

1016-178

# OHIO DEPARTMENT OF TRANSPORTATION DIVISION OF HIGHWAYS

FHWA REGION	STATE	FEDERAL PROJECT			1 22
5	OHIO			92	

SR-898(2)  
MR-3J03(1)  
FAI-188-14.94

PLAN NO. 92

PART	COUNTY	ROUTE	SECTIONS	PROJECT TERMINI		NET LENGTH MILES	TOWNSHIP	CITY	VILLAGE
				BEGIN	END				
1	FAI	S.R. 188	(14.94)(16.53)	14.94	16.74	1.28		Lancaster	
2	FAI	S.R. 188	(16.01)(16.74)(22.64)	16.01	26.53	9.56			
3	FAI	S.R. 188	(21.89)	21.89	22.64	0.75			Pleasantville

CALCULATED BY RLM DATE 7-26-84

CHECKED BY SKR DATE 7-27-84

1016(84) Rev.

The Standard 10 83 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 require the closing of the highways to traffic on Parts No. None and that detours will be provided by State forces. The closing to traffic of the highways will not be required on Parts No. 1, 2, and 3 and provisions for the maintenance and safety of traffic will be as indicated in the proposal.

Approved Date 7-31-84 John W. Hagan  
District Deputy Director of Transportation

Approved Date 9-4-84 Walter J. Gesting  
Engineer of Bridges

Approved Date \_\_\_\_\_  
Engineer of Maintenance

Approved Date 9-14-84 James R. Longenecker  
Chief Engineer, Operations

Approved Date \_\_\_\_\_  
Assistant Deputy Director, Program Development

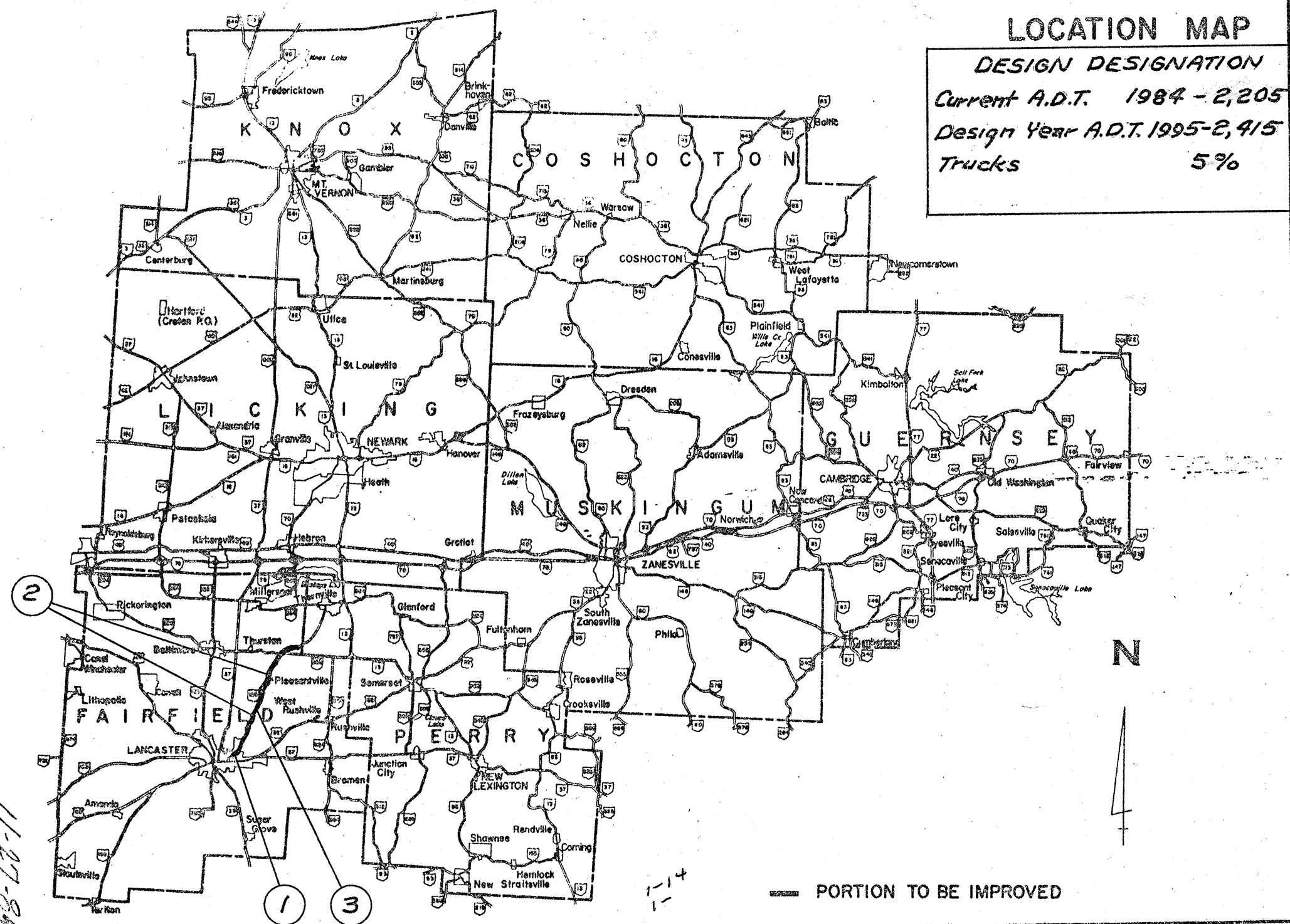
Approved Date \_\_\_\_\_  
Chief Engineer, Construction

Approved Date \_\_\_\_\_  
Chief Engineer, Design

Approved Date \_\_\_\_\_  
Assistant Director, Department of Transportation

Approved Date 9-14-84 William J. Smith  
Director, Department of Transportation

**LOCATION MAP**  
DESIGN DESIGNATION  
Current A.D.T. 1984 - 2,205  
Design Year A.D.T. 1995 - 2,415  
Trucks 5%



1016(84)

11-27-84

DEPARTMENT OF TRANSPORTATION  
FEDERAL HIGHWAY ADMINISTRATION

APPROVED:

DIVISION ADMINISTRATOR      DATE

STANDARD DRAWINGS		SUPPLEMENTAL SPECIFICATIONS	
BP-5	7-16-81	SS-803	5-27-83
TC-7.10	4-9-79	SS-847	10-17-83
		SS-947	10-17-83

REV. 12-5-84 sheet 19 JDP

Shoulder Restoration:

In order to provide positive drainage from the roadway surface to the shoulder break, the existing roadway shoulders shall be graded and shaped using a grader having a minimum weight of 23,000 pounds. Payment for all of the above grading and shaping work, including labor and incidentals, shall be paid for at the unit price bid for ITEM SPECIAL - GRADER RENTAL, and shall be for the actual number of grader hours worked.

All excess material remaining around guardrail and other areas after the grader work is completed, and not disposed of on the site, shall be removed and disposed of by the contractor. Payment for all of the above removal work shall be paid for at the unit price bid for ITEM SPECIAL - LOADER RENTAL, and shall be for the actual number of loader hours worked. Any other equipment, labor or incidentals required to complete this Item shall be included therein for payment.

The following estimated quantities have been included in the General Summary for the above purposes.

ITEM SPECIAL - GRADER RENTAL	<u>Part 1</u> 1	Hours	<u>Part 2-A</u> 2	Hours	<u>Part 2-B</u> 15	Hours
ITEM SPECIAL - LOADER RENTAL	<u>1</u>	Hours	<u>1</u>	Hours	<u>7</u>	Hours
	<u>Part 2-C</u> 12	Hours	<u>Part 3</u> 1	Hours		
	<u>6</u>	Hours	<u>1</u>	Hours		

BRIDGE FAI-188-1995

The existing wearing course shall be removed from the timber decks. Care shall be exercised not to damage the bolt heads or timber decks. From the time of the removal to the time of replacement there shall be a period of seven (7) work days to allow State Forces to repair the wood portion of the bridge decks. Through traffic shall be maintained at all times at each location during the removal and replacement of the wearing course and while the decks are being repaired.

The thickness of material on the decks to be removed and replaced is shown on Sheet 18.

Also, for distance of 50 ft. <sup>+</sup> at each end of the bridge there will be a wearing course removal to assure a smooth transition onto the bridge deck after the wearing course has been removed and while the bridge deck is being repaired. This transition shall begin at the timber deck of the bridge after the wearing course has been removed and feather to 0 inches 50 ft. <sup>+</sup> in both directions. After the bridge deck has been repaired, the deck and the transition area shall be tacked with 407 material before the 404 material is applied as directed by the Engineer. The actual thickness and distance of the transition area may vary due to irregularities in the existing surface. The final profile shall be smooth.

The following quantities are carried to the General Summary for the above purpose.

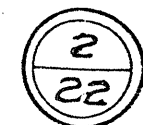
		<u>PART 2-B</u>	
202	Wearing Course Removed	233	Sq.-Yds.
404	Extra Asphalt Concrete for Transition Areas	5	Cu.Yds.

GENERAL NOTES

CALCULATED BY RLM DATE 7-26-84

CHECKED BY SKR DATE 7-27-84

92  
FAI-188-14.94



ITEM SPECIAL PAVEMENT PLANING, BITUMINOUS, WITHOUT HEATING:

The pavement from S.L.M. 14.95 to S.L.M. 16.07 (Curbed Section in Lancaster) shall have 1 inch of wearing surface removed by planing without heating. The planing shall be performed in a manner that will leave the existing profile and transverse slopes unchanged after 1 inch of 404 Asphalt Concrete is applied to the planed surface. Extreme care shall be exercised to avoid damage to existing manholes, water valve boxes and concrete gutter plates. Intersecting streets shall be planed in the same manner and feathered to the existing profile as directed by the Engineer.

The pavement from S.L.M. 21.89 to 22.64 (In Pleasantville) shall have a variable depth of 1 inch to 3 inches of wearing surface removed by planing without heating. Curbed areas shall have 3 inches ± of wearing surface removed and other areas shall have 1 inch ± of wearing surface removed. The Engineer shall determine the depth of planing at time of construction. The planing shall be performed in a manner that will establish an approximate transverse slope of 3/16 inches per foot from the centerline of the highway to the face of the curb or edge of pavement. Intersecting streets and roadways shall be planed and feathered as directed by the Engineer.

GRADE CORRECTION AT PENN-CENTRAL RR. S.L.M. 22.63:

A quantity of 50 Cu.Yds. of Item 403, Asphalt Concrete has been included in the plan to improve the profile of the highway on the North side of the railroad tracks at the North corporation limits of Pleasantville (S.L.M. 22.63). The Contractor shall plane the existing surface adjacent to the railroad crossing timbers as directed by the Engineer. The Asphalt Concrete to improve the profile shall then be placed and compacted as directed by the Engineer prior to applying the final course of Item 403 Asphalt Concrete. The planing operation shall be included in Item Special, Pavement Planing, Bituminous Without Heating. The cost of placing the additional Asphalt Concrete shall be included with Item 403 Asphalt Concrete. Any additional berm material necessary to adjust the berm area to the new pavement elevation shall be included in Item 617 Compacted Aggregate.

Item 403 Asphalt Concrete 50 Cu.Yds. Part 2-C

PAVED SHOULDERS -

The paved shoulder shall be applied at the same time as the final course of 404 Asphalt Concrete, as directed by the Engineer.

