

11 R

STATE OF OHIO DEPARTMENT OF TRANSPORTATION

CUY-90-23.95 LAK-90-0.00 CUY-LAKELAND BLVD. CITIES OF CLEVELAND AND EUCLID VILLAGE OF BRATENAH

CUYAHOGA / LAKE COUNTIES	OHIO	1
CUY - 90-23.95	FHWA REGION 5	200
LAK - 90-0.00		
CUY-LAKELAND BLVD.		
M-IA58 / IR-90-1(156)33	FEDERAL PROJECT	

M-IA58(1) IR-90-1(156)33

LIMITED ACCESS

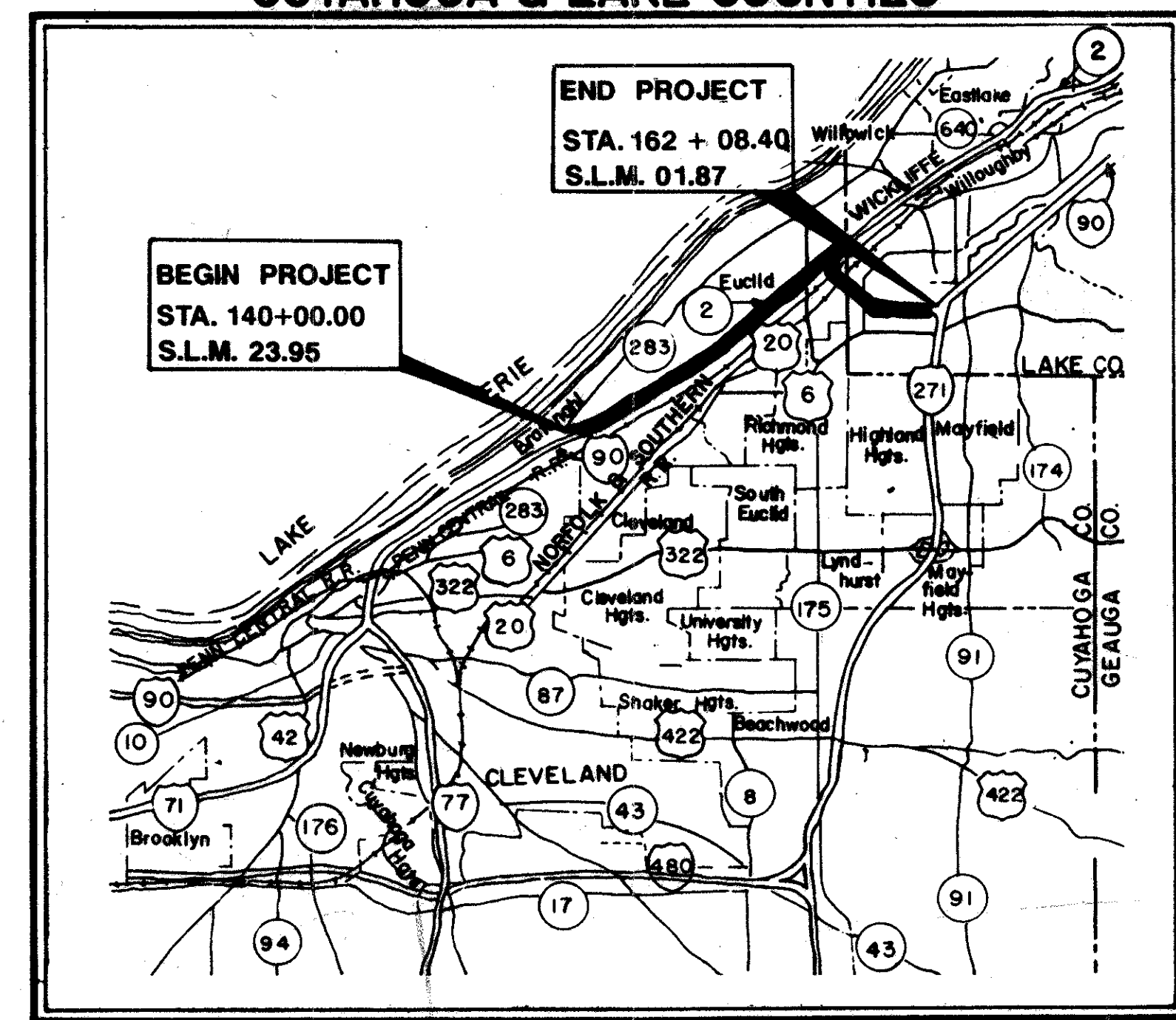
This improvement is especially designed for through traffic and has been declared a limited access highway or freeway by action of the Director in accordance with the provisions of Section 5511.02 of the Revised Code of Ohio.

DESIGN DESIGNATION

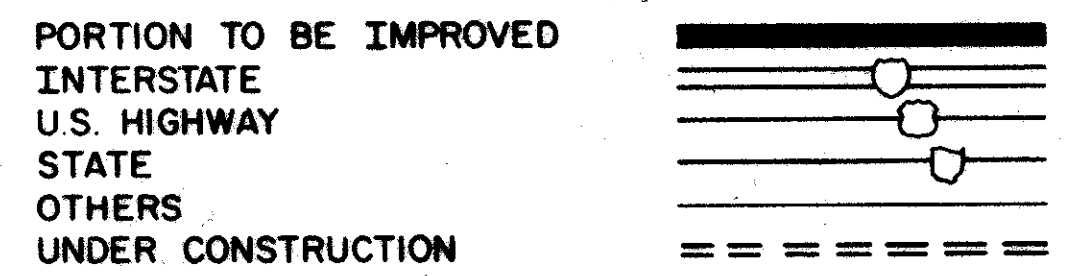
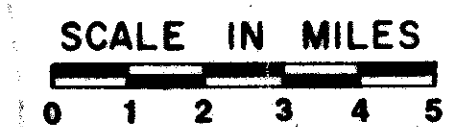
CURRENT ADT (1989)	=	101,070
DESIGN YEAR ADT (2009)	=	141,500
DHV	=	14,150
D	=	55%
T	=	5%
V (DESIGN)	=	60 MPH
V (POSTED)	=	55 MPH
FUNCTIONAL CLASSIFICATION	=	INTERSTATE

NOTE: PROJECT DESIGNATION CUY-90-23.95, LAK-90-0.00 APPEARING THROUGHOUT THIS PLAN SHALL BE CONSIDERED TO READ CUY/LAK-90-23.95/0.00, CUY-LAKELAND BLVD.

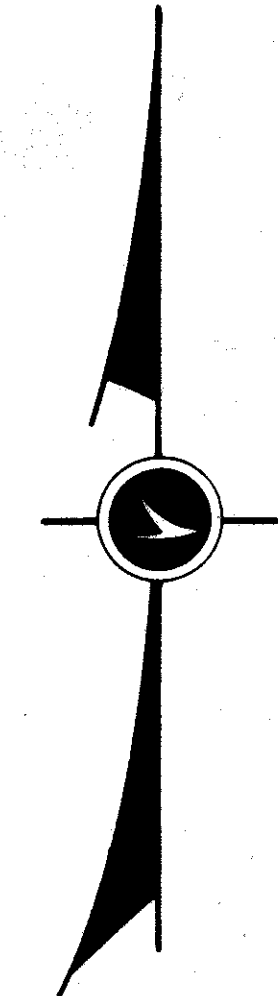
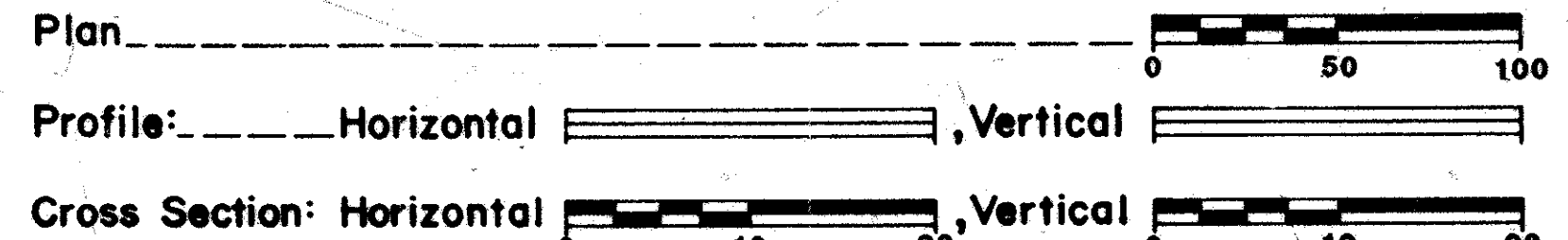
CITY OF WICKLIFFE
CITY OF WILLOUGHBY HILLS
CUYAHOGA & LAKE COUNTIES



LOCATION MAP



SCALES



"Under authority of section 4511.21, Division (1) of the revised code of Ohio, The revised prima facie speed limits as indicated herein are determined to be reasonable and safe, and are hereby established for the duration of this project. The prima facie speed limit or limits hereby established shall become effective when appropriate signs giving notice thereof are erected"

1989 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.

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.

UNDERGROUND UTILITIES
TWO WORKING DAYS BEFORE YOU DIG
Call 800-362-2764 (Toll free)
OHIO UTILITIES PROTECTION SERVICE
NON-MEMBERS MUST BE CALLED DIRECTLY

APPROVED: <u>H. A. G. Galt</u>	DISTRICT DEPUTY DIRECTOR OF TRANSPORTATION
DATE: 12-12-89	
APPROVED: <u>B. D. H. H. H. H.</u>	ENGINEER, BUREAU OF BRIDGES AND STRUCTURAL DESIGN
DATE: 2/8/90	
APPROVED: <u>Thodore J. Skitt</u>	CHIEF ENGINEER, PLANNING AND DESIGN
DATE: 3/27/90	
APPROVED: <u>Bernard B. Hunt</u>	DIRECTOR, DEPARTMENT OF TRANSPORTATION
DATE: 3/27/90	

SUPPLEMENTAL SPECIFICATIONS

802	5-4-88	903	1-1-69
805	1-13-77	905	5-2-89
807	10-2-89	931	6-18-85
847	10-17-83	947	10-17-83
862	12-16-88	962	1-23-90
853	6-26-78	944	6-24-87
956	6-26-78	952	12-14-88
941	5-28-87	942	11-27-89
852	6-10-87	845	5-31-88
		953	8-21-80

CONVENTIONAL SIGNS

County Line	-----	Limited Access (only)	-----	LA
Township Line	-----	Right of Way (only)	-----	RW
Section Line	-----	Limited Access & Right of Way	-----	LA & RW
Corporation Line	-----	Existing Right of Way	-----	
Fence Line (existing)	---x---x---	Property Line	---x---x---	(in existing fence)
Center Line	-----	Railroad	-----	or -----
Trees	⊙, ⊙	Guardrail (existing)	-----	(proposed) -----
Stumps	⊙, ⊙			
Utility Poles: Telephone	⊙			
Power	⊙			
Light	⊙			

INDEX OF SHEETS

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SHEET 10 IS NOT USED

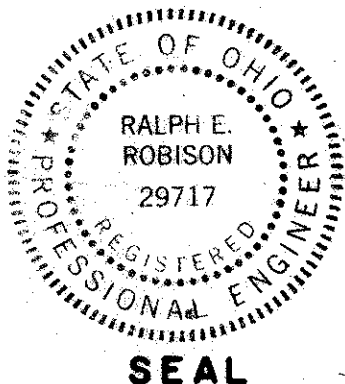
LINE DATA

LENGTH OF PROJECT	
I-90	
STA. 140+00.00 TO STA. 403+00.00	= 26,300 LIN. FT.
STA. EQUATION	
STA. 403+00.00 BK = STA. 41+12.20 AHEAD	
STA. 41+12.20 TO STA. 100+00	= 5,887.8 LIN. FT.
EUCLID SPUR	
STA. 28+52.20 TO STA. 162+08.40	= 13,356.2 LIN. FT.
TOTAL LENGTH OF PROJECT	= 45,544.0 LIN. FT. OR 8.626 MILES
I-90	
STA. 139+25.00 TO STA. 140+00.00	= 75 LIN. FT.
EUCLID SPUR	
STA. 162+08.4 TO STA. 162+83.40	= 75 LIN. FT.
LAKELAND FREEWAY	
STA. 100+00.00 TO STA. 100+75.00	= 75 LIN. FT.
TOTAL LENGTH OF WORK	= 45,769 LIN. FT. OR 8.668 MI.

Plan Prepared By:

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

Ralph E. Robison
RALPH E. ROBISON



SUPPLEMENTAL PRINTS OF STANDARD CONSTRUCTION DRAWINGS

BP-3	12-6-76	GR-1	1-11-85	CB-3A	5-1-79	TC-51.10	1-20-84	MT-95.30	10-10-88
BP-4	10-1-87	GR-2B	2-5-82	CB-5	11-10-83	TC-51.11	1-20-84	MT-95.31	10-10-88
BP-5	10-1-87	GR-3	1-21-85	CB-2-2A+B	5-1-79	TC-52.10	4-3-79	MT-99.10	11-14-86
BP-7	10-1-87	GR-4	2-5-82	TC-7.65	3-1-79	TC-52.20	4-3-79	MT-99.20	4-29-88
BP-12	10-1-87	GR-4A	1-30-84	TC-21.10	1-20-84	TC-61.10	4-5-82		
BP-13	1-23-90	GR-5	2-5-82	TC-22.20	3-1-79	TC-65.10	2-26-82	HL-30.31	5-1-87
BP-2	1-11-85	GR-6	2-5-82	TC-35.10	8-29-84	TC-65.11	4-5-82	HL-30.21	5-1-87
MC-1	6-13-69	GR-6A	2-5-82	TC-41.10	8-29-84	TC-71.10	4-9-79	HL-30.22	5-1-87
F-1	11-10-83	I-2A	12-18-84	TC-41.20	3-26-79	TC-72.20	2-26-82		
F-3	5-1-76	MC-4	7-26-76	TC-41.40	6-18-79	TC-82.10	8-29-84		
CB-6	5-1-79	MC-9	1-30-84	TC-41.50	3-26-79				
F-5	5-1-76	MC-9A	1-11-85	TC-42.10	8-19-77				
F-6	5-1-76	MC-11	8-1-78	TC-42.20	3-26-79				

Project: _____
Date of Letting: _____ 19____ Contract No. _____
LD0300 Rev. 11-21-73

DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

APPROVED: _____
DIVISION ADMINISTRATOR DATE

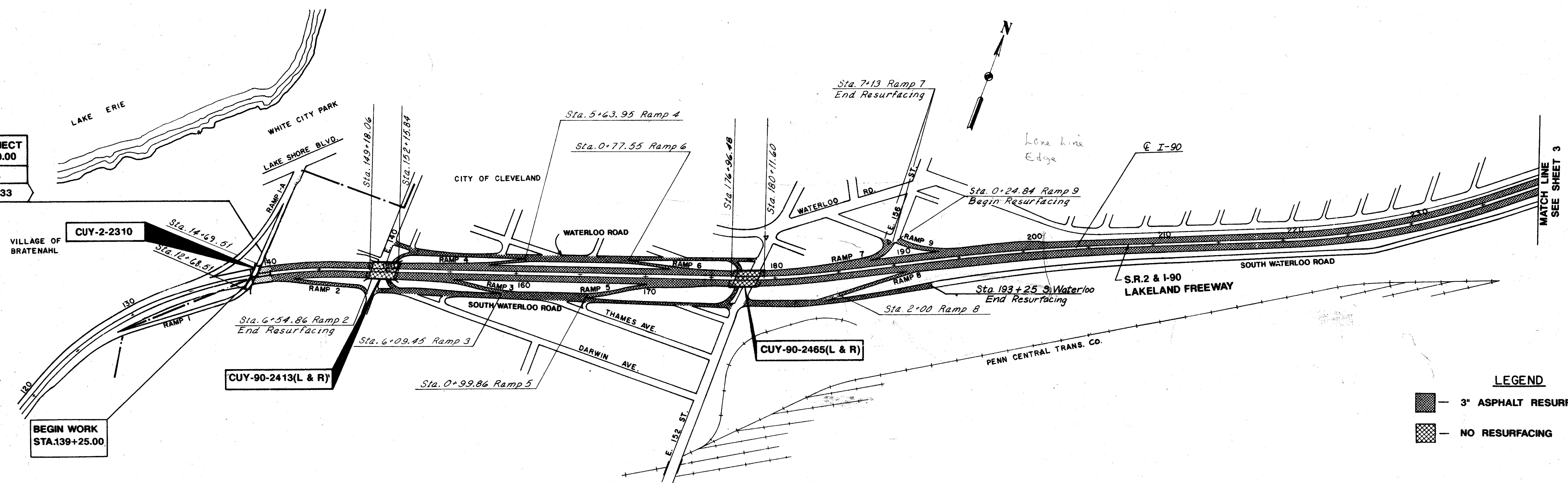
SCHEMATIC RESURFACING PLAN

FHWA REGION	STATE	PROJECT
5	OHIO	

2
200

CUYAHOGA COUNTY
 CUY-90-23.95
 LAKE COUNTY
 LAK-90-0.00

BEGIN PROJECT
 STA. 140+00.00
 S.L.M. 23.95
 IR-90-1(156)33



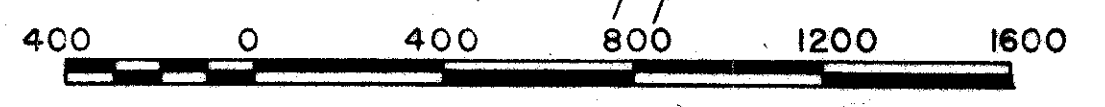
BEGIN WORK
 STA. 139+25.00

MATCH LINE
 SEE SHEET 3

MADE J.M.W. DATE 4-8-88
 TRACED T.D. DATE 4-10-88
 CHECKED A.H.S. DATE 4-11-88
 SCALE 1"=400'

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

HNTB



LEGEND
 3" ASPHALT RESURFACING
 NO RESURFACING

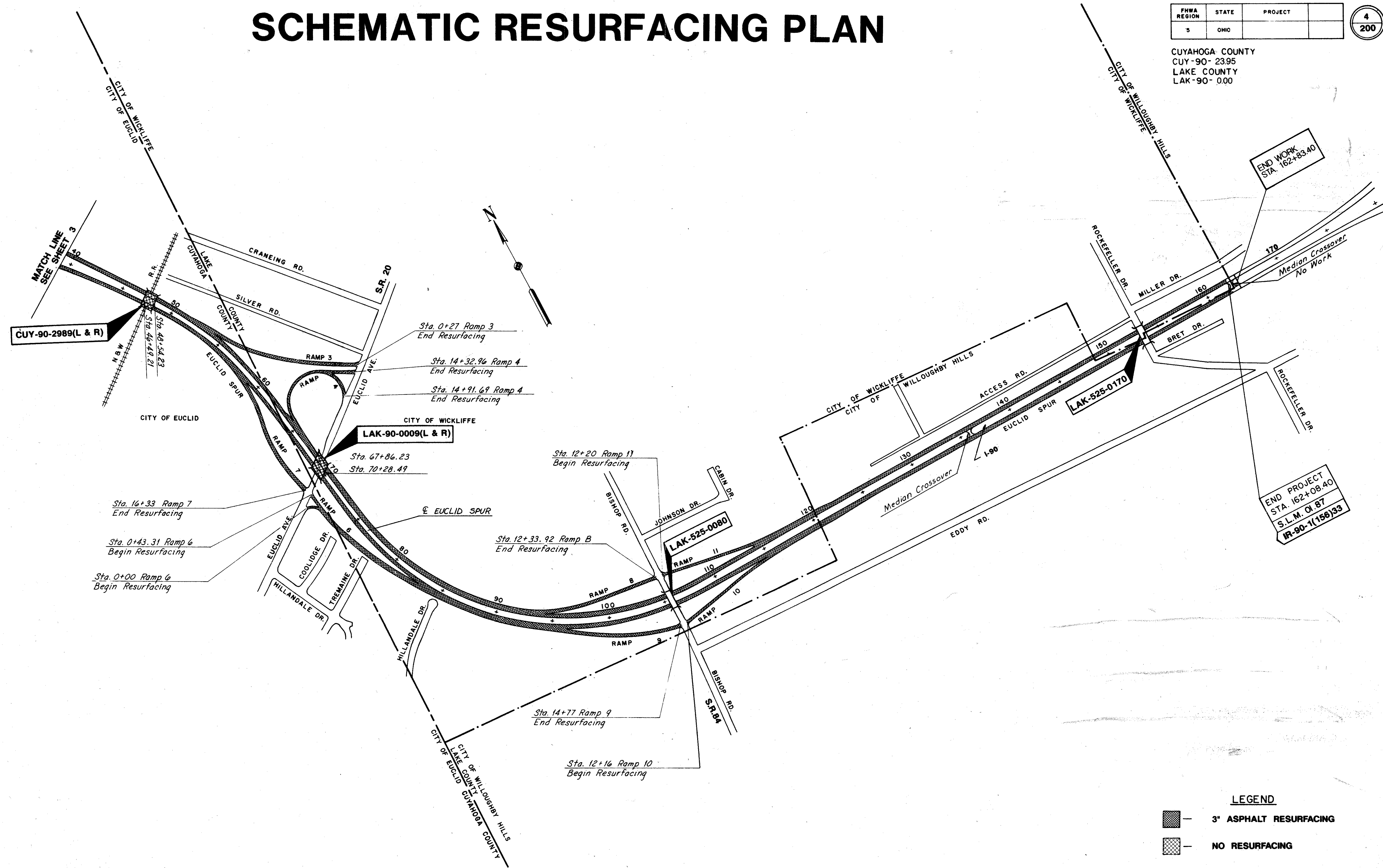
FOR QUANTITIES SEE SHEETS 39-43.

SCHEMATIC RESURFACING PLAN

FHWA REGION	STATE	PROJECT	
5	OHIO		

4
200

CUYAHOGA COUNTY
 CUY-90-23.95
 LAKE COUNTY
 LAK-90-0.00



CUY-90-2989(L & R)

LAK-90-0009(L & R)

LAK-525-0080

LAK-525-0170

END PROJECT
 STA. 162+08.40
 S.L.M. 01.87
 R-90-1(156)33

LEGEND

- 3" ASPHALT RESURFACING
- NO RESURFACING

MADE J.M.W. DATE 4-8-88
 TRACED T.D. DATE 4-16-88
 CHECKED A.H.S. DATE 4-11-88
 SCALE 1"=400'

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

HNTB



FOR QUANTITIES SEE SHEETS 39-43.

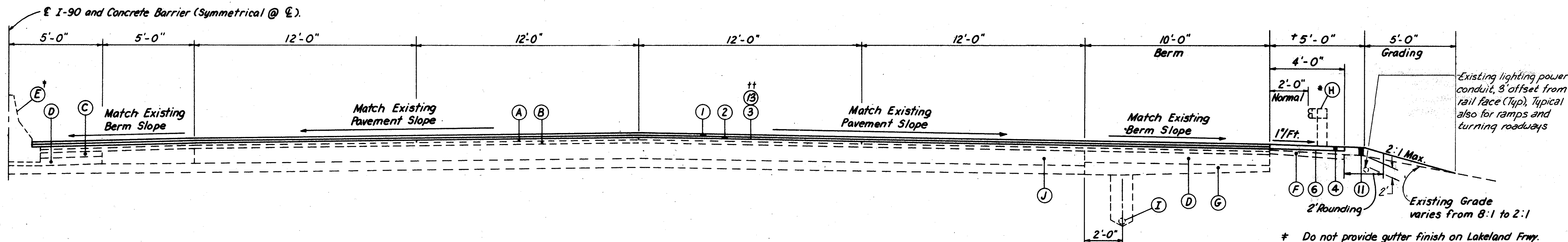
TYPICAL SECTIONS

TYPE 446

FHWA REGION	STATE	PROJECT
5	OHIO	

5
200

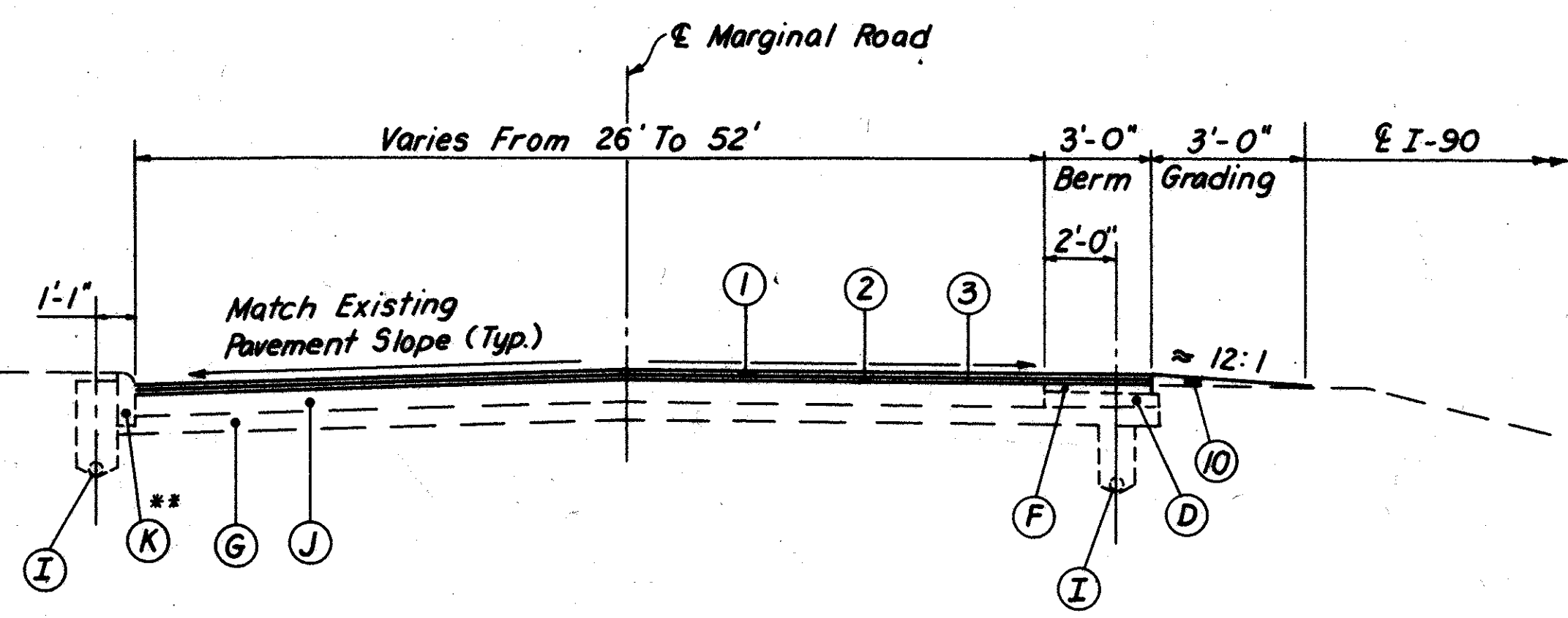
CUYAHOGA COUNTY
CUY-90-23.95
LAKE COUNTY
LAK-90-0.00



NORMAL SECTION - LAKELAND FREEWAY, I-90

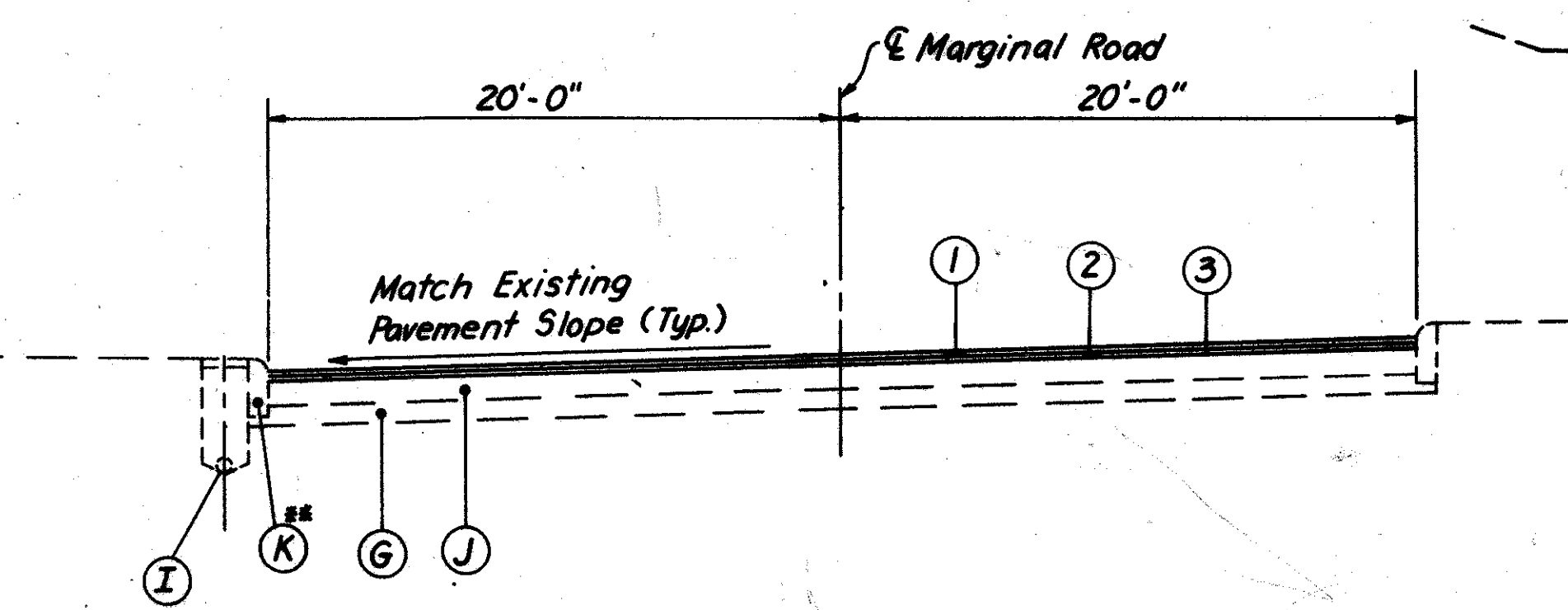
Sta. 140+00 to Sta. 403+00
Station Equation Sta. 403+00 Back =
Sta. 41+12.20 Ahead
Sta. 41+12.20 to Sta. 56+32.04

- * Do not provide gutter finish on Lakeland Fwy. and associated ramps, see sheet 96.
- * For Typical Section of Berm without guardrail, See detail A.
- + For Typical Section with curbed berm See detail B.
- ** See Sheet 95 for Curb/Gutter Treatment on Marginal Roads.
- †† Item 403 Provided on Mainline Pavement excluding berms.



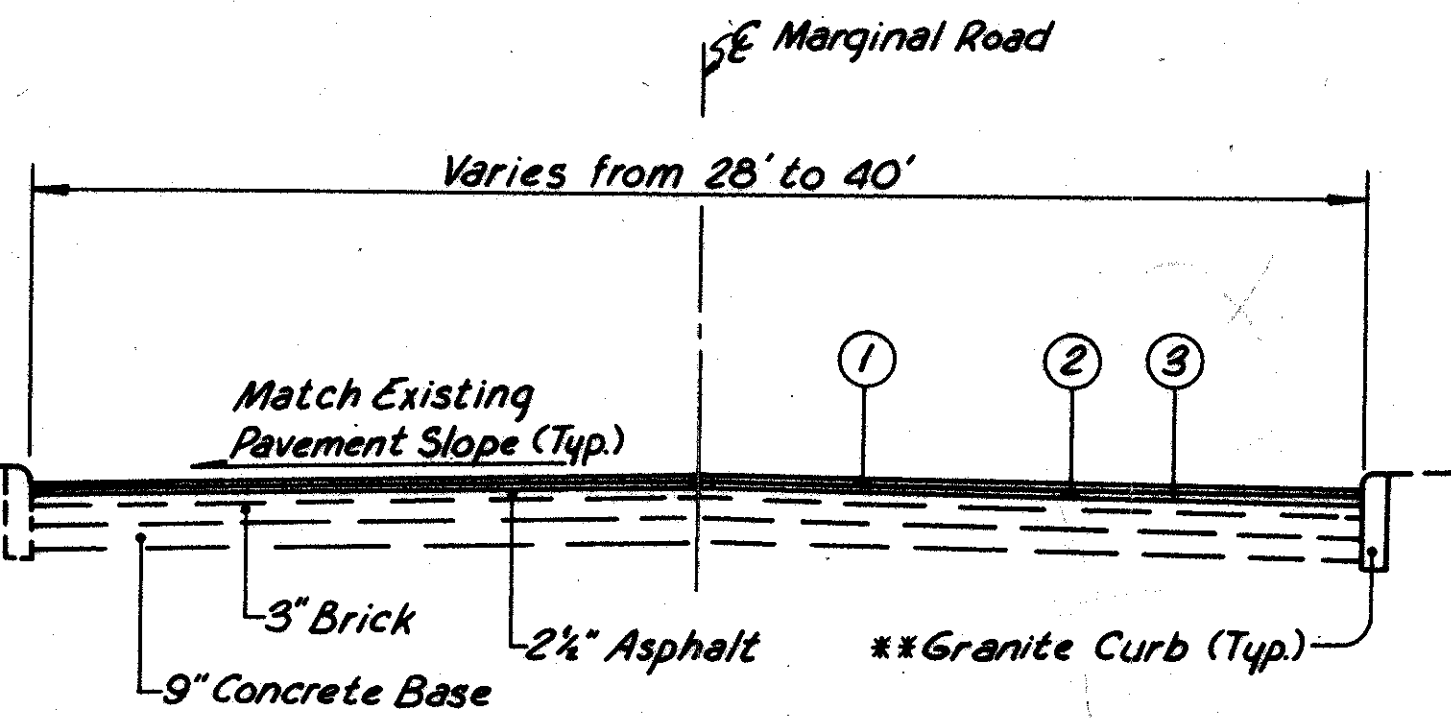
MARGINAL ROAD

(North Marginal Road shown;
South Marginal Road Opposite-Hand)
Waterloo Road, South Waterloo Road,
Villaview Road, Lakeland Blvd.



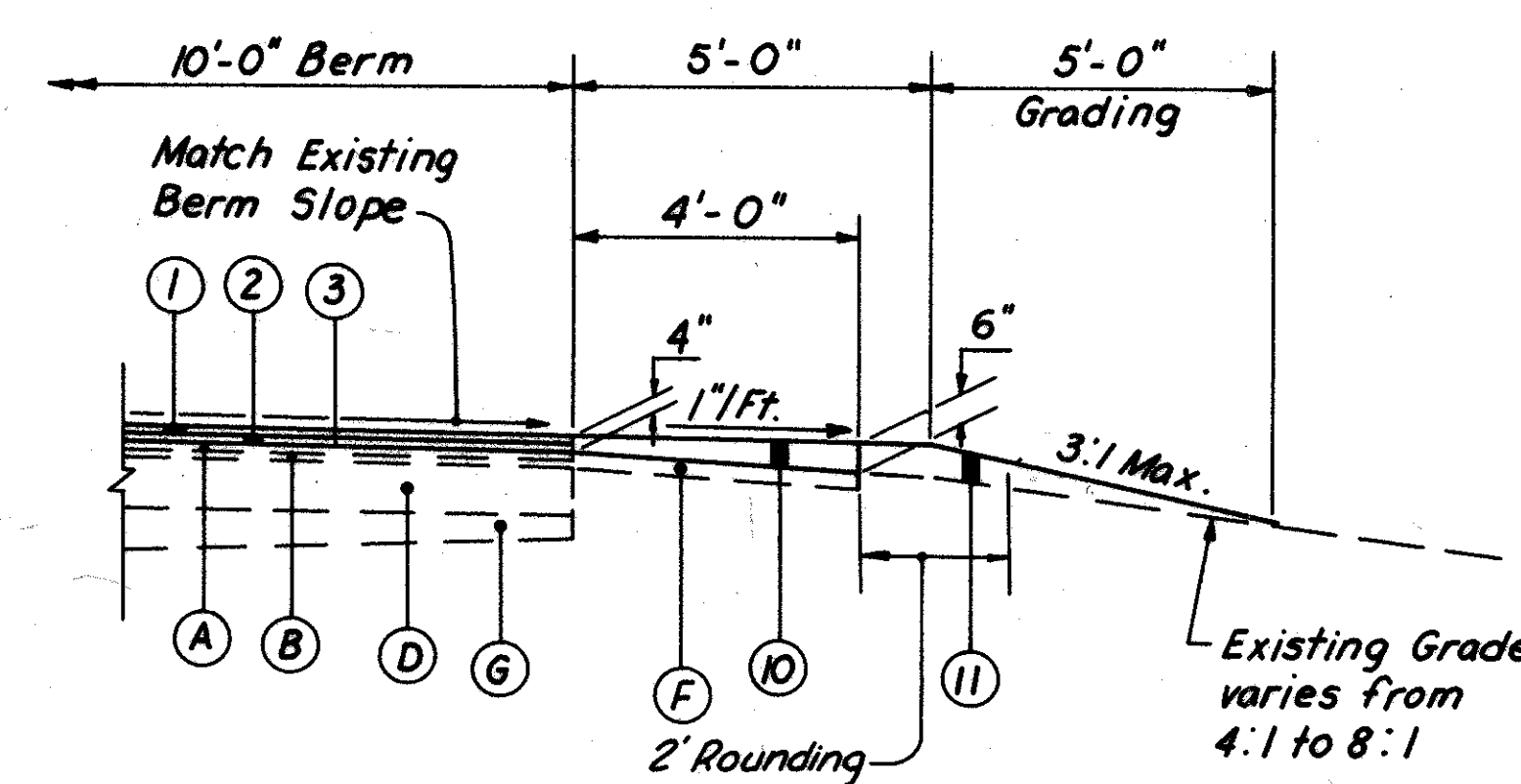
MARGINAL ROAD (TWO WAY TRAFFIC)

Lakeland Blvd. Sta. 25+30.74 to Sta. 71+53
Villaview Road from E. 185th Street to Neff Road
(Superelevated Section Shown)



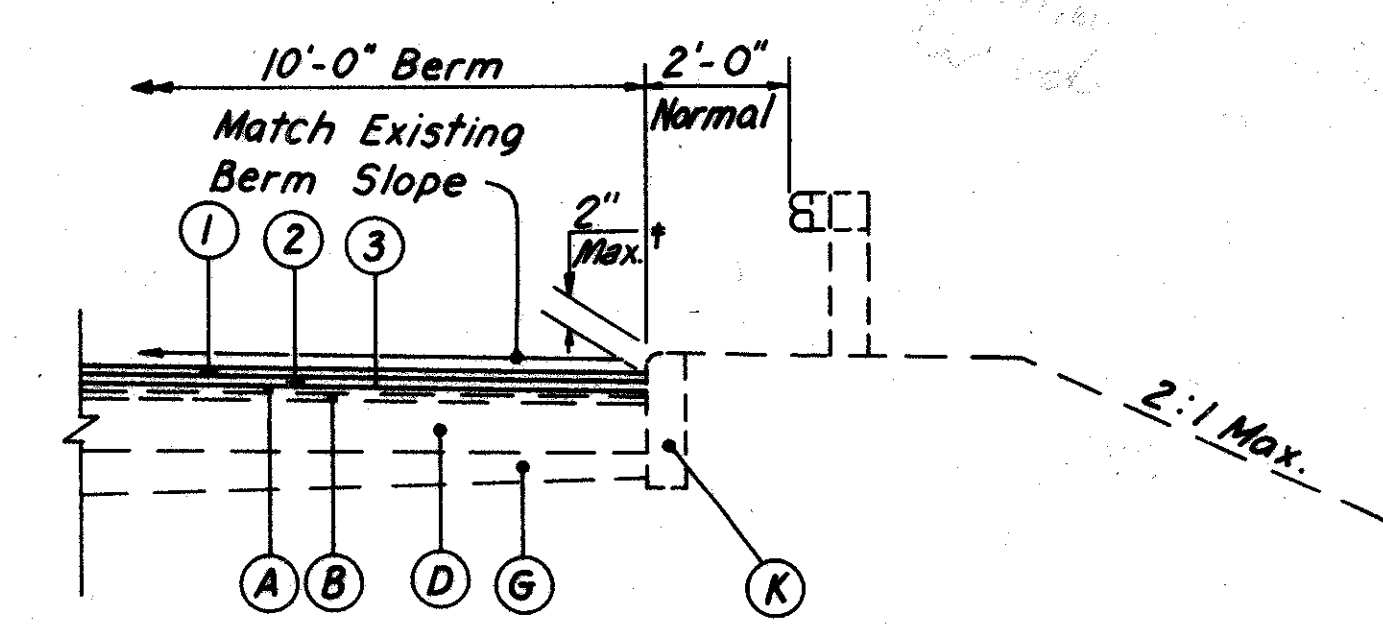
SOUTH MARGINAL ROAD

Lakeland Blvd. (E.B. Only) Between
E. 222nd St. and E. 260th St.



TYPICAL SECTION OF BERM WITHOUT GUARDRAIL, I-90

DETAIL A



TYPICAL SECTION OF CURBED BERM, LAKELAND FWY. AND RAMPS

LAKELAND FWY. Sta. 331+98 to Sta. 346+50
Sta. 360+50 to Sta. 374+49
Sta. 377+18 to Sta. 385+25
Ramps 8E-13E, 15E

DETAIL B

LEGEND

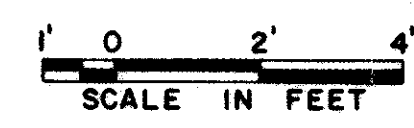
- EXISTING**
- (A) 1-1/4" ASPHALT CONCRETE
 - (B) 1-3/4" ASPHALT CONCRETE
 - (C) BITUMINOUS AGGREGATE BASE
 - (D) AGGREGATE BASE
 - (E) CONCRETE BARRIER
 - (F) COMPACTED AGGREGATE WITH BITUMINOUS SEAL COAT
 - (G) SUBBASE
 - (H) GUARDRAIL, TYPE 5
 - (I) UNDERDRAIN
 - (J) CONCRETE PAVEMENT
 - (K) CONCRETE CURB

- PROPOSED**
- (1) ITEM 446 - 1-1/4" ASPHALT CONCRETE SURFACE COURSE, TYPE I, AC-20, AS PER PLAN (SEE NOTE ON SHEET 8.)
 - (2) ITEM 446 - 1-3/4" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE 2, AC-20
 - (3) ITEM 407 - TACK COAT
 - (4) ITEM 404 - 3" ASPHALT CONCRETE, AC-20
 - (5) ITEM 659 - SEEDING AND MULCHING
 - (6) HERBICIDES (SEE GEN. NOTE ON SH. 9)
 - (7) ITEM 203 - EMBANKMENT, AS PER PLAN
 - (8) ITEM 310 - SUBBASE, TYPE I, GRADING A, AS PER PLAN
 - (9) ITEM 301 - 6" BITUMINOUS AGGREGATE BASE, AC-20, AS PER PLAN
 - (10) ITEM 617 - COMPACTED AGGREGATE TYPE A
 - (11) ITEM 203 - LINEAR GRADING AS PER PLAN
 - (12) ITEM 408 - BITUMINOUS PRIME COAT
 - (13) ITEM 403 - ASPHALT CONCRETE, AC-20 (SEE NOTE ON SHEET 8)

- NOTES:**
1. TYPICAL SECTIONS ARE INTENDED TO SHOW THE GENERAL ROADWAY AND PAVEMENT FEATURES ONLY. FOR DETAILS SEE PLAN SHEETS AND DETAIL SHEETS.
 2. FOR MARGINAL ROAD WIDENING TYPICAL SECTIONS SEE SHEET 102.

MADE J.M.W. DATE 4-8-88 Howard, Needles, Tammen & Bergendoff
TRACED J.D. DATE 2-11-88 CONSULTING ENGINEERS
CHECKED A.H.S. DATE 2-11-88 CLEVELAND, OHIO
SCALE 3/8" = 1'-0"

HNTB



Rev. 6-1-90

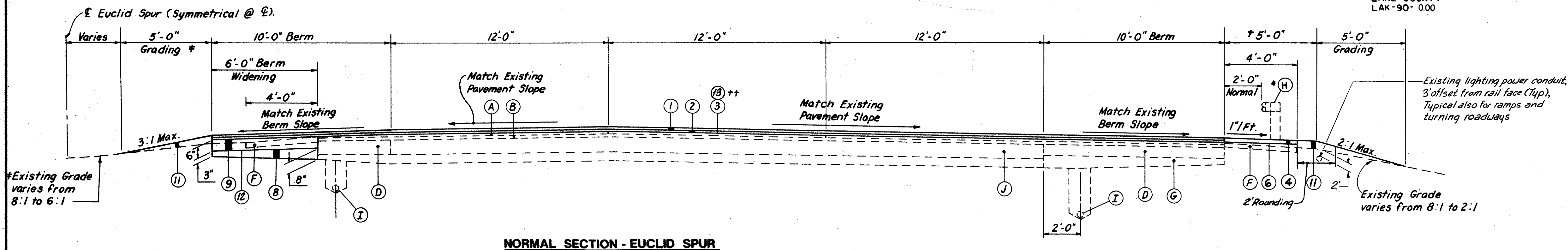
TYPICAL SECTIONS

TYPE 44G

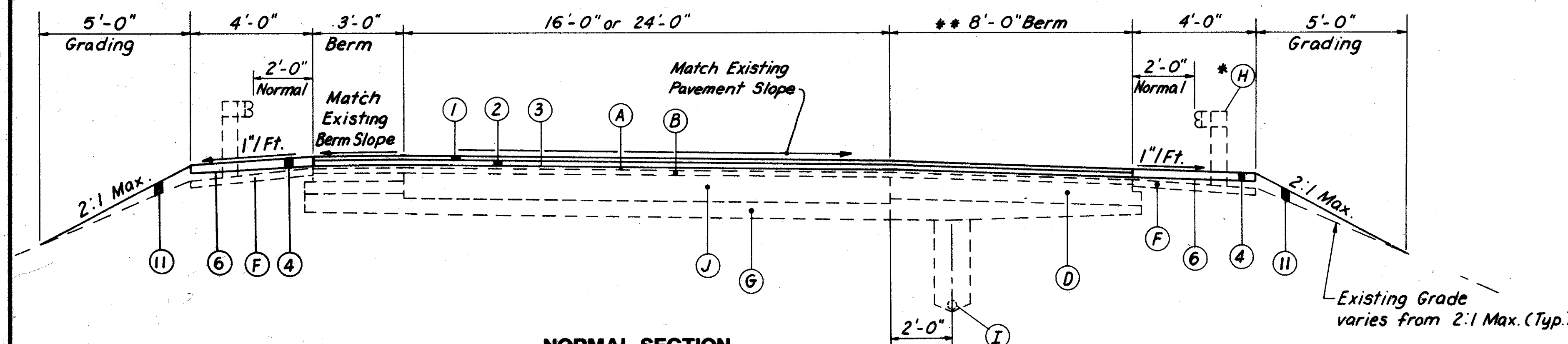
FHWA REGION	STATE	PROJECT
5	OHIO	

6
200

CUYAHOGA COUNTY
CUY-90-2395
LAKE COUNTY
LAK-90-000

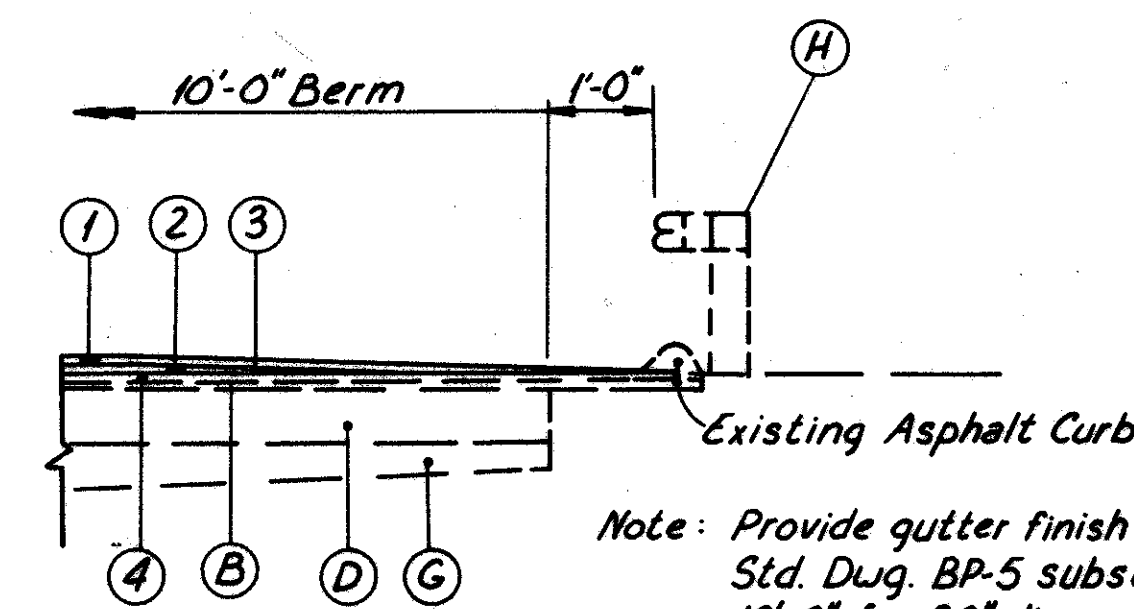


NORMAL SECTION - EUCLID SPUR



NORMAL SECTION RAMP AND TURNING ROADWAYS

(Existing 8' Rt. Berm)



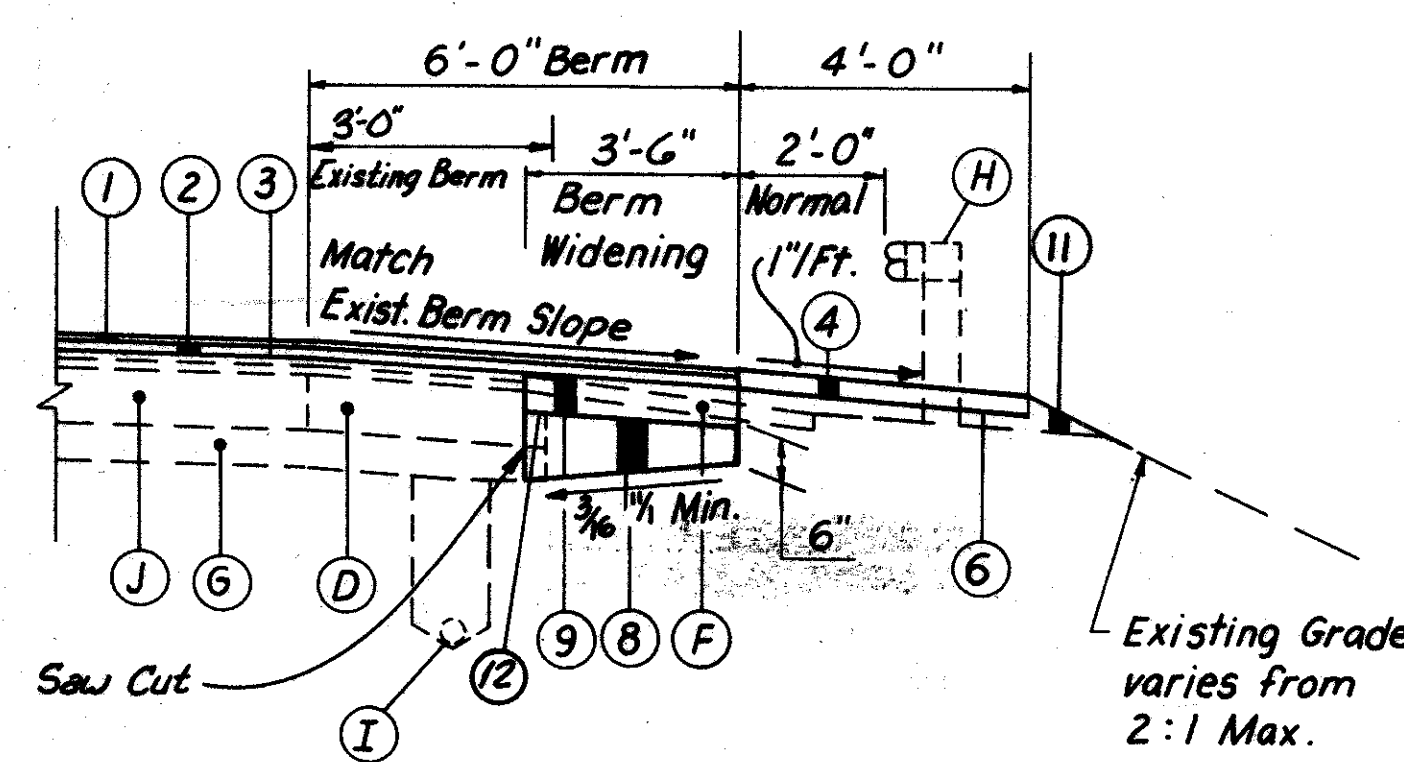
TYPICAL SECTION OF CURBED BERM, EUCLID SPUR

EUCLID SPUR STA. 48+63 TO RAMP 7 STA. 4+90 (RT)
EUCLID SPUR RAMP 2 STA. 6+08 TO STA. 10+00 (RT)

- * For Typical Section Detail of Berm without guardrail, See Detail A on sheet 5.
- † For Typical Section Detail with curbed berm, See Detail F.
- ‡ For Typical Section where existing grade varies from 4:1 to 6:1, See Detail C.
- ** For Shoulder Widening See Details D and E.
- †† Item 403 provided on mainline pavement excluding berms.

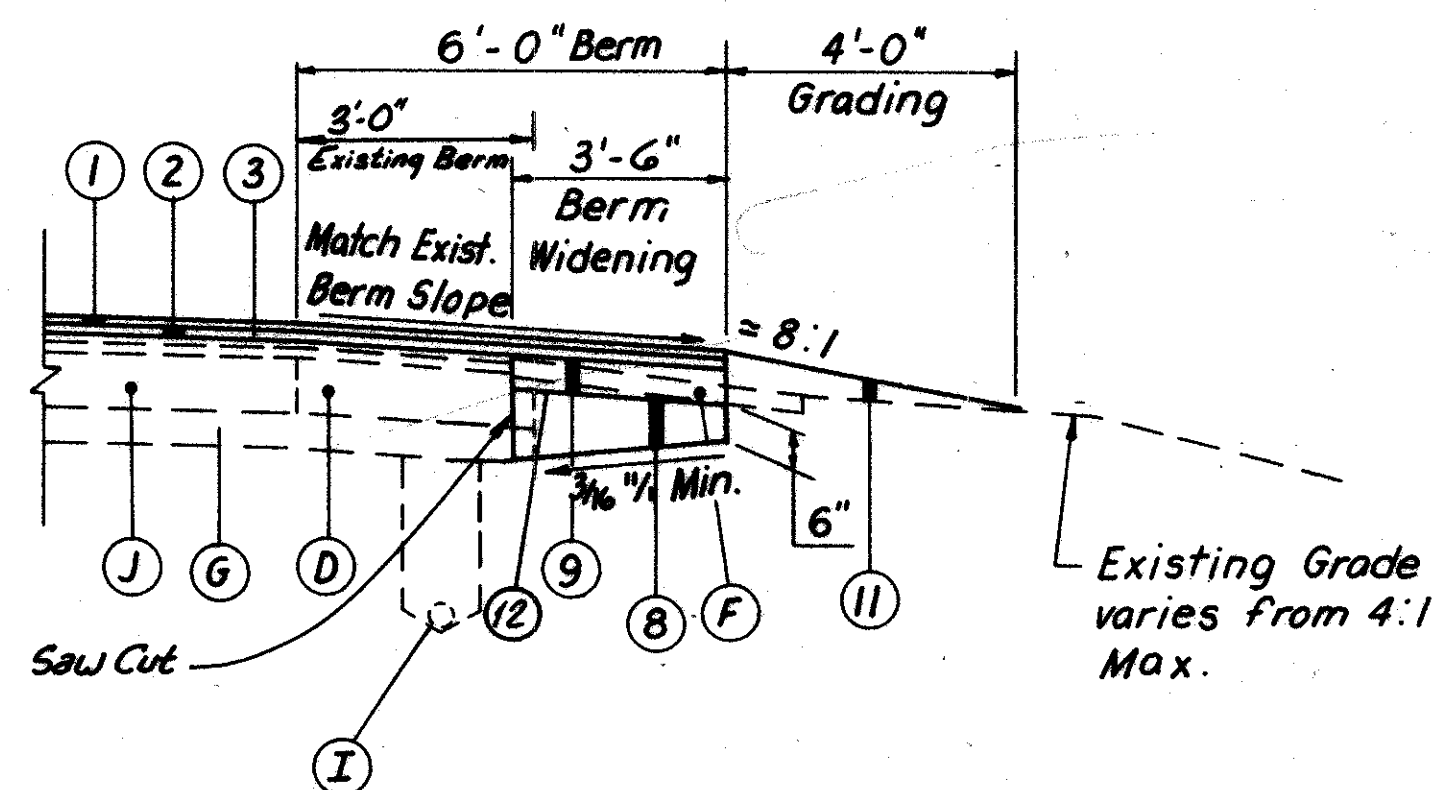
NOTE:
FOR LEGEND SEE SHEET 5.

NOTE:
TYPICAL SECTIONS ARE INTENDED TO SHOW THE GENERAL ROADWAY AND PAVEMENT FEATURES ONLY. FOR DETAILS SEE PLAN SHEETS AND DETAIL SHEETS.



TYPICAL RAMP SHOULDER WIDENING - WITH GUARDRAIL

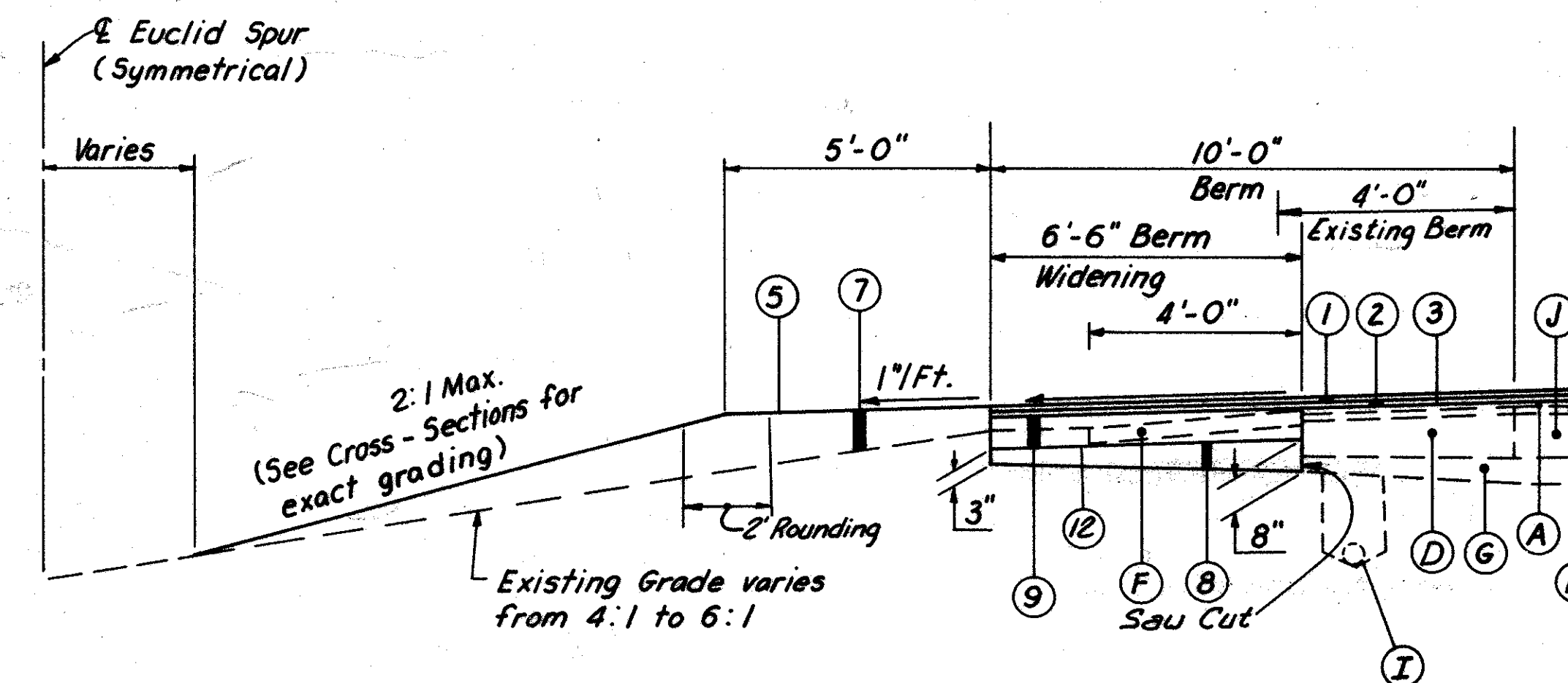
DETAIL D



TYPICAL RAMP SHOULDER WIDENING - WITHOUT GUARDRAIL

DETAIL E

DETAIL F



TYPICAL SECTION - EUCLID SPUR - EXISTING SLOPE 4:1 TO 6:1

DETAIL C

MADE J.M.W. DATE 4-8-88
TRACED J.D. DATE 2-12-88
CHECKED A.H.S. DATE 2-11-88
SCALE 3/8" = 1'-0"

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

HNTB

1" = 0' 2' 4'
SCALE IN FEET

GENERAL NOTES

FHWA REGION	STATE	PROJECT
5	OHIO	

7
200

CUYAHOGA COUNTY
CUY - 90-23.95
LAKE COUNTY
LAK - 90-0.00

GENERAL

FIELD OFFICE

THE CONTRACTOR SHALL PROVIDE A SUITABLE FIELD OFFICE HAVING A MINIMUM OF 800 SQ. FT. OF FLOOR SPACE. PAYMENT SHALL BE AT THE LUMP SUM PRICE BID FOR ITEM 619-FIELD OFFICE.

RIGHT-OF-WAY

ALL WORK SHALL BE PERFORMED WITHIN THE EXISTING RIGHT-OF-WAY OR EASEMENTS.

CONTINGENCY QUANTITIES

THE CONTRACTOR SHALL NOT ORDER MATERIALS OR PERFORM WORK FOR PLAN ITEMS SET UP TO BE USED "AS DIRECTED BY THE ENGINEER" UNLESS AUTHORIZED BY THE ENGINEER. THE ACTUAL WORK LOCATIONS AND QUANTITIES USED AT THE ENGINEER'S DISCRETION SHALL BE MADE A MATTER OF RECORD BY INCORPORATION INTO THE FINAL CHANGE ORDER GOVERNING COMPLETION OF THIS PROJECT.

UNDERGROUND UTILITIES

THE LOCATIONS OF THE UNDERGROUND UTILITIES SHOWN ON THE PLANS ARE AS OBTAINED FROM THE OWNERS OF THE UTILITY AS REQUIRED BY SECTION 153.64 OF THE OHIO REVISED CODE.

UTILITY OWNERSHIP

THE FOLLOWING UTILITIES AND OWNERS ARE LOCATED WITHIN THE WORK LIMITS OF THIS PROJECT:

AT&T COMMUNICATIONS 3833 WEYMOUTH MEDINA, OH 44256 216-723-9109	CABLEVISION OF OH 14300 INDUSTRIAL BLVD. MAPLE HEIGHTS, OH 44137 216-663-4003
--	--

CLEVELAND ELECTRIC ILLUMINATING 55 PUBLIC SQUARE CLEVELAND, OH 44113 216-5479-4489	CITY OF CLEVELAND DIVISION OF WATER 4600 HARVARD CLEVELAND, OH 44105 216-271-4265
--	---

EAST OHIO GAS CO. 1201 E. 55TH ST. CLEVELAND, OH 44103 216-432-6651	OHIO BELL TELEPHONE 15531 LORAIN AVE. CLEVELAND, OH 44113 216-529-4961
--	---

U.S. SPRINT 3065 HARGROVE RD. ATLANTA, GA 30339 800-521-0579	CITY OF EUCLID 585 E. 222 ST. EUCLID, OH 44123
---	--

CLEVELAND PUBLIC POWER
1201 LAKESIDE AVENUE
CLEVELAND, OH 44114
216-664-3922

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 PLANS. THESE PLANS MAY BE REVIEWED AT THE OHIO DEPARTMENT OF TRANSPORTATION, DISTRICT TWELVE OFFICES, 5500 TRANSPORTATION BOULEVARD, GARFIELD HEIGHTS, OHIO 44125-5396.*

COOPERATION BETWEEN CONTRACTORS

THE CONTRACTOR SHALL COOPERATE AND COORDINATE HIS OPERATIONS WITH THE CONTRACTOR'S ON OTHER PROJECTS THAT MAY BE IN FORCE DURING THE LIFE OF THIS CONTRACT. NO WAIVER OF ANY PROVISIONS OF 105.07 OF THE CONSTRUCTION AND MATERIAL SPECIFICATIONS IS INTENDED.

COST PARTICIPATIONS

COST PARTICIPATIONS ARE AS FOLLOWS:
COST PARTICIPATION I - FEDERAL AND STATE (I.R. FUND)
COST PARTICIPATION II - FEDERAL AND LOCAL (M FUND)
COST PARTICIPATION III - STATE

ALL ITEMS ARE COST PARTICIPATION I UNLESS SHOWN OTHERWISE.

ALL WORK ON LAKELAND BLVD. FROM STA. 17+74 TO STA. 71+53 AND THE LAKELAND-BLVD. E. 260 ST. CONNECTOR (STA. 0+52.64 TO STA. 6+74) IS FUNDED BY COST PARTICIPATION II. RELAMPING OF LUMINAIRES IS FUNDED BY COST PARTICIPATION III.

EQUIPMENT AND MATERIAL STORAGE

IN ORDER TO PROVIDE FOR THE SAFETY OF THE TRAVELING PUBLIC THE CONTRACTORS ATTENTION IS DIRECTED TO 614.03. IN ADDITION THE FOLLOWING PROVISIONS SHALL APPLY:

1. STORED OR PARKED VEHICLES, MATERIALS AND EQUIPMENT SHALL BE LOCATED BEHIND EXISTING PERMANENT GUARDRAIL OR NOT LESS THAN 30-FT BEYOND THE TRAVELED WAY.
2. ANY REMOVED ITEMS SHALL NOT BE STORED ON THE RIGHT-OF-WAY FOR MORE THAN THIRTY DAYS.
3. ALL DISTURBED AREAS SHALL BE RETURNED TO THEIR ORIGINAL CONDITION AT NO EXPENSE TO THE STATE.

ROADWAY

ROUNDING OF CORNERS SHOWN ON CROSS SECTIONS

ALL CORNERS SHALL BE ROUNDED (4-FT MINIMUM) EVEN THOUGH SHOWN OTHERWISE ON THESE PLANS.

ITEM 203 - EMBANKMENT, AS PER PLAN

THE METHOD OF MEASUREMENT FOR THIS ITEM SHALL BE BY THE METHOD OF AVERAGE END AREAS WHERE CROSS SECTIONS ARE INCLUDED IN THE PLANS.

THE TOP 3-IN. OF EMBANKMENT SHALL CONSIST OF LOOSE, FRIABLE, LOAMY SOIL WITHOUT THE ADMIXTURE OF REFUSE OR STONE GREATER THAN 1-IN. THE SOIL SHALL BE CAPABLE OF SUPPORTING VEGETATION.

DITCH RESTORATION

THIS WORK SHALL CONSIST OF THE REMOVAL AND DISPOSAL OF SILT, VEGETATION, TREES AND OTHER LOOSE OR UNSUITABLE MATERIAL FROM THE EXISTING DITCHES. THE ORIGINAL DITCH CROSS SECTION AND GRADE SHALL BE RE-ESTABLISHED TO THE SATISFACTION OF THE ENGINEER. THE DITCHES SHALL BE SEEDED AND MULCHED AS PER ITEM 659 INCLUDING FERTILIZING AND LIMING, AFTER THE CROSS SECTIONS AND GRADES HAVE BEEN RE-ESTABLISHED.

THE LOCATIONS OF THIS WORK SHALL BE AS DIRECTED BY THE ENGINEER. PAYMENT FOR ITEM 203 - EXCAVATION, NOT INCLUDING EMBANKMENT CONSTRUCTION, AS PER PLAN SHALL INCLUDE ALL COSTS OF REMOVAL, DISPOSAL AND RESTORATION WITH SEEDING AND MULCHING, FERTILIZING AND LIMING. MEASUREMENT WILL BE BY LOOSE VOLUME IN CARRIER.

THE FOLLOWING ESTIMATED QUANTITY HAS BEEN INCLUDED IN THE GENERAL SUMMARY TO BE UTILIZED AS OUTLINED ABOVE:

ITEM 203 - EXCAVATION, NOT INCLUDING EMBANKMENT CONSTRUCTION, AS PER PLAN 225 C.Y.

LINEAR GRADING, AS PER PLAN

THE INTENT OF THIS ITEM IS THAT THE CONTRACTOR MUST PERFORM ALL WORK NECESSARY TO PROVIDE PROPERLY SHAPED SHOULDERS AS SHOWN ON THE TYPICAL SECTIONS, SO THAT ADEQUATE DRAINAGE CAN BE MAINTAINED.

ALL WORK INCLUDING EXCAVATION, EMBANKMENT (SEE GENERAL NOTE "EMBANKMENT, AS PER PLAN", AND AS SPECIFIED IN 203.04 PARAGRAPH G), AND SEEDING AND MULCHING AS PER SPECIFICATION 659 SHALL BE INCLUDED IN THE UNIT PRICE BID FOR ITEM 203 - LINEAR GRADING, AS PER PLAN.

PAYMENT FOR THE ABOVE SHALL BE INCLUDED IN THE UNIT PRICE BID FOR ITEM 203 - LINEAR GRADING, AS PER PLAN. THE UNIT OF MEASURE SHALL BE BY STATION MEASURED ALONG THE OUTSIDE EDGE OF EACH SHOULDER WITH ONE STATION EQUAL TO 100 LINEAR FEET. FOR ESTIMATED QUANTITIES SEE SHEET NO. 46

* Cuy-2-22.97
Cuy-2-24.33
Cuy-2-26.04 and
Cuy-2-28.16 / Cuy-525-0.00 / Lak-525-0.00

ITEM 202 - RAISED PAVEMENT MARKERS REMOVED FOR STORAGE

REMOVED MARKERS SHALL BE STORED, FOR PICK-UP BY STATE FORCES, ON THE RIGHT-OF-WAY WITHIN THE PROJECT LIMITS BY THE CONTRACTOR AS DIRECTED BY THE ENGINEER. ALL COSTS TO BE INCLUDED IN THE UNIT PRICE BID FOR ITEM 202 - RAISED PAVEMENT MARKERS REMOVED FOR STORAGE. THE FOLLOWING QUANTITY IS INCLUDED IN THE GENERAL SUMMARY.

ITEM 202 - RAISED PAVEMENT MARKERS REMOVED FOR STORAGE 3,800 EA.

GUARDRAIL PROTECTION

NO SIGN SUPPORTS SHALL BE ERRECTED BEFORE THE NECESSARY GUARDRAIL PROTECTION IS IN PLACE. SIMILARLY EXISTING GUARDRAIL WHICH PROTECTS AN OBSTRUCTION OR SLOPE WHICH IS TO BE UPGRADED TO ELIMINATE GUARDRAIL, SHALL NOT BE REMOVED UNTIL THAT WORK HAS BEEN COMPLETED. EXISTING GUARDRAIL WHICH IS SCHEDULED TO BE REPLACED WITH TYPE 5 GUARDRAIL, SHALL NOT BE REMOVED UNTIL THE NEW GUARDRAIL IS READY TO BE INSTALLED. UNDER NO CIRCUMSTANCES SHALL ANY HAZARD BE WITHOUT GUARDRAIL PROTECTION FOR MORE THAN 24 HOURS. (SEE PUBLIC SAFETY NOTE SHEET NO.12)

LOCATION OF GUARDRAIL

THE LOCATIONS OF GUARDRAIL RUNS, AS SHOWN IN THESE PLANS, ARE SUBJECT TO ADJUSTMENT PRIOR TO FINAL ACCEPTANCE. THE ENGINEER SHALL BE SATISFIED THAT ALL INSTALLATIONS WILL AFFORD MAXIMUM PROTECTION FOR TRAFFIC.

SEQUENCE OF OPERATIONS FOR GUARDRAIL INSTALLATION

1. COMPLETE SHOULDER CONSTRUCTION.
2. REMOVE EXISTING GUARDRAIL (INSTALL TEMPORARY CONCRETE BARRIER AT HAZARDS - SEE PUBLIC SAFETY NOTE).
3. CONSTRUCT STRIP OF ITEM 404 - ASPHALT CONCRETE, AS PER TYPICAL SECTIONS AND PLAN DETAILS.
4. INSTALL NEW GUARDRAIL.

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.

RAISING EXISTING GUARDRAIL

THE FOLLOWING ESTIMATED QUANTITY IS CARRIED TO THE GENERAL SUMMARY TO BE USED WHERE AND AS DIRECTED BY THE ENGINEER TO RAISE EXISTING GUARDRAIL TO THE PROPER HEIGHT AFTER RESURFACING HAS BEEN COMPLETED.

PAYMENT SHALL INCLUDE ALL MATERIALS AND LABOR NECESSARY TO RAISE THE GUARDRAIL IN CONFORMANCE WITH ITEM 606 AND THE STANDARD CONSTRUCTION DRAWING, GR-2B. TAPERED STEEL SPACER BLOCKS SHALL ONLY BE USED ON STEEL POSTS WHEN RAISING GUARDRAIL HEIGHT AS SHOWN ON STANDARD CONSTRUCTION DRAWING GR-2B.

ITEM 606 - RAISING EXISTING GUARDRAIL, TYPE 5 2,500 LIN.FT.

DUST CONTROL

THE FOLLOWING ESTIMATED QUANTITIES HAVE BEEN INCLUDED IN THE GENERAL SUMMARY TO BE USED AS DIRECTED BY THE ENGINEER FOR DUST CONTROL:

ITEM 616 - WATER 50 M.GAL.
ITEM 616 - CALCIUM CHLORIDE 5 TON

FENCE REPLACEMENT

ALL EXISTING WOVEN WIRE FENCE SHALL BE REPLACED WITH CHAIN LINK FENCE THROUGHOUT THIS PROJECT.

NO EXISTING FENCE SHALL BE REMOVED UNTIL THE NEW FENCE IS AVAILABLE AND READY FOR INSTALLATION. IF THE NEW FENCE IS NOT INSTALLED WITHIN 7 DAYS AFTER REMOVAL, THE CONTRACTOR SHALL ERECT A TEMPORARY STOCKTIGHT FENCE UNTIL THE NEW FENCE IS COMPLETED. THIS SHALL BE DONE AT NO ADDITIONAL COST TO THE STATE.

ALL EXISTING FENCE SHALL BE REFERENCED PRIOR TO REMOVAL SO THAT NEW FENCE CAN BE INSTALLED ON THE IDENTICAL ALIGNMENT EXCEPT WHERE SHOWN OTHERWISE IN THE PLANS. FOR FURTHER INFORMATION IN REGARD TO THE EXISTING FENCE THE CONTRACTOR SHALL REFER TO THE PREVIOUS CONSTRUCTION PLANS. THESE PLANS MAY BE REVIEWED AT THE OHIO DEPARTMENT OF TRANSPORTATION, DISTRICT TWELVE OFFICES, 5500 TRANSPORTATION BOULEVARD, GARFIELD HEIGHTS, OHIO 44125-5396.*

FOR ESTIMATED QUANTITIES AND LOCATIONS, SEE SHEET NO. 108.

ITEM 201 - CLEARING AND GRUBBING

THE WOVEN WIRE FENCE REPLACEMENT WILL REQUIRE A SUBSTANTIAL AMOUNT OF CLEARING AND GRUBBING TO PERFORM THE WORK. ONLY THE VEGETATION WHICH IS NECESSARY FOR THE FENCE REMOVAL/ REPLACEMENT SHALL BE CLEARED AND ONLY WITHIN THE LIMITED ACCESS OF THE HIGHWAY.

DAMAGED FENCE

THE FOLLOWING ESTIMATED QUANTITY HAS BEEN CARRIED TO THE GENERAL SUMMARY TO BE USED FOR THE REPLACEMENT OF EXISTING DAMAGED CHAIN LINK FENCE, AS DIRECTED BY THE ENGINEER:

ITEM 202 - FENCE REMOVED 2,000 L.F.
ITEM 607 - FENCE, TYPE CLT 2,000 L.F.

ITEM 604 - MONUMENT BOXES ADJUSTED TO GRADE

ALL EXISTING MONUMENT BOXES WITHIN THE PROJECT LIMITS, UNLESS OTHERWISE DIRECTED BY THE ENGINEER, SHALL BE ADJUSTED TO GRADE. THE BOX SHALL BE CENTERED OVER THE EXISTING IRON PIN PRIOR TO THE INITIAL OVERLAY. THE ENTIRE MONUMENT BOX ASSEMBLY SHALL BE ADJUSTED TO GRADE. NO INSERTS OR ADJUSTING RINGS WILL BE PERMITTED.

THE FOLLOWING ESTIMATED QUANTITY HAS BEEN INCLUDED IN THE GENERAL SUMMARY TO BE USED AS DIRECTED BY THE ENGINEER.

ITEM 604 - MONUMENT BOXES, ADJUSTED TO GRADE	PARTICIPATION I	PARTICIPATION II
	114 EA.	12 EA.

PAVEMENT

ALIGNMENT AND PROFILE

THE WORK PROPOSED BY THIS PROJECT IS FOR THE RESURFACING OF THE EXISTING PAVEMENT. THE PROFILE OF THE PROPOSED SURFACE WILL BE APPROXIMATELY 3-IN. ABOVE THAT OF THE EXISTING PAVEMENT.

ITEM 301 - BITUMINOUS AGGREGATE BASE, AC-20, AS PER PLAN

THIS ITEM SHALL BE USED TO REPAIR BADLY DAMAGED OR DISTRESSED BERMS AS DIRECTED BY THE ENGINEER. THIS WORK SHALL INCLUDE THE REMOVAL OF 3-IN. OF THE EXISTING SHOULDER MATERIAL AND THE CONSTRUCTION OF A 3-IN. COURSE OF ITEM 301 ON THE EXISTING SUBBASE OR NEW SUBBASE AT THE CROSS SLOPES AS SHOWN ON THE TYPICAL SECTIONS. ALL COST OF EXCAVATION AND INSTALLATION SHALL BE INCLUDED IN THE UNIT PRICE BID FOR ITEM 301 - BITUMINOUS AGGREGATE BASE, AC-20, AS PER PLAN. THE CONTRACTOR SHALL PERFORM THE ABOVE AT A TIME CONSISTENT WITH THE "GENERAL CONSTRUCTION SEQUENCE NOTE".

THE FOLLOWING ESTIMATED QUANTITY HAS BEEN CARRIED TO THE GENERAL SUMMARY TO BE USED AS OUTLINED ABOVE AND AS DIRECTED BY THE ENGINEER:

ITEM 301-BITUMINOUS AGGREGATE BASE, AC-20, AS PER PLAN 1,500 C.Y.

ITEM 310 - SUBBASE, TYPE I, GRADING A, AS PER PLAN

THIS ITEM SHALL BE USED TO REPLACE EXISTING UNSUITABLE SUBBASE, AS DETERMINED BY THE ENGINEER, PRIOR TO THE PLACING OF ITEM 301. ALL COST OF EXCAVATION AND INSTALLATION SHALL BE INCLUDED IN THE UNIT PRICE BID FOR ITEM 310 - SUBBASE, TYPE I, GRADING A, A.P.P. THE FOLLOWING ESTIMATED QUANTITY IS INCLUDED IN THE GENERAL SUMMARY TO BE USED AS OUTLINED ABOVE:

ITEM 310 - SUBBASE, TYPE I, GRADING A, AS PER PLAN 200 C.Y.

MATERIAL FURNISHED FOR THIS ITEM SHALL EXCLUDE ALL SLAG EXCEPT CRUSHED AIR-COOLED BLAST FURNACE SLAG.

GENERAL NOTES

FHWA REGION	STATE	PROJECT
5	OHIO	

CUYAHOGA COUNTY
CUY - 90-23.95
LAKE COUNTY
LAK - 90-0.00

ITEM 403

THIS ITEM SHALL BE USED AS A LEVELLING COURSE IN THE MAINLINE PAVEMENT ONLY (EXCLUDING ALL BERMS) TO ELIMINATE WHEEL RUTS. THE LEVELLING COURSE SHALL BE PLACED IN ENTIRETY PRIOR TO BEGINNING ASPHALT RESURFACING OPERATION. THE QUANTITIES SHOWN ON SHEET 41 INDICATE AN AVERAGE DEPTH OF 1/2-IN. FOR ESTIMATING PURPOSES ONLY. ACTUAL DEPTH WILL VARY TO ACHIEVE A LEVEL SURFACE.

ITEM 609 - ASPHALT CONCRETE CURB AC-20, TYPE 1

THIS ITEM SHALL BE USED TO RE-DIRECT THE FLOW OF WATER AWAY FROM BRIDGE ABUTMENTS LOCATED AT THE DOWNGRADE SIDE OF EACH BRIDGE.

TWENTY FIVE (25) FEET OF ASPHALT CURB SHALL BE USED AT EACH LOCATION. THE CURB SHALL BUTT CLOSELY TO THE WINGWALL AND BE LOCATED UNDER THE GUARDRAIL.

THE FOLLOWING ESTIMATED QUANTITY HAS BEEN INCLUDED IN THE GENERAL SUMMARY TO BE USED AS OUTLINED ABOVE AND AS DIRECTED BY THE ENGINEER:

ITEM 609 - ASPHALT CONCRETE CURB AC-20, TYPE 1 900 L.F.

ITEM 446

ON THIS PROJECT, ITEM 446 TABLE 2-2, PROPERTIES OF MIXTURES SHALL BE FOR HEAVY TRAFFIC VOLUMES.

ITEM 446 - ASPHALT CONCRETE AC-20, AS PER PLAN

THE AGGREGATE IN THE 446 SURFACE COURSE TYPE 1H IS RESTRICTED TO SLAG.

SPREADING EQUIPMENT

AN AUTOMATIC SCREED CONTROL HAVING A 40-FT SKI ARM SHALL BE USED FOR PLACING THE INTERMEDIATE COURSE (SEE PROPOSAL NOTE). FOR FULL WIDTH PAVING, THE WIDTH LAID SHALL NOT EXCEED THE PAVEMENT'S RATED WIDTH AS RECOMMENDED BY THE PAVEMENT MANUFACTURER.

LONGITUDINAL JOINTS

LONGITUDINAL JOINTS BETWEEN A PAVEMENT LANE AND ADJOINING BERM OR SPEED CHANGE LANE AND BETWEEN A SPEED CHANGE LANE AND THE ADJOINING BERM SHALL BE MADE THE SAME DAY. ALL LONGITUDINAL JOINTS SHALL BE HOT WITH THE EXCEPTION OF ONE COLD JOINT PER ROADWAY. LONGITUDINAL JOINT LOCATIONS SHALL BE AS APPROVED BY THE ENGINEER. EACH RAMP SHALL HAVE ONLY ONE LONGITUDINAL COLD JOINT LOCATED APPROXIMATELY HALFWAY ACROSS THE RAMP.

PAVEMENT PLANING AT BRIDGE APPROACHES

THE ASPHALT APPROACHES TO STRUCTURES SHALL BE PLACED AS SHOWN ON THE DETAILS ON SHEET NO. 97. MINOR SURVEY WORK WILL BE REQUIRED TO DETERMINE THE LIMITS OF PAVEMENT PLANING. ALL COSTS OF SAID SURVEY SHALL BE INCLUDED IN ITEM 254 - PAVEMENT PLANING, BITUMINOUS

ITEM 251 - PARTIAL DEPTH PAVEMENT REPAIR, AS PER PLAN

THE PAVEMENT SHALL BE REMOVED TO THE SPECIFIED DEPTH WITHIN THE DESIGNATED LIMITS BY A GRINDING METHOD THAT WILL CUT NEAT VERTICAL EDGES.

IF AFTER THE REMOVAL OPERATION THE ENGINEER DETERMINES THAT A FULL-DEPTH REPAIR WILL BE NECESSARY NO FURTHER WORK WILL BE REQUIRED. PAYMENT FOR THE GRINDING OPERATION WILL BE MADE BY PAYING FOR 50% OF THE MEASURED AREA AT THE UNIT PRICE BID FOR ITEM 251 - PARTIAL DEPTH PAVEMENT REPAIR, AS PER PLAN. FOR ADDITIONAL DETAILS, NOTES AND QUANTITIES SEE SHEET 98.

ITEM 407 - TACK COAT

THE RATE OF APPLICATION OF ITEM 407 SHALL BE SUBJECT TO ADJUSTMENT AS DIRECTED BY THE ENGINEER PER 407.05. PLAN QUANTITIES INDICATE AN AVERAGE APPLICATION RATE OF 0.075 GAL. PER SQUARE YARD OF TACK COAT FOR ESTIMATING PURPOSES ONLY.

JOINT SEALERS

ALL REFERENCES TO 705.01 OR 705.02, APPEARING ON STANDARD DRAWINGS OR ON THE PLANS, SHALL BE CONSIDERED TO READ 705.04.

CURB TREATMENT ON MARGINAL ROADS

IT IS THE INTENT THROUGHOUT THIS PROJECT TO PROVIDE SOUND CURBING WITH SUFFICIENT REVEAL (FOLLOWING THE PROPOSED OVERLAY) ON THE MARGINAL ROADS. THE DESIRED MINIMUM CURB REVEAL IS 4-IN. TO ACCOMPLISH THIS THREE CASES FOR CURB TREATMENT HAVE BEEN ESTABLISHED. EACH CASE ALONG WITH ASSOCIATED QUANTITIES ARE DETAILED ON SHEET 95. EXISTING CURB SHALL NOT BE REMOVED AT DRIVEWAYS.

CURB RAMPS

CURB RAMPS SHALL BE CONSTRUCTED IN THE EXISTING WALK AT ALL LOCATIONS SUMMARIZED ON SHEET 51 AND AS DIRECTED BY THE ENGINEER. CONSTRUCTION SHALL BE PERFORMED AS PER STANDARD DRAWING BP-12.

ITEM 622 - CONCRETE BARRIER TYPE B42, AS PER PLAN

CONCRETE BARRIER TYPE B42, AS PER PLAN, SHALL BE CONSTRUCTED AS DETAILED ON SHEET 99 AND STANDARD DRAWING MC-9. LOCATIONS SHALL BE AS SUMMARIZED ON SHEETS 48-50 AND AS DIRECTED BY THE ENGINEER.

ITEM SPECIAL - SAWING AND SEALING ASPHALT CONCRETE PAVEMENT JOINTS, 705.04

SAWING AND SEALING OF ASPHALT CONCRETE PAVEMENT JOINTS SHALL BE PERFORMED ON THE MARGINAL ROADS WHICH HAVE AN EXISTING CONCRETE SURFACE (NO PREVIOUS OVERLAY). ALL WORK SHALL BE DONE IN ACCORDANCE WITH THE PROPOSAL NOTE AND AS DIRECTED BY THE ENGINEER.

THE FOLLOWING ESTIMATED QUANTITY HAS BEEN INCLUDED IN THE GENERAL SUMMARY TO BE USED AS OUTLINED ABOVE:

ITEM SPECIAL - SAWING AND SEALING ASPHALT CONCRETE PAVEMENT JOINTS, 705.04 12,000 L.F.

ITEM SPECIAL - FILLING CONCRETE PAVEMENT JOINTS

THE ITEM SHALL CONSIST OF THE PREPARATION AND FILLING OF PAVEMENT JOINTS ON THE MARGINAL ROADS WHICH HAVE AN EXISTING RIGID CONCRETE SURFACE (NO PREVIOUS OVERLAY). ONLY THE JOINTS WITH A WIDTH GREATER THAN 1-IN. SHALL BE FILLED.

THE ENGINEER SHALL DESIGNATE THE LOCATION OF THE JOINTS TO BE FILLED. JOINTS SHALL BE THOROUGHLY CLEANED BY AN APPROVED METHOD TO REMOVE DUST, DIRT, MOISTURE, VEGETATION, AND OTHER FOREIGN MATERIAL THAT WILL PREVENT BONDING. EACH JOINT SHALL BE CLEANED TO A MINIMUM DEPTH OF 1-IN.

PREPARED JOINTS SHALL BE FILLED USING RUBBERIZED SAND-ASPHALT SPECIFIED IN SUPPLEMENTAL SPECIFICATION 805 AND SHALL BE COMPACTED BY AN APPROVED METHOD.

PAYMENT SHALL BE MADE AT THE CONTRACT UNIT PRICE PER LINEAR FOOT. "ITEM SPECIAL - FILLING CONCRETE PAVEMENT JOINTS," WHICH PRICE SHALL CONSTITUTE FULL COMPENSATION FOR ALL LABOR, MATERIALS, TOOLS, AND EQUIPMENT REQUIRED TO COMPLETE THIS ITEM OF WORK.

THE FOLLOWING ESTIMATED QUANTITY HAS BEEN INCLUDED IN THE GENERAL SUMMARY TO BE USED AS OUTLINED ABOVE:

ITEM SPECIAL - FILLING CONCRETE PAVEMENT JOINTS 2,000 L.F.

CONCRETE SLOPE PROTECTION REPAIR

THIS WORK SHALL INCLUDE THE REMOVAL OF THE EXISTING CONCRETE SLOPE PROTECTION, PLACING EMBANKMENT MATERIAL TO FILL ERODED AREAS UNDER AND ADJACENT TO THE PROPOSED CONCRETE SLOPE PROTECTION, REPLACING EXISTING PIPE OUTLETS AND THE INSTALLATION OF NEW SLOPE PROTECTION. FILTER FABRIC (712.09 TYPE B) SHALL BE PLACED UNDER ALL NEW SLOPE PROTECTION. ALL JOINTS BETWEEN THE NEW AND OLD SLOPE PROTECTION SHALL BE SEALED WITH 705.04. ALL ADDITIONAL OPEN JOINTS AND CRACKS SHALL ALSO BE SEALED WITH 705.04. ALL REPAIR AREAS 10-FT BY 10-FT AND LARGER SHALL BE REINFORCED USING 709.10 WELDED STEEL WIRE FABRIC. EXISTING PAVED DITCH AT THE BASE OF THE SLOPE SHALL BE REPLACED AS PER 601.09 WHEN THE SLOPE ABOVE IS BEING REPLACED. ENTIRE PANELS, FROM THE ABUTMENT TO THE PAVED DITCH, SHALL BE REPLACED. THE WIDTH AND LOCATION OF REPLACEMENT SHALL BE AS DIRECTED BY THE ENGINEER.

ALL COSTS OF REMOVAL INCLUDING REMOVING ANY WASHED OUT SOIL AT THE BASE OF THE SLOPE PROTECTION SHALL BE INCLUDED UNDER ITEM 202 - CONCRETE SLOPE PROTECTION REMOVED.

ALL COSTS OF CONSTRUCTING THE NEW CONCRETE SLOPE PROTECTION, INCLUDING ALL NECESSARY EMBANKMENT, JOINT AND CRACK SEALING, AND PAVED DITCH REPLACEMENT, SHALL BE INCLUDED UNDER ITEM 601 - CONCRETE SLOPE PROTECTION, AS PER PLAN. SEE DETAIL ON SHEET 95A.

THE FOLLOWING ESTIMATED QUANTITIES HAVE BEEN INCLUDED IN THE GENERAL SUMMARY TO BE USED AS DIRECTED BY THE ENGINEER:

ITEM 202 - CONCRETE SLOPE PROTECTION REMOVED 550 S.Y.
ITEM 601 - CONCRETE SLOPE PROTECTION, AS PER PLAN 550 S.Y.
ITEM 603 - 6" CONDUIT, TYPE E, 707.19 85 L.F.

ITEM 604 - PAVED SHOULDER INLETS 2-A-6, 2-A-8, 2-A-10, AS PER PLAN

ALL REQUIRED REINFORCING STEEL AS LISTED ON THE STANDARD CONSTRUCTION DRAWINGS SHALL BE EPOXY-COATED IN ACCORDANCE WITH 709.00 OR SUPPLEMENTAL SPECIFICATION 941 AND PLACED AS PER 509.10. ADDITIONAL PRECAST-REQUIRED REINFORCEMENT FOR "BASE" SECTIONS ARE NOT SUBJECT TO THIS REQUIREMENT.

ALL COSTS OF THIS TREATMENT SHALL BE INCLUDED IN THE COSTS OF THESE ITEMS.

INLETS REPLACED

AS DETERMINED BY THE ENGINEER, PAVED SHOULDER INLETS ON THE MAINLINE AND RAMPS SHALL BE REPLACED WITH NEW INLETS IN KIND. NEW INLETS SHALL BE CONSTRUCTED TO THE HEIGHT OF THE ADJACENT CURB TO REMAIN. SEE SHEET 95A FOR RESURFACING DETAIL AT INLETS. THE FOLLOWING ESTIMATED QUANTITIES ARE INCLUDED IN THE GENERAL SUMMARY FOR USE AS DIRECTED BY THE ENGINEER AND PAID AT THE UNIT PRICE BID FOR:

ITEM 604 - INLET, TYPE 2-A-6, AS PER PLAN 2 EACH
ITEM 604 - INLET, TYPE 2-A-8, AS PER PLAN 5 EACH
ITEM 604 - INLET, TYPE 2-A-10, AS PER PLAN 4 EACH

REFER TO THE NOTE ON THIS SHEET 8 FOR AS PER PLAN REQUIREMENT.

AGGREGATE SLOPE PROTECTION REPAIR

THIS ITEM SHALL BE USED TO REPAIR EXISTING SLOPE PROTECTION WHICH HAS BEEN ERODED AS A RESULT OF BRIDGE DRAINAGE.

THIS WORK SHALL INCLUDE THE PLACEMENT OF NON-POROUS EMBANKMENT MATERIAL AND EITHER CRUSHED AGGREGATE SLOPE PROTECTION OR BAGGED RIPRAP.

SMALL EROSION AREAS SHALL BE REPAIRED USING EMBANKMENT AND CRUSHED AGGREGATE SLOPE PROTECTION TO MATCH THE SURROUNDING AREA.

LARGE EROSION AREAS SHALL BE REPAIRED AS FOLLOWS:

1. CONSTRUCT EMBANKMENT TO FORM A SHALLOW DITCH (6-IN. DEEP) ALONG THE LINE OF SCUPPERS.
2. PLACE A CONSTANT WIDTH (AS DETERMINED BY THE ENGINEER) OF BAGGED RIPRAP ALONG THE PREPARED SLOPE.
3. COVER ALL REMAINING REPAIR AREAS WITH CRUSHED AGGREGATE SLOPE PROTECTION.

SEE DETAILS ON SHEET 95A.

ALL COSTS OF FURNISHING AND PLACING THE EMBANKMENT AND EXCAVATION SHALL BE INCLUDED UNDER ITEM 601 - CRUSHED AGGREGATE SLOPE PROTECTION, AS PER PLAN OR ITEM 601 - RIPRAP, USING CONCRETE IN BAGS, AS PER PLAN.

THE FOLLOWING ESTIMATED QUANTITIES HAVE BEEN INCLUDED IN THE GENERAL SUMMARY TO BE USED AS OUTLINED ABOVE AS DIRECTED BY THE ENGINEER:

ITEM 601 - CRUSHED AGGREGATE SLOPE PROTECTION, AS PER PLAN 100 S.Y.
ITEM 601 - RIPRAP, USING CONCRETE IN BAGS, AS PER PLAN 40 S.Y.

SLOPE REPAIR

THIS ITEM SHALL BE USED TO REPAIR EXISTING ERODED ROADWAY SLOPES.

THE WORK SHALL INCLUDE EMBANKMENT, EXCAVATION AS REQUIRED TO PROVIDE PROPER COMPACTION, AND SEEDING AND MULCHING. EROSION AREAS SHALL BE REPAIRED TO MATCH THE ADJACENT NON-ERODED GRADE AND AS DIRECTED BY THE ENGINEER. EXCAVATION SHALL ALSO INCLUDE THE REMOVAL OF ANY WASHED OUT SOIL AT THE BASE OF THE SLOPE.

THE FOLLOWING ESTIMATED QUANTITIES HAVE BEEN INCLUDED IN THE GENERAL SUMMARY TO BE USED AS OUTLINED ABOVE:

ITEM 203 - EMBANKMENT, AS PER PLAN 250 C.Y.
ITEM 203 - EXCAVATION, NOT INCLUDING EMBANKMENT CONSTRUCTION 77 C.Y.
ITEM 659 - SEEDING AND MULCHING 167 S.Y.

ITEM 604 - CATCH BASIN NO. 5 CONCRETE APRON RECONSTRUCTED

THIS ITEM SHALL CONSIST OF REMOVAL RECONSTRUCTION OF DAMAGED CONCRETE APRONS AT EXISTING NO. 5 CATCH BASINS. THE EXISTING APRONS TO BE REPLACED SHALL BE AS DIRECTED BY THE ENGINEER. CARE SHALL BE TAKEN NOT TO DAMAGE THE CATCH BASIN WALL AND GRATE. FOLLOWING THE REMOVAL OF THE APRON ALL VOIDS SHALL BE FILLED AND COMPACTED PRIOR TO THE CONSTRUCTION OF THE NEW APRON. THE NEW APPROACH SHALL BE CONSTRUCTED AS PER STANDARD CONSTRUCTION DRAWING CB-5.

PAYMENT FOR THE WORK, INCLUDING MATERIAL, LABOR, TOOLS AND EQUIPMENT INCIDENTAL TO THE ABOVE OPERATION WILL BE AT THE CONTRACT UNIT PRICE BID PER EACH FOR "ITEM 604 - CATCH BASIN NO. 5 CONCRETE APRON RECONSTRUCTED."

THE FOLLOWING ESTIMATED QUANTITY HAS BEEN CARRIED TO THE GENERAL SUMMARY TO BE USED AS OUTLINED ABOVE:

ITEM 604 - CATCH BASIN NO. 5 CONCRETE APRON RECONSTRUCTED 10 EA.

WATERING AND MOWING PERMANENT SEEDED AREAS

THE FOLLOWING ESTIMATED QUANTITIES ARE TO BE USED AS DIRECTED BY THE ENGINEER TO PROMOTE GROWTH AND TO CARE FOR THE PERMANENT SEEDED AREAS, AS PER 659.09:

ITEM 659 - WATER 10 M.GAL.
ITEM 659 - MOWING 20 M.S.F.

ITEM 605 - AGGREGATE DRAIN, AS PER PLAN

THE FOLLOWING ESTIMATED QUANTITY IS INCLUDED IN THE GENERAL SUMMARY TO BE USED WHERE AND AS DIRECTED BY THE ENGINEER TO DRAIN SUBBASE MATERIAL WHICH HAS BECOME SATURATED:

ITEM 605 - AGGREGATE DRAIN, AS PER PLAN 300 L.F.

GRANULAR MATERIAL FOR THIS ITEM SHALL BE NO. 8 OR 9 SIZE AND LIMITED TO DURABLE NATURAL AGGREGATES OR AIR-COOLED BLAST FURNACE SLAG.

EROSION CONTROL

ITEMS 601 AND 660 ARE PROVIDED IN THE PLANS FOR EROSION CONTROL. ROCK OF A STABLE NATURE WILL NOT BE REMOVED IN ORDER TO PLACE ANY OF THESE ITEMS, AND TURF OF A STABLE NATURE WILL NOT BE REMOVED IN ORDER TO PLACE 660, 667 OR 668. THE ENGINEER SHALL CHECK AND NON-PERFORM QUANTITIES OR ADJUST LOCATIONS AND QUANTITIES FOR THESE ITEMS WHERE INDICATED BY FIELD CONDITIONS DURING CONSTRUCTION. IN ADDITION THESE ITEMS SHALL MEET THE REQUIREMENTS OF CMS 108.04.

GENERAL NOTES

FHWA REGION	STATE	PROJECT	
5	OHIO		

9
200

CUYAHOGA COUNTY
CUY - 90-23.95
LAKE COUNTY
LAK - 90-0.00

UNDERDRAIN OUTLETS

EXISTING UNDERDRAIN REPLACEMENT WILL OCCUR AT LOCATIONS WHERE EXISTING DETERIORATED OR DAMAGED CURB IS BEING REPLACED. FOR UNDERDRAIN SUMMARY TABLE SEE SHEET 95. PROPOSED UNDERDRAIN SHALL BE CONNECTED TO THE EXISTING UNDERDRAIN AT EACH END OF THE PROPOSED RUN. THE FOLLOWING ESTIMATED QUANTITY HAS BEEN CARRIED TO THE GENERAL SUMMARY FOR OUTLETTING PROPOSED UNDERDRAIN INTO ADJACENT CATCH BASINS:

	COST PARTICIPATION		
	I	II	
ITEM 603 - 6" CONDUIT, TYPE F 707.17 NON PERFORATED ASTM 3034 SDR 35, SS-931	400	200	L.F.

ITEM 605 - 6-IN. SHALLOW PIPE UNDERDRAINS, AS PER PLAN
GRANULAR FILTER MATERIALS FOR THIS ITEM SHALL BE NO. 8 OR 9 SIZE AND LIMITED TO DURABLE NATURAL AGGREGATES OR AIR-COOLED BLAST FURNACE SLAG.

TEMPORARY SOIL EROSION AND SEDIMENT CONTROL
THE FOLLOWING ESTIMATED QUANTITIES ARE TO BE USED AS DIRECTED BY THE ENGINEER, FOR TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES:

207 TEMPORARY SEEDING AND MULCHING	2700 S.Y.
207 STRAW OR HAY BALES	150 EA.
207 FILTER FABRIC FENCE	3,000 L.F.
659 MOWING	20 M S.F.
659 COMMERCIAL FERTILIZER	0.63 TON
659 REPAIR SEEDING AND MULCHING	700 S.Y.
659 WATER	6 M GAL.

CONNECTION TO EXISTING PIPE

WHERE THE PLANS PROVIDE FOR 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.

REVIEW OF DRAINAGE FACILITIES

BEFORE ANY WORK IS STARTED ON THE PROJECT, AND AGAIN BEFORE 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 INSPECTIONS SHALL BE KEPT IN WRITING BY THE STATE.

ALL NEW CONDUITS, INLETS, CATCH BASINS AND MANHOLES CONSTRUCTED AS A 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.

ITEM 606 GUARDRAIL, TYPE 5, ITEM 404 ASPHALT CONCRETE, AS PER PLAN

A specified width adjacent to the existing outside paved shoulder in guardrail areas shall be paved with a 3" compacted course of item 404 Asphalt Concrete as shown on the typical section.

Prior to placing this material, application of a herbicide such as Trellan E.C., Spike or approved equal shall be applied at the rate recommended by the manufacturer. The contractor shall be properly licensed to apply herbicides and adhere strictly to label instructions of any herbicide approved for this use.

After the 404 Asphalt has been placed and compacted, holes for guardrail posts shall then be bored thru the 404 by the use of a boring machine or a method approved by the Engineer. The disturbed area around each post shall then be backfilled with 404. The herbicide shall be paid for at the unit price bid for item 404 Asphalt Concrete, As Per Plan. Payment shall be paid for, at the unit price bid for item 606 Guardrail, Type 5, As Per Plan and item 404 Asphalt Concrete, As Per Plan, for their respective work.

ITEM 207 - FILTER FABRIC FENCE

MATERIALS
FILTER FABRIC SHALL MEET THE REQUIREMENTS OF ITEM 207.02.

CONSTRUCTION

THE BOTTOM OF THE FENCE SHALL BE BURIED 6-IN. BELOW THE GROUND. THE FENCE SHALL BE HIGH ENOUGH TO RETAIN SEDIMENT-LADEN WATER AND ADEQUATELY SUPPORTED TO PREVENT COLLAPSE OR BURSTING. THE GROUND ELEVATION OF THE FENCE SHALL BE HELD CONSTANT WITH THE EXCEPTION OF THE END ELEVATIONS WHICH SHALL BE RAISED TO PREVENT FLOW AROUND THE END OF THE FENCE.

MAINTENANCE

THE FILTER FABRIC FENCE SHALL BE MAINTAINED TO BE FUNCTIONAL. THIS SHALL INCLUDE REMOVAL OF TRAPPED SEDIMENT AND REQUIRED CLEANING, REPAIR, AND/OR REPLACEMENT OF THE FILTER FABRIC.

PAYMENT

THE COST OF ALL MATERIALS, CONSTRUCTION, MAINTENANCE AND REMOVAL REQUIRED SHALL BE PAID FOR UNDER ITEM 207 LIN.FT. FILTER FABRIC FENCE.

ITEM 604 - CATCH BASINS OR INLETS, ADJUSTED TO GRADE, AS PER PLAN

ITEM 604 - MANHOLE ADJUSTED TO GRADE, AS PER PLAN

ALL EXISTING MANHOLES, CATCH BASINS AND INLETS WITHIN THE LOCATION OF WHICH THE PROFILE IS BEING INCREASED, UNLESS OTHERWISE DIRECTED BY THE ENGINEER, SHALL BE ADJUSTED TO GRADE. ADJUSTMENT SHALL BE LIMITED TO METHOD 604.03 (A).

THE FOLLOWING ESTIMATED QUANTITIES HAS BEEN INCLUDED IN THE GENERAL SUMMARY TO PERFORM THIS WORK:

	COST PARTICIPATION		
	I	II	
ITEM 604 - CATCH BASINS OR INLETS, ADJUSTED TO GRADE, AS PER PLAN	180 EA.	29 EA.	
ITEM 604 - MANHOLE ADJUSTED TO GRADE, AS PER PLAN	100 EA.	27 EA.	

ITEM 604 - CATCH BASINS OR INLETS RECONSTRUCTED TO GRADE, AS PER PLAN

THE FOLLOWING ESTIMATED QUANTITY IS INCLUDED IN THE GENERAL SUMMARY FOR USE WHERE DIRECTED BY THE ENGINEER AND PAID AT THE UNIT PRICE BID FOR:

ITEM 604 - CATCH BASINS OR INLETS, RECONSTRUCTED TO GRADE, AS PER PLAN	20 EA.
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ALL INLETS RECONSTRUCTED SHALL INCLUDE THE ENTIRE UPPER BOX PORTION OF THE STRUCTURE. REINFORCING SHALL BE PROVIDED AS DETAILED UNDER GENERAL NOTE ITEM 604 - PAVED SHOULDER INLETS 2-A-6, 2-A-8, AS PER PLAN.

CASTINGS REPLACED WITH BICYCLE-SAFE GRATES

EXISTING CASTINGS ON THE MARGINAL ROADS SHALL BE REPLACED IF THEY ARE NOT BICYCLE SAFE. TO PROVIDE FOR THE CASTING REPLACEMENT AN ESTIMATED QUANTITY OF THIS MISCELLANEOUS METAL IS INCLUDED IN THE GENERAL SUMMARY TO BE USED AS DIRECTED BY THE ENGINEER. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO PROVIDE THE CASTINGS OF THE REQUIRED SIZE, TYPE AND STRENGTH (HEAVY DUTY) FOR THE PARTICULAR STRUCTURE IN QUESTION. ALL MATERIALS TO MEET ITEM 604 SPECIFICATIONS AND THE PRIOR APPROVAL OF THE ENGINEER.

THE FOLLOWING ESTIMATED QUANTITY HAS BEEN CARRIED TO THE GENERAL SUMMARY TO PERFORM THIS WORK:

	PARTICIPATION	
	I	II
ITEM SPECIAL - MISCELLANEOUS METAL	4,500*	7,200*

SPRING DRAINS

REFERENCE IS MADE TO THE DETAILED DRAWING ON STANDARD CONSTRUCTION DRAWING MC-1, SHOWING THE METHOD OF DRAINING ANY SPRING THAT MAY BE SHOWN ON THE PLANS, OR ENCOUNTERED DURING CONSTRUCTION, AS DETERMINED BY THE ENGINEER. SPRING DRAINS SHALL BE OUTLETTED TO HIGHWAY DRAINAGE STRUCTURE WITH 10' OF 6" CONDUIT TYPE F IN LIEU OF AGGREGATE DRAIN AS SHOWN ON THE STANDARD CONSTRUCTION DRAWING. THE FOLLOWING ESTIMATED QUANTITIES HAVE BEEN INCLUDED IN THE GENERAL SUMMARY FOR THIS PURPOSE:

ITEM 605 - 6" UNCLASSIFIED PIPE UNDERDRAIN, 707.01 TYPE III OR 707.21 TYPE III, AS PER PLAN	100 L.F.
ITEM 603 - 6" CONDUIT TYPE F, 707.17 NON-PERFORATED ASTM 3034, SDR 35, S5931	50 L.F.

THE CONTRACTOR SHALL NOT ORDER MATERIALS FOR "SPRING DRAINS" UNTIL AUTHORIZED BY THE ENGINEER, AND IN THE EVENT NO SPRINGS ARE ENCOUNTERED, THE ITEM SHALL BE NON-PERFORMED.

ITEM SPECIAL - MISCELLANEOUS METAL

EXISTING CASTINGS MAY PROVE TO BE UNSUITABLE FOR REUSE, AS DETERMINED BY THE ENGINEER, DURING THE CONSTRUCTION OF THIS PROJECT. TO PROVIDE FOR THIS CONTINGENCY, AN ESTIMATED QUANTITY OF MISCELLANEOUS METAL HAS BEEN INCLUDED IN THE GENERAL SUMMARY TO BE USED AS DIRECTED BY THE ENGINEER. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO PROVIDE THE CASTINGS OF THE REQUIRED TYPE, SIZE AND STRENGTH (HEAVY DUTY) FOR THE PARTICULAR STRUCTURE IN QUESTION. ALL MATERIALS TO MEET ITEM 604 SPECIFICATIONS AND THE PRIOR APPROVAL OF THE ENGINEER. WHERE IT IS NECESSARY TO COMPLETELY REPLACE UNSUITABLE MANHOLE CASTINGS, THEY SHALL BE REPLACED USING NEENAH R-1729, EAST JORDAN 1700 OR AN APPROVED EQUAL. MONUMENT BOXES THAT ARE UNSUITABLE FOR REUSE SHALL BE REPLACED WITH NEENAH NF-000T04, EAST JORDAN 8365 OR AN APPROVED EQUAL.

THE FOLLOWING ESTIMATED QUANTITY HAS BEEN CARRIED TO THE GENERAL SUMMARY TO PERFORM THIS WORK:

	PARTICIPATION	
	I	II
ITEM SPECIAL - MISCELLANEOUS METAL	7,000*	700*

WATERWORK

ITEM 604 - MANHOLES ADJUSTED TO GRADE AS PER PLAN

ITEM 614 - VALVE BOXES ADJUSTED TO GRADE

ALL EXISTING WATER MANHOLES & VALVE BOXES WITHIN THE PROJECT LIMITS SHALL BE ADJUSTED TO GRADE UNLESS OTHERWISE DIRECTED BY THE ENGINEER.

MANHOLE ADJUSTMENT SHALL BE LIMITED TO METHOD 604.03(A).

THE FOLLOWING ESTIMATED QUANTITIES HAS BEEN CARRIED TO THE GENERAL SUMMARY TO PERFORM THIS WORK:

ITEM 604 - MANHOLE ADJUSTED TO GRADE AS PER PLAN	10 EA.
ITEM 614 - VALVE BOX ADJUSTED TO GRADE	40 EA.

WORK ZONE SPEED LIMIT SIGNS:

Total length of project = $\frac{8.626 \text{ miles}}{0.5/\text{mile spacing}} = 17.25 \times 2 \text{ Ea. side} = 34.50 \text{ EA.}$

Add 40 Each on Ramps 40 Ea.
Total nos. of Work Zone Speed Limit Signs = 75 Ea.

TRAFFIC MAINTENANCE

FHWA REGION	STATE	PROJECT
5	OHIO	

CUYAHOGA COUNTY
CUY - 90-23.95
LAKE COUNTY
LAK - 90-0.00

GENERAL

BEFORE WORK BEGINS, THE CONTRACTOR SHALL SUBMIT TO THE ENGINEER THE NAMES AND TELEPHONE NUMBERS OF AT LEAST TWO PERSONS WHO CAN BE CONTACTED 24 HOURS PER DAY BY THE OHIO DEPARTMENT OF TRANSPORTATION AND ALL INTERESTED POLICE AGENCIES. THESE PERSONS SHALL BE RESPONSIBLE FOR PLACING OR REPLACING NECESSARY TRAFFIC CONTROL DEVICES TO MAINTAIN THE TRAVELED PAVEMENT SAFELY.

TRAFFIC SHALL BE MAINTAINED WITHOUT INTERRUPTION DURING CONSTRUCTION OF THE WORK EXCEPT AS OTHERWISE APPROVED BY THE ENGINEER OR SPECIFIED IN THESE NOTES OR PLANS. THE CONTRACTOR SHALL SET UP AND OPERATE HIS EQUIPMENT IN SUCH A MANNER AS TO NOT ENCROACH UPON THE TRAVELED PAVEMENT.

TRAFFIC IS TO BE MAINTAINED IN A UNIFORM PATTERN THROUGHOUT THE ENTIRE LENGTH OF THE PROJECT AND IS NOT TO BE SUBJECT TO CONSTANT LANE SHIFTS. A 45 MPH REGULATORY SPEED LIMIT ZONE WILL BE ESTABLISHED WITHIN THE PROJECT LIMITS AS SHOWN ON SHEET 14. THE USE OF BERMS TO MAINTAIN TRAFFIC IS PROHIBITED EXCEPT WHERE THE PLANS INDICATE, OR AS OTHERWISE APPROVED BY THE ENGINEER. SHOULD ANY EXISTING OR NEW BERM AREAS BECOME DAMAGED OR DESTROYED DUE TO THE CONTRACTOR'S NEGLIGENCE OR FAILURE TO PROVIDE ADEQUATE SIGNS, BARRICADES, CONES, FLAGGERS, OR OTHER TRAFFIC CONTROL DEVICES, THE RESTORATION OF THE BERMS WILL BE AT THE CONTRACTOR'S EXPENSE, UNLESS OTHERWISE APPROVED BY THE ENGINEER.

