CUY-90-14.90

PID 77332/85531

APPENDIX EX-22

CUY-077-1379 and 090-1621 PID 0.231

(Reference Document)

State of Ohio
Department of Transportation
Jolene M. Molitoris, Director

Innerbelt Bridge
Construction Contract Group 1 (CCG1)

Revision Date: 1978

11-0

STATE OF OHIO
DEPARTMENT OF TRANSPORTATION
CUY-77-13.79 AND CUY-90-16.21
CUYAHOGA COUNTY
CITY OF CLEVELAND

I-FI-77-5(18)161
I-FI-90-1(101)29
ISSUE I

FHWA REGION	STATE	PROJECT	
5	OHIO	I-FI-77-5(18)161 I-FI-90-1(101)29	

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CUYAHOGA COUNTY
CUY-77-13.79
CUY-90-16.21

Federal Funds I-77-5(18)161 & I-90-1(101)29 appearing throughout this plan shall be considered to read I-FI-77-5(18)161 & I-FI-90-1(101)29

Project designation CUY-77/90.14.12/16.21 appearing throughout this plan shall be considered to read CUY-77/90-13.79/16.21

CONVENTIONAL SIGNS

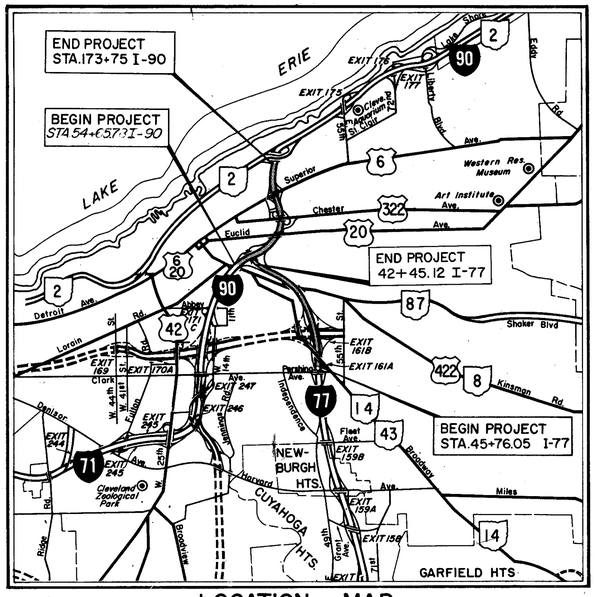
Corporation Line
Fence Line (existing) —x— (proposed) —x—
Center Line —12—13—14—
Limited Access (only) —LA—
Limited Access & Right of Way —LA&RW—
Railroad or
Guardrail (existing) (proposed)
Existing Sewer
Existing Catch Basin or Inlet
Existing Manhole
Manhole Adjusted to Grade
Std. No. I - 3 Median Inlet
Manhole Reconstructed to Grade

INDEX OF SHEETS

LINE DATA

I-77-5(18)161		
Begin Project I-77	Sta. 45+76.05 to Sta. 130+41.88 (Eqn: 130+41.88 Bk. = 30+41.88 Ah.)	8,465.83 Lin. Ft.
End Project I-77	Sta. 30+41.88 to Sta. 42+45.12	1,203.24 Lin. Ft.
Net Length of Project		9,669.07 Lin. Ft. or 1.831 Miles
Add Work	Sta. 198+75 I-77 to Sta. 199+83.68 I-77	108.68 Lin. Ft.
Net Length of Work		9777.75 Lin. Ft. or 1.85, Miles
I-90-1(101)29		
Begin/End Project I-77	Sta. 42+45.12 to Sta. 51+77.74	932.62 Lin. Ft.
Begin Project I-90	Sta. 54+53.72 to Sta. 83+09.31 (Eqn: 83+09.31 Bk. = 98+00 Ah.)	2,843.53 Lin. Ft.
	Sta. 98+00 to Sta. 127+09.87 (Eqn: 127+09.87 Bk. = 126+61.13 Ah.)	2,909.87 Lin. Ft.
End Project	Sta. 126+61.13 to Sta. 173+75	4,713.87 Lin. Ft.
Net Length of Project		11,399.89 Lin. Ft. or 2.159 Miles
Add Work	Sta. 1982+63 I-90 to Sta. 1999+01.08 I-90 (Eqn: 1999+01.08 I-90 Bk. = 3+87.63 I-90 Ah.)	1,638.08 Lin. Ft.
	Sta. 3+87.63 I-90 to Sta. 54+53.81 I-90	5,078.15 Lin. Ft.
	Sta. 173+75 I-90 to Sta. 183+98.24 I-90 W.B. (Eqn: 183+98.24 I-90 W.B. Bk. = 67+26.31 I-90 Ah.)	1,023.24 Lin. Ft.
	Sta. 67+26.31 I-90 to Sta. 74+55 I-90	728.69 Lin. Ft.
East 9th St.	Sta. 5+00 to Sta. 19+00	1,400.00 Lin. Ft.
East 14th St. N.B.	Sta. 18+60 to Sta. 23+65	505.00 Lin. Ft.
East 14th St. S.B.	Sta. 5+10 to Sta. 8+15	305.00 Lin. Ft.
East 22nd St.	Sta. 1+75 to Sta. 4+25	250.00 Lin. Ft.
Carnegie Ave.	Sta. 5+00 to Sta. 8+50	350.00 Lin. Ft.
Relocated Cedar Ave.	Sta. 1+00 to Sta. 3+20	220.00 Lin. Ft.
Cedar Ave.	Sta. 0+50 to Sta. 1+45	95.00 Lin. Ft.
Prospect Ave.	Sta. 2+90 to Sta. 18+80	1,590.00 Lin. Ft.
Euclid Ave.	Sta. 6+00 to Sta. 7+70	170.00 Lin. Ft.
Chester Ave.	Sta. 0-4+20 to Sta. 14+40	1,860.00 Lin. Ft.
Payne Ave.	Sta. 5+00 to Sta. 7+45	245.00 Lin. Ft.
Superior Ave.	Sta. 0-6+00 to Sta. 8+60	1,460.00 Lin. Ft.
St. Clair Ave.	Sta. 0+30 to Sta. 7+00	670.00 Lin. Ft.
Hamilton Ave.	Sta. 5+85 to Sta. 7+55	170.00 Lin. Ft.
Lakeside Ave.	Sta. 6+35 to Sta. 8+95	260.00 Lin. Ft.
Net Length of Work		29,418.05 Lin. Ft. or 5.571 Miles

Total Length of Project = 21,068.96 L.F. or 3.990 Mi.
Total Length of Work = 39,195.80 L.F. or 7.423 Mi.



LOCATION MAP

SCALE IN MILES
0 1 2 4 6 8

PORTION TO BE IMPROVED
FUTURE CONSTRUCTION
INTERSTATE
U.S. HIGHWAYS
STATE HIGHWAYS

SCALES (IN FEET)
Plan 100 50 0 100
Cross Section: Horizontal 5 3 1 0 5, Vertical 5 3 1 0 5

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, REVISED CODE OF OHIO

1977 SPECIFICATIONS

The standard specifications of the State of Ohio, Department of Transportation, including changes and supplemental specifications listed in the proposal shall govern this improvement.

The right of way for this improvement will be provided by the State of Ohio.

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

Approved *Thomas M. Frail*
Date 5-9-78 District Deputy Director of Transportation

Approved *Robert B. Pfeiffer*
Date 8-15-78 Engineer, Bureau of Bridges and Structural Design

Approved *R. E. Gallin*
Date 10-3-78 Chief Engineer, Planning And Design

Approved *David S. Wein*
Date 10-3-78 Director, Department of Transportation

Sheets 1 and 123 revised 4-5-79 WJJ

SUPPLEMENTAL SPECIFICATIONS

NUMBER	DATE	NUMBER	DATE
836	3-12-75	845	6-27-77
839	11-25-70	850	6-27-77
844	11-8-74	852	5-5-78
921	12-4-72	853	6-26-78
1001	7-3-71	808	1-1-71
936	6-26-78	847	4-3-76
S625	1-11-74	953	6-27-77 — 3-8-79
S713	1-11-74	848	2-23-78
849	4-25-77	949	11-2-77

SUPPLEMENTAL PRINTS OF STANDARD CONSTRUCTION DRAWINGS

NUMBER	DATE	NUMBER	DATE	NUMBER	DATE	NUMBER	DATE	NUMBER	DATE
AS-1-72(Sh.1&2)	6-30-72	GR-1	12-6-76	HL-9	3-22-77	MH-1	6-12-75	TC-41.10	8-19-77
SD-1-69(Sh.1 of 4)	6-12-69	GR-2B	12-6-76	HL-10	1-21-76	TC-7.65	10-1-74	TC-41.20	4-1-77
BP-3	12-6-76	GR-3A,3	12-6-76	HL-11	4-6-73	TC-12.30	10-1-74	TC-41.50	4-1-77
BP-4	12-6-76	GR-3B	12-6-76	HL-17A	4-6-73	TC-18.24	10-1-74	TC-42.10	8-19-77
BP-5	8-11-75	GR-4	12-6-76	MC-6	6-1-65	TC-18.26	10-1-74	TC-42.20	4-1-77
BP-7	12-6-76	GR-4A	7-26-76	I-2A	6-6-69	TC-21.10	10-1-74	TC-51.10	6-2-75
BP-11	1-3-75	GR-5&GR6	1-1-76	I-3	1-20-70	TC-22.10	10-1-74	TC-51.11	6-2-75
CB-2-2A&B	6-1-65	BP-1	6-1-65	L-1&L-2	6-1-73	TC-22.20	8-19-77	TC-52.10	4-1-77
CB-3	1-1-76	HL-2	7-27-73	MC-1	6-13-69	TC-31.20	8-27-76	TC-52.20	4-1-77
F-1 & F-3	5-1-76	HL-5	9-6-73	MC-3	6-1-73	TC-31.21	8-27-76	TC-61.10	8-19-77
F-2	11-1-77	HL-7	1-21-76	MC-4	7-26-76	TC-32.10	8-27-76	TC-71.10	12-1-75
F-5	5-1-76	HL-8	1-21-76	MC-9	1-1-74	TC-32.11	8-27-76	TC-35.10	10-1-77

Rev 2-14-79
Rev. 1-9-79
Rev. 10-26-78

PREPARED AND RECOMMENDED BY

HOWARD NEEDLES TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
CLEVELAND

Browning Crow
BROWNING CROW 003168

Project: CUY-77-13.79 & CUY-90-16.21
Date of Letting ____ 19__, Contract No. ____

LD0300 Rev. 11-21-73

DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

APPROVED:

DIVISION ADMINISTRATOR — DATE

Revised 4-5-79

TYPICAL SECTIONS

TYPE 404

FHWA REGION	STATE	PROJECT	
5	OHIO		

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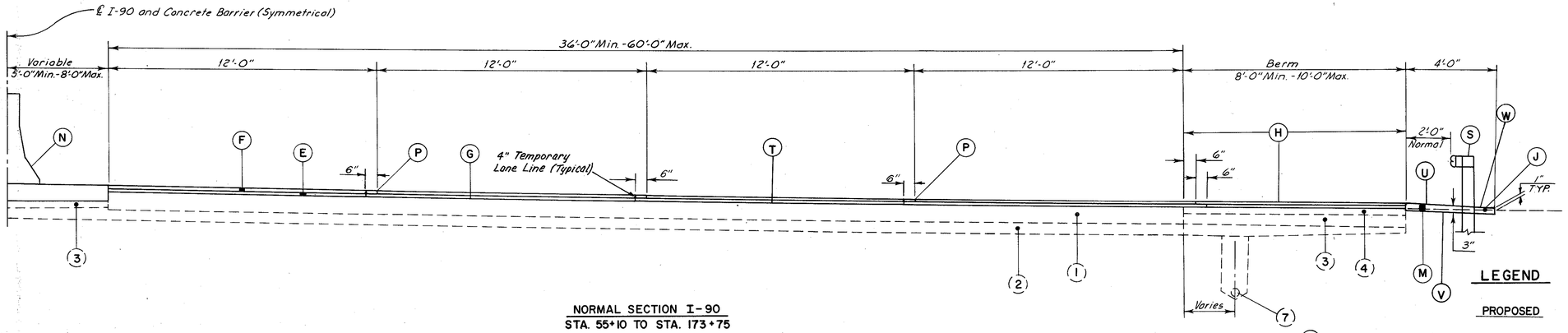
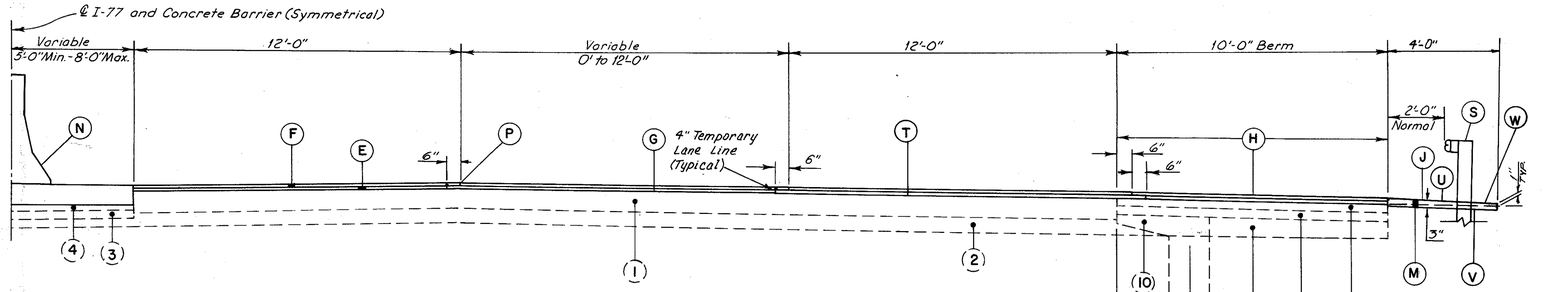
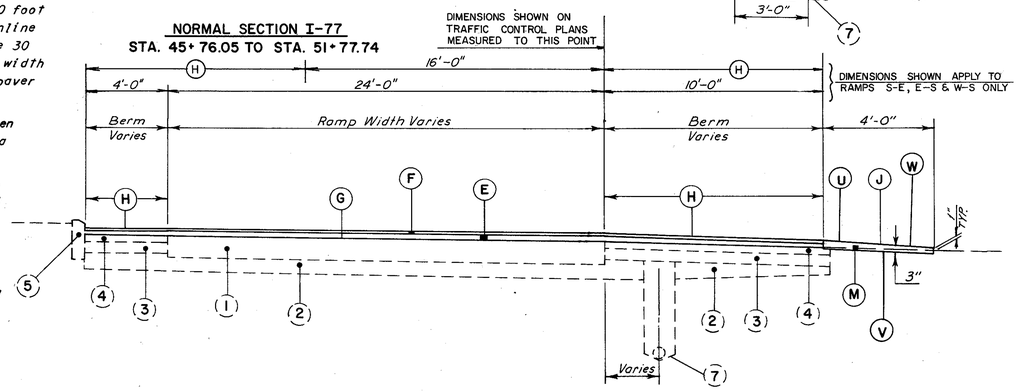
CUYAHOGA COUNTY
CUY-77-14.12
CUY-90-16.21



NORMAL SECTION I-90
STA. 55+10 TO STA. 173+75



NORMAL SECTION I-77
STA. 45+76.05 TO STA. 51+77.74



NORMAL RAMP SECTION

SCALE IN FEET: 1 0 1 2 3 4 5

*NOTE: A "Hot Longitudinal Joint" shall not be required at the right edge of pavement (in the direction of traffic). Location of such joints shall depend upon the width of the pavement to be resurfaced and in no case shall the width between joints be greater than 24'. For additional information concerning this item see note in proposal.

LEGEND

PROPOSED

(E)	Item 848	1½" Asphalt Concrete Intermediate Course, Type 2
(F)	Item 848	1½" Asphalt Concrete Surface Course, Type 1
(G)	Item 407	Tack Coat: 702.02, RC-250, or 702.04, SS-1, SS-1H, MS-2 or RS-1 with Cover Aggregate
(H)	Item 409	Seal Coat: Bituminous Material, 702.02, MC-800 or MC-3000, 702.03, CBAE-800, or 702.04, RS-1, RS-2, CRS-1, or CRS-2; or 702.09, RT-9 or RT-10. Applied at the rate of 0.35 Gal. per Sq. Yds. Cover Aggregate No. 8 at the rate of 0.008 Cu. Yds. per Sq. Yd.
(J)	Item 409	Seal Coat: Bituminous Material, 702.02, MC-800 or MC-3000, 702.03, CBAE-800, or 702.04, RS-1, RS-2 or CRS-1, CRS-2; 702.09, RT-9 or RT-10, applied at the rate of 0.35 Gal. per Sq. Yd.
(M)	Item 617	Compacted Aggregate, As Per Plan
(N)	Item 622	Concrete Barrier, Type B, C, or D, Modified, as per plan
(P)		Hot Longitudinal Joint *
(S)	Item 606	Guard Rail, Type 5, as per plan
(T)	Item 848	Asphalt Concrete, Intermediate Course, Type 1
(U)	Item 617	Water: Applied as directed by the Engineer.
(V)	Item Special	Weed Control
(W)	Item 408	Prime Coat: 702.09 RT-2 or RT-3; 702.02 MC-30 or MC-70; 702.03 Primer 20 applied at the rate of 0.40 Gal. per Sq. Yd. (Place prior to 'J', Item 409)

EXISTING

(1)	Reinforced Portland Cement Concrete
(2)	Subbase
(3)	Stabilized Crushed Aggregate
(4)	Waterproofed Aggregate Base
(5)	Curb
(7)	Underdrain
(10)	Special Subbase using No. 6 Aggregate

Note:
Typical Sections are intended to show the general roadway and pavement features only. For details see the plan sheets and detail sheets or refer to original construction projects as shown on Sheet 3.

For Median Typical Sections see Sheets 31&32.

NOTES:

SPREADING EQUIPMENT: An automatic screed control having a minimum 40 foot ski arm shall be used for placing the 402 and 404 courses on the mainline only (see proposed note). The maximum paver operating speed shall be 30 feet per minute for rubber tired pavers. For full width paving, the width laid shall not exceed the paver's rated width as recommended by the paver manufacturer.

LONGITUDINAL JOINTS- 402 AND 404 COURSES: Longitudinal joints between a pavement lane and adjoining berm of speed change lane and between a speed change lane and the adjoining berm shall be made the same day.

The Contractor's attention is directed to section 401.15 of the specifications. Longitudinal and transverse joints shall be painted with the bituminous material used in the mixture on both surface courses as directed by the Engineer.

848 ASPHALT CONCRETE: Subsequent to the completion of plans, the asphalt concrete used on this project has been revised from items 402, 403, and 404 to supplemental specification 848. All reference to 402, 403, and 404 appearing on the plans shall be considered to read as follows:

402 becomes 848 Asphalt Concrete Intermediate Course, Type 2
403 becomes 848 Asphalt Concrete Intermediate Course, Type 1
404 becomes 848 Asphalt Concrete Suface Course, Type 1

On this project, item 848, table 2-2, properties of mixtures shall be for heavy traffic volumes.

MADE D.S.P. DATE 3.24.75
TRACED A.D.I. DATE 4.5.75
CHECKED G.F.M. DATE 3.27.75
SCALE 3/8"=1'-0"

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
CLEVELAND, OHIO
HNTB

K9E-10-1522 1-19

SCHEMATIC PLAN
CONSTRUCTION PROJECT LIMITS

FHWA REGION	STATE	PROJECT	
5	OHIO		

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CUYAHOGA COUNTY
CUY-77-14.12
CUY-90-16.21

LEGEND

- PROJECT I-71-5(8)248, (CUY-42-18.42)
- PROJECT I-71-5(6)247, (CUY-42-18.29)
- PROJECT I-1057(5), (CUY-42-17.43-18.02)
- PROJECT I-1057(3), (CUY-42R-19.78)

NOTE: Original centerline Stationing in projects I-71-5(8)248, ACI-1057(8) and I-1057(3) have been adjusted by 100 stations to established stationing used in these plans.

500 0 500 1000 1500 2000

MADE MEE DATE 12-3-75
TRACED T.S. DATE 12-10-75
CHECKED D.S.P. DATE 12-18-75
SCALE 1" = 500'

Howard, Needles, Tammen & Bergendoff
CONSULTING ENGINEERS
CLEVELAND, OHIO

HNTB

GENERAL NOTES

GENERAL

QUANTITY CALCULATIONS
MADE BY GFM DATE 12-5-75
CHECKED BY DSP DATE 12-12-75

FHWA REGION	STATE	PROJECT	
5	OHIO		

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CUYAHOGA COUNTY
CUY-77-14.12
CUY-90-16.21

FIELD OFFICE

The Contractor shall provide a suitable field office having a minimum of 800 Sq. Ft. of floor space, and in addition to the requirements of Item 619, he shall provide and maintain sanitary provisions as per 107.06. All the above is included in the lump sum price bid per Item 619 - " Field Office ".

ESTIMATED QUANTITIES

Specific locations and usage of the estimated quantities set up on this plan to be used as directed by the Engineer shall be made a matter of record by incorporation into the final change order governing completion on this project. Estimated quantities of materials shall not be ordered for delivery to the project unless authorized by the Engineer.

UNDERGROUND UTILITIES

Extreme caution should be exercised in areas with underground electrical conduit or cable, sewers, drains, water lines or other underground utilities.

The contractor is fully responsible for all damage inflicted on underground utilities in the excavation and replacement of sign support foundations, guard rail and the like.

The Contractor shall be responsible for locating all underground utilities and shall protect them or be fully responsible for all damage to underground utilities in the excavation and replacement of sign support foundations, guard rail and the like.

COST PARTICIPATION

The Quantities which appear in the plans have been placed in one of the following participation areas:

COST PARTICIPATION I
FEDERAL INTERSTATE, STATE AND CITY PARTICIPATION

COST PARTICIPATION II, FI-Funds
FEDERAL PRIMARY AND STATE PARTICIPATION

COST PARTICIPATION III
STATE PARTICIPATION

EXISTING TYPICAL SECTIONS

Existing typical sections have been taken from the records and are believed to represent the existing pavement, but the State of Ohio does not guarantee the accuracy of the same.

For further information in regard to the existing typical sections the Contractor shall refer to the previous construction sections noted on Sheet 3, Schematic Plan. These plans may be reviewed at The Ohio Department of Transportation, District Twelve Offices 10100 Broadway Road, Garfield Heights, Ohio 44125.

ITEM SPECIAL - HERBICIDES FOR WEED CONTROL

Prior to placing the Item 617 Compacted Aggregate, an application of Princep 80W, or Amizine using 25 lbs. in 30 gallons of water per 5000 square yards, or an approved equal, shall be applied to the shoulder bed. The rate and method of application of an approved equal shall be in strict conformance with the manufacturer's instructions. for Amizine or

Payment shall be made at the contract unit price bid per square yard, "Item Special - Herbicides for Weed Control", which price shall constitute full compensation for all labor, materials, tools, equipment and water required to complete this item of work.

The following quantities has been added to the General Summary:

1-77-5(18)161		1-90-1(101)29	
12,114 sy	Cost Part. II	18,574 sy	Cost Part. II

GRADING AT EXISTING LIGHT TOWER FOUNDATIONS

This note shall apply when a light tower foundation (provided by others) is encountered within the grading limits of an infield area being regraded.

Where directed by the Engineer, the Contractor shall grade and sod the areas adjacent to the light tower foundations in accordance with the details shown on Sheet 110.

Grading adjacent to the light tower foundations shall be considered incidental to the proposed grading for that area and not a seperate pay item.

An estimated quantity of 75 sq. yds. of Item 660 Sodding has been included in the General Summary to be used as directed by the Engineer.

IMPACT ATTENUATOR ASSEMBLIES

This project requires bids for the impact attenuators to be supplied. The type has been limited to the HI-DRO CUSHION System as manufactured by Energy Absorbtion Systems, Inc., Chicago, Illinois.

The Attenuation Devices shall be constructed within the reserve area shown on the plan and shall be designed in accordance with the following criteria:

Performance Criteria:

Vehicle Weight Range	2000 to 4500 lbs.
Vehicle Speed	60 MPH
Impact Angle	0 degrees to 25 degrees measured from the direction
Average Permissable Vehicle Deceleration	of the roadways. 12 g's while preventing actual impacting of the
Maximim occupant Deceleration onset rate	hazard or backup wall 500 g's per second

Dimensional Criteria:

Side taper rate	10:1 minimum relative to the adjacent edge of pavement

The Impact Attenuator Assemblies shall be constructed in accordance with manufacturer, recommendations and specifications. The work to be performed under this item shall include all labor, equipment, materials and incidentals necessary for furnishing and installing the attenuation device including foundations, backup walls, anchor blocks, surface treatment or any other items necessary for a complete and functional installation. Prior to ordering any of the impact attenuators the Contractor shall supply site plans and working drawings together with performance data for each location for approval by the Director.

The materials used in the installation shall be all new, first quality and free from defects. The method of measurement for this item shall be the actual number of impact attenuator assemblies complete and accepted.

The basis of payment shall be at the contract price for:

1-90-1(101)29 - Cost Participation I
Item Special - Impact Attenuator (HY-DRO Cushion)

For No. 1, see Sheet 36. (Cost Participation III)
For No. 2, see Sheet 23. (Cost Participation I)

SEEDING AND MULCHING

Seeding quantities associated with 203 earthwork items shown on the plan are only approximate and final payment will be for the actual number of square yards of disturbed area seeded, as per Item 659. Commercial fertilizer having a formula of 12-12-12 shall be applied per 659.08.

The following estimated quantities have been added to the General Summary to be used as directed by the Engineer.

ITEM 659	Commercial Fertilizer (12-12-12)	
1-90-1(101)29	1.72 Ton	Cost Participation I
ITEM 659	Water	
1-90-1(101)29	41.30 M.Gal.	Cost Participation I

AGRICULTURAL LIMING, AS PER PLAN

The location and need for agricultural liming will be determined by laboratory tests, after rough grading operations have been performed. The following quantity of agricultural liming shall be added to the General Summary and is sufficient for the entire project. However, if laboratory tests show that liming is not required, this work will be nonperformed.

The following quantity has been added to the General Summary.

ITEM 659	Agricultural Liming	
1-90-1(101)29	8.60 Tons	Cost Participation I

PUBLIC SAFETY

The period of time that a hazard is left unprotected by the removal of guardrail shall be held to an absolute minimum and in no case shall such a period be longer than one working day. If, after one day, the entire run of guardrail construction is not completed, the following shall apply:

A. In areas where existing guardrail has been removed or the guardrail is in a partial stage of completion the Contractor shall provide and maintain Type II barricades with Type C (steady burning) warning lights (see Sheet 100 for detail) within the limits of the unprotected area. The barricades shall be placed at 50' intervals and offset at least two feet from the edge of traveled roadway and in close proximity to the construction. The approach end of a partially completed run of guardrail shall be fastened at ground level to a steel drum.
B. If the existing guardrail is for the protection of an obstacle (i.e. sign support, bridge pardpet, etc.) the Contractor shall erect Type 6 temporary beam rail in accordance with Item 606.04 for a length of 50 feet preceeding the obstacle in the direction of traffic. The requirements of part (A) shall apply to the remaining guardrail within the run.
C. The requirements stated in (A) and (B) shall apply for a period not to exceed one week. Where the rebuilding or construction of any run of guardrail cannot be accomplished within one week, the Contractor shall provide and maintain temporary beam rail, in accordance with Item 606.04, in the interim time it takes to complete the work. On the traffic approach end of the temporary beam rail, the end of the first section of rail shall be fastened to the steel drum so that the end of the rail is at the pavement or ground surface. In addition, a Type II barricade with Type B (High Intensity Flasher) Warning Light shall be placed in front of this initial section of temporary beam rail to provide forewarning to the approaching traffic.

The term "guardrail" as used herein shall be understood to cover all types of guardrail existing or proposed for the project including barrier design guardrail.

The work associated with the construction of Item 622, Concrete Barrier, shall be so scheduled as to minimize the time that the median is not blocked by either the existing barrier rail or by the Concrete Barrier. This requirement shall not be construed as waiving the requirements of Item 614, Maintaining Traffic.

The cost of complying with these safety procedures shall be included in the lump sum bid for Item 614, Maintaining Traffic.

EQUIPMENT AND MATERIAL STORAGE

In order to provide for the safety of the traveling public, the Contractor's attention is directed to the following:

1. Construction equipment shall not be parked nor materials stored within the existing right of way limits of this project overnight.
2. Construction equipment and vehicles in use during the working day shall not be parked any closer than thirty feet (30 ft) to the edge of roadway pavement, unless behind permanent guardrail, when the equipment and/or vehicles are not in operation.
3. Private vehicles shall not be parked within the existing right of way limits of this project at any time.
4. Materials removed for disposal, reuse, or storage may be stockpiled for pick-up and removal by the end of the same normal working day. Locations of the pick-up points shall be designated by the Engineer and shall be at least thirty feet (30 ft) away from the edge of the roadway pavement, unless behind permanent guardrail.
5. Materials brought on-site for use in the project construction should be restricted to that quantity expected to be used during a working day and shall be stockpiled at a location greater than thirty feet (30 ft) from the edge of the roadway pavement, unless behind permanent guardrail. Materials not used during the same working day shall be removed from within the existing project right of way in accordance with (1) above.
6. Items 1 through 5 shall apply between the extreme work limits of this project.

The above procedures supersede Item 614.03, Traffic Control, paragraph three.

Exceptions to the above procedures shall not be made except as approved in writing by the Director.

The cost of complying with these safety procedures shall be included in the lump sum bid for Item 614, Maintaining Traffic.

FASTENING OF BRIDGE TERMINAL ASSEMBLIES: Bridge terminal assemblies which are to be fastened to existing concrete parapets by steel box blockouts shall be attached by means of through bolts. Expansion anchor bolts will not be permitted.

Where self-drilling anchors are permitted and are used, the holes shall be drilled with the tubular expansion shell, rather than with a bit, to insure a proper fit. The anchors shall be installed flush with the surface of concrete.

Rev. 1 - 9 - 79

MADE G.F.M. DATE 12-5-75
TRACED T.P.M. DATE 12-11-75
CHECKED D.S.P. DATE 12-12-75
SCALE

Howard, Needles, Tammen & Bergendoff
CONSULTING ENGINEERS
CLEVELAND, OHIO

HNTB

GENERAL NOTES

QUANTITY CALCULATIONS
MADE BY FSJ DATE 8-11-77
CHECKED BY DSP DATE 10-21-77

FHWA REGION	STATE	PROJECT	
5	OHIO		

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CUYAHOGA COUNTY
CUY-77-14.12
CUY-90-16.21

ROADWAY

LOCATIONS OF GUARD RAIL

The location of guard rail runs as shown in these plans are subject to adjustment, as determined by the Engineer, to assure that the planned installations will afford maximum protection for traffic. The location of proposed guard rail as shown on the plans may need to be shifted longitudinally so that the locations of the new guard rail posts do not coincide with the old rail post locations.

GUARDRAIL REMOVED

All posts, blocks, bolts, rail and other material shall be disposed of by the Contractor. . All post holes shall be carefully filled and tamped to match existing ground.

In areas where guardrail is removed or new guardrail is to be installed outside the limits of Item 617, the following shall apply:

1. All areas disturbed by the removal of guardrail shall be graded and seeded to match the surrounding conditions.
2. An area under new guardrail 3' wide, measured from one foot in front of the rail shall not be seeded.

Payment for all of the above shall be at the unit price bid for Item 202 Guardrail Removed or Item 202 Guardrail, Barrier Design, Removed, measured by the linear foot, center-to-center of terminal posts, or center of bridge connection splices.

~~GUARD RAIL, TYPE 5, AS PER PLAN~~

~~Rail elements salvaged under 202 on this project may be used in lieu of furnishing~~ new rail elements for 606 Guardrail . If salvaged rail is used, it must be renovated prior to installation and new splice bolts furnished.

Painted rail elements shall be dismantled and all paint, rust, dirt and other foreign material detrimental to galvanizing shall be removed from rails, and intermediate post bolt slots $\frac{3}{4}$" x 2-$\frac{1}{2}$" shall be punched where required for Type 5 installations. The rail shall then be galvanized in accordance with 710.06. Immediately after award of the contract, the Contractor shall submit an outline of the galvanizing plant operations. The outline shall include information on the plant capacity and storage facilities for the articles as delivered for galvanizing and storage facilities for the articles after the work is completed. This outline, when approved by the Department, will become a part of the contract.

The Contractor shall notify the Engineer at least 72 hours in advance of galvanizing any lot of articles in order that arrangements may be made to have the Department Inspector at the plant when the work is in progress. The Inspector shall have free entry, at all times while work on the contract is being performed, to all parts of the plant that concern the cleaning and galvanizing of the articles. The Contractor shall afford the Inspector all reasonable facilities without charge, to satisfy him that the work is being performed in accordance with these specifications.

Existing galvanized rail elements shall be cleaned of rust, dirt and other foreign materials. Intermediate post bolt slots $\frac{3}{4}$" x 2-$\frac{1}{2}$" shall be field punched or drilled. Areas on which the spelter coating has been damaged and intermediate holes shall be repaired or regalvanized in accordance with AASHTO Specification M 36-73I Section 23 or they may be repaired under the direction of the Engineer with stick-form galvanizing repair compound meeting the requirements of FSS O-G-93.

Payment for all of the above shall be included in the unit price bid for 606 Guard rail, Type 5, as per plan of 606 Guard rail, Type 5, barrier design, as per plan.

GUARDRAIL FLARES

Guardrail flare dimensions at approach anchor assemblies shall be 1'-6" unless noted otherwise on the plan. Guardrail flares shall be in accordance with Standard Construction Drawings GR-4 and GR-5.

CONCRETE BARRIER MEDIAN REMOVED

This item of work shall involve the careful removal of the existing concrete barrier median between Stations 73+55 I-90 and 74+45 I-90, for the installation of Sign Support No. 55 at Station 74+00, shown on Sheet 74.

Payment shall include all labor, materials and items necessary to remove 90 linear feet per Item 202 - Concrete Barrier Median Removed, COST PART. III

RAILING REMOVED, AS PER PLAN

This item or work shall include the carefull removal of all existing bridge railing and the repair of existing anchor bolts where Type CL Fence, Modified, As Per Plan, is to be erected. All railing removed shall be delivered to 734 S.O.M. Center Rd. (S.R. 91) by the Contractor.

All approach railing shall remain in place and any missing railing end caps shall be replaced. The cost or replacement end caps shall be incidental to the unit price bid for this item.

After the railing has been removed, the Engineer shall inspect all railing anchor bolt groups for damage. Any set of anchor bolts deemed unfit for reuse shall be repaired or replaced. Replacement bolt groups shall be located in accordance with the specifications of Item 607 Type CL Fence, Modified, As Per Plan, and to the satisfaction of the Engineer. Payment for the replacement bolts shall be per Item Special - Threaded Sleeve Anchor Bolts.

Existing bolt groups which are not reused shall be cut down and ground smooth so as to be flush with the top of the parapet concrete.

Payment for the work described, except as noted, shall include all labor, materials and other necessary items at the unit price bid per linear foot for: Item 202 - Railing Removed, As Per Plan.

607 - TYPE CL FENCE, MODIFIED, AS PER PLAN

This item of work shall include all labor, material and other necessary items required to install chain link fence on the existing overpass structures across I-90, as detailed in the plans. The chain link fence fabric shall be 48" in height and shall have knuckled selvage edges at the top and bottom.

End posts and line posts shall be welded to a steel base plate as detailed on Sheet 45. The base plates and posts shall be galvanized in accordance with 711.02 of the Construction and Material Specifications.

All post assemblies (post and base plate) shall be fastened to the existing parapet by reusing the existing aluminum bridge railing anchor bolts (or replacement bolt group). One aluminum nut and washer shall be provided for each aluminum anchor bolt (existing nut and washer may be reused). To protect against electrolytic action between dissimilar metals the following procedure is recommended: the projecting portions of each bolt shall be coated, the annular spaces between bolts and base plates shall be caulked and protection shall be provided between the bolt nuts and base plates, in accordance with 517.05 of the Construction and Material Specifications.

If steel anchor bolts are encountered during the erection of the post assemblies, one steel nut and washer shall be provided for each steel bolt (existing nut and washer may be reused) and the requirements of 517.05 shall be waived.

Payment for the work described shall be at the unit price bid per linear foot for: Item 607 - Type CL Fence, Modified, As Per Plan.

ITEM SPECIAL - THREADED SLEEVE ANCHOR BOLTS

This item or work shall consist of all labor, material and equipment necessary to install $\frac{3}{4}$" Ø self-drilling threaded sleeve anchor bolts for fastening the chain link fence post assemblies at locations designated by the Engineer.

The self-drilling threaded sleeve anchor bolts shall be capable of developing a pullout resistance of not less than 10,000 lbs. Samples shall be provided for laboratory testing.

Payment for the work described above shall be at the unit price bid per each for: Item Special - Threaded Sleeve Anchor Bolts.

An estimated quantity of 200 $\frac{3}{4}$" Ø Threaded Sleeve Anchor Bolts is included in the General Summary to be used as directed by the Engineer.

TYPE CL FENCE, AS PER PLAN

This item of work shall include all labor, equipment and materials necessary to repair damaged Type CL fence or close gaps between sections of existing Type CL fence where noted in the plans. It is intended that when rebuilding Type CL fence that the Contractor reuse, in lieu of new fence, existing fence if in satisfactory condition, as determined by the Engineer.

Fence lines and locations shown on the plan are only approximate and may be adjusted by the Engineer for actual ground conditions. No intermediate anchor posts or corner post assemblies are shown on the plan sheets, but it is not intended that the requirement of 607.05 (b) be waived.

Final payment for Type CL Fence, as per plan, shall be the actual linear feet of fence, or fence repaired, complete in place.

Payment for all of the above shall be included in the unit price bid for: Item 607- Type CL Fence, As Per Plan.

REMOVAL OF EXISTING PIPE

The removal of all existing pipe drains which would normally be removed in various excavation items shall be included for payment in the unit price bid for the respective excavation items unless otherwise itemized in the plans. Any pipes abandoned will have ends plugged.

CURB REMOVED, AS PER PLAN

This work shall consist of removing entrance ramp and exit ramp curbs as detailed in the plans on Sheet 48 . Removal of curb is to provide a continuous minimum ten foot mainline berm. Any open trenches resulting from removing curb shall be back filled with of Item 305. Portland Cement Concrete Base, in accordance with the requirements of Item 305.

Payment for all of the above shall be at the unit price bid per linear foot of 202- Curb Removed, As Per Plan.

PAVEMENT REMOVED, AS PER PLAN

The existing pavement shall be removed by sawing a neat line for the full depth required by the pavement replacement details, Sheet 46 . In addition the cost of removing the subbase material for the 305 replacements shall be included in the unit price bid for the pavement removal item. All loose and broken concrete must be removed from the joints. Adequate protection against damaging the abutting pavement shall be taken. The Contractor's attention is directed to 107.12 of the Specifications. The cost of reshaping and recompacting the subbase or subgrade disturbed during the removal operations, and any additional excavation along the existing paved berm necessary for the pavement replacement operations, shall also be included in the unit price bid for the pavement removal item.

ITEM 664 PLANTING SALVAGED PLANTS, AS PER PLAN

In addition to the requirements of Item 664 of the Construction and Material Specifications, the following shall apply to this item of work:

a) Each tree removed for replanting will have the specified earth ball intact.
b) During the period of time the tree is out of the ground the earth ball shall be covered with straw and kept moist.
c) All work will be done between the months of April and October.

In lieu of storing and replanting the trees designated to be relocated, the Contractor shall have the option of providing new trees of like kind and caliber at the relocated station and offset shown on the plan.

Prior to the start of this work the Contractor and the Engineer shall field review the trees designated for relocation. If in the judgement of the Engineer, any tree is unfit for relocation it shall be removed per Item 201 and the requirements for replanting be nonperformed.

Payment for all labor, material, and equipment necessary to complete the work as noted will be made at the contract bid price per each for:

Item 664 Planting Salvaged Plants, as per plan

ITEM 665 LARGE TREES MOVED AND RESET, AS PER PLAN

In addition to the requirements of Item 665 of the Construction and Material Specification, the following shall apply to this item of work:

a) Each tree removed for replanting will have the specified earth ball intact.
b) During the period of time the tree is out of the ground the earth ball shall be covered with straw and kept moist.
c) All work will be done between the months of April and October.

In lieu of storing and replanting the trees designated to be relocated, the Contractor shall have the option of providing new trees of like kind and caliber at the relocated station and offset shown on the plan.

Prior to the start of this work the Contractor and the Engineer shall field review the trees designated for relocation. If in the judgement of the Engineer, any tree is unfit for relocation it shall be removed per Item 201 and the requirements for replanting be nonperformed.

Payment for all labor, material, and equipment necessary to complete the work as noted will be made at the contract bid price per each for:

Item 665 Large Trees Moved and Reset, as per plan.

MADE M.E.E. DATE 12-4-75
TRACED T.P.M. DATE 12-17-75
CHECKED D.S.P. DATE 12-18-75
SCALE

Howard, Needles, Tammen & Bergendoff
CONSULTING ENGINEERS
CLEVELAND, OHIO
HNTB

GENERAL NOTES

FHWA REGION	STATE	PROJECT	
5	OHIO		

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QUANTITY CALCULATIONS
MADE BY G.F.M. DATE 12-10-75
CHECKED BY D.S.P. DATE 12-12-75

CUYAHOGA COUNTY
CUY-77-14.12
CUY-90-16.21

848, Asphalt Concrete
Subsequent to the completion of plans, the asphalt concrete used on this project has been revised from items 402, 403 and 404 to supplemental specification 848. All reference to 402, 403 and 404 appearing on the plans shall be considered to read as noted on sheet 2.

PAVEMENT

TEMPORARY CONCRETE BARRIER

The temporary concrete barrier to be provided at Ramp S-W on Sheet 20, shall be either cast-in-place or precast concrete barrier sections (without 9" base **or dowels). The** requirements of Item 622 and Standard Construction Drawing MC-9 shall apply except that the concrete barrier sections shall be limited to 10'-0" in length and pinned together.

Each section of barrier shall be provided with lifting rings to allow for ease in handling the sections during placing or removal operations.

Also included in this item of work, but incidental to the unit price bid, is the removal of any steel drums in the Ramp S-W gore. The steel drums shall be disposed of at the direction of the Engineer.

Payment for all labor, equipment and material necessary to complete this item, as noted above, shall be at the unit price bid per linear foot for:

I-77-5(18)161	Cost Part. I
Item 622 - Concrete Barrier, Standard Type A, As Per Plan	260 Lin.Ft.

ITEM 305 - 15" PORTLAND CEMENT CONCRETE BASE, AS PER PLAN

All patches are to be undercut a minimum of 6 inches below the bottom of the existing pavement and shall extend back under the existing pavement 9 inches along all sides. No dowels are required at the joints. One inch performed expansion joint material, 705.03 shall be installed along one side of full width replacement, the cost to be included in the unit price bid for Item 305, -15" Portland Cement Concrete Base, as per plan.

ITEM 305 - 9" PORTLAND CEMENT CONCRETE BASE, AS PER PLAN

This item of work shall involve the replacement of pavement sections as designated in the plans on Sheet 46. Removal of pavement full depth and cutting off all protruding dowel bars. Before any section is replaced the existing base shall be examined and determined if suitable, by the Engineer. The surface smoothness required by 451.12 shall be waived. A one inch preformed expansion joint filler, 705.03, shall be placed at each transverse joint abutting existing pavement.

Payment for all operations and material necessary to perform the work shall be at the unit price bid per square yard of Item 305, 9" Portland Cement Concrete Base, as per plan.

ITEM 402 ASPHALT CONCRETE, AS PER PLAN

Areas of pavement which do not require repair as detailed on Sheet 46 and have loose and broken concrete shall have all loose and broken concrete removed to the satisfaction of the Engineer. The areas in which loose and broken concrete has been removed shall be filled with Item 402 "Asphalt Concrete" to match the elevation of the surrounding pavement.

Prior to placing the 402 material, the affected area shall be painted in accordance with the materials approved for Item 407 in these plans.

This item of work shall include all labor and materials necessary to complete the work described above. An estimated quantity of 100 C.Y. of Item 402, as per plan, shall be used in the locations as directed by the Engineer, as follows:

I-77-5(18)161	50 Cu. Yds.	Cost Participation II
I-90-1(101)29	50 Cu. Yds.	Cost Participation II

ITEM 403 ASPHALT CONCRETE

In order to correct any irregularities in the existing pavement surface prior to placing the Item 402 course, the Contractor apply an Item 403 Asphalt Concrete AC-20, Preleveling Course.

FEATHERING OVERLAY AT BRIDGES

This note shall apply only at bridges which have been overlaid under previous contracts. The existing asphalt feathers shall be removed to a minimum 1½ inches below final grade and then resurfaced as per the typical feather detail at structures. The following estimated quantity is included in the general summary for the removal of the existing asphalt feathers.

I-77-5(18)161
Item 202-Wearing Course Removed 1300 Sq. Yds. Cost Participation I
I-90-1(101)29
Item 202-Wearing Course Removed 2100 Sq. Yds. Cost Participation I

ITEM 404 ASPHALT CONCRETE

Where resurfacing terminates on the mainline and ramps, any pavement removed by chipping or other means for installing butt joints as per Standard Drawing BP-5 shall be included in the payment per cubic yard of the accepted quantities of Item 404 Asphalt Concrete, complete in place.

ITEM 305 - 9" PORTLAND CEMENT CONCRETE BASE

This item shall include the removal and disposal of the existing paved shoulder material to a depth of 9 inches, compaction of the excavated area and construction of a 9" Item 305-Portland Cement Concrete Base⊕ where shown in the plans* or directed by the Engineer, for the purpose of maintaining traffic.

Payment for the labor, materials and equipment shall be at the unit price bid per square yard of Item 305-9" Portland Cement Concrete Base.

The following estimated quantity has been added to the General Summary:

I-77-5(18)161

Item 305 - 9" Portland Cement Concrete Base **7500** Sq.Yds. Cost Participation I

I-90-1(101)29

Item 305 - 9" Portland Cement Concrete Base **11,000** Sq.Yds. Cost Participation I

***- The locations for this item as shown on the plan sheets are approximate. The exact locations shall be as determined by the traffic control plans.**

⊕-An expansion bolt joint as shown on std. constr. drwg. BP-3 is req'd as part of this item.

DIMENSIONS FOR PAVEMENT REPLACEMENTS

The dimensions for the concrete pavement replacements shown in the plans are approximate. The field dimensions for the replacements may be adjusted by the Engineer and final payment quantities shall be actual completed work dimensions.

ITEM SPECIAL - RUMBLE GROOVES

This item of work shall consist of forming Rumble Grooves to the new dense concrete overlay or asphalt concrete as shown on Sheet 92 The application shall consist of six sets of Rumble Grooves consisting of twelve grooves per set. The grooves shall be 4" wide at the pavement surface with edges tapered to approximately ¾" at the bottom of the strip. The strips will be ⅜" deep and spaced on one foot centers.

All labor, materials and incidentals required to perform this work shall be included in the unit price bid per foot of Item Special - Rumble Grooves

UNSTABLE MATERIALS REMOVED AND REPLACED

This work shall consist of removing of unstable subbase and subgrade materials as encountered in areas of Item 305 pavement replacement. Work shall include preparing a new surface as required, furnishing, placing and compacting aggregate base as reasonably close as possible to conform with existing cross-sections. All under cut areas are to be drained to existing underdrain, cost to be included in this item. This work shall be performed only when deemed necessary and in specific areas determined by the Engineer. The aggregate base specifications, Item 310, of the Construction and Materials Specifications, shall apply where pertinent to the operations being performed. Otherwise work shall be as directed by the Engineer.

The following estimated quantity is provided to be used as directed by the Engineer for such unsuitable material replacement and payment for accepted quantities, complete in place, shall be made at the unit price bid.

Item Special-Removal and Replacement of Unstable Materials
Using 310 Subbase, Grading A, As Per Plan

I-77-5(18)161	150 Cu. Yds.	Cost Participation II
I-90-1(101)29	500 Cu. Yds.	Cost Participation II

ITEM 404 Bitumen CONCRETE FOR MAINTAINING TRAFFIC

This item shall be used to temporarily repair holes in the bridge decks and to relevel berms which have been previously rebuilt with item 301 and are to be used for maintaining traffic.

It shall also be used to ramp along the longitudinal joints of the bridge deck repairs when the said joint is exposed to traffic. The ramp shall be four ft. wide and shall be installed before traffic is exposed to the longitudinal joint.

The following estimated quantity is included in the general notes to be used where and as directed by the Engineer.

I-77-5(18)161
Item 404 Bit. Concrete for Maintaining Traffic 75 Cu. Yds. Cost Participation I
I-90-1(101)29
Item 404 Bit. Concrete for Maintaining Traffic 50 Cu. Yds. Cost Participation I

COMPACTED AGGREGATE, AS PER PLAN

All excavation and embankment operations necessary for the placement of this item shall meet the requirements of Item 203 "Roadway Excavation and Embankment".

Also to be included in this item of work is any grading of the shoulder area where traffic or weather may have built a ridge of earth and debris along the shoulder or under guard rail. In areas where guard rail has been removed and new guard rail is to be constructed, the site restoration for the placement of Item 617 "Compacted Aggregate" shall be completed prior to placing of the new guard rail. The extent of this work shall be such that smooth shoulder slopes are maintained to assure positive drainage of the shoulder.

Payment for all excavation and embankment operations shall be included in the unit price bid for Item 617 "Compacted Aggregate, As Per Plan".

Any damage to the Item 617 due to the subsequent guardrail installation will be repaired by the Contractor and at no additional expense to the State.

The following estimated quantities have been provided in the General Summary, Item 617 Compacted Aggregate, as per plan:

I-77-5(18)161 (Cost Participation II)

Item 617	COMPACTED AGGREGATE, AS PER PLAN	1010 C.Y.
Item 617	WATER	60.6 M.Gal.

I-90-1(101)29 (Cost Participation II)

Item 617	COMPACTED AGGREGATE, AS PER PLAN	1592 C.Y.
Item 617	WATER	95.5 M.Gal.

CONCRETE BARRIER, STANDARD TYPE A

This item of work shall include all labor and materials necessary to complete the installation of concrete barrier transition sections, to and from the concrete barrier median overhead sign No. 55 foundation between stations 73+95 to 74+05 ℄I-90. During the placement of the concrete barrier base, restoration of any disturbed subbase shall be replaced with No. 8 or No. 9 Aggregate to the satisfaction of the Engineer at no additional cost to the State.

Payment for the work described above is as follows:

	I-90-1(101)29
	Cost Part. III
Item 622 Concrete Barrier, Standard Type A	80 L.F.

CONCRETE BARRIER, STANDARD TYPE ___, MODIFIED, AS PER PLAN

This item of work shall include all labor, equipment and materials to provide concrete barrier median and base as detailed in the plans. The median base shall be continuous (including median base at sign support foundations and inlets) and extend from edge of pavement to edge of pavement or to the dimensions shown on the plan. This item shall also include 4" raceway, station marking, lead-in parapets to structures and transitions to bridge piers, inlets and sign supports.

The 4" raceway alignment in transition sections shall be adjusted to permit proper alignment with the 4" conduit in the "Barrier Wall Assembly at Existing Sign Supports, as per plan" as detailed on Sheet 44.

The Contractor shall stencil station numbers into the sides of the concrete barrier before it takes its final set. The complete station number is to be marked every 100 feet. The numerals shall be 3 to 4 inches in height and ¼ inch in depth. The station numbers shall be placed parallel with the pavement on each face near the top of the 18" vertical section.

All lateral tapering of the concrete barrier in transition sections shall be done at a rate of one foot in forty feet.

Payment for all of the above shall be at the unit price bid per linear foot of Item 622 Concrete Barrier, Standard Type ___, Modified, As Per Plan.

ITEM 310 SUBBASE, GRADING A, AS PER PLAN

Material for this item shall meet the requirements of Grading A of 310.02 after all operations of placing and compacting have been completed.

MADE G.F.M. DATE 12-10-75
TRACED T.B.M. DATE 12-11-75
CHECKED D.S.P. DATE 12-12-75
SCALE

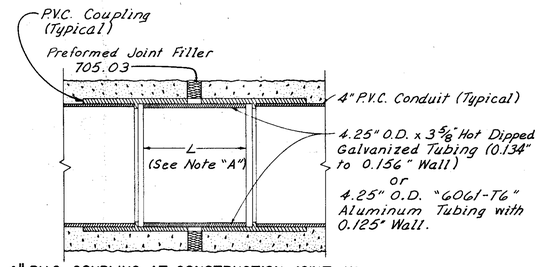
Howard, Needles, Tammen & Bergendoff
CONSULTING ENGINEERS
CLEVELAND, OHIO

HNTB

Rev. 10-26-78

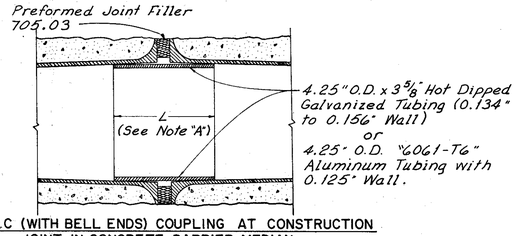
GENERAL NOTES

PAVEMENT (CONT.)

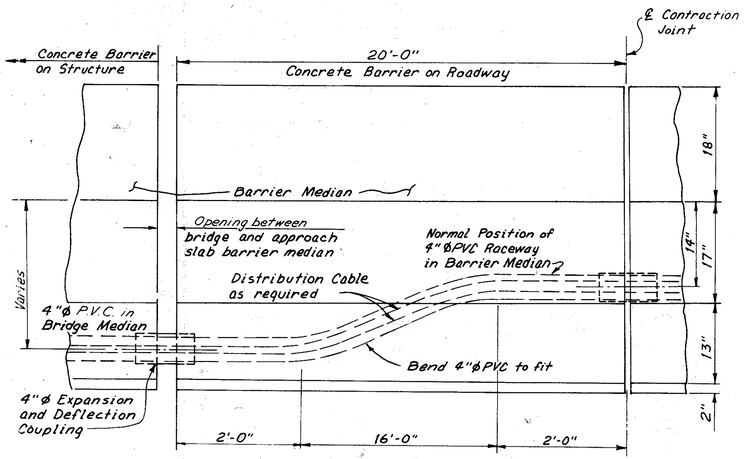


4" P.V.C. COUPLING AT CONSTRUCTION JOINT IN CONCRETE BARRIER MEDIAN
No Scale

Note "A": "L" is approximately 3 3/4" when joint is 1/2".
Note "B": Conduit couplings as detailed herein shall be provided at all median barrier joints where a joint filler is used, as required or permitted by Item 622 or Standard Construction Drawing MC-9.



4" P.V.C (WITH BELL ENDS) COUPLING AT CONSTRUCTION JOINT IN CONCRETE BARRIER MEDIAN
No Scale



BARRIER MEDIAN RACEWAY TRANSITION DETAIL
No Scale

DRAINAGE

REVIEW OF DRAINAGE FACILITIES

Before any work is started on the project, and before the final acceptance by the State, representatives of the State and the Contractor along with local representatives shall make an inspection of the existing sewers within the work limits which are to remain in service and which may be affected by the work. The condition of the existing conduits and their appurtenances shall be determined from field observations. Records of the inspection shall be kept in writing by the State.

All new conduits, inlets, catch basins and manholes constructed as part of the project shall be free of all foreign matter and in a clean condition before the project will be accepted by the State.

All existing sewers inspected initially by the above-mentioned parties shall be maintained and left in a condition reasonably comparable to that determined by the original inspection. Any change in the condition resulting from the Contractor's operations shall be corrected by the Contractor to the satisfaction of the Engineer.

Payment for all operations described above shall be included in the unit prices bid for the pertinent 603 conduit items of the contract.

CONNECTIONS TO EXISTING PIPES

Where the plans provide for a proposed conduit to be connected to, or to cross either over or under an existing sewer, it shall be the responsibility of the contractor to locate the existing pipe both as to line and grade before he starts to lay the proposed conduit.

Payment for all operations described above shall be included in the unit price bid for the pertinent 603 conduit items

CATCH BASINS AND INLETS AT CURBED SHOULDERS & CURBED RAMP NOSES

While performing the resurfacing work, the Contractor shall take care to keep open the grates of existing catch basins and curb openings of existing curb inlets at curbed shoulders and curbed ramp noses. The contractor shall taper the resurfacing course to match the existing elevations of the grates and curb openings as directed by the Engineer.

MANHOLE COVERS

The Contractor shall set the frames for manhole covers at such an elevation and inclination as to place the surface of the cover in the plane of the finished surface.

EXISTING PIPES

If existing pipes are encountered (which are not shown in the plans) and disturbed while removing existing inlets they shall be replaced by new pipes as directed by the Engineer.

	COST PARTICIPATION I	
	CUY.-77-14.12	CUY.-90-16.21
Item 603 12" Type B Conduit	125 Lin. Ft.	125 Lin. Ft.
Item 603 15" Type B Conduit	125 Lin. Ft.	125 Lin. Ft.

The material shall not be ordered by the Contractor unless prior approval is received from the Engineer.

EXISTING UNDERDRAINS

Where existing underdrains are encountered and no provision has been made for new underdrains, they shall be connected to new inlet, or suitably outletted with Item 605. Following quantity has been provided in the General Summary to be used as directed by the Engineer for that purpose. The materials shall not be ordered by the Contractor unless prior approval is received from the Project Engineer.

	COST PARTICIPATION I	
	CUY.-77-14.12	CUY.-90-16.21
Item 605 6" Unclassified Pipe Underdrains	125 Lin. Ft.	125 Lin. Ft.
Item 603 6" Type F Conduit	125 Lin. Ft.	125 Lin. Ft.

ITEM 604 - MANHOLE ADJUSTED TO GRADE WITH BOLT DOWN CASTING AS PER PLAN

All existing manholes shall be adjusted to grade by increasing the height of the structure walls by 2¼" except at the following locations: D-61, D-62, D-63, D-66, D-67, and D-70 where walls shall be increased by 1¼" and at structure D-80 where walls shall be decreased by 6½".

This adjustment shall be done as specified in method (a) under 604.03. The existing castings of the "Manholes Adjusted to Grade With Bolt Down Castings As per plan" which are to remain within the pavement or berm limits shall be replaced with EAST JORDAN IRON WORKS CATALOGUE NO. 1040-T or NEENAH FOUNDRY CATALOGUE NO. 1915 G or approved equal bolt down castings.

Payment for above work shall be included in the contract bid price per each Item 604-Manhole Adjusted To Grade With Bolt Down Castings, As Per Plan.

QUANTITY CALCULATIONS
MADE BY A.H.S. DATE 5-6-75
CHECKED BY M.E.E. DATE 5-9-75

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CUYAHOGA COUNTY
CUY.-77-14.12
CUY.-90-16.21

ITEM 604 - MANHOLE RECONSTRUCTED TO GRADE WITH BOLT DOWN CASTING, MODIFIED A OR B AS PER PLAN

The Existing castings of Manhole Reconstructed to grade with Bolt Down Castings modified A or B as per plan which are to remain within the pavement or berm limits shall be replaced with EAST JORDAN IRON WORKS CATALOGUE NO. 1040-T or NEENAH FOUNDRY CATALOGUE NO. R-1915 G or approved equal bolt down casting. For additional modifications, see Sheets 42 & 43.

Payment for above work shall be included in the contract bid price per each Item 604-Manhole Reconstructed to grade with bolt down casting, modified A or B as per plan.

ITEM 604 - STANDARD NO. I-3B MEDIAN INLET, MODIFIED B AS PER PLAN

Modifications are same as shown (on Sheet 40) for standard No. I-3B median inlet, modified I as per plan except the dimension A is 2'-6", the dimension B is 0'-0", length of bar M-5-a is 7'-2", no. of M-5-b bars are 18, length of bar M-5-c is 6'-10", and length of bar M-5-d is 4'-8".

Payment for above work shall be included in the contract bid price per each item 604 - Standard No. I-3B median inlet, modified B as per plan.

ITEM 604 - STANDARD NO. I-3B MEDIAN INLET, MODIFIED E AS PER PLAN

The existing pavement removed for construction of proposed inlet shall be replaced by Item 305, Portland Cement Concrete Base (to match existing pavement) using dowelled joints as per BP-4. In place of the standard 4'-6" depressed apron, a 2'-3" apron shall be provided. Additional modifications are same as shown for standard No. I-3B median inlet modified D, as per plan (on Sheet 40) except W is 30", length of bar M-5-a is 10'-2", length of bar M-5-c is 9'-4" and no. of M-5-b bars are 23.

Payment for all operations described above shall be included in the contract bid prices per each Item 604 - Standard No. I-3 median inlet, modified E as per plan.

ITEM 604 - STANDARD NO I-3B MEDIAN INLET, MODIFIED F AS PER PLAN

Modifications are same as shown for standard No. I-3B Median inlet modified D as per plan on sheet 40, except the depressed apron shall be 3'-0" and the existing pavement removed for construction of proposed inlet shall be replaced by the Item 305, Portland Cement Concrete Base (to match existing pavement) using dowelled joints as per BP-4.

Payment for above work shall be included in the contract bid price per each Item 604 - Standard No. I-3B median inlet modified F as per plan.

ITEM 604 - STANDARD NO. I-3B MEDIAN INLET, MODIFIED G AS PER PLAN (D-60, D-69)

Modifications are same as shown (on sheet 40) for standard no. I-3B median inlet, modified C as per plan except the depressed apron shall be 2'-2", the casting shall be NEENAH FOUNDRY CATALOGUE NO. R-3233-F (without curb box) or EAST JORDAN IRON WORKS CATALOGUE NO. 5130 or approved equal with maximum width of 22" and the existing pavement removed for construction of proposed inlet shall be replaced by the Item 305, Portland Cement Concrete Base (to match existing pavement) using dowelled joints as per BP-4.

Payment for above work shall be included in the contract bid price per each item 604 Standard No. I-3B median inlet, modified G as per plan.

ITEM 604 - STANDARD NO I-3B MEDIAN INLET MODIFIED H AS PER PLAN

Modifications are same as shown (on sheet 40) for standard no. I-3B median inlet modified C as per plan except the depressed apron shall be 3'-0" and the existing pavement removed to construct the proposed inlet shall be replaced by Item 305 Portland Cement Concrete Base (to match existing pavement) using dowelled joints as per BP-4.

Payment for above work shall be included in the unit price bid per each item 604 Standard no. I-3B median inlet modified H as per plan.

ITEM 604 - STANDARD NO. I-3A MEDIAN INLET MODIFIED AS PER PLAN, I-3B MEDIAN INLET MODIFIED A OR B OR C OR D OR E OR F OR G OR H OR I OR J AS PER PLAN

Payment for proposed inlets include all excavations (including removal of any obstruction), labor and materials to construct new structure. Existing pipes are to be left in place, unless otherwise noted on plans, and proposed structures are to be built around existing pipes. Care should be taken to protect existing pipes from damage during construction of the inlets. All inlets shall be cast-in-place.

The cost of this work shall be at contract bid price per each Standard No. I-3A, Median Inlet, modified as per plan, and Standard No. I-3B Median Inlet Modified A or B or C or D or E or F or G or H or I or J as per plan.

MADE A.H.S. DATE 5-6-75
TRACED F.S. DATE 5-8-75
CHECKED M.E.E. DATE 5-9-75
SCALE NONE

Howard, Needles, Tammen & Bergendoff
CONSULTING ENGINEERS
CLEVELAND, OHIO

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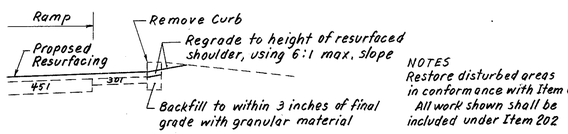
ITEM 603 12" CONDUCT, AS PER PLAN

This item shall consist of 12" diameter slotted drain, bituminous coated corrugated (2 2/3 x 1/2) steel conduit 707.05 (0.079") with 6" by 3/16" galvanized solid bar grate with hugger type coupling bands, as manufactured by Armco Steel Corporation or an approved equal. All costs for labor and materils including bedding and backfilling as detailed shall be included in the price bid for item 603, 12" Conduit, As Per Plan.

ITEM 202 - CURB REMOVED, AS PER PLAN (TYPE 7 & TYPE B)

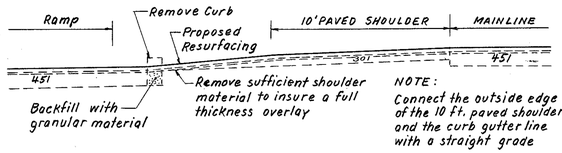
THE FOLLOWING DETAILS AND SPECIFICATIONS SHALL APPLY TO THIS ITEM OF WORK

CASE (1) - TYPE 7 CURB REMOVED



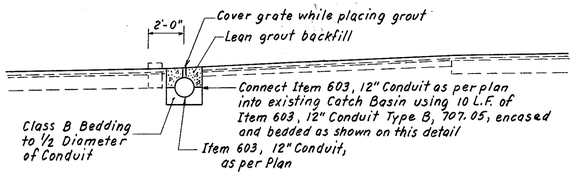
NOTES
Restore disturbed areas in conformance with Item 659
All work shown shall be included under Item 202

CASE (2A) - TYPE B CURB REMOVED (MAINLINE AND RAMP ON UPGRADE)



NOTE:
Connect the outside edge of the 10 Ft. paved shoulder and the curb gutter line with a straight grade

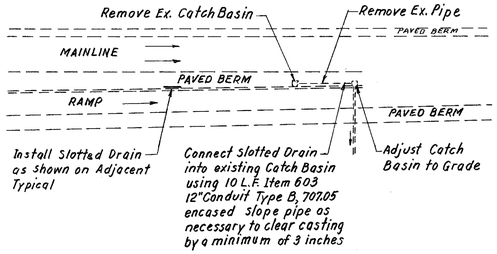
CASE (2B) - TYPE B CURB REMOVED (MAINLINE AND RAMP ON DOWNGRADE)
THE DETAILS OF CASE 2A SHALL APPLY WITH THE FOLLOWING EXCEPTIONS



ALL COST OF LABOR AND MATERIALS TO PERFORM ALL WORK AS DETAILED ABOVE (WITH THE EXCEPTION OF THE RESURFACING ITEMS AND THE 603 ITEMS) SHALL BE INCLUDED IN THE UNIT PRICE BID FOR ITEM 202 - CURB REMOVED, AS PER PLAN.

TYPICAL DRAINAGE MODIFICATIONS

CASE (2B) SHOWN



CURB REMOVAL AT ENTRANCE RAMPS

RAMP	LOCATION AT		202 CURB REMOVED AS PER PLAN * LIN. FT.	202 CATCH BASIN REMOVED EACH	202 PIPE REMOVED 24" & UNDER LIN. FT.	603 12" CONDUIT, AS PER PLAN * LIN. FT.	603 12" CONDUIT TYPE B 707.05 ENCASED LIN. FT.	604 CATCH BASIN ADJUSTED TO GRADE EACH
S-E	RAMP N-E		270					
E-N	RAMP W-N		255					
F-2	I-77 SB		290			170	10	1
W-5	I-77 SB		270					
Total I-77 (Code I)			1085			170	10	1

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TRAFFIC CONTROL NOTES

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SIGNING

202 REMOVAL OF GROUND MOUNTED SIGNS

THIS WORK SHALL CONSIST OF THE REMOVAL OF GROUND MOUNTED SIGNS AS SHOWN ON THE PLANS.

TO ASSURE MAINTENANCE OF ADEQUATE TRAFFIC CONTROL AT ALL TIMES, NO SIGNS SHALL BE REMOVED WITHOUT THE APPROVAL OF THE ENGINEER.

PAYMENT FOR REMOVAL OF SIGNS WILL INCLUDE ALL NECESSARY LABOR AND EQUIPMENT REQUIRED TO PERFORM THE REQUIRED WORK AS INDICATED ABOVE.

BASIS OF PAYMENT WILL BE AS FOLLOWS FOR ALL OTHER SIGNS:

202 REMOVAL OF GROUND MOUNTED SIGNS AT THE CONTRACT BID PRICE PER EACH.

202 REMOVAL OF GROUND MOUNTED

THIS ITEM OF WORK SHALL CONSIST OF THE REMOVAL OF GROUND MOUNTED SIGN SUPPORTS AND FOUNDATIONS AS INDICATED IN THE PLANS.

THE FOUNDATIONS SHALL BE REMOVED TO A MINIMUM OF ONE FOOT BELOW THE GROUND SURFACE. BACKFILLING, RESTORATION AND DISPOSAL OF SURPLUS MATERIAL WILL ALSO BE INCLUDED IN THIS WORK.

BASIS OF PAYMENT WILL BE AS FOLLOWS WHICH PRICE WILL INCLUDE ALL LABOR AND EQUIPMENT NECESSARY TO PERFORM THE REQUIRED ITEM OF WORK:

(1) 202 REMOVAL OF GROUND MOUNTED SIGN SUPPORTS, NO. 8 POSTS AND SMALLER, AT THE CONTRACT BID PRICE PER EACH.

(2) 202 REMOVAL OF GROUND MOUNTED SIGN SUPPORTS, BEAMS LARGER THAN NO. 8 POSTS, AT THE CONTRACT BID PRICE PER EACH.

202 REMOVAL OF GROUND MOUNTED SIGN INSTALLATIONS

THIS WORK SHALL CONSIST OF THE REMOVAL OF SIGN INSTALLATIONS AS SHOWN ON THE PLANS.

WORK SHALL CONSIST OF THE REMOVAL OF SIGN SUPPORTS, SIGNS AND FOUNDATIONS AND THE DISPOSAL OF SURPLUS MATERIAL.

TO ASSURE MAINTENANCE OF ADEQUATE TRAFFIC CONTROL AT ALL TIMES, NO SIGNS SHALL BE REMOVED WITHOUT THE APPROVAL OF THE ENGINEER.

PAYMENT FOR REMOVAL OF GROUND MOUNTED SIGN INSTALLATIONS WILL INCLUDE ALL NECESSARY LABOR AND EQUIPMENT REQUIRED TO PERFORM THE REQUIRED WORK AS INDICATED ABOVE.

BASIS OF PAYMENT WILL BE AS FOLLOWS:

(1) 202 REMOVAL OF GROUND MOUNTED MAJOR SIGN INSTALLATIONS , AT THE CONTRACT BID PRICE PER EACH, FOR SIGNS FORTY (40) SQUARE FEET OR GREATER.

(2) 202 REMOVAL OF GROUND MOUNTED SIGN INSTALLATIONS , AT THE CONTRACT BID PRICE PER EACH, FOR SIGNS LESS THAN FORTY (40) SQUARE FEET.

202 REMOVAL OF OVERHEAD SIGN SUPPORT *BY TYPE*

THIS WORK SHALL CONSIST OF THE REMOVAL OF THE OVERHEAD SIGN SUPPORT SHOWN ON THE PLANS. WORK SHALL ALSO INCLUDE REMOVAL OF SIGN SUPPORT FOUNDATIONS AND DISPOSAL OF ANY SURPLUS MATERIAL.

TO ASSURE MAINTENANCE OF ADEQUATE TRAFFIC CONTROL AT ALL TIMES, NO SIGNS SHALL BE REMOVED WITHOUT THE APPROVAL OF THE ENGINEER.

REMOVAL OF THE OVERHEAD MOUNTED SIGNS AND/OR SIGN LIGHTING IS COVERED UNDER A SEPARATE PAY ITEM.

PAYMENT FOR REMOVAL OF THE SIGN SUPPORT WILL INCLUDE ALL NECESSARY LABOR AND EQUIPMENT REQUIRED TO PERFORM THE REQUIRED WORK AS INDICATED ABOVE.

BASIS OF PAYMENT WILL BE AT THE CONTRACT PRICE PER EACH FOR 202 REMOVAL OF OVERHEAD SIGN SUPPORT , BY TYPE.

202 REMOVE OVERHEAD MOUNTED SIGNS

This work shall consist of the removal of overhead mounted signs and their disposal.

The work required shall include the removal of signs, sign attachment assemblies and miscellaneous hardware. Materials removed will become the property of the Contractor.

Removal of sign lighting items is covered under a seperate pay item

To assure maintenance of adequate traffic control at all times, no signs shall be removed without the approval of the Engineer.

Basis of payment will be as follows which price will include all labor, materials, equipment and incidentals necessary to perform the required item of work:

202 Remove overhead mounted signs , at the contract bid price per each.

202 REMOVAL OF OVERPASS STRUCTURE MOUNTED SUPPORT,

This work shall consist of the removal of the overpass structure mounted sign supports shown on the plan. Work shall also include the removal of all anchor bolts flush with the surface of the parapet concrete or removal entirely and the resulting holes filled with grout.

To assure maintenance of adequate traffic control at all times, no sign support shall be removed without the approval of the Engineer.

Removal of overhead mounted signs and sign lighting items are covered under seperate pay items.

Payment for removal of the sign support will include all necessary labor and equipment required to perform the required work as indicated above.

Basis of payment will be at the contract price per each item 202 Removal of Overpass Structure Mounted Support,

844 GROUND MOUNTED SUPPORTS, NO.4 POST, AS PER PLAN

THIS WORK SHALL CONSIST OF THE FURNISHING, ASSEMBLY AND INSTALLATION OF TWO (2) NO. 2 DRIVE POSTS (NO. 4 POST) IN COMBINATION WITH A SQUARE WELDED OR SEAMLESS GALVANIZED TUBULAR POST EXTENSION SPLICED TO THE TOP OF THE No. 4 POST. DETAILS ARE SHOWN ON STANDARD CONSTRUCTION DRAWING TC-41.50.

WORK SHALL INCLUDE ALL LABOR, MATERIALS, EQUIPMENT, TOOLS, AND HARDWARE NECESSARY TO PERFORM THE REQUIRED WORK.

BASIS OF PAYMENT WILL BE FOR 844 GROUND MOUNTED SUPPORTS, NO. 4 POST, AS PER PLAN, PER LINEAR FOOT MEASURED BY THE TOTAL OVERALL LENGTH OF COMBINATION POST.

844 REMOVE AND REERECT GROUND MOUNTED SIGNS

THIS WORK SHALL INCLUDE THE REMOVAL OF EACH SIGN AND THE REERECTION ON THE GROUND MOUNTED SUPPORT AT THE LOCATION SHOWN IN THE PLANS.

BASIS OF PAYMENT WILL BE AS FOLLOWS AND WILL INCLUDE ALL LABOR, MATERIALS, EQUIPMENT AND INCIDENTALS NECESSARY TO PERFORM THE REQUIRED WORK:

(1) 844 REMOVE AND REERECT GROUND MOUNTED MAJOR SIGNS, AT THE CONTRACT PRICE BID PER EACH, FOR SIGNS FORTY (40) SQUARE FEET OR GREATER.

(2) 844 REMOVE AND REERECT GROUND MOUNTED SIGNS, AT THE CONTRACT PRICE BID PER EACH, FOR SIGNS LESS THAN FORTY (40) SQUARE FEET.

844 SIGN ATTACHMENT TO EXISTING SUPPORT

THIS ITEM OF WORK SHALL CONSIST OF FURNISHING AND INSTALLING COMPLETE IN PLACE THE REQUIRED OVERHEAD SIGN SUPPORT BRACKETS, SIGN LIGHTING ARMS, LUMINAIRE MOUNTING STRUCTURES, OTHER NECESSARY STRUCTURAL MEMBERS AND MISCELLANEOUS HARDWARE ON EXISTING OVERHEAD SIGN SUPPORTS WHERE INDICATED IN THE PLANS.

PAYMENT SHALL BE FOR EACH OVERHEAD SIGN TO BE ATTACHED

PAYMENT WILL INCLUDE ALL LABOR AND MATERIALS REQUIRED TO PERFORM THE WORK AS INDICATED FOR 844 SIGN ATTACHMENT TO EXISTING SUPPORT, AT THE CONTRACT BID PRICE PER EACH.

844 REMOVE AND REERECT OVERHEAD SIGN SUPPORT, BY TYPE

THIS WORK SHALL CONSIST OF THE REMOVAL AND REERECTION OF THE OVERHEAD SIGN SUPPORT SHOWN IN THE PLANS.

WORK SHALL ALSO INCLUDE THE REMOVAL OF THE SIGN SUPPORT FOUNDATIONS AS REQUIRED IN 202. IN ADDITION, ANCHOR BOLTS IN THE NECESSARY QUANTITY SHALL BE FURNISHED ONLY AND ARE INCLUDED AS PART OF THIS ITEM OF WORK.

PAYMENT FOR THIS WORK WILL BE MADE AT THE CONTRACT UNIT PRICE BID PER EACH, 844 REMOVE AND REERECT OVERHEAD SIGN SUPPORT, BY TYPE, INSTALLED IN PLACE AND ACCEPTED, WHICH PRICE WILL BE FULL COMPENSATION FOR FURNISHING ALL ANCHOR BOLTS, 2" AND 3/4" EMT CONDUIT ELLS (FOR INSTALLATION UNDER 844 CONCRETE FOR ANCHOR BASE FOUNDATIONS) AND FOR TRANSPORTING AND INSTALLING THE OVERHEAD SIGN SUPPORT STRUCTURE INCLUDING ALL COMPONENT PARTS NECESSARY TO MAKE A COMPLETE WORKABLE INSTALLATION, READY FOR SIGN ERECTION, INSTALLATION OF DISCONNECT SWITCH AND ENCLOSURE, GROUND ROD AND WIRE CONNECTIONS AND SIGN WIRING.

MADE G.F.M. DATE 11-25-75
TRACED J.A.G. DATE 12-1-75
CHECKED D.S.P. DATE 12-12-75
SCALE

Howard, Needles, Tammen & Bergendoff
CONSULTING ENGINEERS
CLEVELAND, OHIO

HNTB

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SIGNING (CONT.)

844 SIGNS, BY TYPE

SIGN FACE BACKGROUND MATERIAL SHALL BE TYPE F REFLECTIVE SHEETING UNLESS OTHERWISE SPECIFIED IN THE PLANS. THE PROPOSED BACKGROUND COLOR AND LEGEND TYPE SHALL BE SHOWN ON EACH SIGN LAYOUT SHOP DRAWING SUBMITTED FOR REVIEW IN ACCORDANCE WITH 844.04.

844 ALTERNATE DESIGNS FOR SIGN SUPPORTS

IF THE CONTRACTOR DESIRES TO FURNISH ALTERNATE DESIGN(S) OR MATERIALS FOR SIGN SUPPORTS, THE ALTERNATE DESIGN(S) SHALL BE SUBMITTED TO THE STATE AT LEAST 21 DAYS PRIOR TO OPENING OF BIDS. THE BIDDER WILL BE NOTIFIED AS TO ACCEPTANCE OR REJECTION OF ALTERNATE DESIGN AT LEAST 7 DAYS BEFORE BIDS ARE TO BE OPENED. SUBMISSIONS SHALL BE MADE TO THE OHIO DEPARTMENT OF TRANSPORTATION, BUREAU OF DESIGN SERVICES, 25 SOUTH FRONT STREET, COLUMBUS, OHIO 43215.

844 DRIVE POSTS

DRIVE POSTS SHALL BE STEEL IN ACCORDANCE WITH 712.20.

844 POLE MOUNTED SIGN ATTACHMENT

THIS WORK SHALL CONSIST OF THE FURNISHING AND INSTALLATION OF STAINLESS STEEL STRAPS, MOUNTING BRACKETS, AND HARDWARE AS DETAILED ON SHEET 92.

BASIS OF PAYMENT WILL BE AT THE CONTRACT BID PRICE PER EACH 844 POLE MOUNTED SIGN ATTACHMENT WHICH PRICE WILL INCLUDE ALL LABOR, MATERIAL, EQUIPMENT AND INCIDENTALS NECESSARY TO PERFORM THE REQUIRED ITEM OF WORK.

844 BRIDGE CONNECTIONS FOR SMALL SIGNS

This work shall consist of the furnishing, fabrication, and erection of the bridge connection as detailed on Sheet 92.

Payment for the signs is covered under seperate items within the plans.

Basis of payment will be as follows and will include all materials, equipment, labor and incidentals required to perform the work.

844 Bridge Connections For Small Signs, at the contract bid price per each.

844 EXISTING SIGN REVISED, AS PER PLAN

THIS ITEM OF WORK SHALL CONSIST OF REVISING AN EXISTING SIGN BY REMOVING EXISTING LEGEND AND FURNISHING AND INSTALLING DEMOUNTABLE COPY AND ENTRUSHEET SIGN PANEL AND BACK BRACING AS NEEDED TO CHANGE THE SIGN AS DETAILED ON THE PLAN SHEETS.

PAYMENT WILL BE MADE FOR EACH EXISTING SIGN REVISED AS PER PLAN AT THE CONTRACT UNIT PRICE AND BE FULL COMPENSATION FOR ALL LABOR AND MATERIALS REQUIRED TO COMPLETE THE WORK IN A CRAFTSMAN LIKE MANNER.

SIGN LIGHTING

202 & 844 REMOVE AND REERECT SIGN LIGHTING FIXTURES

THIS WORK SHALL CONSIST OF THE DISMANTLING OF SIGN LIGHTING FIXTURES AND APPURTENANCES AND THEIR DISPOSAL OR REERECTION.

SIGN LIGHTING FIXTURES NOT REUSED SHALL BE STORED WITHIN THE PROJECT FOR REMOVAL BY STATE FORCES.

THE WORK REQUIRED FOR REERECTION SHALL INCLUDE CLEANING AND REPAIR, PROVIDING NEW HARDWARE IF NECESSARY, AND THE INSTALLATION OF NEW LAMPS OF THE PROPER TYPE AND SIZE AFTER REERECTION, IN ACCORDANCE WITH 844.10.

INCIDENTAL MATERIALS NOT REUSED WILL BECOME THE PROPERTY OF THE CONTRACTOR, WHO SHALL DISPOSE OF THEM.

BASIS OF PAYMENT WILL BE AS FOLLOWS WHICH PRICE WILL INCLUDE ALL LABOR, MATERIALS, EQUIPMENT AND INCIDENTALS NECESSARY TO PERFORM THE REQUIRED WORK.

(1) 202 REMOVE SIGN LIGHTING FIXTURES FOR STORAGE, AT THE CONTRACT BID PRICE PER EACH.

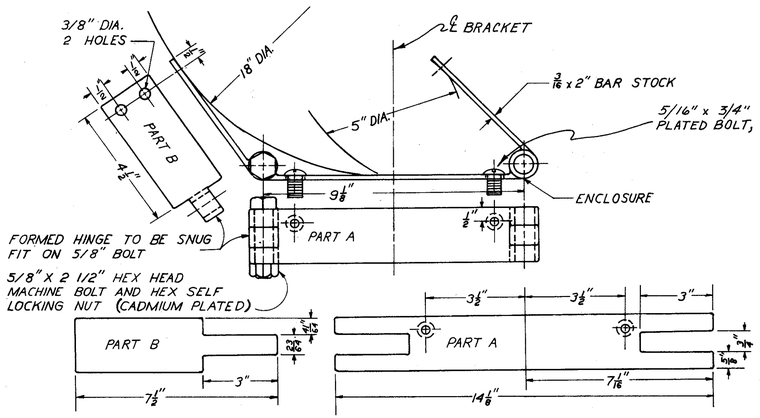
(2) 844 REMOVE AND REERECT SIGN LIGHTING FIXTURES, AT THE CONTRACT BID PRICE PER EACH.

844 DISCONNECT SWITCH ENCLOSURE MOUNTING BRACKETS

This work shall include the fabricating, furnishing and installation of disconnect switch enclosure mounting brackets when enclosures are mounted on existing overhead sign supports (not part of this project) or attached to concrete bridge columns or abutments.

Work shall consist of field drilling, attachment and hardware for installation on an existing overhead sign support, as detailed on this sheet. For details of attachment to concrete bridge columns or abutments see Standard Construction Drawing TC-32.11.

Basis of payment will be at the contract bid price per each, 844 Disconnect Switch Enclosure Mounting Bracket which price will be full compensation for furnishing, fabrication and installation including all labor, material and incidentals necessary to complete this work.



ENCLOSURE MOUNTING BRACKET
(EXISTING SUPPORT MOUNTING DETAIL)
NO SCALE

844 SIGN SERVICE, AS PER PLAN

This item shall consist of providing complete electrical service per 844.10, under existing pavement and contiguous shoulders, from an existing pullbox to a median mounted disconnect switch, by an approved method such as "Drilling" or "Jacking" and as detailed on Standard Construction Drawing TC-32.10.

The Contractor shall place the conduit with the least amount of disturbance to existing pavement, subbase, berm pavement or shoulders of the roadway, and to prevent damage to existing utilities. All push pits or necessary excavation shall be backfilled and restored in accordance with 844.10.

Payment shall be at the contract unit price bid per each, including full compensation for excavation, drilling or jacking, backfilling, compaction, restoration of pavement and all labor, material, equipment and incidentals necessary to complete the work for: 844 Sign Service, As Per Plan.

844 PADLOCKS AND KEYS

Padlocks furnished shall be either brass or bronze padlocks equal to Master No. 4 BKA or Wilson Bohannan 660 and shall be keyed in accordance with 844.10.

Payment will be included in the bid for the item(s) being locked.

844 BALLASTS

IN ADDITION TO THE REQUIREMENTS OF 844.10, BALLASTS FOR MERCURY VAPOR LUMINAIRES SHALL BE LOCATED WITHIN THE LUMINAIRE HOUSING OR CONTAINED IN A WEATHERPROOF HOUSING CONTIGUOUS TO THE LUMINAIRE.

202 REMOVE OVERHEAD STRUCTURE MOUNTED WARNING FLASHERS, AS PER PLAN

This item or work shall involve the complete and careful removal of the structure mounted warning flasher units from the Hamilton Ave. bridge parapet over I-90. All appurtenances, conduit and wires shall be removed to the source of the electrical service connection.

The warning flasher units and appurtenances removed shall be stored as directed by the Engineer for removal by State forces. All items not removed by State forces shall become the property of the Contractor.

Payment for this item of work will include all labor, materials and equipment required to perform the work at the lump sum bid price for:

Item 202 - Remove Overhead Structure Mounted Warning Flashers, As Per Plan

S625 ELECTRICAL EQUIPMENT

This item of work shall provide for an 18" Pullbox, 2 - IX Connector Kits and the connection to the existing lighting circuit at Sta. 74+00 I-90, shown on Sheet 74, and in accordance with S625.

Payment for this item shall be on a lump sum basis and include all electrical materials, equipment and incidentals, including specified tests required, complete in place.

MADE G.F.M. DATE 11-25-75
TRACED J.A.G. DATE 12-1-75
CHECKED D.S.P. DATE 12-12-75
SCALE

Howard, Needles, Tammen & Bergendoff
CONSULTING ENGINEERS
CLEVELAND, OHIO

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TRAFFIC MAINTENANCE NOTES

QUANTITY CALCULATIONS
MADE BY DSP DATE 10-27-77
CHECKED BY FWH DATE 11-21-77

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TEMPORARY SIGNS AND SUPPORTS FOR MAINTAINING TRAFFIC

The following requirements shall be adhered to regarding materials and placement of signs to be furnished, installed, maintained, and subsequently removed by the contractor in accordance with the plans.

Signs shall be aluminum sheet or plywood type with reflective sheeting in accordance with Supplemental Specification 844. Sign Material shall conform with the following schedule:

Individual Sign Area	Material
less than 10 sq. ft.	0.060 Alum. Sheet
10-16 sq. ft.	0.080 Alum. Sheet
16-20 sq. ft.	0.100 Alum. Sheet
over 20 sq. ft.	$\frac{3}{4}$ inch Plywood

The Contractor shall have the option of furnishing extrusheet aluminum panels as a substitute for plywood.

All supports for ground mounted signs not erected on drums or overpass mounted shall be steel channel type, driven to a minimum depth of 5 feet, wood supports, or other method approved by the Engineer. Signs shall have 1,2, or 3 separate supports in accordance with the following schedule:

TOTAL SIGN ASSEMBLY AREA (Sq. Ft.)	SIGN LENGTH (Horiz.)	SUPPORT TYPE 4 Ft. or Less	4-10 Ft.	11 Ft. or More
10 or Less		1-3 Lb. Post	2-3 Lb. Post	-
10-20		1-6 Lb. Beam	2-3 Lb. Post	-
21-40		-	2-6 Lb. Beam	3-6 Lb. Beam
41-75		-	-	

Supports for ground mounted signs greater than 75 sq. ft. in area shall be as directed by the Engineer.

Mounting height and lateral placement of temporary signs shall be in accordance with Figure C-1 of the Ohio Manual of Uniform Traffic Control Devices, current edition, latest revisions.

Standards and sign layouts for temporary signs are available from the Office of Highway Design Services, 25 South Front Street, Columbus, Ohio 43215.

The Contractor shall be responsible for removal of all temporary signs and supports when no longer needed, and he shall restore each sign site to its original condition.

All signs and supports furnished, erected, maintained, and removed by the Contractor shall become the property of the Contractor.

Basis of payment for the above described work shall be included in the Lump Sum bid for Item 614, Maintaining Traffic.

DRUMS AND TEMPORARY BEAM RAIL, FOR MAINTAINING TRAFFIC

Maintenance of traffic through and around work areas on this project shall be done with drums or temporary beam rail per Item 606 of the Construction and Material Specifications, except that drums shall be spaced at intervals of 50 feet unless specified to be 25 feet in the plans or directed by the Engineer.

It is estimated that approximately 2000 Lin. Ft. is required for the above. Payment for the above shall be included in the lump sum bid for item 614 Maintaining Traffic.

844 Remove and reerect overhead sign supports, as per plan

This item of work shall consist of the removal and reerection of overhead sign supports to coincide with the maintence of traffic plans for I.R. 77.

Work shall include the removal of the sign span including sign lighting, wiring and hardware, end frame(median side only) and foundation to approximately 6 inches below temporary pavement grade (when located off structure).

Required work on structure mounted supports shall include the removal of the end frame anchor bolts(bolted connetion) at sta. 89+90 SB and the removal of the mounting framework at sta. 101+04 SB. The latter shall be accomplished by either 1) Unbolting the entire support frame from the plate girder web stiffener or 2) by cutting the support beam free from the mounting frame.

Reerection includes all bolting, welding and painting as per 514 to return the support to its pre-construction condition.

Sign supports, end frames and spans shall be stored within the I.R. 490 interchange area (on the closed roadways).

Temporary ground mounted guide signs as shown on the traffic control plans shall be installed before the corresponding overhead sign support is removed.

Each overhead sign support shall be reerected as soon as possible after the median is no longer used for maintaining traffic.

The concrete foundation shall be rebuilt to its original dimensions or modified as detailed. Rebars shall be spliced using approved mechanical connectors or threaded sleeves. Anchor bolts shall be spliced using threaded sleeves only. All work shall be subject to the approval of the Engineer.

All new materials required to perform the subject work shall meet the requirements of 844.03. Mechanical rebar connectors, threaded sleeves, reinforcing bars, electrical conduits, electrical connector kits and any other necessary hardware required to perform this work shall be furnished by the contractor and are included as part of this item of work.

Before placing new concrete, the surface to be bonded to shall be throughly cleaned and covered with a bonding grout as approved by the Engineer.

The following is a list of overhead sign supports which will require the aforementioned work.

STATION	TYPE
I-77 80+78 NB	off structure
I-77 89+90 SB	on structure
I-77 101+14 SB	on structure
I-77 108+81 NB	off structure
I-77 125+45 NB	off structure
I-77 32+94 SB	off structure

For additional details see sheet no. 10A.

Payment for this work shall be made at the contract unit price bid per each, item 844 Remove and reerect overhead sign support as per plan, which price will be full compensation for furnishing all materials and labor necessary to remove and subsequently reerect each sign support, including foundation, to its pre-construction condition or modified as shown on the construction details.

I-77-5(18)16I
Item 844 Remove and reerect overhead sign support, as per plan — Cost Participation I — 6 each

"T" Shaped steel plates over structure open joints

"T" Shaped steel plates shall be anchored to the bridge deck as approved by the engineer. Any difference in grade between the steel plate and the bridge deck shall be ramped with item 404-asphalt concrete at a rate not to exceed 1" per 5 feet. All costs for the installation and subsquent removal of the steel plates and asphalt shall be included in the unit price bid for item 614, maintaining traffic.

FLASHING ARROW BARRICADE

Whenever any part of the traveled surface is closed, the motorist shall be warned and diverted by the Contractor through the use of a Flashing Arrow Panel, Type A. The Contractor shall refer to TC-35.10, Item 844 and the provision set forth in the Ohio Manual of Uniform Traffic Control Devices for Streets and Highways, current edition, latest revision, for all information regarding furnishing, maintaining and use of Flashing Arrow Barricades.

Payment shall be included under Item 614-maintaining traffic.

Temporary Lane Lines (Painted)

After bridge deck repairs have been made and before traffic is returned to normal and before traffic is returned to the 402 intermediate course of resurfacing after rolling is completed, the Contractor shall furnish and apply a 4" painted lane line as per 847.12. This line shall be placed at the joints as shown in the typical sections, sheet 2. Cost to be included in item 614 Maintaining Traffic.

An estimated quantity which includes furnishing, placing, maintaining and removing the temporary lane lines has been added to the General Summary as follows:

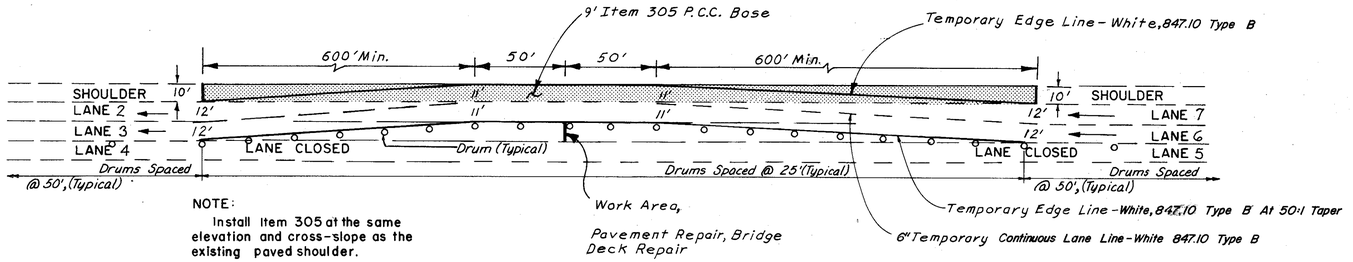
I-77-5(18)16I			
Item 847 4" Temporary Lane Line	14	Miles	Cost Participation I
I-90-1(101)29			
Item 847 4" Temporary Lane Line	18	Miles	Cost Participation I

Temporary Plastic Pavement Markings (Preformed)

Preformed temporary plastic pavement markings as shown below and on the maintenance of traffic detail sheets shall specifically include the cost of removing all conflicting existing pavement markings and the concurrent removal of these temporary pavement markings at the termination of the pertinent traffic control phase.

	I-77-5(18)16I	I-90-1(101)29
~~Item 847 4" Temporary Edge Line, 847.10 Type B~~	~~60,000 L.F.~~	~~97,500 L.F.~~
~~Item 847 6" Temporary Continuous Lane Line, 847.10 Type B~~	~~55,000 L.F.~~	~~45,000 L.F.~~

Cost to be included in item 614 Maintaining Traffic.



NOTE:
Install Item 305 at the same elevation and cross-slope as the existing paved shoulder.

MAINTENANCE OF TRAFFIC AROUND WORK AREA
Lane 7 Southbound or Lane 2 Northbound

Item 615-Flexible Temporary Pavement, Class B, As Per Plan

This item of work shall consist of the construction of a flexible temporary pavement consisting on 1½ inches of 402 on 5 inches of 301.
The following estimated quantity is included in the general summary for providing temporary pavement within the median area or where otherwise shown.

Item 615, Flexible Temporary Pavement, Class B, As Per Plan
I-77-5(18)16I 6000 S.Y. Cost Participation I
I-90-1(101)29 4200 S.Y. Cost Participation I

MADE DSP DATE 10-27-77
TRACED KAL DATE 10-27-77
CHECKED FWH DATE 11-21-77
SCALE None

Howard, Needles, Tammen & Bergendoff
CONSULTING ENGINEERS
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MAINTAINING VEHICULAR TRAFFIC

General Provisions:

The basic objective of this note is to emphasize to the Contractor that the planned construction occur, with a minimum of hazard, delay and inconvenience to the motoring public using the highway. In general, the Contractor shall conduct his operations so as to achieve this objective. The following general provisions are mandatory:

1. The minimum number of thru lanes to be maintained during construction will be as specified in the "General Construction Sequence" note or as otherwise noted in the plans.

2. Construction shall be done in stages as outlined in the "General Construction Sequence" note. The Contractor shall notify the Engineer two (2) weeks prior to starting work on each stage, in order that the Engineer can coordinate with the District Traffic Engineer the detour signing to be performed by the Contractor.

3. The Contractor shall notify the Engineer and the City of Cleveland Police Division not less than twenty-four (24) hours prior to a scheduled disruption of traffic.

5. Law Enforcement Officer with Patrol Car shall be used only when it is necessary for a complete stoppage of traffic. An estimated quantity of 200 Hr. for item Special, Law Enforcement Officer is included in the general summary for this purpose as further detailed in Paragraph 12.

6. During overhead construction the Contractor shall provide, if deemed necessary by the Engineer, safety nets and or other safety devices under the structures to protect traffic in the area of construction.

7. During non-working periods, open excavations shall be covered with steel plates and delineated with warning flashers and or other approved devices as deemed appropriate by the Engineer. Steel plates shall be anchored, as directed by the Engineer.

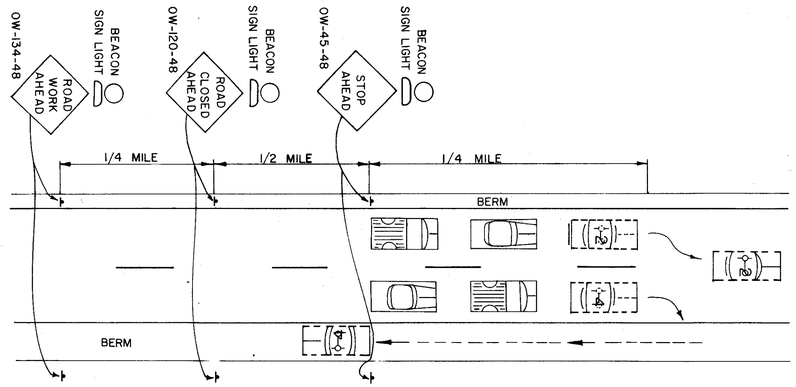
8. Existing signs located within the road work areas which are deemed necessary for interim or permanent traffic control, shall be removed and reerected in locations approved by the Engineer.

9. The Contractor shall furnish, erect and maintain all new warning and information signs necessary for maintaining traffic. The Contractor shall determine what signs are needed and advise the Engineer two (2) weeks in advance of initiating his detailed plans.

10. A 35 MPH speed limit will be imposed during maintained lane operations. The 35 MPH R-24-10 signs shall be provided every ½ mile at locations approved by the Engineer.

11. Traffic control devices shall be set-up prior to the start of construction, and shall be properly maintained during the time such special conditions exist. They shall remain in place only as long as they are needed and shall be immediately removed thereafter. Where operations are performed in stages, there shall be in place only those devices that apply to the condition present during the stage in progress. All signs with messages which do not apply during a certain period shall be covered or set aside out of the view of traffic.

12. Erection of span type and bridge mounted overhead supports shall be accomplished in such a manner that complete stoppage on all lanes of any directional roadway is not more than fifteen (15) minutes in any one(1) consective thirty (30) minute period. A minimum of two (2) law enforcement patrol vehicles shall be used to pace motorists to a stop. After traffic has been stopped, one (1) patrol vehicle shall travel along the roadway shoulder 500 feet behind the backup of stopped vehicles. Where stoppages occur in the vicinity of freeway entrances, the Contractor shall place flagmen on the ramps to stop traffic. Patrol vehicles shall have high-rise flashing beacons to provide adequate visibility to approaching motorists. When the Engineer deems appropriate, the Contractor shall erect and maintain "ROADWORK AHEAD", "ROAD CLOSED AHEAD", and "STOP AHEAD" signs with flashing twelve inch (12") traffic signal heads in accordance with 842.08. These signs shall be illuminated during night operation. Patrol vehicles and signs shall be located in accordance with the following sketch. This work shall be limited to the hours of 1:00 am to 5:00 am Monday thru Friday.



13. The planned construction of Bridges on I-77 and I-90 shall have the following special conditions apply in addition to the general provisions for this project:

a) **The number of lanes and the lane widths maintained shall be as shown on the traffic control plans sheets 108-107.**

b) Lanes shall be a minimum ten (10') feet wide. Whenever possible, additional room adjacent to the driving lanes (2 foot minimum each side desirable) should be provided.

c) There shall be positive removal or obliteration of pavement markings which conflict with the temporary traffic patterns created by the proposed construction. The markings may be removed by grinding, sandblasting, chemical treatment or any other method approved by the Engineer. Upon removal, all stains shall be removed by the use of kerosine, gasoline or other approved solvent. However, the pavement shall not be damaged in any way. The removal of existing pavement marking shall be done before opening the area to traffic.

d) Temporary pavement markings during the construction phases **for the bridge deck work** shall be made with **847.10 type B** tape in lieu of paint.

e) During the construction on **the subject bridges,** the Contractor shall not disrupt or impede the normal flow of traffic on the underpass roadways.

f) **The traffic control phases on I-77 and I-90 are not intended to be coordinated with each other.**

h) Channelization of traffic thru the construction area shall be accomplished with Temporary Concrete Barrier (Type A) in maximum lengths of ten feet (10'), cast with lifting rings. Channelization of traffic in areas where temporary concrete barrier is not specified shall be done with steel drums spaced at intervals of fifty (50') feet and mounted with Type B or C Barricade Warning Lights and or Temporary Beam Rail.

i) The impact attenuator and temporary concrete barrier used during the phased construction shall become the property of the State, after completion of the work.

14. Placement of final Roadway Pavement Markings shall be accomplished only Monday thru Friday between the hours of 9:00am and 3:00pm with a maximum of one lane each direction closed at any one time.

The Contractor shall provide two (2) trailing vehicles with flashing beacon following the pavement marking equipment when markings are placed, in order to provide advance warning to the motorist of the temporary lane closure and construction. The two (2) trailing vehicles shall travel 500 feet apart with the remote vehicle traveling on the shoulder (left or right as applicable) where usable shoulder is available. The intermediate trailing vehicle shall travel in the closed lane 500 feet behind the pavement marking equipment.

Each trailing vehicle shall have yellow flashing beacons plus orange and black construction warning signs mounted on the back facing traffic with standard type messages advising motorists of the work ahead, advisory warning speed, and which lane is closed.

15. The Contractor shall furnish all material, labor and equipment necessary to maintain traffic in accordance with the preceeding general provisions except for item Special, Law Enforcement Officer. Payment shall be at the lump sum bid for item 614 Maintaining Traffic.

MADE DSP DATE 10-27-77
TRACED RAL DATE 10-27-77
CHECKED DATE
SCALE —

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SUGGESTED GENERAL CONSTRUCTION SEQUENCE

The Contractor is reminded that, in the conduct of this project, his sequence of operation shall be planned and executed in such a way as to minimize the number of lane reductions and/or lane width reductions required to maintain traffic through the project. In this regard, traffic shall be maintained by staging construction of the major work items. When traffic lanes are closed during a particular stage, all operations to that lane shall be performed in an orderly sequence such that it will not be necessary to again close that lane (except for the asphalt concrete overlay and pavement marking).

It is the intent of this project to maintain a minimum of two lanes of traffic in both directions on the mainline pavement unless otherwise noted. Also, the Contractor is reminded that the flow of traffic shall not be "split" when being diverted around a work area unless the work is being done in the gore areas of an exit ramp.

Overhead sign supports that are being installed to replace existing sign supports shall be in place prior to the removal of the existing signs and supports.

SCHEDULE of thru lanes to be maintained:

APPROX. STATION LIMITS	BASIC ROADWAY TYPICAL SECTION (EXIST. THRU LANES)	NO. OF THRU LANES TO BE MAINTAINED DURING CONSTRUCTION*
I-77		
1. Sta 45+76± to Sta 66+75	2 Lanes each direction 12' Median	2 Lanes each direction using some temporary pavement
2. Sta 66+75 to Sta 95± (Sta 87± to Sta 95±)	2 Lanes each direction Median transition down to 10' (on CUY-77-1459)	2 Lanes each direction using some temporary pavement.
3. Sta 95± to Sta 129+50 (Sta 95± to Sta 108±)	3 Lanes each direction Median transitions up to 16' (on CUY-77-1459)	2 Lanes each direction **using some temporary pavement**
4. Sta 129+50 to Sta 47±	3 Lanes each direction 16' Median	2 Lanes each direction using some temporary pavement
5. Sta 47± to Sta 51+77±	2 Lanes each direction 16' Median	2 Lanes each direction using some temporary pavement
I-90		
1. Sta 55± to Sta 83±	3 Lanes each direction 10' Median transitions up to 16'	2 Lanes each direction **using some temporary pavement**
2. Sta 83± to Sta 149±	3 Lanes each direction 16' Median	2 Lanes each direction
3. Sta 149± to Sta 155±	3 Lanes each direction 16' Median transitions down to a 12' Median	2 Lanes each direction
4. Sta 155± to Sta 172±	4 Lanes each direction 12' Median	3 Lanes (E.B.) 2 Lanes **(W.B.)**
5. Sta 172± (WB) to Sta 70± (WB)	2 Lanes Median varies	2 Lanes thru Innerbelt Curve (Using temporary pavement)

*Unless otherwise directed by the Engineer or noted on the plan, the minimum width of each thru traffic lane being maintained shall be 11 feet.

MAJOR WORK ITEMS

The following major work items will require traffic maintenance procedures which shall be incorporated into the Contractor's sequence of operations:

A. Removal of existing median pavement.
B. Installation of median drainage facilities.
C. Installation of concrete barrier median.
D. Removal of overhead sign supports.
E. Installation of overhead sign supports.
F. Repair of pavement joints.
G. Repair of pavement panels.
H. Repair of bridge decks, trimming end dams and safety shape mdedian.
I. Installation of pressure relief jounts.
J. Jacking conduit under pavement (Sign Service, As Per Plan).
K. Concrete Barrier at Innerbelt Curve.
L. Realignment and Widening of Ramp E-13.
M. Overhead median mounted sign support on Memorial Shoreway (Sta 74+00 W.B. I-90).
N. Asphalt Concrete Overlay.
O. Pavement Marking.

SUGGESTED CONSTHUCTION SEQUENCE

STAGE 1 (I-90)

1. Construct all 9" Item 305 required for the maintenance of traffic throughout this project including that determined necessary by the Engineer at the time the work on this project begins.

2. Install Major Work Item M.

3. Begin phased construction work on Bridge CUY-90-1524, CUY-90-1628, CUY-90-1640 and CUY-90-1651, as detailed on sheets 10W – 10Z, and as follows:

PHASE I (A)
- Close Ramps E-11 and E-13 to traffic.
- Do all work for Major Work Item L which does not interfer with maintenance of traffic for this phase.

PHASE I (B)
- Remove median barrier guardrail within the limits shown.
- The resulting open joint, after the barrier guardrail's removed, shall be covered by the Contractor with a method approved by the Engineer.
- Provide Temporary Flexible Pavement, Class B, as per plan off the structure within the limits of the median concrete and guardrail removed.
- Provide a drop lane condition for westbound I-90 traffic exiting to I-77.
- Repair approach slab and backwall as detailed in the plans.

PHASE II
- Ramps E-11 and E-13 to remain closed to traffic.
- All temporary pavement marking, temporary concrete barrier and steel drums used to maintain eastbound traffic during Phase I (B), to remain in place.
- Maintenance of westbound traffic shall be revised as shown, including the installation of a temporary Fitch type attenuation device at Sta 76+27 I-90.
- Repair approach slab and backwall as detailed in the plans.
- Do all work for Major Work Item L which does not interfer with maintenance of traffic for this phase.

PHASE III
- Ramps E-11 and E-13 to remain closed to traffic.
- Temporary Fitch attenuation device installed in Phase II will be **relocated** at the start of work on Phase III to Sta. 76+60±.
- Control and maintenance of traffic shall be as detailed in the plans.
- Repair approach slab and backwall as detailed in the plans.
- Do all work for Major Work Item L which does not interfer with the maintenance of traffic for this phase.

PHASE IV
- Ramps E-11 and E-13 to remain closed to traffic.
- Control and maintenance of traffic shall be as detailed in the plans.
- Repair approach slab and backwall as detailed in the plans.
- Do all work for Major Work Item L which does not interfer with the maintenance of traffic for this phase.

PHASE V (not detailed in the plans)
- Complete Major Work Item L.
- Maintain traffic in accordance with the General Provisions for this project.

STAGE 2 (I-77)

1. Construct all 9" item 305 required for the maintenance of traffic throughout this project including that determined necessary by the Engineer at the time the work on this project begins.
2. Begin phased construction work on bridge no. CUY-77-1436C, CUY-77-1439B, CUY-77-1440A, CUY-77-1459, CUY-77-1519, CUY-77-1548, CUY-77-1564, CUY-77-1576, CUY-90-1640B, ramps E-15 and E-18 over E.9th and ramp E-15 over Broadway, as detailed on sheets 10B-10V, and as follows

Phases I thru V B
- Remove median barrier guardrail within the limits shown.
- The resulting open joint, after the barrier guardrail's removal, shall be covered by the contractor with a method approved by the Engineer.
- Provide temporary flexible pavement, Class B, as per plan, off the structure within the limits of the median concrete and guardrail removed.
- Remove overhead sign spans as detailed on sheet 10A.
- Provide temporary modifications to the median drainage structures as detailed on sheet 10A.

STAGE 3

1. Maintain traffic on Lanes 3,4,5 and 6 and perform the necessary repair work on Lanes 1,2,7 and 8. Complete the installation of major overhead sign supports at this time.

STAGE 4

1. Perform Major Work Items N and O in accordance with these plans.

If the Contractor so elects, he may submit an alternate construction sequence provided the intent of the contract (subsection 104.01) is followed and no additional inconvenience to the traveling public results there from. No alternate plan shall be placed into effect until approval has been granted, in writing, by the Director.

The requirements set forth in Section 108.03 of the Specifications are not to be considered waived by the foregoing Suggested Construction Sequence.

MADE D S P DATE 10-29-77
TRACED KAL DATE 10-29-77
CHECKED DATE
SCALE

Howard, Needles, Tammen & Bergendoff
CONSULTING ENGINEERS
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FHWA REGION	STATE	PROJECT	
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CUYAHOGA COUNTY
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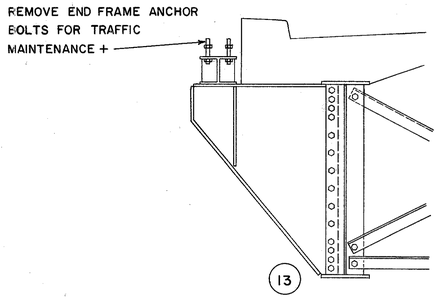
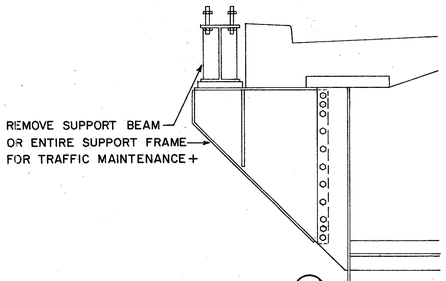


STA. 89+90 SB

EXISTING CROSS SECTION *

SCALE 1/2 "=1'-0"

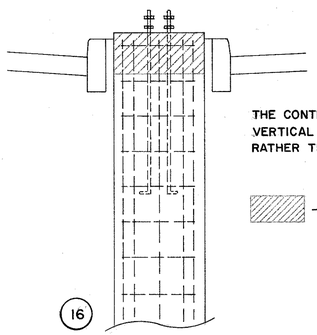
*— PROPOSED SIMILAR EXCEPT FOR BARRIER MEDIAN ADDITION, GUARDRAIL AND END FRAME NOT SHOWN
+— SEE GENERAL NOTES



STA. 101+14 SB

EXISTING CROSS SECTION *

SCALE 1/2 "= 1'-0"



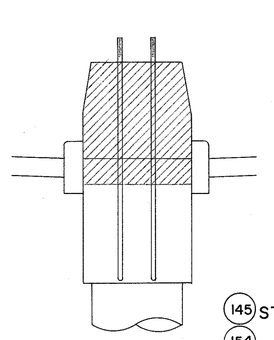
STA. 108+81 NB

EXISTING CROSS SECTION *

SCALE 1/2 "= 1'-0"

THE CONTRACTOR MAY BEND THE VERTICAL REINFORCING BARS FLUSH RATHER THAN CUTTING OFF.

—INDICATES REMOVAL

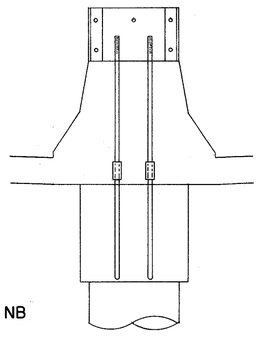


(145) STA. 80+78 NB

(154) STA. 125+45 NB

EXISTING TYPICAL SECTION

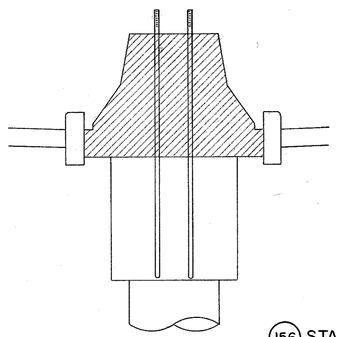
SCALE 1/2 "=1'-0"



MODIFIED TYPICAL SECTION ⊕

SCALE 1/2 "=1'-0"

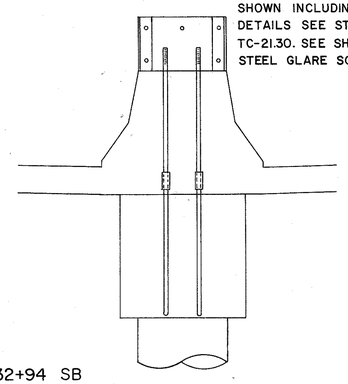
⊕ FOR DIMENSIONS AND DETAILS NOT SHOWN INCLUDING REINFORCING DETAILS SEE STD. CONSTR. DRAWING TC-21.30. SEE SHEET NO. 44 FOR STEEL GLARE SCREEN DETAILS.



(156) STA. 32+94 SB

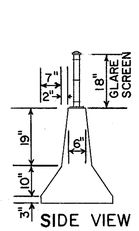
EXISTING TYPICAL SECTION

SCALE 1/2 "=1'-0"

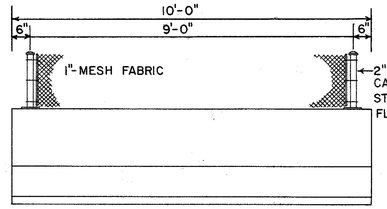


MODIFIED TYPICAL SECTION ⊕

SCALE 1/2 "=1'-0"

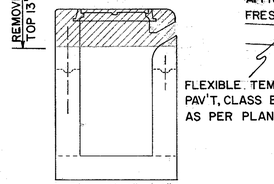


SIDE VIEW



TEMPORARY CONCRETE BARRIER

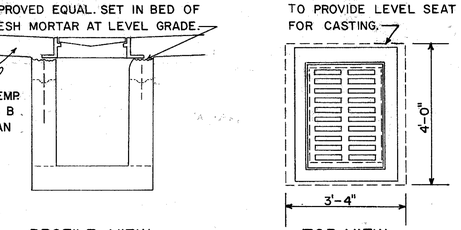
NOTES:
TEMPORARY CONCRETE BARRIER SHALL MEET THE REQUIREMENTS OF ITEM 622 AND STD. CONSTR. DRWG. MC-9 DATED 11-1-77. THE BARRIER SECTIONS SHALL BE TIED TOGETHER WITH STEEL CABLE OR BOLTED TOGETHER WITH STEEL CONNECTORS ALONG THE TOP OF THE BARRIER, EITHER METHOD IS SUBJECT TO THE APPROVAL OF THE ENGINEER. WHEN THE TEMPORARY CONCRETE BARRIER IS USED FOR SEPARATING OPPOSING TRAFFIC LANES AN 18 INCH GLARE SCREEN SHALL BE INCLUDED AS DETAILED ABOVE. FOR GLARE SCREEN DETAILS AND SPECIFICATIONS NOT SHOWN SEE STD. CONSTR. DRWG. F-7. ALL COSTS FOR THE TEMPORARY CONCRETE BARRIER AND GLARE SCREEN SHALL BE INCLUDED IN THE LUMP SUM PRICE BID FOR ITEM 614-MAINTAINING TRAFFIC. AT THE COMPLETION OF THE PROJECT ALL USED BARRIER SECTIONS AND GLARE SCREENS WHICH REMAIN USEABLE SHALL BE DELIVERED AND UNLOADED AT THE STATE MAINTENANCE YARD AT SR. 175 AND EMERY ROAD IN WARRENSVILLE HTS. OHIO.



EXISTING MEDIAN INLET

SCALE 1/2 "=1'-0"

EXISTING MEDIAN INLETS ARE SIMILAR TO CURRENT STD. CONSTR. DRWG. 1-2A. (TROUGH NOT SHOWN)



PROFILE VIEW

TOP VIEW

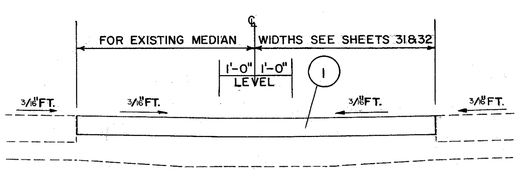
MODIFIED MEDIAN INLET

THE MODIFIED MEDIAN INLETS AS SHOWN ABOVE ARE TO BE USED WHERE THE MAINTENANCE OF TRAFFIC PLANS INDICATE THE MEDIAN IS TO BE USED FOR MAINTAINING TRAFFIC AND A POSITIVE DRAINAGE SYSTEM IS REQUIRED. ALL COSTS OF THE PARTIAL REMOVAL AND THE EVENTUAL TOTAL REMOVAL OF THE AFFECTED MEDIAN INLETS SHALL BE INCLUDED IN THE COST OF THE PERTINENT NEW 604 ITEM. ALL OTHER COSTS FOR MATERIALS AND LABOR NECESSARY TO MODIFY THE INLETS AS SHOWN SHALL BE INCLUDED IN THE LUMP SUM PRICE BID FOR ITEM 614-MAINTAINING TRAFFIC.

THE FOLLOWING IS A LIST OF MEDIAN INLETS WHICH WILL REQUIRE THE ABOVE MODIFICATION:

I-77	STA. 66+50	STA. 85+50
	STA. 69+50	STA. 86+62

THE REMAINDER OF MEDIAN INLETS (8 LOCATIONS ON I-77 & 8 LOCATIONS ON I-90) SHALL BE SLABBED OVER AFTER PARTIAL REMOVAL TO SUPPORT THE PROPOSED TEMPORARY PAVEMENT. ALL COSTS FOR THE INSTALLATION AND EVENTUAL REMOVAL OF THE AFOREMENTION INLET SLABS SHALL BE INCLUDED IN THE LUMP SUM PRICE BID FOR ITEM 614-MAINTAINING TRAFFIC.



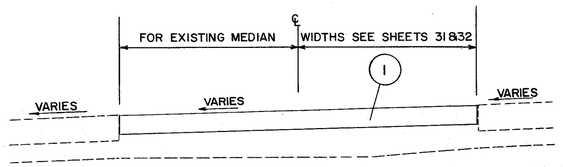
NORMAL SECTION

I-77

STA. 66+00 TO STA. 75+13.27
STA. 79+39.20 TO STA. 87+29.50
‡ STA. 130+25 TO STA. 34+02.53
‡ STA. 36+16.47 TO STA. 42+45.12

I-90

‡ STA. 73+96.25 TO STA. 84+80



TEMPORARY MEDIAN PAVEMENT

FOR EXISTING TYPICALS SEE SHEET NO. 31

(1) —6½"—FLEXIBLE TEMPORARY PAVEMENT CLASS B, AS PER PLAN (1½"-402 ON 5"-301)

‡ —REVERSE ALL SLOPES SHOWN ON TYP. SECTION
# —INCLUDES TRANSITIONS

SUPERELEVATED SECTION #

I-77

STA. 107+52.62 TO STA. 118+89.71
STA. 124+11.43 TO STA. 130+25
STA. 44+54.88 TO STA. 49+30.16
STA. 51+07.08 TO STA. 51+77.74

I-90

STA. 54+65.78 TO STA. 58+79.98
STA. 61+16.05 TO STA. 65+10.18
STA. 68+19.03 TO STA. 70+89.23

TRAFFIC MAINTENANCE PLAN

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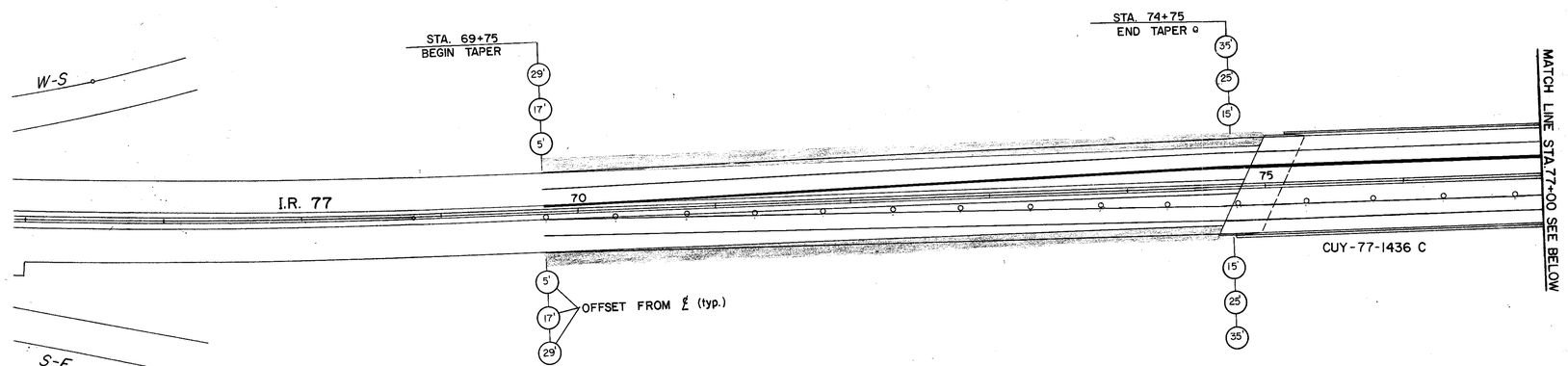
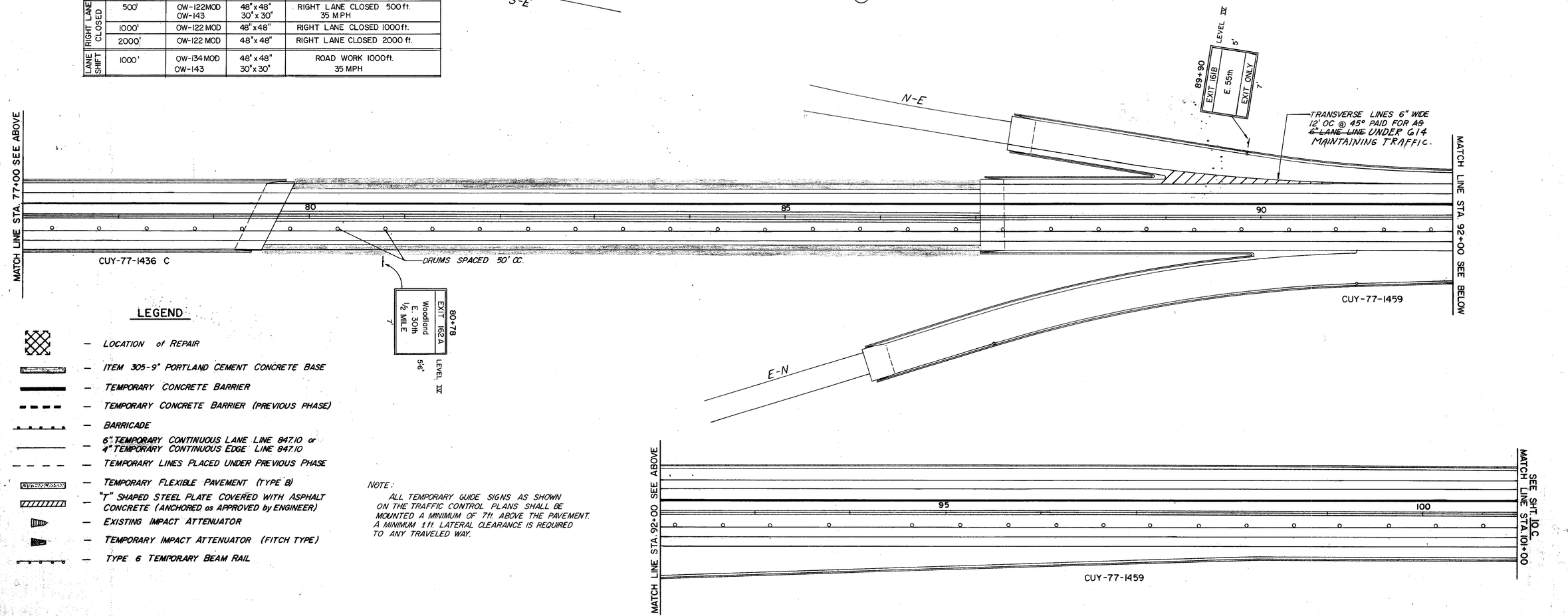
CUY-77-13.79
CUY-90-16.21

ADVANCE WARNING SIGNS FOR ANY CONDITION WHICH RESTRICTS OR REDIRECTS TRAFFIC SHALL BE ERECTED BEFORE ANY SUCH RESTRICTION IS PUT INTO EFFECT. ALL SUCH SIGNS SHALL BE COVERED OR REMOVED FROM THE VIEW OF TRAFFIC WHENEVER THEY ARE NOT APPLICABLE. THE SIGNS SHALL BE REQUIRED ON BOTH SIDES OF THE ROADWAY & MOUNTED AT THE HEIGHT INDICATED ON PLATE C-I OF THE "OMUTCD." THE SIGN LEGENDS AND LOCATIONS SHALL BE AS INDICATED IN THE FOLLOWING TABLE. DISTANCES ARE MEASURED BACK FROM THE POINT OF RESTRICTION.

	DISTANCE	SIGN	SIZE	DESCRIPTION
LEFT LANE CLOSED	500'	OW-123 MOD OW-143	48"x 48" 30"x 30"	LEFT LANE CLOSED 500ft. 35 MPH
	1000'	OW-123 MOD	48"x 48"	LEFT LANE CLOSED 1000 ft.
	2000'	OW-123 MOD	48"x 48"	LEFT LANE CLOSED 2000 ft.
RIGHT LANE CLOSED	500'	OW-122 MOD OW-143	48"x 48" 30"x 30"	RIGHT LANE CLOSED 500 ft. 35 MPH
	1000'	OW-122 MOD	48"x 48"	RIGHT LANE CLOSED 1000 ft.
	2000'	OW-122 MOD	48"x 48"	RIGHT LANE CLOSED 2000 ft.
LANE SHIFT	1000'	OW-134 MOD OW-143	48"x 48" 30"x 30"	ROAD WORK 1000 ft. 35 MPH





LEGEND

- LOCATION of REPAIR
- ITEM 305-9" PORTLAND CEMENT CONCRETE BASE
- TEMPORARY CONCRETE BARRIER
- TEMPORARY CONCRETE BARRIER (PREVIOUS PHASE)
- BARRICADE
- 6" TEMPORARY CONTINUOUS LANE LINE 847.10 or 4" TEMPORARY CONTINUOUS EDGE LINE 847.10
- TEMPORARY LINES PLACED UNDER PREVIOUS PHASE
- TEMPORARY FLEXIBLE PAVEMENT (TYPE B)
- "T" SHAPED STEEL PLATE COVERED WITH ASPHALT CONCRETE (ANCHORED as APPROVED by ENGINEER)
- EXISTING IMPACT ATTENUATOR
- TEMPORARY IMPACT ATTENUATOR (FITCH TYPE)
- TYPE 6 TEMPORARY BEAM RAIL

NOTE:
ALL TEMPORARY GUIDE SIGNS AS SHOWN ON THE TRAFFIC CONTROL PLANS SHALL BE MOUNTED A MINIMUM OF 7ft. ABOVE THE PAVEMENT. A MINIMUM 1 ft. LATERAL CLEARANCE IS REQUIRED TO ANY TRAVELED WAY.

PHASE I
TRAFFIC MAINTENANCE PLAN

TRAFFIC MAINTENANCE PLAN

FHWA REGION	STATE	PROJECT	
5	OHIO		

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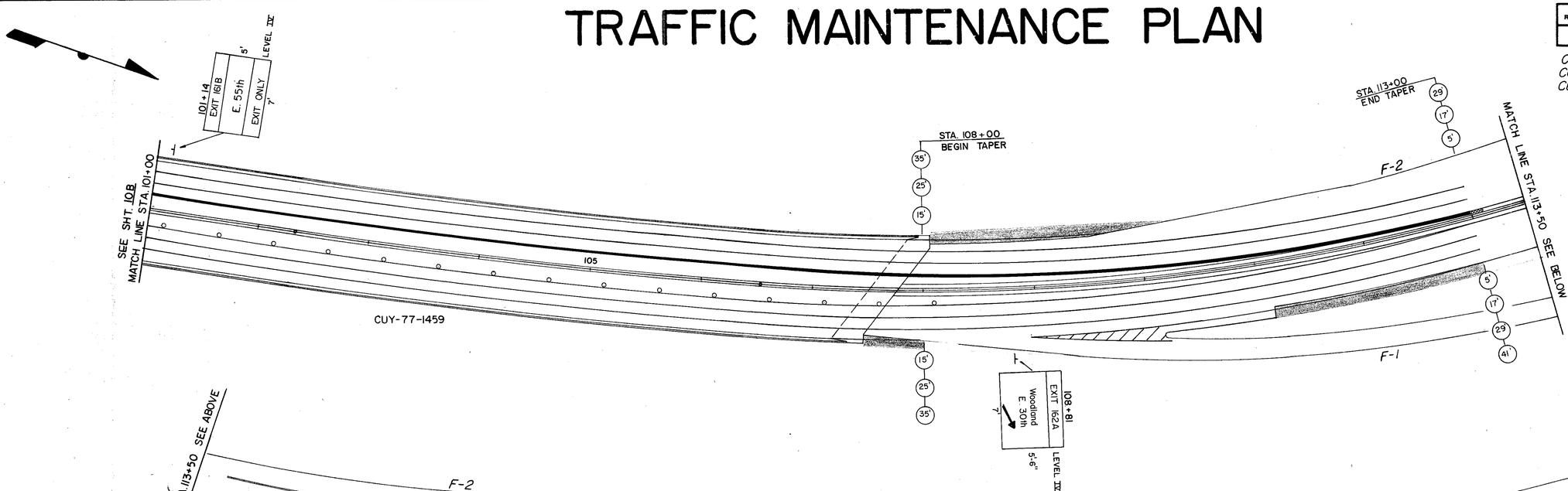
CUYAHOGA COUNTY
CUY-77-13.79
CUY-90-16.21



NOTES:
FOR LEGEND SEE SHT. 10B

PHASE I
TRAFFIC MAINTENANCE PLAN

TRAFFIC MAINTENANCE PLAN

FHWA REGION	STATE	PROJECT	
5	OHIO		

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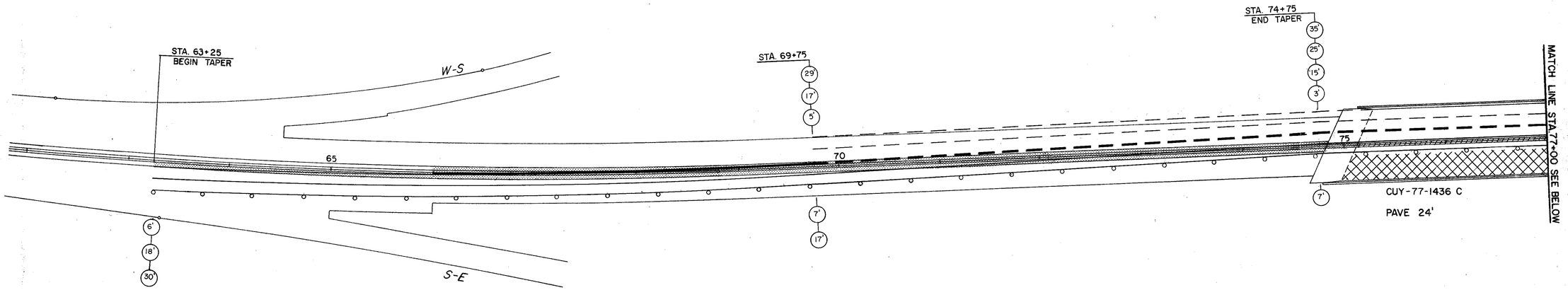
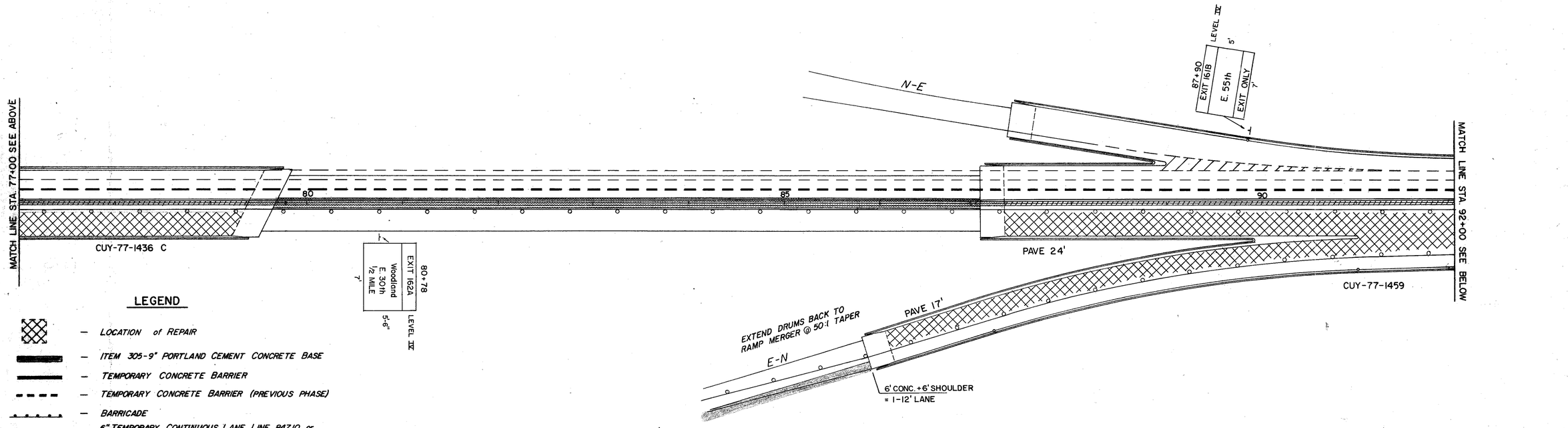
169

CUYAHOGA COUNTY
CUY-77-13.79
CUY-90-16.21





LEGEND

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- EXISTING IMPACT ATTENUATOR
- TEMPORARY IMPACT ATTENUATOR (FITCH TYPE)
- TYPE 6 TEMPORARY BEAM RAIL

PHASE IIA
TRAFFIC MAINTENANCE PLAN

TRAFFIC MAINTENANCE PLAN

FHWA REGION	STATE	PROJECT	
5	OHIO		

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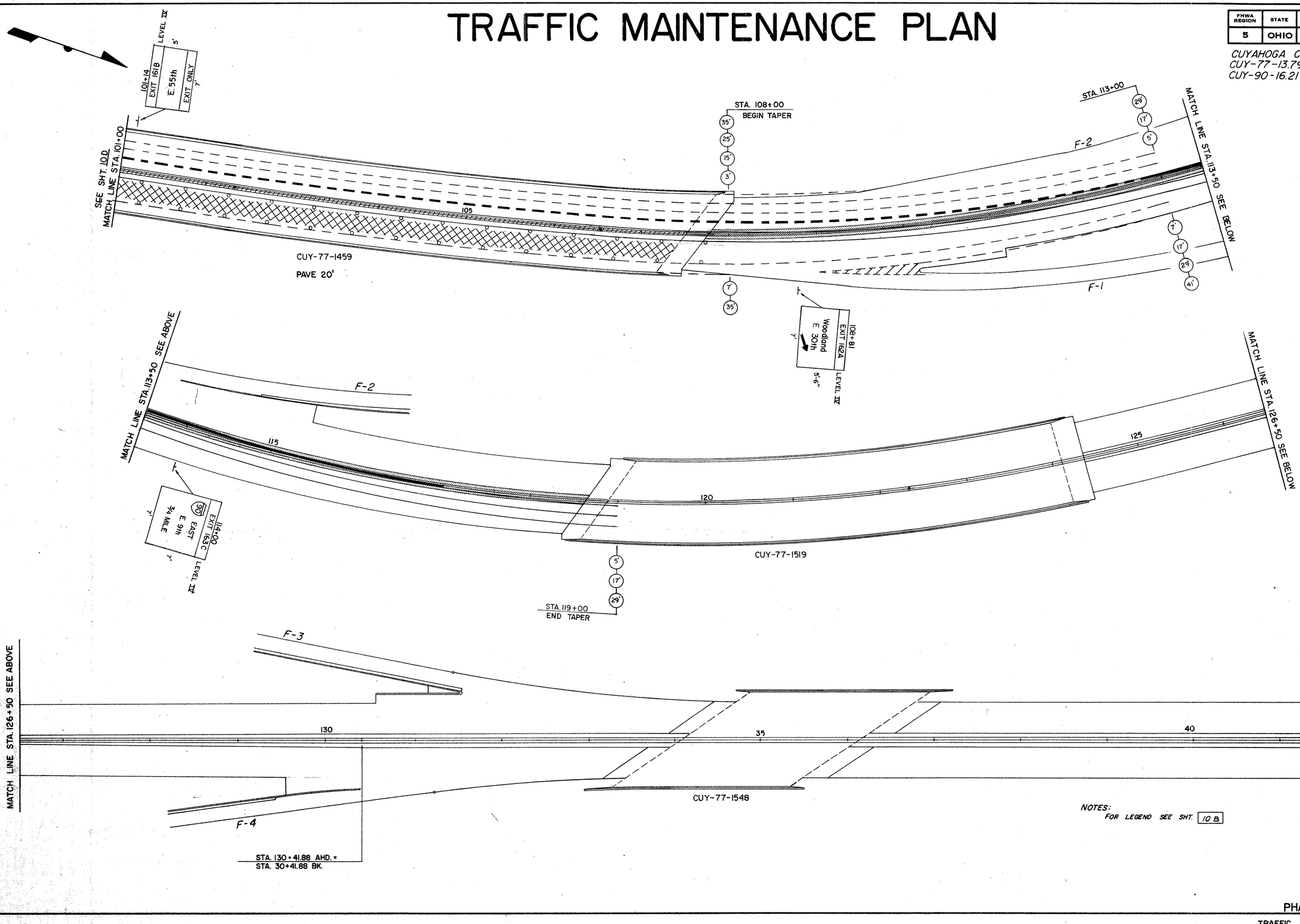
CUYAHOGA COUNTY
CUY-77-13.79
CUY-90-16.21



NOTES:
FOR LEGEND SEE SHT. 10 B.

