OHIO DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

FHWA REGION	STATE	Federal Project		
5	Ohio	IR-270-5 (48) 119		1 / 118

PART	COUNTY	ROUTE	SECTIONS	PROJECT TERMINII BEGIN	PROJECT TERMINII END	NET LENGTH MILES	TOWNSHIP	CITY	VILLAGE
1	FRA	IR-270	(28.95)(31.28)(34.49)	29.11	35.60	2.71	Blendon Mifflin		
2	FRA	IR-270	(30.54)(31.45)(33.96)	30.54	34.37	3.32		Columbus	
3	FRA	IR-270	(33.62)(34.37)(35.60)	33.62	37.00	1.86		Gahanna	

LIMITED ACCESS
This improvement is especially designed for through traffic and has been declared a limited access highway or freeway by action of the Director in accordance with the provisions of Section 5511.02 of the Revised Code of Ohio.

Total Project Length 41,660 Lin. Ft. or 7.89 Miles, Total Work Length 42,401 Lin. Ft. or 8.03 Miles

FRA-270-29.11

PLAN NO.

The Standard 19 87 Specifications of the State of Ohio, Department of Transportation, including changes and Supplemental Specifications listed in the plans and proposal shall govern these improvements.

I hereby approve these plans and declare that the making of these improvements will not require the closing of the highway to traffic, and provisions for the maintenance and safety of traffic will be as set forth on the plans and estimates.

Approved Date 12-17-86 George E. [signature] District Deputy Director of Transportation

Approved Date ________ Engineer, Bureau of Bridges and Structural Design

Approved Date ________ Chief Engineer, Planning and Design

Approved Date ________ Director, Department of Transportation

Department of Transportation
Federal Highway Administration
Approved:

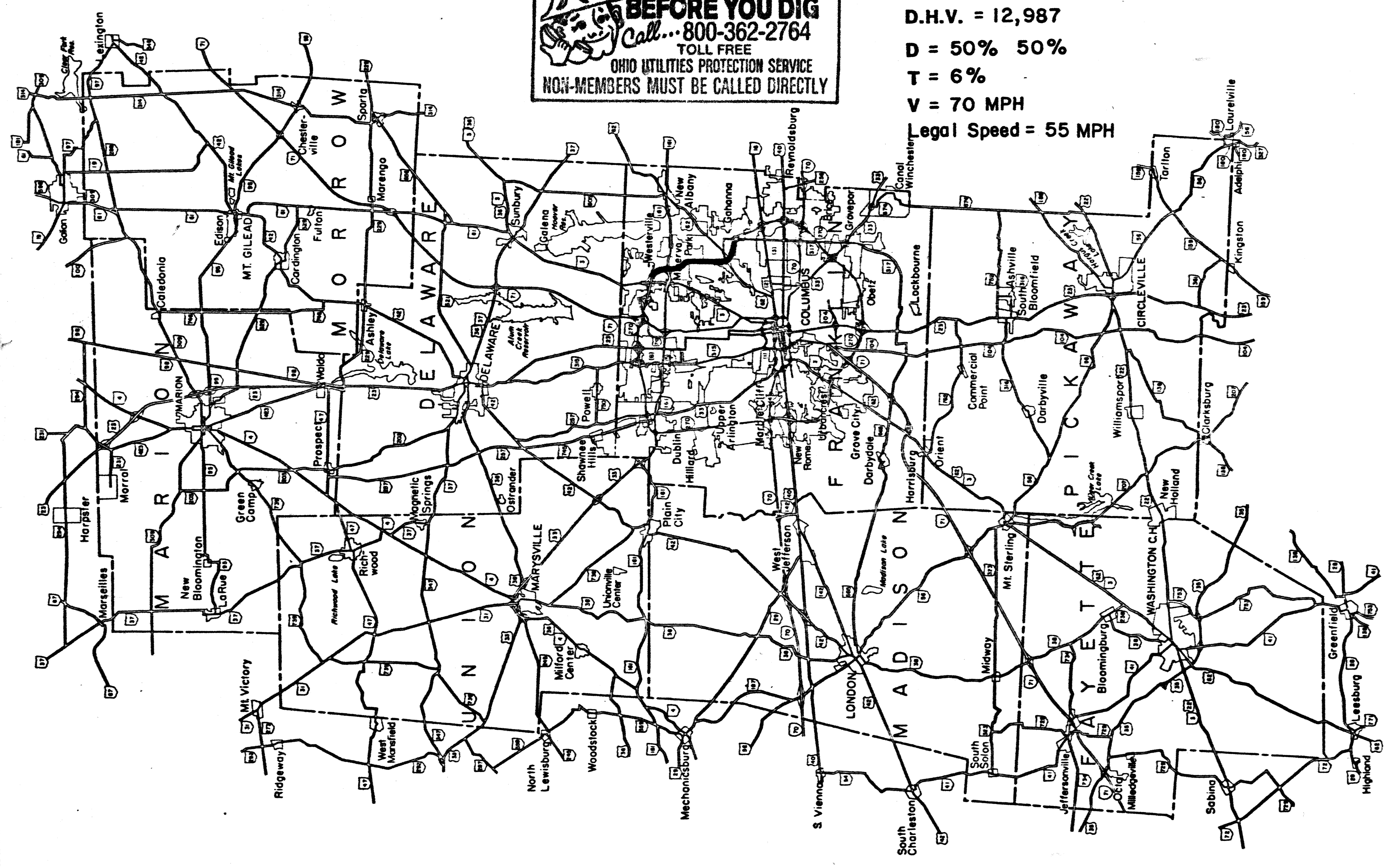
Division Administrator ________ Date ________

LOCATION MAP

TWO WORKING DAYS
BEFORE YOU DIG
Call...800-362-2764
TOLL FREE
OHIO UTILITIES PROTECTION SERVICE
NON-MEMBERS MUST BE CALLED DIRECTLY

DESIGN DESIGNATION

Current A.D.T. (1987) = 49,472
Design A.D.T. (2007) = 86,577
D.H.V. = 12,987
D = 50% 50%
T = 6%
V = 70 MPH
Legal Speed = 55 MPH



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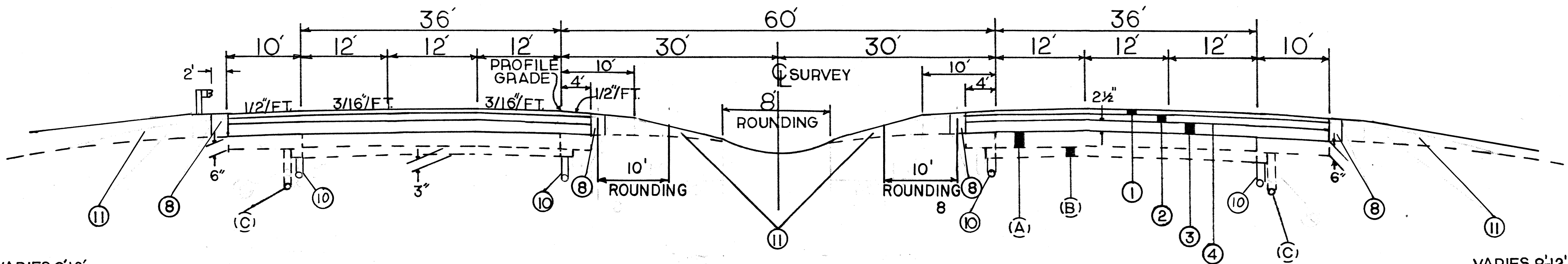
DEPARTMENT OF TRANSPORTATION
M& R 712 REV. 9-1-83

SCHEMATIC PLAN

TYPICAL SECTIONS

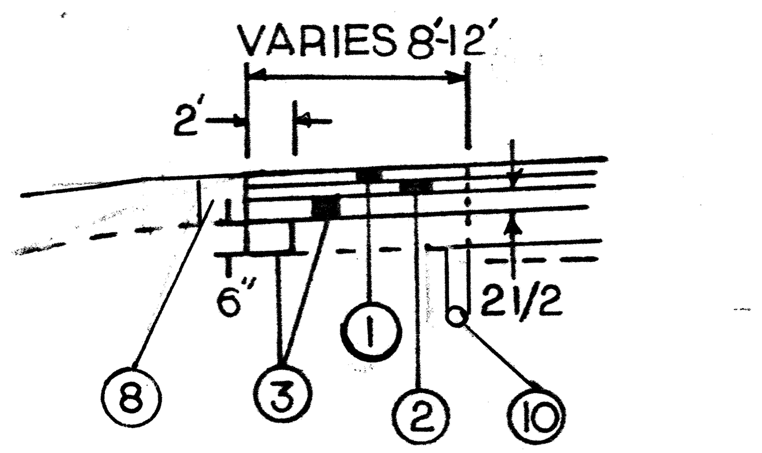
TYPE 846 ON 301

SECTION A

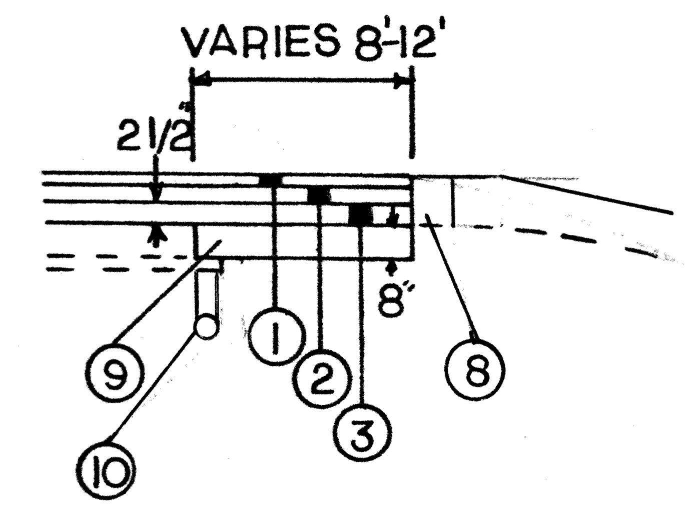


NORMAL SECTION

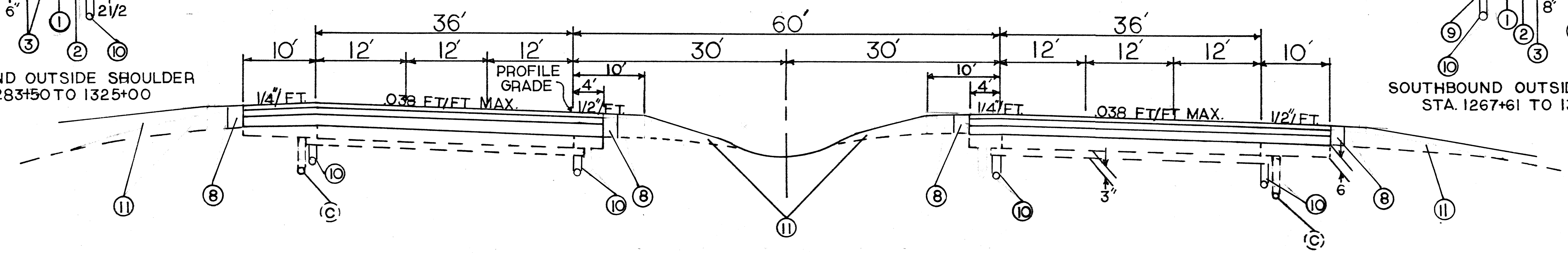
STA. 1249+63 to 1296+16
STA. 1313+71 to 1325+00



NORTHBOUND OUTSIDE SHOULDER
STA. 1283+50 TO 1325+00



SOUTHBOUND OUTSIDE SHOULDER
STA. 1267+61 TO 1325+00



SUPERELEVATED SECTION

STA. 1188+19 to 1249+63
STA. 1296+16 to 1313+71

LEGEND - EXISTING PAVEMENT

(A) ITEM 453 - 8" CONTINUOUSLY REINFORCED CONCRETE PAVEMENT

(B) ITEM 301 - BITUMINOUS AGGREGATE BASE

(C) ITEM 605 - 6" PIPE UNDERDRAIN (DEEP)

LEGEND - PROPOSED PAVEMENT

1. ITEM 846 - 1 1/4" ASPHALT CONCRETE, SURFACE COURSE, TYPE 1 AC-20, AS PER PLAN
2. ITEM 846 - 1 3/4" ASPHALT CONCRETE, INTERMEDIATE COURSE, TYPE 2 AC-20
3. ITEM 301 - BITUMINOUS AGGREGATE BASE: AC-20
4. ITEM SPECIAL - PAVEMENT REINFORCING FABRIC
5. ITEM 407 - TACK COAT @ .10 GAL./S.Y.
   - COVER AGGREGATE @ 7 lbs./S.Y.
8. ITEM 617 - COMPACTED AGGREGATE (2' wide)
9. ITEM 305 - CONCRETE BASE
10. ITEM SPECIAL - PAVEMENT EDGE DRAINS
11. ITEM 203 - EMBANKMENT

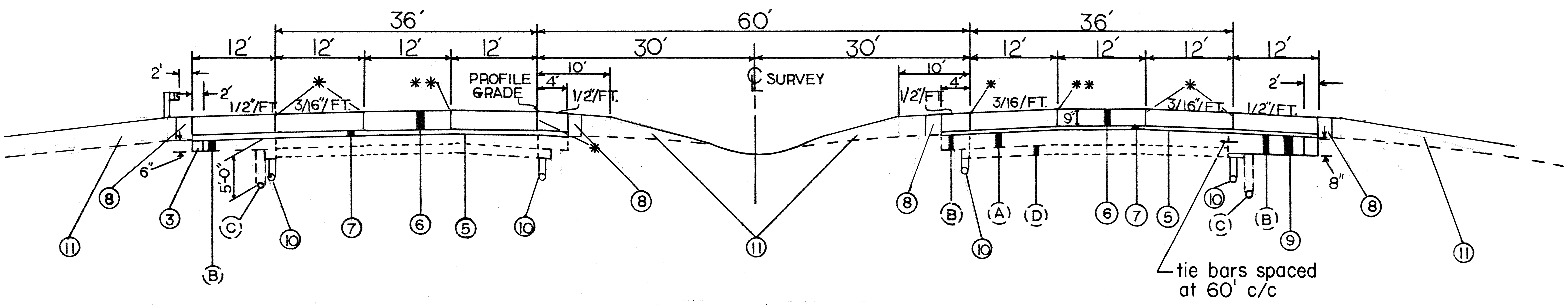
TYPICAL SECTIONS

TYPE 452

SECTION B

* standard longitudinal joint as per BP-3

* * untied longitudinal joint



NORMAL SECTION

STA. 1325+00 to 1355+06

STA. 1357+40 to 1439+85

LEGEND - EXISTING PAVEMENT

(A) ITEM 453 - 8" CONTINUOUSLY REINFORCED CONCRETE PAVEMENT

(B) ITEM 301 - BITUMINOUS AGGREGATE BASE

(C) ITEM 605 - 6" PIPE UNDERDRAIN

(D) ITEM 804 - 4" CEMENT STABILIZED SUBBASE

LEGEND - PROPOSED PAVEMENT

(3) ITEM 301 - BITUMINOUS AGGREGATE BASE: AC-20

(5) ITEM 407 - TACK COAT @ .10 GAL./S.Y.
- COVER AGGREGATE @ 7 lbs./S.Y.

(6) ITEM 452 - PLAIN CONCRETE PAVEMENT, AS PER PLAN (also see Proposal Note)

(7) ITEM 403 - 1"± ASPHALT CONCRETE

(8) ITEM 617 - COMPACTED AGGREGATE (2' wide)

(9) ITEM 305 - CONCRETE BASE

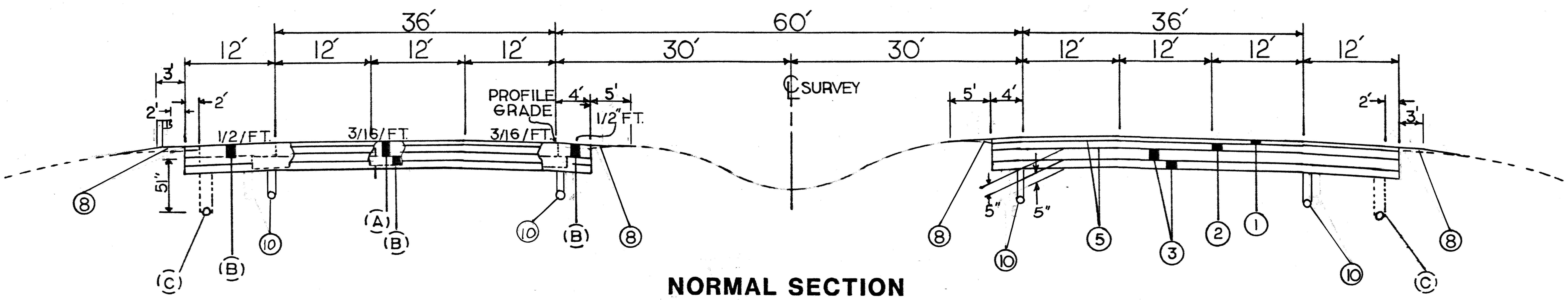
(10) ITEM 605 - SHALLOW PIPE UNDERDRAINS
ITEM SPECIAL- PAVEMENT EDGE DRAINS

(11) ITEM 203 - EMBANKMENT

TYPICAL SECTIONS

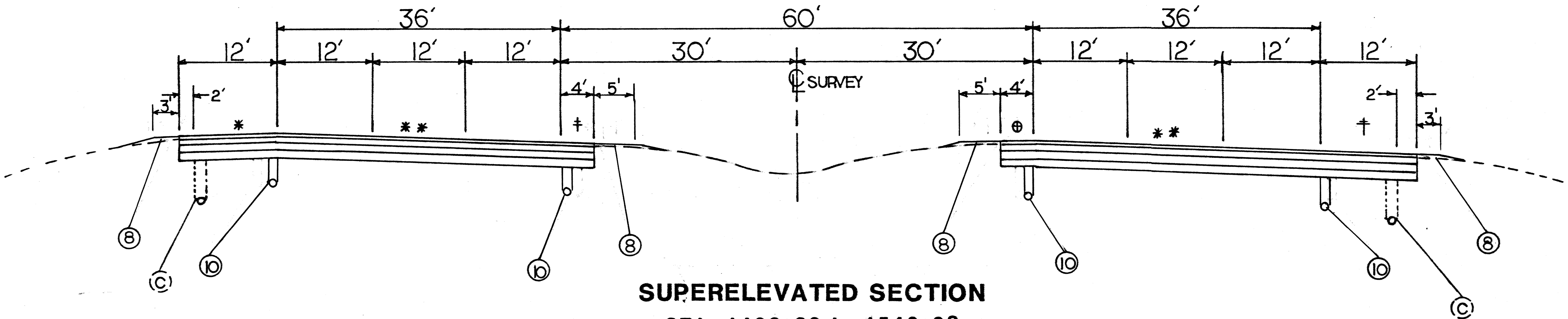
TYPE 846 ON 301

SECTION C



NORMAL SECTION

STA. 1439+85 to 1490+00



SUPERELEVATED SECTION

STA. 1490+00 to 1546+28

LEGEND - EXISTING PAVEMENT

(A) ITEM 453 - 8" CONTINUOUSLY REINFORCED CONCRETE PAVEMENT

(B) ITEM 301 - BITUMINOUS AGGREGATE BASE

(C) ITEM 605 - 6" PIPE UNDERDRAIN

* 3/8"/FT. STA. 1490+00 - 1524+00
1/8"/FT. STA. 1524+00 - 1546+28
** .032 FT./FT. MAX. STA. 1490+00 - 1519+75
.064 FT./FT. MAX. STA. 1519+75 - 1524+00
.0645 FT./FT. MAX. STA. 1524+00 - 1546+28
† 1/2"/FT. OR SAME AS PAV'T. STA. 1490+00 - 1546+28
⊕ NO SLOPE - STA. 1490+00 - 1524+00
1/8"/FT. STA. 1524+00 - 1546+28

LEGEND - PROPOSED PAVEMENT

(1) ITEM 846 - 1 1/4" ASPHALT CONCRETE, SURFACE COURSE, TYPE 1 AC-20, AS PER PLAN

(2) ITEM 846 - 1 3/4" ASPHALT CONCRETE, INTERMEDIATE COURSE, TYPE 2 AC-20

(3) ITEM 301 - BITUMINOUS AGGREGATE BASE: AC-20

(5) ITEM 407 - TACK COAT @ .10 GAL./S.Y.
- COVER AGGREGATE @ 7 lbs./S.Y.

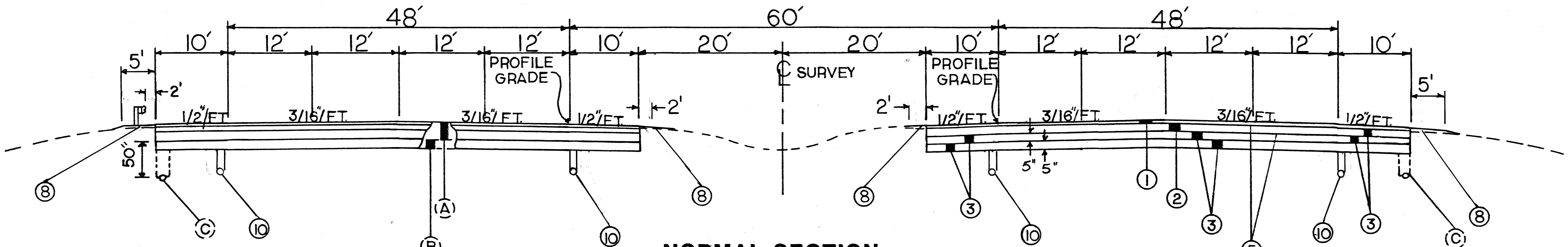
(8) ITEM 617 - COMPACTED AGGREGATE

(10) ITEM 605 - SHALLOW PIPE UNDERDRAIN

TYPICAL SECTIONS

TYPE 846 ON 301

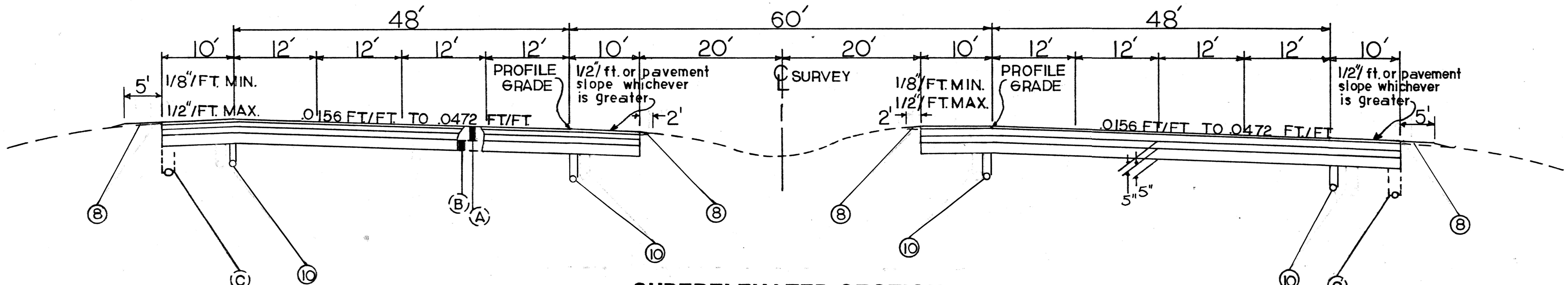
SECTION C



NORMAL SECTION

STA. 1546+28 to 1588+26

STA. 1600+22 to 1601+61



SUPERELEVATED SECTION

STA. 1588+26 to 1600+22

LEGEND - EXISTING PAVEMENT

(A) ITEM 453 - 8" CONTINUOUSLY REINFORCED CONCRETE PAVEMENT

(B) ITEM 301 - BITUMINOUS AGGREGATE BASE

(C) ITEM 605 - 6" PIPE UNDERDRAIN

LEGEND - PROPOSED PAVEMENT

(1) ITEM 846 - 1 1/4" ASPHALT CONCRETE, SURFACE COURSE, TYPE 1 AC-20, AS PER PLAN

(2) ITEM 846 - 1 3/4" ASPHALT CONCRETE, INTERMEDIATE COURSE, TYPE 2 AC-20

(3) ITEM 301 - BITUMINOUS AGGREGATE BASE: AC-20

(5) ITEM 407 - TACK COAT @ .10 GAL./S.Y.
- COVER AGGREGATE @ 7 lbs./S.Y.

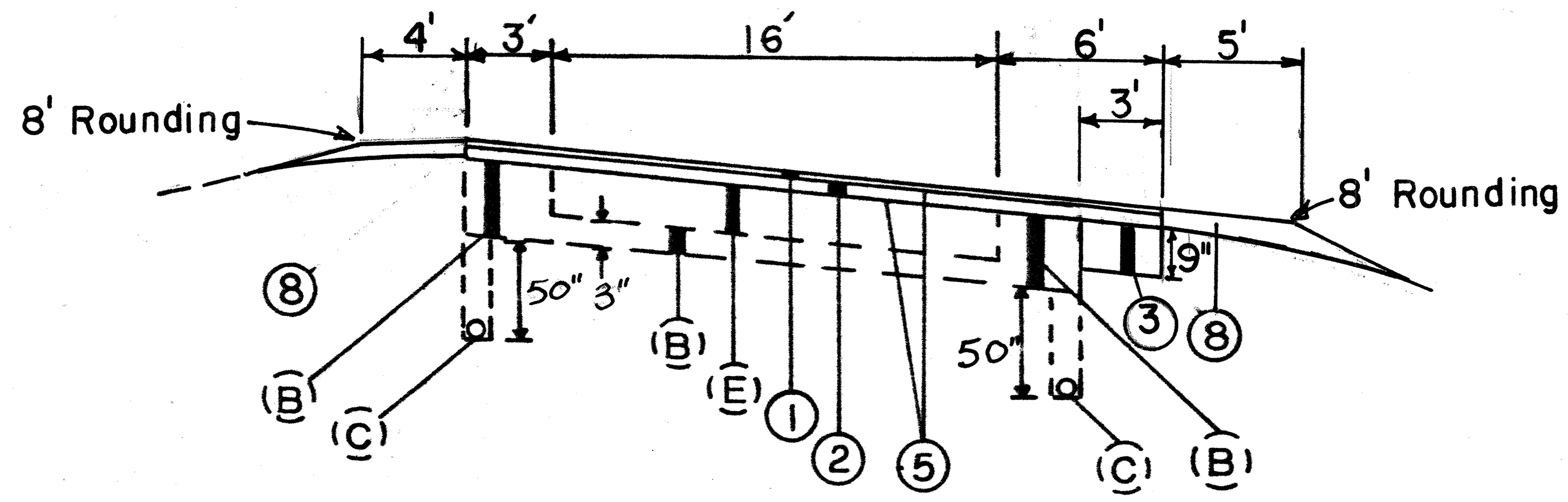
(8) ITEM 617 - COMPACTED AGGREGATE

(10) ITEM 605 - SHALLOW PIPE UNDERDRAIN

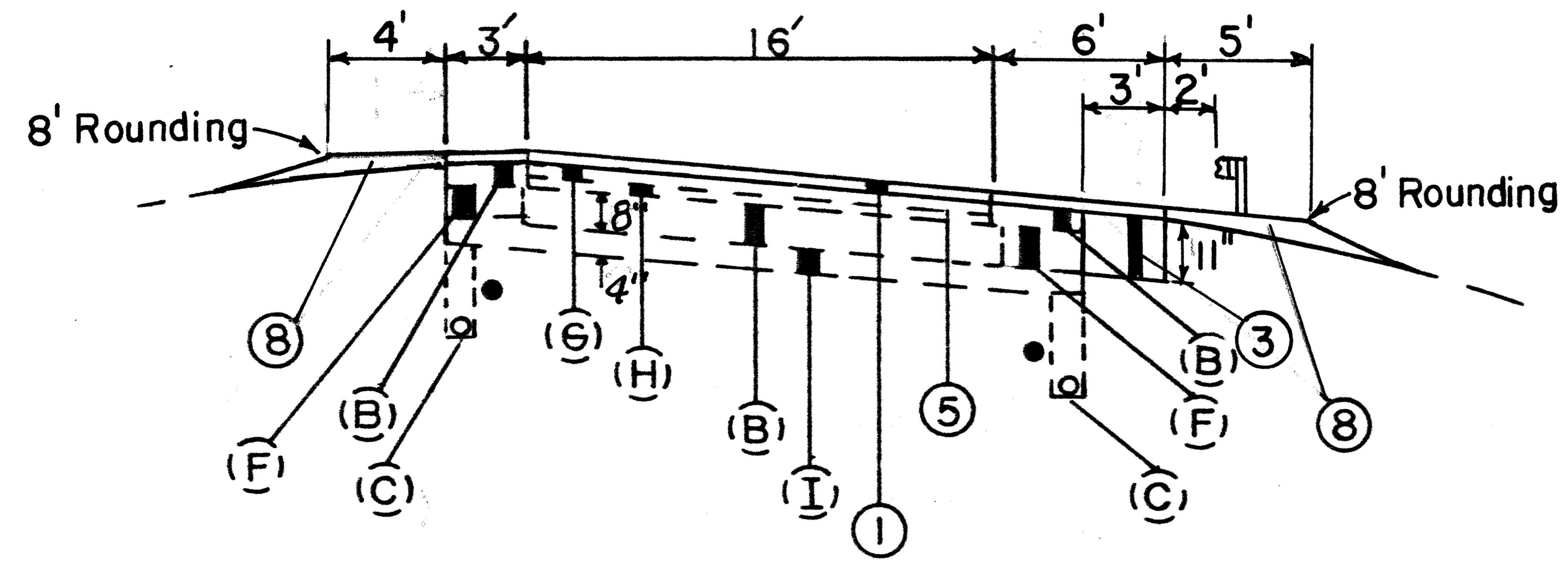
TYPICAL SECTIONS

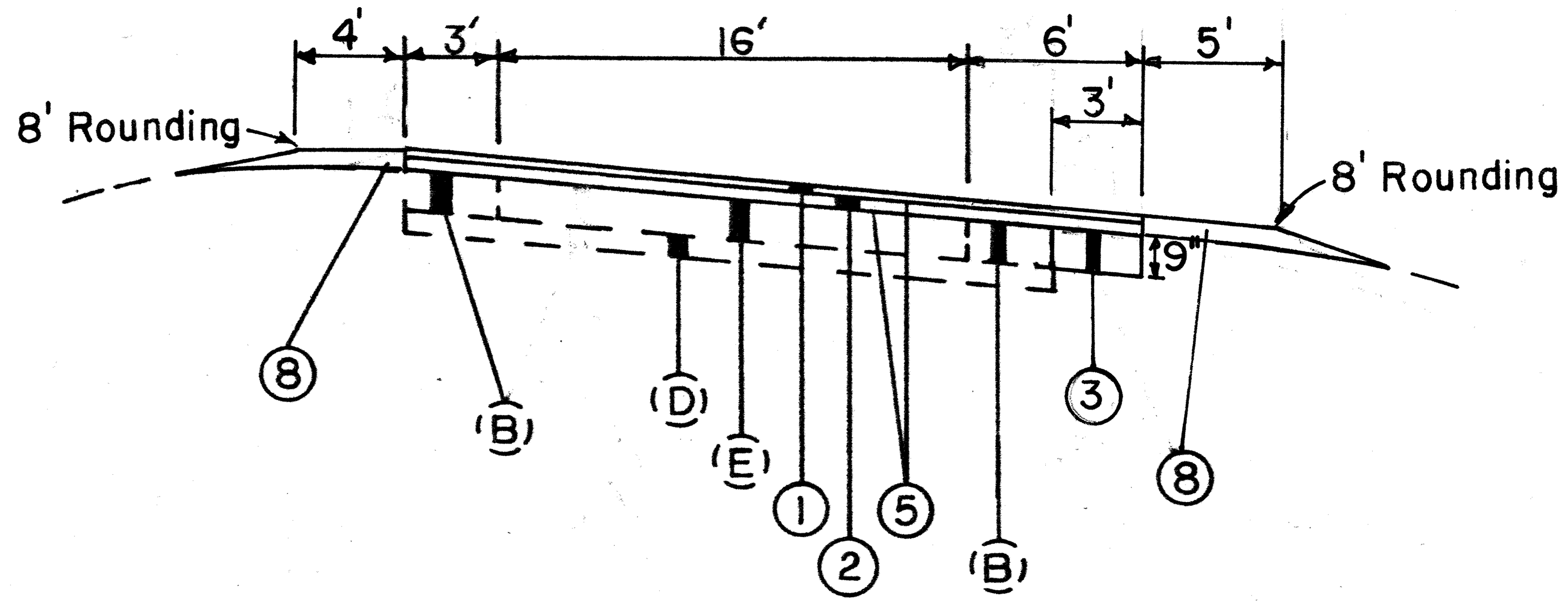
TYPE 846

RAMPS

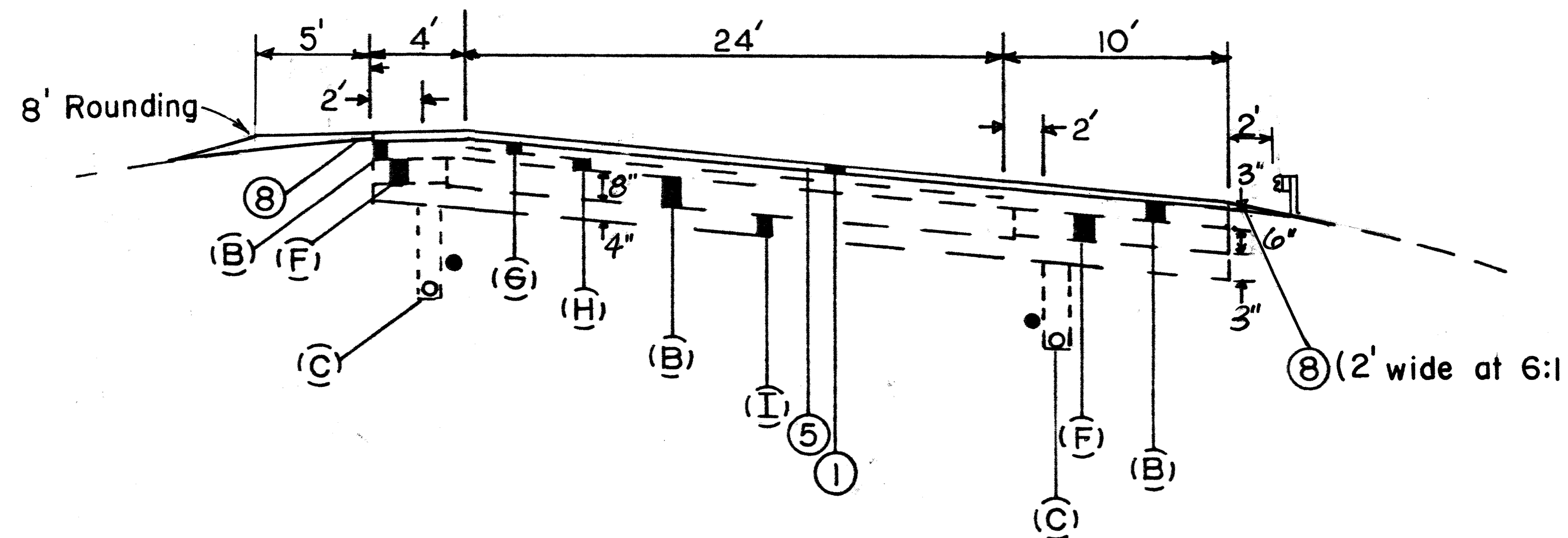


SECTION A RAMPS





SECTION B RAMPS



SECTION C RAMPS

LEGEND - EXISTING PAVEMENT

- (B) ITEM 301 - BITUMINOUS AGGREGATE BASE
- (C) ITEM 605 - 6" PIPE UNDERDRAIN
- (D) ITEM 804 - 4" CEMENT STABILIZED SUBBASE
- (E) ITEM 451 - 9" REINFORCED PORTLAND CEMENT CONCRETE PAVEMENT
- (F) ITEM 304 - AGGREGATE BASE
- (G) ITEM 404 - 1 1/4" ASPHALT CONCRETE
- (H) ITEM 402 - 1 3/4" ASPHALT CONCRETE
- (I) ITEM 310 - SUBBASE

● EXISTING UNDERDRAINS 30" BELOW SUBBASE IN FILL & 50" BELOW SUBBASE IN CUT

LEGEND - PROPOSED PAVEMENT

- (1) ITEM 846 - 1 1/4"
- (2) ITEM 846 - 1 3/4"
- (5) ITEM 407 - TACK COAT @ .10 GAL./S.Y.
  - COVER AGGREGATE @ 7 lbs./S.Y.
- (8) ITEM 617 - COMPACTED AGGREGATE
- (3) ITEM 301 - BITUMINOUS AGGREGATE BASE: AC-20

GENERAL NOTES

Project Description

This project consists of three Sections: A, B, and C.

-Section A's (Sta. 1188+19 to 1325+00) treatment consists of pavement repair, drainage, pavement reinforcing fabric, 2 1/2" of 301, 3" of 846, 617, fill, seeding, mulching, and guardrail. In addition, saw and seat will be done on the Northbound lanes from Sta. 1285+08 to 1325+00.

-Section B (Sta, 1325+00 to 1452+00) will have drainage, 1" 403 bond breaker, 9" 452, 617, fill, seeding, mulching, and guardrail. Also, Miller Transverse Joints will be installed in the Southbound lanes from Sta. 1432+59 to 1434+72.

-Section C (Sta. 1452+00 to 1604+79) will have complete pavement removal, base removal, drainage, 10" of 301, 3" 846, 617, and guardrail.

Sequence of Operations

In Section A, from Sta. 1188+19 to 1285+08, all work will be performed under traffic. The final 1 1/4" of 846 shall be placed after all work needing conflicting temporary pavement markings is completed.

Prior to closing the NB lanes, the SB lanes will have the following work done:

Sta. 1267+61 to 1325+00 will have pavement repair, drainage, and 12' ITEM 305 concrete outside shoulder installed.

Sta. 1325+00 to 1439+35 will have drainage and 12' ITEM 305 concrete outside shoulder installed.

Sta. 1439+35 to 1529+99 will have drainage and 12' flexible outside shoulder installed.

For the entire length of two-way traffic, the Contractor shall install type A anchor assemblies on median side guardrail and install concrete barrier at median side of structures. Quantities are shown on sheet 58 and 85.

Build traffic divider on SB lanes from Sta. 1285+08 to 1605+36. The contractor will close US-62 ramps to and from NB 270 (see sheet 41). Move traffic to SB lanes of 270.

The State will change signs for Airport at SR-317 and Morse Rd. and for Gahanna at SR-317.

Complete all work in Northbound lanes except for final 1 1/4" of 846 in Section A South of Sta. 1285+08 and the entire length of Section C. The outside shoulders will be widened to 12' from Sta. 1283+50 to 1439+85.

Build traffic divider and install temporary pavement markings in the Northbound lanes.

The State will change signs for the Airport and Gahanna. The contractor will close US-62 ramps to and from SB 270 (see sheet 41) and open ramps to and from NB 270. Move all traffic to NB 270.

Complete all work on SB lanes of 270 in the closure area.

Return traffic to SB lanes and open US-62 ramps to and from 270 SB.

Remove traffic divider and complete 1 1/4" 846 overlay in the NB lanes under traffic.

GENERAL

The Contractor shall submit in writing a schedule of operations to the Engineer (see 101.18) and receive approval in writing before work is started on this project.

The 407 tack coat shall be applied just ahead of the day's paving operation.

The work proposed by this project is for the resurfacing and repair of the existing pavement. The alignment of the existing pavement will not be changed and the profile of the proposed surface will be similar to that of the existing pavement except it will be raised an amount equal to the thickness of the resurfacing course.

Any exposed center line longitudinal joints shall be covered by the adjacent asphalt concrete placement of the Contractor's next work day. A maximum of fifty (50) feet of longitudinal joint can be left over the weekend.

All intermediate course joints shall be governed by Sec. 401.15 and the cost of sealing these joints shall be included in the unit price bid for the asphalt course.

All work shall be performed within the existing right-of-way.

The Contractor shall restrict the sawing operation in the pavement repair area to only the removal and replacement which can be completed in one week or as directed by the Engineer.

All Traffic Control devices shall be furnished, erected, maintained and removed by the Contractor in accordance with the Ohio Manual of Uniform Traffic Control Devices.

Location of Guardrail

The locations of guardrail runs, as shown in these plans, are subject to adjustment prior to final acceptance. The Engineer shall be satisfied that all installations will afford maximum protection for traffic.

407 Tack Coat, as per plan

The tack coat and cover aggregate operation shall be determined as per 407.05 and 407.06 of the CMS. Plan quantities indicate an average application rate of .10 gallons per square yard of Tack Coat for estimating purposes only. Cover Aggregate shall be provided as deemed necessary by the Engineer; however, all costs for materials, labor, and incidentals necessary to furnish and place required Cover Aggregate shall be included for payment in the unit price bid for ITEM 407 - Tack Coat, as per plan.

WATERING PERMANENT SEEDED AREAS

An estimated quantity of ITEM 659 - Water has been provided to be used as directed by the Engineer to promote growth and to care for the permanent seeded areas, as per 659.09. For quantities see sheet 70.

LIGHTING NOTE

The Contractor's attention is directed to Section 107.12 of the State of Ohio Construction and Material Specifications. Any damage caused by the Contractor to the existing O.D.O.T. lighting cables located within this project shall be repaired at the Contractor's expense.

Lighting cables are located throughout the project area. Locations of these cables are on file at the O.D.O.T. District office.

GENERAL NOTES cont.

ITEM 614 - Work Zone Marking Signs

A quantity of 11 each Work Zone Marking Signs (11 each "NO EDGE LINES" OW-167) are carried to the General Summary to be used as directed by the Engineer.

Public Safety

No hazard shall be left unprotected except for the actual time necessary to remove, grade and reinstall guardrail in a continuous operation The removal of all existing guardrail shall at all times be as directed by the Engineer. No guardrail shall be removed until the new materials are on the site, ready for installation. The exposed approach end of the final section of an incomplete guardrail run shall be dropped to the ground until the installation is completed. When a gap exists in a guardrail run, rail elements shall be bolted together to eliminate exposed ends during non-working hours. Failure to comply with these requirements shall be deemed sufficient cause to order work suspended on this project until such time that the Engineer is assured of said compliance.

ITEM 846 - Asphalt Concrete Surface Course, Type 1, as per plan

The top surface of the longitudinal and transverse joints shall be painted six (6) inches wide with the same bituminous material used in the 846 mixture as directed. Application rate shall be at least 0.25 gal./sq. yd. The cost of this operation is to be included in the cost of ITEM 846 - Asphalt Concrete Surface Course, Type 1, as per plan.

ITEM 619 - Field Office

The Contractor shall provide a suitable field office having a minimum of 800 sq. ft. of floor space. Payment shall be at the lump sum bid for Item 619 - Field Office.

Contingency Quantities

The contractor shall not order materials or perform work listed in the General Summary for items designated by plan note to be used "as directed by the Engineer" unless authorized by the Engineer. The actual work locations and quantities used at the Engineer's discretion shall be made a matter of record by incorporation into the final change order governing completion of this project.

ITEM 617 - Water

An estimated quantity of water has been provided for the compaction of Item 617 - Compacted Aggregate.

Section A: Part 1 = 10 M. Gal., Part 2 = 7 M. Gal.
Section B: Part 2 = 11 M. Gal., Part 3 = 1 M. Gal.
Section C: Part 1 = 4 M. Gal., Part 2 = 1 M. Gal., Part 3 = 3 M. Gal.

Quantities carried to the General Summary

ITEM 452 - Plain Concrete Pavement, as per plan (also see proposal note)

In lieu of 452.01 of the specifications, contraction joints shall be constructed with dowels as shown for Item 451 pavement on Standard Drawing BP-4 dated 1-11-85. Dowels and joint assemblies shall be coated in accordance with 709.13. Spacing between joints shall be as shown on sheet 64. All sawed or formed joints shall be sealed with joint filler conforming to ASTM D-3405 or 705.11.

ITEM 603 - 4" Conduit, Type E 707.15, as per plan

In addition to the requirements for backfill, when conduit is placed under paved berms, the final 3 1/4" will be Item 301. The cost of this 301 shall be included in the unit price bid per lin. ft. of ITEM 603 - 4" Conduit. Type E 707.15 as per plan.

ITEM 451 - 9" Reinforced Concrete Pavement, as per plan
(Miller Transfer Joint)

This item shall consist of the installation of the Miller Transverse Joint between Stations 1432+59 and 1434+72 in the 451 Reinforced Concrete Pavement. The method of installation and reinforcing details are shown on sheet no. 74. The Miller Joint Assembly shall be firmly held in position by powder actuated fasteners for concrete, shank diameter .177 in. diameter x 2 1/2 in. long, to be staggered at 6 ft. o.c. centered about the centerline. A representative from ARMCO shall be present during all stages of installation to assist the Contractor.

The Miller Joint Assembly shall be obtained from ARMCO, INC., Middletown, Ohio. Each joint assembly will be complete, ready for installation, and shall be epoxy coated with the powder type and film thickness specified by ARMCO. Touch up material shall be provided by the powder coater. Inspection and approval of the coating procedure and approval of materials shall be provided by the Ohio Department of Transportation Testing Laboratory.

Payment for the Miller Transverse Joint shall be made under:

ITEM	UNIT	DESCRIPTION
451	Square Yard	9" Reinforced Concrete Pavement, as per plan

INITIAL PAVEMENT MARKINGS FOR RESURFACED SECTIONS

GENERAL NOTES

In addition to the requirements of 621 and 847 the following shall apply:

621 Materials

Glass beads shall be kept dry during storage and prior to use.

621 SPECIAL EQUIPMENT

The Contractor's striper shall be equipped with an odometer graduated to 1/100 of a mile. The Engineer will determine the degree of accuracy of the Contractor's odometer and establish an adjustment factor as may be required to accurately determine the pay item quantities. The Engineer will periodically check the odometer's operation to assure maintenance of accurate measurements.

Failure of the odometer to function properly shall be cause to stop the work until the odometer is made to function properly. On short projects the Engineer may approve alternate methods to accurately measure the length of the various types of markings applied. If measurement of the work has to be done by the Department, the cost of the Department labor and equipment plus 10 percent shall be deducted from payment due the Contractor for the work. When measuring lane, edge and center line marking the odometer shall be started at the first marked line and remain in operation, until the end of the section being marked, where it shall be shut off and the reading of the odometer recorded.

Electrical foot counters shall be provided and installed in the striper. The counters shall individually tabulate the amount of footage applied by each striping gun on the center line carriage and lane line carriage, whether solid or dashed. The counters shall be 6 digit type with a reset feature.

The pavement marking equipment shall be equipped with a pressure regulated air jet which shall remove all debris from the pavement in advance of the applicator gun. The air jet shall operate when marking material is being applied and shall be synchronized with marking material application or remain "on" at all times.

The Contractor shall use an accurate dashing mechanism, capable of being easily adjusted

Provision for the above special equipment by the Contractor shall be incidental to the application.

847 LAYOUT AND PREMARKING

In addition to the requirements of 847 premarking for auxiliary markings shall be located from schematic forms provided at the pre-construction conference.

621 MATERIAL QUANTITY MEASUREMENT

The quantity of marking material or glass beads per unit of measurement will be computed by the Engineer at the end of each day's work. A day's applied mileage of less than 2 miles may be included in the next day's applied markings for the purpose of computing marking material and bead application rates.

The Contractor shall provide a calibrated measuring device acceptable to the Engineer for measuring material in the striper tanks.

The quantity of marking material used shall be determined by measuring the marking material in the tanks before and after marking material is applied. The Contractor shall cooperate with the Engineer in providing measurements whenever requested. The marking material application rate shall be determined by dividing the total gallons used by the appropriate marking length as determined from the foot counter as described within the Special Equipment Section of these notes. Any determination of pay deduction resulting from shortages in marking quantities shall be based on the measurements obtained by this method. The amount of glass beads applied will be ascertained by the Engineer by observation and from information supplied by the Contractor as to quantity used.

847 AUXILIARY PAVEMENT MARKING

For this project auxiliary markings shall be defined as: stop lines, crosswalk lines, transverse lines, railroad symbol markings, lane arrows, word on pavement and dotted lines except when used to extend edge lines.

STANDARD CONSTRUCTION DRAWING TC 71.10

The dimensions shown on Standard Construction Drawing TC 71.10 are nominal. Letters, numerals and symbols conforming to the requirements of section 3B-17 of the 1978 National Manual On Uniform Traffic Control Devices may also be used. Any of the following standards for letters, numeral or symbol dimdimensioning may be used; A.) Standard dimensions shown on this detail or B.) Standard dimensions (either metric or their hard converted English unit equivalents) in accord with the 1977 Metric Edition Standard Alphabets For Highway Signs and Pavement Marking with Errata or C.) Standard dimensions shown in figures 3-17, 3-18, 7-2, 7-3, 8-2 or 9-6 of the 1978 National Manual On Uniform Traffic Contol Devices.

1984 Raised Pavement Marker
General Notes

Description

In accordance with the lines, symbols and dimensions shown on the plans or as described herein, the work shall consist of furnishing and placing plowable raised pavement markers (hereafter referred to as RPMs). Placing State furnished castings and placing prismatic retro-reflectors.

The Contractor shall furnish all material (except state-supplied material), services, labor and equipment necessary for the required pavement preparation and placement of RPMs and prismatic retro-reflectors for each item described herein.

Materials

The RPM shall consist of two components. One component is a casting; the other component is a prismatic retro-reflector. Both components of the RPM shall be as manufactured by the Amerace Corporation, Niles, Illinois or an approved functional equivalent.

The Contractor furnished castings shall be either a Stimsonite Model 96, or a Stimsonite Model 96 LP, low profile as shown in the plans.

The State supplied RPM castings shall be Stimsonite Model 99 one way plowable RPM castings.

The Stimsonite Model 944 prismatic retro-reflector shall consist of an acrylic plastic shell filled with tightly adherent potting compound. The shell shall contain one or two prismatic retro-reflective faces to reflect incident light longitudinally along the pavement from a single or opposite directions. The reflector shall be in the shape of a shallow frustum of a pyramid. The reflector shall be constructed as follows:

1. Dimensions 4"x2"x.480" (nominal)

   Slope of reflecting surface 30°
   Area of each reflecting surface 1.87 in^2
   The outer surface of the shell shall be smooth except for purposes of identification.

2. Shell shall be molded of methyl methacrylate conforming to Federal Specification L-P-380C, Type 1, Class 3. Filler shall be a potting compound selected for strength, resilience and adhesion adequate to pass the necessary physical requirements. The surface of each lens shall be protected with a hard, abrasion-resistant coating sufficient to pass the Steel Wool Abrasion Procedure and subsequent Reflective Brilliance Requirement.

A one-way RPM is equipped with a prismatic retro-reflector which retro-reflects light in one direction only. A two-way RPM is equipped with a prismatic retro-reflector which retro-reflects light in two opposing directions.

The casting adhesive used to bond the RPM to the pavement shall be a two-component standard set epoxy available from PolyCarb, Inc. or General Adhesives and Chemical Company or an approved functional equivalent all made with the following formulation:

Component A	Parts by Weight*
Epoxy Resin (Epon 828 or functional) equivalent)	100.00
Titanium Dioxide (ASTM D-476-73 Type III or IV)	7.68
Talc (Nytal #200, Vanderbilt or equal)	36.64

Component B	Parts by Weight*
N-Aminoethyl piperazine (Jefferson or functional equivalent)	25.10
Nonyl Phenol (Jefferson or functional equivalent)	50.03
Talc (C-400, Cyprus or equal)	69.28
Carbon Black (ASTM D-561-77, Type I powder)	0.23

*All measurements shall have a tolerance of ±2%

The reflector adhesive used by the Contractor to bond the prismatic retro-reflector to castings shall be MACCO, LN-602 (Liquid Nails), a waterproof synthetic rubber and resin based adhesive, manufactured by SCM Glidden-Durkee, Division of SCM Corporation, Macco Adhesives Group, Wickliffe, Ohio 44092 or an approved functional equivalent made with the following generic formulation:

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Material		% By Weight *
1.	SBR Rubber	15.6
2.	Hydrocarbon Resin	11.9
3.	Rosin Ester	6.6
4.	Antioxidant	.7
5.	Toulene	8.0
6.	Hexane	26.6
7.	Calcium Carbonate	4.2
8.	Kaolin Clay	26.4
		100.0

*All measurements shall have a tolerance of ±2%

All materials are to be Contractor supplied, except that the State shall furnish to the Contractor RPM castings in the quantities shown herein not including the prismatic retro-reflector component, required to complete the work. The quantity and type of State furnished materials are shown below.

The RPM Castings furnished by the State shall be Stimsonite Model 99 castings and shall not include prismatic retro-reflectors.

The Contractor will be informed at the pre-construction conference of the location in ODOT District _____ of the State furnished RPM materials. The Contractor shall pick-up of State furnished RPM materials at this location for transport to the work site or the Contractor's storage facility. The Contractor shall notify ODOT District ____ in writing at least 5 calendar days prior to pick-up of RPM materials. The Contractor shall provide receiving tickets to the Department for the RPM materials received. Procedures for documenting receipt of RPM materials will be furnished to the Contractor at the pre-construction conference. The Contractor shall store the RPM materials without damage or contamination with foreign matter. A deduction, in the amount of the actual cost to the State of Ohio, shall be made for materials damaged by the Contractor or for castings received by the Contractor which were not installed and were not returned to the Department.

Materials Furnished by the State

The quantities listed below are approximate. They represent the best estimate of available material at the time of the plan preparation. Two weeks prior to the sale date prospective bidders can secure exact quantity information for the material to be furnished by the State from the ODOT District ______ Traffic Engineer at _______________.

In the event that the State does not furnish all of the RPM castings indicated, the Contractor shall furnish and install the additional necessary RPM castings which shall be paid for at the unit price bid for Item Special, Raised Pavement Marker Casting.

A token number of 25 each, Raised Pavement Marker Castings have been carried to the General Summary to establish a unit bid price.

MATERIALS FURNISHED BY THE STATE

DESCRIPTION	QUANTITIES
RPM ONE WAY PLOWABLE CASTINGS (MODEL 99)	
TOTAL RPM CASTINGS (FOR), INSTALLATION ONLY	

TESTING AND CERTIFICATION

The requirement of Testing and Certification shall apply to all materials furnished by the Contractor. Materials furnished by the State shall not be subject to the requirements of this section.

The Contractor shall furnish to the Engineer Certified Test Data of the material's physical characteristics and Certification that the materials were manufactured and assembled in accordance with applicable State specifications. The results of all factory quality control inspection of the prismatic retro-reflectors to casting bond shall be included in the physical characteristics data.

I. The Stimsonite Model 96 RPM casting shall be nodular iron conforming to Specification ASTM-A-536-80 Grade, 72-45-05, hardened to 52-54RHC, snow plowable in two opposing directions designed to be equipped with a replaceable prismatic retro-reflector. The Stimsonite Model 96 RPM casting shall weigh not less than 4.05 pounds nor more than 4.95 pounds.

II. The Stimsonite Model 96 LP RPM casting shall be nodular iron conforming to Specification ASTM-A-536-80 Grade, 72-45-05, hardened to 52-54RHC, snow plowable in two opposing directions designed to be equipped with replaceable prismatic retro-reflector. The Stimsonite Model 96 LP RPM casting shall weigh not less than 4.86 pounds nor more than 5.94 pounds.

III. In addition to the Requirements of 106.03, the Contractor shall furnish to the Engineer no later than the Pre-Construction Conference, Certified Test Data that the prismatic retro-reflectors meet the following requirements.

The Certified Test Data for the prismatic retro-reflectors shall be obtained by an independent test laboratory.

A. Brightness Requirements:
1. Definitions
Horizontal entrance angle shall mean the angle in the horizontal plane between the direction of entrance light and the normal to the leading edge of the reflectors. Divergence

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angle shall mean the angle at the reflector between observer's line of sight and the direction of the light entrance on the reflector.

Reflective brilliance shall mean candlepower of the returned light at the chosen divergence angle for each foot candle of illumination at the reflector on a plane perpendicular to the entrance light.

2. Optical Performance

a) Steel Wool Abrasion Procedure
From a 1" diameter flat pad using #3 coarse steel wool per Federal Specification FF-W-1825. Place the steel wool pad on the reflector lens. Apply a load of 50 pounds and rub the entire lens surface 100 times. (Note: on two color units the red lens will not be glass covered and should not be abraded.)

b) Reflective Brilliance
After abrading the lens surface, using the foregoing steel wool abrasion procedure, the reflective brilliance of each crystal (white) reflecting surface at 0.2° divergence angle shall be not less than the following when the entrance light is paralled to the base of the reflector.

HORIZONTAL ENTRANCE ANGLE	REFLECTIVE BRILLIANCE Candlepower/ft. C
0°	3.0
20°	1.2

For yellow reflectors, the reflective brilliance shall be 60% of the value for crystal (white). For red reflectors, the reflective brilliance shall be 25% of the value for crystal (white).

c) Optical Testing Procedure
A minimum sample of 30 reflectors of each color for each project shall be tested. The reflector to be tested shall be located with the center of the reflecting face at a distance of 5 feet from a uniformly bright light source having an effective diameter of 0.28 inches.

The photocell width shall be an annular ring .37" I. D. - .47" O. D. It shall be shielded to eliminate stray light. The distance from light source center to the photocell center shall be 0.21 inches. If a test distance of other than 5 feet is used, the source and receiver dimensions and the distance between source and receiver shall be modified in proportion to the test distance.

Failure of more than 4% of the reflecting faces shall be unacceptable.

B. Seal Test Requirements
A sample of 50 units shall be submerged in water at room temperature and subjected to a vacuum of 5 inches gage for five minutes. After restoring atmospheric pressure the units shall be left submerged for an additional five minutes. When examined for water intake, failure of more than one unit shall be cause for rejection of the shipment.

C. Heat Resistance Test Requirements
Three reflectors shall be tested for four hours in a circulating air oven at 175F plus or minus 5 F. The test specimens shall be placed in a horizontal position on a grid or perforated shelf permitting free air circulation. At the conclusion of the test the sample shall be removed from the oven and permitted to cool in air to room temperature. The samples after exposure to heat shall show no significant change in shape and general appearance when compared with corresponding unexposed control standards. There shall be no failures.

IV. The Contractor shall furnish to the Engineer, no later than the pre-construction conference for this project, a Certificate of Analysis containing the Certified Formulation and Certified Test Data for the casting adhesive to be obtained in the following manner:

A. The Certified Formulation shall be, for each of the Component Parts, the actual percent by weight, the name of the producer and brand name of the material, and the producer's code number. A certified formulation will be required once for each RPM project for each Component Part A and B.

B. Certified Test Data for the properties of the Component Parts, Components A (Epoxy) and B (Hardener), and the Cured System shall be obtained in accordance with the Methods of Test of AASHTO M237-73. The respective properties of the Component Parts to be tested are noted in Sections 2.3.1 through 2.3.3 and 2.3.5 through 2.3.7. The properties of both Components A and B to be tested are noted in Section 3.1.

C. The properties of the Cured System to be tested are listed in Table 7 of AASHTO M237-73.

D. Certified Test Data for the Parts A and B may be obtained by the respective manufacturers. Certified Test Data for the Cured System shall be obtained by an independent test laboratory or the respective manufacturer.

E. For sampling purposes a batch shall consist of a single charge of all Components into a mixing chamber.

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F. Certified Test Data will be required for each batch of material. The Contractor shall furnish the Engineer a 1 pint sample of each Component Part from each batch of casting adhesive to be used on the project and from any subsequent batches when required by the Engineer.

G. If substitutions are made for the prescribed materials, Epoxy Resin (Epon 828 or functional equivalent), N-Aminoethyl piperozine (Jefferson or functional equivalent), or Nonyl Phenol (Jefferson or functional equivalent) the Contractor shall submit the producer's technical literature along with the Certified Formulation.

H. As per MIL-P-15173A, Type B, if substitution for the prescribed materials Talc (nytal #200, Vanderbilt or equal) or Talc (C-400, Cyprus or equal) occurs after production has begun, the Contractor shall furnish new Certificate of Analysis with another Certified Formulation and Certified Test Data.

V. The Contractor shall furnish to the Engineer, no later than the pre-construction conference for the project, a Certificate of Analysis containing the certified formulation of the synethic rubber and resin based reflector adhesive. The Certified Formulation shall be for each material the actual percent by weight. A Certified Formulation will be required once for each RPM project. The Contractor shall furnish the Engineer a one tube sample of the reflector adhesive to be used on the project.

Pavement Preparation

The Contractor shall clean and prepare the pavement to which the RPM casting is to be bonded, to the satisfaction of the Engineer, such that at the time of RPM installation the pavement shall be free of dirt, dust, oil, grease, moisture, curing compound, loose or unsound layers or any other material which would interfere with proper bonding of the RPM to the pavement.

Layout

Before beginning RPM casting placement, the Contractor shall accurately and adequately lay out, by reference points, the location of all RPMs.

RPMs shall not be placed on pavement surfaces that show visible evidence of cracking, checking, spalling, or failure of underlying base material.

RPMs shall not be placed within one foot of active signal detector loop wires. The Contractor shall exercise extreme care so that detector lead-in cables will not be cut. RPMs shall not be placed directly over painted pavement markings except where the painted markings deviate visibly from their correct alignment, and then only with the approval of the Engineer. RPMs shall not be placed at a pavement construction joint or within an intersection of a driveway or public street as a result of typical RPM spacing.

If during the pre-installation layout operations, it is determined that a RPM would be placed at a point with one of the aforementioned conditions, the affected RPM shall be relocated longitudinally a sufficient distance to a point approved by the Engineer. The distance the RPM may be relocated shall not exceed 10% of the typical RPM spacing. Where it would be necessary to relocated the RPM a distance greater than 10% of the typical RPM spacing, the affected RPM shall not be installed.

Installation of RPMs on bridge decks, although acceptable, shall be minimized by the Contractor. When the typical RPM spacings would require an RPM to be installed on a bridge deck near the bridge enddam, the subject RPM shall be relocated to the approach slab. This procedure shall be waived for all bridge deck mounted RPMs whose typical locations are separated from the bridge enddam by a distance exceeding 10% of the typical RPM spacing.

When placing RPMs at an existing RPM installation, the new location of each RPM shall be not more than one foot longitudinally in either direction from the damaged or missing casting location. Unless the downstream traffic location has superior pavement quality to the upstream traffic location, the preferred location shall be the upstream location.

Damaged castings with prismatic retro-reflectors still intact shall be replaced as determined by the Engineer.

Placement of RPMs

At the time of placement in the pavement the RPM casting shall be free of dirt, dust, oil, grease, rust, moisture or any foreign matter which will impair adhesion to the pavement. It shall be the Contractor's responsibility to clean each contaminated casting by sand blasting or other acceptable procedures approved by the Engineer to remove all such foreign matter prior to installation.

The pavement surface temperature at the time of RPM placement shall be not less than 50°F. The ambient air temperature shall be not less than 50°F. RPMs shall not be installed if the pavement surface is visibly wet.

The Contractor shall keep traffic off newly installed RPMs for the minimum period specified in the following table.

Ambient Air Temperature °F	Minimum Period (Minutes) Protected from Traffic
100	15
90	20
80	25
70	30
60	35
50 (no application below 50°F)	45

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General Notes

During periods of high ambient relative humidity, epoxy may require a longer drying time than indicated above.

RPMs shall be installed by inserting the two keels on the casting into parallel slots cut into the pavement, the RPM castings shall be installed within 10 days after the slots are cut into the pavement.

The casting adhesive shall be mixed by combining Components A (Epoxy) and B (Hardener) in a ratio of 1:1 by volume. The casting adhesive requires that the mixing operation and placing of the RPMs be done rapidly. Any mixed batch that becomes so viscous that it cannot be readily extruded from under the RPM with light pressure shall not be used. The casting adhesive shall be maintained at 60°F to 80°F before mixing. Any heating of the casting adhesive shall be by the application of indirect heat. The casting adhesive shall not be heated above 120°F.

Before applying the casting adhesive, the slots shall be brushed or blown clean of loose material and shall be dry. The cleaned slots shall be filled with casting adhesive. Sufficient epoxy shall be placed in and between the slots to insure that all voids beneath and around the casting are filled so as to create a watertight seal around the casting. The keels of the casting shall be placed into the slots in such a manner as to assure that the tips of the RPM snowplow deflecting surfaces are below the pavement surface and that the four lugs on the keels of the casting are in contact with the pavement.

The Contractor may attach the prismatic retro-reflectors to new castings which do not include a prismatic retro-reflector already factory attached by Amerace Corporation at any time prior to the insertion of the casting into the pavement slots. Otherwise, the prismatic retro-reflector shall not be attached to a new casting until after the epoxy adhesive in the pavement slots has properly hardened. In either operation, the following prismatic retro-reflector attachment procedure shall be used. The RPM casting shall be rid of dirt, dust, oil, grease, rust, moisture or any foreign matter (including damaged reflectors or parts thereof) which will impair adhesion of the prismatic retro-reflector to the casting. Sandblasting or another procedure acceptable to the Engineer shall be utilized to rid the casting of foreign matter. The recessed attachment area shall be coated with reflector adhesive. The prismatic retro-reflector shall be inserted into the recessed attachment area and pressed into place until a small amount of reflector adhesive squeezes out on both sides and a bond has been made with the casting. The Contractor shall press the prismatic retro-reflector into place by the application of a load of not less than 100 pounds or by a procedure acceptable to the Engineer. Adhesive material shall not be permitted on the reflective surface of the prismatic retro-reflector. The pavement surface temperature and the ambient air temperature shall be at or above 40°F at the time of application of the prismatic retro-reflector. The Contractor shall not attach the prismatic retro-reflector to the casting when rain over the work site is imminent.

Placement Tolerances

RPMs installed at the double yellow centerline shall be centered between the two painted lines. RPMs installed along an edge or channelizing line shall be placed so that the near edge of the marker casting is no more than 1 inch from the near edge of the painted line. RPMs installed along a lane line or dashed yellow centerline shall be placed between and in line with the dashes.

Replacement of Prismatic Retro-Reflectors

Damaged or missing prismatic retro-reflectors within the existing marker installations where the casting remains intact shall be replaced with the reflector type shown on the details in the plan. Damaged reflectors include those that are loose or have been broken, chipped, cracked or have otherwise lost their retro-reflective properties as determined by the Engineer. The location of existing RPMs that require the replacement of damaged or missing retro-reflectors shall be determined by the Engineer.

Some existing castings have remnants of the old retro-reflector or contain entire retro-reflectors that are not serviceable. When replacing retro-reflectors in such castings, the work shall include removing whatever remains of the old retro-reflector. The attachment procedure for replacing prismatic retro-reflectors within existing RPM installations shall be as described in the note titled Placement of RPMs, with the additional requirement that the reflector attachment area of the casting be sand blasted immediately prior to reflector attachment.

RPM Supplement Marking Descriptions

Channelizing Lines: RPMs which are used in channelizing line applications shall have one-way prismatic retro-reflectors facing traffic which shall be white in color to match the channelizing line color.

Lane Lines: RPMs which are used in lane line applications shall have two-way prismatic retro-reflectors, white facing traffic and red facing the opposite direction.

Freeway and Expressway Lane Line Reflectors: RPMs used in freeway and expressway lane line applications shall have one-way prismatic retro-reflectors, white facing traffic, except as noted below:

At freeway and expressway interchanges two-way prismatic retro-reflectors, white facing traffic and red facing the opposite direction, shall be placed for 1600 feet upstream measured from the physical gore of the first deceleration lane in the interchange. Where subsequent deceleration lanes are present, 2 way white/red reflectors continue through the interchange, to the physical gore of the last deceleration lane in the interchange. Where there are no subsequent deceleration lanes at the interchange the placement of one-way white prismatic retro-reflectors shall resume as required in the plan.

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General Notes

On the expressway mainline approaches to at grade intersections, two-way prismatic retro-reflectors, white facing traffic and red facing the opposite direction shall be placed for 1600 feet upstream from the intersection.

Edge Lines: RPMs which are used in edge line applications shall have one-way prismatic retro-reflectors which match the edge line color (white facing traffic for right edge lines; yellow facing traffic for the left edge lines).

Center Lines: RPMs which are used in centerline applications shall have two-way prismatic retro-reflectors, which shall be yellow to match the centerline color.

2 Way Radio Communications

The Contractor shall furnish and maintain the radio equipment necessary for 2-way voice communication between the Contractor's project foreman and the state inspector at all times during the RPM installation operations. This equipment shall be provided for the term of the contract only.

Method of Measurement

The number of RPMs will be the actual number furnished complete with prismatic retro-reflector in place, and accepted, in the units designated, including layout, premarking, surface preparation, and the furnishing and application of all required adhesives.

The number of RPM Castings, (for) Installation Only will be the actual number furnished by the State excluding an attached prismatic retro-reflector, complete, in place, and accepted in the units designated, including layout, premarking, surface preparation and the furnishing and application of the required adhesives.

The number of prismatic retro-reflectors will be the actual number Contractor furnished complete in place on State furnsihed RPM castings or on existing RPM castings in the pavement and accepted in the units designated including casting preparation and the furnishing and application of all required adhesives.

Basis of Payment

Payment for accepted quantites in place will be made at the contract unit price for:

ITEM	UNIT	DESCRIPTION
Special	Each	Raised Pavement Marker
Special	Each	Raised Pavement Marker Casting Installation Only
Special	Each	Prismatic-Retro-Reflector

ITEM 614 MAINTAINING TRAFFIC

Normal directional traffic shall be maintained on the roadway at all times during the construction period in accordance with sheets 55 & 56 of this contract and the Ohio Manual of Uniform Traffic Control Devices as approved by the Engineer, except that a flashing arrow panel shall be used in addition to the traffic control required for closing one lane of a 4-lane highway (divided or undivided).

At the completion of each working day, all signs and channelizing devices shall be removed from the roadway and the roadway opened to the normal flow of traffic.

The required lane closure shall remain in effect until all foreign matter or debris created by the installation of the RPM castings and/or prismatic retro-reflectors is removed from the roadway.

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MAINTAINING TRAFFIC GENERAL NOTES

GENERAL

In addition to the requirements for maintaining traffic as indicated in the Ohio Manual of Uniform Traffic Control Devices and pertinent items of specifications, the following requirements shall apply:

The paved shoulder, embankment, and 617 shall be at the same stage of completion as the main line pavement before traffic is returned to a diverted section unless otherwise directed by the Engineer.

A watchman shall be on duty twenty-four (24) hours per day during the time restricted traffic is being maintained to insure proper functioning of the various traffic control devices, except when the Contractor is performing work in these areas.

When work is being performed or equipment is on berms or shoulders and is within 12' of a traveled lane, that lane shall be closed.

Berm reshaping and guardrail removal and construction shall be performed on only one side of the pavement at any given time.

All pavement repairs shall be completed prior to resurfacing operation in any given area.

No traffic shall be permitted on any portion of a bridge deck which has been machine scarified.

The Contractor shall arrange his operations so as to prevent any interference to the continuous flow of traffic. All vehicles, equipment, men, and their activities are restricted at all times to one side of the pavement unless otherwise approved by the Engineer.

Existing speed limit sign legends in areas where traffic is restricted shall be covered and advisory speed limits be placed. The Engineer shall record covered and uncovered signs in the project diary.

Before work begins, the Contractor shall submit to the Engineer the names and telephone numbers of a person or persons who can be contacted 24 hours a day by the Ohio Department of Transportation and all interested police agencies. This person or persons shall be responsible for replacing necessary traffic control devices.