THE CONTRACTOR SHALL SUBMIT A SCHEDULE OF OPERATION, IN WRITING, TO THE PROJECT ENGINEER FOR HIS APPROVAL AT LEAST 7 DAYS PRIOR TO ANY TRAFFIC RESTRICTION. THE CONTRACTOR SHALL ALSO NOTIFY LOCAL POLICE AND FIRE DEPARTMENT 7 DAYS PRIOR TO ANY RESTRICTION.

PHASING OF CONSTRUCTION

PHASING OF CONSTRUCTION AS APPEARS IN THESE MAINTENANCE OF TRAFFIC PLANS IS INTENDED TO PROVIDE FOR THE COMPLETION OF ALL UP-GRADING WORK IN FIVE PHASES.

THE FIRST FOUR PHASES ARE DETAILED UNDER "CONSTRUCTION SEQUENCE" SEE SHEET 13.

PHASE 5 PROVIDES FOR THE RESURFACING OPERATION.

MAINTAINING VEHICULAR TRAFFIC

GENERAL PROVISIONS

- TRAFFIC SHALL BE MAINTAINED IN ACCORDANCE WITH THE GENERAL CONSTRUCTION SEQUENCE NOTE ON SHEET 12. THE CONTRACTOR SHALL SET UP AND OPERATE HIS EQUIPMENT IN SUCH A MANNER AS TO MINIMIZE ENCROACHMENT UPON THE TRAVELED WIDTH OF PAVEMENT.
- NO STOPPAGE OF TRAFFIC OR ESTABLISHMENT OF LANE RESTRICTIONS SHALL OCCUR WITHOUT LAW ENFORCEMENT PERSONNEL AT EACH LOCATION TO DIRECT TRAFFIC.
- 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.
- DURING NON-WORKING PERIODS, OPEN EXCAVATIONS SHALL BE DELINEATED WITH WARNING FLASHERS AND/OR OTHER APPROVED DEVICES AS DEEMED APPROPRIATE BY THE ENGINEER.
- EXISTING SIGNS LOCATED WITHIN THE ROAD WORK AREAS WHICH ARE NECESSARY FOR INTERIM OR PERMANENT TRAFFIC CONTROL SHALL BE REMOVED AND REERECTED IN LOCATIONS AS APPROVED BY THE ENGINEER.
- THE CONTRACTOR SHALL FURNISH, ERECT, MAINTAIN AND REMOVE ALL TRAFFIC CONTROL DEVICES NECESSARY FOR MAINTAINING TRAFFIC. THE CONTRACTOR SHALL DETERMINE WHAT SIGNS ARE NEEDED AND ADVISE THE ENGINEER 2 WEEKS IN ADVANCE OF HIS DETAILED PLANS. ALL TEMPORARY OVERLAYS REVISING EXISTING SIGNS SHALL HAVE BLACK LETTERS ON AN ORANGE BACKGROUND, EXCEPT AS NOTED. ALL SIGNS AND OVERLAYS SHALL BE CONSIDERED AS PART OF ITEM 614 - MAINTAINING TRAFFIC.

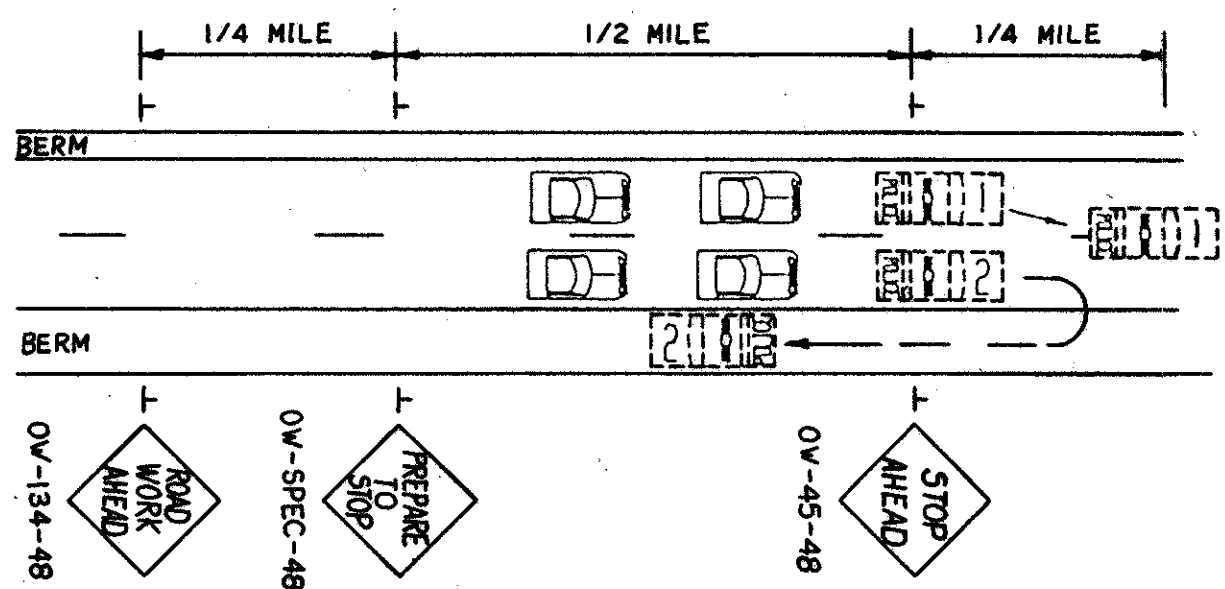
7. TRAFFIC CONTROL DEVICES SHALL BE SET UP PRIOR TO THE START OF CONSTRUCTION, AND SHALL BE PROPERLY MAINTAINED DURING THE TIME SUCH SPECIAL CONDITIONS EXIST. THEY SHALL REMAIN IN PLACE ONLY AS LONG AS THEY ARE NEEDED AND SHALL BE IMMEDIATELY REMOVED THEREAFTER. WHERE OPERATIONS ARE PERFORMED IN STAGES, 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.

8. PLACEMENT OF FINAL ROADWAY PAVEMENT MARKINGS SHALL BE ACCOMPLISHED ONLY MONDAY THRU FRIDAY BETWEEN THE HOURS OF 9:00 A.M. AND 3:00 P.M. A MAXIMUM OF ONE LANE MAY BE CLOSED FOR TWO LANE ROADWAYS AND A MAXIMUM OF TWO LANES CLOSED FOR THREE OR FOUR LANE ROADWAYS. THE CONTRACTOR SHALL PROVIDE 2 TRAILING VEHICLES WITH FLASHING BEACON FOLLOWING THE PAVEMENT MARKING EQUIPMENT WHEN MARKINGS ARE PLACED IN ORDER TO PROVIDE ADVANCE WARNING TO THE MOTORISTS OF THE TEMPORARY LANE CLOSURE AND CONSTRUCTION. THE 2 TRAILING VEHICLES SHALL TRAVEL 500' 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' BEHIND THE PAVEMENT MARKING EQUIPMENT. THE POLICE CRUISER SHALL TRAVEL 500' TO 1,000' BEHIND THE REMOTE TRAILING VEHICLES.

EACH TRAILING VEHICLE SHALL HAVE A YELLOW FLASHING BEACON PLUS 48" MINIMUM 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.

9. ALL TRAFFIC CONTROL DEVICES SHALL BE IN ACCORDANCE WITH THE OHIO MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES, ALSO KNOWN AS THE "MANUAL".

10. ERECTION OF SPAN TYPE OVERHEAD SUPPORTS SHALL BE ACCOMPLISHED IN SUCH A MANNER THAT COMPLETE TRAFFIC STOPPAGE ON ALL LANES OF ANY DIRECTIONAL ROADWAY IS NO LONGER THAN 10 MINUTES IN ANY ONE CONSECUTIVE 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 SLOWED, ONE (1) PATROL VEHICLE SHALL TRAVEL ALONG THE ROADWAY SHOULDER 500-FT BEHIND THE BACK-UP OF STOPPED VEHICLES. WHERE STOPPAGE OCCURS IN THE VICINITY OF FREEWAY ENTRANCES, THE CONTRACTOR SHALL PLACE FLAGGERS 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", "PREPARE TO STOP"; AND "STOP AHEAD" SIGNS WITH FLASHING TWELVE INCH (12) TRAFFIC SIGNAL HEADS IN ACCORDANCE WITH 632.05. THESE SIGNS SHALL BE ILLUMINATED DURING NIGHT OPERATIONS. PATROL VEHICLES AND SIGNS SHALL BE LOCATED IN ACCORDANCE WITH THE FOLLOWING SKETCH. ERECTION OF SIGN SPANS SHALL BE DONE AT NIGHT BETWEEN THE HOURS OF 10 PM AND 6 AM.



NOTE: DETAIL IS SHOWN FOR TWO LANE DIRECTIONAL TRAFFIC. IF ADDITIONAL DIRECTIONAL LANES EXIST THE STOPPAGE OF TRAFFIC SHALL BE ACCOMPLISHED IN ACCORDANCE WITH THE EXISTING ROADWAY CONDITIONS (1 PATROL VEHICLE IS REQUIRED FOR EACH LANE OF STOPPED TRAFFIC).

11. ALL LABOR, MATERIALS, EQUIPMENT AND ANY INCIDENTALS REQUIRED TO COMPLETE THE WORK AS DESCRIBED ABOVE SHALL BE INCLUDED IN THE LUMP SUM BID FOR ITEM 614 - MAINTAINING TRAFFIC.

ITEM SPECIAL - LAW ENFORCEMENT OFFICER WITH PATROL CAR

THE CONTRACTOR SHALL PROVIDE AND PAY ALL COST FOR THE SERVICES OF LAW ENFORCEMENT OFFICER WITH PATROL CAR FOR THE EXCLUSIVE PURPOSE OF CONTROLLING TRAFFIC WHENEVER A CHANGE IN THE TRAFFIC PATTERN TAKES PLACE. THE NUMBER OF OFFICERS AND CARS REQUIRED FOR THIS PURPOSE SHALL BE DETERMINED BY THE CONTRACTOR AND APPROVED BY THE ENGINEER. THE OFFICERS SHALL MOVE THEIR PATROL CARS AS NECESSARY TO INSURE THEIR CONSTANT PRESENCE AT THE POINT(S) OF SLOWDOWN, STOPPAGE OR BACK-UP. PAYMENT FOR THE ABOVE WILL BE INCLUDED IN THE UNIT PRICE BID FOR ITEM SPECIAL - LAW ENFORCEMENT OFFICER WITH PATROL CAR. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO MAKE ARRANGEMENTS FOR SCHEDULING AND PAYMENT OF LAW ENFORCEMENT OFFICER WITH PATROL CAR.

ITEM SPECIAL - LAW ENFORCEMENT OFFICER WITH PATROL CAR 300 HRS.

EQUIPMENT AND MATERIAL STORAGE

IN ORDER TO PROVIDE FOR THE SAFETY OF THE TRAVELING PUBLIC THE CONTRACTORS ATTENTION IS DIRECTED TO 614.03. IN ADDITION THE FOLLOWING PROVISIONS SHALL APPLY:

- STORED OR PARKED VEHICLES, MATERIALS AND EQUIPMENT SHALL BE LOCATED BEHIND EXISTING PERMANENT GUARDRAIL OR NOT LESS THAN 30' BEYOND THE TRAVELED WAY.
- ANY REMOVED ITEMS SHALL NOT BE STORED ON THE RIGHT OF WAY FOR MORE THAN 30 DAYS.
- ALL DISTURBED AREAS SHALL BE RETURNED TO THEIR ORIGINAL CONDITION AT NO EXPENSE TO THE STATE.

TRAFFIC CONTROL MATERIALS

A. SIGNS

SIGN DIMENSIONS AND SPECIFICATIONS, INCLUDING LETTER SIZES, SHALL BE AS PROVIDED IN THE "MANUAL", OR IN SIGN DESIGN DRAWINGS PROVIDED BY THE DEPARTMENT OF TRANSPORTATION. THE SIGNS SHALL BE SUBJECT TO APPROVAL OF THE ENGINEER PRIOR TO THE START OF THE PROJECT. ADVANCE WARNING SIGNS ARE TO BE PROVIDED AS OUTLINED ON SHEET 14.

B. SIGN SUPPORTS

SUPPORTS SHALL BE ADEQUATE IN MASS AND STABILITY TO PREVENT THE SIGNS BEING BLOWN OVER BY WIND OR VEHICULAR GENERATED AIR TURBULENCE.

C. DRUMS

DRUMS SHALL BE IN ACCORDANCE WITH PERTINENT SECTIONS OF THE OHIO MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES. ALL PERMANENT LANE CLOSURES SHALL BE DELINEATED WITH DRUMS SPACED AT 50' CENTER TO CENTER. ALL COSTS FOR INSTALLING, MAINTAINING AND SUBSEQUENT REMOVAL OF SAID DRUMS SHALL BE INCLUDED IN THE LUMP SUM BID PRICE FOR ITEM 614 - MAINTAINING TRAFFIC.

D. SMALL BARRICADES

TYPE II BARRICADES MAY BE USED INSTEAD OF DRUMS TO CLOSE LANES WHERE REQUIRED FOR RESURFACING. THESE SHALL BE AT LEAST 36" HIGH AND 12" WIDE. NEAR THE TOP OF THE BARRICADE THERE SHALL BE A PANEL WITH ALTERNATE ORANGE AND REFLECTORIZED WHITE 6" WIDE STRIPS. THIS PANEL SHALL BE AT LEAST 12" WIDE AND 24" HIGH. FOR NIGHTTIME USE A STEADY BURN LIGHT SHALL BE LOCATED AT THE TOP OF THE BARRICADE AT THE END NEAREST TO TRAFFIC. THE BARRICADES SHALL BE OF SUFFICIENT STABILITY SO THAT WIND OR TRAFFIC AIR TURBULENCE WILL NOT UPSET THEM. BARRICADES SHALL BE IN ACCORDANCE WITH PERTINENT SECTIONS OF THE OHIO MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES.

E. LIGHTING DEVICES

FLASHERS SHALL BE 12 VOLT BATTERY-OPERATED MODELS WITH 7" DIAMETER YELLOW LENSES ILLUMINATED BY RAPID INTERMITTENT FLASHES OF SHORT DURATION AND SHALL BE PLACED ON ALL SIGNS AT ALL TIMES.

CONTINUOUS BURN LIGHTS SHALL BE 12 VOLT BATTERY OPERATED MODELS WITH MINIMUM 7" DIAMETER YELLOW LENSES. THEY SHALL BE PLACED ABOVE THE GROUND ON THE TOPS OF DRUMS, BARRICADES OR CONCRETE BARRIERS AND SPACED AT 50' INTERVALS. CONTINUOUS BURN LIGHTS AS DESCRIBED ABOVE SHALL BE REQUIRED WHENEVER ANY PORTION OF THE TRAVELED SURFACE IS CLOSED DURING TWILIGHT OR NIGHTTIME HOURS.

F. 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 ONE FLASHING ARROW BARRICADE FOR EACH LANE CLOSED. THE CONTRACTOR SHALL REFER TO STANDARD DRAWING TC-35.10 AND THE PROVISION SET FORTH IN OHIO MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS FOR ALL INFORMATION REGARDING FURNISHING, MAINTAINING AND USE OF FLASHING ARROW BARRICADES. PAYMENT FOR THE ABOVE SHALL BE INCLUDED IN THE LUMP SUM BID FOR ITEM 614 - MAINTAINING TRAFFIC.

ITEM SPECIAL - REPLACEMENT SIGNS

FLAT SHEET SIGNS FURNISHED BY THE CONTRACTOR IN ACCORDANCE WITH THE REQUIREMENT OF THE PLANS, SPECIFICATIONS AND PROPOSAL WHICH BECOME DAMAGED BY TRAFFIC FOR REASONS BEYOND THE CONTROL OF THE CONTRACTOR SHALL BE REPLACED IN KIND WHEN ORDERED BY THE ENGINEER.

PAYMENT FOR THE NEW SIGNS SHALL BE MADE AT THE BID PRICE PER SQUARE FOOT FOR ITEM SPECIAL REPLACEMENT SIGNS AND SHALL INCLUDE THE COST OF REMOVING AND DISPOSING OF THE DAMAGED SIGNS, HARDWARE AND SUPPORTS AND PROVIDING NECESSARY REPLACEMENT HARDWARE, SUPPORTS, ETC. REPLACEMENT SIGNS SHALL BE NEW BUT OTHER MATERIALS MAYBE USED, SUBJECT TO APPROVAL BY THE ENGINEER.

AN ESTIMATED QUANTITY OF ITEM SPECIAL, REPLACEMENT SIGNS HAS BEEN CARRIED TO THE GENERAL SUMMARY.

ITEM SPECIAL - REPLACEMENT SIGNS 300 S.F.

ITEM SPECIAL - REPLACEMENT DRUMS

DRUMS FURNISHED BY THE CONTRACTOR IN ACCORDANCE WITH THE REQUIREMENT OF THE PLANS, SPECIFICATION AND PROPOSAL WHICH BECOME DAMAGED BY TRAFFIC FOR REASONS BEYOND THE CONTROL OF THE CONTRACTOR SHALL BE REPLACED IN KIND WHEN ORDERED BY THE ENGINEER AND PAID FOR UNDER ITEM SPECIAL - REPLACEMENT DRUMS. PAYMENT FOR EACH NEW DRUM SHALL INCLUDE (1) THE COST OF REMOVING AND DISPOSING OF THE DAMAGED DRUM, AND (2) PROVIDING, MAINTAINING AND REMOVING NEW DRUMS IN ACCORDANCE WITH THE CONTRACT REQUIREMENTS FOR THE ORIGINAL DRUMS. (REPLACEMENT LIGHTS SHALL NOT BE PAID FOR SEPARATELY BUT CONSIDERED INCIDENTAL TO THIS ITEM OR ITEM 614 - MAINTAINING TRAFFIC.

AN ESTIMATED QUANTITY OF ITEM SPECIAL - REPLACEMENT DRUMS HAS BEEN CARRIED TO THE GENERAL SUMMARY.

ITEM SPECIAL - REPLACEMENT DRUMS 2,000 EA.

ITEM 404 - BITUMINOUS CONCRETE FOR MAINTAINING TRAFFIC

THIS ITEM SHALL BE USED TO REPAIR HOLES IN BRIDGE DECKS, ROADWAY SURFACE AND BERMS WHICH ARE DAMAGED DURING THE CLOSURE AND TO PROVIDE TEMPORARY ASPHALT RAMPS. THE CONTRACTOR SHALL USE THIS ITEM TO MAINTAIN THE HIGHWAY ACCORDING TO SEC. 614.02.

ANY CLOSURES NECESSARY TO PERFORM THIS WORK SHALL BE AS APPROVED BY THE ENGINEER. PRIOR TO RESURFACING, TEMPORARY ASPHALT RAMPS SHALL BE REMOVED AS PART OF THIS ITEM. THE FOLLOWING ESTIMATED QUANTITY IS INCLUDED IN THE GENERAL SUMMARY FOR THE MAINTENANCE OF TRAFFIC AS OUTLINED ABOVE, TO BE USED AS DIRECTED BY THE ENGINEER ON ALL PARTS OF THIS PROJECT.

ITEM 404 - BITUMINOUS CONCRETE FOR MAINTAINING TRAFFIC 150 C.Y.

TRAFFIC MAINTENANCE

FHWA REGION	STATE	PROJECT	
5	OHIO		

12
200

CUYAHOGA COUNTY
CUY - 90-23.95
LAKE COUNTY
LAK - 90-0.00

TEMPORARY CONCRETE BARRIER (PUBLIC SAFETY)

TEMPORARY CONCRETE BARRIER SECTIONS (10' MIN. LENGTH) AS REQUIRED BY THE PUBLIC SAFETY NOTE SHALL BE SUPPLIED BY THE CONTRACTOR. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL LOADING, UNLOADING AND TRANSPORTATION OF THE BARRIER.

THE BARRIER SECTIONS SHALL BE BOLTED TOGETHER WITH STEEL CONNECTIONS AS PER STANDARD CONSTRUCTION DRAWING MC-9A.

ALL COSTS FOR FURNISHING, INSTALLING AND SUBSEQUENT REMOVING TEMPORARY CONCRETE BARRIER AS DESCRIBED UNDER PUBLIC SAFETY SHALL BE INCLUDED IN THE LUMP SUM BID PRICE FOR ITEM 614 - MAINTAINING TRAFFIC.

TEMPORARY CONCRETE BARRIER (PARAPET RECONSTRUCTION)

TEMPORARY CONCRETE BARRIER SECTIONS ARE REQUIRED TO SEPARATE THE WORK AREA FROM THE THRU TRAFFIC WHILE WORK IS BEING PERFORMED ON THE BRIDGE PARAPETS. FOR DETAILS AND REQUIREMENTS SEE SHEETS 13 & 16A.

THE TEMPORARY CONCRETE BARRIER SHALL MEET THE REQUIREMENTS ABOVE AND SHALL BE PAID FOR SEPARATELY IN THE UNIT PRICE BID FOR ITEM 622 - TEMPORARY CONCRETE BARRIER. THE FOLLOWING ESTIMATED QUANTITY HAS BEEN INCLUDED IN THE GENERAL SUMMARY TO BE USED AS DESCRIBED ABOVE AND AS SUMMARIZED ON SHEET 17.

ITEM 622 - TEMP. CONCRETE BARRIER, BRIDGE MOUNTED 5,692 L.F.
ITEM 622 - TEMPORARY CONCRETE BARRIER 2,540 L.F.

ITEM 614 - TEMPORARY PAVEMENT MARKINGS (LANE SHIFTS)

LANE SHIFTS OR LANE CLOSURES SHALL BE IMPLEMENTED USING 55:1 MAXIMUM TAPER RATES ON MAINLINE PAVEMENT AND TURNING ROADWAYS, 25:1 MAXIMUM TAPER RATES ON RAMPS, AND 35:1 MAXIMUM TAPER RATES ON THE MARGINAL ROADS. REFER TO TYPICAL DETAILS ON SHEETS 14 AND 15.

TYPICAL LOCATIONS INCLUDE:

- LANE CLOSURES
- LANE SHIFTS
- ENTRANCE/EXIT RAMP EXTENSIONS ACROSS CLOSED OUTSIDE LANES

THE FOLLOWING ESTIMATED QUANTITIES AS SUMMARIZED ON SHEET 17 HAVE BEEN INCLUDED IN THE GENERAL SUMMARY TO BE USED AS OUTLINED ABOVE AND SHOWN IN THE TRAFFIC MAINTENANCE PLANS.

ITEM 614 - TEMPORARY LANE LINES, CLASS 1, 947.03 TYPE B 1.86 MI.
ITEM 614 - TEMPORARY STOP LINES, CLASS 1, 947.03 TYPE B 22 L.F.
ITEM 614 - TEMPORARY EDGE LINES, CLASS 1, 947.03 TYPE B 5.39 MI.
ITEM 614 - TEMPORARY CHANNELIZING LINES, CLASS 1, 947.03 TYPE B 14,158 L.F.
ITEM 614 - TEMPORARY TRANSVERSE LINES, CLASS 1, 947.03 TYPE B 2,430 L.F.

ITEM 621 - REMOVAL OF PAVEMENT MARKINGS

THIS ITEM SHALL BE USED TO REMOVE EXISTING PERMANENT PAVEMENT MARKINGS WHICH ARE IN CONFLICT WITH THE TEMPORARY MARKINGS AS SHOWN ON THE TRAFFIC MAINTENANCE DETAILS. PAYMENT SHALL BE BASED UPON THE ACTUAL LENGTH REMOVED. (GAPS SHALL NOT BE INCLUDED IN THE MEASURED LENGTH.) THE FOLLOWING ESTIMATED QUANTITY HAS BEEN INCLUDED IN THE GENERAL SUMMARY TO BE USED AS OUTLINED ABOVE.

ITEM 621 - REMOVAL OF PAVEMENT MARKINGS 25,500 L.F.

ITEM 614 - TEMPORARY PAVEMENT MARKINGS (RESURFACING OR LANE SHIFT REMOVAL)

AFTER THE OVERLAYS ARE PLACED OR FOLLOWING THE FINAL LANE SHIFT REMOVALS, THE FOLLOWING TEMPORARY MARKINGS SHALL BE USED AS INTERIM FOR THE PERMANENT MARKINGS. TEMPORARY MARKINGS SHALL BE PLACED AT THE LOCATIONS OF THE PERMANENT MARKINGS AS SHOWN IN THE TRAFFIC CONTROL PLANS. THE FOLLOWING ESTIMATED QUANTITY HAS BEEN INCLUDED IN THE GENERAL SUMMARY TO BE USED AS INTENDED ABOVE.

ITEM 614 - TEMPORARY LANE LINES, CLASS II, 621 PAINT 103.28 MI.
ITEM 614 - TEMPORARY EDGE LINES, CLASS I, 621 PAINT 98.32 MI.
ITEM 614 - TEMPORARY GORE MARKINGS, CLASS II, 621 PAINT 15,860 L.F.
ITEM 614 - TEMPORARY STOP LINES, CLASS I, 621 PAINT 2,314 L.F.

ITEM 614 - TEMPORARY RAISED PAVEMENT MARKERS TYPE B

TRPM'S AS DESCRIBED ON SHEET 16 SHALL BE PROVIDED AS A SUPPLEMENT TO THE TEMPORARY PAVEMENT MARKINGS.

THE FOLLOWING ESTIMATED QUANTITY AS SUMMARIZED ON SHEET 17 HAS BEEN INCLUDED IN THE GENERAL SUMMARY TO BE USED AS OUTLINED ABOVE.

ITEM 614 - TEMPORARY RAISED PAVEMENT MARKERS, TYPE B 3083 EA.

TRAFFIC CONTROL FOR ASPHALT CONCRETE OPERATIONS (ITEM 446 COURSES)

ALL ASPHALT CONCRETE OPERATIONS SHALL BE CONDUCTED IN A MANNER THAT WILL ASSURE MINIMUM DANGER AND INCONVENIENCE TO THE HIGHWAY USERS. ASPHALT CONCRETE WORK SHALL BE PERFORMED AT NIGHT BETWEEN THE HOURS OF 10:00 PM AND 6:00 AM EXCEPT FOR THREE LANE ROADWAYS WHICH SHALL BE PLACED FROM 12:00 AM TO 6:00 AM. RAMPS AND DIRECTIONAL LANES SHALL BE PAVED BETWEEN THE HOURS OF 10:00 AM AND 3:00 PM.

PLACEMENT OF THE OVERLAY COURSES SHALL BE PERFORMED AFTER ALL SHOULDER CONSTRUCTION IS COMPLETE. ALL OF THE INTERMEDIATE LEVELING COURSE MUST BE PLACED FULL WIDTH OF EXISTING PAVEMENT PRIOR TO PLACEMENT OF FINAL SURFACE COURSE.

PROCEDURE FOR INSTALLATION OF ANY ASPHALT LAYER SHALL BE SUCH THAT NO DISCONTINUITY IN THE ELEVATION OF THE TRAVELED SURFACE SHALL EXIST AT ANY TIME OTHER THEN 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 IN ACCORDANCE WITH THE GENERAL CONSTRUCTION SEQUENCE NOTE.

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.

TRAFFIC SHALL NOT BE PERMITTED TO CROSS ANY PART-WIDTH RESURFACING JOINT EXCEPT AS IS NECESSARY DURING THE ACTUAL RESURFACING OPERATION. ANY PART WIDTH RESURFACING JOINTS WHICH MUST BE EXPOSED TO TRAFFIC SHALL BE RAMPED USING ITEM 404 - BITUMINOUS CONCRETE FOR MAINTAINING TRAFFIC, AT A RATE NOT TO EXCEED 1-IN. IN 4-FT FOR TRANSVERSE RAMPS AND 1-IN. PER 1-FT FOR LONGITUDINAL RAMPS.

PRIOR TO OPENING THE ROADWAY TO NORMAL TRAFFIC DURING WINTER MONTHS, ALL ASPHALT WORK INCLUDING THE SURFACE COURSE MUST BE COMPLETED AN EQUAL FULL WIDTH DISTANCE. NO INTERMEDIATE LEVELING COURSE IS TO BE TRAVELED ON DURING WINTER MONTHS NOR SHALL ANY PART WIDTH RESURFACING REMAIN DURING THE WINTER. THE CONTRACTOR IS CAUTIONED TO SCHEDULE HIS OPERATIONS TO MEET THIS REQUIREMENT. IF HE FAILS TO MEET THIS REQUIREMENT, THE CONTRACTOR SHALL INCREASE THE SURFACE COURSE THICKNESS BY 1/2-IN. ENTIRELY AT HIS OWN EXPENSE.

PUBLIC SAFETY

THE FOLLOWING PROVISIONS "A", "B" AND "C" SHALL APPLY WHEN THE LANE ADJACENT TO THE GUARDRAIL IS OPEN TO TRAFFIC.

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 COMPLETE THE FOLLOWING SHALL APPLY.

- 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 WITHIN THE LIMITS OF THE UNPROTECTED AREA. THE BARRICADES SHALL BE PLACED TO 50' INTERVALS AND OFFSET AT LEAST 2' FROM THE EDGE OF THE 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.

- IF THE EXISTING GUARDRAIL IS FOR THE PROTECTION OF AN OBSTACLE (I.E. SIGN SUPPORT, BRIDGE PARAPET, ETC.) THE CONTRACTOR SHALL ERECT TEMPORARY CONCRETE BARRIER AS DETAILED ON SHEET 14. THE REQUIREMENTS OF PARAGRAPH "A" SHALL APPLY TO THE REMAINING GUARDRAIL WITHIN THE RUN. TEMPORARY BARRIER SHALL BE FLARED AT A 5:1 TAPER RATE AND SHALL INCLUDE A TEMPORARY END TERMINAL AS PER MC-9A.

- THE REQUIREMENTS STATED IN "A" 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 CONCRETE BARRIER IN THE INTERIM TIME IT TAKES TO COMPLETE THE WORK. THE APPROACH END OF THE TEMPORARY CONCRETE BARRIER SHALL BE FLARED 10' (50' AT 5:1 TAPER) AND SHALL INCLUDE A TEMPORARY END TERMINAL AS PER MC-9A. 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 BARRIER TO PROVIDE FOREWARNING TO THE APPROACHING TRAFFIC.

WHEN THE LANE ADJACENT TO THE GUARDRAIL IS CLOSED TO TRAFFIC, THE PROVISIONS OF PARAGRAPH "A" ABOVE SHALL APPLY AFTER 1 DAY, THE PROVISIONS OF PARAGRAPH "B" ABOVE SHALL APPLY AFTER 5 DAYS AND THE PROVISIONS OF PARAGRAPH "C" ABOVE SHALL APPLY AFTER 15 DAYS.

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 COST OF COMPLYING WITH THE SAFETY PROCEDURES SHALL BE INCLUDED IN THE LUMP SUM BID PRICE FOR ITEM 614 - MAINTAINING TRAFFIC.

MAJOR WORK ITEMS

THE FOLLOWING MAJOR WORK ITEMS WILL REQUIRE TRAFFIC MAINTENANCE PROCEDURES WHICH SHALL BE INCORPORATED INTO THE CONTRACTORS SEQUENCE OF OPERATIONS.

- MODIFICATION OF OVERHEAD SIGN SUPPORTS
- INSTALLATION OF CONCRETE BARRIER AND REPLACEMENT OF GUARDRAIL
- REPAIR OF PAVEMENT JOINTS AND PANELS
- REMOVAL OF GORE CURBING
- ASPHALT CONCRETE OVERLAY
- PAVEMENT MARKING
- BRIDGE PARAPET AND MEDIAN MODIFICATIONS
- SHOULDER WIDENING
- SOUNDING AND REPAIRING THE UNDERSIDE OF CONCRETE BRIDGE DECKS
- WIDENING OF THE MARGINAL ROAD

GENERAL CONSTRUCTION SEQUENCE

THE CONTRACTOR IS REMINDED THAT, IN THE CONDUCT OF THIS PROJECT, HIS SEQUENCE OF OPERATIONS 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, WHEN A TRAFFIC LANE IS CLOSED, ALL OPERATIONS TO THAT LANE SHALL BE PERFORMED IN AN ORDERLY SEQUENCE SUCH THAT IT WILL NOT BE NECESSARY TO AGAIN CLOSE THAT LANE UNTIL THE FINAL OVERLAY AND PAVEMENT MARKING OPERATIONS BEGIN.

IT IS THE INTENT OF THIS PROJECT TO CLOSE ONLY ONE LANE OF TRAFFIC DURING PEAK HOURS (6 AM TO 12 AM) AND TWO LANES DURING NON-PEAK HOURS (12 AM TO 6 AM).

IT IS ALSO REQUIRED OF THE CONTRACTOR TO HAVE ALL NORMAL LANES OF TRAFFIC OPENED THROUGHOUT THE WINTER SEASON (NOVEMBER 15TH THRU APRIL 1ST). NO LANE RESTRICTIONS, INCLUDING RAMPS, WILL BE ALLOWED DURING THIS TIME. THE CONTRACTOR IS CAUTIONED TO SCHEDULE HIS WORK, ESPECIALLY ASPHALT OVERLAYS, TO MEET THIS REQUIREMENT.

OVERHEAD SIGNS AND SUPPORTS THAT ARE BEING MODIFIED SHALL NOT BE REMOVED UNTIL THE NEW FOUNDATION IS CONSTRUCTED AND ANY REQUIRED SUPPORT MODIFICATIONS ARE AT THE SITE.

PAYMENT

ALL LABOR, MATERIALS, EQUIPMENT, AND ANY INCIDENTALS REQUIRED TO COMPLETE THE WORK AS DESCRIBED ABOVE SHALL BE INCLUDED IN THE LUMP SUM BID FOR ITEM 614 - MAINTAINING TRAFFIC UNLESS PAID FOR SEPARATELY.

ITEM 614 - BARRIER REFLECTORS, TYPE B

BARRIER REFLECTORS AND THEIR MOUNTINGS SHALL CONFORM TO SUPPLEMENTAL SPECIFICATION 802 EXCEPT THAT SPACING OF THE REFLECTORS SHALL BE HALF THE DISTANCE SPECIFIED IN S.S.802. THEY SHALL BE PLACED ON EXISTING GUARDRAIL AND BRIDGE PARAPETS ADJACENT TO TRAFFIC LANES WHICH HAVE BEEN SHIFTED FROM THE NORMAL DRIVING LANE. THEY SHALL ALSO BE PLACED ON ALL TEMPORARY CONCRETE BARRIERS. REFLECTOR COLOR SHALL MATCH THE COLOR OF THE EDGELINE. THE FOLLOWING ESTIMATED QUANTITIES HAVE BEEN INCLUDED IN THE GENERAL SUMMARY TO BE USED AS OUTLINED ABOVE PRIOR TO SHIFTING TRAFFIC.

ITEM 614 - BARRIER REFLECTORS, TYPE B 204 EACH

SCHEDULE OF THRU LANES TO BE MAINTAINED			
APPROXIMATE STATION LIMITS	BASIC ROADWAY TYPICAL SECTION	NUMBER OF THRU LANES TO BE MAINTAINED DURING PVMT. REPAIR*	NUMBER OF THRU LANES TO BE MAINTAINED DURING RESURFACING**
I-90 EB & WB STA 140+00 TO STA 403+00	4 LANE EACH DIRECTION	3 LANES EACH DIRECTION	2 LANES EACH DIRECTION (10 PM TO 6 AM)
STA 41+12.20 TO STA 60+00		2 LANES EACH DIRECTION 12 AM TO 6 AM ONLY	
LAKELAND FWY. WB STA. 60+00 TO STA 84+00 TURNING RDWY. #2 LAKELAND FWY. EB* STA. 62+00 TO STA 94+00 TURNING RDWY. #1 SB SPUR STA 54+00 TO STA 87+00 NB SPUR STA 52+00 TO STA 67+00 SPUR RAMP 6	2 LANES	1 LANE	1 LANE (10 PM TO 6 AM)
SB SPUR STA 40+00 TO STA 54+00 STA 92+00 TO STA 162+08.40 NB SPUR STA 43+00 TO STA 52+00 STA 67+00 TO STA 162+08.40 SPUR RAMP 1	3 LANES	2 LANES 12 AM TO 6 AM ONLY	1 LANE (12 AM TO 6 AM)
RAMPS (ALL RAMPS NOT LISTED SEPARATELY IN TABLE)	1 LANE	1 - 11' LANE USING SHLDR. AS NECESSARY	1 LANE (10 AM TO 3 PM)
SB SPUR STA 87+00 TO STA 92+00 LAKELAND FWY. EB&WB STA. 94+00 TO STA 100+00	4 LANES 3 LANES EACH DIRECTION	2 LANES 2 LANES EACH DIRECTION 1 LANE EACH DIRECTION 12 AM TO 6 AM ONLY	2 LANES (10 PM TO 6 AM) 1 LANE EACH DIRECTION (12 AM TO 6 AM)
MARGINAL RD.	2 LANES	1 LANE	1 LANE (10 PM TO 6 AM)
MARGINAL RD. STA 25+00 TO STA 71+50	2 LANES EACH DIRECTION	1 LANE EACH DIRECTION	1 LANE EACH DIRECTION (10 PM TO 6 AM)

* IF TRAFFIC IS RESTRICTED CONCURRENTLY ON TURNING ROADWAY NO. 1 THEN A LANE RESTRICTION ON LAKELAND FWY EB IS LIMITED TO 12 AM TO 6 AM ONLY.

** ALLOWABLE RESURFACING TIMES SHOWN IN PARENTHESIS.

+ PAVEMENT REPAIRS INCLUDE SHOULDER REPLACEMENT AND FULL DEPTH OR PARTIAL DEPTH REPAIR. AT THE COMPLETION OF THE PAVEMENT REPAIRS THE ROADWAY SHALL BE RE-OPENED TO NORMAL TRAFFIC. ANY LANE CLOSURES NEEDED AFTER THAT TIME SHALL BE RESTRICTED TO NON-RUSH HOUR (9 AM TO 2 PM OR 8 PM TO 6 AM).

CONSTRUCTION SEQUENCE

FHWA REGION	STATE	PROJECT
5	OHIO	

13
200

CUYAHOGA COUNTY
CUY - 90-23.95
LAKE COUNTY
LAK - 90-0.00

PHASE 1

A. WORK REQUIRED

- PERFORM PAVEMENT REPAIR IN THE FOLLOWING LANES BY IMPLEMENTING A PERMANENT STANDARD LANE CLOSURE. REFER TO SHEET 14 FOR TYPICAL LANE CLOSURE DETAIL. SEE SHEETS 17-23 FOR PHASE 1 PLAN DETAILS.

ROADWAY	LANE LOCATION
I-90 EB & WB	ENTIRE INSIDE LANE
LAKELAND FWY EB & WB	ENTIRE INSIDE LANE
EUCLID SPUR NB & SB	ENTIRE INSIDE LANE
TURNING RDWY NO. 2	ENTIRE LEFT LANE

- PERFORM BERM WIDENING ADJACENT TO CLOSED INSIDE LANES AT THE FOLLOWING LOCATIONS:

ROADWAY	LOCATION
I-90, LAKELAND FWY	ALL REQUIRED MAINLINE INSIDE BERM WIDENING
EUCLID SPUR	LEFT BERM WIDENING AND PAVEMENT REPAIR
*RAMP 1 (SPUR)	LEFT BERM WIDENING AND PAVEMENT REPAIR
*RAMP 2 (SPUR)	LEFT BERM WIDENING AND PAVEMENT REPAIR
RAMP 6 (SPUR)	LEFT LANE PAVEMENT REPAIR

*NOTE:
TREATMENT OF RAMPS 1 (SPUR) AND 2 (SPUR) REFER TO THE TYPICAL RAMP DETAIL ON SHEET 14. ONLY STEP 1 ON THE TYPICAL SEQUENCE WILL APPLY SUBSTITUTING "PHASE 1" WHERE "PHASE 2" IS INDICATED.

- REMOVE GORE CURB ON RAMP 2 (SPUR).

- REBUILD MEDIAN PARAPETS ON REQUIRED STRUCTURES.

B. REQUIREMENTS

- ALL FULL-DEPTH REPAIR WORK IN PHASE 1 IS TO BE PERFORMED USING RIGID MATERIAL, EXCEPT RAMPS 1 (SPUR) AND 2 (SPUR) WHICH SHALL RECEIVE FLEXIBLE FULL-DEPTH REPAIR.
- ALL CONFLICTING EXISTING PAVEMENT MARKINGS ARE TO BE REMOVED WITH PAYMENT INCLUDED UNDER ITEM 621 - REMOVAL OF PAVEMENT MARKINGS.
- IN ACCORDANCE WITH THE "GENERAL CONSTRUCTION SEQUENCE" NOTE, ALL ADDITIONAL OPERATIONS WHICH REQUIRE THE LANE CLOSURES ESTABLISHED ABOVE SHALL BE PERFORMED DURING THIS PHASE.
- AT ALL ENTRANCE POINTS TO THE MAINLINE UNDER CONSTRUCTION THE FOLLOWING WARNING SIGNS SHALL BE PROVIDED: "ROAD WORK AHEAD" (OW-134) AND "45 MPH" (OW-143).

PHASE 1A

A. WORK REQUIRED

- PERFORM PAVEMENT REPAIR IN THE FOLLOWING LANES BY TEMPORARILY RELOCATING THE DRUM LINE OF PHASE 1. THE DRUM LINE SHALL BE MOVED OVER 12' TO CLOSE OFF AN ADDITIONAL LANE ADJACENT TO THE CLOSED LANE OF PHASE 1. REFER TO SHEET 14 FOR TYPICAL TWO LANE CLOSURE DETAIL. SEE SHEETS 17-23 FOR PHASE 1A PLAN DETAILS.

ROADWAY	LANE LOCATION
I-90 EB & WB	ENTIRE INSIDE CENTER LANE
LAKELAND FWY	WESTBOUND CENTER LANE
EUCLID SPUR	SOUTHBOUND CENTER LANE STA 86+00 TO STA 162+08.4

B. REQUIREMENTS

- ALL PAVEMENT REPAIR WORK IN PHASE 1A IS TO BE PERFORMED USING FLEXIBLE MATERIAL.
- 1A IS A SUB-PHASE OF 1 AND IS TO BE ESTABLISHED ONLY BETWEEN 12 AM TO 6 AM. PRIOR TO PEAK HOURS THE DRUM LINE SHALL BE RETURNED TO THAT OF PHASE 1 WITH THE ADDITIONAL LANE OPEN TO TRAFFIC.

PHASE 2

A. WORK REQUIRED

- PERFORM PAVEMENT REPAIR IN THE FOLLOWING LANES BY IMPLEMENTING A PERMANENT STANDARD LANE CLOSURE. REFER TO SHEET 14 FOR TYPICAL LANE CLOSURE DETAIL AND SHEET 16 FOR TYPICAL EXIT/ENTRANCE RAMP ACROSS CLOSED LANE(S). SEE SHEETS 24-31 FOR PHASE 2 PLAN DETAILS.

ROADWAY	LANE LOCATION
I-90 EB & WB	ENTIRE OUTSIDE LANE
LAKELAND FWY	WESTBOUND RIGHT LANE
EUCLID SPUR NB & SB	ENTIRE OUTSIDE LANE
TURNING RDWY NO. 1	ENTIRE RIGHT LANE
TURNING RDWY NO. 2	ENTIRE RIGHT LANE

- PERFORM RIGHT BERM WIDENING AND PAVEMENT REPAIR ON ALL RAMPS. REFER TO TYPICAL RAMP DETAIL ON SHEET 14.

- REBUILD OUTSIDE PARAPETS AND WINGWALLS ON REQUIRED STRUCTURES.

B. REQUIREMENTS

- ALL FULL-DEPTH REPAIR WORK IN PHASE 2 IS TO BE PERFORMED USING RIGID MATERIAL, EXCEPT RAMPS WHICH SHALL RECEIVE FLEXIBLE FULL-DEPTH REPAIR (SEE TYPICAL RAMP DETAIL).
- ALL CONFLICTING EXISTING PAVEMENT MARKINGS ARE TO BE REMOVED WITH PAYMENT INCLUDED UNDER ITEM 621 - REMOVAL OF PAVEMENT MARKINGS.
- IN ACCORDANCE WITH THE "GENERAL CONSTRUCTION SEQUENCE" NOTE, ALL ADDITIONAL OPERATIONS WHICH REQUIRE THE LANE CLOSURES ESTABLISHED ABOVE SHALL BE PERFORMED DURING THIS PHASE.

PHASE 2A

A. WORK REQUIRED

- PERFORM PAVEMENT REPAIR IN THE FOLLOWING LANES BY TEMPORARILY RELOCATING THE DRUM LINE OF PHASE 2. THE DRUM LINE SHALL BE MOVED OVER 12' TO CLOSE OFF AN ADDITIONAL LANE ADJACENT TO THE CLOSED LANE OF PHASE 2. REFER TO SHEET 14 FOR TYPICAL LANE CLOSURE DETAIL AND SHEET 15 FOR TYPICAL EXIT/ENTRANCE RAMP ACROSS CLOSED LANE(S). SEE SHEETS 24-31 FOR PHASE 2A PLAN DETAILS.

ROADWAY	LANE LOCATION
I-90 EB & WB	ENTIRE OUTSIDE CENTER LANE
LAKELAND FWY	EASTBOUND RIGHT LANE
	EASTBOUND CENTER LANE STA 97+00 TO STA 100+00
EUCLID SPUR	SOUTHBOUND CENTER LANE STA 41+43 TO STA 52+50
	NORTHBOUND CENTER LANE STA 43+67 TO STA 48+00
	STA 70+75 TO STA 162+08.4

B. REQUIREMENTS

- ALL PAVEMENT REPAIR WORK IN PHASE 2A IS TO BE PERFORMED USING FLEXIBLE MATERIAL.
- 2A IS A SUB-PHASE OF 2 AND IS TO BE ESTABLISHED ONLY BETWEEN 12 AM TO 6 AM. PRIOR TO PEAK HOURS THE DRUM LINE SHALL BE RETURNED TO THAT OF PHASE 2 WITH THE ADDITIONAL LANE OPEN TO TRAFFIC.

PHASE 2B

A. WORK REQUIRED

- PERFORM PAVEMENT REPAIR ON THE LEFT LANE OF TURNING RDWY NO. 1. SEE SHEET 32 FOR PLAN SHEET DETAILS.
- PERFORM PARAPET WORK AND IMPACT ATTENUATOR INSTALLATION ON STRUCTURE CUY-90-2969. SEE SHEET 32A FOR PLAN DETAILS.

B. REQUIREMENTS

- AT FULL-DEPTH REPAIR WORK IN PHASE 2B IS PERFORMED USING RIGID MATERIAL.
- ALL CONFLICTING EXISTING PAVEMENT MARKINGS ARE TO BE REMOVED WITH PAYMENT INCLUDED UNDER ITEM 621 - REMOVAL OF PAVEMENT MARKINGS.

- PHASE 2B IS AN EXTENSION OF PHASE 2 BETWEEN I-90 STA 62+00 TO TURNING ROADWAY NO. 1 STA 19+55, AND ALSO BETWEEN TURNING ROADWAY NO. 2 STA 6+12 TO TURNING ROADWAY NO. 2 STA 0+00. SEE SHEETS 32 AND 32A.

PHASE 3

A. WORK REQUIRED

- PERFORM PAVEMENT REPAIR ON THE FOLLOWING LANES OF THE MARGINAL ROADS. REFER TO SHEET 33 FOR TYPICAL MARGINAL ROAD DETAIL - PHASE 3. SEE SHEETS 33-35 FOR PHASE 3 PLAN DETAILS.

MARGINAL ROAD	LANE
SOUTH WATERLOO RD	ENTIRE RIGHT LANE
LAKELAND BLVD EB&WB	ENTIRE RIGHT LANE
WATERLOO RD	ENTIRE RIGHT LANE
VILLAVIEW RD	RIGHT LANE BETWEEN NEFF RD AND E. 200TH ST

- PERFORM PAVEMENT REPAIR ON THE ENTIRE WIDTH OF VILLAVIEW ROAD BETWEEN E. 185TH ST AND NEFF RD. THE ROAD IS TO BE CLOSED WITH TRAFFIC DETOURED TO THE NORTH. THE FOLLOWING SIGNS SHALL BE PROVIDED ON TYPE III BARRICADES AT EACH END OF THE CLOSED ROAD:

"ROAD CLOSED" R-75
"DETOUR" OC-14L(R)

LOCAL ACCESS TO GLENFIELD AVENUE MUST BE AVAILABLE DURING THE ROAD CLOSURE. TOTAL TIME CLOSURE FOR THE PAVEMENT REPAIR SHALL BE LIMITED TO 15 CALENDAR DAYS. CLASS MS CONCRETE IN ACCORDANCE WITH SS905 SHALL BE USED.

B. REQUIREMENTS

- ALL FULL-DEPTH REPAIR WORK IN PHASE 3 IS TO BE PERFORMED USING RIGID MATERIALS.
- IN ACCORDANCE WITH THE "GENERAL CONSTRUCTION SEQUENCE" NOTE, ALL ADDITIONAL OPERATIONS WHICH REQUIRE THE LANE CLOSURE ESTABLISHED ABOVE SHALL BE PERFORMED DURING THIS PHASE.
- ACCESS SHALL BE MAINTAINED FOR ALL DRIVEWAYS OFF THE MARGINAL ROADS. ALL DRIVEWAYS ARE SHOWN ON THE RESURFACING PLAN SHEETS.

PHASE 4

A. WORK REQUIRED

- PERFORM PAVEMENT REPAIR ON THE FOLLOWING LANES OF THE MARGINAL ROADS. REFER TO SHEET 36 FOR TYPICAL MARGINAL ROAD DETAIL - PHASE 4. SEE SHEETS 36-38 FOR PHASE 4 PLAN DETAILS.

MARGINAL ROAD	LANE
SOUTH WATERLOO RD	ENTIRE LEFT LANE
LAKELAND BLVD EB&WB	ENTIRE LEFT LANE
WATERLOO ROAD	ENTIRE LEFT LANE
VILLAVIEW ROAD	LEFT LANE BETWEEN NEFF RD AND E. 200TH ST.

- PERFORM PAVEMENT REPAIR ON THE ENTIRE WIDTH OF ALL MARGINAL CONNECTORS BY CLOSING THE ROAD. REFER TO SHEET 36 FOR TYPICAL DETAIL. TOTAL TIME CLOSURE FOR EACH CONNECTOR TO PERFORM REPAIR SHALL BE LIMITED TO 5 CALENDAR DAYS. CLASS MS CONCRETE IN ACCORDANCE WITH SS905 MAY BE USED.

B. REQUIREMENTS

- ALL FULL-DEPTH REPAIR WORK IN PHASE 4 IS TO BE PERFORMED USING RIGID MATERIAL.
- IN ACCORDANCE WITH THE "GENERAL CONSTRUCTION SEQUENCE" NOTE ALL ADDITIONAL OPERATIONS WHICH REQUIRE THE LANE CLOSURES ESTABLISHED ABOVE SHALL BE PERFORMED DURING THIS PHASE.

PHASE 4A

A. WORK REQUIRED

- PERFORM PAVEMENT REPAIR ON THE CENTER LANE OF ALL MARGINAL ROAD WEAVE AREAS. THE DRUM LINE OF PHASE 4 SHALL BE RELOCATED 12' TO CLOSE THE CENTER LANE. REFER TO SHEET 36 FOR TYPICAL DETAIL.

B. REQUIREMENTS

- ALL PAVEMENT REPAIR IN PHASE 4A IS TO BE PERFORMED USING FLEXIBLE MATERIAL.
- 4A IS A SUB-PHASE OF 4 AND IS TO BE ESTABLISHED ONLY BETWEEN 12 AM AND 6 AM. PRIOR TO PEAK HOURS THE DRUM LINE SHALL BE RETURNED TO THAT OF PHASE 4 WITH THE CENTER LANE OPEN TO TRAFFIC.

PHASE 5

A. WORK REQUIRED

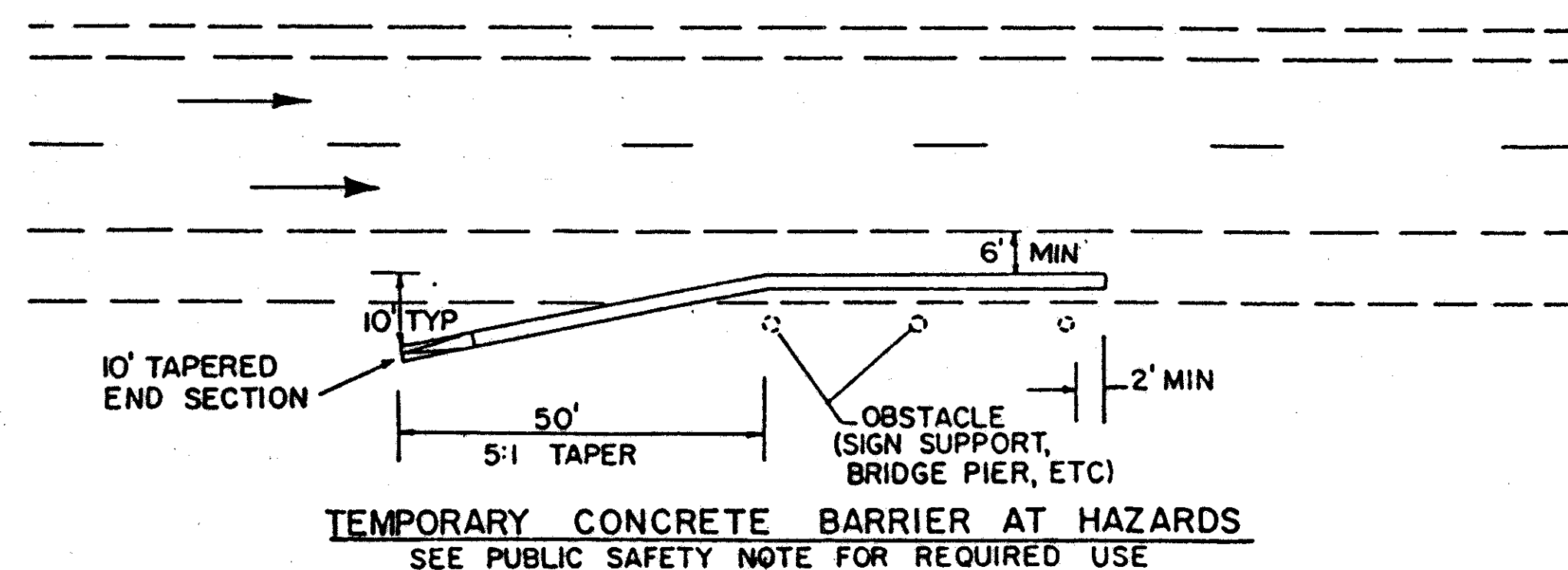
- PERFORM ASPHALT CONCRETE RESURFACING ON ALL ROADWAYS WITH TRAFFIC MAINTAINED IN ACCORDANCE WITH THE REQUIREMENTS STATED IN THE GENERAL NOTES.

TEMPORARY PRECAST BARRIERS

THE FOLLOWING GUIDELINES APPLY TO THE USE OF TEMPORARY PRECAST CONCRETE BARRIERS TO SEPARATE BRIDGE WORK AREAS FROM THRU TRAFFIC:

ROADWAY (APPROACHES TO BRIDGE WORK AREAS) - THE STANDARD BARRIER AS SHOWN ON STD. DWG. MC-9A APPLIES TO ALL ROADWAY BARRIERS. THE BARRIER SECTIONS SHALL BE PINNED TOGETHER. PAYMENT SHALL BE INCLUDED UNDER ITEM 622 - TEMPORARY CONCRETE BARRIER.

STRUCTURE (BRIDGE OVERLAY OR RAILING FACING) - THE STANDARD BARRIER AS SHOWN ON STD. DWG. MC-9A APPLIES. SEE NOTES AND DETAILS ON SHEET 16A REGARDING SPECIAL DECK SURFACE PREPARATION, BOLTED END CONNECTIONS AND JOINT BLOCKING. PAYMENT SHALL BE INCLUDED UNDER ITEM 622 - TEMPORARY CONCRETE BARRIER, BRIDGE MOUNTED.



**TABLE I
ADVANCE WARNING SIGNS**

	DISTANCE	SIGN	SIZE	DESCRIPTION
LEFT LANE(S) CLOSED	500'	OW-60D	48" X 48"	WIDTH TRANSITION (SYMBOLIC)
	1000'	OW-143	24" X 24"	35 MPH
	2000'	* OW-123 MOD	48" X 48"	LEFT LANE CLOSED 1000 FT
	3000'	OW-134	48" X 48"	ROAD WORK AHEAD
	5200'	OW-134	48" X 48"	ROAD WORK AHEAD
RIGHT LANE(S) CLOSED	500'	OW-60C	48" X 48"	WIDTH TRANSITION (SYMBOLIC)
	1000'	OW-143	24" X 24"	35 MPH
	2000'	* OW-122 MOD	48" X 48"	RIGHT LANE CLOSED 1000 FT
	3000'	OW-134	48" X 48"	ROAD WORK AHEAD
	5200'	OW-134	48" X 48"	ROAD WORK AHEAD
LANE SHIFT (ADVANCE)	1000'	OW-134 MOD	48" X 48"	ROAD WORK 1000'
	2000'	OW-143	30" X 30"	35 MPH
	3000'	OW-134	48" X 48"	ROAD WORK AHEAD
EXIT RAMP ACROSS CLSD LANE	GORE	OW-SPEC	48" X 48"	EXIT RAMP
	500'	OW-SPEC	48" X 48"	EXIT RAMP 500 FT
	1000'	OW-SPEC	48" X 48"	EXIT RAMP 1000 FT

* FOR TWO LANE CLOSURE DESCRIPTION SHALL READ "RIGHT (LEFT) 2 LANES CLOSED AHEAD"

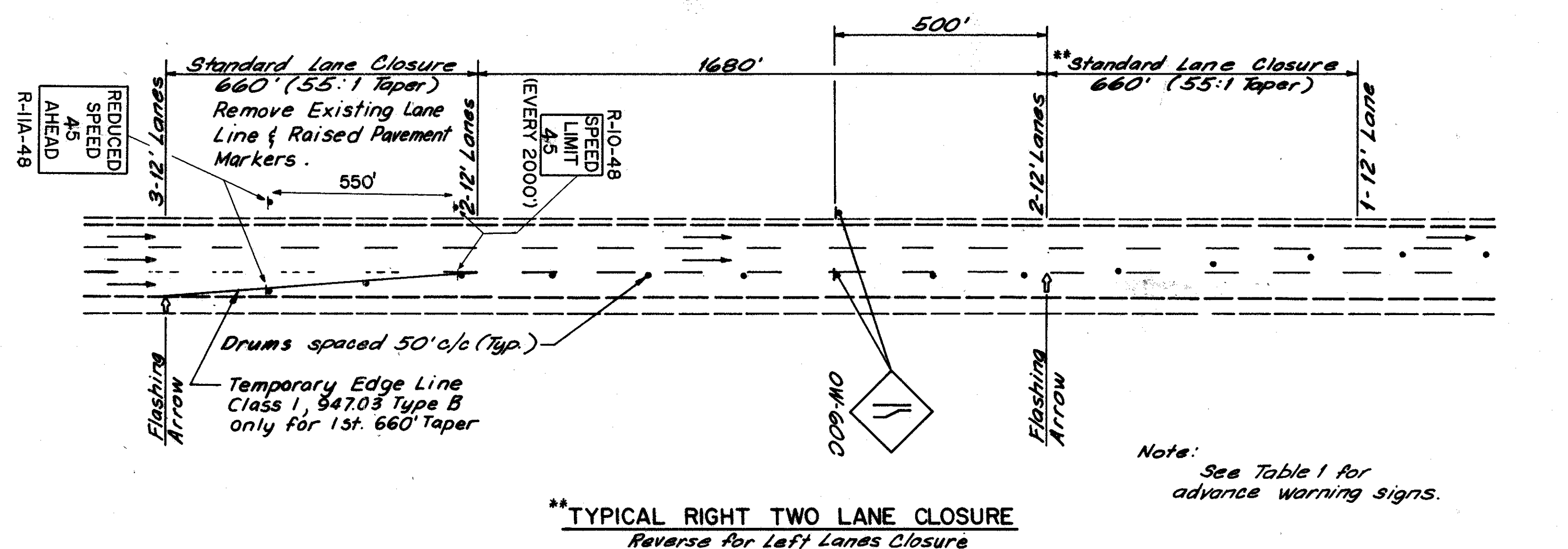
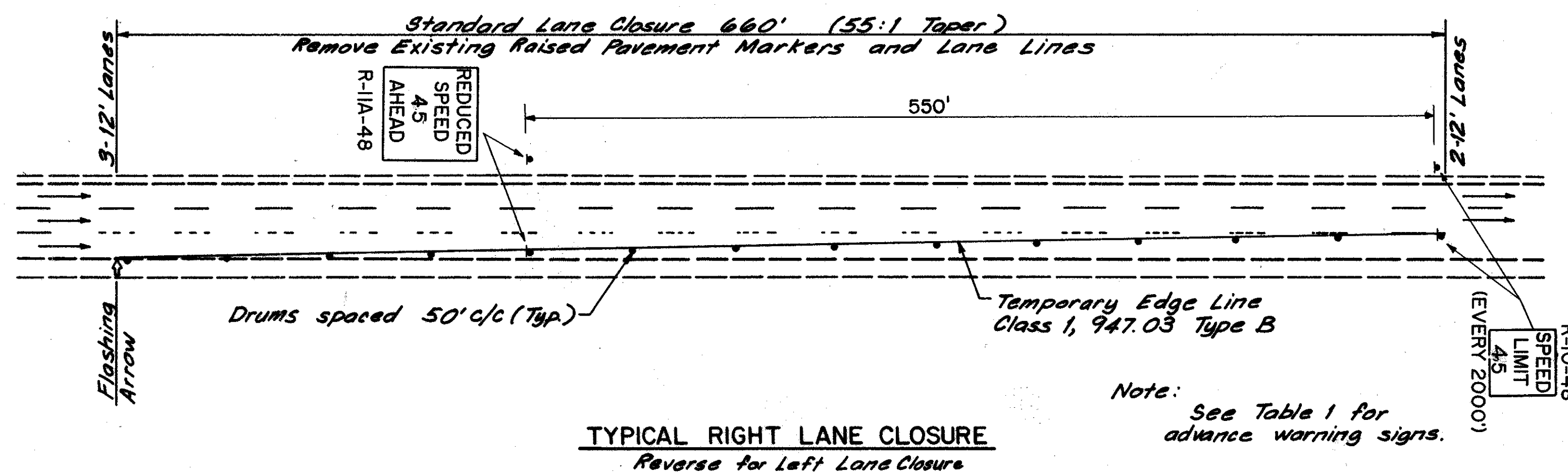
† DISTANCES ARE MEASURED FROM BEGINNING OF LANE CLOSURE, LANE SHIFT OR PAINTED GORE.

SPEED LIMIT REDUCTION

A 45 MPH REGULATORY SPEED LIMIT ZONE WILL BE ESTABLISHED FOR THIS PROJECT AS INDICATED IN THE TYPICAL LANE CLOSURE DETAILS. THIS WILL REQUIRE NEW TEMPORARY R-10-48 SPEED LIMIT SIGNS (SPACED EVERY 2000 FEET) TO BE FURNISHED, ERECTED AND MAINTAINED BY THE CONTRACTOR. IN ADDITION, THE EXISTING SPEED LIMIT SIGNS SHALL BE COVERED OR OVERLAYED WITH THE NEW SPEED LIMIT BY THE CONTRACTOR. ALL COSTS FOR THIS WORK SHALL BE INCLUDED IN ITEM 614-MAINTAINING TRAFFIC.

TYPICAL SEQUENCE FOR RAMP TREATMENT

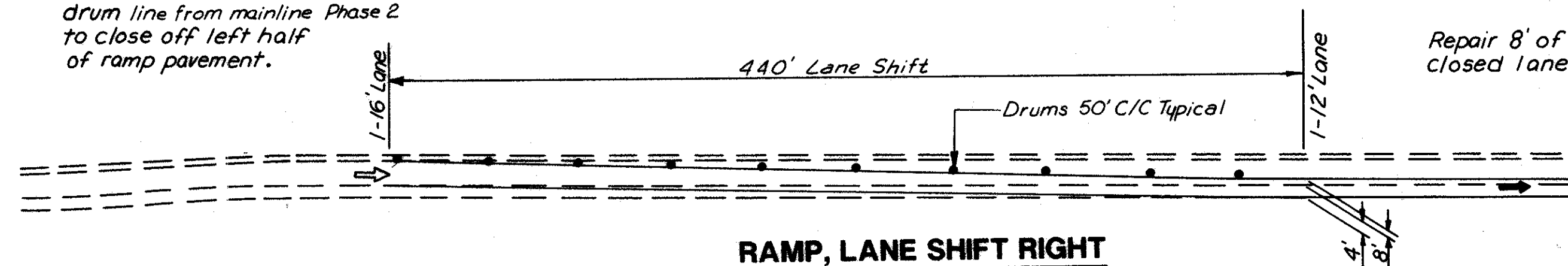
1. With Phase 2 traffic maintenance established on the mainline, continue drum line to close off 8' of ramp pavement adjacent to the right berm. This will be a temporary closure established only during daylight hours. Flexible pavement repair shall be performed along with berm widening as required (See Detail; Lane Shift Left). Refer to Typical Exit/Entrance Ramp across closed lane for preferable method of shifting ramp traffic from the mainline closure.
2. With Phase 2 traffic maintenance established on the mainline continue the drum line to close off 8' of ramp pavement adjacent to the left berm. This will be a temporary closure established only during daylight hours. Flexible pavement repair shall be performed (See Detail; Lane Shift Right).



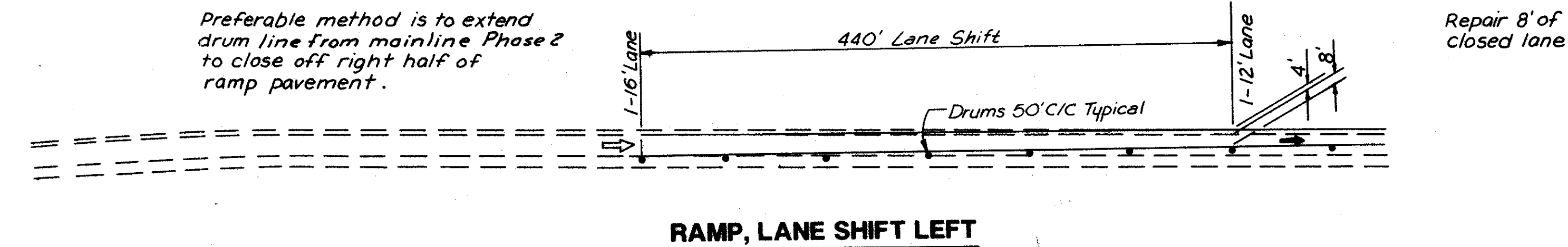
Note: See Table I for advance warning signs.

**Closure of a second lane is during night time only (non-peak hours), and since it is a temporary closure no pavement markings shall be used.

Preferable method is to extend drum line from mainline Phase 2 to close off left half of ramp pavement.



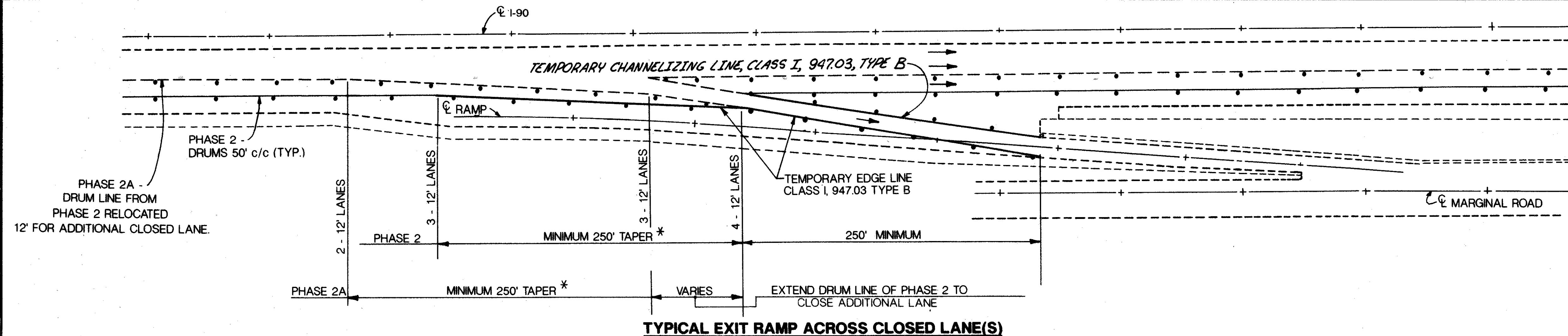
Preferable method is to extend drum line from mainline Phase 2 to close off right half of ramp pavement.



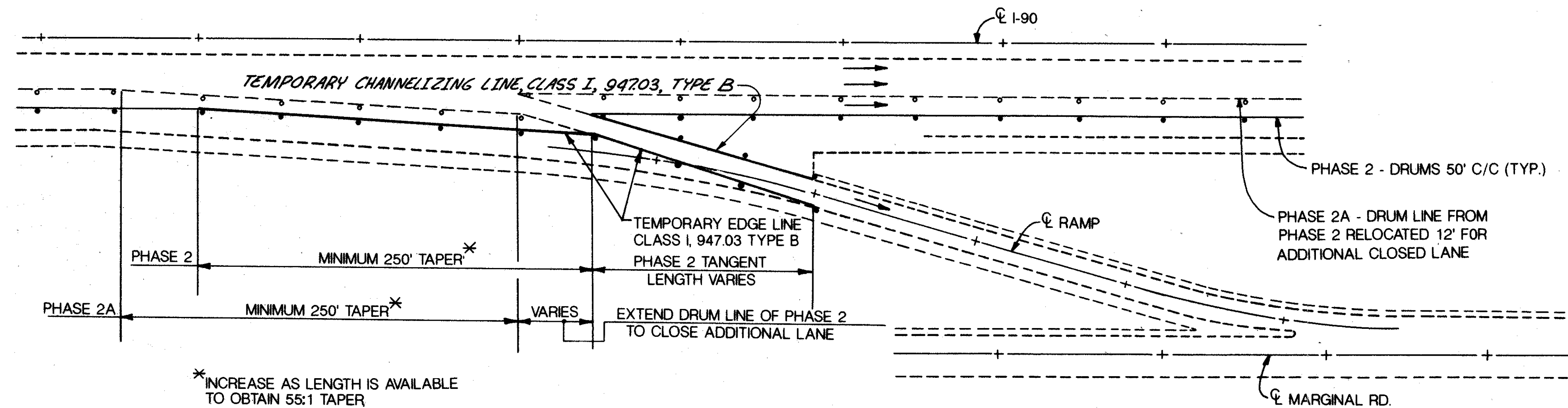
FHWA REGION	STATE	PROJECT	
5	OHIO		

15
200

CUYAHOGA COUNTY
CUY - 90-23.95
LAKE COUNTY
LAK - 90-0.00



**TYPICAL EXIT RAMP ACROSS CLOSED LANE(S)
TYPE 1**

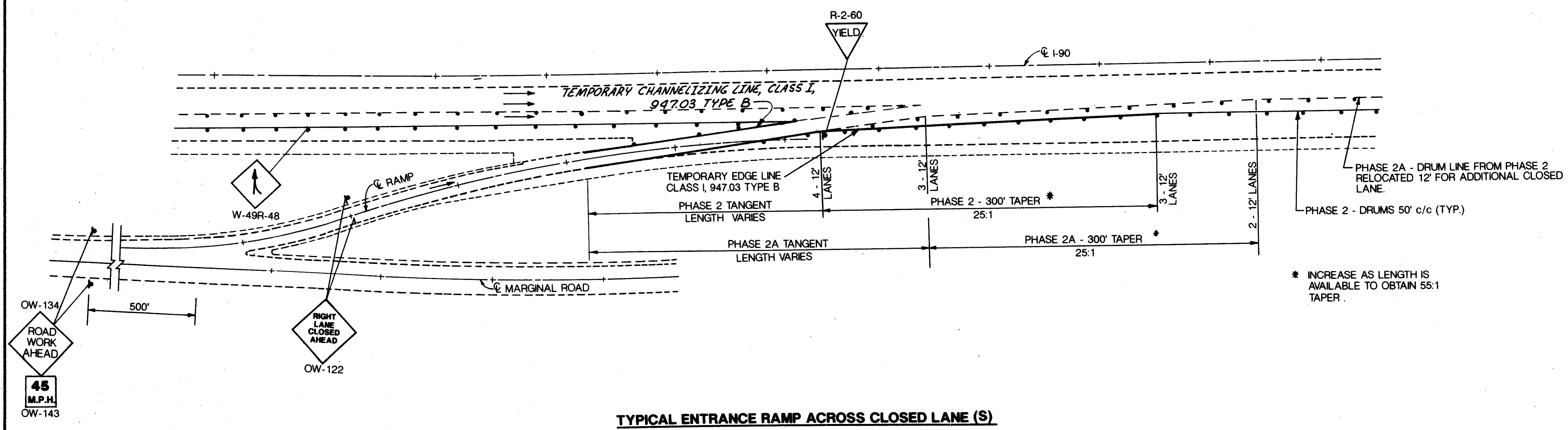


**TYPICAL EXIT RAMP ACROSS CLOSED LANE(S)
TYPE 2**

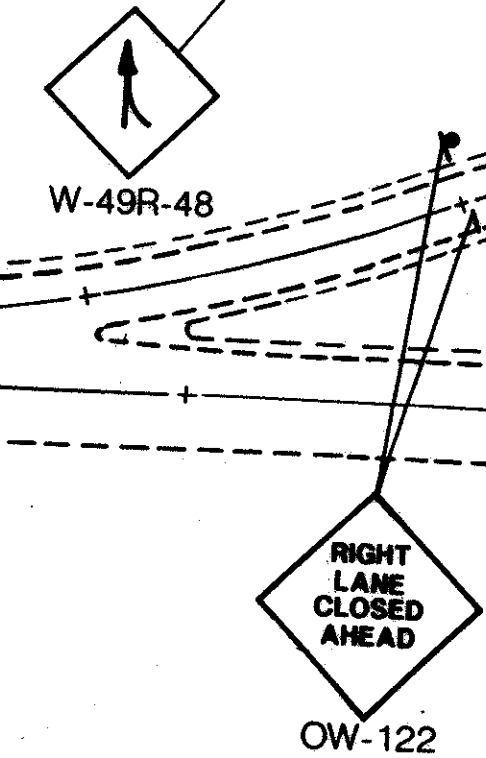
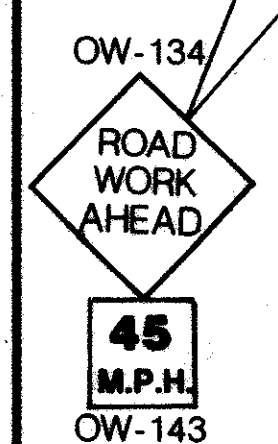
- NOTES:**
- PAVEMENT REPAIRS WHICH FALL WITHIN THE TEMPORARY EXIT/ENTRANCE RAMP LANES SHALL BE REPAIRED USING FLEXIBLE MATERIALS. EVERY ATTEMPT SHALL BE MADE TO AVOID PAVEMENT REPAIRS WITHIN THE TEMPORARY RAMP TERMINI. WHEN FLEXIBLE REPAIRS ARE NECESSARY THEY SHALL BE PERFORMED BETWEEN 10 AM AND 3 PM. FLAGMEN SHALL BE REQUIRED TO CONTROL TRAFFIC DURING THAT WORK.
 - REFER TO TYPICAL RAMP DETAIL FOR TREATMENT AT RAMPS.
 - REMOVE EXISTING GORE MARKINGS AND LANE LINES WITHIN THE TEMPORARY EXIT LANE. PAYMENT IS UNDER ITEM 621 - REMOVAL OF PAVEMENT MARKINGS (SEE GENERAL NOTES).
 - FOR ADVANCE SIGNING REQUIREMENTS, SEE TABLE 1 ON SHEET 14.
 - FOR LEGEND SEE SHEET 17.

* INCREASE AS LENGTH IS AVAILABLE TO OBTAIN 55:1 TAPER

* INCREASE AS LENGTH IS AVAILABLE TO OBTAIN 55:1 TAPER



TYPICAL ENTRANCE RAMP ACROSS CLOSED LANE (S)

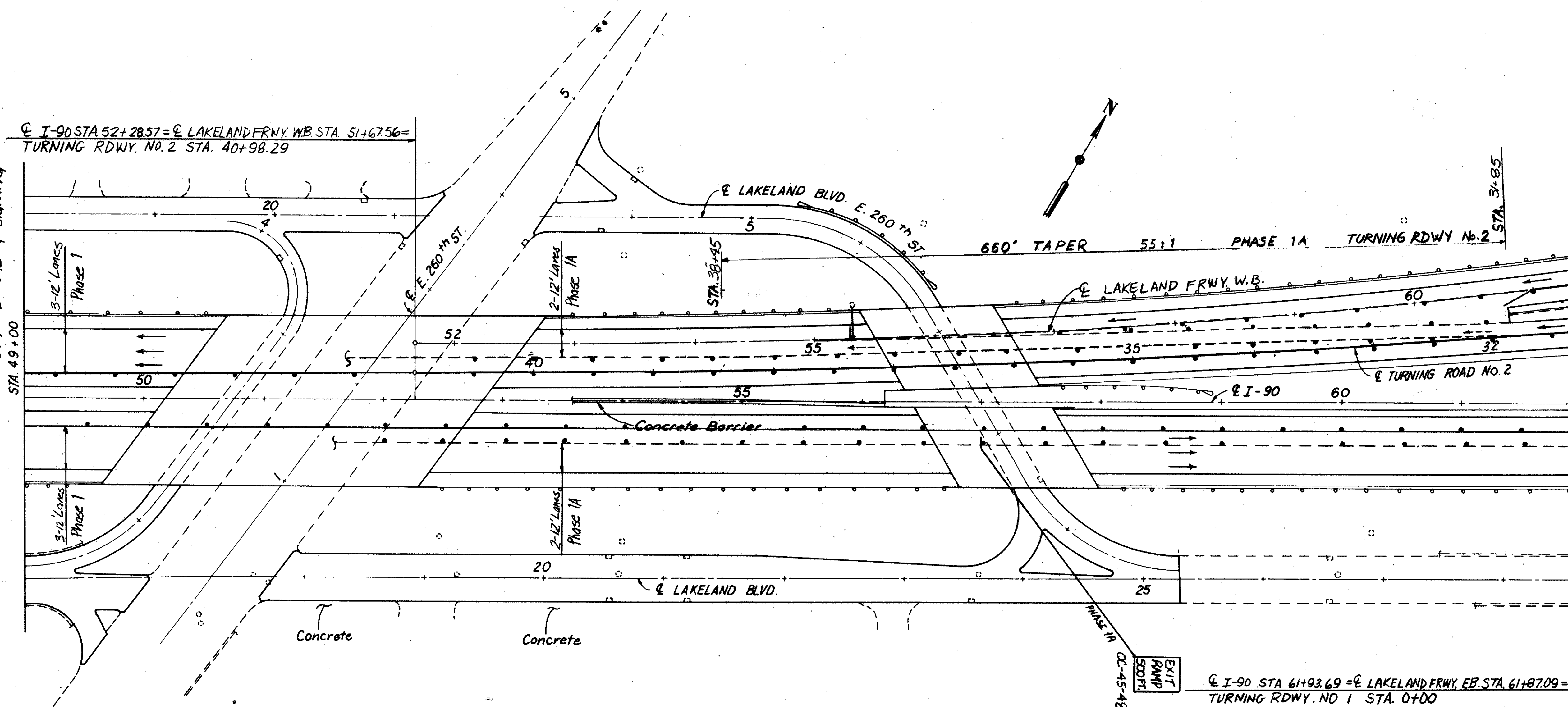


MADE J.M.W. DATE 4-6-89
TRACED J.P.B. DATE 4-7-89
CHECKED J.P.B. DATE 4-10-89
SCALE As Shown

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

HNTB

PHASE 1: INSIDE LANE CLOSED E.B. & W.B. - TYPICAL TO THE BEGINNING OF PROJECT.
PHASE 1A: DRUM LINE OF PHASE 1 RELOCATED TO CLOSE AN ADDITIONAL LANE BOTH E.B. & W.B. TYPICAL TO THE BEGINNING OF PROJECT. SEE SHEET 14 FOR TYPICAL LANE(S) CLOSURE & SIGNING.



LEGEND

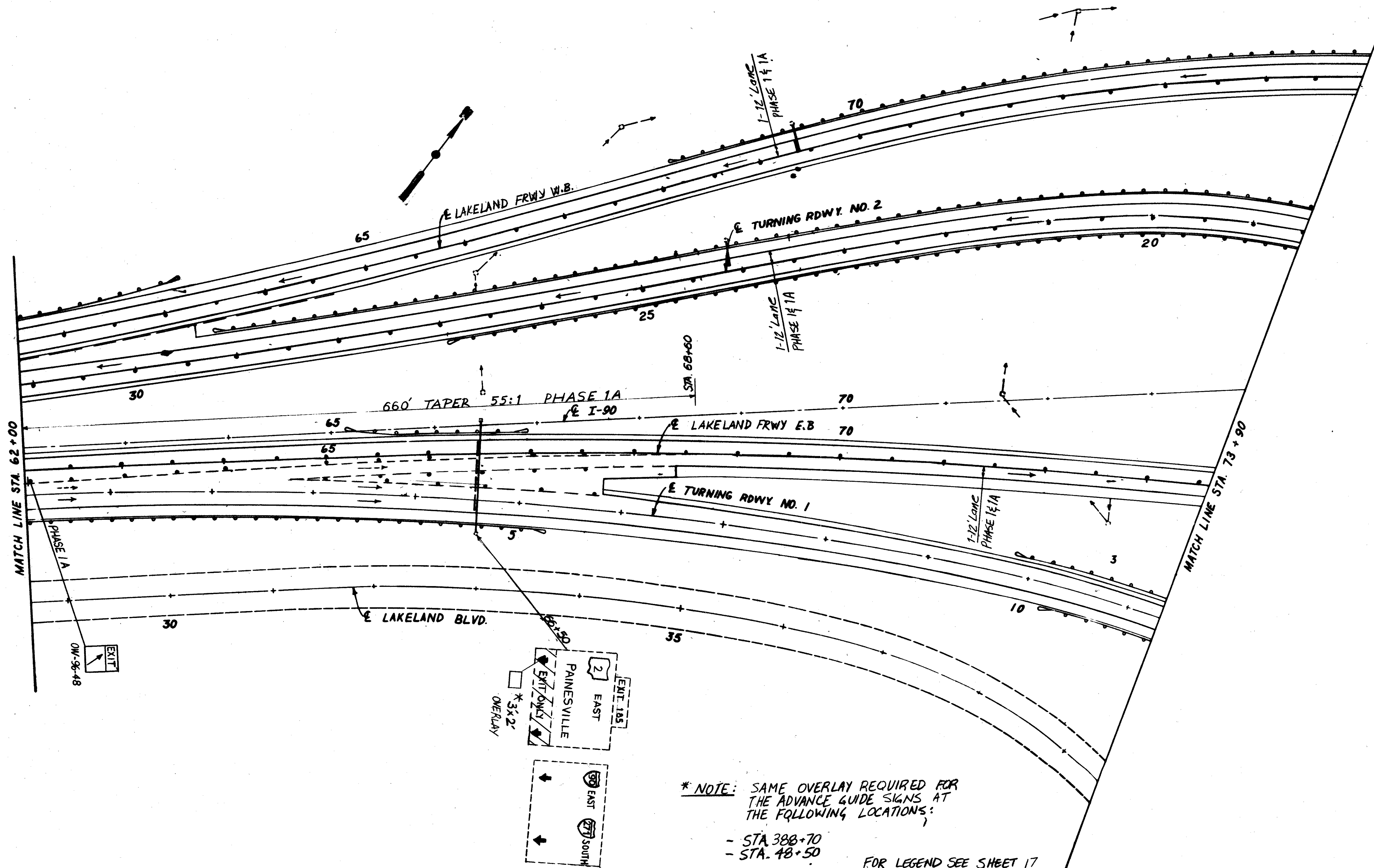
- DRUMS SPACED @ 50' C/C (TYP) (NO PAV'T. MARKING EXCEPT AS NOTED)
- - - DRUM LINE FOR SUB-PHASE, DRUMS FROM PERMANENT LANE CLOSURE RELOCATED 12' DURING NON-PEAK HOURS TO CLOSE AN ADDITIONAL LANE.
- DIRECTION AND NUMBER OF LANES.
- TEMPORARY PAVEMENT MARKING
- ▨ TEMPORARY CONCRETE BARRIER

	PHASE 1,1A	PHASE 2,2A,2B	PHASE 3,3A	PHASE 4,4A	TOTAL
TEMPORARY PAVEMENT MARKINGS					
①	TEMPORARY EDGE LINE, CLASS I, 947.03 TYPE B	1.00 MI.	436 MI.	0.03 MI.	539 MI.
②	4" TEMPORARY CHANNELIZING LINE, CLASS I, 947.03 TYPE B	920 L.F.	13038 L.F.	200 L.F.	14158 L.F.
③	TEMPORARY TRANSVERSE LINES, CLASS I, 947.03 TYPE B	-	2430 L.F.	-	2430 L.F.
	TEMPORARY CONCRETE BARRIER ROADWAY STRUCTURE	1000 L.F.	1540 L.F.	-	2540 L.F.
		1963 L.F.	3729 L.F.	-	5692 L.F.
	TEMPORARY BARRIER REFLECTORS, TYPE B-YELLOW	83 EA.	-	-	83 EA.
	TEMPORARY BARRIER REFLECTORS, TYPE B-WHITE	-	121 EA.	-	121 EA.
	TEMPORARY RAISED PAVEMENT MARKERS, TYPE B.	357 EA.	2454 EA.	137 EA.	3083 EA.
④	TEMPORARY LANE LINE, CLASS I, 947.03 TYPE B	-	4400 L.F.	5400 L.F.	9800 L.F.
⑤	TEMPORARY STOP LINES, CLASS I, 947.03 TYPE B	-	-	22 L.F.	22 L.F.

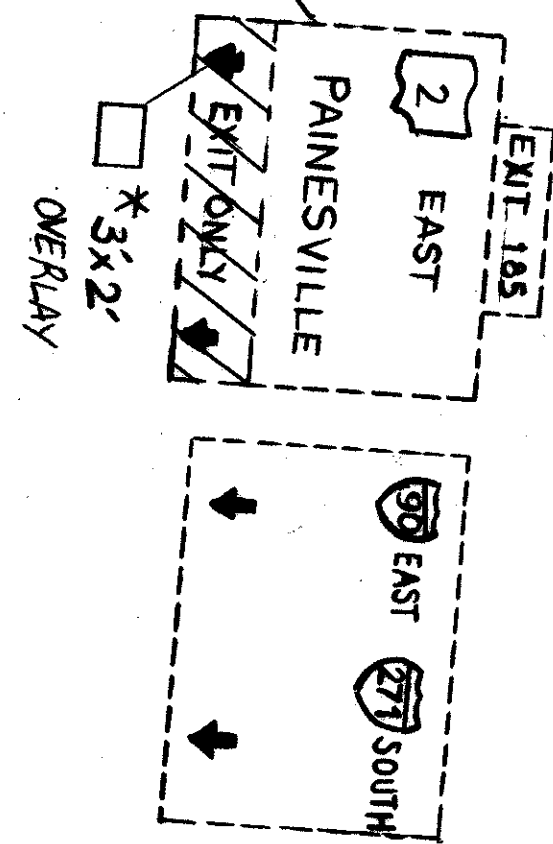
FHWA REGION	STATE	PROJECT	
5	OHIO		

18
200

CUYAHOGA COUNTY
CUY - 90-23.95
LAKE COUNTY
LAK - 90-0.00



* NOTE: SAME OVERLAY REQUIRED FOR THE ADVANCE GUIDE SIGNS AT THE FOLLOWING LOCATIONS:
 - STA. 388+70
 - STA. 48+50
 FOR LEGEND SEE SHEET 17



MADE J.A.C. DATE 2-15-89
 TRACED J.A.C. DATE 2-16-89
 CHECKED J.M.W. DATE 2-17-89
 SCALE AS SHOWN

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

HNTB



PHASE 1,1A

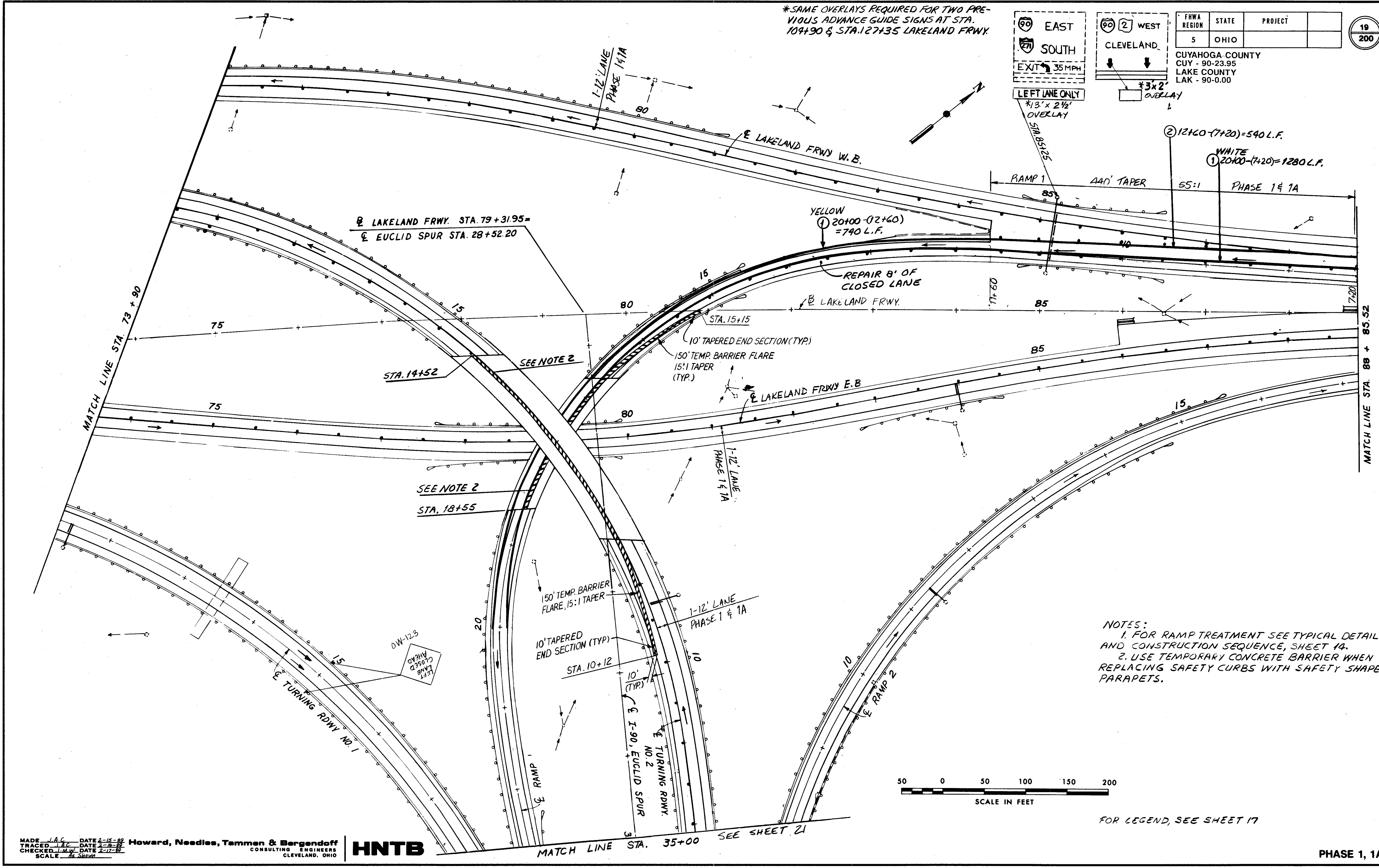
TRAFFIC MAINTENANCE

*SAME OVERLAYS REQUIRED FOR TWO PREVIOUS ADVANCE GUIDE SIGNS AT STA. 104+90 & STA. 127+35 LAKELAND FRWY.

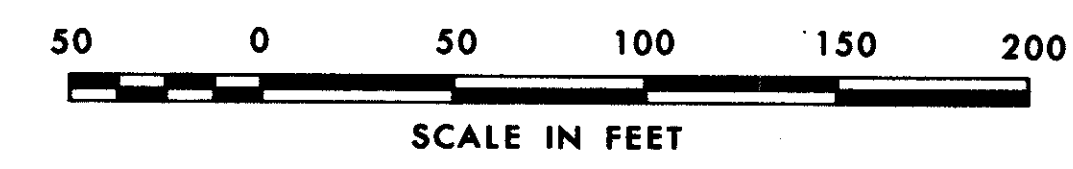
FHWA REGION 5	STATE OHIO	PROJECT	

19
200

CUYAHOGA COUNTY
CUY - 90-23.95
LAKE COUNTY
LAK - 90-0.00



- NOTES:
1. FOR RAMP TREATMENT SEE TYPICAL DETAIL AND CONSTRUCTION SEQUENCE, SHEET 14.
 2. USE TEMPORARY CONCRETE BARRIER WHEN REPLACING SAFETY CURBS WITH SAFETY SHAPE PARAPETS.



FOR LEGEND, SEE SHEET 17

MADE J.A.C. DATE 2-15-89
 TRACED L.M.W. DATE 2-16-89
 CHECKED L.M.W. DATE 2-17-89
 SCALE As Shown

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



MATCH LINE STA. 35+00 SEE SHEET 21

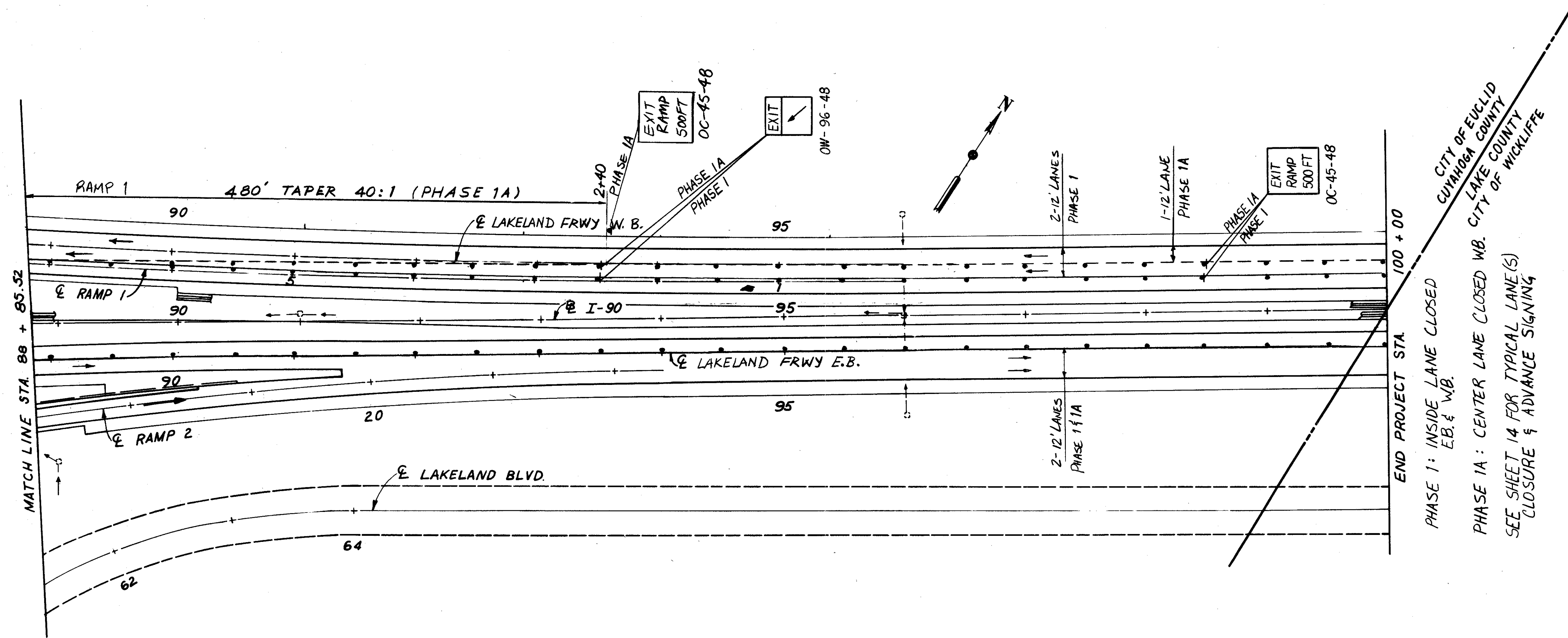
PHASE 1, 1A

TRAFFIC MAINTENANCE

FHWA REGION	STATE	PROJECT
5	OHIO	

20
200

CUYAHOGA COUNTY
CUY - 90-23.95
LAKE COUNTY
LAK - 90-0.00



END PROJECT STA. 100 + 00

PHASE 1: INSIDE LANE CLOSED
E.B. & W.B.

PHASE 1A: CENTER LANE CLOSED W.B. CITY OF WICKLIFFE
SEE SHEET 14 FOR TYPICAL LANE(S)
CLOSURE & ADVANCE SIGNING

CITY OF EUCLID
CUYAHOGA COUNTY
LAKE COUNTY
CITY OF WICKLIFFE

NOTE: For Ramp treatment See
Typical Detail & Construction
Sequence, Sheet 14.

MADE J.A.C. DATE 2-15-89
TRACED J.A.C. DATE 2-16-89
CHECKED J.M.W. DATE 2-17-89
SCALE AS SHOWN

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

HNTB



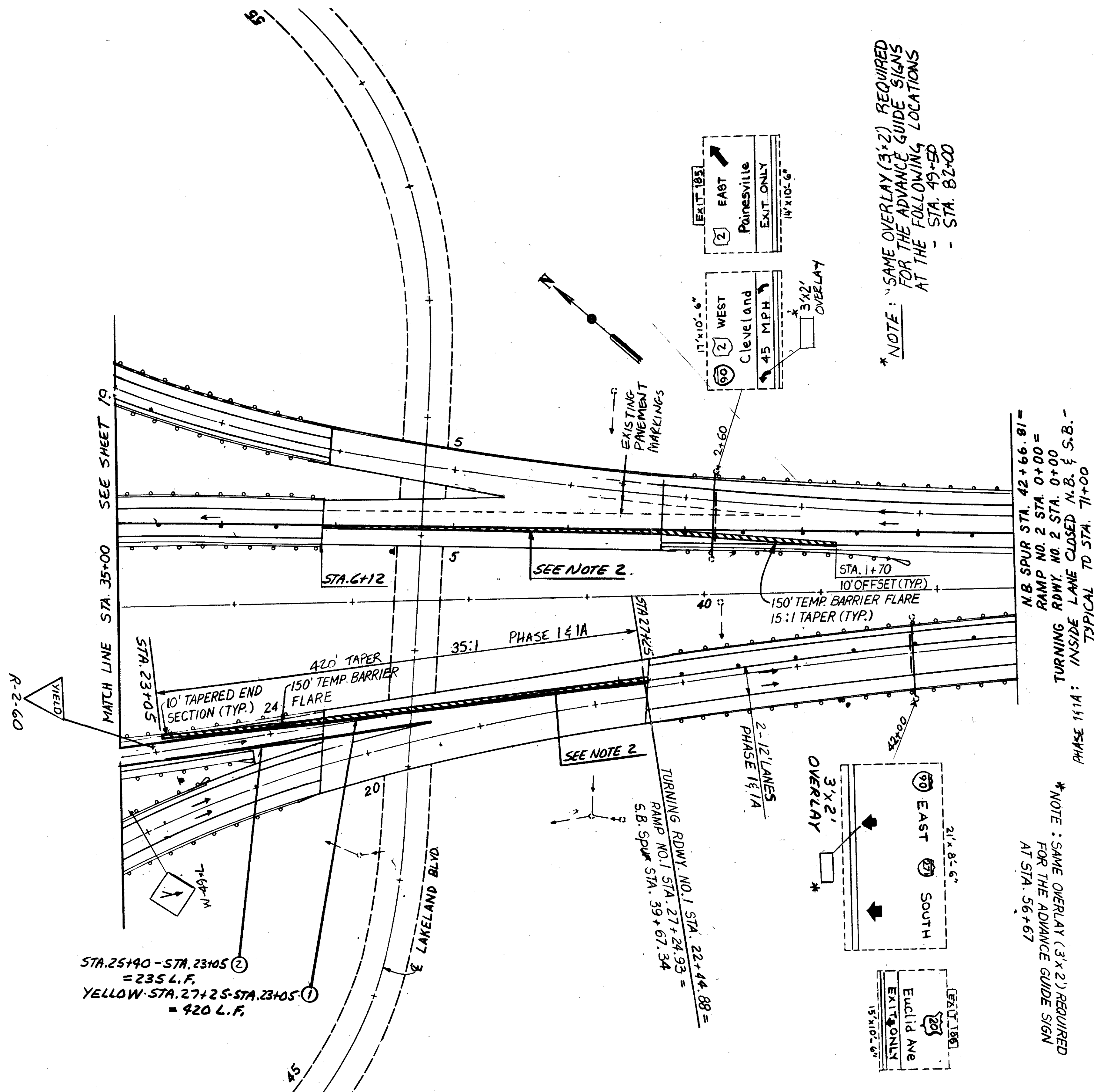
FOR LEGEND SEE SHEET 17

PHASE 1,1A

TRAFFIC MAINTENANCE

FHWA REGION	STATE	PROJECT
5	OHIO	

CUYAHOGA COUNTY
 CUY - 90-23.95
 LAKE COUNTY
 LAK - 90-0.00



*NOTE: SAME OVERLAY (3'x2') REQUIRED FOR THE ADVANCE GUIDE SIGNS AT THE FOLLOWING LOCATIONS
 - STA. 49+50
 - STA. 82+00

N.B. SPUR STA. 42+66.81 =
 RAMP NO. 2 STA. 0+00 =
 TURNING RDWY. NO. 2 STA. 0+00 =
 PHASE 111A: INSIDE LANE CLOSED N.B. & S.B. -
 TYPICAL TO STA. 71+00

*NOTE: SAME OVERLAY (3'x2') REQUIRED FOR THE ADVANCE GUIDE SIGN AT STA. 56+67

- NOTES:
1. FOR RAMP TREATMENT SEE TYPICAL DETAILS & CONSTRUCTION SEQUENCE SHEET 1A.
 2. USE TEMPORARY CONCRETE BARRIER WHEN REPLACING SAFETY CURB WITH SAFETY SHAPE PARAPETS.

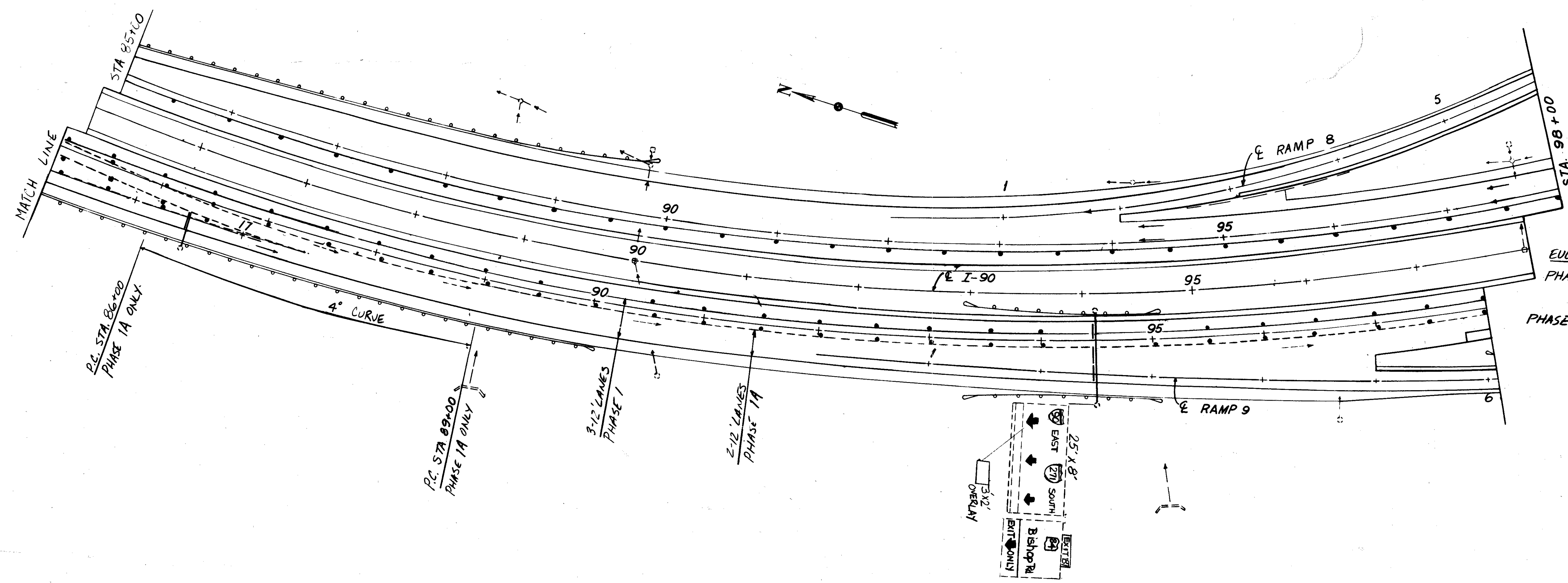
FOR LEGEND SEE SHEET 17.



FHWA REGION	STATE	PROJECT	
5	OHIO		

23
200

CUYAHOGA COUNTY
CUY - 90-23.95
LAKE COUNTY
LAK - 90-0.00



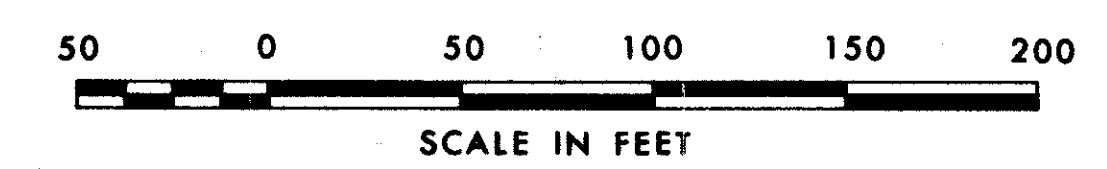
EUCLID SPUR N.B.
PHASE 1, 1A: INSIDE LANE CLOSED - TYPICAL TO THE PROJECT END
SEE SHEET 14 FOR TYPICAL LANE CLOSURE DETAIL & SIGNING

EUCLID SPUR S.B.
PHASE 1: INSIDE LANE CLOSED - TYPICAL TO THE PROJECT
PHASE 1A: CENTER LANE CLOSED - TYPICAL TO THE PROJECT END

FOR LEGEND SEE SHEET 17

MADE JAC DATE 2-15-89
TRACED JAC DATE 2-15-89
CHECKED JMW DATE 2-17-89
SCALE AS SHOWN

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



PHASE 1, 1A

TRAFFIC MAINTENANCE

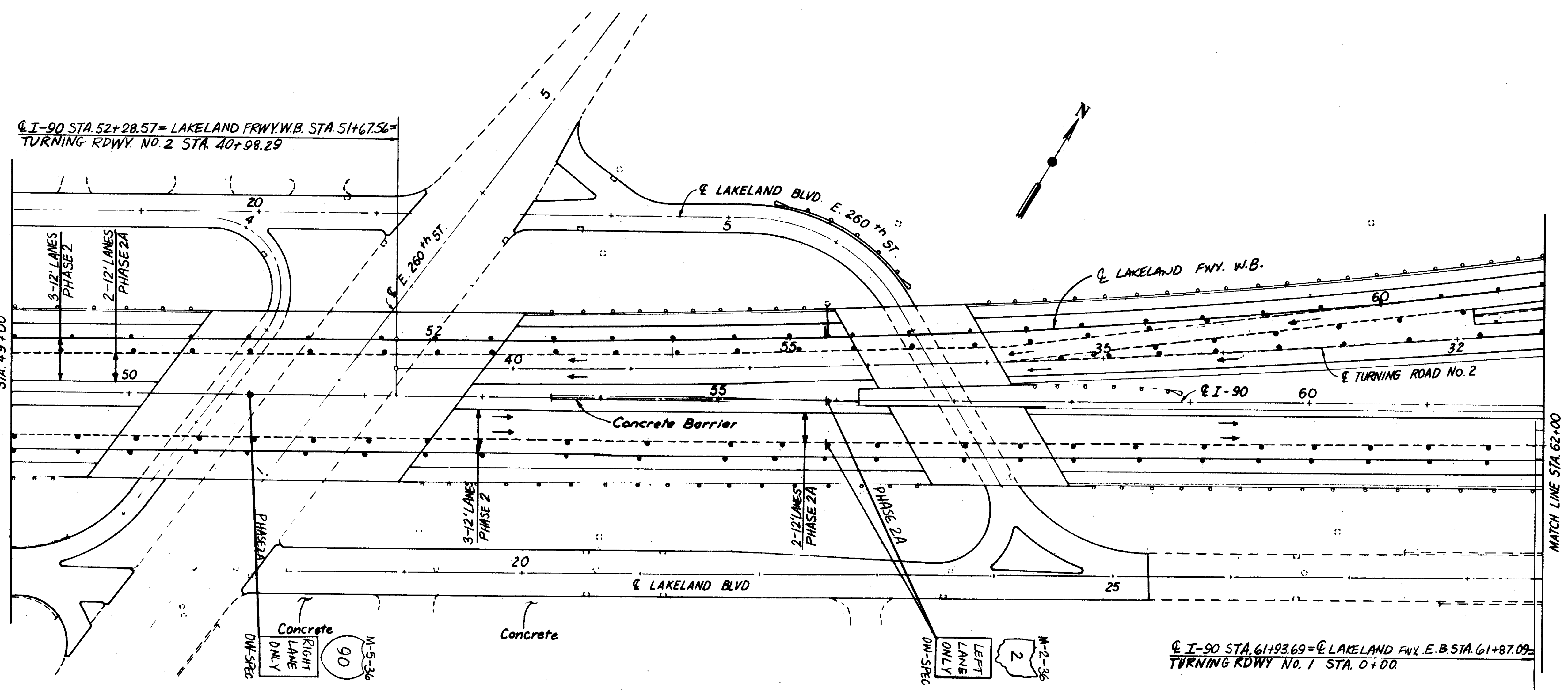
FHWA REGION	STATE	PROJECT
5	OHIO	

24
200

CUYAHOGA COUNTY
CUY - 90-23.95
LAKE COUNTY
LAK - 90-0.00

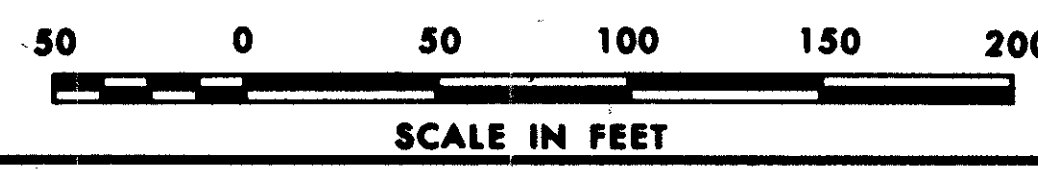
PHASE 2 : OUTSIDE LANE CLOSED E.B. & W.B. -
TYPICAL TO THE BEGINNING OF PROJECT.