ITEM 202- RAISED PAVEMENT MARKERS REMOVED FOR STORAGE:

Raised Pavement Markers shall be removed in a manner that prevents damage to the castings. All depressions caused by removal of the markers shall be filled with 404 material to the existing roadway surface prior to resurfacing. Removed markers are to be stored on the right of way within the project limits by the Contractor as directed. All costs to be included in the contract price bid for Item 202 - Raised Pavement Markers removed for Storage.

CALC. BY		OHIO	3
DATE		FHWA REGION	5
CHKD. BY			22
DATE			

DESIGNED BY RLM DATE 7-26-84

APPROVED BY SKR DATE 7-27-84

# 614 WORK ZONE PAVEMENT MARKINGS

FAI - 188 - 14.94

### GENERAL

THE CONTRACTOR SHALL FURNISH, INSTALL, MAINTAIN AND WHEN NECESSARY, REMOVE WORK ZONE RETROREFLECTIVE PAVEMENT MARKINGS ON EXISTING, RECONSTRUCTED, RESURFACED OR TEMPORARY ROADS WITH THE WORK LIMITS, IN ACCORDANCE WITH THE FOLLOWING REQUIREMENTS.

THE MARKINGS SHALL BE MAINTAINED IN GOOD CONDITION TO PROVIDE DAY AND NIGHT VISIBILITY. THE MARKINGS SHALL BE REPAIRED OR REPLACED AS DIRECTED BY THE ENGINEER TO MAINTAIN REQUIRED VISUAL EFFECTIVENESS AND NIGHT VISIBILITY AT NO ADDITIONAL COST TO THE STATE.

THE CONTRACTOR SHALL, IN ADVANCE OF ANY SECTION OF ROADWAY LACKING OMITTED FULL PATTERN STANDARD DIMENSION EDGE LINE OR CENTER LINE MARKINGS, ERECT A "NO EDGE LINES" (OW-167) SIGN OR "UNMARKED NO PASSING ZONES" (OW-168) SIGN OR BOTH AS MAY BE APPROPRIATE. THESE SIGNS SHALL BE IN PLACE PRIOR TO EXPOSING THE ROADWAY TO TRAFFIC. THESE SIGNS SHALL BE REPEATED EVERY 1 TO 2 MILES AND AT OTHER LOCATIONS AS NECESSARY. THESE SIGNS SHALL BE REMOVED WHEN THEY NO LONGER APPLY. THE COST FOR FURNISHING AND ERECTING AND SUBSEQUENTLY REMOVING THESE SIGNS SHALL BE INCLUDED IN 614 MAINTAINING TRAFFIC, UNLESS SPECIFICALLY ITEMIZED.

### TEMPORARY PAVEMENT MARKING MATERIALS

UNLESS OTHERWISE INDICATED ON THE PLANS, TEMPORARY PAVEMENT MARKINGS MAY BE EITHER 621.02 PAINT OR 947.03 TYPE B OR C PREFORMED MATERIAL.

#### PAINT

PAINTED MARKINGS SHALL BE IN ACCORDANCE WITH 621 EXCEPT THAT THE INCREASE OF 25 PERCENT IN THE APPLICATION RATE FOR NEW BITUMINOUS PAVEMENT AND PARAGRAPH 621.14 SHALL NOT APPLY.

#### TYPE B AND TYPE C PREFORMED MATERIAL

PREFORMED MATERIAL SHALL COMPLY WITH 947.03 EXCEPT THAT NO PREFORMED MATERIAL CONTAINING METAL SHALL BE PLACED ON ANY SURFACE UNLESS IT WILL BE REMOVED LATER BY THE CONTRACTOR. TEMPORARY PAVEMENT MARKINGS OF 947.03 PREFORMED MATERIAL SHALL BE REMOVED PRIOR TO PLACEMENT OF 621 OR 847 SURFACE COURSE MARKINGS AT THAT LOCATION. PREFORMED MATERIAL SHALL BE APPLIED IN ACCORDANCE WITH 847 EXCEPT AS MODIFIED HEREIN.

### PLACEMENT

TEMPORARY MARKINGS SHALL BE COMPLETE AND IN PLACE ON ALL PAVEMENT PRIOR TO EXPOSING IT TO TRAFFIC. WHEN TEMPORARY MARKINGS CONFLICT WITH THE TRAFFIC PATTERN, THEY SHALL BE REMOVED BY THE CONTRACTOR IN ACCORDANCE WITH 621.134.

### TEMPORARY MARKING CLASSES

#### CLASS I MARKINGS

CLASS I MARKINGS SHALL BE APPLIED TO THE FULL DIMENSIONS AS DEFINED IN 621 WITH THE FOLLOWING ADDITIONS OR EXCEPTIONS:

- 1) LANE LINES SHALL BE 4-INCHES IN WIDTH.
- 2) TRANSVERSE LINES SHALL BE 8-INCHES IN WIDTH.
- 3) STOP LINES SHALL BE 12-INCHES IN WIDTH.
- 4) CROSS WALK LINES SHALL BE 8-INCHES IN WIDTH.

### CLASS II MARKINGS

CLASS II MARKINGS (ABBREVIATED) SHALL BE DEFINED AS FOLLOWS:

CENTER LINES SHALL CONSIST OF SINGLE, YELLOW 4-INCH WIDE BY A MINIMUM OF 48-INCH LONG DASHES SPACED AT A MAXIMUM OF 40-FOOT INTERVALS.

LANE LINES SHALL CONSIST OF WHITE 4-INCH WIDE BY A MINIMUM OF 48-INCH LONG DASHES SPACED AT A MAXIMUM OF 40-FOOT INTERVALS.

GORE MARKINGS SHALL BE TWO CONTINUOUS, WHITE 4-INCH LINES PLACED AT THE THEORETICAL GORE OF AN EXIT RAMP OR DIVERGING ROADWAYS.

THE PAINT APPLICATION RATE SHALL BE NOT LESS THAN 1.6 GALLONS PER MILE FOR LANE LINE AND CENTER LINE AND 16 GALLONS PER MILE FOR GORE MARKINGS.

### CONFLICTING EXISTING MARKINGS

THE CONTRACTOR SHALL, PRIOR TO PLACING TEMPORARY MARKINGS, REMOVE ALL CONFLICTING EXISTING MARKINGS VISIBLE TO THE TRAVELING PUBLIC DURING DAYLIGHT OR NIGHTTIME HOURS IN ACCORDANCE WITH 621.134. THE COST FOR REMOVAL OF CONFLICTING MARKINGS SHALL BE INCLUDED IN 614 MAINTAINING TRAFFIC UNLESS SPECIFICALLY ITEMIZED.

THE CONTRACTOR SHALL ALSO REMOVE THE PRISMATIC RETRO-REFLECTOR WITHIN ANY RAISED PAVEMENT MARKER (RPM) WHICH IS IN CONFLICT WITH THE TEMPORARY PAVEMENT MARKINGS. WHEN THE TEMPORARY PAVEMENT MARKINGS ARE REMOVED AND THE RPM IS NO LONGER IN CONFLICT, THE CONTRACTOR SHALL THOROUGHLY CLEAN THE RECESSED REFLECTOR ATTACHMENT AREA OF THE CASTING AND INSTALL A NEW PRISMATIC RETRO-REFLECTOR OF THE SAME KIND AND COLOR. THE COST FOR THIS WORK SHALL BE INCIDENTAL TO THE VARIOUS PAY ITEMS.

### INTERIM MARKINGS

WITHIN 21 CALENDAR DAYS AFTER OPENING ANY LENGTH OF PAVEMENT TO TRAFFIC, THE 621 OR 847 PAVEMENT MARKINGS CALLED FOR IN THE PLANS OR EQUIVALENT 614 CLASS I, PAINT MARKINGS SHALL BE APPLIED. THE CONTRACTOR SHALL FURNISH ALL LABOR, EQUIPMENT, AND MATERIAL NECESSARY TO PLACE AND MAINTAIN 614 CLASS I PAINT MARKINGS AS PART OF THE LUMP SUM BID FOR 614 MAINTAINING TRAFFIC.

FOR EACH CALENDAR DAY BEYOND 21 DAYS THAT THIS WORK SHALL REMAIN UNCOMPLETED, THE PROVISIONS OF 108.07 WILL BE INVOKED, EXCEPT THAT BETWEEN NOVEMBER 15 AND APRIL 15 WEATHER CONDITIONS SHALL NOT BE AN ACCEPTABLE REASON FOR EXTENSION.

### METHOD OF MEASUREMENT

TEMPORARY PAVEMENT MARKINGS WILL BE MEASURED COMPLETE IN PLACE, BY CLASS AND MATERIAL, IN THE UNITS DESIGNATED. LINE QUANTITIES WILL BE THE LENGTH OF THE COMPLETED STRIPE, INCLUDING GAPS, INTERSECTIONS, AND OTHER SECTIONS OF PAVEMENT NOT NORMALLY MARKED, IN ACCORDANCE WITH 621.15.

TEMPORARY PAVEMENT MARKINGS WILL INCLUDE THE LAYOUT, APPLICATION AND REMOVAL OF THE MARKINGS, WHEN REQUIRED.

### BASIS OF PAYMENT

PAYMENT FOR ACCEPTED QUANTITIES COMPLETE IN PLACE WILL BE MADE AT THE CONTRACT UNIT PRICE. PAYMENT SHALL BE FULL COMPENSATION FOR ALL MATERIALS, LABOR, INCIDENTALS AND EQUIPMENT FOR PLACEMENT, MAINTENANCE AND NECESSARY REMOVAL OF THE MARKINGS.

ITEM	UNIT	DESCRIPTION
<del>614</del>	<del>MILES</del>	<del>TEMPORARY LANE LINES, CLASS I, *</del>
614	MILES	TEMPORARY CENTER LINES, CLASS II, *
<del>614</del>	<del>LIN. FT.</del>	<del>TEMPORARY CHANNELIZING LINES, CLASS I, *</del>
<del>614</del>	<del>MILES</del>	<del>TEMPORARY EDGE LINES, CLASS I, *</del>
<del>614</del>	<del>LIN. FT.</del>	<del>TEMPORARY GORE MARKINGS, CLASS II, *</del>
<del>614</del>	<del>LIN. FT.</del>	<del>TEMPORARY STOP LINES, CLASS I, *</del>
<del>614</del>	<del>LIN. FT.</del>	<del>TEMPORARY CROSSWALK LINES, CLASS I, *</del>
<del>614</del>	<del>EACH</del>	<del>TEMPORARY LANE ARROWS, CLASS I, *</del>
<del>614</del>	<del>EACH</del>	<del>TEMPORARY RAILROAD SYMBOL MARKINGS, CLASS I, *</del>
<del>614</del>	<del>EACH</del>	<del>TEMPORARY WORD "ONLY" ON PAVEMENT, 72 INCH, CLASS I, *</del>
<del>614</del>	<del>LIN. FT.</del>	<del>TEMPORARY TRANSVERSE LINES, CLASS I, *</del>
<del>614</del>	<del>LIN. FT.</del>	<del>TEMPORARY DOTTED LINES, CLASS I, *</del>

\*621 PAINT, 947.03 TYPE B OR 947.03 TYPE C

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CALCULATED BY RM DATE 7-10-84

CHECKED BY DH DATE 7-10-84

INITIAL PAVEMENT MARKINGS FOR RESURFACED SECTIONS

GENERAL NOTES

FED. RD. DIVISION	STATE	PROJECT	
5	OHIO		

4  
22

PLAN NO. 92

FAI-188-14.94

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 dimensioning 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 Control Devices.