The standard device for closing any lanes to traffic shall be weighted, properly reflectorized plastic or steel drums. Steel drums placed on a newly paved surface course shall be placed on 1/2" plywood. Cones may be used in daytime in lieu of drums if approved by the Engineer.

Cones must be weighted to increase stability by double stacking, sandbags, or as approved by the Engineer. Metal rings of any type over the cone will not be permitted.

The work limits on these plans are for physical construction only. The installation and operation of all required traffic control devices shall be provided by the Contractor whether inside or outside these work limits.

Two-way Traffic

All work shall be completed on the closed section of highway before it is opened to traffic, except the final 1 1/4" surface course of 846 Type 1 shall not be applied until after the removal of the temporary barrier in the Northbound lanes in Sec. A South of SR 161 and Sec. C, or unless otherwise directed.

In the area of two-way opposing traffic "Right Lane Must Use Shoulder", OC-49R-48, signs shall be installed at the maximum spacing of 1500'.

All existing crossovers within the project limits shall be closed to traffic while two-way traffic is being maintained on either the Northbound or Southbound lanes of IR-270. The Contractor shall erect, maintain, and subsequently remove all signs, barricades, etc., necessary to close these crossovers.

Crossovers

A minimum 12' lane shall be maintained at all times unless otherwise shown on the crossover detail sheets or directed.

Type C steady burning barricade warning lights shall be erected on drums or barricades in the area of crossovers. The spacing shall be the same as the spacing for the drums or barricades shown on the crossover detail sheets.

All existing pavement markings shall be removed and replaced with appropiate markings. All markings will be maintained during the crossover. The temporary markings shall be removed in accordance with 621.134 and all necessary markings shall be returned to the finished portion.

Ramp Closures at US-62

The Contractor shall close the US-62 ramps to and from SB 270 when the SB lanes are closed and the ramps to and from NB 270 when the NB lanes are closed. The State will install detour signs for the Airport at SR-317 and Morse Rd. and for Gahanna at SR-317. The Contractor shall notify the State of Ohio District 6 Traffic Engineer, telephone (614) 466-1410, fourteen days prior to the closing of the ramps at US-62. All conflicting signs shall be covered or altered by the State of Ohio.

ITEM 404 - Bituminous Concrete for Maintaining Traffic

The Contractor shall maintain and restore berm damaged by traffic opposite the work areas. Estimated quantities of 404 Bituminous Concrete are provided for this operation.

Sec. A: Part 1 = 25 Cu. Yd., Part 2 = 25 Cu. Yd.
Sec. B: Part 2 = 35 Cu. Yd., Part 3 = 15 Cu. Yd.
Sec. C: Part 1 = 15 Cu. Yd., Part 2 = 5 Cu. Yd., Part 3 = 30 Cu. Yd.

MAINTAINING TRAFFIC GENERAL NOTES cont.

ITEM Special - Law Enforcement Officer with Patrol Car

The Contractor shall provide the services of one special duty Law Enforcement Officer (L.E.O.) and patrol car for the purpose of closing one or more lanes of directional traffic and channelizing that traffic into one or two lanes. When the period of closure is expected to last more than one working day, the L.E.O. shall be present during the initial first day set-up period but is not considered necessary and shall not be included for payment under L.E.O. with patrol car during the remainder of the period of use of a given closure arrangement. A flashing arrow barricade with signs and drums as detailed is sufficient for warning at the beginning and end of such arrangements after the first day. A downstream extension of such arrangement shall not require the use of a L.E.O. When the beginning point of a lane closure operation is shifted substantially, or a new lane closure arrangement is initiated in another part of the project area, a L.E.O. shall again be required. In all cases the L.E.O. shall be utilized as directed by the Engineer. Information regarding arrangement and payments by the Contractor for special duty L.E.O. with patrol car may be obtained by contacting the Ohio Highway Patrol, 650 East Main Street, Columbus Ohio, telephone (614)466-2660.

Payment for the L.E.O. with patrol car shall be made at the contract price for Item Special, Unit - Hours, Description - Law Enforcement Officer with Patrol Car.

Sec. A: Part 1 = 80 Hr., Part 2 = 60 Hr.
Sec. B: Part 2 = 40 Hr., Part 3 = 10 Hr.
Sec. C: Part 1 = 20 Hr., Part 2 = 10 Hr., Part 3 = 40 Hr.

Floodlighting

Floodlighting of the work site for operations conducted during night time periods shall be accomplished so that the lights do not cause glare to the drivers on the highway. To insure the adequacy of the floodlight placement, the Contractor and the Engineer shall drive through the work site each night when the lighting is in place and operative prior to commencing any work. If glare is detected, the light placement and sheilding shall be adjusted to the satisfaction of the Engineer before work proceeds.

ITEM 625 - Temporary Lighting, as per plan

Adequate area illumination to clearly identify the beginning of lane closure transitions at night for long term operations shall be provided by using 150 watt minimum high pressure sodium luminaires or 250 watt minimum mercury luminaires. Luminaires shall be located adjacent to each end of the transition taper.

The Contractor shall provide temporary lighting for the crossovers. The approximate station limits are as follows:

LOCATION	FROM	TO
North End (at SR 161)	Sta. 1279+00	Sta. 1285+00
North Side of Morse Rd.	Sta. 1334+78	Sta. 1343+42
South Side of Morse Rd.	Sta. 1371+74	Sta. 1381+00
South End (at SR 317)	Sta. 1605+00	Sta. 1611+00

Temporary lighting shall provide an average initial intensity of 1.2 foot-candles and shall be installed before the designated areas are used for the maintenance of traffic.

The Contractor shall submit 4 sets of his proposed detailed temporary lighting plans to the Engineer for review and approval. These plans shall show location of poles, length of bracket arms, type and size of luminaires and lamps, mounting height, power source, and other pertinent information.

Reconditioned or approved used materials may be furnished for the temporary lighting system. Construction will be with fiberglass or other breakaway poles and underground electrical feeds with pull-away connector kits (Type II and III). Mounting height for temporary luminaires shall not be less than 27 feet. The temporary lighting installations shall be removed and disposed of by the Contractor when no longer needed.

The Contractor shall furnish all electrical energy, materials, labor and equipment necessary to install, operate, maintain, and remove the temporary lighting.

The lump sum bid price for ITEM 625 - Temporary Lighting, as per plan shall include payment for all labor, equipment, materials, and incidentals necessary to provide the temporary lighting as specified.

Alternate Methods

If the Contractor so elects, he may submit alternate methods for the maintenance of traffic, provided the intent of the above provisions is followed and no additional inconvenience to the traveling public results therefrom. No alternate plan shall be placed into effect until approval has been granted, in writing, by the Director.

QUANTITIES			
Calc.		Chk'd.	
Date		Date	

FHWA REGION	STATE	PROJECT	
5	OHIO		

PLAN NO. 19/118

FRA-270-29.11

GENERAL SUMMARY

ITEM	SECTION A			SECTION B			SECTION C				TOTAL PART 1	TOTAL PART 2	TOTAL PART 3	GRAND TOTAL	UNIT	DESCRIPTION
	PART 1	PART 2	TOTAL	PART 2	PART 3	TOTAL	PART 1	PART 2	PART 3	TOTAL						
202	4798	3302	8100	1903.5	134	2037.5					4798	5205.5	134	10,137.5	LIN.FT.	GUARDRAIL REMOVED FOR STORAGE
606	4260.5	3027	7287.5	1478.5	96.5	1575			150 (12)	150	4260.5	4505.5	246.5	9,012.5	LIN.FT.	GUARDRAIL, TYPE 5
606	50	50	100	100		100					50	150		200	LIN.FT.	GUARDRAIL, BARRIER DESIGN, TYPE 5
606	12	5	17	8	1	9			2 (12)	2	12	13	3	28	EACH	ANCHOR ASSEMBLY, STANDARD TYPE A
606	1	1	2	2		2					1	3		4	EACH	ANCHOR ASSEMBLY, BARRIER DESIGN, STANDARD TYPE A
606	12	5	17	6	1	7					12	11	1	24	EACH	ANCHOR ASSEMBLY, STANDARD TYPE T
606	5	1	6	4		4			2	2	5	5	2	12	EACH	BRIDGE TERMINAL ASSEMBLY, STANDARD TYPE A
SPECIAL	4798	3302	8100	1903.5	134	2037.5					4798	5205.5	134	10,137.5	LIN.FT.	BERM RESHAPING
SPECIAL	3	1	4				15		9	24	18	1	9	28	EACH	EXISTING TYPE A ANCHOR ASSEMBLY MODIFIED
SPECIAL				1	1	2	9		4	13	9	1	5	15	EACH	EXISTING TYPE A ANCHOR ASSEM. MODIFIED, BARRIER DESIGN
SPECIAL	64		64	20		20	144		88	232	208	20	88	316	EACH	ADDITIONAL GUARD POST INSTALLED

GENERAL NOTES

GUARDRAIL:
The log points of the proposed guardrail shown are approximate. Exact locations will be determined and marked by stakes or other marks by the Engineer. Mail boxes that interfer with the removal or replacement of guardrail shall be relocated by the Contractor as approved by the Engineer. The cost of this item shall be included in the unit price bid for Item 606 Guardrail.

GUARDRAIL OVER CULVERTS:
When sufficient post depth is not available due to a culvert, guardrail posts directly over the culvert shall be set in holes, encased in a minimum of 4" thickness of Class C concrete for the full depth of the hole, or as detailed on GR-1 for inlet mounted posts. Method shall be approved by the Engineer. Payment for the above shall be included in the unit price bid for the applicable guardrail item.

GUARDRAIL POST AND GUARD POST HOLES:
All holes remaining after removal of guardrail posts or guard posts shall be filled with granular material, excess material resulting from guardrail reconstruction or excess material from berm reshaping. All fill material shall be approved by the Engineer. Material placed in holes shall be thoroughly compacted and leveled off as directed by the Engineer. Payment for the above shall be included in the unit price bid for the applicable guardrail item.

(12) TO BE INSTALLED BEFORE SOUTH BOUND TRAFFIC IS MOVED TO THE NORTH BOUND LANES.

ITEM	Section A Part 1	Section A Part 2	Section A Total	Section B Part 2	Section B Part 3	Section B Total	Section C Part 1	Section C Part 2	Section C Part 3	Section C Total	Total Part 1	Total Part 2	Total Part 3	ITEM	GRAND TOTAL	UNIT	DESCRIPTION
																	ROADWAY
202	5091	2168	7259	13,827	3496	17,323	54,943	13,120	83,596	151,659	60,034	29,115	87,092	202	176,241	Sq. Yd.	Pavement Removed
202	5091	2168	7259	13,827	3496	17,323	54,943	13,120	83,596	151,659	60,034	29,115	87,092	202	176,241	Sq. Yd.	Base Removed
202	2884	588	3472						2500	2500	2884	588	2500	202	5972	Sq. Yd.	Wearing Course Removed
202	142	168	310								142	168		202	310	Lin. Ft.	Curb Removed
202	387	387	774								387	387		202	774	Sq. Yd.	Concrete Median Removed
202	400	270	670	530	63	593	407	50	440	897	807	850	503	202	2160	Each	Raised Pavement Markers Removed for Storage
203	8215	5132	13,347	21,140	3087	24,227					8215	26,272	3087	203	37,574	Cu. Yd.	Embankment
203	10	10	20	6162	3980	10,142	100	20	200	320	110	6192	4180	203	10,482	Cu. Yd.	Excavation not Including Embankment Construction
203	217	1336	1553	3444	679	4123	5131	1359	8023	14,513	5348	6139	8702	203	20,189	Cu. Yd.	Excavation not Including Embankment Construction, as per plan
203	65	91	156	125	13	138	78		7	85	143	216	20	203	379	Sta.	Linear Grading
203	4628	1655	6283	14,946	1621	16,567	58,854	14,058	88,722	161,634	63,482	30,659	90,343	203	184,484	Sq. Yd.	Subgrade Compaction
615		1600	1600	6480		6480			1600	1600		8080	1600	615	9680	Sq. Yd.	Temporary Pavement, Class A
615		Lump	Lump	Lump		Lump			Lump	Lump		Lump	Lump	615	Lump		Temporary Roads
622	200	690	890	200		200			888	888	200	890	888	622	1978	Lin. Ft.	Temporary Concrete Barrier
625		Lump	Lump	Lump		Lump			Lump	Lump		Lump	Lump	625	Lump		Temporary Lighting, as per plan
Spec.	1944	11,624	13,568								1944	11,624		Spec.	13,568	Sq. Yd.	Seating Existing Concrete Pavement (See Proposal Note)
Spec.	3528	20,988	24,516								3528	20,988		Spec.	24,516	Lin. Ft.	Partial Depth Pavement Sawing (See Proposal Note)
Spec.	1814	1399	3213								1814	1399		Spec.	3213	Lin. Ft.	Full Depth Pavement Sawing
Spec.		1	1						1	1		1	1	Spec.	2	Each	Impact Attenuator, G.R.E.A.T. System, Model No. 206206NF6GCZ
Spec.	11	11	22	11		11					11	22		Spec.	33	Cu. Yd.	Pavement Repair (See Proposal Note)
Spec.	1790	6152	7942	21,906	3494	25,400	11,732	2814	16,040	30,586	13,522	30,872	19,534	Spec.	63,928	Lin. Ft.	Temporary Asphalt Divider
404	25	25	50	35	15	50	15	5	30	50	40	65	45	404	150	Cu. Yd.	Bituminous Concrete for Maintaining Traffic
																	EROSION CONTROL
659	158	100	258	281	76	357					158	381	76	659	615	M. Gal.	Water
659	7	4	11	12	3	15					7	16	3	659	26	Ton	Commercial Fertilizer
659	72,924	46,177	119,101	129,927	35,328	165,255					72,924	176,104	35,328	659	284,356	Sq. Yd.	Seeding and Mulching

DEPARTMENT OF TRANSPORTATION
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GENERAL SUMMARY

FRA-270-29.11

21/118

	Section A	Section B	Section C	Total	Total	Total		GRAND		

GENERAL SUMMARY

ITEM	Section A			Section B			Section C				Total Part 1	Total Part 2	Total Part 3	ITEM	GRAND TOTAL	UNIT	DESCRIPTION
	Part 1	Part 2	Total	Part 2	Part 3	Total	Part 1	Part 2	Part 3	Total							
																	PAVEMENT
301	8587	5879	14,466	4644	1945	6589	21,499	4952	32,299	58,750	30,086	15,475	34,244	301	79,805	Cu.Yd.	Bituminous Aggregate Base: AC-20
304	10	114	124	420		420	100	20	304	424	110	554	304	304	968	Cu.Yd.	Aggregate Base
305	648	5764	6412	10,626	1747	12,373					648	16,390	1747	305	18,785	Sq.Yd.	8" Concrete Base
403				3539	486	4025						3539	486	403	4025	Cu.Yd.	Asphalt Concrete, AC-20
407	23,378	16,512	39,890	16,409	2623	19,032	20,135	3751	24,386	48,272	43,513	36,672	27,009	407	107,194	Gal.	Tack Coat, as per plan
451					852	852							852	451	852	Sq.Yd.	9" Reinforced Concrete Pavement, as per plan
452				105,787	13,907	119,694						105,787	13,907	452	119,694	Sq.Yd.	9" Plain Concrete Pavement, as per plan
452				7200		7200						7200		452	7200	Sq.Yd.	13" Plain Concrete Pavement
617	1932	1472	3404	2175	260	2435	795	87	553	1435	2727	3734	813	617	7274	Cu.Yd.	Compacted Aggregate
617	10	7	17	11	1	12	4	1	3	8	14	19	4	617	376	M.Gal.	Water
846	5631	3996	9627	1255	269	1524	3624	867	5639	10,130	9255	6118	5908	846	21,281	Cu.Yd.	Asphalt Concrete Intermediate Course Type 2, AC-20
846	4051	2848	6899	853	192	1045	4470	619	4424	9513	8521	4320	4616	846	17,457	Cu.Yd.	Asphalt Concrete Surface Course Type 1, AC-20, as per plan
846	11	9	20	42		42					11	51		846	62	Cu.Yd.	Asphalt Concrete Intermediate Course Type 1, AC-20
Spec.	64,616	40,032	104,648								64,616	40,032		Spec.	104,648	Sq.Yd.	Pavement Reinforcing Fabric (See Proposal Note)
Spec.	68	53	121								68	53		Spec.	121	Cu.Yd.	Open Graded Asphalt Drainage Layer (See Proposal Note)
Spec.					102	102							102	Spec.	102	Lin.Ft.	Pressure Relief Joint, Type D
Spec.	1878	1167	3045								1878	1167		Spec.	3045	Sq.Yd.	Partial Depth Pavement Joint Repair
																	DRAINAGE
603	715	545	1260	985	230	1215	680	130	880	1690	1395	1660	1110	603	4165	Lin.Ft.	4" Conduit, Type E 707.15, as per plan
603	290	220	510	400	100	500	340	60	350	750	630	680	450	603	1760	Lin.Ft.	6" Conduit, Type F
604	3	2	5	4		4	1			1	4	6		604	10	Each	Catch Basin Adjusted to Grade
605	734	576	1310	3488	1748	5236	28,412	6138	34,940	69,490	29,146	10,202	36,688	605	76,036	Lin.Ft.	4" Shallow Pipe Underdrains
605	112	112	224	112		112					112	224		605	336	Lin.Ft.	Aggregate Drains, Longitudinal, as per plan
605	240	240	480	240		240					240	480		605	720	Lin.Ft.	Aggregate Drains, Transverse, as per plan
Spec.	31,246	19,602	50,848	37,570	5240	42,810					31,246	57,172	5240	Spec.	93,658	Lin.Ft.	Pavement Edge Drains

GENERAL SUMMARY

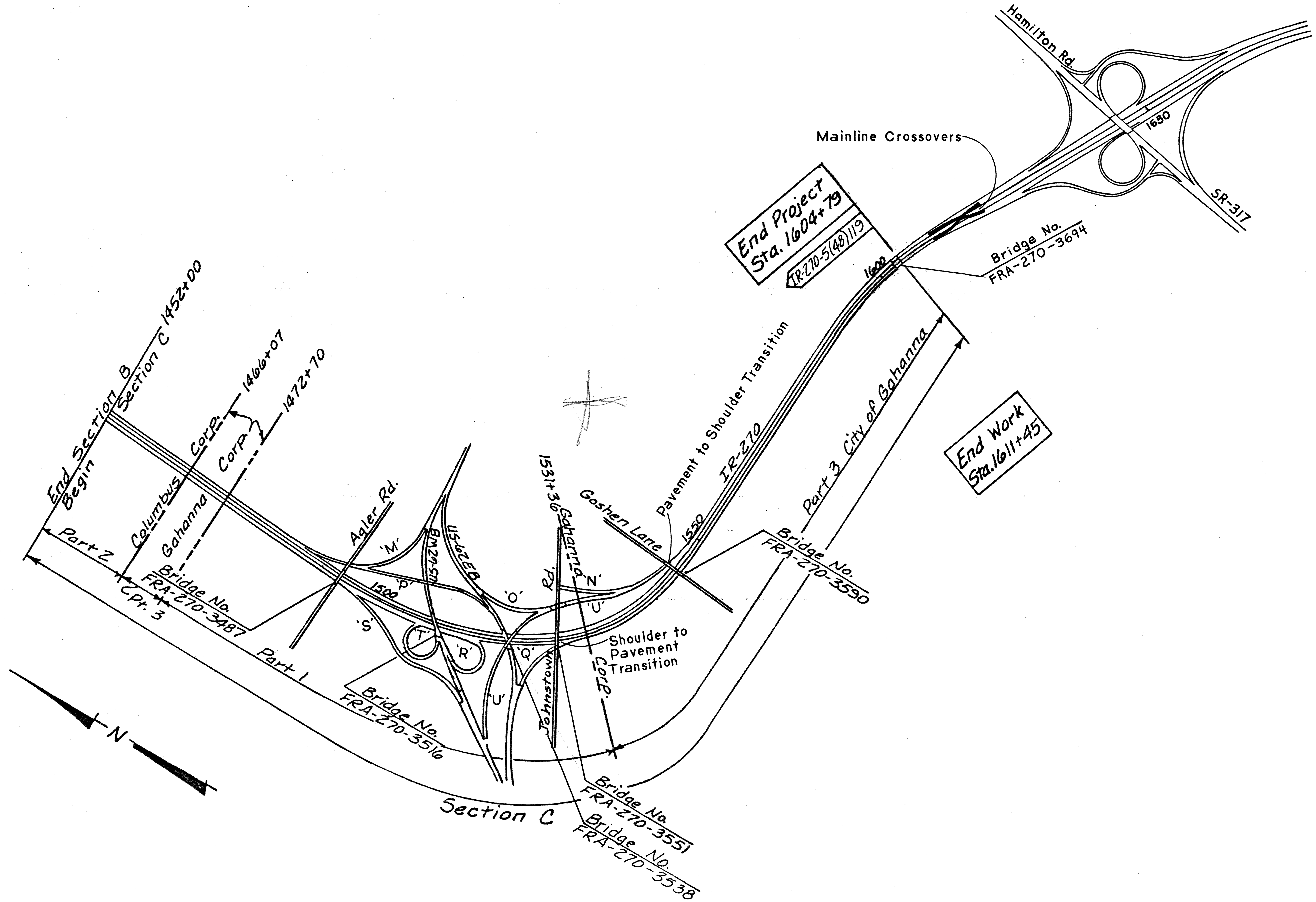
ITEM	Section A Part 1	Section A Part 2	Section A Total	Section B Part 2	Section B Part 3	Section B Total	Section C Part 1	Section C Part 2	Section C Part 3	Section C Total	Total Part 1	Total Part 2	Total Part 3	ITEM	GRAND TOTAL	UNIT	DESCRIPTION
																	STRUCTURES
513	28		28								28			513	28	Each	Reset Abutment Rockers
513	28		28								28			513	28	Each	Trimming of Beam Ends
516	244		244	220		220			332	332	244	220	332	516	796	Lin. Ft.	Vertical Extension of Structural Expansion Joints, as per plan
510	584		584	648		648					584	648		510	1232	Each	Dowel Holes
845	1732		1732	2526		2526			5054	5054	1732	2526	5054	845	9312	Sq. Yd.	Latex Modified Concrete Overlay (1¼" thick)
845	20		20	28		28			62	62	20	28	62	845	110	Cu. Yd.	Latex Modified Concrete Overlay (variable thickness)
824	13,442		13,442	14,490		14,490					13,442	14,490		824	27,932	Lb.	Epoxy Coated Reinforcing Steel, grade 60
Spec.	712		712	818		818			1174	1174	712	818	1174	Spec.	2704	Sq. Yd.	Sealing of Concrete Surfaces (See Proposal Note)
Spec.	17		17						36	36	17		36	Spec.	53	Each	Scupper Modification
511	78		78	90		90					78	90		511	168	Cu. Yd.	Class S Concrete for Bridge Rail
																	TRAFFIC CONTROL
614	.51	2.26	2.71	9.62	.99	10.61	3.33	.80	3.66	7.79	3.84	12.68	4.65	614	21.17	Mile	Temporary Edge Lines, Class I
614	18.27	6.99	25.26	12.45	1.99	14.44	6.95	1.87	10.52	19.34	25.22	21.31	12.51	614	59.04	Mile	Temporary Lane Lines, Class I
614		2498	2498						793	793		2498	793	614	3291	Lin. Ft.	Temporary Channelizing Lines, Class I
614	600	600	1200	300		300	100		300	400	700	900	300	614	1900	Lin. Ft.	Temporary Gore Marking, Class II
614	2	1	3	3		3	1	1	3	5	3	5	3	614	11	Each	Work Zone Marking Signs
621	8.76	6.26	15.02	10.34	1.36	11.70	10.64	1.08	7.00	18.72	19.40	17.68	8.36	621	45.44	Mile	Edge Lines
621	6.65	4.12	10.77	8.50	1.36	9.86	6.53	1.08	9.20	16.81	13.18	13.70	10.56	621	37.44	Mile	Lane Lines
847	330	270	600	704		704	88		940	1028	418	974	940	847	2332	Lin. Ft.	Transverse Lines, 947.02
847	1790	1320	3110	2078		2078	3284		1272	4556	5074	3398	1272	847	9744	Lin. Ft.	Channelizing Lines, 947.02
847				110		110	50			50	50	110		847	160	Lin. Ft.	Stop Lines, 947.02
847				2		2						2		847	2	Each	Lane Arrows, 947.02
847				1		1						1		847	1	Each	96" Word "Only" on Pavement, 96", 947.02
Spec.	525	361	886	708	84	792	543	68	586	1197	1068	1137	670	Spec.	2875	Each	Raised Pavement Marker
Spec.	171	1210	1381	2773	288	3061	990	232	1892	3114	1161	4215	2180	Spec.	7556	Each	Temporary Raised Pavement Marker, Type B
Spec.	10	30	40	10		10			40	40	10	40	40	Spec.	90	Each	Mini Drums
Spec.	76	258	334	920	147	1067	494	118	674	1286	570	1296	821	Spec.	2687	Each	Curb Reflectors
Spec.	10	30	40	10		10			40	40	10	40	40	Spec.	90	Each	Barrier Reflectors
Spec.	59	107	166	59	4	63	40		5	45	99	166	9	Spec.	274	Each	Guardrail Reflectors
Spec.	80	60	140	40	10	50	20	10	40	70	100	110	50	Spec.	260	Hour	Law Enforcement Officer with Patrol Car
614	Lump	Lump	Lump	Lump	Lump	Lump	Lump	Lump	Lump	Lump	Lump	Lump	Lump	614	Lump		Maintaining Traffic
619	Lump	Lump	Lump	Lump	Lump	Lump	Lump	Lump	Lump	Lump	Lump	Lump	Lump	619	Lump		Field Office
623	Lump	Lump	Lump	Lump	Lump	Lump	Lump	Lump	Lump	Lump	Lump	Lump	Lump	623	Lump		Construction Layout Stakes
624	Lump	Lump	Lump	Lump	Lump	Lump	Lump	Lump	Lump	Lump	Lump	Lump	Lump	624	Lump		Mobilization

PLAN NO.

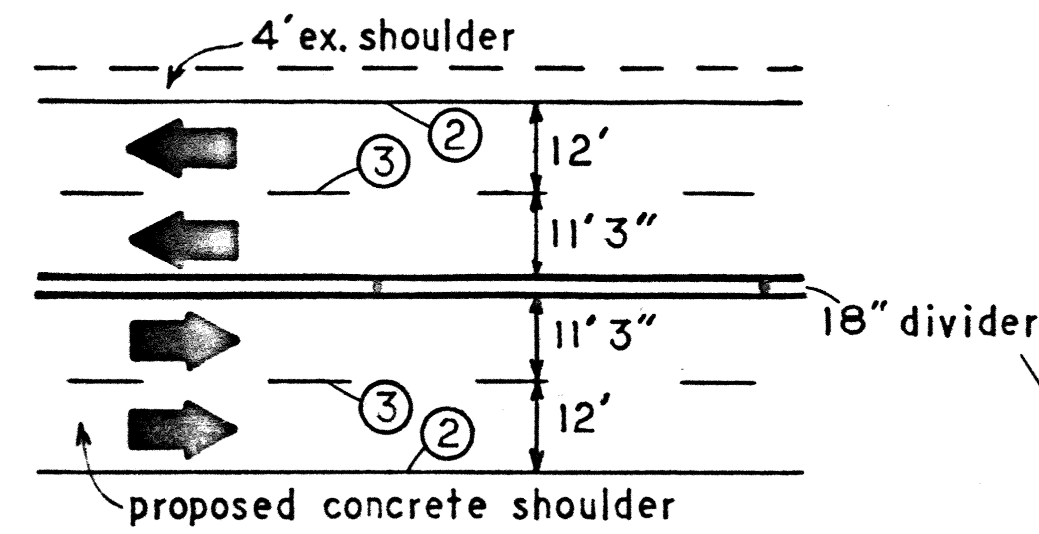
TRAFFIC MAINTENANCE SCHEMATIC

PLAN NO.

TRAFFIC MAINTENANCE SCHEMATIC CONTD.



RETURN CROSSOVER FOR NORTHBOUND CLOSURE



① 4" Yellow Edge Line

② 4" White Edge Line

③ 4" Lane Line

④ Channelizing Line

Quantities on sheet no. 98

For lane closure details see:
"Closing Two Lanes of a Six
Lane Divided Highway".

Curve Data

Δ = 15° 13' 11.4"
D = 5° 0' 0.0"
R = 1,145.916'
T = 153.1'
L = 304.397'
E = 10.18'

*Payment included in lump sum for item 615 – Temporary Roads

▨ Item 615 – Temporary Pavement, Class A

Quantities on sheet no. 58

RAMP CROSSOVER, MORSE RD. TO IR-270 NB

① 4" Yellow Edge Line

② 4" White Edge Line

Quantities on sheet no. 98

*Payment included in lump sum for item 615 — Temporary Roads

Item 615 — Temporary Pavement, Class A

Quantities on sheet no. 58

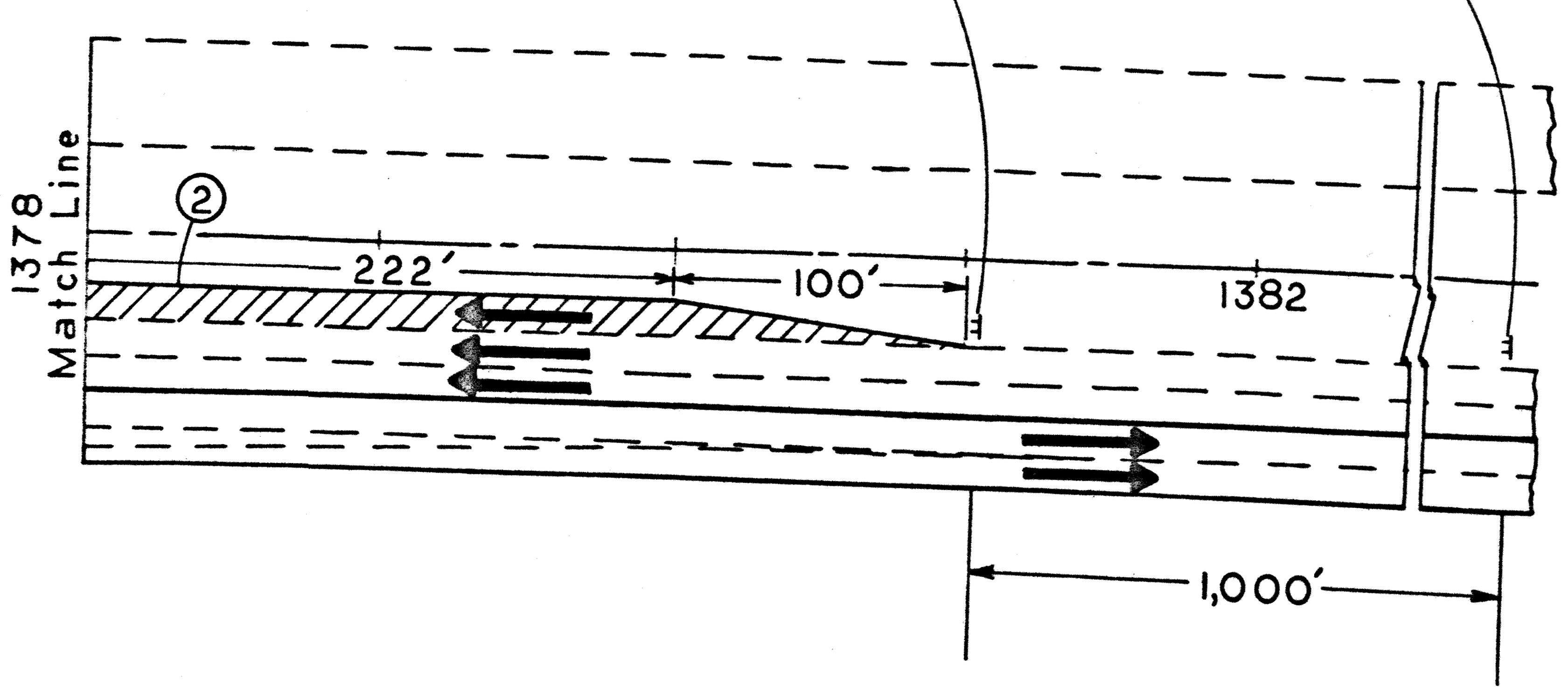
Curve Data

	Curve 1	Curve 2	Curve 3	Curve 4
Δ =	13° 1' 28.2"	15° 13' 11.4"	22° 40' 48"	24° 16' 55.2"
D =	5° 0' 0.0"	5° 0' 0.0"	9° 0' 0"	9° 0' 0.0"
R =	1,145.916'	1,145.916'	636.62'	636.62'
T =	130.81'	153.1'	127.67'	136.96'
L =	260.49'	304.397'	252.00'	269.80'
E =	7.44'	10.18'	12.68'	13.58'

RAMP CROSSOVER, IR-270 NB TO MORSE RD.

Curve Data

	Curve 1	Curve 2	Curve 3	Curve 4	Curve 5
Δ =	16° 46' 48"	17° 13' 24.6"	13° 1' 28.2"	18° 44' 10.3"	18° 35' 27.6"
D =	9° 0' 0.0"	5° 0' 0.0"	5° 0' 0"	9° 0' 0.0"	5° 0' 0.0"
R =	636.62'	1,145.916'	1,145.916'	636.62'	1,145.916'
T =	93.89'	173.54'	130.80'	105.03'	187.56'
L =	186.73'	344.5'	260.49'	208.18'	371.82'
E =	6.89'	13.07'	7.44'	8.61'	15.25'



INITIAL CROSSOVER FOR NORTHBOUND CLOSURE

① 4" Yellow Edge Line

② 4" White Edge Line

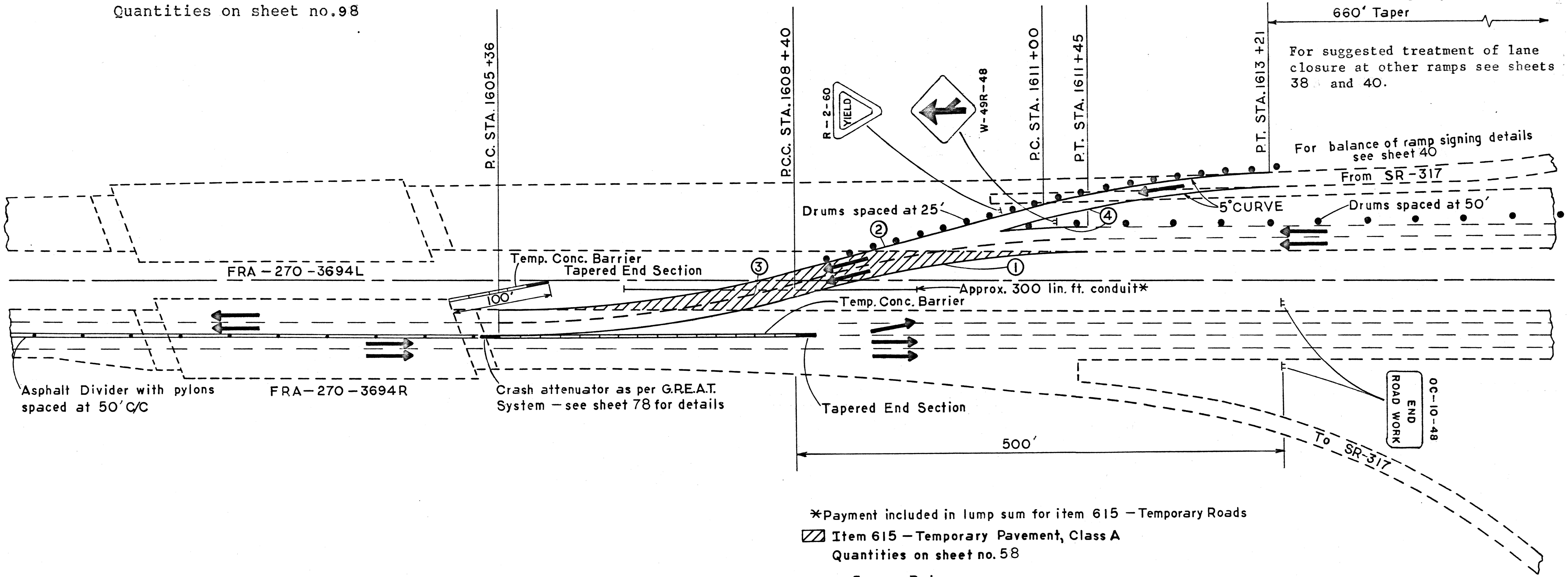
③ 4" Lane Line

④ Channelizing Line

Quantities on sheet no.98

For lane closure details see: "Closing Two Lanes of an Eight Lane Divided Highway".

For suggested treatment of lane closure at other ramps see sheets 38 and 40.



*Payment included in lump sum for item 615 - Temporary Roads

▨ Item 615 - Temporary Pavement, Class A
Quantities on sheet no. 58

<u>Curve Data</u>

Δ = 15° 13' 11.4"
D = 5° 0' 0.0"
R = 1,145.916'
T = 153.1'
L = 304.397'
E = 10.18'

INITIAL CROSSOVER FOR SOUTHBOUND CLOSURE

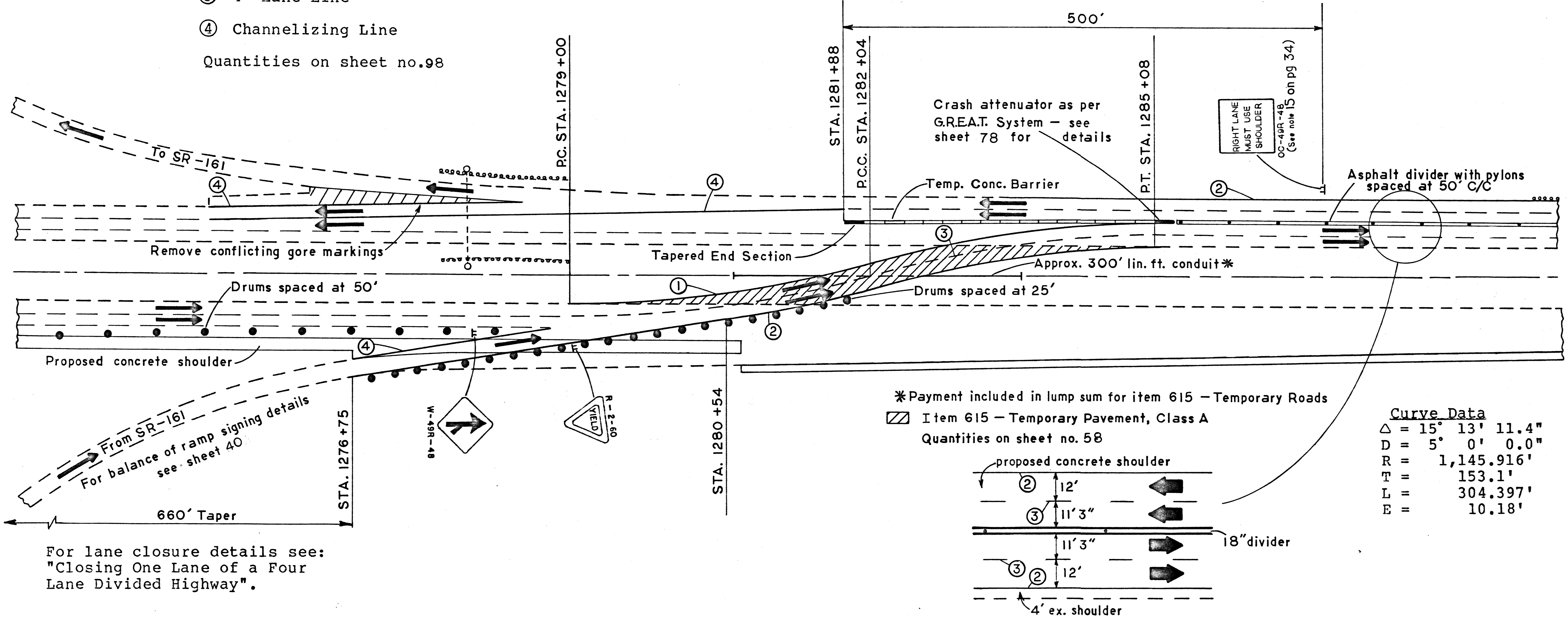
① 4" Yellow Edge Line

② 4" White Edge Line

③ 4" Lane Line

④ Channelizing Line

Quantities on sheet no.98



For lane closure details see:
"Closing One Lane of a Four Lane Divided Highway".

DEPARTMENT OF TRANSPORTATION
M& R 712 REV. 9-1-83

FRA-270-29.11

PLAN NO.

RAMP CROSSOVER, IR-270 SB TO MORSE RD.

*Payment included in lump sum for item 615 – Temporary Roads

▨ Item 615 – Temporary Pavement, Class A
Quantities on sheet no. 58

Curve Data

	Curve 1	Curve 2	Curve 3	Curve 4
Δ =	13° 1' 28.2"	15° 13' 11.4"	19° 29' 54.6"	17° 22' 50.8"
D =	5° 0' 0.0"	5° 0' 0.0"	9° 0' 0"	9° 0' 0.0"
R =	1,145.916'	1,145.916'	636.62'	636.62'
T =	130.81'	153.1'	109.39'	97.30'
L =	260.49'	304.397'	216.65'	193.12'
E =	7.44'	10.18'	9.33'	7.39'

RAMP CROSSOVER, MORSE RD. TO IR-270 SB

Curve Data

	Curve 1	Curve 2	Curve 3	Curve 4
Δ =	24° 32' 13.2"	14° 26' 31.2"	13° 1' 28.2"	18° 12' 27.6"
D =	6° 0' 0.0"	5° 0' 0.0"	5° 0' 0"	9° 0' 0.0"
R =	954.93'	1,145.916'	1,145.916'	636.62'
T =	207.66'	145.19'	130.80'	102.02'
L =	408.95'	288.84	260.49'	202.31'
E =	22.32'	9.16'	7.44'	8.12'

RETURN CROSSOVER FOR SOUTHBOUND CLOSURE

PLAN NO.

① 4" Yellow Edge Line

② 4" White Edge Line

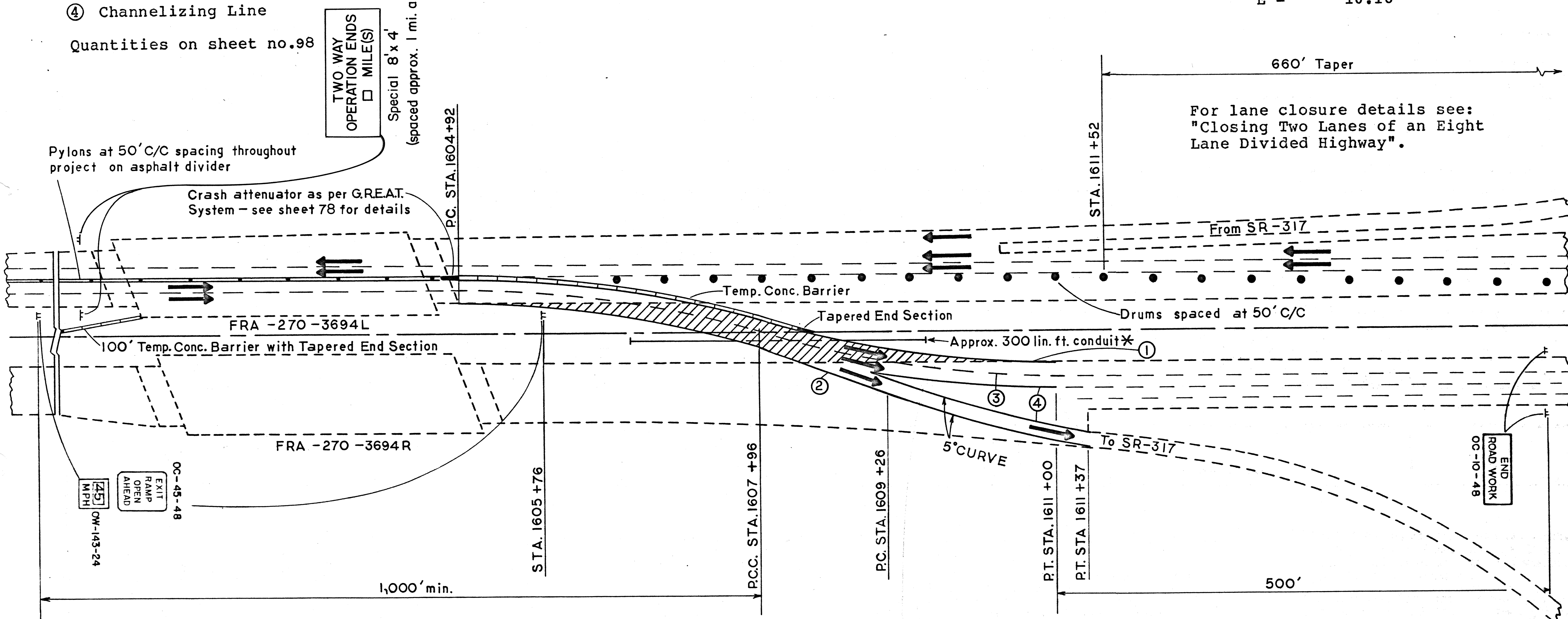
③ 4" Lane Line

④ Channelizing Line

Quantities on sheet no.98

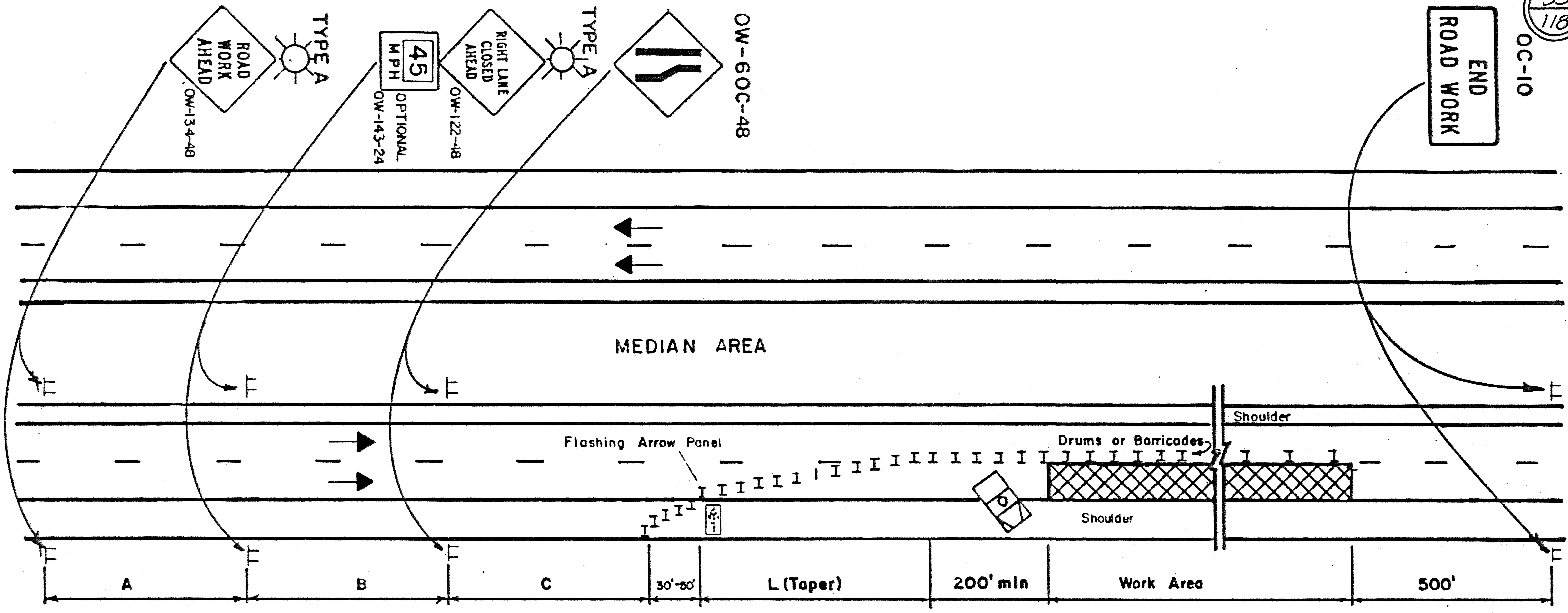
Curve Data
△ = 15° 13' 11.4"
D = 5° 0' 0.0"
R = 1,145.916'
T = 153.1'
L = 304.397'
E = 10.18'

For lane closure details see: "Closing Two Lanes of an Eight Lane Divided Highway".



*Payment included in lump sum for item 615 – Temporary Roads

Item 615 – Temporary Pavement, Class A
Quantities on sheet no.58



GENERAL NOTES:

1. The taper length (L) shall be in accordance with Section 7F-17 of the OMUTCD. The location of the transition taper and location of the advance warning signs should be adjusted to provide for adequate sight distance for the existing vertical and horizontal roadway alignment. In order to determine the minimum number of channelizing devices for the transition taper see Table 7-5 OMUTCD. For a 55 MPH prevailing speed and a 12 ft. lane, not less than thirteen (13) drums or barricades shall be used to form the lane transition taper in advance of the work area. Not less than five (5) drums or barricades shall be used to form the taper on the shoulder. drums or barricades shall be spaced approximately 50' to 60' center to center for the first 1000 feet of the work area and at a maximum of 100 to 120 feet for the balance of the work area. Cones may be substituted for barricades or drums during daylight closures only.

2. The major standard level warning sign sizes may be used on divided streets or highways that are not classified as freeways or expressways.

3. When work is being performed in the lane adjacent to the median on a divided highway an OW-123-48 sign(s) shall be substituted for the OW-122-48 sign(s) and an OW-60D-48 sign(s) shall be substituted for the OW-60C sign(s).

4. The work vehicle shown at the beginning of the work area shall be in place and unoccupied whenever workers are in the work area. This work vehicle shall be removed from the pavement whenever workers are not in the work area. Other protective devices may be used in lieu of the work vehicle shown when approved by the Engineer. The vehicle shall be equipped with a 360° rotating or flashing amber beacon clearly visible a minimum of a ½ mile.

5. The flashing arrow panel shall meet requirements of TC-35.10.

6. Type C steady burning barricade warning lights shall be erected on drums or barricades for night lane closures. The maximum spacing shall be identical to the channelizing device spacing requirements described in Note 1.

MINIMUM DISTANCE	A	B	C
MAJOR STANDARD	500'	500'	500'
URBAN FREEWAY & EXPRESSWAY	500' TO 1000'	500' TO 1000'	500' TO 1000'
RURAL FREEWAY & EXPRESSWAY	2600'	1600'	1000'

7. Type A flashing barricade warning lights shown on the "Road Work Ahead" and the "Right Lane Closed Ahead" signs are required whenever a night lane closure is necessary.

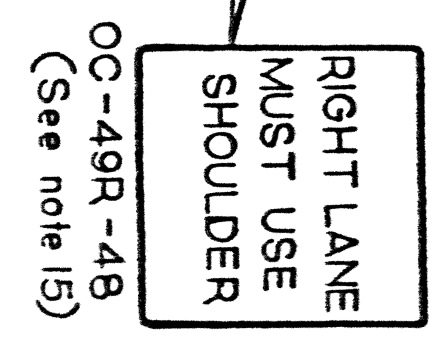
8. Some work area locations may require more than just static or conventional signs to enhance communication with the driver. At these locations Portable Changeable Message Signs (PCMS) units are recommended. These devices should be located 2000 to 4000 feet in advance of a lane closure or other point of required action. See Section 7G-8.1, OMUTCD for further guidance on use of PCMS units.

OHIO DEPARTMENT OF TRANSPORTATION

CLOSING ONE LANE OF A FOUR LANE DIVIDED HIGHWAY

DATE 12/82

CLOSING TWO LANES OF A SIX LANE DIVIDED HIGHWAY



GENERAL NOTES

1. This closure to be used for joint repair, paving and for placement and removal of a temporary asphalt divider. The approach and taper sections can be used for closing lanes in conjunction with a crossover.

2. Thirteen (13) drums or barricades shall be used to form the lane transition taper in advance of the work area. Five (5) channelizing devices shall be used to form the taper on the shoulder. Cones, drums or barricades shall be spaced at 50 to 60 foot centers in an area from 200 feet ahead of the work area to 1,000 feet into the work area and at a maximum of 100 to 120 feet for the balance of the work area when a divider is not being used. Cones may be substituted for the barricades or drums for the lane closures during daylight hours only.

3. Two (2) lanes of traffic shall be maintained at all times.

4. The work vehicle shown on the beginning of the work area shall be in place and unoccupied whenever men are working within the work area. This vehicle shall be moved from the pavement whenever workmen are not in the work area. Other protective devices may be used in lieu of the work vehicle shown when approved by the Engineer.

5. Type C steady burning barricade warning lights shall be erected on drums or barricades for night lane closures. The maximum spacing shall be identical to the channelizing device spacing requirements described in Note 2.

6. The Type A flashing barricade warning lights shown are required whenever a night lane closure is necessary.

7. Install 4" Temporary Channelizing Lines, White, Class I and remove when work is completed.

8. Install 4" Temporary Edge Lines, White, Class I and remove when the work is completed.

9. Install 4" Temporary Edge Lines, Yellow, Class I and remove when the work is completed.

10. Remove existing conflicting markings and replace when the work is completed.

11. The Contractor shall make any necessary shoulder repairs as directed by the Engineer to maintain traffic on shoulders.

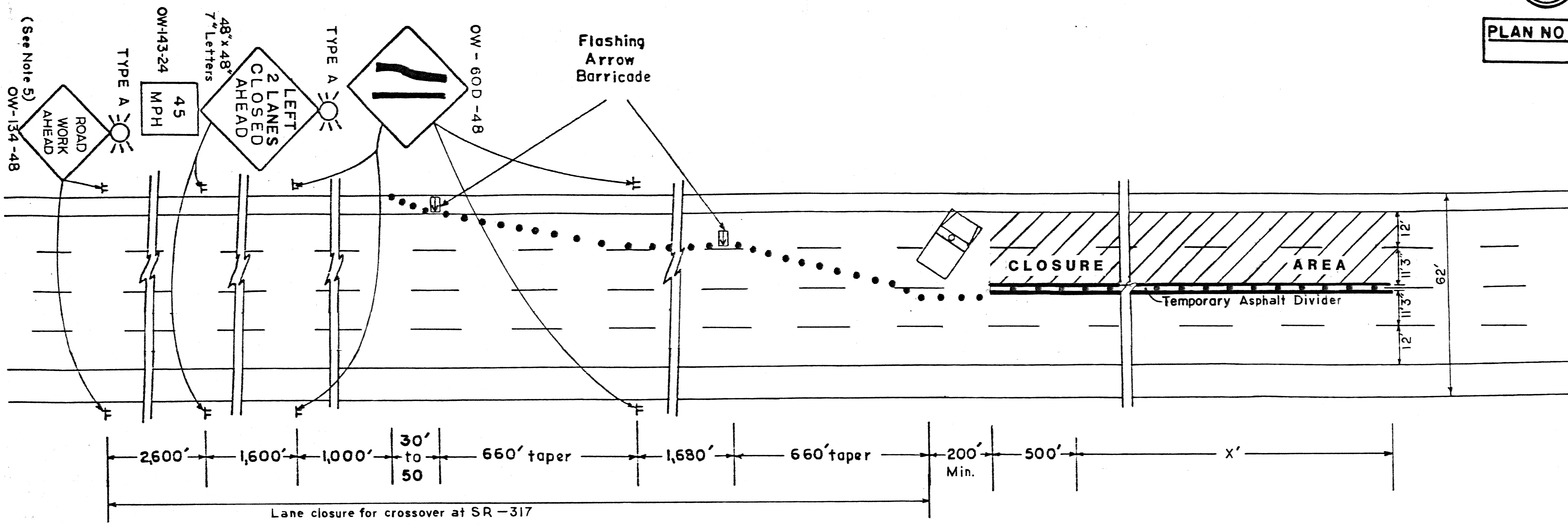
12. Additional offset to be as directed by the Engineer only during the placement of the latex modified concrete overlay.

13. A minimum of two 10' lanes shall be maintained at all times unless otherwise directed by the Engineer.

14. Closing only the right or left lane of a six (6) lane highway shall be as detailed in "Closing One Lane of a Four Lane Highway".

15. The maximum spacing of the OC-49R-48, "Right Lane Must Use Shoulder", near the work area is 1,500 feet. When the distance "X" is less than 1,500 feet, the second OC-49R should be deleted.

16. For payment of placing and removing temporary markings see 614 WORK ZONE PAVEMENT MARKINGS.



GENERAL NOTES

1. This closure to be used for paving and for placement and removal of a temporary asphalt divider. The approach and taper sections can be used for closing lanes in conjunction with a crossover.

2. Thirteen (13) drums or barricades shall be used to form the lane transition taper in advance of the work area. Five (5) channelizing devices shall be used to form the taper on the shoulder. Cones, drums or barricades shall be spaced at 50 to 60 foot centers in an area from 200 feet ahead of the work area to 1,000 feet into the work area and at a maximum of 100 to 120 feet for the balance of the work area when a divider is not being used. Cones may be substituted for the barricades or drums for the lane closures during daylight hours only.

3. A minimum of two lanes as shown above shall be maintained at all times unless otherwise directed by the Engineer.

4. The work vehicle shown at the beginning of the work area shall be in place and unoccupied whenever men are working within the work area. This vehicle shall be moved from the pavement whenever workmen are not in the work area. Other protective devices may be used in lieu of the work vehicle shown when approved by the Engineer.

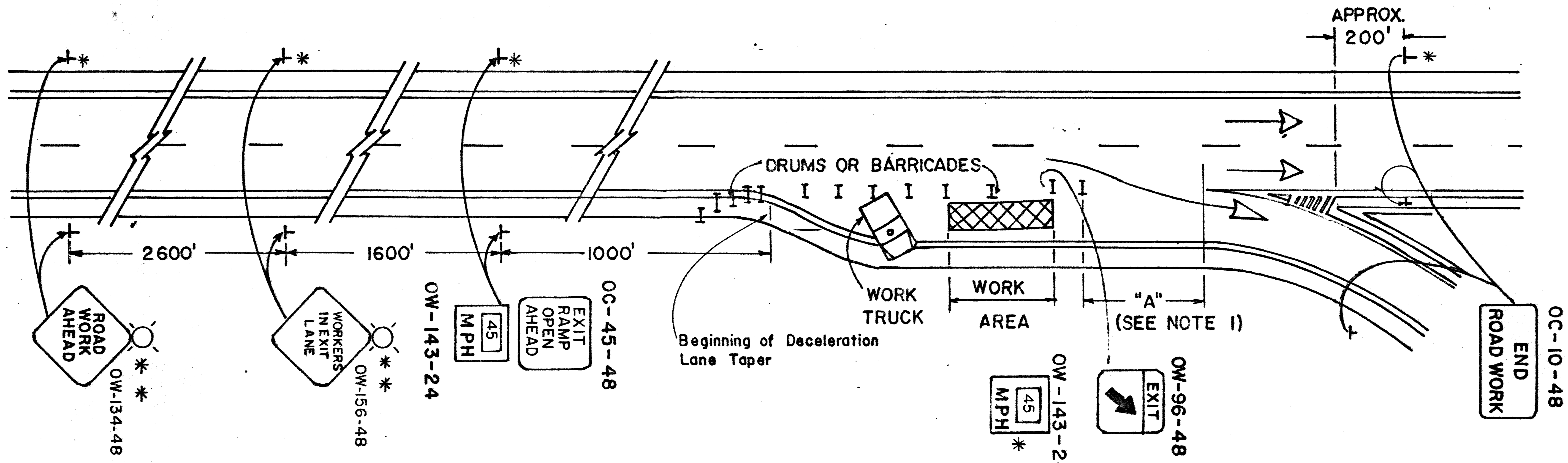
5. Type C steady burning barricade warning lights shall be erected on drums or barricades for night lane closures. The maximum spacing shall be identical to channelizing device spacing requirements described in Note 1.

6. The Type A flashing barricade warning lights shown above are required whenever a night lane closure is necessary.

7. Closing only the right or left lane of an eight (8) lane highway shall be as detailed in "Closing One Lane of a Four Lane Highway".

8. For payment of placing and removing temporary markings see 614 WORK ZONE PAVEMENT MARKINGS.

CLOSING TWO LANES OF AN EIGHT LANE DIVIDED HIGHWAY



* * TYPE A FLASHING BARRICADE WARNING LIGHTS ARE REQUIRED FOR NIGHT LANE CLOSURES.

* OPTIONAL SIGN ERECTED WITH THE APPROVAL OF THE ENGINEER.

GENERAL NOTES.

1. THIS WORK AREA TRAFFIC CONTROL APPLICATION SHALL ONLY APPLY WHEN THE DISTANCE "A" IS GREATER THAN 100'. WHEN DISTANCE "A" IS LESS THAN 100', THE RAMP SHALL BE CLOSED. WHEN THE RAMP IS CLOSED, THE TRAFFIC CONTROL SHALL INCLUDE DETOUR SIGNING FOR EXIT RAMP CLOSURES IN ACCORDANCE WITH OMUTCD.

2. DRUMS OR BARRICADES SHALL BE SPACED AT 50 FOOT CENTERS. CONES MAY BE SUBSTITUTED FOR BARRICADES OR DRUMS FOR THE LANE CLOSURES DURING DAYLIGHT HOURS ONLY.

3. TYPE C STEADY BURNING BARRICADE WARNING LIGHTS SHALL BE ERECTED ON DRUMS OR BARRICADES FOR NIGHT LANE CLOSURES. MAXIMUM SPACING SHALL BE 50' CENTER TO CENTER IN ADVANCE OF THE WORK AREA AND 200' CENTER TO CENTER WITHIN THE LIMITS OF THE WORK AREA.

4. THE WORK TRUCK SHOWN AT THE BEGINNING OF THE WORK AREA SHALL BE IN PLACE AND UNOCCUPIED WHENEVER MEN ARE WORKING WITHIN THE WORK AREA. THIS TRUCK SHALL BE MOVED FROM THE PAVEMENT WHENEVER WORKMEN ARE NOT IN THE WORK AREA. OTHER PROTECTIVE DEVICES MAY BE USED IN LIEU OF THE WORK TRUCK SHOWN WHEN APPROVED BY THE ENGINEER.

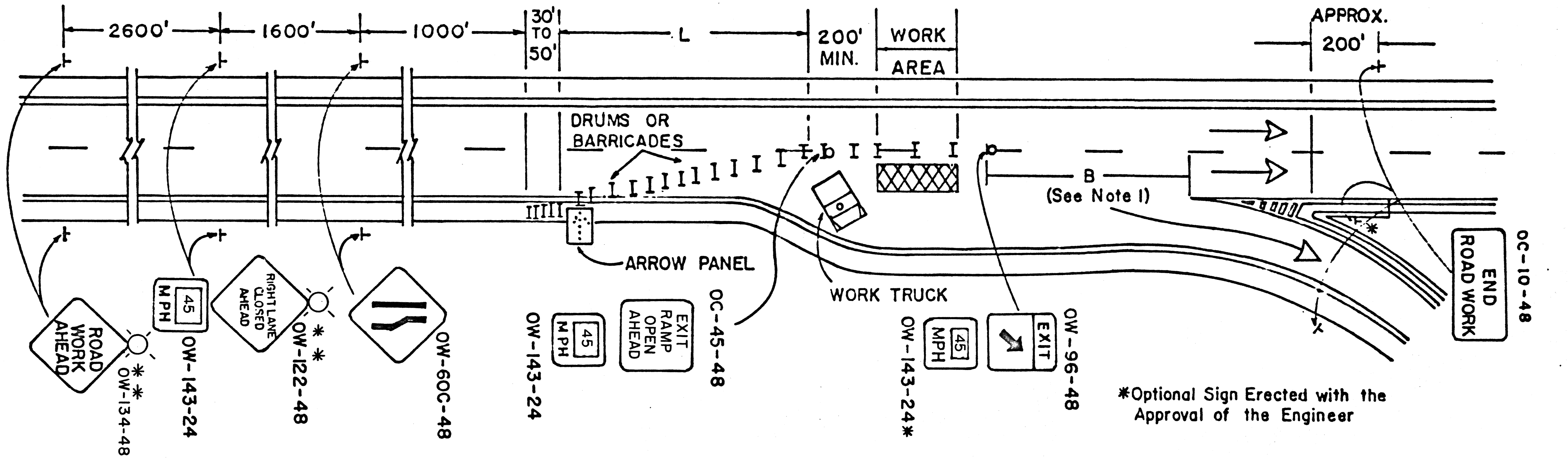
5. THE SPACINGS BETWEEN CONSTRUCTION AND MAINTENANCE SIGNS SHOWN ON THIS DETAIL MAY REQUIRE ADJUSTMENTS (INCREASES OR DECREASES) TO ASSURE THAT THEY ARE POSITIONED NO CLOSER THAN 200 FEET TO EXISTING SIGNS AS DETERMINED BY THE ENGINEER.

6. THE WORK TRUCK SHALL BE EQUIPPED WITH A 360° ROTATING OR FLASHING AMBER BEACON CLEARLY VISIBLE A MINIMUM OF A 1/4 MILE

OHIO DEPARTMENT OF TRANSPORTATION

LANE CLOSURE IN DECELERATION LANE

DATE 8-3-79



GENERAL NOTES

1. THIS WORK AREA TRAFFIC CONTROL APPLICATION SHALL ONLY BE USED WHEN THE DISTANCE "B" IS 100 FEET OR GREATER. WHEN "B" IS LESS THAN 100 FEET, THE TRAFFIC CONTROL SHOWN ON THE "LANE CLOSURE AT EXIT GORE" DETAIL SHOULD BE USED, OR THE EXIT SHOULD BE CLOSED, OR THE TRAFFIC CONTROL ON THIS DRAWING MAY BE USED WITH APPROVAL OF THE ENGINEER. WHEN THE EXIT IS CLOSED, APPROPRIATE DETOUR SIGNS SHALL BE PROVIDED.

2. WHEN WORK IS BEING PERFORMED IN THE LANE ADJACENT TO THE MEDIAN ON A DIVIDED HIGHWAY, REFER TO THE TYPICAL WORK AREA TRAFFIC CONTROL SHOWN IN FIGURE C-21 OF THE OHIO MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES.

3. THE WORK TRUCK SHOWN AT THE BEGINNING OF THE WORK AREA SHALL BE IN PLACE AND UNOCCUPIED WHENEVER MEN ARE WORKING WITHIN THE WORK AREA. THIS TRUCK SHALL BE MOVED FROM THE PAVEMENT WHENEVER WORKMEN ARE NOT IN THE WORK AREA. OTHER PROTECTIVE DEVICES MAY BE USED IN LIEU OF THE WORK TRUCK SHOWN WHEN APPROVED BY THE ENGINEER.

✱✱ TYPE A FLASHING BARRICADE WARNING LIGHTS ARE REQUIRED FOR NIGHT LANE CLOSURES.

4. THE FLASHING ARROW PANEL SHALL BE IN ACCORDANCE WITH TC-35.10.

5. THIRTEEN (13) DRUMS OR BARRICADES SHALL BE USED TO FORM THE LANE TRANSITION TAPER IN ADVANCE OF THE WORK AREA. FIVE (5) CHANNELIZING DEVICES SHALL BE USED TO FORM THE TAPER ON THE SHOULDER. CONES, DRUMS, OR BARRICADES SHALL BE SPACED AT 50 FOOT CENTERS. CONES MAY BE SUBSTITUTED FOR BARRICADES OR DRUMS FOR THE LANE CLOSURES DURING DAYLIGHT HOURS ONLY.

6. TYPE C STEADY BURNING BARRICADE WARNING LIGHTS SHALL BE ERECTED ON DRUMS OR BARRICADES FOR NIGHT LANE CLOSURES. MAXIMUM SPACING SHALL BE 50' CENTER TO CENTER IN ADVANCE OF THE WORK AREA AND 200' CENTER TO CENTER WITHIN THE LIMITS OF THE WORK AREA.

7. TAPER FORMULAE:

   $L = S \times W$ FOR SPEEDS OF 45 OR MORE.
   $L = WS^2/60$ FOR SPEEDS OF 40 OR LESS.

   WHERE:

   L = MINIMUM LENGTH OF TAPER.
   S = NUMERICAL VALUE OF POSTED SPEED LIMIT PRIOR TO WORK OR 85 PERCENTILE SPEED.
   W = WIDTH OF OFFSET.

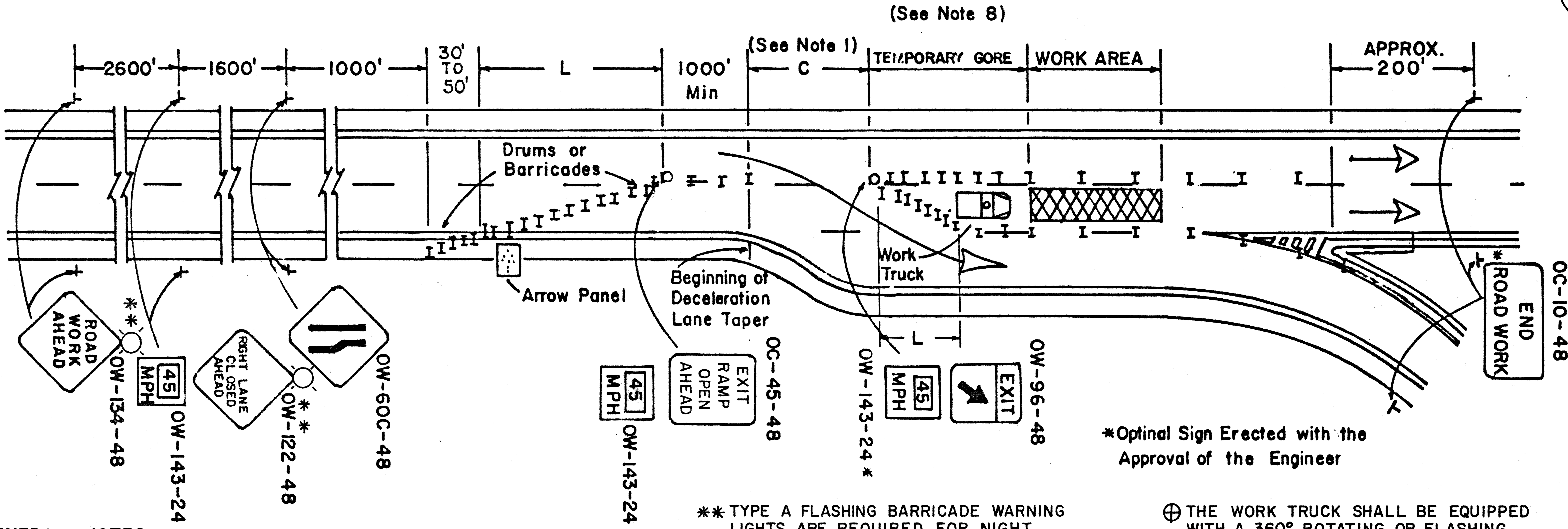
8. THE SPACINGS BETWEEN CONSTRUCTION AND MAINTENANCE SIGNS SHOWN ON THIS DETAIL MAY REQUIRE ADJUSTMENTS (INCREASES OR DECREASES) TO ASSURE THAT THEY ARE POSITIONED NO CLOSER THAN 200 FEET TO EXISTING SIGNS AS DETERMINED BY THE ENGINEER.

9. THE WORK TRUCK SHALL BE EQUIPPED WITH A 360° ROTATING OR FLASHING AMBER BEACON CLEARLY VISIBLE A MINIMUM OF A 1/4 MILE.