PHASE 2A : DRUM LINE OF PHASE 2 RELOCATED TO CLOSE
AN ADDITIONAL LANE BOTH E.B. & W.B. -
TYPICAL TO THE BEGINNING OF PROJECT
SEE SHEET 14 FOR TYPICAL LANE(S) CLOSURE DETAIL & SIGNING
SEE SHEET 15 FOR TYPICAL ENTRANCE & EXIT RAMP ACROSS CLOSED LANE(S)



MADE JAC DATE 2-23-88
TRACED JAC DATE 3-24-88
CHECKED LMW DATE 3-6-88
SCALE 1"=50'

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



FOR LEGEND SEE SHEET 17

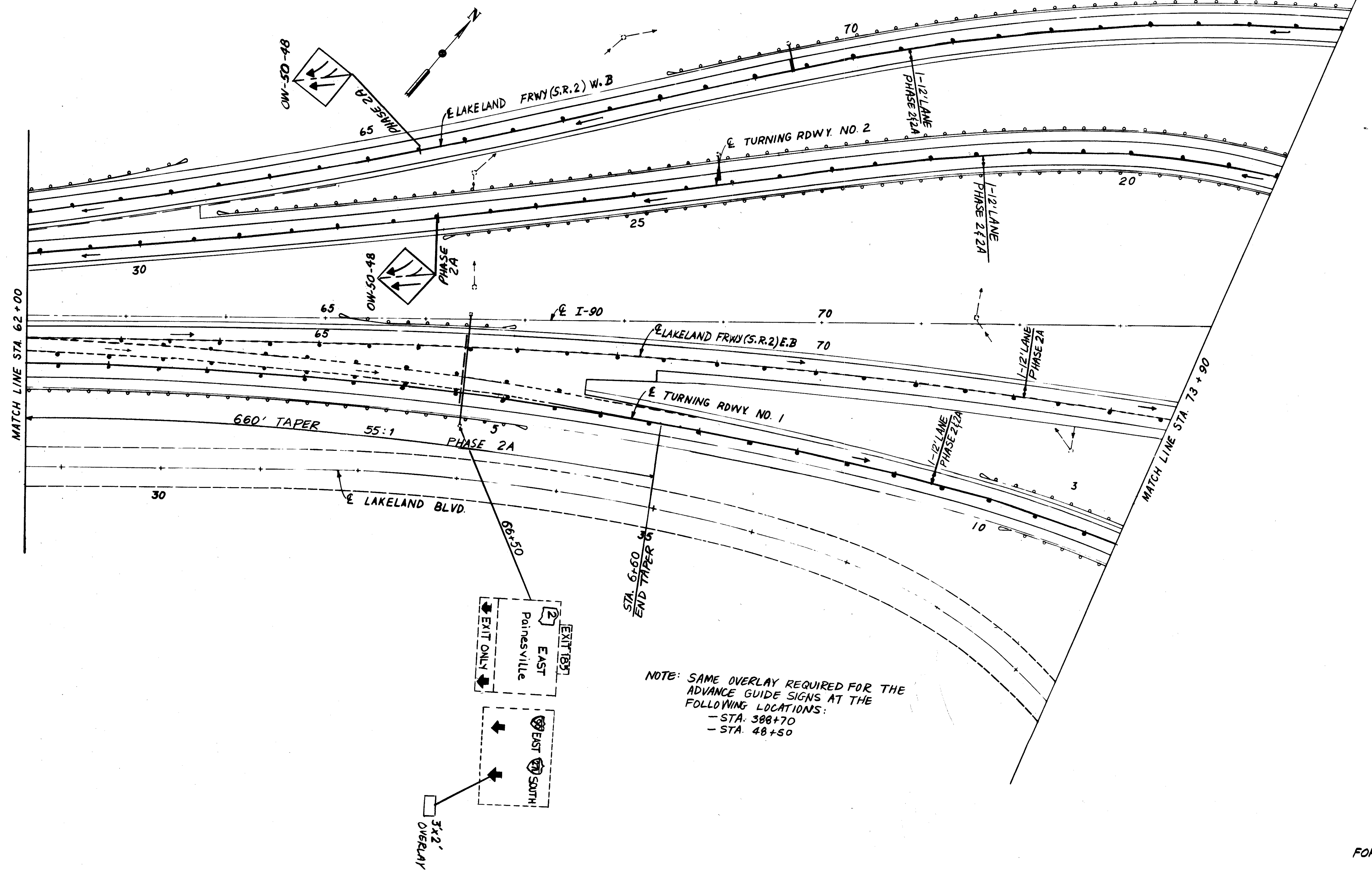
PHASE 2, 2A

TRAFFIC MAINTENANCE

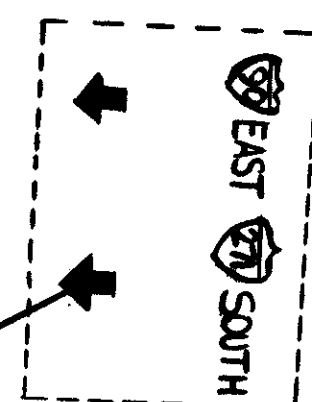
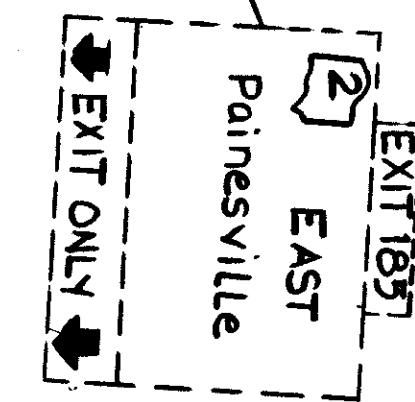
FRWA REGION	STATE	PROJECT
5	OHIO	

25
200

CUYAHOGA COUNTY
 CUY - 90-23.95
 LAKE COUNTY
 LAK - 90-0.00



NOTE: SAME OVERLAY REQUIRED FOR THE
 ADVANCE GUIDE SIGNS AT THE
 FOLLOWING LOCATIONS:
 - STA. 388+70
 - STA. 48+50



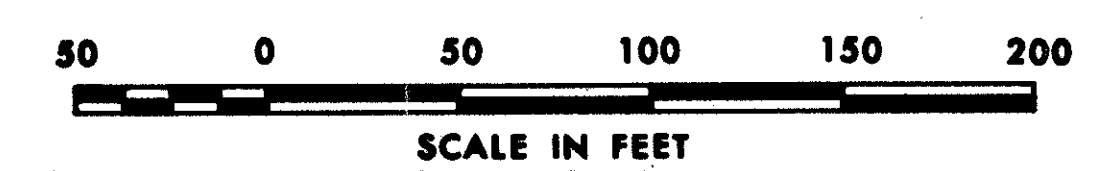
3'x2'
 OVERLAY

FOR LEGEND, SEE SHEET 17.

MADE I.A.C. DATE 2-24-88
 TRACED I.A.C. DATE 2-24-88
 CHECKED J.M.W. DATE 3-6-88
 SCALE 1"=50'

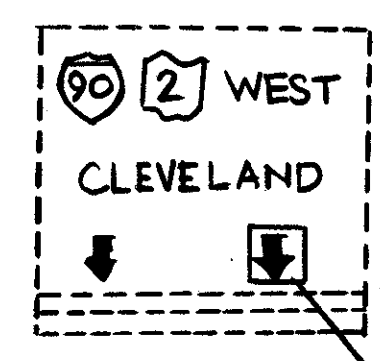
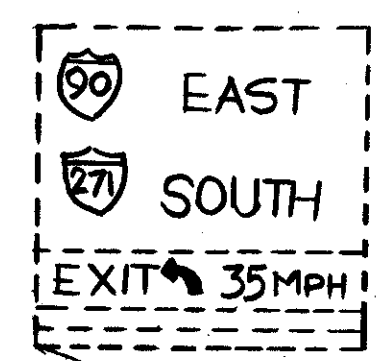
Howard, Needles, Tammen & Bergendoff
 CONSULTING ENGINEERS
 CLEVELAND, OHIO

HNTB



PHASE 2, 2A

TRAFFIC MAINTENANCE

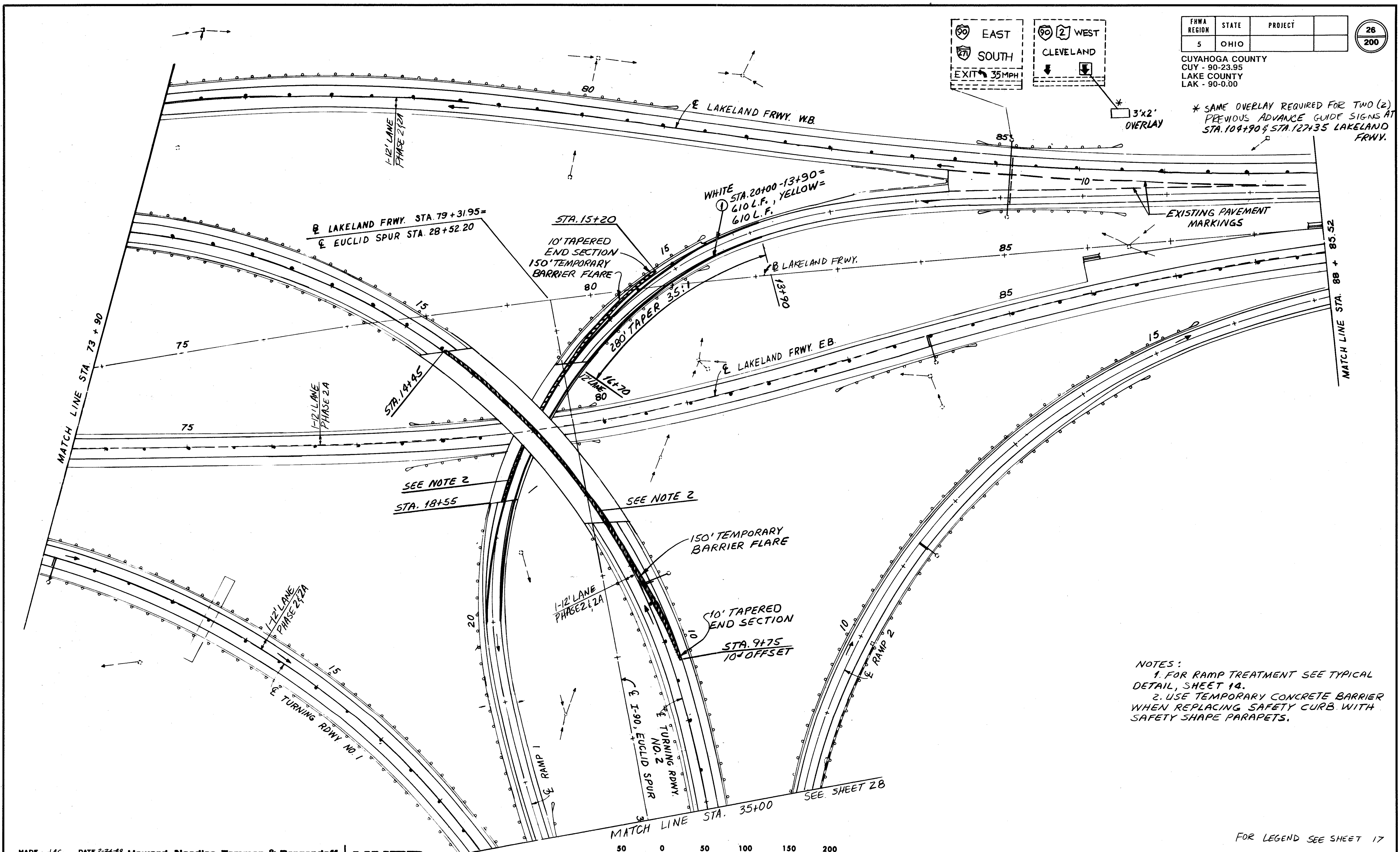


FHWA REGION	STATE	PROJECT
5	OHIO	

26
200

CUYAHOGA COUNTY
CUY - 90-23.95
LAKE COUNTY
LAK - 90-0.00

* SAME OVERLAY REQUIRED FOR TWO (2) PREVIOUS ADVANCE GUIDE SIGNS AT STA. 104+90 & STA. 127+35 LAKELAND FRWY.



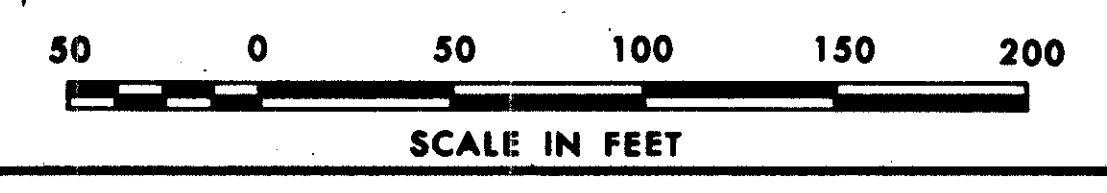
SEE NOTE 2

SEE NOTE 2

- NOTES:
1. FOR RAMP TREATMENT SEE TYPICAL DETAIL, SHEET 14.
 2. USE TEMPORARY CONCRETE BARRIER WHEN REPLACING SAFETY CURB WITH SAFETY SHAPE PARAPETS.

MADE J.A.C. DATE 2-24-80
TRACED J.A.C. DATE 2-24-82
CHECKED J.M.W. DATE 3-6-82
SCALE 1"=40'

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



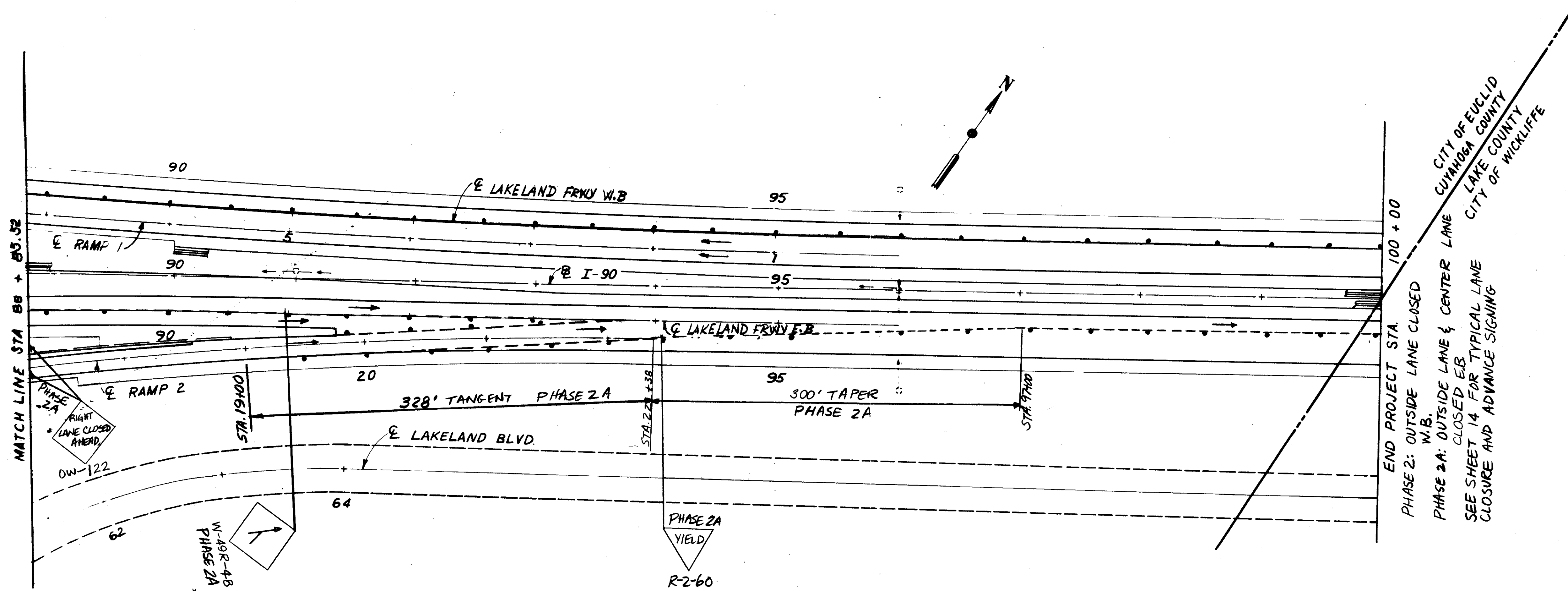
FOR LEGEND SEE SHEET 17

PHASE 2, 2A

TRAFFIC MAINTENANCE

FHWA REGION	STATE	PROJECT	
5	OHIO		

CUYAHOGA COUNTY
 CUY - 90-23.95
 LAKE COUNTY
 LAK - 90-0.00



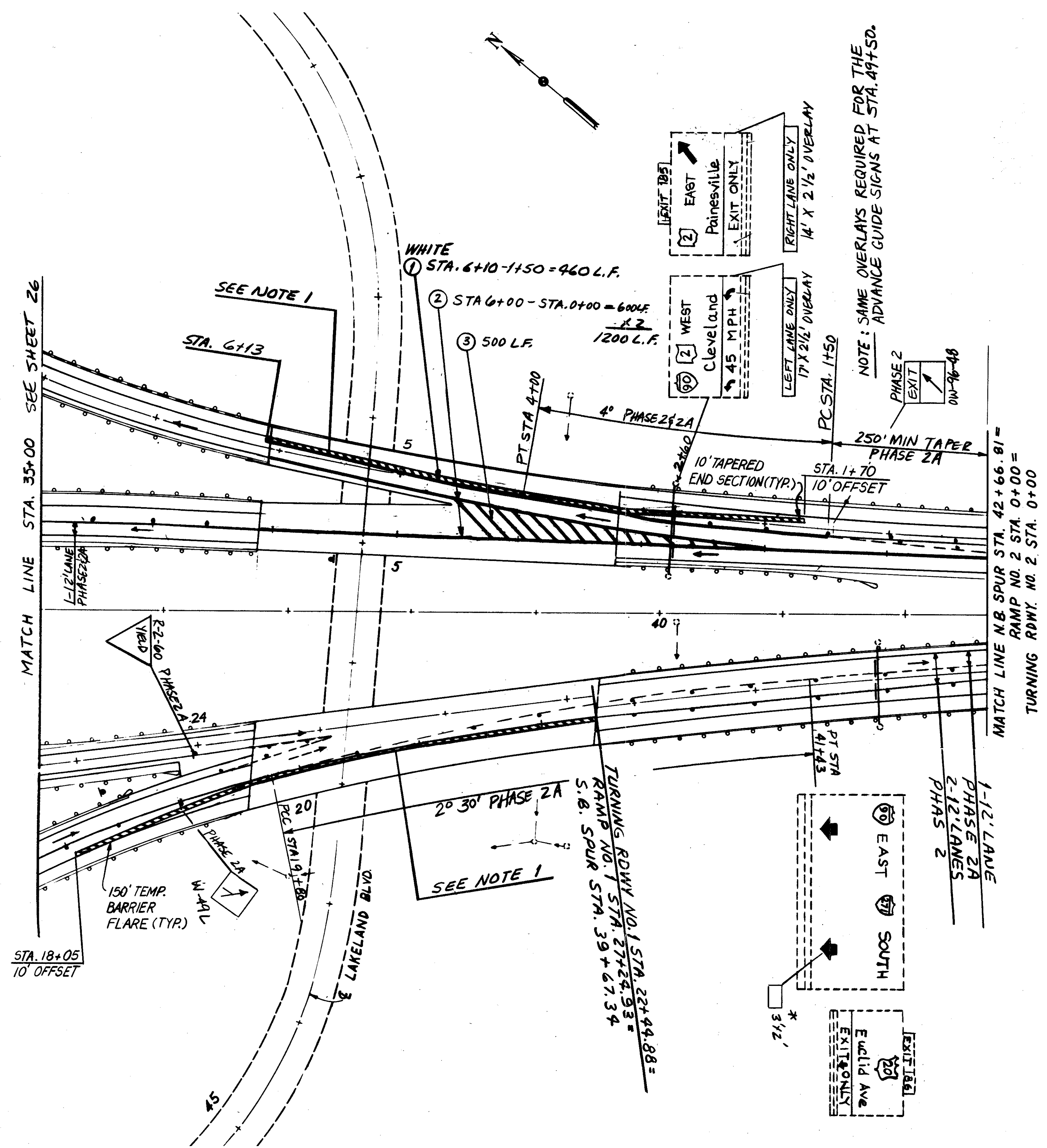
END PROJECT STA. 100 + 00
 PHASE 2: OUTSIDE LANE CLOSED
 W.B.
 PHASE 2A: OUTSIDE LANE & CENTER LANE
 CLOSED E.B.
 SEE SHEET 14 FOR TYPICAL LANE
 CLOSURE AND ADVANCE SIGNING

NOTE:
 FOR RAMP TREATMENT SEE
 TYPICAL DETAIL, SHEET 14.

FHWA REGION	STATE	PROJECT	
5	OHIO		

28
200

CUYAHOGA COUNTY
CUY - 90-23.95
LAKE COUNTY
LAK - 90-0.00



NOTE: SAME OVERLAYS REQUIRED FOR THE ADVANCE GUIDE SIGNS AT STA. 49+50.

- ① WHITE STA. 6+10-1+50 = 460 L.F.
- ② STA 6+00 - STA. 0+00 = 600 L.F.
- ③ 500 L.F.

- NOTES:
1. USE TEMPORARY CONCRETE BARRIER WHEN REPLACING SAFETY CURB WITH SAFETY SHAPE PARAPETS
 2. FOR RAMP TREATMENT SEE TYPICAL DETAIL, SHEET 14.

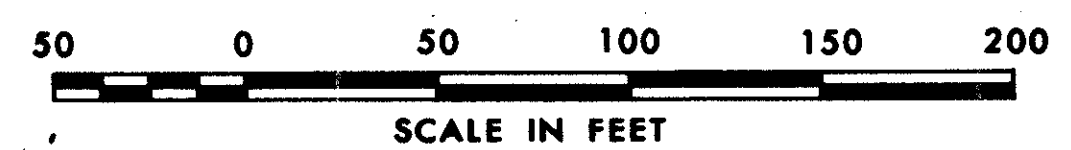
FOR LEGEND SEE SHEET 17

* SAME OVERLAY REQUIRED FOR THE ADVANCE GUIDE SIGN AT STA. 56+67

MADE J.A.C. DATE 2-24-89
TRACED J.A.C. DATE 2-24-89
CHECKED J.M.W. DATE 3-6-89
SCALE 1"=50'

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

HNTB

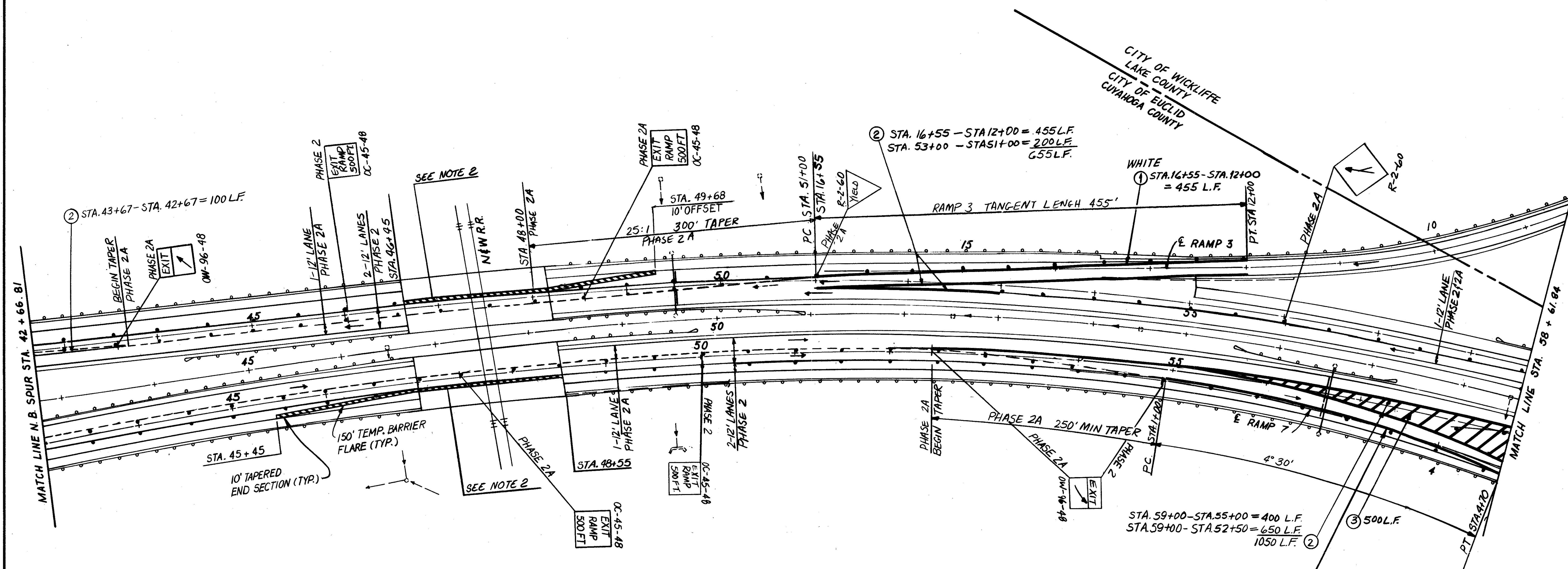


PHASE 2, 2A

TRAFFIC MAINTENANCE

FHWA REGION	STATE	PROJECT
5	OHIO	

CUYAHOGA COUNTY
CUY - 90-23.95
LAKE COUNTY
LAK - 90-0.00

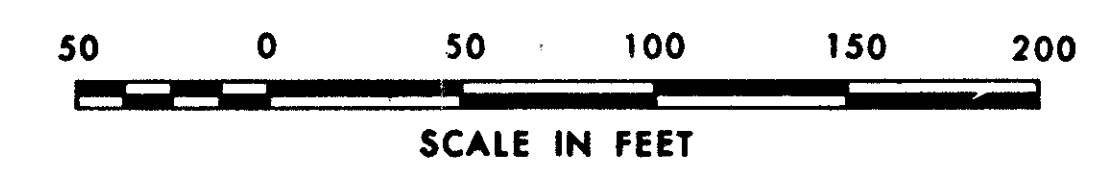


NOTES:

1. FOR RAMP TREATMENT SEE TYPICAL DETAIL, SHEET 14.
2. USE TEMPORARY CONCRETE BARRIER WHEN REPLACING SAFETY CURB WITH SAFETY SHAPE PARAPETS.

MADE I.A.C. DATE 2-27-88
TRACED I.A.C. DATE 2-27-88
CHECKED I.M.W. DATE 2-6-89
SCALE 1"=50'

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



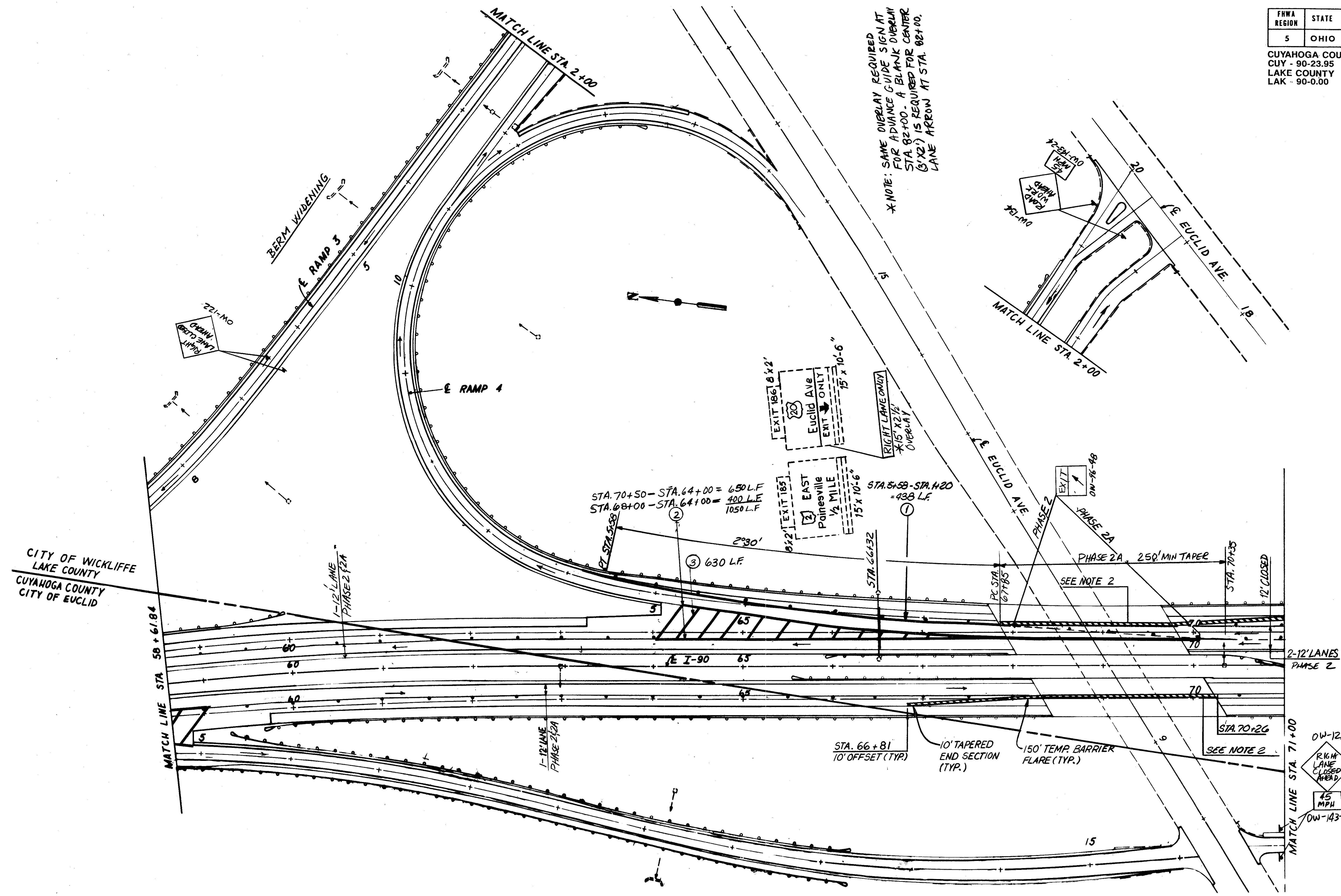
FOR LEGEND SEE SHEET 17.

FHWA REGION	STATE	PROJECT	
5	OHIO		

30
200

CUYAHOGA COUNTY
CUY - 90-23.95
LAKE COUNTY
LAK - 90-0.00

*NOTE: SAME OVERLAY REQUIRED FOR ADVANCE GUIDE SIGN AT STA 82+00. A BLANK OVERLAY (SIX 2') IS REQUIRED FOR CENTER LANE ARROW AT STA. 82+00.



CITY OF WICKLIFFE
LAKE COUNTY
CUYAHOGA COUNTY
CITY OF EUCLID

STA. 70+50 - STA. 64+00 = 650 L.F.
STA. 68+00 - STA. 64+00 = 400 L.F.
1050 L.F.

STA. 5+58 - STA. 420 = 438 L.F.

③ 630 L.F.

STA. 66+81
10' OFFSET (TYP.)

10' TAPERED
END SECTION
(TYP.)

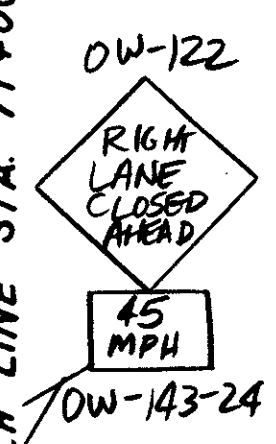
150' TEMP BARRIER
FLARE (TYP.)

STA. 70+26
SEE NOTE 2

MATCH LINE STA. 71+00

NOTES:

1. FOR RAMP TREATMENT SEE TYPICAL DETAIL, SHEET 14.
2. USE TEMPORARY CONCRETE BARRIER WHEN REPLACING SAFETY CURB WITH SAFETY SHAPE PARADETS. SEE SHEET 14 FOR TYPICAL DETAIL.



MADE JAG DATE 2-27-89
TRACED JAL DATE 2-27-89
CHECKED JMW DATE 3-6-89
SCALE 1/4"=50'

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



FOR LEGEND SEE SHEET 17.

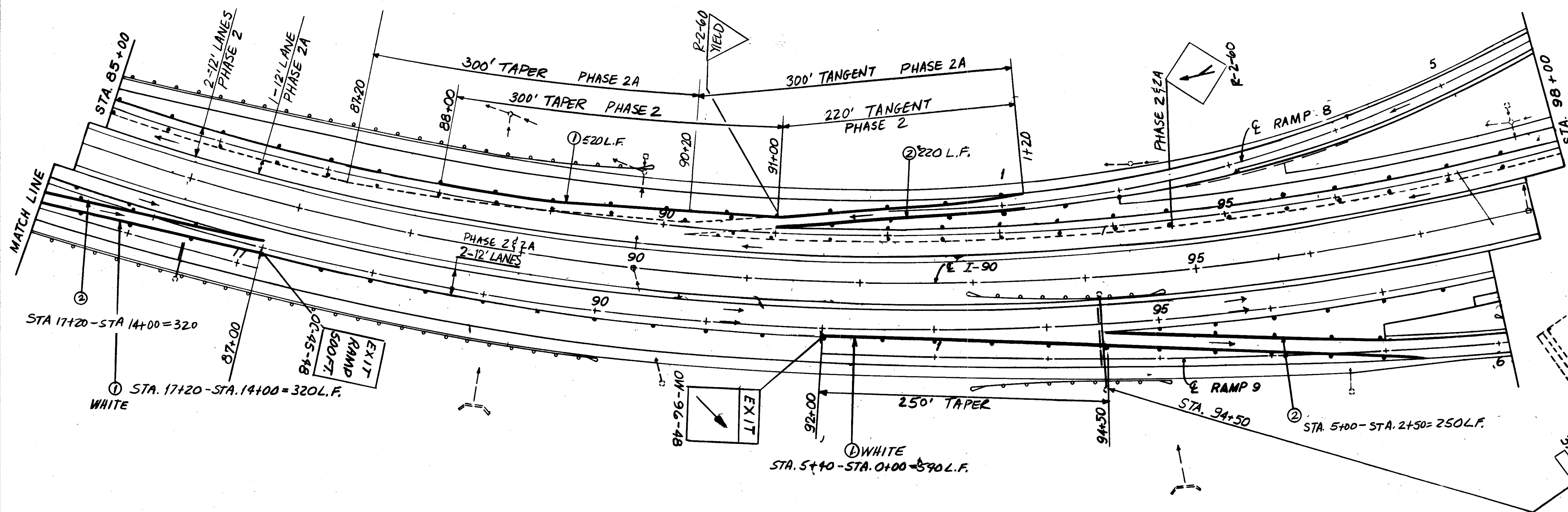
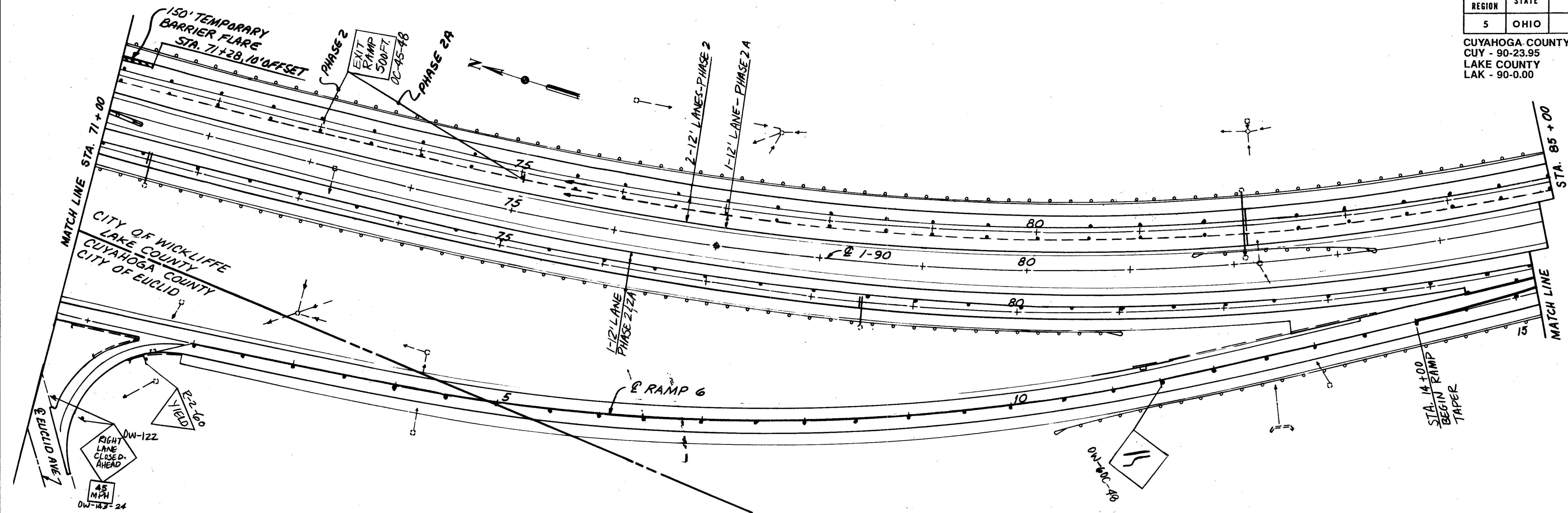
PHASE 2, 2A

TRAFFIC MAINTENANCE

FHWA REGION	STATE	PROJECT
5	OHIO	

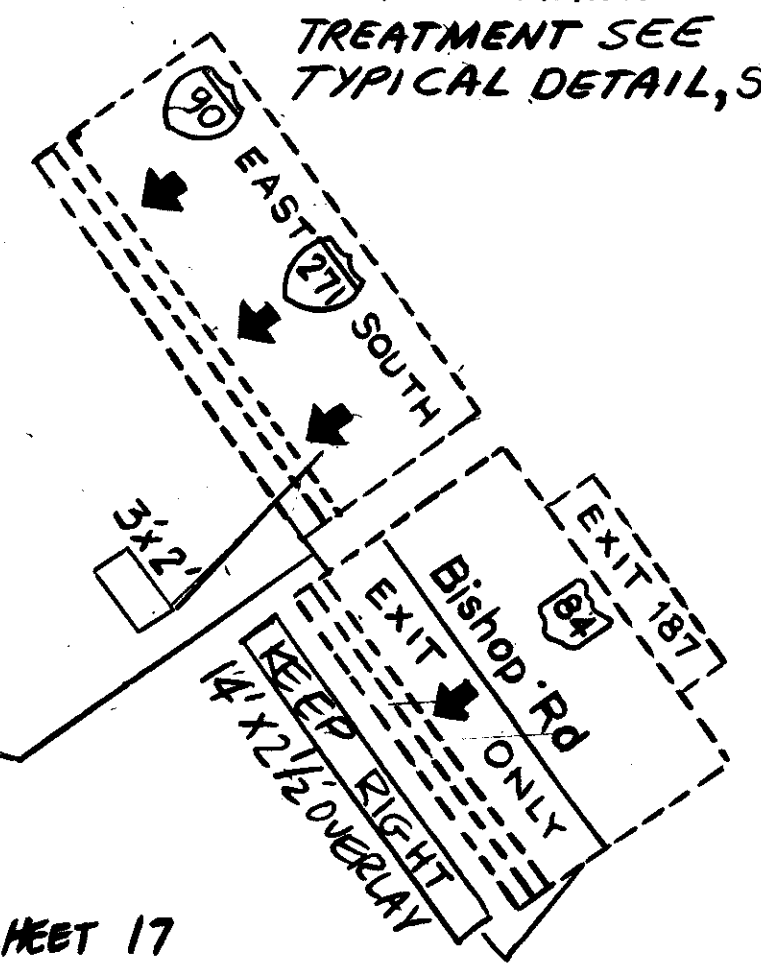
31
200

CUYAHOGA COUNTY
CUY - 90-23.95
LAKE COUNTY
LAK - 90-0.00



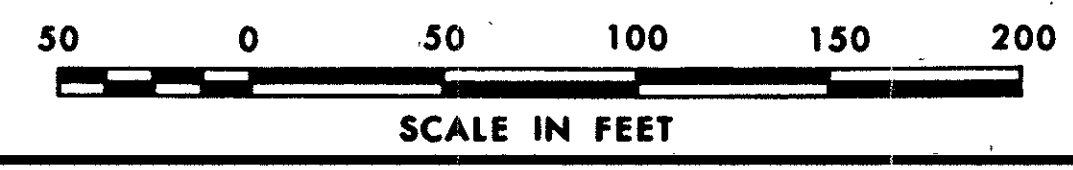
EUCLID SPUR N.B.
 PHASE 2: OUTSIDE LANE CLOSED-TYPICAL TO THE END OF PROJECT.
 PHASE 2A: CENTER LANE CLOSED-TYPICAL TO THE END OF PROJECT
 SEE SHEET 14 FOR TYPICAL LANE CLOSURE DETAIL AND SIGNING. SEE SHEET 15 FOR TYPICAL EXIT RAMP ACROSS CLOSED LANES.
EUCLID SPUR S.B.
 PHASE 2, 2A: OUTSIDE LANE CLOSED-TYPICAL TO THE END OF PROJECT.
 SEE SHEET 15 FOR TYPICAL ENTRANCE RAMP ACROSS CLOSED LANE.

NOTE:
 FOR RAMP TREATMENT SEE TYPICAL DETAIL, SHEET 14.



MADE JAC DATE 2-28-89
 TRACED JAC DATE 2-28-89
 CHECKED J.M.W. DATE 4-6-89
 SCALE 1"=50'
Howard, Needles, Tammen & Bergendoff
 CONSULTING ENGINEERS
 CLEVELAND, OHIO

HNTB



FOR LEGEND SEE SHEET 17

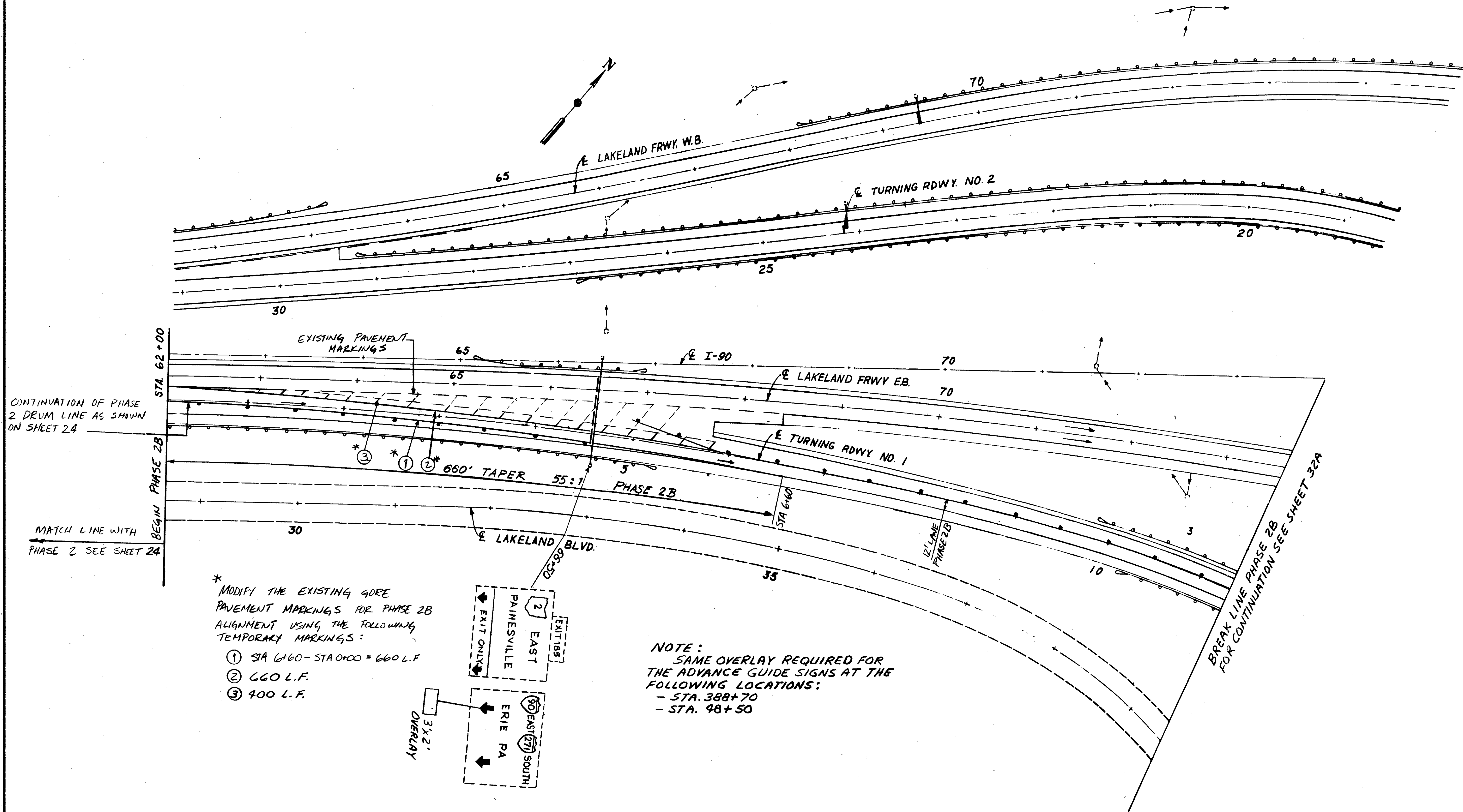
PHASE 2, 2A

TRAFFIC MAINTENANCE

FHWA REGION	STATE	PROJECT	
5	OHIO		

32
200

CUYAHOGA COUNTY
CUY - 90-23.95
LAKE COUNTY
LAK - 90-0.00



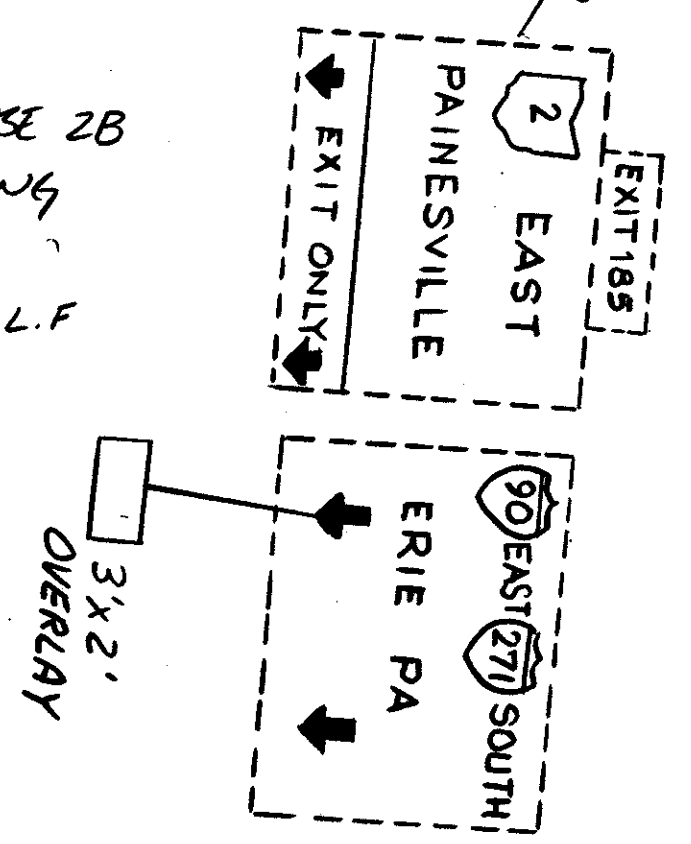
CONTINUATION OF PHASE 2 DRUM LINE AS SHOWN ON SHEET 24

MATCH LINE WITH PHASE 2 SEE SHEET 24

STA. 62+00
BEGIN PHASE 2B

* MODIFY THE EXISTING GORE PAVEMENT MARKINGS FOR PHASE 2B ALIGNMENT USING THE FOLLOWING TEMPORARY MARKINGS:

- ① STA 6+60 - STA 0+00 = 660 L.F.
- ② 660 L.F.
- ③ 400 L.F.



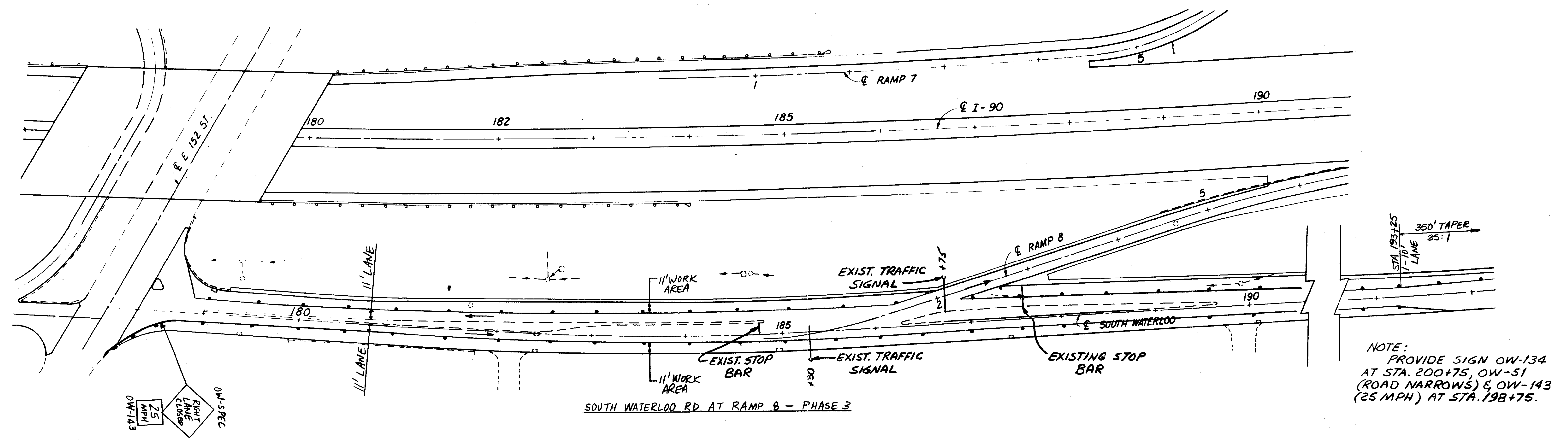
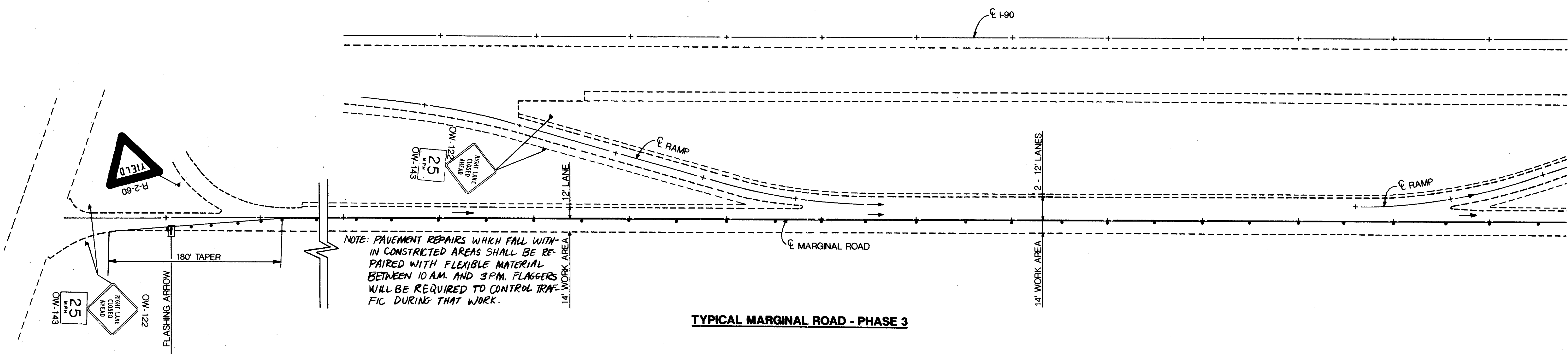
NOTE:
SAME OVERLAY REQUIRED FOR THE ADVANCE GUIDE SIGNS AT THE FOLLOWING LOCATIONS:
- STA. 388+70
- STA. 48+50

BREAK LINE PHASE 2B FOR CONTINUATION SEE SHEET 32A

FHWA REGION	STATE	PROJECT	
5	OHIO		

33
200

CUYAHOGA COUNTY
CUY - 90-23.95
LAKE COUNTY
LAK - 90-0.00



MADE LMW DATE 3-1-80
 TRACED LMW DATE 3-1-80
 CHECKED LMW DATE 3-7-80
 SCALE 1"=50'

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

HNTB

FOR LEGEND SEE SHEET 17.

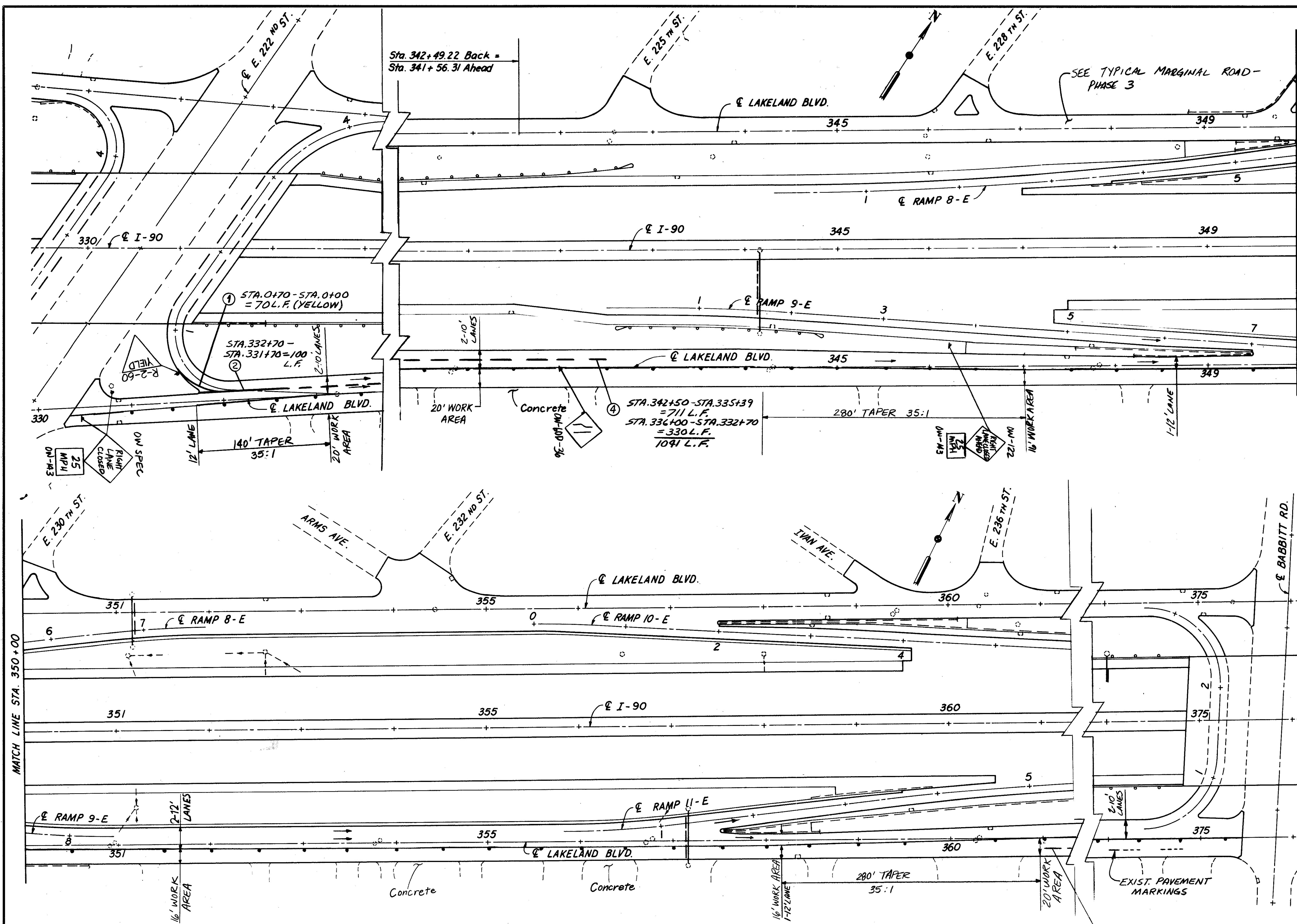
PHASE 3

TRAFFIC MAINTENANCE

FHWA REGION	STATE	PROJECT	
5	OHIO		

34
200

CUYAHOGA COUNTY
CUY - 90-23.95
LAKE COUNTY
LAK - 90-0.00



SOUTH MARGINAL RD. BETWEEN E. 222ND ST. AND E. 260TH ST. - PHASE 3
SOUTH MARGINAL RD. BETWEEN E. 222ND ST. AND BABBITT RD. SHOWN
SOUTH MARGINAL RD. BETWEEN BABBITT RD. AND E. 260TH ST. IS SIMILAR

④ STA. 372+50 - STA. 361+00 = 1150 L.F.

FOR LEGEND SEE SHEET 17.

PHASE 3

MADE L.M.W. DATE 3-4-88
 TRACED J.P. DATE 3-7-88
 CHECKED J.P. DATE 3-7-88
 SCALE 1"=50'

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

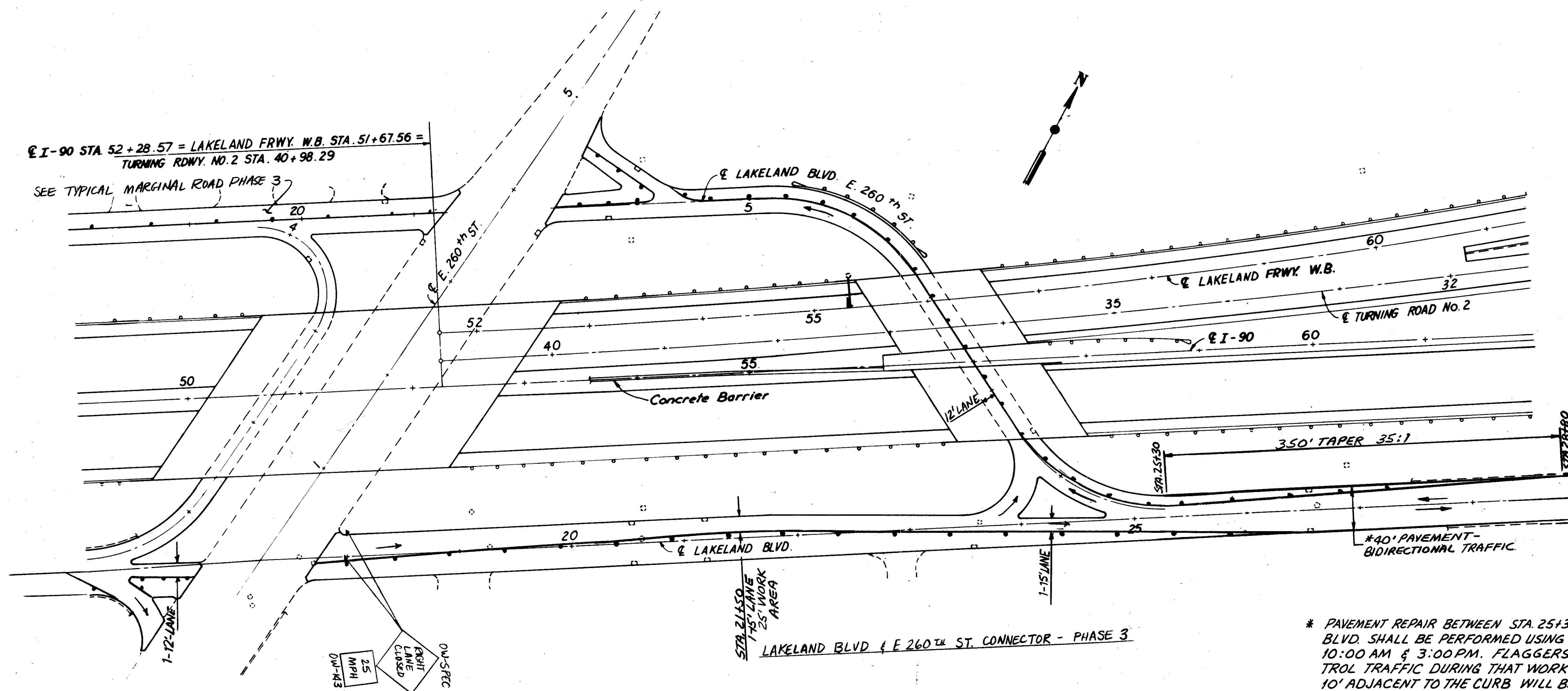
HNTB

TRAFFIC MAINTENANCE

FHWA REGION	STATE	PROJECT	
5	OHIO		

35
200

CUYAHOGA COUNTY
CUY - 90-23.95
LAKE COUNTY
LAK - 90-0.00

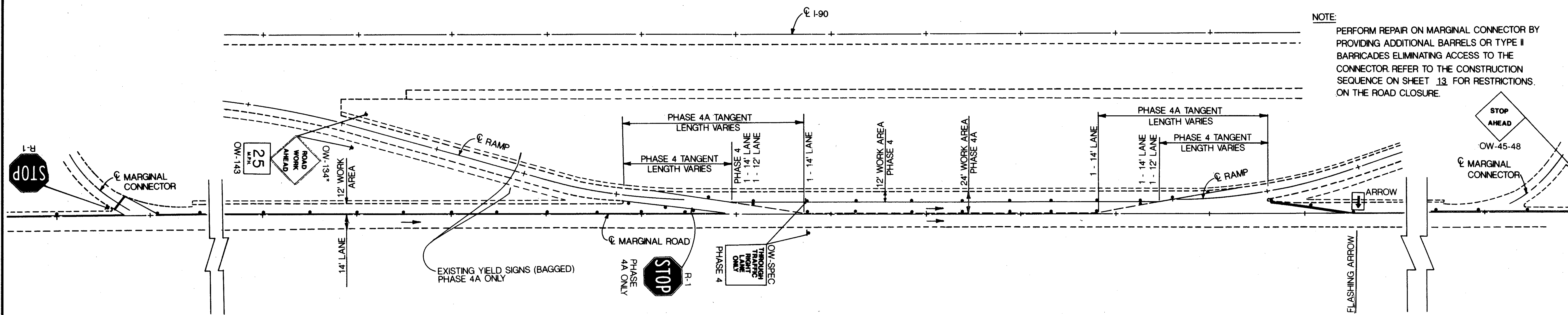


* PAVEMENT REPAIR BETWEEN STA. 25+30 & STA. 71+53 ON S. LAKELAND BLVD. SHALL BE PERFORMED USING FLEXIBLE MATERIAL BETWEEN 10:00 AM & 3:00 PM. FLAGGERS WILL BE REQUIRED TO CONTROL TRAFFIC DURING THAT WORK. PERMANENT CLOSURES OF 10' ADJACENT TO THE CURB WILL BE PERMITTED TO PERFORM CURB REPAIR. 10' PERMANENT CLOSURE SHALL BE INSTALLED ON ONLY ONE SIDE AT A TIME.

NOTE:
PROVIDE SIGN OW-134 AT STA. 79+00, LT. OW-51 (ROAD NARROWS) & OW-143 (25 MPH) AT STA. 28+80 LT.

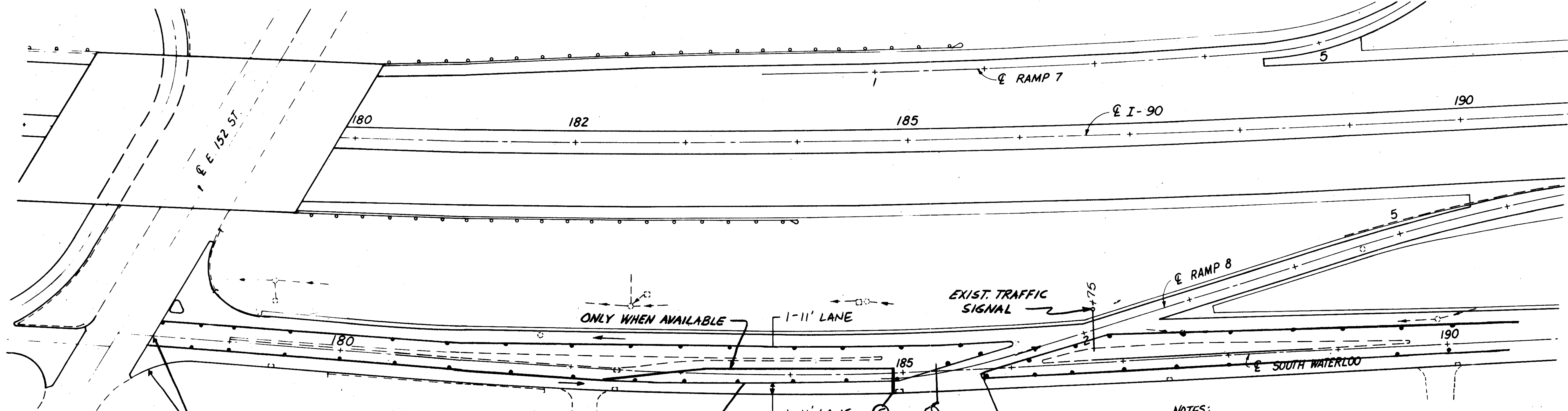
CUYAHOGA COUNTY
CUY - 90-23.95
LAKE COUNTY
LAK - 90-0.00

NOTE:
PERFORM REPAIR ON MARGINAL CONNECTOR BY PROVIDING ADDITIONAL BARRELS OR TYPE II BARRICADES ELIMINATING ACCESS TO THE CONNECTOR. REFER TO THE CONSTRUCTION SEQUENCE ON SHEET 13 FOR RESTRICTIONS ON THE ROAD CLOSURE.



* DURING PHASE 4A REPLACE SIGN OW-134 WITH OW-45-48 (STOP AHEAD)

TYPICAL MARGINAL ROAD - PHASE 4, 4A



STA. 184+93 - STA. 183+18 = 175 L.F.
EXIST. TRAFFIC SIGNAL - SEE NOTE 3
SOUTH WATERLOO ROAD AT RAMP 8 - PHASE 4

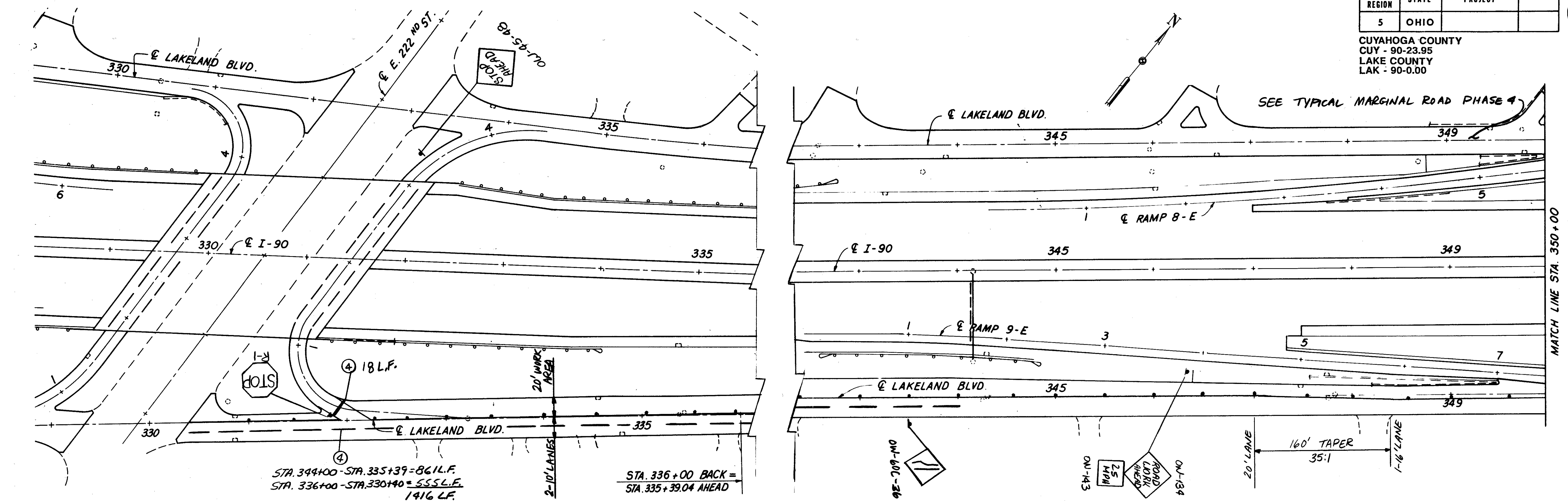
- NOTES:
1. FOR SOUTH WATERLOO RD WESTBOUND PROVIDE 35:1 TAPER BEGINNING AT STA. 193+25 (SIMILAR TO PHASE 3 - SEE SHEET 33.) PROVIDE ADVANCE WARNING SIGNS OW-123 "ROAD WORK AHEAD" AT STA. 206+75 AND SIGNS OW-160C & OW-143 (25 MPH) AT STA. 201+75.
 2. PROVIDE LEFT TURN SLOT FOR EASTBOUND TRAFFIC WHEN REPAIRED PAVEMENT IS AVAILABLE. PROVIDE TEMPORARY LANE CONTROL SIGN R-31Q DURING THIS CONDITION. THE SOUTHERNMOST SIGNAL HEAD AT STA. 185+30 SHOULD BE ADJUSTED TO ITS ORIGINAL EXIST. SEQUENCE TO ALLOW FOR CONTINUOUS THRU TRAFFIC.
 3. TO PROVIDE FOR LEFT THRU MOVEMENT THE SOUTHERNMOST SIGNAL HEAD AT STA. 185+30 IS TO BE ADJUSTED TO MATCH THE SEQUENCE OF THE SIGNAL HEAD ADJACENT TO IT.
 4. FOR LEGEND SEE SHEET 17.

FHWA REGION	STATE	PROJECT
5	OHIO	

37
200

CUYAHOGA COUNTY
CUY - 90-23.95
LAKE COUNTY
LAK - 90-0.00

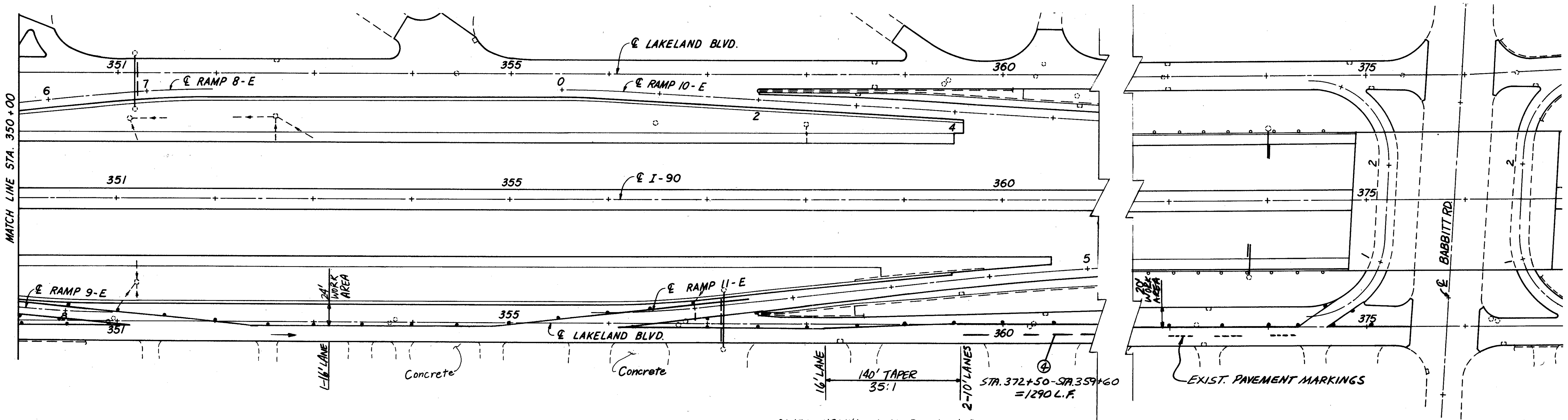
SEE TYPICAL MARGINAL ROAD PHASE 4



STA. 344+00 - STA. 335+39 = 861 L.F.
STA. 336+00 - STA. 330+40 = 555 L.F.
1416 L.F.

STA. 336+00 BACK =
STA. 335+39.04 AHEAD

STA. 372+50 - STA. 359+60
= 1290 L.F.



SOUTH MARGINAL ROAD BETWEEN E. 222ND ST.
& E 260TH ST. - PHASE 4
SOUTH MARGINAL RD. BETWEEN E222ND ST. & BABBITT RD. SHOWN,
SOUTH MARGINAL RD. BETWEEN BABBITT & E 260TH ST IS SIMILAR

FOR LEGEND SEE SHEET 17

MADE JAW DATE 3-2-89
TRACED RZ DATE 3-2-89
CHECKED PZ DATE 3-8-89
SCALE 1"=50'

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

HNTB

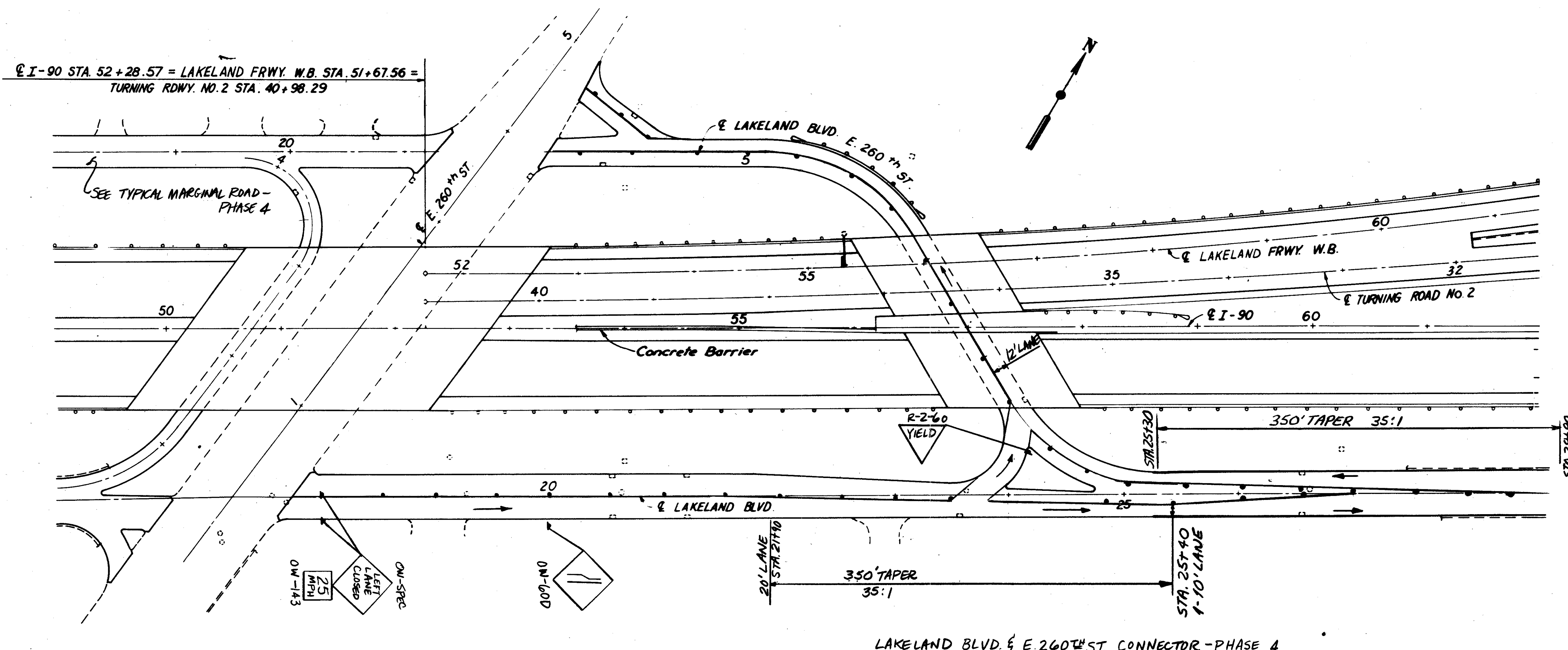
PHASE 4

TRAFFIC MAINTENANCE

FHWA REGION	STATE	PROJECT
5	OHIO	

38
200

CUYAHOGA COUNTY
 CUY - 90-23.95
 LAKE COUNTY
 LAK - 90-0.00



LAKELAND BLVD. & E 260TH ST. CONNECTOR - PHASE 4

NOTE: PROVIDE SIGN OW-134 AT STA. 79+00,
 OW-51 & OW-143 (25 MPH) AT STA. 28+80.
 FOR TREATMENT OF S. LAKELAND
 BLVD. BETWEEN STA. 25+30 & STA.
 71+50 SEE SHEET 35.

FOR LEGEND SEE SHEET 17

MADE 1/11/89 DATE 3-2-89 **Howard, Needles, Tammen & Bergendoff**
 TRACED 1/11/89 DATE 3-2-89 CONSULTING ENGINEERS
 CHECKED 1/11/89 DATE 3-2-89 CLEVELAND, OHIO
 SCALE 1"=50'



PHASE 4

TRAFFIC MAINTENANCE

11-8

COMPUTATIONS AND SUB-SUMMARIES

FHWA REGION	STATE	PROJECT
5	OHIO	

39
200

CUYAHOGA COUNTY
CUY - 90-23.95
LAKE COUNTY
LAK - 90-0.00

QUANTITY CALCULATIONS
MADE BY N.K. DATE 3-15-89
CHECKED BY R.M. DATE 3-29-89

ITEM 446					
I-90 Stations	Side	End Widths (ft.)	Surface Area (Sq. Yds.)	446 Type 1 (Cu. Yds.)	446 Type 2 (Cu. Yds.)
From To					
139+25	Rt.	66.75, 100.75	3256.944	113.088	158.324
142+75	Rt.	66.75	4769.36	165.60	231.84
152+15.84	Rt.	66.75	142.10	4.93	6.91
152+35	Rt.	66.75, 78.75	1818.75	63.151	88.411
154+60	Rt.	78.75, 101.75	1935.96	67.22	94.109
156+53.06	Rt.	66.75	10,373.25	360.182	504.255
170+51.7	Rt.	87.75, 78.75	2759.28	95.808	134.132
173+50	Rt.	78.75, 66.75	2425	84.201	117.882
176+50	Rt.	66.75	344.73	11.97	16.76
180+11.6	Rt.	66.75	7356.59	255.44	357.61
190+03.5	Rt.	76.75, 62.75	822.97	28.575	40.005
191+09.69	Rt.	86.75, 78.75	1465.04	50.869	71.217
192+69.03	Rt.	78.75	1539.74	53.463	74.848
194+45	Rt.	78.2	782	27.153	38.013
195+35	Rt.	78.75	2318.75	80.512	112.717
198+00	Rt.	78.75, 66.75	2829.17	98.235	137.529
139+25	Lt.	65	397.583	13.805	19.327
139+80.05	Lt.	65.875	512.36	17.790	24.906
140+50.05	Lt.	66.75	6437.74	223.53	312.95
152+15.84	Lt.	66.75	253.33	8.80	12.32
152+50	Lt.	66.75, 78.75	2425	84.201	117.882
155+50	Lt.	78.75, 88.75	2273.72	78.948	110.528
157+94.34	Lt.	62.75, 76.75	821.73	28.532	39.945
159+03.5	Lt.	66.75	9489.18	329.485	461.279
171+82.94	Lt.	97.75, 78.75	2863.81	99.438	139.213
174+75	Lt.	78.75, 66.75	1790.30	62.16	87.03
180+11.6	Lt.	66.75	284.8	9.89	13.84
180+50	Lt.	66.75, 78.75	2425	84.201	117.882
183+50	Lt.	78.75, 92.75	4525.69	157.142	219.999
188+25	Lt.	62.75, 76.75	685.88	23.815	33.341
189+13.5	Lt.	66.75	3344.84	116.140	162.596
193+64.49	Lt.	99.75, 90.75	852.06	29.585	41.42
194+45	Lt.	90.2, 83.2	867	30.104	42.146
195+35	Lt.	83.75, 82.75	779.78	27.076	37.906
196+19.3	Lt.	82.75, 78.75	3864.33	134.178	187.849
200+50	Lt.	78.75, 66.75	808.34	28.067	39.294
201+50	Lt.	133.5	10,053.885	349.091	488.727
208+27.79	Lt.	132.4	653.47	22.690	31.766
208+72.21	Lt.	133.5	25,299.44	878.447	1229.826
SUBTOTALS				4397.512	6156.534

ITEM 446					
I-90 Stations	Side	End Widths (ft.)	Surface Area (Sq. Yds.)	446 Type 1 (Cu. Yds.)	446 Type 2 (Cu. Yds.)
From To					
225+77.79	Lt.	132.4	653.47	22.690	31.766
226+22.21	Lt.	133.5	6,757.77	234.643	328.501
230+77.79	Lt.	132.4	653.47	22.690	31.766
231+22.21	Lt.	133.5	6717.57	233.247	326.546
235+75.08	Rt.	66.75	6695.10	232.467	325.454
244+77.79	Rt.	66.2	326.73	11.345	15.883
245+22.21	Rt.	66.75	8432.90	292.81	409.93
259+33.69	Rt.	66.75	180.30	6.26	8.76
259+58	Rt.	66.75, 82.25	1949.75	67.699	94.779
261+93.54	Rt.	81.7, 88.7	425.24	14.765	20.671
262+38.46	Rt.	89.25, 97.75	639.33	22.199	31.078
263+00	Rt.	66.75	3590.33	124.66	174.53
270+78.81	Rt.	66.75, 78.75	2010.57	69.81	97.74
273+27.54	Rt.	78.2, 85.2	407.77	14.159	19.822
273+72.46	Rt.	85.75, 98.75	846.04	29.376	41.127
274+55	Rt.	66.75	7379.58	256.234	358.727
284+50	Rt.	76.75, 62.75	674.25	23.411	32.776
285+37	Rt.	86.75, 78.75	1836.31	63.76	89.26
235+75.08	Lt.	66.75, 78.75	4041.02	140.312	196.437
240+75	Lt.	78.75	3524.41	122.375	171.324
244+77.79	Lt.	78.2	385.96	13.401	18.762
245+22.21	Lt.	78.75	1255.19	43.583	61.016
246+65.66	Lt.	78.75, 86.75	1288.00	44.722	62.611
248+25	Lt.	62.75, 76.75	821.5	28.507	39.909
249+31	Lt.	66.75	2810.92	97.601	136.641
253+10	Lt.	66.75, 78.75	2425	84.201	117.881
256+10	Lt.	78.75	430.76	14.96	20.94
259+33.69	Lt.	78.75, 84.75	2360.30	81.96	114.74
261+93.54	Lt.	84.2, 86.2	155.92	5.410	7.575
262+10	Lt.	62.2, 67.2	204.6	7.104	9.946
262+38.46	Lt.	67.75, 76.75	221.08	7.676	10.747
262+66	Lt.	66.75	326.33	11.331	15.863
263+10	Lt.	66.75, 78.75	2425	84.201	117.881
266+10	Lt.	78.75	1523.29	52.89	74.05
270+78.81	Lt.	78.75, 86.75	1616.38	56.12	78.57
272+54.61	Lt.	62.75, 69.75	536.85	18.641	26.097
273+27.54	Lt.	69.2, 75.2	360.36	12.512	17.517
273+72.46	Lt.	75.75, 76.75	72.35	2.512	3.517
273+81	Lt.	66.75	8725.63	302.971	424.160
285+57.49	Lt.	97.75, 78.75	1757.45	61.02	85.43
289+63.9	Rt.	78.75, 79.28	288.89	10.63	14.89
289+98.78	Rt.	79.28, 86.75	7801.15	270.871	379.220
298+44.54	Rt.	86.2, 90.2	440.22	15.285	21.399
298+89.46	Rt.	90.75, 97.75	1157.60	40.194	56.272
300+00	Rt.	66.75	18,006.1	625.211	875.296
324+27.79	Rt.	66.2	326.66	11.342	15.879
324+72.2	Rt.	66.75	717.93	24.928	34.899
325+69	Rt.	76.75, 62.75	825.82	28.678	40.149
326+75.57	Rt.	86.75, 78.75	1465.04	50.869	71.217
328+34.91	Rt.	78.78	709.36	24.63	34.48
331+97.46	Rt.	78.75	1553.475	53.94	75.516
333+75	Rt.	78.75, 66.75	3233.33	112.268	157.175
337+25	Rt.	66.75	206.11	7.157	10.019
337+52.79	Rt.	66.2	326.73	11.345	15.883
337+97.21	Rt.	66.75	2616.53	90.851	127.192
341+50	Rt.	66.75, 78.75	808.33	28.067	39.294
SUBTOTALS				4442.501	6219.510

ITEM 446					
I-90 Stations	Side	End Widths (ft.)	Surface Area (Sq. Yds.)	446 Type 1 (Cu. Yds.)	446 Type 2 (Cu. Yds.)
From To					
342+50	Rt.	78.75, 83.75	1286.82	44.681	62.553
343+92.54	Rt.	83.2, 86.2	422.75	14.679	20.550
344+37.46	Rt.	86.75, 97.75	2178.54	75.643	105.901
346+50	Rt.	66.75	4657.67	161.724	226.413
352+78	Rt.	66.205	323.67	11.238	15.734
353+22	Rt.	66.75	3960.5	137.516	192.523
358+56	Rt.	76.75, 62.75	1503.5	52.205	73.086
360+50	Rt.	86.75, 79.75	1827.25	63.446	88.824
362+47.54	Rt.	79.2, 78.2	392.8	13.639	19.094
362+92.46	Rt.	78.75	2690.98	93.436	130.811
366+00	Rt.	78.75, 66.75	4041.02	140.312	196.437
370+99.92	Rt.	66.75	2665.66	92.59	129.63
377+17.97	Rt.	66.75	5243.81	182.08	254.91
384+25	Rt.	66.75, 78.75	808.33	28.067	39.294
385+25	Rt.	78.75, 94.75	2776.13	96.393	134.95
388+50.54	Rt.	94.2, 99.2	482.64	16.758	23.462
388+95.46	Rt.	99.75, 97.75	324.12	11.254	15.756
389+25	Rt.	66.75	391.52	13.594	19.032
389+77.79	Rt.	66.2	326.73	11.345	15.883
390+22.21	Rt.	66.75	7520.859	262.877	368.028
400+43	Rt.	76.75, 62.75	907.37	31.506	44.108
401+60.08	Rt.	86.75, 78.75	1286.49	44.67	62.537
289+63.9	Lt.	78.75	305.2	10.60	14.84
289+98.78	Lt.	78.75	7400.40	256.956	359.742
298+44.54	Lt.	78.2, 83.2	402.78	13.985	19.58
298+89.46	Lt.	83.75, 86.75	573.45	19.911	27.876
299+50	Lt.	62.75, 76.75	945.5	32.83	45.962
300+72	Lt.	66.75	17,472.10	606.666	849.335
324+27.79	Lt.	66.2	330.41	11.472	16.061
324+72.21	Lt.	66.75	1572.93	54.615	76.461
326+84.29	Lt.	97.75, 78.75	2115.16	73.443	102.82
329+00	Lt.	78.75	139.82	4.86	6.80
331+97.46	Lt.	78.75	459.725	15.962	22.348
332+50	Lt.	78.75, 66.75	808.33	28.067	39.294
333+50	Lt.	66.75	2987.36	103.727	145.218
337+52.79	Lt.	66.2	326.73	11.345	15.883
337+97.21	Lt.	66.75	391.53	13.595	19.033
338+50	Lt.	66.75, 78.75	2829.17	98.234	137.528
342+00	Lt.	78.75	1702.23	59.105	82.747
343+94.54	Lt.	78.2	372.93	12.949	18.128
344+37.46	Lt.	78.75, 87.75	2428.50	84.322	118.051
347+00	Lt.	62.75, 76.75	1635.25	56.779	79.491
349+11	Lt.	66.75	2721.92	94.511	132.315
352+78	Lt.	66.205	323.67	11.238	15.734
353+22	Lt.	66.75	5399.33	187.476	262.466
360+50	Lt.	97.75, 90.75	2068.68	71.829	100.560
362+47.54	Lt.	90.2, 87.2	442.71	15.372	21.520
362+92.46	Lt.	87.75, 78.75	1457.25	50.599	70.838
364+50	Lt.	78.75, 66.75	808.33	28.067	39.294
365+50	Lt.	66.75	6745.24	234.21	327.89
377+17.97	Lt.	66.75	52.14	1.81	2.53
377+25	Lt.	66.75, 78.75	2425	84.201	117.881
380+75	Lt.	78.75	2931.86	101.801	142.521
384+10.07	Lt.	78.75, 87.75	1525.60	52.972	74.161
385+75	Lt.	62.75, 76.75	914.5	31.753	44.455
386+93	Lt.	66.75	1168.42	40.570	56.798
SUBTOTALS				4175.485	5845.677
SHEET TOTALS				13,016	18,222

ITEM 407 - TACK COAT : 13.016 C.Y. + (1 1/4" x 1 YD.) x 0.075 GAL./S.Y. = 28,113 GAL.

MADE BY N.K. DATE 3-15-89
TRACED BY N.K. DATE 3-29-89
CHECKED BY R.M. DATE 3-29-89
SCALE None

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

HNTB

COMPUTATIONS AND SUB-SUMMARIES

FHWA REGION	STATE	PROJECT
5	OHIO	

CUYAHOGA COUNTY
CUY - 90-23.95
LAKE COUNTY
LAK - 90-0.00

QUANTITY CALCULATIONS
MADE BY N.K. DATE 3-15-89
CHECKED BY R.M. DATE 3-29-89

ITEM 446						
Stations		Side	End Widths (Ft.)	Surface Area (Sq. Yds.)	446 Type 1 (Cu. Yds.)	446 Type 2 (Cu. Yds.)
From	To					
388+50.54	388+95.46	Lt.	66.2	330.41	11.472	16.061
388+95.46	389+77.79	Lt.	66.75	610.61	21.202	29.682
389+77.79	390+22.21	Lt.	66.2	326.73	11.345	15.883
390+22.21	401+75	Lt.	66.75	8549.86	296.868	415.616
401+75	403+00	Lt., I 90	97.75, 90.75	1309.03	45.452	63.633
41+12.2	41+87.54	Lake, E.	78.75	659.23	22.89	32.046
41+87.54	42+32.46	Lake, E.	78.2	390.3	13.552	18.973
42+32.46	44+87.2	Lake, E.	78.75	2228.98	77.395	108.353
44+87.2	47+87.2	Lake, E.	78.75, 66.75	2425	84.201	117.882
47+87.2	48+27.79	Lake, E.	66.75	301.04	10.453	14.634
48+27.79	48+72.21	Lake, E.	66.2	326.73	11.345	15.883
48+72.21	49+92.48	Lake, E.	66.75	892.0	30.97	43.36
53+08.78	56+17.13	Lake, E.	66.75	2286.93	79.41	111.17
57+82.87	61+87.086	Lake, E.	63.62	2857.36	99.21	138.90
61+87.086	63+83	Lake, E.	62.67	1404.05	48.751	68.252
63+83	67+71.5	Lake, E.	67, 100	3604.42	125.153	175.215
67+71.5	68+41.322	Lake, E.	44, 39	321.957	11.179	15.65
68+41.322	86+00	Lake, E.	39	7620.938	264.616	370.462
86+00	89+44	Lake, E.	62, 44	2025.78	70.339	98.475
89+44	91+39.477	Lake, E.	63, 45	1112.862	40.124	57.014
91+39.477	94+01.774	Lake, E.	72, 58	1894.367	65.776	92.087
94+01.774	100+00	Lake, E.	58, 57	3822	132.708	185.791
41+12.2	41+87.54	Lake, W.	90.75, 83.75	730.38	25.360	35.504
41+87.54	42+32.46	Lake, W.	83.2, 71.2	380.32	13.205	18.488
42+32.46	43+87.2	Lake, W.	71.75, 78.75	1293.8	44.923	62.893
43+87.2	44+87.2	Lake, W.	78.75, 66.75	808.33	28.067	39.294
44+87.2	48+27.79	Lake, W.	66.75	2526.04	87.709	122.793
48+27.79	48+72.21	Lake, W.	66.2	326.73	11.345	15.883
48+72.21	49+92.48	Lake, W.	66.75	892.0	30.97	43.36
60+72	83+25	Lake, W.	39	9763	338.991	474.587
83+25	84+41.2	Lake, W.	39, 45	542.27	18.829	26.360
84+41.2	88+97.4	Lake, W.	74, 50	3142.71	109.121	152.77
88+97.4	100+00	Lake, W.	50	6125.55	212.691	297.768
5+82	6+22	TRW. 1	44, 41	188.9	6.558	9.182
6+22	7+50	TRW. 1	41, 38	561.78	19.506	27.309
7+50	19+35	TRW. 1	38, 39	5069.17	176.01	246.42
19+35	2+95.22	TRW. 2	29	951.264	33.03	46.242
6+36.01	11+36.25	TRW. 2	39	2167.71	75.27	105.37
14+72.81	29+46	TRW. 2	39	6383.82	221.66	310.32
29+46	31+88.651	TRW. 2	48, 35	1118.89	38.85	54.39
31+88.651	35+00	TRW. 2	73, 64	2369.71	82.281	115.193
35+00	35+62.69	TRW. 2	64, 62	438.83	15.23	21.33
37+26.08	40+02	TRW. 2	66, 75	2046.41	71.06	99.48
Euclid Spur						
39+99.877	46+49.21	S.B.	51	3679.55	127.76	178.87
48+54.23	53+90	S.B.	51	3036.03	105.411	147.581
53+90	58+52.3	S.B.	50, 73	3159.05	109.689	153.564
58+52.3	59+72	S.B.	42, 39	551.95	19.165	26.831
59+72	67+86.23	S.B.	39	3528.33	122.51	171.52
70+28.49	82+67	S.B.	39	5366.88	186.35	260.89
82+67	84+33	S.B.	49, 35	774.67	26.898	37.657
84+33	87+00	S.B.	71, 63	1987.67	69.016	96.622
87+00	92+00	S.B.	63	3500	121.527	170.138
92+00	96+58.969	S.B.	63, 85	3773.75	131.032	183.445
96+58.969	97+60	S.B.	54, 51	589.35	20.463	28.649
SUBTOTALS					4275.498	5985.725

ITEM 446						
Stations		Side	End Widths (Ft.)	Surface Area (Sq. Yds.)	446 Type 1 (Cu. Yds.)	446 Type 2 (Cu. Yds.)
From	To					
97+60	113+09.341	S.B.	51	8779.60	304.845	426.78
113+09.341	115+03.982	S.B.	60, 46	1146.22	39.799	55.719
115+03.982	117+66.279	S.B.	70, 63	1938.08	67.294	94.212
117+66.279	121+50	S.B.	63	2686.05	93.265	130.571
121+50	125+00	S.B.	63, 51	2216.67	76.967	107.754
125+00	162+08.4	S.B.	51	21,014.27	729.657	1021.52
42+66.811	46+49.21	N.B.	51	2166.93	75.24	105.34
48+54.23	51+06.03	N.B.	51	1426.87	49.54	69.36
51+06.03	53+34.146	N.B.	51, 59	1349.04	46.841	65.578
53+34.146	55+05.266	N.B.	35, 49	1140.8	39.611	55.455
55+05.266	63+25	N.B.	39, 39	3552.18	123.339	172.674
63+25	64+45.747	N.B.	39, 43	550.07	19.100	26.739
64+45.747	67+86.23	N.B.	74, 51	2364.47	82.10	114.94
70+28.49	92+00	N.B.	51	305.22	427.26	598.17
92+00	94+08.158	N.B.	51, 72	1422.41	49.389	69.144
94+08.158	95+59	N.B.	47, 62	905.05	31.425	43.995
95+59	114+29.863	N.B.	51	10,601.56	368.707	515.350
114+29.863	117+93.11	N.B.	82, 63	2926.16	101.602	142.243
117+93.11	121+00	N.B.	63	2148.23	74.591	104.427
121+00	122+00	N.B.	63, 51	633.33	21.990	30.787
122+00	162+08.4	N.B.	51	22,714.266	788.684	1104.159
SUBTOTALS					3610.646	5054.917

SUBTOTALS	ITEM 446	ITEM 446
	TYPE 1	TYPE 2
	CU. YDS.	CU. YDS.
388+50.54 - 97+60 (SPUR)	4275.498	5985.725
97+60 - 162+08.4	3610.646	5054.917
RAMP 2 - RAMP 12	619.451	867.235
SHEET TOTALS	8506	11,908

ITEM 407 - TACK COAT : 8506 C.Y. + (1 1/4" x 1 YD.) x 0.075 GAL./S.Y. = 18,372 GAL.
36"

ITEM 446						
Stations		Ramp	End Widths (Ft.)	Surface Area (Sq. Yds.)	446 Type 1 (Cu. Yds.)	446 Type 2 (Cu. Yds.)
From	To					
0+00	0+37.5	2	34, 40	154.167	5.353	7.494
0+37.5	1+00	2	30, 27	197.917	6.872	9.621
1+00	4+39.24	2	27	1017.72	35.337	49.472
4+39.24	5+56.55	2	27, 24	332.38	11.541	16.157
5+56.55	6+00.09	2	24	116.1	4.031	5.643
6+00.09	6+24.51	2	24, 16	54.27	1.884	2.638
6+24.51	6+54.86	2	16	53.95	1.873	2.622
2+66.44	2+96	3	35, 40	123.167	4.276	5.987
2+96	3+66.44	3	31, 27	226.973	7.881	11.033
3+66.44	5+51.24	3	27	554.4	19.25	26.95
5+51.24	6+09.45	3	32, 21	171.4	5.951	8.331
6+09.45	6+58.59	4	26, 26	288.89	10.03	14.043
6+58.59	4+87.81	4	26, 26	662.19	22.993	32.19
4+87.81	5+63.95	4	26, 27	224.19	7.784	10.90
0+99.86	1+76	5	25, 27	219.96	7.637	10.692
1+76	3+93	5	27	651	22.604	31.646
3+93	5+04.92	5	40, 21	379.284	13.169	18.437
0+77.55	1+43.77	6	22, 27	180.27	6.259	8.763
1+43.77	3+81.5	6	27, 28	726.397	25.222	35.311
3+81.5	4+05.4	6	40, 31	94.272	3.273	4.582
4+52.74	5+80	7	30, 24	381.78	13.256	18.559
5+80	5+95	7	24, 16	33.33	1.157	1.620
5+95	7+13	7R	16, 18	222.88	7.739	10.834
5+95	6+73.73	7L	0, 28	122.47	4.252	5.95
6+73.73	7+05.11	7L	28	97.63	3.39	4.746
7+05.11	Calcutta	7L	0, 28 in 40, 52'	63.03	2.189	3.064
2+05	3+18	8	0, 30	188.333	6.539	9.155
3+18	6+77	8	24	941.333	32.685	45.759
0+24.84	0+46.6	9R	8, 11	22.97	.797	1.117
0+24.84	0+74.84	9L	8, 16	66.66	2.315	3.240
0+46.6	0+74.84	9R	11	34.52	1.199	1.678
0+74.84	2+31.48	9	27	469.92	16.316	22.843
2+31.48	3+06	9	27, 31	240.12	8.337	11.672
3+06	3+28	9	42, 33	91.667	3.183	4.456
1+59	2+58.89	11	24	266.373	9.249	12.949
2+58.89	3+58.89	11	24, 27	283.33	9.838	13.773
3+58.89	11+55.01	11	27	3348.36	116.261	162.766
11+55.01	12+18.15	11	24, 20	154.34	5.359	7.503
11+55.01	12+18.15	11	Transition	4.17	.145	.203
3+47.86	3+67	12	31, 43	78.687	2.732	3.825
3+67	4+90.66	12	31, 29	412.2	14.312	20.037
4+90.66	10+02.13	12	29	1648.07	57.224	80.114
10+02.13	13+00	12	29, 53, 95	1372.68	47.662	66.727
13+00	14+00	12	53, 95	599.44	20.814	29.139
14+00	14+51.24	12	50, 95, 42, 95	267.30	9.281	12.994
SUBTOTALS					619.451	867.235

COMPUTATIONS AND SUB-SUMMARIES

FRWA REGION	STATE	PROJECT
5	OHIO	

41
200

CUYAHOGA COUNTY
CUY - 90-23.95
LAKE COUNTY
LAK - 90-0.00

QUANTITY CALCULATIONS
MADE BY NK DATE 3-15-89
CHECKED BY RM DATE 3-29-89

ITEM 446						
Stations		Ramp	End Widths (Ft.)	Surface Area (Sq. Yds.)	446 Type 1 (Cu. Yds.)	446 Type 2 (Cu. Yds.)
From	To					
14+00	14+51.24	12	Extra area	42.7	1.483	2.076
14+00	14+51.24	12	Extra area	12.81	.445	.623
14+51.24	16+20	12L	35,40	703.17	24.415	34.181
14+51.24	15+08.69	12R	12,18	95.75	3.325	4.654
0+55.15	2+02.51	12R	18	294.72	10.233	14.327
2+50.77	3+50.77	13	24,27	283.33	9.838	13.773
3+50.77	4+42.42	13	27,29	285.13	9.900	13.860
4+42.42	7+92.28	13	29	1127.33	39.143	54.800
7+92.28	8+38.93	13	29,27	145.13	5.039	7.055
8+38.93	10+75	13	27	708.21	24.59	34.427
10+75	11+86.17	13	16	197.64	6.862	9.607
10+75	11+86.17	13	Tapers	26.39	.916	1.283
1+87.08	2+87.08	14	23,26	272.222	9.452	13.233
2+87.08	3+87.08	14	26,27	294.44	10.223	14.313
3+87.08	7+35.73	14	27	1045.95	36.317	50.844
3+78.76	4+02	14A	32,38	90.378	3.138	4.393
4+02	4+78.76	14A	27	230.28	7.996	11.194
4+78.76	6+86.6	14A	27,21	554.24	19.244	26.942
0+99.95	1+87.71	15	23,27	243.78	8.465	11.85
1+87.71	2+87.71	15	27,26	294.44	10.224	14.313
2+87.71	3+87.71	15	26,24	277.78	9.645	13.503
0+77.55	1+75	16	21,27	259.87	9.023	12.632
1+75	2+79.79	16	27,27	314.37	10.915	15.282
2+79.79	3+60	16	27,30	253.998	8.819	12.347
3+60	3+75.5	16	35,31	56.833	1.973	2.763
3+53.31	4+04	1E	31,40	199.944	6.942	9.719
4+04	4+53.31	1E	30,27	156.148	5.422	7.59
4+53.31	6+24.8	1E	27	514.47	17.863	25.009
6+24.8	6+82.09	1E	27,25,85	168.21	5.841	8.177
6+24.8	6+82.09	1E	taper	1.11	.039	0.054
6+82.09	7+24.8	1E	31,85,21	125.4	4.354	6.096
3+02.71	4+02.71	2E	24,25	272.22	9.452	13.233
4+02.71	5+02.71	2E	25,27	288.89	10.031	14.043
5+02.71	6+51.59	2E	27	448.44	15.571	21.799
6+51.59	6+87.73	2E	27,23	100.39	3.486	4.88
0+99.98	1+96.57	6E	23,27	240.53	8.352	11.692
1+96.57	2+62.36	6E	27	227.37	7.895	11.053
2+62.36	3+62.36	6E	27,25	288.89	10.031	14.043
3+62.36	4+62.36	6E	25,24	272.22	9.452	13.233
0+77.55	1+77.55	7E	21,27	266.67	9.259	12.963
1+77.55	3+36.61	7E	27	477.18	16.569	23.196
3+36.61	4+10	7E	27,28	224.247	7.786	10.901
4+10	4+34	7E	38,31	92	3.194	4.472
2+68.4	3+68.4	8E	24	266.67	9.259	12.963
3+68.4	4+68.4	8E	24,27	283.33	9.838	13.773
4+68.4	5+04.86	8E	27	109.38	3.798	5.317
5+04.86	5+71.41	8E	27,21	177.47	6.162	8.627
3+99.67	4+83	9E	31,39	324.061	11.252	15.753
4+83	6+02.3	9E	27	357.9	12.427	17.398
6+02.3	7+02.3	9E	27,17	244.44	8.487	11.882
1+97.21	2+97.21	10E	19,24	238.89	8.295	11.613
2+97.21	3+30.94	10E	24,27	95.57	3.318	4.646
3+30.94	4+10	10E	27	237.18	8.235	11.529
4+10	4+99.24	10E	33,31	337.129	11.706	16.388
1+60.42	2+17.73	11E	21,27,85	155.53	5.40	7.56
2+17.73	2+60.32	11E	27,85,27	129.78	4.506	6.309
2+60.32	3+63.97	11E	27,24	293.68	10.197	14.276
3+63.97	4+63.97	11E	24	266.67	9.259	12.963
4+00.31	4+66	12E	31,38	251.812	8.743	12.241
4+66	6+31.49	12E	27	496.47	17.238	24.134
6+31.49	7+05.61	12E	27,19	189.42	6.577	9.208
SUBTOTALS					587.859	823.008

ITEM 446						
Stations		Ramp	End Widths (Ft.)	Surface Area (Sq. Yds.)	446 Type 1 (Cu. Yds.)	446 Type 2 (Cu. Yds.)
From	To					
1+64.03	2+64.03	13E	25,28	294.44	10.224	14.33
2+64.03	3+64.03	13E	28,27	305.56	10.610	14.85
3+64.03	4+40.48	13E	27	229.35	7.963	11.149
4+40.48	4+82.16	13E	27,21	106.52	3.699	5.178
1+54.77	2+54.77	14E	25,27	288.89	10.031	14.043
2+54.77	2+95.36	14E	27	121.77	4.228	5.919
2+95.36	3+95.36	14E	27,25	288.89	10.031	14.043
3+95.36	4+95.36	14E	25,24	272.22	9.452	13.233
1+49.91	2+49.91	15E	19,27	255.56	8.874	12.423
2+49.91	3+72	15E	27	366.27	12.718	17.805
3+72	4+57.5	15E	37,31	300.33	10.428	14.60
11+60.2	12+75	1	29,22	325.27	11.294	15.812
12+75	16+50.67	1	22	918.30	31.89	44.64
18+78	23+83	1	22	1234.44	42.86	60.01
23+83	24+18.58	1	35,25	118.60	4.12	5.77
0+00	2+94.38	2	22,34	915.85	31.79	44.52
6+30	17+25	2	27	3285	114.06	159.69
17+25	19+76.128	2	27,27	753.38	26.159	36.623
0+28	1+50	3		372.49	12.934	18.107
1+50	11+50	3	22	2444.44	84.876	118.826
11+50	12+50.983	3	22,21	241.24	8.376	11.727
12+50.983	14+17.794	3	21,24	417.03	14.48	20.272
4+53.541	4+90	4	31,37	137.73	4.782	6.695
4+90	5+50	4	27,22	163.33	5.671	7.940
6+00	10+96.766	4	22	1214.32	42.164	59.029
10+96.766	13+91.686	4		715.2	24.833	34.766
13+91.686	14+91.69	4	19,17	200.01	6.945	9.723
Left Turn Slot		4		749.4	26.021	36.429
0+30	1+91.744	6		594	20.625	28.875
0+43.744	1+91.744	6	4' berm	65.97	2.291	3.207
1+91.744	11+30	6	38	3961.53	137.522	192.573
11+30	11+93.419	6	39	274.82	9.542	13.359
11+93.419	13+50	6	39,38	669.82	23.257	32.560
13+50	14+50.421	6	38,36	618.4	21.472	30.061
4+58.635	4+90	7	31,40	123.72	4.296	6.014
4+90	5+58.635	7	28,22	190.65	6.620	9.268
5+58.635	15+37.88	7	22	2392.49	83.072	116.301
15+37.88	16+21	7		287.6	9.986	13.980
2+05.6	3+06	8	35,22.5	259.37	9.006	12.608
3+06	4+06	8	22.5,22	247.22	8.584	12.018
4+06	11+79.167	8	22	1889.96	65.623	91.872
11+79.167	12+32	8		185	6.424	8.993
4+64.385	4+99	9	31,37	130.77	4.541	6.357
4+99	5+65	9	27,22	179.67	6.238	8.734
5+65	13+75	9	22	1980	68.75	96.249
13+75	14+77	9		281.8	9.785	13.699
2+62.023	5+66.667	10	24,22	778.53	27.032	37.845
5+66.667	11+77.148	10	22	1492.29	51.815	72.541
11+77.148	12+16	10		140	4.861	6.806
3+62.31	4+09	11	31,35	171.197	5.944	8.322
4+09	4+62.31	11	25,22	139.20	4.834	6.767
4+62.31	11+25	11	22	1619.91	56.247	78.745
11+25	12+21	11		263.6	9.153	12.814
SUBTOTALS					1249.003	1748.720
SHEET TOTALS					1837	2572

ASPHALT LEVELLING COURSE *

ROADWAY	STATION		SIDE	LENGTH	ADJUSTED	WIDTH	ITEM 403 ASPHALT CONC. AC-20
	FROM	TO			LENGTH		
				L.F.	L.F.	L.F.	C.Y.+
LAKELAND FWY.	140+00	403+00	LT, RT	26,300			
	41+12	56+17	LT, RT	1,505			
SUBTRACT FOR BRIDGES				27,805			
CUY-90-2413	149+18	152+16	LT, RT	298			
CUY-90-2465	176+96	180+12	LT, RT	316			
CUY-90-2616	256+59	259+34	LT, RT	275			
CUY-90-2639	267+84	270+79	LT, RT	295			
CUY-90-2674	287+37	289+64	LT, RT	227			
CUY-90-2754	329+16	331+95	LT, RT	279			
CUY-90-2840	374+59	377+18	LT, RT	259			
CUY-90-2910	49+92	53+09	LT, RT	319			
				2,268			
LAKELAND FWY. E.B.	57+83	67+70	LT, RT	987	25,537	96	3,780
LAKELAND FWY. W.B.	57+83	60+75	LT, RT	292			
LAKELAND FWY. W.B.	60+75	84+45	LT, RT	2,370	1,279	48	95
LAKELAND FWY. E.B.	67+70	91+40	LT, RT	2,370			
TURNING RDWY. NO. 1	5+80	19+35	LT, RT	1,355			
TURNING RDWY. NO. 2	6+36	31+85	LT, RT	2,549			
				8,644			
SUBTRACT FOR BRIDGE							
CUY-90-2956	11+36	14+73	LT, RT	337			
				8,307		24	308
LAKELAND FWY. W.B.	84+45	100+00	LT, RT	1,555			
LAKELAND FWY. E.B.	91+40	100+00	LT, RT	860			
TURNING RDWY. NO. 2	0+00	3+20	LT, RT	320			
EUCLID SPUR N.B.	42+67	110+82	LT, RT	6,815			
SPUR (I-90)	111+46	162+08	LT	5,062			
EUCLID SPUR S.B.	40+00	84+30	LT, RT	4,430			
EUCLID SPUR S.B.	96+95	112+17	LT, RT	1,522			
SPUR (I-90)	111+55	162+08	RT	5,053			
				25,617			
SUBTRACT FOR BRIDGES							
CUY-90-2989	46+49	48+54	LT, RT	2(205)			
LAK-90-0009	67+86	70+28	LT, RT	2(242)			
				894			
EUCLID SPUR S.B.	84+30	96+95	LT, RT	1,265	24,723	36	1,370
					1,265	48	94
TOTAL							5,650

* BASED ON 1/2" THICKNESS

* LEVELLING COURSE PROVIDED FOR MAINLINE ONLY. SEE SHEET 8 FOR FURTHER DESCRIPTION.

