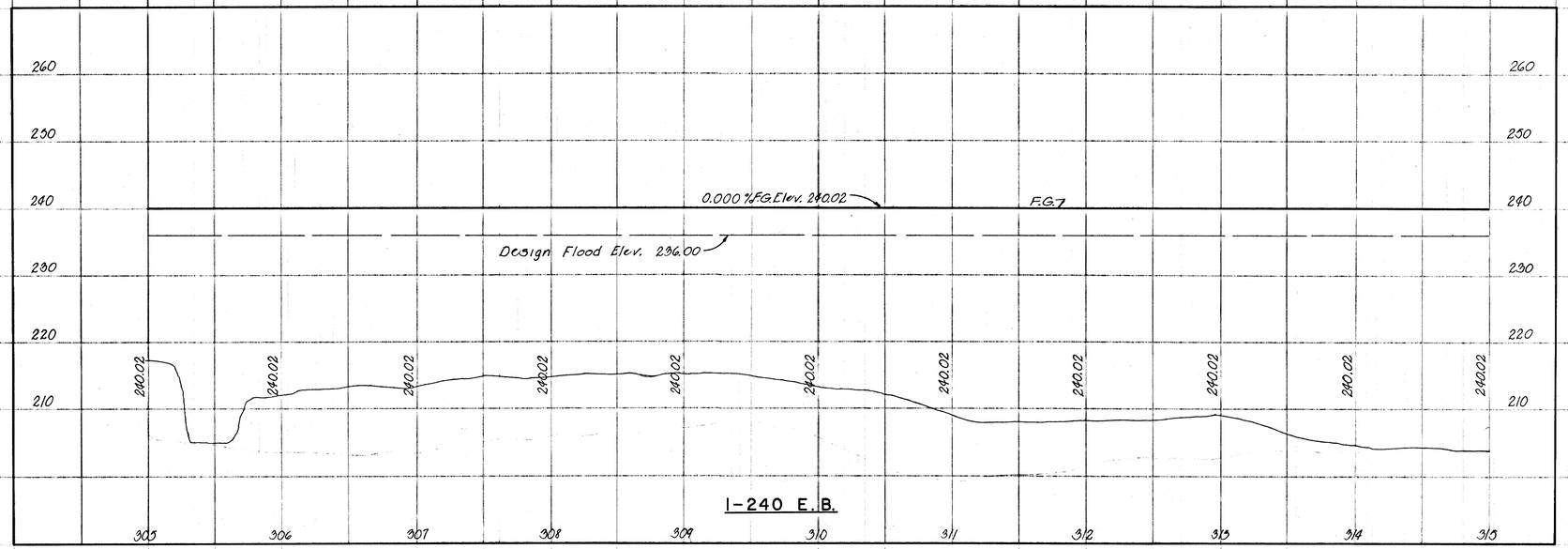


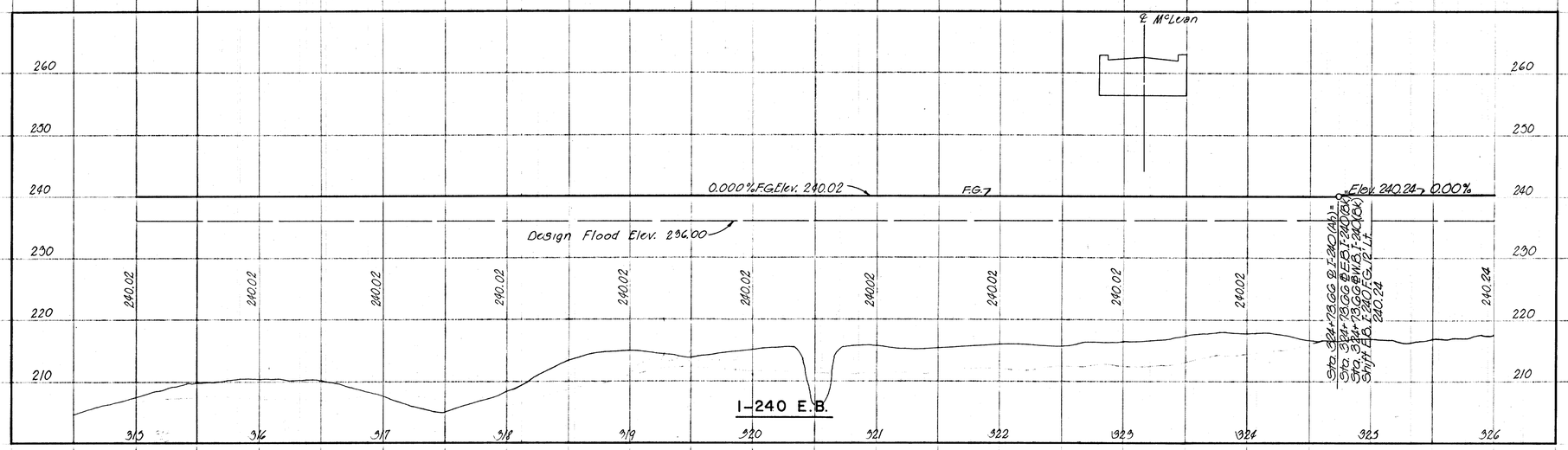
STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
BUREAU OF HIGHWAYS

E.B. I-240 PROFILES
STA. 284+00 TO 305+00

HOR. SCALE 1"=50'
VERT. SCALE 1"=10'

TYPE	YEAR	PROJECT NO	SHEET NO
Const	1974	I-240-1(04)A	23





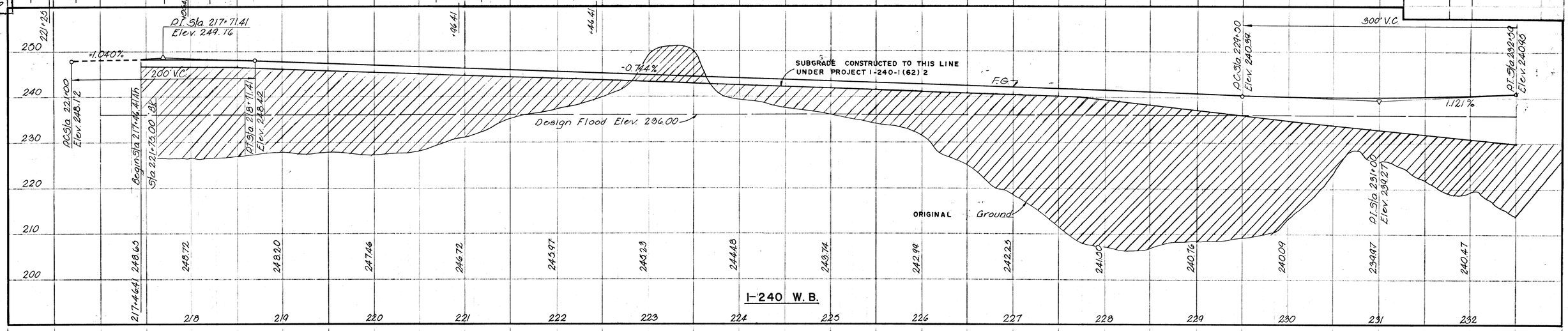
STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
BUREAU OF HIGHWAYS

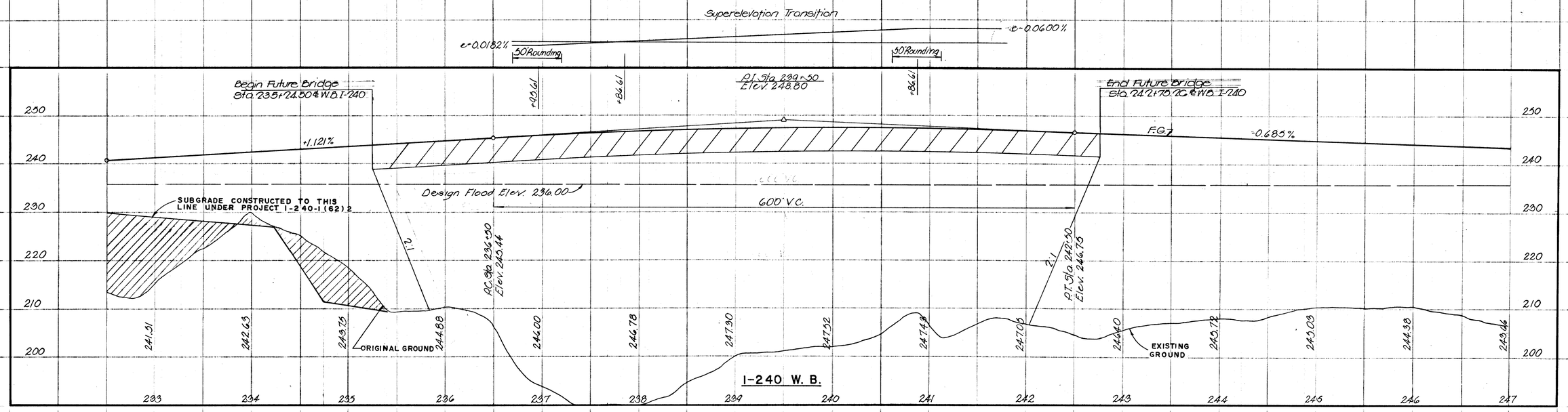
E.B. I-240 PROFILES
STA. 305+00 TO 326+00

HOR. SCALE 1"=50'
VERT. SCALE 1"=10'

REV. 4-9-74 ; SHOWED THE SUBGRADE LINE AS BUILT UNDER A PREVIOUS CONTRACT.

TYPE	YEAR	PROJECT NO	SHEET NO
Const.	1974	I-240-1(24)A	24



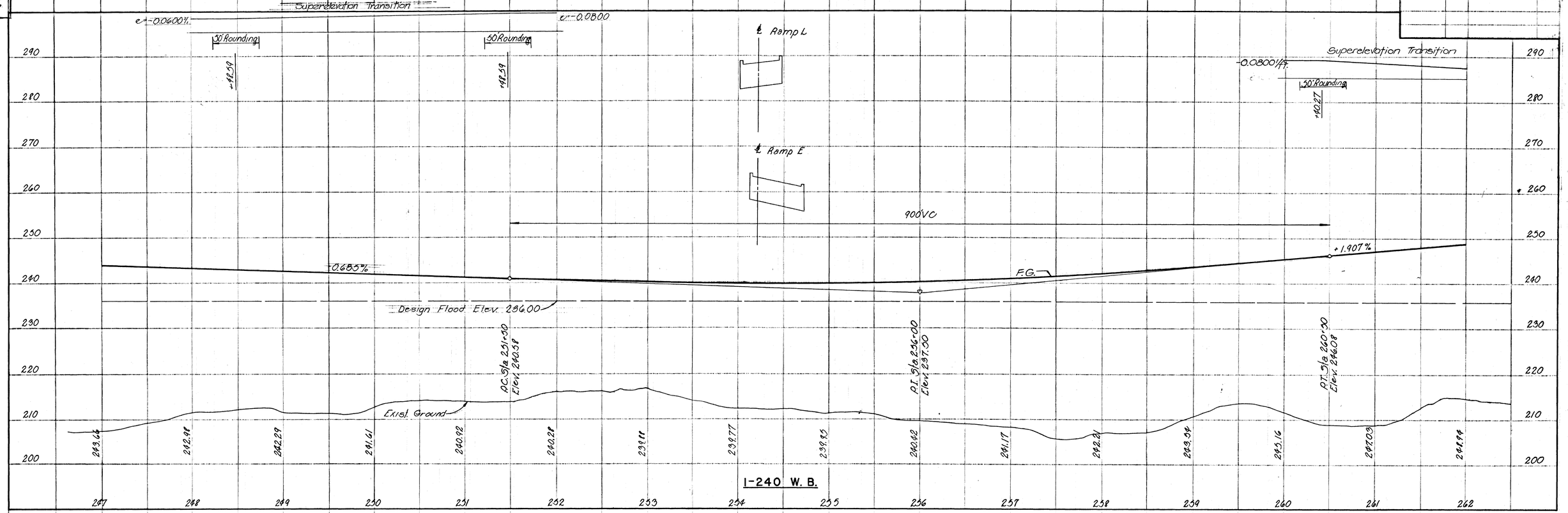


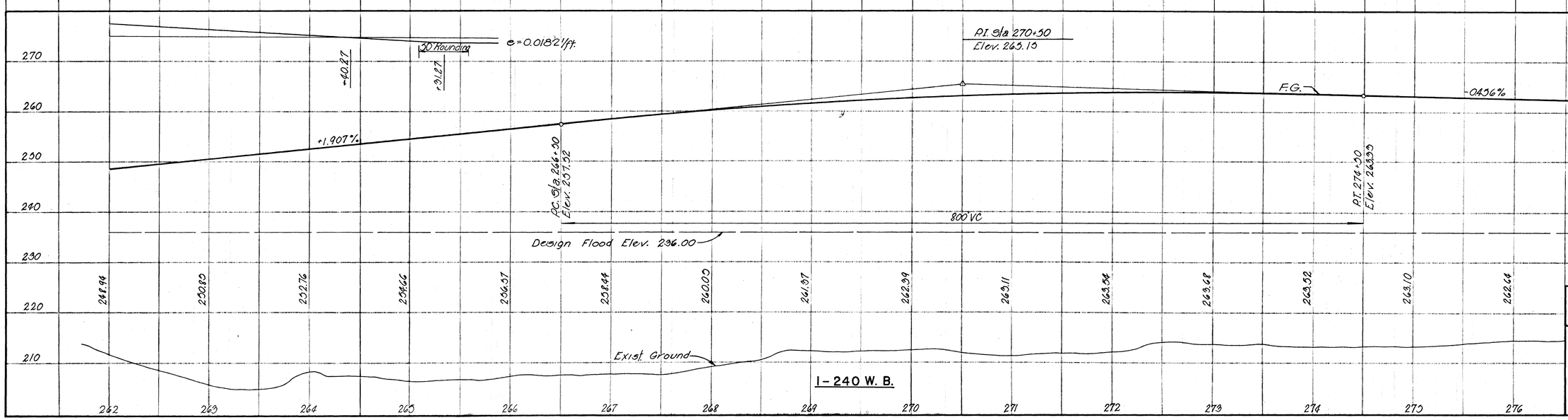
STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
BUREAU OF HIGHWAYS

W.B. I-240 PROFILES
STA. 217+46.41 TO 247+00

HOR. SCALE 1"=50'
VERT. SCALE 1"=10'

TYPE	YEAR	PROJECT NO	SHEET NO
Const.	1974	EACI-240-1(104)14	25





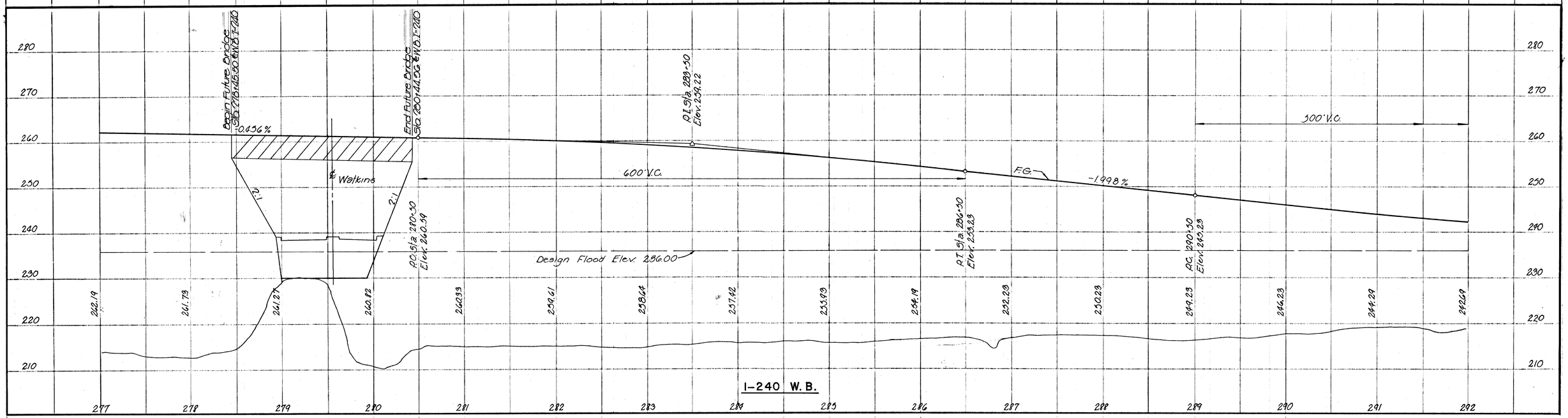
STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
BUREAU OF HIGHWAYS

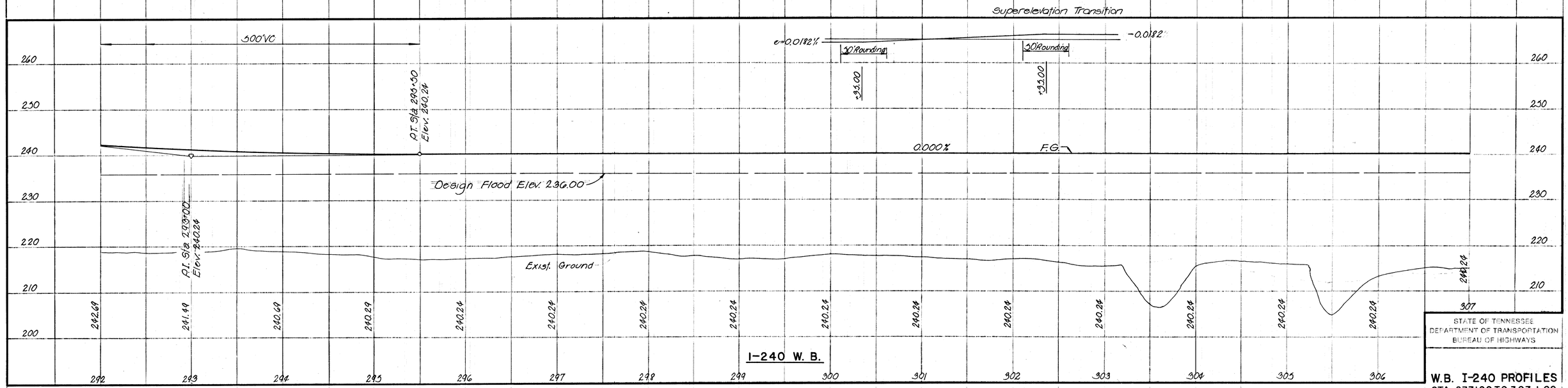
W.B. I-240 PROFILES
STA. 247+00 TO 277+00

HOR. SCALE 1"=50'
VERT. SCALE 1"=10'

REV. 4-9-74; SHOWED BRIDGE ABUTMENT FILLS ARE TO BE CONSTRUCTED TO TIE INTO THE EXISTING STREET.

TYPE	YEAR	PROJECT NO.	SHEET NO.
Const.	1974	EACF-240-1(104)4	2G



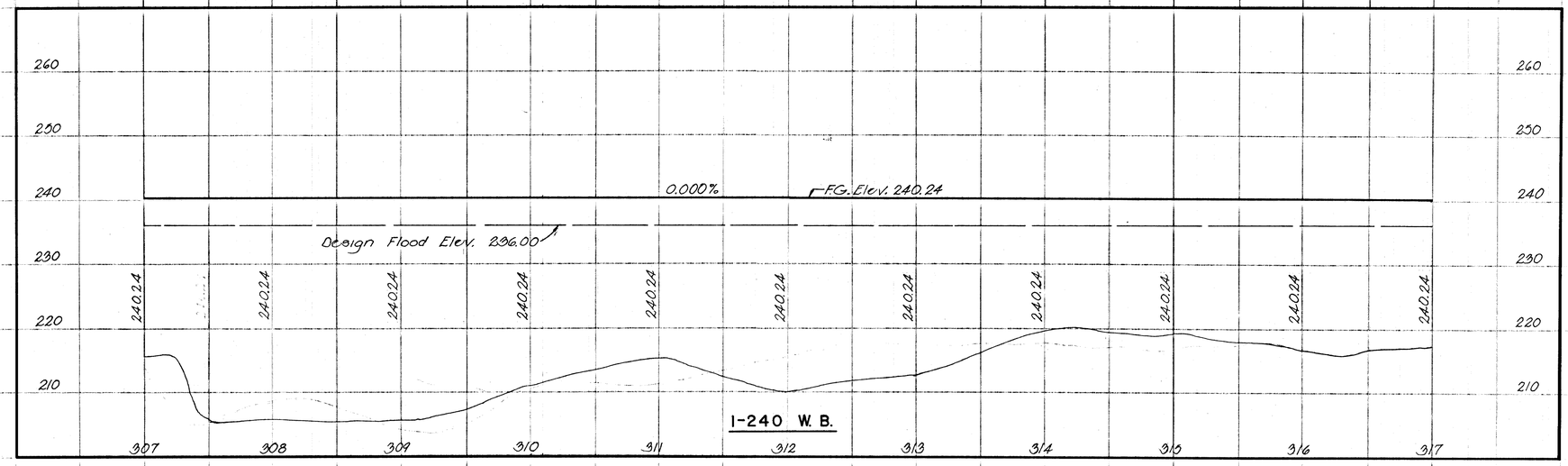


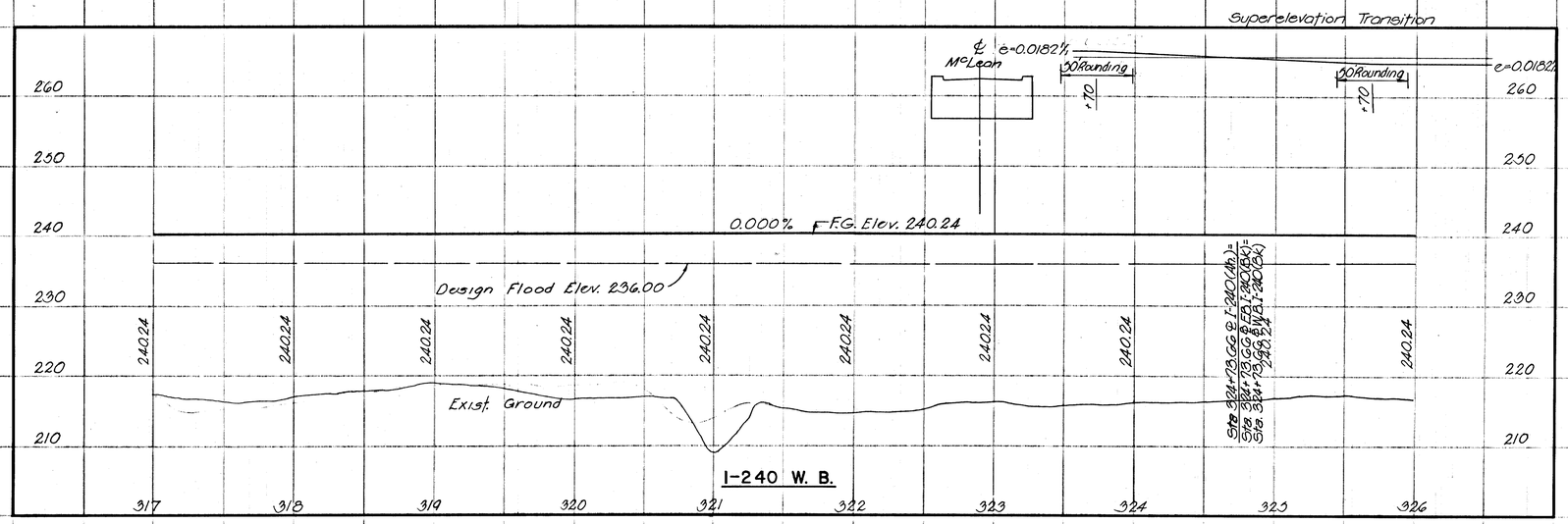
STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
BUREAU OF HIGHWAYS

W.B. I-240 PROFILES
STA. 277+00 TO 307+00

HOR. SCALE 1"=50'
VERT. SCALE 1"=10'

TYPE	YEAR	PROJECT NO	SHEET NO
Const	1974	LIC I-240-1(204)4	27

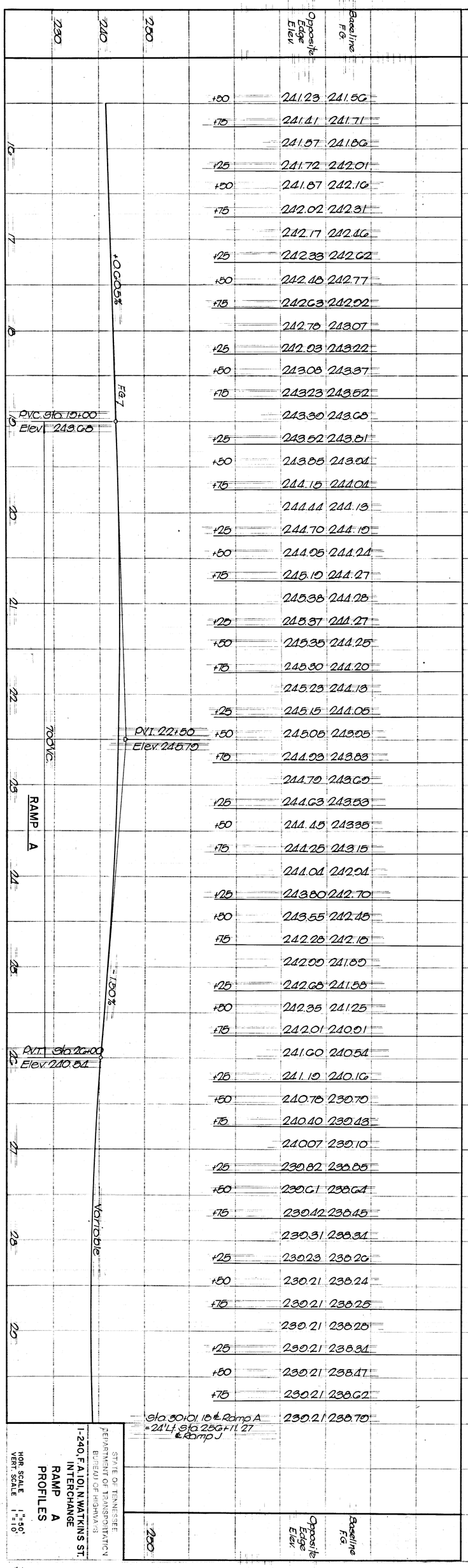




STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
BUREAU OF HIGHWAYS

W.B. I-240 PROFILES
STA. 307+00 TO 326+00

HOR. SCALE 1" = 50'
VERT. SCALE 1" = 10'



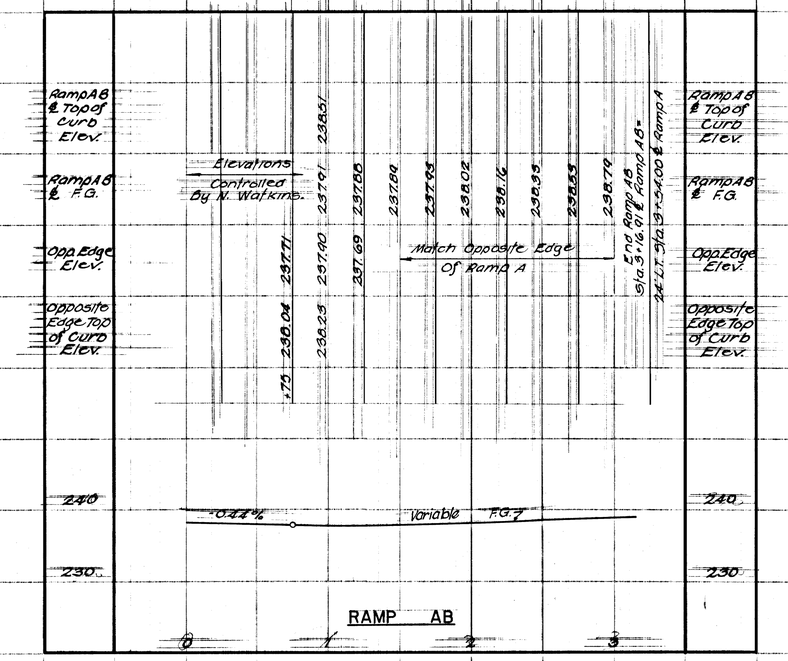
STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
BUREAU OF HIGHWAYS

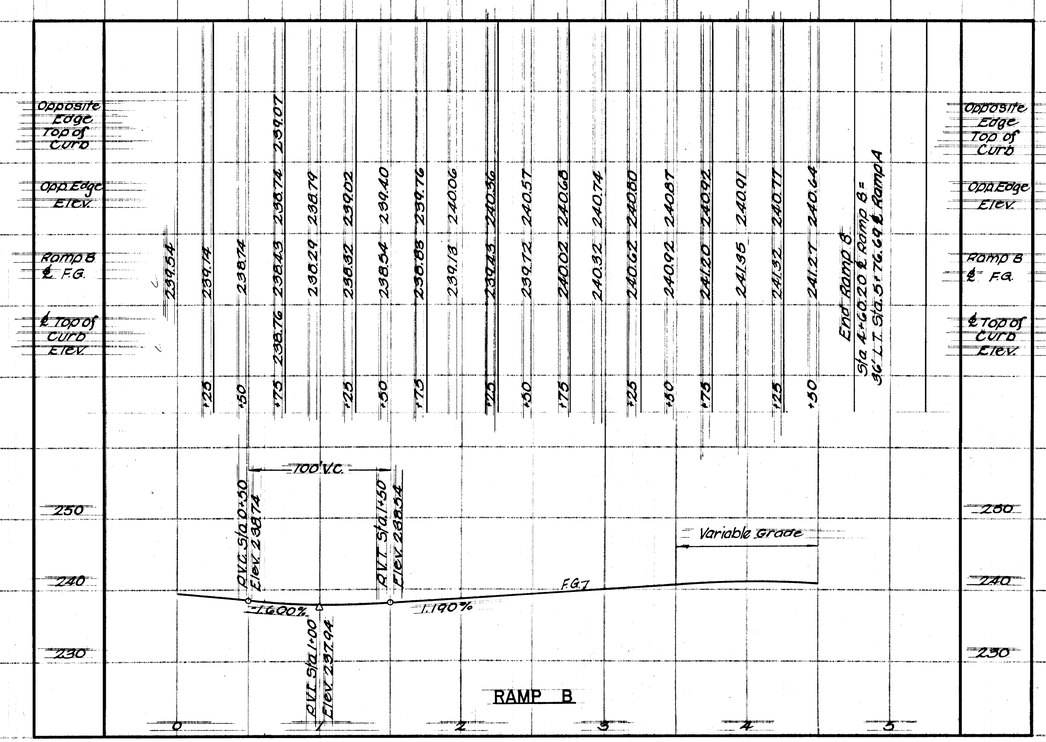
I-240, F.A. 101, N. WATKINS ST.
INTERCHANGE
RAMP A
PROFILES

HOR. SCALE 1" = 50'
VERT. SCALE 1" = 10'

TYPE: Const.
YEAR: 1974
PROJECT NO. I-240-2(10)74
SHEET NO. 2B

TYPE	YEAR	PROJECT NO	SHEET NO.
Const.	1974	EACI-240-1(9A)4	20





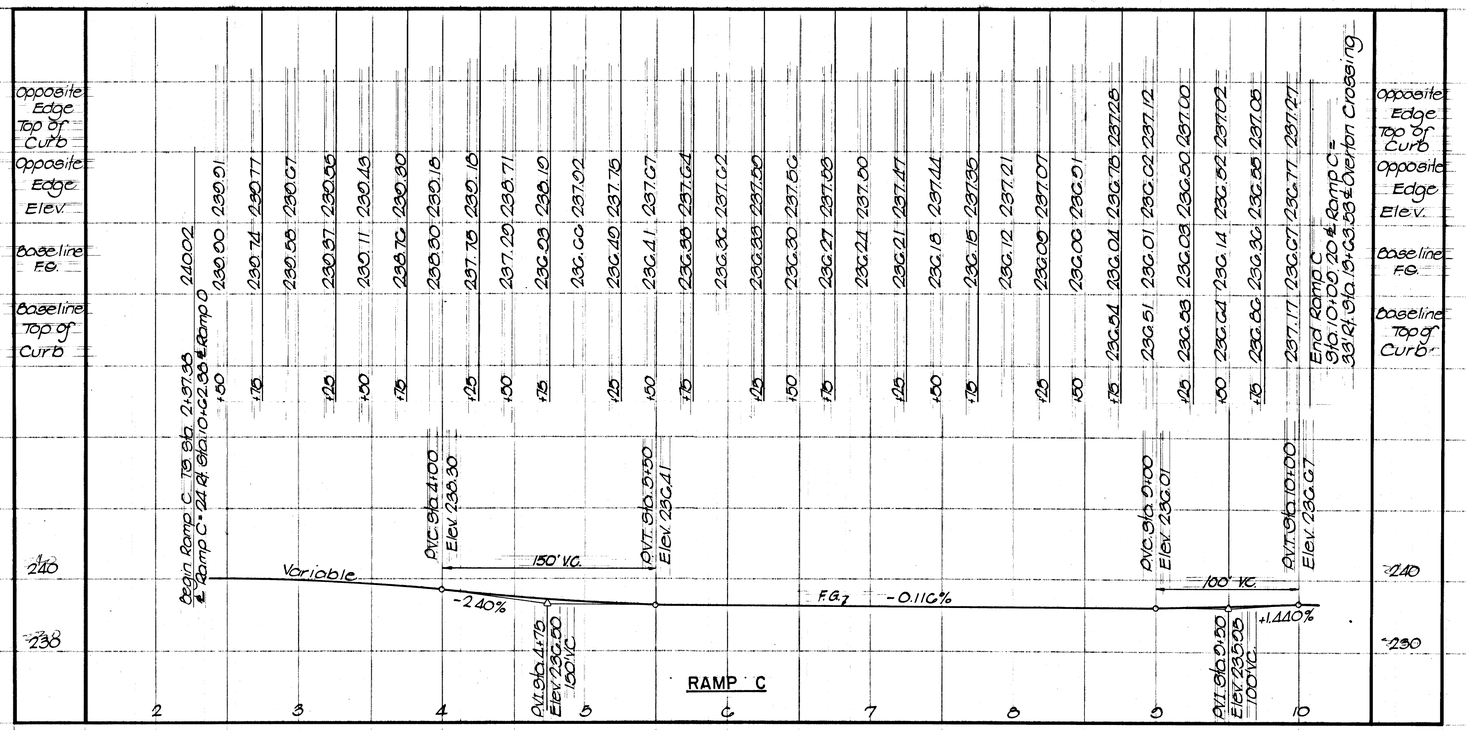
STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
BUREAU OF HIGHWAYS

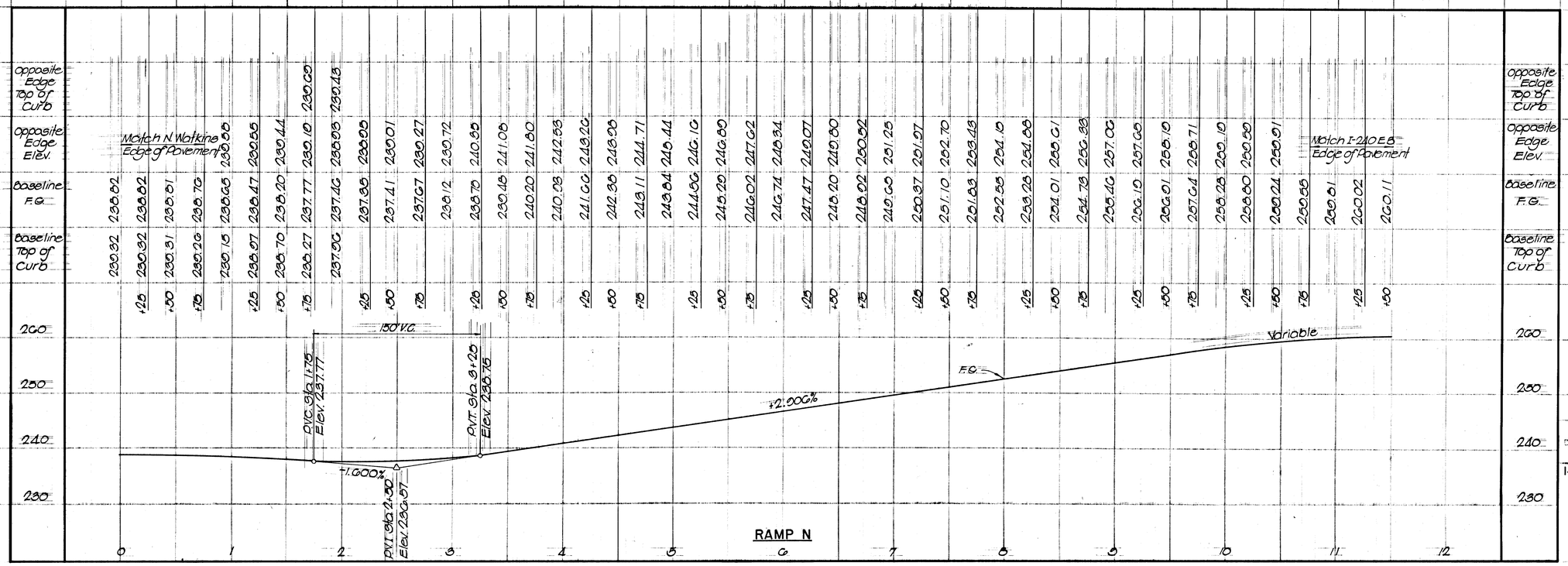
I-240, F.A. 101, N. WATKINS ST. INTERCHANGE

RAMPS AB & B PROFILES

HOR. SCALE 1" = 50'
VERT. SCALE 1" = 10'

TYPE	YEAR	PROJECT NO	SHEET NO
Const.	1974	E.A.C.I-240-1(204)4	30





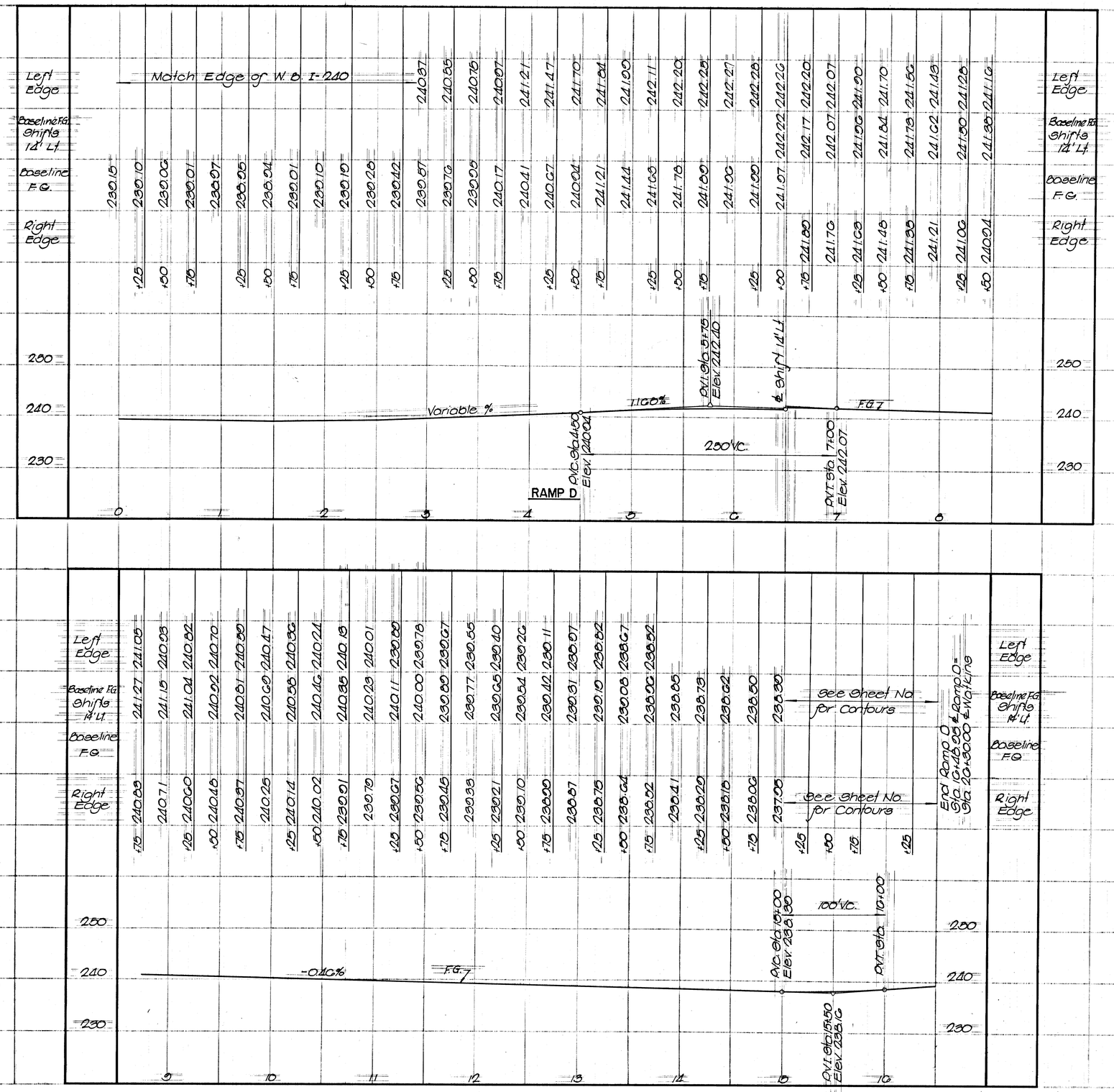
STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
BUREAU OF HIGHWAYS

I-240, F.A. 101, N. WATKINS ST.
INTERCHANGE

RAMPS C & N
PROFILES

HOR. SCALE 1"=50'
VERT. SCALE 1"=10'

TYPE	YEAR	PROJECT NO.	SHEET NO.
Const.	1974	IACI-240-1(104)	31



STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
BUREAU OF HIGHWAYS

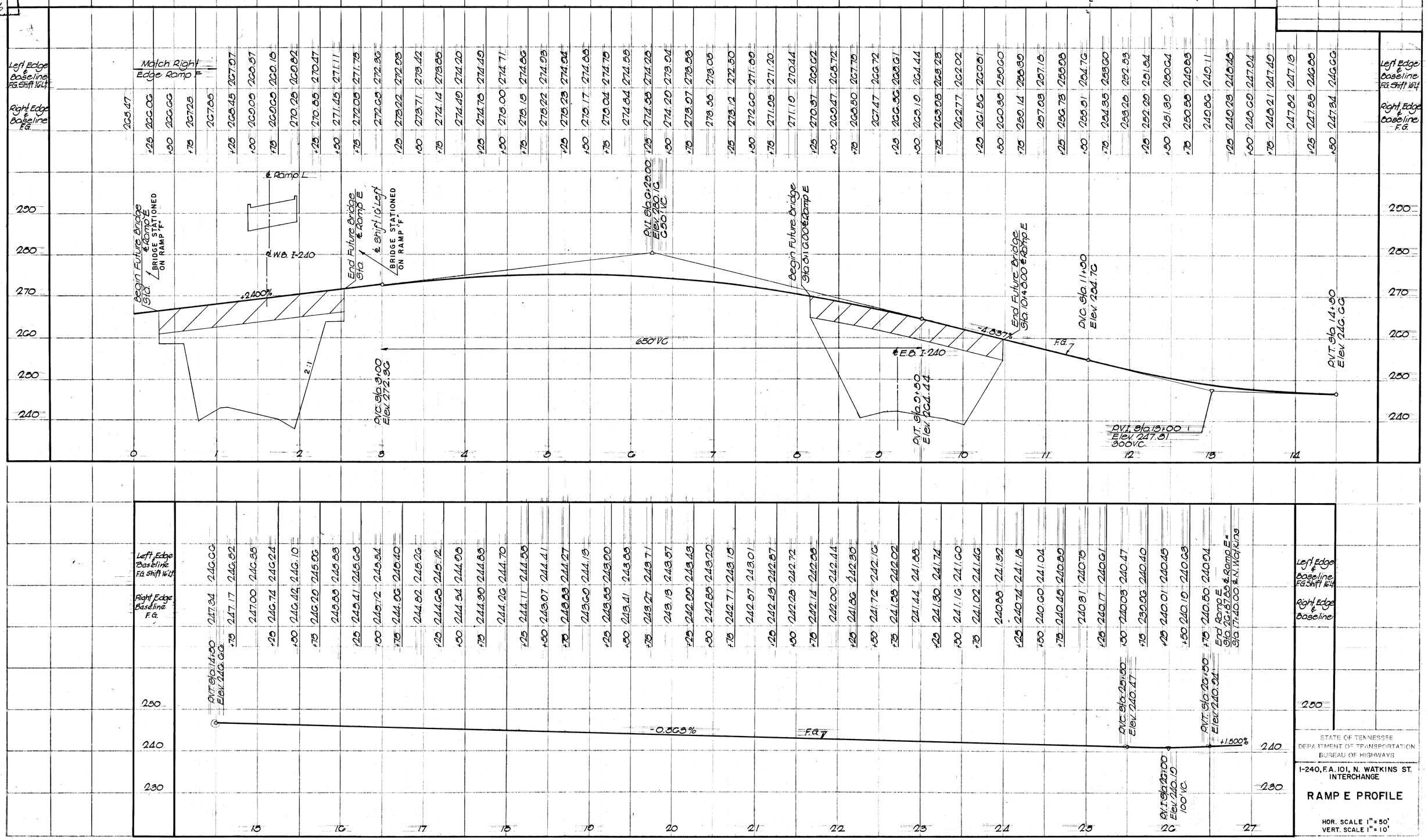
I-240, F.A.101, N. WATKINS ST. INTERCHANGE

RAMP D
PROFILE

HOR. SCALE 1" = 50'
VERT. SCALE 1" = 10'

REV. 7-6-76: ADJUSTED THE BEGINNING AND END STATIONS ON THE BRIDGES AT STATIONS 9+20.11 ℄ RAMP "E" AND BRIDGE FOR RAMPS "E" & "F" ℄ RAMP "E" STA. 1+61 ±.

TYPE	YEAR	PROJECT NO.	SHEET NO.
Const.	1974	I-IC I-240-1(12)4	32



STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
BUREAU OF HIGHWAYS

I-240, F.A. 101, N. WATKINS ST. INTERCHANGE

RAMP E PROFILE

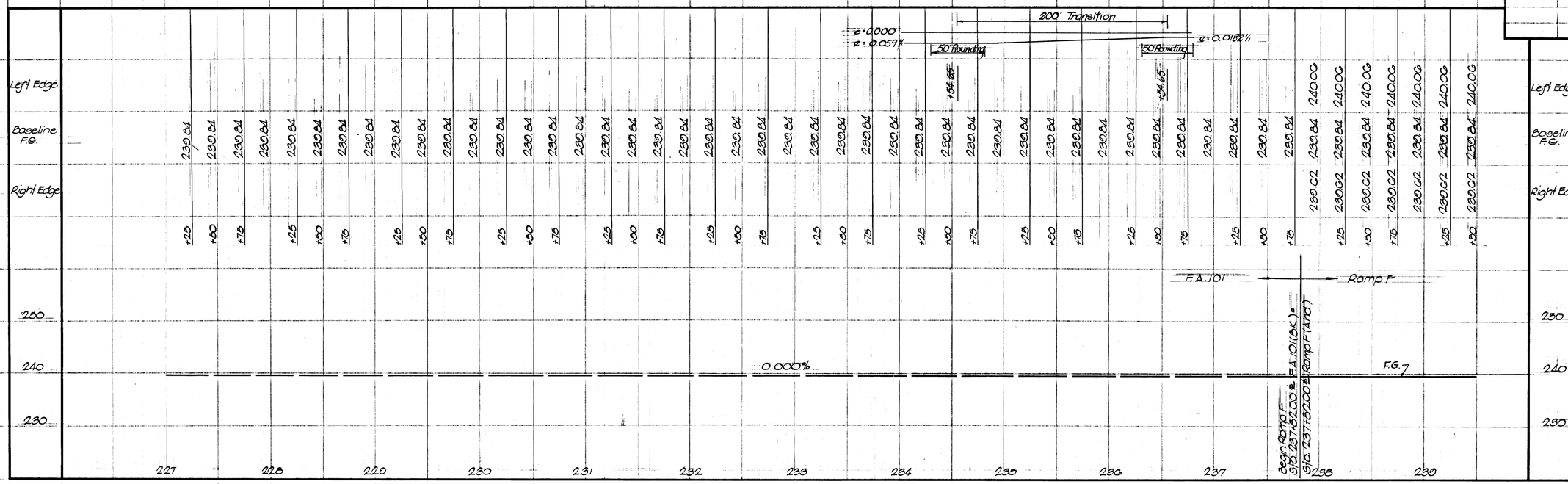
HOR. SCALE 1" = 50'
VERT. SCALE 1" = 10'

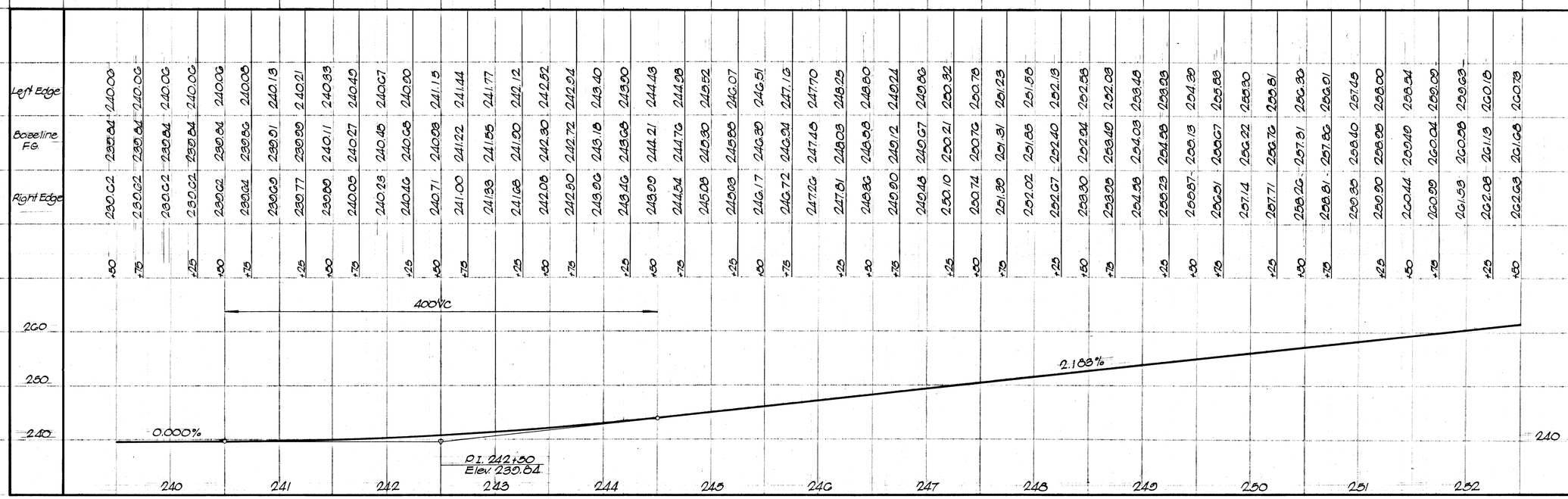
TENN. STATE HIGHWAYS
Plans Divn. | File No. IN-316

MICROFILM

REV. 6-4-74; REVISED SUPERELEVATION DIAGRAM.

TYPE	YEAR	PROJECT NO
Const.	1974	FAC I-240-1(104) 4.36





STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
BUREAU OF HIGHWAYS

I-240, F.A. 101, N. WATKINS ST. INTERCHANGE

F.A. 101 & RAMP F PROFILES

HOR. SCALE 1" = 50'
VERT. SCALE 1" = 10'

REV. 7-6-76: ADJUSTED THE BEGINNING AND END STATIONS OF THE BRIDGE AT STATION 255+42.10 ℄ RAMP "F".

TYPE	YEAR	PROJECT NO	SHEET NO
Const.	1974	I-240-1(04)	4 34

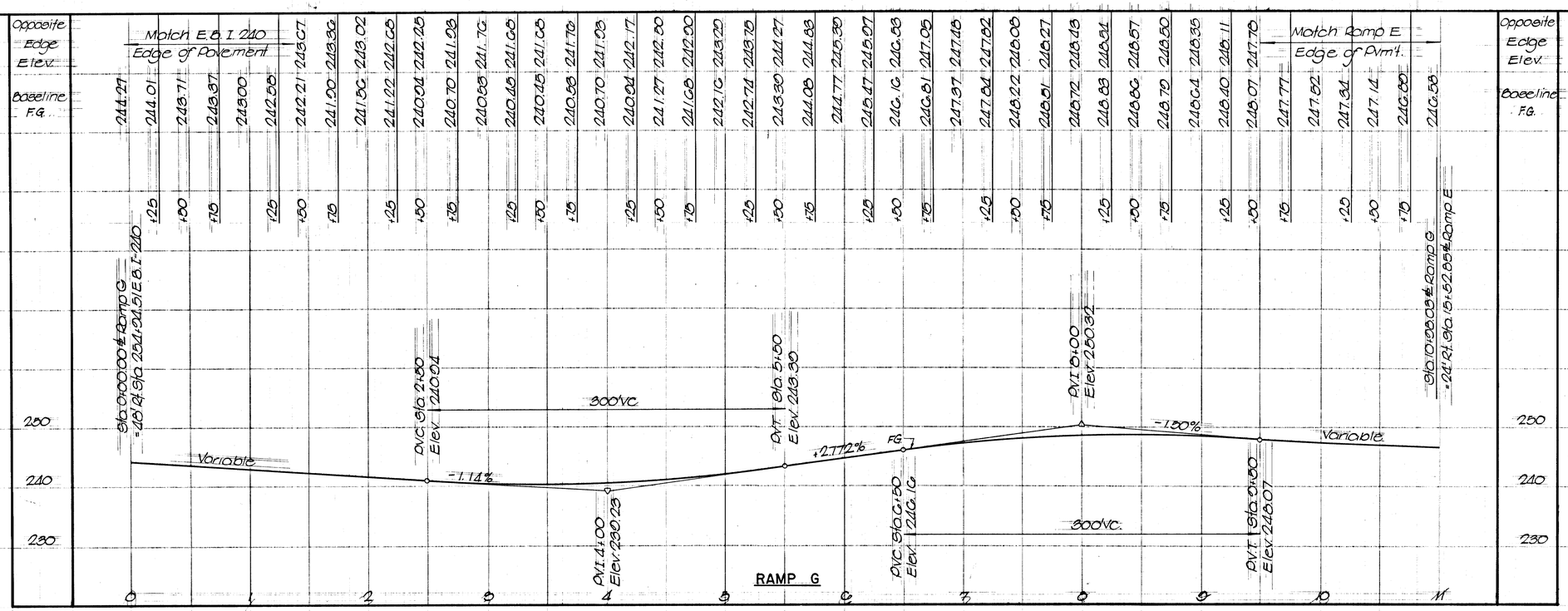
STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
BUREAU OF HIGHWAYS

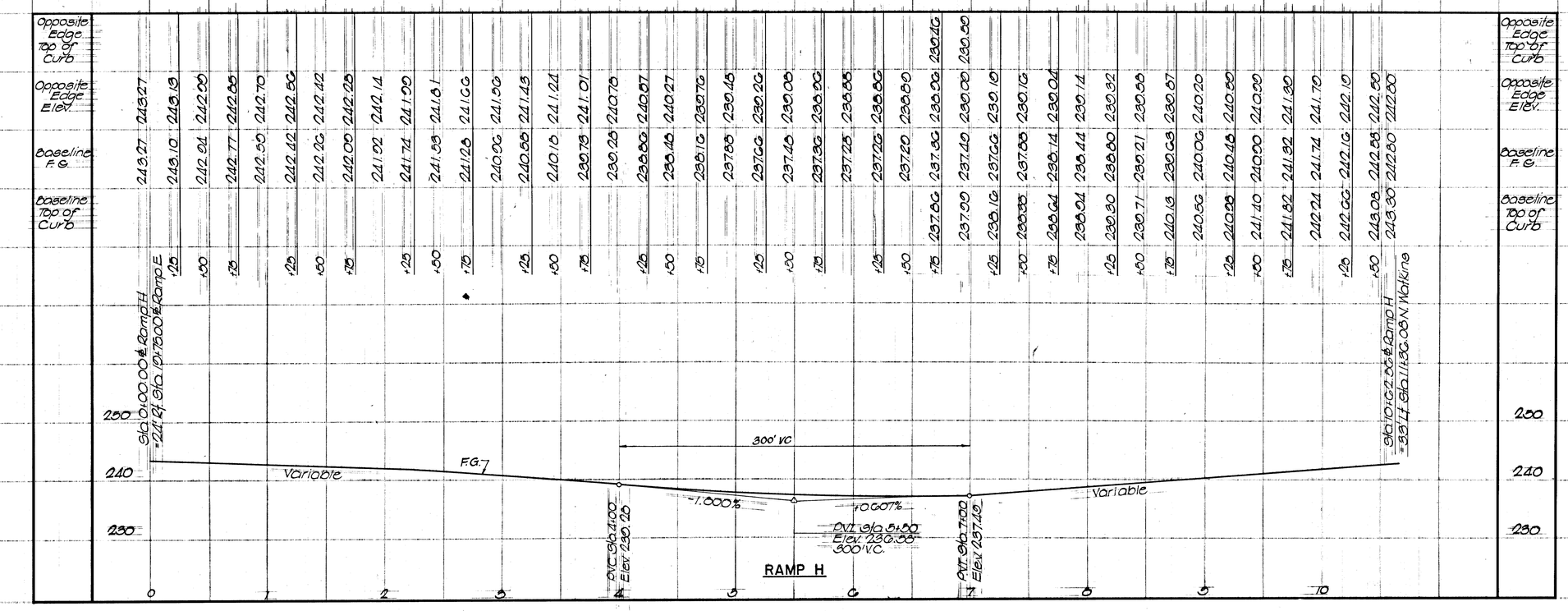
I-240, F.A. 101, N. WATKINS ST. INTERCHANGE

RAMP F PROFILE

HOR. SCALE 1" = 50'
VERT. SCALE 1" = 10'

TYPE	YEAR	PROJECT NO	SHEET NO
Const.	1974	I-IC-I-240-1(24)4	35





STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
BUREAU OF HIGHWAYS

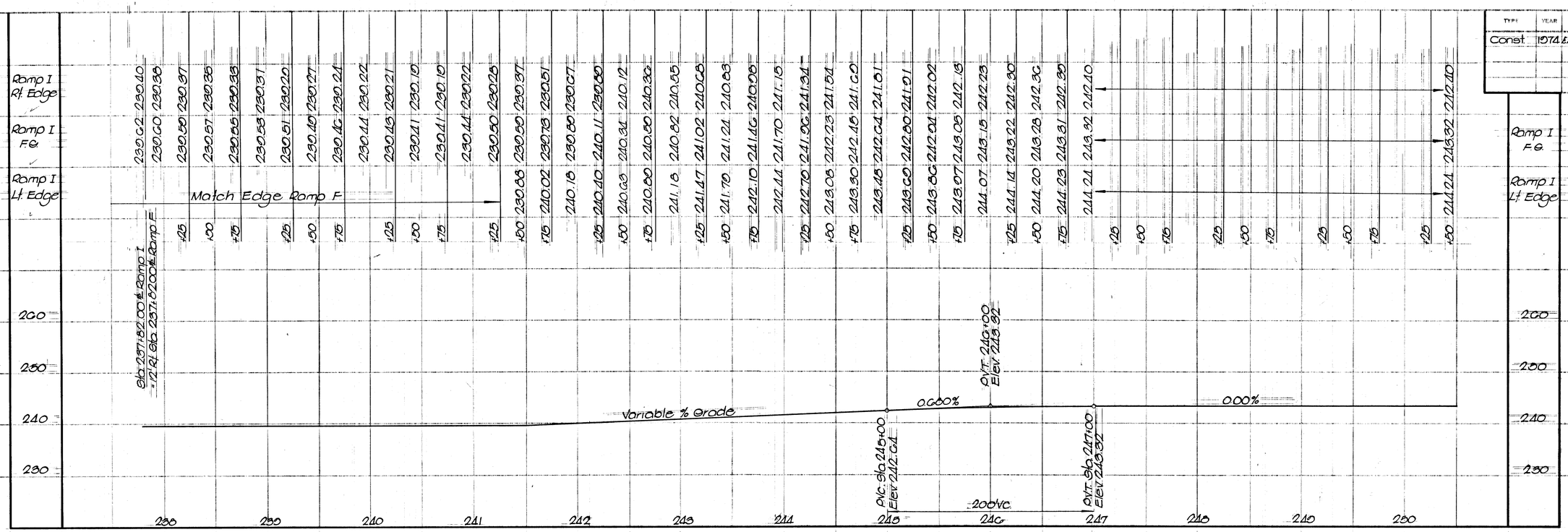
I-240, F.A. 101, N. WATKINS ST.
INTERCHANGE

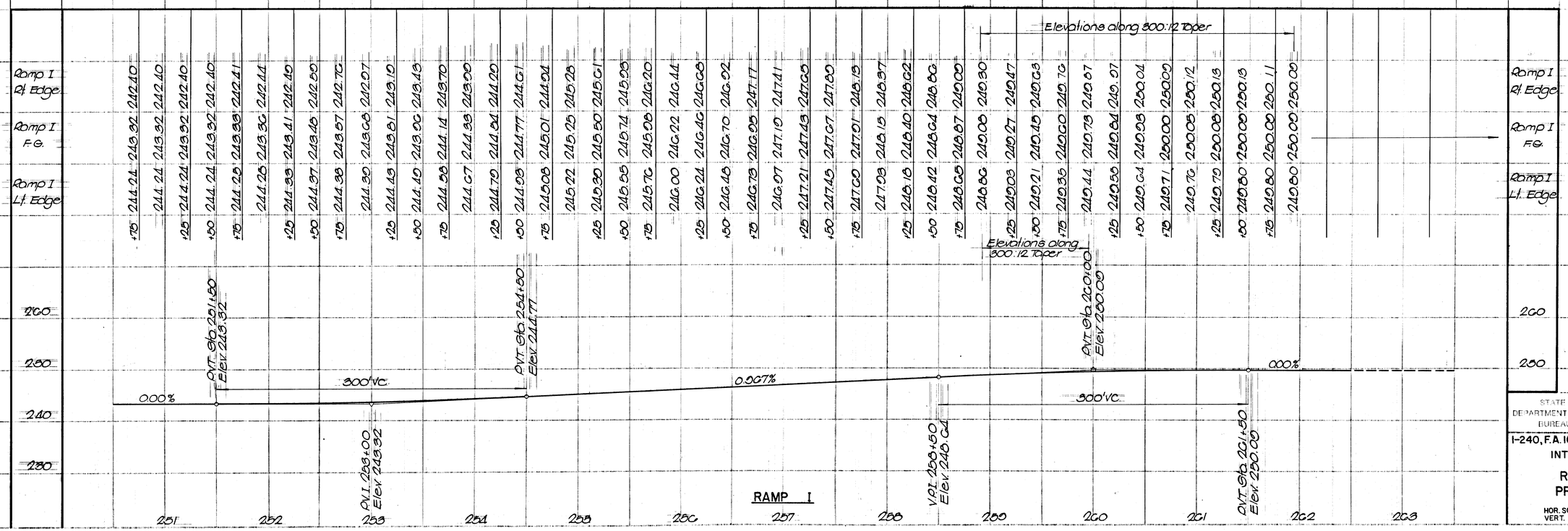
RAMPS G & H
PROFILES

HOR. SCALE 1" = 50'
VERT. SCALE 1" = 10'

TENN. STATE HIGHWAYS
Bus Divn. File No. IN-316

TYPE	YEAR	PROJECT NO	SHEET NO
Const.	1974	BRC I-240-1(104)	36





STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
BUREAU OF HIGHWAYS

I-240, F.A. 101, N. WATKINS ST.
INTERCHANGE

RAMP I
PROFILE

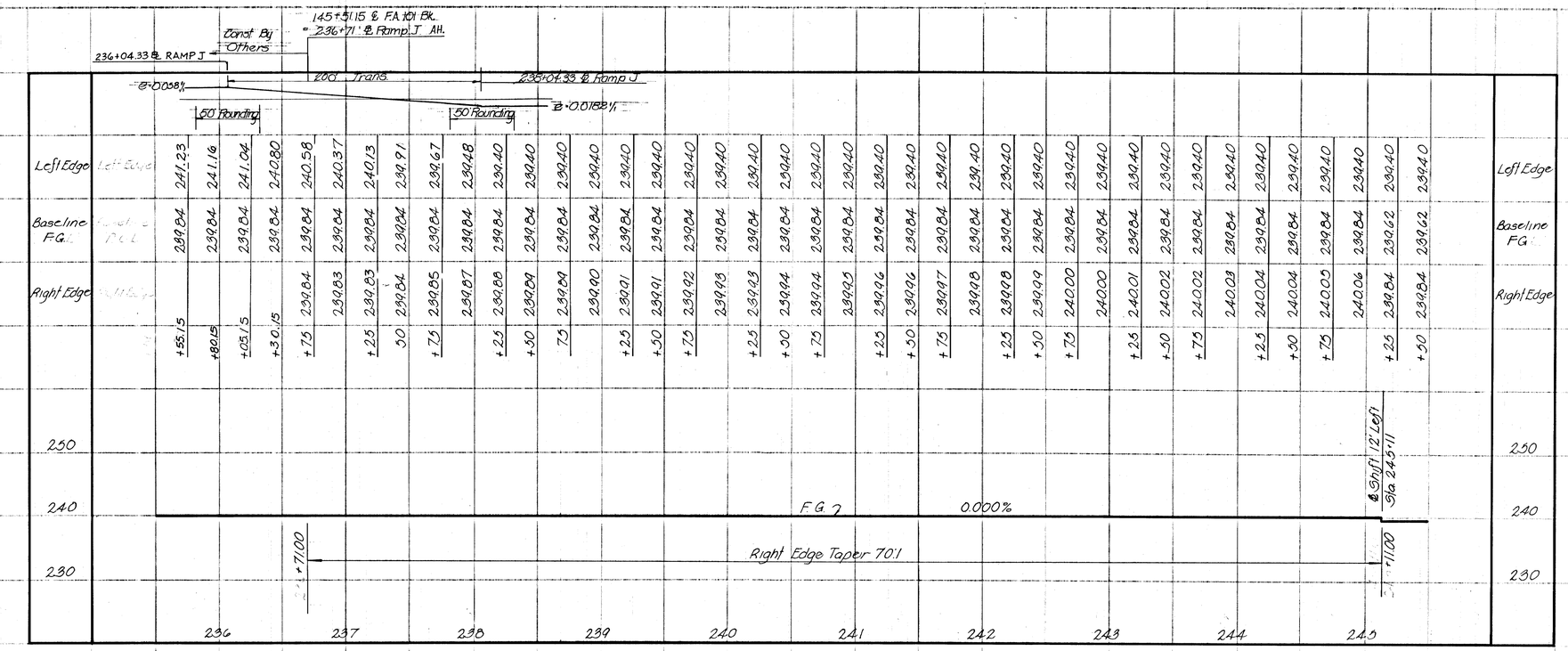
HOR. SCALE 1" = 50'
VERT. SCALE 1" = 10'

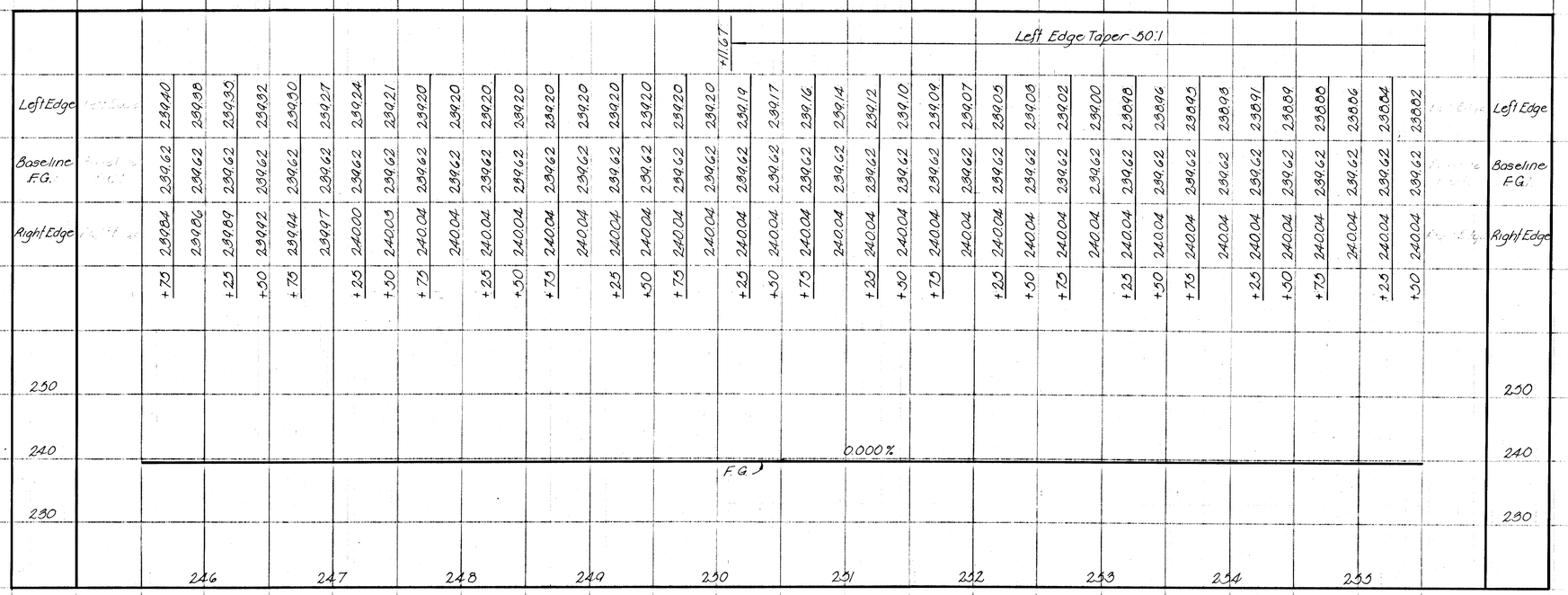
TENN. STATE HIGH.
Plans Divn. | File No. 316

MICROFILMED

TYPE	YEAR	PROJECT NO.	SHEET NO.
Const.	1974	I-I-240-1(104)	37

REV. 6-4-74; CHANGED SUPERELEVATION AND PAVEMENT EDGE ELEVATIONS.





STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
BUREAU OF HIGHWAYS

I-240, F.A. 101, N. WATKINS ST. INTERCHANGE

RAMP J PROFILE

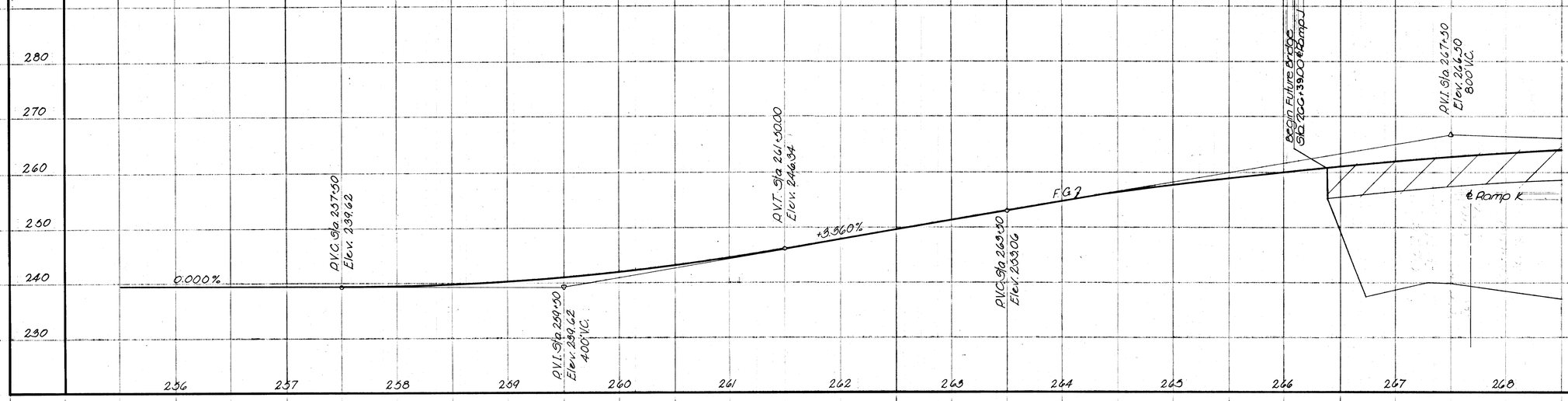
HOR. SCALE 1" = 50'
VERT. SCALE 1" = 10'

TENN. STATE HIGHWAYS
Plans Div. | File No. IN-316

REV. 7-6-76: ADJUSTED THE BEGINNING STATION OF BRIDGE AT STATION 267+67.86 ℄ RAMP "J"

TYPE	YEAR	PROJECT NO.	SHEET NO.
Const.	1974	IACI-240-1(104)	38

	Left Edge	Baseline F.G.	Right Edge
+50	238.82	239.62	240.04
+75	238.81	239.62	240.04
	238.79	239.62	240.04
+25	239.20	239.62	240.04
+50	239.20	239.62	240.04
+75	239.20	239.62	240.04
	239.20	239.62	240.04
+25	239.20	239.62	240.04
+50	239.20	239.62	240.04
+75	239.23	239.65	240.07
	239.31	239.73	240.15
+25	239.44	239.86	240.28
+50	239.62	240.04	240.46
+75	239.86	240.28	240.70
	240.15	240.57	240.99
+25	240.49	240.91	241.33
+50	240.88	241.30	241.72
+75	241.33	241.75	242.17
	241.82	242.24	242.66
+25	242.38	242.80	243.22
+50	242.98	243.40	243.82
+75	243.64	244.06	244.48
	244.34	244.76	245.18
+25	245.11	245.53	245.95
+50	245.92	246.34	246.76
+75	246.76	247.18	247.60
	247.60	248.02	248.44
+25	248.44	248.86	249.28
+50	249.28	249.70	250.12
+75	250.12	250.54	250.96
	250.96	251.38	251.80
+25	251.80	252.22	252.64
+50	252.64	253.06	253.48
+75	253.46	253.88	254.30
	254.26	254.68	255.10
+25	255.02	255.44	255.86
+50	255.75	256.17	256.59
+75	256.45	256.87	257.29
	257.12	257.54	257.96
+25	257.77	258.19	258.59
+50	258.41	258.79	259.17
+75	259.01	259.37	259.73
	259.57	259.92	260.27
+25	260.08	260.43	260.68
+50	260.57	260.92	261.27
+75	261.02	261.37	261.72
	261.45	261.80	262.15
+25	261.84	262.19	262.54
+50	262.20	262.55	262.90
+75	262.55	262.88	263.23
	262.85	263.18	263.53
+25	263.10	263.45	263.80
	263.34	263.60	264.04



STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
BUREAU OF HIGHWAYS

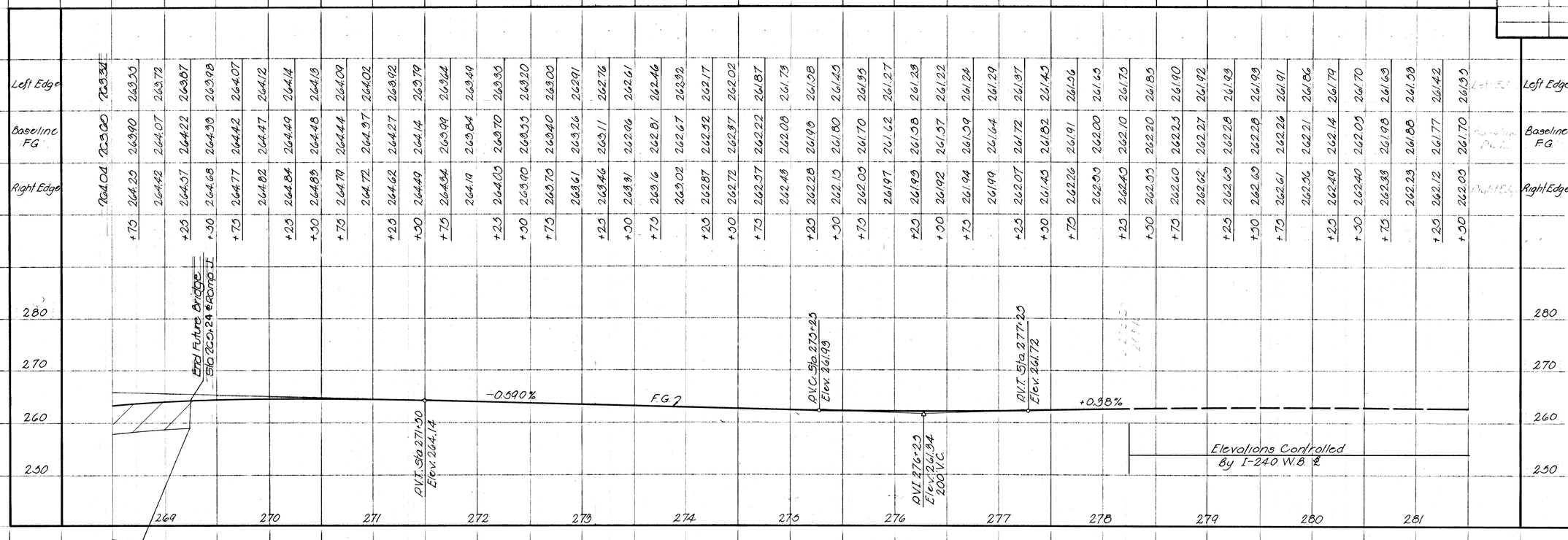
I-240, F.A. 101, N. WATKINS ST. INTERCHANGE

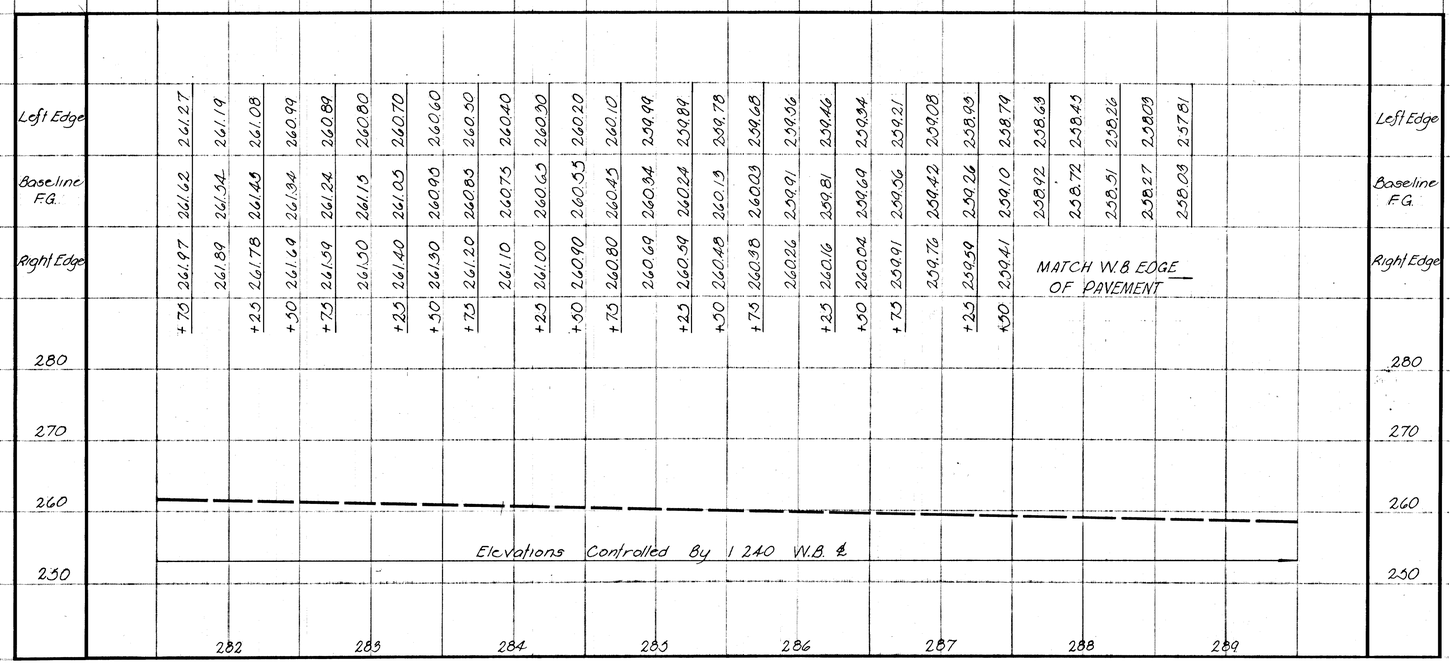
RAMP J PROFILE

HOR. SCALE 1" = 50'
VERT. SCALE 1" = 10'

REV. 7-6-76: ADJUSTED THE END STATION OF BRIDGE AT STATION 267+67.87 ℄ RAMP "J"

TYPE	YEAR	PROJECT NO.	SHEET NO.
Const.	1974	IACI-240-1(24)X	30





STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
BUREAU OF HIGHWAYS

I 240, F.A. 101, N. WATKINS ST. INTERCHANGE

RAMP J PROFILE

HOR. SCALE 1" = 50'
VERT. SCALE 1" = 10'

TENN. STATE HIGHWAYS
Plans Divn.
File No. IN-316

MICROFILMED

TYPE	YEAR	PROJECT NO.	SHEET NO.
Const.	1974	EACI-240-1(04)4	40

Station	Right Edge	Baseline F.G.	Left Edge
	←Match Edge Ramp A	239.52	
+25		239.55	
+50		239.58	
+75		239.62	
		239.65	
+25		239.70	
+50		239.77	
+75		239.86	
	240.94	239.96	
+25	241.02	240.04	
+50	241.07	240.09	
+75	241.07	240.09	
	241.04	240.06	
+25	240.98	240.00	
+50	240.87	239.89	
+75	240.73	239.75	
	240.56	239.58	
+25	240.36	239.38	
+50	240.19	239.21	
+75	240.09	239.11	
	240.06	239.08	
+25	240.09	239.11	
+50	240.19	239.21	
+75	240.35	239.37	
	240.57	239.59	
+25	240.86	239.88	
+50	241.22	240.24	
+75	241.64	240.66	
	242.11	241.15	
+25	242.58	241.70	
+50	243.02	242.26	
+75	243.40	242.77	
	243.72	243.23	
+25	244.01	243.64	
+50	244.31	244.01	
+75	244.62	244.33	
	244.89	244.60	
+25	245.11	244.82	
+50	245.28	244.99	
+75	245.41	245.12	
		245.49	245.20
+25		245.51	245.22
+50		245.50	245.21
+75		245.43	245.14
		245.31	245.00
+25		245.15	244.76
+50		244.97	244.47
+75		244.79	244.18
		244.61	243.89
+25		244.42	243.59
+50		244.26	243.32
+75		244.12	243.07
		244.01	242.85
+25		243.94	242.69

End Ramp K
Sta. 13+27.85 ℄ Ramp K = 48' LT. Sta. 225 41.29 ℄ W.B. I-240

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
BUREAU OF HIGHWAYS

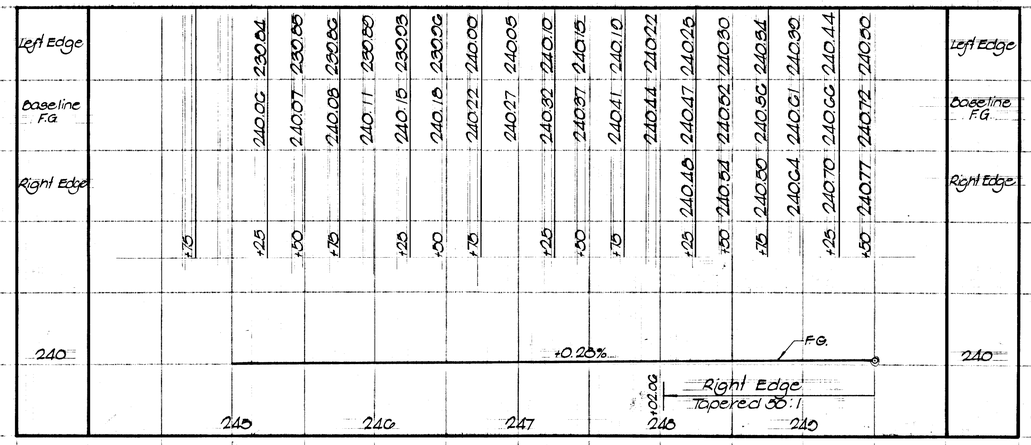
I-240, F.A. 101, N. WATKINS ST. INTERCHANGE

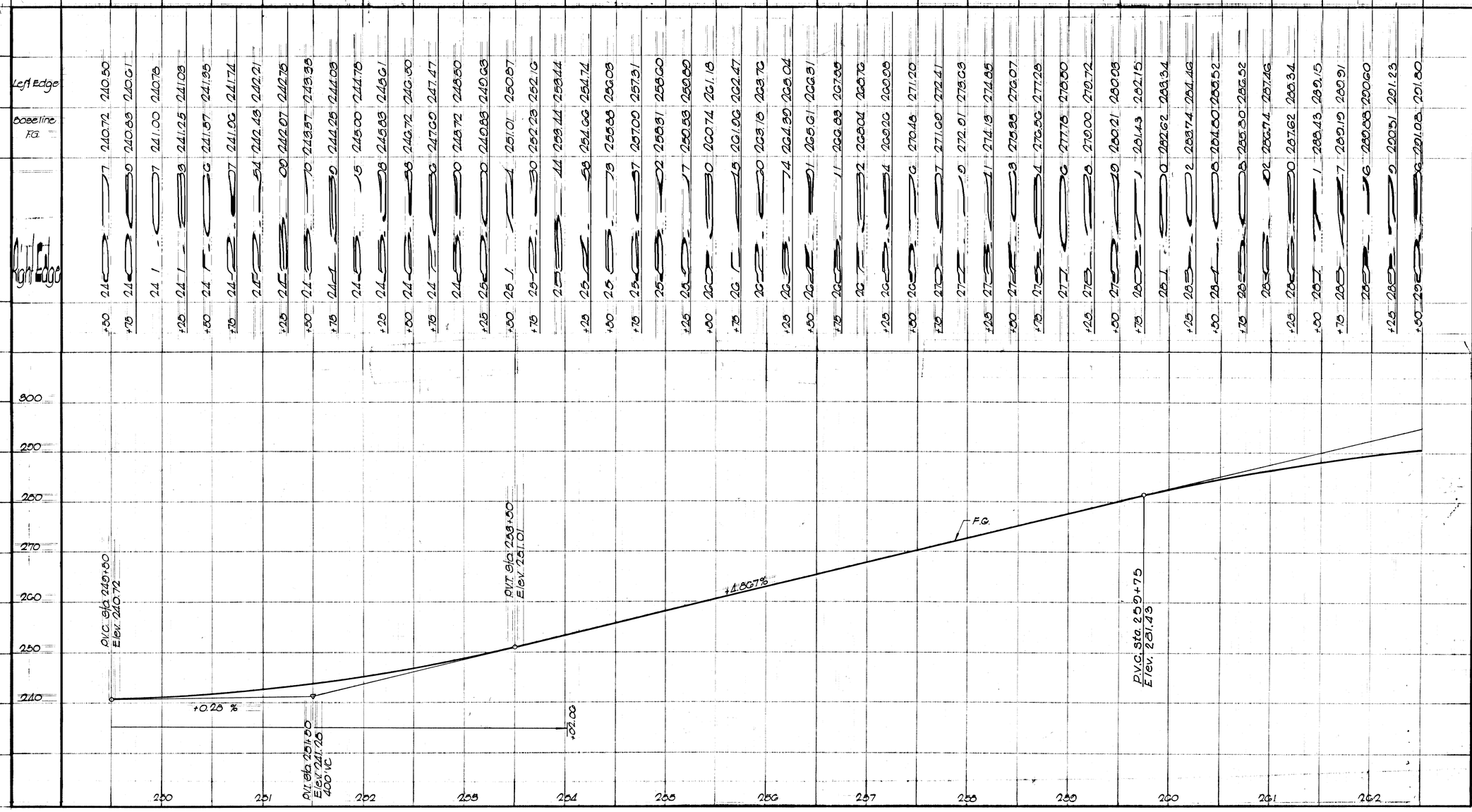
RAMP K PROFILE

HOR. SCALE 1" = 50'
VERT. SCALE 1" = 10'

TYPE	YEAR	PROJECT NO.	SHEET NO.
Const.	1974	EAC I 240-1(24)	4

Revised 6-16-76; changed the vertical curve length from 1,000' to 850' on the vertical curve at P.I. Sta. 26+50 and corrected the elevations shown on the profile sheets accordingly.





STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
BUREAU OF HIGHWAYS

I-240, F.A. 101, N. WATKINS ST. INTERCHANGE

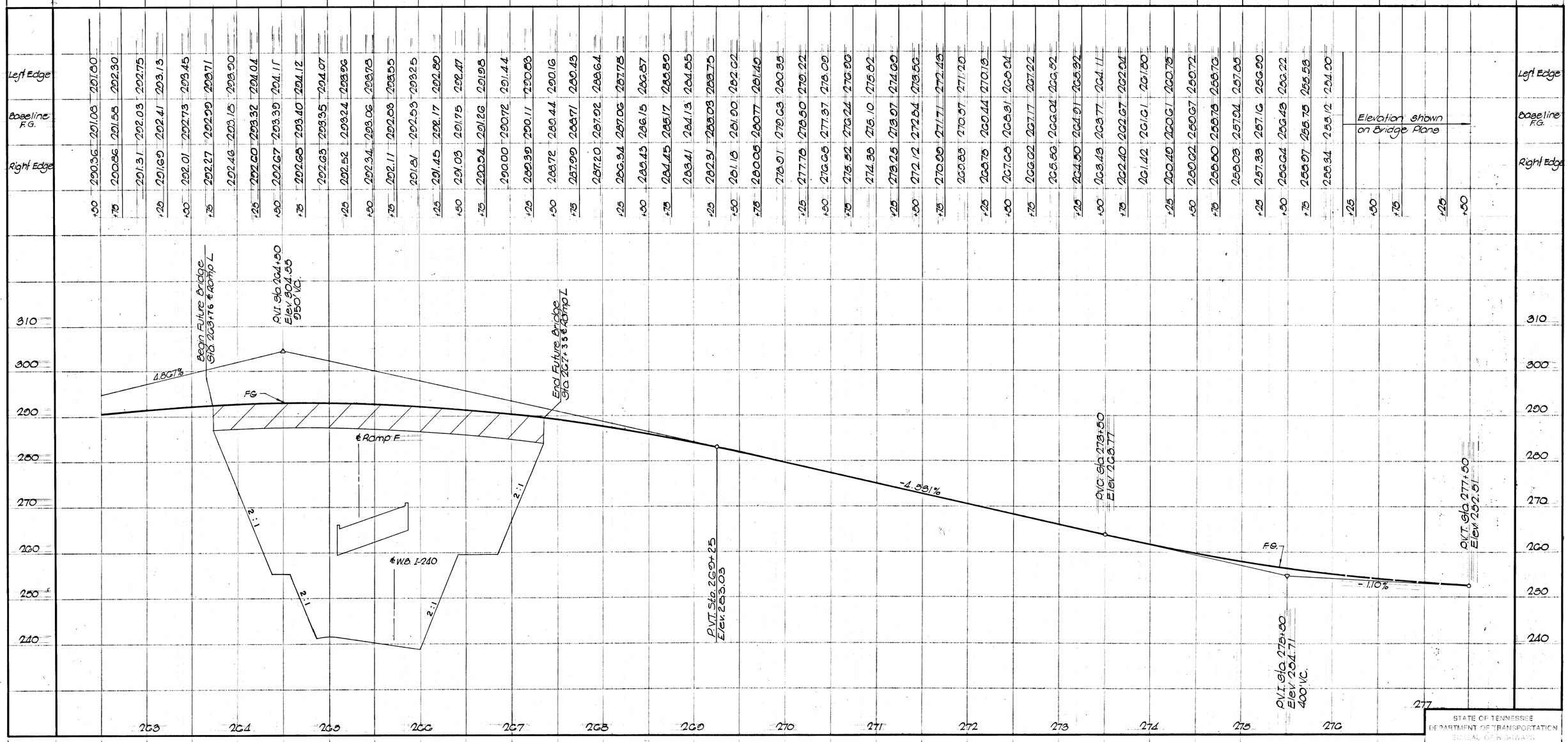
RAMP L PROFILE

HOR. SCALE 1" = 50'
VERT. SCALE 1" = 10'

REV. 7-6-76; ADJUSTED THE BEGINNING AND END STA. FOR THE BRIDGE AT STA. 265+69.50 ℄ RAMP "L".

TYPE	YEAR	PROJECT NO	SHEET NO
Const.	1974	I-240-1(204)4	42

Revised 6-16-76; Changed the vertical Curve Length from 1,000' to 950' on the vertical curve at P.I. Sta. 264+50 and corrected the Elevations shown on the profile sheets Accordingly.



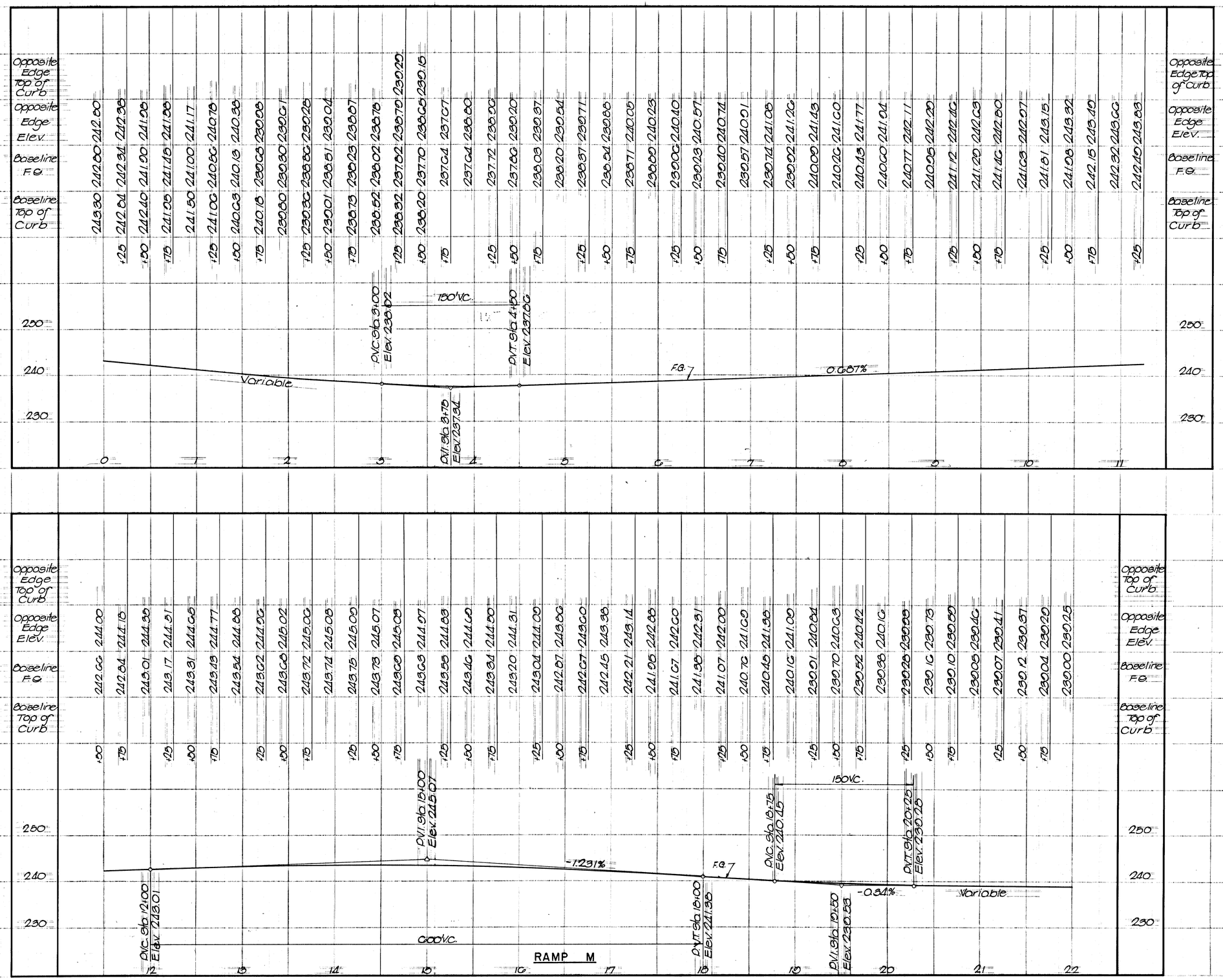
STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
BUREAU OF HIGHWAYS

I-240, F.A. 101, N. WATKINS ST. INTERCHANGE

RAMP L PROFILE

HOR. SCALE 1" = 50'
VERT. SCALE 1" = 10'

TYPE	YEAR	PROJECT NO.	SHEET NO.
Const.	1974	FAC I-240-1(104)A	48



STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
BUREAU OF HIGHWAYS

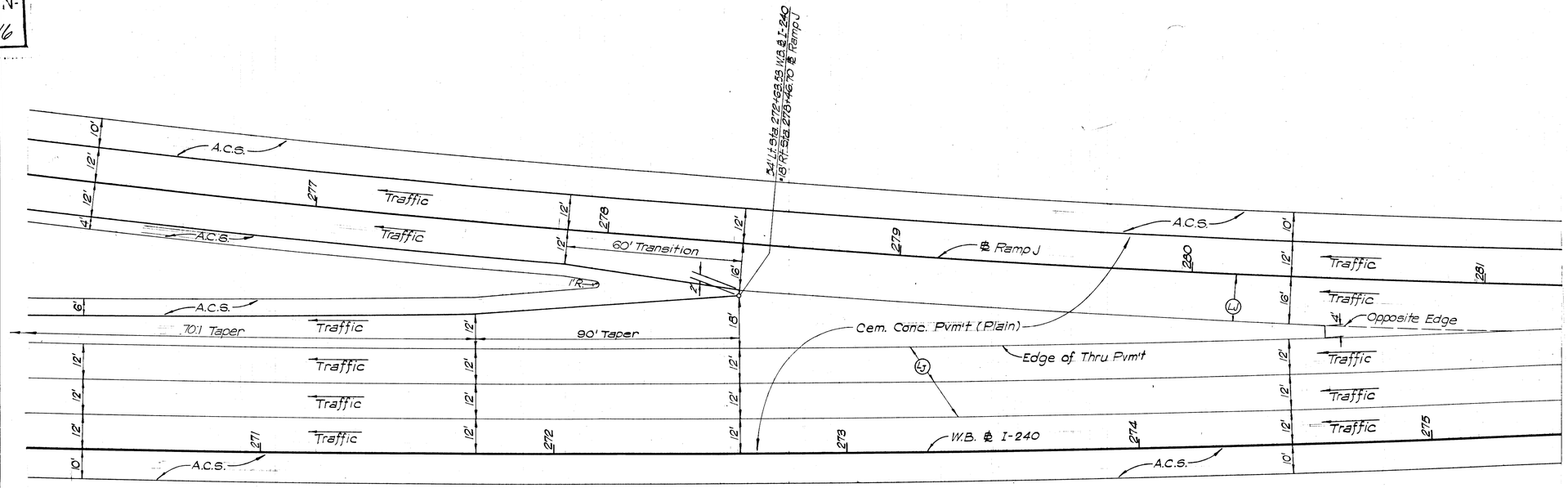
I-240, F.A. 101, N. WATKINS ST. INTERCHANGE

RAMP M
PROFILE

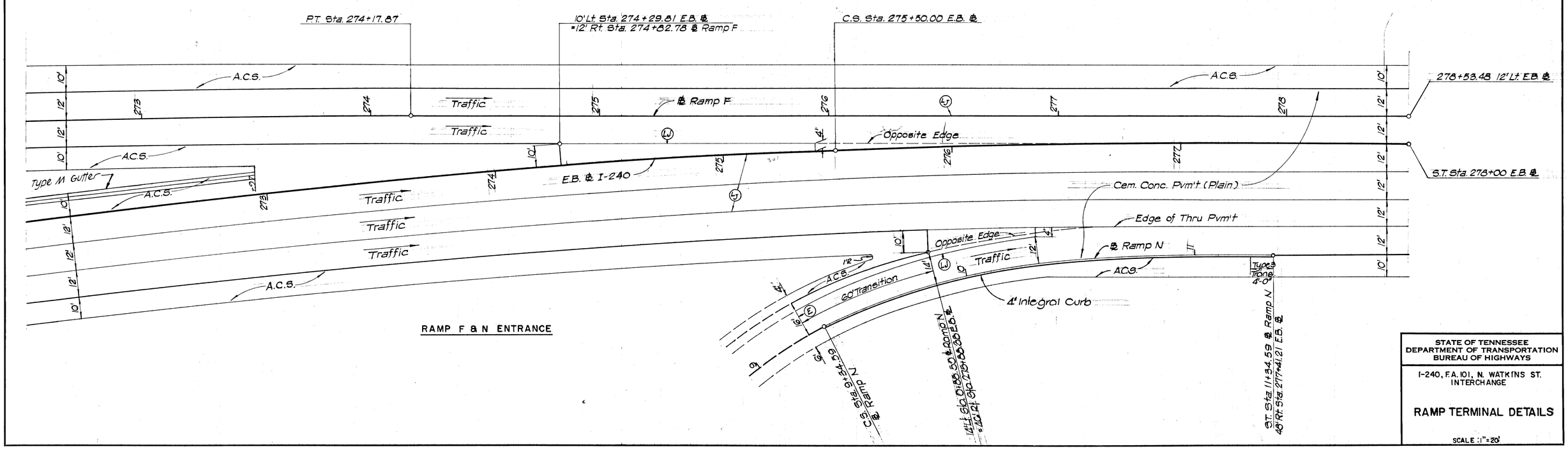
HOR. SCALE 1"=50'
VERT. SCALE 1"=10'

TYPE	YEAR	PROJECT NO.	SHEET NO.
Const	1974	EAC I-240-1(24)1	44

REV. 7-18-75: ADJUSTED THE LOCATION OF THE "M" TYPE GUTTER ON THE E. B. LANES.



RAMP J EXIT



RAMP F & N ENTRANCE

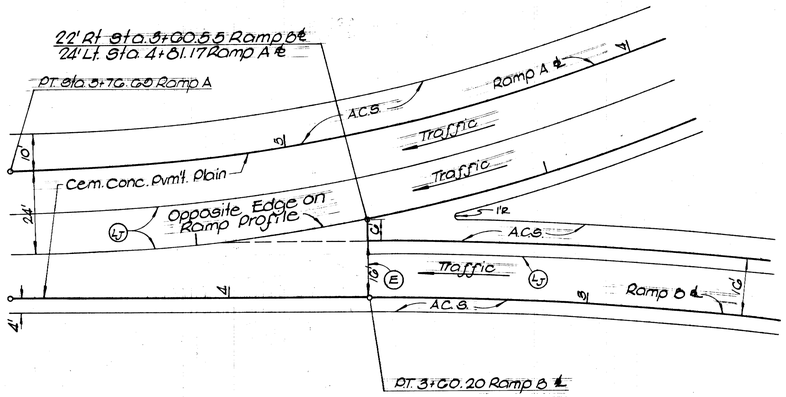
STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
BUREAU OF HIGHWAYS

I-240, F.A. 101, N. WATKINS ST. INTERCHANGE

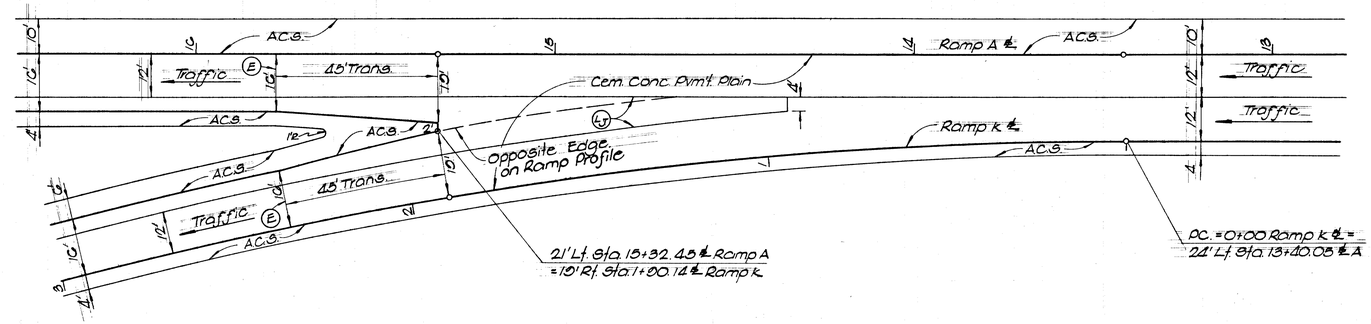
RAMP TERMINAL DETAILS

SCALE: 1" = 20'

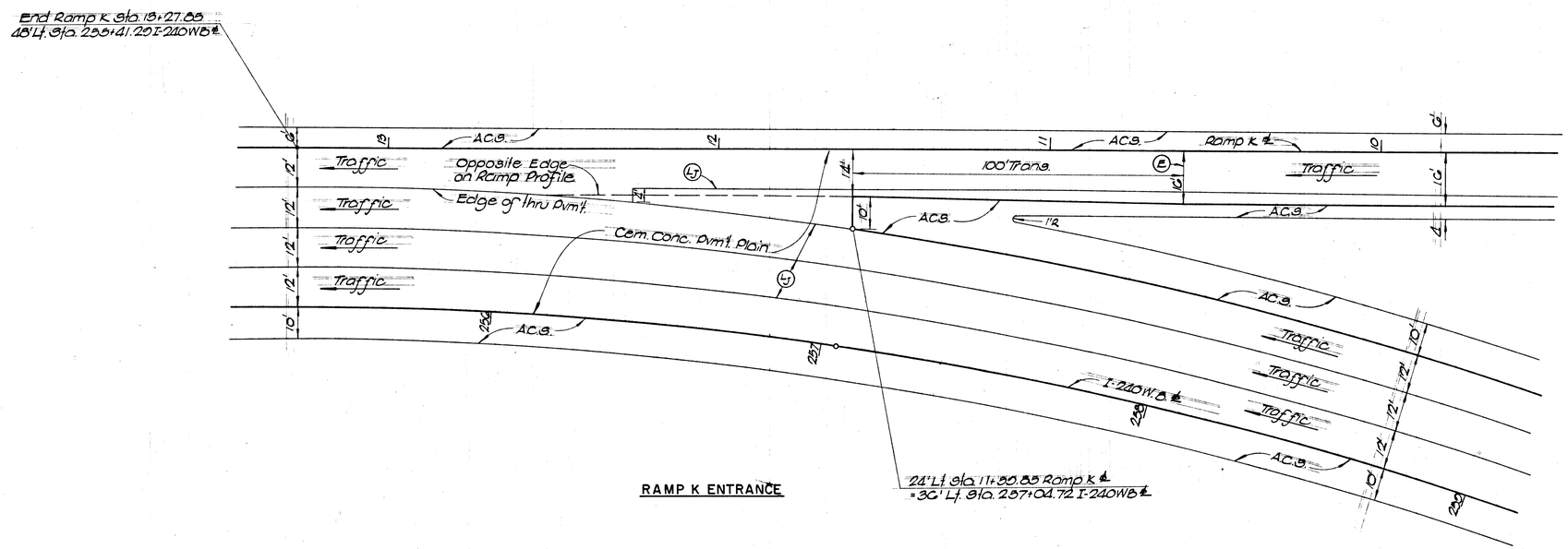
TYPE	YEAR	PROJECT NO.	SHEET NO.
Const.	1974	FAC-I-240-1(104)A	45



RAMP A & B MERGE



RAMP A & K DIVERGE



RAMP K ENTRANCE

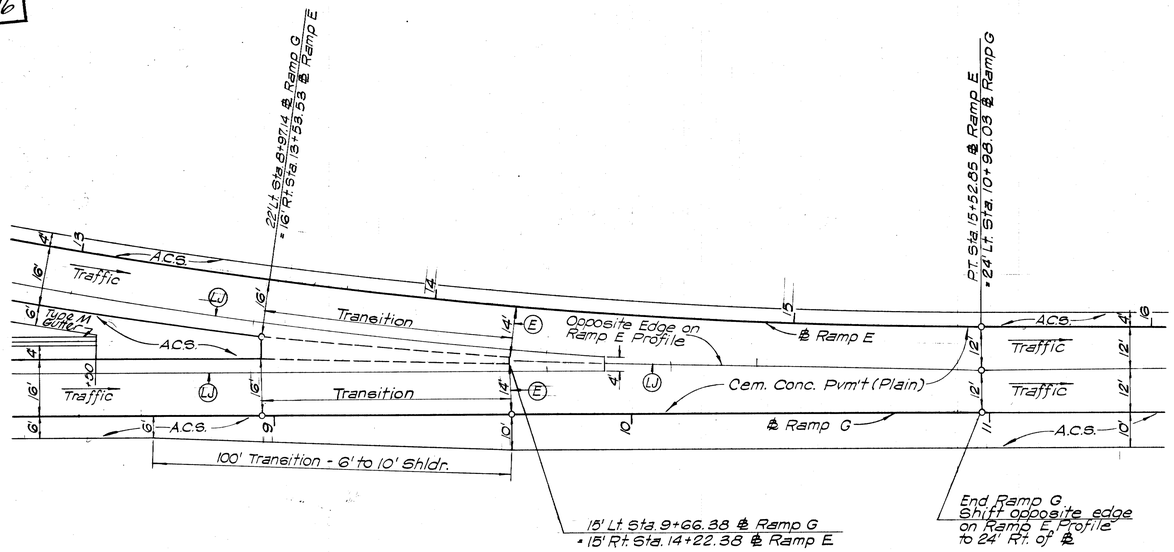
STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
BUREAU OF HIGHWAYS

I-240, F.A. 101, N. WATKINS ST. INTERCHANGE

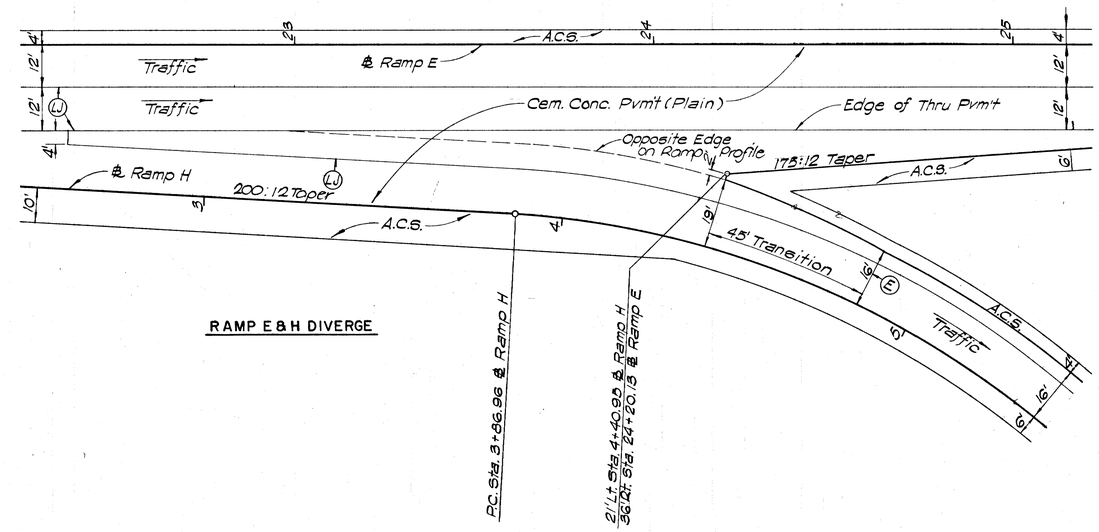
RAMP TERMINAL DETAILS

SCALE: 1" = 20'

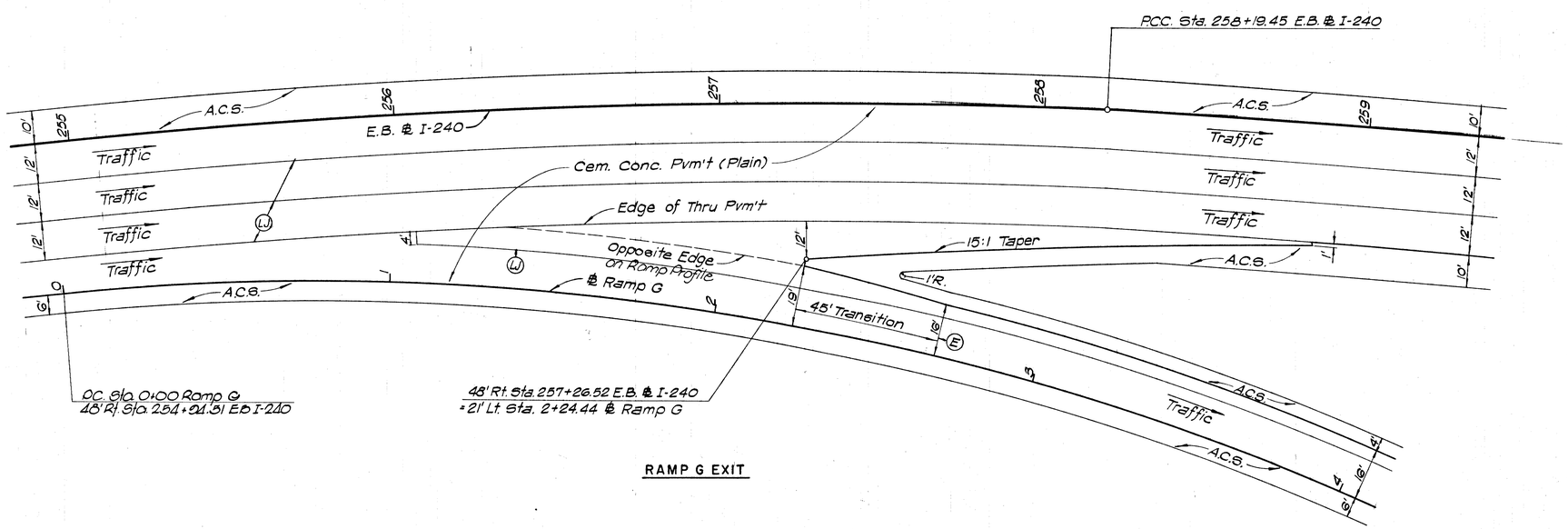
TYPE	YEAR	PROJECT NO.	SHEET NO.
Const.	1974	FAC I-240-1(104)4	4G



RAMP E & G MERGE



RAMP E & H DIVERGE



RAMP G EXIT

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
BUREAU OF HIGHWAYS

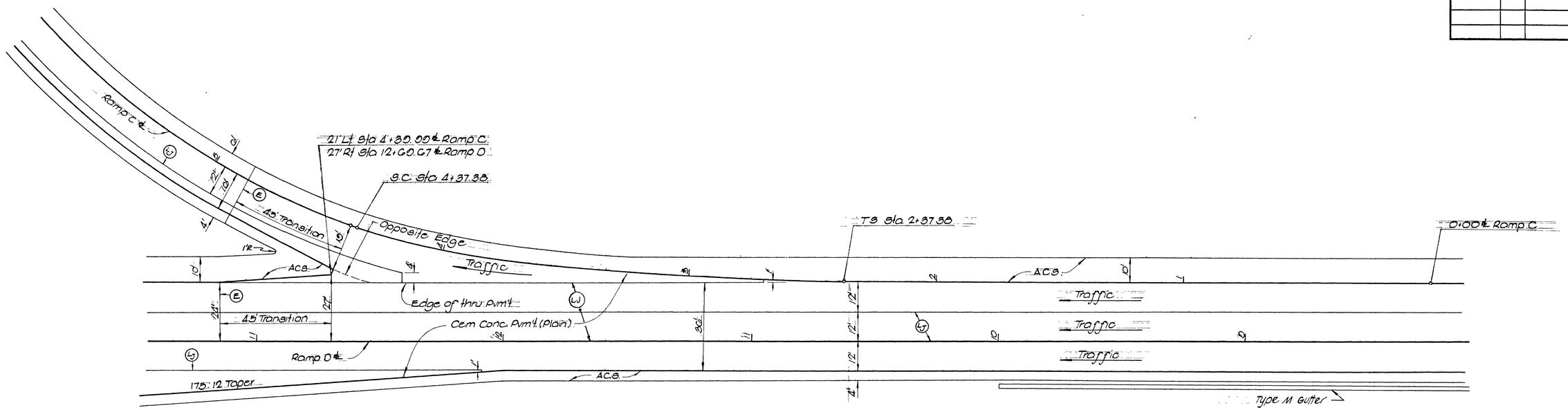
I-240, F.A. 101, N. WATKINS ST. INTERCHANGE

RAMP TERMINAL DETAILS

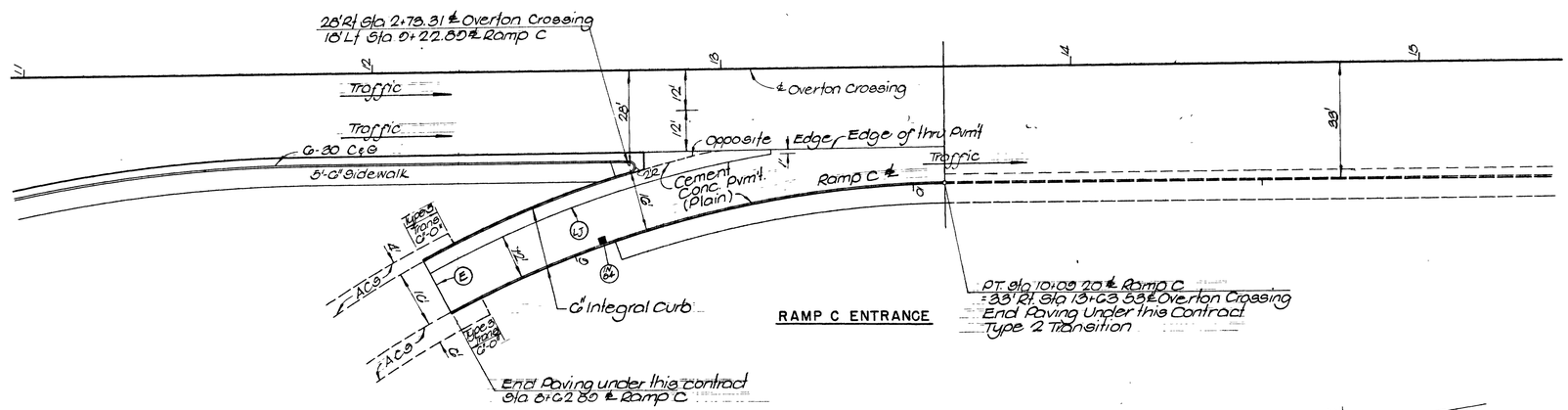
SCALE: 1"=20'

REVISION 4-9-74; DELETE CORR. CONC. MEDIAN STRIP RAMP C ENTRANCE.

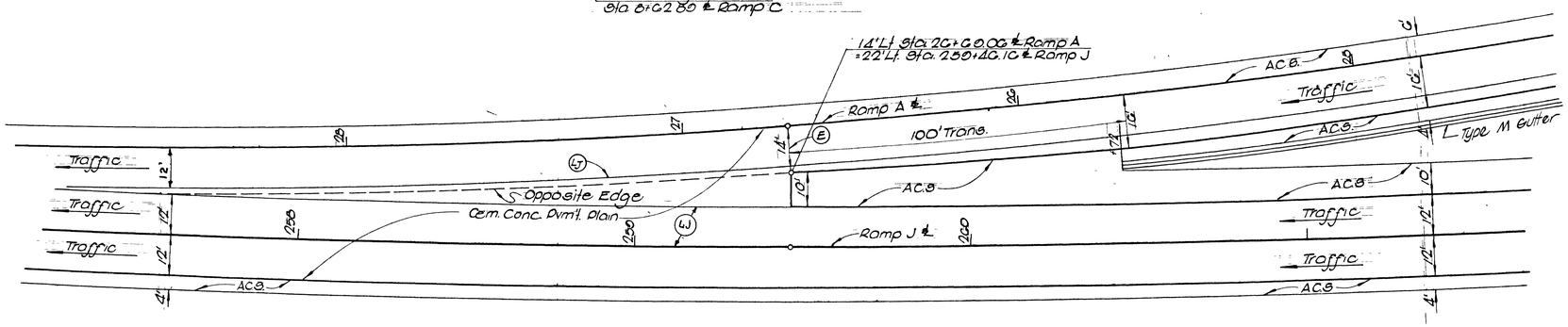
TYPE	YEAR	PROJECT NO	SHEET NO
Const.	1974	EDC-I-240-1(104)4	47



RAMP C & D DIVERGE



RAMP C ENTRANCE



RAMP A & J MERGE

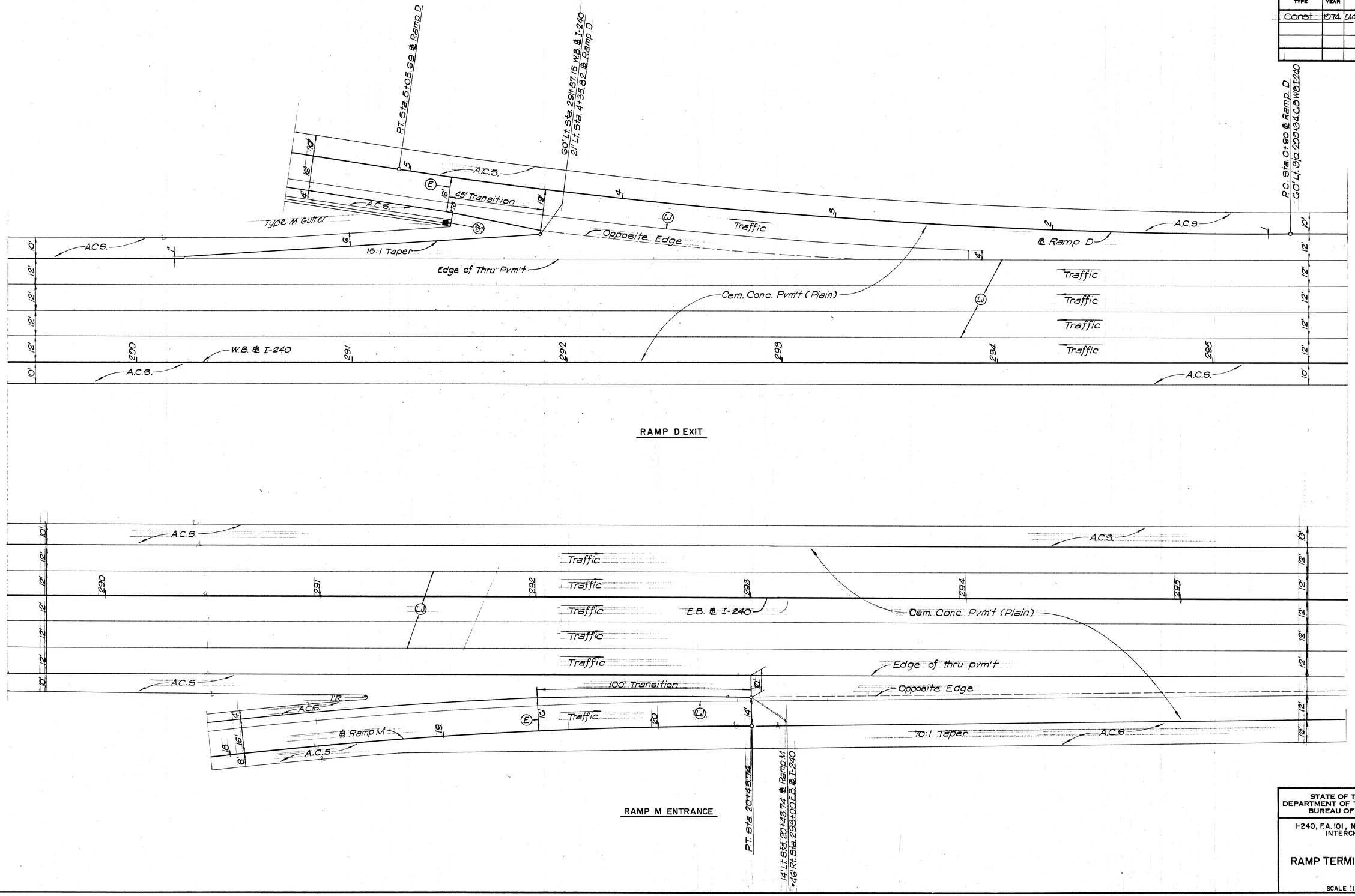
STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
BUREAU OF HIGHWAYS

I-240, F.A. 101, N. WATKINS ST. INTERCHANGE

RAMP TERMINAL DETAILS

SCALE 1" = 20'

TYPE	YEAR	PROJECT NO.	SHEET NO.
Const	1974	EMC I-240-1(24)A	48



STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
BUREAU OF HIGHWAYS

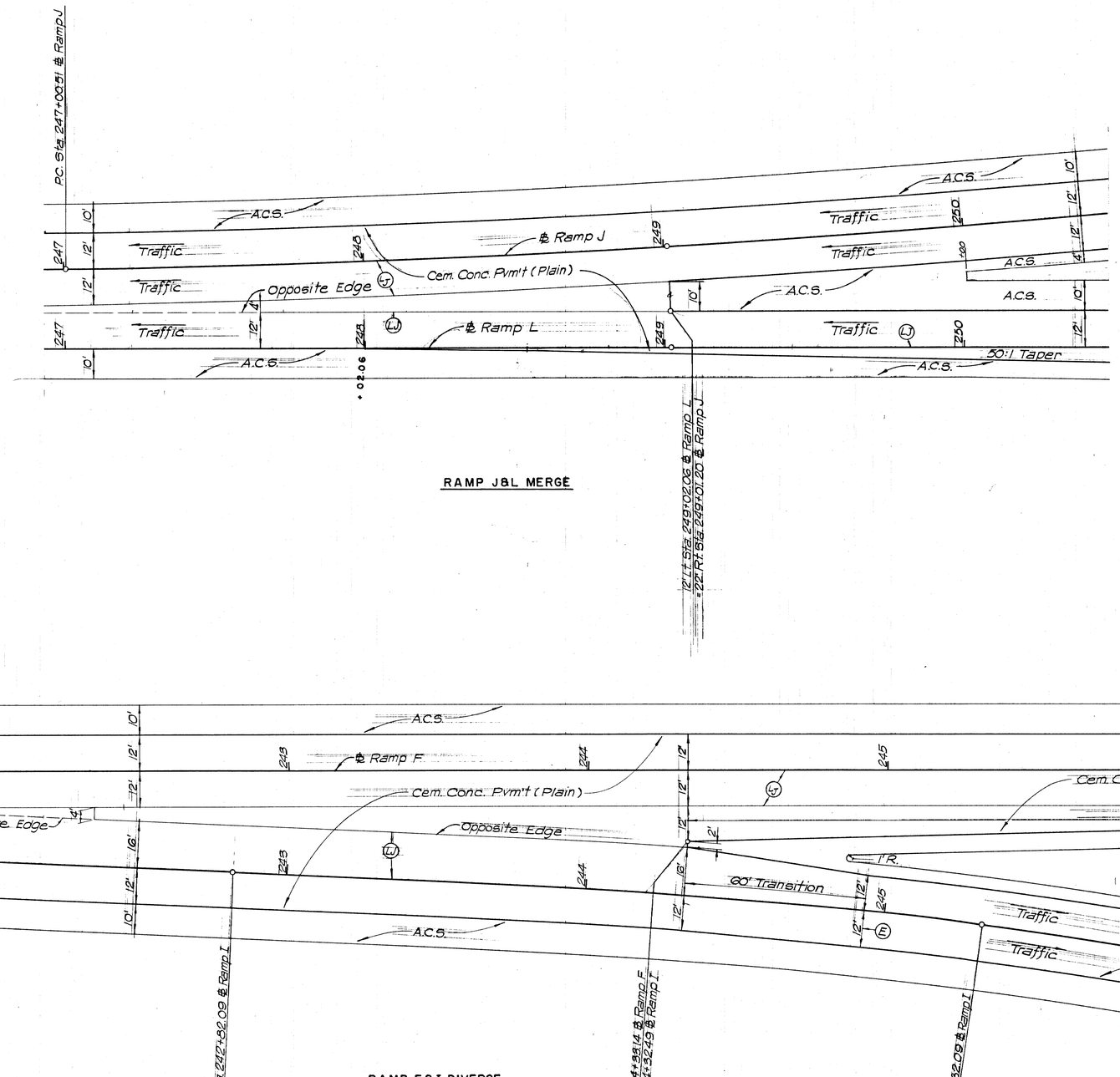
I-240, F.A. 101, N. WATKINS ST. INTERCHANGE

RAMP TERMINAL DETAILS

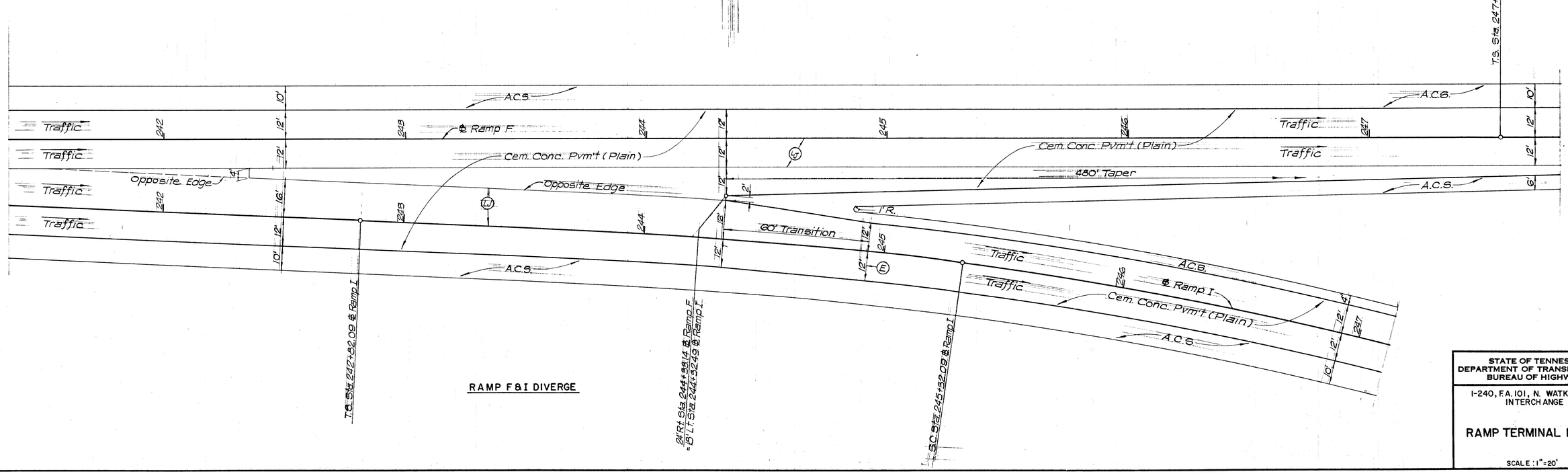
SCALE 1"=20'

TYPE	YEAR	PROJECT NO.	SHEET NO.
Const.	1974	EAC I-240-1(204) 4	40

REVISION 4-9-74; REMOVED IC-2 DITCH RAMP J AND L MERGE, EXTEND RAMP L TAPER.



RAMP J&L MERGE



RAMP F&I DIVERGE

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
BUREAU OF HIGHWAYS

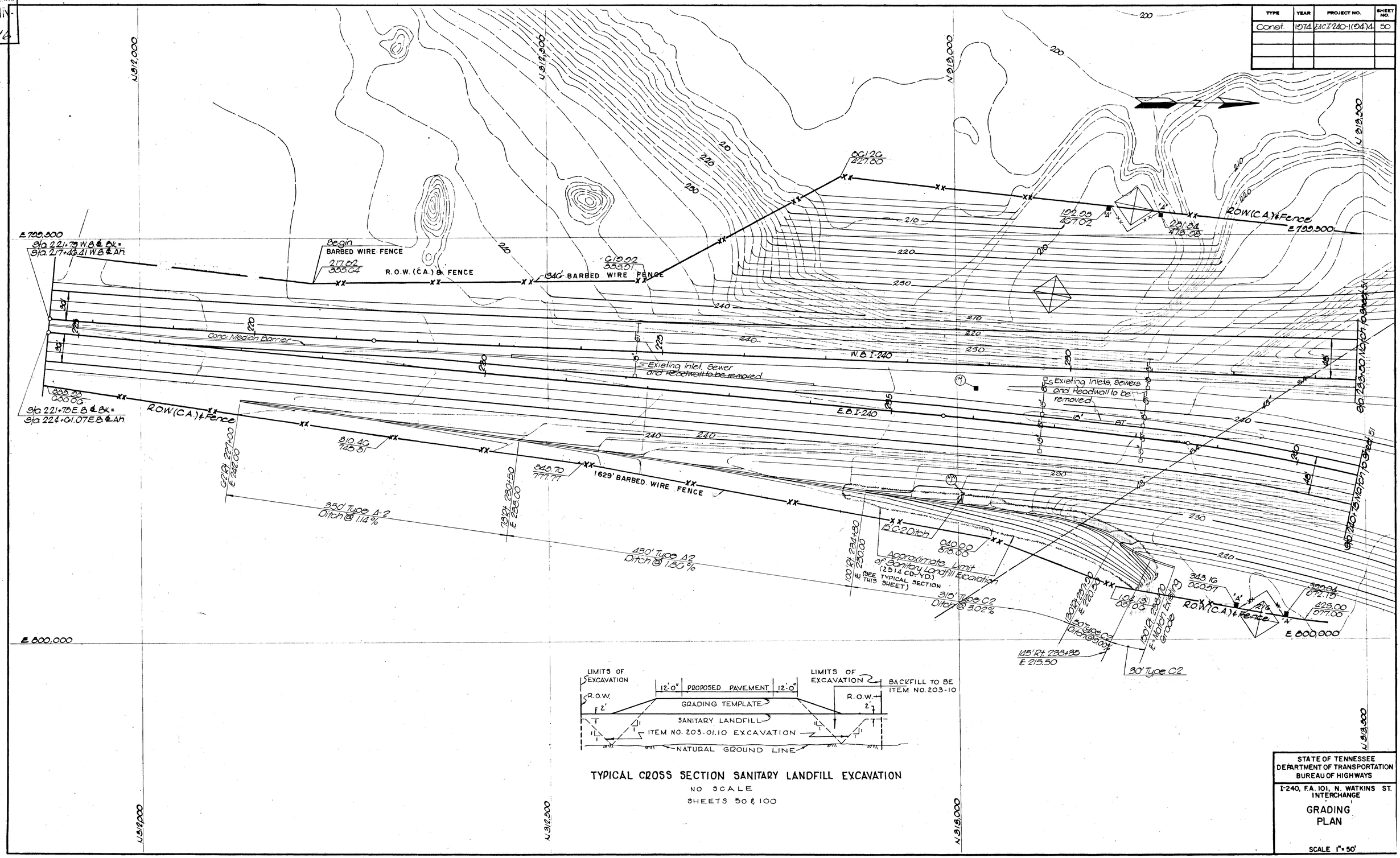
I-240, F.A. 101, N. WATKINS ST. INTERCHANGE

RAMP TERMINAL DETAILS

SCALE: 1" = 20'

TENN. STATE HIGHWAYS
Plans Divn. | File No. IN-316

TYPE	YEAR	PROJECT NO.	SHEET NO.
Const.	1974	FAC I-240-1(047)4	50



TYPICAL CROSS SECTION SANITARY LANDFILL EXCAVATION

NO SCALE

SHEETS 50 & 100

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
BUREAU OF HIGHWAYS

I-240, F.A. 101, N. WATKINS ST. INTERCHANGE

GRADING PLAN

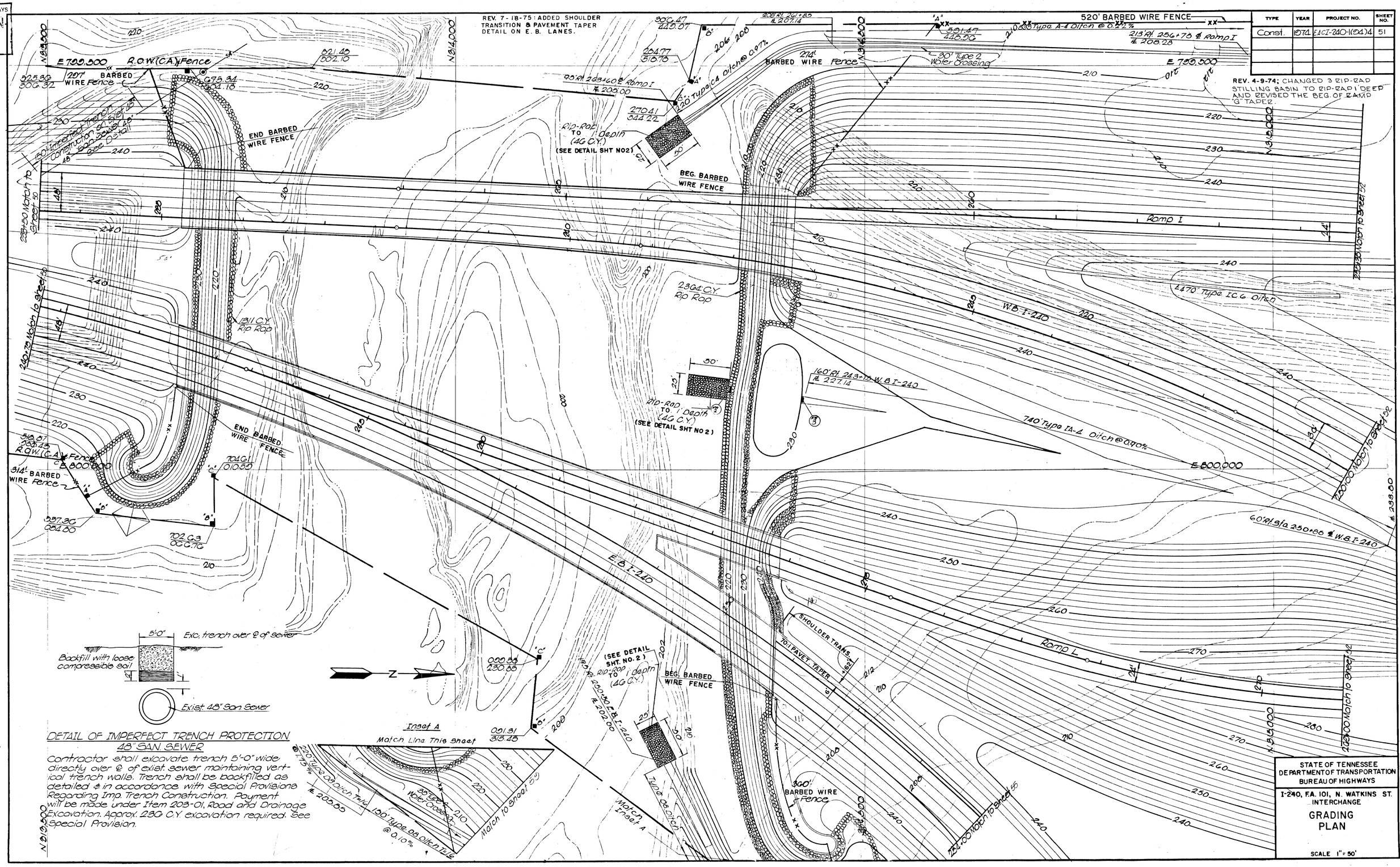
SCALE 1" = 50'

TENN. STATE HIGHWAYS
Plans Divn. | File No. 316 | IN

REV. 7-18-75: ADDED SHOULDER TRANSITION & PAVEMENT TAPER DETAIL ON E.B. LANES.