OHIO DEPARTMENT OF TRANSPORTATION

LANE CLOSURE BEFORE EXIT GORE

U TC
3-3-79



*Optinal Sign Erected with the Approval of the Engineer

** TYPE A FLASHING BARRICADE WARNING LIGHTS ARE REQUIRED FOR NIGHT LANE CLOSURES.

⊕ THE WORK TRUCK SHALL BE EQUIPPED WITH A 360° ROTATING OR FLASHING AMBER BEACON CLEARLY VISIBLE A MINIMUM OF A 1/4 MILE.

GENERAL NOTES

1. THIS WORK AREA TRAFFIC CONTROL APPLICATION SHALL ONLY BE USED WHEN THE DISTANCE "C" IS 100 FEET OR GREATER. WHEN "C" IS LESS THAN 100 FEET, THE TRAFFIC CONTROL SHOWN ON THE "LANE CLOSURE BEFORE EXIT GORE" DETAIL SHOULD BE USED, OR THE EXIT SHOULD BE CLOSED, OR THE TRAFFIC CONTROL ON THIS DRAWING MAY BE USED WITH APPROVAL OF THE ENGINEER. WHEN THE EXIT IS CLOSED, APPROPRIATE DETOUR SIGNS SHALL BE PROVIDED.

2. WHEN WORK IS BEING PERFORMED IN ONLY THE LANE ADJACENT TO THE MEDIAN ON A DIVIDED HIGHWAY, REFER TO THE TYPICAL WORK AREA TRAFFIC CONTROL SHOWN IN FIGURE C-21 OF THE OHIO MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES.

3. THE WORK TRUCK SHOWN AT THE BEGINNING OF THE WORK AREA SHALL BE IN PLACE AND UNOCCUPIED WHENEVER MEN ARE WORKING WITHIN THE WORK AREA. THIS TRUCK SHALL BE MOVED FROM THE PAVEMENT WHENEVER WORKMEN ARE NOT IN THE WORK AREA. OTHER PROTECTIVE DEVICES MAY BE USED IN LIEU OF THE WORK TRUCK SHOWN WHEN APPROVED BY THE ENGINEER. A TRUCK MOUNTED IMPACT ATTENUATOR MAY BE EMPLOYED. ⊕

4. THE FLASHING ARROW PANEL SHALL BE IN ACCORDANCE WITH TC-35.10.

5. THIRTEEN (13) DRUMS OR BARRICADES SHALL BE USED TO FORM THE LANE TRANSITION TAPER IN ADVANCE OF THE WORK AREA. FIVE (5) CHANNELIZING DEVICES SHALL BE USED TO FORM THE TAPER ON THE SHOULDER. CONES, DRUMS, OR BARRICADES SHALL BE SPACED AT 50 FOOT CENTERS. CONES MAY BE SUBSTITUTED FOR BARRICADES OR DRUMS FOR THE LANE CLOSURES DURING DAYLIGHT HOURS ONLY.

6. TYPE C STEADY BURNING BARRICADE WARNING LIGHTS SHALL BE ERECTED ON DRUMS OR BARRICADES FOR NIGHT LANE CLOSURES. MAXIMUM SPACING SHALL BE 50' CENTER TO CENTER IN ADVANCE OF THE WORK AREA AND 200' CENTER TO CENTER WITHIN THE LIMITS OF THE WORK AREA.

7. TAPER FORMULAE:

   $L = S \times W$ FOR SPEEDS OF 45 OR MORE.
   $L = WS^2/60$ FOR SPEEDS OF 40 OR LESS.

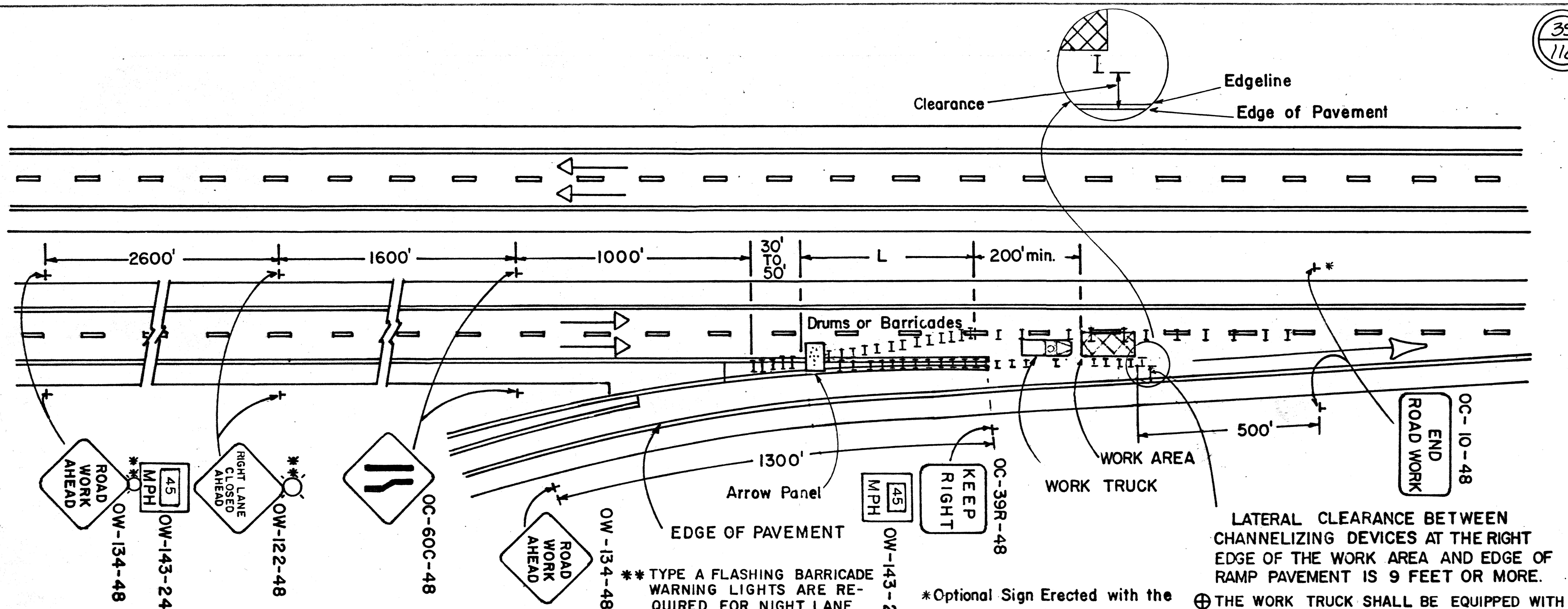
   WHERE:

   L = MINIMUM LENGTH OF TAPER.
   S = NUMERICAL VALUE OF POSTED SPEED LIMIT PRIOR TO WORK OR 85 PERCENTILE SPEED.
   W = WIDTH OF OFFSET.

8. WHEN CREATING A TEMPORARY GORE, CHANNELIZING DEVICES SHOULD BE SPACED 25' CENTER TO CENTER SO AS TO CREATE A "SOLID GORE" EFFECT.

9. THE SPACINGS BETWEEN CONSTRUCTION AND MAINTENANCE SIGNS SHOWN ON THIS DETAIL MAY REQUIRE ADJUSTMENTS (INCREASES OR DECREASES) TO ASSURE THAT THEY ARE POSITIONED NO CLOSER THAN 200 FEET TO EXISTING SIGNS AS DETERMINED BY THE ENGINEER.

OHIO DEPARTMENT OF TRANSPORTATION	
LANE CLOSURE AT EXIT GORE	DATE 8-3-79



** TYPE A FLASHING BARRICADE WARNING LIGHTS ARE RE-QUIRED FOR NIGHT LANE CLOSURES.

*Optional Sign Erected with the Approval of the Engineer

LATERAL CLEARANCE BETWEEN CHANNELIZING DEVICES AT THE RIGHT EDGE OF THE WORK AREA AND EDGE OF RAMP PAVEMENT IS 9 FEET OR MORE.

⊕ THE WORK TRUCK SHALL BE EQUIPPED WITH A 360° ROTATING OR FLASHING AMBER BEACON CLEARLY VISIBLE A MINIMUM OF A 1/4 MILE.

GENERAL NOTES

1. THIS WORK AREA TRAFFIC CONTROL APPLICATION SHALL BE EMPLOYED WHEN THE LATERAL CLEARANCE BETWEEN THE CHANNELIZING DEVICES AT THE RIGHT EDGE OF THE WORK AREA AND THE EDGE OF THE RAMP PAVEMENT IS 9 FEET OR MORE. WHEN THE CLEARANCE IS LESS THAN 9 FEET, THE TRAFFIC CONTROL ON "LANE CLOSURE AT ENTRANCE RAMP: PLAN B" SHOULD BE USED, OR THE RAMP SHOULD BE CLOSED, OR ALLOWING RAMP TRAFFIC TO USE THE BERM SHOULD BE CONSIDERED PROVIDED THE OPERATION IS "SHORT" IN DURATION. WHEN THE RAMP IS CLOSED, APPROPRIATE DETOUR SIGNS SHALL BE PROVIDED.

2. THIRTEEN (13) DRUMS OR BARRICADES SHALL BE USED TO FORM THE LANE TRANSITION TAPER IN ADVANCE OF THE WORK AREA. FIVE (5) CHANNELIZING DEVICES SHALL BE USED TO FORM THE TAPER ON THE SHOULDER. CONES, DRUMS, OR BARRICADES SHALL BE SPACED AT 50 FOOT CENTERS. CONES MAY BE SUBSTITUTED FOR BARRICADES OR DRUMS FOR THE LANE CLOSURES DURING DAYLIGHT HOURS ONLY.

3. RAMP SIGNS SHALL BE DUAL MOUNTED ON MULTILANE RAMPS.

4. THE FLASHING ARROW PANEL SHALL BE IN ACCORDANCE WITH TC-35.10.

5. THE WORK TRUCK SHOWN AT THE BEGINNING OF THE WORK AREA SHALL BE IN PLACE AND UNOCCUPIED WHENEVER MEN ARE WORKING WITHIN THE WORK AREA. THIS TRUCK SHALL BE MOVED FROM THE PAVEMENT WHENEVER WORKMAN ARE NOT IN THE WORK AREA. OTHER PROTECTIVE DEVICES MAY BE USED IN LIEU OF WORK TRUCK SHOWN WHEN APPROVED BY THE ENGINEER. A TRUCK MOUNTED IMPACT ATTENUATOR MAY BE EMPLOYED.⊕

6. TYPE C STEADY BURNING BARRICADE WARNING LIGHTS SHALL BE ERECTED ON DRUMS OR BARRICADES FOR NIGHT LANE CLOSURES. MAXIMUM SPACING SHALL BE 50' CENTER TO CENTER IN ADVANCE OF THE WORK AREA AND 200' CENTER TO CENTER WITHIN THE LIMITS OF THE WORK AREA.

7. TAPER FORMULAE:

   $L = S \times W$ FOR SPEEDS OF 45 OR MORE.
   $L = WS^2/60$ FOR SPEEDS OF 40 OR LESS.

   WHERE:

   L = MINIMUM LENGTH OF TAPER.
   S = NUMERICAL VALUE OF POSTED SPEED LIMIT PRIOR TO WORK OR 85 PERCENTILE SPEED.
   W = WIDTH OF OFFSET.

8. THE SPACINGS BETWEEN CONSTRUCTION AND MAINTENANCE SIGNS SHOWN ON THIS DETAIL MAY REQUIRE ADJUSTMENTS (INCREASES OR DECREASES) TO ASSURE THAT THEY ARE POSITIONED NO CLOSER TNAN 200 FEET TO EXISTING SIGNS AS DETERMINED BY THE ENGINEER.

OHIO DEPARTMENT OF TRANSPORTATION	
LANE CLOSURE AT ENTRANCE RAMP: PLAN A	DATE 8-3-79

General Notes

1. This work area traffic control application shall be employed when the lateral clearance between channelizing devices at the right edge of the work area and the edge of the ramp pavement is less than 9 feet. When the clearance is more than 9 feet, the traffic control on "Lane Closure at Entrance Ramp: Plan A" should be used, or the ramp should be closed. When the ramp is closed, appropriate detour signs shall be provided.

2. Thirteen (13) drums or barricades shall be used to form the lane transition taper in advance of the work area. Five (5) channelizing devices shall be used to form the taper on the shoulder. Cones, drums, or barricades shall be spaced at 50 foot centers. Cones may be substituted for barricades or drums for the lane closures during daylight hours only.

3. Ramp signs shall be dual mounted on multi-lane ramps. When the ramp is not long enough to allow placement as specified above, the signs may be spaced proportionately within the space available as determined by the Engineer (a 200' minimum spacing must be maintained).

4. The flashing arrow panel shall be in accordance with TC-35.10.

5. The work truck shown at the beginning of the work area shall be in place and unoccupied whenever men are working within the work area. This truck shall be moved from the pavement whenever workmen are not in the work area. Other protective devices may be used in lieu of work truck shown when approved by the Engineer.⊕

6. Type C steady burning barricade warning lights shall be erected on drums or barricades for night lane closures. Maximum spacing shall be 50' center to center in advance of the work area and 200' center to center within the limits of the work area.

7. It may be necessary to move the location of an existing Yield condition. In these cases, the permanent R-2 sign installation shall be covered and the temporary installation shall be mounted upon a drive post which shall be banded to a drum with stainless steel strapping material or other techniques subject to the approval of the Engineer.

8. Taper Formulae:

$L = S \times W$ for Speeds of 45 or more.
$L = WS^2/60$ for Speeds 40 or less.

Where:

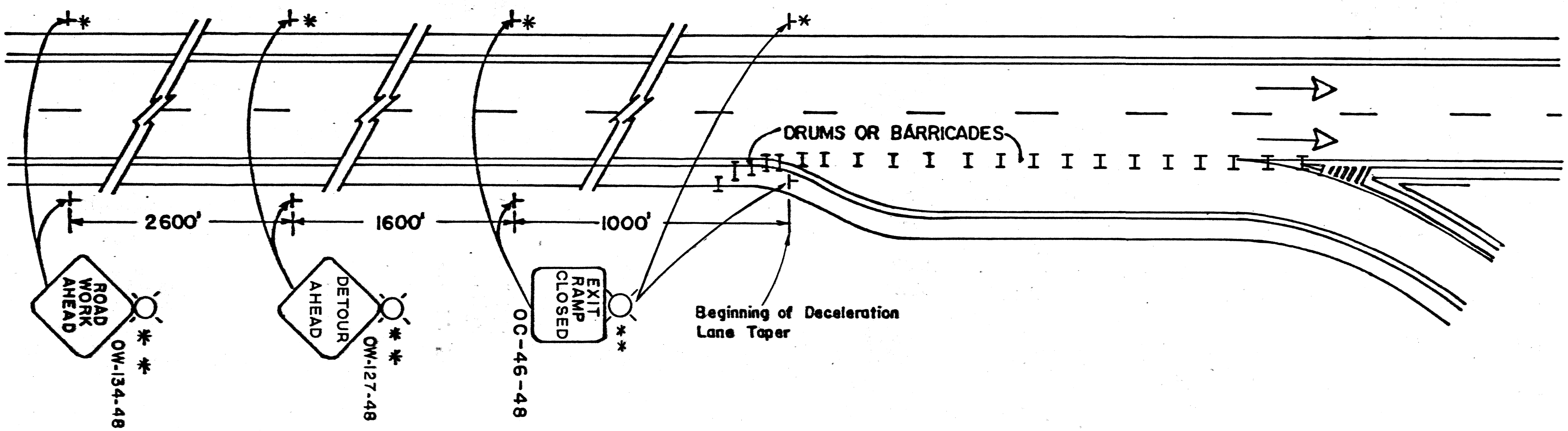
L = Minimum length of taper.
S = Numerical value of posted speed limit prior to work or 85 percentile speed.
W = Width of offset.

9. THE SPACINGS BETWEEN CONSTRUCTION AND MAINTENANCE SIGNS SHOWN ON THIS DETAIL MAY REQUIRE ADJUSTMENTS (INCREASES OR DECREASES) TO ASSURE THAT THEY ARE POSITIONED NO CLOSER THAN 200 FEET TO EXISTING SIGNS AS DETERMINED BY THE ENGINEER.

* * Type A flashing barricade lights are required for night lane closures.

⊕ The work truck shall be equipped with a 360° rotating or flashing amber beacon clearly visible a minimum of a 1/4 mile.

OHIO DEPARTMENT OF TRANSPORTATION	
LANE CLOSURE AT ENTRANCE RAMP PLAN B	DATE 8-3-79



* * TYPE A FLASHING BARRICADE WARNING LIGHTS ARE REQUIRED FOR NIGHT LANE CLOSURES.

* OPTIONAL SIGN ERECTED WITH THE APPROVAL OF THE ENGINEER.

GENERAL NOTES

1. Drums or barricades shall be spaced at 25 foot centers. Additional drums or barricades may be required as directed.

2. Type C steady burning barricade warning lights shall be erected on drums or barricades.

3. The spacings between construction and maintenance signs shown on this detail may require adjustments (increases or decreases) to assure that they are positioned no closer than 200 feet to existing signs or to avoid other obstacles. In any event, the adjustments shall be as determined by the engineer.

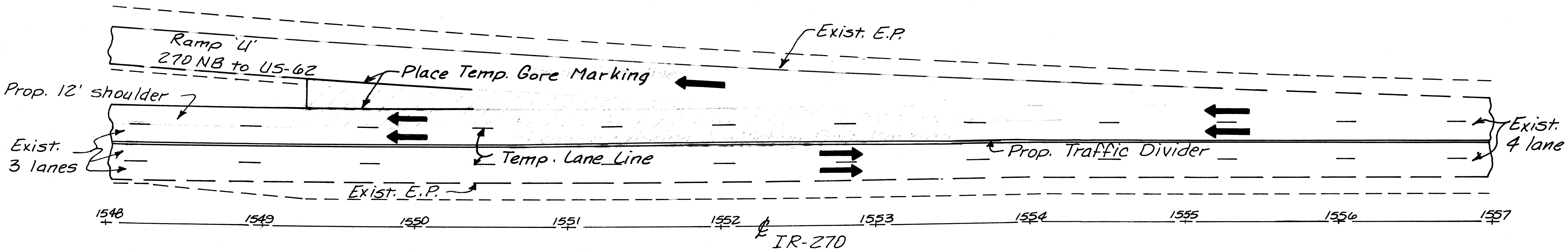
OHIO DEPARTMENT OF TRANSPORTATION	
RAMP CLOSURE	DATE

DEPARTMENT OF TRANSPORTATION
M& R 712 REV. 9-1-83

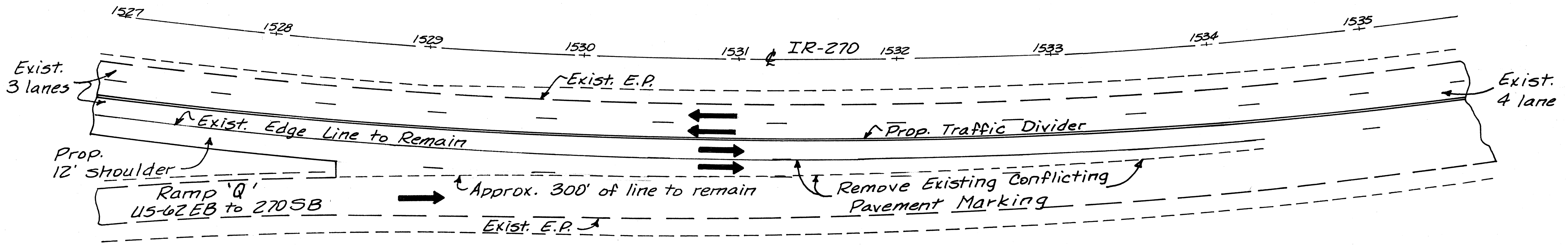
TWO-WAY TRAFFIC DETAILS AT RAMPS

FRA-270-29.11

PLAN NO.



Work Zone Pavement Markings as shown should be in place for the two-way traffic. Replace with appropiate pavement markings when SB traffic is returned to the SB lanes and the final overlay is placed.



DEPARTMENT OF TRANSPORTATION
M&R 712 REV. 9-1-83

PAVEMENT CALCULATIONS

① Apply immediately prior to the placing of the 846 Type 2.
② Apply immediately prior to the 846 Type I and 403.
⑦ Cover Aggregate to be included in Tack Coat, as per plan. (See Gen. Notes)
③ The 10" of 301 shall be placed in a maximum of 5" layers.
④ To be used prior to placing of the 403 Bond Breaker.
✱ Totals to Page 73.
∓ Totals to Page 61.

PART & SECTION	ROUTE	STATION TO STATION	LENGTH LIN. FT.	PAVEMENT WIDTH	EXISTING TYPE PAVEMENT	PAVEMENT AREA SQ. YD.	301 ③ BITUMINOUS AGGREGATE BASE AVG. THICK INCHES	301 ③ BITUMINOUS AGGREGATE BASE CU. YD.	846 Type 2 ASPHALT CONCRETE AVG. THICK INCHES	846 Type 2 ASPHALT CONCRETE CU. YD.	846 Type 1 ASPHALT CONCRETE AVG. THICK INCHES	846 Type 1 ASPHALT CONCRETE CU. YD.	407 TACK COAT ① @ .10 gal./s.y. GAL.	407 COVER AGGR. ⑦ @ 7 lb./s.y. TON	407 TACK COAT ② @ .10 gal./s.y. GAL.	407 COVER AGGR ⑦ @ 7 lb./s.y. TON	452 9" PLAIN CONC. PAV'T. SQ. YD.	452 13" PLAIN CONC. PAV'T. SQ. YD.	202 PAVEMENT REMOVED SQ. YD.	202 BASE REMOVED SQ. YD.	SPEC. PAVEMENT REINFORCING FABRIC SQ. YD.	SPEC. SEATING EXIST. CONC. PAVEMENT SQ. YD.	SPEC. PARTIAL DEPTH PAVEMENT SAWING LIN. FT.	403 ASPHALT CONCRETE 1" Thick Bond Breaker CU. YD.
1-A	IR-270	1188+19 - 1211+90	2371	36 Δ 36	453	18,968	2½	1317	1¾	922	1¼	659	1897	66	1897	66					18,968			
		1211+90 - 1218+40	650	36	453	2600	10	722	1¾	126	1¼	90	260	9	260	9			2600	2600	2600			
		(1211+90 - 1218+40)	(650)	36	453	2600	2½	181	1¾	126	1¼	90	260	9	260	9					2600			
		1218+40 - 1264+10	4570	36 Δ 36	453	36,560	2½	2539	1¾	1777	1¼	1269	3656	128	3656	128					36,560			
		1302+75 - 1307+61	486	36	453	1944	2½	135	1¾	95	1¼	68	194	7	194	7					1944	1944	3528	
		(1302+75 - 1307+61)	(486)	36	453	1944	2½	135	1¾	95	1¼	68	194	7	194	7					1944			
		1307+61 - 1309+61	200	36 Δ 36	453	1600	10	444	1¾	78	1¼	56	160	6	160	6			1600	1600				
		1309+61 - 1309+86	25	36 Δ 36	453	200					1⅛	6			20	1								
		1309+86 - 1311+36	150	Struc. #3141																				
		1311+36 - 1311+61	25	36 Δ 36	453	200					1⅛	6			20	1								
		1311+61 - 1311+70	9	36 Δ 36	453	72	10	20	1¾	4	1¼	3			7	1			72	72				
	Extra Area Quantities from Page 45							606		895		652	1904	69	1844	67								
	Shoulder Quantities from Page 51							1800		1513		1084	3159	114	3182	115								
	Total Part 1 - Sec. A carried to General Summary							7899✱		5631		4051	11,684	415	11,694	417			4272∓	4272∓	64,616	1944	3528	
2-A	IR-270	1264+10 - 1285+08	2098	36 Δ 36	453	16,784	2½	1166	1¾	816	1¼	583	1678	59	1678	59					16,784			
		1285+08 - 1302+75	1767	36	453	7068	2½	491	1¾	344	1¼	245	707	25	707	25					7068	7068	12,744	
		(1285+08 - 1302+75)	(1767)	36	453	7068	2½	491	1¾	344	1¼	245	707	25	707	25					7068			
		1311+70 - 1313+61	191	36 Δ 36	453	1528	10	424	1¾	74	1¼	53	153	5	153	5			1528	1528				
		1313+61 - 1325+00	1139	36	453	4556	2½	316	1¾	221	1¼	158	456	16	456	16					4556	4556	8244	
		(1313+61 - 1325+00)	(1139)	36	453	4556	2½	316	1¾	221	1¼	158	456	16	456	16					4556			
	Extra Area Quantities from Page 46							680		878		631	1812	64	1812	64								
	Shoulder Quantities from Page - 52							1246		1098		775	2287	80	2287	80								
	Total Part 2 - Sec. A carried to General Summary							5130✱		3996		2848	8256	290	8256	290			1528∓	1528∓	40,032	11,624	20,988	
2-B	IR-270	1325+00 - 1350+56	2556	36 Δ 36	453	20,448									2045④	72	20,448							568
		1350+56 - 1355+06	450	36 Δ 36	453	3600	4	400										3600	3600	3600				
		1355+06 - 1357+40	234	Struc. #3227																				
		1357+40 - 1361+90	450	36 Δ 36	453	3600	4	400										3600	3600	3600				
		1361+90 - 1382+00	2010	36 Δ 36	453	16,080									1608④	56	16,080							446
	Continued on Next Page																							

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DEPARTMENT OF TRANSPORTATION
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PAVEMENT CALCULATIONS

FRA-270-29.11

① Apply immediately prior to the placing of the 846 Type 2.

② Apply immediately prior to the 846 Type 1 and 403.

③ The 10" of 301 shall be placed in a maximum of 5" layers.

④ To be used prior to placing of the 403 Bond Breaker.

⑦ Cover Aggregate to be included in Tack Coat, as per plan. (See Gen. Notes)

* Totals to Page 73.

PART & SECTION	ROUTE	STATION TO STATION	LENGTH LIN. FT.	PAVEMENT WIDTH	EXISTING TYPE PAVEMENT	PAVEMENT AREA SQ. YD.	301 ③ BITUMINOUS AGGREGATE BASE AVG. THICK INCHES	301 ③ BITUMINOUS AGGREGATE BASE CU. YD.	846 Type 2 ASPHALT CONCRETE AVG. THICK INCHES	846 Type 2 ASPHALT CONCRETE CU. YD.	846 Type 1 ASPHALT CONCRETE AVG. THICK INCHES	846 Type 1 ASPHALT CONCRETE CU. YD.	407 TACK COAT ① @ .10 gal./s.y. GAL.	407 COVER AGGR. ⑦ @ 7 lb./s.y. TON	407 TACK COAT ② @ .10 gal./s.y. GAL.	407 COVER AGGR. ⑦ @ 7 lb./s.y. TON	452 9" PLAIN CONC. PAV'T. SQ. YD.	452 13" PLAIN CONC. PAV'T. SQ. YD.	202 PAVEMENT REMOVED SQ. YD.	202 BASE REMOVED SQ. YD.	452 9" PLAIN CONC. PAV'T. AS PER PLAN SQ. YD.	451 9" REINFORCED CONC. PAV'T. AS PER PLAN SQ. YD.		403 ASPHALT CONCRETE 1" Thick Bond Breaker CU. YD.
2-B	IR-270	1382+00-1426+75	4475	36 Δ 36	453	35,800									3580 ④	125	35,800							994
		1444+22-1452+00	778	36 Δ 36	453	6224	10	1729	1¾	303	1¼	216	622	22	622	22			6224	6224				
	Extra Area Quantities from Page 48							355		527		376	1083	41	2082	77			403	403				277
	Shoulder Quantities from Page 53							1076		425		261	877	32	3890	138	33,459							1254
	Total Part 2 - Sec. B carried to General Summary							3960*		1255		853	2582	95	13,827	490	105,787	7200	13,827	13,827				3539
3-B	IR-270	1426+75-1432+59	584	36 Δ 36	453	4672									467 ④	16	4672							129
		1432+59-1434+72	213	36	453	852									85 ④	3						852		24
		(1432+59-1434+72)	(213)	36	453	852									85 ④	3	852							24
		1434+72-1439+85	513	36 Δ 36	453	4104									410 ④	14	4104							114
		1439+85-1444+22	437	36 Δ 36	453	3496	14½	1408	1¾	170	1¼	121	350	12	350	12			3496	3496				
	Extra Area Quantities from Page 48							97		24		17	50	2	50	2								
	Shoulder Quantities from Page 53							391		75		54	155	5	621	20	4279							195
	Total Part 3 - Sec. B carried to General Summary							1896*		269		192	555	19	2068	70	13,907		3496	3496		852		486
1-C	IR-270	1472+70-1531+36	5866	36 Δ 36	453	46,928	10	13,036	1¾	2281	1¼	1629	4693	164	4693	164			46,928	46,928				
	Extra Area Quantities from Page 50							2227		390		1599	802	28	4609	160			8015	8015				
	Shoulder Quantities from Page 54							5447		953		1242	1963	69	3375	121								
	Total Part 1 - Sec. C carried to General Summary							20,710*		3624		4470	7458	261	12,677	445			54,943	54,943				
2-C	IR-270	1452+00-1466+07	1407	36 Δ 36	453	11,256	10	3127	1¾	547	1¼	391	1126	39	1126	39			11,256	11,256				
	Extra Area Quantities from Page 50							518		91		65	186	7	186	7			1864	1864				
	Shoulder Quantities from Page 54							1307		229		163	470	17	469	17								
	Total Part 2 - Sec. C carried to General Summary							4952		867		619	1782	63	1969	70			13,120	13,120				
3-C	IR-270	1466+07-1472+70	663	36 Δ 36	453	5304																		
		1531+36-1549+30	1794	36 Δ 48	453	16,744																		
		1549+30-1601+61	5231	48 Δ 48	453	55,797																		
	Pavement Total					77,845	10	21,624	1¾	3784	1¼	2703	7785	272	7785	272			77,845	77,845				
	Extra Area Quantities from Page 50							1598		279		478	575	20	1417	50			5751	5751				
	Shoulder Quantities from Page 55							9010		1576		1243	3244	114	3580	125								
	Total Part 3 - Sec. C carried to General Summary							32,232*		5639		4424	11,604	406	12,782	447			83,596	83,596				

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① Apply immediately prior to the placing of the 846 Type 2.
② Apply immediately prior to the 846 Type 1.
⑦ Cover Aggregate to be included in Tack Coat, as per plan. (See Gen. Notes)

EXTRA AREA AND DEDUCTION

PART & SECTION	ROUTE	STATION TO STATION	SIDE	DESCRIPTION	LENGTH LIN. FT.	WIDTH IN FEET	PAVEMENT AREA SQ. YD.	301 BITUMINOUS AGGREGATE BASE AVG. THICK INCHES	301 BITUMINOUS AGGREGATE BASE CU. YD.	846 Type 2 ASPHALT CONCRETE AVG. THICK INCHES	846 Type 2 ASPHALT CONCRETE CU. YD.	846 Type 1 ASPHALT CONCRETE AVG. THICK INCHES	846 Type 1 ASPHALT CONCRETE CU. YD.	407 TACK COAT ① @ .10 gal./s.y. GAL.	407 COVER AGGR. ⑦ @ 7 lb./s.y. TON	407 TACK COAT ② @ .10 gal./s.y. GAL.	407 COVER AGGR ⑦ @ 7 lb./s.y. TON
1-A	IR-270	1235+00-1251+12	Lt.	161 WB to 270 NB (Ramp A)	1612	0-40	3582	2½	249	1¾	174	1¼	124	358	13	358	13
		1251+12-1268+70			1758	16	3125			1¾	152	1¼	109	313	11	313	11
		(1251+12-1252+37)			(125)	16	222	1¼	8								
		Total Ramp A							257		326		233	671	24	671	24
		1249+12-1260+35	Lt.	270 NB to 161 WB (Ramp B)	1123	16	1996			1¾	97	1¼	69	200	7	200	7
		1260+35-1262+92			257	47-12	842	2½	58	1¾	41	1¼	29	84	3	84	3
		1262+92-1264+10			118	12	157	2½	11	1¾	8	1¼	5	16	1	16	1
		(1259+10-1260+35)			(125)	16	222	1¼	8								
		1254+32-1260+32			600	0-12	400	2½	28	1¾	19	1¼	14	40	1	40	1
		Total Ramp B							105		165		117	340	12	340	12
		1242+50-1243+50	Rt.	270 SB to 161 WB (Ramp G)	100	0-12	67	2½	5	1¾	3	1¼	2	7	1	7	1
		1243+50-1246+00			250	12	333	2½	23	1¾	16	1¼	12	33	1	33	1
		1246+00-1250+56			456	12-39	1292	2½	90	1¾	63	1¼	45	129	5	129	5
		1250+56-1267+74			1718	16	3054			1¾	148	1¼	106	305	11	305	11
		(1250+56-1251+81)			(125)	16	222	1¼	8								
		Total Ramp G							126		230		165	474	18	474	18
		1248+38-1259+75	Rt.	161 WB to 270 SB (Ramp H)	1137	16	2021			1¾	98	1¼	70	202	7	202	7
		1259+75-1263+28			353	37-12	961	2½	67	1¾	47	1¼	33	96	3	96	3
		1263+28-1264+10			82	12	109	2½	8	1¾	5	1¼	4	11	1	11	1
		(1258+50-1259+75)			(125)	16	222	1¼	8								
		Total Ramp H							83		150		107	309	11	309	11
		1187+44-1188+19	R&L.	Feather at Begin Project	75	36&36	600					¾	13	60	2		
		1223+72	Med.	Median Crossover			500	2½	35	1¾	24	1¼	17	50	2	50	2
	Total	Part 1-Sec. A	carried to Page 43						606		895		652	1904	69	1844	67

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① Apply immediately prior to the placing of the 846 Type 2.
② Apply immediately prior to the 846 Type 1.
⑦ Cover Aggregate to be included in Tack Coat, as per plan. (See Gen. Notes)

EXTRA AREA AND DEDUCTION

PART & SECTION	ROUTE	STATION TO STATION	SIDE	DESCRIPTION	LENGTH LIN. FT.	WIDTH IN FEET	PAVEMENT AREA SQ. YD.	301 BITUMINOUS AGGREGATE BASE AVG. THICK INCHES	301 BITUMINOUS AGGREGATE BASE CU. YD.	846 Type 2 ASPHALT CONCRETE AVG. THICK INCHES	846 Type 2 ASPHALT CONCRETE CU. YD.	846 Type 1 ASPHALT CONCRETE AVG. THICK INCHES	846 Type 1 ASPHALT CONCRETE CU. YD.	407 TACK COAT ① @ .10 gal./s.y. GAL.	407 COVER AGGR. ⑦ @ 7 lb./s.y. TON	407 TACK COAT ② @ .10 gal./s.y. GAL.	407 COVER AGGR. ⑦ @ 7 lb./s.y. TON
2-A	IR-270	1258+50-1275+47		270 NB to 161 EB (Ramp C)	1697	16	3017			1¾	147	1¼	105	302	11	302	11
		1275+47-1276+47			100	16-18	189			1¾	9	1¼	7	19	1	19	1
		(1275+22-1276+47)			(125)	16-18	236	1¼	8								
		1276+47-1281+00			453	39-12	1284	2½	89	1¾	62	1¼	45	128	4	128	4
		1281+00-1283+50			250	12	333	2½	23	1¾	16	1¼	12	33	1	33	1
		1283+50-1284+50			100	12-0	67	2½	5	1¾	3	1¼	2	7	1	7	1
		Total Ramp C							125		237		171	489	18	489	18
		1264+10-1267+21		161 EB to 270 NB (Ramp D)	311	12-37	847	2½	59	1¾	41	1¼	29	85	3	85	3
		(1267+21-1268+46)			(125)	16	222	1¼	8								
		1267+21-1277+55			1034	16	1838			1¾	89	1¼	64	184	6	184	6
		1277+55-1278+55			100	16-18	189			1¾	9	1¼	7	19	1	19	1
		Total Ramp D							67		139		100	288	10	288	10
		1259+14-1260+14		161 EB to 270 SB (Ramp E)	100	18-16	189			1¾	9	1¼	7	19	1	19	1
		1260+14-1276+82			1668	16	2965			1¾	144	1¼	103	297	10	297	10
		(1275+57-1276+82)			(125)	16	222	1¼	8								
		1276+82-1292+75			1593	39-0	3452	2½	240	1¾	168	1¼	120	345	12	345	12
		Total Ramp E							248		321		230	661	23	661	23
		1264+10-1266+58		270 SB to 161 EB (Ramp F)	248	12-47	813	2½	56	1¾	40	1¼	28	81	3	81	3
		1266+61-1272+61			600	12-0	400	2½	28	1¾	19	1¼	14	40	1	40	1
		1266+58-1267+58			100	18-16	189			1¾	9	1¼	7	19	1	19	1
		(1266+58-1267+83)			(125)	18-16	236	1¼	8								
		1267+58-1277+92			1034	16	1838			1¾	89	1¼	64	184	6	184	6
		Total Ramp F							92		157		113	324	11	324	11
		1302+00	Med.	Median Crossover			500	2½	35	1¾	24	1¼	17	50	2	50	2
		1322+75-1325+00		Feather from Sec. A to Sec. B	225	36Δ36	1800	2¼	113								
	Total	Part 2 - Sec. A	carried to Page 43						680		878		631	1812	64	1812	64

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① Apply immediately prior to the placing of the 846 Type 2.

② Apply immediately prior to the 846 Type 1 and 403.

⑦ Cover Aggregate to be included in Tack Coat, as per plan. (See Gen. Notes)

EXTRA AREA AND DEDUCTION

PART & SECTION	ROUTE	STATION TO STATION	SIDE	DESCRIPTION	LENGTH LIN. FT.	WIDTH IN FEET	PAVEMENT AREA SQ. YD.	301 BITUMINOUS AGGREGATE BASE AVG. THICK INCHES	301 CU. YD.	846 Type 2 ASPHALT CONCRETE AVG. THICK INCHES	846 Type 2 CU. YD.	846 Type 1 ASPHALT CONCRETE AVG. THICK INCHES	846 Type 1 CU. YD.	407 TACK COAT ① @ .10 gal./s.y. GAL.	407 COVER AGGR. ⑦ @ 7 lb./s.y. TON	407 TACK COAT ② @ .10 gal./s.y. GAL.	407 COVER AGGR ⑦ @ 7 lb./s.y. TON	403 ASPHALT CONCRETE 1" Thick Bond Breaker CU. YD.	452 9" PLAIN CONCRETE PAVEMENT SQ. YD.
2-B	IR-270	1331+00-1346+00		Morse Rd. to 270 NB (Ramp I)	1500	0-32	2667									267	9	74	2667
		1346+00-1347+08			108	32-39	426									43	1	12	426
		(1347+08-1350+58)			(350)	16	622	3½	60										
		1347+08-1358+97			1189	16				1¾	103	1¼	73	211	7	211	7		
					Radius		100			1¾	5	1¼	3	10	1	10	1		
		Total Ramp I							60		108		76	221	8	531	18	86	3093
				270 NB to Morse Rd. (Ramp J)	Radius		100			1¾	5	1¼	3	10	1	10	1		
		1356+80-1361+75			495	24	1320			1¾	64	1¼	46	132	5	132	5		
		1361+75-1363+25			150	24-16	333			1¾	16	1¼	12	33	1	33	1		
		1363+25-1367+91			466	16	828			1¾	40	1¼	29	83	3	83	3		
		(1364+41-1367+91)			(350)	16	622	3½	60										
		1367+91-1372+50			459	39-12	1301									130	5	36	1301
		1372+50-1375+00			250	12	333									33	1	9	333
		1375+00-1376+00			100	12-0	67									7	1	2	67
		Total Ramp J							60		125		90	258	10	428	17	47	1701
		1351+88-1355+69		Morse Rd. to 270 SB (Ramp K)	381	16	677			1¾	33	1¼	24	68	2	68	2		
		1353+97-1354+76			79	16	140			1¾	7	1¼	5	14	1	14	1		
		1354+76-1355+69			93	16-14	155			1¾	8	1¼	5	16	1	16	1		
		1355+69-1362+76			707	46-16	2435			1¾	118	1¼	85	244	9	244	9		
		1362+76-1365+35			259	16	460			1¾	22	1¼	16	46	2	46	2		
		(1361+85-1362+76)			(91)	20-16	182	1	5										
		(1362+76-1365+35)			(259)	16	460	4½	58										
		1365+35-1381+50			1615	39-0	3499									350	12	97	3499
		Total Ramp K							63		188		135	388	15	738	27	97	3499
		1338+00-1339+00		270 SB to Morse Rd. (Ramp L)	100	0-12	67									7	1	2	67
		1339+00-1341+50			250	12	333									33	1	9	333
		1341+50-1346+05			455	12-39	1289									129	5	36	1289
		1346+05-1355+40			935	16	1662			1¾	81	1¼	58	166	6	166	6		
		(1346+05-1349+55)			(350)	16	622	3½	60										
					Radius		100			1¾	5	1¼	3	10	1	10	1		
		Total Ramp L							60		86		61	176	7	345	14	47	1689

EXTRA AREA AND DEDUCTION

① Apply immediately prior to the placing of the 846 Type 2.
② Apply immediately prior to the 846 Type I and 403.
③ The 301 shall be placed in maximum 5" layers.
⑦ Cover Aggregate to be included in Tack Coat, as per plan. (See Gen. Notes)

PART & SECTION	ROUTE	STATION TO STATION	SIDE	DESCRIPTION	LENGTH LIN. FT.	WIDTH IN FEET	PAVEMENT AREA SQ. YD.	301 ③ BITUMINOUS AGGREGATE BASE AVG. THICK INCHES	301 ③ BITUMINOUS AGGREGATE BASE CU. YD.	846 Type 2 ASPHALT CONCRETE AVG. THICK INCHES	846 Type 2 ASPHALT CONCRETE CU. YD.	846 Type 1 ASPHALT CONCRETE AVG. THICK INCHES	846 Type 1 ASPHALT CONCRETE CU. YD.	407 TACK COAT ① @ .10 gal./s.y. GAL.	407 COVER AGGR. ⑦ @ 7 lb./s.y. TON	407 TACK COAT ② @ .10 gal./s.y. GAL.	407 COVER AGGR ⑦ @ 7 lb./s.y. TON	403 ASPHALT CONCRETE 1" Thick Bond Breaker CU. YD.	452 9" PLAIN CONCRETE PAVEMENT SQ. YD.	202 PAVEMENT REMOVED SQ. YD.	202 BASE REMOVED SQ. YD.
2-B	IR-270	1444+75-1452+00		62 EB to 270 NB (Ramp P)	725	0-10	403	10	112	1¾	20	1¼	14	40	1	40	1			403	403
	Total Part 2- Sec. B carried to Page 44								355		527		376	1083	41	2082	77	277	9982	403	403
3-B	IR-270	1427+50		Median Crossover			500	7	97	1¾	24	1¼	17	50	2	50	2				
	(Total Part 3-Sec B carried to Page 44)																				

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EXTRA AREA AND DEDUCTION

① Apply immediately prior to the placing of the 846 Type 2.
② Apply immediately prior to the 846 Type 1.
③ The 301 shall be placed in maximum 5" layers.
⑦ Cover Aggregate to be included in Tack Coat, as per plan. (See Gen. Notes)

PART & SECTION	ROUTE	STATION TO STATION	SIDE	DESCRIPTION	LENGTH LIN. FT.	WIDTH IN FEET	PAVEMENT AREA SQ. YD.	301 ③ BITUMINOUS AGGREGATE BASE AVG. THICK INCHES	301 ③ BITUMINOUS AGGREGATE BASE CU. YD.	846 Type 2 ASPHALT CONCRETE AVG. THICK INCHES	846 Type 2 ASPHALT CONCRETE CU. YD.	846 Type 1 ASPHALT CONCRETE AVG. THICK INCHES	846 Type 1 ASPHALT CONCRETE CU. YD.	407 TACK COAT ① @ .10 gal./s.y. GAL.	407 COVER AGGR. ⑦ @ 7 lb./s.y. TON	407 TACK COAT ② @ .10 gal./s.y. GAL.	407 COVER AGGR ⑦ @ 7 lb./s.y. TON	202 PAVEMENT REMOVED SQ. YD.	202 BASE REMOVED SQ. YD.
1-C	IR-270	1495+29-1507+54		62 WB to 270 NB (Ramp M)	1225	16	2178					1¼	76			218	8		
				270 NB to Johnstown Rd. (Ramp N)	Radius		100												
		1530+12-1531+36			124	16	220												
		Total Ramp N					320					1¼	11			32	1		
		1517+75-1527+68		270 NB. to 62 EB (Ramp O)	993	16	1765					1¼	61			177	6		
		1472+70-1485+00		62 EB to 270 NB (Ramp P)	1230	12-40	3553	10	987	1¾	173			355	12			3553	3553
		1485+00-1487+69			269	30-48	1166												
		1487+69-1496+35			866	30-65	4571												
		1495+35-1515+74			2039	24	5437												
		Total Ramp P					14,727		987		173	1¼	511	355	12	1473	52	3553	3553
		1517+11-1528+43		62 EB to 270 SB (Ramp Q)	1132	24	3019												
		1528+43-1529+99			156	49-40	771												
		1529+99-1531+36			137	40-38	594	10	165	1¾	29			59	2			594	594
		Total Ramp Q					4384		165		29	1¼	152	59	2	438	15	594	594
		1510+00-1510+37		270 SB to 62 EB (Ramp R)	37	12	49	10	14	1¾	2			5	1			49	49
		1510+37-1513+65			328	12-51	1148	10	319	1¾	56			115	4			1148	1148
		1513+65-1519+60			595	12-0	397	10	110	1¾	19			40	1			397	397
		1513+65-1524+51			1086	16	1931												
		Total Ramp R					3525		443		77	1¼	122	160	6	353	12	1594	1594
		1472+70-1488+25		270 SB to 62 WB (Ramp S)	1555	12	2073					1¼	72			207	7		
		1488+25-1491+00			275	12	367	10	102	1¾	18	1¼	13	37	1	37	1	367	367
		1491+00-1495+99			499	12-39	1414	10	393	1¾	69	1¼	49	141	5	141	5	1414	1414
		1495+99-1517+50			2151	24	5736					1¼	199			574	20		
		Total Ramp S							495		87		333	178	6	959	33	1781	1781

① Apply immediately prior to the placing of the 846 Type 2.
② Apply immediately prior to the 846 Type 1.
③ The 301 shall be placed in maximum 5" layers.
⑦ Cover Aggregate to be included in Tack Coat, as per plan. (See Gen. Notes)

EXTRA AREA AND DEDUCTION

PART & SECTION	ROUTE	STATION TO STATION	SIDE	DESCRIPTION	LENGTH LIN. FT.	WIDTH IN FEET	PAVEMENT AREA SQ. YD.	301 ③ BITUMINOUS AGGREGATE BASE AVG. THICK INCHES	301 ③ BITUMINOUS AGGREGATE BASE CU. YD.	846 Type 2 ASPHALT CONCRETE AVG. THICK INCHES	846 Type 2 ASPHALT CONCRETE CU. YD.	846 Type 1 ASPHALT CONCRETE AVG. THICK INCHES	846 Type 1 ASPHALT CONCRETE CU. YD.	407 TACK COAT ① @ .10 gal./s.y. GAL.	407 COVER AGGR. ⑦ @ 7 lb./s.y. TON	407 TACK COAT ② @ .10 gal./s.y. GAL.	407 COVER AGGR. ⑦ @ 7 lb./s.y. TON	202 PAVEMENT REMOVED SQ. YD.	202 BASE REMOVED SQ. YD.
1-C	IR-270	1494+01-1506+72		62 WB to 270 SB (Ramp T)	1271	16	2260												
		1506+72-1507+40			68	27-15	159												
		1507+40-1509+43			203	25-12	417	10	116	1¾	20			42	1			417	417
		1509+43-1510+00			57	12	76	10	21	1¾	4			8	1			76	76
		Total Ramp T					2912		137		24	1¼	101	50	2	291	10	493	493
		1501+27-1518+78		270 NB to 62 WB (Ramp U)	1751	24	4669												
		1523+73-1527+67			394	24	1051												
		1527+67-1528+70			103	59-42	578												
		1530+12-1531+36			124	32-24	386												
		Total Ramp U					6684					1¼	232			668	23		
	Total	Part 1 - Sec. C		carried to Page 44					2227		390		1599	802	28	4609	160	8015	8015
2-C	IR-270	1452+00-1453+15		62 EB to 270 NB (Ramp P)	115	10-12	141												
		1453+15-1466+07			1292	12	1723												
		Total Ramp P	(Part	2-Sec. C carried to Page 44)			1864	10	518	1¾	91	1¼	65	186	7	186	7	1864	1864
3-C	IR-270	1466+07-1467+07		270 SB to 62 WB (Ramp S)	100	0-12	67												
		1467+07-1472+70			563	12	751												
		Total Ramp S					818					1¼	28			82	3		
		1466+07-1472+70		62 EB to 270 NB (Ramp P)	663	12	884	10	246	1¾	43	1¼	31	88	3	88	3		
		1531+36-1537+93		270 NB to Johnstown Rd. (Ramp N)	657	16	1168					1¼	41			117	4		
		1531+36-1537+89		270 NB to 62 WB (Ramp U)	653	24	1741												
		1537+89-1542+38			449	58-24	2045												
		1542+38-1549+30			692	24	1845												
		1549+30-1560+09			1079	44-0	2638	10	733	1¾	128			264	9			2638	2638
		Total Ramp U					8269		733		128	1¼	287	264	9	827	29	2638	2638
		1531+36-1546+79		62 EB to 270 SB (Ramp Q)	1543	26-0	2229	10	619	1¾	108	1¼	77	223	8	223	8	2229	2229
		1601+61-1601+86		App. Slab at Struc. 3694	25	48Δ48	267					1	7			27	1		
		1604+79-1605+29		Feather at End Project	50	48Δ48	533					½	7			53	2		
	Total	Part 3 - Sec. C		carried to Page 44					1598		279		478	575	20	1417	50	5751	5751

PAVED SHOULDERS

① Apply immediately prior to the placing of the 846 Type 2.
② Apply immediately prior to the 846 Type 1 and 403.

* Quantities carried directly to the General Summary.

⑥ Sec. A - 6" avg. thickness, Ramps - 3" avg. thickness

⑦ Cover Aggregate to be included in Tack Coat, as per plan. (See Gen. Notes)

PART & SECTION	ROUTE	STATION TO STATION	LENGTH LIN. FT.	PROPOSED WIDTH (FT.) N.B. Outside or Ramp Sh'dr.	N.B. Inside or Ramp Sh'dr.	S.B. Inside Sh'dr.	S.B. Outside Sh'dr.	SHOULDER AREA (SQ. YD.)	301 BITUMINOUS AGGREGATE BASE AVG. THICK INCHES	301 CU. YD.	846 Type 2 ASPHALT CONCRETE AVG. THICK INCHES	846 Type 2 CU. YD.	846 Type 1 ASPHALT CONCRETE AVG. THICK INCHES	846 Type 1 CU. YD.	407 TACK COAT ① @ .10 gal./s.y. GAL.	407 COVER AGGR. ⑦ @ 7 lb./s.y. TON	407 TACK COAT ② @ .10 gal./s.y. GAL.	407 COVER AGGR. ⑦ @ 7 lb./s.y. TON	617 * COMPACTED AGGREGATE (For Detail see Typ. Sec.) Total Width in Ft.	617 SQ. YD.	617 ⑥ CU. YD.	203* Excavation not Including Embank. Const. as per plan CU. YD.	403 Asphalt Concrete CU. YD.	305* 8" Concrete Base SQ. YD.	452 9" Plain Concrete Pav't. SQ. YD.
1-A	IR-270	1187+44-1188+19	75	10	4	4	10	233					3/4	5			23	1	8	67	11				
		1188+19-1235+48	4729	10	4	4	10	14,712	2½	1022	1¾	715	1¼	511	1471	51	1471	51	8	4204	701				
		1235+48-1243+00	752	8	4	4	10	2172	2½	151	1¾	106	1¼	75	217	8	217	8	8	668	111				
		1243+00-1250+64	764	8	4	4	8	2037	2½	141	1¾	99	1¼	71	204	7	204	7	8	679	113				
		1250+64-1251+12	48	8	4	4	10	139	2½	10	1¾	7	1¼	5	14	1	14	1	8	43	7				
		1251+12-1259+75	863	10	4	4	10	2685	2½	186	1¾	131	1¼	93	269	9	269	9	8	767	128				
		1259+75-1260+32	57	10	4	4	8	165	2½	11	1¾	8	1¼	6	17	1	17	1	8	51	9				
		1260+32-1264+10	378	8	4	4	8	1008	2½	70	1¾	49	1¼	35	101	4	101	4	8	336	56				
		1302+75-1307+61	486	12	4	4	12	1728	2½	120	1¾	84	1¼	60	173	6	173	6	8	432	72				
		1307+61-1309+86	225	12-10	4	4	12-10	750	1¼	26	7/8	18	1 1/8	23	75	3	75	3	8	200	33				
		1309+86-1311+36	150	Struc. # 3141																					
		1311+36-1311+70	34	10-11	4	4	10-11	110	3/16	1	1/8	1	3/32	1	11	1	11	1							
	Ramp A	1251+12-1268+70	1758	6	3			1758			1¾	85	1¼	61	176	6	176	6	13	2539	212				
	"	(1251+12-1252+37)	(125)	6	3			125	1¼	4															
	Ramp B	1249+12-1260+35	1123	6	3			1123			1¾	55	1¼	39	112	4	112	4	13	1622	135				
	"	(1259+10-1260+35)	(125)	6	3			125	1¼	4															
	Ramp G	1250+56-1267+74	1718	3	6			1718			1¾	84	1¼	60	172	6	172	6	13	2482	207				
	"	(1250+56-1251+81)	(125)	3	6			125	1¼	4															
	Ramp H	1248+38-1259+75	1137	3	6			1137			1¾	55	1¼	39	114	4	114	4	13	1642	137				
	"	(1258+50-1259+75)	(125)	3	6			125	1¼	4															
	Shoulder Quantities for Maintaining Traffic from Page								53	46		16			33	3	33	3				217		648	
	Total	Part 1-Sec. A carried to Page 43								1800		1513		1084	3159	114	3182	115			1932	217		648	
2-A	IR-270	1264+10-1266+01	191	8	4	4	8	509	2½	35	1¾	25	1¼	18	51	2	51	2	8	170	28				
		1266+01-1267+21	120	8	4	4	10	347	2½	24	1¾	17	1¼	12	35	1	35	1	8	107	18				
		1267+21-1276+47	926	10	4	4	10	2881	2½	200	1¾	140	1¼	100	288	10	288	10	8	823	137				
		1276+47-1276+82	35	8	4	4	10	101	2½	7	1¾	5	1¼	4	10	1	10	1	8	31	5				
		1276+82-1283+50	668	8	4	4	8	1781	2½	124	1¾	87	1¼	62	178	6	178	6	8	594	99				
		1283+50-1284+33	83	8-12	4	4	8	240	2½	17	1¾	12	1¼	8	24	1	24	1	8	74	12				
		1284+33-1290+83	650	12	4	4	8	2022	2½	140	1¾	98	1¼	70	202	7	202	7	8	578	96				
		1290+83-1292+75	192	12	4	4	8-12	640	2½	44	1¾	31	1¼	22	64	2	64	2	8	171	29				
		1292+75-1302+75	1000	12	4	4	12	3556	2½	247	1¾	173	1¼	123	356	12	356	12	8	889	148				
		1311+70-1313+61	191	11-12	4	4	11-12	658	1 7/16	26	1	18	3/4	14	66	2	66	2	8	170	28				
		Cont. to Next Page																							

DEPARTMENT OF TRANSPORTATION
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PAVED SHOULDERS

① Apply immediately prior to the placing of the 846 Type 2.
② Apply immediately prior to the 846 Type 1 and 403.
④ To be used prior to placing the 403 Bond Breaker.
⑤ Extra material provided for leveling of shoulders.
* Quantities carried directly to the General Summary.
⑥ Mainline - 6" avg. thickness
Ramps - 3" avg. thickness
⑦ Cover Aggregate to be included in Tack Coat, as per plan. (See Gen. Notes)

PART & SECTION	ROUTE	STATION TO STATION	LENGTH LIN. FT.	PROPOSED WIDTH (FT.) N.B. Outside Sh'dr. or Ramp Sh'dr.	N.B. Inside Sh'dr. or Ramp Sh'dr.	S.B. Inside Sh'dr.	S.B. Outside Sh'dr.	SHOULDER AREA (SQ. YD.)	301 BITUMINOUS AGGREGATE BASE AVG. THICK INCHES	301 CU.YD.	846 Type 2 ASPHALT CONCRETE AVG. THICK INCHES	846 Type 2 CU.YD.	846 Type 1 ASPHALT CONCRETE AVG. THICK INCHES	846 Type 1 CU.YD.	407 TACK COAT ① @.10 gal./s.y. GAL.	407 COVER AGGR. ⑦ @ 7 lb./s.y. TON	407 TACK COAT ② @.10 gal./s.y. GAL	407 COVER AGGR. ⑦ @ 7 lb./s.y. TON	617* COMPACTED AGGREGATE (For details see Typ. Sec.) Total Width Ft.	617* SQ.YD.	617* ⑥ CU.YD.	203* Excavation not Including Embank. Const. as per plan CU.YD.	403 Asphalt Concrete (Bond Breaker) CU.YD. 2" avg. ⑤ N.B.	403 1" avg. SB	305* 8" Concrete Base SQ.YD.	452 9" Plain Concrete Pav't. SQ.YD.	451 9" Reinforced Concrete Pav't. as per plan SQ.YD.
2-A	IR-270	1313+61-1325+00	1139	12	4	4	12	4050	2½	281	1¾	197	1¼	141	405	14	405	14	8	1012	169						
		(1322+75-1325+00)	(225)	12	4	4	12	800	2¼	50																	
	Ramp C	1258+50-1276+47	1797	6	3			1797			1¾	87	1¼	62	180	6	180	6	13	2596	216						
	"	(1275+22-1276+47)	(125)	6	3			125	1¼	4																	
	Ramp D	1267+21-1278+55	1134	6	3			1134			1¾	55	1¼	39	113	4	113	4	13	1638	137						
	"	(1267+21-1268+46)	(125)	6	3			125	1¼	4																	
	Ramp E	1259+14-1276+82	1768	3	6			1768			1¾	86	1¼	61	177	6	177	6	13	2554	213						
	"	(1275+57-1276+82)	(125)	3	6			125	1¼	4																	
	Ramp F	1266+58-1277+92	1134	3	6			1134			1¾	55	1¼	39	113	4	113	4	13	1638	137						
	"	(1266+58-1267+83)	(125)	3	6			125	1¼	4																	
	Shoulder Quantities for Maintaining Traffic from Page 53									35		12			25	2	25	2				1336			5764		
	Total Part 2-Sec. A carried to Page 43									1246		1098		775	2287	80	2287	80			1472						
2-B	IR-270	1325+00-1331+00	600	12	4	4	12	2133									213 ④	7	8	533	92		59	30		2133	
		1331+00-1332+92	192	12-8	4	4	12	640									64 ④	2	8	171	29		17	9		640	
		1332+92-1338+00	508	8	4	4	12	1580									158 ④	6	8	452	75		38	25		1580	
		1338+00-1339+00	100	8	4	4	12-8	289									29 ④	1	8	89	15		7	4		289	
		1339+00-1346+05	705	8	4	4	8	1880									188 ④	7	8	627	105		52	26		1880	
		1346+05-1347+08	103	8	4	4	12	320									32 ④	1	8	92	15		8	5		320	
		1347+08-1350+56	348	12	4	4	12	1237									124 ④	4	8	309	52		34	17		1237	
		1350+56-1354+31	375	12	4	4	12	1333											8	333	56					1333	
		1354+31-1355+31	100	12-10	4	4	12-10	333											8	89	15					333	
		1355+31-1357+15	184	Struc. #3227																							
		1357+15-1358+15	100	10-12	4	4	10-12	333											8	89	15					333	
		1358+15-1361+90	375	12	4	4	12	1333											8	333	56					1333	
		1361+90-1365+35	345	12	4	4	12	1227									123 ④	4	8	307	51		34	17		1227	
		1365+35-1367+93	258	12	4	4	8	803									80 ④	3	8	229	38		25	10		803	
		1367+93-1375+00	707	8	4	4	8	1885									189 ④	7	8	628	105		52	26		1885	
		1375+00-1376+00	100	8-12	4	4	8	289									29 ④	1	8	89	15		9	4		289	
		1376+00-1380+50	450	12	4	4	8	1400									140 ④	5	8	400	67		44	17		1400	
		1380+50-1426+75	4625	12	4	4	12	16,444									1644 ④	58	8	4111	685		457	228		16,444	

Cont. on Next Page

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① Apply immediately prior to the placing of the 846 Type 2.
② Apply immediately prior to the 846 Type 1 and 403.
③ The 301 shall be placed in maximum 5" layers.
④ To be used prior to placing the 403 Bond Breaker.
⑤ Extra material provided for leveling of shoulders.

PAVED SHOULDERS

⑥ Sec. B - 6" avg. thickness
Sec. C - 1" avg. thickness
Ramps - 3" avg. thickness
✱ Quantities carried directly to General Summary.

⑦ Cover Aggregate to be included in Tack Coat, as per plan. (See Gen. Notes)
‡ Quantities carried to Page 72.

PART & SECTION	ROUTE	STATION TO STATION	LENGTH LIN. FT.	PROPOSED WIDTH (FT.) N.B. Outside or Ramp Sh'dr.	N.B. Inside or Ramp Sh'dr.	S.B. Inside Sh'dr.	S.B. Outside Sh'dr.	SHOULDER AREA (SQ. YD.)	301 ③ BITUMINOUS AGGREGATE BASE AVG. THICK INCHES	301 ③ CU. YD.	846 Type 2 ASPHALT CONCRETE AVG. THICK INCHES	846 Type 2 CU. YD.	846 Type 1 ASPHALT CONCRETE AVG. THICK INCHES	846 Type 1 CU. YD.	407 TACK COAT ① @ .10 gal./s.y. GAL.	407 COVER AGGR. ⑦ @ 7 lb./s.y. TON	407 TACK COAT ② @ .10 gal./s.y. GAL.	407 COVER AGGR. ⑦ @ 7 lb./s.y. TON	617 ✱ COMPACTED AGGREGATE (For details see Typ. Sec.) Total Width in Ft.	617 ✱ SQ. YD.	617 ✱ ⑥ CU. YD.	203‡ Excavation not Including Embank. Const. as per plan CU. YD.	403 Asphalt Concrete (Bond Breaker) CU. YD. 2" avg. ⑤ N.B.	403 1" avg. S.B.	305✱ 8" Concrete Base SQ. YD.	452 9" Plain Concrete Pav't. SQ. YD.	451 9" Reinforced Concrete Pav't. as per plan SQ. YD.	452 9" Plain Concrete Pav't. as per plan SQ. YD.
2-B	IR-270																											
		1444+22 - 1452+00	778	12	4	4		1729	10	480	1¾	84	1¼	60	173	6	173	6	6	519	87							
		(1444+22 - 1452+00)	(778)				12	1037					1¼	36			104	4	2	173	29							
	Ramp I	1347+08 - 1358+97	1189	6	3			1189			1¾	58	1¼	41	119	4	119	4	13	1717	143							
	"	(1347+08 - 1350+58)	(350)	6	3			350	3½	34																		
	Ramp J	1356+80 - 1367+91	1111	6	3			1111			1¾	54	1¼	39	111	4	111	4	13	1605	134							
	"	(1364+41 - 1367+91)	(350)	6	3			350	3½	34																		
	Ramp K	1351+88 - 1355+69	381	3	6			381			1¾	19	1¼	13	38	1	38	1	13	550	46							
	"	1353+97 - 1355+69	172	3	6			172			1¾	8	1¼	6	17	1	17	1	13	248	21							
	"	1355+69 - 1365+35	966	3	6			966			1¾	47	1¼	34	97	3	97	3	13	1395	116							
	"	(1361+85 - 1365+35)	(350)	3	6			350	3½	34																		
	Ramp L	1346+05 - 1355+40	935	3	6			935			1¾	45	1¼	32	94	3	94	3	13	1351	113							
	"	(1346+05 - 1349+55)	(350)	3	6			350	3½	34																		
	Shoulder	Quantities	for Maintaining	Traffic				from Page	53	460		110			228	10	124	6				2868			10,626			
	Total	Part 2 - Sec. B	carried to Page 44							1076		425		261	877	32	3890	138			2175	2868‡	836	418	10,626	33,459		
3-B	IR-270	1426+75 - 1432+59	584	12	4	4	12	2076									208④	7	8	519	87		58	29		2076		
		1432+59 - 1434+72	213			4	12	379									38④	1	4	95	16			11			379	
		(1432+59 - 1434+72)	(213)	12	4			379									38④	1	4	95	16		21			379		
		1434+72 - 1439+85	513	12	4	4	12	1824									182④	6	8	456	76		51	25		1824		
		1439+85 - 1444+22	437	12	4	4		971	8½	229	1¾	47	1¼	34	97	3	97	3	6	291	49							
		(1439+85 - 1444+22)	(437)				12	583					1¼	20			58	2	2	97	16							
	Shoulder	Quantities	for Maintaining	Traffic				from Page	54	162		28			58	2						518			1747			
	Total	Part 3 - Sec. B	carried to Page 44							391		75		54	155	5	621	20			260	518‡	130	65	1747	4279	379	
1-C	IR-270	1472+70 - 1487+71	1501	10	4	4	8	4336	10	1204	1¾	211	1¼	151	434	15	434	15	20	3336	93							
		1487+71 - 1495+92	821	12	4	4	8	2554	10	709	1¾	124	1¼	89	255	9	255	9	20	1824	51							
		1495+92 - 1507+42	1150	12	4	4		2556	10	710	1¾	124	1¼	89	256	9	256	9	16	2044	57							
		(1495+92 - 1507+42)	(1150)				12	1533					1¼	53			153	5	4	511	14							
		1507+42 - 1513+60	618	12	4	4	8	1923	10	534	1¾	93	1¼	67	192	7	192	7	20	1373	38							
		1513+60 - 1528+43	1483	12	4	4		3296	10	916	1¾	160	1¼	114	330	12	330	12	16	2636	73							
		(1513+60 - 1528+43)	(1483)				12	1977					1¼	69					4	659	18							
		1528+43 - 1528+99	56	12	4	4	10	187	10	52	1¾	9	1¼	6	19	1	19	1	20	124	3							
		Cont. on Next Page																										

PAVED SHOULDERS

① Apply immediately prior to the placing of the 846 Type 2.
② Apply immediately prior to the 846 Type 1 and 403.
③ The 301 shall be placed in maximum 5" layers.
⑦ Cover Aggregate to be included in Tack Coat, as per plan. (See Gen. Notes)

* Quantities carried directly to the General Summary. ‡ Quantities carried to Page 72.

PART & SECTION	ROUTE	STATION TO STATION	LENGTH LIN. FT.	PROPOSED WIDTH (FT.) N.B. Outside or Ramp Sh'dr.	N.B. Inside or Ramp Sh'dr.	S.B. Out-side Sh'dr.	S.B. Out-side Sh'dr.	SHOULDER AREA (SQ. YD.)	301 ③ BITUMINOUS AGGREGATE BASE AVG. THICK INCHES	301 CU.YD.	846 Type 2 ASPHALT CONCRETE AVG. THICK INCHES	846 Type 2 CU.YD.	846 Type 1 ASPHALT CONCRETE AVG. THICK INCHES	846 Type 1 CU.YD.	407 TACK COAT ① @.10 gal./s.y. GAL.	407 COVER AGGR. ⑦ @ 7 lb./s.y. TON	407 TACK COAT ② @.10 gal./s.y. GAL.	407 COVER AGGR. ⑦ @ 7 lb./s.y. TON	617 * COMPACTED AGGREGATE (For details see Typ. Sec.) Total Width in Ft.	617 SQ.YD.	617 1" avg. thick CU.YD.	203 ‡ Excavation not Including Embank. Const. as per plan CU.YD.	403 Asphalt Concrete	305 8" Concrete Base SQ.YD.	452 9" Plain Concrete Pav't. SQ.YD.
1-C	IR-270	1528+99-1529+99	100	12	4	4-10	10	367	10	102	1¾	18	1¼	13	37	1	37	1	20	222	6				
		1529+99-1531+36	137	12	4	10	10	548	10	152	1¾	27	1¼	19	55	2	55	2	20	304	8				
	Ramp M	1495+29-1507+54	1225	6	3			1225					1¼	43			123	4	13	1769	49				
	Ramp N	1530+12-1531+36	124	6	3			124					1¼	4			12	1	13	179	5				
	Ramp O	1517+75-1527+68	993	6	3			993					1¼	34			99	3	13	1434	40				
	Ramp P	1485+00-1486+35	135	10-6				120					1¼	4			12	1	5	75	2				
	"	1486+35-1495+35	900	6	4			1000					1¼	35			90	4	14	1400	39				
	"	1495+35-1515+74	2039	10	4			3172					1¼	110			317	11	9	2039	57				
	Ramp Q	1517+11-1528+43	1132	4	10			1761					1¼	61			176	6	9	1132	31				
	Ramp R	1513+65-1524+51	1086	3	6			1086					1¼	38			109	4	13	1569	44				
	Ramp S	1495+99-1517+50	2151	3	6			2151					1¼	75			215	8	13	3107	86				
	Ramp T	1494+01-1506+72	1271	3	6			1271					1¼	44			127	4	13	1836	51				
	Ramp U	1501+27-1518+78	1751	10	4			2724					1¼	95			272	10	9	1751	43				
	"	1523+73-1527+67	394	10	4			613					1¼	21			61	2	9	394	11				
	"	1527+67-1528+70	103	8	4			137					1¼	5			14	1	9	103	3				
	"	1530+12-1531+36	124	8	4			165					1¼	6			17	1	9	124	3				
	Shoulder Quantities for Maintaining Traffic from Page 54									1068		187			385	13						855			
	Total Part 1-Sec. C carried to Page 44									5447		953		1242	1963	69	3375	121			795	855 ‡			
2-C	IR-270	1452+00-1453+15	115	12-10	4	4		243	10	68	1¾	12	1¼	8	24	1	24	1	16	204	6				
		(1452+00-1453+15)	(115)				12	153					1¼	5			15	1	4	51	1				
		1453+15-1466+07	1292	10	4	4		2584	10	718	1¾	126	1¼	90	258	9	258	9	16	2297	64				
		(1453+15-1466+07)	(1292)				12	1723					1¼	60			172	6	4	574	16				
	Shoulder Quantities for Maintaining Traffic from Page 54									521		91			188	7						417			
	Total Part 2-Sec. C carried to Page 44									1307		229		163	470	17	469	17			87	417 ‡			
3-C	IR-270	1466+07-1467+07	100	10	4	4		200	10	56	1¾	10	1¼	7	20	1	20	1	16	178	5				
		(1466+07-1467+07)	(100)				12-8	111					1¼	4			11	1	4	44	1				
		1467+07-1472+70	563	10	4	4	8	1626	10	452	1¾	79	1¼	56	163	6	163	6	20	1251	35				
		1531+36-1548+30	1694	12	4	10	10	6776	10	1882	1¾	329	1¼	235	678	24	678	24	20	3764	105				
		1548+30-1549+30	100	12	4-10	10	10	433	10	120	1¾	21	1¼	15	43	2	43	2	20	222	6				
		1549+30-1598+39	4909	10	10	10	10	21,818	10	6061	1¾	1061	1¼	758	2182	76	2182	76	20	10909	303				
		1598+39-1599+35	96	10-8	10	10	10	416	10	116	1¾	20	1¼	14	42	1	42	1	20	213	6				
		Cont. on Next Page																							

PAVED SHOULDERS

① Apply immediately prior to the placing of the 846 Type 2.
② Apply immediately prior to the 846 Type 1 and 403.
③ The 301 shall be placed in maximum 5" layers.
⑦ Cover Aggregate to be included in Tack Coat, as per plan. (See Gen. Notes)
* Quantities carried directly to General Summary.
‡ Quantities carried to Page 72.