MADE BY NK DATE 3-15-89
TRACED BY NK DATE 3-15-89
CHECKED BY RM DATE 3-29-89
SCALE None

HNTB
CONSULTING ENGINEERS
CLEVELAND, OHIO

COMPUTATIONS AND SUB-SUMMARIES

QUANTITY CALCULATIONS

MADE BY N.K. DATE 3/10/89
 CHECKED BY R.M. DATE 3/31/89

FHWA REGION	STATE	PROJECT
5	OHIO	

42
200

CUYAHOGA COUNTY
 CUY - 90-23.95
 LAKE COUNTY
 LAK - 90-0.00

BRIDGE APPROACH SLABS

STATIONS		SIDE	END	SURFACE		446	
FROM	TO			WIDTHS	AREA	TYPE 1	TYPE 2
				(FT)	(SQ. YD.)	(CU. YD.)	(CU. YD.)
I-90							
149+ 18.06	149+ 43.06	LT RT	133.5	370.833	12.876		
151+ 90.84	152+ 15.84	LT RT	133.5	370.833	12.876		
176+ 96.48	177+ 21.48	LT RT	133.5	370.833	12.876		
179+ 86.6	180+ 11.6	LT RT	133.5	370.833	12.876		
256+ 59.23	256+ 84.23	LT RT	145.5	404.167	14.033		
259+ 08.69	259+ 33.69	LT RT	145.5	404.167	14.033		
267+ 84.09	268+ 09.09	LT RT	145.5	404.167	14.033		
270+ 53.81	270+ 78.81	LT RT	145.5	404.167	14.033		
287+ 36.72	287+ 61.72	LT RT	157.5	437.5	15.191		
289+ 38.9	289+ 63.9	LT RT	157.5	437.5	15.191		
329+ 15.98	329+ 40.98	LT RT	157.5	437.5	15.191		
331+ 72.46	331+ 97.46	LT RT	157.5	437.5	15.191		
374+ 59.47	374+ 84.47	LT RT	133.5	370.833	12.876		
376+ 92.97	377+ 17.97	LT RT	133.5	370.833	12.876		
49+ 92.48	50+ 17.48	LT RT	133.5	370.833	12.876		
52+ 83.78	53+ 08.78	LT RT	133.5	370.833	12.876		
56+ 17.13	56+ 42.13	RT	63.62	176.722	6.136		
57+ 57.87	57+ 82.87	RT	63.62	176.722	6.136		
19+ 35	19+ 60	TRW 1	69.66	187.5	6.51		
EUCLID SPUR							
39+ 74.877	39+ 99.877	SB	51	141.667	4.919		
46+ 49.21	46+ 74.21	SB	51	141.667	4.919		
48+ 29.23	48+ 54.23	SB	51	141.667	4.919		
67+ 86.23	68+ 11.23	SB	39	108.333	3.761		
70+ 03.49	70+ 28.49	SB	39	108.333	3.761		
2+ 95.22	3+20.22	TRW 2	63.65	177.778	6.173		
6+ 11.01	6+ 36.01	TRW 2	39	108.333	3.761		
11+ 36.25	11+ 61.25	TRW 2	39	108.333	3.761		
14+ 47.81	14+ 72.81	TRW 2	39	108.333	3.761		
35+ 62.69	35+ 87.69	TRW 2	62	172.222	5.98		
37+ 01.08	37+ 26.08	TRW 2	66.75	185.417	6.438		
EUCLID SPUR							
46+ 49.21	46+ 74.21	NB	51	141.667	4.919		
48+ 29.23	48+ 54.23	NB	51	141.667	4.919		
67+ 86.23	68+ 11.23	NB	51	141.667	4.919		
70+ 03.49	70+ 28.49	NB	51	141.667	4.919		
16+ 50.67	16+ 75.67	RAMP 1	22	61.111	2.122		
18+ 53	18+ 78	RAMP 1	22	61.111	2.122		
6+ 05	6+ 30	RAMP 2	27	75.0	2.604		
SUBTOTALS					317.363		

STATIONS		END	SURFACE	446			
FROM	TO			WIDTHS	AREA	TYPE 1	TYPE 2
			(FT)	(SQ. YD.)	(CU. YD.)	(CU. YD.)	
MARGINAL CONNECTOR (I-90 STA 151+00)							
2+ 02.67 S	0	19	427.859	14.856	20.799		
0	2+ 14.59 N	19	453.023	15.73	22.022		
SOUTH WATERLOO RD.							
149+ 90	150+ 65	PLANIMETER	258.194	8.965	12.551		
150+ 65	151+ 56.13	18	182.26	6.328	8.86		
151+ 56.13	152+ 42.51	PLANIMETER	299.293	10.392	14.549		
152+ 42.51	154+ 33.56	29	615.605	21.375	29.925		
154+ 33.56	154+ 58.56	31, 29	83.333	2.893	4.051		
DARWIN AVE							
4+ 02	4+ 75	PLANIMETER	228.389	7.93	11.102		
WATERLOO RD.							
151+ 37	151+ 57.19	PLANIMETER	63.89	2.218	3.106		
151+ 57.19	152+ 26.29	26, 30.42	216.59	7.52	10.528		
152+ 26.29	153+ 25.94	PLANIMETER	436.11	15.143	21.2		
153+ 25.94	159+ 62.67	29	2051.685	71.239	99.735		
159+ 62.67	161+ 11.4	29	479.241	16.64	23.296		
161+ 11.4	161+ 36.4	29, 31	83.333	2.893	4.051		
161+ 36.4	162+ 80.07	PLANIMETER	868.055	30.141	42.197		
162+ 80.07	167+ 92.63	41	2334.995	81.076	113.507		
E. 143RD ST							
0+ 15.5	0+ 53	PLANIMETER	115.74	4.019	5.626		
E. 147TH ST							
1+ 61.24	1+ 96.96	PLANIMETER	117.592	4.083	5.716		
SOUTH WATERLOO RD.							
154+ 58.56	155+ 71.32	29	363.338	12.616	17.662		
155+ 71.32	156+ 46.47	PLANIMETER	363.44	12.619	17.667		
156+ 46.47	159+ 24	29	894.263	31.051	43.471		
159+ 24	159+ 80.82	26	164.146	5.699	7.979		
159+ 80.82	160+ 59.28	PLANIMETER	372.49	12.934	18.107		
160+ 59.28	162+ 66.07	41	942.043	32.71	45.794		
162+ 66.07	164+ 09.46	PLANIMETER	789.25	27.404	38.366		
164+ 09.46	164+ 34.46	43, 41	116.667	4.051	5.671		
164+ 34.46	165+ 60	41	571.904	19.858	27.801		
165+ 60	166+ 61.29	PLANIMETER	601.38	20.881	29.234		
166+ 61.29	167+ 00	26, 31	122.582	4.256	5.959		
167+ 00	172+ 57.79	29	1797.323	62.407	87.370		
172+ 57.79	174+ 01.46	PLANIMETER	668.492	23.211	32.496		
SUBTOTALS					593.138	830.398	

STATIONS		END	SURFACE	446			
FROM	TO			WIDTHS	AREA	TYPE 1	TYPE 2
			(FT)	(SQ. YD.)	(CU. YD.)	(CU. YD.)	
174+ 01.46	174+26.46	31, 29	83.333	2.893	4.051		
174+ 26.46	175+ 86.62	29	516.071	17.919	25.087		
175+ 86.62	176+ 11.62	29, 28	79.167	2.749	3.848		
176+ 11.62	176+ 23.59	28	37.24	1.293	1.81		
176+ 23.59	177+ 62	PLANIMETER	558.293	19.385	27.139		
WATERLOO RD							
167+ 92.63	168+ 71.09	41, 47	383.582	13.319	18.646		
168+ 71.09	169+ 25	25, 31	167.72	5.824	8.153		
169+ 25	170+ 53.92	29	415.409	14.424	20.193		
170+ 53.92	170+ 78.92	29, 31	83.333	2.893	4.051		
170+ 78.92	176+ 85.91	29	1955.857	67.912	95.076		
176+ 85.91	177+ 11.42	29, 28	80.782	2.805	3.927		
177+ 11.42	177+ 19.54	28	25.262	0.877	1.228		
177+ 19.54	177+ 72.29	PLANIMETER	176.333	6.123	8.572		
177+ 72.29	179+ 00.12	18	255.66	8.877	12.428		
179+ 00.12	179+ 56	PLANIMETER	322.222	11.188	15.663		
HALE AVE.							
3+ 49	4+ 23	26, PLANIM.	232	8.055	11.278		
MARGINAL CONNECTOR (I-90 STA 178+13)							
2+ 09.88 S	0	19	443.08	15.385	21.539		
0	1+ 96.64 N	19	415.129	14.414	20.18		
SOUTH WATERLOO RD.							
178+ 30	179+ 05	PLANIMETER	545.833	18.952	26.533		
179+ 05	182+ 32.10	47	1708.189	59.312	83.037		
182+ 32.1	183+ 32.1	47, 57	577.778	20.062	28.086		
183+ 32.1	184+ 82	57	949.366	32.964	46.15		
184+ 82	186+ 26.65	59	948.261	32.926	46.096		
186+ 26.65	186+ 65.55	57, 47	224.755	7.804	10.926		
186+ 65.55	187+ 59.17	47	488.904	16.976	23.766		
187+ 59.17	189+ 61.39	47	1056.038	36.668	51.335		
189+ 61.39	192+ 39.17	50, 43	1435.197	49.833	69.766		
192+ 39.17	193+ 25	43	410.076	14.239	19.934		
193+ 25	194+ 00	43	358.333	12.442	17.419		
VILLAVIEW RD.							
261+ 12	261+ 57.86	PLANIMETER	218.055	7.571	10.600		
261+ 57.86	267+ 51.71	28	1847.533	64.150	89.811		
267+ 51.71	268+ 13	PLANIMETER	494.444	17.168	24.035		
268+ 66	269+ 20.42	PLANIMETER	233.333	8.102	11.343		
269+ 20.42	269+ 45.42	28, 29	79.167	2.749	3.848		
GLENFIELD AVE. (INTERSECTING VILLAVIEW RD.)							
		PLANIMETER	88.889	3.086	4.321		
SUBTOTALS					621.339	869.875	

STATIONS		END	SURFACE	446		
FROM	TO			WIDTHS	AREA	TYPE 1
			(FT)	(SQ. YD.)	(CU. YD.)	(CU. YD.)
VILLAVIEN RD.						
269+ 45.42	279+ 08	29	3101.647	107.696	150.774	
279+ 08	279+ 28.22	31, 24	61.783	2.145	3.00	
279+ 28.22	280+ 45.17	51, 41	597.744	20.755	29.057	
280+ 45.17	282+ 90	41	1115.337	38.727	54.218	
282+ 90	283+ 68.46	41, 47	383.582	13.319	18.646	
283+ 68.46	283+ 94.5	26, 31	82.46	2.863	4.008	
283+ 94.5	289+ 13.99	29	1673.912	58.122	81.371	
289+ 13.99	289+ 67	PLANIMETER	335.417	11.646	16.305	
MARGINAL CONNECTOR (I-90 STA 269+50)						
0+ 74.97	7+ 73	18	1396.06	48.474	67.864	
7+ 73	8+ 89.74	30, 0	155.333	5.393	7.551	
SOUTH WATERLOO RD.						
269+ 84	271+ 54.75	PLANIMETER	647.222	22.473	31.462	
271+ 54.75	271+ 80.78	34, 35	99.782	3.464	4.85	
271+ 80.78	277+ 43	35	2186.411	75.917	106.284	
277+ 43	277+ 70.71	37, 32	106.222	3.688	5.163	
277+ 70.71	278+ 49.17	53, 47	435.889	15.135	21.189	
278+ 49.17	282+ 06.4	47	1865			

COMPUTATIONS AND SUB-SUMMARIES

QUANTITY CALCULATIONS

MADE BY N.K. DATE 3/13/89
 CHECKED BY R.M. DATE 3/31/89

FWHA REGION	STATE	PROJECT
5-	OHIO	

CUYAHOGA COUNTY
 CUY - 90-23.95
 LAKE COUNTY
 LAK - 90-0.00

STATIONS		END	SURFACE	446	446
FROM	TO	WIDTHS	AREA	TYPE 1	TYPE 2
		(FT)	(SQ. YD.)	(CU. YD.)	(CU. YD.)
INTERSECTING STREETS WITH LAKELAND BLVD. (WB)					
E. 207TH ST		PLANIMETER	178.472	6.197	8.676
E. 209TH ST		PLANIMETER	176.389	6.125	8.574
E. 210TH ST		PLANIMETER	180.555	6.269	8.777
E. 212TH ST		PLANIMETER	183.33	6.366	8.912
E. 214TH ST		PLANIMETER	194.44	6.751	9.452
E. 216TH ST		PLANIMETER	215.74	7.491	10.487
E. 218TH ST		PLANIMETER	215.278	7.475	10.465
E. 220TH ST		PLANIMETER	223.611	7.764	10.870
E. 223RD ST		PLANIMETER	106.944	3.713	5.199
LAKELAND BLVD. (EB)					
317+ 50	318+ 70	29, 41	466.667	16.204	22.685
318+ 70	322+ 73.71	41	1839.123	63.858	89.402
322+ 73.71	323+ 75	41, 51	517.704	17.976	25.166
323+ 75	327+ 92.33	29	1344.73	46.692	65.369
327+ 92.33	328+ 17.33	29, 28	79.167	2.749	3.848
328+ 17.33	329+ 34	PLANIMETER	468.75	16.276	22.786
330+ 39	330+ 85.75	PLANIMETER	195.37	6.784	9.497
330+ 85.75	332+ 09.36	28	384.564	13.353	18.694
332+ 09.36	343+ 70	40	5158.4	179.111	250.755
MARGINAL CONNECTOR (I-90 STA 329+00)					
0+ 87.34	4+ 50.36	18	726.04	25.210	35.294
4+ 50.36	N. LAKELAND	PLANIMETER	31.25	1.085	1.519
LAKELAND BLVD. (WB)					
318+ 50	319+ 70	29, 41	466.667	16.204	22.685
319+ 70	323+ 70.2	41	1823.133	63.303	88.625
323+ 70.2	324+ 48.48	41, 47	382.702	13.288	18.604
324+ 48.48	325+ 06.5	26, 31	183.73	6.380	8.931
325+ 06.5	330+ 49.66	29	1750.182	60.770	85.078
330+ 49.66	330+ 74.66	29, 28	79.167	2.749	3.848
330+ 74.66	331+ 68.97	28	293.409	10.188	14.263
331+ 68.97	332+ 19.5	PLANIMETER	234.722	8.150	11.410
333+ 13	334+ 38.34	PLANIMETER	545.833	18.953	26.534
334+ 38.34	337+ 50.96	28	972.596	33.771	47.279
337+ 50.96	337+ 75.96	28, 30	80.556	2.797	3.916
337+ 75.96	342+ 49.22	28	1472.364	51.124	71.573
341+ 56.31	348+ 79	28	2248.369	78.068	109.296
348+ 79	350+ 00	38, 34	484	16.806	23.528
350+ 00	351+ 90.55	55, 41	1016.267	35.287	49.402
351+ 90.55	355+ 52.47	41	1648.747	57.248	80.147
355+ 52.47	357+ 50	41, 51	1009.598	35.055	49.078
357+ 50	358+ 83.84	32	475.876	16.523	23.133
358+ 83.84	360+ 21	32, 38	533.4	18.521	25.929
360+ 21	375+ 20.77	28	4665.951	162.012	226.817
SUBTOTALS				1154.646	1616.503

STATIONS		END	SURFACE	446	446
FROM	TO	WIDTHS	AREA	TYPE 1	TYPE 2
		(FT)	(SQ. YD.)	(CU. YD.)	(CU. YD.)
INTERSECTING STREETS WITH LAKELAND BLVD. (WB)					
MILLER AVE		PLANIMETER	170.139	5.908	8.271
E. 224TH ST		PLANIMETER	241.667	8.391	11.748
E. 225TH ST		PLANIMETER	247.222	8.584	12.018
E. 228TH ST		PLANIMETER	202.778	7.041	9.857
E. 230TH ST		PLANIMETER	216.667	7.523	10.532
ARMS AVE & E. 232ND ST		PLANIMETER	365.972	12.707	17.790
IVAN AVE		PLANIMETER	138.889	4.823	6.752
E. 236TH ST		PLANIMETER	174.305	6.052	8.473
LAKELAND BLVD. (EB)					
343+ 70	346+ 37	40, 33.325	1087.654	37.766	52.872
346+ 37	348+ 50	43.325, 32	891.346	30.950	43.329
348+ 50	349+ 50	32, 34	366.677	12.731	17.824
349+ 50	350+ 96.59	51, 43	765.526	26.581	37.213
350+ 96.59	355+ 88.81	43	2351.718	81.657	114.320
355+ 88.81	357+ 50	43, 55	877.59	30.472	42.661
357+ 50	358+ 08	34	219.111	7.608	10.651
358+ 08	358+ 50	34, 38	168	5.833	8.167
358+ 50	363+ 30	28, 40	1813.333	62.963	88.148
363+ 30	375+ 06.74	40	5229.956	181.596	254.234
375+ 06.74	375+ 45	PLANIMETER	197.222	6.848	9.587
376+ 14	376+ 56.05	PLANIMETER	183.333	6.366	8.912
376+ 56.05	377+ 33.56	28	241.142	8.373	11.722
377+ 33.56	386+ 48.17	40	4064.933	141.144	197.601
386+ 48.17	391+ 28.17	40, 28	1813.333	62.963	88.148
LAKELAND BLVD. (WB)					
375+ 20.77	375+ 60	PLANIMETER	175.694	6.100	8.541
376+ 30	376+ 72.97	PLANIMETER	180.555	6.269	8.777
376+ 72.97	388+ 60	28	3692.982	128.229	179.520
388+ 60	388+ 85	28, 30	80.556	2.797	3.916
388+ 85	390+ 44.94	55, 41	853.013	29.619	41.466
MARGINAL CONNECTORS (I-90 STA 375+00)					
WEST SIDE					
S. LAKELAND	0+ 59.06	PLANIMETER	46.528	1.616	2.262
0+ 59.06	2+ 75.93	18	433.74	15.060	21.085
2+ 75.93	N. LAKELAND	PLANIMETER	39.167	1.360	1.904
MARGINAL CONNECTOR (I-90 STA 377+00)					
S. LAKELAND	0+ 37.60	PLANIMETER	57.13	1.984	2.777
0+ 37.6	2+ 75.92	18	476.64	16.55	23.17
2+ 75.92	N. LAKELAND	PLANIMETER	47.685	1.656	2.318
SUBTOTALS				976.120	1366.566

STATIONS		END	SURFACE	446	446
FROM	TO	WIDTHS	AREA	TYPE 1	TYPE 2
		(FT)	(SQ. YD.)	(CU. YD.)	(CU. YD.)
INTERSECTING STREETS WITH LAKELAND BLVD. (WB)					
E. 237TH ST		PLANIMETER	190.278	6.607	9.250
E. 239TH ST		PLANIMETER	222.222	7.716	10.802
E. 245TH ST		PLANIMETER	259.028	8.994	12.592
E. 248TH ST		PLANIMETER	203.472	7.065	9.891
E. 250TH ST		PLANIMETER	452.083	15.697	21.976
LAKELAND BLVD. (EB)					
391+ 28.17	392+ 28.17	28	311.111	10.802	15.123
392+ 28.17	393+ 58.63	51, 43	681.291	23.656	33.118
393+ 58.63	396+ 74	43	1506.768	52.318	73.246
396+ 74	398+ 30	43, 55	849.333	29.491	41.287
398+ 30	398+ 55	30, 28	80.556	2.797	3.916
398+ 55	399+ 30	28	233.333	8.102	11.343
399+ 30	403+ 00	28, 37.25	1341.25	46.571	65.2
7+ 64	8+ 74	37.25, 40	472.083	16.392	22.948
8+ 74	15+ 68.98	40	3088.8	107.25	150.15
15+ 68.98	16+ 60	PLANIMETER	944.444	32.793	45.910
17+ 74	17+ 98.04	PLANIMETER	106.944	3.713	5.199
* 17+ 98.04	21+ 74.24	40	1672	58.056	81.278
* 21+ 74.24	24+ 74.24	40, 22	1033.333	35.880	50.231
* 24+ 74.24	25+ 30.74	PLANIMETER	262.222	9.105	12.747
* LEFT TURN LANE TO E. 260		PLANIMETER	147.222	5.112	7.157
* 25+30.74	71+53	40	20543.378	713.312	998.636
LAKELAND BLVD. (WB)					
390+ 44.94	397+ 21.22	41	3080.831	106.973	149.763
397+ 21.22	398+ 71.71	41, 51	769.171	26.707	37.390
398+ 71.71	402+ 99.55	28	1331.058	46.217	64.704
9+ 99.55	21+ 03.11	28	3433.298	119.212	166.896
21+ 03.11	21+ 24	PLANIMETER	90.278	3.135	4.389
MARGINAL CONNECTOR (I-90 STA 50+75)					
0+ 38.68	3+ 82.91	18	688.46	23.905	33.467
3+ 82.91	LAKELAND WB	PLANIMETER	30.092	1.045	1.463
LAKELAND BLVD E. 260TH ST CONNECTOR					
* 0+ 52.64	6+ 15.59	24'	1501.2	52.125	72.975
* 6+ 15.59	6+ 61.04	26, 24	126.25	4.384	6.137
* 6+ 61.04	6+ 74	PLANIMETER	37.153	1.290	1.806
* RIGHT TURN SLOT TO E. 260		PLANIMETER	186.111	6.462	9.047
SUBTOTALS COST PARTICIPATION I				703.445	984.824
SUBTOTALS COST PARTICIPATION II				889.439	1245.213

* COST PARTICIPATION II

SUBTOTALS	ITEM 446	ITEM 446
	TYPE 1	TYPE 2
	CU. YDS.	CU. YDS.
INTERSECTING ST-LAKELAND WB	1154.646	1616.503
INTERSECTING ST-MARGINAL CONN	976.120	1366.566
INTERSECTING ST-E. 260TH ST	703.445	984.824
SHEET TOTALS	2834	3968
COST PARTICIPATION I	889	1245

ITEM 407 - TACK COAT	2834.211 C.Y. ÷ (1 1/4" x 1 YD.) ÷ 36"	× 0.075 GAL./S.Y. = 6.122 GAL.	COST PARTICIPATION I
	889.439 C.Y. ÷ (1 1/4" x 1 YD.) ÷ 36"	× 0.075 GAL./S.Y. = 1.922 GAL.	COST PARTICIPATION II

MADE N.K. DATE 3-13-89
 TRACED R.M. DATE 3-31-89
 CHECKED R.M. DATE 3-31-89
 SCALE

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



MAINLINE BERM WIDENING

QUANTITY CALCULATIONS
 MADE BY J.M.W. DATE 12-27-88
 CHECKED BY R.M. DATE 2-15-89

FHWA REGION	STATE	PROJECT
5	OHIO	

44
200

CUYAHOGA COUNTY
 CUY - 90-23.95
 LAKE COUNTY
 LAK - 90-0.00

ROADWAY	STATION		SIDE	LENGTH		BERM		①		②		①+②		TOTALS	
	FROM	TO		LIN. FT.	LIN. FT.	301	310	203	446	446	407	408	408	408	408
	6" BITUMINOUS AGGREGATE BASE AC-20			SUBBASE TYPE 1 NOT INCL. EMBANKMENT AS PER PLAN		EXCAVATION TYPE 1, AC-20		1-1/4" ASPHALT CONCRETE TYPE 1, AC-20		1-3/4" ASPHALT CONCRETE TYPE 2, AC-20		TACK COAT (0.075 GAL/SY)		BITUMINOUS PRIME COAT (0.4 GAL/SY)	
I-90 LAKELAND FWY (EB) CENTERLINE I-90	57+75	58+55	LT	80	2	3.0	3.8	*	0.6	0.9	1.3	7.1			
	58+55	59+00	LT	45	2.5	2.1	2.4	*	0.4	0.6	0.9	5.0			
	59+00	60+15	LT	115	4.5	9.6	9.8	19.4	2.0	2.8	4.3	23.0			
	60+15	67+70	LT	755	6	83.9	76.9	160.8	17.5	24.5	37.8	201.3			
	67+70	69+30	LT	160	4	11.9	12.5	24.4	2.5	3.5	5.3	28.4			
	69+30	70+10	LT	80	2	3.0	3.8	6.8	0.6	0.9	1.3	7.1			
LAKELAND FWY (WB) CENTERLINE RAMP 1 (SPUR)	5+95	10+75**	LT	480	6	53.3	48.9	102.2	11.1	15.6	24.0	128.0			
	10+75	11+60	LT	85	6.5	10.2	9.6	19.8	2.1	3.0	4.6	24.6			
I-90, LAKELAND FWY (WB) CENTERLINE TURNING RDWY. NO. 2	29+45	30+25	LT	80	2	3.0	3.8	6.8	0.6	0.9	1.3	7.1			
	30+25	31+85	LT	160	4	11.9	12.5	24.4	2.5	3.5	5.3	28.4			
	31+85	33+25	LT	140	6	15.6	14.3	29.9	3.2	4.5	7.0	37.3			
	33+25	34+28	LT	103	4.7	9.0	9.0	18.0	1.9	2.6	4.0	21.5			
	34+28	34+85	LT	57	2.7	2.9	3.3	*	0.6	0.8	1.3	6.8			
	34+85	35+65	LT	80	2	3.0	3.8	*	0.6	0.9	1.3	7.1			
I-90 EUCLID SPUR (SB) CENTERLINE SB SPUR	39+96	40+76	LT	80	2	3.0	3.8	*	0.6	0.9	1.3	7.1			
	40+76	42+36	LT	160	4	11.9	12.5	*	2.5	3.5	5.3	28.4			
	42+36	44+43.5	LT	207.5	6	23.1	21.1	*	4.8	6.7	10.4	55.3			
	44+43.5	46+03.5	LT	160	4	11.9	12.5	*	2.5	3.5	5.3	28.4			
	46+03.5	46+83.5	LT	80	2	3.0	3.8	*	0.6	0.9	1.3	7.1			
	48+64	49+44	LT	80	2	3.0	3.8	*	0.6	0.9	1.3	7.1			
	49+44	51+04	LT	160	4	11.9	12.5	*	2.5	3.5	5.3	28.4			
	51+04	59+00	LT	2854/2829 X 796 = 803	6	89.2	81.8	*	18.6	26.0	40.2	214.1			
	59+00	60+60	LT	160	4	11.9	12.5	*	2.5	3.5	5.3	28.4			
	60+60	61+40	LT	80	2	3.0	3.8	*	0.6	0.9	1.3	7.1			
CENTERLINE SB SPUR	80+25	81+05	LT	80	2	3.0	3.8	6.8	0.6	0.9	1.3	7.1			
	81+05	82+65	LT	160	4	11.9	12.5	24.4	2.5	3.5	5.3	28.4			
	82+65	112+16.71	LT	2303/2328 X 2952 = 2920	6	324.5	297.4	621.8	67.6	94.6	146.0	778.7			
	CL SPUR STA 111+54.57 = CL SB SPUR STA 112+16.71														
CENTERLINE SPUR	111+54.57	162+08.40	LT	5054	6	561.5	514.7	1076.2	117.0	163.8	252.7	1347.7			
I-90, EUCLID SPUR NB CENTERLINE TURNING ROADWAY NO. 2	3+09	2+29	LT	80	2	3.0	3.8	6.8	0.6	0.9	1.3	7.1			
	2+29	0+69	LT	160	4	11.9	12.5	24.4	2.5	3.5	5.3	28.4			
	0+69	0+00	LT	69	6	7.7	7.0	14.7	1.6	2.2	3.5	18.4			
	CL TURNING RDWY NO. 2 STA 0+00 = CL NB SPUR STA 42+66.81														
CENTERLINE NB SPUR	42+66.81	44+07	RT	140.2	6	15.6	14.3	29.9	3.2	4.5	7.0	37.4			
	44+07	45+67	RT	160	4	11.9	12.5	24.4	2.5	3.5	5.3	28.4			
	45+67	46+47	RT	80	2	3.0	3.8	6.8	0.6	0.9	1.3	7.1			
	48+34	49+14	RT	80	2	3.0	3.8	6.8	0.6	0.9	1.3	7.1			
	49+14	50+74	RT	160	4	11.9	12.5	24.4	2.5	3.5	5.3	28.4			
	50+74	55+10	RT	2876/2901 X 436 = 432	6	48.0	44.0	92.0	10.0	14.0	21.6	115.2			
	55+10	56+70	RT	160	4	11.9	12.5	24.4	2.5	3.5	5.3	28.4			
	56+70	57+50	RT	80	2	3.0	3.8	6.8	0.6	0.9	1.3	7.1			
	61+60	62+40	RT	80	2	3.0	3.8	6.8	0.6	0.9	1.3	7.1			
	62+40	64+00	RT	160	4	11.9	12.5	24.4	2.5	3.5	5.3	28.4			
	64+00	65+53	RT	153	6	17.0	15.6	32.6	3.5	5.0	7.7	40.8			
	65+53	67+13	RT	160	4	11.9	12.5	24.4	2.5	3.5	5.3	28.4			
	67+13	67+93	RT	80	2	3.0	3.8	6.8	0.6	0.9	1.3	7.1			
	70+10	70+90	RT	80	2	3.0	3.8	6.8	0.6	0.9	1.3	7.1			
	70+90	72+50	RT	160	4	11.9	12.5	24.4	2.5	3.5	5.3	28.4			
	72+50	76+00	RT	350	6	38.9	35.6	74.5	8.1	11.3	17.5	93.3			
	76+00	77+50	RT	150	6	16.7	15.3	*	3.5	4.9	7.5	40.0			
	77+50	110+81.51	RT	2281/2256 X 3382 = 3369	6	374.3	343.1	717.4	52.0	72.8	112.3	898.4			
	CL SPUR STA 111+46.33 = CENTERLINE NB SPUR STA 110+81.51														
CENTERLINE SPUR	111+46.33	162+08.40	RT	5062	6	562.5	515.6	1078.1	117.2	164.0	253.1	1349.9			
				TOTALS			2481	2316	4400	491	688	1059	5948		

ROADWAY	STATION		SIDE	LENGTH	END AREA	301 (1)		310 (2)		203 (1)+(2)		408	
	FROM	TO				6" BIT. AGG. BASE AC-20	SUBBASE TYPE 1 GRADING A AS PER PLAN	EXC. NOT INCL. EMB. CONSTR.	BITUMINOUS PRIME COAT (0.4 GAL/SY)	408	408		
	L.F.	S.F.				C.Y.	C.Y.	C.Y.	GAL.	GAL.			
I-90 (E.B.)	58+35	69+50	LT	1,115	557.5	10	14	24	25				
RAMP 1 (SPUR)	5+95	11+60	LT	565	282.5	5	7	12	13				
TURN. RDWY. NO. 2	30+05	35+05	LT	500	250	5	6	11	11				
SPUR (S.B.)	40+56	46+23.5	LT	567.5	283.8	5	7	12	13				
SPUR (S.B.)	49+24	60+80	LT	1,156	578	11	14	25	26				
SPUR (S.B.)	80+85	112+16.71	LT	3,132	1,566	30	39	69	70				
SPUR	111+54.57	162+08.40	LT	5,054	2,527	47	62	109	112				
TURN. RDWY. NO. 2	2+49	0+00	LT	249	124.5	2	3	5	6				
SPUR (N.B.)	42+66.81	45+87	RT	320	160	3	4	7	7				
SPUR (N.B.)	48+94	56+90	RT	796	398	7	10	17	18				
SPUR (N.B.)	62+20	67+33	RT	513	256.5	5	6	11	11				
SPUR (N.B.)	70+70	110+81.51	RT	4,012	2,006	37	50	87	89				
SPUR	111+46.33	162+08.40	RT	5,062	2,531	47	62	109	112				
TOTALS						214	284	498	513				

NOTE: FOR BERM WIDENING TRANSITION
 DETAIL AT BRIDGES SEE SHEET 91.

* REFER TO CROSS SECTIONS, SEE SHEETS 109-114
 ** SEE RAMP 1 BERM WIDENING DETAILS ON SHEET 89.

† SEE NOTE ON SHEET 7.
 †† SEE NOTE ON SHEET 8.

MADE J.M.W. DATE 12-27-88
 TRACED R.M. DATE 2-15-89
 CHECKED R.M. DATE 2-15-89
 SCALE

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

HNTB

Rev. 6-1-90

COMPUTATIONS AND SUB-SUMMARIES

RAMP BERM WIDENING

QUANTITY CALCULATIONS
 MADE BY P.F. DATE 1-12-89
 CHECKED BY R.M. DATE 2-17-89

FHWA REGION	STATE	PROJECT
5	OHIO	

45
200

CUYAHOGA COUNTY
 CUY - 90-23.95
 LAKE COUNTY
 LAK - 90-0.00

ROADWAY	STATION		SIDE	LENGTH		BERM		①		②		①+②	
	FROM	TO		WIDENING	301	310	203	446	446	407	408		
	LIN. FT.			WIDENING	6" BITUMINOUS AGGREGATE BASE AC-20	SUBBASE TYPE I GRAD. A As Per *PLANT	EXCAVATION NOT INCL. EMBANKMENT CONSTR.	1-1/4" ASPHALT CONCRETE TYPE 1, AC-20 AS PER PLANT**	1-3/4" ASPHALT CONCRETE TYPE 2, AC-20	TACK COAT (0.075 GAL/SY)	BITUMINOUS PRIME COAT (0.4 GAL/SY)		
RAMP 8	3+17	5+35	RT	218	3	12.1	16.1	28.2	2.5	3.5	5.5	29.1	
RAMP 11	2+95	11+55	LT	(1004.5\992)284 + 576 = 864	3	48.0	64.0	*159.3	10.0	14.0	21.6	115.2	
	11+55	12+10	LT	(95.5\108)55 = 49	2.5	2.2	3.0	*8.4	0.5	0.7	1.0	5.4	
RAMP 12	4+29	14+01	RT	(145.5/160)420+(245.5/260)83+(495.5/510)62+407 = 928	3	51.6	68.7	120.3	10.7	15.0	23.2	123.7	
RAMP 13	4+20	10+75	LT	(285.5/300)22+(135.5/150)347+(385.5/400)286 = 610	3	33.9	45.2	79.1	7.1	9.9	15.3	81.3	
RAMP 14	3+40	7+17	LT	377	3	20.9	27.9	48.8	4.4	6.1	9.4	50.3	
RAMP 14A	4+35	6+58	RT	(520.5/508)146+(1395.5/1408)77=226	3	12.6	16.7	29.3	2.6	3.7	5.7	30.1	
RAMP 15	1+18	2+73	RT	(520.5/508)57+(995.5/1008)98=155	3	8.6	11.5	20.1	1.8	2.5	3.9	20.7	
RAMP 16	1+04	2+95	LT	191	3	10.6	14.1	24.7	2.2	3.1	4.8	25.5	
RAMP 1-E	4+39	7+06	RT	(1995.5/2008)243+(520.5/508)24=266	3	14.7	19.7	34.5	3.1	4.3	6.7	35.5	
RAMP 2-E	4+49	6+75	LT	(1995.5/2008)203+(520.5/508)23=225	3	12.6	16.6	29.2	2.6	3.6	5.5	30.0	
RAMP 6-E	1+22	3+85	RT	(520.5/508)65+(1395.5/1408)198=263	3	14.6	19.5	34.1	3.0	4.3	6.6	35.1	
RAMP 7-E	0+93	3+80	LT	(520.5/508)97+(995.5/1008)190=287	3	15.9	21.3	37.2	3.3	4.7	7.2	38.3	
RAMP 8-E	3+60	5+35	LT	175	3	9.7	13.0	22.7	2.0	2.8	4.4	23.3	
	5+35	5+75	LT	40	5.5	4.1	5.4	9.5	0.8	1.2	1.8	9.8	
RAMP 9-E	4+65	6+40	RT	175	3	9.7	13.0	22.7	2.0	2.8	4.4	23.3	
	6+40	7+02	RT	62	5.5	6.3	8.4	14.7	1.3	1.8	2.8	15.2	
RAMP 10-E	1+97	2+95	LT	98	5.5	10.0	13.3	23.3	2.1	2.9	4.5	24.0	
	2+95	3+98	LT	103	3	5.7	7.6	13.3	1.2	1.7	2.6	13.7	
RAMP 11-E	1+60	1+82	RT	22	5.5	2.2	3.0	5.2	0.5	0.7	1.0	5.4	
	1+82	3+63	RT	(3495.5/3508)65+116=181	3	10.1	13.4	23.5	2.1	2.9	4.5	24.1	
RAMP 12-E	4+78	6+57	RT	179	3	9.9	13.3	23.2	2.1	2.9	4.5	23.9	
	6+57	7+06	RT	49	5.5	5.0	6.7	11.7	1.0	1.5	2.2	12.0	
RAMP 13-E	2+94	4+62	LT	168	3.25	10.1	13.5	23.6	2.1	2.9	4.6	24.3	
	4+62	4+82	LT	20	6	2.2	3.0	5.2	0.5	0.6	1.0	5.3	
RAMP 14-E	1+55	3+28	RT	(1020.5/1008)22+(1395.5/1408)51=174	3	9.6	12.8	22.5	2.1	2.8	4.4	23.2	
RAMP 15-E	1+49	1+94	LT	45	5.5	4.6	6.1	10.7	1.0	1.3	2.1	11.0	
	1+94	4+09	LT	215	3	11.9	15.9	27.8	2.5	3.5	5.4	28.7	
RAMP 1 - SPUR	11+60	14+00	LT	(0.986)230+(464/477)10=237	4	17.6	23.4	41.0	3.7	5.1	7.9	42.1	
	14+00	16+40	LT	(465.5/477)240=234	1+	8.6	11.6	20.2	0.9	1.3	2.0	20.8	
	18+57	24+25	LT	(465.5/477)123+(0.988)300+145=561	1+	20.8	27.6	48.4	2.2	3.0	4.7	49.9	
	12+95	14+53	RT	(1.022)95+(489/477)63=162	3	9.0	12.0	21.0	1.9	2.6	4.0	21.6	
	19+28	23+83	RT	(489.5/477)52+(1.013)300+103=460	3	25.6	34.1	59.6	5.3	7.5	11.5	61.3	
RAMP 2 - SPUR	6+15	17+25	LT	(1.009)185+(775.5/764)705+(1.010)220=1124	1+	41.8	55.5	97.9	4.3	6.1	9.4	99.9	
	17+25	17+80	LT	(1.008)55=55	1.5+	2.0	2.7	4.7	0.3	0.4	0.7	4.9	
	11+97	17+60	RT	(751.5/764)308+(0.992)255=556	3	30.9	41.2	72.1	6.4	9.0	13.9	74.1	
RAMP 3 - SPUR	1+27	12+90	RT	475+(0.992)200+(806/818.5)249+(0.992)200+39=1156	3	64.2	85.6	149.8	13.4	18.7	28.9	154.1	
RAMP 4 - SPUR	5+08	14+51	RT	(0.973)132+(247.5/260)632+(207.5/220)179=899	3	50.0	66.4	116.6	10.4	14.6	22.5	119.9	
RAMP 7 - SPUR	5+16	15+38	RT	(1619.5/1637)270+300+(1451.5/1432)325+(1.007)127=1024	3	56.9	75.8	132.8	11.9	16.6	25.6	136.5	
RAMP 8 - SPUR	3+20	11+79	LT	(1128.5/1146)200+(0.992)200+459=854	3	47.4	63.2	110.7	9.9	13.8	21.4	113.9	
RAMP 9 - SPUR	5+22	13+75	RT	(1927.5/1910)378+(1.005)200+275=857	3	47.6	63.5	111.1	9.9	13.9	21.4	114.3	
RAMP 10 - SPUR	4+36	11+77	LT	741	3	41.2	54.9	96.1	8.6	12.0	18.5	98.8	
RAMP 11 - SPUR	4+19	11+25	RT	706	3	39.2	52.3	91.5	8.2	11.4	17.7	94.1	
TOTALS						878	1163	2086	175	244	377	2,094	

ROADWAY	STATION		SIDE	LENGTH	END AREA	301 (1)		310 (2)		203 (1)+(2)		408
	FROM	TO				6" BIT. AGG. BASE AC-20	SUBBASE TYPE I GRADING A, AS PER PLAN	EXC. NOT INCL. EMB. CONSTR.	BITUMINOUS PRIME COAT (0.4 GAL/SY)			
	L.F.					C.Y.	C.Y.	C.Y.	GAL.			
RAMP 8	3+17	5+35	RT	218	109	2	3	5	5			
RAMP 11	2+95	11+55	LT	+864	432	8	11	19	19			
RAMP 12	4+29	14+01	RT	+928	464	9	11	20	21			
RAMP 13	4+20	10+75	LT	+610	305	6	8	14	14			
RAMP 14	3+40	7+17	LT	377	188.5	3	5	8	8			
RAMP 14A	4+35	6+58	RT	+226	113	2	3	5	5			
RAMP 15	1+18	2+73	RT	+155	77.5	1	2	3	3			
RAMP 16	1+04	2+95	LT	191	95.5	2	2	4	4			
RAMP 1-E	4+39	7+06	RT	+266	133	2	3	5	6			
RAMP 2-E	4+49	6+75	LT	+225	112.5	2	3	5	5			
RAMP 6-E	1+22	3+85	RT	+263	131.5	2	3	5	6			
RAMP 7-E	0+93	3+80	LT	+287	143.5	3	4	7	6			
RAMP 8-E	3+60	5+75	LT	+255	127.5	2	3	5	6			
RAMP 9-E	4+65	7+02	RT	+299	149.5	3	4	7	7			
RAMP 10-E	1+97	3+98	LT	+299	149.5	3	4	7	7			
RAMP 11-E	1+60	3+63	RT	+225	112.5	2	3	5	5			
RAMP 12-E	4+78	7+06	RT	+277	138.5	3	3	6	6			
RAMP 13-E	2+94	4+82	LT	+208	104	2	3	5	5			
RAMP 14-E	1+55	3+28	RT	+174	87	2	2	4	4			
RAMP 15-E	1+49	4+09	LT	+305	152.5	3	4	7	7			
RAMP 1 - SPUR	11+60	14+00	LT	+237	118.5	2	3	5	5			
RAMP 1 - SPUR	12+95	14+53	RT	+162	81	2	2	4	4			
RAMP 1 - SPUR	19+28	23+83	RT	+460	230	4	6	10	10			
RAMP 2 - SPUR	11+97	17+60	RT	+556	278	5	7	12	12			
RAMP 3 - SPUR	1+27	12+90	RT	+1,156	578	11	14	25	26			
RAMP 4 - SPUR	5+08	14+51	RT	+899	449.5	8	11	19	20			
RAMP 7 - SPUR	5+16	15+38	RT	+1,024	512	9	13	22	23			
RAMP 8 - SPUR	3+20	11+79	LT	+854	427	8	11	19	19			
RAMP 9 - SPUR	5+22	13+75	RT	+857	428.5	8	11	19	19			
RAMP 10 - SPUR	4+36	11+77	LT	741	370.5	7	9	16	16			
RAMP 11 - SPUR	4+19	11+25	RT	706	353	7	9	16	16			
TOTALS						133	180	313	319			

+ACTUAL LENGTH ALONG CURVE
 ++TOTAL LENGTH INCLUDES BOTH SIDES OF CONCRETE MEDIAN

* QUANTITY INCLUDES ADDITIONAL EXCAVATION FOR CURBED BERM SECTION - SEE SHEET 84 FOR DETAILS

** QUANTITY BASED ON 8" AVERAGE DEPTH

† SEE NOTE ON SHEET 7.

†† SEE NOTE ON SHEET 8.

+ QUANTITY FOR ITEMS 203, 301, 310 & 408 BASED ON 2' MINIMUM NEW BERM SECTION

NOTE: SEE SHEETS 83 TO 90
 FOR RAMP BERM WIDENING DETAILS.

MADE BY P.F. DATE 1-12-89
 TRACED BY R.M. DATE 2-2-89
 CHECKED BY R.M. DATE 2-17-89
 SCALE _____

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

HNTB

Rev. 6-1-90

COMPUTATIONS AND SUB-SUMMARIES

ITEM 203 LINEAR GRADING

QUANTITY CALCULATIONS

MADE BY R.M. DATE 2/7/89
 CHECKED BY P.F. DATE 2/17/89

FHWA REGION	STATE	PROJECT
5	OHIO	

CUYAHOGA COUNTY
 CUY - 90-23.95
 LAKE COUNTY
 LAK - 90-0.00

ROADWAY	STATION		SIDE	ITEM 203 LINEAR GRADING AS PER PLAN (STA.)
	FROM	TO		
I-90 (EB)	140+00	141+25	RT	1.25
	143+15	149+05	RT	5.90
	151+78	155+15	RT	3.37
	156+80	169+40	RT	12.60
	171+20	176+88	RT	5.68
	179+62	190+05	RT	10.43
	191+60	256+36	RT	64.76
	258+94	262+05	RT	3.11
	263+25	268+17	RT	4.92
	274+80	284+50	RT	9.70
	285+90	287+26	RT	1.36
	289+27	298+00	RT	8.73
	300+55	325+70	RT	25.15
	327+50	328+67	RT	1.17
	347+35	358+75	RT	11.40
	389+90	400+40	RT	10.50
	STA EQN: STA403+00 BACK=STA41+12.20 AHEAD			
	402+65	49+45	RT	8.68
	52+45	56+65	RT	4.20
	58+15	61+93.69	RT	3.79
	59+00	61+93.69	LT	2.94
TURNING RDWY. #1	0+00	19+31	RT	19.31
	5+80	19+00	LT	13.20
LAKELAND FREEWAY EB	61+87.09	86+00	LT	24.13
	67+70	89+45	RT	21.75
	92+65	100+00	RT	7.35
SB SPUR	39+80	46+88	RT	7.08
	61+40	68+06	LT	6.66
	58+90	68+31	RT	9.41
	70+51	82+65	RT	12.14
	70+23	112+16.71	LT	41.94
	86+30	94+00	RT	7.70
	97+00	112+16.71	RT	15.17
I-90 (SPUR)	111+54.57	162+08.4	LT	50.54
	111+54.57	113+00	RT	1.45
	116+00	162+08.4	RT	46.08
SUBTOTAL				483.55

ROADWAY	STATION		SIDE	ITEM 203 LINEAR GRADING AS PER PLAN (STA.)
	FROM	TO		
I-90 (WB)	140+00	149+56	LT	9.56
	152+29	157+15	LT	4.86
	159+00	171+60	LT	12.60
	173+15	177+46	LT	4.31
	180+38	188+00	LT	7.62
	189+15	193+40	LT	4.25
	194+00	247+65	LT	53.65
	249+30	257+11	LT	7.81
	259+56	261+55	LT	1.99
	262+65	267+71	LT	5.06
	270+39	271+50	LT	1.11
	273+70	285+40	LT	11.70
	286+72	287+74	LT	1.02
	289+74	298+45	LT	8.71
	300+75	326+60	LT	25.85
	327+85	329+87	LT	2.02
	348+30	359+60	LT	11.30
	387+20	401+00	LT	13.80
	44+87	50+52	LT	5.65
	53+49	55+75	LT	2.26
LAKELAND FREEWAY WB	56+67	100+00	LT	43.33
	64+65	83+25	RT	18.60
TURNING ROADWAY #2	14+82	34+27	LT	19.45
	14+39	29+40	RT	15.01
	6+23	11+57	LT	5.34
	6+23	11+31	RT	5.08
	3+09	0+00	LT	3.09
NB SPUR	42+66.81	46+46	LT	3.79
	42+66.81	46+47	RT	3.80
	48+29	52+60	LT	4.31
	48+34	67+93	RT	19.59
	55+10	64+05	LT	8.95
	70+10	76+50	RT	6.40
	69+75	93+00	LT	23.25
	95+60	110+81.51	LT	15.22
	77+00	110+81.51	RT	33.82
I-90 (SPUR)	111+46.33	162+08.4	RT	50.62
	111+46.33	113+30	LT	1.84
	116+45	162+08.4	LT	45.63
SUBTOTAL				522.25

ROADWAY	STATION		SIDE	ITEM 203 LINEAR GRADING AS PER PLAN (STA.)
	FROM	TO		
RAMP 2	-1+47	4+40	RT	5.87
	0+38	6+00	LT	5.62
RAMP 3	1+30	5+50	RT	4.20
	3+00	6+55	LT	3.55
RAMP 4	0+80	5+22	LT	4.42
	2+70	6+00	RT	3.30
RAMP 5	0+00	3+90	LT	3.90
	1+40	5+75	RT	4.35
RAMP 6	0+55	3+80	RT	3.25
	1+15	5+35	LT	4.20
RAMP 7	4+28	5+85	LT	1.57
RAMP 8	2+05	4+50	LT	2.45
	3+18	7+25	RT	4.07
RAMP 9	0+80	3+60	LT	2.80
	0+45	3+05	RT	2.60
RAMP 11	1+00	1+55	LT	0.55
	3+60	11+50	RT	7.90
RAMP 12	2+60	14+00	RT	11.40
	3+70	14+25	LT	10.55
RAMP 13	2+00	10+75	LT	8.75
	4+40	11+00	RT	6.60
RAMP 14	0+75	7+15	LT	6.40
	3+90	8+00	RT	4.10
RAMP 14A	0+11	6+58	RT	6.47
	4+05	7+00	LT	2.95
RAMP 15	0+00	1+85	LT	1.85
	1+20	4+40	RT	3.20
RAMP 16	0+00	3+60	RT	3.60
	1+05	4+95	LT	3.90
RAMP 1-E	1+57	7+05	RT	5.48
	4+05	8+00	LT	3.95
RAMP 2-E	2+00	6+75	LT	4.75
	5+00	7+50	RT	2.50
RAMP 6-E	0+30	2+60	LT	2.30
	1+25	5+40	RT	4.15
RAMP 7-E	0+00	4+05	RT	4.05
	1+50	5+30	LT	3.80
RAMP 8-E	5+50	7+00	RT	1.50
RAMP 9-E	4+85	8+00	LT	3.15
RAMP 10-E	0+50	4+10	RT	3.60
RAMP 11-E	0+50	2+65	LT	2.15
RAMP 12-E	4+70	8+00	LT	3.30
RAMP 13-E	3+75	6+00	RT	2.25
RAMP 14-E	0+50	2+90	LT	2.40
	2+18	6+00	RT	3.82
RAMP 15-E	0+40	3+75	RT	3.35
SUBTOTAL				190.87

ROADWAY	STATION		SIDE	ITEM 203 LINEAR GRADING AS PER PLAN (STA.)
	FROM	TO		
SPUR RAMPS				
RAMP 1	6+00	16+40	LT	10.40
	12+70	16+66	RT	3.96
	18+65	24+31	LT	5.66
	18+80	23+81	RT	5.01
RAMP 2	3+08	0+00	RT	3.08
	10+00	21+00	RT	11.00
	6+22	17+25	LT	11.03
RAMP 3	1+25	15+00	RT	13.75
	1+25	11+50	LT	10.25
RAMP 4	4+95	13+15	LT	8.20
	1+45	14+50	RT	13.05
RAMP 7	5+00	15+30	RT	10.30
	4+90	15+30	LT	10.40
RAMP 6	0+45	11+25	LT	10.80
	1+90	16+50	RT	14.60
RAMP 8	1+00	11+80	LT	10.80
	4+05	11+80	RT	7.75
RAMP 9	2+00	13+80	RT	11.80
	5+00	13+80	LT	8.80
RAMP 10	1+65	11+80	LT	10.15
	5+65	11+80	RT	6.15
RAMP 11	1+45	11+25	RT	9.80
	4+10	11+25	LT	7.15
SUBTOTAL				213.89

SUBTOTALS	ITEM 203
	LINEAR GRADING AS PER PLAN (STA.) (SEE NOTE ON SHEET 7)
I-90 E.B. - I-90 (SPUR)	483.55
I-90 W.B. - I-90 (SPUR)	522.25
RAMPS	190.87
SPUR RAMPS	213.89
SHEET TOTAL	1411



ITEM 802 BARRIER REFLECTORS

QUANTITY CALCULATIONS
 MADE BY R.M. DATE 3/16/89
 CHECKED BY NK DATE 3/27/89

FHWA REGION	STATE	PROJECT
5	OHIO	

47
200

CUYAHOGA COUNTY
 CUY - 90-23.95
 LAKE COUNTY
 LAK - 90-0.00

ROADWAY	STATION		SIDE	SPACING	ITEM 802		
	FROM	TO			INTERVAL	BARRIER REFLECTOR	
						TYPE A	TYPE B
	LIN. FT.		LIN. FT.	EACH	EACH		
I-90 EB	136+18.75	140+18.75	RT	100	5		
	140+18.75	142+65	RT	82	2	1	
I-90 EB	144+61.25	153+61.25	RT	100	7	3	
	153+61.25	155+45	RT	92	1	1	
I-90 EB	174+13.75	180+13.75	RT	100	4	3	
	180+13.75	182+30.75	RT	109	2		
I-90 EB	210+93.75	212+93.75	RT	100	3		
	212+93.75	214+58.75	RT	82.5	2		
I-90 EB	229+93.75	231+15	RT	61	2	1	
I-90 EB	243+93.75	244+93.75	RT	100	1	1	
	244+93.75	246+96.25	RT	101	2		
I-90 EB	254+67.25	260+67.25	RT	100	4	3	
RAMP 12	1+17.25	3+17.25	RT	50	3	1	
	3+17.25	4+00	RT	41	2		
I-90 EB	267+10.75	272+10.75	RT	100	4	2	
RAMP 14A	1+30.31	2+88.5	RT	79	1	1	
I-90 EB	283+18.75	284+15	RT	48	2	1	
RAMP 15	2+01	4+01	RT	50	5		
	CL RAMP 15 STA 5+22 = CL I-90 STA 286+72						
RAMP 15/I-90 EB	4+01	288+51	RT	100	1	2	
I-90 EB	288+51	290+52	RT	101	2		
S. LAKE LAND	298+49.75	300+49.75	LT	100	3		
	300+49.75	302+56	LT	103	2		
I-90 EB	297+60.75	298+82	RT	61	2	1	
I-90 EB	312+93.75	314+15	RT	61	2	1	
I-90 EB	323+43.75	324+65	RT	61	2	1	
I-90 EB	327+17	331+17	RT	100	2	3	
	331+17	333+03	RT	93	2		
RAMP 9-E	0+18.75	1+82	RT	82	2	1	
I-90 EB	363+91	386+91	RT	100	20	4	
	386+91	388+85	RT	97	1	1	
	CL I-90 STA 61+93.69 = TURNING ROADWAY NO. 1 STA 0+00						
I-90 EB/TR NO. 1	43+93.75	3+00.06	RT	100	17	5	
TR NO. 1	3+00.06	4+75	RT	87	1	1	
LAKELAND FWY EB	65+40.75	66+62	LT	61	2	1	
TR NO. 1	10+70.75	16+70.75	LT	50	13		
	16+70.75	17+77	LT	53	2		
TR NO. 1	10+18.75	19+18.75	RT	50	19		
	19+18.75	22+18.75	RT	100		3	
S. B. SPUR	39+41.21	54+41.21	RT	100	13	2	
RAMP 7	0+51.21	9+51.21	RT	100	8	1	
	9+51.21	11+60.75	RT	105	2		
LAKELAND FWY EB	77+80.75	79+87	RT	103	3		
LAKELAND FWY EB	77+87.75	79+69	LT	91	3		
SUBTOTALS					176	45	

ROADWAY	STATION		SIDE	SPACING	ITEM 802		
	FROM	TO			INTERVAL	BARRIER REFLECTOR	
						TYPE A	TYPE B
	LIN. FT.		LIN. FT.	EACH	EACH		
RAMP 2	4+51	6+51	LT	100	2	1	
	6+51	14+51	LT	50	16		
	14+51	15+59.5	LT	54	2		
RAMP 3	0+93.75	6+93.75	RT	100	7		
	6+93.75	11+93.75	RT	50	10		
	11+93.75	15+93.75	RT	100	4		
N. B. SPUR	51+58.84	41+58.84	LT	100	7	3	
RAMP 2	1+07.97	7+07.97	RT	100	2	4	
	7+07.97	13+57.97	RT	50	12	1	
	13+57.97	14+81.25	RT	62	2		
LAKELAND FWY EB	82+93.75	84+15	RT	61	2	1	
SB SPUR	55+60.75	56+82	LT	61	2	1	
RAMP 7	5+48.75	9+48.75	LT	100	5		
	9+48.75	11+55	LT	103	2		
SB SPUR	59+68.5	76+68.5	RT	100	15	3	
	76+68.5	78+65	RT	98	1	1	
	CL RAMP 6 STA 17+17.59 = CL SB SPUR STA 87+00						
RAMP 6/SB SPUR	10+68.75	87+51.16	RT	100	8		
SB SPUR	87+51.16	89+53.65	RT	101	2		
SB SPUR	80+05.25	82+24	LT	109	3		
SB SPUR	93+43.75	94+65	LT	61	2	1	
SB SPUR	93+43.75	94+65	RT	61	2	1	
RAMP 9	6+18.75	14+18.75	LT	100	9		
	14+18.75	14+68.75	LT	50	1		
SB SPUR	103+93.75	104+93.75	RT	100	1	1	
	104+93.75	106+65	RT	86	2		
RAMP 10	11+31.25	12+07	RT	50	3		
SB SPUR	140+93.75	142+15	LT	61	2	1	
SB SPUR	140+93.75	142+15	RT	61	2	1	
SB SPUR	146+43.75	148+50	RT	103	3		
SB SPUR	151+93.75	153+90	RT	98	2	1	
	STA 403+00 CL I-90 BACK = STA 41+12.20 CL I-90 AHEAD						
I-90 (EB & WB)	140+00	56+12	CL	100		558	
	56+12	58+25	CL	107		4	
I-90 EB	86+00	90+00	LT	100		4	
I-90 EB	90+00	100+00	LT	100		11	
I-90 WB	90+00	100+00	RT	100		11	
I-90 WB	139+60	141+81.25	LT	111	2		
	141+81.25	144+81.25	LT	100	3	1	
I-90 WB	148+06	149+60.25	LT	77	2		
	149 60.25	154+60.25	LT	100	3	3	
I-90 WB	172+75	174+94.25	LT	110	1	1	
	174+94.25	185+94.25	LT	100	9	3	
SUBTOTALS					153	617	

ROADWAY	STATION		SIDE	SPACING	ITEM 802		
	FROM	TO			INTERVAL	BARRIER REFLECTOR	
						TYPE A	TYPE B
	LIN. FT.		LIN. FT.	EACH	EACH		
I-90 WB	194+75	195+96.25	LT	61	2	1	
I-90 WB	208+35	210+50	LT	108	1	1	
	210+50	211+50	LT	100	2		
I-90 WB	214+00	215+31.25	LT	66	3		
I-90 WB	225+85	227+06.25	LT	61	2	1	
I-90 WB	246+28.25	247+72	LT	72	3		
I-90 WB	249+85	250+81.25	LT	48	2	1	
I-90 WB	254+67.25	256+93.5	LT	113	2		
	CL I-90 STA 259+60 = CL RAMP 13 STA 0+00						
I-90 WB/RAMP 13	256+93.5	2+33.5	LT	100	3	2	
RAMP 13	2+33.5	3+83.5	LT	50	4		
RAMP 13	4+00	4+81.25	RT	41	2		
	4+81.25	10+81.25	RT	50	13		
I-90 WB	264+39.75	266+45.25	LT	103	2		
	266+45.25	272+45.25	LT	100	5	2	
RAMP 16	2+28.5	4+20	LT	96	2		
	4+20	5+70	LT	50	2	1	
I-90 WB	287+49	292+49	LT	100	4	2	
I-90 WB	301+35	302+56.25	LT	61	2	1	
I-90 WB	313+60	314+81.25	LT	61	2	1	
RAMP 7-E	2+73.5	3+63.5	LT	45	2		
	3+63.5	6+13.5	LT	50	4	1	
I-90 WB	328+62.5	341+62.5	LT	100	11	3	
RAMP 8-E	1+75	3+06.25	LT	66	3		
I-90 WB	362+55	363+95	LT	70	2	1	
I-90 WB	368+53.75	370+66.25	LT	106	2		
	370+66.25	383+66.25	LT	100	12	2	
I-90 WB	389+85	391+06.25	LT	61	2	1	
I-90 WB	40+76.25	42+54.01	LT	89	2		
	42+54.01	52+54.01	LT	100	8	2	
LAKELAND FWY WB	51+93	62+93	LT	100	10	2	
TR NO. 2	4+51	10+51	RT	100	4	3	
	10+51	20+51	RT	50	13	7	
	20+51	25+51	RT	100	5		
	25+51	27+43.75	RT	96	2		
TR NO. 2	10+50.75	15+00.75	LT	50	4	6	
	15+00.75	15+82	LT	41	2		
TR NO. 2	23+88.75	24+88.75	LT	100	2		
	24+88.75	26+70	LT	91	2		
LAKELAND FWY WB	69+25	70+46.25	LT	61	2	1	
RAMP 1	14+71.25	21+21.25	RT	50	9	5	
	21+21.25	22+81	RT	79	2		
RAMP 1	15+08.75	17+58.75	LT	50	3	3	
	17+58.75	18+69	LT	55		2	
SUBTOTALS					166	52	

ROADWAY	STATION		SIDE	SPACING	ITEM 802		
	FROM	TO			INTERVAL	BARRIER REFLECTOR	
						TYPE A	TYPE B
	LIN. FT.		LIN. FT.	EACH	EACH		
	CL RAMP NO. 1 STA 27+24.93 = CL SB SPUR STA 39+67.34						
RAMP 1/SB SPUR	22+98.75	48+41.16	LT	100	9	5	
SB SPUR	48+41.16	50+20.25	LT	90	2		
RAMP 1	9+68.75	10+90	LT	61	2	1	
LAKELAND FWY WB	85+10	86+31.25	LT	61	2	1	
TR NO. 2	1+68.75	4+68.75	LT	100	1	3	
	4+68.75	6+23	LT	77		2	
NB SPUR	46+51	48+56.25	RT	103		2	
	48+56.25	50+56.25	RT	100	2	1	
NB SPUR	56+37.5	57+68.75	RT	66	3		
NB SPUR	58+60	59+81.25	LT	61	2	1	
RAMP 4	2+65	1+00	RT	83	1	1	
NB SPUR	68+00	90+00	LT	100	20	3	
RAMP 4/NB SPUR	5+00	90+00	R&L	100	25	2	
NB SPUR	66+35	68+16.25	RT	91	1	1	
	68+16.25	71+16.25	RT	100	2	2	
NB SPUR	81+85	83+06.25	RT	61	2	1	
NB SPUR	104+56.5	106+19	LT	81	3		
RAMP 8	11+75.25	12+25	RT	50	2		
RAMP 11	11+50	12+10	LT	50	3		
RAMP 11	1+03.75	2+25	RT	61	2	1	
RAMP 11	1+03.75	2+25	LT	61	2	1	
NB SPUR	125+37.5	126+62.5	LT	62.5	3		
NB SPUR	129+85	131+06.25	LT	61	2	1	
NB SPUR	142+85	144+06.25	LT	61	2	1	
NB SPUR	153+10	154+66.25	LT	7			

GUARDRAIL QUANTITIES

QUANTITY CALCULATIONS				
MADE BY	P.F.	DATE	8-26-88	
CHECKED BY	M.I.P.	DATE	9-23-88	
FHWA REGION	STATE	PROJECT		
5	OHIO			

48
200

CUYAHOGA COUNTY
CUY - 90-23.95
LAKE COUNTY
LAK - 90-0.00

REF NO.	ROADWAY	STATION		SIDE	GUARDRAIL QUANTITIES												
					202	606	606	606	606	622	404						
					GUARDRAIL REMOVED	GUARDRAIL TYPE 5 AS PER PLAN	ANCHOR ASSY. TYPE A	ANCHOR ASSY. TYPE T	BRIDGE TERMINAL ASSY. TYPE A	CONCRETE BARRIER TYPE B42 AS PER PLAN	3" ASPHALT CONCRETE, AC-20 AS PER PLAN	SOIL STERILANT					
					L.F.	L.F.	EA.	EA.	EA.	L.F.	C.Y.	S.Y.					
GR-1	I-90	139+62.5	142+25	RT	137.5	262.5			1			9.7	116.7				
		142+25	142+65	RT	40						40						
		142+65	143+00	RT	35												
GR-2	I-90	139+18.5	139+60	LT	41.5							14.8	177.8				
		139+60	143+60	LT	400	387.5		1	1								
		143+60	144+00	LT	40						40						
		144+00	149+56	LT	556	556.25			2			20.6	247.1				
GR-3	I-90	144+42.5	149+05	RT	462.5	437.5	1		1			17.1	205.6				
GR-4	RAMP 2	5+79	6+41.5	LT	62.5												
GR-5	I-90	152+29	154+04	LT	175	150	1		1			6.5	77.8				
		154+04	155+54	LT	150												
GR-5A	I-90	151+78	155+03	RT	325	325			2			12.0	144.4				
		155+03	155+45	RT	42						42						
		155+45	155+78	RT	33												
GR-6	I-90	172+33.5	172+75	LT	41.5												
		172+75	173+21	LT	46						46						
		173+21	177+46	LT	425	425			2			15.7	188.9				
GR-7	I-90	173+20	173+95	RT	75												
		173+95	176+70	RT	275	250	1		1			10.2	122.2				
GR-8	I-90	179+62	179+74.5	RT	12.5	12.5			1			0.5	5.6				
		179+74.5	182+18.25	RT								9.0	108.3				
		182+18.25	183+99.5	RT	181.25				1			0.5	5.6				
GR-9	I-90	180+38	185+00.5	LT								17.1	205.6				
		185+00.5	186+13	LT	50	87.5	1					4.2	50.0				
GR-9A	I-90	194+40	194+75	LT	35												
		194+75	195+15	LT	40						40						
		195+15	196+15	LT	100	75	1		1			3.7	44.4				
GR-10	I-90	207+97	208+35	LT	38												
		208+35	208+75	LT	40						40						
		208+75	213+75	LT	147	500			1			18.5	222.2				
GR-11	I-90	210+50	211+50	RT	75	75	1		1			3.7	44.4				
		211+50	211+90	RT	40						40						
		211+90	214+58.75	RT	268.75	256.25			1	1		10.0	119.4				
		214+58.75	216+62.5	RT	203.75												
GR-12	I-90	213+75	215+50	LT	175	150.0	1				6.5	77.8					
GR-13	I-90	225+75	225+85	LT	10												
		225+85	226+25	LT	40						40						
		226+25	227+25	LT	75	75	1		1			3.7	44.4				
GR-14	I-90	229+75	230+75	RT	100	75	1		1			3.7	44.4				
		230+75	231+15	RT	40						40						
		231+15	231+50	RT	35												
GR-15	I-90	243+75	244+75	RT	100	75	1		1			3.7	44.4				
		244+75	245+15	RT	40						40						
		245+15	246+96.25	RT	181.25	168.75			1	1		6.7	80.6				
		246+96.25	247+31	RT	34.75												
GR-16	I-90	245+97	246+28.25	LT	31.25												
		246+28.25	247+90.75	LT	143.75	125	1		1			6.0	72.2				
SUB-TOTALS					5599.75	4468.75	11	5	20		408.00	204.1					

REF NO.	ROADWAY	STATION		SIDE	GUARDRAIL QUANTITIES												
					202	606	606	606	606	622	404						
					GUARDRAIL REMOVED	GUARDRAIL TYPE 5 AS PER PLAN	ANCHOR ASSY. TYPE A	ANCHOR ASSY. TYPE T	BRIDGE TERMINAL ASSY. TYPE A	CONCRETE BARRIER TYPE B42 AS PER PLAN	3" ASPHALT CONCRETE, AC-20 AS PER PLAN	SOIL STERILANT					
					L.F.	L.F.	EA.	EA.	EA.	L.F.	C.Y.	S.Y.					
GR-17	I-90	249+48.5	249+85	LT	36.5												
		249+85	250+25	LT	40						40						
		250+25	251+50	LT	125	100	1		1			4.7	55.9				
		251+50	254+67.25	LT	317.25												
		254+67.25	257+11	LT	243.75	231.25			1	1		9.0	108.3				
GR-18	I-90	253+98.5	256+36	RT	150	212.5	1		1			8.8	106.2				
GR-19	I-90	259+56	4+02.25	LT	25				1			14.9	178.8				
			RAMP 13														
		4+02.25	6+08.5	LT	206.25												
GR-20	RAMP 13	4+00	4+62.5	RT	12.5	50			1			2.3	27.8				
		4+62.5	11+00	RT								23.6	283.3				
GR-21	I-90	258+94	2+31.5	RT	287.5	287.5						2	10.6	127.8			
			RAMP 12														
		2+31.5	2+75	RT	43.5						43.5	4.6	55.6				
		2+75	4+00	RT	125	112.5			1	1							
		4+00	6+94	RT	294												
GR-22	I-90	263+08.5	264+39.75	LT	131.25												
		264+39.75	264+52.25	LT	12.5				1			0.5	5.6				
		264+52.25	267+71	LT								11.8	141.7				
GR-23	I-90	264+04.5	266+92	RT	287.5												
		266+92	268+17	RT	125	100	1		1			4.6	55.6				
GR-24	I-90	270+39	272+64	LT	150	200	1		1			8.3	100.0				
GR-25	RAMP 14A	0+11	2+48.5	RT	237.5	237.5			2			8.8	105.6				
		2+48.5	2+88.5	RT	40						40						
		2+88.5	3+23.5	RT	35												
GR-26	I-90	282+75	283+75	RT	75	75	1		1		3.7	44.4					
		283+75	284+15	RT	40						40						
GR-27	RAMP 15	1+82.25	287+26	RT	350	368.75	1		1		14.6	175.0					
		I-90															
GR-28	RAMP 16	2+28.5	286+45	LT	233.5	225			1	1		8.8	105.6				
		286+45	286+86.5	LT	41.5						41.5						
		286+86.5	287+74	LT	87.5	87.5			2			3.2	38.9				
GR-29	I-90	289+27	290+52	RT	125	112.5			1	1		4.6	55.6				
		290+52	292+52	RT	200												
GR-30	I-90	289+74	292+92.75	LT	50	25	1					11.9	141.6				
		292+92.75	296+99	LT	456.25												
GR-30A	S. LAKE- LAND	296+18.5	298+31	LT	212.5												
GR-31	I-90	298+31	302+56	LT	425	387.5	1		1			15.7	188.9				
		297+42	298+42	RT	75	75	1		1			3.7	44.4				
		298+42	298+82	RT	40						40						
		298+82	299+04.5	RT	22.5												
GR-32	I-90	301+25	301+35	LT	10												
		301+35	301+75	LT	40						40						
		301+75	302+75	LT	75	75	1		1			3.7	44.4				
GR-32A	RAMP 1E S. LAKE- LAND	4+94	315+63	LT	1400												
GR-33	I-90	312+75	313+75	RT	75	75	1		1			3.7	44.4				
		313+75	314+15	RT	40						40						
		314+15	314+25	RT	10												
GR-34																	

GUARDRAIL QUANTITIES

QUANTITY CALCULATIONS

MADE BY P.F. DATE 8-31-88
 CHECKED BY R.M. DATE 2-23-89

FHWA REGION	STATE	PROJECT
5	OHIO	

49
200

CUYAHOGA COUNTY
 CUY - 90-23.95
 LAKE COUNTY
 LAK - 90-0.00

REF NO.	ROADWAY	STATION		SIDE	GUARDRAIL QUANTITIES					622	404	SOIL STERILANT #
		FROM	TO		202	606	606	606	606			
		L.F.	L.F.		EA.	EA.	EA.	CONCRETE BARRIER TYPE B42 AS PER PLAN**	3" ASPHALT CONCRETE, AC-20, AS PER PLAN			
GR-36	RAMP 7E	2+50	2+73.5	LT	23.5							
	I-90	2+73.5	327+80.25	LT	268.75	256.25				10.0	119.4	
	I-90	327+80.25	328+30.75	LT	50.5					50.5		
	I-90	328+30.75	329+87 +	LT	156.25	156.25				5.8	69.4	
GR-37	RAMP 6E											
	I-90	4+15	326+98.25	RT	62.5							
	I-90	326+98.25	328+67 +	RT	168.75	143.75	1			6.3	75.0	
GR-38	I-90	331+28 +	333+03	RT	175	162.5		1		6.5	77.8	
	I-90	333+03	334+03	RT	100							
GR-39	I-90	332+52 +	337+58.25	LT	506.25	506.25				18.8	225.0	
	I-90	337+58.25	338+00	LT	41.75					41.75		
	I-90	338+00	341+81.25	LT	381.25	356.25	1			14.1	169.4	
	I-90	341+81.25	342+77	LT	95.75							
GR-40	RAMP 9E											
	I-90	0+00	1+37.5	RT	128.5	112.5	1			5.1	61.1	
	I-90	1+37.5	1+82	RT	44.5					44.5		
	I-90	1+82	2+34	RT	52							
GR-40A	RAMP 8E											
	I-90	1+75	3+25	LT		112.5	1	1		5.6	66.7	
GR-41	I-90	362+45	362+55	LT	10							
	I-90	362+55	362+95	LT	40					40		
	I-90	362+95	364+13.75	LT	80	93.75	1			4.4	52.8	
GR-42	I-90	364+97.25	366+03.5	RT	100	81.25	1			4.0	47.2	
	I-90	366+03.5	373+34.75	RT						27.1	325.0	
	I-90	373+34.75	374+05.5	RT	70.75	25		2		0.9	11.1	
	I-90	374+05.5	374+68	RT						2.3	27.8	
GR-43	I-90	368+53.75	373+85	LT	525.5	518.75		1	1	19.7	236.1	
	I-90	373+85	374+28.25	LT	43.25					43.25		
	I-90	374+28.25	374+72 +	LT	43.75	43.75				1.6	19.4	
GR-44	I-90	377+10 +	385+10	LT	800	775	1			29.6	355.6	
GR-45	I-90	377+06	388+43.5	RT	75 *	75 *				42.1	505.6	
	I-90	388+43.5	388+85	RT	41.5					41.5		
	I-90	388+85	389+00	RT	15							
GR-46	I-90	389+75	389+85	LT	10							
	I-90	389+85	390+25	LT	40					40		
	I-90	390+25	391+25	LT	75	75	1			3.7	44.4	
GR-47	I-90	402+04.05	41+95	LT	47.5	106.25		1	1	4.4	52.8	
	I-90	41+95	42+39.5	LT	44.5					44.5		
	I-90	42+39.5	50+52 +	LT	562.5	812.5				30.1	361.1	
GR-48	I-90											
	I-90	42+00	48+25	RT	455	600	1			23.2	277.8	
	I-90	48+25	48+70	RT	45					45		
	I-90	48+70	49+45 +	RT	75	75				2.8	33.3	
GR-49	I-90	52+45	56+65	RT	50 *	50 *				15.6	186.7	
GR-50	I-90	53+49 +	55+24	LT	175	175				6.5	77.8	
	I-90	55+24	55+74	LT	50					50		
GR-51	LAKE- LAND FWY WB	56+68 +	62+61.75	LT	637.5	568.75	1			22.0	263.9	
GR-51A	##	3+35	4+60	RT	125							
GR-52	LAKE- LAND FWY WB	57+03	58+53	RT	150							
	LAKE- LAND FWY WB	57+03 +	57+78	LT		112.5				4.2	50.0	
GR-53	I-90											
	I-90	58+15 +	4+33.81	RT	812.5	812.5				30.1	361.1	
	I-90	4+33.81	4+75	RT	41.19					41.19		
	I-90	4+75	5+15.5	RT	40.5							
GR-54	TR #2	14+39	23+82.75	RT	943.75	943.75			2	35.0	419.4	
	TR #2	23+82.75	24+25	RT	42.25					42.25		
	TR #2	24+25	27+43.75	RT	318.75	306.25	1		1	11.8	141.7	
	TR #2	27+43.75	29+20.25	RT	176.5							
GR-55	LAKE- LAND FWY EB	65+22	66+22	LT	100	75	1			3.7	44.4	
	LAKE- LAND FWY EB	66+22	66+62	LT	40					40		
	LAKE- LAND FWY EB	66+62	66+97	LT	35							
GR-56	TR #2	14+82	15+82	LT	100	87.5		1	1	3.7	44.4	
	TR #2	15+82	24+40	LT	858	181.25				8.1	97.2	
	TR #2	24+40	26+71.25	LT	231.25	193.75	1	1		8.6	102.8	
	TR #2	26+71.25	26+95.5	LT	24.25							
SUB-TOTALS					10405.94	8593.75	12	8	23	610.19	417.4	

REF NO.	ROADWAY	STATION		SIDE	GUARDRAIL QUANTITIES										622	404	SOIL STERILANT #
		FROM	TO		202	606	606	606	606	606	606	606	606				
		L.F.	L.F.		EA.	EA.	EA.	EA.	EA.	EA.	EA.	EA.	EA.	L.F.			
GR-57	LAKE- LAND FWY WB	67+98	69+25	LT	127												
	LAKE- LAND FWY WB	69+25	69+65	LT	40										40		
	LAKE- LAND FWY WB	69+65	70+65	LT	100	75	1			1						3.7	44.4
	LAKE- LAND FWY WB	70+65	81+10.5	LT	1045.5												
GR-58	TR #1																
	TR #1	9+52	17+77	LT	792	787.5	1		1							30.6	366.7
	TR #1	17+77	18+60	LT	83												
GR-59	TR #1	10+18.75	11+25	RT	107.5	81.25	1			1						3.9	47.2
	TR #1	11+25	11+68.5	RT	43.5										43.5		
	TR #1	11+68.5	19+31	RT	25	25			2							28.2	338.9
GR-60	LAKE- LAND FWY EB	77+62	79+87	RT	225	187.5	1	1								8.3	100
GR-61	LAKE- LAND FWY EB	77+06.5	79+56.5	LT	187.5	225	1									9.3	111.1
	LAKE- LAND FWY EB	79+56.5	79+94	LT	37.5				1							0.5	5.6
GR-62	RAMP 1	18+81	22+81	RT	25				1	1						14.8	177.8
	RAMP 1	22+81	23+81	RT	100												
GR-62A	RAMP 1	22+30	22+80	LT	50												
	RAMP 1	22+80	24+30	LT	150	125	1			1						5.6	66.7
GR-63	RAMP 1	14+64	14+90	LT	26												
	RAMP 1	14+90	16+40	LT	150	125	1			1						5.6	66.7
GR-64	RAMP 1	14+52.5	15+75	RT	122.5	97.5	1			1						4.5	54.4
	RAMP 1	15+75	16+16	RT	41										41		
	RAMP 1	16+16	16+66	RT	50	50			2							1.9	22.2
GR-65	TR #2	6+23	10+32	LT	409												
	TR #2	10+32	11+57	LT	125	100	1			1						4.6	55.6
GR-66	TR #2	6+36	10+50	RT	25	25			2							15.3	184.0
	TR #2	10+50	11+31	RT	81										81		
GR-67	RAMP 2	6+22	15+59.5	LT	937.5	925			1	1						34.7	416.7
GR-68	RAMP 2	6+25	11+06.25	RT	62.5 *	62.5 *			2							17.8	213.9
	RAMP 2	11+06.25	11+50	RT	43.75										43.75		
	RAMP 2	11+50	14+81.25	RT	331.25	318.75			1	1						12.3	147.2
GR-69	LAKE- LAND FWY EB	82+75	83+75	RT	100	75	1			1						3.7	44.4
	LAKE- LAND FWY EB	83+75	84+15	RT	40												

GUARDRAIL QUANTITIES

QUANTITY CALCULATIONS

MADE BY M.J.P. DATE 8-25-88
 CHECKED BY P.F. DATE 3-2-89

FHWA REGION	STATE	PROJECT	
5	OHIO		

CUYAHOGA COUNTY
 CUY - 90-23.95
 LAKE COUNTY
 LAK - 90-0.00

GUARDRAIL QUANTITIES														
REF NO.	ROADWAY	STATION		SIDE	202	606	606	606	606	606	606	404	SOIL	
		FROM	TO		GUARDRAIL REMOVED	GUARDRAIL TYPE 5 AS PER PLAN	ANCHOR ASSY. TYPE A	ANCHOR ASSY. TYPE T	BRIDGE ASSY. TYPE A	GUARDRAIL BARRIER DESIGN TYPE 5	ANCHOR ASSY. BARRIER DESIGN TYPE A	CONCRETE BARRIER AS PER PLAN**		3" ASPHALT CONCRETE, AC-20, AS PER PLAN
					L.F.	L.F.	EA.	EA.	EA.	L.F.	EA.	L.F.	C.Y.	S.Y.
GR-78	SB SPUR	48+64	50+20.25	LT	137.5	143.75		1	1			5.8	69.4	
GR-79	SB SPUR	RAMP 7												
		48+66	2+43.75	RT	25	25			2			28.5	341.7	
		2+43.75	2+92	RT	48.25					48.25				
		2+92	11+60.75	RT	275*	275*		1	1			32.2	386.1	
		11+60.75	12+27	RT	66.25									
GR-80	SB SPUR	55+42	56+42	LT	90.5				2	75	1	3.7	44.4	
		56+42	56+82	LT	40						40			
		56+82	57+26.5	LT	44.5									
GR-80A	NB SPUR	56+37.5	56+75	RT		25		1				1.4	16.7	
		56+75	57+87.5	RT					87.5	1		4.2	50.0	
GR-81	NB SPUR	58+25	58+60	LT	35									
		58+60	59+00	LT	40						40			
		59+00	60+00	LT	100	75	1		1			3.7	44.4	
GR-82	RAMP 7	5+30	5+92.5	LT	62.5					37.5	1	2.3	27.8	
		5+92.5	11+55	LT	562.5	550		1				20.8	250	
		11+55	12+30	LT	75									
GR-83	NB SPUR	1+45	2+20	RT	75	75			2			2.8	33.3	
		2+20	2+65	RT	45						45			
		2+65	13+45	RT	1080									
GR-84	SB SPUR	59+80	60+99.75	RT	119.75							27.1	325.0	
		60+99.75	68+31	RT	731.25	706.25	1		1					
GR-85	SB SPUR	64+06	66+37.25	LT	82.25					206.25	1	8.6	102.8	
		66+37.25	68+06	LT	168.75	168.75			1			6.3	75.0	
GR-86	NB SPUR	65+93	66+27	RT	34									
		66+27	66+68	RT	41						41			
		66+68	67+93	RT	125	125			2			4.6	55.6	
GR-87	NB SPUR	69+75	81+81.25	LT	125*	125*			2			44.7	536.1	
		81+81.25	82+25	LT	43.75						43.75			
		82+25	88+62.5	LT	62.5*	62.5*			1			23.6	283.3	
		88+62.5	90+18.75	LT	125	131.25	1					5.8	69.4	
GR-88	NB SPUR	70+10	71+35	RT	12.5	12.5			1			4.6	55.6	
GR-89	SB SPUR	70+52	71+20.75	RT	68.75	68.75			2			2.5	30.6	
		71+20.75	71+68.75	RT	48						48			
		71+68.75	78+25	RT	25	25			2			24.3	291.7	
		78+25	78+65	RT	40						40			
		78+65	81+02	RT	237									
GR-90	RAMP 6	10+36.5	10+50	RT	13.5									
		10+50	16+25	RT	575	550	1		1			21.3	255.6	
		16+25	16+65	RT	40						40			
		16 65	89+53.65	RT	306.25	293.75			1	1		11.3	136.1	
	SB SPUR	89+53.25	90+06	RT	52.75									
GR-90A	SB SPUR	79+86.5	82+05.25	LT						193.75	1	8.1	97.2	
		82+05.25	82+24	LT		6.25			1			0.7	8.3	
GR-91	NB SPUR	81+50	81+85	RT	35									
		81+85	82+25	RT	40						40			
		82+25	83+25	RT	100				2	75	1	3.7	44.4	
GR-92	SB SPUR	93+25	94+25	LT	94	75	1		1			3.7	44.4	
		94+25	94+65	LT	40						40			
		94+65	95+06	LT	41									
GR-93	SB SPUR	92+50	93+50	RT	94	75	1		1			3.7	44.4	
		93+50	93+90	RT	40						40			
		93+90	94+31	RT	41									
GR-94	RAMP 9	6+00	14+55	LT								31.7	380	
SUB-TOTALS					6404.00	3593.75	6	6	27	675	6	506.0	341.7	

* Exact Location to be determined by the Engineer.

GUARDRAIL QUANTITIES														
REF NO.	ROADWAY	STATION		SIDE	202	606	606	606	606	606	404	SOIL		
		FROM	TO		GUARDRAIL REMOVED	GUARDRAIL TYPE 5 AS PER PLAN	ANCHOR ASSY. TYPE A	ANCHOR ASSY. TYPE T	BRIDGE ASSY. TYPE A	GUARDRAIL BARRIER DESIGN TYPE 5	ANCHOR ASSY. BARRIER DESIGN TYPE A		CONCRETE BARRIER AS PER PLAN**	3" ASPHALT CONCRETE, AC-20, AS PER PLAN
					L.F.	L.F.	EA.	EA.	EA.	L.F.	EA.	L.F.	C.Y.	S.Y.
GR-95	RAMP 9	11+81.25	13+93.75	RT	193.75	175		1	1			7.9	94.4	
		13+93.75	14+00	RT	6.25									
GR-96	SB SPUR	103+75	104+75	RT	97.5	75			1			3.7	44.4	
		104+75	105+15	RT	40						40			
		105+15	106+65	RT	150	137.5			1	1		5.6	66.7	
		106+65	106+90	RT	25									
GR-97	NB SPUR	104+31.5	104+56.5	LT	25									
		104+56.5	106+37.75	LT	181.25	143.75	1		1			6.7	80.6	
		106+37.75	106+44	LT	6.25									
GR-97A	RAMP 8	11+75.25	12+25	RT								1.8	22.1	
GR-97B	RAMP 11	11+31.25	12+10	LT								2.9	35.0	
GR-97C	RAMP 10	11+31.25	12+07	RT								2.8	33.7	
GR-98	RAMP 11	0+85	1+85	RT	100	75	1		1			3.7	44.4	
		1+85	2+60	RT	75						40			
GR-99	RAMP 11	0+85	1+85	LT	100	75	1		1			3.7	44.4	
		1+85	2+60	LT	75						40			
GR-100	NB SPUR	125+00	125+50	LT	50				1			0.5	5.6	
		125+50	126+81.25	LT								4.9	58.3	
GR-101	NB SPUR	129+50	129+85	LT	35									
		129+85	130+25	LT	40						40			
		130+25	131+25	LT	100	75	1		1			3.7	44.4	
GR-102	SB SPUR	140+75	141+75	LT	100	75	1		1			3.7	44.4	
		141+75	142+50	LT	75						40			
GR-103	SB SPUR	140+75	141+75	RT	100	75	1		1			3.7	44.4	
		141+75	142+15.5	RT	37.5						40			
GR-104	NB SPUR	142+50	142+85	LT	35									
		142+85	143+25	LT	40						40			
		143+25	144+25	LT	100	75	1		1			3.7	44.4	
GR-105	SB SPUR	146+25	148+50	RT	150	187.5	1		1			8.3	100.0	
		148+50	149+00	RT	50									
GR-106	SB SPUR	151+75	152+75	RT	100	75	1		1			3.7	44.4	
		152+75	153+15	RT	40						40			
		153+15	153+90	RT	75	62.5			1	1		2.8	33.3	
		153+90	154+00	RT	10									
GR-107	NB SPUR	152+85	153+10	LT	25									
		153+10	154+85	LT	12.5						1	6.5	77.8	
SUB-TOTALS					2250.0	1306.25	11	7	10			320.0	80.3	
SHEET TOTALS					8654	4900	17	13	37	675	6	826	422	

FOR INFORMATION ONLY, SEE ADDITIONAL NOTES

** See Note on Sheet 8.

See Sheets 76 to 81 for ref. no. plan location.



CURB RAMPS

CURB RAMPS

ROADWAY	STATION	SIDE
RAMP 2	6+55	LT&RT
N. WATERLOO RD	151+45	LT&RT
S WATERLOO RD	150+05	LT&RT
S WATERLOO (DARWIN)	155+70	RT
	156+00	RT
N. WATERLOO (E. 143)	159+80	LT
	160+10	LT
N. WATERLOO (SYLVIA)	161+25	LT
	161+95	LT
S. WATERLOO (THAMES)	165+40	RT
	165+75	RT
N. WATERLOO (E. 147)	166+45	LT
	166+85	LT
N. WATERLOO (HALE)	170+60	LT
	170+70	LT
S. WATERLOO RD	177+40	RT
	177+60	LT
	178+30	RT
	178+50	LT
	178+55	LT
	178+75	LT
N. WATERLOO RD	179+00	RT
	179+05	LT
RAMP 12	16+05	LT&RT
VILLAVIEW RD	261+30	LT
	261+15	RT
	268+00	LT
	268+20	RT
	269+00	RT
	268+75	LT
S. WATERLOO RD	269+85	LT
	270+10	RT
VILLAVIEW RD	289+85	LT
	289+60	RT
N. LAKELAND BLVD	290+45	RT
	290+60	LT
	290+70	LT
	290+85	LT
S. WATERLOO RD	288+30	LT
	288+25	RT
S. LAKELAND BLVD	289+00	RT
	289+05	LT
N. LAKELAND (E. 207)	307+95	LT
	308+45	LT
S. LAKELAND (GORSE)	307+25	RT
	307+60	RT
N. LAKELAND (E. 209)	311+00	LT
	311+50	LT

CURB RAMPS

ROADWAY	STATION	SIDE
N. LAKELAND (E. 210)	313+50	LT
	313+95	LT
N. LAKELAND (E. 212)	316+05	LT
	316+55	LT
N. LAKELAND (E. 214)	318+50	LT
	319+15	LT
N. LAKELAND (E. 216)	321+90	LT
	322+65	LT
N. LAKELAND (E. 218)	325+50	LT
	326+10	LT
N. LAKELAND (E. 220)	329+00	LT
	329+60	LT
S. LAKELAND BLVD	329+05	RT
	329+30	LT
	330+30	RT
	330+65	LT
N. LAKELAND BLVD	332+20	LT
	331+90	RT
	333+20	RT
	333+40	LT
N. LAKELAND (E. 223)	336+10	LT
	336+35	LT
N. LAKELAND (MILLER)	337+60	LT
	338+20	LT
N. LAKELAND (E. 224)	339+65	LT
	339+85	LT
	340+15	LT
	340+40	LT
N. LAKELAND (E. 225)	343+40	LT
	344+20	LT
N. LAKELAND (E. 228)	346+05	LT
	346+30	LT
	346+50	LT
	346+80	LT
N. LAKELAND (E. 230)	349+70	LT
	349+95	LT
	350+25	LT
	350+60	LT
N. LAKELAND (ARMS)	353+85	LT
N. LAKELAND (E. 232)	354+80	LT
N. LAKELAND (IVAN)	359+00	LT
	359+45	LT
N. LAKELAND (E. 236)	360+15	LT
	360+80	LT
N. LAKELAND (E. 237)	363+80	LT
	364+40	LT

CURB RAMPS

ROADWAY	STATION	SIDE
N. LAKELAND (E. 239)	367+40	LT
	367+60	LT
	367+90	LT
	368+25	LT
N. LAKELAND BLVD	375+60	LT
	375+55	RT
S. LAKELAND BLVD	375+35	LT
	375+35	RT
N. LAKELAND BLVD.	376+40	LT
	376+40	RT
S. LAKELAND BLVD.	376+25	LT
	376+20	RT
N. LAKELAND (E. 245)	384+05	LT
	384+85	LT
N. LAKELAND (E. 248)	387+05	LT
	387+70	LT
N. LAKELAND (E. 250)	392+50	LT
	392+90	LT
	393+40	LT
	393+80	LT
S. LAKELAND BLVD.	16+65	LT
	16+45	RT
	16+25	RT
	16+10	RT
	* 17+95	LT
	* 17+70	RT
N. LAKELAND BLVD.	21+05	RT
	21+25	LT
LAKELAND BLVD. E. 260 (E. 260TH ST.)	* 6+75	LT
	* 6+55	RT
	* 6+40	RT
	* 6+25	RT
RAMP 3	0+35	RT
	0+40	LT
	0+45	LT
	0+50	LT
RAMP 4 (EUCLID STA 19+00)	14+30	LT
	14+30	RT
(EUCLID STA 16+00)	14+65	LT
	14+70	RT
RAMP 7	15+95	LT
RAMP 6 (EUCLID STA 7+60)	0+40	LT
	0+50	RT
(EUCLID STA 6+00)	0+60	LT
	0+40	RT

* COST PARTICIPATION II

SUBTOTALS		PARTICIPATION		TOTAL	UNIT
		I	II		
ITEM 202	WALK REMOVED (33 SQ. FT./EACH LOCATION)	4554	198	4752	SQ. FT.
ITEM 202	CURB REMOVED (6 LIN. FT./EACH LOCATION)	828	36	864	LIN. FT.
ITEM 608	CURB RAMPS (36 SQ. FT./EACH LOCATION)	4968	216	5184	SQ. FT.

ITEM 617

COMPACTED AGGREGATE

QUANTITY CALCULATIONS

MADE BY R.M. DATE 2/28/89
CHECKED BY N.K. DATE 3/21/89

FHWA REGION	STATE	PROJECT
5	OHIO	

51
200

CUYAHOGA COUNTY
CUY - 90-23.95
LAKE COUNTY
LAK - 90-0.00

ROADWAY	STATION		SIDE	LENGTH	AVG. AREA	ITEM 617*	
	FROM	TO				COMPACTED	AGGREGATE
				LIN. FT	S.F.	CU. YD.	
S. WATERLOO RD.	152+43	159+20	LT	677	0.44	11.0	
	160+30	166+20	LT	590		9.6	
	167+00	175+85	LT	885		14.4	
	179+30	186+65	LT	735		12.0	
	187+87	193+25	LT	538		8.8	
	271+78	277+42	LT	564		9.2	
	271+45	287+35	RT	*1,160		18.9	
	278+05	282+65	LT	460		7.5	
	283+25	287+92	LT	467		7.6	
S. LAKELAND BLVD.	289+38	298+31	LT	893		14.6	
	302+56	303+68	LT	112		1.8	
	304+70	323+33	LT	1,863		30.4	
	324+00	327+90	LT	390		6.4	
	351+27	356+95	LT	568		9.3	
	393+55	397+87	LT	432		7.0	
N. WATERLOO RD.	153+22	161+45	RT	823		13.4	
	162+15	168+50	RT	635		10.3	
	169+25	177+00	RT	775		12.6	
VILLAVIEW RD.	269+48	274+00	RT	452		7.4	
	275+38	279+08	RT	370		6.0	
	279+70	283+20	RT	350		5.7	
	283+95	289+25	RT	530		8.6	
N. LAKELAND BLVD.	291+35	304+30	RT	1,295		21.1	
	305+00	324+15	RT	1,915		31.2	
	325+05	330+50	RT	545		8.9	
	351+10	356+45	RT	535		8.7	
	390+10	397+60	RT	750	0.44	12.2	
						SUBTOTAL	314.6

*LENGTH ADJUSTED TO DEDUCT FOR DRIVEWAYS

ROADWAY	STATION		SIDE	LENGTH	AVG. AREA	ITEM 617*	
	FROM	TO				COMPACTED	AGGREGATE
				LIN. FT	S.F.	CU. YD.	
LAKELAND FWY (EB)	67+70	77+62	RT	992	1.67	61.2	
	79+87	82+75	RT	288		17.8	
	84+15	89+45	RT	530		32.7	
LAKELAND FWY (WB)	62+61.75	69+25	LT	663.3		41.0	
	70+65	85+10	LT	1,445		89.2	
	86+50	100+00	LT	1,350		83.3	
TURNING RDWY NO. 1	4+75	10+87.5	RT	543.7		33.6	
TURNING RDWY NO. 2	27+43.75	29+37	RT	193.3		11.9	
LAKELAND FWY (EB)	94+00	100+00	RT	600		37.0	
NB SPUR	55+05	58+60	LT	355		21.9	
	60+00	64+10	LT	410		25.4	
SB SPUR	58+86	60+99.75	RT	213.7		13.2	
	78+65	82+67	RT	402		24.9	
	89+53.25	92+00	RT	246.8		15.2	
NB SPUR	90+18.75	92+00	LT	181.3		11.2	
	95+59	104+56.5	LT	897.5		55.4	
SB SPUR	96+97	103+75	RT	678		41.9	
	106+65	112+16.71	RT	551.7		34.1	
NB SPUR	106+37.75	110+81.51	LT	443.7		27.4	
SPUR (NB)	111+46.33	113+80	LT	233.7		14.4	
SPUR (SB)	111+54.57	113+09	RT	154.4		9.5	
SPUR (NB)	117+07	125+37.5	LT	830.5		51.3	
SPUR (SB)	117+75	140+75	RT	2,300		142.0	
SPUR (NB)	126+81.25	129+85	LT	303.8		18.7	
	131+25	142+85	LT	1,160		71.6	
	144+25	153+10	LT	885		54.6	
SPUR (SB)	142+15	146+25	RT	410		25.3	
	148+50	151+75	RT	325		20.1	
SPUR (NB)	154+85	162+08.4	LT	723.4		44.7	
SPUR (SB)	153+90	162+08.4	RT	818.4	1.67	50.5	
						SUBTOTAL	1181.0

ROADWAY	STATION		SIDE	LENGTH	AVG. AREA	ITEM 617*	
	FROM	TO				COMPACTED	AGGREGATE
				LIN. FT	S.F.	CU. YD.	
I-90	143+12	144+42.5	RT	130.5	1.67	8.1	
	154+04	156+32	LT	228		14.1	
	159+03	171+60	LT	1,257		77.7	
	156+80	169+38	RT	1,258		77.8	
	172+08	173+95	RT	187		11.6	
	182+30.75	190+05	RT	774.3		47.9	
	186+13	187+96	LT	183		11.3	
	189+15	193+40	LT	425		26.3	
	192+70	210+50	RT	1,780		110.1	
	196+15	208+35	LT	1,220		75.5	
	214+58.75	229+75	RT	1516.3		93.8	
	215+50	225+85	LT	1,035		64.0	
	231+15	243+75	RT	1,260		77.9	
	227+25	246+28.25	LT	1903.3		117.7	
	246+96.25	253+98.5	RT	702.25		43.4	
	249+30	249+85	LT	55		3.4	
	251+50	254+67.25	LT	317.3		19.6	
	262+65	264+39.75	LT	174.8		10.8	
	263+23	266+92	RT	369		22.8	
	274+80	282+75	RT	795		49.2	
	284+15	284+48	RT	33		2.0	
	273+81	285+40	LT	1,159		71.7	
	290+52	297+42	RT	690		42.7	
	292+92.75	298+45	LT	552.25		34.2	
	300+76	301+35	LT	59		3.6	
	302+75	313+60	LT	1,085		67.1	
	300+55	312+75	RT	1,220		75.5	
	314+15	323+25	RT	910		56.3	
	315+00	326+60	LT	1,160		71.7	
	324+65	325+69	RT	104		6.4	
	347+34	358+56	RT	1,122		69.4	
	363+30	364+97.25	RT	167		10.3	
	349+11	359+60	LT	1,049		64.9	
	386+93	389+85	LT	292		18.1	
	391+25	401+00	LT	975		60.3	
	389+94	400+40	RT	1,046		64.7	
	41+32	42+00	RT	68	1.67	4.2	
						SUBTOTAL	1686.1





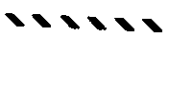


SUBTOTALS</

FHWA REGION	STATE	PROJECT
5	OHIO	

55
200

CUYAHOGA COUNTY
CUY - 90-23.95
LAKE COUNTY
LAK - 90-0.00

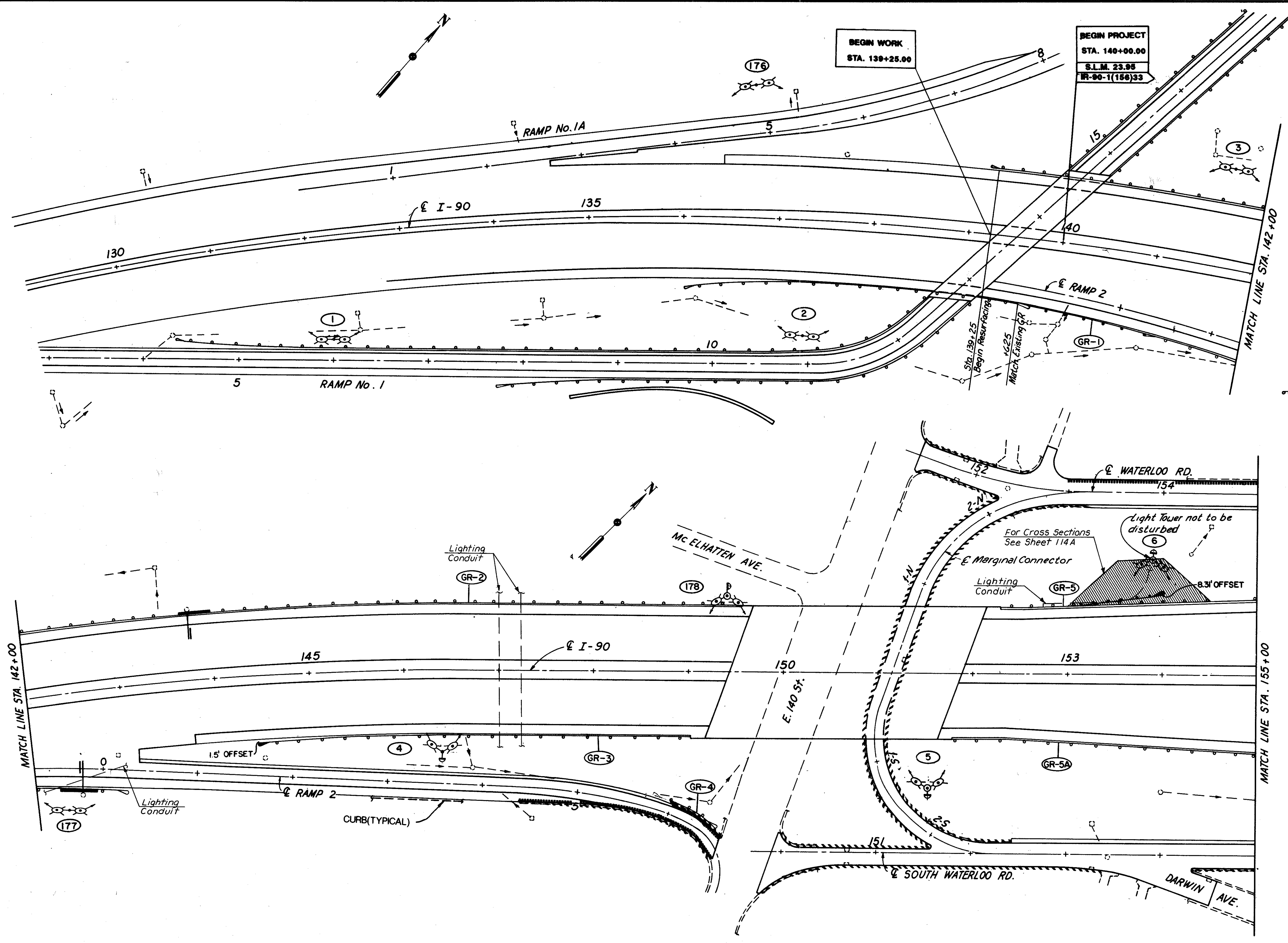
LEGEND

-  EXISTING LIGHT TOWER (SEE LIGHTING PLANS)
-  OFFSET
-  PROPOSED BERM WIDENING
-  PROPOSED GRADING LIMITS (BY CROSS-SECTIONS)
-  CURB REPLACEMENT (SEE SHEET 95)
-  GUTTER PLANING (SEE SHEET 95)
-  TYPE B-42 BARRIER, AS PER PLAN

CROSS REFERENCE	
ITEM	SHEET
RESURFACING QUANTITIES	39-40, 42-43
RESURFACING DETAILS	95-97
GUARDRAIL QUANTITIES	48
GUARDRAIL DETAILS	94
GRADING QUANTITIES	46
TRAFFIC CONTROL PLANS	146-147
LIGHTING QUANTITIES	182
LEGEND	55
PAVEMENT REPAIR DETAILS AND QUANTITIES	98

SCOPE OF PROPOSED GUARDRAIL WORK

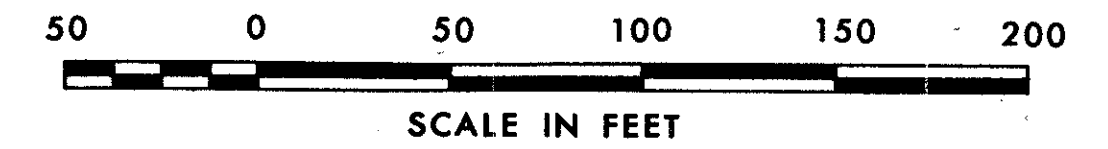
IT IS THE INTENT OF THIS PROJECT TO PROVIDE GUARDRAIL AT LOCATIONS CONSISTENT WITH CURRENT DESIGN CRITERIA. ALL GUARDRAIL HAS BEEN REVIEWED FOR WARRANT, LOCATION AND EXISTING CONDITION. THE PROPOSED GUARDRAIL WORK IS INDICATED IN THE SUB-SUMMARY TABLES ON SHEETS 48-51. THE PLAN VIEWS DO NOT INDICATE A DIFFERENCE BETWEEN EXISTING AND PROPOSED GUARDRAIL WHEN LOCATED IN CLOSE PROXIMITY. EXISTING LIGHTING POWER CONDUIT WHICH CROSSES UNDER PROPOSED GUARDRAIL HAS BEEN SHOWN ON THE PLAN SHTS. AS SHOWN ON TYPICAL SECTIONS THE NORMAL OFFSET OF EXISTING CONDUIT IS 3' FROM THE FACE OF GUARDRAIL. FOR FURTHER INFORMATION CONTRACTOR SHALL REFER TO PREVIOUS CONSTRUCTION PLANS AVAILABLE AT OHIO DEPT. OF TRANSPORTATION DISTRICT OFFICE.