TYPE	YEAR	PROJECT NO.	SHEET NO.
Const.	1974	EACI-240-1(004)4	51

REV. 4-9-74; CHANGED 3 RIP-RAP STILLING BASIN TO RIP-RAP 1' DEEP AND REVISED THE BEG. OF RAMP 'G' TAPER.



STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
BUREAU OF HIGHWAYS

I-240, F.A. 101, N. WATKINS ST. INTERCHANGE

GRADING PLAN

SCALE 1" = 50'

TYPE	YEAR	PROJECT NO.	SHEET NO.
Const.	1974	FACI-240-1(024)4	52

REV. 4-9-74; CORRECTED MATCH SHEET NUMBERS.

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
BUREAU OF HIGHWAYS

I-240, FA. 101, N. WATKINS ST. INTERCHANGE

GRADING PLAN

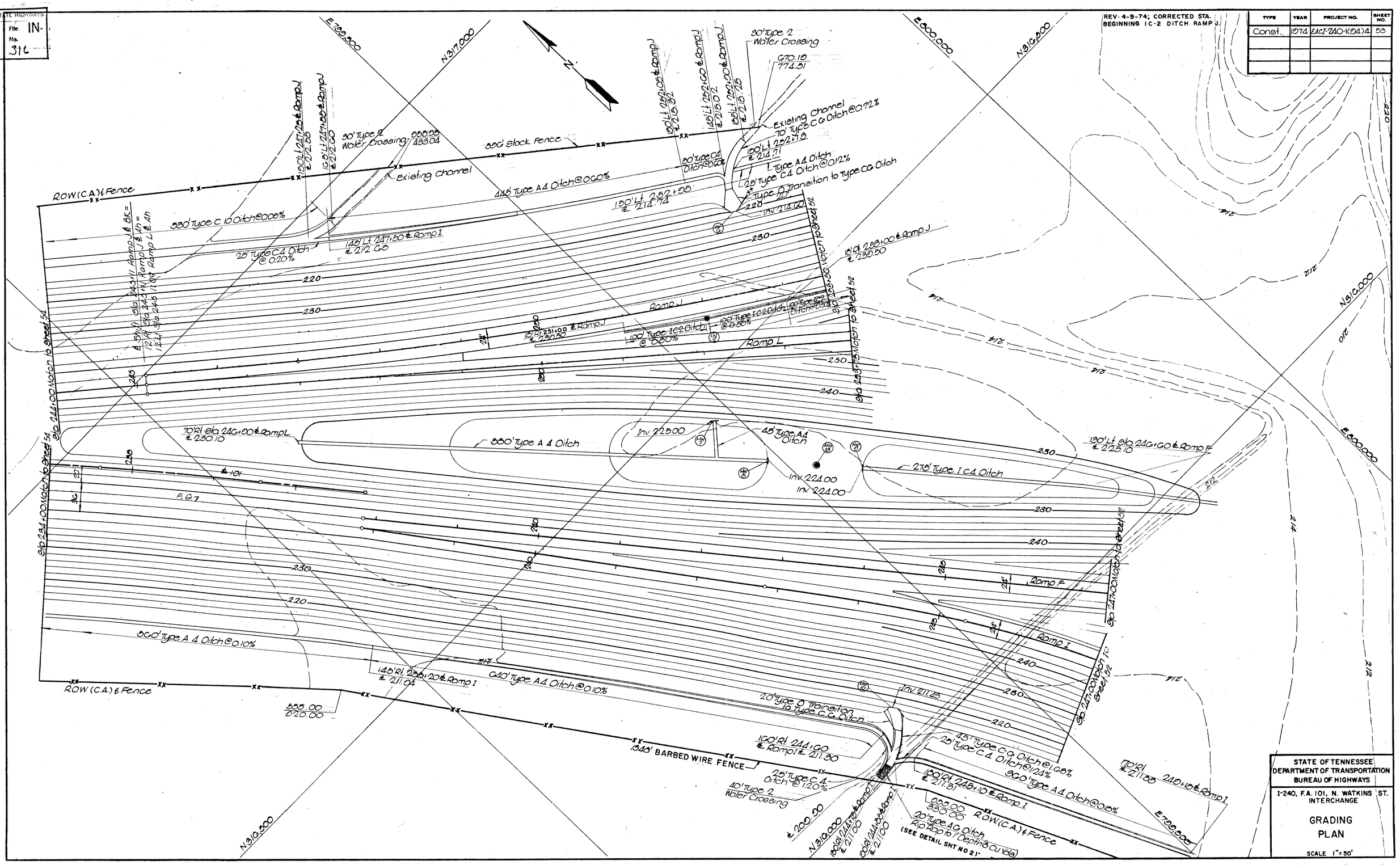
SCALE 1" = 50'

TENN. STATE HIGHWAYS
Plans Divn. File No. IN-316

MICROFILMED

REV. 4-9-74; CORRECTED STA. BEGINNING IC-2 DITCH RAMP J.

TYPE	YEAR	PROJECT NO.	SHEET NO.
Const.	1974	EACI-240-1(104)4	53



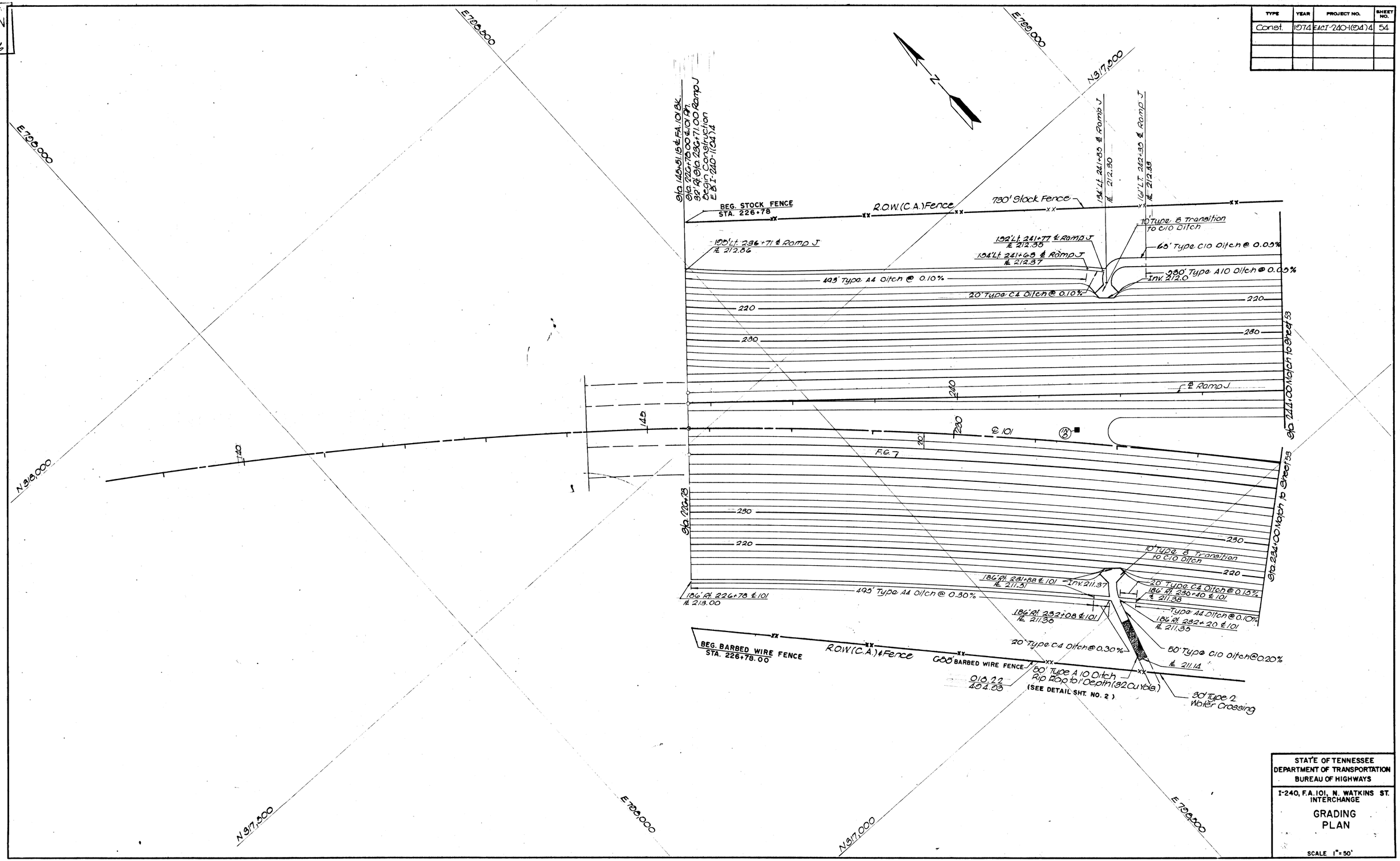
STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
BUREAU OF HIGHWAYS

I-240, F.A. 101, N. WATKINS ST. INTERCHANGE

GRADING PLAN

SCALE 1" = 50'

TYPE	YEAR	PROJECT NO.	SHEET NO.
Const.	1974	E-ICT-240-1(24)4	54.



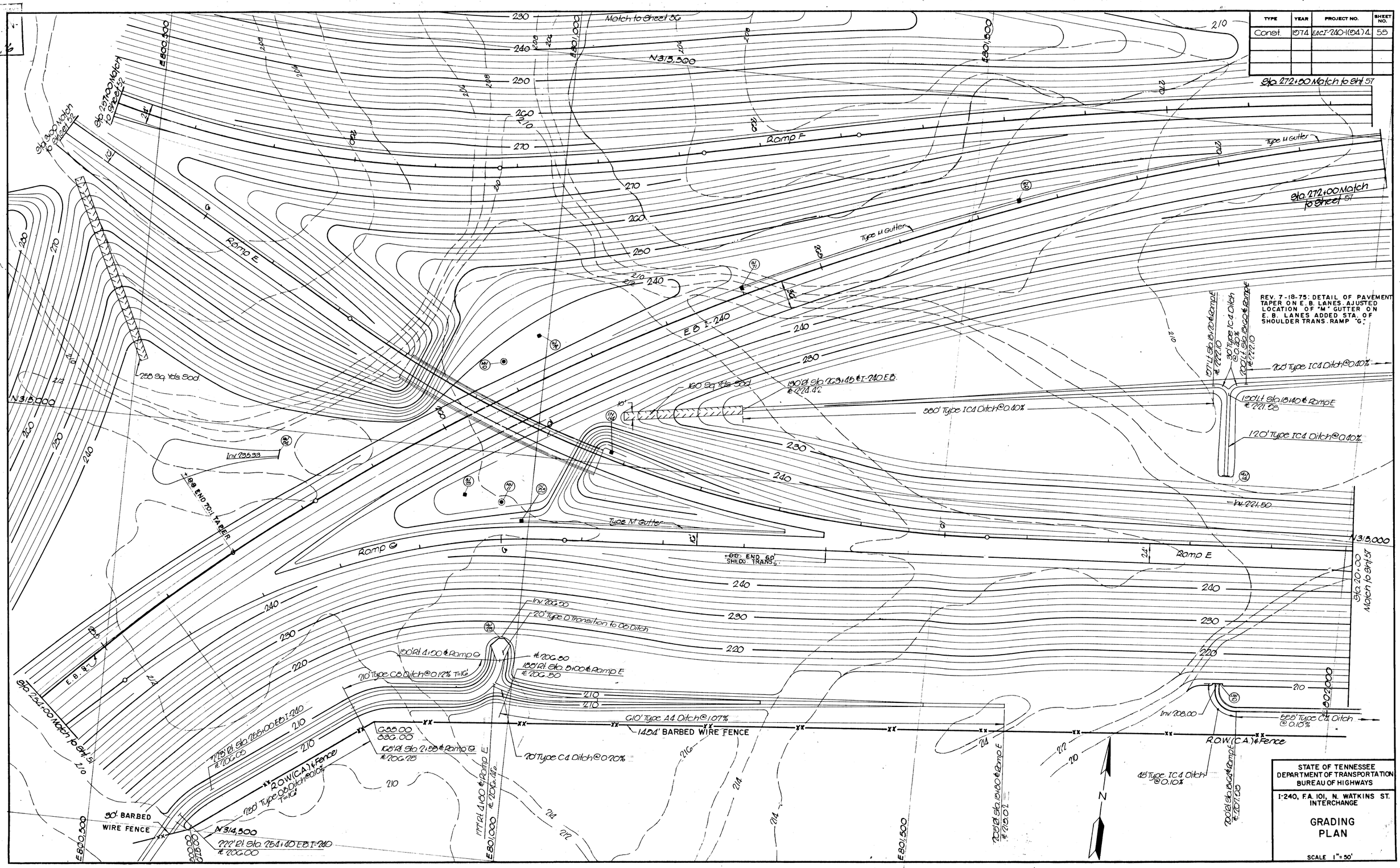
STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
BUREAU OF HIGHWAYS

I-240, F.A. 101, N. WATKINS ST.
INTERCHANGE

GRADING
PLAN

SCALE 1" = 50'

TYPE	YEAR	PROJECT NO.	SHEET NO.
Const.	1974	E&CI-240-1(04) 4.	55



REV. 7-18-75: DETAIL OF PAVEMENT TAPER ON E.B. LANES. AJUSTED LOCATION OF "M" GUTTER ON E.B. LANES ADDED STA. OF SHOULDER TRANS. RAMP "G."

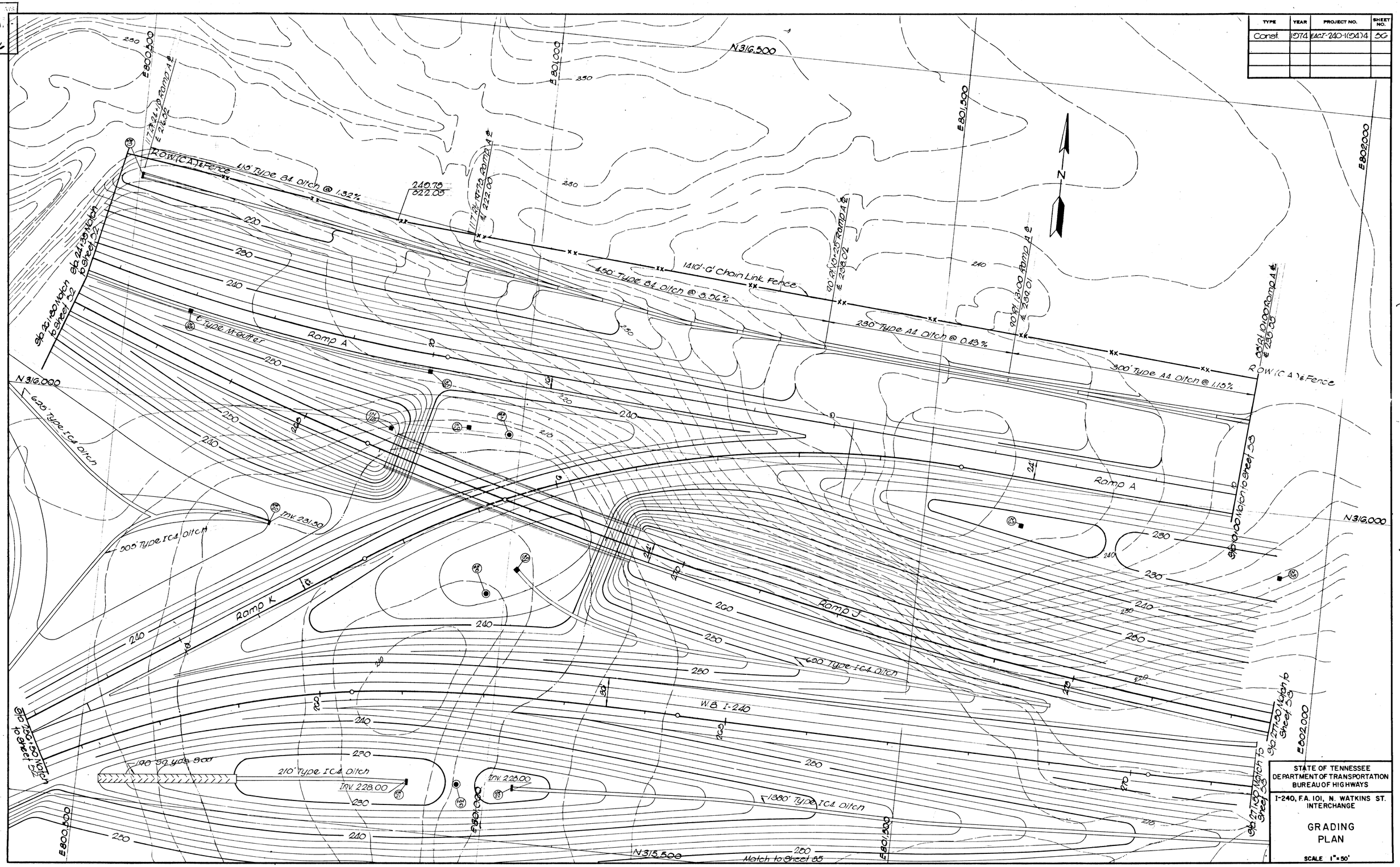
STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
BUREAU OF HIGHWAYS

I-240, F.A. 101, N. WATKINS ST. INTERCHANGE

GRADING PLAN

SCALE 1" = 50'

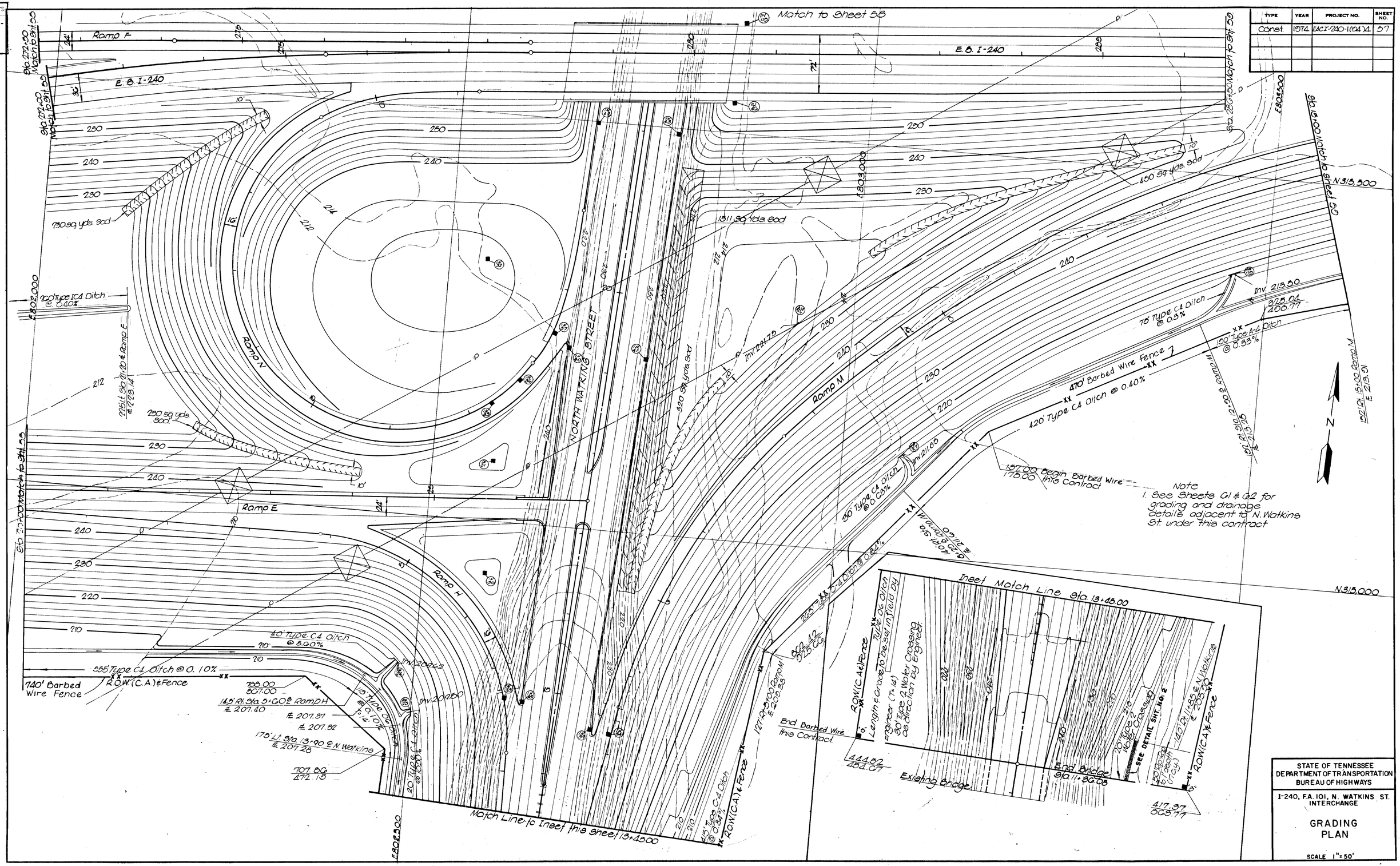
TYPE	YEAR	PROJECT NO.	SHEET NO.
Const.	1974	EACI-240-1(04)4	56



TENN. STATE HIGHWAYS

Plans	File	IN-
Divn.	No.	316

TYPE	YEAR	PROJECT NO.	SHEET NO.
Const.	1974	EACI-240-1(24)X1	57



STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
BUREAU OF HIGHWAYS

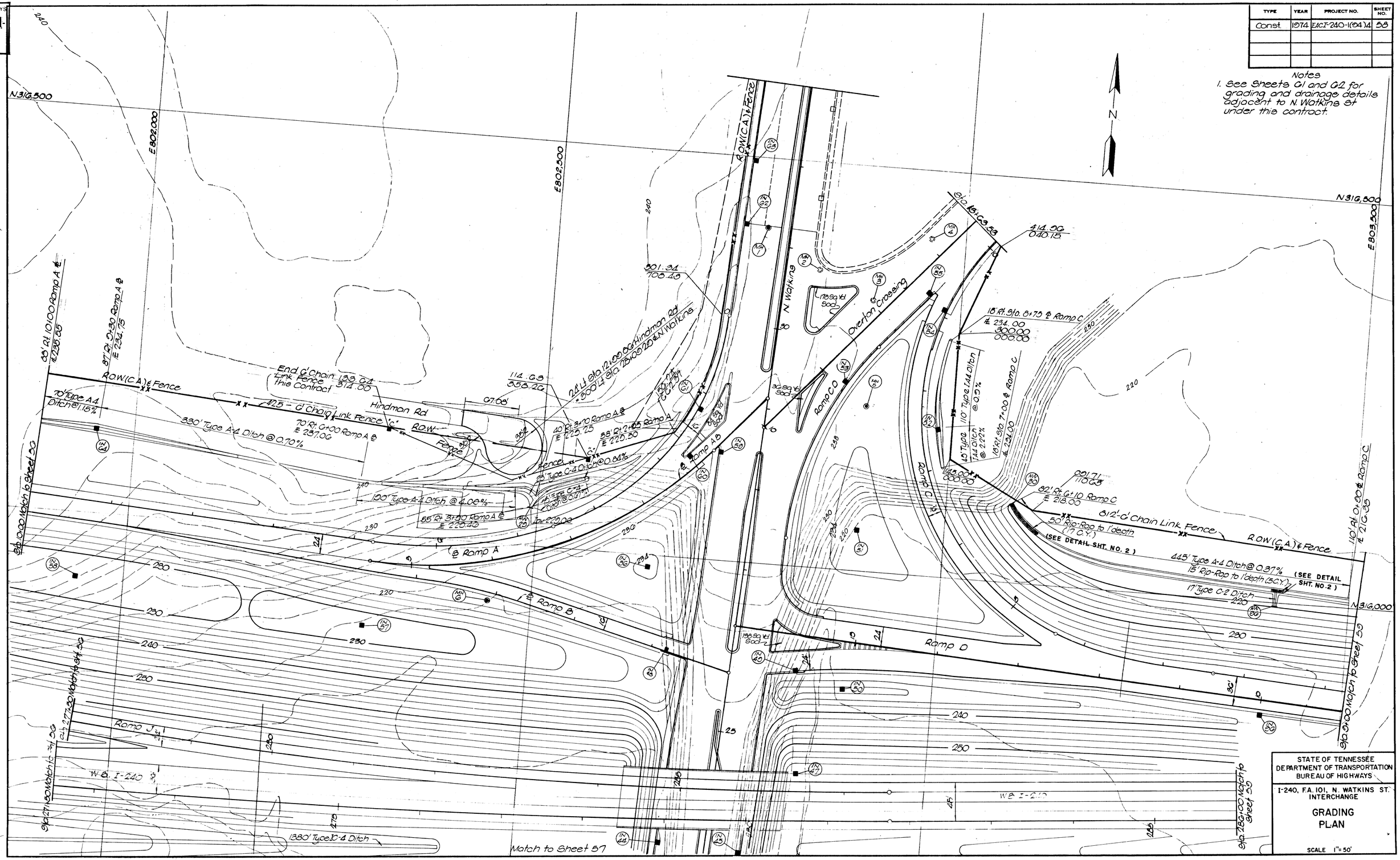
I-240, F.A. 101, N. WATKINS ST. INTERCHANGE

GRADING PLAN

SCALE 1" = 50'

TYPE	YEAR	PROJECT NO.	SHEET NO.
Const.	1974	EACI-240-1(104)4	58

Notes
1. See Sheets G1 and G2 for grading and drainage details adjacent to N. Watkins St under this contract.



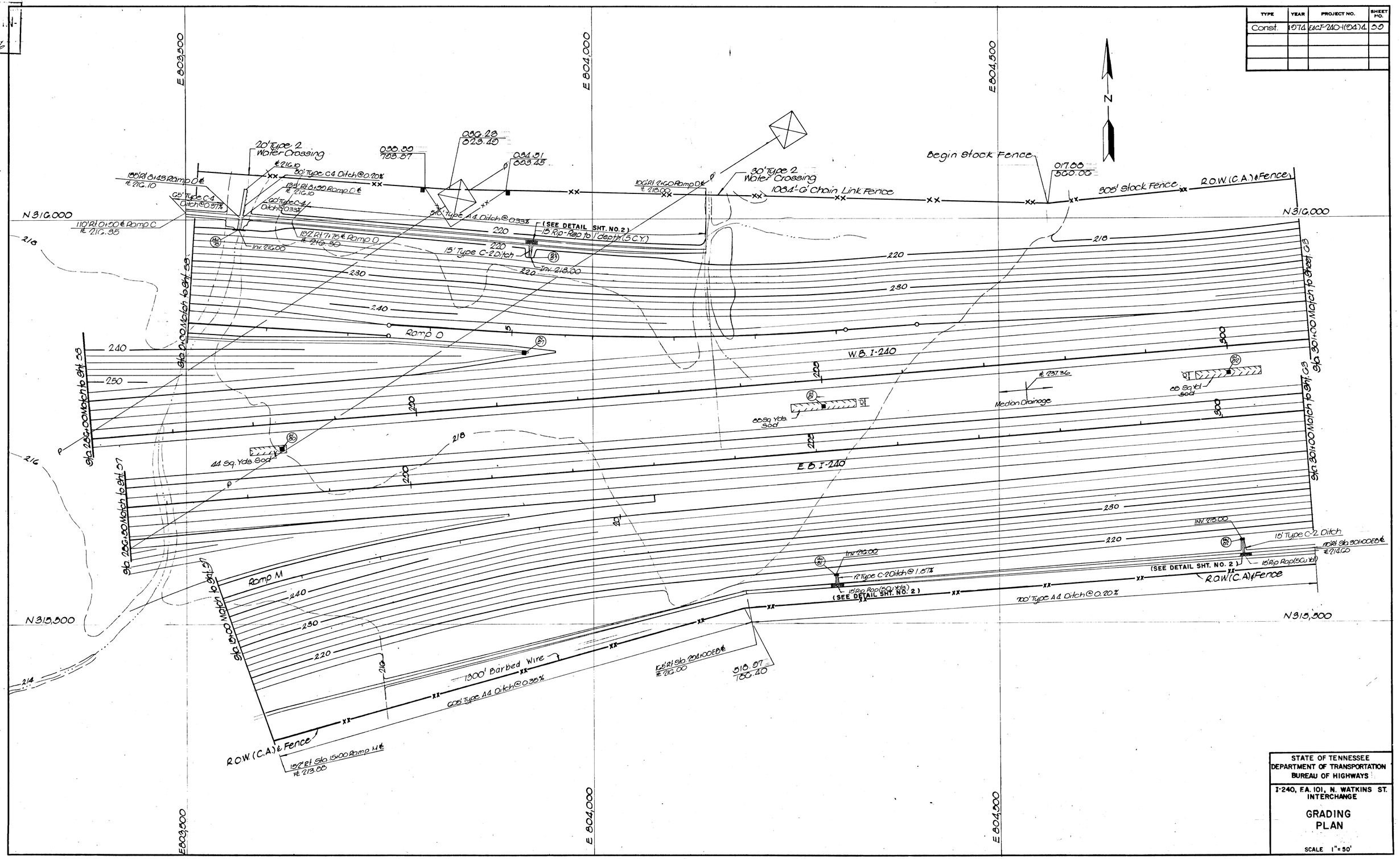
STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
BUREAU OF HIGHWAYS

I-240, F.A. 101, N. WATKINS ST. INTERCHANGE

GRADING PLAN

SCALE 1" = 50'

TYPE	YEAR	PROJECT NO.	SHEET NO.
Const.	1974	EACF-240-1(104)4	50



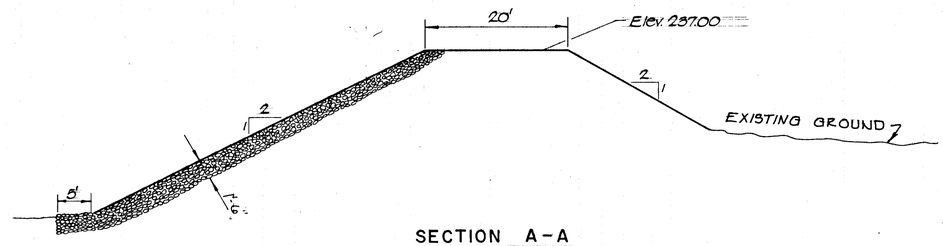
STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
BUREAU OF HIGHWAYS

I-240, F.A. 101, N. WATKINS ST. INTERCHANGE

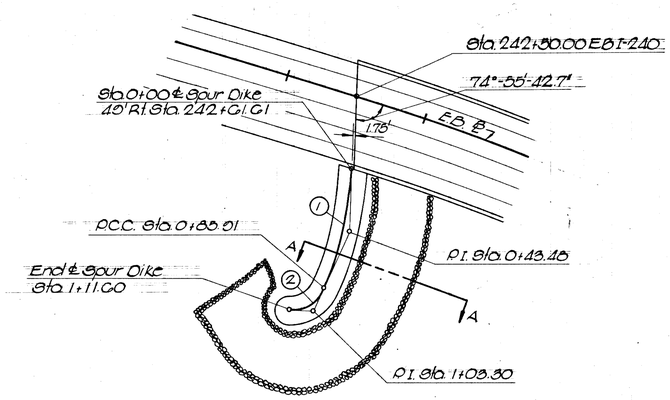
GRADING PLAN

SCALE 1" = 50'

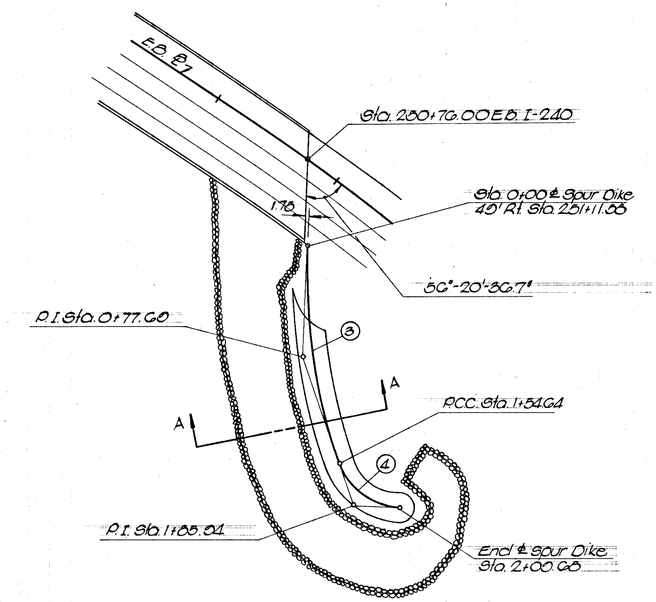
TYPE	YEAR	PROJECT NO.	SHEET NO.
CONST.	1974	EAC I-240-1(94) 4	60



SECTION A-A
Scale 1"=10'



Scale: 1"=50'



Scale: 1"=50'

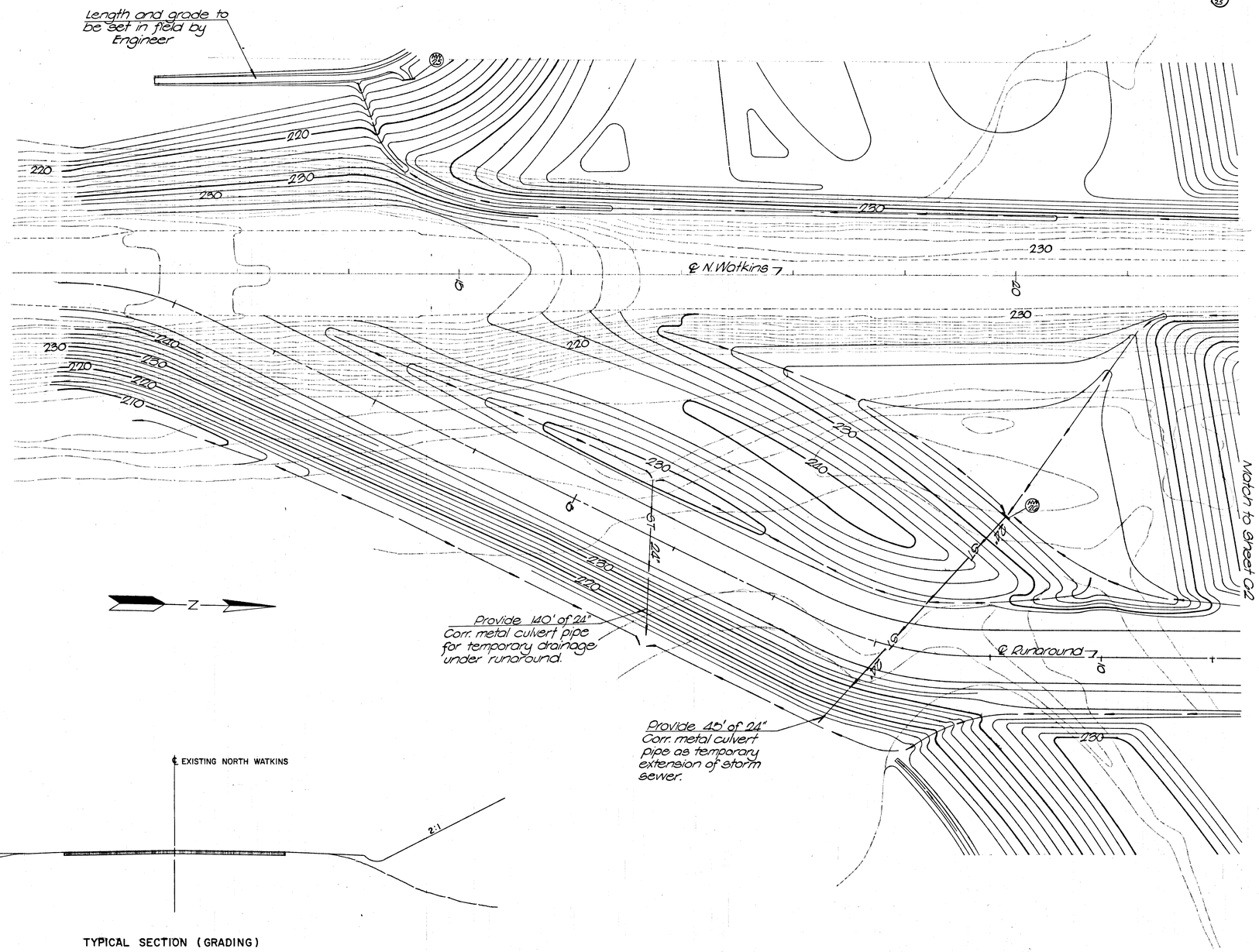
Curve No.	1	2	3	4
P.I. Sta.	0+43.48	1+08.30	0+77.60	1+85.04
Δ	21°48'-51"	68°11'-54.5"	21°48'-51"	68°11'-54.5"
Dc	25°22'-37.6"	229°02'-05"	14°08'-54.2"	128°54'-92.5"
R	225.78'	25.00'	406.40'	46.24'
T	43.48'	17.30'	77.60'	31.31'
Lc	85.01'	30.58'	154.04'	85.04'

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
BUREAU OF HIGHWAYS

SPUR DIKE
DETAILS

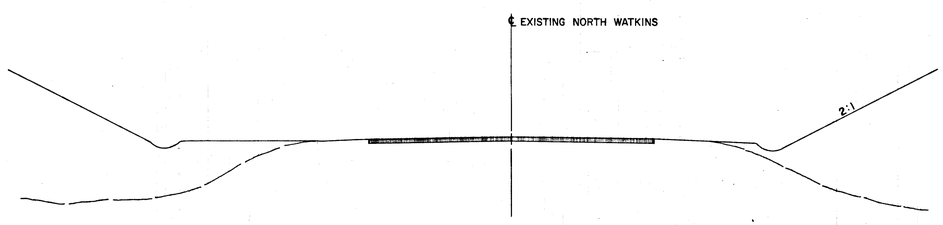
REVISION 4-9-74; CORRECTED

TYPE	YEAR	PROJECT NO.	SHEET NO.
Const.	1974	EAC. I-240-1(24)4	G1



Note

1. See Sheet 78 for runaround geometry.
2. Quantities for temporary drainage items are included on Sh. 78.
3. The contractor shall stock pile 48,000 Cu. Yds. of borrow material in a location to be determined by the Engineer. This material is to be used to complete the grading of the interchange under a subsequent contract.



TYPICAL SECTION (GRADING)

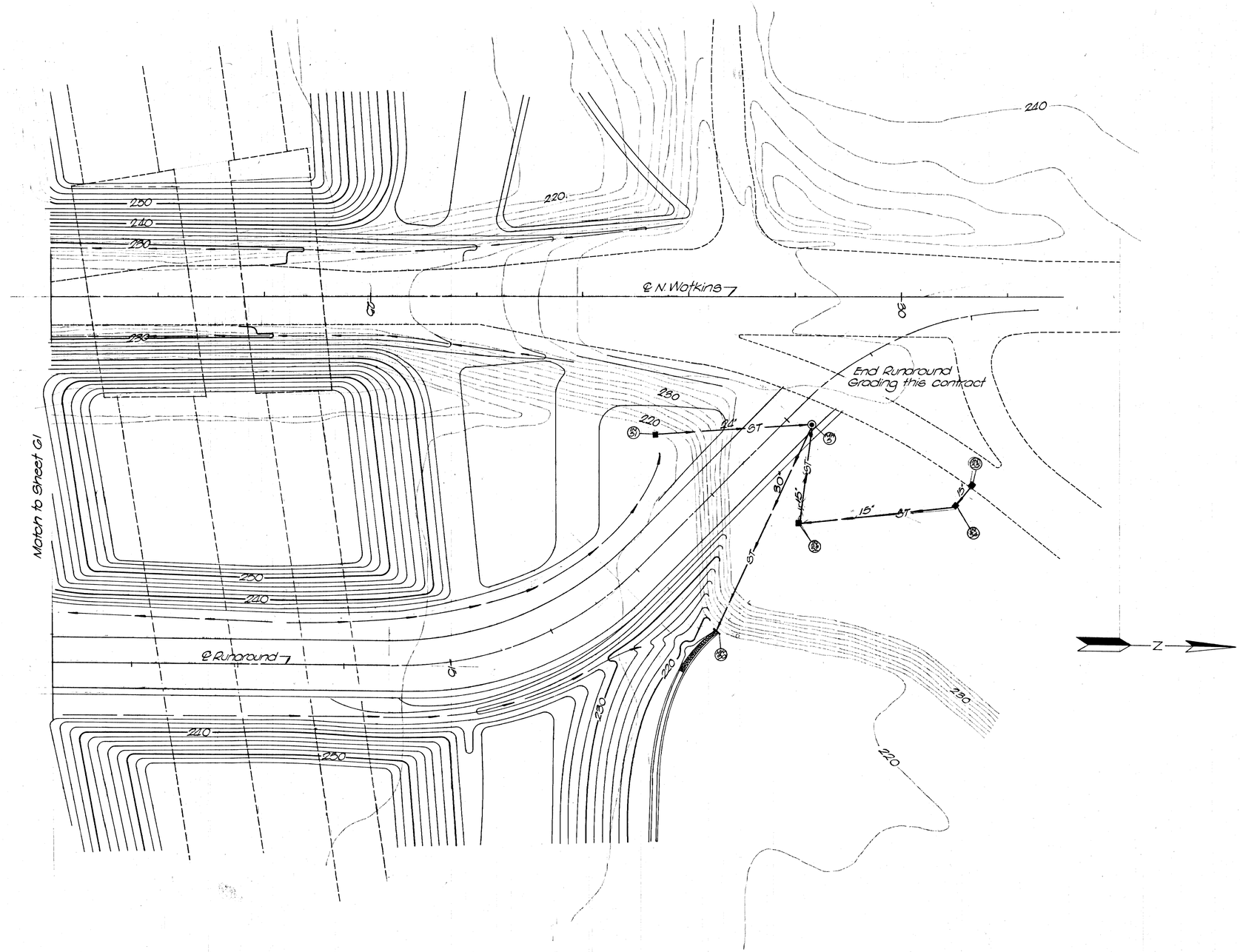
STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
BUREAU OF HIGHWAYS

GRADING AND DRAINAGE ADJACENT TO N. WATKINS STREET

SCALE: 1" = 50'

TYPE	YEAR	PROJECT NO.	SHEET NO.
Const.	1974	FACT-210-1(94)-A	G2

Note
1. See Sheet 73 for runaround geometry.
2. See Sheet 74 for drainage details.



STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
BUREAU OF HIGHWAYS

GRADING AND DRAINAGE
ADJACENT TO
N. WATKINS STREET

SCALE: 1" = 50'

TYPE	YEAR	PROJECT NO.	SHEET NO.
Const.	1974	EAC.I-240-1(9)4	G3

REV. 3-29-74; REFERENCE SHEET NUMBER SHOWN.

INLETS

Code	Roadway	Station	℄ Elev.	Type	Depth
(24)	I-240(WB)	35'Rt. 305+00	235.74	37	2.75
(25)	I-240(WB)	35'Rt. 310+00	235.74	37	2.75
(26)	I-240(WB)	35'Rt. 315+00	235.74	37	2.75

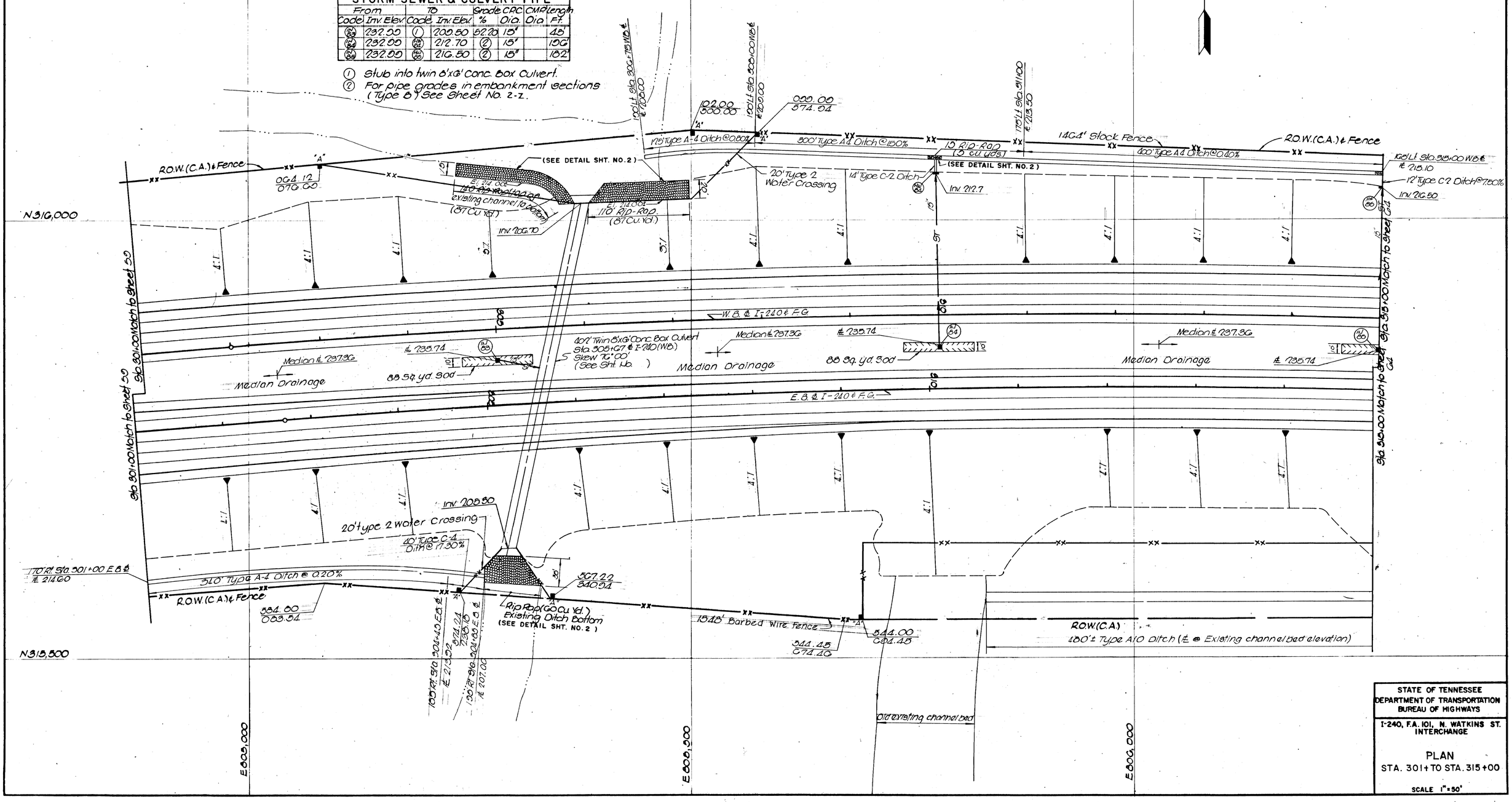
CONCRETE HEADWALLS

Code	Roadway	Station	Type	Class "A" Conc. C.Y.	Rein. Stl. LBS.
(24)	I-240(WB)	160' Lt. 310+00	A-15-4	0.00	60
(25)	I-240(WB)	145' Lt. 315+00	A-15-4	0.00	60

STORM SEWER & CULVERT PIPE

From Code	From Inv. Elev.	To Code	To Inv. Elev.	Grade %	CPC Dia.	CMP Dia.	Length Ft.
(24)	232.00	(1)	200.50	52.20	15"		45'
(24)	232.00	(24)	212.70	(2)	15"		106'
(26)	232.00	(26)	216.50	(2)	15"		182'

(1) Stub into twin 8'x6' conc. box culvert.
(2) For pipe grades in embankment sections (Type B) See Sheet No. 2-2.



STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
BUREAU OF HIGHWAYS

I-240, F.A. 101, N. WATKINS ST. INTERCHANGE

PLAN
STA. 301+ TO STA. 315+00

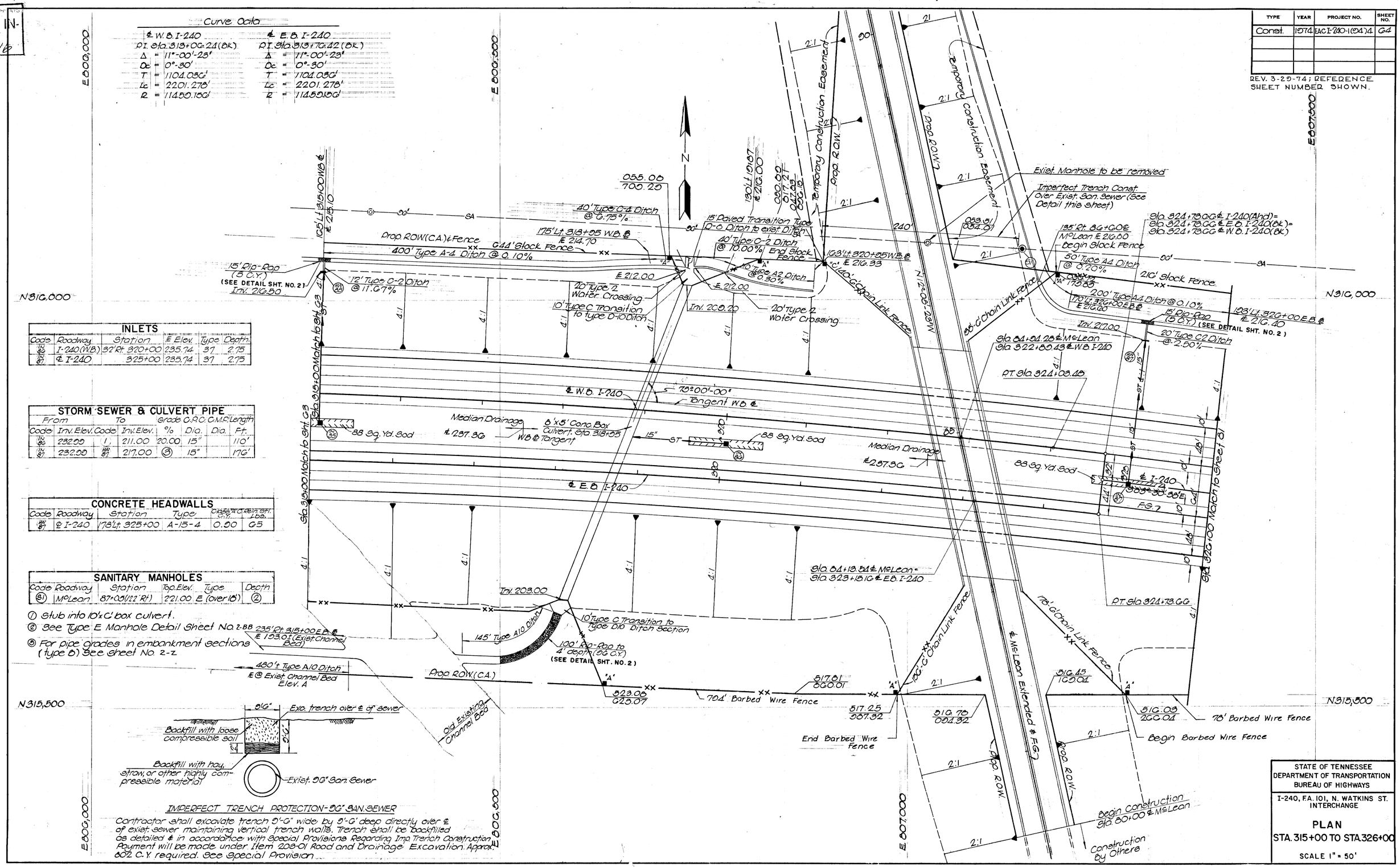
SCALE 1" = 50'

TYPE	YEAR	PROJECT NO.	SHEET NO.
Const.	1974	EAC I-240-1(24)4	G4

REV. 3-29-74; REFERENCE SHEET NUMBER SHOWN.

Curve Data

℄ W.B. I-240	℄ E.B. I-240
P.I. Sta. 313+06.24 (BK)	P.I. Sta. 313+76.42 (BK)
Δ = 11°-00'-28"	Δ = 11°-00'-28"
Dc = 0°-30'	Dc = 0°-30'
T = 1104.06'	T = 1104.06'
Lc = 2201.27'	Lc = 2201.27'
R = 11450.16'	R = 11450.16'



INLETS

Code	Roadway	Station	℄ Elev.	Type	Depth
(IN 86)	I-240 (W.B.)	32' Rt. 320+00	235.74	31	2.75
(IN 87)	℄ I-240	325+00	235.74	31	2.75

STORM SEWER & CULVERT PIPE

From Code	From Inv. Elev.	To Code	To Inv. Elev.	Grade %	O.R.C. Dia.	O.M.P. Dia.	Length Ft.
(IN 86)	232.00	1	211.00	20.00	15"		110'
(IN 87)	232.00	(HW 87)	217.00	(3)	15"		176'

CONCRETE HEADWALLS

Code	Roadway	Station	Type	Class "A" Conc. C.Y.	Rein. Stl. Lbs.
(HW 87)	℄ I-240	78' Lt. 325+00	A-15-4	0.90	65

SANITARY MANHOLES

Code	Roadway	Station	Top. Elev.	Type	Depth
(S1)	McLean	87+05 (122' Rt.)	221.00	E (over 18")	(2)

(1) Stub into 10'x6' box culvert.
(2) See Type E Manhole Detail Sheet No. 2-BB
(3) For pipe grades in embankment sections (Type B) See Sheet No. 2-2

IMPERFECT TRENCH PROTECTION - 30" SAN. SEWER

Contractor shall excavate trench 9'-6" wide by 9'-6" deep directly over ℄ of exist. sewer maintaining vertical trench walls. Trench shall be backfilled as detailed & in accordance with Special Provisions Regarding Imp. Trench Construction. Payment will be made under Item 208-01 Road and Drainage Excavation. Approx. 602 C.Y. required. See Special Provision.

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
BUREAU OF HIGHWAYS

I-240, F.A. 101, N. WATKINS ST. INTERCHANGE

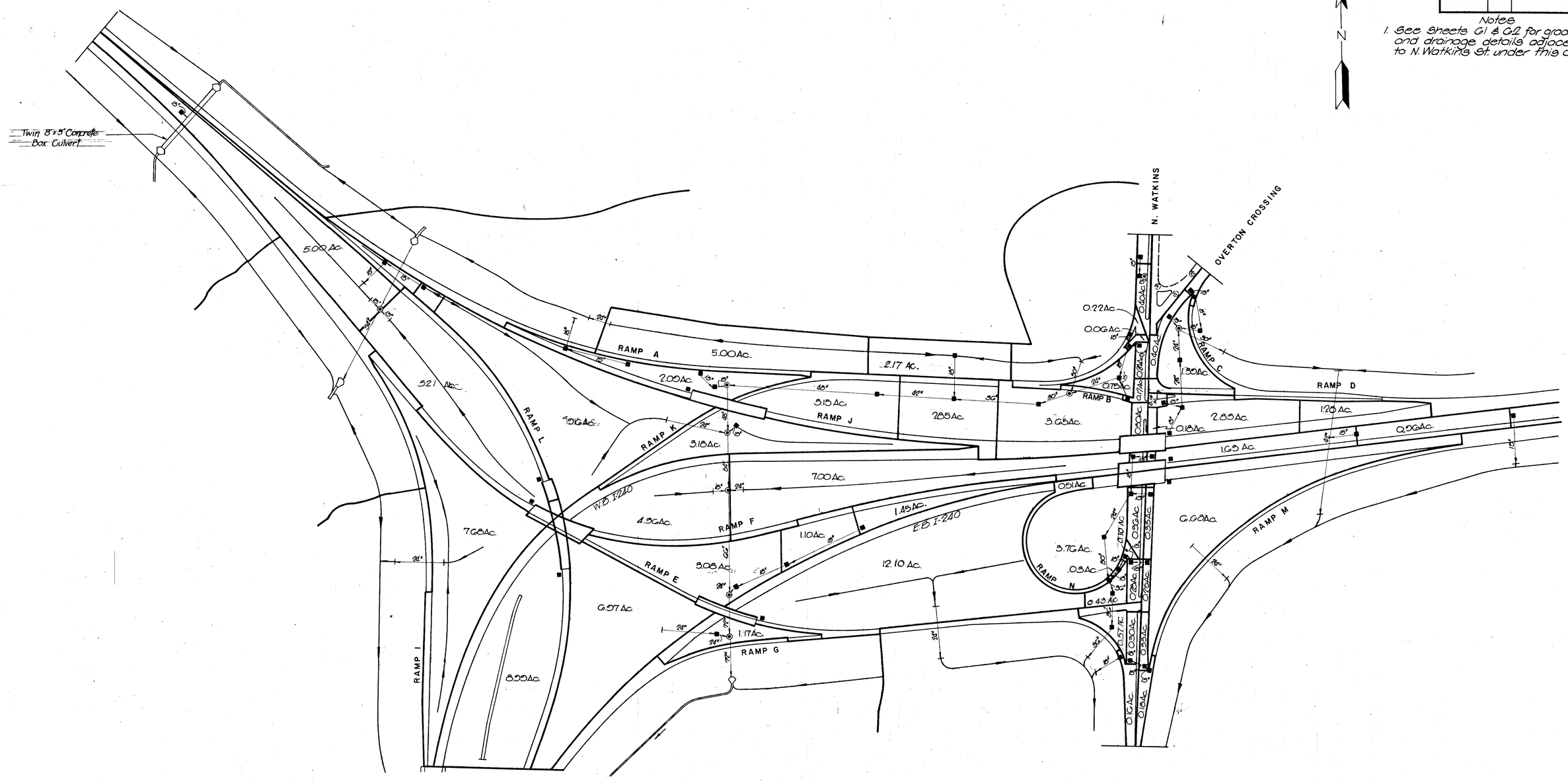
PLAN

STA. 315+00 TO STA. 326+00

SCALE 1" = 50'

TYPE	YEAR	PROJECT NO.	SHEET NO.
Const.	1974	IXCI-240-1(104)4	G5

Notes
1. See Sheets G1 & G2 for grading and drainage details adjacent to N. Watkins St. under this contract



STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
BUREAU OF HIGHWAYS

I-240, F.A. 101, N. WATKINS ST. INTERCHANGE

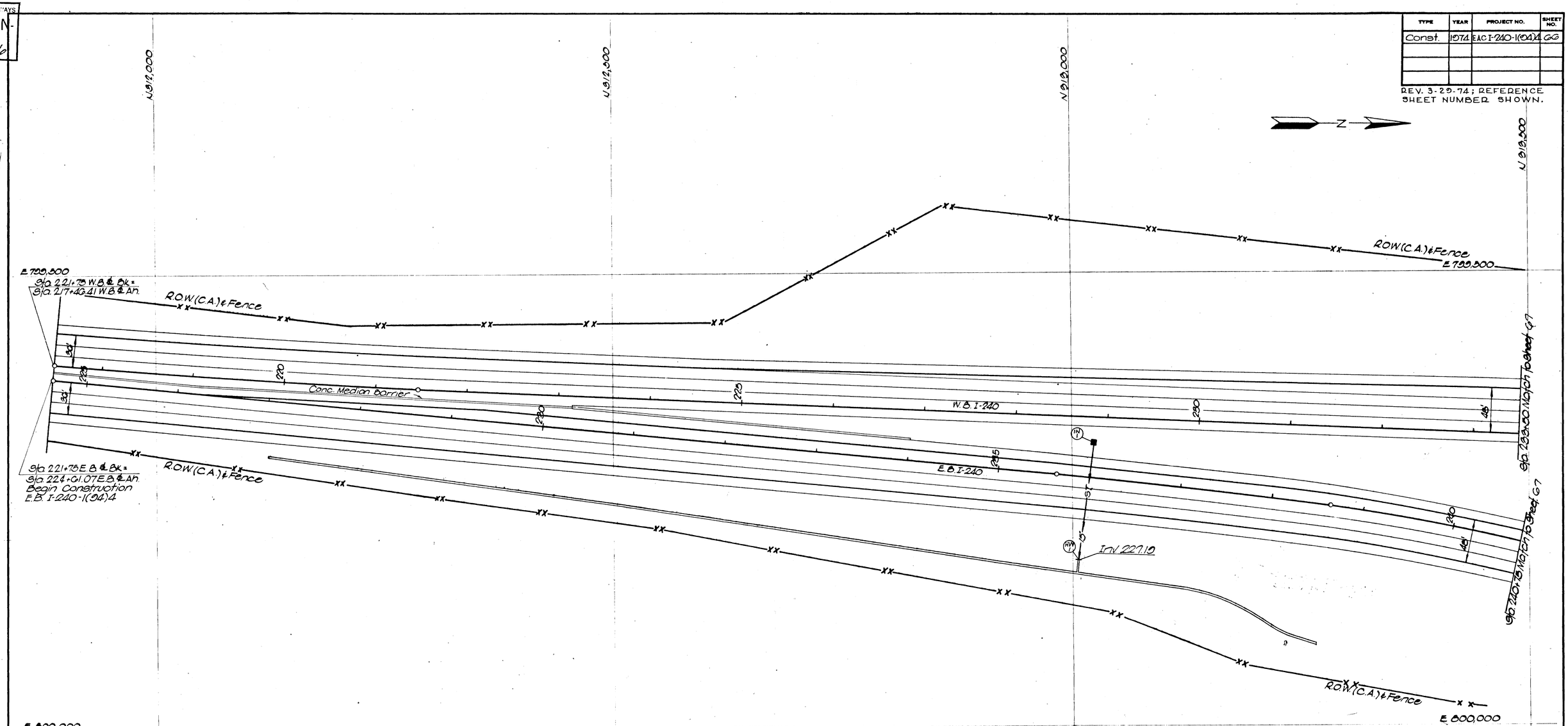
DRAINAGE MAP

SCALE 1"=200'

TENN. STATE HIGHWAYS
Plans Divn. | File No. IN-316

TYPE	YEAR	PROJECT NO.	SHEET NO.
Const.	1974	EAC I-240-1(94)4	GG

REV. 3-29-74; REFERENCE SHEET NUMBER SHOWN.



INLETS				
Code	Roadway	Station & Elev.	Type	Depth
(14)	I-240 EB &	236+00 (30'Lt) 235.50	5G	2.75

STORM SEWER & CULVERT PIPE								
From		To		Grade	C.P.C.	C.M.P.	Length
Code	Inv. Elev.	Code	Inv. Elev.	%	Dia.	Dia.	Ft.
(14)	235.75	(14A)	227.10	(1)	18"		128'

(1) For pipe grades in embankment sections (Type B) See Sheet No. 2-Z.

CONCRETE HEADWALLS				
Code	Roadway	Station	Type	Class "A" Conc. C.Y.	Conc. Reinf. Stl. Lbs.
(14A)	I-240 EB &	236+00 (30'Rt)	A-15-4	0.90	65

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
BUREAU OF HIGHWAYS

I-240, F.A. 101, N. WATKINS ST. INTERCHANGE

DRAINAGE PLAN

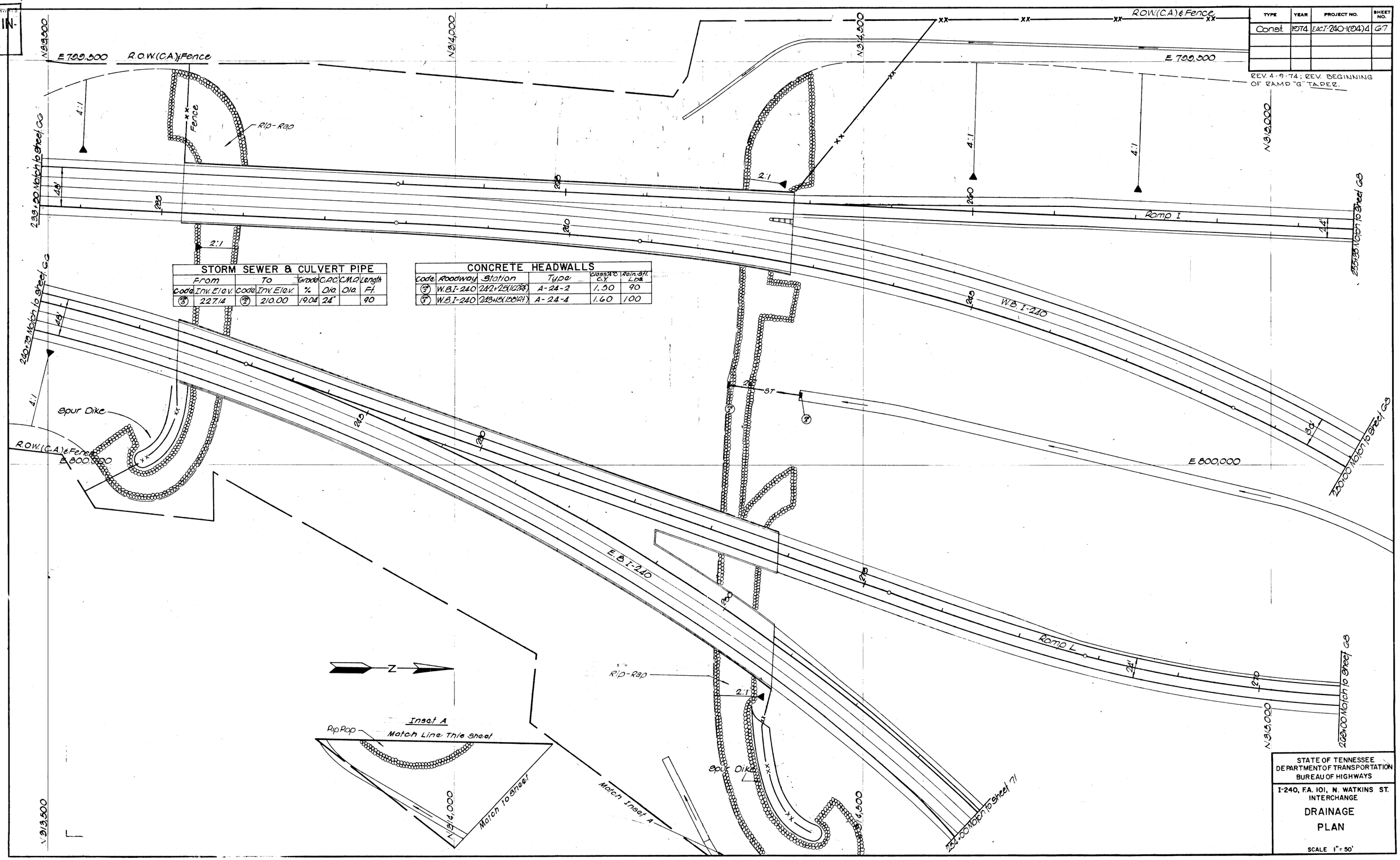
SCALE 1" = 50'

TENN. STATE HIGHWAYS
Plans Divn. | File No. IN-316

MICROFILMED

TYPE	YEAR	PROJECT NO.	SHEET NO.
Const.	1974	EACI-240-1(104)4	G7

REV. 4-9-74; REV. BEGINNING OF RAMP "G" TAPER.