PART & SECTION	ROUTE	STATION TO STATION	LENGTH LIN. FT.	PROPOSED WIDTH (FT.) N.B. Outside or Ramp Sh'dr.	N.B. Inside or Ramp Sh'dr.	S.B. Inside Sh'dr.	S.B. Outside Sh'dr.	SHOULDER AREA (SQ. YD.)	301 ③ BITUMINOUS AGGREGATE BASE AVG. THICK INCHES	301 ③ CU. YD.	846 Type 2 ASPHALT CONCRETE AVG. THICK INCHES	846 Type 2 CU. YD.	846 Type 1 ASPHALT CONCRETE AVG. THICK INCHES	846 Type 1 CU. YD.	407 TACK COAT ① @.10 gal./s.y. GAL.	407 COVER AGGR. ⑦ @ 7 lb./s.y. TON	407 TACK COAT ② @.10 gal./s.y. GAL.	407 COVER AGGR. ⑦ @ 7 lb./s.y. TON	617 * COMPACTED AGGREGATE (For Details see Typ. Sec.) Total width in ft.	617 * SQ. YD.	617 * 1" avg. thick CU. YD.	203‡ Excavation not Including Embank. Const. as per plan CU. YD.	403 Asphalt Concrete CU. YD.	305 8" Concrete Base SQ. YD.	452 9" Plain Concrete Pav't. SQ. YD.
3-C	IR-270	1599+35-1600+90	155	8	10	10	10	654	10	182	1 3/4	32	1 1/4	23	65	2	65	2	20	344	10				
		1600+90-1601+86	96	8	10	10	10-8	395	10	110	1 3/4	19	1 1/4	14	40	1	40	1	20	213	6				
	Ramp N	1531+36-1537+93	657	6	3			657					1 1/4	23				2	13	949	26				
	Ramp U	1531+36-1537+93	657	10	4			1022					1 1/4	35			102	4	9	657	18				
	"	1537+93-1542+17	424	8	4			565					1 1/4	20			57	2	9	424	12				
	"	1542+17-1549+30	713	10	4			1109					1 1/4	39			111	4	9	713	20				
	Shoulder Quantities for Maintaining Traffic from Page 54									31		5			11	1						25			
	Total	Part 3-Sec. C	carried to Page 44							9010		1576		1243	3244	114	3580	125			553	25‡			

DEPARTMENT OF TRANSPORTATION
M& R 712 REV. 9-1-83

PAVED SHOULDERS FOR MAINTAINING TRAFFIC

① Apply immediately prior to the placing of the 846 Type 2.
② Apply immediately prior to the 846 Type 1 and 403.
③ The 301 shall be placed in maximum 5" layers.
⑦ Cover Aggregate to be included in Tack Coat, as per plan. (See Gen. Notes)
* Quantities carried directly to the General Summary.

PART & SECTION	ROUTE	STATION TO STATION	LENGTH LIN. FT.	S.B. Outside Shoulder				301 ③		846 Type 2		846 Type 1*		407		407		617		203	403	305	452
				EXIST. WIDTH (FT.)	EXIST. SHOULDER AREA (SQ. YD.)	PROP. WIDTH (FT.)	PROP. SHOULDER AREA (SQ. YD.)	BITUMINOUS AGGREGATE BASE		ASPHALT CONCRETE		ASPHALT CONCRETE INTERMEDIATE		TACK COAT ①	COVER AGGR. ⑦	TACK COAT ②	COVER AGGR. ⑦	COMPACTED AGGREGATE		Excavation not Including Embank. Const. as per plan	Asphalt Concrete	8" Concrete Base	9" Plain Concrete Pav't.
								AVG. THICK INCHES	CU.YD.	AVG. THICK INCHES	CU.YD.	AVG. THICK INCHES	CU.YD.	@.10 gal./s.y. GAL.	@ 7 lb./s.y. TON	@.10 gal./s.y. GAL.	@ 7 lb./s.y. TON	SQ.YD.	CU.YD.	CU.YD.	CU.YD.	SQ.YD.	SQ.YD.
1-A	IR-270	1302+75-1307+61	486	10	540	12	648													144		648	
		1307+61-1308+86	125	10	139	12	167	5	23	1¾	8	1¼	6	17	1	17	1			37			
		1308+86-1309+86	100	10	111	12-10	122	5	17	1¾	6	1¼	4	12	1	12	1			27			
		1311+36-1311+70	34	10	38	10-11	40	5	6	1¾	2	1¼	1	4	1	4	1			9			
	Total Part 1-Sec. A to Page 51								46		16		11	33	3	33	3			217		648	
2-A	IR-270	1267+61-1271+71	410	10	456	10	456													101		456	
		1271+71-1272+71	100	10	111	10-12	122													27		122	
		1272+71-1276+82	411	10	457	12	548													122		548	
		1276+82-1280+75	393	20-11	677	20-11	677													150		677	
		1280+75-1290+83	1008	8	896	8	896													199		896	
		1290+83-1292+75	192	8-10	192	8-12	213													47		213	
		1292+75-1302+75	1000	10	1111	12	1333													296		1333	
		1311+70-1312+36	66	10	73	11-12	84	5	12	1¾	4	1¼	3	8	1	8	1			19			
		1312+36-1313+61	125	10	139	12	167	5	23	1¾	8	1¼	6	17	1	17	1			37			
		1313+61-1325+00	1139	10	1266	12	1519													338		1519	
	Total Part 2- Sec. A to Page 52								35		12		9	25	2	25	2			1336		5764	
2-B	IR-270	1325+00-1338+00	1300	10	1444	12	1733													385		1733	
		1338+00-1339+00	100	10-8	100	12-8	111													25		111	
		1346+05-1350+56	451	10	501	12	601													134		601	
		1350+56-1354+31	375	10	417	12	500	5	69	1¾	24	1¼	17	50	2	50	2			111			
		1354+31-1355+31	100	10	111	12-10	122	5	17	1¾	6	1¼	4	12	1	12	1			27			
		1355+31-1357+15	184	Struc. # 3227																			
		1357+15-1358+15	100	10	111	10-12	1222	5	17	1¾	6	1¼	4	12	1	12	1			27			
		1358+15-1361+90	375	10	417	12	500	5	69	1¾	24	1¼	17	50	2	50	2			111			
		1361+90-1365+35	345	10	383	12	460													102		460	
		1365+35-1369+50	415	15-11	599	15-11	599													133		599	
		1369+50-1380+50	1100	8	978	8	978													217		978	
		1380+50-1381+50	100	8-10	100	8-12	111													25		111	
		1381+50-1426+75	4525	10	5028	12	6033													1341		6033	
		1444+22-1452+00	778	10	864	12	1037	10	288	1¾	28			58	2					230			
	Total Part 2 -Sec. B to Page 53								460		110		42	228	10	124	6			2868		10,626	

DEPARTMENT OF TRANSPORTATION
M&R 712 REV. 9-1-83

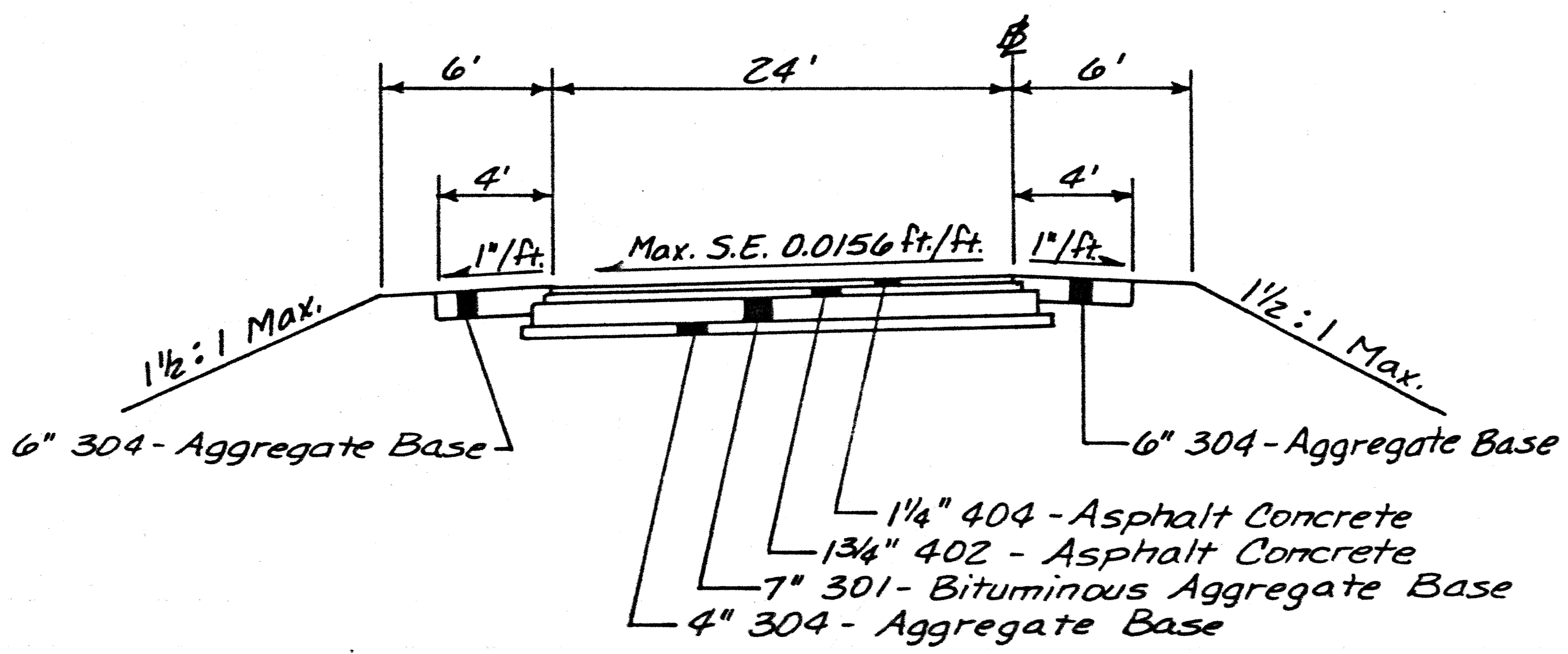
PAVED SHOULDERS FOR MAINTAINING TRAFFIC

FRA-270-29.11

① Apply immediately prior to the placing of the 846 Type 2.
② Apply immediately prior to the 846 Type 1 and 403.
③ The 301 shall be placed in maximum 5" layers.
⑦ Cover Aggregate to be included in Tack Coat, as per plan. (See Gen. Notes)
* Quantities carried directly to the General Summary.

PART & SECTION	ROUTE	STATION TO STATION	LENGTH LIN. FT.	S.B. Outside Shoulder EXIST. WIDTH (FT.)	EXIST. SHOULDER AREA (SQ. YD.)	PROP. WIDTH (FT.)	PROP. SHOULDER AREA (SQ. YD.)	301 ③ BITUMINOUS AGGREGATE BASE AVG. THICK INCHES	301 ③ CU.YD.	846 Type 2 ASPHALT CONCRETE AVG. THICK INCHES	846 Type 2 CU.YD.	846 Type 1* ASPHALT CONCRETE INTERMEDIATE AVG. THICK INCHES	846 Type 1* CU.YD.	407 TACK COAT ① @.10 gal./s.y. GAL.	407 COVER AGGR. ⑦ @ 7 lb./s.y. TON	407 TACK COAT ② @.10 gal./s.y. GAL.	407 COVER AGGR. ⑦ @ 7 lb./s.y. TON	617 COMPACTED AGGREGATE SQ.YD.	617 CU.YD.	203 Excavation not Including Embank. Const. as per plan CU.YD.	403 Asphalt Concrete CU.YD.	305 8" Concrete Base SQ.YD.	452 9" Plain Concrete Pav't. SQ.YD.		
3-B	IR-270	1426+75-1439+85	1310	10	1456	12	1747													388		1747			
		1439+85-1444+22	437	10	486	12	583	10	162	1¾	28			58	2					130					
	Total	Part 3-Sec. B to Page 53																		518		1747			
1-C	IR-270	1495+92-1507+42	1150	10	1278	12	1533																		
		1513+60-1528+43	1483	10	1648	12	1977																		
		1528+48-1529+99	151	24-16	336	24-16	336																		
	Total	Part 1-Sec. C to Page 54			3262		3846	10	1068	1¾	187			385	13					855					
2-C	IR-270	1452+00-1466+07	1407	10	1563	12	1876	10	521	1¾	91			188	7					417					
	(Total	Part 2-Sec. C	to Page	54)																					
3-C	IR-270	1466+07-1467+07	100	10-8	100	12-8	111	10	31	1¾	5			11	1					25					
	(Total	Part 3-Sec. C	to Page	55)																					

TYPICAL SECTION OF CROSSOVER



Note:
Earthwork will be paid for under
Item 615 - Temporary Roads: Lump Sum.

Pavement will be paid for under
Item 615 - Temporary Pavement, Class
A (flexible): Sq. Yd.

Four foot shoulders will be paid
for under Item 304 - Aggregate
Base: Cu. Yd.

Estimated Quantities:

	Pt. 2-A S. of SR-161	Pt. 2-B N. of Morse Rd. / S. of Morse Rd.	Pt. 3-C N. of SR-317
Item 615 - Temporary Pavement, Class A	1600 s.y.	3180+3300=6480 s.y.	1600 s.y.
Item 615 - Temporary Roads	Lump	Lump	Lump
Item 304 - Aggregate Base	104 c.y.	208+212= 420 c.y.	104 c.y.

Totals carried to the General Summary.

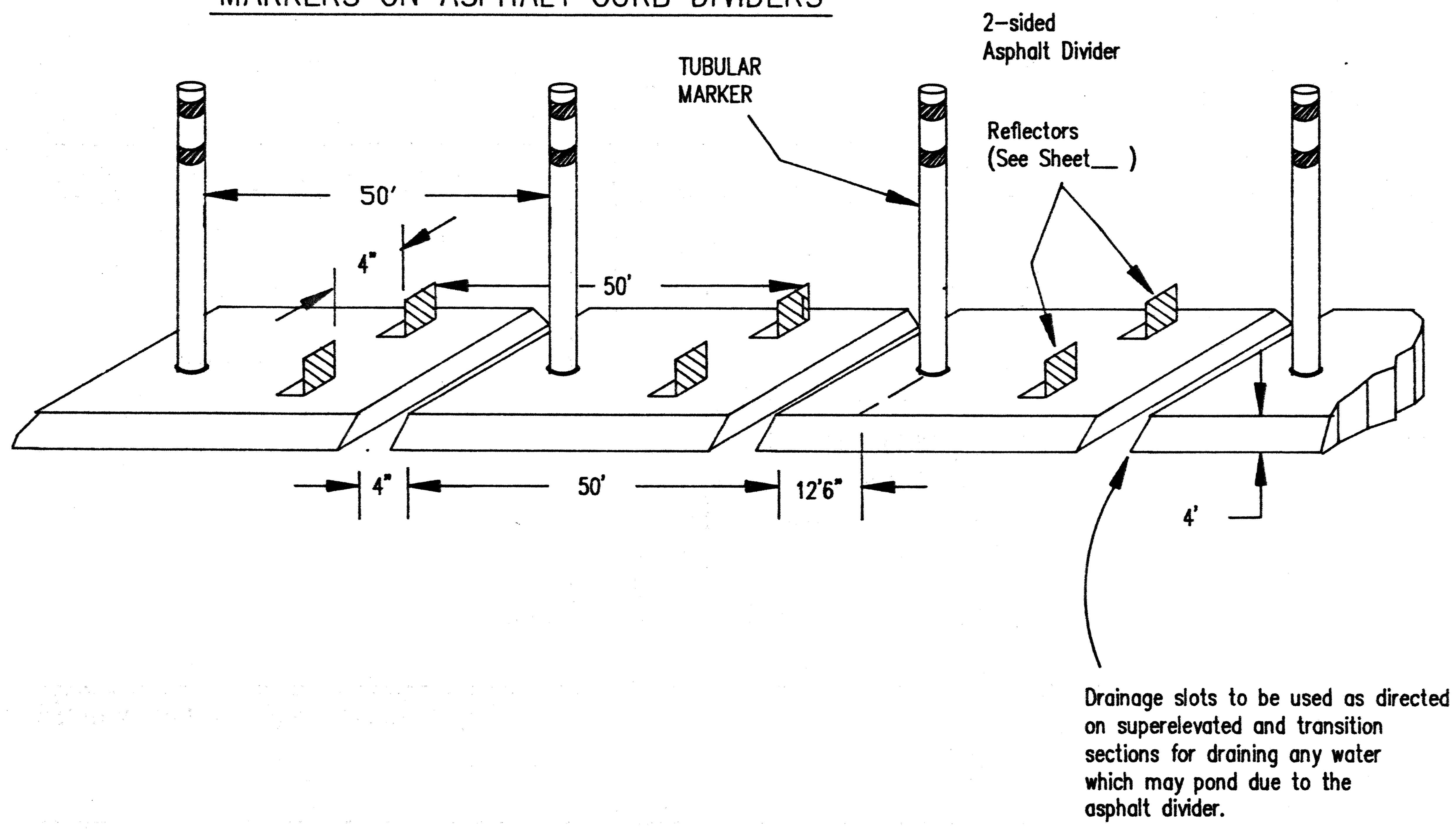
ITEM 622 - Temporary Concrete Divider

	Location	Length
Part 1-A	Struc. #3141	200 lin. ft.
Part 2-A	SB at SR 161	370 lin. ft.
	NB at SR 161	320 lin. ft.
	Total =	690 lin. ft.
Part 2-B	Struc. #3227	200 lin. ft.
Part 3-C	Struc. #3694	200 lin. ft.
	SB at SR 317	324 lin. ft.
	NB at SR 317	364 lin. ft.
	Total =	888 lin. ft.

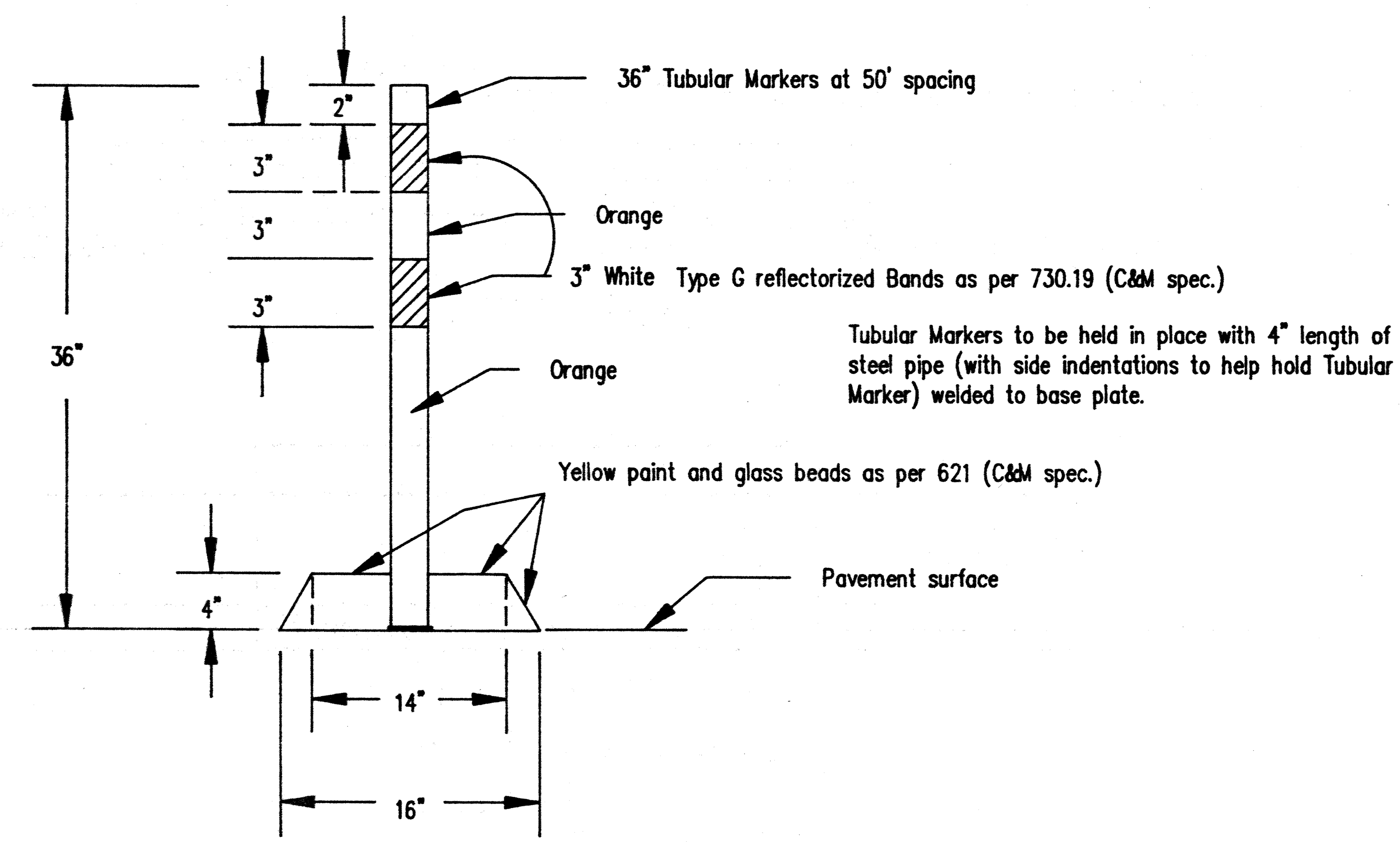
Totals carried to the General Summary.

TEMPORARY ASPHALT DIVIDER

PLACEMENT OF REFLECTORS & TUBULAR MARKERS ON ASPHALT CURB DIVIDERS



TUBULAR MARKER INSTALLATION DETAIL



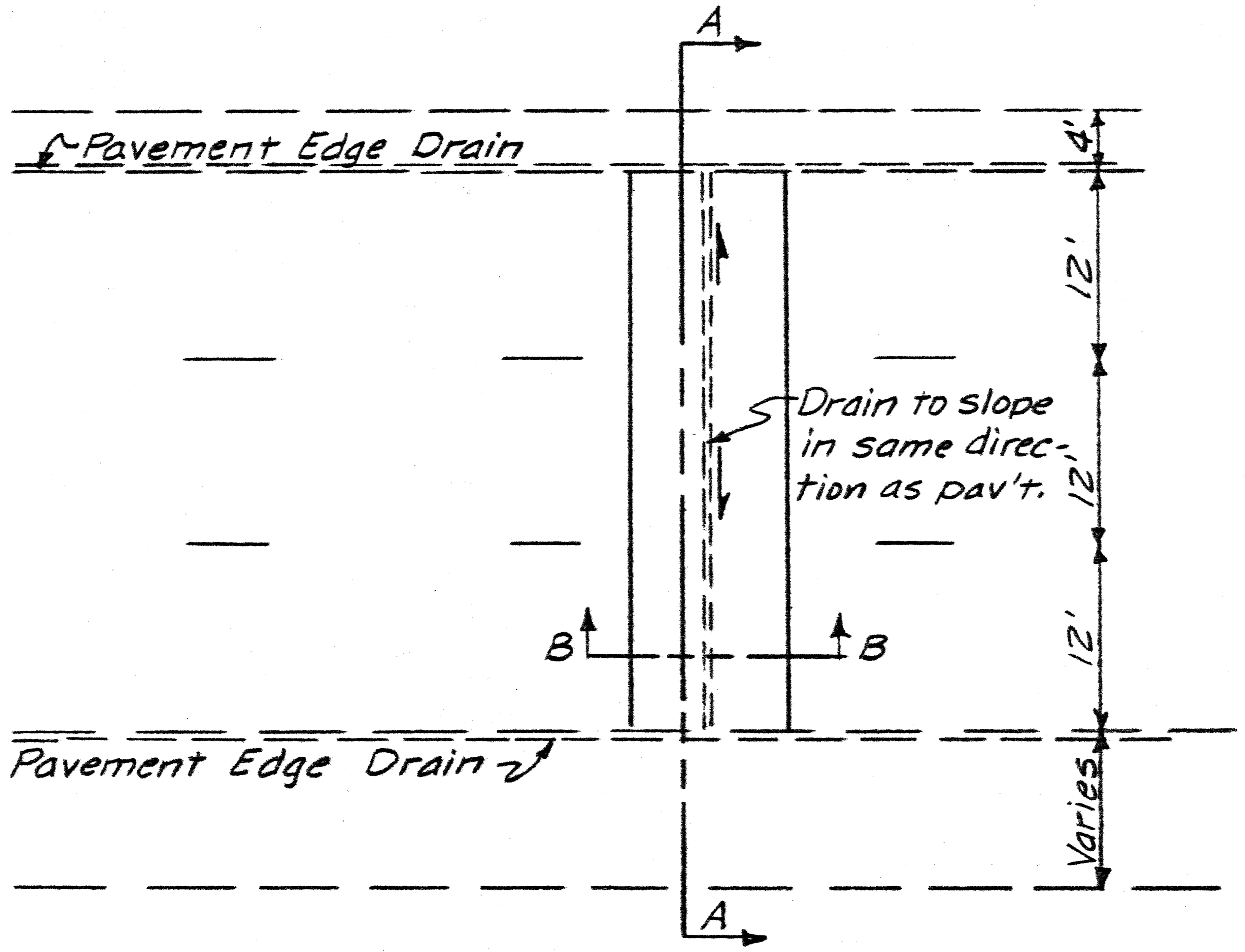
This item shall consist of constructing an asphalt concrete divider to the dimensions shown in the plans, painting the divider yellow, and the removal and disposal when no longer needed. The asphalt concrete material shall meet the general requirements of specification 404. The paint and glass beads shall meet the requirements of specification Sec. 621. The method of measurement will be linear feet in place with payment as Item Special - Temporary Asphalt Divider. The cost of furnishing, installing, and replacing any damaged tubular markers shall be included in this item.

ITEM SPECIAL - Temporary Asphalt Divider

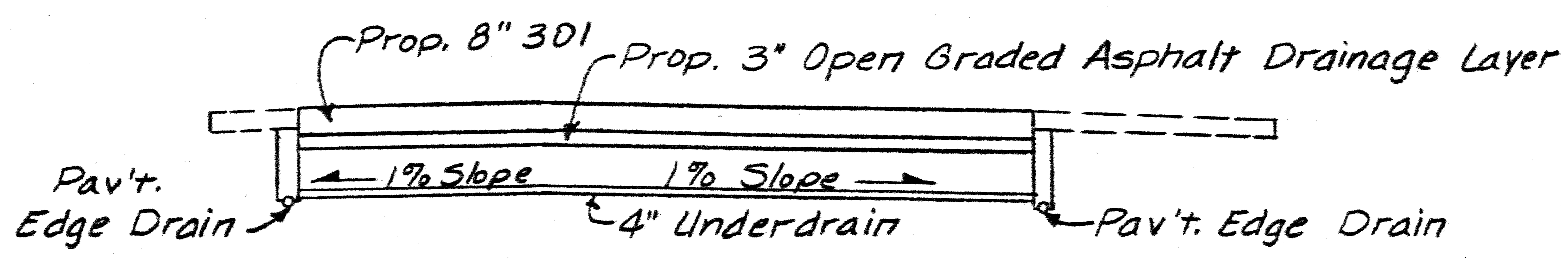
Part 1-A	(NB & SB)	1302+75 - 1311+70	x 2 sides	=	1,790 lin. ft.
Part 2-A	(NB & SB)	1285+29 - 1302+75	x 2 sides	=	3,492 lin. ft.
	(NB & SB)	1311+70 - 1325+00	x 2 sides	=	2,660 lin. ft.
			Total	=	6,152 lin. ft.
Part 2-B	(NB & SB)	1325+00 - 1426+75	x 2 sides	=	20,175 lin. ft.
	(NB & SB)	1444+22 - 1452+00	x 2 sides	=	1,556 lin. ft.
			Total	=	21,906 lin. ft.
Part 3-B	(NB & SB)	1426+75 - 1444+22	x 2 sides	=	3,494 lin. ft.
Part 1-C	(NB & SB)	1472+70 - 1531+36	x 2 sides	=	11,732 lin. ft.
Part 2-C	(NB & SB)	1452+00 - 1466+07	x 2 sides	=	2,814 lin. ft.
Part 3-C	(NB & SB)	1466+07 - 1472+70	x 2 sides	=	1,326 lin. ft.
	(SB)	1531+36 - 1605+15	x 1 side	=	7,379 lin. ft.
	(NB)	1531+36 - 1604+71	x 1 side	=	7,335 lin. ft.
			Total	=	16,040 lin. ft.

Totals carried to the General Summary.

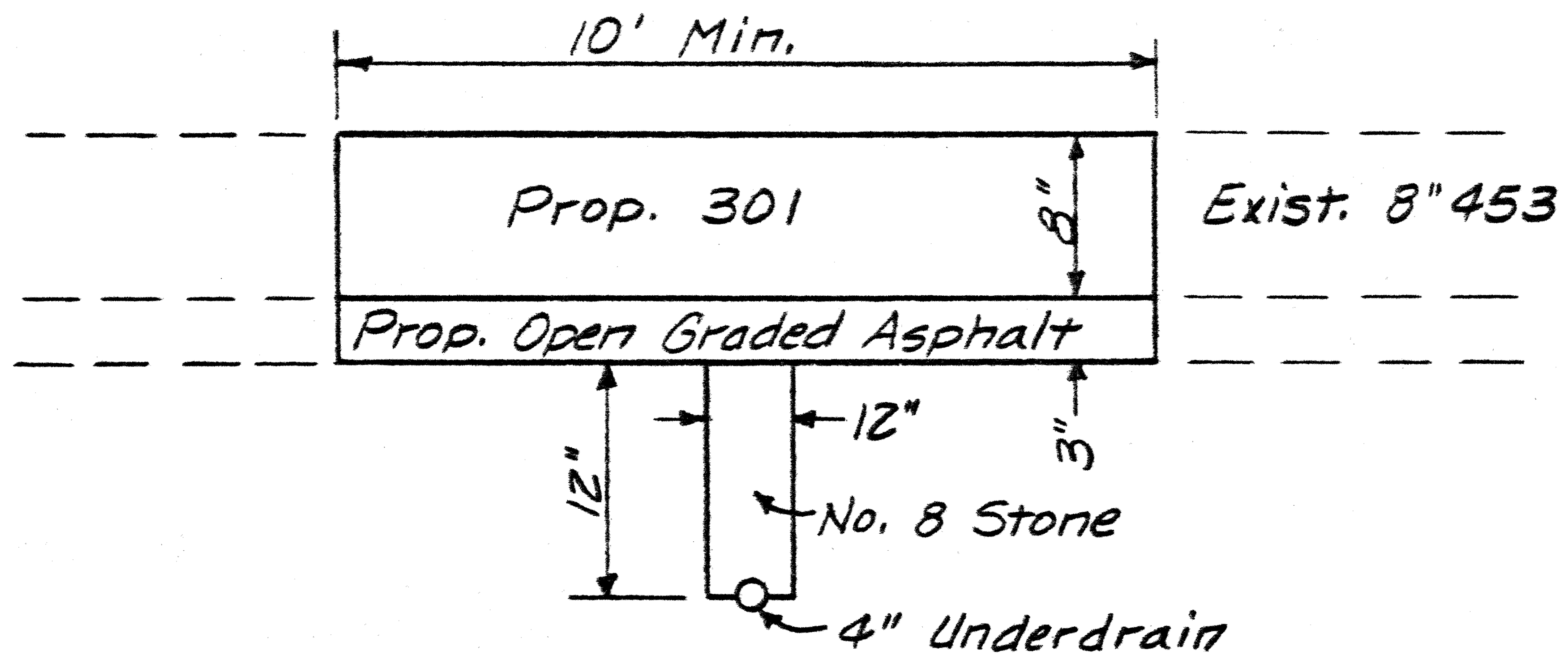
JOINT REPAIR DETAILS - SECTION A
(MAINLINE)



TYPICAL PLAN - SECTION A



SECTION A-A



SECTION B-B

Repair Locations (10' wide)									
S.L.M.	Northbound					Southbound			
Sec. A Pt. 1	Ramp Lane	Lane 1	Lane 2	Lane 3		Lane 3	Lane 2	Lane 1	Ramp Lane
29.11 to 30.00		3	2	2	MEDIAN	3	3	4	
30.00 to 30.54		2	2	2		2	2	2	
31.28 to 31.45		1	1	1		2	2	2	
Total Part 1 - Sec. A = 38 Repairs									
Sec. A Pt. 2	Ramp Lane	Lane 1	Lane 2	Lane 3		Lane 3	Lane 2	Lane 1	Ramp Lane
30.54 to 31.00	3	2	2	2	MEDIAN	1	1	1	
31.00 to 31.28		2	2	2		1	1	1	
31.45 to 31.70		1	1	1		2	2	2	
Total Part 2 - Sec. A = 30 Repairs									

See next page for Pavement Repair quantities.

JOINT REPAIR & MEDIAN REMOVAL

JOINT REPAIR QUANTITIES
(Mainline Joint Repair)

Sec. A - Part 1
38 repair locations x 120 sq. ft. each = 4560 sq. ft.
1 - 24' x 20' slab = 480 " "
1 - 12' x 12' slab = 144 " "
1 - 48' X 20' SLAB = 960 " "
Sub-Total = 6144 sq. ft.
an additional 20% to be used as directed = 1229 " "
Total = 7373 sq. ft.

Sec. A - Part 2
30 repair locations x 120 sq. ft. each = 3600 sq. ft.
1 - 24' x 20' slab = 480 " "
1 - 24' x 30' slab = 720 " "
Sub-Total = 4800 sq. ft.
an additional 20% to be used as directed = 960 " "
Total = 5760 sq. ft.

ITEM 202 - Pavement Removed and Base Removed
Part 1-A: 7373 sq. ft. ÷ 9 = 819 sq. yd. 4272 sq. yd. (from pg. 43) = 5091 sq. yd.

Part 2-A: 5760 sq. ft. ÷ 9 = 640 sq. yd. 1528 sq. yd. (from pg. 43) = 2168 sq. yd.
(Totals to General Summary)

ITEM SPECIAL - Full Depth Pavement Sawing
Part 1-A: 38 repairs x 34' each = 1292 lin. ft.
1 slab x 68' = 68 " "
1 slab x 36' = 36 " "
1 slab x 116' = 116 " "
Sub-Total = 1512 lin. ft.
+ 20% = 302 " "
Total = 1814 lin. ft. (Total to General Summary)

Part 2-A: 30 repairs x 34' each = 1020 lin. ft.
1 slab x 68' = 68 " "
1 slab x 78' = 78 " "
Sub-Total = 1166 lin. ft.
+ 20% = 233 " "
Total = 1399 lin. ft. (Total to General Summary)

ITEM 301 - Bituminous Aggregate Base
Part 1-A: 7373 sq. ft. x 8" deep = 182 Cu. Yd. (Total to page 73.)

Part 2-A: 5760 sq. ft. x 8" deep = 142 Cu. Yd. (Total to page 73.)

ITEM SPECIAL - Open Graded Asphalt Drainage Layer (see proposal note)
Part 1-A: 7373 sq. ft. x 3" deep = 68 Cu. Yd. (Total to General Summary)

Part 2-A: 5760 sq. ft. x 3" deep = 53 Cu. Yd. (Total to General Summary)

ITEM 605 - 4" Shallow Pipe Underdrains
Part 1-A: 38 - 10' repairs x 1 drain each x 12' = 456 lin. ft.
1 - 20' repair x 2 drains x 24' = 48 " "
1 - 12' repair x 1 drain x 12' = 12 " "
1 - 20' repair x 2 drains x 48' = 96 " "
Sub-Total = 612 lin. ft.
+ 20% = 122 " "
Total = 734 lin. ft. (To pg. 97.)

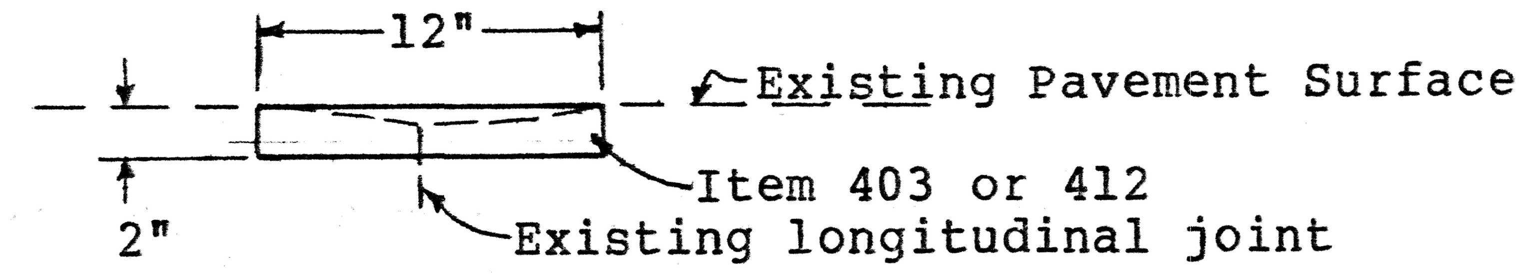
Part 2-A: 30 - 10' repairs x 1 drain each x 12' = 360 lin. ft.
1 - 20' repair x 2 drains x 24' = 48 " "
1 - 30' repair x 3 drains x 24' = 72 " "
Sub-Total = 480 lin. ft.
+ 20% = 96 " "
Total = 576 lin. ft. (To pg. 97.)

ITEM SPECIAL - Partial Depth Pavement Joint Repair
(see Proposal Note)

In addition to the requirements as set forth in the Proposal Note, Item 403 or 412 - Asphalt Concrete shall be placed in the removal areas.

The area calculated for repair includes all deteriorated longitudinal joints.

ITEM	UNIT	DESCRIPTION
Special	Sq. Yd.	Partial Depth Pavement Joint Repair



TYPICAL REPAIR DETAIL

Sec. A - Part 1 Estimated 1878 Sq. Yd.

Sec. A - Part 2 Estimated 1167 Sq. Yd.

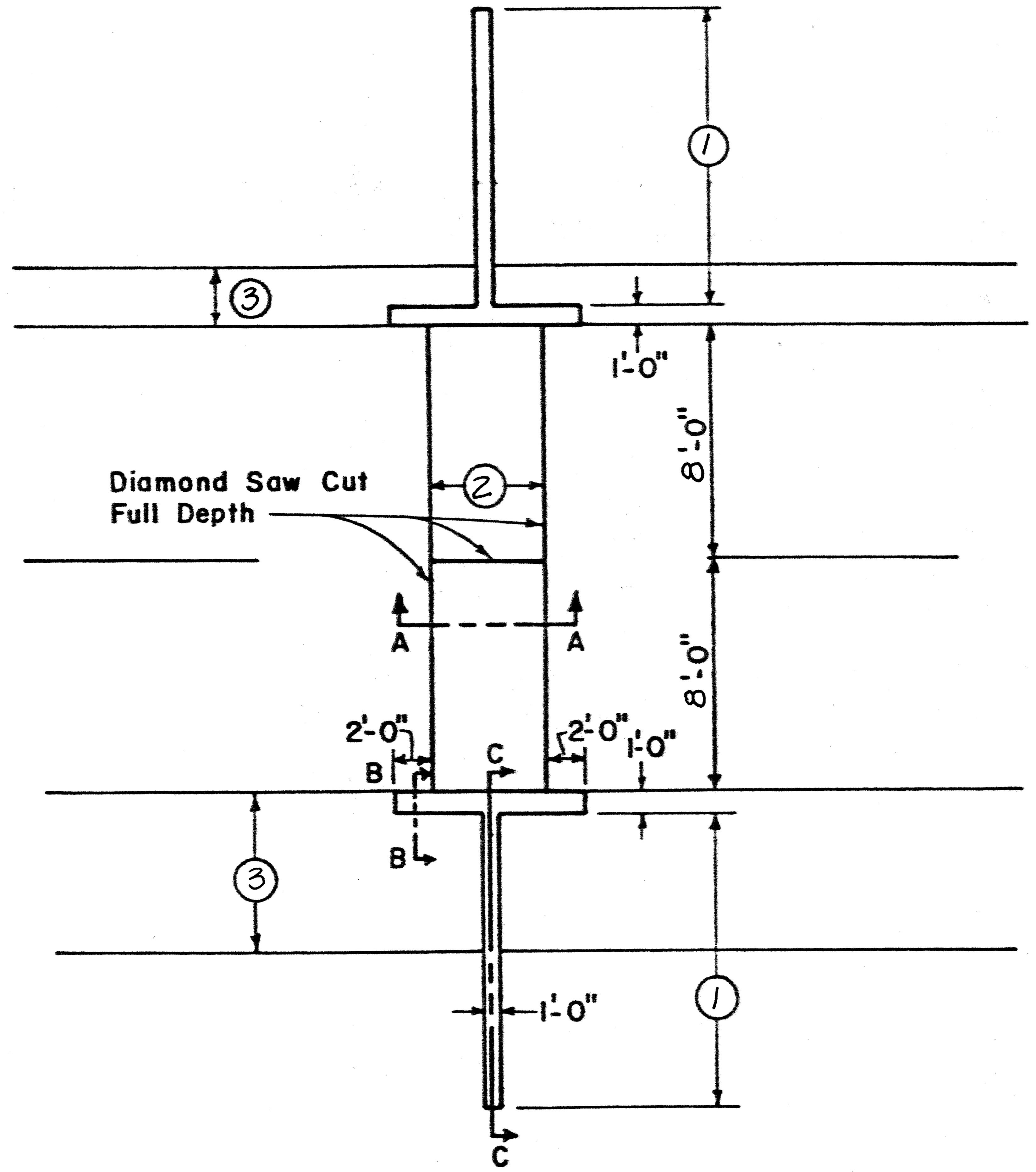
ITEMS 202 - Concrete Median Removed and 202 Curb Removed (for exit gore removal)

This operation shall consist of the removal and disposal of the indicated concrete exit ramp noses and curb. The bid items for this operation shall be ITEM 202 - Concrete Median Removed and ITEM 202 - Curb Removed. Also to be included in these items at the bid price will be any backfill, earth shaping, grading or compaction necessary to form a smooth transition between the shoulder and the adjoining pavement as per 202.02. Also, any damage to the surrounding pavement coused by this operation shall be repaired at the Contractor's expense.

Part	Ramp	202 Curb Removed	202 Concrete Median Removed	603 Catch Basin Adjusted to Grade	Locations of C.B.
		Lin. Ft.	Each	Each	
1-A	A			2	1247+50 & 1248+25
1-A	B		139		
1-A	G	142	248	1	1250+58
Total Part 1-A		142	387	3	
2-A	C		248		
2-A	D			1	1266+42
2-A	F	168	139	1	1266+64
Total Part 2-A		168	387	2	
2-B	I			2	1343+04 & 1343+54
2-B	K			2	1368+96 & 1369+46
Total Part 2-B				4	
1-C	M			1	1493+10

Totals carried to the General Summary.

ITEM SPECIAL - Pavement Repair (see note in proposal)
(Ramp Joint Repair)



(A) Existing 9" Reinforced Concrete Pavement

(B) Existing Subbase

(C) Existing Base

(1) Pay length for aggregate drains - used 15' for estimating purposes.

(2) Variable width - minimum width 3'-0"

(3) Width of berm - 3'.

(4) Flexible Replacement using Item 301.

(5) 12" No. 8 stone (aggregate drains)

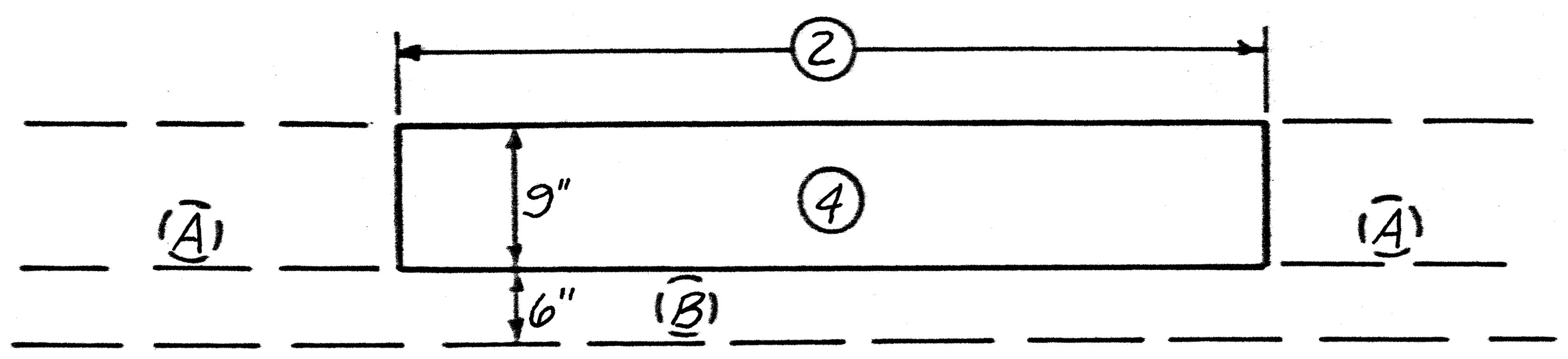
(6) Backfill

Removal areas as detailed are used for estimating purposes. The actual dimensions in the field may vary as directed. Payment shall be based on areas completed, accepted, and measured in place.

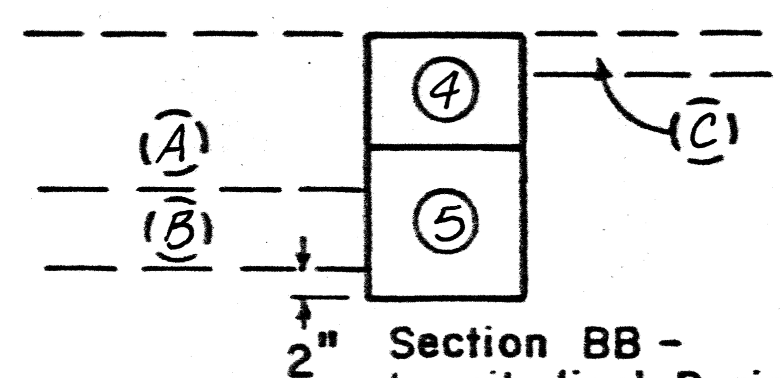
ITEM SPECIAL - Pavement Repair shall be measured and paid for in Cu. Yd.

Removal area used for estimating: 3' x 16' x .75' deep ÷ 27 = 1.33 Cu. Yd.

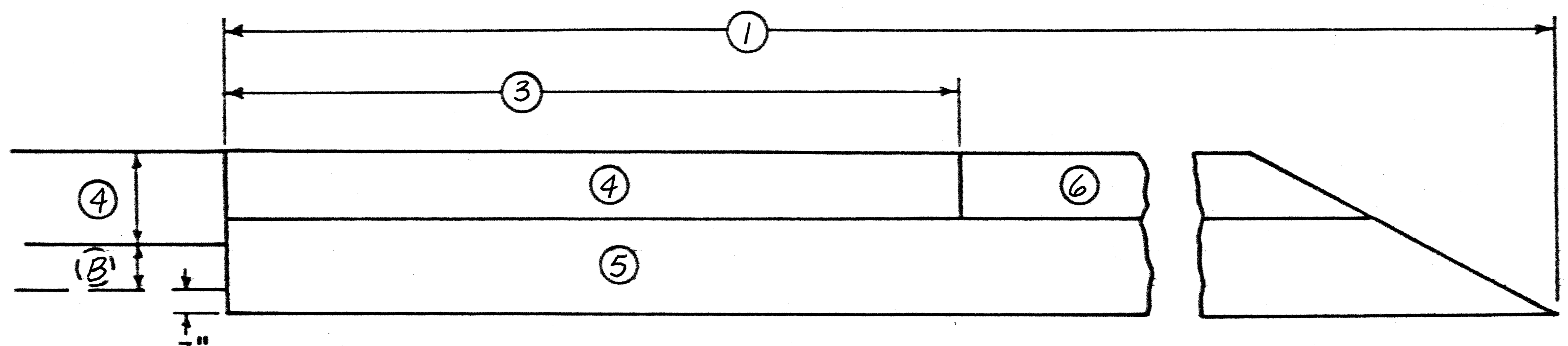
See page 63 for quantities.



Section AA – Pavement Repair Detail



Section BB - Longitudinal Drain Detail



Section CC – Transverse Drain Detail

PAVEMENT REPAIR
(JOINT REPAIR FOR RAMPS)

ITEM SPECIAL - Pavement Repair (see note in proposal)

Part 1 - Sec. A:	Ramp A - 2 joints at 1.33 Cu. Yd. each =	2.66 Cu. Yd.
	Ramp B - 2 joints at 1.33 Cu. Yd. each =	2.66 " "
	Ramp G - 2 joints at 1.33 Cu. Yd. each =	2.66 " "
	Ramp H - 2 joints at 1.33 Cu. Yd. each =	2.66 " "
	Total =	10.64 Cu. Yd.
	=	11 Cu. Yd.
Part 2 - Sec. A:	Ramp C - 2 joints at 1.33 Cu. Yd. each =	2.66 Cu. Yd.
	Ramp D - 2 joints at 1.33 Cu. Yd. each =	2.66 " "
	Ramp E - 2 joints at 1.33 Cu. Yd. each =	2.66 " "
	Ramp F - 2 joints at 1.33 Cu. Yd. each =	2.66 " "
	Total =	10.64 Cu. Yd.
	=	11 Cu. Yd.
Part 2 - Sec. B:	Ramp I - 2 joints at 1.33 Cu. Yd. each =	2.66 Cu. Yd.
	Ramp J - 2 joints at 1.33 Cu. Yd. each =	2.66 " "
	Ramp K - 2 joints at 1.33 Cu. Yd. each =	2.66 " "
	Ramp L - 2 joints at 1.33 Cu. Yd. each =	2.66 " "
	Total =	10.64 Cu. Yd.
	=	11 Cu. Yd.

ITEM 605 - Aggregate Drains, Longitudinal, as per plan

The cost of the No. 8 stone, 301, and any other work and material necessary to complete this item to be included in the price bid per lin. ft. of ITEM 605 - Aggregate Drains, Longitudinal, as per plan.

Part 1 - Sec. A: 8 joints x 2 sides x 7 lin. ft. each = 112 lin. ft.

Part 2 - Sec. A: 8 joints x 2 sides x 7 lin. ft. each = 112 lin. ft.

Part 2 - Sec. B: 8 joints x 2 sides x 7 lin. ft. each = 112 lin. ft.

ITEM 605 - Aggregate Drains, Transverse, as per plan

The cost of the No. 8 stone, 301, the removal and erection of guardrail, and all other work and material necessary to complete this item to be included in the price bid per lin. ft. of ITEM 605 - Aggregate Drains, Transverse, as per plan.

Part 1 - Sec. A: 8 joints x 2 sides x 15 lin. ft. each = 240 lin. ft.

Part 2 - Sec. A: 8 joints x 2 sides x 15 lin. ft. each = 240 lin. ft.

Part 2 - Sec. B: 8 joints x 2 sides x 15 lin. ft. each = 240 lin. ft.

Quantities carried to the General Summary.

MISC. QUANTITIES

SUBBASE/SUBGRADE FAILURES

If after removal of the pavement, the Engineer determines that the subbase or subgrade has failed or is pumping, he shall direct the contractor to excavate the unsuitable material, and replace it with 304 aggregate. Payment for this work will be made at the contract bid price for the following items.

ITEM 203 - Excavation not Including Embankment Construction

Part 1 - Sec. A:	10 Cu. Yd.	Part 1 - Sec. C:	100 Cu. Yd.
Part 2 - Sec. A:	10 Cu. Yd.	Part 2 - Sec. C:	20 Cu. Yd.
		Part 3 - Sec. C:	200 Cu. Yd.

ITEM 304 - Aggregate Base

Part 1 - Sec. A:	10 Cu. Yd.	Part 1 - Sec. C:	100 Cu. Yd.
Part 2 - Sec. A:	10 Cu. Yd.	Part 2 - Sec. C:	20 Cu. Yd.
		Part 3 - Sec. C:	200 Cu. Yd.

Totals carried to the General Summary.

ITEM 202 - Wearing Course Removed

The feathering at the begin project (Sta. 1188+19) and the existing asphalt repairs shall be removed to the existing concrete pavement at the following locations. Areas used are approximate. The actual locations and dimensions of the removals may vary and shall be as directed.

Part 1 - Sec. A:

S.L.M. 29.11 R & L	- 72' x 200' ÷ 9 =	1600 Sq. Yd.
S.L.M. 29.68 L	- 36' x 106' ÷ 9 =	424 " "
S.L.M. 29.73 R	- 36' x 75' ÷ 9 =	300 " "
S.L.M. 30.17 R	- 48' x 105' ÷ 9 =	560 " "
	Total =	2884 Sq. Yd.

Part 2 - Sec. A

S.L.M. 30.65 L	- 36' x 82' ÷ 9 =	328 Sq. Yd.
S.L.M. 31.06 R	- 36' x 65' ÷ 9 =	260 " "
	Total =	588 Sq. Yd.

Totals carried to the General Summary.

DEPARTMENT OF TRANSPORTATION
M& R 712 REV. 9-1-83

SUBGRADE COMPACTION

ITEM 203 - Subgrade Compaction

Part 1-A

Sta. 1211+90 - 1218+40 = 650' x 39' wide ÷ 9 = 2,817 Sq. Yd.
Sta. 1307+61 - 1309+61 = 200' x 78' wide ÷ 9 = 1,733 " "
Sta. 1311+61 - 1311+70 = 9' x 78' wide ÷ 9 = 78 " "
Total = 4,628 Sq. Yd.

Part 2-A

Sta. 1311+70 - 1313+61 = 191' x 78' wide ÷ 9 = 1,655 Sq. Yd.

Part 2-B

Sta. 1350+56 - 1355+06 = 450' x 78' wide ÷ 9 = 3,900 Sq. Yd.
Sta. 1357+40 - 1361+90 = 450' x 78' wide ÷ 9 = 3,900 " "
Sta. 1444+22 - 1452+00 = 778' x 78' wide ÷ 9 = 6,743 " "
Extra Area from pg. 41 = 403 " "
Total = 14,946 Sq. Yd.

Part 3-B

Sta. 1442+35 - 1444+22 = 187' x 78' wide ÷ 9 = 1,621 Sq. Yd.

Part 1-C

Sta. 1472+70 - 1531+36 = 5866' x 78' wide ÷ 9 = 50,839 Sq. Yd.
Extra Area from pg. 41 = 8,015 " "
Total = 58,854 Sq. Yd.

Part 2-C

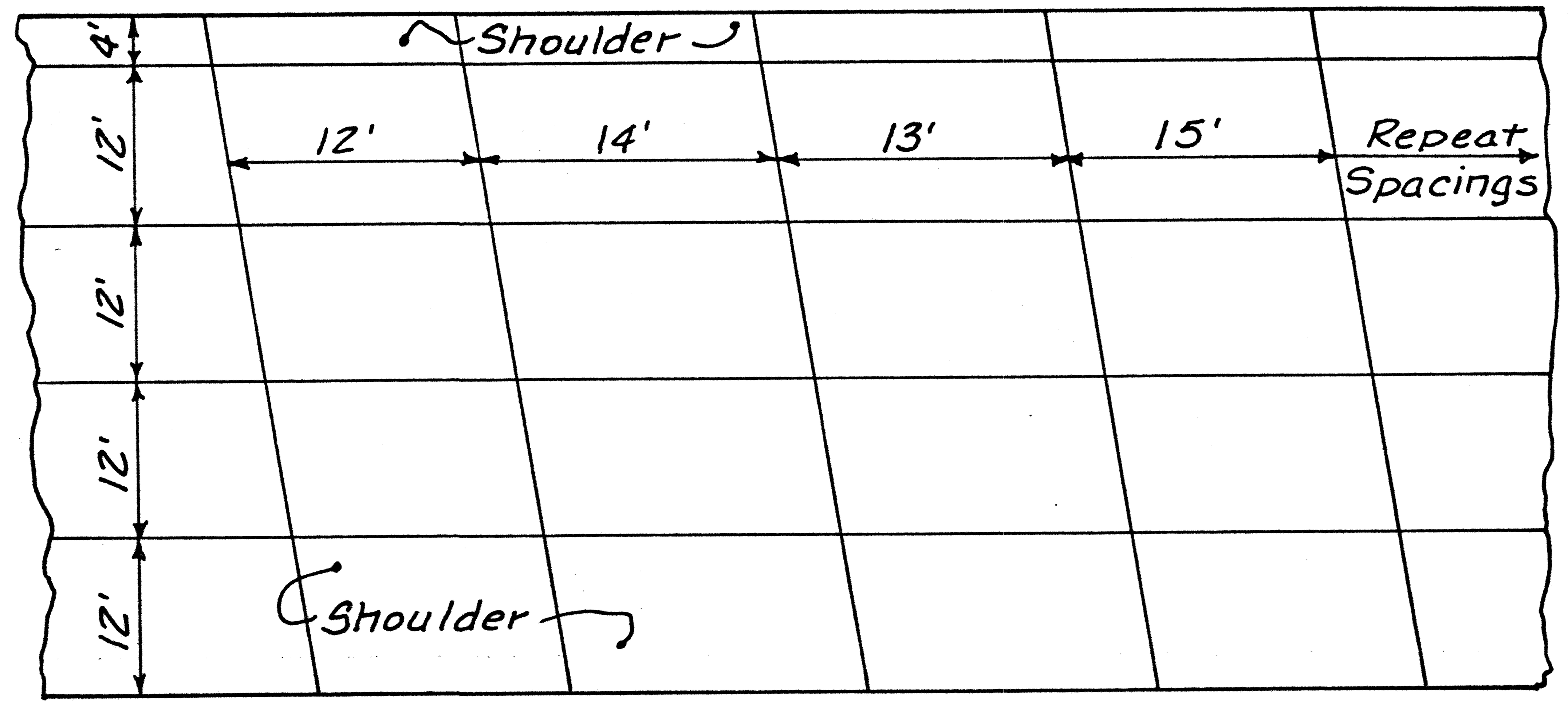
Sta. 1452+00 - 1466+07 = 1407' x 78' wide ÷ 9 = 12,194 Sq. Yd.
Extra Area from pg. 41 = 1,864 " "
Total = 14,058 Sq. Yd.

Part 3-C

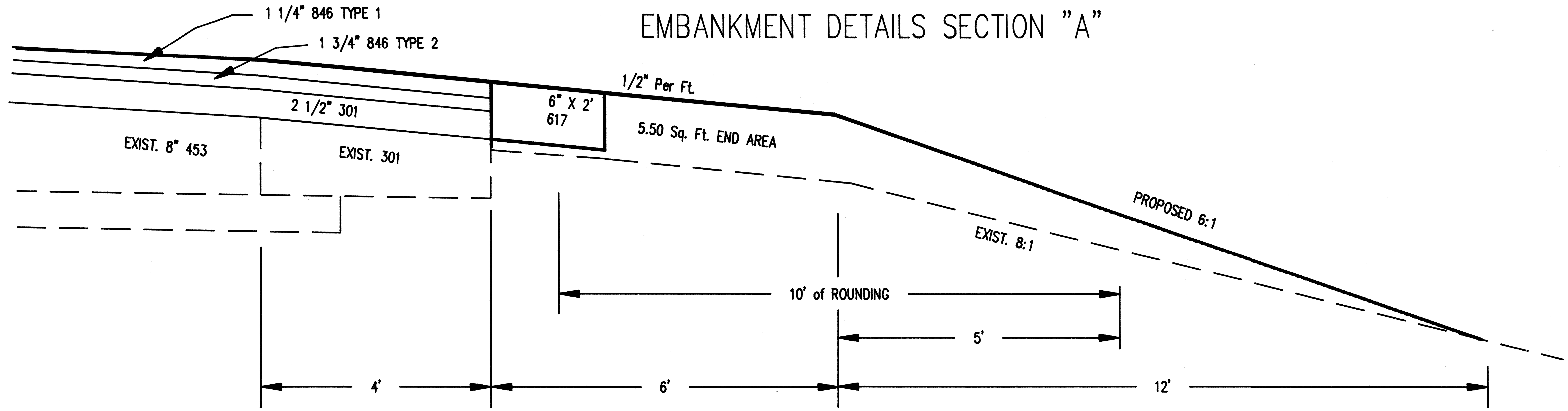
Sta. 1466+07 - 1472+70 = 663' x 78' wide ÷ 9 = 5,746 Sq. Yd.
Sta. 1531+36 - 1549+30 = 1794' x 90' wide ÷ 9 = 17,940 " "
Sta. 1549+30 - 1601+61 = 5231' x 102' wide ÷ 9 = 59,285 " "
Extra Area from pg. 41 = 5,751 " "
Total = 88,722 Sq. Yd.

PLAN NO.

TYPICAL JOINT SPACING DETAIL



EMBANKMENT DETAILS SECTION "A"



MEDIAN SHOULDER AND INSLOPE EMBANKMENT DETAIL FOR SECTION "A" FROM STA. 1188+19 to 1325+00

OUTSIDE SHOULDER AND INSLOPE EMBANKMENT DETAIL FOR SECTION "A" (Various Locations) FROM STA. 1188+19 to 1284+00 Lt. and to 1292+00 Rt.

OUTSIDE SHOULDER AND INSLOPE EMBANKMENT DETAIL FOR SEC. "A" (Various Locations) to 1284+00 Lt. and 1292+00 Rt.

PROPOSED 12' SHOULDERS START at 1284+00 Lt. and 1292+00 Rt.
END AREAS FOR FILL ARE 0.91 Sq.Ft. LESS PER SIDE AND 2' SHORTER FOR SEEDING.
ROUNDING IS 8" WIDE.

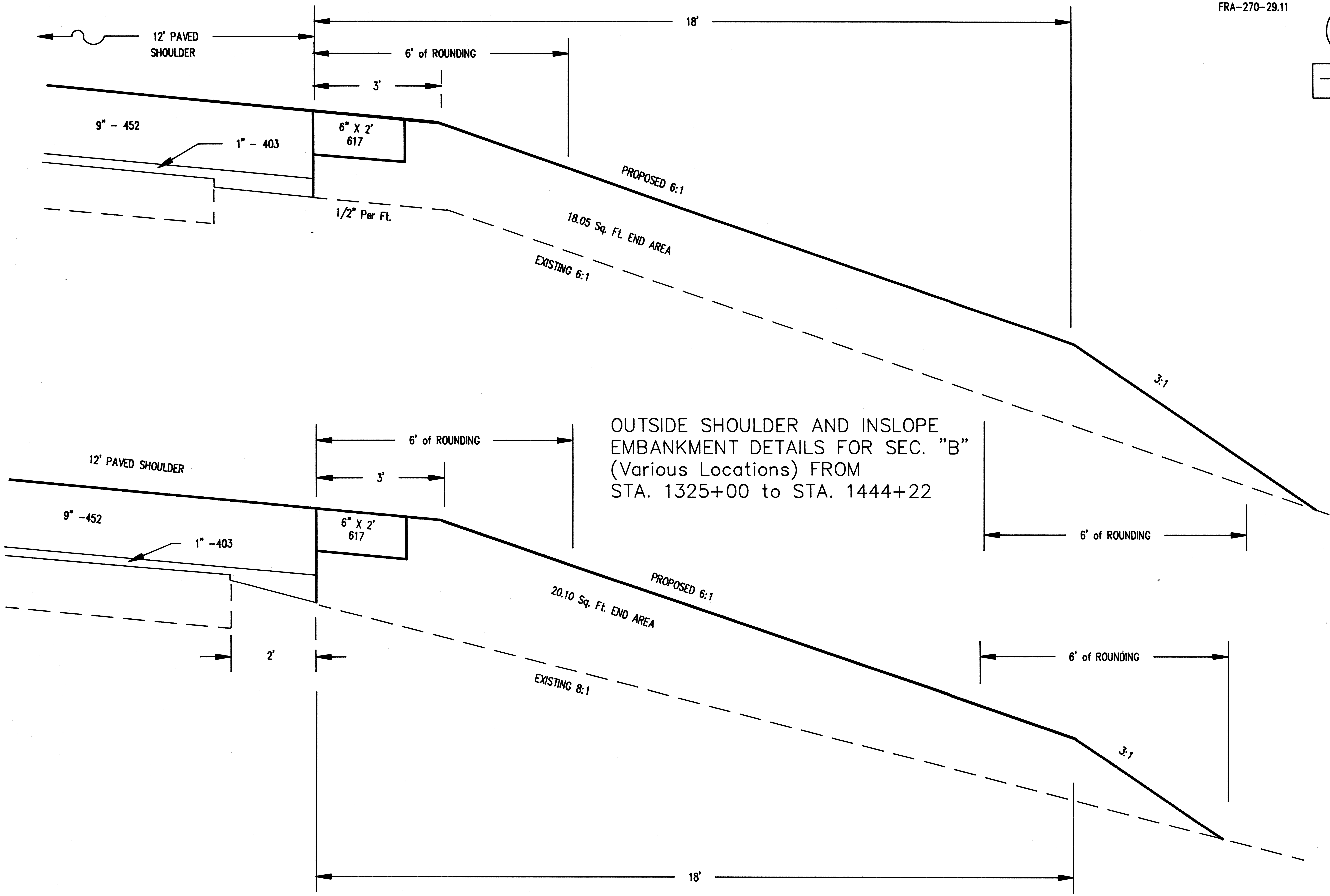
EMBANKMENT & EXCAVATION DETAILS SECTION "B"

MEDIAN SHOULDER AND INSLOPE EMBANKMENT DETAIL FOR SECTION "B" FROM STA. 1325+00 TO 1444+22

X'	FILL SQ. FT. END AREA
10.5'	14.78
13'	16.90
15'	18.48
17'	19.94
19'	21.17
21'	22.17

OUTSIDE SHOULDER, INSLOPE EMBANKMENT AND BACKSLOPE EXCAVATION DETAIL FOR SEC. "B" (Various Locations) FROM STA. 1325+00 to 1444+22

NOTE: ALL EMBANKMENT AND EXCAVATION QUANTITIES ARE FOR ESTIMATING PURPOSES ONLY – ALL WORK SHALL BE AS DIRECTED.



OUTSIDE SHOULDER AND INSLOPE EMBANKMENT DETAILS FOR SEC. "B" (Various Locations) FROM STA. 1325+00 to STA. 1444+22

ITEM 203 EMBANKMENT for Shoulders And Inslopes in Section "A" (5 1/2" Asphalt Overlay). See Embankment Details.

STATION	CUT SQ.FT. END AREA	FILL SQ.FT. END AREA	VOLUMES CUT CU.YD.	VOLUMES FILL CU.YD.
1188+19	—	26.92		
			—	4,667
1235+00	—	26.92		
			—	192
1237+00	—	24.86		
			—	189
1239+00	—	26.18		
			—	194
1241+00	—	26.18		
			—	109
1242+00	—	32.64		
			—	242
1244+00	—	32.64		
			—	101
1245+00	—	21.82		
			—	83
1246+00	—	22.96		
			—	98
1247+00	—	29.78		
			—	331
1250+00	—	29.78		
			—	105
1251+00	—	26.92		
			—	1,306
1264+10	—	26.92		
		RURAL PART 1		
		COLUMBUS PART 2		
1264+10	—	26.92		
			—	1,884
1283+00	—	26.92		
			—	110
1284+00	—	32.64		
			—	363
1287+00	—	32.64		
			—	106
1288+00	—	24.86		
			—	368
1292+00	—	24.86		
			—	177
1294+00	—	22.96		
			—	92
1295+00	—	26.92		
			—	100
1296+00	—	26.92		
			—	98
1297+00	—	26.22		
			—	558
1302+75	—	26.22		
		COLUMBUS PART 2		

QUANTITIES CONTINUED FROM LAST COLUMN

		RURAL PART 1		
1302+75	—	26.92		
			—	598
1308+75	—	26.92		
STRUCTURE FRA-270-3141 Rt. & Lt. @ SUNBURY RD.				
		RURAL PART 1		
		COLUMBUS PART 2		
1312+50	—	26.92		
			—	449
1317+00	—	26.92		
			—	92
1318+00	—	22.96		
			—	170
1320+00	—	22.96		
			—	85
1321+00	—	22.96		
			—	170
1323+00	—	22.96		
			—	310
1325+00	—	60.80		

SUMMARY OF ITEM 203 EMBANKMENT FOR SECTION "A"
TOTAL CARRIED TO GENERAL SUMMARY
RURAL (PART 1) =8,215 CU.YD.
COLUMBUS (PART 2) =5,132 CU.YD.

SECTION "A"

SECTION "B"

ITEM 203 EMBANKMENT for Shoulders and Inslopes And ITEM 203 EXCAVATION NOT INCLUDING EMBANKMENT CONTRUCTION in SECTION "B" (9" Concrete Overlay with 1" Asphalt Bond Breaker) See Embankment and Excation Details.

STATION	CUT SQ.FT. END AREA	FILL SQ.FT. END AREA	VOLUMES CUT CU.YD.	VOLUMES FILL CU.YD.
1325+00	—	60.80		
			—	901
1329+00	—	60.80		
			—	219
1330+00	—	57.53		
			—	217
1331+00	0	59.58		
			18	223
1332+00	9.48	60.65		
			35	217
1333+00	9.48	56.38		
			176	1,044
1338+00	9.48	56.38		
			35	221
1339+00	9.48	63.12		
			35	234
1340+00	9.48	63.12		
			26	231
1341+00	4.75	61.65		
			9	221
1342+00	0	57.80		
			0	2,569
1354+00	—	57.80		
			—	107
1355+00	—	0		

STATION	CUT SQ.FT. END AREA	FILL SQ.FT. END AREA	VOLUMES CUT CU.YD.	VOLUMES FILL CU.YD.
1355+00	—			
	STRUCTURE FRA-270-3227 Lt. & Rt. @ MORSE RD.			
1357+00	—	0		
			—	56
1357+50	—	60.80		
			—	3,716
1374+00	0	60.80		
			18	230
1375+00	9.48	63.28		
			53	218
1376+00	18.96	54.26		
			70	201
1377+00	18.96	54.26		
			53	211
1378+00	9.48	59.58		
			70	441
1380+00	9.48	59.58		
			18	231
1381+00	0	64.90		
			0	1,202
1386+00	0	64.90		
			18	231
1387+00	9.48	59.58		
			53	211
1388+00	18.96	54.26		
			632	1,809
1397+00	18.96	54.26		
			76	201
1398+00	22.00	54.26		
			652	1,608
1406+00	22.00	54.26		
			111	201
1407+00	38.00	54.26		
			174	201
1408+00	56.00	54.26		
			415	402
1410+00	56.00	54.26		
			200	201
1411+00	52.00	54.26		
			578	603
1414+00	52.00	54.26		
			200	201
1415+00	56.00	54.26		
			2,437	2,361
1426+75	56.00	54.26		
	▲ COLUMBUS PART 2 ▲			
	▼ GAHANNA PART 3 ▼			
1426+75	56.00	54.26		
			881	854
1431+00	56.00	54.26		
			215	201
1432+00	60.00	54.26		
			222	201
1433+00	60.00	54.26		
			259	201
1434+00	80.00	54.26		
			1,778	1,206
1440+00	80.00	54.26		
			625	424
1444+22	0	0		

ITEM 203 EMBANKMENT for Shoulders and Inslopes and
ITEM 203 EXCAVATION NOT INCLUDING EMBANKMENT CONSTRUCTION
in SECTION "B" (9" Concrete Overlay with 1" Asphalt
Bond Breakers) See Embankment and Excaation Detail

SUMMARY OF ITEM 203 EMBANKMENT AND ITEM 203
EXCAVATION NOT INCLUDING EMBANKMENT FOR SEC. "B"
TOTAL CARRIED TO GENERAL SUMMARY
COLUMBUS (PART 2) CUT =6,162
FILL =21,140
GAHANNA (PART 3) CUT =3,980
FILL =3,087

ITEM 659 – WATER M.GAL.
THE EQUATION FOR ESTIMATING M.GAL. OF WATER IS AS FOLLOWS
(Sq.Ft. of Seeding Area / 1,000) X 120 X 2 [For Watering Perm. Seeded Areas = GAL.