# TRAFFIC CONTROL FOR LONG LINE PAVEMENT MARKING OPERATIONS

## GENERAL

In addition to 614, traffic shall be maintained in accordance with the following requirements.

The purpose of the following requirements for Traffic Control for Pavement Marking operations is to provide safety for highway users, workers and equipment and to protect the markings from damage during application. These requirements are the required minimums. If at any time during the application of markings it is found by the Engineer that these minimum traffic control device requirements are not achieving the necessary safety and marking protection, additional traffic control devices shall be implemented in accordance with 104.02.

The Engineer may suspend work in order to relieve traffic congestion at any time. No work shall be done during peak hours, as determined by the Engineer.

## LEAD VEHICLE

A lead vehicle is to be used to warn opposing traffic of the approach of centerline and other marking equipment when this equipment extends into the adjacent opposing traffic lane. The lead vehicle shall precede the "left of center" marking equipment a distance that will provide advance safe warning to approaching traffic. The operator of this unit should drive ahead of the crest of a vertical curve or around a horizontal curve and wait until the "left of center" marking equipment nears and then proceed, maintaining an advance location of 400 feet to 600 feet.

A lead vehicle shall be equipped and operated with the following traffic control devices:

1. A 360° rotating or flashing amber beacon clearly visible a minimum of 1/4 mile.
2. Lighted head lights and tail lights, and
3. A KEEP RIGHT sign (OC-31R-48) and WET PAINT sign (OC-52-48) mounted a minimum of 5' above the road surface measured to the bottom of the sign and visible to opposing traffic.

## POWER BROOM EQUIPMENT

Power broom equipment shall be equipped and operated during pavement preparations (Item 621.04) with the following traffic control devices:

1. A 360° rotating or flashing amber beacon clearly visible a minimum of 1/4 mile.
2. Lighted head lights and tail lights, and
3. A flashing arrow panel 54" x 30" (Type B) visible to the rear mounted a minimum of 7' above the road surface measured to the bottom of the panel and used only on multi-lane highways.

## LINE MARKING MACHINE

All traffic line marking machines shall be equipped and operated with the following traffic control equipment:

1. Three 360° rotating or flashing amber beacons clearly visible a minimum of 1/4 mile mounted a minimum of 7' above the road surface; one forward, one on the right rear and one on the left rear of the vehicle.
2. (a) A flashing arrow panel 54" x 30" (Type B) displayed to the rear mounted a minimum of 7' above the road surface measured to the bottom of the panel and used only on multilane highways, or  
 (b) A DO NOT PASS sign (R-33A-48) visible to the rear during centerline marking on two lane, two way roadways and mounted a minimum of 7' above the road surface measured to the bottom of the sign. This sign may be

used to cover the arrow panel, which shall Not be used on two lane, two way roadways.

3. A WET PAINT with arrow sign (OC-50-24 or OC-51-48) shall face the rear. The sign shall be positioned with the arrow pointing to the wet line. When used, OC-50-24 shall be mounted on the in use carriage side of the vehicle. OC-50-24 and OC-51-48 signs shall be mounted a minimum of 1' above the road surface.
4. A KEEP RIGHT sign (OC-31R-48) and WET PAINT sign (OC-52-48) mounted a minimum of 5' above the road surface measured to the bottom of the sign and facing opposing traffic when this unit extends into the adjacent opposing traffic lane.
5. The guide and side mounted marking carriages shall each be equipped with a clean red flag not less than 16" square and fastened to staffs of sufficient length so as to permit the flags to move freely of any obstruction.

## TRAIL VEHICLE

When required a trail vehicle shall be positioned at the track free end of the wet line. An additional trail vehicle shall be used when applying lane lines of fast dry material (i.e.  $\leq$  2 min. dry) to protect the wet line between the line marking machine and the track free end of the wet line. All pavement marking application, protection and support equipment following the line marking machine shall be equipped with the traffic control of a trail vehicle.

Trail vehicles shall be equipped and operated with the following traffic control equipment:

1. A 360° rotating or flashing amber beacon clearly visible a minimum of 1/4 mile.
2. (a) A flashing arrow panel 54" x 30" (Type B) visible to the rear mounted at a minimum height of 7' above the road surface measured to the bottom of the panel and used only on multi-lane highways, or  
 (b) A DO NOT PASS sign ((R-33A-48) visible to the rear during centerline marking on two lane, two way roadways, and mounted a minimum of 7' above the road surface measured to the bottom of the sign. This sign may be used to cover the arrow panel, which shall Not be used on two lane, two way roadways.
3. A WET PAINT with arrow sign (OC-50-24 or OC-51-48) shall face the rear. The sign shall be positioned with the arrow pointing to the wet line. When used, OC-50-24 shall be mounted on the side of the vehicle nearest the wet marking material. When used, OC-50-24 shall be mounted a minimum of 4'6" above the road surface and OC-51-48 shall be mounted a minimum of 5'0" above the road surface, both measured to the bottom of the sign.

## CONES AND WET PAINT-KEEP OFF SIGNS

Cones and WET PAINT-KEEP OFF signs (R-87-24) shall be placed to protect the line whenever the track free time exceeds two minutes. These devices shall not be removed until the line has dried to a track free condition. Retrieval equipment shall have traffic control of a trail vehicle. Cones shall have a minimum height of 18". They shall be spaced to protect the wet line, normally between 120' and 200'. In areas of traffic congestion, on curves and at other locations where tracking of the wet line is expected, spacings as close as 20' may be required. The WET PAINT-KEEP OFF signs (R-87-24) shall be placed facing traffic

at:

- A. The beginning and end of line application,
- B. All side and cross roads, and
- C. Maximum intervals of one mile.

DATE  
9-82  
12-82

CALCULATED BY RM DATE 7-10-84

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**IMMOBILE OPERATIONS**

When loading material, cleaning or performing other operations in the field every effort shall be made to have all equipment completely off of the traveled roadway. When it becomes necessary to enter upon private property, permission shall be obtained in advance. When the Contractor cannot remove his equipment from the traveled roadway all traffic control devices on the vehicles shall be in operation and flaggers and vehicles shall be stationed to protect the work site and the travelling public.

Two way traffic shall be maintained. Flaggers shall be equipped in accordance with Item 614.03.

**AUXILIARY MARKINGS**

Pavement preparation and placing of auxiliary markings are considered to be stationary operations and traffic control shall be in accordance with plan details shown on Sheet(s) 21 & 22 and Part 7, Ohio Manual of Uniform Traffic Control Devices (OMUTCD).

**LAYOUT AND PREMARKING**

The vehicle used in layout and premarking (Item 621.051) shall be equipped and operated with the following equipment:

1. A 360° rotating or flashing amber beacon clearly visible a minimum of 1/2 mile.
2. Lighted head lights and tail lights, and
3. A KEEP RIGHT sign (OC-31R-48) mounted a minimum of 5' above the road surface measured to the bottom of the sign and visible to opposing traffic.

**NIGHTTIME OPERATION**

Nighttime operation is defined to include the time from one-half hour after sunset to one-half hour before sunrise, and at any other time when there are unfavorable atmospheric conditions or when there is not sufficient natural light to render discernible persons, vehicles, and substantial objects on the highway at a distance of one thousand feet.

During nighttime conditions the following additional traffic control shall be provided:

1. Cones shall be reflectorized or equipped with lighting devices for maximum visibility (See 7F-5, OMUTCD), and
2. The guide and side mounted carriages shall be illuminated.

The presence of highway lighting does not waive these requirements.

**MINIMUM PAVEMENT MARKING TRAFFIC CONTROL EQUIPMENT REQUIREMENTS**

This table indicates the traffic control equipment which shall be furnished for each type of long line pavement marking operation. In addition, those types of traffic control equipment which shall be furnished when directed by the Engineer are indicated.

EQUIPMENT	PAVEMENT MARKING LINE TYPE <sup>1</sup>					
	CENTER LINE		EDGE LINE		LANE LINE <sup>2</sup> CHANNELIZING LINE	
	> 2 MIN. DRY	≤ 2 MIN. DRY	> 2 MIN. DRY	≤ 2 MIN. DRY	> 2 MIN. DRY	≤ 2 MIN. DRY
LEAD VEHICLE	Required	Required	Not Required	Not Required	Not Required	Not Required
POWER BROOM EQUIPMENT	Required	Required	Required	Required	Required	Required
LINE MARKING MACHINE	Required	Required	Required	Required	Required	Required
TRAIL VEHICLE	Not Required	Required	Required	Required	Not Required	Required
TRAIL VEHICLE (ADDITIONAL)	Required	Required	Required	Required	Required	Required
TRAIL VEHICLE (SIGN & CONE RETRIEVAL)	Required	Not Required	Required	Not Required	Required	Not Required

1. For equipment requirements for auxiliary operations see plan sheet(s) \_\_\_\_\_ and Part 7, OMUTCD.
2. Includes both dashed and solid lane lines.