STORM SEWER & CULVERT PIPE

From		To		Grade	C.R.C.	C.M.P.	Length
Code	Inv. Elev.	Code	Inv. Elev.	%	Dia.	Dia.	Ft.
(18)	227.14	(19)	210.00	19.04	24"		90

CONCRETE HEADWALLS

Code	Roadway	Station	Type	Class A C.Y.	Rein. Stl. Lbs.
(18)	W.B. I-240	242+25 (160RA)	A-24-2	1.50	90
(17)	W.B. I-240	243+15 (158RA)	A-24-4	1.60	100

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
BUREAU OF HIGHWAYS

I-240, F.A. 101, N. WATKINS ST. INTERCHANGE

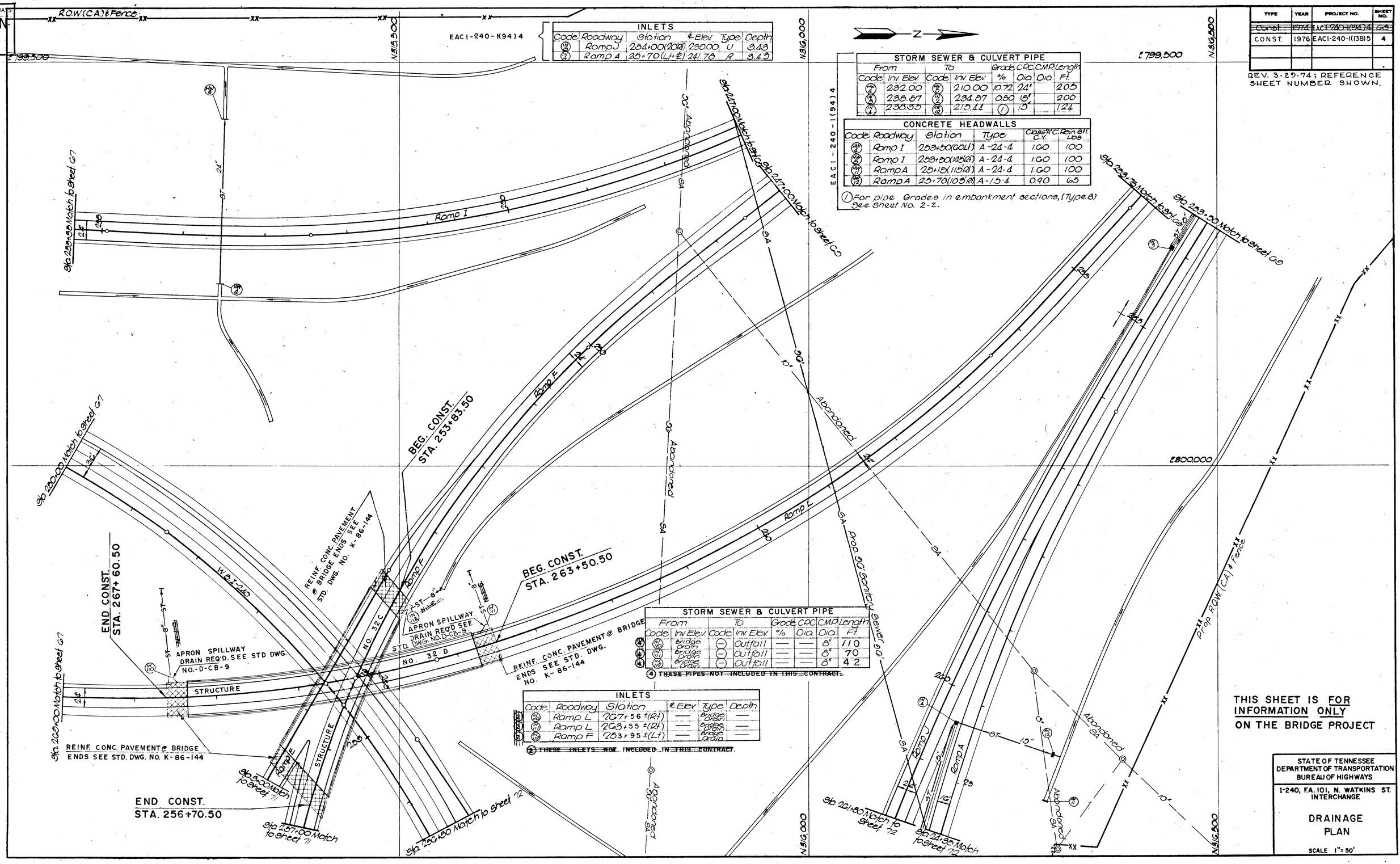
DRAINAGE PLAN

SCALE 1" = 50'

TENN. STATE HIGHWAYS
Plans Divn. | File No. 316

TYPE	YEAR	PROJECT NO.	SHEET NO.
~~Const~~	~~1974~~	~~EACI-240-1(94)4~~	~~G3~~
CONST.	1976	EACI-240-1(138)5	4

REV. 3-29-74; REFERENCE SHEET NUMBER SHOWN.



INLETS

Code	Roadway	Station	℄ Elev.	Type	Depth
(18)	Ramp J	254+00(20'Rt)	230.00	U	3.43
(2)	Ramp A	25+70(L+2)	241.78	R	3.45

STORM SEWER & CULVERT PIPE

From Code	From Inv. Elev.	To Code	To Inv. Elev.	Grade %	C.P.C. Dia.	C.M.P. Dia.	Length Ft.
(2)	232.00	(18)	210.00	10.72	24"		205
(5)	235.57	(2)	234.57	0.50	15"		200
(4)	238.35	(12)	215.44	(1)	15"		124

CONCRETE HEADWALLS

Code	Roadway	Station	Type	Class "A" C.Y.	Reinf. Stl. Lbs.
(19)	Ramp I	253+50(60'Lt)	A-24-4	1.60	100
(15)	Ramp I	253+50(145'Rt)	A-24-4	1.60	100
(17)	Ramp A	25+15(115'Rt)	A-24-4	1.60	100
(13)	Ramp A	25+70(105'Rt)	A-15-4	0.90	65

(1) For pipe Grades in embankment sections, (Type B) See Sheet No. 2-Z.

STORM SEWER & CULVERT PIPE

From Code	From Inv. Elev.	To Code	To Inv. Elev.	Grade %	C.P.C. Dia.	C.M.P. Dia.	Length Ft.
(14)	Bridge Drain	(—)	Outfall	—	—	8"	110
(14)	Bridge Drain	(—)	Outfall	—	—	8"	70
(14)	Bridge Drain	(—)	Outfall	—	—	8"	42

(4) ~~THESE PIPES NOT INCLUDED IN THIS CONTRACT.~~

INLETS

Code	Roadway	Station	℄ Elev.	Type	Depth
(14)	Ramp L	267+56 ±(Rt)	—	Bridge Drain	—
(14)	Ramp L	263+55 ±(Rt)	—	Bridge Drain	—
(14)	Ramp F	263+95 ±(Lt)	—	Bridge Drain	—

(4) ~~THESE INLETS NOT INCLUDED IN THIS CONTRACT.~~

THIS SHEET IS FOR INFORMATION ONLY ON THE BRIDGE PROJECT

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
BUREAU OF HIGHWAYS

I-240, F.A. 101, N. WATKINS ST. INTERCHANGE

DRAINAGE PLAN

SCALE 1" = 50'

TENN. STATE HIGHWAYS		
Plans Divn.	File No.	IN-316

TYPE	YEAR	PROJECT NO.	SHEET NO.
Const.	1974	FACI-240-1(94)4	G9

REV. 3-29-74; REFERENCE SHEET NUMBER SHOWN.

MICROFILMED

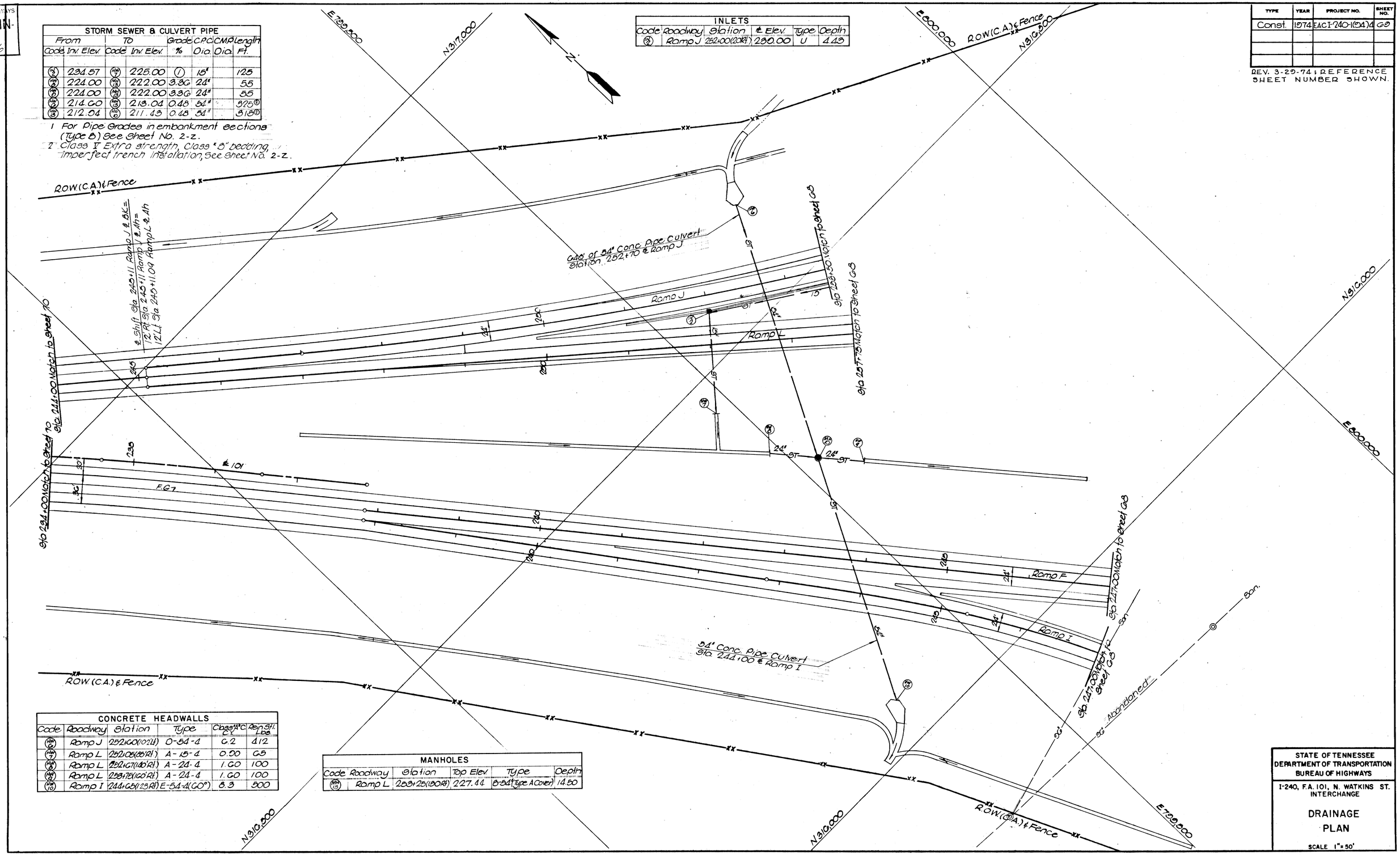
STORM SEWER & CULVERT PIPE

From Code	From Inv. Elev	To Code	To Inv. Elev	Grade %	CPC Dia	CMP Dia	Length Ft.
52	234.57	49	225.00	(1)	18"		125
53	224.00	53	222.00	3.30	24"		55
53	224.00	53	222.00	3.30	24"		55
54	214.00	55	213.04	0.48	54"		325(2)
56	212.04	56	211.43	0.48	54"		315(2)

1 For Pipe Grades in embankment sections (Type B) See Sheet No. 2-Z.
2 Class V Extra strength, Class "B" bedding, imperfect trench installation, See Sheet No. 2-Z.

INLETS

Code	Roadway	Station	℄ Elev.	Type	Depth
52	Ramp J	252+00(20'Rt)	230.00	U	4.43



CONCRETE HEADWALLS

Code	Roadway	Station	Type	Chag 4" C.Y.	Rein Stl. Lbs.
49	Ramp J	252+00(10'Lt)	D-54-4	6.2	412
49	Ramp L	252+05(25'Rt)	A-15-4	0.50	65
49	Ramp L	252+67(110'Rt)	A-24-4	1.60	100
49	Ramp L	253+75(160'Rt)	A-24-4	1.60	100
49	Ramp I	244+65(125'Rt)	E-54-4(60°)	8.3	500

MANHOLES

Code	Roadway	Station	Top Elev	Type	Depth
49	Ramp L	253+25(190'Rt)	227.44	B-54(Type A Cover)	14.50

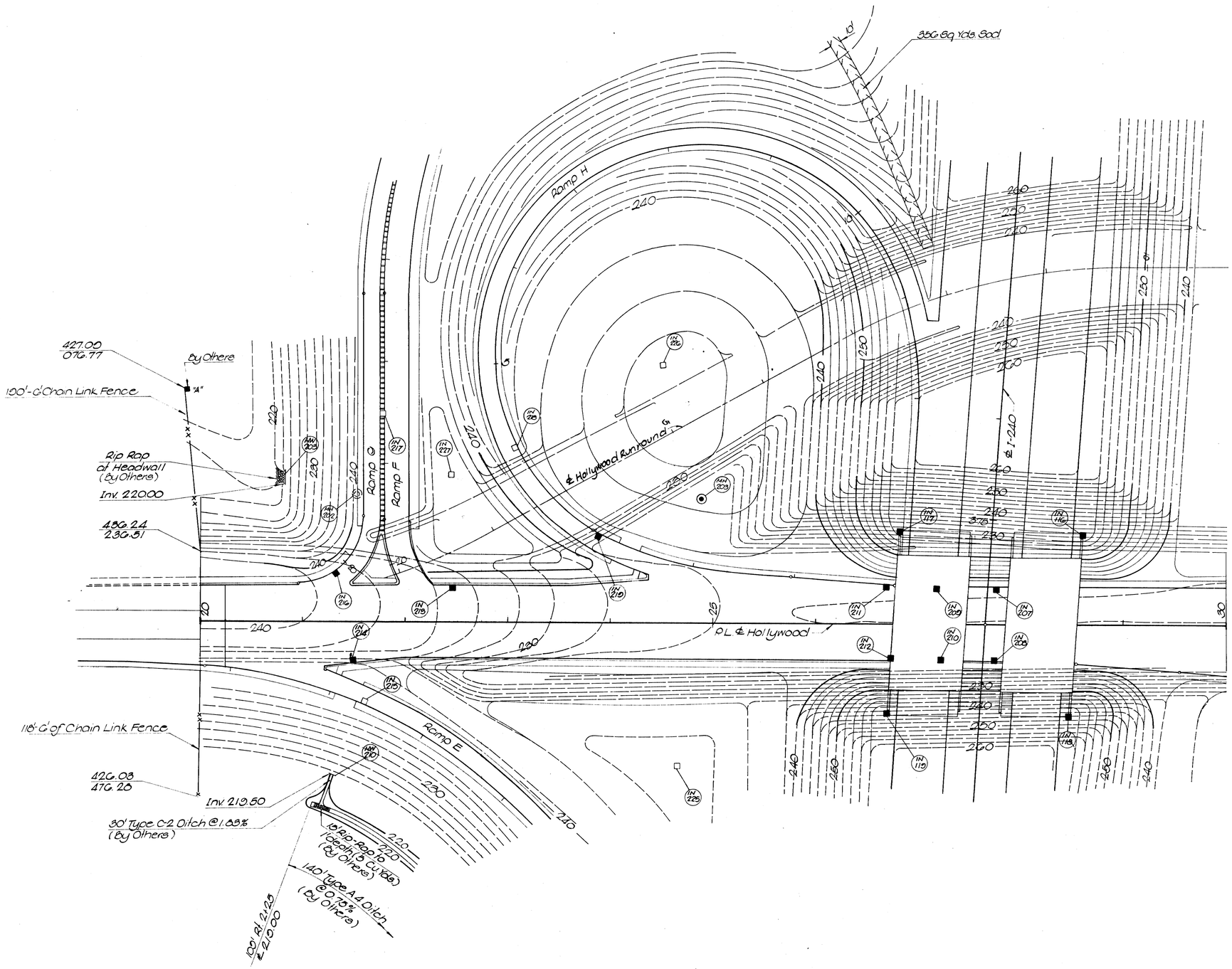
STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
BUREAU OF HIGHWAYS

I-240, F.A. 101, N. WATKINS ST. INTERCHANGE

DRAINAGE PLAN

SCALE 1" = 50'

TYPE	YEAR	PROJECT NO.	SHEET NO.
			70



STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
BUREAU OF HIGHWAYS

HOLLYWOOD STREET
GRADING PLAN

TENN. STATE HIGHWAYS		
Plans Divn.	File No.	IN-316

MICROFILMED

REV. 3-29-74; REFERENCE SHEET NUMBER SHOWN.

TYPE	YEAR	PROJECT NO.	SHEET NO.
~~Const.~~	~~1974~~	~~EAC-240-1(194)4~~	~~72~~
CONST.	1976	EAC1-240-1(138)5	6

INLETS

EAC1-240-1(94)4

Code	Roadway	Station	℄ Elev.	Type	Depth
(1) (IN 118)	Ramp J	266+18 ℄(LT)	—	Bridge Drain	—
(IN 119)	Ramp A	12+55(68'LT)	220.75	D4	13.20
(IN 120)	Ramp A	15+40(80'LT)	237.50	B7	2.85
(IN 121)	Ramp A	20+00(LT ℄)	244.06	R	3.48
(IN 122)	Ramp A	23+00(LT ℄)	244.51	Q	3.48
(IN 123)	Ramp J	268+10(77'RT)	235.75	B7	2.75

(1) ~~These Inlets Not Included In This Contract~~

STORM SEWER & CULVERT PIPE

EAC1-240-1(94)4

From Code	From Inv. Elev.	To Code	To Inv. Elev.	Grade %	CPC Dia.	CMP Dia.	Length Ft.
(1) (IN 124)	Bridge Drain	(—)	Outfall	—	—	8"	30'
(IN 125)	216.55	(MH 7)	214.16	0.38	48"	(1)	636'
(IN 126)	240.03	(IN 127)	234.75	7.45	15"	—	70'
(IN 128)	234.00	(MH 8)	232.85	4.00	18"	—	48'
(IN 129)	233.00	(MH 9)	231.00	5.00	15"	—	40'
(IN 130)	231.50	(MH 10)	214.71	6.08	24"	(1)	277'
(IN 131)	214.06	(MH 11)	213.11	0.80	48"	(1)	101'
(IN 132)	228.00	(IN 133)	226.20	2.77	24"	—	65'
(IN 134)	228.00	(IN 135)	226.70	2.24	18"	—	58'
(IN 136)	212.71	(IN 137)	211.27	0.63	54"	(2)	230'
(IN 138)	241.08	(IN 139)	238.85	1.01	15"	—	220
(IN 140)	216.52	(MH 12)	216.00	1.08	24"	—	05'
(IN 141)	210.87	(IN 142)	208.56	0.52	66"	(2)	445

(1) Class V concrete Pipe Culvert; Class B Bedding
(2) Class V concrete Pipe Culvert; Imperfect Trench Installation; Class B Bedding; See Sheet No. 2-Z
(1) ~~These Pipes Not Included In This Contract~~

CONCRETE HEADWALLS

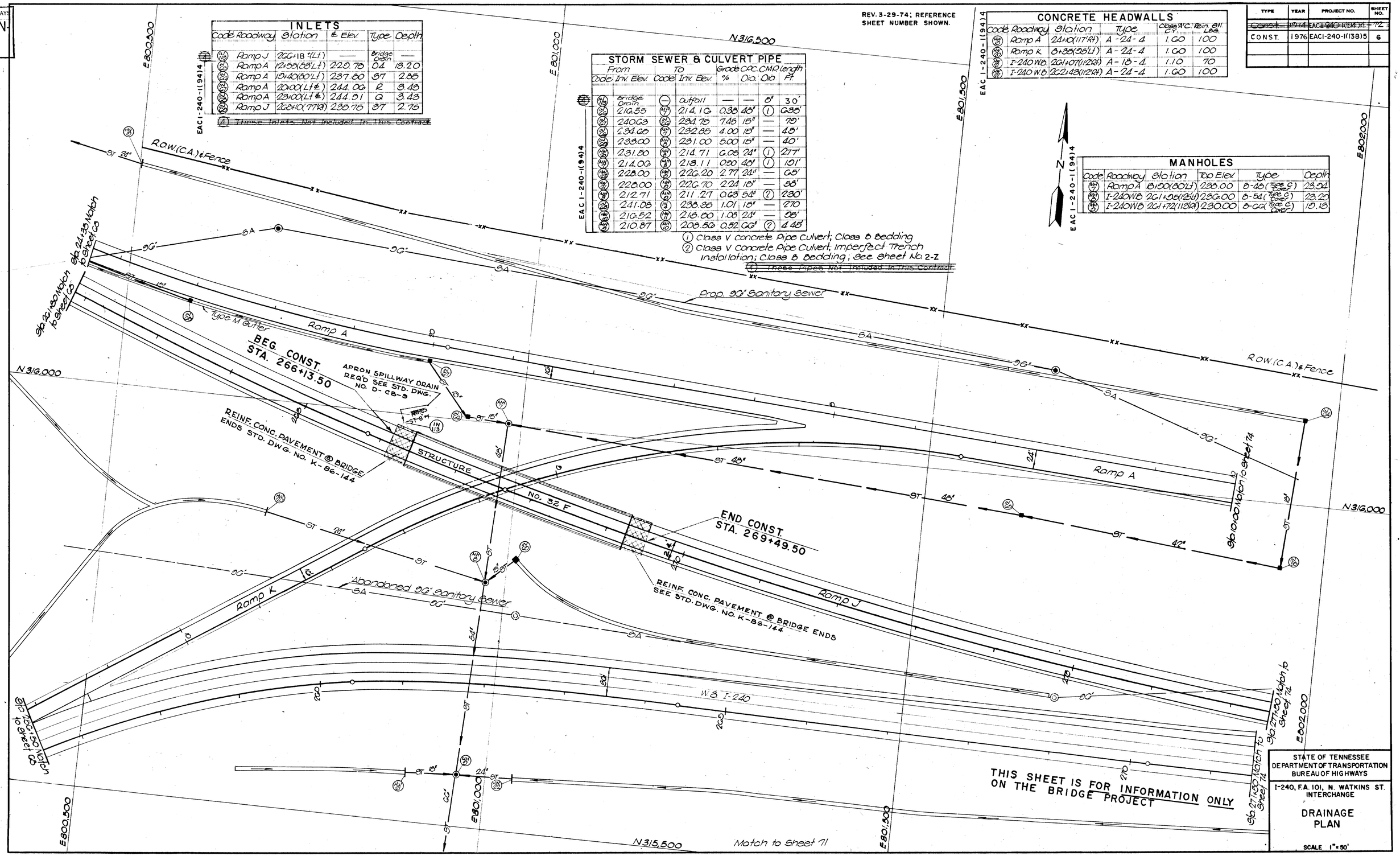
EAC1-240-1(94)4

Code	Roadway	Station	Type	Class A/C CY.	Rein. Bil. Lbs.
(IN 143)	Ramp A	24+10(117'RT)	A-24-4	1.60	100
(IN 144)	Ramp K	8+38(26'LT)	A-24-4	1.60	100
(IN 145)	I-240 WB	261+07(112'RT)	A-18-4	1.10	70
(IN 146)	I-240 WB	262+48(112'RT)	A-24-4	1.60	100

MANHOLES

EAC1-240-1(94)4

Code	Roadway	Station	Top Elev.	Type	Depth
(MH 7)	Ramp A	8+00(80'LT)	238.00	B-46 (Type C)	23.04
(MH 8)	I-240 WB	261+06(126'LT)	236.00	B-54 (Type C)	23.20
(MH 9)	I-240 WB	261+72(118'RT)	230.00	B-60 (Type C Conc.)	15.18



STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
BUREAU OF HIGHWAYS

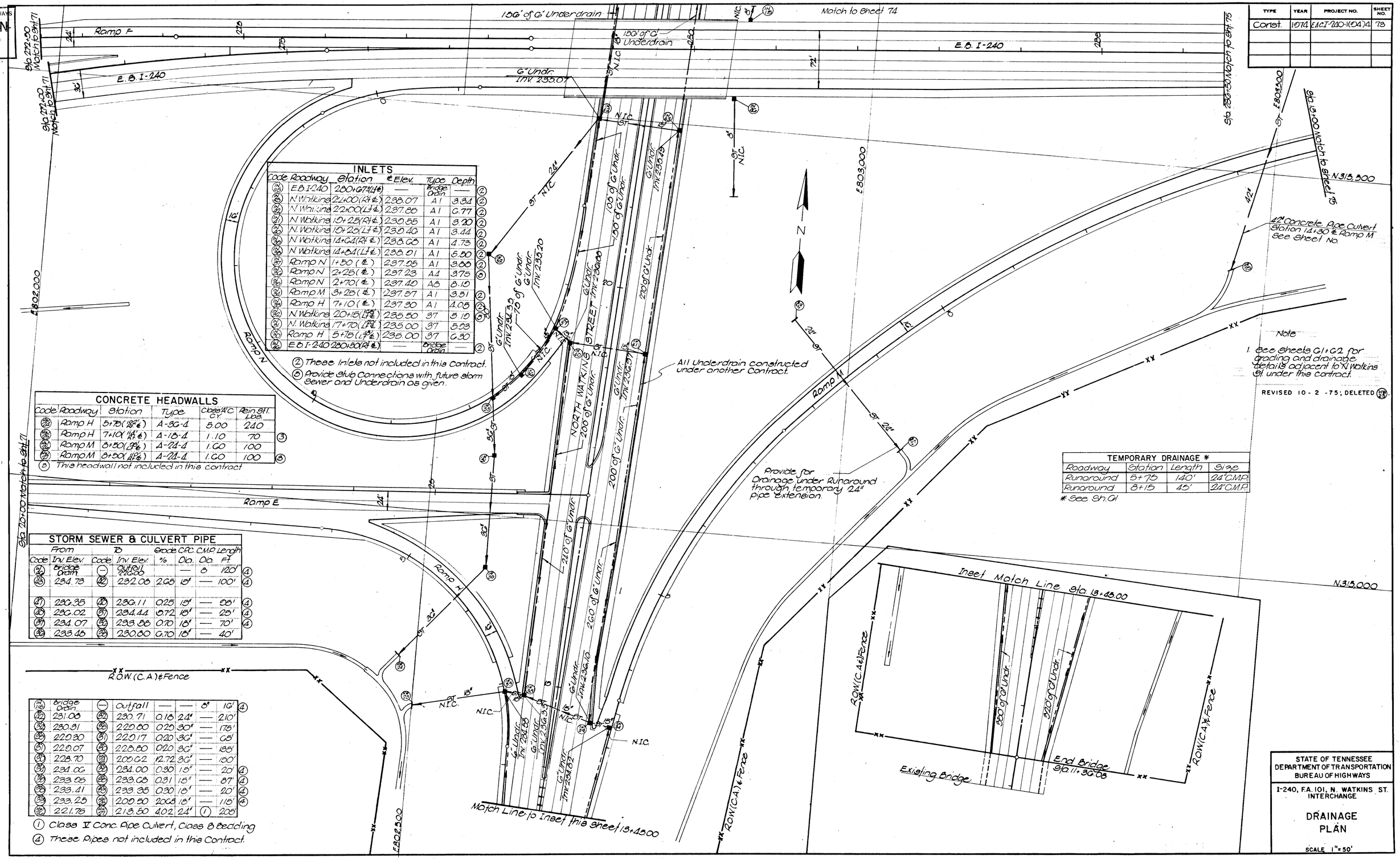
I-240, F.A. 101, N. WATKINS ST. INTERCHANGE

DRAINAGE PLAN

SCALE 1" = 50'

TENN. STATE HIGHWAYS
Plans Divn. | File No. IN-316

TYPE	YEAR	PROJECT NO.	SHEET NO.
Const.	1974	E.A.C.I-240-1(104)4	73



INLETS

Code	Roadway	Station	℄ Elev.	Type	Depth	
(26)	E.B. I-240	280+67.4(℄)	—	Bridge Drain	—	(2)
(26)	N. Watkins	24+00 (Rt ℄)	238.07	A1	3.34	(2)
(26)	N. Watkins	22+00 (Lt ℄)	237.80	A1	6.77	(2)
(26)	N. Watkins	10+25 (Rt ℄)	230.85	A1	3.20	(2)
(26)	N. Watkins	10+25 (Lt ℄)	230.40	A1	3.44	(2)
(26)	N. Watkins	14+64 (Rt ℄)	238.68	A1	4.73	(2)
(26)	N. Watkins	14+64 (Lt ℄)	238.01	A1	5.50	(2)
(26)	Ramp N	1+50 (℄)	237.95	A1	3.88	(2)
(26)	Ramp N	2+25 (℄)	237.23	A4	3.75	(5)
(26)	Ramp N	2+70 (℄)	237.40	A8	8.10	
(26)	Ramp M	3+25 (℄)	237.57	A1	3.51	(2)
(26)	Ramp H	7+10 (℄)	237.30	A1	4.05	(2)
(26)	N. Watkins	20+15 (Lt 15.5' ℄)	236.50	37	5.10	(2) (5)
(26)	N. Watkins	17+70 (Lt 19.5' ℄)	235.00	37	5.58	
(26)	Ramp H	5+75 (Lt 4.5' ℄)	235.00	37	6.30	
(26)	E.B. I-240	280+50 (Rt ℄)	—	Bridge Drain	—	(2)

(2) These Inlets not included in this Contract.
(5) Provide stub connections with future storm sewer and Underdrain as given.

CONCRETE HEADWALLS

Code	Roadway	Station	Type	Class A C CY	Rein Stl. Lbs.	
(26)	Ramp H	5+75 (19.5' Rt ℄)	A-36-4	6.00	240	
(26)	Ramp H	7+10 (17.5' Rt ℄)	A-18-4	1.10	70	(3)
(26)	Ramp M	3+50 (19.5' Lt ℄)	A-24-4	1.60	100	
(26)	Ramp M	3+50 (17.5' Lt ℄)	A-24-4	1.60	100	(5)

(5) This headwall not included in this contract

STORM SEWER & CULVERT PIPE

Code	From Inv. Elev.	Code	To Inv. Elev.	Grade %	CPC Dia.	CMP Dia.	Length Ft	
(26)	Bridge Drain	—	Outfall 232.00		—	8"	120'	(4)
(26)	234.78	(26)	232.08	2.65	18"	—	100'	(4)
(26)	236.35	(26)	236.11	0.25	18"	—	98'	(4)
(26)	236.02	(26)	234.44	6.72	18"	—	25'	(4)
(26)	234.07	(26)	233.58	0.70	18"	—	70'	(4)
(26)	233.45	(26)	230.60	6.70	18"	—	40'	
(116)	Bridge Drain	—	Outfall	—	—	8"	16'	(4)
(26)	231.06	(26)	230.71	0.18	24"	—	210'	
(26)	230.81	(26)	229.60	0.20	30"	—	176'	
(26)	229.30	(26)	229.17	0.20	36"	—	68'	
(26)	229.07	(26)	228.80	0.20	36"	—	135'	
(26)	228.70	(26)	200.62	12.72	36"	—	160'	
(26)	234.06	(26)	234.00	0.30	18"	—	20'	(4)
(26)	233.95	(26)	233.68	0.31	15"	—	87'	(4)
(26)	233.41	(26)	233.35	0.30	18"	—	20'	(4)
(26)	233.25	(26)	200.50	200.8	18"	—	115'	(4)
(26)	221.75	(26)	213.50	4.02	24"	(1)	205'	

(1) Class V Conc. Pipe Culvert, Class B Bedding
(4) These Pipes not included in this Contract.

TEMPORARY DRAINAGE *

Roadway	Station	Length	Size
Runaround	5+75	140'	24" C.M.P.
Runaround	8+15	45'	24" C.M.P.

* See Sh. G1

Note
1. See Sheets G1 + G2 for grading and drainage details adjacent to N. Watkins St. under this contract.

REVISED 10-2-75; DELETED (26).

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
BUREAU OF HIGHWAYS

I-240, F.A. 101, N. WATKINS ST. INTERCHANGE

DRAINAGE PLAN

SCALE 1" = 50'

REV. 10-2-75; DELETED (IN 35) AND STORM SEWER (35) TO (IN 34).

REV. 6-13-74; ADDED SHEET NUMBER ON NOTE NO. 2.

REVISION 4-9-74; DELETED (IN 83) ADDED (IN 83)

TYPE	YEAR	PROJECT NO.	SHEET NO.
Const.	1974	EMC I-240-1(104) 4	74

Note

1. See Sheets G1 and G2 for grading and drainage details adjacent to N. Watkins St. under this contract.

INLETS

Code	Roadway	Station	℄ Elev.	Type	Depth	
(24)	N. Watkins	31+70 (Lt ℄)	235.32	A-3	3.96	(1)
(24)	N. Watkins	32+00 (Lt ℄)	235.75	A-1	3.34	(1)
(24)	N. Watkins	23+50 (Lt ℄)	237.51	A-3	3.34	(1)
(24)	N. Watkins	23+50 (Rt ℄)	237.70	A-3	5.20	(1)
(24)	N. Watkins	26+40 (Lt ℄)	237.67	A-1	3.34	(1)
(24)	Ramp A	1+40 (℄)	235.44	A-1	3.51	(1)
(24)	Ramp AB	1+18 (Rt ℄)	237.32	A-3	5.58	(1)
(24)	Ramp A	5+30 (95' Lt)	229.75	37	5.60	
(24)	Ramp B	4+55 (70' Lt)	229.75	37	5.55	
(24)	N. Watkins	26+85 (170' Lt)	233.00	37	3.02	(5)
(24)	Overton Crossing	17+60 (27' Rt)	235.13	A-1	3.34	(1)
(24)	Ramp C	5+07 (℄)	235.75	A-3	3.61	
(24)	Overton Crossing	11+07 (33' Rt)	235.60	A-3	3.34	(1)
(24)	Ramp C	7+50 (27' Rt)	233.00	37	2.65	
(24)	N. Watkins	27+65 (180' Rt)	233.00	37	3.00	(5)
(24)	Ramp D	15+05 (60' Lt)	233.75	37	3.54	(1)
(24)	Ramp P	1+50 (℄)	237.46	A-1	3.34	(1)
(24)	Ramp B	0+80 (℄)	238.14	A-1	3.34	
(24)	Ramp J	28+45 (22' Lt)	—	Bridge Drain	—	(1)
(24)	Ramp A	0+30 (67' Rt)	234.75	37	3.00	
(24)	Ramp D	10+00 (Lt.)	239.96	2	3.50	

(1) These Inlets not included in this Contract.

(5) Provide Stub Connections with future Storm Sewer as given.

CONCRETE HEADWALLS

Code	Roadway	Station	Type	Class 'A' C.Y.	Rein. Stl. Lbs.
(24)	Ramp A	3+77 (30' Rt)	A-30-4	3.30	170
(24)	Ramp C	6+05 (78' Rt)	A-30-2	3.00	170
(24)	Ramp D	10+00 (20' Lt)	A-15-4	0.90	65

MANHOLES

Code	Roadway	Station	Top Elev.	Type	Depth	
(MH 1)	N. Watkins	31+20 (33' Lt ℄)	236.30	D-4 (Type C Cover)	5.01	(3)
(MH 5)	Ramp C	7+78 (68' Lt ℄)	234.50	C-4 (Type C Cover)	14.20	(6)
(MH 6)	Ramp B	3+01 (12' Lt ℄)	238.04	C-4 (Type C Cover)	11.24	(6)

(3) This Manhole not included in this Contract.

(6) Provide Stub Connections with future Storm Sewer as given.

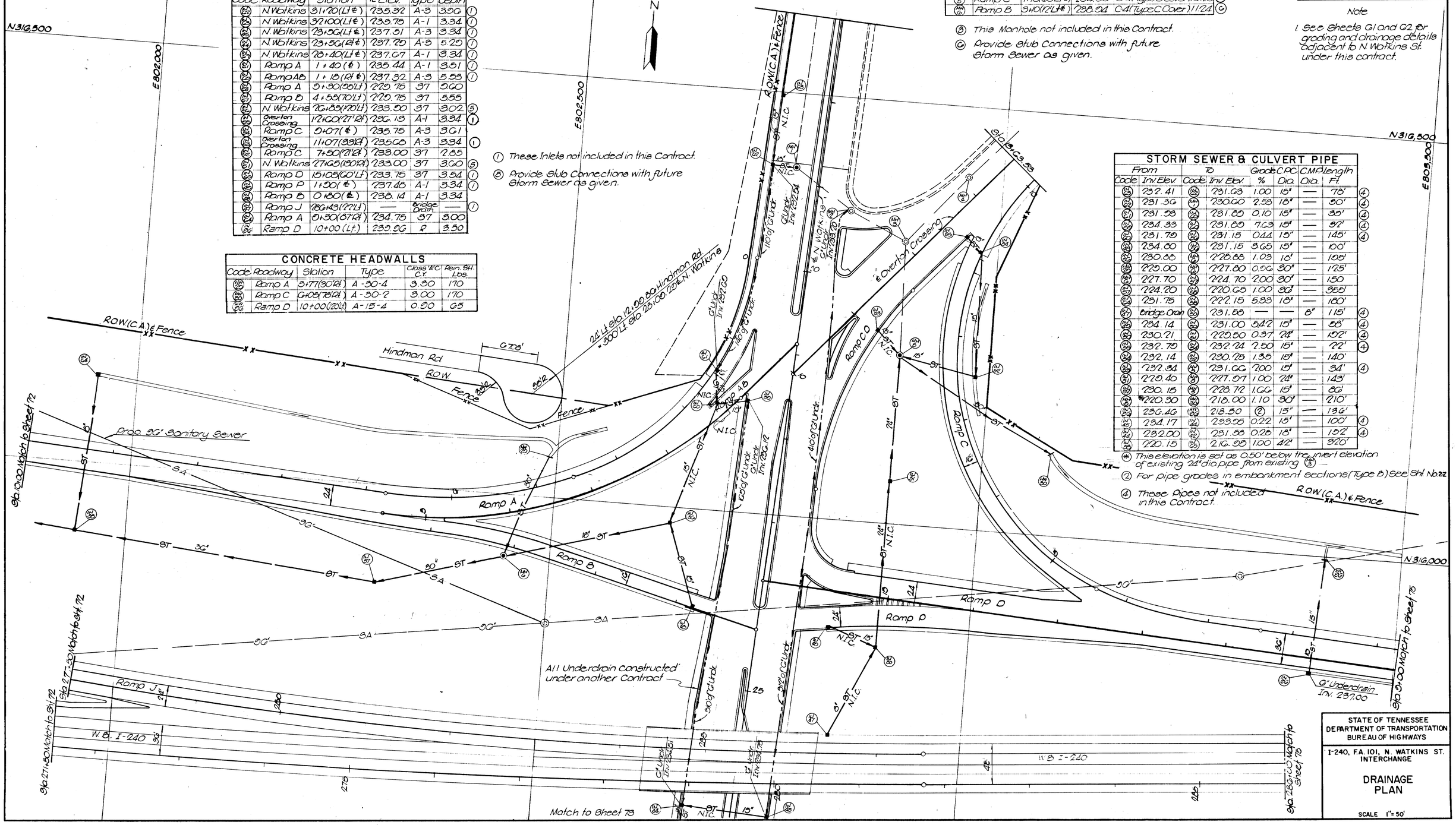
STORM SEWER & CULVERT PIPE

From Code	From Inv. Elev.	To Code	To Inv. Elev.	Grade %	C.P.C. Dia.	C.M.P. Dia.	Length Ft.	
(24)	232.41	(24)	231.63	1.00	15"	—	78'	(4)
(24)	231.36	(MH 1)	230.60	2.53	18"	—	30'	(4)
(24)	231.98	(24)	231.89	0.10	15"	—	90'	(4)
(24)	234.33	(24)	231.89	7.63	18"	—	87'	(4)
(24)	231.70	(24)	231.15	0.44	15"	—	145'	(4)
(24)	234.80	(24)	231.15	3.65	15"	—	100'	
(24)	230.88	(24)	228.88	1.03	18"	—	195'	
(24)	229.00	(24)	227.80	0.96	30"	—	125'	
(MH 5)	227.70	(24)	224.70	2.00	30"	—	150	
(24)	224.20	(24)	220.65	1.00	36"	—	355'	
(24)	231.75	(24)	222.15	5.33	18"	—	180'	
(24)	bridge Drain	(24)	231.88	—	—	8"	115'	(4)
(24)	234.14	(24)	231.00	5.42	15"	—	58'	(4)
(24)	230.21	(24)	229.50	0.37	24"	—	192'	(4)
(24)	232.79	(24)	232.24	2.50	15"	—	22'	(4)
(24)	232.14	(24)	230.25	1.35	15"	—	140'	
(24)	232.34	(24)	231.66	2.00	15"	—	34'	(4)
(24)	229.40	(24)	227.07	1.00	24"	—	143'	
(24)	230.15	(24)	228.72	1.66	15"	—	86'	
(24)	*220.30	(24)	218.00	1.10	30"	—	210'	
(24)	230.46	(24)	218.50	(2)	15"	—	136'	
(24)	234.17	(24)	233.95	0.22	15"	—	100'	(4)
(24)	232.00	(24)	231.88	0.26	18"	—	152'	(4)
(24)	220.15	(24)	216.95	1.00	42"	—	320'	

(*) This elevation is set as 0.50' below the invert elevation of existing 24" dia. pipe from existing (24).

(2) For pipe grades in embankment sections (Type B) See Stl. No. 22

(4) These Pipes not included in this Contract.



STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
BUREAU OF HIGHWAYS

I-240, F.A. 101, N. WATKINS ST. INTERCHANGE

DRAINAGE PLAN

SCALE 1" = 50'

TYPE	YEAR	PROJECT NO.	SHEET NO.
Const.	1974	FACI-240-1(04)4	75

REV. 3-29-74; REFERENCE SHEET NUMBER SHOWN.

INLETS

Code	Roadway	Station	℄ Elev.	Type	Depth
(26)	(Med) I-240	288+40(W.B.℄)	244.08	8G	2.76
(27)	(Med) I-240	295+00(W.B.℄)	235.70	8T	2.76
(28)	(Med) I-240	300+00(W.B.℄)	235.74	8T	2.76
(29)	Ramp O	4+82(Lt.)	241.54	R	3.48

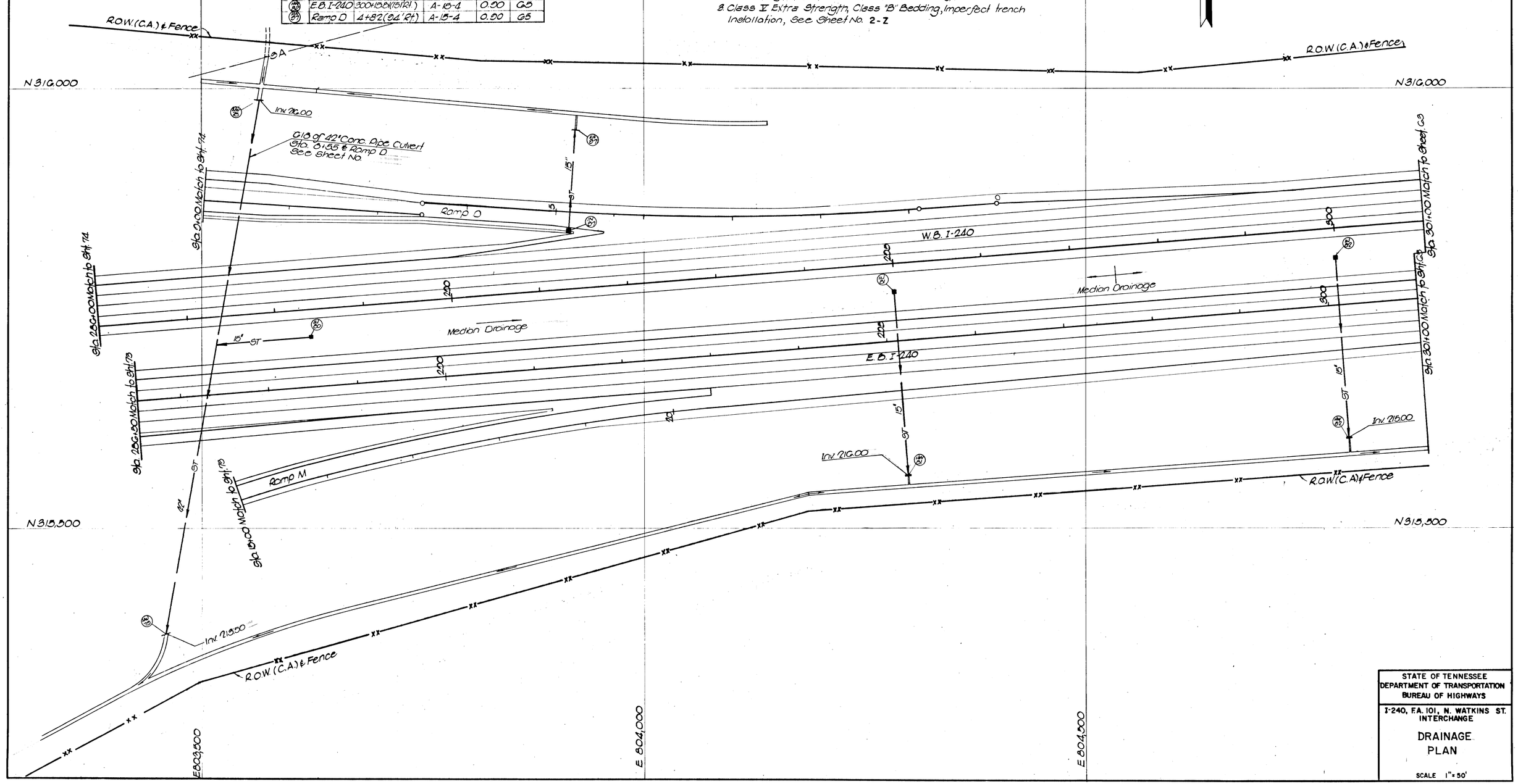
CONCRETE HEADWALLS

Code	Roadway	Station	Type	Class Ex.	Rein Bar Lbs.
(30)	Ramp O	8+40.92(110.72Rt.)	A-42-4	G.60	280
(31)	Ramp M	18+55.41(110.92Rt.)	B-42-4(30°)	G.25	201
(32)	E.B. I-240	295+15.8 (154Rt.)	A-15-4	0.00	65
(33)	E.B. I-240	300+13.81(151Rt.)	A-15-4	0.00	65
(34)	Ramp O	4+82(84'Rt.)	A-15-4	0.00	65

STORM SEWER & CULVERT PIPE

From Code	From Inv. Elev.	To Code	To Inv. Elev.	Grade %	C.P.C. Dia.	C.M.P. Dia.	Length Ft.
(34)	242.18	(1)	215.87	25.05	15"		105
(31)	238.04	(35)	216.00	(2)	15"		208
(36)	232.08	(36)	215.00	(2)	15"		204
(36)	216.00	(36)	213.50	0.40	42"(3)		615
(37)	238.1 L	(37)	218.00	(2)	15"		116

1. Stub 15" Pipe into 42" Conc. Pipe Culvert.
2. For Pipe grades in embankment sections (Type B) See Sheet No. 2-Z
3. Class V Extra Strength, Class "B" Bedding, Imperfect trench Installation, See Sheet No. 2-Z



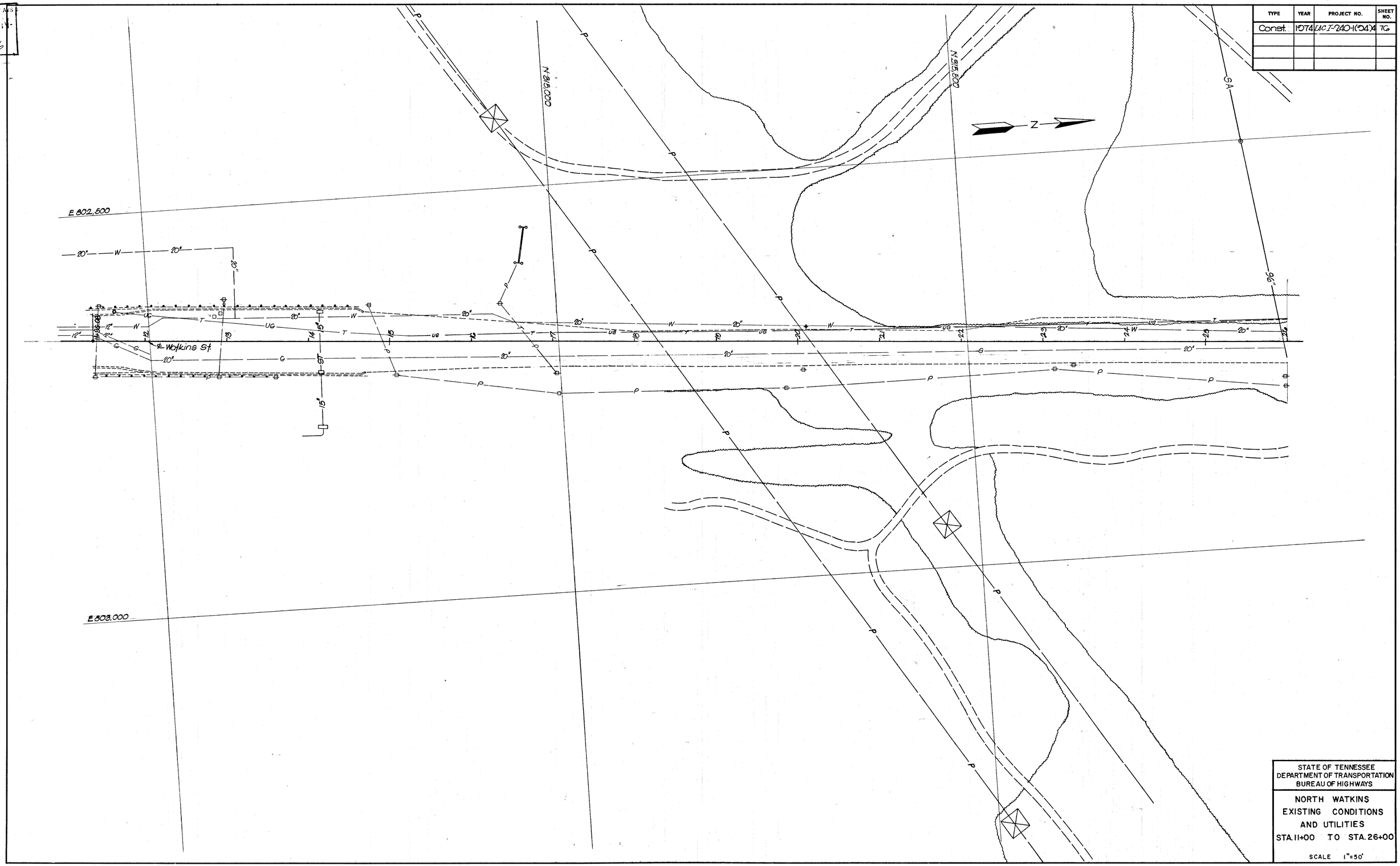
STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
BUREAU OF HIGHWAYS

I-240, F.A. 101, N. WATKINS ST. INTERCHANGE

DRAINAGE PLAN

SCALE 1" = 50'

TYPE	YEAR	PROJECT NO.	SHEET NO.
Const.	1974	IAC I-240-1(204)	7G

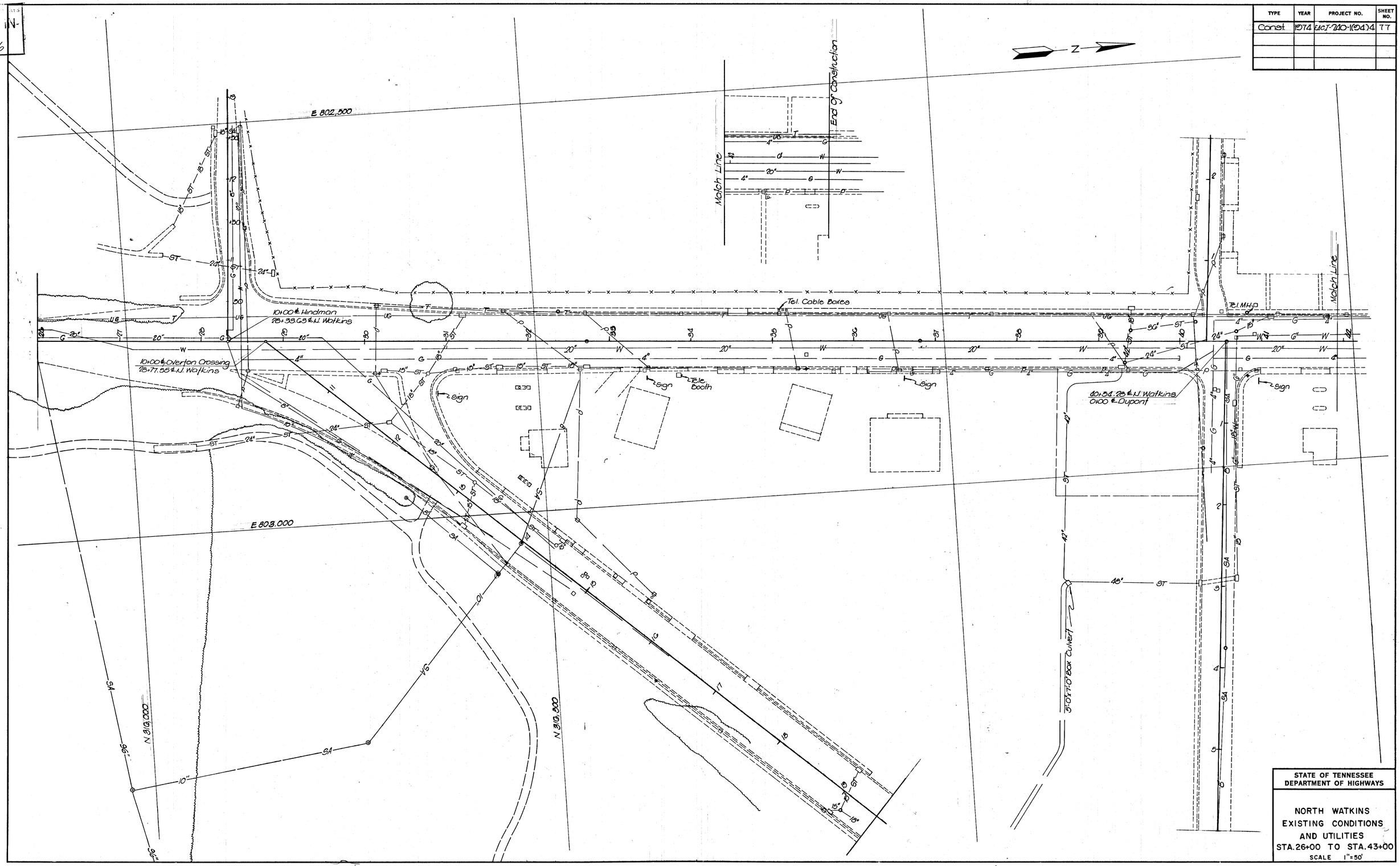


STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
BUREAU OF HIGHWAYS

NORTH WATKINS
EXISTING CONDITIONS
AND UTILITIES
STA. 11+00 TO STA. 26+00

SCALE 1"=50'

TYPE	YEAR	PROJECT NO.	SHEET NO.
Const.	1974	FACT-240-1(204)4	77



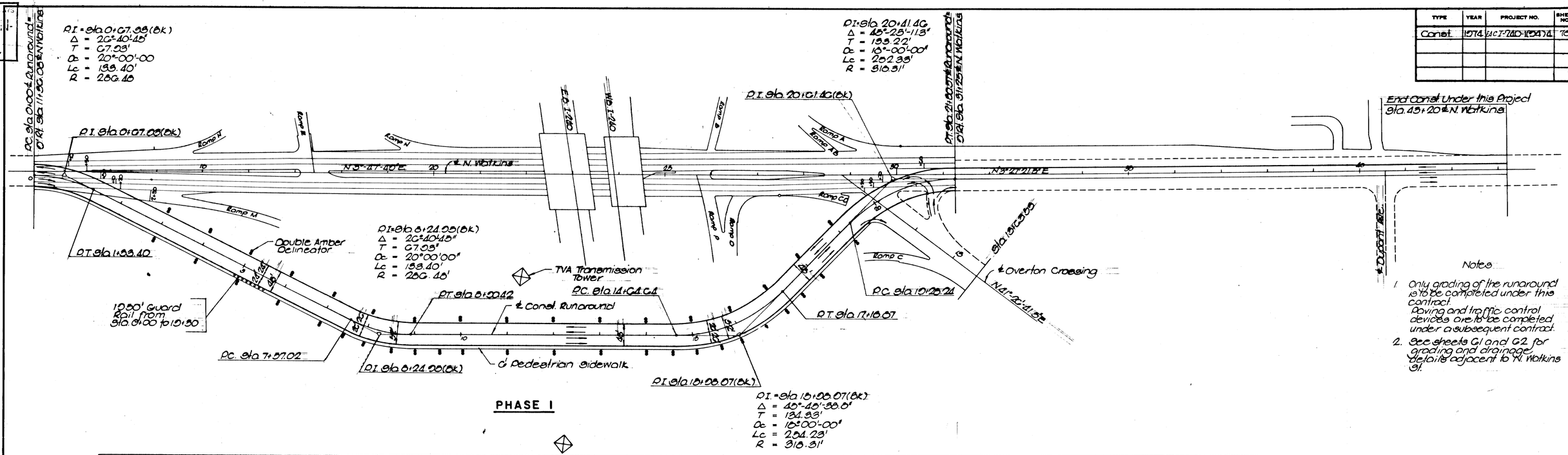
STATE OF TENNESSEE
DEPARTMENT OF HIGHWAYS

NORTH WATKINS
EXISTING CONDITIONS
AND UTILITIES
STA. 26+00 TO STA. 43+00

SCALE 1" = 50'

TENN. STATE HIGHWAYS
Plans Div. File No. 3/6

TYPE	YEAR	PROJECT NO.	SHEET NO.
Const.	1974	IC I-240-1(104)	76



Notes

1. Only grading of the runaround is to be completed under this contract. Paving and traffic control devices are to be completed under a subsequent contract.
2. See sheets G1 and G2 for grading and drainage details adjacent to N. Watkins St.

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
BUREAU OF HIGHWAYS

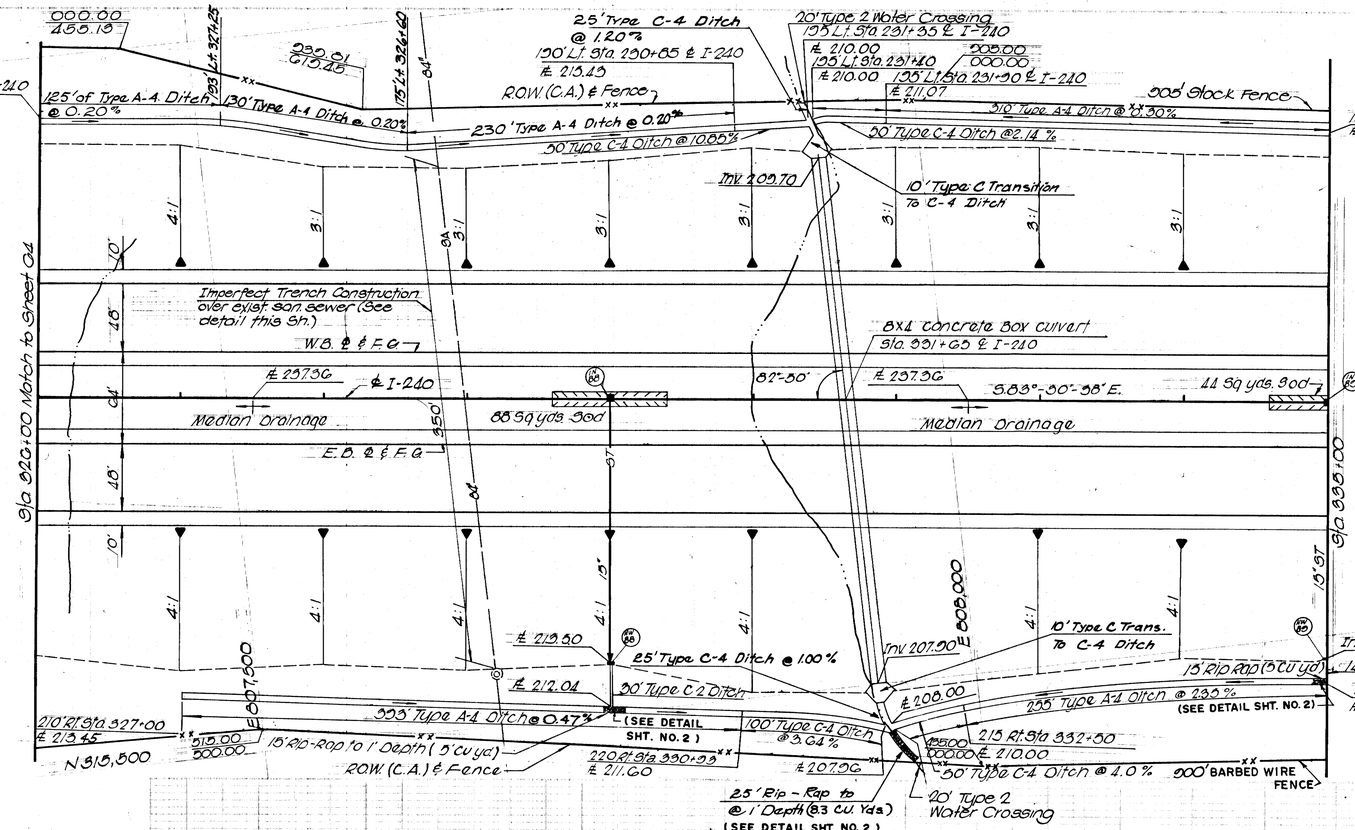
NORTH WATKINS ST.
CONSTRUCTION RUNAROUND
PLAN & PROFILE

SCALE: 1"=100'

TENN. STATE HIGHWAYS
Plans Div. | File No. IN-316

Const. 1974 EACI-240-1(04)A 81

REV. 3-29-74; REFERENCE SHEET NUMBERS SHOWN.

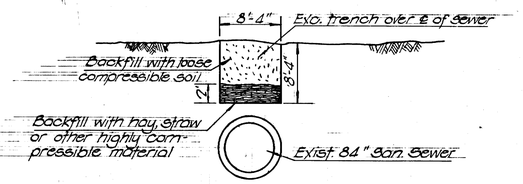


INLETS					
Code	Roadway	Station	℄ Elev.	Type	Depth
88	I-240	330+00 ℄	230.74	37	2.75
88	I-240	330+00 ℄	230.74	37	2.75

CONCRETE HEADWALLS					
Code	Roadway	Station	Type	Class "A" C.Y.	Rein. Stl. Lbs.
88	I-240	330+00 (RGLT)	A-15-4	0.90	65
88	I-240	335+00 (RGLT)	A-15-4	0.90	65

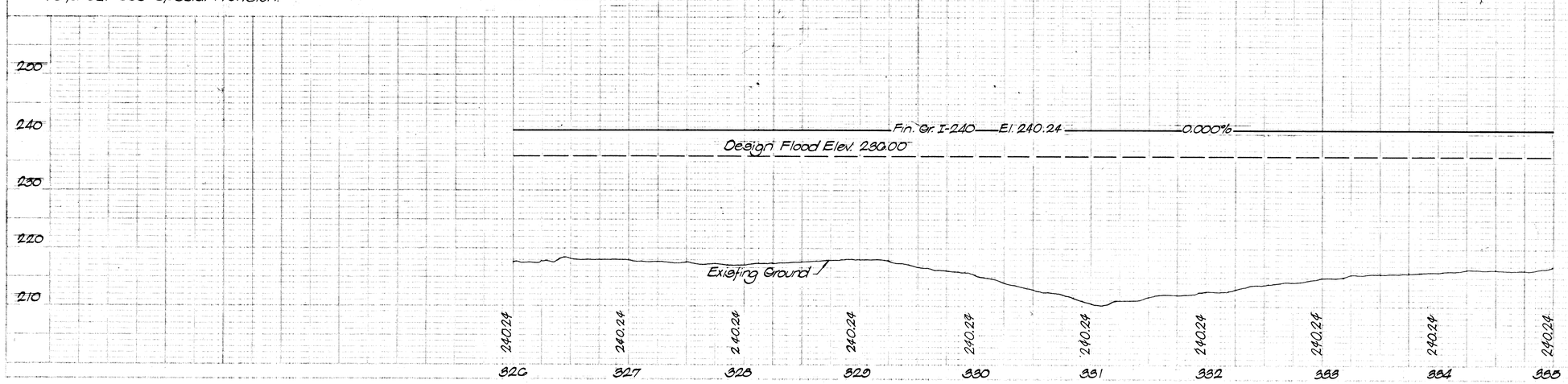
STORM SEWER & CULVERT PIPE							
From		To		Grade C.P.C.M.P.			Length
Code	Inv. Elev.	Code	Inv. Elev.	%	Dia.	Dia.	Ft.
88	232.90	88	218.50	1*	15"		184
88	232.90	88	217.00	1*	15"		174

1* For pipe grades in embankment sections (Type B) See Sheet No. 2-Z



IMPERFECT TRENCH PROTECTION - 84" SAN. SEWER

Contractor shall excavate trench 8'-4" wide by 8'-4" deep directly over ℄ of exist. sewer, maintaining vertical trench walls. Trench shall be back-filled as detailed & in accordance with Special Provisions Regarding Imp. Trench Construction. This work will be paid for under Item 203-01 Road and Drainage Excavation. Approx. 300 C.Y. exc. required. See Special Provision.



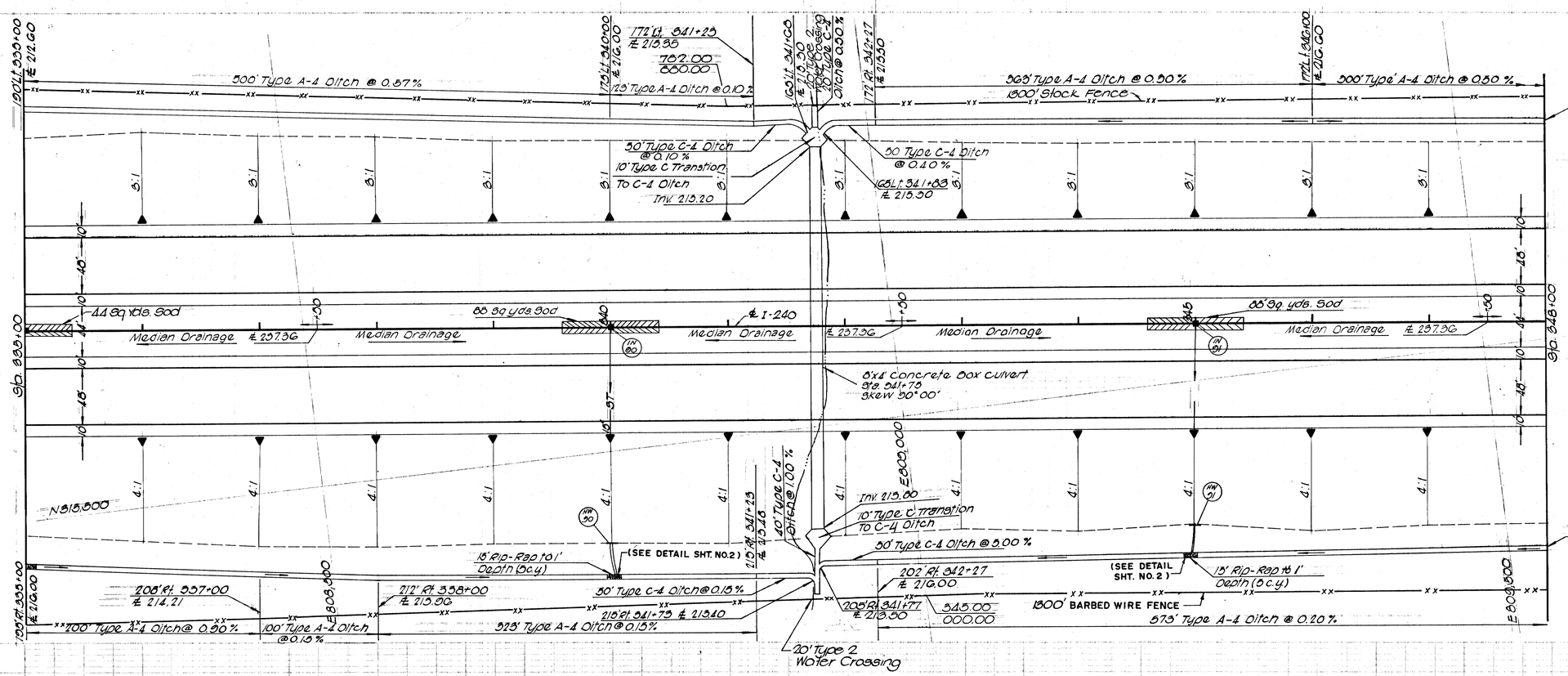
STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
BUREAU OF HIGHWAYS

I-240 PLAN & PROFILE
STA. 326+00 TO 335+00

SCALE 1" = 50' HOR.
1" = 10' VERT.