SEC. "A", PART 1 = 72,924 Sq.Yd. X 9 = 656,316 Sq.Ft.
(656,316 / 1,000) X 240 = 157,516 GAL. = 158 M.GAL

SEC. "A", PART 2 = 46,177 Sq.Yd. X 9 = 415,593 Sq.Ft.
(415,593 / 1,000) X 240 = 99,742 GAL. = 100 M.GAL.

SEC. "B", PART 2 = 129,927 Sq.Yd. X 9 = 1,169,343 Sq.Ft.
(1,169,343 / 1,000) X 240 = 280,642 GAL. = 281 M.GAL.

SEC."B", PART 3 = 35,328 Sq.Yd. X 9 = 317,952 Sq.Ft.
(317,952 / 1,000) X 240 = 76,308 GAL. = 76 M.GAL.

(TOTALS CARRIED TO GENERAL SUMMARY)

ITEM 659 – FERTILIZER – TON
THE EQUATION FOR ESTIMATING TONS OF FERTILIZER IS AS FOLLOWS
(Sq. Ft. of Seeding Area / 1,000) x 20 = Lbs.

SEC."A", PART 1
(656,316 / 1,000) X 20 = 13,126 Lbs. = 7 TON

SEC."A", PART 2
(415,593 / 1,000) X 20 = 8,312 Lbs. = 4 TON

SEC."B", PART 2
(1,169,343 / 1,000) X 20 = 23,387 Lbs. = 12 TON

SEC."B", PART 3
(317,952 / 1,000) X 20 = 6,359 Lbs. = 3 TON

(TOTALS CARRIED TO GENERAL SUMMARY)

NOTES: THE COST OF COMPACTION SHALL BE INCLUDED IN
THE UNIT PRICE BID FOR 203 EMBANKMENT AND WILL BE AS
DIRECTED.
MAINTAIN ALL EXISTING DITCH ELEVATIONS.
ALL QUANTITIES FOR 203 EMBANKMENT, 203 EXCAVATION
NOT INCLUDING EMBANKMENT CONSTRUCTION, AND 659
SEEDING AND MULCHING ARE FOR ESTIMATING PURPOSES
ONLY – ALL WORK SHALL BE AS DIRECTED

ITEM 659 - SEEDING AND MULCHING
Rt.& Lt. SIDE, SHOULDER AND DITCH SLOPE AREAS, AND MEDIAN AREAS.

Rt.& Lt. SIDE, SECTION "B", PART 2 (COLUMBUS)
1325+00 to 1330+00 =(500'x 46') ÷ 9 = 2,556 Sq.Yd.
1330+00 to 1340+00 =(1,000'x 55') ÷ 9 = 6,111 Sq.Yd.
1340+00 to 1347+00 =(700'x 43') ÷ 9 = 3,344 Sq.Yd.
1347+00 to 1355+00 =(800'x 46') ÷ 9 = 4,089 Sq.Yd.
STRUCTURE FRA - 270 - 3227 Rt. & Lt.
1357+00 to 1374+00 =(1,700'x 46') ÷ 9 = 8,689 Sq.Yd.
1374+00 to 1405+00 =(3,100'x 70') ÷ 9 = 24,111 Sq.Yd.
1405+00 to 1426+75 =(2,175'x 98') ÷ 9 = 23,683 Sq.Yd.
Rt.& Lt. SIDE TOTAL = 72,583 Sq.Yd.

MEDIAN AREAS, SEC."B", PART 2
1325+00 to 1355+00 =(3,000'x 52') ÷ 9 = 17,333 Sq.Yd.
STRUCTURE FRA - 270 - 3227 Rt. & Lt.
1357+50 to 1426+75 =(6,925'x 52') ÷ 9 = 40,011 Sq.Yd.
MEDIAN TOTAL = 57,344 Sq.Yd.
TOTAL SEEDING AND MULCHING AREA FOR
SECTION "B", PART 2 =129,927 Sq.Yd.

Rt.& Lt. SIDE, SECTION "B", PART 3 (GAHANNA)
1426+75 to 1444+22 =(1,747'x130') ÷ 9 = 25,234 Sq.Yd.

MEDIAN AREAS, SEC."B", PART 3
1426+75 to 1444+22 =(1,747'x 52') ÷ 9 = 10,094 Sq.Yd.
TOTAL SEEDING AND MULCHING AREA FOR
SECTION "B", PART 3 = 35,328 Sq.Yd.

(TOTALS CARRIED TO GENERAL SUMMARY)

ITEM 659 - SEEDING AND MULCHING
Rt.& Lt. SIDE, SHOULDER AND DITCH SLOPE AREAS, AND MEDIAN AREAS.

Rt.& Lt. SIDE, SECTION "A", PART 1 (RURAL)
1188+19 to 1236+00 =(4,781'x 26') ÷ 9 = 13,812 Sq.Yd.
1236+00 to 1242+00 =(600'x 38') ÷ 9 = 2,533 Sq.Yd.
1242+00 to 1244+00 =(200'x 50') ÷ 9 = 1,111 Sq.Yd.
1244+00 to 1250+00 =(600'x 38') ÷ 9 = 2,533 Sq.Yd.
1250+00 to 1264+00 =(1,400'x 26') ÷ 9 = 4,044 Sq.Yd.
1302+75 to 1309+00 =(625'x 24') ÷ 9 = 1,667 Sq.Yd.
STRUCTURE FRA - 270 - 3141 Rt. & Lt.
1311+00 to 1311+70 =(70'x 24') ÷ 9 = 187 Sq.Yd.
Rt.& Lt. SIDE TOTAL = 25,887 Sq.Yd.

MEDIAN AREAS, SEC."A", PART 1
1188+19 to 1223+50 =(3,531'x 52') ÷ 9 = 20,401 Sq.Yd.
MEDIAN CROSSOVER
1224+00 to 1264+10 =(4,010'x 52') ÷ 9 = 23,169 Sq.Yd.
1302+75 to 1308+75 =(600'x 52') ÷ 9 = 3,467 Sq.Yd.
MEDIAN TOTAL = 47,037 Sq.Yd.
TOTAL SEEDING AND MULCHING AREA FOR
SECTION "A", PART 1 = 72,924 Sq.Yd.

Rt.& Lt. SIDE, SECTION "A", PART 2 (COLUMBUS)
1264+10 to 1284+00 =(1,990'x 26') ÷ 9 = 5,749 Sq.Yd.
1284+00 to 1288+00 =(400'x 50') ÷ 9 = 2,222 Sq.Yd.
1288+00 to 1296+00 =(800'x 30') ÷ 9 = 2,667 Sq.Yd.
1296+00 to 1302+75 =(675'x 24') ÷ 9 = 1,800 Sq.Yd.
1311+70 to 1318+00 =(630'x 24') ÷ 9 = 1,680 Sq.Yd.
1318+00 to 1325+00 =(700'x 30') ÷ 9 = 2,333 Sq.Yd.
Rt.& Lt. SIDE TOTAL = 16,451 Sq.Yd.

MEDIAN AREAS, SEC."A", PART 2
1264+10 to 1301+75 =(3,765'x 52') ÷ 9 = 21,753 Sq.Yd.
MEDIAN CROSSOVER
1302+25 to 1302+75 =(50'x 52') ÷ 9 = 289 Sq.Yd.
1311+70 to 1325+00 =(1,330'x 52') ÷ 9 = 7,684 Sq.Yd.
MEDIAN TOTAL = 29,726 Sq.Yd.
TOTAL SEEDING AND MULCHING AREA FOR
SECTION "A", PART 2 = 46,177 Sq.Yd.

(TOTALS CARRIED TO GENERAL SUMMARY)

SHOULDER EXCAVATION & LINEAR GRADING

ITEM 203 - Excavation not Including Embankment Construction, as per plan

This item shall consist of excavating the existing berms as specified under 203 and in a manner that will not damage or undermine the adjoining pavement. In addition, removal of the existing flexible berms will be included under this item.

Payment will be made under:

ITEM	UNIT	DESCRIPTION
203	Cu. Yd.	Excavation not including embankment construction, as per plan

For Northbound outside shoulder:

Pt. 2-B:	Sta. 1444+22 to 1452+00 =	778' x 12' wide x 12" deep =	346 Cu. Yd.
Pt. 3-B:	Sta. 1339+85 to 1444+22 =	437' x 12' wide x 6" avg. =	97 Cu. Yd.
Pt. 1-C:	Sta. 1472+70 to 1487+71 =	1501' x 10' wide x 12" deep =	556 Cu. Yd.
	1487+71 to 1531+36 =	4365' x 12' wide x 12" deep =	1940 Cu. Yd.
		Total =	2496 Cu. Yd.
Pt. 2-C:	Sta. 1452+00 to 1453+15 =	115' x 11' avg. x 12" deep =	47 Cu. Yd.
	1453+15 to 1466+07 =	1292' x 10' wide x 12" deep =	479 Cu. Yd.
		Total =	526 Cu. Yd.
Pt. 3-C:	Sta. 1466+07 to 1472+70 =	663' x 10' wide x 12" deep =	246 Cu. Yd.
	1531+36 to 1549+30 =	1794' x 12' wide x 12" deep =	797 Cu. Yd.
	1549+30 to 1598+39 =	4909' x 10' wide x 12" deep =	1818 Cu. Yd.
	1598+39 to 1599+35 =	96' x 9' avg. x 12" deep =	32 Cu. Yd.
	1599+35 to 1601+86 =	251' x 8' wide x 12" deep =	74 Cu. Yd.
		Total =	2967 Cu. Yd.

For Northbound inside shoulder:

Pt. 2-B:	Sta. 1444+22 to 1452+00 =	778' x 4' wide x 12" deep =	115 Cu. Yd.
Pt. 3-B:	Sta. 1339+85 to 1444+22 =	437' x 4' wide x 6" avg. =	32 Cu. Yd.
Pt. 1-C:	Sta. 1472+70 to 1531+36 =	5866' x 4' wide x 12" deep =	869 Cu. Yd.
Pt. 2-C:	Sta. 1452+00 to 1466+07 =	1407' x 4' wide x 12" deep =	208 Cu. Yd.
Pt. 3-C:	Sta. 1466+07 to 1472+00 =	663' x 4' wide x 12" deep =	98 Cu. Yd.
	1531+36 to 1548+30 =	1694' x 4' wide x 12" deep =	251 Cu. Yd.
	1548+30 to 1549+30 =	100' x 7' avg. x 12" deep =	26 Cu. Yd.
	1549+30 to 1601+86 =	5256' x 10' wide x 12" deep =	1947 Cu. Yd.
		Total =	2322 Cu. Yd.

For Southbound inside shoulder:

Pt. 2-B:	Sta. 1444+22 to 1452+00 =	778' x 4' wide x 12" deep =	115 Cu. Yd.
Pt. 3-B:	Sta. 1339+85 to 1444+22 =	437' x 4' wide x 6" avg. =	32 Cu. Yd.
Pt. 1-C:	Sta. 1472+00 to 1528+99 =	5629' x 4' wide x 12" deep =	834 Cu. Yd.
	1528+99 to 1529+99 =	100' x 7' avg. x 12" deep =	26 Cu. Yd.
	1529+99 to 1531+36 =	137' x 10' wide x 12" deep =	51 Cu. Yd.
		Total =	911 Cu. Yd.
Pt. 2-C:	Sta. 1452+00 to 1466+07 =	1407' x 4' wide x 12" deep =	208 Cu. Yd.
Pt. 3-C:	Sta. 1466+07 to 1472+70 =	663' x 4' wide x 12" deep =	98 Cu. Yd.
	1531+36 to 1601+86 =	7050' x 10' wide x 12" deep =	2611 Cu. Yd.
		Total =	2709 Cu. Yd.

Excavation, Not Including Embankment Construction, as per plan - Totals

	Pt. 2-B	Pt. 3-B	Pt. 1-C	Pt. 2-C	Pt. 3-C
NB Outside Shoulder	346	97	2496	526	2967
NB Inside Shoulder	115	32	869	208	2322
SB Inside Shoulder	115	32	911	208	2709
Sub-Totals	576	161	4276	942	7998
Totals from pg. 53,54 & 55	2868	518	855	417	25
Total	3444	679	5131	1359	8023

Quantities carried to General Summary.

ITEM 203 - Linear Grading (for widening of NB outside shoulder)
ITEM 301 - Bituminous Aggregate Base (for widening of NB outside shoulder)

Part 1-A: Sta. 1302+75 to 1309+86 = 711'
Sta. 1311+36 to 1311+70 = 34'
Linear Grading Total = 745' = 7 Sta.

ITEM 301 - 745' x 2' wide x 6" deep = 28 Cu. Yd.
Total from page 43 = 7895 " "
(Pg.61) Joint Repair Total = 182 " "
Total = 8105 Cu. Yd.

Part 2-A: Sta. 1283+50 to 1302+75 = 1925'
Sta. 1311+70 to 1325+00 = 1330'
Linear Grading Total = 3255' = 33 Sta.

ITEM 301 - 3255' x 2' wide x 6" deep = 121 Cu. Yd.
Total from page 43 = 5126 " "
(Pg 61) Joint Repair Total = 142 " "
Total = 5389 Cu. Yd.

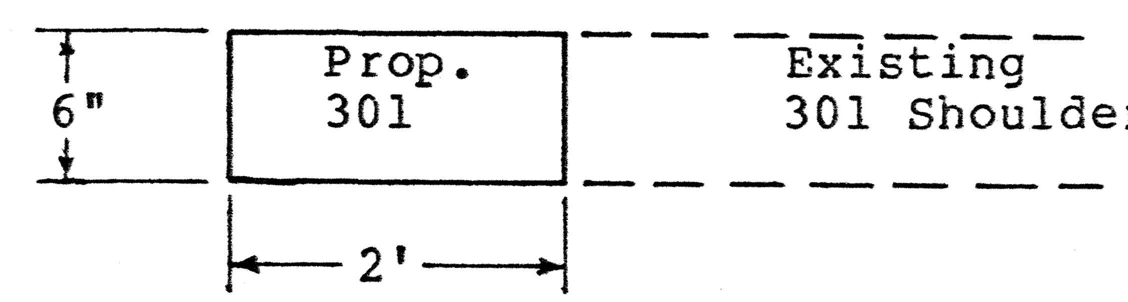
Part 2-B: Sta. 1325+00 to 1332+92 = 792'
Sta. 1347+08 to 1355+31 = 823'
Sta. 1358+15 to 1367+93 = 978'
Sta. 1375+00 to 1426+75 = 5175'
Linear Grading Total = 7768' = 78 Sta.

ITEM 301 - 7768' x 2' wide x 6" wide = 288 Cu. Yd.
Total from page 44 = 3916 " "
Total = 4204 Cu. Yd.

Part 3-B: Sta. 1426+75 to 1439+85 = 1310' = 13 Sta.

ITEM 301 - 1310' x 2' wide x 6" deep = 49 Cu. Yd.
Total from page 44 = 1896 " "
Total = 1945 Cu. Yd.

Linear Grading and 301 quantities carried to the General Summary.



SHOULDER WIDENING DETAIL

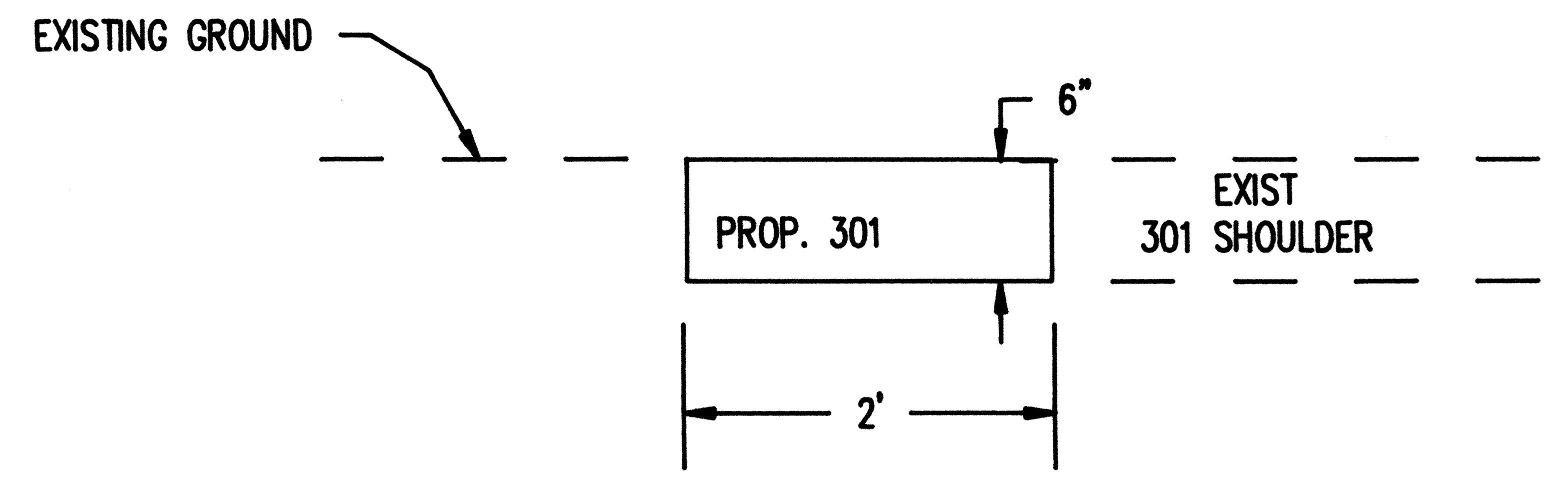
SHOULDER WIDENING QUANTITIES & DETAILS

PART	LOCATION	LENGTH (FT.)	WIDTH (FT.)	DEPTH (FT.)	CU. FT.	301 BITUM. AGGR. BASE CU.YD.	203 LINEAR GRADING STA.
1-A	MAINLINE STA. 1302+75-1309+86	711	2	.5	711		
	MAINLINE STA. 1311+36-1311+70	34	2	.5	34		
	RAMP A STA. 1251+12-1268+70	1758	3	.75	3956		
	RAMP B STA. 1249+12-1260+35	1123	3	.75	2527		
	RAMP G STA. 1250+56-1267+74	1718	3	.75	3866		
	RAMP H STA. 1248+38-1259+75	1137	3	.75	2558		
	SUB-TOTAL	6481			13652	506	65
	TOTAL FROM PAGE 43					7899	
	TOTAL FROM PAGE 61					182	
1-A	TOTAL					8587	65
2-A	MAINLINE STA. 1283+50-1302+75	1925	2	.5	1925		
	MAINLINE STA. 1311+70-1325+00	1330	2	.5	1330		
	RAMP C STA. 1258+50-1276+47	1797	3	.75	4043		
	RAMP D STA. 1267+21-1278+55	1134	3	.75	2552		
	RAMP E STA. 1259+14-1276+82	1768	3	.75	3978		
	RAMP F STA. 1266+58-1277+92	1134	3	.75	2552		
	SUB-TOTAL	9088			16380	607	91
	TOTAL FROM PAGE 43					5130	
	TOTAL FROM PAGE 61					142	
2-A	TOTAL					5879	91
2-B	MAINLINE STA. 1325+00-1332+92	792	2	.5	792		
	MAINLINE STA. 1347+08-1355+31	823	2	.5	823		
	MAINLINE STA. 1358+15-1367+93	978	2	.5	978		
	MAINLINE STA. 1375+00-1426+75	5175	2	.5	5175		
	RAMP I STA. 1347+08-1358+97	1189	3	.75	2675		
	RAMP J STA. 1356+80-1367+91	1111	3	.75	2500		
	RAMP K STA. 1351+88-1365+35	1519	3	.75	3418		
	RAMP L STA. 1346+05-1355+40	935	3	.75	2104		
	SUB-TOTAL	12522			18,465	684	125
	TOTAL FROM PAGE 44					3960	
2-B	TOTAL					4644	125
3-B	MAINLINE STA. 1426+75-1439+85	1310	2	.5	1310	49	13
	TOTAL FROM PAGE 44					1896	
3-B	TOTAL					1945	13
1-C	RAMP M STA. 1495+29-1507+54	1225	3	.92	3369		
	RAMP N STA. 1530+12-1531+36	124	3	.92	341		
	RAMP O STA. 1517+75-1527+68	993	3	.92	2731		
	RAMP P STA. 1486+35-1495+35	900	3	.92	2475		
	RAMP R STA. 1513+65-1524+51	1086	3	.92	2987		
	RAMP S STA. 1495+99-1517+50	2151	3	.92	5915		
	RAMP T STA. 1494+01-1506+72	1271	3	.92	3495		
	SUB-TOTAL	7750			21,313	789	78
	(CONTINUE TO NEXT COLUMN)						

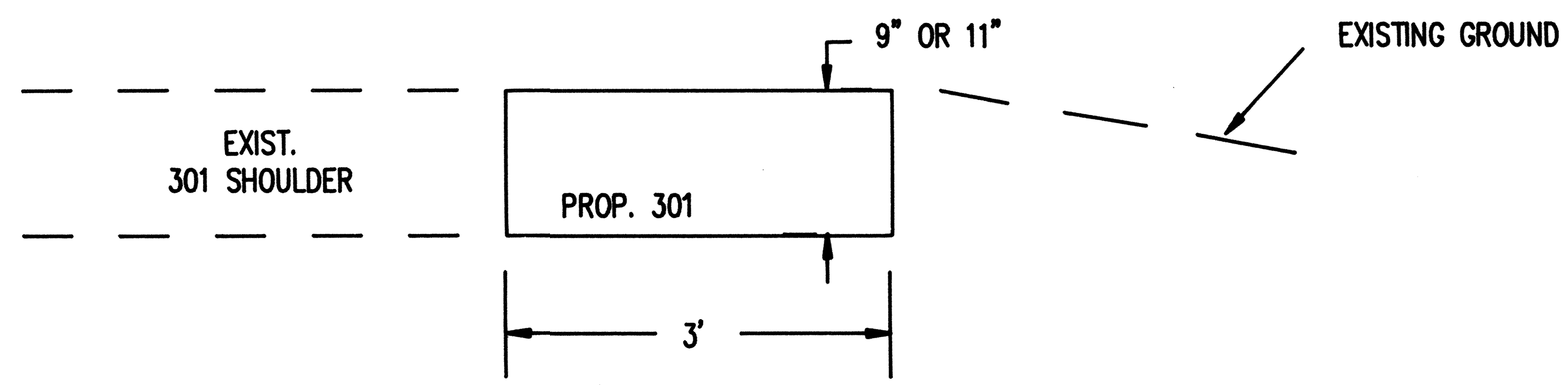
PART	LOCATION	LENGTH (FT.)	WIDTH (FT.)	DEPTH (FT.)	CU. FT.	301 BITUM. AGGR. BASE CU.YD.	203 LINEAR GRADING STA.
	TOTAL FROM PAGE 44					20,710	
1-C	TOTAL					21,499	78
3-C	RAMP N STA. 1531+36-1537+93	657	3	.92	1807	67	7
	TOTAL FROM PAGE 44					32,232	
3-C	TOTAL					32,299	7

QUANTITIES CARRIED TO THE GENERAL SUMMARY

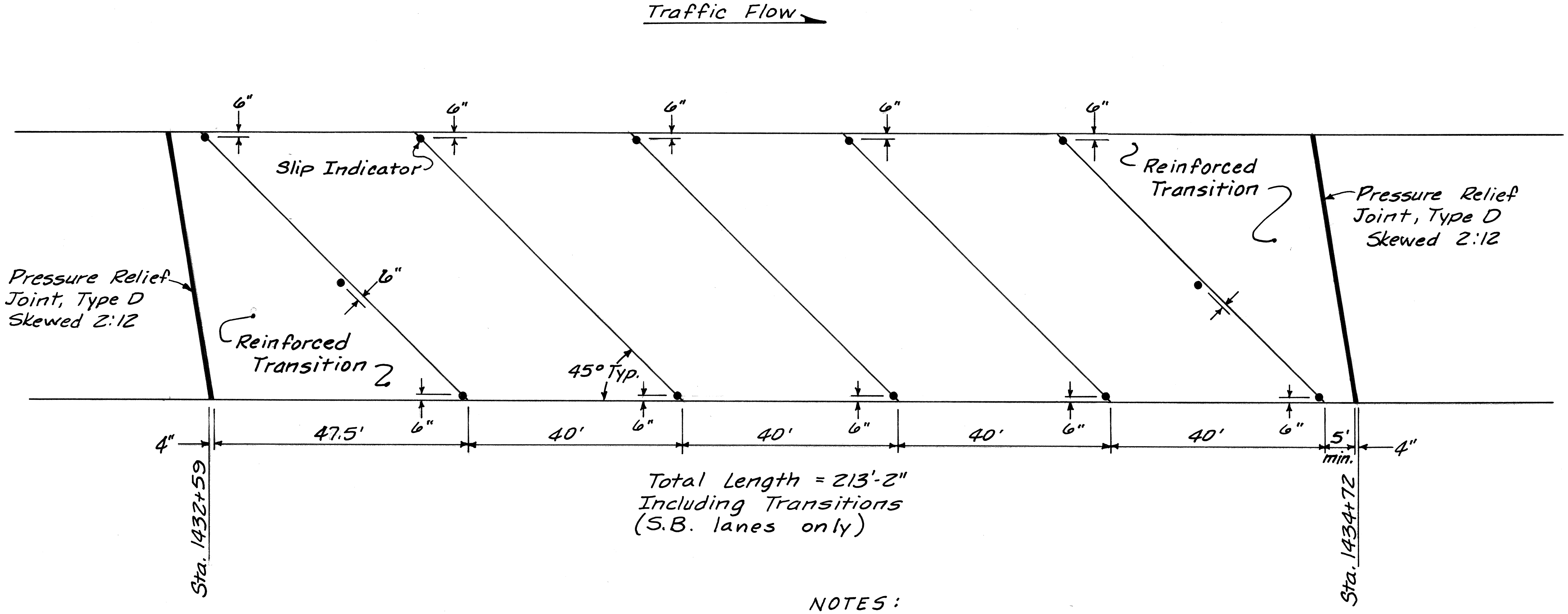
MAINLINE SHOULDER WIDENING DETAIL (FOR N B OUTSIDE SHOULDER)



RAMP SHOULDER WIDENING DETAIL (SEE TYPICAL SECTIONS ON SHEET NO. 7)



ITEM 451 - 9" Reinforced Concrete Pavement, as per plan
(Miller Transverse Joints)



NOTES:

1. Traffic lanes shall have reinforcing steel installed. Reinforcing steel shall be installed so it overlaps dowel ends of the Miller Joint, by 3 to 4 inches.

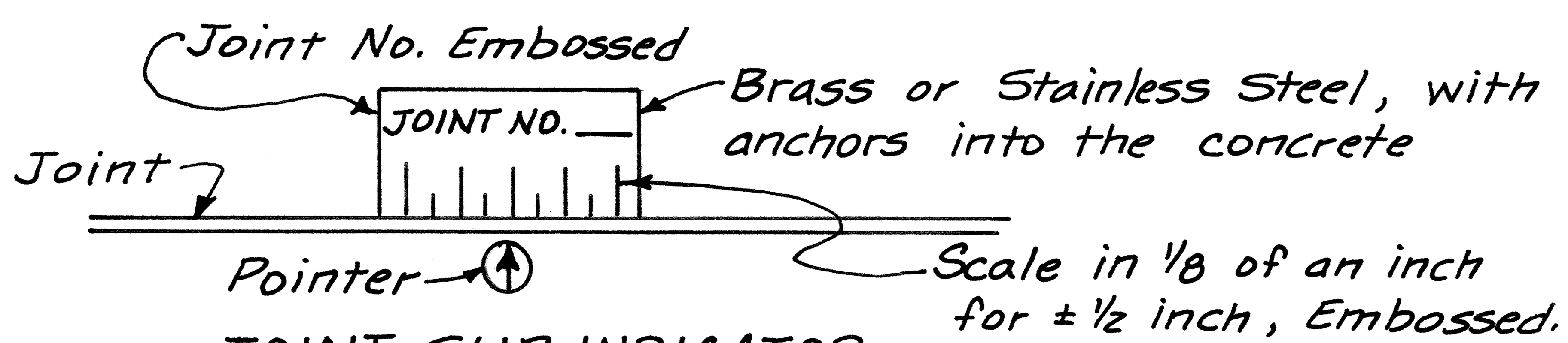
2. Transition sections at beginning and end of the trial installation shall have traffic lanes reinforced with steel.

3. Isolate trial installation from regular concrete overlay. with Standard Type D Pressure Relief Joint, skewed 2:12 as shown on layout.

4. Miller Joint shall be installed at 45° to the traffic flow, from outside to outside of opposite shoulders.

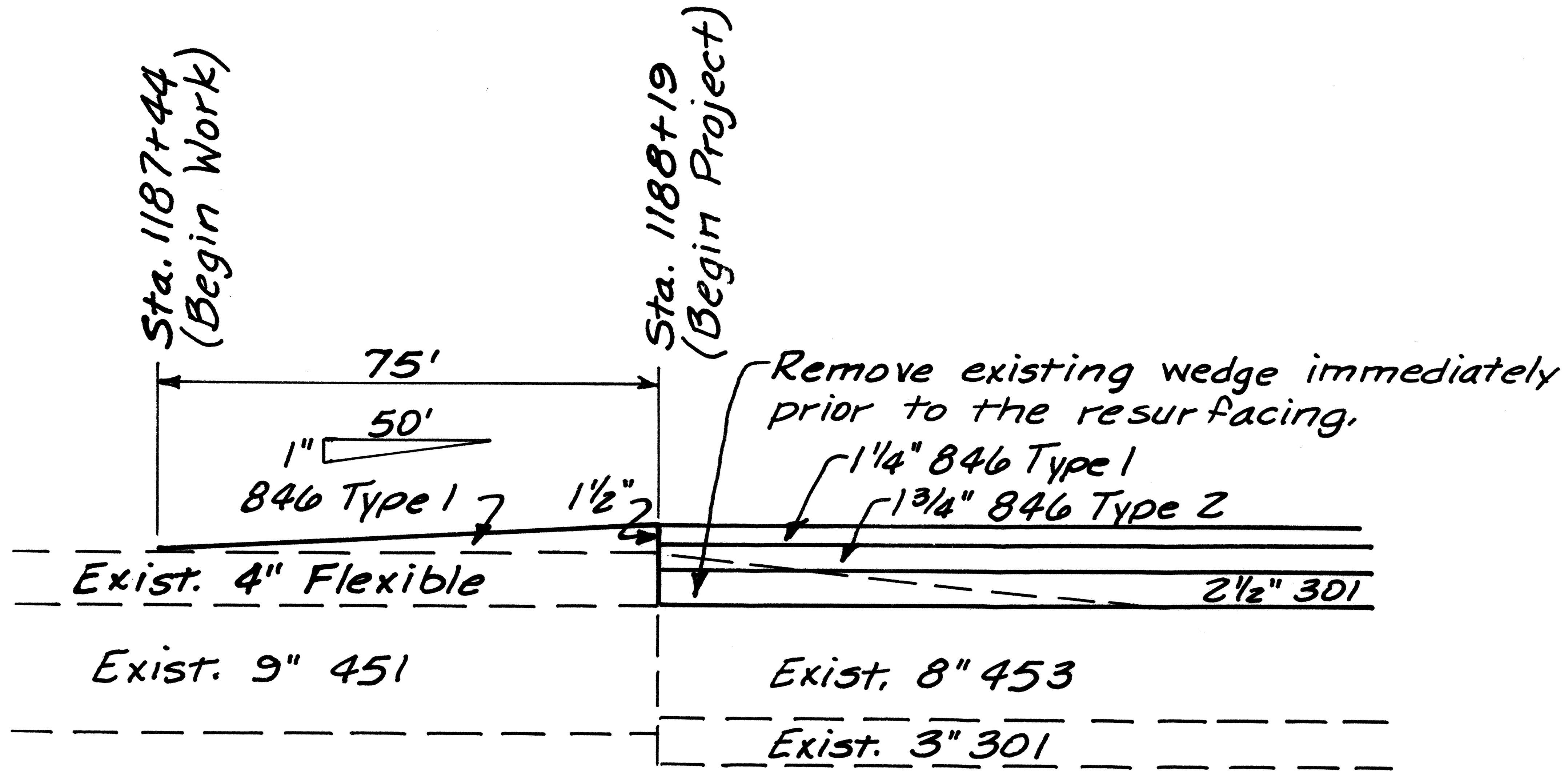
5. Install Miller Joint so concrete grade is 1/8 to 1/4 inch above the joint.

6. Install Slip Joint Indicators to moniter pavement movement along Miller Joint. Indicators will be embedded in the concrete at specified locations, by others.

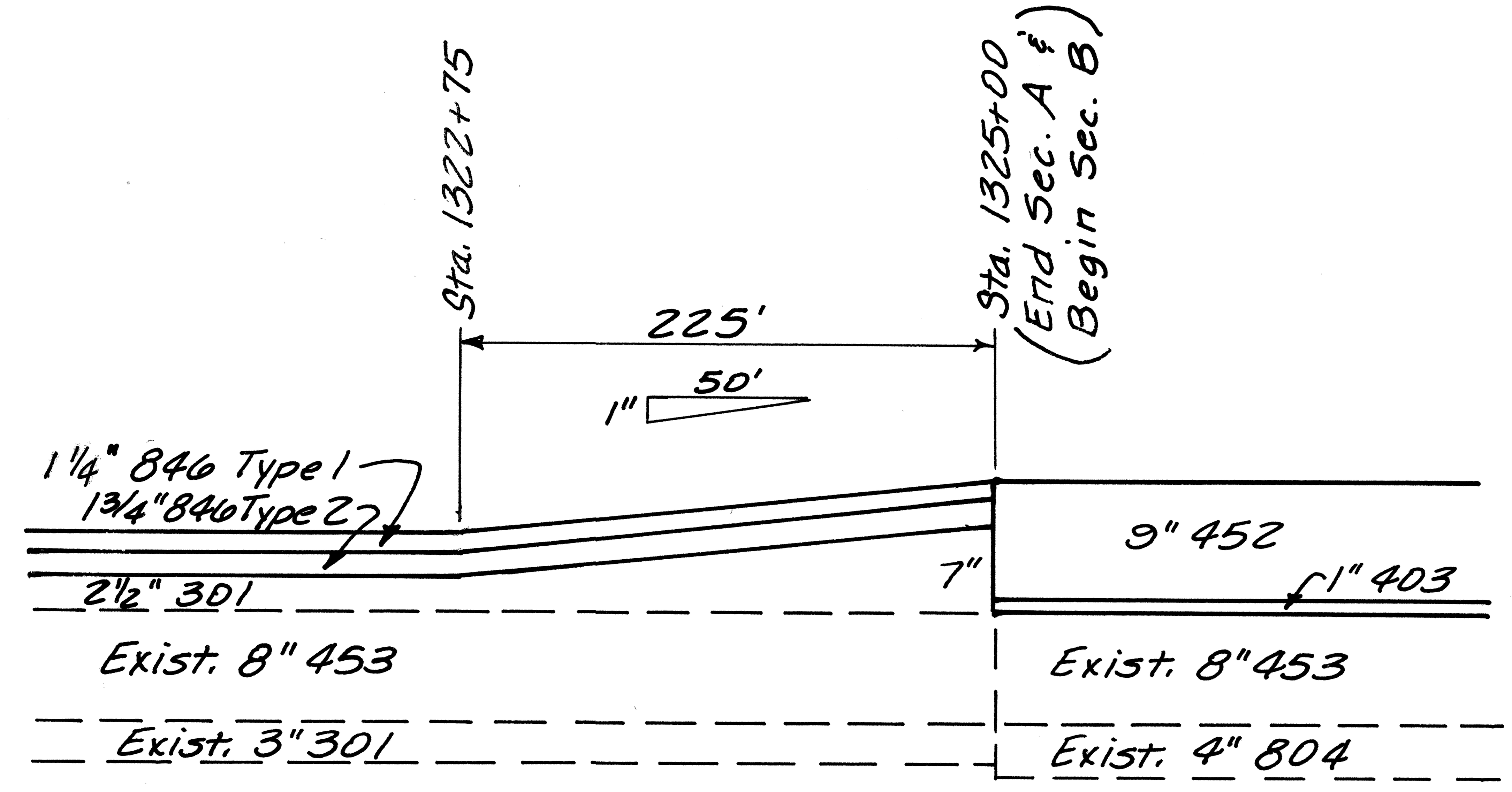


JOINT SLIP INDICATOR
(Total of 12)

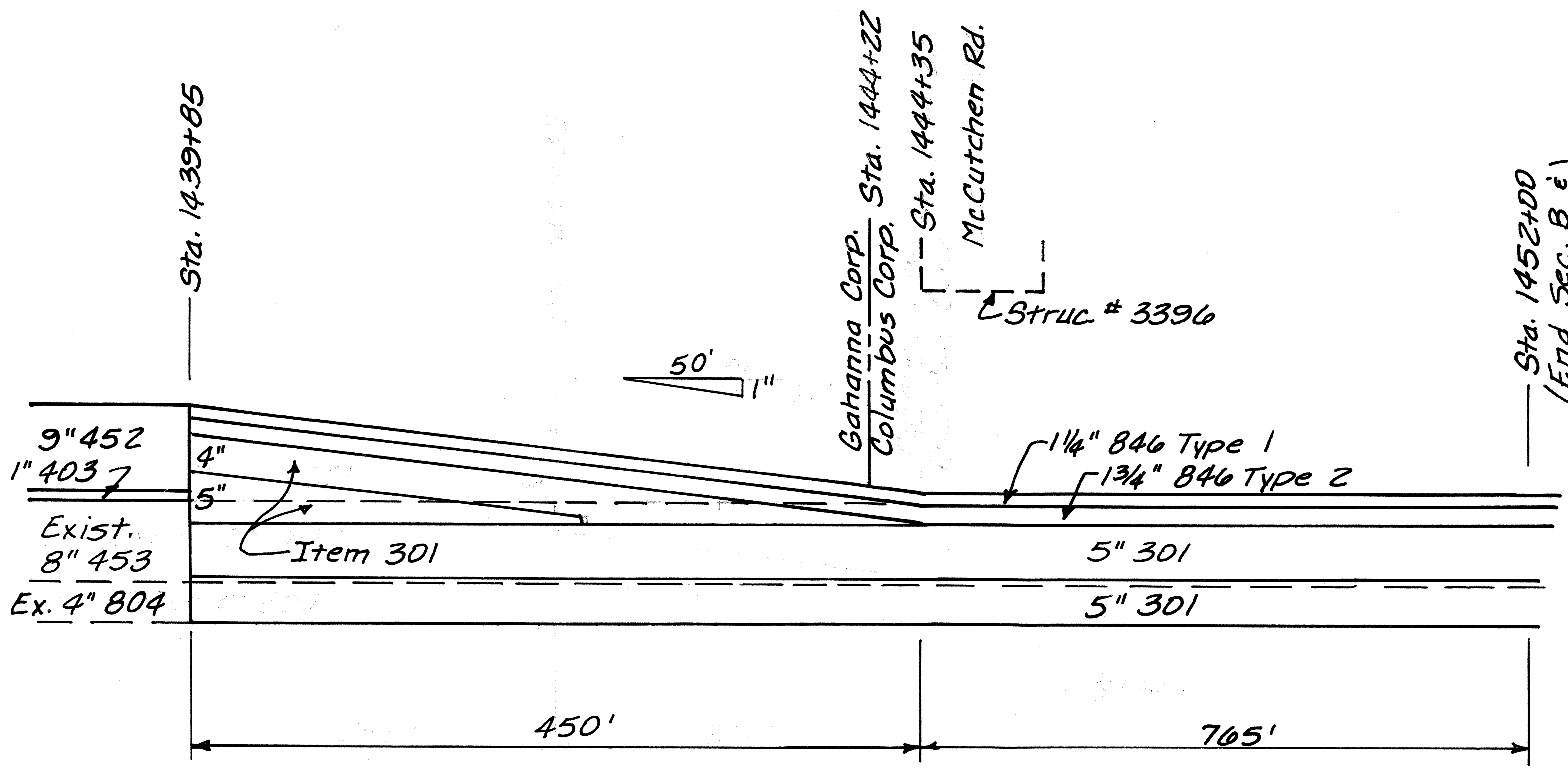
PAVING DETAILS



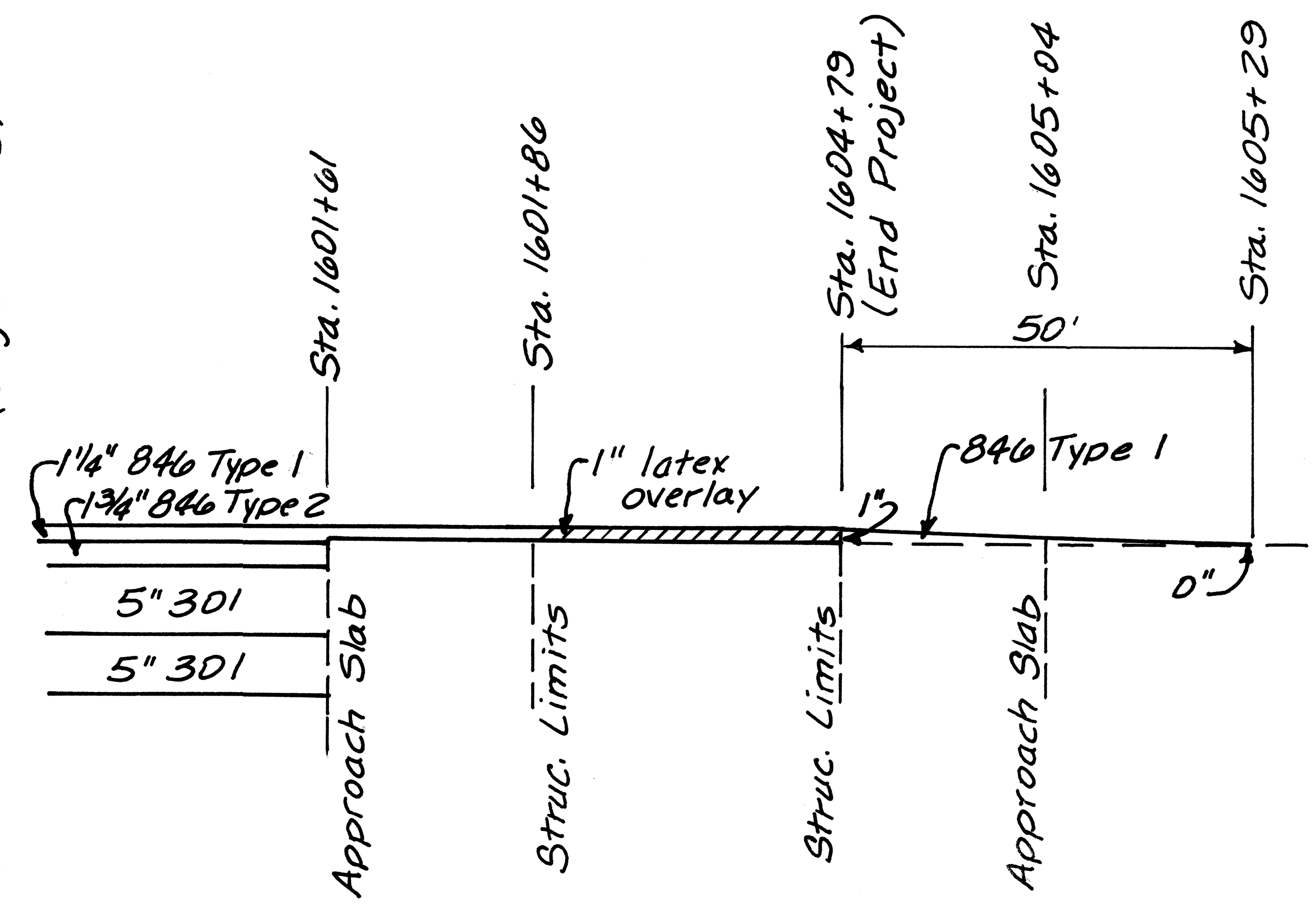
DETAIL AT BEGIN PROJECT



DETAIL AT TRANSITION FROM ASPHALT OVERLAY (Sec. A) TO CONCRETE OVERLAY (Sec. B)

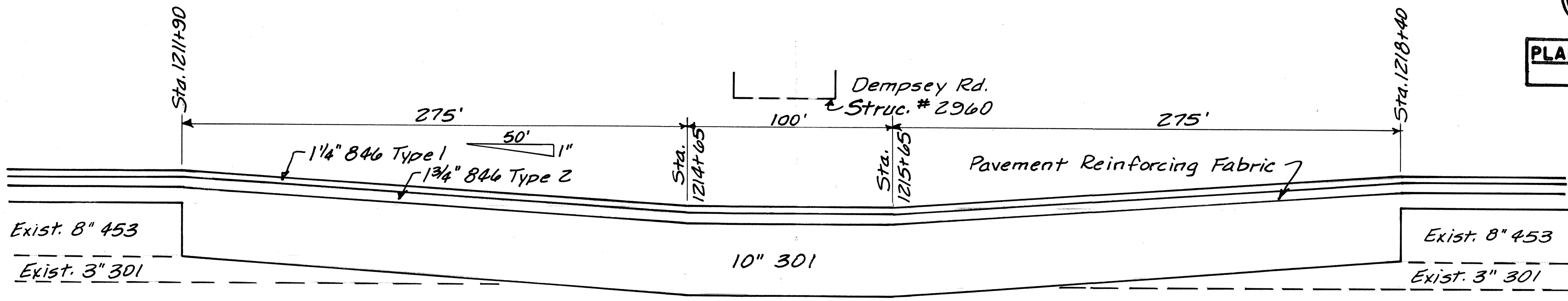


DETAIL AT TRANSITION FROM CONC. OVERLAY (Sec. B) TO FULL DEPTH REPLACEMENT

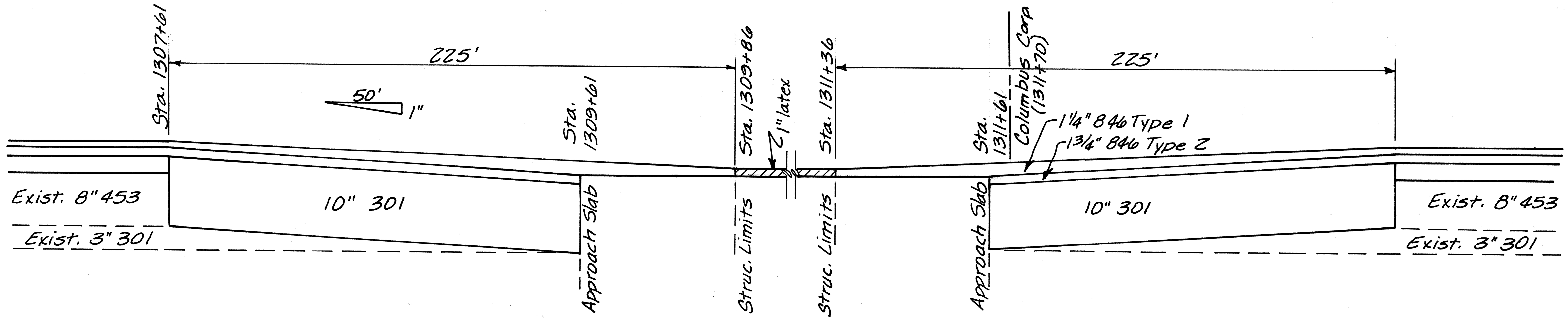


DETAIL AT STRUC. # 3694 AND END PROJECT

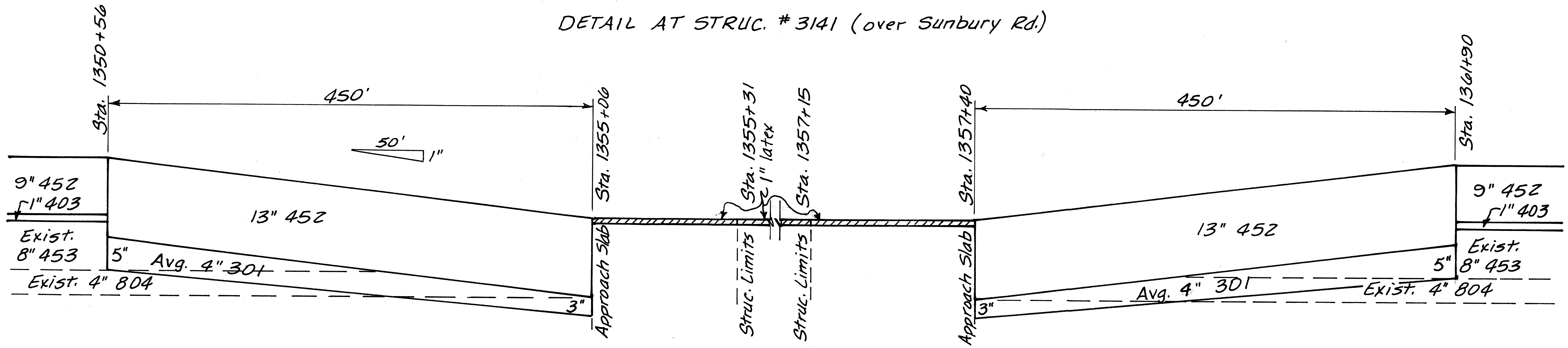
PAVING AT STRUCTURES DETAILS



DETAIL UNDER STRUC. # 2960 L (Demsey Rd.)

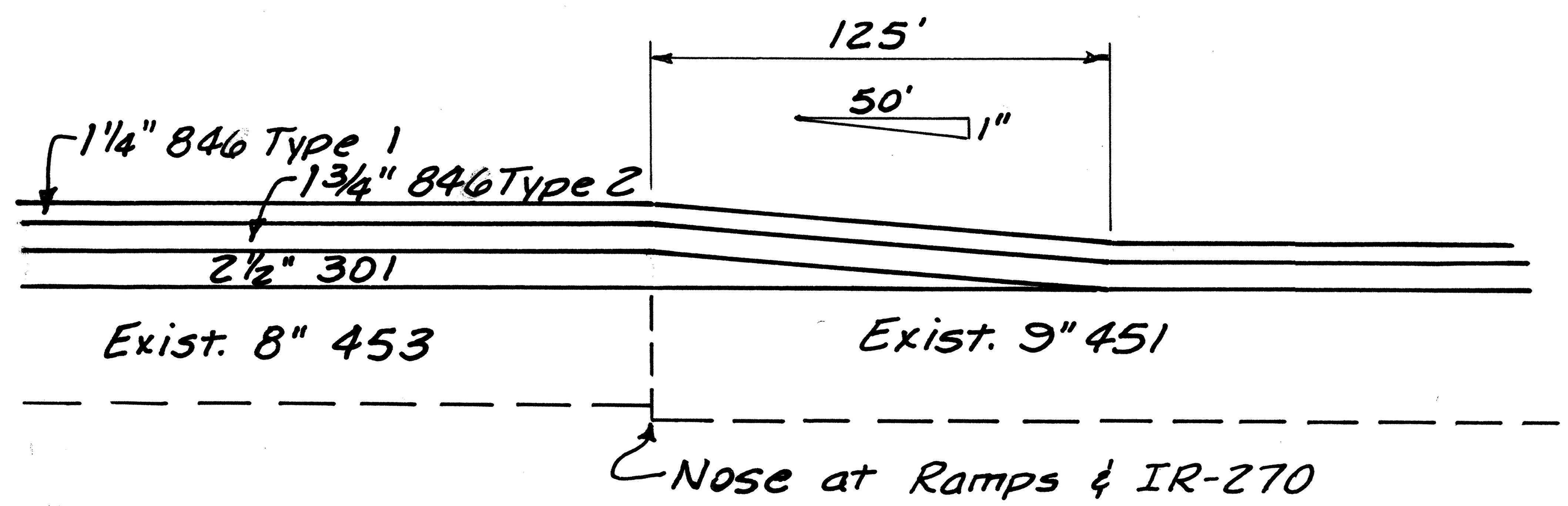


DETAIL AT STRUC. # 3141 (over Sunbury Rd.)

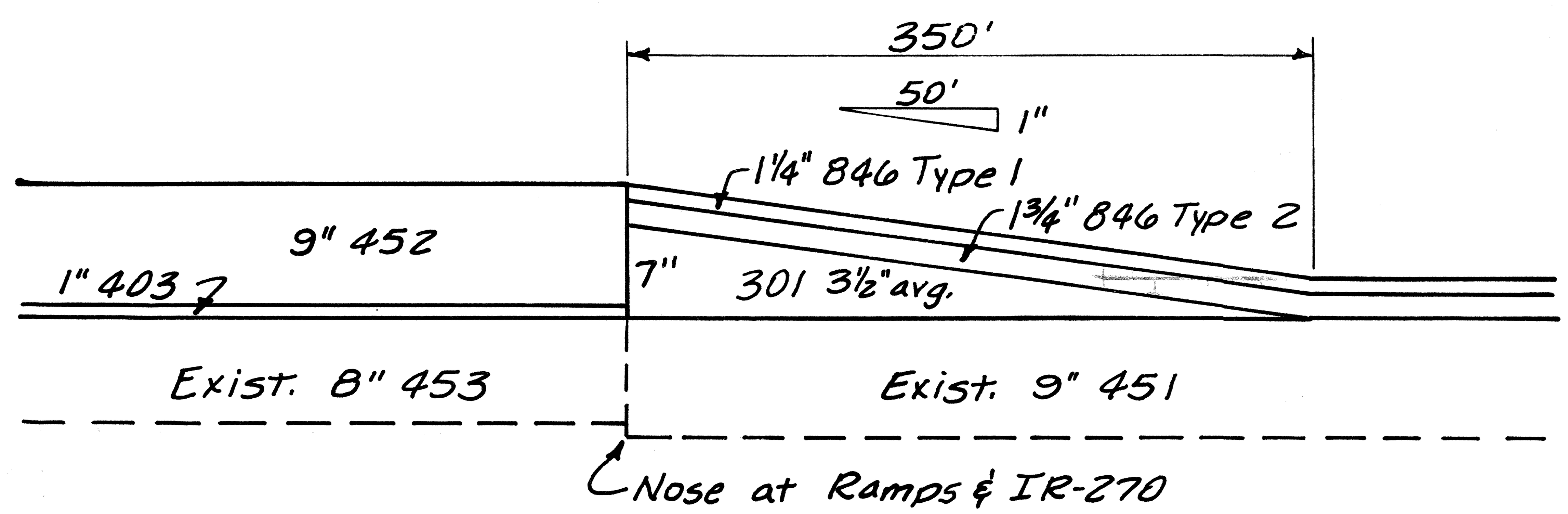


DETAIL AT STRUC. # 3227 (over Morse Rd.)

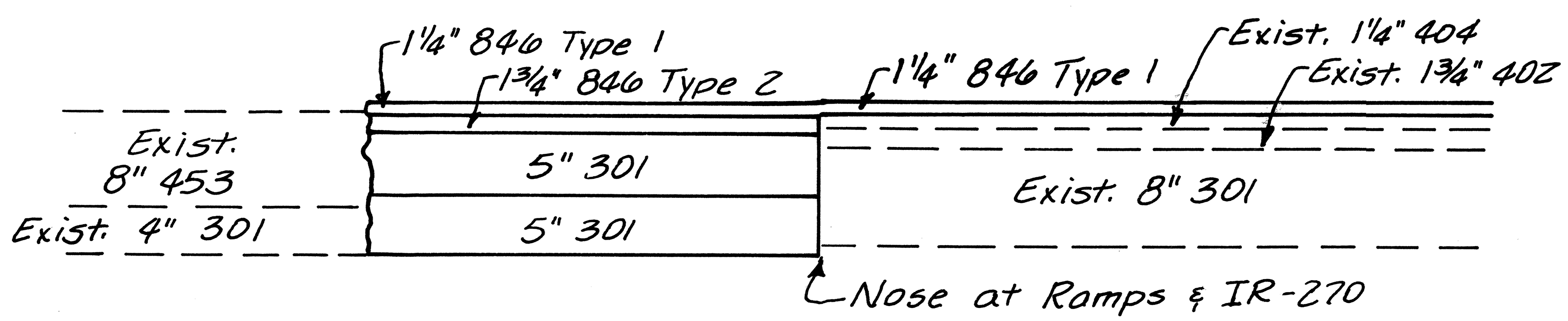
RAMP PAVING DETAILS



SECTION A FEATHERING AT RAMPS

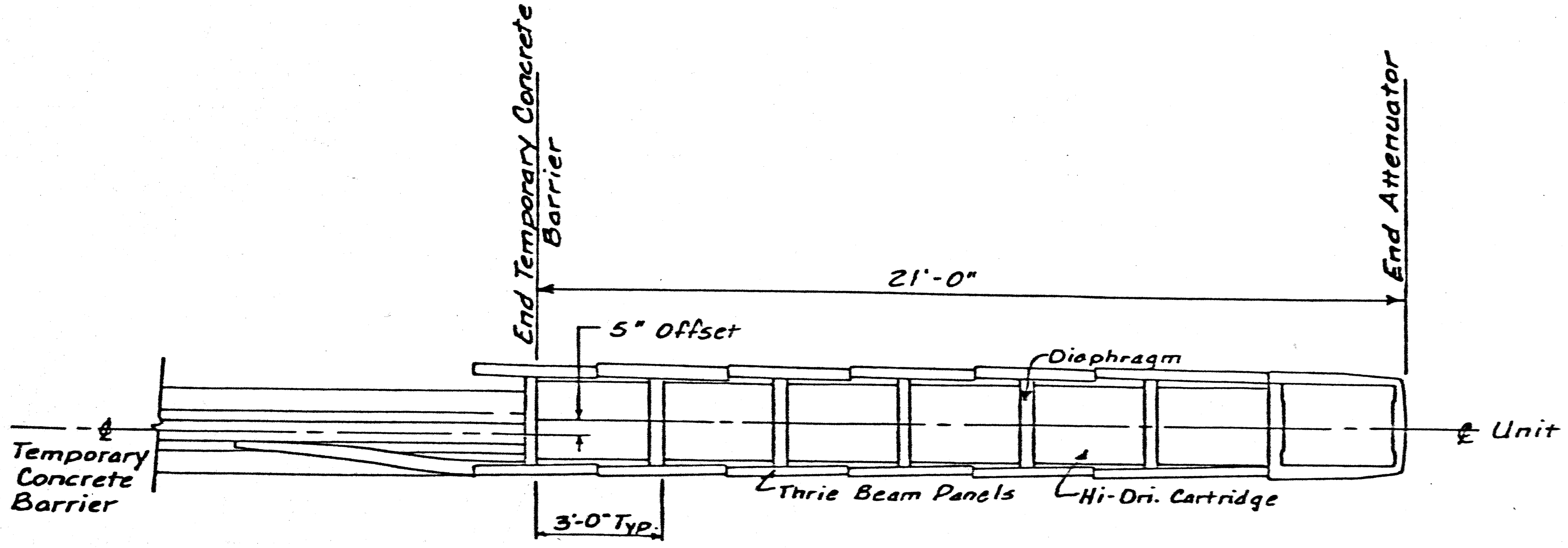


SECTION B FEATHERING AT RAMPS



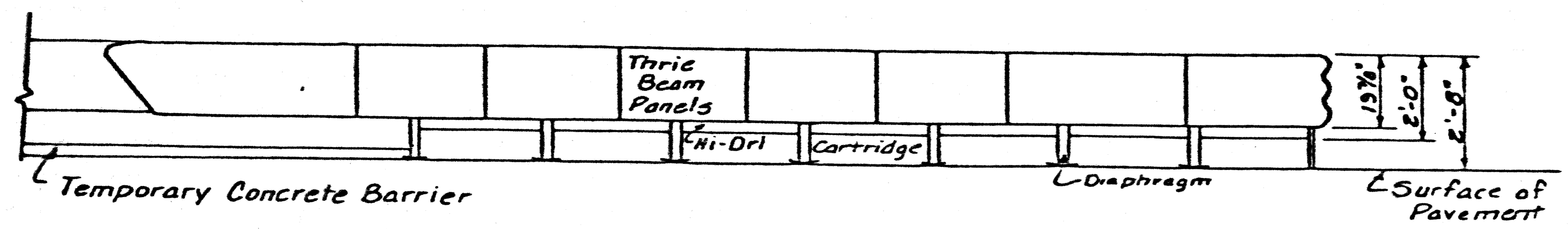
SECTION C AT RAMPS

G.R.E.A.T. ATTENUATOR DETAILS



PLAN

Scale
0 6" 1' 2' 3' 4'



ELEVATION

<u>ITEM SPECIAL - G.R.E.A.T. Attenuator</u>

This work shall consist of providing, maintaining, and subsequently removing an impact attenuator unit and accessories supplied by Energy Absorption Systems Inc., IBM Plaza, Chicago, Illinois 60611, placed in accordance with the manufacturer's specifications and plan detail sheets and in reasonably closs conformity with the lines, grades, thicknesses, and Typical Sections shown on the plans or as established by the Engineer.

The nose of the attenuator shall be marked with three evenly spaced 4" horizontal stripes of white reflective material. The fender panels shall be marked with white reflective material in 2 vertical stripes 4" in width. The center of the first stripe shall be located 8" from the rear edge of each panel and the center of the second stripe shall be located 2'11" from the rear edge of each panel. The unit shall be bi-directional and is identified as model number 206206NF6Gcz with transition panel.

In addition to the quantities listed in the General Summary, at least one additional complete unit shall be on hand at all times to replace damaged units. In any case, when a unit is damaged it shall be repaired or replaced within 12 hours. This additional attenuator will be included in the contract unit price bid per each installed and removed device under this item.

PLAN NO. R.P.M.

DETAIL	S.C.D. T.C. 65.10
1	MULTILANE UNDIVIDED
GAP	CENTERLINE RPMS AT
	80' TYP.

DETAIL	S.C.D. T.C. 65.11
2	TAPERED ACCELERATION LANE
3	DECELERATION LANE
4	PARALLEL ACCELERATION LANE
5	MULTILANE DIVIDED/EXPRESSWAY

DETAIL	S.C.D. T.C. 65.12
6	STOP APPROACH
7	ONE LANE APPROACH W/LT. TURN LANE
8	THRU APPROACH
9	TWO LANE APPROACH W/LT. TURN LANE

DETAIL	S.C.D. T.C. 65.13
10	4 LANE DIVIDED TO 2 LANE TRANSITION
11	4 LANE UNDIVIDED TO 2 LANE TRANSITION
12	TWO LANE NARROW BRIDGE
13	TWO WAY LEFT TURN LANE
14	ONE LANE BRIDGE
15	HORIZONTAL CURVE

LOCATION SUB-SUMMARY

LOCATION				DETAIL	PARTICIPATION	ITEM SPECIAL QUANTITIES					PRISMATIC RETRO-REFLECTOR TYPES						APPLICATION		REMARKS
COUNTY	ROUTE	S.L.M. SECTION				RPM	RPM CASTING INSTALLATION ONLY			PRISMATIC RETRO REFLECTOR	ONE-WAY		TWO-WAY				NEW	EXISTING	
		FROM	TO				ONE-WAY PLOWABLE	TWO-WAY PLOWABLE 96	96 LP		WHITE	YELLOW	WHITE / WHITE	YELLOW / YELLOW	WHITE / RED				
					SEC."A"														
FRA	IR-270	1188+19	1264+10	5	PART 1	380									380		X		MAINLINE 270
		1244+00	1251+60	2	PART 1	38					26	12					X		RAMP "A"
		1259+50	1261+10	3	PART 1	15					13	2					X		RAMP "B"
		1248+20	1251+80	3	PART 1	33					31	2					X		RAMP "G"
		1259+20	1262+00	4	PART 1	15					11	4					X		RAMP "H"
		1302+75	1311+70	5	PART 1	44									44		X		MAINLINE 270
PART 1,	SEC."A"	TOTAL				525					81	20			424				
					SEC."A"														
FRA	IR-270	1264+60	1267+80	4	PART 2	17					13	4					X		RAMP "D"
		1275+30	1279+00	3	PART 2	33					31	2					X		RAMP "C"
		1265+70	1267+50	3	PART 2	13					11	2					X		RAMP "F"
		1276+00	1284+00	2	PART 2	42					29	13					X		RAMP "E"
		1264+10	1302+75	5	PART 2	192									192		X		MAINLINE 270
		1311+70	1325+00	5	PART 2	64									64		X		MAINLINE 270
PART 2,	SEC."A"	TOTAL				361					84	21			256				
					SEC."B"														
FRA	IR-270	1325+00	1426+75	5	PART 2	508									508		X		MAINLINE 270
		1444+22	1452+00	5	PART 2	40									40		X		MAINLINE 270
		1339+80	1348+20	2	PART 2	48					32	16					X		RAMP "I"
		1367+15	1370+75	3	PART 2	33					31	2					X		RAMP "J"
		1364+20	1373+00	2	PART 2	46					31	15					X		RAMP "K"
		1343+25	1346+85	3	PART 2	33					31	2					X		RAMP "L"
PART 2,	SEC."B"	TOTAL				708					125	35			548				
					SEC."B"														
FRA	IR-270	1426+75	1444+22	5	PART 3	84									84		X		MAINLINE 270
COUNTY AND SHEET SUB-TOTALS																			

DETAIL	S.C.D. T.C. 65.10
1	MULTILANE UNDIVIDED
GAP	CENTERLINE RPMS AT
	80' TYP.

DETAIL	S.C.D. T.C. 65.11
2	TAPERED ACCELERATION LANE
3	DECELERATION LANE
4	PARALLEL ACCELERATION LANE
5	MULTILANE DIVIDED/EXPRESSWAY

DETAIL	S.C.D. T.C. 65.12
6	STOP APPROACH
7	ONE LANE APPROACH W/LT. TURN LANE
8	THRU APPROACH
9	TWO LANE APPROACH W/LT. TURN LANE

DETAIL	S.C.D. T.C. 65.13
10	4 LANE DIVIDED TO 2 LANE TRANSITION
11	4 LANE UNDIVIDED TO 2 LANE TRANSITION
12	TWO LANE NARROW BRIDGE
13	TWO WAY LEFT TURN LANE
14	ONE LANE BRIDGE
15	HORIZONTAL CURVE

PLAN NO. R.P.M.

LOCATION SUB-SUMMARY

LOCATION				DETAIL	PARTICIPATION	ITEM SPECIAL QUANTITIES					PRISMATIC RETRO-REFLECTOR TYPES						APPLICATION		REMARKS
COUNTY	ROUTE	S.L.M. SECTION				RPM	RPM CASTING INSTALLATION ONLY			PRISMATIC RETRO REFLECTOR	ONE-WAY		TWO-WAY				NEW	EXISTING	
		FROM	TO				ONE-WAY PLOWABLE	TWO-WAY PLOWABLE 96	TWO-WAY PLOWABLE 96 LP		WHITE	YELLOW	WHITE / WHITE	YELLOW / YELLOW	WHITE / RED				
					SEC."C"														
FRA	IR-270	1472+70	1531+36	5	PART 1	292									292		X		MAINLINE 270
		1480+20	1488+60	2	PART 1	44					35	9					X		RAMP TO 270 N.B. FROM 62
		1485+00	1518+00	5	PART 1	42									42		X		2 LANE RAMP FROM 62 TO 270 N.B.
		1492+40	1496+40	2	PART 1	22					16	6					X		RAMP FROM 62 W.B. TO 270 N.B.
		1493+50	1496+70	3	PART 1	29					27	2					X		RAMP, 270 S.B. TO 62 W.B.
		1505+80	1508+60	4	PART 1	13					10	3					X		RAMP, 62 W.B. TO 270 S.B.
		1512+60	1514+40	3	PART 1	15					13	2					X		RAMP, 270 S.B. TO 62 E.B.
		1499+20	1533+00	5	PART 1	42									42		X		2 LANE RAMP, 270 N.B. TO 62 W.B.
		1527+60	1536+00	2	PART 1	44					34	10					X		RAMP, 62 E.B. TO 270 S.B.
PART 1,	SEC. "C"	TOTAL				543					135	32			376				
					SEC."C"														
FRA	IR-270	1452+00	1466+07	5	PART 2	68									68		X		MAINLINE 270
					SEC."C"														
FRA	IR-270	1466+07	1472+70	5	PART 3	32									32		X		MAINLINE 270 (6 LANE DIV.)
		1538+40	1558+00	5	PART 3	120									120		X		MAINLINE 270 (7 LANE DIV.)
		1558+00	1604+79	5	PART 3	348									348		X		MAINLINE 270 (8 LANE DIV.)
		1548+40	1554+20	3	PART 3	55					53	2					X		RAMP FROM 270 N.B. TO 62
		1533+00	1558+00	5	PART 3	31									31		X		2 LANE RAMP 270 N.B. TO 62
PART 3,	SEC. "C"	TOTAL				586					53	2			531				
COUNTY AND SHEET SUB-TOTALS																			

Item Special - Existing Type A Anchor Assembly Modified.

The existing Type A Anchor Assemblies have an extra intermediate post "C" located 12'-6" from the concrete anchor. This post shall be removed flush with the top of the concrete encasement. If the existing rail element is two 12'-6" pieces of rail they shall be replaced with one 25'-0" long rail element. The completed type A Anchor Assembly shall conform with GR-4.