Required Equipment



Equipment Required When Directed by the Engineer



Not Required

TRAFFIC CONTROL FOR LONG LINE PAVEMENT MARKING OPERATIONS

DATE  
9-8-84  
12-84

CALCULATED BY RM DATE 7-10-84

CHECKED-BY DH DATE 7-10-84

# PAVEMENT MARKING TYPICAL DETAILS

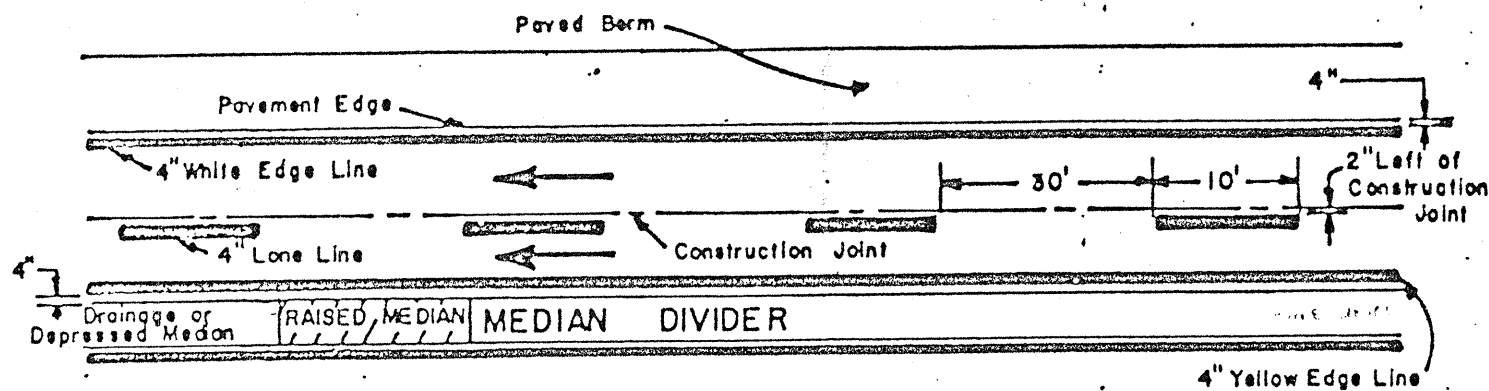
FED. RD. DIV.	STATE	PROJECT	
5	OHIO		

7  
22

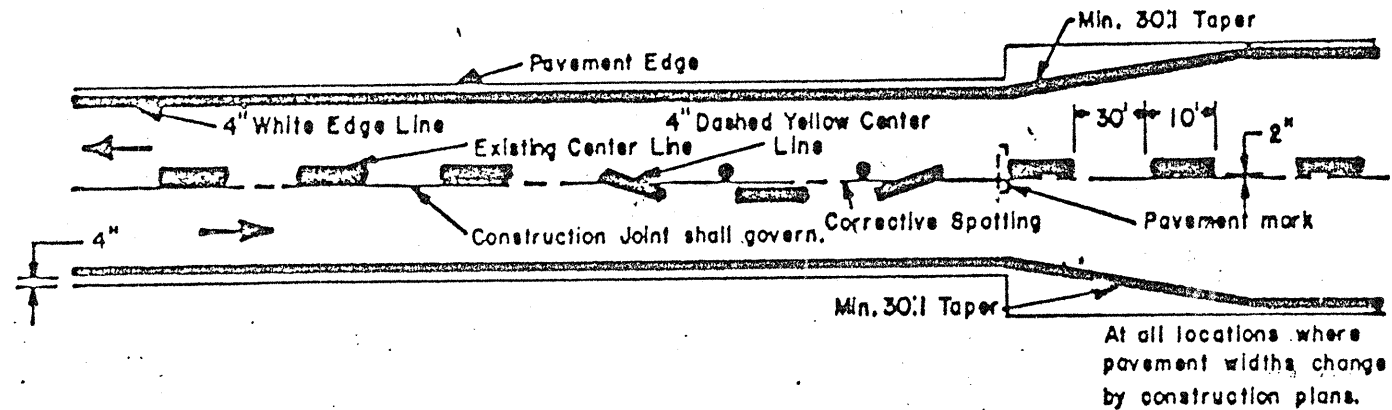
PLAN NO. 92

FAI-188-14.94

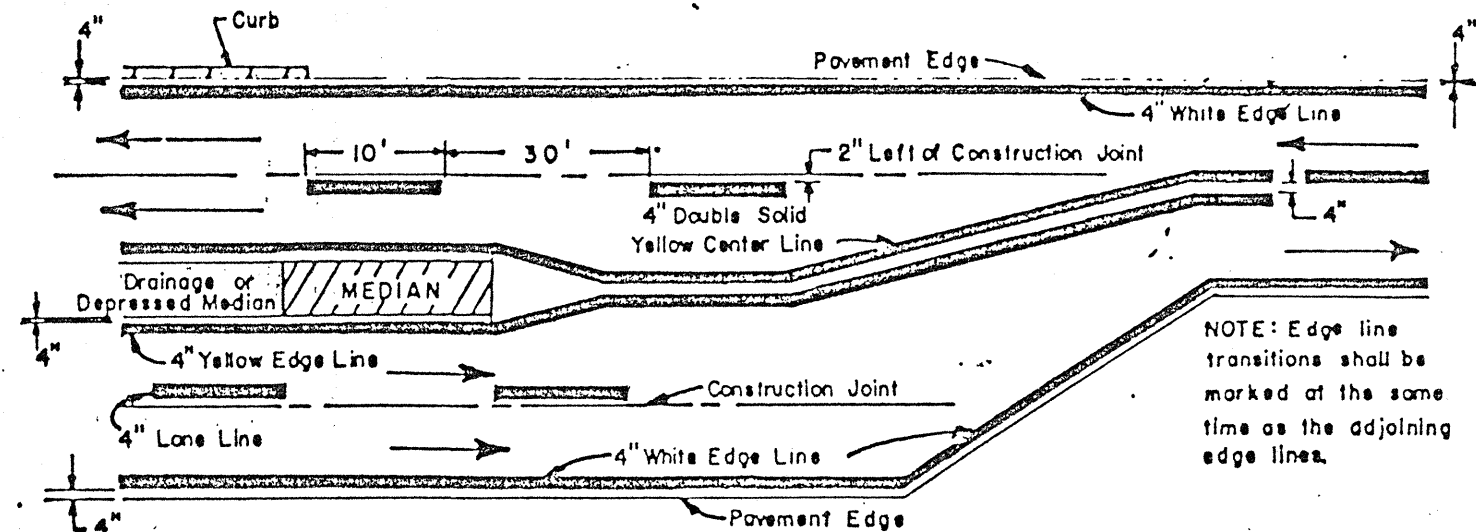
## FREEWAY & EXPRESSWAY MAINLINE MARKINGS



## TWO LANE MARKINGS



## MULTILANE DIVIDED & UNDIVIDED HIGHWAY MARKINGS



NOTE: Edge line transitions shall be marked at the same time as the adjoining edge lines.

### NOTES:

1. THE DISTANCE FROM THE PAVEMENT EDGE TO THE NEAR-SIDE 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.

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







CALCULATED BY Bon DATE 7-10-84  
 CHECKED BY P.H. DATE 7-10-84

# PAVEMENT MARKING SUB-SUMMARY

FED. RD. DIVISION	STATE	PROJECT
5	OHIO	

10  
22

FAI-188-14.94

PLAN No 92

Totals carried to General Summary

CO.	ROUTE	FROM S.L.M.	TO S.L.M.	621 QUANTITIES			PARTICIPATION	621 CENTER LINE REMARKS	
				CENTER LINES MILES					
				TOTAL	DASHED	SOLID			
FAI	S.R. 188	14.94	16.01	Lancaster Corp.	1.15	—	2.300	Part 1	See Request Forms for extra ☹
FAI	S.R. 188	16.01	16.53	Lancaster Corp.	0.52	—	1.014	Part 2A	
FAI	S.R. 188	16.53	16.74	Lancaster Corp.	0.21	—	0.420	Part 1	
FAI	S.R. 188	16.74	16.97	Lancaster Corp.	0.23	—	0.460	Part 2A	
FAI	S.R. 188	16.97	21.89	Pleasantville Corp.	4.92	1.999	7.361	Part 2B	
FAI	S.R. 188	21.89	22.64	Pleasantville Corp.	0.75	0.422	0.910	Part 3	
FAI	S.R. 188	22.64	26.53	Perry Co. Line	3.89	2.449	4.752	Part 2C	
CENTER LINE TOTAL					11.67	4.870	17.217		

CO.	ROUTE	FROM S.L.M.	TO S.L.M.	621 QUANTITIES			PARTICIPATION	621 LANE LINE REMARKS
				4" LANE LINES MILES				
				TOTAL	DASHED	SOLID		
LANE LINE TOTAL								

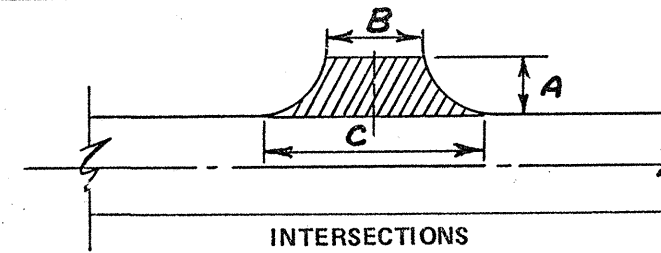
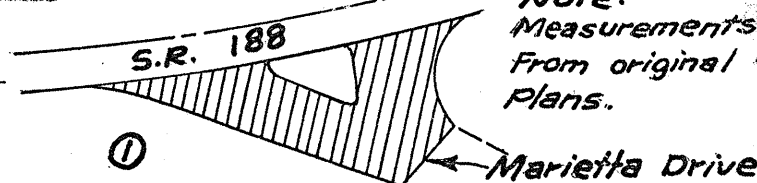
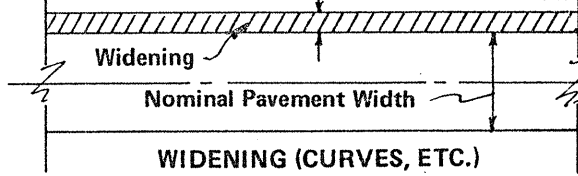
CO.	ROUTE	FROM S.L.M.	TO S.L.M.	WHITE EDGE LINE QUANTITIES				YELLOW EDGE LINE QUANTITIES				621 EDGE LINE REMARKS
				TOTAL	HIGHWAY	RAMP	PART.	TOTAL	HIGHWAY	RAMP	PART.	
				MILES	MILES	MILES		MILES	MILES	MILES		
FAI	S.R. 188	16.01	16.53	Lancaster Corp.	1.04	1.04		Part 2A				
FAI	S.R. 188	16.53	16.74	Lancaster Corp.	0.42	0.42		Part 1				
FAI	S.R. 188	16.74	16.97	Lancaster Corp.	0.46	0.46		Part 2A				
FAI	S.R. 188	16.97	21.89	Pleasantville Corp.	9.84	9.84		Part 2B				
FAI	S.R. 188	21.89	22.64	Pleasantville Corp.	1.50	1.50		Part 3				
FAI	S.R. 188	22.64	26.53	Perry Co. Line	7.78	7.78		Part 2C				
EDGE LINE TOTAL					21.04	21.04						

CALCULATED BY RLM DATE 7-26-84

CHECKED BY "W" SKR DATE 7-26-84

EXTRA AREA AND DEDUCTIONS

NOTE:  
Measurements taken  
From original Construction  
Plans.

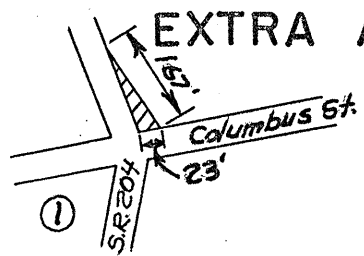
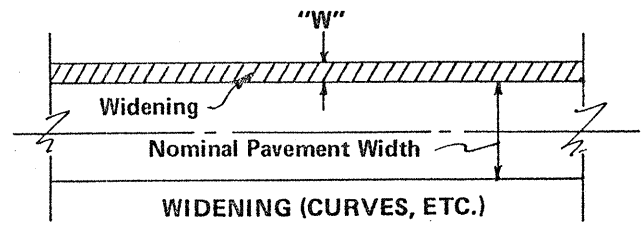