PHASE II A
TRAFFIC MAINTENANCE PLAN

TRAFFIC MAINTENANCE PLAN

FHWA REGION	STATE	PROJECT	
5	OHIO		

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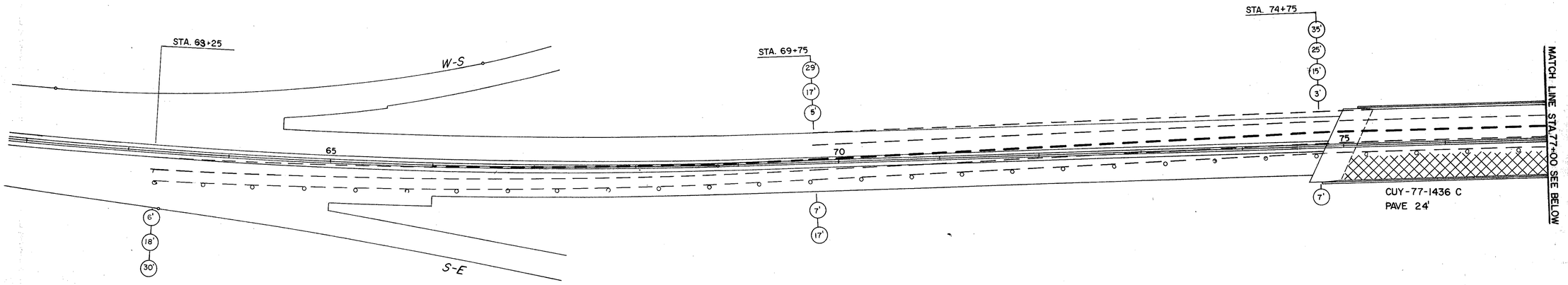
CUYAHOGA COUNTY
CUY-77-13.79
CUY-90-16.21



LEGEND

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- TYPE 6 TEMPORARY BEAM RAIL

PHASE II B
TRAFFIC MAINTENANCE PLAN

TRAFFIC MAINTENANCE PLAN

FHWA REGION	STATE	PROJECT	
5	OHIO		

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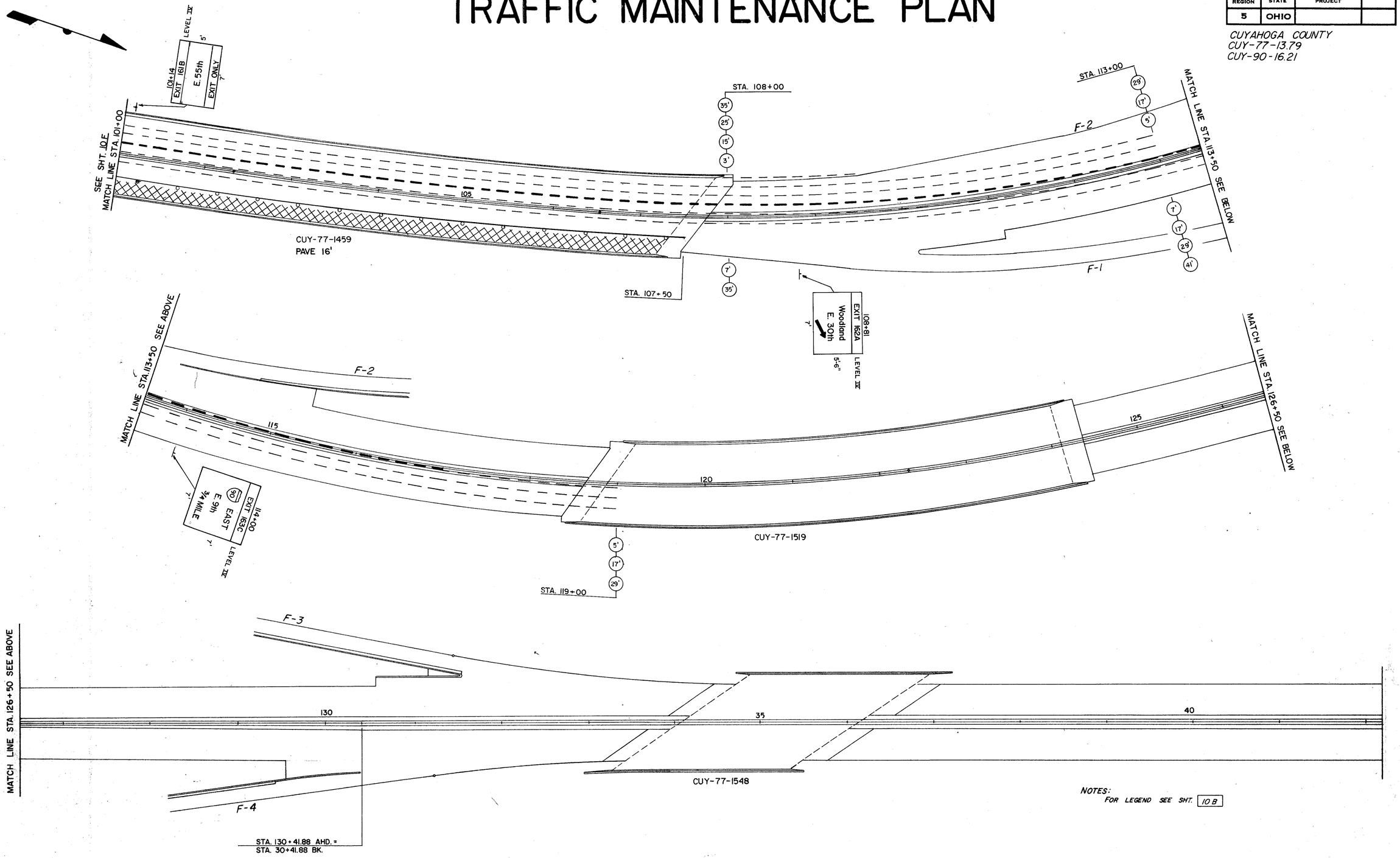
CUYAHOGA COUNTY
CUY-77-13.79
CUY-90-16.21



NOTES:
FOR LEGEND SEE SHT. 10B

PHASE II B
TRAFFIC MAINTENANCE PLAN

TRAFFIC MAINTENANCE PLAN

FHWA REGION	STATE	PROJECT	
5	OHIO		

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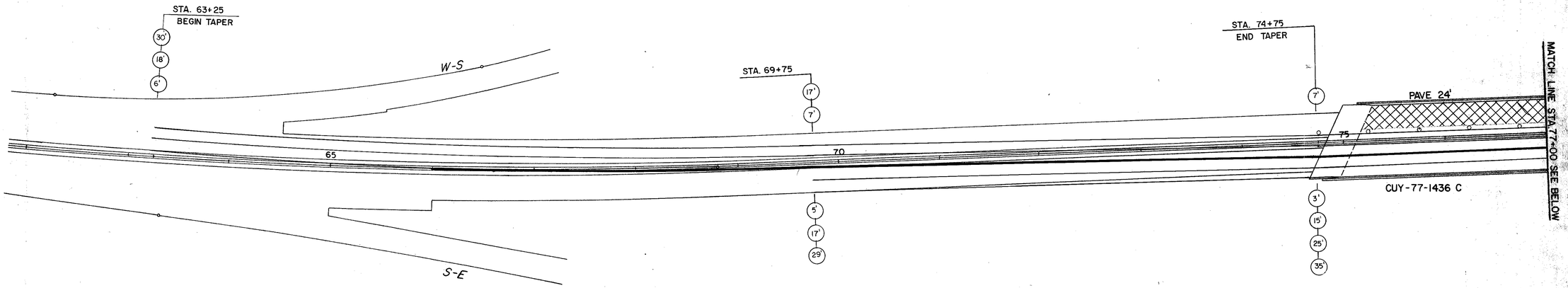
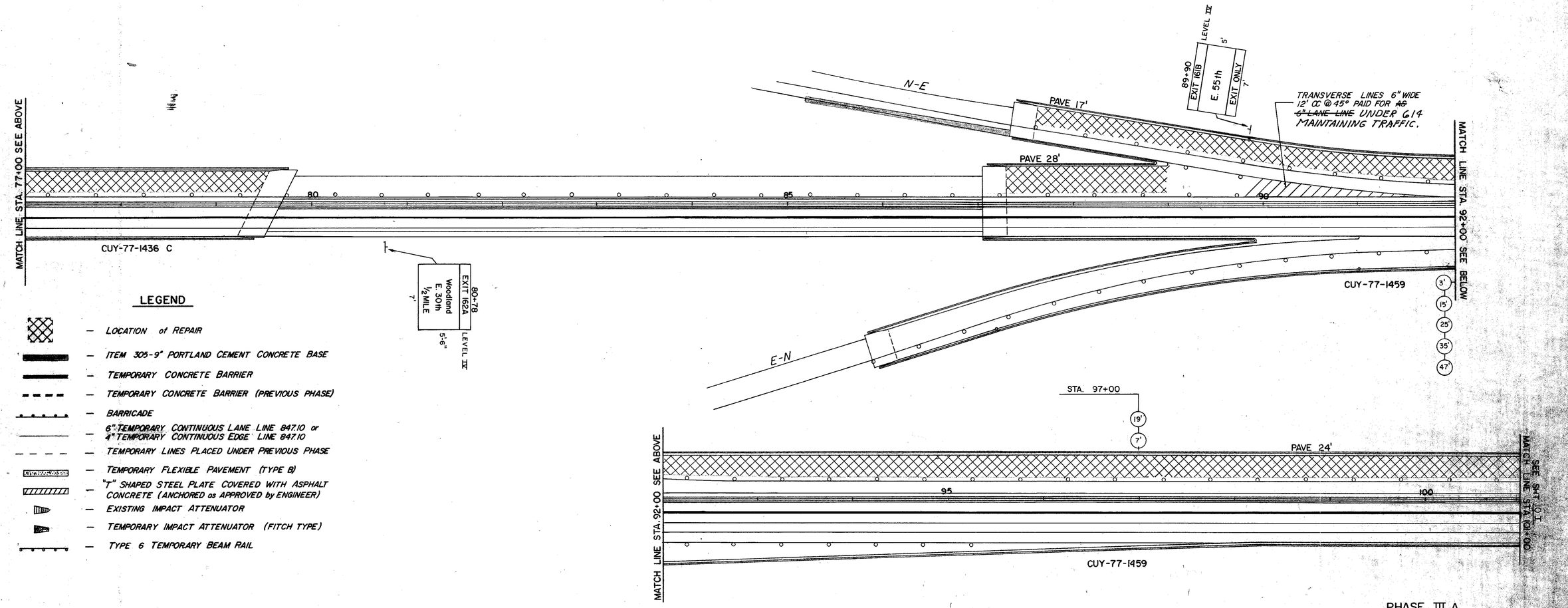
CUYAHOGA COUNTY
CUY-77-13.79
CUY-90-16.21





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PHASE III A

TRAFFIC MAINTENANCE PLAN

TRAFFIC MAINTENANCE PLAN

FHWA REGION	STATE	PROJECT	
5	OHIO		

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CUYAHOGA COUNTY
CUY-77-13.79
CUY-90-16.21

NOTES:
FOR LEGEND SEE SHT. 10B

PHASE IIIA
TRAFFIC MAINTENANCE PLAN

TRAFFIC MAINTENANCE PLAN

FHWA REGION	STATE	PROJECT	
5	OHIO		

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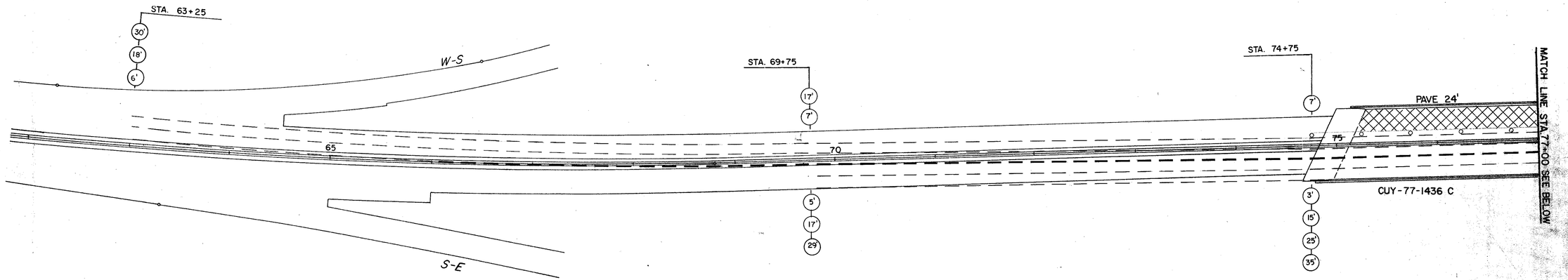
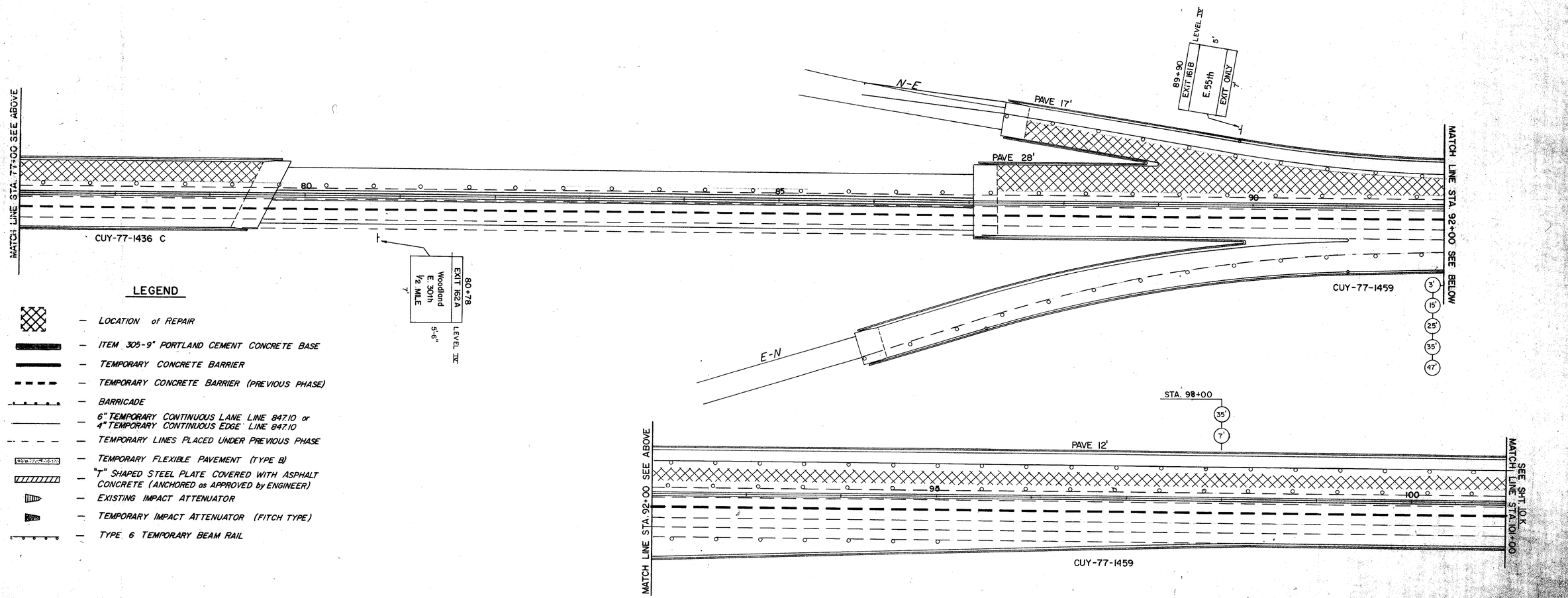
CUYAHOGA COUNTY
CUY-77-13.79
CUY-90-16.21





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- TYPE 6 TEMPORARY BEAM RAIL

PHASE III B

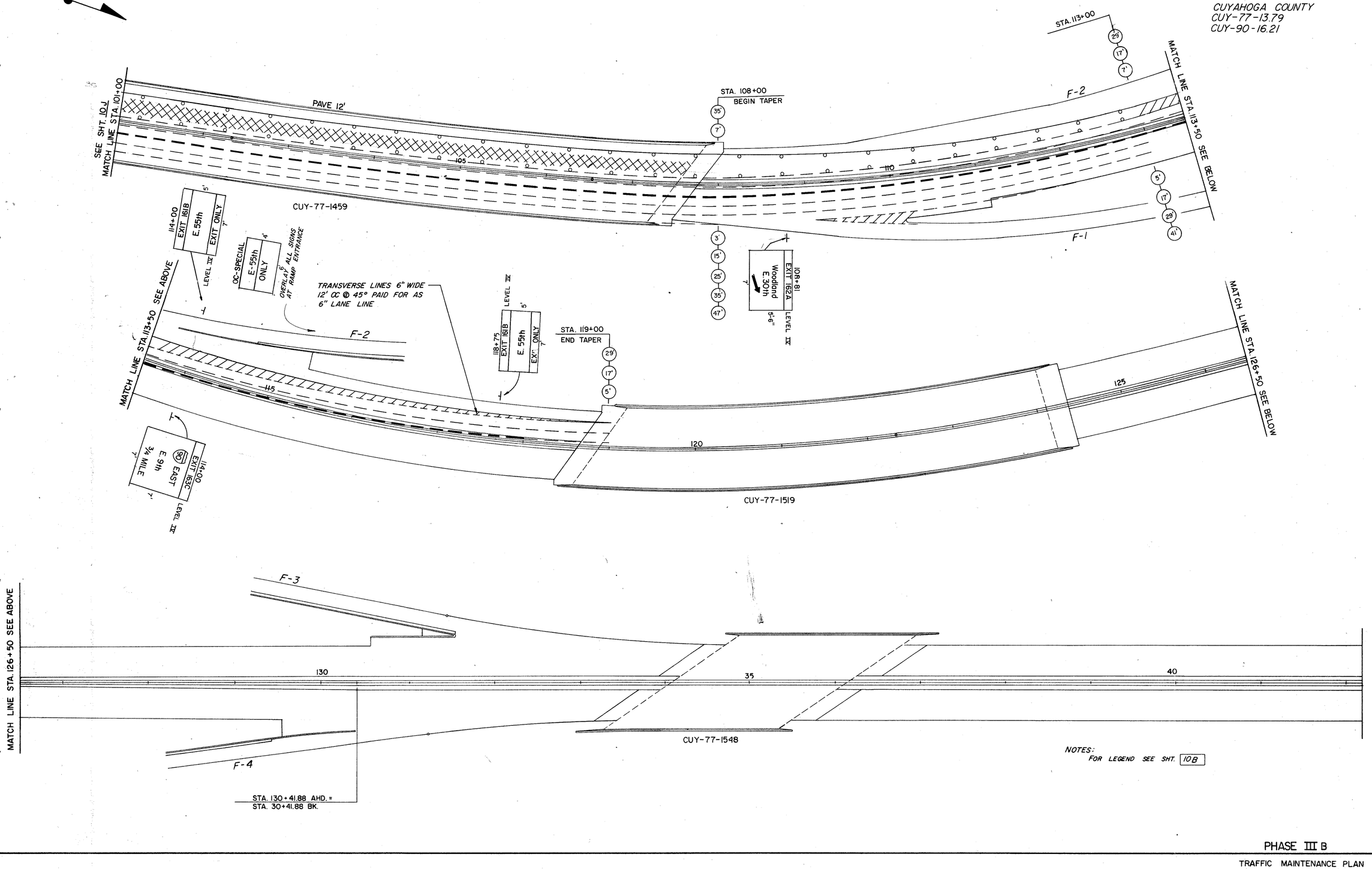
TRAFFIC MAINTENANCE PLAN

TRAFFIC MAINTENANCE PLAN

FHWA REGION	STATE	PROJECT	
5	OHIO		

10K / 169

CUYAHOGA COUNTY
CUY-77-13.79
CUY-90-16.21



NOTES:
FOR LEGEND SEE SHT. 10B

PHASE III B

TRAFFIC MAINTENANCE PLAN

TRAFFIC MAINTENANCE PLAN

FHWA REGION	STATE	PROJECT	
5	OHIO		

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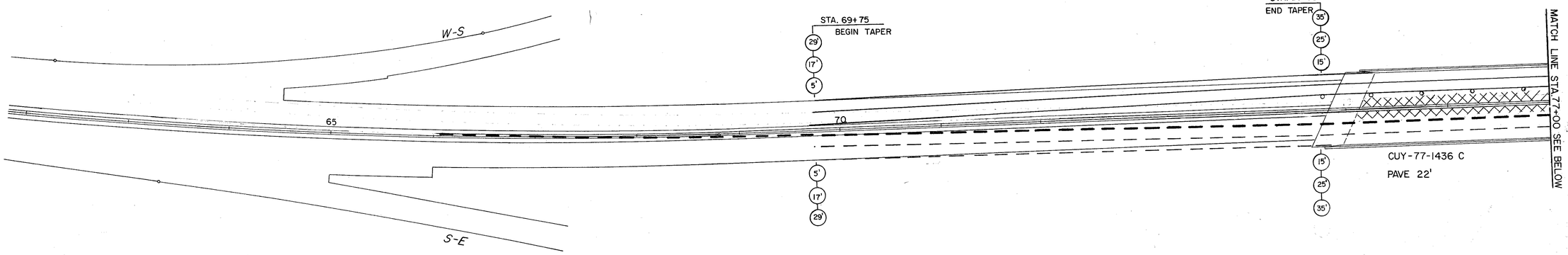
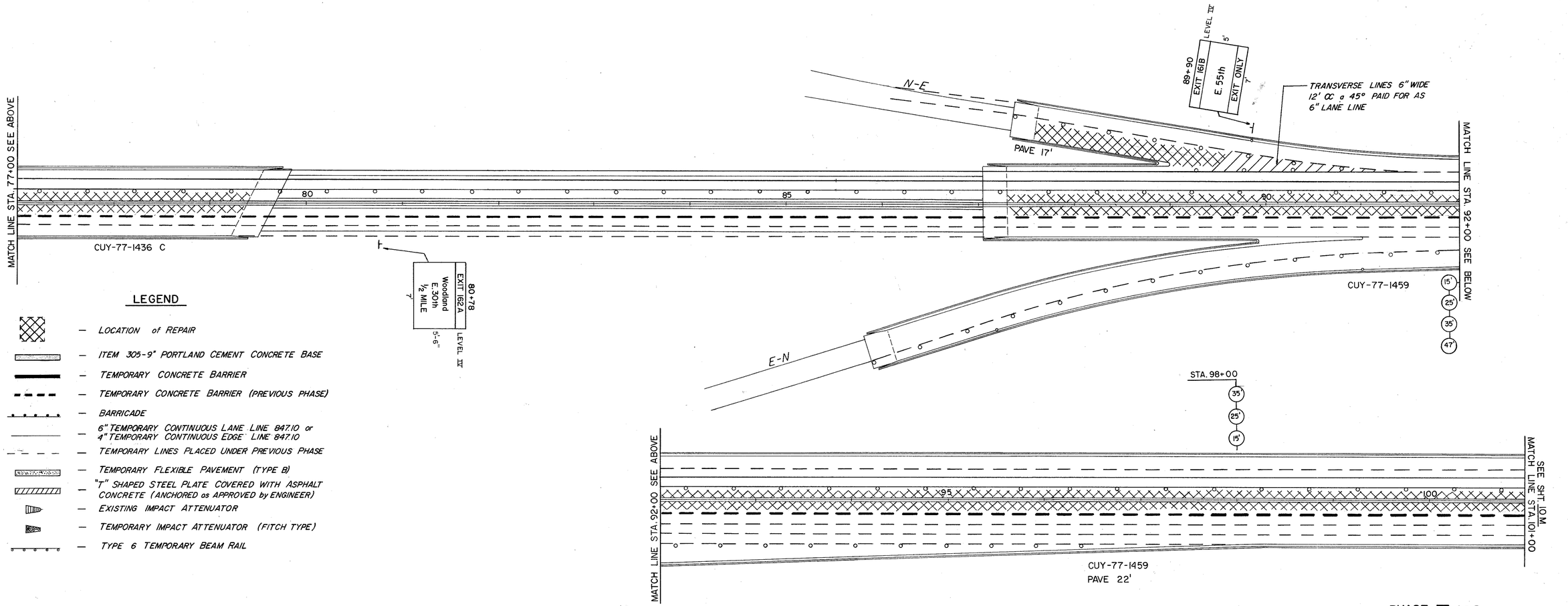
CUYAHOGA COUNTY
CUY-77-13.79
CUY-90-16.21





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- TYPE 6 TEMPORARY BEAM RAIL

PHASE IV A&B

TRAFFIC MAINTENANCE PLAN

TRAFFIC MAINTENANCE PLAN

FHWA REGION	STATE	PROJECT	
5	OHIO		

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CUYAHOGA COUNTY
CUY-77-13.79
CUY-90-16.21

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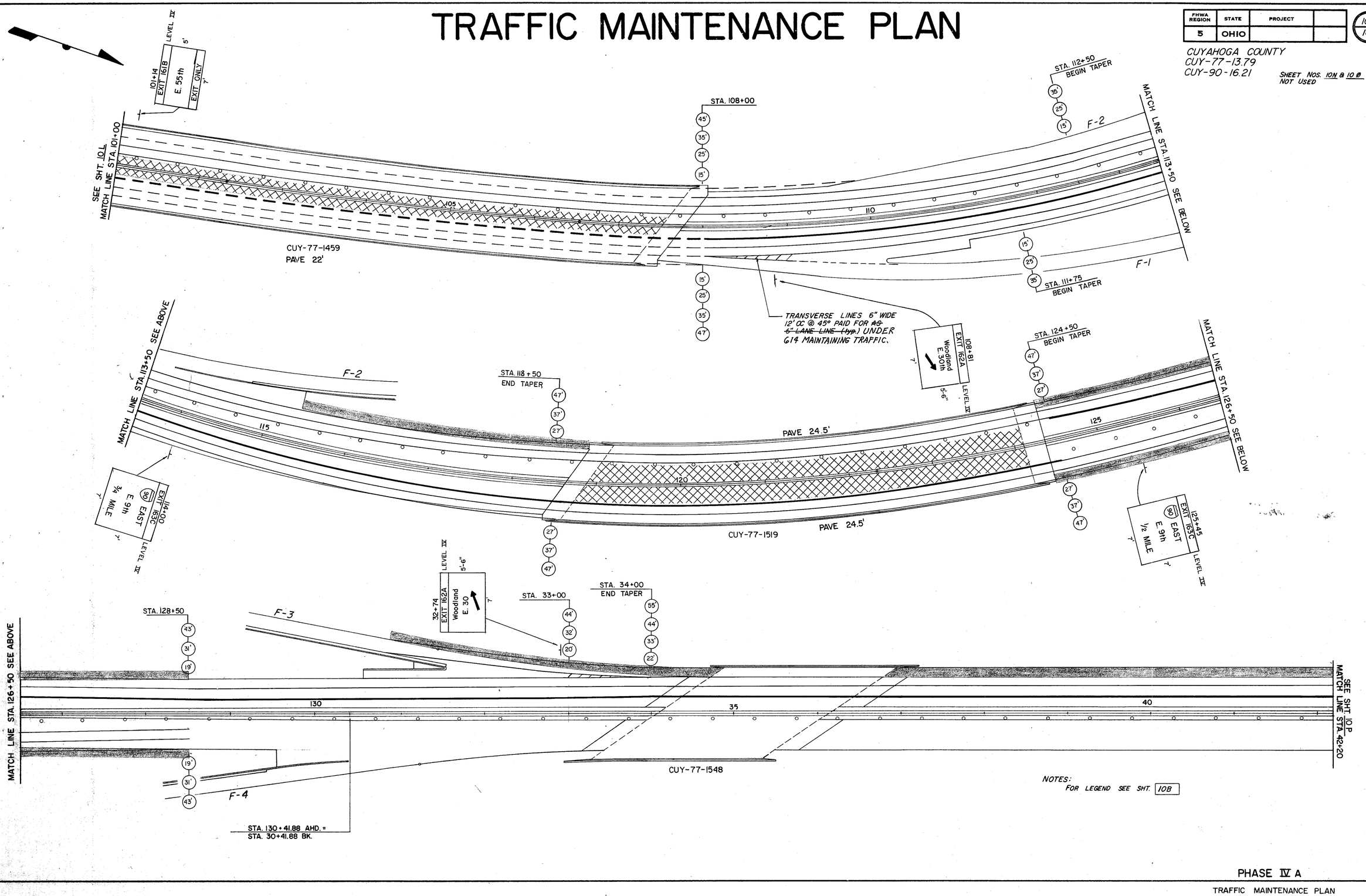

NOTES:
FOR LEGEND SEE SHT. 10B

PHASE IV A

TRAFFIC MAINTENANCE PLAN

TRAFFIC MAINTENANCE PLAN

FHWA REGION	STATE	PROJECT	
5	OHIO		

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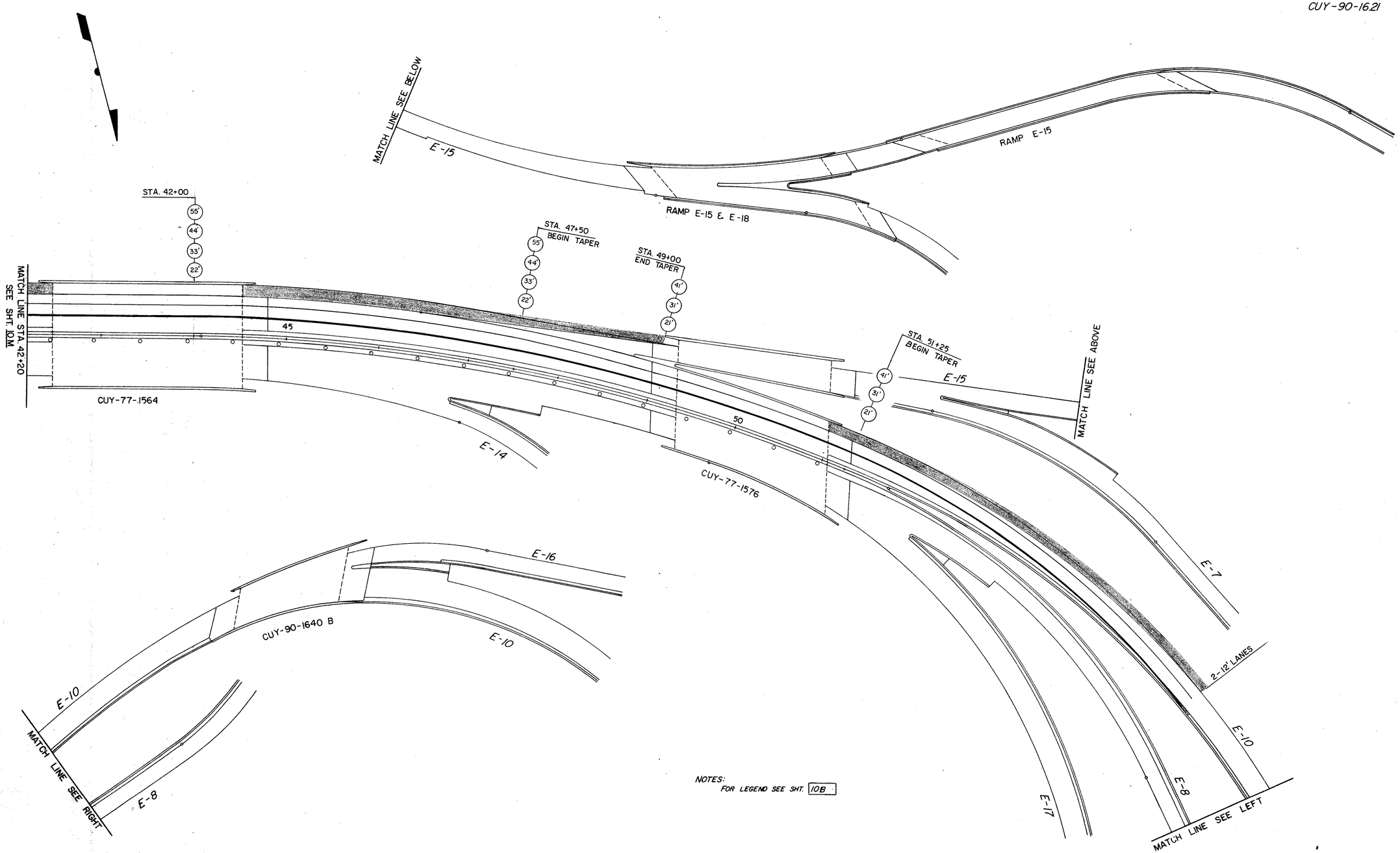
CUYAHOGA COUNTY
CUY-77-13.79
CUY-90-16.21



NOTES:
FOR LEGEND SEE SHT. 10B

PHASE IV A

TRAFFIC MAINTENANCE PLAN

TRAFFIC MAINTENANCE PLAN

FHWA REGION	STATE	PROJECT	
5	OHIO		

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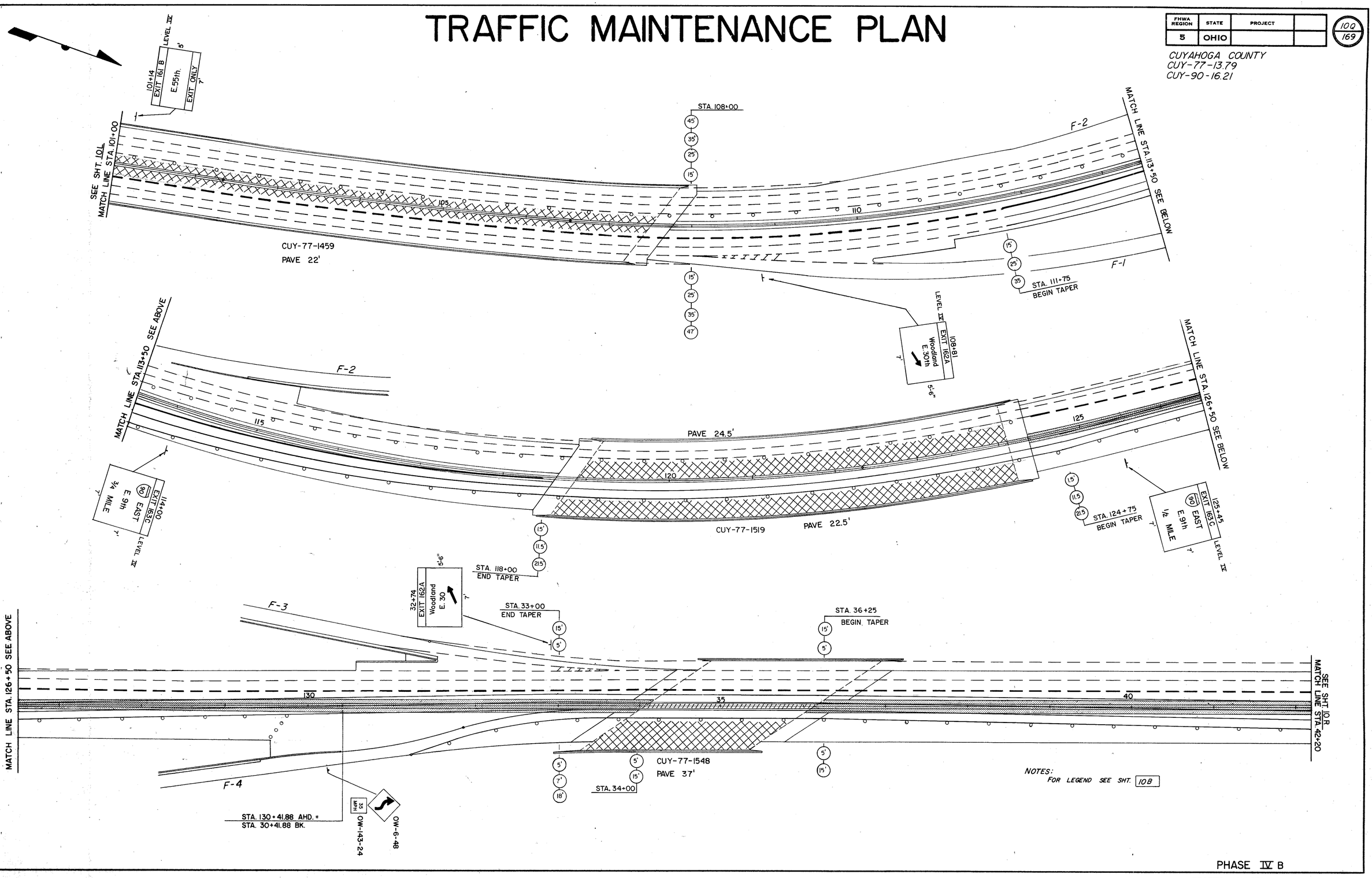
CUYAHOGA COUNTY
CUY-77-13.79
CUY-90-16.21



NOTES:
FOR LEGEND SEE SHT. 10B

PHASE IV B

TRAFFIC MAINTENANCE PLAN

TRAFFIC MAINTENANCE PLAN

FHWA REGION	STATE	PROJECT	
5	OHIO		

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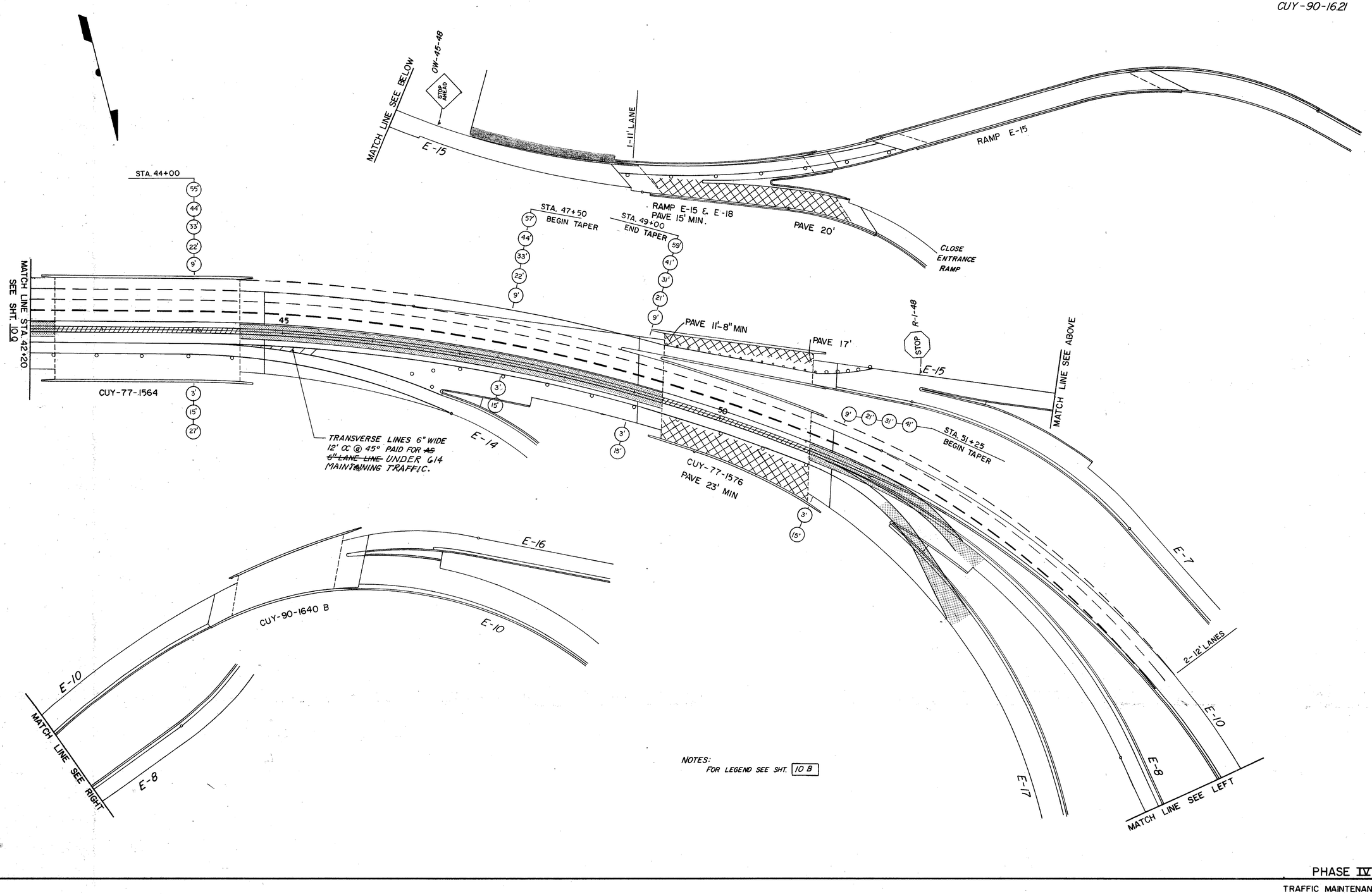
CUYAHOGA COUNTY
CUY-77-13.79
CUY-90-16.21



NOTES:
FOR LEGEND SEE SHT. 10 B

PHASE IV B
TRAFFIC MAINTENANCE PLAN

TRAFFIC MAINTENANCE PLAN

FHWA REGION	STATE	PROJECT	
5	OHIO		

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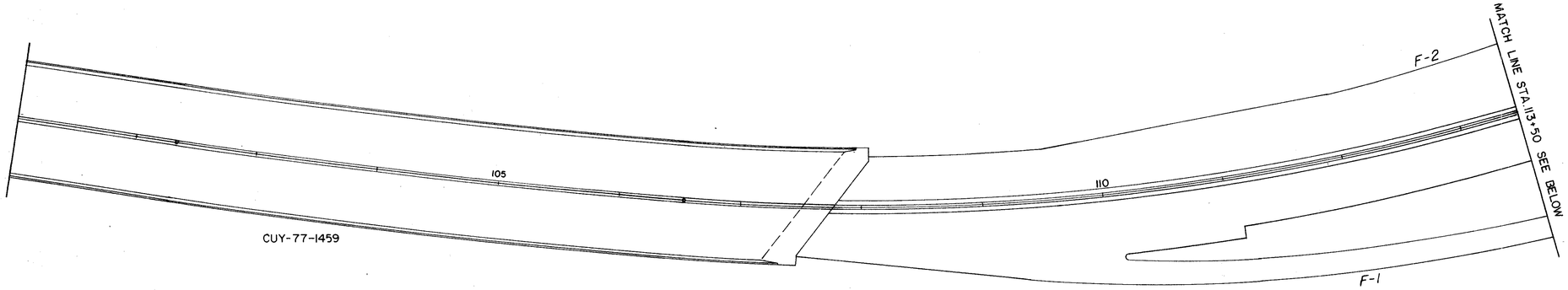
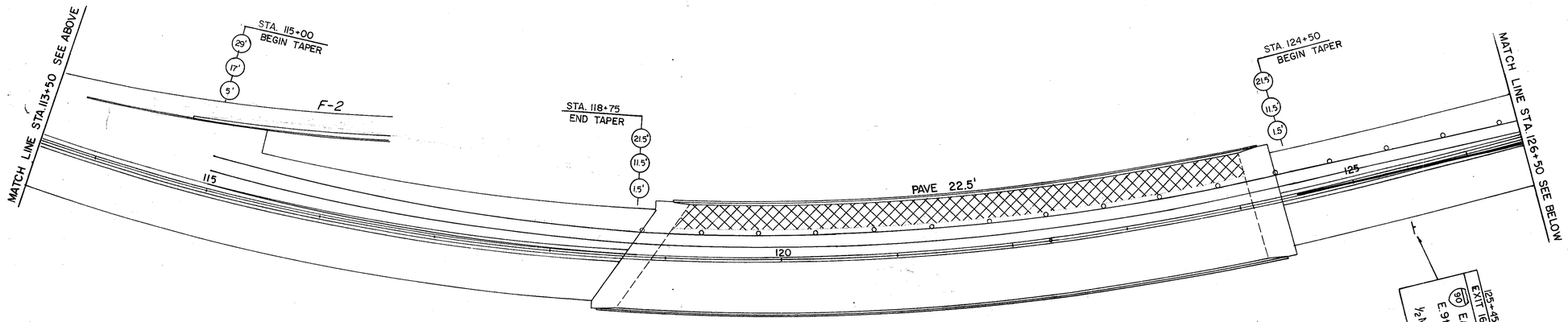
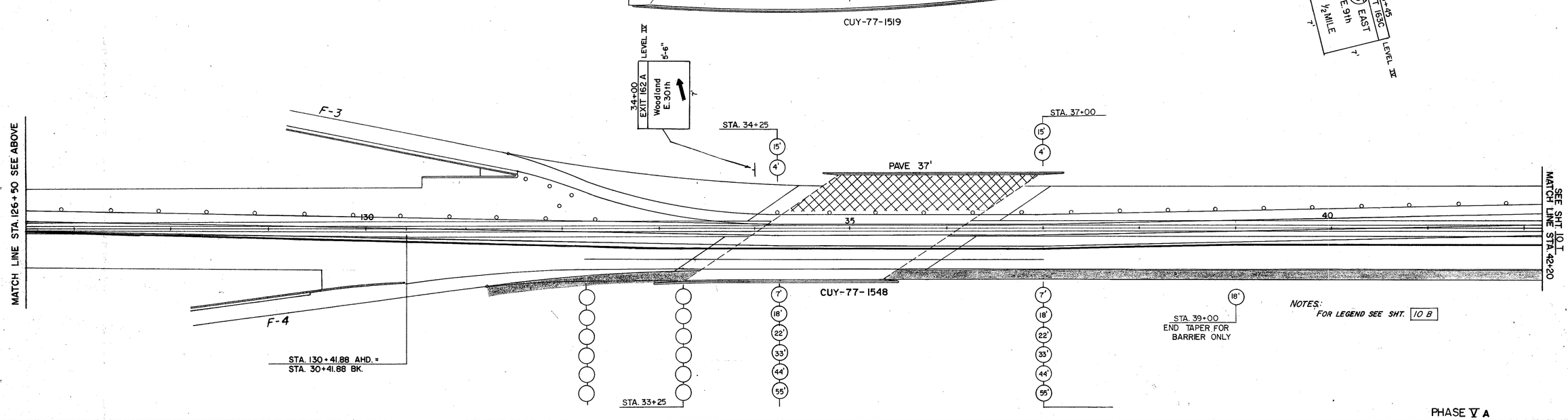
CUYAHOGA COUNTY
CUY-77-13.79
CUY-90-16.21







PHASE V A

TRAFFIC MAINTENANCE PLAN

TRAFFIC MAINTENANCE PLAN

FHWA REGION	STATE	PROJECT	
5	OHIO		

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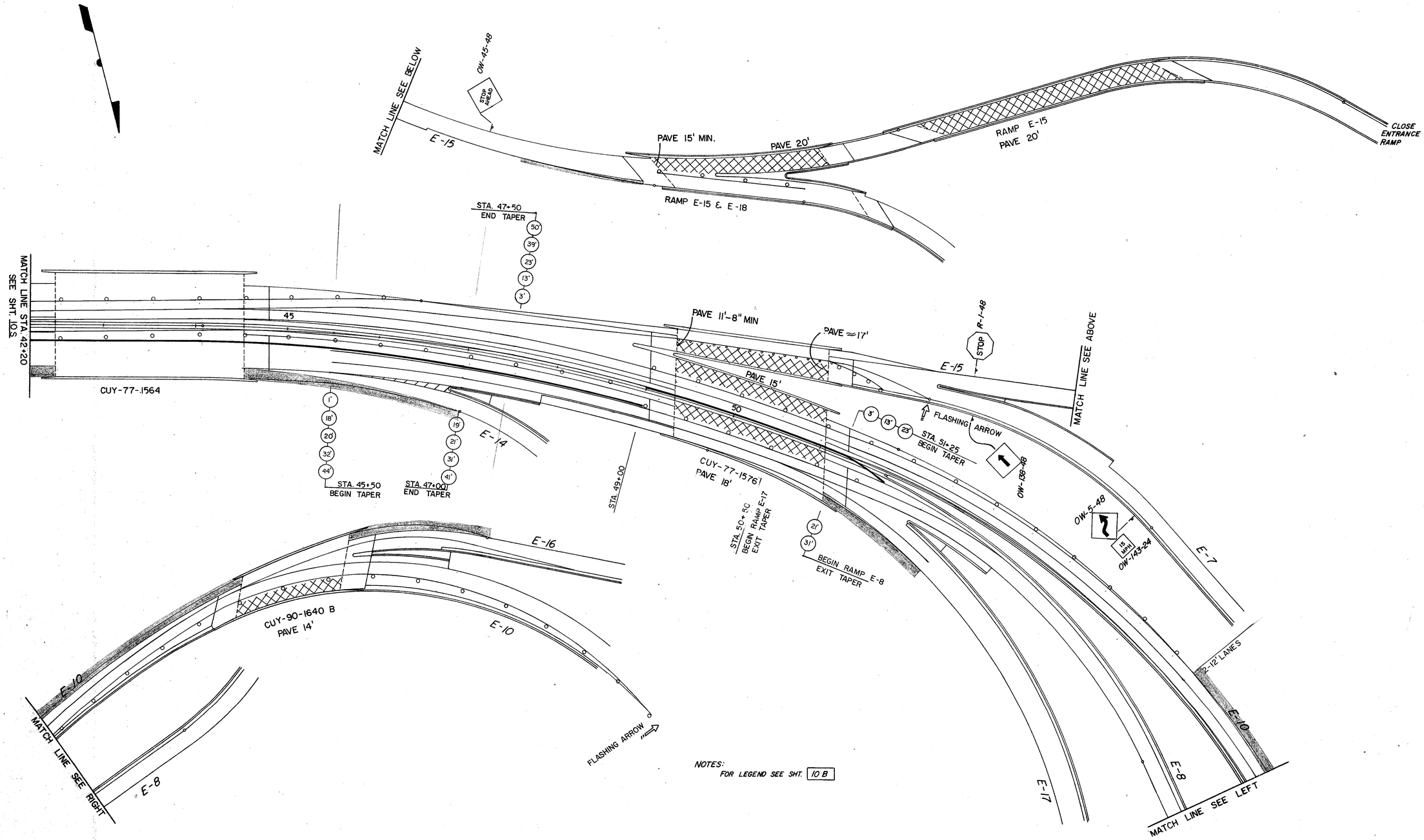
CUYAHOGA COUNTY
CUY-77-13.79
CUY-90-16.21



NOTES:
FOR LEGEND SEE SHT. 10 B

PHASE V A
TRAFFIC MAINTENANCE PLAN

TRAFFIC MAINTENANCE PLAN

FHWA REGION	STATE	PROJECT	
5	OHIO		

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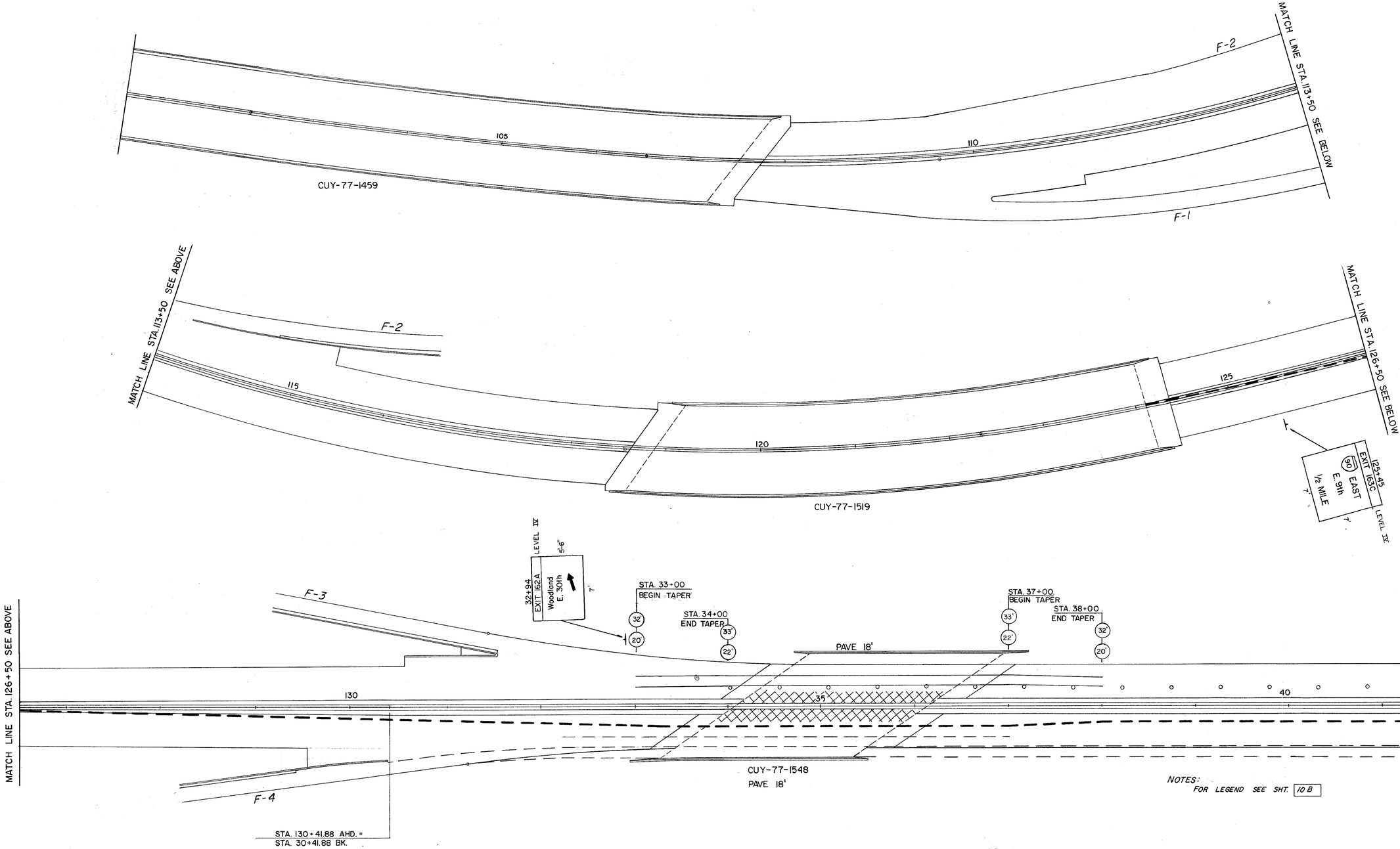
CUYAHOGA COUNTY
CUY-77-13.79
CUY-90-16.21



NOTES:
FOR LEGEND SEE SHT. 10 B

PHASE V B
TRAFFIC MAINTENANCE PLAN

TRAFFIC MAINTENANCE PLAN

FHWA REGION	STATE	PROJECT	
5	OHIO		

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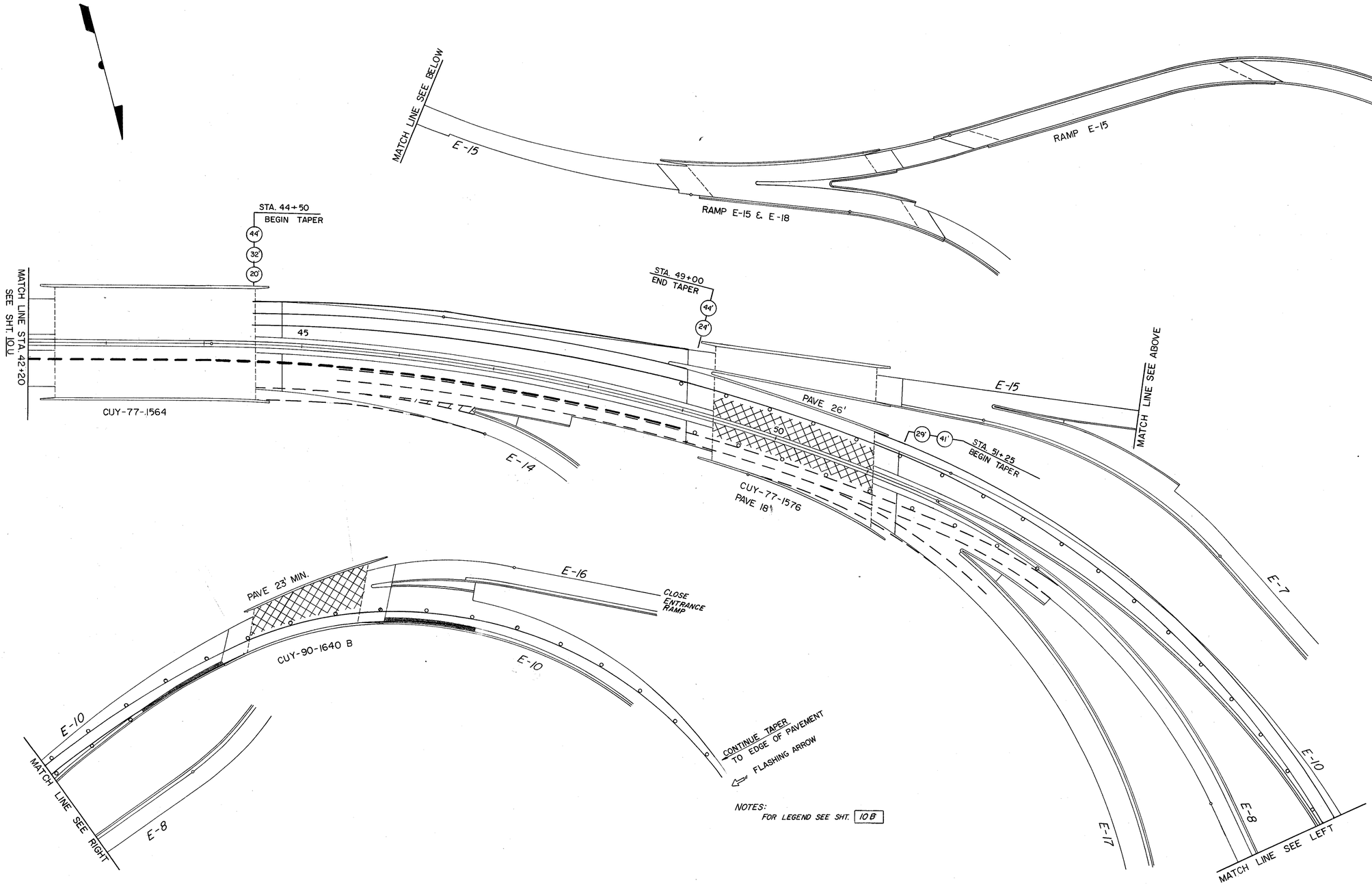
CUYAHOGA COUNTY
CUY-77-13.79
CUY-90-16.21



NOTES:
FOR LEGEND SEE SHT. 10B

PHASE V B
TRAFFIC MAINTENANCE PLAN

TRAFFIC MAINTENANCE PLAN

FHWA REGION	STATE	PROJECT	
5	OHIO		

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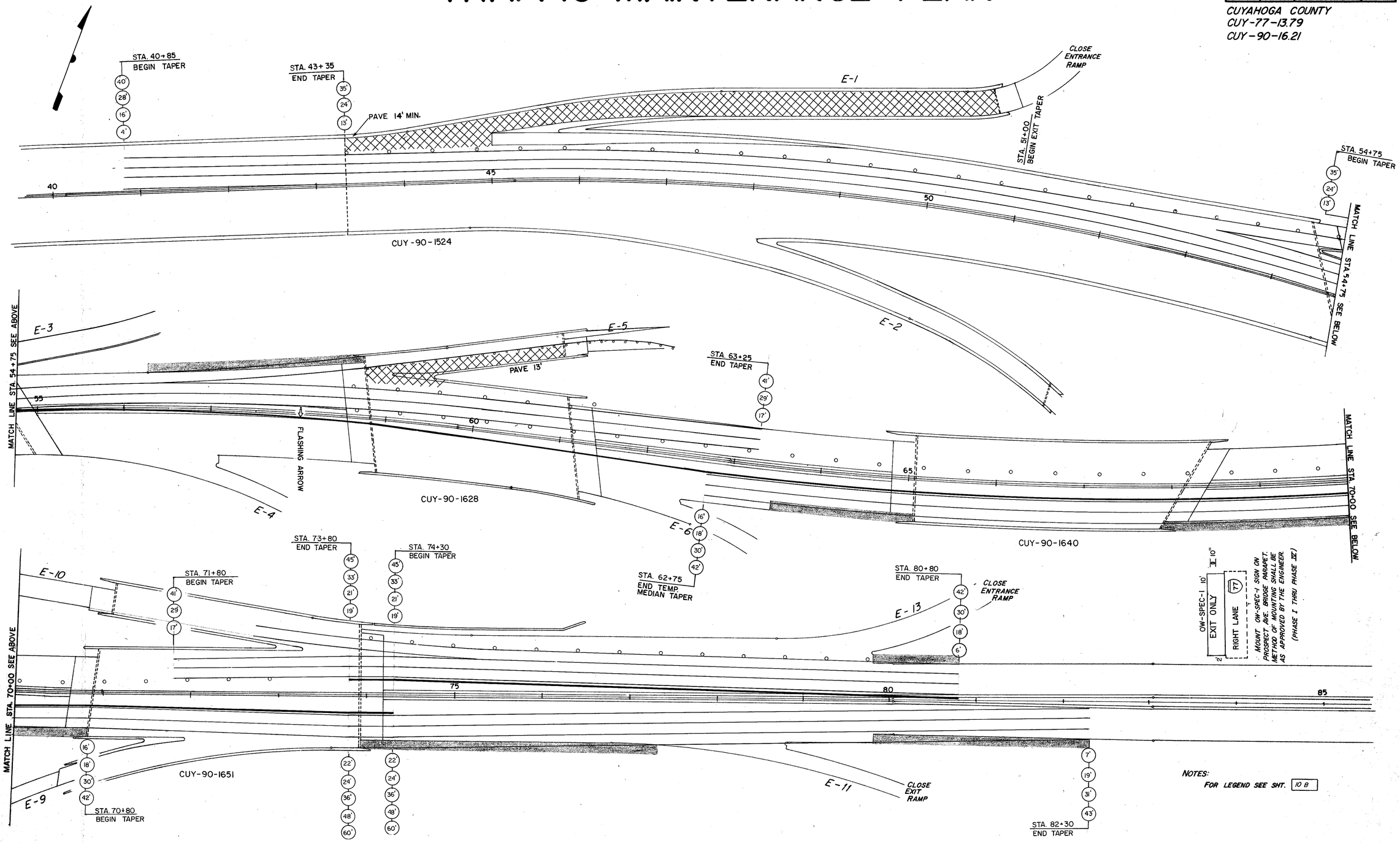
CUYAHOGA COUNTY
CUY-77-13.79
CUY-90-16.21



NOTES:
FOR LEGEND SEE SHT. 10 B

PHASE I
TRAFFIC MAINTENANCE PLAN

TRAFFIC MAINTENANCE PLAN

FHWA REGION	STATE	PROJECT	
5	OHIO		

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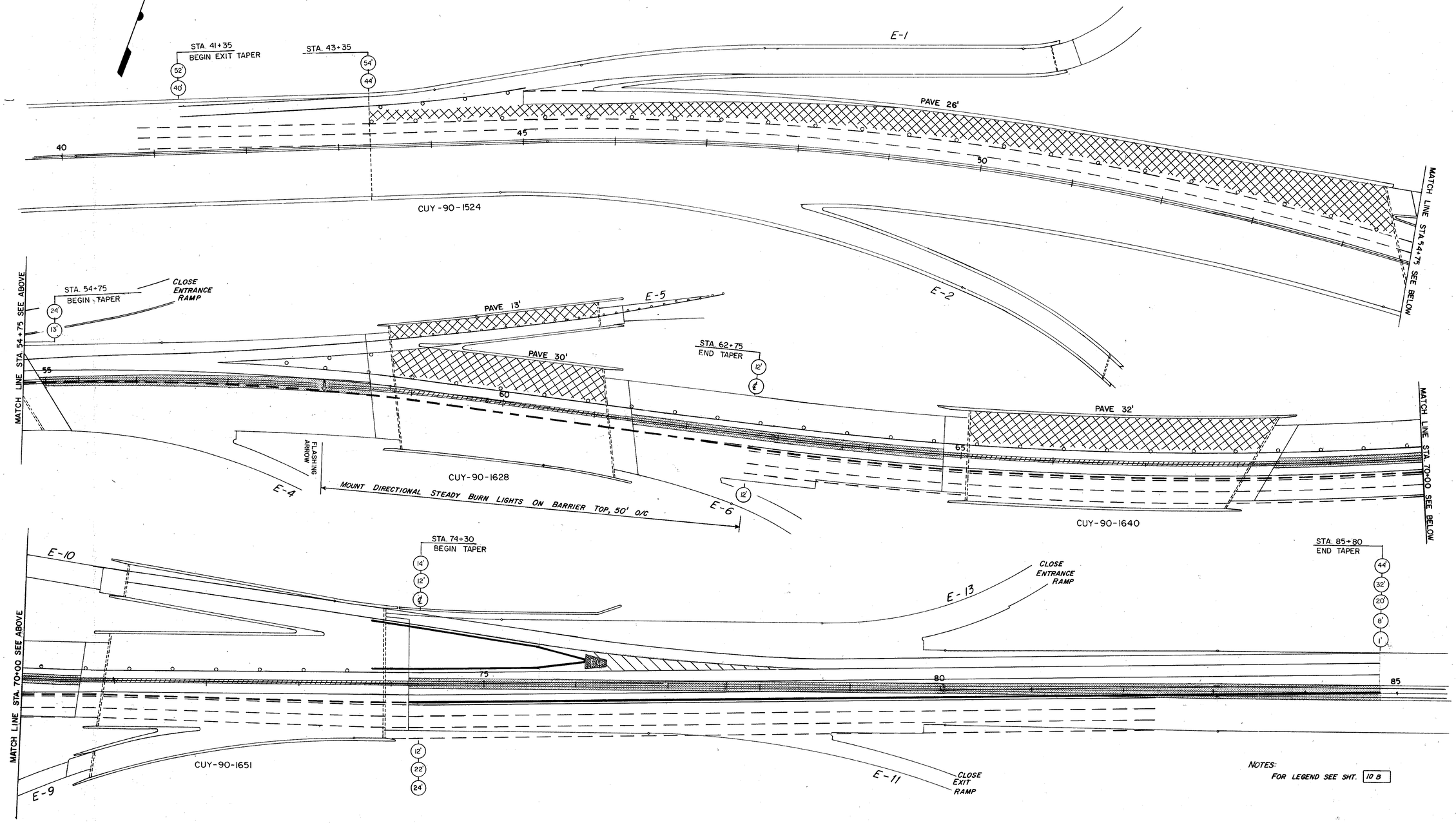
CUYAHOGA COUNTY
CUY-77-13.79
CUY-90-16.21



NOTES:
FOR LEGEND SEE SHT. 10 B

PHASE II
TRAFFIC MAINTENANCE PLAN

TRAFFIC MAINTENANCE PLAN

FHWA REGION	STATE	PROJECT	
5	OHIO		

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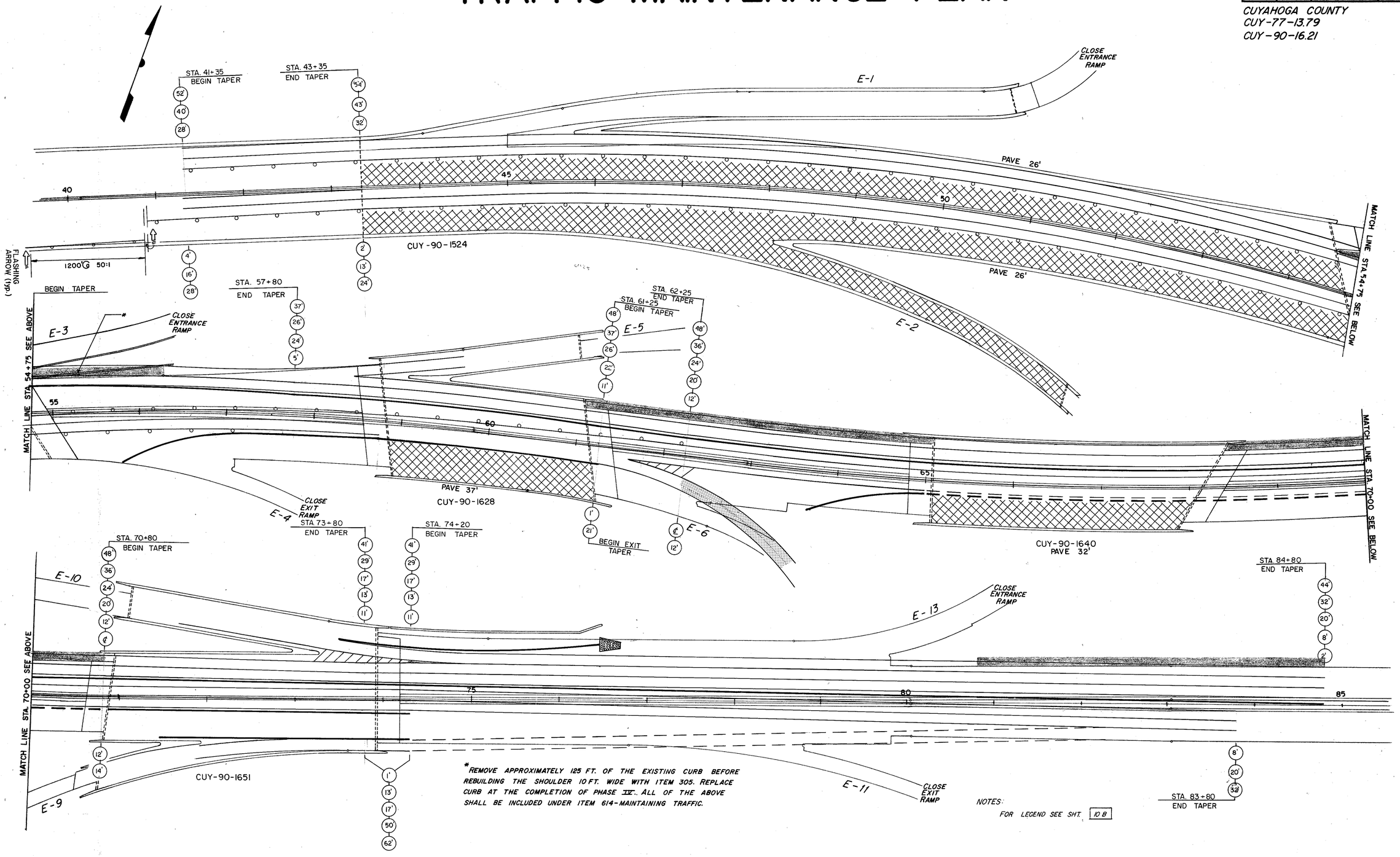
CUYAHOGA COUNTY
CUY-77-13.79
CUY-90-16.21



* REMOVE APPROXIMATELY 125 FT. OF THE EXISTING CURB BEFORE REBUILDING THE SHOULDER 10 FT. WIDE WITH ITEM 305. REPLACE CURB AT THE COMPLETION OF PHASE III. ALL OF THE ABOVE SHALL BE INCLUDED UNDER ITEM 614-MAINTAINING TRAFFIC.

NOTES:

FOR LEGEND SEE SHT. 10 B

PHASE III
TRAFFIC MAINTENANCE PLAN

TRAFFIC MAINTENANCE PLAN

FHWA REGION	STATE	PROJECT	
5	OHIO		

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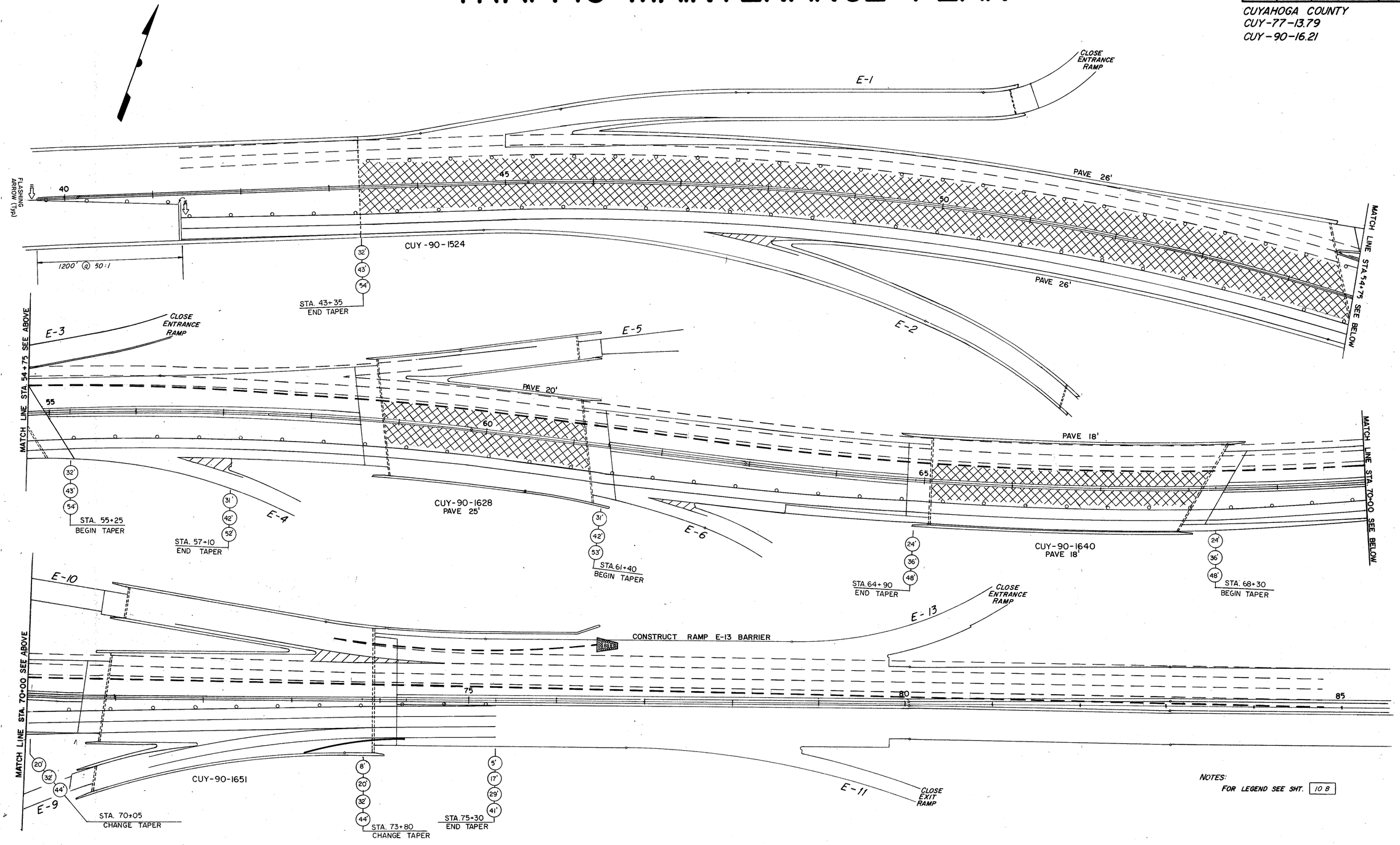
169

CUYAHOGA COUNTY
CUY-77-13.79
CUY-90-16.21



NOTES:
FOR LEGEND SEE SHT. 10 B

PHASE IV
TRAFFIC MAINTENANCE PLAN

TRAFFIC NOTES & DETAILS

FOR ASPHALTIC CONCRETE WORK

FHWA REGION	STATE	PROJECT	
5	OHIO		

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169

CUYAHOGA COUNTY
CUY-77-13.79
CUY-90-16.21

TRAFFIC CONTROL TIMING AND SEQUENCE OF OPERATIONS FOR ASPHALTIC CONCRETE WORK:

ALL ASPHALTIC CONCRETE OPERATIONS SHALL BE CONDUCTED IN A MANNER THAT WILL ASSURE MINIMUM DANGER AND INCONVENIENCE TO THE HIGHWAY USERS. ALL ASPHALTIC CONCRETE WORK ON ANY TRAVELED PORTION OF THE HIGHWAY FACILITY SHALL BE PERFORMED AT NIGHT BETWEEN THE HOURS OF 6:30 P.M. AND 6:30 A.M.

IN EITHER THE WESTBOUND OR EASTBOUND DIRECTION, ALL OF THE INTERMEDIATE LEVELING COURSE SHALL BE PLACED BEFORE WORK IS BEGUN ON THE SURFACE COURSE. THE PROCEDURE FOR INSTALLATION OF ANY LAYER ASPHALT SHALL BE SUCH THAT NO DISCONTINUITY IN THE ELEVATION OF THE TRAVELED SURFACE SHALL EXIST AT ANY TIME OTHER THAN DURING THE PERMITTED WORKING HOURS AND THEN ONLY WHEN SUCH PROPER TRAFFIC CONTROL DEVICES ARE IN PLACE AS WILL PREVENT SUCH A DISCONTINUITY BEING A DANGER TO HIGHWAY USERS.

TRAFFIC MUST BE MAINTAINED AT ALL TIMES IN BOTH DIRECTIONS; HOWEVER, EITHER THE RIGHT 2 OR LEFT 2 LANES IN EITHER DIRECTION MAY BE CLOSED ONLY DURING THE PERMITTED WORK HOURS TO ALLOW THE LAYING OF ASPHALT CONCRETE. TRAFFIC CONTROL FOR SUCH LANE CLOSINGS SHALL BE AS SHOWN ON THIS SHEET.

WHENEVER ANY PART OF THE TRAVELED SURFACE IS CLOSED, THE MOTORISTS SHALL BE WARNED AND DIVERTED BY THE CONTRACTOR THROUGH THE USE OF A FLASHING ARROW, IN ADDITION TO THOSE PROVISIONS SET FORTH IN THE OHIO MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS, CURRENT EDITION, LATEST REVISIONS. REFERENCE SHALL ALSO BE MADE TO SUPPLEMENTAL SPECIFICATION 844 AND THE DETAILS ON SHEET 10E.

FOR A TWO LANE DIRECTIONAL PAVEMENT, ONLY ONE LANE AT A TIME MAY BE CLOSED DURING THE PAVING OPERATIONS.

AN ACCEPTABLE METHOD OF ACCOMPLISHING THE PLACEMENT OF ANY LAYER OF ASPHALTIC CONCRETE WOULD BE FOR THE CONTRACTOR TO CLOSE THE LEFT TWO LANES IN EITHER DIRECTION AT THE BEGINNING OF THE PERMITTED DAILY WORK PERIOD AND TO PLACE ONE LAYER OF ASPHALTIC CONCRETE AN EQUAL DISTANCE IN EACH OF THE CLOSED LANES DURING THE FIRST HALF OF THE DAILY WORK PERIOD. THE RIGHT TWO LANES WOULD THEN BE CLOSED AND, DURING THE SECOND HALF OF THE SAME SINGLE DAILY WORK PERIOD, THE CORRESPONDING LAYER OF ASPHALT CONCRETE WOULD BE PLACED IN BOTH OF THE RIGHT TWO LANES FOR THE SAME DISTANCE AND ADJACENT TO THE AREA IN WHICH IT WAS PLACED IN THE LEFT TWO LANES. ANY OTHER METHOD THE CONTRACTOR DESIRES TO USE MUST BE APPROVED BY THE ENGINEER BEFORE ANY WORK BEGINS.

LANE MARKING:

LANE MARKINGS SHALL BE PLACED AND MAINTAINED ON ANY SURFACE OPEN TO TRAFFIC, INCLUDING THE 402 INTERMEDIATE COURSE WHEN IT IS BEING USED TO CARRY TRAFFIC.

ON ANY SURFACE WHICH IS TO BE LATER COVERED WITH ASPHALTIC MATERIAL AS PART OF THIS PROJECT, THE RATE OF APPLICATION OF PAINT MAY BE HALF OF THAT SET OUT IN 621.05 HOWEVER, THE RATE APPLICATION OF GLASS BEADS REMAIN AT 6 POUNDS PER GALLON OF PAINT.

PAYMENT FOR THIS ITEM SHALL BE INCLUDED IN LUMP SUM BID FOR ITEM 614 MAINTAINING TRAFFIC RATHER THAN AS DESCRIBED IN 621.16.

BEFORE ANY PORTION OF THE FINAL 404 WEARING COURSE BEING PLACED AS PART OF THIS CONTRACT IS OPENED TO TRAFFIC, THE CONTRACTOR SHALL PERFORM EITHER OF THE FOLLOWING:

1) APPLY LANE MARKINGS TO THE LEFT OF PROPOSED LOCATIONS OF THE FINAL PAVEMENT MARKING ITEMS SHOWN ON SHEETS 49 THROUGH 64. THE RATE OF APPLICATION OF PAINT AND BEADS SHALL BE THE SAME AS THAT SPECIFIED ABOVE FOR THE 402 INTERMEDIATE COURSE. PAVEMENT SHALL BE INCLUDED IN THE LUMP SUM BID FOR ITEM 614, MAINTAINING TRAFFIC.

OR 2) IMMEDIATELY COMPLETE THE FINAL PAVEMENT MARKING ITEMS SHOWN ON SHEETS 49 THROUGH 64

TRAFFIC CONTROL MATERIALS:

SIGN:

SIGN DIMENSIONS AND SPECIFICATIONS, INCLUDING LETTER SIZE, SHALL BE AS PROVIDED IN THE OHIO MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES, CURRENT EDITION, LATEST REVISIONS.

ALL SIGNS SHALL HAVE A REFLECTORIZED BACKGROUND OF REFLECTIVE MATERIAL AS DESCRIBED IN THE OHIO MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES, CURRENT EDITION, LATEST REVISIONS.

BARRELS:

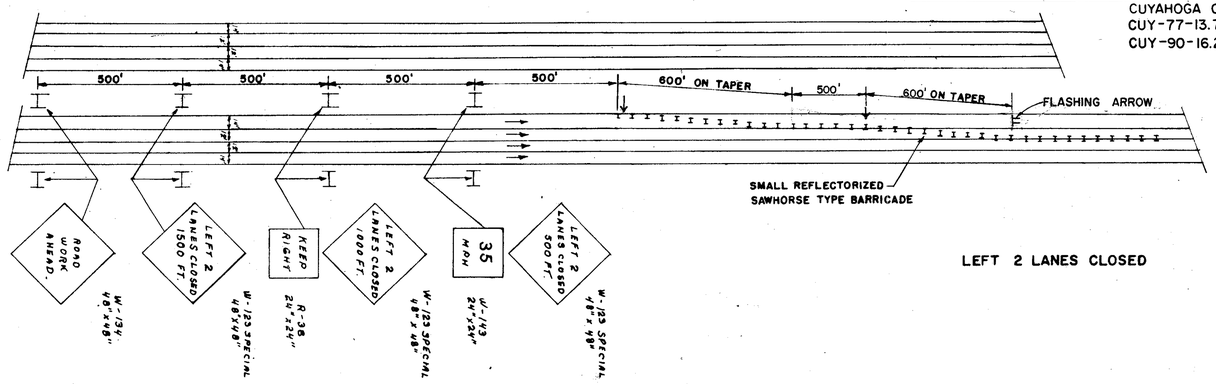
ALL BARRELS SHALL BE 55 GALLON STEEL DRUMS PAINTED BLACK AND MARKED ALTERNATELY WITH (3) ORANGE AND (2) WHITE CIRCUMFERENTIAL BANDS, AS PER 614.03. THEY SHALL BE SUBTANTIALLY FREE FROM RUST AND MAJOR DEFORMITIES, AND SHALL BE FILLED WITH SUFFICIEN GRANULAR MATERIAL TO INSURE STABILITY WARNING SIGNS AND DRUMS SHELL BE IN ACCORDANCE WITH PERTINENT SECTIONS OF THE OHIO MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES, CURRENT EDITION.

FLASHERS:

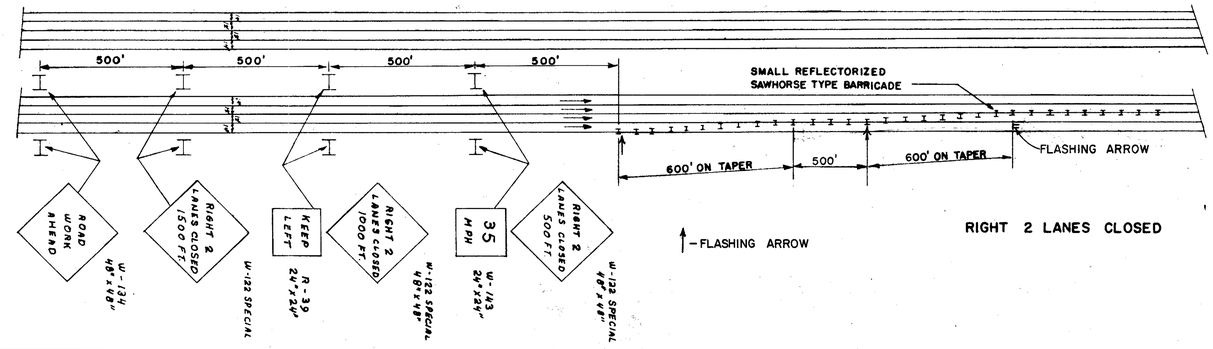
FLASHERS SHALL BE IN ACCORDANCE WITH PERTINENT SECTIONS OF THE OHIO MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES, CURRENT EDITION, LATEST REVISIONS. SUPPLEMENTAL SPECIFICATION 844 AND SHEET 10E

SMALL BARRICADES:

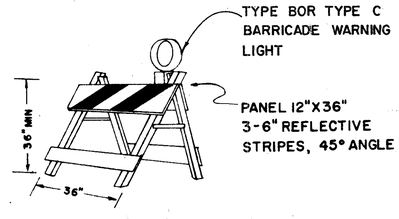
TYPE II BARRICADES SHALL BE USED TO CLOSE LANES WHERE REQUIRED, FOR RESURFACING. THESE SHALL BE OF EITHER WOOD OR METAL. THESE SHALL BE AT LEAST 36" HIGH AND 36" WIDE. NEAR THE TOP OF THE BARRICADE THERE SHALL BE A PANEL WITH ALTERNATE ORANGE AND REFLECTORIZED WHITE 6" WIDE STRIPES. THIS PANEL SHALL BE AT LEAST 36" WIDE AND 12" HIGH. A SINGLE FACED FLASHER SHALL BE LOCATED AT THE TOP OF THE BARRICADE AT THE END NEAREST TO TRAFFIC. THE FLASH SHALL FACE ONCOMING TRAFFIC. THE BARRICADES SHALL BE OF SUFFICIENT STABILITY SO THAT WIND OR TRAFFIC AIR TURBULANCE WILL NOT UPSET THEM. BARRICADES SHALL BE IN ACCORDANCE WITH PERTINENT SECTIONS OF THE OHIO MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES, CURRENT EDITION, LATEST REVISIONS.



LEFT 2 LANES CLOSED

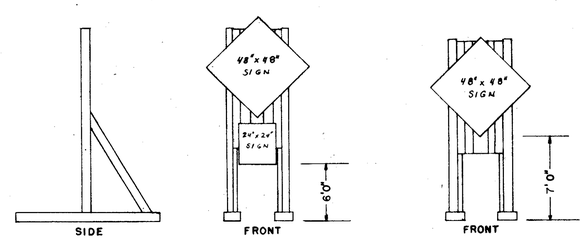


RIGHT 2 LANES CLOSED



REFLECTORIZED SAWHORSE TYPE BARRICADE DETAIL

IF WEIGHTS ARE ADDED TO IMPROVE STABILITY, THE WEIGHTS SHALL BE ADDED TO THE LOWER HORIZONTAL BRACING.



SIGN STANDARDS SHALL BE INSTALLED DURING WORKING HOURS 2FT. OFF EDGE OF BERM OR BEHIND GUARDRAIL WHEN POSSIBLE, AND REMOVED FROM VIEW IN THEIR ENTIRETY ALL OTHER TIMES.

GENERAL TRAFFIC CONTROL NOTES AND DETAILS

FOR ADDITIONAL NOTES, SEE SHEETS 9A & 9B.

10943

MADE GFM DATE 12-12-76
TRACED JAF DATE 12-12-76
CHECKED DSP DATE 12-12-76
SCALE 1"=1'

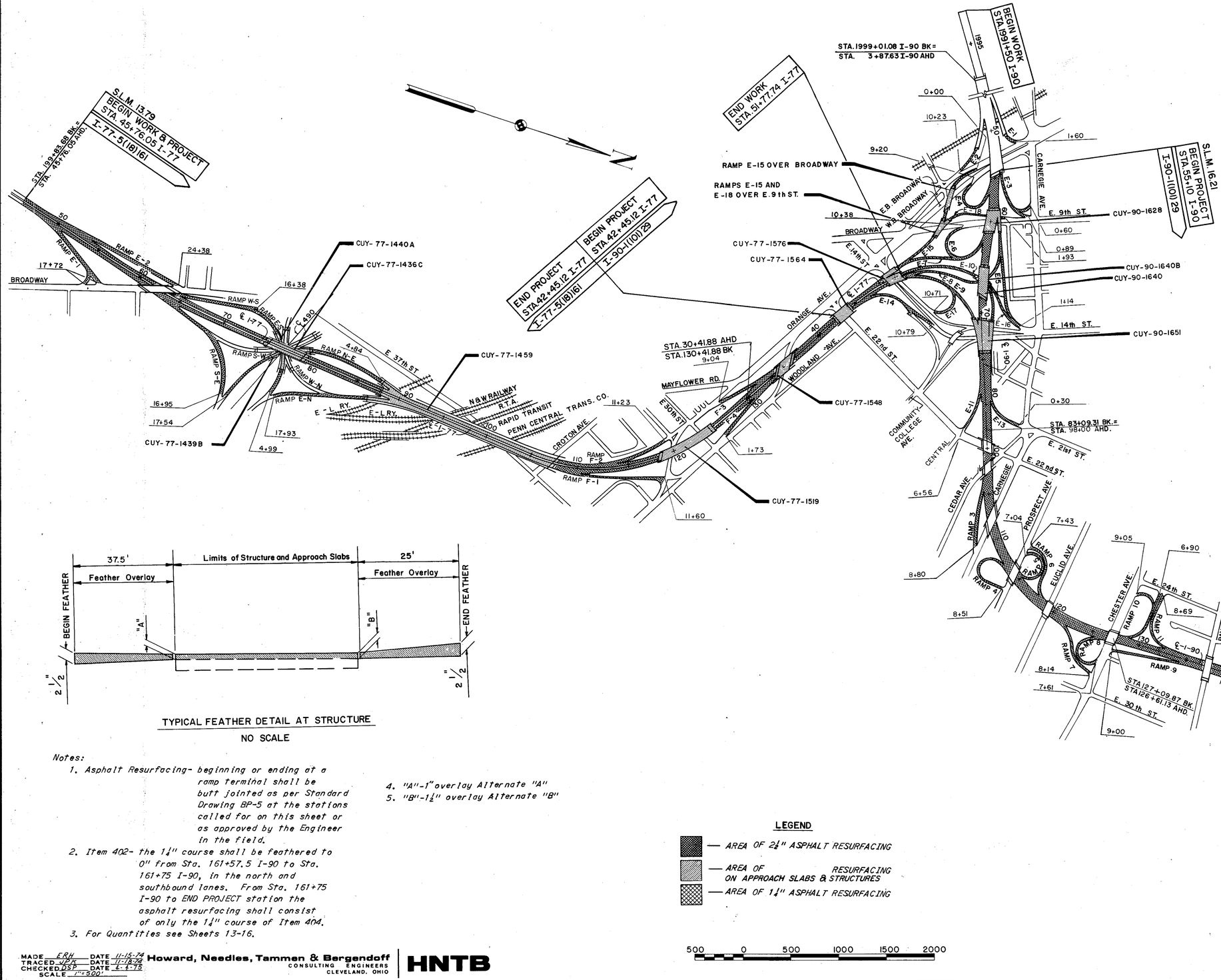
Howard, Needles, Tammen & Bergendoff
CONSULTING ENGINEERS
CLEVELAND, OHIO
HNTB

TRAFFIC NOTES & DETAILS

FHWA REGION	STATE	PROJECT	
5	OHIO		

12
169

CUYAHOGA COUNTY
CUY-77-14.12
CUY-90-16.21



TYPICAL FEATHER DETAIL AT STRUCTURE

NO SCALE

Notes:

1. *Asphalt Resurfacing- beginning or ending at a ramp terminal shall be butt jointed as per Standard Drawing BP-5 at the stations called for on this sheet or as approved by the Engineer in the field.*
2. *Item 402- the 1¼" course shall be feathered to 0" from Sta. 161+57.5 I-90 to Sta. 161+75 I-90, in the north and southbound lanes. From Sta. 161+75 I-90 to END PROJECT station the asphalt resurfacing shall consist of only the 1¼" course of Item 404.*
3. *For Quantities see Sheets 13-16.*
4. *"A"-1" overlay Alternate "A"*
5. *"B"-1½" overlay Alternate "B"*

LEGEND

- AREA OF 2½" ASPHALT RESURFACING
- AREA OF RESURFACING ON APPROACH SLABS & STRUCTURES
- AREA OF 1¼" ASPHALT RESURFACING

500 0 500 1000 1500 2000

MADE ERH DATE 11-15-74
TRACED VJK DATE 11-18-74
CHECKED DSP DATE 4-4-75
SCALE 1"=500'

Howard, Needles, Tammen & Bergendoff
CONSULTING ENGINEERS
CLEVELAND, OHIO

HNTB

ASPHALT RESURFACING SCHEMATIC PLAN

11-0

COMPUTATIONS AND SUB-SUMMARIES

QUANTITY CALCULATIONS
MADE BY D.S.P. DATE 4-4-75
CHECKED BY G.F.M. DATE 5-14-75

FED. RD. DIVISION	STATE	PROJECT	
5	OHIO		

13
169

CUYAHOGA COUNTY
CUY. 77-14.12
CUY. 90-16.21

ITEM 402 & 404 COST PARTICIPATION I & II

I-77 Stations From	I-77 Stations To	Side	End Widths (Ft.)	Surface Area (Sq. Yds.)	404 Volume (Cu. Yds.)	402 Volume (Cu. Yds.)
45+76.05	47+81	Rt.	46'	1047.52	36.37	
45+76.05	62+23.45	Lt.	36'	6589.6	228.81	
47+81	49+73	Rt.	57'	1216.0	42.22	
49+73	50+71	Rt.	43'	468.22	16.26	
50+71	52+00	Rt.	46'	659.33	22.89	
52+00	59+19.51	Rt.	46'	3677.50	127.69	
59+19.51	64+50	Rt.	24'	1414.64	49.12	
60+75	63+20	Rt.	8'	217.78	7.56	
63+20	64+50	Rt.	7.45'	107.61	3.74	
62+23.45	64+50	Lt.	24'	604.13	20.98	
63+08	64+50	Lt.	6'	94.67	3.29	
50+85	54+76	Lt.	6.5'	282.39	9.81	
54+75	62+23.34	Lt.	10'	831.49	28.87	
56+85	62+23.34	Lt.	7'	418.71	14.54	
64+50	70+50	Rt. Lt.	24'	3200.0	111.11	
64+50	74+88.27	Rt.	10'	1153.63	40.06	
64+50	65+40	Lt.	15'	150.0	5.21	
65+40	74+88.27	Lt.	10'	1053.63	36.58	
70+50	74+88.27	Rt. Lt.	24'	2337.44	81.16	
79+64.20	87+04.50	Rt. Lt.	34'	5593.38	194.21	
107+77.62	118+64.71	Rt. Lt.	36'	8696.72	301.97	
107+58	108+75	Rt.	8'	104.0	3.61	
108+75	110+13.45	Rt.	25.5'	392.28	13.62	
110+13.45	111+13.45	Rt.	10'	111.11	3.86	
107+77.62	109+16	Rt.	10'	153.76	5.34	
107+77.62	112+68	Lt.	10'	544.87	18.92	
109+50	112+73	Lt.	8'	287.11	9.97	
112+73	115+45	Lt.	11'	332.44	11.54	
115+45	118+64.71	Lt.	10'	355.23	12.33	
111+13.45	118+64.71	Rt.	10'	834.73	28.98	
124+36.43	130+41.88	Rt. Lt.	46'	6189.04	214.90	
30+41.88	33+77.53	Rt. Lt.	36'	2685.2	93.24	
30+53.61	31+53.61	Lt.	10'	111.11	3.86	
31+41.88	34+69	Lt.	15'	545.2	18.93	
30+41.88	33+39	Rt.	14'	462.19	16.05	
30+41.88	30+61.88	Lt.	10'	22.22	0.77	
36+41.47	42+20	Rt. Lt.	46'	5913.86	205.34	
CUY-77-1436C						
74+98.27	75+13.27	Rt. Lt.	33.65	186.94	6.49	4.54
79+39.20	79+64.20	Rt. Lt.	33.65	186.94	6.49	4.54
CUY-290-0189ES						
7+72.70	8+02.70		38.42	128.07	4.45	3.11
11+08.37	11+33.37		31.0	86.11	2.99	2.09
CUY-290-0191NE						
7+75.96	8+00.96		30	83.33	2.89	2.03
13+33.46	13+58.46		30	83.33	2.89	2.03
CUY-77-1459						
87+04.5	87+29.5	Rt. Lt.	37.65	209.17	7.26	5.08
107+52.62	107+77.62	Rt. Lt.	45.65	253.61	8.81	6.16
26+74.5	26+99.5		35.29	98.03	3.40	2.38
4+58.5	4+83.5		35.29	98.03	3.40	2.38
CUY-77-1519						
118+64.71	118+89.71	Rt. Lt.	45.65	253.61	8.81	6.16
124+11.43	124+36.43	Rt. Lt.	45.65	253.61	8.81	6.16
CUY-77-1548						
33+77.53	34+02.53	Rt. Lt.	51	283.33	9.84	6.89
36+16.47	36+41.47	Rt. Lt.	51	283.33	9.84	6.89
CUY-77-1564						
42+20.12	42+45.12	Rt. Lt.	46	255.56	8.87	6.21
Cost Participation I Subtotal					2139	
Cost Participation II Subtotal						2110

SAME AS ITEM 404

ITEM 402 & 404 COST PARTICIPATION I & II

Stations From	Stations To	Side	End Widths (Ft.)	Surface Area (Sq. Yds.)	404 Volume (Cu. Yds.)	402 Volume (Cu. Yds.)
RAMP E-1						
49+73 I-77	10+87 Rp E-1	Rt.	10	133.33	4.63	
10+87	11+81	Rt.	5	52.22	1.81	
47+81 I-77	10+65 Rp E-1	Rt.	13.5	434.37	15.08	
10+65	11+65	Rt.	22	233.52	8.11	
11+65	17+72	Rt.	24	1618.51	56.20	
14+42	15+92	Rt.	6	100.0	3.47	
15+92	17+72	Rt.	12	240.0	8.33	
Ramp Turn-Out			(100' x 16')	177.78	6.17	
					103.80	
RAMP S-E						
0+00	1+55		13	223.89	7.77	
1+55	5+33.20		12	504.27	17.51	
4+04	5+33.20		12.5	179.44	6.23	
0+00	5+33.20		10	592.44	20.57	
5+33.20	5+82.84		29.95	165.19	5.74	
5+33.20	16+95.42	Rt.	10	1291.36	44.84	
5+82.84	6+82.84	Lt.	29	322.22	11.19	
6+82.84	8+23		13	202.45	7.03	
6+82.84	9+00	Lt.	4	96.52	3.35	
6+82.84	10+75.47		12	523.51	18.18	
8+23	10+75.47		13	364.68	12.66	
10+75.47	11+75.47		25	277.78	9.65	
11+75.47	15+95.42		24	1119.87	38.88	
15+95.42	16+95.42		25	277.78	9.65	
10+75.47	16+95.42	Lt.	4	275.53	9.57	
					222.82	
RAMP E-2						
5+55.67	10+65		7.92	448.21	15.56	
10+65	13+61.5		12	395.33	13.73	
13+61.5	14+54.09		13	133.74	4.64	
14+54.09	15+53		14	153.86	5.34	
15+53	16+53		15	166.67	5.79	
18+00	20+00		16	355.56	12.35	
20+00	22+63.47		20	585.49	20.33	
22+63.47	24+38		16	278.28	9.66	
Ramp E-2 Turn-Out			(75'x17')	141.67	4.92	
5+55.67	6+90.03	Lt.	5.6	83.60	2.90	
6+90.03	14+54.09	Lt.	8	679.16	23.58	
14+54.09	15+04.09	Lt.	7.5	41.67	1.45	
15+04.09	19+37	Lt.	7	336.71	11.69	
19+37	20+75	Lt.	5	76.67	2.66	
20+75	23+75	Lt.	3	100.0	3.47	
23+75	24+00	Lt.	1.5	4.17	0.14	
15+53	22+63.47	Rt.	3	236.82	8.22	
22+63.47	23+38	Rt.	1.5	12.5	0.43	
					146.86	
RAMP W-S						
26+78	25+92.76		13	123.12	4.28	
25+92.76	23+71.02		12	295.65	10.27	
25+10	23+71.02		13	200.75	6.97	
25+92.76	16+38.21	Lt.	10	1060.61	36.83	
23+71.02	22+71.02		27	300.0	10.42	
22+71.02	21+71.02		25	277.78	9.65	
22+71.02	21+71.02	Rt.	3	33.33	1.16	
21+71.02	20+77		13	135.81	4.72	
20+77	17+30		8	308.44	10.71	
17+30	16+38.21		13	132.59	4.61	
25+92.76	25+10		13	119.54	4.15	
					103.77	
RAMP E-S						
21+44.12	20+48		12	128.16	4.45	
21+44.12	11+33.37	Lt.	4	449.22	15.60	
20+48	11+33.37		24	2439.01	84.69	
7+72.70	5+98.80		24	463.73	16.10	
5+98.80	0+00		30.57	2034.22	70.63	
17+00	16+12.56		6.5	63.15	2.19	
16+12.56	11+33.37	Rt.	10	532.43	18.49	
7+72.70	6+00	Rt.	10	191.89	6.67	
7+72.70	0+00	Lt.	4	343.42	11.92	
					165.92	

SAME AS ITEM 404

ITEM 402 & 404 COST PARTICIPATION I & II

Stations From	Stations To	Side	End Widths (Ft.)	Surface Area (Sq. Yds.)	404 Volume (Cu. Yds.)	402 Volume (Cu. Yds.)
RAMP E-N						
17+92.61	18+92.61		17	188.89	6.56	
18+92.61	21+22.44		16	408.59	14.19	
21+22.44	23+22.44		15	333.33	11.57	
23+22.44	24+45		19.5	265.55	9.22	
12+94	26+24.50	Rt.	10	1478.29	51.33	
17+92.61	21+22.44	Lt.	4	146.59	5.09	
21+22.44	22+22.44	Lt.	3	33.33	1.16	
25+75.94	26+74.50	Lt.	28	306.6	10.65	
					90.53	
RAMP W-N						
14+45.40	15+65		14	186.04	6.46	
15+65	16+94.75		25	360.42	12.51	
14+45.40	16+94.75		4	110.82	3.85	
					22.82	
RAMP N-E						
17+54.39	13+58.46	Rt.	26	1143.80	39.72	
17+54.39	13+58.46	Lt.	4	175.97	6.11	
7+75.96	4+28.01	Rt.	26	1005.19	34.90	
7+75.96	0+38.48	Lt.	4	327.77	11.38	
4+28.01	3+28.01		27	300.0	10.42	
3+28.01	2+22.34		11	129.15	4.48	
3+28.01	2+28		14.5	161.11	5.59	
2+28	1+40		6	58.67	2.04	
2+22.34	1+40		12	109.79	3.81	
1+40	0+38.48		25	282.0	9.79	
					128.24	
RAMP N-W						
5+32.48	4+83.50		38	206.80	7.18	
6+33	7+28		12	126.67	4.40	
7+28	8+19.86		18	183.72	6.38	
5+32.48	8+19.86	Rt.	10	319.31	11.09	
					29.05	
RAMP F-1						
2+80.63	3+80.63		17	188.89	6.56	
1+83.12	3+80.63	Rt.	6.5	142.65	4.95	
2+80.63	11+55	Lt.	3	291.46	10.12	
3+80.63	7+75		16	701.10	24.34	
3+80.63	10+42.33	Rt.	3	220.57	7.66	
10+42.33	11+60		24	313.79	10.90	
Ramp Turn-Out			(75' x 26')	216.67	7.52	
11+19	11+43	Rt.	5	13.33	0.46	
					72.51	
RAMP F-2						
4+28	6+21.87		14	301.58	10.47	
4+28	5+21.87	Lt.	10	104.30	3.62	
5+21.87	7+21.87	Lt.	6.5	144.44	5.02	
6+21.87	7+21.87	Rt.	17.5	194.44	6.75	
7+21.87	10+22.49	Rt. Lt.	22	734.85	25.52	
10+22.49	11+23	Rt. Lt.	8.5	94.93	3.30	
					54.68	
RAMP F-3						
3+50	7+04.20		16	629.69	21.86	
7+04.20	9+04.20		19	422.22	14.66	
3+53.61	9+04.20	Lt.	3	183.53	6.37	
0+30	6+98	Rt.	8	593.78	20.62	
					63.51	
RAMP F-4						
7+16.4	1+73.65		16	964.89	33.50	
2+75	1+73.65		8	90.09	3.13	
10+00	2+75	Rt.	10	805.56	27.97	
6+20	1+73		3	149.0	5.17	
					69.77	
I-77-5 (18)161						
Cost Participation I Sheet Total					3497	
Cost Participation II Sheet Total						3469

SAME AS ITEM 404

Quantities Continued on Sheet 14

MADE D.S.P. DATE 4-4-75
TRACED J.P.K. DATE 5-13-75
CHECKED G.F.M. DATE 5-14-75
SCALE —

Howard, Needles, Tammen & Bergendoff
CONSULTING ENGINEERS
CLEVELAND, OHIO

HNTB

COMPUTATIONS AND SUB-SUMMARIES

QUANTITY CALCULATIONS
MADE BY D.S.P. DATE 4-4-75
CHECKED BY G.F.M. DATE 5-14-75

FED. RD. DIVISION	STATE	PROJECT	
5	OHIO		

14
169

CUYAHOGA COUNTY
CUY. 77-14.12
CUY. 90-16.21

ITEM 402 & 404 COST PARTICIPATION I & II

Stations From	Stations To	Side	End Widths (Ft.)	Surface Area (Sq. Yds.)	404 Volume I (Cu. Yds.)	402 Volume II (Cu. Yds.)
44+79 I-77	48+00 I-77	Lt.	49'	1747.67	60.68	
44+79	46+85	Rt.	8'	183.11	6.36	
44+79	48+00	Rt.	24'	856.0	29.72	
44+79	48+00	Rt.	11'	392.33	13.62	
47+90	48+00	Rt.	10'	11.11	0.39	
48+00	48+73	Lt.	46.42'	376.52	13.07	
48+00	49+04	Lt.	9'	104.0	3.61	
48+73	49+04	Lt.	14.63'	50.39	1.75	
48+73	49+04	Lt.	32.83'	113.08	3.93	
48+00 I-77	49+04 I-77	Rt.	34'	392.89	13.64	
54+65 I-90	57+06 I-90	Rt.	63.84'	1703.96	59.17	
57+06	58+54	Rt.	60.34'	992.26	34.45	
54+80	56+30	Lt.	38.42'	640.33	22.23	
56+30	58+54	Lt.	42.39'	1055.04	36.63	
54+75	56+50	Lt.	6'	116.67	4.05	
56+50	58+54	Lt.	10'	226.67	7.87	
61+43	64+87.7	Rt. Lt.	36'	2757.6	95.75	
61+50	62+50	Rt.	26.5'	294.44	10.22	
62+50	63+50	Rt.	10'	111.11	3.86	
63+50	64+87.7	Rt.	10'	153.0	5.31	
61+35	64+87.7	Lt.	10'	391.89	13.61	
68+46	70+63	Rt. Lt.	46'	2218.22	77.02	
74+21	75+47	Lt.	49.68'	695.52	24.15	
75+47	79+86	Lt.	48'	2341.33	81.29	
79+86	83+09	Lt.	46'	1650.89	57.32	
74+21	76+85.5	Rt.	58'	1704.56	59.19	
76+85.5	78+87	Rt.	58.5'	1309.75	45.48	
78+87	79+87	Rt.	46'	511.11	17.75	
79+87	83+09	Rt.	46'	1645.78	57.15	
						SAME AS ITEM 404
98+00	101+25	Rt. Lt.	46'	3322.22	115.35	
101+25	104+88	Rt. Lt.	36'	2904.0	100.83	
104+45	105+75	Rt.	8'	115.56	4.01	
101+25	102+00	Rt.	10'	83.33	2.89	
101+25	104+88	Lt.	10'	403.33	14.00	
104+88	118+00	Rt. Lt.	36'	10,496.0	364.44	
105+75	112+00	Rt.	10'	694.44	24.11	
113+90	118+00	Rt.	10'	455.56	15.82	
104+88	110+94.5	Lt.	10'	673.89	23.40	
115+50	117+10	Lt.	10'	177.78	6.17	
113+90	120+10	Rt.	12'	826.67	28.70	
113+00	114+10	Lt.	12'	146.67	5.09	
110+94.5	113+00	Lt.	6'	137.0	4.76	
110+94.5	114+10	Lt.	10'	350.56	12.17	
118+00	124+88	Rt.	36'	2752.0	95.56	
119+00	124+88	Lt.	58'	3789.33	131.57	
118+00	120+10	Rt.	10'	233.33	8.10	
118+00	119+00	Lt.	36'	400.00	13.89	
121+89	122+30	Rt.	8'	36.44	1.27	
122+30	125+00	Rt.	10'	300.0	10.42	
125+00	126+03	Rt.	5'	57.22	1.99	
126+61	130+00	Rt.	36'	1356.0	47.08	
124+88	127+10	Rt.	36'	888.0	30.83	
126+75	127+40	Rt.	12'	152.0	5.28	
127+40	129+00	Rt.	6'	106.67	3.70	
126+75	130+00	Rt.	10'	361.11	12.54	
124+88	127+10	Lt.	48'	1184.0	41.11	
126+61	127+30	Lt.	48'	368.0	12.78	
124+88	127+30	Lt.	10'	323.33	11.23	
127+30	130+00	Lt.	36'	1080.0	37.50	
128+80	131+80	Lt.	10'	333.33	11.57	
131+80	132.34	Lt.	8'	48.0	1.67	
134+50 I-90	139+00 I-90	Lt.	22'	1100.0	38.19	

ITEM 402 & 404 COST PARTICIPATION I & II

I-90 Stations From	I-90 Stations To	Side	End Widths (Ft.)	Surface Area (Sq. Yds.)	404 Volume (Cu. Yds.)	402 Volume (Cu. Yds.)
130+00	142+05	Rt.	36'	4820.0	167.36	
130+00	131+75	Rt.	10'	194.44	6.75	
130+00	140+14	Lt.	36'	4056.0	140.83	
136+00	139+94	Rt.	22'	963.11	33.44	
142+05	143+50	Rt.	7'	112.78	3.92	
142+05	151+00	Rt.	38'	3778.89	131.21	
140+14	151+00	Lt.	38'	4585.33	159.21	
143+50	151+00	Rt.	10'	833.33	28.94	
141+75	151+00	Lt.	10'	1027.78	35.69	
151+00	155+46	Rt.	40'	1982.22	68.83	
151+00	153+70	Rt.	8'	240.0	8.33	
151+00	154+07	Lt.	40'	1364.44	47.38	
151+00	153+32	Lt.	4'	103.11	3.58	
151+50	154+07	Lt.	6.75'	192.75	6.69	
155+46	156+48	Rt.	40'	453.33	15.74	
155+82	172+64.25	Lt.	52'	9719.67	337.49	117.22
155+82	166+25	Lt.	8'	927.11	32.19	18.03
156+48	173+75	Rt.	52'	9978.22	346.47	103.97
156+48	159+40	Rt.	8'	259.56	9.01	9.01
160+90	167+00	Rt.	8'	542.22	18.83	2.35
168+32.6	169+15	Rt.	4'	36.62	1.27	—
169+15	173+75	Rt.	8'	408.89	14.20	—
168+00	172+64.25	Lt.	8'	412.67	14.33	—
172+64.25	173+14	Lt.	Varies	281.11	9.76	—
173+14	173+75	Lt.	28'	189.78	6.59	—
CUY-77-1564						
44+54.88	44+79.88	Rt. Lt.	46	255.56	8.87	6.21
CUY-77-1576						
49+05.16	49+30.16		(39+38+23)	277.78	9.65	6.75
51+07.08	51+32.08		(44+36)	222.22	7.72	5.40
15+02.70	15+27.70		34	94.44	3.28	2.30
CUY-90-1640						
64+85.18	65+10.18	Rt. Lt.	49	272.22	9.45	6.62
68+19.03	68+44.03	Rt. Lt.	49	272.22	9.45	6.62
CUY-90-1640B						
7+94.83	8+19.83		61	109.44	3.80	2.66
9+38.16	9+63.16		37	102.78	3.57	2.50
CUY-90-1651						
70+64.23	70+89.23	Lt. Rt.	49	272.22	9.45	6.62
4+36.11	4+61.11		29	80.56	2.80	1.96
3+86.38	4+11.38		37	102.78	3.57	2.50
73+96.25	74+21.25	Lt.	77.66	215.72	7.49	5.24
		Rt.	57.33	159.25	5.53	3.87
CUY-90-Ramp E-18 over E. 9th						
10+24.01	10+49.01		30	83.33	2.89	2.03
7+74.55	7+99.55	Lt.	20	55.56	1.93	1.35
		Rt.	22	61.11	2.12	1.49
CUY-90-Ramp E-15 over Broadway Ave.						
3+92.75	4+17.75		23	63.89	2.22	1.55
6+85.67	7+10.67		21	58.33	2.03	1.42
CUY-90-1628						
58+54.98	58+79.98	Rt.	61	169.44	5.88	4.12
		Lt.	66	183.33	6.37	4.46
61+16.05	61+41.05	Rt.	66	183.33	6.37	4.46
		Lt.	50	138.89	4.82	3.38
12+00.16	12+25.16		29	80.56	2.80	1.96
CUY-90-1619						
54+65.78	54+90.78		(52+38+25)	319.44	11.09	7.76
2+77.77	3+02.77		38	105.56	3.67	2.57
6+95.01	7+20.01		30	83.33	2.89	2.03
Cost Participation I Subtotal					3874	
Cost Participation II Subtotal						3293

ITEM 402 & 404 COST PARTICIPATION I & II

Stations From	Stations To	Side	End Widths (Ft.)	Surface Area (Sq. Yds.)	404 Volume (Cu. Yds.)	402 Volume (Cu. Yds.)
RAMP E-14						
0+80	3+23	Rt.	9	243.00	8.44	
3+23	6+75	Rt.	8	312.89	10.86	
2+76.73	10+79.56		16	1427.25	49.56	
2+76.73	9+79.56	Lt.	3	234.28	8.13	
10+50	11+00	Rt.	4	22.22	0.77	
4+72	6+00		4	56.89	1.98	
6+00	7+77		19	373.67	12.97	
8+77	10+50		8	153.78	5.34	
7+77	8+77		8	88.89	3.09	
					101.14	
RAMP E-17						
1+50.62	2+31.62		48	432.0	15.00	
2+31.62	6+21.14	Lt.	27	1168.56	40.58	
1+50.62	5+83.64	Rt.	10	481.13	16.71	
6+21.14	7+06.65		13	123.51	4.29	
7+06.65	8+90.65		19	388.44	13.49	
8+90.65	9+70.65		24.25	215.56	7.48	
9+70.65	10+70.65		19.25	213.89	7.43	
5+83.64	8+90.65	Rt.	9	307.01	10.66	
7+06.65	9+70.65		3	88.0	3.06	
					118.70	
RAMP E-9						
0+00	1+90		24	506.67	17.59	
1+90	4+40		16	444.44	15.43	
1+90	3+80		8	168.89	5.86	
3+80	4+40		9	60.0	2.08	
0+00	4+40		3	146.67	5.09	
					46.05	
RAMP E-8						
0+47.96	1+47.96		24	266.67	9.26	
0+00	14+10	Lt.	3	470.0	16.32	
1+47.96	9+94.52	Rt.	24	2257.49	78.39	
9+94.52	11+74.52		20	400.0	13.89	
11+74.52	14+10		10	261.64	9.08	
					126.94	
RAMP E-5						
11+95	2+50.32		16	1679.43	58.31	
11+95	1+84	Rt.	8	898.67	31.20	
8+60.56	2+50.32	Lt.	3	203.41	7.06	
2+50.32	1+13.65		36.06	547.59	19.01	
					115.58	
RAMP E-16						
1+82.29	2+82.29		24	266.67	9.26	
2+82.29	4+86.88		16	363.72	12.63	
4+86.88	5+10.88		16.5	44.00	1.53	
5+10.88	5+50.46		17	74.76	2.60	
5+50.46	6+30		16.5	145.82	5.06	
2+82.29	6+30	Rt.	8	309.08	10.73	
0+38.25	5+50.46	Lt.	3	170.74	5.93	
					47.74	
RAMP E-10						
4+10	7+10	Rt.	33	1100.0	38.19	
7+10	8+00		34.5	345.0	11.98	
4+10	8+00	Lt.	3	130.0	4.51	
9+70	10+20		25	138.89	4.82	
10+20	17+95		24	2066.67	71.76	
9+70	17+95	Rt. Lt.	13	1191.67	41.38	
					172.64	
Cost Participation I Sheet Total			I-90-1(101)29		4614	
Cost Participation II Sheet Total			I-90-1(101)29			4033

SAME AS ITEM 404

MADE D.S.P. DATE 4-4-75
TRACED J.P.K. DATE 5-14-75
CHECKED G.F.M. DATE 5-14-75
SCALE —

Howard, Needles, Tammen & Bergendoff
CONSULTING ENGINEERS
CLEVELAND, OHIO

HNTB

Quantities Continued on Sheet 15

COMPUTATIONS AND SUB-SUMMARIES

QUANTITY CALCULATIONS
MADE BY D.S.P. DATE 4-4-75
CHECKED BY G.F.M. DATE 5-14-75

FED. RD. DIVISION	STATE	PROJECT	
5	OHIO		

CUYAHOGA COUNTY
CUY. 77-14.12
CUY. 90-16.21

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ITEM 402 & 404 COST PARTICIPATION I & II

Stations From	Stations To	Side	End Widths (Ft.)	Surface Area (Sq. Yds.)	404 Volume (Cu. Yds.)	402 Volume (Cu. Yds.)
RAMP E-15						
15+03	14+06		30	323.33	11.23	
14+06	12+26		16.5	330.0	11.46	
12+26	9+90		20	524.44	18.21	
15+03	11+00	Rt.	8	358.22	12.44	
12+26	9+75	Lt.	3	83.67	2.91	
11+00	10+00	Rt.	6.1	67.78	2.35	
7+65	7+00		20	144.44	5.02	
7+65	7+00	Rt. Lt.	4	28.89	1.00	
3+80	0+00		20	844.44	29.32	
3+80	0+30	Rt.	3	116.67	4.05	
					97.99	
RAMP E-7						
6+50	4+50		19	422.22	14.66	
4+50	2+35		16	382.22	13.27	
2+35	1+37		24	261.33	9.07	
7+40	1+37	Lt.	3	201.0	6.98	
4+50	2+35	Rt.	8	191.11	6.64	
					50.62	
RAMP E-18						
1+93	5+79		16	686.22	23.83	
5+79	7+90		18	422.0	14.65	
1+93	7+60	Lt.	3	189.0	6.56	
1+93	7+90	Rt.	8	530.67	18.43	
					63.47	
RAMP E-6						
1+98	2+18		16	35.56	1.23	
2+18	4+48		21.5	549.44	19.08	
4+48	5+68		38.5	513.33	17.82	
5+68	8+38		19	570.0	19.79	
8+38	9+38		24.5	272.22	9.45	
9+38	10+38		18.5	205.56	7.14	
5+68	9+38	Rt.	3	123.33	4.28	
1+05	5+43	Lt.	10	486.67	16.90	
4+93	5+43		9	50.0	1.74	
4+93	8+38	Rt.	8	306.67	10.65	
5+68	9+38	Lt.	3	123.33	4.28	
1+98	5+68	Lt.	3	123.33	4.28	
					116.64	
RAMP E-4						
2+39	7+27		18.	976.0	33.89	
7+27	8+40		17	213.44	7.41	
8+40	9+20		17	151.11	5.25	
1+60	8+40	Rt.	8	604.44	20.99	
					67.54	
RAMP E-3						
6+60	2+56		25	1122.22	38.97	
2+56	2+03		30.5	179.61	6.24	
2+03	0+60		18	286.0	9.93	
Conn. 2+07	0+87		18	240.0	8.33	
1+00	6+60		8	497.78	17.28	
					80.75	
RAMP E-1						
1+60	2+77		30	390.0	13.54	
1+67	2+77		8	97.78	3.40	
					16.94	
RAMP E-2						
7+10	10+23		17	591.22	20.53	
7+20	9+43		8	198.22	6.88	
9+43	9+78		5	19.44	0.68	
					28.09	
RAMP E-11						
1+98.5	3+90		16	340.44	11.82	
3+90	5+60		18	340.0	11.81	

SAME AS ITEM 404

ITEM 402 & 404 COST PARTICIPATION I & II

Stations From	Stations To	Side	End Widths (Ft.)	Surface Area (Sq. Yds.)	404 Volume (Cu. Yds.)	402 Volume (Cu. Yds.)
RAMP E-11 (Con't)						
5+60	6+56		24	256.0	8.89	
0+00	1+98.5	Rt.	9	198.5	6.89	
1+98.5	4+66.3	Rt.	8	238.04	8.27	
4+66.3	5+46.3	Rt.	5	44.44	1.54	
1+98.5	5+60	Lt.	3	120.5	4.18	
					53.40	
RAMP E-13*						
1+28.89	0+30		24	263.70	9.16	
0+90	0+30		35	233.33	8.10	
1+28.89	0+90	Lt.	3	12.96	0.45	
1+28.89	1+05	Rt.	6	15.93	0.55	
					18.26	
RAMP No. 3						
0+00	2+45		14.5	394.72	13.71	
2+45	3+34		22	217.56	7.55	
3+34	8+80		24	1456.0	50.56	
0+00	1+99	Rt.	9	199.0	6.91	
1+99	8+30	Rt.	8	560.89	19.48	
8+30	8+80	Rt.	4	22.22	0.77	
					98.98	
RAMP No. 4						
0+00	1+06		14.5	170.78	5.93	
1+06	1+83		16	136.89	4.75	
1+83	7+93		18	1220.0	42.36	
7+93	8+51		Planimeter	213.0	7.40	
0+00	1+06	Lt.	9	106.0	3.68	
1+06	7+93	Lt.	8	610.67	21.20	
					85.32	
RAMP No. 5						
0+00	1+15	Lt.	9	115.0	3.99	
0+00	0+50		14.5	80.56	2.80	
0+50	1+15		16	115.56	4.01	
1+15	6+18		18	1006.0	34.93	
1+15	6+37	Lt.	8	464.0	16.11	
6+18	6+38		18	40.0	1.39	
					63.23	
RAMP No. 6						
0+00	1+30.39		25	362.22	12.58	
1+30.39	1+65.25		26	100.71	3.50	
1+65.25	6+50		24	1292.67	44.88	
6+50	7+42.71		Planimeter	311.11	10.80	
0+00	1+04	Rt.	9	104.0	3.61	
1+04	6+50	Rt.	8	485.33	16.85	
6+50	6+85	Rt.	5	19.44	0.68	
					92.90	
RAMP No. 7						
0+00	1+81.54		23.5	474.02	16.46	
1+81.54	2+23.36		25	116.17	4.03	
2+23.36	7+27		24	1343.04	46.63	
7+27	8+14		Planimeter	270.0	9.38	
0+00	0+75	Rt.	10	83.33	2.89	
0+75	1+81.54	Rt.	9	106.54	3.70	
1+81.54	7+27	Rt.	8	484.85	16.84	
7+27	7+62	Rt.	5	19.44	0.68	
					100.61	
RAMP No. 8						
0+00	0+71	Lt.	23.5	185.39	6.44	
0+71	1+47.6		16	136.18	4.73	
1+47.6	6+70.1		18	1045.0	36.28	
6+70.1	7+61.1		Planimeter	112.0	3.89	

SAME AS ITEM 404

* For additional quantities on Ramp E-13 See Sheet 24B.

ITEM 402 & 404 COST PARTICIPATION I & II

Stations From	Stations To	Side	End Widths (Ft.)	Surface Area (Sq. Yds.)	404 Volume (Cu. Yds.)	402 Volume (Cu. Yds.)
RAMP No. 8	(Con't)					
0+71	6+90	Lt.	8	550.22	19.10	
					70.44	
RAMP No. 10						
0+00	0+58.5		14.5	94.25	3.27	
0+58.5	1+23.6		16	115.73	4.02	
1+23.6	5+09		18	770.8	26.76	
5+09	6+37 Conn.		Planimeter	290.0	10.07	
5+78	6+90		Planimeter	223.0	7.74	
6+37 Conn.	8+14 Conn.		18	354.0	12.29	
8+14 Conn.	9+05 Conn.		Planimeter	106.0	3.68	
0+00	1+23.6	Lt.	9	123.6	4.29	
1+23.6	8+34.1	Lt.	8	631.56	21.93	
					94.05	
RAMP No. 11						
0+00	2+14.5	Rt.	32.5	774.58	26.90	
2+14.5	2+55.9		25	115.0	3.99	
2+55.9	8+68		24	1632.27	56.68	
8+18	8+53	Rt.	5	19.44	0.68	
2+14.5	8+18	Rt.	8	536.44	18.63	
					106.88	
RAMP No. 9						
0+00	1+41.2	Lt.	23.5	368.69	12.80	
1+41.2	2+24		15	138.0	4.79	
2+24	8+62		16	1134.22	39.38	
1+41.2	8+62	Lt.	8	640.71	22.25	
8+62	9+00		23.5	99.22	3.45	
					82.67	
RAMP No. 12						
0+00	2+09.4		23.5	546.77	18.98	
2+09.4	2+72.5		25	175.28	6.09	
2+72.5	4+06.3		24	356.8	12.39	
4+06.3	5+27 5+23 Conn.		Planimeter	565.0	19.62	
5+27	7+19		24	512.0	17.78	
7+19	7+93		Planimeter	239.0	8.30	
Connection						
5+53	7+79		24	602.67	20.92	
7+79	8+70		Planimeter	310.0	10.76	
0+00	1+57	Rt.	9	157.0	5.45	
1+57	7+79 Conn.	Rt.	8	552.89	19.20	
7+79 Conn.	8+14 Conn.	Rt.	5	19.44	0.68	
5+27 Rp. 12	7+19 Rp. 12	Rt.	8	170.67	5.93	
7+19 Rp. 12	7+54 Rp. 12	Rt.	5	19.44	0.68	
					146.78	
RAMP No. 13						
0+00	1+13.5	Lt.	24.5	308.97	10.73	
1+13.5	1+63.7		15	83.67	2.91	
1+63.7	4+08		16	434.31	15.08	
4+08	8+03		Planimeter	1246.0	43.26	
1+13.5	4+08	Lt.	8	261.78	9.09	
4+08	5+06	Lt.	5	84.44	2.93	
					84.00	
RAMP No. 14						
0+00	0+91	Rt.	4	40.44	1.40	
0+00	1+73		27.4	526.69	18.29	
1+73	2+02		25	80.56	2.80	
2+02	3+75		24	461.33	16.02	
3+75	4+68 4+66 Conn.		Planimeter	342.22	11.88	
4+68	7+65		24	792.0	27.50	
4+66 Conn.	5+43 Conn.		24	205.33	7.13	
5+43 Conn.	7+00 Conn.		Planimeter	355.56	12.35	
					97.37	
Cost Participation I Sheet Total			I-90-1(101)29		1717	
Cost Participation II Sheet Total			I-90-1(101)29			1717

SAME AS ITEM 404

MADE D.S.P. DATE 4-4-75
TRACED J.P.K. DATE 5-13-75
CHECKED G.F.M. DATE 5-14-75
SCALE —

Howard, Needles, Tammen & Bergendoff
CONSULTING ENGINEERS
CLEVELAND, OHIO

HNTB

Quantities Continued on Sheet 16

COMPUTATIONS AND SUB-SUMMARIES

FED. RD. DIVISION	STATE	PROJECT	
5	OHIO		

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QUANTITY CALCULATIONS
MADE BY DSP DATE 4-4-75
CHECKED BY GFM DATE 5-14-75

CUYAHOGA COUNTY
CUY. 77-14.12
CUY. 90-16.21

ITEM 402 & 404 COST PARTICIPATION I & II

Stations From	Stations To	Side	End Widths (Ft.)	Surface Area (Sq. Yds.)	404 Volume (Cu. Yds.)	402 Volume (Cu. Yds.)
RAMP No. 15						SAME AS ITEM 404
0+00	1+28	Lt.	4	56.89	1.98	
0+00	1+02		14.5	164.33	5.71	
1+02	3+26		19	472.89	16.42	
3+26	7+46		24	1120.0	38.89	
7+46	8+10		Planimeter	301.67	10.47	
					73.47	73.47
RAMP No. 16						SAME AS ITEM 404
0+00	2+32.2		Planimeter	335.0	11.63	
2+32.2	5+99.5		24	979.47	34.01	
5+99.5	7+48.7 Conn.	7+48	Planimeter	461.78	16.03	
7+48	9+50		16	359.11	12.47	
Connector						
7+48.7	10+25.9		16	492.8	17.11	
0+00	0+70	Lt.	4	31.11	1.08	
					92.33	92.33
RAMP No. 18						SAME AS ITEM 404
0+00	1+46		8	129.78	4.51	—
0+58	1+35		12	102.67	3.56	—
1+35	6+50		24	1373.33	47.69	
6+50	7+48		Planimeter	362.7	12.59	
7+48	7+85		Planimeter	105.6	3.67	
7+85	9+39		24	410.67	14.26	
Connector			120 x 19.3	257.33	8.94	
					95.22	87.15
RAMP No. 17						SAME AS ITEM 404
0+00	0+63		4	28.0	0.97	—
0+00	0+98		Planimeter	58.0	2.01	—
0+98	3+37		Planimeter	544.0	18.89	
3+37	8+37		24	1333.33	46.30	
8+37	9+00		Planimeter	273.78	9.51	
					77.68	74.70
SHOREWAY - INNERBELT						
60+29.5	59+83.5		5	25.56	0.89	0.89
					0.89	0.89
Cost Participation I Subtotal					340	
Cost Participation II Subtotal						329

PAVEMENT QUANTITIES COST PARTICIPATION I & II

Item	Project	Calculation	Quantity	Unit
403		Ashpalt Concrete		
	I-77-5 (18) 61	77,091 S.Y. x .013889 C.Y./S.Y.	1071 II	Cu. Yd.
	I-90-1 (101) 29	154,377 S.Y. x .013889 C.Y./S.Y.	2144 II	Cu. Yd.
407		Tack Coat		
	I-77-5 (18) 61	100,715 S.Y. x 0.1 Gal./S.Y.	10072 I	Gal.
	I-90-1 (101) 29	192,126 S.Y. x 0.1 Gal./S.Y.	19213 I	Gal.
407		Tack Coat Cover Aggregate		
	I-77-5 (18) 61	100,715 S.Y. x 7 Lbs./S.Y. ÷ 2000 Lbs/Ton	353 I	Tons
	I-90-1 (101) 29	192,126 S.Y. x 7 Lbs./S.Y. ÷ 2000 Lbs/Ton	672 I	Tons
408		Bituminous Prime Coot		
	I-77-5 (18) 61	12,113 S.Y. x 0.40 Gal./S.Y.	4845 II	Gal.
	I-90-1 (101) 29	18,574 S.Y. x 0.40 Gal./S.Y.	7430 II	Gal.
409		Seal Coat Bituminous Material		
	I-77-5 (18) 61	12,113 S.Y. x 0.35 Gal./S.Y.	4,239 II	Gal.
	I-77-5 (18) 61	25,342 S.Y. x 0.35 Gal./S.Y.	8,870 I	Gal.
	I-90-1 (101) 29	37,492 S.Y. x 0.35 Gal./S.Y.	13,122 I	Gal.
	I-90-1 (101) 29	18,574 S.Y. x 0.35 Gal./S.Y.	6,501 II	Gal.
409		Seal Coat Cover Aggregate No. 8		
	I-77-5 (18) 61	25,342 S.Y. x 0.008 C.Y./S.Y.	203 I	Cu. Yd.
	I-90-1 (101) 29	37,492 S.Y. x 0.008 C.Y./S.Y.	300 I	Cu. Yd.

ITEM 605 - AGGREGATE DRAINS COST PARTICIPATION II

STATION	SIDE	LENGTH (Lin. Ft.) Inside Shoulder	LENGTH (Lin. Ft.) Outside Shoulder
I-77-5(18) 161			
73+99 ℄ I-77	Rt.	7	3
74+18 ℄ I-77	Lt.	3	3
80+34 ℄ I-77	Rt.	7	3
80+54 ℄ I-77	Lt.	3	3
5+64 ℄ N-W Ramp			3
86+25 ℄ I-77	Rt.	7	3
86+25 ℄ I-77	Lt.	3	3
25+94 ℄ E-N Ramp		4	3
108+38 ℄ I-77	Rt.	3.5	3
108+70 ℄ I-77	Lt.		2
117+75 ℄ I-77	Rt.	3.5	3
118+00 ℄ I-77	Lt.		2
125+17 ℄ I-77	Rt.	3.5	
125+17 ℄ I-77	Lt.		2
32+65 ℄ I-77	Rt.		2
9+00 ℄ Ramp F-4			2
36+89 ℄ I-77	Rt.		2
37+54 ℄ I-77	Lt.		2
41+40 ℄ I-77	Rt.		2
41+40 ℄ I-77	Lt.		2
Total I-77-5(18) 161		93	
I-90-1(101) 29			
45+60 ℄ I-77	Rt.		2
45+60 ℄ I-77	Lt.	6.5	
48+31 ℄ I-77	Rt.		2
48+15 ℄ I-77	Lt.	6.5	
0+38 ℄ Ramp E-8			2
17+14 ℄ Ramp E-10			2
6+60 ℄ Ramp E-7			2
10+87 ℄ Ramp E-15			2
7+02 ℄ Ramp E-18			2
2+75 ℄ Ramp E-15			1.5
8+00 ℄ Ramp E-2			2
1+97 ℄ Ramp E-1			2
5+80 ℄ Ramp E-3			2
55+95 ℄ I-90	Rt.		5
55+60 ℄ I-90	Lt.		

STATION	SIDE	LENGTH (Lin. Ft.) Inside Shoulder	LENGTH (Lin. Ft.) Outside Shoulder
57+75 ℄ I-90	Rt.		5
57+75 ℄ I-90	Lt.		
62+21 ℄ I-90	Rt.		2
62+21 ℄ I-90	Lt.		2
64+10 ℄ I-90	Rt.		
64+10 ℄ I-90	Lt.		2
75+00 ℄ I-90	Rt.		2
75+00 ℄ I-90	Lt.		2
4+90 ℄ Ramp E-10			2
3+50 ℄ Ramp E-9			2
11+13 ℄ Ramp E-5		2	2
10+70 ℄ Ramp E-10			2
5+43 ℄ Ramp E-16			2
7+15 ℄ Ramp E-10			2
6+95 ℄ N-E Ramp			4
14+40 ℄ N-E Ramp			4
7+00 ℄ E-S Ramp			4
12+20 ℄ E-S Ramp			4
98+00 ℄ I-90	Rt.		12
98+00 ℄ I-90	Lt.		12
106+25 ℄ I-90	Rt.	3	
106+25 ℄ I-90	Lt.		12
116+00 ℄ I-90	Rt.	3	
116+00 ℄ I-90	Lt.		12
125+00 ℄ I-90	Rt.	2	
125+00 ℄ I-90	Lt.		12
131+60 ℄ I-90	Lt.		12
131+60 ℄ I-90	Rt.		12
139+00 ℄ I-90	Lt.		12
140+00 ℄ I-90	Rt.		12
150+00 ℄ I-90	Lt.		12
150+50 ℄ I-90	Rt.		12
159+00 ℄ I-90	Rt.	2	
159+00 ℄ I-90	Lt.		10
169+00 ℄ I-90	Lt.		10
169+20 ℄ I-90	Rt.	2	
Total I-90-1(101) 29		249	

ITEM SPECIAL - PRESSURE RELIEF JOINT, TYPE C COST PARTICIPATION II

STATION	SIDE	LENGTH (Lin. Ft.)	STATION	SIDE	LENGTH (Lin. Ft.)
I-77-5(18)161			I-90-1(101) 29		
73+99 ℄ I-77	Rt.	24	45+60 ℄ I-77	Rt.	42
74+18 ℄ I-77	Lt.	24	45+60 ℄ I-77	Lt.	36
80+34 ℄ I-77	Rt.	24	48+31 ℄ I-77	Rt.	24
80+54 ℄ I-77	Lt.	24	48+15 ℄ I-77	Lt.	44
5+64 ℄ N-W Ramp		24	0+38 ℄ Ramp E-8		52
86+25 ℄ I-77	Rt.	24	17+14 ℄ Ramp E-10		24
86+25 ℄ I-77	Lt.	24	6+60 ℄ Ramp E-7		31
25+94 ℄ E-N Ramp		24	10+70 ℄ Ramp E-15		22
108+38 ℄ I-77	Rt.	36	7+02 ℄ Ramp E-18		18
108+70 ℄ I-77	Lt.	36	2+75 ℄ Ramp E-15		20
117+75 ℄ I-77	Rt.	36	8+00 ℄ Ramp E-2		17
118+00 ℄ I-77	Lt.	36	1+97 ℄ Ramp E-1		30
125+17 ℄ I-77	Rt.	36	5+80 ℄ Ramp E-3		25
125+17 ℄ I-77	Lt.	36	55+95 ℄ I-90	Rt.	62
32+65 ℄ I-77	Rt.	38	55+60 ℄ I-90	Lt.	36
9+00 ℄ Ramp F-4		42	57+75 ℄ I-90	Rt.	48
36+89 ℄ I-77	Rt.	36	57+75 ℄ I-90	Lt.	44
37+54 ℄ I-77	Lt.	36	62+21 ℄ I-90	Rt.	64
41+40 ℄ I-77	Rt.	36	62+21 ℄ I-90	Lt.	36
41+40 ℄ I-77	Lt.	36	64+10 ℄ I-90	Rt.	36
			64+10 ℄ I-90	Lt.	36
Total I-77-5(18) 161		632	75+00 ℄ I-90	Rt.	48
			75+00 ℄ I-90	Lt.	60
			4+90 ℄ Ramp E-10		24
			3+50 ℄ Ramp E-9		16
			11+13 ℄ Ramp E-5		23
			10+70 ℄ Ramp E-10		24
			5+43 ℄ Ramp E-16		17
			7+15 ℄ Ramp E-10		36
			6+95 ℄ N-E Ramp		16
			14+40 ℄ N-E Ramp		16
			7+00 ℄ E-S Ramp		24
			12+20 ℄ E-S Ramp		24
			98+00 ℄ I-90	Rt.	36
			98+00 ℄ I-90	Lt.	36
			106+25 ℄ I-90	Rt.	36
			106+25 ℄ I-90	Lt.	36
			116+00 ℄ I-90	Rt.	48
			116+00 ℄ I-90	Lt.	36
			125+00 ℄ I-90	Rt.	36
			125+00 ℄ I-90	Lt.	48
			131+60 ℄ I-90	Lt.	36
			131+60 ℄ I-90	Rt.	36
			139+00 ℄ I-90	Lt	48
			140+00 ℄ I-90	Rt.	48
			150+00 ℄ I-90	Lt.	40
			150+50 ℄ I-90	Rt.	40
			159+00 ℄ I-90	Rt.	52
			159+00 ℄ I-90	Lt.	52
			169+00 ℄ I-90	Lt.	52
			169+20 ℄ I-90	Rt.	52
			Total I-90-1(101) 29		1843

RAILING REMOVED AS PER PLAN COST PART. I

STATION	STATION	SIDE	LENGTH (LF)
E. 22nd St.			
2+09	3+69	Lt.	160
2+95	4+16	Rt.	121
Reloc. Cedar			
1+09	2+52	Rt.	143
1+56	3+14	Lt.	158
Carnegie Ave.			
5+07	7+38	Rt.	231
6+37	8+40	Lt.	203
Prospect Ave.			
10+11	11+74	Rt.	163
10+57	12+16	Lt.	159
Euclid Ave.			
6+06	7+48	Rt.	144
6+21	7+65	Lt.	144
Chester Ave.			
6+25	7+79	Rt.	154
6+18	7+72	Lt.	154
Payne Ave.			
5+07	7+31	Rt.	224
5+15	7+39	Lt.	224
Superior Ave.			
1+49	3+73	Rt.	224
1+71	3+95	Lt.	224
St. Clair Ave.			
4+06	6+48	Rt.	242
4+30	6+72	Lt.	242
Hamilton Ave.			
5+93	7+35	Rt.	142
6+07	7+49	Lt.	142
Lakeside Ave.			
6+40	8+70	Rt.	230
6+60	8+90	Lt.	230
TOTAL I-90-1(101) 29			4058

ITEM 404 - ASPHALT CONCRETE COST PARTICIPATION I

I-77-5 (18) 161 Sheet	I-77-5 (18) 161 Sheet Subtotal (Cu. Yds.)	I-90-1 (101) 29 Sheet	I-90-1 (101) 29 Sheet Subtotal (Cu. Yds.)
13	3497	14	4614
14	-	15	1717
15	-	16	340
Total	3497	Total	6671

ITEM 402 - ASPHALT CONCRETE COST PARTICIPATION II

I-77-5 (18) 161 Sheet	I-77-5 (18) 161 Sheet Subtotal (Cu. Yds.)	I-90-1 (101) 29 Sheet	I-90-1 (101) 29 Sheet Subtotal (Cu. Yds.)
13	3469	14	4033
14	-	15	1717
15	-	16	329
Total	3469	Total	6079

MADE DSP DATE 5-4-75
TRACED JPK DATE 5-16-75
CHECKED GFM DATE 5-17-75
SCALE None

Howard, Needles, Tammen & Bergendoff
CONSULTING ENGINEERS
CLEVELAND, OHIO

HNTB

Rev. 1 - 9 - 79

GENERAL SUMMARY

QUANTITY CALCULATIONS
MADE BY D.S.P. DATE 10-25-77
CHECKED BY JAG DATE 12-5-77

FHWA REGION	STATE	PROJECT	
5	OHIO		

17/169

TYPE CODE 6706

CUYAHOGA COUNTY
CUY-77-14.12
CUY-90-16.21

Totals and cost participation

DESCRIPTION	UNIT	ITEM	TOTAL QUANT.	I-77-5(18)161 COST PART. I	I-77-5(18)161 COST PART. II & III	I-90-1(101)29 COST PART. I	I-90-1(101)29 COST PART. II & III
ROADWAY							
Catch Basin Abandoned	Each	202	2			2	
Concrete Gutter Removed	Sq. Yd.	202	159			159	
Guardrail Removed	Lin. Ft.	202	34,244	11,175		22,019	1050**
Guardrail, Barrier Design, Removed	Lin. Ft.	202	13,012	4416		8596	
Curb Removed	Lin. Ft.	202	27,877	5513		21,348	1016**
Inlet Abandonded	Each	202	5			4	1**
Curb Removed, As Per Plan	Lin. Ft.	202	3768	1085		2683	
Wearing Course Removed	Sq. Yd.	202	3400	1300		2100	
Pipe Removed 24" and Under	Lin. Ft.	202	836	10		826	
Concrete Barrier Median Removed	Lin. Ft.	202	90				90**
Concrete Median Pavement Removed	Sq. Yd.	202	11,802	2028		9150	624**
Pavement Removed, As Per Plan	Sq. Yd.	202	4282		374*		3908*
Railing Removed, as per plan	Lin. Ft.	202	4058			4058	
Temporary Pavement, class B, flexible design, as per plan	Sq. Yd.	615	10,210	6000		4210	
Subgrade Compaction	Sq. Yd.	203	915			915	
Excavation not Including Embankment Construction	Cu. Yd.	203	2006		459**	1547	
Embankment	Cu. Yd.	203	15,421		164**	15,119	138**
Centerline Reference Monument, Modified, As Per Plan	Each	604	14	6		8	
Guardrail, Type 5,	Lin. Ft.	606	28,418.5	11,454		16,964.5	
Anchor Assembly, Type A	Each	606	54	12		42	
Anchor Assembly, Type T	Each	606	46	7		39	
Bridge Terminal Assembly, Type A	Each	606	1			1	
Bridge Terminal Assembly, Type C	Each	606	7			7	
Bridge Terminal Assembly, Type D	Each	606	19	5		14	
Bridge Terminal Assembly, Type E	Each	606	13	8		5	
Bridge Terminal Assembly, Type H	Each	606	1			1	
Bridge Terminal Assembly, Type J	Each	606	35	10		25	
Fence, Type CL, As Per Plan	Lin. Ft.	607	1950	1018	410**		522**
Fence, Type CL, Modified, As Per Plan	Lin. Ft.	607	4058			4058	
Gate, Type CL	Each	607	5		3**		2**
Water	M. Gal.	617	158		61*		97*
Impact Attenuator (HI-DRO CUSHION)	Each	Special	2			1	1**
3/4"ϕ Threaded Sleeve Anchor Bolts	Each	Special	200			200	
Compacted Aggregate, as per plan	Cu. Yd.	617	2628		1010*		1618*
PAVEMENT							
Bituminous Concrete For Maintaining Traffic	Cu. Yd.	404	125	75		50	
Bituminous Aggregate Base: 702.01 AC-20; or 702.09, RT-11 or RT-12	Cu. Yd.	301	111			111	
9" Portland Cement Concrete Base	Sq. Yd.	305	20690	7500		13190	
9" Portland Cement Concrete Base, As Per Plan	Sq. Yd.	305	4095		327*		3768*
15" Portland Cement Concrete Base, As Per Plan	Sq. Yd.	305	187		47*		140*
Subbase, Grading A, As Per Plan	Cu. Yd	310	673			544	129**
Concrete Barrier, Standard Type A, As per plan	Lin. Ft.	622	260	260			
Asphalt Concrete Intermediate Course, Type 2	Cu. Yd.	848	9690		3469*		6221*
Asphalt Concrete Intermediate Course, Type 2 As Per Plan	Cu. Yd.	848	100		50*		50*
Asphalt Concrete Intermediate Course, Type 1	Cu. Yd.	848	3215		1071*		2144*
Asphalt Concrete Surface Course, Type 1	Cu. Yd.	848	10310	3497		6813	
Tack Coat: 702.02, RC-250, or 702.04, SS-1, SS-1H, MS-2 or RS-1	Gal.	407	29,695	10,072		19623	
Cover Aggregate	Ton	407	1040	353		687	
Bituminous Prime Coat: 702.09, Rt-2 or Rt-3; 702.02 MC-30 or MC-70; 702.03 Primer 20	Gal.	408	12,405		4845*		7560*
Seal Coat Bituminous Material: 702.09, Rt-9 or Rt-10; 702.02, MC-800 or MC-3000; 702.04, RS-1 or RS-2, CRS-1 or CRS-2; or 702.03, CBAE-800	Gal.	409	33,605	8870	4239*	13995	6501*
Seal Coat Cover Aggregate, No. 8	Cu. Yd.	409	522	203		319	
Class C Concrete	Cu. Yd	511	20				20**
Curb, Type 6, Modified, As Per Plan	Lin. Ft.	609	90			90	
4" Concrete Median	Sq. Yd.	612	326				326**
Concrete Barrier, Standard Type A	Lin. Ft.	622	80				80**
Concrete Barrier, Standard Type B	Lin. Ft.	622	40			40	
Concrete Barrier, Standard Type B, Modified, As Per Plan	Lin. Ft.	622	9816	4272		5544	
Concrete Barrier, Standard Type C, Modified, As Per Plan	Lin. Ft.	622	4147			4147	
Concrete Barrier, Standard Type D, Modified, As Per Plan	Lin. Ft.	622	2052			972	1080**
Concrete Barrier, Standard Type A, Modified, As Per Plan	Lin. Ft.	622	646			646	
Pressure Relief Joint, Standard Type C	Lin. Ft.	Special	2475		632*		1843*
Removal & Replacement of Unstable Materials using 310 Subbase Grading A	Cu. Yd.	Special	650		150*		500*

I-77-5(18)161 — Sheet Number

DESCRIPTION	7A	9A	6	16	20	21	22	28	30	33	46
Guardrail Removed								11,175			
Guardrail, Barrier Design, Removed								4416			
Curb Removed										5513	
Curb Removed, As Per Plan	1085										
Wearing Course Removed			1300								
Pipe Removed 24" and Under									10		
Concrete Median Pavement Removed										2028	
Pavement Removed, As Per Plan											374*
Temporary Pavement, class B, flexible design, as per plan		6000									
Centerline Reference Monument, Modified, As Per Plan										6	
Guardrail, Type 5,								11,454			
Anchor Assembly, Type A								12			
Anchor Assembly, Type T								7			
Bridge Terminal Assembly, Type D								5			
Bridge Terminal Assembly, Type E								8			
Bridge Terminal Assembly, Type J								10			
Fence, Type CL, As Per Plan					913/140**	45/10**	260**				
Gate, Type CL					1**		2**				
Water			606*								
Bituminous Concrete For Maintaining Traffic			75								
9" Portland Cement Concrete Base			7500								
9" Portland Cement Concrete Base, As Per Plan											327*
15" Portland Cement Concrete Base, As Per Plan											47*
Concrete Barrier, Standard Type A, As per plan			260								
Asphalt Concrete Intermediate Course, Type 2				3469*							
Asphalt Concrete Intermediate Course, Type 2 As Per Plan			50*								
Asphalt Concrete Intermediate Course, Type 1				1071*							
Asphalt Concrete Surface Course, Type 1				3497							
Tack Coat				10,072							
Cover Aggregate				353							
Bituminous Prime Coat				4845*							
Seal Coat Bituminous Material				8870/4239*							
Seal Coat Cover Aggregate, No. 8				203							
Concrete Barrier, Standard Type B, Modified, As Per Plan										4272	
Pressure Relief Joint, Standard Type C				632*							
Removal & Replacement of Unstable Materials using 310 Subbase Grading A			150*								

I-90-1(101)29 — Sheet Number (4 to 29)

DESCRIPTION	4	9A	5	6	16	23	24	24B	25	26	27	28	29
Guardrail Removed								369				9128.5	12,521.5
Guardrail, Barrier Design, Removed												899	7697
Curb Removed								34					
Inlet Abandonded							1		1	1			
Wearing Course Removed				2100									
Pipe Removed 24" and Under								756					
Concrete Barrier Median Removed			90**										
Concrete Median Pavement Removed								21					
Railing Removed, as per plan					4058								
Temporary Pavement, class B, flexible design, as per plan		4200											
Subgrade Compaction								915					
Excavation not Including Embankment Construction								814					
Embankment								222					
Guardrail, Type 5,								250				5873.5	10,841
Anchor Assembly, Type A								1				14	27
Anchor Assembly, Type T												11	28
Bridge Terminal Assembly, Type A								1					
Bridge Terminal Assembly, Type C													7
Bridge Terminal Assembly, Type D												9	5
Bridge Terminal Assembly, Type E												5	
Bridge Terminal Assembly, Type H												1	
Bridge Terminal Assembly, Type J												10	15
Fence, Type CL, As Per Plan						50**	181**		126**	155**	10**		
Fence, Type CL, Modified, As Per Plan							1016		918	1380	744		
Gate, Type CL							1**		1**				
Water				95.5*				1.6*					
Impact Attenuator (HI-DRO CUSHION)	1/1*												
3/4"ϕ Threaded Sleeve Anchor Bolts			200										
Compacted Aggregate, as per plan				1592*				26*					
Bituminous Concrete For Maintaining Traffic				50									
Bituminous Aggregate Base								111					
9" Portland Cement Concrete Base				11000				915					
Subbase, Grading A, As Per Plan								281					
Asphalt Concrete Intermediate Course, Type 2					6079*			98*					
Asphalt Concrete Intermediate Course, Type 2 As Per Plan				50*									
Asphalt Concrete Intermediate Course, Type 1					2144*								
Asphalt Concrete Surface Course, Type 1					6671			98					
Tack Coat					19213			283					
Cover Aggregate					672			10					
Bituminous Prime Coat					7430*			130*					
Seal Coat Bituminous Material					13122/6501*			426					
Seal Coat Cover Aggregate, No. 8					300			9					
Concrete Barrier, Standard Type A				80*									
Concrete Barrier, Standard Type D, Modified, As Per Plan								200					
Concrete Barrier, Standard Type A, Modified, As Per Plan								646					
Pressure Relief Joint, Standard Type C					1843*								
Removal & Replacement of Unstable Materials using 310 Subbase Grading A				500*									

I-90-1(101)29 — Sheet Number (30 to 109A)

DESCRIPTION	30	33	37	43A	46	48	98	99	100	101	102	104	105	107	108	109	109A
Catch Basin Abandoned							1	1									
Concrete Gutter Removed							86					22	28	14	9		
Guardrail Removed			1050**														
Curb Removed		21,314	1016**														
Inlet Abandonded	1**			1													
Curb Removed, As Per Plan						2683											
Pipe Removed 24" and Under	55			15													
Concrete Median Pavement Removed		9129	624**														
Pavement Removed, As Per Plan					3908*												
Temporary Pavement, class B, flexible design, as per plan												10					
Excavation not Including Embankment Construction						609	9	31		18		66					459**
Embankment			138**				2889	1205	918	432	376	3835	2274	1421	1213	334	164**
Centerline Reference Monument, Modified, As Per Plan		8															
9" Portland Cement Concrete Base						1275											
9" Portland Cement Concrete Base, As Per Plan					3768*												
15" Portland Cement Concrete Base, As Per Plan					140*												
Subbase, Grading A, As Per Plan		51	129**			212											
Asphalt Concrete Intermediate Course, Type 2						44*											
Asphalt Concrete Surface Course, Type 1						44											
Tack Coat						127											
Cover Aggregate						5											
Seal Coat Bituminous Material						447											
Seal Coat Cover Aggregate, No. 8						10											
Class C Concrete			20**														
Curb, Type 6, Modified, As Per Plan		10				80											
4" Concrete Median			326**														
Concrete Barrier, Standard Type B		40															
Concrete Barrier, Standard Type B, Modified, As Per Plan		5544															
Concrete Barrier, Standard Type C, Modified, As Per Plan		4147															
Concrete Barrier, Standard Type D, Modified, As Per Plan		772	1080**														

1. Quantities continued on Sheet 18.
2. For explanation of Cost Participation I, II & III, see Sheet 4.
3. Quantities with an asterisk (*) are included in Cost Participation II. (FI)
4. Quantities with (2) asterisks (**) are included in Cost Participation III.

Rev. 1-9-79 Rev. 10-26-78

MADE D.S.P. DATE 10-25-77
TRACED T.D. DATE 11-3-77
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SCALE

Howard, Needles, Tammen & Bergendoff
CONSULTING ENGINEERS
CLEVELAND, OHIO

HNTB

GENERAL SUMMARY

QUANTITY CALCULATIONS
MADE BY A.H.S DATE 8-28-77
CHECKED BY D.S.P. DATE 10-31-77

FHWA REGION	STATE	PROJECT	
5	OHIO		

18
169

CUYAHOGA COUNTY
CUY-77-14.12
CUY-90-16.21

TYPE CODE 6706 (UNLESS NOTED OTHERWISE)

I-77-5(18)161 SHEET NUMBER 4	7	16	30	47	7A	I-90-1(101)29 SHEET NUMBER 4	7	16	23	24	24B	25	26	30	43A	47	98	99	100	101	102	104	105	107	108	109	112	109A	I-77-5(18)161 COST PART. I	I-77-5(18)161 COST PART. II & III	I-90-1(101)29 COST PART. I	I-90-1(101)29 COST PART. II & III	TOTAL QUANT.	UNIT	ITEM	DESCRIPTION
																																				DRAINAGE
																	38	40													78		78	Lin.Ft.	603	12" Conduit, Type C
	125						125		25		10			30	10														125		200		325	Lin.Ft.	603	6" Conduit, Type F
	125		10				125			65	8	67		20/100**	15														135		300	100**	535	Lin.Ft.	603	12" Conduit, Type B
	125						125							5															125		130		255	Lin.Ft.	603	15" Conduit, Type B
											1																				1		1	Each	604	Standard No. 2-2-A Catch Basin
												1					1	1													3		3	Each	604	Standard No. 2-2-B Catch Basin
										1																					1		1	Each	604	Standard No. 2-A-6 Paved Shoulder Inlet
														4**																		4**	4	Each	604	Standard No. 3 Catch Basin, modified, as per plan
					170																								170				170	Lin.Ft.	603	12" conduit, as per plan
															2																2		2	Each	604	Standard No. I-3A Median Inlet, modified, as per plan
					1						1																		1		1		2	Each	604	Catch Basin Adjusted to Grade
											1														1						2		2	Each	604	Catch Basin Reconstructed to Grade
											1																				1		1	Each	604	Manhole Reconstructed to Grade
			1											1															1		1		2	Each	604	Standard No. I-3B Median Inlet, Modified A, as per plan
														2																	2		2	Each	604	Standard No. I-3B Median Inlet, Modified B, as per plan
														5																	5		5	Each	604	Standard No. I-3B Median Inlet, Modified C, as per plan
														2																	2		2	Each	604	Standard No. I-3B Median Inlet, Modified D, as per plan
														1																	1		1	Each	604	Standard No. I-3B Median Inlet, Modified E, as per plan
														1																	1		1	Each	604	Standard No. I-3B Median Inlet, Modified F, as per plan
														2																	2		2	Each	604	Standard No. I-3B Median Inlet, Modified G, as per plan
														1																	1		1	Each	604	Standard No. I-3B Median Inlet, Modified H, as per plan
														2																	2		2	Each	604	Standard No. I-3B Median Inlet, Modified I, as per plan
			9											9															9		9		18	Each	604	Standard No. I-3B Median Inlet, Modified J, as per plan
			2										1	33															2		34		36	Each	604	Manhole Adjusted to Grade with bolt down Casting, as per plan
														1																	1		1	Each	604	Manhole Reconstructed to Grade with bolt down Casting, Modified A,
																																				as per plan
														1**																		1**	1	Each	604	Manhole Reconstructed to Grade with bolt down Casting, Modified B,
																																				as per plan
					10																								10				10	Lin.Ft.	603	12" Conduit, Type B, 707.05, encased
	125						125																						125		125		250	Lin.Ft.	605	6" Unclassified Pipe Underdrain
				109*												1032*														109*		1032*	1141	Lin.Ft.	605	Aggregate Drain, As Per Plan, using No. 8 Aggregate
		93*						249*																						93*		249*	342	Lin.Ft.	605	Aggregate Drains
									149	50	730																				929		929	Lin.Ft.	605	6" Shallow Pipe Underdrain
																																				EROSION CONTROL (Y005)
											1151						3141	1649	1539	873	644	3658	2972	1930	1718	816		2083**		2083**	20,091		22,174	Sq.Yd.	659	Seeding and Mulching
						1.72					0.10																	0.19		0.19**	1.82		2.01	Ton	659	Commercial Fertilizer (12-12-12)
						8.60					0.52																	0.94**		0.94**	9.12		10.06	Ton	659	Agricultural Liming, as per plan
						41.30																									41.30		41.30	M.Gal.	659	Water
						75												100					67								242		242	Sq.Yd.	660	Sodding
12,114*						18,574*					325*																			12,114*		18,899*	31,013	Sq.Yd.	Special	Herbicides for Weed Control
																																				LANDSCAPING
																											25				25		25	Each	201	Trees Removed, as per plan
																											44				44		44	Each	664	Planting Salvaged Plants, As Per Plan
																											10				10		10	Each	665	Large Trees Moved and Reset, As Per Plan

1. Quantities continued on Sheet 19.
2. For explanation of Cost Participation I, II & III, see Sheet 4.
3. Quantities with an asterisk (*) are included in Cost Participation II(FI)
4. Quantities with (2) asterisk (**) are included in Cost Participation III.

Rev. 10-26-78

MADE A.H.S DATE 8-28-77
TRACED T.D DATE 11-02-77
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SCALE

Howard, Needles, Tammen & Bergendoff
CONSULTING ENGINEERS
CLEVELAND, OHIO

HNTB

GENERAL SUMMARY

QUANTITY CALCULATIONS
MADE BY D.S.P. DATE 11-2-77
CHECKED BY J.A.G. DATE 12-6-77

TYPE CODE 6706

FHWA REGION	STATE	PROJECT	
5	OHIO		

CUYAHOGA COUNTY
CUY-77-14.12
CUY-90-16.21

19 / 169

I-77-5(18)161 Sheet Number: 9A	33	93	I-90-1(101)29 Sheet Number: 9A	65	66	67	68	69	75	76	77	78	79	80	81	82	83	84	85	86	87	88	94	I-77-5(18)161 Cost Part. I	I-77-5(18)161 Cost Part. II	I-90-1(101)29 Cost Part. I	I-90-1(101)29 Cost Part. II & III	Total Quant.	Unit	Item	Description
																															TRAFFIC CONTROL SIGNING
				2	12	3	7	5	13	14	12	9	18													95		95	Each	202	Removal of Ground Mounted Signs
					3	5		2	1		6	4	2/2**													23	2**	25	Each	202	Removal of Ground Mounted Sign Supports, No. 8 Posts and Smaller
										1	2	2														5		5	Each	202	Removal of Ground Mounted Sign Supports, Beams larger than No.8 Posts
					1	2	7	3	2	6	2	5	4													32		32	Each	202	Removal of Ground Mounted Sign Installation
				4	3	6/1*	3																			16	1*	17	Each	202	Removal of Ground Mounted Major Sign Installation
				2/1*	13	10	7	5/1**																		37	1* | 1**	39	Each	202	Removal of Overhead Mounted Sign
								1																		1		1	Each	202	Removal of Overhead Sign Support No. 9.12
				1																						1		1	Each	202	Removal of Overhead Sign Support No. 10.48
				1	1																					2		2	Each	202	Removal of Overhead Sign Support for Monotube
					4	10	7	5/1**																		26	1**	27	Each	202	Removal of Overhead Structure Mounted Support
		147																					439	147		439		586	Each	620	Delineators, Type C, post mounted
		63																					378	63		378		441	Each	620	Delineators, Type D, post mounted
		7																					26	7		26		33	Each	620	Delineators, Type D, rail mounted
																							9			9		9	Each	620	Delineators, Type D, parapet mounted
		35																					54	35		54		89	Each	620	Delineators, Type C, rail mounted
					2	11/2*	2	3			5	4	4/1**																		
																										31	2*/1**	34	EACH	844	BREAKAWAY CONNECTIONS
6																								6				6	Each	844	Remove And Reerect Overhead Sign Support, As Per Plan
																	4**										4**	4	Each	844	Repair Anchor Base Foundation, as per plan
						1		1	13	12	35	30	13/4**													105	4**	109	Each	844	Remove and Reerect Ground Mounted Signs
					1	1		1																		3		3	Each	844	Remove and Reerect Ground Mounted Major Signs
				1*																							1*	1	Each	844	Remove and Reerect Overhead Sign Support, No. 12.24 Design 5
						32*			210.3	161.5	174.55	135.75	81/220**													764	32* | 220**	1016	Sq.Ft.	844	Signs, flat sheet
				2023.5	2462.5	1857/81*	1909.5	1343			64	32	64													9755.5	81*	9836.5	Sq.Ft.	844	Signs, extru sheet
									309.25	230	321.25	149.5	228													1238		1238	Lin.Ft.	844	Ground Mounted Support, No. 3 Steel Post, Driven
						193/32*	35	50			88.5	70	80/42.5**													517	32* | 42**	591	Lin.Ft.	844	Ground Mounted Supports, S4X7.7
									156	142.5	405.5	368	132.5													1205		1205	Lin.Ft.	844	Ground Mounted Supports, No. 4 Steel Post, As Per Plan, Driven
					41.5																					42		42	Lin.Ft.	844	Ground Mounted Supports, W 8x17
					5.3	2.97/0.54*	0.54	0.81			1.35	0.54	1.08/0.27**													12.6	0.5* | 0.3**	13.4	C.Y.	844	Concrete for Embedded Foundations
				61.17	58.65	30.31	44.46	19.93																		214.5		214.5	C.Y.	844	Concrete for Anchor Base Foundations
				7*	1		1	2																		4	7*	11	Each	844	Existing Sign Revised, As Per Plan
						1			6	6	2	3														18		18	Each	844	Pole Mounted Sign Attachment
				1*				3																		3	1*	4	Each	844	Sign Attachment to Existing Support
	1																							1				1	Each	844	Barrier Wall Assembly for Existing Sign Supports, Design No. 1
									1	2																3		3	Each	844	Bridge Connection for Small Signs
															1											1		1	Each	844	Overhead Sign Support, 7,65, Design No. 6, mod., 54' Span
														1												1		1	Each	844	Overhead Sign Support, 7.65, Design No. 6, mod., 62' Span
															1											1		1	Each	844	Overhead Sign Support, 7.65, Design No. 6, mod., 69' Span
															1											1		1	Each	844	Overhead Sign Support, 7.65, Design No. 8, mod., 68' Span
																			1							1		1	Each	844	Overhead Sign Support, 7.65, Design No.8, mod., as per plan, 78' Span
														1												1		1	Each	844	Overhead Sign Support, 7.65, Design No. 8, mod., 84' Span
																				1						1		1	Each	844	Overhead Sign Support, 7.65, Design No. 8, mod., 88' Span
														1												1		1	Each	844	Overhead Sign Support, 7.65, Design No. 8, mod., 89' Span
																						1				1		1	Each	844	Overhead Sign Support, 12.30, Design No. 2, 18' Arm
																		1		1						2		2	Each	844	Overhead Sign Support, 12.30, Design No. 2, mod., 14' Arm
																1		1	2	4	3	1				12		12	Each	844	Overhead Sign Support, 12.30, Design No. 2, mod., 16' Arm
																			5		1	1				7		7	Each	844	Overhead Sign Support, 12.30, Design No. 2, mod., 17' Arm
																	1									1		1	Each	844	Overhead Sign Support, 12.30, Design No. 5, mod., 18' Arm
																					1					1		1	Each	844	Overhead Sign Support, 12.30, Design No. 2, mod., 20' Arm
														1												1		1	Each	844	Overhead Sign Support, 12.30, Design No. 4, mod., 20' Arm
																	1									1		1	Each	844	Overhead Sign Support, 12.30, Design No. 5, mod., 20' Arm
																						1**					1**	1	Each	844	Overhead Sign Support, 12.30, Design No. 5, mod., 22' Arm
																1										1		1	Each	844	Overhead Sign Support, 12.30, Design No. 7, mod., 22' Arm
																1	1									2		2	Each	844	Overhead Sign Support, 12.30, Design No. 7, mod., 24' Arm
															1	1										2		2	Each	844	Overhead Sign Support, 12.30, Design No. 9, mod., 24' Arm
																2		3				2				7		7	Each	844	Overhead Sign Support, 18.24
																		1		1		1**				2	1**	3	Each	844	Overhead Sign Support, 18.26, Design No. 2
																		4		1	2	2				9		9	Each	844	Overhead Sign Support, 18.26, Design No. 3
																		1			1					2		2	Each	844	Overhead Sign Support, 18.26, Design No. 4
																	2									2		2	Each	844	Overhead Sign Support, 18.26, Design No. 7, Modified
	3																							3				3	Each	844	Barrier Wall Assembly For Existing Sign Supports, Design No. 1A
																															Pavement Marking

1. Quantities continued on Sheet 19A.
2. For explanation of Cost Participation I, II & III, see Sheet 4.
3. Quantities with an asterisk (*) are included in Cost Participation II(FI)
4. Quantities with (2) asterisks (**) are included in Cost Participation III.

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MADE D.S.P. DATE 11-1-77
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Howard, Needles, Tammen & Bergendoff
CONSULTING ENGINEERS
CLEVELAND, OHIO

HNTB

GENERAL SUMMARY

QUANTITY CALCULATIONS
MADE BY D.S.P. DATE 11-1-77
CHECKED BY J.A.G. DATE 12-7-77

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FHWA REGION	STATE	PROJECT	
5	OHIO		

19A / 169

CUYAHOGA COUNTY
CUY-77-14.12
CUY-90-16.21

I-77-5(18)161 SHEET NUMBER 4	9A	54	10A	I-90-1(101)29 SHEET NUMBER 4	10A	9B	9A	24B	54	89	90	91	92	91	I-77-5(18)161 COST PART. I	II & III	I-90-1(101)29 COST PART. I	II & III	TOTAL QUANT.	UNIT	ITEM	DESCRIPTION
																						PAVEMENT MARKING (CON'T)
		10.95						0.35	15.85						10.95		16.20		27.15	Miles	621	4-inch Edge Lines,
		5.77							11.79						5.77		11.79		17.56	Miles	847	6-inch Lane Lines, 847.09
		0.20							1.05						0.20		1.05		1.25	Miles	847	4-inch Lane Lines, 847.09
		1.26						0.01	1.74						1.26		1.75		3.01	Miles	847	8-inch Channelizing Lines, 847.09
		94							232						94		232		326	Lin.Ft.	847	24-inch Stop Lines, 847.09
									311								311		311	Lin.Ft.	847	4-inch Dotted Lines, 847.09
		1892							2258						1892		2258		4,150	Lin.Ft.	847	24-inch Broad Transverse Lines, 847.09
		3350							21,797						3350		21,797		25,147	Lin.Ft.	621	Curb Marking,
		11							42						11		42		53	Each	847	Lane Arrows, 847.09
		5							20						5		20		25	Each	847	Word "ONLY" on Pavement, 847.09
		1674							3480						1674		3480		5154	Sq.Ft.	621	Island Marking,
									1506								1506		1506	Lin.Ft.	847	6-inch Crosswalk Lines, 847.09
									240								240		240	Lin.Ft.	847	4-inch Centerline, 847.09
													3864*					3864*	3864	Lin.Ft.	Special	Rumble Grooves
																						SIGN LIGHTING
										14							14		14	Each	202	Remove Sign Lighting Fixtures for Storage
														Lump**				Lump*	Lump	Lump	202	Remove Overhead Structure Mounted Warning Flashers, As Per Plan
										19	20	13		2*			52	2*	54	Each	S625	Ground Rod
														Lump**				Lump*	Lump	Lump	S625	Electrical Equipment
										17	20	13		1**			50	1**	51	Each	844	Sign Service
										30	21	10		1**			61	1**	62	Each	844	Signs Wired
										4	9	9		1**			22	1**	23	Each	844	Signs Wired, Overpass Structure Mounted
										38	40	28		2**			106	2**	108	Each	844	Switch Enclosure Mounting Bracket
										19	20	14		1**			53	1**	54	Each	844	Disconnect Switch with Enclosure
										3	3	1					7		7	Each	844	Mercury Vapor Luminaire, w/100 watt lamp
										47	41	29		1**			117	1**	118	Each	844	Mercury Vapor Luminaire, w/175 watt lamp
										12							12		12	Each	844	Mercury Vapor Luminaire, w/250 watt lamp
										3	3	1					7		7	Each	844	Ballast, Type 100-480
										47	41	29		1**			117	1**	118	Each	844	Ballast, Type 175-480
										12							12		12	Each	844	Ballast, Type 250-480
										2				1**			2	1**	3	Each	844	Sign Service, as per plan
																						GENERAL
Lump				Lump											Lump		Lump		Lump	Lump	619	Field Office
			Lump		Lump										Lump		Lump		Lump	Lump	614	Maintaining Traffic
															Lump		Lump		Lump	Lump	623	Construction Layout Stakes
						200									90		110		200	Hours	Special	Law Enforcement Officer with Patrol Car
																						For Roadway Lighting Quantities, see Sheet 114
																						For Bridge CUY-77-1436 C, Quantities, see Sheet 125
																						For Bridge CUY-77-1438 B, Quantities, see Sheet 125
																						For Bridge CUY-77-1439 B, Quantities, see Sheet 125
																						For Bridge CUY-77-1440 A, Quantities, see Sheet 125
																						For Bridge CUY-77-1441 A, Quantities, see Sheet 125
																						For Bridge CUY-77-1459 , Quantities, see Sheet 125
																						For Bridge CUY-77-1519 , Quantities, see Sheet 125
																						For Bridge CUY-77-1548 , Quantities, see Sheet 125
																						For Bridge CUY-77-1564 , Quantities, see Sheet 125
																						For Bridge CUY-77-1576 A&B, Quantities, see Sheet 125
																						For Bridge CUY-77-1593 L, Quantities, see Sheet 125
																						For Bridge CUY-90-1628 , Quantities, see Sheet 125
																						For Bridge CUY-90-1640 , Quantities, see Sheet 125
																						For Bridge CUY-90-1651 , Quantities, see Sheet 125
																						For Bridge Ramp E-15 & Ramp E-18 over E. 9th St. Quantities, see Sheet 125
																						For Bridge Ramp E-15 over W.B. Broadway Ave. Quantities, see Sheet 125

1. For explanation of Cost Participation I, II & III, see Sheet 4.
2. Quantities with an asterisk (*) are included in Cost Participation II(FI)
3. Quantities with (2) asterisks (**) are included in Cost Participation III.

Rev. 1 - 9 -'79 Rev. 10-26-78

MADE D.S.P. DATE 11-1-77
TRACED T.W.D. DATE 11-7-77
CHECKED F.W.H. DATE 11-16-77
SCALE

Howard, Needles, Tammen & Bergendoff
CONSULTING ENGINEERS
CLEVELAND, OHIO

HNTB

QUANTITY CALCULATIONS

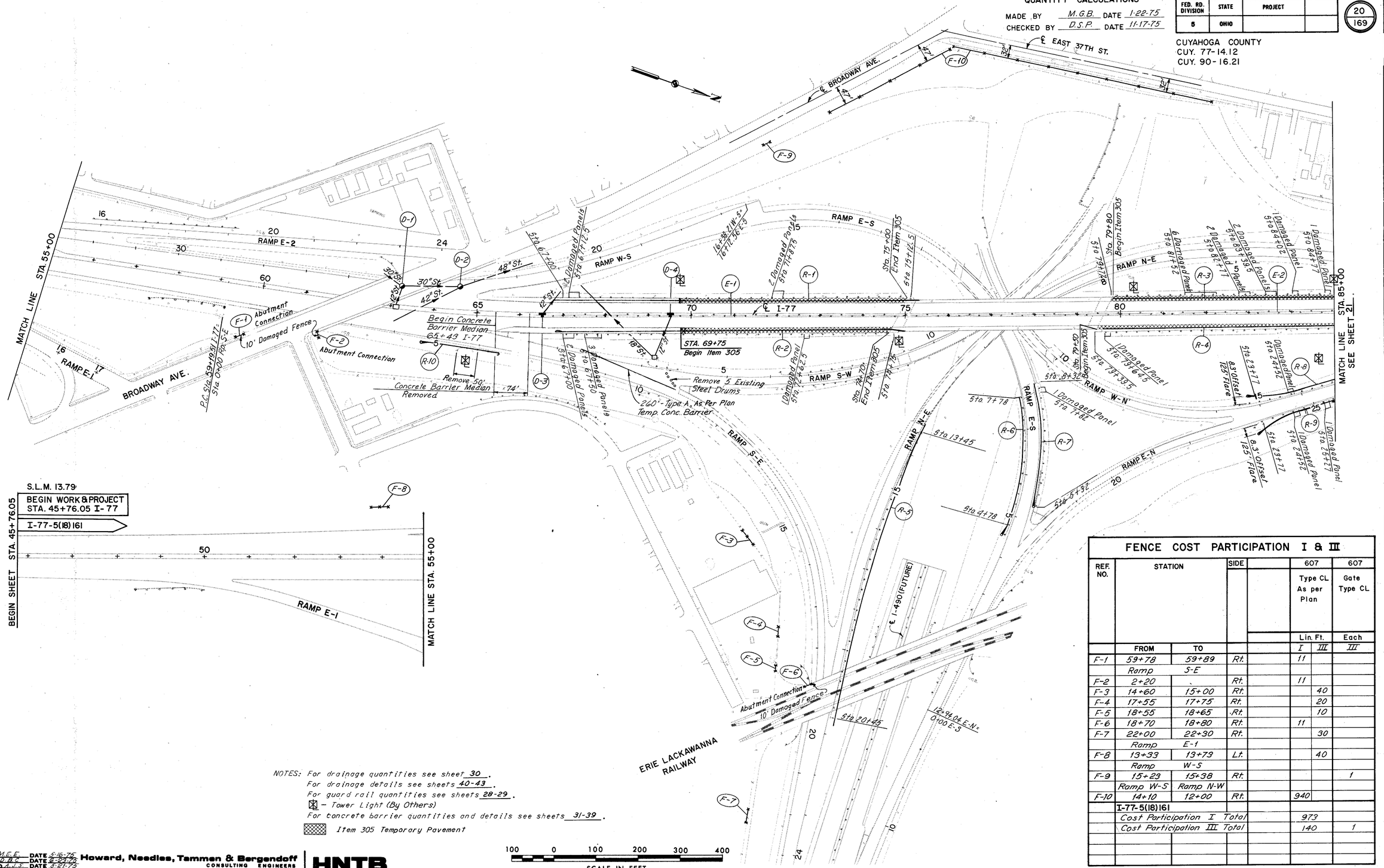
MADE BY M.G.B. DATE 1-22-75

CHECKED BY D.S.P. DATE 11-17-75

FED. RD. DIVISION	STATE	PROJECT	
5	OHIO		

20
169

CUYAHOGA COUNTY
CUY. 77-14.12
CUY. 90-16.21



FENCE COST PARTICIPATION I & III

REF. NO.	STATION FROM	STATION TO	SIDE		607 Type CL As per Plan Lin. Ft. I	607 Type CL As per Plan Lin. Ft. III	607 Gate Type CL Each III
F-1	59+78	59+89	Rt.		11		
	Ramp	S-E					
F-2	2+20		Rt.		11		
F-3	14+60	15+00	Rt.			40	
F-4	17+55	17+75	Rt.			20	
F-5	18+55	18+65	Rt.			10	
F-6	18+70	18+80	Rt.		11		
F-7	22+00	22+30	Rt.			30	
	Ramp	E-1					
F-8	13+33	13+73	Lt.			40	
	Ramp	W-S					
F-9	15+23	15+38	Rt.				1
	Ramp W-S	Ramp N-W					
F-10	14+10	12+00	Rt.		940		
	I-77-5(18)161						
	Cost Participation I Total				973		
	Cost Participation III Total				140		1

NOTES: For drainage quantities see sheet 30.
For drainage details see sheets 40-43.
For guard rail quantities see sheets 28-29.
⊠ – Tower Light (By Others)
For concrete barrier quantities and details see sheets 31-39.
Item 305 Temporary Pavement

MADE M.E.E. DATE 5-16-75
TRACED D.B.C. DATE 6-24-75
CHECKED A.J.S. DATE 3-21-72
SCALE 1"=100'

Howard, Needles, Tammen & Bergendoff
CONSULTING ENGINEERS
CLEVELAND, OHIO

HNTB

100 0 100 200 300 400
SCALE IN FEET

STA. 45+76.05 TO STA. 85+00 I-77

QUANTITY CALCULATIONS

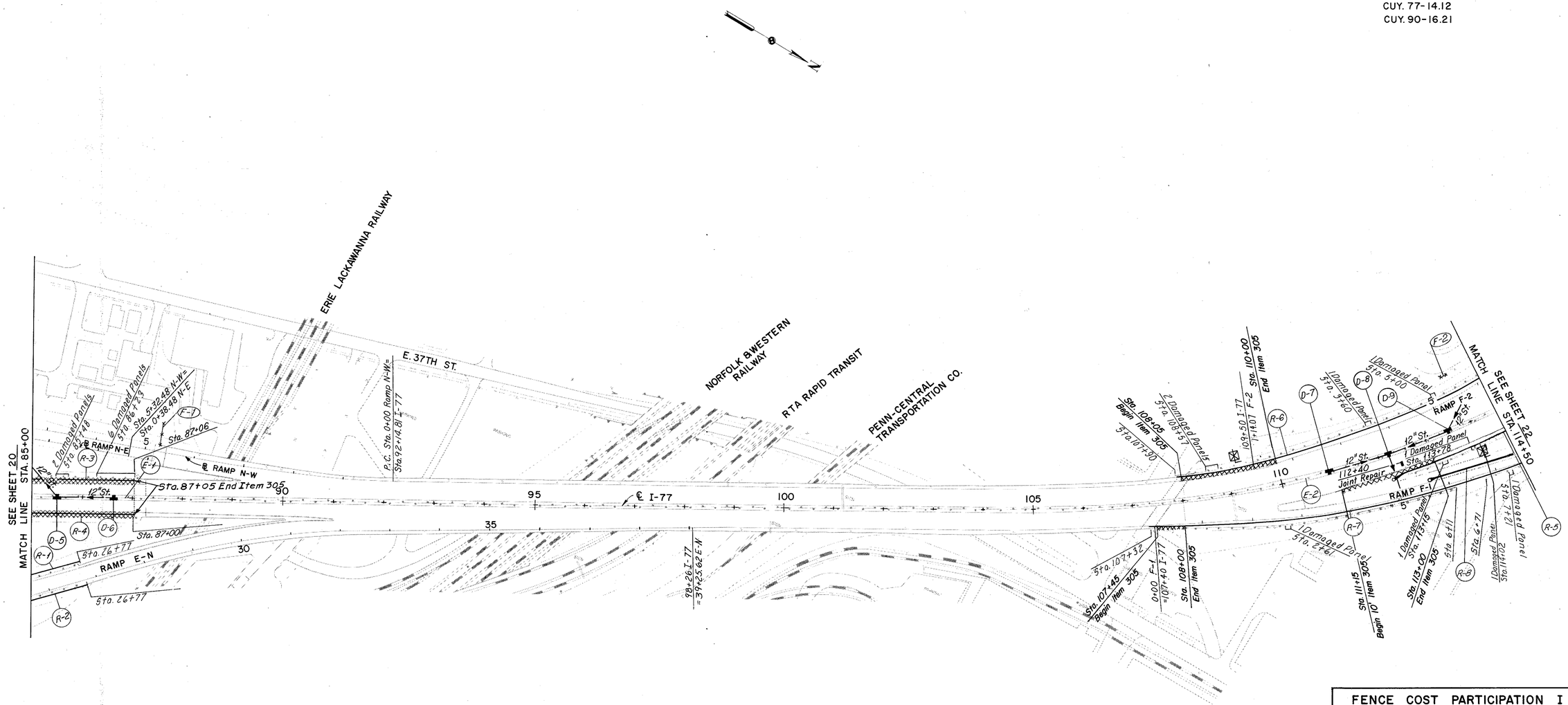
MADE BY M.G.B. DATE 1-23-75

CHECKED BY D.S.P. DATE 11-17-75

FED. RD. DIVISION	STATE	PROJECT	
5	OHIO		

21
169

CUYAHOGA COUNTY
CUY. 77-14.12
CUY. 90-16.21



NOTES: For drainage quantities see sheet 30.
For drainage details see sheets 40-43.
For guard rail quantities see sheets 28-29.
⊠ – Tower Light by others.
For concrete barrier quantities and details see sheets 31-39.