Basis of Payment - Payment will be made at the contract unit price for:

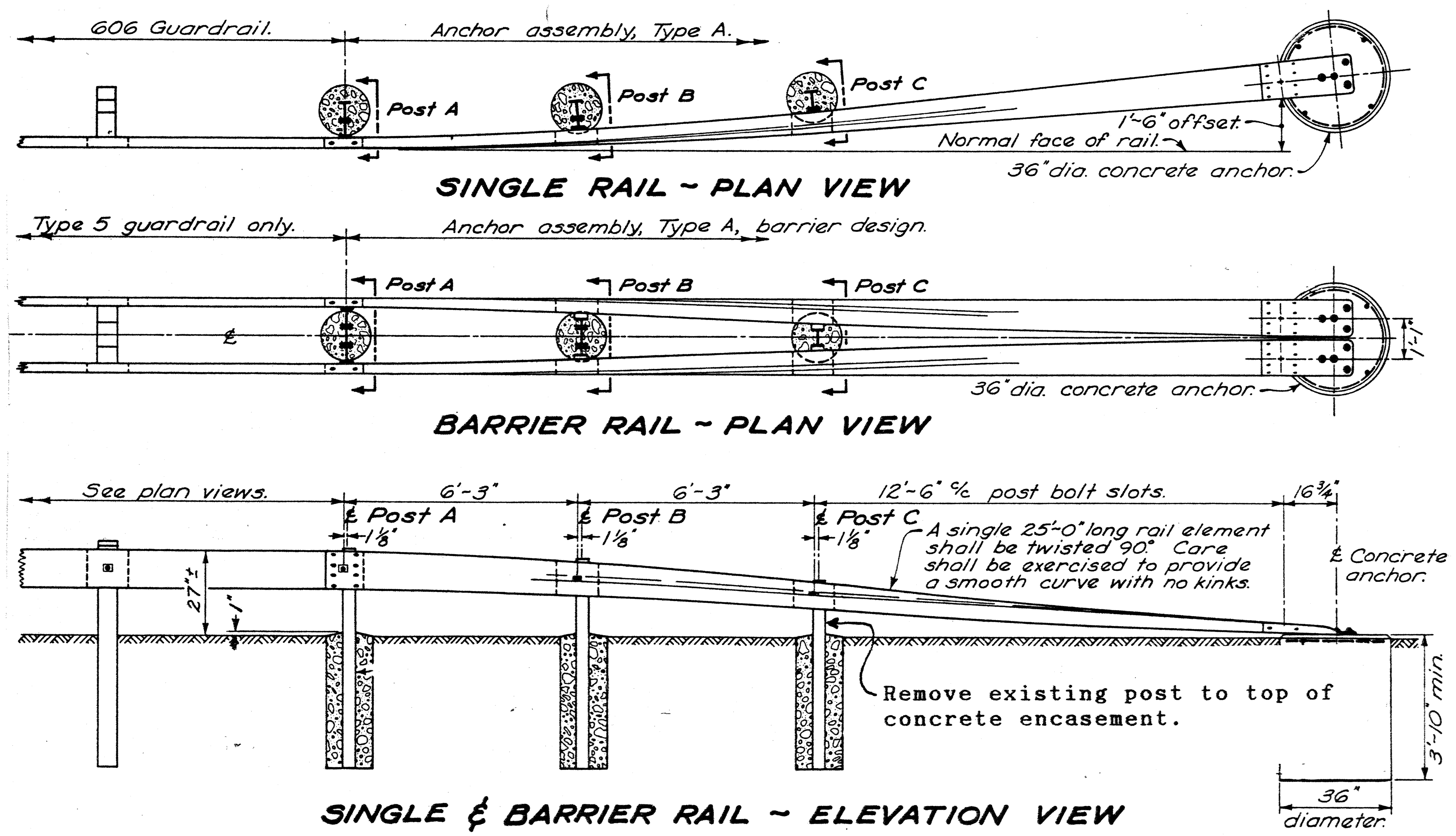
Item	Unit	Description
Special	Each	Existing Type A Anchor Assembly Modified

Item Special - Additional Guard Rail Posts Installed

In areas where the distance from the bridge piers or signpost to the face of the existing rail is less than 4'-0", additional posts shall be installed as detailed in Standard Drawing GR-6A. The installed guard rail posts shall include spacer blocks, back-up plates, all necessary hardware, labor and equipment to complete this item.

Basis for payment - Payment will be made at the contract unit price for:

Item	Unit	Description
Special	Each	Additional Guard Rail Posts Installed



GUARDRAIL DATA

PART	ROUTE	STARTING LOG POINT	SIDE	ITEM 202 GUARDRAIL REMOVED			ITEM 606 GUARDRAIL					ANCHOR ASSEMBLY			GUARDRAIL CONNECTIONS TO BRIDGES		GUARD POSTS	9' GUARD RAIL POSTS	BERM RESHAPING	ITEM SPECIAL EXISTING TYPE A ANCHOR ASSEMBLY MODIFIED		⑦		* NOTES
				REMOVED	FOR STORAGE	FOR RE-USE	TYPE	GUARD RAIL	BARRIER	CURVED RAIL ELEMENTS		TYPE T (GR-4A)	SINGLE RAIL (GR-4)	BARRIER RAIL (GR-4)	TYPE					SINGLE RAIL	BARRIER RAIL			
										LENGTH	RADIUS													
				LIN.FT.	LIN.FT.	LIN.FT.		LIN.FT.	LIN.FT.	LIN.FT.	FT.	EACH	EACH	EACH		EACH	EACH	EACH	LIN.FT.	EACH	EACH	EACH		
1	270	1187+80	L		162.5		5	125				1	1						162.5					
		1197+00	R		162.5		5	125				1	1						162.5					
		1200+75	L		162.5		5	125				1	1						162.5					
		1210+00	R		475		5	437.5				1	1						475					
		1213+25	CR																	1		10		
		1214+00	CL																	1		10		
		1214+87	L		237.5		5	200				1	1						237.5					
		1224+00	R		162.5		5	125				1	1						162.5					
		1224+75	L		162.5		5	125				1	1						162.5					
		1243+50	R		612.5		5	575				1	1						612.5					
		1244+50	L		237.5		5	200				1	1						237.5					
		1248+00	CR		162.5		5	125				1	1						162.5					
		1261+50	CR																	1		10		
		1261+90	R		275		5	237.5				1	1						275					
		1262+70	CL																			22		
		1262+66	L		275		5	237.5				1	1						275					
		1302+75	R		747		5	747							A	1			747					
		1302+75	L		647		5	647							A	1			647					
		1307+74	C		212.5		5	125	50					1	A	1			212.5					
		1311+00	I		70		5	70							a	1			70					
1	270	1311+36	C		34		5	34							A	1			34					
TOTAL	PART 1	SEC.A	TO	PG. 19	4798			4260.5	50			12	12	1		5			4798	3		64		

⑦ ITEM SPECIAL – ADDITIONAL GUARD POSTS INSTALLED

⑧ USE EXISTING BRIDGE CONNECTIONS

⑨ RAMP P

⑩ RAMP U

⑪ RAMP Q

⑫ TO BE INSTALLED BEFORE SOUTH BOUND TRAFFIC IS MOVED TO THE NORTH BOUND LANES.

ITEM 202 GUARDRAIL REMOVED FOR STORAGE: Guardrail, standard terminals, posts and miscellaneous hardware designated for salvage shall be stored ON THE PROJECT as directed by the Engineer for removal by State forces. All material not considered salvageable shall be disposed of by the Contractor as directed. Payment for the above shall be included in the unit price bid for Item 202 Guardrail Removed for Storage.

BERM RESHAPING: Berms at locations where existing guardrail is removed or where new guardrail is to be erected shall be reshaped as directed by the Engineer to insure a smooth surface free of all irregularities. Excess excavation shall be disposed of as directed by the Engineer. Payment for reshaping berms as described shall be included in the contract price bid per lineal foot for Item Special, Berm Reshaping.

GUARDRAIL DATA

PART	ROUTE	STARTING LOG POINT	SIDE	ITEM 202 GUARDRAIL REMOVED: REMOVED LIN.FT.	ITEM 202: FOR STORAGE LIN.FT.	ITEM 202: FOR RE-USE LIN.FT.	ITEM 606 GUARDRAIL: TYPE	ITEM 606: GUARD RAIL LIN.FT.	ITEM 606: BARRIER LIN.FT.	ITEM 606: CURVED RAIL ELEMENTS LENGTH LIN.FT.	ITEM 606: CURVED RAIL ELEMENTS RADIUS FT.	ANCHOR ASSEMBLY: TYPE T (GR-4A) EACH	ANCHOR ASSEMBLY: SINGLE RAIL (GR-4) EACH	ANCHOR ASSEMBLY: BARRIER RAIL (GR-4) EACH	GUARDRAIL CONNECTIONS TO BRIDGES: TYPE	GUARDRAIL CONNECTIONS TO BRIDGES: EACH	GUARD POSTS EACH	9' GUARD RAIL POSTS EACH	BERM RESHAPING LIN.FT.	ITEM SPECIAL EXISTING TYPE A ANCHOR ASSEMBLY MODIFIED: SINGLE RAIL EACH	ITEM SPECIAL EXISTING TYPE A ANCHOR ASSEMBLY MODIFIED: BARRIER RAIL EACH	(7) EACH		* NOTES
2	270	1265+20	CL																	1				
		1277+75	L		162.5		5	125				1	1						162.5					
		1277+75	CL		162.5		5	125				1	1						162.5					
		1288+75	L		162.5		5	125				1	1						162.5					
		1295+22	L		753		5	740.5				1							753					
		1296+22	R		653		5	628					1						653					
		1311+70	L		630		5	605					1						630					
		1311+95	R		600		5	587.5				1			A	1			600					
		1311+70	CL		178.5		5	91	50					1					178.5					
TOTAL	PART 2	SEC. A	TO	PG. 19	3302			3027	50			5	5	1	A	1			3302	1				

(7) ITEM SPECIAL – ADDITION GUARD POSTS INSTALLED
(8) USE EXISTING BRIDGE CONNECTIONS
(9) RAMP P
(10) RAMP U
(11) RAMP Q
(12) TO BE INSTALLED BEFORE SOUTH BOUND TRAFFIC IS MOVED TO THE NORTH BOUND LANES

ITEM 202 GUARDRAIL REMOVED FOR STORAGE: Guardrail, standard terminals, posts and miscellaneous hardware designated for salvage shall be stored ON THE PROJECT as directed by the Engineer for removal by State forces. All material not considered salvageable shall be disposed of by the Contractor as directed. Payment for the above shall be included in the unit price bid for Item 202 Guardrail Removed for Storage.

BERM RESHAPING: Berms at locations where existing guardrail is removed or where new guardrail is to be erected shall be reshaped as directed by the Engineer to insure a smooth surface free of all irregularities. Excess excavation shall be disposed of as directed by the Engineer. Payment for reshaping berms as described shall be included in the contract price bid per lineal foot for Item Special, Berm Reshaping.

GUARDRAIL DATA

PART	ROUTE	STARTING LOG POINT	SIDE	ITEM 202 GUARDRAIL REMOVED			ITEM 606 GUARDRAIL					ANCHOR ASSEMBLY			GUARDRAIL CONNECTIONS TO BRIDGES		GUARD POSTS	9' GUARD RAIL POSTS	BERM RESHAPING	ITEM SPECIAL EXISTING TYPE A ANCHOR ASSEMBLY MODIFIED		7		* NOTES
				REMOVED	FOR STORAGE	FOR RE-USE	TYPE	GUARD RAIL	BARRIER	CURVED RAIL ELEMENTS LENGTH	CURVED RAIL ELEMENTS RADIUS	TYPE T (GR-4A)	SINGLE RAIL (GR-4)	BARRIER RAIL (GR-4)	TYPE					SINGLE RAIL	BARRIER RAIL			
				LIN.FT.	LIN.FT.	LIN.FT.		LIN.FT.	LIN.FT.	LIN.FT.	FT.	EACH	EACH	EACH		EACH	EACH	EACH	LIN.FT.	EACH	EACH	EACH		
2	270	1324+75	R		187.5		5	150				1	1						187.5					
		1342+75	R		187.5		5	150				1	1						187.5					
		1353+16	CR		200		5	125	50					1	A	1			200					
		1353+48	R		150		5	125					1		A	1			150					
		1357+47	L		150		5	125					1		A	1			150					
		1357+30	CL		200		5	125	50					1	A	1			200					
		1370+00	L		187.5		5	150				1	1						187.5					
		1392+75	L		187.5		5	150				1	1						187.5					
		1420+75	L		187.5		5	150				1	1						187.5					
		1444+22	R		89		5	76.5				1							89					
		1444+22	L		177		5	152					1						177					
		1444+23	CR																			10		
		1444+30	CL																			10		
		1445+73	C																		1			
TOTAL	PART 2	SEC.B	TO	PG.19	1903.5			1478.5	100			6	8	2	A	4			1903.5		1	20		
3	270	1443+11	C																		1			
		1443+11	R		111		5	86					1						111					
		1443+99	L		23		5	10.5				1							23					
TOTAL	PART 3	SEC. B	TO	PG.19	134			96.5				1	1						134		1			

(7) ITEM SPECIAL – ADDITIONAL GUARD POSTS INSTALLED

(8) USE EXISTING BRIDGE CONNECTIONS

(9) RAMP P

(10) RAMP U

(11) RAMP Q

(12) TO BE INSTALLED BEFORE SOUTH BOUND TRAFFIC IS MOVED TO THE NORTH BOUND LANES

ITEM 202 GUARDRAIL REMOVED FOR STORAGE: Guardrail, standard terminals, posts and miscellaneous hardware designated for salvage shall be stored ON THE PROJECT as directed by the Engineer for removal by State forces. All material not considered salvageable shall be disposed of by the Contractor as directed. Payment for the above shall be included in the unit price bid for Item 202 Guardrail Removed for Storage.

BERM RESHAPING: Berms at locations where existing guardrail is removed or where new guardrail is to be erected shall be reshaped as directed by the Engineer to insure a smooth surface free of all irregularities. Excess excavation shall be disposed of as directed by the Engineer. Payment for reshaping berms as described shall be included in the contract price bid per lineal foot for Item Special, Berm Reshaping.

GUARDRAIL DATA

SECTION C PART	ROUTE	STARTING LOG POINT	SIDE	ITEM 202 GUARDRAIL REMOVED: REMOVED LIN.FT.	ITEM 202 GUARDRAIL REMOVED: FOR STORAGE LIN.FT.	ITEM 202 GUARDRAIL REMOVED: FOR RE-USE LIN.FT.	ITEM 606 GUARDRAIL: TYPE	ITEM 606 GUARDRAIL: GUARD RAIL LIN.FT.	ITEM 606 GUARDRAIL: REBUILT LIN.FT.	ITEM 606 GUARDRAIL: CURVED RAIL ELEMENTS LENGTH LIN.FT.	ITEM 606 GUARDRAIL: CURVED RAIL ELEMENTS RADIUS FT.	ANCHOR ASSEMBLY: TYPE T (GR-4A) EACH	ANCHOR ASSEMBLY: SINGLE RAIL (GR-4) TYPE A EACH	ANCHOR ASSEMBLY: BARRIER RAIL (GR-4) TYPE A EACH	GUARDRAIL CONNECTIONS TO BRIDGES: TYPE	GUARDRAIL CONNECTIONS TO BRIDGES: EACH	GUARD POSTS EACH	9' GUARD RAIL POSTS EACH	SPECIAL BERM RESHAPING LIN.FT.	ITEM SPECIAL EXISTING TYPE A ANCHOR ASSEMBLY MODIFIED: SINGLE RAIL EACH	ITEM SPECIAL EXISTING TYPE A ANCHOR ASSEMBLY MODIFIED: BARRIER RAIL EACH	⑦ EACH		
1	270	1490+84	R																	1		16		
		1491+06	C																		2	36		
		1492+06	L																	1		10		
		1492+07	⑨ R																	1		6		
		1494+10	⑨ L																	1		6		
		1505+19	⑨ R																	1				
		1505+28	⑨ L																	1				
		1506+39	C																		2			
		1506+81	L																	1		34		
		1506+86	R																	1		20		
		1508+50	⑩ L																	1				
		1508+50	⑩ R																	1				
		1517+74	C																		2			
		1518+10	R																	1		16		
		1520+50	L																	1				
		1521+28	C																		1			
		1524+94	⑪ R																	1				
		1525+00	L																	1				
		1525+30	C																		1			
		1528+00	C																		1			
		1528+18	L																	1				
TOTAL	PART 1	SECTION C	TO PG. 19																	15	9	144		

⑦ ITEM SPECIAL – ADDITIONAL GUARD POSTS INSTALLED

⑧ USE EXISTING BRIDGE CONNECTIONS

⑨ RAMP P

⑩ RAMP U

⑪ RAMP Q

⑫ TO BE INSTALLED BEFORE SOUTH BOUND TRAFFIC IS MOVED TO THE NORTH BOUND LANES.

<u>ITEM 202 GUARDRAIL REMOVED FOR STORAGE:</u>
Guardrail, standard terminals, posts and miscellaneous hardware designated for salvage shall be stored ON THE PROJECT as directed by the Engineer for removal by State forces. All material not considered salvageable shall be disposed of by the Contractor as directed. Payment for the above shall be included in the unit price bid for Item 202 Guardrail Removed for Storage.

<u>BERM RESHAPING:</u> Berms at locations where existing guardrail is removed or where new guardrail is to be erected shall be reshaped as directed by the Engineer to insure a smooth surface free of all irregularities. Excess excavation shall be disposed of as directed by the Engineer. Payment for reshaping berms as described shall be included in the contract price bid per lineal foot for Item Special, Berm Reshaping.

GUARDRAIL DATA

SECTION C PART	ROUTE	STARTING LOG POINT	SIDE	ITEM 202 GUARDRAIL REMOVED: REMOVED LIN.FT.	ITEM 202: FOR STORAGE LIN.FT.	ITEM 202: FOR RE-USE LIN.FT.	ITEM 606 GUARDRAIL: TYPE	ITEM 606: GUARD RAIL LIN.FT.	ITEM 606: REBUILT LIN.FT.	ITEM 606: CURVED RAIL ELEMENTS LENGTH LIN.FT.	ITEM 606: CURVED RAIL ELEMENTS RADIUS FT.	ANCHOR ASSEMBLY: TYPE T (GR-4A) EACH	ANCHOR ASSEMBLY: SINGLE RAIL (GR-4) TYPE A EACH	ANCHOR ASSEMBLY: BARRIER RAIL (GR-4) TYPE A EACH	GUARDRAIL CONNECTIONS TO BRIDGES: TYPE	GUARDRAIL CONNECTIONS TO BRIDGES: EACH	GUARD POSTS EACH	9' GUARD RAIL POSTS EACH	SPECIAL BERM RESHAPING LIN.FT.	ITEM SPECIAL EXISTING TYPE A ANCHOR ASSEMBLY MODIFIED: SINGLE RAIL EACH	ITEM SPECIAL EXISTING TYPE A ANCHOR ASSEMBLY MODIFIED: BARRIER RAIL EACH	⑦ EACH		
3	270	1467+25	L																	1		4		
		1531+45	⑩R																	1				
		1531+70	⑩L																	1				
		1539+00	⑩R																	1		4		
		1539+06	⑩L																	1		4		
		1545+30	C																		2	20		
		1546+20	⑩R																		1	40		
		1554+00	LC				5	⑫75					⑫1							1		4		
		1557+00	L																	1		4		
		1576+00	LC				5	⑫75					⑫1							1		4		
		1585+25	C												A	1					1	4		
		1601+75	R												A	1				1				
TOTAL	PART 3	SECTION C	TO PG. 19					150					2		A	2				9	4	88		

⑦ ITEM SPECIAL – ADDITIONAL GUARD POSTS INSTALLED

⑧ USE EXISTING BRIDGE CONNECTIONS

⑨ RAMP P

⑩ RAMP U

⑪ RAMP Q

⑫ TO BE INSTALLED BEFORE SOUTH BOUND TRAFFIC IS MOVED TO THE NORTH BOUND LANES.

ITEM 202 GUARDRAIL REMOVED FOR STORAGE: Guardrail, standard terminals, posts and miscellaneous hardware designated for salvage shall be stored ON THE PROJECT as directed by the Engineer for removal by State forces. All material not considered salvageable shall be disposed of by the Contractor as directed. Payment for the above shall be included in the unit price bid for Item 202 Guardrail Removed for Storage.

BERM RESHAPING: Berms at locations where existing guardrail is removed or where new guardrail is to be erected shall be reshaped as directed by the Engineer to insure a smooth surface free of all irregularities. Excess excavation shall be disposed of as directed by the Engineer. Payment for reshaping berms as described shall be included in the contract price bid per lineal foot for Item Special, Berm Reshaping.

ITEM SPECIAL- PAVEMENT EDGE DRAINS

Alternate "A"
Description: This item shall consist of furnishing and installing an experimental pipe underdrain system in accordance with these specifications, as shown on the plans, and as directed by the Engineer.

Materials: The underdrain shall be the Monsanto Drainage Mat (MDM) as produced by the Monsanto Company of St. Louis, Missouri. The tradename for the MDM system is Hydraway.

Construction: The MDM shall be installed in a trench as shown on the plans and in accordance with the manufacturer's recommendations. Backfill the trench with the excavated trench material placed in three (3) layers and each layer compacted to a density of not less than 90% of the maximum dry weight density. Place the first layer of the backfill material simultaneously with the trenching operation to hold the mat flush against the trench wall.

Splice the MDM, as indicated prior to placing it in the trench, using the kit furnished by the manufacturer and in accordance with the manufacturer's directions. All material required for the splice will be supplied in the kit but any equipment required shall be furnished by the Contractor.

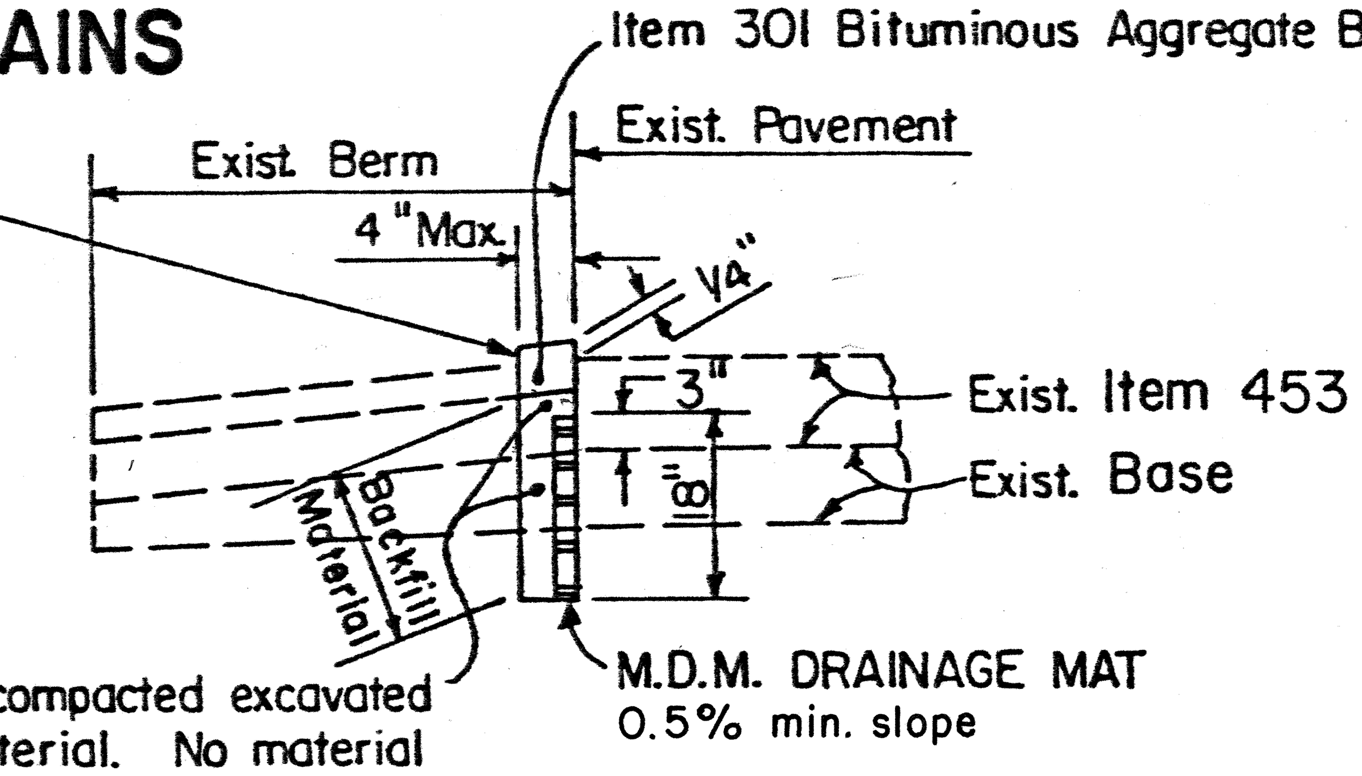
Place the underdrain outlets in accordance with Item 603 as directed by the Engineer, using the outlet fittings indicated. Monsanto will supply outlet fittings which will make the transition between the MDM system and a standard 4" diameter pipe. Install fittings as recommended by the manufacturer.

Additional product information and installation instructions may be obtained by contacting Ben Buchanan, Manager Commercial Development, Engineered Products Division, Monsanto Co., St, Louis, MO 63167, Telephone: (800) 325-4330.

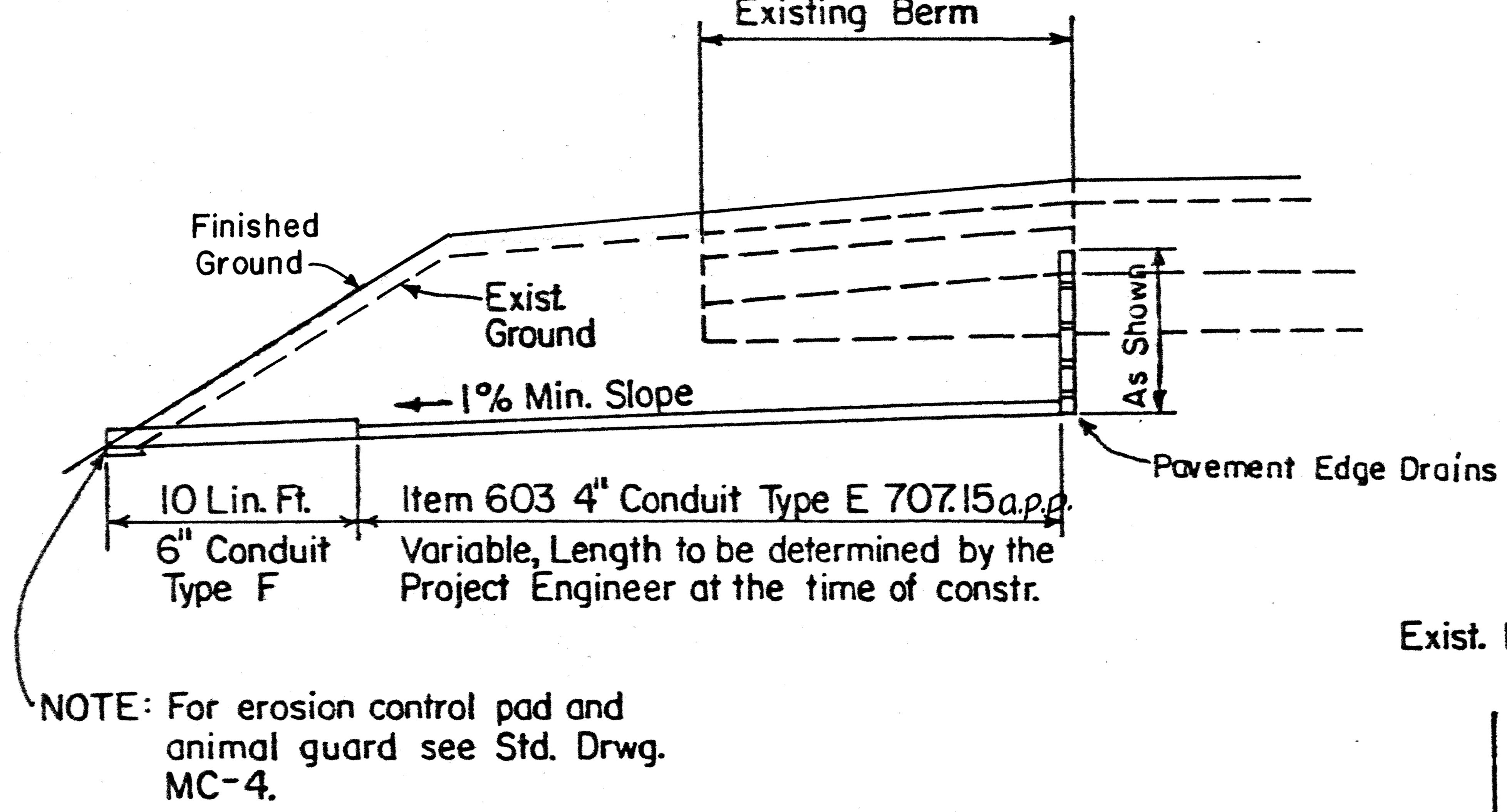
The Contractor shall not begin installation of the MDM System unless a representative of the Monsanto Company is present.

Method of Measurement: Completed and accepted underdrains (MDM System) will be measured by the linear foot in place.

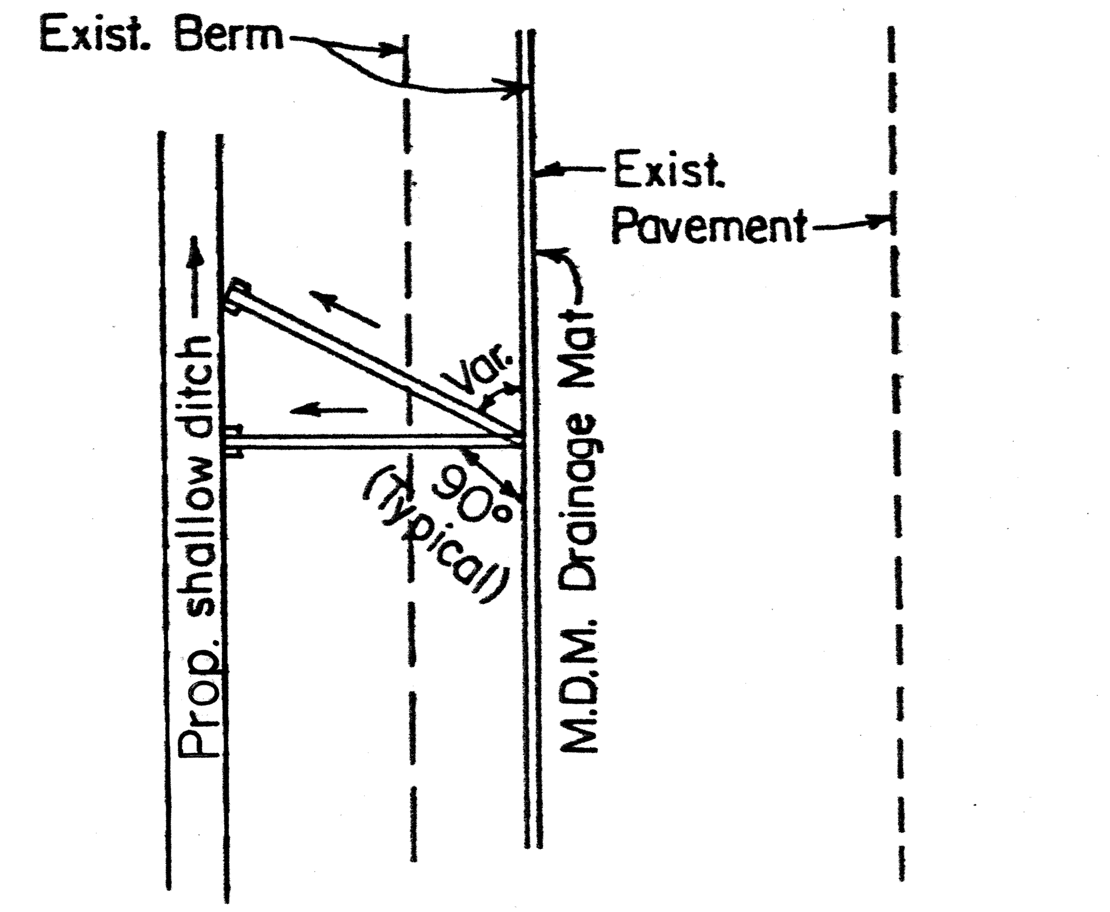
Basis of Payment: Work completed and accepted under this item and measured will be paid for at the contract unit price bid per linear foot for ITEM SPECIAL - Pavement Edge Drains which price shall be full compensation for excavation and backfill; for furnishing materials, including material for splices and outlet fittings; for all labor, tools, equipment, and incidentals necessary to complete the work.



NOTE: The cost of the excavation, embankment and Item 301 to be included in the unit price bid per Lin. Ft. of Item Special Pavement Edge Drains.

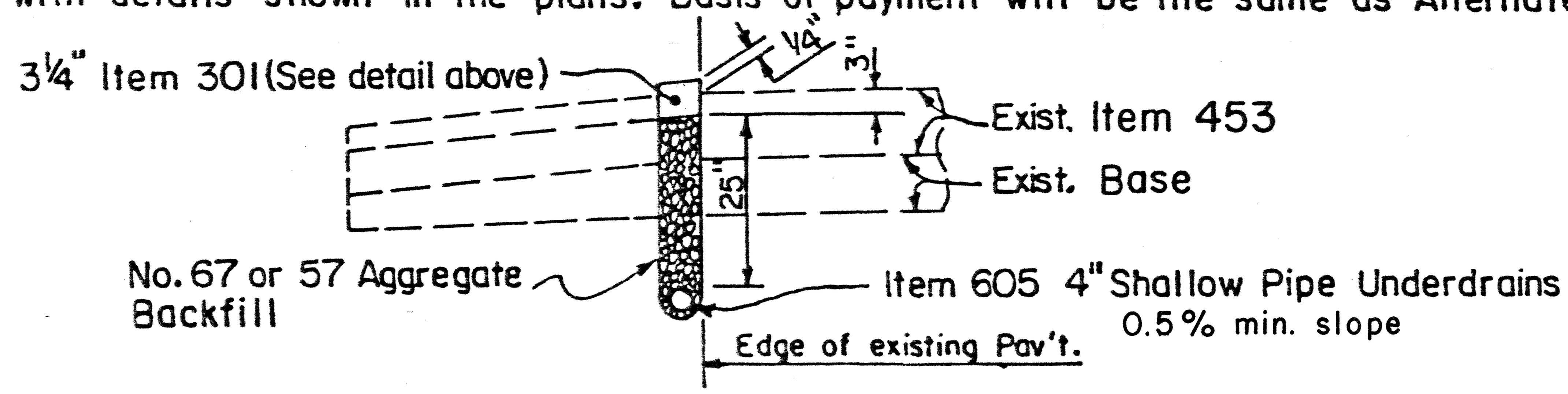


NOTE: When existing ditch is to shallow to outlet the proposed conduit at 90°, it shall be angled to get the minimum slope to drain as directed by the Engineer.



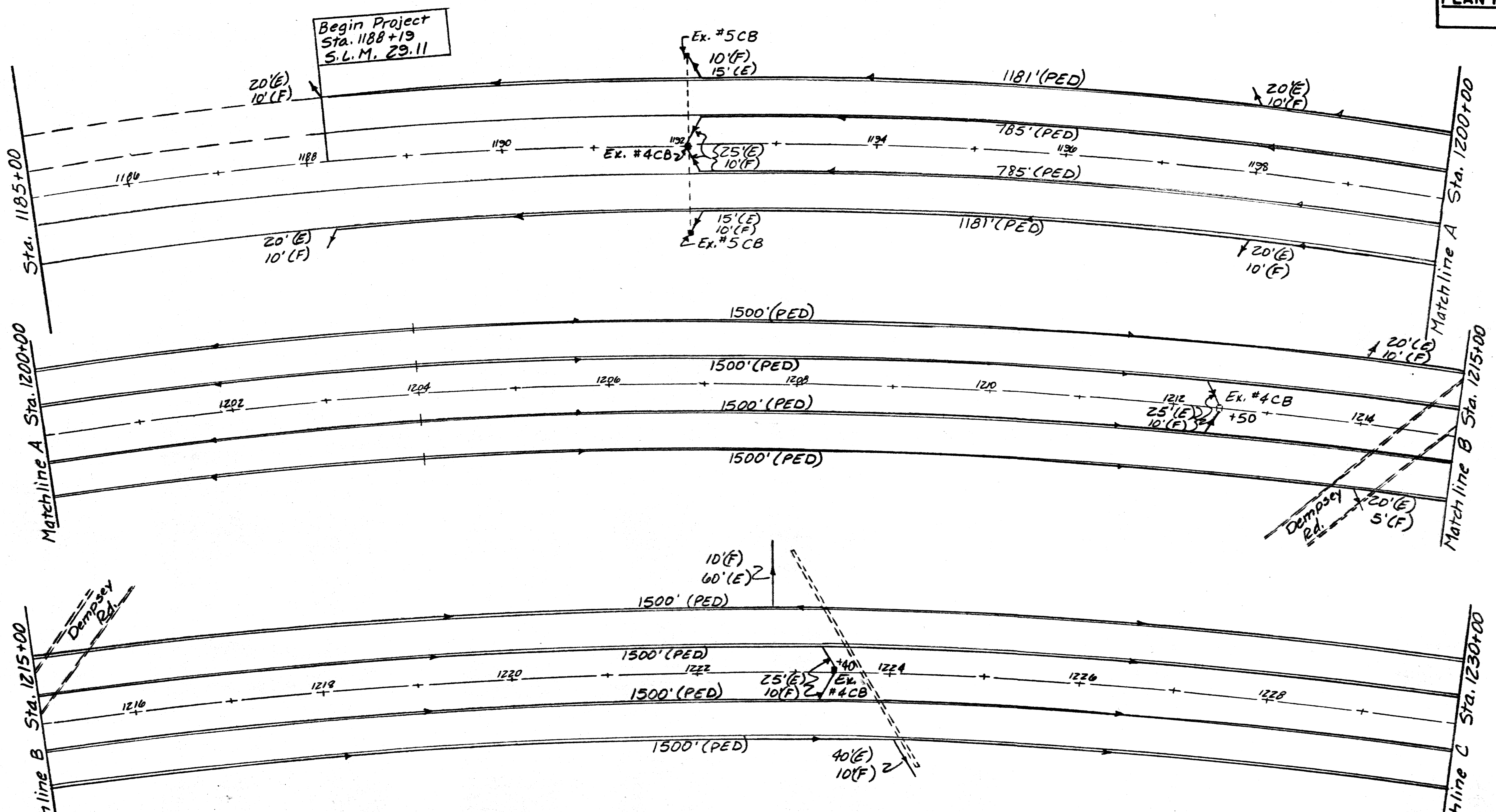
ALTERNATE "B"

In lieu of the M.D.M. Underdrain System, they may use 605 4" Shallow Pipe Underdrains in accordance with details shown in the plans. Basis of payment will be the same as Alternate "A".



NOTE: Outlet details to be the same as shown above.

DRAINAGE



Sub-Totals Sec. A - Part 1

ITEM SPECIAL - Pavement Edge Drains (PED) = 15,932 lin. ft.

ITEM 603 - 4" Conduit, Type E as per plan (E) = 400 lin. ft.

ITEM 603 - 6" Conduit, Type F (F) = 160 lin. ft.

DEPARTMENT OF TRANSPORTATION
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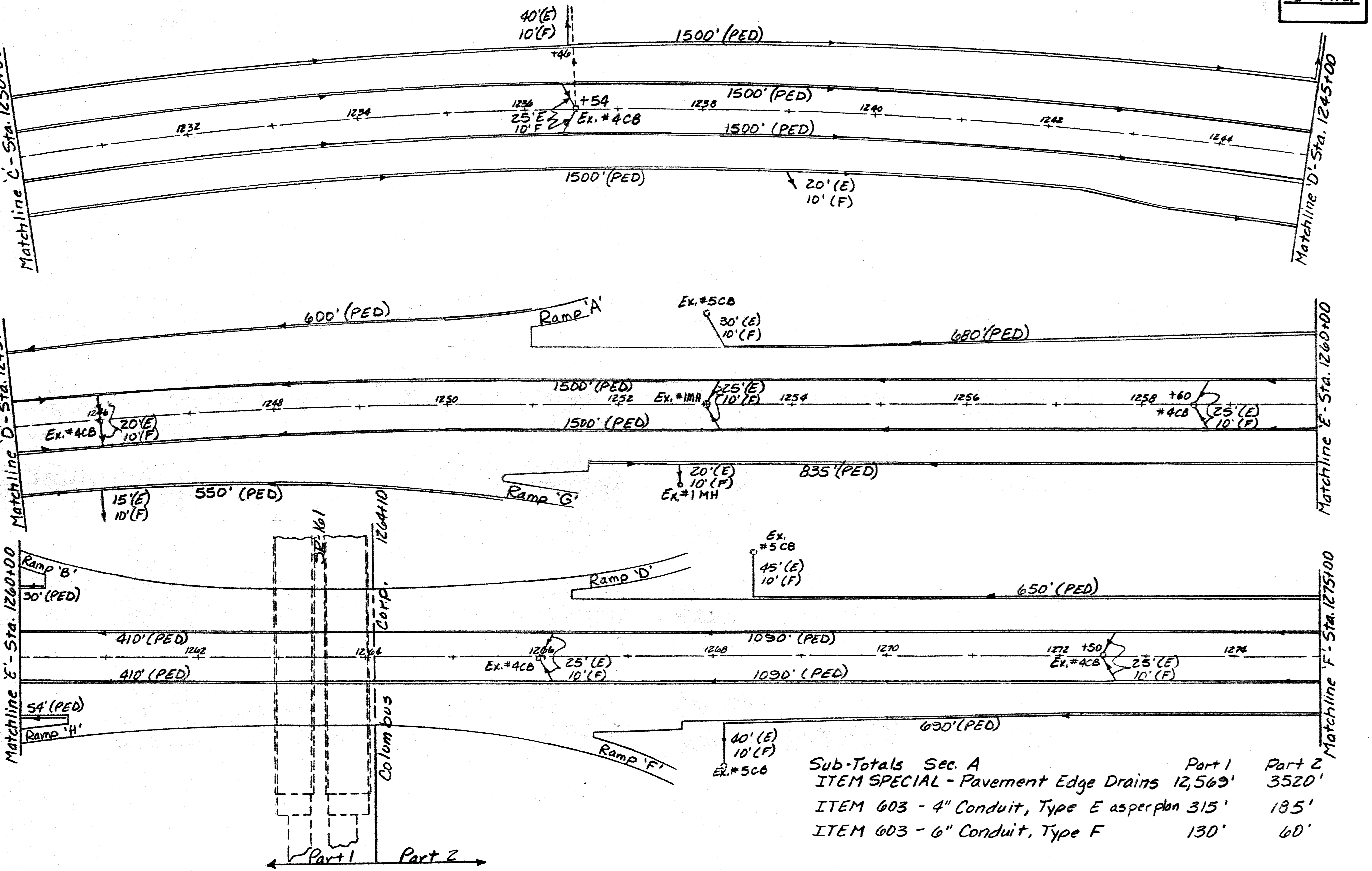
DRAINAGE

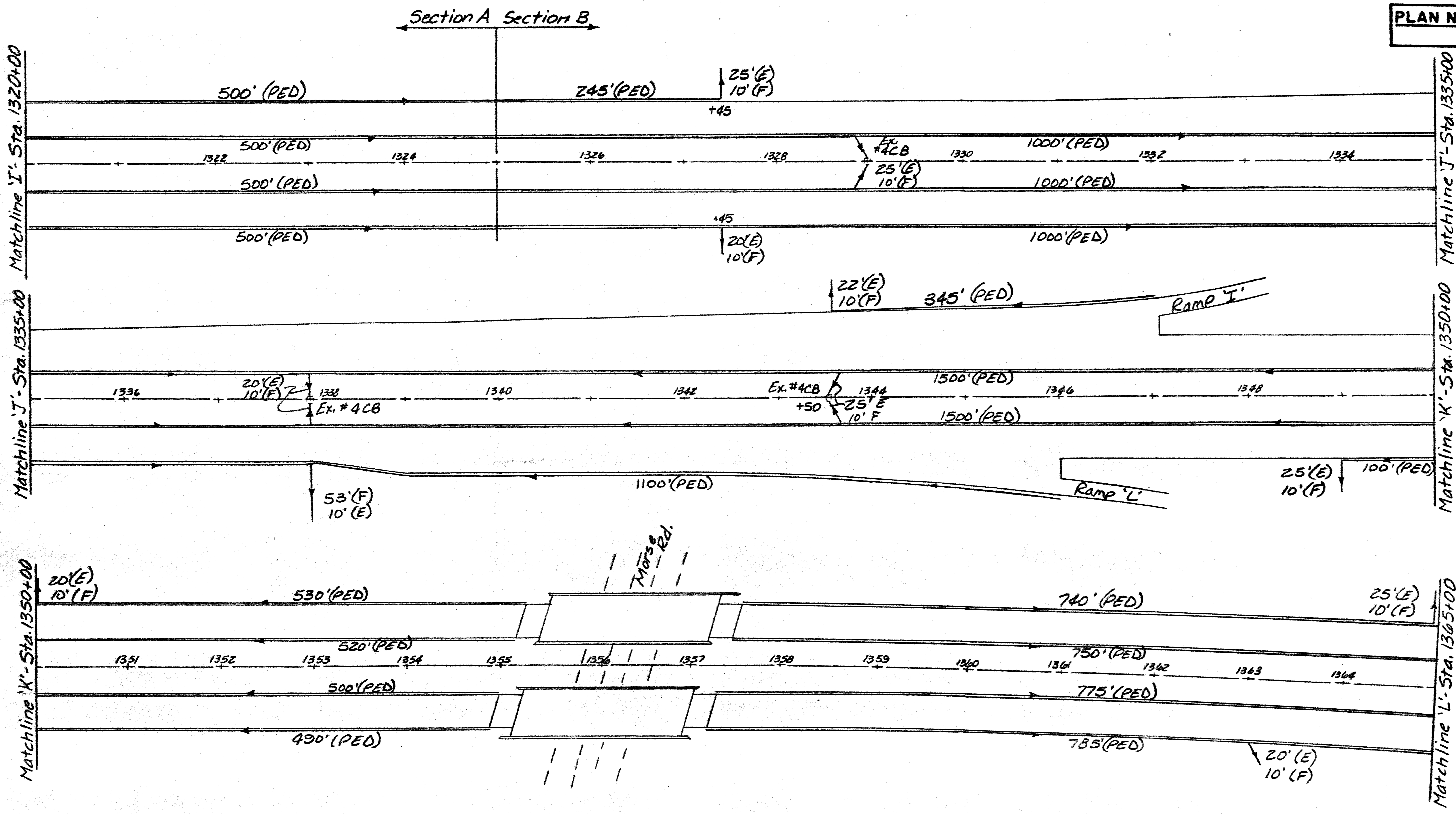


Sub-Totals Sec. A

	Part 1	Part 2
ITEM SPECIAL - Pavement Edge Drains	12,569'	3520'
ITEM 603 - 4" Conduit, Type E asper plan	315'	185'
ITEM 603 - 6" Conduit, Type F	130'	60'

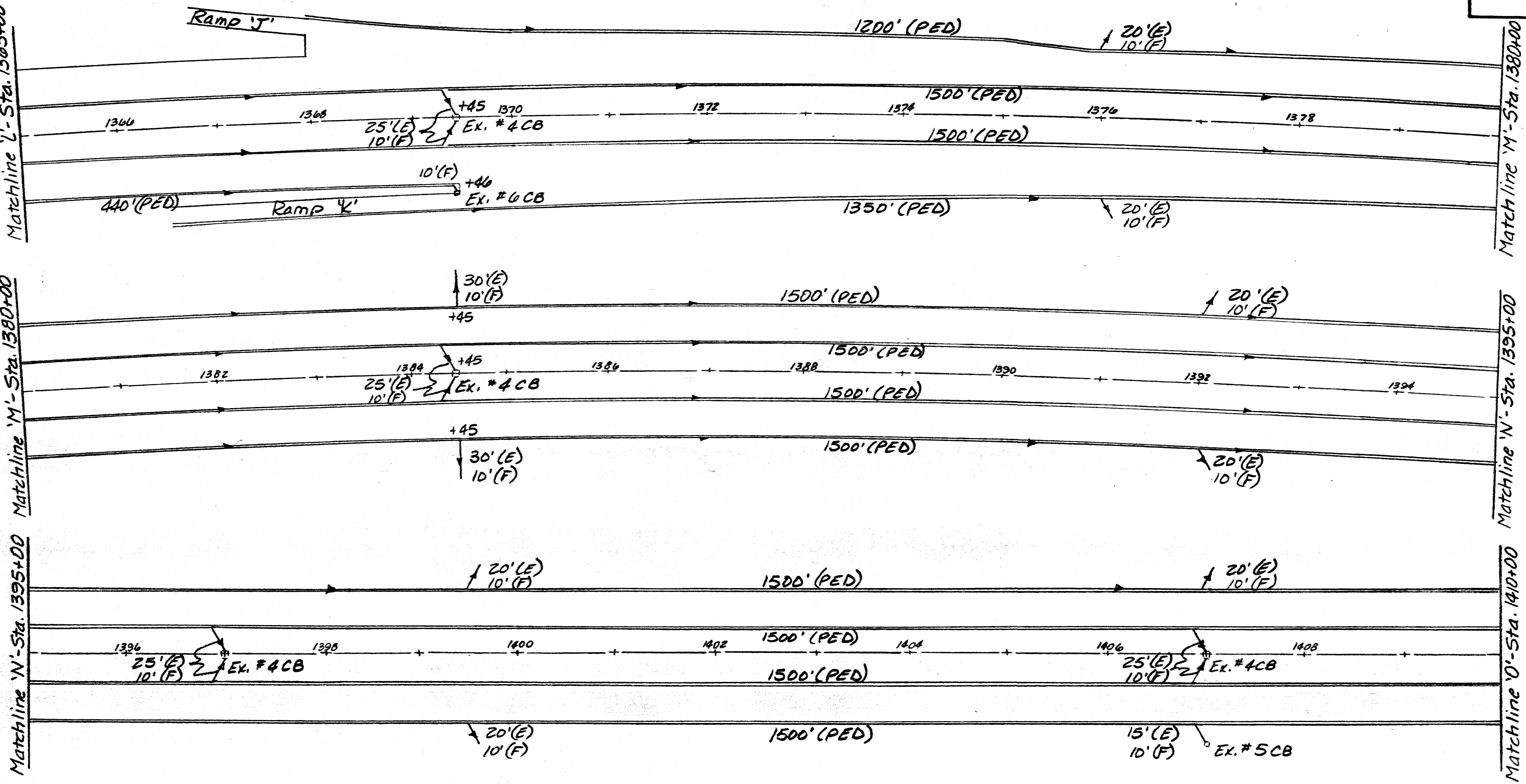
Sub-Totals Sec. A	Part 1	Part 2
ITEM SPECIAL - Pavement Edge Drains	2745'	14,082'
ITEM 603 - 4" Conduit, Type E as per plan		360'
ITEM 603 - 6" Conduit, Type F		160'

DRAINAGE



Sub-Totals Part 2	Sec. A	Sec. B
ITEM SPECIAL - Pavement Edge Drains	2000'	12,880
ITEM 603 - 4" Conduit, Type E as per plan		350'
ITEM 603 - 6" Conduit, Type F		140'

DRAINAGE



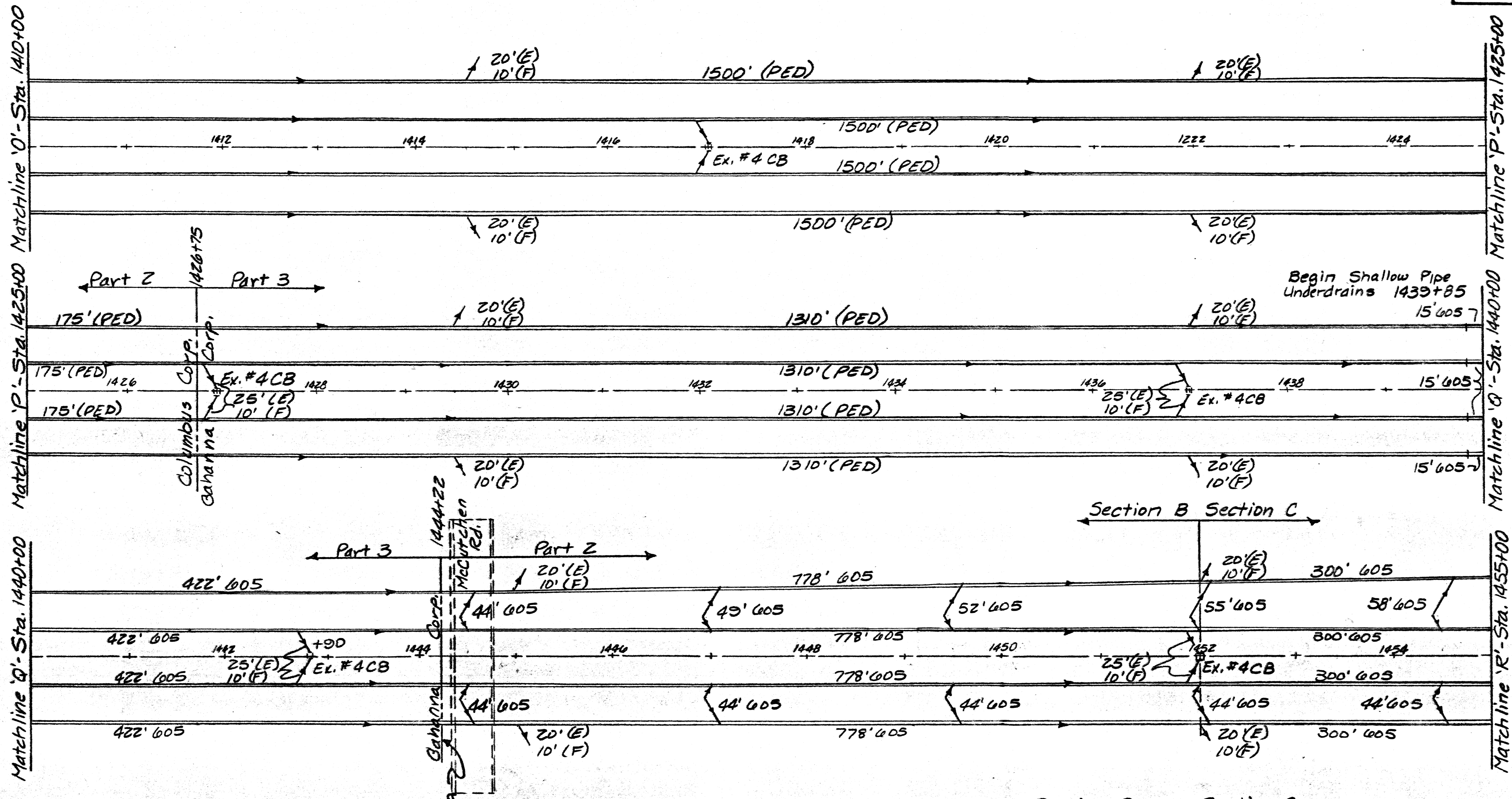
Sub-Totals Sec. B Part 2

ITEM SPECIAL - Pavement Edge Drains 17,990'

ITEM 603 - 4" Conduit, Type E as per plan 415'

ITEM 603 - 6" Conduit, Type F 190'

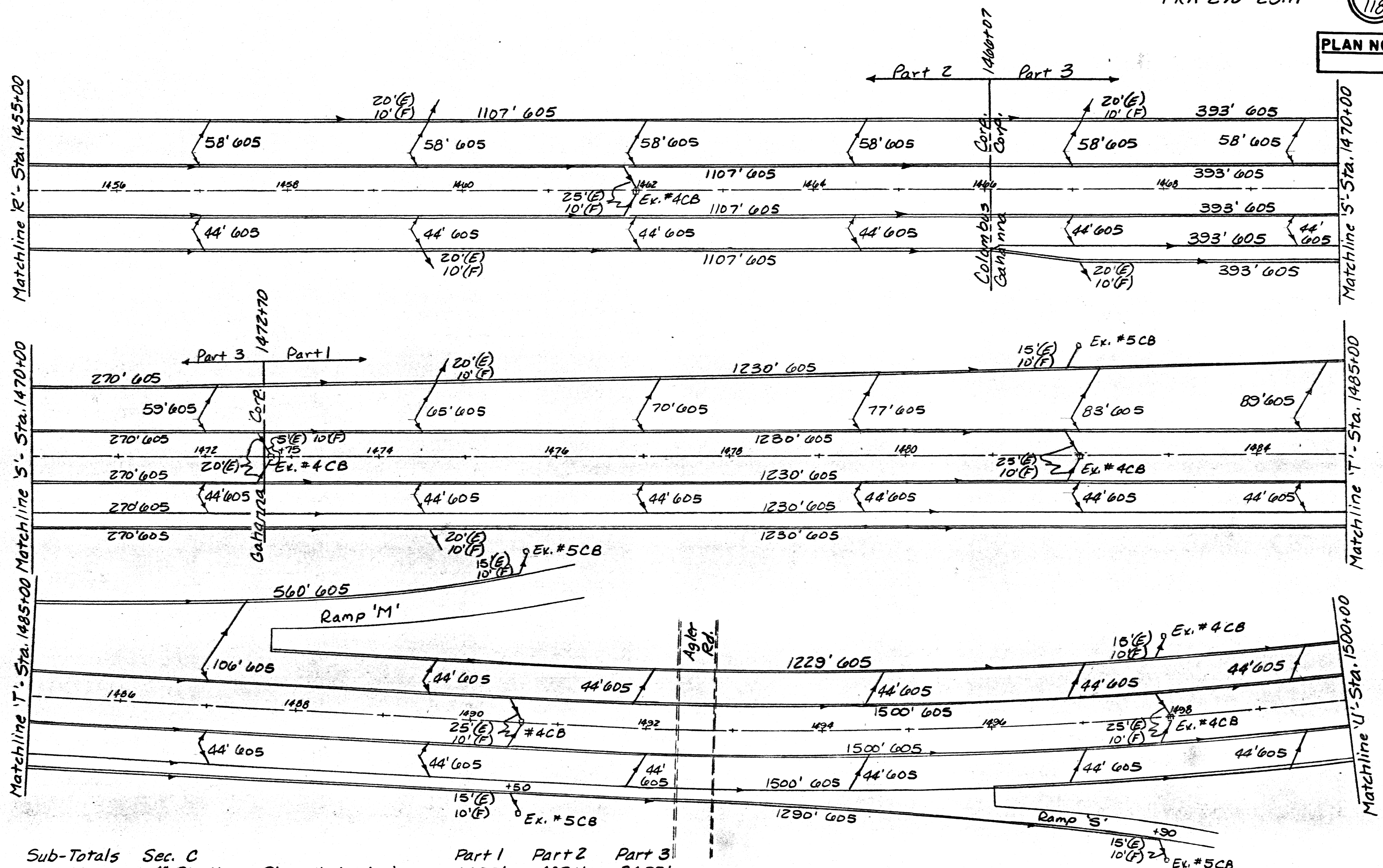
DRAINAGE



Columbus Corp.

Sub-Totals	Section B Part 2	Section B Part 3	Section C Part 2
ITEM SPECIAL - Pavement Edge Drains	6700'	5240'	
ITEM 605 - 4" Shallow Pipe Underdrains	3488'	1748'	1302'
ITEM 603 - 4" Conduit, Type E as per plan	220'	230'	40'
ITEM 603 - 6" Conduit, Type F	100'	100'	20'

DRAINAGE



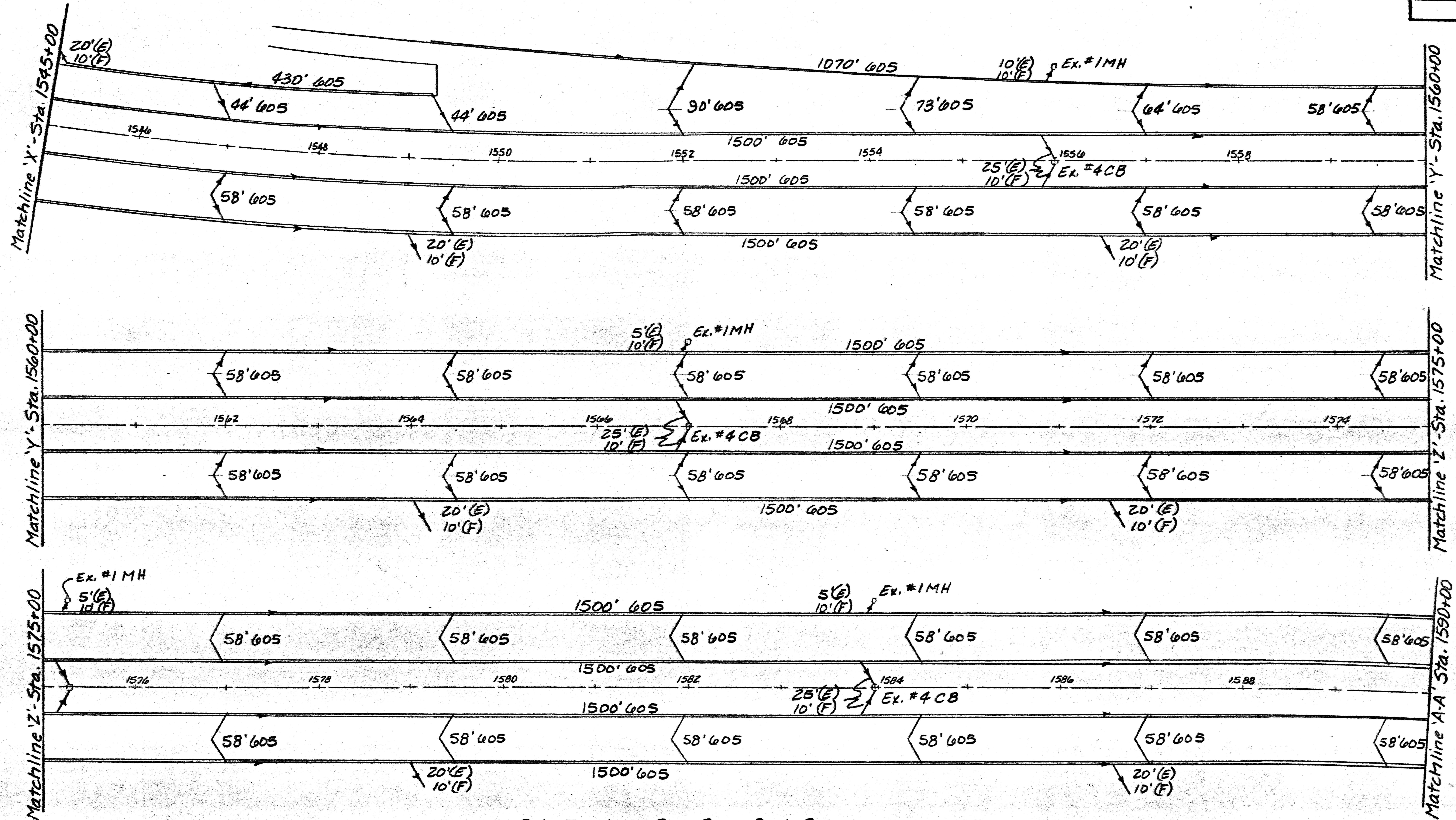
Sub-Totals Sec. C	Part 1	Part 2	Part 3
ITEM 605 - 4" Shallow Pipe Underdrains	14,923'	4836'	3622'
ITEM 603 - 4" Conduit, Type E as per plan	315'	90'	80'
ITEM 603 - 6" Conduit, Type F	180'	40'	20'

DRAINAGE

Sub-Totals Sec. C

	Part 1	Part 3
ITEM 605 - 4" Shallow Pipe Underdrains	13,489'	6115'
ITEM 603 - 4" Conduit, Type E as per plan	365'	135'
ITEM 603 - 6" Conduit, Type F	160'	70'

DRAINAGE



Sub-Totals Sec. 3 Part 3

ITEM 605 - 4" Shallow Pipe Underdrains 20,113'

ITEM 603 - 4" Conduit, Type E as per plan 345'

ITEM 603 - 6" Conduit, Type F 180'

DRAINAGE

Sub-Totals Sec. C Part 3

ITEM 605 - 4" Shallow Pipe Underdrains	5090'
ITEM 603 - 4" Conduit, Type E as per plan	320'
ITEM 603 - 6" Conduit, Type F	80'

Drainage Totals

	Spec.	603	603	605		
	Pavement Edge Drains	4" Conduit, Type E as per plan	6" Conduit, Type F	4" Shallow Pipe Underdrains		
	Lin. Ft.	Lin. Ft.	Lin. Ft.	Lin. Ft.		
Section A						
Part 1	31,246	715	290	734 *		
Part 2	19,602	545	220	576 *		
Section B						
Part 2	37,570	985	400	3488		
Part 3	5240	230	100	1748		
Section C						
Part 1		680	340	28,412		
Part 2		130	60	6138		
Part 3		880	350	34,940		

Totals carried to General Summary.

* These totals carried from Page 61.

WORK ZONE PAVEMENT MARKING QUANTITIES

ITEM 614 - Temporary Lane Lines, Class I

Part 1 - Sec. A:

Sta. 1188+19 to 1264+10 = 7591' x 4 lines 1 x 3 courses = 91,092 lin. ft.
Sta. 1302+75 to 1311+70 = 895' x 6 lines 2 = 5,370 " "
= 96,462 lin. ft.
Total = 18.27 mi.

Part 2 - Sec. A:

Sta. 1264+10 to 1275+30 = 1120' x 4 lines 1 x 3 courses = 13,440 lin. ft.
Sta. 1275+30 to 1279+00 = 370' x 3 lines 1 x 3 courses = 3,330 " "
Sta. 1279+00 to 1285+08 = 608' x 1 line (NB Crossover) = 608 " "
Sta. 1279+00 to 1285+08 = 608' x 1 line (SB Crossover) = 608 " "
Sta. 1281+88 to 1285+08 = 320' x 1 line (NB) = 320 " "
Sta. 1285+08 to 1302+75 = 1767' x 6 lines 2 = 10,602 " "
Sta. 1311+70 to 1325+00 = 1330' x 6 lines 2 = 7,980 " "
= 36,888 lin. ft.
Total = 6.99 mi.

Part 2 - Sec. B:

Sta. 1325+00 to 1426+75 = 10,175' x 6 lines 2 = 61,050 lin. ft.
Sta. 1444+22 to 1452+00 = 778' x 6 lines 2 = 4,668 " "
= 65,718 lin. ft.
Total = 12.45 mi.

Part 3 - Sec. B:

Sta. 1426+75 to 1444+22 = 1747' x 6 lines 2 = 10,482 lin. ft.
Total = 1.99 mi.

Part 1 - Sec. C:

Sta. 1472+70 to 1487+69 = 1499' x 7 lines 3 = 10,493 lin. ft.
Sta. 1487+36 to 1531+36 = 4367' x 6 lines 2 = 26,202 " "
= 36,695 lin. ft.
Total = 6.95 mi.

Part 2 - Sec. C:

Sta. 1452+00 to 1466+07 = 1407' x 7 lines 2 = 9,849 lin. ft.
Total = 1.87 mi.

Part 3 - Sec. C:

Sta. 1466+07 to 1472+70 = 663' x 7 lines 3 = 4,641 lin. ft.
Sta. 1531+36 to 1549+30 = 1794' x 6 lines 2 = 10,764 " "
Sta. 1549+30 to 1604+92 = 5562' x 7 lines 3 = 38,934 " "
Sta. 1604+92 to 1611+00 = 608' x 1 line (SB Crossover) = 608 " "
Sta. 1605+36 to 1611+45 = 609' x 1 line (NB Crossover) = 609 " "
= 55,556 lin. ft.
Total = 10.52 mi.

1 NB & SB lanes with 2 lines each

2 SB - 1 line; NB - 2 lines for two-way traffic, 1 line to replace traffic divider, and 2 lines immediately following the final overlay if needed.

3 SB - 1 line; NB - 2 lines for two-way traffic, 1 line to replace traffic divider, and 3 lines immediately following the final overlay if needed.

ITEM 614 - Temporary Edge Lines, Class I

Part 1 - Sec. A:

Mainline Sta. 1302+75 to 1311+70 = 895' x 3 lines 4 = 2,685 lin. ft.
Total = .51 mi.

Part 2 - Sec. A:

Mainline Sta. 1285+08 to 1302+75 = 1,767' x 3 lines 4 = 5,301 lin. ft.
" Sta. 1311+70 to 1325+00 = 1,330' x 3 lines 4 = 3,990 lin. ft.
NB Crossover - Sta. 1279+00 to 1285+08 = 608 lin. ft. (white)
" " Sta. 1279+00 to 1285+08 = 608 lin. ft. (yellow)
SB Crossover - Sta. 1276+75 to 1285+08 = 833 lin. ft. (white)
" " Sta. 1279+00 to 1285+08 = 608 lin. ft. (yellow)
Total = 11,948 lin. ft. or 2.26 mi.

Part 2 - Sec. B:

Mainline Sta. 1325+00 to 1426+75 = 10,175' x 3 lines 4 = 30,525 lin. ft.
" Sta. 1444+22 to 1452+00 = 778' x 3 lines 4 = 2,334 lin. ft.

Ramp Crossover Morse Rd. to IR-270 NB
Sta. 1340+78 to 1343+82 = 304 lin. ft. (white)
Sta. 1340+38 to 1350+77 = 1,039 lin. ft. (white)
Sta. 1347+27 to 1350+77 = 350 lin. ft. (white)
Sta. 1340+38 to 1350+77 = 1,039 lin. ft. (yellow)
Sta. 1339+48 to 1343+42 = 394 lin. ft. (yellow)
Sta. 1345+62 to 1350+77 = 515 lin. ft. (yellow)

Ramp Crossover IR-270 NB to Morse Rd.
Sta. 1364+32 to 1367+82 = 350 lin. ft. (white)
Sta. 1371+98 to 1381+00 = 902 lin. ft. (white)
Sta. 1364+32 to 1377+78 = 1,346 lin. ft. (white)
Sta. 1364+32 to 1377+78 = 1,346 lin. ft. (yellow)
Sta. 1364+32 to 1369+69 = 537 lin. ft. (yellow)
Sta. 1371+74 to 1375+98 = 424 lin. ft. (yellow)

Ramp Crossover IR-270 SB to Morse Rd.
Sta. 1337+78 to 1349+38 = 1,160 lin. ft. (white)
Sta. 1335+00 to 1343+64 = 864 lin. ft. (white)
Sta. 1347+33 to 1349+38 = 205 lin. ft. (white)
Sta. 1339+58 to 1343+42 = 384 lin. ft. (yellow)
Sta. 1337+78 to 1349+38 = 1,160 lin. ft. (yellow)
Sta. 1344+95 to 1349+38 = 443 lin. ft. (yellow)

Ramp Crossover Morse Rd. to IR-270 SB
Sta. 1361+83 to 1376+03 = 1,420 lin. ft. (white)
Sta. 1361+83 to 1366+53 = 470 lin. ft. (white)
Sta. 1372+35 to 1381+00 = 865 lin. ft. (white)
Sta. 1361+83 to 1367+74 = 591 lin. ft. (yellow)
Sta. 1361+83 to 1376+03 = 1,420 lin. ft. (yellow)
Sta. 1372+29 to 1376+28 = 399 lin. ft. (yellow)
Total = 50,786 lin. ft. or 9.62 mi.

Part 3 - Sec. B:

Mainline Sta. 1426+75 to 1444+22 = 1,747' x 3 lines 4 = 5,241 lin. ft.
Total = .99 mi.

Part 1 - Sec. C:

Mainline Sta. 1472+70 to 1531+36 = 5,866' x 3 lines 4 = 17,598 lin. ft.
Total = 3.33 mi.

WORK ZONE PAVEMENT MARKING QUANTITIES

ITEM 614 - Temporary Edge Lines, Class I (Cont.)

Part 2 Sec. C:

Mainline Sta. 1452+00 to 1466+07 =	1,407' x 3 lines ④ =	4,221 lin. ft.	
	Total =	.80 mi.	

Part 3 - Sec. C:

Mainline Sta. 1466+07 to 1472+70 =	663' x 3 lines ④ =	1,989 lin. ft.	
" Sta. 1531+36 to 1604+92 =	7,356' x 2 lines ⑤ =	14,712 lin. ft.	
NB Crossover - Sta. 1605+36 to 1611+45 =	609 lin. ft.	(yellow)	
" " Sta. 1605+36 to 1613+21 =	785 lin. ft.	(white)	
SB Crossover - Sta. 1604+92 to 1611+00 =	608 lin. ft.	(yellow)	
" " Sta. 1604+92 to 1611+37 =	645 lin. ft.	(white)	
Total =	19,348 lin. ft.	or 3.66 mi.	

④ SB - 1 white; NB - 2 white

⑤ NB - 2 white

ITEM 614 - Temporary Channelizing Lines, Class I

Part 2 - Sec. A:

NB Crossover - Sta. 1272+40 to 1279+00 = 660' x 2 lines	=	1320 lin. ft.
SB Crossover - Sta. 1276+75 to 1278+75 (Ramp E to Crossover)	=	200 " "
" " Sta. 1275+30 to 1281+88 (2 way traf. to 1 way)	=	658 " "
" " Sta. 1275+30 to 1278+50 (2 way traf. to 1 way)	=	320 " "
Total	=	2498 lin. ft.