MICROFILMED

Const. 1974 IAC I-240-1(04) 1 82



INLETS						
Code	Roadway	Station	℄ Elev.	Type	Depth
IN 80	I-240	340+00	230.74	3G	2.75
IN 81	I-240	345+00	235.74	3G	2.75

STORM SEWER & CULVERT PIPE							
From		To		Grade	C.D.C.M.Q.		Length
Code	Inv. Elev.	Code	Inv. Elev.	%	Dia.	Dia.	Ft.
IN 80	232.90	OS 80	214.66	10.07	15"		182'
IN 81	232.90	OS 81	217.54	2.09	15"		170'

CONCRETE HEADWALLS					
Code	Roadway	Station	Type	Class "C" Conc. C.Y.	Reinf. Stl. Lbs.
IN 80	I-240	340+00	A-15-4	0.90	60
IN 81	I-240	345+00	A-15-4	0.90	60

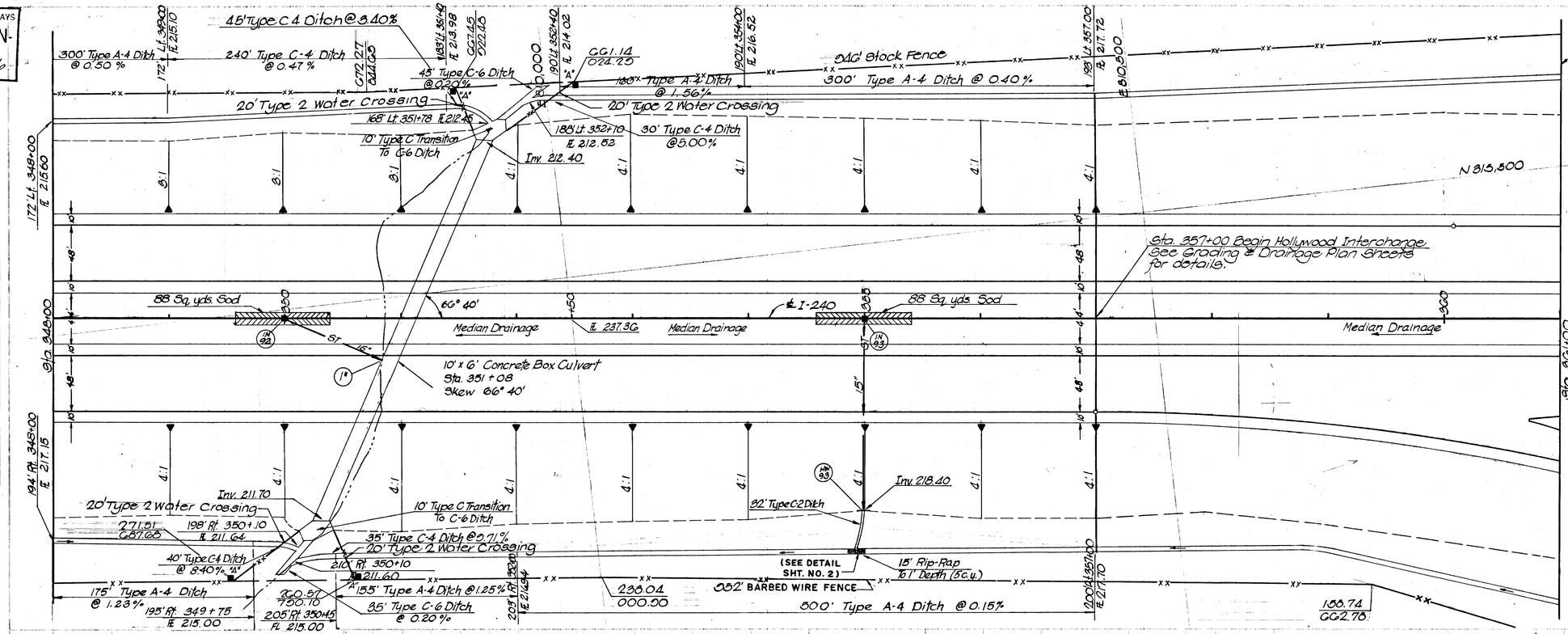
STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
BUREAU OF HIGHWAYS

I-240 PLAN & PROFILE
STA. 335+00 TO STA. 348+00

SCALE 1" = 50' HOR.
1" = 10' VERT.

TENN. STATE HIGHWAYS
Plans Divn. | File No. IN-316

Const. 1DT4.EACI-240-1(104)4 83



STORM SEWER & CULVERT PIPE

From Code	From Inv. Elev.	To Code	To Inv. Elev.	Grade %	C.P.C. Dia.	C.M.P. Dia.	Length Ft.
IN 92	232.99	IN	215.00	20.00	15"		90'
IN 92	232.99	IN 93	218.39	890	15"		164'

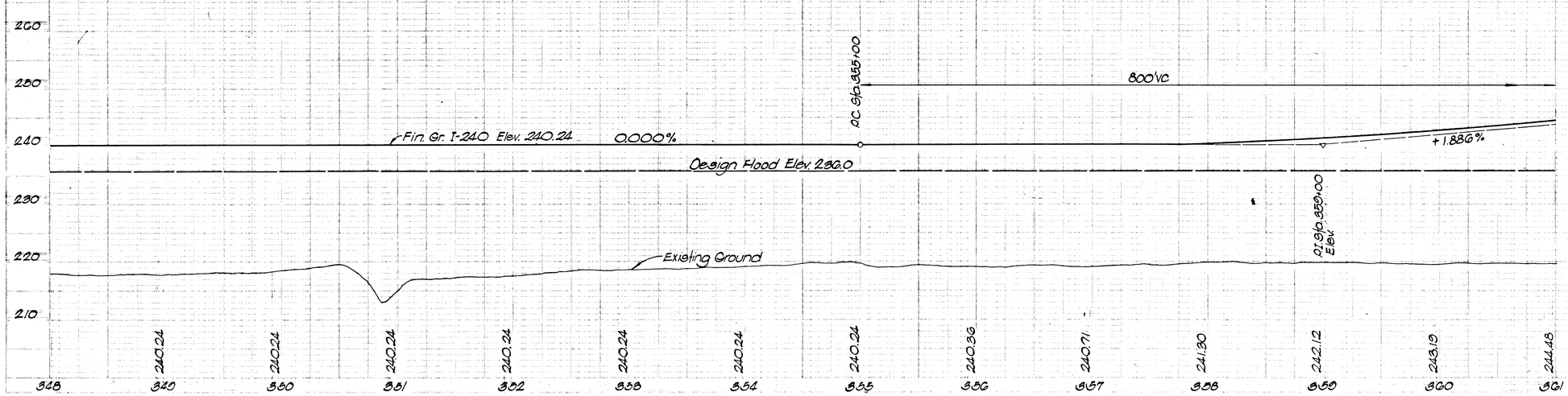
1x Stub into 10' x 6' Concrete Box Culvert

INLETS

Code	Roadway	Station	EL Elev.	Type	Depth
IN 92	I-240	350+00	235.74	36	2.75'
IN 93	I-240	355+00	235.74	36	2.75'

CONCRETE HEADWALLS

Code	Roadway	Station	Type	Class of C.C. C.Y.	Rein. Stl. Lbs.
IN 93	I-240	355+00	A-15-4	0.90	65



STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
BUREAU OF HIGHWAYS

I-240 PLAN & PROFILE
STA. 348+00 TO STA. 361+00

SCALE 1" = 50' HOR.
1" = 10' VERT

MICROFILMED

TENN. STATE HIGHWAYS
Plans Divn. File No. IN-316

TYPE	YEAR	PROJECT NO	SHEET NO.
Const.	1974	IAC I-240-1(24) 4	84

For Quantities and Details this sheet see Hollywood St. Interchange Grading and Drainage Sheets.

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
BUREAU OF HIGHWAY

I-240 PLAN & PROFILE
STA. 361+00 TO STA. 374+00

SCALE 1" = 50' HOR.
1" = 10' VERT.

MICROFILMED

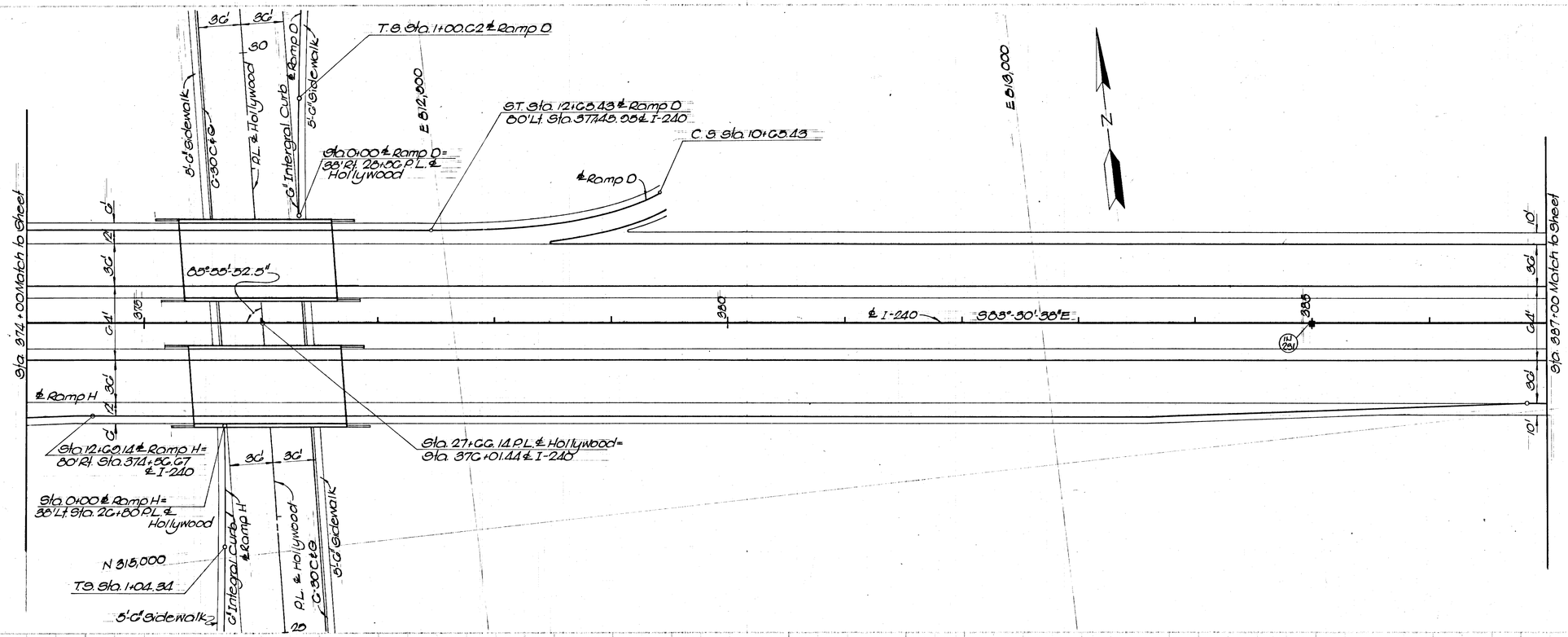
TENN. STATE HIGHWAYS
Plans Drn. File No. IN-3.16

MICROFILMED

REV. 4-9-74; SHOWED BRIDGE ABUTMENT FILLS ARE TO BE CONSTRUCTED TO TIE TO AN EXISTING ROAD.

TYPE	YEAR	PROJECT NO.	SHEET NO.
Const.	1974	IMCI-240-1(104)	85

For Quantities and Details this sheet See Hollywood St. Interchange Grading and Drainage Sheets.



STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
BUREAU OF HIGHWAYS

I-240 PLAN & PROFILE

STA. 374+00 TO STA. 387+00

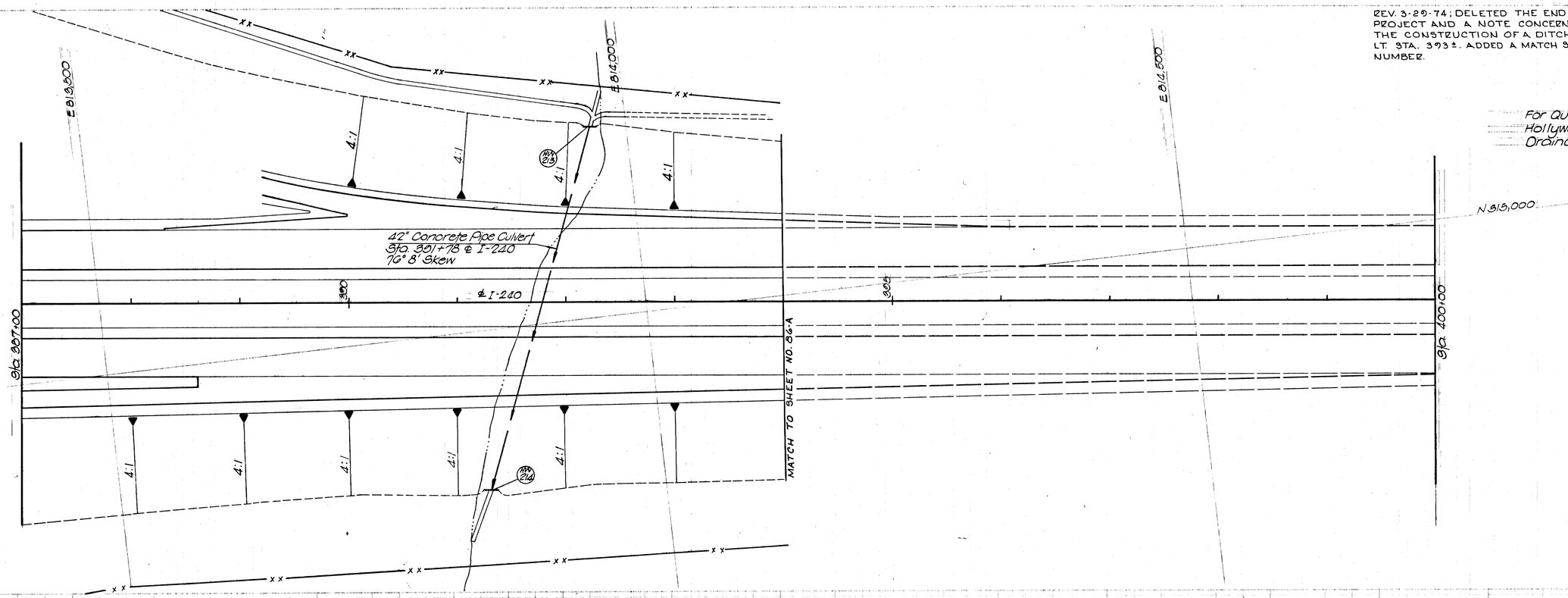
SCALE 1" = 50' HOR.
1" = 10' VERT.

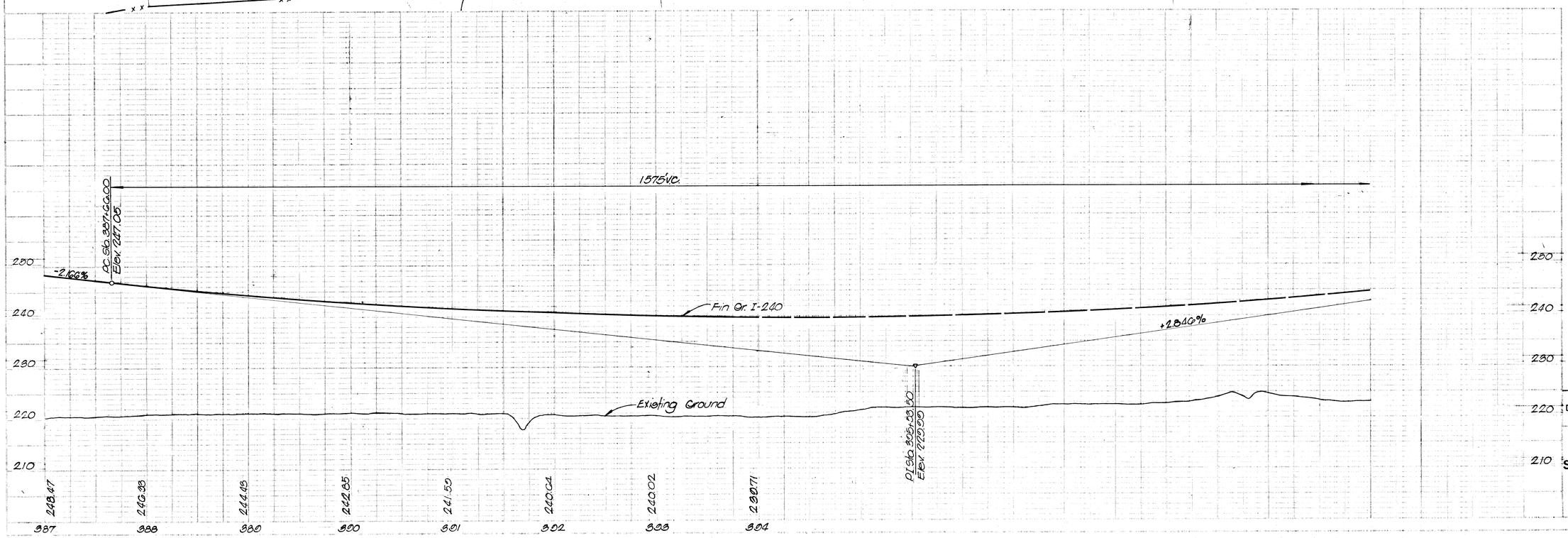
TENN. STATE HIGHWAYS
Plans Divn. | File No. IN-316

REV. 3-29-74; DELETED THE END OF PROJECT AND A NOTE CONCERNING THE CONSTRUCTION OF A DITCH LT. STA. 393±. ADDED A MATCH SHEET NUMBER.

TYPE	YEAR	PROJECT NO	SHEET NO
Const.	1974	EACI-240-1(24)4	86

For Quantities and Details this Sheet See Hollywood Interchange Grading and Drainage Sheets.





STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
BUREAU OF HIGHWAYS

I-240 PLAN & PROFILE
STA. 387+00 TO STA. 394+00

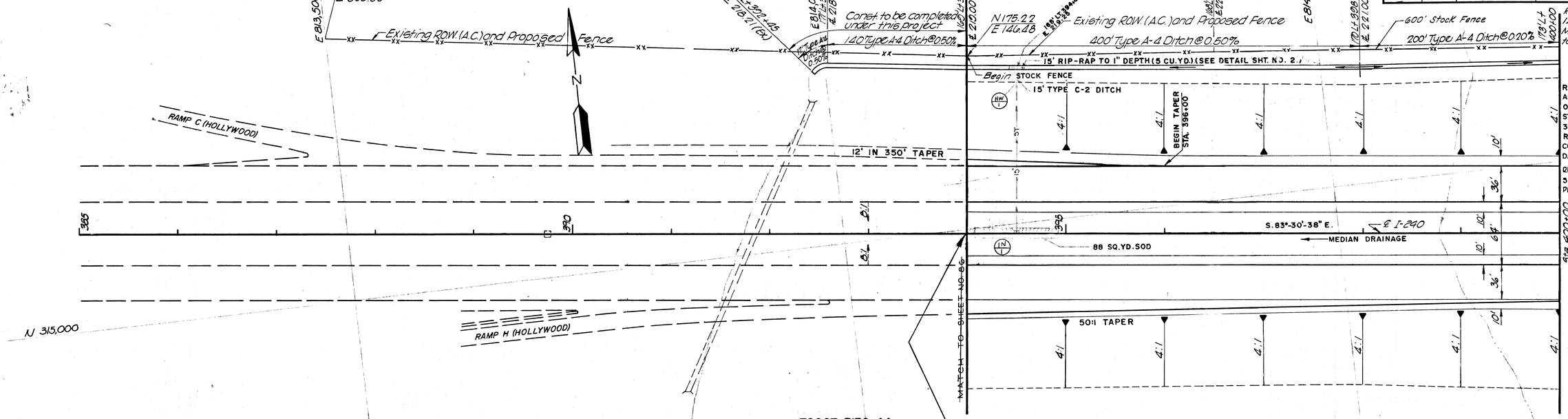
SCALE 1" = 50' HOR.
1" = 10' VERT.

MICROFILMED

PLAN — STARTED / COMPLETED / ALIGNMENT CHECKED / WRITTEN BY / DATE / WORK BY / NO.

PROFILE — STARTED / COMPLETED / PROFILE CHECKED / WRITTEN BY / DATE / WORK BY / NO.

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
3	TENN.	EACI-240-1(94)4	1974	86-A	



REVISION 11-15-73 ADDED 350' TAPER ON RAMP "C" FROM STA. 392+50 TO STA. 396+00 DUE TO A REVISION ON THE CONSULTANT PLANS DATED 10-6-73

REV. 3-29-74; THIS SHEET ADDED TO PLANS.

TYPE	YEAR	PROJECT NO.	SHEET NO.
PAVING	1977	I-240-1(143) 8	3

79007-3136-44
BEGIN PROJ. NO. I-240-1(143)8 (PAVING)
STA. 394+00.00 ℄ I-240

REV. 12-28-73; CHANGED THE GRADE AND DRAINAGE FROM STA. 394+00 TO STA. 400+00 DUE TO A REVISIONS ON THE CONSULTANT PLANS AS SHOWN ON PRINTS RECEIVED 12-12-73.

INLETS

Code	Roadway	Station	℄ Elev.	Type	Depth
(MP)	I-240	394+50 (℄ Med)	235.18	37	1.92

STORM SEWER & CULVERT PIPE

From Code	From Inv Elev	To Code	To Inv Elev	Grade %	C.P.C. Dia	C.M.P. Dia	Length Ft.
(MP)	233.60	(MP)	220.00	(1)	15"		144

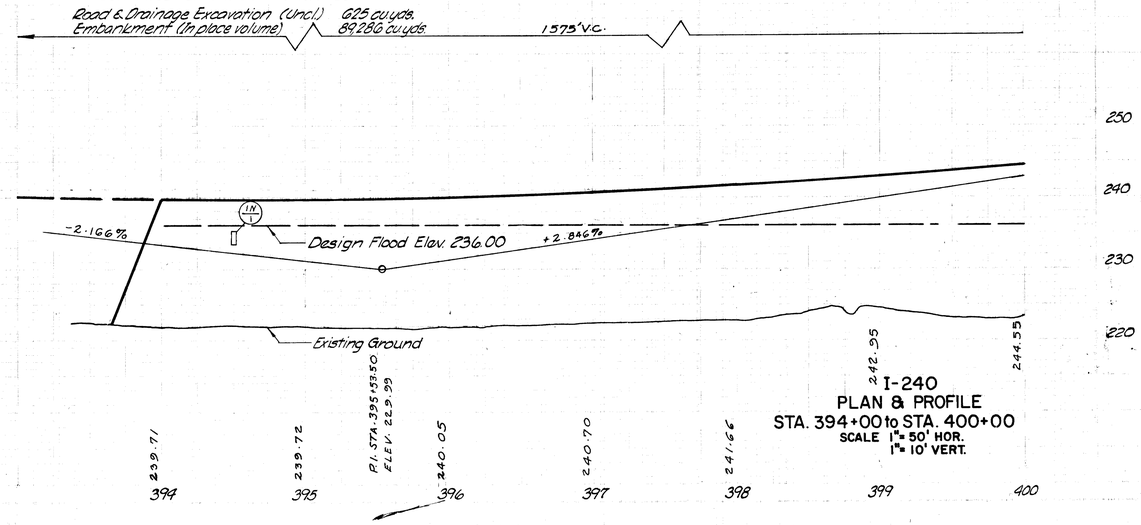
(1) For Pipe grades in embankment sections (Type B) See Sheet No. 2-2

CONCRETE HEADWALLS

Code	Roadway	Station	Type
(MP)	I-240	394+50 (1 Left)	A-15-4

ESTIMATED EARTHWORK QUANTITIES

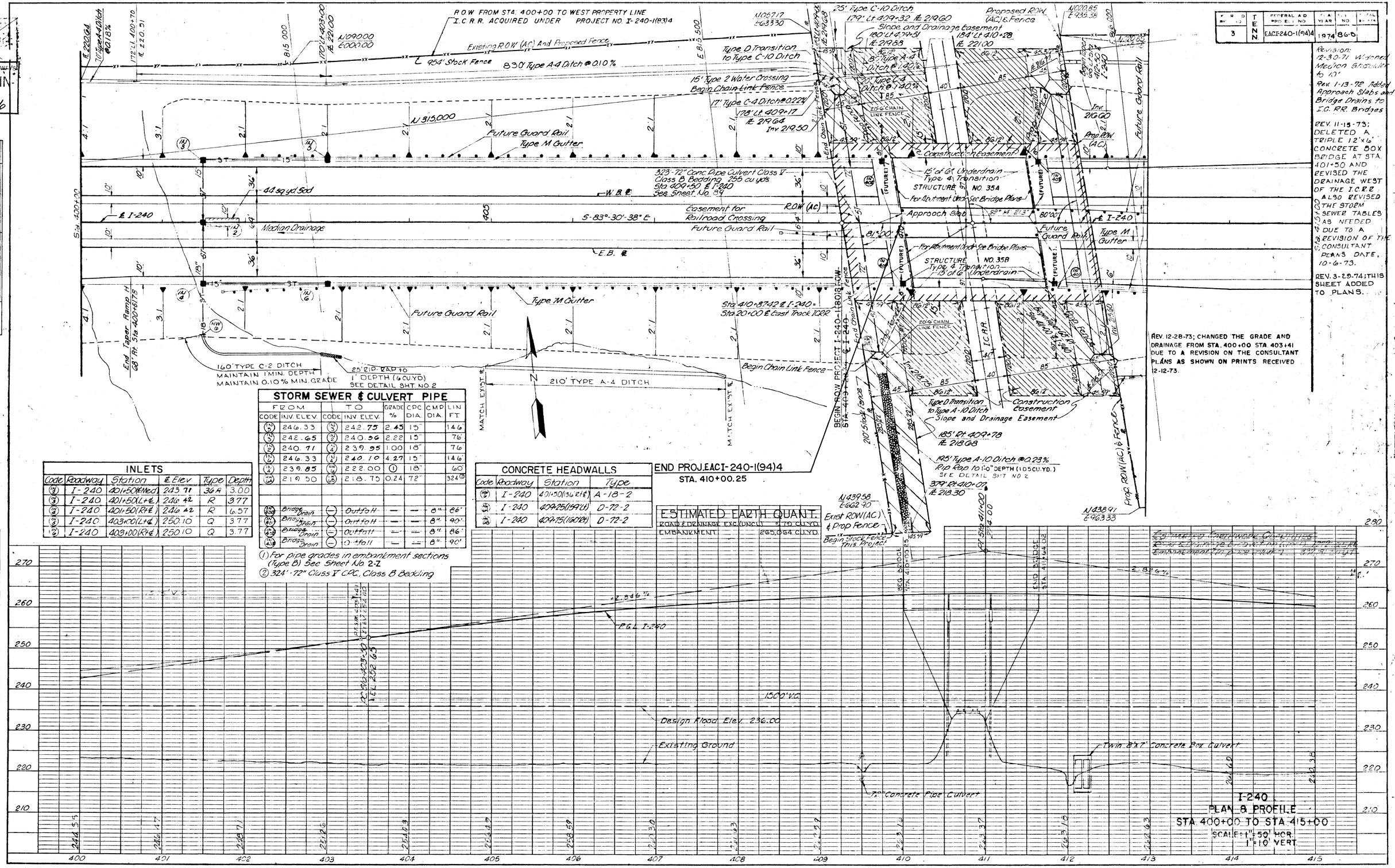
Road & Drainage Excavation (Uncl) 625 cu.yds.
Embankment (In place volume) 89,286 cu.yds.



I-240
PLAN & PROFILE
STA. 394+00 to STA. 400+00
SCALE 1" = 50' HOR.
1" = 10' VERT.

TENN. STATE HIGHWAYS
Plans Divn. File No. 3-16

F.R.D. No.	STATE	FEDERAL AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
3	TENN.	EACI-240-1(94)4	1974	86-D	



STORM SEWER & CULVERT PIPE

FROM CODE	FROM INV. ELEV.	TO CODE	TO INV. ELEV.	GRADE %	CPC DIA.	CMP DIA.	LIN FT
(12) 6	246.33	(12) 5	242.75	2.45	15"		146'
(5)	242.65	(12) 2	240.56	2.22	15"		76'
(12) 2	240.71	(12) 1	239.95	1.00	18"		76'
(12) 6	246.33	(12) 1	240.10	4.27	15"		146'
(12) 1	239.85	(1) 6	222.00	(1)	18"		60'
(1) 5	219.50	(1) 5	218.75	0.24	72"		324' (2)
(1) 2	Bridge Drain	(1)	Outfall	—	—	8"	86'
(1) 3	Bridge Drain	(1)	Outfall	—	—	8"	90'
(1) 4	Bridge Drain	(1)	Outfall	—	—	8"	86'
(1) 5	Bridge Drain	(1)	Outfall	—	—	8"	90'

(1) For pipe grades in embankment sections (Type B) See Sheet No. 2-Z
(2) 324'-72" Class V CPC, Class B Bedding

INLETS

Code	Roadway	Station	℄ Elev	Type	Depth
(12) 4	I-240	401+50(℄ Med)	243.71	36 A	3.00
(12) 3	I-240	401+50(L+℄)	246.42	R	3.77
(12) 2	I-240	401+50(R+℄)	246.42	R	6.57
(12) 1	I-240	403+00(L+℄)	250.10	Q	3.77
(12) 6	I-240	403+00(R+℄)	250.10	Q	3.77

CONCRETE HEADWALLS

Code	Roadway	Station	Type
(12) 7	I-240	401+50(136' R+℄)	A-18-2
(12) 8	I-240	409+25(159' L+℄)	D-72-2
(12) 9	I-240	409+75(160' R+℄)	D-72-2

ESTIMATED EARTH QUANT.

ROAD & DRAINAGE EXC. (UNCL)	479 CU.YD.
EMBANKMENT	265,064 CU.YD.

PLAN: SURVEYED, PLOTTED, ALIGNMENT CHECKED, RT. OF WAY CHECKED, NOTE BOOK, NO., BY, DATE

PROFILE: SURVEYED, PLOTTED, GRADES CHECKED, B.M. NOTED, STRUCTURE DETAIL NOTED, NOTE BOOK, NO., BY, DATE

K+E PLATE 1, PLAN-PROFILE KEUFFEL & ESSER CO.

TENN. STATE HIGHWAYS
Div. | File No. 3/6

MICROFILMED

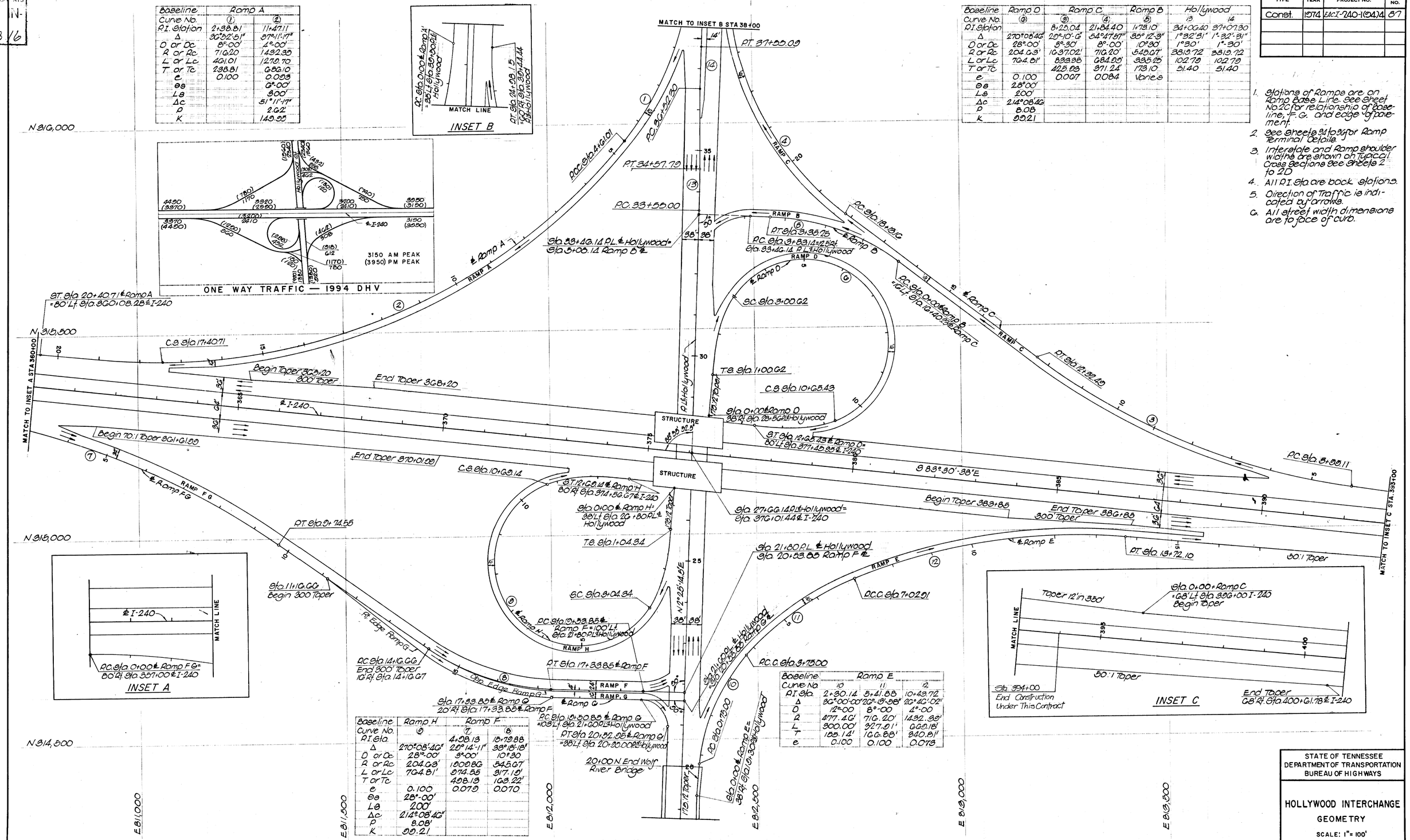
TYPE	YEAR	PROJECT NO.	SHEET NO.
Const.	1974	IMC I-240-1(104)A	87

Baseline	Ramp A	
Curve No.	1	2
P.I. Station	2+38.81	11+47.11
Δ	36°02'51"	57°11'17"
D or Dc	8°00'	4°00'
R or Rc	716.20	1432.39
L or Lc	401.01	1210.70
T or Tc	208.81	668.10
e	0.100	0.093
θs		6°00'
Ls		300'
Δc		51°11'17"
P		2.62'
K		149.95

INSET B

Baseline	Ramp D	Ramp C		Ramp B	Hollywood	
Curve No.	6	3	4	5	13	14
P.I. Station		8+25.04	21+84.40	1+78.10	34+06.40	37+07.30
Δ	270°08'46"	20°10'06"	64°47'57"	35°12'31"	1°32'51"	1°32'31"
D or Dc	28°00'	8°30'	8°00'	10°30'	1°30'	1°30'
R or Rc	204.68'	1637.02'	716.20'	545.67'	3819.72	3819.72
L or Lc	964.81'	839.88	1084.99	335.25	102.79	102.79
T or Tc		425.88	871.24'	173.10	51.40	51.40
e	0.100	0.067	0.084	Varies		
θs	28°00'					
Ls	200'					
Δc	214°08'46"					
P	8.08'					
K	00.21					

1. Stations of Ramps are on Ramp Base Line. See Sheet No. 20 for relationship of baseline, F.G. and edge of pavement.
2. See sheets 31 to 36 for Ramp Terminal Details.
3. Interstate and Ramp shoulder widths are shown on Typical Cross Sections See sheets 2 to 20
4. All P.I. Sta. are back stations.
5. Direction of Traffic is indicated by arrows.
6. All street width dimensions are to face of curb.



Baseline	Ramp H	Ramp F	
Curve No.	6	7	8
P.I. Sta.		4+08.13	18+79.88
Δ	270°08'46"	20°14'11"	38°18'18"
D or Dc	28°00'	8°00'	10°30'
R or Rc	204.68'	1000.86	545.67'
L or Lc	964.81'	874.55	367.19'
T or Tc		408.13	188.22'
e	0.100	0.070	0.070
θs	28°00'		
Ls	200'		
Δc	214°08'46"		
P	8.08'		
K	00.21		

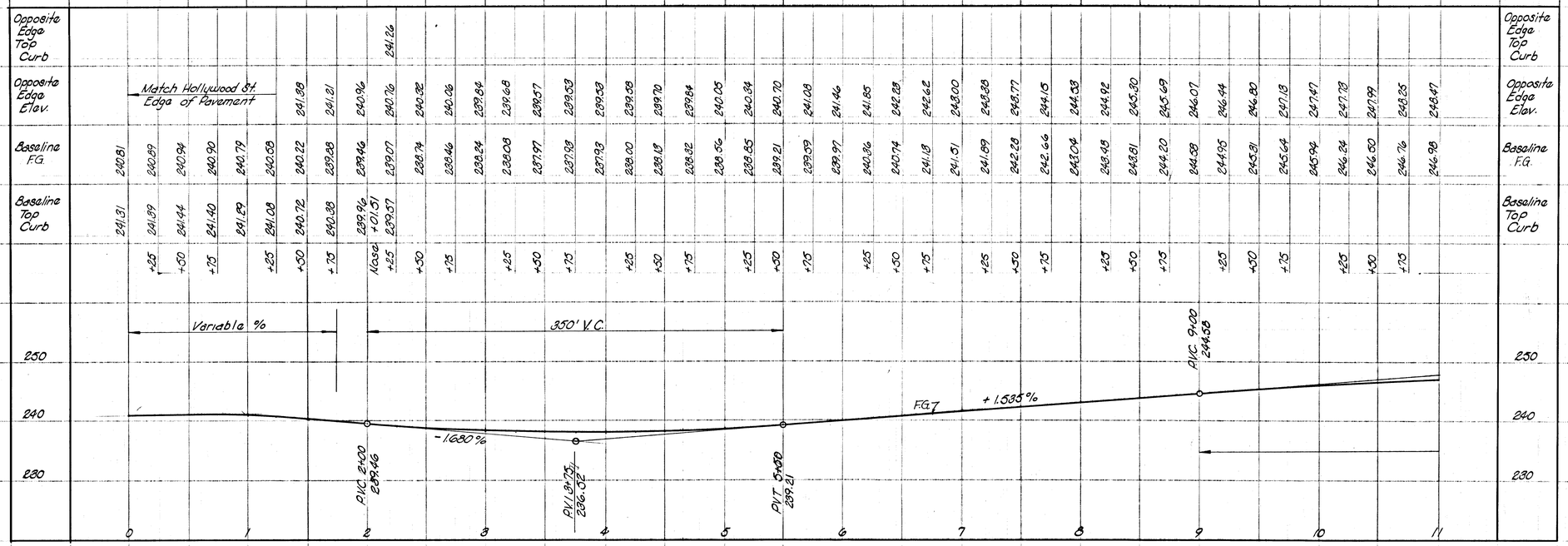
Baseline	Ramp E		
Curve No.	10	11	12
P.I. Sta.	2+30.14	5+41.88	10+49.72
Δ	36°00'00"	26°18'58"	26°46'02"
D	12°00'	8°00'	4°00'
R	477.46'	716.20'	1432.39'
L	300.00'	327.91'	668.18'
T	155.14'	166.88'	340.81'
e	0.100	0.100	0.073

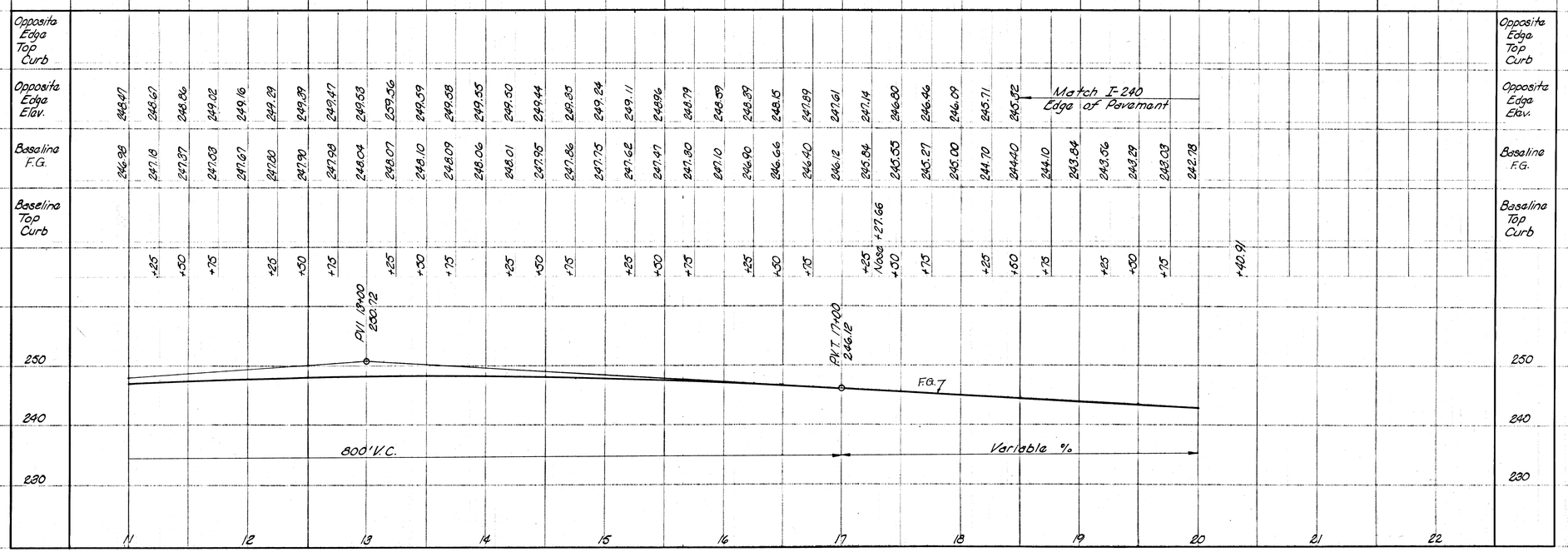
STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
BUREAU OF HIGHWAYS

HOLLYWOOD INTERCHANGE
GEOMETRY

SCALE: 1" = 100'

TYPE	YEAR	PROJECT NO	SHEET NO
Const.	1974	FACI-240-1(04)	4 B8





STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
BUREAU OF HIGHWAYS

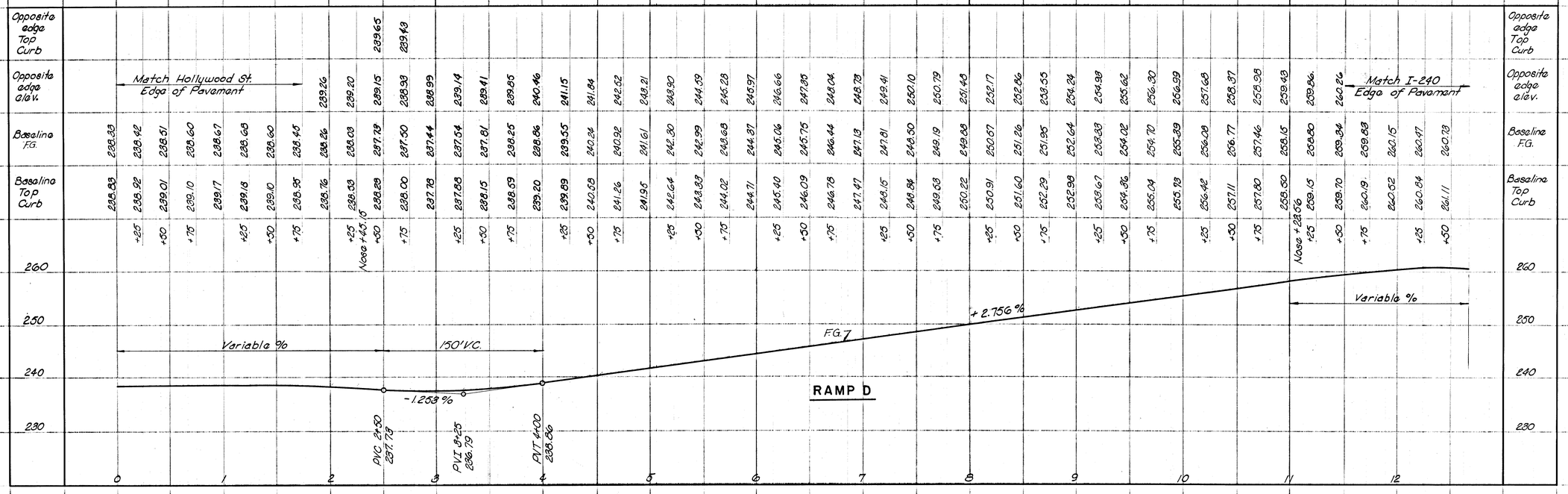
HOLLYWOOD STREET INTERCHANGE PROFILE

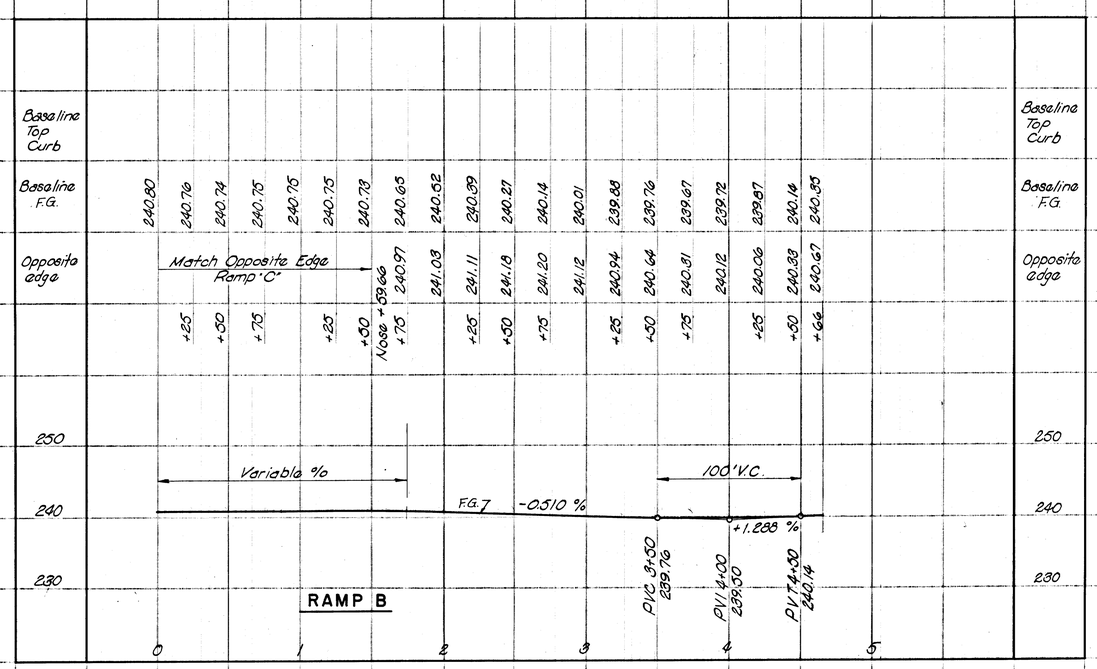
RAMP A PROFILE

HOR. SCALE 1" = 50'
VERT. SCALE 1" = 10'

TENN. STATE HIGHWAYS
Plans Divn. File No. IN-316

TYPE	YEAR	PROJECT NO.	SHEET NO.
Const.	1974	ACI-240-1(104)	89





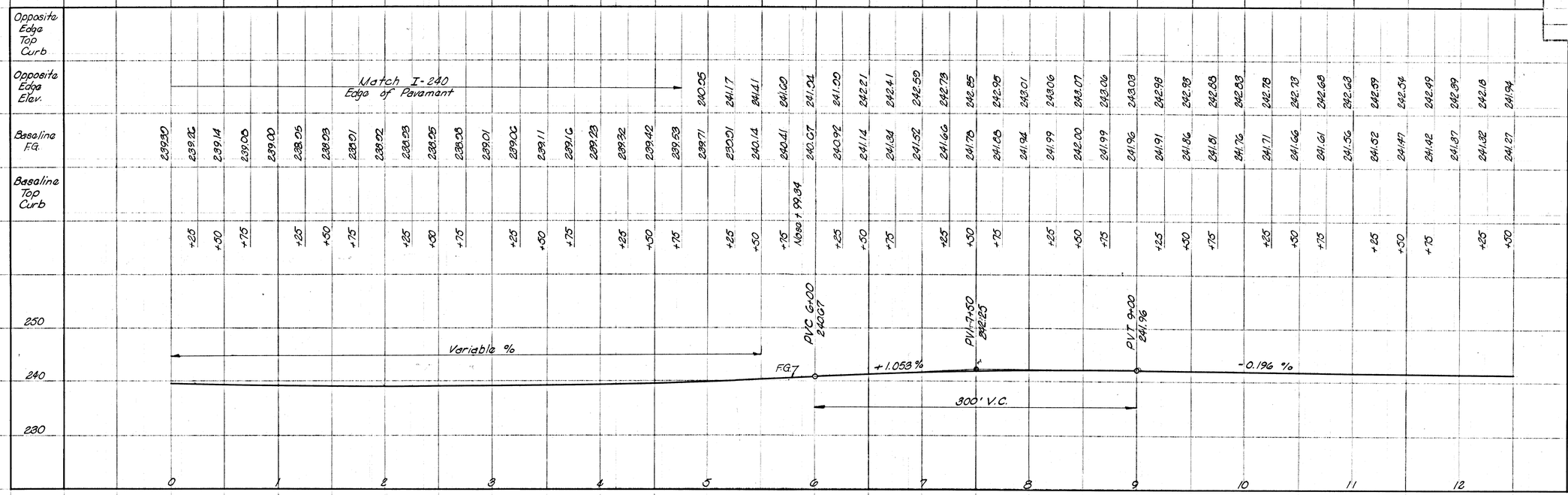
STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
BUREAU OF HIGHWAYS

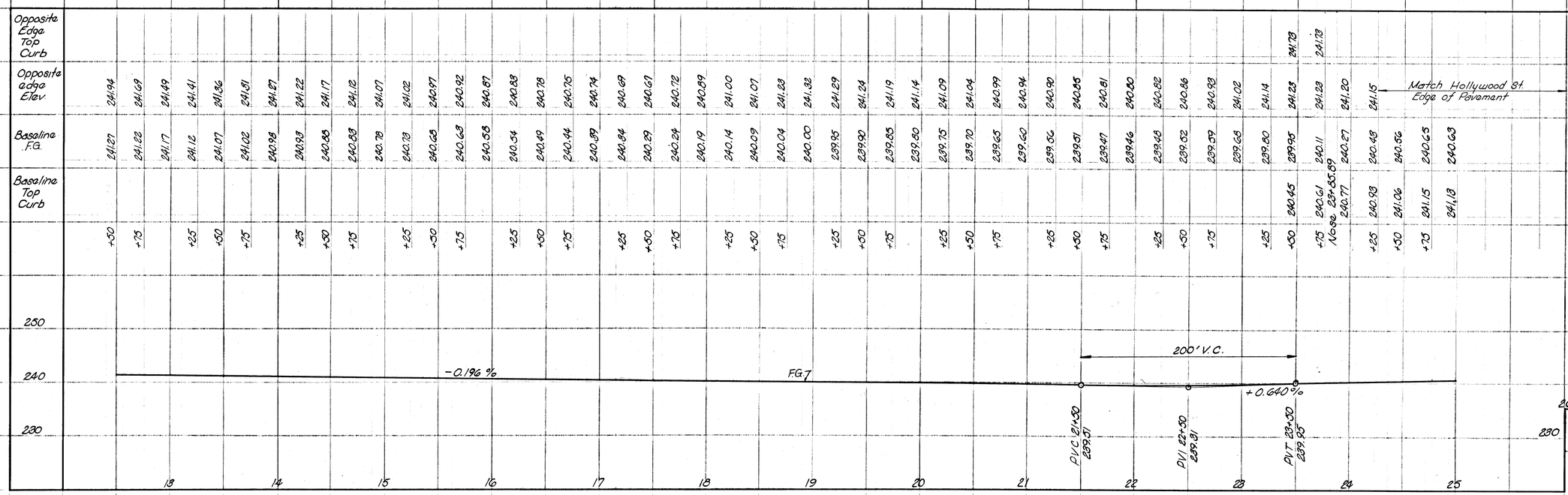
HOLLYWOOD STREET INTERCHANGE PROFILE

RAMPS D&B PROFILES

HOR. SCALE 1"=50'
VERT. SCALE 1"=10'

TYPE	YEAR	PROJECT NO.	SHEET NO.
Const	1974	IM-I-240-1(DA)A	20





STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
BUREAU OF HIGHWAYS

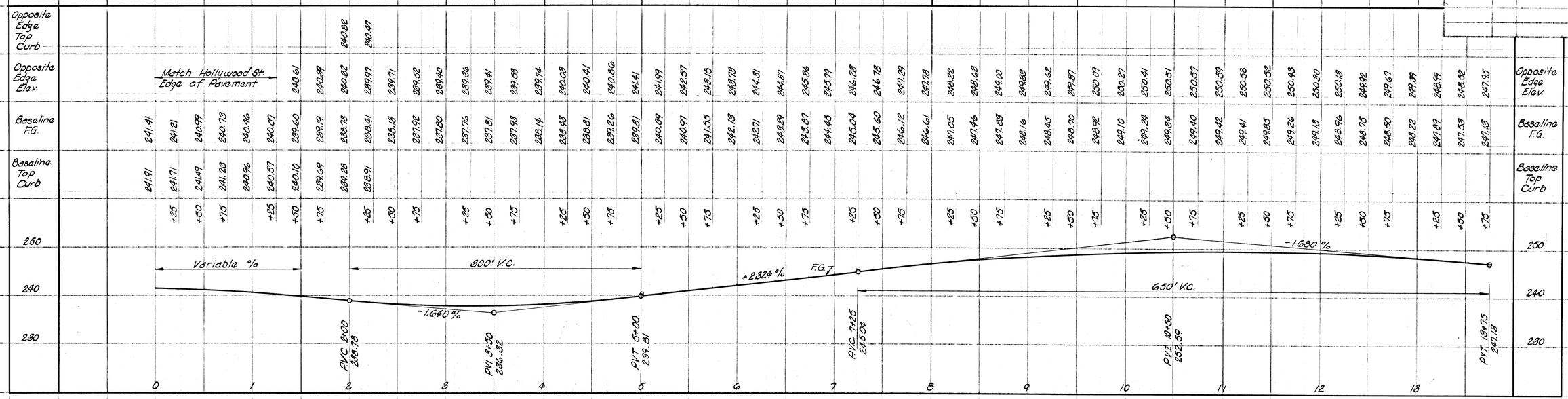
HOLLYWOOD STREET INTERCHANGE PROFILE

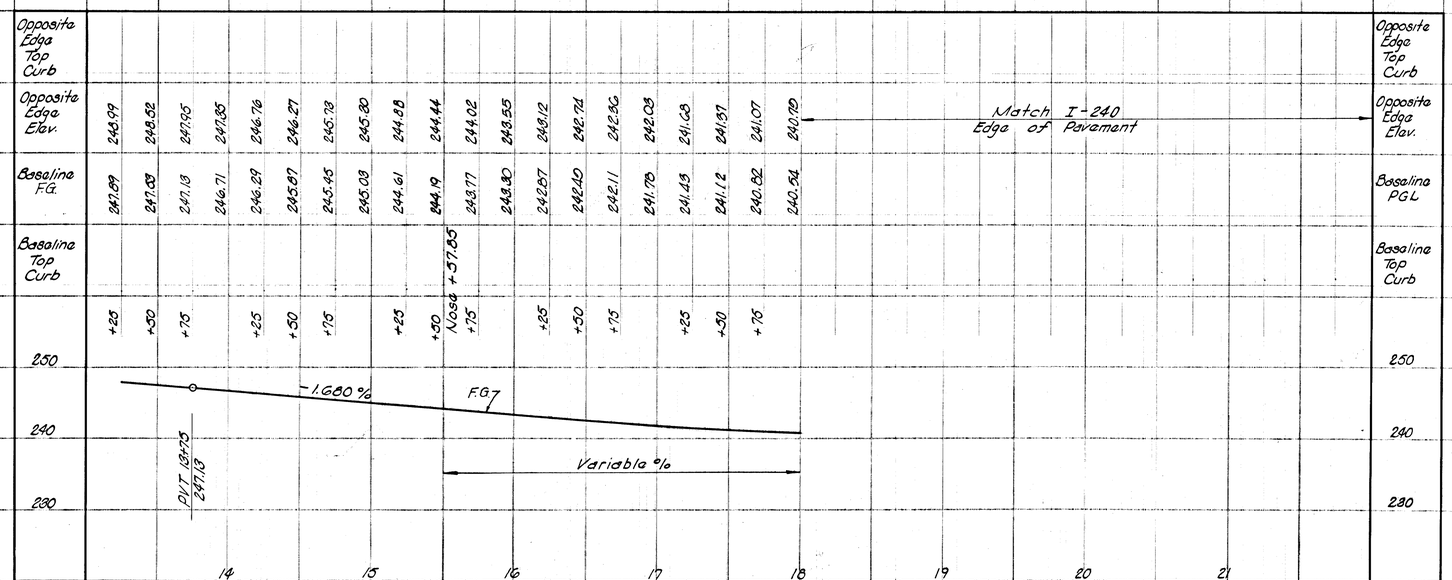
RAMP C PROFILE

HOR. SCALE 1" = 50'
VERT. SCALE 1" = 10'

TENN. STATE HIGHWAYS
Plans Divn. | File No. IN-316

TYPE	YEAR	PROJECT NO.	SHEET NO.
Const	1974	FACT-240-1(24)	21





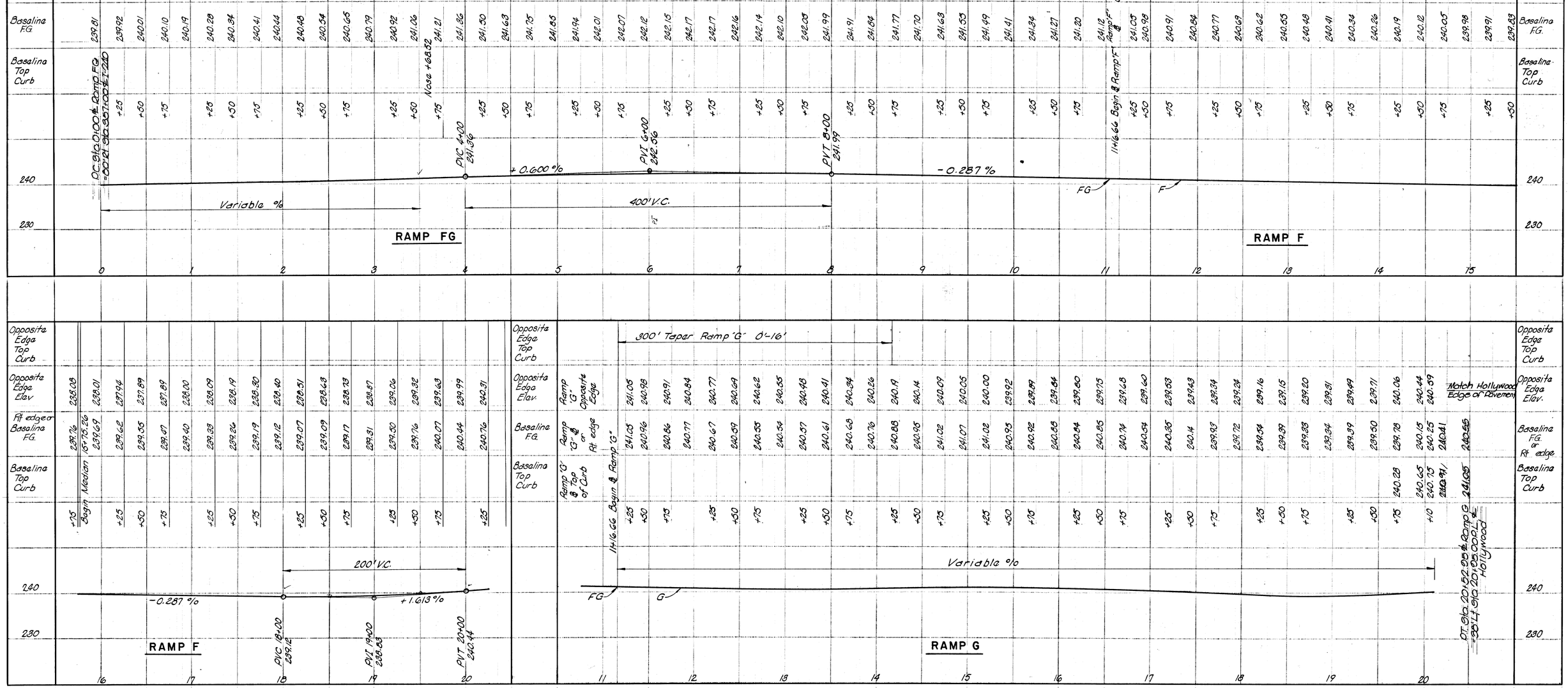
STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
BUREAU OF HIGHWAYS

HOLLYWOOD STREET INTERCHANGE PROFILE

RAMP E PROFILE

HOR. SCALE 1" = 50'
VERT. SCALE 1" = 10'

TYPE	YEAR	PROJECT NO.	SHEET NO.
Const.	1974	IAC-I-240-1(34)1	82



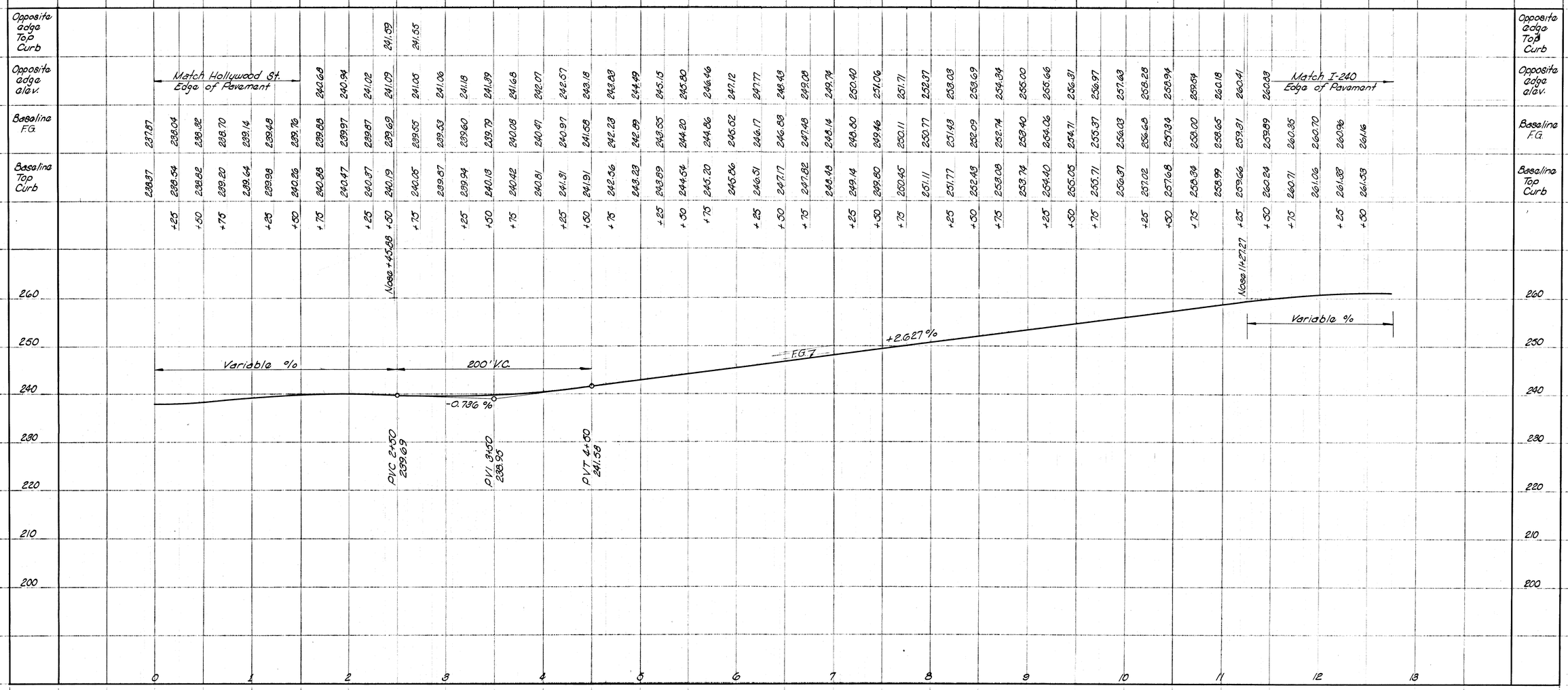
STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
BUREAU OF HIGHWAYS

HOLLYWOOD STREET INTERCHANGE PROFILE

RAMPS FG, F & G PROFILES

HOR. SCALE 1" = 50'
VERT. SCALE 1" = 10'

TYPE	YEAR	PROJECT NO	SHEET NO
Const.	1974	IACI-240-1(24)A	23



STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
BUREAU OF HIGHWAYS

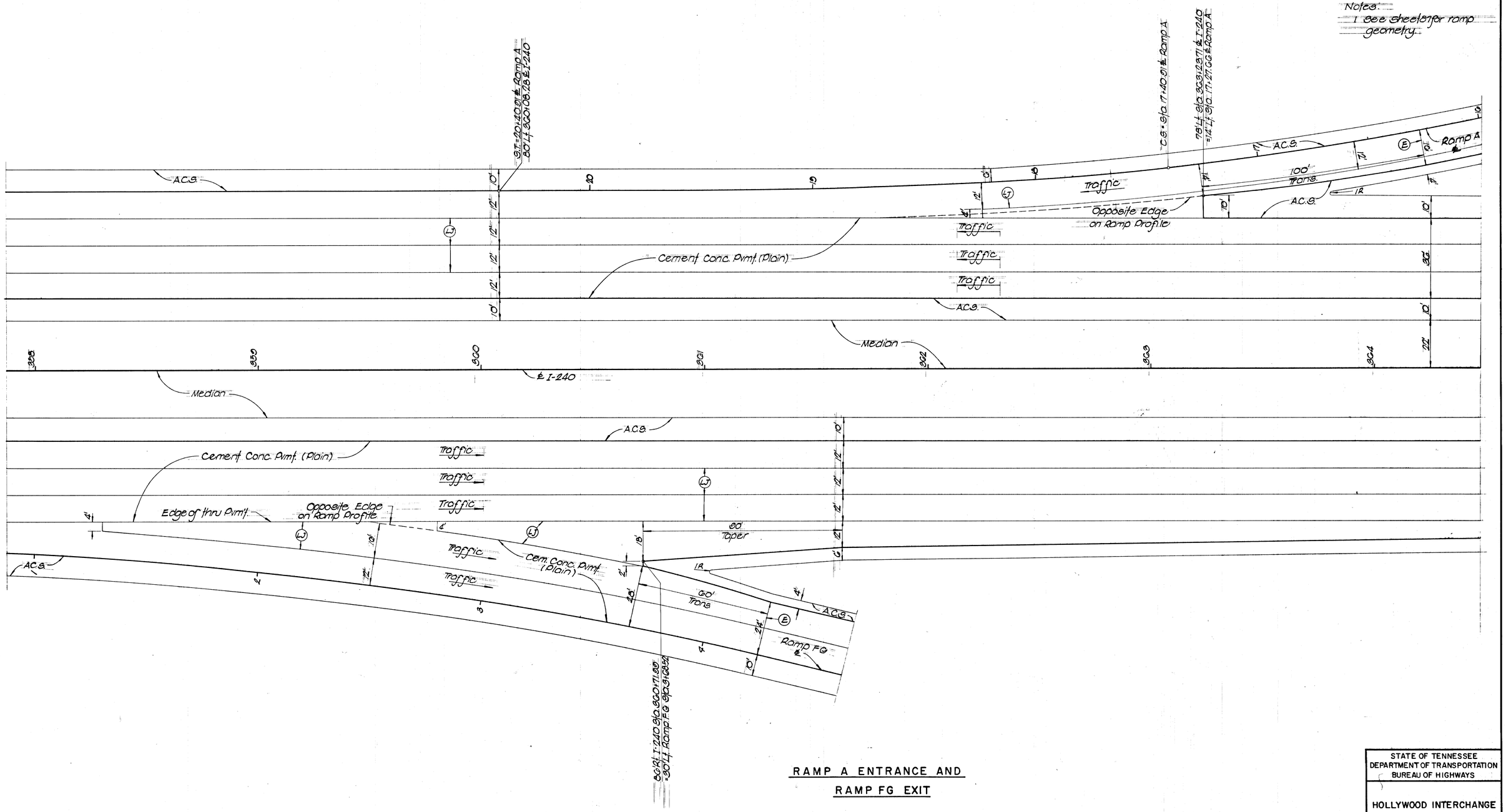
HOLLYWOOD STREET INTERCHANGE PROFILE

RAMP H PROFILE

HOR. SCALE 1" = 50'
VERT. SCALE 1" = 10'

TYPE	YEAR	PROJECT NO.	SHEET NO.
Const.	1974	IMCI-240-1(204)4	94

Notes:
1 See sheet 91 for ramp geometry.