MADE P.F. DATE 3-1-89
TRACED P.L.B. DATE 3-5-89
CHECKED R.M. DATE 3-10-89
SCALE 1"=50'

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

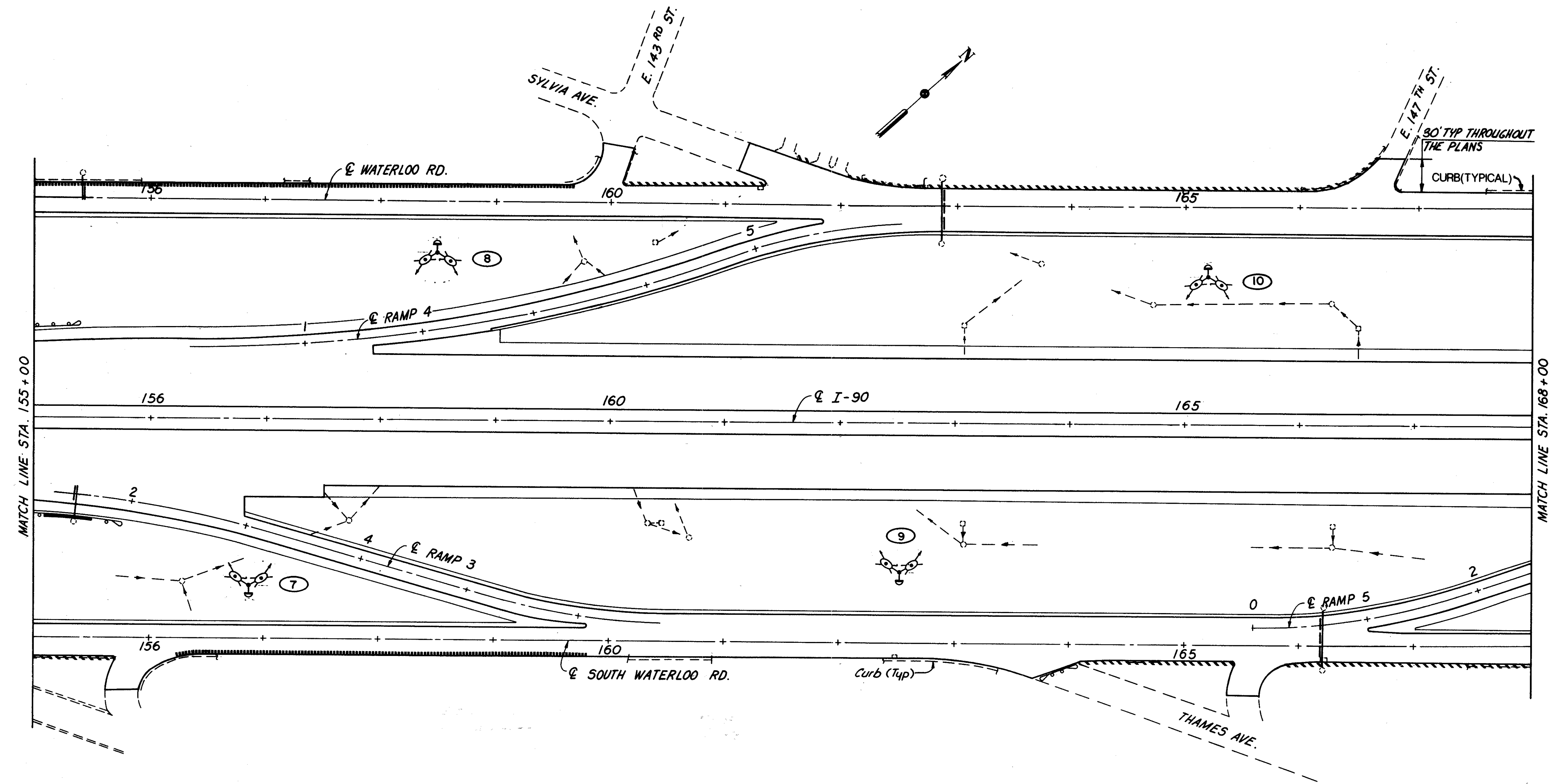
HNTB



FHWA REGION	STATE	PROJECT	
5	OHIO		

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200

CUYAHOGA COUNTY
CUY - 90-23.95
LAKE COUNTY
LAK - 90-0.00



CROSS REFERENCE	
ITEM	SHEET
RESURFACING QUANTITIES	39-40, 42-43
RESURFACING DETAILS	95-97
GUARDRAIL QUANTITIES	48
GUARDRAIL DETAILS	94
GRADING QUANTITIES	46
TRAFFIC CONTROL PLANS	148
LIGHTING QUANTITIES	182
LEGEND	55
PAVEMENT REPAIR DETAILS AND QUANTITIES	98



MADE P.F. DATE 3-1-82
TRACED R.L.B. DATE 3-8-82
CHECKED R.M. DATE 3-10-82
SCALE 1"=50'

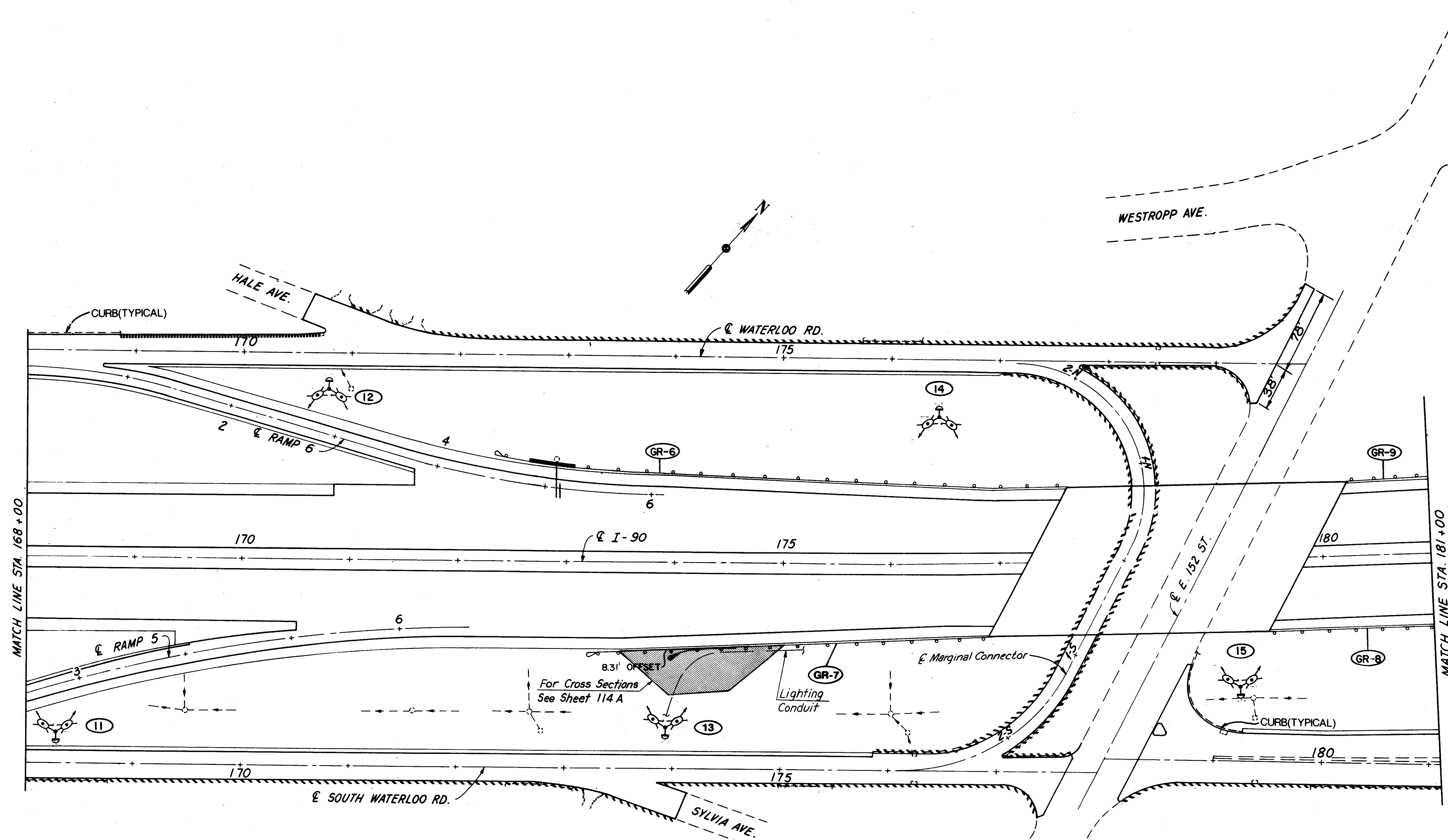
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CLEVELAND, OHIO

HNTB

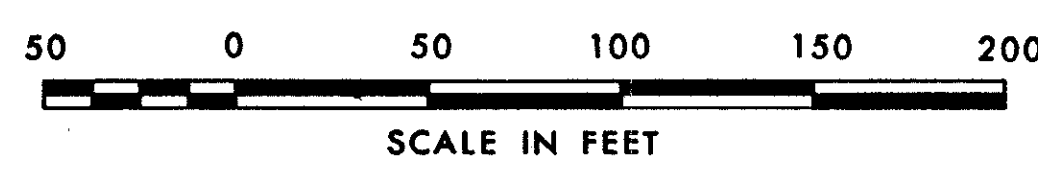
FHWA REGION	STATE	PROJECT	
5	OHIO		

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200

CUYAHOGA COUNTY
CUY - 90-23.95
LAKE COUNTY
LAK - 90-0.00



CROSS REFERENCE	
ITEM	SHEET
RESURFACING QUANTITIES	39-40, 42-45
RESURFACING DETAILS	95-97
GUARDRAIL QUANTITIES	48
GUARDRAIL DETAILS	94
GRADING QUANTITIES	46
TRAFFIC CONTROL PLANS	149
LIGHTING QUANTITIES	182
LEGEND	55
PAVEMENT REPAIR DETAILS AND QUANTITIES	98



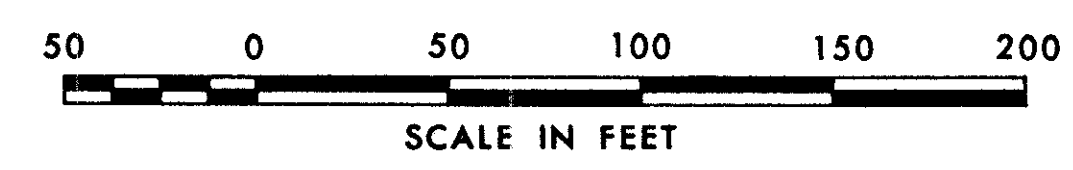
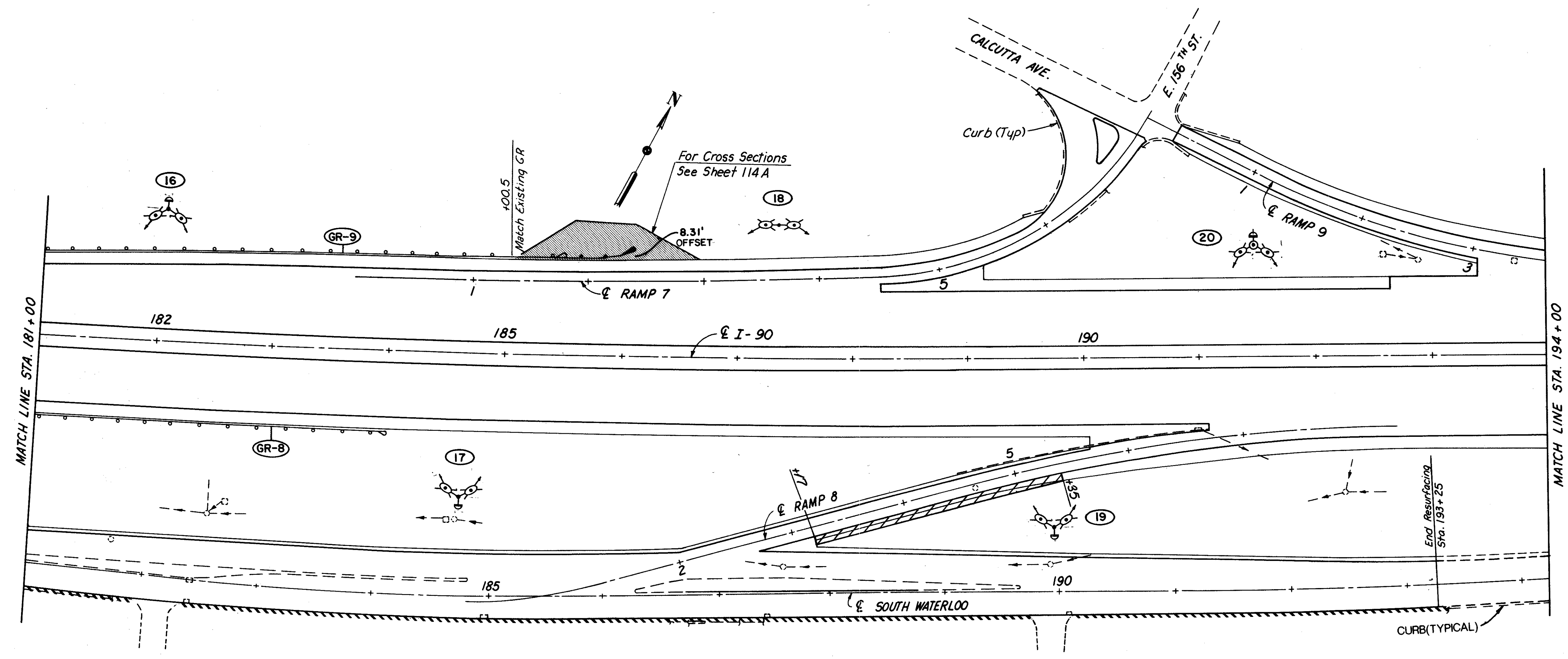
MADE P.F. DATE 3-1-89
TRACED A.L.B. DATE 3-6-89
CHECKED R.M. DATE 3-10-89
SCALE 1"=20'

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



FHWA REGION	STATE	PROJECT
5	OHIO	

CUYAHOGA COUNTY
CUY - 90-23.95
LAKE COUNTY
LAK - 90-0.00



CROSS REFERENCE	
ITEM	SHEET
RESURFACING QUANTITIES	39-40, 42-43
RESURFACING DETAILS	95-97
GUARDRAIL QUANTITIES	48
GUARDRAIL DETAILS	94
GRADING QUANTITIES	46
TRAFFIC CONTROL PLANS	150
LIGHTING QUANTITIES	182
CURB REMOVAL DETAILS AND QUANTITIES	94
BERM WIDENING DETAILS	83
BERM WIDENING QUANTITIES	45
LEGEND	55
PAVEMENT REPAIR DETAILS AND QUANTITIES	98

MADE P.F. DATE 3-1-89
TRACED R.L.B. DATE 3-8-89
CHECKED R.M. DATE 3-10-89
SCALE 1"=50'

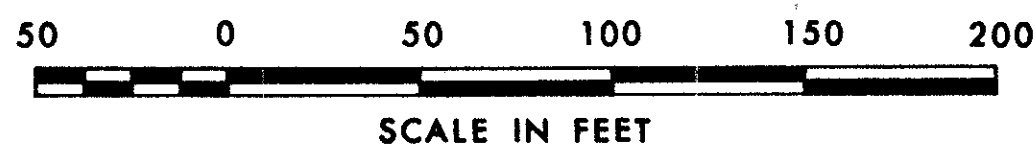
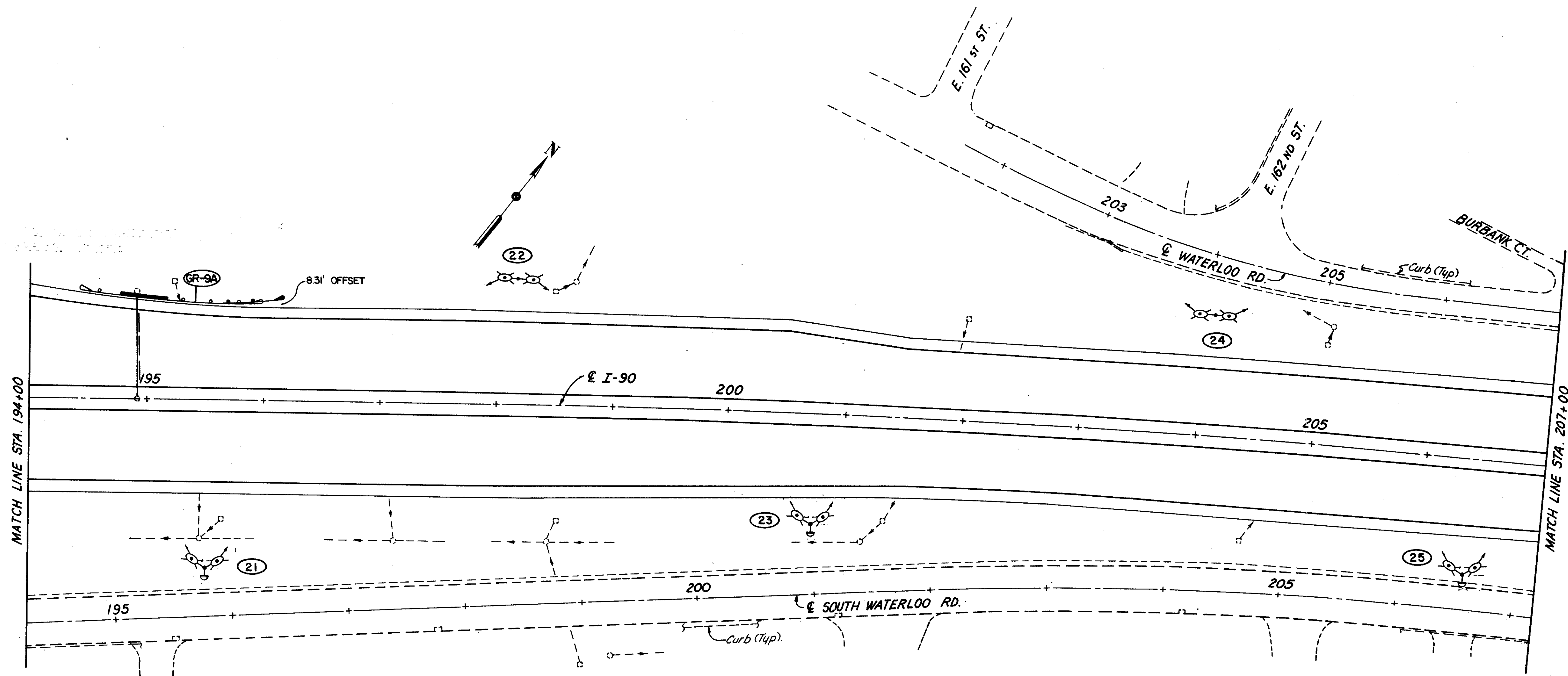
Howard, Needles, Tammen & Bergendoff
CONSULTING ENGINEERS
CLEVELAND, OHIO



FHWA REGION	STATE	PROJECT	
5	OHIO		

59
200

CUYAHOGA COUNTY
CUY - 90-23.95
LAKE COUNTY
LAK - 90-0.00



CROSS REFERENCE	
ITEM	SHEET
RESURFACING QUANTITIES	39-40
RESURFACING DETAILS	95-97
GUARDRAIL QUANTITIES	48
GUARDRAIL DETAILS	94
GRADING QUANTITIES	46
TRAFFIC CONTROL PLANS	151
LIGHTING QUANTITIES	182
LEGEND	55
PAVEMENT REPAIR DETAILS AND QUANTITIES	98

MADE P.F. DATE 3-1-89
TRACED R.L.B. DATE 3-8-89
CHECKED R.M. DATE 3-10-89
SCALE 1"=50'

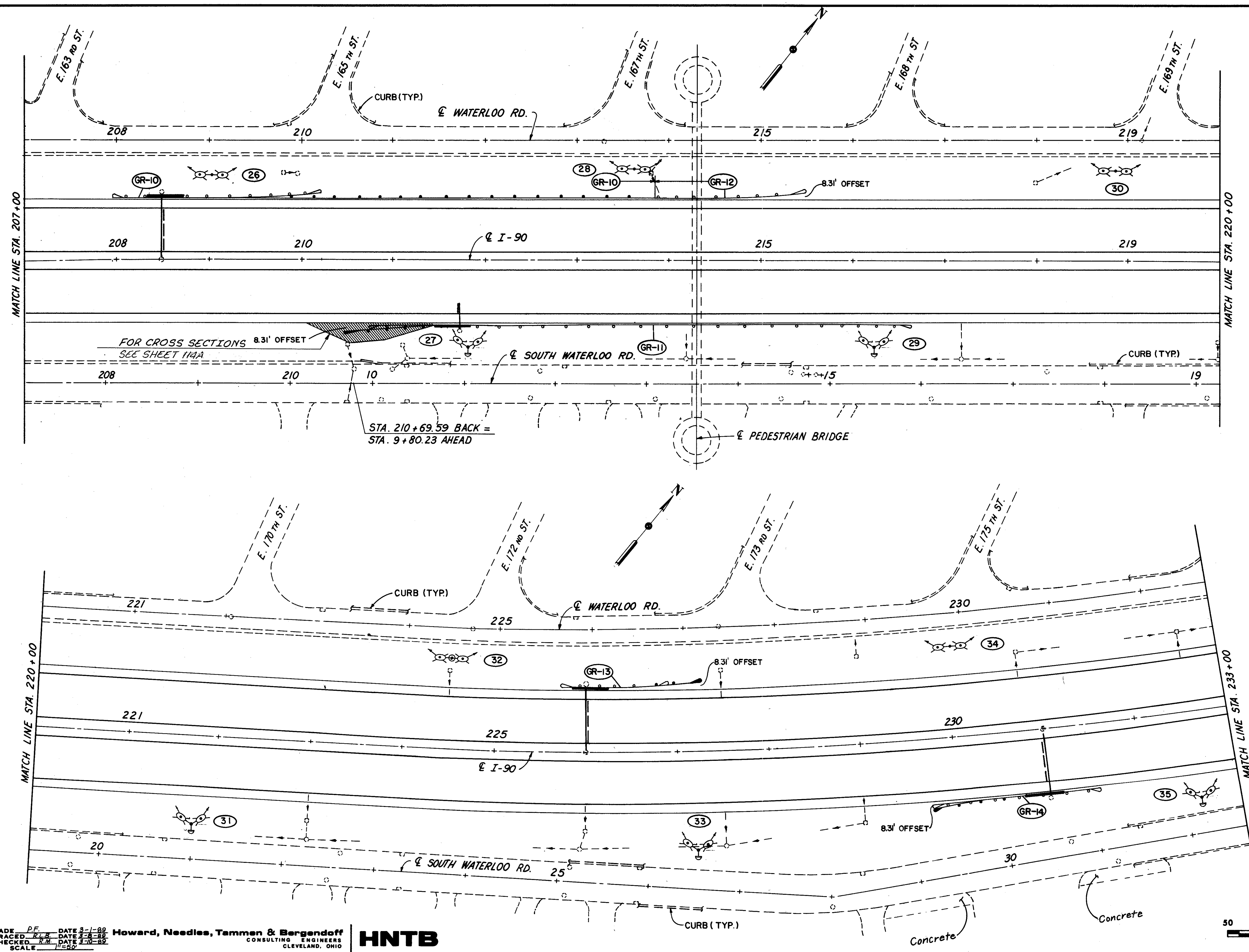
Howard, Needles, Tammen & Bergendoff
CONSULTING ENGINEERS
CLEVELAND, OHIO

HNTB

FHWA REGION	STATE	PROJECT
5	OHIO	

60
200

CUYAHOGA COUNTY
CUI - 90-23.95
LAKE COUNTY
LAK - 90-0.00



FOR CROSS SECTIONS
SEE SHEET 114A

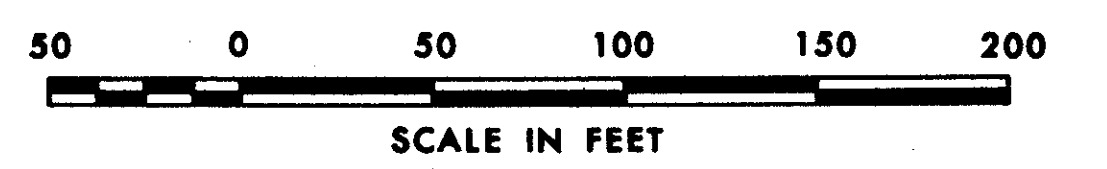
STA. 210+69.59 BACK =
STA. 9+80.23 AHEAD

CROSS REFERENCE	
ITEM	SHEET
RESURFACING QUANTITIES	39
RESURFACING DETAILS	95-97
GUARDRAIL QUANTITIES	48
GUARDRAIL DETAILS	94
GRADING QUANTITIES	46
TRAFFIC CONTROL PLANS	152-153
LIGHTING QUANTITIES	182
LEGEND	55
PAVEMENT REPAIR DETAILS AND QUANTITIES	98

MADE P.F. DATE 3-1-89
TRACED R.M. DATE 3-8-89
CHECKED R.M. DATE 3-10-89
SCALE 1"=50'

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

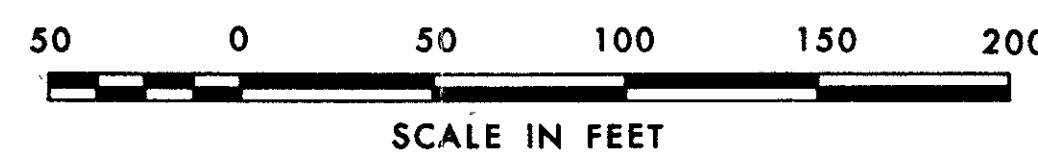
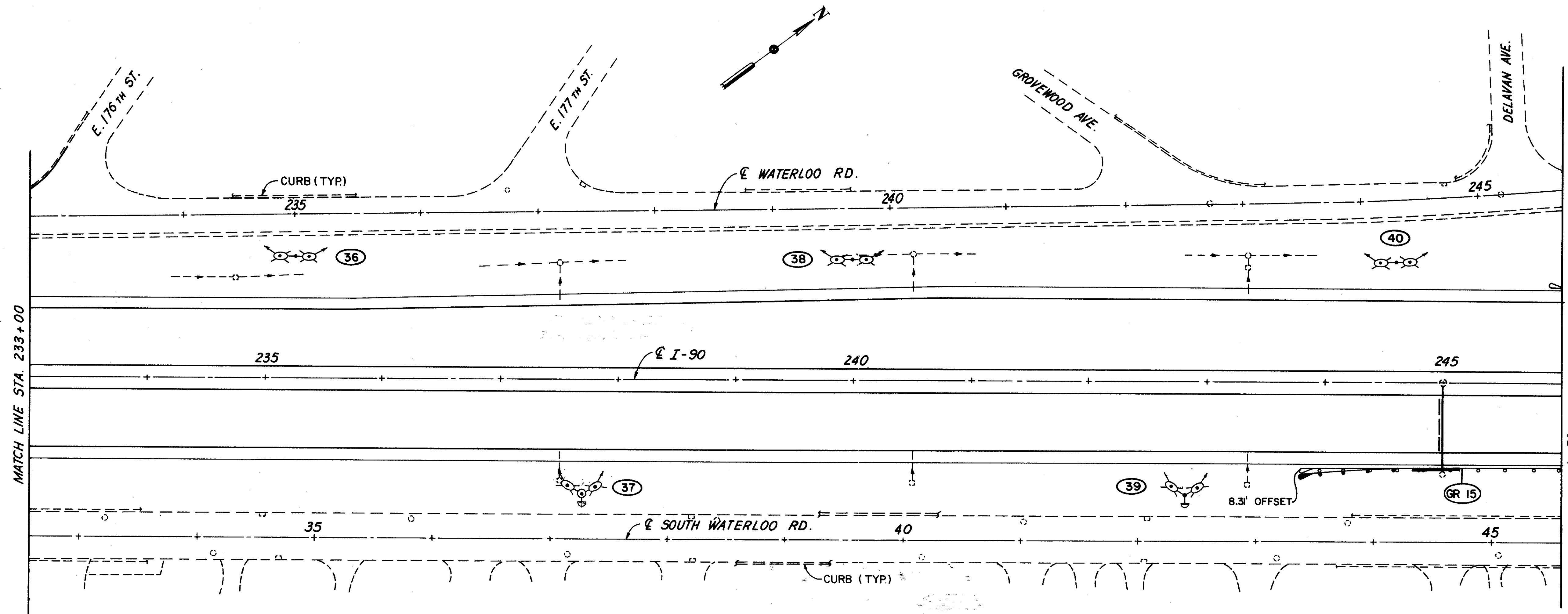
HNTB



FHWA REGION	STATE	PROJECT	
5	OHIO		

61
200

CUYAHOGA COUNTY
CUY - 90-23.95
LAKE COUNTY
LAK - 90-0.00



CROSS REFERENCE	
ITEM	SHEET
RESURFACING QUANTITIES	39
RESURFACING DETAILS	95-97
GUARDRAIL QUANTITIES	48
GUARDRAIL DETAILS	94
GRADING QUANTITIES	46
TRAFFIC CONTROL PLANS	154
LIGHTING QUANTITIES	182
LEGEND	55
PAVEMENT REPAIR DETAILS AND QUANTITIES	98

MADE P.F. DATE 3-1-90
TRACED R.L.B. DATE 3-8-90
CHECKED R.M. DATE 3-10-90
SCALE 1"=50'

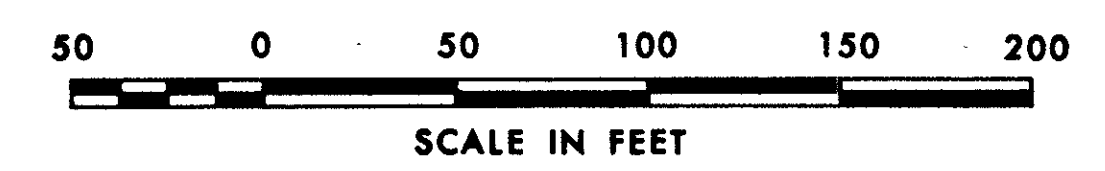
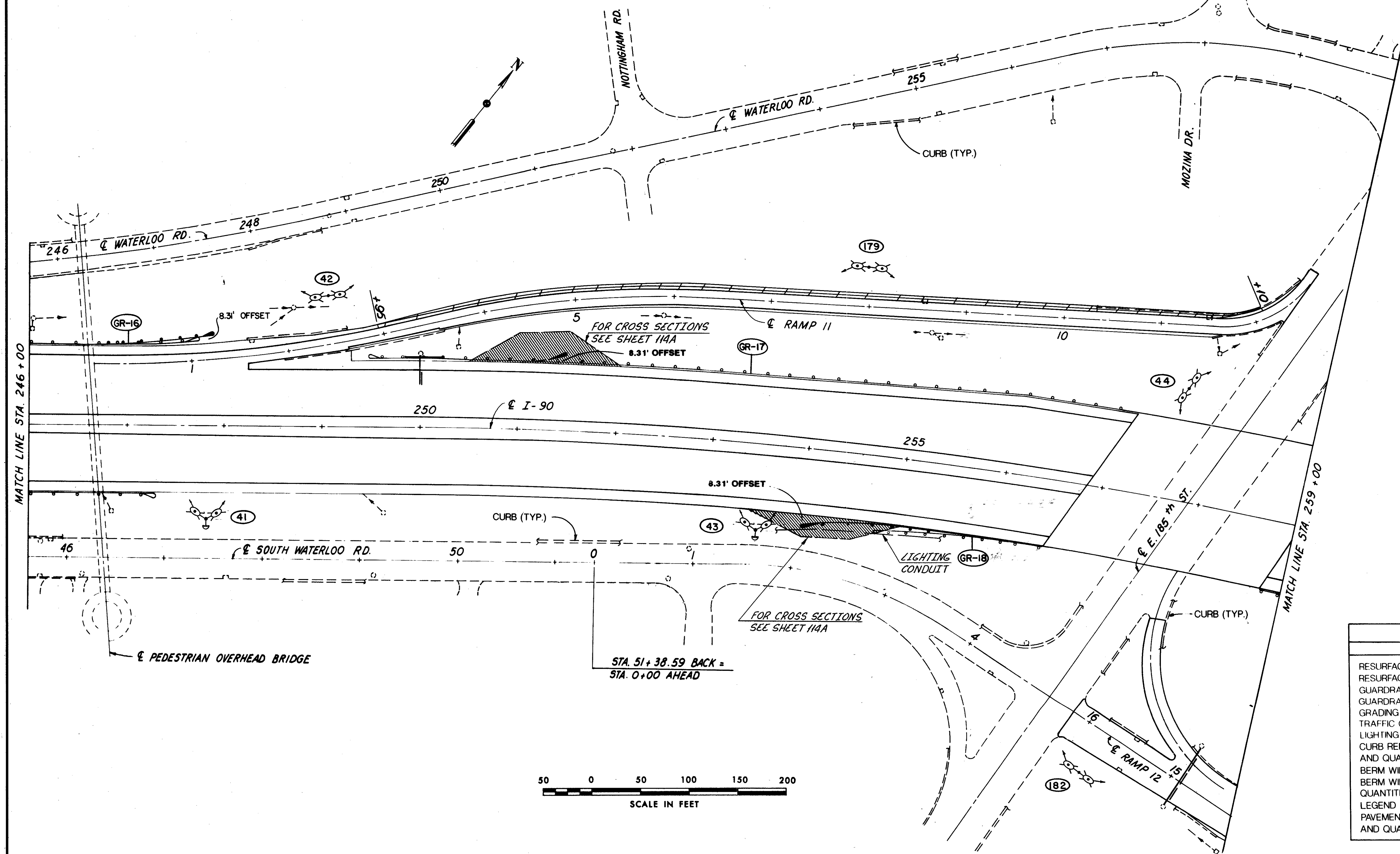
Howard, Needles, Tammen & Bergendoff
CONSULTING ENGINEERS
CLEVELAND, OHIO

HNTB

FHWA REGION	STATE	PROJECT
5	OHIO	

62
200

CUYAHOGA COUNTY
CUY - 90-23.95
LAKE COUNTY
LAK - 90-0.00



CROSS REFERENCE	
ITEM	SHEET
RESURFACING QUANTITIES	39-40
RESURFACING DETAILS	95-97
GUARDRAIL QUANTITIES	48
GUARDRAIL DETAILS	94
GRADING QUANTITIES	46
TRAFFIC CONTROL PLANS	155
LIGHTING QUANTITIES	182
CURB REMOVAL DETAILS	
AND QUANTITIES	94
BERM WIDENING DETAILS	84
BERM WIDENING	
QUANTITIES	45
LEGEND	55
PAVEMENT REPAIR DETAILS	
AND QUANTITIES	98

MADE P.F. DATE 3-2-99
 TRACED R.T.B. DATE 3-9-99
 CHECKED R.M. DATE 3-10-99
 SCALE 1"=50'

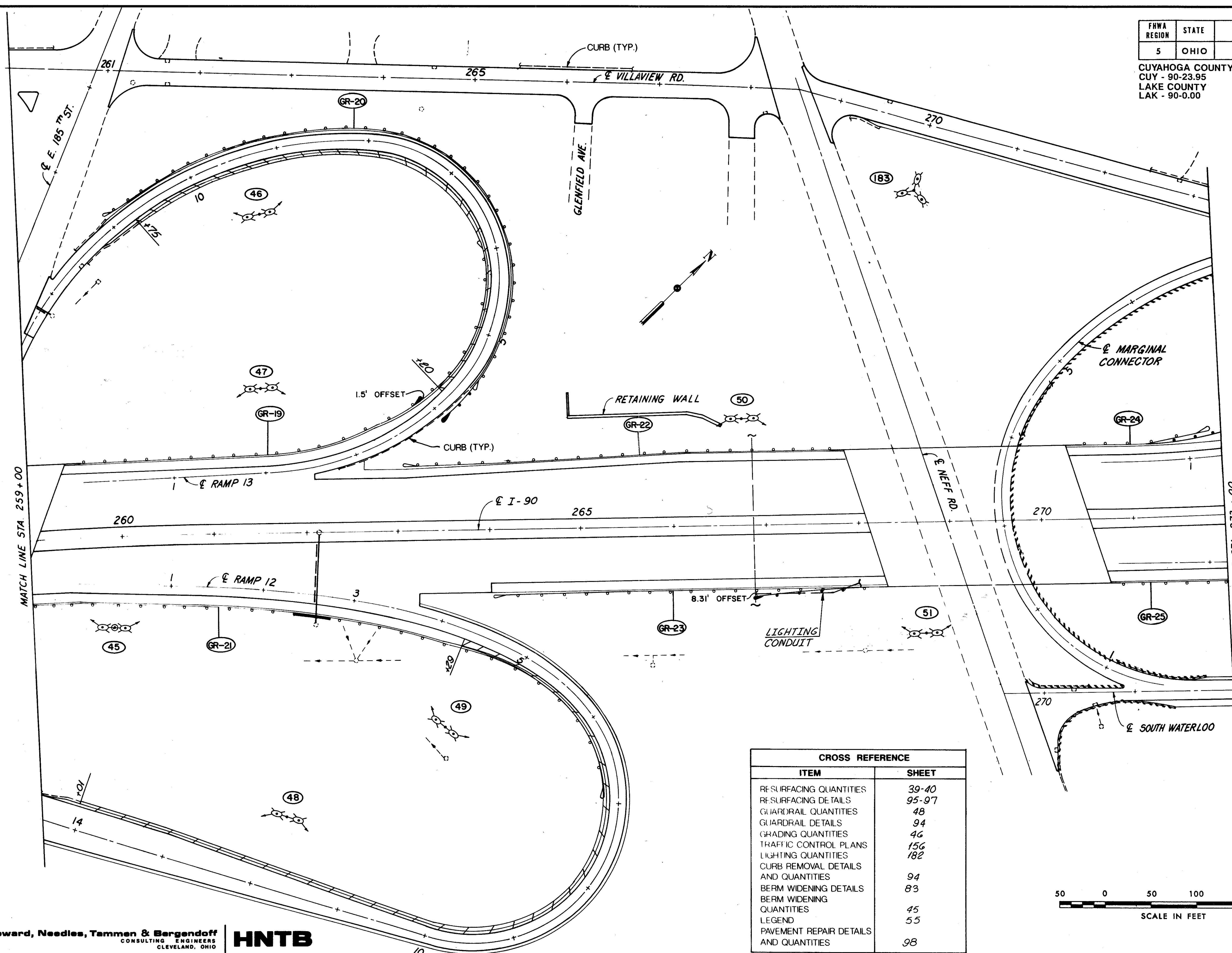
Howard, Needles, Tammen & Bergendoff
 CONSULTING ENGINEERS
 CLEVELAND, OHIO



FHWA REGION	STATE	PROJECT	
5	OHIO		

63
200

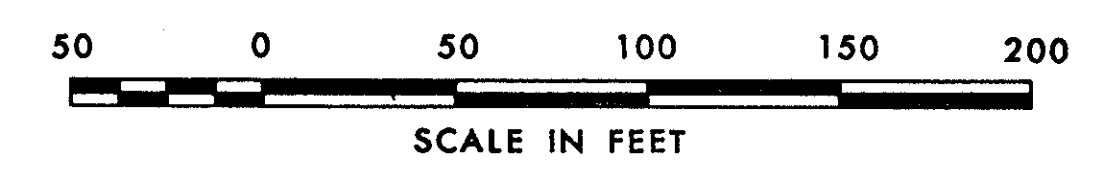
CUYAHOGA COUNTY
CUY - 90-23.95
LAKE COUNTY
LAK - 90-0.00



MATCH LINE STA. 259+00

MATCH LINE STA. 272+00

CROSS REFERENCE	
ITEM	SHEET
RESURFACING QUANTITIES	39-40
RESURFACING DETAILS	95-97
GUARDRAIL QUANTITIES	48
GUARDRAIL DETAILS	94
GRADING QUANTITIES	46
TRAFFIC CONTROL PLANS	156
LIGHTING QUANTITIES	182
CURB REMOVAL DETAILS AND QUANTITIES	94
BERM WIDENING DETAILS	83
BERM WIDENING QUANTITIES	45
LEGEND	55
PAVEMENT REPAIR DETAILS AND QUANTITIES	98



MADE P.F. DATE 5-2-89
TRACED R.L.B. DATE 3-9-89
CHECKED R.M. DATE 3-10-89
SCALE 1"=50'

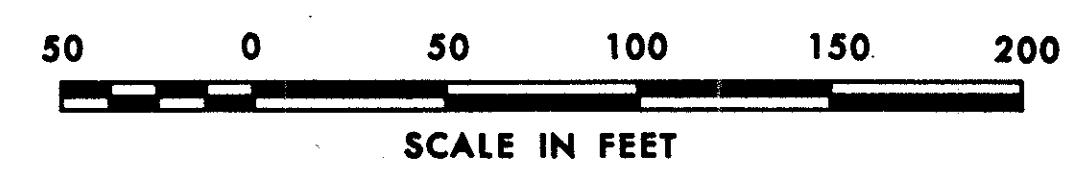
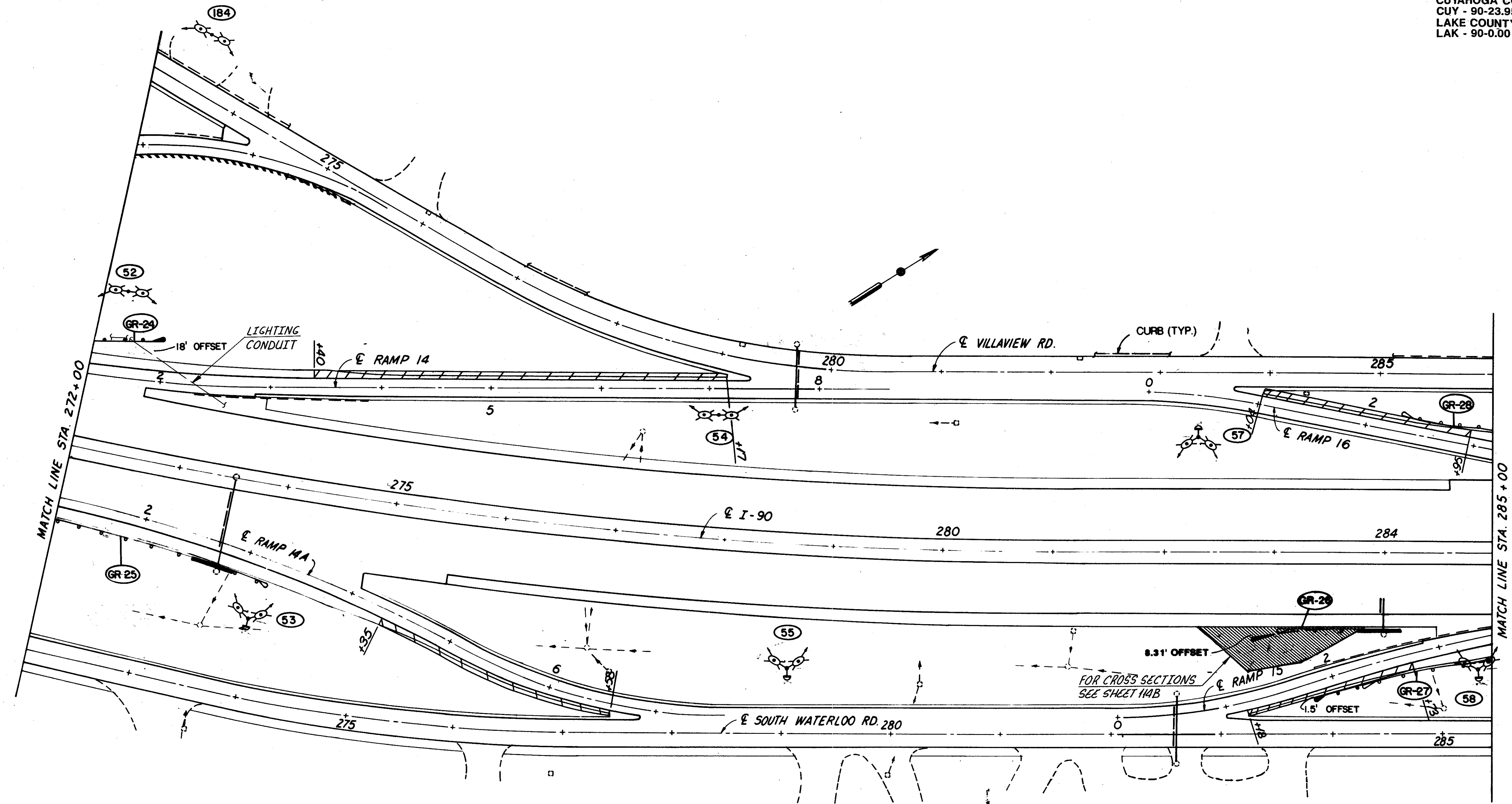
Howard, Needles, Tammen & Bergendoff
CONSULTING ENGINEERS
CLEVELAND, OHIO

HNTB

FRWA REGION	STATE	PROJECT	
5	OHIO		

64
200

CUYAHOGA COUNTY
CUY - 90-23.95
LAKE COUNTY
LAK - 90-0.00



CROSS REFERENCE	
ITEM	SHEET
RESURFACING QUANTITIES	39, 41-43
RESURFACING DETAILS	95-97
GUARDRAIL QUANTITIES	48
GUARDRAIL DETAILS	94
GRADING QUANTITIES	46
TRAFFIC CONTROL PLANS	157
LIGHTING QUANTITIES	182
CURB REMOVAL DETAILS AND QUANTITIES	94
BERM WIDENING DETAILS	83
BERM WIDENING QUANTITIES	45
LEGEND	55
PAVEMENT REPAIR DETAILS AND QUANTITIES	98

MADE BY DATE 2-2-89
TRACED R.L.B. DATE 3-9-89
CHECKED R.M. DATE 3-10-89
SCALE 1"=50'

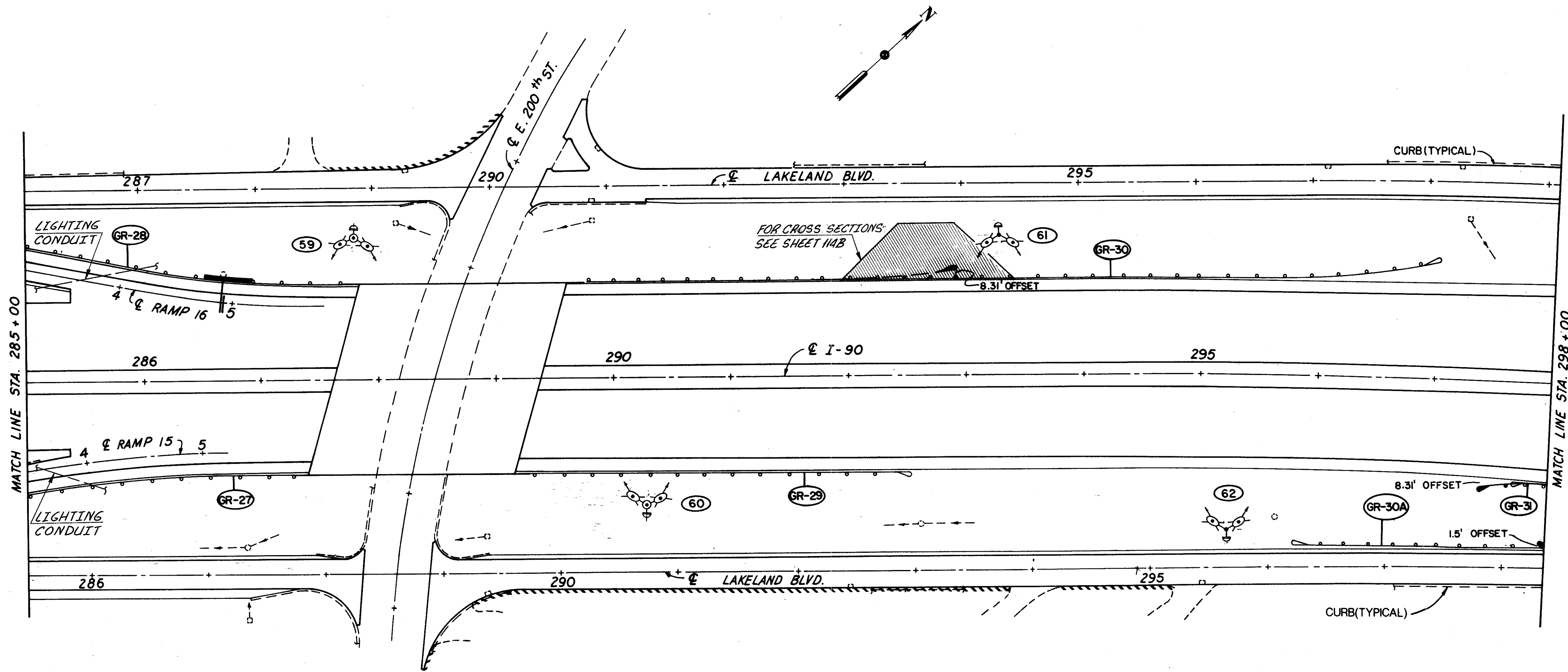
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CONSULTING ENGINEERS
CLEVELAND, OHIO



FHWA REGION	STATE	PROJECT	
5	OHIO		

65
200

CUYAHOGA COUNTY
CUY - 90-23.95
LAKE COUNTY
LAK - 90-0.00



CROSS REFERENCE	
ITEM	SHEET
RESURFACING QUANTITIES	39, 41-43
RESURFACING DETAILS	95-97
GUARDRAIL QUANTITIES	48
GUARDRAIL DETAILS	94
GRADING QUANTITIES	46
TRAFFIC CONTROL PLANS	158
LIGHTING QUANTITIES	182
CURB REMOVAL DETAILS AND QUANTITIES	94
LEGEND	55
PAVEMENT REPAIR DETAILS AND QUANTITIES	98

MADE PF DATE 3-2-88
 TRACED RLB DATE 3-3-88
 CHECKED RM DATE 3-10-88
 SCALE 1"=50'

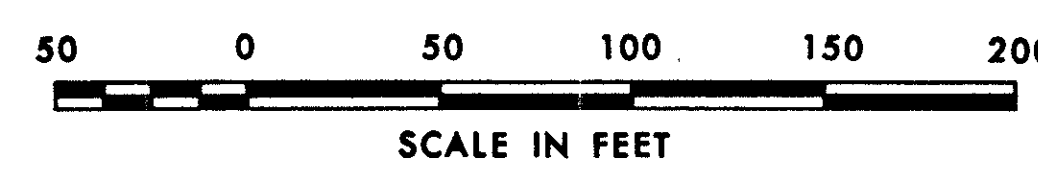
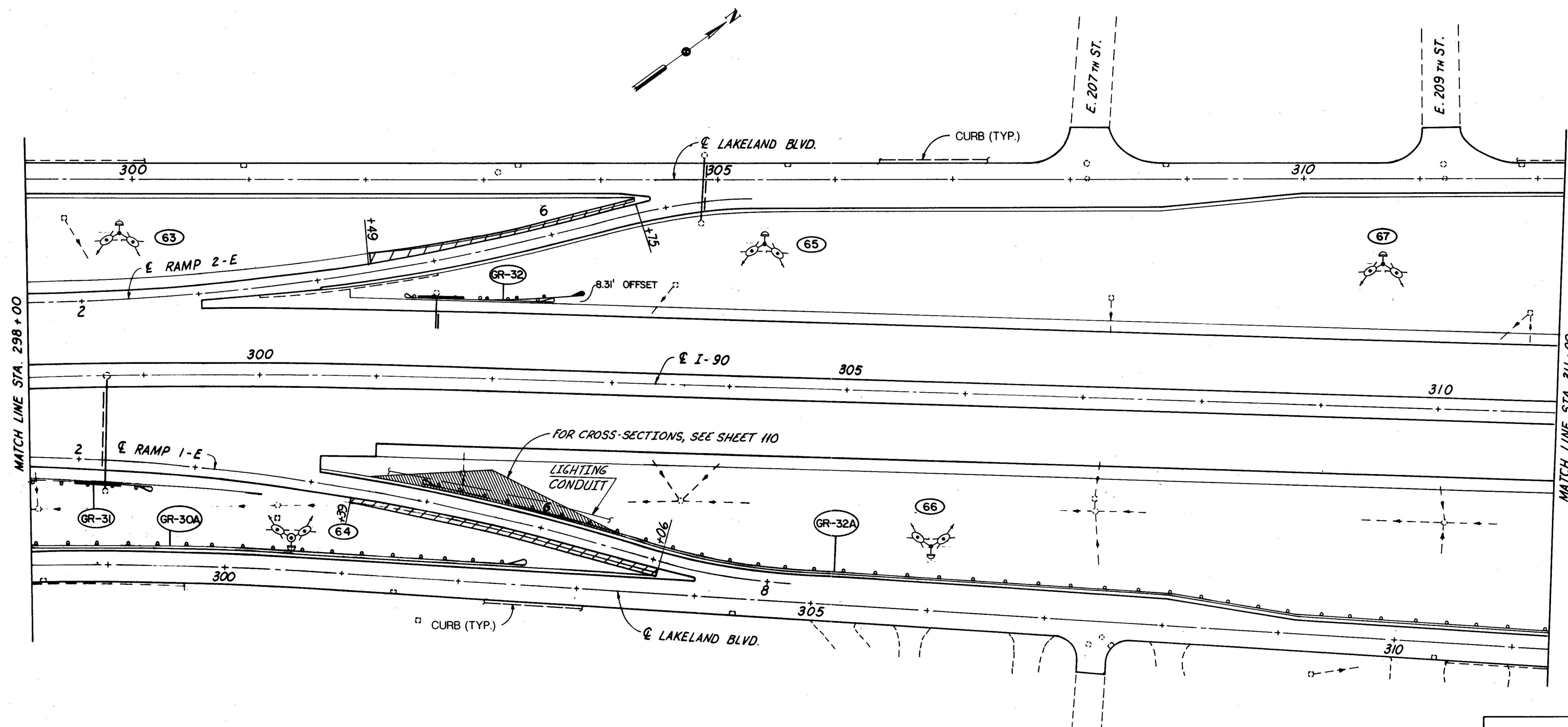
Howard, Needles, Tammen & Bergendoff
CONSULTING ENGINEERS
CLEVELAND, OHIO

HNTB

FHWA REGION	STATE	PROJECT	
5	OHIO		

66
200

CUYAHOGA COUNTY
CUY - 90-23.95
LAKE COUNTY
LAK - 90-0.00



CROSS REFERENCE	
ITEM	SHEET
RESURFACING QUANTITIES	39, 41-43
RESURFACING DETAILS	95-97
GUARDRAIL QUANTITIES	48
GUARDRAIL DETAILS	94
GRADING QUANTITIES	46, 110
TRAFFIC CONTROL PLANS	159
LIGHTING QUANTITIES	182
CURB REMOVAL DETAILS AND QUANTITIES	94
BERM WIDENING DETAILS	83
BERM WIDENING QUANTITIES	45
LEGEND	55
PAVEMENT REPAIR DETAILS AND QUANTITIES	98

MADE P.F. DATE 3-2-89
TRACED K.L.B. DATE 3-9-89
CHECKED K.M. DATE 3-10-89
SCALE 1"=80'

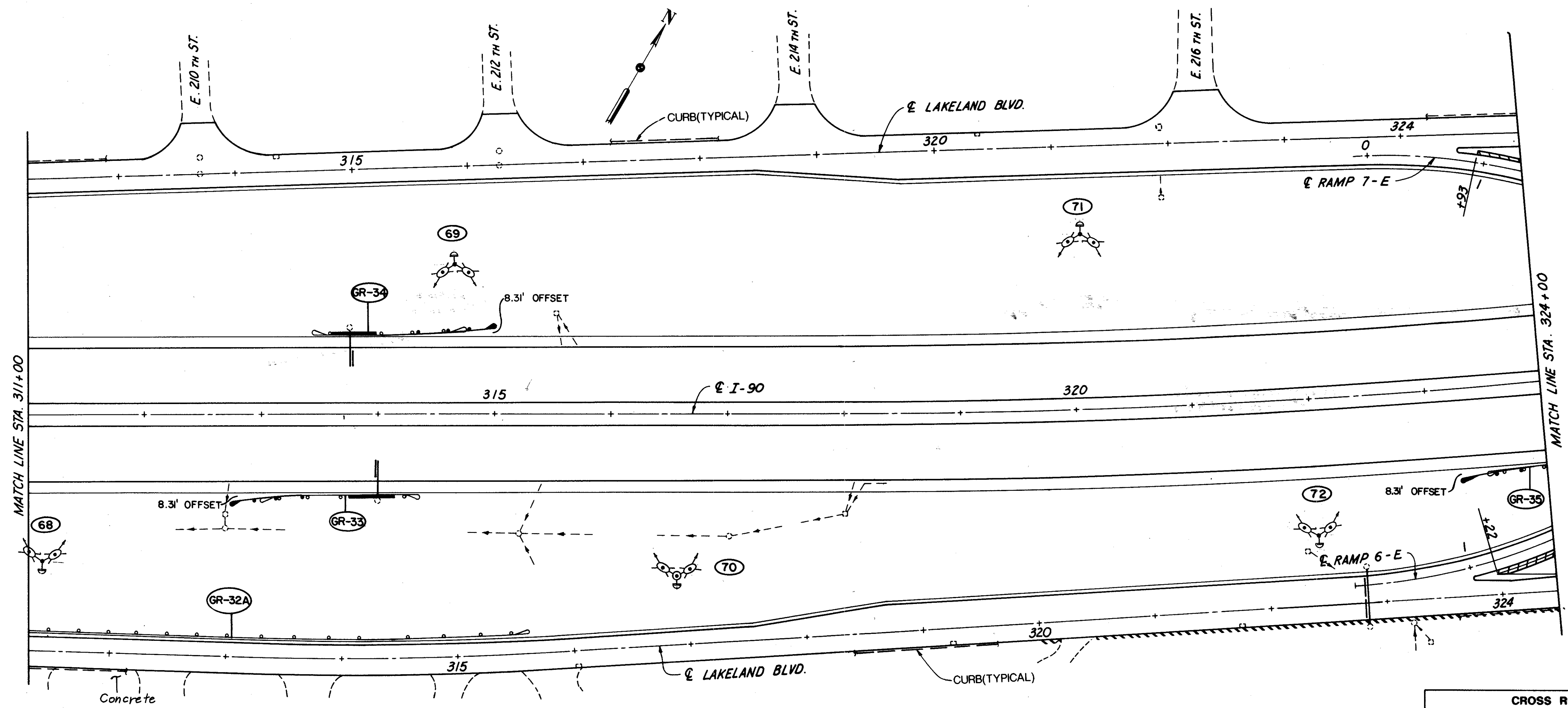
Howard, Needles, Tammen & Bergendoff
CONSULTING ENGINEERS
CLEVELAND, OHIO

HNTB

FHWA REGION	STATE	PROJECT	
5	OHIO		

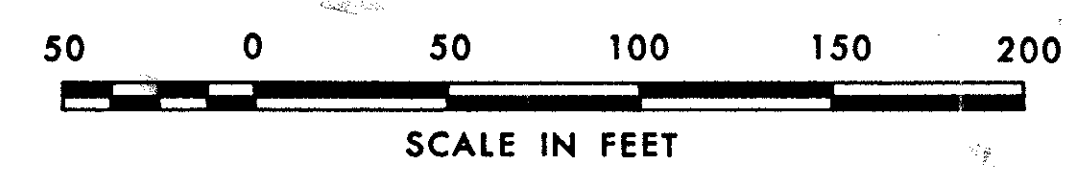
67
200

CUYAHOGA COUNTY
CUY - 90-23.95
LAKE COUNTY
LAK - 90-0.00



MATCH LINE STA. 311+00

MATCH LINE STA. 324+00



CROSS REFERENCE	
ITEM	SHEET
RESURFACING QUANTITIES	39, 41-43
RESURFACING DETAILS	95-97
GUARDRAIL QUANTITIES	48
GUARDRAIL DETAILS	94
GRADING QUANTITIES	46
TRAFFIC CONTROL PLANS	160
LIGHTING QUANTITIES	182
CURB REMOVAL DETAILS AND QUANTITIES	94
BERM WIDENING DETAILS	83
BERM WIDENING QUANTITIES	45
LEGEND	55
PAVEMENT REPAIR DETAILS AND QUANTITIES	98

MADE P.F. DATE 3-2-89
TRACED R.L.H. DATE 3-9-89
CHECKED R.M. DATE 3-13-89
SCALE 1"=50'

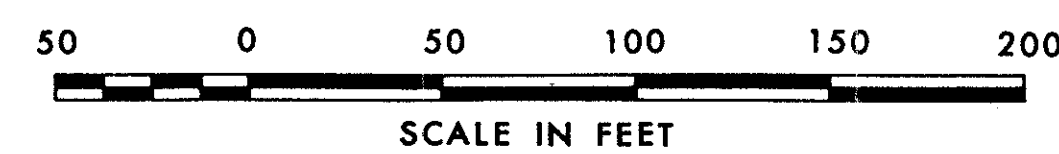
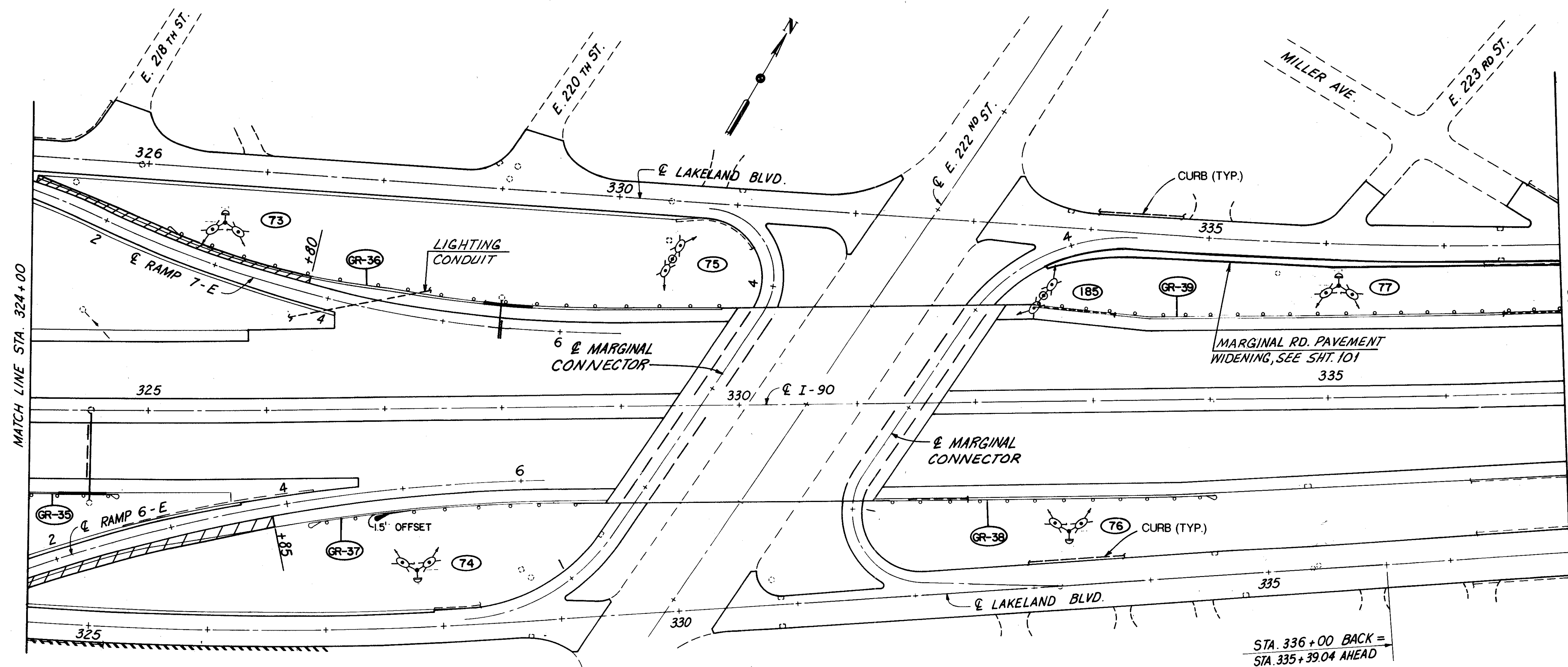
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CONSULTING ENGINEERS
CLEVELAND, OHIO



FHWA REGION	STATE	PROJECT	
5	OHIO		

68
200

CUYAHOGA COUNTY
CUY - 90-23.95
LAKE COUNTY
LAK - 90-0.00



CROSS REFERENCE	
ITEM	SHEET
RESURFACING QUANTITIES	39, 41-43
RESURFACING DETAILS	95-97
GUARDRAIL QUANTITIES	48
GUARDRAIL DETAILS	94
GRADING QUANTITIES	46
TRAFFIC CONTROL PLANS	161
LIGHTING QUANTITIES	182
CURB REMOVAL DETAILS AND QUANTITIES	94
BERM WIDENING DETAILS	83
BERM WIDENING QUANTITIES	45
LEGEND	55
PAVEMENT REPAIR DETAILS AND QUANTITIES	98

MADE P.F. DATE 3-2-89
TRACED K.S. DATE 3-2-89
CHECKED K.M. DATE 2-13-89
SCALE 1"=50'

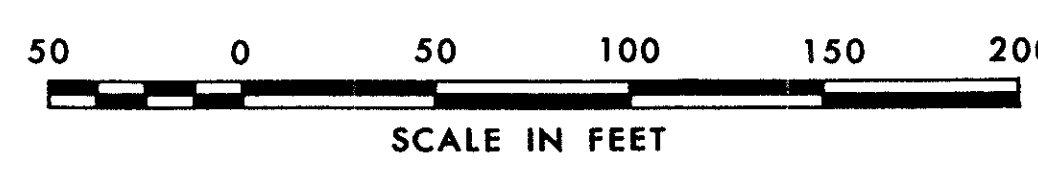
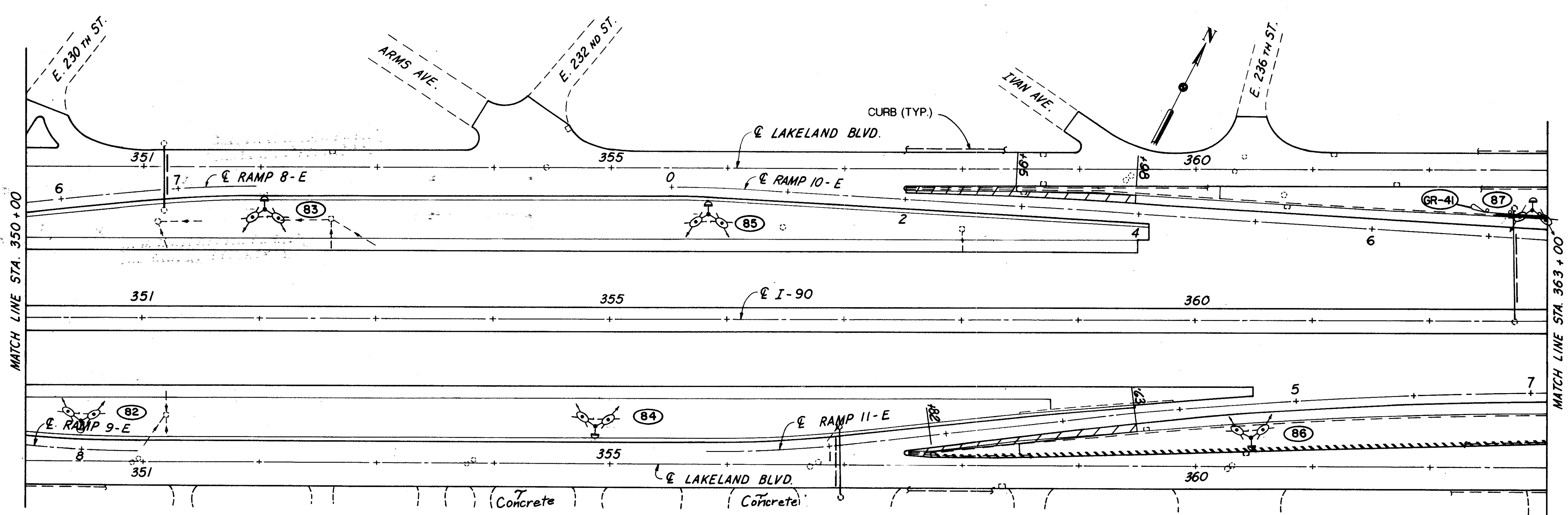
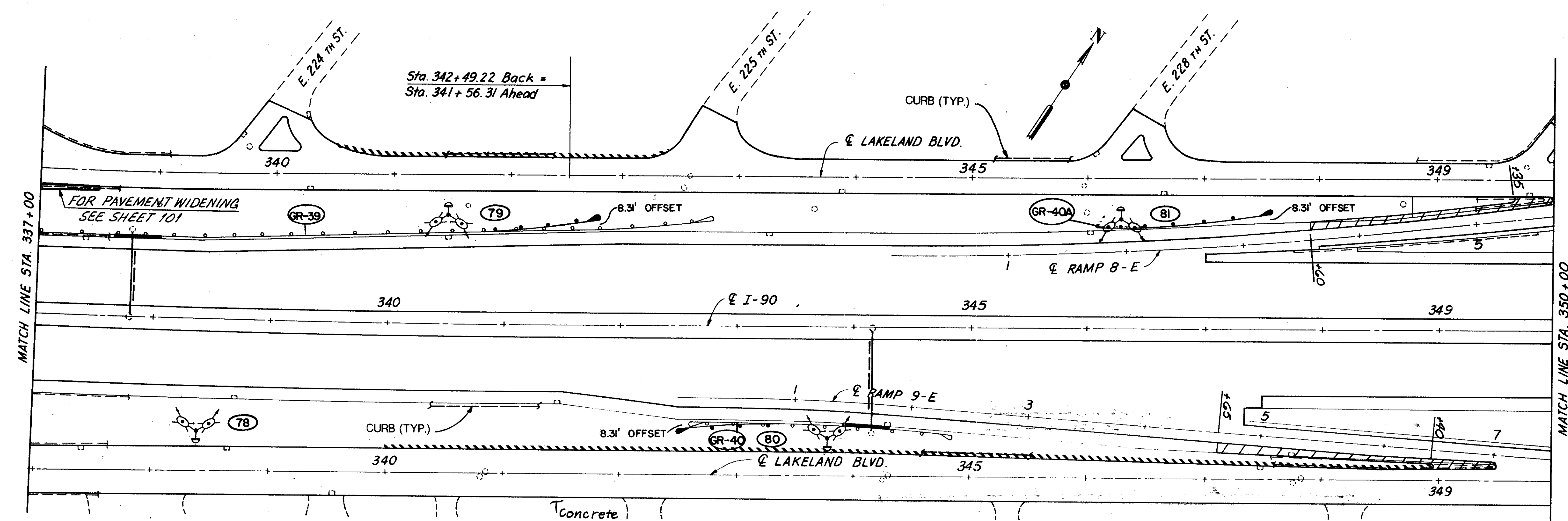
Howard, Needles, Tammen & Bergendoff
CONSULTING ENGINEERS
CLEVELAND, OHIO

HNTB

FHWA REGION	STATE	PROJECT	
5	OHIO		

69
200

CUYAHOGA COUNTY
 CUY - 90-23.95
 LAKE COUNTY
 LAK - 90-0.00



CROSS REFERENCE	
ITEM	SHEET
RESURFACING QUANTITIES	39, 41-43
RESURFACING DETAILS	95-97
GUARDRAIL QUANTITIES	49
GUARDRAIL DETAILS	94
GRADING QUANTITIES	46
TRAFFIC CONTROL PLANS	162-163
LIGHTING QUANTITIES	182
CURB REMOVAL DETAILS AND QUANTITIES	94
BERM WIDENING DETAILS AND QUANTITIES	85-86
BERM WIDENING QUANTITIES	45
LEGEND	55
PAVEMENT REPAIR DETAILS AND QUANTITIES	98

MADE P.F. DATE 3-5-89
 TRACED R.L.B. DATE 3-10-89
 CHECKED R.M. DATE 3-13-89
 SCALE 1"=50'

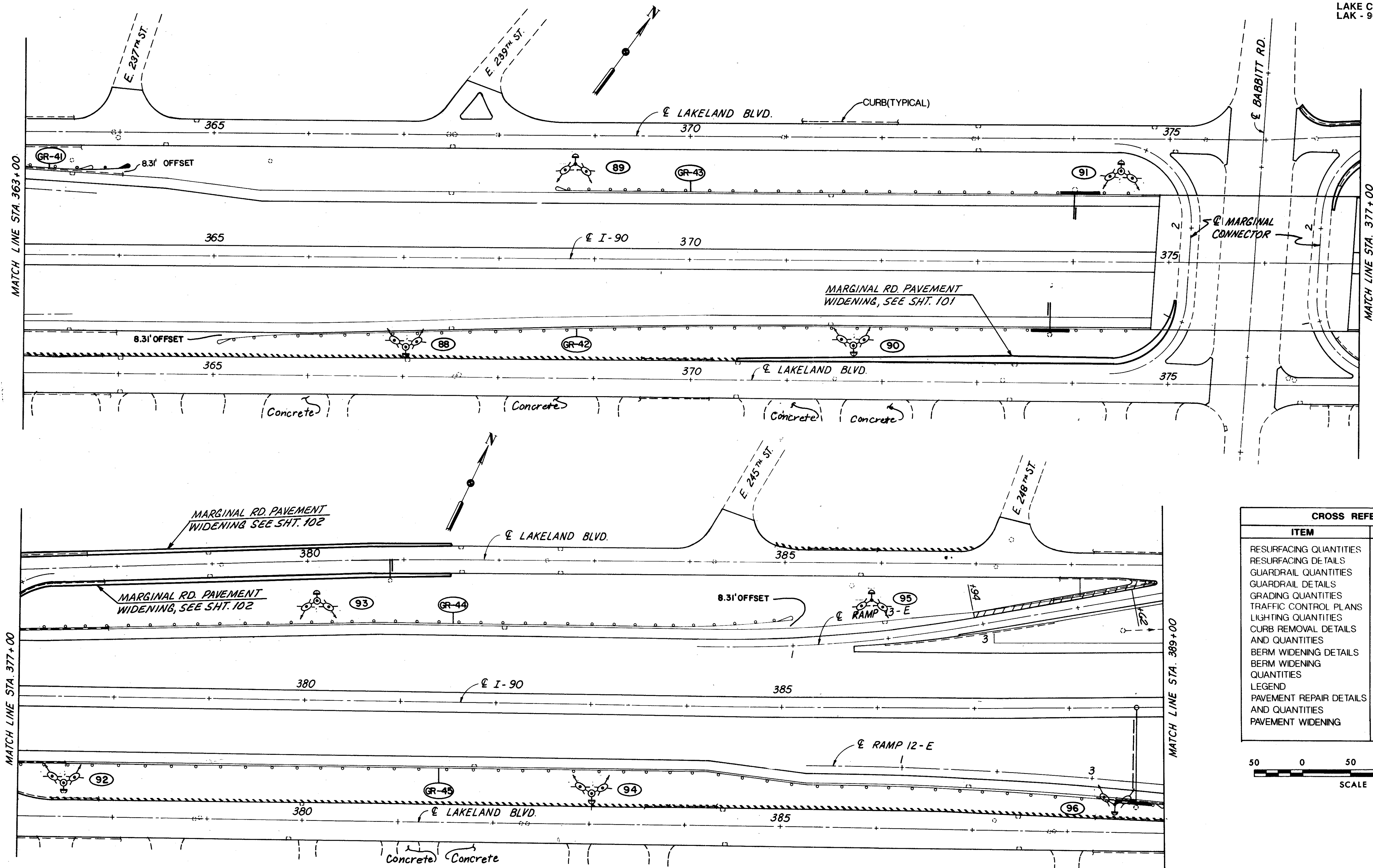
Howard, Needles, Tammen & Bergendoff
 CONSULTING ENGINEERS
 CLEVELAND, OHIO

HNTB

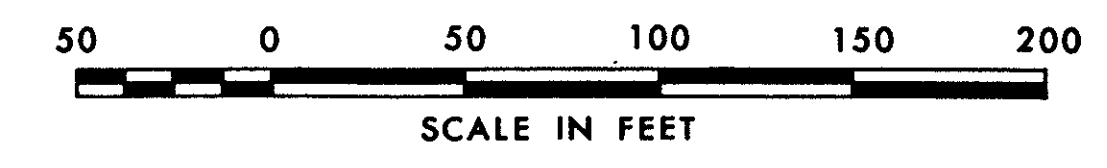
FHWA REGION	STATE	PROJECT	
5	OHIO		

70
200

CUYAHOGA COUNTY
CUY - 90-23.95
LAKE COUNTY
LAK - 90-0.00



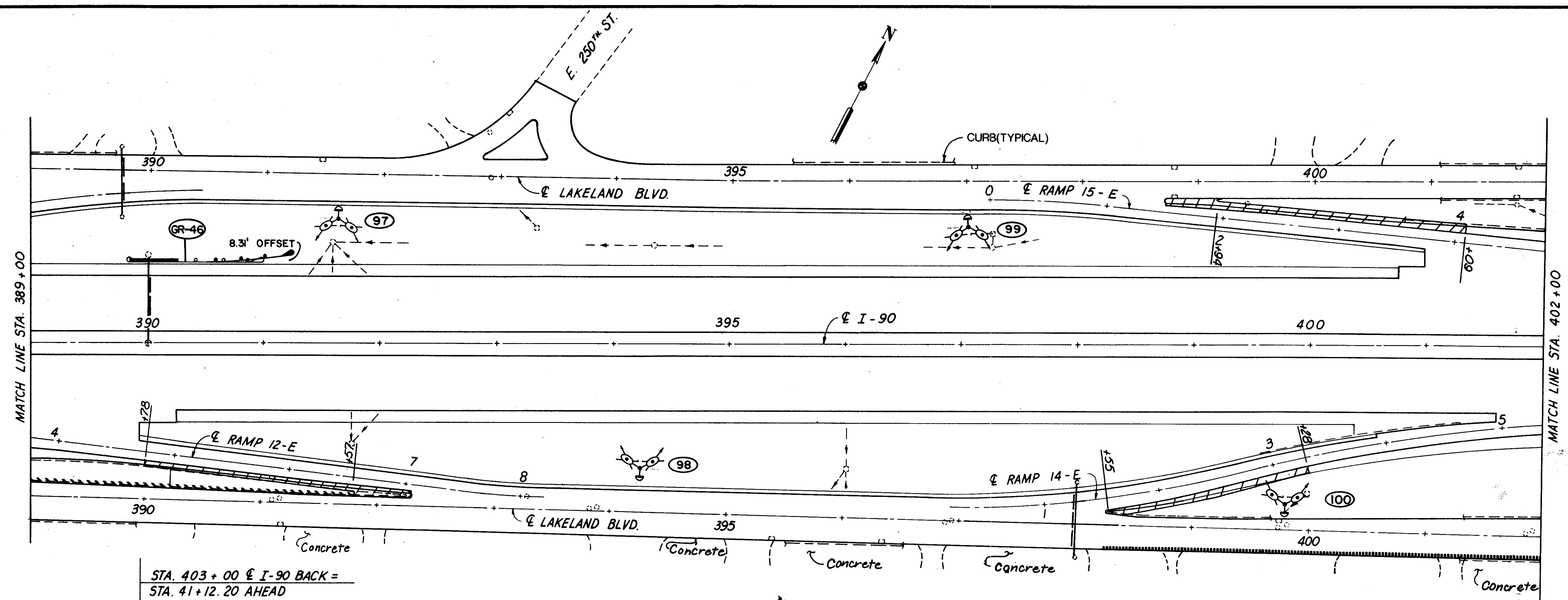
CROSS REFERENCE	
ITEM	SHEET
RESURFACING QUANTITIES	39, 41-43
RESURFACING DETAILS	95-97
GUARDRAIL QUANTITIES	49
GUARDRAIL DETAILS	94
GRADING QUANTITIES	46
TRAFFIC CONTROL PLANS	164-165
LIGHTING QUANTITIES	182
CURB REMOVAL DETAILS AND QUANTITIES	94
BERM WIDENING DETAILS	87
BERM WIDENING QUANTITIES	45
LEGEND	55
PAVEMENT REPAIR DETAILS AND QUANTITIES	93
PAVEMENT WIDENING	101-102



MADE P.F. DATE 3-3-89
TRACED P.L.B. DATE 3-10-89
CHECKED R.M. DATE 3-13-89
SCALE 1"=50'

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CLEVELAND, OHIO

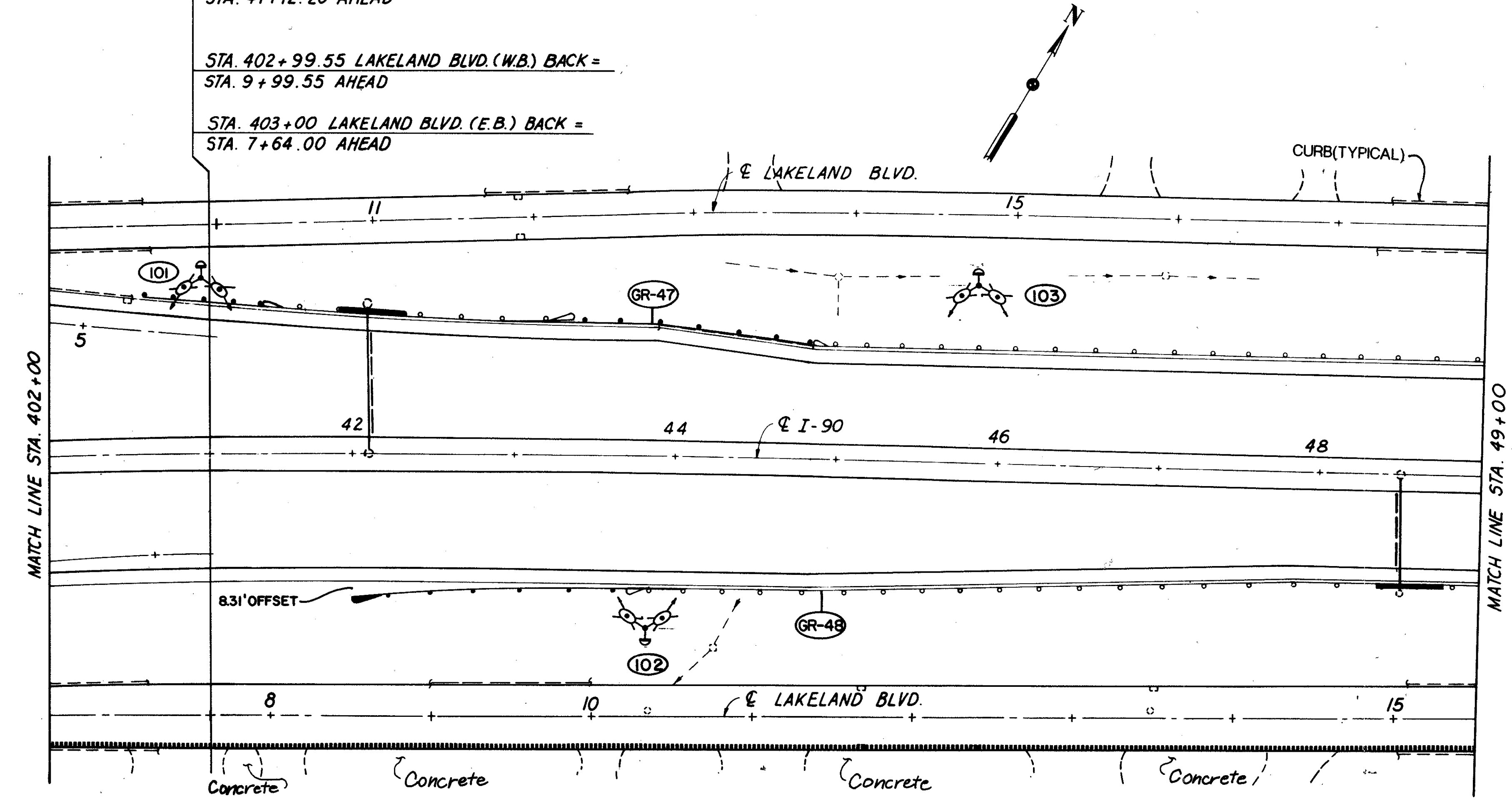
HNTB



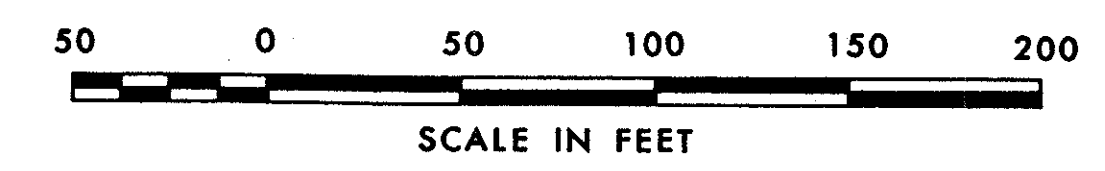
STA. 403+00 I-90 BACK =
STA. 41+12.20 AHEAD

STA. 402+99.55 LAKELAND BLVD. (W.B.) BACK =
STA. 9+99.55 AHEAD

STA. 403+00 LAKELAND BLVD. (E.B.) BACK =
STA. 7+64.00 AHEAD



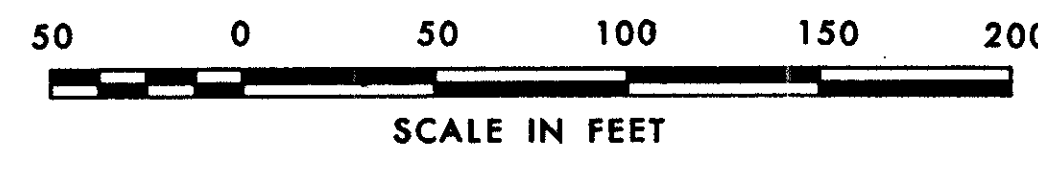
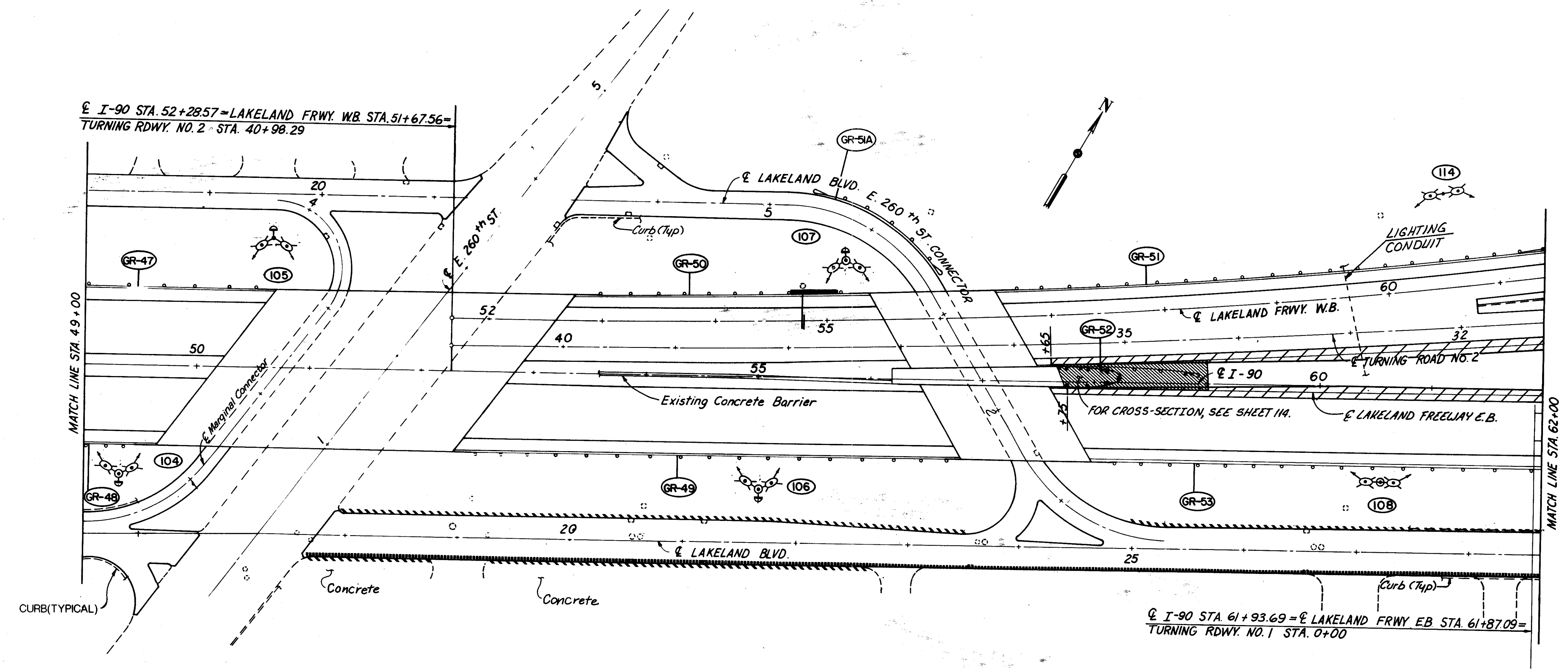
CROSS REFERENCE	
ITEM	SHEET
RESURFACING QUANTITIES	39-43
RESURFACING DETAILS	95-97
GUARDRAIL QUANTITIES	49
GUARDRAIL DETAILS	94
GRADING QUANTITIES	46
TRAFFIC CONTROL PLANS	166-167
LIGHTING QUANTITIES	182
CURB REMOVAL DETAILS AND QUANTITIES	94
BERM WIDENING DETAILS	87-88
BERM WIDENING QUANTITIES	45
LEGEND	55
PAVEMENT REPAIR DETAILS AND QUANTITIES	98
PAVEMENT WIDENING	102



FHWA REGION	STATE	PROJECT	
5	OHIO		

72
200

CUYAHOGA COUNTY
CUY - 90-23.95
LAKE COUNTY
LAK - 90-0.00



CROSS REFERENCE	
ITEM	SHEET
RESURFACING QUANTITIES	40-43
RESURFACING DETAILS	95-97
GUARDRAIL QUANTITIES	49
GUARDRAIL DETAILS	94
GRADING QUANTITIES	46, 114
TRAFFIC CONTROL PLANS	168
LIGHTING QUANTITIES	182
CURB REMOVAL DETAILS AND QUANTITIES	94
BERM WIDENING DETAILS	91
BERM WIDENING QUANTITIES	44
LEGEND	55
PAVEMENT REPAIR DETAILS AND QUANTITIES	98

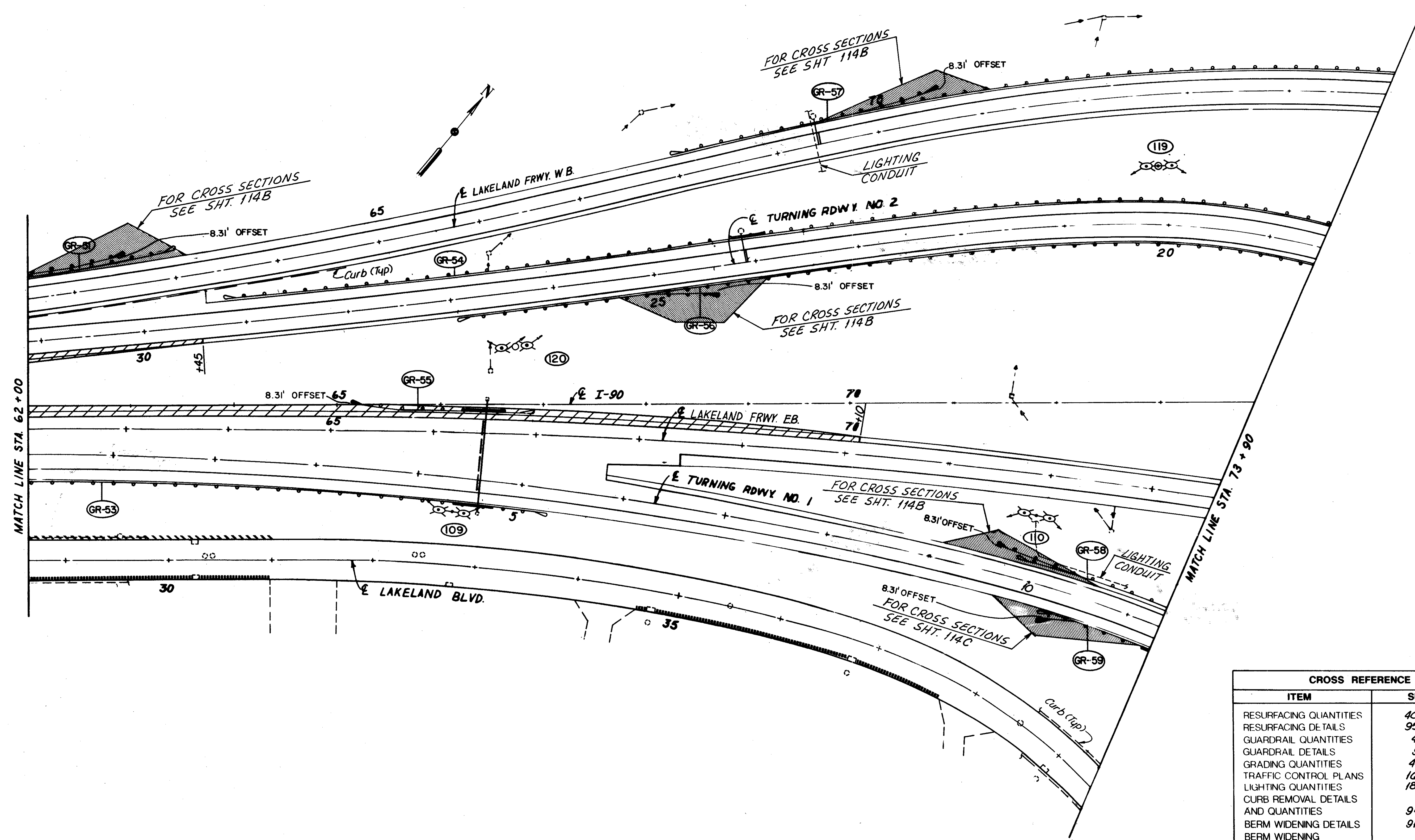
MADE P.F. DATE 3-3-90
 TRACED R.L.B. DATE 3-10-90
 CHECKED R.M. DATE 3-13-90
 SCALE 1"=50'
Howard, Needles, Tammen & Bergendoff
 CONSULTING ENGINEERS
 CLEVELAND, OHIO



FHWA REGION	STATE	PROJECT	
5	OHIO		

73
200

CUYAHOGA COUNTY
CUY - 90-23.95
LAKE COUNTY
LAK - 90-0.00



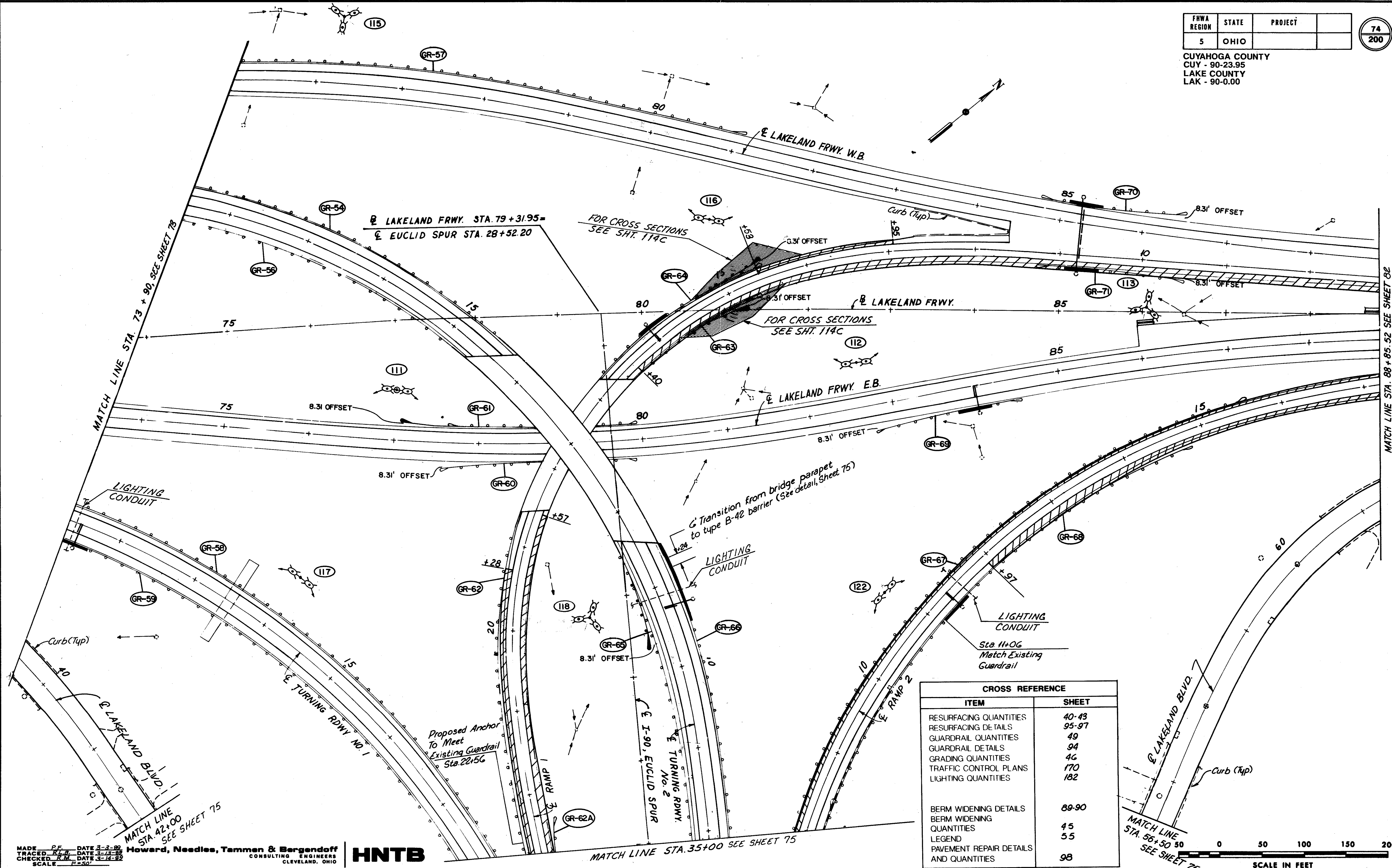
CROSS REFERENCE	
ITEM	SHEET
RESURFACING QUANTITIES	40-43
RESURFACING DETAILS	95-97
GUARDRAIL QUANTITIES	49
GUARDRAIL DETAILS	94
GRADING QUANTITIES	46
TRAFFIC CONTROL PLANS	169
LIGHTING QUANTITIES	182
CURB REMOVAL DETAILS	
AND QUANTITIES	94
BERM WIDENING DETAILS	91
BERM WIDENING	
QUANTITIES	44
LEGEND	55
PAVEMENT REPAIR DETAILS	
AND QUANTITIES	98



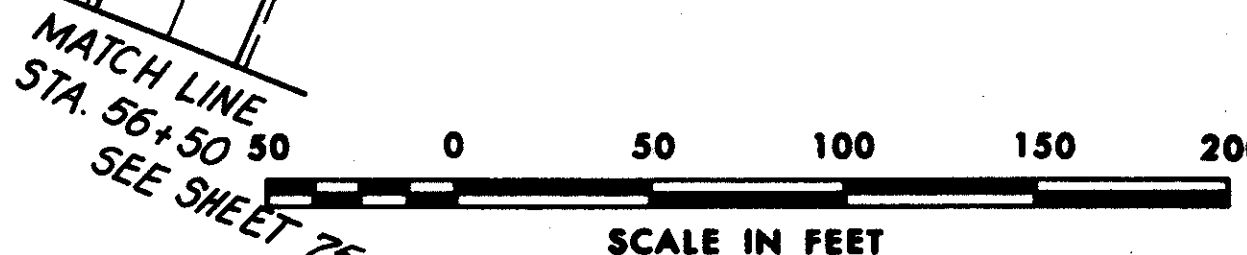
MADE P.F. DATE 3-3-89
TRACED R.L.B. DATE 3-18-89
CHECKED R.M. DATE 3-14-89
SCALE 1"=50'

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

HNTB



CROSS REFERENCE	
ITEM	SHEET
RESURFACING QUANTITIES	40-43
RESURFACING DETAILS	95-97
GUARDRAIL QUANTITIES	49
GUARDRAIL DETAILS	94
GRADING QUANTITIES	46
TRAFFIC CONTROL PLANS	170
LIGHTING QUANTITIES	182
BERM WIDENING DETAILS	89-90
BERM WIDENING QUANTITIES	45
LEGEND	55
PAVEMENT REPAIR DETAILS AND QUANTITIES	98



MADE P.F. DATE 3-2-89
 TRACED R.L.B. DATE 3-15-89
 CHECKED R.M. DATE 3-14-89
 SCALE 1"=50'

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

HNTB

FHWA REGION	STATE	PROJECT
5	OHIO	

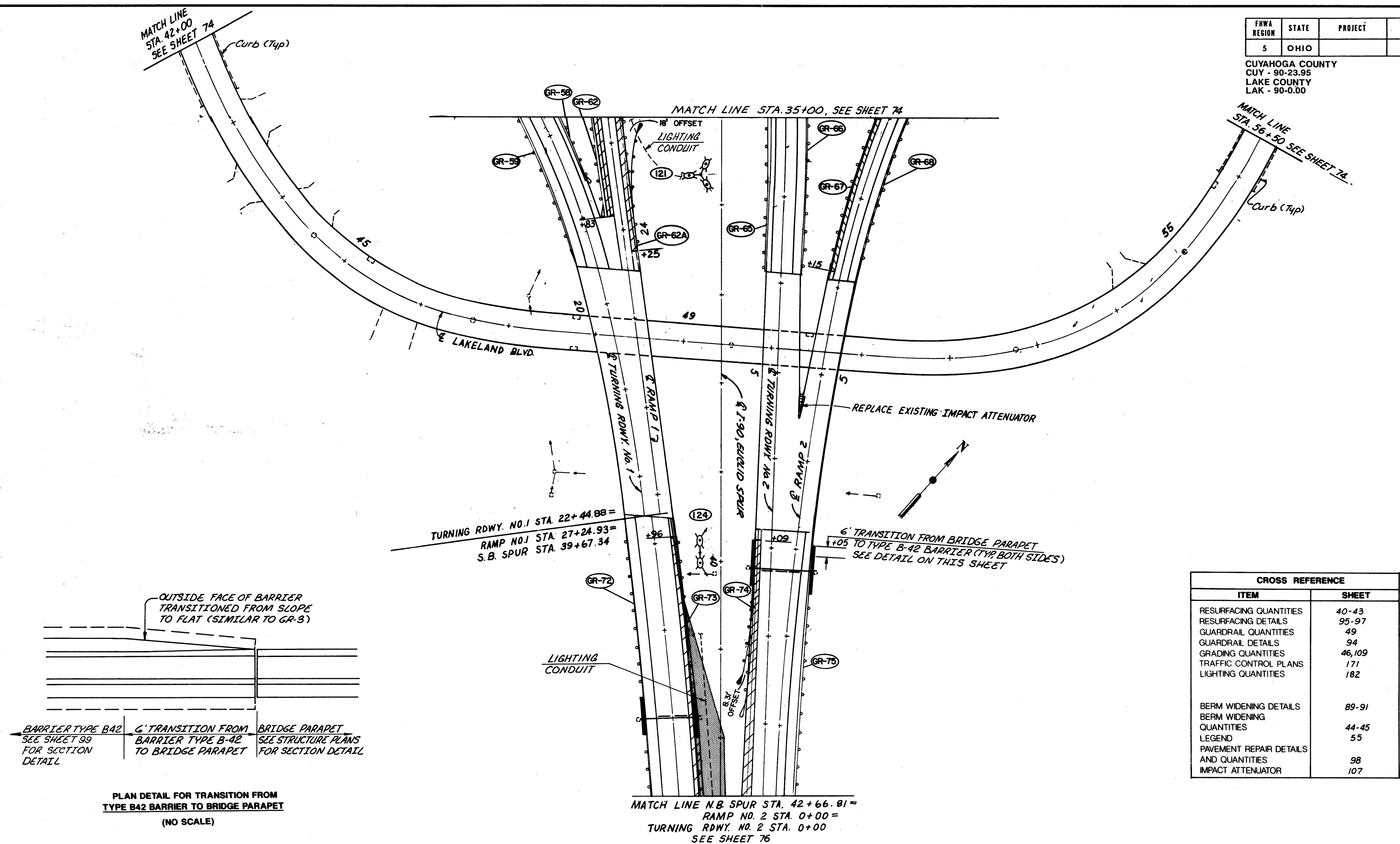
75
200

CUYAHOGA COUNTY
CUY - 90-23.95
LAKE COUNTY
LAK - 90-0.00

MATCH LINE
STA. 42+00
SEE SHEET 74

MATCH LINE STA. 35+00, SEE SHEET 74

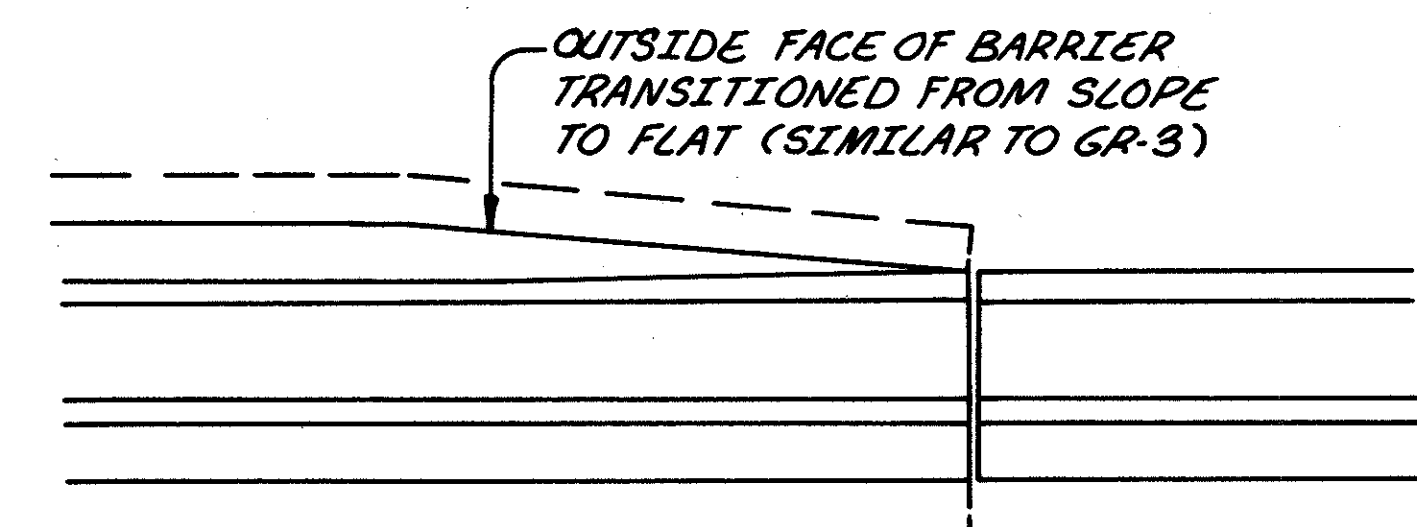
MATCH LINE
STA. 56+50
SEE SHEET 74



TURNING RDWY. NO. 1 STA. 22+44.88 =
RAMP NO. 1 STA. 27+24.93 =
S.B. SPUR STA. 39+67.34

6' TRANSITION FROM BRIDGE PARAPET
+05 TO TYPE B-42 BARRIER (TYP. BOTH SIDES)
SEE DETAIL ON THIS SHEET

MATCH LINE N.B. SPUR STA. 42+66.81 =
RAMP NO. 2 STA. 0+00 =
TURNING RDWY. NO. 2 STA. 0+00
SEE SHEET 76

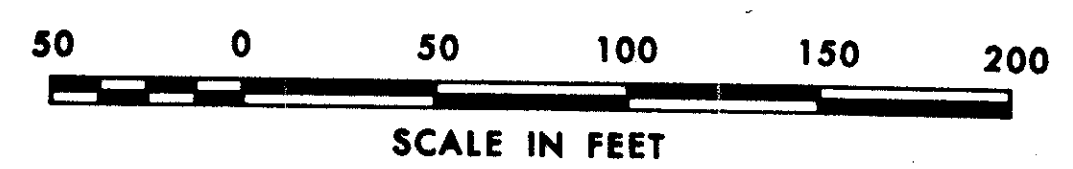


BARRIER TYPE B42 SEE SHEET 99 FOR SECTION DETAIL
6' TRANSITION FROM BRIDGE PARAPET TO BRIDGE PARAPET SEE STRUCTURE PLANS FOR SECTION DETAIL

PLAN DETAIL FOR TRANSITION FROM TYPE B42 BARRIER TO BRIDGE PARAPET (NO SCALE)

CROSS REFERENCE	
ITEM	SHEET
RESURFACING QUANTITIES	40-43
RESURFACING DETAILS	95-97
GUARDRAIL QUANTITIES	49
GUARDRAIL DETAILS	94
GRADING QUANTITIES	46, 109
TRAFFIC CONTROL PLANS	171
LIGHTING QUANTITIES	182
BERM WIDENING DETAILS	89-91
BERM WIDENING QUANTITIES	44-45
LEGEND	55
PAVEMENT REPAIR DETAILS AND QUANTITIES	98
IMPACT ATTENUATOR	107

NOTE: THE COST FOR TRANSITION SHALL BE INCLUDED IN THE PRICE FOR ITEM 622 - CONCRETE BARRIER, TYPE B42



MADE P.E. DATE 3-3-89
TRACED C.L.R. DATE 3-3-89
CHECKED R.M. DATE 2-14-89
SCALE 1"=50'

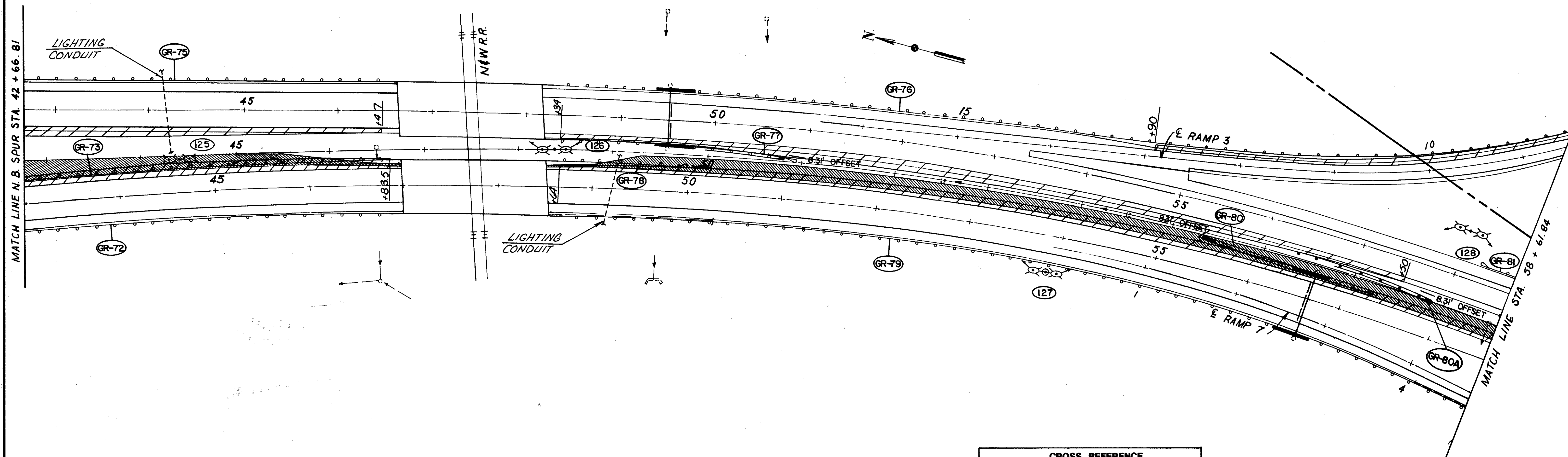
Howard, Needles, Tammen & Bergendoff
CONSULTING ENGINEERS
CLEVELAND, OHIO

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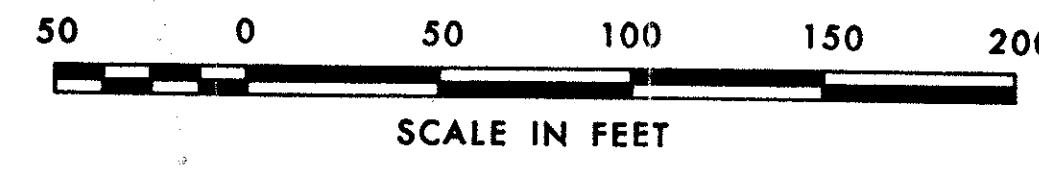
FHWA REGION	STATE	PROJECT
5	OHIO	

76
200

CUYAHOGA COUNTY
 CUY - 90-23.95
 LAKE COUNTY
 LAK - 90-0.00



CROSS REFERENCE	
ITEM	SHEET
RESURFACING QUANTITIES	40-42
RESURFACING DETAILS	95-97
GUARDRAIL QUANTITIES	49-50
GUARDRAIL DETAILS	94
GRADING QUANTITIES	46, 109-110
TRAFFIC CONTROL PLANS	172
LIGHTING QUANTITIES	182
BERM WIDENING DETAILS	90-91
BERM WIDENING QUANTITIES	44-45
LEGEND	55
PAVEMENT REPAIR DETAILS AND QUANTITIES	98



MADE P.F. DATE 3-6-89
 TRACED R.L.A. DATE 3-7-89
 CHECKED R.M. DATE 3-14-89
 SCALE 1"=50'

Howard, Needles, Tammen & Bergendoff
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 CLEVELAND, OHIO

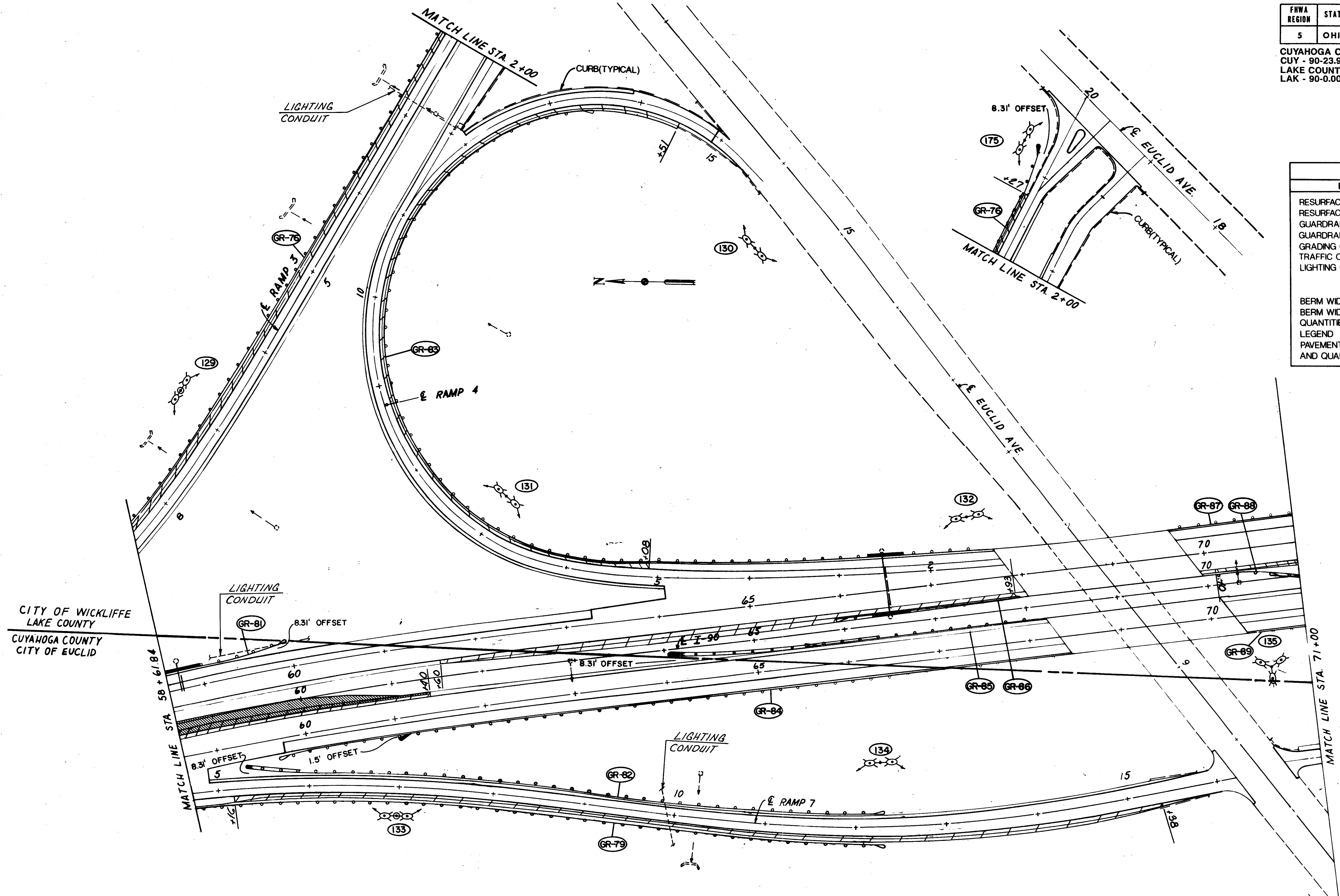


FHWA REGION	STATE	PROJECT	
5	OHIO		

77
200

CUYAHOGA COUNTY
CUY - 90-23.95
LAKE COUNTY
LAK - 90-0.00

CROSS REFERENCE	
ITEM	SHEET
RESURFACING QUANTITIES	40-42
RESURFACING DETAILS	95-97
GUARDRAIL QUANTITIES	50
GUARDRAIL DETAILS	94
GRADING QUANTITIES	46, 113
TRAFFIC CONTROL PLANS	173
LIGHTING QUANTITIES	182
BERM WIDENING DETAILS	83, 90-91
BERM WIDENING QUANTITIES	44-45
LEGEND	55
PAVEMENT REPAIR DETAILS AND QUANTITIES	98

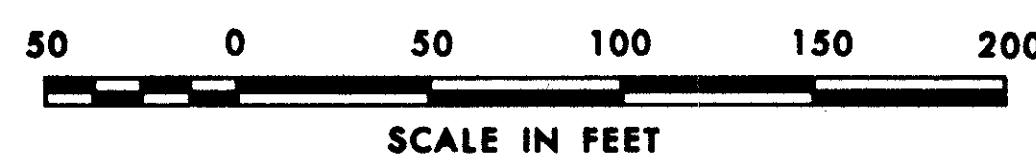


CITY OF WICKLIFFE
LAKE COUNTY
CUYAHOGA COUNTY
CITY OF EUCLID

MADE BY DATE 3-4-89
TRACED P.L.B. DATE 3-13-89
CHECKED R.M. DATE 3-14-89
SCALE 1"=50'

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

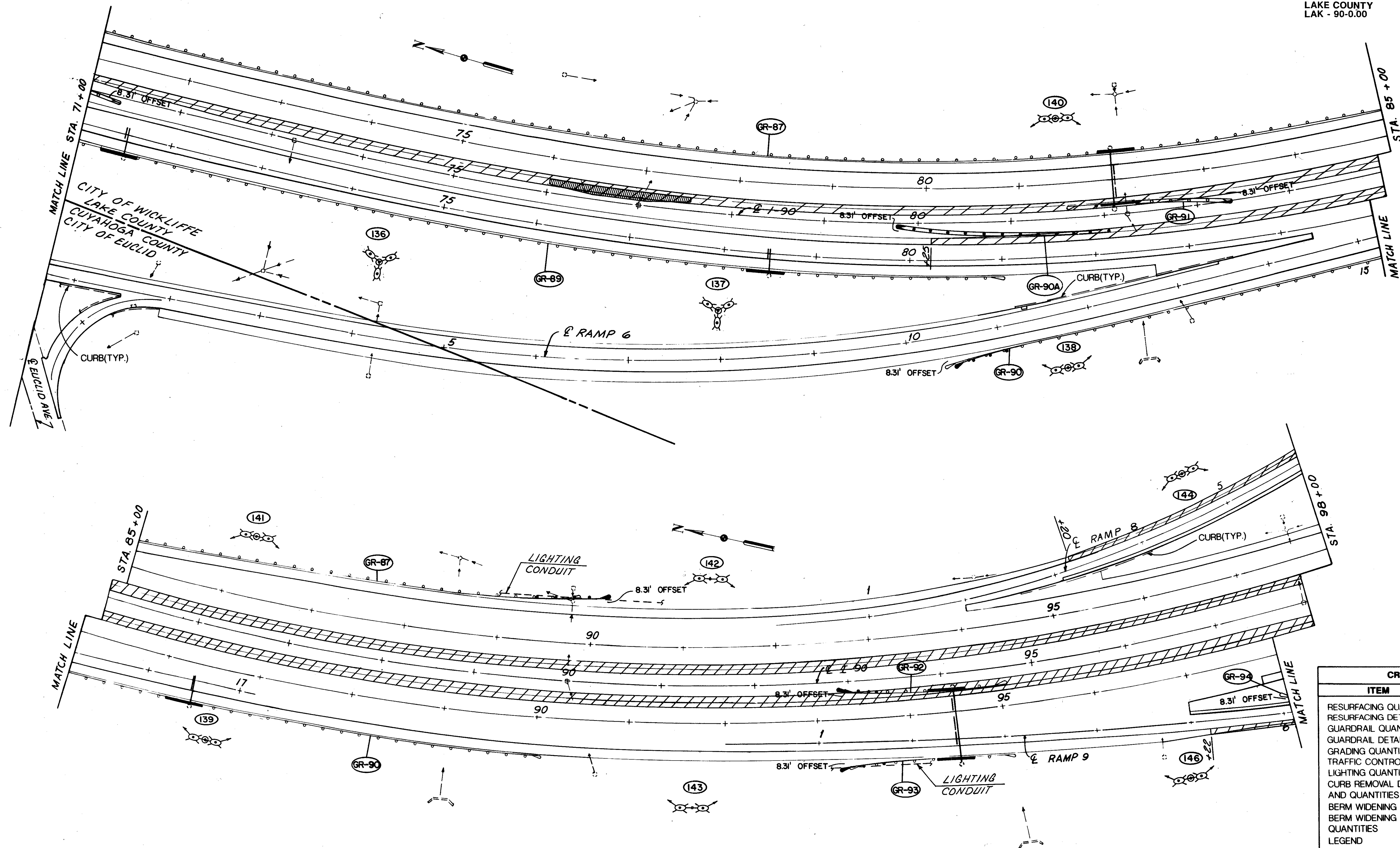
HNTB



FHWA REGION	STATE	PROJECT	
5	OHIO		

78
200

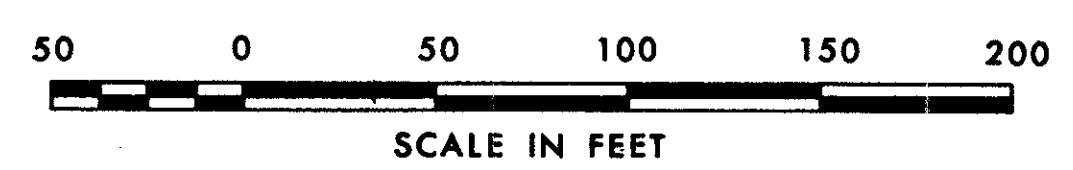
CUYAHOGA COUNTY
CUY - 90-23.95
LAKE COUNTY
LAK - 90-0.00



CROSS REFERENCE	
ITEM	SHEET
RESURFACING QUANTITIES	40, 42
RESURFACING DETAILS	95-97
GUARDRAIL QUANTITIES	50
GUARDRAIL DETAILS	94
GRADING QUANTITIES	46, 114
TRAFFIC CONTROL PLANS	174-175
LIGHTING QUANTITIES	182
CURB REMOVAL DETAILS AND QUANTITIES	94
BERM WIDENING DETAILS AND QUANTITIES	83, 91
BERM WIDENING QUANTITIES	44-45
LEGEND	55
PAVEMENT REPAIR DETAILS AND QUANTITIES	98

MADE BY DATE 3-4-89
TRACED BY DATE 3-14-89
CHECKED BY DATE 3-16-89
SCALE 1"=50'

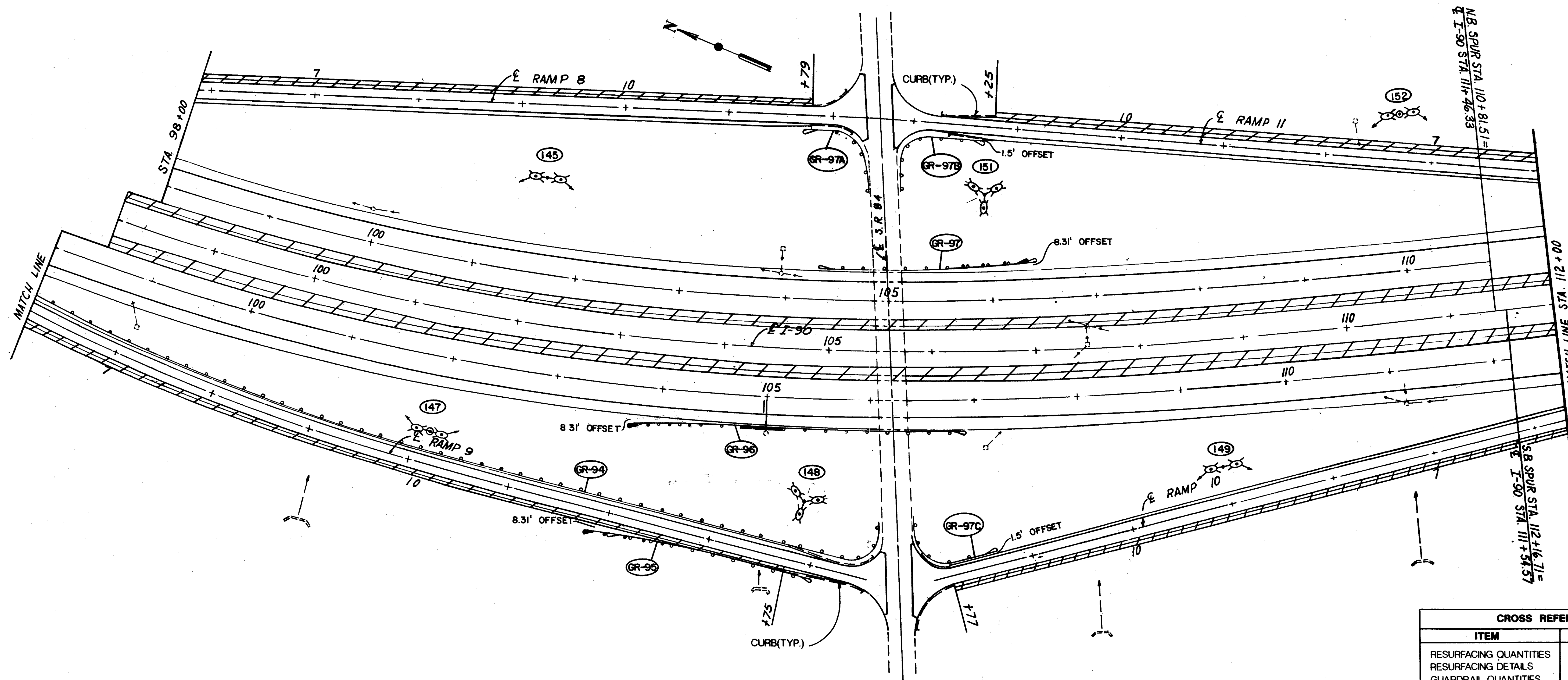
Howard, Needles, Tammen & Bergendoff
CONSULTING ENGINEERS
CLEVELAND, OHIO