▨ Item 305 Temporary Pavement

For joint repair details see Sheet 46

100 0 100 200 300 400
SCALE IN FEET

FENCE COST PARTICIPATION I & III

REF. NO.	STATION FROM	TO	SIDE	607 Type CL As per Plan Lin. Ft. I	III
	Ramp	N-W			
F-1	4+75	4+75 Rt.	Rt.	45	
	Ramp	F-2			
F-2	5+33	5+43	Lt.		10
	I-77-5 (18) 161				
	Cost Participation I Total			45	
	Cost Participation III Total				10

MADE M.E.E. DATE 5-16-75
TRACED D.R.G. DATE 6-23-75
CHECKED R.W.S. DATE 8-21-75
SCALE 1"=100'

Howard, Needles, Tammen & Bergendoff
CONSULTING ENGINEERS
CLEVELAND, OHIO

HNTB

STA. 85+00 TO STA. 114+50 I-77

QUANTITY CALCULATIONS

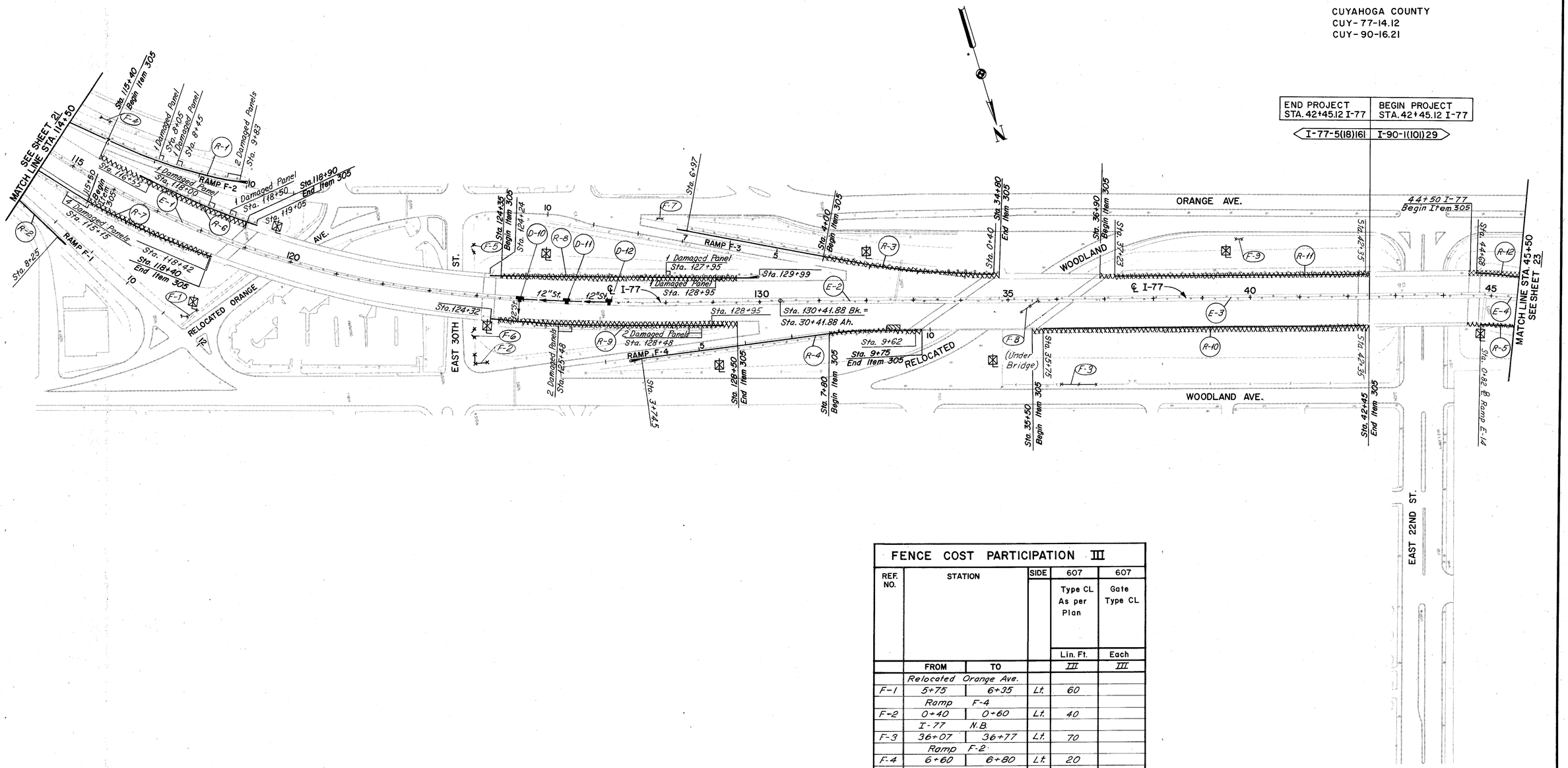
MADE BY M.G.B. DATE 1-23-75

CHECKED BY D.S.P. DATE 11-17-75

FED. RD. DIVISION	STATE	PROJECT	
5	OHIO		

22
169

CUYAHOGA COUNTY
CUY-77-14.12
CUY-90-16.21



FENCE COST PARTICIPATION III

REF. NO.	STATION FROM	STATION TO	SIDE	607 Type CL As per Plan (Lin. Ft.)	607 Gate Type CL (Each)
	Relocated Orange Ave.			III	III
F-1	5+75	6+35	Lt.	60	
	Ramp F-4				
F-2	0+40	0+60	Lt.	40	
	I-77 N.B.				
F-3	36+07	36+77	Lt.	70	
	Ramp F-2				
F-4	6+60	6+80	Lt.	20	
	East 30 St.				
F-5					1
F-6					1
	Ramp F-3				
F-7	7+54	7+63	Rt.	10	
	Relocated Woodland				
F-8	4+45	4+95	Lt.	50	
	Orange Ave.				
F-9	18+10	18+20	Rt.	10	
	I-77-5(18)161				
	Total			260	2

NOTES: For drainage quantities see sheet 30.
For drainage details see sheets 40-43.
For guard rail quantities see sheets 28-29.
⊠ – Tower Light (By others)
For concrete barrier quantities and details see sheets 31-39.

Item 305 Temporary Pavement

For pavement replacement details, see sheet 46.

MADE A.J.S. DATE 5-6-75
TRACED D.B.C. DATE 5-23-75
CHECKED M.E.E. DATE 5-8-75
SCALE 1"=100'

Howard, Needles, Tammen & Bergendoff
CONSULTING ENGINEERS
CLEVELAND, OHIO

HNTB

100 0 100 200 300 400
SCALE IN FEET

QUANTITY CALCULATIONS

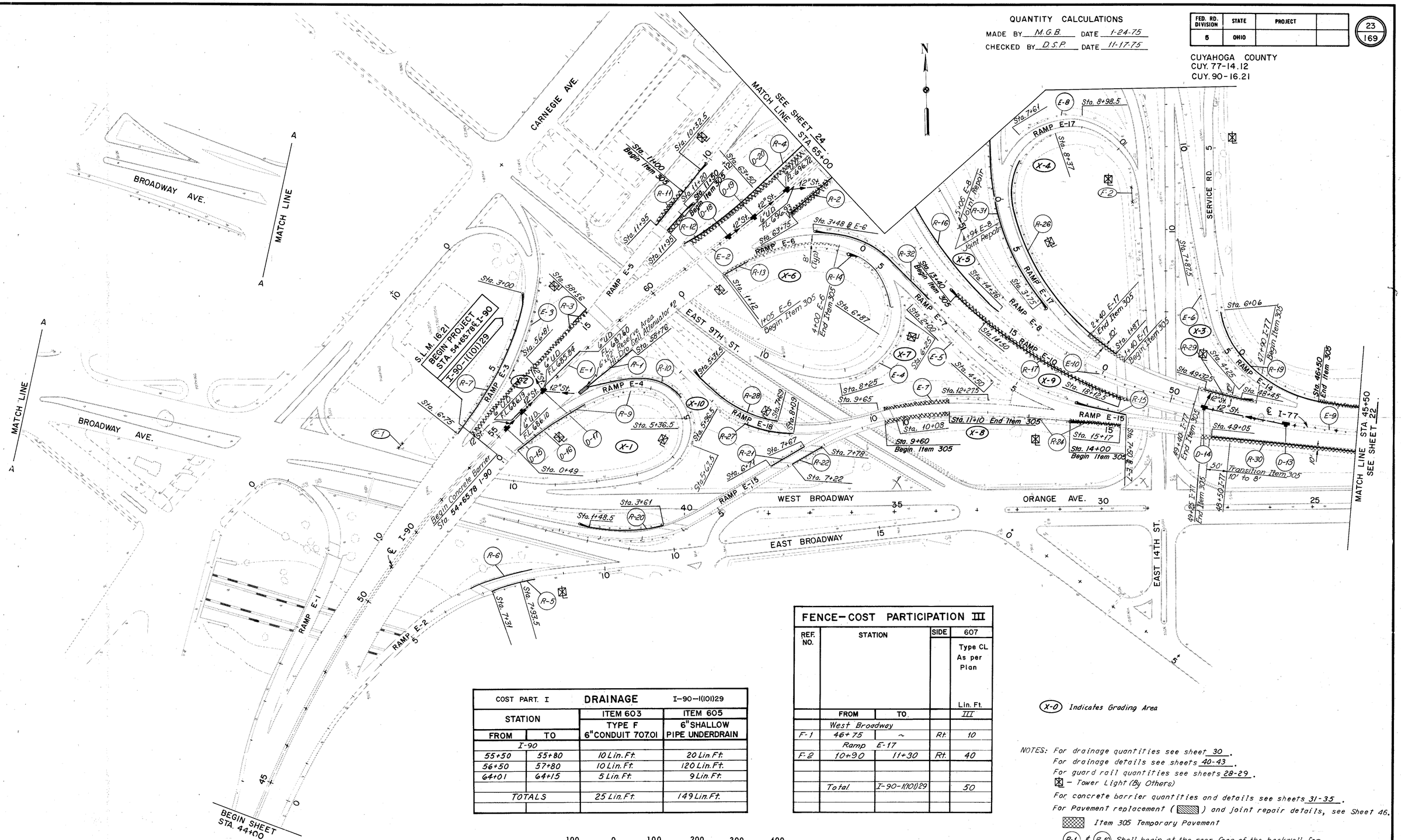
MADE BY M.G.B. DATE 1-24-75

CHECKED BY D.S.P. DATE 11-17-75

FED. RD. DIVISION	STATE	PROJECT	
5	OHIO		

23
169

CUYAHOGA COUNTY
CUY. 77-14.12
CUY. 90-16.21



COST PART. I	DRAINAGE	I-90-1(101)29
STATION	ITEM 603 TYPE F 6" CONDUIT 707.01	ITEM 605 6" SHALLOW PIPE UNDERDRAIN
FROM — TO		
I-90		
55+50 — 55+80	10 Lin. Ft.	20 Lin. Ft.
56+50 — 57+80	10 Lin. Ft.	120 Lin. Ft.
64+01 — 64+15	5 Lin. Ft.	9 Lin. Ft.
TOTALS	25 Lin. Ft.	149 Lin. Ft.

FENCE — COST PARTICIPATION III

REF. NO.	STATION FROM	TO	SIDE	607 Type CL As per Plan Lin. Ft. III
	West Broadway			
F-1	46+75	~	Rt.	10
	Ramp E-17			
F-2	10+90	11+30	Rt.	40
	Total	I-90-1(101)29		50

(X-0) Indicates Grading Area

NOTES: For drainage quantities see sheet 30.
For drainage details see sheets 40-43.
For guard rail quantities see sheets 28-29.
⊠ — Tower Light (By Others)
For concrete barrier quantities and details see sheets 31-35.
For Pavement replacement (▨) and joint repair details, see Sheet 46.
▨ Item 305 Temporary Pavement
(R-1) & (R-10) Shall begin at the rear face of the backwall for Hi-Dro Cell Attenuator #2.
For Cross Section Layout Sheet of Grading Areas, See Sheet 95.

100 0 100 200 300 400
SCALE IN FEET

MADE M.G.B. DATE 5-16-75
TRACED D.R.C. DATE 6-23-75
CHECKED A.J.S. DATE 5-20-75
SCALE 1"=100'

Howard, Needles, Tammen & Bergendoff
CONSULTING ENGINEERS
CLEVELAND, OHIO

HNTB

STA. 45+50 I-77
STA. 44+50 I-90 TO STA. 65+00 I-90

QUANTITY CALCULATIONS

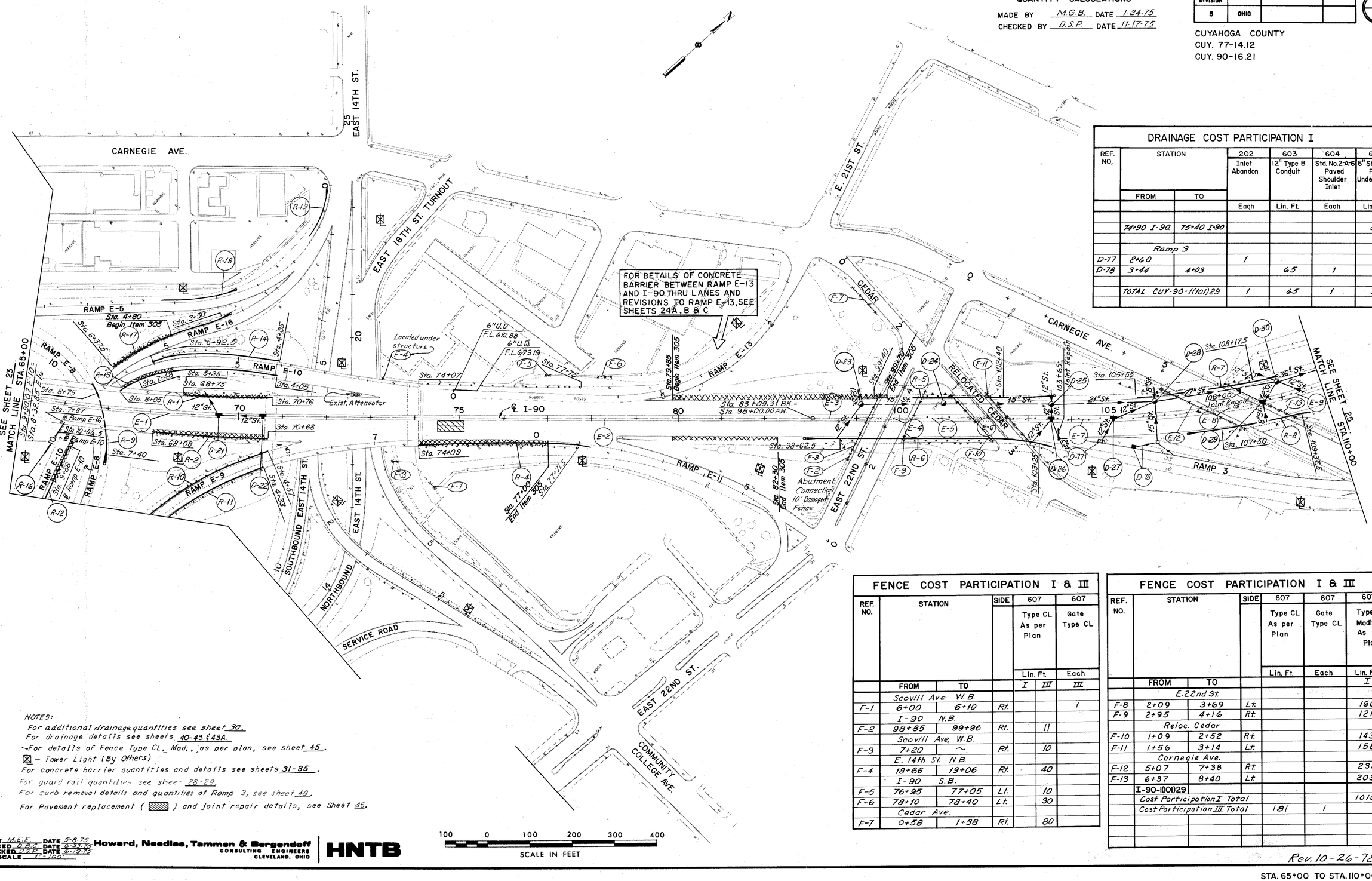
MADE BY M.G.B. DATE 1-24-75

CHECKED BY D.S.P. DATE 11-17-75

FED. RD. DIVISION	STATE	PROJECT	
5	OHIO		

24
169

CUYAHOGA COUNTY
CUY. 77-14.12
CUY. 90-16.21



DRAINAGE COST PARTICIPATION I

REF. NO.	STATION FROM	STATION TO	202 Inlet Abandon	603 12" Type B Conduit	604 Std. No. 2-A-6 Paved Shoulder Inlet	605 6" Shallow Pipe Underdrain
			Each	Lin. Ft.	Each	Lin. Ft.
	74+90 I-90	75+40 I-90				50
	Ramp 3					
D-77	2+60		1			
D-78	3+44	4+03		65	1	
	TOTAL CUY-90-1(101)29		1	65	1	50

NOTES:

For additional drainage quantities see sheet 30.

For drainage details see sheets 40-43 & 43A.

For details of Fence Type CL, Mod., as per plan, see sheet 45.

⊠ – Tower Light (By Others)

For concrete barrier quantities and details see sheets 31-35.

For guard rail quantities see sheet 28-29.

For curb removal details and quantities at Ramp 3, see sheet 48.

For Pavement replacement (▨) and joint repair details, see Sheet 46.

FENCE COST PARTICIPATION I & III

REF. NO.	STATION FROM	STATION TO	SIDE	607 Type CL As per Plan Lin. Ft. I	607 Type CL As per Plan Lin. Ft. III	607 Gate Type CL Each III
	Scovill Ave.	W.B.				
F-1	6+00	6+10	Rt.			1
	I-90	N.B.				
F-2	98+85	99+96	Rt.		11	
	Scovill Ave.	W.B.				
F-3	7+20	~	Rt.		10	
	E. 14th St.	N.B.				
F-4	18+66	19+06	Rt.		40	
	I-90	S.B.				
F-5	76+95	77+05	Lt.		10	
F-6	78+10	78+40	Lt.		30	
	Cedar Ave.					
F-7	0+58	1+38	Rt.		80	

FENCE COST PARTICIPATION I & III

REF. NO.	STATION FROM	STATION TO	SIDE	607 Type CL As per Plan Lin. Ft.	607 Gate Type CL Each	607 Type CL Modified As per Plan Lin. Ft. I
	E.22nd St.					
F-8	2+09	3+69	Lt.			160
F-9	2+95	4+16	Rt.			121
	Reloc. Cedar					
F-10	1+09	2+52	Rt.			143
F-11	1+56	3+14	Lt.			158
	Carnegie Ave.					
F-12	5+07	7+38	Rt.			231
F-13	6+37	8+40	Lt.			203
	I-90-1(101)29					
	Cost Participation I Total					1016
	Cost Participation III Total			181	1	

MADE M.E.E. DATE 3-8-75
TRACED D.B.C. DATE 6-19-75
CHECKED D.S.P. DATE 6-19-75
SCALE 1"=100'

Howard, Needles, Tammen & Bergendoff
CONSULTING ENGINEERS
CLEVELAND, OHIO

HNTB

100 0 100 200 300 400
SCALE IN FEET

Rev. 10-26-78

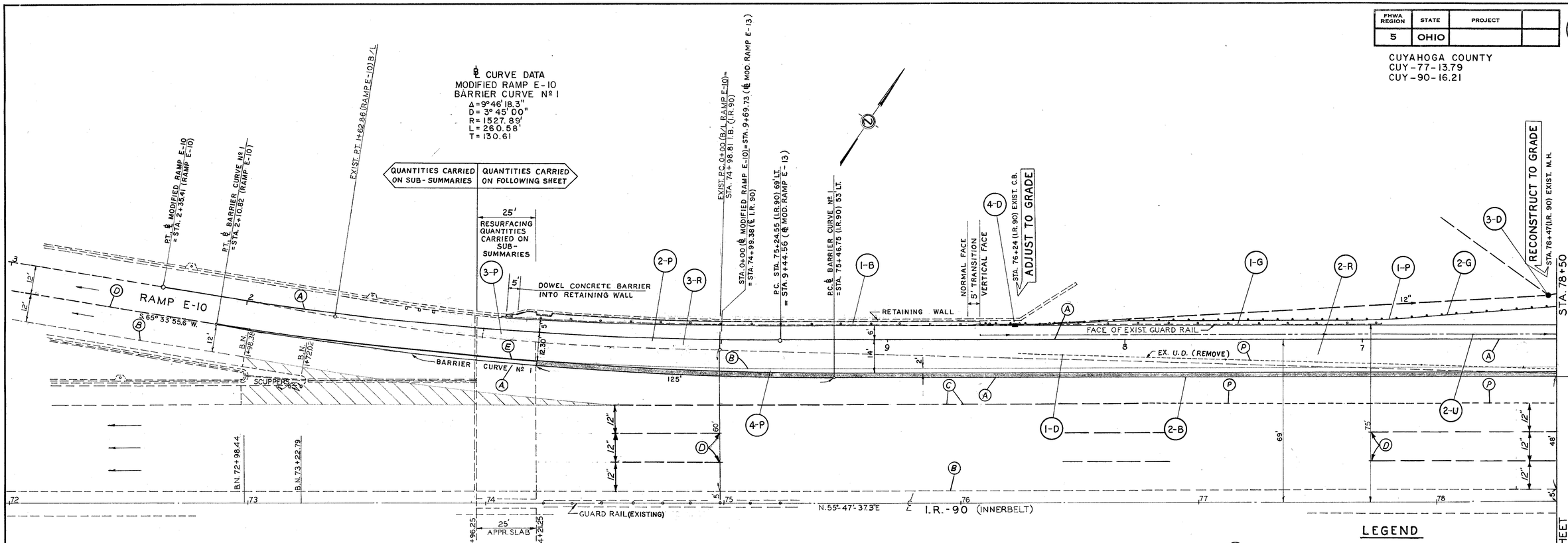
STA. 65+00 TO STA. 110+00 I-90

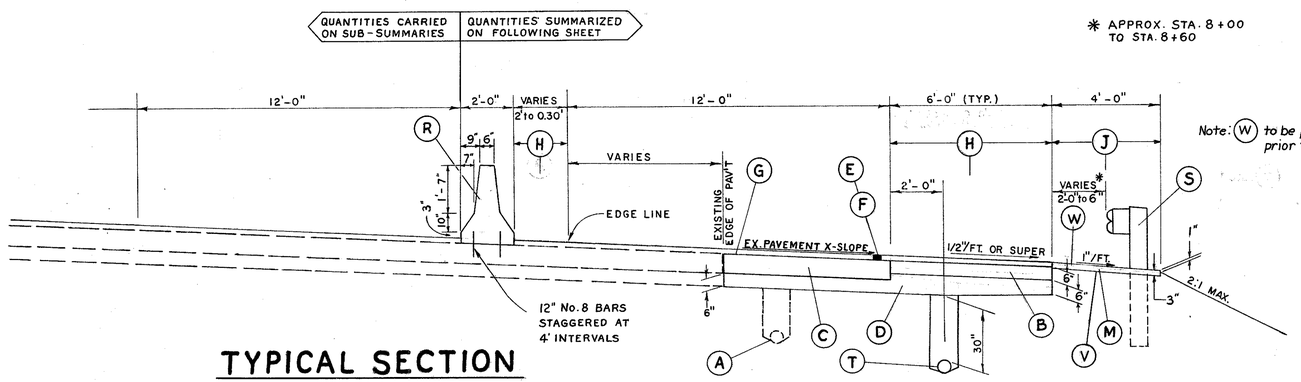
FHWA REGION	STATE	PROJECT	
5	OHIO		

24A
169

CUYAHOGA COUNTY
CUY-77-13.79
CUY-90-16.21

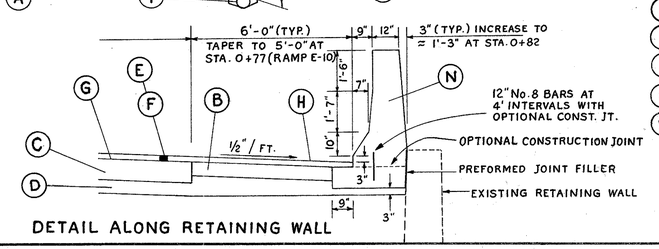
℄ CURVE DATA
MODIFIED RAMP E-10
BARRIER CURVE Nº 1
Δ = 9°46'18.3"
D = 3°45'00"
R = 1527.89'
L = 260.58'
T = 130.61





TYPICAL SECTION

RAMP E-10
STA. 0+00 TO STA. 1+03.28
RAMP E-13
STA. 1+28.89 TO STA. 9+69.73



DETAIL ALONG RETAINING WALL

LEGEND

(A)	Item 202	Pipe Removed, 24" and Under
(B)	Item 301	Bituminous Aggregate Base
(C)	Item 305	9" Portland Cement Concrete Base
(D)	Item 310	Subbase, Grading A
(E)	Item 402	1¼" Asphalt Concrete, AC-20
(F)	Item 404	1¼" Asphalt Concrete, AC-20
(G)	Item 407	Tack Coat: 702.04, SS-1, SS-1h, MS-2 or RS-1; or 702.02, RC-250 @ 0.10 Gal./S.Y. with Cover Aggregate @ 7 lb./S.Y.
(H)	Item 409	Seal Coat Bituminous Material: 702.02, MC-800 or MC-3000; 702.03 CBAE-800; 702.04, RS-1, RS-2 or CRS-2 @ 0.30 Gal/S.Y. Cover Aggregate No.8 @ 0.008 C.Y./S.Y.
(J)	Item 409	Seal Coat Bituminous Material: 702.02, MC-800 or MC-3000; 702.03 CBAE-800; 702.04, RS-1, RS-2, CRS-1 or CRS-2 or 702.09, RT-9 or RT-10 @ 0.30 Gal/S.Y.
(M)	Item 617	Compacted Aggregate, as per Plan
(N)	Item 622	Concrete Barrier, Type D-50 Modified as per plan
(R)	Item 622	Concrete Barrier, Type A, Modified, as per Plan
(S)	Item 606	Guardrail, Type 5
(T)	Item 605	6" Shallow Pipe Underdrains
(U)	Item 617	Water: Applied as directed by the Engineer
(V)	Item Special	Weed Control
(W)	Item 408	Prime Coat: 702.09 RT-2 or RT-3; 702.02 MC-30 or MC-70: 702.03 Primer 20 applied at the rate of 0.40 Gal. per Sq. Yd.

SEE FOLLOWING SHEET FOR QUANTITIES
SEE EXISTING TYPICAL SECTION SEE SHEET No. 2
PAVEMENT MARKING LEGEND, SEE SHEET 56.

RAMP E-13 CONCRETE BARRIER

SHEET 1 of 3

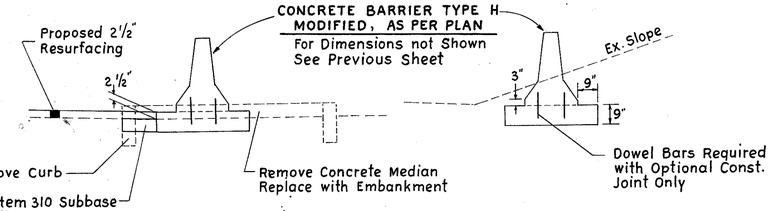
FHWA REGION	STATE	PROJECT		24B / 169
5	OHIO			

CUYAHOGA COUNTY
CUY-77-13.79
CUY-90-16.21

COMPUTED BY: E.N.F. 9-14-77
CHECKED BY : M.A.A. 9-16-77

PAVEMENT MARKINGS COST PART. I

STATION TO STATION	SIDE	621 4" White Edge Line (A)	847 4" Yellow Edge Line (B)	847 8" Channelizing Line (E)
		Lin.Ft.	Lin.Ft.	Lin.Ft.
1+28.89 E-13 to 1+03 E-10	Rt.	944		
1+28.89 E-13 to 0+78 E-10	Lt.		914	
0+78 E-10 to 1+03 E-10	Lt.			25
I-90-1(101)29				
TOTALS		944	914	25

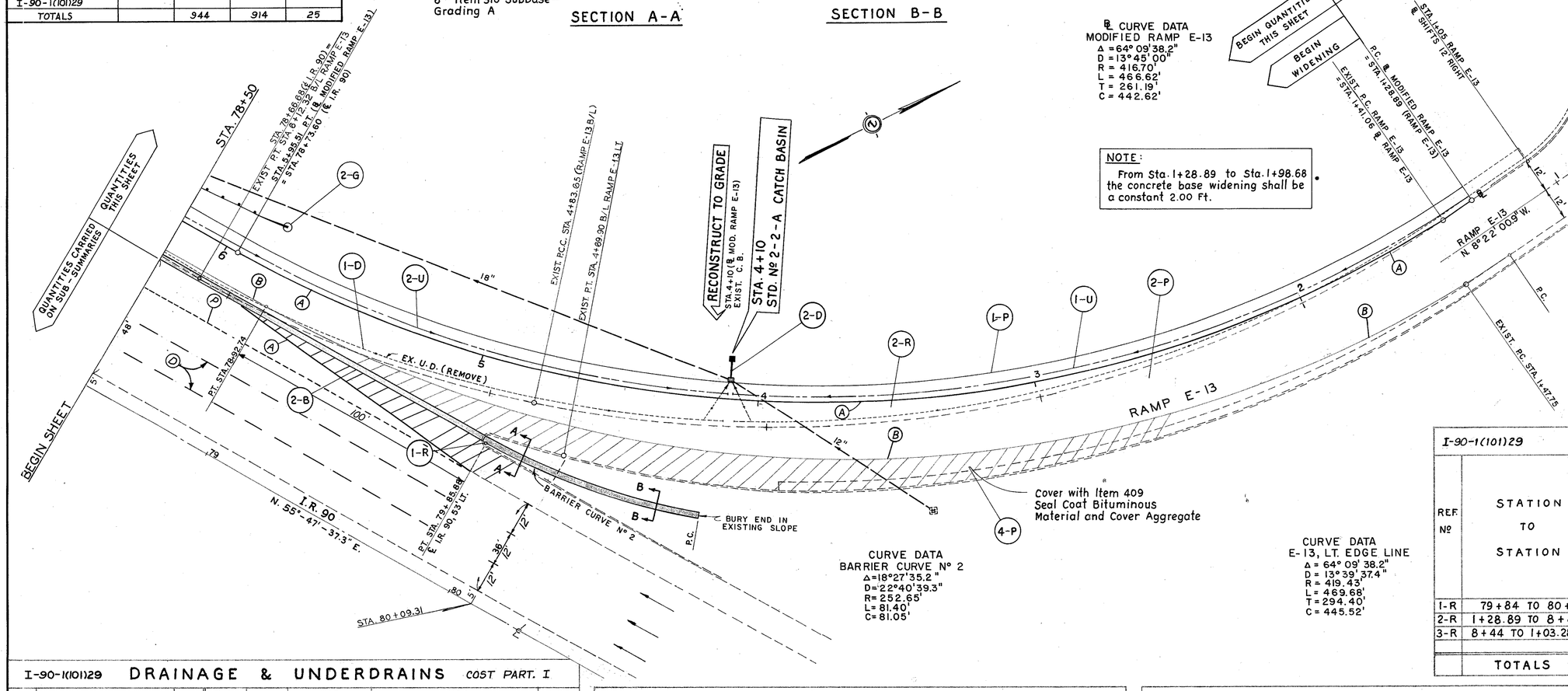


SECTION A-A

SECTION B-B

℄ CURVE DATA
MODIFIED RAMP E-13
Δ = 64° 09' 38.2"
D = 13° 45' 00"
R = 416.70'
L = 466.62'
T = 261.19'
C = 442.62'

NOTE:
From Sta. 1+28.89 to Sta. 1+98.68 the concrete base widening shall be a constant 2.00 Ft.



CURVE DATA
BARRIER CURVE Nº 2
Δ=18°27'35.2"
D=22°40'39.3"
R=252.65'
L=81.40'
C=81.05'

CURVE DATA
E-13, LT. EDGE LINE
Δ = 64° 09' 38.2"
D = 13° 39' 37.4"
R = 419.43'
L = 469.68'
T = 294.40'
C = 445.52'

EROSION CONTROL COST PART.I

STATION TO STATION	SIDE	659 Seeding and Mulching	659 Commercial Fertilizer (12-12-12)	659 Agricultural Liming
I-90-1(101)29		SQ.YD.	TON	TON
1+29 TO 8+44	RT.	1151	0.10	0.52

I-90-1(101)29 ROADWAY COST PARTICIPATION I

REF. Nº	STATION TO STATION	SIDE	202 Concrete Median Pavement Removed	202 Curb Removed	203 Subgrade Compaction	203 Excavation not Including Embankment Construction	203 Embankment
			SQ.YD.	LIN.FT.	SQ.YD.	CU.YD.	CU.YD.
1-R	79+84 TO 80+14	LT.	21	34			1
2-R	1+28.89 TO 8+44	RT.			780	698	221
3-R	8+44 TO 1+03.28 (E-10)	RT.			135	116	
	TOTALS		21	34	915	814	222

I-90-1(101)29 DRAINAGE & UNDERDRAINS COST PART. I

REF. Nº	STATION TO STATION	SIDE	202 Pipe Removed 24" & Under	603 6" Conduit, Type F	603 12" Conduit Type B	604 Manhole Reconstructed to Grade	604 Catch Basin Reconstructed to Grade	604 Standard Nº 2-2-A Catch Basin	604 Catch Basin Adjusted to Grade	605 6" Shallow Pipe Underdrain
			LIN.FT.	LIN.FT.	LIN.FT.	EACH	EACH	EACH	EACH	LIN.FT.
1-D	1+29 TO 8+45	RT.	756							
2-D	4+10	RT.			8		1	1		
3-D	6+22	RT.				1				
4-D	8+46	RT.							1	
1-U	1+29 TO 4+09	RT.		5						280
2-U	4+11 TO 8+61	RT.		5						450
	TOTALS		756	10	8	1	1	1	1	730

I-90-1(101)29 GUARDRAIL & CONCRETE BARRIER COST PART. I

REF. Nº	STATION TO STATION	SIDE	202 Guardrail Removed	606 Guardrail Type 5	606 Anchor Assembly Type A	606 Bridge Terminal Assembly, Type A	622 Concrete Barrier Type D-90 Modified as per plan	622 Concrete Barrier Type A, Modified as per Plan
			LIN.FT.	LIN.FT.	EACH	EACH	LIN.FT.	LIN.FT.
1-G	6+92 To 0+91 (E-10)	RT.	369					
2-G	5+84 To 8+61	RT.		250	1	1		
1-B	8+61 To 0+91 (E-10)	RT.					200	
2-B	74+21 To 80+65	LT.						646
	TOTALS		369	250	1	1	200	646

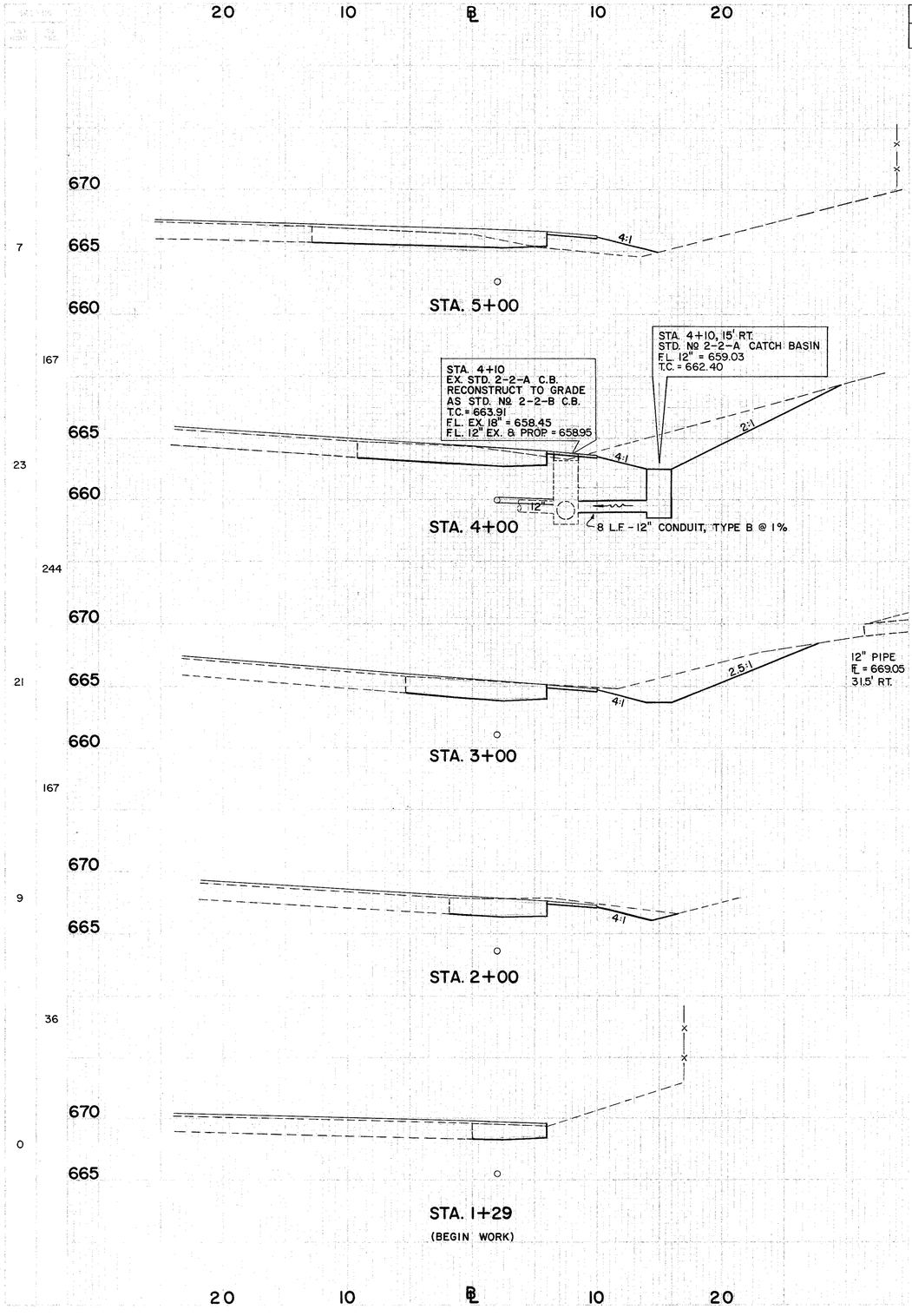
I-90-1(101)29 PAVEMENT

All Quantities are cost participation I, unless noted by asterisk(*) to be cost Participation II.

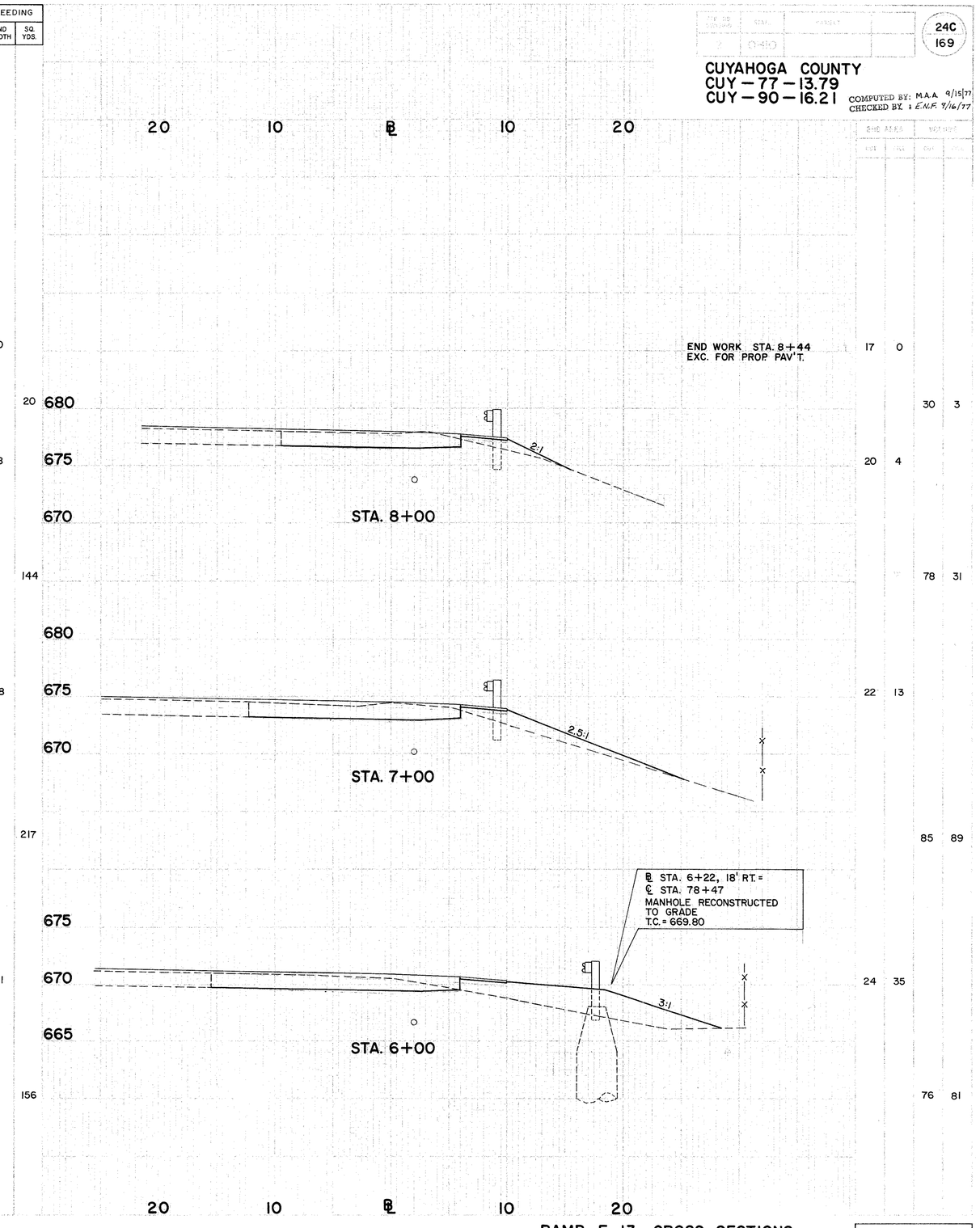
REF. Nº	STATION TO STATION	SIDE	301 Bituminous Aggregate Base	305 9" Portland Cement Concrete Base	310 Subbase Grading A As per plan	617 Water	402 Asphalt Concrete (AC-20)	404 Asphalt Concrete (AC-20)	407 Tack Coat	407 Cover Aggregate	409 Seal Coat Bituminous Material	409 Seal Coat Cover Aggregate Nº 8	408 Prime Coat	617 Compacted Aggregate, as per Plan	SPECIAL Weed Control
			CU.YD.	SQ.YD.	CU.YD.	M.GAL	CU.YD.	CU.YD.	GAL	TON	GAL.	CU.YD.	GAL	CU.YD.	SQ.YD.
1-P	1+28.89 To 8+61	R&L				1.6*					95		130*	26*	325*
2-P	1+28.89 To 0+78 (E-10)	R&L	97	904	276		98*	98	283	10	181	5			
3-P	0+78 (E-10) To 1+03.28	R&L	14	11	5										
4-P	1+28.89 To 0+78 (E-10)	LT.									150	4			
	TOTALS		111	915	281	1.6*	98*	98	283	10	426	9	130*	26*	325*

Rev. 10-26-78 RAMP E-13 CONCRETE BARRIER | SHEET 2 of 3

END AREA		VOLUME		SEEDING	
CUT	FILL	CUT	FILL	END WIDTH	SQ. YDS.



7	17	9					
167	126	17	0				
23	51	0	8				
244	169	0					
21	40	0					
167	104	0	18				
9	16	0					
36	30	0	21				
0	7	0					



20	17	0				30	3
144						20	4
217						78	31
156						85	89
						24	35
						76	81

24C
169

CUYAHOGA COUNTY
CUY – 77 – 13.79
CUY – 90 – 16.21

COMPUTED BY: M.A.A. 9/15/77
CHECKED BY: E.N.F. 9/16/77

RAMP E-13 CROSS SECTIONS

SHEET 3 OF 3

QUANTITY CALCULATIONS

MADE BY MGB DATE 1-24-75

CHECKED BY DSP DATE 11-17-75

FED. RD. DIVISION	STATE	PROJECT	
5	OHIO		

25
169

CUYAHOGA COUNTY
CUY-77-14.12
CUY-90-16.21

DRAINAGE COST PARTICIPATION I

REF. NO.	STATION FROM	STATION TO	202 Inlet Abandon *	603 12" Type B Conduit	604 Std.No.2-2-B C.B.
			Each	Lin. Ft.	Each
	I-90				
D-79	133+70	134+35	1	67	1
	TOTAL I-90-1(101)29		1	67	1

*Connect Pipes thru.

FENCE COST PARTICIPATION I & III

REF. NO.	STATION FROM	STATION TO	SIDE	607 Type CL As per Plan	607 Gate Type CL	607 Type CL Modified As per Plan
				Lin. Ft. III	Each III	Lin. Ft. I
	Ramp 3					
F-1	8+80	9+45	Rt.	110		
	I-90 N.B.					
F-2	130+40	130+70	Rt.	16	1	
	Prospect Ave.					
F-3	10+11	11+74	Rt.			163
F-4	10+57	12+16	Lt.			159
	Euclid Ave.					
F-5	6+04	7+48	Rt.			144
F-6	6+21	7+65	Lt.			144
	Chester Ave.					
F-7	6+25	7+79	Rt.			154
F-8	6+18	7+72	Lt.			154
	I-90-1(101)29					
	Cost Participation I Total					918
	Cost Participation III Total			126	1	

NOTES: For additional drainage quantities see sheet 30.
For drainage details see sheets 40-43 & 43A
For guard rail quantities see sheets 28-29.
⊠ – Tower Light (By Others)
For concrete barrier quantities and details see sheets 31-39.
For details of Fence Type CL, Mod., as per plan, see sheet 45.
For curb removal details at Ramps 4,5,6,7,8,9,10,11, see sheet 48.
For pavement replacement (▨) and joint repair details, see sheet 46.
▩ Item 305 Temporary Pavement

MADE MEE DATE 5-8-75
TRACED DBC DATE 6-23-75
CHECKED DSP DATE 6-27-75
SCALE 1"=100'

Howard, Needles, Tammen & Bergendoff
CONSULTING ENGINEERS
CLEVELAND, OHIO

HNTB

SCALE IN FEET

STA. 110+00 TO STA. 135+00 I-90

QUANTITY CALCULATIONS

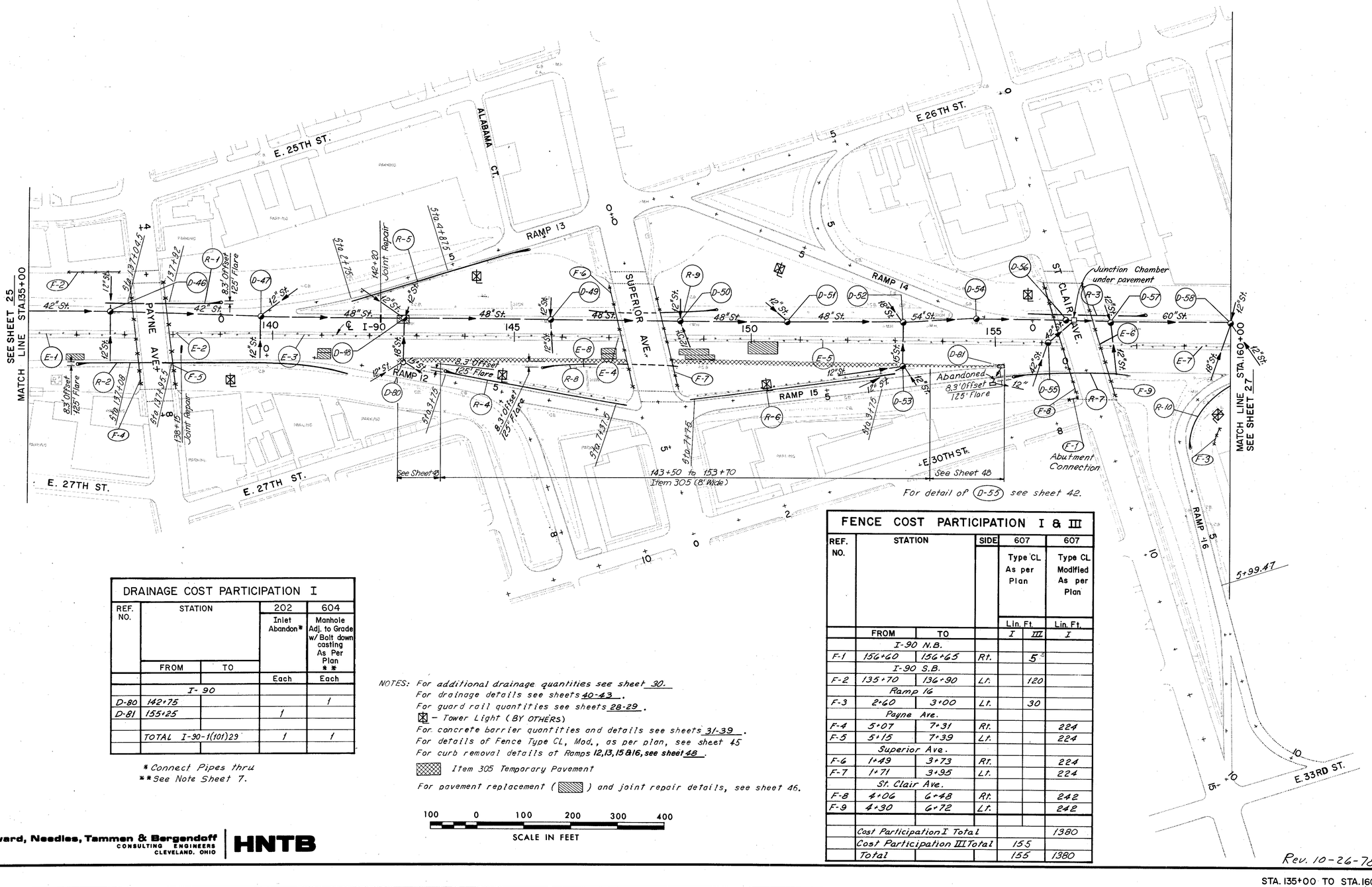
MADE BY MGB DATE 1-24-75

CHECKED BY DSP DATE 11-17-75

FED. RD. DIVISION	STATE	PROJECT	
5	OHIO		

26
169

CUYAHOGA COUNTY
CUY-77-14.12
CUY-90-16.21



DRAINAGE COST PARTICIPATION I

REF. NO.	STATION FROM	STATION TO	202 Inlet Abandon* Each	604 Manhole Adj. to Grade w/ Bolt down casting As Per Plan ** Each
	I-90			
D-80	142+75			1
D-81	155+25		1	
	TOTAL I-90-1(101)29		1	1

* Connect Pipes thru
** See Note Sheet 7.

NOTES: For additional drainage quantities see sheet 30.
For drainage details see sheets 40-43.
For guard rail quantities see sheets 28-29.
⊠ – Tower Light (BY OTHERS)
For concrete barrier quantities and details see sheets 31-39.
For details of Fence Type CL, Mod., as per plan, see sheet 45
For curb removal details at Ramps 12,13,15&16, see sheet 48.
Item 305 Temporary Pavement
For pavement replacement ( ) and joint repair details, see sheet 46.

100 0 100 200 300 400
SCALE IN FEET

FENCE COST PARTICIPATION I & III

REF. NO.	STATION FROM	STATION TO	SIDE	607 Type CL As per Plan Lin. Ft. I	607 Type CL As per Plan Lin. Ft. III	607 Type CL Modified As per Plan Lin. Ft. I
	I-90 N.B.					
F-1	156+60	156+65	Rt.		5	
	I-90 S.B.					
F-2	135+70	136+90	Lt.		120	
	Ramp 16					
F-3	2+60	3+00	Lt.		30	
	Payne Ave.					
F-4	5+07	7+31	Rt.			224
F-5	5+15	7+39	Lt.			224
	Superior Ave.					
F-6	1+49	3+73	Rt.			224
F-7	1+71	3+95	Lt.			224
	St. Clair Ave.					
F-8	4+06	6+48	Rt.			242
F-9	4+30	6+72	Lt.			242
	Cost Participation I Total					1380
	Cost Participation III Total				155	
	Total				155	1380

MADE MEE DATE 5-9-75
TRACED DEC DATE 6-27-75
CHECKED DSP DATE 11-12-75
SCALE 1"=100'

Howard, Needles, Tammen & Bergendoff
CONSULTING ENGINEERS
CLEVELAND, OHIO

HNTB

Rev. 10-26-78

QUANTITY CALCULATIONS
MADE BY M.G.B. DATE 1-24-75
CHECKED BY D.S.P. DATE 11-17-75

FED. RD. DIVISION	STATE	PROJECT	
5	OHIO		

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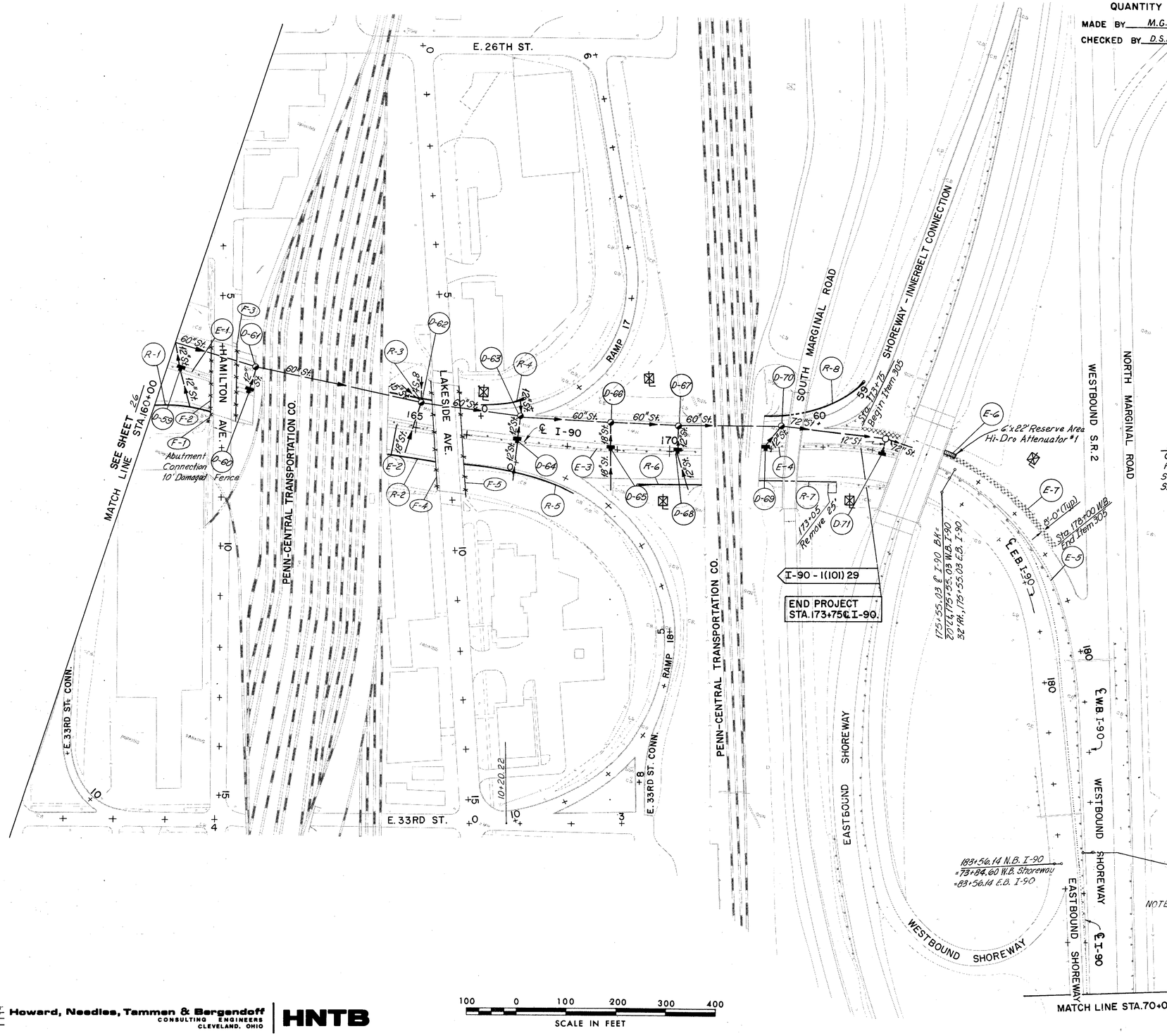
169

CUYAHOGA COUNTY
CUY. 77-14.12
CUY. 90-16.21



FENCE COST PARTICIPATION I

REF. NO.	STATION FROM	STATION TO	SIDE		607 Type CL As per Plan	607 Type CL Modified As per Plan
					Lin. Ft.	Lin. Ft.
					III	I
	I-90 N.B.					
F-1	161+08	~	Rt.		10	
	Hamilton Ave.					
F-2	5+93	7+35	Rt.			142
F-3	6+07	7+49	Lt.			142
	Lakeside Ave.					
F-4	6+40	8+70	Rt.			230
F-5	6+60	8+90	Lt.			230
	I-90-1(101)29					
	Total				10	744

NOTES:
For drainage quantities see sheet 30.
For drainage details see sheets 40-43.
For guard rail quantities see sheets 28-29.
⊠ – Tower Light (By Others)
For concrete barrier quantities and details see sheets 31-39.
For details of Fence Type CL, Mod., as per plan, see sheet 26.
For curb removal details at Ramp 17, see sheet 48.
For drainage work east of Sta. 174+20 ℄ I-90, see sheets 31&32.
For concrete barrier quantities and details east of Sta. 175+33.42 ℄ I-90, see sheets 36-39.
▨ Item 305 Temporary Pavement

Rev. 10-26-78

MADE M.E.E. DATE 5-9-75
TRACED D.R.C. DATE 6-24-75
CHECKED G.F.M. DATE 6-3-75
SCALE 1"=100'

Howard, Needles, Tammen & Bergendoff
CONSULTING ENGINEERS
CLEVELAND, OHIO

HNTB

100 0 100 200 300 400
SCALE IN FEET

STA. 160+00 TO STA. 74+45 I-90

GUARD RAIL SUB-SUMMARIES

QUANTITY CALCULATIONS
MADE BY DSP DATE 9-17-76
CHECKED BY MGB DATE 6-3-77

FHWA REGION	STATE	PROJECT	
5	OHIO		

28
169

CUYAHOGA COUNTY
CUY-77-14.12 CUY-90-16.21

GUARD RAIL - COST PARTICIPATION I

SH. NO.	REF. NO.	STATION FROM	STATION TO	SIDE	202 Guardrail Removed		202 Barrierrail Removed	606 Guardrail Type 5		606 Anchor Assembly Type A	606 Bridge Terminal Assembly Type C	606 Bridge Terminal Assembly Type E	606 Bridge Terminal Assembly Type D	606 Bridge Terminal Assembly Type J		606 Anchor Assembly Type T
					Lin. Ft.		Lin. Ft.	Lin. Ft.		Each		Each	Each	Each		Each
20		I-77-5(18)16.1	I-77													
	R-1	66+76	75+13.5	Lt.	812.5			825.0						1		1
	R-2	66+75	74+75	Rt.	775.0			775.0		1		1				
	R-3	79+76	85+00	Lt.	523.0			524.0				1				
	R-4	79+38	85+00	Rt.	560.5			561.5						1		
	E-1	66+17	75+13.27	Ctr.			896.0									
	E-2	79+39.2	85+00	Ctr.			561.0									
		Ramp N-E														
	R-5	13+34	20+71.5	Lt.	700.0			725.0						1		1
		Ramp E-S														
	R-6	4+53	7+79	Lt.	300.0			300.0		1			1			
	R-7	5+33	8+33	Rt.	300.0			275.0		1			1			
		Ramp E-N														
	R-8	23+53	25+90	Lt.	212.0			212.0		1						
	R-9	23+53	25+75	Rt.	197.0			197.0		1						
		Ramp S-E														
	R-10	4+65	6+40	Rt.	50.0			137.5		1						1
21		Ramp E-N														
	R-1	25+90	26+78	Lt.	87.0			88.0				1				
	R-2	25+75	26+78	Rt.	102.0			103.0				1				
		I-77														
	R-3	85+00	87+06	Lt.	206.0			206.0						1		
	R-4	85+00	87+00	Rt.	200.0			200.0				1				
	R-5	112+05.5	114+50	Rt.	215.0			219.5		1						
	E-1	85+00	87+27.5	Ctr.			227.5									
	E-2	107+55	114+50	Ctr.			695.0									
		I-77	Ramp F-2													
	R-6	107+89	6+00	Lt.	646.0			647.0				1				
		I-77	Ramp F-1													
	R-7	107+31	7+42	Rt.	700.0			751.0						1		
		Ramp F-1														
	R-8	5+65	7+40	Lt.				137.5		1						1
22		Ramp F-2														
	R-1	6+00	10+03	Lt.	383.0			378.0		1						
		Ramp F-1														
	R-2	7+42	8+54.5	Rt.	108.0			100.0								1
		Ramp F-3														
	R-3	0+39	7+14	Rt.	657.0			662.5						1		1
		Ramp F-4														
	R-4	3+50.5	9+63	Rt.	587.5			587.5		1			1			
		I-77														
	R-6	116+31	118+06	Lt.	250.0			262.5						1		1
	R-7	114+50	118+43	Rt.	392.0			393.0				1				
	R-8	124+23	129+98	Lt.	575.0			550.0		1		1				
	R-9	124+31	129+18.5	Rt.	462.5			462.5		1				1		
	R-10	35+74	42+35	Rt.	661.0			661.0					1	1		
	R-11	37+22	42+35	Lt.	513.0			513.0					1	1		
	E-1	114+50	118+88	Ctr.			438.0									
	E-2	124+13	33+98.5	Ctr.			986.0									
	E-3	36+23.5	42+36	Ctr.			612.5									
	I-77-5(18)16.1 Sheet Total				11,175.0		4416.0	11454.0		12		8	5	10		7

NINE

SCALE —
MADE M.E.E. DATE 5-16-75
TRCD J.P.K. DATE 6-23-75
CKD G.F.M. DATE 5-16-75

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK

NOTE: THE FOLLOWING REFERENCE NUMBERS WERE NOT USED : R-8, R-18, R-23, ON SHEET 23

(Quantities Cont. on Sheet 29)

GUARD RAIL - COST PARTICIPATION I

SH. NO.	REF. NO.	STATION FROM	STATION TO	SIDE	202 Guardrail Removed	202 Barrierrail Removed	606 Guardrail Type 5	606 Anchor Assembly Type A	606 Bridge Terminal Assembly Type C	606 Bridge Terminal Assembly Type E	606 Bridge Terminal Assembly Type D	606 Bridge Terminal Assembly Type J	606 Bridge Terminal Assembly Type H	606 Anchor Assembly Type T
					Lin. Ft.	Lin. Ft.	Lin. Ft.	Each		Each	Each	Each	Each	Each
22		I-90-1(101)23	I-77											
	R-12	44+67	45+60	Lt.	82.0		83.0				1			
	E-4	44+61	45+50	Ctr.		89.0								
		Ramp E-14												
	R-5	0+81	1+51	Rt.	69.0		70.0					1		
23		I-90												
	R-1	57+30	58+76	Rt.	100.0		146.0				1			
	R-2	63+75	65+00	Rt.	125.0		100.0	1			1			
	R-3	58+06	58+56	Lt.	175.0		37.5					1		1
	R-4	61+25	64+75	Lt.	350.0		350.0				1	1		
	E-1	54+66	58+86	Ctr.		420.0								
	E-2	61+10	65+00			390.0								
		Ramp E-2												
	R-5	7+30	8+30	Rt.	62.5		87.5					1		1
	R-6	6+90.5	8+28	Lt.			125.0					1		1
		Ramp E-3												
	R-7	3+00	6+75	Rt.	375.0		350.0	1					1	
	E-3	2+60	4+35	Lt.	175.0									
		Ramp E-4												
	R-9	0+45	2+45	Rt.	487.5		187.5					1		1
	R-10	2+63	4+63	Lt.	287.5		187.5							1
		Ramp E-5												
	R-11	10+20	11+95	Rt.	162.5		150.0	1			1			
	R-12	11+07.5	11+95	Lt.	75.0		62.5	1			1			
		Ramp E-6												
	R-13	1+12	1+74.5	Rt.	575.0		50.0					1		1
	R-14	4+20	5+95				137.5	1						1
	E-4	6+25	8+25	Lt.	200.0									
		Ramp E-7												
	E-5	2+00	4+50	Rt.	250.0									
	R-15	6+25	7+50	Lt.			100.0	1			1			
		Ramp E-10												
	R-16	11+36	14+36	Lt.	300.0		287.5							1
	R-17	13+25	18+12.5	Rt.	362.5		462.5	1			1			
		Ramp E-14												
	E-6	4+25	7+87.5	Lt.	362.5									
	R-19	1+51	6+06	Rt.	449.0		442.5							1
		Ramp E-15												
	R-20	1+48.5	3+61	Lt.	187.5		187.5	1				1		
	R-21	6+71	7+67	Lt.	96.0		96.0					1		
	R-22	7+22	7+78	Rt.	56.0		56.0					1		
	E-7	9+65	12+27.5	Lt.	262.5									
	R-24	13+92	15+17	Rt.	309.0		100.0	1						
		Ramp E-17												
	E-8	7+61	8+98.5	Lt.	137.5									
	R-26	1+87	7+24.5	Rt.	650.0		525.0					1		1
		Ramp E-18												
	R-27	6+84	8+09	Rt.	212.5		100.0	1				1		
	R-28	5+19	7+69	Lt.	237.5		225.0	1				1		
		I-77												
	R-29	48+07.5	49+32.5	Rt.	87.5		100.0	1				1		
	R-30	45+50	49+05	Lt.	355.0		355.0					1		
		Ramp E-17	Ramp E-9											
	R-31	3+50	2+00	Lt.	462.5		437.5	1						
		Ramp E-6	Ramp E-7											
	R-32	3+48	2+12.5	Lt.	850.0		275.0	1						1
	I-90-1(101)23 Sheet Subtotal				9128.5	899.0	5873.5	14	0	5	9	10	1	11

NINE

GUARD RAIL SUB-SUMMARIES

QUANTITY CALCULATIONS
MADE BY DSP DATE 9-17-76
CHECKED BY MGB DATE 6-3-77

FHWA REGION	STATE	PROJECT	
5	OHIO		

CUYAHOGA COUNTY
CUY-77-14.12
CUY-90-16.21

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GUARD RAIL - COST PARTICIPATION I

SH. NO.	REF. NO.	STATION FROM	STATION TO	SIDE		202 Guardrail Removed	202 Barrierrail Removed	606 Guardrail Type 5		606 Anchor Assembly Type A	606 Bridge Terminal Assembly Type C	606 Bridge Terminal Assembly Type D	606 Bridge Terminal Assembly Type J		606 Anchor Assembly Type T
						Lin. Ft.	Lin. Ft.	Lin. Ft.		Each	Each	Each	Each		Each
		Sheet 23 (Cont.)													
		I-77													
	E-9	45+50	49+30	Ctr.			380.0								
	E-10	51+05	51+86	Ctr.			81.0								
24		I-90													
	R-1	68+75	70+76	Lt.		201.0		201.0				1	1		
	R-2	68+08	70+68	Rt.		260.0		260.0				1	1		
	R-3	NOT	USED												
	R-4	74+09	77+96.5	Rt.		362.5		375.0					1		1
	R-5	99+02.5	103+65	Lt.		300.0		425.0		1					1
	R-6	82+71.81	103+75	Rt.		462.5		575.0		1					1
	R-7	105+55	109+05	Lt.		262.5		312.5		1					1
	R-8	106+75	109+62.5	Rt.		187.5		250.0		1					1
		Ramp E-8													
	R-9	7+12.5	9+00	Rt.		137.5		150.0		1					1
		Ramp E-9													
	R-10	2+00	4+57	Lt.		257.0		257.0			1				
	R-11	2+00	4+33	Rt.		233.0		233.0				1			
		Ramp E-10													
	R-12	9+86	11+36	Lt.		150.0		150.0					1		
	R-13	4+05	8+05	Lt.		177.0		400.0		1			1		
	R-14	4+05	7+05	Rt.		287.5		287.5					1		1
	R-15	Not Used													
		Ramp E-16													
	R-16	7+87	8+74.5	Rt.		62.5		75.0					1		1
	R-17	3+25	6+37.5	Rt.		287.5		287.5		1		1			
		I-90													
	E-1	68+19	70+89	Ctr.			270.0								
	E-2	73+96	83+09	Ctr.			913.0								
	E-3	98+00	99+05	Ctr.			105.0								
	E-4	99+05	100+55	Ctr.		300.0									
	E-5	100+55	101+42.5	Ctr.			87.5								
	E-6	101+42.5	102+80	Ctr.		275.0									
	E-7	102+80	106+80	Ctr.			400.0								
	E-8	106+80	108+67.5	Ctr.		375.0									
	E-9	108+67.5	110+00	Ctr.			132.5								
		Ramp E-5													
	R-18	3+55	5+30	Rt.				137.5		1					1
	R-19	0+00	1+25	Rt.				87.5		1					1
25		I-90	Ramp 5												
	R-1	112+64	1+29	Lt.		162.5		237.5		1					1
		Ramp 4	I-90												
	R-2	0+92.5	115+47.5	Rt.		137.5		212.5		1					1
		Ramp 6	I-90												
	R-3	0+61	121+01.5	Lt.		100.0		225.0		1					1
		I-90	Ramp 7												
	R-4	118+00	0+40	Rt.		100.0		212.5		1					1
		Ramp 8	I-90												
	R-5	1+58	127+68	Rt.		150.0		262.5		1					1
		I-90	Ramp 10												
	R-6	125+70	1+13.5	Lt.		150.0		287.5		1					1
		Ramp 11													
	R-10	0+00	1+75	Rt.				137.5		1					1

GUARD RAIL - COST PARTICIPATION I

SH. NO.	REF. NO.	STATION FROM	STATION TO	SIDE		202 Guardrail Removed	202 Barrierrail Removed	606 Guardrail Type 5		606 Anchor Assembly Type A	606 Bridge Terminal Assembly Type J	606 Bridge Terminal Assembly Type C	606 Bridge Terminal Assembly Type D		606 Anchor Assembly Type T
						Lin. Ft.	Lin. Ft.	Lin. Ft.		Each	Each	Each	Each		Each
		Sheet 25 (Cont.)													
		I-90													
		Ramp 8	Chester Ave.												
	R-7	6+65	7+80	Rt.		225.0		237.5			1				1
		Ramp 9	Chester Ave.												
	R-8	4+00	7+72	Rt.		462.5		500.0			1				1
	E-1	110+00	113+42.5	Ctr.			342.5								
	E-2	113+42.5	114+80	Ctr.		275.0									
	E-3	114+80	118+80	Ctr.			400.0								
	E-4	118+80	120+17.5	Ctr.		275.0									
	E-5	120+17.5	126+30	Ctr.			612.5								
	E-6	126+30	127+42.5	Ctr.		225.0									
	E-7	127+42.5	135+00	Ctr.			757.5								
	R-9	Not	Used												
26		I-90													
	R-1	136+55	139+05	Lt.		87.5		212.5		1					1
	R-2	135+95	1+76 Ramp 12	Rt.		87.5		537.5		1					1
	R-3	155+70	158+20	Lt.				212.5		1					1
		Ramp 12													
	R-4	3+75	7+37.5	Lt.		362.5		337.5		1			1		
		Ramp 13													
	R-5	2+75	6+75	Rt.		212.5		362.5		1					1
		Ramp 15													
	R-6	3+57	7+82	Rt.		400.0		412.5			1				1
		I-90	Ramp 15												
	R-7	157+85	1+13	Rt.				212.5		1					1
	E-1	135+00	136+93	Ctr.			193.0								
	E-2	136+93	138+18	Ctr.		250.0									
	E-3	138+18	146+93	Ctr.			875.0								
	E-4	136+93	148+43	Ctr.		300.0									
	E-5	148+43	155+80.5	Ctr.			737.5								
	E-6	155+80.5	157+80.5	Ctr.		400.0									
	E-7	157+80.5	160+00	Ctr.			219.5								
	E-8	146+29	146+79	Rt.		50.0									
		Ramp 16													
	R-10	0+90	3+22.5	Lt.				207.5		1					
		I-90													
	R-8	145+50	148+37.5	Rt.				250.0		1					1
	R-9	146+53	149+28	Lt.				237.5		1					1
27		I-90													
	E-1	160+00	160+30.5	Ctr.			30.5								
	E-2	160+30.5	166+55.5	Ctr.		1250.0									
	E-3	166+55.5	170+05.5	Ctr.			350.0								
	E-4	170+05.5	175+33.5	Ctr.		1056.0									
	E-5	175+33.5	185+63.5	Lt.		1050.0									
	E-6	174+40	175+65 W.B.	Lt.		125.0									
	E-7	177+16 W.B.	177+41 W.B.	Lt.		25.0									
		Ramp 16	I-90												
	R-1	0+90	161+05	Rt.				105.0				1			
		I-90													
	R-2	164+50	165+50	Rt.				100.0			1	1			
	R-3	164+40	165+30	Lt.				90.0			1	1			
	R-4	165+85	0+85 Ramp 17	Lt.				100.0		1		1			
	R-5	66+05	1+55 Ramp 18	Rt.				237.5			1				1
	R-6	169+40	170+65	Rt.				100.0		1		1			
	R-7	171+75	173+90	Rt.		25		155.0			1				
	R-8	171+90	39+00 Stwy Conn.	Lt.				175.0		1	1				
		I-90-1(101)29 Sheet Total				12,521.5	7697.0	10,841.0		27	15	7	5		28

NONE

SCALE —
MADE M.E.L. DATE 5-16-75
TRCD. J.P.K. DATE 6-24-75
CKD. G.F.M. DATE 5-19-75

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK

Note: All Quantities on This Sheet are Part of Project I-90-1(101)29

DRAINAGE (COST PARTICIPATION I)

SH. NO.	REF. NO.	STATION FROM	STATION TO	SIDE	202 Pipe Removed 24" and under	603 Type F Conduit 6"	603 Type B Conduit 12"	603 Type B Conduit 15"	604 Standard Number I-3B Median Inlet, Modified * G as per plan	604 Standard Number I-3B Median Inlet, Modified *** A as per plan	604 Standard Number I-3B Median Inlet, Modified J as per plan **
					Lin. Ft.	Lin. Ft.	Lin. Ft.	Lin. Ft.	Each	Each	Each
	D-1	24+97	@ W-S Ramp	Lt.							
	D-2	23+57	@ W-S Ramp	Lt.							
	D-3	66+50	℄ I-77	℄	5		5			1	
	D-4	69+50	↑	℄	5		5				1
	D-5	85+50		℄							1
	D-6	86+62		℄							1
	D-7	110+97		℄							1
	D-8	112+23.37		℄							1
	D-9	113+47		℄							1
	D-10	124+94.50		℄							1
	D-11	125+93.10		℄							1
	D-12	126+81	℄ I-77	℄							1
	CUY-77-5(18)16.1		TOTAL		10		10			1	9
	D-13	47+20	℄ I-77	℄							1
	D-14	49+20	℄ I-77	℄							1
	D-15	55+25	℄ Innerbelt	℄							1
	D-16	55+80	↑	℄							1
	D-17	56+50		℄	10		10				
	D-18	62+26		℄							1
	D-19	63+01		℄							1
	D-20	64+01		℄							1
	D-21	69+53		℄							1
	D-22	70+56		℄							1
	D-23	99+10		Lt.							
	D-24	101+10		Lt.							
	D-25	103+50		Lt.							
	D-26	103+50		℄	5		5				
	D-27	105+00		℄							
	D-28	106+00		Lt.							
	D-29	108+60		℄							
	D-30	109+00		Lt.							
	D-31	112+40		Lt.							
	D-32	114+70		℄							
	D-33	115+15		Lt.							
	D-34	117+00		Lt.							
	D-35	117+50		℄							
	D-36	118+60		Lt.							
	D-37	121+00		Lt.							
	D-38	121+00		℄							
	D-39	124+00		Lt.							
	D-40	124+00		℄							
	D-41	125+60		℄	5			5			
	D-42	126+00		Lt.							
	D-43	128+50		Lt.							
	D-44	131+00		Lt.							
	D-45	134+00		Lt.							
	D-46	136+75		Lt.							
	D-47	139+75		Lt.							
	D-48	142+75		Lt.							
	D-49	145+75		Lt.							
	D-50	148+50		Lt.							
	D-51	150+75		Lt.							
	D-52	153+20		Lt.							
	D-53	153+20		Rt.							
	D-54	154+75		Lt.							
	D-55	156+20		℄							
	D-56	156+56		Lt.							
	D-57	157+50		Lt.							
	D-58	160+00		Lt.							
	D-59	160+25		℄	10	5	5				
	D-60	161+65		℄	5	5			1		
	D-61	161+65		Lt.							
	D-62	165+00		Lt.							
	D-63	167+00		Lt.							
	D-64	167+00		℄	5	5					
	D-65	168+85		℄	5	5					
	D-66	168+65		Lt.							
	D-67	170+15	℄ Innerbelt	Lt.							
	CUY-90-1(101)29		TOTAL		45	20	20	5	1	9	

SH. NO.	REF. NO.	STATION FROM	STATION TO	SIDE	604 Standard Number I-3B Median Inlet, Modified ≠ I as per plan	604 Standard Number I-3B Median 'Inlet, Modified * B as per plan	604 Standard Number I-3B Median Inlet, Modified ≠ C as per plan	604 Standard Number I-3B Median Inlet, Modified ≠ D as per plan	604 Standard Number I-3B Median Inlet, modified E as per plan *	604 Manhole Adjusted to Grade with bolt down casting, as per plan *	604 Manhole Reconstructed to Grade with bolt down casting, Modified A as per plan ≠ ≠	N. G. Elevations of I-3 Median Inlets	Flow Line Elevations of existing and/or proposed storm sewers and underdrains at proposed median inlets
					Each	Each	Each	Each	Each	Each	Each		
	D-1	24+97	@ W-S Ramp	Lt.						1			
	D-2	23+57	@ W-S Ramp	Lt.						1			
	D-3	66+50	℄ I-77	℄									
	D-4	69+50	↑	℄								661.79	6"U.D.(E℄N) 657.50 ; 12"St.(NW) 657.00
	D-5	85+50		℄								670.83	6"U.D.(N) 657.50 ; 12"St.(W) 667.00
	D-6	86+62		℄								684.31	6"U.D.(N) 680.88 ; 12"St.(SW℄N) 678.38
	D-7	110+97		℄								683.76	6"U.D.(N,W℄E) 680.00 ; 12"St.(S) 679.50
	D-8	112+23.37		℄								691.70	6"U.D.(S) 688.29 ; 12"St.(N) 687.50
	D-9	113+47		℄								690.90	6"U.D.(N℄S) 687.30 ; 6"U.D.(NE) 686.50 ; 12"St.(S℄N) 684.35 ; 15"St.(E) 684.12
	D-10	124+94.50		℄								691.62	6"U.D.(N) 688.17 ; 12"St.(S℄NW) 686.32
	D-11	125+93.10		℄								700.16	6"U.D.(E) 696.53 ; 12"St.(W℄N) 694.00
	D-12	126+81	℄ I-77	℄								699.48	6"U.D.(E) 695.97 ; 12"St.(E℄W) 694.50
	CUY-77-5(18)16.1		TOTAL							2		698.78	6"U.D.(E) 695.28 ; 12"St.(E) 694.94
	D-13	47+20	℄ I-77	℄								696.49	6"U.D.(SE) 693.00 ; 12"St.(NW) 692.56
	D-14	49+20	℄ I-77	℄								695.49	12"St.(SE) 690.58 ; 12"St.(NE) 690.00
	D-15	55+25	℄ Innerbelt	℄								690.07	12"St.(NE) 686.20
	D-16	55+80	↑	℄								689.89	12"St.(SW) 685.99 ; 12"St.(NE) 685.90 ; 6"U.D.(S) 686.10
	D-17	56+50		℄					1			690.22	12"St.(SW) 685.69 ; 12"St.(N) 684.66 ; 12"St.(E) 684.70 ; 6"U.D.
	D-18	62+26		℄								698.39	12"St.(E) 695.00 (NW) 685.84
	D-19	63+01		℄								699.53	12"St.(W) 694.64 ; 12"St.(E) 694.60
	D-20	64+01		℄								701.00	12"St.(W) 694.11 ; 12"St.(SE) 694.07 ; 6"U.D.(N) 696.72
	D-21	69+53		℄								703.16	12"St.(NW) 696.50 ; 12"St.(NE) 696.52
	D-22	70+56		℄								700.93	12"St.(SW) 697.06
	D-23	99+10		Lt.						1			
	D-24	101+10		Lt.						1			
	D-25	103+50		Lt.						1			
	D-26	103+50		℄			1					644.05	12"St.(S℄W) 638.25 ; 12"St.(E) 638.50
	D-27	105+00		℄			1					644.53	12"St.(S℄N) 639.00
	D-28	106+00		Lt.						1			
	D-29	108+60		℄				1				647.46	12"St.(SE) 644.00 ; 12"St.(N) 643.00
	D-30	109+00		Lt.						1			
	D-31	112+40		Lt.						1			
	D-32	114+70		℄				1				646.04	12"St.(S℄N) 642.00
	D-33	115+15		Lt.						1			
	D-34	117+00		Lt.						1			
	D-35	117+50		℄	1							641.92	12"St.(SW) 638.00
	D-36	118+60		Lt.						1			
	D-37	121+00		Lt.						1			
	D-38	121+00		℄	1							637.69	12"St.(NE) 631.75 ; 12"St.(W) 630.00 ; 6"St.(NE) 633.41
	D-39	124+00		Lt.						1			
	D-40	124+00		℄			1					635.93	12"St.(W) 631.75
	D-41	125+60		℄			1					635.22	15"St.(SE) 627.50 ; 12"St.(NE) 629.00 ; 18"St.(NW) 627.25
	D-42	126+00		Lt.						1			
	D-43	128+50		Lt.						1			
	D-44	131+00		Lt.						1			
	D-45	134+00		Lt.						1			
	D-46	136+75		Lt.						1			
	D-47	139+75		Lt.						1			
	D-48	142+75		Lt.						1			
	D-49	145+75		Lt.						1			
	D-50	148+50		Lt.						1			
	D-51	150+75		Lt.						1			
	D-52	153+20		Lt.						1			
	D-53	153+20		Rt.						1			
	D-54	154+75		Lt.						1			
	D-55	156+20		℄							1		
	D-56	156+56		Lt.						1			
	D-57	157+50		Lt.						1			
	D-58	160+00		Lt.						1			
	D-59	160+25		℄			1					610.36	12"St.(NE ℄SW) 605.25
	D-60	161+65		℄								609.83	12"St.(W) 605.41
	D-61	161+65		Lt.						1			
	D-62	165+00		Lt.						1			
	D-63	167+00		Lt.						1			
	D-64	167+00		℄	1							602.31	12"St.(E℄W) 597.25
	D-65	168+85		℄	1							595.10	18"St.(NE) 582.93 ; 18"St.(SW) 582.72
	D-66	168+65		Lt.						1			
	D-67	170+15	℄ Innerbelt	Lt.						1			
	CUY-90-1(101)29		TOTAL		2	2	5	2	1	32	1		

DRAINAGE (COST PARTICIPATION I & III)

SH. NO.	REF. NO.	STATION FROM	STATION TO	SIDE	202 Inlet Abandon Each	202 Pipe Removed 24" and under Lin. Ft.	603 Type F Conduit 6" Lin. Ft.	603 Type B Conduit 12" Lin. Ft.	604 Manhole Adjusted to Grade with bolt down casting, as per plan * Each	604 Manhole Reconstructed to Grade with bolt down casting, Modified B as per plan ≠ Each	604 Standard Number I-3B Median Inlet, modified F as per plan * Each	604 Standard Number I-3B Median Inlet, modified G as per plan * Each	604 Standard No. 3.C.B. Modified, as per plan ø Each	N-G Elevation of I-3 median inlets	Flow line Elevations of existing storm sewers and underdrains at proposed median inlets
	D-68	170+12	℄ Innerbelt	Lt		5	5				1			590.03	12"St.(E℄W) 595.00
	D-69	171+93	℄ Innerbelt	℄		5	5					1		584.63	12"St.(W) 579.25
	D-70	172+25	℄ Innerbelt	℄					1					584.41	
	D-71	174+20	℄ Innerbelt								1			582.64	12"St.(E℄W) 575.78
	D-72	177+00	Innerbelt NB		1 ⊗				1 ⊗					581.17	
	D-73	178+25	Innerbelt SB					100 ⊗						580.94	12"St.(S) 576.74
	D-74	178+25	Innerbelt SB											580.89	15"St.(SW) 576; 12"St.(E) 573.64
	D-75	181+45	Innerbelt SB											581.12	12"St.(SW) 576; 12"St.(E) 573.64
	D-76	183+20	Innerbelt SB							1				581.55	12"St.(E℄W) 574.80
	CUY-90-1(101)29		TOTALS		1 ⊗	10	10	100 ⊗	1	1	1	1	4		

MADE A.H.S. DATE 4-7-75
TRACED T.S. DATE 4-31-75
CHECKED M.E.E. DATE 5-9-75
SCALE NONE

Howard, Needles, Tammen & Bergendoff
CONSULTING ENGINEERS
CLEVELAND, OHIO

HNTB

* See note on sheet 7.
≠ See details on sheet 40.
See details on sheet 42.
*** See details on sheet 38A.
** See table on sheet 40.
ø See details on sheet 41.

⊗ Indicates Cost Participation III

FHWA REGION	STATE	PROJECT	
5	OHIO		

30
169

CUYAHOGA COUNTY
CUY.-77-14.12
CUY.-90-16.21

QUANTITY CALCULATIONS

MADE BY A.H.S. DATE 5-7-75
CHECKED BY M.E.E. DATE 5-9-75

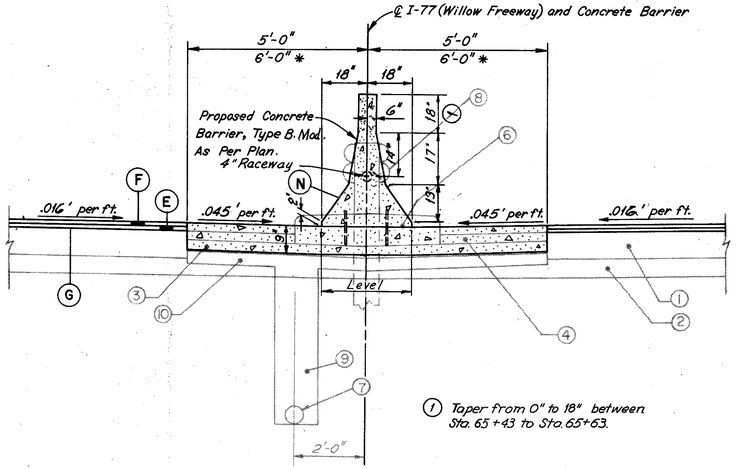
DRAINAGE QUANTITIES

CONCRETE BARRIER TYPICAL SECTIONS

FHWA REGION	STATE	PROJECT	
5	OHIO		

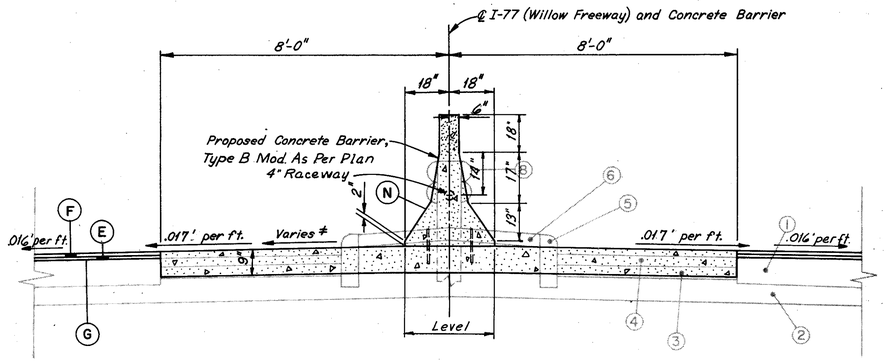
31
169

CUYAHOGA COUNTY
CUY-77-14.12
CUY-90-16.21



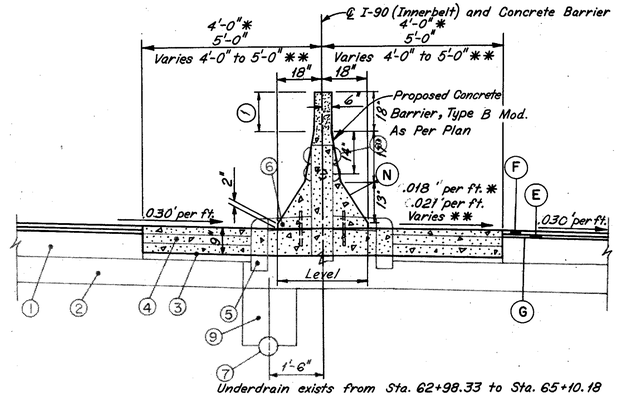
I-77 (WILLOW FREEWAY) – NORMAL SECTION

* Sta. 65+43 to Sta. 66+75
Sta. 66+75 to Sta. 68+75 (Median Width Varies from 12'-0" to 10'-0")
Sta. 68+75 to Sta. 75+13.27
Sta. 79+39.20 to Sta. 87+29.50



I-77 (WILLOW FREEWAY) – NORMAL SECTION

Sta. 130+25 to Sta. 130+41.88
Sta. 30+41.88 to Sta. 34+02.53
Sta. 36+16.47 to Sta. 40+75
≠ Sta. 40+75 to Sta. 42+45.12



Underdrain exists from Sta. 62+98.33 to Sta. 65+10.18 and from Sta. 68+19.03 to Sta. 70+89.23

(1) Taper from 0" to 18" between Sta. 54+65.78 and Sta. 54+85.78

I-90 (INNERBELT) – SUPERELEVATED SECTION

FREEWAY CURVE TO THE RIGHT

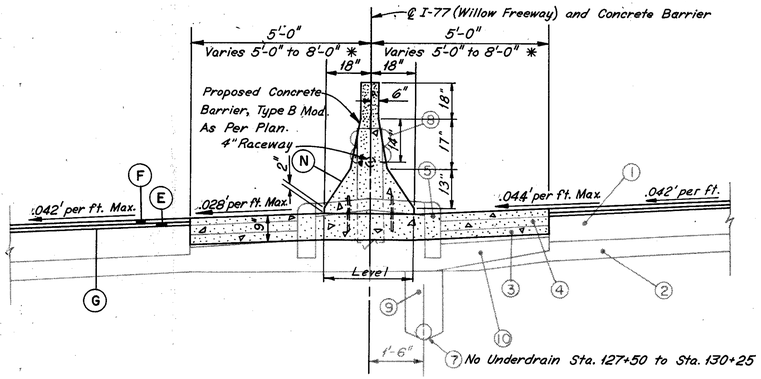
* Sta. 54+65.78 to Sta. 55+00
** Sta. 55+00 to Sta. 58+00
Sta. 58+00 to Sta. 58+79.98

FREEWAY CURVE TO THE LEFT

Sta. 62+98.33 to Sta. 65+10.18
Sta. 68+19.03 to Sta. 70+89.23

SUPERELEVATION TRANSITION

Sta. 61+16.05 to Sta. 62+98.33



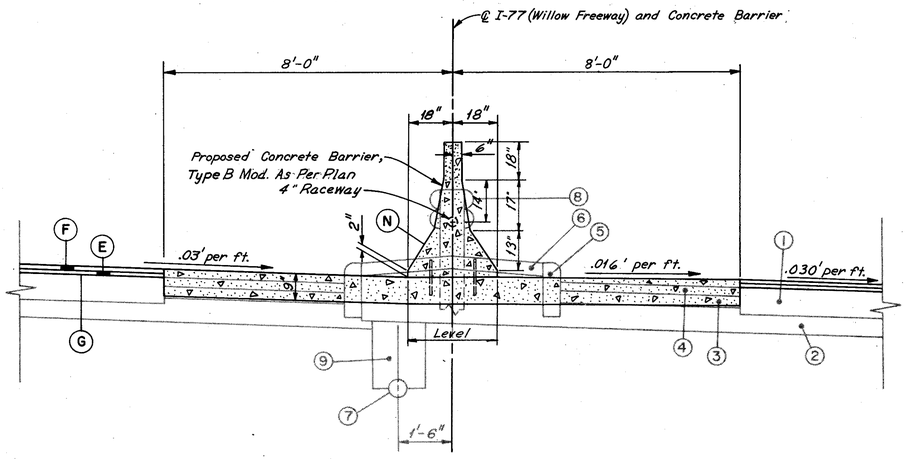
I-77 (WILLOW FREEWAY) – SUPERELEVATED SECTION

FREEWAY CURVE TO THE LEFT

Sta. 108+25 to Sta. 118+89.71

SUPERELEVATION TRANSITION

Sta. 107+52.62 to Sta. 108+25
Sta. 124+11.43 to Sta. 124+50
* Sta. 124+50 to Sta. 130+25



I-77 (WILLOW FREEWAY) – SUPERELEVATED SECTION

FREEWAY CURVE TO THE RIGHT

Sta. 44+54.88 to Sta. 49+30.16
Sta. 51+07.08 to Sta. 51+77.74

Note:
The Contractor shall be advised that during the removal of the existing concrete curb and median for the installation of concrete median barrier, restoration of any disturbed subbase shall be replaced with no. 8 or 9 aggregate to the satisfaction of the Engineer, at no additional cost to the State.

LEGEND

(1) Portland Cement Concrete Pavement
(2) Subbase
(3) Aggregate Base
(4) Waterproofed Bituminous Base Course
(5) Curb
(6) Concrete Median
(7) Underdrain
(8) Guard Rail
(9) Porous Backfill
(10) No. 6 Aggregate

PROPOSED

(E) Item 402 1¼" Asphalt Concrete, AC-20
(F) Item 404 1¼" Asphalt Concrete, AC-20
(G) Item 407 Tack Coat 702.02, RC-250; 702.04, SS-1, SS-1H, MS-2 or RS-1 with Cover Aggregate
(N) Item 622 Concrete Barrier
(R) Expansion joint, ¾" min. Preformed Filler 705.03

MADE GFM DATE 4-1-75
TRACED TS DATE 4-17-75
CHECKED DSP DATE 4-17-75
SCALE None

Howard, Needles, Tammen & Bergendoff
CONSULTING ENGINEERS
CLEVELAND, OHIO

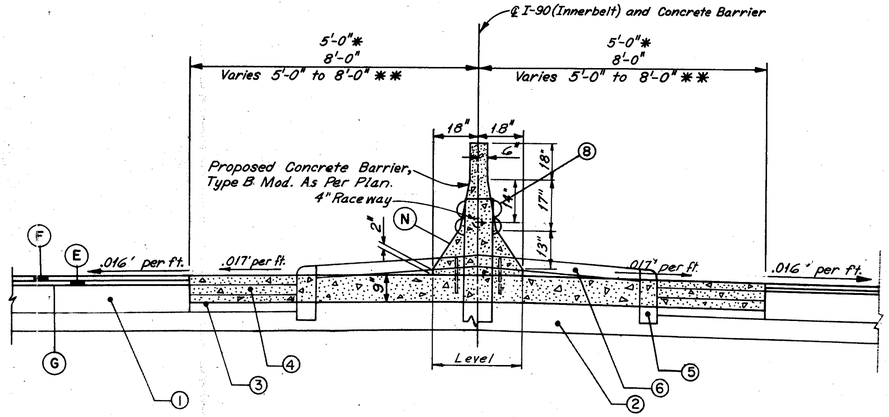
HNTB

CONCRETE BARRIER TYPICAL SECTIONS

FHWA REGION	STATE	PROJECT	
5	OHIO		

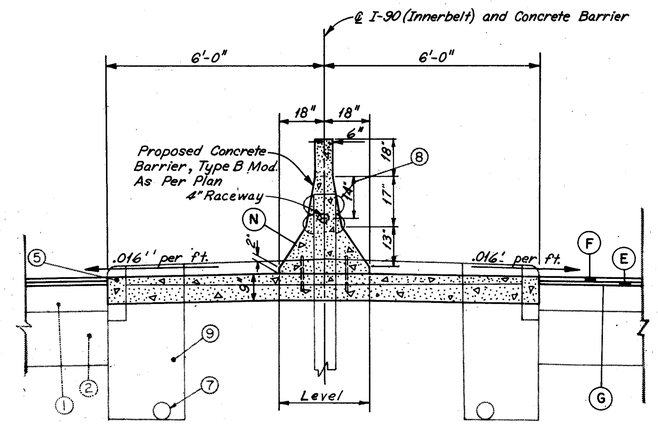
32
169

CUYAHOGA COUNTY
CUY-77-14.12
CUY-90-16.21



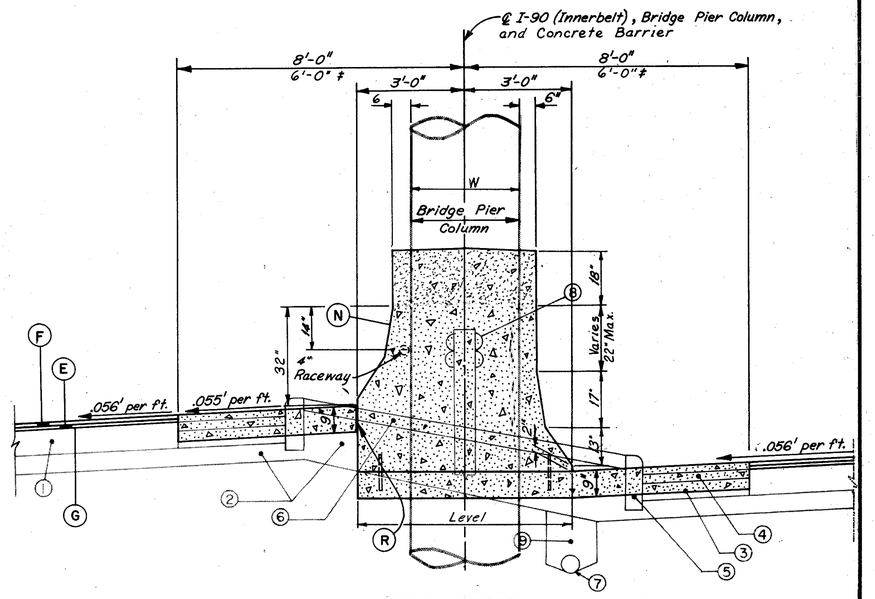
I-90 (INNERBELT) — NORMAL SECTION

*Sta. 73+96.25 to Sta. 80+09.31
**Sta. 80+09.31 to Sta. 83+09.31 Bk.
Sta. 98+00 Ah. to Sta. 101+25
Sta. 127+75 to Sta. 151+00



I-90 (INNERBELT) — NORMAL SECTION

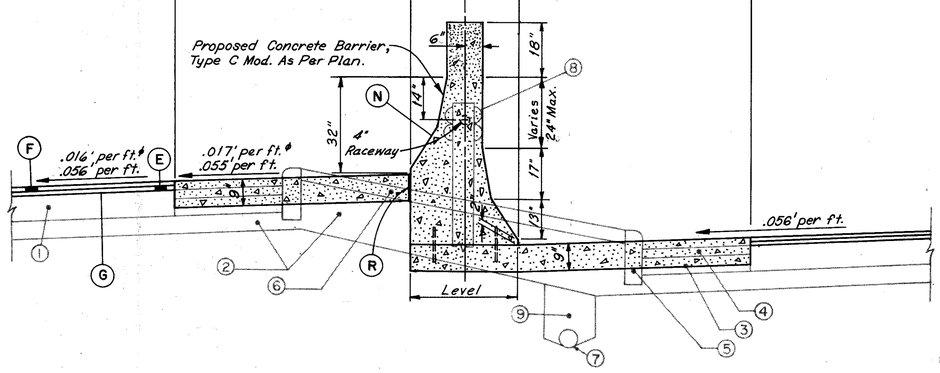
Sta. 151+00 to Sta. 157+00



I-90 (INNERBELT) SUPERELEVATED SECTION
AT BRIDGE PIERS

Sta. 101+66.99 to Sta. 102+55.16 (W=36")
Sta. 106+90 to Sta. 108+44.29 (W=39")
Sta. 113+63.56 to Sta. 114+57.50 (W=36")
Sta. 118+99.29 to Sta. 119+90.29 (W=36")
Sta. 126+50.61 to Sta. 127+20.39 (W=36")
‡Sta. 157+00 to Sta. 157+25.69 (W=36")
‡Sta. 160+81.55 to Sta. 161+25 (W=36")
‡Sta. 161+75 to Sta. 164+49 (W=54")
‡Sta. 170+54.19 to Sta. 171+83.27 (W=56")
‡Sta. 172+36.60 to Sta. 172+61.58 (W=36")
‡Sta. 174+38.88 to Sta. 175+33.42 (Opposite Hand)(W=36")

For Proposed and Existing LEGENDS see sheet 31.



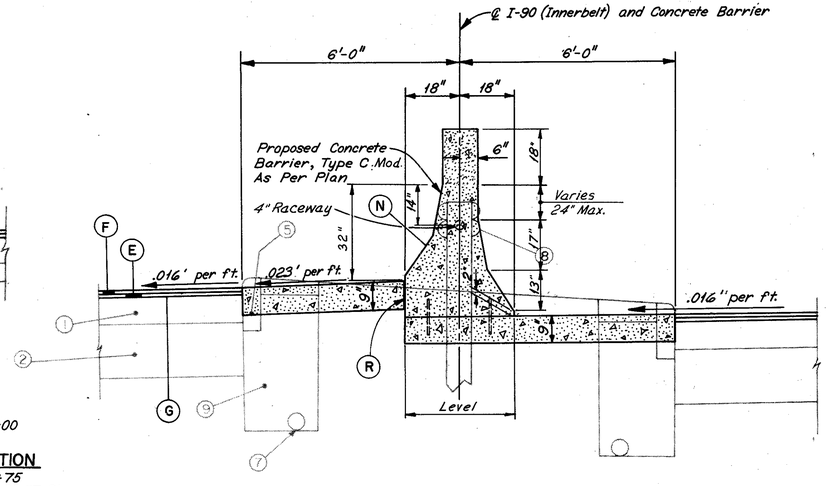
I-90 (INNERBELT) — SUPERELEVATED SECTION
FREEWAY CURVE TO THE LEFT

SOUTHBOUND
Sta. 106+25 to Sta. 122+00

SOUTHBOUND TRANSITION
Sta. 101+25 to Sta. 106+25
Sta. 122+00 to Sta. 127+00
*Sta. 127+00 to Sta. 127+09.87 Bk.
*Sta. 126+61.13 Ah. to Sta. 127+75.00

NORTHBOUND
Sta. 107+75 to Sta. 122+00

NORTHBOUND TRANSITION
Sta. 101+25 to Sta. 107+75
Sta. 122+00 to Sta. 127+09.87 Bk.
Sta. 126+61.13 Ah. to Sta. 127+75



I-90 (INNERBELT) — SUPERELEVATED SECTION
FREEWAY CURVE TO THE LEFT
Sta. 160+00 to Sta. 165+26.75
Sta. 165+91.92 to Sta. 171+50
SUPERELEVATION TRANSITION
Sta. 157+00 to Sta. 160+00
Sta. 171+50 to Sta. 173+14.03
Sta. 173+14.03 to Sta. 175+33.42 (Opposite Hand)

MADE GFM DATE 4-1-75
TRACED TS DATE 4-17-75
CHECKED DSP DATE 4-17-75
SCALE None

Howard, Needles, Tammen & Bergendoff
CONSULTING ENGINEERS
CLEVELAND, OHIO

HNTB

CONCRETE BARRIER MEDIAN QUANTITIES

FHWA REGION	STATE	PROJECT	
5	OHIO		

33 / 169

CUYAHOGA COUNTY
CUY-77-14.12
CUY-90-16.21

QUANTITY CALCULATIONS
MADE BY AHS DATE 8-30-77
CHECKED BY DSP DATE 9-1-77

ITEM 202 - CURB REMOVED

STATION FROM	STATION TO	CALCULATION	COST PARTICIPATION I LIN. FT.
I-77-5(18)161			
℄ I-77			
107+52.62	118+89.71	1137.09' x 2 Sides	2274
124+11.43	130+41.88 BK	630.45' x 2 Sides	1261
30+41.88 AH.	34+02.53	360.65' x 2 Sides	721
36+16.47	42+45.12	628.65' x 2 Sides	1257
I-77-5(18)161 TOTAL			5513
I-90-1(101)29			
℄ I-77			
44+54.88	49+30.16	475.28' x 2 Sides	951
℄ I-90			
54+65.78	58+79.98	414.20' x 2 Sides	828
61+16.05	65+10.18	394.13' x 2 Sides	788
68+19.03	70+89.23	270.20' x 2 Sides	540
73+96.25	80+09.31	613.06' x 2 Sides	1226
80+09.31	83+09.31 BK	300.00' x 2 Sides	600
98+00 AH.	127+09.87 BK	2909.87' x 2 Sides	5820
126+61.13 AH.	151+00	2438.87' x 2 Sides	4878
151+00	175+33.42	2433.42' x 2 Sides	4867
I-90-1(101)29 TOTAL			20,498

ITEM 202 - CONCRETE MEDIAN REMOVED

STATION FROM	STATION TO	CALCULATION	COST PARTICIPATION I SQ. YDS.
I-77-5(18)161			
℄ I-77			
66+17	66+75	58' x 6' ÷ 9	39
66+75	68+75	200' x (6'+4') ÷ 18	111
68+75	75+13.27	638.27' x 4' ÷ 9	284
79+39.20	87+29.50	790.30' x 4' ÷ 9	351
107+52.62	118+89.71	1137.09' x 3' ÷ 9	379
124+11.43	124+50	38.57' x 3' ÷ 9	13
124+50	126+92.27	242.27' x (3'+5') ÷ 18	108
126+92.27	130+41.88 BK	349.61' x 5' ÷ 9	194
30+41.88 AH.	34+02.53	360.65' x 5' ÷ 9	200
36+16.47	42+45.12	628.65' x 5' ÷ 9	349
I-77-5(18)161 TOTAL			2028
I-90-1(101)29			
℄ I-77			
44+54.88	49+30.16	475.28' x 5' ÷ 9	264
51+07.08	51+77.74	70.66' x 6' ÷ 9	47
℄ I-90			
54+65.78	58+79.98	414.20' x 3' ÷ 9	138
61+16.05	65+10.18	394.13' x 3' ÷ 9	131
68+19.03	70+89.23	270.20' x 3' ÷ 9	90
73+96.25	80+09.31	613.06' x 3' ÷ 9	204
80+09.31	83+09.31 BK.	300.00' x (3'+9') ÷ 18	200
98+00 AH.	127+09.87 BK.	2909.87' x 9' ÷ 9	2910
LESS FOR BRIDGE PIERS			-61
126+61.13 AH.	151+00	2438.87' x 9' ÷ 9	2439
LESS FOR BRIDGE PIERS			-36
151+00	175+33.42	2433.42' x 11' ÷ 9	2974
LESS FOR BRIDGE PIERS			-171
I-90-1(101)29 TOTAL			9129

ITEM 622 - CONCRETE BARRIER, COST PARTICIPATION I

STATION FROM	STATION TO	TYPE B MOD. AS PER PLAN LIN. FT.	TYPE B LIN. FT.	TYPE C, MOD. AS PER PLAN LIN. FT.	TYPE D, MOD. AS PER PLAN LIN. FT.	
℄ I-77	I-77-5(18)161					
65+43	75+13.27	970.27				
79+39.20	87+29.50	790.30				
107+52.62	118+89.71	1137.09				
124+11.43	130+41.88	630.49				
(Station Equation)						
30+41.88	34+02.53	360.65				
36+16.47	42+45.12	628.65				
Deductions :						
1. I-3 Median Inlets						
10 @ 20.0 Lin. Ft.		(200.00)				
2. Barr. Wall Assem. @ Exist Signs						
1 @ 10.0 Lin. Ft.		(40.00)				
3. Med. Pullbox 2 @ 2.5 L.F.		(5.00)				
TOTAL I-77-5(18)161		4272	0	0	0	
℄ I-77 I-90-1(101)29						
44+54.88	49+30.16	475.28				
51+07.08	51+77.44	70.66				
Ramp E 10ϕ						
17+02.72	17+41.98	39.26				
16+62.72	17+02.72		40.00			
16+52.72	16+62.72				10.00	
9+78.75	16+52.72				673.97	
Interstate 90						
54+65.78	58+79.98	414.20				
61+16.05	65+10.18	394.19				
68+19.03	70+89.23	270.20				
73+96.25	83+09.31	913.06				
(Station Equation)						
98+00	101+25	325.00				
101+25	127+09.87			2584.87		
(Station Equation)						
126+61.30	127+75			113.87		
127+75	157+00	2925.00				
157+00	165+26.75			826.75		
165+26.75	165+91.92				130.34	
165+91.92	175+33.42			941.50		
Deductions :						
1. I-3 Median Inlets						
10 @ 20.0 Lin. Ft.		(200.00)				
15 @ 20.0 Lin. Ft.				(300.00)		
2 @ 20.0 Lin. Ft.					(40.00)	
2. TC-21.30 Sign Support Fd.						
7 @ 10.0 Lin. Ft.		(70.00)				
1 @ 10.0 Lin. Ft.				(10.00)		
3. Med Pullbox 5 @ 2.5 L.F		(12.5)				
4 @ 2.5 Lin. Ft				(10.00)		
1 @ 2.5 Lin. Ft.					(2.5)	
TOTAL I-90-1(101)29		5544	40	4147	772	

ϕ See Detail H Sheet 35.

ITEM 844 - BARRIER WALL ASSEMBLY FOR EXISTING SIGN SUPPORTS COST PARTICIPATION I

Station	Design 1A* Each	Design 1*
Interstate 77		
80+78	1	
108+81		1
125+45	1	
32+94	1	
TOTAL I-77-5(18)161	3	1

*See Sheet 44 for details.

Cost Part. I CUY-90-1(101)29

ITEM 609 - CURB, MOD. AS PER PLAN

Station From	Station To	℄	Length Lin. Ft.
0+44	0+54	E-8	10
TOTAL			10

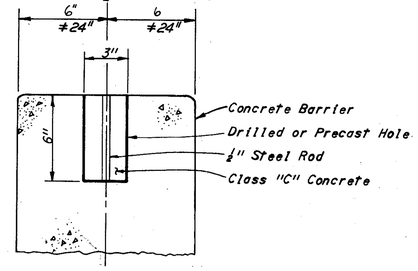
Cost Part I CUY-90-1(101)29

ITEM 202 - CURB REMOVED

Station From	Station To	℄	Length (Lin. Ft.)
9+80	17+42	E-10	762
0+44	0+54	E-8	10
0+00	0+44	E-8	44
CUY-90-1(101)29			
TOTAL (COST PART. I)			816

CENTERLINE REFERENCE MONUMENT, MODIFIED AS PER PLAN COST PART. I

STATION	604 ℄ Ref. Monument Mod. As Per Plan Each	PROJECT
P.T. Sta. 68+80.23 ℄ I-77	1	I-77-5(18)161
P.O.T. Sta. 74+00 ℄ I-77	1	
P.O.T. Sta. 84+92.29 ℄ I-77	1	
S.C. Sta. 108+32.99 ℄ I-77	1	
P.O.C. Sta. 118+00 ℄ I-77	1	
S.T. Sta. 128+32.99 ℄ I-77	1	I-77-5(18)161
P.O.T. Sta. 99+00 ℄ I-90	1	I-90-1(101)29
P.C. Sta. 104+88.37 ℄ I-90	1	
P.T. Sta. 124+88.26 ℄ I-90	1	
P.O.T Sta. 139+01.71 ℄ I-90	1	
P.O.T. Sta. 152+00 ℄ I-90	1	
P.C. Sta. 159+86.30 ℄ I-90	1	
P.O.C. Sta. 165+00 ℄ I-90	1 ≠	
P.C. Sta. 173+15.03 ℄ I-90	1 ≠	I-90-1(101)29
TOTAL	6	I-77-5(18)161
TOTAL	8	I-90-1(101)29



Note:
Cost of furnishing and placing steel rod and class "C" concrete included in price bid for Item 604 Centerline Reference Monument, Modified as per plan.

DETAIL CENTERLINE REFERENCE MONUMENT PLACED IN CONCRETE BARRIER
No Scale

ITEM 310 - SUBBASE, GRADING A COST PART I AS PER PLAN

STATION FROM	STATION TO	CALCULATION	QUANTITY	UNIT
Ramp E-10				
9+90	16+52.72	$673.37 \times 2.5 \times \frac{7}{12} \times \frac{1}{27}$	36	C.Y.
16+52.72	16+92.72	$40 \times \left(\frac{5.75+2.5}{2}\right) \times \frac{7}{12} \times \frac{1}{27}$	4	C.Y.
16+92.72	17+41.98	$49.26 \times \left(\frac{10.83+3.17}{2}\right) \times \frac{7}{12} \times \frac{1}{27}$	11	C.Y.
CUY-90-1(101)29 TOTAL			51	C.Y.

MADE AHS DATE 8-30-77
TRACED TAK DATE 9-2-77
CHECKED DSP DATE 9-2-77
SCALE None

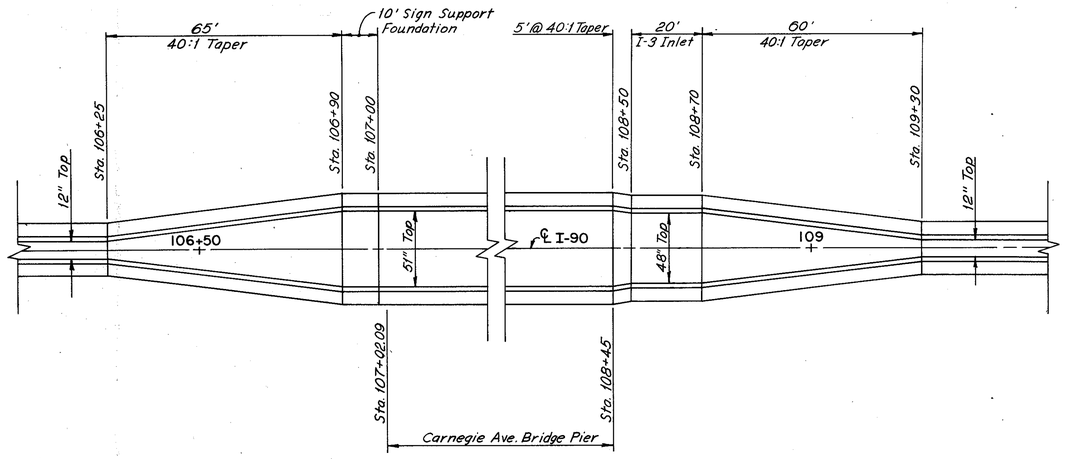
Howard, Needles, Tammen & Bergendoff
CONSULTING ENGINEERS
CLEVELAND, OHIO
HNTB

CONCRETE BARRIER MEDIAN DETAILS

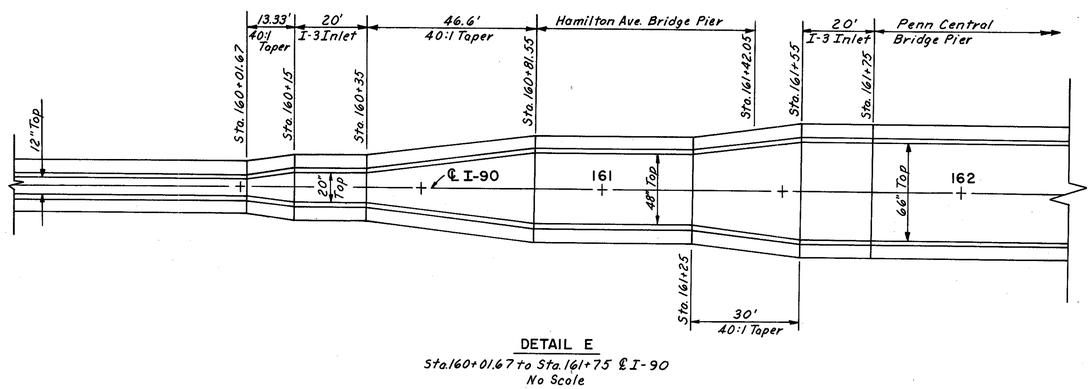
FHWA REGION	STATE	PROJECT	
5	OHIO		

34
169

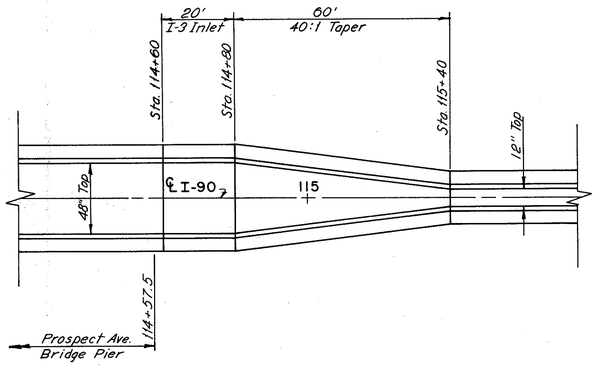
CUYAHOGA COUNTY
CUY-77-14.12
CUY-90-16.21



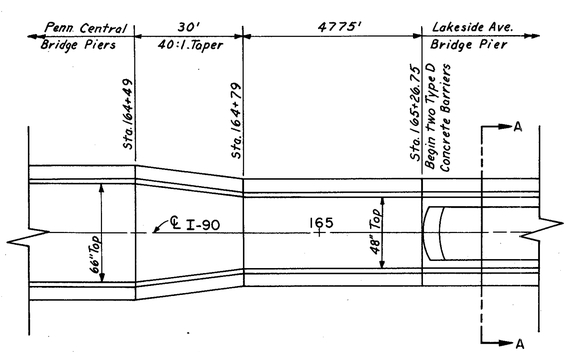
DETAIL C
Sta. 106+25 to Sta. 109+90
No Scale



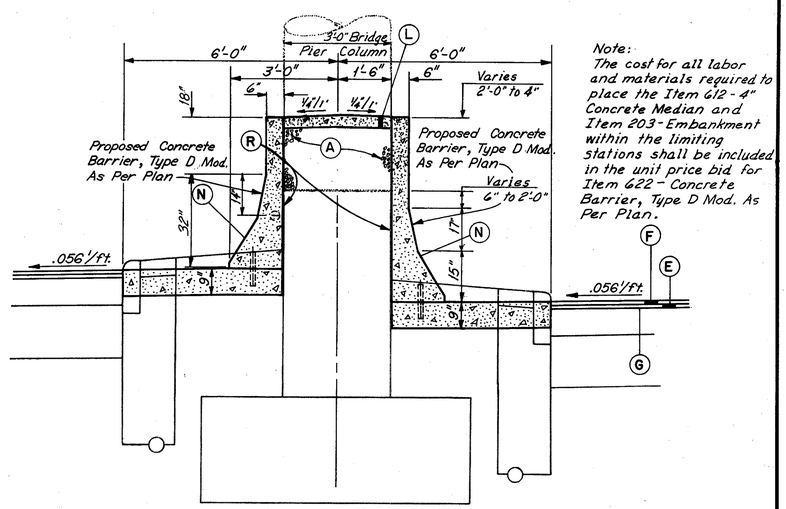
DETAIL E
Sta. 160+01.67 to Sta. 161+75 ℄ I-90
No Scale



DETAIL D
Sta. 114+57.5 to Sta. 115+40 ℄ I-90
No Scale



DETAIL F
Sta. 164+49 to Sta. 165+26.75
No Scale



Note:
The cost for all labor and materials required to place the Item 612-4" Concrete Median and Item 203-Embankment within the limiting stations shall be included in the unit price bid for Item 622-Concrete Barrier, Type D Mod. As Per Plan.

For Proposed and Existing LEGENDS see sheet 31#3B

SECTION A-A
Sta. 165+26.75 to Sta. 165+91.92

MADE GFM DATE 11-19-75
TRACED TS DATE 11-20-75
CHECKED MEC DATE 11-21-75
SCALE As Shown

Howard, Needles, Tammen & Bergendoff
CONSULTING ENGINEERS
CLEVELAND, OHIO

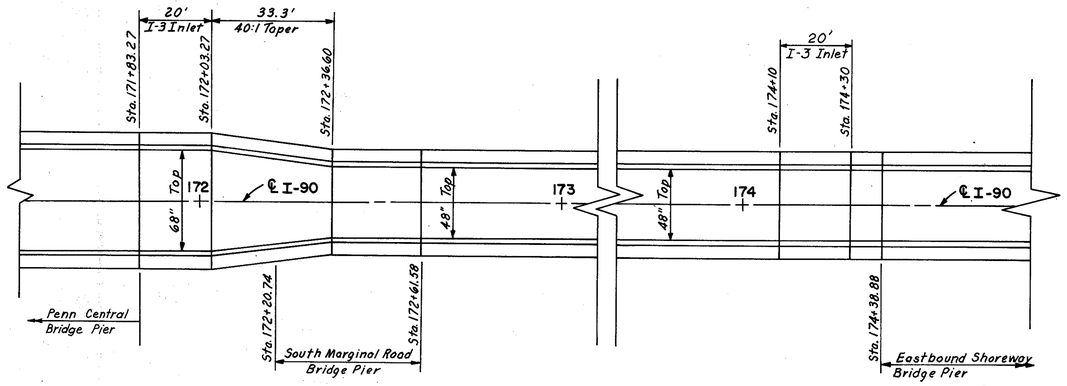
HNTB

CONCRETE BARRIER MEDIAN DETAILS

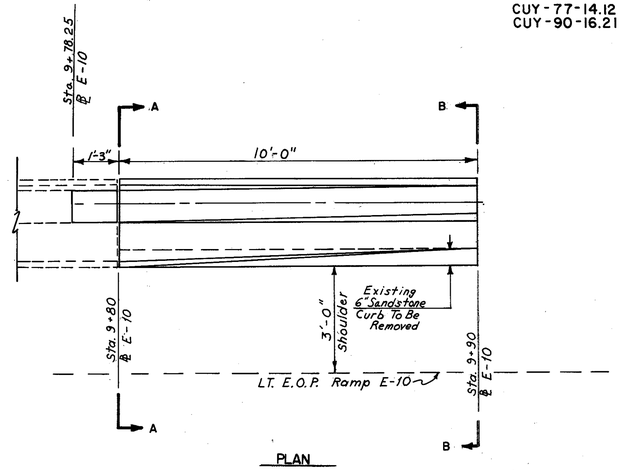
FHWA REGION	STATE	PROJECT	
5	OHIO		

35
169

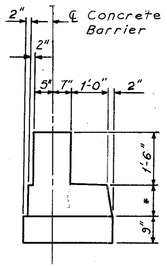
CUYAHOGA COUNTY
CUY-77-14.12
CUY-90-16.21



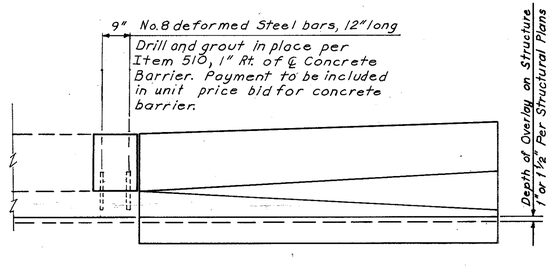
DETAIL G
Sta. 171+83.27 to Sta. 174+38.88 ℄ I-90
No Scale



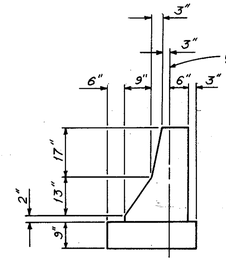
PLAN



SECTION A-A



ELEVATION



SECTION B-B

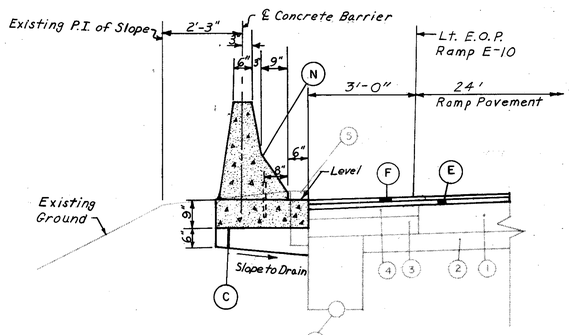
* 8½" or 9" depending on the depth of overlay used, per structural plans.

* Replace with Type 6 curb, mod, as per plan, transitioned from the ground line to the height of the existing curb. Existing ground shall be graded and restored to match the final elevations of the Concrete Barrier Base and Type 6 Curb, modified, as per plan. The cost shall be incidental to the pertinent 622 pay item.

Notes:
1. For details at D-82 and D-83 see sheet 43A.
2. For quantities, see sheet 33.
3. ▨ — Limits of Concrete Barrier Base.

DETAIL H
I-77 END TERMINAL PLAN
No Scale

DETAIL - I
SCALE: ½" = 1'-0"



RAMP E-10
Sta. 9+90 To Sta. 16+52.72
Scale: ½" = 1'-0"

For Proposed and Existing Legends refer to Sheet 31.

MADE G.F.M. DATE 12-10-75
TRACED T.S. DATE 12-11-75
CHECKED D.S.P. DATE 3-27-77
SCALE No Scale

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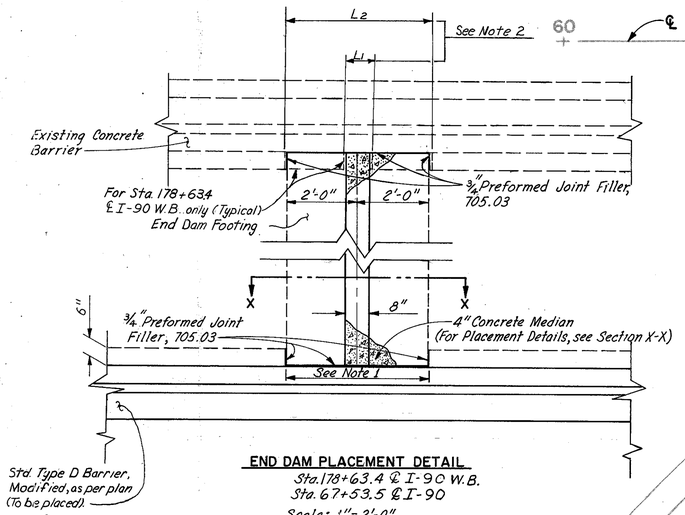
HNTB

CUY-90-1640 B

FHWA REGION	STATE	PROJECT	
5	OHIO		

36
169

CUYAHOGA COUNTY
CUY-77-14.12
CUY-90-16.21

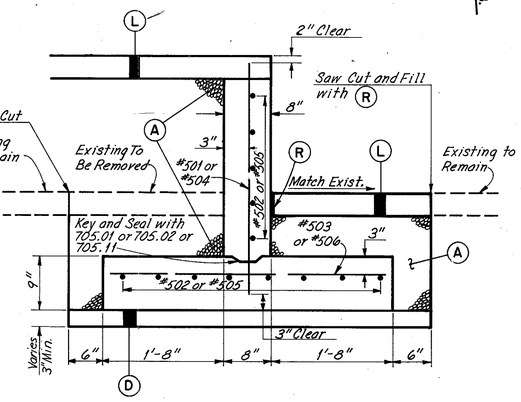


END DAM PLACEMENT DETAIL
Sta. 178+63.4 ℄ I-90 W.B.
Sta. 67+53.5 ℄ I-90
Scale: 1"=2'-0"

REINFORCEMENT SCHEDULE				
MARK	NO. BARS	LENGTH	TYPE	WEIGHT (Lbs.)
501	16	3'-0"	Str.	50.06
502	13	7'-6"	Str.	101.69
503	16	3'-6"	Str.	58.41
504	20	3'-0"	Str.	62.58
505	13	9'-6"	Str	128.81
506	20	3'-6"	Str.	73.01
TOTAL				265

END DAM DETAIL
Sta. 178+63.4 W.B. I-90
Scale: 1"=2'-0"

END DAM DETAIL
Sta. 67+53.5 I-90
Scale: 1"=2'-0"



SECTION X-X
Scale: 1"=1'-0"

NOTES:

1. The Contractor shall omit the 6" rear base extension of the Standard Type D Barrier, Modified as per plan, as shown where the end dam footing is to be placed.
2. To prevent damage to the existing barrier and to facilitate placement of the end dam, the Contractor shall carefully remove the 6" rear base extension of the existing barrier for a length L_1 equal to 9½" @ Sta. 178+63.4 I-90 W.B. and length L_2 equal to 4'-1½" at Sta. 67+53.5 ℄ I-90 The cost for all labor, materials and incidentals necessary to complete the work described above shall be included in the unit price bid for Item 511 Class C Concrete.
3. For Quantities and Section F-F, see Sheet 37.
4. See Sheet 38 for Legend
5. For Sections A-A, B-B, C-C and D-D, see Sheet 38.
6. For Cross Sections of I-90 segment shown above, see Sheet 39.
7. For Drainage Quantities, see Sheet 30.
8. For Drainage Details, see Sheets 41-43.
9. ▨ — Area of 4" Concrete Median.

MADE M.E.E. DATE 9-15-75
TRACED J.B.M. DATE 11-10-75
CHECKED D.S.P. DATE 9-23-75
SCALE As shown

Howard, Needles, Tammen & Bergendoff
CONSULTING ENGINEERS
CLEVELAND, OHIO

HNTB

CONCRETE BARRIER DETAILS: STA. 175+33.42 I-90 TO STA. 181+55 W.B. I-90
STA. 181+00 E.B. I-90

ITEM 202 – CURB REMOVED (Cost Participation III)				
STATION FROM	STATION TO	℄	CALCULATION	QUANTITY (Lin. Ft.)
175+33	175+55	I-90		22
175+55	177+50	I-90W.B.		190
177+50	177+90	I-90W.B.		40
177+90	178+50	I-90W.B.		60
178+50	180+16	I-90W.B.		160
180+16	183+98	I-90W.B.		382
67+26	69+25	I-90		199
Sub-Total				1053
Less out for inlets				-37
TOTAL				1016

ITEM 202 – GUARD RAIL REMOVED (Cost Participation III)				
STATION FROM	STATION TO	℄	CALCULATION	QUANTITY (Lin. Ft.)
175+33	183+98	I-90W.B.	851	851
67+26	69+25	I-90	199	199
TOTAL				1050

ITEM 203 – EMBANKMENT (Cost Participation III)				
STATION FROM	STATION TO	℄	CALCULATION End Area (Typicals) x Length	QUANTITY (Cu.Yds.)
177+03	178+63	I-90W.B.	6.53 x 160 ÷ 27	38.7
67+53	69+25	I-90	15.64 x 172 ÷ 27	99.6
TOTAL				138

ITEM 612 – 4" CONCRETE MEDIAN (Cost Participation III)				
STATION FROM	STATION TO	℄	CALCULATION	QUANTITY (Sq.Yds.)
177+03	178+63	I-90W.B.	(2+10)÷2 x 160 ÷ 9	106.7
178+63	67+53	I-90	2 x 562 ÷ 9	124.9
67+53	69+25	I-90	(8+1.92)÷2 x 172 ÷ 9	94.8
TOTAL				326

QUANTITY CALCULATIONS

MADE BY M.E.E. DATE 9-15-75

CHECKED BY G.F.M. DATE 10-17-75

FHWA REGION	STATE	PROJECT	
5	OHIO		

37
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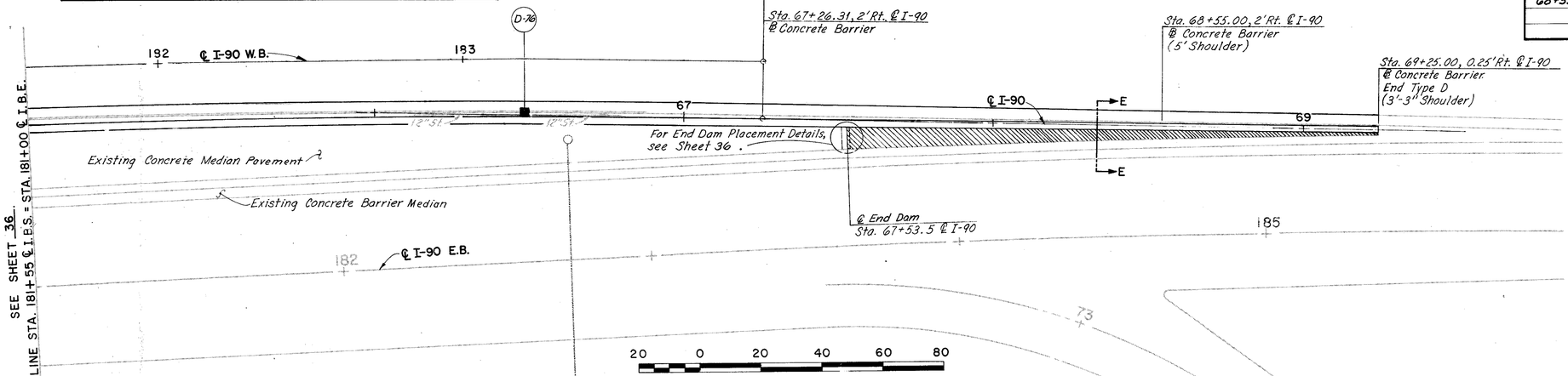
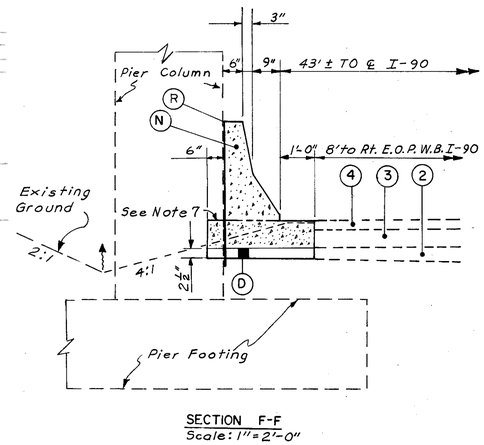
CUYAHOGA COUNTY
CUY-77-14.12
CUY-90-16.21

ITEM 202 – CONCRETE MEDIAN PAVEMENT REMOVED (Cost Participation III)				
STATION FROM	STATION TO	℄	CALCULATION	QUANTITY (Sq. Yds.)
175+33	175+55	I-90	(4.23+4.86) x 22 ÷ 18	11.1
175+55	176+29	I-90W.B.	(4.86+5.40) x 74 ÷ 18	42.2
176+29	176+80	I-90W.B.	(5.40+7.29) x 51 ÷ 18	36.0
176+80	177+03	I-90W.B.	(7.29+8) x 23 ÷ 18	19.5
177+03	177+50	I-90W.B.	8.5 x 47 ÷ 9	44.4
177+50	178+50	I-90W.B.	(8.5+4.75) x 100 ÷ 18	73.6
178+50	178+62.5	I-90W.B.	4.75 x 12.5 ÷ 9	6.6
178+62.5	178+67.5	I-90W.B.	(16.83+17.16) x 5 ÷ 18	9.4
178+67.5	183+98	I-90W.B.	4.75 x 530.5 ÷ 9	280.0
67+26	67+50.5	I-90	4.75 x 24.5 ÷ 9	12.9
67+50.5	67+55.5	I-90	(9.62+9.34) x 5 ÷ 18	5.3
67+55.5	68+55	I-90	4.75 x 100 ÷ 9	52.8
68+55	69+25	I-90	(4.75+3) x 70 ÷ 18	30.1
TOTAL				624





SECTION F-F
Scale: 1"=2'-0"

ITEM 310 – SUBBASE, GRADING A, AS PER PLAN (Cost Participation III)				
STATION FROM	STATION TO	℄	CALCULATION	QUANTITY (Cu. Yds.)
175+33.42	175+55	I-90WB	1.40sf x 21.58' ÷ 27	1.12
175+55	176+80	I-90WB	½(1.40sf+3.06sf) x 125' ÷ 27	10.32
176+80	177+03	I-90WB	½(3.06sf+3.44sf) x 23 ÷ 27	2.77
177+03	68+55	I-90WB	3.44sf x 823.93' ÷ 27	104.97
68+55	69+25	I-90	½(4.16sf+2.37sf) x 70' ÷ 27	7.53
174+50	175+30	I-90Lt	½((2.5"+3")/12) x 3' x 80' x 501.87/458.37 ÷ 27	2.23
TOTAL				129

ITEM 511 – CLASS C CONCRETE (Cost Participation III)				
STATION FROM	STATION TO	℄	CALCULATION	QUANTITY (Cu. Yds.)
175+33.42	176+00	I-90WB	(3+2) x ½ x (66.58) ÷ 27	6.16
176+00	177+03	I-90WB	(2+5) x ½ x (103) ÷ 27	13.35
TOTAL				20

ITEM 622 – CONCRETE BARRIER, TYPE D MODIFIED AS PER PLAN (Cost Participation III)			
STATION FROM	STATION TO	LOCATION	QUANTITY (Lin. Ft.)
174+50	175+30	I-90 Lt	80
175+33.42	176+02.09	I-90 W.B. Median	69
176+02.09	176+70.09	I-90 W.B. Median	68
176+70.09	177+00	I-90 W.B. Median	30
177+00	180+00	I-90 W.B. Median	300
180+00	181+00	I-90 W.B. Median	100
181+00	182+00	I-90 W.B. Median	100
182+00	183+00	I-90 W.B. Median	100
183+00	68+00	I-90 Median	172
68+00	69+25	I-90 Median	125
(Less) 4 Catch Basins @ 16'-0"			(64)
TOTAL			1080

NOTES:

1. For Section E-E, see Sheet 38, also legend
2. For Cross Sections of I-90 segment shown above, see Sheet 39 .
3. For End Dam details, see Sheet 36.
4. For Drainage Quantities, see Sheet 30 .
5. For Drainage Details, see Sheets 41-43.
6. ▨ — Area of 4" Concrete Median.
7. The Contractor shall omit the 6" rear base extension of the Standard, Type D Concrete Barrier at the pier columns.
8. All Quantities included in Project I-90-1 (101) 29.
9. See Sheet 36 for location of Section F-F.

MADE M.L.B. DATE 6-21-77
TRACED M.K.N. DATE 6-29-77
CHECKED A.W.S. DATE 6-29-77
SCALE 1" = 20'-0"

Howard, Needles, Tammen & Bergendoff
CONSULTING ENGINEERS
CLEVELAND, OHIO

HNTB

CONCRETE BARRIER DETAILS: STA. 181+55 W.B. I-90 / STA. 181+00 E.B. I-90 TO STA. 69+25 ℄ I-90

CONCRETE BARRIER TYPICAL SECTIONS

FHWA REGION	STATE	PROJECT	
5	OHIO		

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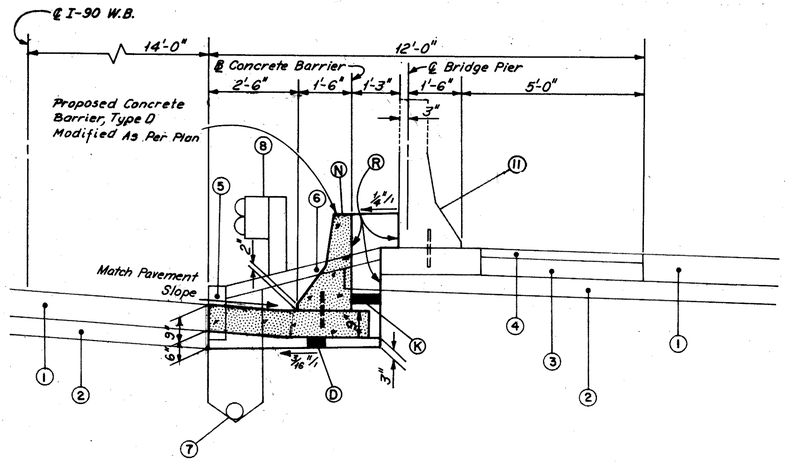
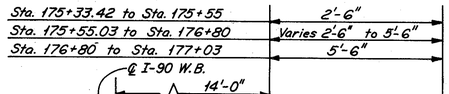
169

CUYAHOGA COUNTY
CUY-77-14.12
CUY-90-16.21



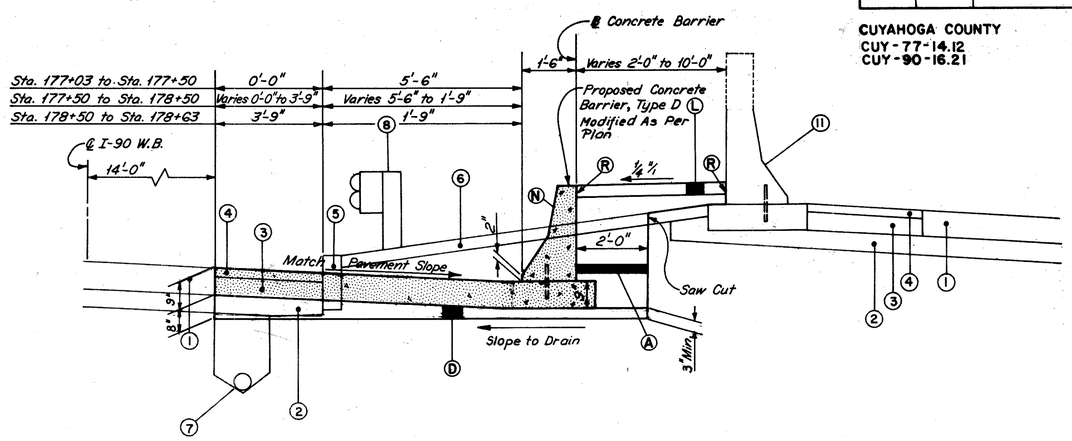
SECTION A-A

Sta. 175+33.42 ℄ I-90 W.B.



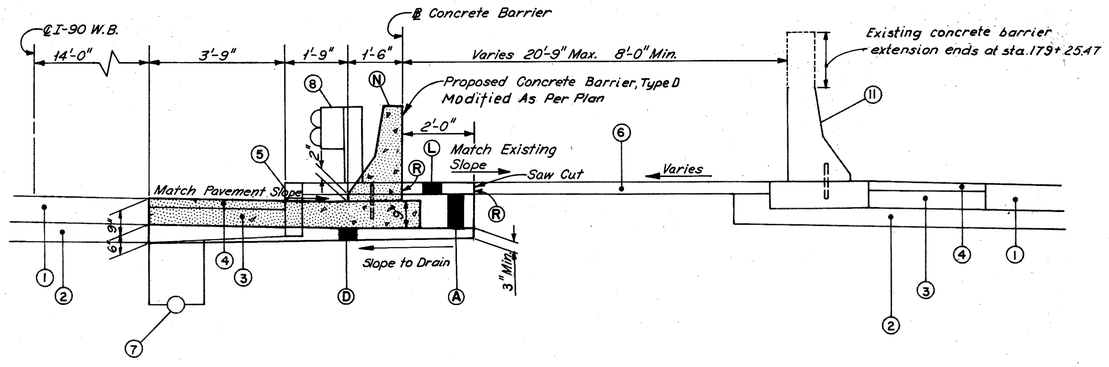
SECTION B-B

Sta. 175+33.42 to Sta. 177+03 ℄ I-90 W.B.



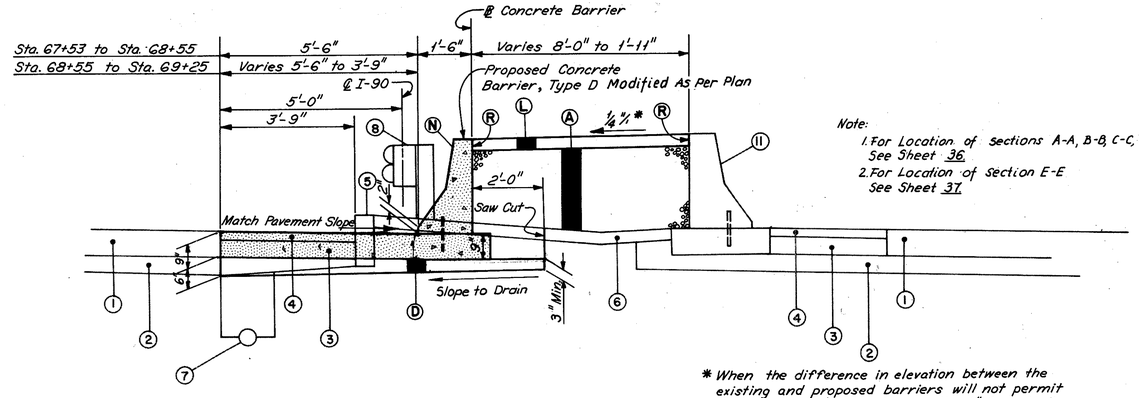
SECTION C-C

Sta. 177+03 to Sta. 178+63 ℄ I-90 W.B.



SECTION D-D

Sta. 178+63 ℄ I-90 W.B. to Sta. 67+53 ℄ I-90



Note:
1. For Location of Sections A-A, B-B, C-C, D-D, See Sheet 36
2. For Location of Section E-E See Sheet 37

* When the difference in elevation between the existing and proposed barriers will not permit a continuous ¼"/ft. slope on the 4" Conc. Median, the 4" Conc. Median shall be crowned with a minimum cross slope of ¼"/ft. in either direction.

SECTION E-E

Sta. 67+53 to Sta. 69+25 ℄ I-90

LEGEND

PROPOSED

- (A) Item 203 Embankment
- (D) Item 310 Subbase, Grading A
- (K) Item 511 Class C Concrete
- (L) Item 612 4" Concrete Median
- (N) Item 622 Concrete Barrier, Type D Modified As Per Plan
- (R) ¾" Preformed Joint Filler, 705.03

EXISTING

- (1) Portland Cement Concrete Pavement
- (2) Subbase
- (3) Aggregate Base
- (4) Waterproofed Bituminous Base Course
- (5) Curb
- (6) Concrete Median
- (7) Underdrain
- (8) Guard Rail
- (11) Concrete Barrier

MADE M.E.E. DATE 9-11-75
TRACED T.S. DATE 11-18-75
CHECKED G.F.M. DATE 12-7-75
SCALE 1"= 2'-0"

Howard, Needles, Tammen & Bergendoff
CONSULTING ENGINEERS
CLEVELAND, OHIO

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FHWA REGION	STATE	PROJECT	
5	OHIO		

38A
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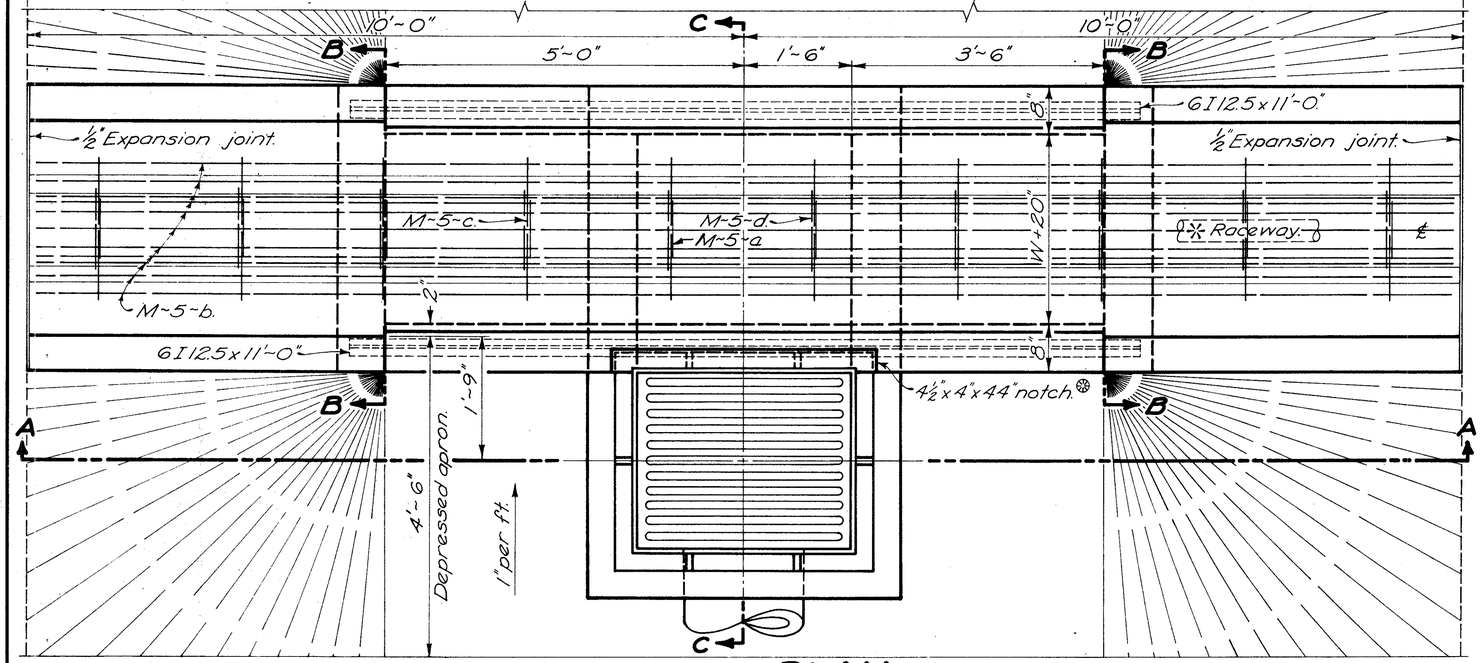
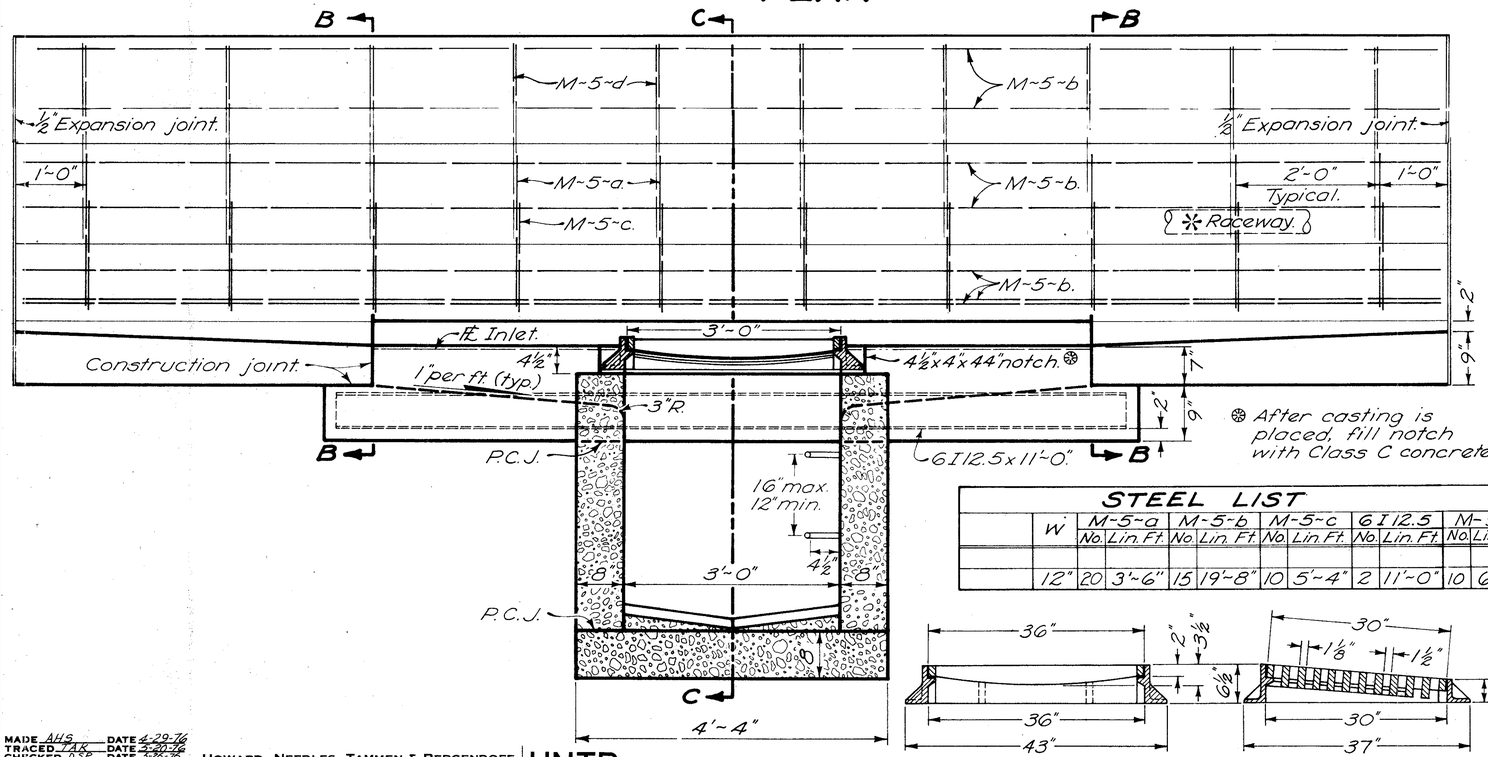
CUYAHOGA COUNTY
CUY - 77 - 14.12
CUY - 90 - 16.21

Deduct 20 lin. ft. from concrete barrier. All costs for concrete barrier and inlet are included in Item 604.



PLAN

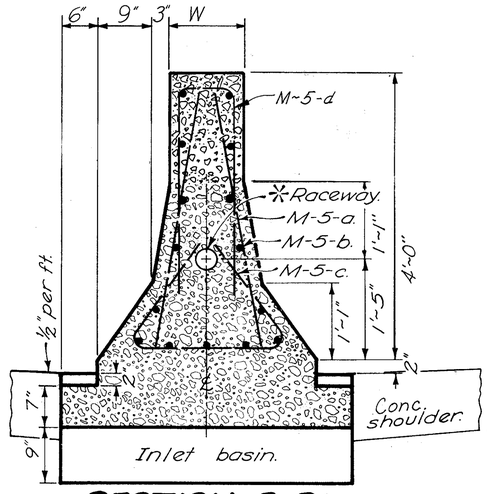


⊛ After casting is placed, fill notch with Class C concrete.

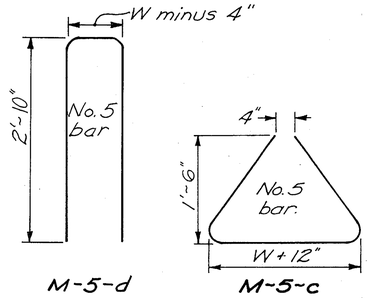
STEEL LIST

	W	M-5-a		M-5-b		M-5-c		6 I 12.5		M-5-d	
		No.	Lin. Ft.	No.	Lin. Ft.	No.	Lin. Ft.	No.	Lin. Ft.	No.	Lin. Ft.
	12"	20	3'-6"	15	19'-8"	10	5'-4"	2	11'-0"	10	6'-4"

CASTING DETAILS



SECTION B-B



M-5-d M-5-c

NOTE:
THE PURPOSE OF THIS DRAWING IS TO SHOW THE MODIFICATION TO STANDARD CONSTRUCTION DRAWING I-3, FOR THE PURPOSE OF INCLUDING AN 18 INCH VERTICAL EXTENSION, AS PART OF THIS DETAIL.

NOTES

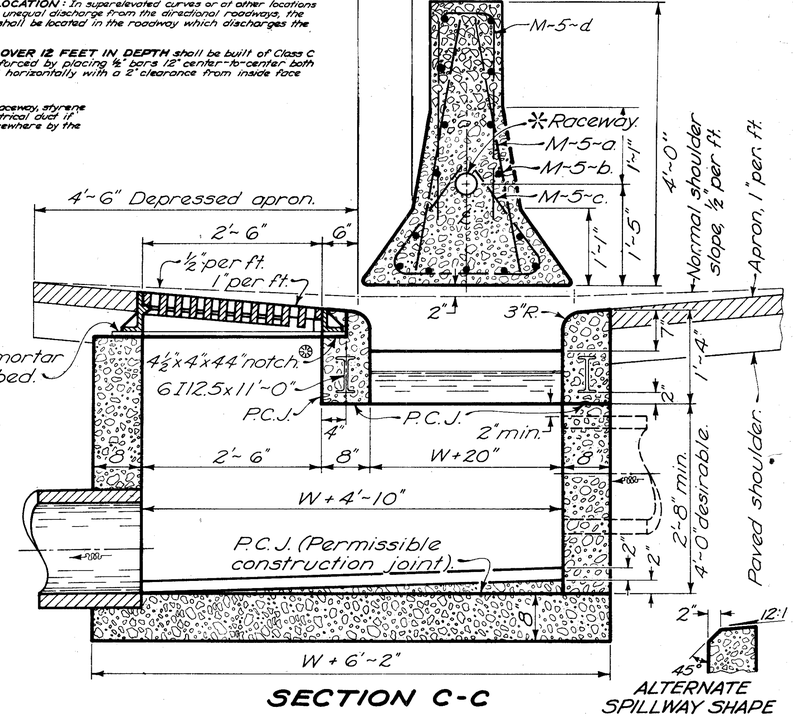
WALLS: The sections between the base and the upper permissible construction joint may be built of brick, concrete block, or cast-in-place concrete, 8" nominal thickness, for depths of 12' or less. The unit above the upper permissible construction joint may be precast or cast-in-place.
Concrete for precast or cast-in-place construction shall meet the requirements of 511 Class C.
If a skewed pipe protrudes more than 2" inside a wall, the pipe shall be trimmed flush and finished to produce a neat appearance.

STEPS shall be in accordance with Standard Drawing MH-1. Minimum weight of frame and cover shall be 540 pounds.

GRATE LOCATION: In superelevated curves or at other locations where there is unequal discharge from the directional roadways, the inlet grating shall be located in the roadway which discharges the major flow.

INLETS OVER 12 FEET IN DEPTH shall be built of Class C concrete reinforced by placing ½" bars 12" center-to-center both vertically and horizontally with a 2" clearance from inside face of the wall.

✲ 4" Lighting raceway, styrene or fiber electrical duct if required elsewhere by the plans.



SECTION C-C

ALTERNATE SPILLWAY SHAPE

MADE AHS DATE 4-29-76
TRACED TAK DATE 5-20-76
CHECKED DSF DATE 5-20-76
SCALE 1"=1'-0"

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
HNTB

SECTION A-A

STANDARD NO. I-3B MEDIAN INLET MODIFIED A, AS PER PLAN

QUANTITY CALCULATIONS

MADE BY G.F.M. DATE 10-17-75
CHECKED BY M.E.E. DATE 10-27-75

Note:
Cross Sections and Earthwork shown are for information only. All work shall be paid for as part of Item 622-Concrete Barrier, Standard Type D, Modified As Per Plan.

FHWA REGION	STATE	PROJECT	
5	OHIO		

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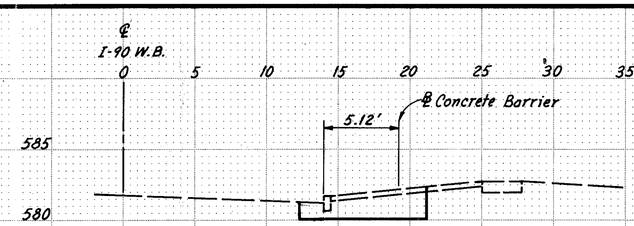
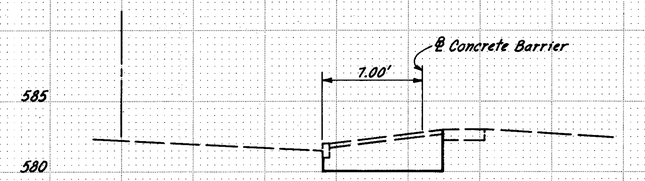
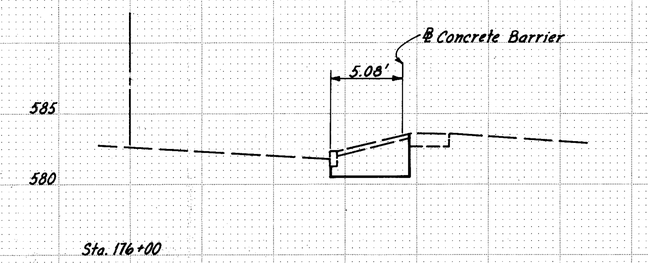
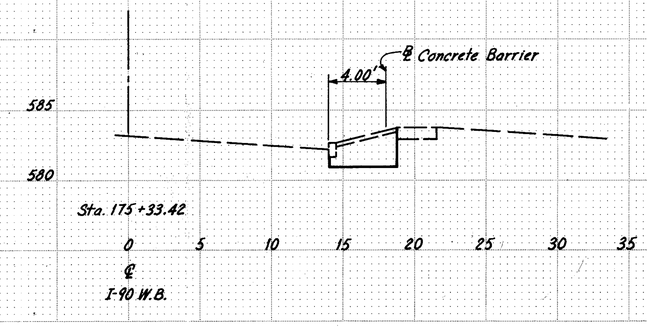
CUYAHOGA COUNTY
CUY-77-14.12
CUY-90-16.21

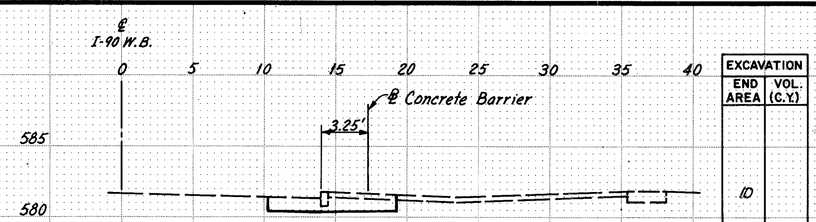
ESTIMATED QUANTITIES			
	DESCRIPTION	QUANTITY	UNIT
	Excavation not including Embankment Construction	448	Cu. Yds.

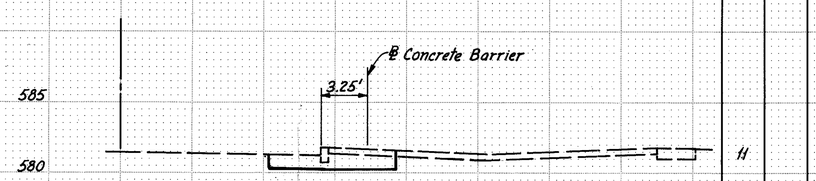


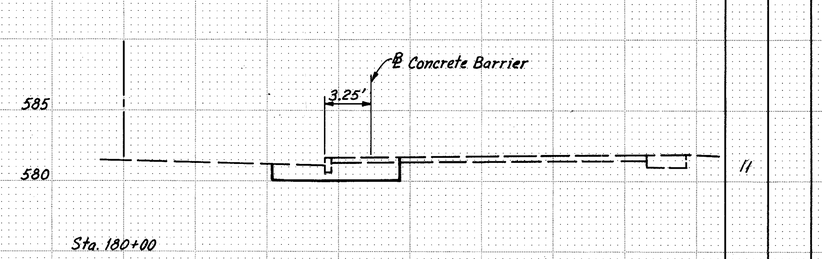


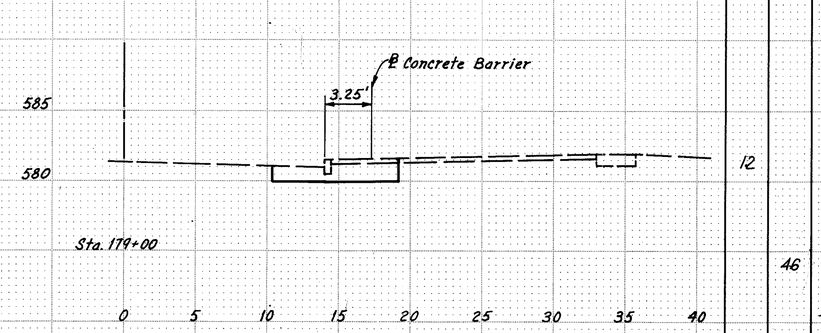




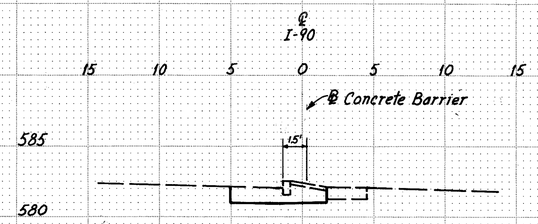


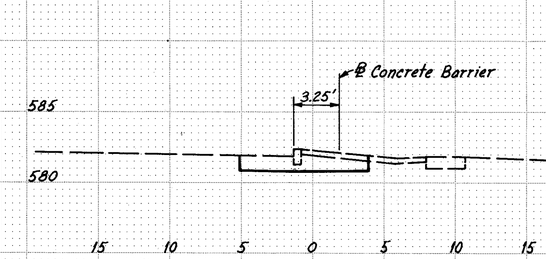




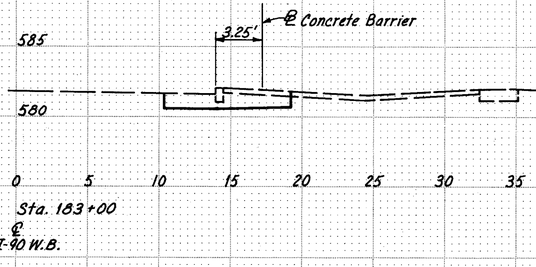


SCALE: 1" = 5' HORIZONTAL AND VERTICAL





Station Equation
Sta. 183+98.24, 19' Rt. ℄ I-90 W.B. =
Sta. 67+26.31 ℄ I-90



T.B.M. - "X" on E. Side, Conc. Base of Light Pole, 42.5' Lt. of Sta. 177+25 ℄ I-90 W.B. Elev. 582.59

EXCAVATION			EXCAVATION			EXCAVATION	
END AREA	VOL. (C.Y.)		END AREA	VOL. (C.Y.)		END AREA	VOL. (C.Y.)
13			10				
	57			39			
18			11			8	
	54			41			42
11			11			10	
	25			43			64
9			12			10	
			13	46		10	37

MADE G.F.M. DATE 10-17-75
TRACED P.M. DATE 10-31-75
CHECKED M.E.E. DATE 10-27-75
SCALE 1" = 5' Hor. & Vert.