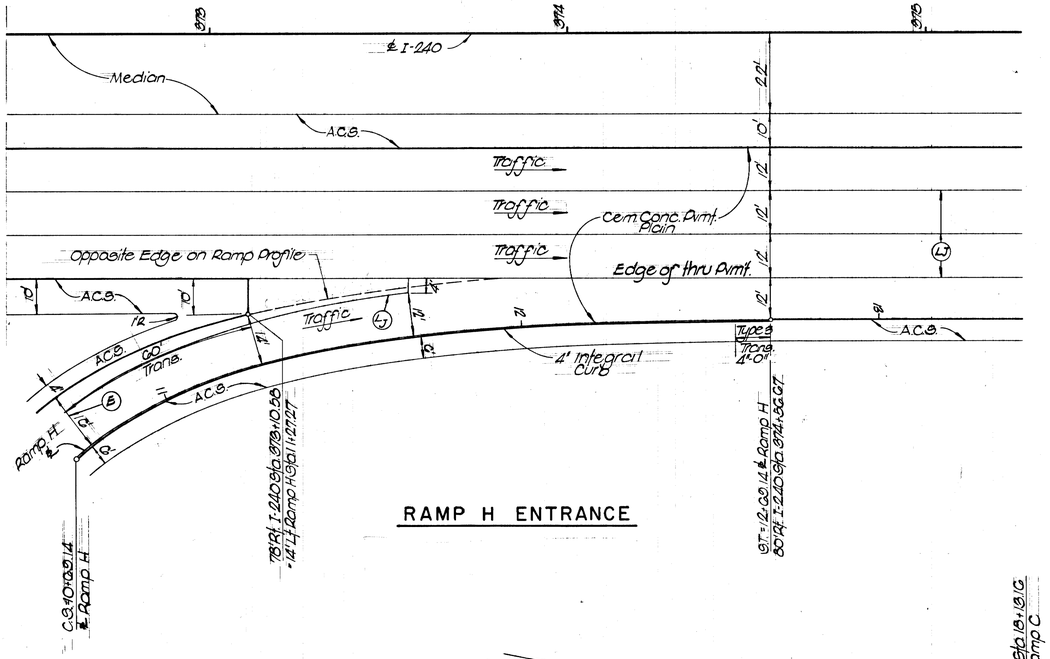
RAMP A ENTRANCE AND
RAMP FG EXIT

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
BUREAU OF HIGHWAYS

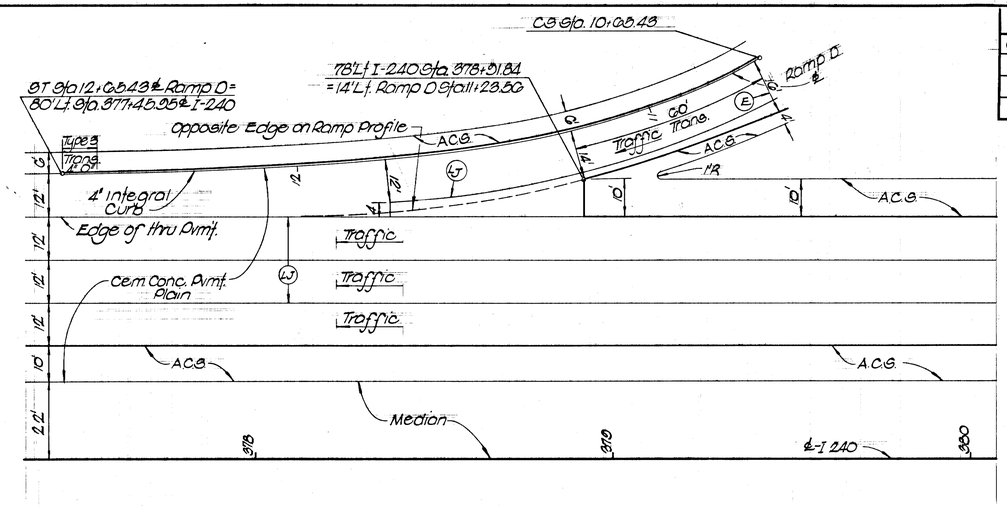
HOLLYWOOD INTERCHANGE
RAMP TERMINAL DETAILS

SCALE: 1" = 20'

TYPE	YEAR	PROJECT NO.	SHEET NO.
Const.	1974	℄ I-240-1(104) 4	95

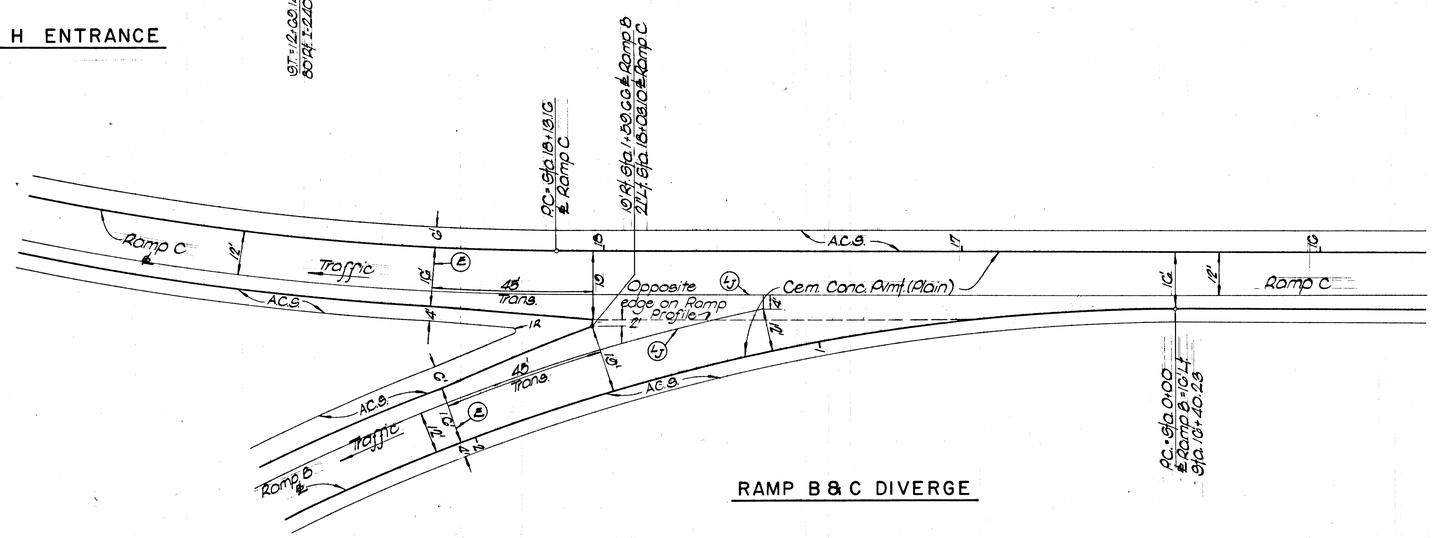


RAMP H ENTRANCE



RAMP D ENTRANCE

Notes:
1. See Sheet 87 for ramp geometry



RAMP B & C DIVERGE

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
BUREAU OF HIGHWAYS

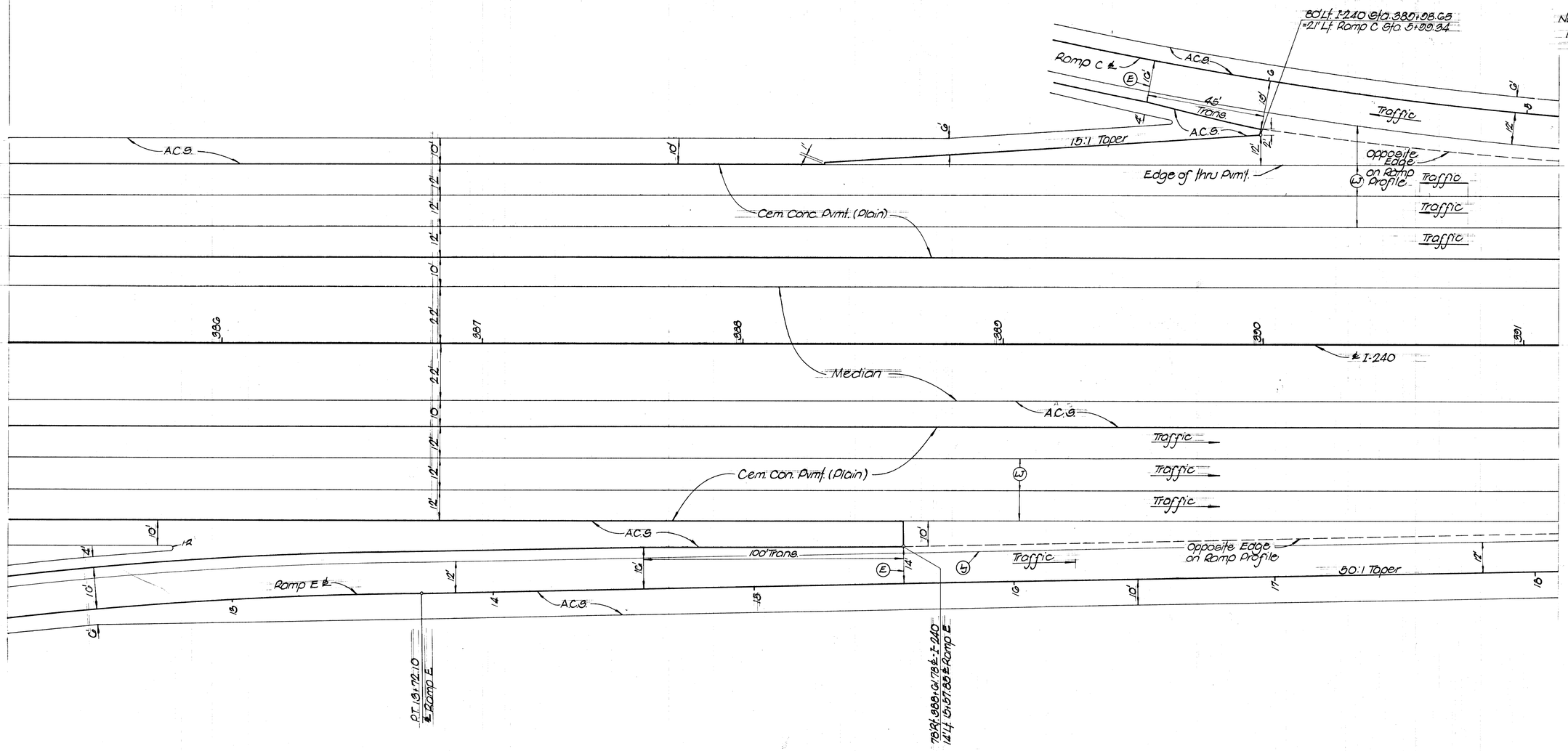
HOLLYWOOD INTERCHANGE
RAMP TERMINAL DETAILS

SCALE: 1" = 20'

TENN. STATE H.
Plans Divn. | File No. 3/6 | IN-

TYPE	YEAR	PROJECT NO.	SHEET NO.
Const.	1974	BMC I-240-1(104)	06

Notes:
1. See Sheet 07 for ramp geometry.



RAMP C EXIT AND
RAMP E ENTRANCE

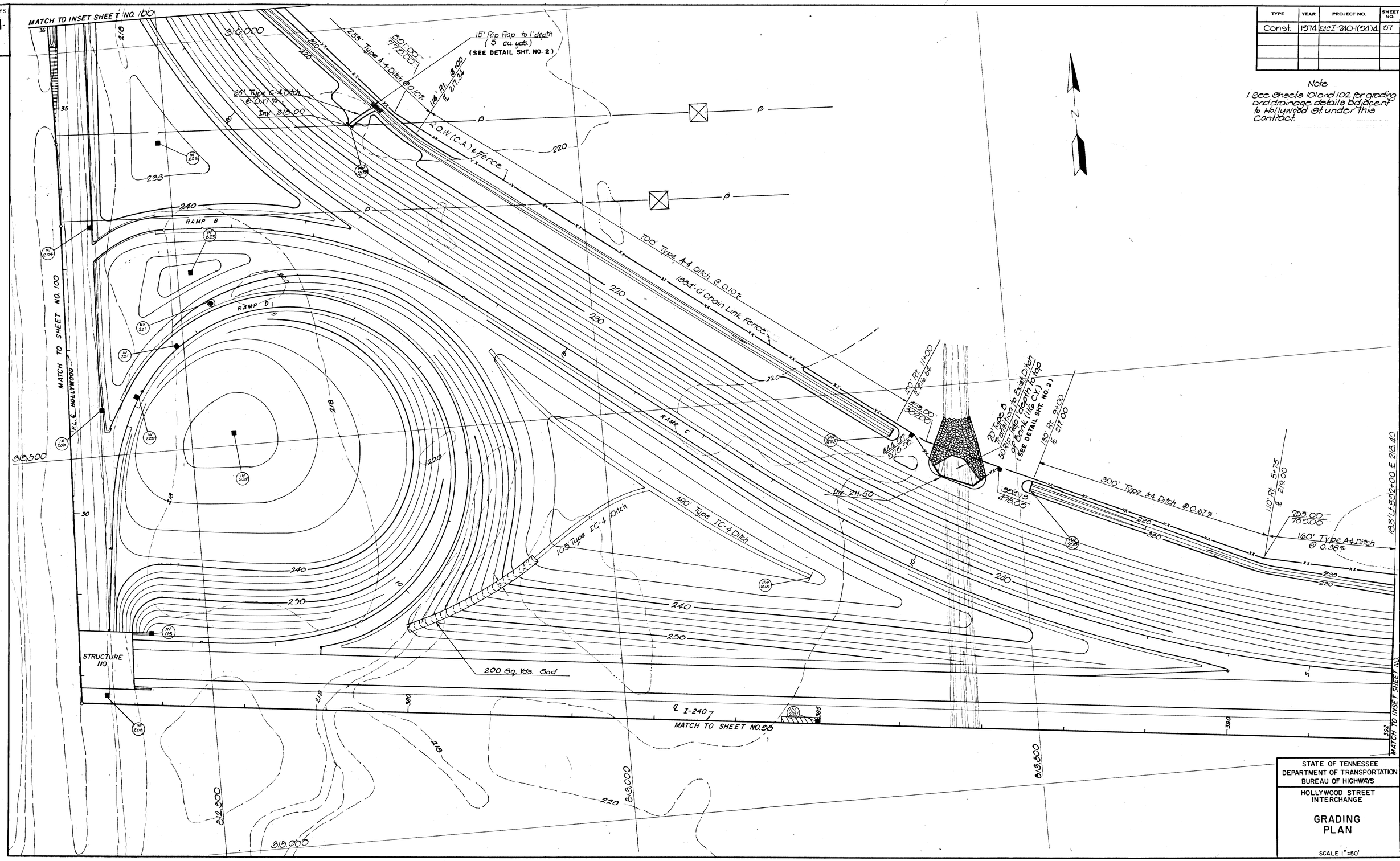
STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
BUREAU OF HIGHWAYS

HOLLYWOOD INTERCHANGE
RAMP TERMINAL DETAILS
SCALE: 1" = 20'

TENN. STATE HIGHWAYS
Plans File IN-
Divn. No. 316

TYPE	YEAR	PROJECT NO.	SHEET NO.
Const.	1974	EMCI-240-1(04)4	07

Note
1. See sheets 101 and 102 for grading and drainage details adjacent to Hollywood St. under this Contract.



STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
BUREAU OF HIGHWAYS

HOLLYWOOD STREET INTERCHANGE

GRADING PLAN

SCALE 1"=50'

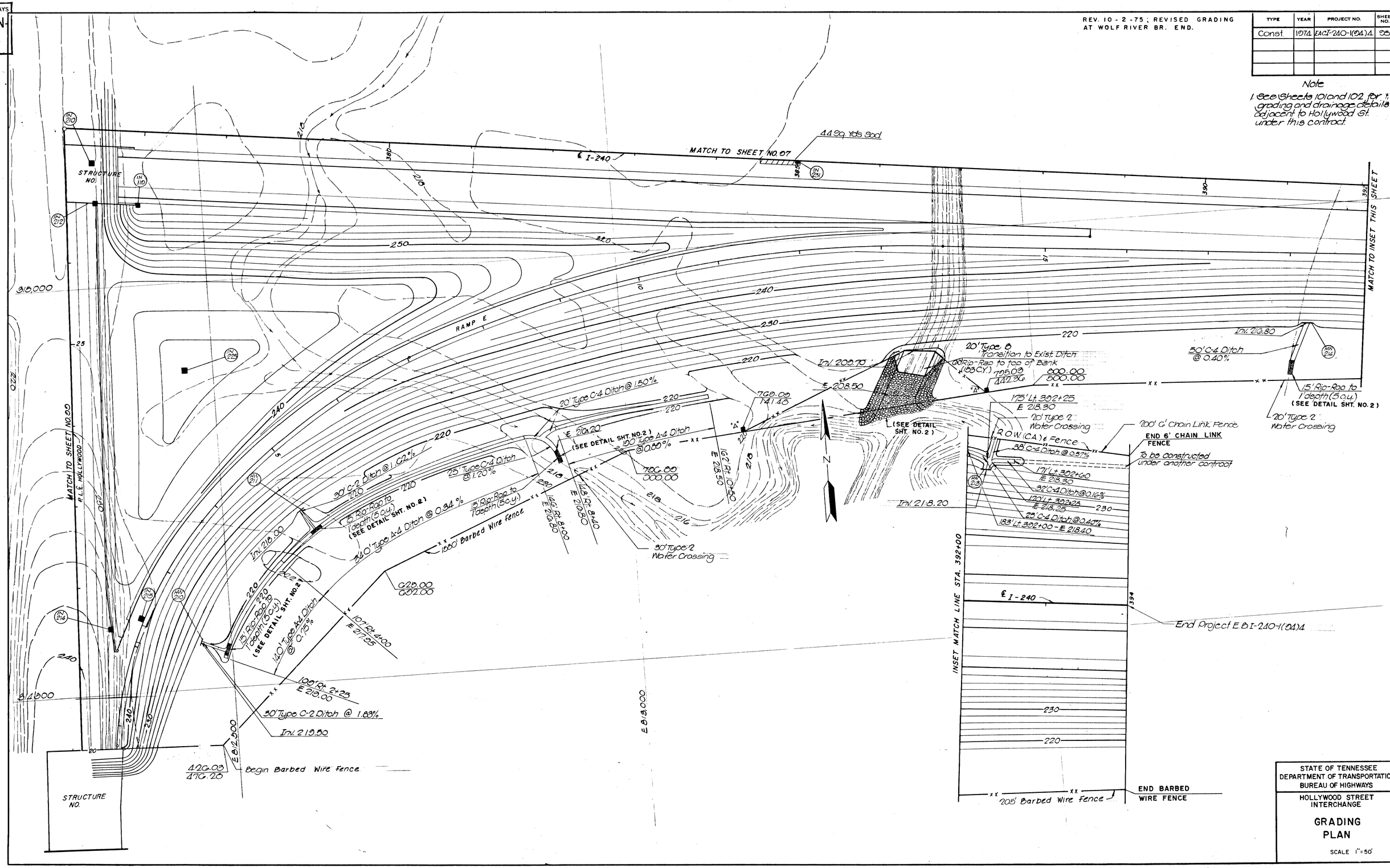
TENN. STATE HIGHWAYS
Plans Divn. | File No. IN-316

REV. 10-2-75; REVISED GRADING AT WOLF RIVER BR. END.

TYPE	YEAR	PROJECT NO.	SHEET NO.
Const.	1974	ACI-240-1(94)4	98

Note

1. See Sheets 101 and 102 for grading and drainage details adjacent to Hollywood St. under this contract.



STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
BUREAU OF HIGHWAYS

HOLLYWOOD STREET INTERCHANGE

GRADING PLAN

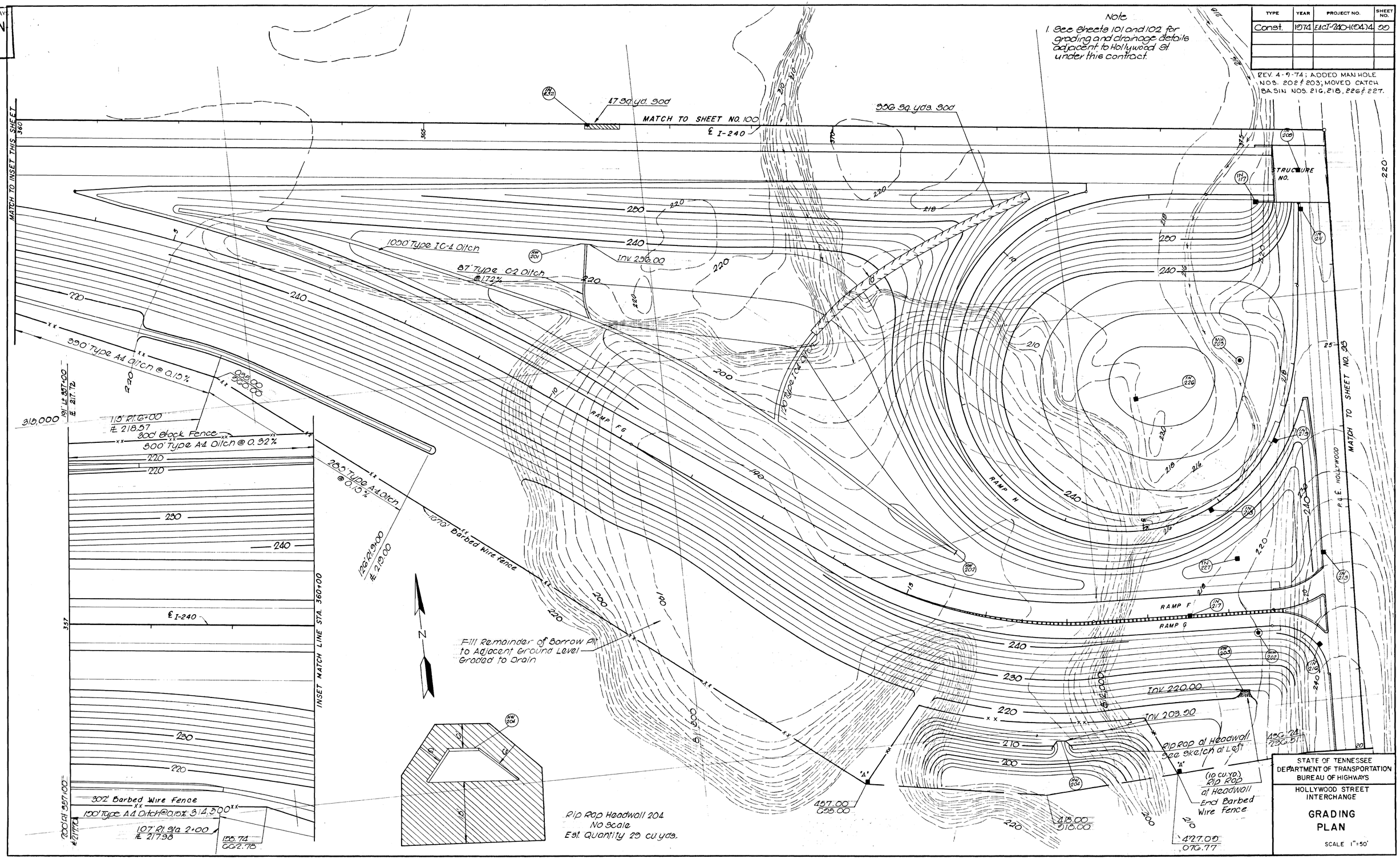
SCALE 1" = 50'

TENN. STATE HIGHWAYS
Plans Divn. File No. IN 316

TYPE	YEAR	PROJECT NO.	SHEET NO.
Const.	1974	EACT-240-1(104)4	20

REV. 4-9-74; ADDED MAN HOLE NOS. 202 & 203; MOVED CATCH BASIN NOS. 216, 218, 226 & 227.

Note
1. See Sheets 101 and 102 for grading and drainage details adjacent to Hollywood St. under this contract.



STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
BUREAU OF HIGHWAYS

HOLLYWOOD STREET INTERCHANGE

GRADING PLAN

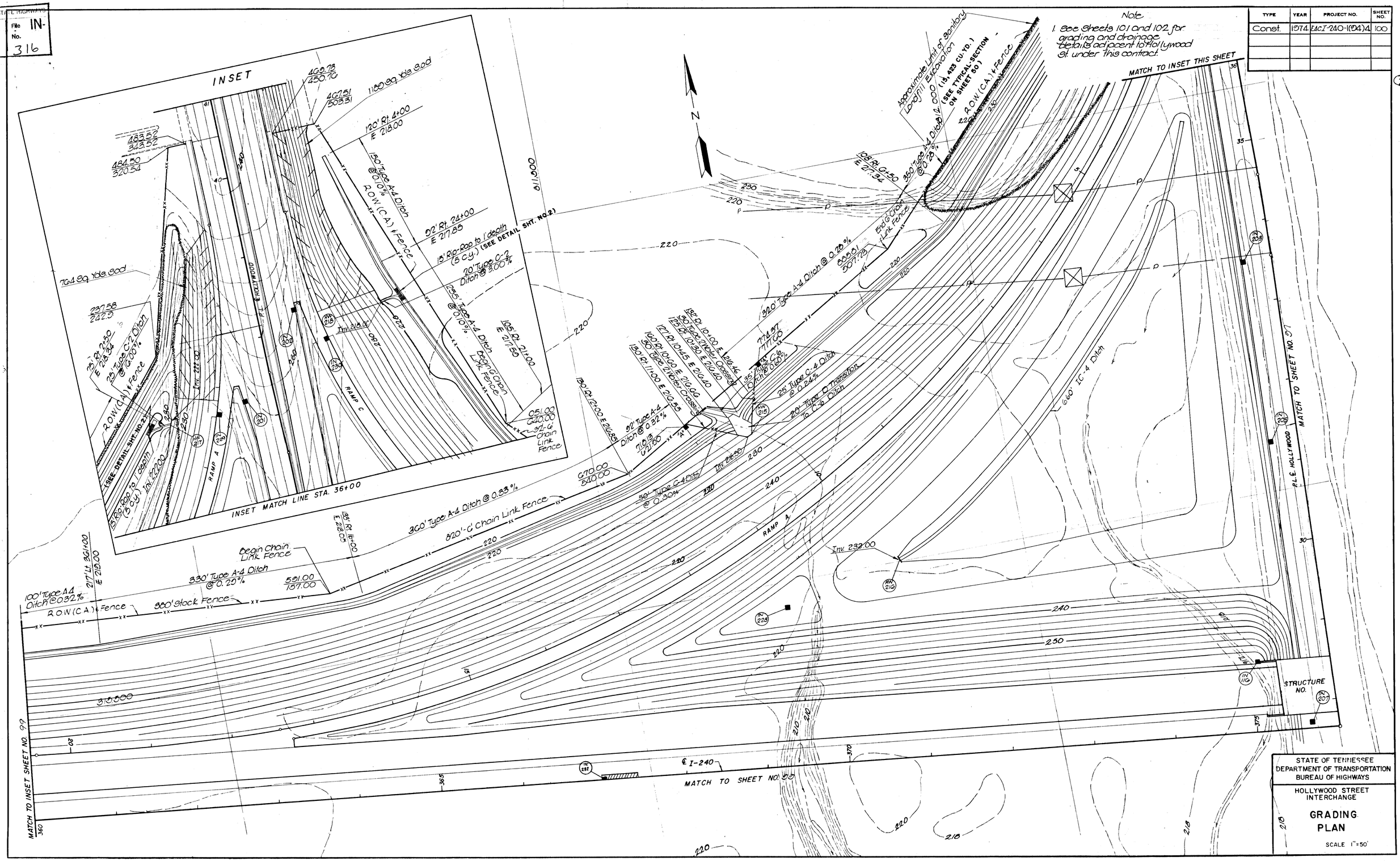
SCALE 1" = 50'

TENN. STATE HIGHWAYS
Plans Divn. File No. IN-316

MICROFILMED

TYPE	YEAR	PROJECT NO.	SHEET NO.
Const.	1974	IACI-240-1(24)4	100

Note
1. See Sheets 101 and 102 for grading and drainage details adjacent to Hollywood St. under this contract.



STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
BUREAU OF HIGHWAYS

HOLLYWOOD STREET INTERCHANGE

GRADING PLAN

SCALE 1"=50'

TENN. STATE HIGHWAYS
Plans Divn. | File No. IN-316

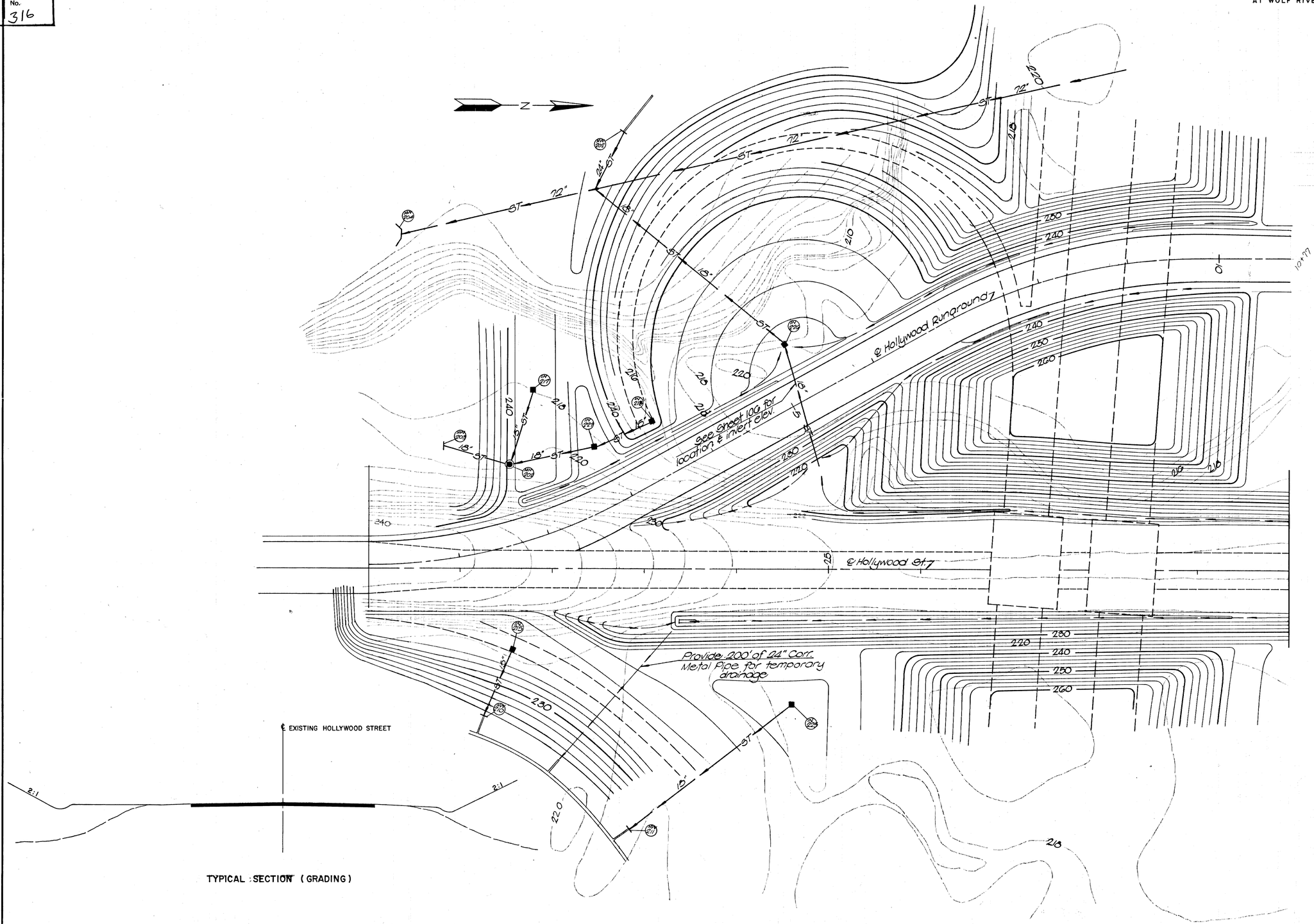
REV. 4-9-74; CHANGED (IN 216) TO (IN 219)

REV. 10-2-75; CHANGED GRADING AT WOLF RIVER BRIDGE END.

TYPE	YEAR	PROJECT NO.	SHEET NO.
Const.	1974	ECI-220-1(9A)-4	101

Note

1. See Sheet 108 for Hollywood Runaround Geometry.
2. See Sheet 105 & 106 for drainage details and quantities.
3. The contractor shall stock pile 168,000 cu. yds. of borrow material in a location to be determined by the Engineer this material is to be used to complete this grading of the interchange under a subsequent contract.



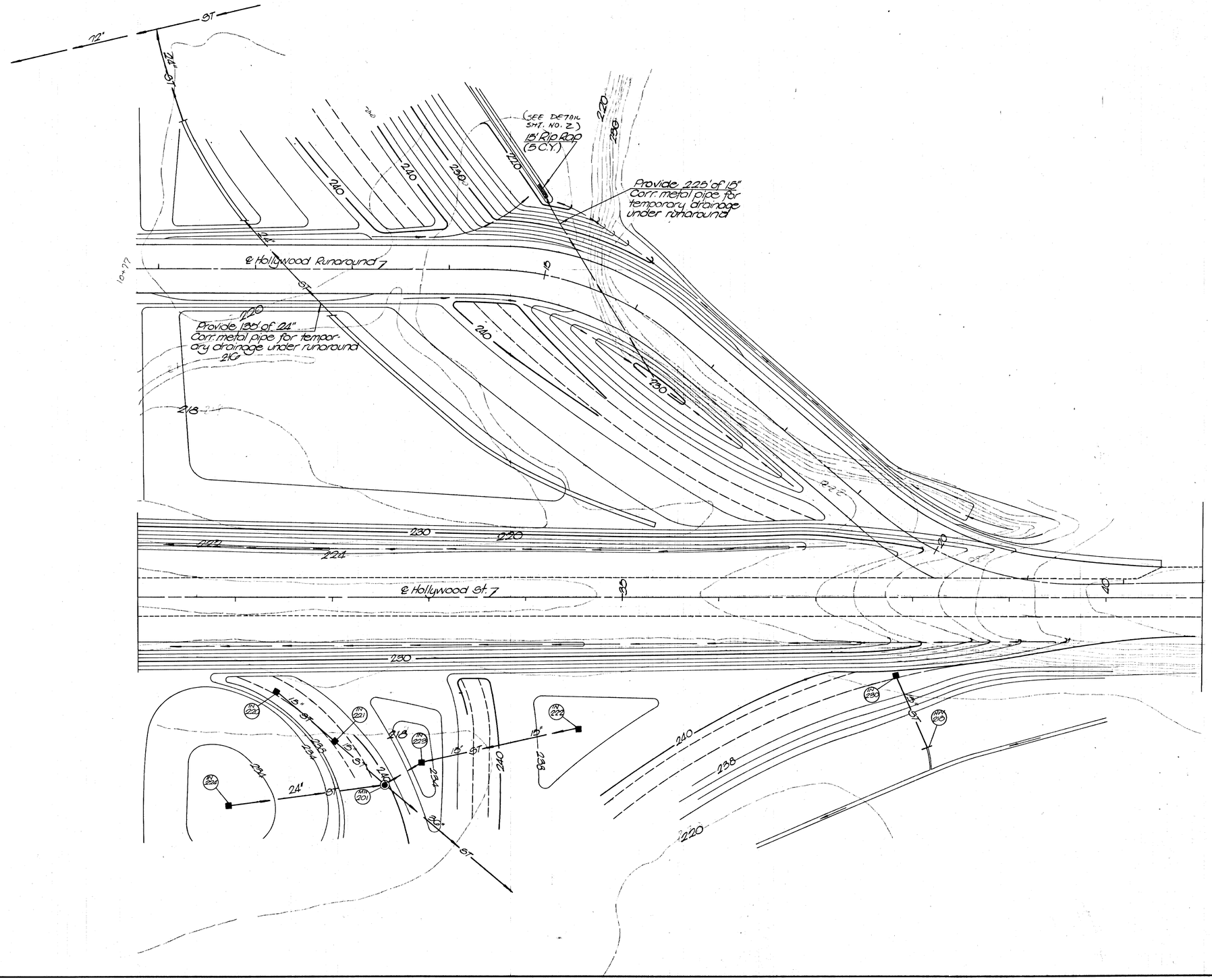
STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
BUREAU OF HIGHWAYS

GRADING AND DRAINAGE ADJACENT TO HOLLYWOOD STREET

SCALE: 1" = 50'

TYPE	YEAR	PROJECT NO.	SHEET NO.
Const.	1974	ACF-210-1(24)-4	102

Note
1. See Sheet 109 for Hollywood Runaround Geometry.....
2. Quantities for temporary drainage items are included on Sh. 107



STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
BUREAU OF HIGHWAYS

GRADING AND DRAINAGE
ADJACENT TO
HOLLYWOOD STREET

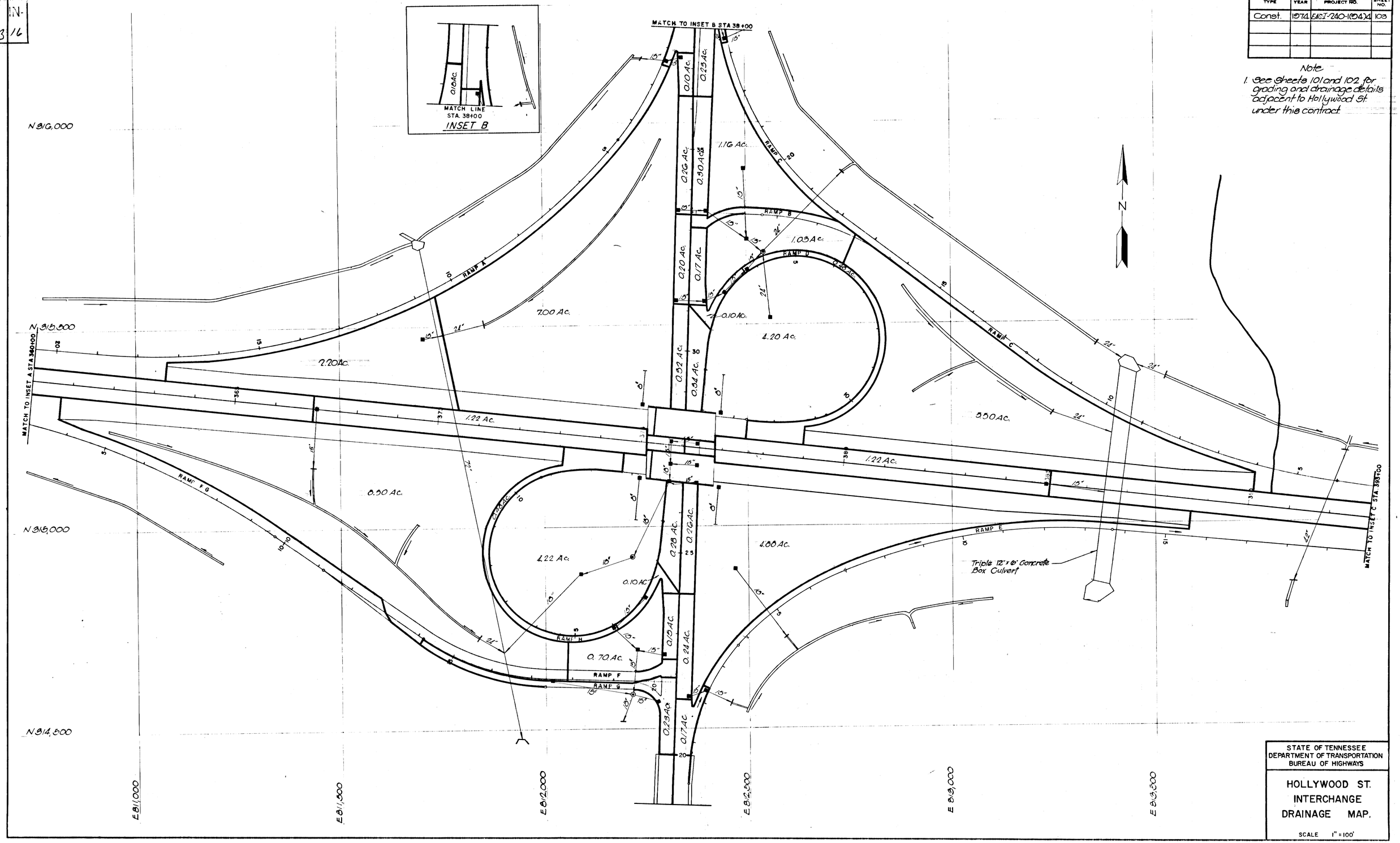
SCALE: 1" = 50'

TENN. STATE HIGHWAYS	
Plans Divn.	File No. IN-316

TYPE	YEAR	PROJECT NO.	SHEET NO.
Const.	1974	IAC I-240-1(104)4	103

Note.

1. See sheets 101 and 102 for grading and drainage details adjacent to Hollywood St. under this contract.



STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
BUREAU OF HIGHWAYS

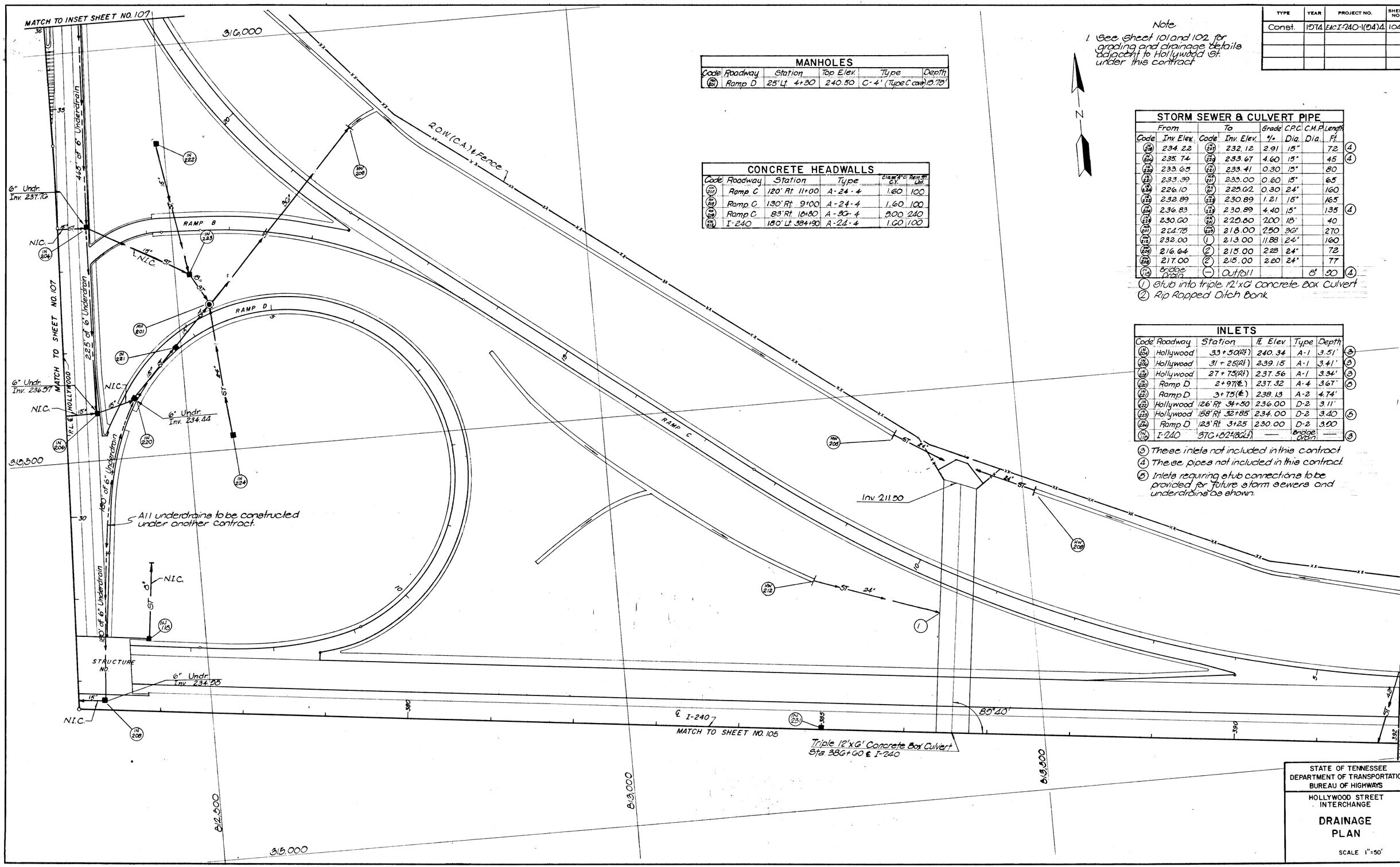
HOLLYWOOD ST.
INTERCHANGE
DRAINAGE MAP.

SCALE 1" = 100'

TYPE	YEAR	PROJECT NO.	SHEET NO.
Const.	1974	E&C I-240-1(104)4	104

Note

1. See Sheet 101 and 102 for grading and drainage details adjacent to Hollywood St. under this contract



MANHOLES

Code	Roadway	Station	Top Elev.	Type	Depth
MH 201	Ramp D	25' Lt. 4+30	240.50	C-4' (Type C cone)	15.75'

CONCRETE HEADWALLS

Code	Roadway	Station	Type	Dia. or 4"Ø C.V.	Rein. Wt. Lbs.
CHW 202	Ramp C	120' Rt 11+00	A-24-4	1.60	100
CHW 203	Ramp C	130' Rt 9+00	A-24-4	1.60	100
CHW 204	Ramp C	83' Rt 16+80	A-30-4	3.00	240
CHW 211	I-240	180' Lt. 384+90	A-24-4	1.60	100

STORM SEWER & CULVERT PIPE

From Code	From Inv. Elev.	To Code	To Inv. Elev.	Grade %	C.P.C. Dia.	C.M.P. Dia.	Length Ft.	
IN 206	234.22	IN 207	232.12	2.91	15"		72	4
IN 204	235.74	IN 205	233.67	4.60	15"		45	4
IN 230	233.65	IN 231	233.41	0.30	15"		80	
IN 231	233.39	IN 201	233.00	0.60	15"		65	
IN 224	226.10	IN 225	225.62	0.30	24"		160	
IN 228	232.89	IN 229	230.89	1.21	15"		165	
IN 206	236.83	IN 229	230.89	4.40	15"		135	4
IN 229	230.60	IN 210	229.80	2.00	18"		40	
IN 201	224.75	IN 209	218.00	2.50	36"		270	
IN 212	232.00	(1)	213.00	11.88	24"		160	
IN 209	216.64	(2)	215.00	2.28	24"		72	
IN 208	217.00	(2)	215.00	2.60	24"		77	
IN 110	Bridge Drain	—	Outfall			8"	90	4

(1) Stub into triple 12'x6' Concrete Box Culvert
(2) Rip Rapped Ditch Bank

INLETS

Code	Roadway	Station	Rt. Elev.	Type	Depth	
IN 204	Hollywood	33+50 (Rt)	240.34	A-1	3.51'	3
IN 206	Hollywood	31+25 (Rt)	239.15	A-1	3.41'	3
IN 208	Hollywood	27+75 (Rt)	237.56	A-1	3.34'	3
IN 220	Ramp D	2+97 (℄)	237.32	A-4	3.67'	3
IN 221	Ramp D	3+75 (℄)	238.13	A-2	4.74'	
IN 222	Hollywood	126' Rt 34+50	236.00	D-2	3.11'	
IN 223	Hollywood	158' Rt 32+85	234.00	D-2	3.40	5
IN 224	Ramp D	123' Rt 3+25	230.00	D-2	3.00	
IN 110	I-240	376+82 (BGL)	—	Bridge Drain	—	3

(3) These inlets not included in this contract
(4) These pipes not included in this contract.
(5) Inlets requiring stub connections to be provided for future storm sewers and underdrains as shown.

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
BUREAU OF HIGHWAYS

HOLLYWOOD STREET INTERCHANGE

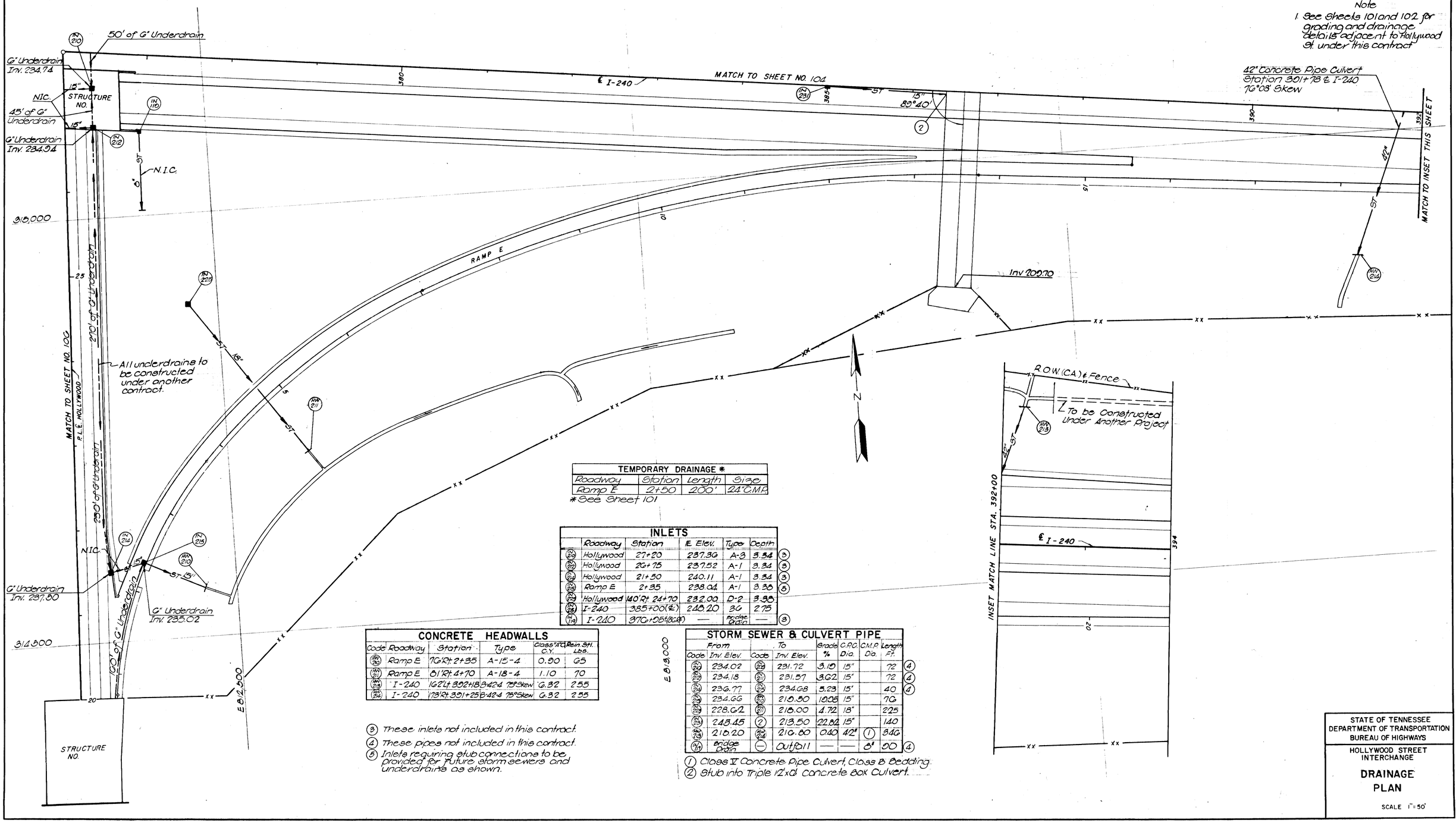
DRAINAGE PLAN

SCALE 1" = 50'

TENN. STATE HIGHWAYS
Plans Divn. File No. IN-316

TYPE	YEAR	PROJECT NO.	SHEET NO.
Const.	1974	EACI-240-1(104)	105

Note
1. See Sheets 101 and 102 for grading and drainage details adjacent to Hollywood St. under this contract



TEMPORARY DRAINAGE *			
Roadway	Station	Length	Size
Ramp E	2+50	200'	24" C.M.P.

*See Sheet 101

INLETS

	Roadway	Station	IE Elev.	Type	Depth	
(IN 26)	Hollywood	27+20	237.36	A-3	3.34	(3)
(IN 22)	Hollywood	26+75	237.52	A-1	3.34	(3)
(IN 24)	Hollywood	21+50	240.11	A-1	3.34	(3)
(IN 29)	Ramp E	2+35	238.04	A-1	3.36	(5)
(IN 28)	Hollywood	140' Rt. 24+70	232.00	D-2	3.38	
(IN 19)	I-240	385+00 (℄)	248.20	36	2.75	
(IN 19)	I-240	387+05 (Rt. Rt.)	—	Bridge Drain	—	(3)

CONCRETE HEADWALLS

Code	Roadway	Station	Type	Class "A" C.Y.	Rein. Stl. Lbs.
(IN 26)	Ramp E	76' Rt. 2+35	A-15-4	0.80	65
(IN 21)	Ramp E	81' Rt. 4+70	A-18-4	1.10	70
(IN 23)	I-240	162' Lt. 302+18	B-42-4 75° Skew	6.32	255
(IN 24)	I-240	178' Rt. 301+25	B-42-4 75° Skew	6.32	255

STORM SEWER & CULVERT PIPE

From Code	From Inv. Elev.	To Code	To Inv. Elev.	Grade %	C.P.C. Dia.	C.M.P. Dia.	Length Ft.	
(IN 28)	234.02	(IN 28)	231.72	3.19	15"		72	(4)
(IN 22)	234.18	(IN 21)	231.57	3.62	15"		72	(4)
(IN 24)	236.77	(IN 22)	234.68	5.23	15"		40	(4)
(IN 29)	234.66	(IN 30)	210.50	18.05	15"		76	
(IN 22)	228.62	(IN 21)	218.00	4.72	18"		225	
(IN 23)	248.45	(2)	213.50	22.82	15"		140	
(IN 23)	218.20	(IN 24)	216.80	0.40	42"	(1)	346	
(IN 19)	Bridge Drain	(—)	Outfall	—	—	8"	100	(4)

(3) These inlets not included in this contract.
(4) These pipes not included in this contract.
(5) Inlets requiring stub connections to be provided for future storm sewers and underdrains as shown.

(1) Class V Concrete Pipe Culvert, Class B Bedding.
(2) Stub into Triple 12'x8' Concrete Box Culvert.

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
BUREAU OF HIGHWAYS

HOLLYWOOD STREET INTERCHANGE

DRAINAGE PLAN

SCALE 1" = 50'

TENN. STATE HIGHWAYS
Plans Divn. File No. IN-3/6

TYPE	YEAR	PROJECT NO.	SHEET NO.
Const.	1974	F.A.C.I-240-1(24)X1	106

CONCRETE HEADWALLS

Code	Roadway	Station	Type	Class A.C. C.Y.	Rein Stl.
(IN 201)	I-240	(140Rt) 367+00	A-15-4	0.90	65
(HW 202)	Ramp F	(60Lt) 15+40	A-24-4	1.60	100
(HW 203)	Ramp G	(70Rt) 19+25	B-18-4	60° Skew	1.04	68
(HW 204)	Ramp F	(151.53 Rt) 16+25	E-72-2	75° Skew	8.3	509

STORM SEWER & CULVERT PIPE

From Code	From Inv. Elev	To Code	To Inv. Elev	Grade %	C.P.C. Dia.	C.M.P. Dia.	Length Ft.	
(IN 310)	231.45	(IN 311)	231.30	0.30	18"		50	(4)
(IN 312)	218.50	(IN 313)	215.12	2.50	18"		135	(6)
(IN 314)	214.87	(1)	207.50	2.78	18"		265	
(IN 315)	231.28	(IN 316)	224.00	3.73	18"		195	(4)
(IN 317)	235.75	(IN 318)	235.52	0.20	15"		115	(4)
(IN 319)	235.30	(IN 320)	226.00	12.75	15"		65	
(IN 321)	237.22	(IN 322)	226.00	0.74	15"		105	(4)

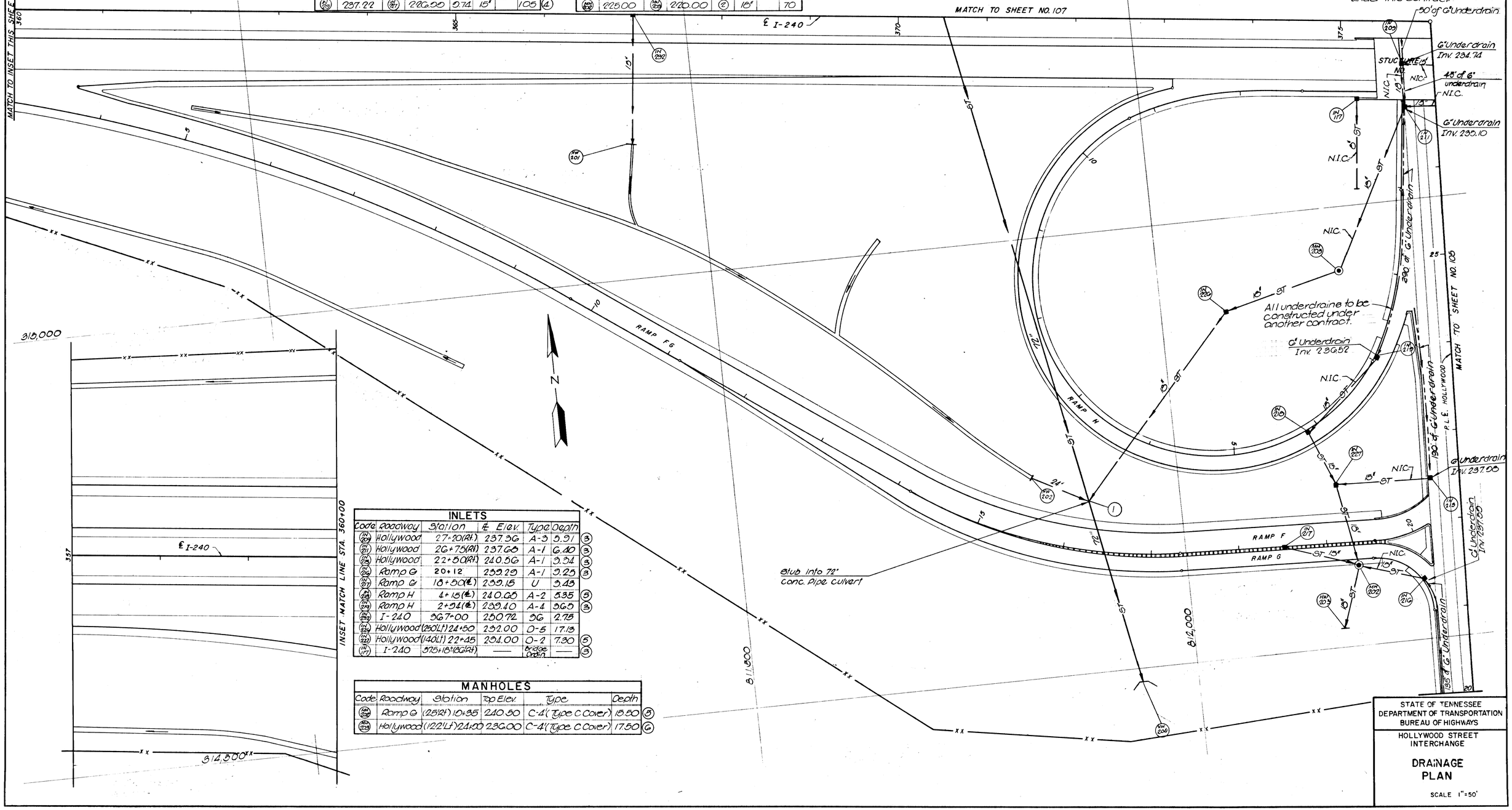
STORM SEWER & CULVERT PIPE CONT.

From Code	From Inv. Elev	To Code	To Inv. Elev	Grade %	C.P.C. Dia.	C.M.P. Dia.	Length Ft.	
(IN 323)	226.70	(IN 324)	226.00	0.78	18"		90	
(IN 325)	235.72	(IN 326)	231.50	5.28	15"		80	
(IN 327)	237.00	(IN 328)	231.50	7.33	15"		75	(4)
(IN 329)	247.07	(IN 330)	236.00	(2)	15"		145	
(IN 331)	231.00	(1)	207.50	32.57	24"		70	
(IN 332)	bridge drain	—	outfall	—	—	8"	100	(4)
(IN 333)	225.00	(IN 334)	220.00	(2)	18"		70	

(1) Stub into 72" Concrete Pipe Culvert
(2) For Pipe Grades in Embankment Sections. (Type B) See Sheet No. 2-2.
(3) These inlets not included in this contract.
(4) These pipes not included in this contract.
(5) Inlets or manholes requiring stub connections to be provided for future storm sewers and underdrains as shown.
(6) Manhole #203 will not be included in this contract. The storm sewer installed to this point will be terminated as an open end pipe with the invert elevation given in the table.

REV. 3-29-74; REFERENCE SHEET NUMBERS SHOWN.
REV. 4-9-74; CORRECTED STA. FOR (IN 316)

Note
1. See Sheets 101 and 102 for grading and drainage details adjacent to Hollywood St. under this contract.



INLETS

Code	Roadway	Station	℄ Elev.	Type	Depth	
(IN 309)	Hollywood	27+20 (Rt.)	237.36	A-3	5.91	(3)
(IN 311)	Hollywood	26+75 (Rt)	237.65	A-1	6.40	(3)
(IN 313)	Hollywood	22+50 (Rt.)	240.56	A-1	5.34	(3)
(IN 315)	Ramp G	20+12	239.29	A-1	5.25	(3)
(IN 317)	Ramp G	18+50 (℄)	239.15	U	5.45	
(IN 319)	Ramp H	4+15 (℄)	240.05	A-2	5.35	(5)
(IN 321)	Ramp H	2+54 (℄)	239.40	A-4	5.65	(3)
(IN 323)	I-240	367+00	250.72	56	2.75	
(IN 325)	Hollywood	(250 Lt) 24+50	232.00	D-5	17.18	
(IN 327)	Hollywood	(140 Lt) 22+45	234.00	D-2	7.30	(5)
(IN 332)	I-240	375+18 (160 Rt)	—	Bridge Drain	—	(5)

MANHOLES

Code	Roadway	Station	Top Elev.	Type	Depth	
(MH 208)	Ramp G	(25 Rt) 10+35	240.50	C-4 (Type C Cover)	15.50	(5)
(MH 209)	Hollywood	(122 Lt) 24+00	236.00	C-4 (Type C Cover)	17.50	(6)

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
BUREAU OF HIGHWAYS

HOLLYWOOD STREET INTERCHANGE

DRAINAGE PLAN

SCALE 1" = 50'

TENN. STATE HIGHWAYS
Plans Divn. File No. IN-316

TYPE	YEAR	PROJECT NO.	SHEET NO.
Const.	1974	FACI-240-1(104)4	107

REV. 3-29-74; REFERENCE SHEET NUMBERS SHOWN.

REV. 6-13-74; ADDED SHEET NUMBER ON NOTE NO. 3.

Note

1. See Sheets 101 and 102 for grading and drainage details adjacent to Hollywood St. under this contract.

STORM SEWER & CULVERT PIPE

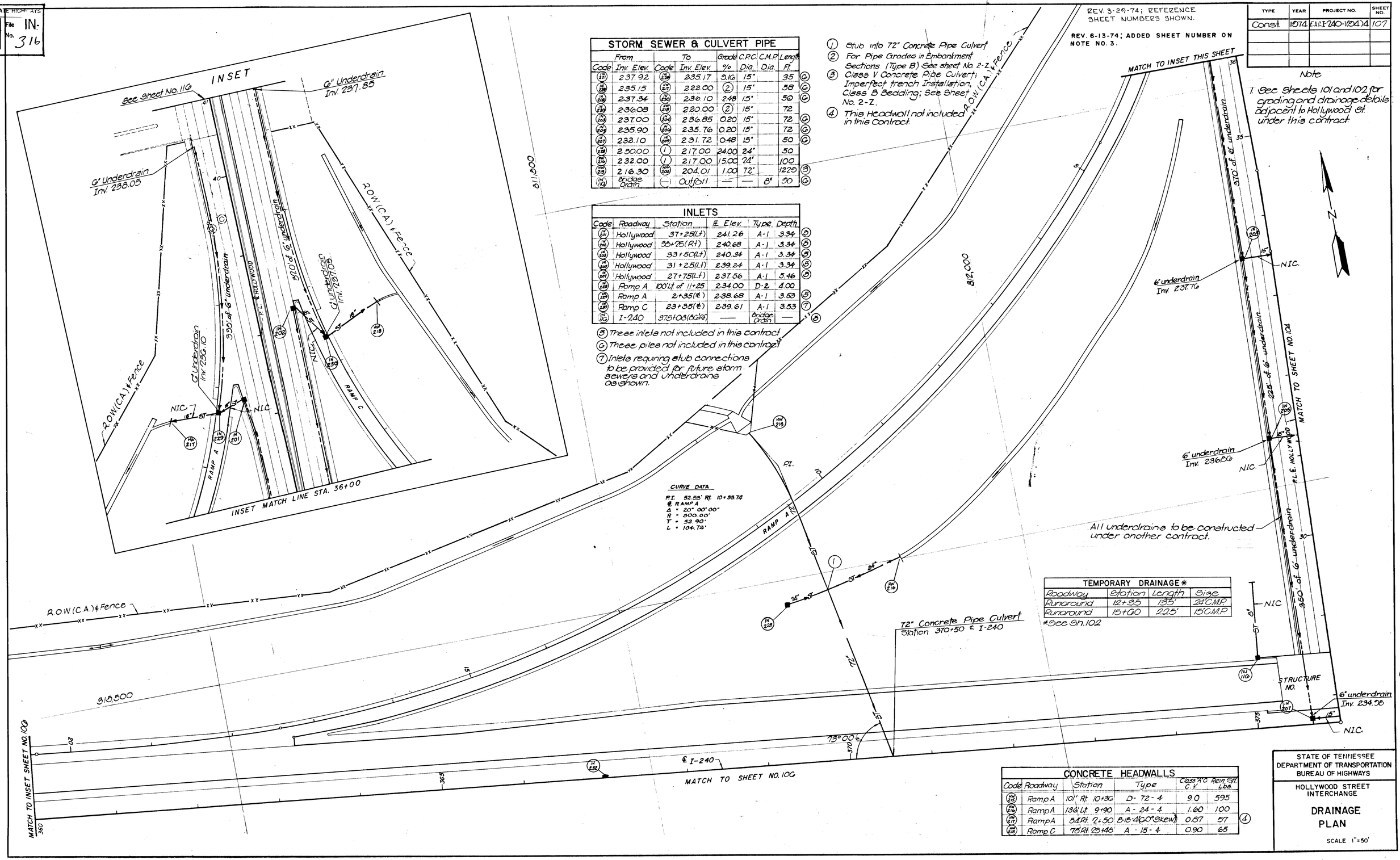
From Code	From Inv. Elev.	To Code	To Inv. Elev.	Grade %	C.P.C. Dia.	C.M.P. Dia.	Length Ft.	
12/20	237.92	12/20	235.17	9.16	15"		35	G
12/21	235.15	12/21	222.00	2	15"		58	G
12/20	237.34	12/20	236.10	2.48	15"		50	G
12/20	236.08	12/20	220.00	2	15"		72	
20/20	237.00	20/24	236.85	0.20	15"		72	G
20/20	235.90	20/20	235.76	0.20	15"		72	G
16/207	232.10	16/209	231.72	0.48	15"		50	G
22/22	250.00	1	217.00	24.00	24"		50	
22/20	232.00	1	217.00	15.00	24"		100	
20/20	216.30	20/20	204.01	1.00	72"		1220	3
16/16	Bridge Drain	—	Outfall	—	—	8"	30	G

INLETS

Code	Roadway	Station	F.E. Elev.	Type	Depth	
12/20	Hollywood	37+25(Lt)	241.26	A-1	3.34	5
12/20	Hollywood	35+75(Rt)	240.68	A-1	3.34	5
12/20	Hollywood	33+50(Lt)	240.34	A-1	3.34	5
12/20	Hollywood	31+25(Lt)	239.24	A-1	3.34	5
12/20	Hollywood	27+75(Lt)	237.56	A-1	5.46	5
22/20	Ramp A	100' Lt of 11+25	234.00	D-2	4.00	
12/20	Ramp A	2+35(℄)	238.68	A-1	3.53	5
12/20	Ramp C	23+35(℄)	239.61	A-1	3.53	7
20/16	I-240	375+06(60'Rt)	—	Bridge Drain	—	6

5 These inlets not included in this contract.
6 These pipes not included in this contract.
7 Inlets requiring stub connections to be provided for future storm sewers and underdrains as shown.