PLAN NO. 92

11  
22

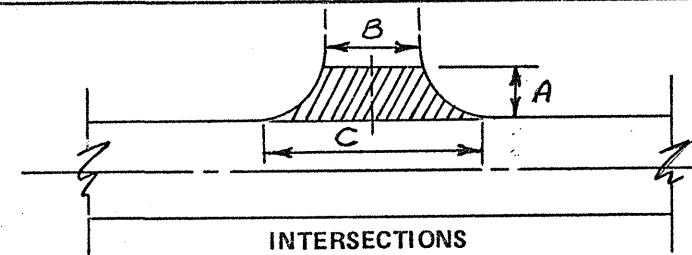
FAI-188-14.94

PART	ROUTE	LOG POINT TO LOG POINT	SIDE	DESCRIPTION	INTERSECTIONS			AREA IN SQ. YDS.	PROPOSED ITEMS						
					A IN FEET	B IN FEET	C IN FEET		407		ASPHALT CONCRETE		SPECIAL Pavement Planing Bituminous without Heating Sq. Yds.	Existing Surface	
									TACK COAT @ .0-10 gal./s.y. Gals.	COVER AGGR. @ ..... lbs./s.y. Tons	THICK INCHES	CU. YDS. ITEM			THICK INCHES
1	S.R. 188		Rt.	Goslin Drive	20	22	45	74	7		1	2		74	Paved
			Rt.	North Ewing St.	22	28	65	114	11		1	3		114	Paved
			Rt.	Baldwin Drive	13	60	105	119	12		1	3		119	Paved
			Rt.	Kemper Avenue	25	29	80	151	15		1	4		151	Paved
			Rt.	Kanawha Drive	35	35	100	263	26		1	7		263	Paved
			Rt.	Marietta Drive ①				700	70		1	19		700	Paved
			Rt.	Wheeling Road	53	30	105	398	40		1	11		398	Paved
			Lt.	Lynn Drive	40	30	100	289	29		1	8		289	Paved
				TOTALS PART 1 (Totals carried to Sheet 13)				2,108	210			57		2,108	Code 01
2-A			Lt.	Concordia Drive	40	36	100	302	30		1	8		302	Paved
			Lt.	Tiki Road	35	26	94	233	23		1 1/2	10			Paved
				TOTALS PART 2-A (Totals carried to Sheet 14)				535	53			18		302	
2-B			Rt.	Mudhouse Road	45	22	100	305	31		1 1/2	13			Paved
			Lt.	Rainbow Drive	40	21	80	224	22		1 1/2	9			Paved
			Lt.	Barry Drive N.E.	35	23	84	208	21		1 1/2	9			Paved
			Rt.	Pleasant Way N.E.	25	22	68	125	13		1 1/2	5			Paved
			Rt.	Coonpath Road (Co. Rd. 31)	25	20	68	122	12		1 1/2	5			Paved
			Lt.	Coonpath Road (Co. Rd. 31)	30	20	78	163	16		1 1/2	7			Paved
			Rt.	Beatty Road	20	16	46	69	7		1 1/2	3			Paved
			Rt.	Carroll Eastern Rd. (Co. Rd. 19)	20	15	44	66	7		1 1/2	3			Paved
			Lt.	Carroll Eastern Rd. (Co. Rd. 19)	20	20	66	96	10		1 1/2	4			Paved
				TOTALS PART 2-B (Totals carried to Sheet 14)				1,378	139			58			



EXTRA AREA AND DEDUCTIONS

CALCULATED BY RLM DATE 7-26-84  
CHECKED BY SKR DATE 7-27-84



PLAN NO. 92

12  
22

FAI-188-14.94

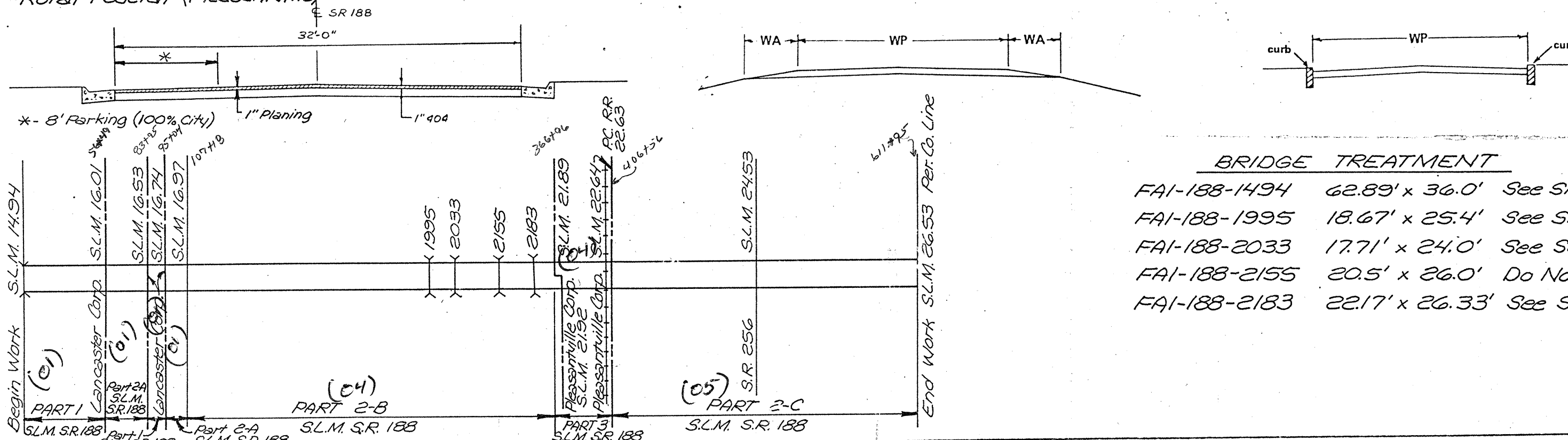
PART	ROUTE	LOG POINT TO LOG POINT	SIDE	DESCRIPTION	INTERSECTIONS			AREA IN SQ. YDS.	PROPOSED ITEMS						
					A IN FEET	B IN FEET	C IN FEET		407		ASPHALT CONCRETE		Existing Surface	SPECIAL Pavement Planing Bituminous without Heating Sq. Yds.	
									TACK COAT @ 0.10 gal./s.y. Gals.	COVER AGGR. @ ..... lbs./s.y. Tons	THICK INCHES	CU. YDS.			THICK INCHES
									403	404					
2-C	S.R. 188		Lt.	Musser Road (Twp. Rd. 382)	40	15	78	207	21			9	1 1/2	Paved	
			Rt.	Lake Road (Connector)	20	16	60	84	8			4	1 1/2	Paved	
			Rt.	Lake Road	35	16	48	124	12			5	1 1/2	Paved	
			Lt.	Lake Road (Co. Rd. 62)	90	19	132	755	76			31	1 1/2	Paved	
			Rt.	S.R. 256	35	20	74	183	18			8	1 1/2	Paved	
			Lt.	S.R. 256	35	20	73	181	18			8	1 1/2	Paved	
			Rt.	Cattail Road (Co. Rd. 80)	35	16	61	150	15			6	1 1/2	Paved	
			Lt.	Cattail Road (Twp. Rd. 419)	40	21	77	218	22			9	1 1/2	Paved	
			Rt.	New Salem Road	30	22	68	150	15			6	1 1/2	Paved	
			Lt.	New Salem Road	35	20	77	189	19			8	1 1/2	Paved	
TOTALS	PART 2-C (Totals	carried to Sheet 14)						2,241	224			94			
3			Rt.	Richland Rd. N.E.	40	22	88	244	24			8	1 1/4	Paved	244
			Rt.	Academy Street	20	20	52	80	8			3	1 1/4	Paved	80
			Lt.	Columbus Street	15	32	50	68	7			2	1 1/4	Paved	68
			Rt.	Columbus Street	8	39	52	40	4			1	1 1/4	Paved	40
			Rt.	High Street	25	16	45	85	9			3	1 1/4	Paved	85
			Lt.	Summit Street	30	19	56	125	13			4	1 1/4	Paved	125
			Rt.	Extra Area @ Columbus St. ①				213	21	1/2	3	7	1	Paved	213
TOTALS	PART 3 (Totals	carried to Sheet 15)						855	86		3	28			855 (C <sub>extra</sub> C <sub>5</sub> )

- 1 - Urban (Lancaster)
- 2A - Urban In Fact
- 2-B - Rural Federal
- 2-C - Rural Non-Federal
- 3 - Rural Federal (Pleasantville)

TYPICAL 1

TYPICAL 2

TYPICAL 3



BRIDGE TREATMENT

FAI-188-1494	62.89' x 36.0'	See Sheet 18
FAI-188-1995	18.67' x 25.4'	See Sheet 18
FAI-188-2033	17.71' x 24.0'	See Sheet 18
FAI-188-2155	20.5' x 26.0'	Do Not Cover
FAI-188-2183	22.17' x 26.33'	See Sheet 18

(1) Bridge Length x Pavement Width (2) Field Measured

PAVEMENT DATA

PART	ROUTE	LOG POINT TO LOG POINT	LENGTH		WP FEET	TYPICAL	EXISTING TYPE PAVEMENT	PAVEMENT AREA SQ. YDS.	PROPOSED PAVEMENT						SPECIAL Pavement Planing Bituminous without Heating (1") Sq. Yds.	614 Temporary Center Lines, Class II Miles
			MILES	LIN. FT.					407		ASPHALT CONCRETE					
									TACK COAT @ 0.10 gal./s.y. GALS.	COVER AGGR. @ 1.0 lbs./s.y. TONS	ITEM 403 THICK INCHES	CU. YDS.	ITEM 404 THICK INCHES	CU. YDS.		
1	S.R. 188	14.94-15.13	0.19	1,003	32 <sup>(2)</sup>	1	404	3,566	357	2		1	99		3,566	0.38
		15.13-15.38	0.25	1,320	24 <sup>(2)</sup>	1	404	3,520	352	2		1	98		3,520	0.50
CITY		(15.13-15.38)	(0.25)	(1,320)	8 <sup>(2)</sup>	1*	404	1,173	117	1		1	33	(02)	(1,173)	
		15.38-15.56	0.18	950	32 <sup>(2)</sup>	1	404	3,378	338	2		1	94		3,378	0.36
		15.56-16.01	0.45	2,376	24 <sup>(2)</sup>	1	404	6,336	634	3		1	176		6,336	0.90
CITY		(15.56-16.01)	(0.45)	(2,376)	8 <sup>(2)</sup>	1*	404	2,112	211	1		1	59	(02)	(2,112)	
		16.53-16.74	0.21	1,109	21 <sup>(2)</sup>	2	404	2,588	259	1	0	36	1	72		0.42
		Extra Areas From Sheet 11						2,108	210				57		2,108	
		Extra Tack Coat For Longitudinal Joint							16							
		Deduct for Bridge (1)						(224)	(22)				(6)			
TOTALS	PART 1		1.28	6,758				21,272	2,144	10		36	590		18,908	2.56
TOTALS	CITY		(0.70)	(3,696)				3,285	328	2			92		3,285	
	Total Part 1		1.28	6,758				24,557	2,472	12		36	682		22,193	2.56
2-A	S.R. 188	16.01-16.07	0.06	317	32 <sup>(2)</sup>	1	404	1,127	113	1		1	31		1,127	0.12
		16.07-16.53	0.46	2,429	21 <sup>(2)</sup>	2	404	5,668	567	3	0	79	1	157		0.92
		(PART 2-A CONTINUED ON NEXT SHEET)														