Howard, Needles, Tammen & Bergendoff
CONSULTING ENGINEERS
CLEVELAND, OHIO

HNTB

STA. 175+33.42 ℄ I-90 WB. TO STA. 69+25 ℄ I-90

DRAINAGE DETAILS

FHWA REGION	STATE	PROJECT	
5	OHIO		

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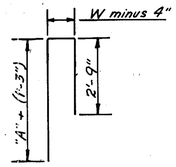
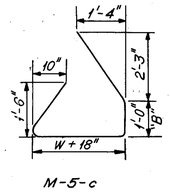
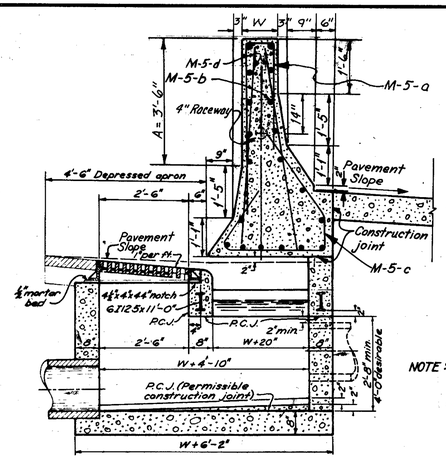
CUYAHOGA COUNTY
CUY.– 77–14.12
CUY.– 90–16.21







NOTE: For additional details see Standard Construction Drawing I-3, Median Inlets.

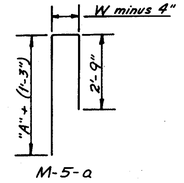
STEEL LIST										
W	M-5-a		M-5-b		M-5-c		6 I 12.5		M-5-d	
	No.	Lin. Ft.	No.	Lin. Ft.	No.	Lin. Ft.	No.	Lin. Ft.	No.	Lin. Ft.
12"	10	8'-2"	20	19'-8"	10	7'-10"	2	11'-0"	20	5'-8"

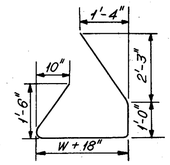
STANDARD NO. I-3B MEDIAN INLET, MODIFIED I AS PER PLAN

STANARD NO. I-3B MEDIAN INLET MODIFIED J AS PER PLAN			
Location	Ref. No.	Apron Width	Apron Side (s)
69+50	D-4	3'-6"	both
85+50	D-5	3'-6"	both
86+62	D-6	3'-6"	both
110+97	D-7	3'-6"	Grate side only
112+23.37	D-8	3'-6"	↑
113+47	D-9	3'-6"	
124+94.50	D-10	3'-6"	
125+93.10	D-11	4'-3"	
126+81	D-12	4'-6"	
47+20	D-13	4'-6"	
49+20	D-14	4'-6"	
55+25	D-15	3'-6"	
55+80	D-16	3'-6"	
62+26	D-18	3'-6"	
63+01	D-19	3'-6"	
64+01	D-20	3'-6"	
69+53	D-21	3'-6"	
70+56	D-22	3'-6"	Grate side only

Note: For additional details and modifications see Standard No. I-3B Median Inlet Modified A as per plan on sheet 38A.

STANDARD NO. I-3B MEDIAN INLET, MODIFIED J AS PER PLAN



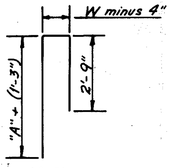


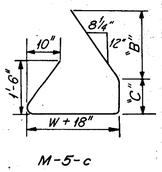
STEEL LIST										
W	M-5-a		M-5-b		M-5-c		6 I 12.5		M-5-d	
	No.	Lin. Ft.	No.	Lin. Ft.	No.	Lin. Ft.	No.	Lin. Ft.	No.	Lin. Ft.
48"	10	11'-2"	27	19'-8"	10	10'-10"	2	11'-0"	20	5'-8"

Note: For additional details see Standard Construction Drawing I-3B Medium Inlets.

STEEL LIST										
Ref. No.	W	M-5-a		M-5-b		M-5-c		6 I 12.5		M-5-d	
		No.	Lin. Ft.	No.	Lin. Ft.	No.	Lin. Ft.	No.	Lin. Ft.	No.	Lin. Ft.
D-26	12"	10	6'-11"	17	19'-8"	10	6'-8"	2	11'-0"	20	4'-5"
D-27	12"	10	7'-9"	20	19'-8"	10	7'-6"	2	11'-0"	20	5'-3"
D-41	12"	10	7'-5"	20	19'-8"	10	7'-6"	2	11'-0"	20	5'-2"
D-42	12"	10	7'-0"	17	19'-8"	10	7'-0"	2	11'-0"	20	4'-8"
D-59	20"	10	7'-9"	19	19'-8"	10	7'-10"	2	11'-0"	20	4'-7"
D-60	66"	10	11'-7"	29	19'-8"	10	11'-8"	2	11'-0"	20	4'-7"
D-69	68"	10	11'-6"/11'-3"	28	19'-8"	10	11'-4"/11'-1"	2	11'-0"	20	4'-5"/4'-2"
D-71	48"	10	9'-10"/10'-0"	24	19'-8"	10	9'-8"	2	11'-0"	20	4'-4"/4'-6"

Note: Placement of M-5-b bars shall be done in field as directed by the Engineer. For additional details see Standard Construction Drawing I-3 Median Inlets.

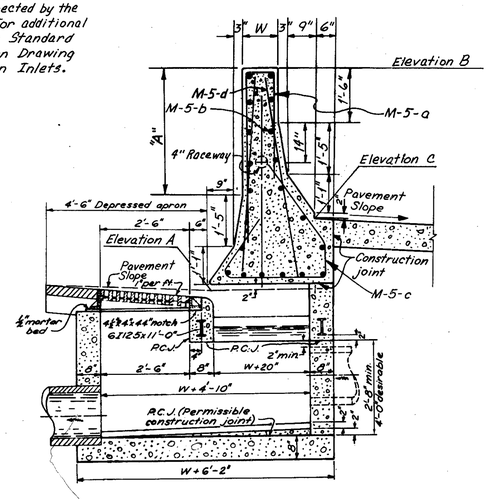


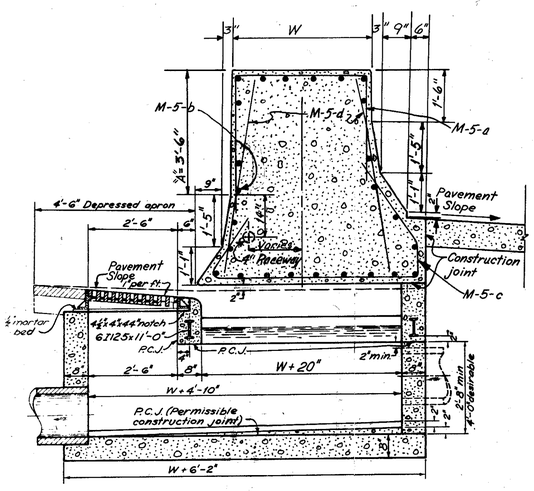


STANDARD NO. I-3B MEDIAN INLET, MODIFIED C AS PER PLAN							
Ref. No.	℄ I-90 Station Limits for Inlets	Elevation A	Elevation B	Elevation C	"A"	"B"	"C"
D-26	103+40	644.07	647.42	644.75	2.18'	2'-0"	0'-0"
	103+60	644.05	647.51	644.84	2.29'	2'-0"	0'-0"
D-27	104+90	644.47	648.68	646.01	3.04'	2'-3"	0'-6"
	105+10	644.60	648.87	646.20	3.10'	2'-3"	0'-6"
D-41	123+90	635.97	640.13	637.46	2.99'	2'-3"	0'-6"
	124+10	635.88	639.98	637.31	2.93'	2'-3"	0'-6"
D-42	125+50	635.27	638.91	636.24	2.47'	2'-3"	0'-0"
	125+70	635.18	638.75	636.08	2.40'	2'-3"	0'-0"
** D-59	160+15	610.40	614.02	611.35	2.45'	2'-0"	0'-6"
	160+35	610.32	613.94	611.27	2.45'	2'-0"	0'-6"
* D-60	161+55	609.87	613.43	610.76	2.39'	2'-0"	0'-6"
	161+75	609.79	613.37	610.68	2.39'	2'-0"	0'-6"
* D-69	171+83	584.76	588.14	585.47	2.21'	2'-0"	0'-0"
	172+03	584.51	587.67	585.00	1.99'	1'-9"	0'-0"
D-71	174+10	582.71	586.04	583.37	2.16'	2'-0"	0'-0"
	174+30	582.57	586.08	583.41	2.34'	2'-0"	0'-0"

* See note on sheet 7.
** Instead of a standard 4'-6" Depressed Apron, provide a 4'-2" Depressed Apron.

STANDARD NO. I-3B MEDIAN INLET, MODIFIED C AS PER PLAN





STANDARD NO. I-3B MEDIAN INLET, MODIFIED D AS PER PLAN

MADE A.H.S. DATE 4-30-75
TRACED T.S. DATE 5-5-75
CHECKED M.E.E. DATE 5-6-75
SCALE 1/2" = 1'-0"

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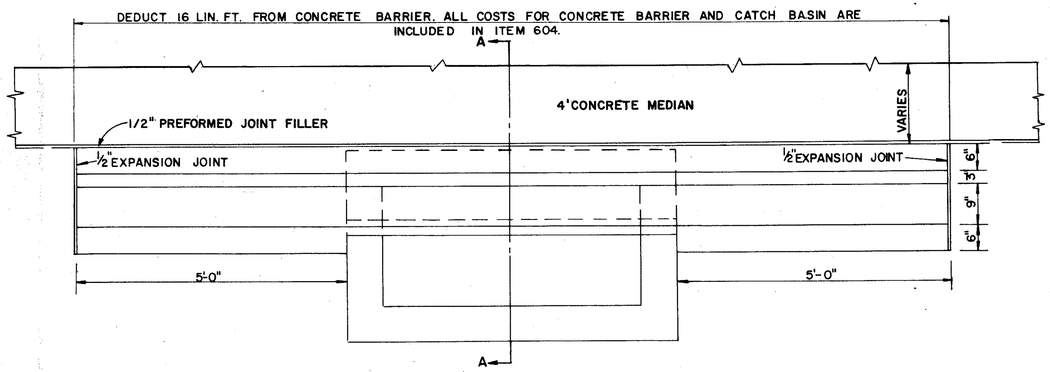
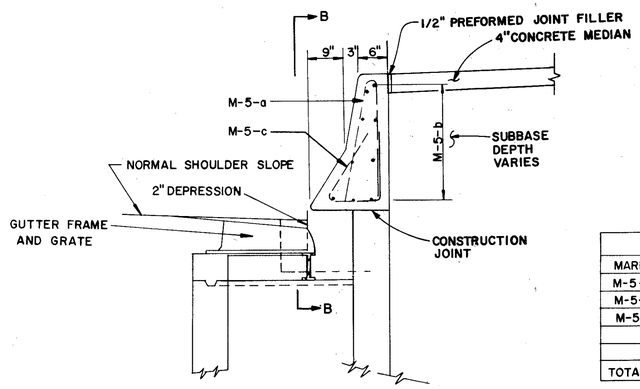
FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

41
169

CUYAHOGA COUNTY
CUY-77-14.12
CUY-90-16.21



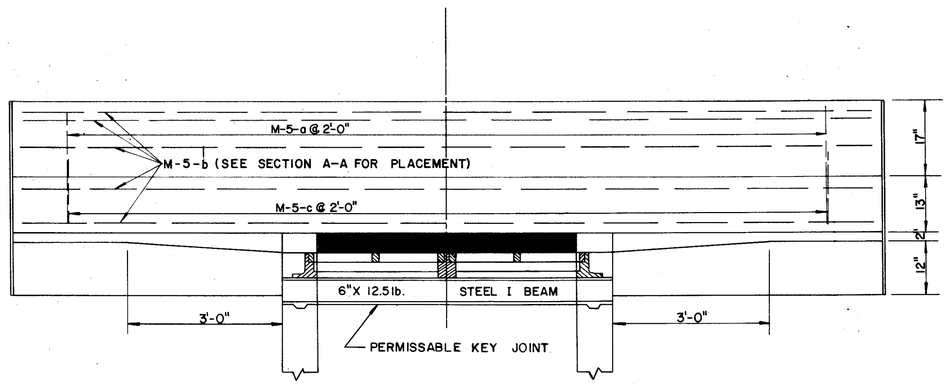
PLAN
GUTTER FRAME AND GRATES NOT SHOWN



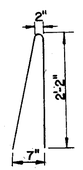
SECTION A-A

STEEL LIST			
MARK	NO.	LENGTH	WEIGHT
M-5-a	8	4'-5"	37
M-5-b	9	15'-8"	147
M-5-c	8	3'-6"	29
TOTAL REINFORCING STEEL			213 lbs.

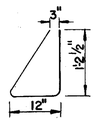
NOTES:
THE STEEL LIST TABLE QUANTITY IS INCLUDED WITH THIS DRAWING FOR ESTIMATING PURPOSES ONLY.
FOR NOTES, DIMENSIONS AND DETAILS NOT SHOWN STANDARD CONSTRUCTION DRAWINGS CB-3 "CATCH BASINS" AND I-3 "MEDIAN INLETS" SHALL APPLY.



SECTION B-B



M-5-a



M-5-c

STANDARD NO.3 CATCH BASIN, MODIFIED, AS PER PLAN

MADE AHS DATE 9-2-75
TRACED RDJ DATE 9-3-75
CHECKED MRE DATE 9-4-75
SCALE 1"=1'-0"

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BRUNING 44.560.10943

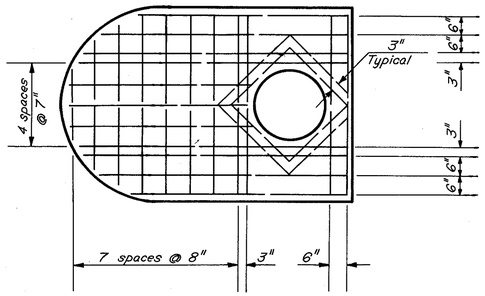
DRAINAGE DETAILS

DRAINAGE DETAILS

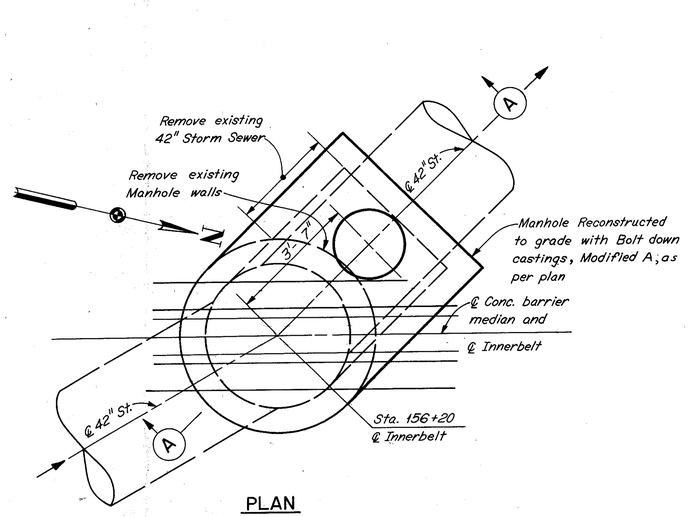
FHWA REGION	STATE	PROJECT	
5	OHIO		

42
169

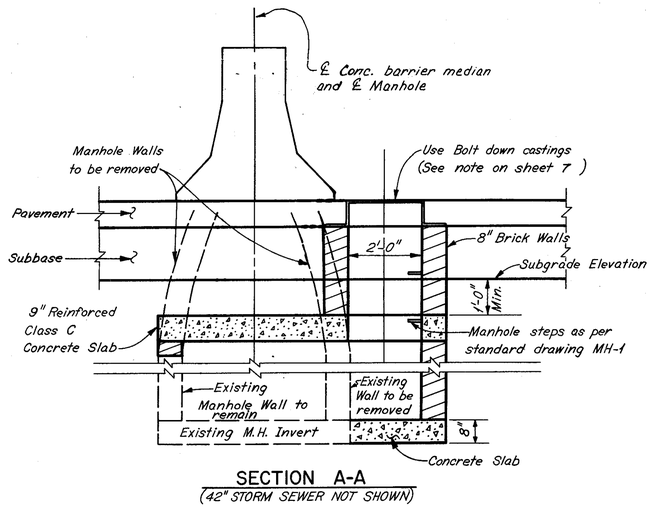
CUYAHOGA COUNTY
CUY.-77-14.12
CUY.-90-16.21



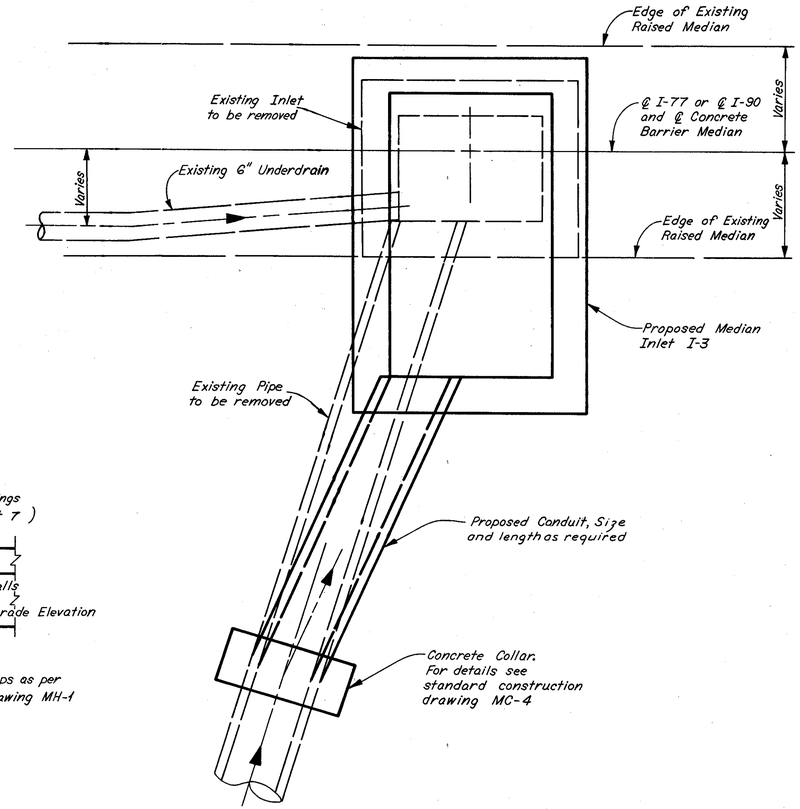
SLAB PLAN



PLAN



SECTION A-A
(42" STORM SEWER NOT SHOWN)



TYPICAL DETAIL SHOWING CONNECTION OF EXISTING STORM SEWER TO PROPOSED MEDIAN INLET I-3

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

NOTES:

All dimensions and elevations to be determined in the field by the Engineer.

Reinforcing bars shall be No. 6 spaced as indicated, with a minimum cover of 1½". Reinforcing rods shall be cut, bent and placed in the field as directed by the Engineer.

Payment for above work shall be included with unit price bid per each item 604 - Manhole Reconstructed to grade with bolt down casting, modified A, as per plan.

MANHOLE RECONSTRUCTED TO GRADE WITH BOLT DOWN CASTING, MODIFIED A, AS PER PLAN

Scale: ½" = 1'-0"

MADE A.H.S. DATE 4-30-75
TRACED J.S. DATE 5-5-75
CHECKED M.E.E. DATE 5-6-75
SCALE As Shown

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CLEVELAND, OHIO

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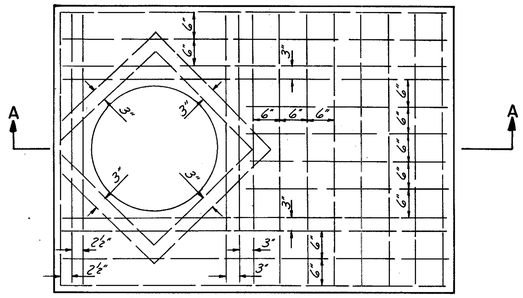
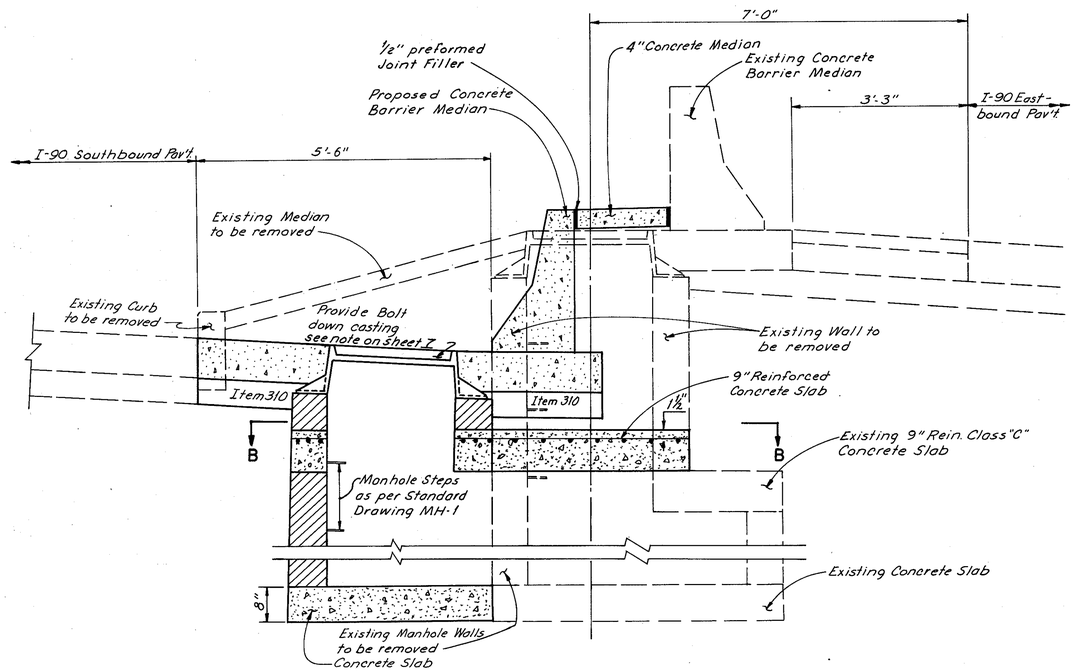
FHWA REGION	STATE	PROJECT	
5	OHIO		

CUYAHOGA COUNTY
CUY-77-14.12
CUY-90-16.21

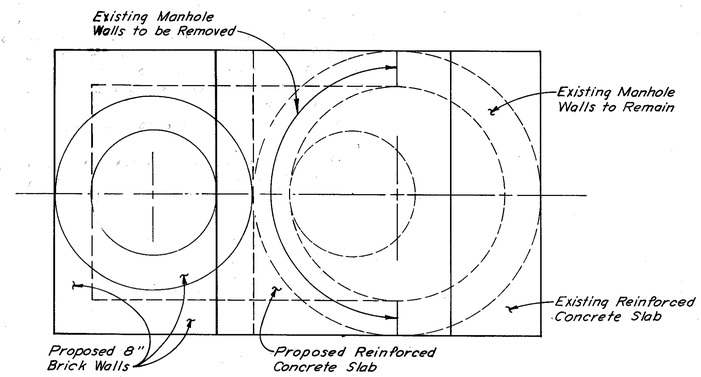


For reinforcing see note below

SLAB PLAN



SECTION A-A
(Storm Sewers not shown)



SECTION B-B

NOTES:
All dimensions and elevations to be determined in the field by the Engineer.
Reinforcing bars shall be No. 6 spaced as indicated, with a minimum cover of 1½". Reinforcing rods shall be cut, bent and placed in the field as directed by the Engineer.
Payment for above work shall be included with unit price bid per each item 604 - Manhole Reconstructed to grade with bolt down casting, modified B, as per plan.

MANHOLE RECONSTRUCTED TO GRADE WITH BOLT DOWN CASTING, MODIFIED B AS PER PLAN

I-90 EAST BOUND STA. 77+00

MADE AHS DATE 9-1-75
TRACED RDJ DATE 9-2-75
CHECKED MRE DATE 9-3-75
SCALE ¾"=1'

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FHWA REGION	STATE	PROJECT	
5	OHIO		

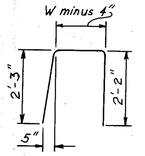
43A / 169

QUANTITY CALCULATIONS
MADE BY DSP DATE 6-16-77
CHECKED BY AHS DATE 6-22-77

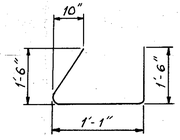
CUYAHOGA COUNTY
CUY-77-14.12
CUY-90-16.21

STEEL LIST								
W	M-5-a		M-5-b		M-5-c		6 I 12.5	
	No.	Lin. Ft.	No.	Lin. Ft.	No.	Lin. Ft.	No.	Lin. Ft.
9"	10	4'-10"	9	19'-8"	10	4'-3"	2	11'-0"

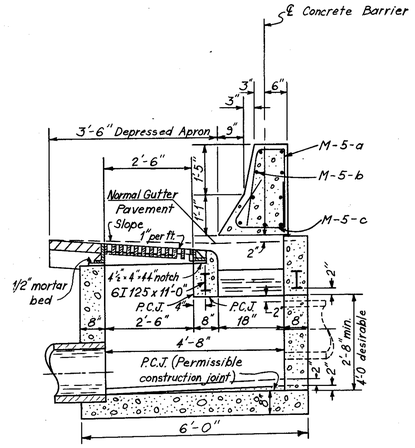
NOTE: For additional details see Standard Construction Drawing I-3, Median Inlets.



M-5-a



M-5-c



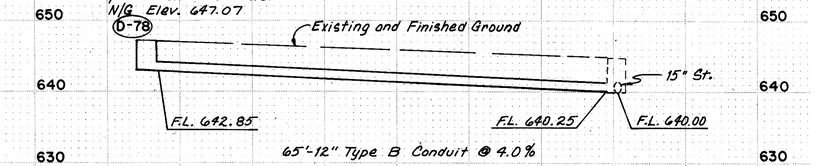
STANDARD NO. I-3A MEDIAN INLET MODIFIED AS PER PLAN
(Section C-C as noted on Std Const. Drwg. I-3)
(Scale ½" = 1'-0")

DRAINAGE COST PARTICIPATION I									
REF. NO.	STATION		202 Inlet Abandoned	202 Pipe Removed 24" and Under	603 Type F Conduit 6"	603 Type B Conduit 12"	604 Std. I-3A Median Inlet Mod., As per plan	N.G. Elevations of I-3 Inlets	Flow line elevations of existing and/or proposed storm sewers and Underdrains at proposed median inlets.
	FROM	TO	EACH	LIN. FT.	LIN. FT.	LIN. FT.	EACH		
D-82	9+85		1 **					677.35	12"(S) 673.80 12"(SW) 673.60; 6"(S) 674.10
D-83	9+85	10+00		15	10	15	1	677.88	12"(N) 673.90; 6"(S) 674.74
D-84		13+00					1	680.32	12"(NW) 676.57; 6"(S) 677.25
	TOTALS I-90-1(101) 29		1	15	10	15	2		

** Connect pipes through

Sta. 3+44, 15' Rt, Ramp 3
Std. 2-A-6
paved shoulder inlet
N/G Elev. 647.07
(D-78)

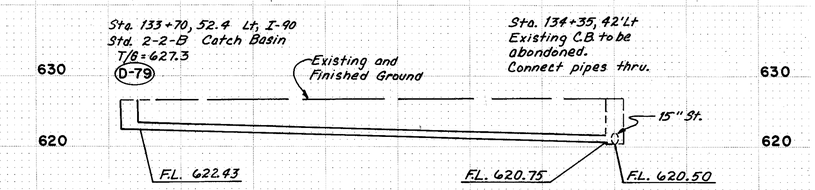
Sta. 4+03, 36' Lt, Ramp 3
Existing C.B.



DETAILS AT (D-78)

Sta. 133+70, 52.4 Lt, I-90
Std. 2-2-B Catch Basin
T/G=627.3
(D-79)

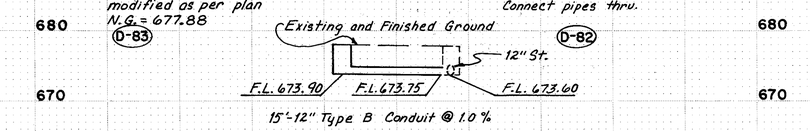
Sta. 134+35, 42' Lt
Existing C.B. to be abandoned.
Connect pipes thru.



DETAILS AT (D-79)

Sta. 10+00, 27' Lt, Ramp E-10
Std. No. I-3A median inlet modified as per plan
N.G.= 677.88
(D-83)

Sta. 9+85, 27' Lt, Ramp E-10
Existing C.B. to be abandoned.
Connect pipes thru.



DETAILS AT (D-82) AND (D-83)

Notes:
For location of D-78 see sheet 24.
For location of D-79 see sheet 25.
For location of D-82 and D-83 see sheet 35.

MADE AHS DATE 8-28-77
TRACED EAL DATE 8-30-77
CHECKED DSP DATE 8-29-77
SCALE As Shown

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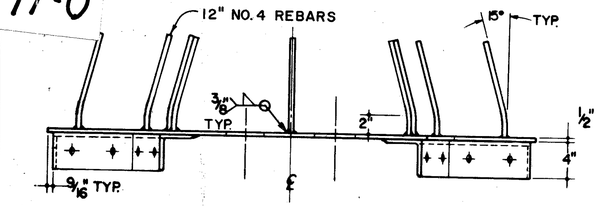
FHWA REGION	STATE	PROJECT	
5	OHIO		

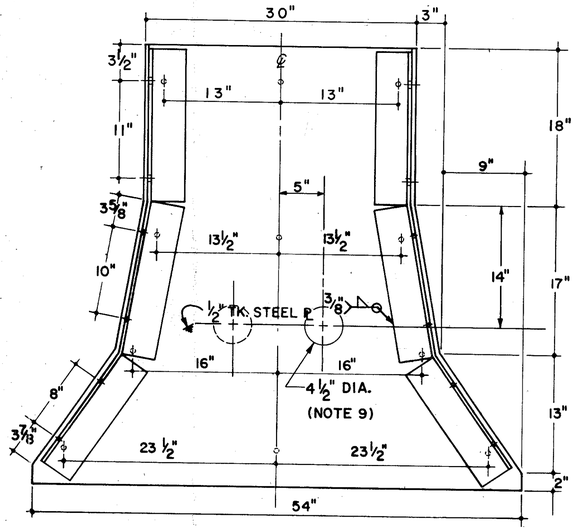
CUYAHOGA COUNTY
CUY-77-13.79
CUY-90-16.21

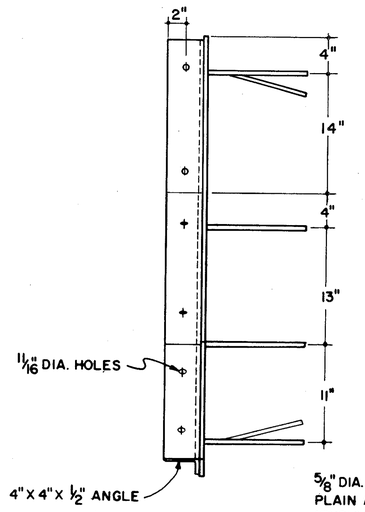


DESIGN	BARRIER WALL OPENING	WALL ℄ LENGTH
1	10'-0"	9'-10"
2*	4'-0"	3'-10"
1A⊕	10'-0"	9'-10"

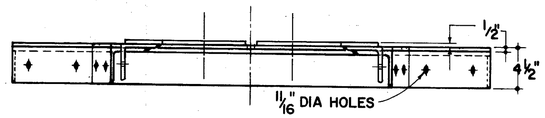
CHART "A"

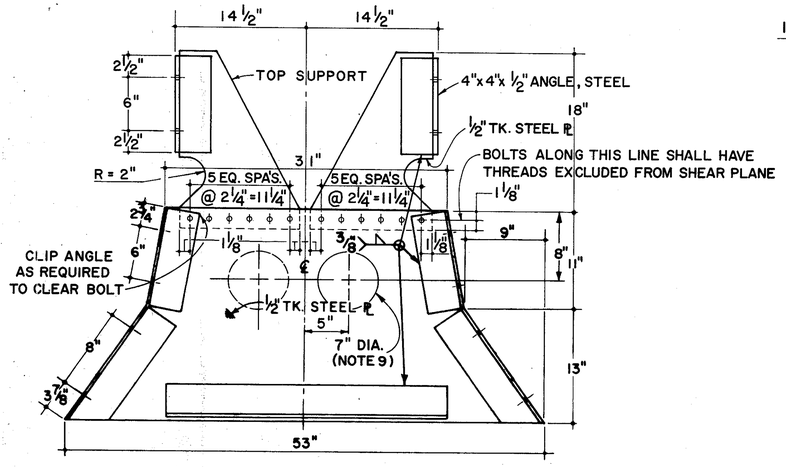
* SEE NOTE 8
⊕ SEE NOTE 11

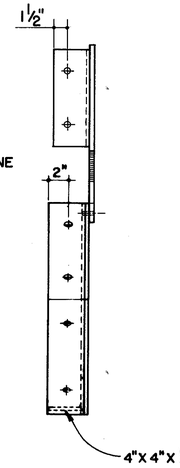




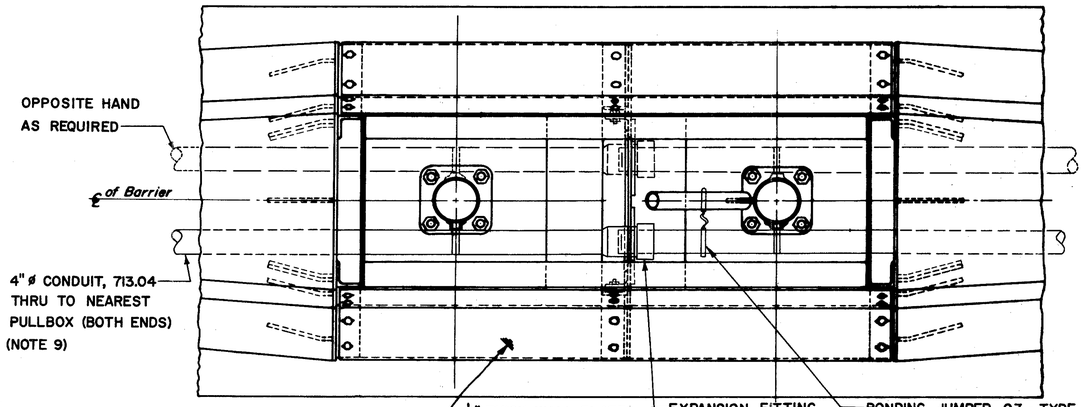
END BULKHEAD

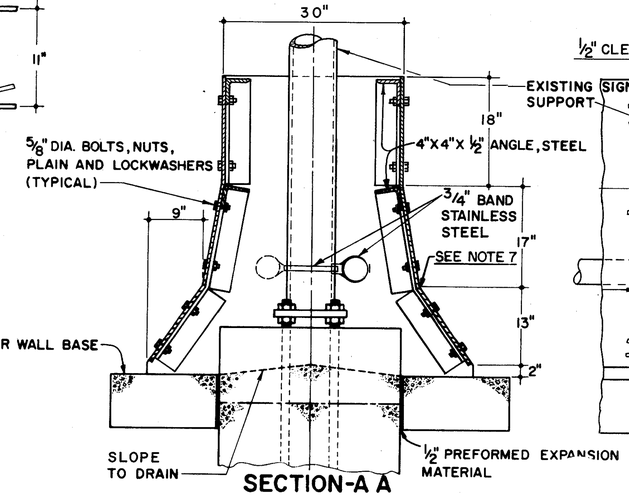




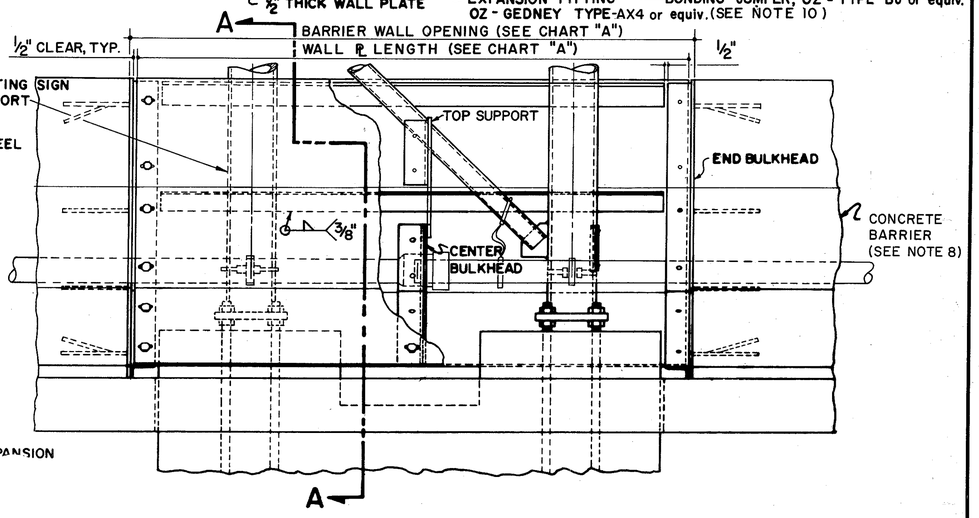


CENTER BULKHEAD





SECTION-A A



NOTE

1. ALL STEEL PARTS SHALL BE GALVANIZED AFTER FABRICATION AS PER ASTM A-123.
2. ALL 5/8" BOLTS, NUTS, PLAIN WASHERS AND LOCKWASHERS SHALL BE GALVANIZED AS PER ASTM A 153.
3. REINFORCING BARS SHALL BE ASTM A-615, GRADE 40.
4. AFTER FABRICATION AND GALVANIZING THE PARTS SHALL BE SHOP ASSEMBLED AND SHIPPED TO THE JOB SITE AS A UNIT.
5. INSTALLATION: REMOVE ONE WALL PLATE, AND ONE TOP SUPPORT, PLACE THE UNIT AROUND THE SIGN SUPPORT, REINSTALL WALL PLATE AND TOP SUPPORT, AND FORM THE CONCRETE BARRIER UP TO THE END BULKHEADS.
6. PLATES AND ANGLES SHALL BE ASTM A-36 STEEL.
7. EACH WALL PLATE MAY BE MADE FROM A SINGLE PIECE AND FORMED ON A PRESS BRAKE OR THREE PIECES WELDED USING A 100% PENETRATION BUTT JOINT WELD.
8. FOR CANTILEVER, CENTER MOUNT AND BUTTERFLY TYPE SIGN SUPPORTS PROVIDE A 3'-0" SECTION OF CONCRETE BARRIER WALL ON EACH SIDE OF THE 3'-10" WALL ℄ AS A PART OF THIS ITEM. ELIMINATE THE CENTER BULKHEAD ON DESIGN 2.
9. INSTALLATION OF ELECTRICAL CONDUIT, INCLUDING ALL LABOR, MATERIAL, AND INCIDENTALS SHALL BE INCLUDED IN THE UNIT BID PRICE PER EACH ITEM 844 - "BARRIER WALL ASSEMBLY FOR EXISTING SIGN SUPPORTS, DESIGN _____, AS PER PLAN."
10. SET FREE END OF CONDUIT AT THE CENTER OF THE EXPANSION COUPLING TRAVEL.
11. DESIGN 1A CONSISTS OF 18 INCH STEEL GLARE SCREEN ONLY. THE DESIGN SHALL BE ESSENTIALLY THE SAME AS THE TOP 18 INCHES OF THE BARRIER SHOWN WITH THE FOLLOWING EXCEPTION; ADD TWO ADDITIONAL REBAR ANCHORS AT EACH END BULKHEAD 3 1/2 INCHES FROM THE BOTTOM OF THE FRAMWORK. (2) ANCHOR THE TOP SUPPORT OF THE CENTER BULKHEAD INTO THE CONCRETE MEDIAN USING TWO 12 INCH NO. 4 REBAR ANCHORS PER SIDE.

NOTE:

THE PURPOSE OF THIS DRAWING IS TO SHOW THE MODIFICATION TO STANDARD CONSTRUCTION DRWING TC-21.31, FOR THE PURPOSE OF INCLUDING 4" RACEWAY AND AN 18" VERTICAL EXTENION, AS PART OF THIS DETAIL.

BARRIER WALL ASSEMBLY FOR EXISTING SIGN SUPPORTS

NOTE

REFER TO STANDARD CONSTRUCTION DRAWING TC-21.10 FOR TYPICAL DIMENSIONS WITH THE FOLLOWING MODIFICATIONS TO REINFORCEMENT SCHEDULES.

- MARK 601 LENGTH = D MIN. + 5"
- MARK 603 NUMBER = 4
- MARK 604 NUMBER = 8
- MARK 402 VERTICAL DIMENSION = 52"

REFER TO STANDARD CONSTRUCTION DRAWING TC-21.30 FOR ADDITIONAL DETAILS.

FHWA REGION	STATE	PROJECT	
5	OHIO		

44A / 169

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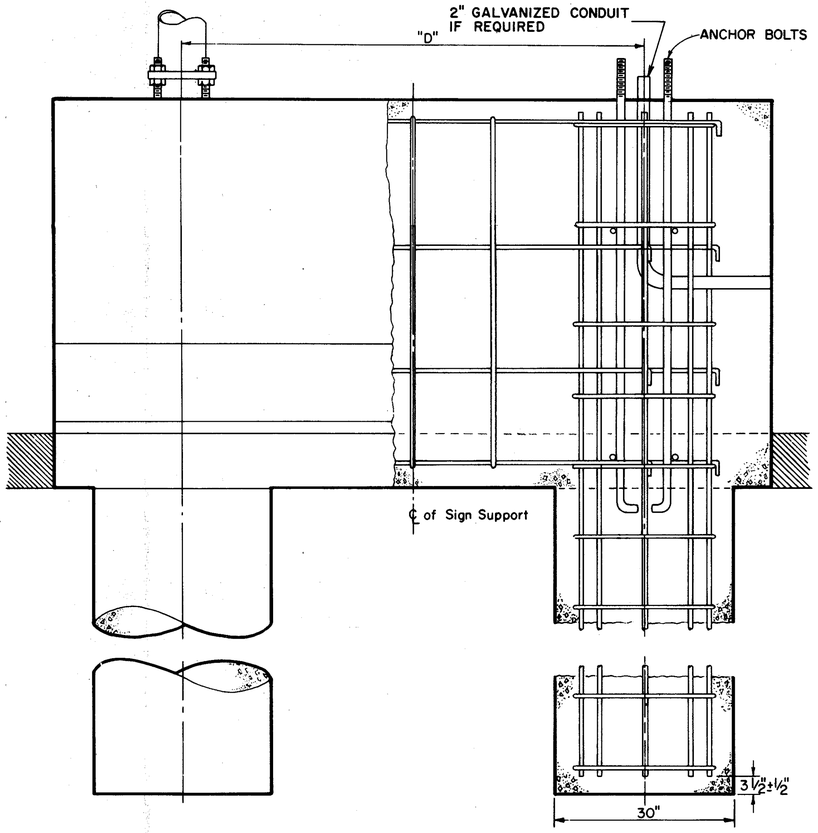
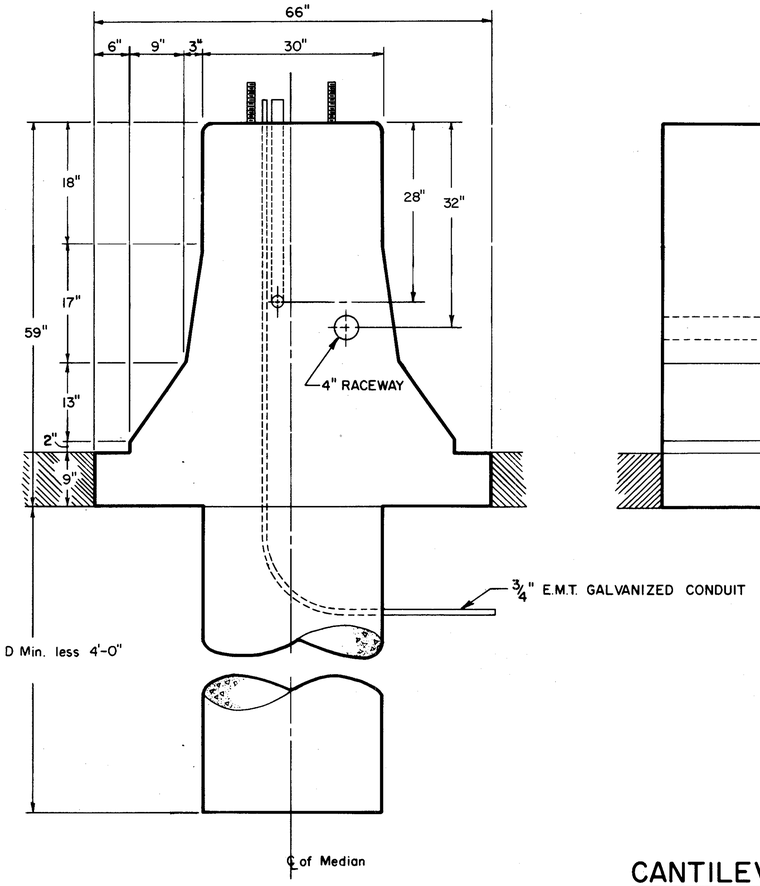
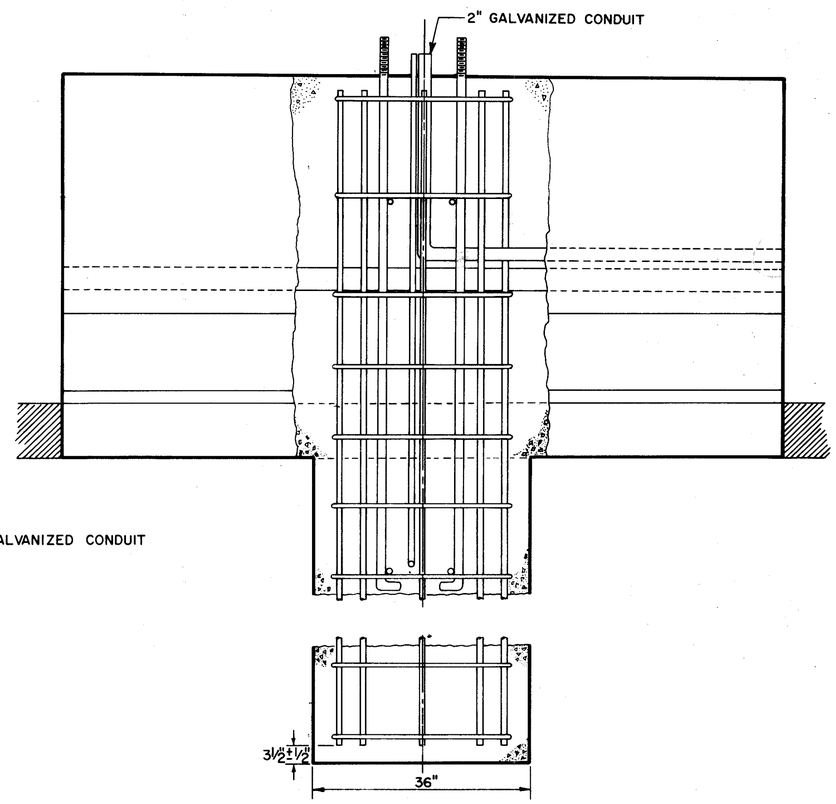
CUY-77-13.79
CUY-90-16.21



SPAN TYPE





CANTILEVER, BUTTERFLY OR CENTER MOUNT TYPE

FOR INFORMATION REGARDING THE TRANSITION SECTIONS OF THE BARRIER WALL SEE STANDARD CONSTRUCTION DRAWING MC-9.

Note:
For dimensions "D" and "D" Min. refer to Standard Constuction Drawing TC-21.10.

MADE MGB DATE 6-21-77
TRACED DWT DATE 3-14-77
CHECKED DSP DATE 3-15-77
SCALE No Scale

Howard, Needles, Tammen & Bergendoff
CONSULTING ENGINEERS
CLEVELAND, OHIO

HNTB

CONCRETE BARRIER MEDIAN
OVERHEAD
SIGN SUPPORT FOUNDATIONS

FOR 50" BARRIER HEIGHT

No Scale

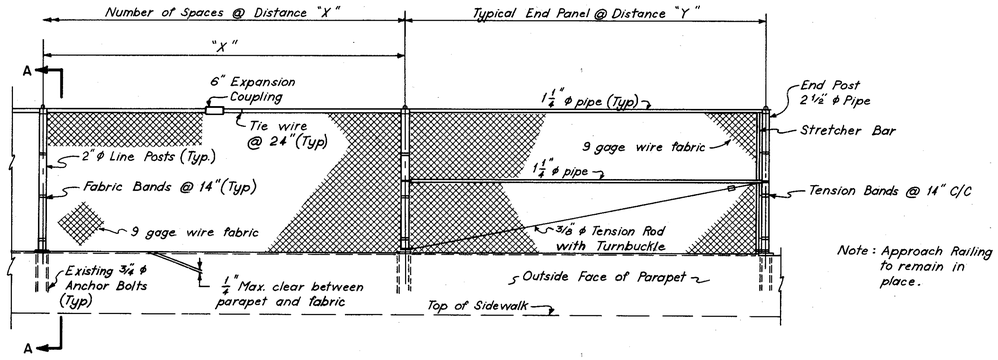
FENCE DETAILS

FHWA REGION	STATE	PROJECT	
5	OHIO		

45
169

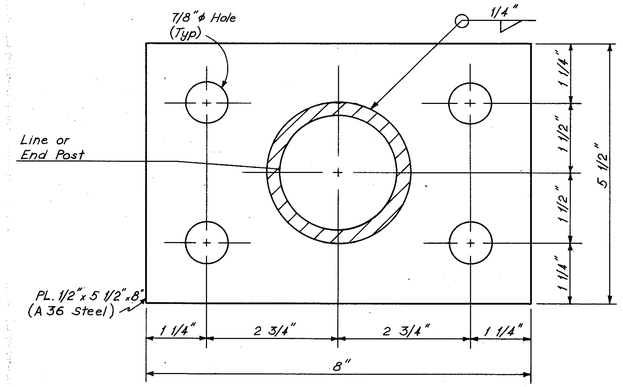
CUYAHOGA COUNTY
CUY-77-14.12
CUY-90-16.21

FENCE DATA					
PLAN SHEET	DESIGNATION	"X"	NO. OF SPACES	"Y"	STRUCTURE OVER I-90
24	F-8	9'-2"	11	(2)-9'-2"	E. 22nd ST.
	F-9	9'-2"	11	(2)-9'-2"	
	F-10	8'-4"	15	(2)-8'-4"	CEDAR AVE.
	F-11	8'-0"	17	(2)-8'-0"	
	F-12	7'-6 1/4"	26	(2)-7'-6 1/4"	CARNEGIE AVE.
	F-13	7'-8 1/8"	22	(2)-7'-8 1/8"	
25	F-3	8'-4"	17	(2)-8'-4"	PROSPECT AVE.
	F-4	8'-1"	17	(2)-8'-1"	
	F-5	9'-4"	13	(2)-9'-4"	EUCLID AVE.
	F-6	9'-3"	13	9'-1 1/2";9'-3"	
	F-7	10'-0"	13	(2)-10'-0"	CHESTER AVE.
	F-8	10'-0"	13	(2)-10'-0"	
26	F-4	8'-2"	25	(2)-8'-2"	PAYNE AVE.
	F-5	8'-2"	25	(2)-8'-2"	
	F-6	8'-3"	25	(2)-8'-3"	SUPERIOR AVE.
	F-7	8'-3"	25	(2)-8'-3"	
	F-8	8'-3"	26	(2)-8'-3"	ST. CLAIR AVE.
	F-9	8'-3"	27	(2)-8'-3"	
27	F-2	9'-3"	13	(2)-9'-3"	HAMILTON AVE.
	F-3	9'-3"	13	(2)-9'-3"	
	F-4	10'-0"	21	(2)-10'-0"	LAKESIDE AVE.
	F-5	10'-0"	21	(2)-10'-0"	
Dimensions "X" & "Y" are from field measurements.					

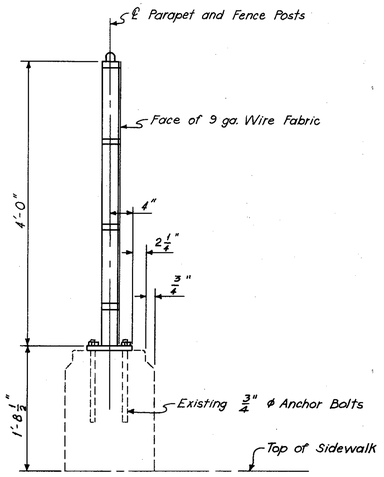


ELEVATION
Scale : 1/2" = 1'-0"

Note : Approach Railing to remain in place.



LINE & END POST BASE PLATE DETAIL
No Scale



SECTION A-A
Scale 1" = 1'-0"

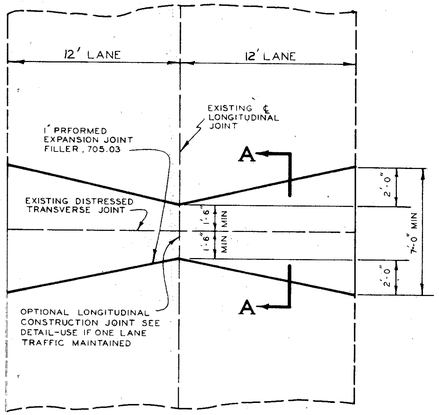
Notes:
1. For additional information of type CL fence, modified, as per plan see general note on Sheet 5.
2. For quantities see Sheets 24,25,26,27,.

MADE DWT DATE 9-21-77
TRACED DWT DATE 9-21-77
CHECKED DSP DATE 9-27-77
SCALE As Shown

Howard, Needles, Tammen & Bergendoff
CONSULTING ENGINEERS
CLEVELAND, OHIO

HNTB

305 PAVEMENT REPLACEMENT DETAILS

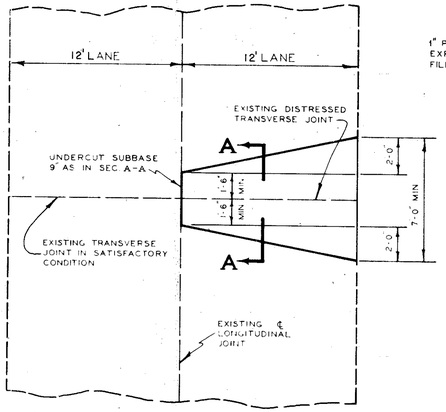


TWO LANE REPLACEMENT

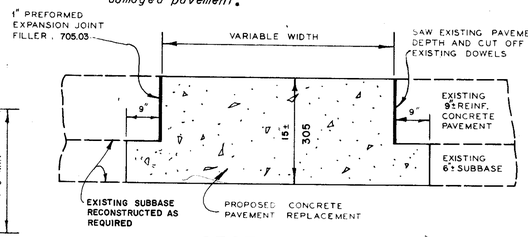
PAVEMENT REPLACEMENT			
≠ STATION	LANE NO.	305 TWO LANE REPLACE-MENT	305 SINGLE LANE REPLACE-MENT
		EACH	EACH
I-77-5(18)16I			
112+40 ℄ I-77 Rt.	3		1
Additional *		2	2
TOTAL		2	3
I-90-1(101)29			
103+65 ℄ I-90 E.B.	2		1
108+00 ℄ I-90 W.B.	7		1
121+90 ℄ I-90 W.B.	6&7	1	
122+45 ℄ I-90 E.B.	2		1
131+00 ℄ I-90 E.B.	3&4	1	
138+15 ℄ I-90 E.B.	3		1
142+20 ℄ I-90 W.B.	7		1
163+00 ℄ I-90 W.B.	6&7	1	
4+94 ℄ Ramp E-8	1	1	
5+06 ℄ Ramp E-8	1	1	
Additional *		2	2
TOTAL		7	7

*Additional locations as required and determined by the Engineer.

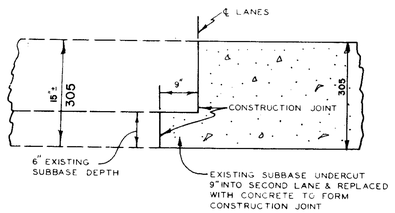
≠Stations listed in the table indicate the station of a line or transvere joint which bisects the damaged pavement.



SINGLE LANE REPLACEMENT



SECTION A-A



OPTIONAL LONGITUDINAL CONSTRUCTION JOINT FOR FULL WIDTH REPLACEMENT WHERE ONE LANE OF TRAFFIC MAINTAINED

SEE SHEET No 6 FOR GENERAL NOTES PERTAINING TO PAVEMENT REMOVAL AND REPLACEMENT

THIS WORK IS FOR THE REPAIRING OF DETERIORATED TRANSVERSE PAVEMENT JOINTS AND OTHER SMALL DETERIORATED AREAS. THE LOCATION AND SIZES OF THE REPAIRS SHALL BE THE DIRECTION OF THE ENGINEER. THE FOLLOWING ESTIMATED QUANTITIES ARE PROVIDED FOR THIS PAVEMENT REPAIR WORK.

I-77-5(18)16I
2 TWO LANE REPAIRS @ 13 S.Y. EACH (AVG: AREA) = 26 S.Y.
3 SINGLE LANE REPAIRS @ 7 S.Y. EACH (AVG. AREA) = 21 S.Y.

ITEM 202 PAVEMENT REMOVED AS PER PLAN 47 S.Y. COST PART. II
ITEM 305 15" PORTLAND CEMENT CONCRETE BASE 47 S.Y. COST PART. II

I-90-1(101)29
7 TWO LANE REPAIRS @ 13 S.Y. EACH (AVG. AREA) = 91 S.Y.
7 SINGLE LANE REPAIRS @ 7 S.Y. EACH (AVG. AREA) = 49 S.Y.

ITEM 202 PAVEMENT REMOVED, AS PER PLAN 140 S.Y. COST PART. II
ITEM 305 15" PORTLAND CEMENT CONCRETE BASE, AS PER PLAN 140 S.Y. COST PART. II

THE COST OF RESHAPING, RECONSTRUCTING AND RECOMPACTING OF THE EXISTING SUBBASE NECESSARY SHALL BE INCLUDED IN THE UNIT PRICE BID FOR 305, 15" PORTLAND CEMENT CONCRETE BASE, AS PER PLAN

MADE M.E.E. DATE 12-4-75
TRACED T.A.R. DATE 12-12-75
CHECKED G.F.M. DATE 12-9-75
SCALE No Scale

Howard, Needles, Tammen & Bergendoff
CONSULTING ENGINEERS
CLEVELAND, OHIO

HNTB

305 PAVEMENT REPLACEMENT DETAILS

FHWA REGION	STATE	PROJECT	
5	OHIO		

46
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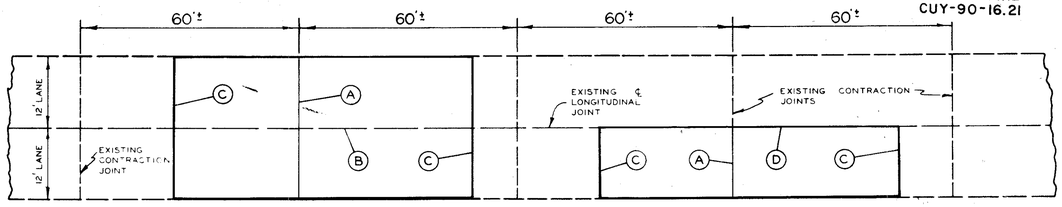
CUYAHOGA COUNTY
CUY-77-14.12
CUY-90-16.21



TYPICAL TWO LANE REPLACEMENT

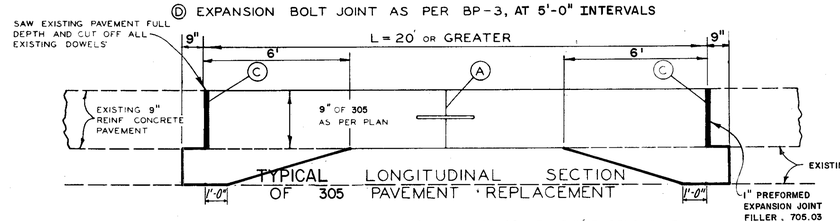
TYPICAL ONE LANE REPLACEMENT

Ⓐ STANDARD CONTRACTION JOINT AS PER STD. DRWG. BP-4 — LOCATE ON STRAIGHT LINE EXTENSION OF EXISTING JOINT FOR SINGLE LANE PAVEMENT

Ⓑ LONGITUDINAL JOINT — LONGITUDINAL CONSTRUCTION JOINT AS PER BP-3 OPTIONAL IF ONE LANE TRAFFIC IS TO BE MAINTAINED (TO BE USED ONLY WHEN PAVEMENT REPLACEMENT IS FULL WIDTH)

Ⓒ EXPANSION JOINT USING 705.03

Ⓓ EXPANSION BOLT JOINT AS PER BP-3, AT 5'-0" INTERVALS



TYPICAL LONGITUDINAL SECTION OF 305 PAVEMENT REPLACEMENT

SEE SHEET No 6 FOR GENERAL NOTES PERTAINING TO PAVEMENT REMOVAL AND REPLACEMENT

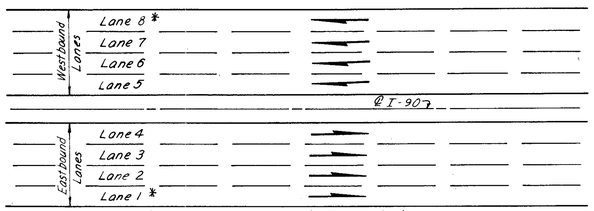
FOR AGGREGATE DRAIN DETAILS SEE SHEET 47

THIS WORK IS FOR THE REPAIRING OF THE LARGER SIZE DETERIORATED PAVEMENT AREAS OF EITHER SINGLE OR TWO LANE WIDTHS. THE LOCATIONS AND SIZES OF THESE REPAIRS SHALL BE AT THE DIRECTION OF THE ENGINEER. THE FOLLOWING ESTIMATED QUANTITIES ARE PROVIDED FOR THIS PAVEMENT REPLACEMENT WORK:

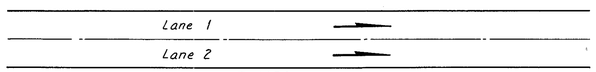
I-77-5(18)16I
ITEM 202 PAVEMENT REMOVED, AS PER PLAN S.Y. COST PART. II
ITEM 305 9" PORTLAND CEMENT CONCRETE BASE, AS PER PLAN S.Y. COST PART. II

I-90-1(101)29
ITEM 202 PAVEMENT REMOVED, AS PER PLAN S.Y. COST PART. II
ITEM 305 9" PORTLAND CEMENT CONCRETE BASE, AS PER PLAN S.Y. COST PART. II

THE COST OF RESHAPING, RECONSTRUCTING AND RECOMPACTING OF THE EXISTING SUBBASE NECESSARY SHALL BE INCLUDED IN THE UNIT PRICE BID FOR 305 9" PORTLAND CEMENT CONCRETE BASE, AS PER PLAN



* Reference to Lanes 1 & 8 are to be used only if 4 lanes of travel exist.



RAMPS

LANE NUMBERING SCHEME FOR PAVEMENT REPLACEMENT QUANTITIES
No Scale

QUANTITY CALCULATIONS
MADE BY M.E.E. DATE 12-4-75
CHECKED BY G.F.M. DATE 12-9-75

PAVEMENT REPLACEMENT			
≠ STATION	LANE NO.	202 PAVEMENT REMOVED AS PER PLAN	305 9" PORTLAND CEMENT CONC. BASE AS PER PLAN
		SQ. YDS.	SQ YDS.
I-77-5(18)16I			
9+00 ℄ Ramp F-4	1	27	27
Additional *		300	300
TOTAL		327	327
I-90-1(101)29			
2+30 ℄ Ramp E-6	1	53	53
74+50 ℄ I-90 E.B.	3&4	160	160
127+25 ℄ I-90 W.B.	6	80	80
0+10 ℄ Ramp 9	1	53	53
131+50 ℄ I-90 E.B.	3&4	80	80
141+00 ℄ I-90 E.B.	2&3	80	80
142+70 ℄ I-90 W.B.	6&7	27	27
147+00 ℄ I-90 E.B.	2&3	80	80
148+45 ℄ I-90 E.B.	3	80	80
148+60 ℄ I-90 E.B.	2	80	80
149+95 ℄ I-90 E.B.	3&4	80	80
162+35 ℄ I-90 W.B.	7	80	80
163+25 ℄ I-90 W.B.	5&6	160	160
Additional *		2675	2675
TOTAL		3768	3768

*Additional locations as required and determined by the Engineer.

≠Stations listed in the table indicate the beginning station of the damaged pavement in the direction of traffic.

Rev. 1 - 9-79

PAVEMENT REPLACEMENT DETAILS

KYE-10-1503 3-79

LONGITUDINAL & TRANSVERSE AGGREGATE DRAIN DETAILS

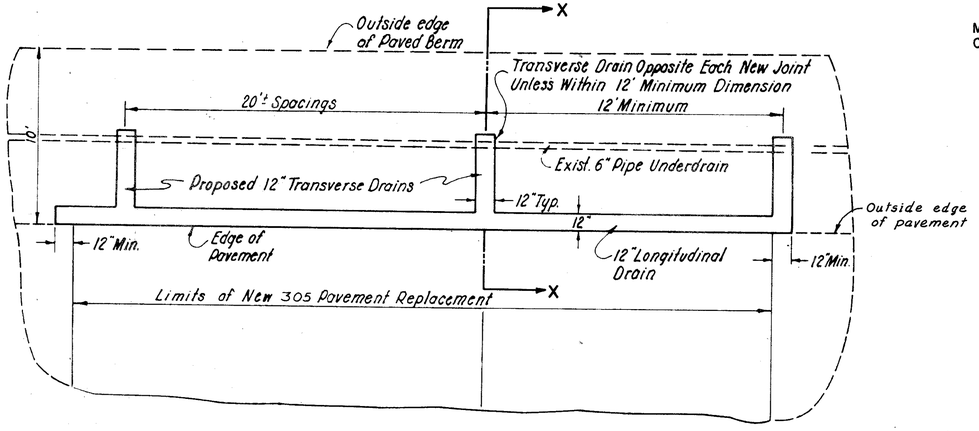
FHWA REGION	STATE	PROJECT	
5	OHIO		

47
169

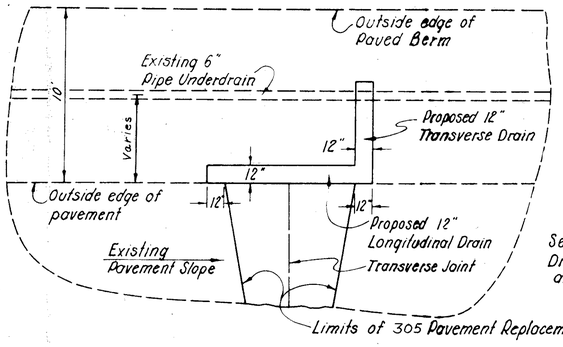
CUYAHOGA COUNTY
CUY-77-14.12
CUY-90-16.21

QUANTITY CALCULATIONS
Made By MEE Date 12-4-75
Checked By GFM Date 12-9-75

For Full Width 305 Replacement, the Spacing of the Transverse Drains on the Inside Berm shall be the same as for the Outside Berm.

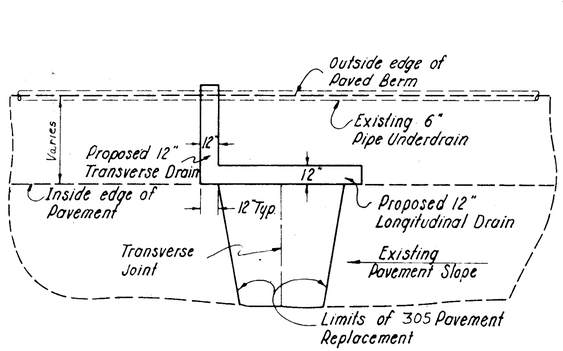


TYPICAL LONGITUDINAL AND TRANSVERSE AGGREGATE DRAIN DETAILS WITH 305 PAVEMENT REPLACEMENTS



OUTSIDE PAVEMENT EDGE

See Transverse Drain Details at Right



INSIDE PAVEMENT EDGE

TYPICAL LONGITUDINAL AND TRANSVERSE AGGREGATE DRAIN DETAILS WITH 305 PAVEMENT REPLACEMENTS

* Additional quantity provided for use by the Engineer. It is to be used in conjunction with additional areas of pavement replacement other than those listed on Sheet 46, as determined by the Engineer.

NOTES

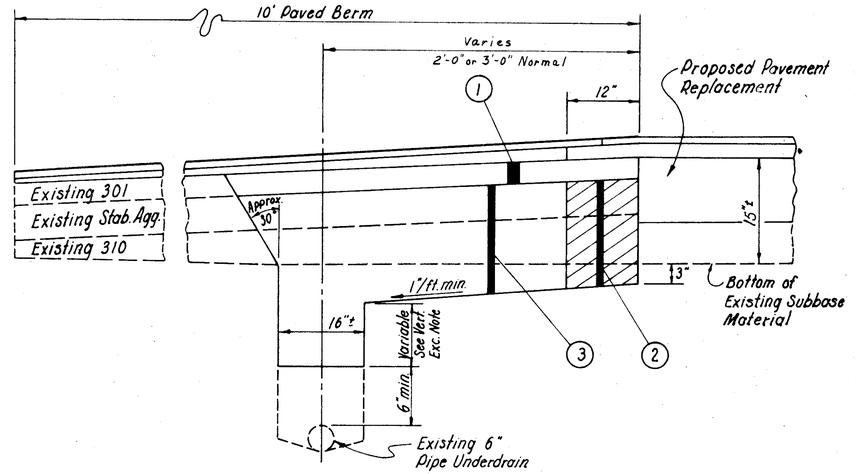
Longitudinal aggregate drains shall be constructed continuously along the pavement edges for the full length of 305 Pavement Replacements (see Sheet 46 for details). Transverse aggregate drains shall be constructed at 20 feet maximum spacing along the length of the pavement replacements or as directed by the Engineer.

The vertical limit of the excavation shall be to six (6) inches above the top of the existing pipe underdrain or to the top of vertical limit of the existing No. 8 aggregate underdrain trench backfill. Positive drainage must be secured. Any tile broken or damaged as a result of this operation shall be replaced by the Contractor at his expense.

The unit price bid for Item 605 Aggregate Drains, As Per Plan, shall include the removing and disposing of existing berm materials, the furnishing, placing and compacting of the No. 8 Aggregate, furnishing, placing and compacting of the 402 Asphalt Concrete and all incidental requirements necessary to complete these items.

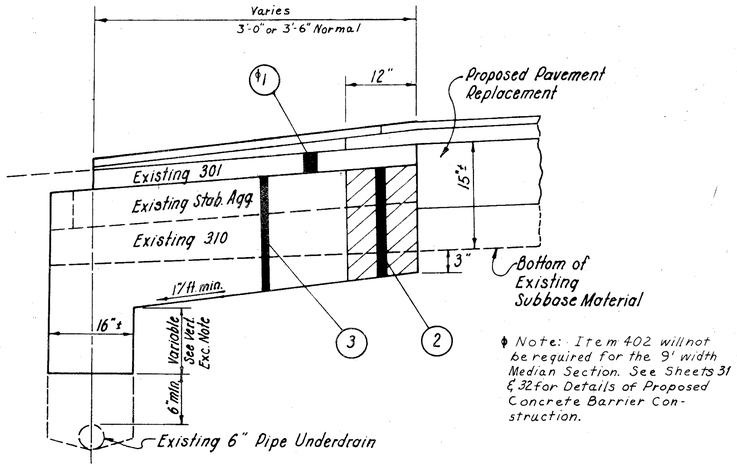
The 402 Asphalt Concrete shall be placed and compacted on the berms as directed by the Engineer for the aggregate drain estimated quantities.

ESTIMATED QUANTITIES	
I-77-5(18)161	I-90-1(101)29
Item 605 AGGREGATE DRAINS, AS PER PLAN (LONGITUDINAL)	Item 605 AGGREGATE DRAINS, AS PER PLAN (LONGITUDINAL)
1 x 9' (Avg. Length) = 9 Lin.Ft. Additional * = 80 Lin.Ft. 89 Lin.Ft.	13 x 62' (Avg. Length) = 806 Lin.Ft. 8 x 9' (Avg. Length) = 72 Lin.Ft. Additional * = 80 Lin.Ft. 958 Lin.Ft.
I-77-5(18)161	I-90-1(101)29
Item 605 AGGREGATE DRAINS, AS PER PLAN (TRANSVERSE)	Item 605 AGGREGATE DRAINS, AS PER PLAN (TRANSVERSE)
1 x 5' (Avg. Length) = 5 Lin.Ft. Additional * = 15 Lin.Ft. 20 Lin.Ft.	8 x 3' (Avg. Length) = 24 Lin.Ft. Additional * = 50 Lin.Ft. 74 Lin.Ft.
TOTAL COST. PART. II 109 Lin.Ft.	TOTAL COST PART. II 1032 Lin.Ft.



TRANSVERSE DRAIN DETAIL FOR OUTSIDE BERM

SECTION X-X



TRANSVERSE DRAIN DETAIL FOR MEDIAN BERM

♦ Note: Item 402 will not be required for the 9' width Median Section. See Sheets 31 & 32 for Details of Proposed Concrete Barrier Construction.

(1) 3" 402 Asphalt Concrete (AC-20)

(2) 605 Longitudinal Aggregate Drain, As Per Plan, Using No. 8 Aggregate

(3) 605 Transverse Aggregate Drain, As Per Plan, Using No. 8 Aggregate

CURB REMOVAL AND PAVEMENT REPLACEMENT

FHWA REGION	STATE	PROJECT	
5	OHIO		

48
169

QUANTITY CALCULATIONS
MADE BY M.G.B. DATE 4-10-75
CHECKED BY T.D.V. DATE 4-11-75

CUYAHOGA COUNTY
CUY-77-14.12
CUY-90-16.21

COST PARTICIPATION I (unless noted ⊗ to be COST PARTICIPATION II)

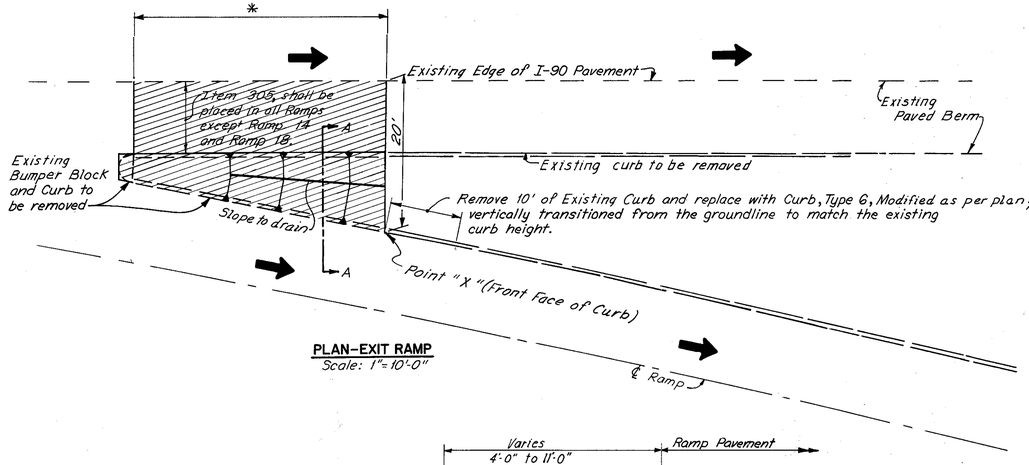
SH. NO.	STATION (I-90) CUY-90-1(101)29 FROM	TO	SIDE	Reference Ramp	203 Excavation not including Embankment Construction Cu. Yds.	202 Curb Removed as per plan Lin. Ft.	310 Subbase Grading Type A as per plan Cu. Yds.	305 9" Portland Cement Concrete Base Sq. Yds.	402⊗ 1¼" Asphalt Concrete (AC-20) Cu. Yds.	404 1¼" Asphalt Concrete (AC-20) Cu. Yds.	407 Tack Coat Gal.	409 Seal Coat Bituminous Material Gal.	407 Cover Aggregate Tons	409 Seal Coat Cover Aggregate Number 8 Cu. Yds.	609 Curb, Type 6 Modified as per plan Lin. Ft.
	112+00	112+86	Rt.	4	21.63	134	8.18	49.09	1.7	1.7	4.9	17.2	0.2	0.4	
	114+62	115+50	Lt.	5	23.05	127	8.31	49.87	1.7	1.7	5.0	17.5	0.2	0.4	
	117+10	117+61	Lt.	6	11.04	80	4.09	24.54	0.9	0.9	2.5	8.6	0.1	0.2	10
	121+87	122+30	Rt.	7	17.74	82	6.53	39.17	1.4	1.4	3.9	13.8	0.1	0.3	10
	125+00	126+03	Rt.	8	26.01	155	9.66	57.95	2.0	2.0	5.8	20.3	0.2	0.5	
	131+75	134+58	Rt.	9	120.81	359	38.60	231.60	8.0	8.0	23.2	81.1	0.8	1.9	
	127+89	128+80	Lt.	10	23.06	135	8.59	51.52	1.8	1.8	5.2	18.1	0.2	0.4	
	131+80	132+34	Lt.	11	27.79	103	10.21	61.28	2.1	2.1	6.1	21.5	0.2	0.5	10
	142+05	143+50	Rt.	12	49.52	231	18.51	111.05	3.9	3.9	11.1	38.9	0.4	0.9	10
	140+14	142+00	Lt.	13	79.16	248	23.20	139.20	4.8	4.8	13.9	48.8	0.5	1.1	
	153+70	155+46	Rt.	15	53.68	289	22.97	137.85	4.8	4.8	13.8	48.3	0.5	1.1	
	159+40	159+91	Rt.	16	25.42	75	7.07	42.42	1.5	1.5	4.2	14.8	0.1	0.3	
	167+24	168+00	Lt.	17	34.69	99	10.83	64.97	2.3	2.3	6.5	22.8	0.2	0.5	
	104+45	105+75	Rt.	3	65.18	225	23.53	141.17	4.9	4.9	14.1	49.5	0.5	1.1	10
	153+32	154+07	Lt.	14	7.13	103	2.36	14.19	0.5	0.5	1.4	5.0	0.1	0.1	10
	168+33	169+15	Rt.	18	5.79	106	1.90	11.39	0.4	0.4	1.1	4.0	0.1	0.1	10
	57+06	58+06	Rt.	E-4	23.26	132	7.88	47.3	1.6	1.6	4.7	16.6	0.2	0.4	10
		TOTALS			609	2683	212	1275	44 ⊗	44	127	447	4.6	10	80

Notes:
▨ Item 305, 9" Portland Cement Concrete Base

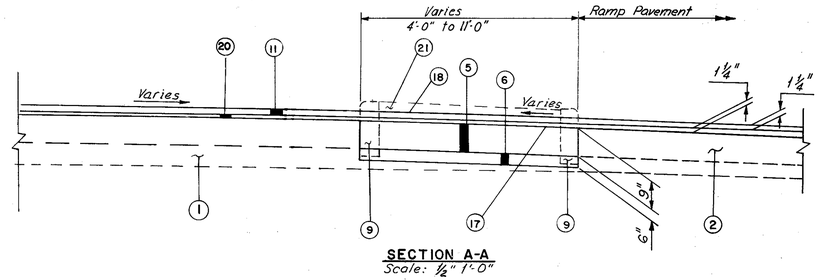
** The length of Ramp Curb to be removed shall be determined by setting Point "Y" 10 Ft.≠ from the near edge of pavement of the mainline.

≠ On Ramp Nos. 15, 16 and 17, the width of the existing paved shoulder along the mainline to be removed and replaced with Item 305, is 8 Ft.

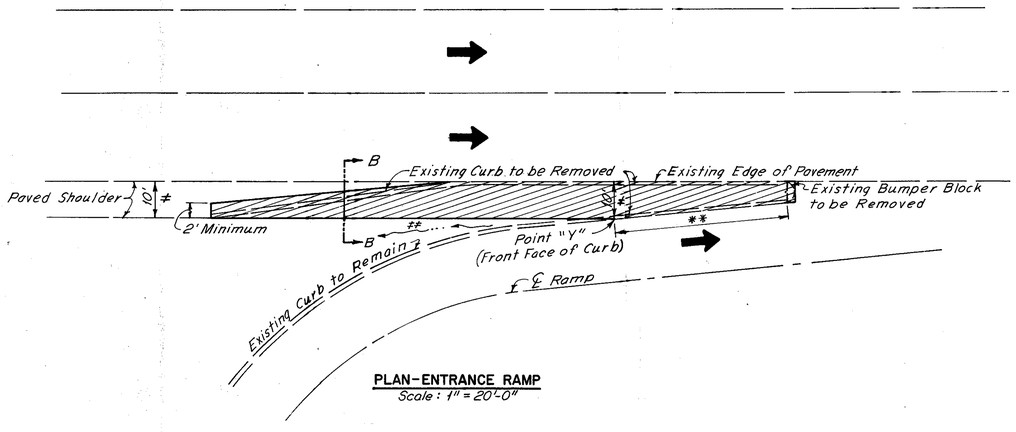
* Length of Proposed 9" Portland Cement Concrete Base is determined by setting Point "X" 20 Ft. from the near edge of pavement of the mainline, except at the following location:
Ramp E-4 * = 24'
Grade to drain at Ramp 15.



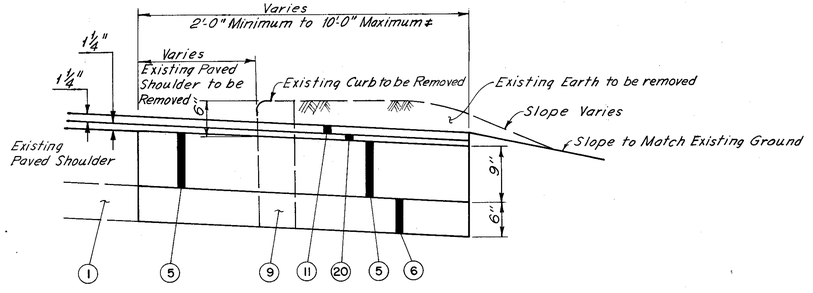
PLAN-EXIT RAMP
Scale: 1"=10'-0"



SECTION A-A
Scale: ½" 1'-0"



PLAN-ENTRANCE RAMP
Scale: 1" = 20'-0"



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

LEGEND

(1) Existing Subbase
(2) Existing Reinforced Concrete Pavement
(5) Item 305, 9" Portland Cement Concrete Base
(6) Item 310, Subbase Grading Type "A", As per plan
(9) Existing Sandstone or Concrete Curb
(11) Item 404, Asphalt Concrete, AC-20
(17) Item 407, Tack Coat: 702.02, RC-250, or 702.04, SS-1, SS-1h, MS-2 or RS-1, Applied at the rate of 0.1 gal. per sq. yds. Cover Aggregate at a rate of 7 lbs. per sq. yds.
(18) Item 409, Seal Coat Bituminous Material: 702.02, MC-800 or MC-3000; 702.03, CBAE-800, or 702.04, RS-1, RS-2 or CRS-1, CRS-2; 702.09, RT-9 or RT-10. Applied at the rate of .35 gal. per sq. yds. Cover Aggregate No. 8 at the rate of .008 cu. yds. per sq. yds.
(20) Item 402, Asphalt Concrete, AC-20
(21) Existing Tamped Earth

MADE M.G.B. DATE 4-10-75
TRACED J.P.K. DATE 4-18-75
CHECKED T.D.V. DATE 4-11-75
SCALE AS SHOWN

Howard, Needles, Tammen & Bergendoff
CONSULTING ENGINEERS
CLEVELAND, OHIO

HNTB

PAVEMENT MARKING SUB-SUMMARIES

QUANTITY CALCULATIONS
MADE BY T.D.V. DATE 3-27-75
CHECKED BY D.S.P. DATE 4-24-75

FHWA REGION	STATE	PROJECT	
5	OHIO		

49
169

CUYAHOGA COUNTY
CUY-77-14.12
CUY-90-16.21

PAVEMENT MARKINGS — ITEM 847 — COST PARTICIPATION I

LOCATIONS AND STATIONS	SIDE	4" WHITE EDGE LINE * (A) LIN. FT.	4" YELLOW EDGE LINE * (B) LIN. FT.	4" LANE LINE (C) LIN. FT.	6" LANE LINE (D) LIN. FT.	8" WHITE CHANNELIZING LINE (E) LIN. FT.	24" WHITE BROAD TRANSVERSE LINE (F) LIN. FT.	CURB MARKING "WHITE" * (G) LIN. FT.
I-77-5(18)16.1								
I-77								
45+76.05 – 130+41.88	Med. x 2		16932					
45+76.05 – 51+00	Rt. x 2				1048			
46+62 – 49+62	Rt.			300				
49+62 – 51+71	Rt.					209	72	
50+71 – 51+71	Rt.							100
45+76.05 – 48+10.78	Rt.	235						
51+71 – 59+20	Rt.	749						
45+76.05 – 62+23	Lt. x 2				3294			
53+30 – 54+73	Lt.					143		
50+81 – 53+30	Lt.			249				
50+81 – 62+23	Lt.	1142						
51+00 – 94+30	Rt.				4330			
51+00 – 66+00	Rt.					1500		
65+00 – 66+00	Rt. x 2							200
66+00 – 94+30	Rt.	2830						
62+23 – 100+80	Lt.				3857			
55+00 – 64+50	Lt.					950		
62+23 – 88+00	Lt.	2577						
88+00 – 100+80	Lt.					1280		
94+30 – 130+41.88	Rt. x 2				7224			
100+80 – 130+41.88	Lt. x 2				5924			
98+26 – 107+40	Rt.	914						
92+15 – 109+50	Lt.	1735						
108+87 – 111+13	Rt.					226		
108+87 – 110+13	Rt.					116	142	
111+13 – 130+41.88	Rt.	1929						
113+00 – 130+41.88	Lt.	1742						
112+00 – 113+00	Lt.			100				
30+53 – 32+62	Lt.					109		
31+60 – 32+62	Lt.						173	
30+41.88 – 42+45.12	MED.		1203					
30+41.88 – 42+45.12	MED.		1203					
30+41.88 – 42+45.12	Rt. x 2				2406			
33+79 – 42+45	Rt.	866						
35+09 – 42+45	Lt.	736						
30+41.88 – 42+45	Lt. x 2				2406			
TOTAL I-77-5(18)16.1		15,455	19,338	649	30,489	4533	387	300
I-90-1(101)29.9								
I-77								
42+45.12 – 51+74	MED.		929					
42+45.12 – 51+78	MED.		933					
42+45.12 – 43+49	Rt. x 2				208			
43+49 – 49+82	Rt.				693			
42+45.12 – 43+99	Rt.	154						
45+49 – 47+89	Rt.					240		
47+89 – 49+81	Rt.	192						
42+45 – 46+38	Lt.	393						
42+45 – 46+38	Lt. x 2				786			
46+90 – 47+90	Rt.							100
46+38 – 51+78	Lt.				540			
47+18 – 51+78	Lt.	460						
47+18 – 48+73	Lt.					155		
46+38 – 47+18	Lt.			80	80			

PAVEMENT MARKINGS — ITEM 847 — COST PARTICIPATION I

LOCATIONS AND STATIONS	SIDE	4" WHITE EDGE LINE * (A) LIN. FT.	4" YELLOW EDGE LINE * (B) LIN. FT.	4" LANE LINE (C) LIN. FT.	6" LANE LINE (D) LIN. FT.	8" WHITE CHANNELIZING LINE (E) LIN. FT.	24" WHITE BROAD TRANSVERSE LINE (E) LIN. FT.	CURB MARKING "WHITE" * (G) LIN. FT.
I-90								
40+85 — 54+90*	LT RT.	3395	3560	250	7205	1110	430	
72+25 – 74+65	Lt.					240		
54+90 – 58+00	Lt.	310						
58+09 – 72+25	Lt.	1416						
56+56 – 58+16	Rt.					160		
57+16 – 58+16	Rt.							100
59+09 – 63+49	Rt.					440		
62+49 – 63+49	Rt.							100
58+16 – 60+47	Rt.	231						
77+06 – 79+87	Rt.					281		
76+41 – 77+06	Rt.			65				
78+87 – 79+87	Rt.							100
63+49 – 72+93	Rt.	944						
73+63 – 76+86	Rt.	323						
54+90 – 83+09.31	Med. x 2		5639					
54+90 – 59+09	Lt. & Rt. x 5				2095			
59+09 – 83+09.31	Lt. & Rt. x 4				9601			
74+21 – 83+09.31	Lt.	888						
79+87 – 83+09.31	Rt.	322						
103+93 – 105+75	Rt.					182		
74+65 – 76+75	Lt.			210				
98+00 – 102+00	Rt.	400						
113+40 – 115+90	Rt.			200				
105+75 – 113+40	Rt.	765						
113+90 – 120+10	Rt.	620						
83+09.31 – 114+10	Lt.	3101						
113+55 – 114+10	Lt.			55				
114+10 – 117+10	Lt.	300						
117+10 – 119+57	Lt.					267		
119+57 – 120+77	Lt.			120				
120+25 – 122+30	Rt.					205		
119+25 – 120+25	Rt.			100				
122+30 – 126+75	Rt.	445						
125+00 – 126+75	Rt.					175		
126+75 – 127+09.87	Rt.			35				
126+61 – 126+84	Rt.			23				
83+09.31 – 127+09.87	Lt. & Rt. x 4				17602			
83+09.31 – 127+09.87	Med. x 2		8801					
119+00 – 127+09.87	Lt.	810						
135+24 – 136+69	Rt.			125				
126+75 – 135+24	Rt.	849						
125+39 – 127+09.31	Lt.			171				
126+61.13 – 128+10	Lt.			149				
128+10 – 131+80	Lt.	370						
131+80 – 134+25	Lt.					245		
134+25 – 135+05	Lt.			80				
134+50 – 139+00	Lt.	450						
140+21 – 143+50	Rt.					329		
139+46 – 140+21	Rt.			75				
138+30 – 140+00	Lt.			170				
140+00 – 153+32	Lt.	1332						
143+50 – 160+04	Rt.	1654						
160+90 – 167+00	Rt.	610						
155+82 – 166+25	Lt.	1043						
153+32 – 158+00	Lt.					468		
167+11 – 173+22	Lt.	611						
I-90-1(101)29							430	

*-Mainline And Ramps On Structure

PAVEMENT MARKINGS — ITEM 847 — COST PARTICIPATION I

LOCATIONS AND STATIONS	SIDE	4" WHITE EDGE LINE * (A) LIN. FT.	4" YELLOW EDGE LINE * (B) LIN. FT.	4" LANE LINE (C) LIN. FT.	6" LANE LINE (D) LIN. FT.	8" WHITE CHANNELIZING LINE (E) LIN. FT.	4" DOTTED LINE (P) LIN. FT.	CURB MARKING "WHITE" * (G) LIN. FT.
I-90 Cont.								
168+33 – 169+15	Rt.							82
167+95 – 169+15	Rt.					120		
172+64 – 173+14	Lt.	50				50		
173+14 – 173+75	Lt.			NONE				61
169+15 – 173+75	Rt.	460						
126+61.13 – 173+75	Med. x 2		4714					
126+61.13 – 158+48	Rt. x 2				5974			
126+61.13 – 158+00	Lt. x 2				6278			
158+00 – 172+64	Lt. x 3				4392			
156+48 – 173+75	Rt. x 3				5181			
172+64 – 173+14	Lt.				50			
172+64 – 173+75	Lt.				111			
Mod. Ramp E-13								
0+78 – 2+11	Lt.	133						
76+75 – 79+86	Lt.						311	
I-90-1(101)29								
Sheet Total		23,031	24,576	1,908	60,736	4,667	311	543

(Quantities Cont. on Sheet 50)

*. ITEM 621 PAINT

MADE D.S.P. DATE 4-24-75
TRACED J.P.K. DATE 5-14-75
CHECKED M.G.B. DATE 7-16-75
SCALE None

Howard, Needles, Tammen & Bergendoff
CONSULTING ENGINEERS
CLEVELAND, OHIO

HNTB

Rev 12-18-78

PAVEMENT MARKING SUB-SUMMARIES

QUANTITY CALCULATIONS
MADE BY T.D.V. DATE 3-27-75
CHECKED BY D.S.P. DATE 4-15-75

FHWA REGION	STATE	PROJECT	
5	OHIO		

50
169

CUYAHOGA COUNTY
CUY-77-14.12
CUY-90-16.21

PAVEMENT MARKINGS — ITEM 847 — COST PARTICIPATION I

LOCATIONS AND STATIONS	SIDE	4" WHITE EDGE LINE * (A)	4" YELLOW EDGE LINE * (B)	4" LANE LINE (C)	6" LANE LINE (D)	8" WHITE CHANNELIZING LINE (E)	24" WHITE BROAD TRANSVERSE LINE (F)	CURB MARKING "WHITE" * (G)	LANE ARROWS (H)	24" STOP LINES (I)	ISLAND MARKING "WHITE" * (J)	WORD "ONLY" ON PAVEMENT (K)	CURB MARKING "YELLOW" * (L)	6" CROSSWALK LINES (M)
		LIN. FT.	LIN. FT.	LIN. FT.	LIN. FT.	LIN. FT.	LIN. FT.	LIN. FT.	EACH	LIN. FT.	SQ. FT.	EACH	LIN. FT.	LIN. FT.
RAMP E-1									5			3		
9+60 – 10+68	Lt.					108								
10+68 – 11+11	Lt.		100					100						
14+00 – 16+40	Lt.			240										
15+77 – 16+40	Lt.					63								
16+40 – 17+35	Lt.					190								
8+11 – 11+91	Rt.	380												
11+11 – 17+75	Lt.												664	
11+91 – 16+00 (Conn.)	Rt.							411						
16+35 – 17+40	Rt.							105						
15+20 – 16+00 (Conn.)	Lt.												80	
17+45										36				
15+90 (Conn.)										12				
16+45 – 17+45	℄		200											
RAMP E-2														
14+56 – 16+56	Rt.							200						
5+56 – 24+30	Lt.	1874												
15+56 – 23+80	Rt.		824											
RAMP S-E														
1+80 – 5+83	Lt.					403	533							
5+83 – 16+95	Lt.		1112				225							
0+00 – 16+95	Rt.	1695			NONE									NONE
65+00 – 65+45	Lt.										297			
RAMP W-S														
21+71 – 25+93	℄ & Rt.	422												
22+71 – 23+71	Lt.							100						
RAMP E-S														
0+00 – 5+00	Rt.		500			335	155							
5+00 – 21+44	Lt.		1644											
6+00 – 21+44	Rt.	1544												
RAMP N-E														
0+39 – 17+93	Lt.		1754											
5+33 – 17+93	Rt.	1260												
RAMP N-W														
3+14 – 5+33	Lt.		219											
1+35 – 3+14	Lt.					179	300							
0+00 – 5+33	Rt.	533												
4+82 – 8+19	Rt.						292							

PAVEMENT MARKINGS — ITEM 847 — COST PARTICIPATION I

LOCATIONS AND STATIONS	SIDE	4" WHITE EDGE LINE * (A)	4" YELLOW EDGE LINE * (B)	4" LANE LINE (C)	6" LANE LINE (D)	8" WHITE CHANNELIZING LINE (E)	24" WHITE BROAD TRANSVERSE LINE (F)	CURB MARKING "WHITE" * (G)	LANE ARROWS (H)	24" STOP LINES (I)	ISLAND MARKING "WHITE" * (J)	WORD "ONLY" ON PAVEMENT (K)	CURB MARKING "YELLOW" * (L)	6" CROSSWALK LINES (M)
		LIN. FT.	LIN. FT.	LIN. FT.	LIN. FT.	LIN. FT.	LIN. FT.	LIN. FT.	EACH	LIN. FT.	SQ. FT.	EACH	LIN. FT.	LIN. FT.
RAMP E-N														
17+93 – 18+08	Lt.										117			
17+93 – 18+93	Lt.							100						
17+93 – 22+22	Lt.		429											
21+00 – 23+22	Lt.							222						
12+94 – 39+26	Rt.	2632												
23+22 – 24+73	Lt.					151								
32+00 – 35+30	Lt.					330								
30+88 – 32+00	Lt.							112						
RAMP F-1									5			2		
2+60 – 3+60	Lt.							100						
3+60 – 11+60	Lt.		800											
11+50										30				
0+00 – 11+30 (Turnout)	Rt.	1130												
10+50 – 12+00 (Turnout)	Rt.							150						
11+00 (Turnout) – 11+50 (Turnout)	Lt.												50	
11+50 (Turnout)										16				
11+15 – 11+55	Rt.							40						
9+50 – 11+00	℄			150										
11+00 – 11+50	℄					50								
RAMP F-2					NONE		NONE							NONE
1+14 – 10+15	Lt.	901												
4+50 – 5+30	Rt.					80								
5+30 – 6+50	Rt.							120						
6+50 – 11+40	Rt.		490											
10+15 – 11+45	Lt.							130						
RAMP F-4														
6+16 – 7+16	Lt.										560			
6+16 – 6+36	Lt.							20						
7+16 – 8+22	Lt.	106				106								
1+73 – 2+33	Rt.										420			
2+33 – 2+73	Rt.							40						
2+73 – 10+52	Rt.	779												
1+73 – 6+16	Lt.		443											
RAMP F-3									1					
3+54 – 3+94	Lt.										280			
3+54 – 4+54	Lt.							100						
2+45 – 3+54	Lt.					109								
I-77-5(18)16.1														
Sheet Subtotal		13257	8515	390	0	2104	1505	2050	11	99	1674	5	794	0

(Quantities Cont. on Sheet 51)

* ITEM 621 PAINT

MADE D.S.P. DATE 4-15-75
TRACED J.P.K. DATE 5-14-75
CHECKED M.G.B. DATE 7-16-75
SCALE NONE

Howard, Needles, Tammen & Bergendoff
CONSULTING ENGINEERS
CLEVELAND, OHIO

HNTB

Rev 12-18-78

PAVEMENT MARKING SUB-SUMMARIES

QUANTITY CALCULATIONS
MADE BY T.D.V. DATE 3-27-75
CHECKED BY D.S.P. DATE 4-16-75

FHWA REGION	STATE	PROJECT	
5	OHIO		

51
169

CUYAHOGA COUNTY
CUY-77-14.12
CUY-90-16.21

PAVEMENT MARKINGS — ITEM 847 — COST PARTICIPATION I

LOCATIONS AND STATIONS	SIDE	4" WHITE EDGE LINE * (A) LIN. FT.	4" YELLOW EDGE LINE * (B) LIN. FT.	4" LANE LINE (C) LIN. FT.	6" LANE LINE (D) LIN. FT.	8" WHITE CHANNELIZING LINE (E) LIN. FT.	24" WHITE BROAD TRANSVERSE LINE (F) LIN. FT.	CURB MARKING "WHITE" * (G) LIN. FT.	LANE ARROWS (H) EACH	24" STOP LINES (I) LIN. FT.	ISLAND MARKING "WHITE" * (J) SQ. FT.	WORD "ONLY" ON PAVEMENT (K) EACH	CURB MARKING "YELLOW" * (L) LIN. FT.	6" CROSS-WALK LINES (M) LIN. FT.
Ramp F-3 Cont.														
0+00 - 6+98	Rt.	698												
3+54 - 9+04	Lt.		550											
6+98 - 9+04	Rt.							206						
I-77-3(18)161	"													
Sheet Total		698	550					206						
I-90-1(101)29									1					
Ramp E-14														
1+50 - 2+77	Lt.					127	217							
2+77 - 3+17	Lt.										270			
2+77 - 3+77	Lt.							100						
0+00 - 3+03 Access Rd.	Rt.	776												
8+77 - 10+50	Rt.	173												
2+77 - 9+80	Lt.		703											
9+80 - 10+80	Lt.							100						
7+00 - 8+77	Rt.					177								
7+00 - 7+77	Rt.					77	75							
Ramp E-9														
0+62 - 1+94	Rt.					132								
0+00 - 5+80	Lt.		580											
1+95 - 7+50	Rt.	555												
5+80 - 6+80	Lt.					100								
6+80 - 74+39 (I-90)	Rt.			140										
Ramp E-17					NONE				1	NONE		NONE		NONE
0+00 - 2+31	Lt.					231								
1+40 - 3+31	Lt.					191	132							
2+31 - 3+31	Lt. x 2							200			188			
6+75 - 7+07	Lt.					32	15							
7+07 - 8+07	Lt x 2							200			140			
7+07 - 9+71	Lt.		264											
9+71 - 10+71	Lt.												100	
2+31 - 6+75	℄			444										
0+00 - 8+91	Rt.	891												
8+91 - 11+11	Rt.							220						
2+31 - 6+21	Lt.		390											
Ramp E-8														
1+60 - 10+05	Rt.	845												
0+00 - 14+18	Lt.		1418											
10+05 - 11+75	Rt.							170						
11+75 - 12+25	Rt. x 2					100								
12+25 - 12+75	Rt.			50										
Ramp E-10														
9+90 - 17+42	Rt.	752												
1+70 - 17+42	Lt.		1572											

PAVEMENT MARKINGS — ITEM 847 — COST PARTICIPATION I

LOCATIONS AND STATIONS	SIDE	4" WHITE EDGE LINE * (A) LIN. FT.	4" YELLOW EDGE LINE * (B) LIN. FT.	4" LANE LINE (C) LIN. FT.	6" LANE LINE (D) LIN. FT.	8" WHITE CHANNELIZING LINE (E) LIN. FT.	24" WHITE BROAD TRANSVERSE LINE (F) LIN. FT.	CURB MARKING "WHITE" * (G) LIN. FT.	LANE ARROWS (H) EACH	24" STOP LINES (I) LIN. FT.	ISLAND MARKING "WHITE" * (J) SQ. FT.	WORD "ONLY" ON PAVEMENT (K) EACH	CURB MARKING "YELLOW" * (L) LIN. FT.	6" CROSS-WALK LINES (M) LIN. FT.
Ramp E-10 Conf.														
2+11 - 17+42	℄				31									
7+10 - 8+10	Rt. x 2							200						
1+03 - 8+10	Rt.	707												
8+10 - 8+40	Rt. x 2					60								
0+40 - 1+70	Lt.					130	155							
1+03 - 2+11	Lt.					108								
Ramp E-13														
1+00-75+30 (I-90)	Lt.		849											
0+30 - 1+00	Lt.												70	
0+30 - 1+20	Rt.							100						
1+20 - 1+28.89	Rt.	9												
0+33 - 0+43														120
Ramp E-16														
0+38 - 5+50	Lt.		512											
2+82 - 8+33	Rt.	551												
1+82 - 2+82	Rt.							100						
1+15 - 2+82						167								
0+38 - 0+58	Lt.										140			
Ramp E-5									NONE	NONE		NONE		
0+00 - 2+00	Rt.							200						
2+00 - 15+20	Rt.	1320												
2+50 - 8+60	Lt.		610											
1+85 - 2+50	Lt.					65	58							
2+50 - 2+80	Lt.										280			
8+60 - 9+60	Lt.							100						
13+91 - 14+51	Lt.					60								
14+51 - 15+11	Lt.			60										
12+04 - 13+55	Lt.		151											
Ramp E-15														
0+00 - 19+80	Rt.	1980												
0+00 - 0+25	Rt.							25						
0+00 - 7+65	Lt.		765								125			
7+65 - 9+05	Lt.							140						
9+05 - 9+55	Lt.					50								
9+55 - 10+05	Lt.			50										
12+23 - 14+06	Lt.							183						
14+06 - 14+56	Lt.					50								
14+56 - 16+53	Lt.		97											
16+53 - 17+40	Lt.							87						
I-90-1(101)29														
Sheet Total		8559	7911	744	1531	1857	652	2125	2	0	1143	0	170	120

(Quantities Cont. on Sheet 52)

* ITEM 621 PAINT

MADE D.S.P. DATE 4-16-75
TRACED J.P.K. DATE 6-5-75
CHECKED M.G.B. DATE 7-16-75
SCALE NONE

Howard, Needles, Tammen & Bergendoff
CONSULTING ENGINEERS
CLEVELAND, OHIO

HNTB

Rev-12-18-78

PAVEMENT MARKING SUB-SUMMARIES

QUANTITY CALCULATIONS
MADE BY T.D.V. DATE 3-27-75
CHECKED BY D.S.P. DATE 4-22-75

FHWA REGION	STATE	PROJECT	
5	OHIO		

52
169

CUYAHOGA COUNTY
CUY-77-14.12
CUY-90-16.21

PAVEMENT MARKINGS — ITEM 847— COST PARTICIPATION I

LOCATIONS AND STATIONS	SIDE	4" WHITE EDGE LINE * (A)	4" YELLOW EDGE LINE * (B)	4" LANE LINE (C)	6" LANE LINE (D)	8" WHITE CHANNELIZING LINE (E)	24" WHITE BROAD TRANSVERSE LINE (F)	CURB MARKING "WHITE" * (G)	LANE ARROWS (H)	24" STOP LINES (I)	ISLAND MARKING "WHITE" * (J)	WORD "ONLY" ON PAVEMENT (K)	CURB MARKING "YELLOW" * (L)	6" CROSS-WALK LINES (M)
		LIN. FT.	LIN. FT.	LIN. FT.	LIN. FT.	LIN. FT.	LIN. FT.	LIN. FT.	EACH	LIN. FT.	SQ. FT.	EACH	LIN. FT.	LIN. FT.
RAMP E-18														
1+93 – 10+20	Rt.	827												
1+93 – 13+66	Lt.		1173											
1+93 – 2+18	Lt.										175			
1+93 – 2+93	Lt. x 2							200						
RAMP E-4									1					
1+79 – 2+39	Lt.					60								
3+39 – 9+20	Lt.												681	
2+39 – 3+39	Lt.							100						
0+50 – 8+85	Rt.	835					43							
RAMP E-3														
0+00 – 1+00	Rt.							100						
1+00 – 6+60	Rt.	560												
0+50 – 2+03	Lt.												153	
0+20 (Conn.) – 2+07 (Conn.)	Rt.							187						
0+86 (Conn.) – 2+07 (Conn.)	Lt.		121											
2+03 – 5+74	Lt.		371											
2+03 – 2+53	Lt.	50			NONE	50				NONE		NONE		
2+53 – 6+60	℄			407										
0+10 – 0+66									80					
5+74 – 6+74	Lt.							100						
RAMP E-1														
0+00 – 1+82	Rt.							182						
1+82 – 2+77	Rt.	95												
1+60 – 2+77	Lt.												117	
RAMP E-2									1					
7+20 – 9+23	Lt.												203	
9+23 – 10+23	Lt.							100						
7+20 – 9+80	Rt.	260												
9+43 – 10+23	Rt.							80						
9+95 – 10+20														60
RAMP E-6									1					
1+10 – 1+98	Rt.					88	56							
1+98 – 2+98	Lt.							100						
1+98 – 2+38	Lt.										266			
1+98 – 4+48	Lt.		250											
0+00 – 8+38	Rt.	838												
8+38 – 10+38	Rt.							200						
9+38 – 10+38	Lt.							100						

PAVEMENT MARKINGS — ITEM 847— COST PARTICIPATION I

LOCATIONS AND STATIONS	SIDE	4" WHITE EDGE LINE * (A)	4" YELLOW EDGE LINE * (B)	4" LANE LINE (C)	6" LANE LINE (D)	8" WHITE CHANNELIZING LINE (E)	24" WHITE BROAD TRANSVERSE LINE (F)	CURB MARKING "WHITE" * (G)	LANE ARROWS (H)	24" STOP LINES (I)	ISLAND MARKING "WHITE" * (J)	WORD "ONLY" ON PAVEMENT (K)	CURB MARKING "YELLOW" * (L)	6" CROSS-WALK LINES (M)
		LIN. FT.	LIN. FT.	LIN. FT.	LIN. FT.	LIN. FT.	LIN. FT.	LIN. FT.	EACH	LIN. FT.	SQ. FT.	EACH	LIN. FT.	LIN. FT.
RAMP E-6 Cont.														
5+68 – 9+38	Lt.		370											
5+40 – 5+68	Lt. x 2					56	16							
5+68 – 5+88	Lt.										140			
5+68 – 6+68	Lt.							100						
RAMP E-7														
0+00 – 8+97	Lt.		897											
1+37 – 2+37	Rt.							100						
2+37 – 4+50	Rt.	213												
4+50 – 6+50	Rt.							200						
6+50 – 7+00	Rt.					50	15							
RAMP E-11									3			1		
0+00 – 6+00	Rt.	600												
5+00 – 6+56 (Conn.)	Rt.							156						
6+50 (Conn.) ; 6+75										44				
1+99 – 5+61	Lt.		362											
5+61 – 6+56	Lt.												105	
5+56 – 6+06	℄			50										
6+06 – 6+56	℄					50								
Island					NONE			60			1500			
6+26 (Conn.) – 6+50 (Conn.)	Lt.												24	
0+85 – 1+98	Lt.					113	100							
1+98 – 2+38	Lt.										256			
1+98 – 2+98	Lt.							100						
RAMP 3									2					
5+85 – 8+90	℄			305										
1+93 – 3+31	Lt.					138	150							
3+31 – 4+85	Lt.		154											
4+85 – 8+80	Lt.												395	
0+00 – 8+80	Rt.	880												
8+30 – 9+40	Rt.							132						
8+90 – 9+00														100
RAMP 4														
0+00 – 7+93	Lt.	793												
7+93 – 8+80	Lt.							87						
1+83 – 8+51	Rt.												668	
1+54 – 1+83	Rt.							29						
0+00 – 1+54	Rt.					154								
8+40 – 8+50														90
I-90-1(101)29														
Sheet Subtotal		5951	3698	762	0	759	380	2413	8	44	2337	1	2346	330

(Quantities Cont. on Sheet 53) * ITEM 621 PAINT

MADE D.S.P. DATE 4-22-75
TRACED J.P.K. DATE 6-23-75
CHECKED M.G.B. DATE 7-28-75
SCALE —

Howard, Needles, Tammen & Bergendoff
CONSULTING ENGINEERS
CLEVELAND, OHIO

HNTB

Rev 12-18-78

PAVEMENT MARKING SUB-SUMMARIES

QUANTITY CALCULATIONS
MADE BY T.D.V. DATE 3-27-75
CHECKED BY D.S.P. DATE 4-22-75

FHWA REGION	STATE	PROJECT	
5	OHIO		

53
169

CUYAHOGA COUNTY
CUY-77-14.12
CUY-90-16.21

PAVEMENT MARKINGS – ITEM 847– COST PARTICIPATION I

LOCATIONS AND STATIONS	SIDE	4" WHITE EDGE LINE * (A)	4" YELLOW EDGE LINE * (B)	4" LANE LINE (C)	6" LANE LINE (D)	8" WHITE CHANNELIZING LINE (E)	24" WHITE BROAD TRANSVERSE LINE (F)	CURB MARKING "WHITE" * (G)	LANE ARROWS (H)	24" STOP LINES (I)	ISLAND MARKING "WHITE" * (J)	WORD "ONLY" ON PAVEMENT (K)	CURB MARKING "YELLOW" * (L)	6" CROSS-WALK LINES (M)
		LIN. FT.	LIN. FT.	LIN. FT.	LIN. FT.	LIN. FT.	LIN. FT.	LIN. FT.	EACH	LIN. FT.	SQ. FT.	EACH	LIN. FT.	LIN. FT.
Ramp No. 5														
1+15 - 6+37	Rt.												532	
6+37 - 7+04	Lt.							67						
0+00 - 6+37	Lt.	637												
0+88 - 1+15	Rt.							37						
0+00 - 0+88	Rt.					88								
6+40 - 6+50														80
Ramp No. 6									4			4		
0+63 - 1+45	Lt.					82	90							
1+45 - 3+67	Lt.		222											
0+00 - 7+00	Rt.	700												
6+50 - 7+40	Rt.							113						
4+50 - 6+70	℄			220										
6+70 - 7+20	℄					50								
7+20										30				
7+25 - 7+30														80
3+67 - 7+40	Lt.												373	
Ramp No. 7									4					
0+00 - 7+75	Rt.	775												
7+27 - 8+15	Rt.							119						
1+15 - 1+86	Lt.					71	80							
1+86 - 4+26	Lt.		240		NONE						NONE			
5+00 - 8+00	℄			300						33				
8+00														
8+05 - 8+10														66
4+26 - 8+15													389	
Ramp No. 8														
0+00 - 1+24	Rt.					124								
0+00 - 6+90	Lt.	690												
1+24 - 1+49	Lt.							50						
1+49 - 6+90	Rt.												541	
6+90 - 7+61	Lt.							71						
6+95 - 7+00														80
Ramp No. 9														
0+76 - 2+16	Rt.					140								
2+16 - 2+66	Rt.							50						
2+66 - 9+12	Rt.												646	
8+62 - 8+81 (Chester)	Lt.							75						
0+00 - 8+62	Lt.	862												
8+82 - 8+87														60

PAVEMENT MARKINGS – ITEM 847– COST PARTICIPATION I

LOCATIONS AND STATIONS	SIDE	4" WHITE EDGE LINE * (A)	4" YELLOW EDGE LINE * (B)	4" LANE LINE (C)	6" LANE LINE (D)	8" WHITE CHANNELIZING LINE (E)	24" WHITE BROAD TRANSVERSE LINE (F)	CURB MARKING "WHITE" * (G)	LANE ARROWS (H)	24" STOP LINES (I)	ISLAND MARKING "WHITE" * (J)	WORD "ONLY" ON PAVEMENT (K)	CURB MARKING "YELLOW" * (L)	6" CROSS-WALK LINES (M)
		LIN. FT.	LIN. FT.	LIN. FT.	LIN. FT.	LIN. FT.	LIN. FT.	LIN. FT.	EACH	LIN. FT.	SQ. FT.	EACH	LIN. FT.	LIN. FT.
Ramp No. 10														
0+80 - 1+05	Rt.					25								
1+05 - 1+55	Rt.							50						
1+55 - 7+12	Rt.												557	
5+76 - 7+34	Lt.							203						
8+34 - 9+05 (Conn.)	Rt.							71						
0+00 - 8+34 (Conn.)	Lt.	834												
5+75 - 8+34 (Conn.)	Rt.												259	
8+29 - 8+34														70
Ramp No. 11									4			2		
0+00 - 8+69	Rt.	869												
8+18 - 9+08	Rt.							114						
1+05 - 2+56	Lt.					151	183							
2+56 - 4+96	Lt.		240											
4+96 - 8+88	Lt.												384	
6+00 - 8+73	℄			273										
8+73										24				
8+23 - 8+73	℄					50								
Ramp No. 12									8			8		
1+03 - 2+94	Lt.					191	224							
2+94 - 3+40	Lt.		46		NONE			46			NONE			
3+40 - 8+70													538	
0+00 - 8+29	Rt.	829												
7+79 - 8+29 (Conn.)	Rt.							113						
4+88 - 5+50	Rt.					62								
4+88 - 5+24 (Conn.)	Lt.					36	34							
5+24 - 5+53 (conn.)	Lt.		29					29						
5+27 - 5+50	Rt.							23						
5+53 - 7+00 (Conn.)	Lt.												136	
6+22 - 8+02 (Conn.)	℄			180										
8+02 - 8+52 (Conn.)	℄					50								
7+69 (Conn.) - 8+52										64				
8+56 - 8+61														80
5+50 - 7+69	Rt.	219												
7+73 - 7+78														80
7+19 - 7+69	℄					50								
4+47 - 7+69	℄			322										
Ramp No. 13									2					
0+00 - 5+60	Lt.	560												
5+60 - 5+81	Lt.							21						
6+41 - 8+03	Lt.							190						
2+25 - 8+03	Rt.												594	
1+75 - 2+25	Rt.							50						
I-90-1(101)29														
Sheet Subtotal		6975	777	1295	0	1170	611	1492	22	151	0	14	4949	596

(Quantities Cont. on Sheet 54)

* ITEM 621 PAINT

MADE D.S.P. DATE 4-22-75
TRACED J.P.K. DATE 6-6-79
CHECKED M.G.B. DATE 7-28-79
SCALE NONE

Howard, Needles, Tammen & Bergendoff
CONSULTING ENGINEERS
CLEVELAND, OHIO

HNTB

Rev 12-18-78

PAVEMENT MARKING SUB-SUMMARIES

QUANTITY CALCULATIONS
MADE BY T.D.V. DATE 3-27-75
CHECKED BY D.S.P. DATE 4-24-75

FHWA REGION	STATE	PROJECT	
5	OHIO		

54
169

CUYAHOGA COUNTY
CUY-77-14.12
CUY-90-16.21

* 621

PAVEMENT MARKINGS - ITEM 847 COST PARTICIPATION I

LOCATIONS AND STATIONS	SIDE	4" WHITE EDGE LINE * (A) LIN. FT.	4" YELLOW EDGE LINE * (B) LIN. FT.	4" LANE LINE (C) LIN. FT.	8" WHITE CHANNELIZING LINE (E) LIN. FT.	24" WHITE BROAD TRANSVERSE LINE (F) LIN. FT.	CURB MARKING "WHITE" * (G) LIN. FT.	LANE ARROWS (H) EACH	24" STOP LINES (I) LIN. FT.	WORD "ONLY" ON PAVEMENT (K) EACH	CURB MARKING "YELLOW" * (L) LIN. FT.	6" CROSSWALK LINES (M) LIN. FT.	4" CENTERLINE YELLOW) LIN. FT.
RAMP 13 Cont.													
1+00 - 1+75	Rt.				75								
7+90									15				
6+70 - 7+90													240
7+94 - 8+00												80	
RAMP 14								4		4			
0+80 - 1+75	Lt.				95	115							
1+75 - 4+15	Lt.		240										
4+15 - 1+11 (E. 26th St.)	Lt.										400		
1+73 - 2+73	Lt.						100						
4+54 - 4+69	Rt.				15								
4+69 - 7+65	Rt.						296						
7+60 - 7+65												80	
5+00 - 7+60	℄			260									
RAMP 14 CONNECTION								1					
0+91 - 7+49	Rt.						658						
0+00 - 0+91	Rt.	91											
6+70 - 6+75												70	
6+25 - 6+77	Lt.										52		
4+71 - 6+25	Lt.		154										
4+56 - 4+71	Lt.				15	10							
RAMP 15													
6+00 - 8+10	Rt.										229		
2+15 - 6+00	Rt.		385										
0+00 - 2+15	Rt.				215								
2+15 - 3+15	Rt.						100						
1+28 - 8+10	Lt.						710						
0+00 - 1+28	Lt.	128											
7+75 - 7+80												75	
RAMP 16													
6+00 - 7+47	Lt.	147			147								
2+25 - 9+50	Rt.										725		
1+25 - 2+25	Rt.						100						
7+47 - 10+30	Lt.						292						
4+50 - 6+00	℄			150									
9+50 - 9+55												90	
0+86 - 1+25	Rt.				39								
(E. 33rd St. Connection)													
7+47 - 10+26	Rt.										279		
0+70 - 10+26	Lt.						956						
0+00 - 0+70	Lt.	70											
10+20 - 10+25												65	

PAVEMENT MARKINGS - ITEM 847 COST PARTICIPATION I

LOCATIONS AND STATIONS	SIDE	4" WHITE EDGE LINE * (A) LIN. FT.	4" YELLOW EDGE LINE * (B) LIN. FT.	4" LANE LINE (C) LIN. FT.	8" WHITE CHANNELIZING LINE (E) LIN. FT.	24" WHITE BROAD TRANSVERSE LINE (F) LIN. FT.	CURB MARKING "WHITE" * (G) LIN. FT.	LANE ARROWS (H) EACH	24" STOP LINES (I) LIN. FT.	WORD "ONLY" ON PAVEMENT (K) EACH	CURB MARKING "YELLOW" * (L) LIN. FT.	6" CROSSWALK LINES (M) LIN. FT.	4" CENTERLINE "YELLOW" (N) LIN. FT.
RAMP 17													
0+86 - 1+21	Rt.				35								
1+21 - 2+21	Rt.						100						
1+95 - 7+89	Rt.		594										
0+65 - 9+00	Lt.						876						
0+00 - 0+65	Lt.	65											
7+89 - 9+00	Rt.										111		
RAMP 18								5		1			
1+00 - 1+65					65	50							
0+00 - 0+58	Rt.	58											
0+58 - 9+39	Rt.						881						
7+47 - 7+85	Lt.						38						
7+85 - 9+39	Lt.										154		
1+35 - 2+35	Lt.						100						
1+35 - 3+75	Lt.		240										
3+75 - 6+50	Lt.										275		
7+37 - 7+47	℄ x 2				20	10							
5+15 - 9+30	℄			415									
(E. 33rd St. Connection)													
6+50 - 8+62	Lt.										212		
7+47 - 8+62	Rt.						115						
8+52									22				
I-90-1(101)29													
Sheet Subtotal		559	1613	825	721	185	5322	10	37	5	2437	460	120

* 621

PAVEMENT MARKING SUMMARY - ITEM 847 COST PARTICIPATION I

SHEET NO.	4" WHITE EDGE LINE * (A) LIN. FT.	4" YELLOW EDGE LINE * (B) LIN. FT.	4" LANE LINE (C) LIN. FT.	6" LANE LINE (D) LIN. FT.	8" WHITE CHANNELIZING LINE (E) LIN. FT.	24" WHITE BROAD TRANSVERSE LINE (F) LIN. FT.	CURB MARKING "WHITE" * (G) LIN. FT.	LANE ARROWS (H) EACH	24" STOP LINES (I) LIN. FT.	ISLAND MARKING "WHITE" * (J) SQ. FT.	WORD "ONLY" ON PAVEMENT (K) EACH	CURB MARKING "YELLOW" * (L) LIN. FT.	6" CROSSWALK LINES (M) LIN. FT.	4" CENTERLINE "YELLOW" (N) LIN. FT.	4" DOTTED LINE (P) LIN. FT.
I-77-5(18)161															
49	15,455	19,338	649	30,189	4,533	387	300	–	–	–	–	–	–	–	
50	13,257	8,515	390	0	2,104	1,505	2050	11	94	1,674	5	794	–	–	
51	698	550	–	–	–	–	206	–	–	–	–	–	–	–	
TOTAL	29,410	28,403	1,039	30,489	6,637	1,892	2,556	11	94	1,674	5	794	–	–	–
I-90-1(101)29															
49	23,031	24,576	1,908	60,736	4,667	430	543	–	–	–	–	–	–	–	311
51	8539	7,911	744	1531	1857	652	2,125	2	–	1143	–	170	120	–	
52	5,951	3,698	762	–	759	380	2,413	8	44	2337	1	2,346	330	–	
53	6,975	777	1295	–	1,170	611	1,492	22	151	–	14	4,949	596	–	
54	559	1613	825	–	721	185	5,322	10	37	–	5	2,437	460	240	
TOTAL	45,075	38,575	5,534	62,267	9,174	2,258	11,895	42	232	3,480	20	9,902	1,506	240	311

MADE DSP DATE 4-25-75
TRACED J.P.K. DATE 10-26-78
CHECKED M.G.B. DATE 7-26-78
SCALE —

Howard, Needles, Tammen & Bergendoff
CONSULTING ENGINEERS
CLEVELAND, OHIO

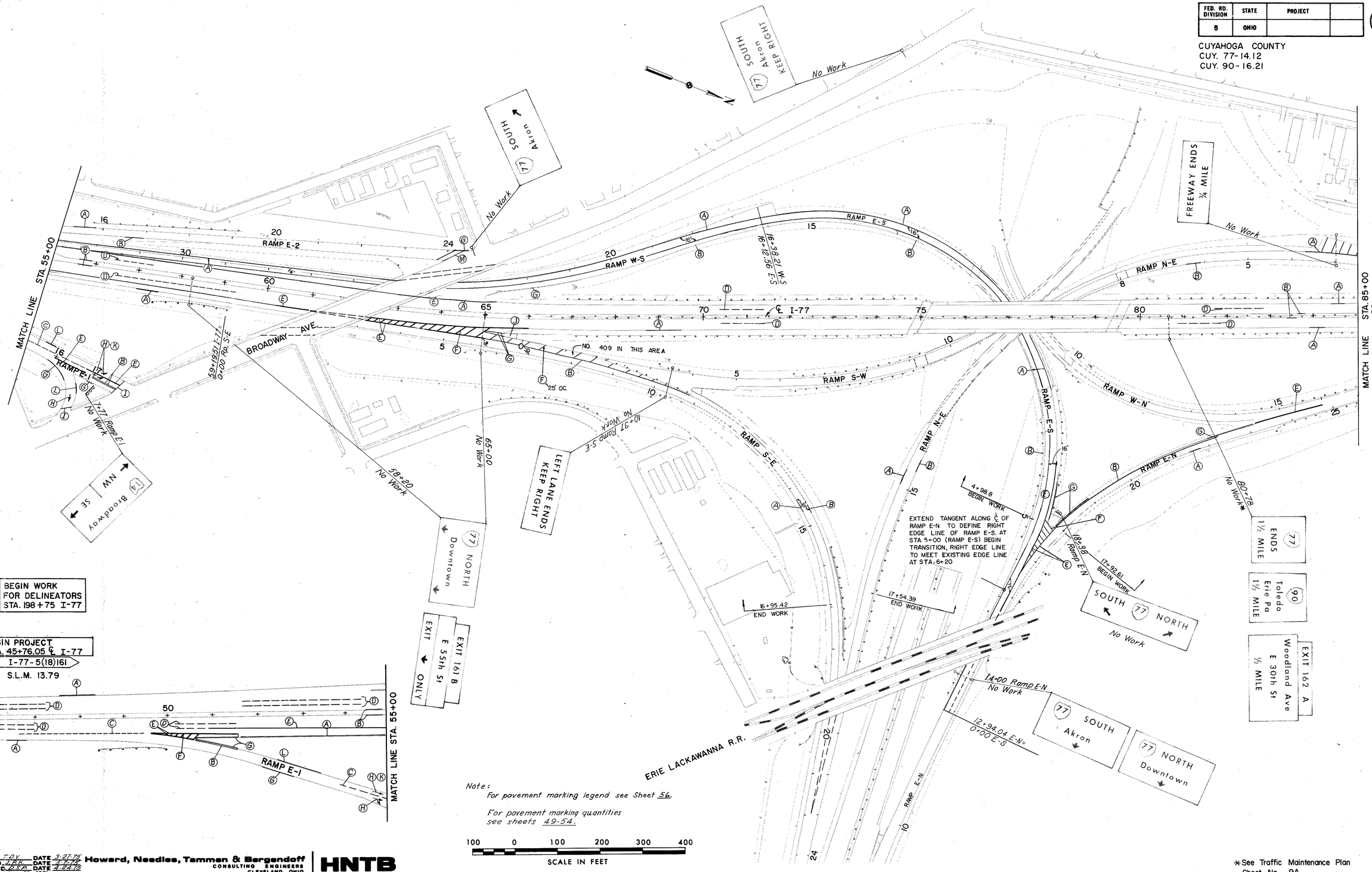
HNTB

Rev. 1-9-79 Rev. 10-26-78

FED. RD. DIVISION	STATE	PROJECT	
5	OHIO		

55
169

CUYAHOGA COUNTY
CUY. 77-14.12
CUY. 90-16.21



Note:
For pavement marking legend see Sheet 56.

For pavement marking quantities see sheets 49-54.

100 0 100 200 300 400
SCALE IN FEET

*See Traffic Maintenance Plan Sheet No. 9A

MADE TDV DATE 3-27-75
TRACED JBK DATE 4-7-75
CHECKED DSP DATE 4-24-75
SCALE 1"=100'

Howard, Needles, Tammen & Bergendoff
CONSULTING ENGINEERS
CLEVELAND, OHIO

HNTB

STA. 45+76.05 TO STA. 85+00 : GUIDE SIGNS

FED. RD. DIVISION	STATE	PROJECT	
5	OHIO		

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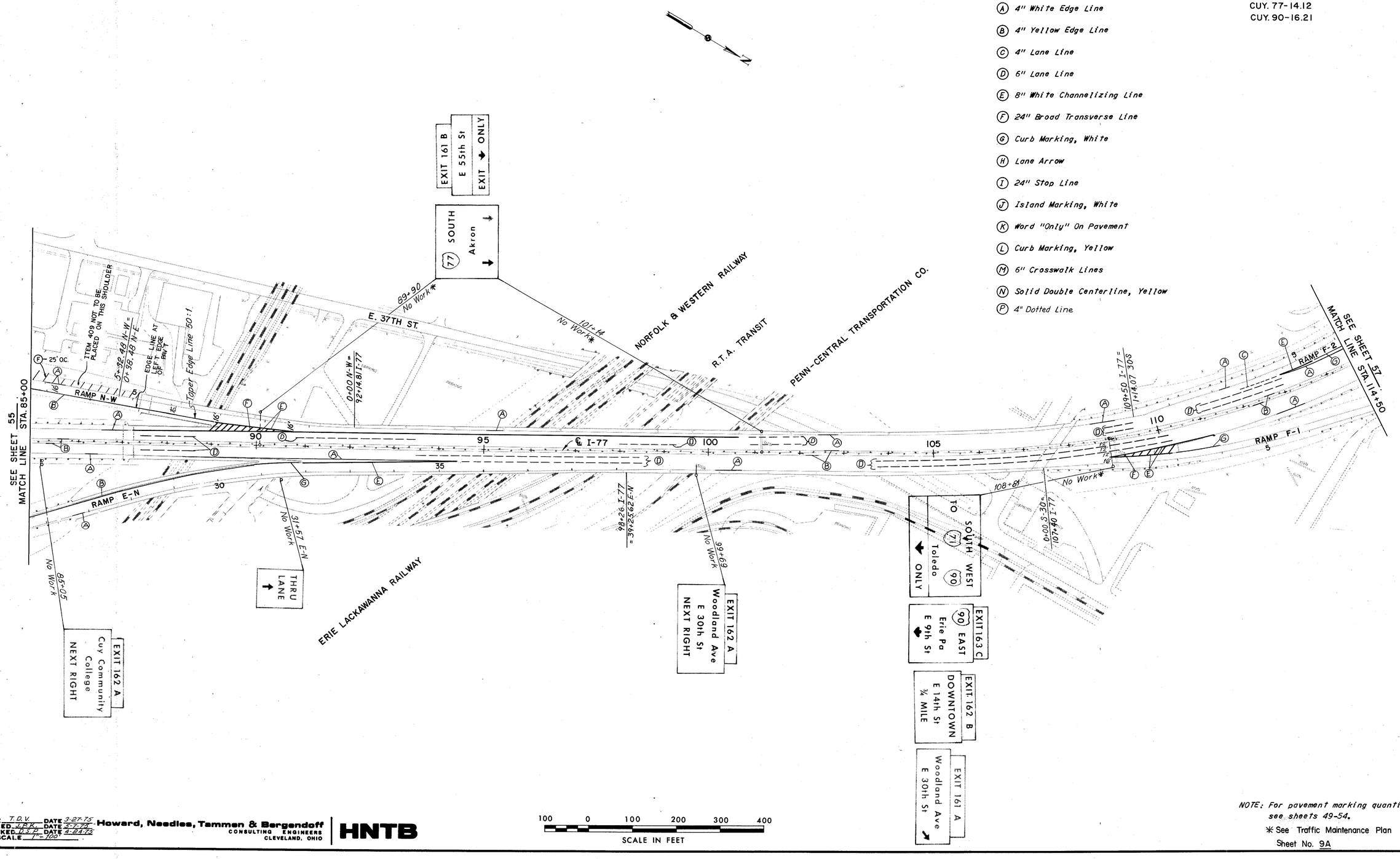
169

CUYAHOGA COUNTY
CUY. 77-14.12
CUY. 90-16.21

PAVEMENT MARKING LEGEND

- (A) 4" White Edge Line
- (B) 4" Yellow Edge Line
- (C) 4" Lane Line
- (D) 6" Lane Line
- (E) 8" White Channelizing Line
- (F) 24" Broad Transverse Line
- (G) Curb Marking, White
- (H) Lane Arrow
- (I) 24" Stop Line
- (J) Island Marking, White
- (K) Word "Only" On Pavement
- (L) Curb Marking, Yellow
- (M) 6" Crosswalk Lines
- (N) Solid Double Centerline, Yellow
- (P) 4" Dotted Line



100 0 100 200 300 400
SCALE IN FEET

NOTE: For pavement marking quantities see sheets 49-54.

* See Traffic Maintenance Plan Sheet No. 9A

MADE T.D.V. DATE 3-27-75
TRACED J.P.K. DATE 4-1-75
CHECKED D.S.P. DATE 4-24-75
SCALE 1"=100'

Howard, Needles, Tammen & Bergendoff
CONSULTING ENGINEERS
CLEVELAND, OHIO

HNTB

STA. 85+00 TO 114+50 : GUIDE SIGNS

FED. RD. DIVISION	STATE	PROJECT	
5	OHIO		

57
169

CUYAHOGA COUNTY
CUY-77-14.12
CUY-90-16.21

SEE SHEET 56
MATCH LINE STA. 114+50

MATCH LINE STA. 45+50
SEE SHEET 60

EXIT 161 B
E 55th St
EXIT ONLY

RAMP F-1
RAMP F-2
RAMP F-3
RAMP F-4

RELOCATED ORANGE AVE.

EAST 30TH STREET

℄ I-77

RELOCATED WOODLAND AVE.

ORANGE AVE.

WOODLAND AVE.

EAST 22ND STREET

Sta. 130+41.88Bk. =
Sta. 30+41.88Ah.

EXIT 161 B
E 55th St
EXIT 1 MILE

EXIT 162 A
Woodland Ave
Broadway
E 30th St

EXIT 162 A
Woodland Ave
Broadway
E 30th St
NEXT RIGHT

TO 14
Broadway
NEXT RIGHT

EXIT 162 B
MUNICIPAL PARKING
NEXT RIGHT

EXIT 162 B
Downtown
E 14th St
EXIT ONLY

EXIT 163 C
EAST
Erie Pa
E 9th St

SOUTH WEST
TO 71 90
Toledo
ONLY

TO STADIUM MIDDLE LANE

2nd LANE

SOUTH 71 LEFT LANE

Orange Ave

Woodland Ave

TO 71 90 KEEP LEFT

SOUTH 77 Akron

SOUTH 71 90

EAST 90 Shoreway

NORTH WEST
SOUTH EAST
Woodland Ave EAST WEST

100 0 100 200 300 400
SCALE IN FEET

NOTE: For pavement marking quantities see sheet 49-54.

For pavement marking legend, see Sheet 56.

*See Traffic Maintenance Plan Sheet 94

STA. 114+50 TO STA. 45+50 I-77 : GUIDE SIGNS

MADE T.O.V. DATE 3-27-75
TRACED J.P.K. DATE 3-6-79
CHECKED D.S.P. DATE 4-24-79
SCALE 1" = 100'

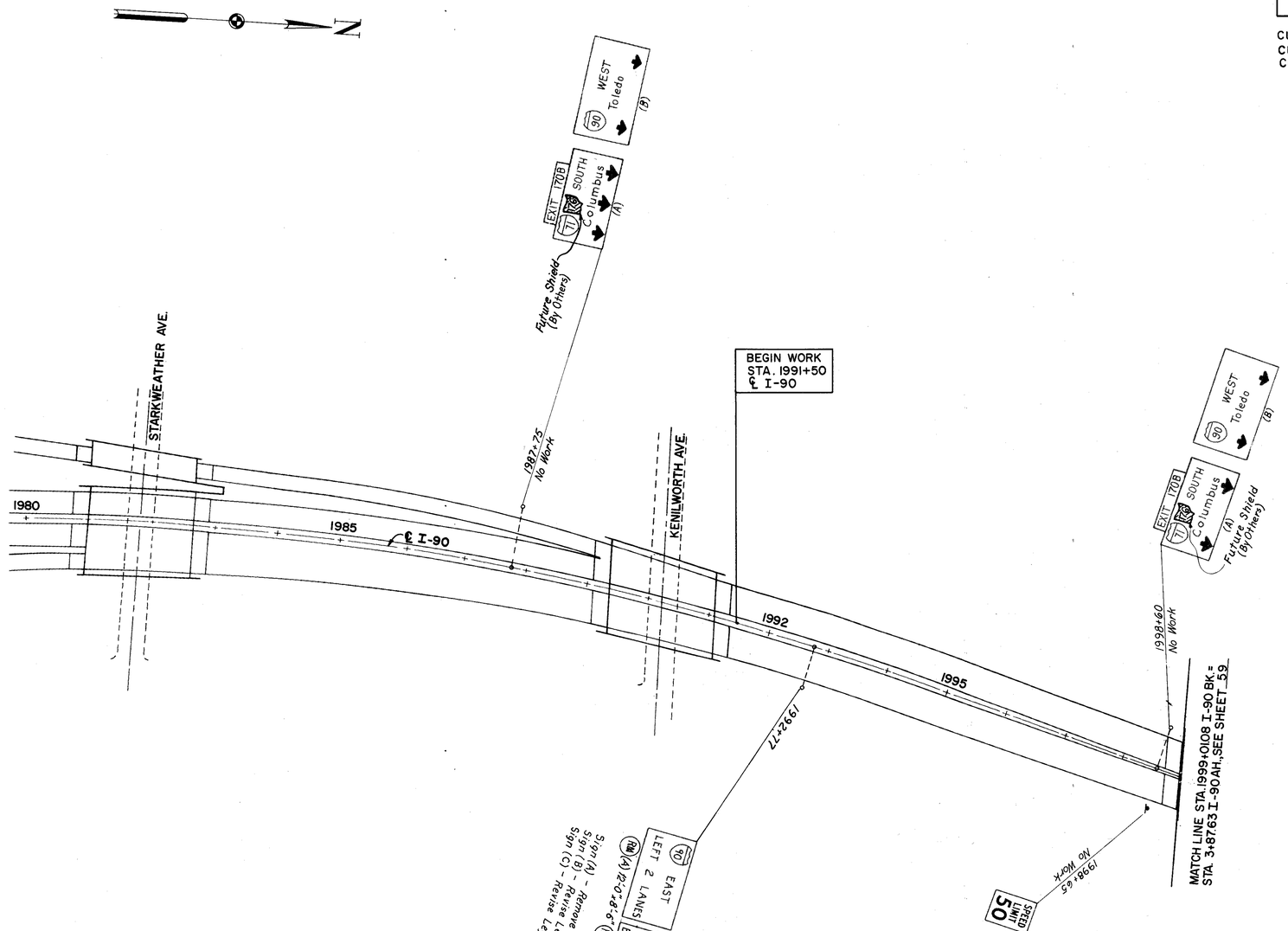
Howard, Needles, Tammen & Bergendoff
CONSULTING ENGINEERS
CLEVELAND, OHIO

HNTB

FHWA REGION	STATE	PROJECT	
5	OHIO		

58
169

CUYAHOGA COUNTY
CUY-77-14.12
CUY-90-16.21



LEGEND

- SIGNALIZED INTERSECTION (EXISTING)
- (SN) PROVIDE NEW SIGN
- (SP) PROVIDE NEW SUPPORT
- (RM) REVISE EXISTING SIGN LEGEND
- PROPOSED SIGN
- EXISTING SIGN (SUBDUED)
- FUTURE SIGN BY OTHERS
- (B/Y) BLACK ON YELLOW PANEL
- SIGN SERVICE, AS PER PLAN
- STATION / PULLBOX — EXISTING PULLBOX ADJACENT TO OVERHEAD SIGN SUPPORT TO CONNECT SIGN SERVICE.
- —E— POWER SERVICE DISTRIBUTION TO OVERHEAD SIGNS

Note: Roman numerals (I, II, III, IV) appearing near proposed Guide Signs do not refer to Cost Participation but to the "Level" of Signing, for use in determination of the Legend Size.

NOTE : For quantities see sheet 65.

MADE D.S.P. DATE 10-16-75
TRACED E.F.M. DATE 11-5-75
CHECKED G.F.M. DATE 10-22-75
SCALE 1"=100'

Howard, Needles, Tammen & Bergendoff
CONSULTING ENGINEERS
CLEVELAND, OHIO

HNTB

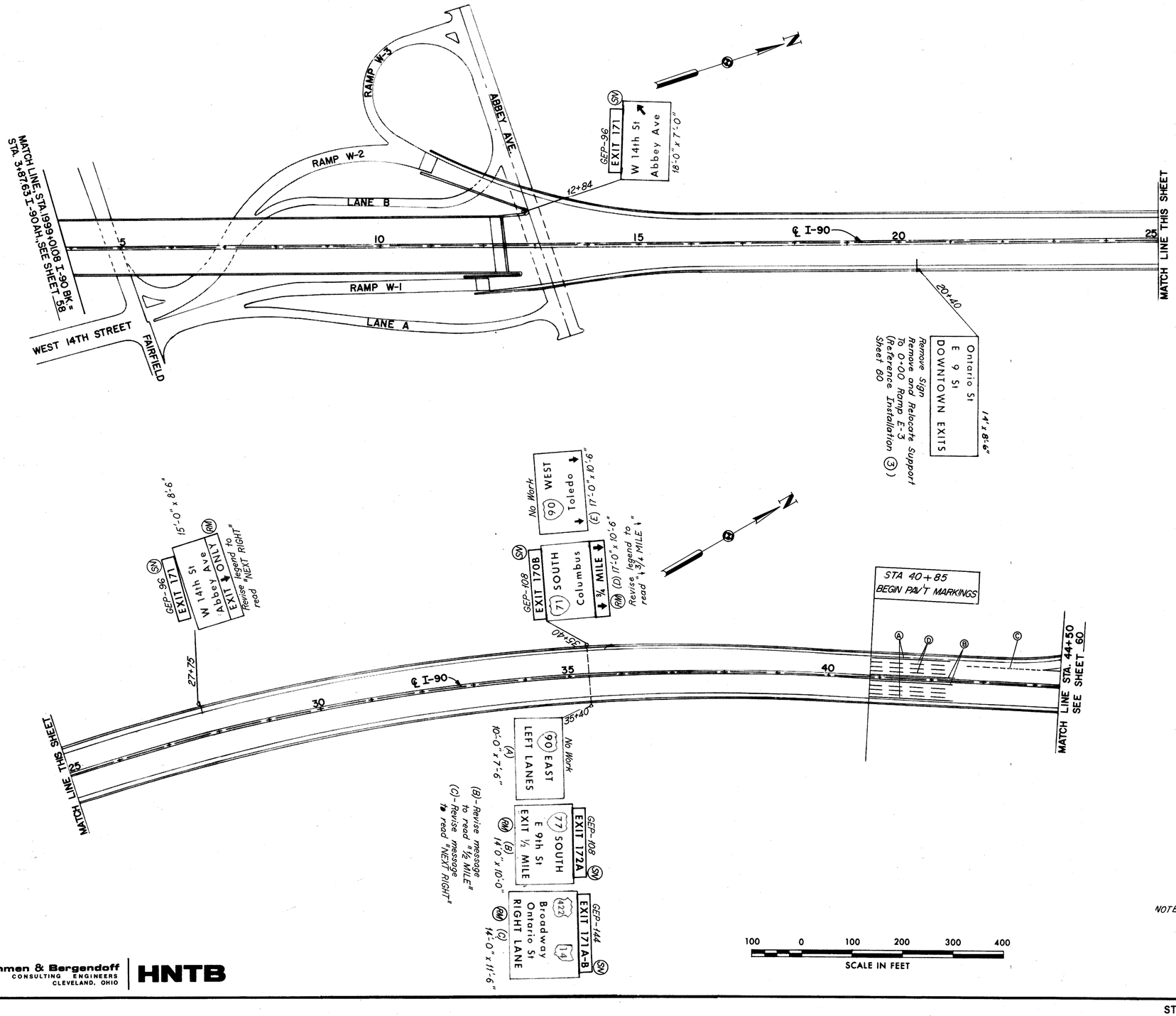
100 0 100 200 300 400
SCALE IN FEET

STA. 1982+63 TO STA. 3+87.63 I-90 GUIDE SIGNS

FED. RD. DIVISION	STATE	PROJECT	
5	OHIO		

59
169

CUYAHOGA COUNTY
CUY-77-14.12
CUY-90-16.21



NOTES: For sign legend see sheet 58
For signing quantities see sheet 65

MADE D.S.P. DATE 10-16-75
TRACED D.B.C. DATE 10-21-75
CHECKED G.F.M. DATE 10-22-75
SCALE 1"=100'

Howard, Needles, Tammen & Bergendoff
CONSULTING ENGINEERS
CLEVELAND, OHIO

HNTB

FED. RD. DIVISION	STATE	PROJECT
5	OHIO	

CUYAHOGA COUNTY
CUY. 77-14.12
CUY. 90-16.21

NOTES: For sign legend see sheet 58.
For signing quantities see sheets 65 & 66.
For sign support details see sheets 80-82.
For pavement marking quantities see sheets 49-54.
For regulatory & warning signs of this area, see Sheet 70.
For pavement marking legend, see Sheet 56.

MADE D.S.P. DATE 10-16-75
TRACED T.S. DATE 10-28-75
CHECKED G.F.M. DATE 10-22-75
SCALE 1" = 100'

Howard, Needles, Tammen & Bergendoff
CONSULTING ENGINEERS
CLEVELAND, OHIO

HNTB

STA. 44+50 I-90 TO STA. 65+00 I-90 / STA. 45+50 I-77 : GUIDE SIGNS

FED. RD. DIVISION	STATE	PROJECT	
5	OHIO		

61
169

CUYAHOGA COUNTY
CUY. 77-14.12
CUY. 90-16.21

CITY OF CLEVELAND

CARNEGIE AVE.

PROSPECT AVE.

E. 21ST. ST.

EAST 14TH ST.

EAST 18TH ST. TURNOUT

E. 22ND ST.

EAST 22ND ST

EAST 14TH ST.

SOUTHBOUND EAST 14TH ST.

NORTHBOUND

SERVICE RD.

COMMUNITY COLLEGE AVE.

CEDAR AVE

RAMP E-5

RAMP E-16

RAMP E-10

RAMP E-9

RAMP E-8

RAMP E-10

RAMP E-11

RAMP E-13

RAMP 3

I-90

INNERBELT NORTH

INNERBELT TO ENTRY

SOUTH SUBURBS NEXT RIGHT

INNERBELT KEEP LEFT NORTH

EXIT 172A SOUTH Akron NEXT RIGHT

EXIT 172D Carnegie Ave ¼ MILE

EXIT 172C E 22nd St EXIT ONLY

EXIT 172B Carnegie Ave ¼ MILE

EAST 22 ST CENTRAL AVE

E 22 St Central Ave

E 22nd St

E 18 St. KEEP RIGHT E. 14 St. KEEP LEFT

THRU TRAFFIC

CARNEGIE AVE EXIT ¼ MI

EAST 90 SOUTH 77

KEEP TO RIGHT EAST 90 77

TO STADIUM

NORTH LOT Municipal Parking 50¢ PAY LEAVE NO TRUCKS

SOUTH LOT Municipal parking 50¢ PAY LEAVE NO TRUCKS

Cuy Community College NEXT RIGHT HOSPITAL NEXT RIGHT

Cuy Comm Col Cleve State Univ NEXT RIGHT HOSPITAL NEXT RIGHT

E 22nd St Carnegie Ave Chester Ave 1 ⅛

Chester Ave Superior Ave Lakeside Ave 1 ¼ ¾

E 14th St E 22nd St

Existing C.E.I. Co. Pole 24112

Existing Attenuator

4+80 S.BE. 14th St Pullbox, 18"

70+00 I-90 Pullbox, 18"

68+35 I-90 Pullbox, 18"

74+20 I-90 Pullbox, 18"

1+00 Ramp E-13 Pullbox, 18"

102+23 I-90 Pullbox, 18"

106+95 I-90 Pullbox, 18"

Sta. 83+09.31 Bk = Sta. 98+00 AH

RELOCATED CEDAR

SEE SHEET 60 MATCH LINE STA. 65+00

SEE SHEET 62 MATCH LINE STA. 110+00

NOTES: For sign legend see sheet 58.
For signing quantities see sheets 66-67.
For sign support details see sheets 82-84.
For pavement marking quantities see sheets 49-54.
For regulatory & warning signing of this area, see Sheet 71.
For pavement marking legend, see sheet 56
For pavement marking details on Ramp E-10, E-13 and SB I-90 between sta 74+65 to Sta 79+86, see sheets 24A, 24B.
For power service distribution to sign, see Cuy-77/90-14.05/16.15 Lighting Plans.

100 0 100 200 300 400
SCALE IN FEET

MADE D.S.P. DATE 10-17-75
TRACED D.B.C. DATE 10-28-75
CHECKED G.P.M. DATE 10-28-75
SCALE 1"=100'

Howard, Needles, Tammen & Bergendoff
CONSULTING ENGINEERS
CLEVELAND, OHIO

HNTB

FED. RD. DIVISION	STATE	PROJECT	
5	OHIO		

62
169

CUYAHOGA COUNTY
CUY. 77-14.12
CUY. 90-16.21

CITY OF CLEVELAND

SEE SHEET 61
MATCH LINE STA.110+00

CARNEGIE AVE.

CHESTER AVE EXIT ½ MILE 12 x 4

PROSPECT AVE

EUCLID AVE

EAST 30TH ST.

EAST 24TH ST.

CHESTER CONN

EAST 27TH ST.

E. 30TH ST.

I-90

MATCH LINE STA.135+00 SEE SHEET 63

Exist. C.E.I. Co. Pole # 24098

Exist. C.E.I. Co. Pole # 24094

C.E.I. Co. Pole # 537349

C.E.I. Co. Pole # 500242

Exist. C.E.I. Co. Pole # 359989.

SCALE IN FEET 100 0 100 200 300 400

NOTES: For sign legend see sheet 58.
For signing quantities see sheets 67-68.
For sign support details see sheets 84-86.
For pavement marking quantities see sheets 49-54.
For regulatory & warning signing of this area, see Sheet 72.
For pavement marking legend, see sheet 56.
For power service distribution to signs, see CUY-77/90-14.05/16.15 Lighting Plans.

MADE D.S.P. DATE 10-17-75
TRACED P.S. DATE 10-20-75
CHECKED D.F.M. DATE 10-27-75
SCALE 1" = 100'

Howard, Needles, Tammen & Bergendoff
CONSULTING ENGINEERS
CLEVELAND, OHIO

HNTB

STA. 110+00 TO STA. 135+00 I-90: GUIDE SIGNS

FED. RD. DIVISION	STATE	PROJECT	
5	OHIO		

63
169

CUYAHOGA COUNTY
CUY. 77-14.12
CUY. 90-16.21

CITY OF CLEVELAND

SEE SHEET 62
MATCH LINE STA.135+00

MATCH LINE A

SEE SHEET 64
MATCH LINE STA.160+00

E. 25TH ST.
E. 27TH ST.
E. 30TH ST.
E. 33RD ST.
E. 24TH ST.
E. 26TH ST.
E. 33RD ST. CONN.
ST. CLAIR AVE.
PAYNE AVE
ALABAMA CT.
SUPERIOR AVE
I-90
RAMP 12
RAMP 13
RAMP 14
RAMP 15
RAMP 16
E 30th St
Superior Ave
Lakeside Ave
Superior St Clair Ave
Chester Ave Euclid Ave EXIT ⅓ MILE
Cleve State University NEXT RIGHT
Chester Ave ½ Prospect Ave SOUTH
Stadium KEEP RIGHT
DETOUR
No Work
Remove
Relocate to 1+50
Pullbox, 18"
Pullbox, 24"
9+70 Light Pole Connect to Pole for sign Service

NOTES: For sign legend see sheet 58.
For signing quantities see sheets 68-69.
For sign support details see sheets 84-88.
For pavement marking quantities see sheets 49-54.
For regulatory & warning signing in this area, see Sheet 73.
For pavement marking legend, see sheet 56.
For power service distribution to signs, see Cuy-77/90-14.05/16.15-Lighting Plans.

100 0 100 200 300 400
SCALE IN FEET

MADE D.S.P. DATE 10-20-75
TRACED J.P.K. DATE 10-28-75
CHECKED G.F.M. DATE 10-30-75
SCALE 1"=100'

Howard, Needles, Tammen & Bergendoff
CONSULTING ENGINEERS
CLEVELAND, OHIO

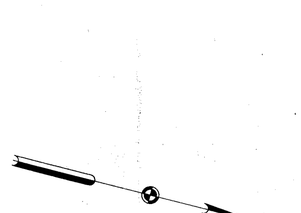
HNTB

STA. 135+00 TO STA. 160+00 I-90: GUIDE SIGNS

FED. RD. DIVISION	STATE	PROJECT	
5	OHIO		

64
169

CUYAHOGA COUNTY
CUY. 77-14.12
CUY. 90-16.21



NOTES: For sign legend see sheet 58.
For signing quantities see sheet 69.
For sign support details see sheets 88.
For pavement marking quantities see sheets 49-54.
For regulatory & warning signing in this area, see Sheet 74.
For pavement marking legend, see sheet, 56

MADE D.S.P. DATE 10-20-75
TRACED J.S. DATE 10-20-75
CHECKED G.F.M. DATE 10-22-75
SCALE 1"=100'

Howard, Needles, Tammen & Bergendoff
CONSULTING ENGINEERS
CLEVELAND, OHIO

HNTB

STA. 160+00 TO STA. 74+45 ℄ I-90 : GUIDE SIGNS

SIGNING SUB-SUMMARIES

QUANTITY CALCULATIONS
MADE BY G.F.M. DATE 10-22-75
CHECKED BY D.S.P. DATE 6-3-77

FHWA REGION	STATE	PROJECT	
5	OHIO		

CUYAHOGA COUNTY
CUY-77-14.12
CUY-90-16.21

GUIDE SIGNING SUB-SUMMARY

SHEET NO.	SIGN NO.	STATION	CODE NO.	SIGN SIZE	DIMENSIONS SEE DETAIL 'A' SHEET NO. 92 (Lin. Ft.) A	B	C	D	E	REMOVE & REERECT G.M. SIGNS Each MINOR	MAJOR	844 SIGNS FLAT SHEET Sq. Ft.	844 SIGNS EXTRU. TYPE Sq. Ft	844 CONC. EMBEDDED FDNS. Cu. Yd.	844 CONC. ANCHOR BASE FDNS. Cu. Yd.	844 SUPPORTS 6 Lb BEAM Lin. Ft.	W8×17 Lin. Ft.	W10×21 Lin. Ft.	W12×31 Lin. Ft.	BREAK AWAY CONN. Each	202 REMOVAL GM. SIGNS Each MINOR	MAJOR	REMOVAL GM. SUPP. Each ≤8 lb.	>8 lb.	REMOVAL GM. INSTALL. Each MINOR	REMOVAL GM. INSTALL. Each MAJOR	REMOVAL O.H. SUPP. Each BY TYPE	SIGN ATTACHMENT TO EXISTING SUPPORT Each	REMOVE & REERECT O.H. SUPPORT Each BY TYPE	REMOVE & RELOCATE OVERHEAD SIGN Each	EXISTING SIGN REVISED, AS PER PLAN Each	POLE MOUNTED SIGN ATTACHMENT. Each	REMOVE O.H. STRUCTURE MOUNTED SUPPORT Each	REMOVE OVERHEAD MOUNTED SIGN Each
58	I-90																																	
	(A)	1992+77Rt.																													1*			
	(B)																														1*			
	(B)		GEP-108	108"x24"									18.0																					
	(C)																														1*			
	(C)		GEP-144	144"x24"									24.0																					
59	I-90																																	
		12+84 Lt.	GEP-96	96"x24"									16.0																					
		20+40Rt.																										1*	12.24* Des.5 Mod.					1*
		27+75 Lt.	GEP-96	96"x24"									16.0																		1*			
	(B)	35+40 Rt.	GEP-108	108"x24"									18.0																		1*			
	(C)		GEP-144	144"x24"									24.0																		1*			
	(D)	35+40 Lt.	GEP-108	108"x24"									18.0																		1*			
60	I-90																																	
	(A)	48+45 Rt.	GEP-108	108"x24"									18.0																					
	(B)		GEP-108	108"x24"									18.0																					
	① (A)	56+65 Rt.		17'-0"x10'-6"									170.0		13.97																			
	(A)		GEP-108	108"x24"									18.0																					
	(B)			20'-0"x8'-0"									150																					
	(B)		GEP-108	108"x24"									18.0																					
	① (C)			13'-0"x7'-0"									84.5																					
	(C)		GEP-108	108"x24"									18.0																					
		57+50 Rt.																									1-10.48							2
	② (A)	61+71 Rt.		17'-0"x7'-0"									110.5		14.19																			
	(A)		GEP-108	108"x24"									18.0																					
	(B)			13'-0"x7'-0"									84.5																					
	(B)		GEP-108	108"x24"									18.0																					
	(C)			15'-0"x13'-6"									195.0																					
	(C)		GEP-108	108"x24"									18.0																					
	⑬	64+50 Lt.		15'-0"x9'-6"									135.0		4.56																			
			GEP-96	96"x24"									16.0																					
	Ramp E-3																																	
	③	0+00		10'-0"x7'-0"									66.0		3.50																			
	Ramp E-3 Connection																																	
	④	0+70		10'-0"x7'-0"									66.0		2.98																			
		1+10																			1													
		0+60																								1								
	Ramp E-4																																	
		2+66																			1													
	Ramp E-6																																	
	⑤ (A)	5+50		15'-0"x5'-0"									67.5		8.77																			
	(A)		GEP-108	108"x24"									18.0																					
	(B)			16'-0"x7'-0"									104.0																					
	(B)		GEP-108	108"x24"									18.0																					
		6+00																								1								
	Ramp E-9																																	
	⑥ (A)	0+40		11'-0"x10'-6"									111.0		8.84																			
	(A)		GEP-108	108"x24"									18.0																					
	(B)			15'-0"x7'-0"									97.5																					
	(B)		GEP-108	108"x24"									18.0																					
		1+28																								1								
	Ramp E-10																																	
		14+25																								1								
	⑦	14+50		18'-0"x11'-6"									148.0		4.36																			
			GEP-108	108"x24"									18.0																					
57	I-77																																	
		44+75Rt.																									1 (mono-tube)							
Sheet Total Cost Participation I													2023.5		61.17						2					4								2
Sheet Total Cost Participation II																												1			7			1
Sheet Total													2023.5		61.17						2					4		1	1		7			3

Note: All quantities on this Sheet Cost Participation I unless noted by an asterisk (*) which indicates Cost Participation II.