1. Stub into 72" Concrete Pipe Culvert
2. For Pipe Grades in Embankment Sections (Type B) See sheet No. 2-Z.
3. Class V Concrete Pipe Culvert; Imperfect trench Installation, Class B Bedding; See Sheet No. 2-Z.
4. This Headwall not included in this Contract.



CURVE DATA
P.I. 52.55' Rt. 10+33.74 ℄ RAMP A
Δ = 20° 00' 00"
R = 300.00'
T = 52.90'
L = 104.72'

TEMPORARY DRAINAGE*

Roadway	Station	Length	Size
Runaround	12+35	135'	24" C.M.P.
Runaround	15+60	225'	15" C.M.P.

*See Sh. 102

CONCRETE HEADWALLS

Code	Roadway	Station	Type	Class A C.Y.	Rein. Stl. Lbs.	
21/16	Ramp A	101' Rt. 10+30	D-72-4	9.0	595	
21/16	Ramp A	136' Lt. 9+90	A-24-4	1.60	100	
21/17	Ramp A	54' Rt. 2+50	B-15-4 (60° Skew)	0.87	57	4
21/18	Ramp C	76' Rt. 23+48	A-15-4	0.90	65	

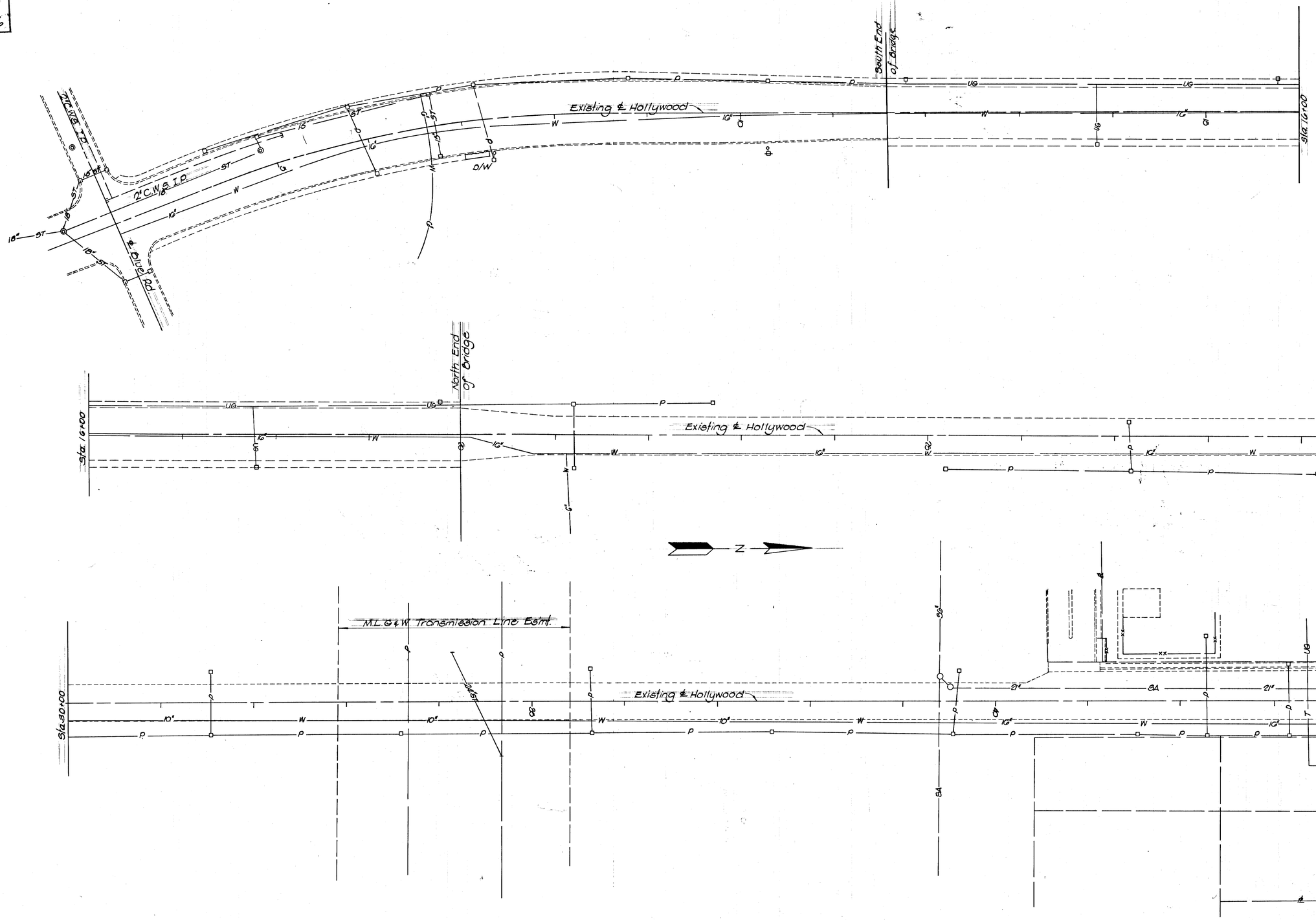
STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
BUREAU OF HIGHWAYS

HOLLYWOOD STREET INTERCHANGE

DRAINAGE PLAN

SCALE 1" = 50'

TYPE	YEAR	PROJECT NO.	SHEET NO.
Const.	1974	EACT-240-1(204)4	108



STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
BUREAU OF HIGHWAYS

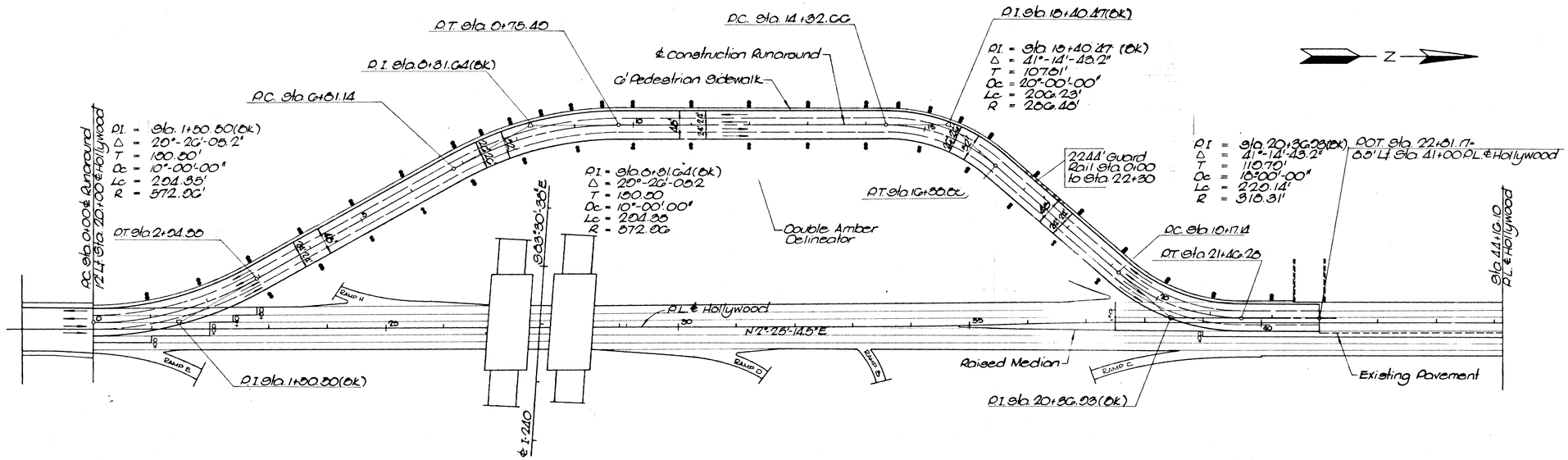
HOLLYWOOD STREET
EXISTING CONDITIONS
AND UTILTIES

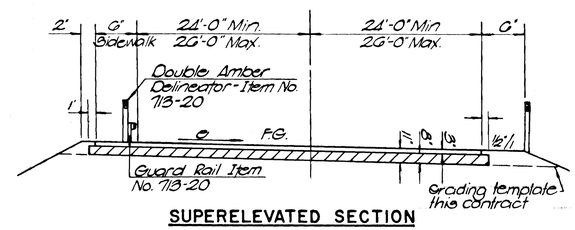
SCALE 1"=50'

TYPE	YEAR	PROJECT NO.	SHEET NO.
Const.	1974	EACI-240-1(04)4	100

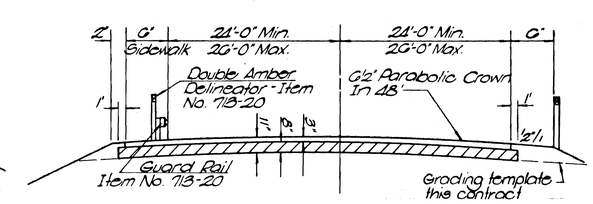
Notes

1. Only grading of the runaround is to be completed under this contract. Paving and traffic control devices are to be completed under a subsequent contract.
2. See sheets 101 and 102 for grading and drainage details adjacent to Hollywood St.

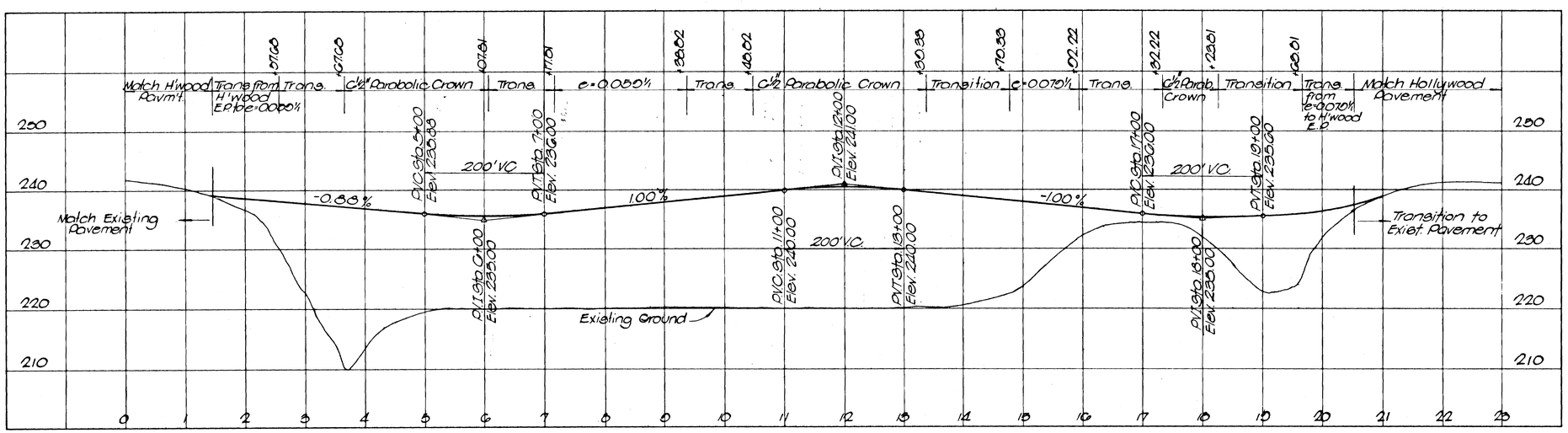




SUPERELEVATED SECTION



TANGENT SECTION



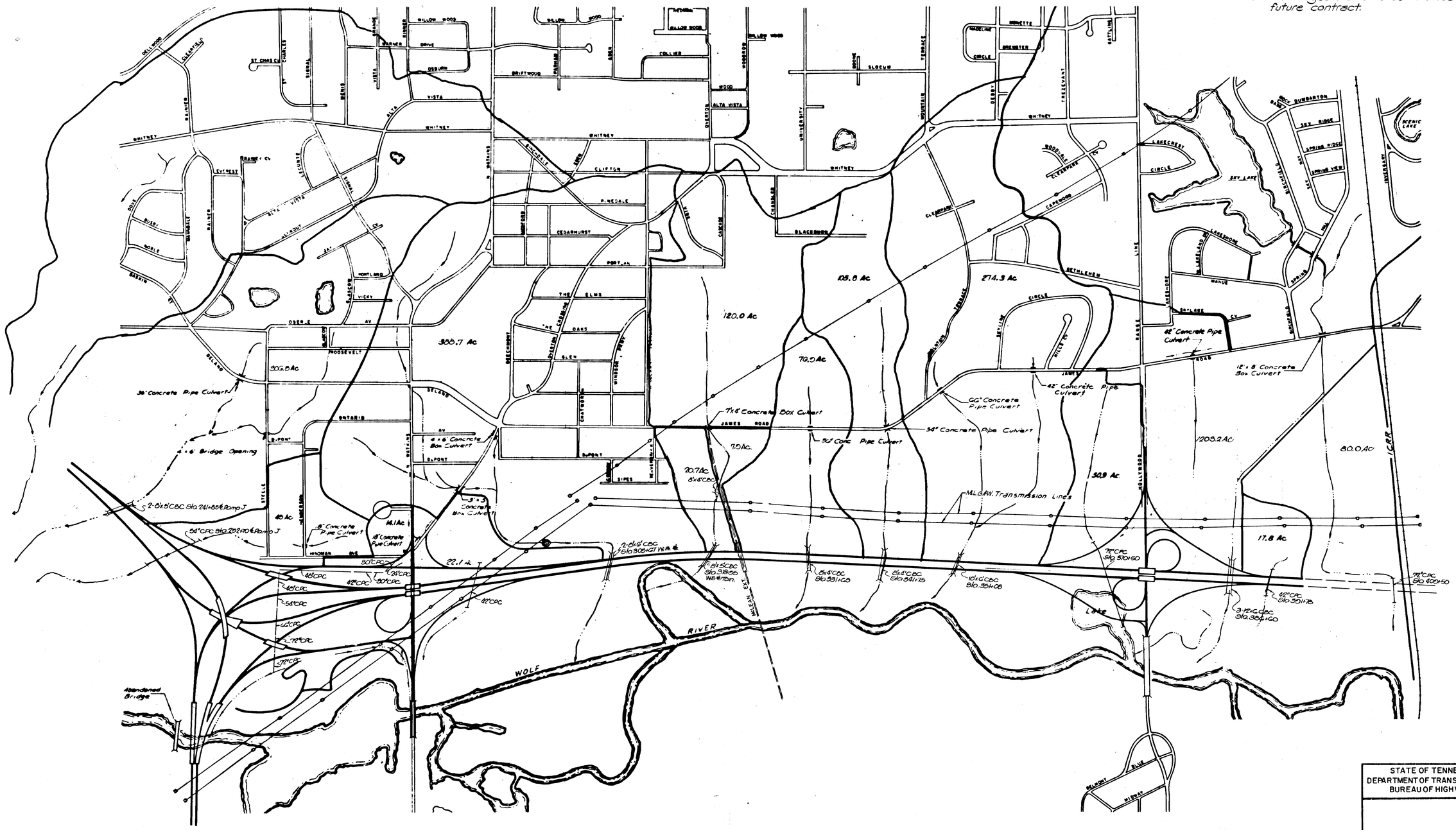
STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
BUREAU OF HIGHWAYS

HOLLYWOOD ST.
CONSTRUCTION RUNAROUND
PLAN & PROFILE

SCALE: 1"=100'

TYPE	YEAR	PROJECT NO.	SHEET NO.
Const.	1974	IACI-240-1(194)4	110

Note: 1. All Bridges are to be constructed under future contract.

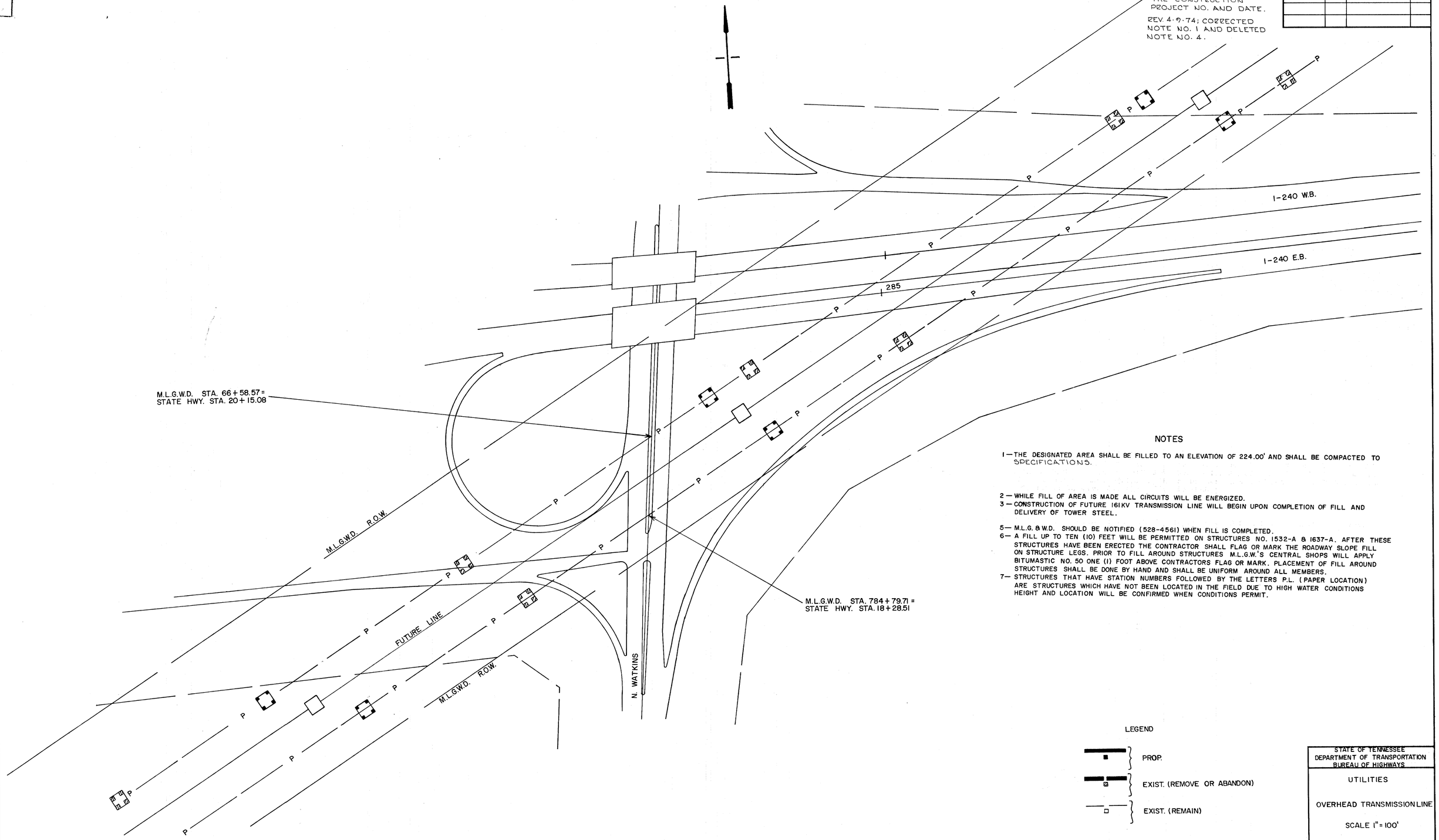


STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
BUREAU OF HIGHWAYS

INTERSTATE DRAINAGE MAP
SCALE: 1"=600'

TYPE	YEAR	PROJECT NO.	SHEET NO.
CONST.	1974	E.A.C.I.-240-1(94)4	111

REV. 3-21-74; ADDED SHEET NOS 111 THRU. 118 TO THE PLANS.
REV. 3-29-74; CORRECTED THE CONSTRUCTION PROJECT NO. AND DATE.
REV. 4-9-74; CORRECTED NOTE NO. 1 AND DELETED NOTE NO. 4.



NOTES

1—THE DESIGNATED AREA SHALL BE FILLED TO AN ELEVATION OF 224.00' AND SHALL BE COMPACTED TO SPECIFICATIONS.

2—WHILE FILL OF AREA IS MADE ALL CIRCUITS WILL BE ENERGIZED.
3—CONSTRUCTION OF FUTURE 161KV TRANSMISSION LINE WILL BEGIN UPON COMPLETION OF FILL AND DELIVERY OF TOWER STEEL.

5—M.L.G.&W.D. SHOULD BE NOTIFIED (528-4561) WHEN FILL IS COMPLETED.
6—A FILL UP TO TEN (10) FEET WILL BE PERMITTED ON STRUCTURES NO. 1532-A & 1637-A. AFTER THESE STRUCTURES HAVE BEEN ERECTED THE CONTRACTOR SHALL FLAG OR MARK THE ROADWAY SLOPE FILL ON STRUCTURE LEGS. PRIOR TO FILL AROUND STRUCTURES M.L.G.W.'S CENTRAL SHOPS WILL APPLY BITUMASTIC NO. 50 ONE (1) FOOT ABOVE CONTRACTORS FLAG OR MARK. PLACEMENT OF FILL AROUND STRUCTURES SHALL BE DONE BY HAND AND SHALL BE UNIFORM AROUND ALL MEMBERS.
7—STRUCTURES THAT HAVE STATION NUMBERS FOLLOWED BY THE LETTERS P.L. (PAPER LOCATION) ARE STRUCTURES WHICH HAVE NOT BEEN LOCATED IN THE FIELD DUE TO HIGH WATER CONDITIONS HEIGHT AND LOCATION WILL BE CONFIRMED WHEN CONDITIONS PERMIT.

LEGEND

PROP.
EXIST. (REMOVE OR ABANDON)
EXIST. (REMAIN)

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
BUREAU OF HIGHWAYS

UTILITIES

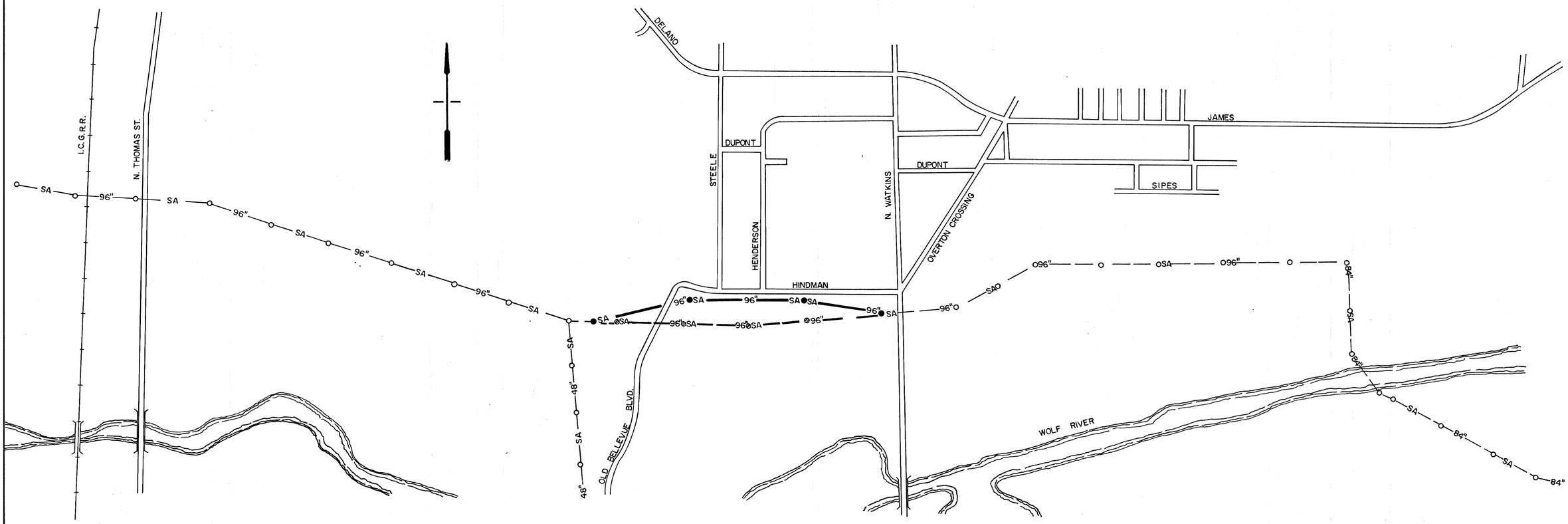
OVERHEAD TRANSMISSION LINE

SCALE 1" = 100'

TYPE	YEAR	PROJECT NO.	SHEET NO.
~~CONST.~~	~~1974~~	~~EACI-240-1(94)A~~	112
CONST.	1976	EACI-240-1(138)5	7

REV. 3-21-74; ADDED SHEET NOS. 111 THRU. 118 TO THE PLANS.

REV. 3-29-74; CORRECTED THE CONST. PROJECT NUMBER AND DATE.



THIS SHEET IS FOR INFORMATION ONLY ON THE BRIDGE PROJECT

LEGEND

PROP.

EXIST. (REMOVE OR ABANDON)

EXIST. (REMAIN)

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
BUREAU OF HIGHWAYS

UTILITIES

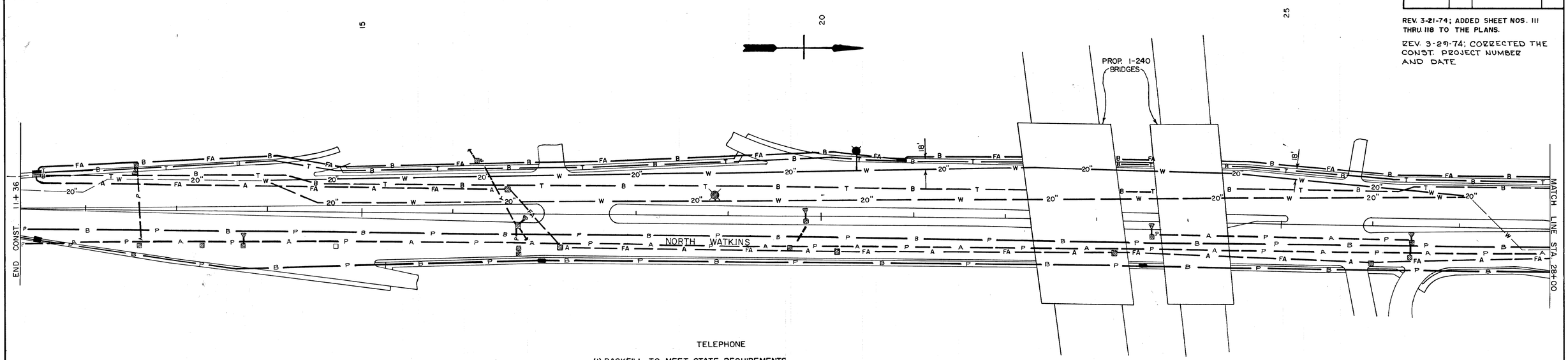
SANITARY SEWER SYSTEM

SCALE 1" = 500'

TYPE	YEAR	PROJECT NO.	SHEET NO.
CONST.	1974	E.A.C.I-240-1(94) 4	113

REV. 3-21-74; ADDED SHEET NOS. 111 THRU 118 TO THE PLANS.

REV. 3-29-74; CORRECTED THE CONST. PROJECT NUMBER AND DATE

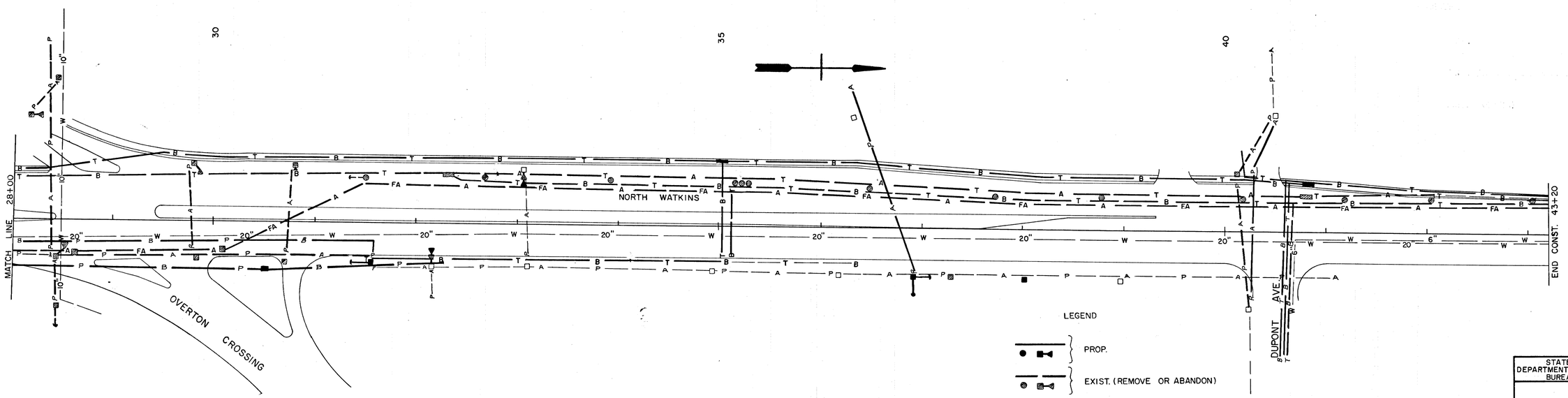


TELEPHONE

(1) BACKFILL TO MEET STATE REQUIREMENTS.
(2) MINIMUM COVER AT ROADWAY CROSSING 30" (DUCT ENCASED)

WATER

(1) ALL WORK TO MEET NATIONAL CODE
(2) THIS WORK TO BE COORDINATED WITH CONTRACTOR WORK.
(3) COMPACTION TO MEET STATE REQUIREMENTS.



LEGEND

PROP.

EXIST. (REMOVE OR ABANDON)

EXIST. (REMAIN)

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
BUREA OF HIGHWAYS

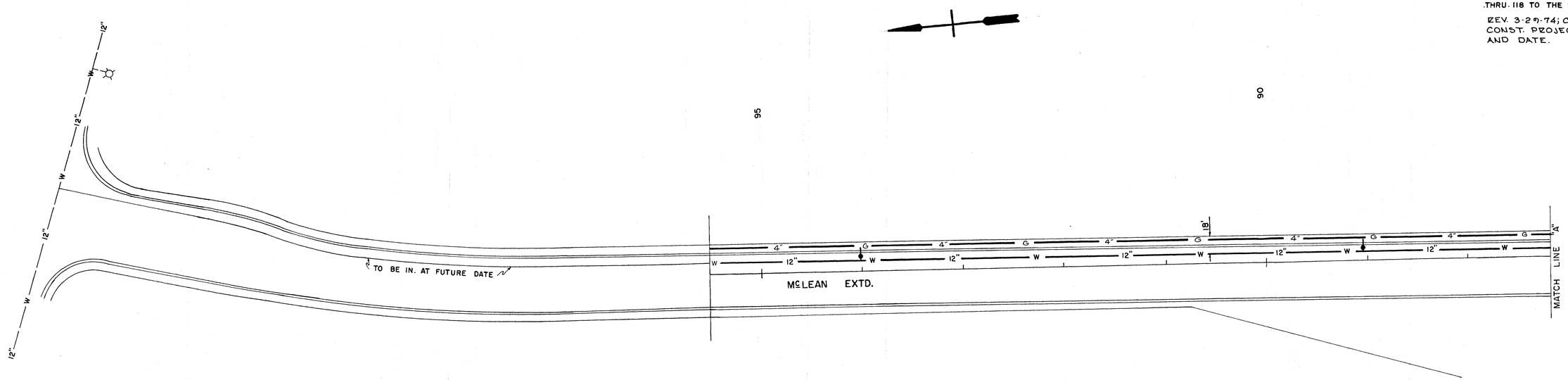
UTILITIES:
FIRE ALARM, WATER
TELEPHONE, POWER AND
STREET LIGHTS

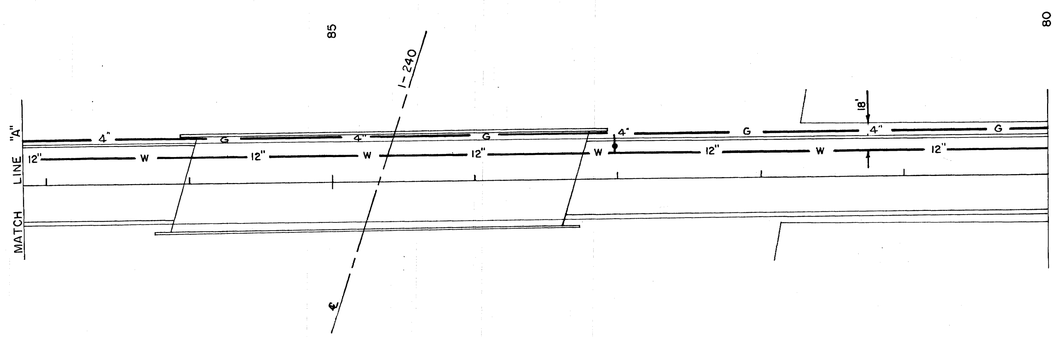
SCALE 1" = 50'

TYPE	YEAR	PROJECT NO.	SHEET NO.
CONST.	1974	E.A.C.E.240-1(94)4	114

REV. 3-21-74; ADDED SHEET NOS. 111 THRU. 118 TO THE PLANS.

REV. 3-29-74; CORRECT THE CONST. PROJECT NUMBER AND DATE.





WATER:

(1) PROP. 12" MAIN TO BE INSTALLED BY M.L.G.W.
(2) PROP 14" ENCASEMENT TO BE DELIVERED TO JOB SITE AND INSTALLED BY CONTRACTOR.

LEGEND

PROP.

EXIST. (REMOVE OR ABANDON)

EXIST. (REMAIN)

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
BUREAU OF HIGHWAYS

UTILITIES:

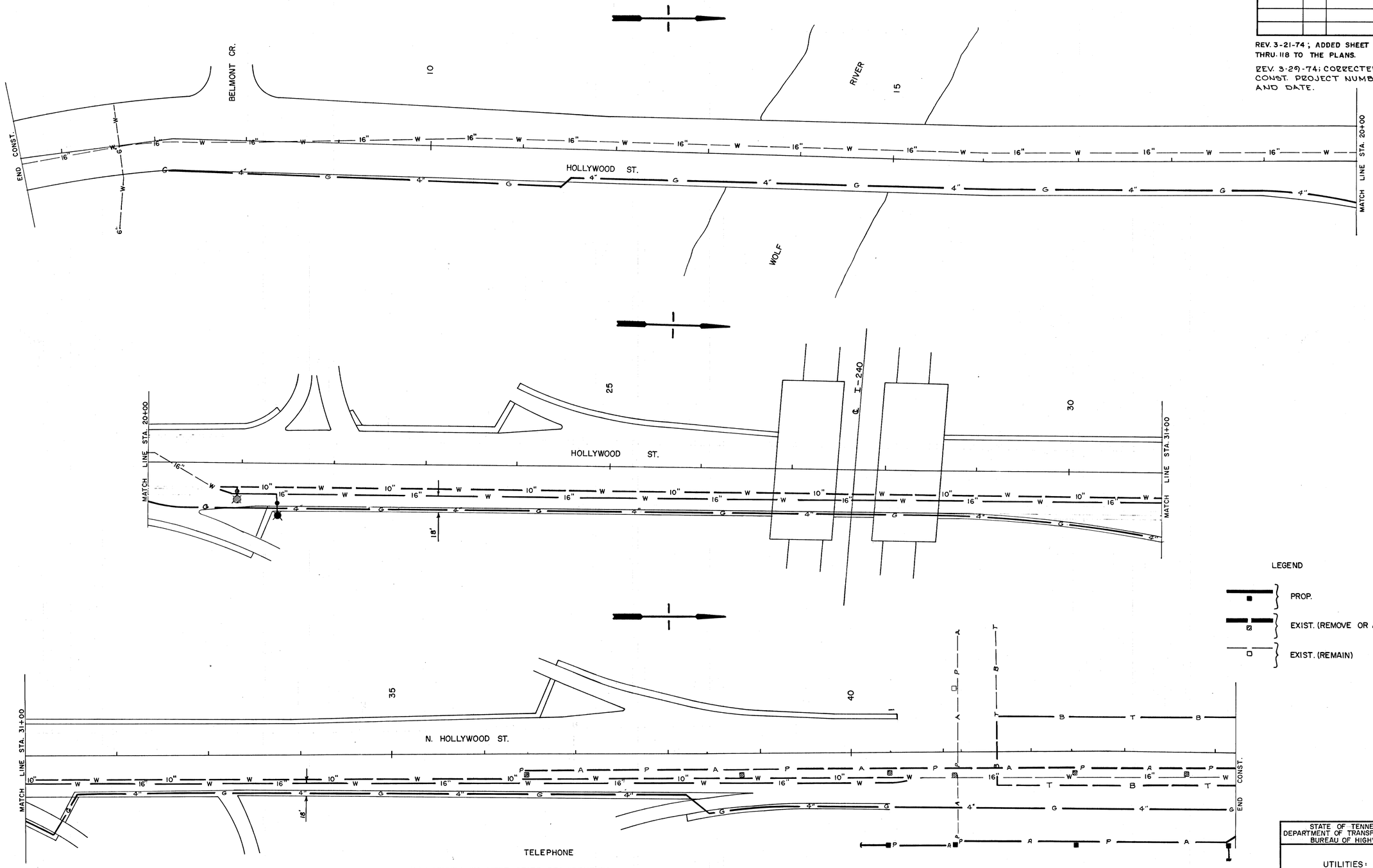
WATER
GAS

SCALE 1" = 50'

TYPE	YEAR	PROJECT NO.	SHEET NO.
CONST.	1974	E.A.C.I.-240-1(94) 4	115

REV. 3-21-74; ADDED SHEET NOS. 111 THRU. 118 TO THE PLANS.

REV. 3-29-74; CORRECTED THE CONST. PROJECT NUMBER AND DATE.



(1.) BACKFILL TO MEET STATE REQUIREMENTS.
(2.) MINIMUM COVER AT ROADWAY CROSSINGS 30" (DUCT ENCASED).

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
BUREAU OF HIGHWAYS

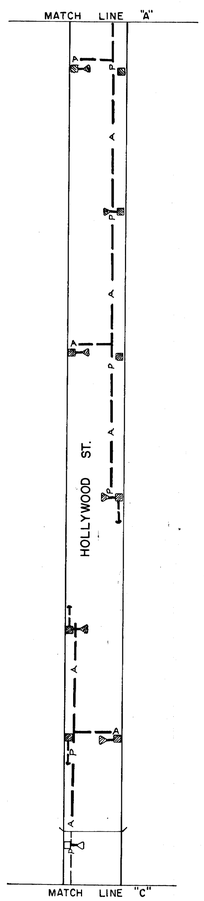
UTILITIES:
WATER AND TELEPHONE
STREET LIGHTS, GAS

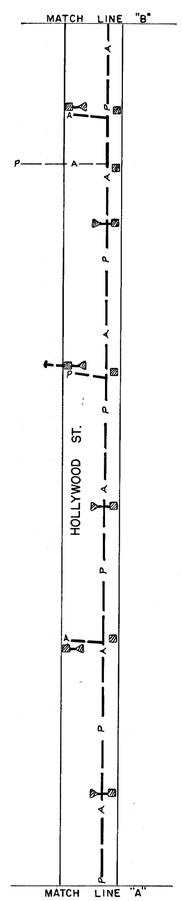
SCALE 1" = 50'

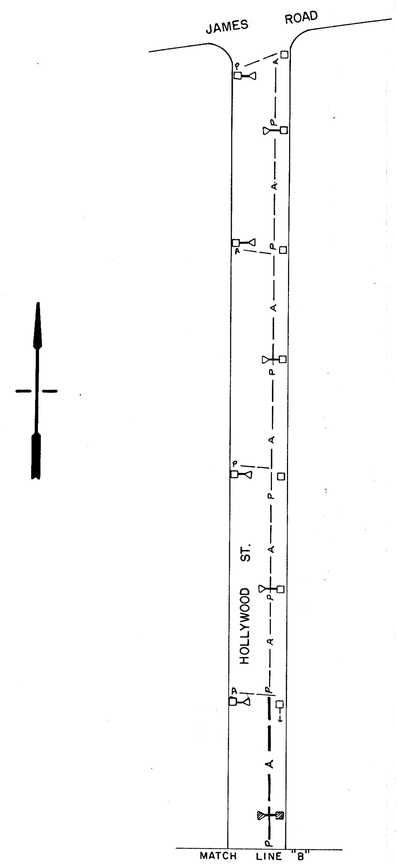
TYPE	YEAR	PROJECT NO.	SHEET NO.
CONST.	1974	E.A.C.I.-240-1(94) 4	116

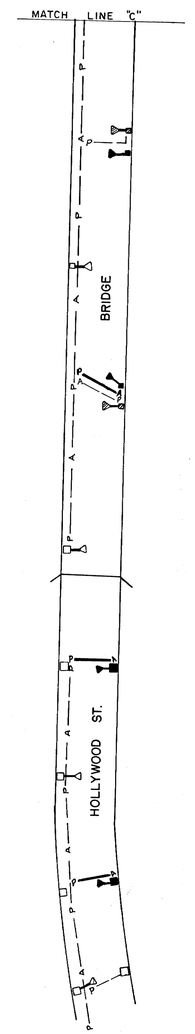
REV. 3-21-74; ADDED SHEET NOS. 111 THRU 118 TO THE PLANS.

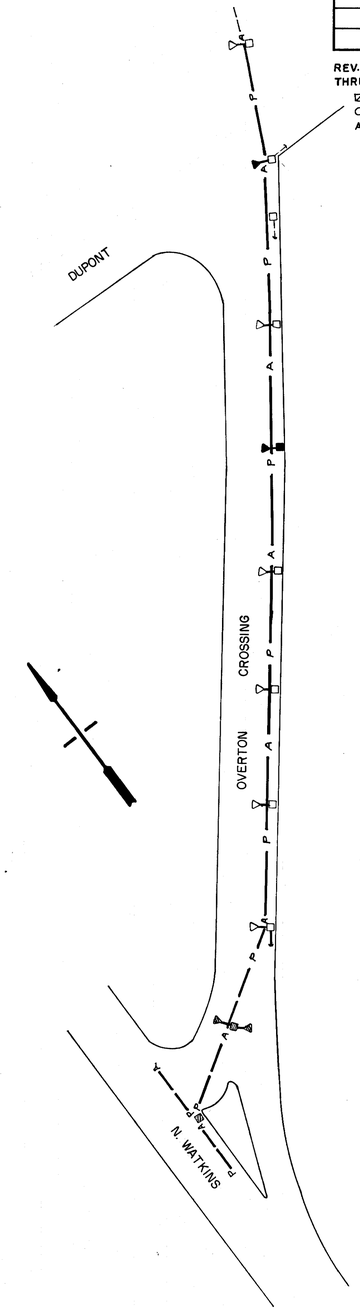
REV. 3-29-74; CORRECT THE CONST. PROJECT NUMBER AND DATE.











LEGEND

PROP.

EXIST. (REMOVE OR ABANDON)

EXIST. (REMAIN)

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
BUREAU OF HIGHWAYS

UTILITIES:

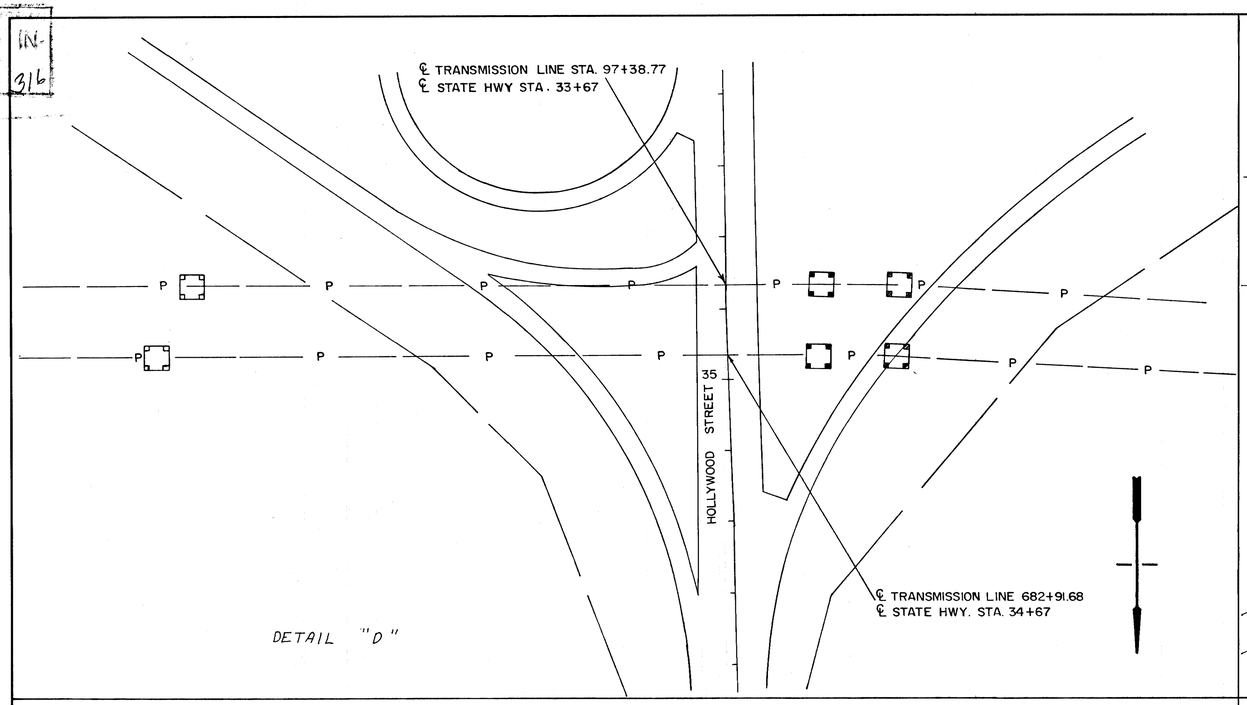
STREET LIGHTS

SCALE 1" = 100'

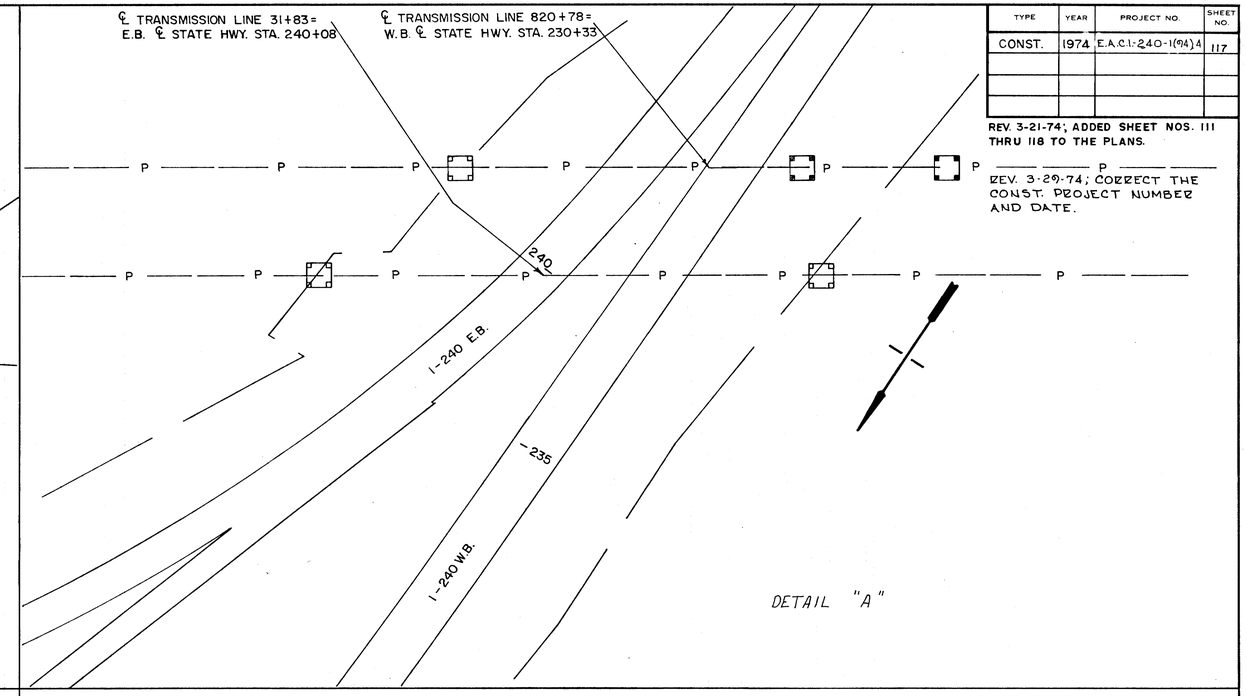
TYPE	YEAR	PROJECT NO.	SHEET NO.
CONST.	1974	E.A.C.I.-240-1(94)4	117

REV. 3-21-74; ADDED SHEET NOS. 111 THRU 118 TO THE PLANS.

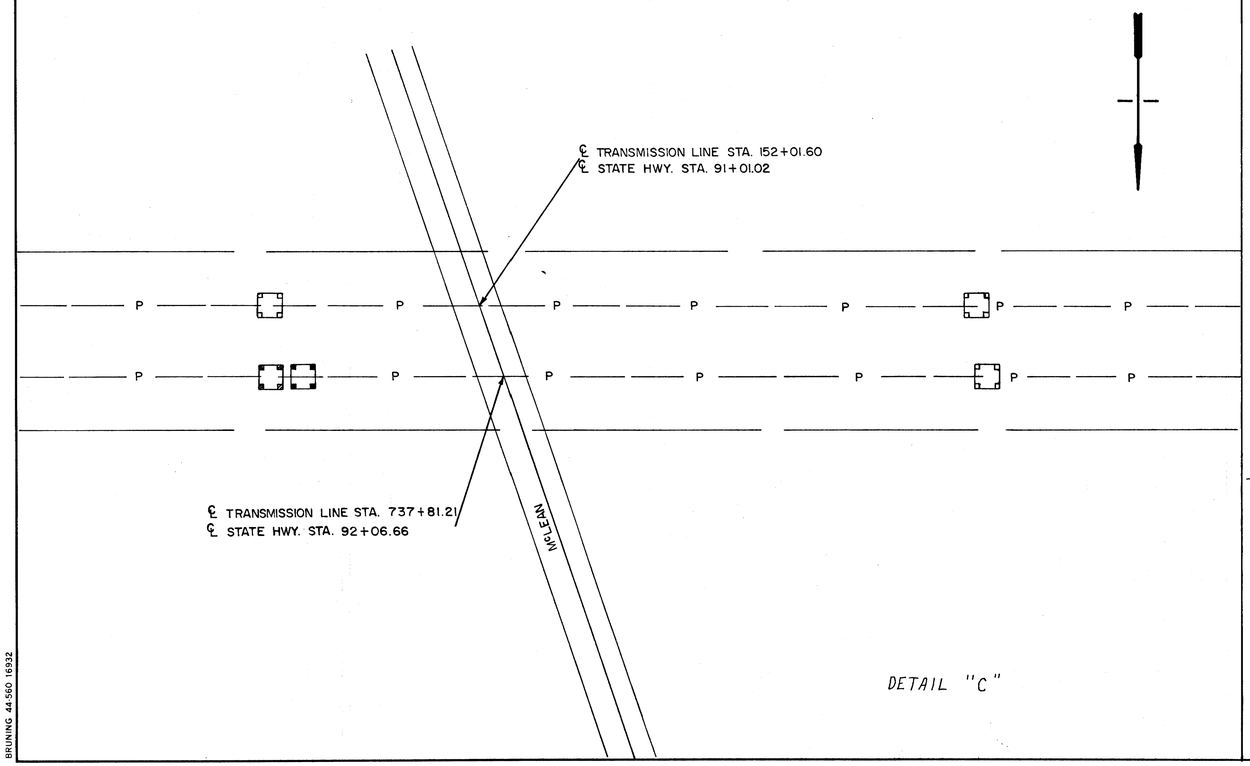
REV. 3-29-74; CORRECT THE CONST. PROJECT NUMBER AND DATE.



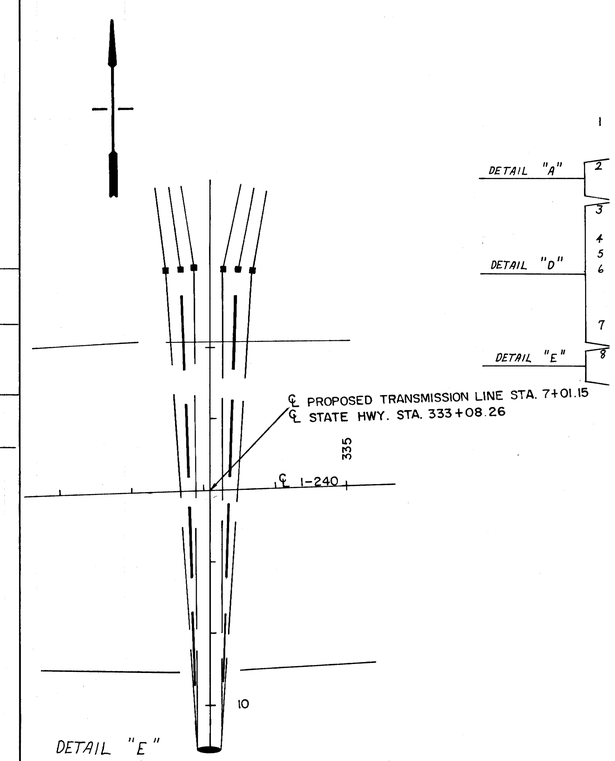
DETAIL "D"



DETAIL "A"



DETAIL "C"



DETAIL "E"

NOTES

1. STRUCTURES WHOSE STATION NUMBERS ARE FOLLOWED BY LETTERS P.L. (PAPER LOCATION) ARE STRUCTURES WHICH HAVE NOT BEEN LOCATED IN THE FIELD DUE TO HIGH WATER CONDITIONS. HEIGHT AND LOCATION WILL BE CONFIRMED WHEN CONDITIONS PERMIT.
2. CONTROL ACCESS FENCES WHICH ARE ALTERED DUE TO TOWERS IN RIGHT-OF-WAY SHALL HAVE A MINIMUM CLEARANCE OF TEN (10) FEET FROM THE NEAREST LOWER LEG UNLESS OTHERWISE INDICATED ON DRAWINGS. (DETAIL "A")
3. STRUCTURE 1524-A WILL BE INSTALLED BEFORE ANY FILL BY THE STATE HIGHWAY DEPARTMENT ABOVE THE EXISTING GROUND.
4. STRUCTURE 1524 WILL BE REMOVED AND INSTALLED AS STRUCTURE 1626-A.
5. STRUCTURE 1626 WILL BE REMOVED.
6. A FILL UP TO SIXTEEN (16) FEET WILL BE PERMITTED ON STRUCTURES 1524-A & 1626-A. AFTER THESE STRUCTURES HAVE BEEN ERECTED THE CONTRACTOR SHALL FLAG OR MARK THE ROADWAY SLOPE FILL ON STRUCTURE LEGS. PRIOR TO FILL AROUND STRUCTURES M.L.G. & W.'S CENTRAL SHOPS WILL APPLY BITUMASTIC Nº 50 ONE (1) FOOT ABOVE CONTRACTOR FLAG OR MARK. (DETAIL "D")
7. PLACEMENT OF FILL AROUND STRUCTURES SHALL BE DONE BY HAND AND SHALL BE UNIFORM AROUND ALL MEMBERS.
8. THE CROSSING SHOWN IN DETAIL "E" (PROPOSED UNIVERSITY SUBSTATION Nº 49-161 KV LINE) IS SUBMITTED TO THE STATE HIGHWAY DEPARTMENT FOR RIGHT-OF-WAY APPROVAL ONLY. M.L.G.W. TO CONSTRUCT THE PROPOSED 161 KV LINE IN THE FALL OF 1974. (DETAIL "E")

LEGEND

- PROP.
- EXIST. (REMOVE OR ABANDON)
- EXIST. (REMAIN)
- FUTURE TRANS. LINE

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
BUREAU OF HIGHWAYS

UTILITIES:

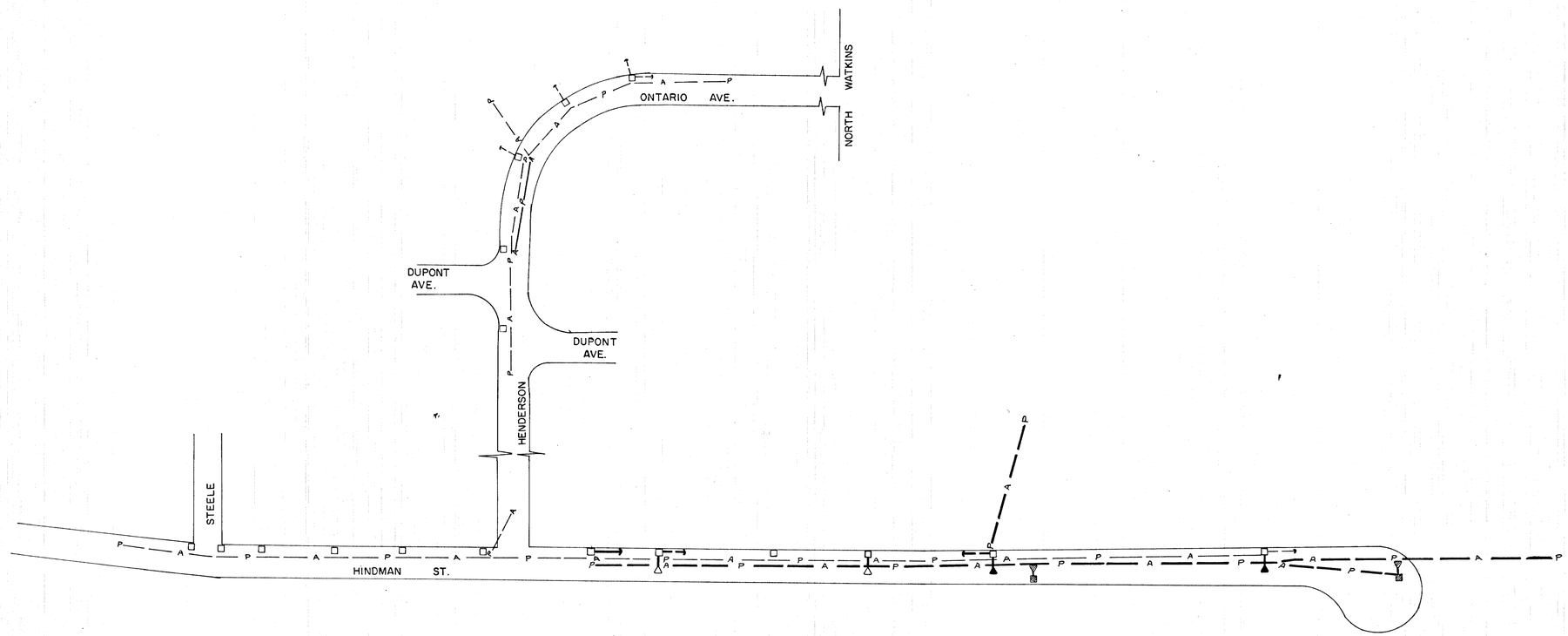
OVERHEAD TRANSMISSION LINE

SCALE 1" = 100'

TYPE	YEAR	PROJECT NO.	SHEET NO.
CONST.	1974	E.A.C.I.-240-1(94)4	118

REV. 3-21-74; ADDED SHEET NOS. 111 THRU 118 TO THE PLANS.

REV. 3-29-74; CORRECT THE CONST. PROJECT NUMBER AND DATE.



LEGEND

PROP.

EXIST. (REMOVE OR ABANDON)

EXIST. (REMAIN)

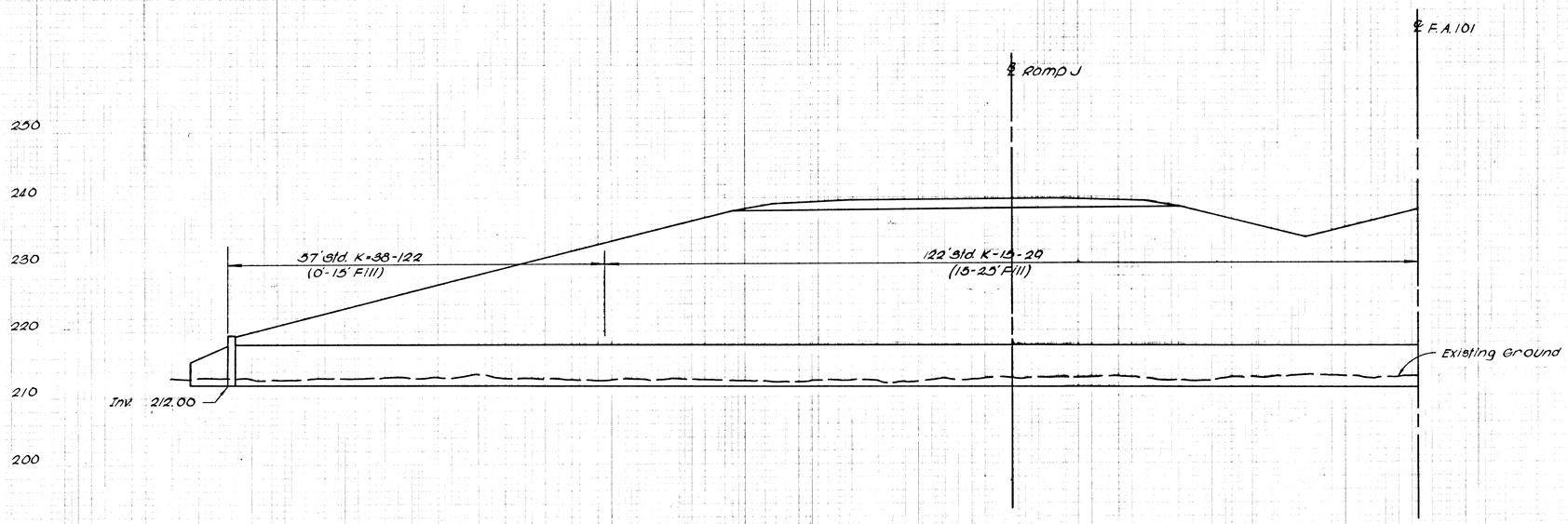
STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
BUREAU OF HIGHWAYS

UTILITIES

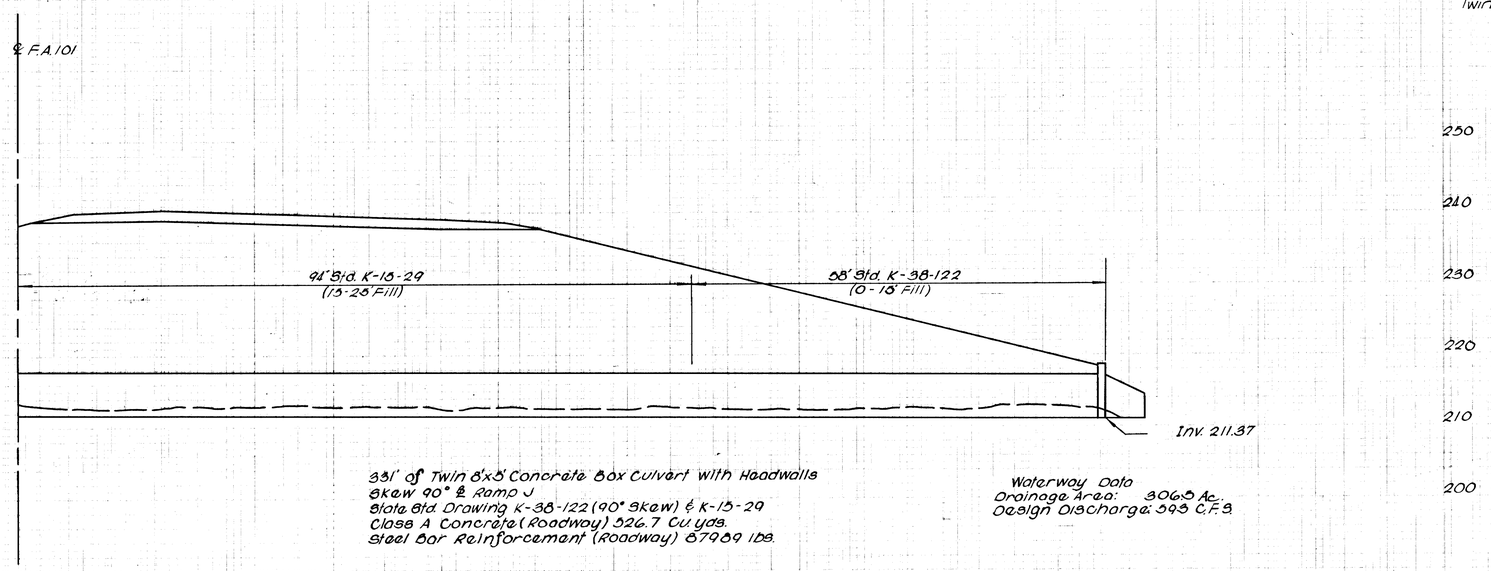
STREET LIGHTS

SCALE NONE

PROJECT NO.	YEAR	SHEET NO.
FACT-240-1(34)-4	1974	119



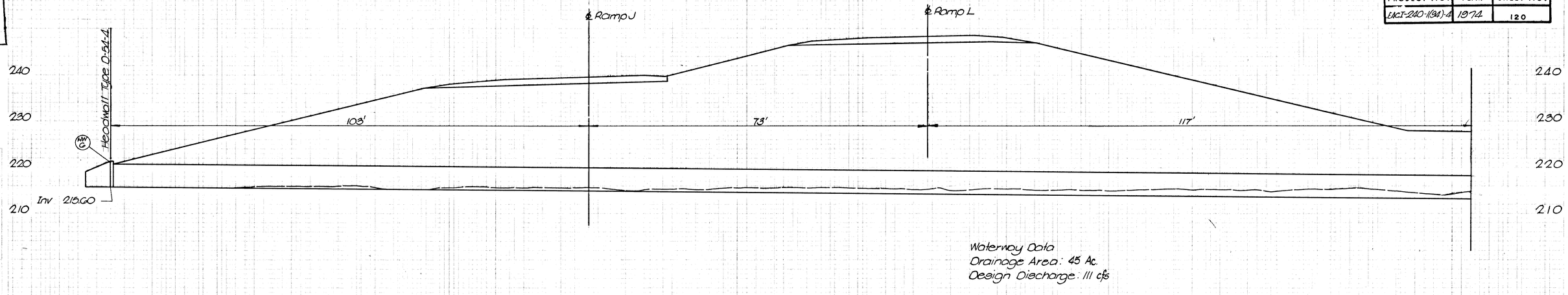
Twin 8x5' box Sta. 231+38.08 ℄ F.A.101
Sta. 241+85 ℄ Ramp J
Scale: 1" = 10'



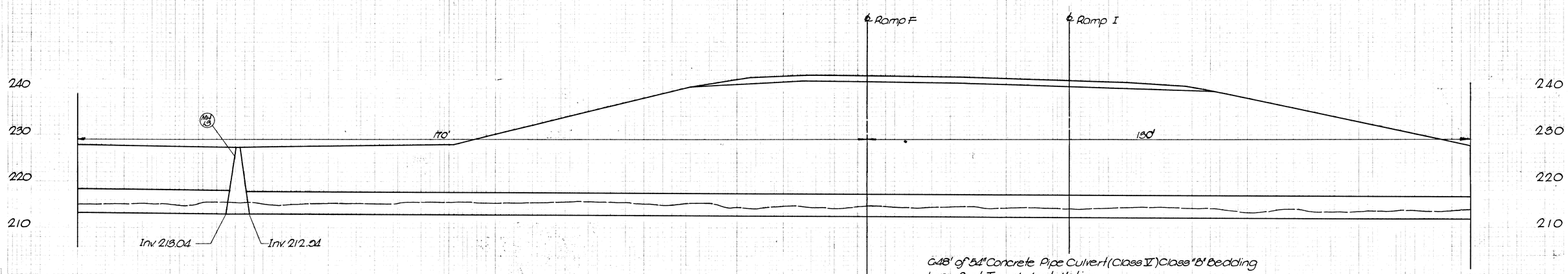
331' of Twin 8'x5' Concrete Box Culvert with Headwalls
Skew 90° ℄ Ramp J
State Std. Drawing K-38-122 (90° Skew) & K-15-29
Class A Concrete (Roadway) 526.7 Cu. yds.
Steel Bar Reinforcement (Roadway) 87989 lbs.

Waterway Data
Drainage Area: 3065 Ac.
Design Discharge: 395 C.F.S.