Part 3 - Sec. C:

NB Crossover - Sta. 1610+55 to 1611+45 (317 to 270NB)	=	90 lin. ft.
" " Sta. 1610+55 to 1613+21 (317 to 270NB)	=	266 " "
SB Crossover - Sta. 1609+00 to 1611+00 (270SB to 317)	=	200 " "
" " - Sta. 1609+00 to 1611+37 (270SB to 317)	=	237 " "
Total	=	793 lin. ft.

ITEM 614 - Temporary Gore Markings, Class II

Part 1 - Sec. A:

Ramp B - 100' each x 3 courses	=	300 lin. ft.
Ramp G - 100' each x 3 courses	=	300 " "
Total	=	600 lin. ft.

Part 2 - Sec. A:

Ramp C - 100' each x 3 courses	=	300 lin. ft.
Ramp F - 100' each x 3 courses	=	300 " "
Total	=	600 lin. ft.

Part 2 - Sec. B:

Ramp L - 100' each x 1 course	=	100 lin. ft.
Ramp J - 100' each x 2 courses	=	200 " "
Total	=	300 lin. ft.

Part 1 - Sec. C:

Ramp O&U - 100' each x 1 course = 100 lin. ft.

Part 3 - Sec. C:

Ramp N&U - 100' each x 1 course	=	100 lin. ft.
Ramp U - 100' each x 2 courses	=	200 " "
Total	=	300 lin. ft.

Totals carried to the General Summary.

NOTES

TEMPORARY RAISED PAVEMENT MARKERS - BARRIER AND GUARDRAIL REFLECTORS - CURB REFLECTORS - MINIDRUMS

TEMPORARY RAISED PAVEMENT MARKERS

THIS ITEM OF WORK SHALL CONSIST OF FURNISHING, INSTALLING, MAINTAINING AND SUBSEQUENTLY REMOVING TEMPORARY RAISED PAVEMENT MARKERS (TRPM'S). THE TRPM'S SHALL BE YELLOW OR WHITE, AS DESCRIBED IN THE PLAN.

MATERIAL

TYPE A UNITS ARE NOT NOW USED.

TYPE B UNITS ARE INTENDED TO PROVIDE HIGH VISIBILITY AT NIGHT BY RETROREFLECTING AUTOMOTIVE HEADLIGHT BACK TO THE DRIVER. THE REFLECTORS SHALL RETURN WHITE OR YELLOW LIGHT AS IS APPROPRIATE FOR THE APPLICATION. THE REFLECTOR UNIT SHALL HAVE AN EFFECTIVE AREA OF AT LEAST 0.40 SQUARE INCH AND ITS BRIGHTNESS (THE TOTAL CANDLE POWER RETURNED BY A REFLECTOR, AT THE SPECIFIED DIVERGENCE ANGLE, PER FOOT CANDLE OF LIGHT INCIDENT OR THE REFLECTOR) SHALL BE AT LEAST:

ENTRANCE ANGLE (DEGREES)	DIVERGENCE ANGLE (DEGREES)	BRIGHTNESS WHITE (COLORLESS)	BRIGHTNESS YELLOW
0	0.10	6.5	4.0
20	0.10	2.6	1.5
0	0.33	1.1	0.6
20	0.33	0.4	0.2

TYPE C UNITS ARE INTENDED TO PROVIDE HIGH VISIBILITY AT NIGHT AND DURING DAYLIGHT. THEIR NIGHT VISIBILITY RETROREFLECTIVE BRIGHTNESS SHALL BE THE SAME AS TYPE B UNITS. THEIR DAY TIME VISIBILITY SHALL BE ASSURED BY SIZE, SHAPE, AND COLOR AS FOLLOWS:

1) THE UNITS SHALL BE A HIGH VISIBILITY YELLOW OR WHITE COLOR WHICH WILL NOT DEGRADE SUBSTANTIALLY DUE TO TRAFFIC WEAR.
2) WHEN VIEWED FROM ABOVE, THE UNITS SHALL HAVE A VISIBLE AREA OF NOT LESS THAN 14 SQUARE INCHES.
3) WHEN VIEWED FROM THE FRONT, PARALLEL TO THE PAVEMENT, AS FROM APPROACHING TRAFFIC, THE UNIT SHALL HAVE A VISIBLE AREA OF NOT LESS THAN 1.5 SQUARE INCHES.

ALL UNITS SHALL BE SHAPED TO MINIMIZE THEIR BEING DISLODGED BY TRAFFIC RUNNING OVER THEM.

THEY SHALL BE OF SUFFICIENT STRENGTH SO AS NOT TO BE BROKEN, OR THE REFLECTOR DISLODGED OR DAMAGED BY IMPACTS FROM VEHICLE TIRES, INCLUDING THOSE OF HIGH PRESSURE TRUCK TIRES LOADED TO 4500 POUNDS.

RETROREFLECTORS SHALL BE PROVIDED IN ONE OR TWO DIRECTIONS ON EACH UNIT AS REQUIRED BY THE PLAN USAGE INSTALLATION.

INSTALLATION THEY SHALL BE ATTACHED TO CLEAN, DRY PAVEMENT BY A BUTYL ADHESIVE PAD OR OTHER CONSTRUCTION GRADE ADHESIVES (SUCH AS FRANKLIN PANEL AND METAL ADHESIVE) SUITABLE TO ANCHOR THE UNIT UNDER THE ABOVE CONDITIONS. WHEN IT IS NECESSARY TO ATTACH UNITS TO NEW CONCRETE WITH CURING COMPOUND REMAINING, THE CURING COMPOUND MEMBRANE SHALL BE REMOVED BY SANDBLASTING OR OTHER MECHANICAL CLEANING METHOD. THEY SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.

THE CONTRACTOR SHALL IMMEDIATELY REPLACE, AT HIS COST, ANY UNITS WHICH FAIL (BROKEN HOUSING, HOUSING WORN TO THE EXTENT THAT DAYTIME VISIBILITY IS SIGNIFICANTLY DIMINISHED OR OF AN UNACCEPTABLE COLOR, DETACHED OR BROKEN REFLECTOR, HOUSING DETACHED FROM ADHESIVE).

THE UNITS SHALL BE PLACED ACCURATELY TO DEPICT STRAIGHT OR UNIFORMLY CURVING LINES. WHEN USED TO SUPPLEMENT TEMPORARY PAVEMENT MARKINGS, THEY MAY BE PLACED ON OR IMMEDIATELY ADJACENT TO THE PAVEMENT MARKING. LOCATIONS SHALL BE ADJUSTED UP TO ONE FOOT LONGITUDINALLY OR SIX INCHES LATERALLY TO AVOID PLACEMENT ON JOINTS, CRACKED OR DETERIORATED PAVEMENT. THEY SHALL NOT BE PLACED DIRECTLY ON PAVEMENT MARKINGS IF THIS WILL DETRACT FROM THEIR ABILITY TO REMAIN ATTACHED TO THE PAVEMENT.

APPLICATION

1) WHEN REQUIRED TO SUPPLEMENT PAVEMENT MARKING; THEY SHALL BE PLACED AS FOLLOWS:

LINE	TYPE	COLOR	SPACING
EDGE LINE	B OR C	WHITE OR YELLOW	20'C/C
LANE LINE	B OR C	WHITE	40'C/C
CENTER LINE SINGLE/BROKEN	B OR C	YELLOW	40'C/C
CENTER LINE DOUBLE SOLID	B OR C	Yellow	2 UNITS SIDE BY SIDE @ 20'C/C
CHANNELIZING LINE (INCLUDES EXIT GORE NOSE)	B OR C	White	10'C/C

2) WHEN USED TO SIMULATE (REPLACE) PAVEMENT MARKING THEY SHALL BE PLACED AS FOLLOWS:

LINE	TYPE	COLOR	SPACING
EDGE LINE	C	WHITE OR YELLOW	10'C/C
LANE LINE	C	WHITE	305' C/C;30'GAP
CENTER LINE DOUBLE SOLID	C	YELLOW	2-UNITS, 4" SIDE BY SIDE @ 10' C/C
CENTER LINE SINGLE BROKEN	C	YELLOW	305'C/C:30'GAP
CHANNELIZING (INCLUDES EXIT GORE NOSE)	C	WHITE	5' C/C
*TWO COLOR EDGELINE	C	WHITE AND YELLOW	BACK TO BACK @ 5' C/C

YELLOW TRPM'S USED TO SEPARATE OPPOSITE FLOWS OF TRAFFIC (CENTERLINES) SHALL BE VISIBLE (DAY AND NIGHT) FROM BOTH DIRECTIONS. ALL OTHER YELLOW TRPM'S AND WHITE TRPM'S SHALL PROVIDE RETROREFLECTIVITY FOR ONE DIRECTION.

WHERE THE PLAN CALLS FOR TYPE B TRPM'S, THE CONTRACTOR MAY SUBSTITUTE TYPE C MARKERS OF THE REQUIRED COLOR AND WITH THE SAME NUMBER OF REFLECTION SURFACES.

REMOVAL

REMOVAL SHALL BE ACCOMPLISHED IN A MANNER THAT LITTLE OR NONE OF THE ADHESIVE REMAINS ON THE PAVEMENT AND PERMANENT PAVEMENT SURFACES SHALL NOT BE SCARRED, BROKEN OR ROUGHENED SIGNIFICANTLY.

PAYMENT

BASIS OF PAYMENT SHALL BE AT THE CONTRACT UNIT PRICE PER EACH TRPM AND SHALL INCLUDE ALL LABOR EQUIPMENT HARDWARE AND INCIDENTALS REQUIRED TO PERFORM THE WORK. IT SHALL ALSO INCLUDE REPLACEMENT OF ALL TEMPORARY RPM'S WHICH, IN THE JUDGMENT OF THE ENGINEER, FAIL FOR ANY REASON, EXCEPT DUE TO FAILURE OF THE PAVEMENT TO WHICH THEY ARE ATTACHED.

BARRIER AND GUARDRAIL REFLECTORS

THIS ITEM OF WORK SHALL CONSIST OF FURNISHING, INSTALLING, MAINTAINING AND SUBSEQUENTLY REMOVING BARRIER REFLECTORS OR GUARDRAIL REFLECTORS TO TEMPORARILY GUIDE TRAFFIC THROUGH CONSTRUCTION AREAS AND TO IMPROVE THE NIGHT VISIBILITY OF TEMPORARY CONCRETE MEDIAN BARRIER (TCMB) OR GUARDRAIL.

MATERIAL

BOTH TYPES OF REFLECTORS SHALL PROVIDE A WHITE (COLORLESS) OR YELLOW RETROREFLECTIVE SURFACE WHICH IS HELD APPROXIMATELY PERPENDICULAR TO APPROACHING TRAFFIC. THE RETROREFLECTIVE SURFACE SHALL BE A MINIMUM OF 7.0 SQUARE INCHES OF HIGH INTENSITY REFLECTIVE SHEETING (730.19). OTHER RETROREFLECTIVE MATERIALS SUCH AS PRISMATIC REFLECTORS OR REFLECTIVE SHEETINGS MAY BE USED, PROVIDED:

1) THE SURFACE IS SMOOTH AND SELF CLEANING
2) THE TOTAL REFLECTIVE BRIGHTNESS IS EQUIVALENT TO THE ABOVE WHEN CONSIDERING REFLECTIVE INTENSITY OF THE SURFACE AND SURFACE AREA.

BARRIER REFLECTORS SHALL NOT PROJECT FROM THE SURFACE MORE THAN 4-INCHES.

GUARDRAIL REFLECTORS SHALL BE DESIGNED TO FIT COMPLETELY WITHIN THE CONCAVE SURFACE OF DEEP BEAM GUARDRAIL.

INSTALLATION

BARRIER REFLECTORS SHALL BE INSTALLED APPROXIMATELY 3-INCHES BELOW THE TOP OF THE BARRIER (BUT NOT MORE THAN 26-INCHES ABOVE PAVEMENT). THEY SHALL BE INSTALLED WITH A HIGH QUALITY CONSTRUCTION ADHESIVE COMPATIBLE WITH BOTH CONCRETE AND THE REFLECTOR BASE. THE CONCRETE SURFACE SHALL BE THOROUGHLY CLEANED AND DRY PRIOR TO APPLYING ADHESIVE.

GUARDRAIL REFLECTORS SHALL BE INSTALLED WITHIN THE CONCAVE SURFACE OF GUARDRAIL. ATTACHMENT MAY BE BY A BRACKET WHICH FITS UNDER THE HEAD OF THE CENTER GUARDRAIL BOLT OR BY A HIGH QUALITY CONSTRUCTION ADHESIVE APPLIED TO THOROUGHLY CLEAN AND DRY SURFACES. THE ADHESIVE SHALL BE COMPATIBLE WITH THE REFLECTOR BASE AND THE GUARDRAIL SURFACE.

THE CONTRACTOR SHALL IMMEDIATELY REPLACE ANY REFLECTOR WHICH BECOMES DAMAGED OR DISLODGED DUE TO NORMAL ACTIVITY OR WEATHER (BUT NOT DUE TO IMPACT FROM VEHICLES OR VANDALISM). THE CONTRACTOR SHALL IMMEDIATELY CLEAN ANY REFLECTOR IF ITS PERFORMANCE IS DEGRADED BY DIRT OR OTHER COATING.

APPLICATION

THE UNITS SHALL BE SPACED AT 50 FOOT INTERVALS FOR TRAFFIC MAINTAINED SITUATIONS ON TANGENT. WHERE CURVES EXCEED 5 DEGREES, SPACING SHALL BE REDUCED TO 25 FEET. WHERE THE ALIGNMENT OF GUARDRAIL OR BARRIER IS SHIFTED (TAPERS) TOWARD THE EDGE OF PAVEMENT, AS AT AN APPROACH TO A BRIDGE PARAPET, OR TO PROTECTED BRIDGE PIERS, SPACING SHALL BE REDUCED TO 25 FEET OR LESS IN THE TAPERED SECTION TO ASSURE THAT AT LEAST 3 UNITS ARE APPLIED TO THE TAPERED SECTION.

WHITE UNITS SHALL BE PLACED ON THE RIGHT SIDE OF APPROACHING TRAFFIC AND YELLOW ON THE LEFT.

REMOVAL

UNITS APPLIED TO TEMPORARY GUARDRAIL OR MEDIAN BARRIER WILL NORMALLY BE REMOVED WITH THE BARRIER OR GUARDRAIL. OLD UNITS, STILL ATTACHED TO BARRIER OR GUARDRAIL MAY BE REUSED PROVIDED THEY ARE IN THE PROPER POSITION AND LOCATION, ARE THE PROPER COLOR, ARE UNDAMAGED AND ARE THOROUGHLY CLEANED. IN CASES WHERE GUARDRAIL OR BARRIER WILL REMAIN FOR A PERMANENT CONDITION, THE UNITS SHALL REMAIN IN PLACE UNLESS THE ENGINEER ORDERS REMOVAL OF ALL OR A PORTION OF THEM.

PAYMENT

BASIS OF PAYMENT SHALL BE AT THE UNIT PRICE BID FOR EACH REFLECTOR AND SHALL INCLUDE ALL LABOR, EQUIPMENT, HARDWARE AND INCIDENTALS REQUIRED TO PERFORM THE WORK. IT SHALL ALSO INCLUDE REPLACEMENT OR CLEANING OF ANY REFLECTORS UNDER THE CONDITIONS DESCRIBED IN INSTALLATION ABOVE.

TEMPORARY REFLECTORS FOR RAISED CURBS

THIS ITEM OF WORK SHALL CONSIST OF FURNISHING, INSTALLING, MAINTAINING AND SUBSEQUENTLY REMOVING TEMPORARY REFLECTORS FOR CURBS WHICH ARE USED TO GUIDE AND SEPARATE TRAFFIC THROUGH CONSTRUCTION AREAS.

MATERIAL

THE REFLECTOR SHALL HAVE A FLAT SURFACE MOUNTED PERPENDICULAR TO THE LINE OF SIGHT OF APPROACHING MOTORISTS. THE UNITS SHALL BE TWO WAY REFLECTIVE (YELLOW BOTH SIDES) AND EACH REFLECTIVE SURFACE SHALL BE AT LEAST NINE SQUARE INCHES OF HIGH INTENSITY REFLECTIVE SHEETING (730.19) OR A RETROREFLECTIVE MATERIAL OF SIMILAR CHARACTERISTICS AND OF SUFFICIENT SIZE TO PRODUCE THE SAME TOTAL REFLECTIVE BRIGHTNESS. THE REFLECTIVE SURFACE SHALL BE ATTACHED TO A BRACKET DESIGNED TO ADHERE TO THE FLAT TOP OF A CURB. WHEN RUN OVER BY A VEHICLE TIRE THEY SHALL BE ESSENTIALLY UNDAMAGED AND THE REFLECTIVE SURFACE SHALL RETURN TO A VERTICAL POSITION.

NOTES

TEMPORARY RAISED PAVEMENT MARKERS - BARRIER AND GUARDRAIL REFLECTORS - CURB REFLECTORS - MINIDRUMS

INSTALLATION AND APPLICATION

THEY SHALL BE ATTACHED TO THE CLEAN, DRY TOP OF THE CURB IN THE ARRANGEMENT SHOWN. ATTACHMENT SHALL BE MADE BY A HIGH QUALITY CONSTRUCTION GRADE ADHESIVE (SUCH AS FRANKLIN METAL & PANEL ADHESIVE) WHICH IS COMPATIBLE WITH BOTH THE REFLECTOR BRACKET AND THE CURB SURFACE. IF THE ADHESIVE MANUFACTURER DOES NOT INDICATE THE PRODUCT TO BE COMPATIBLE WITH ANY PAINT ON THE CURB SURFACE, THE PAINT SHALL BE MECHANICALLY REMOVED TO IMPROVE BONDING.

THE CONTRACTOR SHALL AT HIS COST, IMMEDIATELY REPLACE ANY REFLECTORS WHICH ARE BROKEN, KNOCKED LOOSE BY TIRE ACTION OR RENDERED INEFFECTIVE BY DAMAGE TO THE REFLECTIVE SURFACE. DIRTY UNITS SHALL BE IMMEDIATELY CLEANED BY THE CONTRACTOR.

RE-USE OF UNITS IN EXCELLENT CONDITION, AS DETERMINED BY THE ENGINEER, WILL BE PERMITTED FOR NEW INSTALLATIONS ONLY IF THE TYPE OF UNIT EXHIBITED GOOD RETENTION CHARACTERISTICS IN THE FIRST APPLICATION.

PAYMENT

BASIS OF PAYMENT SHALL BE AT THE CONTRACT UNIT PRICE BID FOR EACH CURB REFLECTOR AND SHALL INCLUDE ALL LABOR, EQUIPMENT, HARDWARE AND INCIDENTALS REQUIRED TO PERFORM THE WORK. IT SHALL ALSO INCLUDE REPLACEMENT OF ALL UNITS LOST OR DAMAGED AS DESCRIBED ABOVE.

MINI DRUMS

THIS ITEM OF WORK SHALL CONSIST OF FURNISHING, INSTALLING, MAINTAINING AND SUBSEQUENTLY REMOVING A CYLINDRICAL REFLECTIVE DEVICE ON THE TOP OF TEMPORARY CONCRETE MEDIAN BARRIERS (CMB) FOR THE PURPOSE OF GUIDING TRAFFIC THROUGH CONSTRUCTION AREAS.

MATERIAL

THE DEVICE SHALL CONSIST OF A DRUM OR CYLINDER, 6-INCHES IN DIAMETER AND 12-INCHES HIGH. AT LEAST ONE END SHALL BE CLOSED TO PROVIDE A MOUNTING SURFACE. THREE 4-INCH WIDE CIRCUMFERENTIAL BANDS OF RETROREFLECTIVE SHEETING (BRIGHTNESS EQUAL TO OR BETTER THAN HIGH INTENSITY SHEETING - 730.19) SHALL BE APPLIED WITH YELLOW NEAR TOP AND BOTTOM AND WHITE IN BETWEEN.

INSTALLATION AND APPLICATION

THE MINI-DRUM SHALL BE MOUNTED WITH AXIS VERTICAL, TO THE CLEAN, DRY TOP SURFACE OF TCMB. IT SHALL BE ATTACHED BY BOLTS OR SCREWS INTO THE CONCRETE AND/OR A HIGH QUALITY CONSTRUCTION GRADE ADHESIVE WHICH IS COMPATIBLE WITH THE CONCRETE AS WELL AS THE BOTTOM SURFACE OF THE DRUM. DRUMS SHALL BE MOUNTED AT 25 FOOT INTERVALS WITHIN THE LIMITS PERSCRIBED IN THE PLANS, EXCEPT ON CURVES WITH A DEGREE OF CURVATURE IN EXCESS OF 6 DEGREE WHEN SPACING SHALL BE REDUCED TO 15 FOOT.

THE CONTRACTOR SHALL, AT HIS COST, IMMEDIATELY REPLACE ANY DRUMS WHICH COME LOOSE, UNLESS DUE TO VEHICLE IMPACT OR VANDALISM. HE SHALL CLEAN DIRTY DRUMS.

RE-USE OF UNITS IN EXCELLENT CONDITION, AS DETERMINED BY THE ENGINEER, WILL BE PERMITTED.

PAYMENT

BASIS OF PAYMENT SHALL BE AT THE CONTRACT UNIT PRICE BID FOR EACH MINI-DRUM AND SHALL INCLUDE ALL LABOR, HARDWARE, EQUIPMENT AND INCIDENTALS REQUIRED TO PERFORM THE WORK. IT SHALL ALSO INCLUDE REPLACEMENT OF ALL UNITS LOST AS DESCRIBED ABOVE.

REPLACEMENT DEVICES

QUANTITIES OF REPLACEMENT TEMPORARY RPM'S, BARRIER AND GUARDRAIL REFLECTORS, CURB REFLECTORS AND MINIDRUMS ARE INCLUDED FOR USE AS DIRECTED BY THE ENGINEER UNDER THE FOLLOWING CONDITIONS:

REPLACEMENT TEMPORARY RPM'S - INSTALLATION WILL BE PAID FOR UNDER THIS ITEM ONLY WHEN IN THE OPINION OF THE ENGINEER, THE UNIT HAS BEEN DISLODGED BY OTHER THAN NORMAL TRAFFIC ACTION, DUE TO FAILURE OF THE UNDERLYING PAVEMENT SURFACE, OR DUE TO VANDALISM.

BARRIER AND GUARDRAIL REFLECTORS, CURB REFLECTORS AND MINIDRUMS - INSTALLATION WILL BE PAID FOR UNDER THIS ITEM ONLY WHEN IN THE OPINION OF THE ENGINEER, THE UNIT HAS BEEN BROKEN OR DISLODGED DUE TO BEING HIT BY A VEHICLE, OR DUE TO VANDALISM.

THE FOLLOWING QUANTITIES ARE INCLUDED IN THE SUMMARY:

TEMPORARY RAISED PAVEMENT MARKERS TYPE B	________EA.
TEMPORARY RAISED PAVEMENT MARKERS TYPE C	________EA.
BARRIER REFLECTORS	________EA.
GUARDRAIL REFLECTORS	________EA.
CURB REFLECTORS	________EA.
MINI DRUMS	________EA.

For quantities see sh't. 102 & 103.

ITEM SPECIAL - Temporary Raised Pavement Markers, Type B

Part 1-A: 200' of Temp. Gore Marking at 10' c/c = 20

Temp. Lane Lines:
Mainline - 1302+75 to 1311+70 = 895' x 2 sides = 1790' at 40'c/c = 45

Temp. Edge Lines:
(use same limits as lane lines) 1790' at 20' c/c = 90

Estimated number for replacement markers = 16
Total Part 1-A = 171

Part 2-A: 200' of Temp. Gore Marking at 10' c/c = 20
Temp. Channelizing Lines:
NB Closure - 1272+40 to 1279+00 = 660' x 2 = 1320' at 10' c/c = 132
SB Closure - 1276+75 to 1278+75 = 200' at 10' c/c (E to Crossover) = 20
SB Closure - 1275+30 to 1281+88 = 658' at 10' c/c (2-way to 1-way) = 66
SB Closure - 1275+30 to 1278+50 = 320' at 10' c/c (2-way to 1-way) = 32

Temp. Lane Lines:
NB for NB Closure at 161 - 1277+00 to 1285+08 = 808'
SB for NB Closure at 161 - 1279+00 to 1285+08 = 808'
NB for SB Closure at 161 - 1281+88 to 1285+08 = 320'
SB for SB Closure at 161 = 1275+00 to 1285+08 = 1008'
2944' at 40' c/c = 74
Mainline - 1285+29 to 1302+75 = 1746'
1311+70 to 1325+00 = 1330'
3076' x 2 sides = 6152' at 40' c/c = 154

Temp. Edge Lines:
(use same limits as lane lines) 2944' x 2 lines = 5888' at 20' c/c = 294
Mainline (use same limits as lane lines) 6152' at 20' c/c = 308

Estimated number for replacement markers = 110
Total Part 2-A = 1210

Part 2-B:
Temp. Lane Lines:
Mainline - 1325+00 to 1426+75 = 10,175'
1444+22 to 1452+00 = 778'
10,953' x 2 = 21,906' at 40' c/c = 548

Temp. Edge Lines:
First closure, Morse Rd. to 270NB - 1339+38 to 1349+32 = 994'
994' x 2 lines x 2 times = 3976' at 20' c/c = 199
First closure, 270NB to Morse Rd. - 1365+40 to 1376+18 = 1078'
1078' x 2 lines x 2 times = 4312' at 20' c/c = 216
Second closure, 270 SB to Morse Rd. - 1339+38 to 1348+98 = 960'
960' x 2 lines x 2 times = 3840' at 20' c/c = 192
Second closure, Morse Rd. to 270 SB - 1362+70 to 1376+26 = 1356'
1356' x 2 lines x 2 times = 5424' at 20' c/c = 271
Mainline (use same limits as lane lines) 21,906' at 20' c/c = 1095

Estimated number for replacement markers = 252
Total Part 2-B = 2773

Part 3-B:
Temp. Lane Lines:
Mainline - 1426+75 to 1444+22 = 1747' x 2 sides = 3494' at 40' c/c = 87

Temp. Edge Lines:
Mainline (use same limits as lane lines) 3494' at 20' c/c = 175

Estimated number for replacement markers = 26
Total Part 3-B = 288

Part 1-C: 200' of Temp. Gore Markings at 10' c/c = 20

Temp. Lane Lines:
Mainline - 1472+70 to 1531+36 = 5866' x 2 = 11,732' at 40' c/c = 293

Temp. Edge Lines:
Mainline (use same limits as lane lines) 11,732' at 20' c/c = 587

Estimated number for replacement markers = 90
Total Part 1-C = 990

Part 2-C
Temp. Lane Lines:
Mainline - 1452+00 to 1466+07 = 1407' x 2 sides = 2814' at 40' c/c = 70

Temp. Edge Lines:
Mainline (use same limits as lane lines) 2814' at 20' c/c = 141

Estimated number for replacement markers = 21
Total Part 2-C = 232

Part 3-C: 200' of Temp. Gore Markings at 10' c/c = 20
Temp. Channelizing Lines:
NB Closure - 1610+35 to 1611+45 = 90' at 10' c/c (317 to 270NB) = 9
NB Closure - 1610+55 to 1613+21 = 266' at 10' c/c (317 to 270NB) = 27
SB Closure - 1609+00 to 1611+00 = 200' at 10' c/c (270SB to 317) = 20
SB Closure - 1609+00 to 1611+37 = 237' at 10' c/c (270SB to 317) = 24

Temp. Lane Lines:
SB for NB Closure at 317 - 1605+36 to 1610+40 = 504'
NB for NB Closure at 317 - 1605+36 to 1615+45 = 1009'
SB for SB Closure at 317 - 1604+92 to 1613+00 = 808'
NB for SB Closure at 317 - 1604+92 to 1615+00 = 1008'
3329' at 40' c/c = 83
Mainline - 1466+07 to 1472+70 = 663'
1531+36 to 1505+00 = 7364'
8027' x 2 = 16,054' at 40' c/c = 401

Temp. Edge Lines:
(use same limits as lane lines) 3329' x 2 lines = 6658' at 20' c/c = 333
Mainline (use same limits as lane lines) 16,054' at 20' c/c = 803

Estimated number for replacement Markers = 172
Total Part 3-C = 1892

All totals carried to the General Summary

ITEM SPECIAL - Mini Drums

Part 1-A:	at Struc. #3141	200 lin. ft. at 25' c/c	=	10
Part 2-A:	SB at SR-161	370 lin. ft. at 25' c/c	=	16
	NB at SR-161	320 lin. ft. at 25' c/c	=	14
		Total Part 2-A	=	30
Part 2-B:	at Struc. #3227	200 lin. ft. at 25' c/c	=	10
Part 3-C:	at Struc. #3694	200 lin. ft. at 25' c/c	=	10
	SB at SR-317	324 lin. ft. at 25' c/c	=	14
	NB at SR-317	363 lin. ft. at 25' c/c	=	16
		Total Part 3-C	=	40

Totals carried to General Summary.

ITEM SPECIAL - Curb Reflectors

Part 1-A: 1,790' at 50' c/c = 36 x 2 sides = 72 + 4 (replacement) = 76

Part 2-A: 6,152' at 50' c/c = 123 x 2 sides = 246 + 12 (replacement) = 258

Part 2-B: 21,906' at 50' c/c = 438 x 2 sides = 876 + 44 (replacement) = 920

Part 3-B: 3,494' at 50' c/c = 70 x 2 sides = 140 + 7 (replacement) = 147

Part 1-C: 11,732' at 50' c/c = 235 x 2 sides = 470 + 24 (replacement) = 494

Part 2-C: 2,814' at 50' c/c = 56 x 2 sides = 112 + 6 (replacement) = 118

Part 3-C: 16,040' at 50' c/c = 321 x 2 sides = 642 + 32 (replacement) = 674

Totals carried to General Summary

ITEM SPECIAL - Barrier and Guardrail Reflectors

Part 1-A:	Conc. Barrier at Struc. #3141 - 200' at 25' c/c	=	10
	Guardrail - 1464' at 25' c/c	=	59
Part 2-A:	Conc. Barrier at SR-161 Crossover (SB) - 370' at 25' c/c	=	16
	Conc. Barrier at SR-161 Crossover (NB) - 340' at 25' c/c	=	14
	Total	=	30
	Guardrail - 2686' at 25' c/c	=	107
Part 2-B:	Conc. Barrier at Struc. #3227 - 200' at 25' c/c	=	10
	Guardrail - 1478.5' at 25' c/c	=	59
Part 3-B:	Guardrail - 96.5' at 25' c/c	=	4
Part 1-C:	Guardrail - 1000' at 25' c/c	=	40
Part 3-C:	Conc. Barrier at Struc. #3694 - 200' at 25' c/c	=	10
	Conc. Barrier at SR-317 Crossover (SB) - 324' at 25' c/c	=	14
	Conc. Barrier at SR-317 Crossover (NB) - 364' at 25' c/c	=	16
	Total	=	40
	Guardrail - 125' at 25' c/c	=	5

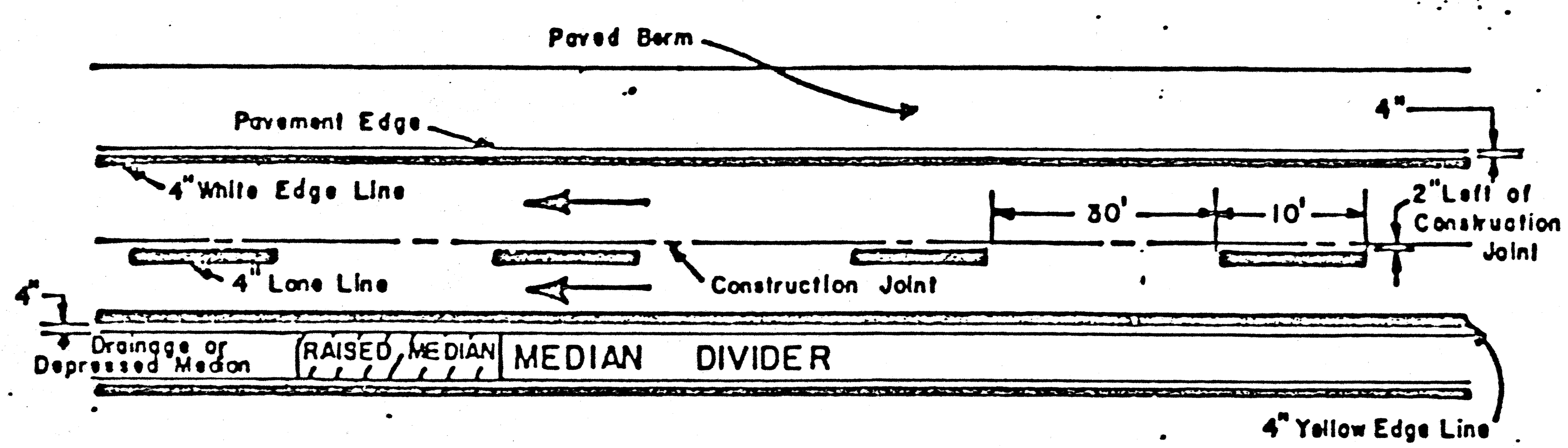
Totals carried to the General Summary.

PAVEMENT MARKING TYPICAL DETAILS

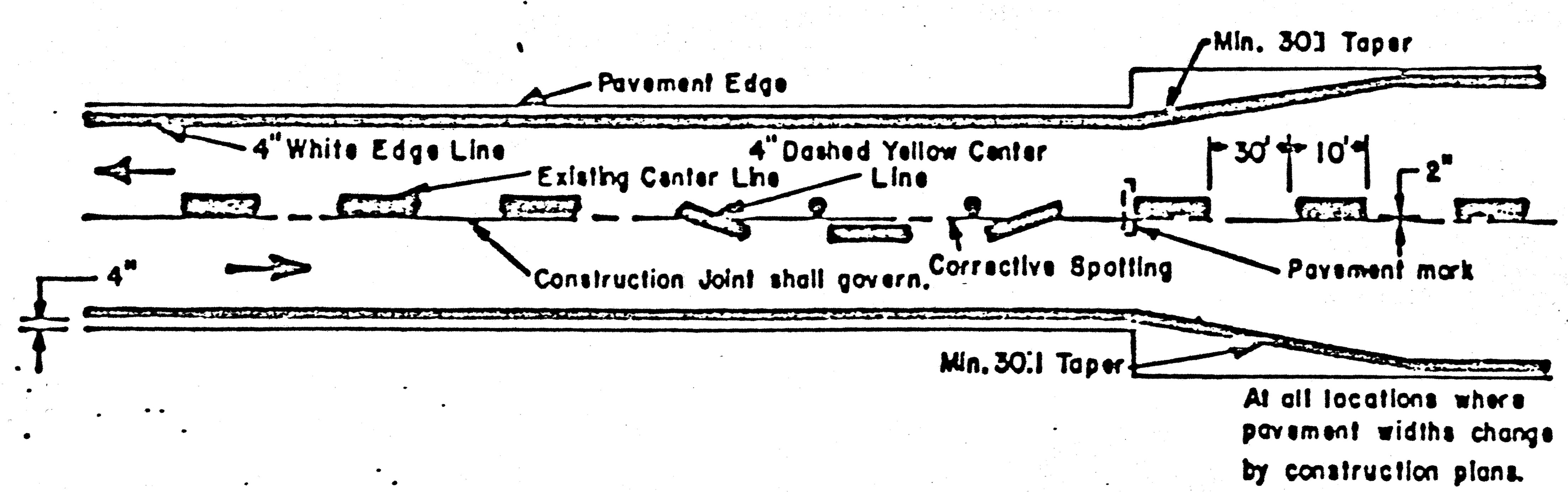
FED.RD DIV.	STATE	PROJECT	
5	OHIO		

PLAN NO.
FRA-270-29.11

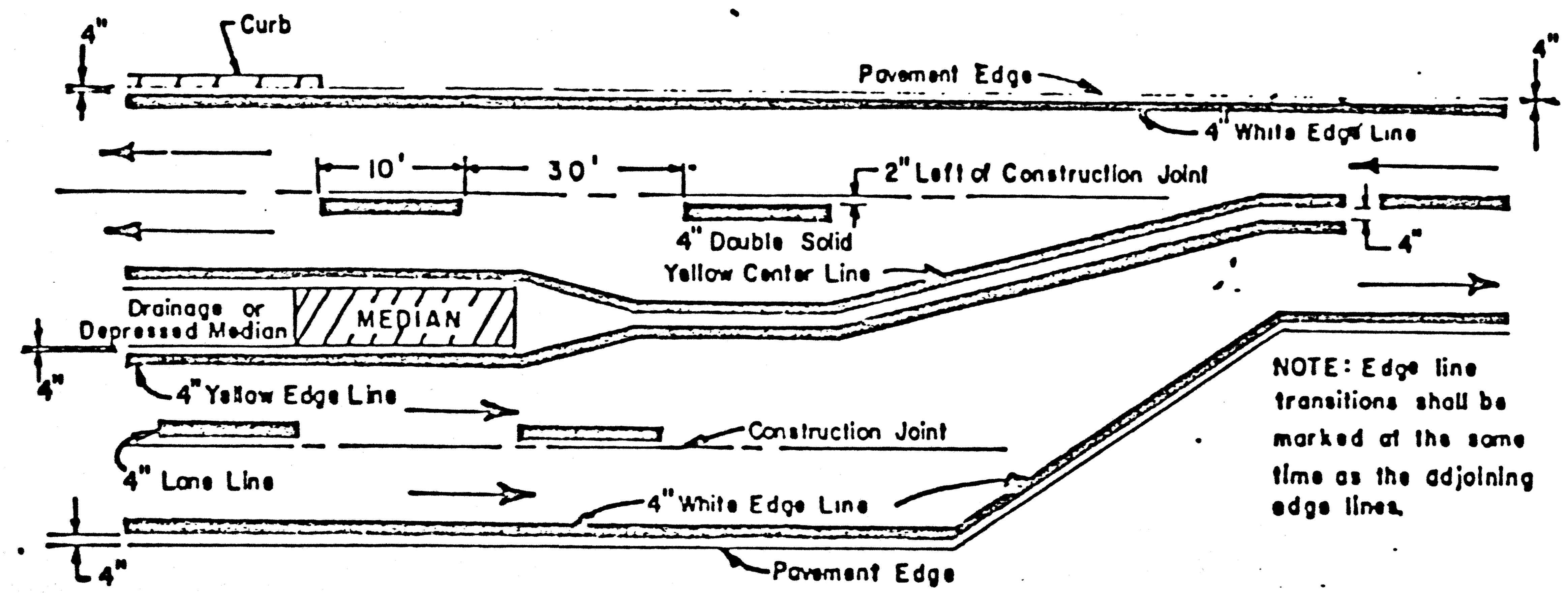
FREEWAY & EXPRESSWAY MAINLINE MARKINGS



TWO LANE MARKINGS



MULTILANE DIVIDED & UNDIVIDED HIGHWAY MARKINGS



NOTES:

1. THE DISTANCE FROM THE PAVEMENT EDGE TO THE NEARSIDE EDGE OF THE EDGELINE MAY BE INCREASED WITH THE APPROVAL OF THE ENGINEER IN ORDER TO MAINTAIN UNIFORM LANE WIDTH.

2. SEE TC 72.20 FOR PAVEMENT ENTRANCE AND EXIT RAMP TERMINALS.

...O. DEPARTMENT OF TRANSPORTATION	
PAVEMENT MARKING TYPICAL DETAILS	DATE 11/80
JDL CDR	

12/81

ITEM 621
EDGE LINE SUB-SUMMARY

LOC NO.	JURIS-DICTION	ROUTE	SLM		WHITE EDGE LINE QUANTITIES				YELLOW EDGE LINE QUANTITIES				REMARKS
			FROM	TO	TOTAL MILES	HIGHWAY	RAMP	PART. TYPE	TOTAL MILES	HIGHWAY	RAMP	PART. TYPE	
1-A		IR-270	29.11	30.54	2.86	2.86			2.86	2.86			
		"	31.28	31.45	0.34	0.34			0.34	0.34			
		Ramp A			.41		.41		.41		.41		
		Ramp B			.21		.21		.21		.21		
		Ramp G			.33		.33		.33		.33		
		Ramp H			.23		.23		.23		.23		
	Total Part	1-Sec. A	to General	Summary	4.38				4.38				
2-A		IR-270	30.54	31.28	1.48	1.48			1.48	1.48			
		"	31.45	31.70	0.50	0.50			0.50	0.50			
		Ramp C			.32		.32		.32		.32		
		Ramp D			.21		.21		.21		.21		
		Ramp E			.41		.41		.41		.41		
		Ramp F			.21		.21		.21		.21		
	Total Part	2-Sec. A	to General	Summary	3.13				3.13				
2-B		IR-270	31.70	33.62	3.84	3.84			3.84	3.84			
		"	33.96	34.10	0.28	0.28			0.28	0.28			
		Ramp I			.30		.30		.30		.30		
		Ramp J			.21		.21		.21		.21		
		Ramp K			.36		.36		.36		.36		
		Ramp L			.18		.18		.18		.18		
	Total Part	2-Sec. B	to General	Summary	5.17				5.17				
3-B		IR-270	33.62	33.96	0.68	0.68			0.68	0.68			
	Total Part	3-Sec. B	to General	Summary									
1-C		IR-270	34.49	35.60	2.22	2.22			2.22	2.22			
		Ramp M			.23		.23		.23		.23		
		Ramp N			.04		.04		.04		.04		
		Ramp O			.19		.19		.19		.19		
		Ramp P			.63		.63		.63		.63		
		Ramp Q			.57		.57		.57		.57		
		Ramp R			.21		.21		.21		.21		
		Ramp S			.41		.41		.41		.41		
		Ramp T			.25		.25		.25		.25		
		Ramp U			.57		.57		.57		.57		
	Total Part	1-Sec. C	to General	Summary	5.32				5.32				

ITEM 621
EDGE LINE SUB-SUMMARY

FED RD DIVISION	STATE	PROJECT	
5	OHIO		

PLAN NO. FRA-270-29.11

LOC NO.	JURIS-DICTION	ROUTE	SLM FROM	SLM TO	WHITE EDGE LINE QUANTITIES TOTAL MILES	WHITE HIGHWAY	WHITE RAMP	WHITE PART. TYPE	YELLOW EDGE LINE QUANTITIES TOTAL MILES	YELLOW HIGHWAY	YELLOW RAMP	YELLOW PART. TYPE	REMARKS
2-C		IR-270	34.10	34.37	0.54	0.54			0.54	0.54			
	Total Part 2-Sec. C to General Summary												
3-C		IR-270	34.37	34.49	0.24	0.24			0.24	0.24			
		"	35.60	37.00	2.80	2.80			2.80	2.80			
		Ramp N			0.12		0.12		0.12		0.12		
		Ramp U			0.34		0.34		0.34		0.34		
	Total Part 2-Sec. C to General Summary				3.50				3.50				

ITEM 621
LANE LINE SUB-SUMMARY

LOC. NO.	JURIS-DICTION	ROUTE	SLM FROM	SLM TO	QUANTITIES TOTAL MILES	4" LANELINES DASHED	4" LANELINES SOLID	PARTICIPATION TYPE				REMARKS
1-A		IR-270	29.11	30.54	5.72	5.72						
		"	31.28	31.45	0.68	0.68						
		Ramp A			.07	.07						
		Ramp B			.06	.06						
		Ramp G			.09	.09						
		Ramp H			.03	.03						
	Total Part	1-Sec. A	to General	Summary	6.65							
2-A		IR-270	30.54	31.28	2.96	2.96						
		"	31.45	31.70	1.00	1.00						
		Ramp C			.04	.04						
		Ramp D			.03	.03						
		Ramp E			.05	.05						
		Ramp F			.04	.04						
	Total Part	2-Sec. A	to General	Summary	4.12							
2-B		IR-270	31.70	33.62	7.68	7.68						
		"	33.96	34.10	.56	.56						
		Ramp I			.06	.06						
		Ramp J			.11	.11						
		Ramp K			.05	.05						
		Ramp L			.04	.04						
	Total Part	2-Sec. B	to General	Summary	8.50							
3-B		IR-270	33.62	33.96	1.36	1.36						
	Total Part	3-Sec. B	to General	Summary	1.36							
1-C		IR-270	34.49	35.60	4.44	4.44						
		Ramp M			.06	.06						
		Ramp O			.02	.02						
		Ramp P			.72	.72						
		Ramp Q			.08	.08						
		Ramp R			.03	.03						
		Ramp S			.58	.58						
		Ramp T			.03	.03						
		Ramp U			.57	.57						
	Total Part	1-Sec. C	to General	Summary	6.53							

ITEM 621
LANE LINE SUB-SUMMARY

PLAN NO.
FRA-270-29.11

LOC. NO.	JURIS-DICTION	ROUTE	SLM FROM	SLM TO	QUANTITIES TOTAL MILES	4" LANELINES DASHED	4" LANELINES SOLID	PARTICIPATION TYPE				REMARKS
2-C		IR-270	34.10	34.37	1.08	1.08						
	Total Part	2-Sec. C	to General	Summary	1.08							
3-C		IR-270	34.37	34.49	.48	.48						
		"	35.60	35.94	1.70	1.70						
		"	35.94	37.00	6.36	6.36						
		Ramp N			.01	.01						
		Ramp Q			.22	.22						
		Ramp U			.43	.43						
	Total Part	3-Sec. C	to General	Summary	9.20							

847 PAVEMENT MARKING SUB-SUMMARY

SHEET TOTAL	FED RD DIVISION	STATE	PROJECT	
______ SQ. FT.	5	OHIO		

AUXILIARY MARKING

FRA-270-29.11

PART	ROUTE	S.L.M. FROM	S.L.M. TO	24" TRANSVERSE LINES WHITE LIN. FT.	24" TRANSVERSE LINES WHITE SQ. FT.	24" TRANSVERSE LINES YELLOW LIN. FT.	24" TRANSVERSE LINES YELLOW SQ. FT.	8" CHANNELIZING LINES WHITE LIN. FT.	8" CHANNELIZING LINES WHITE SQ. FT.	12" CROSSWALK LINES YELLOW LIN. FT.	12" CROSSWALK LINES YELLOW SQ. FT.	WORD ON PAVEMENT ONLY 96" EACH	WORD ON PAVEMENT ONLY 96" SQ. FT.	WORD ON PAVEMENT SCHOOL 96" EACH	WORD ON PAVEMENT SCHOOL 96" SQ. FT.	LANE ARROWS TURN LEFT EACH	LANE ARROWS TURN LEFT SQ. FT.	LANE ARROWS TURN RIGHT EACH	LANE ARROWS TURN RIGHT SQ. FT.	LANE ARROWS THRU. EACH	LANE ARROWS THRU. SQ. FT.	LANE ARROWS COMB. EACH	LANE ARROWS COMB. SQ. FT.	RAILROAD SYMBOL ON PAVEMENT EACH	RAILROAD SYMBOL ON PAVEMENT SQ. FT.	STOP LINE 24" LIN. FT.	STOP LINE 24" SQ. FT.
1-A	IR-270	Ramp A						650																			
		Ramp B		50				340																			
		Ramp G		280				500																			
		Ramp H						300																			
	Total Part 1-Sec. A to General Summary			330				1790																			
2-A	IR-270	Ramp C		190				460																			
		Ramp D						280																			
		Ramp E						200																			
		Ramp F		80				380																			
	Total Part 2-Sec. A to General Summary			270				1320																			
2-B	IR-270	Ramp I						450																			
		Ramp J		336				568				1				2										60	
		Ramp K						500																			
		Ramp L		368				560																			
	Total Part 2-Sec. B to General Summary			704				2078				1				2										50	
																										110	
1-C	IR-270	Ramp M						440																			
		Ramp N																									
		Ramp O		88				200																		50	
		Ramp P						950																			
		Ramp Q						564																			
		Ramp R		216				430																			
		Ramp S		380				460																			
		Ramp T						240																			
	Total Part 1-Sec. C to General Summary			684				3284																			
																										50	
3-C	IR-270	Ramp N		100				272																			
		Ramp U		840				1000																			
	Total Part 3-Sec. C to General Summary			940				1272																			
AUXILIARY MARKING TOTAL			SQ. FT. SUB-TOTAL																								

ESTIMATED QUANTITIES

		Parts & Sections -	1-A	1-A	2-B	2-B	3-C	3-C	
		Type Codes -	X231	X231	X220	X220	X081	X081	
ITEM	DESCRIPTION	UNIT	FRA-270 3141L	FRA-270 3141R	FRA-270 3227L	FRA-270 3227R	FRA-270 3694L	FRA-270 3694R	TOTAL
202	Existing Wearing Surface Course Removed	Sq. Yds.	-	-	-	-	2500	-	2500
513	Reset Abutment Rockers	Each	14	14	-	-	-	-	28
513	Trimming of Beam Ends	Each	14	14	-	-	-	-	28
516	Vertical Extension of Structural Expansion Joints, as per plan	Lin. Ft.	122	122	110	110	164	168	796
510	Dowel Holes	Each	292	292	324	324	-	-	1232
845	Latex Modified Concrete Overlay (1¼" thick)	Sq. Yds.	866	866	1263	1263	2500	2554	9312
845	Latex Modified Concrete Overlay (variable thickness)	Cu. Yds.	10	10	14	14	44	18	110
824	Epoxy Coated Reinforcing Steel, grade 60	Lbs.	6721	6721	7245	7245	-	-	27932
SPECIAL	Sealing of Concrete Surfaces (See proposal note)	Sq. Yds.	356	356	409	409	586	588	2704
SPECIAL	Scupper Modification	Each	8	9	-	-	18	18	53
511	Class S Concrete for Bridge Rail	Cu. Yds.	39	39	45	45	-	-	168

GENERAL NOTES

ITEM 513 - Reset Abutment Rockers
This item shall consist of resetting Abutment Rockers in a Vertical position at 70°F when lowering superstructure ends which were raised to Trim End Dam Angles. Rocker areas are to be cleaned prior to resetting of rockers. If frozen, the assemblies shall be freed to the satisfaction of the Engineer.

ITEM 513 - Trimming of Beam Ends
This item shall consist of trimming beam web and flanges where necessary to provide a minimum of 2 inch clearance from the backwalls.

ITEM 516 - Vertical Extension of Structural Expansion Joints, as per plan
This item shall consist of lifting the ends of the superstructure ½" and trimming the top End Dam Angle to allow 2" expansion; lowering; and furnishing all materials, labor, equipment and incidentals necessary to extend the end dams in accordance with the plans and Standard Drawing BP-5.
At least 15 days prior to jacking operations, the contractor shall submit to the Director for approval, drawings and a description of the methods to be used to raise the superstructure ends. The maximum beam reaction to be jacked is 100 kips. This work shall be complete and Superstructure Ends lowered prior to placing Latex Modified Concrete Overlay.

When the temperature varies from 70°F as called for in the notes for items 513 and 516 an adjustment of 1/8 inch per degrees of temperature change shall be made in the dimensions indicated and in the alignment of the rockers. A lower temperature shall require an increase in the dimensions and a tilt of the rockers toward the piers and an increase in temperature shall require a decrease in the dimensions and a tilt of the rockers toward the abutment backwall. (See table below)

(The number of degrees change from 70°F will have to be determined for these bridges at time of setting of rockers).

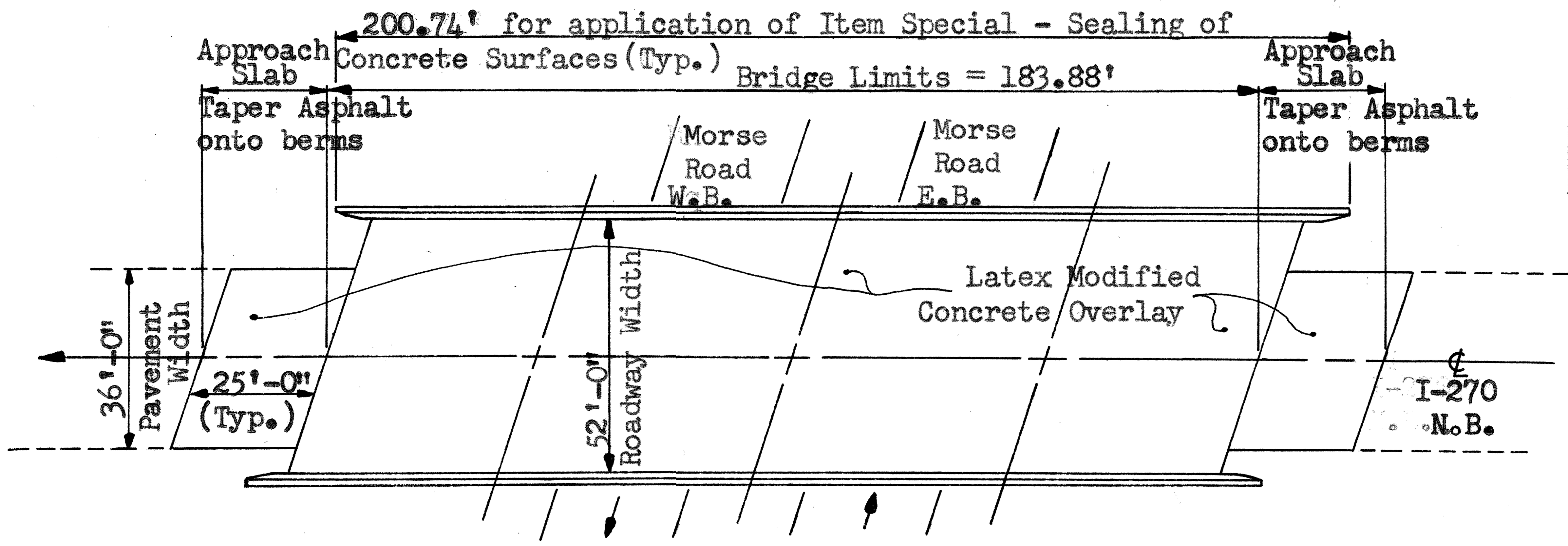
Degrees of temperature change for each 1/8" of movement.		
Bridge Number		°F
FRA-270 3141L&R	North Side	14.4°
	South Side	48.6°

STATE OF OHIO
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
DISTRICT 6 BRIDGE DEPARTMENT

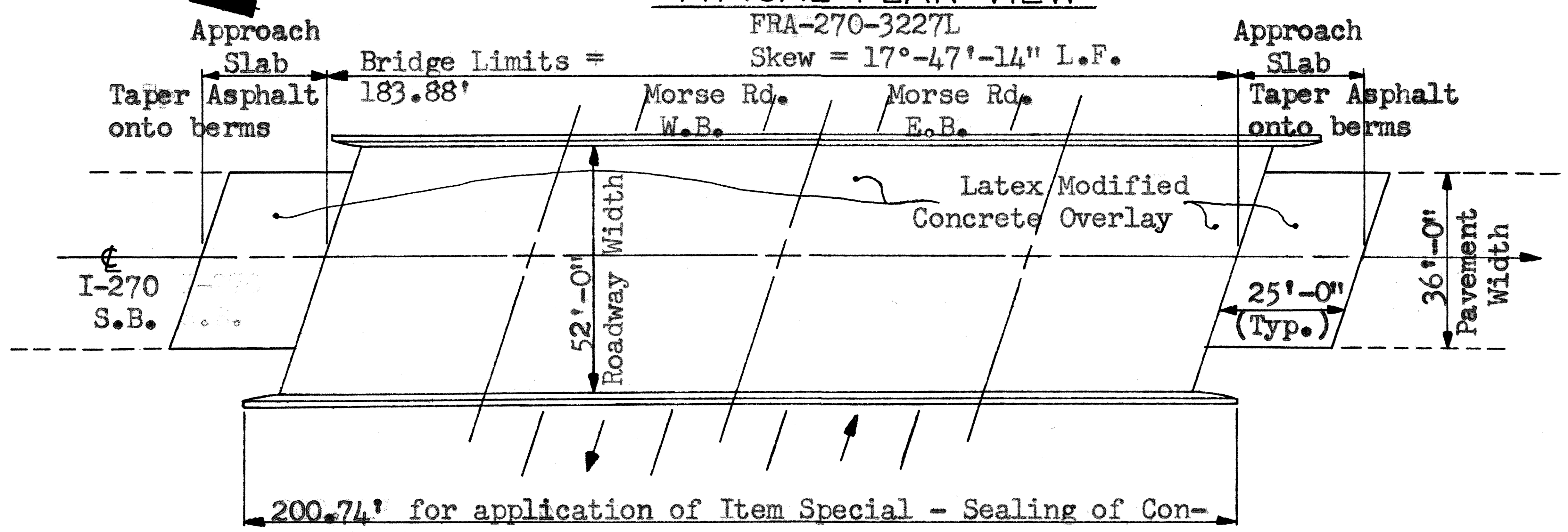
ESTIMATED QUANTITIES & GENERAL NOTES

FRA-270-3141L&R
FRA-270-3227L&R
FRA-270-3649L&R

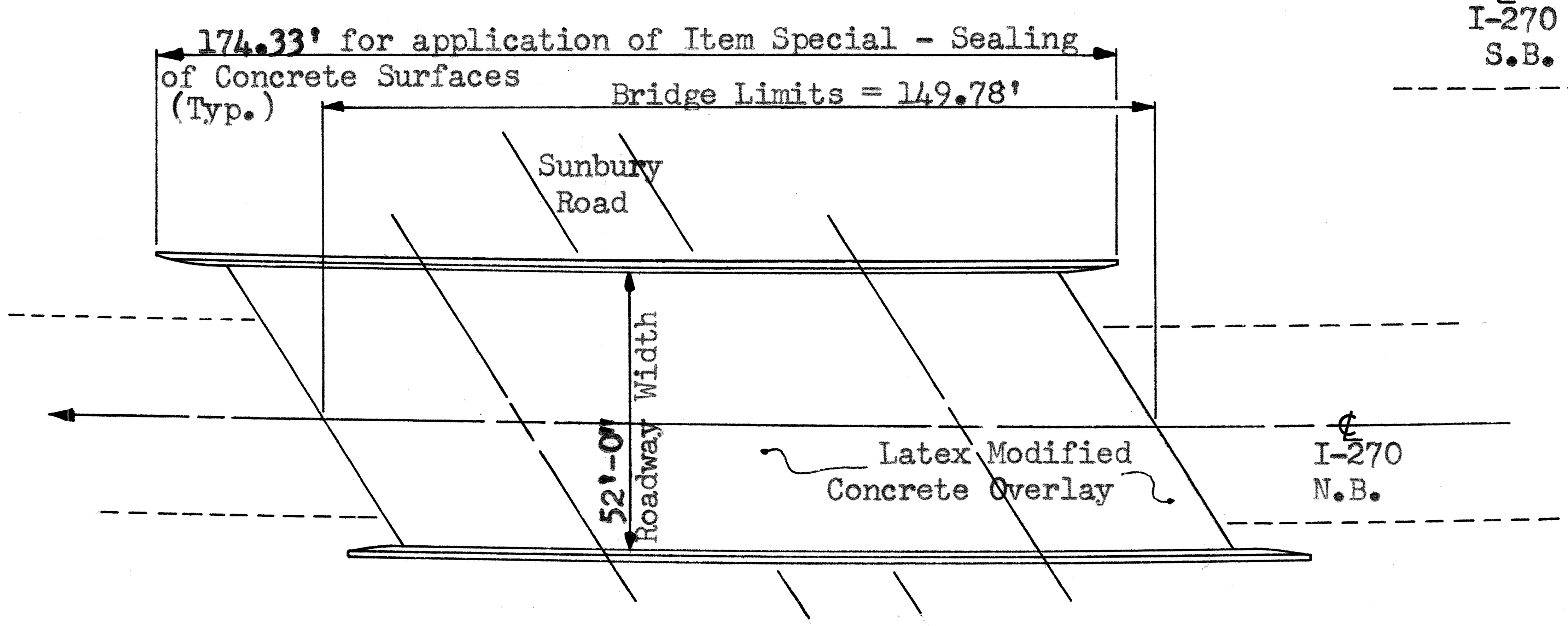
DESIGN	DRAWN	TRACED	CHECKED	REVIEW	DATE	REVISED
Jaz	Jaz	Jaz		EN	5-31-85	



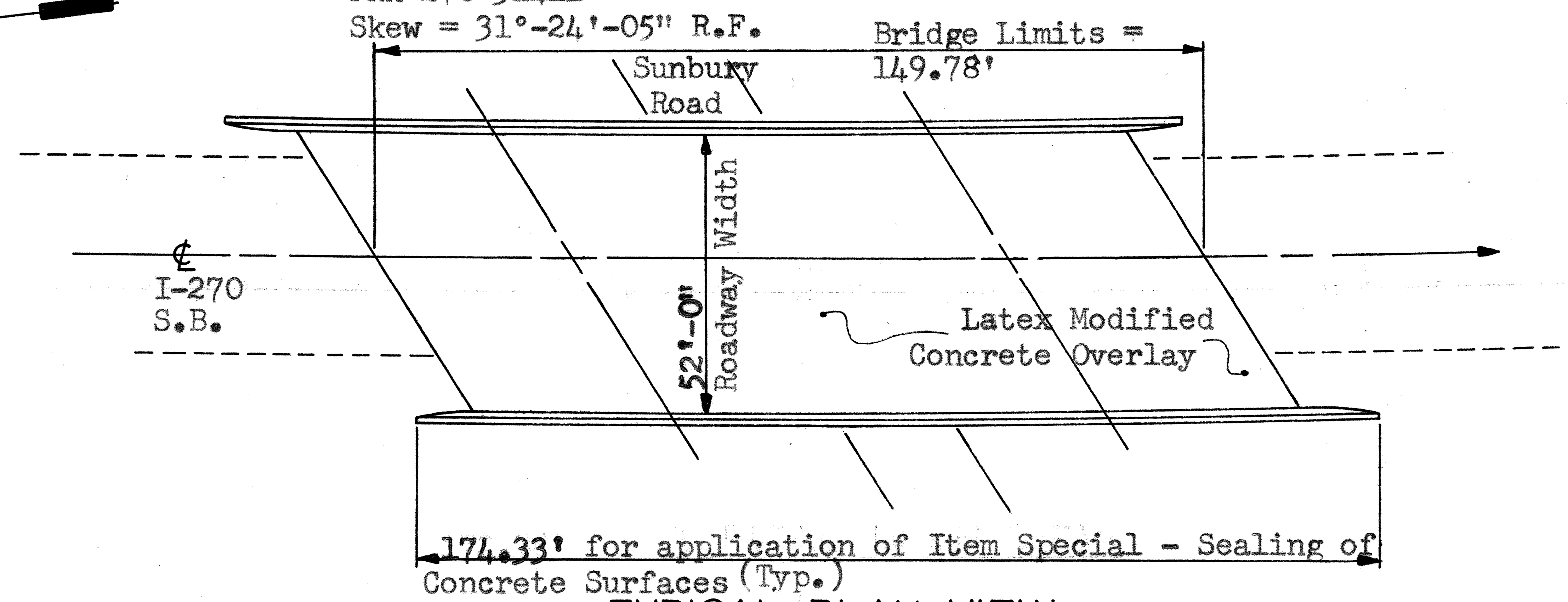
TYPICAL PLAN VIEW
FRA-270-3227L
Skew = 17°-47'-14" L.F.



TYPICAL PLAN VIEW
FRA-270-3227R
Skew = 17°-47'-14" L.F.



TYPICAL PLAN VIEW
FRA-270-3141L
Skew = 31°-24'-05" R.F.



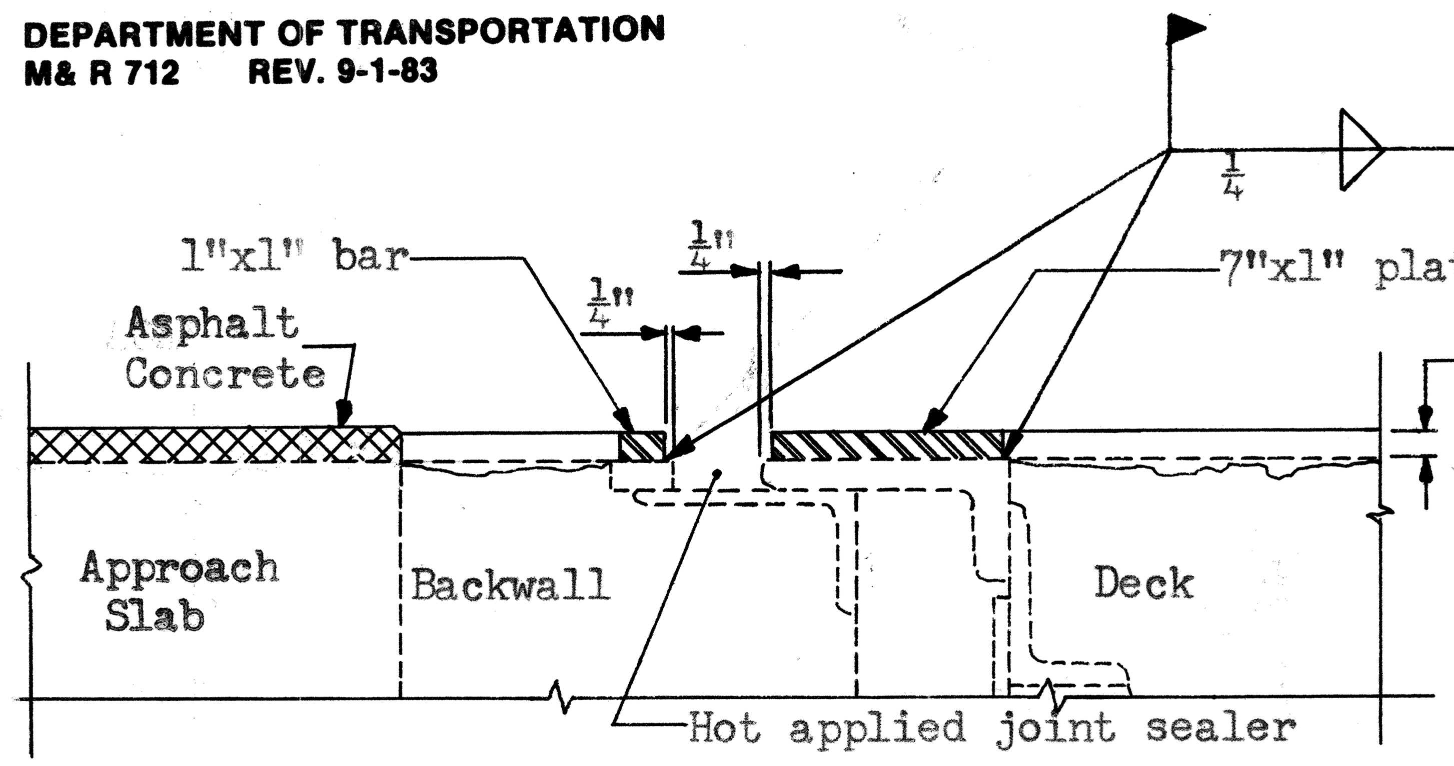
TYPICAL PLAN VIEW
FRA-270-3141R
Skew = 31°-24'-05" R.F.

STATE OF OHIO
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
DISTRICT 6 BRIDGE DEPARTMENT

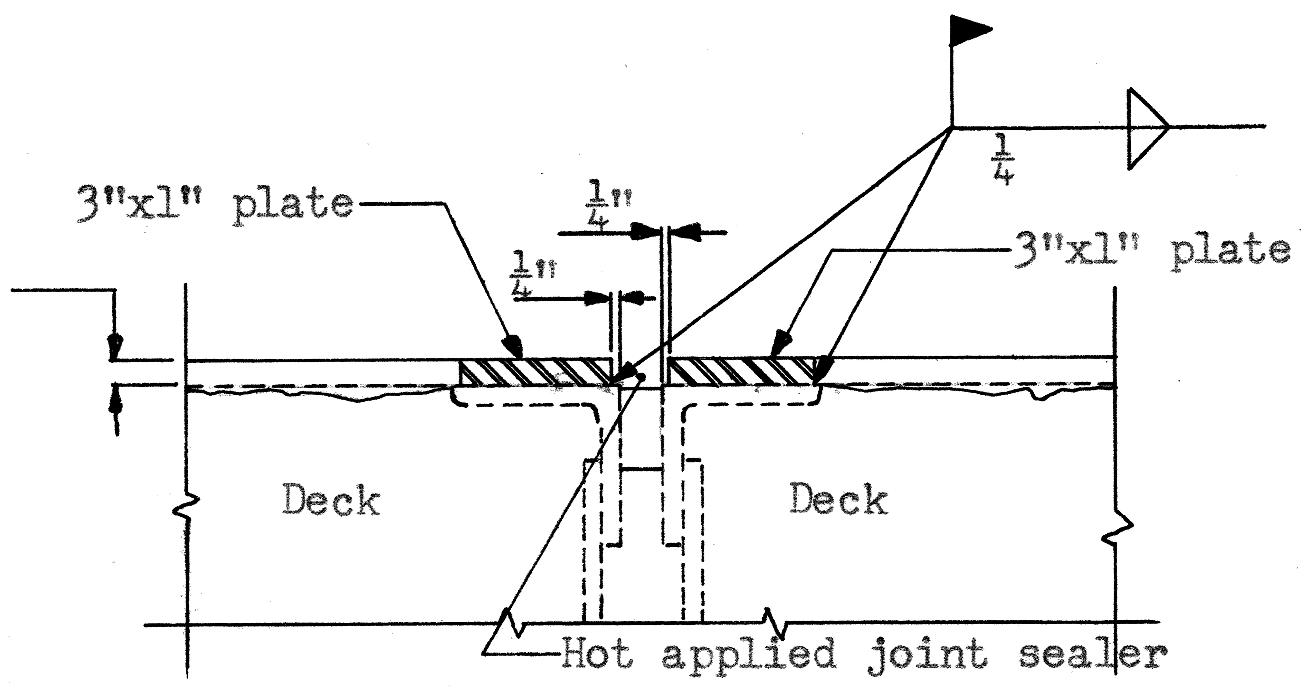
PLAN VIEWS

FRA-270-3141L&R
FRA-270-3227L&R

DESIGN	DRAWN	TRACED	CHECKED	REVIEW	DATE	REVISED
Jaj	Jaj	Jaj		En	5-31-85	



ABUTMENT EXPANSION JOINT

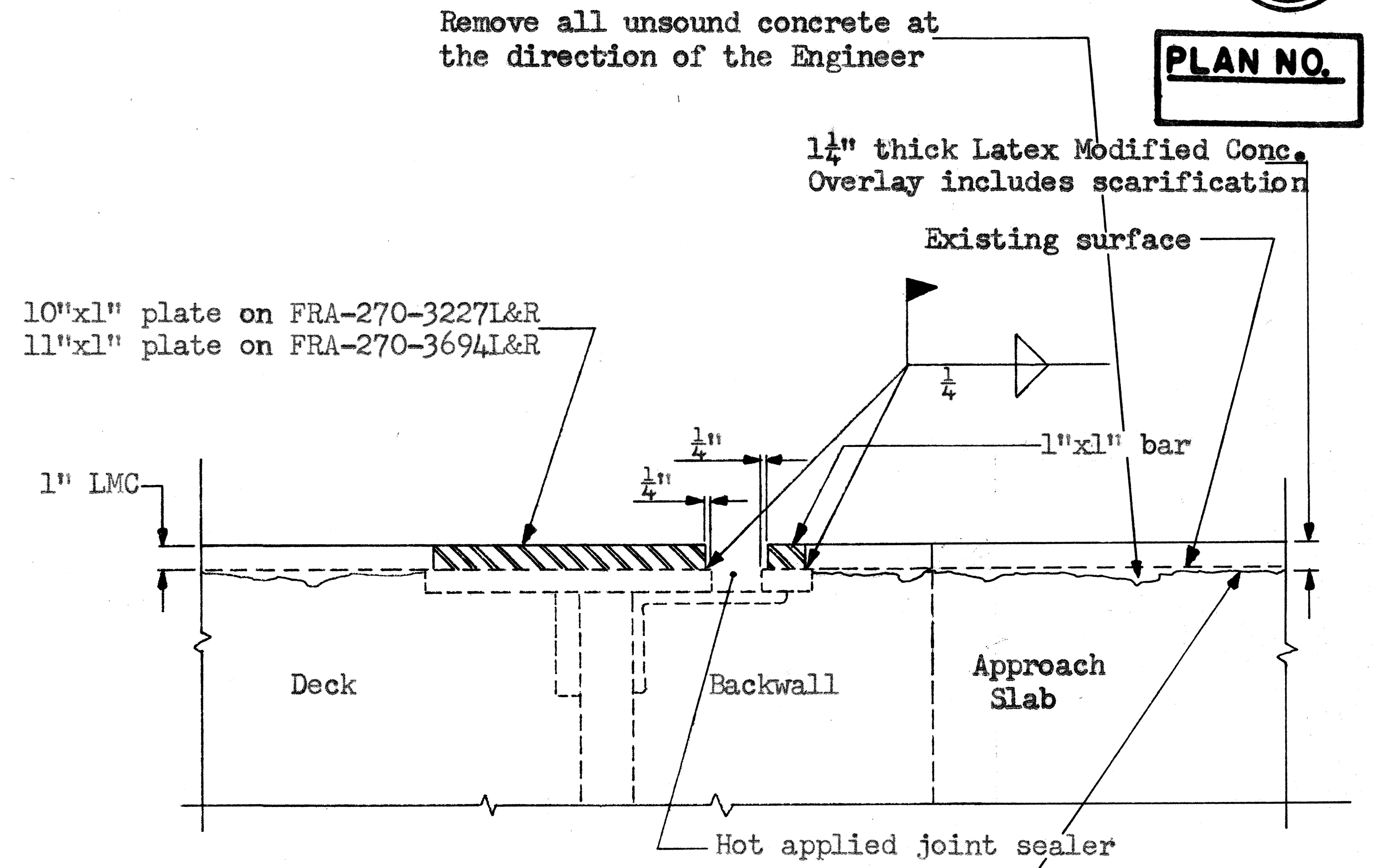


INTERMEDIATE EXPANSION JOINT

VERTICAL EXTENSION OF STRUCTURAL EXPANSION JOINTS

FRA-270-3141L&R

Surfaces of existing steel end dams to be welded shall be cleaned and free of scale, rust, moisture, grease, paint or other foreign material that will prevent proper welding. See Standard Drawing BP-5 for details not shown.