Rev. 1-9-79

MADE G.F.M. DATE 10-22-75
TRACED TAK DATE 11-4-75
CHECKED MEE DATE 10-29-75
SCALE

Howard, Needles, Tammen & Bergendoff
CONSULTING ENGINEERS
CLEVELAND, OHIO

HNTB

SIGNING SUB-SUMMARIES

QUANTITY CALCULATIONS
MADE BY G.F.M. DATE 10-23-75
CHECKED BY D.S.P. DATE 6-3-77

FHWA REGION	STATE	PROJECT	
5	OHIO		

CUYAHOGA COUNTY
CUY-77-14.12
CUY-90-16.21

66
169

GUIDE SIGNING SUB-SUMMARY

SHEET NO.	SIGN NO.	STATION	CODE NO.	SIGN SIZE	DIMENSIONS SEE DETAIL 'A' SHEET NO. 92 (Lin. Ft.) A	B	C	D	E	REMOVE & REERECT G.M. SIGNS Each MINOR	MAJOR	844 SIGNS FLAT SHEET Sq. Ft.	EXTRU. TYPE Sq. Ft	844 CONC. EMBEDDED FDNS. Cu. Yd.	844 CONC. ANCHOR BASE FDNS. Cu Yd	844 SUPPORTS 6 Lb BEAM Lin. Ft.	W8×17 Lin. Ft.	W10×21 Lin. Ft	W12×31 Lin. Ft.	BREAK-AWAY CONN. Each	202 REMOVAL GM. SIGNS Each MINOR	MAJOR	REMOVAL GM. SUPP. Each ≤8 lb	>8 lb	REMOVAL GM. INSTALL. Each MINOR	REMOVAL GM. INSTALL. Each MAJOR	REMOVAL EXISTING O.H. SUPP. BY TYPE		REMOVE & REERECT O.H. SUPPORT BY TYPE	REMOVE & REERECT OVERHEAD MOUNTED SIGN Each	EXISTING SIGN REVISED, AS PER PLAN Each	POLE MOUNTED SIGN ATTACHMENT, Each	REMOVE O.H. STRUCTURE MOUNTED SUPPORT Each	REMOVE OVERHEAD MOUNTED SIGN Each
60 (Continued)																																	
	Ramp E-15																																
		19+43																								1							
	Ramp E-17																																
		0+00																				3											
	(B) (A)	1+87		18'-0"x12'-6"									216.0		13.41																		
	(B)			15'-0"x10'-6"									150.0																				
		2+25																										1-Mono Tube					2
		4+22 Rt.									1													3									
		4+75 Lt.			20.0	21.5								2.3			41.5				2												
	Ramp E-18																																
		0+47																				2											
		2+25																				1											
	I-77																																
	(D) (A)	45+40 Rt.		15'-0"x12'-6"									180.0		14.37																		3
	(B)			12'-0"x13'-0"									139.0																				
	(C)			16'-0"x7'-0"									104.0																				
	(C)		GEP-108	108"x24"									18.0																				
		48+70 Rt.																								1							
	Broadway Ave.																																
		4+20																				1											
		4+40 ℄																				1											
	Ramp E-1																																
		0+73																				1											
	(11)	1+00 Rt.		10'-0"x7'-0"									65.0		3.12																		
	E. 9th St.																																
	(12) (A)	8+75 Rt.		9'-0"x7'-6"									63.0																				
	(B)			8'-0"x5'-6"									40.0																				
61	I-90																																
	(14)	68+25 Rt.		108"x24"									18.0		4.06																		
				18'-0"x12'-0"									207.0																				
		68+69 Rt.																								1							
	(15)	70+00 ℄		19'-0"x9'-0"									161.5		9.02																		
	(16) (A)	74+20		15'-0"x8'-0"									112.5																				1
	(B)			18'-0"x7'-0"									117.0																				1
	(B)		GEP-108	108"x24"									18.0																				
	(C)			16'-0"x7'-0"									104.0																				1
	(C)		GEP-108	108"x24"									18.0																				
	(D)			18'-0"x10'-6"									180.0																				1
	(E)		GEP-108	108"x24"									18.0																	1			
	(E)			18'-0"x0'-6"									9.0																				
		81+66 Lt.																							1								
	(17) (A)	99+30 Rt.		16'-0"x7'-0"									104.0																			1	1
	(A)		GEP-108	108"x24"									18.0																				
	(B)			16'-0"x7'-0"									104.0																				
	(B)		GEP-108	108"x24"									18.0																				
		102+10 Rt.																													1	1
	(18)	102+33 Lt.		12'-0"x10'-6"									120.0		3.25																		
			GEP-108	108"x24"									18.0																				
	(19)	106+95 ℄		19'-0"x9'-0"									161.5		11.42																		
		107+45 Rt.																													1	1
		108+10 Lt.																													1	1
		80+41 Lt.																				3											
Sheet Total Cost Participation I										1		2462.5	5.3	58.65		41.5				2	12		3		1	3			1		4	13
Sheet Total Cost Participation II																																	
Sheet Total										1		2462.5	5.3	58.65		41.5				2	12		3		1	3			1		4	13

MADE GFM DATE 10-23-75
TRACED TAK DATE 11-4-75
CHECKED MEE DATE 10-30-75
SCALE

Howard, Needles, Tammen & Bergendoff
CONSULTING ENGINEERS
CLEVELAND, OHIO

HNTB

* Cost Participation II

SIGNING SUB-SUMMARIES

QUANTITY CALCULATIONS
MADE BY G.F.M. DATE 10-23-75
CHECKED BY D.S.P DATE 6-3-77

FHWA REGION	STATE	PROJECT	
5	OHIO		

67
169

CUYAHOGA COUNTY
CUY-77-14.12
CUY-90-16.21

GUIDE SIGNING SUB-SUMMARY

SHEET NO.	SIGN NO.	STATION	CODE NO.	SIGN SIZE	DIMENSIONS SEE DETAIL 'A' SHEET NO. 92 (Lin Ft) A	B	C	D	E	REMOVE & REERECT G.M. SIGNS Each		844 SIGNS FLAT SHEET Sq Ft	844 SIGNS EXTRU. TYPE Sq Ft	84% CONC. EMBEDDED FDNS. Cu Yd	844 CONC. ANCHOR BASE FDNS. Cu Yd	844 SUPPORTS 5#X7.7 Lin Ft	W8×17 Lin Ft	W10×21 Lin Ft	W12×31 Lin Ft	BREAK AWAY CONN Each	202 REMOVAL GM SIGNS Each		REMOVAL GM SUPP Each		REMOVAL GM INSTALL. Each	REMOVAL GM INSTALL. Each	REMOVAL O.H. SUPP Each		REMOVE & REERECT O.H. SUPPORT BY TYPE	REMOVE & REERECT OVERHEAD MOUNTED SIGN Each	EXISTING SIGN REVISED, AS PER PLAN Each	POLE MOUNTED SIGN ATTACHMENT Each	REMOVE O.H. STRUCTURE MOUNTED SUPPORT Each	REMOVE OVERHEAD MOUNTED SIGN Each
61	(Cont.) Ramp E-5									MINOR	MAJOR										MINOR	MAJOR	≤8 lb.	>8 lb.	MINOR	MAJOR	BY TYPE						
		3+00																							1							
		0+61																			3											
	(20)	0+66		11'-0"x 9'-6"									99.0		3.04																	
		3+25	GH-1	5'-0"x5'-0"			17.0						25.0	0.27		17.0				1												
		3+25	GH-1	7'-0"x5'-0"	17.0	17.0							35.0	0.54		34.0				2												
	Ramp E-11																															
		2+84																							1							
	Ramp E-13																															
	(21)	0+90		8'-0"x 5'-6"									40.0		2.49																1	
		0+68								1													2									
		1+00																								1						
		5+40																								1						
	Ramp No. 3																															
		3+47	GF	108"x 60"	21.0	21.0							45.0	0.54		42.0				2						1						
	E. 14th St.																															
		2+49																								1*						
	(22) (A)	5+15		9'-0"x 5'-0"									40.5 *																			
	(B)			9'-0"x 5'-0"									40.5 *																			
		8+10	D-4-2	8'-0"x 4'-0"	16.0	16.0						32.0*		0.54		32.0*				2 *												
	Prospect Ave.																															
	(23)	3+00		8'-0"x 8'-6"									64.0		2.39																	
		102+25 Lt.																													1	1
62	I-90																															
		110+37 Rt.																								1						
		117+10 Lt.	GF	108"x60"	17.0	17.0							45.0	0.54		34.0				2												
		117+65 Rt.																								1						
	(24) (A)	118+95 Rt.		15'-0"x 8'-0"									112.5																		1	1
	(B)			17'-0"x 7'-0"									110.5																			
	(B)		GEP-108	108"x 24"									18.0																			
	(C)			19'-0"x 7'-0"									123.5																			
	(C)		GEP-108	108"x 24"									18.0																			
	(25) (A)	119+85 Lt.		18'-0"x 10'-6"									180.0																		1	1
	(B)			12'-0"x 10'-6"									120.0																			
	(B)		GEP-108	108"x 24"									18.0																			
	(C)			20'-0"x 7'-0"									130.0																			
	(C)		GEP-108	108"x 24"									18.0																			
		119+85 Lt.																													1	1
	(26)	127+15 Lt.		19'-0"x 9'-0"									161.5																		3	3
		126+65 Rt.																													1	1
		129+50 Lt.			16.0	15.75					1		18.0	0.54		31.75				2			3									
	(27) (A)	133+25		19'-0"x 9'-0"									161.5		12.39																	
	(B)			17'-0"x 7'-0"									110.5																			
	(B)		GEP-108	108"x 24"									18.0																			
	(C)			19'-0"x 7'-0"									123.0																			
	(C)		GEP-108	108"x 24"									18.0																			
		113+90																													1	1
	Ramp No. 5																															
		0+10																													1	1
		6+56		Payment for Removal of Existing Installation at Sta. 6+56, Ramp No. 5 is listed in the Regulatory & Warning Sign Sub-Summary Sheet at said Station																														
	Ramp No. 7																															
		2+42	GF	108"x60"	17.0	17.0							45.0	0.54		34.0				2						1						
Sheet Total Cost Participation I										1	1		1837.0	2.97	20.31	192.75				4	3		5		2	6			1		10	10
Sheet Total Cost Participation II												32	81.0	0.54		32.0				2						1						
Sheet Total										1	1	32	1736.0	3.51	20.31	224.75				13	3		5		2	7			1		10	10

MADE G.F.M. DATE 10-23-75
TRACED T.A.R. DATE 11-5-75
CHECKED M.E.B. DATE 10-30-75
SCALE

Howard, Needles, Tammen & Bergendoff
CONSULTING ENGINEERS
CLEVELAND, OHIO

HNTB

* Cost Participation II

SIGNING SUB-SUMMARIES

QUANTITY CALCULATIONS
MADE BY G.F.M. DATE 10-28-75
CHECKED BY D.S.P. DATE 6-3-77

FHWA REGION	STATE	PROJECT	
5	OHIO		

CUYAHOGA COUNTY
CUY-77-14.12
CUY-90-16.21

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GUIDE SIGNING SUB-SUMMARY

SHEET NO.	SIGN NO.	STATION	CODE NO.	SIGN SIZE	DIMENSIONS SEE DETAIL 'A' SHEET NO. 92 (Lin. Ft.) A	B	C	D	E	REMOVE & REERECT G.M. SIGNS Each MINOR	MAJOR	844 SIGNS FLAT SHEET Sq. Ft.	EXTRU. TYPE Sq. Ft	844 CONC. EMBEDDED FDNS. Cu. Yd.	844 CONC. ANCHOR BASE FDNS Cu. Yd	844 SUPPORTS 5 4 X 7.7 Lin. Ft.	W8×17 Lin. Ft.	W10×21 Lin. Ft.	W12×31 Lin. Ft.	BREAK-AWAY CONN. Each	202 REMOVAL GM. SIGNS Each MINOR	MAJOR	REMOVAL GM. SUPP. Each ≤8 lb.	>8 lb.	REMOVAL GM. INSTALL. Each MINOR	REMOVAL GM. INSTALL. Each MAJOR	REMOVAL O.H. SUPP. BY TYPE		REMOVE & REERECT O.H. SUPPORT BY TYPE	REMOVE & REERECT OVERHEAD MOUNTED SIGN Each	EXISTING SIGN REVISED, AS PER PLAN Each	POLE MOUNTED SIGN ATTACHMENT Each	REMOVE O.H. STRUCTURE MOUNTED SUPPORT Each	REMOVE OVERHEAD MOUNTED SIGN Each
62 (Continued)																																	
	Ramp No. 9																																
		8+20																							1								
	Ramp No. 11																																
		2+80																											1				
		7+00	D-4	9'-0"x4'-0"	17.0	18.0							36.0	8.64		35.0				2													
		7+05																							1								
	Prospect Ave.																																
		8+55 Rt.																														1	
	(28)	9+30 Lt.		9'-0"x8'-6"									72.0		2.49																		
	(29) (A)	12+40 Rt.		8'-0"x8'-6"									64.0		2.39																		
	(B)			8'-0"x8'-6"									64.0																				
		12+50 Rt.																							1								
	(30)	14+00 Lt.		9'-0"x8'-6"									72.0		2.49																		
		18+10 Lt.																				1											
	(31)	18+70 Lt.		8'-0"x8'-6"									64.0		2.49																		
	Chester Ave.																																
		0-4+12 Rt.																				1											
	(32)	0-4+00 Rt.		9'-0"x8'-6"									72.0		2.39																		
	(33)	0+45 Lt.		9'-0"x8'-6"									72.0		2.49																		
		0+46 Lt.																							1								
	(34)	1+00 Rt.		8'-0"x8'-6"									64.0		2.46																		
		1+77 Rt.																				1											
	(35)	8+10 Lt.		8'-0"x8'-6"									64.0		2.49																		
	(36)	9+70 Rt.		8'-0"x8'-6"									64.0		2.49																		
		10+55 Rt.																							1								
	(37)	14+00 Lt.		9'-0"x8'-6"									72.0		2.39																		
		14+33 Lt.																				1											
	Chester Ave. Connection																																
		8+35																							1								
	(38)	9+00		9'-0"x8'-6"									72.0		2.49																		
	E. 24th St.																																
	(39) (A)	2+25		9'-0"x8'-6"									72.0		2.51										1								
	(B)			9'-0"x8'-6"									72.0																				
63	I-90																																
		137+30 Rt.																														1	1
	(40) (A)	141+20 Rt.		17'-0"x7'-0"									110.5		14.89																		
	(A)		GEP-108	108"x24"									18.0																				
	(B)			20'-0"x7'-0"									130.0																				
	(B)		GEP-108	108"x24"									18.0																				
		144+94 Lt.																							1								
		147+30 Rt.																														1	1
	(41) (A)	148+20 Lt.		19'-0"x9'-0"									161.5																			2	2
	(B)			13'-0"x8'-0"									97.5																				
	(B)		GEP-108	108"x24"									18.0																				
		152+09 Lt.																				3											
	(42)	156+40 Rt.		19'-0"x7'-0"									123.5																			2	2
	(43) (A)	157+20 Lt.		17'-0"x7'-0"									110.5																			1	1
	(B)			20'-0"x9'-6"									180																				
	(A)		GEP-108	108"x24"									18.0																				
	(B)		GEP-108	108"x24"									18.0																				
	Ramp No. 12																																
		2+85																							1								
Sheet Total Cost Participation I												1909.5	0.54	44.46	35					2	7									1		7	7
Sheet Total Cost Participation II																					0									0		0	0
Sheet Total												1909.5	0.54	44.46	35					2	7									1		7	7

MADE GFM DATE 10-28-75
TRACED TAK DATE 11-25-75
CHECKED MEE DATE 12-30-75
SCALE —

Howard, Needles, Tammen & Bergendoff
CONSULTING ENGINEERS
CLEVELAND, OHIO

HNTB

* Cost Participation II

SIGNING SUB-SUMMARIES

QUANTITY CALCULATIONS
MADE BY G.F.M. DATE 10-28-75
CHECKED BY D.S.B. DATE 6-3-77

FHWA REGION	STATE	PROJECT	
5	OHIO		

CUYAHOGA COUNTY
CUY-77-14.12
CUY-90-16.21

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GUIDE SIGNING SUB-SUMMARY

SHEET NO.	SIGN NO.	STATION	CODE NO.	SIGN SIZE	DIMENSIONS SEE DETAIL 'A' SHEET NO. 92 (Lin. Ft.) A	B	C	D	E	REMOVE & REERECT G.M. SIGNS Each MINOR	MAJOR	844 SIGNS FLAT SHEET Sq. Ft.	EXTRU. TYPE Sq. Ft.	844 CONC. EMBEDDED FDNS. Cu. Yd.	844 CONC. ANCHOR BASE FDNS. Cu. Yd.	844 SUPPORTS S4X7.7 Lin. Ft.	W8x17 Lin. Ft.	W10x21 Lin. Ft.	W12x31 Lin. Ft.	BREAK AWAY CONN. Each	202 REMOVAL GM. SIGNS Each MINOR	MAJOR	REMOVAL GM. SUPP. Each <8 lb.	>8 lb.	REMOVAL GM. INSTALL. Each MINOR	REMOVAL GM. INSTALL. Each MAJOR	REMOVAL O.H. SUPP BY TYPE	SIGN ATTACHMENT TO EXISTING SUPPORT Each	REMOVE & REERECT O.H. SUPPORT Each	RELOCATE OVERHEAD SIGN AND SUPPORT Each	EXISTING SIGN REVISED, AS PER PLAN Each	POLE MOUNTED SIGN ATTACHMENT. Each	REMOVE O.H STRUCTURE MOUNTED SUPPORT Each	REMOVE OVERHEAD MOUNTED SIGN Each
63 (Continued)																																
	Ramp No. 14																															
		1+80	GF	108"x60"	17.0	17.0							45.0	0.54		34.0				2							9.12						
	Ramp No. 15																															
		1+50					16.0							0.27		16.0				1													
		3+26								1																							
	Ramp No. 16																															
		9+34																															
	(44)	10+00		9'-0"x7'-0"									58.5		2.56							1											
	Superior Ave.																															
		0-5+94 Rt.																								1							
	(45)	0-5+00 Rt.		9'-0"x8'-6"									72.0		2.49																		
		0-2+56 Rt.																								1							
	(46)	0-2+50 Rt.		8'-0"x8'-6"									64.0		2.49																		
	(47) (A)	0+40 Rt.		9'-0"x8'-6"									72.0		2.49																		
	(B)			9'-0"x8'-6"									72.0																				
		0+40 Rt.																								1							
	(48) (A)	4+05 Lt.		8'-0"x8'-6"									64.0		2.39							2											
	(B)			8'-0"x8'-6"									64.0																				
		6+45 Lt.																				1											
	(49)	6+50 Lt.		9'-0"x8'-6"									72.0		2.49																		
	(50)	8+00 Lt.		8'-0"x8'-6"									64.0		2.49																		
		8+52 Lt.																				1											
64	I-90																														1	1
		161+40 Lt.																															
	(51) (A)	165+90 Lt.		19'-0"x7'-0"									123.5																			2	2
	(B)			17'-0"x9'-6"									153.0																				
	(B)		GEP-108	108"x24"									18.0																				
	(52) (A)	170+63 Rt.		16'-0"x10'-6"									160.6																			2	2
	(B)			16'-0"x10'-6"									160.0																				
	(B)		GEP-108	108"x24"									18.0																				
		175+30 Lt.	GEP-108	108"x24"									18.0																	1			
	(53) (B)	182+76 Rt.																									3			1			
	(B)		GEP-108	108"x24"									18.0																			1**	1**
	(56)	161+00 Rt.																															
	Ramp No. 18																															
	(54)	1+00	GEP-108	108"x24"							1		18.0		2.53																		
				10'X0'-6"									9.0											2									
		1+65																															
Sheet Total Cost Participation I										1	1		1343.0	0.81	19.93	50				3	5	2		3			3		2		5	5
Sheet Total Cost Participation III																															1	1
Sheet Total										1	1		1343.0	0.81	19.93	50				3	5	2		3			3		2		6	6

MADE G.F.M. DATE 10-28-75
TRACED J.A.K. DATE 11-5-75
CHECKED M.E.E. DATE 10-30-75
SCALE —

Howard, Needles, Tammen & Bergendoff
CONSULTING ENGINEERS
CLEVELAND, OHIO

HNTB

**Cost Participation III

FED. RD. DIVISION	STATE	PROJECT	
5	OHIO		

70
169

CUYAHOGA COUNTY
CUY. 77-14.12
CUY. 90-16.21

S.L.M. 16.21
BEGIN PROJECT
STA. 55+10 ℄ I-90
I-90-1(101)29

MATCH SEE SHEET 71
STA. 65+00

END SHEET
STA. 45+50

BEGIN SHEET
STA. 44+00

CARNEGIE AVE.
BROADWAY AVE.
WEST BROADWAY
EAST BROADWAY
EAST 9TH ST.
EAST 14TH ST.
ORANGE AVE.
SERVICE RD.
℄ I-90
℄ I-77
RAMP E-1
RAMP E-2
RAMP E-3
RAMP E-4
RAMP E-5
RAMP E-6
RAMP E-7
RAMP E-8
RAMP E-9
RAMP E-10
RAMP E-14
RAMP E-15
RAMP E-17
RAMP E-18
W. 6TH ST. RAMP
STOP
WRONG WAY
TURN AROUND
DO NOT ENTER
YIELD
MERGING TRAFFIC
THRU TRAFFIC MERGE LEFT
THRU LANE
PUBLIC EMERGENCY PHONE
PEDESTRIANS BICYCLES PROHIBITED
Mount on proposed endframe
Relocate to Sta. 5+00
Remove
No Work
Remove Guide Signs
Remove Loop Detectors
Remove Loop Detectors (Locations)
Mount on proposed support
Mount sign on proposed endframe
KEEP RIGHT
SPEED LIMIT 50
SPEED LIMIT 25
EXIT 25 MPH
RAMP 35 MPH
RAMP 30 MPH
EXIT 20 MPH
25 MPH
30 MPH
20 MPH

100 0 100 200 300 400
SCALE IN FEET

NOTES: For sign legend see sheet 58.
For signing quantities see sheets 75 & 76.
For guide signing of this area, see Sheet 60.

MADE M.G.B DATE 2-14-75
TRACED D.B.C DATE 3-6-75
CHECKED D.S.P DATE 2-17-75
SCALE 1"=100'

Howard, Needles, Tammen & Bergendoff
CONSULTING ENGINEERS
CLEVELAND, OHIO

HNTB

STA. 44+00 I-90
STA. 45+50 I-77
TO STA. 65+00 I-90 : R & W SIGNING

FED. RD. DIVISION	STATE	PROJECT	
5	OHIO		

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169

CUYAHOGA COUNTY
CUY. 77-14.12
CUY. 90-16.21

CARNEGIE AVE.
EAST 14TH ST.
EAST 18TH ST. TURNOUT
E. 21ST ST.
PROSPECT AVE.
CARNEGIE AVE.
RELOCATED CEDAR
SEE SHEET 70 MATCH LINE STA. 65+00
SEE SHEET 72 MATCH LINE STA. 110+00
RAMP E-5
RAMP E-16
RAMP E-10
RAMP E-8
RAMP E-9
RAMP E-11
RAMP E-15
RAMP NO. 3
℄ I-90
Sta. 83+09.31 BK = Sta. 98+00 AH.
SOUTHBOUND EAST 14TH ST.
NORTHBOUND
EAST 14TH ST.
SERVICE ROAD
EAST 22ND ST.
COMMUNITY COLLEGE AVE.
PUBLIC EMERGENCY PHONE
PUBLIC EMERGENCY PHONE AHEAD
Both locations
YIELD AHEAD
W-49R
W-2
W-37 E-10
W-62 E-10
W-62 E-16
W-48 E-14th
W-48 S.B. E-14th
R-2
R-41A
R-41B
WRONG WAY
DO NOT ENTER
KEEP RIGHT
STOP
ONE WAY
30 MPH
35 MPH
50 MINIMUM 35 SPEED LIMIT
Remove
No Work
Relocate to End Frame
Relocate "ONE WAY" SIGNS at 6+43 Ramp E-11
Flashers To remain
Both sides
MERGE
4 LANES 4 TO 6:30 PM MON THRU FRI 3 LANES OTHER TIMES
NOTES: For sign legend see sheet 58.
For signing quantities see sheets 76 & 77.
For guide signing of this area, see Sheet 61.
100 0 100 200 300 400
SCALE IN FEET

MADE M.G.B. DATE 2-14-75
TRACED D.B.C. DATE 2-21-75
CHECKED D.S.P. DATE 2-19-75
SCALE 1"=100'

Howard, Needles, Tammen & Bergendoff
CONSULTING ENGINEERS
CLEVELAND, OHIO

HNTB

FED. RD. DIVISION	STATE	PROJECT	
5	OHIO		

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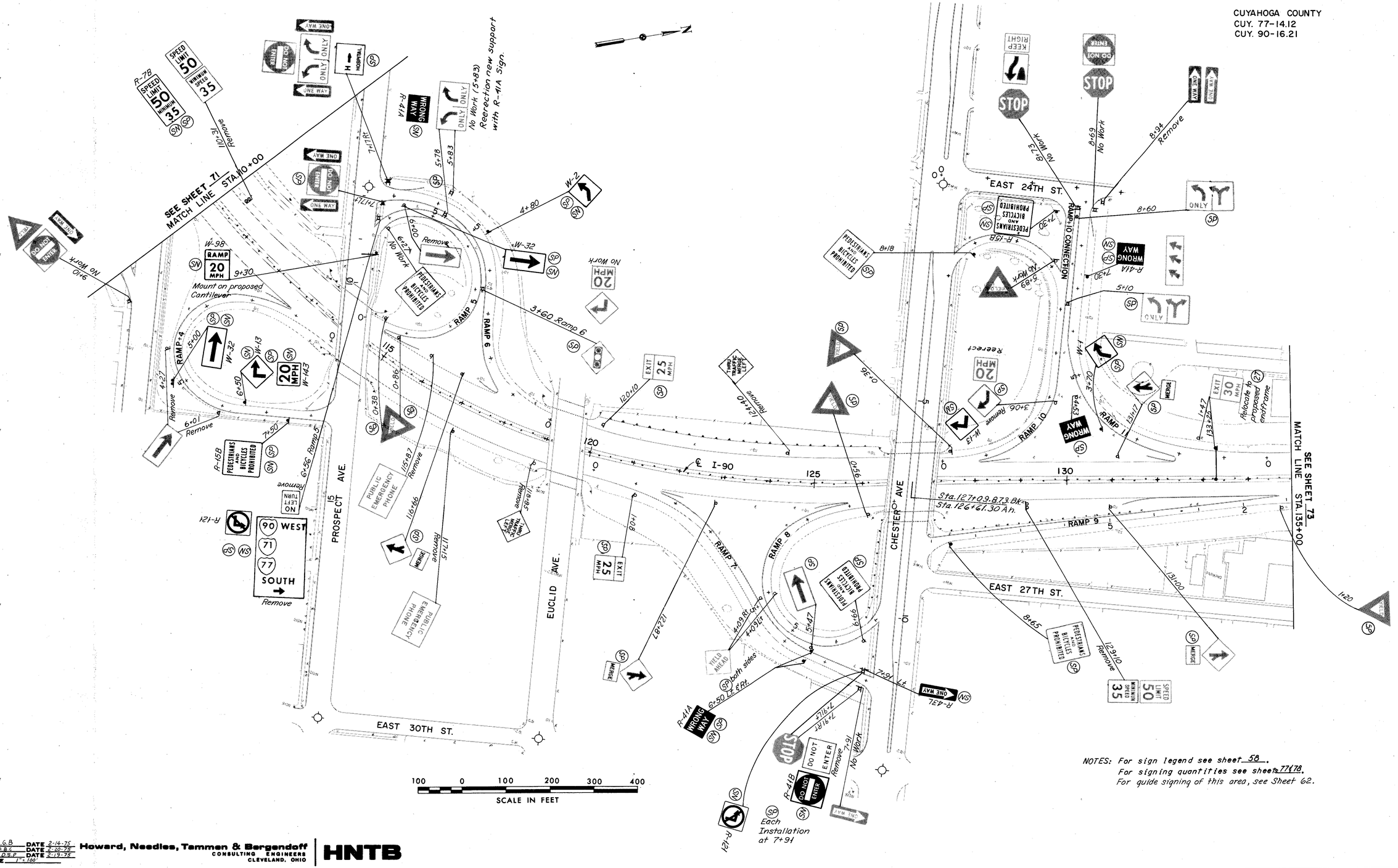
169

CUYAHOGA COUNTY
CUY. 77-14.12
CUY. 90-16.21



NOTES: For sign legend see sheet 58.
For signing quantities see sheets 77 & 78.
For guide signing of this area, see Sheet 62.

MADE M.G.B DATE 2-14-75
TRACED B.B.C. DATE 2-20-75
CHECKED D.S.P DATE 2-19-75
SCALE 1" = 100'

Howard, Needles, Tammen & Bergendoff
CONSULTING ENGINEERS
CLEVELAND, OHIO

HNTB

FED. RD. DIVISION	STATE	PROJECT	
5	OHIO		

73
169

CUYAHOGA COUNTY
CUY. 77-14.12
CUY. 90-16.21

SEE SHEET 72
MATCH LINE STA.135+00

STA.160+00
SEE SHEET 74
MATCH LINE

E. 25TH ST.
E. 26TH ST.
E. 27TH ST.
E. 30TH ST.
E. 33RD ST.
PAYNE AVE.
SUPERIOR AVE.
ST. CLAIR AVE.
E. 26th Conn.
E. 30th Conn.
E. 33RD ST. CONN.
RAMP 12
RAMP 13
RAMP 14
RAMP 15
RAMP 16
I-90

NOTES: For sign legend see sheet 58.
For signing quantities see sheets 78&79.
For guide signing of this area, see Sheet 63.

100 0 100 200 300 400
SCALE IN FEET

MADE M.G.B DATE 2-4-75
TRACED D.B.C DATE 3-7-75
CHECKED D.S.P DATE 2-19-75
SCALE 1"=100'

Howard, Needles, Tammen & Bergendoff
CONSULTING ENGINEERS
CLEVELAND, OHIO

HNTB

STA. 135+00 I-90 TO STA. 160+00 I-90: R&W SIGNING

FED. RD. DIVISION	STATE	PROJECT	
5	OHIO		

74
169

CUYAHOGA COUNTY
CUY. 77-14.12
CUY. 90-16.21

CITY OF CLEVELAND

NOTES: For sign legend see sheet 58 .
For signing quantities see sheet 79
For guide signing of this area, see Sheet 64.

E.26TH ST.
E. 33RD ST.
E. 33RD ST.-CONN
HAMILTON AVE.
LAKESIDE AVE.
PENN CENTRAL TRANSPORTATION CO.
SOUTH MARGINAL ROAD
SHOREWAY - BELT CONNECTION
NORTH MARGINAL ROAD
WESTBOUND S.R. 2
RAMP 17
RAMP 18
EASTBOUND SHOREWAY
WESTBOUND SHOREWAY
℄ I-90
℄ E.B. I-90
℄ W.B. I-90
EXIST. CONC. BARRIER
MATCH LINE STA. 160+00 SEE SHEET 73
MATCH LINE STA. 70+00
END PROJECT STA. 173+75 I-90 S.L.M. 18.17
END WORK STA. 74+45 ℄ I-90
Sta. 160-90 Pullbox
74+00, 53' Rt. ℄ Pullbox, 18" 2-Type IX Kits Connect to exist. lighting circuit M54. For electrical equipment see sheet 9.
74+17 Exist. Light Pole (Typical)
Exist. Lighting Circuit M54
35 MPH W-99L-120
35 MPH W-99R-120
30 MPH EXIT
PUBLIC EMERGENCY PHONE
PUBLIC EMERGENCY PHONE AHEAD
EMERGENCY STOPPING ONLY
PEDESTRIANS & BICYCLES PROHIBITED
STOP AHEAD
No Work
STOP
WRONG WAY R-41A
SPEED LIMIT 50 MINIMUM 35 R-7B
SPEED LIMIT 50 MIN. SPEED 35
WRONG WAY TURN AROUND
YIELD DO NOT ENTER R-2
DO NOT ENTER R-41B
Reerect (A) and (B) only
Reerect (C) and (D) only
(A) (B) (C) (D) STOP DO NOT ENTER ONE WAY
(SP) Both Location
Remove
183+56.14 E.B. I-90 = 73+84.60 W.B. Shoreway = 83+56.14 E.B. I-90
183+98.24 W.B. I-90 = 67+26.31 I-90
173+15.03 ℄ I-90 BK. 173+15.03 W.B. I-90 173+15.03 E.B. I-90
175+55.03 ℄ I-90 BK. 20'Lt., 175+55.03 W.B. I-90 32'Rt., 175+55.03 E.B. I-90

100 0 100 200 300 400
SCALE IN FEET

MADE MGB DATE 2-17-75
TRACED G.B.C. DATE 3-9-75
CHECKED D.S.P. DATE 2-20-75
SCALE 1"=100'

Howard, Needles, Tammen & Bergendoff
CONSULTING ENGINEERS
CLEVELAND, OHIO
HNTB

SIGNING SUB-SUMMARIES

FHWA REGION	STATE	PROJECT	
5	OHIO		

75/169

CUYAHOGA COUNTY
CUY-77-14.12
CUY-90-16.21

QUANTITY CALCULATIONS
MADE BY G.F.M. DATE 10-21-75
CHECKED BY D.S.P. DATE 4-13-77

REGULATORY AND WARNING SIGN SUB-SUMMARY

SHEET NO.	SIGN NO.	STATION	CODE NO.	SIGN SIZE	DIMENSIONS SEE DETAIL 'A' SHEET NO. 92 (Lin. Ft.) A	B	C	D	E	REMOVE & REERECT G.M. SIGNS Each	844 SIGNS FLAT SHEET Sq. Ft.	844 SIGNS EXTRU. TYPE Sq. Ft	844 CONC. EMBEDDED FDNS. Cu. Yd.	844 CONC. ANCHOR BASE FDNS. Cu. Yd.	844 SUPPORTS 4 LB. BEAM AS PER PLAN Lin. Ft.	844 SUPPORTS 3 Lb POST Lin. Ft.	844 SUPPORTS 6 Lb BEAM Lin. Ft.	202 REMOVAL GM. SIGNS Each	202 REMOVAL GM. SUPP. Each ≤8 lb.	202 REMOVAL GM. SUPP. Each >8 lb.	202 REMOVAL GM. INSTALL. Each	620 DELIN. AS PER PLAN Each	POLE MOUNTED SIGN ATTACHMENT. Each	BRIDGE CONNECTION FOR SMALL SIGNS Each
70		Ramp E-1								MINOR MAJOR								MINOR	MAJOR			MINOR			
		1+00 Rt.	R-15B	30"x30"							6.25														
		3+50 Lt.	W-52-48	48"x48"	17.50	18.50					16.0				36.0										
		4+39 Lt.	W-60D-48	48"x48"							16.0							1						1	
		7+94 Rt.																				1			
		Ramp E-2																							
		3+09 Rt.																1							
		7+50 Rt.	R-41A-36	36"x24"			14.0				6.0					14.0									
		7+50 Lt.	R-41A-36	36"x24"			14.0				6.0					14.0									
		10+40 Rt.	R-2-48	48"x48"x48"			15.5				6.9					15.5						1			
		10+00 Lt.	R-41B-36	36"x36"			15.5				9.0					15.5									
		Ramp E-3																							
		2+07 Lt.	W-49R-36	36"x36"			17.25				9.0					17.25		1							
		0+55 Rt					14.5			1						14.5									
		1+87 Rt.					15.0			1						15.0									
		Ramp E-4																							
		1+90 Rt.																1							
		6+50 Rt.	R-41A-36	36"x24"			14.0				6.0					14.0									
		6+50 Lt.	R-41A-36	36"x24"			14.0				6.0					14.0									
		7+08 Lt.																1							
		8+79 Rt.	R-41B-36	36"x36"			15.0				9.0					15.0		1							
		4+17 Lt.					15.0			1						15.0									
		Ramp E-6																							
		1+77 Rt.								1															
		5+50 Rt.																						2	
		6+06 Lt.								2															
		8+12 Lt.																1							
		8+20 Rt.	R-41A-36	36"x24"			14.0				6.0					14.0									
		8+20 Lt.	R-41A-36	36"x24"			14.0				6.0					14.0									
		9+50 Rt.	R-41B-36	36"x36"			15.0				9.0					15.0									
		3+82 Lt.					15.0			1						15.0									
		Ramp E-8																							
		3+50 Lt.								2										1					
		5+00 Lt.			20.5	21.0									41.5										
		5+00 Rt.	R-14-Spec.	48"x48"	20.5	21.0					16.0				41.5										
			R-143-Spec.	36"x36"							9.0														
		Ramp E-9																							
		0+40 Rt.	W-13-36	36"x36"							9.0													1	
			W-143-24	24"x24"							4.0													1	
		Ramp E-10																							
		16+55 Rt.																1							
		Ramp E-14																							
		2+49 Rt.								1															
		9+00 Rt.	R-81A-36	36"x24"			14.0				6.0					14.0									
		9+00 Lt.	R-41A-36	36"x24"			14.0				6.0					14.0									
		10+27 Rt.	R-41B-36	36"x36"							9.0														
		Ramp E-15																							
		0+00 Lt.	R-15B	30"x30"			14.5				6.25					14.5									
		9+22 Rt.	R-2-48	48"x48"x48"							6.9							1							1
		11+66 Rt.			18.0	19.0				1					37.0										
		19+67 Rt.														17.0		1							
		17+44 Rt.					17.0			1															
		Ramp E-17																							
		1+05 Rt.								1															
		2+00 Rt.																						1	
		7+37 Lt.																2							
		9+42 Rt.	R-41A-36	36"x24"			14.0				6.0					14.0									
		9+42 Lt.	R-41A-36	36"x24"			14.0				6.0					14.0		1							
		10+78 Rt.	R-41B-36	36"x36"							9.0														
Sheet Total Cost Participation I										13	210.30				156.0	309.25		13	1		2		6		1
Sheet Total										13	210.30				156.0	309.25		13	1		2		6		1

NOTE:
All quantities on this sheet are in Project Cuy-90-1(10)29.

MADE G.F.M. DATE 10-21-75
TRACED T.J. DATE 11-4-75
CHECKED M.E.E. DATE 10-31-77
SCALE ~

Howard, Needles, Tammen & Bergendoff
CONSULTING ENGINEERS
CLEVELAND, OHIO

HNTB

SIGNING SUB-SUMMARIES

FHWA REGION	STATE	PROJECT	
5	OHIO		

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CUYAHOGA COUNTY
CUY-77-14.12
CUY-90-16.21

QUANTITY CALCULATIONS
MADE BY G.F.M. DATE 10-31-75
CHECKED BY D.S.P. DATE 4-13-77

REGULATORY AND WARNING SIGN SUB-SUMMARY

SHEET NO.	SIGN NO.	STATION	CODE NO.	SIGN SIZE	DIMENSIONS SEE DETAIL 'A' SHEET NO. 92 (Lin. Ft.) A	B	C	D	E	REMOVE & REERECT G.M. SIGNS Each MINOR	MAJOR	844 SIGNS FLAT SHEET Sq. Ft.	EXTRU. TYPE Sq. Ft	844 CONC. EMBEDDED FDNS. Cu. Yd.	844 CONC. ANCHOR BASE FDNS. Cu. Yd.	844 SUPPORTS 4LB. BEAM AS PER PLAN Lin. Ft.	3 Lb POST Lin. Ft.	6 Lb BEAM Lin. Ft.	202 REMOVAL GM. SIGNS Each MINOR	MAJOR	REMOVAL GM. SUPP. Each ≤8 lb	>8 lb	REMOVAL GM. INSTALL. Each	620 DELIN. AS PER PLAN Each	POLE MOUNTED SIGN ATTACHMENT. Each	BRIDGE CONNECTION FOR SMALL SIGNS Each
70 (Continued)																										
	Ramp E-18																									
		2+50 Rt.	R-15B	30"x30"			14.5					6.25					14.5										
		6+82					15.0			1							15.0										
	East 14th St.																									
		10+72 Rt.	W-49R-36	36"x36"			17.25					9.0					17.25		1								
	East Broadway																									
		6+44 Lt.	X-1	18"x18"			14.0					2.25					14.0						1				
	West Broadway																									
		46+00 Rt.	R-2-36	36"x36"x36"			14.5					3.9					14.5										
	East 9th St.																									
		13+80 Lt.	R-41B-36	36"x36"								9.0													1		
			W-49R-36	36"x36"								9.0							1						1		
	I-90																									
		48+50 Lt.																	1							
		49+46 Lt.																	1							
		51+47 Lt.	R-2-60	60"x60"x60"								10.8							1							
		51+68 Rt.																	1							
		54+00 Rt.	W-97-48	48"x60"								20.0													1		
		54+50 Lt.	W-49R-48	48"x48"	18.5	19.0						16.0				37.5											
		58+54 Rt.																	1							
		62+25 Lt.	W-49R-48	48"x48"	18.5	19.0						16.0				37.5											
		61+65 Rt.																							1		
	Ramp E-7																									
		5+46 Rt.					17.50			1																	
	I-77																									
		45+60 Rt.																							1		
71	Ramp E-5																									
		1+50 Rt.	R-15B	30"x30"			14.5					6.25					14.5										
		5+00 Lt.					17.0			1							17.0										
	Ramp E-8																									
		10+50 Rt.	W-49R-30	30"x30"			16.5					6.25					16.5										
	Ramp E-9																									
		6+32 Rt.								1									1							
		5+31 Lt.								1																1	
		5+62 Rt.								1																1	
	Ramp E-10																									
		0+40 Rt.								1																	
		1+46 Rt.																	1							
		4+62 Rt.																	2							
		5+37 Rt.																	2							
	Ramp E-11																									
		4+19 Lt.					14.0			1							14.0		1							
		4+20 Rt.	R-41A-36	36"x24"			14.0					6.0					14.0										
		6+43 Lt.	R-41B-36	36"x36"	15.5	15.5						9.0				31.0								1			
		6+60 Rt.	R-41B-36	36"x36"						2		9.0											1		1		
		6+61 Rt.	R-2-48	48"x48"x48"			15.5					6.9					15.5							1			
		6+73 Rt.	R-2-48	48"x48"x48"			15.5					6.9					15.5							1			
	Ramp E-13																									
		1+14 Rt.					14.5			1							14.5					1					
		4+32 Rt.																					1				
	Ramp E-16																									
		6+27 Rt.			18.0	18.5				1						36.50											
		3+48 Rt.	W-2-36	36"x36"			16.25					9.0					16.25						1				
		3+98 Lt.					17.0			1							17.0										
Sheet Total Cost Participation I										12		161.50				142.5	230.00		14			1	6		6	2
Sheet Total Cost Participation II																											
Sheet Total										12		161.50				142.5	230.00		14			1	6		6	2

Note:
All quantities are included Project I-90-1(101)29.

MADE G.F.M. DATE 10-21-75
TRACED T.F. DATE 11-3-75
CHECKED M.E.E. DATE 10-31-75
SCALE ~

Howard, Needles, Tammen & Bergendoff
CONSULTING ENGINEERS
CLEVELAND, OHIO

HNTB

SIGNING SUB-SUMMARIES

FHWA REGION	STATE	PROJECT	
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CUYAHOGA COUNTY
CUY-77-14.12
CUY-90-16.21

QUANTITY CALCULATIONS
MADE BY G.F.M. DATE 10-21-75
CHECKED BY D.S.P. DATE 4-13-77

REGULATORY AND WARNING SIGN SUB-SUMMARY

SHEET NO.	SIGN NO.	STATION	CODE NO.	SIGN SIZE	DIMENSIONS SEE DETAIL 'A' SHEET NO. 92 (Lin. Ft.) A	B	C	D	E	REMOVE & REERECT G.M. SIGNS Each MINOR	MAJOR	844 SIGNS FLAT SHEET Sq. Ft.	EXTRU. TYPE Sq. Ft.	844 CONC. EMBEDDED FDNS. Cu. Yd.	844 BREAKAWAY CONN GA	844 SUPPORTS 4LB. BEAM AS PER PLAN Lin. Ft.	3 Lb POST Lin. Ft.	5X7.7 Lin. Ft.	202 REMOVAL GM. SIGNS Each MINOR	MAJOR	REMOVAL GM. SUPP. Each ≤8 lb	>8 lb	REMOVAL GM. INSTALL. Each	620 DELIN. AS PER PLAN Each	POLE MOUNTED SIGN ATTACHMENT. Each
T1 (Continued)																									
	East 14th St.																								
		2+18 Rt.	X-1	18"x18"			14.0					2.25							1						
		7+48 Lt.																	1						
	Service Rd.																								
		7+60 Lt.	R-2-48	48"x48"x48"			15.5					6.9					15.5		1						
			R-41A-36	36"x24"								6.0													
		7+70 Rt.	R-2-48	48"x48"x48"			15.5					6.9					15.5		1						
			R-41A-36	36"x24"								6.0													
	Ramp No. 3																								
		7+00 Rt.	R-41A-36	36"x24"			14.0					6.0					14.0								
		7+00 Lt.	R-41A-36	36"x24"			14.0					6.0					14.0								
		7+30 Lt.																	1						
	I-90																								
		69+66 Rt.			19.25	19.75				2						39.0									
		66+85 Rt.																	1						
		74+30 Lt.																							1
		98+38 Rt.	R-7B-48	48"x96"	20.0	20.0						32.0	32.0	0.54	2			40.0					1		
		107+44 Rt.			17.25	17.75				2						35.0									
T2	Ramp No. 4																								
		4+27 Rt.																	1						
		5+00 Rt.	W-32-36	96"x48"	16.0	16.0						32.0	32.0	0.54	2			32.0							
		6+01 Rt.																	1						
		6+50 Lt.	W-13-36	36"x36"	17.75	18.5						9.0				36.5									
			W-143-24	24"x24"								4.0													
		7+50 Rt.	R-15B	30"x30"			15.5					6.25					15.5								
	Ramp No. 5																								
		0+38 Lt.			16.25	16.75				1				0.27	1	33.0									
		6+00 Rt.	W-32-48	48"x24"	14.0	14.0						8.0					28.0		1						
		6+56 Rt.	R-121-24	24"x24"			15.5					4.0					15.5						1		
		0+86 Rt.			15.75	16.25				1						32.0									
	Ramp No. 6																								
		4+80 Rt.	W-2-36	36"x36"			16.25					9.0					16.25								
		5+78 Lt.	R-41A-36	36"x24"			12.0			1		6.0					12.0								1
		5+83 Rt.	R-41A-36	36"x24"								6.0													
		7+17 Lt.					16.5			3						16.5					1				
		7+17 Rt.					18.0			5						18.0					1				
		3+60 Lt.			15.25	16.75				3						31.0									
	Ramp No. 7																								
		6+50 Lt.	R-41A-36	36"x24"			14.0					6.0					14.0								
		6+50 Rt.	R-41A-36	36"x24"			14.0					6.0					14.0								
		7+91 Lt.	R-121-24	24"x24"			20.0			1		4.0				20.0			1		1				
			R-43L-36	36"x15"								3.75													
			R-41B-36	36"x36"								9.0													
		7+91 Rt.	R-41B-36	36"x36"			16.5			2		9.0				16.5			1		1				
		1+08 Rt.			15.75	16.25				1						32.0									
	Ramp No.8																								
		0+56 Lt.			16.75	17.25				1						34.0									
		4+08 Lt.					17.75			1							17.75				1				
		4+08 Rt.					17.75			1							17.75				1				
		5+47 Rt.					12.5			1							12.5								
		6+66 Rt.					13.5			1							13.5								
	Ramp No.9																								
		1+20			16.75	16.25				1						32.0									
		8+65 Lt.					14.5			1							14.5					1			
	Ramp No.10																								
		0+36 Lt.			14.75	16.25				1						30									
		3+06 Rt.	W-13-30	30"x30"	15.75	16.25				1		6.25				32			1						
		5+10 Rt.					14.0			2							14.0								
		8+18 Lt.					14.5			1							14.5					1			
	Ramp No.10 Connection																								
		7+30 Lt.					14.5					6.25					14.5								
		8+60 Lt.					14.0			1							14.0								
Sheet Total Cost Participation I										35		174.55	64.0	1.35	5	437.5	321.25	72.0	12		6	2	2		2
Sheet Total										35		174.55	64.0	1.35	5	437.5	321.25	72.0	12		6	2	2		2

Note:
All quantities in this sheet included Project Cuy-90-1(101)29.

MADE G.F.M. DATE 10-24-75
TRACED T.S. DATE 11-4-75
CHECKED M.E.E. DATE 10-31-75
SCALE —

Howard, Needles, Tammen & Bergendoff
CONSULTING ENGINEERS
CLEVELAND, OHIO

HNTB

SIGNING SUB-SUMMARIES

FHWA REGION	STATE	PROJECT	
5	OHIO		

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CUYAHOGA COUNTY
CUY-77-14.12
CUY-90-16.21

QUANTITY CALCULATIONS
MADE BY GFM DATE 10-24-75
CHECKED BY DSP DATE 11-20-75

REGULATORY AND WARNING SIGN SUB-SUMMARY

SHEET NO.	SIGN NO.	STATION	CODE NO.	SIGN SIZE	DIMENSIONS SEE DETAIL 'A' SHEET NO. 92 (Lin. Ft.) A	B	C	D	E	REMOVE & REERECT G.M. SIGNS Each MINOR	MAJOR	844 SIGNS FLAT SHEET Sq. Ft.	EXTRU. TYPE Sq. Ft	844 CONC. EMBEDDED FDNS. Cu. Yd.	844 BREAKAWAY CONN. EACH	844 SUPPORTS 4LB. BEAM AS PER PLAN Lin. Ft.	3 Lb POST Lin. Ft.	5"X7" Lin. Ft.	202 REMOVAL GM. SIGNS Each MINOR	MAJOR	REMOVAL GM. SUPP. Each ≤ 8 lb	> 8 lb	REMOVAL GM. INSTALL. Each MINOR	MAJOR	620 DELIN. AS PER PLAN Each	POLE MOUNTED SIGN ATTACHMENT Each
72 (Cont.)		Ramp No. 11																								
		4+53					13.0			1							13.0									
		1+47 Rt.								1																
		3+70 Lt.	W-1-30	30"x30"			18.5					6.25					15.5									
		7+30 Rt.	R-41A-36	36"x24"			14.0					6.0					14.0									
		8+94 Rt.																						1		
		Prospect Ave.																								
		9+30 Lt.	W-98-48	48"x60"								20.0														1
		I-90																								
		116+66 Lt.			18.25	18.75				2						37										
		120+10 Lt.			16.75	16.25				1						32										
		122+87 Lt.			18.25	18.75				2						37										
		131+17 Lt.			18.25	18.75				2						37										
		110+31 Lt.	R-7B-48	48"x96"	20.0	20.0							32	0.54	2			40.0						1		
		115+87 Lt.																	1							
		117+15 Rt.																	1							
		118+85 Rt.																	1							
		124+40 Lt.																	1							
		129+10 Rt.																						1		
		133+25 Lt.																								1
		131+00 Rt.			16.75	16.25				2						32										
73		Ramp No. 9																								
		0+16 Rt.																	1							
		Ramp No. 12																								
		6+00 Rt.	R-41A-36	36"x24"								6.0														
		6+43 Lt.								1																
		6+50 Lt.	R-31Spec.	36"x30"			14.5					7.5					14.5									
		7+66 Lt.	R-41B-36	36"x36"			16.5			1		9.0				16.5					1					
		7+66 Rt.	R-41B-36	36"x36"						1		9.0				16.5					1					
			R-43L-36	36"x15"								3.75														
			R-43R-36	36"x15"								3.75														
		7+68 Lt.								2																
		Ramp No. 13																								
		5+50 Lt.	R-15B	30"x30"			14.5					6.25					14.5									
		7+39 Rt.								1																
		7+39 Lt.					17.0										17.0									
		0+90					14.0			1							14.0									
		Ramp No. 14																								
		1+80 Lt.																	1							
		4+05 Lt.																	1							
		6+02 Lt.	R-41A-36	36"x24"			14.0					6.0					14.0									
		6+02 Rt.	W-49R-30	30"x30"			16.5					6.25					16.5							1		
			R-41A-36	36"x24"								6.0														
		7+62 Rt.	R-41B-36	36"x36"			16.5			2		9.0				16.5						1				
		Ramp No. 16																								
		8+67 Lt.	W-49R-30	30"x30"			16.5					6.25					16.5		2							
		9+60 Lt.	R-15B	30"x30"			14.5			2		6.25				14.5										1
		1+46 Lt.			14.75	15.25				1						30.0										
		5+66 Lt.			14.75	15.25				1						30.0										
		East 26th St.																								
		0+43 Rt.	R-41B-36	36"x36"			16.0			2		9.0				16.0					1					
		0+48 Lt.	R-41B-36	36"x36"			16.0			2		9.0				16.0						1				
		0+95 Lt.																						1		
		1+67 Lt.			18.25	18.75				2						37					1					
Sheet Total Cost Participation I										30		135.75	32	0.54	2	368	149.5	40	9		4	2	5			3

NOTE:
All quantities on this sheet are Cost Participation I.

MADE GFM DATE 10-24-75
TRACED TS DATE 11-5-75
CHECKED MEE DATE 10-31-75
SCALE —

Howard, Needles, Tammen & Bergendoff
CONSULTING ENGINEERS
CLEVELAND, OHIO

HNTB

SIGNING SUB-SUMMARIES

FHWA REGION	STATE	PROJECT	
5	OHIO		

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CUYAHOGA COUNTY
CUY-77-14.12
CUY-90-16.21

QUANTITY CALCULATIONS
MADE BY GFM DATE 10-24-75
CHECKED BY DSP DATE 11-20-75

REGULATORY AND WARNING SIGN SUB-SUMMARY

SHEET NO.	SIGN NO.	STATION	CODE NO.	SIGN SIZE	DIMENSIONS SEE DETAIL 'A' SHEET NO. 92 (Lin. Ft.) A	B	C	D	E	REMOVE & REERECT G.M. SIGNS Each MINOR	MAJOR	844 SIGNS FLAT SHEET Sq. Ft.	EXTRU. TYPE Sq. Ft	844 CONC. EMBEDDED FDNS. Cu. Yd.	844 BREAKAWAY COMN	844 SUPPORTS 4LB. BEAM AS PER PLAN Lin. Ft.	3 Lb POST Lin. Ft.	5#X7.7 Lin. Ft.	202 REMOVAL GM. SIGNS Each MINOR	MAJOR	REMOVAL GM. SUPP. Each ≤ 8 lb	> 8 lb	REMOVAL GM. INSTALL. Each	620 DELIN. AS PER PLAN Each		POLE MOUNTED SIGN ATTACHMENT. Each
73 (Continued)																											
		East 26th Connection																									
		5+47 Lt.	R-41A-36	36"x24"			14.0					6.0					14.0										
		5+47 Rt.	R-41A-36	36"x24"			14.0					6.0					14.0		1								
		6+54 Rt.																	1								
		6+54 Lt.	R-2-36	36"x36"x36"			15.0					3.9					15.0										
		6+54 Lt.	R-41B-36	36"x36"			15.0					9.0					15.0										
		East 30th Connection																									
		6+50 Lt.	R-41A-36	36"x24"			14.0					6.0					14.0										
		6+50 Rt.	R-41A-36	36"x24"			14.0					6.0					14.0										
		Ramp No. 15																									
		7+27 Rt.					13.5			1							13.5										
		East 33 rd. Connection																									
		9+00 Lt.	R-15B	30"x30"			14.5					6.25					14.5										
		I-90																									
		135+87 Lt.																		1							
		136+85 Rt.																		1							
		139+00 Rt.																		1							
		141+85 Lt.								2																	
		143+50 Lt.			18.5	19.0										37.5											
		146+02 Lt.	R-7B-48	48"x96"	20.0	20.0							32.0	0.54	2			40.0						1			
		148+65 Rt.																		1							
		154+96 Lt.																		1							
		155+04 Rt.																		1							
		158+89 Lt.																		1							
		152+20 Rt.			18.25	18.75				2						37											
74		Ramp No. 18																									
		6+36 Lt.	R-41A-36	36"x24"			14.0					6.0					14.0							1			
		6+36 Rt.	R-41A-36	36"x24"			14.0					6.0					14.0										
		9+20 Lt.	R-2-36	36"x36"x36"			15.0					3.9					15.0							1			
			R-41B-36	36"x36"								9.0															
		9+35 Rt.	R-2-36	36"x36"x36"			15.0					3.9					15.0		1								
			R-41B-36	36"x36"								9.0															
		1+09 Rt.					15.5			1							15.5										
		East 33rd Connection																									
		(C)&(D) 8+52 Lt.					17.5			2						17.5			2		1						
		(A)&(B) 8+52 Rt.					17.5			2						17.5			2		1						
		I-90																									
		160+86 Rt.																	1								
		165+10 Rt.																	1								
		166+80 Lt.																	1								
		167+10 Rt.																	1								
		169+48 Lt.	R-7B-48	48"x96"	20.0	20.0							32.0	0.54	2			40.0						1			
		169+81 Rt.			13.75	19.25				2**						28**						1**					
		169+82 Rt.			20.75	20.75				2**				0.54	2			41.5**				1**					
		174+43 Rt.																									
	(33)	74+00 Rt.	W-39L-120	10'-0"x11'-0"								110.0**															
	(56)	161+00 Rt.	W-99R-120	10'-0"x11'-0"								110.0**															
		Ramp 17																									
		4+47 Rt.					13.0			1							13.0										
		6+43 Rt.					14.0			1							14.0										
		8+40 Rt.					13.5			1							13.5										
Sheet Total Cost Participation I										13		80.25	64.0			109.5	228.0	80	18		2		4			
Sheet Total Cost Participation III										4		220.00				28.0		41.5			2					
Sheet Total										17		300.25	64.0			137.5	228.0	121.5	18		4		4			

NOTE:
** Indicates Cost Participation III.

MADE GFM DATE 10-24-75
TRACED TS DATE 11-5-75
CHECKED MEE DATE 10-31-75
SCALE —

Howard, Needles, Tammen & Bergendoff
CONSULTING ENGINEERS
CLEVELAND, OHIO

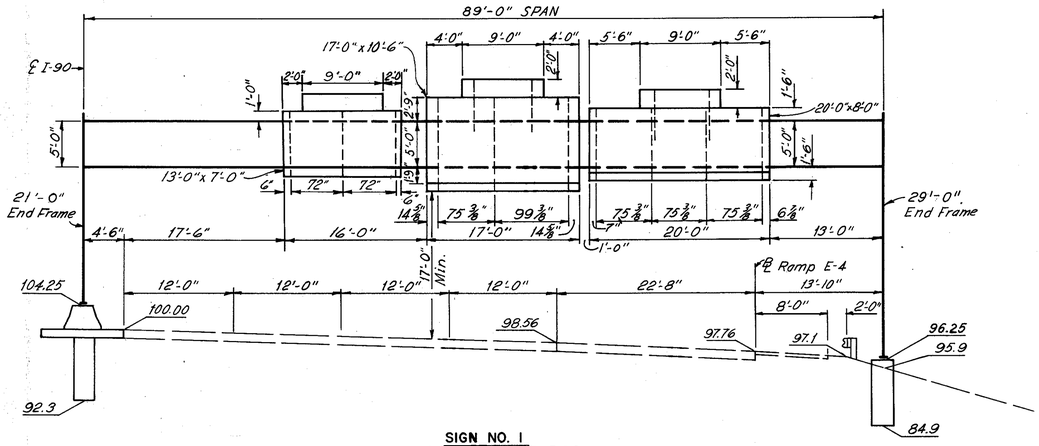
HNTB

SIGN SUPPORT DETAILS

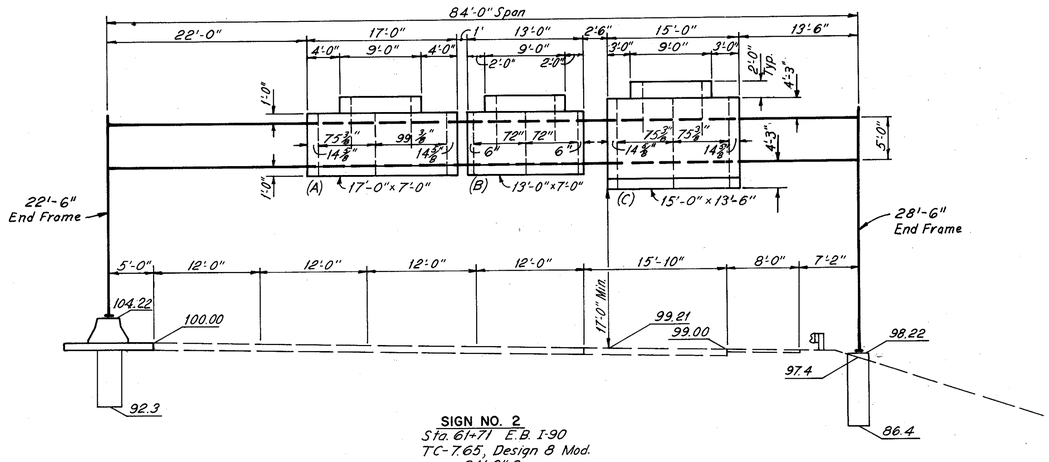
FHWA REGION	STATE	PROJECT	
5	OHIO		

80
169

CUYAHOGA COUNTY
CUY-77-14.12
CUY-90-16.21



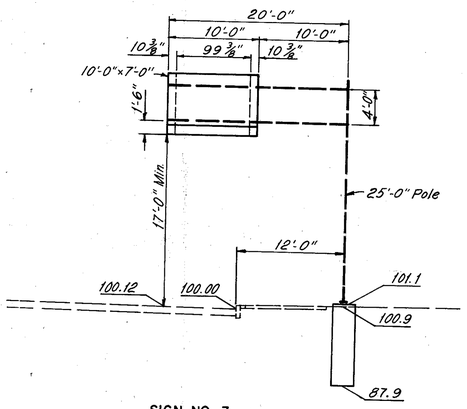
SIGN NO. 1
Sta. 56+65 E.B. I-90
TC-7.65, Design 8 Mod.
89'-0" Span



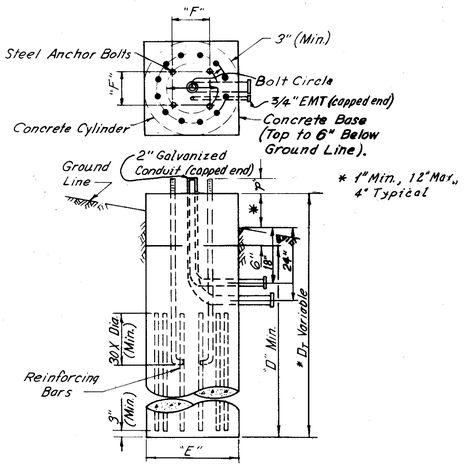
SIGN NO. 2
Sta. 61+71 E.B. I-90
TC-7.65, Design 8 Mod.
84'-0" Span

SIGN NO.	DIM "D" MIN	DIM E	DIM F	DIM P	BOLT CIRCLE	ANCHOR BOLT SIZE	REINF. BARS SIZE	REINF. BARS NO.
3	13"	3'-0"	18"	9⅜"	25½"	2¼"x 120"	1⅛"	12

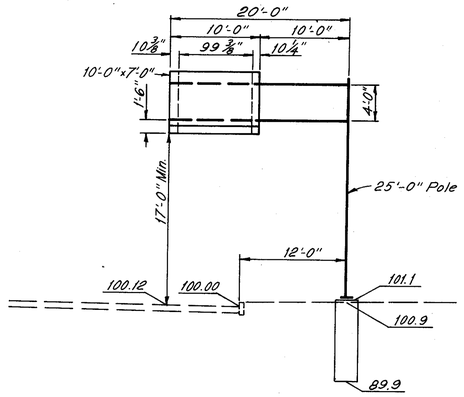
NOTE:
PRIOR TO CONSTRUCTING THE FOUNDATION FOR RELOCATED OVERHEAD SIGN SUPPORT , THE CONTRACTOR SHALL FIELD VERIFY BOLT CIRCLE DIMENSIONS, THE ANCHOR BOLT DIAMETERS, AND DIMENSION "P" FOR BASE PLATES OF OVERHEAD SIGN SUPPORTS BEING RELOCATED.



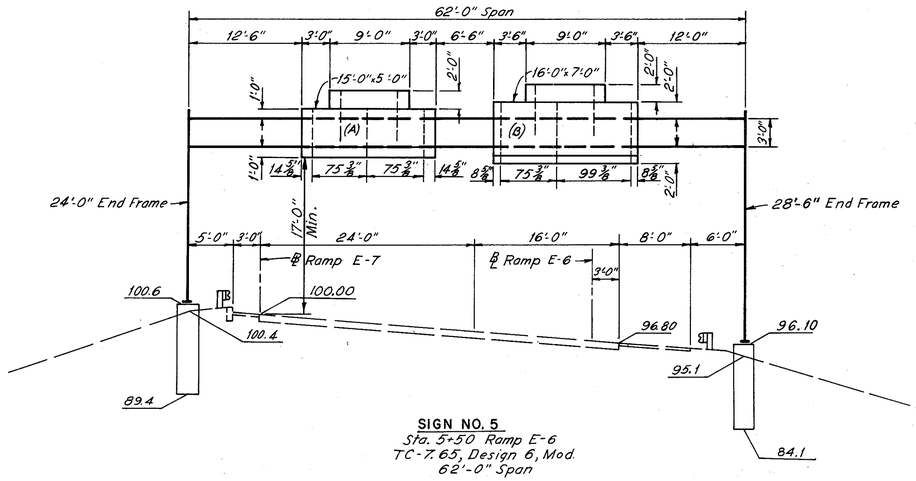
SIGN NO. 3
Sta. 0+00 ℄ Ramp E-3
Existing Support Relocated
from Sta. 20+40 I-90
(Cost Participation II)



FOUNDATION DETAIL
Existing Support
Type 12.24



SIGN NO. 4
Sta. 0+70 ℄ Ramp E-3 Conn.
Std. TC-12.30 Design 4 Mod.
20'-0" Arm



SIGN NO. 5
Sta. 5+50 Ramp E-6
TC-7.65, Design 6, Mod.
62'-0" Span

MADE GFM DATE 10-29-75
TRACED JPK DATE 11-3-75
CHECKED DSP DATE 11-4-75
SCALE No Scale

Howard, Needles, Tammen & Bergendoff
CONSULTING ENGINEERS
CLEVELAND, OHIO

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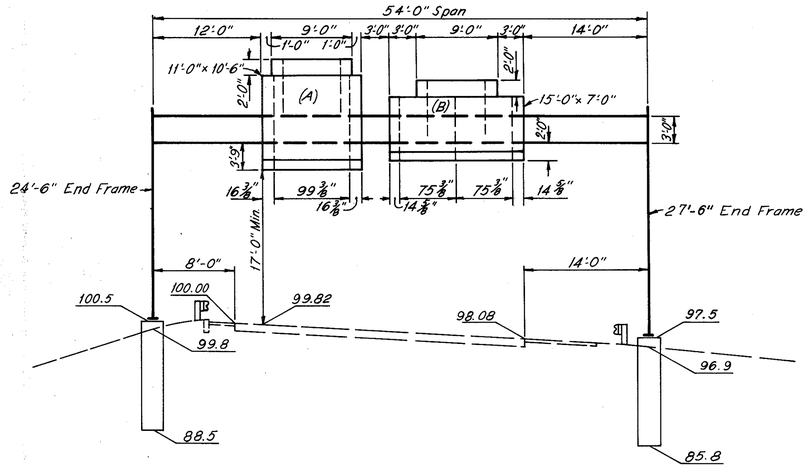
SIGN SUPPORT DETAILS

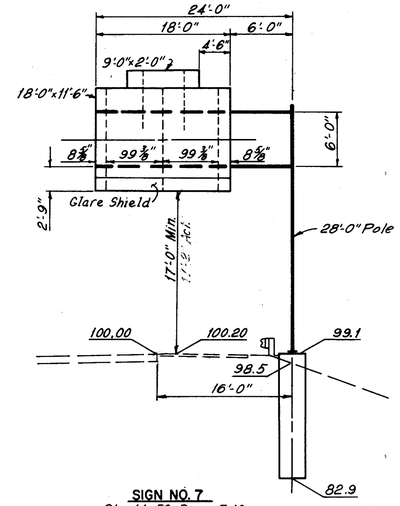
FHWA REGION	STATE	PROJECT	
5	OHIO		

81
169

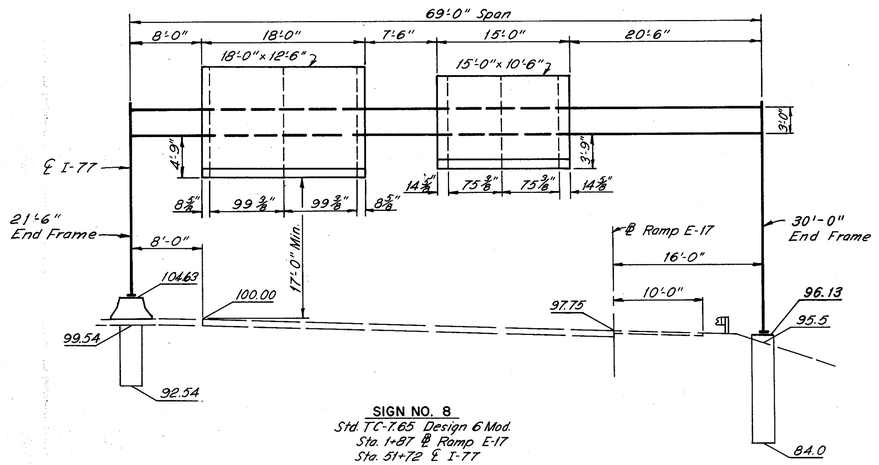
CUYAHOGA COUNTY
CUY-77-14.12
CUY-90-16.21



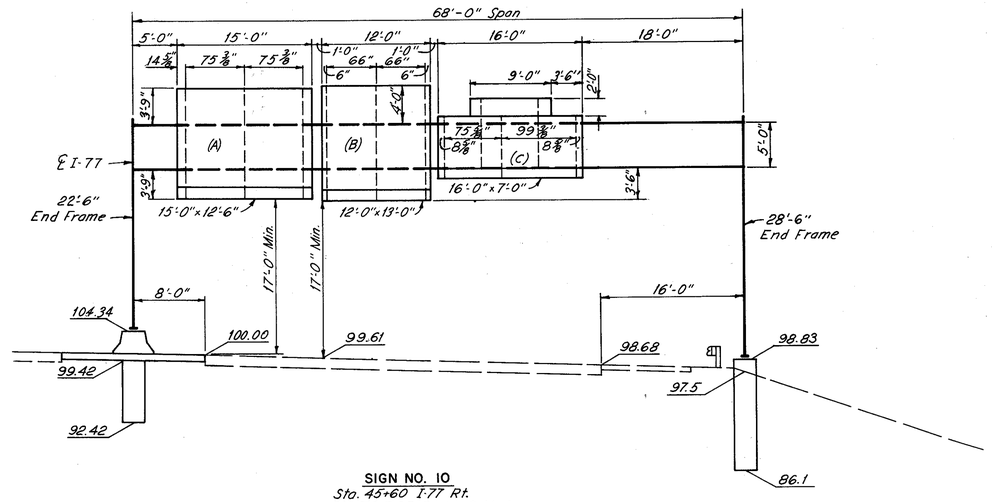
SIGN NO. 6
Sta. 0+40 ℄ Ramp E-9
Std. TC-7.65 Design 6 Mod.
54'-0" Span



SIGN NO. 7
Sta. 14+50 Ramp E-10
Std. TC-12.30 Design No. 9 Mod.
24'-0" Arm



SIGN NO. 8
Std. TC-7.65 Design 6 Mod.
Sta. 1+87 ℄ Ramp E-17
Sta. 51+72 ℄ I-77
69'-0" Span



SIGN NO. 10
Sta. 45+60 I-77 Rt.
Sta. TC-7.65 Design 8 Mod.
68'-0" Span

Note: 1. There is no reference to a Sign No. 9 in these plans.

MADE GFM DATE 10-29-76
TRACED JPK DATE 11-3-76
CHECKED DSP DATE 11-4-76
SCALE No Scale

Howard, Needles, Tammen & Bergendoff
CONSULTING ENGINEERS
CLEVELAND, OHIO

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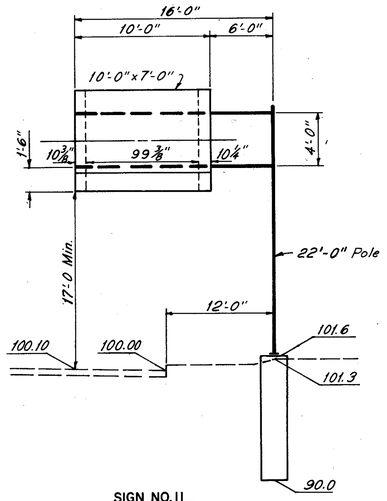
SIGN SUPPORT DETAILS

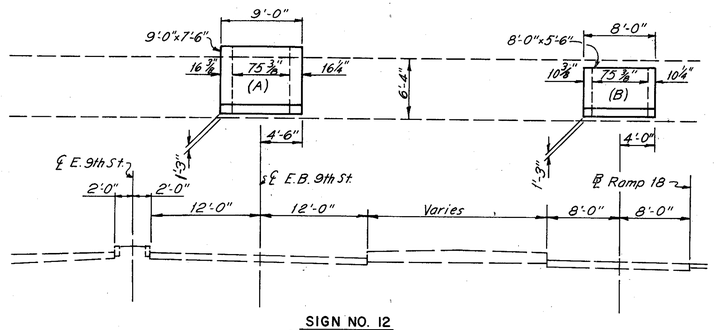
FHWA REGION	STATE	PROJECT	
5	OHIO		

82
169

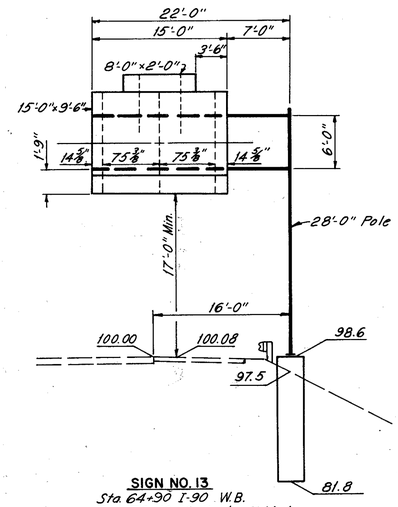
CUYAHOGA COUNTY
CUY-77-14.12
CUY-90-16.21



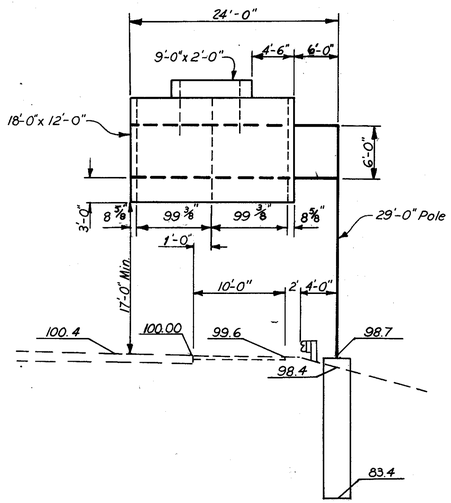
SIGN NO. 11
Sta. 1+00 Broadway E.B.
Std. TC-12.30 Design 2 Mod.
16'-0" Arm



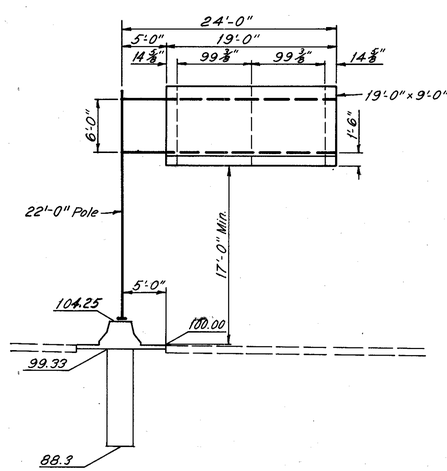
SIGN NO. 12
Sta. 8+75 E. 9th St.
(2) TC-18.24



SIGN NO. 13
Sta. 64+90 I-90 W.B.
Std. TC-12.30 Design 7 Mod.
22'-0" Arm



SIGN NO. 14
Sta. 68+25 I-90EB
Std. TC-12.30, Design 9 Mod.
24'-0" Arm



SIGN NO. 15
Sta. 70+00 I-90 E.B.
Std. TC-12.30, Design 7 Mod.
24'-0" Arm
See Sheet 44A for median foundation detail.

MADE GFM DATE 10-31-75
TRACED UPK DATE 11-5-75
CHECKED DSP DATE 11-7-75
SCALE No Scale

Howard, Needles, Tammen & Bergendoff
CONSULTING ENGINEERS
CLEVELAND, OHIO

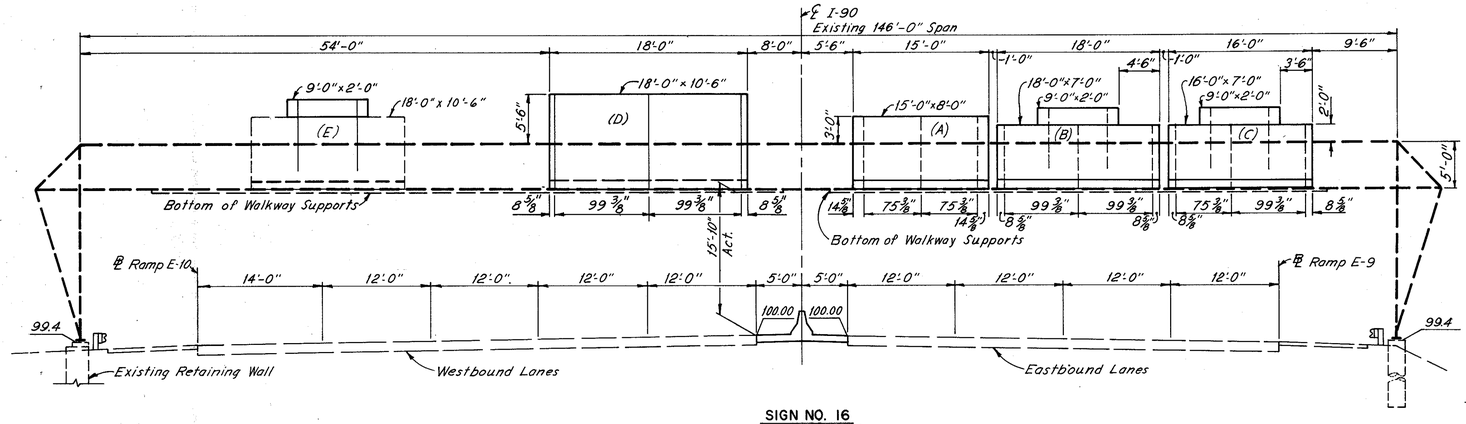
HNTB

SIGN SUPPORT DETAILS

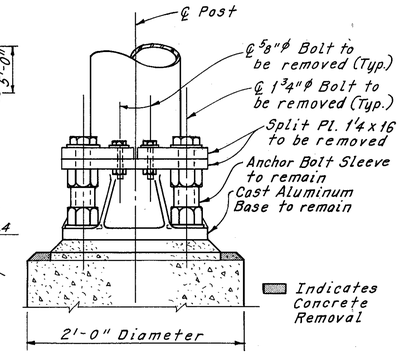
FHWA REGION	STATE	PROJECT	
5	OHIO		

83
169

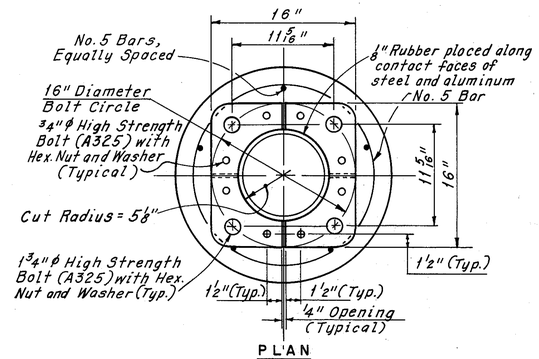
CUYAHOGA COUNTY
CUY-77-14.12
CUY-90-16.21



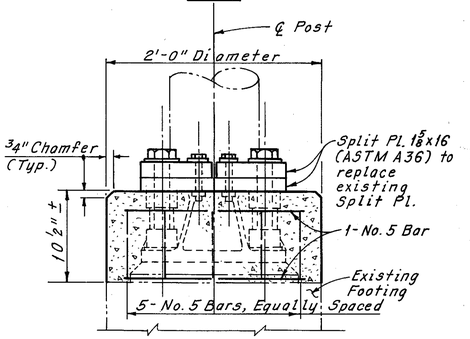
SIGN NO. 16
Sta. 74+20 I-90
Existing Sign Bridge



EXISTING POST BASE DETAIL
SIGN NO. 16

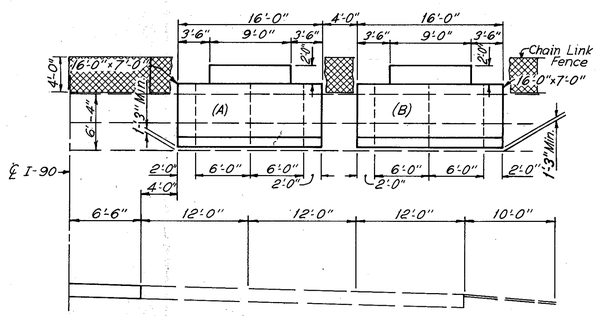


PLAN

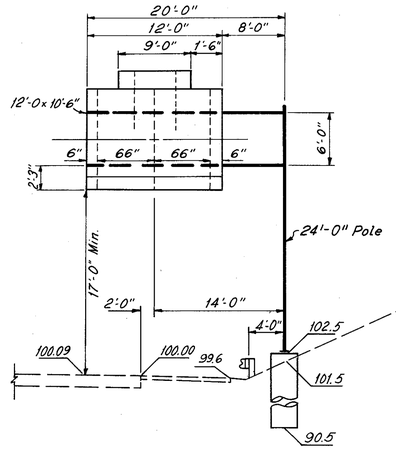


ELEVATION

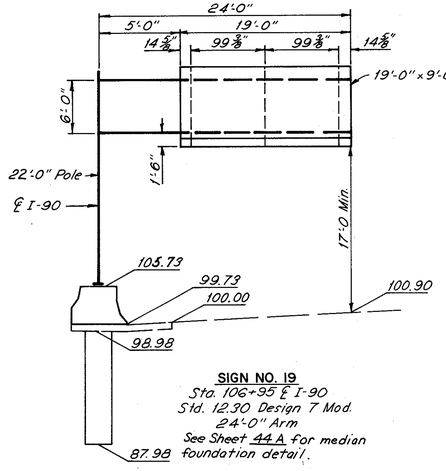
MODIFIED POST BASE DETAIL
SIGN NO. 16



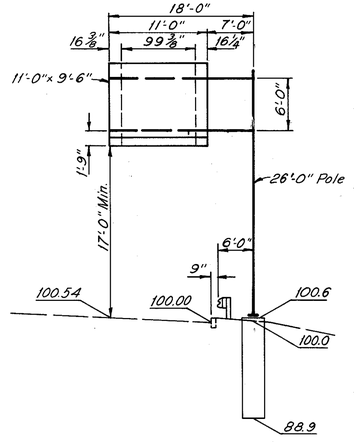
SIGN NO. 17
Sta. 99+30 I-90
2-TC-18.26 Design 7 Mod.



SIGN NO. 18
Sta. 102+33 W.B. I-90
TC-12.30, Design 5 Mod.,
20'-0" Arm



SIGN NO. 19
Sta. 106+95 ℄ I-90
Std. 12.30 Design 7 Mod.
24'-0" Arm
See Sheet 44A for median foundation detail.



SIGN NO. 20
Sta. 0+60 ℄ Ramp E-5
Std. TC-12.30 Design 5 Mod.
18'-0" Arm

Notes: (Sign No. 16)

All new structural steel shall be galvanized according to 711.02 and shall be painted in accordance with Item 514.

New concrete shall be non-shrink epoxy grout (Sika-Dur Hi Mod, Fel-Pro FP132 or equal).

Surfaces between new and existing concrete shall be coated with Polysulfide Epoxy adhesive. The adhesive shall be Thiobond No. 100, Ceilcoat 348 Adhesive, Resiweld R-7680-G or adhesive meeting the requirements of AASHTO M-235-73 I.

Modification of the post base shall be performed when the temperature is about 60° F. and when the wind velocity is low.

The following abbreviation is used:

Typ. = Typical

Payment to repair the (4) existing pole bases, as detailed on this sheet, shall include all labor, equipment and material to complete the work for Item 844 - Repair Anchor Base Foundation, As Per Plan, Cost Participation III.

MADE M.E.E. DATE 11-19-75
TRACED J.P.K. DATE 11-19-75
CHECKED D.S.P. DATE 11-20-75
SCALE No Scale

Howard, Needles, Tammen & Bergendoff
CONSULTING ENGINEERS
CLEVELAND, OHIO

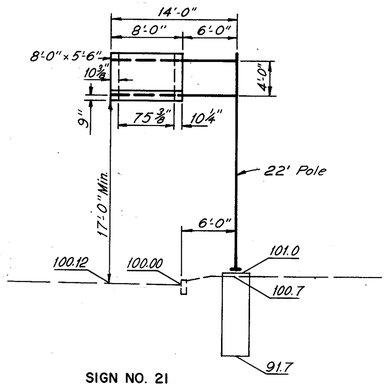
HNTB

SIGN SUPPORT DETAILS

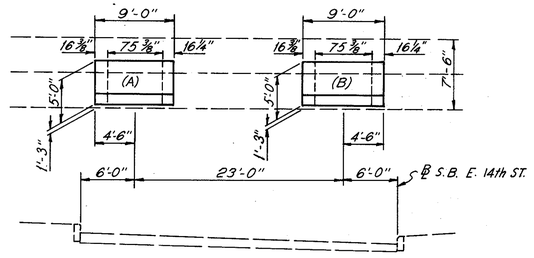
FHWA REGION	STATE	PROJECT	
5	OHIO		

84
169

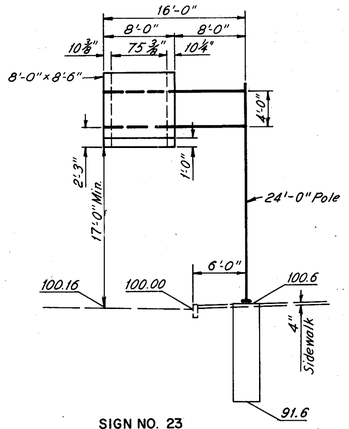
CUYAHOGA COUNTY
CUY-77-14.12
CUY-90-16.21



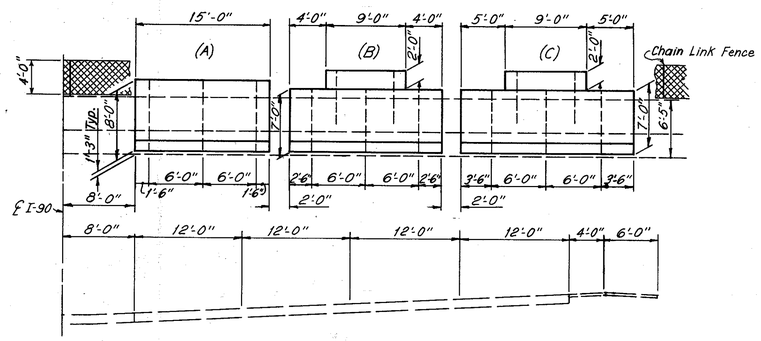
SIGN NO. 21
Sta. 0+90 ℄ Ramp E-13
Std. TC-12.30, Design 2 Mod.
14'-0" Arm



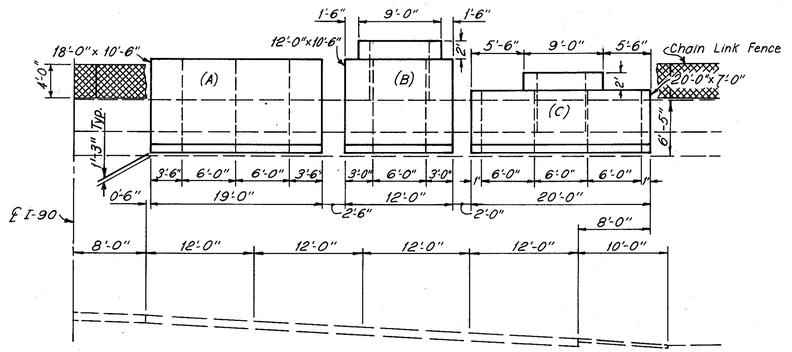
SIGN NO. 22
Sta. 5+15 S.B. E. 14th St.
(2)-TC-18.24



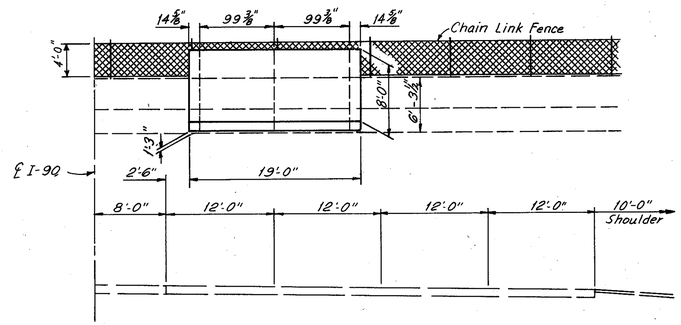
SIGN NO. 23
Sta. 3+00 Prospect Ave. E.B.
Std. TC-12.30, Design 2 Mod.
16'-0" Arm



SIGN NO. 24
Sta. 118+95 E.B. I-90
(3)-TC-18.26, Design 3



SIGN NO. 25
Sta. 119+85 W.B. I-90
(A) - TC-18.26, Design 3
(B) - TC-18.26, Design 2
(C) - TC-18.26, Design 4



SIGN NO. 26
Sta. 127+15 W.B. I-90
TC-18.24

MADE MEE DATE 11-21-75
TRACED UPK DATE 11-22-75
CHECKED DSP DATE 11-25-75
SCALE No Scale

Howard, Needles, Tammen & Bergendoff
CONSULTING ENGINEERS
CLEVELAND, OHIO

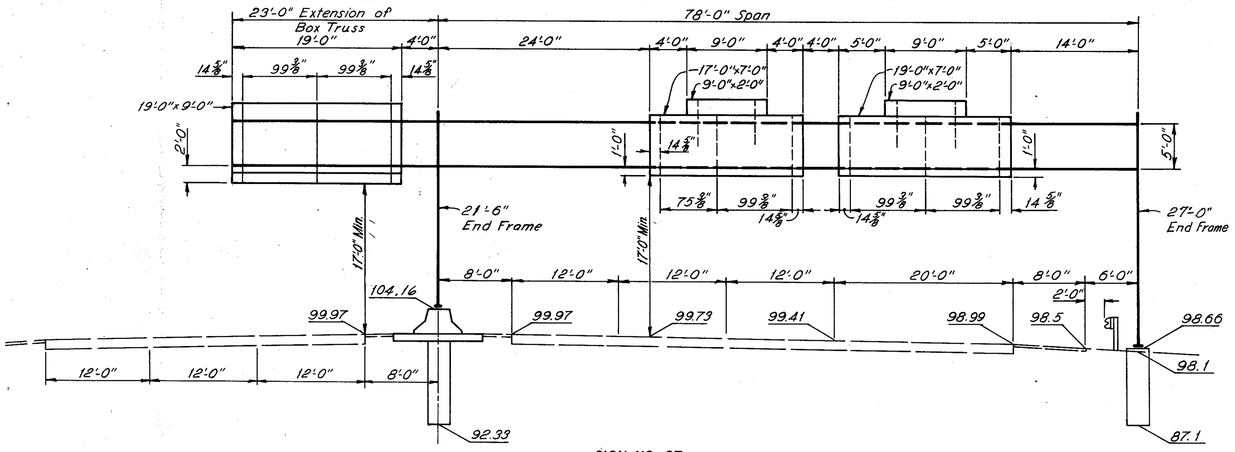
HNTB

SIGN SUPPORT DETAILS

FHWA REGION	STATE	PROJECT	
5	OHIO		

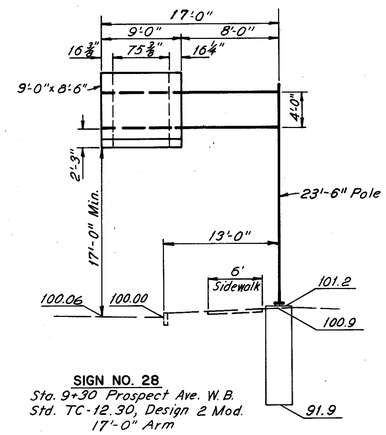
85
169

CUYAHOGA COUNTY
CUY-77-14.12
CUY-90-16.21

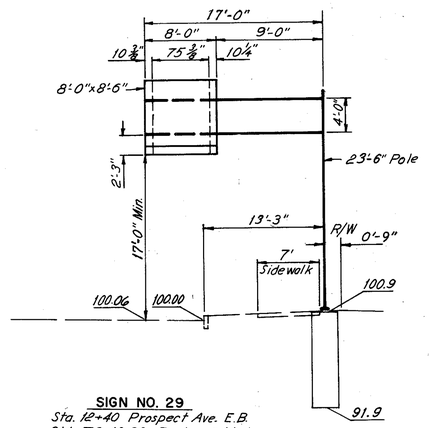


SIGN NO. 27
Sta. 133+25 W.B. I-90
TC-7.65, Design 8 Mod., As Per Plan
78'-0" Span

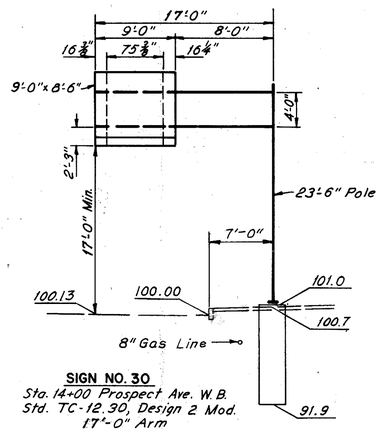
See Sheet 44A for Median Foundation Detail.



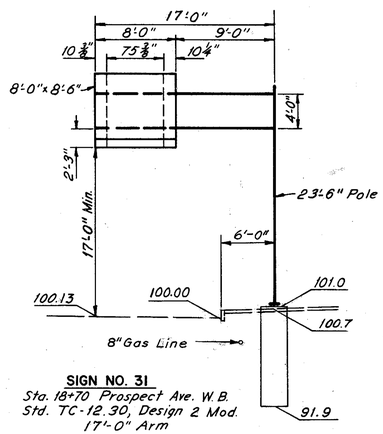
SIGN NO. 28
Sta. 9+30 Prospect Ave. W.B.
Std. TC-12.30, Design 2 Mod.
17'-0" Arm



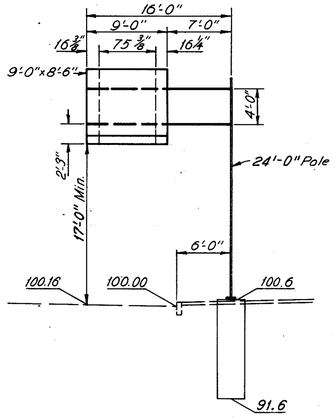
SIGN NO. 29
Sta. 12+40 Prospect Ave. E.B.
Std. TC-12.30, Design 2 Mod.
17'-0" Arm



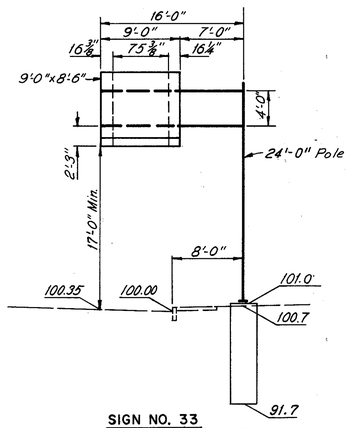
SIGN NO. 30
Sta. 14+00 Prospect Ave. W.B.
Std. TC-12.30, Design 2 Mod.
17'-0" Arm



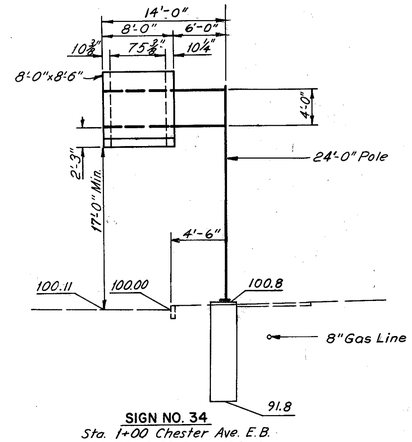
SIGN NO. 31
Sta. 18+70 Prospect Ave. W.B.
Std. TC-12.30, Design 2 Mod.
17'-0" Arm



SIGN NO. 32
Sta. 0-4+00 Chester Ave. E.B.
Std. TC-12.30, Design 2 Mod.
16'-0" Arm



SIGN NO. 33
Sta. 0+45 Chester Ave. W.B.
Std. TC-12.30, Design 2 Mod.
16'-0" Arm



SIGN NO. 34
Sta. 1+00 Chester Ave. E.B.
Std. TC-12.30, Design 2 Mod.
17'-0" Arm

Contractor Note : Before installation of foundation, the location of Ohio Bell Telephone Company conduit in this area should be obtained.

MADE MEF DATE 11-21-75
TRACED JPK DATE 11-22-75
CHECKED GEH DATE 11-25-75
SCALE No Scale

Howard, Needles, Tammen & Bergendoff
CONSULTING ENGINEERS
CLEVELAND, OHIO

HNTB

SIGN SUPPORT DETAILS

FHWA REGION	STATE	PROJECT	
5	OHIO		

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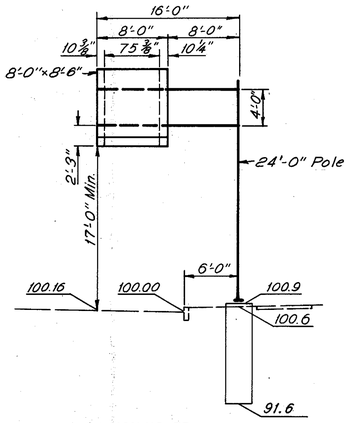
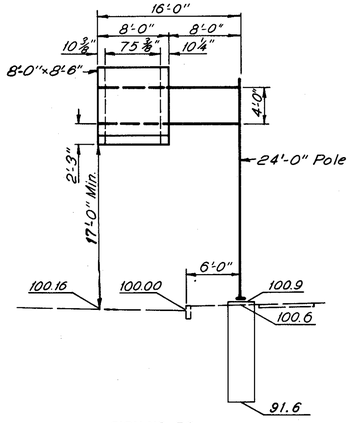
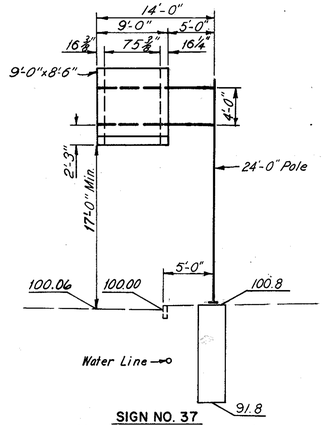
CUYAHOGA COUNTY
CUY-77-14.12
CUY-90-16.21



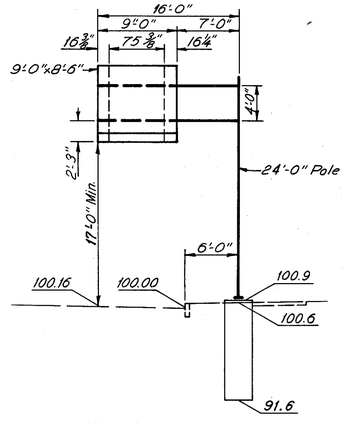
SIGN NO. 35
Sta. 8+10 Chester Ave. W.B.
Std. TC-12.30 Design 2 Mod.
16'-0" Arm



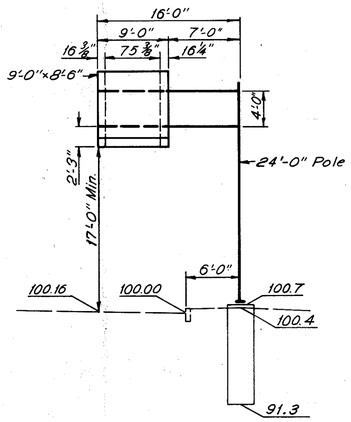
SIGN NO. 36
Sta. 9+70 Chester Ave. E.B.
Std. TC-12.30 Design 2 Mod.
16'-0" Arm



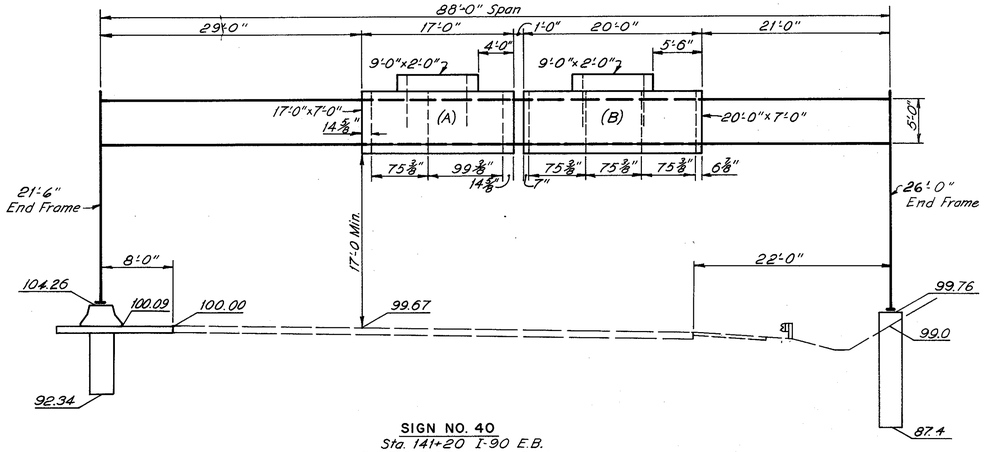
SIGN NO. 37
Sta. 14+00 Chester Ave. W.B.
Std. TC-12.30, Design 2 Mod.
14'-0" Arm



SIGN NO. 38
Sta. 9+00 Chester Connection
Std. TC-12.30, Design 2 Mod.
16'-0" Arm

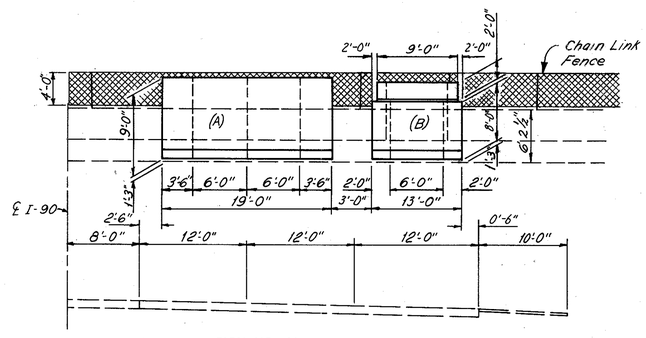


SIGN NO. 39
Sta. 2+25 E. 24th St.
Std. TC-12.30, Design 2 Mod.
16'-0" Arm



SIGN NO. 40
Sta. 141+20 I-90 E.B.
Std. TC-7.65, Design 8 Mod.
88'-0" Span

See Sheet 44A for median foundation detail.



SIGN NO. 41
Sta. 148+20 W.B. I-90
(A)-TC-18.26, Design 2
(B)-TC-18.26, Design 3

MADE G.F.M. DATE 11-24-75
TRACED J.P.K. DATE 11-24-75
CHECKED D.S.P. DATE 11-30-75
SCALE No Scale

Howard, Needles, Tammen & Bergendoff
CONSULTING ENGINEERS
CLEVELAND, OHIO

HNTB

SIGN SUPPORT DETAILS

FHWA REGION	STATE	PROJECT	
5	OHIO		

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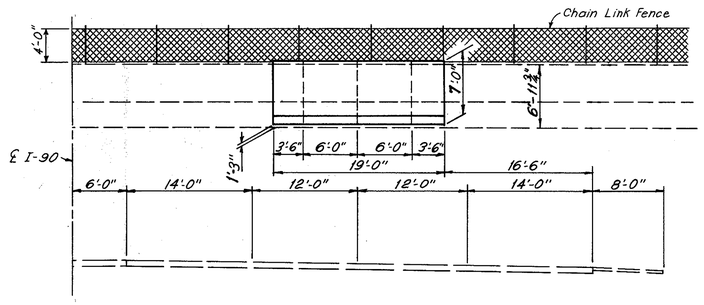
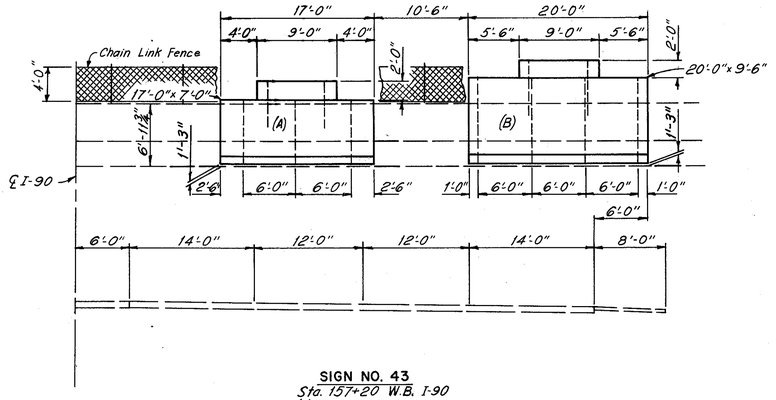
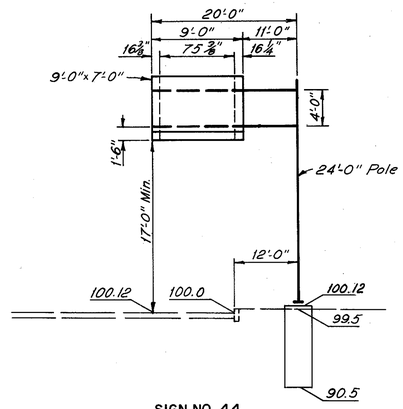
CUYAHOGA COUNTY
CUY-77-14.12
CUY-90-16.21



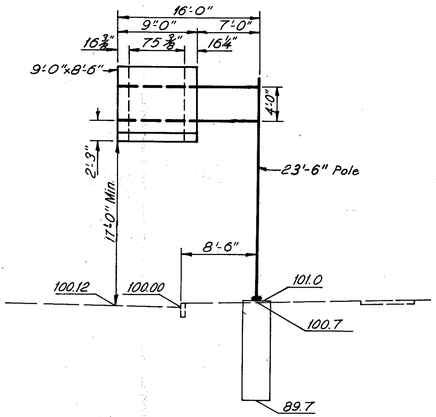
SIGN NO. 42
Sta. 156+40 E.B. I-90
TC-18.26, Design 3



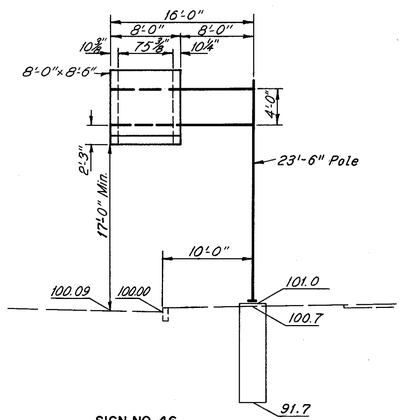
SIGN NO. 43
Sta. 157+20 W.B. I-90
(A) TC-18.26 Design 3
(B) TC-18.26 Design 4



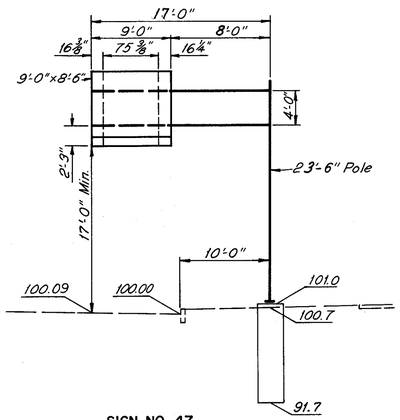
SIGN NO. 44
Sta. 10+00 Ramp 16
TC-12.30 Design 2 Mod.
20'-0" Arm



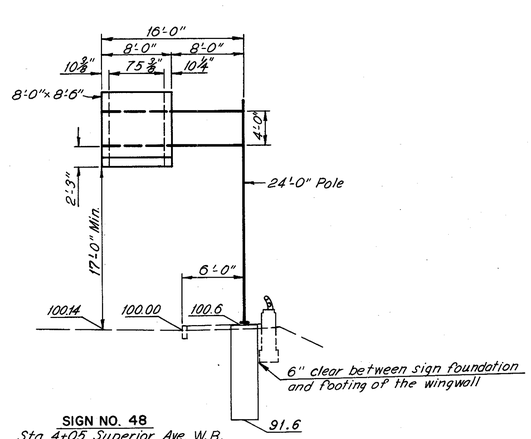
SIGN NO. 45
Sta. 0-5+00 Superior Ave. E.B.
Std. TC-12.30, Design 2 Mod.
16'-0" Arm



SIGN NO. 46
Sta. 0-2+50 Superior Ave. E.B.
Std. TC-12.30, Design 2 Mod.
16'-0" Arm



SIGN NO. 47
Sta. 0+40 Superior Ave. E.B.
Std. TC-12.30, Design 2 Mod.
17'-0" Arm



SIGN NO. 48
Sta. 4+05 Superior Ave. W.B.
Std. TC-12.30, Design 2 Mod.
16'-0" Arm

MADE G.F.M. DATE 11-24-75
TRACED J.P.K. DATE 11-26-75
CHECKED D.S.P. DATE 12-3-75
SCALE No Scale

Howard, Needles, Tammen & Bergendoff
CONSULTING ENGINEERS
CLEVELAND, OHIO

HNTB

SIGN SUPPORT DETAILS

FHWA REGION	STATE	PROJECT	
5	OHIO		

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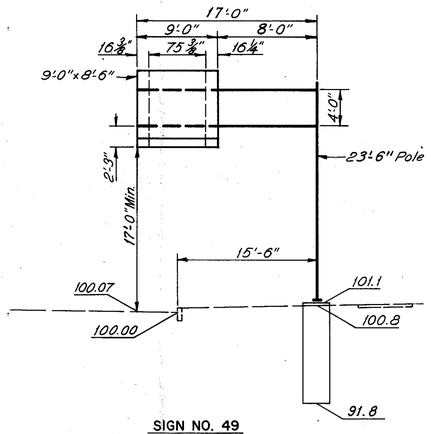
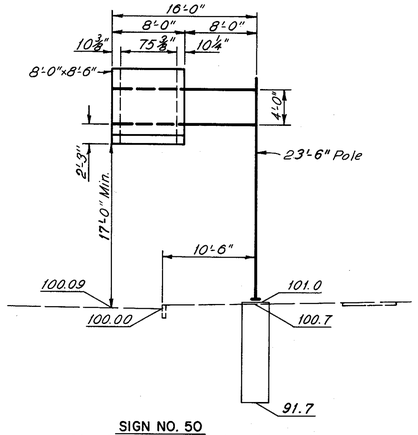
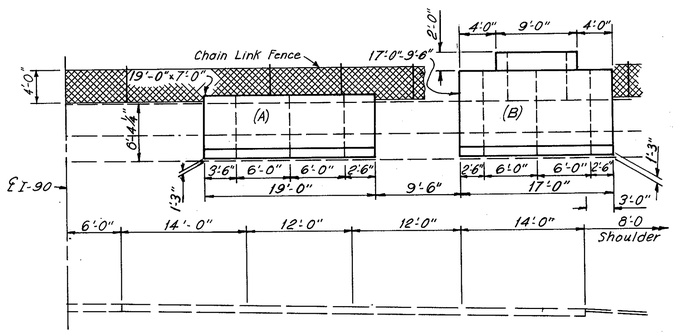
CUYAHOGA COUNTY
CUY-77-14.12
CUY-90-16.21



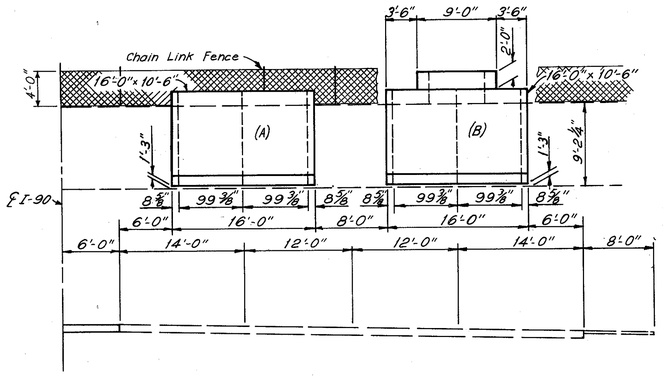
SIGN NO. 49
Sta. 6+50 Superior Ave. W.B.
Std. TC-12.30, Design 2 Mod.
17'-0" Arm



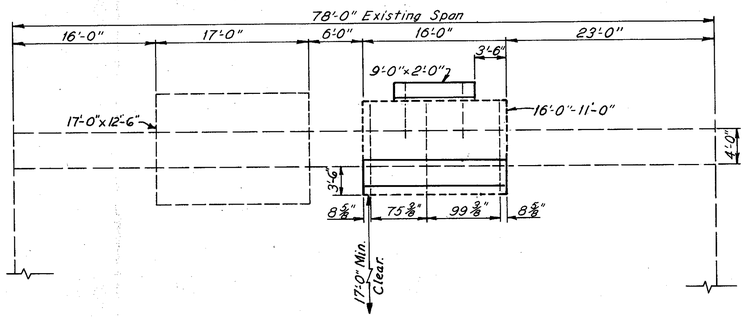
SIGN NO. 50
Sta. 8+00 Superior Ave. W.B.
Std. TC-1230 Design 2 Mod.
16'-0" Arm



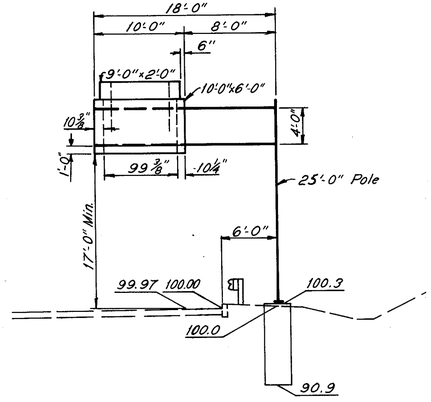
SIGN NO. 51
Sta. 165+90 W.B. I-90
(2)-TC-18.26, Design 3



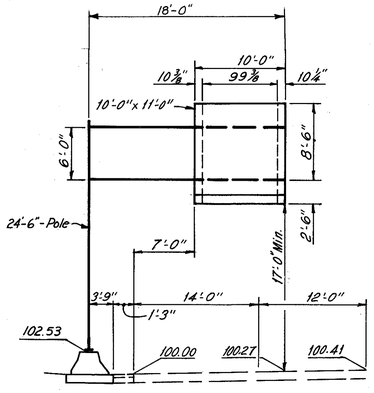
SIGN NO. 52
Sta. 170+63 E.B. I-90
(2)-TC-18.24



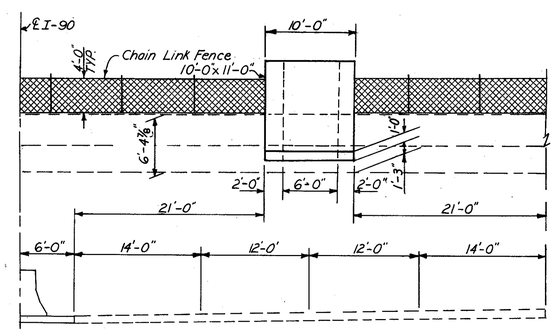
SIGN NO. 53
Sta. 182+76 E.B. I-90
Existing 78'-0" Span



SIGN NO. 54
Sta. 1+00 Ramp 18
Std. TC-12.30 Design 2
18'-0" Arm



SIGN NO. 55
Sta. 74+00 W.B. I-90
TC-12.30, Design 5, Mod.
22'-0" Arm
(Cost Participation III)



SIGN NO. 56
Sta. 161+00 I-90EB
TC-18.26 Design 2
(Cost Participation III)

MADE M.E.E. DATE 11-27-75
TRACED J.P.K. DATE 12-1-75
CHECKED D.S.P. DATE 12-4-75
SCALE No Scale

Howard, Needles, Tammen & Bergendoff
CONSULTING ENGINEERS
CLEVELAND, OHIO

HNTB

SIGN LIGHTING SUB-SUMMARIES

QUANTITY CALCULATIONS
MADE BY W.G.P. DATE 11-20-75
CHECKED BY D.S.P. DATE 6-7-77

FHWA REGION	STATE	PROJECT	
5	OHIO		

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CUYAHOGA COUNTY
CUY-77-14.12
CUY-90-16.21

SIGN NO.	ROADWAY	STATION	SHEET NO.	ACTUAL PANEL SIZE	SIGN WATTS		202	844	844	844	844	844	844		844	844	844		844	844	844		S625							
							Remove Sign Lighting Fixtures For Storage	Sign Service	Signs Wired	Signs Wired Overpass Structure Mounted	Sign Service As Per Plan	Switch Enclosure Mounting Bracket	Disconnect Switch with Enclosure,		Mercury Vapor Luminaire w/100 Watt Lamp	Mercury Vapor Luminaire w/175 Watt Lamp	Mercury Vapor Luminaire w/250 Watt Lamp		Ballast Type CMRI-100-480	Ballast Type CMRI- 175- 480	Ballast Type CMRI- 250- 480		Ground Rod							
							Each	Each	Each	Each	Each	Each	Each		Each	Each	Each		Each	Each	Each		Each							
1A	I-90	56+65 E.B.	60	17'-0"x10'-6"	350			1	1			2	1			2				2			1							
1B				20'-0"x8'-0"	525				1							3				3										
1C				13'-0"x7'-0"	350				1							2				2										
2A	I-90	61+71 E.B.	60	17'-0"x7'-0"	350			1	1			2	1			2				2			1							
2B				13'-0"x7'-0"	350				1							2				2										
2C				15'-0"x13'-6"	500				1									2				2								
		20+40 Rt.	59				2																						
3	RAMP E-3	0+00 Lt.	60	10'-0"x7'-0"	175			1	1			2	1			1				1			1							
4	RAMP E-3 CONN.	0+70 Rt.	60	10'-0"x7'-0"	175			1	1			2	1.			1				1			1							
5A	RAMP E-6	5+50	60	15'-0"x5'-0"	200			1	1			2	1		2				2				1							
5B				16'-0"x7'-0"	350				1							2				2										
6A	RAMP E-9	0+40	60	11'-0"x10'-6"	175			1	1			2	1			1				1			1							
6B				15'-0"x7'-0"	350				1							2				2										
7	RAMP E-10	14+50 Rt.	60	18'-0"x11'-6"	500			1	1			2	1					2				2	1							
8A	RAMP E-17	1+87	60	18'-0"x12'-6"	500			1	1			2	1					2				2	1							
8B				15'-0"x10'-6"	350				1							2				2										
10A	I-77	45+60 Rt.	60	15'-0"x12'-6"	500			1	1			2	1					2				2	1							
10B				12'-0"x19'-0"	500				1									2				2								
10C				16'-0"x7'-0"	350				1							2				2										
11	Ramp E-1	1+00 Rt.	60	10'-0"x7'-0"	175			1	1			2	1			1				1			1							
Br. No. CUY-90-1628	12A	E. 9 St.	8+75 Rt.	60	9'-0"x7'-6"	175			1		1		2	1			1				1			1							
	12B				8'-0"x5'-6"	100					1					1				1										
	13	I-90	64+50 W.B.	60	15'-0"x9'-6"	350			1	1			2	1			2				2			1							
	14	I-90	68+25 E.B.	61	18'-0"x12'-0"	500			1	1			2	1					2				2	1							
	15	I-90	70+00 ℄	61	19'-0"x9'-0"	350				1		1	2	1			2				2			1							
	16A	I-90	74+20	61	15'-0"x8'-0"	350		2	1	1			2	1			2				2			1							
	16B				18'-0"x7'-0"	350		2		1							2				2										
	16C				16'-0"x7'-0"	350		2		1							2				2										
	16D				18'-0"x10'-6"	350		3		1							2				2										
	16E				18'-0"x8'-6"	350		3		1							2				2										
Br. No. CUY-90-1676	17A	I-90	99+30 E.B.	61	16'-0"x7'-0"	350			1		1		2	1.			2				2			1							
	17B				16'-0"x7'-0"	350					1						2				2										
	18	I-90	102+39 W.B.	61	12'-0"x10'-6"	350			1	1			2	1			2				2			1							
	19	I-90	106+95 ℄	61	19'-0"x9'-0"	350				1		1	2	1			2				2			1							
	20	RAMP E-5	0+66	61	11'-0"x9'-6"	175			1	1			2	1			1				1			1							
		I-90-1(101)29 Cost Part I						14	17	30	4	2	38	19		3	47	12		3	47	12		19							

MADE W.G.P. DATE 11-17-75
TRACED J.P.K. DATE 11-20-75
CHECKED E.F.J. DATE
SCALE

Howard, Needles, Tammen & Bergendoff
CONSULTING ENGINEERS
CLEVELAND, OHIO

HNTB

QUANTITY CALCULATIONS
MADE BY W. G. P. DATE 11-21-75
CHECKED BY D.S.P. DATE 11-23-77

FHWA REGION	STATE	PROJECT	
5	OHIO		

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CUYAHOGA COUNTY
CUY-77-14.12
CUY-90-16.21

SIGN LIGHTING SUB-SUMMARIES

	SIGN NO.	ROADWAY	STATION	SHEET NO.	ACTUAL PANEL SIZE	SIGN WATTS			844 Sign Service Each	844 Sign Wired Each	844 Signs Wired Overpass Structure Mounted Each		844 Switch Enclosure Mounting Bracket Each	844 Disconnect Switch with Enclosure, Each		844 Mercury Vapor Luminaire w/100 Watt Lamp Each	844 Mercury Vapor Luminaire w/175 Watt Lamp Each			844 Ballast Type CMRI-100-480 Each	844 Ballast Type CMRI- 175- 480 Each			3625 Ground Rod Each						
	21	RAMP E-13	0+90 Rt.	61	8'-0"x5'-6"	100			1	1			2	1		1				1				1						
BR. NO. CUY-90-1651	22A	E. 14 ST.	5+15 S.B.	61	9'-0"x 5'-0"	100			1		1		2	1		1				1				1						
	22B				9'-0"x 5'-0"	100					1					1				1										
	23	PROSPECT AVE.	3+00 Rt.	61	8'-0"x8'-6"	175			1	1			2	1			1			1				1						
BR. NO. CUY-90-1714	24A	I-90	118+95 Rt.	62	15'-0"x8'-0"	350			1		1		2	1			2			2				1						
	24B				17'-0"x 7'-0"	350					1						2			2										
	24C				19'-0"x 7'-0"	350					1						2			2										
BR. NO. CUY-90-1714	25A	I-90	119+85 Lt.	62	19'-0"x10'-6"	350			1		1		2	1			2			2				1						
	25B				12'-0"x 10'-6"	350					1						2			2										
	25C				20'-0"x 7'-0"	525					1						3			3										
BR. NO. CUY-90-1728	26	I-90	127+15 Lt.	62	19'-0"x9'-0"	350			1		1		2	1			2			2				1						
	27A	I-90	133+25	62	19'-0"x9'-0"	350			1	1			2	1			2			2				1						
	27B				17'-0"x 7'-0"	350				1							2			2										
	27C				19'-0"x 7'-0"	350				1							2			2										
	28	PROSPECT AVE.	9+30 Lt.	62	9'-0"x8'-6"	175			1	1			2	1			1			1				1						
	29A	PROSPECT AVE.	12+40 Rt.	62	8'-0"x8'-6"	175			1	1			2	1			1			1				1						
	29B				8'-0"x8'-6"	175														1										
	30	PROSPECT AVE.	14+00 Lt.	62	9'-0"x8'-6"	175			1	1			2	1			1			1				1						
	31	PROSPECT AVE.	18+70 Lt.	62	8'-0"x8'-6"	175			1	1			2	1			1			1				1						
	32	CHESTER AVE.	-4+00 Rt.	62	9'-0"x8'-6"	175			1	1			2	1			1			1				1						
	33	CHESTER AVE.	0+45 Lt.	62	9'-0"x8'-6"	175			1	1			2	1			1			1				1						
	34	CHESTER AVE.	1+00 Rt.	62	8'-0"x8'-6"	175			1	1			2	1			1			1				1						
	35	CHESTER AVE.	8+10 Lt.	62	8'-0"x 8'-6"	175			1	1			2	1			1			1				1						
	36	CHESTER AVE.	9+70 Rt.	62	8'-0"x8'-6"	175			1	1			2	1			1			1				1						
	37	CHESTER AVE.	14+00 Lt.	62	9'-0"x8'-6"	175			1	1			2	1			1			1				1						
	38	CHESTER AVE. CONNECTION	9+00 Lt.	62	9'-0"x8'-6"	175			1	1			2	1			1			1				1						
	39A	E. 24 ST.	2+25 Rt.	62	9'-0"x8'-6"	175			1	1			2	1			1			1				1						
	39B				9'-0"x8'-6"	175				1							1			1										
	40A	I-90	141+20 Rt.	63	17'-0"x 7'-0"	350			1	1			2	1			2			2				1						
	40B				20'-0"x 7'-0"	525				1							3			3										
		Cuy-90-1(101)29																												
		TOTAL Cost Part I							20	21	9		40	20		3	41			41	3			20						

MADE W.G.P. DATE 11-18-75
TRACED J.P.K. DATE 11-31-75
CHECKED E.P.J. DATE 11-21-75
SCALE

Howard, Needles, Tammen & Bergendoff
CONSULTING ENGINEERS
CLEVELAND, OHIO

HNTB

QUANTITY CALCULATIONS

MADE BY W.G.P. DATE 11-19-75

CHECKED BY D.S.P. DATE 11-23-77

FHWA REGION	STATE	PROJECT	
5	OHIO		

91
169

CUYAHOGA COUNTY
CUY-77-14.12
CUY-90-16.21

SIGN LIGHTING SUB-SUMMARIES

	SIGN NO.	ROADWAY	STATION	SHEET NO.	ACTUAL PANEL SIZE	SIGN WATTS	202 Remove Overhead Structure Mounted Warning Flashers As Per Plan Lump	844 Sign Service, As Per Plan Each	844 Sign Service Each	844 Signs Wired Each	844 Signs Wired Overpass Structure Mounted Each		844 Switch: Enclosure Mounting Bracket Each	844 Disconnect Switch with Enclosure, Each		844 Mercury Vapor Luminaire w/100 Watt Lamp Each	844 Mercury Vapor Luminaire w/175 Watt Lamp Each			844 Ballast Type CMRI-100-480 Each	844 Ballast Type CMRI- 175- 480 Each		S625 Electrical ≠ Equipment Lump	S625 Ground Rod Each						
BR.NO. CUY-90-1768	41A	I-90	148+20 Lt.	63	19'-0"x 9'-0"	350			1		1		2	1			2				2			1					
	41B				13'-0"x 8'-0"	350					1						2				2								
BR.NO. CUY-90-1786	42	I-90	156+40 Rt.	63	19'-0"x 7'-0"	350			1		1		2	1			2				2			1					
BR.NO. CUY-90-1786	43A	I-90	157+20	63	17'-0"x 7'-0"	350			1		1		2	1			2				2			1					
	43B				20'-0"x 9'-6"	525					1						3				3								
	44	RAMP NO. 16	10+00 Lt.	63	9'-0"x 7'-0"	175			1	1			2	1			1				1			1					
	45	SUPERIOR AVE.	0 - 5+00 Lt.	63	9'-0" x 8'-6"	175			1	1			2	1			1				1			1					
	46	SUPERIOR AVE.	0 - 2+50 Rt.	63	8'-0"x 8'-6"	175			1	1			2	1			1				1			1					
	47A	SUPERIOR AVE.	0+40 Rt.	63	9'-0"x 8'-6"	175			1	1			2	1			1				1			1					
	47B				9'-0"x 8'-6"	175				1							1				1								
	48A	SUPERIOR AVE.	4+05 Lt.	63	8'-0" x 8'-6"	175			1	1			2	1			1				1			1					
	48B				8'-0" x 8'-6"	175				1							1				1								
	49	SUPERIOR AVE.	6+50 Lt.	63	9'-0"x 8'-6"	175			1	1			2	1			1				1			1					
	50	SUPERIOR AVE.	8+00 Lt.	63	8'-0"x 8'-6"	175			1	1			2	1			1				1			1					
BR.NO. CUY-90-1803	51A	I-90	165+90 Lt.	64	19'-0"x 7'-0"	350			1		1		2	1			2				2			1					
	51B				17'-0"x 9'-6"	350					1						2				2								
BR.NO. CUY-90-1812	52A	I-90	170+63 Rt.	64	16'-0"x 10'-6"	350			1		1		2	1			2				2			1					
	52B				16'-0"x 10'-6"	350					1						2				2								
	54	RAMP NO. 18	1+00 Rt.	64	10'-0"x 6'-0"	100			1	1			2	1		1				1				1					
	55	I-90	74+00 ℄	74	10'-0"x 11'-0"	175		1 **		1 **			2	1			1				1		Lump **	1 **					
	56	I-90	161+00 Rt.	74	10'-0"x 11'-0"	175	Lump **		1 **		1 **		2 **	1 **			1 **				1 **			1 **					
		Cuy.-90-1(101) 29																											
		Total - Cost Part. I					-	-	13	10	9		28	14		1	29			1	29		-	13					
		Total - Cost Part. III					Lump	1	1	1	1		2	1		-	1			-	1		Lump	2					

≠ See note on Sheet 9.

NOTE: Items indicated (**) are Type III participation all other items are Type I participation. See note sheet 4.

MADE W.G.P. DATE 11-19-75
TRACED J.P.K. DATE 11-21-75
CHECKED E.F.J. DATE 11-21-75
SCALE ~

Howard, Needles, Tammen & Bergendoff
CONSULTING ENGINEERS
CLEVELAND, OHIO

HNTB

MISCELLANEOUS TRAFFIC CONTROL DETAILS

QUANTITY CALCULATIONS
MADE BY M.E.E. DATE 12-10-75
CHECKED BY D.S.P. DATE 12-11-75

FHWA REGION	STATE	PROJECT	
5	OHIO		

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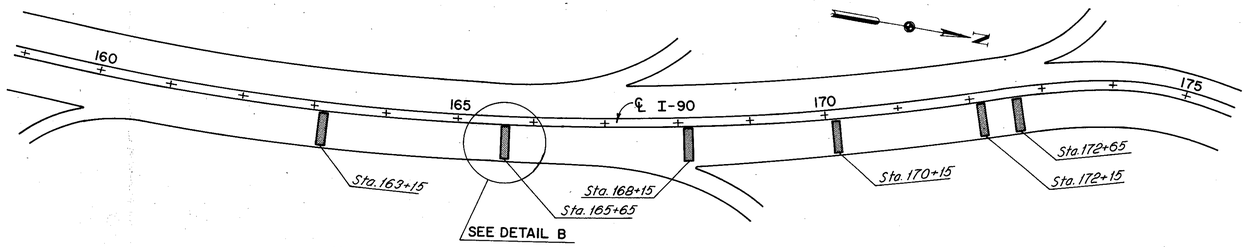
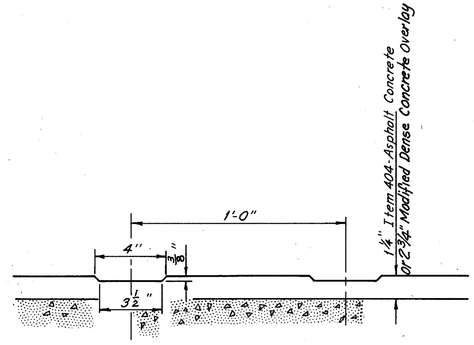
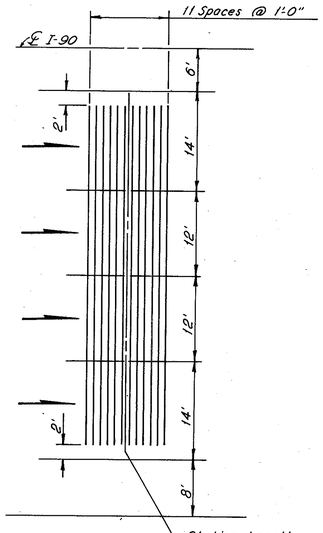
CUYAHOGA COUNTY
CUY-77-14.12
CUY-90-16.21



RUMBLE GROOVES LOCATIONS
PLAN VIEW
Scale: 1"=100'



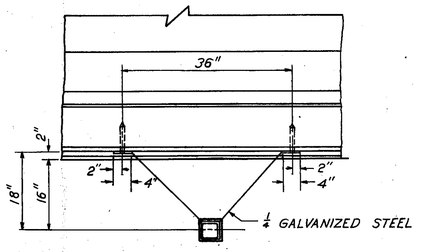
RUMBLE GROOVES DETAIL
Scale: 1"=4"

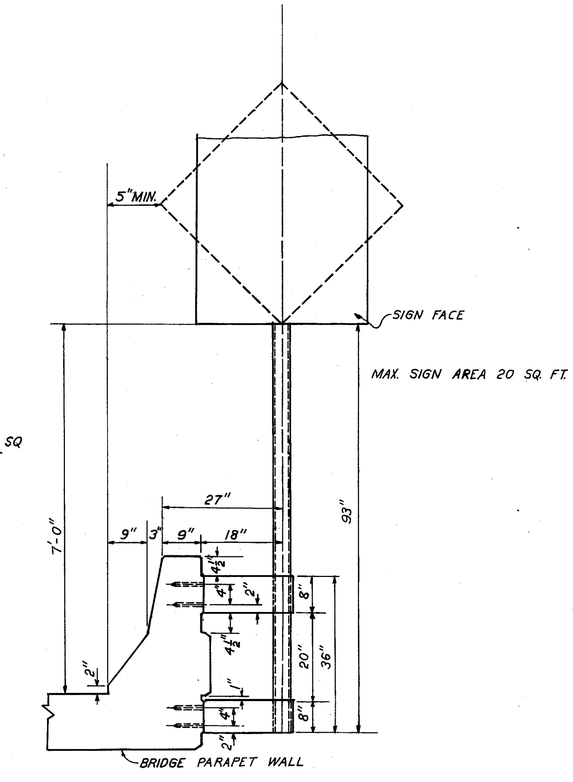


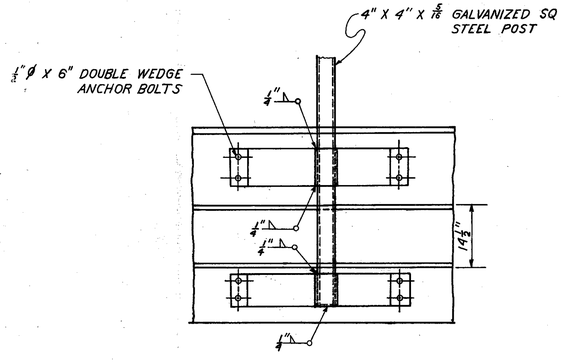
DETAIL B
Scale: 1"=10'

* An Additional Estimated Quantity Of 408 Lin. Ft. Of Rumble Grooves Is Included To Be Used On W.B. I-90 Between Sta. 45+00 And 47+00 Within The Striped Shoulder Area. (See Sheet No. 60 For Location.) The Grooves Shall Be Constructed Above And Recessed 2 Ft. From The Curb And 2 Ft. From The Channelizing Line. The Sets Of Rumble Grooves Shall Be Located At Approximatly 50 Ft. On Centers And Shall Not Be Installed Until The Completion Of Phase IV Of The I-90 Traffic Plans. They are to be installed in the Modified Dense Concrete overlay on Bridge No. CUY.90-1524

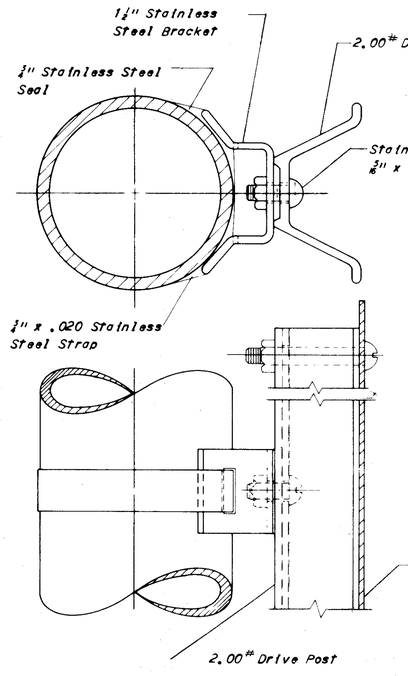
ITEM SPECIAL-RUMBLE GROOVES COST PARTICIPATION III			
STATION I-90	SIDE	CALCULATIONS	QUANTITY (LIN.FT.)
163+15	Rt.	144×4	576
165+65	Rt.	144×4	576
168+15	Rt.	144×4	576
170+15	Rt.	144×4	576
172+15	Rt.	144×4	576
172+65	Rt.	144×4	576
*	Lt.		408
TOTAL		I-90-1(101)29	3864



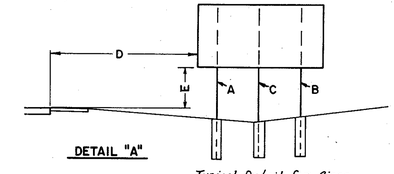




BRIDGE CONNECTION FOR SMALL SIGNS
NO SCALE



POLE MOUNTED SIGNS-ATTACHMENT DETAIL
(No Scale)



DETAIL "A"

Typical Detail for Signs with greater than normal offsets.

MADE JAG DATE 10-06-77
TRACED RLN DATE 10-11-77
CHECKED DSP DATE 10-14-77
SCALE AS SHOWN

Howard, Needles, Tammen & Bergendoff
CONSULTING ENGINEERS
CLEVELAND, OHIO

HNTB

DELINEATOR SUB-SUMMARY

QUANTITY CALCULATIONS
MADE BY M.G.B. DATE 5-20-77
CHECKED BY T. S. DATE 6-22-77

FHWA REGION	STATE	PROJECT	
5	OHIO		

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169

CUYAHOGA COUNTY
CUY-77-14.12
CUY-90-16.21

ITEM 620 DELINEATORS

ROADWAY	STATION FROM	STATION TO	SIDE	SPACE (FT.)	QUANTITY-TYPE C & D POST MOUNTED	RAIL MOUNTED	PARAPET MOUNTED
I-77-5 (18) 161							
Ramp F-3	0+00	7+00	RT	100	7C	1C	
Ramp F-4	2+50	10+50	RT	100	8C	1C	
Ramp F-1	0+00	1+00	RT	100	2C		
	1+70	5+90	RT	70	7C		
	6+90	9+90	RT	100	4C		
Ramp F-2	1+15	3+15	LT *	100	3C		
	3+75	5+55	LT *	60	4C		
	6+35	7+95	LT *	80	3C		
	7+15	11+15	RT *	80	6D		
I-77 SB	198+80	—	LT *	100	1C		
Ramp E-2	5+55	13+55	LT *	100	9C		
	14+25	16+35	LT *	70	4C		
	17+35	23+35	LT *	100	7C		
I-77 NB	196+80	199+80	RT	100	4C		
	46+70	47+70	RT	100	2C		
Ramp E-1	8+50	9+30	RT	80	2C		
	9+90	11+10	RT	60	3C		
	11+10	12+30	LT	60	3D		
	12+30	17+30	LT.	100	6D		
	14+20	16+40	RT.	60	4C		
Ramp E-1 Conn.	16+70	17+30	RT.	60	2C		
	16+70	17+30	LT.	30	3D		
I-77/I-490							
Ramp S-E	0+00	9+00	RT	100	10C		
	9+80	10+60	RT	80	2C		
	11+10	11+60	RT	50	2C		
	11+60	17+10	LT	50	12D		
	12+10	17+10	RT.	100	6C		
Ramp E-N	13+00	15+00	RT.	100	3C		
	15+80	16+60	RT.	80	2C		
	17+10	18+60	RT.	50	4C		
	18+60	20+60	LT.	50	5D		
	19+60	20+60	RT.	100	2C		
	21+40	22+20	LT.	80	2D		
	21+40	22+20	RT.	80	2C		
	23+20	28+20	RT.	100	4C	2C	
	28+20	30+60	LT.	80		4D	
	30+60	32+20	RT.	80		3C	
	33+20	38+20	RT.	100		6C	
	39+25	———	RT.	105	——	1C	
Ramp N-W	0+00	2+40	RT	80		4C	
	3+40	6+40	RT	100	2C	2C	
Ramp N-E	0+45; 1+45	3+85	LT	100; 80	5D		
	3+85	6+25	RT	80	4C		
	6+85	13+45	RT	60	3C	9C	
	14+25	18+25	RT	80	5C		
Ramp W-S	21+90	25+90	RT	80	6C		
Ramp E-S	0+95	4+95	LT	100	5D		
	5+75	——	LT	80	1D		
	5+75	15+25	RT	50	14C	6C	
	6+75	13+75	LT.	100	5D	3D	
	14+45	21+65	LT.	80	10D		
TOTAL — Cost Participation I Type C					147	35	—
TOTAL — Cost Participation I Type D					63	7	—

ITEM 620 DELINEATORS

ROADWAY	STATION FROM	STATION TO	SIDE	SPACE (FT.)	QUANTITY-TYPE C & D POST MOUNTED	RAIL MOUNTED	PARAPET MOUNTED
I-90-1 (101) 29							
I-77 NB	43+40	50+40	℄	100			8D
	51+20	—	℄	80			1D
Ramp E-6	0+00	2+40	RT.	60	3C	2C	
	2+40	4+20	LT.	30	7D		
	2+90	9+90	RT.	60	11C		
	6+20	9+20	LT	30	11D		
	9+20	12+20	RT	60	6C		
Ramp E-7	0+00	0+90	LT	30	4D		
	1+50	2+10	LT	60	2D		
	2+10	3+30	RT	60	3C		
	3+70	4+90	RT	40	4C		
	4+90	8+90	LT	40	7D	4D	
Ramp E-4	0+00; 1+00	3+00	RT	50	5C	1C	
	3+00	3+50	LT	50	2D		
	3+80	6+80	LT	30	11D		
	7+30	8+80	LT	50	4D		
	8+80	10+30	RT	50	4C		
Ramp E-3	1+50 Conn.	2+70	LT	30	5D		
	0+90	1+80	LT	30	4D		
	2+90	6+40	LT	50	8D		
	6+40	10+20	RT	95		5C	
Ramp E-2	0+00	3+50	RT	70		6C	
	3+50	9+50	LT	40	7D	9D	
Ramp E-1	1+00	1+90	RT	30	4C		
	1+90	3+40	LT	30	4D	2D	
	3+40	4+00	RT	60		2C	
	5+00	6+00	RT	100		2C	
	6+70	9+50	RT	70		5C	
	10+00	10+50	RT	50		2C	
Ramp E-5	0+00	3+30	RT	30	12C		
	3+30	4+90	LT	40	5D		
	4+90	7+00	RT	70	4C		
	8+00	17+00	RT	100	8C	2C	
Ramp E-8	0+30	4+30	LT	50	9D		
	4+30	5+70	RT	70	3C		
	6+10	10+90	RT	40	13C		
	10+90	11+70	LT	40	3D		
	12+40	13+10	LT	70	2D		
	13+10	14+10	LT	100	1D		
Ramp E-17	0+00	2+50	RT	50	2C	4C	
	2+50	6+00	LT	50	8D		
	6+00	7+20	RT	30	5C		
	7+20	9+90	LT	30	10D		
	9+90	11+20	RT	30	5C		
Ramp E-9	0+30	3+80	LT	50	8D		
	4+40	5+00	LT	60	1D	1D	
	5+00	6+20	RT	60		3C	
	6+85	7+50	RT	65		2C	
	8+30	9+90	RT	80	3C		
Ramp E-10	0+00	4+80	RT	60	4C	5C	
	5+20	6+80	RT	40	5C		
	6+80	10+00	LT	40	4D	5D	
SHEET TOTAL — COST PARTICIPATION I			TYPE C		104	41	—
SHEET TOTAL — COST PARTICIPATION I			TYPE D		127	21	9

NOTES:
1. Asterisk (*) indicates the side in the direction of increasing stationing.
2. For delineator details see Standard Construction Drawing, TC-61.10.

I-90-1(101)29 - Quantities continued on Sheet 94.

MADE MGB DATE 5-20-77
TRACED DWT DATE 5-2-79
CHECKED DSP DATE 11-3-77
SCALE NONE

Howard, Needles, Tammen & Bergendoff
CONSULTING ENGINEERS
CLEVELAND, OHIO
HNTB

FHWA REGION	STATE	PROJECT	
5	OHIO		

94
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CUYAHOGA COUNTY
CUY-77-14.12
CUY-90-16.21

DELINEATOR SUB-SUMMARY

QUANTITY CALCULATIONS
MADE BY MGB DATE 5-20-77
CHECKED BY TS DATE 6-22-77

ITEM 620 DELINEATORS

ROADWAY	STATION FROM	STATION TO	SIDE	SPACE (FT.)	QUANTITY-TYPE C&D POST MOUNTED	RAIL MOUNTED	
Ramp E-10	10+00	14+80	RT	60	9C		
	15+45	17+40	RT	65	4C		
Ramp E-11	0+00	3+00	RT	60	6C		
	3+00	6+00	LT	60	6D		
Ramp E-13	0+60	4+20	LT	40	10D		
	4+20	6+20	RT	40	6C		
	6+80	8+00	RT	60	3C		
	8+65	9+30	RT	65	2C		
Ramp E-14	0+00	3+00	RT	60	4C	2C	
	3+30	—	RT	30	1C		
	3+30	6+30	LT	30	11D		
	6+90	7+50	LT	60	2D		
	8+50	—	LT	100	1D		
	8+50	11+50	RT	100	4C		
Ramp E-15	0+00	2+10	RT	70	4C		
	2+50	4+90	RT	40	7C		
	5+50	6+10	RT	60	2C		
	6+10	7+90	LT	60	3D	1D	
	7+90	15+10	RT	60	9C	4C	
	15+80	—	RT	70		1C	
	16+80	19+80	RT	100	3C	1C	
Ramp E-16	0+70	3+50	LT	40	8D		
	3+50	7+10	RT	40	8C	2C	
	4+30	5+10	LT	80	2D		
	7+75	—	RT	65		1C	
Ramp E-18	0+80	5+60	RT	60	9C		
	5+90	8+60	RT	30	8C	2C	
	8+60	8+90	LT	30		2D	
	9+50	13+10	LT	60	5D	2D	
Ramp 3	0+00	3+60	RT	60	7C		
	4+60	8+60	RT	100	5C		
Ramp 4	0+00	0+70	LT *	70	2C		
	1+10	1+90	LT *	40	3C		
	1+90	6+40	RT *	30	16D		
	7+00	—	RT *	60	1D		
	7+00	8+00	RT *	100	1D		
I-90 WB	110+95	112+95	LT *	100	3C		
	113+55	114+15	LT *	60	2C		
Ramp 5	0+35	0+95	LT *	30	3C		
	0+95	6+05	RT *	30	18D		
Ramp 6	0+00	0+80	RT	40	3C		
	1+10	1+70	RT	30	3C		
	1+70	2+60	LT	30	4D		
	3+10	—	LT	50	1D		
	3+10	3+60	RT	50	2C		
	3+90	6+60	RT	30	10C		
I-90(WB)	119+70; 121+70	125+70	LT *	100	6C		
	126+40 BK	126+80 AH	LT *	70	2C		
I-90 (EB)	114+90	119+10	RT	105	5C		
Ramp 7	0+00	—	RT	100	1C		

ITEM 620 DELINEATORS

ROADWAY	STATION FROM	STATION TO	SIDE	SPACE (FT.)	QUANTITY-TYPE C&D POST MOUNTED	RAIL MOUNTED	
Ramp 7	1+20	2+10	RT	30	4C		
	2+10	3+60	LT	30	6D		
	4+20	—	LT	60	1D		
	4+20	4+80	RT	60	2C		
	5+10	6+30	RT	30	5C		
	6+90	7+50	RT	60	2C		
I-90(EB)	127+00 BK	129+00 AH	RT	50	6C		
Ramp 8	0+25	1+25	LT *	50	3C		
	1+55	1+85	LT *	30	2C		
	1+85	6+65	RT *	30	17D		
	6+65	7+65	LT *		2C		
Ramp 9	0+00	8+00	LT *	100	9C		
Ramp 10	0+00	—	LT *	70	1C		
	0+40	1+20	LT *	40	3C		
	1+50	—	LT *	30	1C		
	1+50	3+60	RT *	30	8D		
	4+20	—	RT *	60	1D		
	4+20	4+80	LT *	60	2C		
	5+10	6+00	LT *	30	4C		
(To Chester)	6+00	8+10	RT *	30	8D		
(To E. 24th)	6+00	7+00	LT *	100	2C		
Ramp 11	0+00	2+10	RT	70	4C		
	2+40	2+70	RT	30	2C		
	2+70	6+30	LT	30	13D		
	6+90	—	LT	60	1D		
	6+90	8+50	RT	80	3C		
I-90(WB)	135+25	138+25	LT	100	4C		
I-90 (EB)	137+00	139+00	RT	100	3C		
Ramp 12	0+00	3+50	RT	70	6C		
	4+10	—	RT	60	1C		
(To E. 30th)	4+40	5+80	RT	30	5C		
	5+60	6+20	LT	30	3D		
	6+80	7+80	LT	60	2D		
(To Superior)	4+10	7+10	LT	100	4D		
	6+10	7+10	RT	100	2C		
Ramp 13	0+00	3+00	LT *	60	6C		
	4+00	6+00	LT *	100	3C		
	6+00	7+00	RT *	100	2D		
Ramp 14	0+00	2+40	RT	40	7C		
	3+00	3+60	RT	60	2C		
(To E.26th NB)	3+90	4+80	RT	30	4C		
	4+80	6+30	LT	30	6D		
(To E.26th SB)	3+90	4+90	LT	100	2D		
	4+90	6+90	RT	100	3C		
Ramp 15	0+00	2+10	LT *	70	4C		
	3+10	7+10	LT *	100	5C		
I-90 (EB)	157+50	159+50	RT	100	3C		
Ramp 16	0+00	1+80	LT *	30	7C		
	1+80	3+30	RT *	30	6D		
	3+90	—	RT *	60	1D		

ITEM 620 DELINEATORS

ROADWAY	STATION FROM	STATION TO	SIDE	SPACE (FT.)	QUANTITY-TYPE C&D POST MOUNTED	RAIL MOUNTED	PARAPET MOUNTED
	3+90	5+90	LT *	100	3C		
(To E.33rd	6+90	7+90	LT *	100	2C		
	7+90	8+50	RT *	60	2D		
	8+80	10+00	RT *	30	5D		
(To St. Clair)	4+90	8+00	RT *	70	5D		
	8+00	9+40	LT *	70	3C		
I-90(WB)	156+50	165+65	LT *	101.7	10C		
Ramp 17	0+00	1+50	LT *	30	6C		
	1+50	5+10	RT *	30	13D		
	5+70	—	RT *	60	1D		
	5+70	7+70	LT *	100	3C		
Ramp 18	0+00	2+00	RT	40	6C		
	2+00	6+40	LT	40	12D		
	6+40	7+60	RT	40	4C		
	7+60	8+80	LT	40	4D		
(E.33rd St. Conn)	6+80	7+60	LT	40	3D		
	7+60	8+40	RT	40	3C		
Shoreway	46+50	52+10	RT	80	8C		
Innerbelt	53+10	57+10	RT	100	5C		
Connection	57+10	58+30	LT	60	3D		
	58+60	59+50	LT	30	4D		
	59+50	59+80	RT	30	2C		
	60+05	60+30	RT	25	2C		
	60+90	61+90	RT	100	2C		
WB Shoreway	74+45	75+45	LT *	100	2C		
	72+35	73+85	LT *	30	6C		
	68+15	72+35	RT *	30	15D		
	62+05	67+65	RT *	80	8D		
	61+50	165+50	LT	100	5D		
	66+30	—	LT	80	1D		
Sheet 94 Total-Cost Participation I				Type C	335	13	—
Sheet 94 Total-Cost Participation I				Type D	251	5	—
Sheet 93 Total-Cost Participation I				Type C	104	41	—
Sheet 93 Total-Cost Participation I				Type D	127	21	9
I-90-1(101)29 Total-Cost Participation I				Type C	439	54	—
I-90-1(101)29 Total-Cost Participation I				Type D	378	26	9

NOTES:
1. Asterisk (*) indicates the side in the direction of increasing stationing.
2. For delineator details see Standard Construction Drawing, TC-61.10.

MADE MGB DATE 5-20-77
TRACED DWT DATE 8-2-77
CHECKED DSP DATE 11-3-77
SCALE NONE

Howard, Needles, Tammen & Bergendoff
CONSULTING ENGINEERS
CLEVELAND, OHIO

HNTB

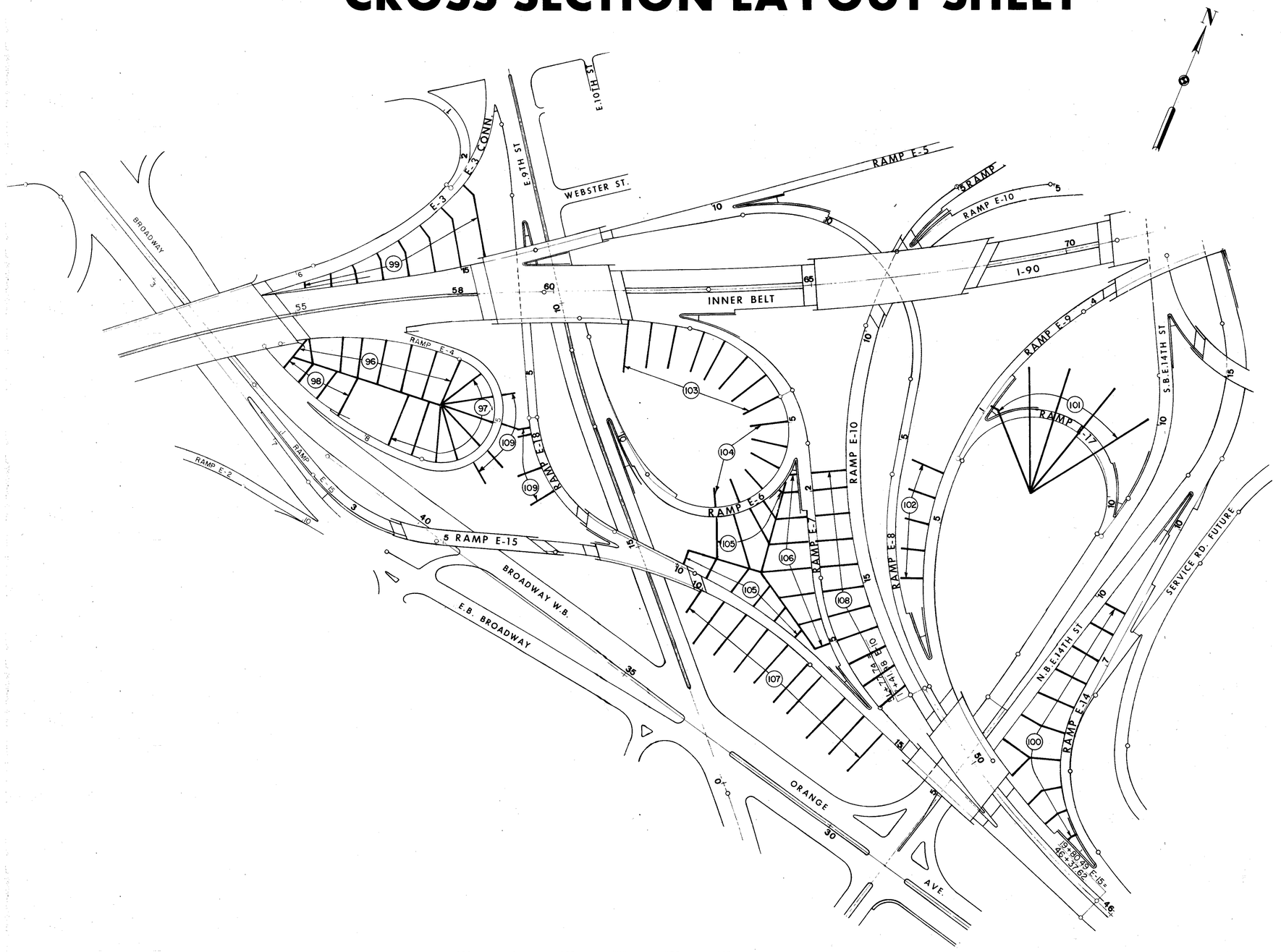
11-0

CROSS SECTION LAYOUT SHEET

FHWA REGION	STATE	PROJECT	
5	OHIO		

95
169

CUYAHOGA COUNTY
CUY-77-14.12
CUY-90-16.21



SHEET NUMBER - 00

MADE D.S.P. DATE 5-27-77
TRACED F.W.C. DATE 6-21-77
CHECKED T.S. DATE 6-23-77
SCALE 1"=100'

Howard, Needles, Tammen & Bergendoff
CONSULTING ENGINEERS
CLEVELAND, OHIO

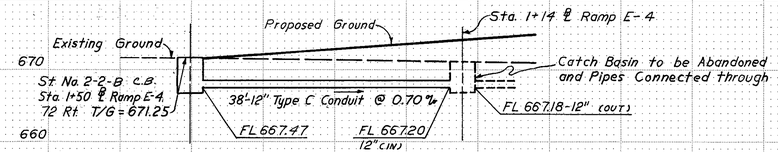
HNTB

FHWA	STATE	PROJECT	
5	OHIO		

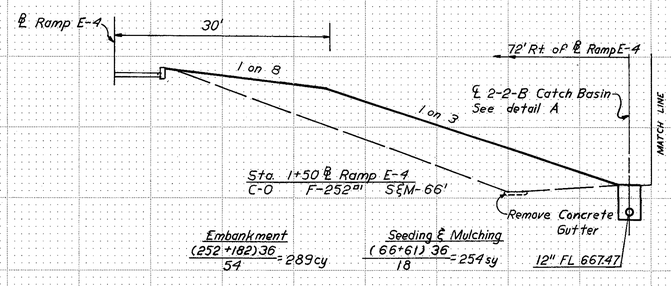
96
169

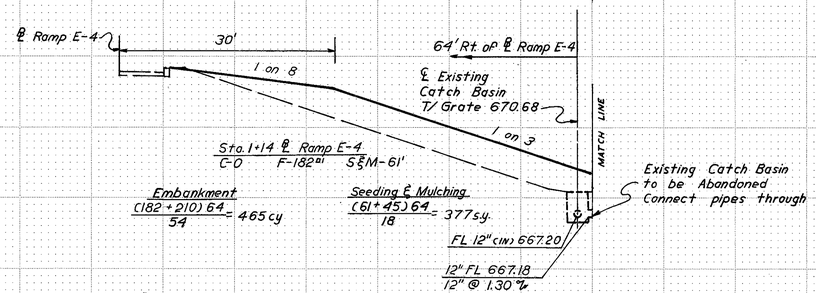
CUYAHOGA COUNTY
CUY-77-14.12
CUY-90-16.21

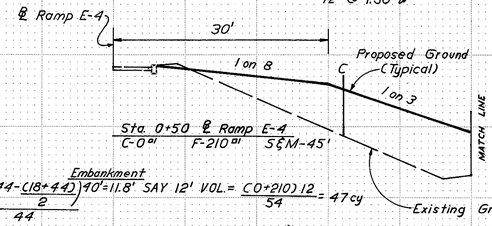
QUANTITY CALCULATIONS
MADE BY DSP DATE 5-9-77
CHECKED BY TS DATE 6-23-77

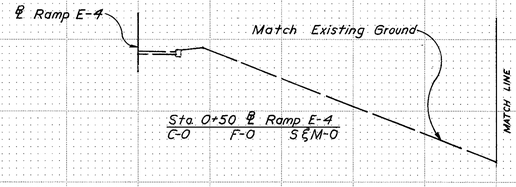


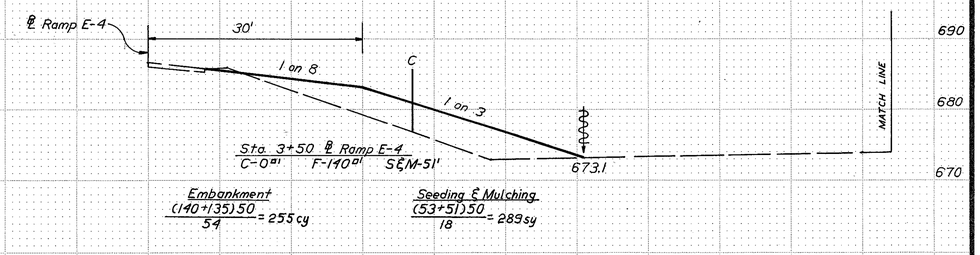
DETAIL A

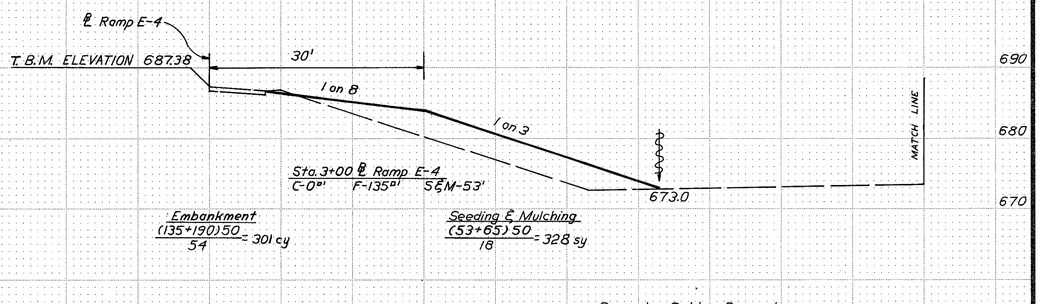


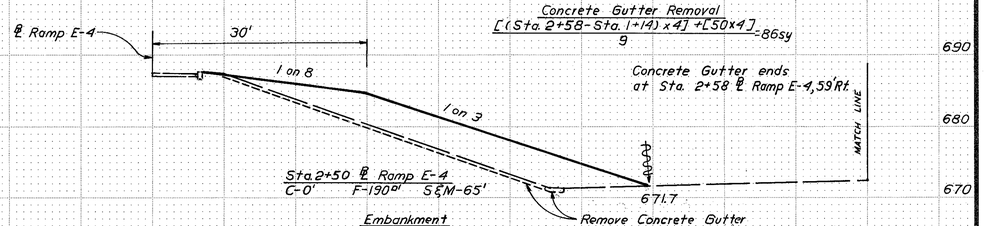


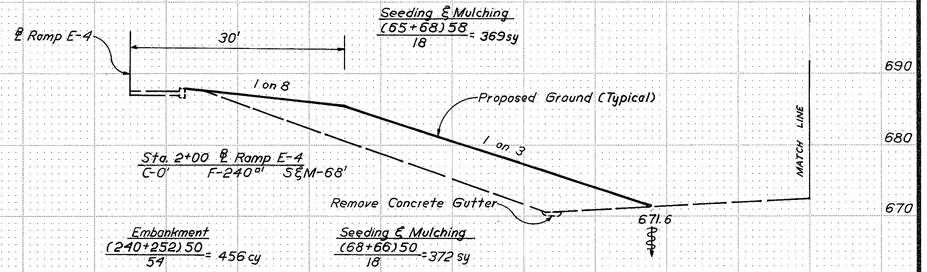












SCALE: 1"=10' Vert.
1"=10' Horiz.

NOTES:
1. See note in General Notes pertaining to corrected arc length Calculations.
2. Excavation of build-up area (non-curbed) adjacent to shoulder is included in cost of Item 617 Compacted Aggregate, as per plan.
3. Quantities for Grading Area (X-1) on Sheet 98.
4. Embankments shall be constructed in accordance with 203.09
5. For location of Match Line see Cross Section Layout Sheet.