PROJECT NO.	YEAR	SHEET NO.
INCT-240-1(94)-4	1974	120

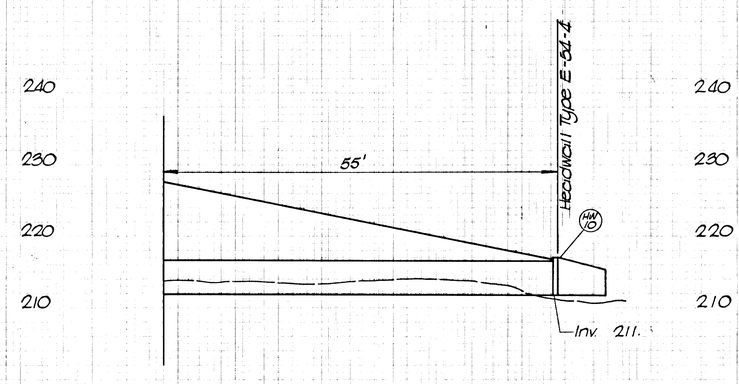


Waterway Data
Drainage Area: 45 Ac.
Design Discharge: 111 cfs

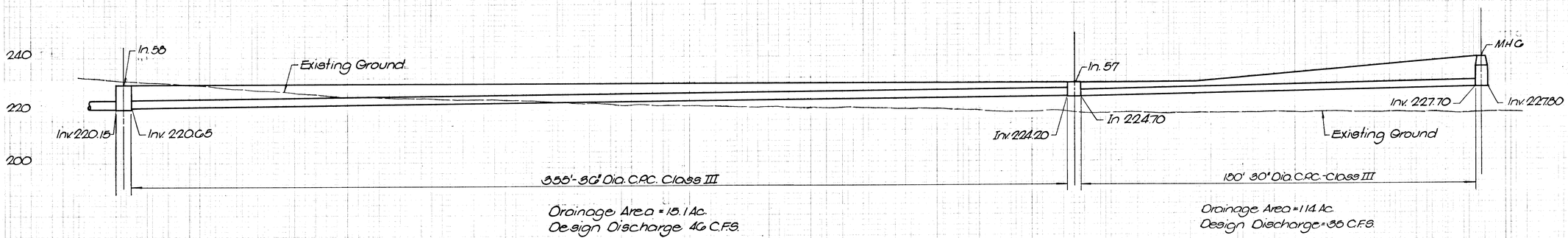


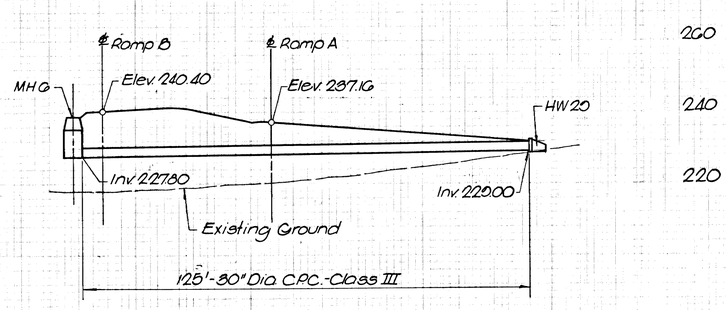
648' of 54" Concrete Pipe Culvert (Class V) Class "B" Bedding
Imperfect Trench Installation
Inlet 00° Skew-Std. Headwall Type D-54-4
Outlet 60° Skew-Std. Headwall Type E-54-4
Bedding Material (Pipe) Class "B" 371 C.Y.

54" Concrete Pipe Culvert
Station 252+70 ℄ Ramp J
Scale: 1" = 10'



PROJECT NO.	YEAR	SHEET NO.
FACI-220-1(94)-4	1974	121



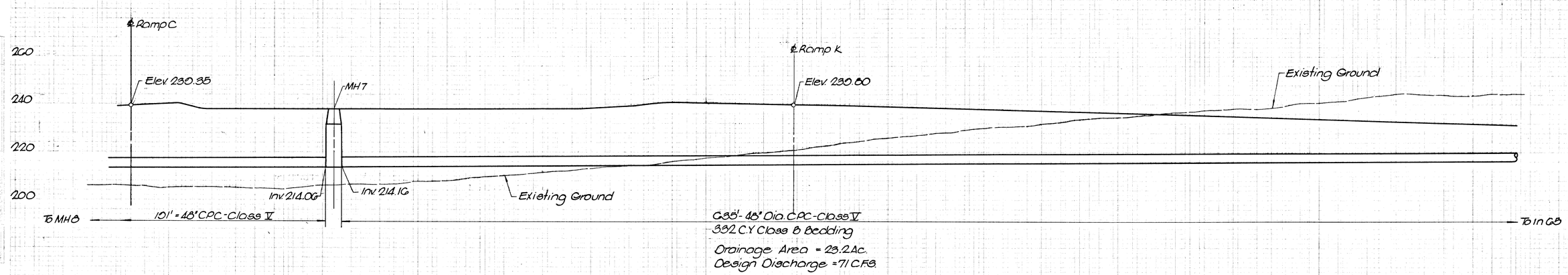


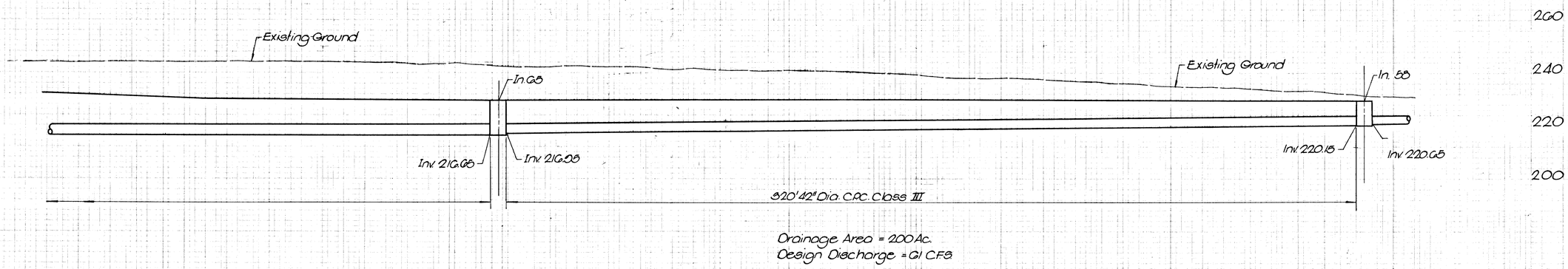
Scale: 1" = 20'

STATE HIGHWAYS
Dsns. File No. 1.1-
Dtrn. 316

PROJECT NO.	YEAR	SHEET NO.
EACF-220-1(24)-A	1971	122

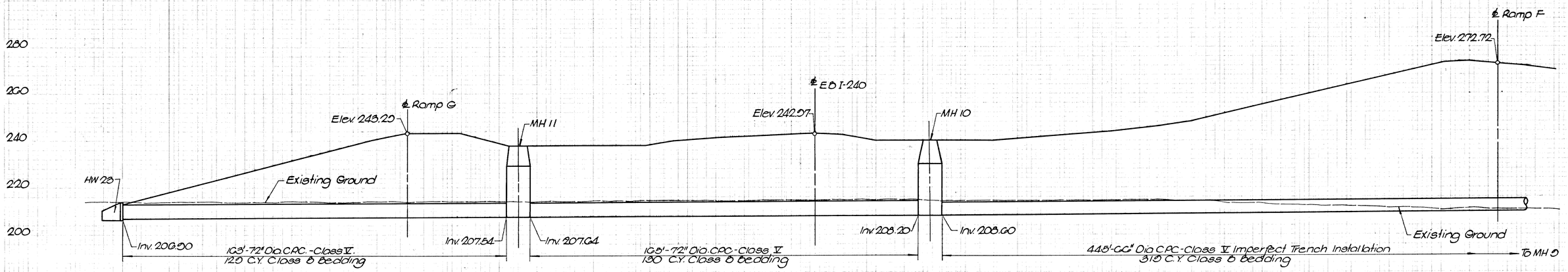
BRIDGE FILMED

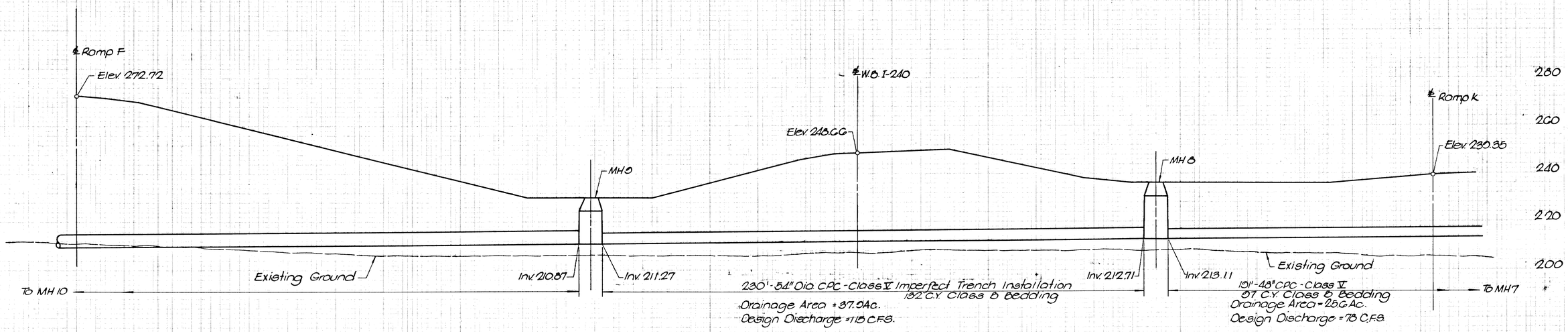




Scale: 1" = 10'

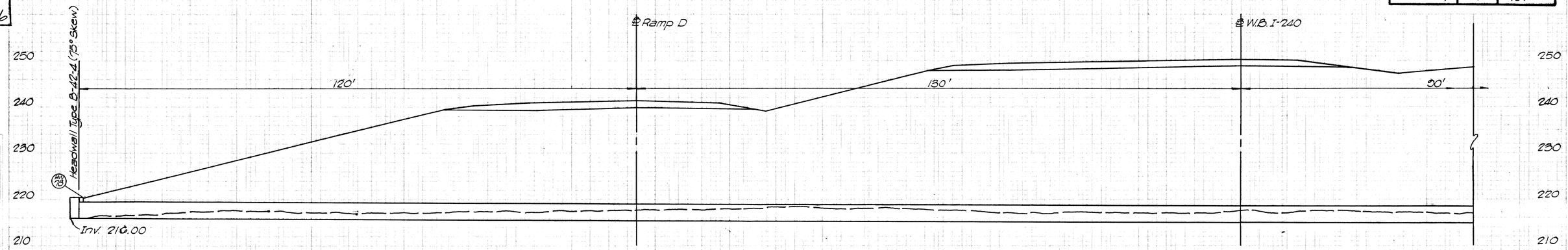
PROJECT NO.	YEAR	SHEET NO.
BRF-240-1(94)-4	1974	123

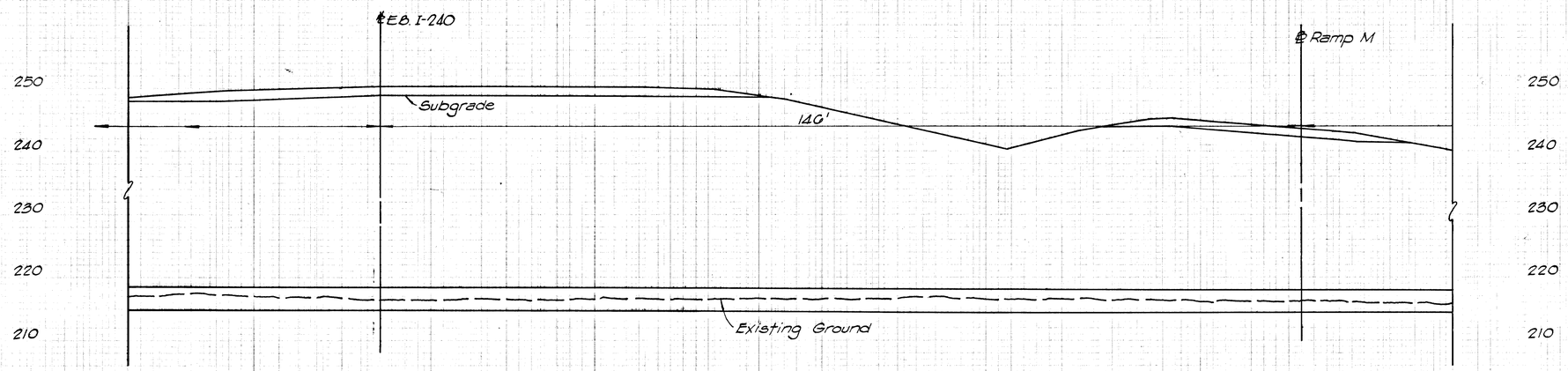




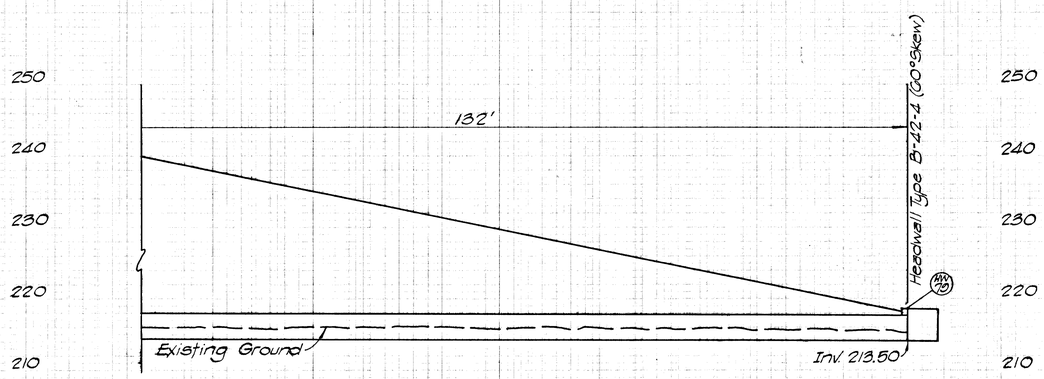
Scale: 1" = 10'

PROJECT NO.	YEAR	SHEET NO.
EACT-240-1(94)-4	1974	124





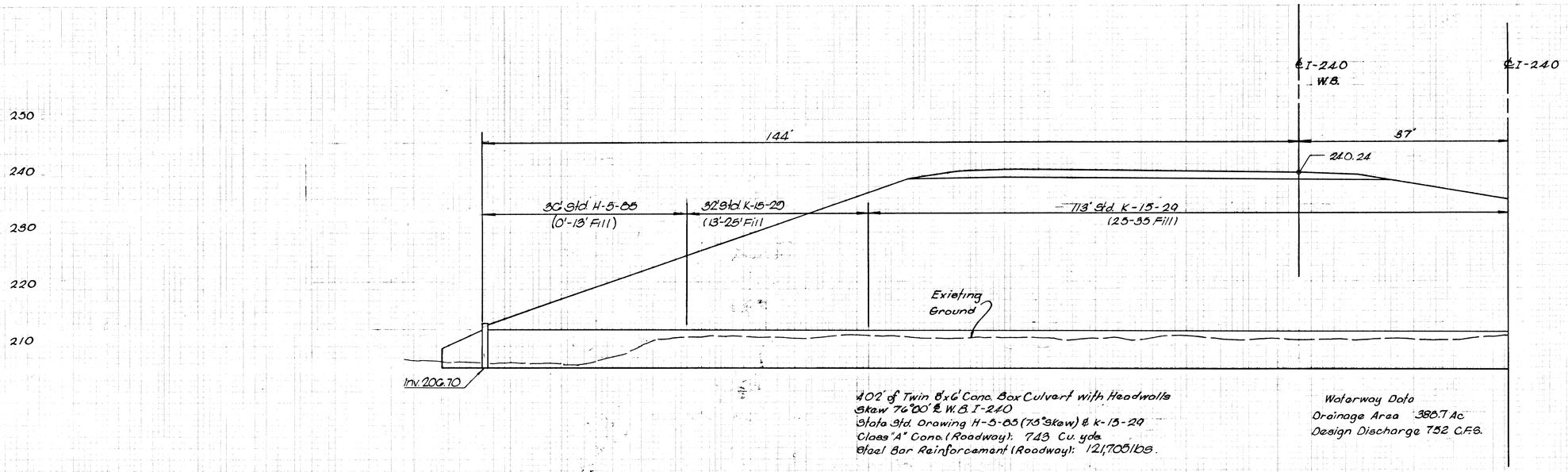
Waterway Data
Drainage Area: 22.1 Ac.
Design Discharge 55 C.F.S.



42" Pipe Sta. 8+55 Ramp D & 14+30 Ramp M
Scale 1" = 10'

618' of 42" Concrete Pipe Culvert (Class V) Class "B" Bedding - Imperfect Trench Installation
Inlet 75° Skew - Std. Headwall Type B-42-4
Outlet 60° Skew - Std. Headwall Type B-42-4
Bedding Material (Pipe) Class B : 278 C.Y.

PROJECT NO.	YEAR	SHEET NO.
FACI-240-1(20)4	1974	125

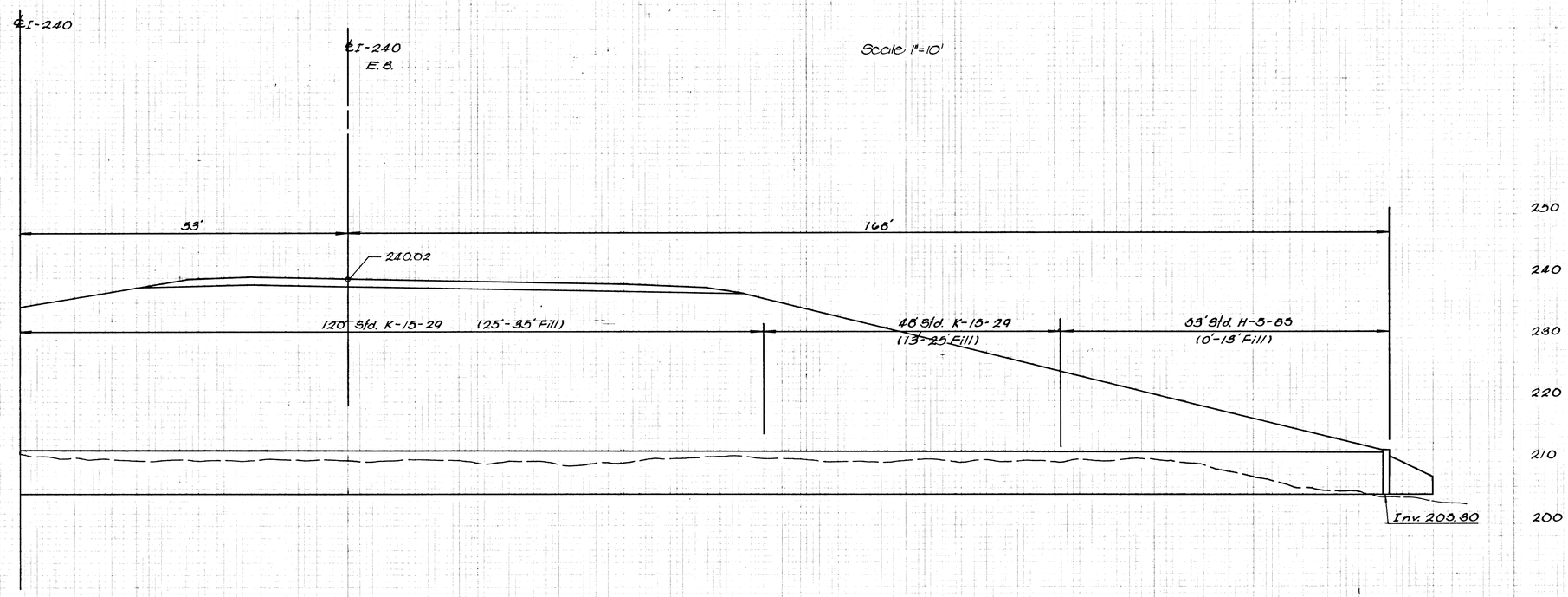


402' of Twin 8'x6' Conc. Box Culvert with Headwalls
Skew 76°00' ℄ W.B. I-240
State Std. Drawing H-5-85 (75° Skew) & K-15-29
Class "A" Conc. (Roadway): 743 Cu. yds
Steel Bar Reinforcement (Roadway): 121,705 lbs.

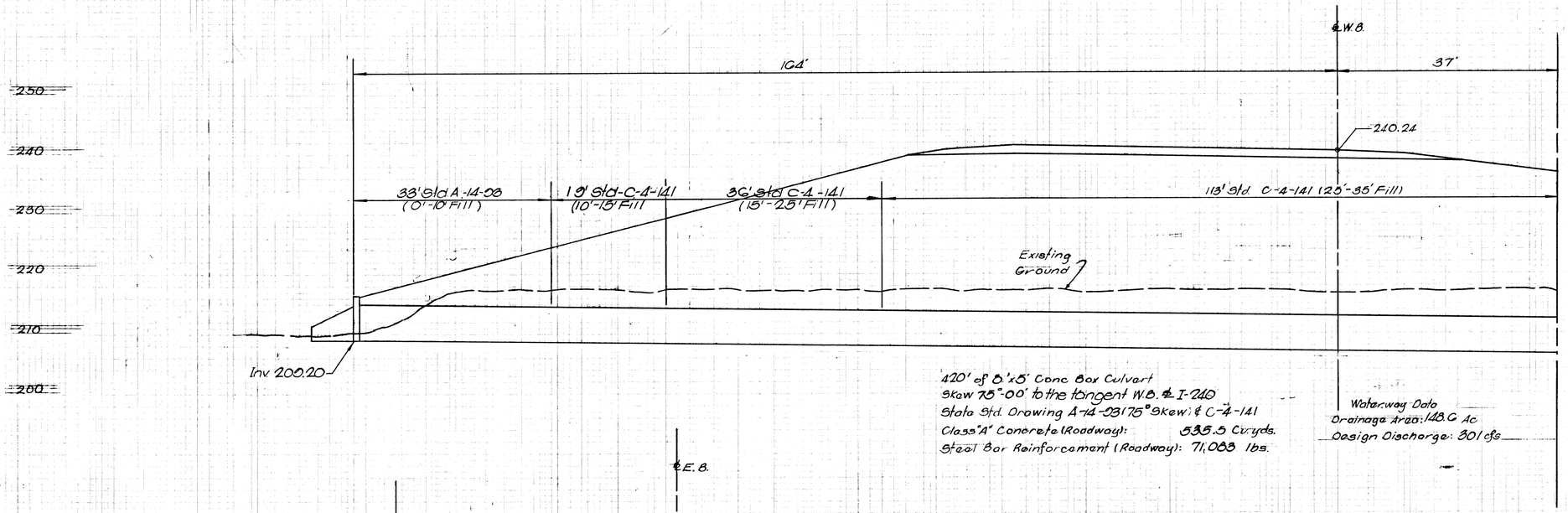
Waterway Data
Drainage Area 380.7 Ac
Design Discharge 732 C.F.S.

Scale: 1"=10'

Twin 8'x6' Conc. Box Culvert
Sta. 800+67 W.B. I-240
Scale: 1"=10'



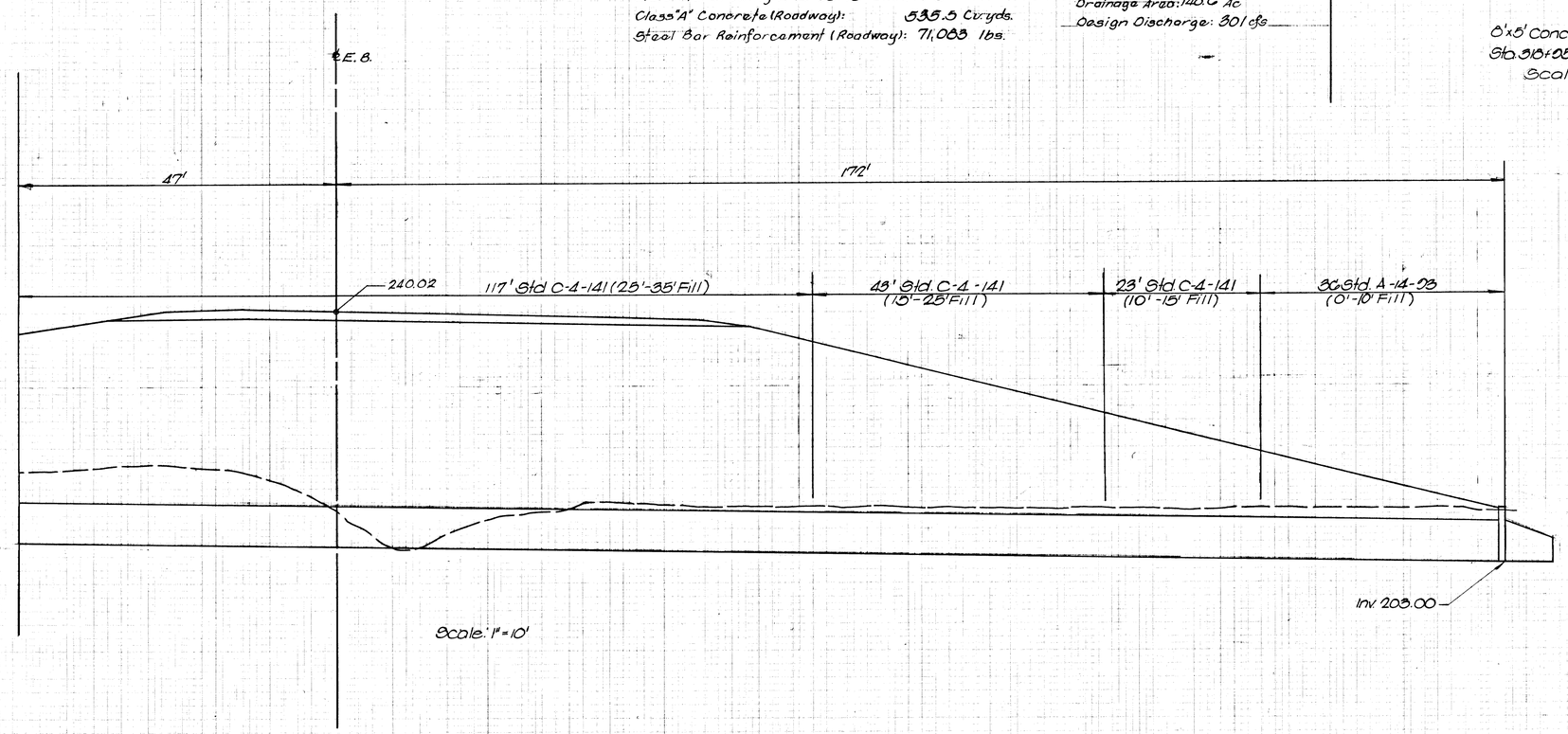
PROJECT NO.	YEAR	SHEET NO.
FACI-240-1(24)4	1974	126



420' of 8'x5' Conc Box Culvert
Skew 75°-00' to the tangent W.B. ℄ I-240
State Std. Drawing A-14-03 (75° Skew) & C-4-141
Class "A" Concrete (Roadway): 535.5 Cu. yds.
Steel Bar Reinforcement (Roadway): 71,083 lbs.

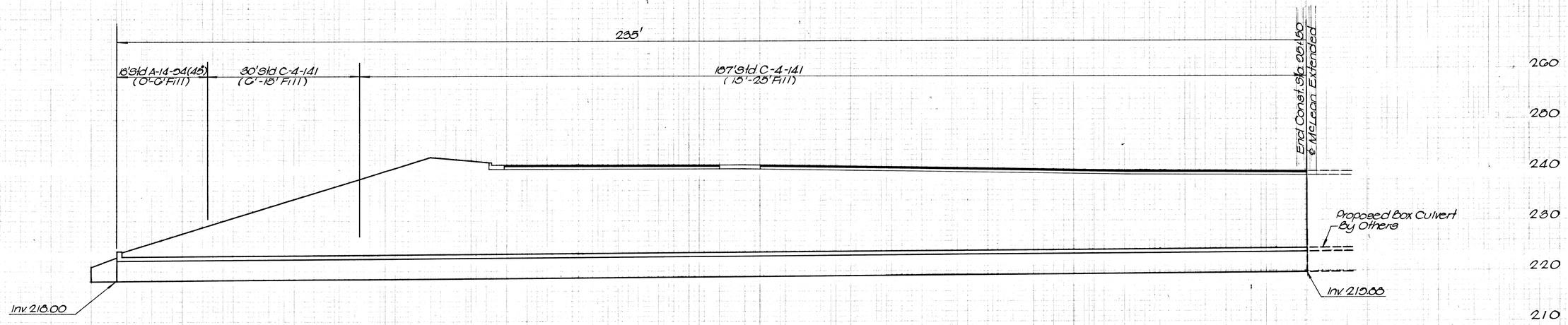
Waterway Data
Drainage Area: 148.6 Ac
Design Discharge: 301 cfs

8'x5' Concrete Box Culvert
Sta. 318+05 ℄ Tangent W.B. I-240
Scale: 1" = 10'



Scale: 1" = 10'

PROJECT NO.	YEAR	SHEET NO.
FACI-240-1(94)-4	1974	127

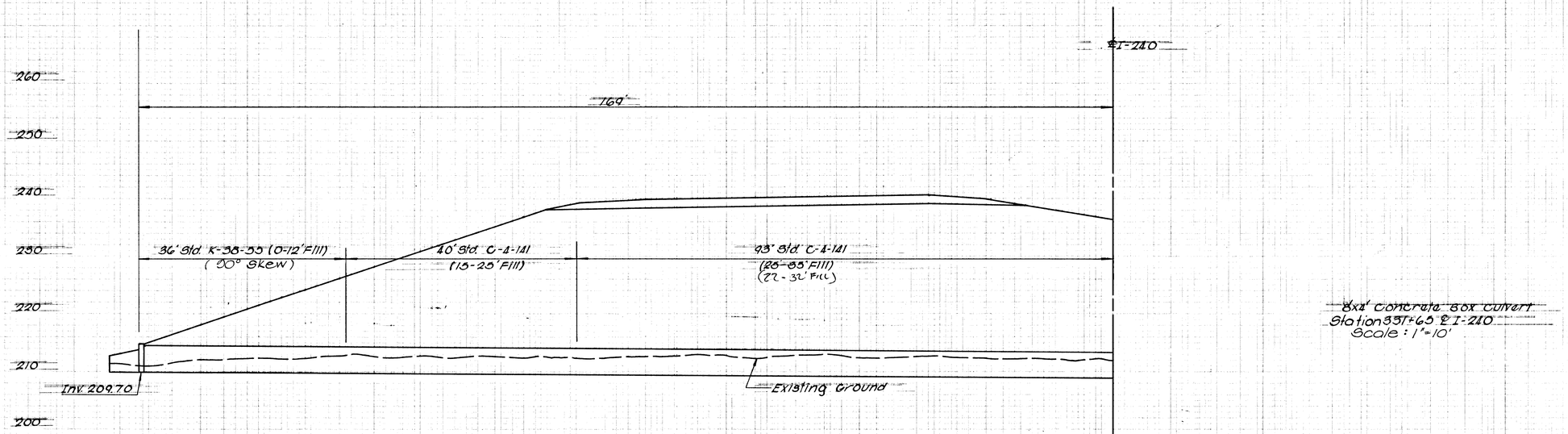


235 of 8'x4' Concrete Box Culvert with one Headwall
State Std. Drawing No. A-14-04 (45° Skew) & C-4-141
Class "A" Concrete (Roadway): 260.3 Cu. Yds.
Steel Bar Reinforcement 35,542 lbs.

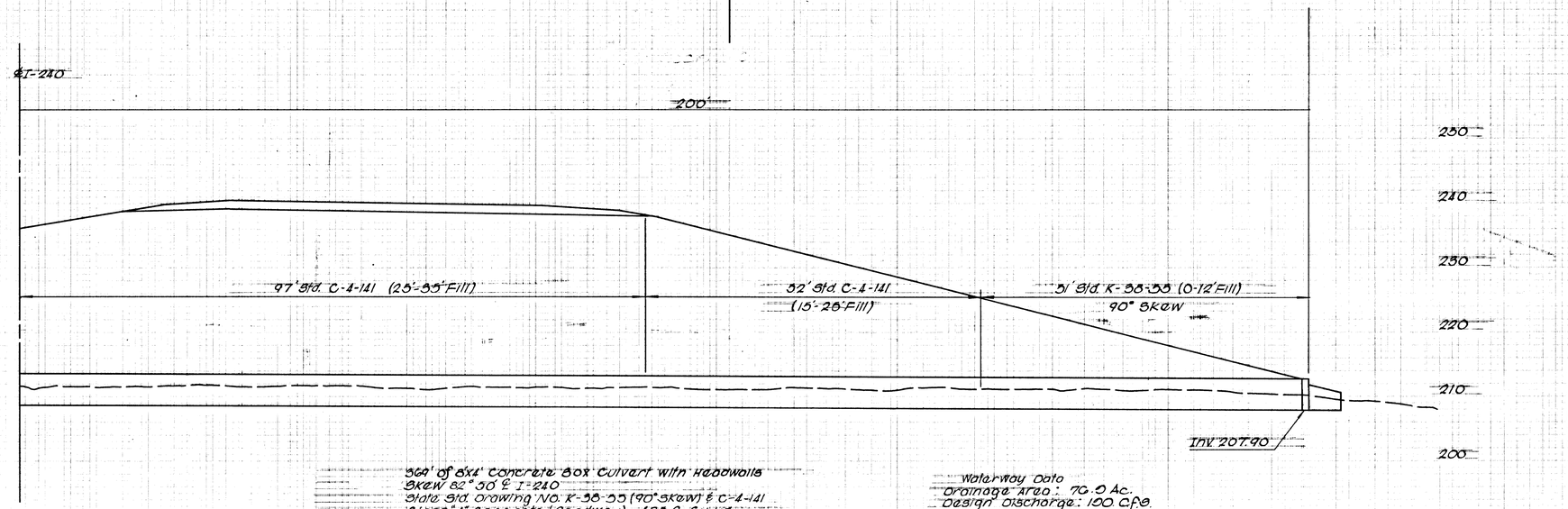
Waterway Data
Drainage Area: 1.20 Ac.
Design Discharge: 207 cfs

8'x4' Concrete Box Culvert
Under McLean Extended
Scale: 1"=10'

PROJECT NO.	YEAR	SHEET NO.
EACT-210-1(24)-4	1974	128



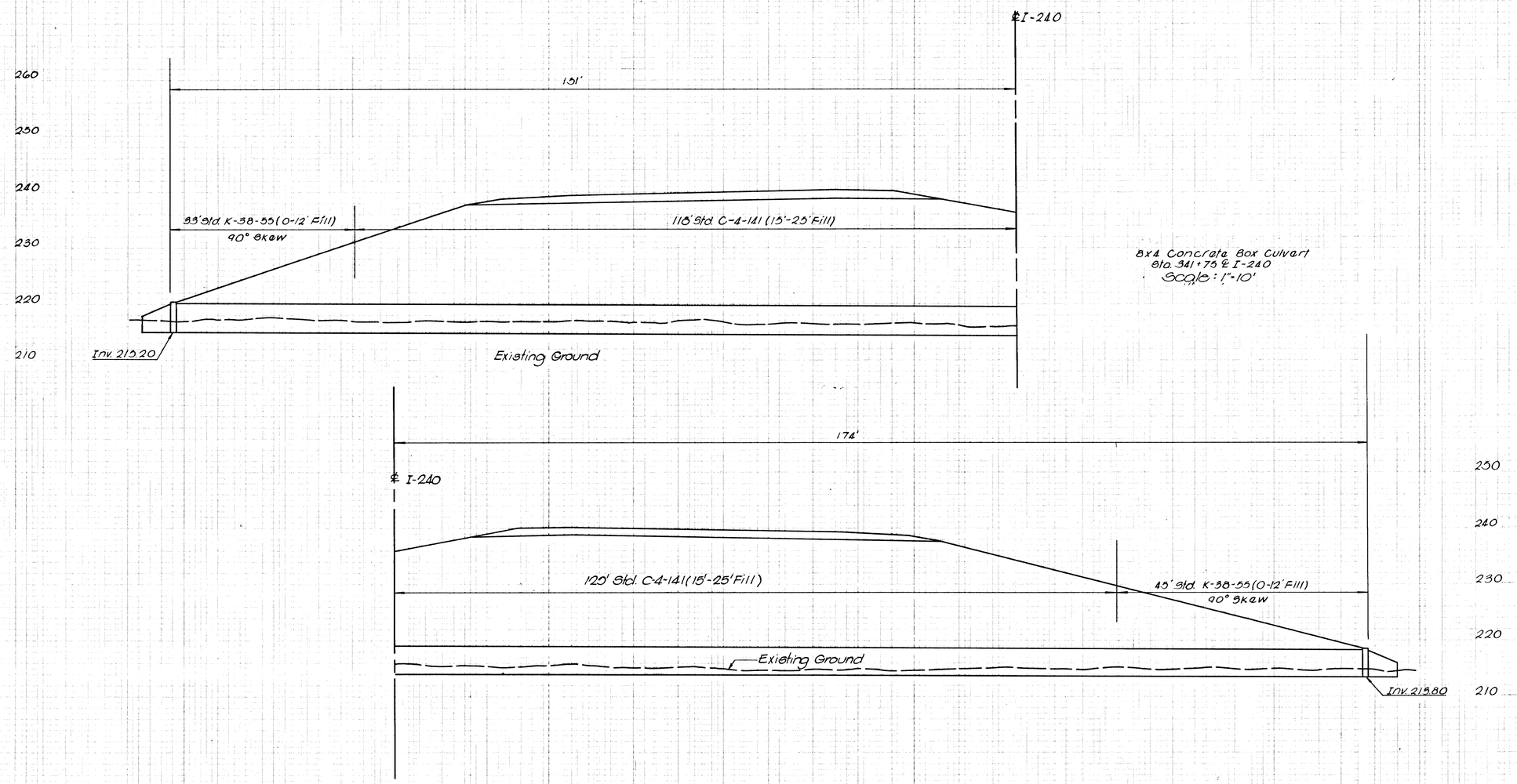
8x4' Concrete Box Culvert
Station 331+60 ℄ I-210
Scale: 1" = 10'



364' of 8x4' Concrete Box Culvert with Headwalls
Skew 82° 30' ℄ I-210
State Std. Drawing No. K-38-55 (90° Skew) & C-4-141
Class "A" Concrete (Roadway) 425.2 Cu yd.
910.01 Bar Reinforcement: 63,615 lbs.

Waterway Data
Drainage Area: 76.0 Ac.
Design Discharge: 100 cfs.

PROJECT NO.	YEAR	SHEET NO.
ACI-240-1(24)-4	1974	129



325' of 8'x4' Concrete Box Culvert With Headwalls
Skew 90° 00' ℄ I-240 State Std. K-38-55 & C-4-141.
Class "A" Concrete (Roadway): 339.9 Cu. yd.
Steel Bar Reinforcement: 50,268 lbs.

Waterway Data.
Drainage Area: 105.8 Ac.
Design Discharge: 224 CFS

TENN. STATE HIGHWAYS
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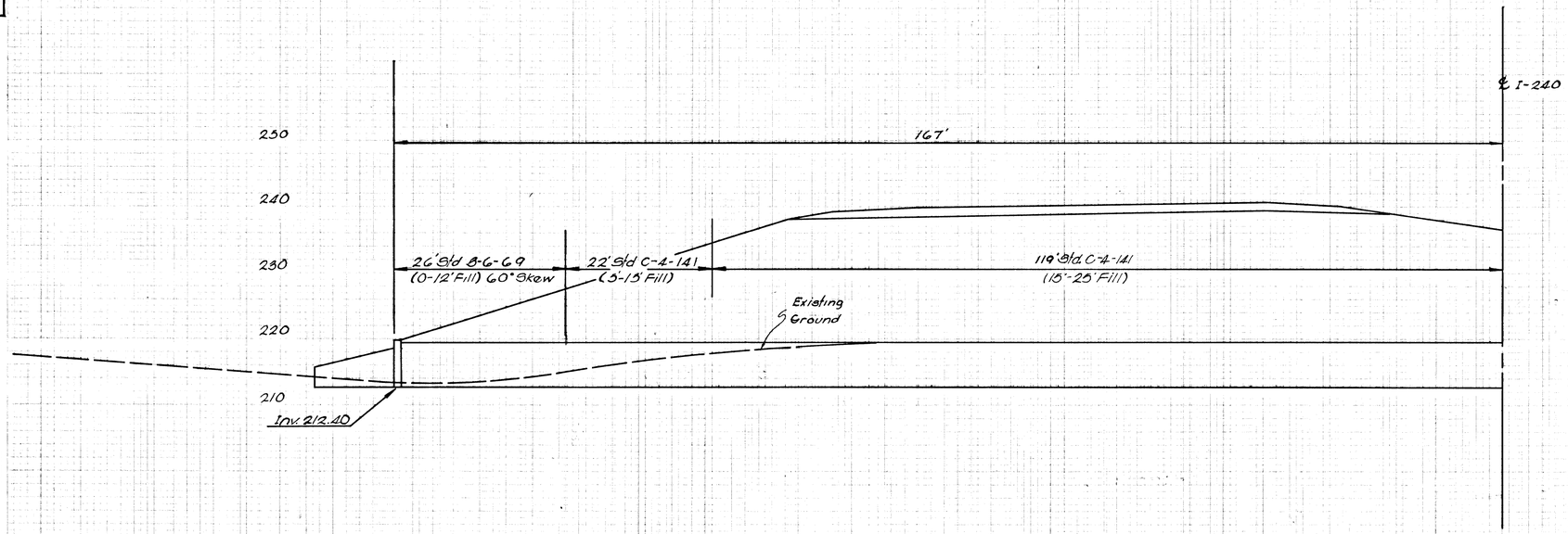
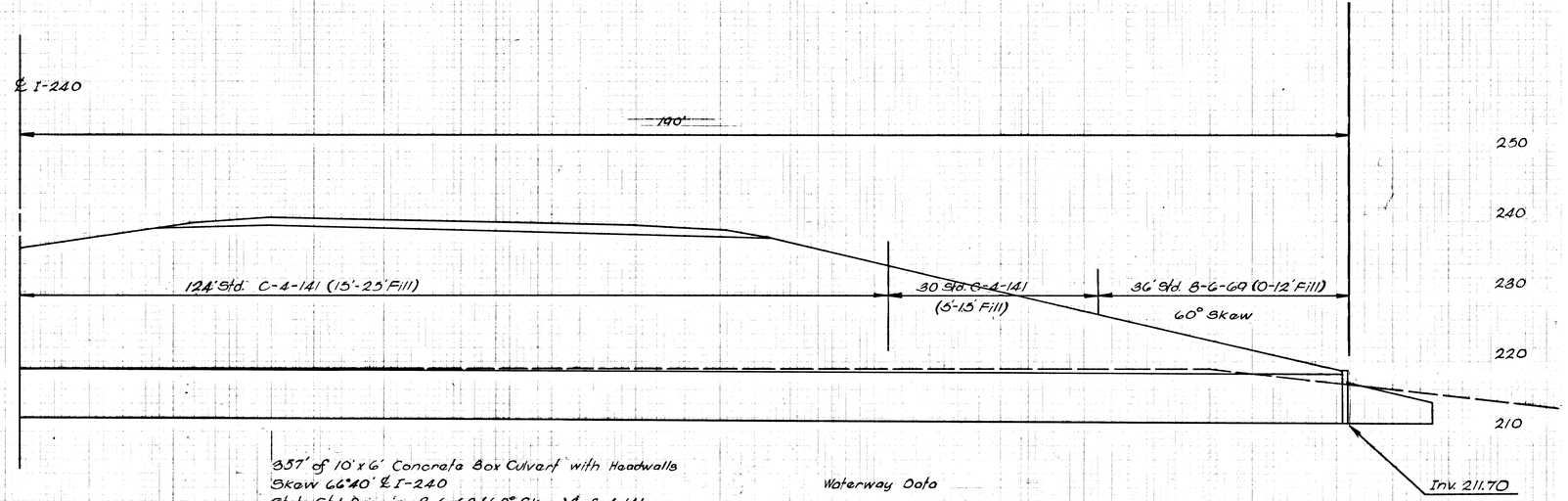
PROJECT NO.	YEAR	SHEET NO.
IMC I-240-1(84)-4	1972	130



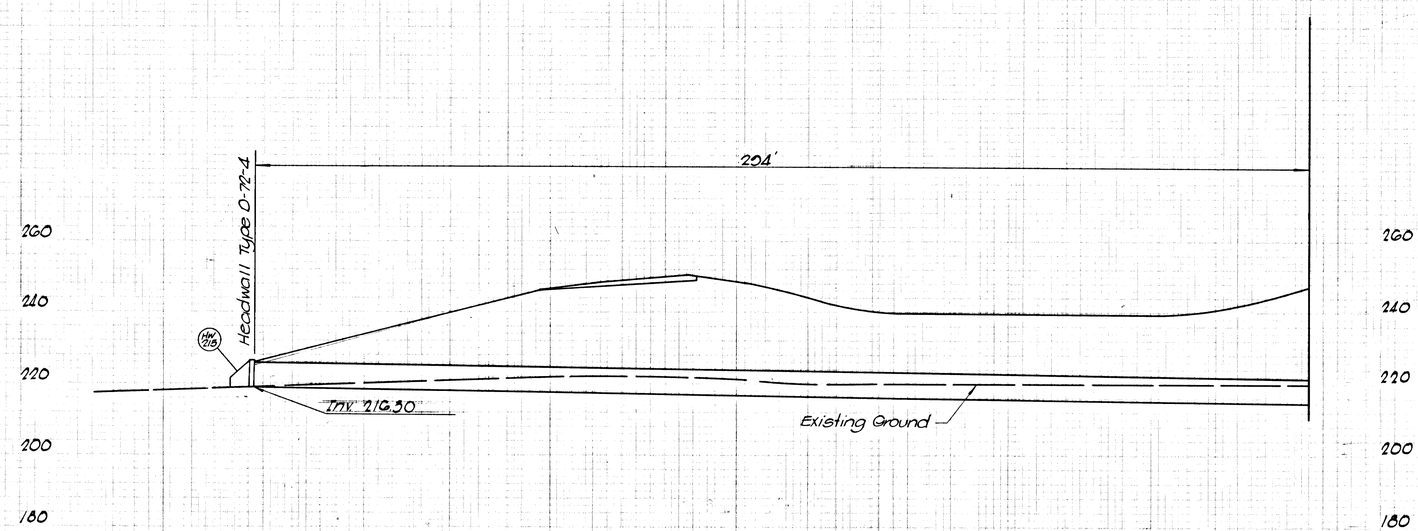
10'x6' Concrete Box Culvert
Sta. 351+08 ℄ I-240
Scale: 1"=10'



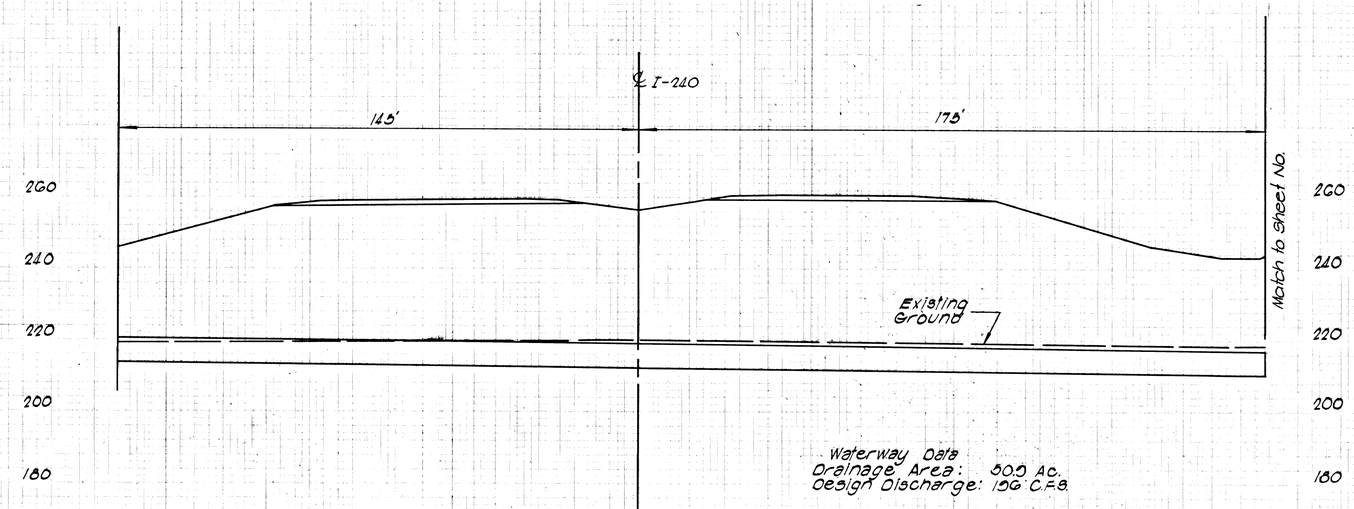
357' of 10'x6' Concrete Box Culvert with Headwalls
Skew 66°40' ℄ I-240
State Std. Drawing 8-6-69 (60° Skew) & C-4-141
Class A Concrete (Roadway) = 629.1 Cu. yds.
Steel Bar Reinforcement: 76905 lbs.

Waterway Data
Drainage Area: 274.3 Ac
Design Discharge: 481 C.F.S.

PROJECT NO.	YEAR	SHEET NO.
IACT-240-1(94)-4	1974	131



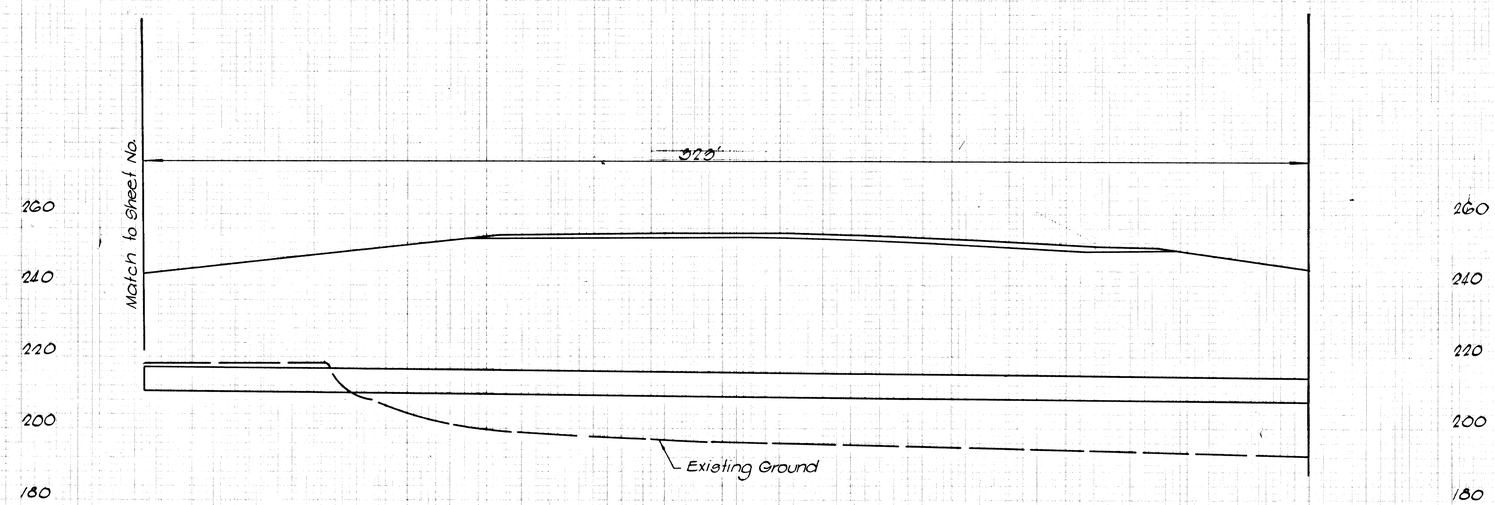
72" Concrete Pipe Culvert
Sta. 370+50 ℄ I-240
Skew 73°00'
Scale: 1" = 20'



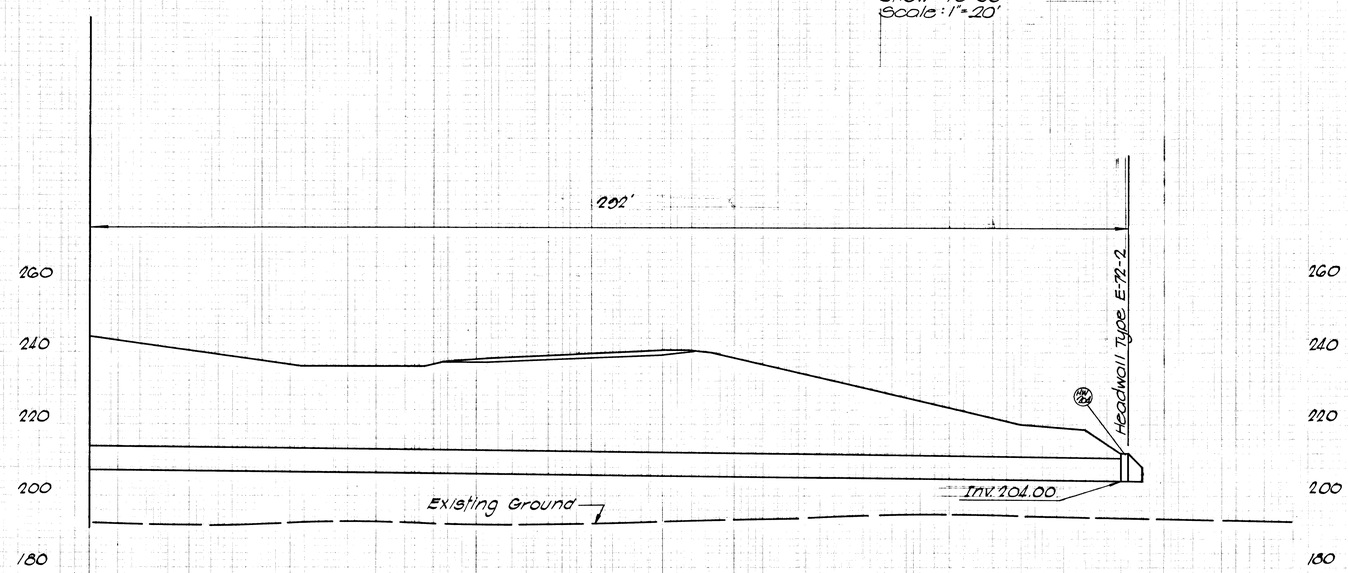
Waterway Data
Drainage Area: 500 Ac.
Design Discharge: 156 C.F.S.

1220' of 72" Concrete Pipe Culvert (Class V) Class "B" Bedding
Imperfect Trench Installation
Inlet 90° Skew - Std. Headwall Type 0-72-4
Outlet 73° Skew - Std. Headwall Type E-72-2
Bedding Material (Pipe) Class "B" - 971 Cu. yds.

PROJECT NO.	YEAR	SHEET NO.
EACI-210-1(94)4	1974	132

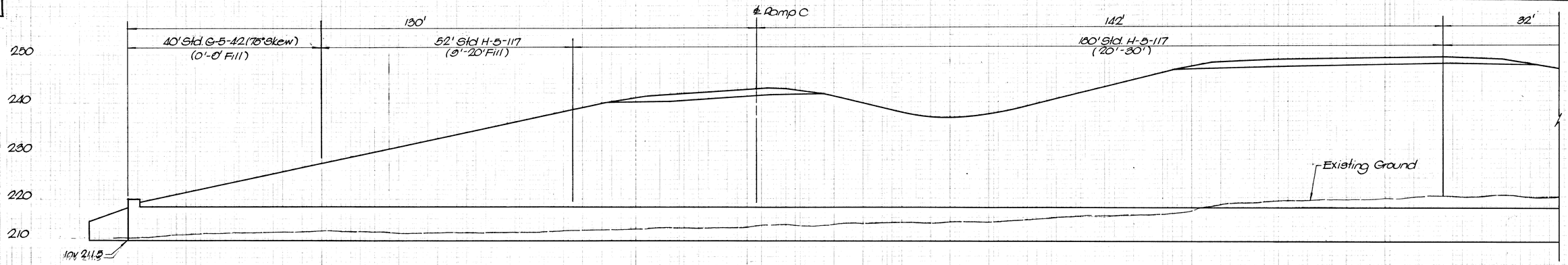


72" concrete Pipe culvert
Sta 370+50 ℄ I-210
Skew 75°00'
Scale: 1"=20'



TENN. STATE HIGHWAYS
Plans Divn. File No. IN-316

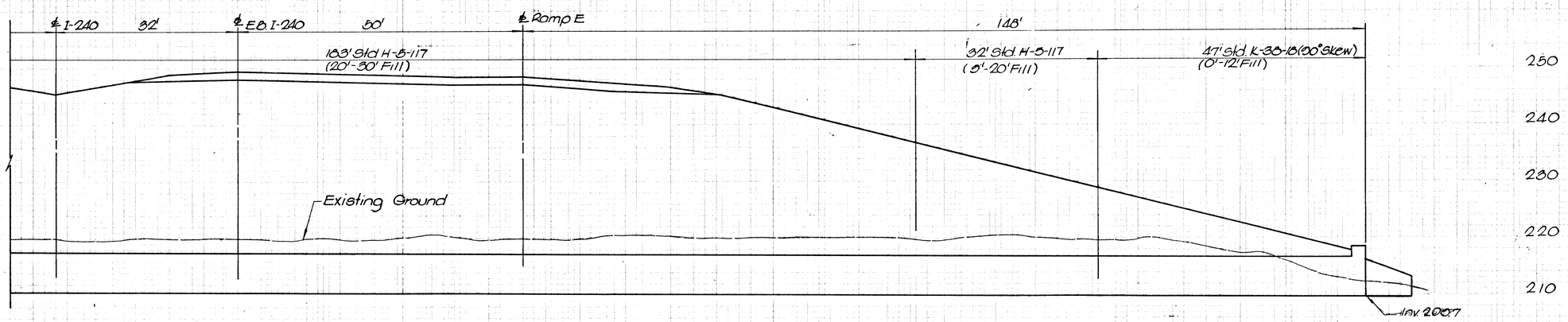
PROJECT NO.	YEAR	SHEET NO.
EACI-240-1(94)-4	1971	133



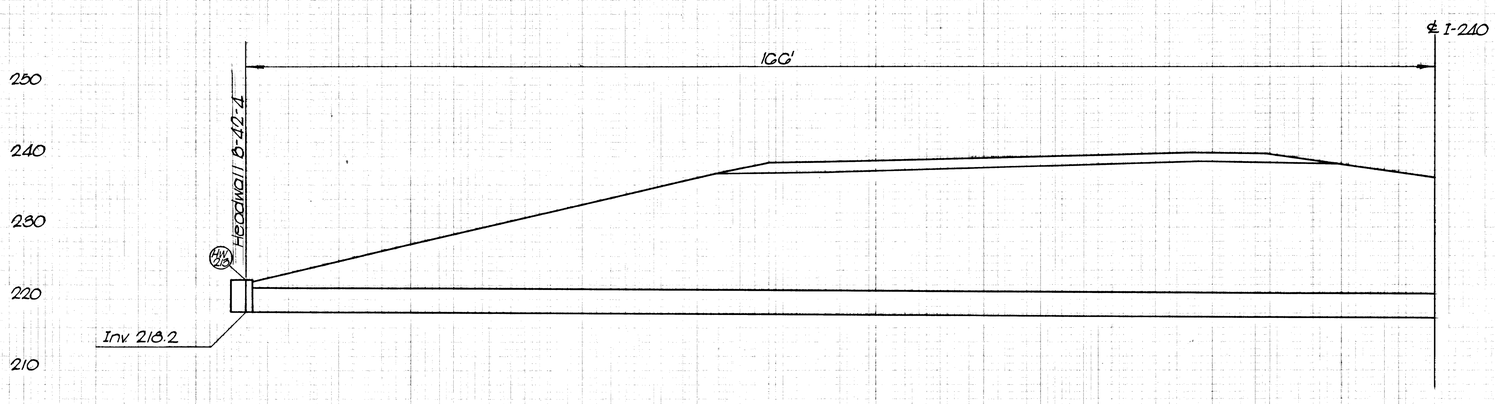
584' of Triple 12'x 6' Concrete Box Culvert Box Culvert with Headwalls
Skew 85°-40' ℄ I-240
Slate Std. Drawing No. G-5-42 (75°), H-5-117, K-38-18 (90°) & K-15-128
Class A Concrete (Roadway) 2481.8 C.Y.
Steel Bar Reinforcement 437,398 lbs.

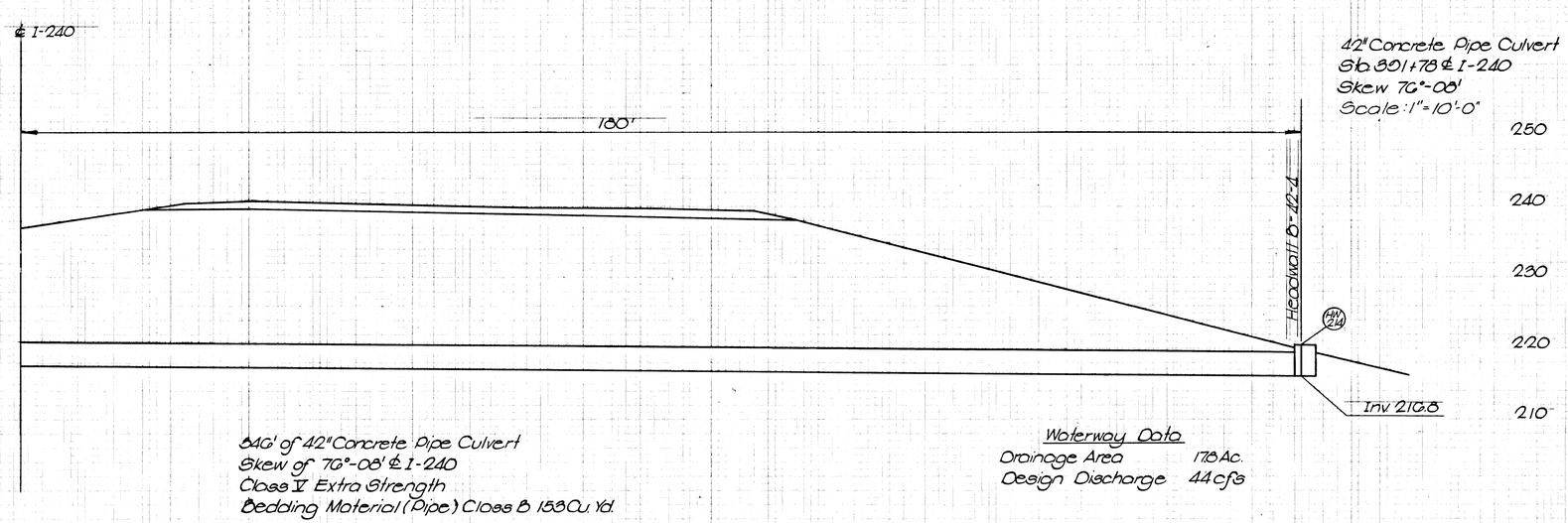
Waterway Data
Drainage Area 1203 Ac.
Design Discharge 1870 C.F.S.

Triple 12'x 6' Concrete Box Culvert
Sta. 386+60 ℄ I-240
Skew 85°-40'
Scale: 1" = 10'-0"



PROJECT NO.	YEAR	SHEET NO.
IACI-240-K(34)-4	1974	184





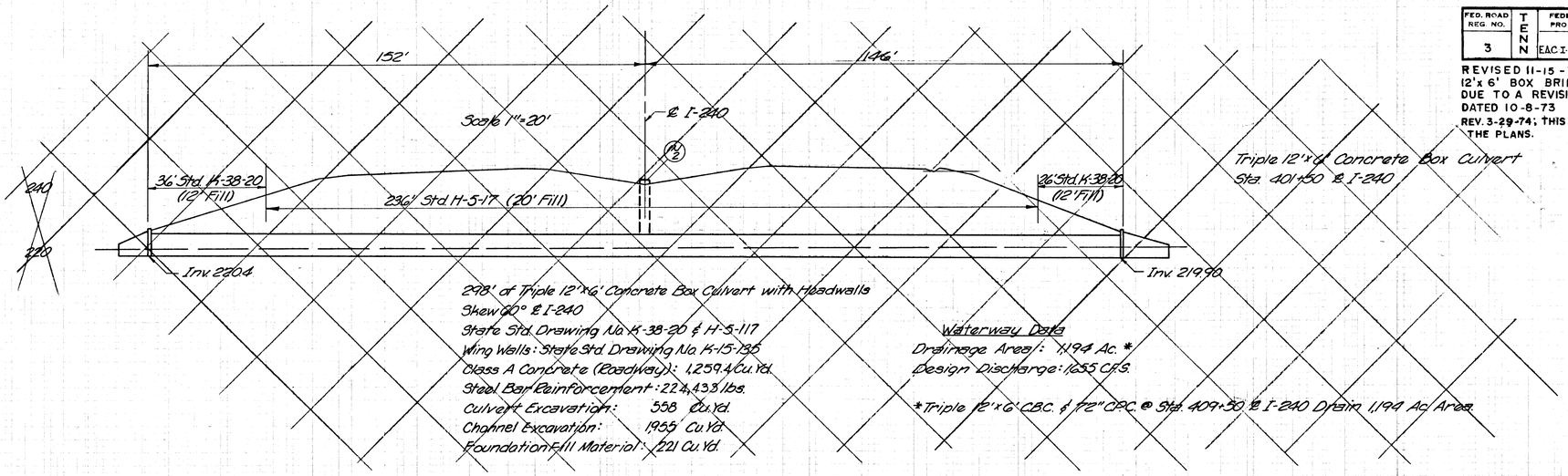
42" Concrete Pipe Culvert
Sta 301+78 ℄ I-240
Skew 70°-08'
Scale: 1" = 10'-0"

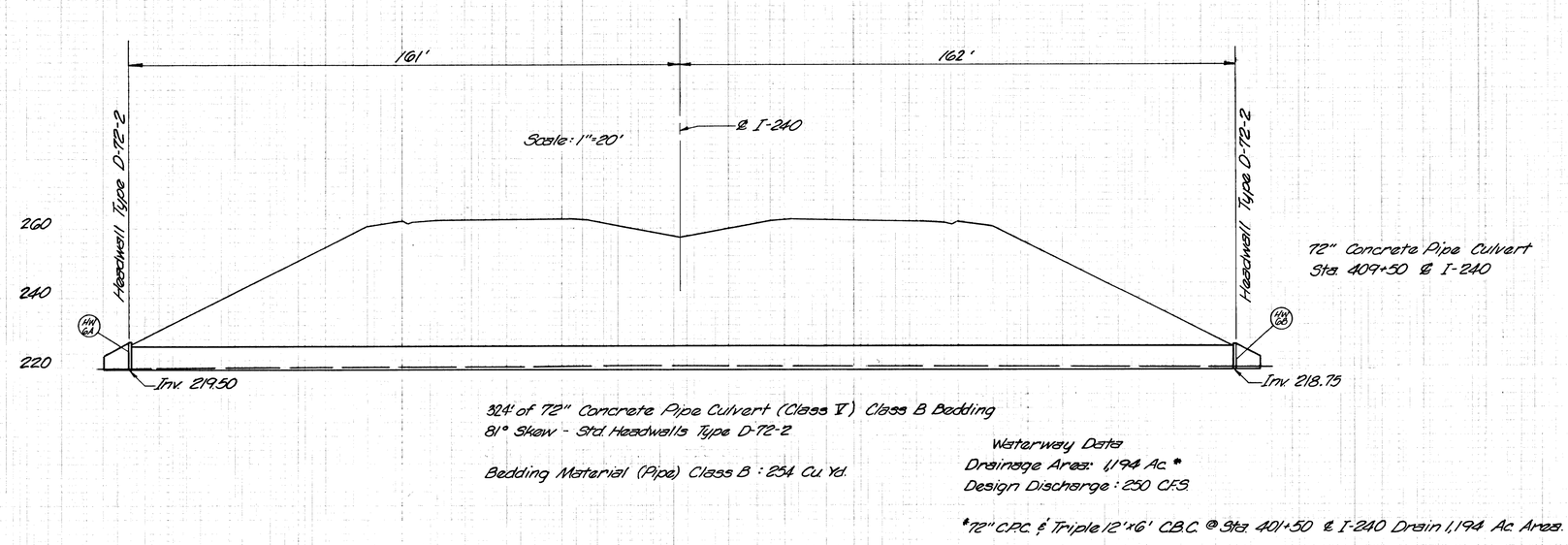
84' of 42" Concrete Pipe Culvert
Skew of 70°-08' ℄ I-240
Class V Extra Strength
Bedding Material (Pipe) Class B 158 Cu. Yd.

Waterway Data
Drainage Area 178 Ac.
Design Discharge 44 cfs

FED. ROAD REG. NO.		FEDERAL AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
3	TENN	EAC I-240-1(94)4	1974	134-A	

REVISED 11-15-73; DELETED TRIPLE 12'x 6' BOX BRIDGE AT STA. 401+50 DUE TO A REVISION BY THE CONSULTANT DATED 10-8-73
REV. 3-29-74; THIS SHEET WAS ADDED TO THE PLANS.





CULVERT CROSS SECTIONS