FHWA REGION	STATE	PROJECT
5	OHIO	

79
200

CUYAHOGA COUNTY
CUY - 90-23.95
LAKE COUNTY
LAK - 90-0.00



CROSS REFERENCE	
ITEM	SHEET
RESURFACING QUANTITIES	40-42
RESURFACING DETAILS	95-97
GUARDRAIL QUANTITIES	50
GUARDRAIL DETAILS	94
GRADING QUANTITIES	46
TRAFFIC CONTROL PLANS	176
LIGHTING QUANTITIES	182
BERM WIDENING DETAILS	83
BERM WIDENING QUANTITIES	44-45
LEGEND	55
PAVEMENT REPAIR DETAILS AND QUANTITIES	98

MADE P.F. DATE 3-4-89
TRACED R.L.B. DATE 3-5-89
CHECKED R.M. DATE 3-6-89
SCALE 1"=50'

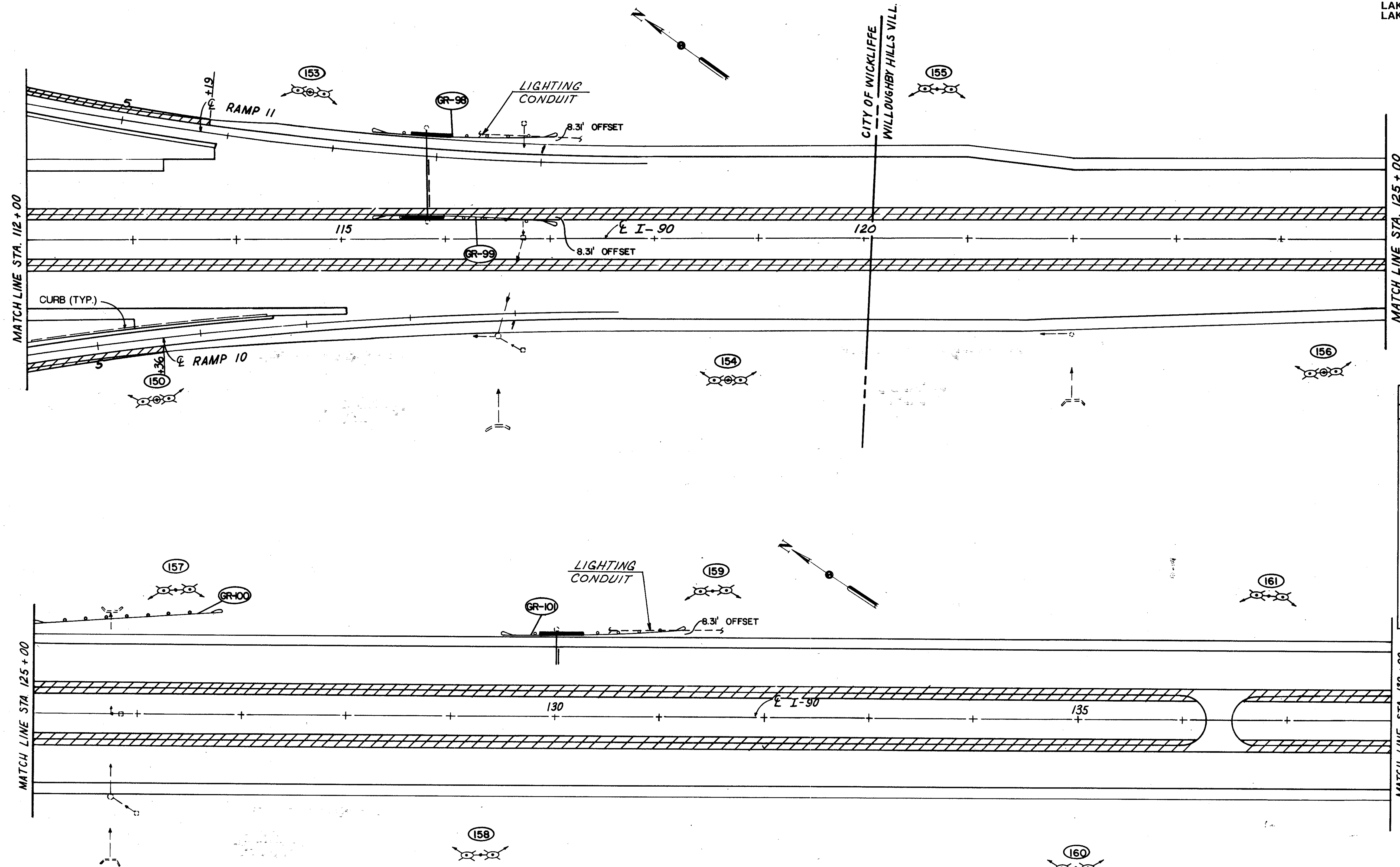
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CONSULTING ENGINEERS
CLEVELAND, OHIO

HNTB

FHWA REGION	STATE	PROJECT
5	OHIO	

80
200

CUYAHOGA COUNTY
CUY - 90-23.95
LAKE COUNTY
LAK - 90-0.00



CROSS REFERENCE	
ITEM	SHEET
RESURFACING QUANTITIES	40-42
RESURFACING DETAILS	95-97
GUARDRAIL QUANTITIES	50
GUARDRAIL DETAILS	94
GRADING QUANTITIES	46
TRAFFIC CONTROL PLANS	177
LIGHTING QUANTITIES	182
CURB REMOVAL DETAILS AND QUANTITIES	94
BERM WIDENING DETAILS	83
BERM WIDENING QUANTITIES	44-45
LEGEND	55
PAVEMENT REPAIR DETAILS AND QUANTITIES	100
CROSSOVER	98



MADE P.F. DATE 3-4-89
TRACED R.L.B. DATE 3-16-89
CHECKED P.M. DATE 3-16-89
SCALE 1" = 50'

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CLEVELAND, OHIO

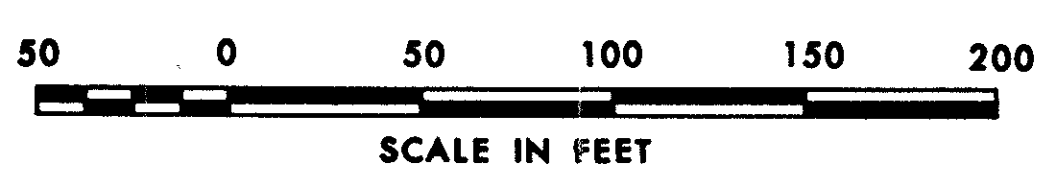
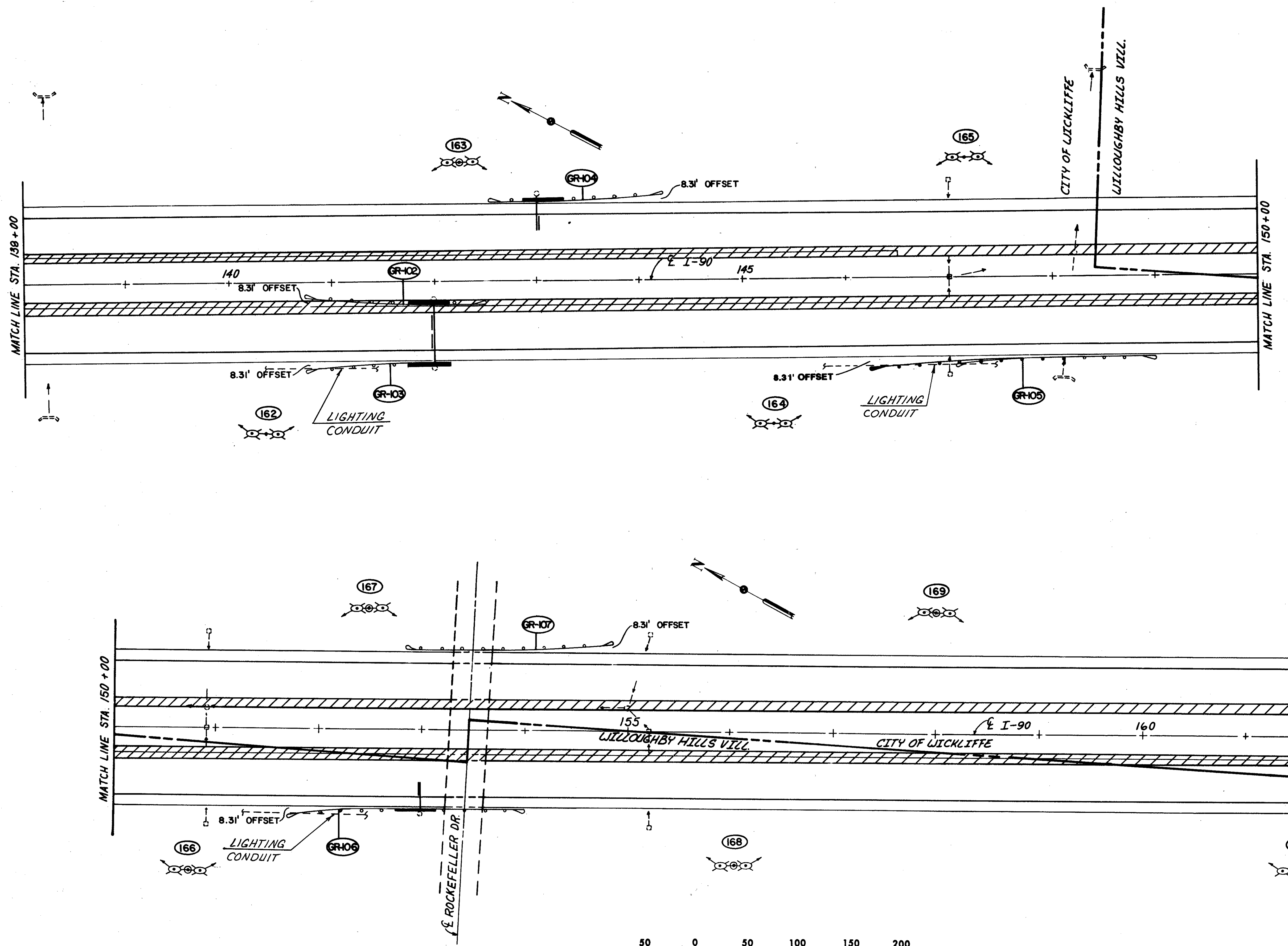
HNTB

FHWA REGION	STATE	PROJECT	
5	OHIO		

81
200

CUYAHOGA COUNTY
CUY - 90-23.95
LAKE COUNTY
LAK - 90-0.00

CROSS REFERENCE	
ITEM	SHEET
RESURFACING QUANTITIES	40-42
RESURFACING DETAILS	95-97
GUARDRAIL QUANTITIES	50
GUARDRAIL DETAILS	94
GRADING QUANTITIES	46
TRAFFIC CONTROL PLANS	178
LIGHTING QUANTITIES	182
LEGEND	55
PAVEMENT REPAIR DETAILS AND QUANTITIES	98
BERM WIDENING QUANTITIES	44



MADE BY DATE 3-4-89
TRACED BY R. DATE 3-12-89
CHECKED BY M. DATE 2-17-89
SCALE 1"=50'

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

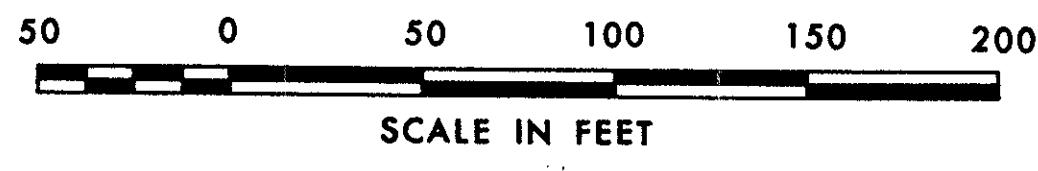
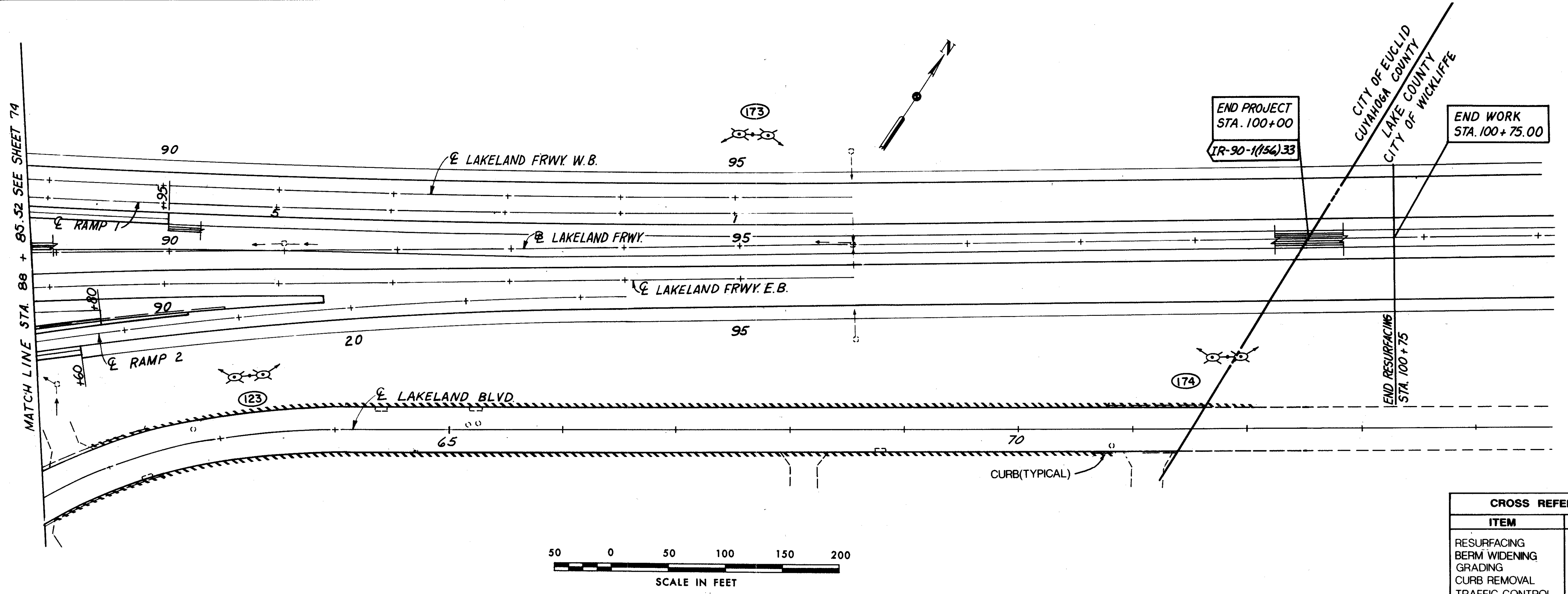
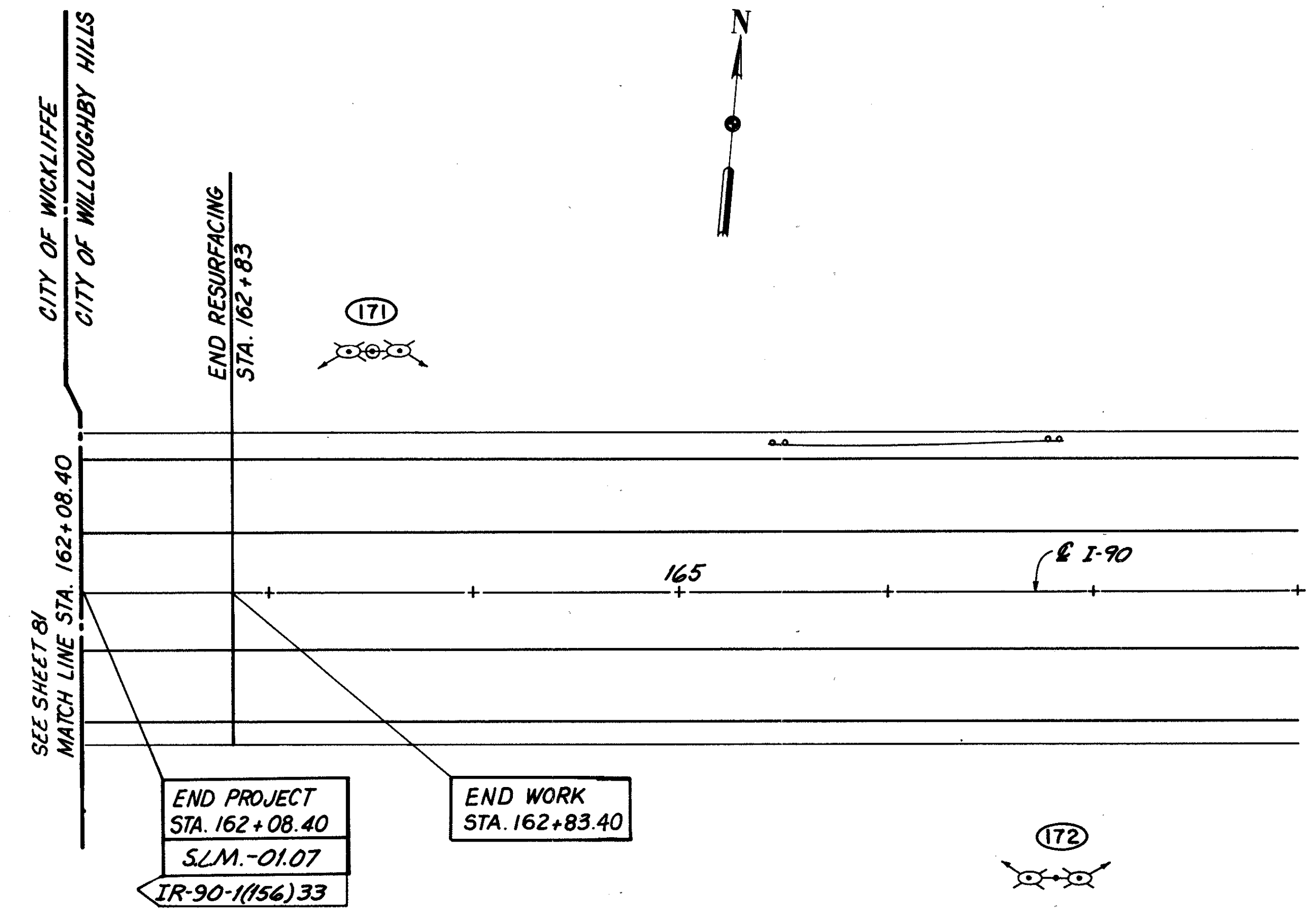


FHWA REGION	STATE	PROJECT	
5	OHIO		

82
200

CUYAHOGA COUNTY
CUY - 90-23.95
LAKE COUNTY
LAK - 90-0.00

CROSS REFERENCE	
ITEM	SHEET
RESURFACING	40, 42
LIGHTING	182
RESURFACING DETAILS	95-97
LEGEND	55



CROSS REFERENCE	
ITEM	SHEET
RESURFACING	43-45
BERM WIDENING	Typical Section
GRADING	46, 108
CURB REMOVAL	94
TRAFFIC CONTROL	179
LIGHTING	182
LEGEND	55

MADE P.F. DATE 3-4-89
TRACED K.L.B. DATE 3-15-89
CHECKED R.M. DATE 3-17-89
SCALE 1"=50'

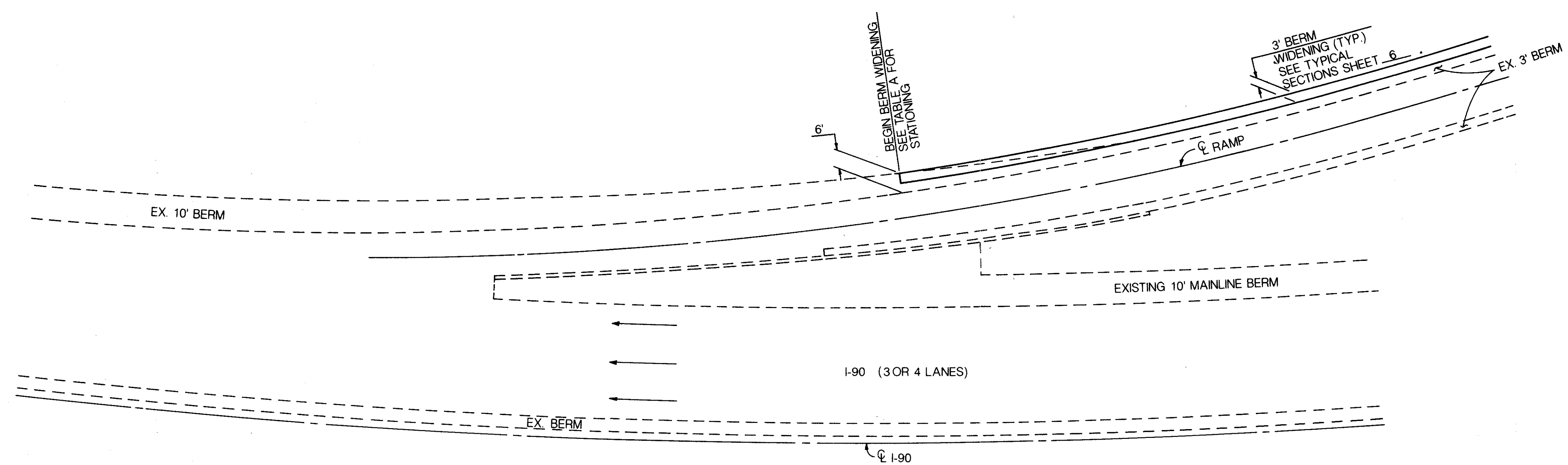
Howard, Needles, Tammen & Bergendoff
CONSULTING ENGINEERS
CLEVELAND, OHIO



FHWA REGION	STATE	PROJECT	
5	OHIO		

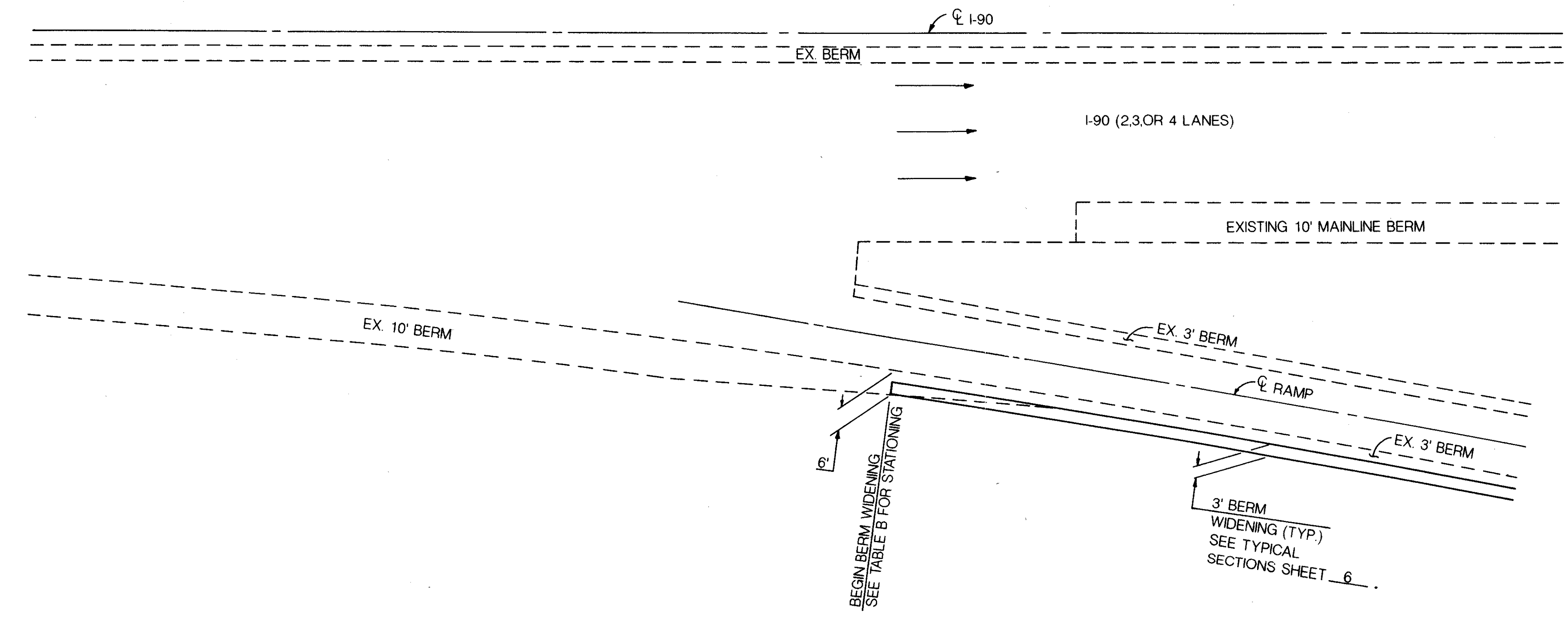
83
200

CUYAHOGA COUNTY
CUY - 90-23.95
LAKE COUNTY
LAK - 90-0.00



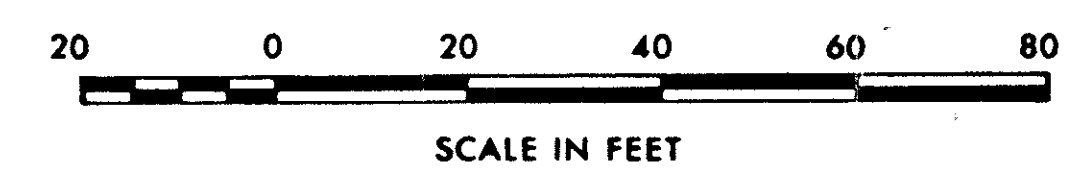
ENTRANCE RAMPS - 3' BERM WIDENING
RAMPS 8, 13, 14, 15, 2-E, 6-E
8, 10, (EUCLID SPUR)

RAMP NO.	STATION
8	5+35
13	4+20
14	3+40
15	2+73
2-E	4+49
6-E	3+85
8(EUCLID SPUR)	3+20
10(EUCLID SPUR)	4+36



EXIT RAMPS - 3' BERM WIDENING
RAMPS 12, 14A, 16, 1-E, 7-E
4, 7, 9, 11 (EUCLID SPUR)

RAMP NO.	STATION
12	4+29
14A	4+35
16	2+95
1-E	4+39
7-E	3+80
4 (EUCLID SPUR)	5+08
7 (EUCLID SPUR)	5+16
9 (EUCLID SPUR)	5+22
11 (EUCLID SPUR)	4+19



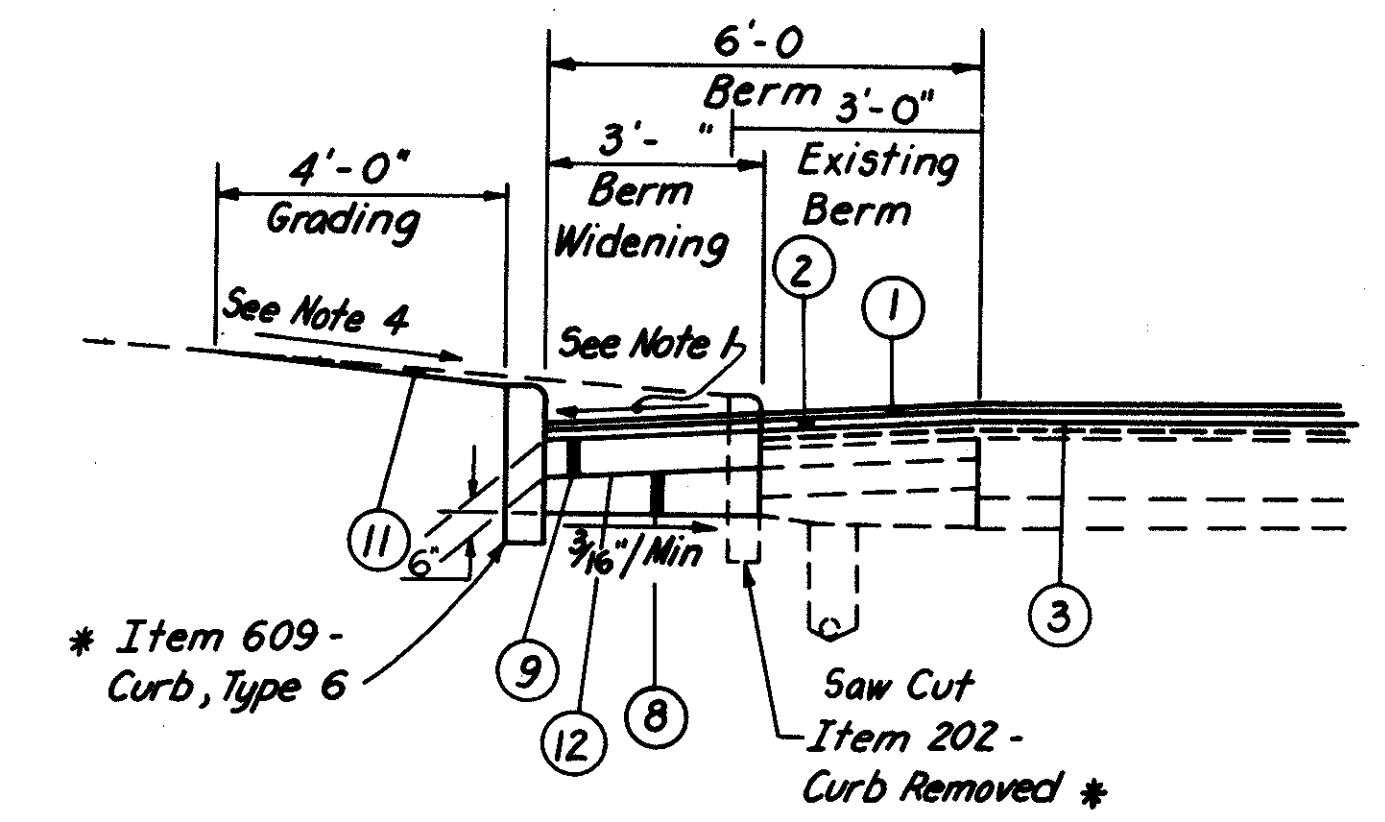
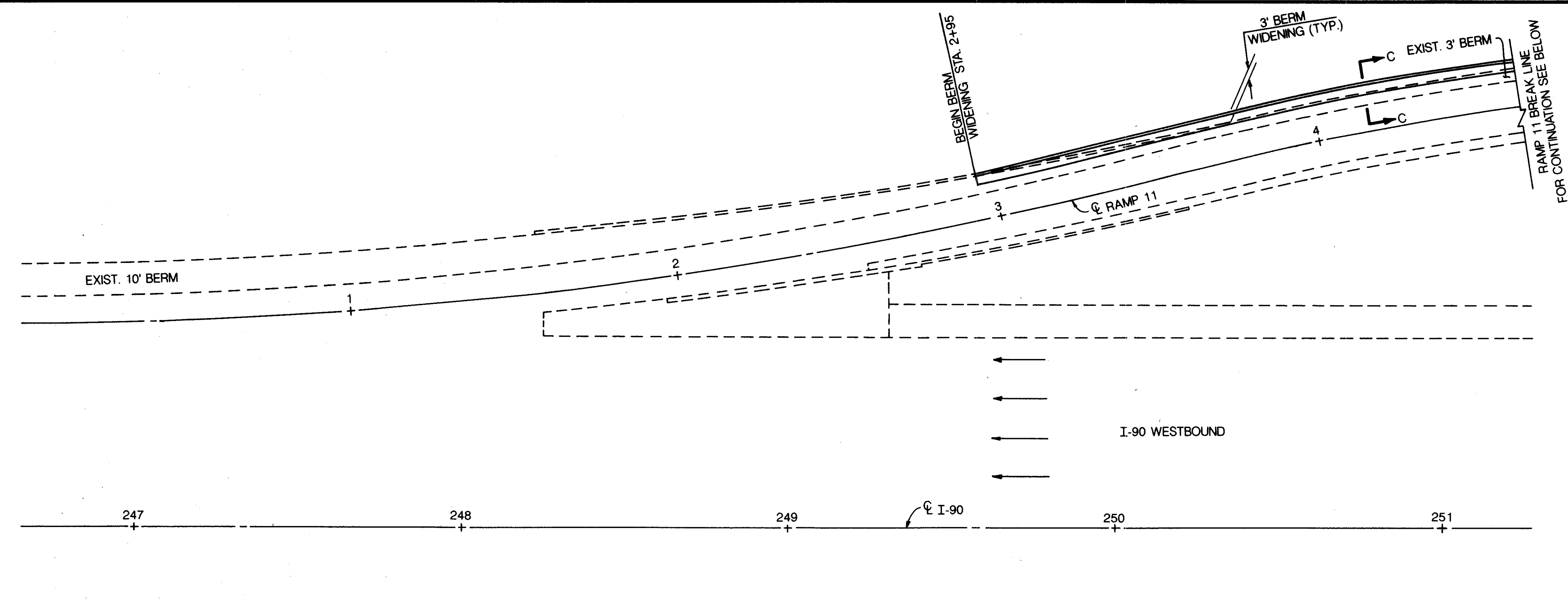
FOR BERM WIDENING QUANTITIES SEE SHEET 45

MADE P.F. DATE 2-22-89
TRACED R.L.B. DATE 2-22-89
CHECKED S.M. DATE 2-22-89
SCALE 1"=20'

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CUYAHOGA COUNTY
 CUY - 90-23.95
 LAKE COUNTY
 LAK - 90-0.00



SECTION C-C

1' 0" 2' 4"
 SCALE IN FEET

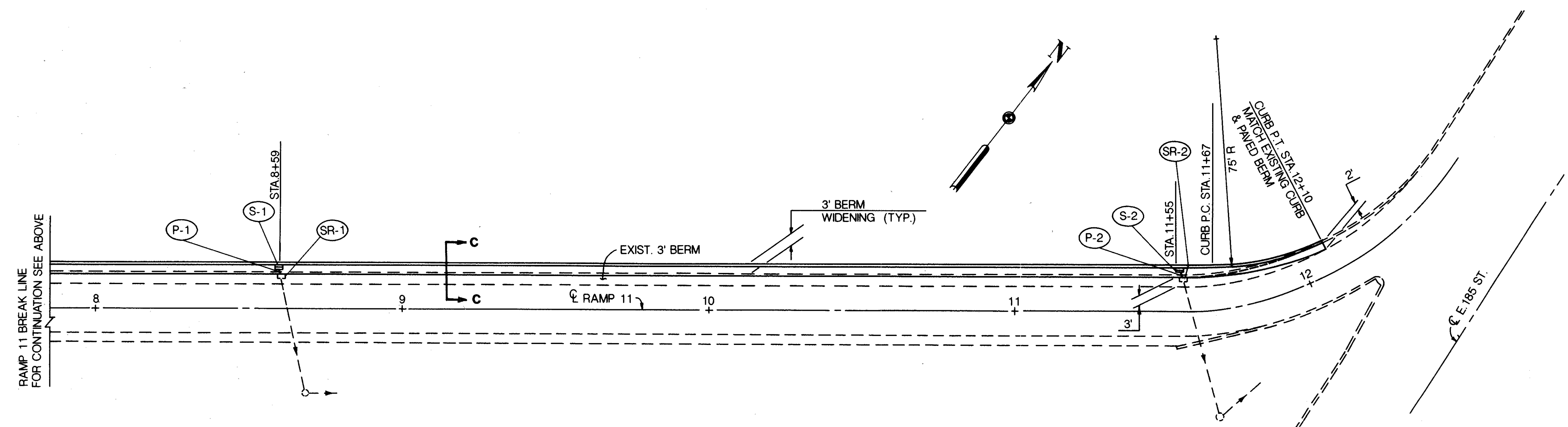
RAMP NO. 11

- Notes:
1. Match Existing Berm Slope
 2. For Complete Ramp typical section see sheet 6.
 - * 3. Items marked with an asterisk indicates quantities covered on this sheet. For all other quantities refer to appropriate sub-summary tables.
 4. Slope of existing ground varies from 30:1 to 8:1. All excavation from outside of existing curb to the inside of proposed curb is covered under Berm Widening - see sheet 45. Earthwork required outside of the proposed curb is covered under Linear Grading - see sheet 46.

CURB QUANTITIES					
STATION		202	609		
FROM	TO	CURB REMOVED	CURB TYPE 6		
		LIN. FT.	LIN. FT.		
2+95	12+10	915	915		
TOTAL		915	915		

DRAINAGE QUANTITIES					
REF. NO.	STATION	202	603+	604	603++
		INLET ABANDONED AS PER PLAN **	12" CONDUIT, TYPE B	CATCH BASIN NO. 3A	6" CONDUIT TYPE B
		EACH	LIN. FT.	EACH	LIN. FT.
SR-1	8+60	1			
P-1	8+60		3		
S-1	8+59			1	8
SR-2	11+53	1			
P-2	11+53		3		
S-2	11+52			1	8
TOTAL		2	6	2	16

- LEGEND**
- ① ITEM 446 - 1-1/4" ASPHALT CONCRETE SURFACE COURSE, TYPE I, AC-20, AS PER PLAN
 - ② ITEM 446 - 1-3/4" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE 2, AC-20
 - ③ ITEM 407 - TACK COAT,
 - ⑧ ITEM 310 - SUBBASE, TYPE II, AS PER PLAN.
 - ⑨ ITEM 301 - 6" AGGREGATE BASE, AC-20
 - ⑪ ITEM 203 - LINEAR GRADING, AS PER PLAN.
 - ⑫ ITEM 408 - BITUMINOUS PRIME COAT



RAMP NO. 11

20 0 20 40 60 80
 SCALE IN FEET

MADE P.F. DATE 2-22-99
 TRACED R.L.D. DATE 2-22-99
 CHECKED R.M. DATE 2-22-99
 SCALE 1"=20'

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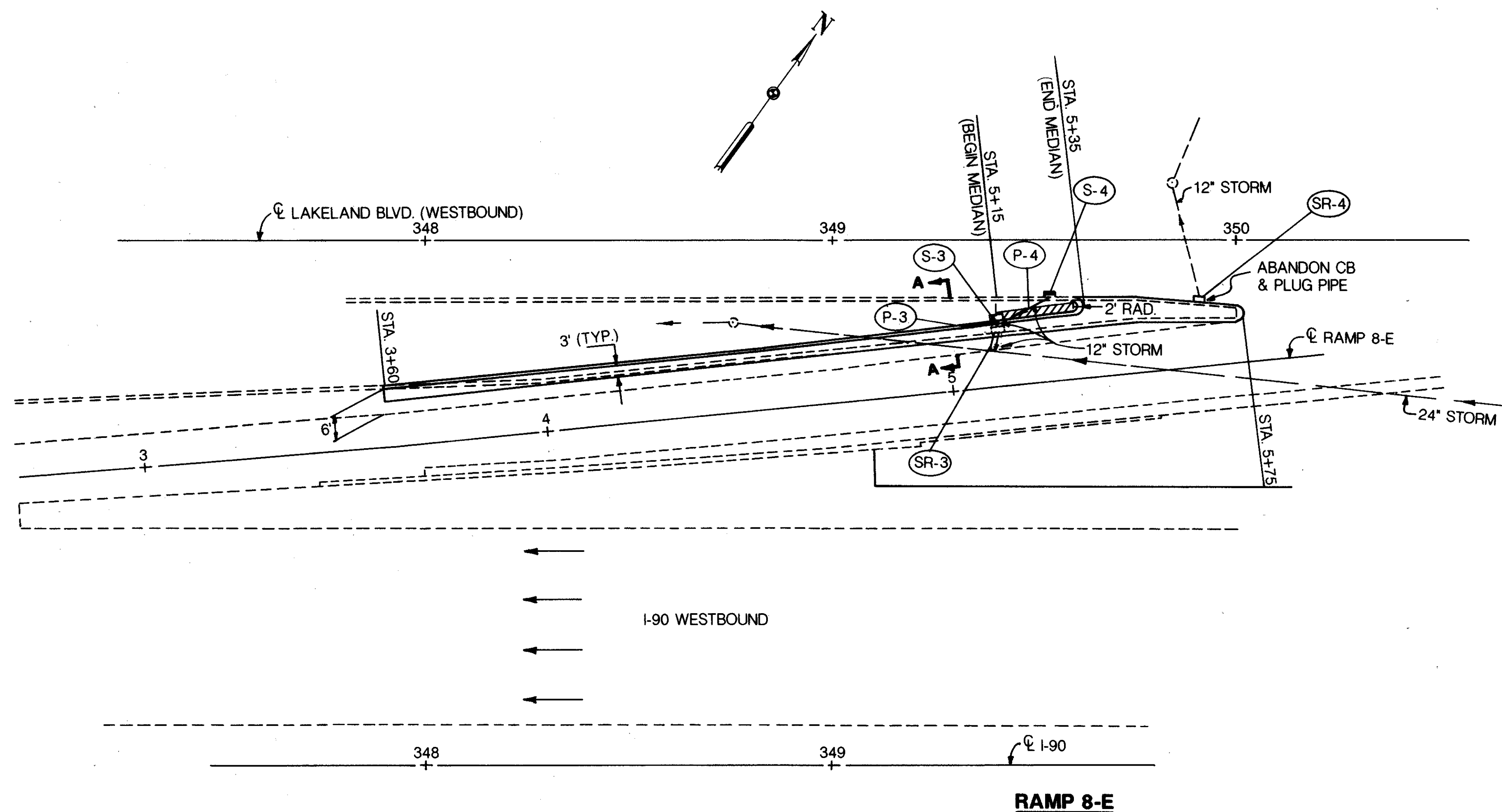


++ TO OUTLET EXISTING UNDERDRAIN INTO PROPOSED CATCH BASINS.
 ** CONNECT PIPES THRU. SEE DETAIL ON SHEET 92.
 + FOR SEWER PROFILES SEE SHEET 92

FHWA REGION	STATE	PROJECT
5	OHIO	

85
200

CUYAHOGA COUNTY
CUY - 90-23.95
LAKE COUNTY
LAK - 90-0.00



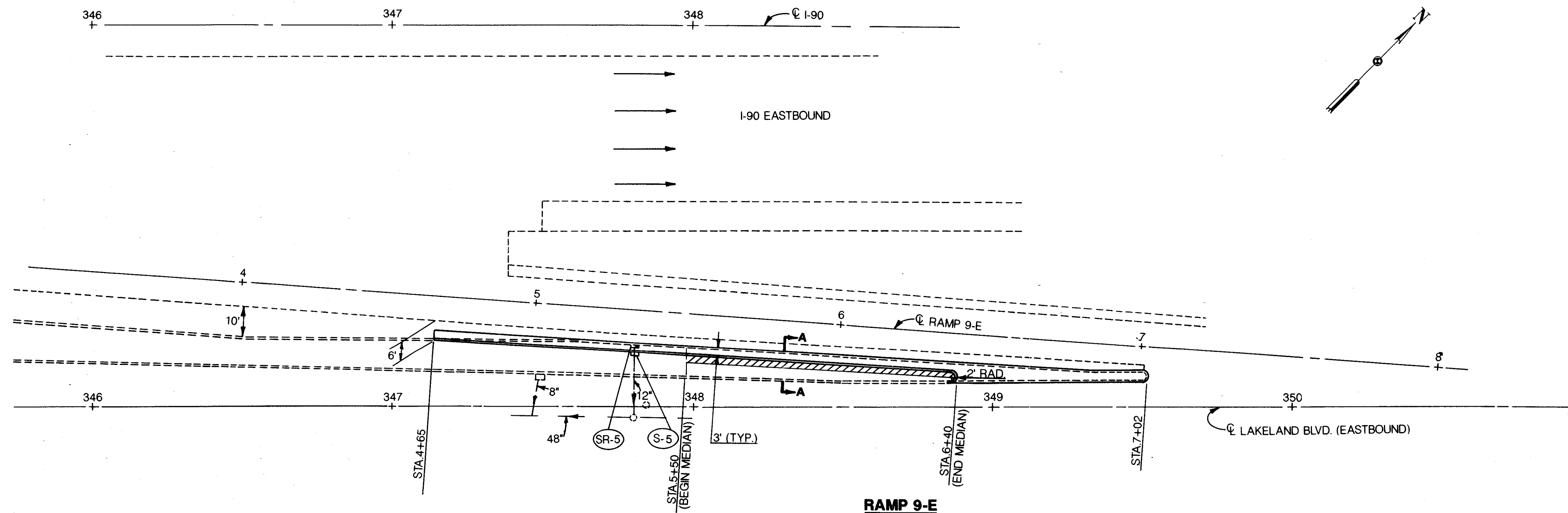
STATION	LENGTH	WIDTH	202		612	
			MEDIAN REMOVED	4" CONC. TRAFFIC ISLAND	MEDIAN REMOVED	4" CONC. TRAFFIC ISLAND
FROM	TO	FT	FT	S.Y.	S.Y.	S.Y.
5+15	5+35	20	2.5	10.0	4.4	
5+35	5+75	40	4.5	20.0		
TOTALS				30.0	4.4	

STATION	202	609	
		CURB REMOVED	CURB TYPE 6
FROM	TO	LIN. FT	LIN. FT
3+60	5+35	175	179
5+35	5+75	82	
TOTALS		257	179

REF. NO.	STATION	202	202	603	604	603	603++	604	203
		AS PER PLAN		24" AND TYPE B UNDER		AS PER PLAN		AS PER PLAN	
		EACH	LIN. FT	LIN. FT	EACH	LIN. FT	LIN. FT	EACH	EACH
SR-3	5+15								1*
S-4	349+55+				1		8		
S-3	5+15					12			
P-4	5+27			4					
P-3	5+15								
SR-4	5+62	1							
TOTALS		1		4	1	12	16	1	1

* CONNECT PIPES THROUGH ABANDONED INLET OR CATCH BASIN. SEE DETAIL ON SHEET 92.
+ CENTERLINE STATION LAKELAND BOULEVARD
++ TO OUTLET EXISTING UNDERDRAIN INTO PROPOSED INLET OR CATCH BASIN
SEE DETAIL ON SHEET 92.

FOR PAVEMENT QUANTITIES SEE SHEET 45
FOR SEWER PROFILES SEE SHEET 93
FOR SECTION A-A SEE SHEET 88.



STATION	202	609	
		CURB REMOVED	CURB TYPE 6
FROM	TO	LIN. FT	LIN. FT
4+65	6+40	175	179
6+40	7+02	126	--
TOTALS		301	179

STATION	LENGTH	WIDTH	202		612	
			AVG	CONCRETE MEDIAN REMOVED	4" CONC. TRAFFIC ISLAND	4" CONC. TRAFFIC ISLAND
FROM	TO	FT	FT	S.Y.	S.Y.	S.Y.
5+50	6+40	90	2.50	45.0	20.0	
6+40	7+02	62	4.50	31.0		
TOTALS				76.0	20.0	

REF. NO.	STATION	202	202	604	603+
		ABANDONED		REMOVED	
		AS PER PLAN		NO. 2-A-8	
		CONDUIT		CONDUIT	
		24" AND TYPE B		AS PER PLAN	
		UNDER		TYPE B	
		#	LIN. FT	EACH	LIN. FT
S-5	5+33			1	
SR-5	5+33	1	3		8
TOTALS		1	3	1	8

+ TO OUTLET UNDERDRAIN INTO PROPOSED INLET
SEE DETAIL ON SHEET 92.
* SEE DETAIL ON SHEET 92.

FOR PAVEMENT QUANTITIES SEE SHEET 45
FOR SECTION A-A SEE SHEET 88.
FOR SEWER PROFILES SEE SHEET 93

MADE BY DATE 1-22-88
TRACED BY DATE 2-22-88
CHECKED BY DATE 2-23-88
SCALE 1"=20'

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

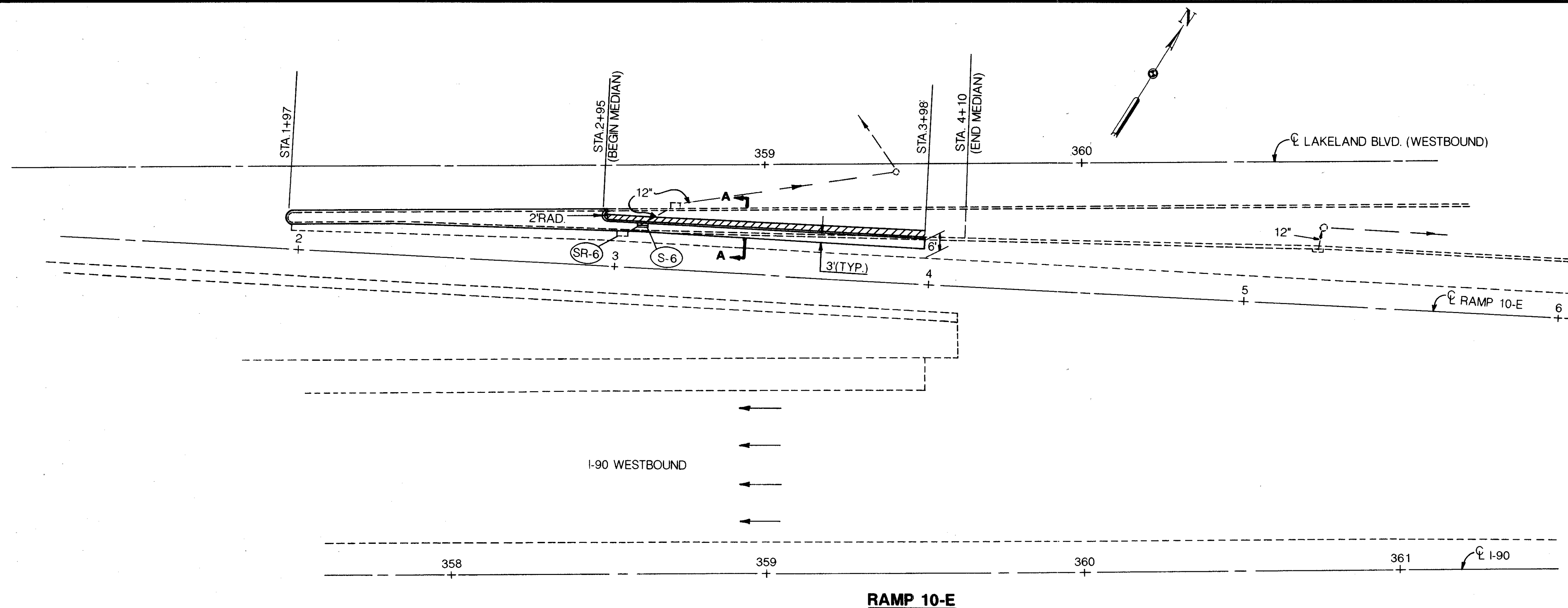
HNTB



FHWA REGION	STATE	PROJECT
5	OHIO	

86
200

CUYAHOGA COUNTY
CUY - 90-23.95
LAKE COUNTY
LAK - 90-0.00



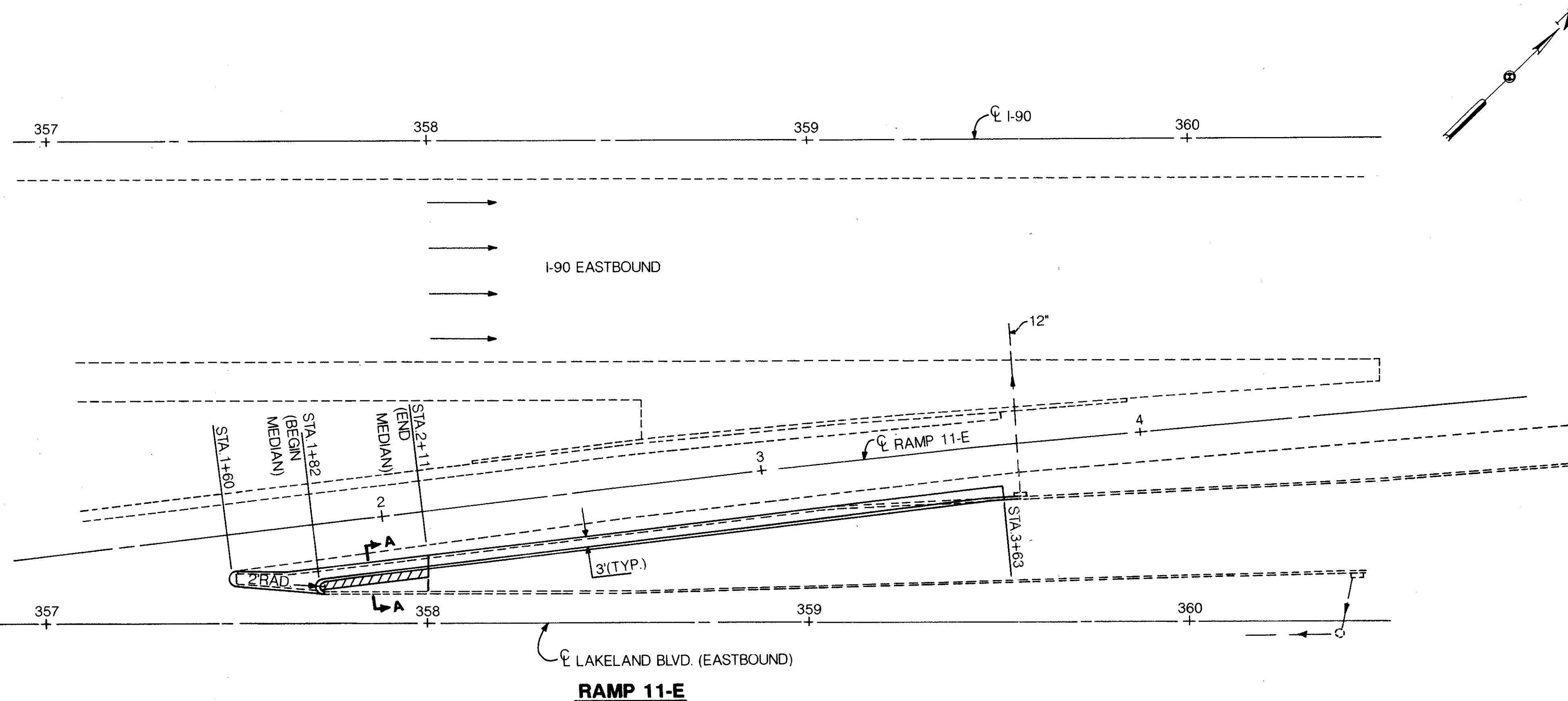
STATION	202	609
FROM	CURB	CURB
TO	REMOVED	TYPE 6
	LIN. FT	LIN. FT
1+97	2+95	198
2+95	3+98	103
TOTALS	301	107

STATION	LENGTH	WIDTH	202	612
FROM	TO	AVG	MEDIAN	4" CONC.
		FT	REMOVED	TRAFFIC ISLAND
		FT	S. Y.	S. Y.
1+97	2+95	98	4.5	49.0
2+95	3+98	103	1.25	37.2
TOTALS			86.2	22.9

REF. NO.	STATION	202	202	604	603 +
	FROM	TO	INLET	PIPE	CATCH
	OR AT		ABANDONED	REMOVED	BASIN
			AS PER PLAN	24" AND NO. 3A	CONDUIT
			* UNDER		TYPE B
			EACH	LIN. FT	EACH
			LIN. FT		LIN. FT
SR-6	3+02	3+02	1		
S-6	3+02	3+08		7	
	3+08	3+08			1
TOTALS			1	7	1
					8

FOR SECTION A-A SEE SHEET 88.
FOR PAVEMENT QUANTITIES SEE SHEET 45
FOR SEWER PROFILES SEE SHEET 93

+ TO OUTLET EXISTING UNDERDRAIN SEE DETAIL ON SHEET 92.
*SEE DETAIL ON SHEET 92.



STATION	202	609
FROM	CURB	CURB
TO	REMOVED	TYPE 6
	LIN. FT	LIN. FT
1+60	1+82	46
1+82	3+63	181
TOTALS	227	185

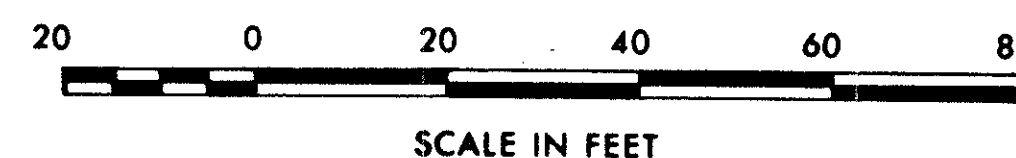
STATION	LENGTH	WIDTH	202	612
FROM	TO	AVG	CONCRETE	4" CONC.
		FT	MEDIAN	TRAFFIC
		FT	REMOVED	ISLAND
		FT	S. Y.	S. Y.
1+60	1+82	22	4.5	11.0
1+82	2+11	29	2.5	14.4
TOTALS			25.4	6.4

FOR PAVEMENT QUANTITIES SEE SHEET 45
FOR SECTION A-A SEE SHEET 88.

MADE OF DATE 2-22-89
TRACED R/B DATE 2-22-89
CHECKED RM DATE 2-24-89
SCALE 1"=20'

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

HNTB



FHWA REGION	STATE	PROJECT
5	OHIO	

87
200

CUYAHOGA COUNTY
CUY - 90-23.95
LAKE COUNTY
LAK - 90-0.00

CURB QUANTITIES				
STATION	202	609		
FROM	TO	CURB REMOVED	CURB TYPE 6	
		LIN. FT	LIN. FT	
4+78	6+57	179	183	
6+57	7+06	100		
TOTALS		279	183	

CONCRETE MEDIAN QUANTITIES					
STATION	LENGTH	WIDTH	202	612	
FROM	TO		MEDIAN REMOVED	4" CONC. TRAFFIC ISLAND	
		FT	S.Y.	S.Y.	
6+06	6+57	51	2.50	25.5	11.3
6+57	7+06	49	4.50	24.5	
TOTALS			50.0	11.3	

DRAINAGE QUANTITIES						
REF. NO.	STATION	202	202	604	603+	
	FROM	TO	INLET ABANDONED AS PER PLAN *	PIPE REMOVED UNDER	INLET NO. 2-A-6	6" CONDUIT AS PER PLAN TYPE B
		OR AT	EACH	LIN. FT	EACH	LIN. FT
S-7		5+92			1	8
SR-7		5+92	1	3	1	8
TOTALS			1	3	1	8

+ TO OUTLET EXISTING UNDERDRAIN INTO PROPOSED INLET.
SEE DETAIL ON SHEET 92
* SEE DETAIL ON SHEET 92.

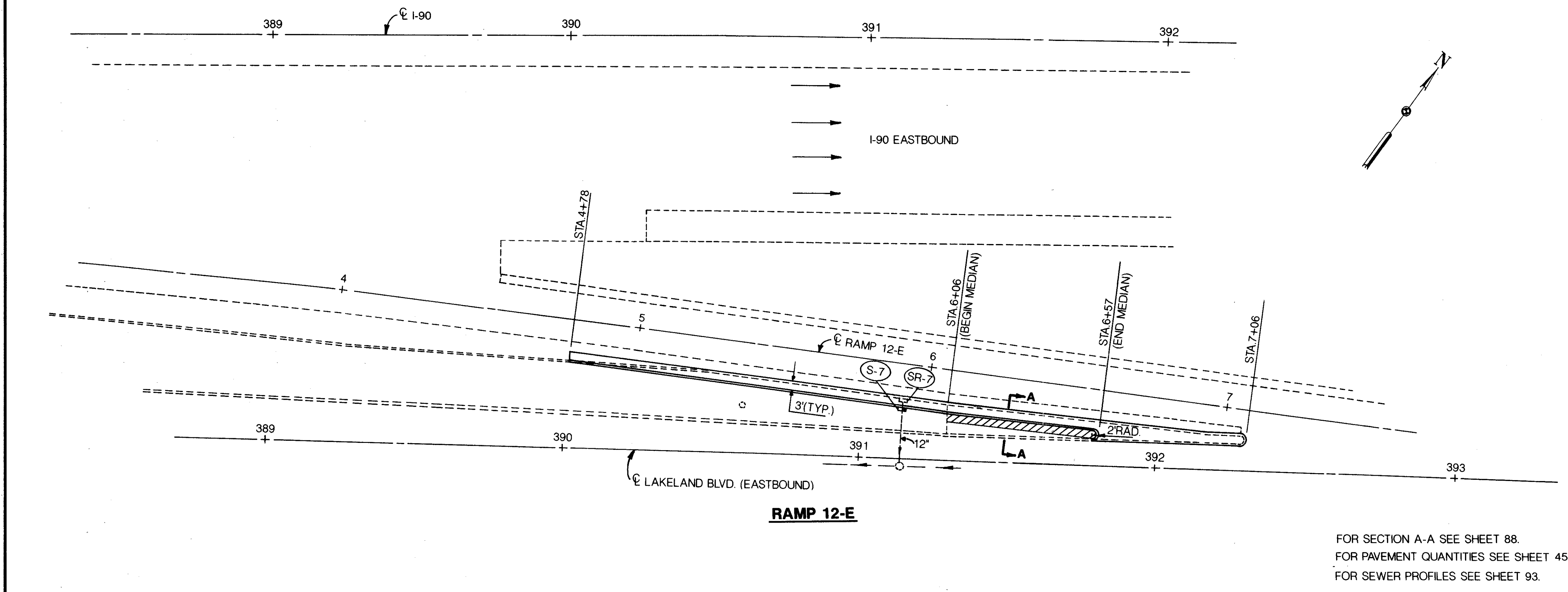
CURB QUANTITIES				
STATION	202	609		
FROM	TO	CURB REMOVED	CURB TYPE 6	
		LIN. FT	LIN. FT	
2+94	4+62	168	172	
4+62	4+82	42		
TOTALS		210	172	

CONCRETE MEDIAN QUANTITIES					
STATION	LENGTH	WIDTH	202	612	
FROM	TO		MEDIAN REMOVED	4" CONC. TRAFFIC ISLAND	
		FT	S.Y.	S.Y.	
4+42	4+62	20	3.0	11.1	4.4
4+62	4+82	20	4.5	10.0	
TOTALS			21.1	4.4	

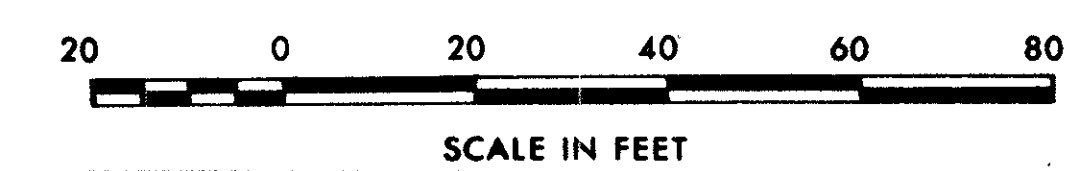
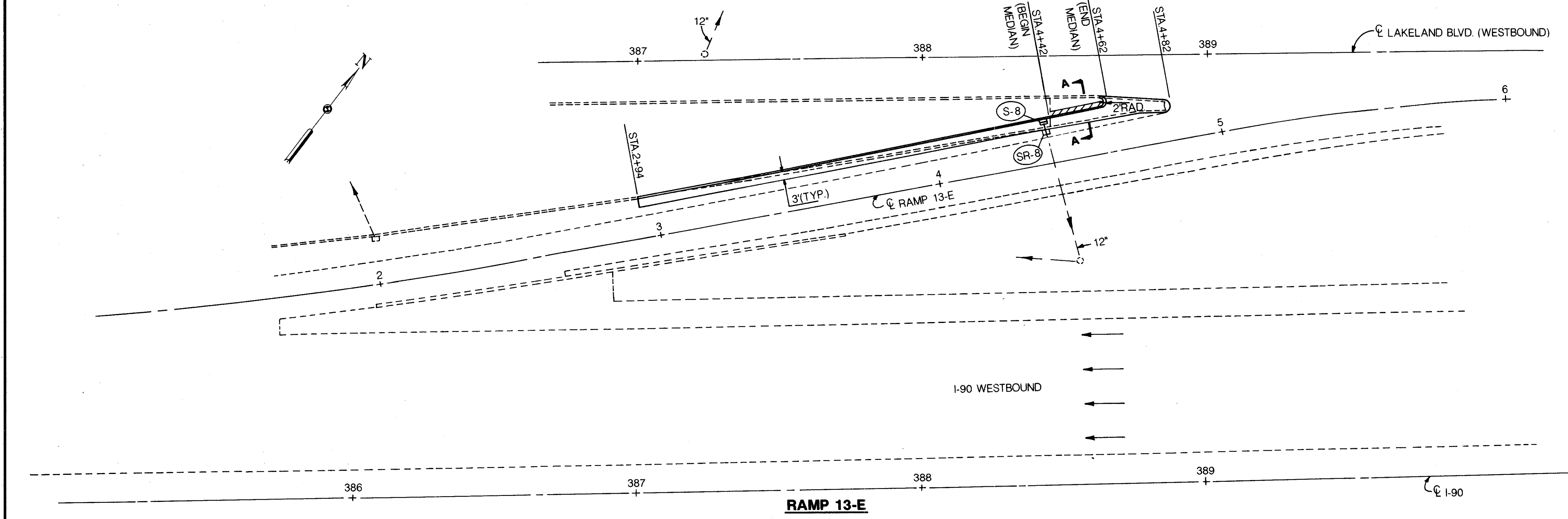
DRAINAGE QUANTITIES						
REF. NO.	STATION	202	603	604	603+	
	FROM	TO	INLET ABANDONED AS PER PLAN *	12" CONDUIT TYPE B	CATCH BASIN NO. 3A	6" CONDUIT TYPE B
		OR AT	EACH	LIN. FT	EACH	LIN. FT
S-8		4+40			1	8
SR-8		4+40	1	3	1	8
TOTALS			1	3	1	8

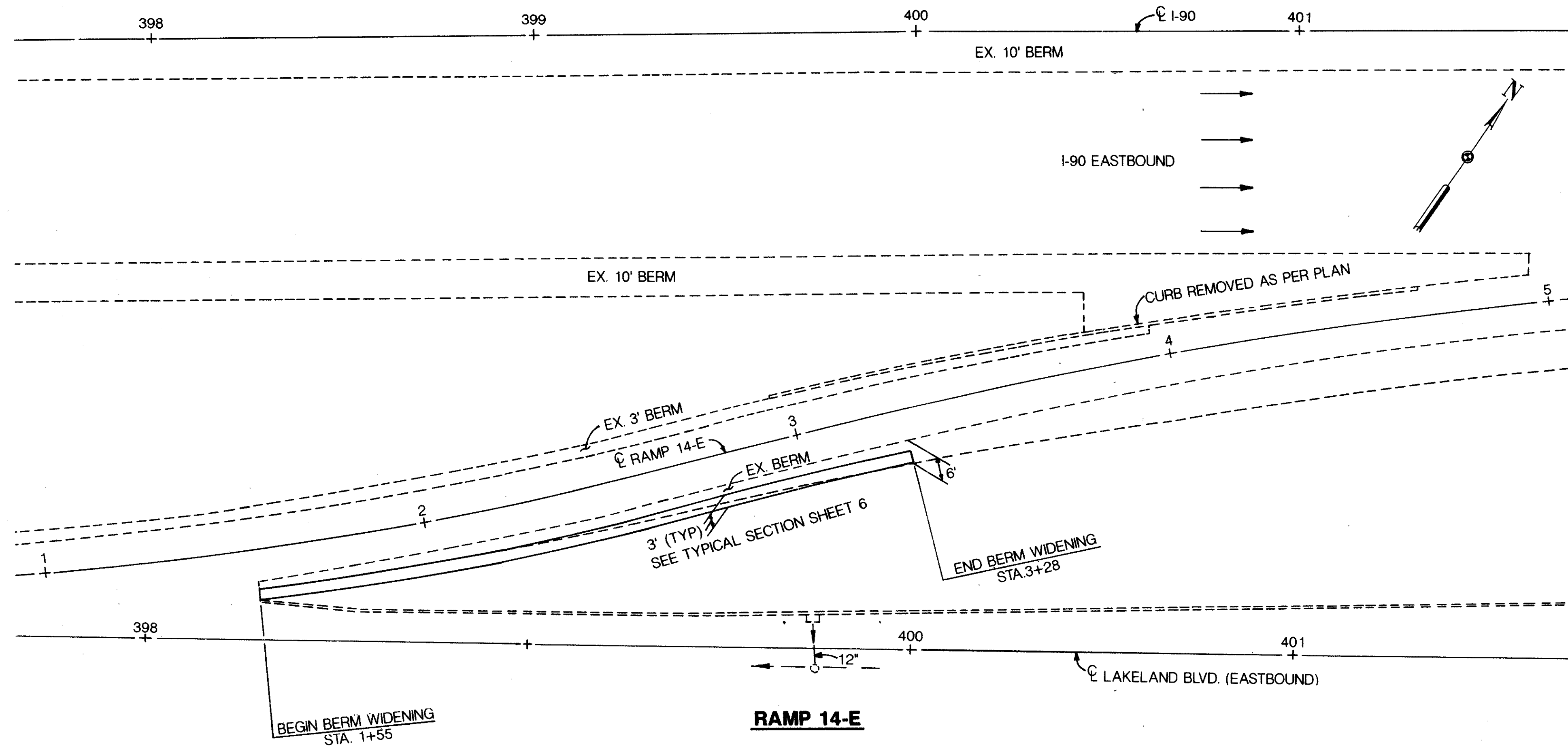
* SEE DETAIL ON SHEET 92.
CONNECT PIPES THROUGH ABANDONED INLET.
+ PROVIDED FOR OUTLETING EXISTING UNDERDRAIN INTO PROPOSED CATCH BASINS

FOR SEWER PROFILES SEE SHEET 93.
FOR SECTION A-A SEE SHEET 88.
FOR PAVEMENT QUANTITIES SEE SHEET 45



FOR SECTION A-A SEE SHEET 88.
FOR PAVEMENT QUANTITIES SEE SHEET 45
FOR SEWER PROFILES SEE SHEET 93.

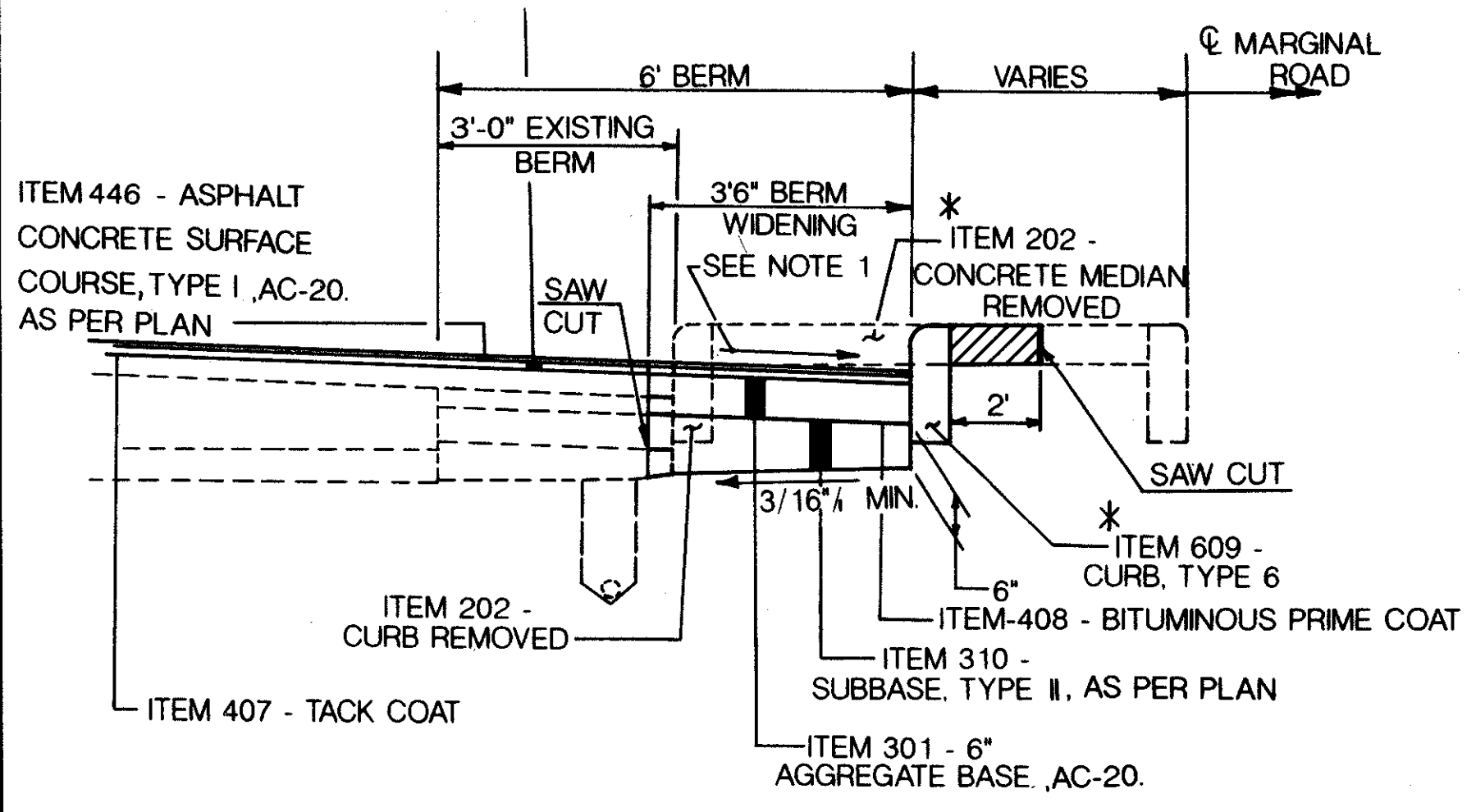




FRWA REGION	STATE	PROJECT
5	OHIO	

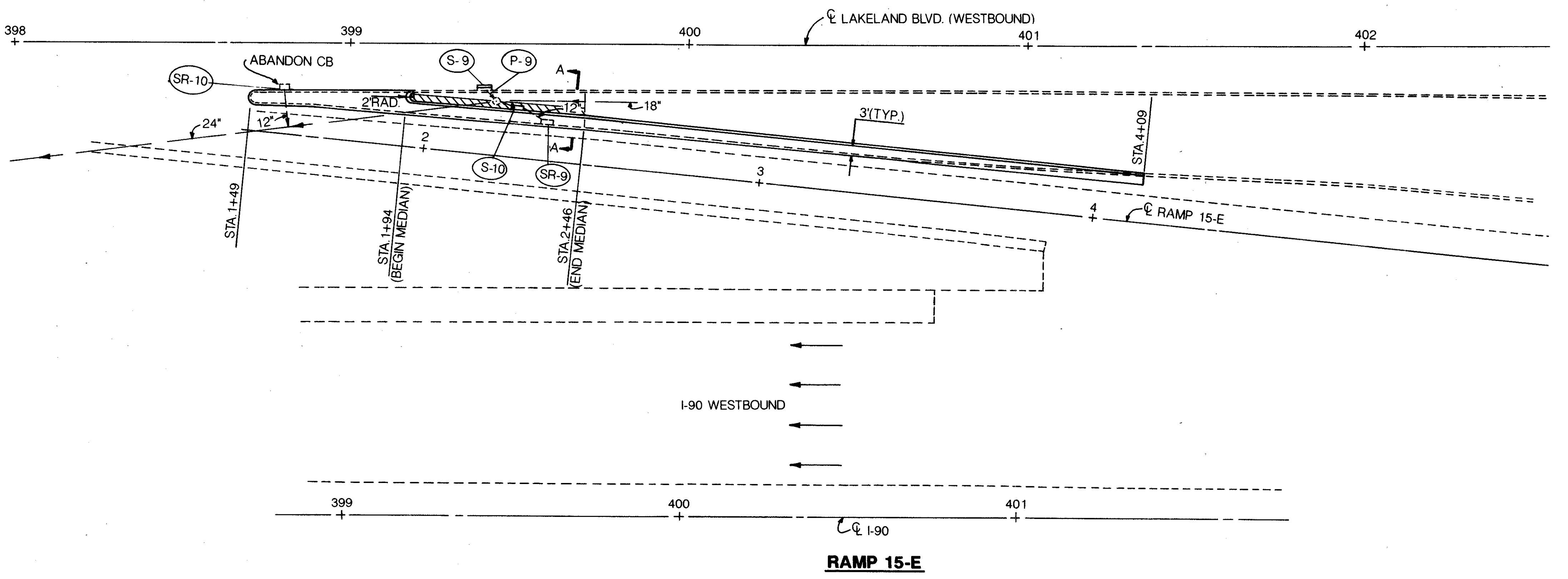
CUYAHOGA COUNTY
CUY - 90-23.95
LAKE COUNTY
LAK - 90-0.00

88
200



SECTION A-A
NO SCALE

- NOTES:
1. MATCH EXISTING BERM SLOPE.
 - * 2. INDICATES QUANTITIES COVERED ON THIS SHEET. FOR ALL OTHER QUANTITIES REFER TO APPROPRIATE SUB-SUMMARY TABLES
- ITEM-612 - 4" CONCRETE TRAFFIC ISLAND



STATION	202 CURB REMOVED LIN. FT	609 CURB TYPE 6 LIN. FT
FROM 1+49 TO 1+94	92	
FROM 1+94 TO 4+09	215	219
TOTALS	307	219

STATION	LENGTH	WIDTH	202 MEDIAN REMOVED S.Y.	612 4" CONC. TRAFFIC ISLAND S.Y.
FROM 1+49 TO 1+94	45	4.5	22.5	
FROM 1+94 TO 2+46	52	2.5	26.5	11.6
TOTALS			48.5	11.6

REF. NO.	STATION	202 *CATCH BASIN ABANDONED AS PER PLAN	202 12" PIPE REMOVED UNDER	603 12" CONDUIT TYPE C	604 CATCH BASIN, CONDUIT ABANDONED	603+ 6" INLET	202 INLET ABANDONED	604 INLET
	FROM OR AT	TO	AS PER PLAN	AS PER PLAN	AS PER PLAN	AS PER PLAN	AS PER PLAN	AS PER PLAN
			EACH	LIN. FT	LIN. FT	EACH	LIN. FT	EACH
SR-9		2+35		9				
S-9	CL LAKELAND	399+39				1		
S-10		2+27					8	
P-9	CL LAKELAND	399+39			5			
SR-10		398+82	1					
TOTALS			1	9	5	1	8	1

+ PROVIDED FOR OUTLETING EXISTING UNDERDRAIN INTO PROPOSED INLET. SEE DETAIL ON SHEET 92.
FOR SEWER PROFILES SEE SHEET 93

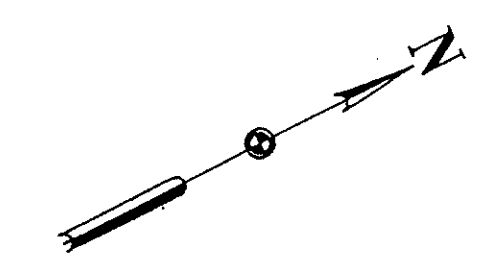
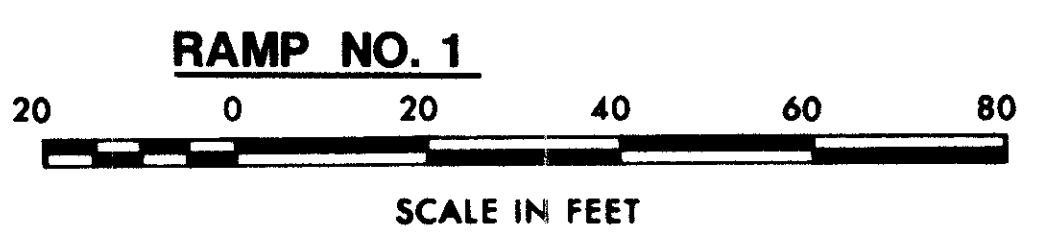
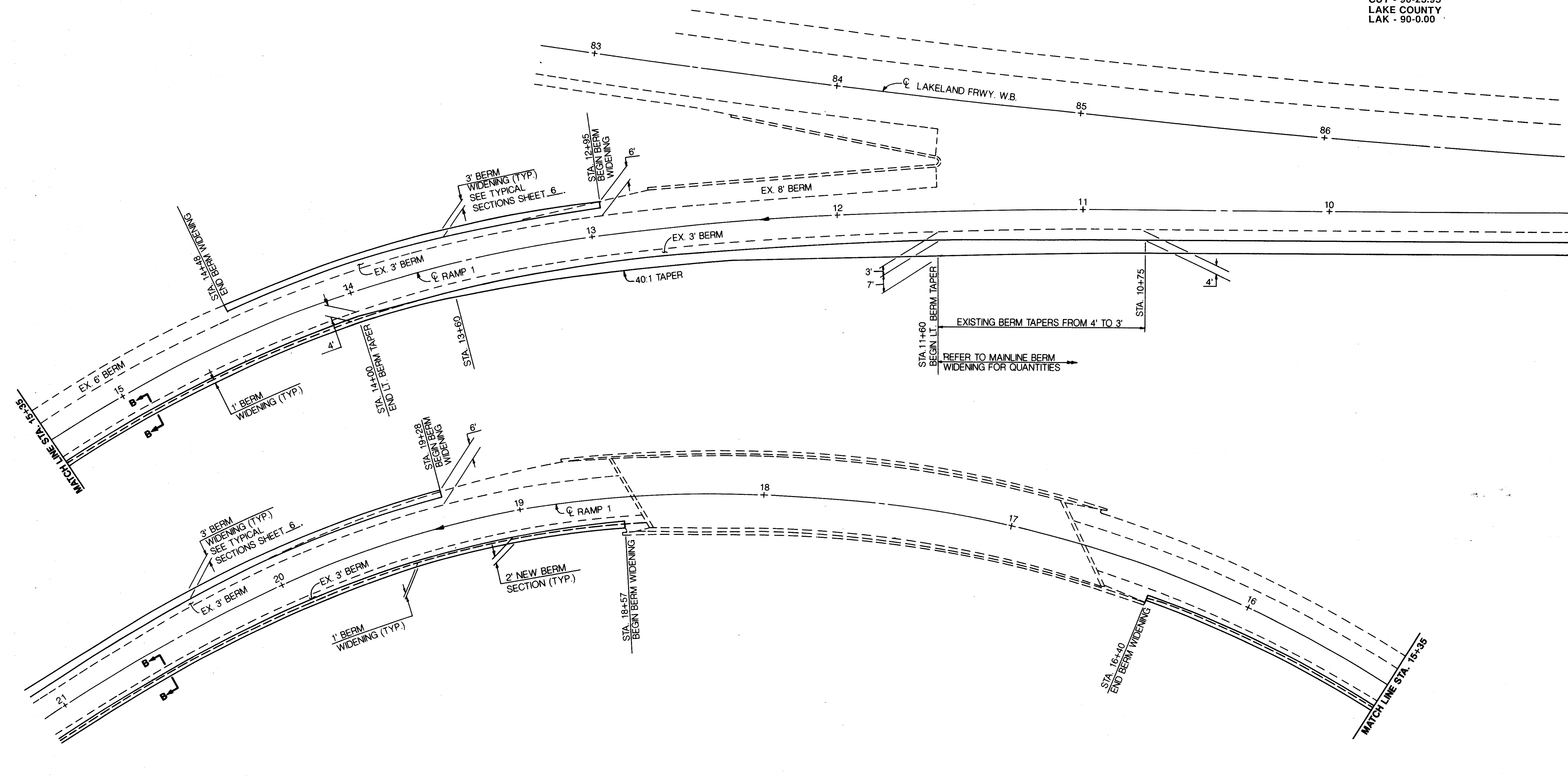
*SEE DETAIL ON SHEET 92



FHWA REGION	STATE	PROJECT
5	OHIO	

89
200

CUYAHOGA COUNTY
CUY - 90-23.95
LAKE COUNTY
LAK - 90-0.00

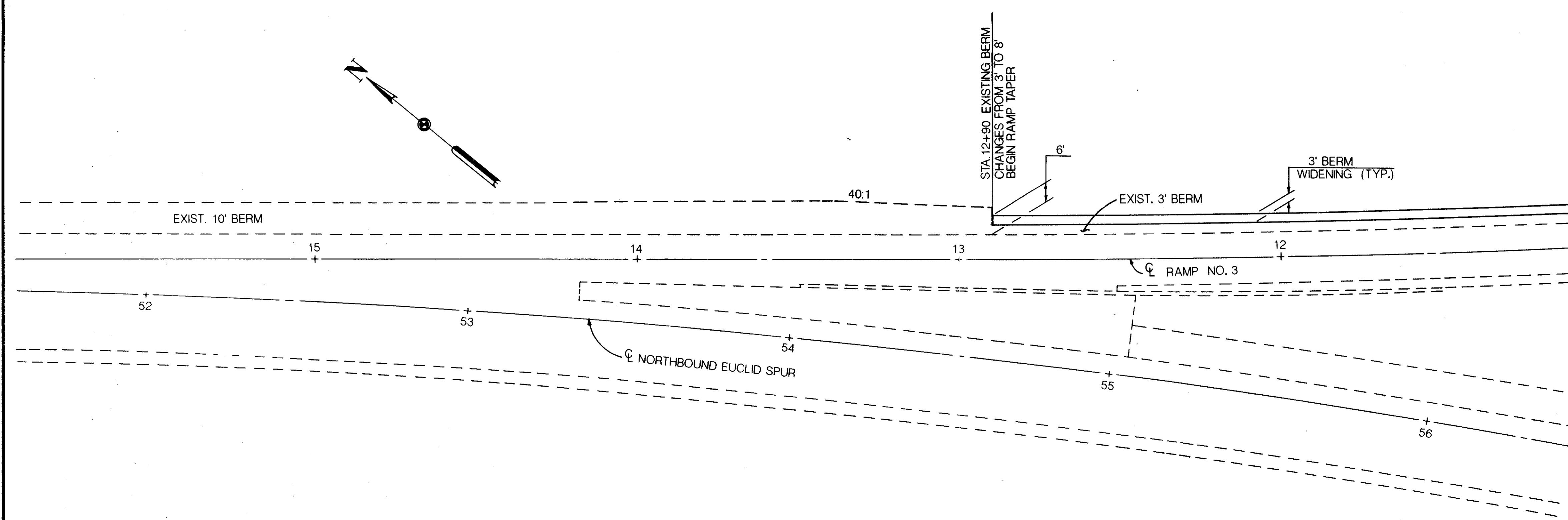
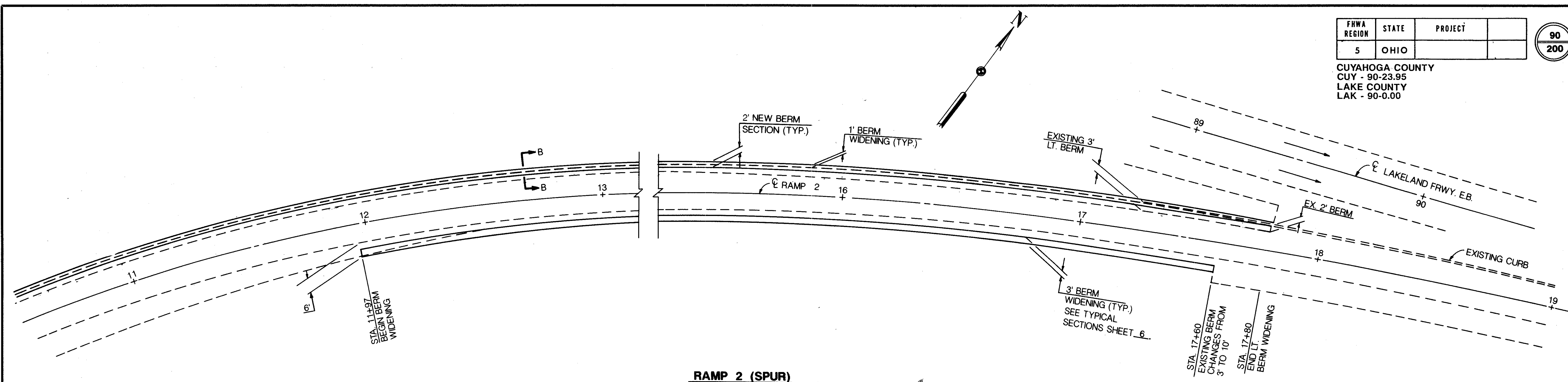


NOTE: FOR SECTION B-B SEE SHEET 90.
FOR ESTIMATED QUANTITIES
REFER TO SHEET 45.

FHWA REGION	STATE	PROJECT	
5	OHIO		

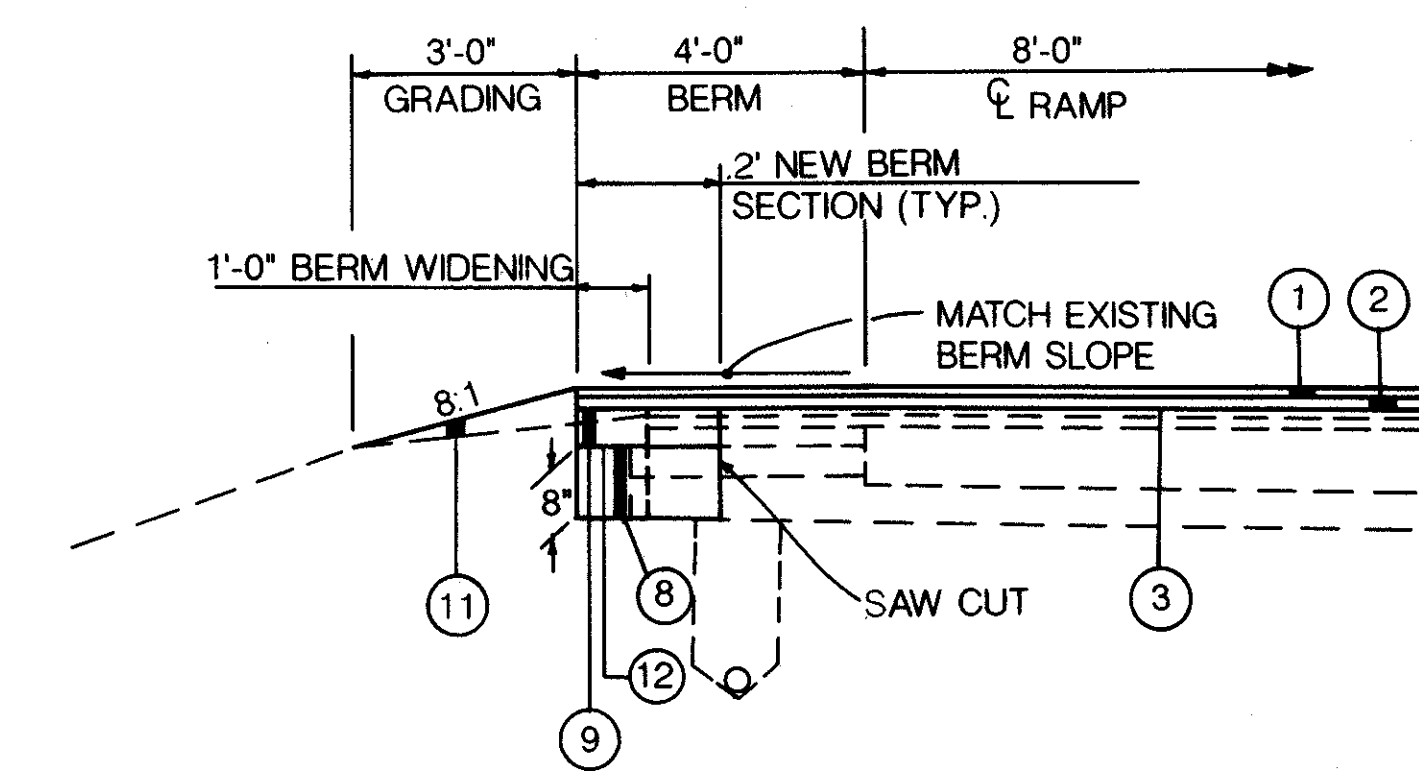
90
200

CUYAHOGA COUNTY
CUY - 90-23.95
LAKE COUNTY
LAK - 90-0.00

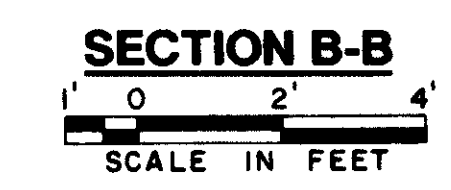


LEGEND

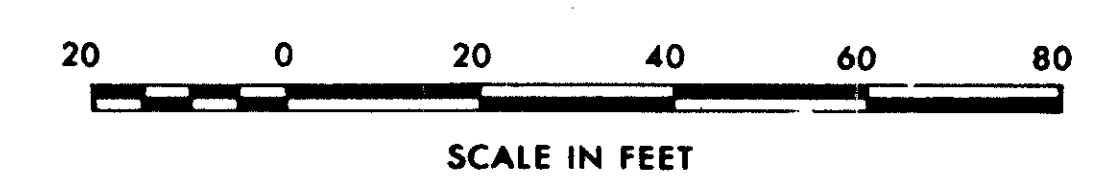
- ① ITEM 446 - 1-1/4" ASPHALT CONCRETE SURFACE COURSE, TYPE 1, AC-20, AS PER PLAN
- ② ITEM 446 - 1-3/4" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE 2, AC-20
- ③ ITEM 407 - TACK COAT
- ④ ITEM 310 - SUBBASE, TYPE II, AS PER PLAN
- ⑤ ITEM 301 - 6" AGGREGATE BASE, AC-20
- ⑥ ITEM 617 - COMPACTED AGGREGATE TYPE A
- ⑦ ITEM 203 - LINEAR GRADING, AS PER PLAN
- ⑧ ITEM 408 - BITUMINOUS PRIME COAT



NOTE: FOR COMPLETE RAMP TYPICAL SECTION SEE SHEET 6.



FOR ESTIMATED QUANTITIES REFER TO SHEET 45.



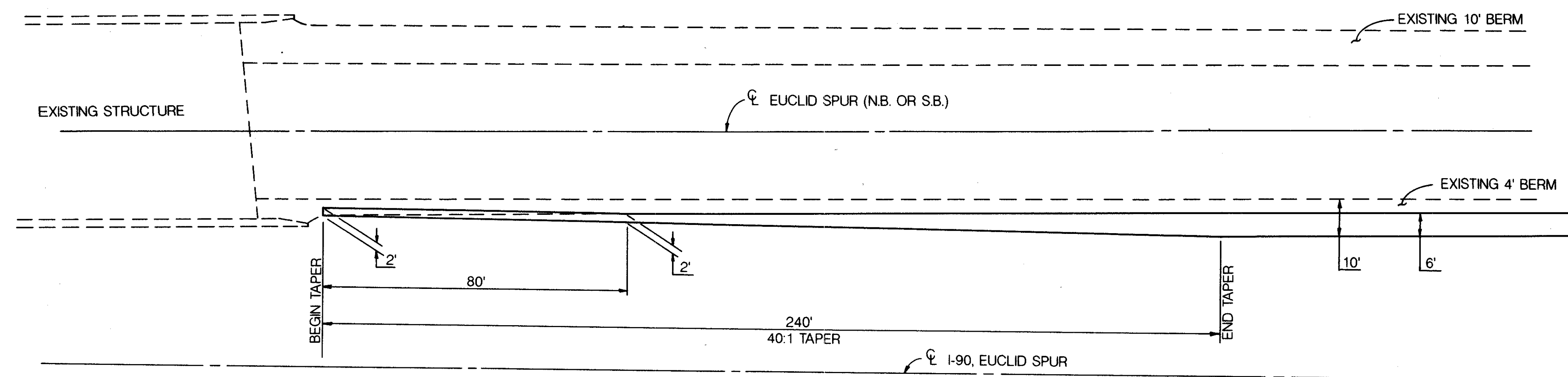
MADE P.F. DATE 2-22-90
TRACED T.D. DATE 2-24-90
CHECKED J.M.W. DATE 2-28-90
SCALE 1" = 20'

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

FHWA REGION	STATE	PROJECT	
5	OHIO		

91
200

CUYAHOGA COUNTY
CUY - 90-23.95
LAKE COUNTY
LAK - 90-0.00



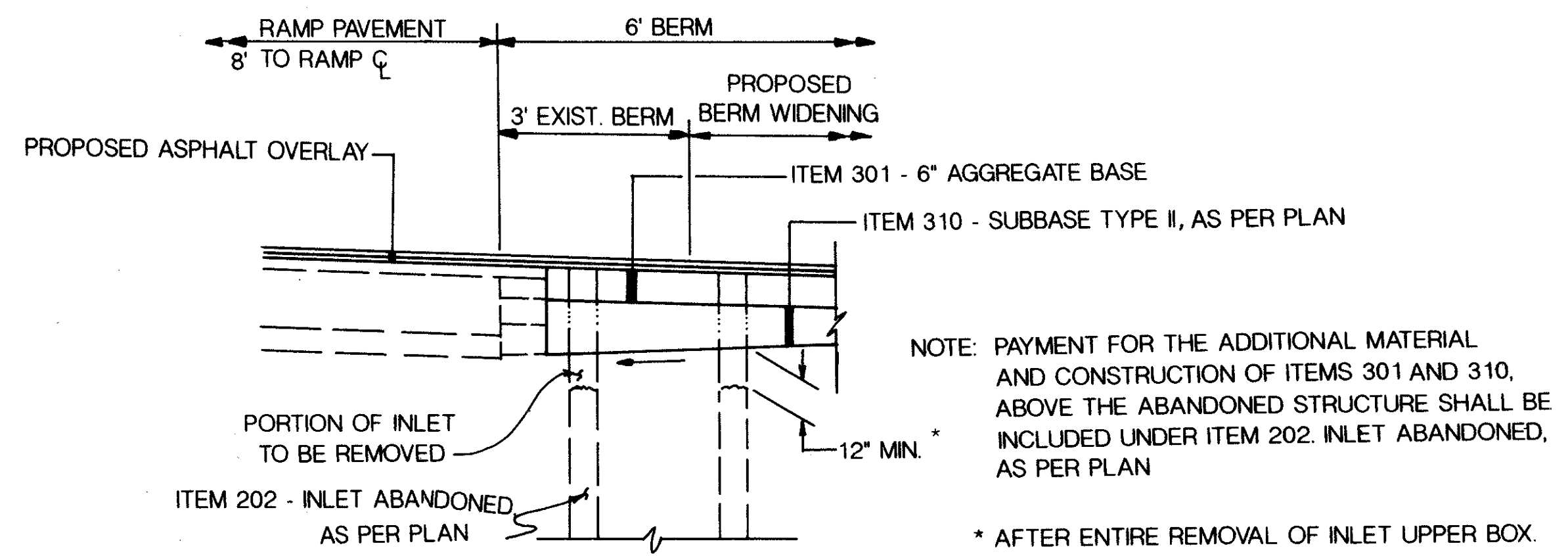
EUCLID SPUR MEDIAN BERM WIDENING - TRANSITION DETAIL AT BRIDGES

MADE J.M.W. DATE 7-17-89
TRACED K.L.B. DATE 7-18-89
CHECKED R.M. DATE 7-18-89
SCALE AS SHOWN

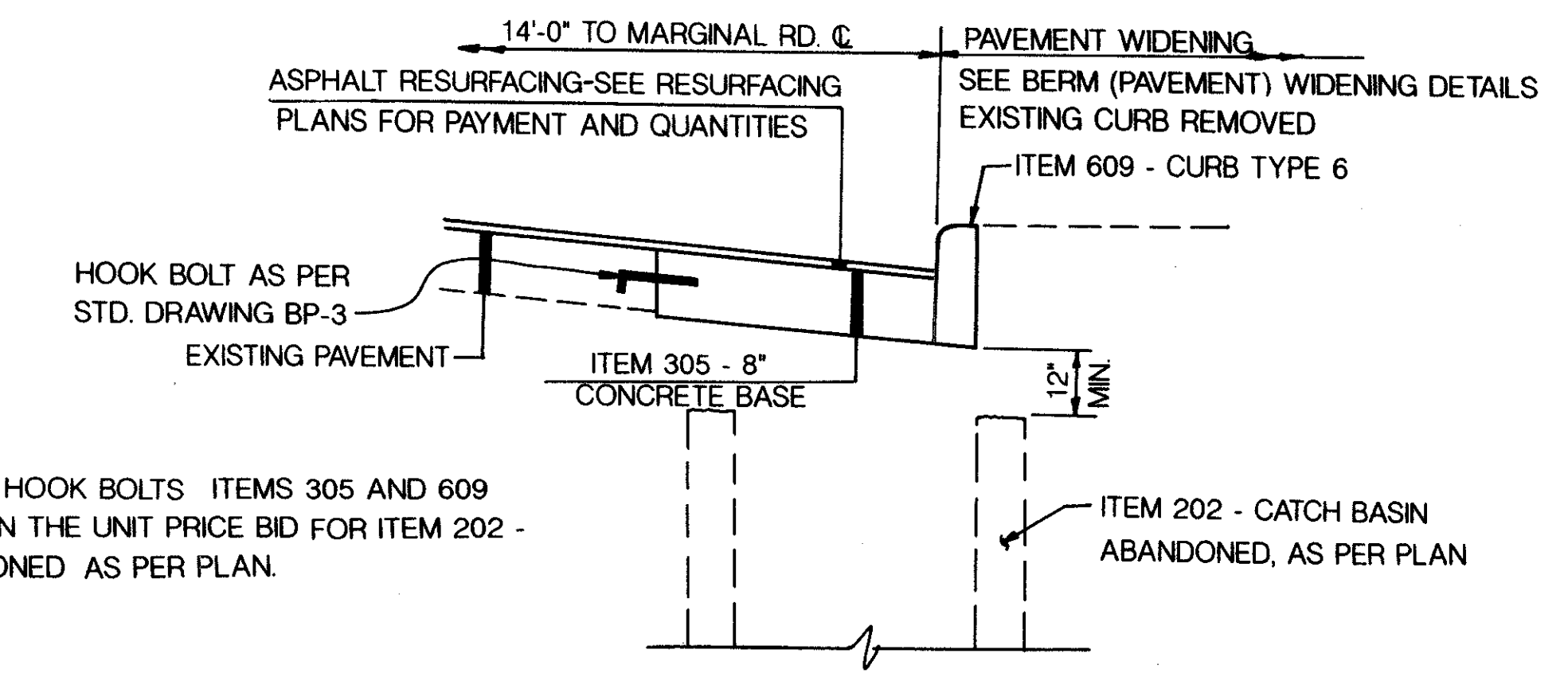
HOWARD NEEDLES TAMMEN & BERGENDOFF
ARCHITECTS ENGINEERS PLANNERS



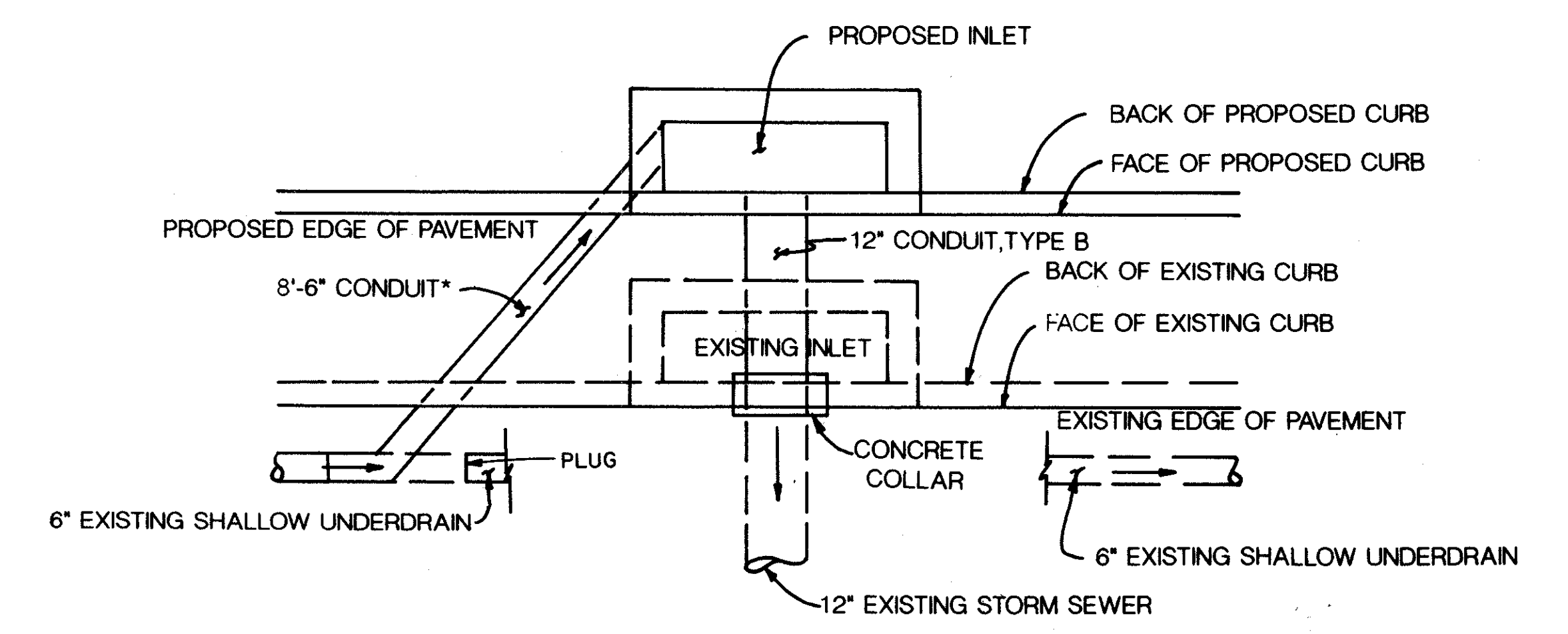
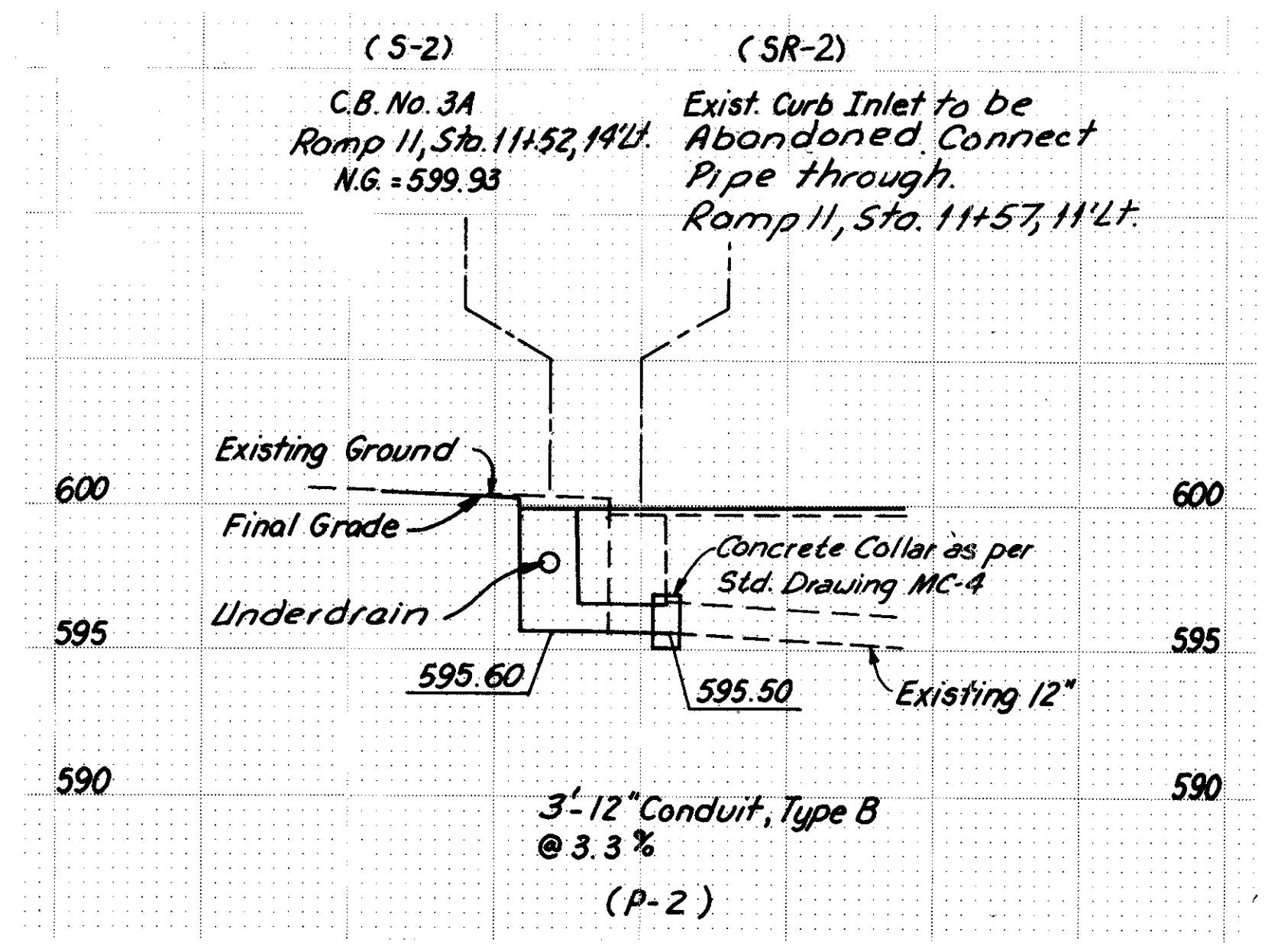
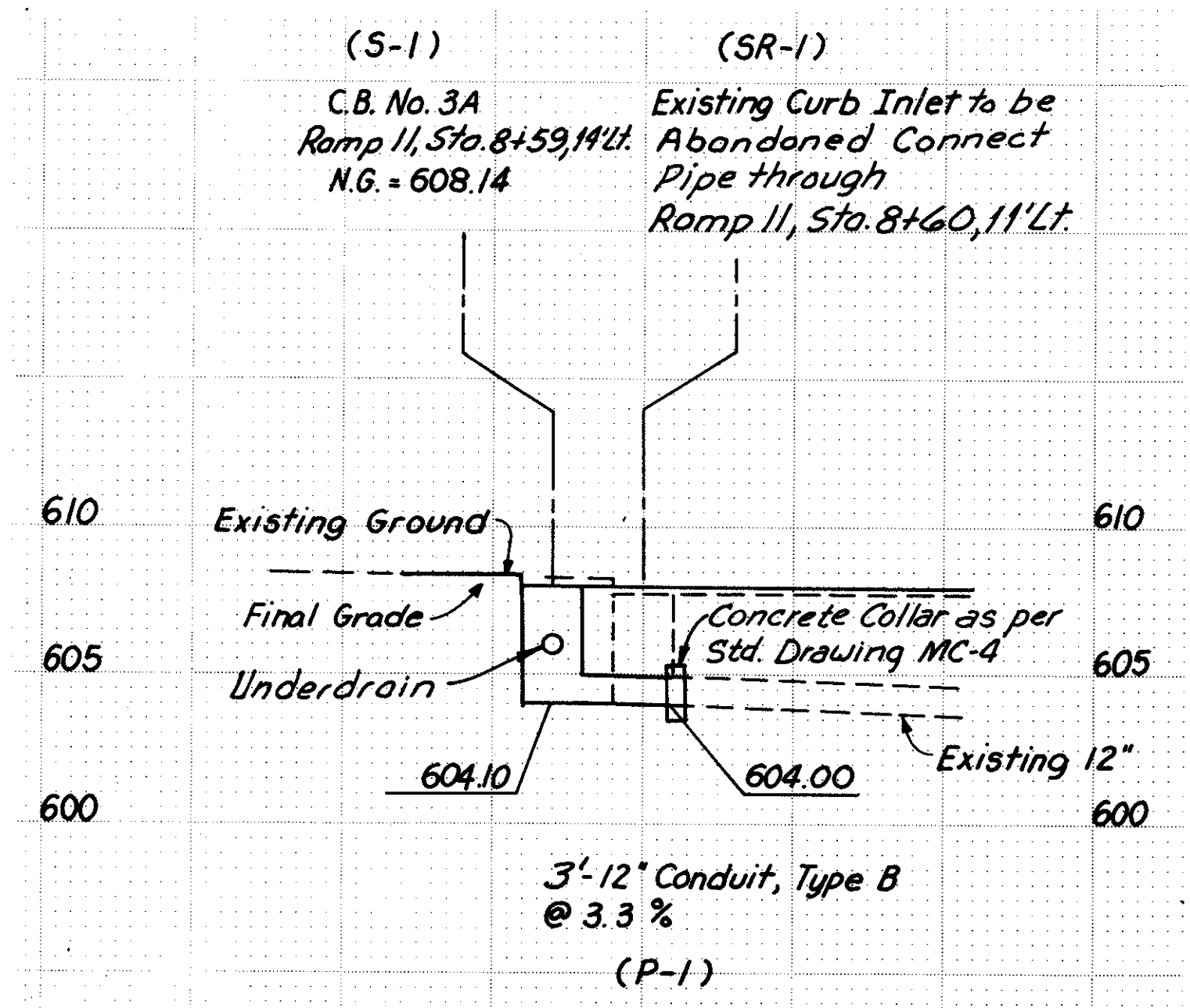
CUYAHOGA COUNTY
CUY - 90-23.95
LAKE COUNTY
LAK - 90-0.00