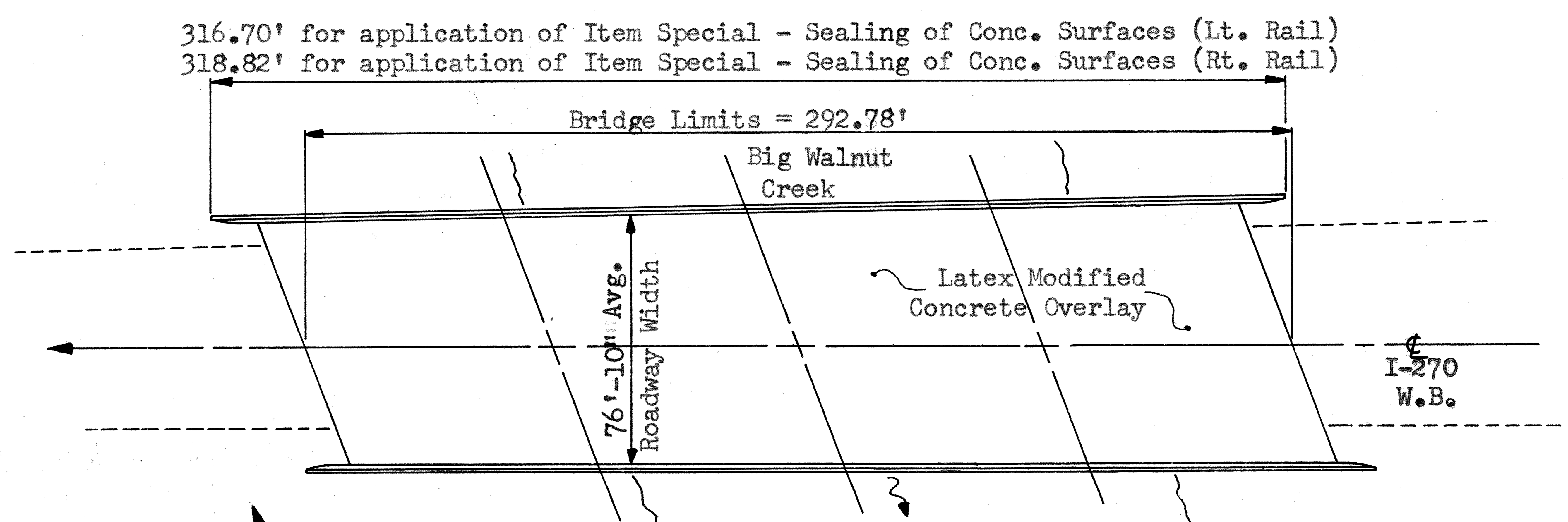


VERTICAL EXTENSION OF STRUCTURAL EXPANSION JOINTS

FRA-270-3227L&R
FRA-270-3694L&R

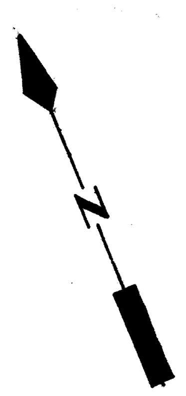
Surfaces of existing steel end dams to be welded shall be cleaned and free of scale, rust, moisture, grease, paint or other foreign material that will prevent proper welding.
See Standard Drawing BP-5 for details not shown.

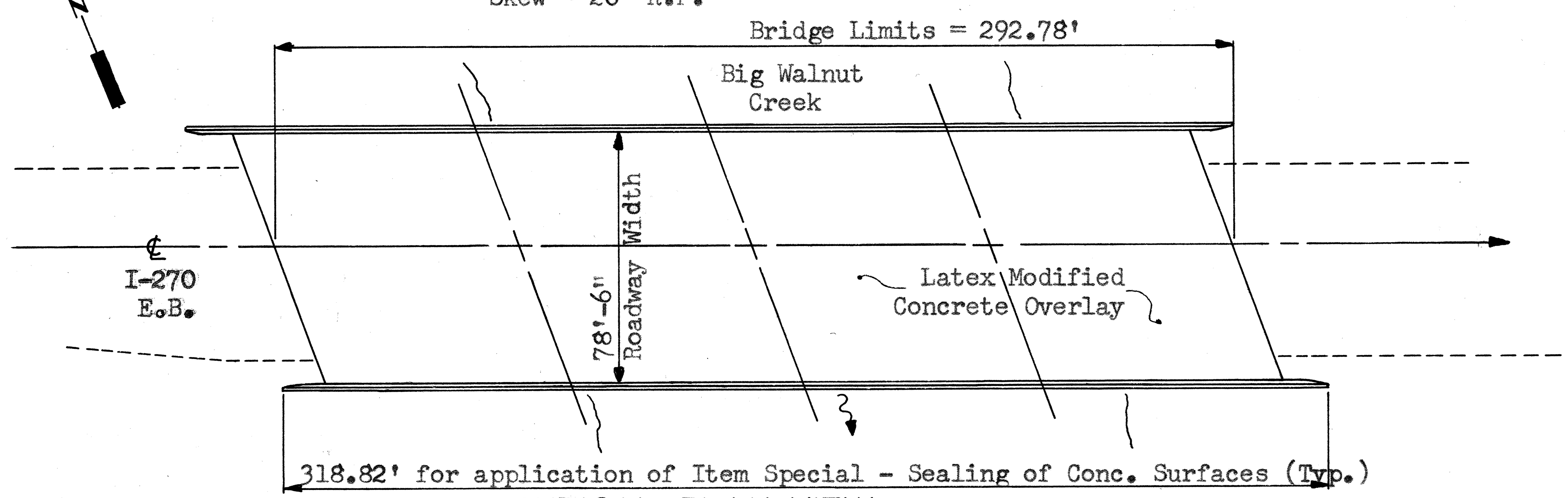
Latex Modified Concrete to be placed on approach slabs of strs. FRA-270-3227L&R only.



TYPICAL PLAN VIEW

FRA-270-3694L
Skew = 20° R.F.





TYPICAL PLAN VIEW

FRA-270-3694R
Skew = 20° R.F.

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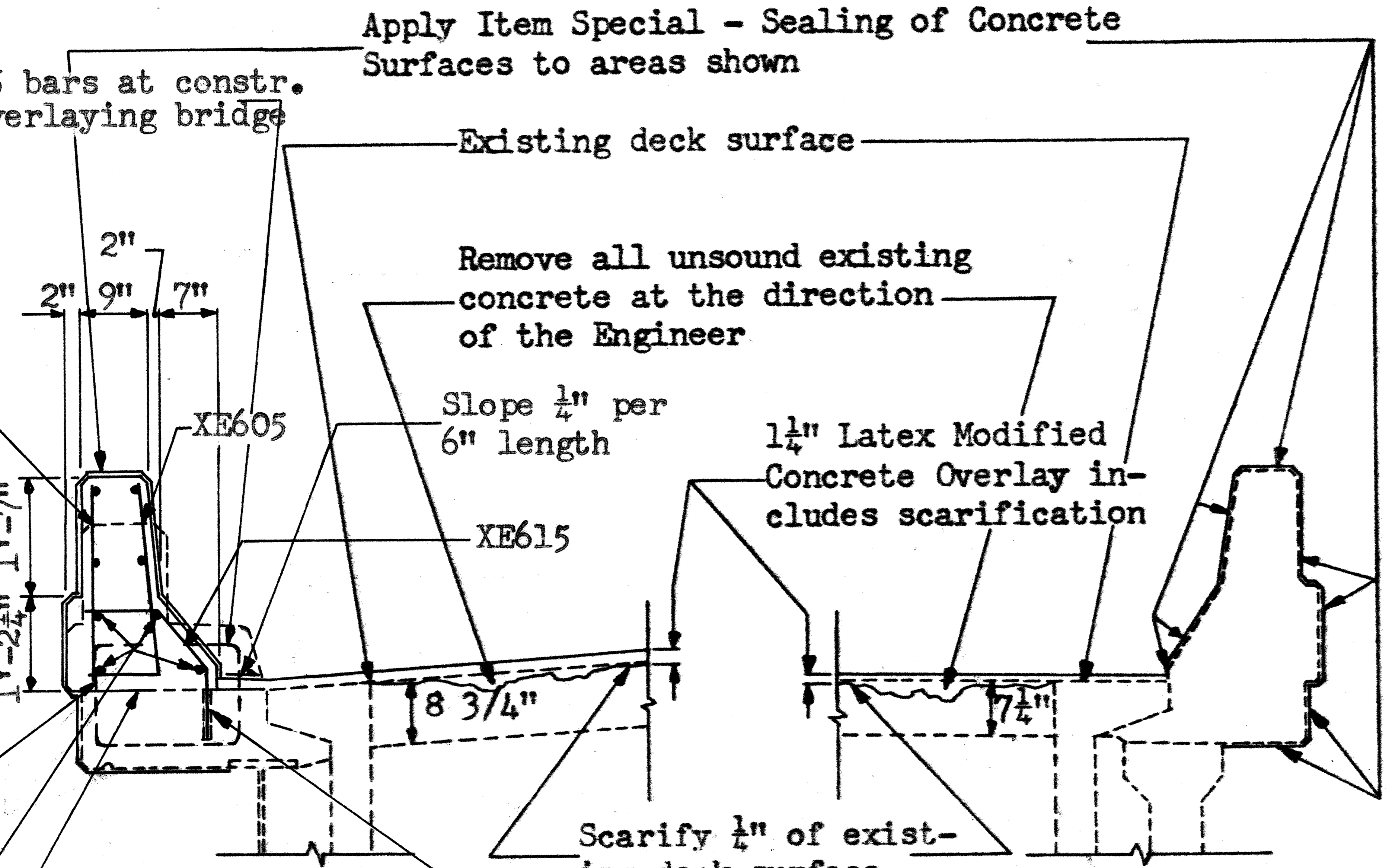
PLAN VIEWS & EXPANSION JOINT DETAILS

FRA-270-3141L&R
FRA-270-3227L&R
FRA-270-3649L&R

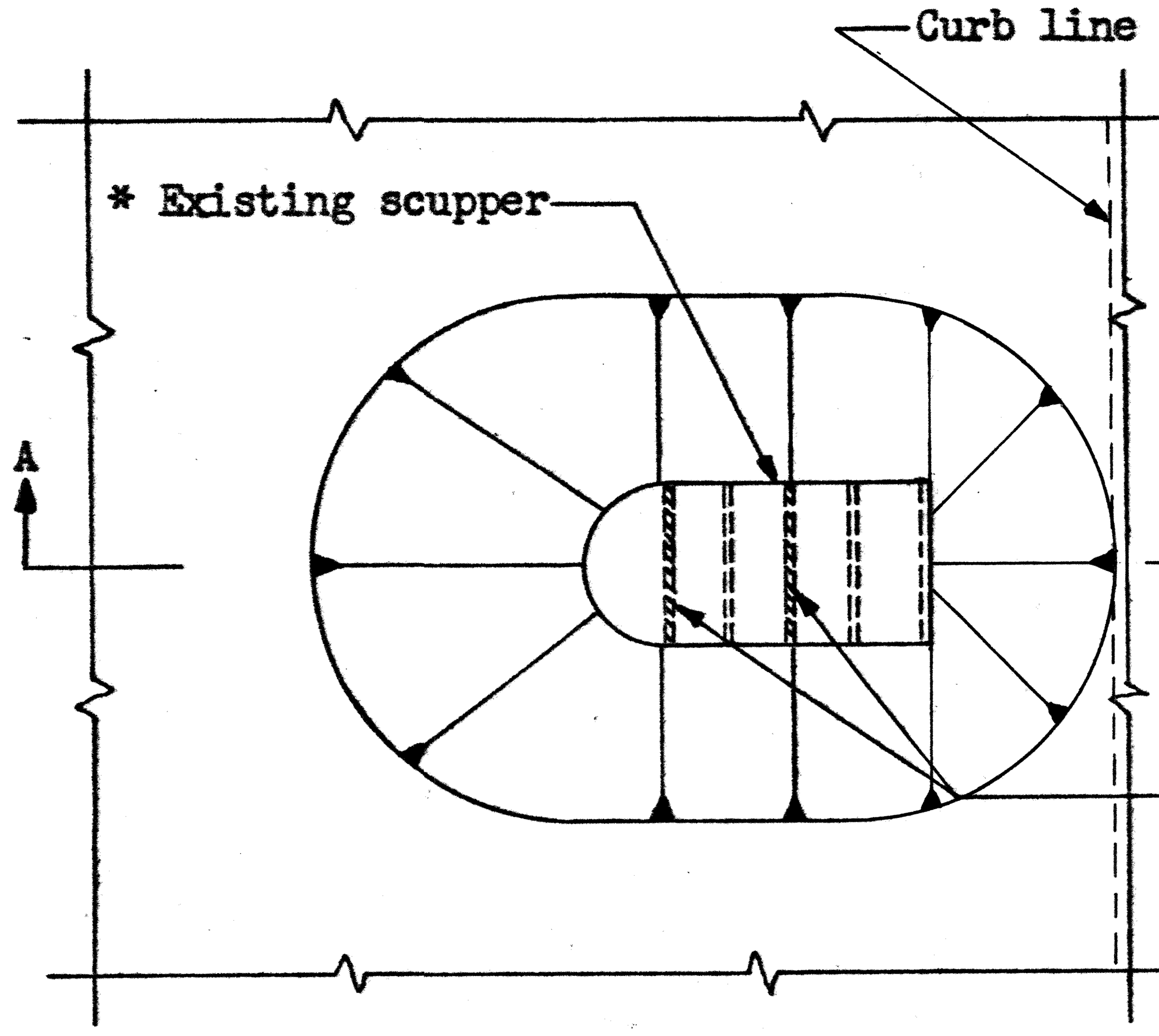
DESIGN	DRAWN	TRACED	CHECKED	REVIEW	DATE	REVISED
JaJ	JaJ	JaJ		En	5-31-85	



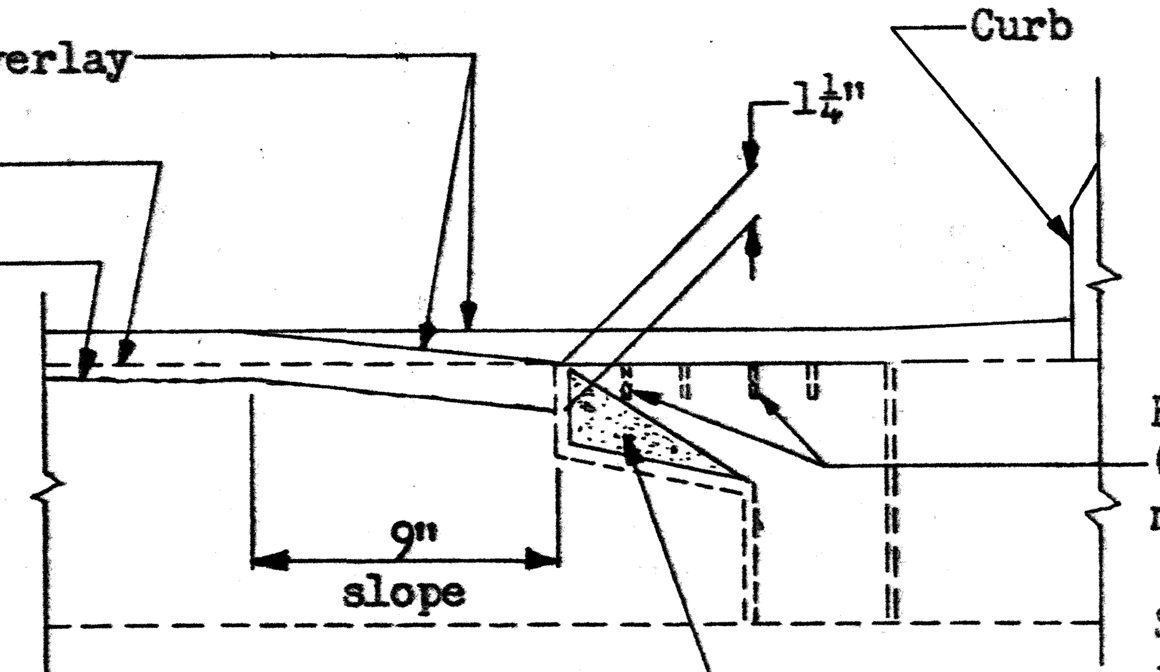
TYPICAL SECTION
FRA-270-3141L&R

TYPICAL SECTION
FRA-270-3694L&R

Dowel #6 bars 7" into existing concrete in accordance with Item 510. Material shall be in accordance with S.S. 853 and 956.



PLAN VIEW

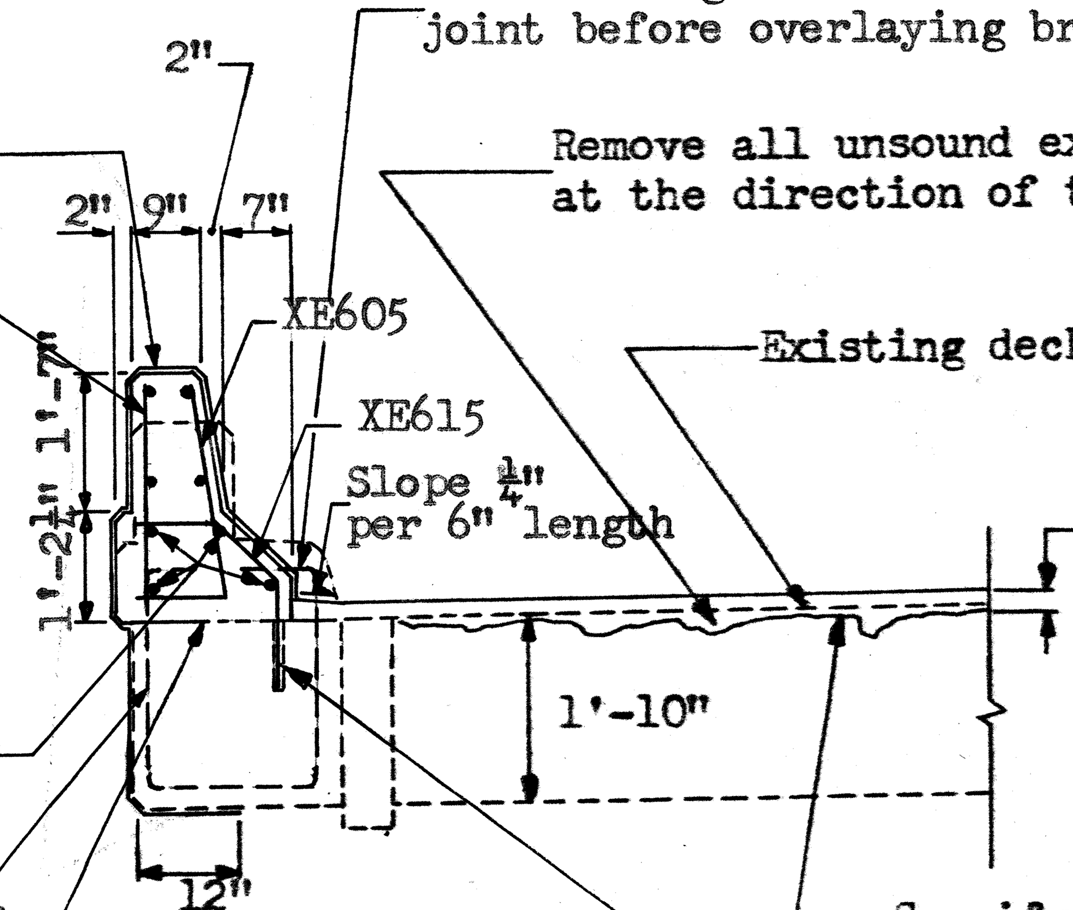


SECTION A-A

Sandblast bottom of scuppers and fill with LMC as shown. This work and removal of bars as shown above shall be included for payment under Item Special - Scupper Modification. (Strs. FRA-270-3141L&R and FRA-270-3649L&R only)

TYPICAL OVERLAY DETAIL AT SCUPPERS

* Scuppers as found may be reversed 180° or of another type than that shown.



TYPICAL SECTION
FRA-270-3227L&R

Dowel #6 bars 7" into existing concrete in accordance with Item 510. Material shall be in accordance with S.S. 853 and 956.

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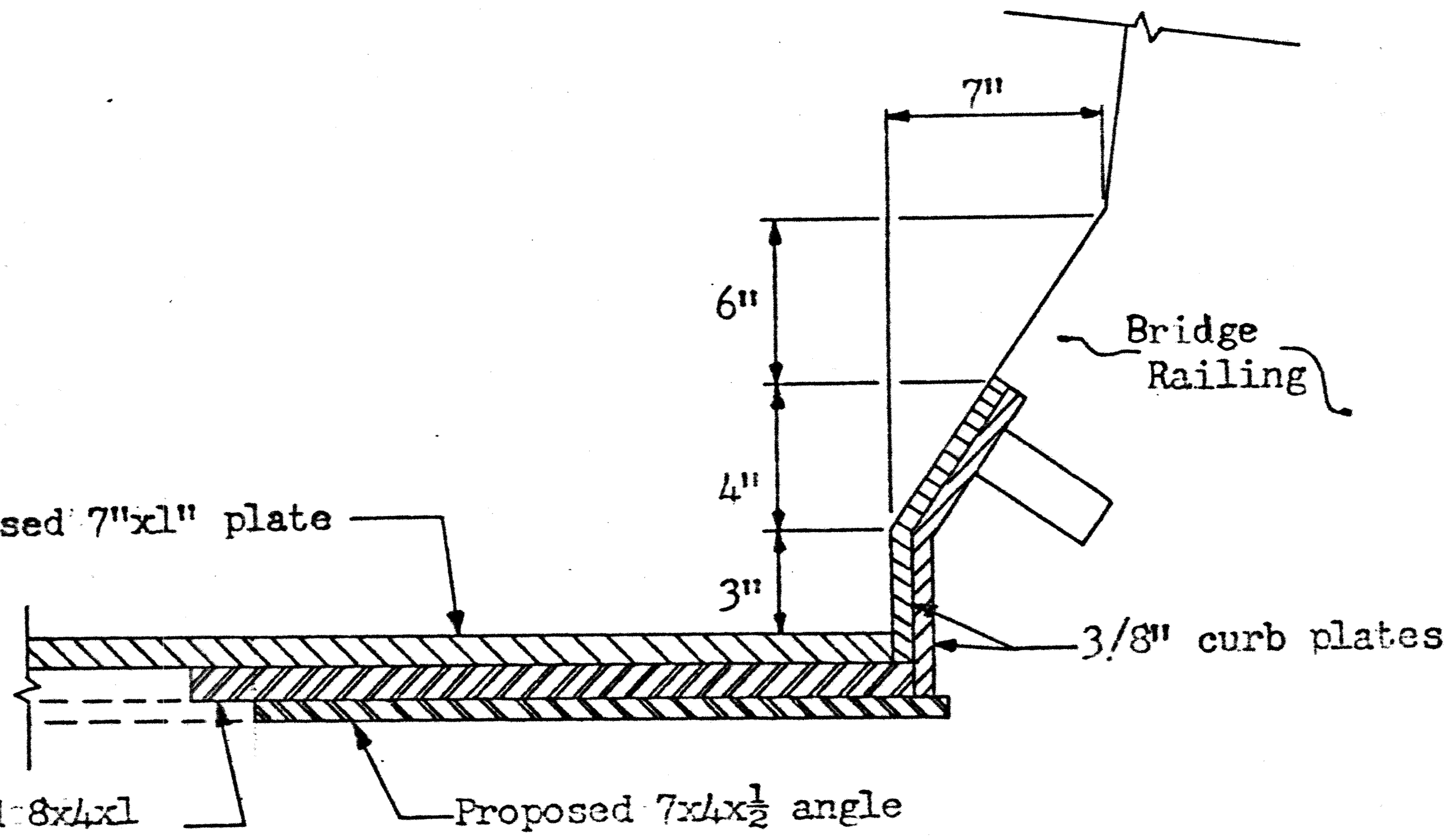
RESURFACING AND REPAIR DETAILS

FRA-270-3141L&R
FRA-270-3227L&R
FRA-270-3694L&R

DESIGN	DRAWN	TRACED	CHECKED	REVIEW DATE	REVISED
Jaj	Jaj	Jaj		En 5-31-85	

PLAN NO.

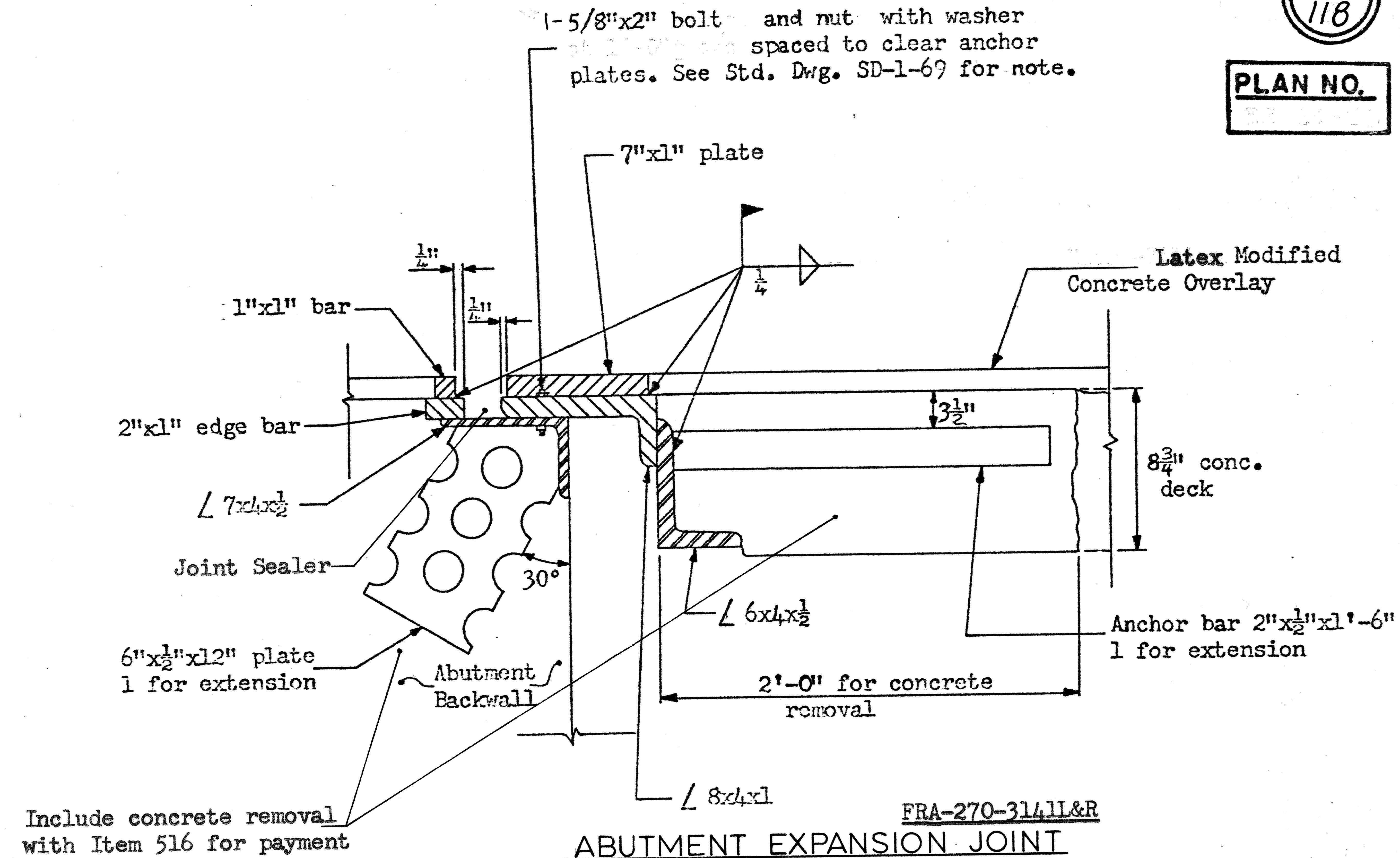
DEPARTMENT OF TRANSPORTATION
M&R 712 REV. 9-1-83



FRA-270-3141L&R

PROPOSED CURB PLATE

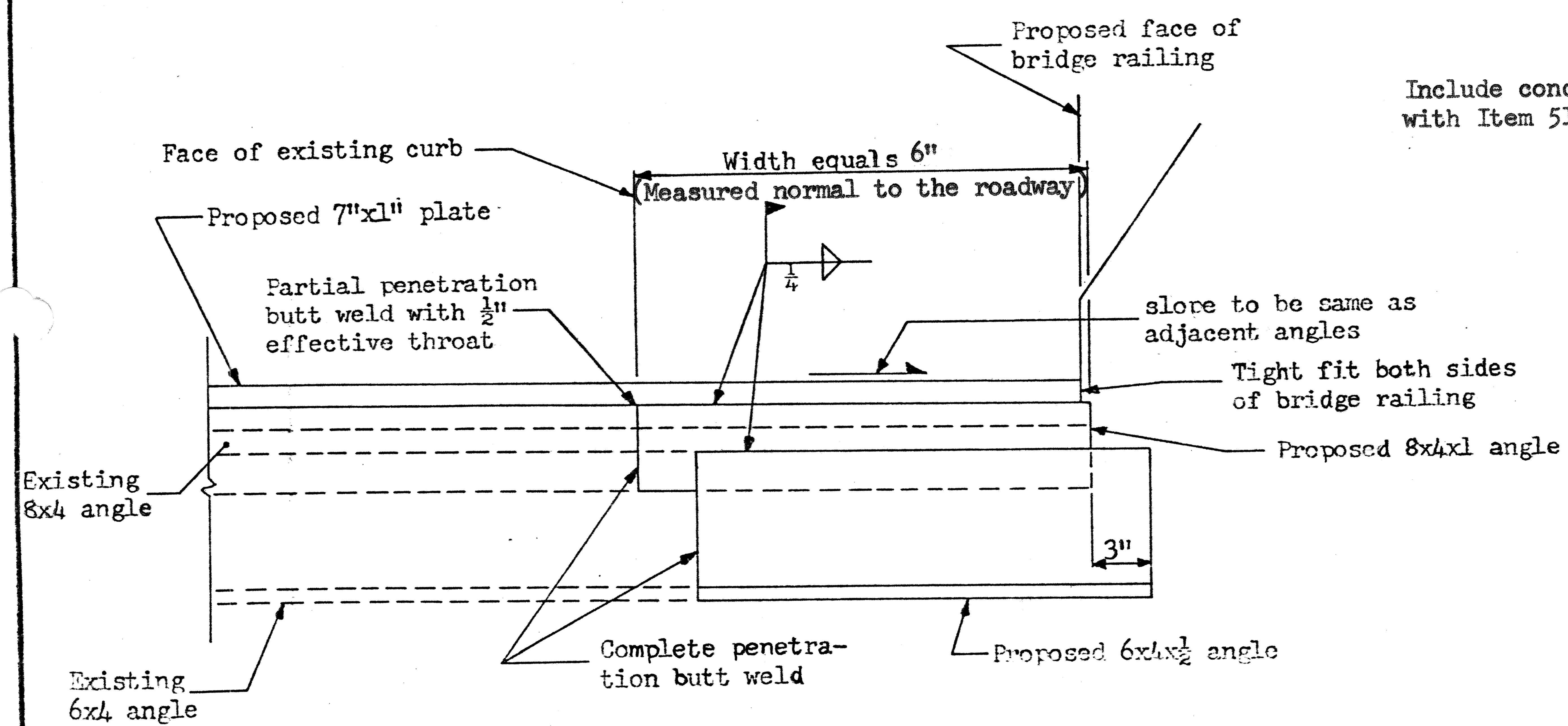
For details and information not shown, see Std. Dwg. SD-1-69.



FRA-270-3141L&R

ABUTMENT EXPANSION JOINT EXTENSION DETAILS

NOTES: For additional details and notes see Std. Dwg. SD-1-69.
Include all end dam armor steel for extensions with Item 516 for payment.
Portions of end dams in contact with steel or concrete shall not be painted. All other portions shall be cleaned and painted in accordance with Item 514 and be included with Item 516 for payment.
Provide 705.01 Joint Sealer as per Std. Dwg. BP-5, and include with Item 516 for payment.
Remove 1'-3"± x 1'-3"± area on abutment backwall for placement of end dam extensions. Replace abutment backwall and bridge deck concrete with Item 511 - Class S Concrete and include with Item 516 for payment.
(Other areas to be removed and replaced for extensions shall also be Class S Concrete and should be included with Item 516 for payment.)



WELDED BUTT JOINT IN SUPERSTRUCTURE END DAM

Lengths of proposed bars, plates and angles to be determined after concrete removal.
FRA-270-3141L&R
FRA-270-3227L&R

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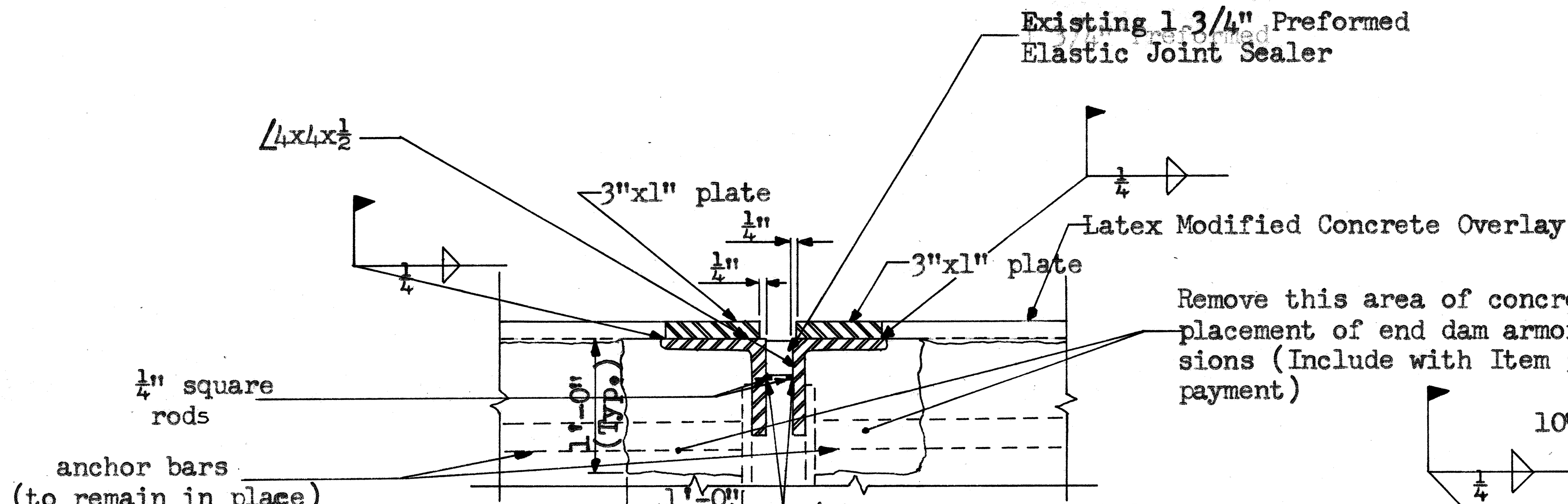
CURB PLATE AND END DAM DETAILS

FRA-270-3141L&R
FRA-270-3227L&R

DESIGN	DRAWN	TRACED	CHECKED	REVIEW	DATE	REVISED
	Jaj	Jaj		EN	12-15-86	

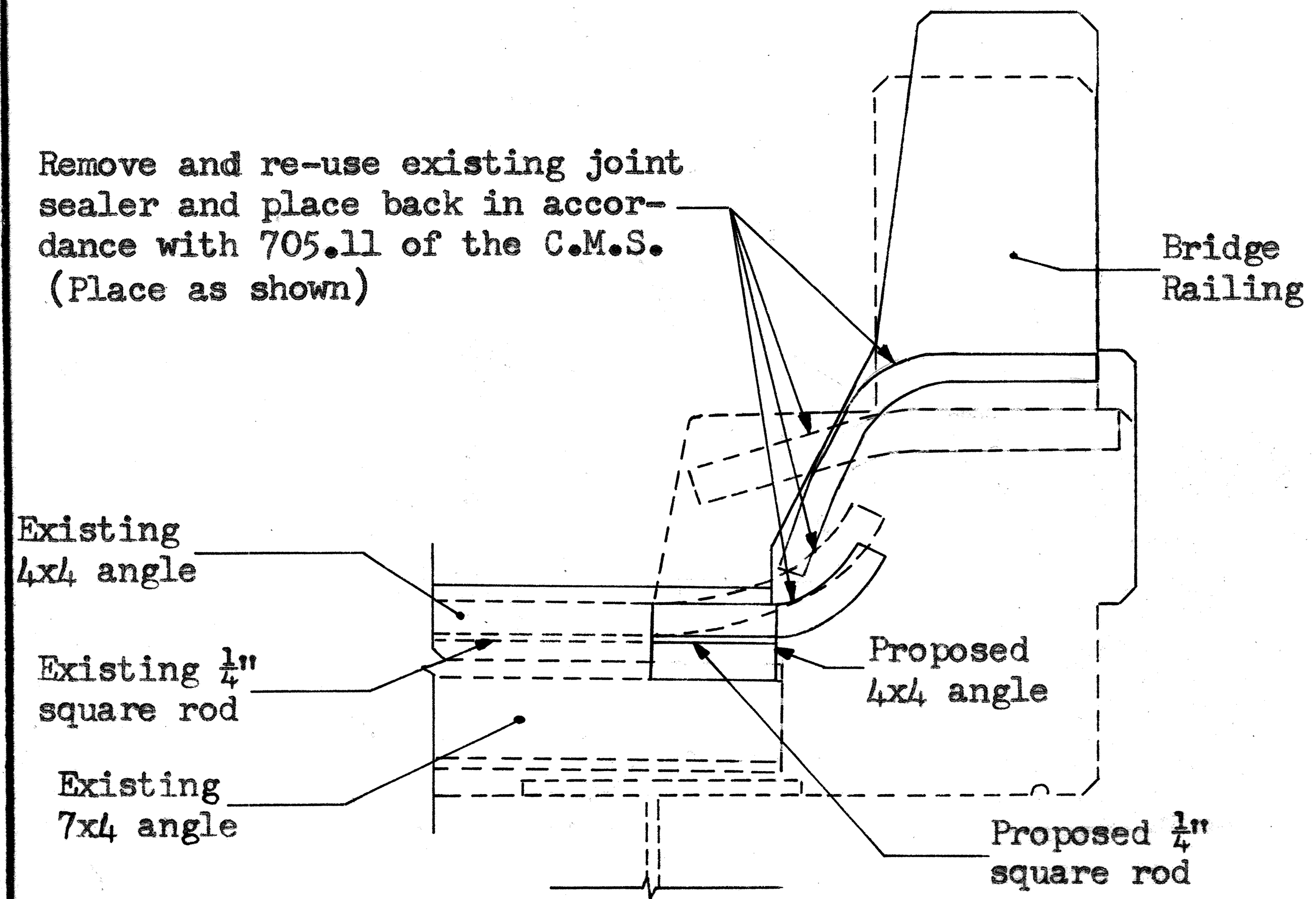
DEPARTMENT OF TRANSPORTATION
M& R 712 REV. 9-1-83



FRA-270-3141L&R

INTERMEDIATE EXPANSION JOINT EXTENSION DETAILS

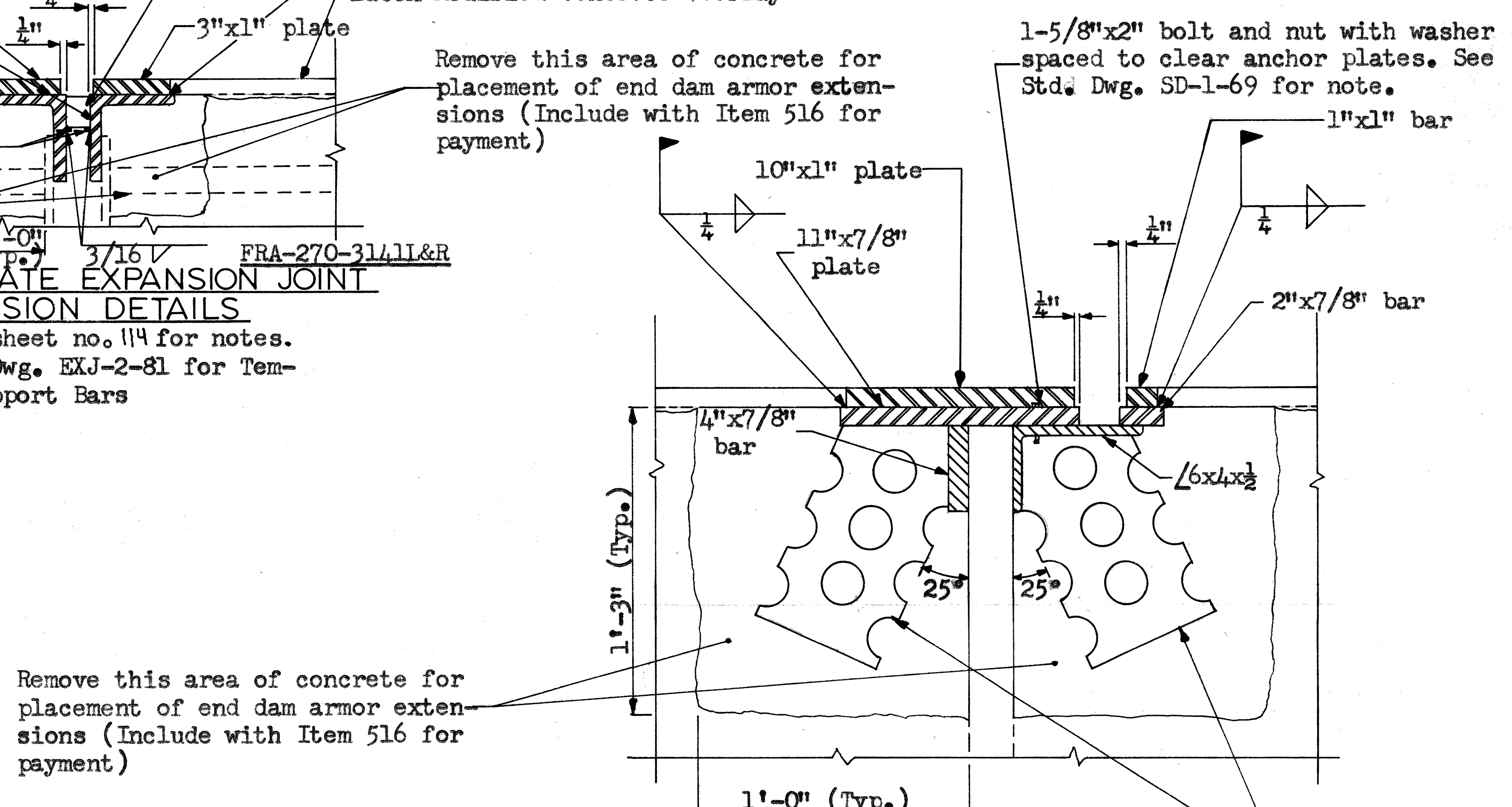
See plan sheet no. 114 for notes.
See Std. Dwg. EXJ-2-81 for Temporary Support Bars



FRA-270-3141L&R

PROPOSED END DAM

See plan sheet no. 114 for welding details

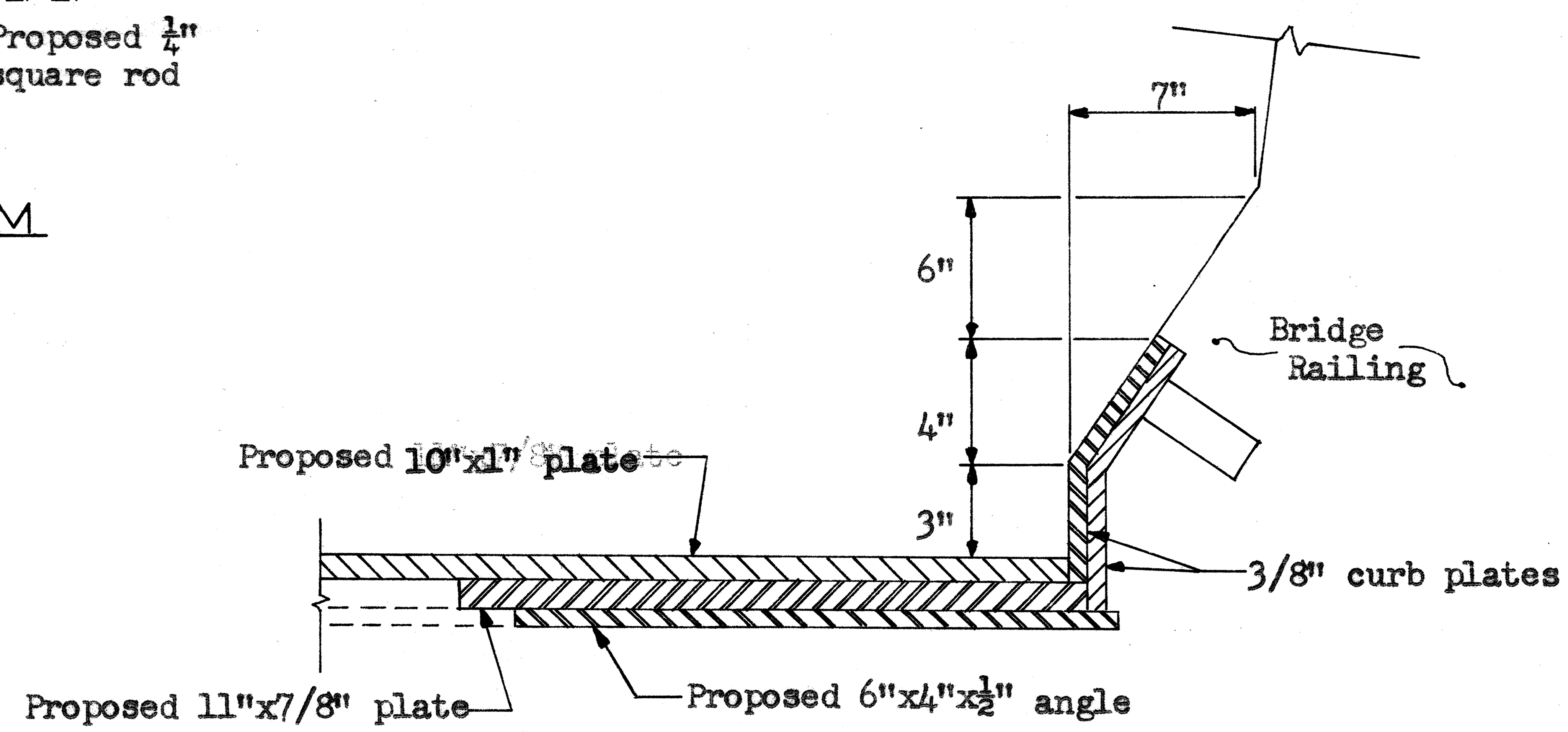


FRA-270-3227L&R

ABUTMENT EXPANSION JOINT EXTENSION DETAILS

See plan sheet no. 114 for notes

6"x½"x12" plate
1 for extension



FRA-270-3227L&R

PROPOSED CURB PLATE

See plan sheet no. 114 for Welded Butt Joint In Superstructure details.
For other details and information not shown, see Std. Dwg. SD-1-69

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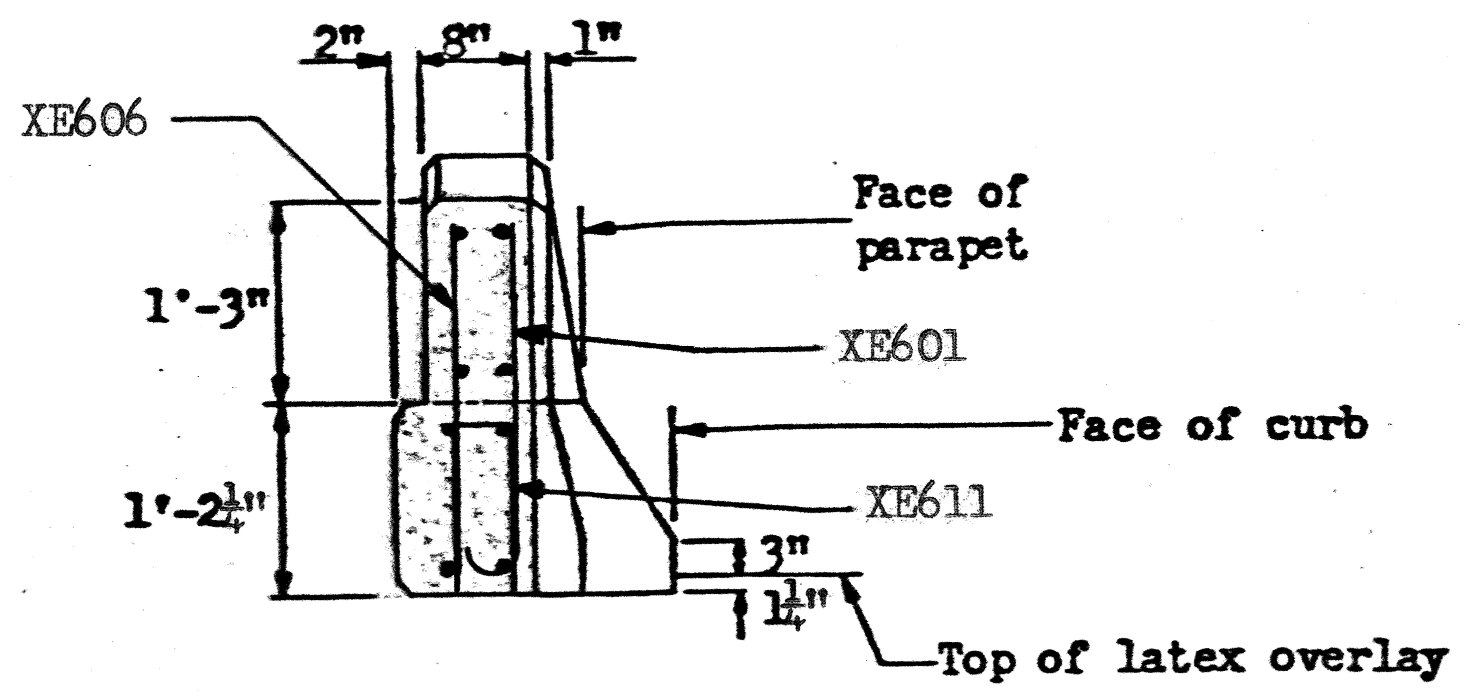
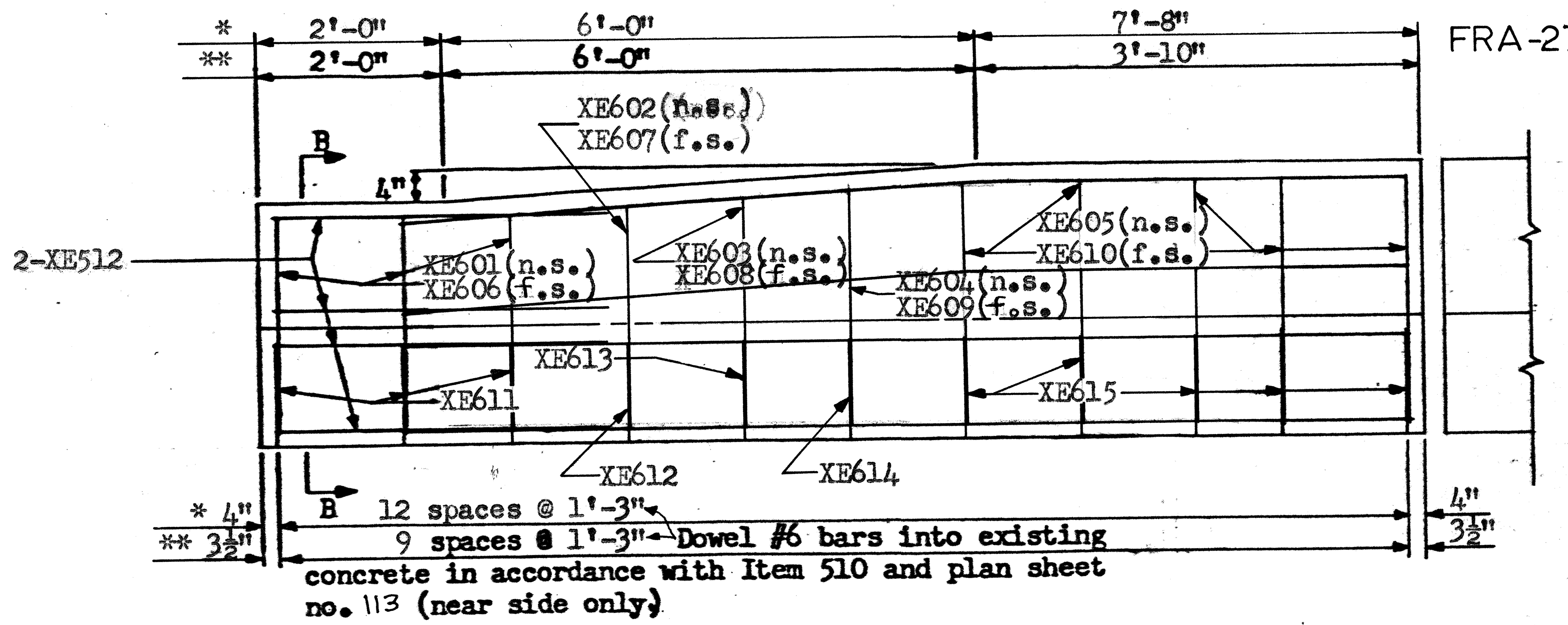
CURB PLATE AND END DAM DETAILS

FRA-270-3141L&R
FRA-270-3227L&R

DESIGN	DRAWN	TRACED	CHECKED	REVIEW	DATE	REVISED
JaJ	JaJ	JaJ		EN	12-15-86	

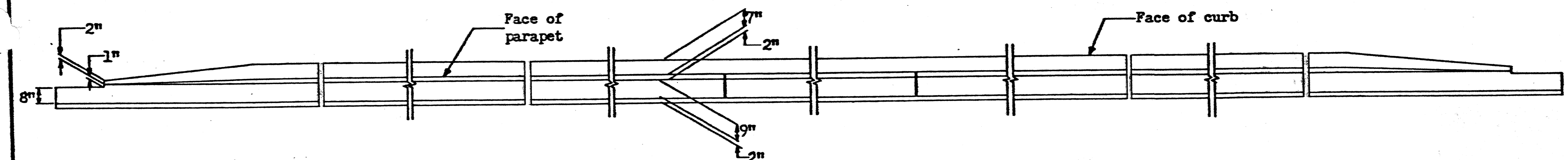


SECTION B-B



TYPICAL ELEVATION VIEW

* NE -- Northeast & SW - Southwest
** NW - Northwest & SE - Southeast



PLAN VIEW

ELEVATION VIEW

n.s. - near side, f.s. - far side

\# The parapets may be cast at one time and the necessary deflection joints cut into the parapet after form removal by sawcutting. The subsequent joints shall then be sealed with a silicone or poly urethane caulking meeting Federal Specification TT-5-230-A.

Min. 2" clearance between reinforcing steel and surface of concrete on both bridges.

Lap #5 bars 1'-8" min.

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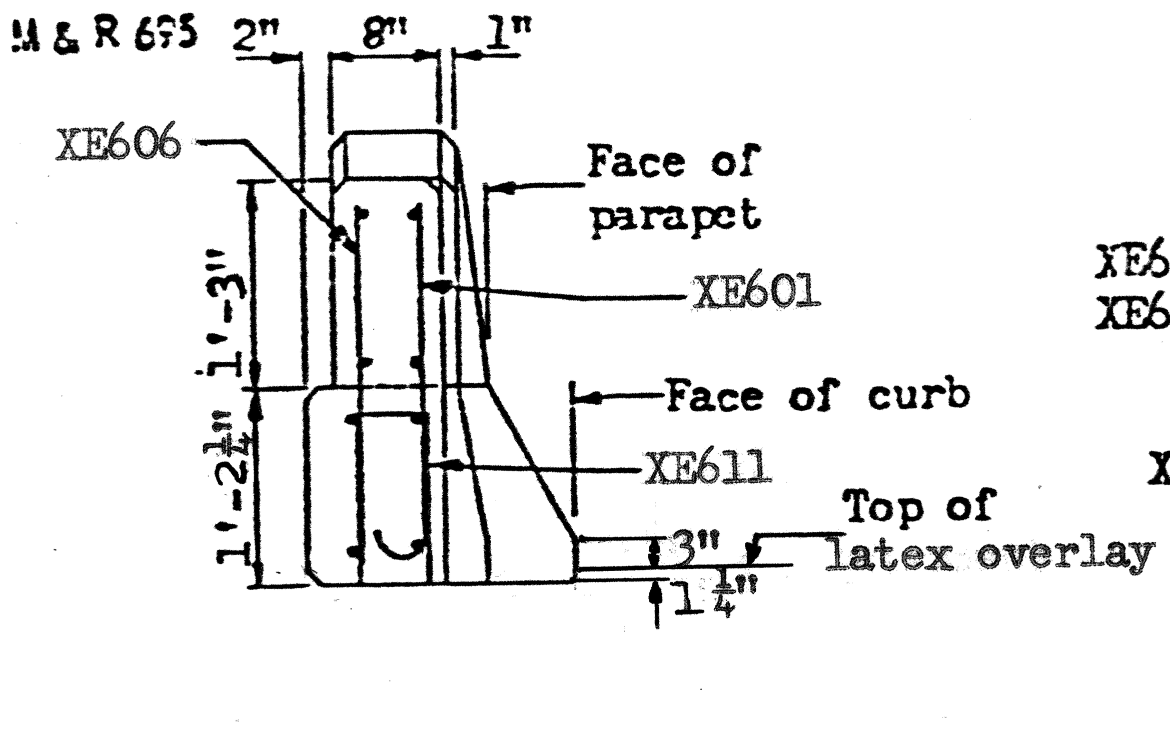
BRIDGE RAILING DETAILS

FRA-270-3141L&R

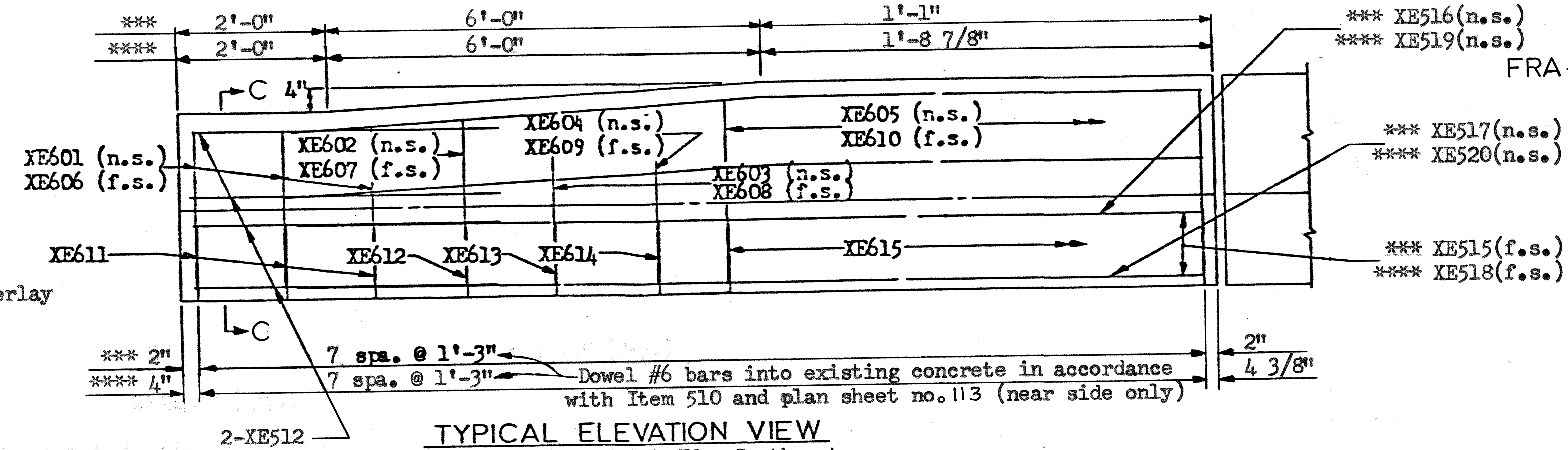
DESIGN	DRAWN	TRACED	CHECKED	REVIEW DATE	REVISE
Jaj	Jaj	Jaj		EM 12-15-86	

FRA-270-29.11

PLAN NO.



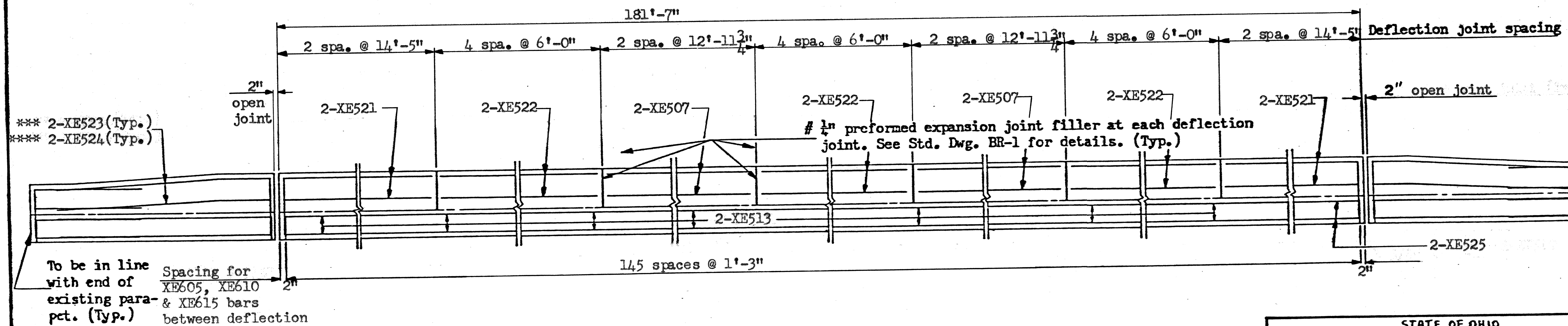
SECTION C-C



TYPICAL ELEVATION VIEW

*** NE - Northeast & SW - Southwest
**** NW - Northwest & SE - Southeast

PLAN VIEW



ELEVATION VIEW

Min. 2" clearance between reinforcing steel and surface of concrete.
Lap #5 bars 1'-8" min.
The parapets may be cast at one time and the necessary deflection joints cut into the parapet after form removal by sawcutting. The subsequent joints shall then be sealed with a silicone or poly urethane caulking meeting Federal Specification TT-5-230-A.

n.s. - near side
f.s. - far side

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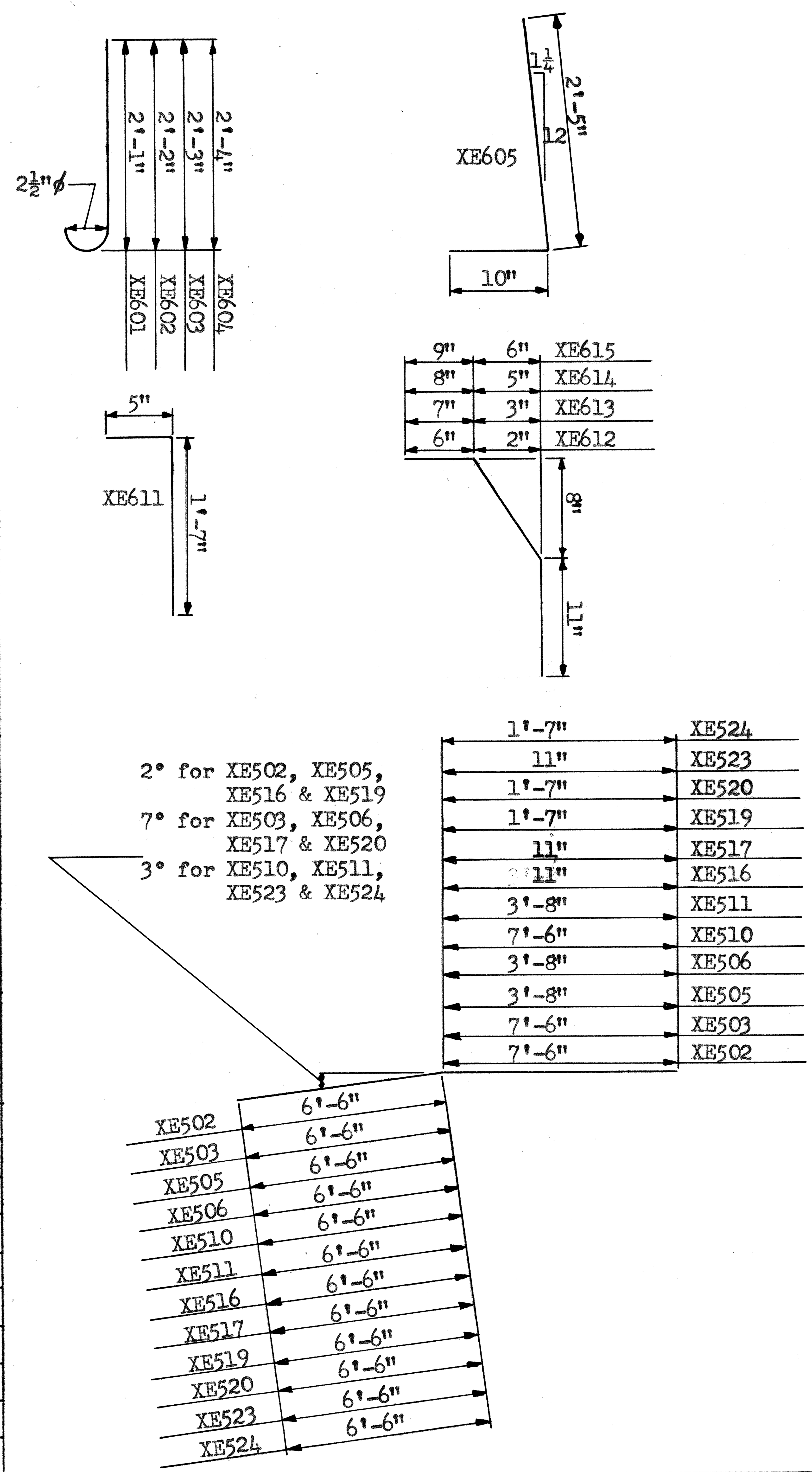
BRIDGE RAILING DETAILS

FRA-270-3227L&R

DESIGN	DRAWN	TRACED	CHECKED	REVIEW	DATE	REVISED
Jaj	Jaj	Jaj		EM	12-15-86	

MARK	NO.	LENGTH	WEIGHT	SHP.
XE601	48	2'-6"	180	Bent
XE602	16	2'-7"	62	Bent
XE603	16	2'-8"	64	Bent
XE604	16	2'-9"	66	Bent
XE605	1136	3'-1"	5262	Bent
XE606	48	2'-1"	150	Str.
XE607	16	2'-2"	52	Str.
XE608	16	2'-3"	54	Str.
XE609	16	2'-4"	56	Str.
XE610	1136	2'-5"	4124	Str.
XE611	48	1'-10"	132	Bent
XE612	16	2'-3"	54	Bent
XE613	16	2'-5"	58	Bent
XE614	16	2'-8"	64	Bent
XE615	1136	2'-10"	4834	Bent
XE501	8	14'-4"	120	Str.
XE502	4	14'-0"	58	Bent
XE503	4	14'-0"	58	Bent
XE504	8	10'-6"	88	Str.
XE505	4	10'-2"	42	Bent
XE506	4	10'-2"	42	Bent
XE507	128	12'-8"	1692	Str.
XE508	96	6'-1"	610	Str.
XE509	64	13'-8"	912	Str.
XE510	16	14'-0"	234	Bent
XE511	16	10'-2"	170	Bent
XE512	128	3'-0"	400	Str.
XE513	144	30'-0"	4506	Str.
XE514	32	25'-8"	856	Str.
XE515	8	7'-9"	64	Str.
XE516	4	7'-5"	30	Bent
XE517	4	7'-5"	30	Bent
XE518	8	8'-3"	68	Str.
XE519	4	8'-1"	34	Bent
XE520	4	8'-1"	34	Bent

BENDING DIAGRAMS



MARK	NO.	LENGTH	WEIGHT	SHP.
XE521	64	14'-1"	940	Str.
XE522	192	5'-8"	1134	Str.
XE523	16	7'-5"	124	Bent
XE524	16	8'-1"	134	Bent
XE525	16	11'-3"	188	Str.
XE526	16	9'-1"	152	Str.

BENDING DIAGRAMS

"E" as a prefix means Epoxy Coated

NOTE: Refer to CMS Sections 106.03, 700, 709.01 through 709.05 and 709.08. Sufficient additional reinforcing steel shall be provided for sampling. Random samples shall be replaced in the structure by the additional steel, spliced in accordance with 509.08.

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REINFORCING STEEL LIST

FRA-270-3141 L&R
FRA-270-3227 L&R

DESIGN	DRAWN	TRACED	CHECKED	REVIEW DATE	REVISED
Jaj	Jaj	Jaj		EM 12-15-86	