TEMPORARY BENCH MARK: Rt. Edge of Pavement Ramp E-4 Sta. 3+00 ℄ Ramp E-4 ELEV. = 687.38

MADE DSP DATE 5-9-77
TRACED FMV DATE 7-1-77
CHECKED TS DATE 7-1-77
SCALE As shown

Howard, Needles, Tammen & Bergendoff
CONSULTING ENGINEERS
CLEVELAND, OHIO

HNTB

STA. 0+50 TO STA. 3+50 ℄ RAMP E-4 : GRADING AREA (X-1)

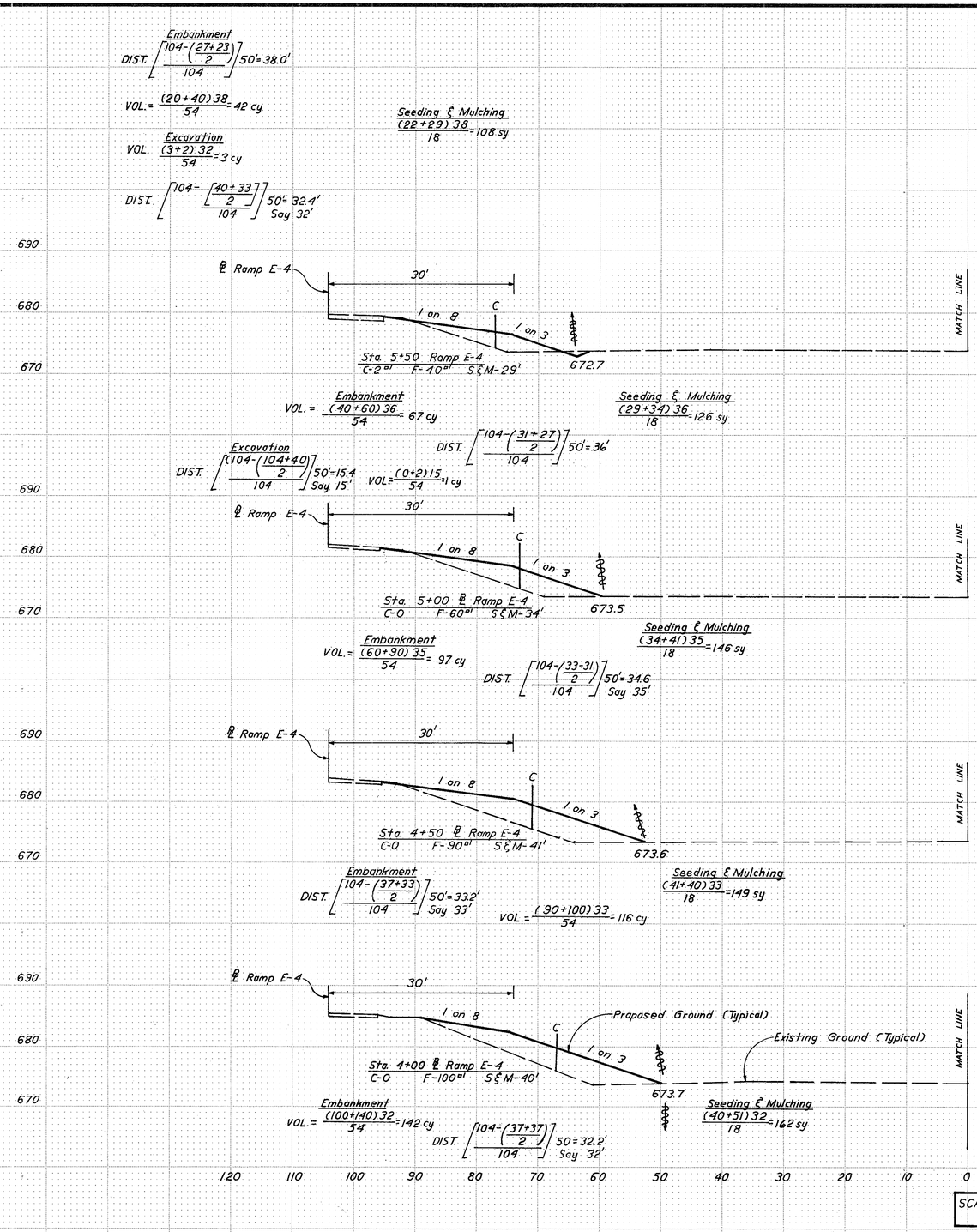
FHWA REGION	STATE	PROJECT	
5	OHIO		

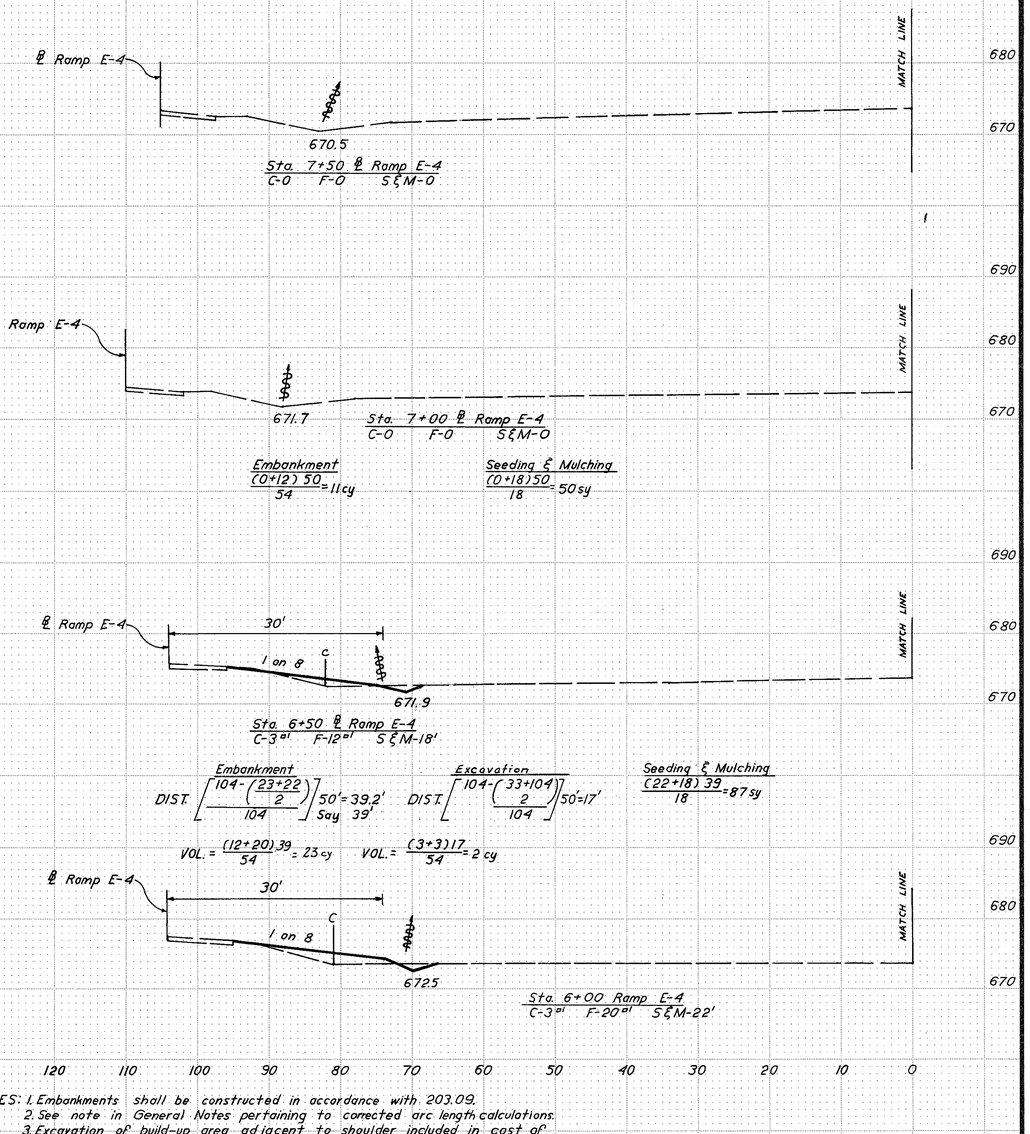
97
169

QUANTITY CALCULATIONS

MADE BY DSP DATE 5-9-77
CHECKED BY T'S DATE 6-23-77

CUYAHOGA COUNTY
CUY-77-14.12
CUY-90-16.21





SCALE: 1" = 10' Horz
1 = 10' Vert

NOTES: 1. Embankments shall be constructed in accordance with 203.09.
2. See note in General Notes pertaining to corrected arc length calculations.
3. Excavation of build-up area adjacent to shoulder included in cost of Item 617 Compacted Aggregate, as per plan.
4. Quantities for Grading Area (X-1) on sheet 98.
5. For location of Match Line see Cross Section Layout Sheet.

MADE DSP DATE 5-9-77
TRACED FMV DATE 7-5-77
CHECKED T'S DATE 7-5-77
SCALE As shown

Howard, Needles, Tammen & Bergendoff
CONSULTING ENGINEERS
CLEVELAND, OHIO

HNTB

STA. 4+00 TO STA. 7+50 ℄ RAMP E-4 ; GRADING AREA (X-1)

FHWA	STATE	PROJECT	
5	OHIO		

98
169

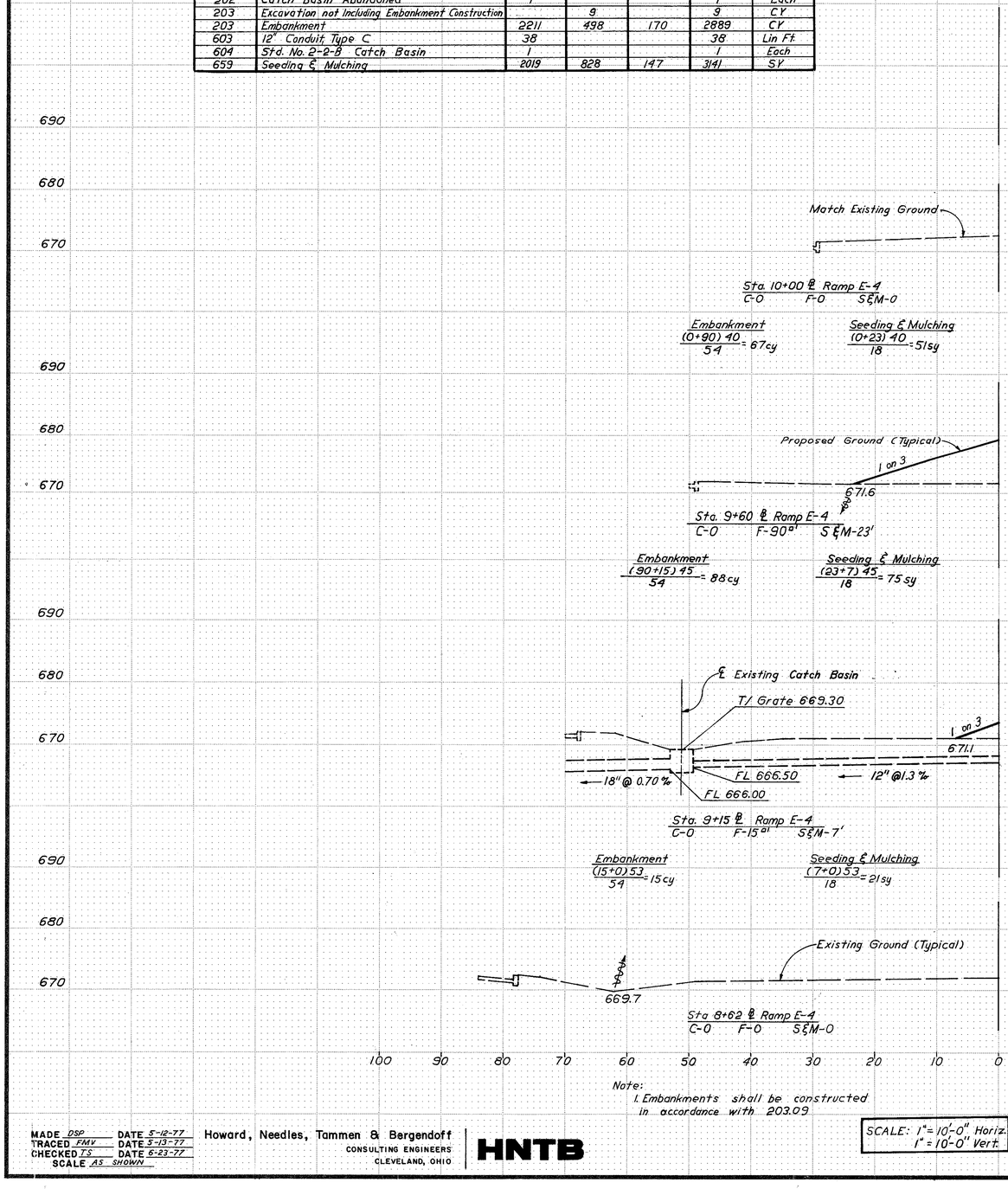
CUYAHOGA COUNTY
CUY-77-14.12
CUY-90-16.21

QUANTITY CALCULATIONS
MADE BY DSP DATE 5-12-77
CHECKED BY TS DATE 6-23-77

GRADING AREA (X-1)

ESTIMATED QUANTITIES COST PART I

ITEM	DESCRIPTION	SHEET 96	SHEET 97	SHEET 98	TOTAL QUANTITY	UNIT
202	Concrete Gutter Removed	86			86	SY
202	Catch Basin Abandoned	1			1	Each
203	Excavation not Including Embankment Construction		9		9	CY
203	Embankment	2211	498	170	2889	CY
603	12" Conduit, Type C	38			38	Lin Ft.
604	Std. No. 2-2-B Catch Basin	1			1	Each
659	Seeding & Mulching	2019	828	147	3141	SY



Note:
1. Embankments shall be constructed in accordance with 203.09

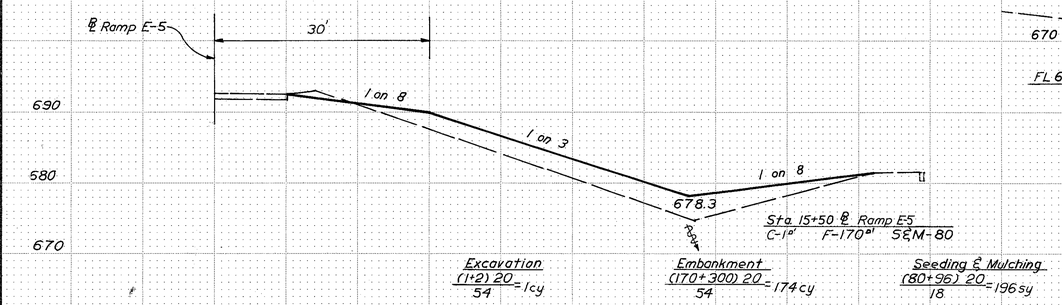
SCALE: 1"=10'-0" Horiz.
1"=10'-0" Vert.

MADE DSP DATE 5-12-77
TRACED FMV DATE 5-13-77
CHECKED TS DATE 6-23-77
SCALE AS SHOWN

Howard, Needles, Tammen & Bergendoff
CONSULTING ENGINEERS
CLEVELAND, OHIO

HNTB

STA 8+62 TO STA 10+00 ℄ RAMP E-4; GRADING AREA (X-1)

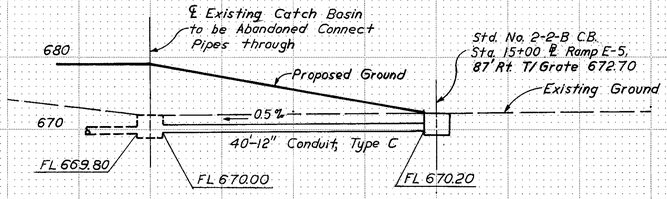


Excavation (1+2) 20 / 54 = 1 cy

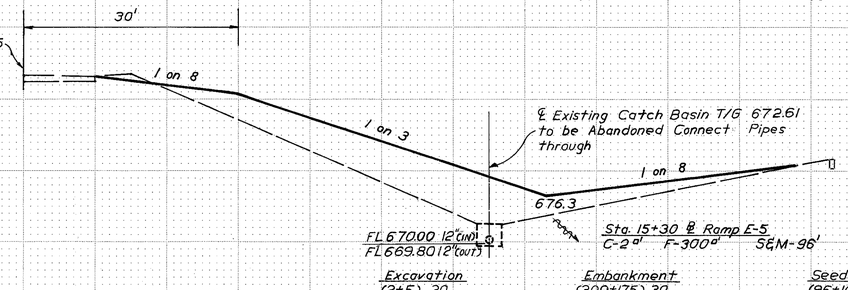
Embankment (170+300) 20 / 54 = 174 cy

Seeding & Mulching (80+96) 20 / 18 = 196 sy

Sta. 15+50 ℄ Ramp E-5
C-1' F-170' S&M-80



DETAIL A



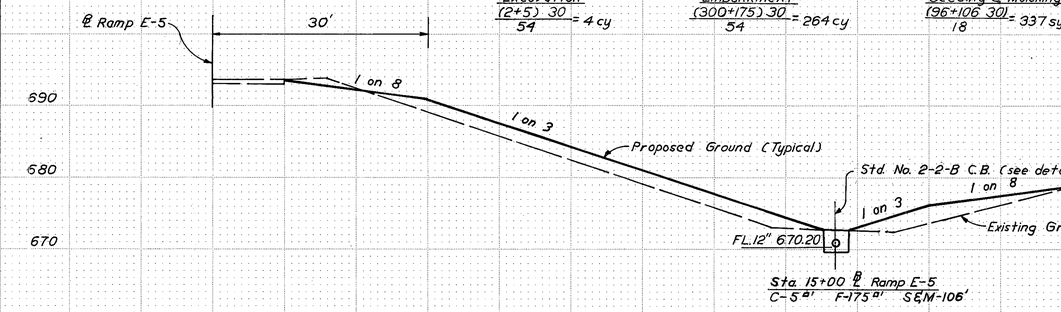
FL 670.00 12"(in)
FL 669.80 12"(out)

Excavation (2+5) 30 / 54 = 4 cy

Embankment (300+175) 30 / 54 = 264 cy

Seeding & Mulching (96+106 30) / 18 = 337 sy

Sta. 15+30 ℄ Ramp E-5
C-2' F-300' S&M-96'

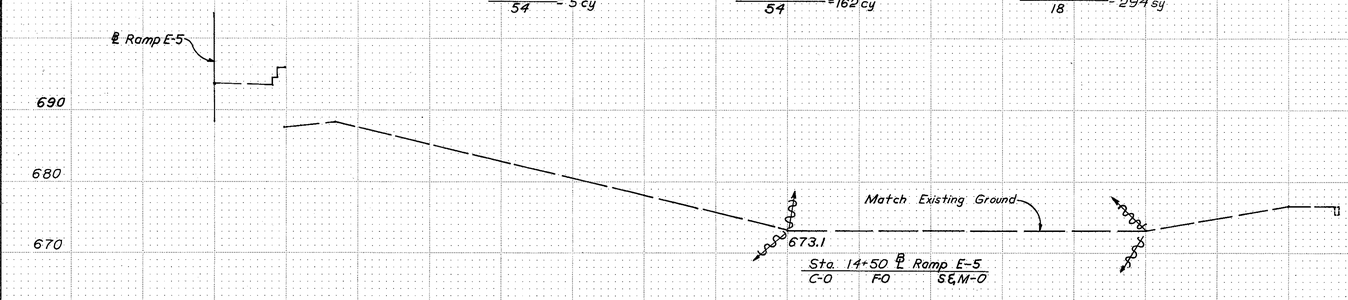


Excavation (5+0) 50 / 54 = 5 cy

Embankment (175+0) 50 / 54 = 162 cy

Seeding & Mulching (106+0) 50 / 18 = 294 sy

Sta. 15+00 ℄ Ramp E-5
C-5' F-175' S&M-106'

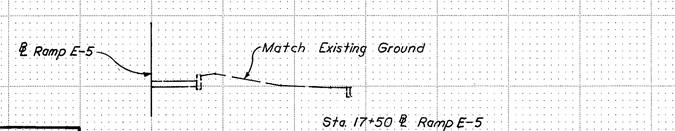


Sta. 14+50 ℄ Ramp E-5
C-0 F-0 S&M-0

ESTIMATED QUANTITIES COST PART I			
ITEM	DESCRIPTION	QUANTITY	UNIT
202	Catch Basin Abandoned	1	Each
203	Excavation, not Including Embank. Construct	31	C.Y.
203	Embankment	1205	C.Y.
603	12" Conduit, Type C	40	L.F.
604	Std. No. 2-2-B Catch Basin	1	Each
659	Seeding and Mulching	1649	S.Y.
660	Sodding	100	S.Y.

Sodding
Sta. 15+00 to Sta. 16+50
150' x 6'-8" = 100 sy
(Less out 100 sy From Seeding & Mulching Total)

SCALE: 1"=10' Horiz.
1"=10' Vert.

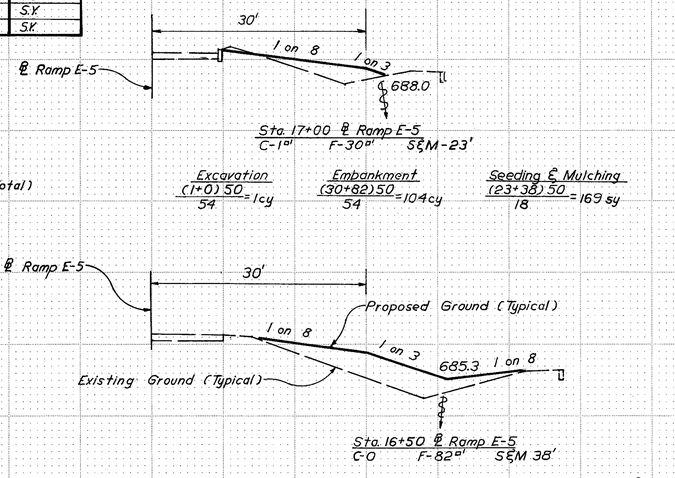


Sta. 17+50 ℄ Ramp E-5

Excavation (0+1) 50 / 54 = 1 cy

Embankment (0+30) 50 / 54 = 28 cy

Seeding & Mulching (0+23) 50 / 18 = 64 sy



Sta. 17+00 ℄ Ramp E-5
C-1' F-30' S&M-23'

Excavation (1+0) 50 / 54 = 1 cy

Embankment (30+82) 50 / 54 = 104 cy

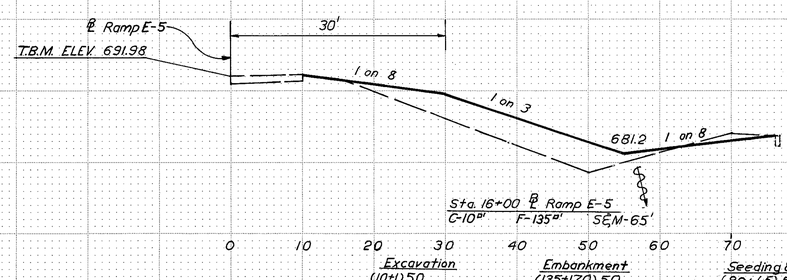
Seeding & Mulching (23+38) 50 / 18 = 169 sy

Sta. 16+50 ℄ Ramp E-5
C-0 F-82' S&M 38'

Excavation (0+10) 50 / 54 = 9 cy

Embankment (82+135) 50 / 54 = 201 cy

Seeding & Mulching (32+59) 50 / 18 = 252 sy



Sta. 16+00 ℄ Ramp E-5
C-10' F-135' S&M-65'

Excavation (10+1) 50 / 54 = 10 cy

Embankment (135+170) 50 / 54 = 282 cy

Seeding & Mulching (80+65) 50 / 18 = 403 sy

Temporary Bench Mark:
Rt Edge of Pavement of Ramp E-5
Sta. 16+00 ℄ Ramp E-5
ELEV. = 691.98

Notes:
1. Excavation of Build-up Area (Non-Curbed) Adjacent to shoulder included in cost of Item 617 Compacted Aggregate, as per plan.
2. Embankment Shall Be Constructed in Accordance with 203.09
3. Provide 6' Sodding along ℄ ditch between Sta. 15+00 ℄ Ramp E-5 and Sta. 16+50 ℄ Ramp E-5

QUANTITY CALCULATIONS

MADE BY DSP DATE 5-11-77
CHECKED BY TS DATE 6-22-77

FHWA	STATE	PROJECT	
5	OHIO		

99 / 169

CUYAHOGA COUNTY
CUY-77-14.12
CUY-90-16.21

MADE DSP DATE 5-11-77
TRACED EMK DATE 7-1-77
CHECKED TS DATE 7-1-77
SCALE AS SHOWN

Howard, Needles, Tammen & Bergendoff
CONSULTING ENGINEERS
CLEVELAND, OHIO

HNTB

STA. 14+50 TO STA. 17+50 ℄ RAMP E-5: GRADING AREA (X-2)

QUANTITY CALCULATIONS

MADE BY DSP DATE 5-12-77

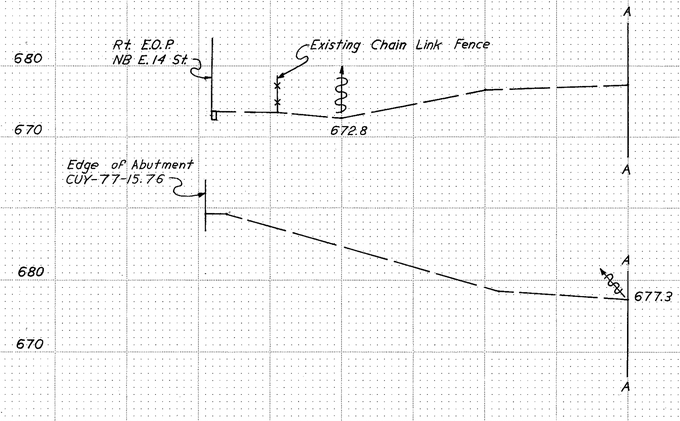
CHECKED BY TS DATE 6-23-77

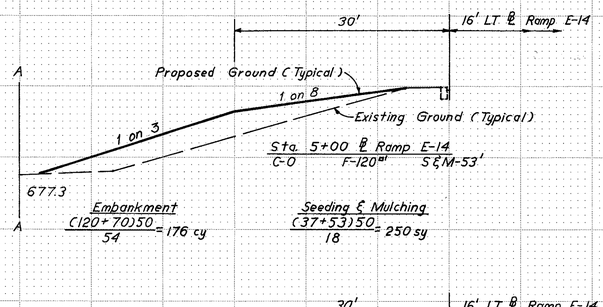
FHWA	STATE	PROJECT	
5	OHIO		

100
169

CUYAHOGA COUNTY
CUY-77-14.12
CUY-90-16.21

ESTIMATED QUANTITIES			COST PART I
ITEM	DESCRIPTION	QUANTITY	UNIT
203	Embankment	918	CY
659	Seeding & Mulching	1539	SY

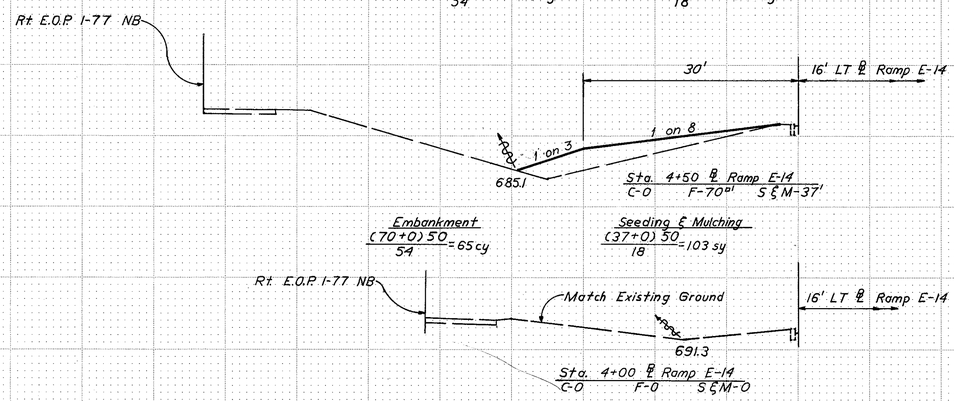




Sta. 5+00 ℄ Ramp E-14
C-0 F-120 at S&M-53'

Embankment (120+70)50 / 54 = 176 cy

Seeding & Mulching (37+53)50 / 18 = 250 sy

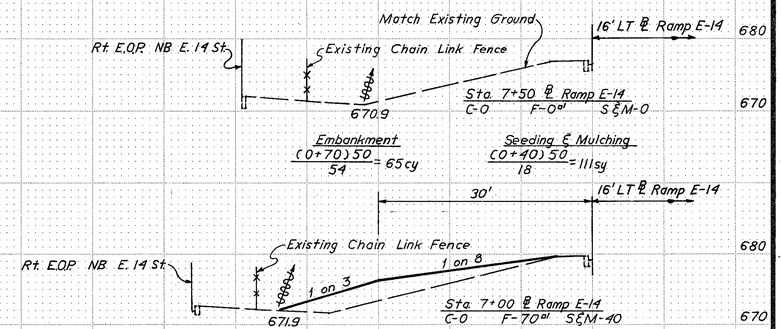


Sta. 4+50 ℄ Ramp E-14
C-0 F-70 at S&M-37'

Embankment (70+0)50 / 54 = 65 cy

Seeding & Mulching (37+0)50 / 18 = 103 sy

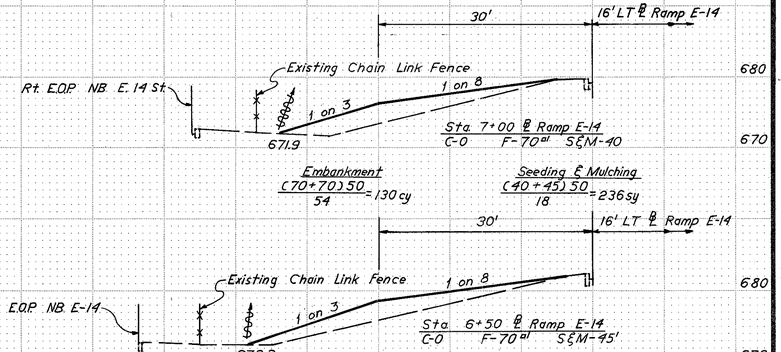
Sta. 4+00 ℄ Ramp E-14
C-0 F-0 S&M-0



Sta. 7+50 ℄ Ramp E-14
C-0 F-0 at S&M-0

Embankment (0+70)50 / 54 = 65 cy

Seeding & Mulching (0+40)50 / 18 = 111 sy



Sta. 7+00 ℄ Ramp E-14
C-0 F-70 at S&M-40

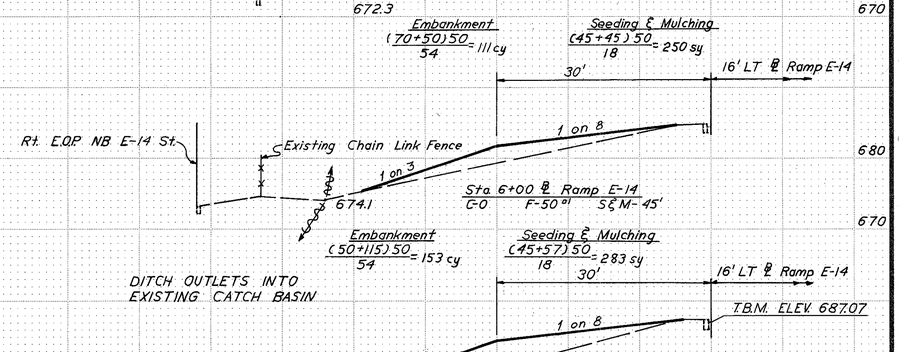
Embankment (70+70)50 / 54 = 130 cy

Seeding & Mulching (40+45)50 / 18 = 236 sy

Sta. 6+50 ℄ Ramp E-14
C-0 F-70 at S&M-45'

Embankment (70+50)50 / 54 = 111 cy

Seeding & Mulching (45+45)50 / 18 = 250 sy

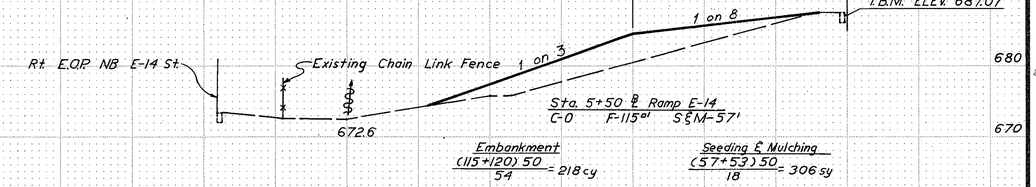


Sta 6+00 ℄ Ramp E-14
C-0 F-50 at S&M-45'

Embankment (50+115)50 / 54 = 153 cy

Seeding & Mulching (45+57)50 / 18 = 283 sy

DITCH OUTLETS INTO EXISTING CATCH BASIN



Sta. 5+50 ℄ Ramp E-14
C-0 F-115 at S&M-57'

Embankment (115+120)50 / 54 = 218 cy

Seeding & Mulching (57+53)50 / 18 = 306 sy

120 110 100 90 80 70 60 50 40 30 20 10 0

100 90 80 70 60 50 40 30 20 10 0

SCALE: 1"=10' Horiz
1"=10' Vert.

TEMPORARY BENCH MARK: LT E.O.P. Sta. 5+50 ℄ Ramp E-14 ELEV. = 687.07

NOTE: 1. Embankments shall be constructed in accordance with 203.09

MADE DSP DATE 5-12-77
TRACED FMV DATE 6-21-77
CHECKED TS DATE 6-23-77
SCALE AS SHOWN

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CONSULTING ENGINEERS
CLEVELAND, OHIO

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STA. 4+00 TO STA. 7+50 ℄ RAMP E-14: GRADING AREA (X-3)

QUANTITY CALCULATIONS

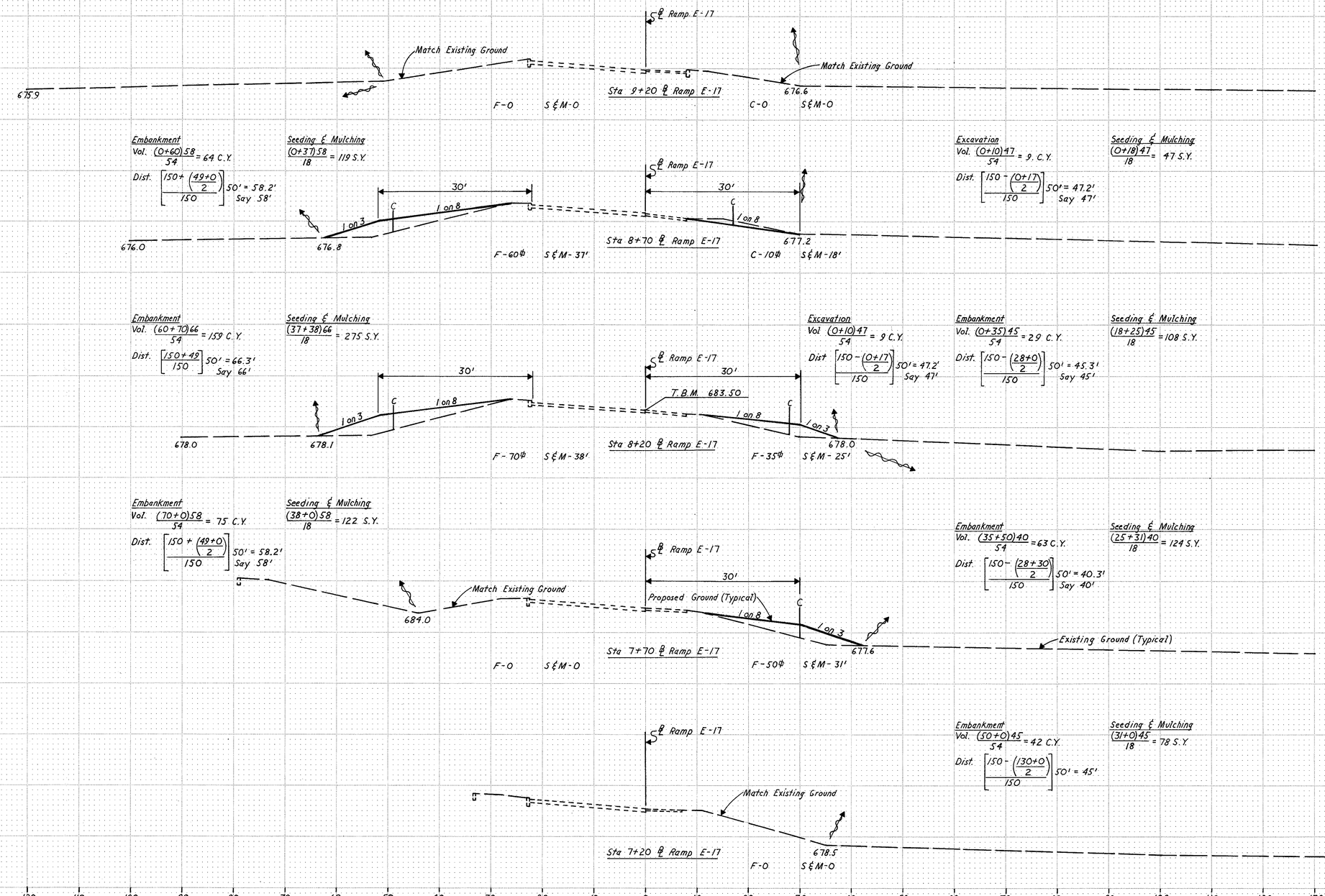
MADE BY DSP DATE 5-12-77

CHECKED BY TS DATE 6-22-77

FHWA	STATE	PROJECT	
5	OHIO		

101
169

CUYAHOGA COUNTY
CUY-77-14.12
CUY-90-16.21



Scale : 1" = 10' Horz.
1" = 10' Vert.

ESTIMATED QUANTITIES COST PART I

Item	Description	Quantity	Unit
203	Excavation Not Including Embankment Construction	18	C.Y.
203	Embankment	432	C.Y.
659	Seeding & Mulching	873	S.Y.

Notes: 1. See note in General Notes pertaining to corrected arc length calculations.
2. Embankments shall be constructed in accordance with 203.09.

Temporary Bench Mark : Rt. Edge Of Pavement Sta 8+20 ℄ Ramp E-17. ELEV. = 683.50

MADE DSP DATE 5-12-77
TRACED REL DATE 7-1-77
CHECKED TS DATE 7-1-77
SCALE As Shown

Howard, Needles, Tammen & Bergendoff
CONSULTING ENGINEERS
CLEVELAND, OHIO

HNTB

STA. 7+20 TO STA. 9+20 ℄ RAMP E-17: GRADING AREA X-4

QUANTITY CALCULATIONS

MADE BY DSP DATE 5-13-77

CHECKED BY TS DATE 6-22-77

FHWA	STATE	PROJECT	
5	OHIO		

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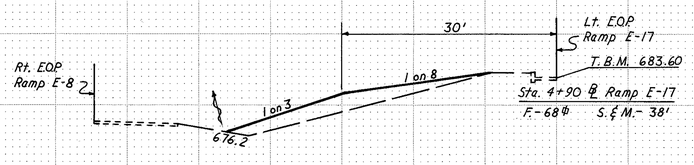
CUYAHOGA COUNTY
CUY-77-14.12
CUY-90-16.21

ESTIMATED QUANTITIES COST PART I

Item	Description	Quantity	Unit
203	Embankment	376	C.Y.
659	Seeding & Mulching	644	S.Y.

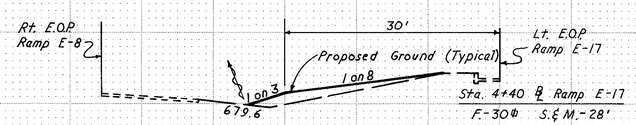
Embankment
$\frac{(68+105)\,50}{54}$ = 160 C.Y.

Seeding & Mulching
$\frac{(38+50)\,50}{18}$ = 244 S.Y.



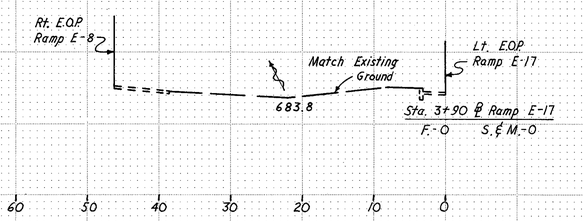
Embankment
$\frac{(30+68)\,50}{54}$ = 91 C.Y.

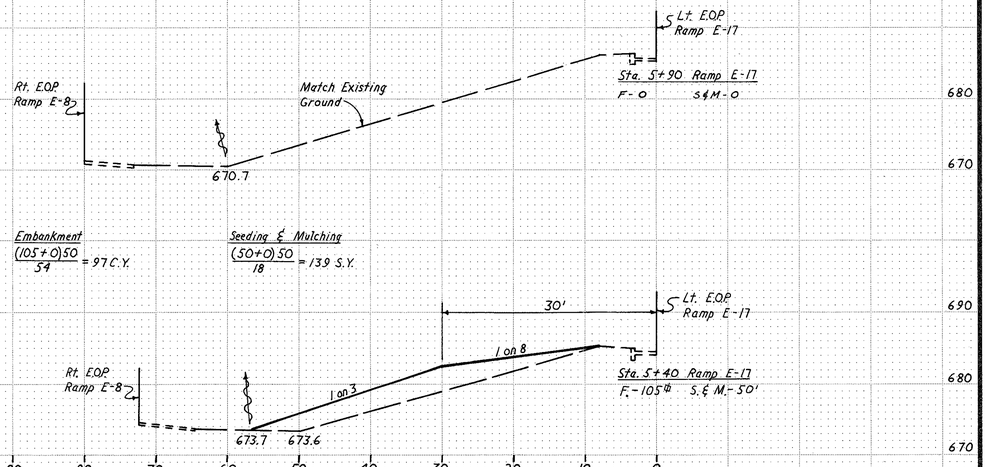
Seeding & Mulching
$\frac{(38+28)\,50}{18}$ = 183 S.Y.



Embankment
$\frac{(0+30)\,50}{54}$ = 28 C.Y.

Seeding & Mulching
$\frac{(28+0)\,50}{18}$ = 78 S.Y.





Scale : 1" = 10' Horz.
1" = 10' Vert.

Temporary Bench Mark : Lt. Edge of Pavement Sta. 4+90 ℄ Ramp E-17 ELEV. = 683.60

Note : 1. Embankments shall be constructed in accordance with 203.09.

MADE DSP DATE 5-13-77
TRACED REL DATE 7-5-77
CHECKED TS DATE 7-6-77
SCALE AS SHOWN

Howard, Needles, Tammen & Bergendoff
CONSULTING ENGINEERS
CLEVELAND, OHIO

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STA. 3+90 TO STA. 5+90 ℄ RAMP E-17: GRADING AREA (X-5)

QUANTITY CALCULATIONS

MADE BY DSP DATE 5-17-77

CHECKED BY TS DATE 6-22-77

FHWA	STATE	PROJECT	
5	OHIO		

103
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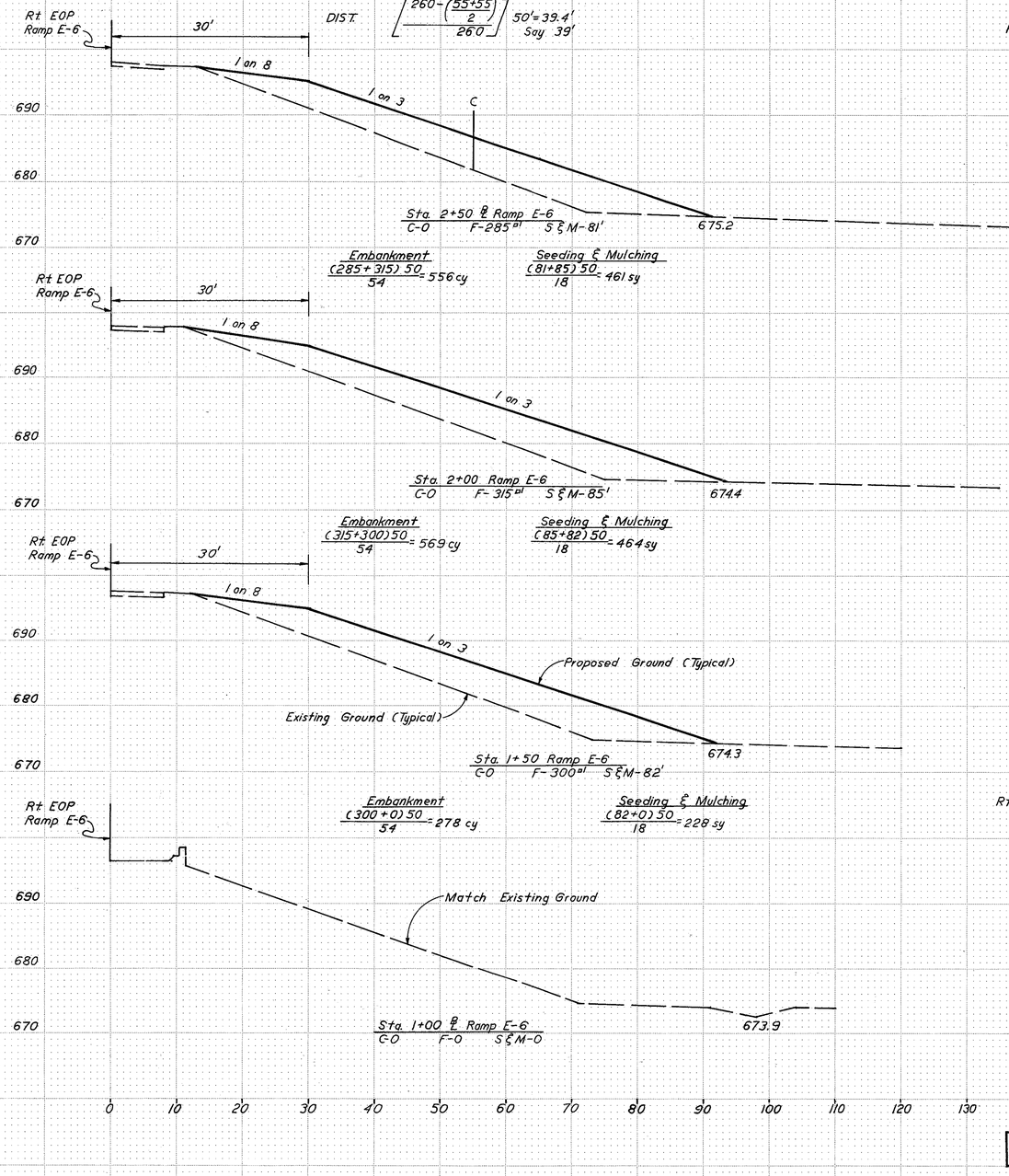
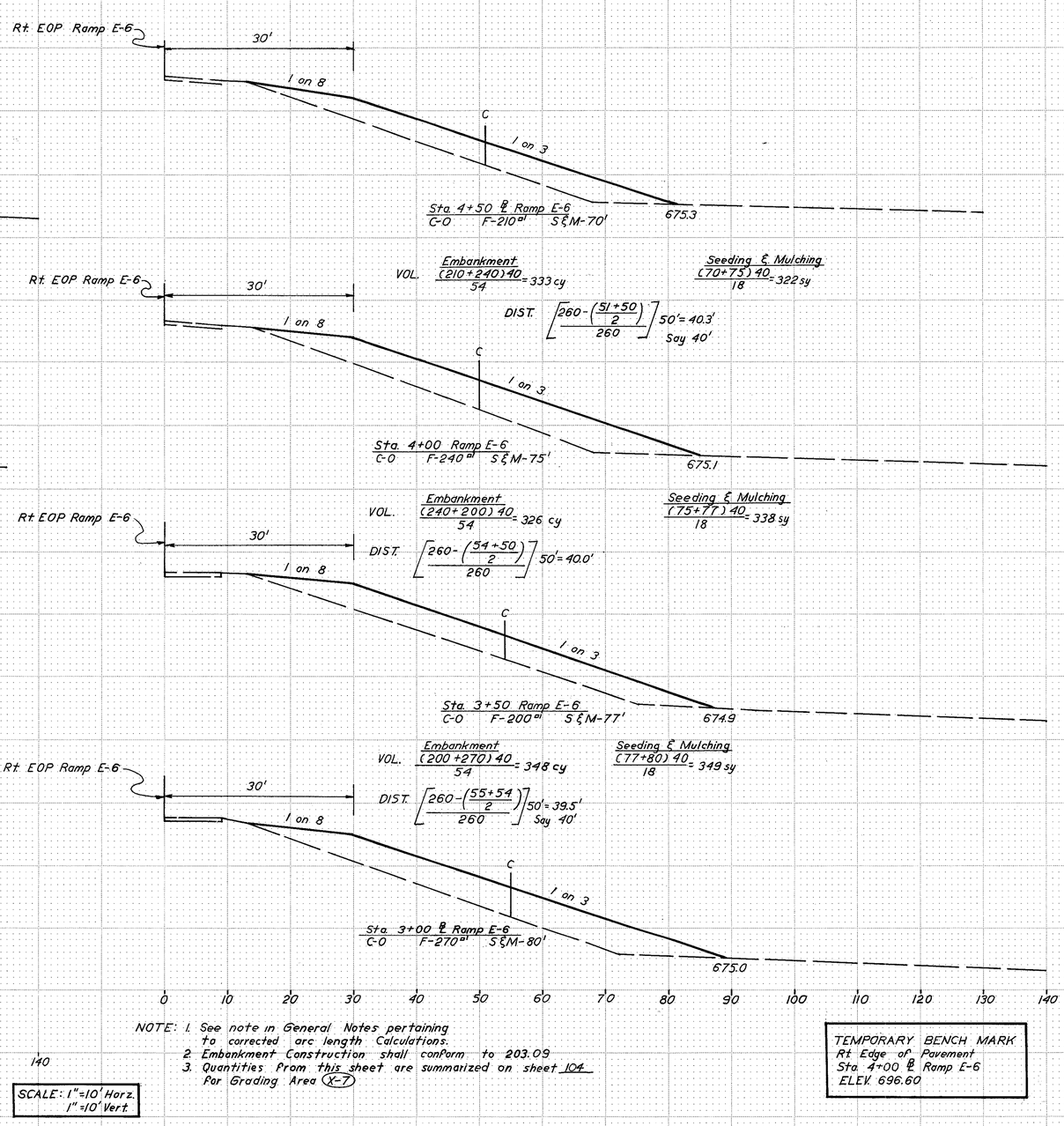
CUYAHOGA COUNTY
CUY-77-14.12
CUY-90-16.21





NOTE: 1. See note in General Notes pertaining to corrected arc length Calculations.
2. Embankment Construction shall conform to 203.09
3. Quantities from this sheet are summarized on sheet 104 For Grading Area (X-7)

SCALE: 1"=10' Horz.
1"=10' Vert.

TEMPORARY BENCH MARK
Rt Edge of Pavement
Sta. 4+00 ℄ Ramp E-6
ELEV. 696.60

MADE DSP DATE 5-17-77
TRACED FMV DATE 6-30-77
CHECKED TS DATE 7-1-77
SCALE AS SHOWN

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CLEVELAND, OHIO

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STA. 1+00 TO STA. 4+50 ℄ RAMP E-6: GRADING AREA (X-6)

QUANTITY CALCULATIONS

MADE BY DSP DATE 5-17-77

CHECKED BY TS DATE 6-22-77

FHWA	STATE	PROJECT	
5	OHIO		

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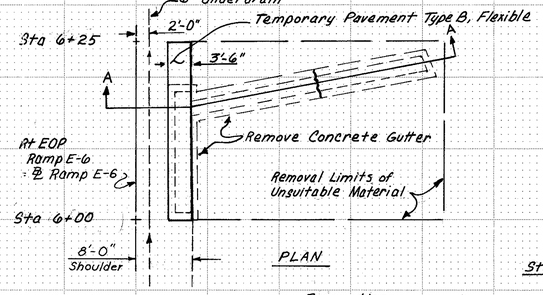
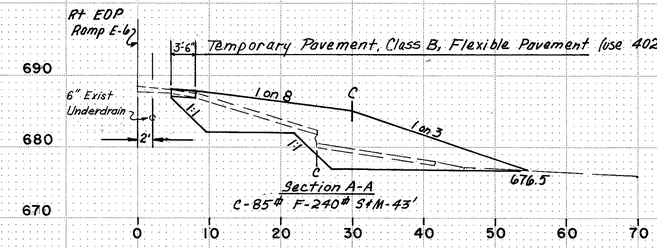
CUYAHOGA COUNTY
CUY-77-14.12
CUY-90-16.21

Remove Concrete Gutter
$\frac{(50' \times 4')}{9}$ = 22 S.Y.

Temporary Pavement Type B, Flexible
$\frac{(25' \times 3.5')}{9}$ = 10 S.Y.



PLAN



Section A-A
C-85# F-240# S&M-43'

Sta 6+00 to Sta 6+25

Excavation
Vol. $\frac{(85+85)\ 21}{54}$ = 66 C.Y.

Dist. $\left[\frac{150+25}{150}\right]$ 25' = 20.8' Say 21'

Embankment
Vol. $\frac{(90+240)\ 20}{54}$ = 122 C.Y.

Dist. $\left[\frac{150-\left(\frac{36+30}{2}\right)}{150}\right]$ 25' = 19.5' Say 20'

Seeding & Mulching
$\frac{(43+48)\ 20}{18}$ = 101 S.Y.

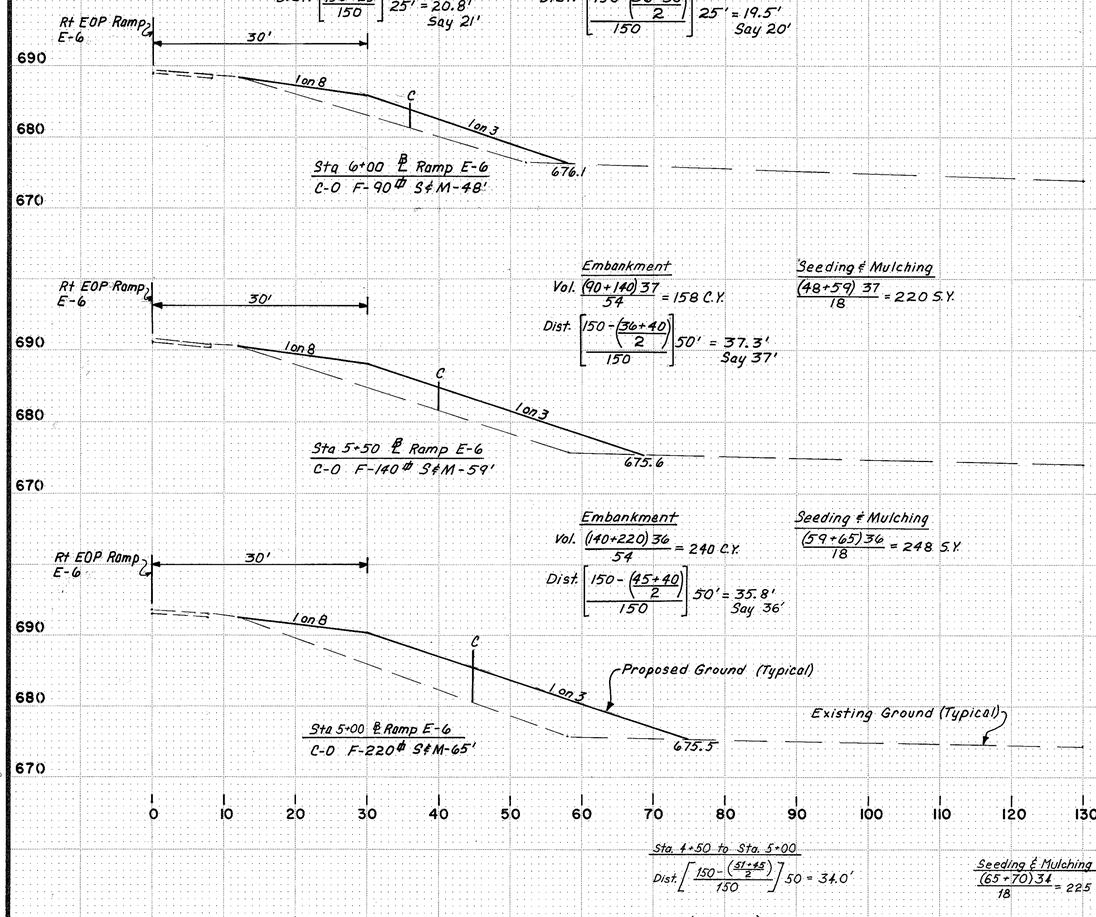
Sta 6+25 to Sta 6+50

Embankment
Vol. $\frac{(80+240)\ 20}{54}$ = 119 C.Y.

Dist. $\left[\frac{150-\left(\frac{30+30}{2}\right)}{150}\right]$ 25' = 20.0'

Seeding & Mulching
$\frac{(40+43)\ 20}{18}$ = 92 S.Y.

GRADING AREA (X-6) ESTIMATED QUANTITIES COST PART I					
ITEM	DESCRIPTION	TOTAL SHEET 103	TOTAL SHEET 104	TOTAL QUANTITY	UNIT
202	Remove Concrete Gutter	—	22	22	S.Y.
203	Excavation: Not Including Embank. Constr.	—	66	66	C.Y.
203	Embankment	2811	1024	3835	C.Y.
659	Seeding & Mulching	2511	1147	3658	S.Y.
615	Temp. Pavement, Type B, Flexible	—	10	10	S.Y.



Embankment
Vol. $\frac{(90+140)\ 37}{54}$ = 158 C.Y.

Dist. $\left[\frac{150-\left(\frac{36+40}{2}\right)}{150}\right]$ 50' = 37.3' Say 37'

Seeding & Mulching
$\frac{(48+59)\ 37}{18}$ = 220 S.Y.

Embankment
Vol. $\frac{(140+220)\ 36}{54}$ = 240 C.Y.

Dist. $\left[\frac{150-\left(\frac{45+40}{2}\right)}{150}\right]$ 50' = 35.8' Say 36'

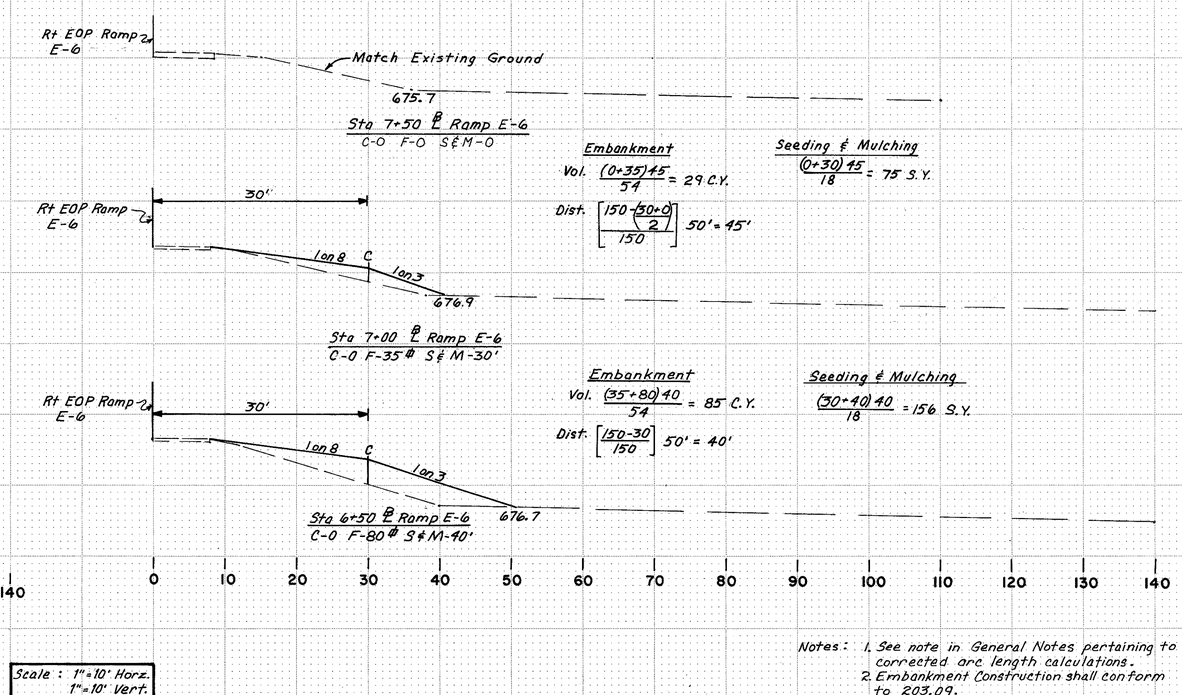
Seeding & Mulching
$\frac{(59+65)\ 36}{18}$ = 248 S.Y.

Sta. 4+50 to Sta. 5+00

Dist. $\left[\frac{150-\left(\frac{31+45}{2}\right)}{150}\right]$ 50 = 34.0'

Vol. $\frac{(220+210)\ 34}{50}$ = 271 C.Y.

Seeding & Mulching
$\frac{(65+70)\ 34}{18}$ = 225 S.Y.



Embankment
Vol. $\frac{(0+35)\ 45}{54}$ = 29 C.Y.

Dist. $\left[\frac{150-\left(\frac{30+0}{2}\right)}{150}\right]$ 50' = 45'

Seeding & Mulching
$\frac{(0+30)\ 45}{18}$ = 75 S.Y.

Embankment
Vol. $\frac{(35+80)\ 40}{54}$ = 85 C.Y.

Dist. $\left[\frac{150-30}{150}\right]$ 50' = 40'

Seeding & Mulching
$\frac{(30+40)\ 40}{18}$ = 156 S.Y.

Scale : 1" = 10' Horz.
1" = 10' Vert.

Notes:
1. See note in General Notes pertaining to corrected arc length calculations.
2. Embankment Construction shall conform to 203.09.

Temporary Bench Mark : Rt. Edge Of Pavement Sta 4+00 ℄ Ramp E-6 ELEV = 696.60

MADE DSP DATE 5-17-77
TRACED KAL DATE 8-29-77
CHECKED TS DATE 8-29-77
SCALE AS SHOWN

Howard, Needles, Tammen & Bergendoff
CONSULTING ENGINEERS
CLEVELAND, OHIO

HNTB

STA. 5+00 TO STA. 7+50 ℄ RAMP E-6 : GRADING AREA (X-6)

QUANTITY CALCULATIONS

MADE BY DSP DATE 5-18-77

CHECKED BY TS DATE 6-23-77

FHWA	STATE	PROJECT	
5	OHIO		

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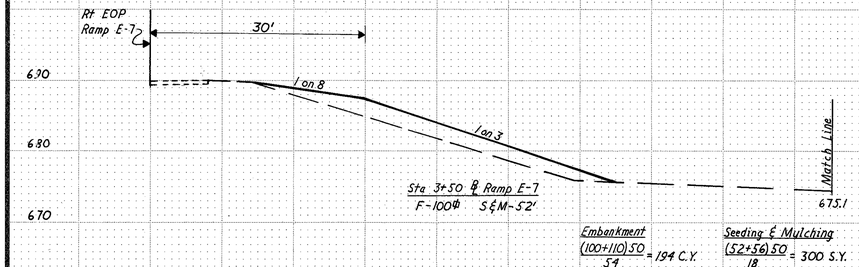
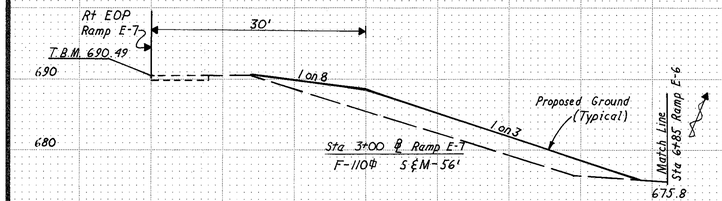
CUYAHOGA COUNTY
CUY-77-14 12
CUY-90-16 21



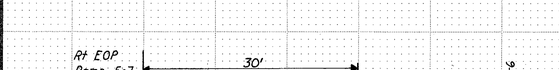
Embankment
(100+110) 50 / 54 = 194 C.Y.

Seeding & Mulching
(52+56) 50 / 18 = 300 S.Y.



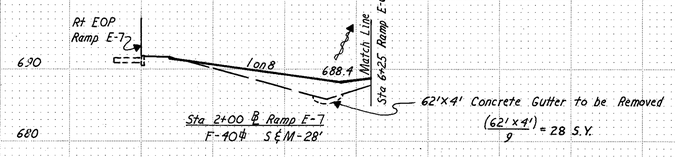
Embankment
(110+90) 50 / 54 = 185 C.Y.

Seeding & Mulching
(56+37) 50 / 18 = 258 S.Y.



Embankment
(90+40) 50 / 54 = 120 C.Y.

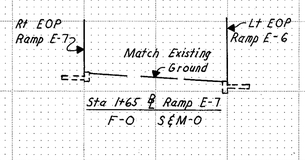
Seeding & Mulching
(37+28) 50 / 18 = 181 S.Y.



(62' x 4') / 9 = 28 S.Y.

Embankment
(40+0) 35 / 54 = 26 C.Y.

Seeding & Mulching
(28+0) 35 / 18 = 54 S.Y.

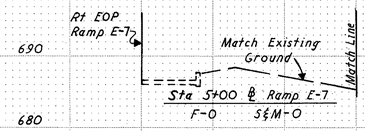


Sodding

6' Sodding between Sta 2+00 and Sta 3+00 along the ℄ of ditch

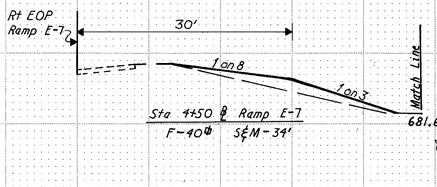
Quantity: 6 x 100 / 9 = 66.7 S.Y.

(Less out 67 S.Y. From Seeding & Mulching)



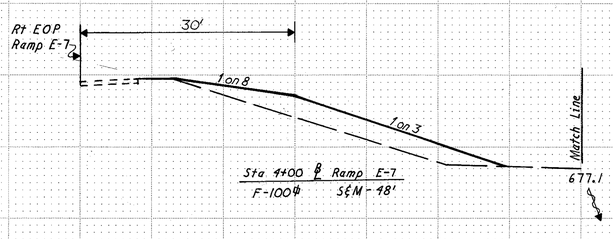
Embankment
(0+40) 50 / 54 = 37 C.Y.

Seeding & Mulching
(0+34) 50 / 18 = 94 S.Y.



Embankment
(40+100) 50 / 54 = 130 C.Y.

Seeding & Mulching
(34+48) 50 / 18 = 228 S.Y.



Embankment
(100+100) 50 / 54 = 185 C.Y.

Seeding & Mulching
(48+52) 50 / 18 = 278 S.Y.

Note: Embankments shall be constructed in accordance with 203.09

Temporary Bench Mark: See Sheet 106

GRADING AREA (X-7) ESTIMATED QUANTITIES COST PART I					
Item	Description	Sheet 106	Sheet 105	Total Quantity	Unit
203	Embankment	1397	877	2274	C.Y.
659	Seeding & Mulching	1579	1393	2972	S.Y.
202	Concrete Gutter Removed		28	28	S.Y.
660	Sodding		67	67	S.Y.

Scale: 1" = 10' Horz.
1" = 10' Vert.

MADE DSP DATE 5-18-77
TRACED REL DATE 6-29-77
CHECKED TS DATE 6-30-77
SCALE AS SHOWN

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CLEVELAND, OHIO

HNTB

STA 1+65 TO STA 5+00 ℄ RAMP E-7: GRADING AREA (X-7)

QUANTITY CALCULATIONS

MADE BY D.S.P DATE 5-18-77
CHECKED BY T.S. DATE 6-23-77

FHWA	STATE	PROJECT	
5	OHIO		

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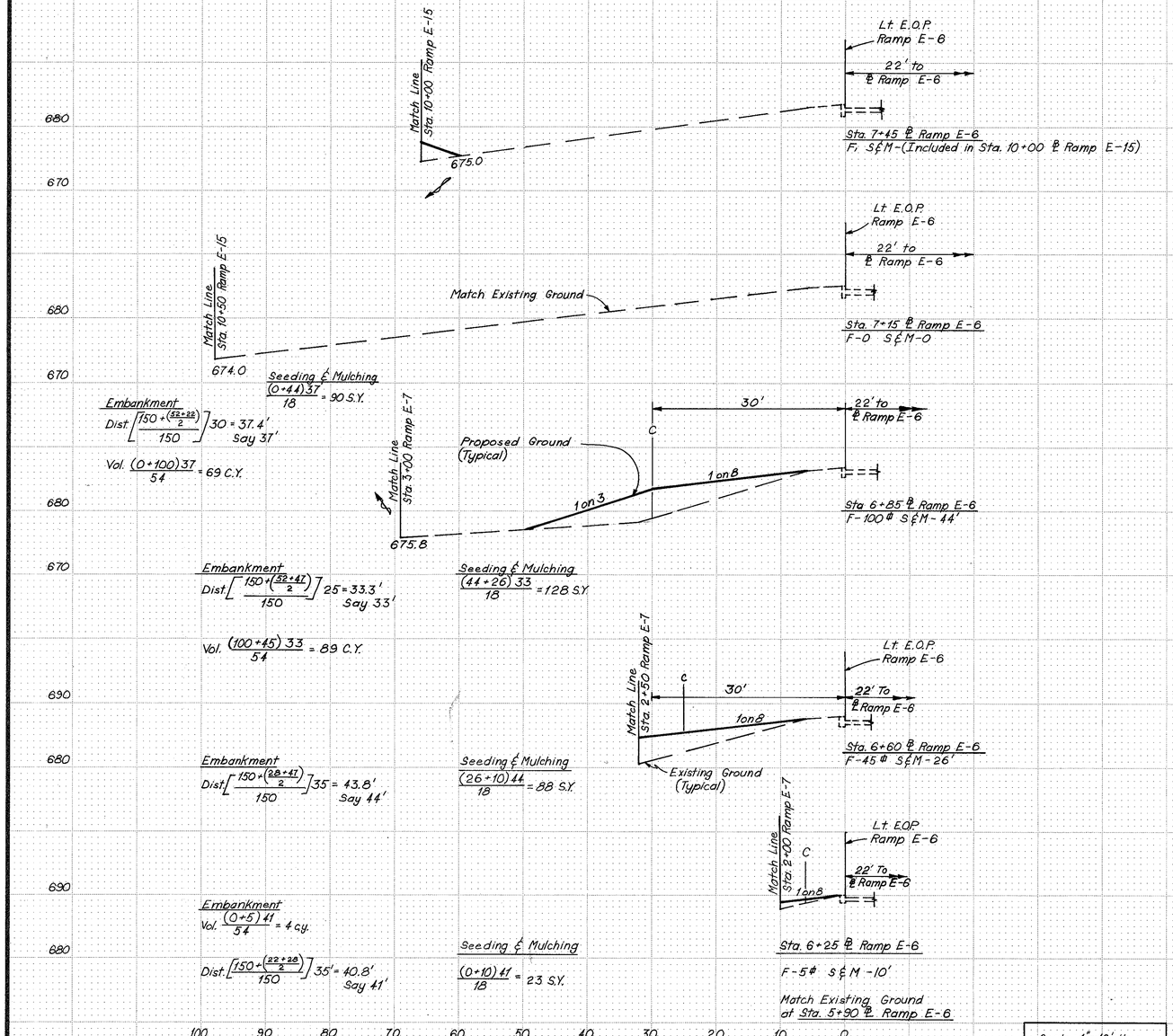
CUYAHOGA COUNTY
CUY-77-14.12
CUY-90-16 21



Embankment
Dist $\left[\frac{150+\left(\frac{52+22}{2}\right)}{150}\right]30 = 37.4'$ Say 37'
Vol. $\frac{(0+100)37}{54} = 69$ C.Y.

Seeding & Mulching
$\frac{(0+44)37}{18} = 90$ S.Y.

Embankment
Dist $\left[\frac{150+\left(\frac{32+42}{2}\right)}{150}\right]25 = 33.3'$ Say 33'
Vol. $\frac{(100+45)33}{54} = 89$ C.Y.

Seeding & Mulching
$\frac{(44+26)33}{18} = 128$ S.Y.

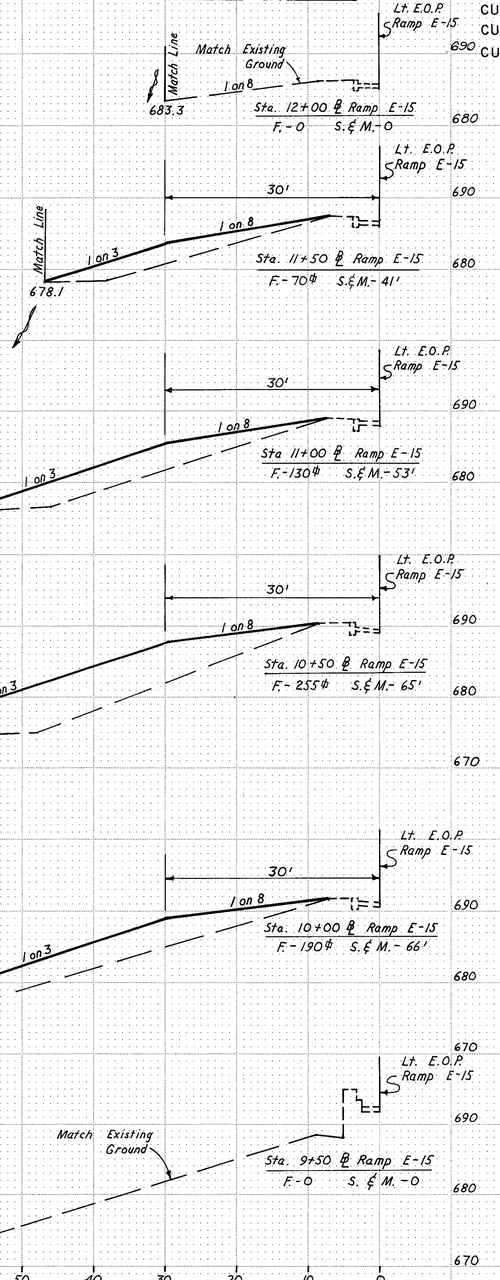
Embankment
Dist $\left[\frac{150+\left(\frac{28+41}{2}\right)}{150}\right]35 = 43.8'$ Say 44'

Seeding & Mulching
$\frac{(26+10)44}{18} = 88$ S.Y.

Embankment
Vol. $\frac{(0+5)41}{54} = 4$ c.y.
Dist $\left[\frac{150+\left(\frac{22+28}{2}\right)}{150}\right]35 = 40.8'$ Say 41'

Seeding & Mulching
$\frac{(0+10)41}{18} = 23$ S.Y.

Scale: 1"=10' Horz.
1"=10' Vert.



Embankment
$\frac{(0+70)50}{54} = 65$ C.Y.

Seeding & Mulching
$\frac{(0+41)50}{18} = 114$ S.Y.

Embankment
$\frac{(70+130)50}{54} = 185$ C.Y.

Seeding & Mulching
$\frac{(41+53)50}{18} = 261$ S.Y.

Embankment
$\frac{(130+255)50}{54} = 356$ C.Y.

Seeding & Mulching
$\frac{(53+65)50}{18} = 328$ S.Y.

Embankment
$\frac{(190+255)50}{54} = 412$ C.Y.

Seeding & Mulching
$\frac{(65+66)50}{18} = 364$ S.Y.

Embankment
$\frac{(0+190)50}{54} = 176$ C.Y.

Seeding & Mulching
$\frac{(0+66)50}{18} = 183$ S.Y.

Notes:
1. See note in General Notes pertaining to corrected arc length calculations.
2. Embankments shall be constructed in accordance with 203.09.
3. Quantities from this sheet included in totals for Grading Area (X-7) on sheet 105.

Temporary Bench Mark: Pt. Edge of Pavement
Sta. 3+00 ℄ Ramp E-7
Elev. = 690.49

MADE D.S.P DATE 5-18-77
TRACED D.T. DATE 8-19-77
CHECKED T.S. DATE 8-19-77
SCALE AS SHOWN

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CONSULTING ENGINEERS
CLEVELAND, OHIO

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STA. 9+50 TO STA. 12+00 ℄ RAMP E-15 & STA. 6+25 TO STA. 7+45 ℄ RAMP E-6 : GRADING AREA (X-7)

FHWA REGION	STATE	PROJECT	
5	OHIO		

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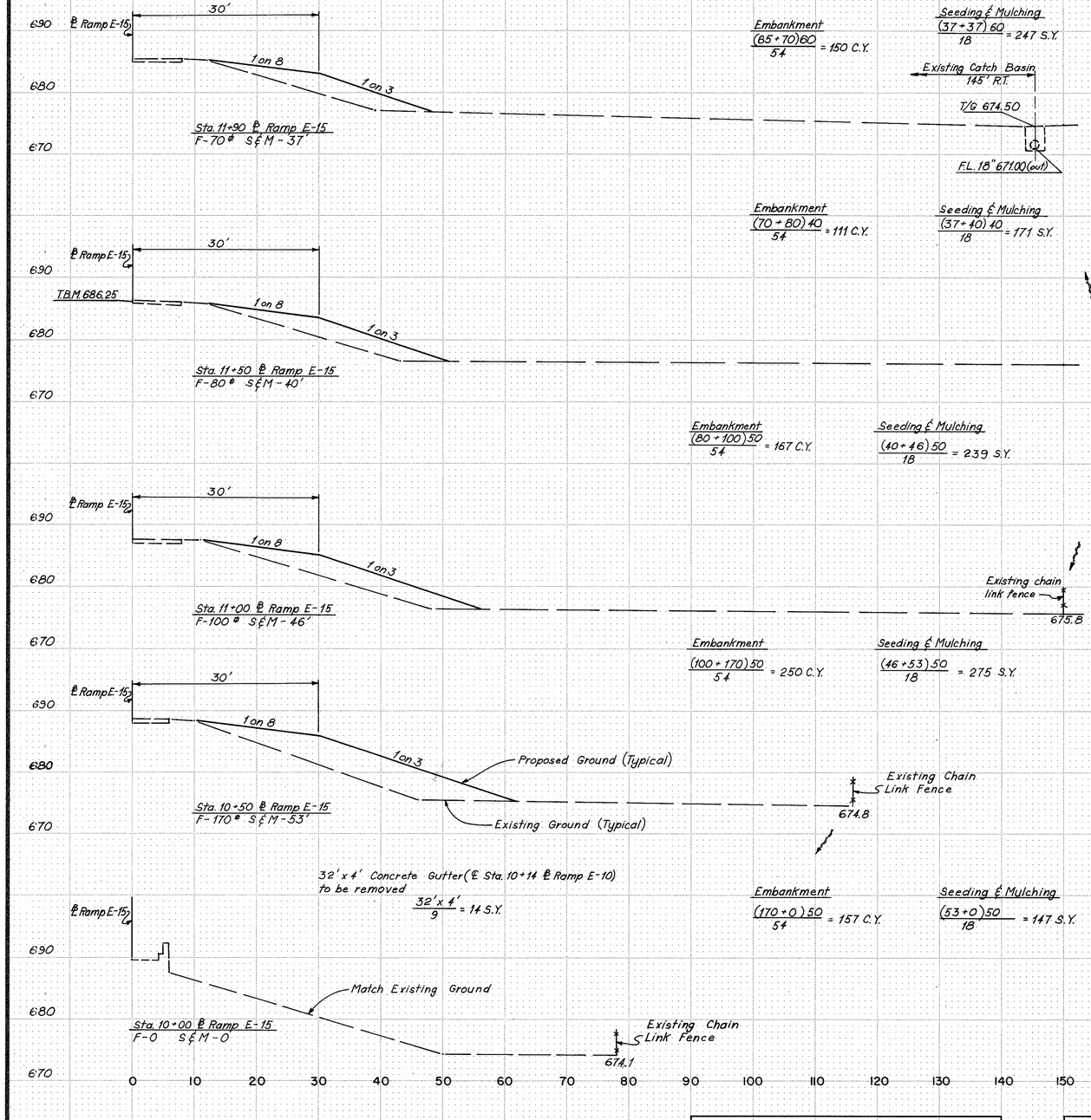
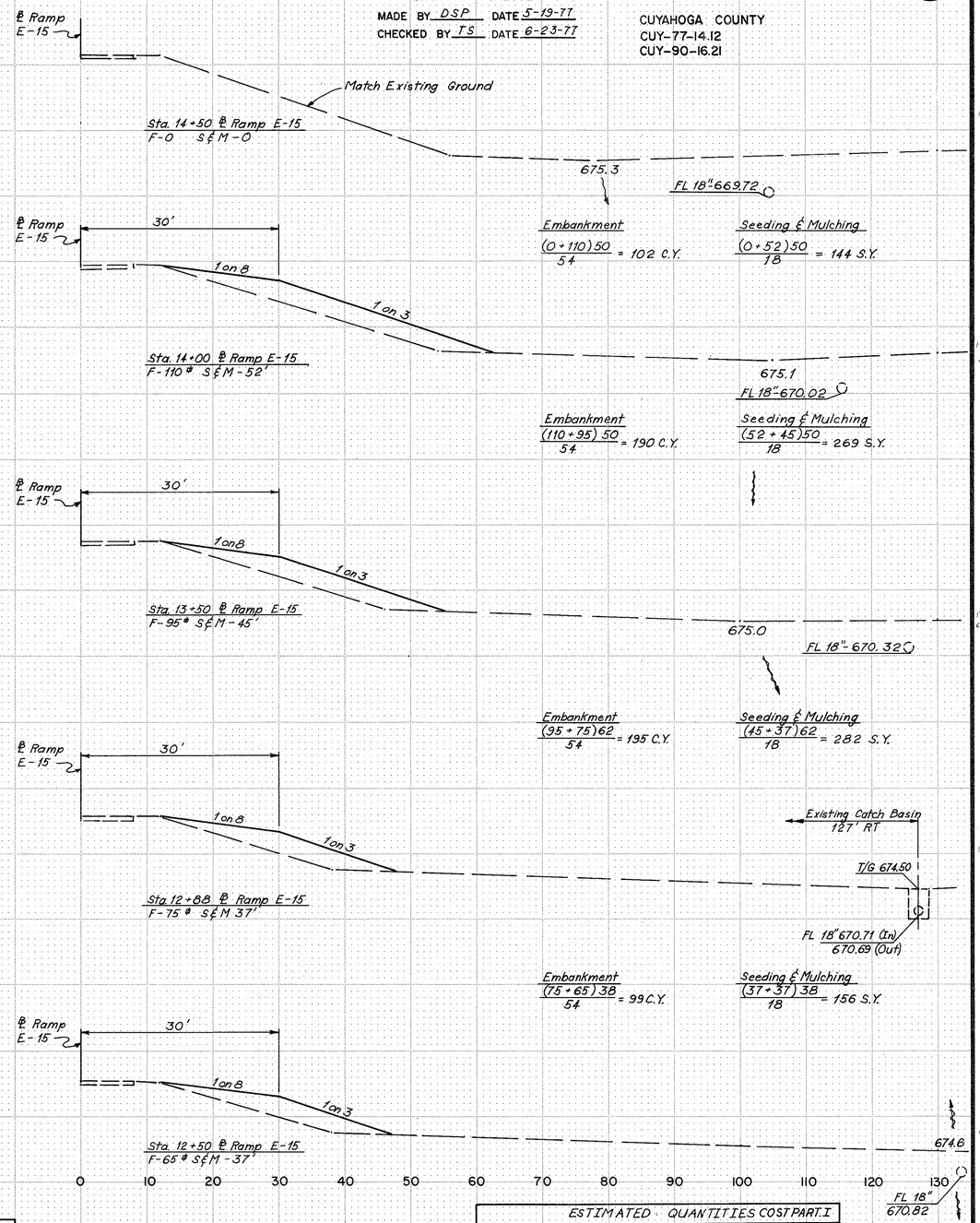
QUANTITY CALCULATIONS
MADE BY D.S.P DATE 5-19-77
CHECKED BY T.S DATE 6-23-77

CUYAHOGA COUNTY
CUY-77-14.12
CUY-90-16.21





Temporary Bench Mark: RT. Edge of Pavement
Sta. 11+50 ℄ Ramp E-15
Elev. = 686.25

Scale: 1" = 10" Horz.
1" = 10" Vert.

Note: Embankments Shall Be Constructed In Accordance With 203.09.

ESTIMATED QUANTITIES COST PART I

ITEM	DESCRIPTION	QUANTITY	UNIT
203	Embankment	1421	CY
659	Seeding & Mulching	1930	SY
202	Concrete Gutter Removed	14	SY

MADE DSP DATE 5-19-77
TRACED DT DATE 8-28-77
CHECKED TS DATE 8-29-77
SCALE AS SHOWN

Howard, Needles, Tammen & Bergendoff
CONSULTING ENGINEERS
CLEVELAND OHIO

HNTB

STA. 10+00 TO STA. 14+50 ℄ RAMP E-15: GRADING AREA X-8

FHWA REGION	STATE	PROJECT	
5	OHIO		

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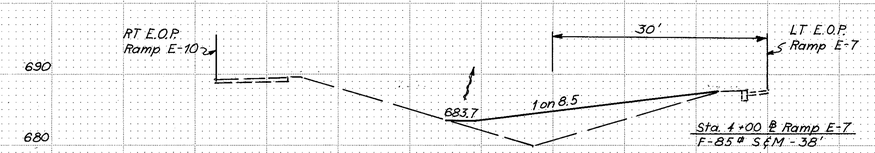
QUANTITY CALCULATIONS

MADE BY DSP DATE 5-18-77
CHECKED BY TS DATE 6-28-77

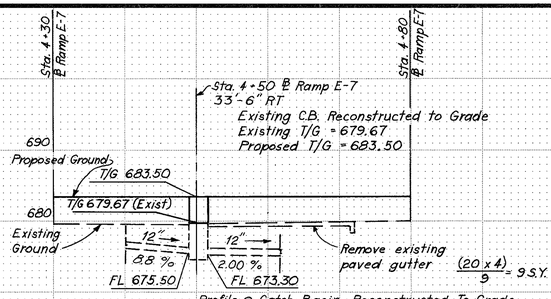
CUYAHOGA COUNTY
CUY-77-14.12
CUY-90-16.21



Embankment (85 + 130)50 / 54 = 199 C.Y.

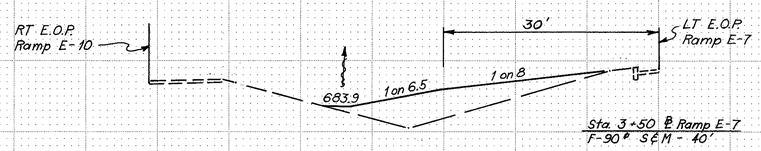
Seeding & Mulching (38 + 60)50 / 18 = 272 S.Y.

Sta. 1+00 ℄ Ramp E-7
F-85 # S&M - 38'



Profile @ Catch Basin Reconstructed To Grade

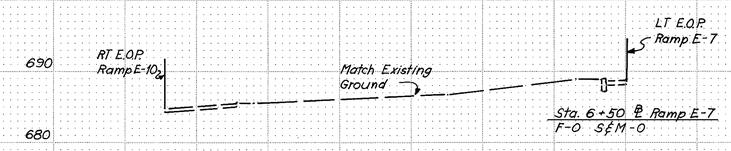
DETAIL - A



Embankment (85 + 90)50 / 54 = 162 C.Y.

Seeding & Mulching (38 + 40)50 / 18 = 217 S.Y.

Sta. 3+50 ℄ Ramp E-7
F-90 # S&M - 40'



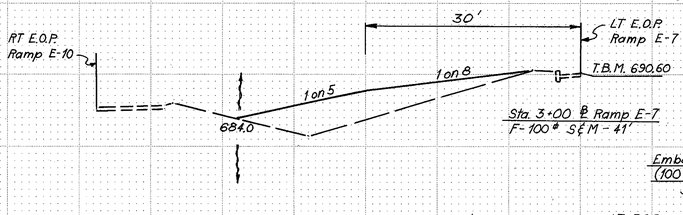
Sta. 6+50 ℄ Ramp E-7
F-0 S&M-0

Embankment (0 + 20)50 / 54 = 19 C.Y.

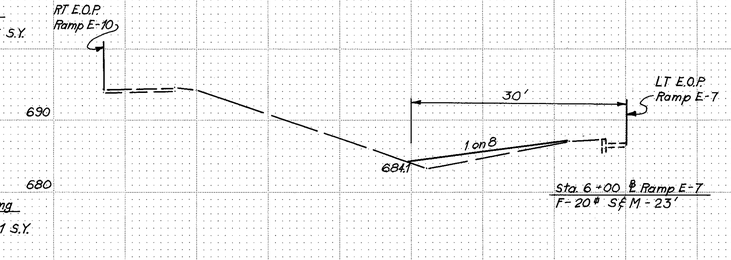
Seeding & Mulching (0 + 23)50 / 18 = 64 S.Y.

Embankment (90 + 100)50 / 54 = 176 C.Y.

Seeding & Mulching (40 + 41)50 / 18 = 225 S.Y.



Sta. 3+00 ℄ Ramp E-7
F-100 # S&M - 41'



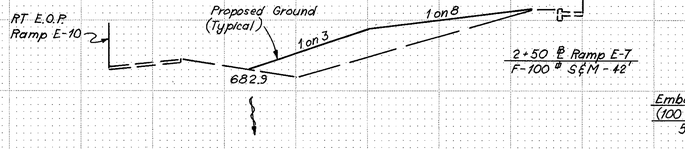
Sta. 6+00 ℄ Ramp E-7
F-20 # S&M - 23'

Embankment (0 + 23)50 / 54 = 185 C.Y.

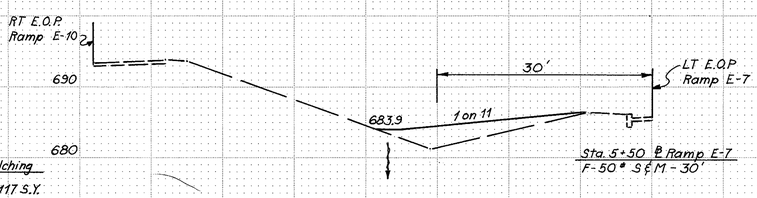
Seeding & Mulching (41 + 42)50 / 18 = 231 S.Y.

Embankment (20 + 50)50 / 54 = 65 C.Y.

Seeding & Mulching (23 + 30)50 / 18 = 147 S.Y.



2+50 ℄ Ramp E-7
F-100 # S&M - 42'



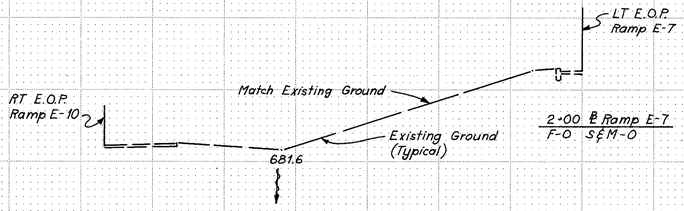
Sta. 5+50 ℄ Ramp E-7
F-50 # S&M - 30'

Embankment (100 + 0)50 / 54 = 93 C.Y.

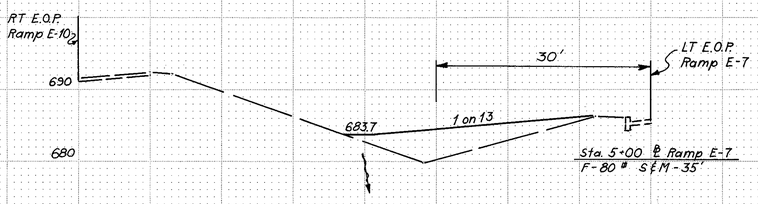
Seeding & Mulching (42 + 0)50 / 18 = 117 S.Y.

Embankment (50 + 80)50 / 54 = 120 C.Y.

Seeding & Mulching (30 + 35)50 / 18 = 181 S.Y.



2+00 ℄ Ramp E-7
F-0 S&M-0

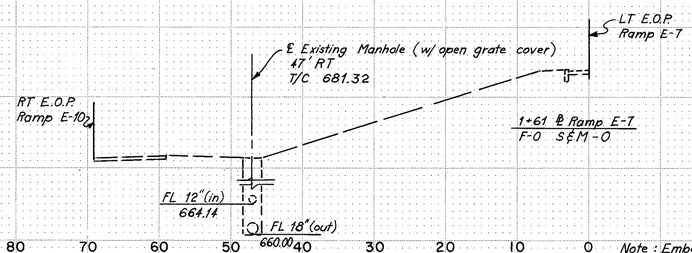


Sta. 5+00 ℄ Ramp E-7
F-80 # S&M - 35'

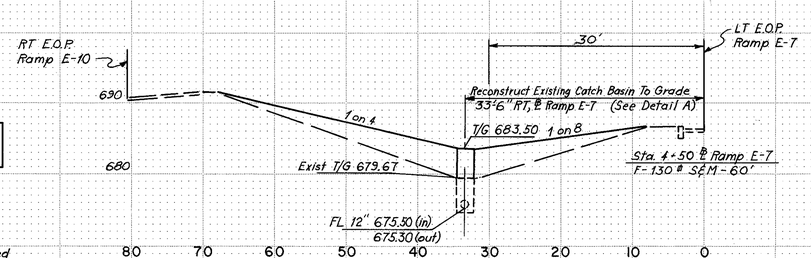
Embankment (80 + 130)50 / 54 = 194 C.Y.

Seeding & Mulching (35 + 60)50 / 18 = 264 S.Y.

TEMPORARY BENCH MARK : Left edge of pavement, Sta. 3+00 ℄ Ramp E-7, Elev. 690.60.



Scale : 1"=10' Horz.
1"=10' Vert.



Sta. 4+50 ℄ Ramp E-7
F-130 # S&M - 60'

ESTIMATED QUANTITIES COST PART. I			
ITEM	DESCRIPTION	QUANTITY	UNIT
202	Concrete Gutter Removed	9	SY
203	Embankment	1213	CY
604	Catch Basin Reconstructed to Grade	1	Each
659	Seeding & Mulching	1718	SY

Note : Embankments shall be constructed per 203.09.

80 70 60 50 40 30 20 10 0

MADE DSP DATE 5-18-77
TRACED DT DATE 8-24-77
CHECKED TS DATE 8-26-77
SCALE AS SHOWN

Howard, Needles, Tammen & Bergendoff
CONSULTING ENGINEERS
CLEVELAND OHIO

HNTB

STA 1+61 TO STA 6+50 RAMP E-7 : GRADING AREA (X-9)

FHWA REGION	STATE	PROJECT	
5	OHIO		

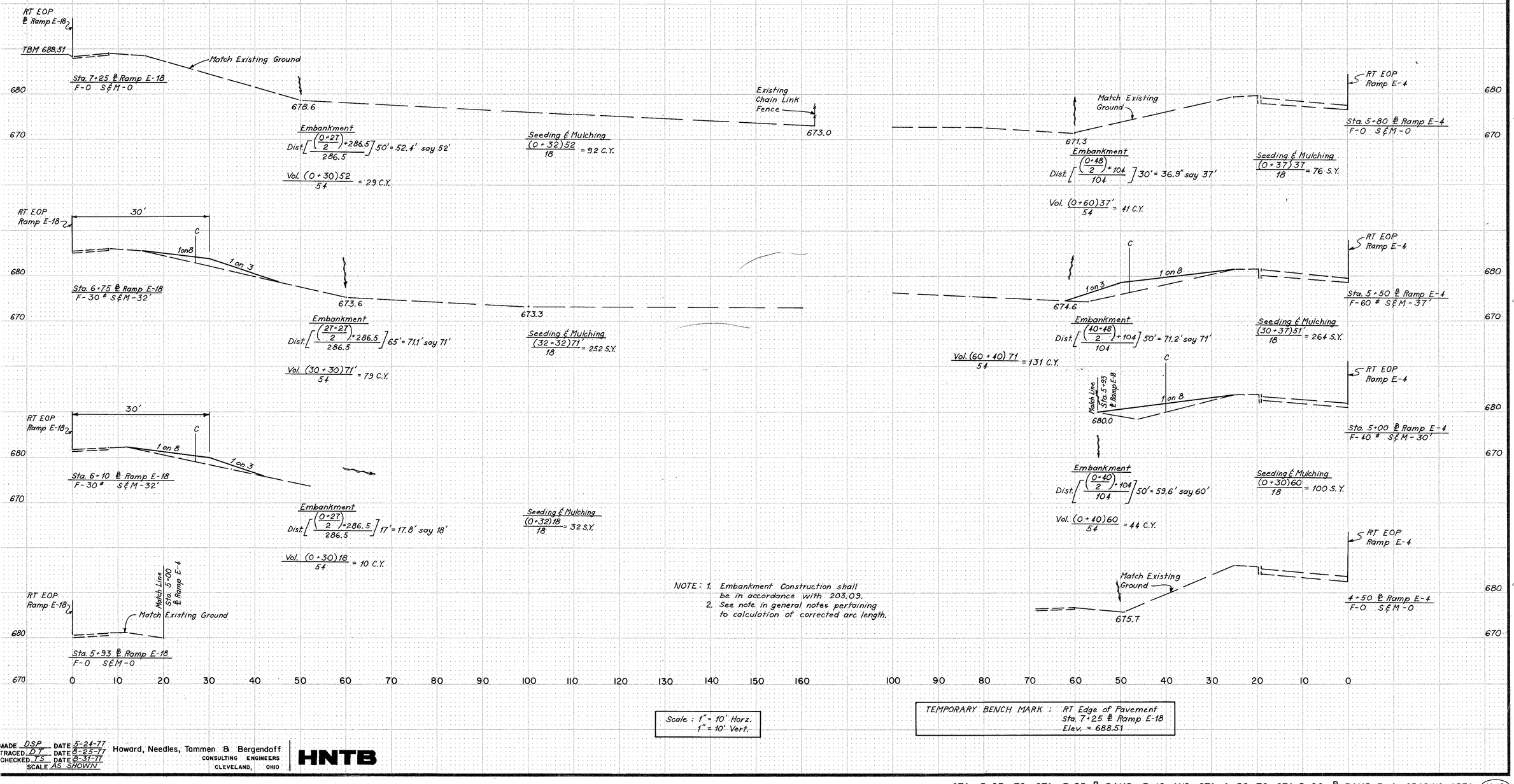
109
169

CUYAHOGA COUNTY
CUY-77-14.12
CUY-90-16.21

QUANTITY CALCULATIONS
MADE BY DSP DATE 5-24-77
CHECKED BY TS DATE 6-23-77

ESTIMATED QUANTITIES COST PART I

ITEM	DESCRIPTION	QUANTITY	UNIT
203	Embankment	334	CY
659	Seeding & Mulching	816	SY



NOTE: 1. Embankment Construction shall be in accordance with 203.09.
2. See note in general notes pertaining to calculation of corrected arc length.

Scale : 1" = 10' Horz.
1" = 10' Vert.

TEMPORARY BENCH MARK : RT Edge of Pavement
Sta. 7+25 ℄ Ramp E-18
Elev. = 688.51

MADE DSP DATE 5-24-77
TRACED DT DATE 6-25-77
CHECKED TS DATE 6-31-77
SCALE AS SHOWN

Howard, Needles, Tammen & Bergendoff
CONSULTING ENGINEERS
CLEVELAND, OHIO

HNTB

STA 5+93 TO STA 7+25 ℄ RAMP E-18 AND STA 4+50 TO STA 5+80 ℄ RAMP E-4: GRADING AREA (X-10)

FHWA REGION	STATE	PROJECT	
5	OHIO		

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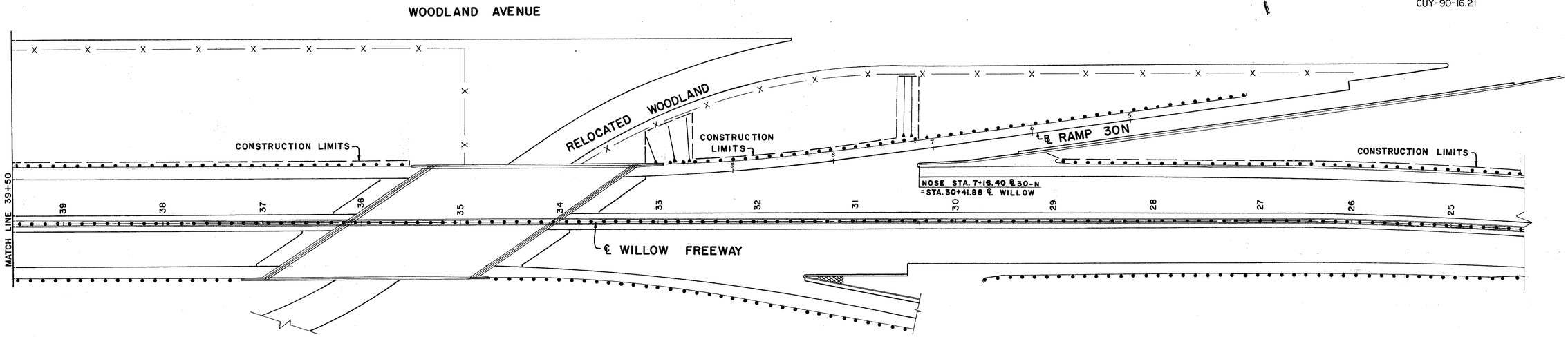
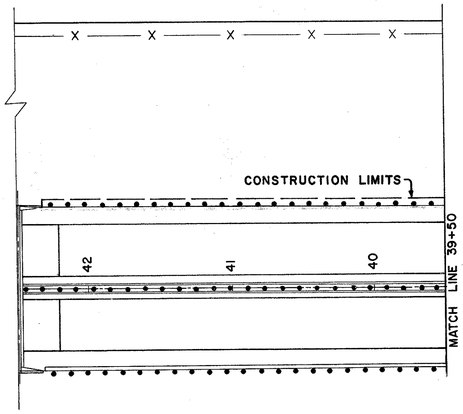
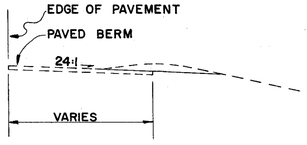
CUYAHOGA COUNTY
CUY-77-13.79
CUY-90-16.21





ESTIMATED QUANTITIES (100% State Participation)

SHEET NUMBER	REF-NUMBER	STATION TO STATION FROM	STATION TO STATION TO	SIDE		203 EXCAVATION NOT INCLUDING EMBANKMENT CONST.	203 EMBANKMENT		659 SEEDING AND MULCHING	659 AGRICULTURAL LIMING	659 COMMERCIAL FERTILIZER		
						CU. YDS.	CU. YDS.		SQ. YDS.	TONS	TONS		
109B,C	*	FROM CROSS SECTIONS		RT.		166	164		326	0.15	0.03		
	**	FROM ESTIMATED QUANTITY		RT.		293			1757	0.79	0.16		
			TOTAL			459	164		2083	0.94	0.19		



℄ RAMP 30-N
STA. 7+35 TO STA. 9+45 (RT.)

℄ WILLOW FREEWAY
STA. 24+30 TO STA. 30+42 (RT.)
STA. 33+00 TO STA. 35+42 (BRIDGE RT.)
STA. 35+42 TO STA. 42+35 (RT.)

** SHOULDER DETAIL

** NOTE:

THIS WORK SHALL CONSIST OF GRADING THE DESIGNATED SHOULDER AREAS WHERE TRAFFIC OR WEATHER MAY HAVE CAUSED A BUILDUP OF EARTH AND DEBRIS ALONG THE PAVED BERM OR UNDER THE GUARDRAIL. THE EXTENT OF THIS WORK SHALL BE SUCH THAT SMOOTH SHOULDER SLOPES ARE MAINTAINED TO ASSURE POSITIVE DRAINAGE OF THE SHOULDER. DAMAGE TO THE EXISTING PAVED BERM CAUSED BY THE CONTRACTOR'S NEGLIGENCE SHALL BE REPAIRED OR REPLACED BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE STATE.

ESTIMATED QUANTITIES FOR THE WORK NOTED ABOVE ARE AS FOLLOWS:

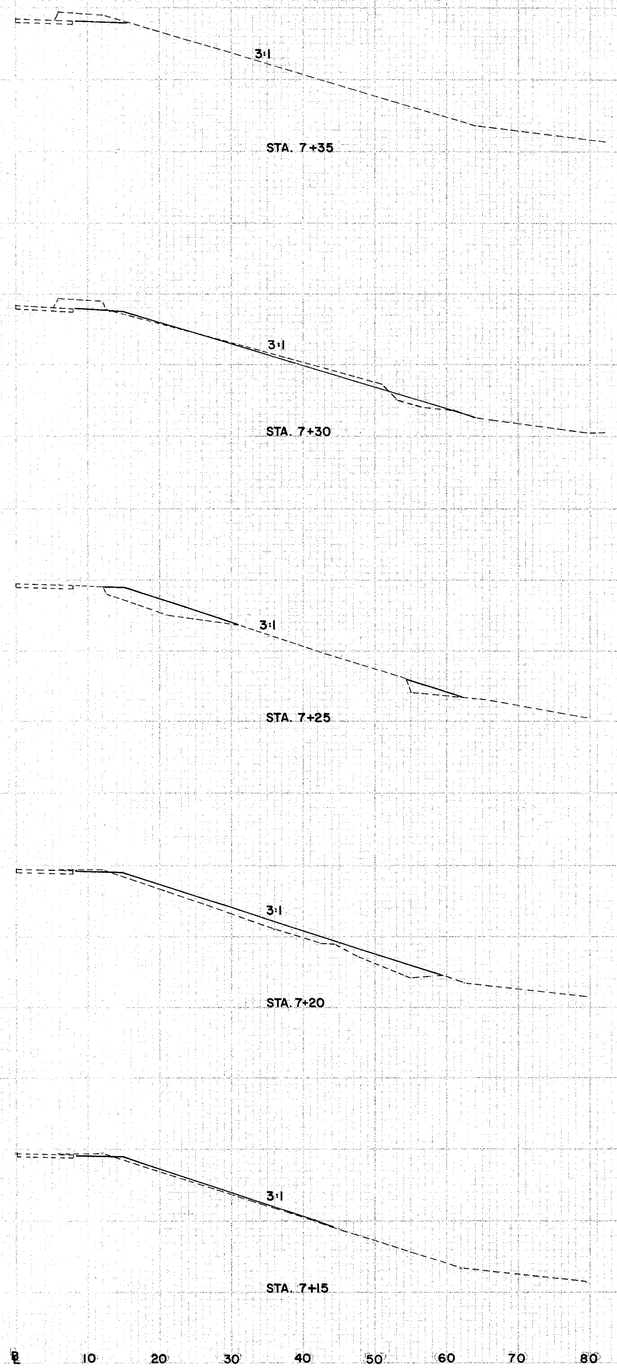
ITEM 203 – EXCAVATION NOT INCLUDING EMBANKMENT 293 CU. YDS.

ITEM 659 – SEEDING AND MULCHING 1757 SQ.YD.

ITEM 659 – AGRICULTURAL LIMING 0.79 TONS

ITEM 659 – COMMERCIAL FERTILIZER 0.16 TONS

SEEDING	
SEED WIDTH	SQ. YDS.
57	32
57	32
57	32
57	32
57	32



END AREA		VOLUME		SEEDING	
CUT	FILL	CUT	FILL	END WIDTH	SQ. YDS.
9	0				
		3	1		
19	8			42	
		2	4		23
0	40			42	
		1	8		23
1	45			42	
		1	5		23
1	4			42	

FED. AID DIVISION | STATE | PROJECT
2 | OHIO |

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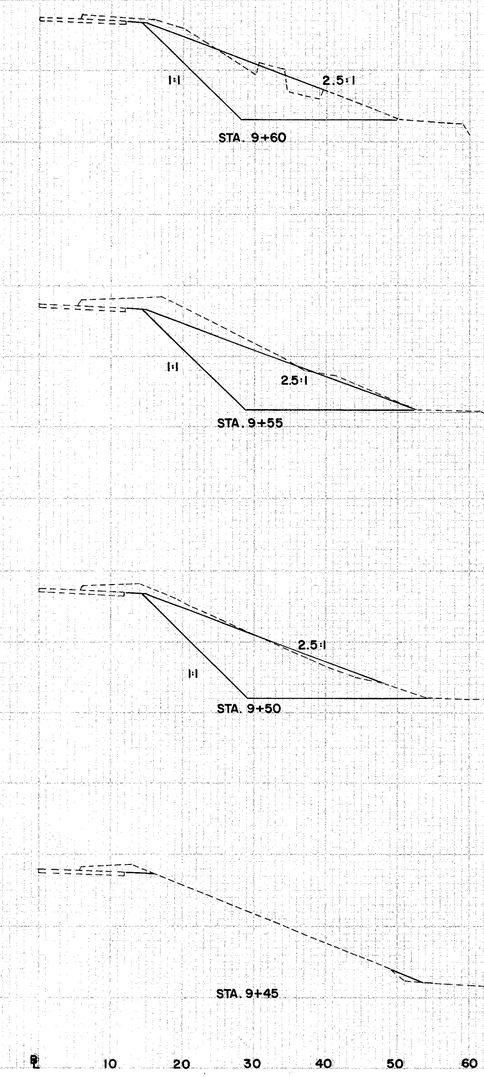
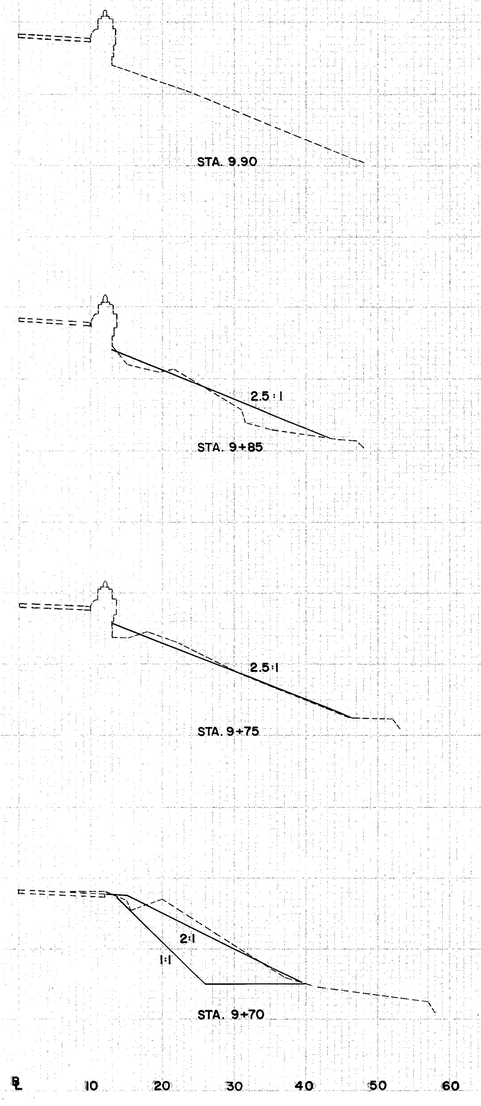
CUY-77-13.79
CUY-90-16.21

END AREA		VOLUME	
CUT	FILL	CUT	FILL



		52	49
170	170		
		36	31
220	170		
		38	32
190	180		
		19	17
10	2		

SLOPE	
CUT	FILL
35	19
35	41
38	22
42	47



	END AREA		VOLUME		SEEDING	
	CUT	FILL	CUT	FILL	END WIDTH	SQ. YDS.
695						
685	0	0				
675						
			1	2		
695						
685	2	26				
675						
			2	6		
695						
685	8	4				
675						
			11	9		
695						
685	110	95				
675						

REGION	STATE	PROJECT	
2	OHIO		

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CUYAHOGA COUNTY
CUY-77-13.79
CUY-90-16.21

END AREA		VOLUME	
CUT	FILL	CUT	FILL

TREE RELOCATION PLAN

FHWA REGION	STATE	PROJECT	
5	OHIO		

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CUYAHOGA COUNTY
CUY-77-14.12
CUY-90-16.21

LEGEND

- EXISTING TREE TO BE REMOVED
- EXISTING TREE TO BE RELOCATED
- PROPOSED TREE LOCATION
- LIMITS OF GRADING

100 0 100 200 300 400

SCALE IN FEET

MADE DSP DATE 10-5-77
TRACED T.W.D. DATE 10-6-77
CHECKED W.J.S. DATE 10-12-77
SCALE 1"=100'

Howard, Needles, Tammen & Bergendoff
CONSULTING ENGINEERS
CLEVELAND, OHIO

HNTB

FHWA REGION	STATE	PROJECT	
5	OHIO		

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CUYAHOGA COUNTY
CUY-77-14.12
CUY-90-16.21

TREE RELOCATION QUANTITIES

ITEM 201 , ITEM 664 , ITEM 665 - COST PARTITICIPATION I

Ref No	Existing Station	Offset	Tree Size	Relocation Station	Offset	201 Trees and/or Stumps Removed	664 Planting Salvaged Plants, as per plan	665 Large Trees Moved and Reset, as per plan
						Each	Each	Each
1	1+73 Ramp E-4	50'Rt.	4"	2+50 Ramp E-4	90'Rt.		1	
2	4+69 Ramp E-4	28'Rt.	3"			1		
3	5+41 Ramp E-4	22'Rt.	5"			1		
4	15+05 Ramp E-5	94'Rt.	5"	15+00 Ramp E-5	60'Rt.		1	
5	15+62 Ramp E-5	58'Rt.	6"			1		
6	15+92 Ramp E-5	58'Rt.	5"			1		
7	16+17 Ramp E-5	40'Rt.	5"	15+80 Ramp E-5	43'Rt.		1	
8	16+34 Ramp E-5	30'Rt.	6"	14+50 Ramp E-5	60'Rt.			1
9	16+49 Ramp E-5	31'Rt.	4"	15+92 Ramp E-5	35'Rt.		1	
10	16+67 Ramp E-5	27'Rt.	5"	16+15 Ramp E-5	33'Rt.		1	
11	5+50 Ramp E-14	75'Lt.	Bush			1		
12	5+42 Ramp E-14	57'Lt.	3"	5+35 Ramp E-14	60'Lt.		1	
13	5+67 Ramp E-14	58'Lt.	4"	5+70 Ramp E-14	75'Lt.		1	
14	5+67 Ramp E-14	58'Lt.	4"	6+00 Ramp E-14	60'Lt.		1	
15	5+62 Ramp E-14	44'Lt.	4"	4+90 Ramp E-14	66'Lt.		1	
16	5+62 Ramp E-14	44'Lt.	4"	4+70 Ramp E-14	66'Lt.		1	
17	4+62 Ramp E-17	51'Lt.	8"	5+90 Ramp E-17	60'Lt.			1
18	5+19 Ramp E-17	50'Lt.	5"	5+40 Ramp E-17	55'Lt.		1	
19	2+83 Ramp E-6	33'Rt.	6"			1		
20	4+40 Ramp E-6	66'Rt.	4"			1		
21	4+75 Ramp E-6	37'Rt.	4"			1		
22	4+91 Ramp E-6	66'Rt.	6"			1		
23	5+24 Ramp E-6	26'Rt.	6"			1		
24	5+55 Ramp E-6	49'Rt.	4"	4+75 Ramp E-6	65'Rt.		1	
25	6+05 Ramp E-6	22'Rt.	3"	5+60 Ramp E-6			1	

ITEM 201 , ITEM 664 , ITEM 665 - COST PARTITICIPATION I

Ref. No.	Existing Station	Offset	Tree Size	Relocation Station	Offset	201 Trees and/or Stumps Removed	664 Planting Salvaged Plants, as per plan	665 Large Trees Moved and Reset, as per plan
						Each	Each	Each
26	6+43 Ramp E-6	28'Rt.	3"	6+45 Ramp E-6	45'Rt.		1	
27	6+14 Ramp E-6	21'Rt.	3"	6+75 Ramp E-6	40'Rt.		1	
28	7+20 Ramp E-6	24'Rt.	10"	7+25 Ramp E-6	50'Rt.			1
29	2+75 Ramp E-7	38'Lt.	4"	2+50 Ramp E-7	55'Rt.		1	
30	3+23 Ramp E-7	45'Rt.	4"	3+00 Ramp E-7	55'Rt.		1	
31	3+49 Ramp E-7	46'Rt.	4"	3+40 Ramp E-7	50'Rt.		1	
32	3+78 Ramp E-7	41'Rt.	5"	3+70 Ramp E-7	55'Rt.		1	
33	4+05 Ramp E-7	39'Rt.	4"	3+90 Ramp E-7	55'Rt.		1	
34	11+21 Ramp E-15	52'Lt.	3"	4+15 Ramp E-7	65'Rt.		1	
35	11+21 Ramp E-15	52'Lt.	3"	4+35 Ramp E-7	55'Rt.		1	
36	11+21 Ramp E-15	52'Lt.	3"	4+50 Ramp E-7	50'Rt.		1	
37	11+21 Ramp E-15	52'Lt.	3"	11+15 Ramp E-15	65'Lt.		1	
38	11+35 Ramp E-15	58'Lt.	3"	10+80 Ramp E-15	70'Lt.		1	
39	11+35 Ramp E-15	58'Lt.	3"	10+60 Ramp E-15	80'Lt.		1	
40	11+05 Ramp E-15	65'Lt.	3"	9+75 Ramp E-15	75'Lt.		1	
41	11+05 Ramp E-15	65'Lt.	3"	10+00 Ramp E-15	65'Lt.		1	
42	11+05 Ramp E-15	65'Lt.	3"	10+25 Ramp E-15	65'Lt.		1	
43	10+50 Ramp E-15	60'Lt.	Bush			1		
44	9+95 Ramp E-15	60'Lt.	4"	9+60 Ramp E-15	60'Lt.		1	
45	10+25 Ramp E-15	28'Rt.	8"	10+00 Ramp E-15	40'Rt.			1
46	10+31 Ramp E-15	45'Rt.	6"	10+50 Ramp E-15	65'Rt.			1
47	10+45 Ramp E-15	33'Rt.	4"	10+75 Ramp E-15	45'Rt.		1	
48	11+05 Ramp E-15	47'Rt.	2"	13+45 Ramp E-15	40'Rt.		1	
49	11+05 Ramp E-15	47'Rt.	2"	13+50 Ramp E-15	40'Rt.		1	
50	11+05 Ramp E-15	47'Rt.	2"	13+47 Ramp E-15	45'Rt.		1	

ITEM 201 , ITEM 664 , ITEM 665 - COST PARTITICIPATION I

Ref. No.	Existing Station	Offset	Tree Size	Relocation Station	Offset	201 Trees and/or Stumps Removed	664 Planting Salvaged Plants, as per plan	665 Large Trees Moved and Reset, as per plan
						Each	Each	Each
51	11+05 Ramp E-15	47'Rt.	Bush			1		
52	11+28 Ramp E-15	26'Rt.	3"	11+40 Ramp E-15	40'Rt.		1	
53	11+28 Ramp E-15	26'Rt.	3"	11+50 Ramp E-15	45'Rt.		1	
54	11+41 Ramp E-15	38'Rt.	3"	11+55 Ramp E-15	40'Rt.		1	
55	11+41 Ramp E-15	38'Rt.	3"	11+60 Ramp E-15	45'Rt.		1	
56	11+57 Ramp E-15	24'Rt.	4"	11+70 Ramp E-15	40'Rt.		1	
57	11+72 Ramp E-15	36'Rt.	3"			3		
58	12+31 Ramp E-15	29'Rt.	12"	12+30 Ramp E-15	60'Rt.			1
59	12+77 Ramp E-15	42'Rt.	12"	12+60 Ramp E-15	55'Rt.			1
60	12+87 Ramp E-15	33'Rt.	9"	12+87 Ramp E-15	60'Rt.			1
61	13+03 Ramp E-15	28'Rt.	6"	14+00 Ramp E-15	60'Rt.			1
62	13+22 Ramp E-15	42'Rt.	Bush			1		
63	13+64 Ramp E-15	32'Rt.	3"			5		
64	14+00 Ramp E-15	38'Rt.	4"	14+25 Ramp E-15	40'Rt.		1	
65	2+32 Ramp E-7	27'Rt.	3"	2+50 Ramp E-7	35'Rt.		1	
66	2+64 Ramp E-7	35'Rt.	4"	2+90 Ramp E-7	35'Rt.		1	
67	3+57 Ramp E-7	42'Rt.	2"	3+45 Ramp E-7	35'Rt.		1	
68	4+89 Ramp E-4	27'Rt.	3"	5+25 Ramp E-4	50'Rt.		1	
69	4+95 Ramp E-4	38'Lt.	8"	5+50 Ramp E-4	60'Lt.			1
70	6+57 Ramp E-18	50'Rt.	1"			4		
	Total (Table 3)					14	10	5
	Total (Table 2)					1	21	3
	Total (Table 1)					10	13	2
	Totals					25	44	10

Note: 1. All offsets are perpendicular to the ramp baseline.

2. All quantities are included in Project I-90-1(101)29

MADE DSP DATE 10-10-77
TRACED TWD DATE 10-10-77
CHECKED WJS DATE 10-12-77
SCALE —

Howard, Needles, Tammen & Bergendoff
CONSULTING ENGINEERS
CLEVELAND, OHIO

HNTB

LIGHTING NOTES

FHWA REGION	STATE	PROJECT	
5	OHIO		

113
169

CUYAHOGA COUNTY
CUY-77-14.12
CUY-90-16.21

SPECIFICATIONS

These notes are supplemental to Items S625 and S713 of the State of Ohio Department of Transportation Construction and Material Specifications.

Reference shall be made to Standard Construction Drawings listed on the title sheet of these plans. Drawings HL-17A and HL-17B are to be used only for the base plate of the median pole and the special median barrier pull box. Median barrier light pole foundation details are shown on sheets 136 and 137

PLAN SPECIFICATION REFERENCES

References to Item 625 and 713 in these plans shall be considered to read as respective references to Items S625 and S713.

GENERAL

This project has been designed on the basis of full lighting with an average illumination of 1.2 ft.-cd. (initial) and a maximum uniformity ratio of 4.0 to 1, for conventional units.

The project will receive 480-volt, two-wire, controlled secondary service with one side grounded, from existing Control Centers.

This project has been designed on the basis of a 5% maximum voltage drop in all branch circuits.

MAINTAINING EXISTING LIGHTING

Before any work is started on this project, representatives of the State, City and the Contractor shall make a visual inspection of the existing roadway and sign lighting systems on Str. No. CUY-77-1459. Records of this inspection as to pole, sign and circuit outages shall be kept in writing by the State.

It shall be the Contractor's responsibility to continuously maintain the existing roadway and sign lighting systems which have been inspected and determined operational by the above parties, and shall maintain such systems (except the replacement of knocked-down poles) untill the new lighting facilities have been installed and approved, and the high voltage test 839 is accomplished. Then, subject to the approval of the Engineer, any existing circuit(s) may be disconnected and the new roadway and sign lighting circuit(s) activated.

Basis of payment shall be at the lump sum bid price for Item 625 "Maintaining Existing Lighting" which shall be full compensation for furnishing all labor, materials and incidentals necessary to complete the item of work.

ELECTRICAL CABLES

In lieu of the requirements listed under S713.02, paragraphs 2(a) and 2(b), all cable to be used for 300 and 600 volt service shall be UL Type RHH, or RHW, or RHH/RHW and further meet the requirements of UL Type USE.

All single conductor cables to be used for 300 and 600 volt service shall not have a separate outer covering.

Alternate bids for 5KV cable shall be for an XLP Type. UL MV-90, dry.

LAMPS - HIGH PRESSURE SODIUM

Supplementing 625.08, and 713.14 of the Specifications, High Pressure Sodium (HPS) Lamps shall be of the wattage indicated in the plans and shall be General Electric "Lucalox", Westinghouse "Ceramalux", Sylvania "Lumalux", or equal as approved by the Engineer.

LUMINAIRES - HIGH PRESSURE SODIUM

53,000 lumen, horizontal Style C luminaires, designed for use with 310 watt HPS lamps, shall have single rated 480 volt, 310 watt integral regulator ballasts.

Style B luminaires shall be General Electric M-1000 Westinghouse OV-50 McGraw-Edison "Unistyle - 1000" or equal approved by the Engineer.

LIGHT POLE ANCHOR BOLTS FOR BRIDGES

Anchor bolts for mounting light poles on bridges shall conform to the requirments of 713.01 and details shown on the plans and standard drawings, or the approved shop drawings, for the respective poles to be placed thereon.

Payment shall be made at the unit price bid for each set of the size required and necessary to install one pole, and this payment shall constitute full compensation for furnishing and placing the bolts.

CONNECTOR KITS

Type VI through Type IX cable connections in pullboxes, junction boxes, and other enclosures below ground may be accomplished by the use of either of the following:

1. A sleeve or tee cable connector conforming to the general requirements of Style "S" or "H", or other connecting device approved by the Engineer. The connector shall be installed in accordance with the manufacturer's directions and the connection shall be sealed and waterproofed with a hi-dielectric compound such as "Aqua Seal" as by Kearney, "Scotch Kit No. 2200" by 3M, or a similiar compound by Blackburn or equal as approved by the Engineer. The sealing material shall be applied in accordance with the manufacturer's directions to make a watertight connection. Connections not accomplished in-line or in tee form shall be additionally protected by use of a hi-dielectric PVC, or other approved material, boot with an approved fastening device.

2. A preassembled kit, as manufactured by Joy or Bussman, or approved equal, with a waterproof or water-tight rating acceptable to the Engineer.

TRANSITION JUNCTION BOX

The unit price bid for each "Item S625, Transition Junction Box" shall be full compensation for furnishing and placing the junction box as shown in the detail on sheet 119A, and all labor, material, equipment, and incidentals necessary to complete the work as specified.

CONDUIT ON STRUCTURES AND STRUCTURE GROUNDING

The structure grounds and expansion joints shown in the plans should not be considered complete in number or better than approximate in location.

Expansion fittings for conduit on structures shall be OZ-Gedney Type AX, Crouse-Hinds Type XJ-8, Appleton Type XJ-8, or equal as approved by the Engineer, as indicated in the plans as -(E)- and installed in the manner detailed on HL-5.

Each expansion fitting shall have a copper external bonding jumper to assure electrical continuity of the grounding system.

Basis of payment shall be included in the unit bid price of the 625 Item Conduit, installed complete, in place, with all materials, labor, and incidentals, approved and accepted.

CONDUIT JACKED UNDER PAVEMENT

This item shall consist of furnishing and installing conduit of the size or sizes indicated under existing pavement and contiguous shoulders by an approved method such as "drilling" or "jacking".

The Contractor shall place the conduit with the least amount of disturbance to existing pavement, subbase, berm pavement or shoulders of the roadway, and to prevent damage to the existing utilities. All push pits or necessary excavations shall be backfilled and restored in accordance with 625.01. Measurement of the conduit shall be the actual amount of lineal feet installed under pavement and shoulders, measured in place, as accepted by the Engineer. The unit price bid for Item 625 "Conduit Jacked Under Pavement" shall be full compensation for excavation, drilling or jacking, backfilling, compaction, restoration of pavement and all labor, material, equipment and incidentals necessary to complete the work as specified.
Where in the plans it is required to tie an existing pullbox into a proposed transition junction box the contractor is required to field locate both appurtenances and to direct his jacking operation such that the conduit connection will be straight and nearly center to center between said boxes.

POLYVINYL-CHLORIDE PLASTIC CONDUIT

POLYVINYL-CHLORIDE CONDUIT FOR ENCASEMENT IN CONCRETE SHALL BE OF THE SIZE AND TYPE SPECIFIED AND SHALL CONFORM TO NEMA STANDARDS PUBLICATION NO. TC6-74 WITH EXCEPTION THAT CONDUIT AND CONDUIT FITTINGS COMPOSED OF ACRYLONITRILE-BUTADIENE-STYRENE (ABS) SHALL NOT BE ACCEPTABLE.

EXISTING CIRCUIT CABLE AND ACCESSORIES

All existing circuit cable and assessories must be removed from existing cross-overs and ducts to allow new circuit cable to be installed. All removal material shall become the property of the Contractor.

Basis of payment for this item of work shall be included in the unit bid price for "Distribution Cable, By Type"' and is incidental to the work.

EXISTING LIGHT POLE AND FOUNDATION, TO BE REMOVED

Removal work as subsequently described shall also comply with Item 4 of the "Equipment and Material Storage" note as found on Sheet No. 4.

Supplementing Item 202 of the Specifications, the Contractor shall remove existing roadway lighting units, pole and foundation, and the adjacent pullbox where described in the plans.

All items removed shall become the property of the Contractor. Circuits cable is to be abandoned in place or removed as directed in the plans. Foundations to be removed may be removed either completely or to not less than one foot below finished grade. Pullboxes are to be abandoned in place in the manner described in 202.09 and backfill in accordance with 202.02.

Upon removal of light poles on structures, protruding structure conduit shall be trimmed at the structure and a 4" galvanized steel or aluminum cover plate, fitting the existing light pole mounting bolt pattern, gasketed or caulked and installed over the opening. Excess bolt material shall be trimmed at the nut.

Basis of payment shall be at the unit bid price per each:
Item 202 - "Existing Lighting Unit, to be removed
Item 202 - "Existing Lighting Unit (Structure Mounted), to be removed, including all labor, material, equipment and incidentals to complete the item of work and accepted as specified.

MEDIAN PULLBOX FOUNDATION

CONSTRUCTION OF THE MEDIAN BARRIER PULLBOX SECTION SHALL CONFORM TO THE REQUIREMENTS OF S625 AND 622 AND AS DETAILED ON HL-17A

BASIS OF PAYMENT SHALL BE AT THE UNIT PRICE BID FOR EACH:

ITEM 625 "SPECIAL MEDIAN BARRIER PULLBOX WITH 36" COVER PLATE

AND SHALL BE FULL COMPENSATION FOR EXCAVATION, FORMING, AND PLACING THE BARRIER SECTION AS DETAILED, MATCHING THE BARRIER TO BHE ADJACENT BARRIER SECTIONS, FURNISHING AND PLACING ANCHOR BOLTS, CONDUITS AND COUPLINGS, AND ALL LABOR, MATERIAL, EQUIPMENT, AND INCIDENTALS NECESSARY TO COMPLETE THE WORK AS SPECIFIED.

HIGH VOLTAGE DIRECT CURRENT TEST

A high voltage direct current test, as described in Supplemental Specification 839, shall be performed on all distribution cable and duct cable systems to be installed on this project. The test shall not be performed until after all new construction, such as guard rail, fence, delineator posts, sign supports, etc., in the immediate vicinity of the location of the cable run being tested, has been completed.

The testing requirements of 625.22(b) are hereby waived for those circuits on which the high voltage test is to be performed.

MADE ERH DATE 8-16-77
TRACED TAR DATE 8-17-77
CHECKED EFJ DATE 8-17-77
SCALE

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CONSULTING ENGINEERS
CLEVELAND, OHIO

HNTB

Rev. 1-9-79

LIGHTING GENERAL SUMMARY

QUANTITY CALCULATIONS
MADE BY EAH DATE 8-15-77
CHECKED BY EFJ DATE 8-17-77

FHWA REGION	STATE	PROJECT	
5	OHIO		

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CUYAHOGA COUNTY
CUY-77-14.12
CUY-90-16.21

I-90-1(101)29 ROADWAY			CUY-77-1564			CUY-77-1576A			CUY-90-1628			CUY-90-1640			CUY-90-1651		
115			115			115			115			115			115		
10																	
10																	
			211			178			237			310			308		
81																	
202																	

I-77-5(18)161 CUY-77-1436C			CUY-77-1519			CUY-77-1548			ROADWAY				CUY-77-1459			
115			115			115			113	115	117	118	117	118	120	121
										6	1	1				
										1		1				
427			523			215						9	1271	753		
										5		9				
										504						
									Lump							
									Lump							

COST PARTICIPATION I-77-5(18)161		I-90-1(101)29		TOTAL QUANT.	UNIT	ITEM	DESCRIPTION	
I		I						
							ROADWAY LIGHTING	2
1				1	Each	202	Existing Lighting Unit, To Be Removed	5
39				39	Each	202	Existing Lighting Unit, Structure Mounted, To Be Removed	6
9				9	Sets	S625	Anchor Bolts, As Per Plan	8
9				9	Each	S625	Light Pole, Design ST12BB43.0D	9
11688				11688	Lin.Ft.	S625	No. 4 AWG, 600 Volt Distribution Cable	11
1815				1815	Lin.Ft.	S625	No. 10 AWG, Pole and Bracket Cable	12
18				18	Each	S625	Luminaire, Style C, Type III, W/310 Watt HPS Ballast	13
18				18	Each	S625	Lamp, 310 W High Pressure Sodium, As Per Plan	15
18				18	Each	S625	Connector Kit, Type VI, As Per Plan	17
20				20	Each	S625	Connector Kit, Type VII-C, As Per Plan	18
2				2	Each	S625	Connector Kit, Type IX, As Per Plan	19
2				2	Each	S625	Connector Kit, Type VIII, As Per Plan	20
8		10		18	Each	S625	Transition Junction Box	24
2		10		12	Each	S625	Special Median Barrier Pullbox With 36" Cover Plate	25
1				1	Each	S625	Structure Grounding System, for Bridge No. CUY-77-1459	27
3198		1244		4442	Lin. Ft	S625	Conduit, 4"ø, ST13.04	28
14		81		95	Lin.Ft.	S625	Conduit, 2"ø, ST13.04	29
504		202		706	Lin.Ft.	S625	Conduit, 3"ø, ST13.04, Jacked-under Pavement	30
Lump				Lump	Lump	S625	Maintaining Existing Lighting	31
Lump				Lump	Lump	839	High Voltage Test	32

NOTE:
Cost Participation I - Federal - 90%, State - 5%, City - 5%.

MADE EAH DATE 8-15-77
TRACED TAK DATE 8-15-77
CHECKED EFJ DATE 8-17-77
SCALE None

Howard, Needles, Tammen & Bergendoff
CONSULTING ENGINEERS
CLEVELAND, OHIO
HNTB

Rev. 1-9-79

LIGHTING QUANTITIES SUB-SUMMARIES

QUANTITY CALCULATIONS
MADE BY ERH DATE 8-15-77
CHECKED BY EFJ DATE 8-17-77

FHWA REGION	STATE	PROJECT	
5	OHIO		

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CUYAHOGA COUNTY
CUY-77-14.12
CUY-90-16.21

LINE NUMBER	STATION	STATION	SIDE	625 Anchor Bolts As Per Plan (Sets)	625 Light Pole Design ST12B49.0D Median Mounted (Each)	625 Conduit 2"ϕ S713.04 (Lin.Ft.)	625 No. 4 AWG, 600 Volt Distribution Cable (Lin. Ft.)	625 Conduit 3"ϕ, S713.04 Jacked-under Pavement (Lin.Ft.)	625 Luminaire, Style C w 310W HPS Ballasts Type III (Each)	625 Lamp 310W High Pressure Sodium (Each)	625 No. 10 AWG Pole and Bracket Cable (Lin. Ft.)	625 Connector Kit Type VI S713.15, As Per Plan (Each)	625 Connector Kit Type VII-C S713.15, As Per Plan (Each)	625 Connector Kit Type VIII S713.15, As Per Plan (Each)	625 Connector Kit Type IX S713.15, As Per Plan (Each)	625 Pullbox, 18" with Cover As Per Plan (Each)	625 Conduit 4" S713.04 (Lin. Ft.)	625 Special Median Barrier Pullbox With 36"Cover Plate (Each)	625 Transition Junction Box (Each)	625 Structure Grounding System (Each)
1																				
2	SHEET	117																		
3	5+15 N-W	89+90 I77	Lt.				470 S/250					2								
4																				
5	87+29	100+00	℄	5 S	5 S		3930		10 S	10 S	1008 S	10 S	10 S				1271 S		1	1 S
6	99+69	100+00	Rt.																	
7																				
8	TOTAL	SHEET 117		5 S	5 S		4470 S/250 S		10 S	10 S	1008 S	10 S	18 S				1271 S		1	1 S
9																				
10																				
11	SHEET	118																		
12																				
13	101+14	108+16	Lt.				1424 S													
14	100+00	108+90	℄	4 S	4 S		3172 S/568		8 S	8 S	807 S	8 S	8 S				753 S	1	1	
15	108+90		Lt/Rt.			9	314						2		2		9			
16	100+00	107+40	Rt.				1490 S													
17																				
18	TOTAL	SHEET 118		4 S	4 S	9	6086 S/882		8 S	8 S	807 S	8 S	8 S 1/2		2		753 S/9	1	1	
19																				
20																				
21																				
22																				
23	65+58.5, I77		℄/Rt			5												1		
24	75+12.77	79+39.70	℄														427 S		2	
25	79+57, 44' Rt	79+39.70	Rt/℄					47												
26	79+39.70	80+42, 44' Lt	℄/Lt					111												
27	118+28, 55' Rt	118+89.21	Rt/℄					82												
28	118+89.21	118+40, 55' Lt	℄/Lt					74												
29	118+89.21	124+11.93	℄														523 S		2	
30	32+98, 70' Rt	34+02.03	Rt/℄					125												
31	34+02.03	34+01, 65' Lt	℄/Lt					65												
32	34+02.03	36+16.97	℄														215 S		2	
33																				
34	SUB TOTAL	I-77-5(18)161				5		504									1165 S	1	6	
35																				
36	42+44.62	44+55.38	℄														211 S		2	
37	44+90		℄			9												1		
38	49+29.66	51+07.58	℄														178 S		2	
39	16+52 RMP E10		Lt			9												1		
40																				
41	55+50 I90		℄			9												1		
42	58+79.48	61+16.55	℄														237 S		2	
43	65+09.68	68+19.53	℄														310 S		2	
44	68+79, 56.5' Rt	68+19.53	Rt/℄					82												
45	68+19.53	68+79, 56.5' Lt	℄/Lt					82												
46	70+88.73	73+96.75	℄														308 S		2	
47	82+52		℄			9												1		
48	111+81		℄			9												1		
49	125+05		℄			9												1		
50	135+46		℄			9												1		
51	151+30		℄			9												1		
52	160+90		℄			9												1		
53	174+39	174+39, 40' Lt	℄/Lt					40										1		
54																				
55	TOTAL Sh.115	I-90-1(101)	29			81		202									1244 S	10	10	
56	TOTAL Sh.115	I-77-5(18)	61	9 S	9 S	14	10556 S/132	504	18 S	18 S	1815 S	18 S	18 S 1/2		2	2	3189 S/9	2	8	1 S

MADE ERH DATE 8-15-77
TRACED JAK DATE 8-26-77
CHECKED EFJ DATE 8-17-77
SCALE None

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CONSULTING ENGINEERS
CLEVELAND, OHIO

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NOTE:
"S" Denotes Structure Quantity

Note:
Quantities on Lines 23 to 53 are from Roadway Sheets.

QUANTITY CALCULATIONS

MADE BY ERH DATE 8-15-77

CHECKED BY EFJ DATE 8-17-77

FHWA REGION	STATE	PROJECT	
5	OHIO		

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CUYAHOGA COUNTY
CUY-77-14.12
CUY-90-16.21

LIGHTING REMOVAL SUB-SUMMARY

LINE NUMBER	STATION	STATION	SIDE	202 Existing lighting unit to be removed, as per plan	202 Existing lighting unit, structure mounted, to be removed, as per plan
				Each	Each
1					
2	Sheet 120				
3					
4	4+89 Ramp N-W	99+50	Rt./Lt.	1	12
5	27+40 Ramp E-N	99+03	Rt./Rt.		13
6					
7	Total	Sheet 120		1	25
8					
9	Sheet 121				
10					
11	100+58	107+06	Lt.		7
12	100+10	106+43	Rt.		7
13					
14	Total	Sheet 121			14
15					
16					
17					
18					
19					
20					
21	TOTAL	SHEET 116		1	39
22					
23					
24					
25					

NOTE:
Structure Quantities are CUY-77-1459
All Above quantities are I-77-5(18)161

LEGEND

Station / Circuit Number — Existing Light Pole

Existing Light Pole, to be removed

Existing Light Pole, on Structure, to be removed

Existing Light Tower

Indicates Platform Required — Station, Offset (Tower No.) Existing — Symbol on Circuit Layout Map (Existing)

Station / Circuit-Pole — Median Mounted Light Pole

310 - III - ST128B+9.00
- Light Pole Designation
- ANSI-IES Type III Distribution, 53,000 Lumen, Style C Luminaire with 310 W. Ballast for 310 W. High Pressure Sodium Lamp

Symbol on Circuit Layout Maps

Existing Underpass Lighting Unit

Median Barrier Pullbox, per HL-17

Pullbox or Junction Box, Existing

Control Center, Pad Mounted, Existing

CP — Symbol on Circuit Layout Map

Proposed Circuit on Circuit Layout Maps

Existing Conduit with S713.02 Cable

Conduit 2" ø, S713.04, with S713.02 Cable

Existing Circuit

Conduit 3" ø, S713.04, Jacked Under pavement

Conduit, 4" ø S713.04 with 4-#4 AWG S713.02 Cable in Median Barrier

(E) — Expansion fitting on Structure

2" Conduit, S713.04

This Item Of Work Will Include The Installation Of Rigid Ferrous Conduit At The Locations Specified On Sheet #115, Connecting The Existing Crossovers Into The Proposed Median Pullboxes.

All Crossovers (Except Sta. 65+58.5 And Sta. 108+90 I-77) Consist Of An 8½"X14" Concrete Encased Duct Bank Of Two 2" Conduits.

The Contractor Shall Determine By Inspection Which Of The Two Conduits Is Empty Or In The Case That Both Are Occupied Which Has Abandoned Cable In It. In The Event That Both Conduits Contain Utilized Conductors The Contractor Will Relocate Or Replace The Cables Of One Duct Into The Other And Report This Work And Location To The District Lighting Engineer.

The Contractor Shall Then Break Into The Available Duct (Being Carefull Not To Disturb The Remaining Conduit), Install Conduit Couplings, Conduit Ells And Two 2" Conduits Up Into The Pullbox Per HL-17A.

Restoration Shall Consist Of Encasing The New Conduit To Conform With The Adjacent Duct Bank And Replacement Of The Pavement Subbase In A Manner Suitable To The Engineer.

The Unit Price Bid For Item S625 2" Conduit, S713.04 Shall Be For Full Compensation For Excavation, Backfilling Compaction, Subbase Restoration, Concrete Encasement, Pullwire And All Labor, Materials Equipment And Incidentals Necessary To Complete The Work As Specified.

MADE ERH DATE 8-12-77
TRACED JAE DATE 8-16-77
CHECKED EFJ DATE 8-16-77
SCALE None

Howard, Needles, Tammen & Bergendoff
CONSULTING ENGINEERS
CLEVELAND, OHIO

HNTB

LIGHTING PLANS

FHWA REGION	STATE	PROJECT	
5	OHIO		

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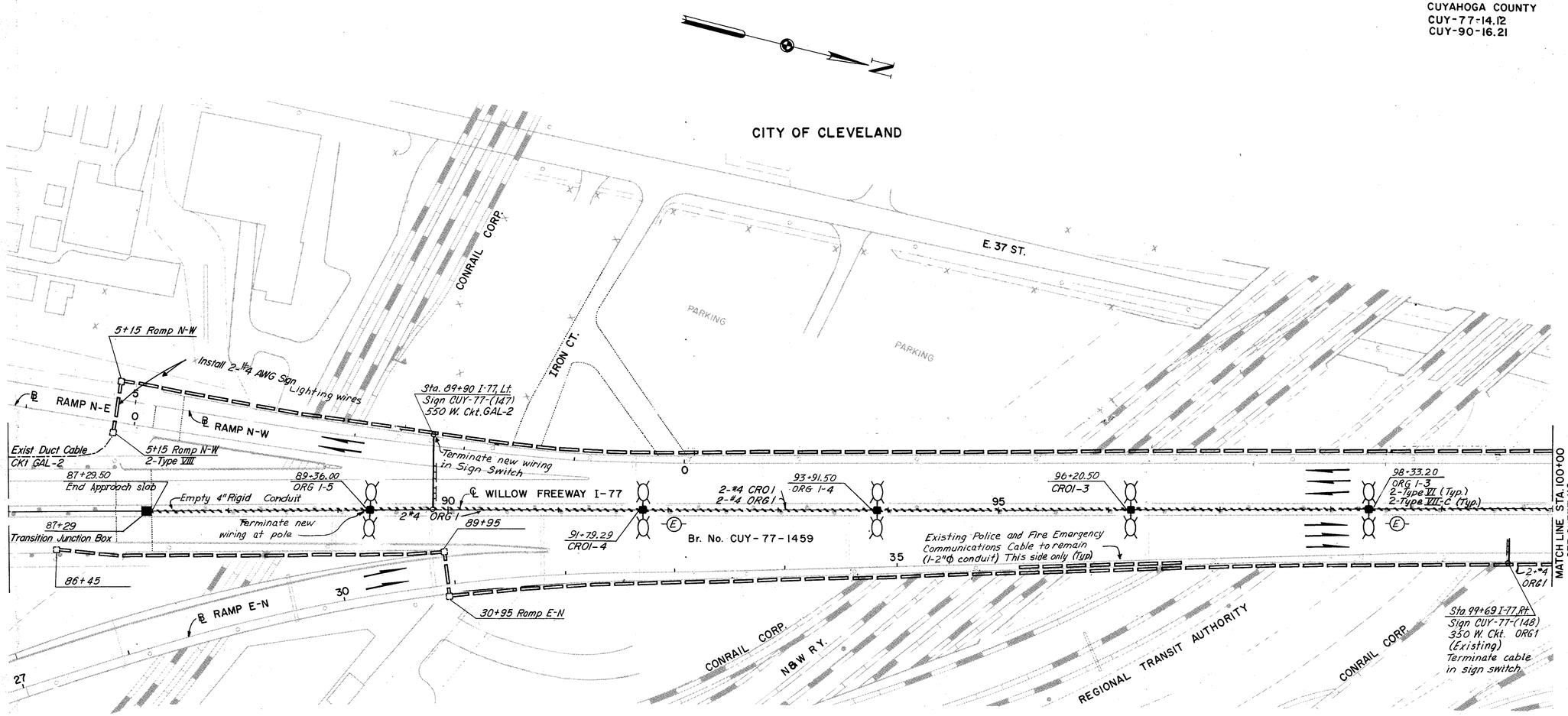
CUYAHOGA COUNTY
CUY-77-14.12
CUY-90-16.21



Note:
All median mounted light poles on this sheet are 310-III-ST 12 BB 49.0 D Reference A

FOR LEGEND SEE SHEET 116 .

MADE EEH DATE 2-8-77
TRACED RAL DATE 3-12-77
CHECKED EFV DATE
SCALE 1"= 50'

Howard, Needles, Tammen & Bergendoff
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50 0 50 100 150 200
SCALE IN FEET

FHWA REGION	STATE	PROJECT	
5	OHIO		

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CUYAHOGA COUNTY
CUY-77-14.12
CUY-90-16.21

CITY OF CLEVELAND

MATCH LINE STA. 100+00
SEE SHEET 117

Sta. 101+14 I-77, Lt.
Sign CUY-77-(149)
550W. Ckt. CR01
Terminate New Wiring
in Sign Switch

Remove existing wires from existing 2"ø conduit, install 2-#4 AWG for sign lighting.

2-#4 Ckt. CR01

102+48.79
ORG1-2

100+37.55
CR01-2

104+50.79
CR01-1

106+54.37
ORG1-1
2-Type VI (Typ.)
2-Type VII-C (Typ.)

2-#4 Ckt. ORG1
2-#4 Ckt CR01

105

BR. NO. CUY-77-1459

Remove existing lighting wires from existing 2"ø conduit, install 2-#4 AWG for sign lighting.

Existing Police and Fire Emergency Signal Cable to remain (1-2"ø Conduit) this side only (Typ.)

2-#4 Ckt. ORG1

E 36 ST.

E 37 ST.

CROTON AVE.

PARKING

PARKING

PARKING

℄ I-77

108+16
Remove existing wires in parapet and connect new wires to existing Ckt. CR01 duct cable with #1 existing Rits.

Maintain Underpass Lighting Circuit

To Existing Power Service RW

107+53.12
Transition Jct. Box

107+52.62
Begin Approach Slab

107+40

Sta. 109+17, 75' Lt., ℄ I-77
Tower No. 9
(CR01-1 Existing)

Existing PB
2-Type IX

108+90 Special 36"
Median Barrier Pullbox

108+90
Existing PB
2-Type VII-C

Sta. 108+81 I-77, Rt.
Sign CUY-77-(150)
1650W. Ckt. ORG1
(Existing)

ORG1 #4

CR01 #4

LA

℄ RAMP F-2

℄ WILLOW FREEWAY I-77

℄ RAMP F-1

CEI Pole #14880
Existing Power Service
Existing 480 VAC 24.6 KVA
Proposed 480 VAC 17.1 KVA
4+45, 50' Lt. ℄ Ramp F-2
Existing Control Center CR0

#4 CR02

Sta. 113+95, 63' Rt. ℄ I-77
Tower No. 10
(ORG2-1 Existing)

#4 ORG2

6+80, 20' Rt. ℄ Ramp F-1
Existing Control Center ORG

Existing C.E.I. Pole
Existing Power Service
Existing 480 VAC 24.7 KVA
Proposed 480 VAC 20.4 KVA

4" Ø Raceway In Median With 4-#4 AWG Wires

Proposed Concrete Barrier Median

Proposed Median Barrier Pullbox With 36" Cover Plate

4"Ø Conduit Coupling And Ell

Existing Duct Bank One 4"Ø Conduit Over 2-2" Ø Conduits Encased

2"Ø Conduit Coupling & Ell (North)

Existing 2"Ø South Conduit TO Remain Intact

Existing 4"Ø Conduit Remove Existing Wire, Install 2-#4 AWG Wires (Both Sides)

STA 108-90 ℄ I-77
Proposed Median Lighting To Existing Crossover Detail
Scale: 1/8" = 1'-0"

Note:
All Median Mounted Light Poles on this sheet are 310-III-ST12BB43.0D Reference A

50 0 50 100 150 200
SCALE IN FEET

FOR LEGEND SEE SHEET 116.

MADE E.R.H. DATE 8-11-77
TRACED T.A.K. DATE 8-12-77
CHECKED E.F.T. DATE 8-17-77
SCALE 1"=50'

Howard, Needles, Tammen & Bergendoff
CONSULTING ENGINEERS
CLEVELAND, OHIO

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LIGHTING PLAN STA. 100+00 TO STA. 114+00 I-77

CIRCUIT LAYOUT MAPS CONTROL CENTER DATA LIGHTING DETAILS

FHWA REGION	STATE	PROJECT	
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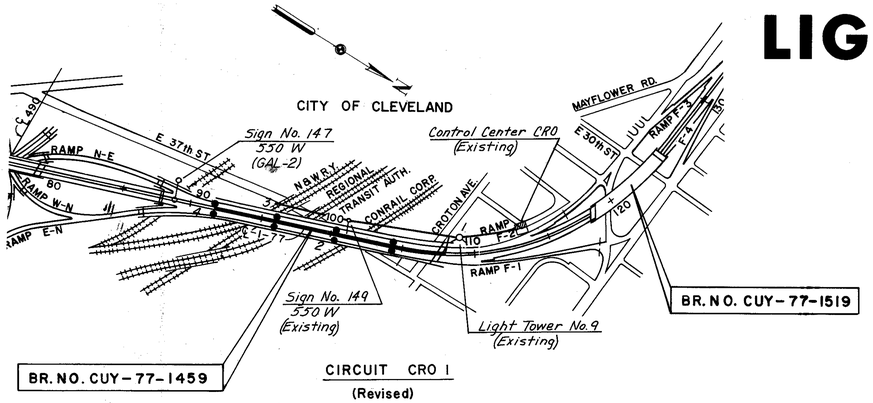
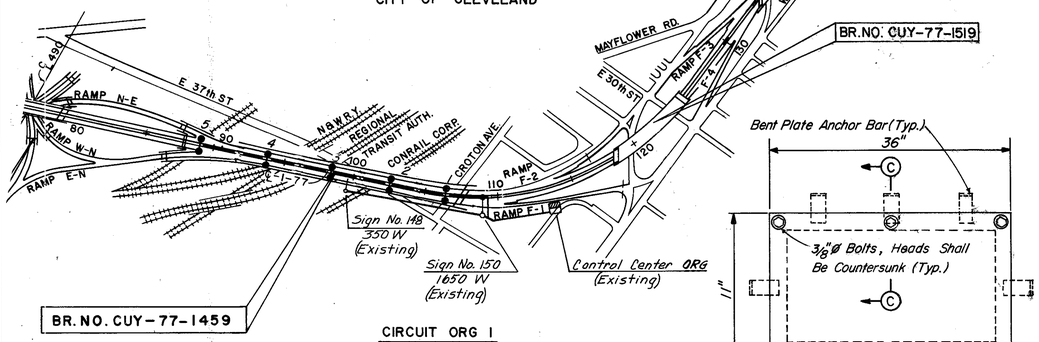
CUYAHOGA COUNTY
CUY-77-14.12
CUY-90-16.21



CIRCUIT CRO 1
(Revised)



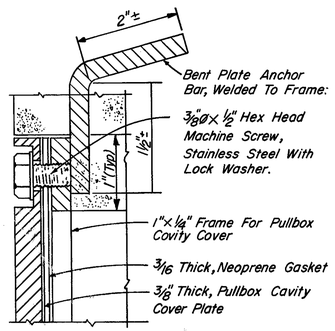
CIRCUIT ORG 1
(Revised)

PULLBOX CAVITY COVER PLATE

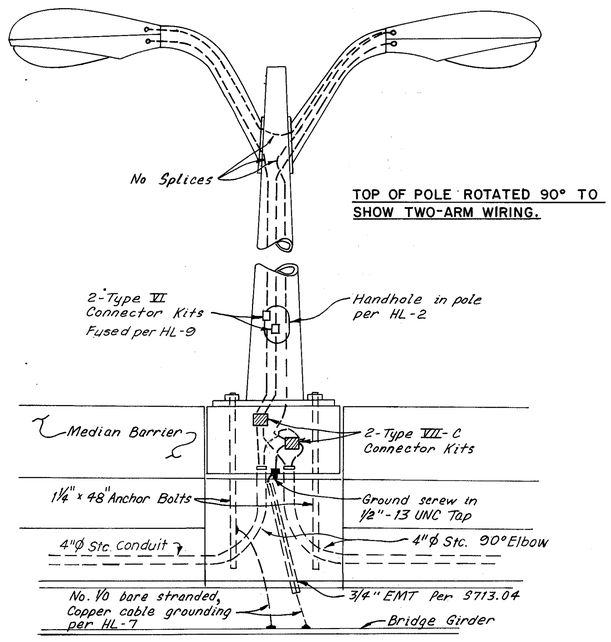
500 0 500 1000 1500 2000
SCALE IN FEET

LIGHT POLE DATA				
REFERENCE LETTER	DESIGN NUMBER	FOUNDATION ANCHOR BOLTS: SIZE DIAM. x LENGTH	FOUNDATION ANCHOR BOLTS: BOLT CIRCLE DIAMETER	TRANSFORMER BASE STYLE
A	ST12BB430D	1¼"x48"	8"x18"	Special*

‡Special base plate as shown on HL-178
*Transformer base details shown on sheets 136 and 137



SECTION C-C



BR. NO. CUY-77-1459-KINGSBURY RUN
LIGHT POLE WIRING-MEDIAN BARRIER
No Scale

CONTROL CENTER DATA

CENTER CIRCUIT	LOCATION	SECONDARY: VOLTAGE (VOLTS)	SECONDARY: LOAD (KVA)	SECONDARY: XFMR. (KVA)	SECONDARY: CABLE (AWG)	SERVICE SWITCH (TYPE)	LAMP TYPE: 310W HPS 0.8A. Ea.	LAMP TYPE: 1000W HPS 2.5A. Ea.	SIGN LOAD (WATTS)	CIRCUIT LOAD (AMPS)	CIRCUIT FUSES (AMPS)	CIRCUIT DROP (%)	NOTES
	SHEET 118												
CRO	4+65 ℄ Ramp F-2, 50'Lt.	480	17.5			S-100	8	10	2425	36.5			Existing Control Center
CRO1			6.0				8	2	550	12.6	20		
CRO2			11.5					8	1875	23.9	30	4.65	
CRO3											30		Spare Circuit
ORG	6+80 ℄ Ramp F-1, 20'Rt.	480	20.9			S-100	10	11	3800	42.4			Existing Control Center
ORG1			5.9				10		2000	12.2	25		
ORG2			15.0					11	1800	31.2	40	3.23	
ORG3											40		Spare Circuit

MADE ERH DATE 8-10-77
TRACED KAL DATE 8-12-77
CHECKED EGJ DATE 8-17-77
SCALE As Shown

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FHWA REGION	STATE	PROJECT	
5	OHIO		

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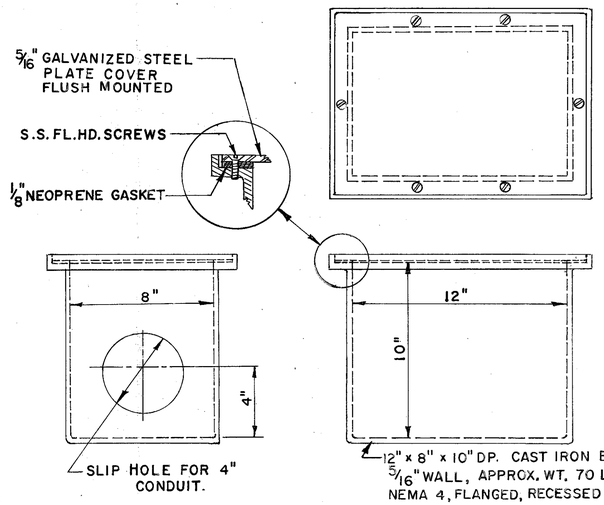
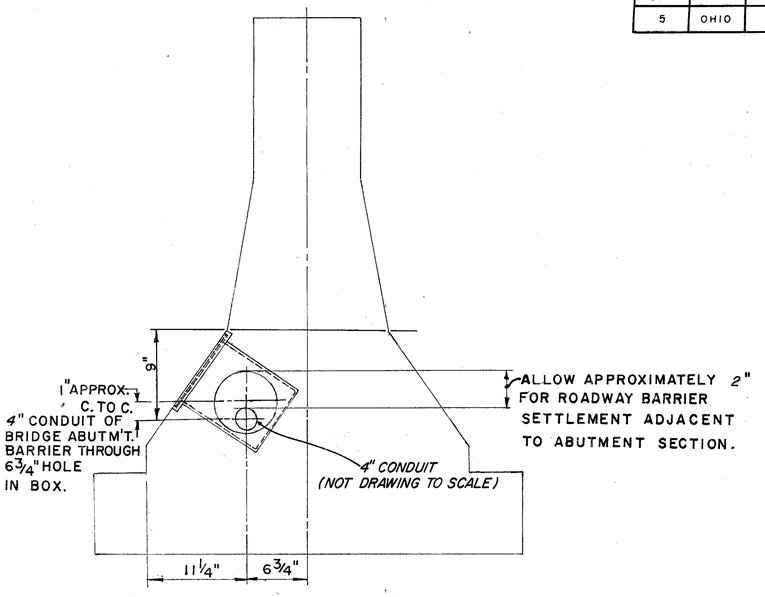
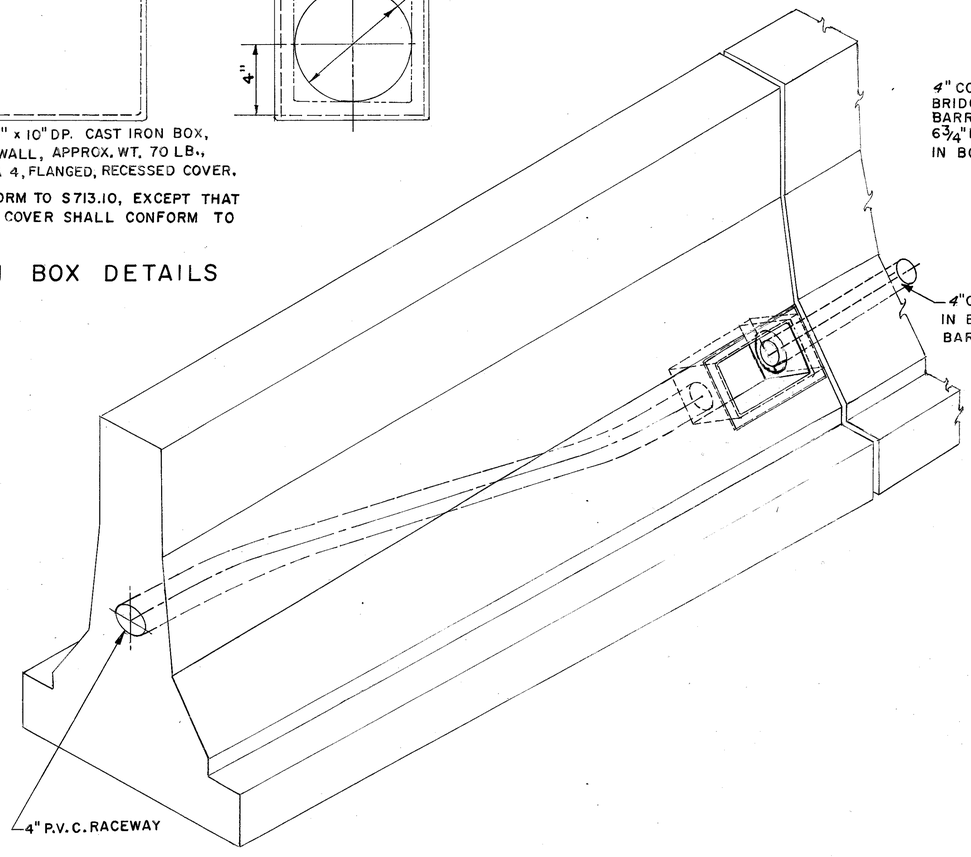


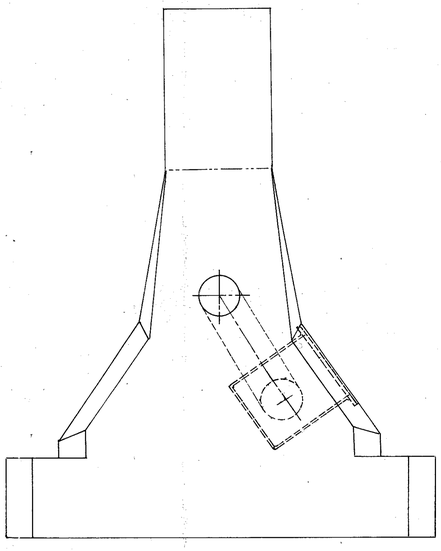
JUNCTION BOX SHALL CONFORM TO S713.10, EXCEPT THAT THE GALVANIZED STEEL PLATE COVER SHALL CONFORM TO ASTM A-242 OR A-36.