02 = 328557

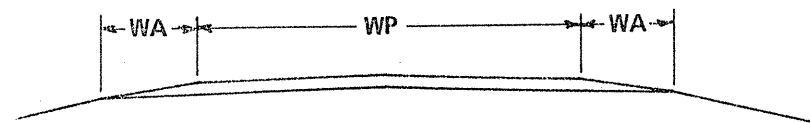
# ASPHALT CONCRETE

FAI-188-14.94

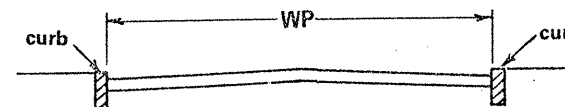
PLAN NO.  
92

14  
22

TYPICAL 2



TYPICAL 3

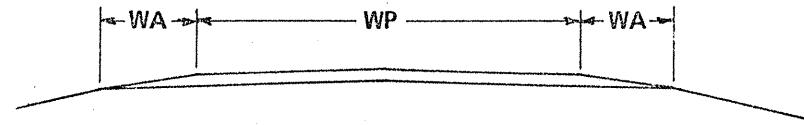


(1) Bridge Length x Pavement Width (2) Field Measured

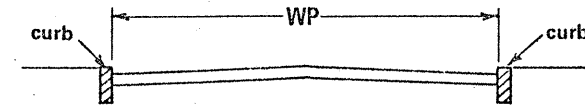
PAVEMENT DATA

PART	ROUTE	LOG POINT TO LOG POINT	LENGTH		WP FEET	TYPICAL	EXISTING TYPE PAVEMENT	PAVEMENT AREA SQ. YDS.	PROPOSED PAVEMENT						SPECIAL Pavement Planing Bituminous without Heating (1") Sq. Yds.	614 Temporary Center Lines, Class II Miles	202 Raised Pavement Markers Removed for Storage Each	
			MILES	LIN. FT.					407		ASPHALT CONCRETE							
									TACK COAT @ .010 gal./s.y. GALS.	COVER AGGR. @ .1 lbs./s.y. TONS	ITEM 403 THICK INCHES Min.	CU. YDS.	ITEM 404 THICK INCHES	CU. YDS.				ITEM THICK INCHES
(PART 2-A CONTINUED FROM SHEET 13)																		
UIF	2-A	16.74-16.97	0.23	1,214	21 <sup>(2)</sup>	2	404	2,833	283	1	0	39	1	79		0.46	Code 1 = 4.06	
		Extra Areas From Sheet 11						535	53					18			302	
		Extra Tack Coat for Longitudinal Joint							9									
	TOTALS PART 2-A		0.75	3,960				10,163	1,025	5		118		285	(Code C)	1.50	1,429	
R-F	2-B	S.R. 188 16.97-21.89	4.92	25,978	21 <sup>(2)</sup>	2	404	60,615	6,062	30	0	842	1	1,684		9.84	11.34 Code 4	137
		Extra Areas From Sheet 11						1,378	139					58				
		Extra Tack Coat for Longitudinal Joint							60									
		Deduct for Bridges (1)						(184)	(18)			(3)		(5)				
	TOTALS PART 2-B		4.92	25,978				61,809	6,243	30		839		1,737		9.84		137
R-NF	2-C	S.R. 188 22.64-26.53	3.89	20,539	18	2	404	41,078	4,108	21	0	571	1	1,141		7.78	Code 5	
		Extra Areas From Sheet 12						2,241	224					94				
		Extra Tack Coat for Longitudinal Joint							48									
	TOTALS PART 2-C		3.89	20,539				43,319	4,380	21		571		1,235		7.78		

TYPICAL 2



TYPICAL 3



FAI-188-14.94

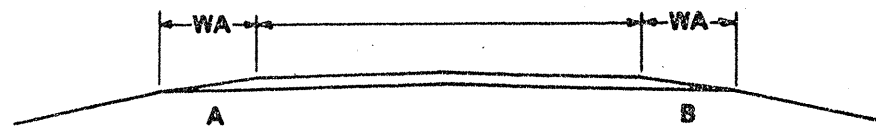
PAVEMENT DATA

PART	ROUTE	LOG POINT TO LOG POINT	LENGTH		WP FEET	TYPICAL	EXISTING TYPE PAVEMENT	PAVEMENT AREA SQ. YDS.	PROPOSED PAVEMENT						SPECIAL PAVEMENT	614 Temporary Center Lines, Class II Miles		
			MILES	LIN. FT.					407		ASPHALT CONCRETE							
									TACK COAT @ .010 gal./s.y. GALS.	COVER AGGR. @ .../... lbs./s.y. TONS	ITEM 403 THICK INCHES	CU. YDS.	ITEM 404 THICK INCHES	CU. YDS.			ITEM THICK INCHES	CU. YDS.
3	S.R. 188	21.89-21.92	0.03	158	11.25	2	404	395	40	1		1 1/4	14			395	0.06	
		21.92-22.04	0.12	634	22.50	2	404	1,585	159	1		1 1/4	55			1,585	0.24	
		22.04-22.17	0.13	686	24	3	404	1,829	183	1		1 1/4	64			1,829	0.26	
		22.17-22.24	0.07	370	24	2	404	987	99	1		1 1/4	34			987	0.14	
		22.24-22.30	0.06	317	35.7	3	404	1,257	126	1		1 1/4	44			1,257	0.12	
		22.30-22.64	0.34	1,795	24	2	404	4,787	479	2		1 1/4	166			4,787	0.68	
Extra Areas From Sheet 12								855	86		3		28			855		
Extra Tack Coat for Longitudinal Joint									11									
TOTALS PART 3			0.75	3,960				11,695	1,183	7	3		405			11,695	1.50 (Code 04)	

# PAVED SHOULDERS

\*NOTES

TYPICAL 1



TYPICAL 2



ITEM 411 - STABILIZED CRUSHED AGGREGATE: Whenever 411 stabilized crushed aggregate is stipulated, the first paragraph of 411.03 is waived and subgrade compaction shall be to the satisfaction of the Engineer.

\*\* One station equals 100 lin. ft. Stations shall be measured along each edge of pavement.

~~1. ITEM 203 LINEAR GRADING: This work shall consist of preparing a subgrade for the shoulder paving by excavating the existing shoulder material to the depth shown in the plan, or as directed by the Engineer to remove any unstable material and by shaping and compacting the subgrade. The unsound or broken edge of bituminous pavements shall first be trimmed to a line established by the Engineer. The existing shoulder then shall be excavated and the subgrade shaped and compacted. Compaction shall be carried out to the satisfaction of the Engineer by means of a trench roller, 401.11. Areas graded in excess of depths specified or directed by the Engineer shall be backfilled to desired grade using 617 Compacted Aggregate at the contractor's expense. Excavated material shall be disposed of as indicated in the plan.~~

- a. Used to back up shoulders where required; the balance to be disposed of as directed by the Engineer.
- b. Disposed of by the Contractor at his own responsibility outside the limits of the right-of-way.
- c. Wasted adjacent to the pavement and within the right-of-way as directed by the Engineer.

~~2. ITEM 402 ASPHALT CONCRETE: Prior to placing a bituminous mixture for shoulder paving, the edge of the existing pavement, for the full depth of the trench, shall be coated with bituminous material in accordance with 401.12.~~

~~3. ITEM 301 BITUMINOUS AGGREGATE BASE may be used in lieu of Item 402 Asphalt Concrete.~~

~~4. ITEM 617 COMPACTED AGGREGATE: A quantity of Item 617 Compacted Aggregate has been provided for areas where the shoulders were low prior to grading and/or low areas caused by removal of unsuitable material.~~

~~5. ITEM 408 BITUMINOUS PRIME COAT: After application of the Prime Coat, no further treatment shall be performed until so directed by the Engineer.~~

~~6. SHIELD: The contractor shall provide a shield to prevent the spraying or drifting of liquid bituminous material onto the edge of the pavement or edgelines. The attention of the contractor is directed to 407.12 of the Specifications.~~

Totals carried to General Summary

PAVED SHOULDER DATA

PART	ROUTE	LOG POINT TO LOG POINT	LENGTH		TYPICAL	PROPOSED WIDTH (FT.)				SHOULDER AREA SQ. YDS.	203		404		411		408	409		617	605	*NOTES
			MILES	LIN. FT.		A	B	C	D		LINEAR GRADING		ASPHALT CONCRETE		STABILIZED CRUSHED AGGREGATE		PRIME	SEAL		COMPACTED AGGREGATE	AGGREGATE DRAINS	
											DEPTH INCHES	**STA.	AVG. THICK INCHES	CU. YDS.	AVG. THICK INCHES	CU. YDS.		Bit. Matl.	Bit. Matl.			
1	S.R.188	16.53-16.74	0.21	1,109	1	2	2			493			2	27			197			21		5
2-A	S.R.188	16.07-16.53	0.46	2,429	1	2	2			1,080			2	60			432			45		5
		16.74-16.97	0.23	1,214	1	2	2			540			2	30			216			22		5
	TOTALS	PART 2-A	0.69	3,643						1,620				90			648			67		
2-B	S.R.188	16.97-21.89	4.92	25,978	1	2	2			11,546			2	641			4,618			481		5
2-C	S.R.188	22.64-26.53	3.89	20,539	1	2	2			9,128			2	507			3,651			380		5
	Total	Part 2	9.50	49,160						22,294				1,238			8,917			928		



CALCULATED BY RLM DATE 7-26-84  
 CHECKED BY SKR DATE 7-27-84

# PAVED SHOULDERS

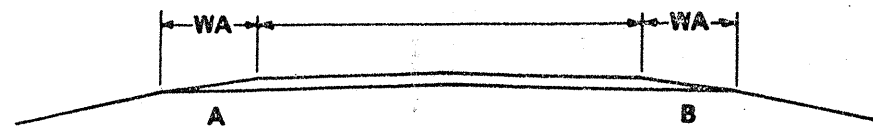
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PLAN NO. 92

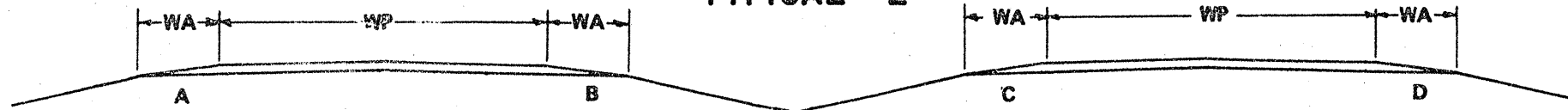
17  
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\*NOTES

TYPICAL 1



TYPICAL 2



ITEM 411 - STABILIZED CRUSHED AGGREGATE: Whenever 411 stabilized crushed aggregate is stipulated, the first paragraph of 411.03 is waived and subgrade compaction shall be to the satisfaction of the Engineer.

\*\* One station equals 100 lin. ft. Stations shall be measured along each edge of pavement.