ITEM 202 - INLET ABANDONED, AS PER PLAN
NO SCALE



ITEM 202 - CATCH BASIN ABANDONED, AS PER PLAN
NO SCALE

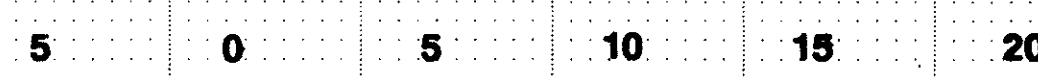
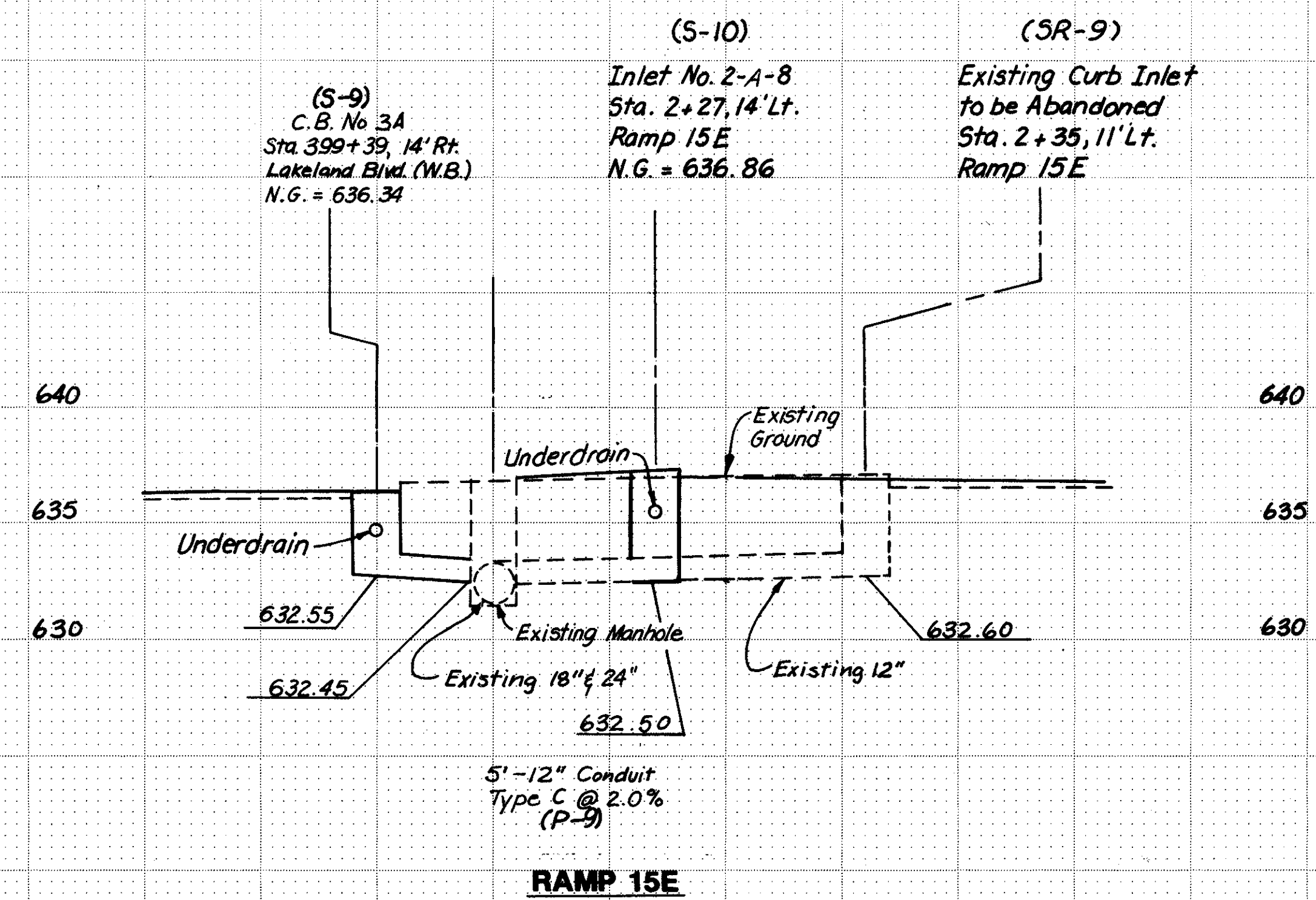
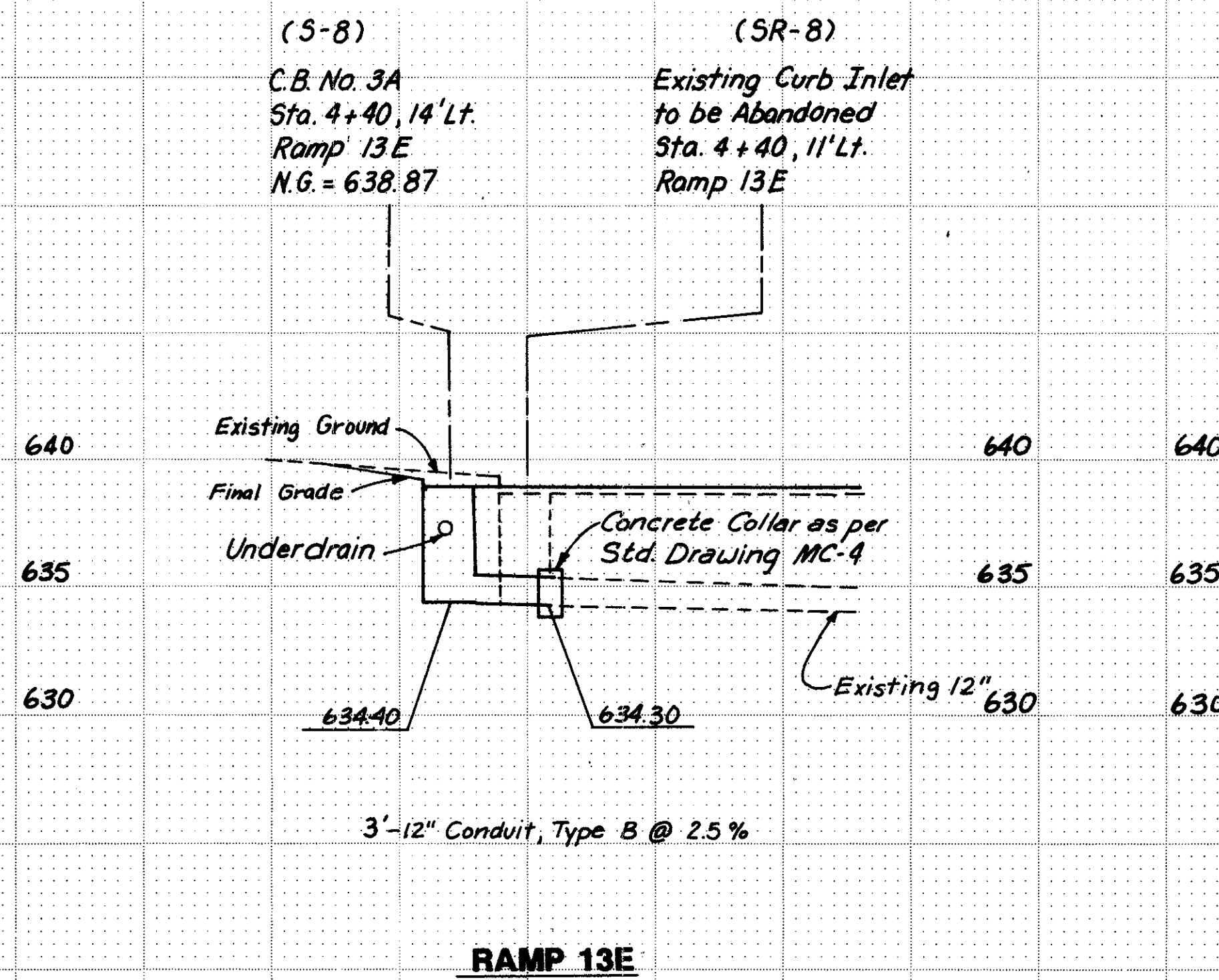
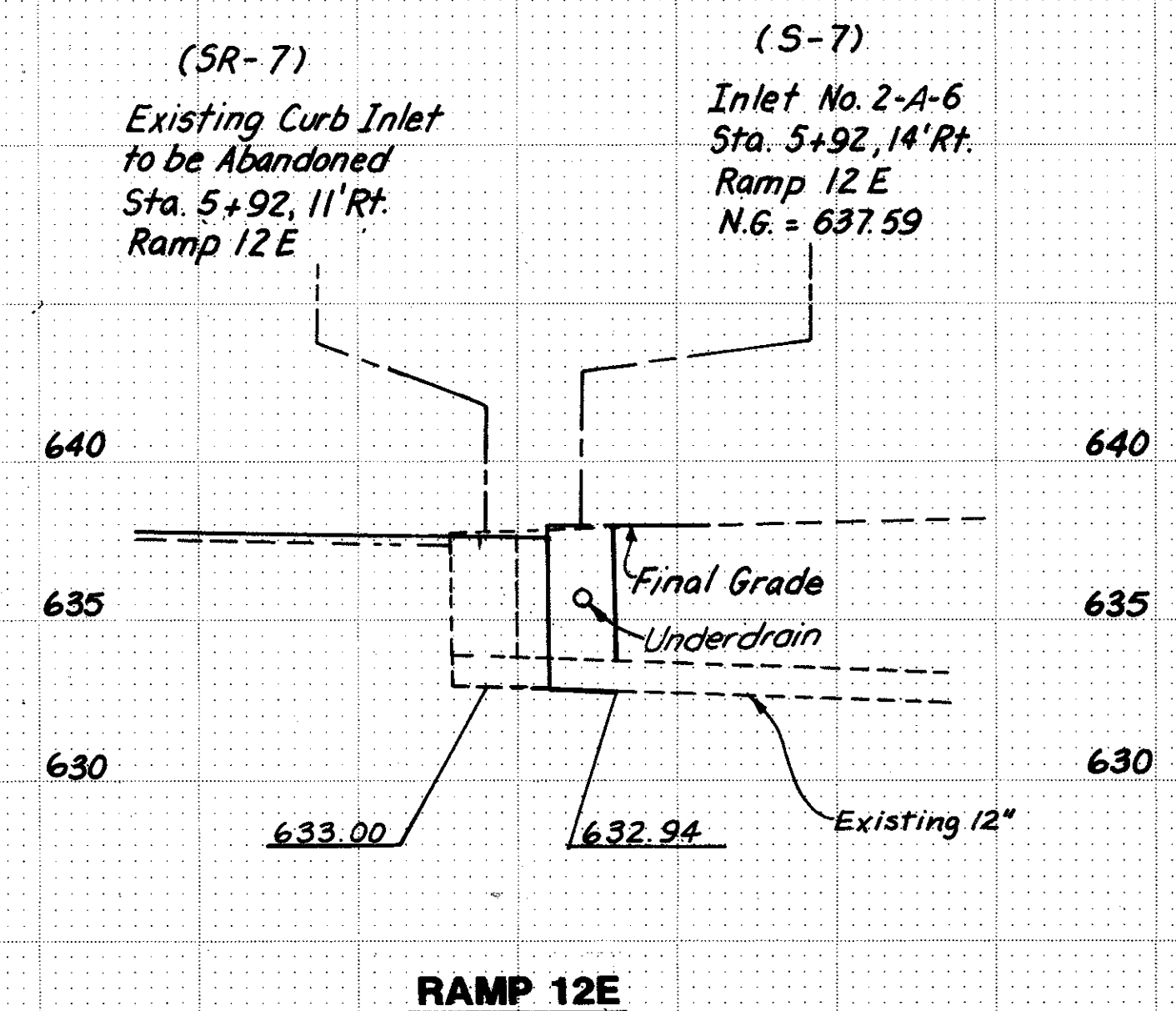
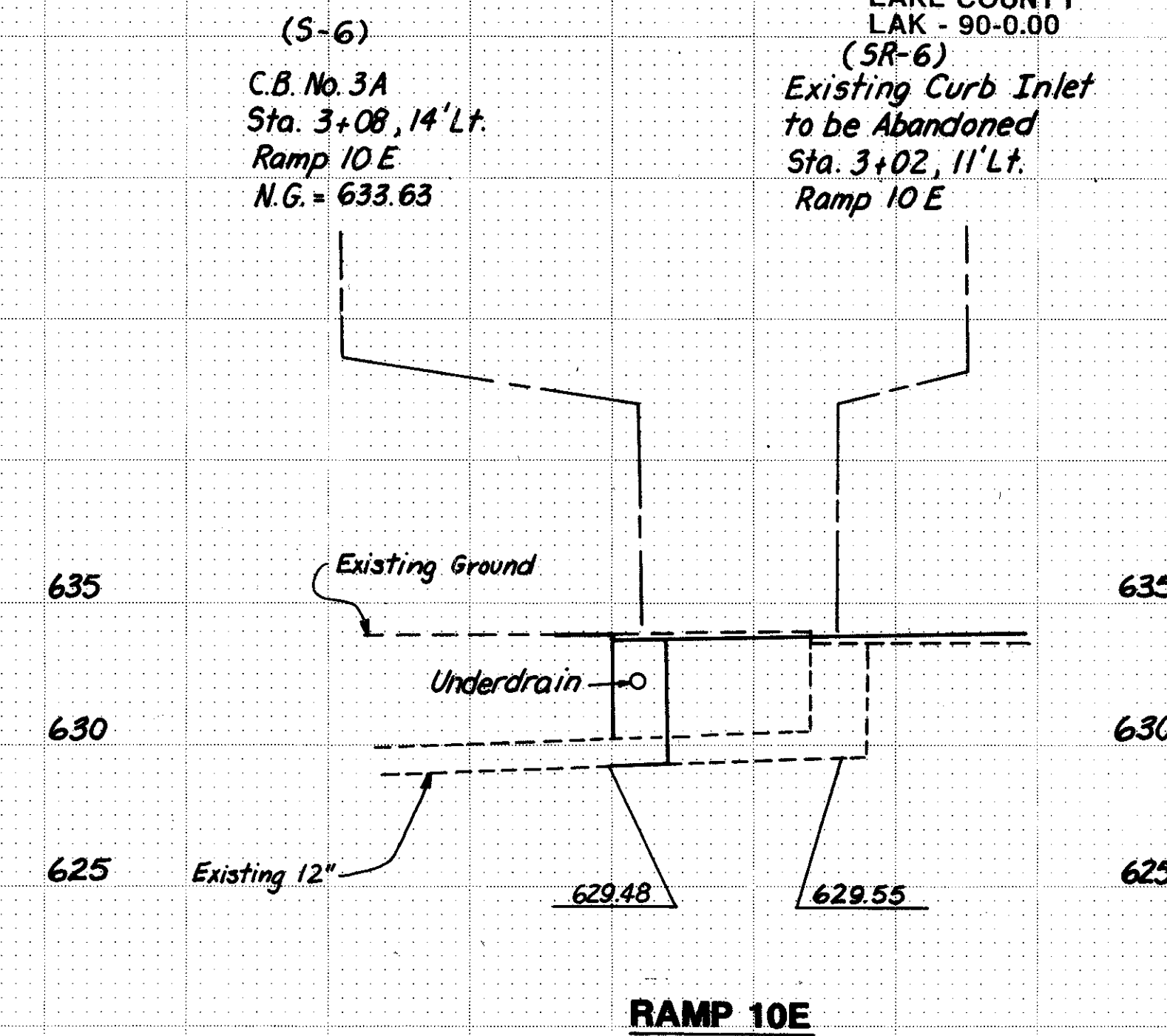
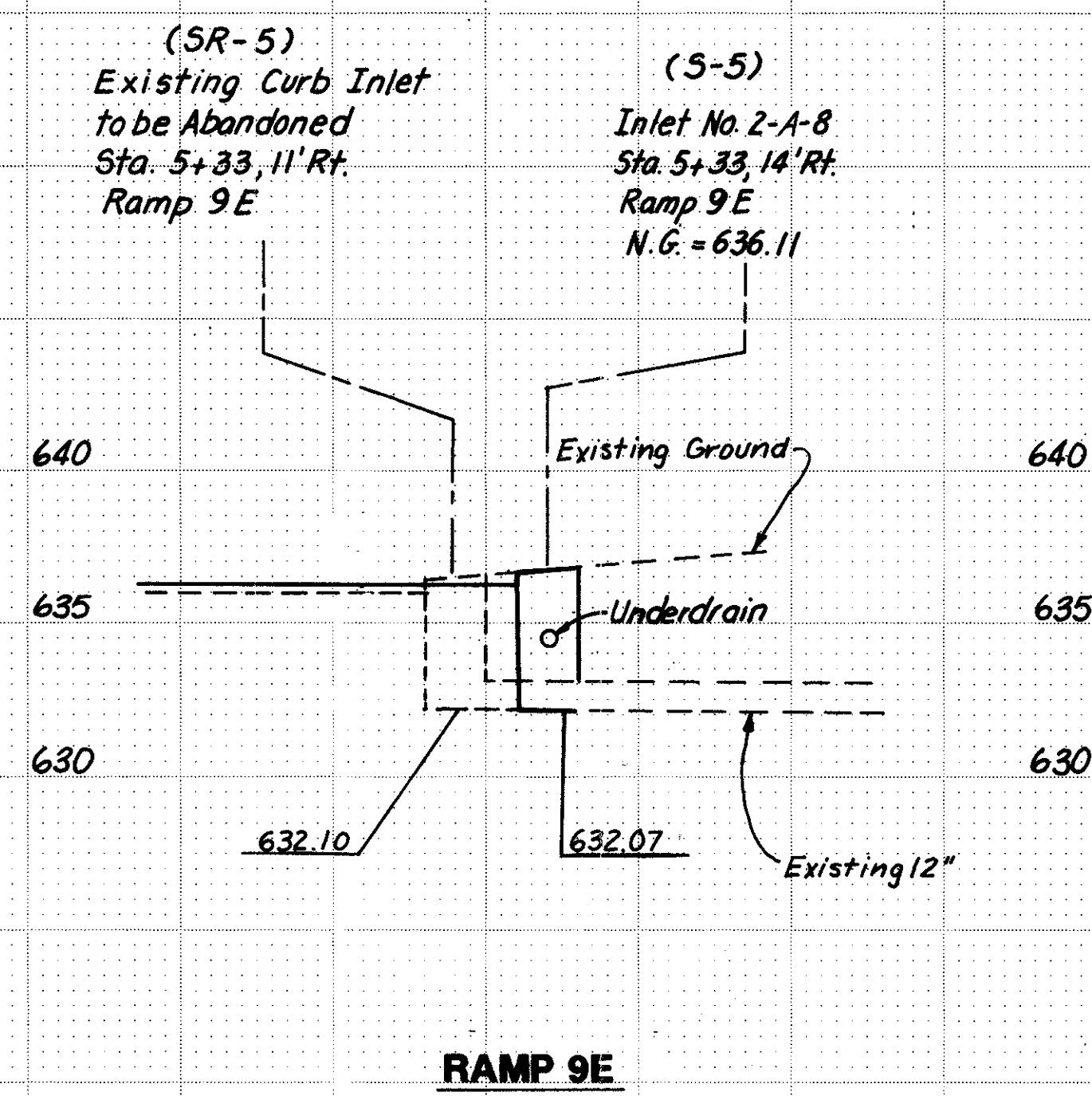
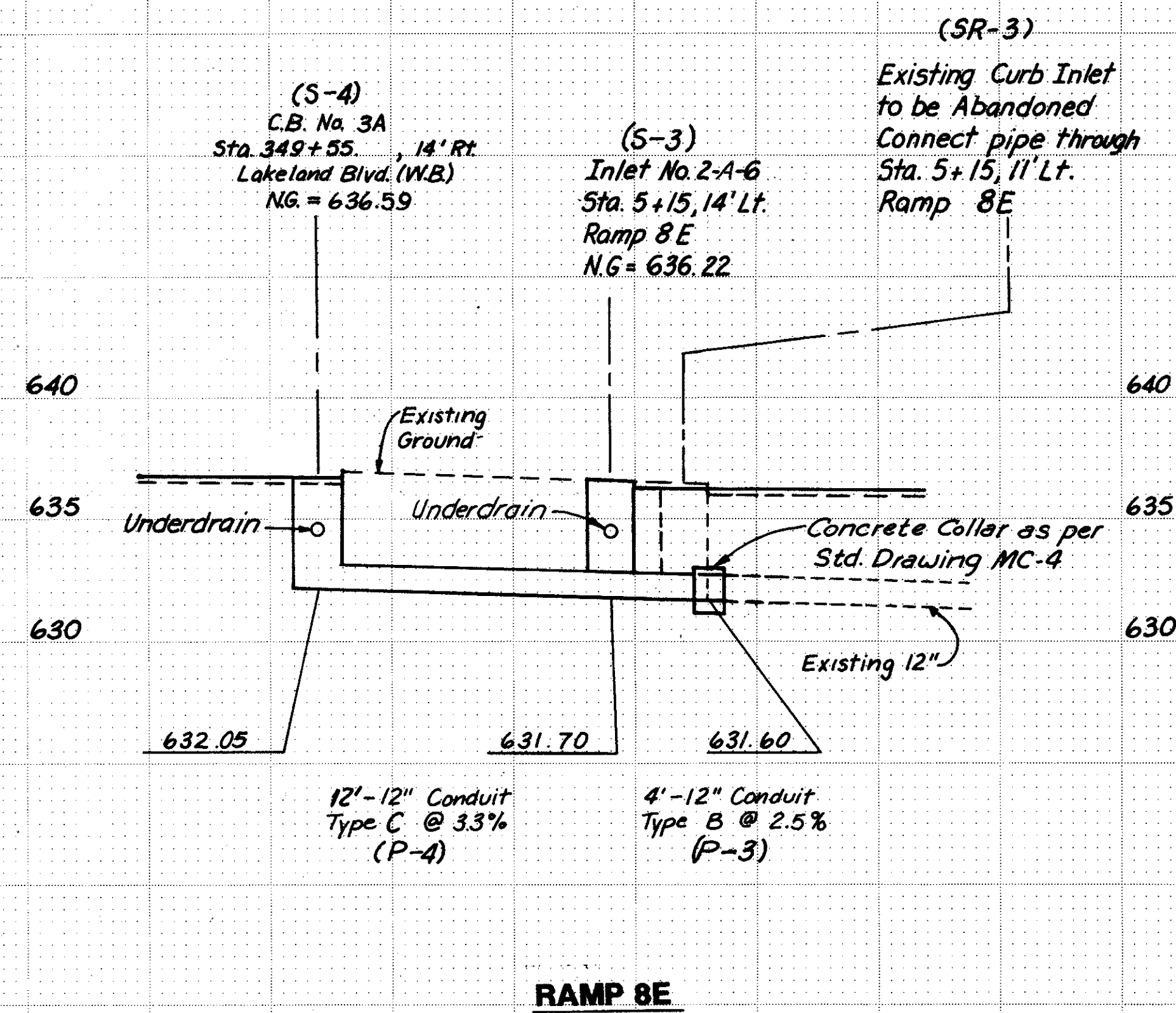


TYPICAL UNDERDRAIN OUTLET DETAIL
NO SCALE

FHWA REGION	STATE	PROJECT
5	OHIO	

93
200

CUYAHOGA COUNTY
CUY - 90-23.95
LAKE COUNTY
LAK - 90-0.00



SCALE IN FEET

NOTE:
All elevations are taken from original construction plans, contractor shall field measure all flow lines to determine exact elevations of proposed modifications.

MADE BY DATE 7-17-82
TRACED & CHECKED DATE 7-18-82
CHECKED J.M.W. DATE 7-18-82
SCALE 1"=5'

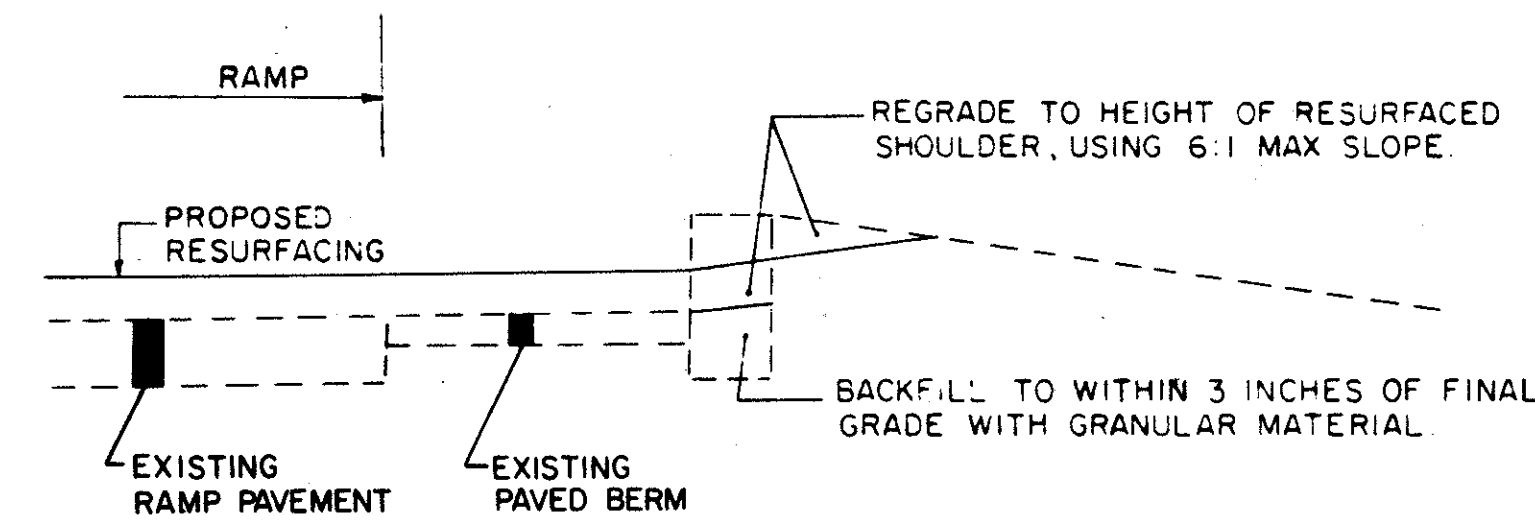
Howard, Needles, Tammen & Bergendoff
CONSULTING ENGINEERS
CLEVELAND, OHIO

HNTB

ITEM 202 - CURB REMOVED, AS PER PLAN

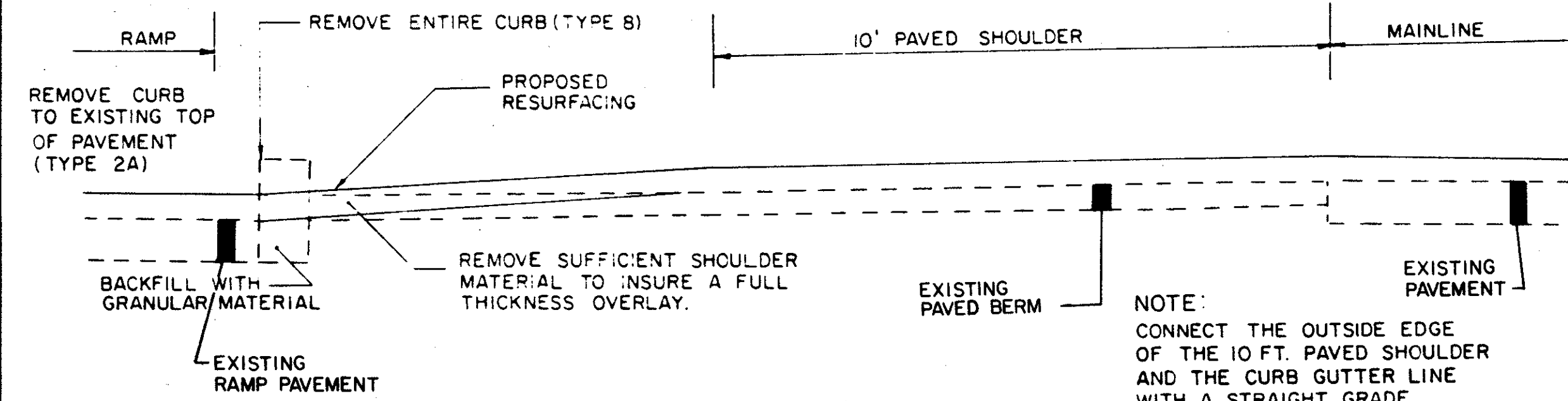
THE FOLLOWING DETAILS AND SPECIFICATIONS SHALL APPLY TO THIS ITEM OF WORK:

CASE I - TYPE 6 OR 7 CURB REMOVED



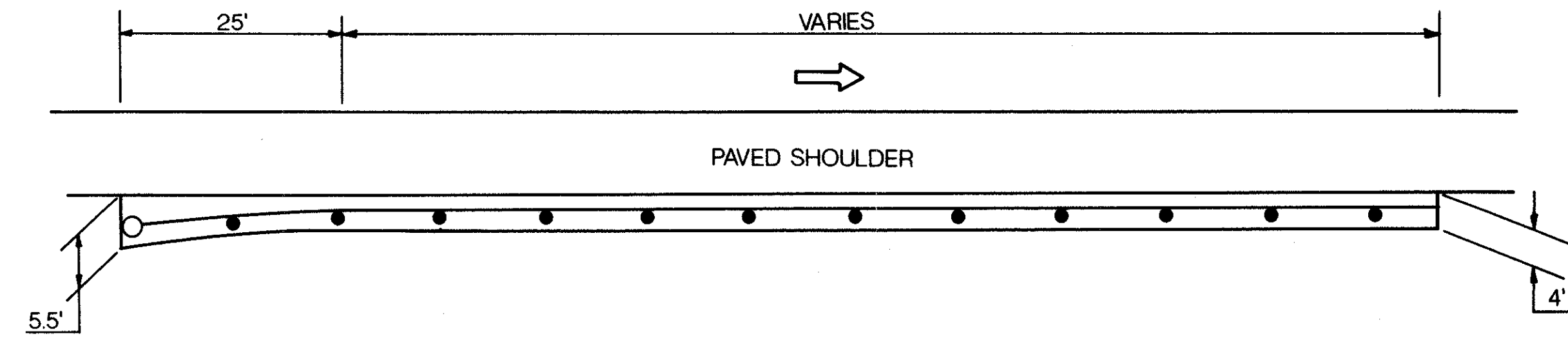
NOTES
RESTORE DISTURBED AREA IN CONFORMANCE WITH ITEM 659. ALL WORK SHOWN SHALL BE INCLUDED UNDER ITEM 202 (WITH THE EXCEPTION OF THE RESURFACING ITEMS.)

CASE 2 - TYPE 2A OR 8 CURB REMOVED

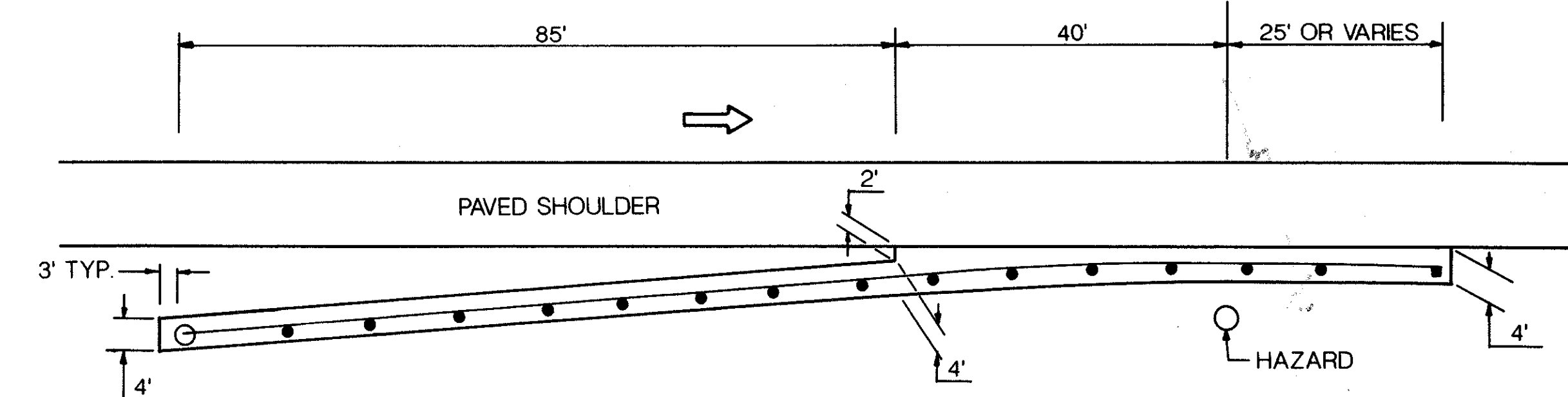


ROADWAY	STATION		SIDE	ITEM 202	
	FROM	TO		CURB REMOVED AS PER PLAN	INLET ABAND. AS PER PLAN
				LIN. FT.	EACH *
RAMP 8	4+50	6+64	LT	214	1
RAMP 11	1+96	3+59	RT	163	
RAMP 13	2+78	4+42	RT	164	
RAMP 14	2+32	3+87	RT	155	
RAMP 15	1+88	3+59	LT	171	
RAMP 2-E	3+52	5+02	RT	150	
RAMP 6-E	2+62	4+24	LT	162	
RAMP 8-E	3+42	5+50	RT	208	
RAMP 11-E	2+25	3+97	LT	172	
RAMP 13-E	1+97	3+64	RT	167	
RAMP 14-E	2+95	4+65	LT	170	
LAKELAND WB	60+74	64+50	RT	376	
RAMP 2 (SPUR)	17+25	19+76	LT	251	
RAMP 6 (SPUR)	11+30	13+65	LT	235	1
RAMP 8 (SPUR)	2+58	4+06	RT	148	
RAMP 10 (SPUR)	3+38	5+67	RT	229	
TOTAL				3,135	2

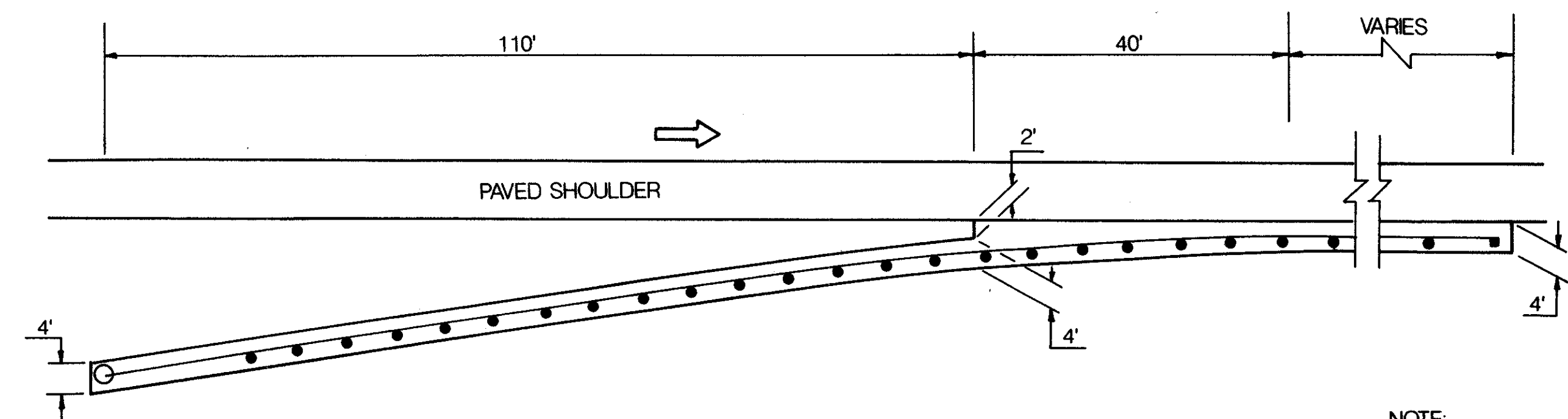
* SEE DETAIL ON SHEET 92.



ITEM 404 FOR EROSION CONTROL WITH 1.5' GUARDRAIL FLARE



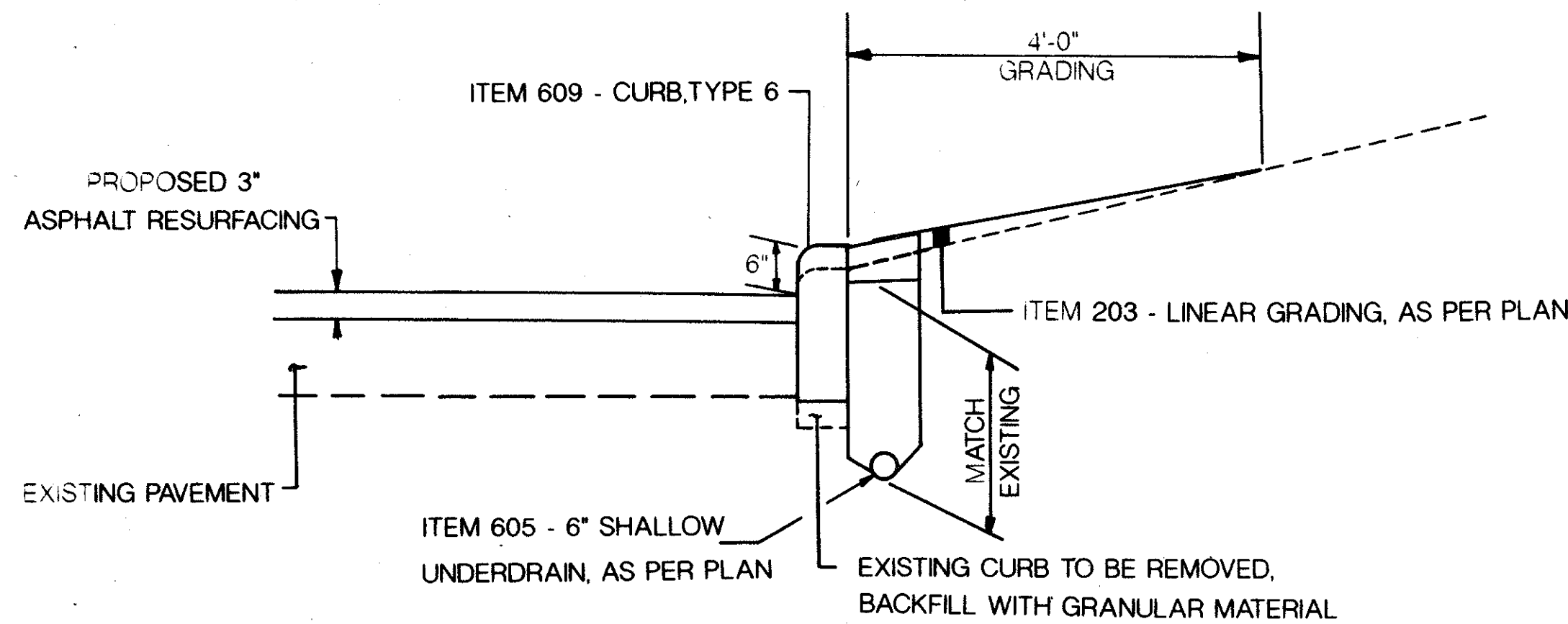
ITEM 404 FOR EROSION CONTROL WITH 8.31' GUARDRAIL FLARE



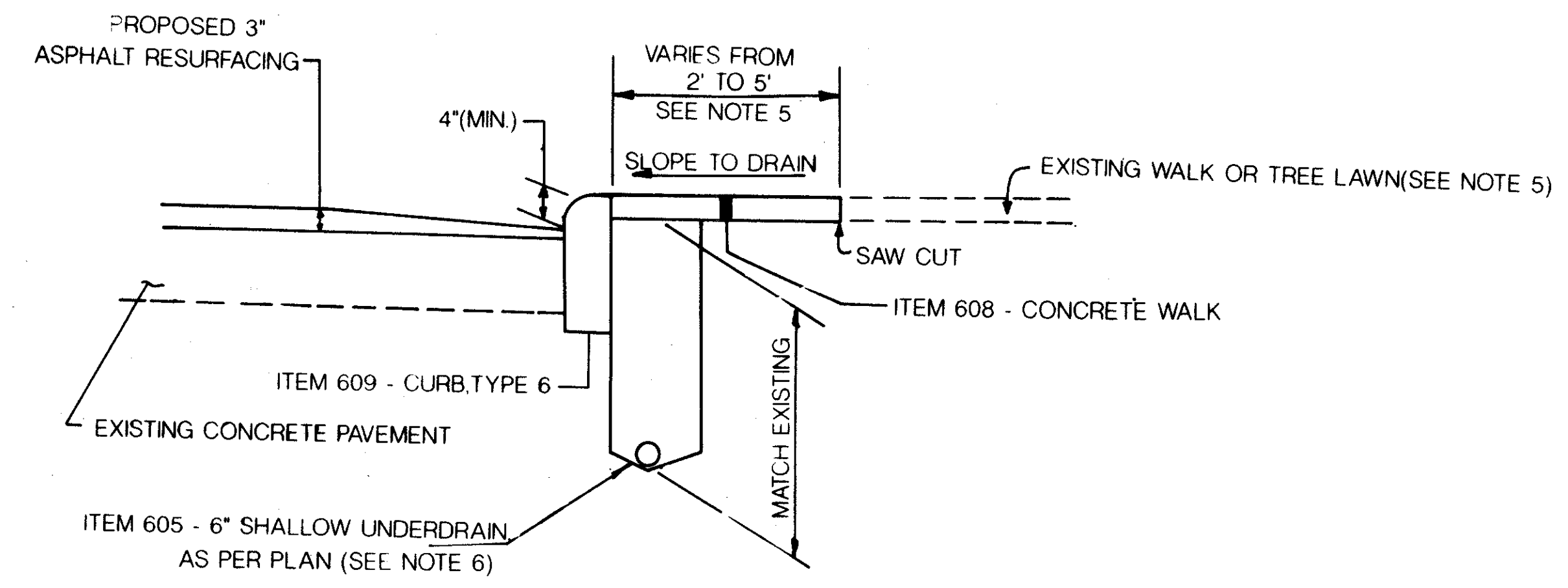
ITEM 404 FOR EROSION CONTROL WITH 18' GUARDRAIL FLARE

NOTE:
1. A 4' WIDE STRIP OF ITEM 404 SHALL BE CONSTRUCTED UNDER ALL EXISTING AND PROPOSED GUARDRAIL.
2. REFER TO GUARDRAIL SUB-SUMMARY TABLE FOR QUANTITIES SEE SHEETS 48 TO 50

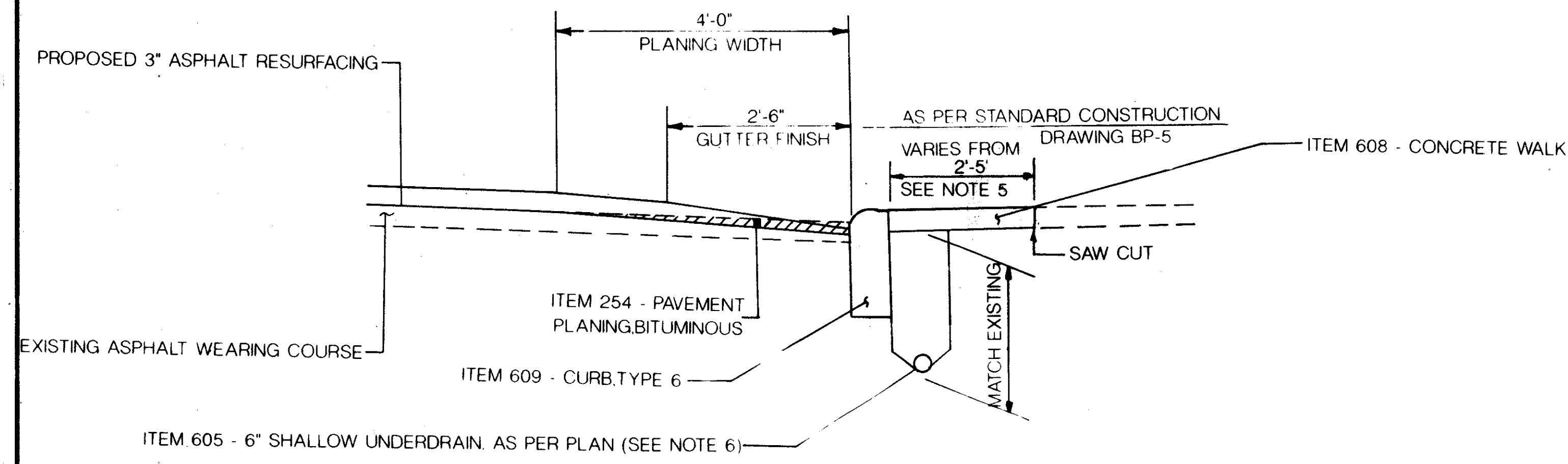
MARGINAL ROAD CURB TREATMENT



**CASE 1
CURB REPLACEMENT WITH GRADING**
No Scale



**CASE 2
CURB REPLACEMENT**
No Scale



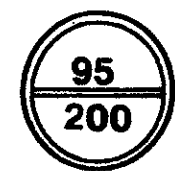
**CASE 3
GUTTER PLANING**
No Scale

(DETAIL SHOWS CURB REPLACEMENT. GUTTER PLANING MAY OCCUR WITHOUT CURB REPLACEMENT)

NOTES:

- GUTTER FINISH, AS PER STANDARD CONSTRUCTION BP-5, (AND AS SHOWN IN CASE 2 AND CASE 3 ON THIS SHEET) SHALL BE PROVIDED THROUGHOUT THE MARGINAL ROAD AS REQUIRED TO MAINTAIN A 4" MINIMUM REVEAL.
- CASE 1 TYPICALLY OCCURS WHERE THE INSIDE EDGE OF THE MARGINAL ROAD IS CURBED AND THE ADJACENT MAINLINE BERM IS ALSO CURBED. THE PROPOSED CURBS REPLACEMENT SHALL BE CONSTRUCTED TO A HEIGHT TO PROVIDE 6" MINIMUM REVEAL. GRADING SHALL BE PERFORMED WITHIN 4' OF THE CURB TO PROVIDE FOR THE EXTENDED CURB HEIGHT.
- CASE 2 TYPICALLY OCCURS WHERE EXISTING MARGINAL ROAD CURB HAS SETTLED AND/OR IS DETERIORATED. THE HEIGHT OF THE PROPOSED CURB SHALL MATCH THE ADJACENT CONCRETE WALK OR TREE LAWN. GUTTER FINISH, AS PER STANDARD CONSTRUCTION DRAWING BP-5, SHALL BE PROVIDED AS REQUIRED TO MAINTAIN A MINIMUM 4" REVEAL.
- CASE 3 OCCURS WHERE THE MARGINAL ROAD HAS AN EXISTING ASPHALT OVERLAY AND THE CURB HAS MINIMAL REVEAL. PAVEMENT PLANING WITHIN 4'-0" OF THE CURB SHALL BE PERFORMED TO INCREASE THE REVEAL. CURB REPLACEMENT AND ASSOCIATED WORK SHALL BE PERFORMED IF THE CURB IS SETTLED AND/OR DETERIORATED. GUTTER FINISH, AS PER STANDARD CONSTRUCTION DRAWING BP-5, SHALL BE PROVIDED AS REQUIRED.
- CONCRETE WALK SHALL BE REPLACED IN KIND. ESTIMATED QUANTITY IS BASED ON 4 1/2" THICKNESS AND 3'-6" WIDTH. WHERE TREE LAWN EXISTS INSTEAD OF SIDEWALK PROVIDE ITEM 660 - SODDING. ESTIMATED QUANTITY OF SODDING IS ALSO BASED ON 3'-6" WIDTH.
- UNDERDRAINS SHALL REPLACE EXISTING UNDERDRAIN AT THE SAME ELEVATIONS.
- QUANTITY TABLE SHOWS APPROXIMATE STATIONS FOR REQUIRED WORK ITEMS. EXACT LOCATIONS SHALL BE AS DIRECTED BY THE ENGINEER.
- EXISTING CURB SHALL NOT BE REMOVED AT DRIVEWAYS.

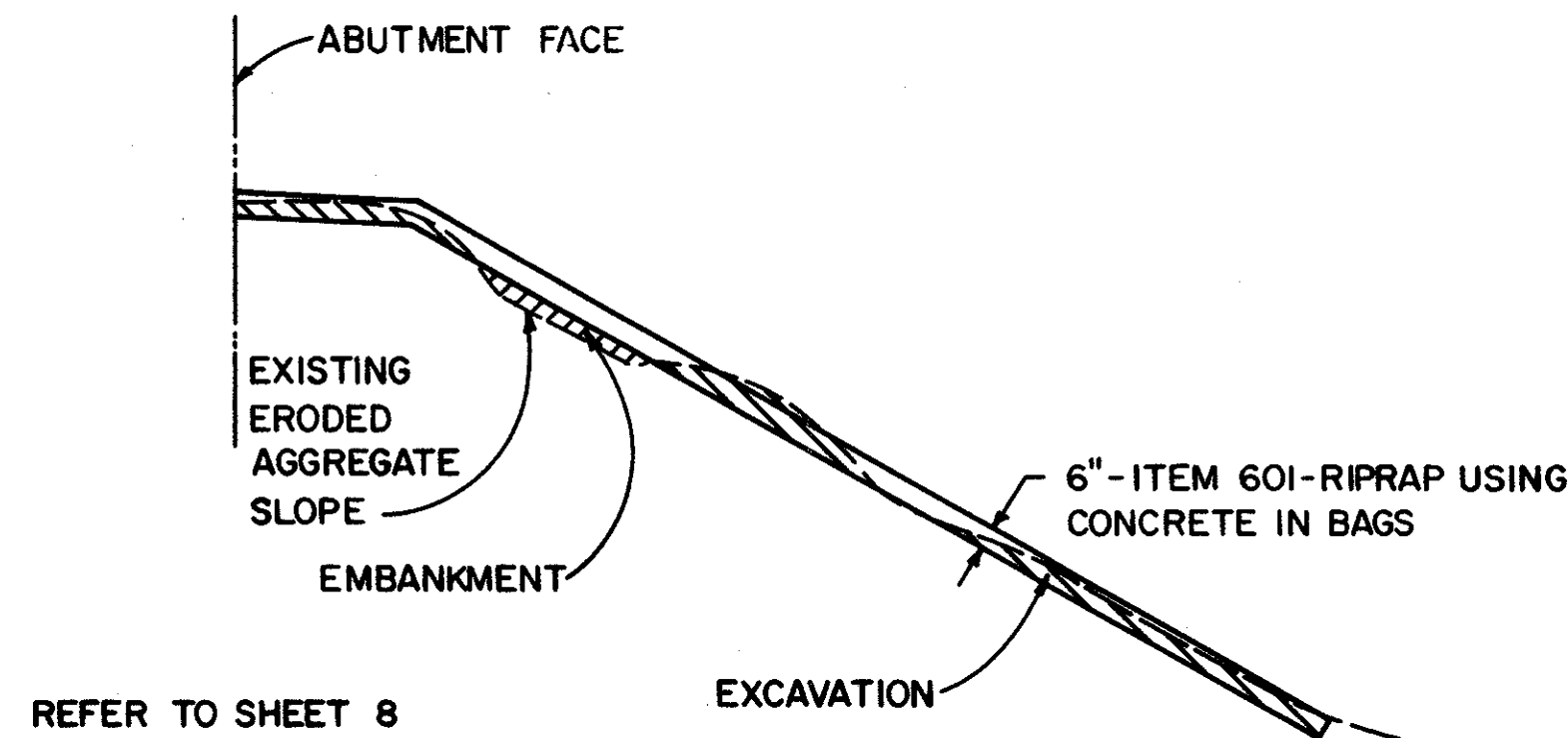
FHWA REGION	STATE	PROJECT
5	OHIO	



CUYAHOGA COUNTY
CUY - 90-23.95
LAKE COUNTY
LAK - 90-0.00

PLAN SHEET NO.	ROADWAY	SIDE	STATION		ITEM 202 CURB REMOVED	ITEM 202 WALK REMOVED	ITEM 203 LINEAR GRADING AS PER PLAN	ITEM 254 PAVEMENT PLANING, BITUMIN.	ITEM 605 6" SHALLOW UNDERDRAIN AS PER PLAN	ITEM 608 4-1/2" CONCRETE WALK	ITEM 609 CURB TYPE 6	ITEM 660 SODDING	
			FROM	TO									
					L.F.	S.F.	STA.	S.Y.	L.F.	S.F.	L.F.	S.Y.	
55	RAMP 2	RT	4+40	6+75	235			104	235		235	91	
55		LT	6+00	6+60	60			27	60		60	23	
55	SOUTH WATERLOO	LT&RT	149+90	151+60	340				340		340	132	
55		RT	151+60	153+35	175				175		175	68	
55-56		RT	154+32	155+71	139				139		139	54	
56		RT	156+22	159+80			159						
56		RT	164+10	165+45	135				135		135	53	
56-57		RT	165+85	175+85	1,000				1,000		1,000	389	
57		LT&RT	175+85	177+65	360				360		360	140	
55	E. 140 MARG. CON.	LT	3+10N	2+20N	90				90		90	35	
55		LT&RT	2+20N	2+20S	880				880		880	342	
55		LT	2+20S	3+10S	90				90		90	35	
55	WATERLOO	LT&RT	151+36	152+30	188			296	188		188	73	
55-56		LT	153+00	159+65									
56		LT	160+10	166+30	620				620		620	241	
57		LT	168+85	170+75				85					
57		LT	171+00	177+75	675				675		675	263	
57		LT	177+75	179+56	362				362		362	140	
57	E. 152 MARG. CON.	RT	2+70N	2+00N	70				70		70	27	
57		LT&RT	2+00N	2+10S	820				820		820	319	
57		RT	2+10S	3+30S	120				120		120	47	
58	SOUTH WATERLOO	RT	178+15	193+25	1,510				1,510		1,510	587	
63		LT&RT	269+84	271+43	315				315		315	123	
63-64	NEFF MARG. CON.	RT	-0+10	9+00	910				910		910	354	
65	VILLAVIEW	LT	288+62	290+00	121				121		121	47	
65	LAKELAND BLVD. EB	RT	288+90	295+17	627				627		627	244	
67-68		RT	320+00	327+00	700				700		700	272	
69		LT	340+00	348+00	800				800		800		
69		LT	348+00	348+85	85		8.00		85		85		
69		LT	357+75	358+50	75	298	0.85		75	298	75		
69-70		LT	358+50	374+40	1,590	263	0.75		1,590	263	1,590		
69	LAKELAND BLVD. WB	LT	340+55	342+49	194				194		194	75	
69		STATION EQUATION	341+56	342+35	79				79		79	31	
			STATION 342+49 BACK = STATION 341+56 AHEAD										
70-71	LAKELAND BLVD. EB		377+40	391+30	1,390		13.90		1,390		1,390		
71		LT	391+30	391+80	50	175			50	175	50		
71		RT	398+30	403+00				209					
71-72		STATION EQUATION	403+00	403+00	79				396				
			STATION 7+64 BACK = STATION 7+64 AHEAD										
70	LAKELAND BLVD. WB	LT	384+80	387+00	220				220		220	86	
72		LT	19+80	21+30	150	525			150	525	150		
			TOTAL COST PARTICIPATION I			15,175	1,261	39.40	1,276	15,175	1,261	15,175	4,291
			COST PARTICIPATION II										
72	LAKELAND	LT	17+75	23+50	575		5.75		575		575		
72-73		LT	25+00	31+00	600		6.00		600		600		
72		RT	17+75	23+00	525	1,838		233	525	1,838	525		
72-73		RT	23+00	31+00				356					
73		RT	34+75	37+75				133					
82		RT	61+50	71+50	1,000		10.00		1,000		1,000		
75,74		LT	62+00	71+50	950		9.50		950		950		
82			TOTALS			3,650	1,838	31.25	722	3,650	1,838	3,650	

SLOPE PROTECTION REPAIR

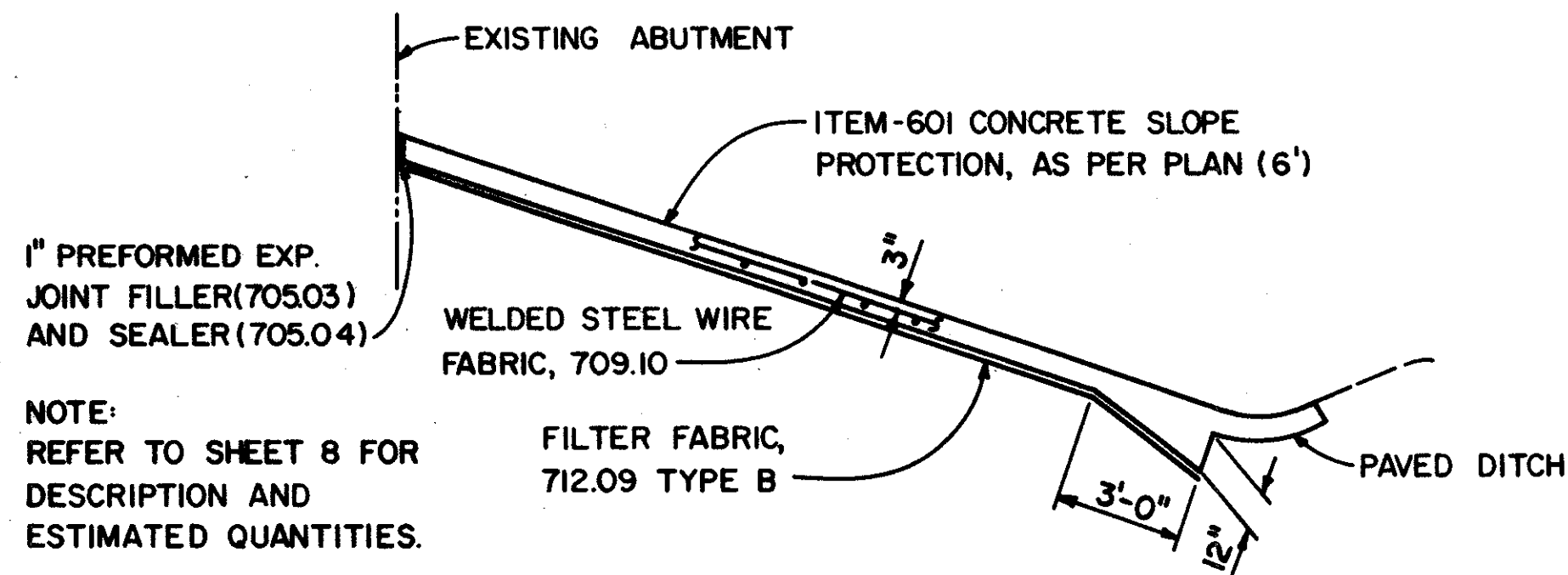


REFER TO SHEET 8 FOR DESCRIPTION AND ESTIMATED QUANTITIES

AGGREGATE SLOPE PROTECTION REPAIR DETAIL

NO SCALE

NOTE:
THE FOLLOWING STRUCTURES REQUIRE AGGREGATE SLOPE PROTECTION REPAIR:
CUY-90-2989
CUY-2-2889
CUY-90-2956
CUY-90-2927
LAK-525-0170

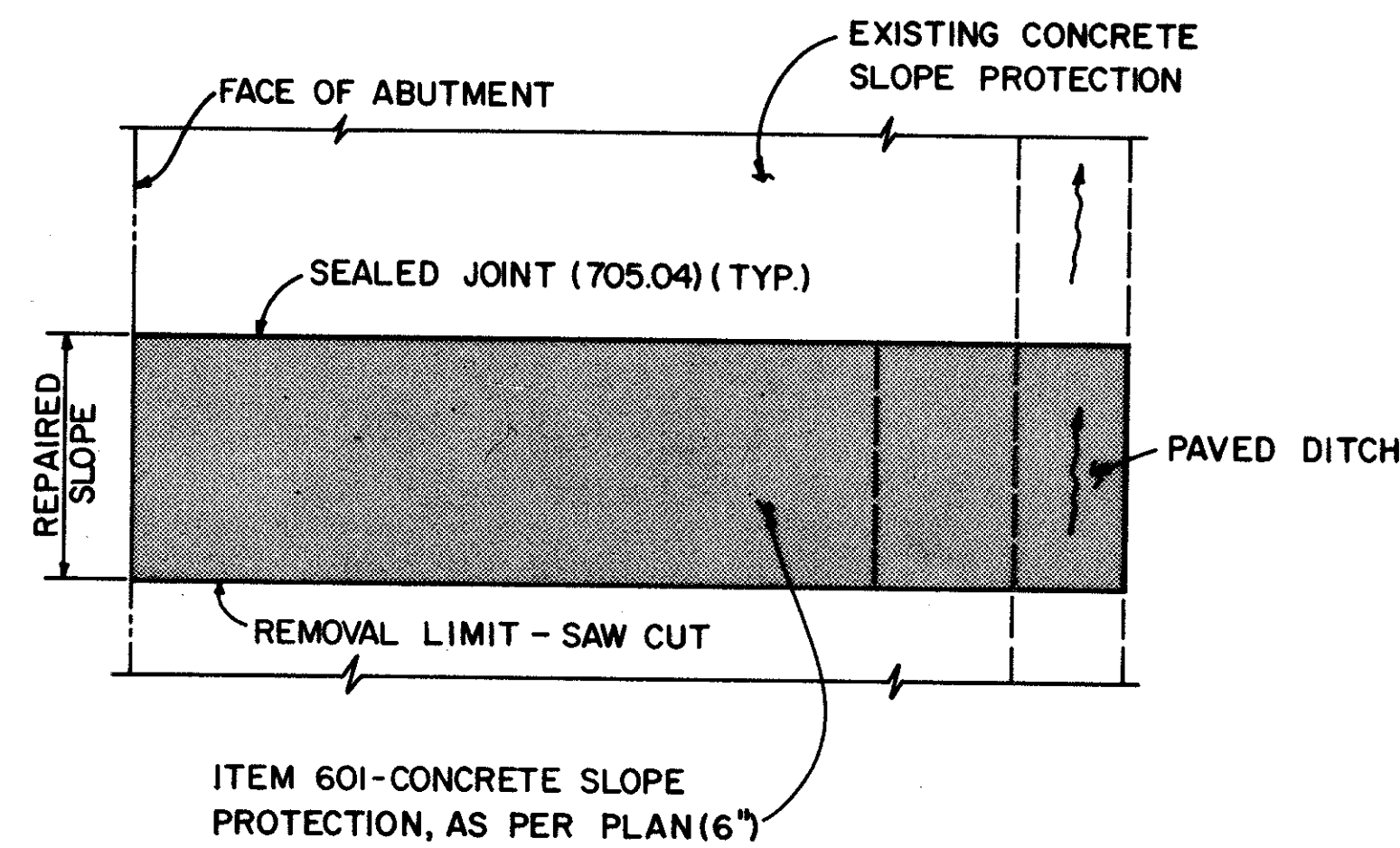


NOTE:
REFER TO SHEET 8 FOR DESCRIPTION AND ESTIMATED QUANTITIES.

CONCRETE SLOPE PROTECTION REPAIR DETAIL

NO SCALE

NOTE:
THE FOLLOWING STRUCTURES REQUIRE CONCRETE SLOPE PROTECTION REPAIR:
CUY-90-2413
CUY-90-2465
CUY-90-2616
CUY-90-2674
CUY-90-2754



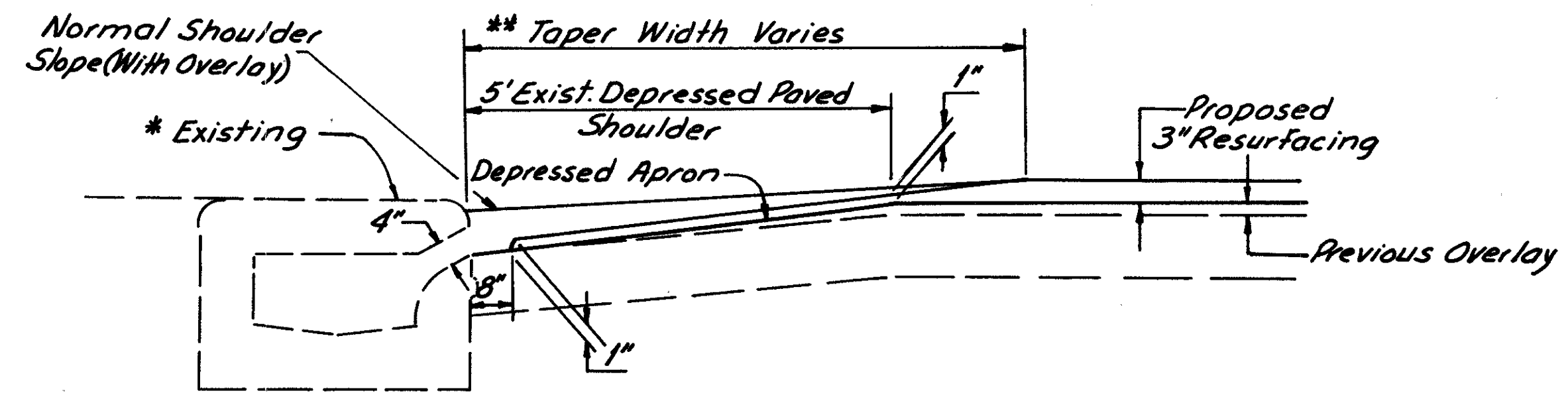
PLAN VIEW

NO SCALE

FHWA REGION	STATE	PROJECT
5	OHIO	

95A
260

CUYAHOGA COUNTY
CUY - 90-23.95
LAKE COUNTY
LAK - 90-0.00

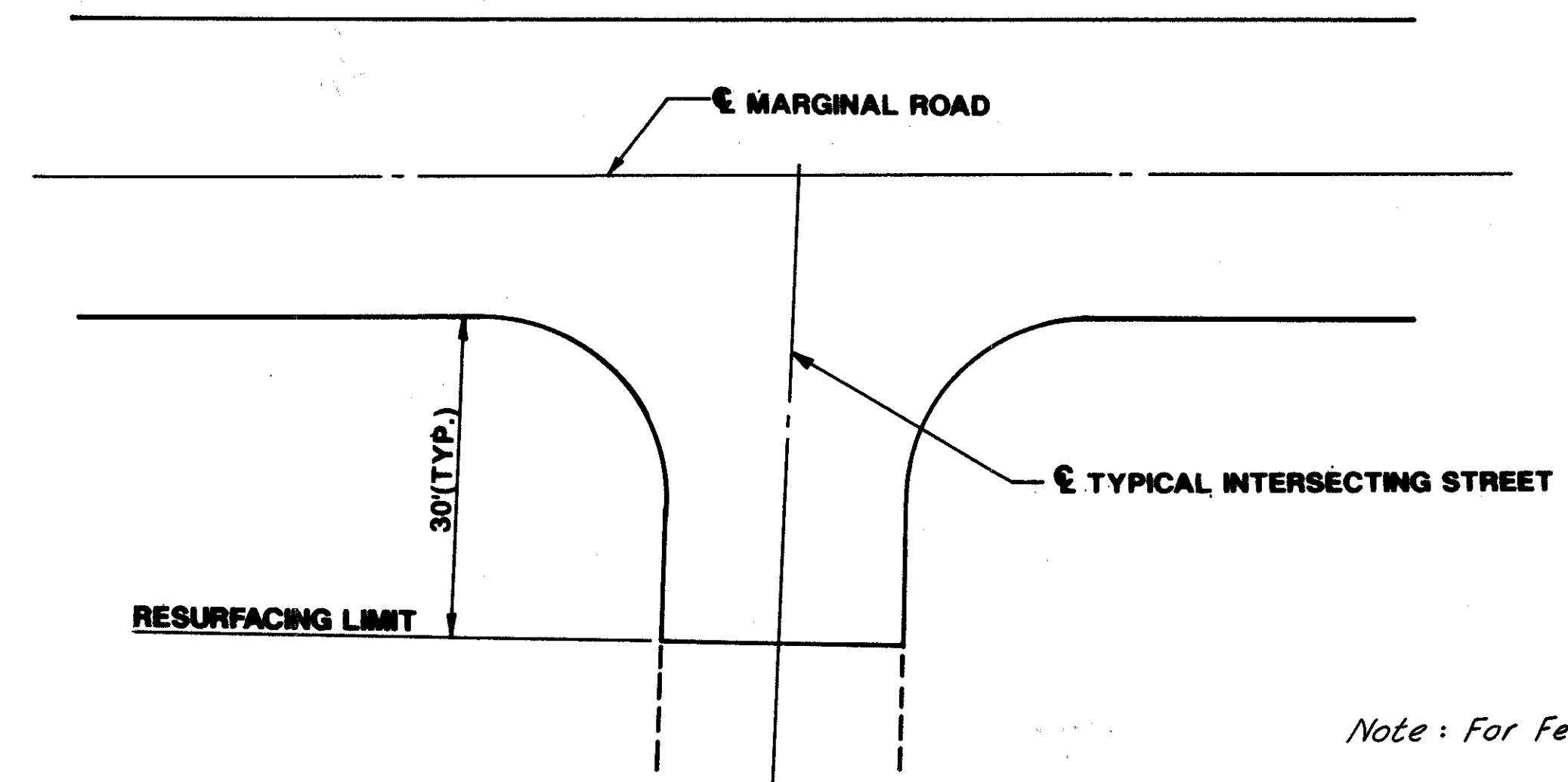


RESURFACING DETAIL AT CURB INLETS

NOT TO SCALE

Note:
* Existing Curb Inlets May Be Replaced or Reconstructed (Refer To The General Notes). New or Reconstructed Inlets Shall Be Constructed To The Same Height As The Adjacent Existing Curb.

** Use The Same Dimension For The Taper Length In The Longitudinal Direction (Adjacent To The Curb) Beginning At The Inlet Opening.



TYPICAL RESURFACING LIMIT OF MARGINAL ROADS AT INTERSECTING STREETS

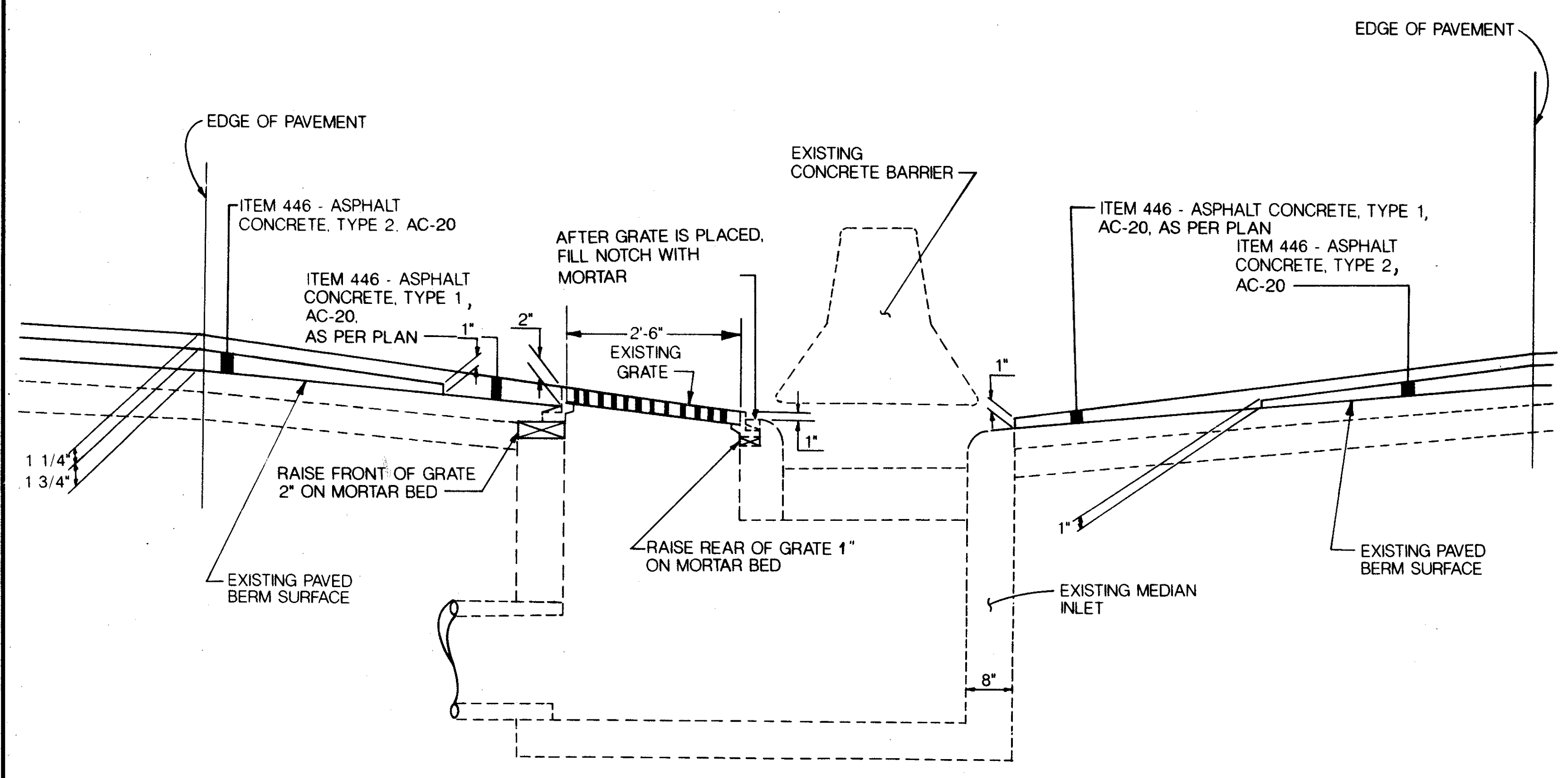
(NO SCALE)

Note: For Feather Detail, See Sheet 97.

MADE J.M.W. DATE 2-9-89
TRACED R.D. DATE 2-8-89
CHECKED R.E. DATE 2-12-89
SCALE 1/4"=1'-0"

HOWARD NEEDLES TAMMEN & BERGENDOFF
ARCHITECTS ENGINEERS PLANNERS



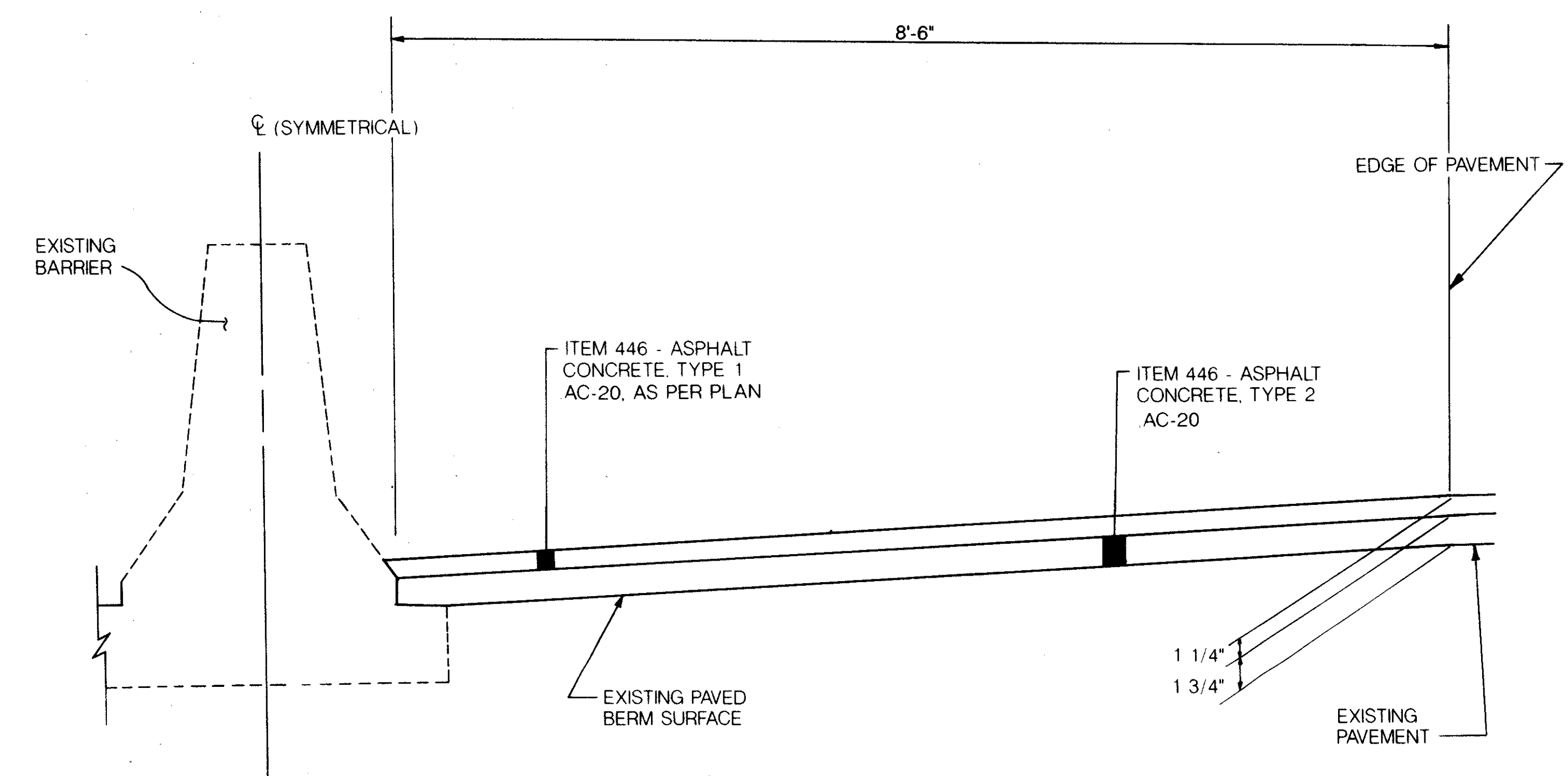


RESURFACING DETAIL AT MEDIAN INLETS
 (NOT TO SCALE)

MEDIAN INLET LOCATION

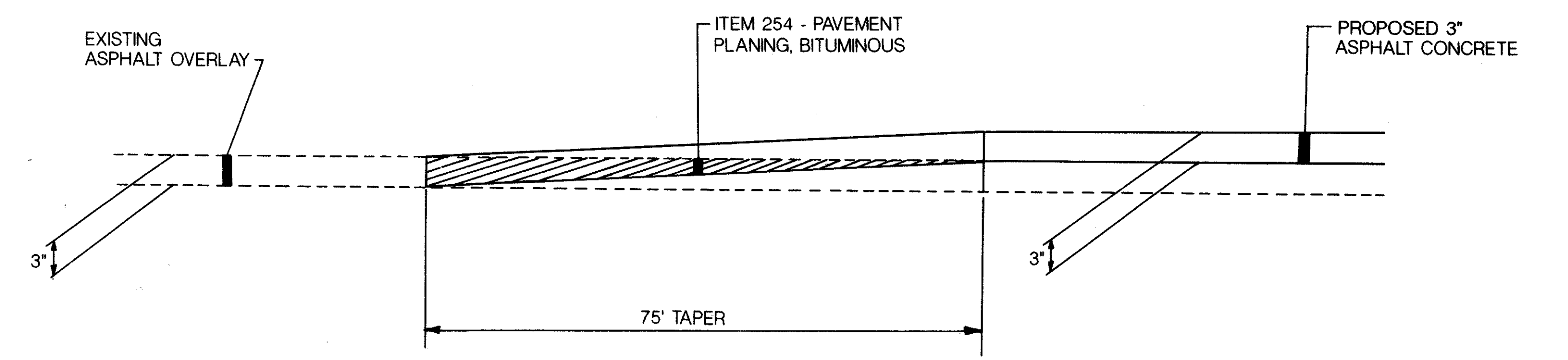
ROADWAY	STATION	STATION	STATION
I-90	140+60	230+80	325+25
	143+45	232+60	326+75
	146+50	237+50	334+90
	154+00	240+50	338+50
	157+00	242+00	341+00
	160+00	243+34.3	343+58
	161+90	245+05	346+20
	163+07.5	248+72	348+80
	166+30	251+35	351+40
	169+45	254+00	354+00
	172+65	259+50	356+60
	176+00	261+99	357+92.6
	182+47	264+70	359+50
	185+80	274+22	363+50
	189+10	275+25	367+50
	192+47	276+59.5	371+50
	195+58.3	278+50	381+80
	197+00	281+30	386+80
	198+75	284+10	391+00
	201+85	293+50	392+48.3
	205+00	296+20	394+00
	207+77	298+02	397+00
	214+20	301+00	400+00
	217+20	302+91.7	402+92.7
	220+00	304+50	45+00
	221+50	307+20	56+14
	223+00	309+95	
	224+50	312+80	
226+00	315+65		
227+50	318+25		
229+00	321+30		

ITEM 604 - MEDIAN INLET ADJUSTED TO GRADE, 88 EACH.



RESURFACING DETAIL AT CONCRETE BARRIER (MEDIAN)
 (NOT TO SCALE)

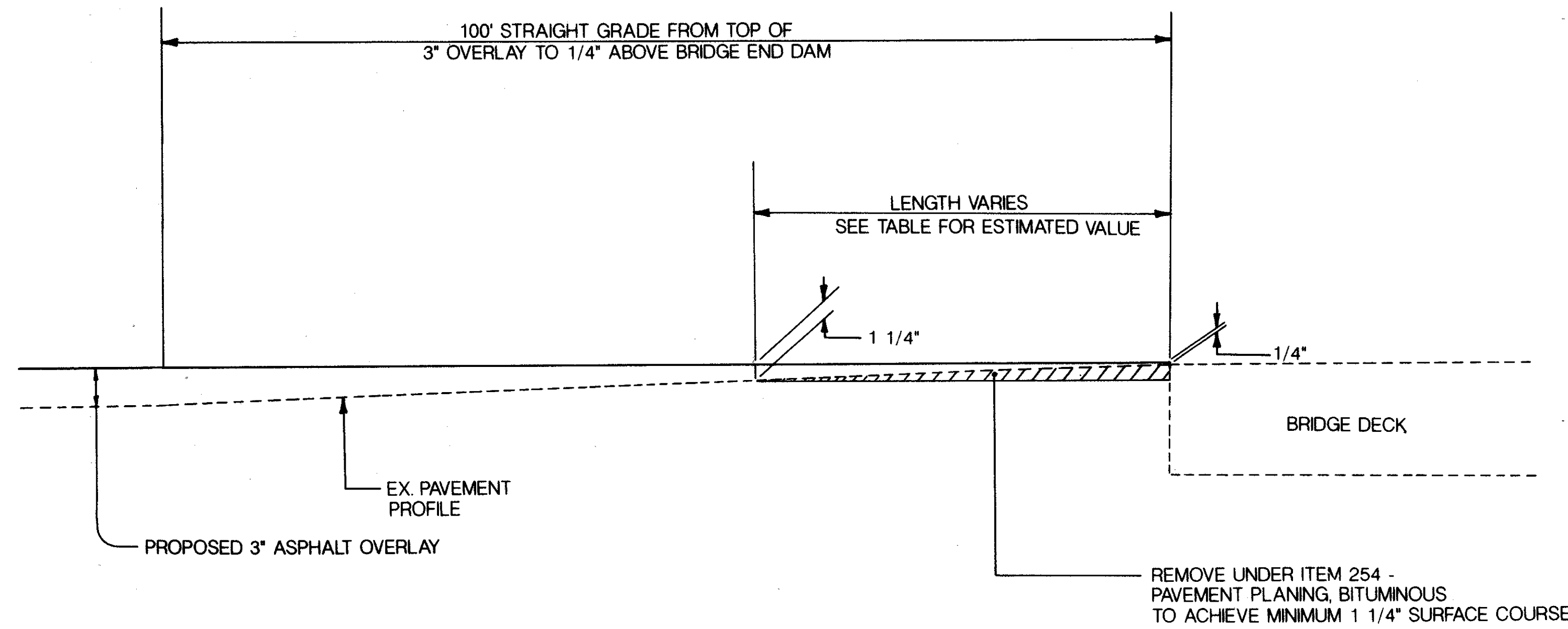
NOTE:
 RESURFACING DETAIL IS SIMILAR FOR CURBED BERMS ON LAKELAND FREEWAY AND RAMPS.



FEATHER DETAIL BUTT JOINT MEETING WITH EXISTING OVERLAY
MAINLINE PAVEMENT ONLY
 (NOT TO SCALE)

FEATHER DETAIL BUTT JOINT MEETING PAVEMENT WITH EXISTING OVERLAY

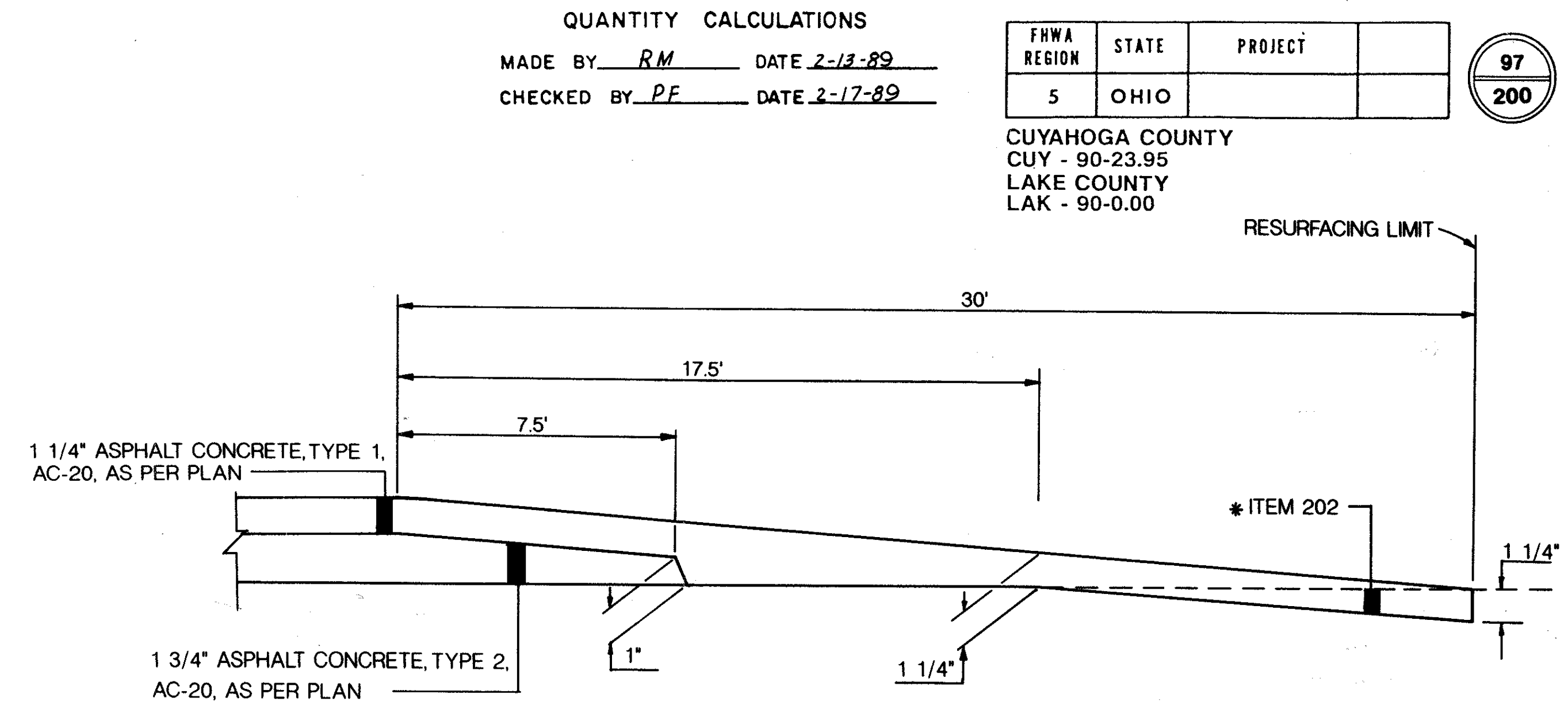
ROADWAY	STATION FROM	STATION TO	SIDE	WIDTH	ITEM 254	
					PVMT. PLANING, BITUMINOUS	
					LIN. FT.	SQ. YD.
I-90	139+25	140+00	EB	66.5	66.5	554.16
	139+25	140+00	WB	66.5	66.5	554.16
LAKELAND FREEWAY	100+00	100+75	EB	54.5	54.5	454.16
	100+00	100+75	WB	54.5	54.5	454.16
EUCLID SPUR	162+08	162+83	SB	50.0	50.0	416.67
	162+08	162+83	NB	50.0	50.0	416.67
TOTAL						2849.97



TYPICAL RESURFACING TREATMENT AT BRIDGE APPROACH

BRIDGE NO. (LOCATION)	APPROACH SIDE	LENGTH		254 PAVEMENT PLANING, BITUMINOUS SQ. YD.
		(AVG) LIN. FT.	(AVG) LIN. FT.	
CUY-90-2413R	WEST	60.0	66.5	443
(E. 140TH ST.)	EAST	66.5	66.5	491
CUY-90-2413L	WEST	62.5	66.5	462
	EAST	63.0	66.5	466
CUY-90-2465R	WEST	77.0	66.5	569
(E. 152ND ST.)	EAST	68.5	66.5	506
CUY-90-2465L	WEST	49.5	66.5	366
	EAST	71.5	66.5	528
CUY-90-2616R	WEST	64.5	66.5	477
(E. 185TH ST.)	EAST	27.5	66.5	203
CUY-90-2616L	WEST	44.5	78.5	388
	EAST	65.0	78.5	567
CUY-90-2639R	WEST	47.0	66.5	347
(NEFF RD.)	EAST	55.0	66.5	406
CUY-90-2639L	WEST	63.5	78.5	554
	EAST	60.5	78.5	528
CUY-90-2674R	WEST	71.0	78.5	619
(E. 200TH ST.)	EAST	58.0	78.5	506
CUY-90-2674L	WEST	72.5	78.5	632
	EAST	59.0	78.5	515
CUY-90-2754R	WEST	72.0	78.5	628
(E. 222ND ST.)	EAST	51.0	78.5	445
CUY-90-2754L	WEST	72.5	78.5	632
	EAST	38.5	78.5	336
CUY-90-2840R	WEST	57.0	66.5	421
(BABBITT RD)	EAST	46.5	66.5	344
CUY-90-2840L	WEST	61.0	66.5	451
	EAST	57.0	66.5	421

BRIDGE NO. (LOCATION)	APPROACH SIDE	LENGTH		254 PAVEMENT PLANING, BITUMINOUS SQ. YD.
		(AVG) LIN. FT.	(AVG) LIN. FT.	
CUY-90-2910R	WEST	58.0	66.5	429
(E. 260TH ST.)	EAST	54.5	66.5	403
CUY-90-2910L	WEST	43.0	66.5	318
	EAST	45.0	66.5	333
CUY-90-2922R	WEST	30.0	64.5	215
(LAKELAND 260TH ST.)	EAST	48.0	63.5	339
CUY-90-2922L	WEST	65.5	74.0	539
	EAST	22.5	66.5	166
CUY-90-2989R	NORTH	45.0	50.0	250
(N&W R.R.)	SOUTH	62.0	50.0	344
CUY-90-2989L	NORTH	30.0	50.0	167
	SOUTH	46.5	50.0	258
LAK-90-0009R	NORTH	61.0	38.0	257
(EUCLID AVE.)	SOUTH	35.0	38.0	148
LAK-90-0009L	NORTH	56.5	52.0	326
	SOUTH	44.0	50.0	244
CUY-90-2956L	EAST	35.5	39.0	154
(RDWY 2 OVER RAMP 1 AND S.R. 2)	WEST	40.5	39.0	176
CUY- 2-2885R	NORTH	33.5	29.0	108
(RAMP 1 OVER S.R. 2)	SOUTH	38.5	29.0	124
CUY-90-2969R	NORTH	17.5	65.0	126
(SB SPUR OVER NYC R.R./LAKELAND BLVD.)	SOUTH	56.5	50.0	314
CUY-90-2969L	SOUTH	58.0	62.0	400
(NB SPUR OVER NYC R.R./LAKELAND BLVD.)	N-EAST	75.5	27.0	227
	N-WEST	63.0	39.0	273
TOTAL				19,889



FEATHER DETAIL ON MARGINAL ROADS AND RAMP
(Not To Scale)

ROADWAY	STATION	SIDE	ITEM 254	
			PAVEMENT PLANING, BITUMINOUS	PAVEMENT PLANING P.C.C.
			SQ. YDS.	SQ. YDS.
RAMP 2	6+55	LT, RT	25	
S. WATERLOO RD.	149+90	LT, RT	80	
WATERLOO RD.	151+37	LT, RT	38	
WATERLOO RD.	152+70	LT	15	
S. WATERLOO RD.	154+25	RT	38	
S. WATERLOO RD.	155+85	RT	42	
WATERLOO RD.	160+00	LT	36	
WATERLOO RD.	161+25	LT	36	
WATERLOO RD.	166+65	LT	35	
S. WATERLOO RD.	165+60	RT	40	
WATERLOO RD.	170+75	LT	36	
WATERLOO RD.	179+56	LT, RT	163	
S. WATERLOO RD.	173+80	RT	38	
S. WATERLOO RD.	177+62	LT, RT	79	
S. WATERLOO RD.	178+30	LT, RT	174	
RAMP 7	7+13	LT, RT	128	
RAMP 9	0+25	LT, RT	24	
RAMP 12	15+90(L)	LT, RT	56	
RAMP 12	16+25(R)	LT, RT	25	
VILLAVIEW RD.	261+12	LT, RT		99
VILLAVIEW RD.	266+20	RT		27
VILLAVIEW RD.	267+90	RT		40
VILLAVIEW RD.	268+13	LT, RT		111
VILLAVIEW RD.	268+66	LT, RT		99
S. WATERLOO RD.	269+84	LT, RT		115
VILLAVIEW RD.	289+67	LT, RT		116
S. WATERLOO RD.	288+32	LT, RT		74
LAKELAND BLVD. (EB)	288+88.5	LT, RT		122
LAKELAND BLVD. (WB)	290+42	LT, RT		89
LAKELAND BLVD. (WB)	308+15	LT		52
LAKELAND BLVD. (WB)	311+20	LT		51
LAKELAND BLVD. (EB)	307+45	RT		35
LAKELAND BLVD. (WB)	313+75	LT		51
LAKELAND BLVD. (WB)	316+35	LT		51
LAKELAND BLVD. (WB)	318+80	LT		58
LAKELAND BLVD. (WB)	322+25	LT		65
LAKELAND BLVD. (WB)	325+75	LT		55
LAKELAND BLVD. (WB)	329+30	LT		55
LAKELAND BLVD. (WB)	332+19.5	LT, RT		97
LAKELAND BLVD. (EB)	329+34	LT, RT		55
LAKELAND BLVD. (EB)	330+39	LT, RT	81	
LAKELAND BLVD. (WB)	333+13	LT, RT		88
LAKELAND BLVD. (WB)	336+20	LT		28
LAKELAND BLVD. (WB)	337+80	LT		35
SUBTOTALS			1,189	1,668

* Payment for removal is either under pavement Planing Bituminous or Pavement Planing, Portland Cement Concrete (See Quantity Table)

ROADWAY	STATION	SIDE	ITEM 254	
			PAVEMENT PLANING, BITUMINOUS	PAVEMENT PLANING P.C.C.
			SQ. YDS.	SQ. YDS.
LAKELAND BLVD. (WB)	340+00	LT		78
LAKELAND BLVD. (WB)	342+75	LT		60
LAKELAND BLVD. (WB)	346+50	LT		61
LAKELAND BLVD. (WB)	350+12	LT		75
LAKELAND BLVD. (WB)	353+90	LT		44
LAKELAND BLVD. (WB)	354+50	LT		101
LAKELAND BLVD. (WB)	359+00	LT		28
LAKELAND BLVD. (WB)	360+50	LT		44
LAKELAND BLVD. (WB)	364+00	LT		52
LAKELAND BLVD. (WB)	367+75	LT		72
LAKELAND BLVD. (WB)	375+60	LT, RT		69
LAKELAND BLVD. (WB)	376+30	LT, RT		65
LAKELAND BLVD. (EB)	375+45	LT, RT	63	
LAKELAND BLVD. (EB)	376+14	LT, RT	54	
LAKELAND BLVD. (WB)	384+50	LT		59
LAKELAND BLVD. (WB)	387+40	LT		54
LAKELAND BLVD. (WB)	393+25	LT		58
LAKELAND BLVD. (EB)	16+60	RT	111	
LAKELAND BLVD. (EB)*	17+74	LT, RT	51	
LAKELAND BLVD. (WB)	21+24	LT, RT		63
LAKELAND-E. 260 ST. *	6+74	LT, RT	87	
LAKELAND BLVD. *	71+53	LT, RT	56	
RAMP 3	0+28	LT, RT	79	
RAMP 4	LEFT TURN	LT, RT	51	
RAMP 4	14+91.69	LT, RT	21	
RAMP 7	16+21	LT, RT	78	
RAMP 6	0+30(L)	LT, RT	49	
RAMP 6	0+43.74	LT, RT	70	
RAMP 8	12+32	LT, RT	82	
RAMP 11	12+21	LT, RT	72	
RAMP 9	14+77	LT, RT	73	
RAMP 10	12+16	LT, RT	83	
SUBTOTALS COST PARTICIPATION I			886	983
TOTALS COST PARTICIPATION I			2,075	2,651
*TOTALS COST PARTICIPATION II			194	

MADE BY RM DATE 2-13-89 **Howard, Needles, Tammen & Bergendoff**
 TRACED BY PF DATE 2-17-89 CONSULTING ENGINEERS
 CHECKED BY PF DATE 2-17-89 CLEVELAND, OHIO
 SCALE NONE

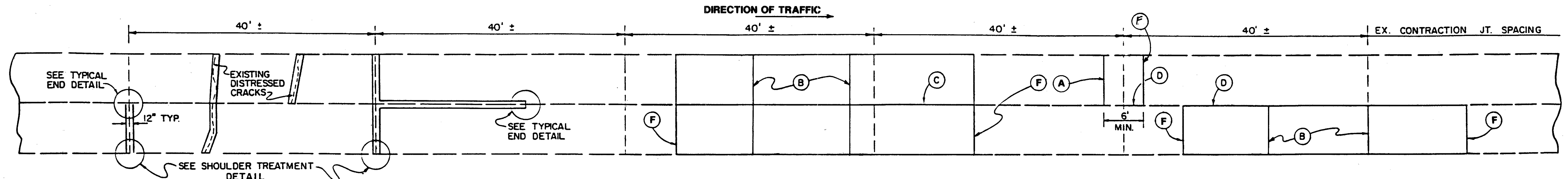


PAVEMENT REPAIR DETAILS

FHWA REGION	STATE	PROJECT	
5	OHIO		

98
200

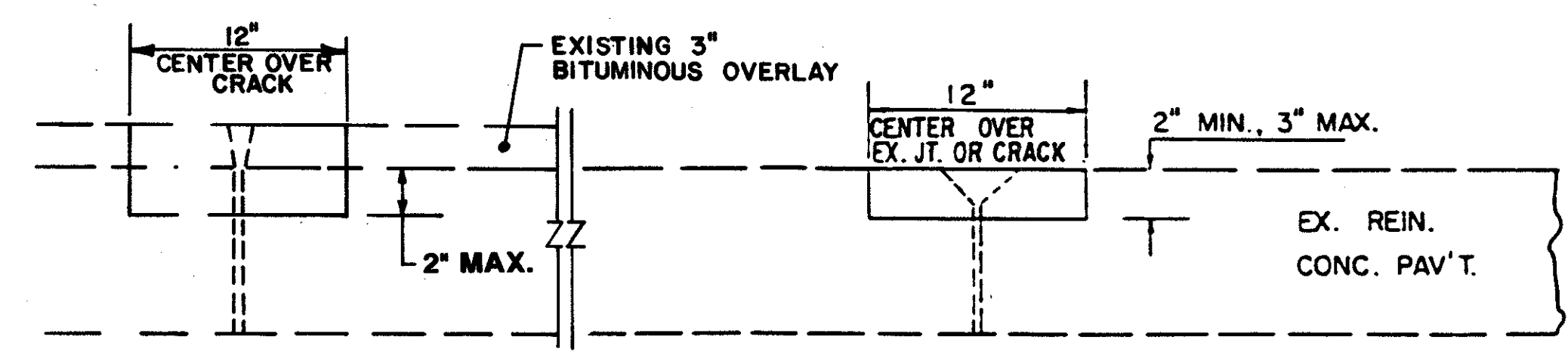
CUYAHOGA COUNTY
CUY - 90-23.95
LAKE COUNTY
LAK - 90-0.00



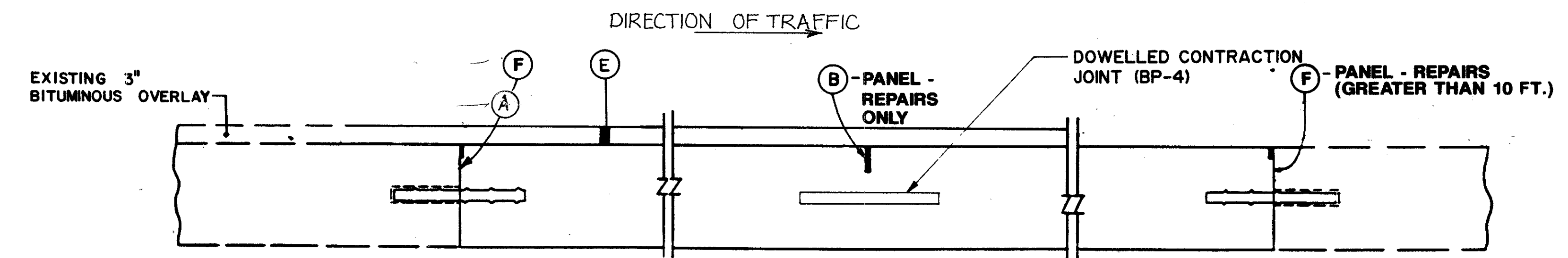
PARTIAL DEPTH JOINT OR CRACK REPAIR

TYPICAL TWO LANE REPLACEMENT

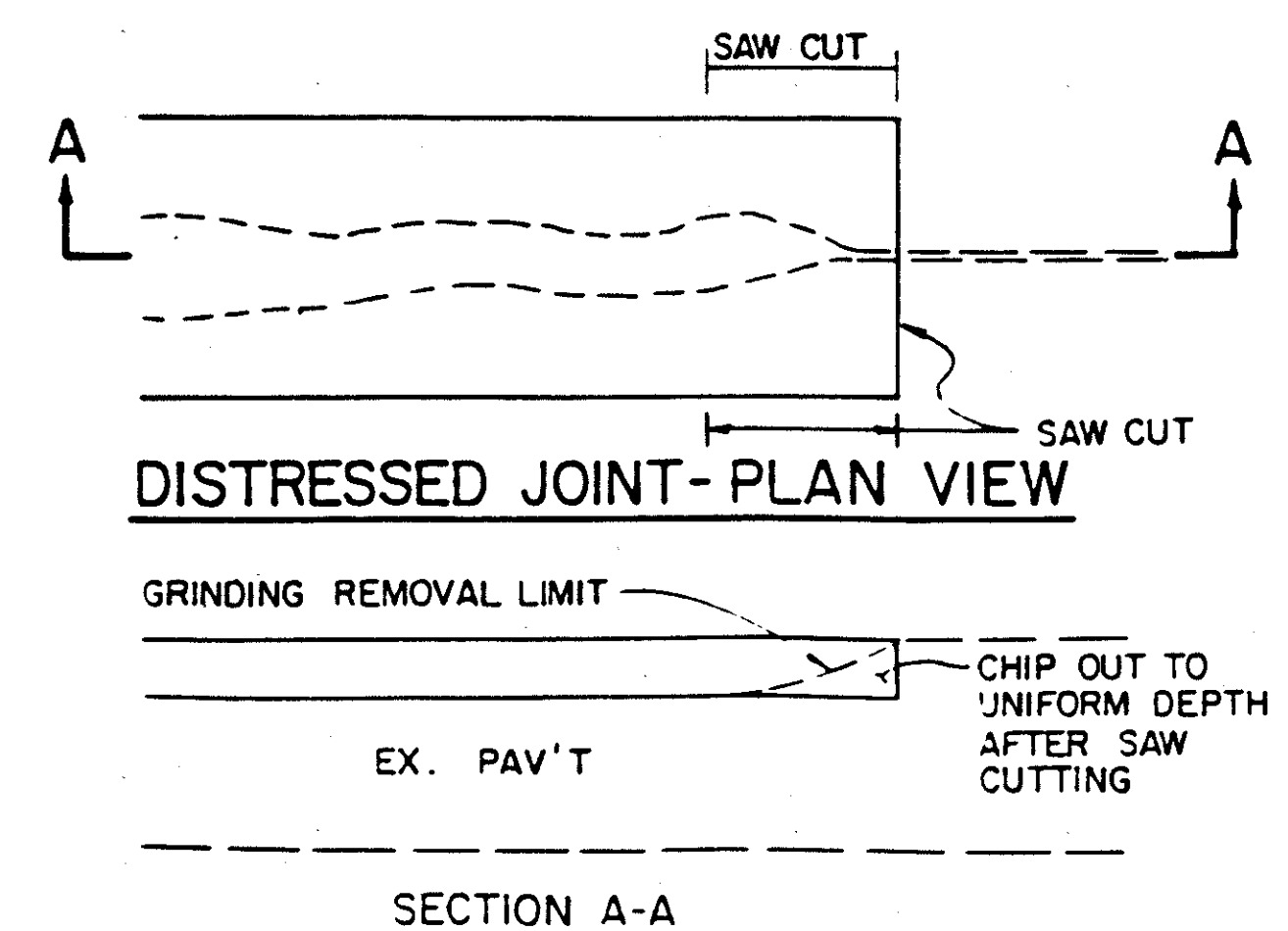
TYPICAL ONE LANE REPLACEMENT



ITEM - 251 - PARTIAL DEPTH PAV'T REPAIR
(WITH AND WITHOUT BITUMINOUS OVERLAY)

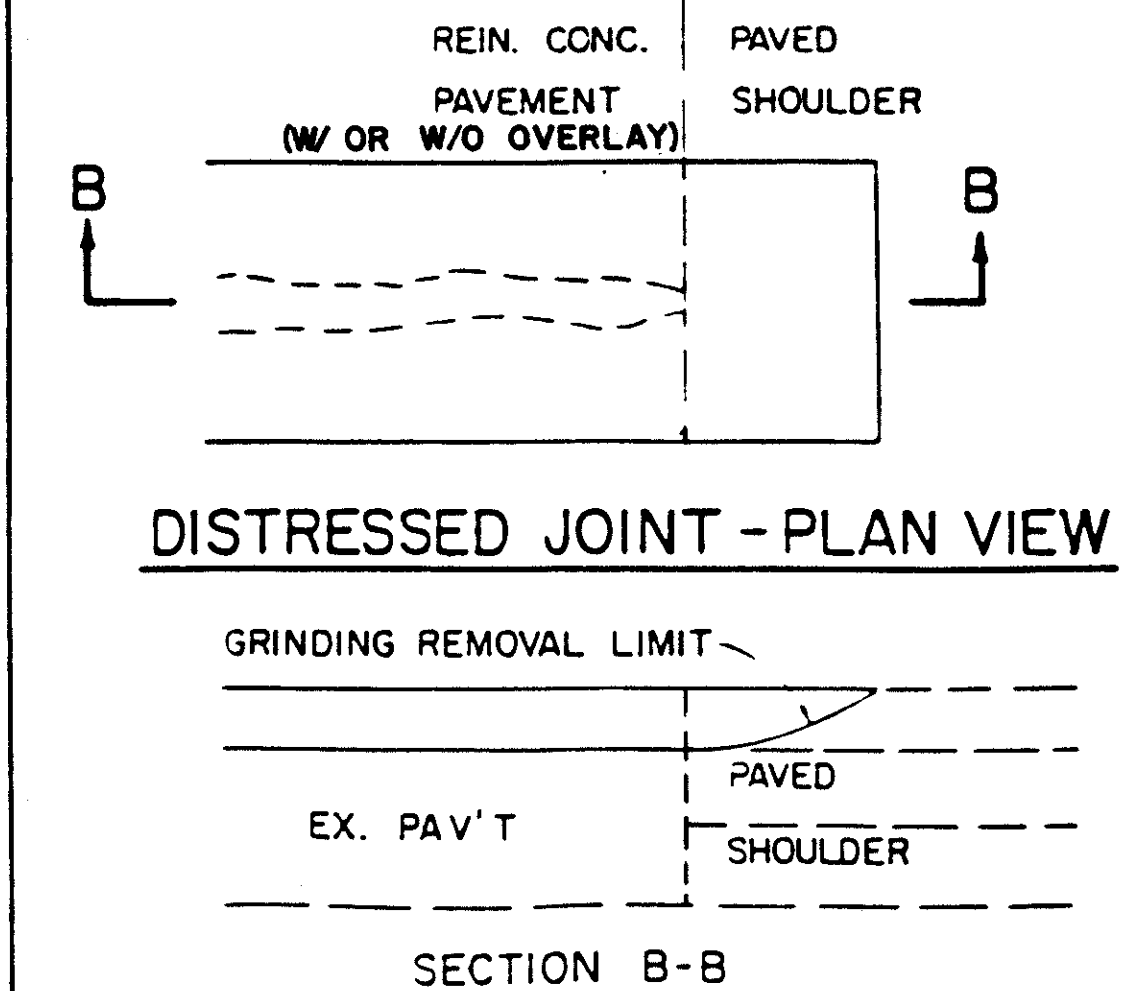


ITEM - 803 - FULL DEPTH RIGID PAVEMENT REMOVAL AND RIGID REPLACEMENT
(WITH AND WITHOUT BITUMINOUS OVERLAY)



TYPICAL END DETAIL

NO SEPARATE PAYMENT WILL BE MADE FOR THESE SAW CUTS



SHOULDER TREATMENT DETAIL

MEASURED QUANTITY SHALL NOT INCLUDE THE PAVED SHOULDER AREA

	ESTIMATED QUANTITIES *					UNIT
	COST PARTICIPATION				II	
	I-90	EUCLID SPUR	MARGINAL ROADS	TOTAL		
ITEM 252 FULL DEPTH RIGID PAVEMENT REMOVAL AND FLEXIBLE REPLACEMENT	5000	500	1000	6500	950	S.Y.
ITEM 803 FULL DEPTH RIGID PAVEMENT REMOVAL AND RIGID REPLACEMENT, CLASS C	4300	950	19000	24250		S.Y.
ITEM 803 FULL DEPTH RIGID PAVEMENT REMOVAL AND REPLACEMENT, CLASS MS	0	0	1000+	1000	0	S.Y.
ITEM 301 BITUMINOUS AGGREGATE BASE, AC-20	3300	750	400	4450	200	C.Y.
ITEM 252 FULL DEPTH PAVEMENT SAWING	18000	1700	2700	22400	1400	L.F.
ITEM 803 FULL DEPTH PAVEMENT SAWING	15400	3200	51600	70200	0	

LEGEND

- (A) TYPE T TIED REPAIR JOINT, AS PER BP-13
- (B) SAWED CONTRACTION JOINT AS PER BP-4 MAX. SPACING 20' ±
- (C) LONGITUDINAL BUTT JOINT AS PER BP-3 (USING HOOK BOLTS)
- (D) LONGITUDINAL JOINT AS PER BP-13
- (E) ITEM 301 - 3" BITUMINOUS AGGREGATE BASE
- (F) TYPE Y DOWELLED REPAIR JOINT, AS PER BP-13

+ CLASS MS RIGID REPLACEMENT CONCRETE SHALL BE USED FOR REPAIRS TO VILLAVIEW RD. BETWEEN NEFF RD. AND E. 185th ST., ON MARGINAL CONNECTORS AND AS DIRECTED BY THE ENGINEER.

* QUANTITY ESTIMATES ARE BASED ON VISUAL INSPECTION. AN ADDITIONAL 25% WAS ADDED TO THE REPAIR AREA TO COMPENSATE FOR ANY ROADWAY DETERIORATION THAT MAY OCCUR BETWEEN THE TIME OF PLAN PREPARATION AND ACTUAL CONSTRUCTION.

ESTIMATED QUANTITY *	PARTICIPATION					II	UNIT
	I						
	I-90	EUCLID SPUR	MARGINAL ROADS	TOTAL			
ITEM 251 PARTIAL DEPTH PAVEMENT REPAIR AS PER PLAN	30570	7410	3320	41300	1450	S.Y.	