TRANSITION JUNCTION BOX DETAILS

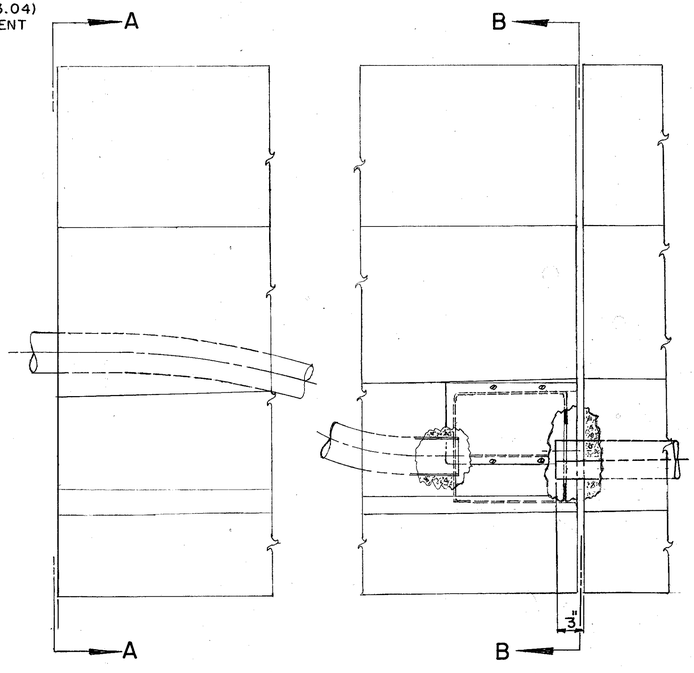


END ELEV. B-B





END ELEV. A-A



SIDE ELEVATION, TRANSITION BARRIER FROM ROADWAY TO BRIDGE CONFIGURATIONS

FHWA REGION	STATE	PROJECT	
5	OHIO		

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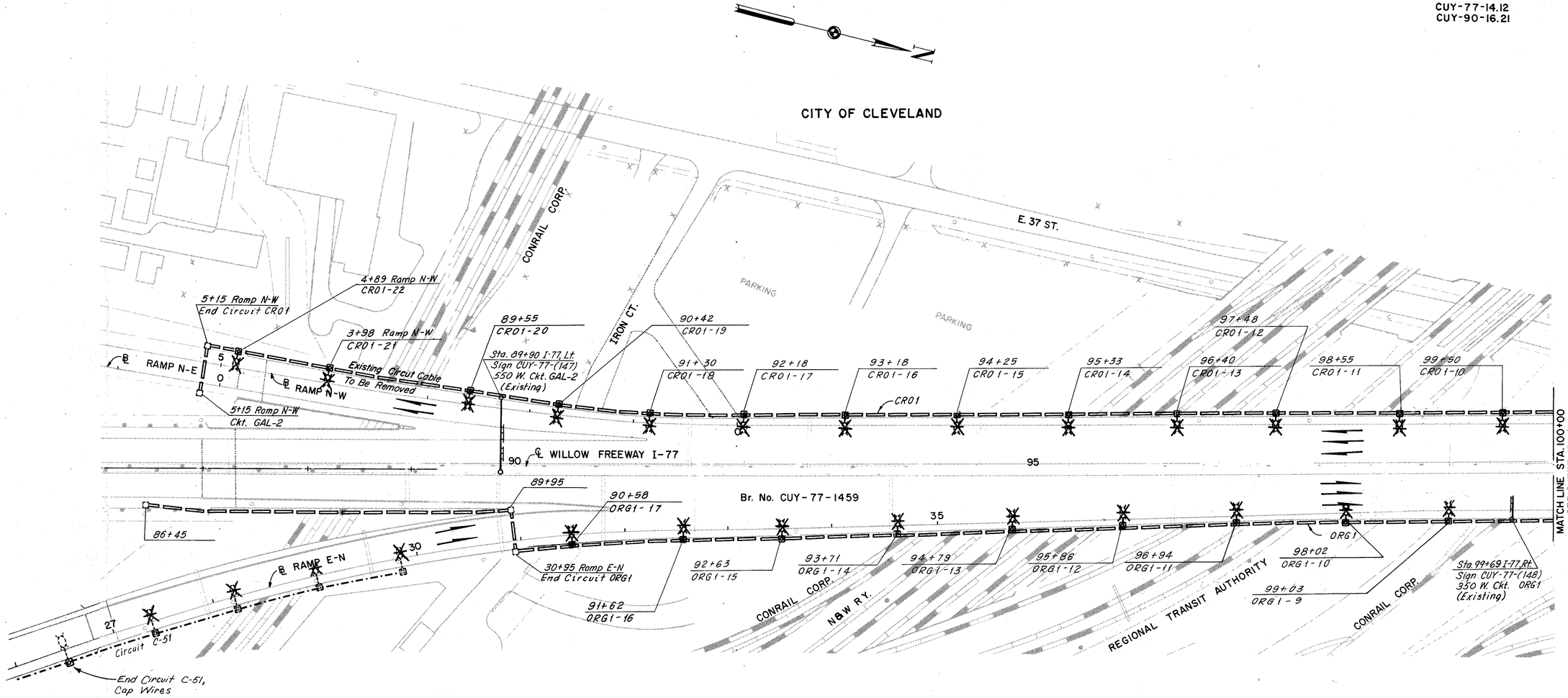
CUYAHOGA COUNTY
CUY-77-14.12
CUY-90-16.21



MADE ERH DATE 8-16-77
TRACED KAL DATE 8-16-77
CHECKED EPJ DATE 8-17-77
SCALE 1"= 50'

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50 0 50 100 150 200
SCALE IN FEET

FOR LEGEND SEE SHEET 116.

LIGHTING REMOVAL STA. 86+00 TO STA. 100+00 I-77

FHWA REGION	STATE	PROJECT	
5	OHIO		

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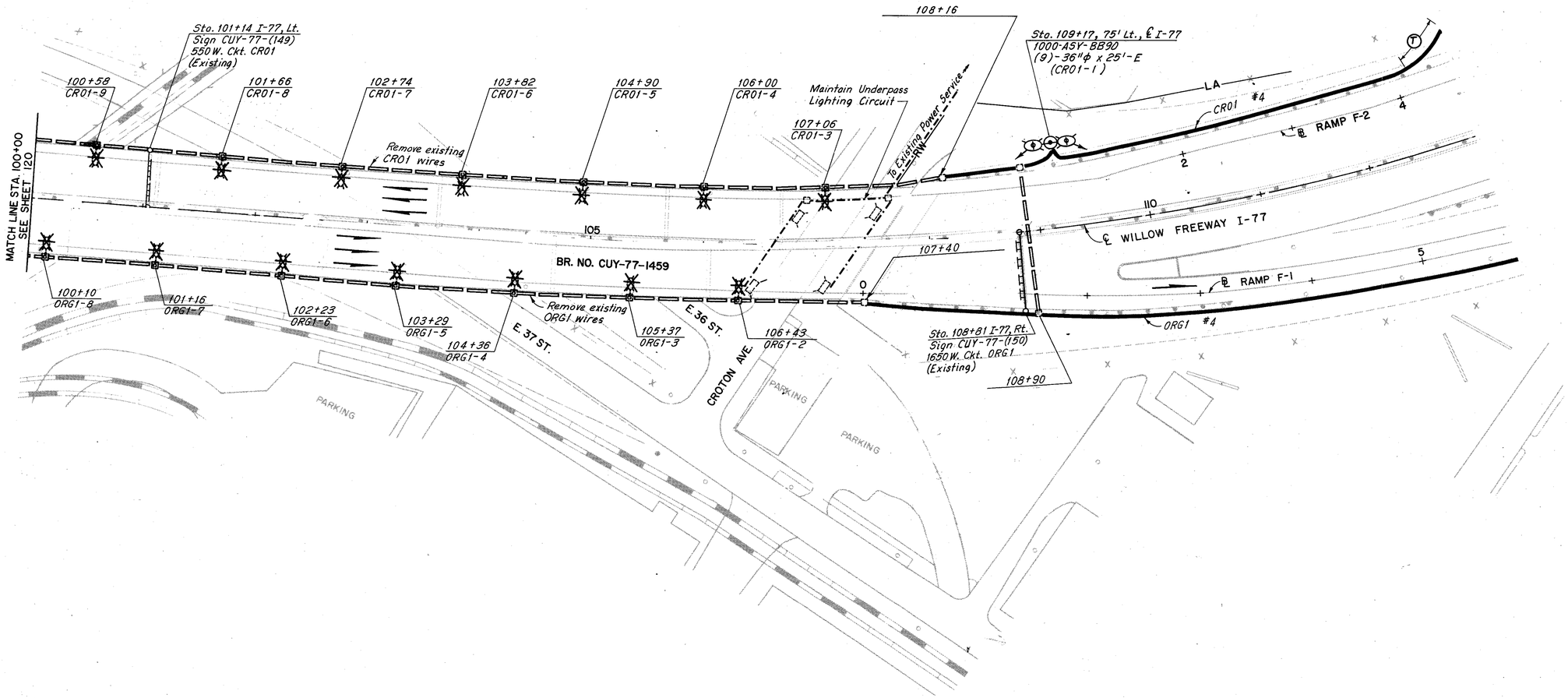
169

CUYAHOGA COUNTY
CUY-77-14.12
CUY-90-16.21

CITY OF CLEVELAND



MADE EBH DATE 8-16-77
TRACED TAK DATE 8-26-77
CHECKED EET DATE 8-27-77
SCALE 1"=50'

Howard, Needles, Tammen & Bergendoff
CONSULTING ENGINEERS
CLEVELAND, OHIO

HNTB

50 0 50 100 150 200
SCALE IN FEET

FOR LEGEND SEE SHEET 116.

LIGHTING REMOVAL STA. 100+00 TO STA. 113+00 I-77

FHWA REGION	STATE	PROJECT	
5	OHIO		

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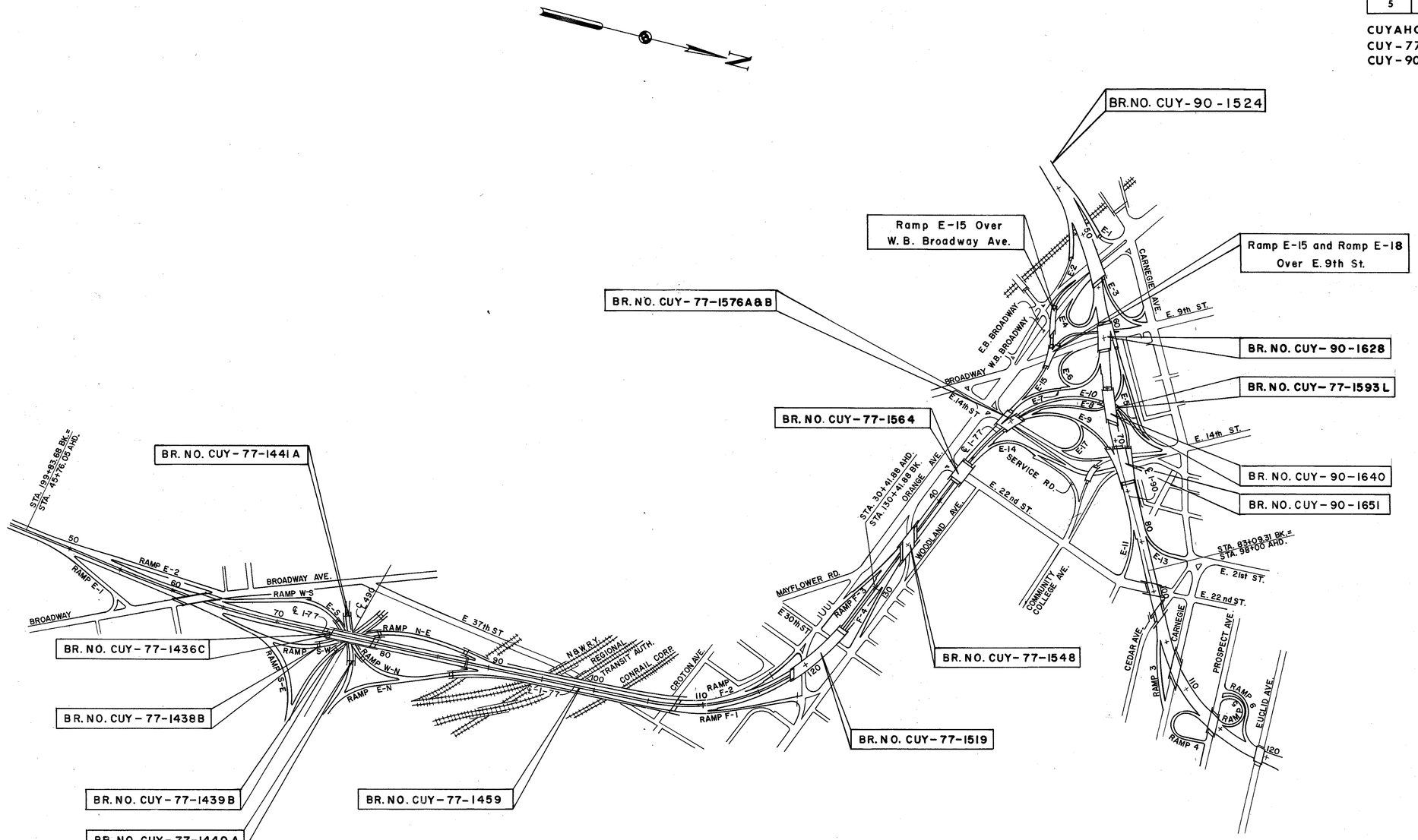
169

CUYAHOGA COUNTY
CUY-77-14.12
CUY-90-16.21



500 0 500 1000 1500 2000
SCALE IN FEET

MADE C.K.B DATE 3-9-77
TRACED C.K.B DATE 3-9-77
CHECKED DATE
SCALE

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CLEVELAND, OHIO

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SCHEMATIC PLAN

GENERAL NOTES - STRUCTURES OVER 20 - FT SPAN

FHWA REGION	STATE	PROJECT	
5	OHIO		

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CUYAHOGA COUNTY
CUY-77-14.12
CUY-90-16.21

1. PROPOSED WORK

A. SURFACING BRIDGE DECKS INCLUDING DECK REPAIRS

THE ENTIRE CONCRETE DECK OF ALL BRIDGES IDENTIFIED ON SHEET 1/22 EXCEPT BR. NO. CUY-77-1564 AND BR. NO. CUY-90-1651 SHALL BE REPAIRED AND RESURFACED IN ACCORDANCE WITH THESE PLANS. RAISING THE EXPANSION JOINTS AND SCUPPERS AS SHOWN IN THE PLANS ALSO IS REQUIRED IN CONJUNCTION WITH THIS WORK. THE DECK OF BRS. NOS. CUY-77-1564 AND CUY-90-1651 HAVE PREVIOUSLY BEEN REPAIRED AND OVERLAID. THESE DECKS REQUIRE FURTHER REPAIR AND SURFACING AT THE PROPOSED MEDIAN. LIMITS OF THE PROPOSED OVERLAY ARE SHOWN IN THE PLANS.

THE BRIDGE DECKS SHALL BE REPAIRED AND RESURFACED USING ONE OF THE TWO ALTERNATES SPECIFIED EXCEPT THE BRIDGE DECK FOR BR. NO. CUY-77-1564 & CUY-90-1524. ALTERNATE "A" CONSISTS OF REPAIR & RESURFACING THE BRIDGE DECKS IN ACCORDANCE W/ITEM 845 LATEX MODIFIED CONCRETE OVERLAY, AND ALTERNATE "B" CONSISTS OF REPAIRING AND RESURFACING THE BRIDGE DECKS IN ACCORDANCE WITH ITEM 850 , DENSE CONCRETE OVERLAY. THE BRIDGE DECK FOR BR. NO. CUY-77-1564 SHALL BE REPAIRED IN ACCORDANCE WITH ITEM SPECIAL, PATCHING CONCRETE BRIDGE DECKS TYPE I . THE SURFACING DETAILS FOR BR. NO. CUY-77-1564 ARE SHOWN IN THE PLANS AND REPAIR REQUIREMENTS ARE INCLUDED IN THE PROPOSAL. SURFACING DETAILS FOR CUY-90-1524 ARE SHOWN ON THE PLANS AND IN THE PROPOSAL.

B. REPLACEMENT OF DEEP BEAM BARRIER MEDIAN WITH CONCRETE BARRIER MEDIAN

THE EXISTING DEEP BEAM GUARDRAIL, INCLUDING THE CONCRETE MEDIAN, SHALL BE REMOVED AND REPLACED WITH A CONCRETE BARRIER MEDIAN ON THE FOLLOWING BRIDGES:

BRIDGE NO. CUY-77-1436 C
BRIDGE NO. CUY-77-1459
BRIDGE NO. CUY-77-1519
BRIDGE NO. CUY-77-1548
BRIDGE NO. CUY-77-1564
BRIDGE NO. CUY-77-1576 A & B
BRIDGE NO. CUY-90-1628
BRIDGE NO. CUY-90-1640
BRIDGE NO. CUY-90-1651

MODIFICATIONS AS SHOWN IN THE PLANS ARE REQUIRED TO THE EXISTING ABUTMENTS AND EXPANSION JOINTS IN CONJUNCTION WITH THE CONSTRUCTION OF THE NEW MEDIAN.

C. TRIM EXPANSION JOINT

THE EXPANSION JOINT SHALL BE TRIMMED AS SHOWN ON SHEET CD-7 OF THE PLANS AT THE FOLLOWING LOCATIONS:

BRIDGE NO. CUY-77-1436 C (NORTH AND SOUTH ABUTMENTS)
BRIDGE NO. CUY-77-1576 A & B (WEST ABUTMENT)
BRIDGE NO. CUY-90-1651 (WEST ABUTMENT AND ABUTMENT E-9)

D. ADDITIONAL PROPOSED WORK (BRS. NOS. CUY-90-1628 AND CUY-90-1651

ADDITIONAL PROPOSED WORK AT BRS. NOS. CUY-90-1628 & CUY-90-1651 IS SHOWN ON THE "SITE PLAN" OF THE BRIDGES. SEE SHEETS 1/5 & 1/8.

E. MEDIAN MOUNTED LIGHT POLE SUPPORTS

MEDIAN MOUNTED LIGHT POLE SUPPORTS SHALL BE PROVIDED AT BR. NO. CUY-77-1459. MODIFICATION OF THE EXISTING DECK AND PROPOSED SUPPORT DETAILS ARE SHOWN IN THE PLANS.

2. DESIGN SPECIFICATIONS

STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES ADOPTED BY THE AMERICAN ASSOCIATION OF STATE HIGHWAY OFFICIALS, DATED 1973, INCLUDING THE 1974 (EXCEPT FOR REINFORCEMENT LAPS), 1975, 1976, AND 1977 INTERIM SPECIFICATIONS AND THE OHIO "SUPPLEMENT" TO THESE SPECIFICATIONS.

THE CLASSES OF CONCRETE AND THE GRADES OF STRUCTURAL STEEL AND REINFORCING STEEL, TOGETHER WITH THE WORKING STRESSES FOR EACH ARE AS FOLLOWS:

CONCRETE CLASS C - UNIT STRESS 1200 PSI FOR SUPERSTRUCTURE
UNIT STRESS 1333 PSI FOR SUBSTRUCTURE

STRUCTURAL STEEL - ASTM A36 - UNIT STRESS 20,000 PSI

REINFORCING STEEL - ASTM A615, A616, A617 - UNIT STRESS 20,000 PSI

3. SUPPLEMENTAL SPECIFICATIONS

REFERENCE SHALL BE MADE TO SUPPLEMENTAL SPECIFICATIONS 808 DATED 1-1-71 AND 836 DATED 3-12-75. 845 DATED 6-27-77, 850 DATED 6-27-77, AND 953 DATED 6-27-77. 3-8-79
853 AND 956 DATED 6-26-78

4. REFERENCE DRAWINGS

REFERENCE SHALL BE MADE TO THE OHIO STANDARD DRAWINGS SD-1-69 DATED 6-12-69 (SHEET 1 OF 4), AS-1-72 DATED 6-30-72 (SHEETS 1 AND 2), HL-5 DATED 9-6-73, AND HL-7 DATED 9-6-73.

5. PLANS OF EXISTING BRIDGES

CONSTRUCTION PLANS FOR THE EXISTING BRIDGES ARE ON FILE AT THE OHIO DEPARTMENT OF TRANSPORTATION, DISTRICT 12 OFFICE, 10100 BROADWAY AVENUE, GARFIELD HEIGHTS, OHIO AND ARE AVAILABLE FOR REFERENCE.

6. DIMENSIONS

DIMENSIONS GIVEN ARE MEASURED HORIZONTALLY AND AT 60° F UNLESS OTHERWISE NOTED. DIMENSIONS GIVEN FOR EXISTING STRUCTURES ARE FROM THE ORIGINAL CONSTRUCTION PLANS UNLESS OTHERWISE INDICATED AS FIELD MEASUREMENTS. SOME VARIATION FROM PLAN DIMENSIONS IS EXPECTED. ANY ADDITIONAL COST RESULTING FROM VARIATION FROM PLAN DIMENSIONS SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR AND NO ADDITIONAL PAYMENT WILL BE AWARDED BY THE STATE.

7. CONSTRUCTION SEQUENCE

ALL WORK AFFECTING TRAFFIC FLOW SHALL BE PERFORMED IN ACCORDANCE WITH THE PHASE CONSTRUCTION SEQUENCE SHOWN IN THE PLANS AND IN ACCORDANCE WITH THE MAINTENANCE OF TRAFFIC NOTES COVERED ON DRAWING NO. 9A-10Z OF THE ROADWAY PLANS.

8. REMOVAL

A. GENERAL

STRUCTURAL STEEL DESIGNATED BY THE PLANS FOR REMOVAL MAY BE REMOVED BY METHODS OF THE CONTRACTOR'S SELECTION AND AS APPROVED BY THE ENGINEER.

WHEN SO DIRECTED BY THE ENGINEER, THE CONTRACTOR SHALL WET DOWN CONCRETE THOROUGHLY DURING REMOVAL OPERATIONS TO PREVENT SPREAD OF DUST. ALL NECESSARY LABOR AND MATERIAL SHALL BE PROVIDED BY THE CONTRACTOR AND INCLUDED WITH ITEM 202, PORTIONS OF STRUCTURES REMOVED, FOR PAYMENT.

B. CONCRETE REMOVAL

THE REMOVAL OF UNSOUND DECK CONCRETE SHALL BE IN ACCORDANCE WITH ITEM 845 LATEX MODIFIED CONCRETE OVERLAY, OR ITEM 850 DENSE CONCRETE OVERLAY. NO TRAFFIC SHALL BE PERMITTED ON ANY PORTION OF THE DECK WHICH HAS BEEN SCARIFIED. OTHER CONCRETE SHALL BE REMOVED BY MEANS OF APPROVED PNEUMATIC HAMMERS EMPLOYING POINTED AND BLUNT CHISEL EDGED TOOLS. THE MAXIMUM WEIGHT OF HAMMER SHALL NOT EXCEED 35 POUNDS.

EXISTING REINFORCING STEEL THAT IS TO REMAIN IN THE REPAIRED STRUCTURE SHALL BE CUT AS INDICATED IN THE PLANS OR AS DIRECTED BY THE ENGINEER TO SERVE AS DOWELS OR PRINCIPAL REINFORCEMENT IN THE REBUILT STRUCTURE. CARE SHALL BE TAKEN TO PRESERVE THE BOND OF SUCH DOWELS OR PRINCIPAL REINFORCEMENT. THESE BARS SHALL BE CLEANED OF ALL CONCRETE FRAGMENTS AND FOREIGN MATTER. PNEUMATIC HAMMERS SHALL NOT BE PLACED IN DIRECT CONTACT WITH THE BARS; HAND TOOLS SHALL BE EMPLOYED FOR FINAL CLEANING. DAMAGED AREAS OF REINFORCEMENT THAT ARE TO REMAIN SHALL BE CUT AND STRESS TRANSFER ACCOMPLISHED BY EITHER A LAPPED OR MECHANICAL SPLICE. OTHER EXISTING REINFORCEMENT WITHIN THE REMOVAL LIMITS SHALL BE REMOVED AND DISPOSED.

C. DISPOSAL OF REMOVED MATERIAL

ALL CONCRETE, REINFORCING STEEL, ASPHALT, ETC., REMOVED FROM THE STRUCTURE AND NOT REUSED SHALL, UNLESS OTHERWISE SPECIFIED, BECOME THE PROPERTY OF THE CONTRACTOR AND SHALL BE REMOVED BY HIM FROM THE SITE.

UNDER NO CIRCUMSTANCES SHALL THE MATERIAL BE PERMITTED TO REMAIN ON THE PREMISES, RIGHT OF WAY OR STREETS PENDING DISPOSAL OF SAME FOR ANY OTHER PURPOSES, UNLESS OTHERWISE SPECIFIED BY THE ENGINEER.

HOWARD, NEEDLES, TAMMEN & BERGENDOFF CONSULTING ENGINEERS CLEVELAND — HNTB

GENERAL NOTES

CUYAHOGA COUNTY OHIO

DRAWN C.K.B.	TRACED	CHECKED C.A.B.	REVIEWED	REVISED
DATE 6-28-77	DATE	DATE 7-5-77	DATE	SHEET GN-1

Revised 4-5-79

GENERAL NOTES - STRUCTURES OVER 20 - FT SPAN

FHWA REGION	STATE	PROJECT	
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9. BONDING NEW CONCRETE TO EXISTING CONCRETE

EXCEPT AT THE INTERFACE OF THE DECK AND CONCRETE BARRIER MEDIAN AND AT THE INTERFACE OF EXISTING CONCRETE AND LATEX MODIFIED CONCRETE, OR EXISTING CONCRETE AND LOW SLUMP CONCRETE, POLYSULFIDE-EPOXY RESIN ADHESIVE SHALL BE USED FOR BONDING NEW CONCRETE TO EXISTING CONCRETE AT ALL LOCATIONS WHERE NEW CONCRETE IS PLACED IN CONTACT WITH EXISTING CONCRETE. THE ADHESIVE SHALL BE THIOBOND No. 100 AS MANUFACTURED BY STEELCOAT MFG. COMPANY, ST. LOUIS, MO., CEILCOAT 348 ADHESIVE, AS MANUFACTURED BY THE CEILCOAT COMPANY, BEREA, OHIO, RESIWELD R-7680-G AS MANUFACTURED BY THE H. B. FULLER COMPANY OR ADHESIVE MEETING THE REQUIREMENTS OF AASHTO M-235-73 I. IN THE EVENT OF APPLICATION AT LESS THAN 60° F. IT MAY BE NECESSARY TO OBTAIN A SLIGHTLY MODIFIED MATERIAL DEPENDING ON THE RECOMMENDATIONS OF THE MANUFACTURER.

PREPARATION OF THE SURFACE OF THE EXISTING CONCRETE SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATION. JUST PRIOR TO APPLICATION THE PREPARED SURFACE SHALL BE WASHED WITH WATER TO REMOVE ALL DUST. WHEN THE SURFACE IS DRY, UNLESS OTHERWISE SPECIFIED BY THE MANUFACTURER, THE ADHESIVE SHALL BE APPLIED BY THOROUGH BRUSHING ONTO THE SURFACE TO A THICKNESS OF NOT LESS THAN 15 MILS WITH THE COVERAGE AVERAGING AT LEAST ONE GALLON PER 100 SQ. FT. WHILE THE ADHESIVE IS TACKY, THE FRESH CONCRETE SHALL BE PLACED AGAINST IT. IF THE ADHESIVE SETS AND IS NO LONGER TACKY, A SECOND COAT SHALL BE APPLIED. THE ADHESIVE SHALL BE THOROUGHLY MIXED AND HEALTH PRECAUTIONS OBSERVED, ALL IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.

NO SEPARATE PAYMENT WILL BE MADE FOR BONDING NEW CONCRETE TO OLD USING POLYSULFIDE-EPOXY RESIN ADHESIVE, BUT THIS WORK SHALL BE INCLUDED IN THE PERTINENT REPAIR ITEM. THIS WORK SHALL INCLUDE ALL LABOR, MATERIAL AND CLEANING, AND PREPARING OF THE EXISTING SURFACE. IF SANDBLASTING THE EXISTING SURFACE IS NECESSARY, THIS WORK SHALL ALSO BE INCLUDED.

10. REINFORCING STEEL

ALL BARS ARE DESIGNATED ON THE PLANS BY BAR NUMBERS. THE BAR SIZE IS INDICATED BY THE FIRST DIGIT.

ALL BAR DIMENSIONS ARE GIVEN OUT TO OUT.

THE CLEAR DISTANCE BETWEEN REINFORCING STEEL AND FACE OF CONCRETE SHALL BE 2" UNLESS OTHERWISE NOTED ON THE PLANS.

MINIMUM REINFORCING STEEL BAR LAPS SHALL BE 30 BAR DIAMETERS.

11. PAINTING STRUCTURAL STEEL

ALL NEW STRUCTURAL STEEL AND EXISTING STRUCTURAL STEEL WHERE THE PAINT SURFACE WAS DAMAGED DURING REPAIR OPERATIONS (AS NOTED IN THE PLANS), SHALL BE PAINTED IN ACCORDANCE WITH ITEM 514, PAINTING.

12. ITEM 510 - DOWEL HOLES, AS PER PLAN

ALL APPLICABLE PROVISIONS OF ITEM 510, DOWEL HOLES, AS SET FORTH IN THE CONSTRUCTION AND MATERIAL SPECIFICATIONS SHALL APPLY EXCEPT AS NOTED HEREIN.

METHOD OF CONSTRUCTION. THE HOLES SHALL BE DRILLED AT THE LOCATION AND TO THE DEPTH SHOWN ON THE PLANS. THE HOLES AND THE ANCHORING SHALL BE IN CONFORMANCE WITH SUPPLEMENTAL SPECIFICATION 853. IN LIEU OF THE BASIS OF PAYMENT DESCRIBED IN S.S. 853, PAYMENT WILL BE MADE AT CONTRACT UNIT PRICE BID FOR ITEM 510, DOWEL HOLES, AS PER PLAN. THIS PRICE SHALL BE PAYMENT IN FULL FOR ALL MATERIAL, EQUIPMENT, AND LABOR NECESSARY TO COMPLETE THIS WORK.

13. ITEM 516 - VERTICAL EXTENSION OF STRUCTURAL EXPANSION JOINTS (END DAMS AND LONGITUDINAL DECK JOINTS), AS PER PLAN

VERTICAL EXTENSION OF STRUCTURAL STEEL EXPANSION JOINTS SHALL BE ACCOMPLISHED IN ACCORDANCE WITH THE DETAILS SHOWN ON SHEETS CD-6 AND CD-7 OF THE PLANS. PAYMENT WILL BE MADE AT THE CONTRACT UNIT PRICE BID FOR ITEM 516, VERTICAL EXTENSION OF STRUCTURAL STEEL EXPANSION JOINTS (END DAMS AND LONGITUDINAL DECK JOINTS), AS PER PLAN. THIS PRICE SHALL BE PAYMENT IN FULL FOR ALL MATERIAL, EQUIPMENT, AND LABOR NECESSARY TO COMPLETE THIS WORK.

14. ITEM 516 - VERTICAL EXTENSION OF STRUCTURAL EXPANSION JOINTS (INTERMEDIATE EXPANSION JOINTS), AS PER PLAN

VERTICAL EXTENSION OF STRUCTURAL STEEL EXPANSION JOINTS SHALL BE ACCOMPLISHED IN ACCORDANCE WITH THE DETAILS SHOWN ON SHEETS 9/22 AND 10/22 OF THE PLANS. PAYMENT WILL BE MADE AT THE CONTRACT UNIT PRICE BID FOR ITEM 516, VERTICAL EXTENSION OF STRUCTURAL STEEL EXPANSION JOINTS (INTERMEDIATE EXPANSION JOINTS), AS PER PLAN. THIS PRICE SHALL BE PAYMENT IN FULL FOR ALL MATERIAL, EQUIPMENT, AND LABOR NECESSARY TO COMPLETE THIS WORK.

20. BR. NO. CUY-90-1651 NOW HAS A DENSE CONCRETE SURFACE. IF ALTERNATE A (LATEX MODIFIED) IS USED ON THE PROJECT, THE LATEX SURFACE OVERLAY THICKNESS SHALL MATCH THAT OF THE ADJACENT DENSE CONCRETE. PAYMENT WILL BE MADE AT UNIT PRICE BID FOR THE LATEX MODIFIED CONCRETE SURFACE OVERLAY ($1\frac{1}{4}$" THICK).

16. ITEM SPECIAL - RESET BEARINGS

RESETTING OF BEARINGS SHALL BE ACCOMPLISHED IN CONNECTION WITH THE RAISING OF THE SUPERSTRUCTURE FOR BACKWALL REPLACEMENT AND IN ACCORDANCE WITH SHEET CD-7 OF THE PLANS AND SHALL BE PAID FOR AT THE CONTRACT UNIT PRICE BID FOR ITEM SPECIAL, RESET BEARINGS. THIS PRICE SHALL BE PAYMENT IN FULL FOR ALL MATERIAL, EQUIPMENT, AND LABOR NECESSARY TO COMPLETE THIS WORK.

17. REPLACEMENT REINFORCEMENT AT AREAS OF FULL DEPTH DECK REPAIR

REPLACEMENT REINFORCEMENT REQUIRED AT AREAS OF FULL DEPTH DECK REPAIR SHALL BE THE SAME SIZE AS ORIGINAL BARS AND SHALL BE PLACED AS NEAR AS POSSIBLE TO THEIR ORIGINAL PLAN LOCATION. BARS SHALL BE SPLICED BY LAPPING IN ACCORDANCE WITH SEC. 509.08. ALL MATERIALS AND LABOR NECESSARY TO COMPLETE THE ABOVE WORK SHALL BE INCLUDED FOR PAYMENT WITH ITEM 845 OR 850 FULL DEPTH REPAIR.

18. SCUPPER MODIFICATION.

MODIFICATION OF SCUPPERS SHALL BE ACCOMPLISHED IN ACCORDANCE WITH SHEET CD-8 OF THE PLANS AND SHALL BE PAID FOR AT THE CONTRACT UNIT PRICE BID FOR ITEM SPECIAL, SCUPPER MODIFICATION. THIS PRICE SHALL BE PAYMENT IN FULL FOR ALL MATERIAL, EQUIPMENT, AND LABOR NECESSARY TO COMPLETE THIS WORK.

19. DENSE CONCRETE BRIDGE DECK OVERLAYS

THE CONTRACTOR HAS THE OPTION AT ANY TIME OR LOCATION TO USE LATEX MODIFIED CONCRETE (MATERIAL SUBJECT TO THE APPROVAL OF THE ENGINEER) IN LIEU OF DENSE CONCRETE. THE THICKNESS OF THE OVERLAY SHALL BE $1\frac{3}{4}$ INCHESS WHEN ABUTTING A DENSE CONCRETE OVERLAY AND $1\frac{1}{4}$ INCHESS OTHERWISE. PAYMENT FOR LATEX MODIFIED CONCRETE WHEN USED IN PLACE OF DENSE CONCRETE SHALL BE MADE AT THE UNIT PRICE BID FOR THE RESPECTIVE DENSE CONCRETE.

THIS NOTE IS SPECIFICALLY APPLICABLE BUT NOT LIMITED TO BR. NO. CUY-77-1576B BR. NO. CUY-77-1593L AND BR. NO. CUY-90-1628 WHERE WORK AREAS ARE LIMITED DUE TO TRAFFIC CONTROL CONSIDERATIONS. IT DOES NOT APPLY TO BR. NO. CUY-90-1524.

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GENERAL NOTES

CUYAHOGA COUNTY OHIO

DRAWN	TRACED	CHECKED	REVIEWED	REVISED
C.K.B.		C.A.B.		
DATE 6-28-77	DATE	DATE 7-5-77	DATE	SHEET GN-2

11-0

Note:
The 4"ϕ Raceway as shown in the Plans shall be 4"ϕ S713.04 Conduit

FHWA REGION	STATE	PROJECT	
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CUYAHOGA COUNTY
CUY-77-14.12
CUY-90-16.21

ESTIMATED QUANTITIES

Item	Total	Unit	Description	I-77 Br. No. CUY-77-1436C	I-77 Br. No. CUY-77-1438B	I-77 Br. No. CUY-77-1439B	I-77 Br. No. CUY-77-1440A	I-77 Br. No. CUY-77-1441A	I-77 Br. No. CUY-77-1459	I-77 Br. No. CUY-77-1519	I-77 Br. No. CUY-77-1548	I-77 Br. No. CUY-77-1564	I-77 Br. No. CUY-77-1576A&B	I-77 Ramp E-15 and Ramp E-18 Over E. 9th St.	I-77 Ramp E-15 Over W. 8 Broadway Ave.	I-77 Br. No. CUY-77-1593L	I-90 Br. No. CUY-90-1628	I-90 Br. No. CUY-90-1640	I-90 Br. No. CUY-90-1651	I-90 Br. No. CUY-90-1524	Participation I-77 Code I	Participation I-77 Code II	Participation I-90 Code I	Participation I-90 Code II
*202	Lump Sum	Lump Sum	Portions Of Structures Removed	Lump Sum	—	—	—	—	Lump Sum	Lump Sum	Lump Sum	Lump Sum	Lump Sum	—	—	—	Lump Sum	Lump Sum	Lump Sum	Lump Sum	Lump Sum		Lump Sum	
202	16249	Sq. Yd.	Wearing Course Removed																	16,249				16,249
848	5	Cu. Yd.	Asphalt Concrete Surface Course, Type I	—	—	—	—	—	—	—	—	5	—	—	—	—	—	—	—		5 ✓			
⊕ 202	Lump	Lump	Portions of Structures Removed (Backwalls)														Lump		Lump					Lump
503	Lump Sum	Lump Sum	Cofferdams, Cribs And Sheeting	—	—	—	—	—	—	—	—	—	—	—	—	—	Lump Sum	—	Lump Sum					Lump
509	177,275	Pounds	Reinforcing Steel	13,805	—	—	—	—	79,208	20,216	8,225	8,069	7,041	—	—	—	10,141	11,881	16,589		136,564		40711	
510	9,577	Each	Dowel Holes, As Per Plan	722	—	—	—	—	4,443	1,167	478	468	416	—	—	—	520	687	676		7694		1883	
≠ 511	978	Cu. Yd.	Class "C" Concrete, Concrete Barrier Median	94	—	—	—	—	449	115	47	47	39	—	—	—	52	68	67		791		187	
511	59	Cu. Yd.	Class "C" Concrete, Substructure	—	—	—	—	—	—	—	—	—	—	—	—	—	7	—	52					59
⊕⊕ 512	20	Lin. Ft.	Premolded Sealing Strip	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	20					20
513	11,945	Pounds	Structural Steel (ASTM A36)	256	—	—	—	—	2,899	237	787	451	474	—	—	—	1,180	225	5,436		5104		6841	
‡‡ 514	Lump Sum	Lump Sum	Field Painting Of New Structural Steel	Lump Sum	Lump Sum	Lump Sum	Lump Sum	Lump Sum	Lump Sum	Lump Sum	Lump Sum	Lump Sum	Lump Sum	Lump Sum	Lump Sum	Lump Sum	Lump Sum	Lump Sum	Lump Sum		Lump Sum		Lump	
516	147	Sq. Ft.	1" Preformed Expansion Joint Filler	12	—	—	—	—	11	11	27	15	16	—	—	—	15	16	24		92		55	
516	2,531	Lin. Ft.	Vertical Extension Of Structural Expansion Joints (End Dams and Longitudinal Deck Joints), As Per Plan	150	49	49	98	75	252	198	383	6	473	100	79	108	300	209	2		2020		511	
516	430	Lin. Ft.	Vertical Extension Of Structural Expansion Joints (Intermediate Expansion Joints), As Per Plan	—	—	—	—	—	430	—	—	—	—	—	—	—	—	—	—		430 ✓			
518	77	Cu. Yd.	Porous Backfill	—	—	—	—	—	—	—	—	—	—	—	—	—	9	—	68					77
518	155	Lin. Ft.	6" Perforated, Helical Corrugated Metal Pipe Including Specials, 707.01	—	—	—	—	—	—	—	—	—	—	—	—	—	22	—	133					155
849	28	Lin. Ft.	Elastomeric Compression Seals Structural Steel Joints, 1" width, as per plan	—	—	—	—	—	—	—	—	—	—	—	—	—	28	—	—					28
611	463	Sq. Yd.	Reinforced Concrete Approach Slabs, T = 15"	—	—	—	—	—	—	—	—	—	—	—	—	—	73	—	390					463
808	978	Units	Chemical Admixture For Concrete, Type A, B Or D	94	—	—	—	—	449	115	47	47	39	—	—	—	52	68	67		791		187	
Special	25	Each	Reset Bearings	—	—	—	—	—	—	—	—	—	—	—	—	—	4	—	21					25
Special	101	Sq. Yd.	Membrane Waterproofing, Sheet Type I (See Proposal Note)	—	—	—	—	—	—	—	—	101	—	—	—	—	—	—	—		101 ✓			
Special	16,589	Sq. Yd.	Modified Dense Concrete Overlay 2¾" Thk. (See Proposal Note)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	16589				16,589
Special	829	Cu. Yd.	Modified Dense Concrete Overlay Var. Thk. (See Proposal Note)									—								829				829
Special	2	Cu. Yd.	Modified Dense Concrete, Full Depth Repair (See Proposal Note)																	2				2
(1) 845	49957	Sq. Yd.	Latex Modified Concrete Surface Overlay (1 1/4" Thick)	3,143	1,435	1,436	1,031	781	23,451	5,244	2,468	—	2,132	851	589	629	3,453	3,280	34		43,190		6767	
(2) 845	1379	Cu. Yd.	Latex Modified Concrete Overlay (Variable Thickness)	79	6	18	13	3	586	66	82	—	107	43	30	8	173	164	1		1041		338	
(3) 845 **	30	Cu. Yd.	Full Depth Repair	2	2	2	2	2	2	2	2	—	2	2	2	2	2	2	2		24		6	
			The following Items (1A), (2A) & (3A) are alternates to Items (1), (2), (3), The Contractor shall bid on one set of items only; i. e. (1) thru (3) or (1A) thru (3A).									—												
(1A) 850	49,957	Sq. Yd.	Dense Concrete Overlay 1¾" Thick	3,143	1,435	1,436	1,031	781	23,451	5,244	2,468	—	2,132	851	589	629	3,453	3,280	34		43,190		6767	
(2A) 850	1379	Cu. Yd.	Dense Concrete Overlay (Variable Thickness)	79	6	18	13	3	586	66	82	—	107	43	30	8	173	164	1		1041		338	
(3A) 850 **	30	Cu. Yd.	Full Depth Repair	2	2	2	2	2	2	2	2	—	2	2	2	2	2	2	2		24		6	
Special	133	Each	Scupper Modification,	8	2	2	2	2	50	7	8	4	9	8	3	3	12	13	—	—	108		25	
Special	1	Sq. Yd.	Patching Concrete Bridge Decks, Type 1 (See Proposal Note)	—	—	—	—	—	—	—	—	1	—	—	—	—	—	—	—		1 ✓			

*Superstructure - Includes existing concrete median above construction joint, concrete beneath end dam extensions at the median, concrete required for curb plate modification, existing concrete deck at proposed light poles for Br. No. CUY-77-1459, and wetting down concrete (See Table I for approximate quantity of concrete), guardrail, guardrail posts including beam spacers, nuts and plates, median plates and anchors, bulb angles and scuppers as required, curb plates and anchors as required at Br. Nos. CUY-90-1628 and CUY-90-1651, portions of the end dams as required at Br. Nos. CUY-90-1628 and CUY-90-1651, removing, grinding parts and welding of the end dam as required at Br. Nos. CUY-77-1436C, CUY-77-1576A and B and CUY-90-1651, and asphalt concrete adjacent to the median at Br. No. CUY-77-1564.

** This item is subject to non-performance if found not to be required.

⊕⊕ Type B Waterproofing maybe used in lieu of Premoulded Sealing Strip.

TABLE I

Bridge No.	Cu. Yd.
CUY-77-1436 C	31
CUY-77-1459	149
CUY-77-1519	38
CUY-77-1548	24
CUY-77-1564	24
CUY-77-1576A and B	20
CUY-90-1628	17
CUY-90-1640	23
CUY-90-1524	80

⊕ Substructure - Includes approximately 7 Cu. Yds. of concrete in the backwall of Abutment E-5, Br. No. CUY-90-1628 and 53 Cu. Yds. of concrete in the backwall of the East Abutment, Br. No. CUY-90-1651.

⊕ Approach Slabs - Includes approximately 463 Sq. Yds. of existing reinforced concrete approach slab, approach roadway and paved berms and all necessary excavation or backfill to provide proper cross section for the approach slabs at Abutment E-5, Br. No. CUY-90-1628 (73 Sq. Yd.), and at the East Abutment, Br. No. CUY-90-1651 (390 Sq. Yd.).

≠ Includes ¼" expansion joint filler at median deflection joints, all sheet asbestos packing, welded wire fabric, concrete beneath end dam extensions at the median and deck slab at proposed light poles for Br. No. CUY-77-1459.

‡‡ Includes all median plate and new curb plate members, end dam extension members at medians and end dam members at new backwalls.

Rev. 10-26-78

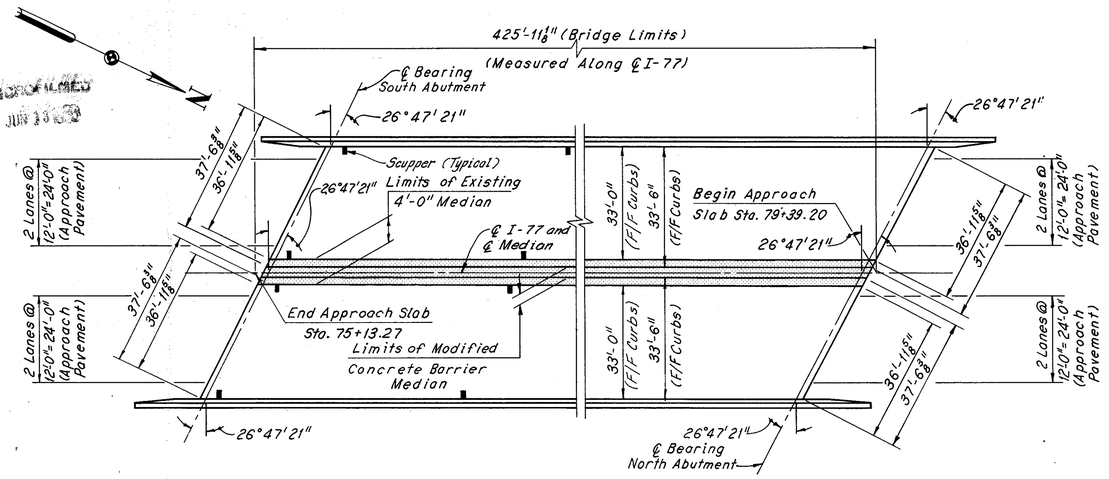
For explanation of Cost Partic. I & II See Sh. 4.

HOWARD, NEEDLES, TAMMEN & BERGENDOFF CONSULTING ENGINEERS CLEVELAND — HNTB

ESTIMATED QUANTITIES

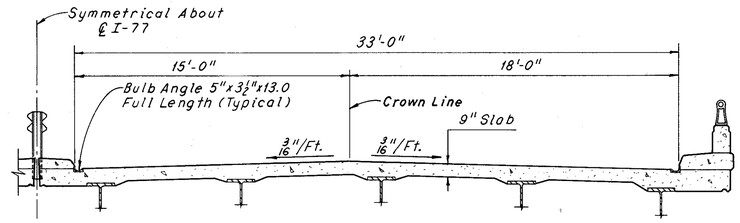
CUYAHOGA COUNTY OHIO

DRAWN	TRACED	CHECKED	REVIEWED	REVISED
C.K.B.	C.P.	W.E.B.		
DATE 6-23-77	DATE 6-24-77	DATE 7-18-77	DATE	SHEET 1 22

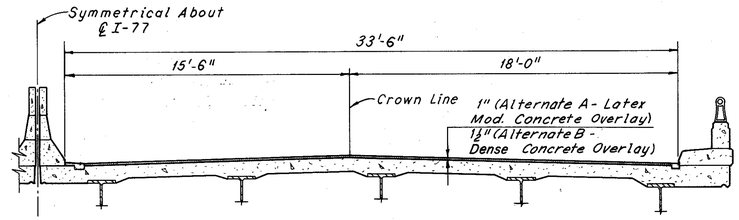


EXISTING AND MODIFIED PLAN

Indicates removal

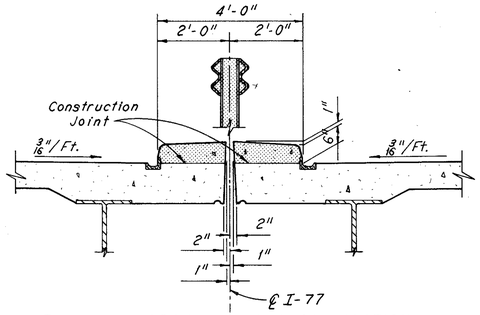


EXISTING TYPICAL SECTION



MODIFIED TYPICAL SECTION

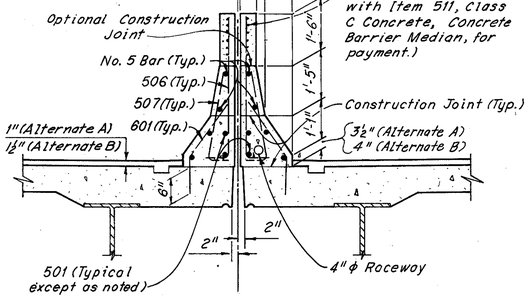
- Remove guardrails, posts, nuts, plates and anchor plates above the construction joint. Include with Item 202, Portions of Structures Removed, for payment.
- Remove existing median above the construction joint. Include with Item 202, Portions of Structures Removed, for payment.
- Remove bulb angle gutter. Include with Item 202, Portions of Structures Removed, for payment.



TYPICAL EXISTING MEDIAN CROSS SECTION

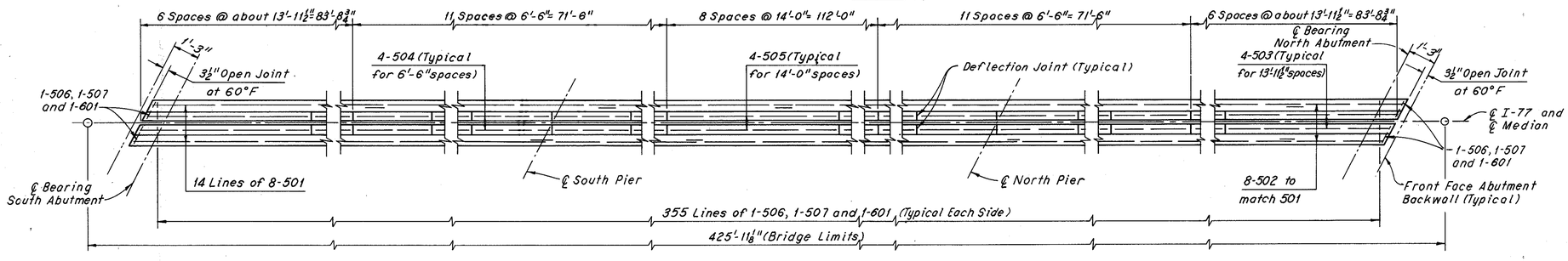
Indicates removal

(For post anchor detail see Sheet CD-6)



TYPICAL MODIFIED MEDIAN CROSS SECTION

Note: All reinforcing bar marks shall be prefixed AM.



CONCRETE BARRIER MEDIAN PLAN

Notes:

For schematic plan and bridge locations, see Sheet 122 .

For expansion joint modification of the median, see Sheets CD-1 and CD-2 .

For details of raising existing end dams, see Sheet CD-6 .

For details of resurfacing, see Sheets CD-5 and CD-8 .

For details of deflection joints in the concrete barrier median, see Sheet CD-6 .

For spacing of dowel holes for 601 bars and concrete barrier median reinforcement, see Sheet CD-6 .

For details of raising existing scuppers, see Sheet CD-8 .

For reinforcement schedule, see Sheet CD-10 .

The following abbreviation is used:

Typ. = Typical

FHWA REGION	STATE	PROJECT	
5	OHIO		

126
169

CUYAHOGA COUNTY
CUY-77-14.12
CUY-90-16.21

HOWARD, NEEDLES, TAMMEN & BERGENDOFF CONSULTING ENGINEERS CLEVELAND — HNTB

EXISTING AND MODIFIED DECK PLAN AND MEDIAN

BR. NO. CUY.-77-1436C

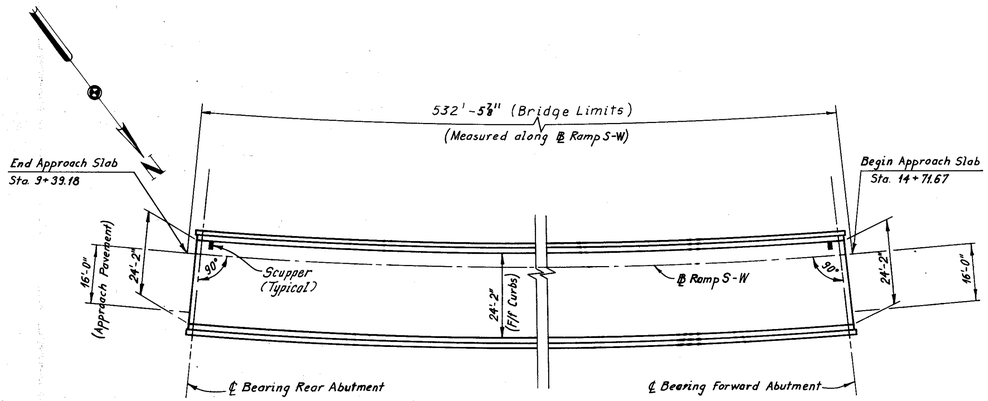
CUYAHOGA COUNTY — OH10

DRAWN	TRACED	CHECKED	REVIEWED	REVISED
A.B.	R.C.L.	A.N.E.D.H.B.		
DATE 12-11-74	DATE 2-6-75	DATE 2-10-77	DATE	SHEET 2 22

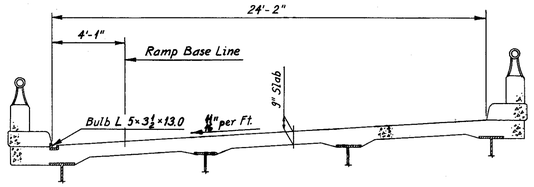
FHWA REGION	STATE	PROJECT	
5	OHIO		

127
169

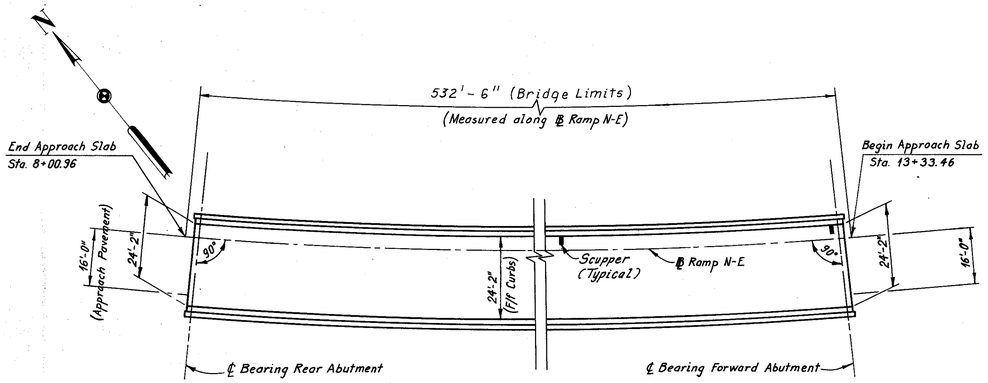
CUYAHOGA COUNTY
CUY-77-14.12
CUY-90-16.21



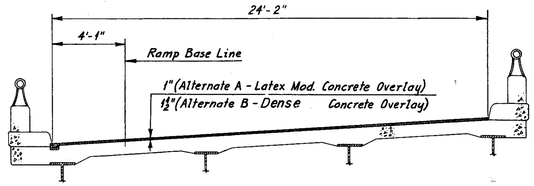
EXISTING AND MODIFIED PLAN
BR. NO. CUY-77-1438 B



EXISTING TYPICAL SECTION



EXISTING AND MODIFIED PLAN
BR. NO. CUY-77-1439 B



MODIFIED TYPICAL SECTION

Notes:
For schematic plan and bridge location, see Sheet 122 .
For details of raising existing end dams, see Sheet CD-6 .
For details of resurfacing, see Sheet CD-5 .
For details of raising existing scuppers, see Sheet CD-8 .

HOWARD, NEEDLES, TAMMEN & BERGENDOFF CONSULTING ENGINEERS CLEVELAND — HNTB

EXISTING AND MODIFIED DECK PLAN AND TYPICAL SECTION

BR. NO. CUY.-77-1438B
BR. NO. CUY.-77-1439B

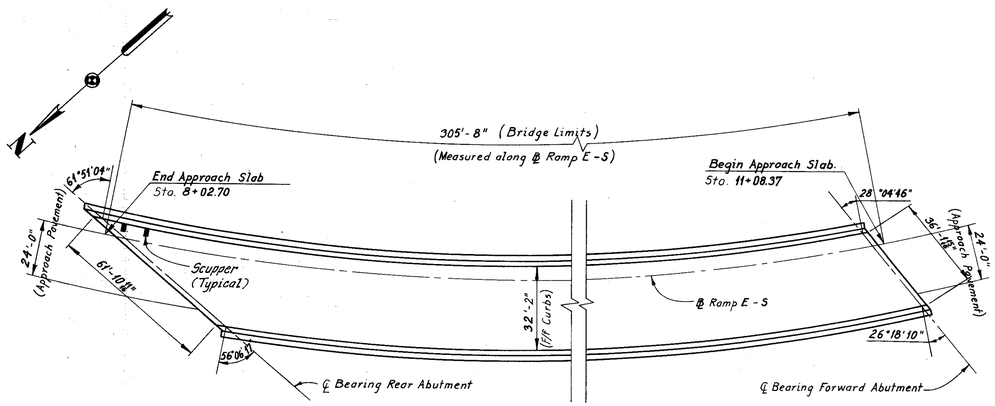
CUYAHOGA COUNTY — OHIO

DRAWN	TRACED	CHECKED	REVIEWED	REVISED
A.N.	A.N.	R.A.S. & D.H.S.		
DATE 11-20-74	DATE 11-25-74	DATE 2-18-77	DATE	SHEET 3 22

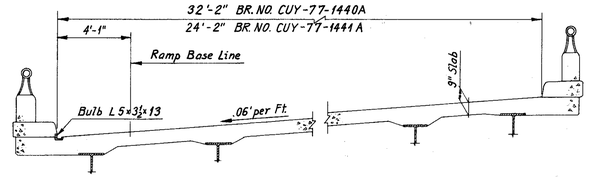
FHWA REGION	STATE	PROJECT	
5	OHIO		

128
169

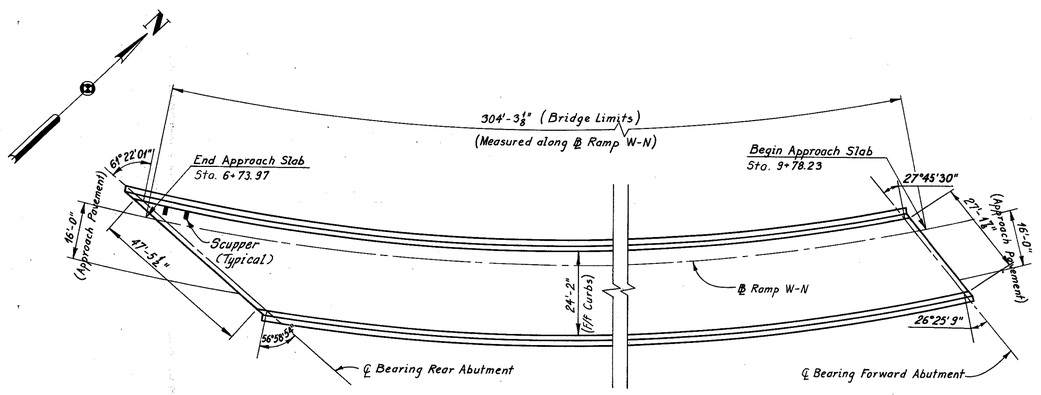
CUYAHOGA COUNTY
CUY-77-14.12
CUY-90-16.21



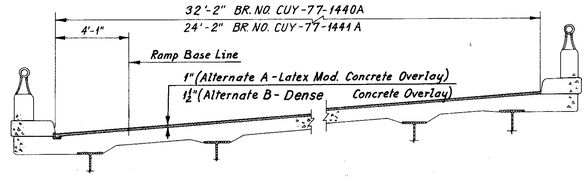
EXISTING AND MODIFIED PLAN
BR. NO. CUY-77-1440A



EXISTING TYPICAL SECTION



EXISTING AND MODIFIED PLAN
BR. NO. CUY-77-1441A



MODIFIED TYPICAL SECTION

Notes:
For schematic plan and bridge location, see Sheet 122 .
For details of raising existing end dams, see Sheet CD-6 .
For details of resurfacing, see Sheet CD-5 .
For details of raising existing scuppers, see Sheet CD-8 .

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS CLEVELAND
HNTB

EXISTING AND MODIFIED DECK PLAN AND TYPICAL SECTION

BR. NO. CUY.-77-1440A
BR. NO. CUY.-77-1441A

CUYAHOGA COUNTY OHIO

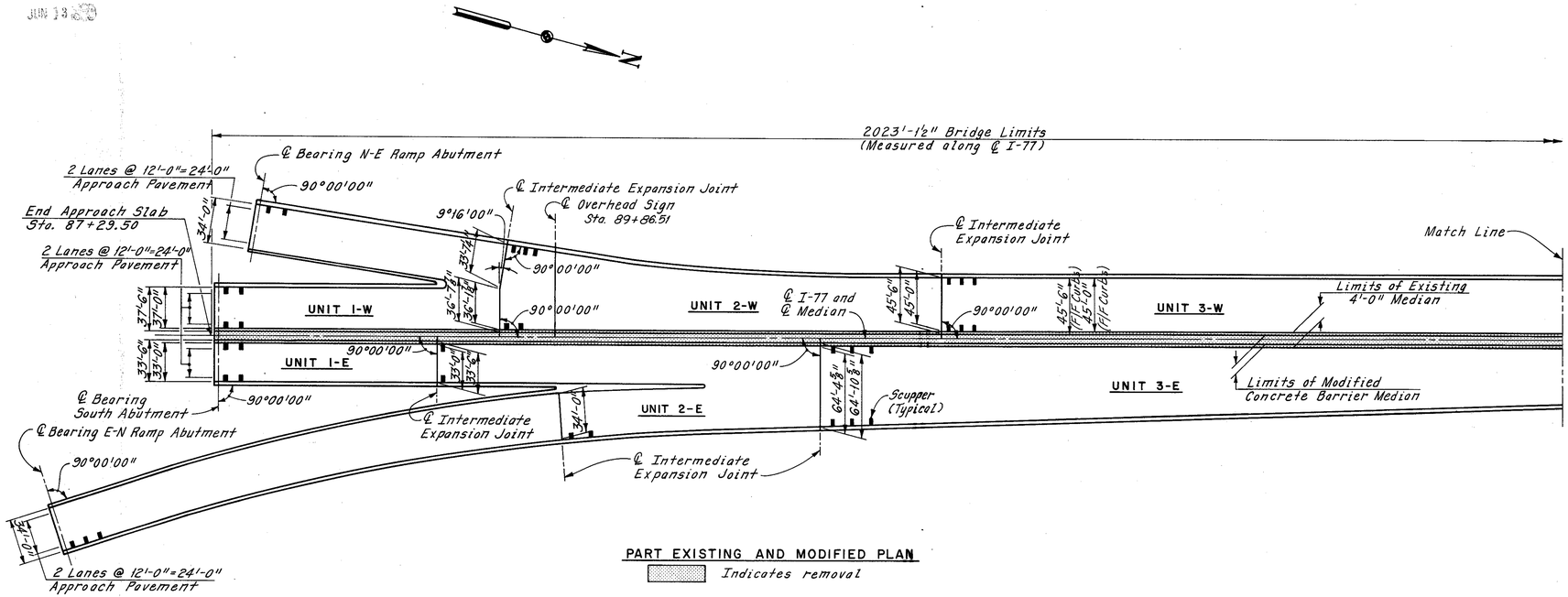
DRAWN AN	TRACED AN	CHECKED R.A.S.J.D.H.S.	REVIEWED	REVISED
DATE 1-21-74	DATE 1-26-74	DATE 2-18-77	DATE	SHEET 4 22

JUN 13 '75

FHWA REGION	STATE	PROJECT	
5	OHIO		

129
169

CUYAHOGA COUNTY
CUY-77-14.12
CUY-90-16.21



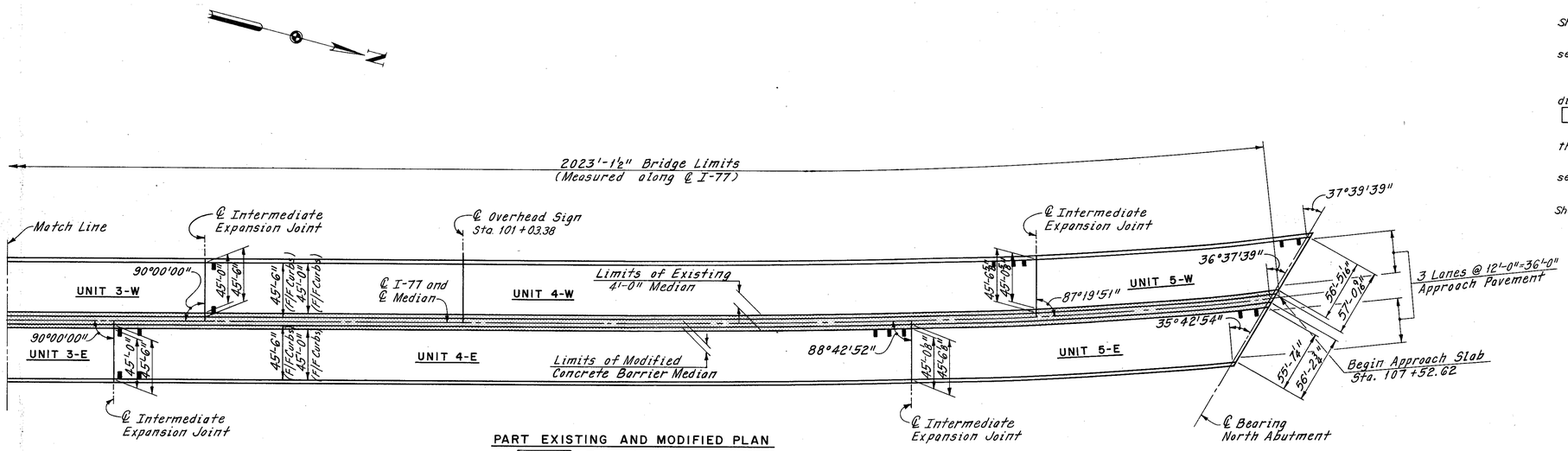
PART EXISTING AND MODIFIED PLAN
Indicates removal

MEDIAN MOUNTED LIGHT POLE SUPPORTS

Median mounted light pole supports shall be provided at the following locations:

Station 89+36.00
Station 91+79.29
Station 93+91.50
Station 96+20.50
Station 98+33.20
Station 100+37.55
Station 102+48.79
Station 104+50.79
Station 106+54.37

For details of median mounted light pole supports, see Sheets 12/22 and 13/22.



PART EXISTING AND MODIFIED PLAN
Indicates removal

Notes:

For schematic plan and bridge locations, see Sheet 122

For existing and modified typical sections, see Sheet 6/22.

For details of raising intermediate expansion joints, see Sheets 9/22 and 10/22.

For end dam expansion joint modification at the median, see Sheets CD-1 and CD-2.

For details of raising existing end dams, see Sheet CD-6.

For details of raising existing scuppers, see Sheet CD-8.

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS CLEVELAND
HNTB

EXISTING AND MODIFIED DECK PLAN

BR. NO. CUY-77-1459

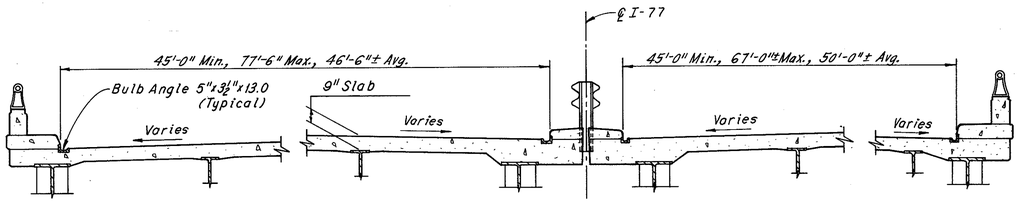
CUYAHOGA COUNTY OHIO

DRAWN	TRACED	CHECKED	REVIEWED	REVISED
R.A.S.	W.E.B.	J.A.B. & D.H.S.		
DATE 1-17-75	DATE 2-13-75	DATE 2-18-75	DATE	SHEET 5 22

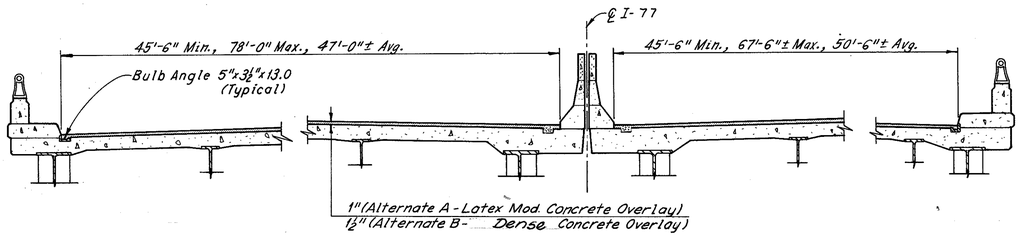
FHWA REGION	STATE	PROJECT	
5	OHIO		

130
169

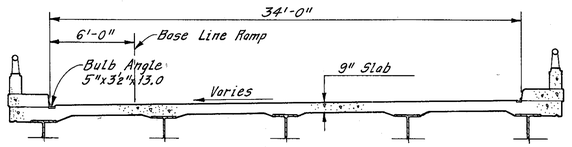
CUYAHOGA COUNTY
CUY-77-14.12
CUY-90-16.21



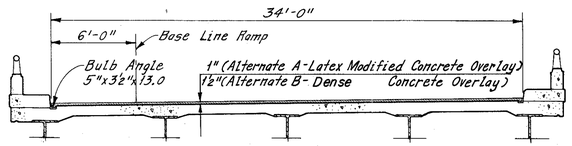
EXISTING TYPICAL SECTION
(Looking North)



MODIFIED TYPICAL SECTION
(Looking North)

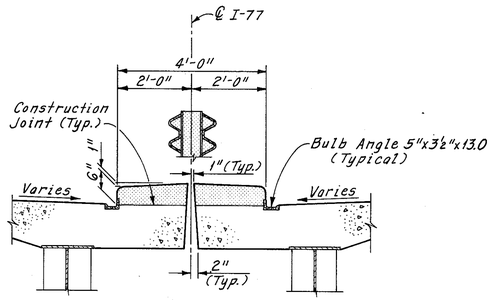


EXISTING TYPICAL SECTION RAMP N-E (LOOKING NORTH)
EXISTING TYPICAL SECTION RAMP E-N (LOOKING SOUTH)

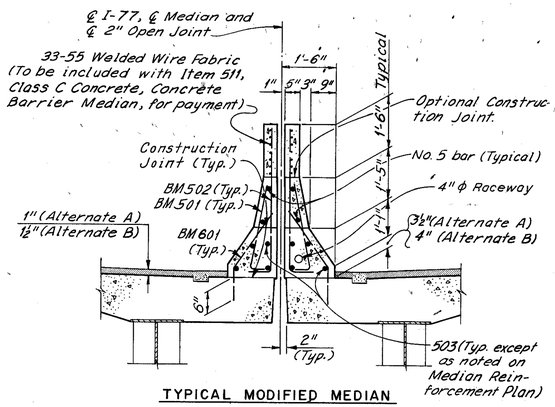


MODIFIED TYPICAL SECTION RAMP N-E (LOOKING NORTH)
MODIFIED TYPICAL SECTION RAMP E-N (LOOKING SOUTH)

- Remove guardrails, posts, nuts, plates and anchor plates above the construction joint. Include with Item 202, Portions of Structures Removed, for payment.
- Remove existing median above the construction joint. Include with Item 202, Portions of Structures Removed, for payment.
- Remove bulb angle gutter. Include with Item 202, Portions of Structures Removed, for payment.



TYPICAL EXISTING MEDIAN
CROSS SECTION
Indicates removal
(For post anchor detail, see Sheet CD-6-)



TYPICAL MODIFIED MEDIAN
CROSS SECTION

Notes:
For median reinforcement, see Sheets 7 / 22 and 8 / 22 .
For details of resurfacing, see Sheets CD-5 and CD-8 .
For reinforcement schedule, see Sheet CD-10 .
The following abbreviations are used:
Typ. = Typical
Min. = Minimum
Max. = Maximum
Avg. = Average

HOWARD, NEEDLES, TAMMEN & BERGENDOFF CONSULTING ENGINEERS CLEVELAND — HNTB

EXISTING AND MODIFIED TYPICAL SECTIONS

BR. NO. CUY-77-1459

CUYAHOGA COUNTY — OHIO

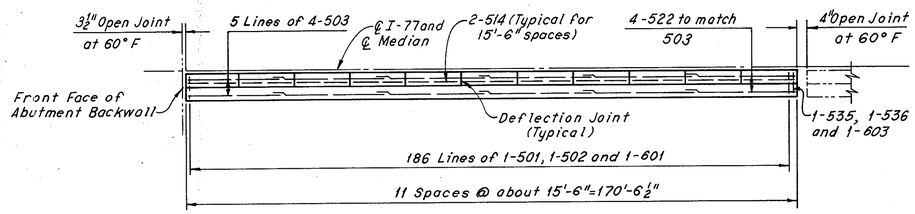
DRAWN	TRACED	CHECKED	REVIEWED	REVISED
R.A.S.	R.C.K. & M.E.B.	J.A.B. & D.H.S.		
DATE 1-17-75	DATE 2-14-75	DATE 2-18-75	DATE	SHEET 6 22

FHWA REGION	STATE	PROJECT	
5	OHIO		

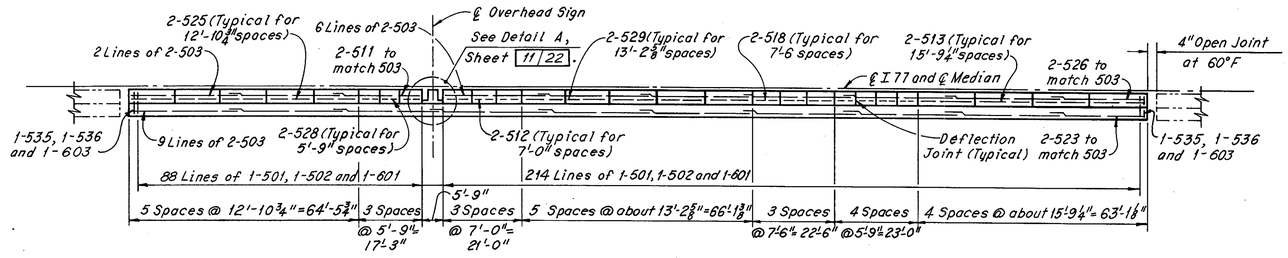
131
169

CUYAHOGA COUNTY
CUY-77-14.12
CUY-90-16.21

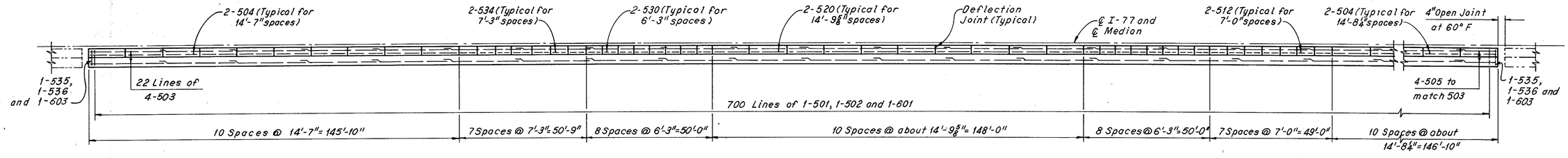
Note: All reinforcing bar marks shall be prefixed BM.



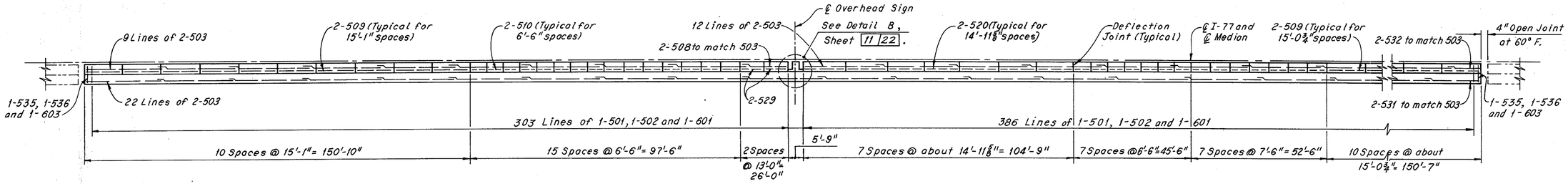
UNIT 1



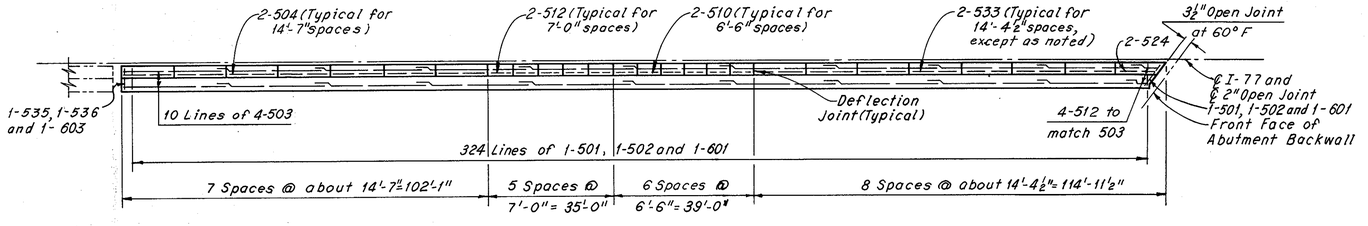
UNIT 2



UNIT 3



UNIT 4



UNIT 5

Notes:

For typical modified cross section, see Sheet 6 22.

For spacing of dowel holes for 601 bars and concrete barrier median reinforcement, see Sheet CD-6.

For details of deflection joints in the concrete barrier median, see Sheet CD-6.

For locations of median mounted light pole supports, see Sheet 5 22.

For details of median mounted light pole supports, see Sheets 12 22 and 13 22.

For intermediate expansion joint modification at the median, see Sheet 9 22.

For abutment expansion joint modification at the median, see Sheets CD-1 and CD-2.

For reinforcement schedule, see Sheet CD-10.

HOWARD, NEEDLES, TAMMEN & BERGENDOFF CONSULTING ENGINEERS CLEVELAND — HNTB

EAST MEDIAN REINFORCEMENT

BR. NO. CUY.-77-1459

CUYAHOGA COUNTY OHIO

DRAWN RAS	TRACED RCA	CHECKED J.A.B. S.D.H.S.	REVIEWED	REVISED
DATE 2-7-75	DATE 2-10-75	DATE 2-11-75	DATE	SHEET 7 22

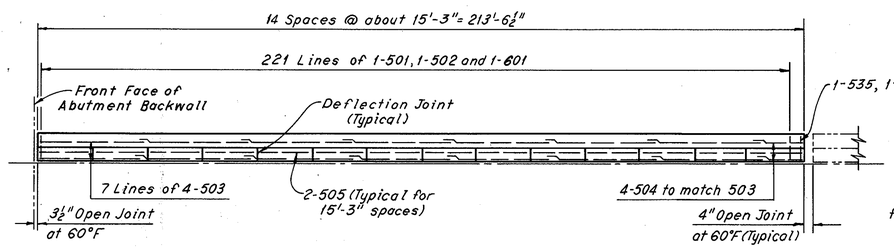
MICROFILMED
JUN 13 80

FHWA REGION	STATE	PROJECT	
5	OHIO		

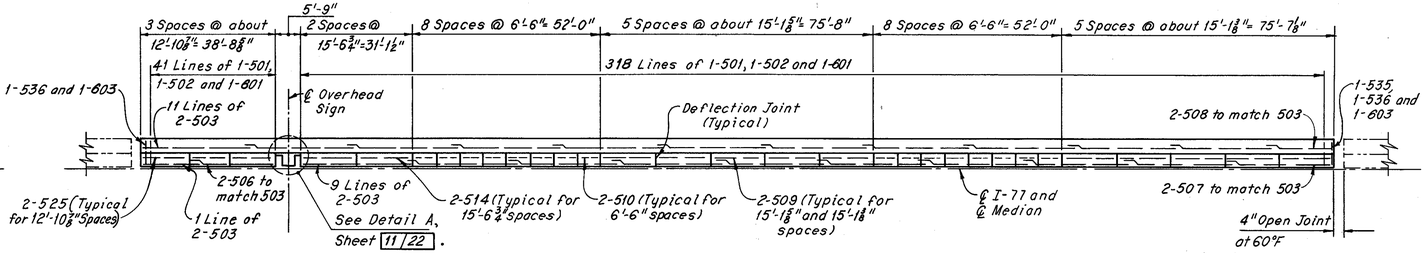
132
169

CUYAHOGA COUNTY
CUY-77-14.12
CUY-90-16.21

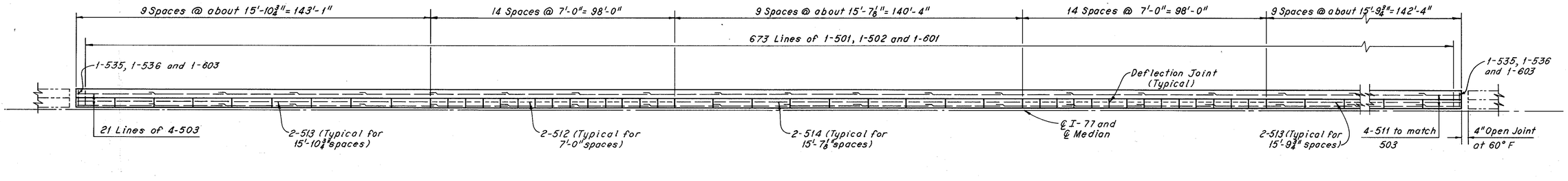
Note: All reinforcing bar marks shall be prefixed BM.



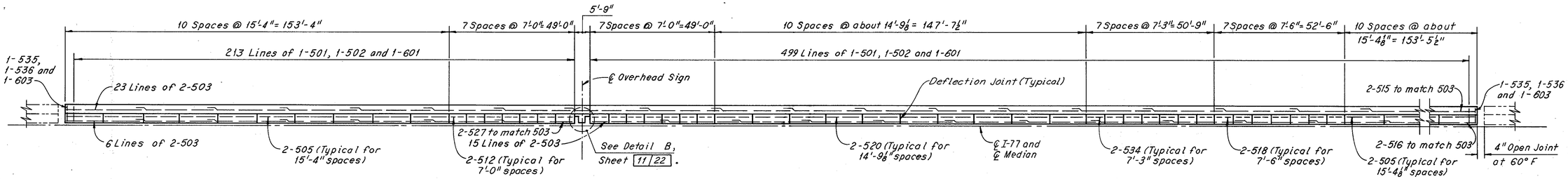
UNIT 1



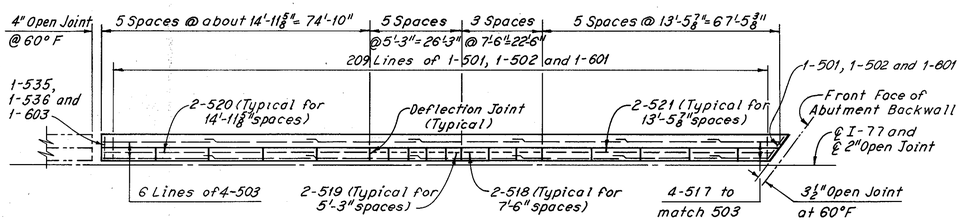
UNIT 2



UNIT 3



UNIT 4



UNIT 5

Notes:

For typical modified cross section, see Sheet 6/22.

For spacing of dowel holes for 601 bars and concrete barrier median reinforcement, see Sheet CD-6.

For details of deflection joints in the concrete barrier median, see Sheet CD-6.

For locations of median mounted light pole supports, see Sheet 5/22.

For details of median mounted light pole supports, see Sheets 12/22 and 13/22.

For intermediate expansion joint modification at the median, see Sheet 9/22.

For abutment expansion joint modification at the median, see Sheets CD-1 and CD-2.

For reinforcement schedule, see Sheet CD-10.

HOWARD, NEEDLES, TAMMEN & BERGENDOFF CONSULTING ENGINEERS CLEVELAND — HNTB

WEST MEDIAN REINFORCEMENT

BR. NO. CUY.-77-1459

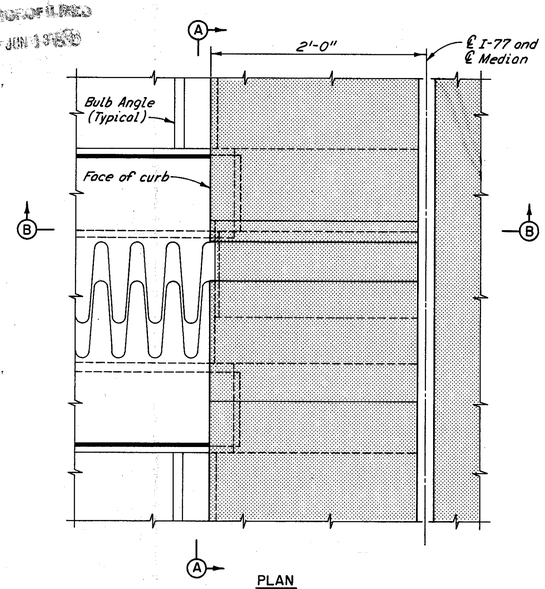
CUYAHOGA COUNTY OHIO

DRAWN R.A.S.	TRACED RCM	CHECKED J.A.B. & D.H.S.	REVIEWED	REVISED
DATE 2-3-75	DATE 2-11-75	DATE 2-11-75	DATE	SHEET 8 / 22

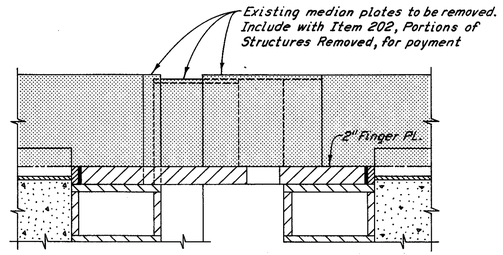
FHWA REGION	STATE	PROJECT	
5	OHIO		

133
169

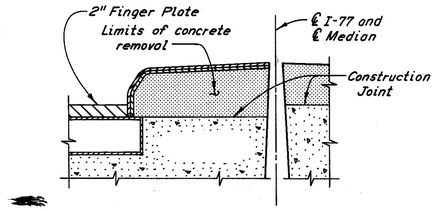
CUYAHOGA COUNTY
CUY - 77 - 14.12
CUY - 90 - 16.21



PLAN
(Finger plate anchor bolts not shown)



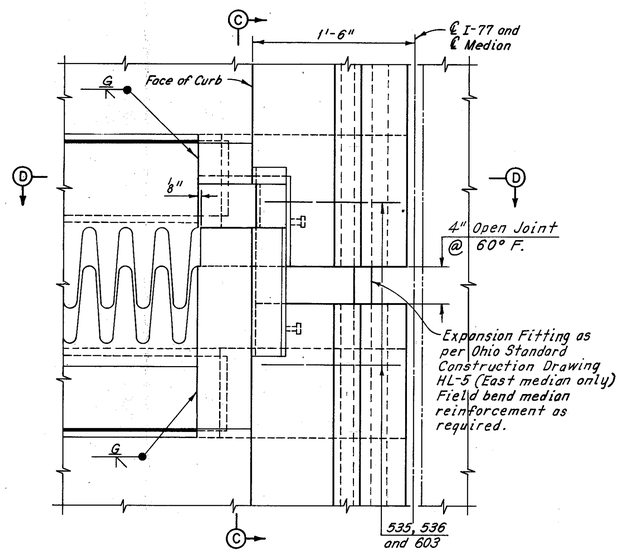
SECTION A-A
(Finger plate anchor bolts not shown)



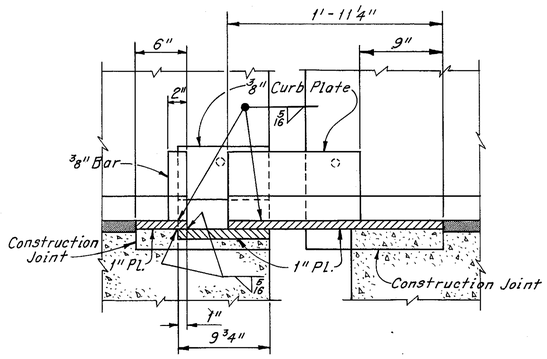
SECTION B-B

EXISTING PLAN AND CROSS SECTIONS AT MEDIAN

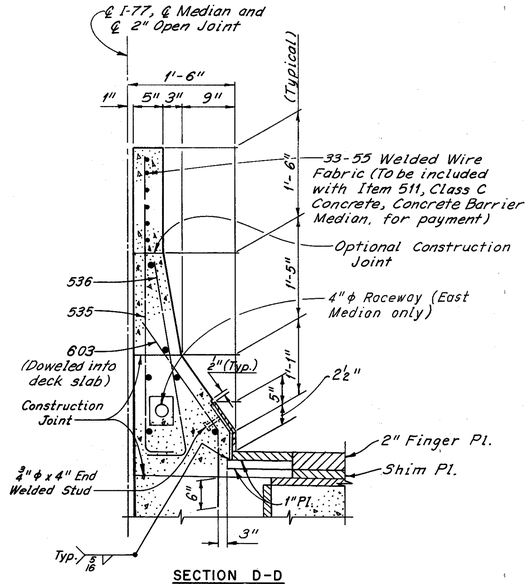
Indicates removal



PLAN
(Finger plate anchor bolts not shown)



SECTION C-C



SECTION D-D

MODIFIED PLAN AND CROSS SECTIONS AT MEDIAN

Indicates concrete overlay

Notes:
For locations of intermediate expansion joints, see Sheet 5 22.
For details of raising intermediate expansion joints, see Sheet 10 22.

HOWARD, NEEDLES, TAMMEN & BERGENDOFF CONSULTING ENGINEERS CLEVELAND — HNTB

INTERMEDIATE EXPANSION JOINT MODIFICATION AT MEDIAN

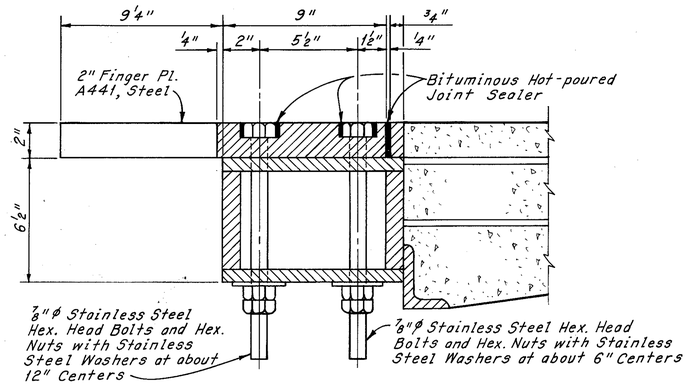
BR. NO. CUY-77-1459

CUYAHOGA COUNTY — OHIO

DRAWN	R.A.S.	TRACED	D.L.R.	CHECKED	J.A.B. & C.K.B.	REVIEWED		REVISED	
DATE	1-9-75	DATE	2-10-75	DATE	2-14-75	DATE		SHEET	9 22

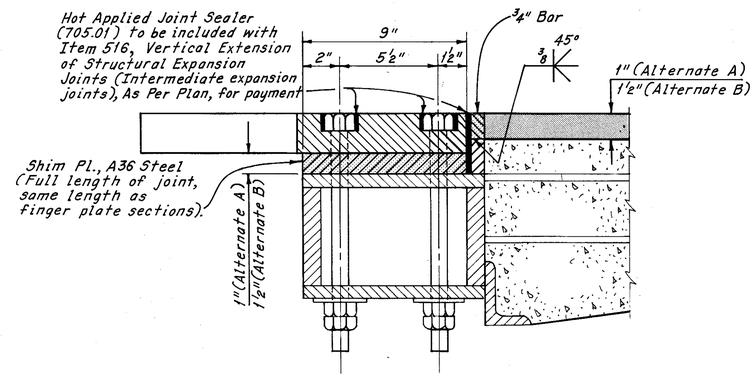
FHWA REGION	STATE	PROJECT	
5	OHIO		

CUYAHOGA COUNTY
CUY - 77 - 14.12
CUY - 90 - 16.21

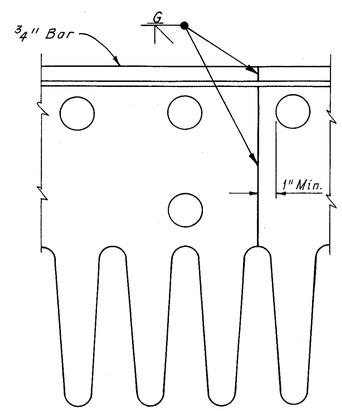


EXISTING DETAIL OF EXPANSION JOINT ASSEMBLY
(One-half of Assembly Shown, Other Half Similar)

Note:
Finger plate sections may be field cut and spliced as required for traffic maintenance. Extreme care shall be taken during cutting operations so that the finger plate support box is not damaged. For Maintenance of Traffic, see Roadway Plans.



MODIFIED DETAIL OF EXPANSION JOINT ASSEMBLY
(One-half of Assembly Shown, Other Half Similar)
▨ *indicates new structural steel*



FINGER PLATE AND ¾" BAR SPLICE DETAIL

Note:
New structural steel and existing structural steel with damaged paint shall be painted in accordance with Item 514. Payment for painting shall be included with Item 516, Vertical Extension of Structural Expansion Joints (Intermediate Expansion Joints), As Per Plan.

Notes:
For location and length of intermediate expansion joints, see Sheet 5 / 22 .
For expansion joint modification at the median, see Sheet 9 / 22 .

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS CLEVELAND — HNTB

RAISING INTERMEDIATE EXPANSION JOINTS

BR. NO. CUY-77-1459

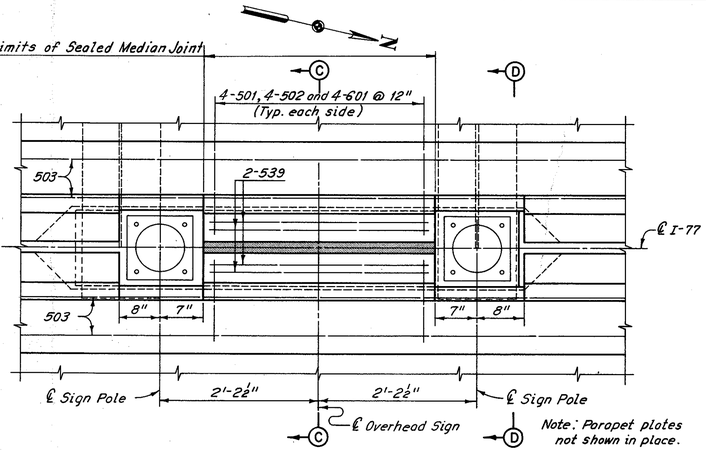
CUYAHOGA COUNTY — OHIO

DRAWN C.K.B.	TRACED C.P.	CHECKED D.H.S.	REVIEWED	REVISED
DATE 6-1-77	DATE 7-19-77	DATE 7-20-77	DATE	SHEET 10 / 22

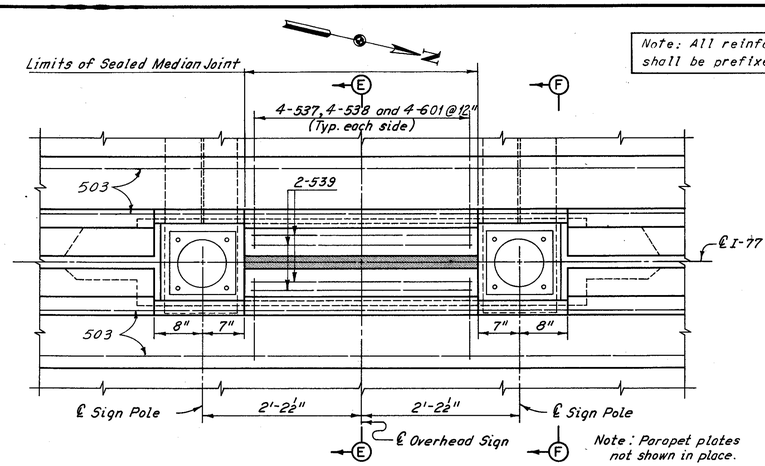
FHWA REGION	STATE	PROJECT	
5	OHIO		

135/169

CUYAHOGA COUNTY
CUY-77-14.12
CUY-90-16.21

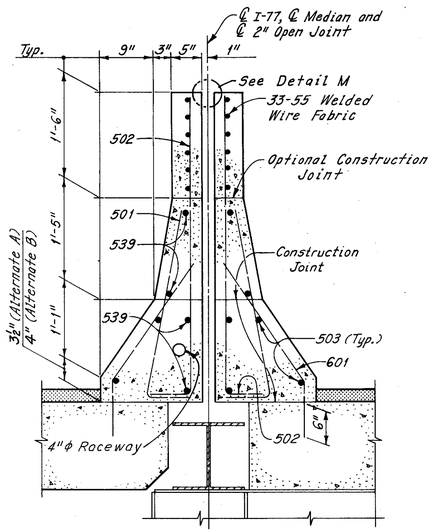


DETAIL A

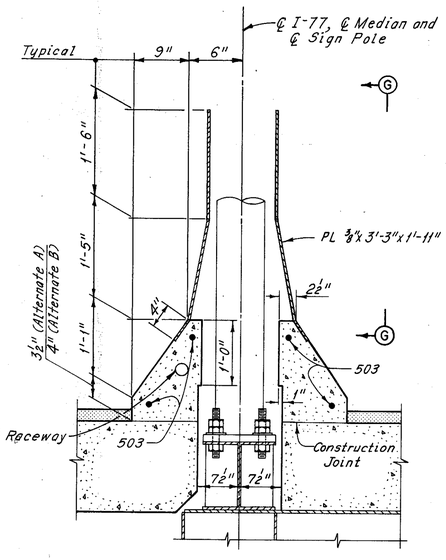


DETAIL B

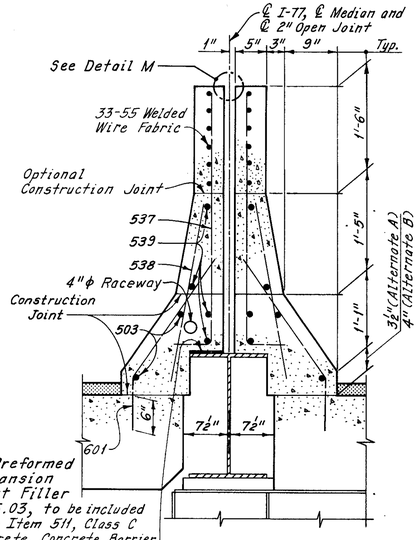
Note: All reinforcing bar marks shall be prefixed BM.



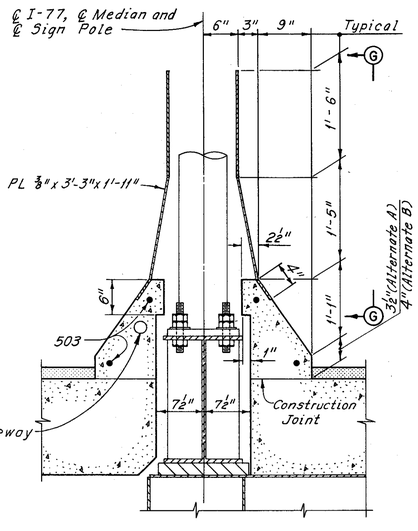
SECTION C-C



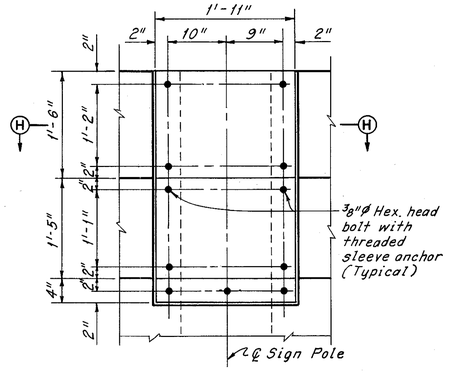
SECTION D-D



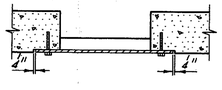
SECTION E-E



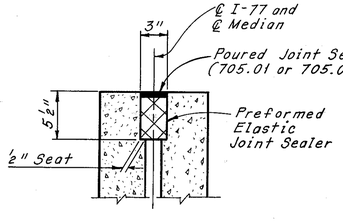
SECTION F-F



ELEVATION G-G

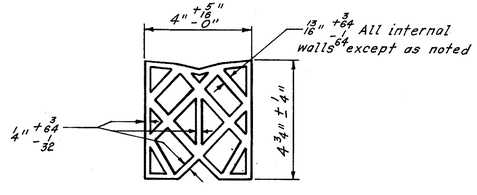


SECTION H-H
(Threaded Sleeve Anchors Not Shown)



DETAIL M

Note:
Poured joint sealer and preformed elastic joint sealer shall be included with Item 511, Class C Concrete, Concrete Barrier Median, for payment.



PREFORMED ELASTIC JOINT SEALER

Notes:
[ ] indicates concrete overlay.
All steel plates shall be galvanized according to 711.02. Galvanizing shall be included with Item 513, Structural Steel, for payment.
33-55 welded wire fabric shall be included with Item 511, Class C Concrete, Concrete Barrier Median, for payment.
For locations of Detail A and Detail B, see Sheets 7/22 and 8/22.
For reinforcement schedule, see Sheet CD-10.
The following abbreviation is used:
Typ. = Typical
⅜"ϕ hex. head bolts and threaded sleeve anchors shall be included with Item 513, Structural Steel, for payment.

HOWARD, NEEDLES, TAMMEN & BERGENDOFF CONSULTING ENGINEERS CLEVELAND — HNTB

MODIFIED MEDIAN DETAILS AT OVERHEAD SIGN SUPPORTS

BR. NO. CUY.-77-1459

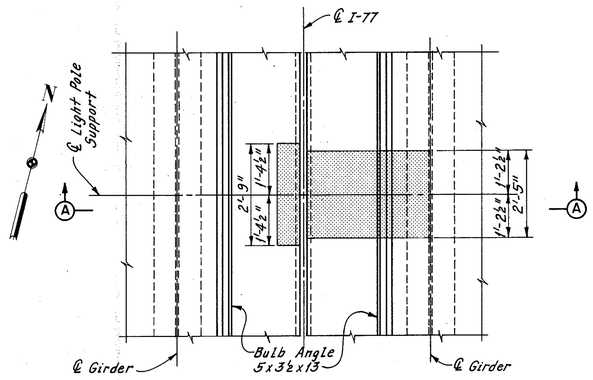
CUYAHOGA COUNTY OHIO

DRAWN	TRACED	CHECKED	REVIEWED	REVISED
K.B.	C.P.	DHS		
DATE 7-20-77	DATE 7-21-77	DATE 7-21-77	DATE	SHEET 11/22

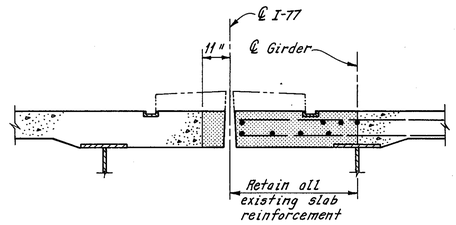
FHWA REGION	STATE	PROJECT	
5	OHIO		

136
169

CUYAHOGA COUNTY
CUY-77-14.12
CUY-90-16.21

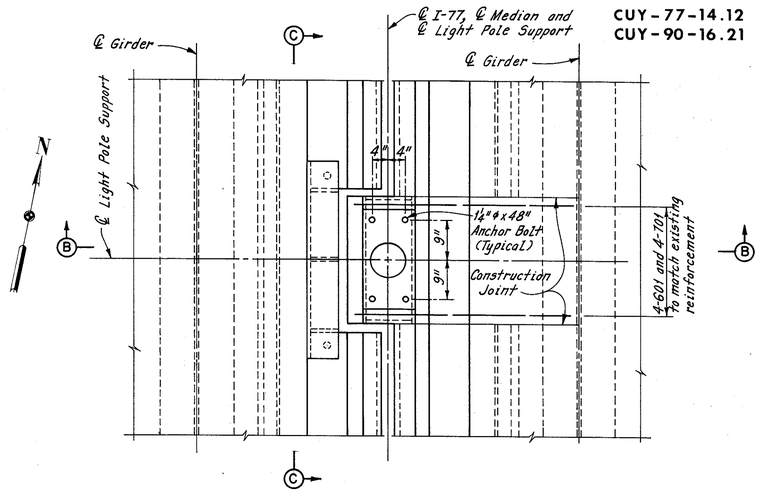


PLAN



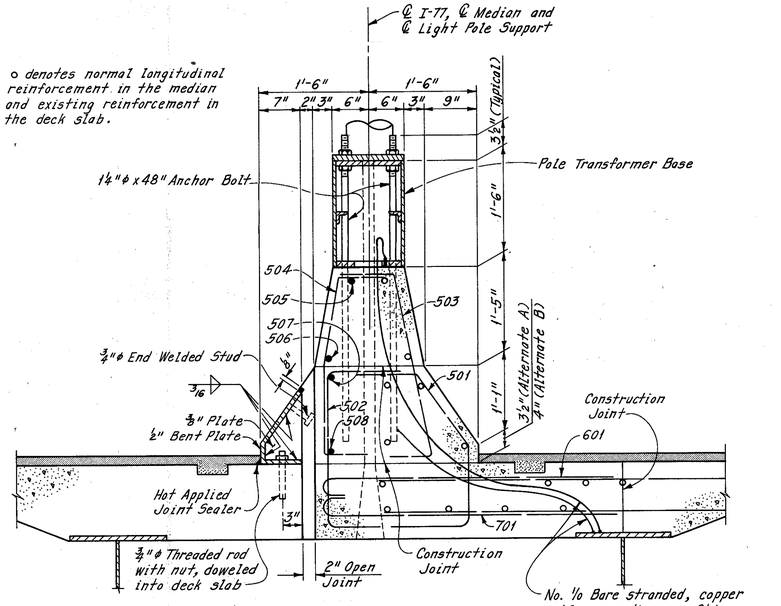
SECTION A-A

DECK SLAB REMOVAL DETAILS
Indicates removal



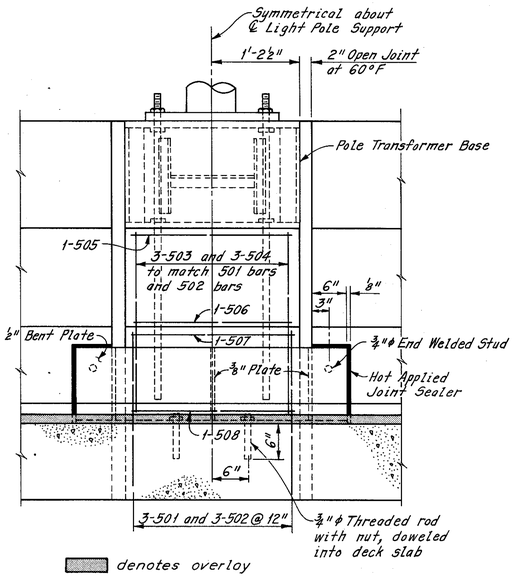
PLAN
(Conduit not shown)

Note: All reinforcing bar marks shall be prefixed BL.



denotes overloy

SECTION B-B
(Conduit not shown)



denotes overloy

SECTION C-C
(Conduit not shown)

Notes:

For locations of median mounted light poles, see Sheet 5 / 22 .

Removal of the deck slab as required shall be included with Item 202, Portions of Structures Removed, for payment.

Transverse reinforcement bars BL501, BL502, BL503, and BL504 replace normal median transverse reinforcement bars BM501, BM502, and BM602. Longitudinal reinforcement in the west median shall be field cut as required at the light pole support. Field cutting shall be included with Item 509, Reinforcing Steel, for payment.

The 1¼"ϕ x 48" anchor bolts, nuts and pole transformer base shall be included with Item 625 for payment. (See Lighting Plans.)

All structural steel shall be galvanized according to 711.02. Galvanizing of steel, except pole transformer base, shall be included with Item 513, Structural Steel, for payment. Galvanizing of the pole transformer base, including the 1¼"ϕ anchor bolts, shall be included with Item 625 for payment. (See Lighting Plans.)

Deck slab concrete required at the light pole support shall be included with Item 511, Class C Concrete, Concrete Barrier Median, for payment.

Hot poured joint sealer (Sec. 705.01) shall be included with Item 511, Class C Concrete, Concrete Barrier Median, for payment.

For pole transformer base details, conduit details and reinforcement schedule, see Sheet 13 / 22

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS CLEVELAND
HNTB

MEDIAN MOUNTED LIGHT POLE SUPPORT DETAILS

BR. NO. CUY-77-1459

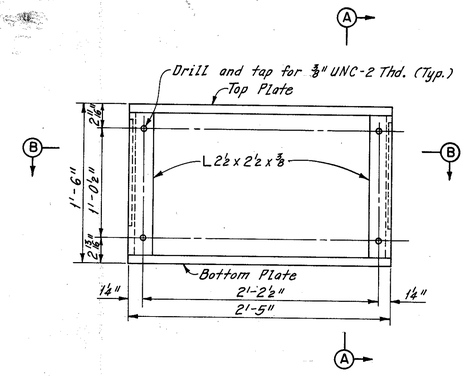
CUYAHOGA COUNTY OHIO

DRAWN	TRACED	CHECKED	REVIEWED	REVISED
C.K.B. DATE 3-7-77	W.E.B. DATE 3-10-77	C.H.B. & D.H.S. DATE 3-17-77	DATE	SHEET 12 / 22

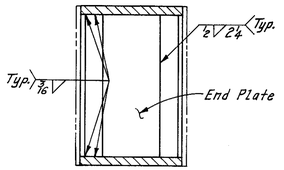
FHWA REGION	STATE	PROJECT	
5	OHIO		

137
169

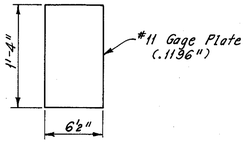
CUYAHOGA COUNTY
CUY-77-14.12
CUY-90-16.21



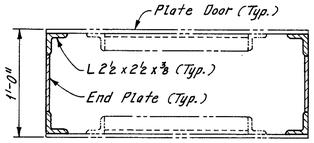
SIDE ELEVATION
(Plate door not shown)



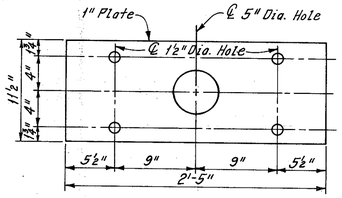
SECTION A-A



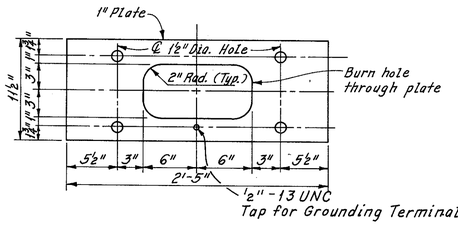
END PLATE DETAIL



SECTION B-B



TOP PLATE DETAIL



BOTTOM PLATE DETAIL

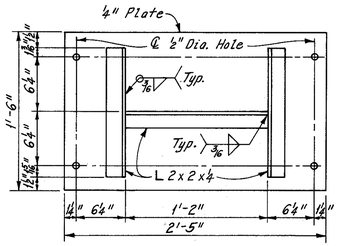
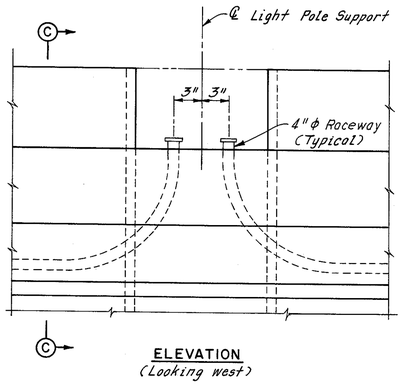
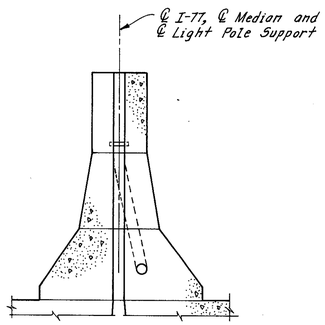


PLATE DOOR DETAIL
(Looking at back side)

POLE TRANSFORMER BASE DETAILS



ELEVATION
(Looking west)

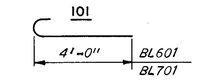


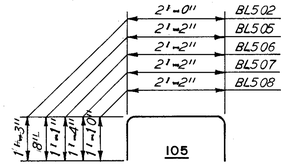
SECTION C-C

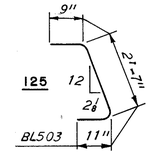
CONDUIT DETAILS

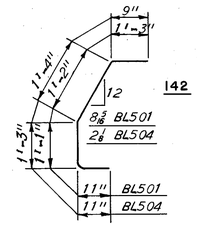
REINFORCEMENT SCHEDULE				
MARK	NO.	LENGTH	TYPE	WEIGHT (LBS.)
BL501	3	41'-2"	142	13
BL502	3	41'-3"	105	13
BL503	3	41'-0"	125	13
BL504	3	41'-0"	142	13
BL505	1	31'-3"	105	3
BL506	1	41'-1"	105	4
BL507	1	41'-7"	105	5
BL508	1	51'-7"	105	6
BL601	4	41'-8"	101	28
BL701	4	41'-10"	101	40
Total Weight For One Light Support =				138

BENDING DIAGRAMS









Note:
For notes, see Sheet 12/22

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS CLEVELAND
HNTB

MEDIAN MOUNTED LIGHT POLE SUPPORT DETAILS

BR. NO. CUY-77-1459

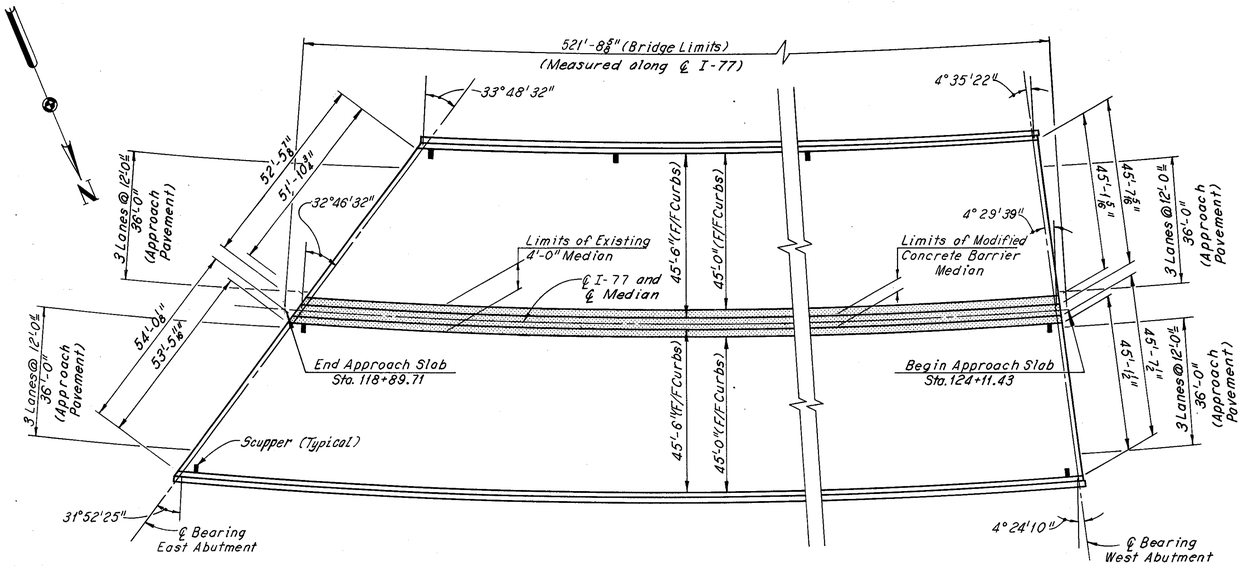
CUYAHOGA COUNTY OHIO

DRAWN	TRACED	CHECKED	REVIEWED	REVISED
C.K.B. DATE 3-7-77	W.E.B. DATE 3-14-77	C.H.B. DATE 3-18-77	DATE	SHEET 13/22

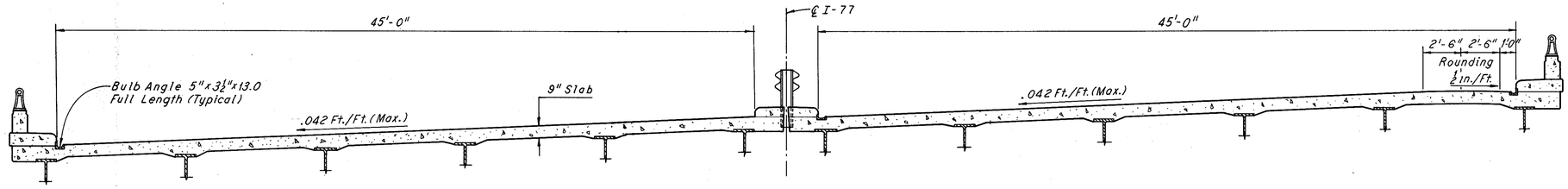
FHWA REGION	STATE	PROJECT	
5	OHIO		

138
169

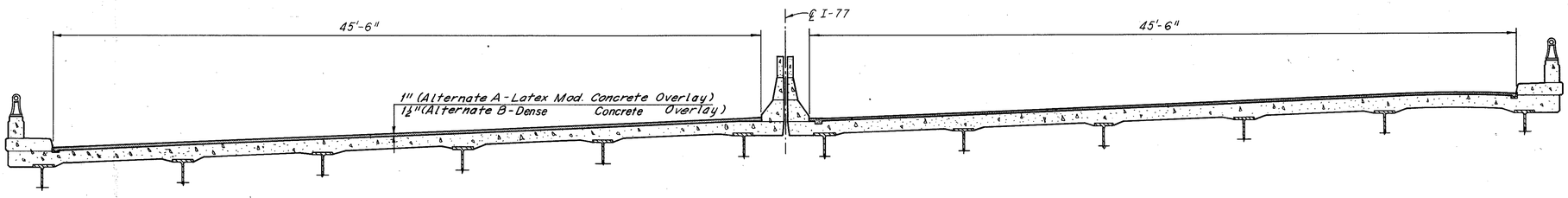
CUYAHOGA COUNTY
CUY-77-14.12
CUY-90-16.21



EXISTING AND MODIFIED PLAN
Indicates removal



EXISTING TYPICAL SECTION



MODIFIED TYPICAL SECTION

Notes:
For schematic plan and bridge location, see Sheet 122 .
For details of raising existing end dams, see Sheet CD-6 .
For details of resurfacing, see Sheets CD-5 and CD-8 .
For expansion joint modification at the median, see Sheets CD-1 and CD-2 .
For details of raising existing scuppers, see Sheet CD-8 .

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS CLEVELAND
HNTB

EXISTING AND MODIFIED DECK PLAN AND TYPICAL SECTION

BR. NO. CUY.-77-1519

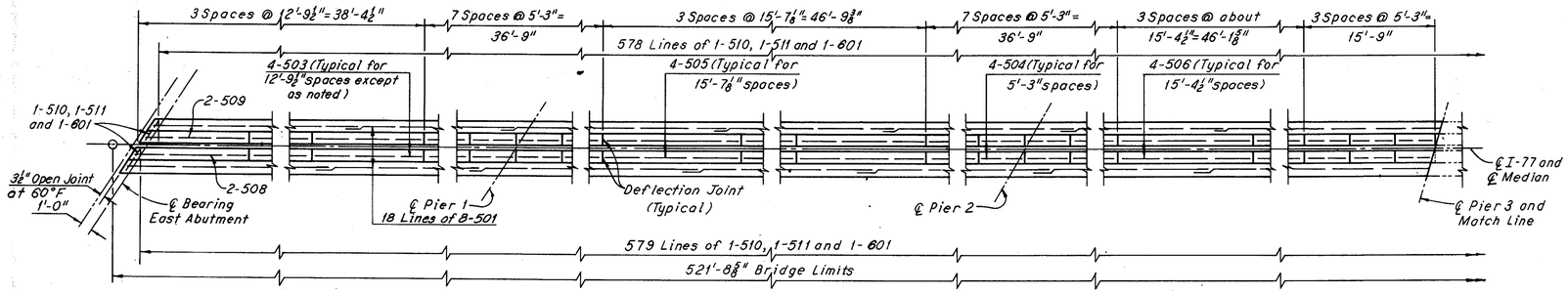
CUYAHOGA COUNTY OHIO

DRAWN RAS	TRACED RCK	CHECKED J.A.B. & D.H.S.	REVIEWED	REVISED
DATE 12-6-74	DATE 1-22-75	DATE 1-29-75	DATE	SHEET 14 22

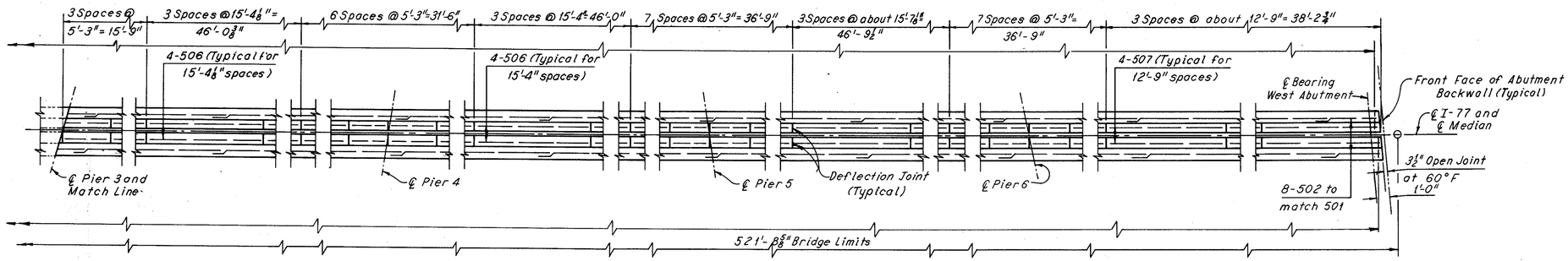
FHWA REGION	STATE	PROJECT	
5	OHIO		

139
169

CUYAHOGA COUNTY
CUY-77-14.12
CUY-90-16.21



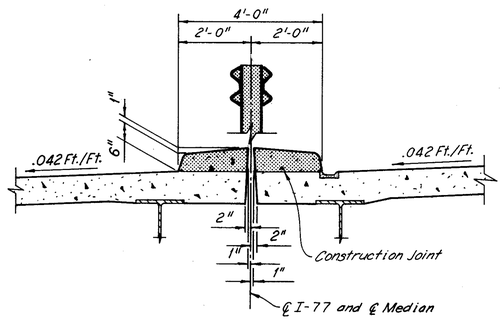
DEVELOPED CONCRETE BARRIER MEDIAN PLAN



DEVELOPED CONCRETE BARRIER MEDIAN PLAN

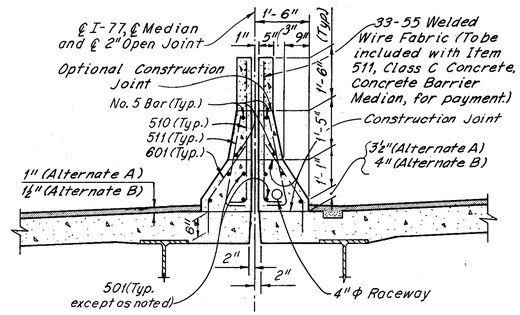
Note: All reinforcing bar marks shall be prefixed CM.

- Remove guardrails, posts, nuts, plates and anchor plates above the construction joint. Include with Item 202, Portions of Structures Removed, for payment.
- Remove existing median above the construction joint. Include with Item 202, Portions of Structures Removed, for payment.
- Remove bulb angle gutter Include with Item 202, Portions of Structures Removed, for payment.



TYPICAL EXISTING MEDIAN CROSS SECTION

Indicates removal
(For post anchor detail, see Sheet CD-6)



TYPICAL MODIFIED MEDIAN CROSS SECTION

Notes:
For details of deflection joints in the concrete barrier median, see Sheet CD-6.
For spacing of dowel holes for 601 bars and concrete barrier median reinforcement, see Sheet CD-6.
For reinforcement schedule, see Sheet CD-10.
The following abbreviation is used:
Typ. = Typical

HOWARD, NEEDLES, TAMMEN & BERGENDOFF CONSULTING ENGINEERS CLEVELAND — HNTB

EXISTING AND MODIFIED MEDIAN DETAILS

BR. NO. CUY.-77-1519

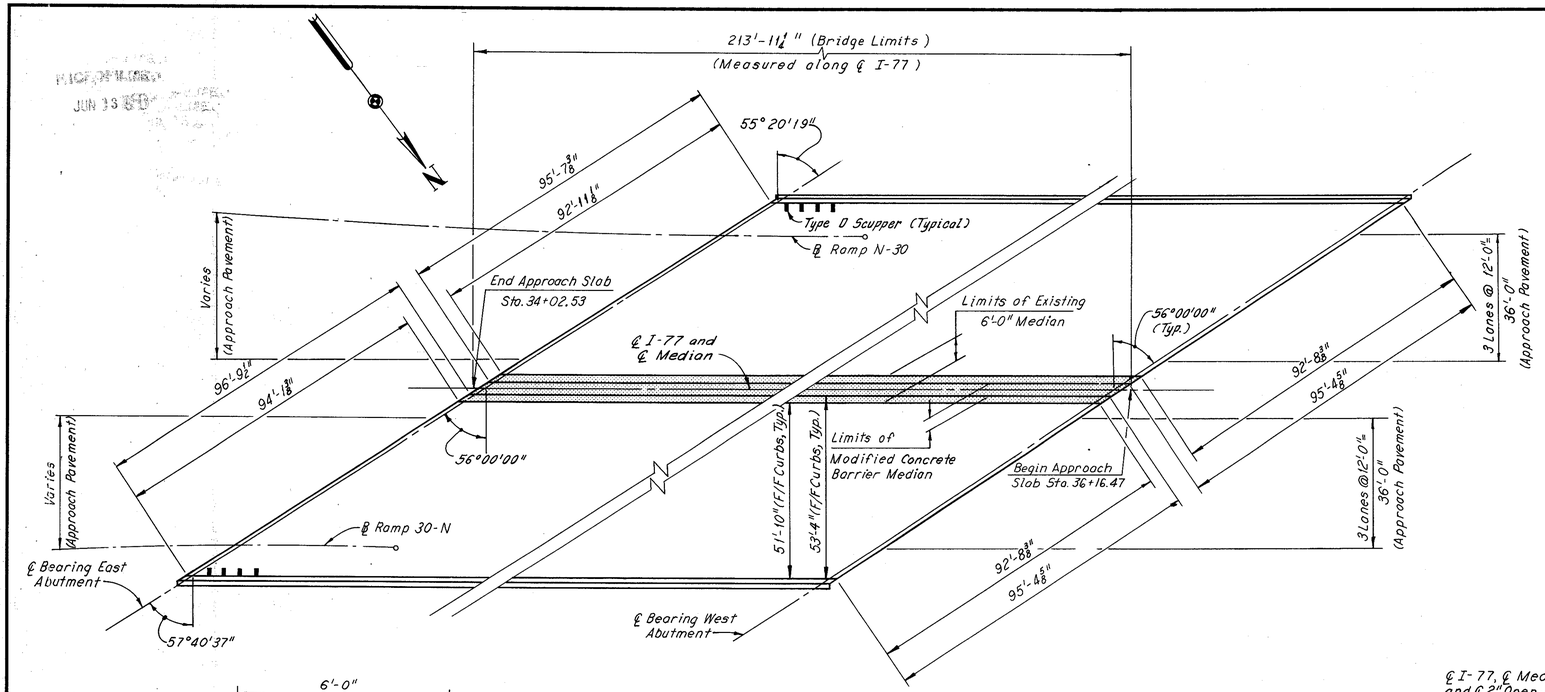
CUYAHOGA COUNTY OHIO

DRAWN RAS	TRACED RCA	CHECKED J.A.B. & D.H.S.	REVIEWED	REVISED
DATE 12-6-74	DATE 1-28-75	DATE 1-29-75	DATE	SHEET 15 22

FHWA REGION	STATE	PROJECT	
5	OHIO		

140
169

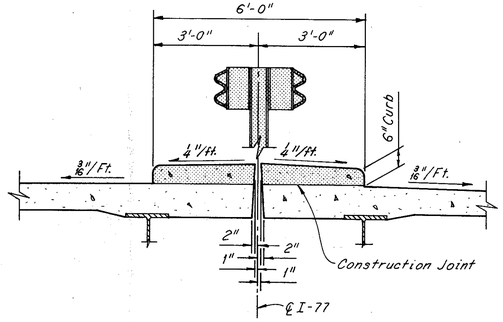
CUYAHOGA COUNTY
CUY-77-14.12
CUY-90-16.21



EXISTING AND MODIFIED PLAN

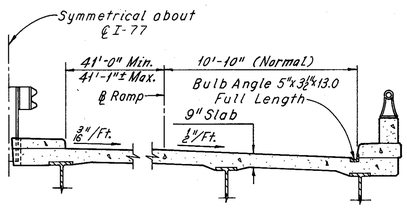
Indicates removal

- Remove guardrails, posts, nuts, plates and anchor plates above the construction joint. Include with Item 202, Portions of Structures Removed, for payment.
- Remove existing median above the construction joint. Include with Item 202, Portions of Structures Removed, for payment.

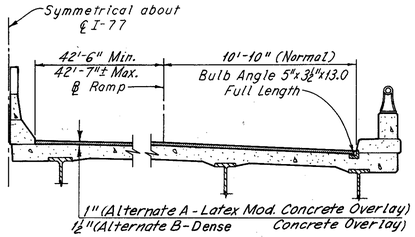


TYPICAL EXISTING MEDIAN CROSS SECTION

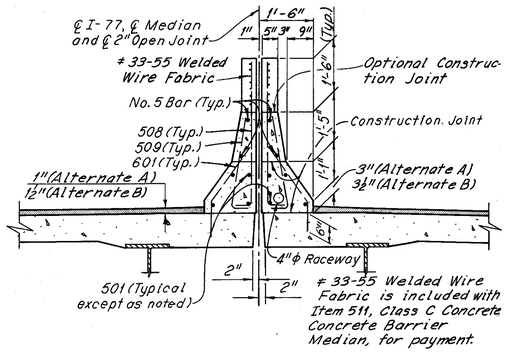
Indicates removal
(For post anchor detail see Sheet CD-6)



EXISTING TYPICAL SECTION



MODIFIED TYPICAL SECTION



TYPICAL MODIFIED MEDIAN CROSS SECTION

Note: All reinforcing bar marks shall be prefixed DM.

Notes:

For schematic plan and bridge locations, see Sheet 122.

For expansion joint modification at the median, see Sheets CD-3 and CD-4.

For details of raising existing end dams, see Sheet CD-6.

For details of resurfacing, see Sheet CD-5.

For details of deflection joints in the concrete barrier median, see Sheet CD-6.

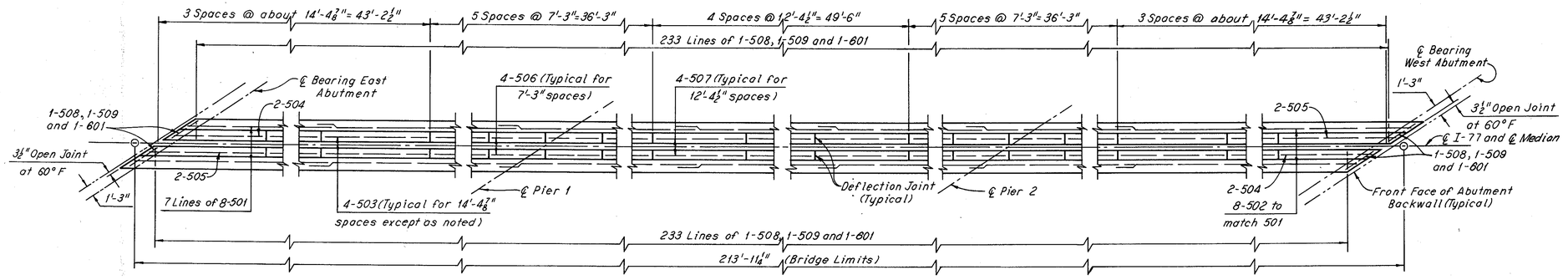
For spacing of dowel holes for 601 bars and concrete barrier median reinforcement, see Sheet CD-6.

For reinforcement schedule, see Sheet CD-10.

For details of raising existing scuppers, see Sheet CD-8.

The following abbreviations are used:

Typ. = Typical
Min. = Minimum
Max. = Maximum



DEVELOPED CONCRETE BARRIER MEDIAN PLAN

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS CLEVELAND
HNTB

EXISTING AND MODIFIED DECK PLAN AND MEDIAN

BR. NO. CUY.-77-1548

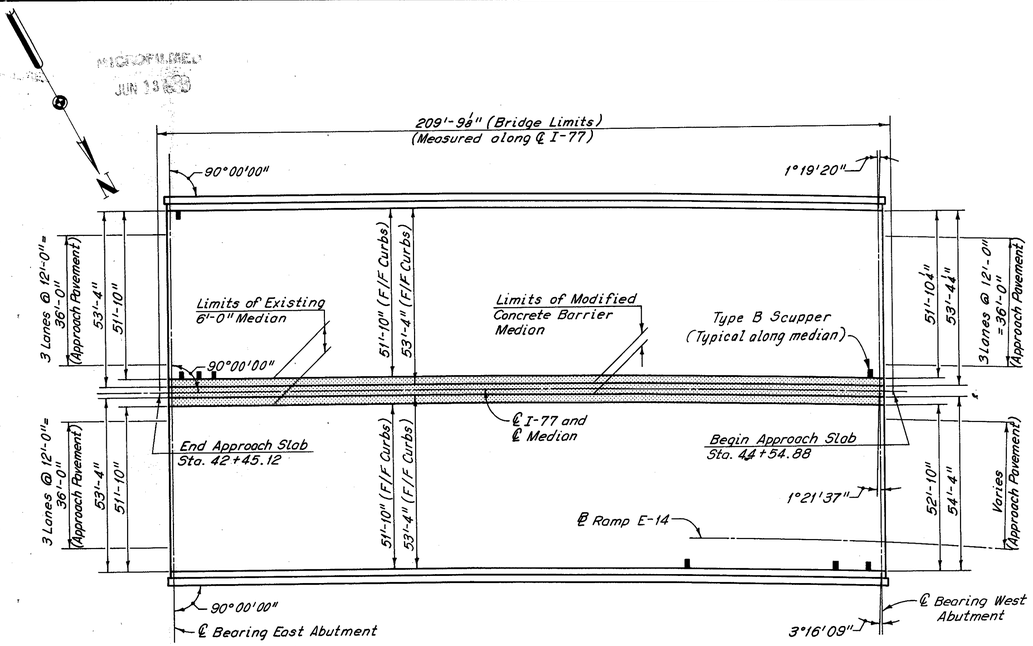
CUYAHOGA COUNTY OHIO

DRAWN R.A.S.	TRACED R.C.K.	CHECKED J.A.B. & D.H.S.	REVIEWED	REVISED
DATE 11-21-74	DATE 1-28-74	DATE 2-3-75	DATE	SHEET 16 22

FHWA REGION	STATE	PROJECT	
5	OHIO		

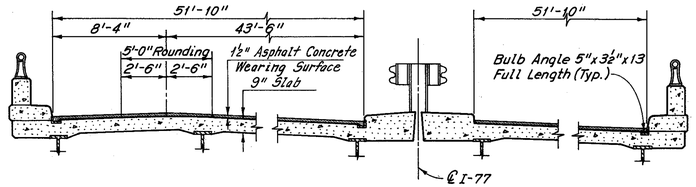
141
169

CUYAHOGA COUNTY
CUY-77-14.12
CUY-90-16.21

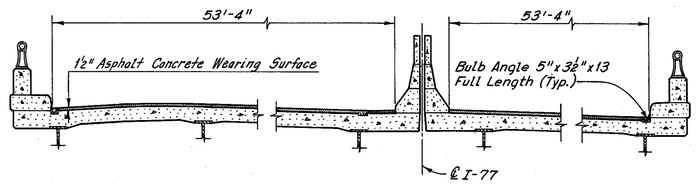


EXISTING AND MODIFIED PLAN

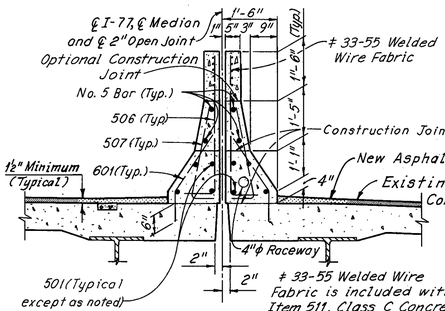
Indicates removal



EXISTING TYPICAL SECTION



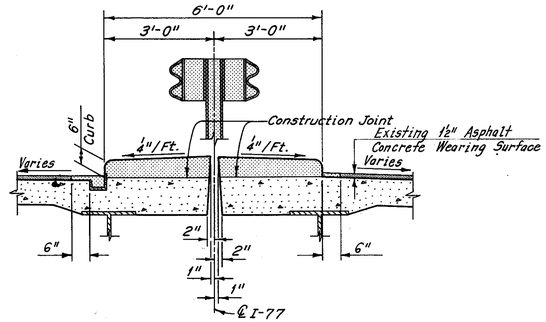
MODIFIED TYPICAL SECTION



TYPICAL MODIFIED MEDIAN CROSS SECTION

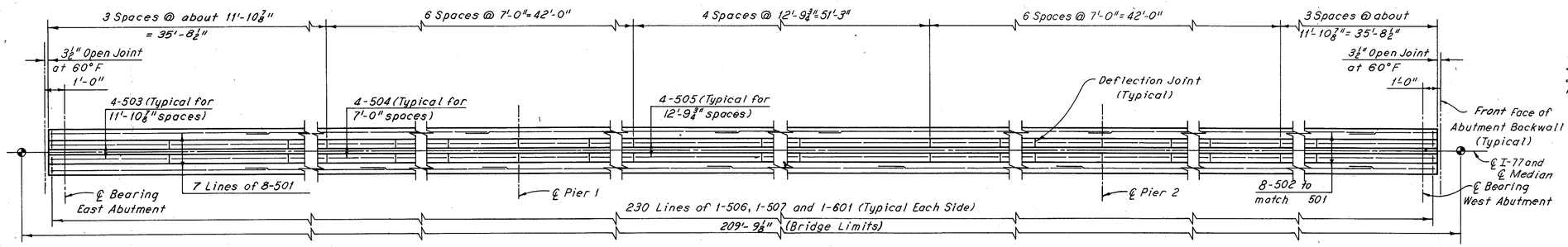
Note: To provide deck drainage, an additional ¼ inch of overlay shall be provided at the barrier median gutter line, sloping to the specified thickness at the roadway edge of the bulb angle gutter. Payment for the additional thickness of the overlay shall be included with Item 404, Asphalt Concrete (AC-20).

- Remove guardrails, posts, nuts, plates and anchor plates above the construction joint. Include with Item 202, Portions of Structures Removed, for payment.
- Remove existing median above the construction joint. Include with Item 202, Portions of Structures Removed, for payment.
- Remove bulb angle gutter. Include with Item 202, Portions of Structures Removed, for payment.
- Remove existing asphalt concrete adjacent to the median as shown in the Typical Existing Median Cross Section. Include with Item 202, Portions of Structures Removed, for payment.
- Remove existing asphalt concrete to 6" around the periphery of all median scuppers. Include with Item 202, Portions of Structures Removed, for payment.



TYPICAL EXISTING MEDIAN CROSS SECTION

Indicates removal
(For post anchor detail, see Sheet CD-6)



DEVELOPED CONCRETE BARRIER MEDIAN PLAN

Note: All reinforcing bar marks shall be prefixed EM.

Notes:
For schematic plan and bridge locations, see Sheet 122 .
For expansion joint modification at the median, see Sheets CD-3 and CD-4 .
For details of raising existing end dams, see Sheet CD-6 .

For details of deflection joints in the concrete barrier median, see Sheet CD-6 .
For spacing of dowel holes for 601 bars and concrete barrier median reinforcement, see Sheet CD-6 .
For details of raising existing scuppers at the median, see Sheet CD-8 .
For reinforcement schedule, see Sheet CD-10 .
The following abbreviation is used:
Typ. = Typical

The void left in the deck after removal of bulb angle gutter shall be patched as per Item 519, Patching Concrete Structures, and included with Item Special, Membrane Waterproofing (Sheet Type 1) for payment.

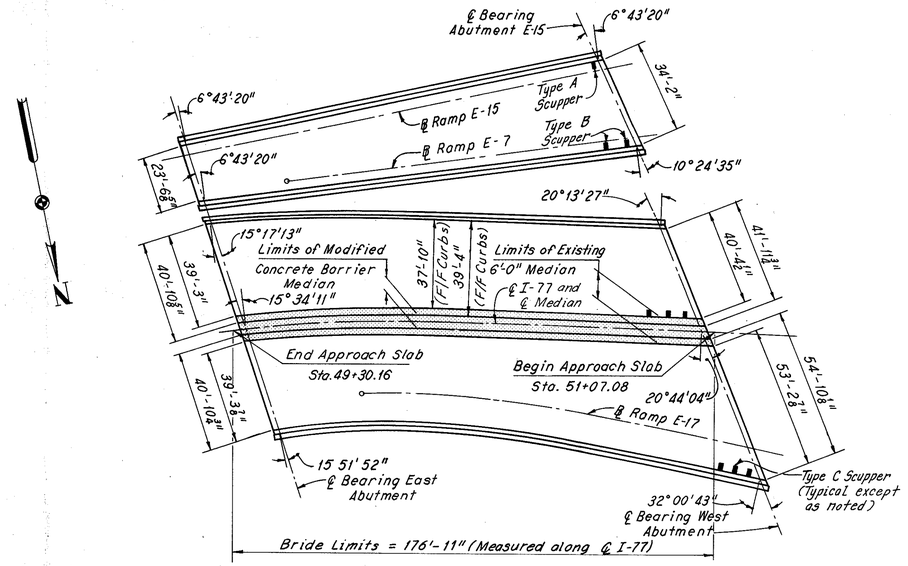
HOWARD, NEEDLES, TAMMEN & BERGENDOFF CONSULTING ENGINEERS CLEVELAND — HNTB

EXISTING AND MODIFIED DECK PLAN AND MEDIAN

BR. NO. CUY.-77-1564

CUYAHOGA COUNTY OHIO

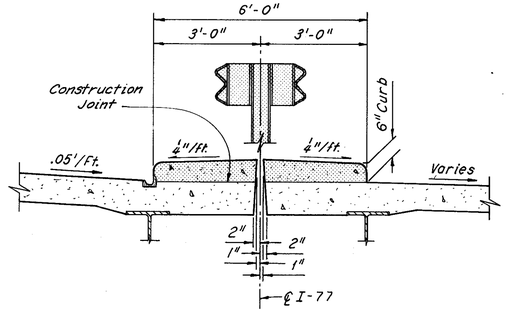
DRAWN	TRACED	CHECKED	REVIEWED	REVISED
JAB	DLR RCK	A.M. F.C.H.B.		
DATE 11-11-74	DATE 11-14-74 1-20-75	DATE 2-9-77	DATE	SHEET 17 22



EXISTING AND MODIFIED PLAN

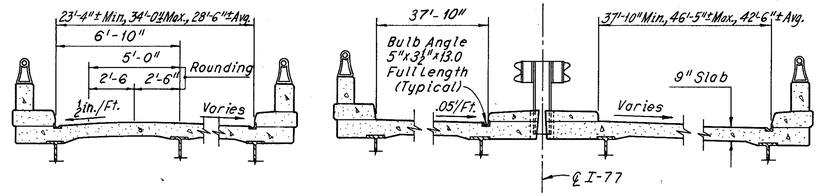
Indicates removal

- Remove guardrails, posts, nuts, plates and anchor plates above the construction joint. Include with Item 202, Portions of Structures Removed, for payment.
- Remove existing median above the construction joint. Include with Item 202, Portions of Structures Removed, for payment.
- Remove bulb angle gutter. Include with Item 202, Portions of Structures Removed, for payment.

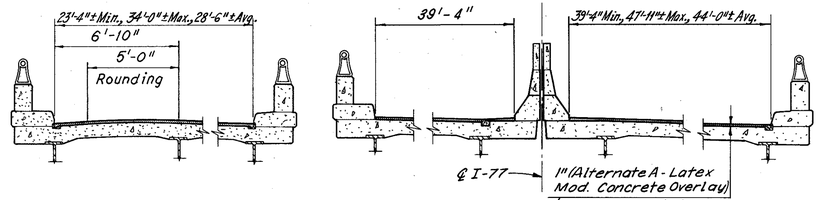


TYPICAL EXISTING MEDIAN CROSS SECTION

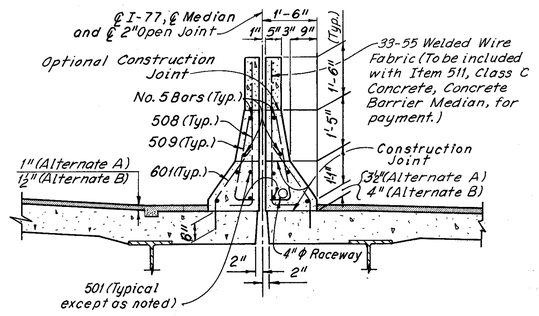
Indicates removal
(For post anchor detail, see Sheet CD-6)



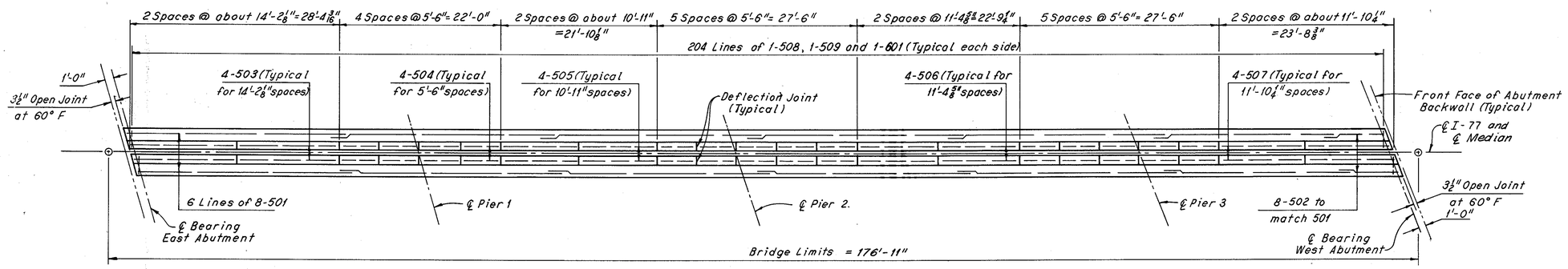
EXISTING TYPICAL SECTION



MODIFIED TYPICAL SECTION



TYPICAL MODIFIED MEDIAN CROSS SECTION



DEVELOPED CONCRETE BARRIER MEDIAN PLAN

Note: All reinforcing bar marks shall be prefixed FM.

Notes:

For schematic plan and bridge locations, see Sheet 122.

For expansion joint modification at the median, see Sheets CD-3 and CD-4.

For details of raising existing end dams, see Sheet CD-6.

For details of resurfacing, see Sheets CD-5 and CD-8.

For details of deflection joints in the concrete barrier median, see Sheet CD-6.

For spacing of dowel holes for 601 bars and concrete barrier median reinforcement, see Sheet CD-6.

For details of raising existing scuppers, see Sheet CD-8.

For reinforcement schedule, see Sheet CD-10.

The following abbreviations are used:

Typ. = Typical
Min. = Minimum
Max. = Maximum
Avg. = Average

FHWA REGION	STATE	PROJECT	
5	OHIO		

142
169

CUYAHOGA COUNTY
CUY-77-14.12
CUY-90-16.21

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS CLEVELAND
HNTB

EXISTING AND MODIFIED DECK PLAN AND MEDIAN

BR. NO. CUY.-77-1576 A & B

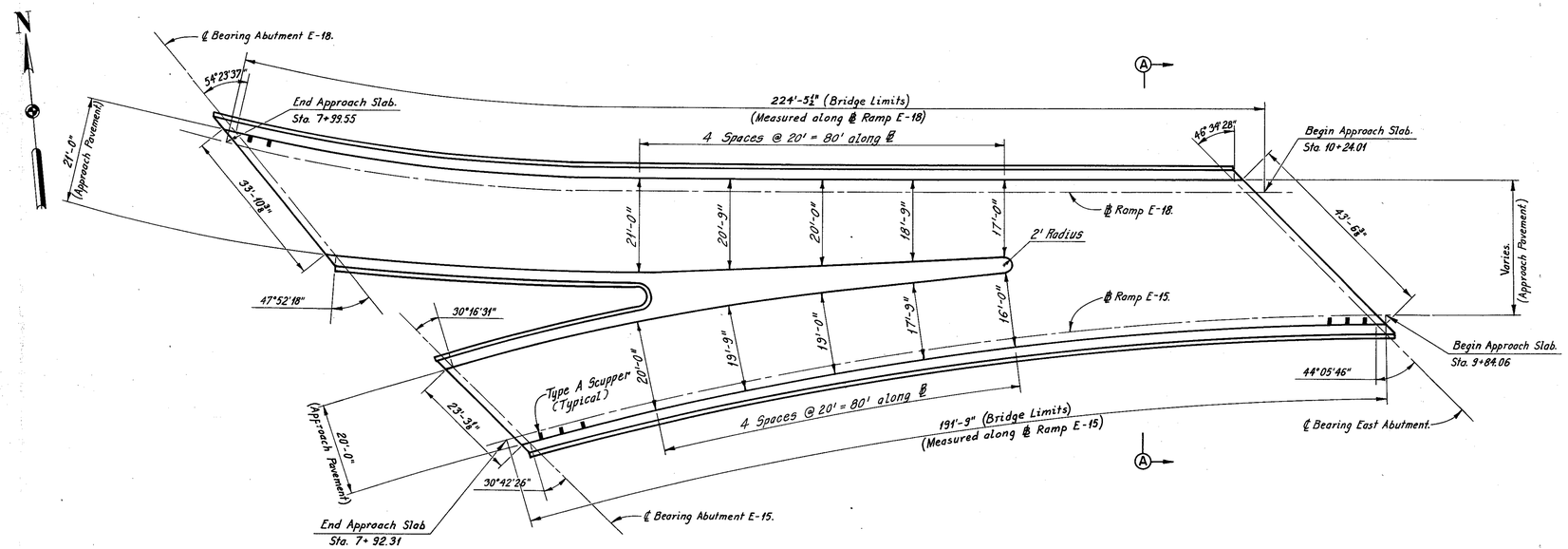
CUYAHOGA COUNTY OHIO

DRAWN	TRACED	CHECKED	REVIEWED	REVISED
R.A.S.	R.C.A.	J.A.B. & D.H.S.		
DATE 11-21-74	DATE 2-3-75	DATE 2-19-75	DATE	SHEET 18 22

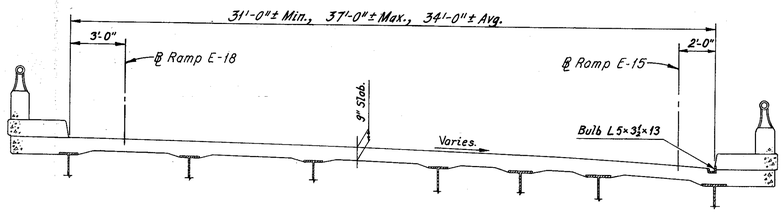
FHWA REGION	STATE	PROJECT	
5	OHIO		

143
169

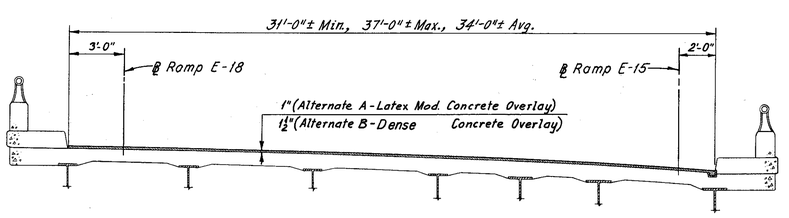
CUYAHOGA COUNTY
CUY-77-14.12
CUY-90-16.21



EXISTING AND MODIFIED PLAN
RAMPS E-15 AND E-18 OVER EAST 9TH STREET



EXISTING SECTION A-A



MODIFIED SECTION A-A

Notes:
For schematic plan and bridge location, see Sheet 122 .
For details of raising existing end dams, see Sheet CD-6 .
For details of resurfacing, see Sheet CD-5 .
For details of raising existing scuppers, see Sheet CD-8 .
The following abbreviations are used:
Min. = Minimum
Max. = Maximum
Avg. = Average

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS CLEVELAND
HNTB

EXISTING AND MODIFIED DECK PLAN AND TYPICAL SECTION

RAMPS E-15 AND E-18 OVER EAST 9TH ST.

CUYAHOGA COUNTY OHIO

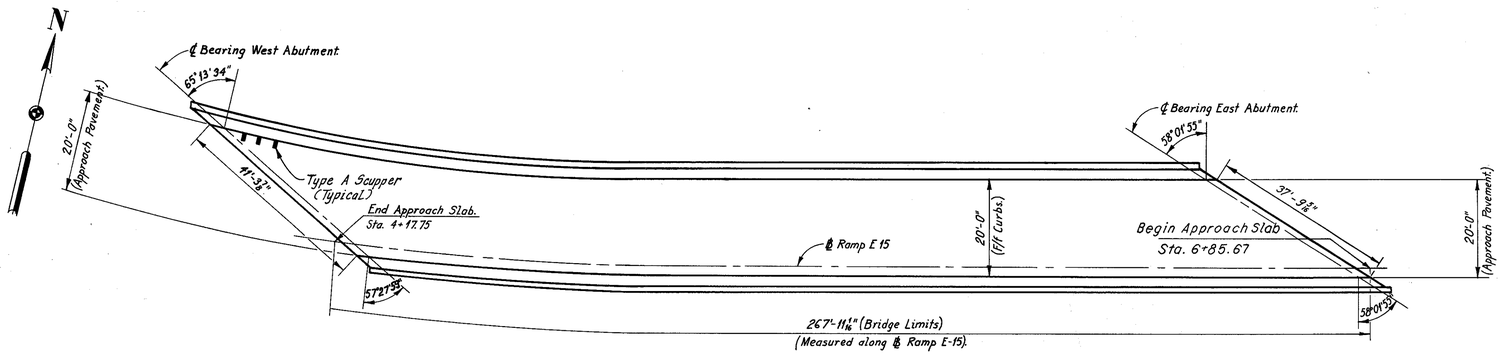
DRAWN	TRACED	CHECKED	REVIEWED	REVISED
A.N.	A.N.	J.K.B.J.D.H.S.		
DATE 12-5-74	DATE 12-5-74	DATE 1-29-75	DATE	SHEET 19 22

MICROFILMED
JUN 14 1978

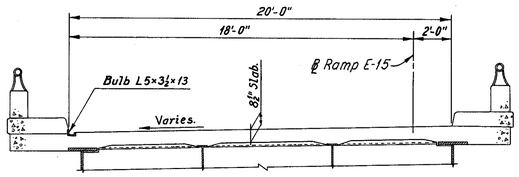
FHWA REGION	STATE	PROJECT	
5	OHIO		

144
169

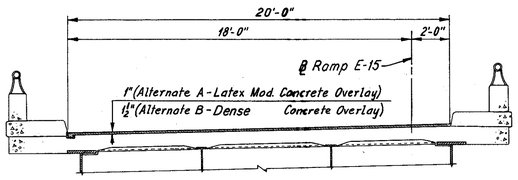
CUYAHOGA COUNTY
CUY-77-14.12
CUY-90-16.21



EXISTING AND MODIFIED PLAN
RAMP E-15 OVER W. B. BROADWAY AVE.



EXISTING TYPICAL SECTION



MODIFIED TYPICAL SECTION

Notes:
For schematic plan and bridge location, see Sheet 122 .
For details of raising existing end dams, see Sheet CD-6 .
For details of resurfacing, see Sheet CD-5 .
For details of raising existing scuppers, see Sheet CD-8 .

HOWARD, NEEDLES, TAMMEN & BERGENDOFF CONSULTING ENGINEERS CLEVELAND — HNTB

EXISTING AND MODIFIED DECK PLAN AND TYPICAL SECTION

RAMP E-15 OVER W. B. BROADWAY AVE.

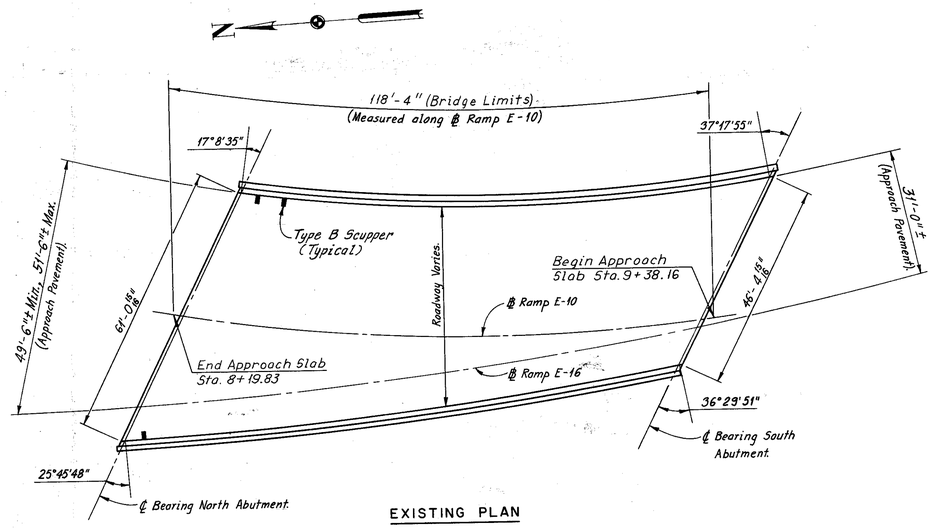
CUYAHOGA COUNTY OHIO

DRAWN N. N.	TRACED A. N.	CHECKED J.A.B. & D.H.S.	REVIEWED	REVISED
DATE 12-4-74	DATE 12-4-74	DATE 1-28-75	DATE	SHEET 20 22

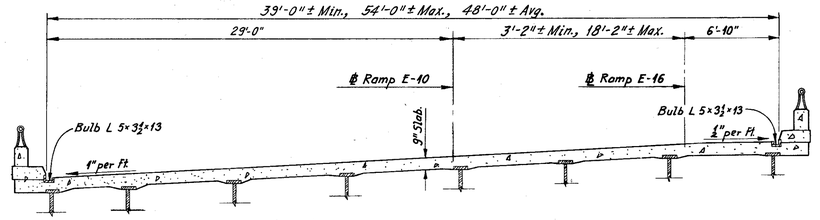
FHWA REGION	STATE	PROJECT	
5	OHIO		

145
169

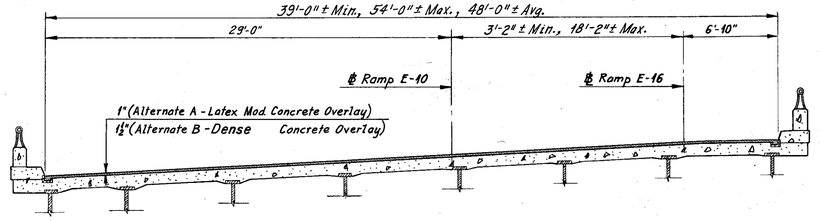
CUYAHOGA COUNTY
CUY-77-14.12
CUY-90-16.21



EXISTING PLAN



EXISTING TYPICAL SECTION



MODIFIED TYPICAL SECTION

Notes:

For schematic plan and bridge location, see Sheet 122 .

For details of raising existing end dams, see Sheet CD-6 .

For details of resurfacing, see Sheet CD-5 .

For details of raising existing scuppers, see Sheet CD-8 .