- 1. ITEM 203 LINEAR GRADING: This work shall consist of preparing a subgrade for the shoulder paving by excavating the existing shoulder material to the depth shown in the plan, or as directed by the Engineer to remove any unstable material and by shaping and compacting the subgrade. The unsound or broken edge of bituminous pavements shall first be trimmed to a line established by the Engineer. The existing shoulder then shall be excavated and the subgrade shaped and compacted. Compaction shall be carried out to the satisfaction of the Engineer by means of a trench roller, 401.11. Areas graded in excess of depths specified or directed by the Engineer shall be backfilled to desired grade using 617 Compacted Aggregate at the contractor's expense. Excavated material shall be disposed of as indicated in the plan.
  - a. Used to back up shoulders where required; the balance to be disposed of as directed by the Engineer.
  - b. Disposed of by the Contractor at his own responsibility outside the limits of the right-of way.
  - c. Wasted adjacent to the pavement and within the right-of-way as directed by the Engineer.
- 2. ITEM 402 ASPHALT CONCRETE: Prior to placing a bituminous mixture for shoulder paving, the edge of the existing pavement, for the full depth of the trench, shall be coated with bituminous material in accordance with 401.12.
- 3. ITEM 301 BITUMINOUS AGGREGATE BASE may be used in lieu of Item 402 Asphalt Concrete.
- 4. ITEM 617 COMPACTED AGGREGATE: A quantity of Item 617 Compacted Aggregate has been provided for areas where the shoulders were low prior to grading and/or low areas caused by removal of unsuitable material.
- 5. ITEM 408 BITUMINOUS PRIME COAT: After application of the Prime Coat, no further treatment shall be performed until so directed by the Engineer.
- ~~6. SHIELD: The contractor shall provide a shield to prevent the spraying or drifting of liquid bituminous material onto the edge of the pavement or edgelines. The attention of the contractor is directed to 107.12 of the Specifications.~~

Totals carried to General Summary

PAVED SHOULDER DATA

PART	ROUTE	LOG POINT TO LOG POINT	LENGTH		TYPICAL	PROPOSED WIDTH (FT.)				SHOULDER AREA SQ. YDS.	203		404		411		408	409		617	605	* NOTES
			MILES	LIN. FT.		LINEAR GRADING		ASPHALT CONCRETE			STABILIZED CRUSHED AGGREGATE		PRIME	SEAL		COMPACTED AGGREGATE	AGGREGATE DRAINS					
			DEPTH INCHES	**STA.		AVG. THICK INCHES	CU. YDS.	AVG. THICK INCHES	CU. YDS.		Bit. Matl.	Bit. Matl.	Aggr.	To Back Up Paved Berm	LIN. FT.							
3	S.R.188	21.89-22.04	0.15	792	1	2	2		352			2	20				141			15		5
		22.17-22.24	0.07	370	1	2	2		164			2	9				66			7		5
		22.30-22.64	0.34	1,795	1	2	2		798			2	44				319			33		5
TOTALS PART 3			0.56	2,957					1,314				73				526			55		

# BRIDGE DECK TREATMENT

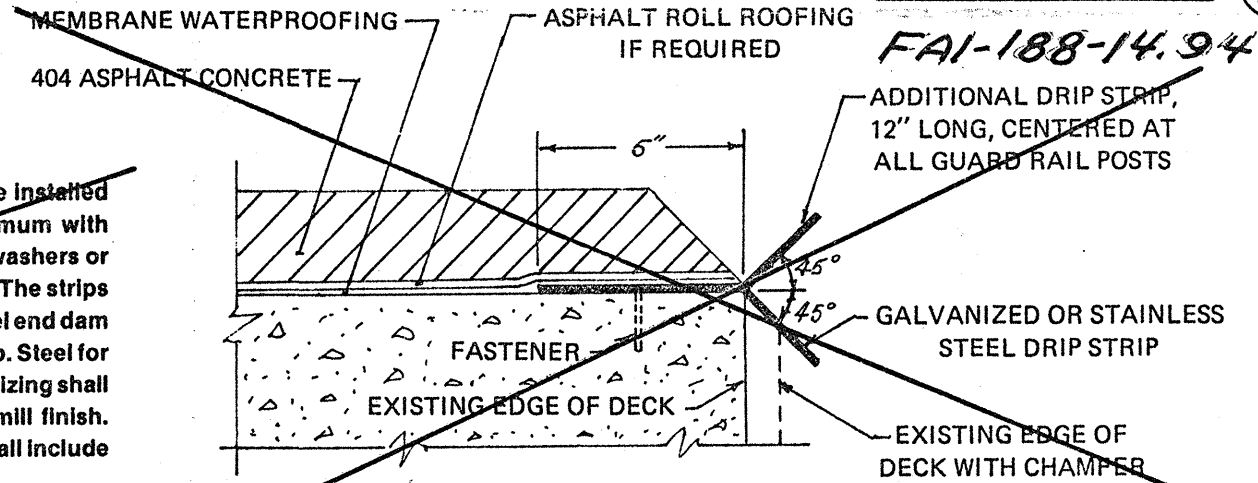
**FAI-188-14.94**

~~PROTECTIVE COURSE FOR MEMBRANE WATERPROOFING~~

~~MEMBRANE WATERPROOFING, Sheet Type 1: A minimum of 1-1/2 inches of 404 Asphalt Concrete shall be placed over the membrane.~~

~~MEMBRANE WATERPROOFING: A minimum of 2-1/2 inches of 404 Asphalt Concrete shall be placed over the membrane.~~

~~**DRIP STRIP:** Prior to applying deck membrane waterproofing, a bent drip strip shall be installed along the edges of the deck as shown. The strips shall be fastened at 1'-6" c/c maximum with 1-1/4" x 5/32" x 1/4" (Length x Shank diameter x Head diameter) flat head drive pins and washers or No. 10 galvanized screws and expansion anchors, subject to the approval of the Engineer. The strips shall be placed the full length of the deck, ending at the face of the abutment wingwall or steel end dam angle. Where splices are required a 3" (Min.) lap shall be used with a fastener through the lap. Steel for galvanized strips shall be 8" x 0.105" and shall meet the requirements of ASTM A568. Galvanizing shall be in accordance with 711.02. Stainless steel shall be 20 gauge ASTM A167, Type 304, mill finish. Payment shall be at the contract price bid for Item Special, Sq. Ft., Steel Drip Strip, which shall include all materials, labor, tools and incidentals necessary to complete item.~~



TYP. SEC. DRIP STRIP

Totals carried to General Summary

BRIDGE DECK DATA

PART	COUNTY, ROUTE, BRIDGE NO.	LENGTH (BRIDGE LIMITS) L.F.	WIDTH L.F.	BRIDGE DECK AREA S.Y.	202 WEARING COURSE REMOVED DEPTH *" S.Y.	BRIDGE DECK REPAIR			PATCHING		STEEL DRIP STRIP S.F.	SPECIAL DECK WATERPROOFING		516 VERT. EXT. OF STR. EXP. JOINTS L.F.	ASPHALT CONCRETE		202 Raised Pavement Markers Removed for Storage Each	407 Tack Coat @ 0.10 Gal./sq. Gals.
						" THICK OVERLAY S.Y.	VARIABLE THICKNESS OVERLAY C.Y.	FULL-DEPTH REPAIR C.Y.	TYPE	S.Y.		MEMBRANE WATERPROOFING SHEET TYPE 1 S.Y.	MEMBRANE WATERPROOFING S.Y.		THICK INS.	404 C.Y.		
1	FAI-188-1494	62.89	36.0	252	252									2	14	6	25	
2-B	FAI-188-1995	18.67	25.4	53	53									3	4		5	
	FAI-188-2033	17.71	24.0	47										2	3		5	
	FAI-188-2183	22.17	26.33	65										2	4		6	
TOTALS	PART 1				53										11		16	

\* FAI-188-1494 - 2"  
FAI-188-1995 - 4"

*100% State*

GENERAL SUMMARY (CONTINUED ON NEXT SHEET)

ITEM	PART 1 Code 03	PART 2-A Code 03	PART 2-B	PART 2-C Code 05	PART 3	100% CITY	GRAND TOTAL Parts 1, 2-A, 2-B, 2-C & 3 CITY	UNIT	DESCRIPTION
847	140						140	Lin.Ft.	Transverse Lines, 947.03 Type A, Inlaid
847	253	48	168	199	61		729	Lin.Ft.	Stop Lines, 947.03 Type A, Inlaid
847	6						6	Each	Word on Pavement, <sup>"ONLY"</sup> 96-inch, 947.03 Type A, Inlaid
847	9						9	Each	Lane Arrows, 947.03 Type A, Inlaid
847	64						64	Sq. Ft.	Island Markings, 947.03 Type A, Inlaid
847	303						303	Lin.Ft.	Channelizing Lines, 947.03 Type A, Inlaid
847					516		516	Lin.Ft.	Crosswalk Lines, 947.03 Type A, Inlaid
847				1	1		2	Each	Railroad Symbol Markings, 947.03 Type A, Inlaid
847					2		2	Each	WORD ON PAVEMENT, "SCHOOL" 96 INCH, 947.03 TYPE A, INLAID

ITEM	MR(Codes 01)		SR(04)	(05)	SR(04)	(02) CITY 100%	R-2	GRAND TOTAL Parts 1, 2-A, 2-B, 2-C, 3, 604	UNIT	DESCRIPTION
	PART 1 (U)	PART 2-A (UIF)	PART 2-B (R-F)	PART 2-C (R-NF)	PART 3 (R-F)					
407	2,169	1,025	6,259	4,380	1,183	328	10	15,344	Gals.	Tack Coat
407	10	5	30	21	7	2	11	75	Tons	Cover Aggregate
403	36	118	839	621	3		12	1,617	Cu. Yds.	Asphalt Concrete AC-20
404	631	375	2,394	1,742	478	92	13	5,712	Cu. Yds.	Asphalt Concrete AC-20
621	1.36	0.75	4.92	3.89	0.75		14	11.67	Miles	Center Lines
621	0.42	1.50	9.84	7.78	1.50		15	21.04	Miles	Edge Lines
SPECIAL	1	2	15	12	1		16	31	Hours	Grader Rental
SPECIAL	1	1	7	6	1		17	16	Hours	Loader Rental
SPECIAL	18,908	1,429			11,695	3,285	18	35,317	Sq. Yds.	Pavement Planing, Bituminous, without Heating
202	6		137				19	143	Each	Raised Pavement Markers Removed for Storage
408	197	648	4,618	3,651	526		20	9,640	Gals.	Bituminous Prime Coat
202	252		286				21	538	Sq. Yds.	Wearing Course Removed
614	2.56	1.50	9.84	7.78	1.50			23.18	Miles	Temporary Center Lines, Class II
624	Lump	Lump	Lump	Lump	Lump			Lump	Lump	Mobilization
617									Sq. Yds.	Shoulder Preparation
617	21	67	481	380	55			1,004	Cu. Yds.	Compacted Aggregate
614	Lump	Lump	Lump	Lump	Lump			Lump	Lump	Maintaining Traffic

GENERAL NOTES

TRAFFIC:

Traffic shall be maintained at all times. The length of restricted traffic zones shall be kept to a minimum consistent with the specification requirements for protection of completed courses.

RAILROAD CROSSINGS:

The new surface course shall be feathered or butt jointed to meet the rail grades as specified.

ALIGNMENT AND PROFILE:

The work proposed by this project is for the resurfacing 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 that it will be raised an amount equal to the thickness of the resurfacing course or courses specified in these plans.

INTERMEDIATE COURSE, SPOT LEVELING AND PATCHING:

This material shall be placed in a separate operation where and as directed by the engineer.

TACK COAT:

The tack coat operation shall be as determined at a pre-construction conference as per 407.05, and application rates shall not exceed 0.10 gal. per sq. yd.

COVER AGGREGATE:

Cover aggregate shall conform to 703.06.

TACK COAT: (Continued)

In addition to the requirements of 407.05 the tack coat shall be applied immediately ahead of the paving operation or as otherwise determined by the Project Engineer.

CONTROL OF ONE WAY TRAFFIC:

In addition to the requirements of the Ohio Manual of Uniform Traffic Control Devices and Material Specifications the following requirements shall apply.

Communications between flaggers shall be by two-way radio during the paving operations.

Payment for the above shall be included in Item 614, Maintaining Traffic.

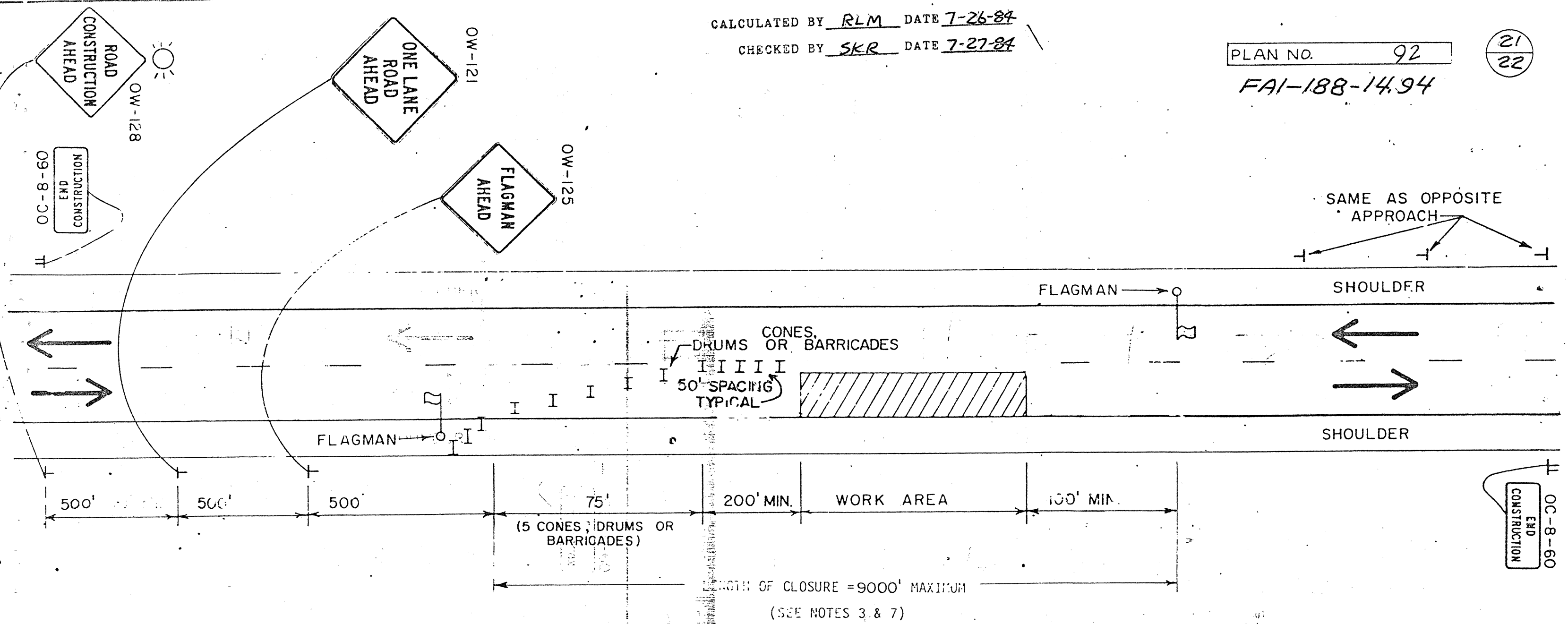
CALCULATED BY RLM DATE 7-26-84

CHECKED BY SKR DATE 7-27-84

PLAN NO. 92

FAI-188-14.94

21  
22



GENERAL NOTES

1. FLAGMEN SHALL BE USED TO CONTROL TRAFFIC CONTINUOUSLY FOR AS LONG AS ONE LANE OPERATION IS IN EFFECT. FLAGMEN SHALL BE ABLE TO COMMUNICATE WITH EACH OTHER AT ALL TIMES EITHER VERBALLY OR BY MEANS OF RADIO OR FIELD TELEPHONES. FLAGMAN STATIONS SHALL BE ADEQUATELY ILLUMINATED FOR NIGHT TIME OPERATIONS BY USE OF A 175 WATT MINIMUM LUMINAIRE.
2. CONES MAY BE SUBSTITUTED FOR BARRICADES OR DRUMS FOR THE LANE CLOSURES DURING DAYLIGHT HOURS ONLY.
3. WHEN THE AMBIENT TEMPERATURE EXCEEDS 80 DEGREES F, THE ENGINEER MAY INCREASE THE LENGTH OF CLOSURE TO ALLOW FOR SUFFICIENT COOLING OF THE NEW PAVEMENT.

4. THE TYPE B HIGH INTENSITY BARRICADE WARNING LIGHT SHOWN ON THE ROAD CONSTRUCTION AHEAD SIGN IS REQUIRED WHENEVER NIGHT LANE CLOSURE IS NECESSARY.
5. TYPE C STEADY BURNING BARRICADE WARNING LIGHTS SHALL BE ERECTED ON DRUMS OR BARRICADES FOR NIGHT LANE CLOSURES.
6. THE ADVANCE WARNING SIGNS "OW-128" "OW-121" AND "OW-125" SHALL BE MOVED BACK AS REQUIRED BY THE QUEUING OF STOPPED VEHICLES.
7. WITHIN THE LENGTH OF CLOSURE, PROVISION SHALL BE MADE TO CONTROL TRAFFIC ENTERING FROM INTERSECTING STREETS AND MAJOR DRIVES AS NECESSARY TO PREVENT WRONG WAY MOVEMENTS AND TO KEEP VEHICLES OFF OF NEW PAVEMENT NOT READY FOR TRAFFIC.

THE ENGINEER MAY SHORTEN THE MAXIMUM ALLOWABLE LENGTH OF CLOSURE TO RELIEVE EXCESSIVE TRAFFIC BACKUPS.

ALL TRAFFIC CONTROL SIGNS, CHANNELIZING DEVICES, AND FLAGMEN SHALL BE MOVED FORWARD BEFORE THE CLOSURE REACHES THE MAXIMUM ALLOWABLE LENGTH. ONLY ONE SIDE OF THE ROAD SHALL BE CLOSED AT ANY TIME IN A WORK AREA.

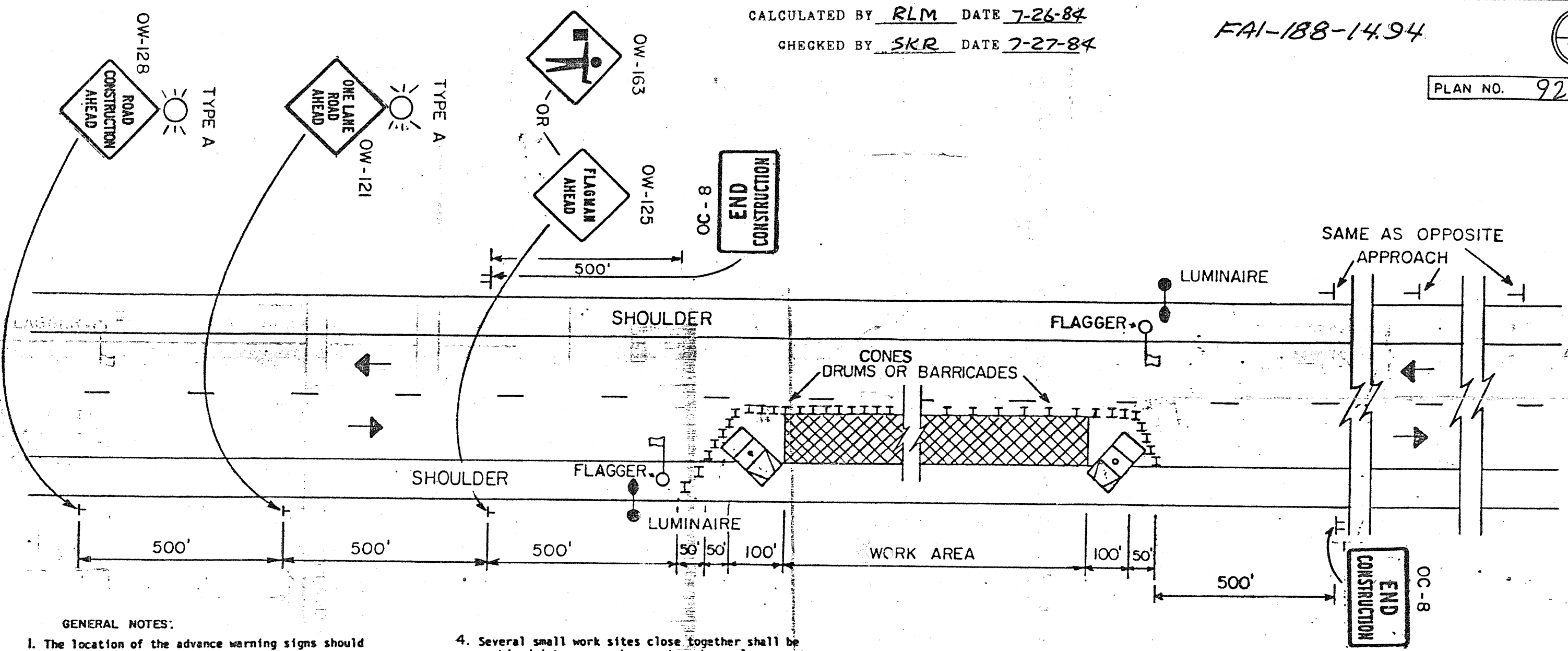
OHIO DEPARTMENT OF TRANSPORTATION		
FLAGMEN CLOSING		DATE
1 LANE OF A 2 LANE HIGHWAY		12/80
PAVING OPERATIONS		
DR	CK	

CALCULATED BY RLM DATE 7-26-84  
 CHECKED BY SKR DATE 7-27-84

FAI-188-14.94

22  
22

PLAN NO. 92



**GENERAL NOTES:**

1. The location of the advance warning signs should be adjusted to provide for adequate sight distance for the existing vertical and horizontal roadway alignment. The distances shown are minimums.
2. Flaggers shall be used to control traffic continuously for as long as a one lane operation is in effect. The flaggers shall communicate with each other at all times as described in the Ohio Manual of Uniform Traffic Control Devices (OMUTCD) in Section 7H: Control of Traffic Through Work Areas.
3. Cones drums or barricades shall be spaced at approximately 50' to 60' center to center for the first 1000 feet of the work area and at a maximum of 100' to 120' center to center for the balance of the work area. Cones, drums or barricades on the advance and return tapers shall be spaced at 10' center to center. Cones may be substituted for barricades or drums for short term lane closures. Cones shall not be used for night lane closures.
4. Several small work sites close together shall be combined into one work area to make a closure not more than 2000 feet long including tapers. Closures of more than 2000 feet may be approved by the Engineer. The minimum length between closures shall be 2000 feet. Only one side of the road shall be closed in any one work area.
5. The work vehicles shown at the beginning and end of the work area shall be in place and unoccupied whenever workers are in the work area. These work vehicles 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 vehicles shown when approved by the Engineer. The vehicles shall be equipped with a 360° rotating or flashing amber beacon clearly visible in all directions a minimum of a 1/2 mile.
6. The Type A flashing barricade warning lights shown on the "Road Construction Ahead" and the "One Lane Road Ahead" signs are required whenever a night lane closure is necessary.
7. 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 3.
8. Adequate area illumination to clearly identify the flagger station 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 one flagger station for each direction of traffic as shown above. The mounting height for temporary luminaires shall be a minimum of 27 feet above the pavement and the overhead conductor clearance shall be 20 feet above the pavement.

THE ENGINEER MAY SHORTEN THE MAXIMUM ALLOWABLE LENGTH OF THE WORK AREA TO ACCOMMODATE TRAFFIC REQUIREMENTS.

BUREAU OF TRAFFIC OHIO DEPARTMENT OF TRANSPORTATION	
FLAGGERS CLOSING 1 LANE OF A 2 LANE HIGHWAY	