The following abbreviations are used:

Min. = Minimum
Max. = Maximum
Avg. = Average

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CONSULTING ENGINEERS CLEVELAND
HNTB

EXISTING AND MODIFIED DECK PLAN AND TYPICAL SECTION

BR. NO. CUY.-77-1593L

CUYAHOGA COUNTY OHIO

DRAWN	TRACED	CHECKED	REVIEWED	REVISED
A.N.	A.N.	J.A.B. & D.H.S.		
DATE 2-10-77	DATE 2-10-77	DATE 1-29-75	DATE	SHEET 21 22

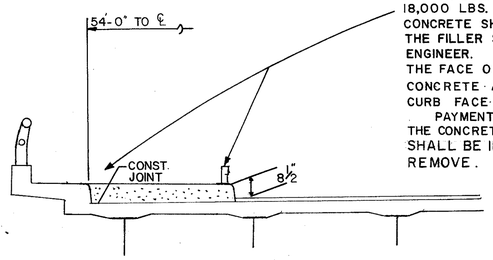
FHWA REGION	STATE	PROJECT	
5	OHIO		

145A
169

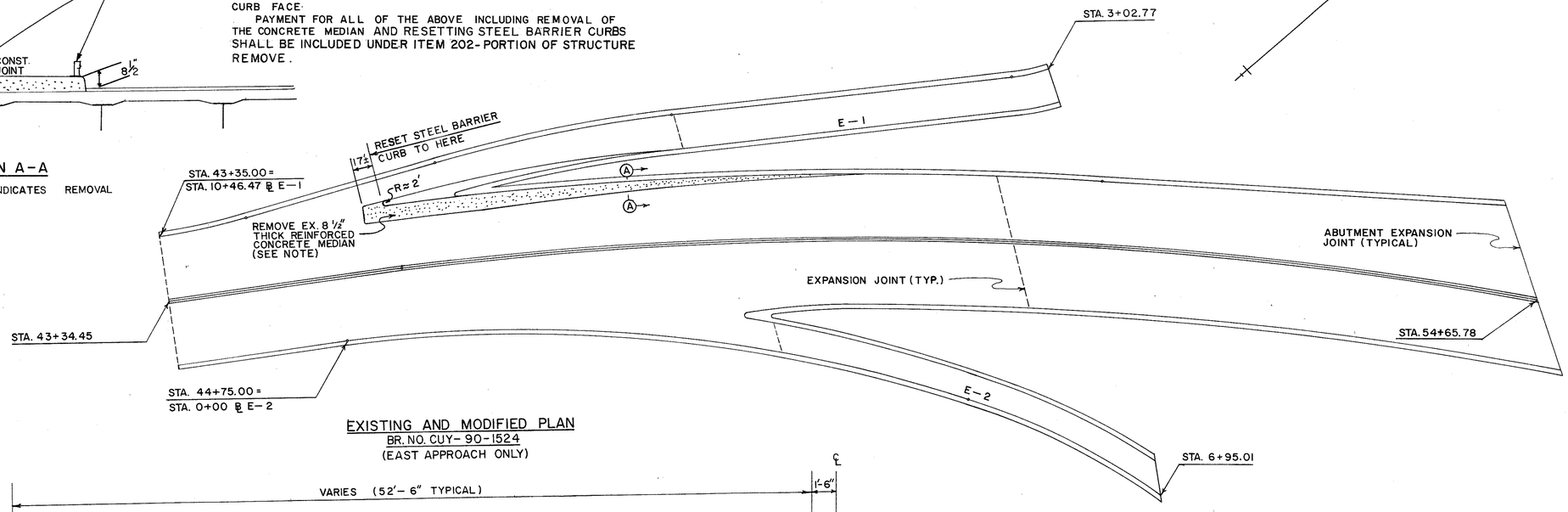
CUYAHOGA COUNTY
CUY - 77 - 13.79
CUY - 90 - 16.21

NOTES:
THE EXISTING STEEL BARRIER CURB SHALL BE RESET ON THE REMAINING CURB TO CONFORM WITH THE MODIFIED TYPICAL SECTION. ATTACH POSTS TO CONCRETE WITH 7/8"ϕ SELF DRILLING CONCRETE ANCHOR BOLTS WITH A PULLOUT RESISTANCE OF NOT LESS THAN 18,000 LBS. ANY OPEN SPACE BETWEEN THE BOLT AND THE CONCRETE SHALL BE FILLED TO PREVENT THE ENTRANCE OF WATER. THE FILLER SHALL BE SUBJECT TO THE APPROVAL OF THE ENGINEER.
THE FACE OF THE CURB SHALL BE PATCHED WITH CONCRETE AS NECESSARY TO FORM A SMOOTH CONTINUOUS CURB FACE.
PAYMENT FOR ALL OF THE ABOVE INCLUDING REMOVAL OF THE CONCRETE MEDIAN AND RESETTING STEEL BARRIER CURBS SHALL BE INCLUDED UNDER ITEM 202- PORTION OF STRUCTURE REMOVE.

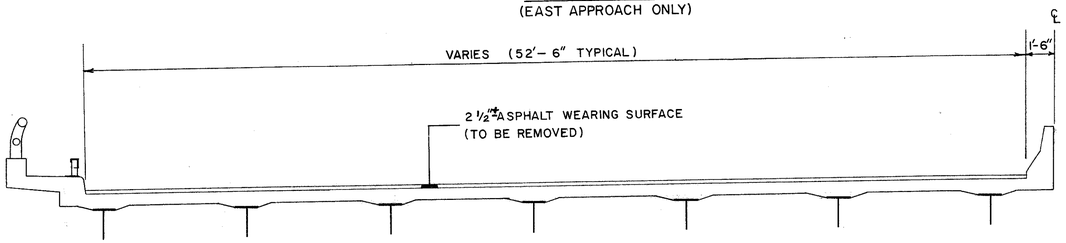
ALL EXCESS STEEL BARRIER CURB AND POSTS SHALL BECOME THE PROPERTY OF THE STATE OF OHIO AND SHALL BE STORED IN AN AREA CONVENIENT FOR PICKUP BY STATE FORCES.



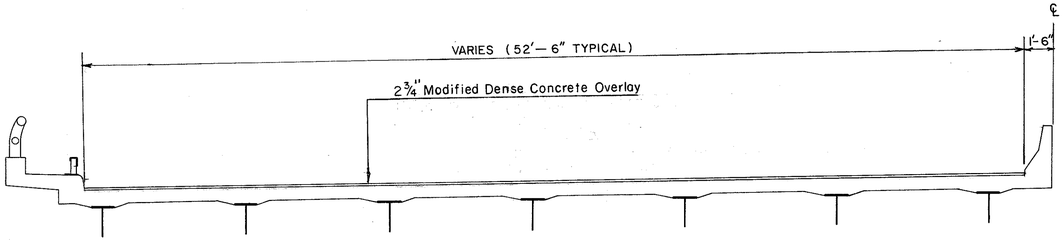
SECTION A-A
▨ -INDICATES REMOVAL



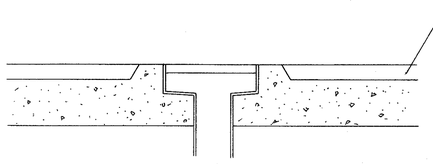
EXISTING AND MODIFIED PLAN
BR. NO. CUY-90-1524
(EAST APPROACH ONLY)



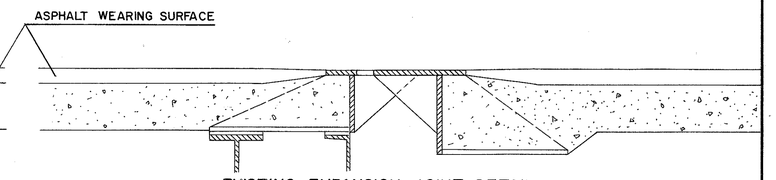
EXISTING TYPICAL HALF SECTION



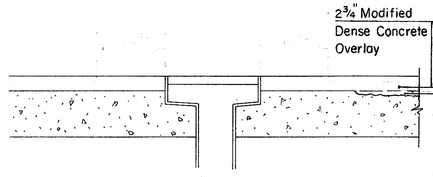
MODIFIED TYPICAL HALF SECTION



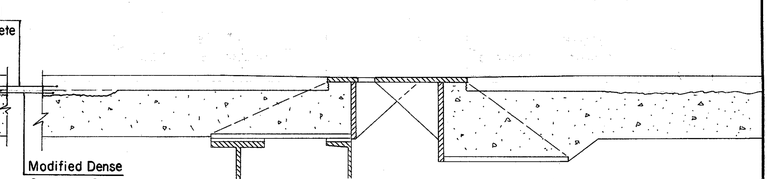
EXISTING SCUPPER DETAIL



EXISTING EXPANSION JOINT DETAIL



MODIFIED SCUPPER DETAIL



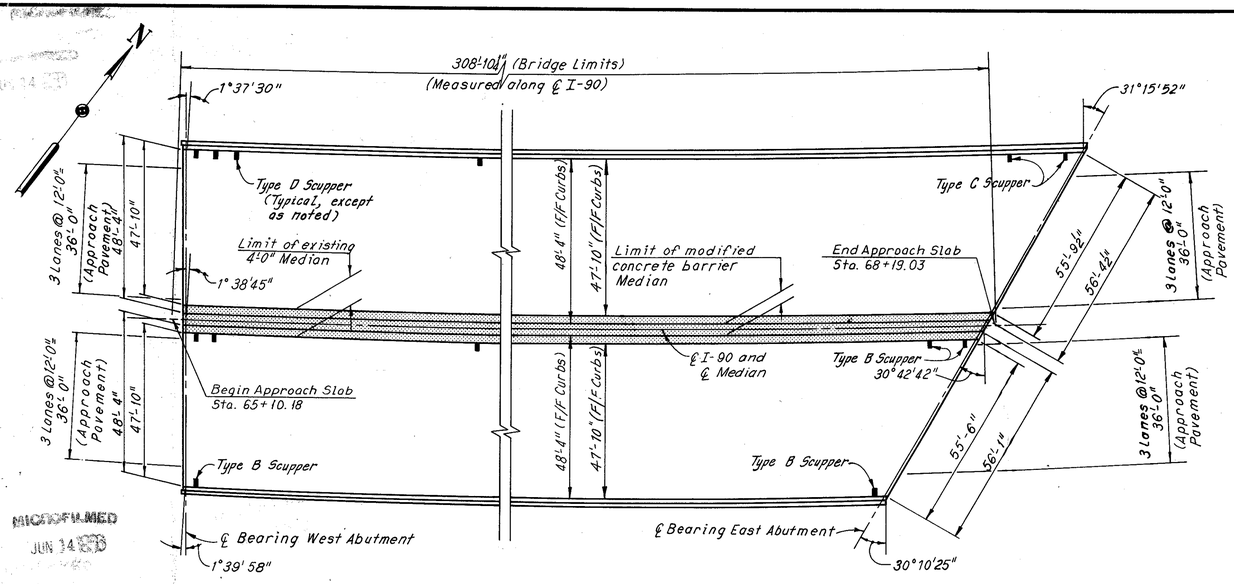
MODIFIED EXPANSION JOINT DETAIL

EXISTING AND MODIFIED DECK PLAN AND TYPICAL SECTION
BR. NO. CUY-90-1524 (EAST APPROACH ONLY)

FHWA REGION	STATE	PROJECT	
5	OHIO		

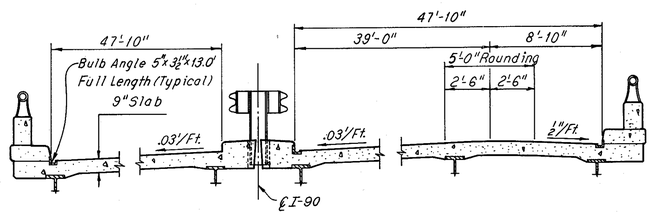
146
169

CUYAHOGA COUNTY
CUY-77-14.12
CUY-90-16.21

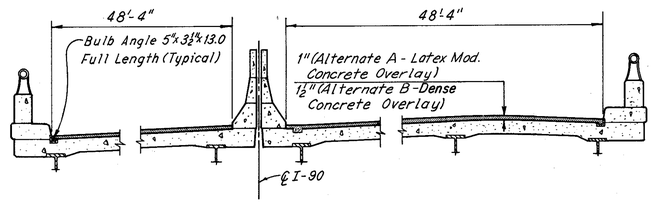


EXISTING AND MODIFIED PLAN

Indicates removal



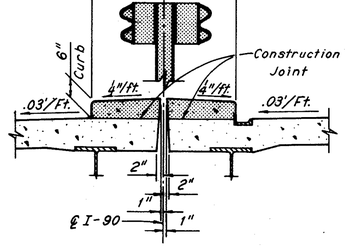
EXISTING TYPICAL SECTION



MODIFIED TYPICAL SECTION

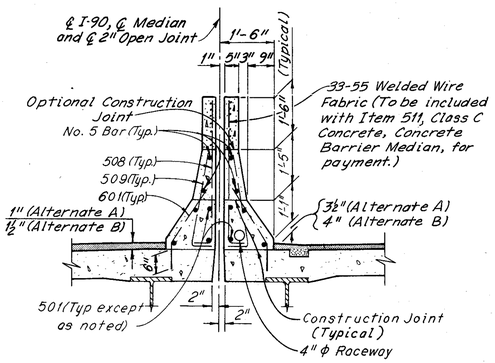
- Remove guardrails, posts, nuts, plates and anchor plates above the construction joint. Include with Item 202, Portions of Structures Removed, for payment.
- Remove existing median above the construction joint. Include with Item 202, Portions of Structures Removed, for payment.
- Remove bulb angle gutter. Include with Item 202, Portions of Structures Removed, for payment.

Note: All reinforcing bar marks shall be prefixed HM.

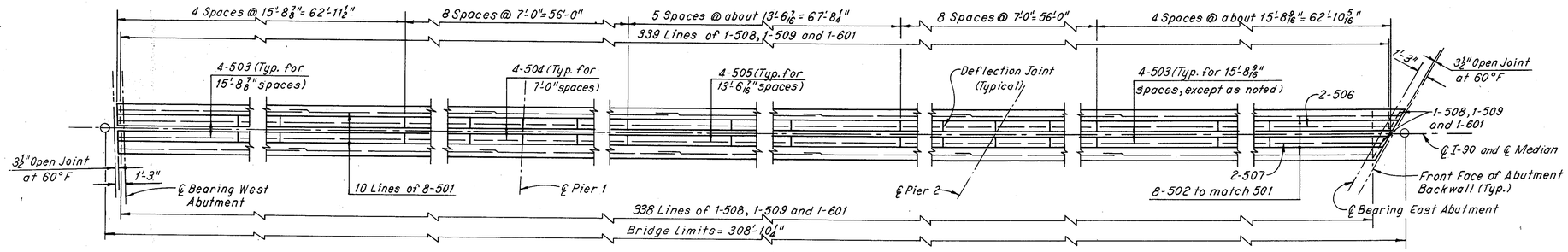


TYPICAL EXISTING MEDIAN CROSS SECTION

Indicates removal
(For post anchor detail, see Sheet CD-6)



TYPICAL MODIFIED MEDIAN CROSS SECTION



DEVELOPED CONCRETE BARRIER MEDIAN PLAN

Notes:

For schematic plan and bridge locations, see Sheet 122.

For expansion joint modification at the median, see Sheets CD-1 and CD-2.

For details of raising existing end dams, see Sheet CD-6.

For details of resurfacing, see Sheets CD-5 and CD-8.

For details of deflection joints in the concrete barrier median, see Sheet CD-6.

For spacing of dowel holes for 601 bars and concrete barrier median reinforcement, see Sheet CD-6.

For details of raising existing scuppers, see Sheet CD-8.

For reinforcement schedule, see Sheet CD-10.

The following abbreviation is used:
Typ. = Typical

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CLEVELAND

HNTB

EXISTING AND MODIFIED DECK PLAN AND MEDIAN

BR. NO. CUY.-90-1640

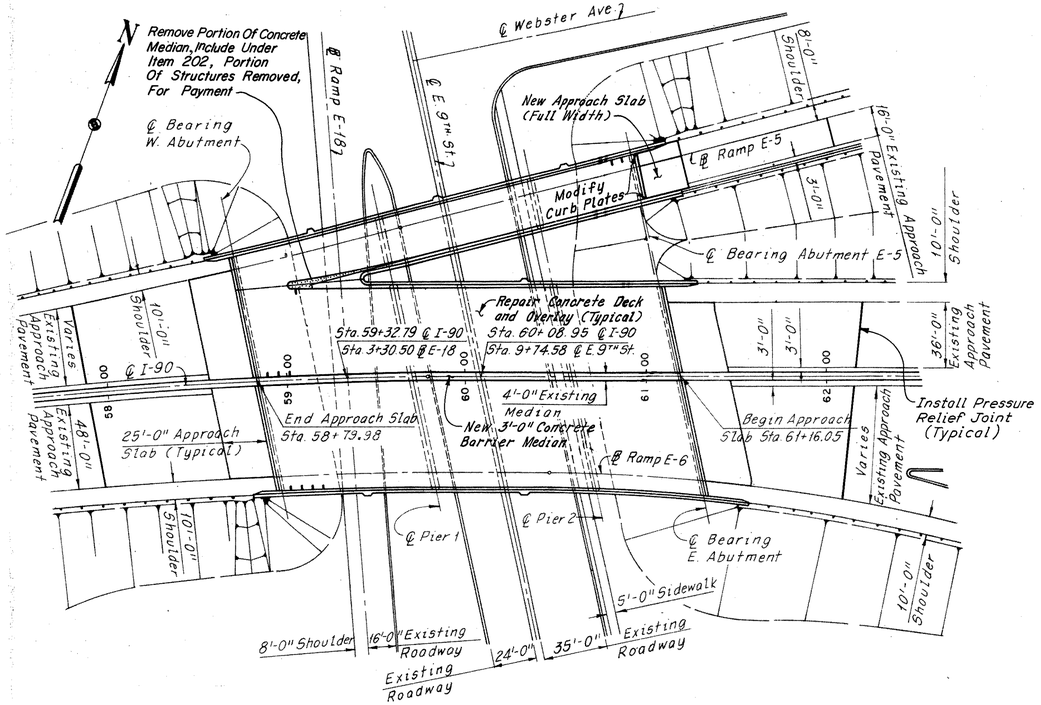
CUYAHOGA COUNTY — OHIO

DRAWN	TRACED	CHECKED	REVIEWED	REVISED
RAS	RCA	J.A.B. & D.H.S.		
DATE 11-6-74	DATE 11-22-74	DATE 1-28-75	DATE	SHEET 22 22

FHWA REGION	STATE	PROJECT	
5	OHIO		

147/169

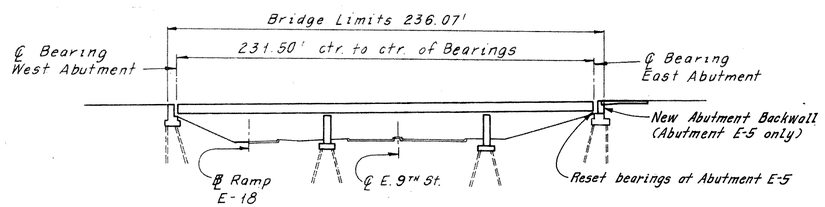
CUYAHOGA COUNTY
CUY-77-14.12
CUY-90-16.21



PLAN

40 0 40 80

SCALE IN FEET



ELEVATION

40 0 40 80

SCALE IN FEET

EXISTING STRUCTURE	
TYPE:	Continuous Steel Beam with Reinforced Concrete Deck, Piers and Abutments
SPANS:	87'-9", 88'-9" and 55'-0" (Measured along ℄ I-90)
ROADWAY:	114'-0" (Nominal) Face to Face of Parapets
LOADING:	CF-2000-57 (Adequate for AASHTO Alternate Loading)
SKEW:	Varies
WEARING SURFACE:	1" Monolithic Concrete
APPROACH SLABS:	AS-1-54 (25' long)
ALIGNMENT:	2°00' Right and Tangent
SUPERELEVATION:	Varies

MODIFIED STRUCTURE	
TYPE:	Continuous Steel Beam with Reinforced Concrete Deck, Piers and Abutments
SPANS:	87'-9", 88'-9" and 55'-0" (Measured along ℄ I-90)
ROADWAY:	114'-0" (Nominal) Face to Face of Parapets with a 3'-0" Barrier Median
LOADING:	CF-2000-57 (Adequate for AASHTO Alternate Loading)
SKEW:	Varies
WEARING SURFACE:	1¼" Latex Modified Concrete or 1¾" Dense Concrete
APPROACH SLABS:	AS-1-54 (25' long, typical except as noted) AS-1-72 (25' long, East Abutment, Ramp E-5)
ALIGNMENT:	2°00' Right and Tangent
SUPERELEVATION:	Varies

PROPOSED WORK:

1. Install pressure relief joints in approach roadway pavement, see Roadway Plans.
2. Replace backwall at Abutment E-5, see Sheet 3/5.
3. Modify curb plates at Abutment E-5.
4. Reset bearings at Abutment E-5, see Sheet 3/5.
5. Replace approach slab adjacent to Abutment E-5, see Sheet 5/5.
6. Replace deep beam barrier median with concrete barrier median, see Sheet 4/5.
7. Repair concrete deck and place concrete overlay, see Sheet CD-5.

6A. Remove portion of concrete median.

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CONSULTING ENGINEERS CLEVELAND
HNTB

SITE PLAN

I-90 OVER EAST 9th STREET

BR. NO. CUY - 90-1628 STA. 58+79.98 STA. 61+16.05

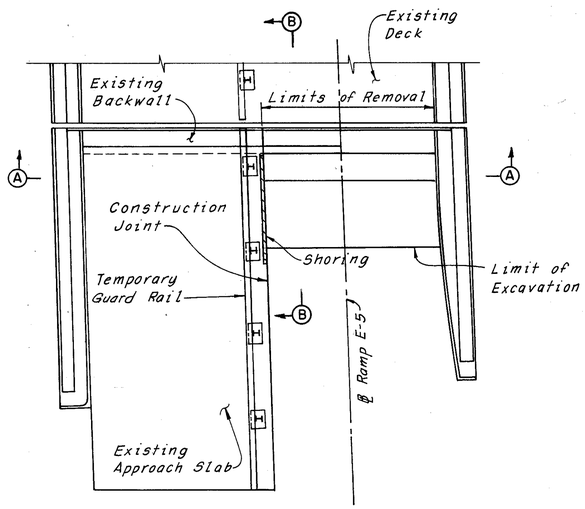
CUYAHOGA COUNTY OHIO

DRAWN	TRACED	CHECKED	REVIEWED	REVISED
C.K.B.	W.E.B.	C.H.B.		
DATE 2-15-77	DATE 3-2-77	DATE 3-11-77	DATE	SHEET 1/5

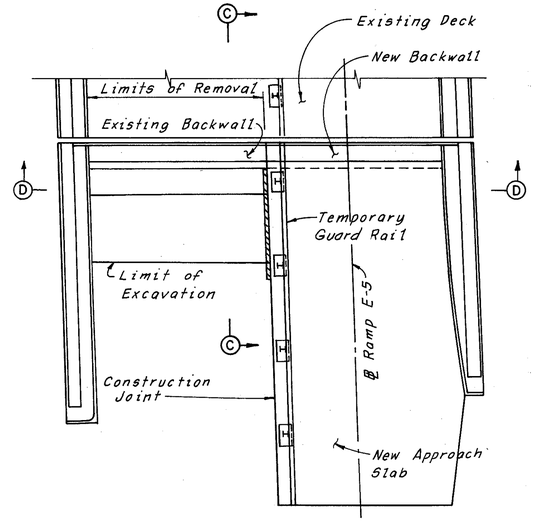
FHWA REGION	STATE	PROJECT	
5	OHIO		

148
169

CUYAHOGA COUNTY
CUY - 77 - 14.12
CUY - 90 - 16.21



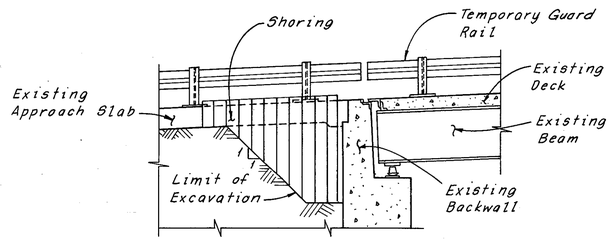
PLAN
(Approach Slab Removed
Excavation Complete)



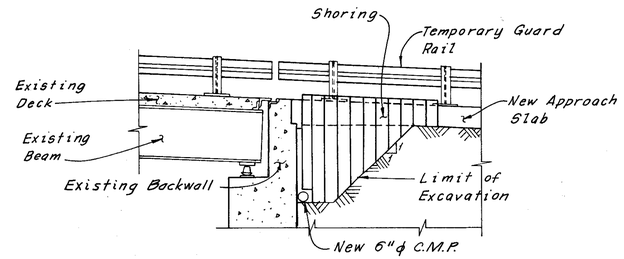
PLAN
(Approach Slab Removed
Excavation Complete)

SECTION A-A

SECTION D-D



SECTION B-B
(Reinforcement not shown)



SECTION C-C
(Reinforcement not shown)

PHASE I CONSTRUCTION

PHASE II CONSTRUCTION

Notes:
Any damage to the new approach slab resulting from the removal of the temporary guardrail or shoring shall be repaired by the Contractor to the satisfaction of the Engineer.
For additional details of traffic maintenance, see Roadway Plans.

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS CLEVELAND
HNTB

MAINTENANCE OF TRAFFIC AND SUGGESTED SHORING AT ABUTMENT E-5
I-90 OVER EAST 9th STREET

BR. NO. CUY - 90-1628 STA. 58+79.98
STA. 61+16.05

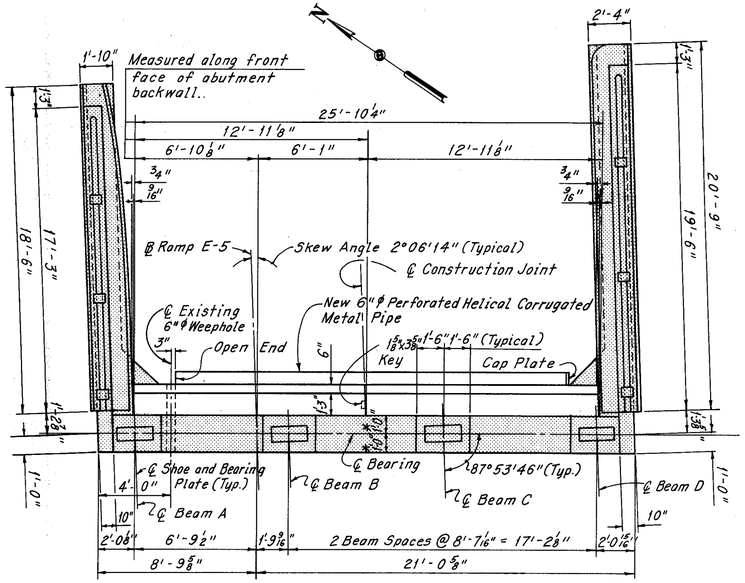
CUYAHOGA COUNTY OHIO

DRAWN	TRACED	CHECKED	REVIEWED	REVISED
A.L.T.	A.L.T.	R.C.K.		
DATE 6.15.76	DATE 6.16.76	DATE 7.7.76	DATE	SHEET 2 | 5

FHWA REGION	STATE	PROJECT	
5	OHIO		

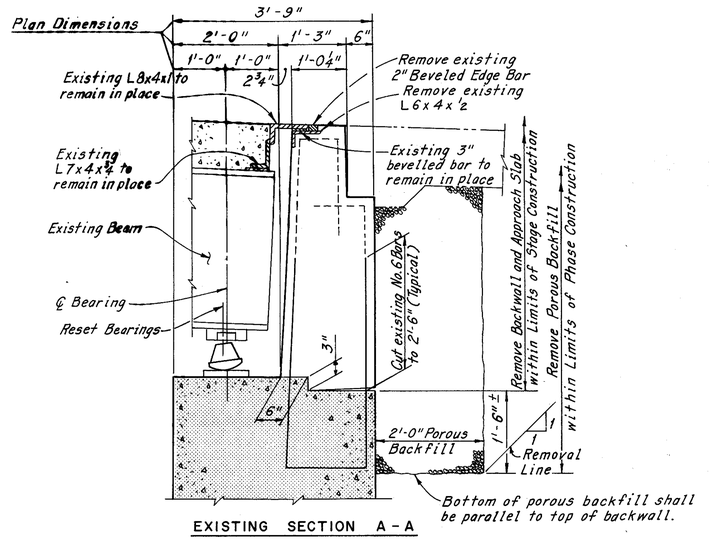
149
169

CUYAHOGA COUNTY
CUY-77-14.12
CUY-90-16.21



* Original plan dimensions, the actual dimensions shall be those which result when the bearings are set in their final position.

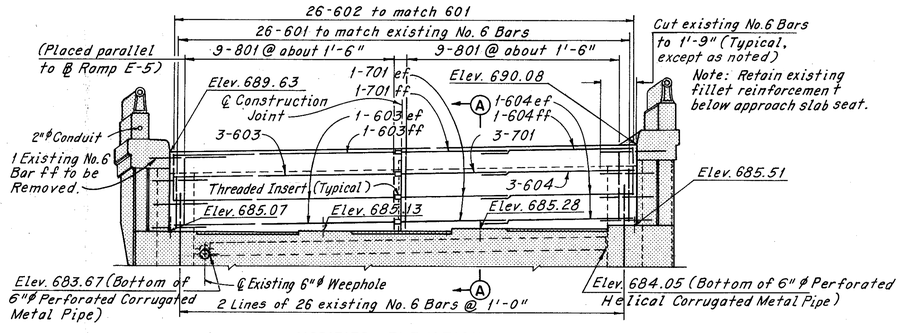
MODIFIED PLAN



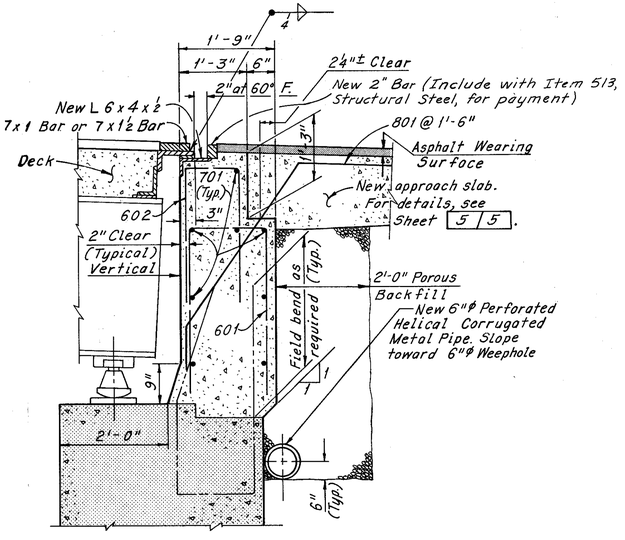
EXISTING SECTION A-A

Note:
All reinforcing bar marks shall be prefixed GA.

Note:
Backwall elevations are from the original plans and given at the top of the 6x4x½ angle of the end dam.



MODIFIED ELEVATION



MODIFIED SECTION A-A

BACKWALL REPLACEMENT PROCEDURE:

1. Bridge the backwall with an adequate steel plate within the area of maintained traffic. Provide bituminous wearing surface cover, as directed by the Engineer, to permit and maintain safe passage of vehicular traffic. The steel plate and bituminous cover shall be included with Item 614, Maintaining Traffic, for payment (see Roadway Plans).
2. Raise the entire superstructure at Abutment E-5 (all beams simultaneously) until there is no contact between the superstructure and backwall end dam angles. All material, labor and equipment required to accomplish the above shall be included with Item 202, Portions of Structures Removed, for payment.
3. Remove approximately 1 foot of the top of the backwall.
4. Reset bearings. (See Sheet CD-7)
5. Release jacks.
6. Remove the remaining portions of the backwall, including reinforcement, except as noted, within the limits of phase construction.
7. Replace the backwall within the limits of the phase construction using the existing superstructure end dam angle to set the new backwall. In setting the top of backwall end dam angle, care shall be exercised to insure proper seating of the superstructure and expansion joint.

Notes:

Indicates existing portions of abutment to remain.

Excavation, backfill (except Porous Backfill) and paved berm removal necessary to accomplish structure modification shall be included with Item 202, Portions of Structures Removed, for payment. Backfill shall be in accordance with Item 203.

For details of backwall expansion joint angle not shown, see Ohio Standard Drawing SD-1-69, Sheet 1 of 4.

For phase construction sequence, see Maintenance Of Traffic and Suggested Shoring at Abutment E-5, Sheet 2 5.

For threaded insert detail and reinforcement schedule, see Sheet CD-10.

For modification of curb plates, see Sheet CD-9.

The following abbreviations are used:

ef = each face
ff = far face
Typ. = Typical

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ABUTMENT E-5

I-90 OVER EAST 9th STREET

BR. NO. CUY-90-1628 STA. 58+79.98
STA. 61+16.05

CUYAHOGA COUNTY OHIO

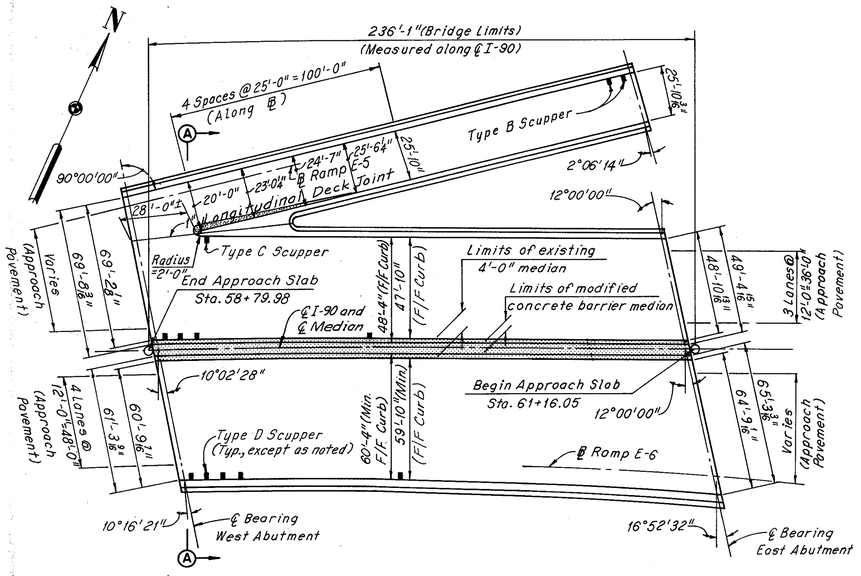
DRAWN	TRACED	CHECKED	REVIEWED	REVISED
C.P.	C.P.	R.C.K. K.C.K.B.		
DATE 6-8-76	DATE 6-15-76	DATE 6-18-76	DATE	SHEET 3 5

RECEIVED
RECEIVED
JAN 14 1978

FHWA REGION	STATE	PROJECT	
5	OHIO		

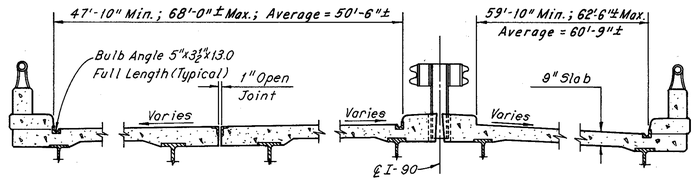
150
169

CUYAHOGA COUNTY
CUY-77-14.12
CUY-90-16.21

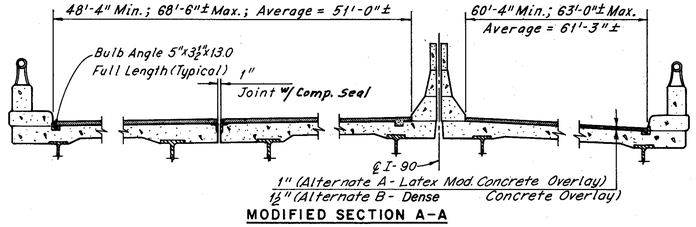


EXISTING AND MODIFIED PLAN

Indicates removal

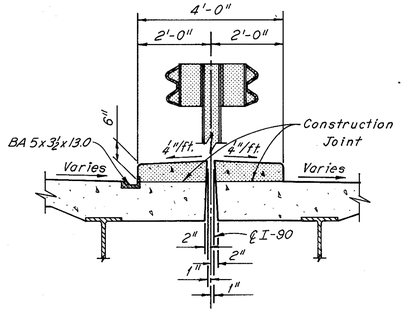


EXISTING SECTION A-A



MODIFIED SECTION A-A

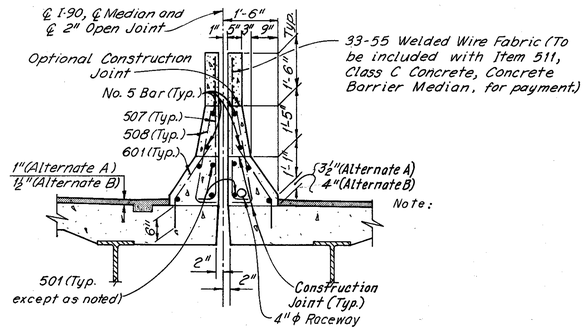
- Remove guardrails, posts, nuts, plates and anchor plates above the construction joint. Include with Item 202, Portions of Structures Removed, for payment.
- Remove existing median above the construction joint. Include with Item 202, Portions of Structures Removed, for payment.
- Remove bulb angle gutter. Include with Item 202, Portions of Structures Removed, for payment.
- **Remove Portion Of Median Separating Ramp E-5 And I-90 W.B. As Shown Above.** Removal and dressing finished face included with Item 202, portions of of structures removed, for payment.



TYPICAL EXISTING MEDIAN CROSS SECTION

Indicates removal

(For Post Anchor Detail, see Sheet CD-6).



TYPICAL MODIFIED MEDIAN CROSS SECTION

Note: All reinforcing bar marks shall be prefixed GM.

Notes:

For schematic plan and bridge locations, see Sheet 122.

For expansion joint modification at the median, see Sheets CD-1 and CD-2.

For details of raising existing end dams, see Sheet CD-6.

For details of resurfacing, see Sheets CD-5 and CD-8.

For details of deflection joints in the concrete barrier median, see Sheet CD-6.

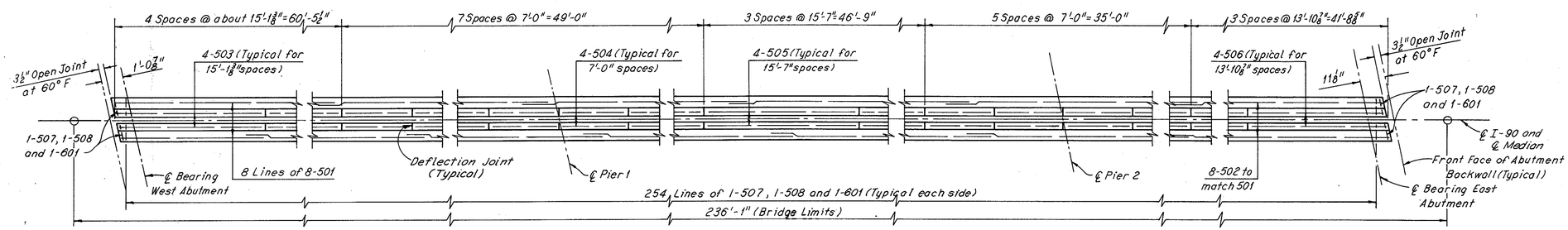
For details of raising longitudinal deck joint, see Sheet CD-7.

For spacing of dowel holes for 601 bars and concrete barrier median reinforcement, see Sheet CD-6.

For details of raising existing scuppers, see Sheet CD-8.

For reinforcement schedule, see Sheet CD-10.

The following abbreviation is used:
Typ. = Typical



DEVELOPED CONCRETE BARRIER MEDIAN PLAN

For details of Compression Seal see sheet CD-7.

Rev. 10-26-78

HOWARD, NEEDLES, TAMMEN & BERGENDOFF CONSULTING ENGINEERS CLEVELAND — HNTB

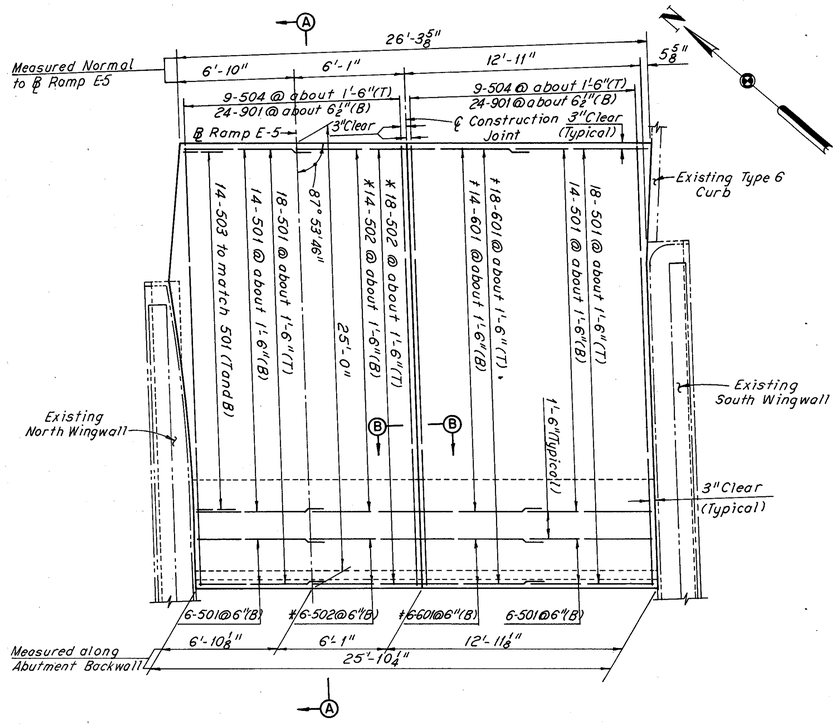
EXISTING AND MODIFIED DECK PLAN AND MEDIAN

I-90 OVER EAST 9th STREET

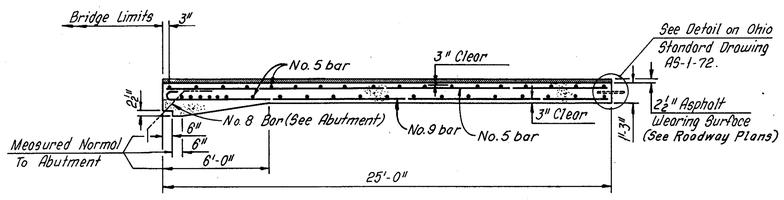
BR. NO. CUY - 90-1628 STA. 58+79.98
STA. 61+16.05

CUYAHOGA COUNTY OHIO

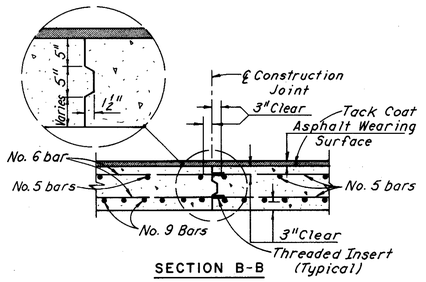
DRAWN	TRACED	CHECKED	REVIEWED	REVISED
J.A.B.	R.C.K.	A.N.J.H.S.		
DATE 11-15-74	DATE 1-17-77	DATE 2-10-77	DATE	SHEET 4 5



APPROACH SLAB PLAN



SECTION A-A

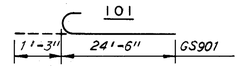


SECTION B-B

* Weld to threaded insert.
† Thread one end for connection to threaded insert.

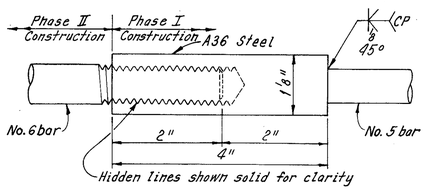
Note: All reinforcing bar marks shall be prefixed G5.

REINFORCEMENT SCHEDULE				
MARK	NO.	LENGTH	TYPE	SER. INCR.
GS501	76	7'-0"	Str.	
GS502	38	6'-6"	Str.*	
GS503	28	2'-6"	Str.	
GS504	18	24'-6"	Str.	
GS601	38	7'-6"	Str.†	
GS901	48	25'-9"	101	



REINFORCING STEEL SAMPLES

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.



THREADED INSERT DETAIL

(Threads are to be Unified Standard Series for Basic Major Diameter of 3/4".)

Note:
Recess Plugs shall be provided in the threaded inserts during Phase I Construction.

Note:
Both the welded and threaded connection shall be capable of developing 125 per cent of the yield strength of the smaller bar connected. Random samples to be submitted for testing.

Note:
The jacking holes as called for on Ohio Standard Drawing AS-1-72 are not required.

Notes:
For phase construction sequence, see Maintenance Of Traffic, Sheet 2 / 5 .
The following abbreviations are used:
T = Top
B = Bottom
Typ. = Typical
For additional notes and details, see Ohio Standard Drawing AS-1-72.

FED. RD. DIVISION	STATE	PROJECT	
5	OHIO		

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CUYAHOGA COUNTY
CUY-77-14.12
CUY-90-16.21

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS CLEVELAND
HNTB

APPROACH SLAB
ABUTMENT E-5
I-90 OVER EAST 9th STREET

BR. NO. CUY - 90-1628 STA. 58+79.98
STA. 61+16.05

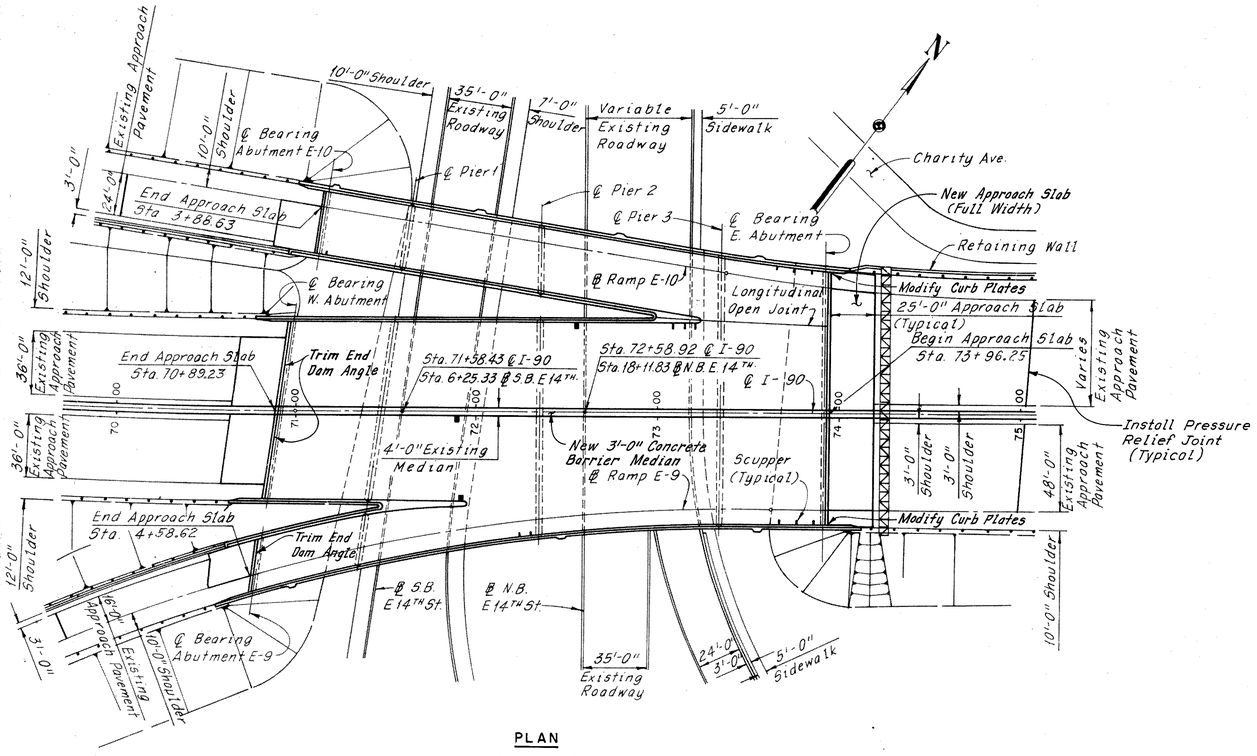
CUYAHOGA COUNTY OHIO

DRAWN	TRACED	CHECKED	REVIEWED	REVISED
R.C.K.	R.A.S.	R.A.S. R.C.K.B.		
DATE 5-27-76	DATE 5-28-76	DATE 6-11-76	DATE	SHEET 5 / 5

FHWA REGION	STATE	PROJECT	
5	OHIO		

152
169

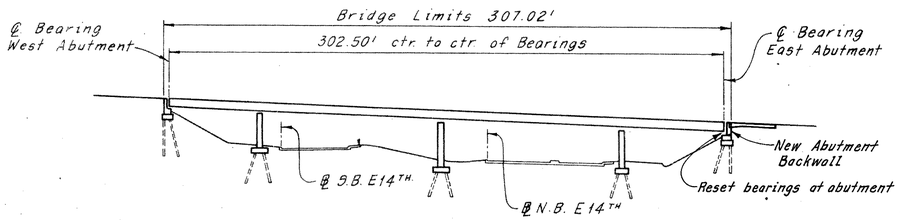
CUYAHOGA COUNTY
CUY-77-14.12
CUY-90-16.21



PLAN

40 0 40 80

SCALE IN FEET



ELEVATION

40 0 40 80

SCALE IN FEET

EXISTING STRUCTURE	
TYPE:	Continuous Welded Steel Girder with Reinforced Concrete Deck, Piers and Abutments
SPANS:	55'-0", 88'-6", 99'-0" and 60'-0" (Measured along ℄ I-90)
ROADWAY:	Varies
LOADING:	CF-2000-57 (Adequate for AASHTO Alternate Loading)
SKEW:	Varies
WEARING SURFACE:	1¾" Low Water, Low Slump, Dense Concrete
APPROACH SLABS:	AS-1-54 (25' long)
ALIGNMENT:	1°30' Left and Tangent
SUPERELEVATION:	Varies

MODIFIED STRUCTURE	
TYPE:	Continuous Welded Steel Girder with Reinforced Concrete Deck, Piers and Abutments
SPANS:	55'-0", 88'-6", 99'-0" and 60'-0" (Measured along ℄ I-90)
ROADWAY:	Varies with a 3'-0" Barrier Median
LOADING:	CF-2000-57 (Adequate for AASHTO Alternate Loading)
SKEW:	Varies
WEARING SURFACE:	1¾" Dense Concrete
APPROACH SLABS:	AS-1-54 (25' long, typical except as noted) AS-1-72 (25' long, East Abutment)
ALIGNMENT:	1°30' Left and Tangent
SUPERELEVATION:	Varies

PROPOSED WORK:

1. Install pressure relief joints in approach roadway pavement, see Roadway Plans.
2. Trim expansion joints at the West Abutment and Abutment E-9, see Sheet CD-7.
3. Replace backwall at East Abutment, see Sheets 5/8 and 6/8.
4. Modify curb plates at East Abutment, see Sheet CD-9.
5. Reset bearings at East Abutment, see Sheets 5/8, 6/8 and CD-7.
6. Replace approach slab adjacent to East Abutment, see Sheet 8/8.
7. Replace deep beam barrier median with concrete barrier median, see Sheet 7/8.
8. Repair deck as required at median and place concrete overlay, see Sheet CD-5.

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CONSULTING ENGINEERS CLEVELAND

HNTB

SITE PLAN

I-90 OVER EAST 14th STREET

BR. NO. CUY-90-1651 STA. 70+89.23
STA. 73+96.25

CUYAHOGA COUNTY OHIO

DRAWN	TRACED	CHECKED	REVIEWED	REVISED
C.K.B. DATE 2-16-77	W.E.B. DATE 3-3-77	C.H.B. DATE 3-11-77	DATE	SHEET 1/8

FHWA REGION	STATE	PROJECT	
5	OHIO		

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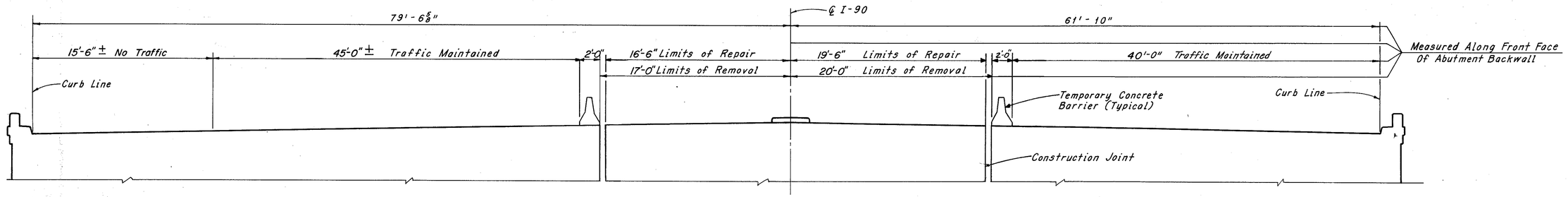
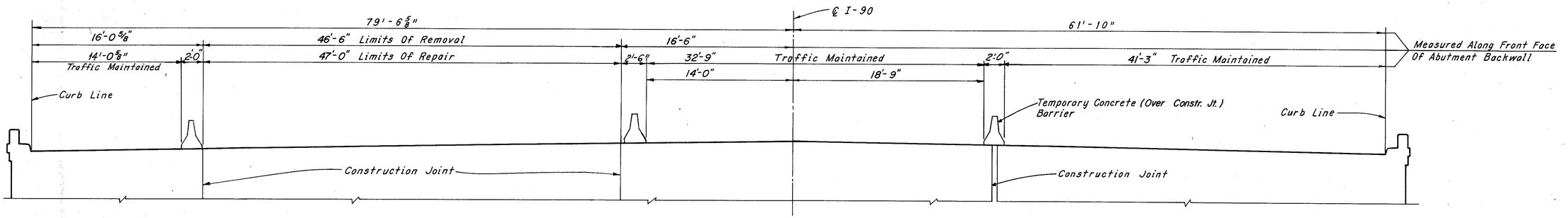
CUYAHOGA COUNTY
CUY - 77 - 14.12
CUY - 90 - 16.21



PHASE IB CONSTRUCTION
(Looking East at East Abutment)



PHASE II CONSTRUCTION
(Looking East at East Abutment)

Notes:

The phase construction views apply within the bridge and approach slab limits. All repair work shall be co-ordinated with the phase construction as shown.

The maintenance of traffic as shown is for the backwall and approach slab replacement only. For traffic maintenance during installation of the permanent concrete barrier at ℄ I-90, and trimming of the end dams, see Roadway Plans.

For maintenance of traffic notes, see Roadway Plans.

For shoring at approach slabs, see Sheet 4 | 8.

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS CLEVELAND
HNTB

MAINTENANCE OF TRAFFIC PHASES IB AND II CONSTRUCTION

I-90 OVER EAST 14th STREET

BR. NO. CUY - 90-1651 STA. 70+89.23
STA. 73+96.25

CUYAHOGA COUNTY OHIO

DRAWN	TRACED	CHECKED	REVIEWED	REVISED
R.A.S.	C.P.	C.K.B.		
DATE 6-7-76	DATE 6-17-76	DATE 3-14-77	DATE	SHEET 2 | 8

FHWA REGION	STATE	PROJECT	
5	OHIO		

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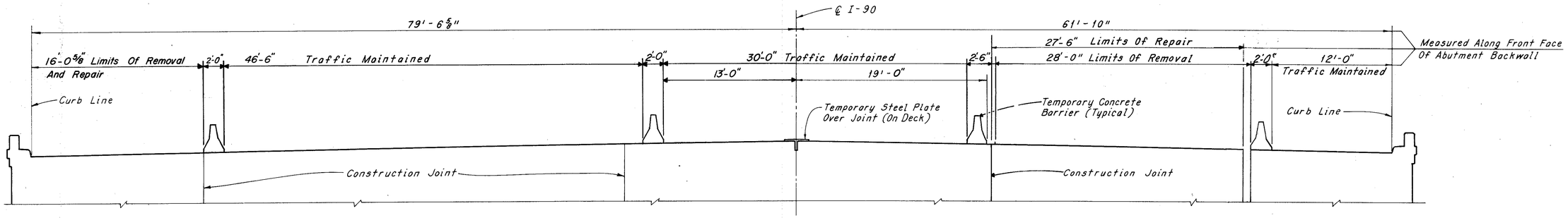
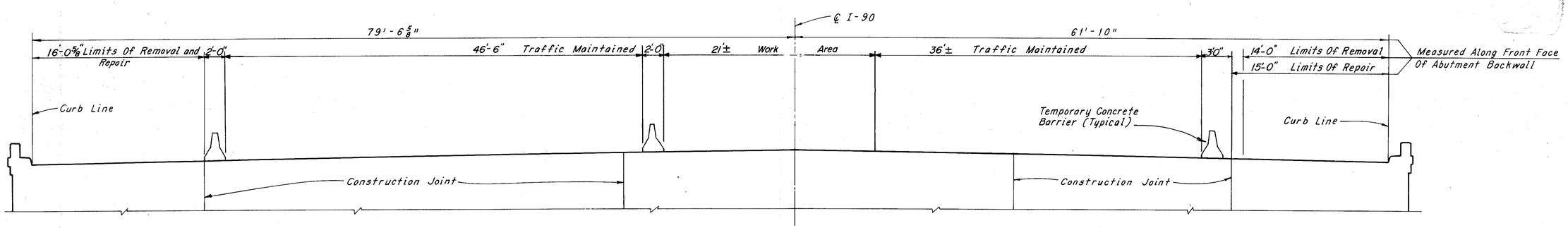
CUYAHOGA COUNTY
CUY - 77 - 14.12
CUY - 90 - 16.21



PHASE III CONSTRUCTION
(Looking East at East Abutment)



PHASE IV CONSTRUCTION
(Looking East at East Abutment)

Note:
For notes, see Sheet 2 / 8.

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CONSULTING ENGINEERS CLEVELAND
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MAINTENANCE OF TRAFFIC PHASES III AND IV CONSTRUCTION

I-90 OVER EAST 14th STREET

BR. NO. CUY - 90-1651
STA. 70+89.23
STA. 73+96.25

CUYAHOGA COUNTY OHIO

DRAWN	TRACED	CHECKED	REVIEWED	REVISED
R.A.S.	C.F.	C.K.B.		
DATE 6-8-76	DATE 6-18-76	DATE 7-14-77	DATE	SHEET 3 / 8

FHWA REGION	STATE	PROJECT	
5	OHIO		

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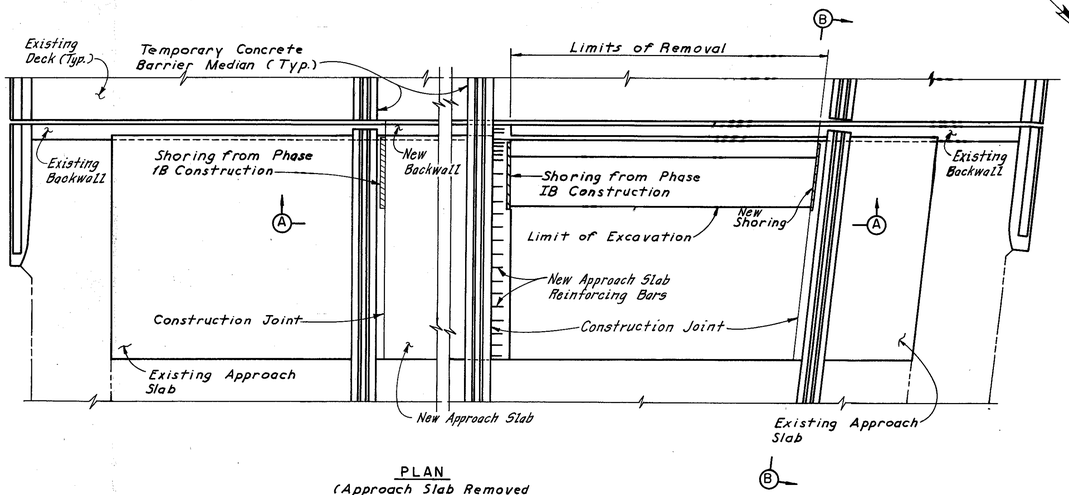
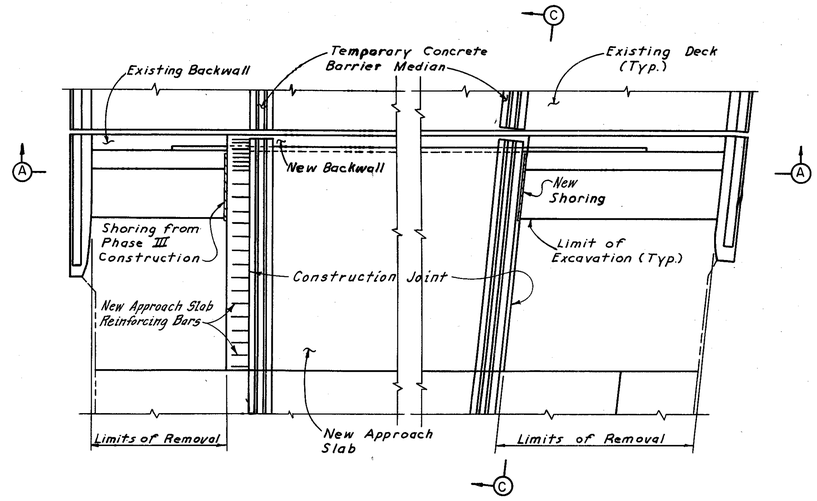
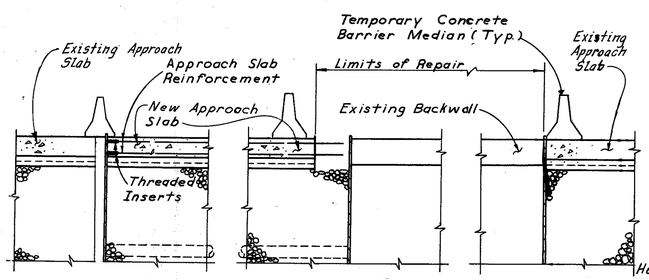
CUYAHOGA COUNTY
CUY - 77 - 14.12
CUY - 90 - 16.21



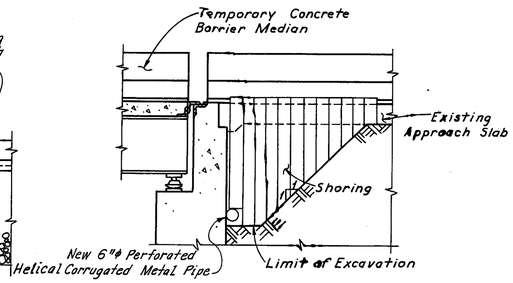
PLAN
(Approach Slab Removed
Excavation Complete)



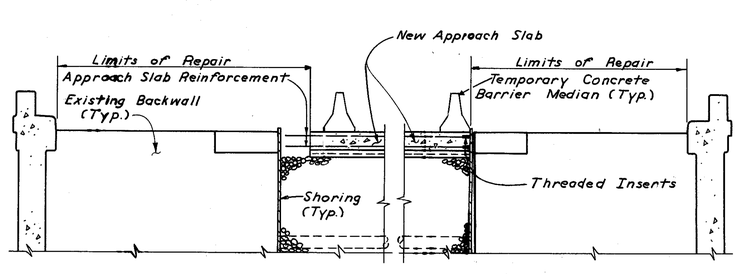
PLAN
(Approach Slab Removed
Excavation Complete)



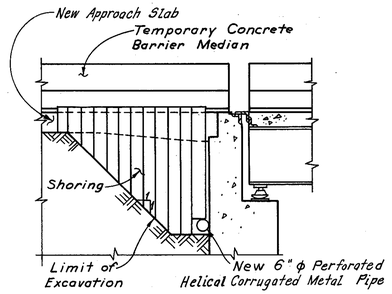
SECTION A-A



SECTION B-B
(Reinforcement not shown)



SECTION A-A



SECTION C-C
(Reinforcement not shown)

PHASE II CONSTRUCTION

PHASE IV CONSTRUCTION

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS CLEVELAND
HNTB

SUGGESTED SHORING AT EAST APPROACH SLAB

I-90 OVER EAST 14th STREET

BR. NO. CUY - 90-1651
STA. 70+89.23
STA. 73+96.25

CUYAHOGA COUNTY OHIO

DRAWN	TRACED	CHECKED	REVIEWED	REVISED
R.A.S.	R.A.S.	C.P.		
DATE 6-10-76	DATE 6-14-76	DATE 6-18-76	DATE	SHEET 4 / 8

FHWA REGION	STATE	PROJECT	
5	OHIO		

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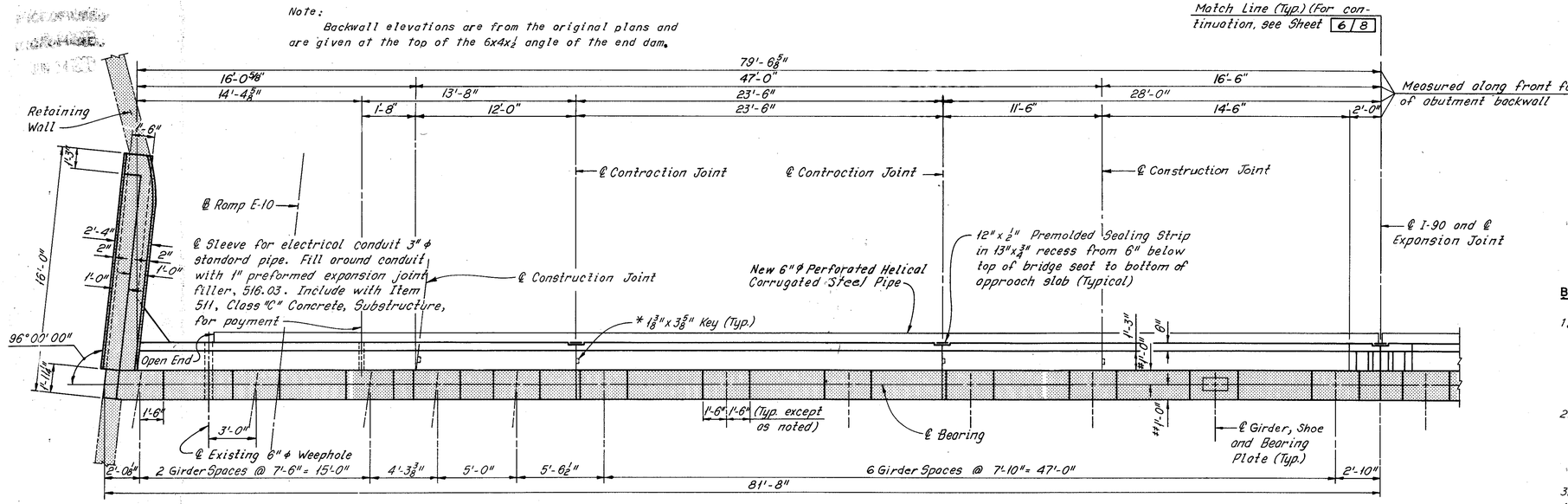
CUYAHOGA COUNTY
CUY - 77 - 14.12
CUY - 90 - 16.21

Note:
Backwall elevations are from the original plans and are given at the top of the 6x4x½ angle of the end dam.

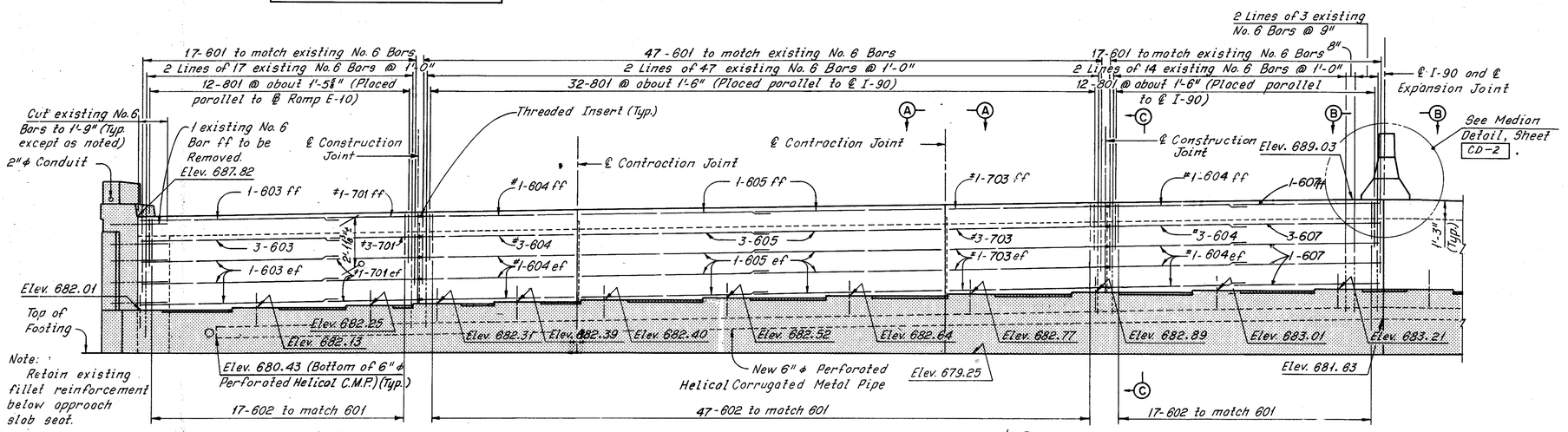


MODIFIED PART PLAN

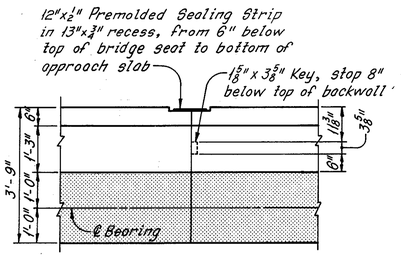
Note: All reinforcing bar marks shall be prefixed JA.

* Stop 8" below top of backwall.
# Weld to threaded insert.
‡ Thread one end for connection to threaded insert.

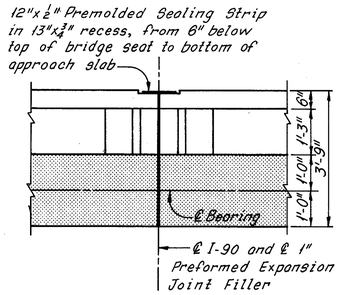
Original plan dimension, the actual dimensions shall be those which result when the bearings are set in their final position.



MODIFIED PART ELEVATION



VIEW A-A



VIEW B-B

BACKWALL REPLACEMENT PROCEDURE:

1. Bridge the backwall with an adequate steel plate within the area of maintained traffic. Provide bituminous wearing surface cover, as directed by the Engineer, to permit and maintain safe passage of vehicular traffic. The steel plate and bituminous cover shall be included with Item 614, Maintaining Traffic, for payment (see Roadway Plans).
2. Raise the entire superstructure at the abutment (all girders simultaneously) until there is no contact between the superstructure and backwall end dam angles. All material, labor and equipment required to accomplish the above shall be included with Item 202, Portions of Structures Removed, for payment.
3. Remove approximately 1 foot of the top of the backwall.
4. Reset bearings (See Sheet CD-7).
5. Release jacks.
6. Remove the remaining portions of the backwall, including reinforcement, except as noted, within the limits of phase construction.
7. Replace the backwall within the limits of the phase construction using the existing superstructure end dam angle to set the new backwall. In setting the top of backwall end dam angle, care shall be exercised to insure proper seating of the superstructure and expansion joint.

Notes:
Indicates existing portions of abutment to remain.
For Existing and Modified Section C-C, see Sheet 6 8.
For phase construction sequence, see Maintenance Of Traffic, Sheets 2 8 and 3 8.
For suggested shoring required at approach slabs, see Sheet 4 8.
For expansion joint modification at the median, see Sheets CD-1 and CD-2.
For modification of curb plates, see Sheet CD-9.
For Reinforcement Schedule, see Sheet CD-10.
For Threaded Insert Detail, see Sheet CD-10.
The following abbreviations are used:
ef = each face
ff = far face
Typ. = Typical
Elev. = Elevation

HOWARD, NEEDLES, TAMMEN & BERGENDOFF CONSULTING ENGINEERS CLEVELAND — HNTB

EAST ABUTMENT

I-90 OVER EAST 14th STREET

BR. NO. CUY - 90 - 1651 STA. 70+89.23
STA. 73+96.25

CUYAHOGA COUNTY OHIO

DRAWN	TRACED	CHECKED	REVIEWED	REVISED
B.P. DATE 5-26-76	B.P. DATE 6-1-76	R.C.K. DATE 6-15-76	DATE	SHEET 5 8

FHWA REGION	STATE	PROJECT	
5	OHIO		

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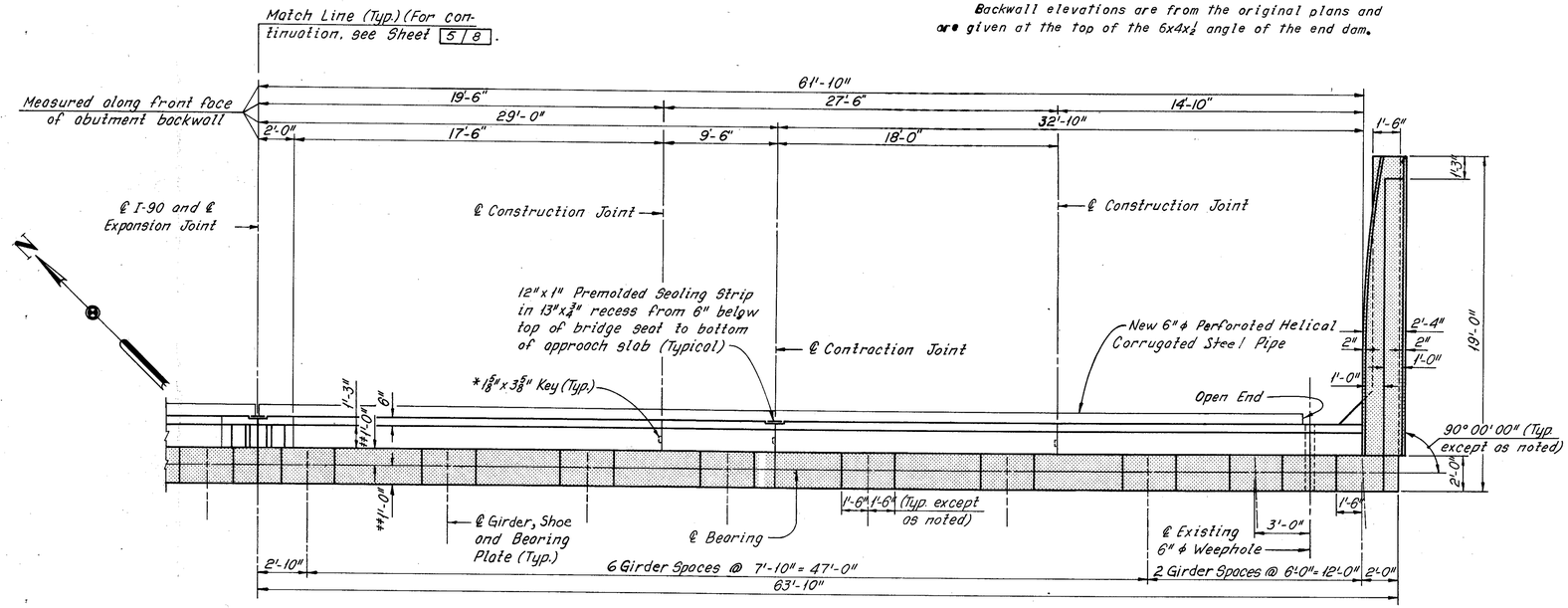
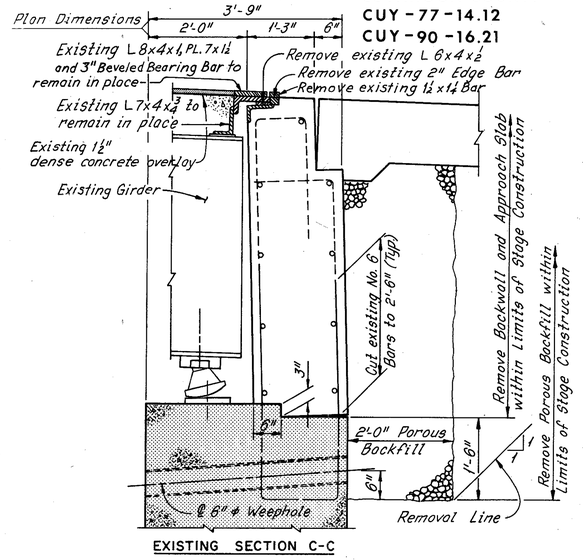
CUYAHOGA COUNTY
CUY - 77 - 14.12
CUY - 90 - 16.21

Note:
Backwall elevations are from the original plans and are given at the top of the 6x4x½ angle of the end dam.





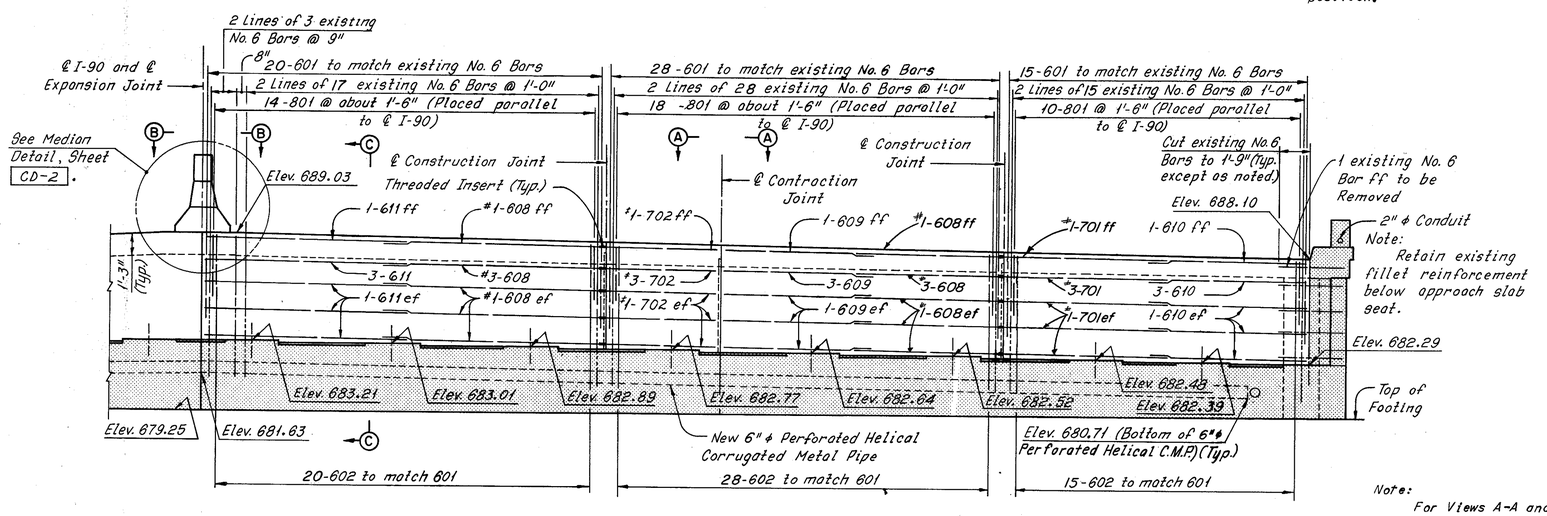
EXISTING SECTION C-C

Note: All reinforcing bar marks shall be prefixed JA.

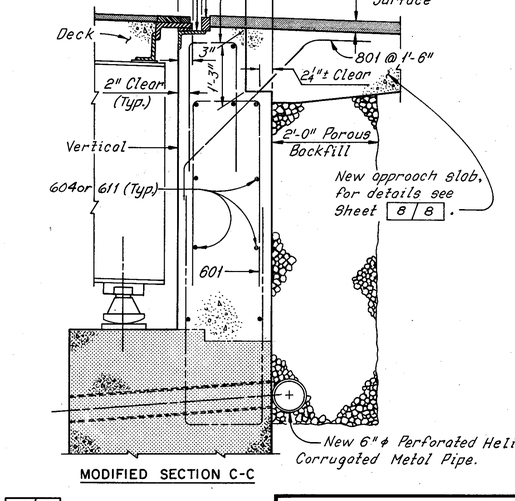
MODIFIED PART PLAN

* Stop 8" below top of backwall.
\# Weld to threaded insert.
‡ Thread one end for connection to threaded insert.

\#\# Original plan dimension, the actual dimensions shall be those which result when the bearings are set in their final position.



MODIFIED PART ELEVATION



MODIFIED SECTION C-C

Note:
For Views A-A and B-B, see Sheet 5/8.
For Backwall Replacement Procedure, see Sheet 5/8.
Excavation, backfill (except Porous Backfill) and paved berm removal necessary to accomplish structure modification shall be included with Item 202, Portions of Structures Removed, for payment. Backfill shall be in accordance with Item 203.
For details of backwall expansion joint angle not shown, see Ohio Standard Drawing SD-1-69, Sheet 1 of 4.
For additional notes, see Sheet 5/8.

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS CLEVELAND
HNTB

EAST ABUTMENT

I-90 OVER EAST 14th STREET

BR. NO. CUY - 90 - 1651 STA. 70+89.23
STA. 73+96.25

CUYAHOGA COUNTY OHIO

DRAWN	TRACED	CHECKED	REVIEWED	REVISED
B.P.	B.P.	R.C.H.		
DATE 5-26-76	DATE 6-1-76	DATE 6-15-76	DATE	SHEET 6 8

FHWA REGION	STATE	PROJECT	
5	OHIO		

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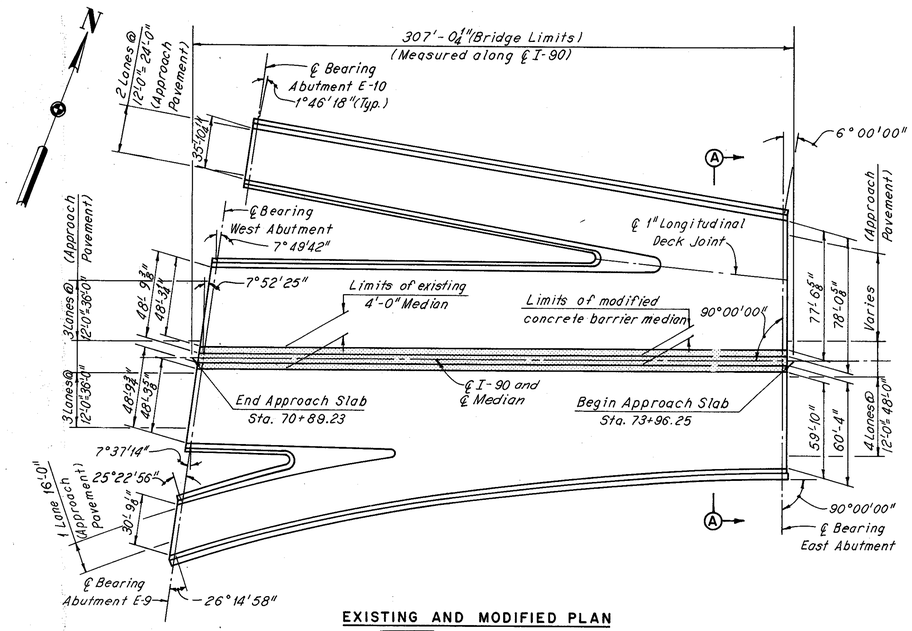
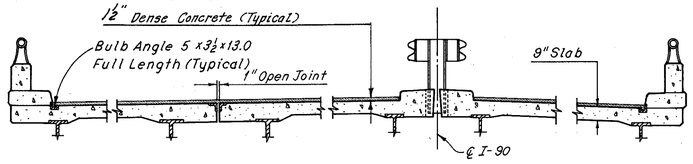
CUYAHOGA COUNTY
CUY-77-14.12
CUY-90-16.21

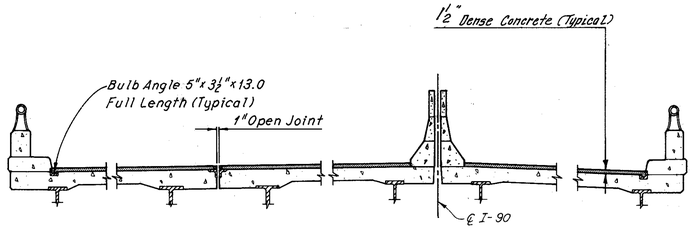


EXISTING AND MODIFIED PLAN

Indicates removal
(Scuppers not shown)

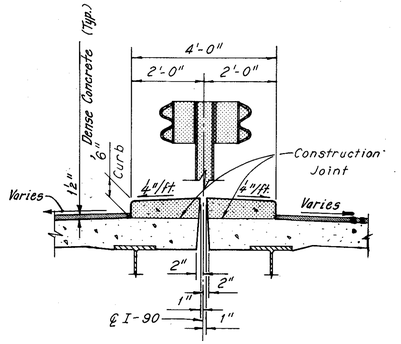


EXISTING SECTION A-A



MODIFIED SECTION A-A

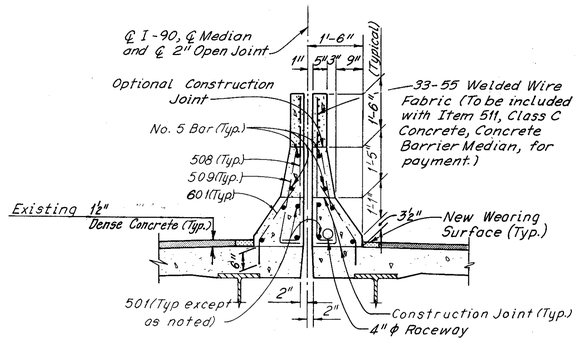
- Remove guardrails, posts, nuts, plates and anchor plates above the construction joint. Include with Item 202, Portions of Structures Removed, for payment.
- Remove existing median above the construction joint. Include with Item 202, Portions of Structures Removed, for payment.
- Remove Existing Bulb Angle Gutter At Median And Approximately Six Inches Of The Adjacent Wearing Course. Include With Item 202, Portions Of Structures Removed, For Payment.



TYPICAL EXISTING MEDIAN CROSS SECTION

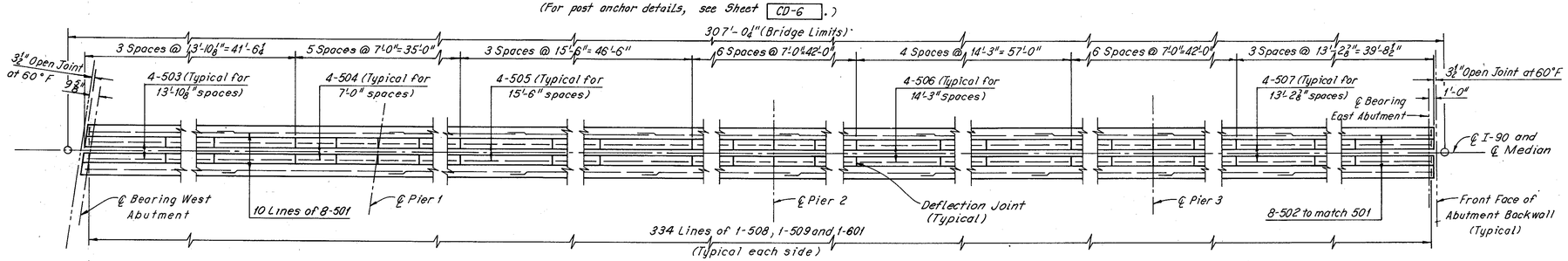
Indicates removal

(For post anchor details, see Sheet CD-6.)



TYPICAL MODIFIED MEDIAN CROSS SECTION

Note: All reinforcing bar marks shall be prefixed JM.



DEVELOPED CONCRETE BARRIER MEDIAN PLAN

Notes:

For schematic plan and bridge locations, see Sheet 122.

For expansion joint modification of the median, see Sheets CD-1 and CD-2.

For details of resurfacing, see Sheet CD-5.

For details of deflection joints in the concrete barrier median, see Sheet CD-6.

For spacing of dowel holes for 601 bars and concrete barrier median reinforcement, see Sheet CD-6.

For reinforcement schedule, see Sheet CD-10.

The following abbreviation is used:
Typ. = Typical

HOWARD, NEEDLES, TAMMEN & BERGENDOFF CONSULTING ENGINEERS CLEVELAND — HNTB

EXISTING AND MODIFIED DECK PLAN AND MEDIAN
I-90 OVER EAST 14th STREET

BR. NO. CUY-90-1651 STA. 70+89.23
STA. 73+96.25

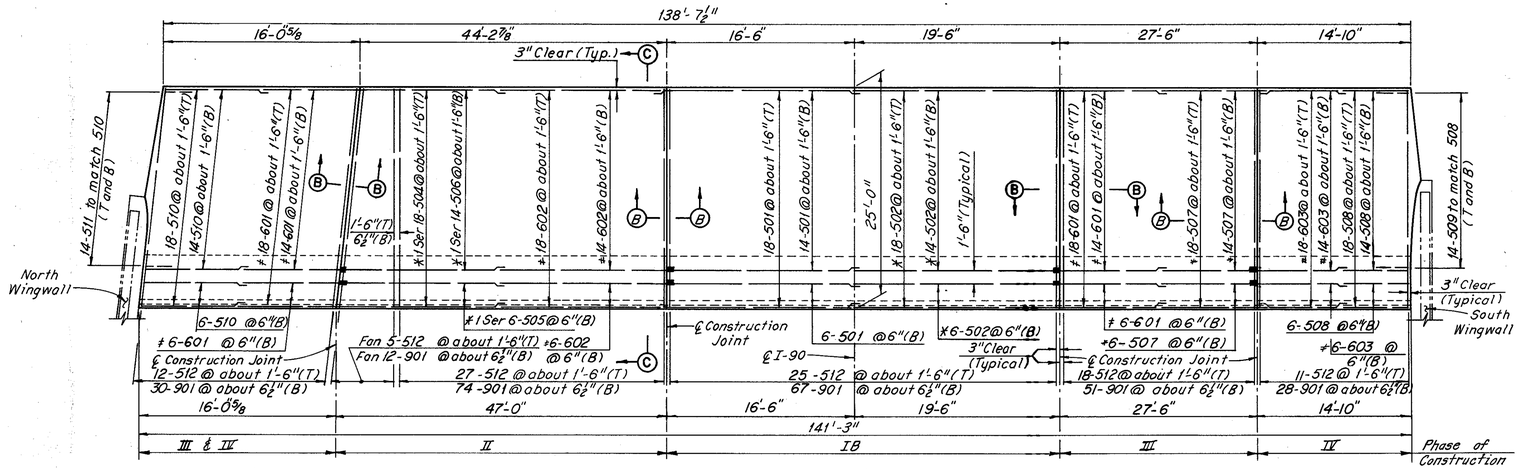
CUYAHOGA COUNTY OHIO

DRAWN	TRACED	CHECKED	REVIEWED	REVISED
W.H.L.	R.C.K.	JAB. & C.K.B.		
DATE 1-6-75	DATE 1-8-75	DATE 1-29-75	DATE	SHEET 7 8

FHWA REGION	STATE	PROJECT	
5	OHIO		

159
169

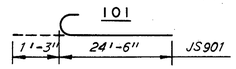
CUYAHOGA COUNTY
CUY - 77 - 14.12
CUY - 90 - 16.21

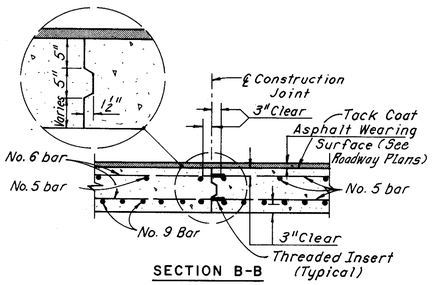


APPROACH SLAB PLAN

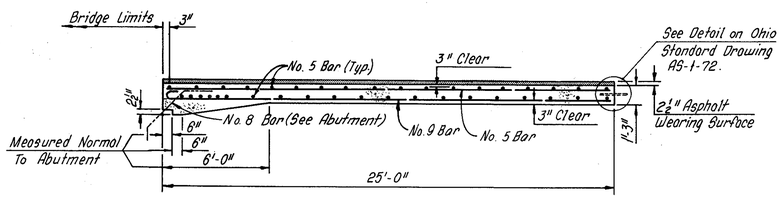
REINFORCEMENT SCHEDULE				
MARK	NO.	LENGTH	TYPE	SER. INCR.
*JS501	38	17'-0"	Str.	
*JS502	38	20'-0"	Str.	
*JS504	1 Ser 18	~~26'-3"~~ ~~25'-9"~~	Str.	1¾"
*JS505	1 Ser 6	~~26'-3"~~ ~~26'-9"~~	Str.	2"
*JS506	1 Ser 14	~~25'-9"~~ ~~25'-9"~~	Str.	1⅛"
*JS507	38	17'-3"	Str.	
JS508	38	9'-3"	Str.	
JS509	28	21'-3"	Str.	
JS510	38	6'-0"	Str.	
JS511	28	21'-0"	Str.	
JS512	98	241'-6"	Str.	
*JS601	76	11'-9"	Str.	
+JS602	38	22'-3"	Str.	
+JS603	38	7'-0"	Str.	
JS901	262	25'-9"	101	

603 ǂ 901





SECTION B-B



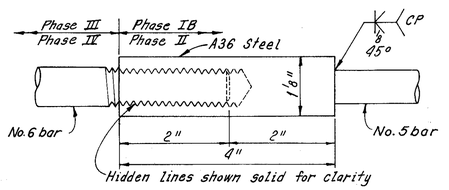
SECTION C-C

* Weld to threaded insert.
ǂ Thread one end for connection to threaded insert.

Note: All reinforcing bar marks shall be prefixed JS.

Note:
The jacking holes as called for on Ohio Standard Drawing AS-1-72 are not required.

Note:
Recess plugs shall be provided in the threaded inserts during Phase IB and Phase II Construction.



THREADED INSERT DETAIL

(Threads are to be Unified Standard Series for Basic Major Diameter of ¾".)

Note:
Both the welded and threaded connection shall be capable of developing 125 per cent of the yield strength of the smaller bar connected. Random samples to be submitted for testing.

REINFORCING STEEL SAMPLES

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.

Notes:
For phase construction sequence, see Maintenance Of Traffic, Sheets 2 / 8 and 3 / 8 .
For details of median barrier transition, see Roadway Plans.
The following abbreviations are used:
T = Top
B = Bottom
Typ. = Typical
For additional notes and details, see Ohio Standard Drawing AS-1-72.

HOWARD, NEEDLES, TAMMEN & BERGENDOFF CONSULTING ENGINEERS CLEVELAND — HNTB

APPROACH SLAB
EAST ABUTMENT
I-90 OVER EAST 14th STREET

BR. NO. CUY - 90-1651
STA. 70+89.23
STA. 73+96.25

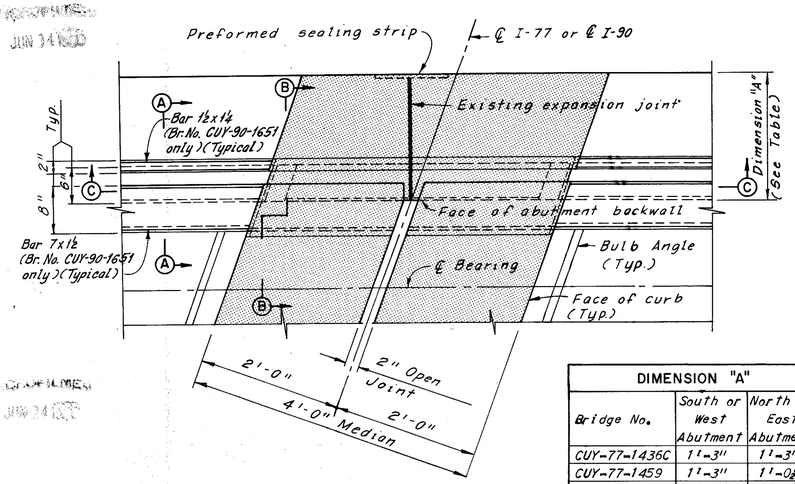
CUYAHOGA COUNTY — OHIO

DRAWN	TRACED	CHECKED	REVIEWED	REVISED
R.C.K.	R.C.K.	B.P.&D.H.S.		
DATE 6-3-76	DATE 6-7-76	DATE 6-11-76	DATE	SHEET 8 | 8

FHWA REGION	STATE	PROJECT	
5	OHIO		

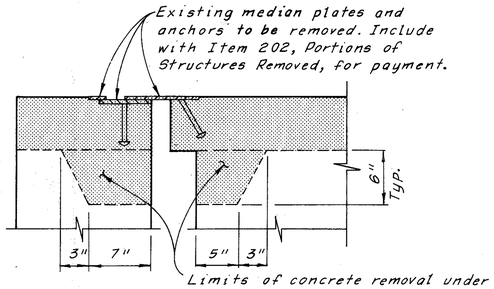
160
169

CUYAHOGA COUNTY
CUY-77-14.12
CUY-90-16.21



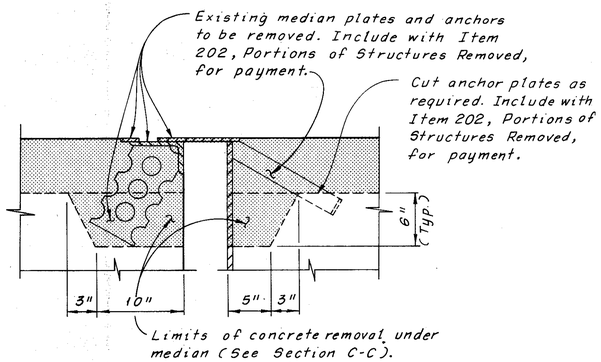
PLAN

DIMENSION "A"		
Bridge No.	South or West Abutment	North or East Abutment
CUY-77-1436C	1'-3"	1'-3"
CUY-77-1459	1'-3"	1'-0¼"
CUY-77-1519	1'-2⅛"	1'-2⅛"
CUY-90-1628	1'-8⅛"	1'-9⅛"
CUY-90-1640	1'-7⅞"	1'-9"
CUY-90-1651	1'-11⅝"	1'-9"



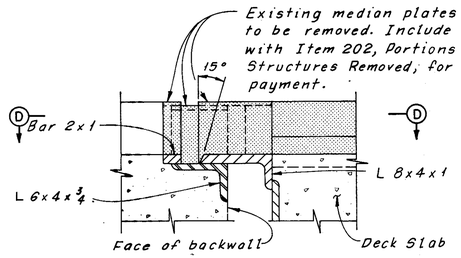
SECTION B-B

BR.NO. CUY-77-1436C
BR.NO. CUY-77-1459
BR.NO. CUY-77-1519



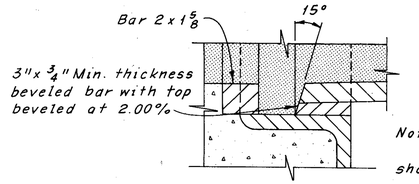
SECTION B-B

BR. NO. CUY-90-1628
BR. NO. CUY-90-1640
BR. NO. CUY-90-1651



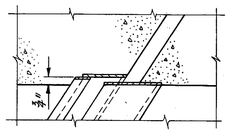
SECTION A-A

BR.NO. CUY-77-1436C, NORTH ABUTMENT
BR.NO. CUY-77-1459
BR.NO. CUY-77-1519



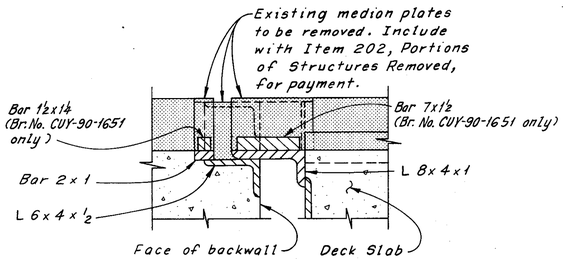
PART SECTION A-A

BR. NO. CUY-77-1436C, SOUTH ABUTMENT



SECTION D-D
BR. NO. CUY-77-1519

(For Section D-D at other bridges, see Plan, this Sheet)

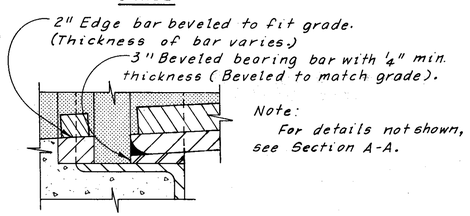


SECTION A-A

BR. NO. CUY-90-1628
BR. NO. CUY-90-1640

3.60% (EAST ABUTMENT)
2.89% (WEST ABUTMENT)

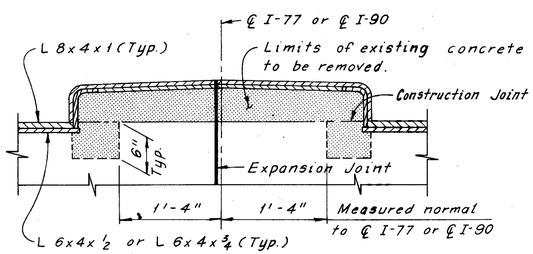
GRADE



PART SECTION A-A

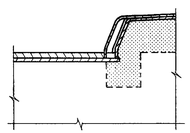
BR. NO. CUY-90-1651

Note:
Existing reinforcing steel below the construction joint shall be retained.

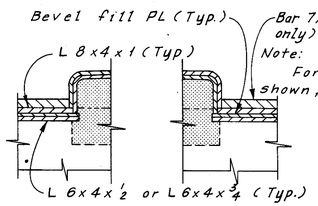


SECTION C-C

(All bridges except Brs. Nos. CUY-77-1519, CUY-90-1651 and at the South Abutment of CUY-77-1436C, see Part Section C-C, this Sheet)



PART SECTION C-C
BR. NO. CUY-77-1519
(For details not shown see Section C-C)



PART SECTION C-C

BR.NO. CUY-77-1436C, SOUTH ABUTMENT AND BR. NO. CUY-90-1651

EXISTING PLAN AND CROSS SECTIONS AT MEDIAN

Indicates Removal

HOWARD, NEEDLES, TAMMEN & BERGENDOFF CONSULTING ENGINEERS CLEVELAND — HNTB

EXPANSION JOINT DETAILS AT MEDIAN (EXISTING)

BR.NO. CUY-77-1436C BR. NO. CUY-90-1628
BR.NO. CUY-77-1459 BR. NO. CUY-90-1640
BR.NO. CUY-77-1519 BR. NO. CUY-90-1651
CUYAHOGA COUNTY OHIO

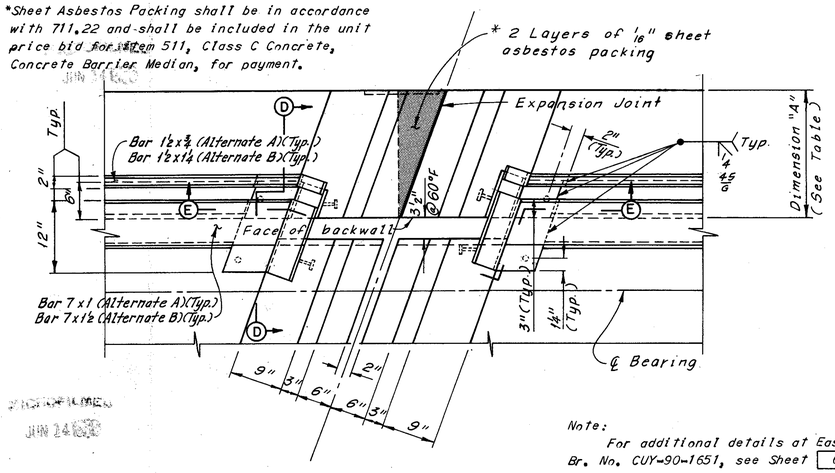
DRAWN CKB	TRACED JJT	CHECKED J.A.B.	REVIEWED	REVISED
DATE 2-6-75	DATE 2-7-75	DATE 2-14-75	DATE	SHEET CD-1

FHWA REGION	STATE	PROJECT	
5	OHIO		

161 / 169

CUYAHOGA COUNTY
CUY-77-14.12
CUY-90-16.21

*Sheet Asbestos Packing shall be in accordance with 711.22 and shall be included in the unit price bid for Item 511, Class C Concrete, Concrete Barrier Median, for payment.



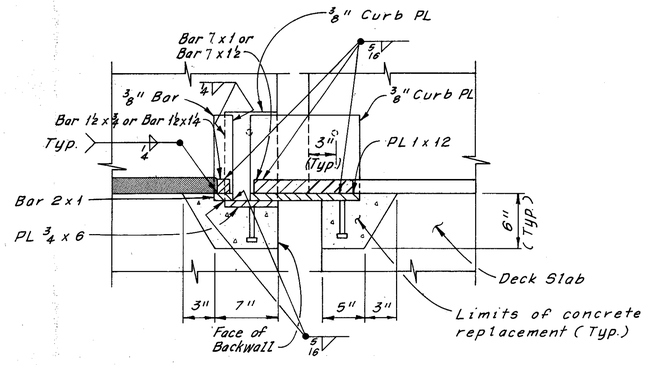
DIMENSION "A"		
Bridge No.	South or West Abutment	North or East Abutment
CUY-77-1436C	1'-3"	1'-3"
CUY-77-1459	1'-3"	1'-0⅛"
CUY-77-1519	1'-2⅜"	1'-2⅛"
CUY-90-1628	1'-8⅛"	1'-9⅛"
CUY-90-1640	1'-7⅞"	1'-9"
CUY-90-1651	1'-11⅜"	1'-3"

MEDIAN REINFORCEMENT			
BR. NO.	A Bars	B Bars	C Bars
CUY-77-1436C	AM506	AM507	AM602
CUY-77-1459	BM502	BM501	BM602
CUY-77-1519	CM510	CM511	CM602
CUY-90-1628	GM507	GM508	GM602
CUY-90-1640	HM508	HM509	HM602
CUY-90-1651	JM508	JM509	JM602

Note:
For additional details at East Abutment, Br. No. CUY-90-1651, see Sheet 6 / 8 .

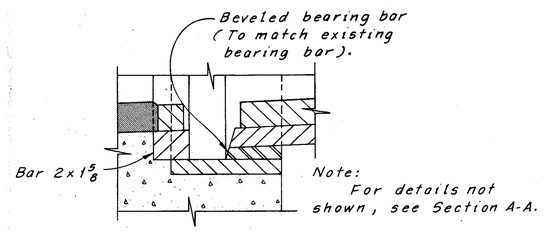
PLAN

▭ Indicates sheet asbestos packing.



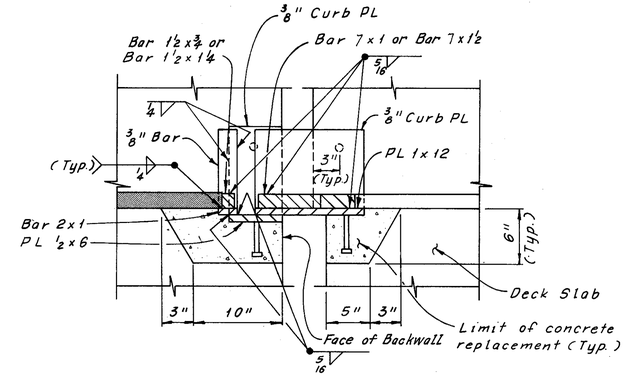
SECTION D-D

▭ Indicates asphalt wearing surface.
BR. NO. CUY-77-1436C, NORTH ABUTMENT
BR. NO. CUY-77-1459
BR. NO. CUY-77-1519



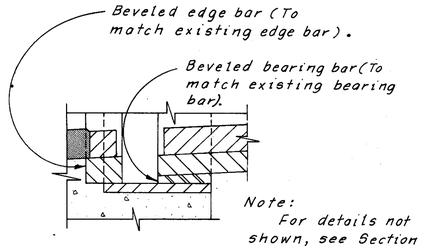
PART SECTION D-D

BR. NO. CUY-77-1436C
SOUTH ABUTMENT



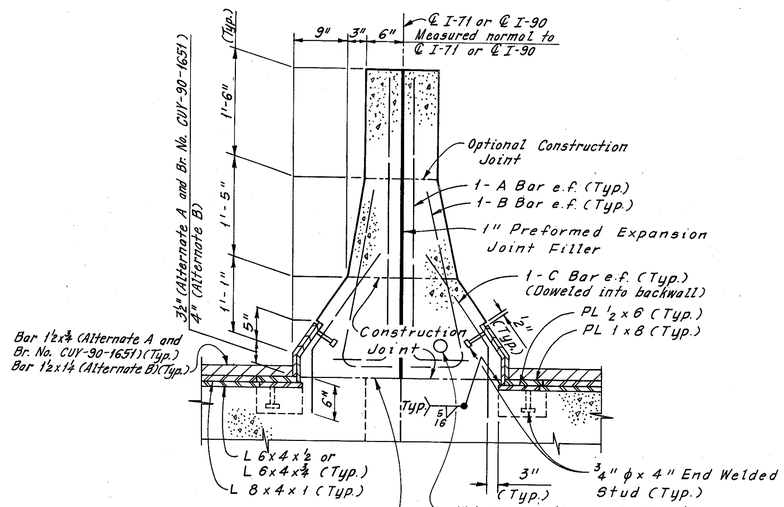
SECTION D-D

▭ Indicates asphalt wearing surface.
BR. NO. CUY-90-1628
BR. NO. CUY-90-1640

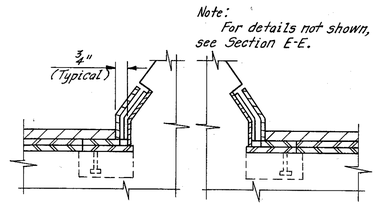


PART SECTION D-D

BR. NO. CUY-90-1651
(Except East Abutment)

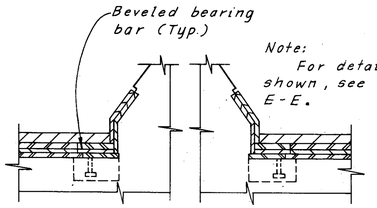


SECTION E-E
(ALL bridges except as noted)



PART SECTION E-E

BR. NO. CUY-77-1519



PART SECTION E-E

BR. NO. CUY-77-1436C
SOUTH ABUTMENT AND
BR. NO. CUY-90-1651

Notes:
For angles and dimensions, see Sheets 2/22, 5/22, 14/22, 22/22, 4/5 and 7/8 .
For reinforcement schedule and bar bending diagrams, see Sheet CO-10 .
The following abbreviations are used:
Typ. = Typical
e.f. = each Face

HOWARD, NEEDLES, TAMMEN & BERGENDOFF CONSULTING ENGINEERS CLEVELAND — HNTB

EXPANSION JOINT DETAILS AT MEDIAN (MODIFIED)

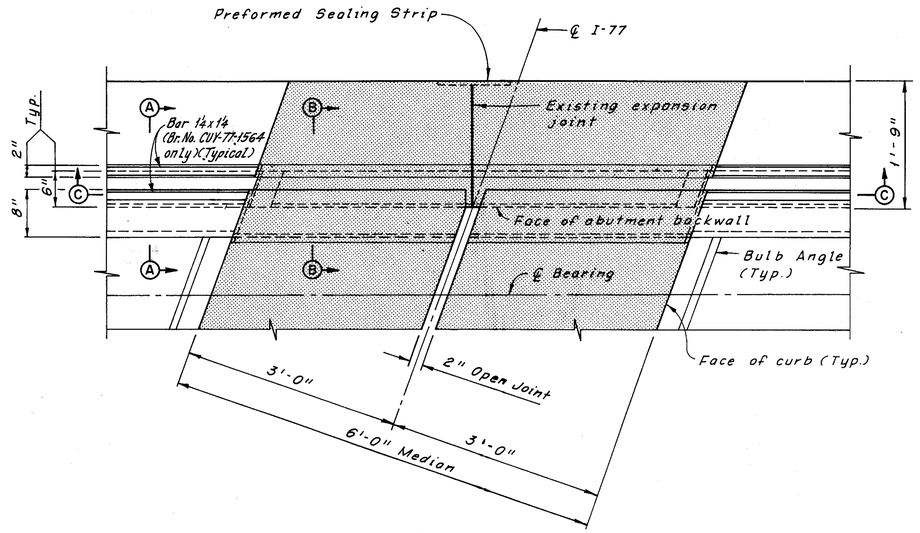
BR. NO. CUY-77-1436C BR. NO. CUY-90-1628
BR. NO. CUY-77-1459 BR. NO. CUY-90-1640
BR. NO. CUY-77-1519 BR. NO. CUY-90-1651
CUYAHOGA COUNTY OHIO

DRAWN C.K.B.	TRACED A.J.T.	CHECKED J.A.B.	REVIEWED	REVISED
DATE 2-9-75	DATE 2-10-75	DATE 2-14-75	DATE	SHEET CO-2

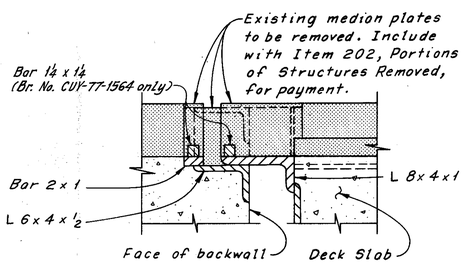
FHWA REGION	STATE	PROJECT	
5	OHIO		

162
169

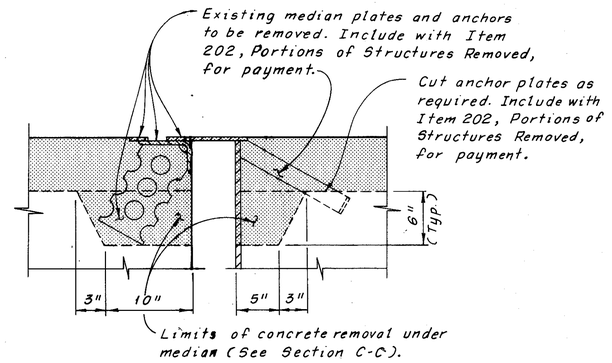
CUYAHOGA COUNTY
CUY-77-14.12
CUY-90-16.21



PLAN

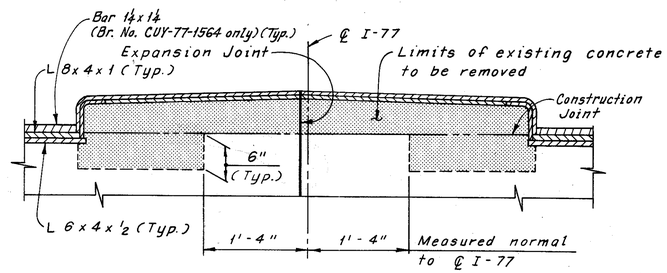


SECTION A-A



SECTION B-B

Note:
Existing reinforcing steel below the construction joint shall be retained.



SECTION C-C

EXISTING PLAN AND CROSS SECTIONS AT MEDIAN

Indicates Removal

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
CLEVELAND

HNTB

EXPANSION JOINT DETAILS AT MEDIAN (EXISTING)

BR. NO. CUY-77-1548
BR. NO. CUY-77-1564
BR. NO. CUY-77-1576A & B

CUYAHOGA COUNTY OHIO

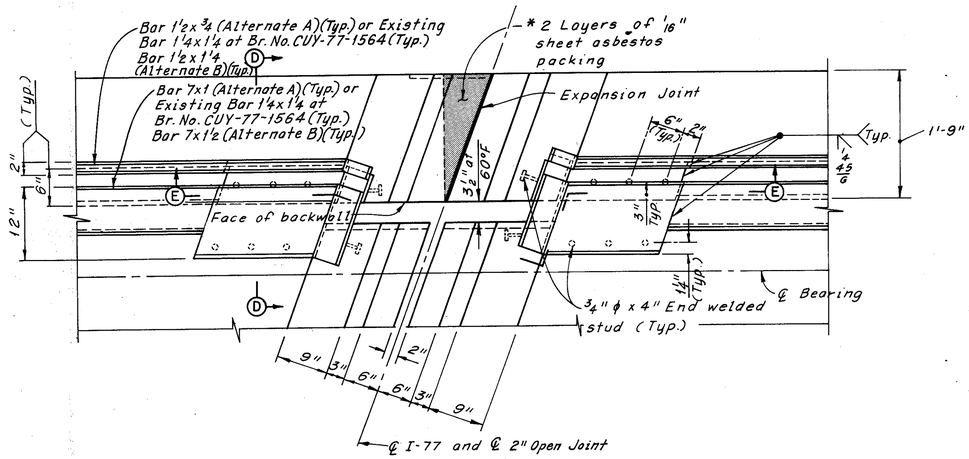
DRAWN CKB	TRACED A.J.	CHECKED J.A.B.	REVIEWED	REVISED
DATE 2-4-75	DATE 2-5-75	DATE 2-12-75	DATE	SHEET CD-3

FHWA REGION	STATE	PROJECT	
5	OHIO		

163
169

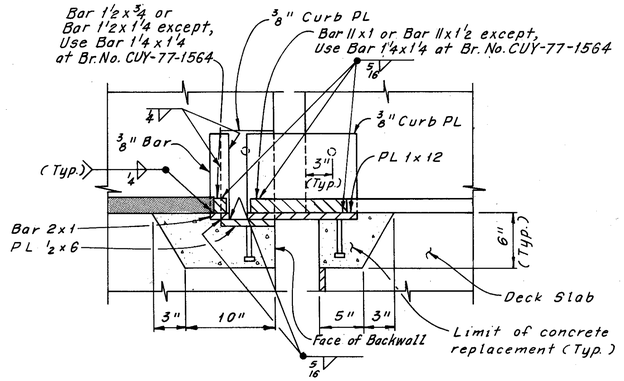
CUYAHOGA COUNTY
CUY-77-14.12
CUY-90-16.21

Sheet Asbestos Packing shall be in accordance with 711.22 and shall be included in the unit price bid for Item 511, Class C Concrete, Concrete Barrier Median, for payment.



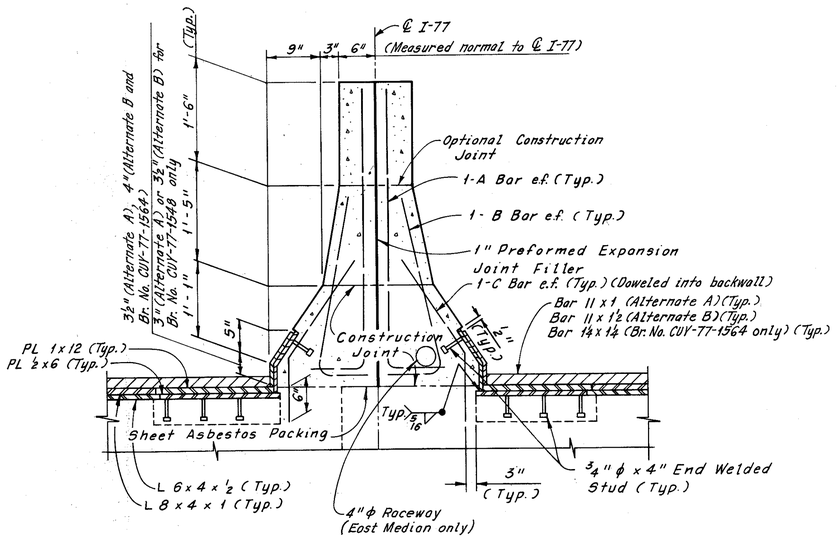
PLAN

Indicates sheet asbestos packing.



SECTION D-D

Indicates asphalt wearing surface.



SECTION E-E

(All bridges except as noted)

MEDIAN REINFORCEMENT			
BR. NO.	A Bars	B Bars	C Bars
CUY-77-1548	DM508	DM509	DM602
CUY-77-1564	EM506	EM507	EM602
CUY-77-1576A&B	FM508	FM509	FM602

MODIFIED PLAN AND CROSS SECTIONS AT MEDIAN

Notes:
For angles and dimensions, see Sheets 16/22, 17/22 and 18/22.
For reinforcement schedule and bar bending diagrams, see Sheet CD-10.
The following abbreviations are used:
Typ = Typical
e.f. = each face

HOWARD, NEEDLES, TAMMEN & BERGENDOFF CONSULTING ENGINEERS CLEVELAND — HNTB

EXPANSION JOINT DETAILS AT MEDIAN (MODIFIED)

BR. NO. CUY-77-1548
BR. NO. CUY-77-1564
BR. NO. CUY-77-1576A & B

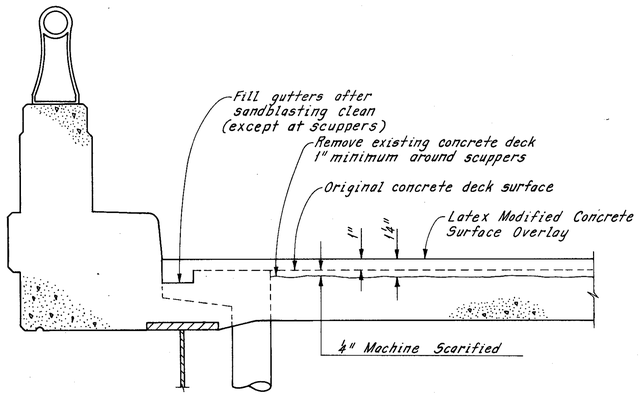
CUYAHOGA COUNTY OHIO

DRAWN	TRACED	CHECKED	REVIEWED	REVISED
CKB	AJT	J.A.B.		
DATE 2-4-75	DATE 2-5-75	DATE 2-12-75	DATE	SHEET CD-4

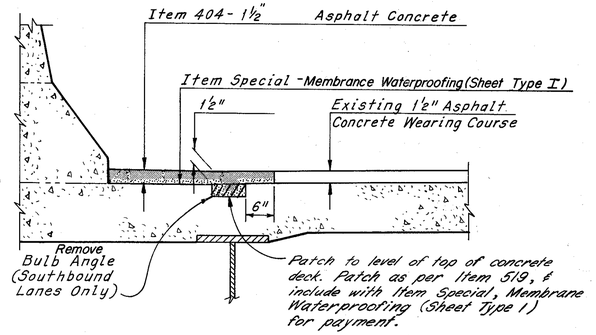
FHWA REGION	STATE	PROJECT	
5	OHIO		

164
169

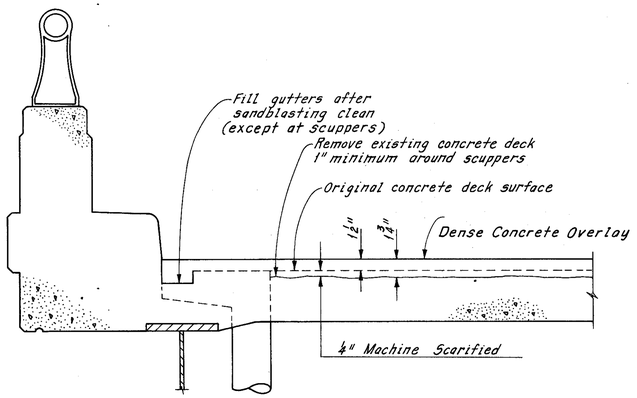
CUYAHOGA COUNTY
CUY-77-14.12
CUY-90-16.21



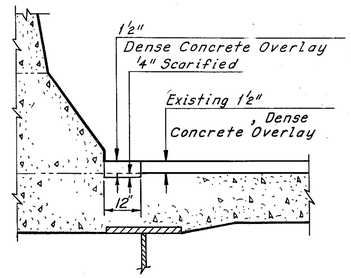
TYPICAL SECTION - ALTERNATE A
LATEX MODIFIED CONCRETE



WEARING SURFACE TREATMENT
BR. NO. CUY-77-1564
(Southbound Lanes Shown, Northbound Lanes Similar, except as noted)



TYPICAL SECTION - ALTERNATE B
DENSE CONCRETE



RESURFACING DETAILS AT MEDIAN
BR. NO. CUY-90-1651

RESURFACING DETAILS

Note:
Sandblasting gutters and removal of existing concrete around scuppers shall be included with Item 845, Latex Modified Concrete Overlay 1¼" Thick Or Item 850, Dense Concrete Overlay 1¾" Thick Payment.

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CONSULTING ENGINEERS CLEVELAND
HNTB

WEARING SURFACE TREATMENT AND RESURFACING DETAILS

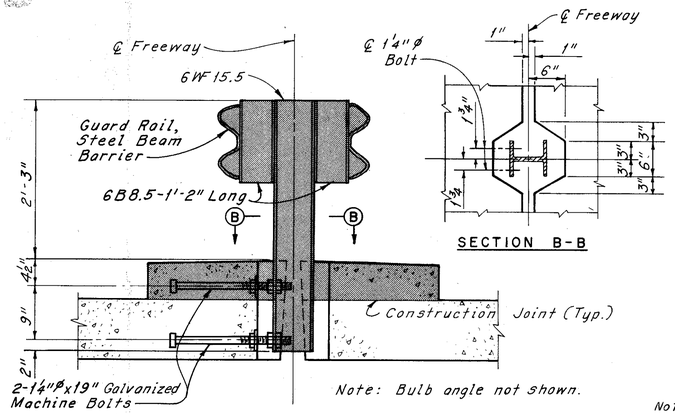
CUYAHOGA COUNTY OHIO

DRAWN CKB	TRACED C.P.	CHECKED DHS	REVIEWED	REVISED
DATE 6-7-77	DATE 7-1-77	DATE 7-7-77	DATE	SHEET CD-5

FHWA REGION	STATE	PROJECT	
5	OHIO		

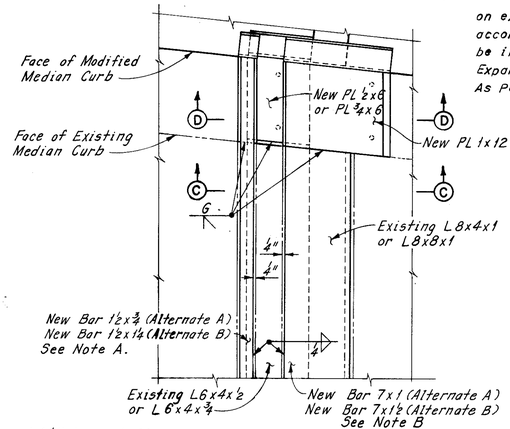
165
169

CUYAHOGA COUNTY
CUY-77-14.12
CUY-90-16.21



EXISTING MEDIAN AT POST ANCHOR

(Br. No. CUY-77-1548, Br. No. CUY-77-1564, Br. No. CUY-77-1576A and B, Br. No. CUY-90-1628, Br. No. CUY-90-1640 and Br. No. CUY-90-1651)



PART PLAN

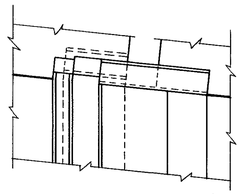
(Existing structural steel shown in phantom)

Note:

New structural steel and areas of damaged paint on existing structural steel shall be painted in accordance with Item 514. Payment for painting shall be included with Item 516, Vertical Extension of Structural Expansion Joints (End Dams and Longitudinal Deck Joints), As Per Plan.

Note:

New 7" bars and 1½" bars shall be included with Item 516, Vertical Extension of Structural Expansion Joints (End Dams and Longitudinal Deck Joints), for payment.



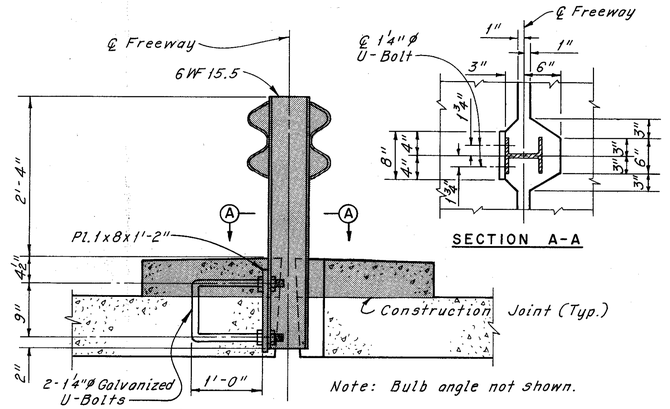
PART PLAN

BR. NO. CUY-77-1519

(For Details Not Shown, See Part Plan)

Note:

The deflection joints in the new concrete barrier median shall be ¼" gray cellular polyvinyl chloride (PVC) sponge or ¼" gray sponge rubber. If rubber is used, it shall meet the requirements of AASHO M-153. The deflection joint shall extend from the top of parapet to Construction Joint (A) and is included with Item 511 for payment. Above Construction Joint (A) the median shall be placed in alternate sections by the use of bulkheads. Closing sections shall be placed after removal of bulkheads, and after placement of expansion joint filler. Exposed edges of the filler shall be flush with the surface of concrete and shall be free of mortar.

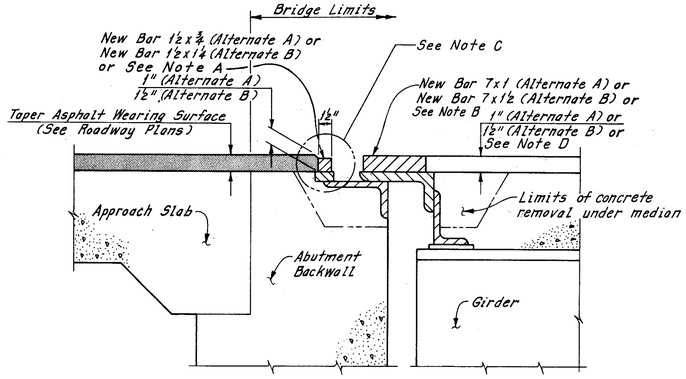


EXISTING MEDIAN AT POST ANCHOR

(Br. No. CUY-77-1436C, Br. No. CUY-77-1459 and Br. No. CUY-77-1519)

MEDIAN POST ANCHOR DETAILS

Indicates Removal



SECTION C-C

Note A: Existing Bar 1¼x1¼, Br. No. CUY-77-1564.
Existing Bar 1½x1¼, Br. No. CUY-90-1651.

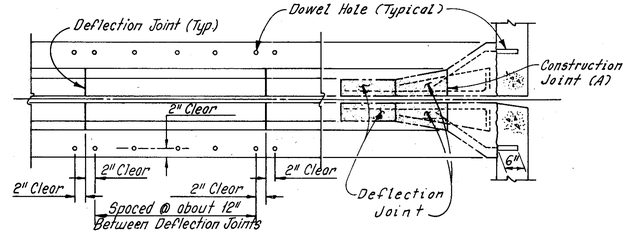
Note B: Existing Bar 1¼x1¼, Br. No. CUY-77-1564.
Existing Bar 7x1½, Br. No. CUY-90-1651.

Note C: For detail at Abutment E-5, Br. No. CUY-90-1628, see Sheet 3/5.
For detail at East Abutment, Br. No. CUY-90-1651, see Sheet 6/8.

Note D: Existing 1½" Asphalt Concrete, Br. No. CUY-77-1564.
Existing 1½" Dense Concrete, Br. No. CUY-90-1651.

RAISING EXPANSION JOINT

(At Brs. Nos. CUY-77-1564 and CUY-90-1651 the Expansion Joints shall be raised only adjacent to the median)



DOWEL HOLE SPACING FOR 601 BARS

Note:

For Section D-D and additional details, see Sheets CD-2 and CD-4.

HOWARD, NEEDLES, TAMMEN & BERGENDOFF CONSULTING ENGINEERS CLEVELAND — HNTB

MEDIAN POST ANCHOR, RAISING EXPANSION JOINT AND DOWEL HOLE SPACING FOR 601 BARS DETAILS

CUYAHOGA COUNTY OHIO

DRAWN	TRACED	CHECKED	REVIEWED	REVISED
C.K.B. DATE 7-7-77	C.P. DATE 7-8-77	D.H.S. & C.K.B. DATE 7-12-77	DATE	SHEET CD-6

FHWA REGION	STATE	PROJECT	
5	OHIO		

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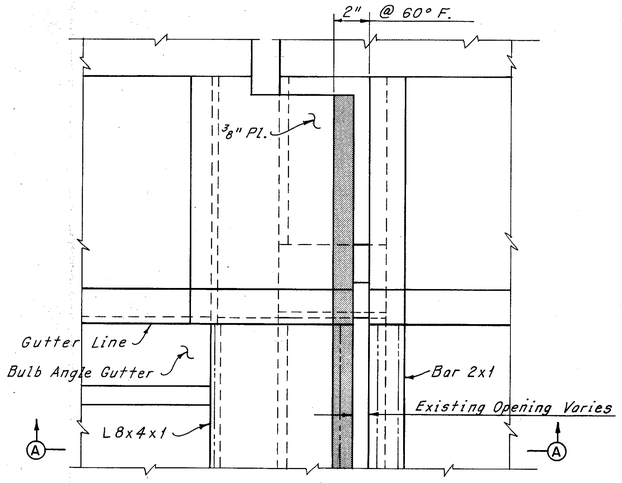
CUYAHOGA COUNTY
CUY-77-14.12
CUY-90-16.21

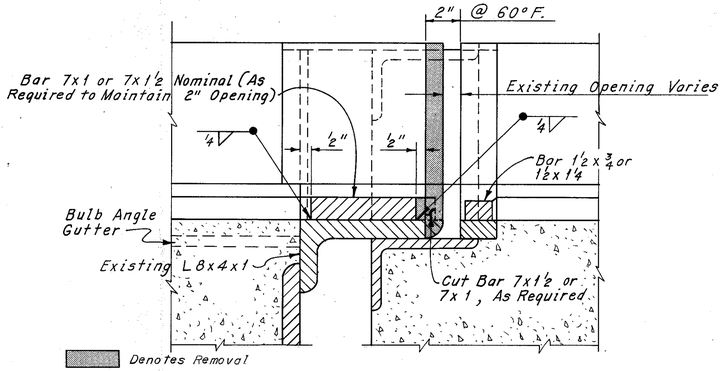
INSTALLATION: Immediately prior to adhesive application, bonding surfaces shall be clean, dry and warmer than 45°F, & they shall be maintained at or above this temperature until the adhesive is cured. Adhesive shall be applied liberally to both steel & elastomeric bonding surfaces using a stiff brush if necessary to achieve a complete and relatively uniform coating. Then the elastomeric seal shall be compressed sufficiently so that it can be inserted & allowed to expand within the joint. After installation, excess adhesive (except for the ¼ inch beads) shall be removed from the exposed seal surfaces.

PROCEDURE FOR TRIMMING EXPANSION JOINTS

1. Install pressure relief joints prior to performing this work.
2. Trim superstructure angle and curb plate maintaining a 2" nominal dimension between the backwall edge bar and modified angle or plate (See Detail). Special care shall be taken by the Contractor so as not to damage any portion of the end dam members.
3. Where surface roughness results from trimming, the Contractor shall grind those areas as directed by the Engineer.



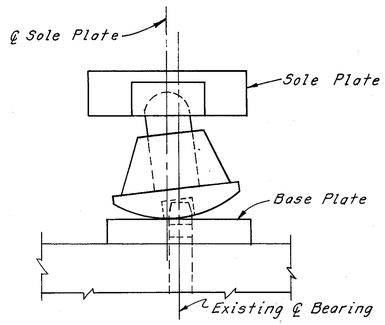
EXISTING PLAN



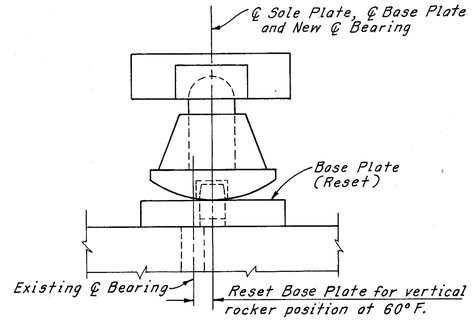
EXISTING AND MODIFIED
SECTION A-A

TRIM EXPANSION JOINT

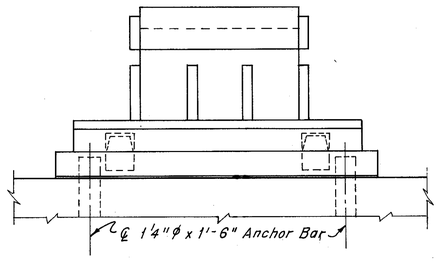
(Steel removal required for this repair including surface grinding and welding required, shall be included with Item 202, Portions of Structures Removed, for payment.)



EXISTING SIDE ELEVATION



MODIFIED SIDE ELEVATION



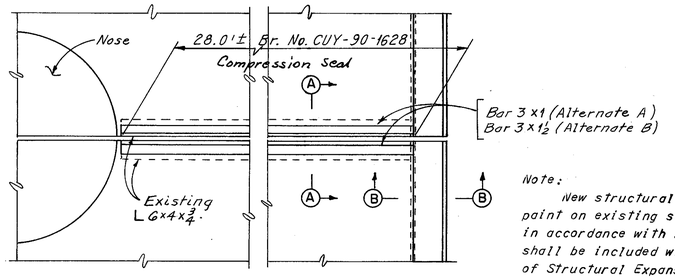
FRONT ELEVATION

RESET BEARINGS

PROCEDURE FOR RESETTING BEARING

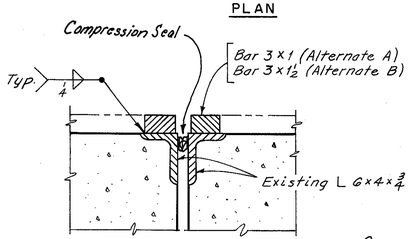
1. Raise the entire superstructure at the abutment (all girders or beams simultaneously) until there is no contact between the sole plate and the bearing.
2. Remove anchor bars to top of masonry.
3. Reset the rocker and base plate in final position by centering the base plate under the sole plate both in the longitudinal and transverse direction.

Note:
Backwall replacement shall be accomplished in connection with the raising of the superstructure for the resetting of the bearings.



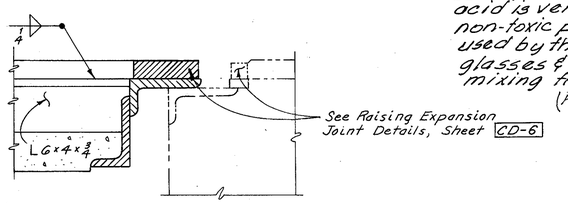
PLAN

Note:
New structural steel and areas with damaged paint on existing structural steel shall be painted in accordance with Item 514. Payment for painting shall be included with Item 516, Vertical Extension of Structural Expansion Joints (End Dams and Longitudinal Deck Joints), As Per Plan.



SECTION A-A

The Compression Seal shall be J-125, Acme Highway Products Corp or E-1250, D.S. Brown Co or equal.



SECTION B-B

RAISING LONGITUDINAL DECK JOINT

ELASTOMERIC COMPRESSION SEALS FOR STRUCTURAL STL. JOINTS
DESCRIPTION: This item shall conform to Supplemental Specification 849 except as follows:
MATERIALS: Adhesives shall be Sikostix 360, Fel-Poxy FP101 or approved alternate. Metal surface primers are not required.
PREPARATION FOR INSTALLATION: Elastomeric surfaces shall be cleaned with MEK, T or other approved solvent using clean disposable cloths. Then not more than 7 days prior to seal installation, a thin coating of cyclizing paste* shall be applied to the elastomeric bonding surfaces only. After from 25 to 40 minutes, the paste shall be washed from the surfaces with clean water.
The preparation of the steel surfaces shall be accomplished not more than 24 hours prior to adhesive bonding.
*Cyclizing Paste is a mixture of 1 pound of Hisil and 6 pounds of concentrated sulfuric acid (18 molar) To mix the paste, add Hisil to acid slowly while stirring mixture to achieve a smooth viscous paste. NOTE: Since concentrated sulfuric acid is very corrosive & Hisil is an extremely fine non-toxic powder, rubber gloves & glasses should be used by those using the paste while gloves, glasses & respirator should be used by those mixing the paste.
(For INSTALLATION procedure see Note at top of Sheet.)

Rev. 10-26-78

HOWARD, NEEDLES, TAMMEN & BERGENDOFF CONSULTING ENGINEERS CLEVELAND — HNTB

TRIM EXPANSION JOINT, RESET BEARINGS AND RAISING LONGITUDINAL DECK JOINT

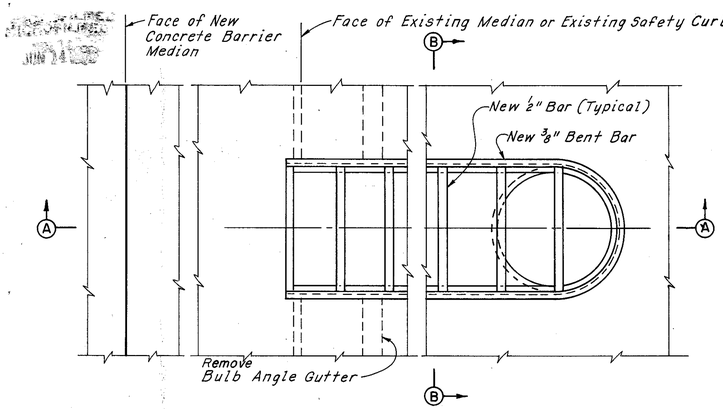
CUYAHOGA COUNTY OHIO

DRAWN	TRACED	CHECKED	REVIEWED	REVISED
CKB	C.P.	D.H.S.		10-26-78
DATE 7-7-77	DATE 7-11-77	DATE 7.12.77	DATE	SHEET CD-7

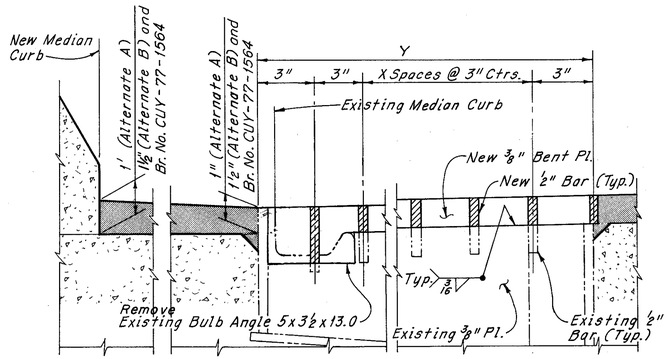
FHWA REGION	STATE	PROJECT	
5	OHIO		

167
169

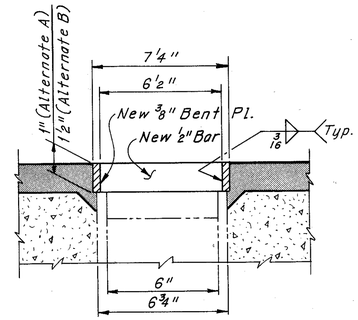
CUYAHOGA COUNTY
CUY-77-14.12
CUY-90-16.21



PLAN



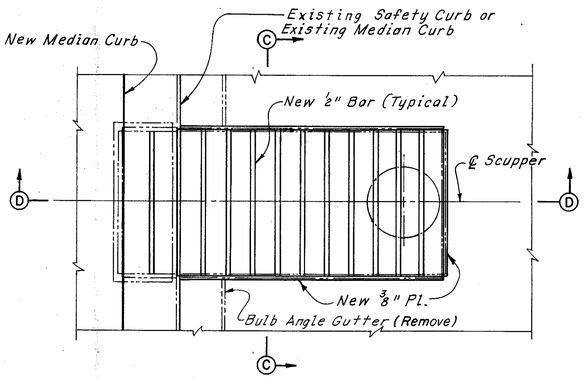
SECTION A-A



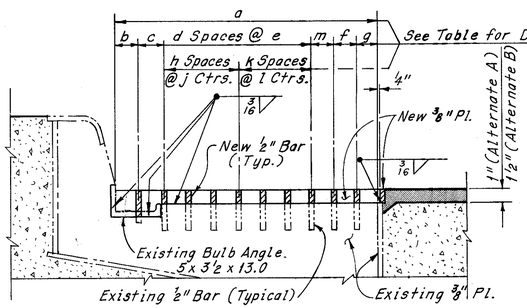
SECTION B-B

SCUPPER TYPE	DIMENSIONS	
	X	Y
A	2	1'-3"
B	3	1'-6"
C	5	2'-0"
D	7	2'-6"

BR. NO. CUY-77-1548, BR. NO. CUY-77-1564, BR. NO. CUY-77-1576A AND B, BR. NO. CUY-77-1593L, BR. NO. CUY-90-1628, BR. NO. CUY-90-1640,
RAMPS E-15 AND E-18 OVER EAST 9th ST. AND RAMP E-15 OVER W.B. BROADWAY AVENUE



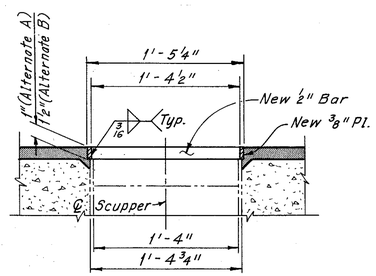
PLAN



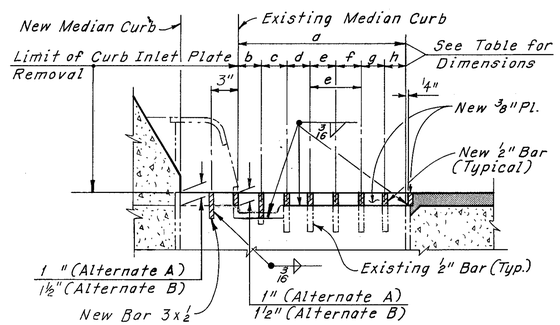
SECTION D-D
(At Safety Curb)

BRIDGE NO. CUY.-77-	DIMENSIONS (AT SAFETY CURB)											
	a	b	c	d	e	f	g	h	j	k	l	m
1436C	2'-5⅜"	2⅝"	2⅞"	6	2⅜"	2¼"	2¼"	—	—	—	—	2⅝"
1438B 1439B	2'-5"	2⅝"	2⅞"	—	—	2¼"	2¼"	3	2¾"	3	2⅝"	2⅝"
1440A 1441A	1'-6"	2⅝"	2⅝"	2	2⅝"	2⅝"	2¼"	—	—	—	—	2⅝"
1459	1'-6"	2⅝"	2⅝"	2	2⅝"	2⅝"	2¼"	—	—	—	—	2⅝"
1519	1'-4¼"	2"	2⅞"	1	2⅞"	2⅞"	2¾"	—	—	—	—	2⅞"

Note:
New structural steel and areas with damaged paint on existing structural steel shall be painted in accordance with Item 514. Payment for painting shall be included with Item Special, Scupper Modifications, As Per Plan, for payment.



SECTION C-C



SECTION D-D
(At Median Curb)

BRIDGE NO. CUY.-77-	DIMENSIONS (AT MEDIAN CURB)							
	a	b	c	d	e	f	g	h
1436C	1'-6"	2⅝"	2⅞"	2⅝"	2⅝"	2¼"	2¼"	2¼"
1459	1'-6"	2⅜"	2⅝"	2½"	2½"	2¾"	2¾"	2½"
1519 (At East Abut.)	1'-4¼"	2⅛"	2⅞"	2⅝"	2⅝"	—	2⅞"	2¾"
1519 (At West Abut.)	1'-9¼"	2⅛"	2⅞"	3⅜"	3⅜"	3⅜"	3⅜"	2¾"

Note:
For additional deck resurfaceing details, see Sheet CD-5.

BR. NO. CUY-77-1436C, BR. NO. CUY-77-1438B, BR. NO. CUY-77-1439B, BR. NO. CUY-77-1440A,
BR. NO. CUY-77-1441A, BR. NO. CUY-77-1459 AND BR. NO. CUY-77-1519

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS CLEVELAND
HNTB

DETAILS OF RAISING EXISTING SCUPPERS

CUYAHOGA COUNTY OHIO

DRAWN	TRACED	CHECKED	REVIEWED	REVISED
D.H.S.	C.P.	C.K.B.		
DATE 6-1-77	DATE 6-28-77	DATE 6-23-77	DATE	SHEET CD-8

FHWA REGION	STATE	PROJECT	
5	OHIO		

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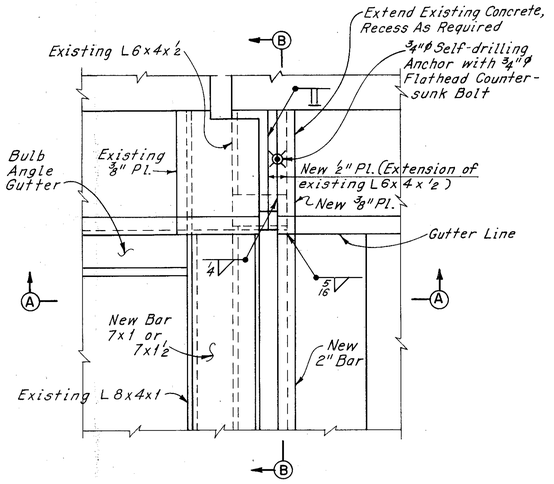
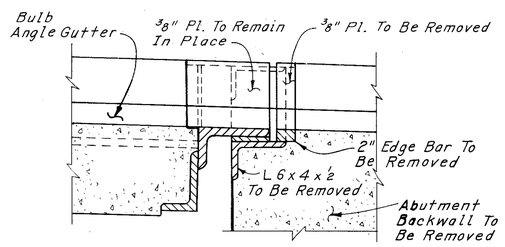
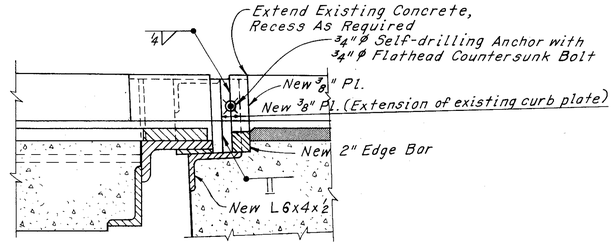
CUYAHOGA COUNTY
CUY-77-14.12
CUY-90-16.21



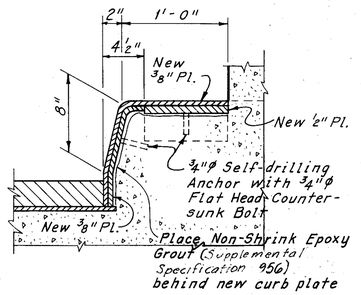
MODIFIED PLAN



EXISTING SECTION A-A

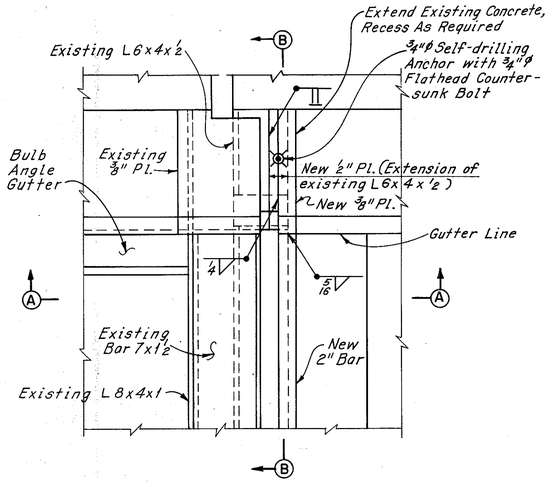


MODIFIED SECTION A-A

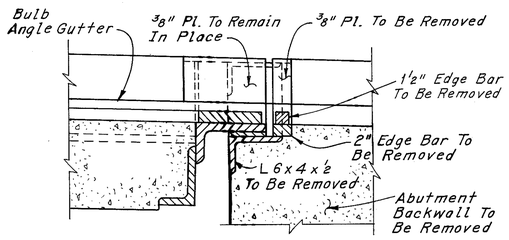


SECTION B-B

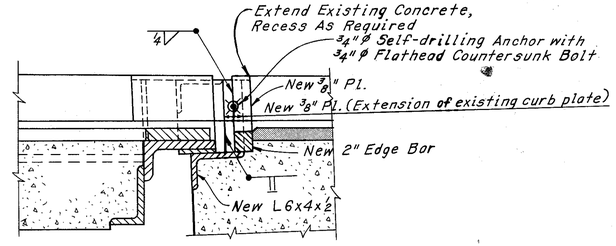
DETAILS AT ABUTMENT E-5, BR. NO. CUY-90-1628



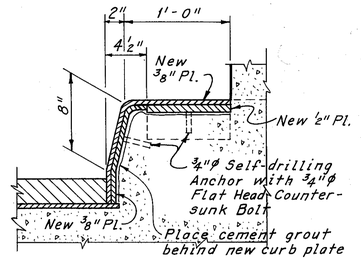
MODIFIED PLAN



EXISTING SECTION A-A



MODIFIED SECTION A-A



SECTION B-B

DETAILS AT EAST ABUTMENT, BR. NO. CUY-90-1651

Notes:

Concrete and steel removal for these repairs shall be included with Item 202, Portions of Structures Removed, for payment.

Non-Shrink Epoxy grout required for these repairs shall be included with Item 513, Structural Steel, for payment.

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS CLEVELAND
HNTB

CURB PLATE MODIFICATIONS

CUYAHOGA COUNTY OHIO

DRAWN CKB	TRACED C.P.	CHECKED DHS	REVIEWED	REVISED
DATE 6-7-77	DATE 6-24-77	DATE 6-8-77	DATE	SHEET CD-9

MARK	NO.	LENGTH	TYPE	SER. INCR.	WEIGHT (LBS.)
	BR. NO. CUY-77-1436C				
	MEDIAN				
AM501	112	30'-0"	Str.		3,504
AM502	8	24'-6"	Str.		204
AM503	48	13'-6"	Str.		676
AM504	88	6'-3"	Str.		574
AM505	32	13'-9"	Str.		459
AM506	722	4'-5"	104		3,328
AM507	722	3'-0"	148		2,259
AM501	714	2'-7"	108		2,370
AM502	8	2'-7"	108		31
		TOTAL WEIGHT =			13,805
	BR. NO. CUY-77-1459				
	MEDIAN				
BM501	4,393	3'-1"	148		14,126
BM502	4,393	4'-6"	104		20,619
BM503	534	30'-0"	Str.		16,709
BM504	58	14'-3"	Str.		862
BM505	72	15'-0"	Str.		1,126
BM506	2	10'-0"	Str.		21
BM507	2	30'-3"	Str.		63
BM508	4	18'-3"	Str.		76
BM509	60	14'-9"	Str.		923
BM510	88	6'-3"	Str.		574
BM511	6	24'-9"	Str.		155
BM512	118	6'-9"	Str.		831
BM513	44	15'-6"	Str.		711
BM514	44	15'-3"	Str.		700
BM515	2	7'-6"	Str.		16
BM516	2	26'-9"	Str.		56
BM517	4	21'-6"	Str.		90
BM518	40	7'-3"	Str.		302
BM519	10	5'-0"	Str.		52
BM520	64	14'-6"	Str.		968
BM521	10	13'-3"	Str.		138
BM522	4	28'-3"	Str.		118
BM523	2	27'-3"	Str.		57
BM524	2	13'-6"	Str.		28
BM525	16	12'-6"	Str.		209
BM526	2	25'-0"	Str.		52
BM527	2	31'-6"	Str.		66
BM528	14	5'-6"	Str.		80
BM529	14	12'-9"	Str.		186
BM530	32	6'-0"	Str.		200
BM531	2	8'-0"	Str.		17
BM532	2	12'-0"	Str.		25
BM533	14	14'-0"	Str.		204
BM534	28	7'-0"	Str.		204
BM535	16	4'-8"	104		78
BM536	16	3'-3"	148		54
BM537	8	3'-6"	104		29
BM538	8	2'-7"	Str.		22
BM539	16	3'-0"	Str.		50
BM601	4,401	2'-7"	108		17,074
BM602	8	2'-7"	108		31
BM603	16	2'-8"	108		64
LIGHT POLE SUPPORTS:					
	9				1,242
		TOTAL WEIGHT =			79,208
	BR. NO. CUY-77-1519				
	MEDIAN				
CM501	144	30'-0"	Str.		4,506
CM502	8	7'-6"	Str.		63
CM503	8	12'-6"	Str.		104
CM504	160	5'-0"	Str.		834
CM505	24	15'-3"	Str.		382
CM506	36	15'-0"	Str.		563
CM507	12	12'-6"	Str.		156
CM508	2	12'-9"	Str.		27
CM509	2	12'-0"	Str.		25
CM510	1,167	4'-5"	104		5,376
CM511	1,167	3'-0"	148		3,652

MARK	NO.	LENGTH	TYPE	SER. INCR.	WEIGHT (LBS.)
CM601	1,159	2'-7"	108		4,497
CM602	8	2'-7"	108		31
		TOTAL WEIGHT =			20,216
	BR. NO. CUY-77-1548				
	MEDIAN				
DM501	56	30'-0"	Str.		1,752
DM502	8	9'-3"	Str.		77
DM503	16	14'-0"	Str.		234
DM504	4	13'-3"	Str.		55
DM505	4	14'-9"	Str.		62
DM506	40	7'-0"	Str.		292
DM507	16	12'-0"	Str.		200
DM508	478	4'-5"	104		2,202
DM509	478	3'-0"	148		1,496
DM601	470	2'-7"	108		1,824
DM602	8	2'-7"	108		31
		TOTAL WEIGHT =			8,225
	BR. NO. CUY-77-1564				
	MEDIAN				
EM501	56	30'-0"	Str.		1,752
EM502	8	7'-6"	Str.		63
EM503	24	11'-6"	Str.		288
EM504	48	6'-6"	Str.		326
EM505	16	12'-3"	Str.		204
EM506	468	4'-5"	104		2,156
EM507	468	3'-0"	148		1,464
EM601	460	2'-7"	108		1,785
EM602	8	2'-7"	108		31
		TOTAL WEIGHT =			8,069
	BR. NO. CUY-77-1576A & B				
	MEDIAN				
FM501	48	30'-0"	Str.		1,502
FM502	8	3'-0"	Str.		25
FM503	8	13'-9"	Str.		115
FM504	56	5'-0"	Str.		292
FM505	8	10'-6"	Str.		87
FM506	8	11'-0"	Str.		92
FM507	8	11'-6"	Str.		96
FM508	416	4'-5"	104		1,916
FM509	416	3'-0"	148		1,302
FM601	408	2'-7"	108		1,583
FM602	8	2'-7"	108		31
		TOTAL WEIGHT =			7,041
	BR. NO. CUY-90-1628				
	ABUTMENT E-5				
GA601	26	7'-1"	105		277
GA602	26	5'-9"	105		225
GA603	8	12'-3"	Str.#		147
GA604	8	8'-3"	Str.		99
GA701	8	6'-0"	Str.#		98
GA801	18	5'-7"	147		268
THREADED INSERTS:					
	8		2		9
		TOTAL WEIGHT =			1,123
	MEDIAN				
GM501	64	30'-0"	Str.		2,003
GM502	8	5'-3"	Str.		44
GM503	16	14'-9"	Str.		246

MARK	NO.	LENGTH	TYPE	SER. INCR.	WEIGHT (LBS)
GM504	48	6'-6"	Str.		325
GM505	12	15'-3"	Str.		191
GM506	12	13'-6"	Str.		169
GM507	520	4'-5"	104		2,396
GM508	520	3'-0"	148		1,627
GM601	512	2'-7"	108		1,986
GM602	8	2'-7"	108		31
		TOTAL WEIGHT =			9,018
	BR. NO. CUY-90-1640				
	MEDIAN				
HM501	80	30'-0"	Str.		2,503
HM502	8	22'-0"	Str.		184
HM503	28	15'-3"	Str.		445
HM504	64	6'-6"	Str.		434
HM505	20	13'-0"	Str.		271
HM506	2	15'-6"	Str.		32
HM507	2	15'-0"	Str.		31
HM508	687	4'-5"	104		3,165
HM509	687	3'-0"	148		2,150
HM601	679	2'-7"	108		2,635
HM602	8	2'-7"	108		31
		TOTAL WEIGHT =			11,881
	BR. NO. CUY-90-1651				
	EAST ABUTMENT				
JA601	144	8'-1"	105		1,748
JA602	144	5'-9"	105		1,244
JA603	10	12'-0"	Str.		180
JA604	20	11'-6"	Str.#		345
JA605	20	12'-6"	Str.		376
JA607	10	6'-6"	Str.		98
JA608	20	10'-0"	Str.#		300
JA609	10	9'-6"	Str.		143
JA610	10	10'-9"	Str.		161
JA611	10	11'-0"	Str.		165
JA701	20	6'-0"	Str.#		245
JA702	10	9'-6"	Str.#		194
JA703	10	11'-6"	Str.#		235
JA801	98	5'-7"	147		1,461
THREADED INSERTS:					
	40		2		44
		TOTAL WEIGHT =			6,939
	MEDIAN				
JM501	80	30'-0"	Str.		2,503
JM502	8	19'-0"	Str.		159
JM503	12	13'-6"	Str.		169
JM504	68	6'-9"	Str.		479
JM505	12	15'-3"	Str.		191
JM506	16	14'-0"	Str.		234
JM507	12	13'-0"	Str.		163
JM508	676	4'-5"	104		3,114
JM509	676	3'-0"	148		2,115
JM601	668	2'-7"	108		2,592
JM602	8	2'-7"	108		31
		TOTAL WEIGHT =			11,750

FHWA REGION	STATE	PROJECT	
5	OHIO		

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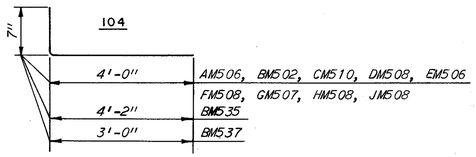
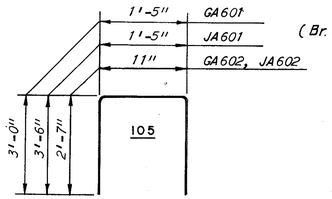
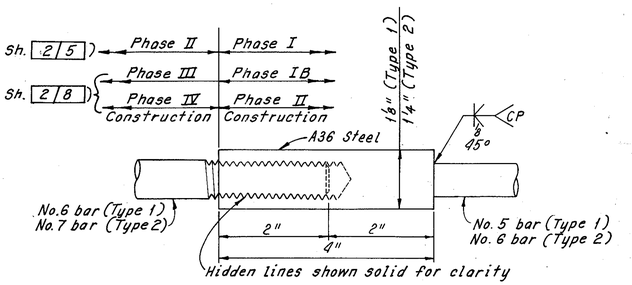
CUYAHOGA COUNTY
CUY-77-14.12
CUY-90-16.21



\# Weld to threaded insert.
\# Thread one end for connection to threaded insert.

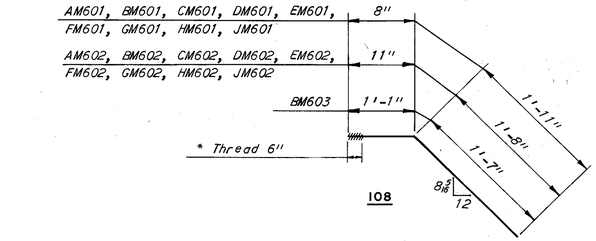


Note:
Recess Plugs shall be provided in the threaded insert during Phase I, IB and II Construction.

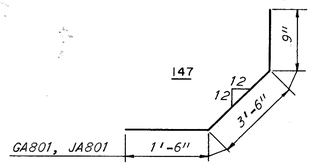


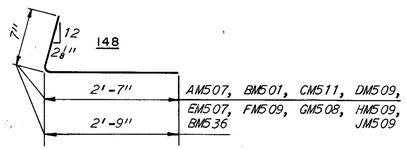
THREADED INSERT DETAIL

(Threads are to be Unified Standard Series for Basic Major Diameter of $\frac{3}{4}$" for Type 1 and $\frac{7}{8}$" for Type 2)



* Bars shall be threaded and degreased. The threads shall be Unified Standard Series for Basic Major Diameter of $\frac{3}{4}$". Threading and degreasing of bars shall be included with Item 509, Reinforcing Steel, for payment.





BENDING DIAGRAMS

Note:
Both the welded and threaded connection shall be capable of developing 125 per cent of the yield strength of the smaller bar connected. Random samples to be submitted for testing.

REINFORCING STEEL SAMPLES

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.

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS CLEVELAND
HNTB

REINFORCEMENT SCHEDULES

CUYAHOGA COUNTY OHIO

DRAWN	TRACED	CHECKED	REVIEWED	REVISED
C.K.B.	C.P.	D.N.S.		
DATE 6-8-77	DATE 7-7-77	DATE 7-12-77	DATE	SHEET CD-10