MADE J.M.W. DATE 4-3-89
TRACED R.L.B. DATE 4-6-89
CHECKED P.F. DATE 4-16-89
SCALE _____

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

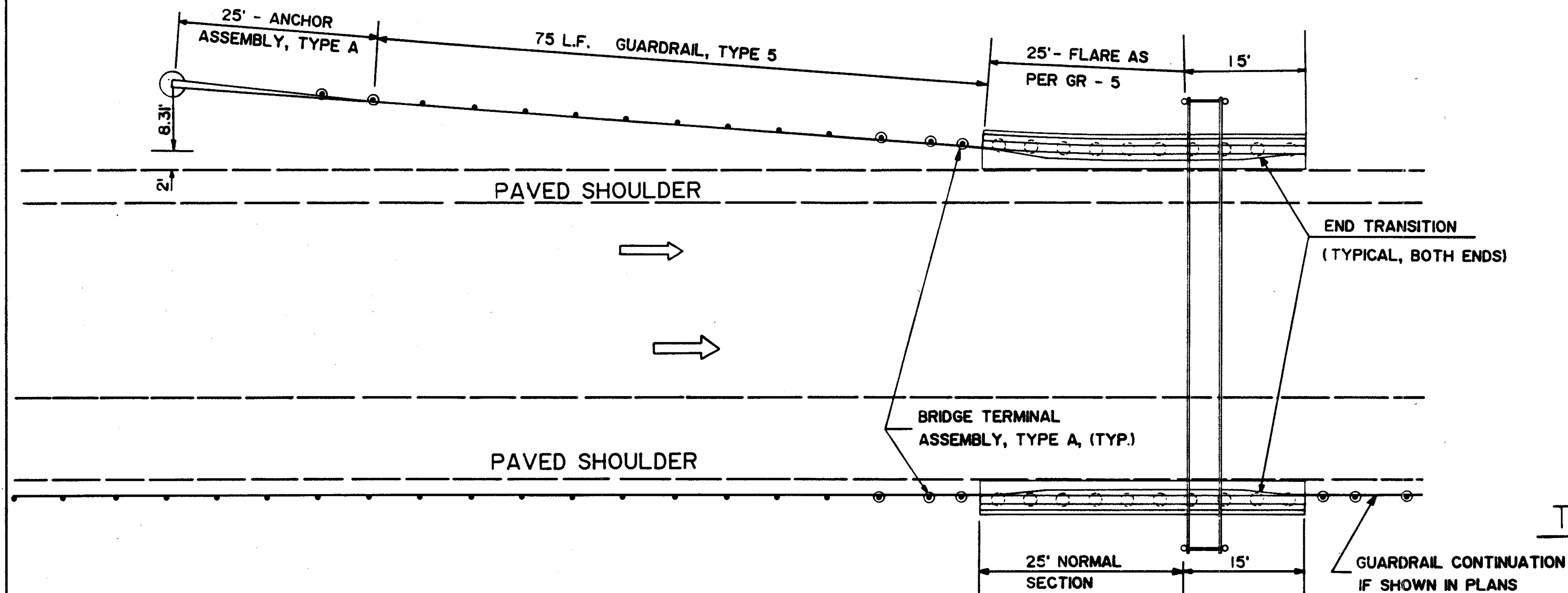
HNTB

FHWA REGION	STATE	PROJECT	
5	OHIO		

99
200

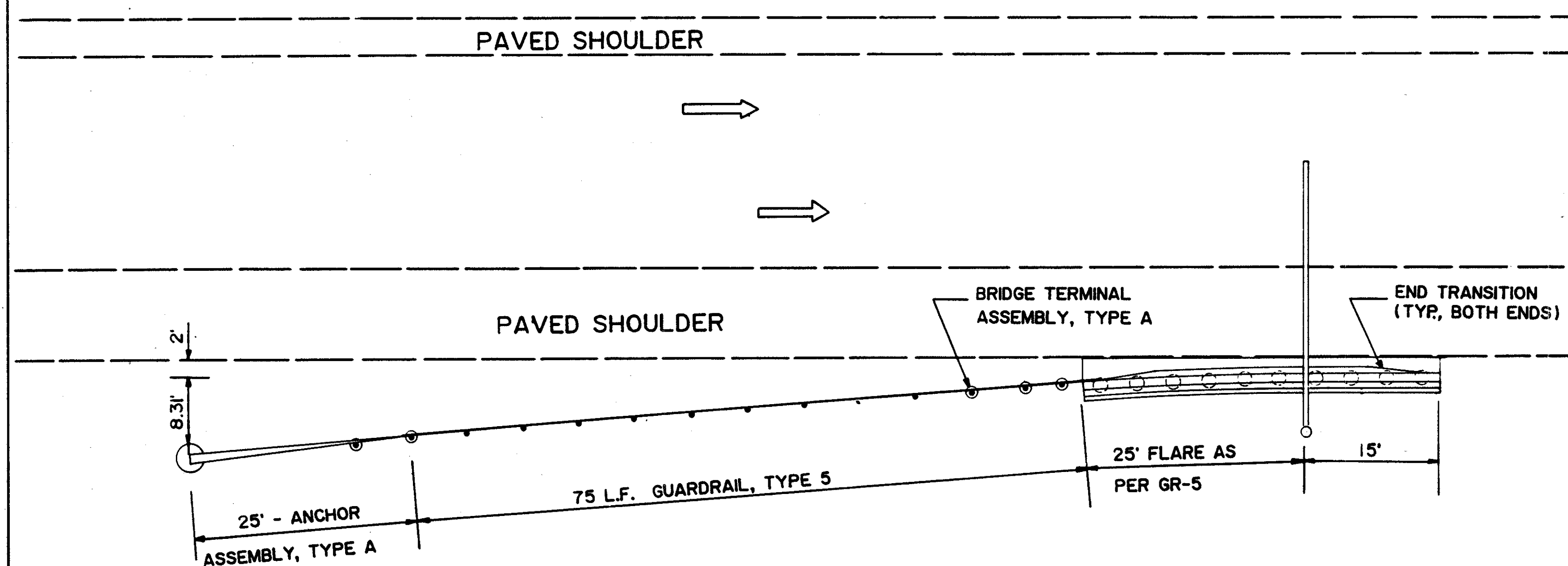
CUYAHOGA COUNTY
CUY - 90-23.95
LAKE COUNTY
LAK - 90-0.00

* - TRANSITION SIMILAR TO GR - 3
EXCEPT 12" TOP WIDTH

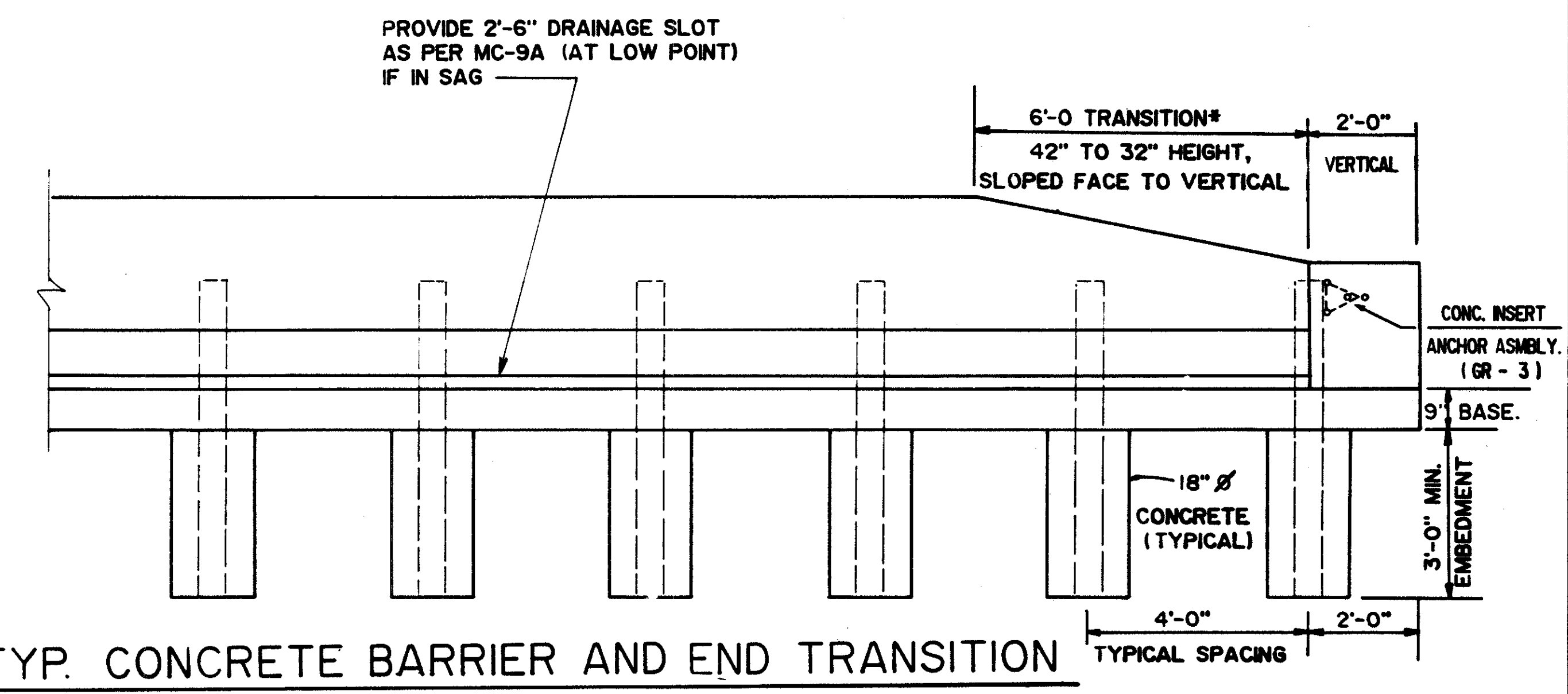


PROTECTION OF OVERHEAD SIGN BRIDGE

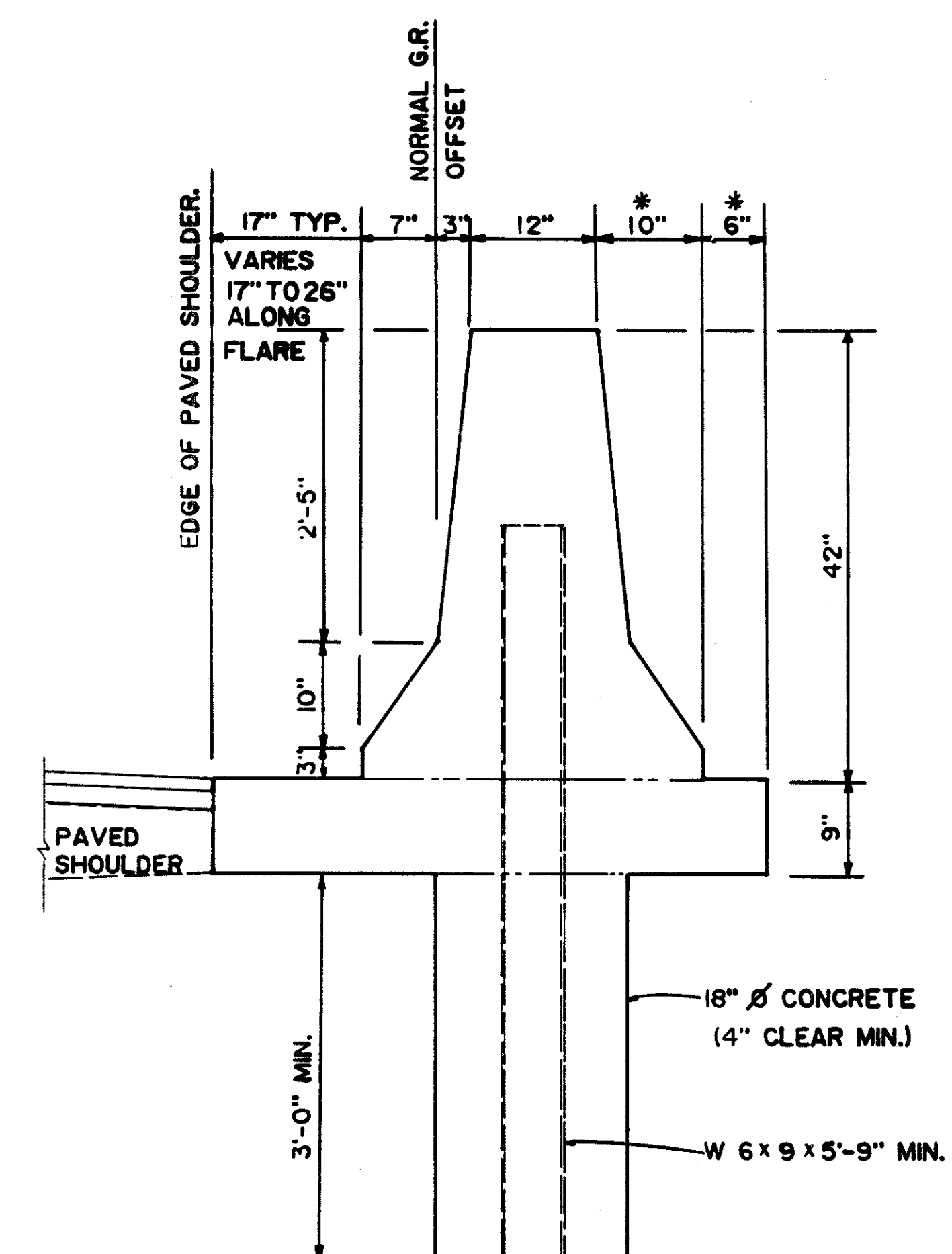
GUARDRAIL AND BARRIER SHALL BE FLARED WHEREVER POSSIBLE. UNFLARED DETAIL ABOVE ONLY APPLIES TO APPLICATIONS WITHIN A LONG GUARDRAIL RUN.



PROTECTION OF CANTILEVER SIGN SUPPORT



TYP. CONCRETE BARRIER AND END TRANSITION



TYPICAL BARRIER SECTION
TYPE B42 AS PER PLAN

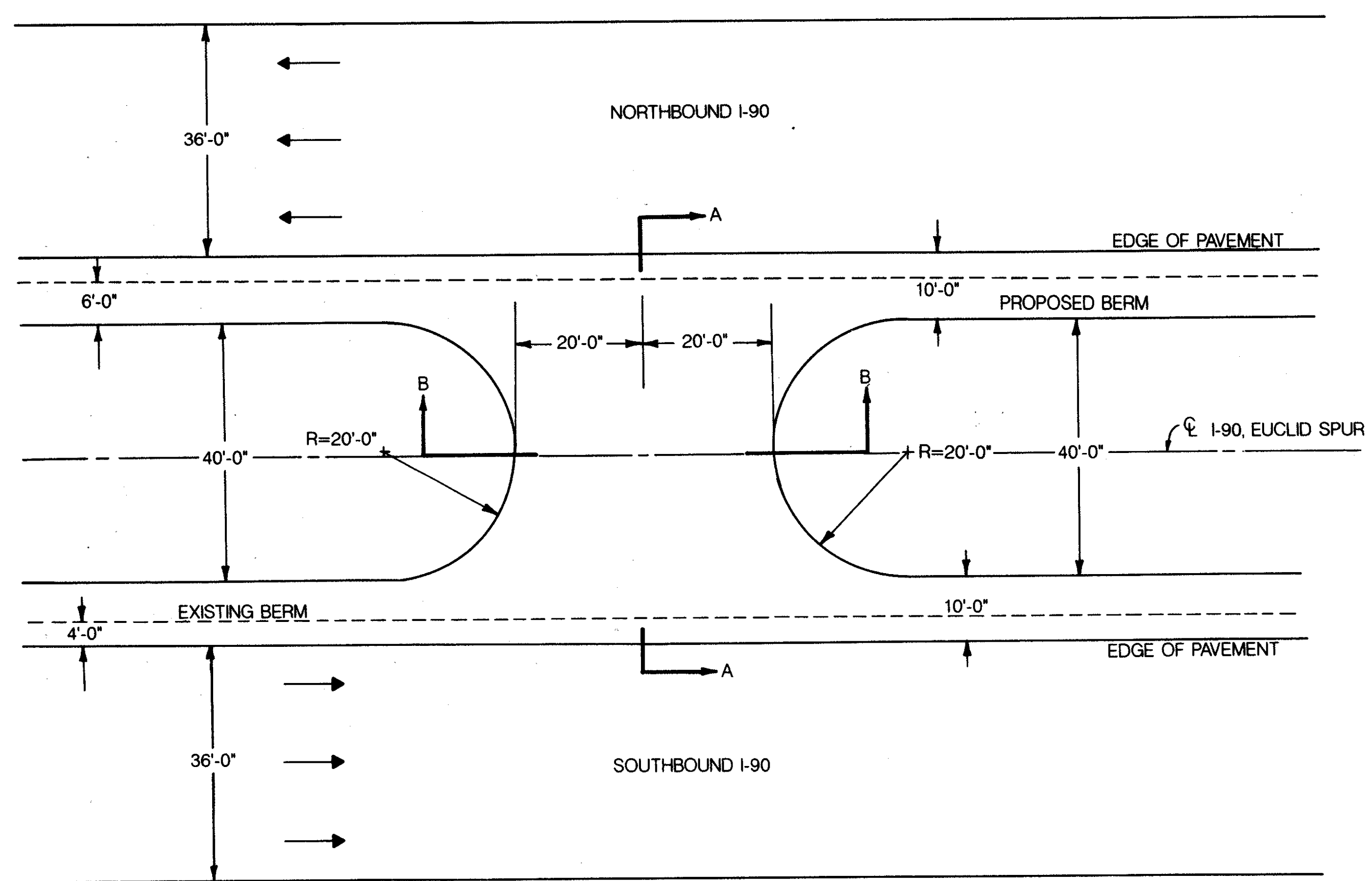
ITEM 622-CONCRETE BARRIER, TYPE B42, AS PER PLAN
THIS WORK SHALL INCLUDE ALL LABOR AND MATERIALS NECESSARY TO CONSTRUCT THE CONCRETE BARRIER AS DETAILED ON THIS SHEET. FOR DETAILS NOT SHOWN SEE STANDARD CONSTRUCTION DRAWING MC-9

* AT CERTAIN LOCATIONS THE OVERHEAD SIGN SUPPORTS WILL BE DIRECTLY ADJACENT TO THE CONCRETE BARRIER. THE BARRIER SHALL BE MODIFIED AS REQUIRED TO PROVIDE FOR THE OVERHEAD SIGN. ALL WORK FOR MODIFICATION SHALL BE AT NO ADDITIONAL COST TO THE STATE. SEE SHEETS 180-181 FOR TYPICAL VIEW OF SIGN ADJACENT TO THE BARRIER.

FHWA REGION	STATE	PROJECT
5	OHIO	

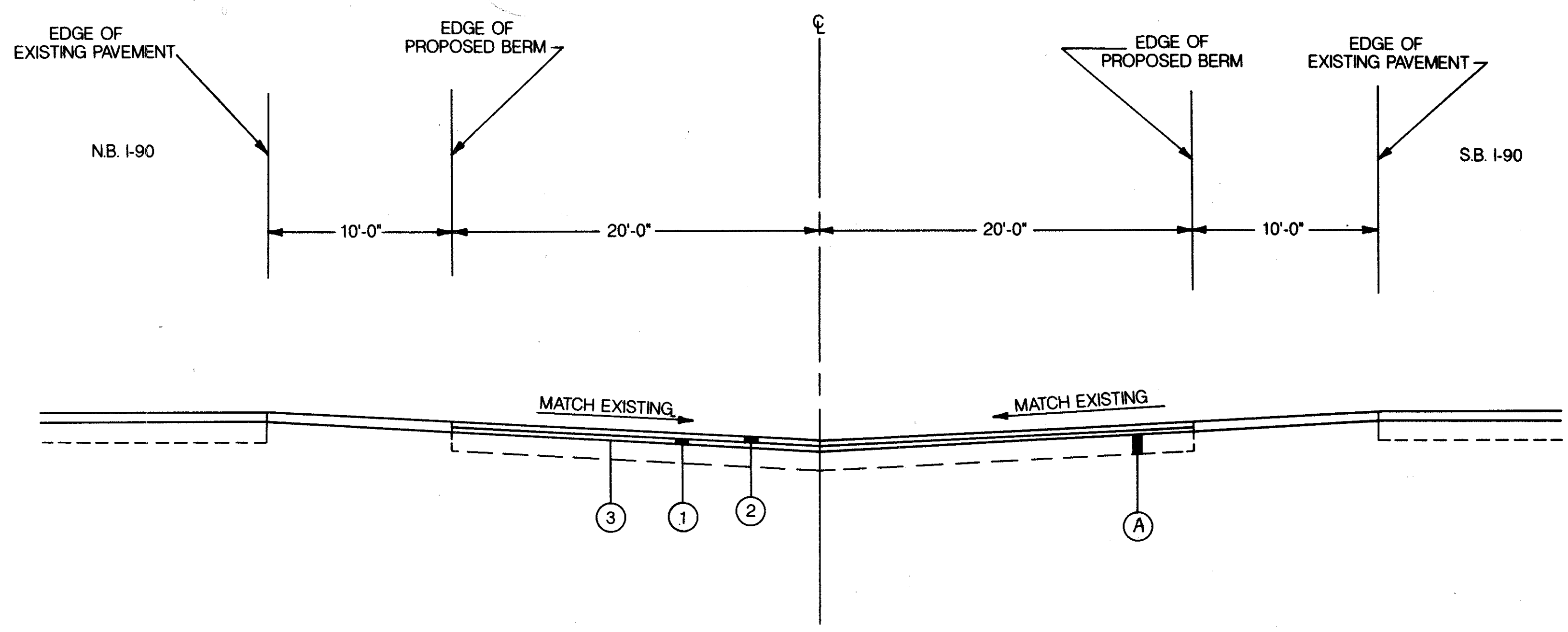
100
200

CUYAHOGA COUNTY
CUY - 90-23.95
LAKE COUNTY
LAK - 90-0.00

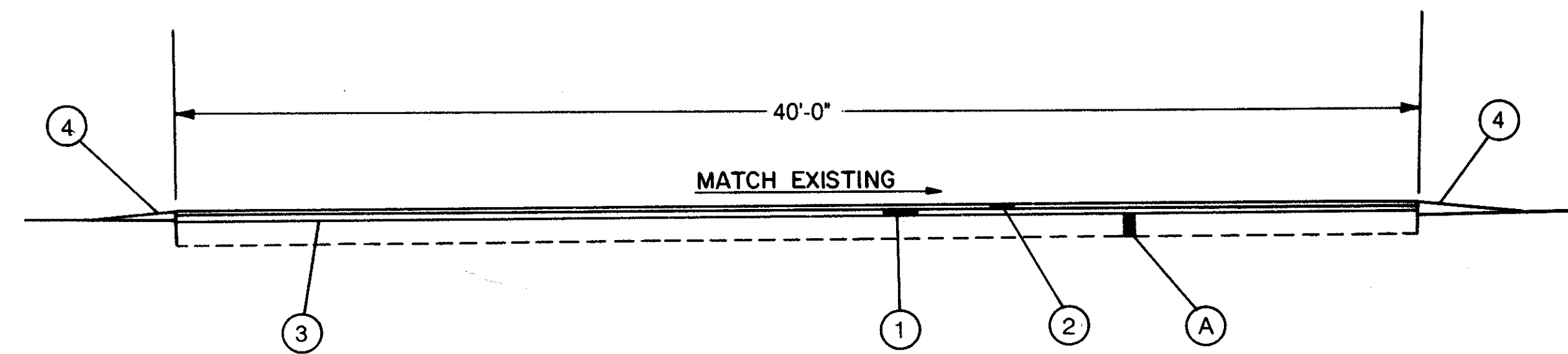


CROSSOVER DETAIL
STATION 136+25, EUCLID SPUR

STATION	446	446	407
	1-1/4" ASPHALT CONCRETE, TYPE 1, AC-20 AS PER PLAN	1-3/4" ASPHALT CONCRETE, TYPE 2, AC-20	TACK COAT 0.075 GAL/S.Y.
	CU.YD.	CU.YD.	GAL.
136+25	7.5	10.5	16.2
TOTALS	7.5	10.5	16.2



SECTION A-A
NOT TO SCALE



SECTION B-B
NOT TO SCALE

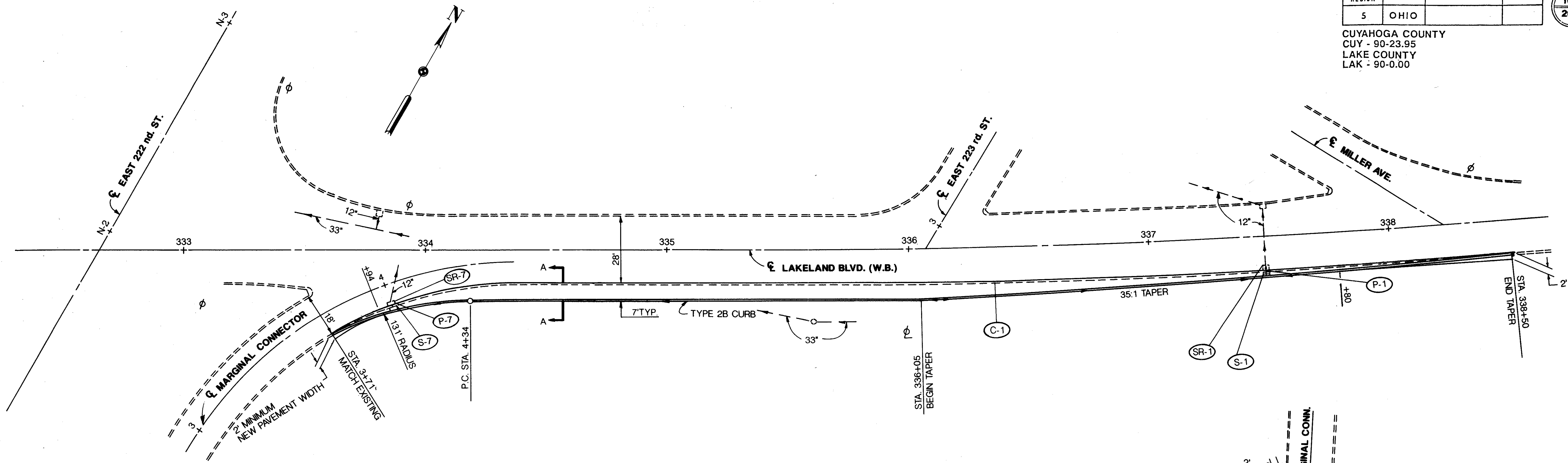
LEGEND

- (A) EXISTING BITUMINIOUS CROSSOVER
- (1) ITEM 446 - 1 3/4" ASPHALT CONCRETE, TYPE 2, AC-20
- (2) ITEM 446 - 1 1/4" ASPHALT CONCRETE, TYPE 1, AC-20, AS PER PLAN
- (3) ITEM 407 - TACK COAT
- (4) ITEM 617 - COMPACTED AGGREGATE

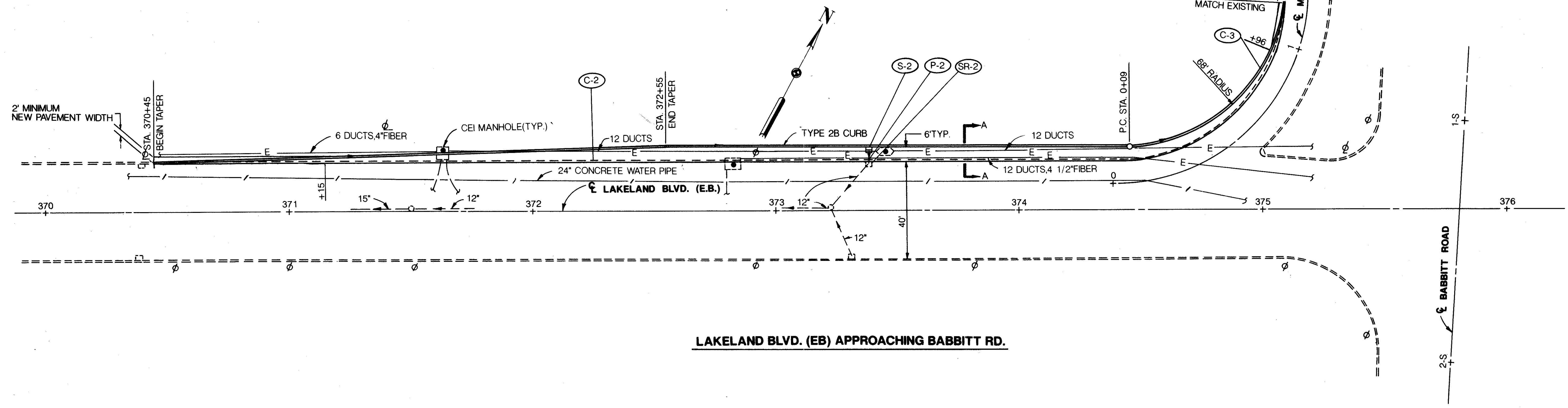
FHWA REGION	STATE	PROJECT	
5	OHIO		

101
200

CUYAHOGA COUNTY
CUY - 90-23.95
LAKE COUNTY
LAK - 90-0.00



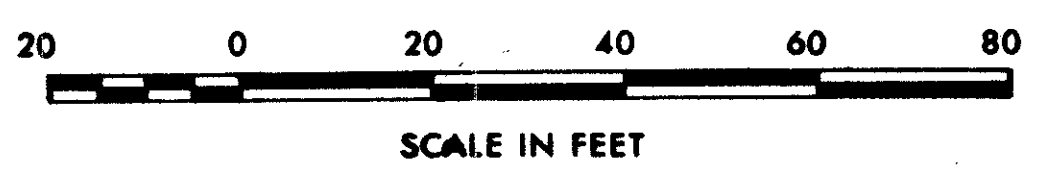
LAKELAND BLVD. (WB) APPROACHING E. 222 ST.



LAKELAND BLVD. (EB) APPROACHING BABBITT RD.

MADE BY: *RM* DATE: 8-1-89
 TRACED BY: *TD* DATE: 8-2-89
 CHECKED BY: *DD* DATE: 8-3-89
 SCALE: 1"=20'

HOWARD NEEDLES TAMMEN & BERGENDOFF
 ARCHITECTS ENGINEERS PLANNERS **HNTB**

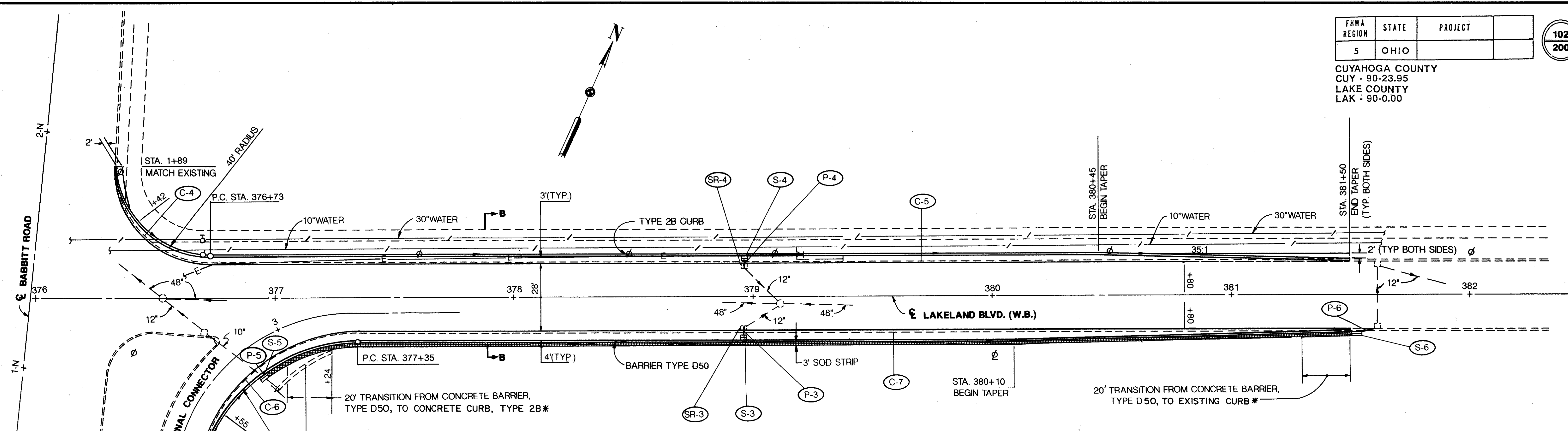


FOR CROSS SECTIONS SEE SHEETS 105 - 106
 FOR QUANTITIES SEE SHEET 103
 FOR SECTION A-A SEE SHEET 102
 FOR SEWER PROFILES SEE SHEET 104
 FOR LEGEND SEE SHEET 102

FHWA REGION	STATE	PROJECT
5	OHIO	

102
200

CUYAHOGA COUNTY
CUY - 90-23.95
LAKE COUNTY
LAK - 90-0.00



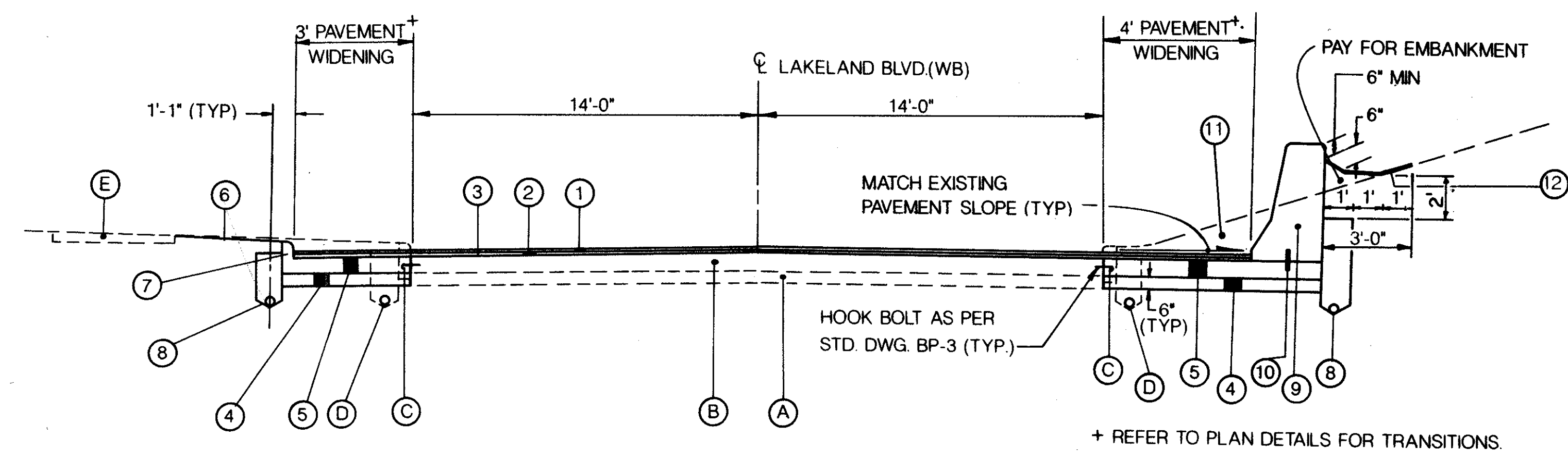
LAKELAND BLVD. (WB) APPROACHING BABBITT RD.



* SEE SHEET 103 FOR END TERMINAL DETAIL.

LEGEND

- EXISTING
- (A) SUBBASE
 - (B) CEMENT CONCRETE PAVEMENT
 - (C) CONCRETE CURB REMOVED
 - (D) UNDERDRAIN REMOVED
 - (E) EXISTING SIDEWALK
- PROPOSED
- (1) ITEM 446 - 1-1/4" ASPHALT CONCRETE SURFACE COURSE, TYPE I, AC-20, AS PER PLAN
 - (2) ITEM 446 - 1-3/4" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE II, AC-20
 - (3) ITEM 407 - TACK COAT
 - (4) ITEM 310 - SUBBASE, TYPE II
 - (5) ITEM 305 - 9" CONCRETE BASE
 - (6) ITEM 659 - SEEDING AND MULCHING
 - (7) ITEM 609 - CONCRETE CURB, TYPE 2B
 - (8) ITEM 605 - 6" SHALLOW PIPE UNDERDRAIN
 - (9) ITEM 622 - CONCRETE BARRIER, TYPE D50, AS PER PLAN
 - (10) DOWEL (STANDARD DRAWING MC-9) ++
 - (11) ITEM 203 - EXCAVATION NOT INCLUDING EMBANKMENT CONSTRUCTION
 - (12) ITEM 660 - SODDING
- ++ COST INCLUDED IN BARRIER



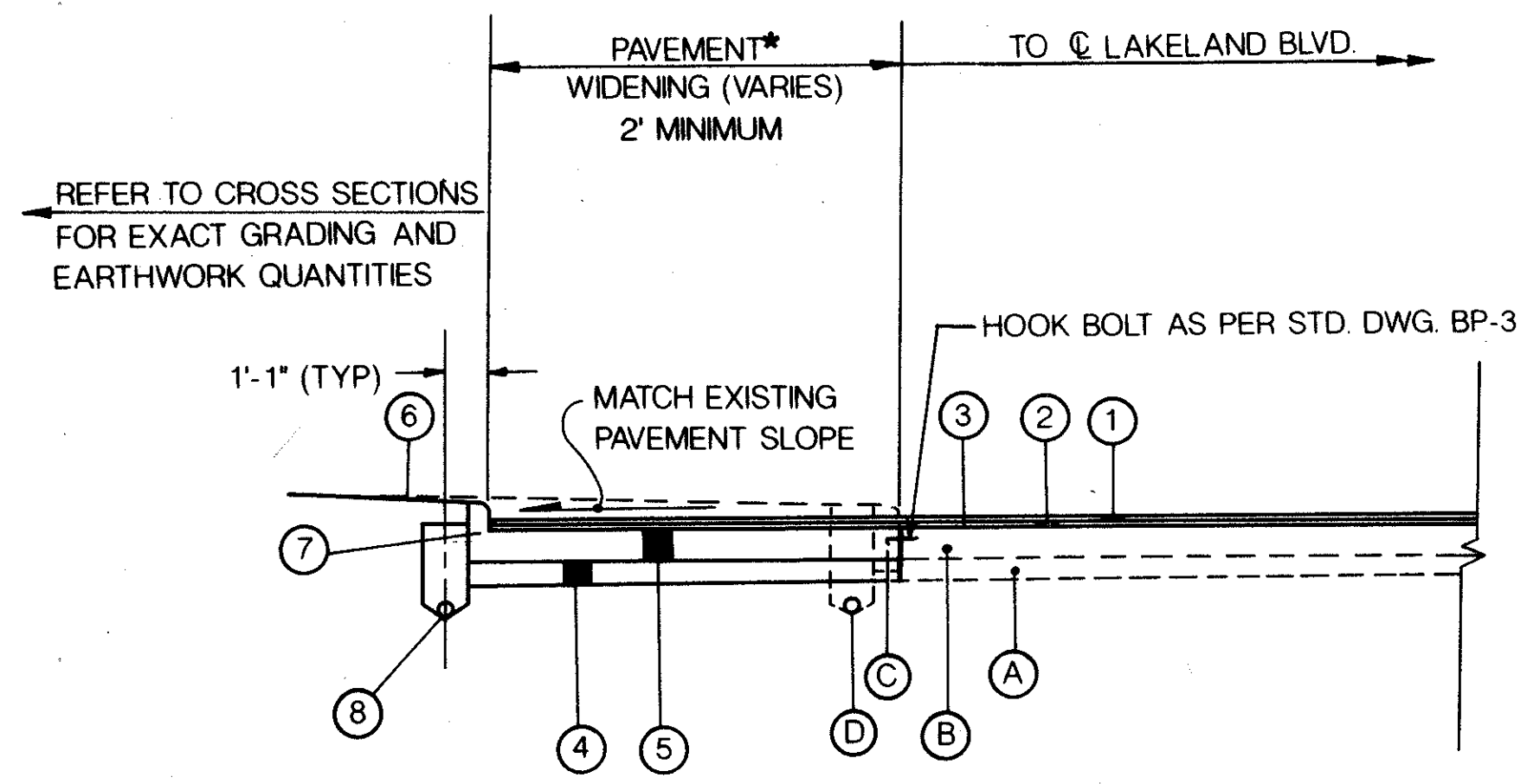
SECTION B-B

NO SCALE

LEGEND

- φ LIGHT POLES
- φ COMBINATION UTILITY POLES
- - - EXISTING WATER LINES
- - - EXISTING ELECTRICAL CONDUITS
- ▣ 3' SOD STRIP
- ⊙ EXISTING CEI MANHOLE
- ⊕ EXISTING WATER VALVE

FOR QUANTITIES SEE SHEET 103
FOR SEWER PROFILES SEE SHEET 104
FOR CROSS SECTIONS SEE SHEET 105 - 106



SECTION A-A

NO SCALE

NOTE
* REFER TO WIDENING PLAN (SHEET 101) FOR EXACT WIDTH.

MADE P.M. DATE 8-1-89
TRACED T.D. DATE 8-4-89
CHECKED G.D. DATE 8-8-89
SCALE 1"=40'

HOWARD NEEDLES TAMMEN & BERGENOFF
ARCHITECTS ENGINEERS PLANNERS **HNTB**

CUYAHOGA COUNTY
 CUY - 90-23.95
 LAKE COUNTY
 LAK - 90-0.00

REF. NO.	STATION		SIDE	ITEM 202 CURB REMOVED LIN. FT.
	FROM	TO		
C-1	LAKELAND BLVD. (WB) 333+61	338+50	RT	491+
C-2	LAKELAND BLVD. (EB) 370+45	374+46	LT	401
C-3	MARG. CONN. 0+09	1+19	LT	100+
C-4	BABBITT RD. LAKELAND (WB) 1+89	376+73	RT/LT	62+
C-5	LAKELAND BLVD. (WB) 376+73	381+50	LT	477
C-6	MARG. CONN. 2+19	3+35	RT	102+
C-7	LAKELAND BLVD. (WB) 377+35	381+50	RT	415
TOTALS				2,048

+ACTUAL LENGTH ALONG CURVE

REF. NO.	STATION AT	ITEM 202	ITEM 202	ITEM 603	ITEM 604	ITEM 603	ITEM 603	ITEM 604	ITEM 604
		CATCH BASIN ABANDONED AS PER PLAN	INLET ABANDONED AS PER PLAN	12" CONDUIT TYPE B	CATCH BASIN NO. 3A	6" CONDUIT TYPE F++	12" CONDUIT TYPE C	CATCH BASIN NO. 2-2-B	CATCH BASIN NO. 6
		EACH	EACH	LIN. FT.	EACH	LIN. FT.	LIN. FT.	EACH	EACH
S-1	337+49		1		1	20			
SR-1*	337+49			3					
P-1	337+49								
S-2	373+38	1		6	1	20			
SR-2+	373+38								
P-2	373+38								
S-3	379+00	1		4		20		1	
SR-3+	379+00								
P-3	379+00								
S-4	379+00	1		3	1	20			
SR-4+	379+00								
P-4	379+00								
S-5	2+84							1	
P-5	2+84						10		
S-6	381+52							1	
P-6	381+52						13		
S-7	4+00		1	2	1	20			
SR-7*	4+00								
P-7	4+00								
TOTALS		3	2	18	4	100	23	2	1

+ PIPE THROUGH ABANDONED CATCH BASIN. SEE DETAIL ON SHEET 92.
 ++ TO OUTLET PROPOSED AND EXISTING UNDERDRAIN INTO PROPOSED CATCH BASIN.
 * PIPE THROUGH ABANDONED INLET, SEE DETAIL ON SHEET 92.

STATION	SIDE	AVERAGE WIDTH	LENGTH	ITEM 310	ITEM 305
				SUBBASE TYPE 1, 6" RAD. A AS PER PLAN	9" CONCRETE BASE
FROM	TO	LIN. FT.	LIN. FT.	CU. YD.	SQ. YD.
MARG. CONN.					
3+71	4+34	RT	4.3	59+	28
LAKELAND BLVD. (WB)					
334+19	336+05	RT	7.5	186	155
336+05	338+50	RT	4.2	245	114
LAKELAND BLVD. (EB)					
370+45	372+55	LT	3.7	210	86
372+55	374+46	LT	6.5	191	138
MARG. CONN.					
0+09	1+19	LT	3.6	98+	39
MARG. CONN.					
2+19	3+35	RT	2.7	100+	30
LAKELAND BLVD. (WB)					
377+35	380+10	RT	4.5	275	138
380+10	381+50	RT	2.9	140	45
BABBITT RD. LAKELAND (WB)					
1+89	376+73	RT/LT	2.3	62+	16
LAKELAND BLVD. (WB)					
376+73	380+45	LT	3.5	372	145
380+45	381+50	LT	2.6	105	30
TOTALS				162	964

+ACTUAL LENGTH ALONG CURVE

STATION	SIDE	AVG. WIDTH	LENGTH	ITEM 446		ITEM 407
				1-1/4" ASPHALT CONC. SURFACE COURSE, TYPE 1, AC-20, AS PER PLAN	1-3/4" ASPHALT CONC. INTERMEDIATE COURSE, TYPE 2, AC-20	TACK COAT .075 GAL/SY
FROM	TO	L.F.	L.F.	CU. YD.	CU. YD.	GAL.
MARG. CONN.						
3+71	4+34	RT	3.5	59+	1	1.7
LAKELAND BLVD. (WB)						
334+19	336+05	RT	7	186	5	10.9
336+05	338+50	RT	3.5	245	3	7.1
LAKELAND BLVD. (EB)						
370+45	372+55	LT	3	210	2	5.3
372+55	374+46	LT	6	191	4	9.6
MARG. CONN.						
0+09	1+19	LT	3	98+	1	2.5
MARG. CONN.						
2+19	3+35	RT	2	100+	1	1.7
LAKELAND BLVD. (WB)						
377+35	380+10	RT	4	275	4	9.2
380+10	381+50	RT	2	140	1	7.3
BABBITT RD. LAKELAND (WB)						
1+89	376+73	RT/LT	1.5	62+	0.4	0.8
LAKELAND BLVD. (WB)						
376+73	380+45	LT	3	372	4	9.3
380+45	381+50	LT	1.5	105	1	1.3
TOTALS				27	41	62

+ACTUAL LENGTH ALONG CURVE

ITEM 605 - 6" SHALLOW PIPE UNDERDRAIN			
STATION	SIDE	FROM	TO
LAKELAND BLVD. (WB)	RT	333+61	338+50
LAKELAND BLVD. (EB)	LT	370+45	374+46
MARG. CONN.	LT	0+09	1+19
BABBITT RD. LAKELAND (WB)	RT/LT	1+89	376+73
LAKELAND BLVD. (WB)	LT	376+73	381+50
MARG. CONN. LAKELAND (WB)	RT	2+19	381+50
TOTAL 2,046			

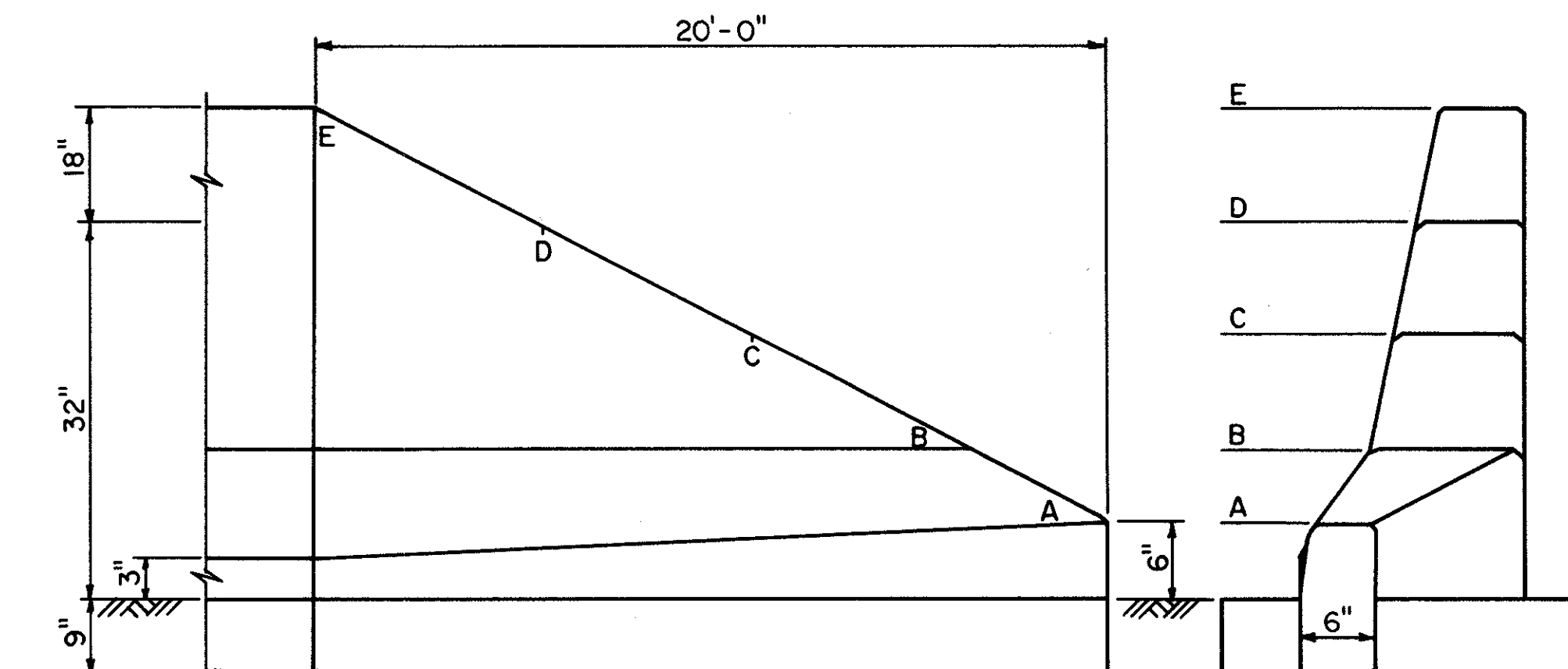
+ACTUAL LENGTH ALONG CURVE

ITEM 609 - CONCRETE CURB, TYPE 2B			
STATION	SIDE	FROM	TO
LAKELAND BLVD. (WB)	RT	333+61	338+50
LAKELAND BLVD. (EB)	LT	370+45	374+46
MARG. CONN.	LT	0+09	1+19
BABBITT RD. LAKELAND (WB)	RT/LT	1+89	376+73
LAKELAND BLVD. (WB)	LT	376+73	381+50
MARG. CONN.	RT	2+19	2+97
TOTAL 1,600			

+ACTUAL LENGTH ALONG CURVE

ITEM 622 - CONCRETE BARRIER, TYPE D50			
STATION	SIDE	FROM	TO
LAKELAND BLVD. (WB)	RT	377+04	381+50
TOTAL 446			

ITEM 660 - SODDING			
STATION	SIDE	FROM	TO
LAKELAND BLVD. (WB)	RT	376+93	381+55
TOTAL 154			



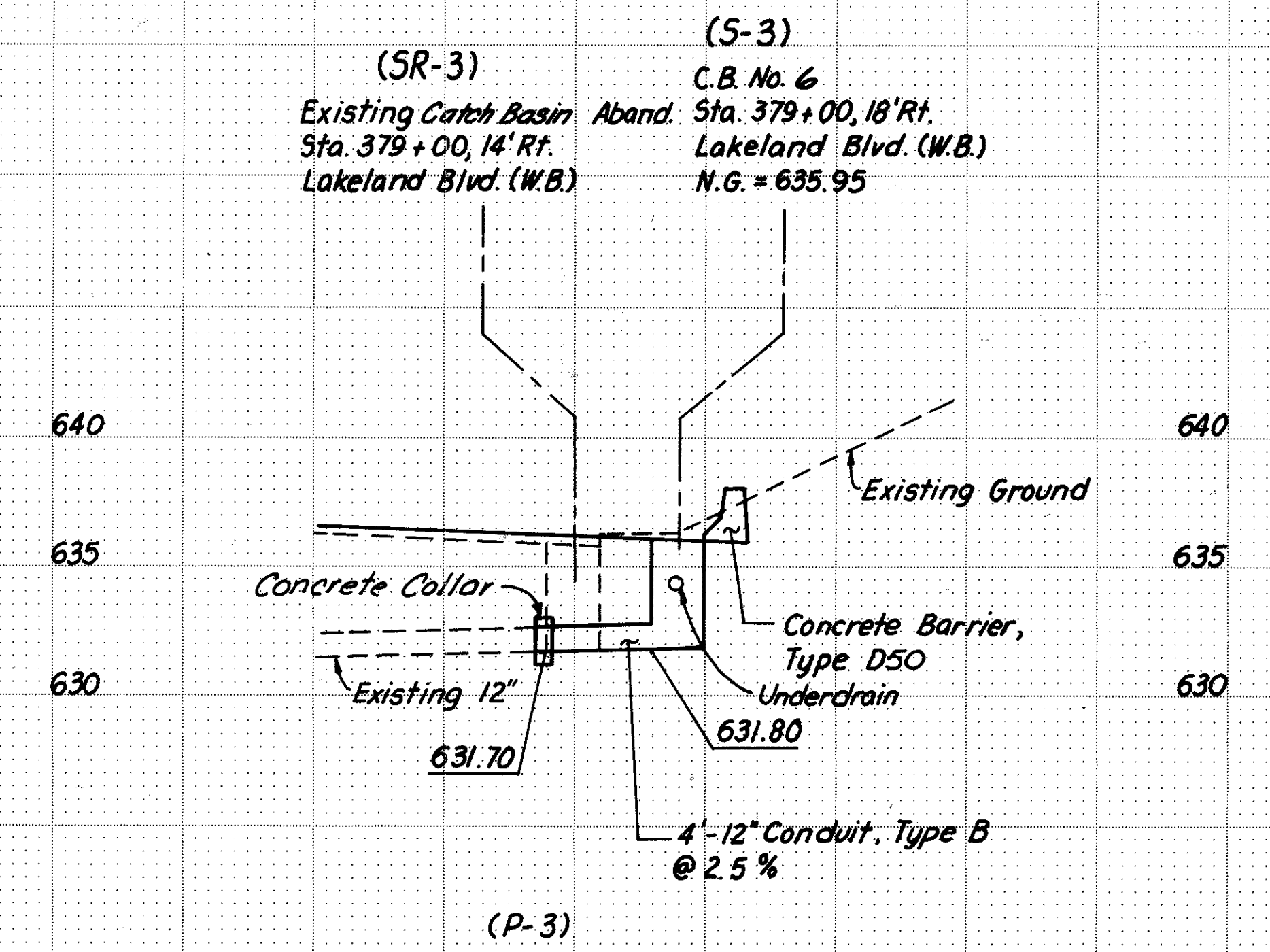
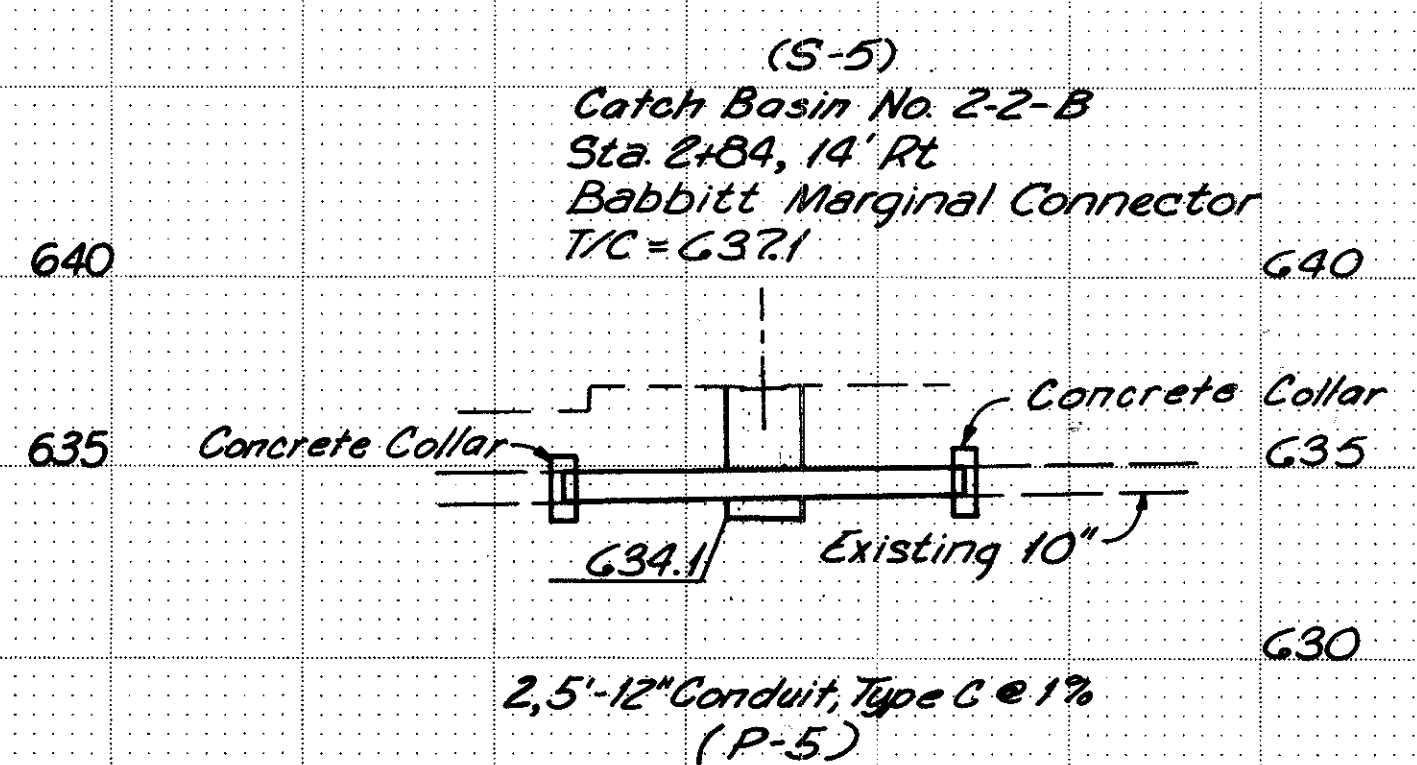
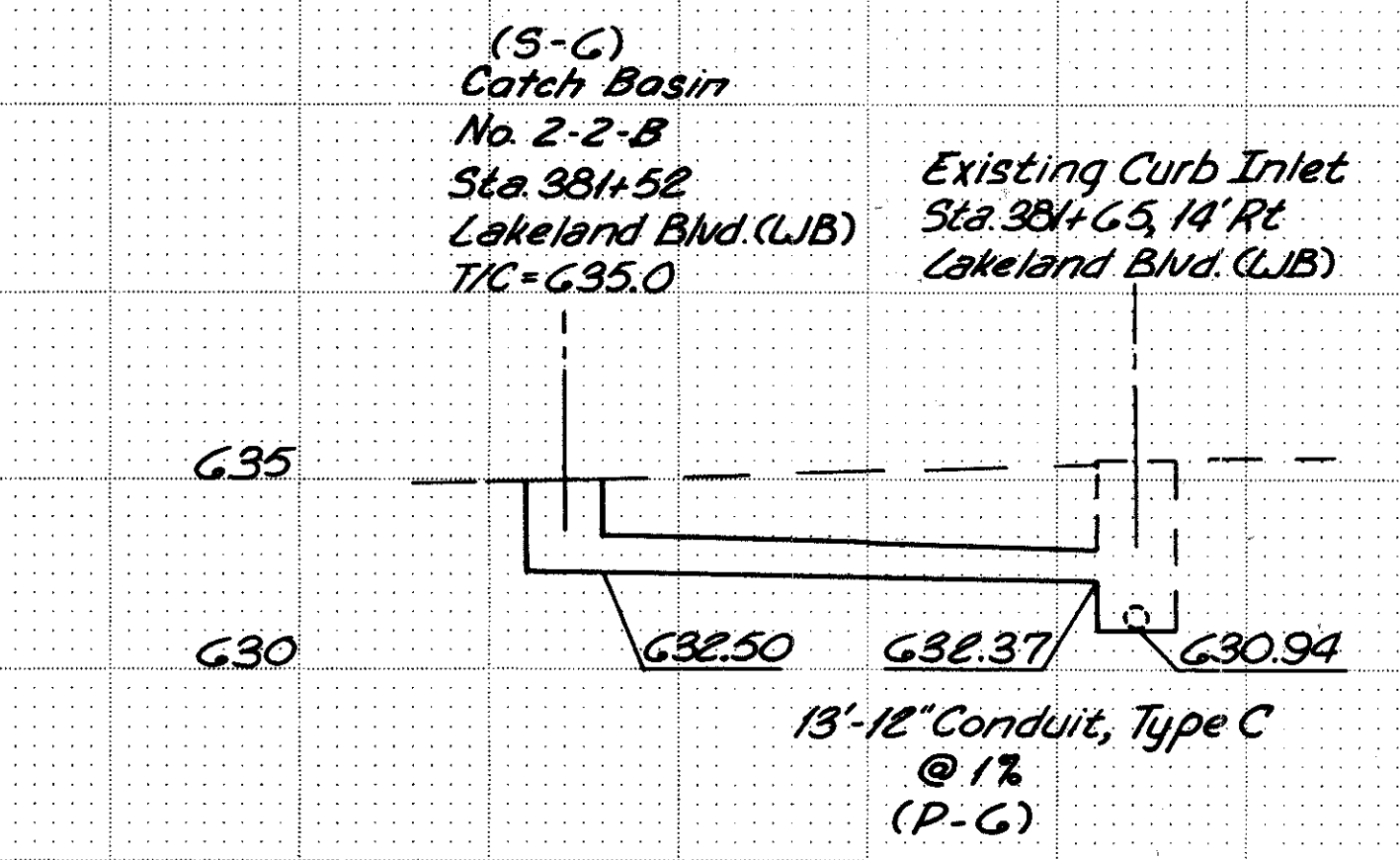
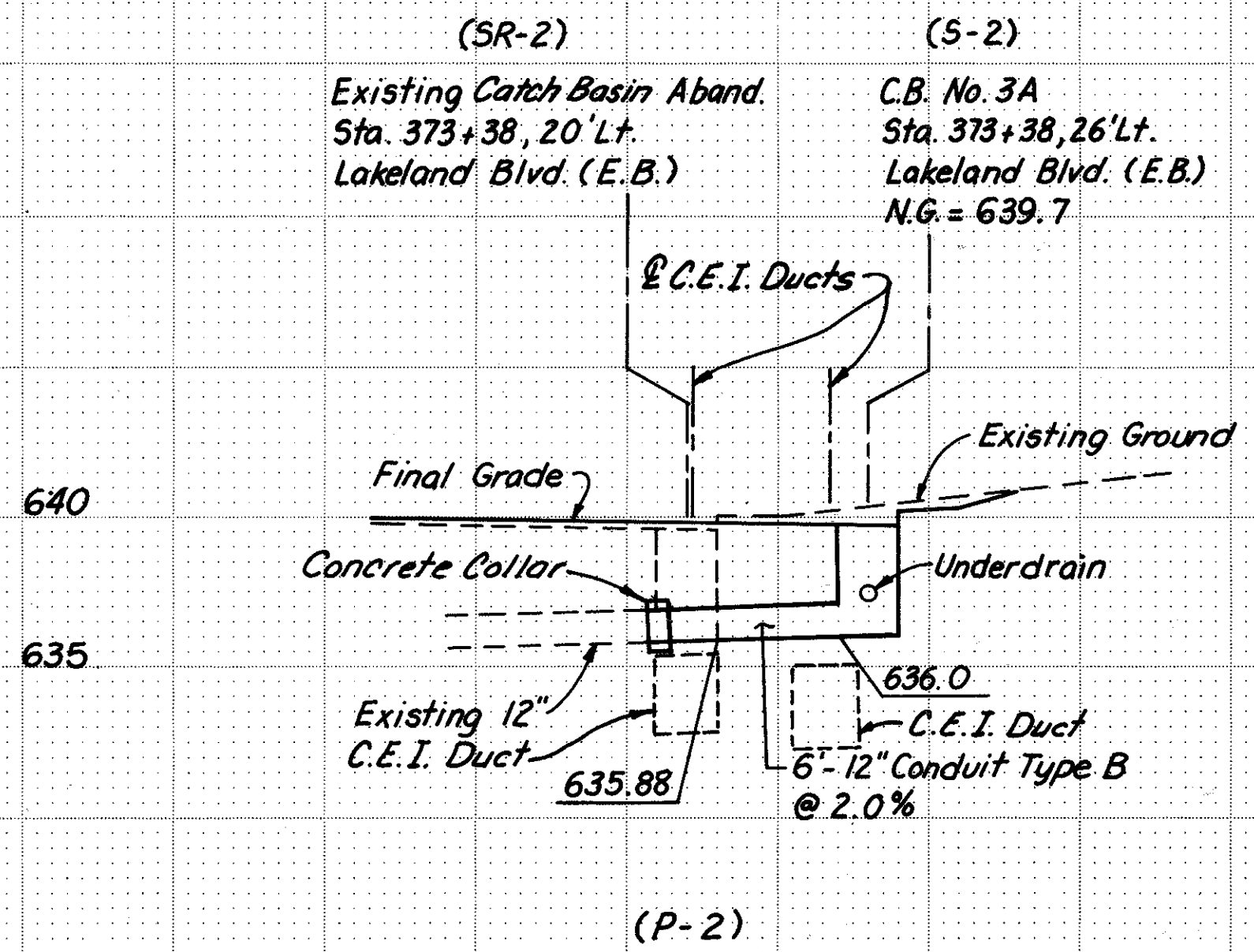
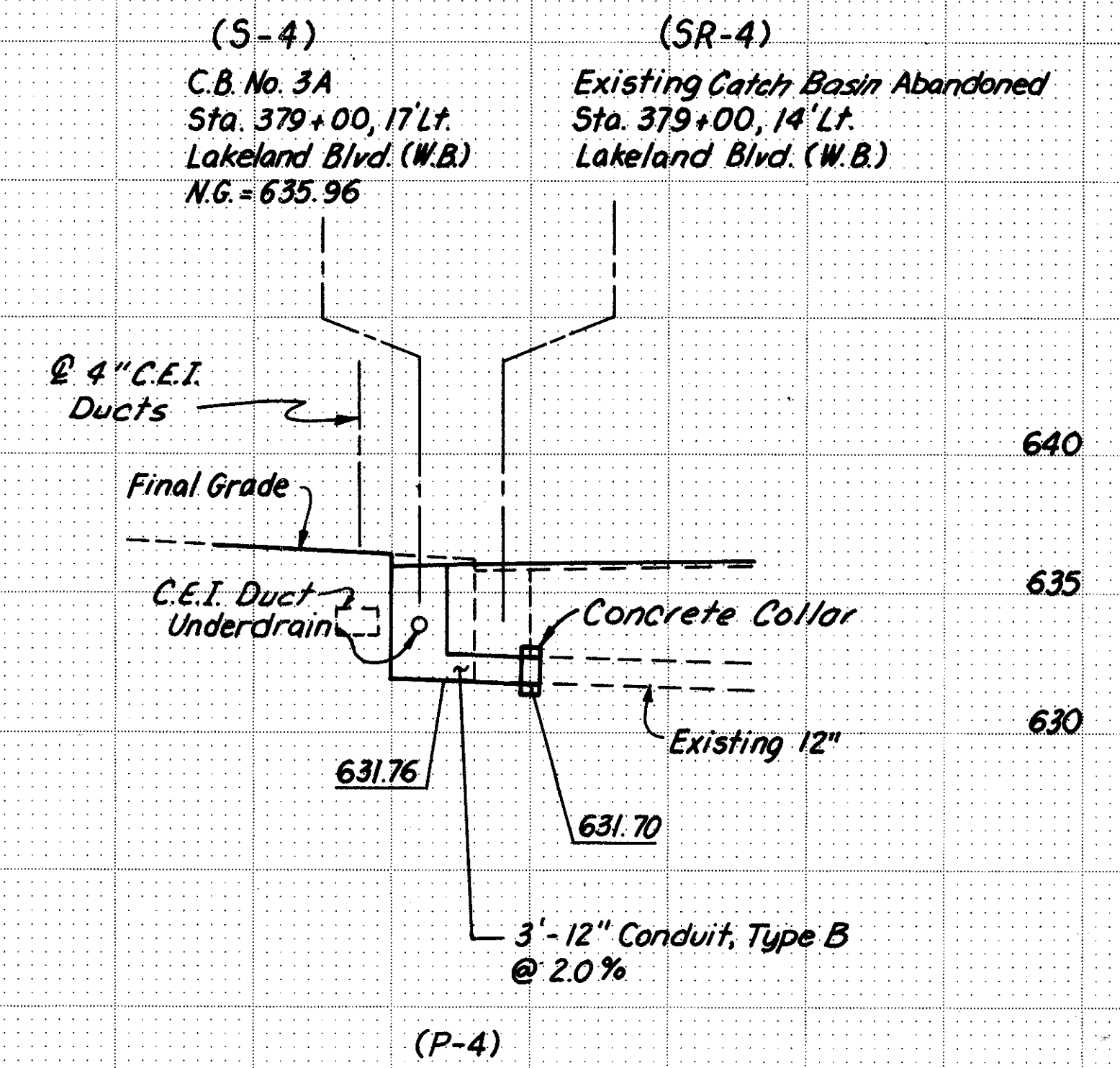
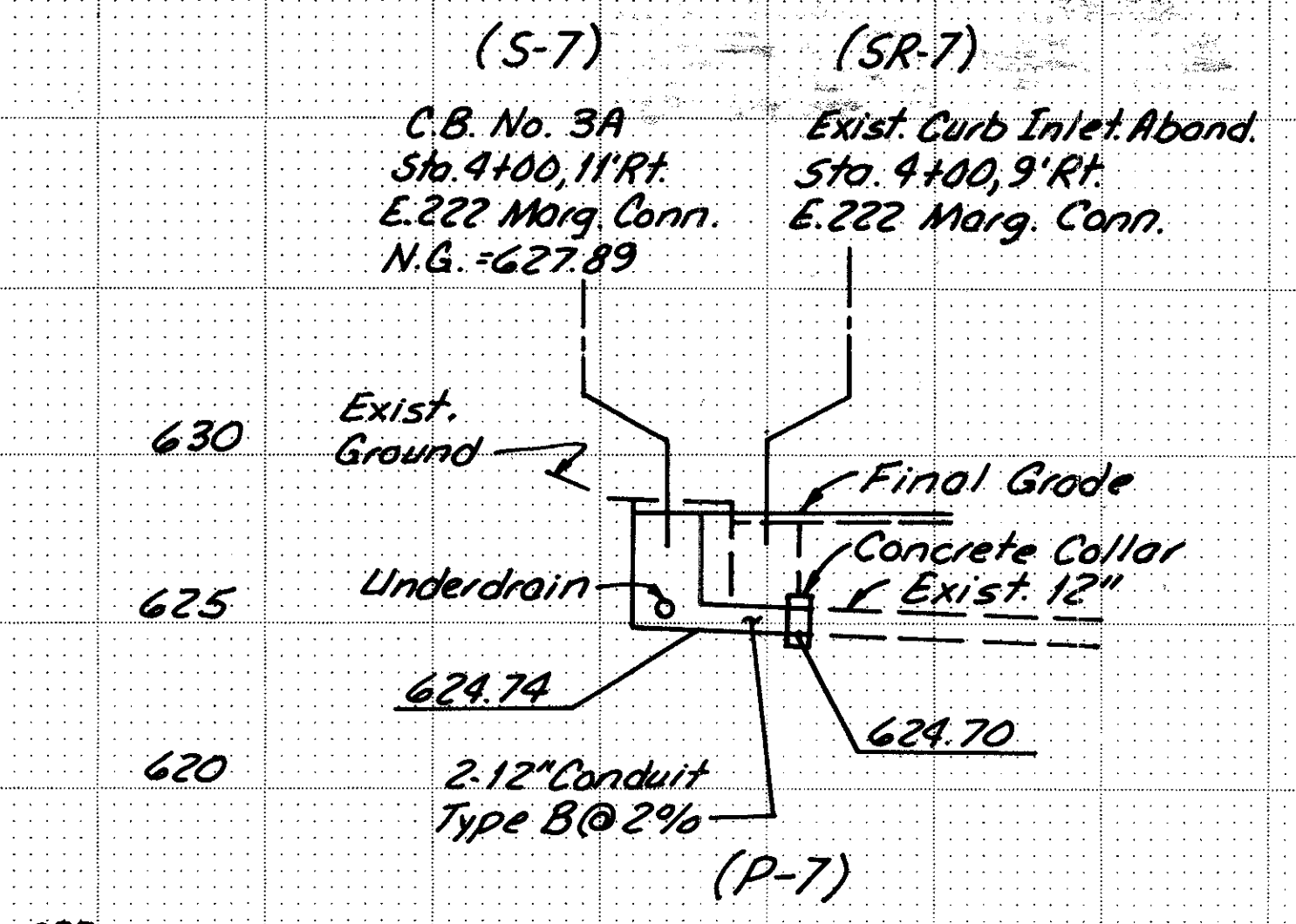
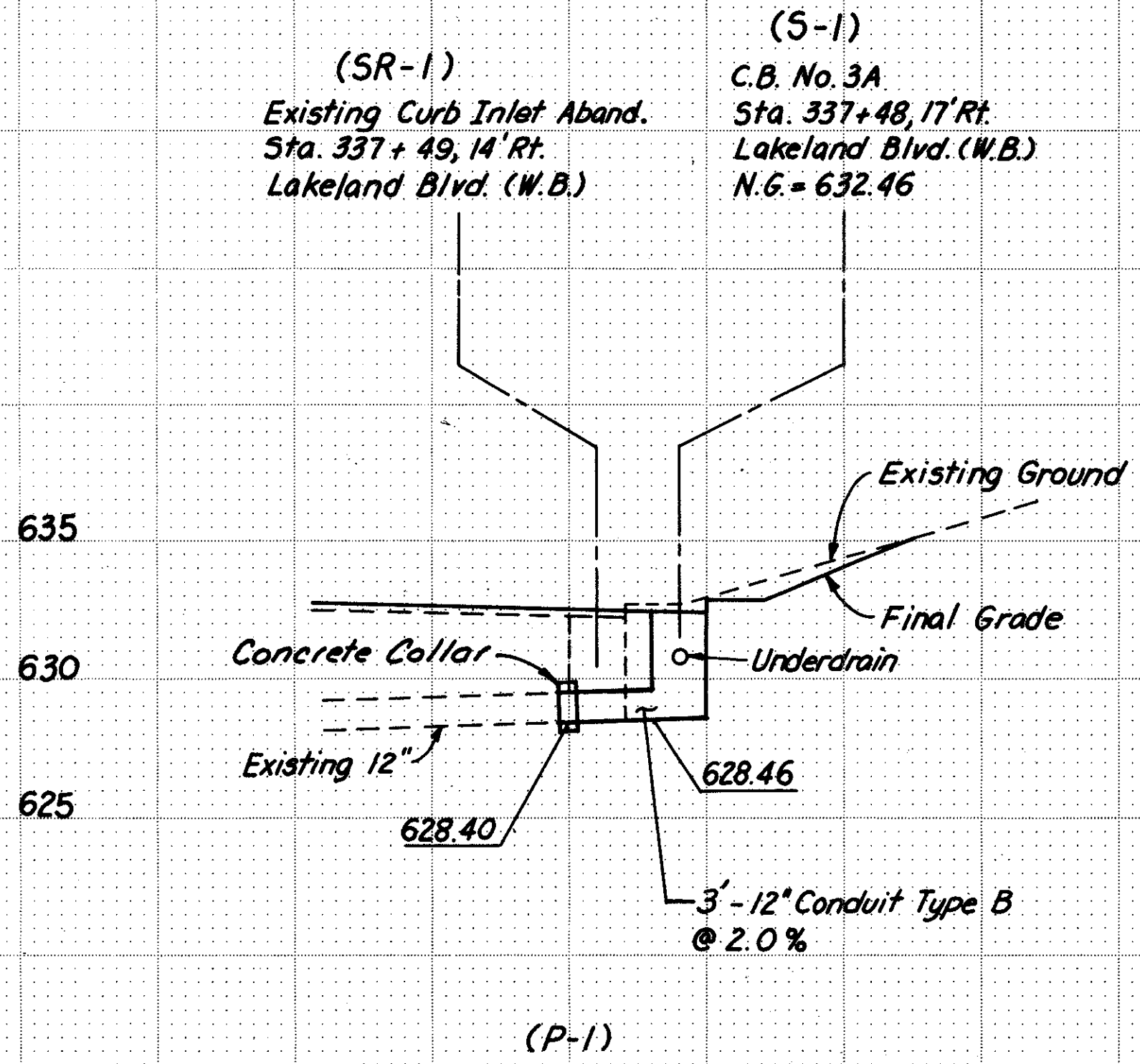
BARRIER END TERMINAL DETAIL
 20' TRANSITION FROM TYPE D50 BARRIER TO TYPE 2B CURB
 (NO SCALE)

SEE SHEETS 101 & 102 FOR PLAN DETAILS AND REFERENCE NOS. LOCATIONS

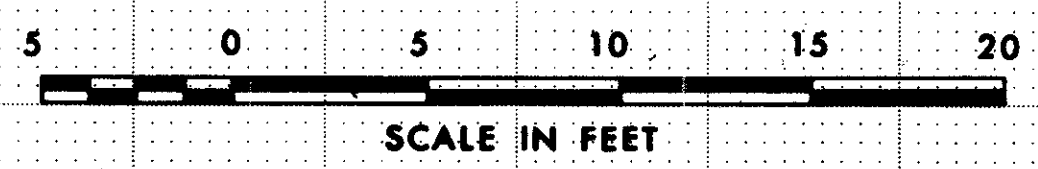
FHWA REGION	STATE	PROJECT
5	OHIO	

104
200

CUYAHOGA COUNTY
CUY - 90-23.95
LAKE COUNTY
LAK - 90-0.00



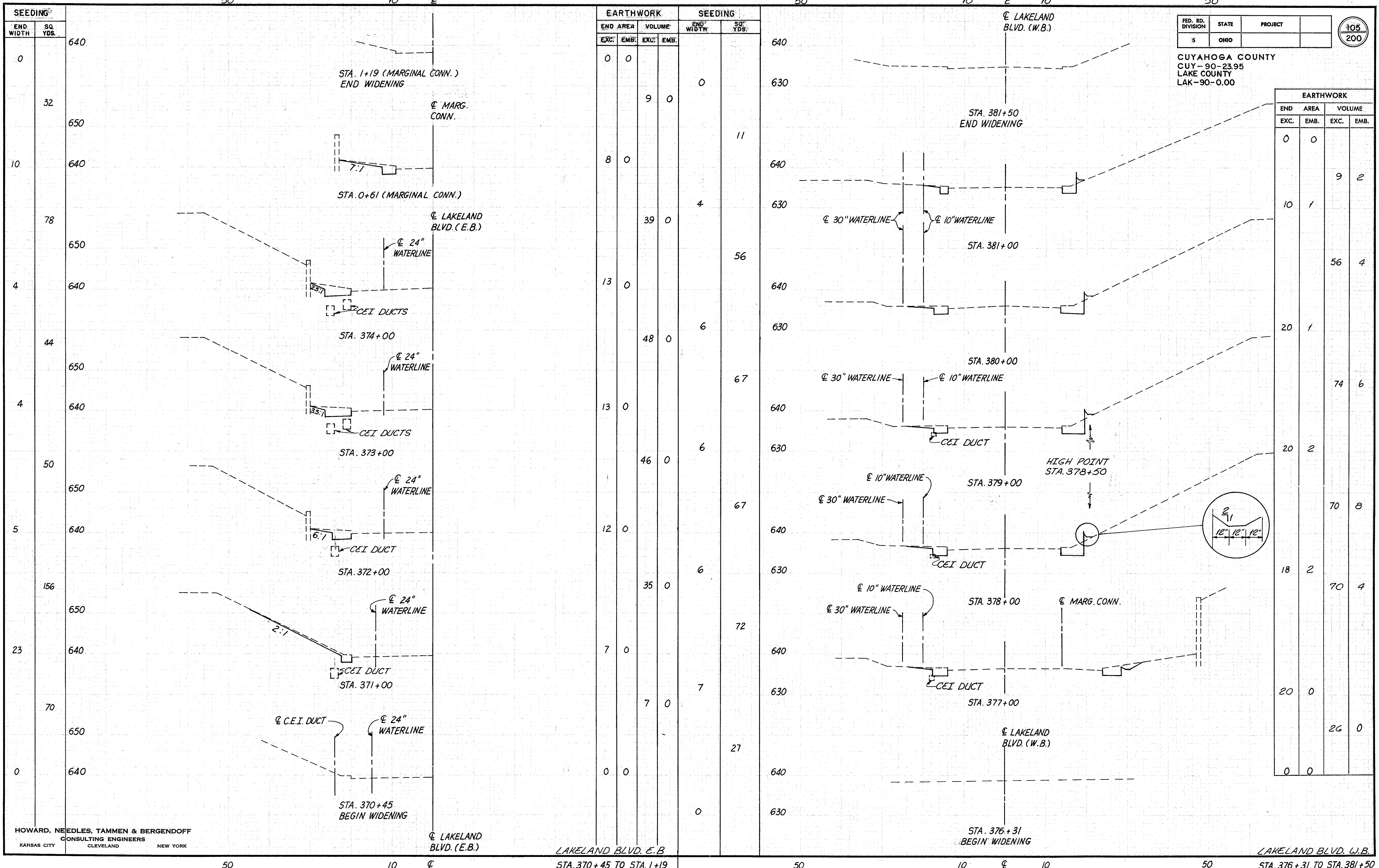
See Sheets 101 & 102 for Plan Details.



T/C = Top of Casting
N.G. = Normal Gutter

NOTE: Existing elevations are taken from former construction plans, contractor shall field measure all flow lines to determine exact elevations of proposed modifications.

Concrete Collar shall be constructed as per Standard Construction Drawing MC-4.



FED. RD. DIVISION	STATE	PROJECT	105 200
5	OHIO		

CUYAHOGA COUNTY
 CUY-90-2395
 LAKE COUNTY
 LAK-90-0.00

EARTHWORK		SEEDING	
END AREA	VOLUME	END WIDTH	SQ. YDS.
EXC.	EMB.	EXC.	EMB.
0	0	0	0
9	0	0	0
8	0	11	0
13	0	4	0
48	0	56	0
13	0	6	0
46	0	67	0
12	0	67	0
35	0	6	0
7	0	72	0
7	0	7	0
0	0	27	0
0	0	0	0

EARTHWORK			
END AREA	VOLUME	END WIDTH	SQ. YDS.
EXC.	EMB.	EXC.	EMB.
0	0	0	0
10	1	9	2
20	1	56	4
20	1	74	6
20	2	70	8
18	2	70	4
20	0	26	0
0	0	0	0

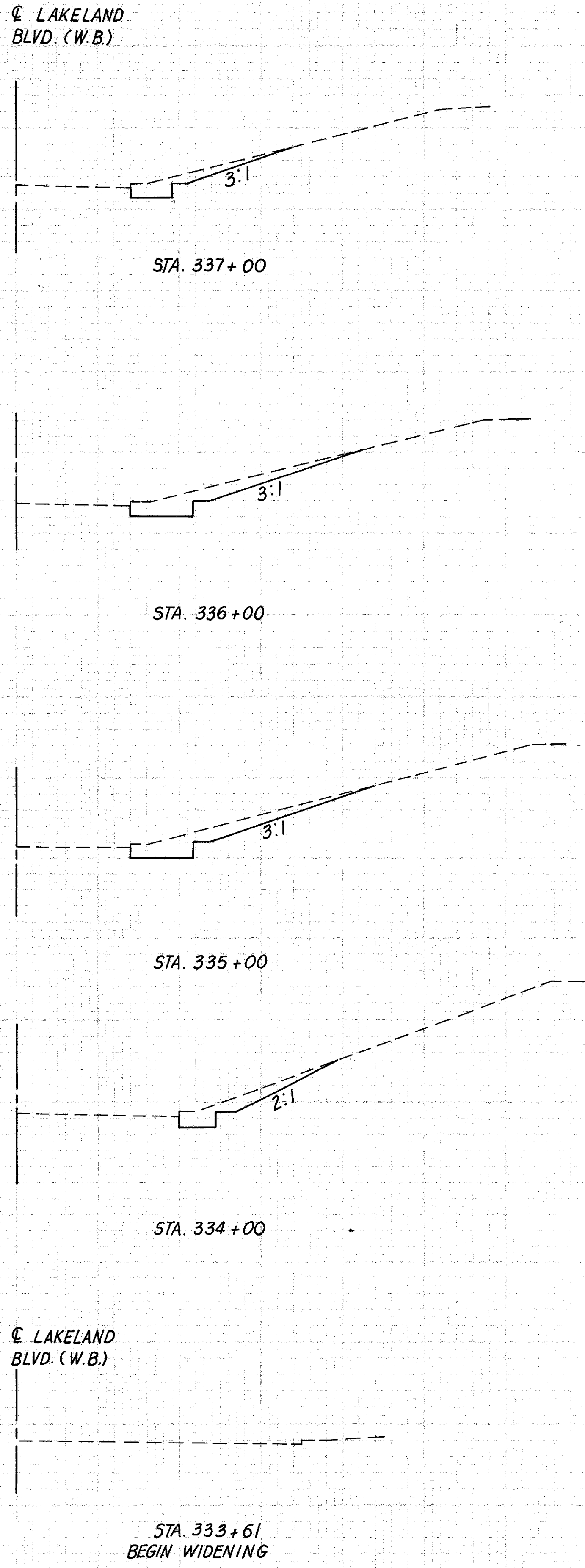
HOWARD, NEEDLES, TAMMEN & BERGENDOFF
 CONSULTING ENGINEERS
 KANSAS CITY CLEVELAND NEW YORK

LAKELAND BLVD. E.B.
 STA. 370+45 TO STA. 1+19

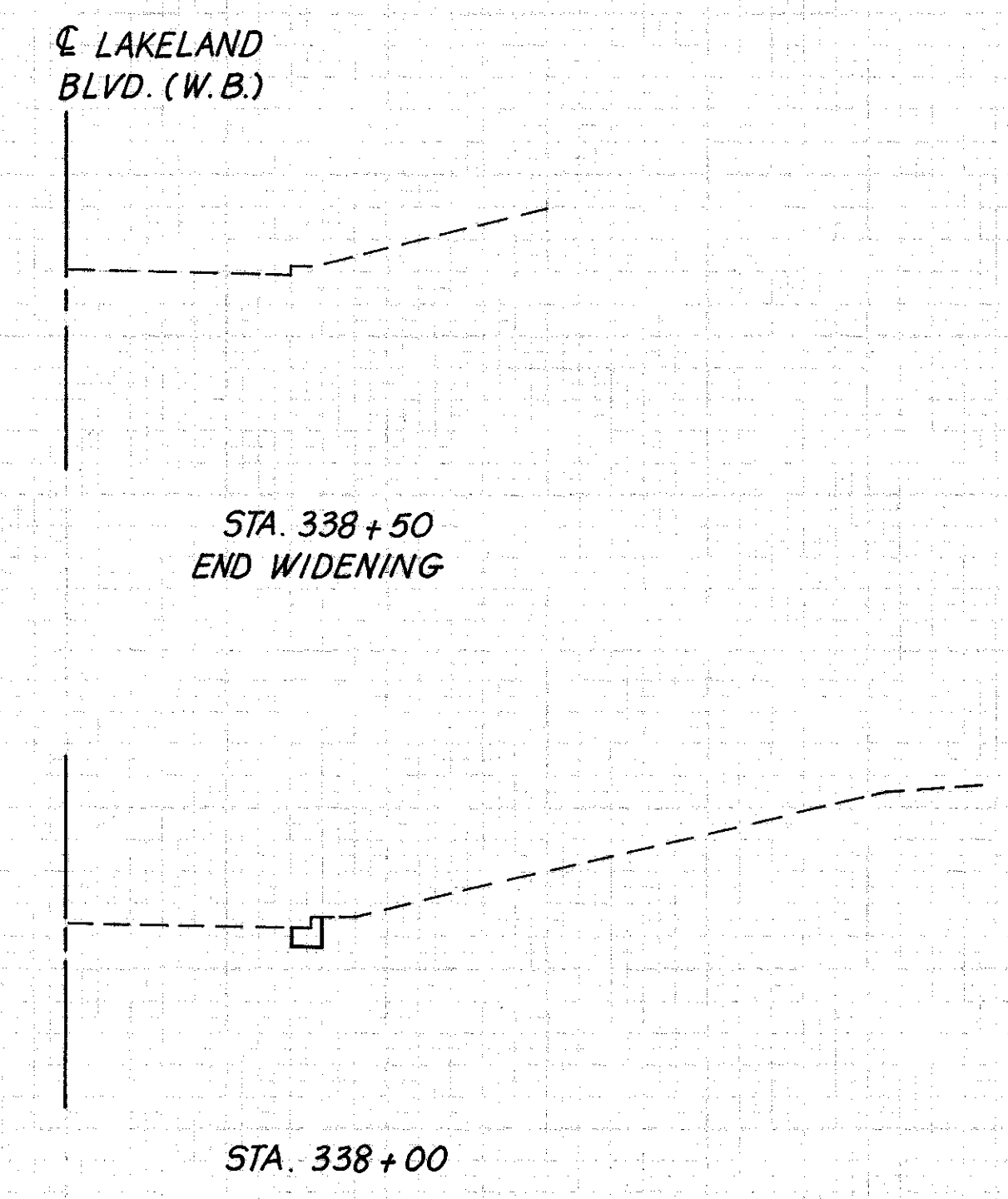
LAKELAND BLVD. W.B.
 STA. 376+31 TO STA. 381+50

LAKELAND BLVD. W.B.
 STA. 376+31 TO STA. 381+50

SEEDING	
END WIDTH	SQ. YDS.
15	640
	630
200	
21	640
	630
239	
22	640
	630
206	
15	640
	630
33	
	640
0	630



EARTHWORK				SEEDING	
END AREA		VOLUME		END WIDTH	SQ. YDS.
EXC.	EMB.	EXC.	EMB.		
13	0				
		89	0		
35	0				
		130	0		
35	0				
		106	0		
22	0	0	0		
		16	0		0
0	0	0	0		
					83



FED. RD. DIVISION	STATE	PROJECT	
5	OHIO		

CUYAHOGA COUNTY
 CUY-90-23.95
 LAKE COUNTY
 LAK-90-0.00

EARTHWORK			
END AREA		VOLUME	
EXC.	EMB.	EXC.	EMB.
0	0		
		3	0
3	0		
		30	0

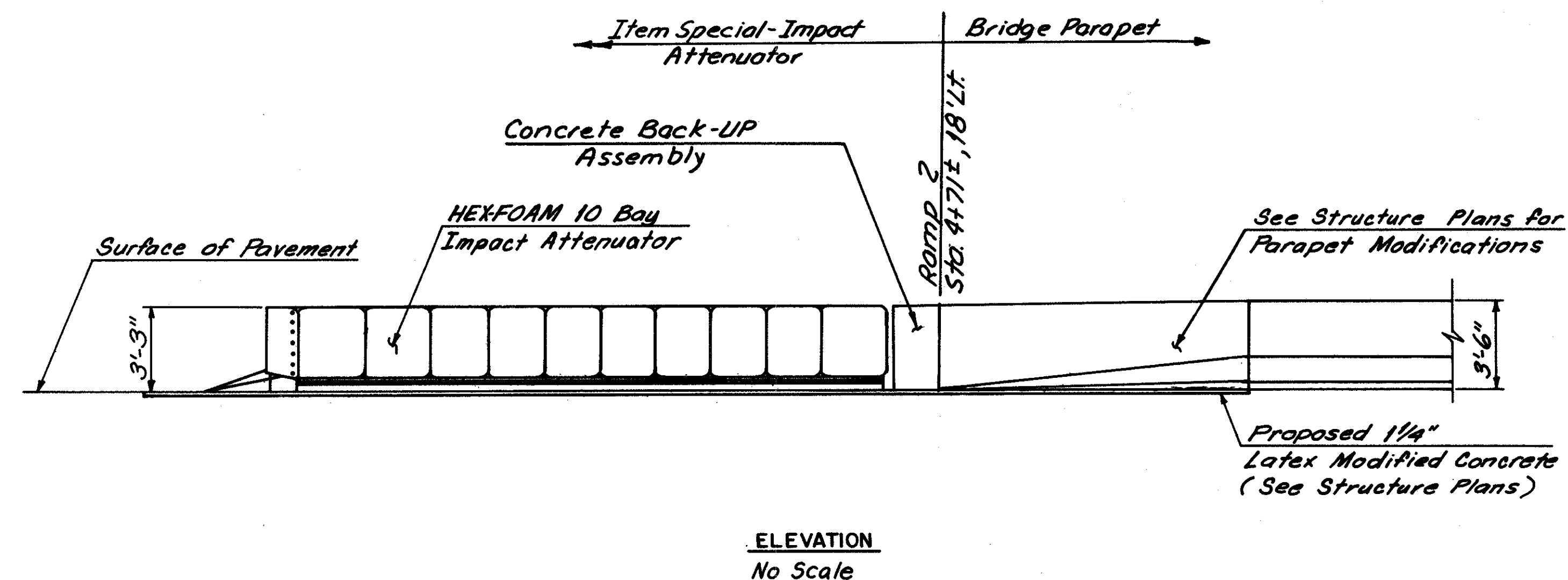
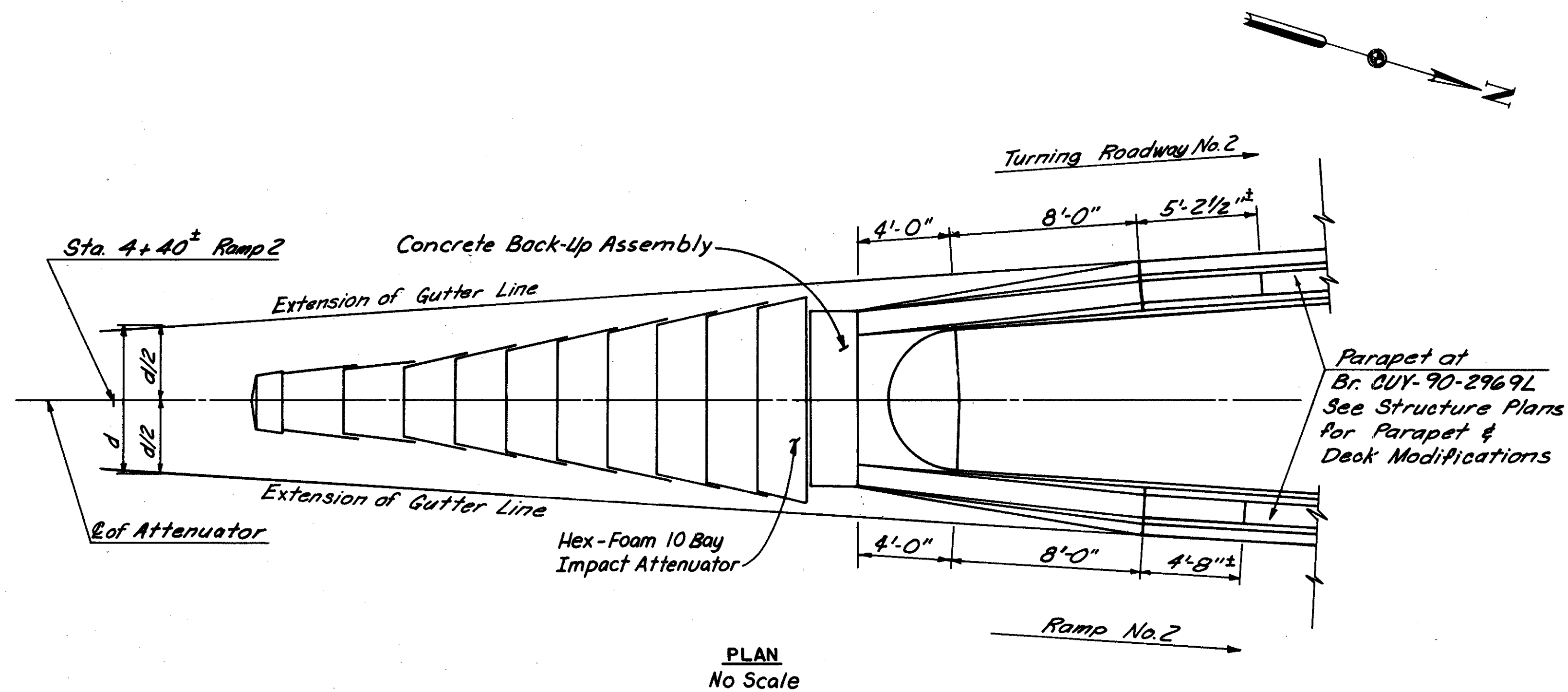
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 KANSAS CITY CLEVELAND NEW YORK

IMPACT ATTENUATOR

FHWA REGION	STATE	PROJECT
5	OHIO	

107
200

CUYAHOGA COUNTY
CUY - 90-23.95
LAKE COUNTY
LAK - 90-0.00



ITEM SPECIAL: HEX - FOAM ATTENUATOR

THIS WORK SHALL CONSIST OF REMOVING THE EXISTING IMPACT ATTENUATOR UNIT AND PROVIDING, INSTALLING AND MAINTAINING A HEX-FOAM ATTENUATOR UNIT AND ACCESSORIES SUPPLIED BY ENERGY ABSORPTION SYSTEMS, INC., CHICAGO, ILLINOIS (TELEPHONE (312) 467-6750). PLACEMENT SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFICATIONS AND PLAN DETAIL SHEETS AND IN REASONABLY CLOSE CONFORMITY WITH THE LINE LOCATION SHOWN ON THE PLANS OR AS ESTABLISHED BY THE ENGINEER.

THE BACK-UP SYSTEM SHALL BE TRANSITIONED FROM HE CONCRETE BARRIER SHAPES TO A RECTANGULAR SHAPE FOR USE AS A CONCRETE BACK-UP FOR THE HEX-FOAM SYSTEM. THE MANUFACTURER SHALL PROVIDE ADDITIONAL DETAILS FOR THIS SHAPE AND TRANSITION.

THE IMPACT ATTENUATOR SHALL BE A HEX-FOAM UNIT MODEL NO. 204711H10S, AND HAVING A BACK-UP WIDTH OF 7'6".

THE COSTS FOR ALL WORK NECESSARY FOR THE COMPLETION OF THIS ITEM SHALL BE PAID FOR UNDER ITEM SPECIAL - IMPACT ATTENUATOR, HEX-FOAM SYSTEM, MODEL NO. 204711H10S.



MADE N.K. DATE 4-17-89
 TRACED By N.K. DATE 4-17-89
 CHECKED R.M. DATE 4-18-89
 SCALE None

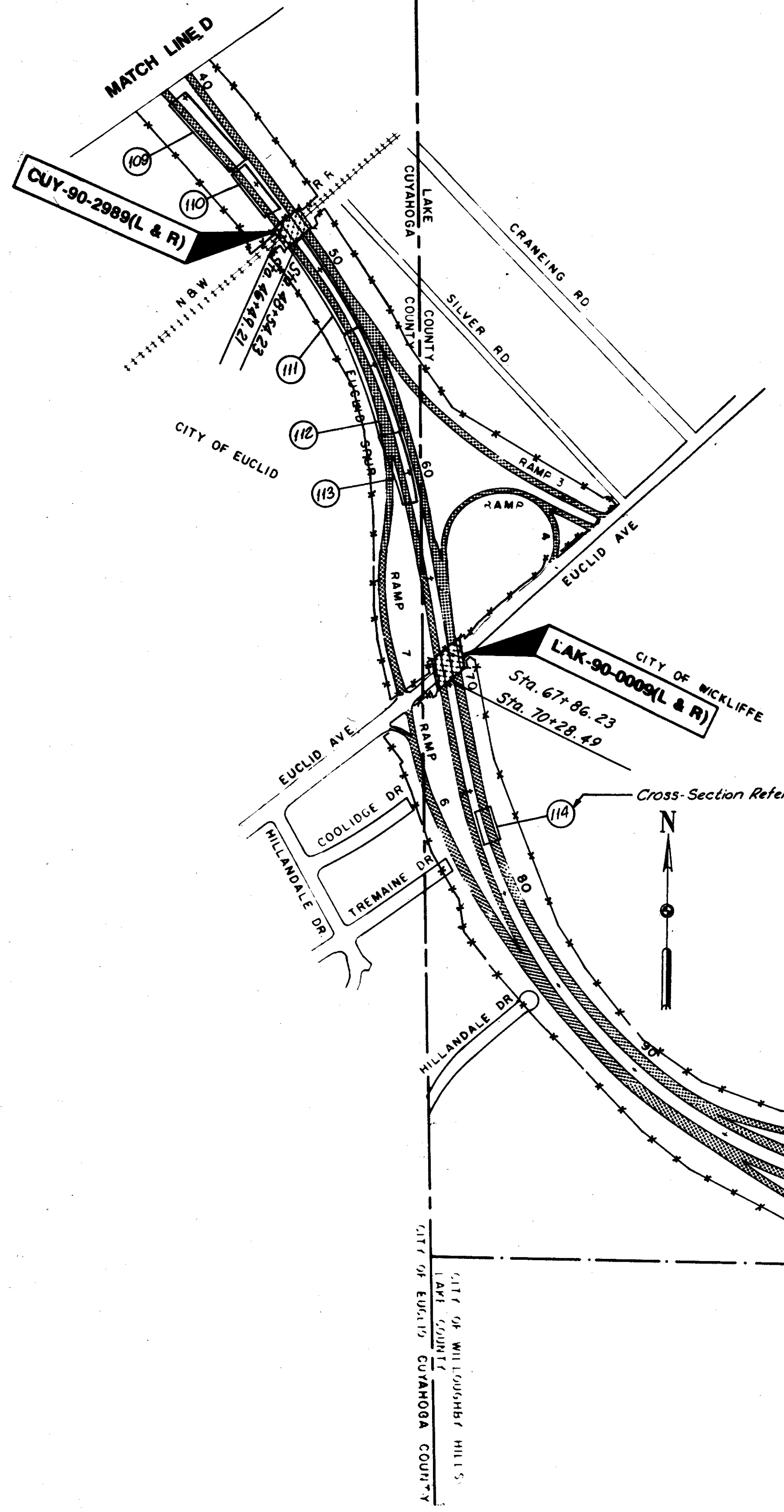
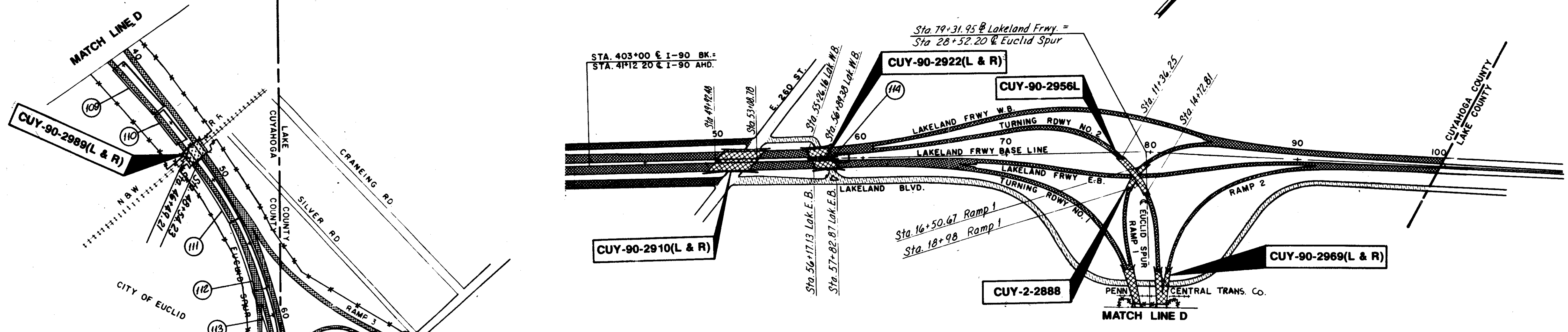
Howard, Needles, Tammen & Bergendoff
 CONSULTING ENGINEERS
 CLEVELAND, OHIO

HNTB

FRWA REGION	STATE	PROJECT
5	OHIO	

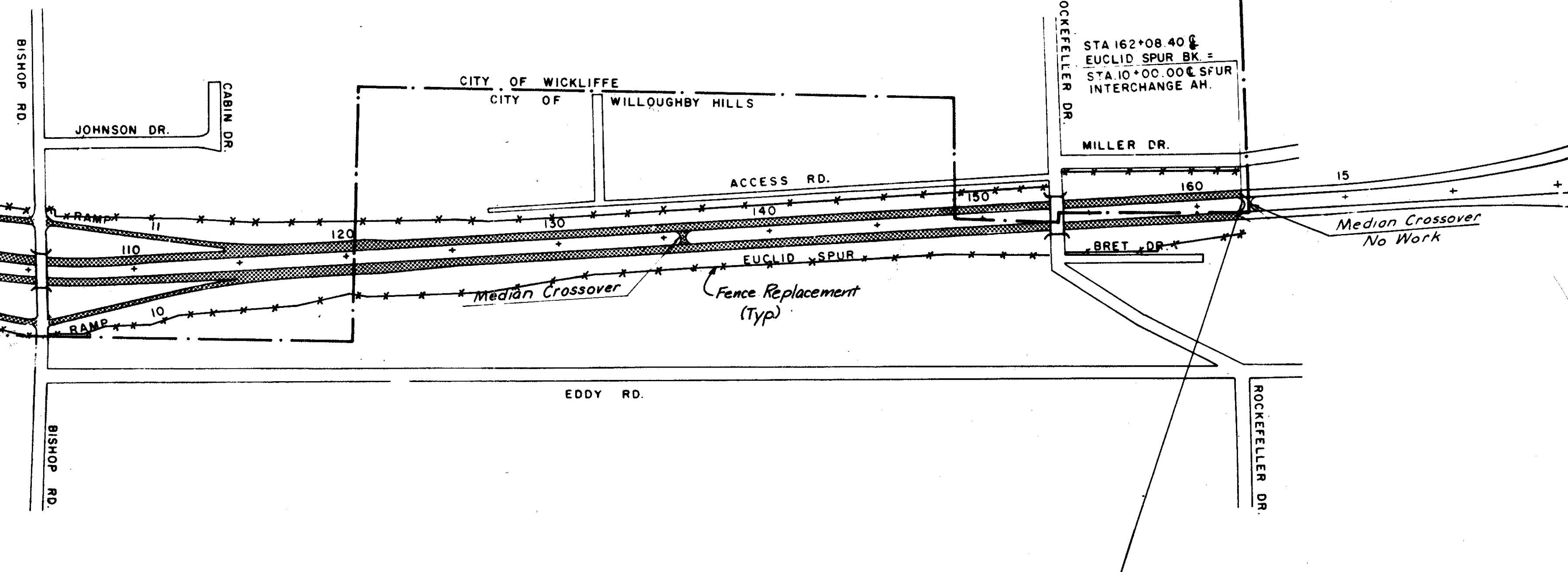
106
200

CUYAHOGA COUNTY
CUY - 90-23.95
LAKE COUNTY
LAK - 90-0.00



FENCE REPLACEMENT	
202	607
FENCE REMOVED (LIN.FT.)	FENCE, TYPE CLT (LIN.FT.)
26,384	26,384

NOTE: APPROXIMATE LOCATION OF FENCE REPLACEMENT IS SHOWN ON THIS SHEET. REFER TO THE GENERAL NOTES FOR REPLACEMENT PROCEDURE AND REQUIREMENTS.



END PROJECT
STA. 162+08.40
S.L.M. 01.87

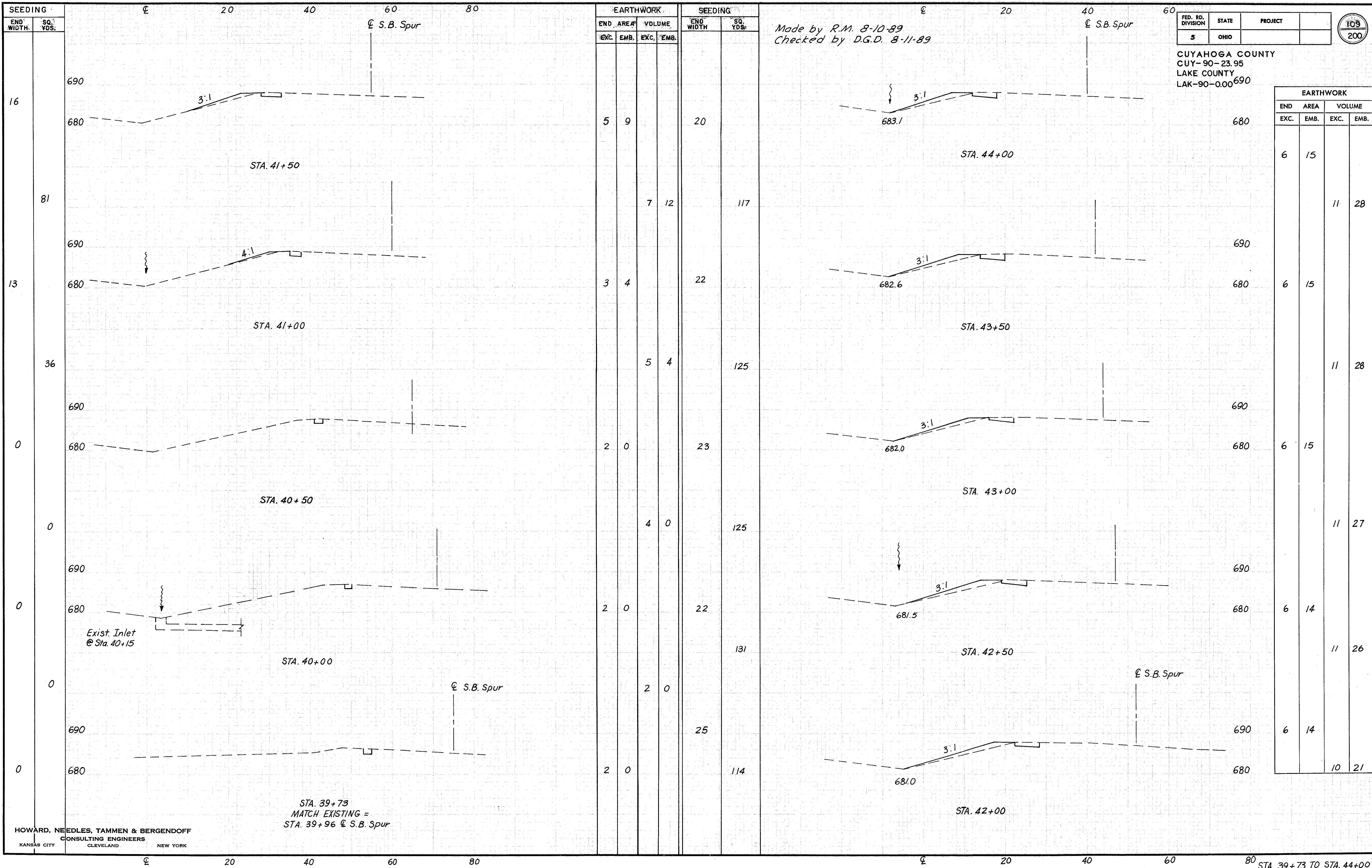
MADE N.K. DATE 4-10-89
TRACED N.M. DATE 4-11-89
CHECKED N.M. DATE 4-12-89
SCALE 1"=400'

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

HNTB



CROSS SECTION LAYOUT AND FENCE REPLACEMENT



Made by R.M. 8-10-89
 Checked by D.G.D. 8-11-89

FED. RD. DIVISION	STATE	PROJECT
5	OHIO	

CUYAHOGA COUNTY
 CUY-90-23.95
 LAKE COUNTY
 LAK-90-0.00



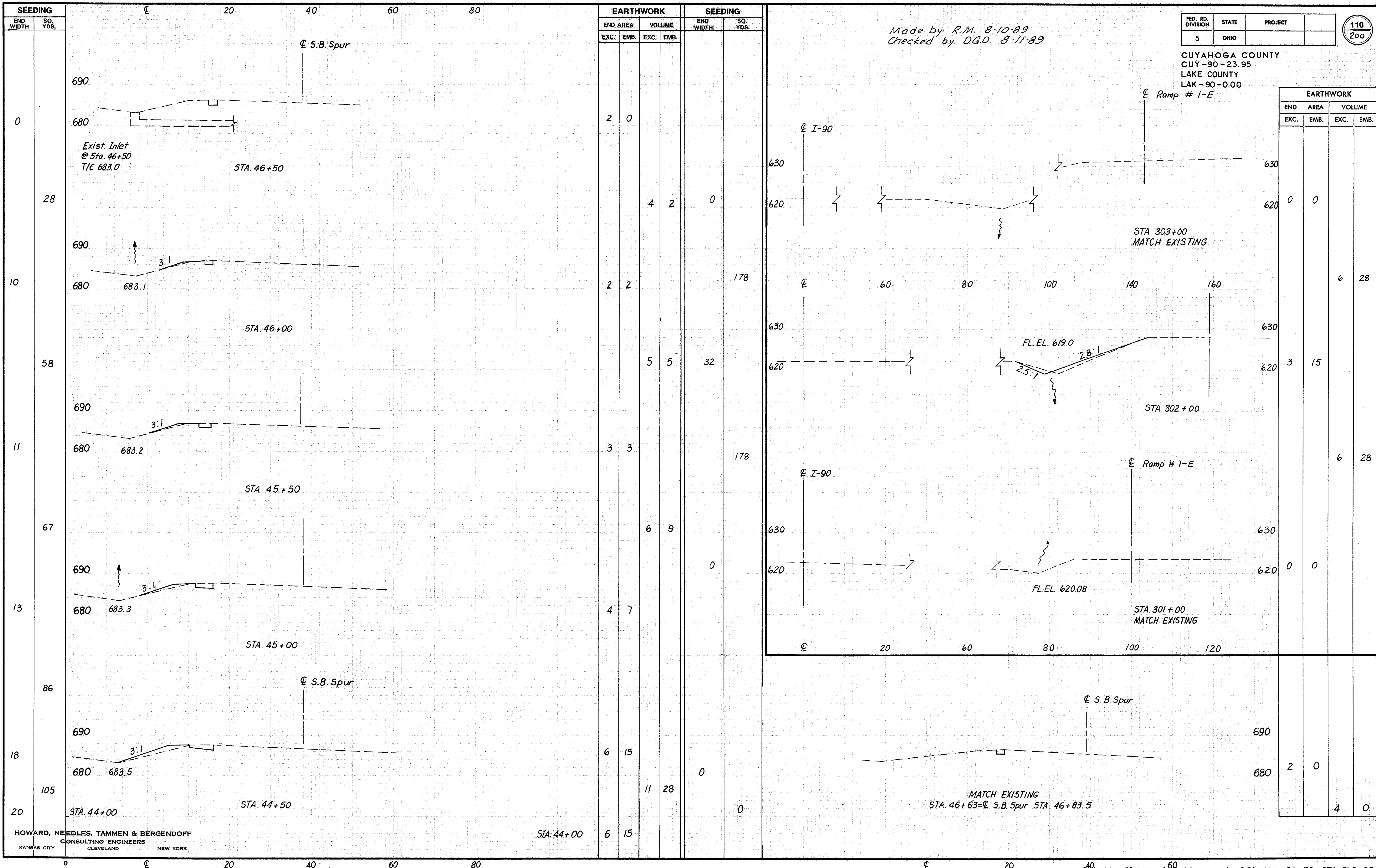
EARTHWORK			
END	AREA	VOLUME	
EXC.	EMB.	EXC.	EMB.
5	9		
		7	12
3	4		
		5	4
2	0		
		4	0
2	0		
		2	0
2	0		

SEEDING	
END WIDTH	SQ. YDS.
20	
117	
22	
125	
23	
125	
22	
131	
25	
114	

EARTHWORK			
END	AREA	VOLUME	
EXC.	EMB.	EXC.	EMB.
6	15		
		11	28
6	15		
		11	28
6	15		
		11	27
6	14		
		11	26
6	14		
		10	21

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STA. 39+73
 MATCH EXISTING =
 STA. 39+96 @ S.B. Spur



Made by R.M. 8-10-89
Checked by D.G.D. 8-11-89

FED. RD. DIVISION	STATE	PROJECT
5	OHIO	

CUYAHOGA COUNTY
CUY-90-23.95
LAKE COUNTY
LAK-90-0.00

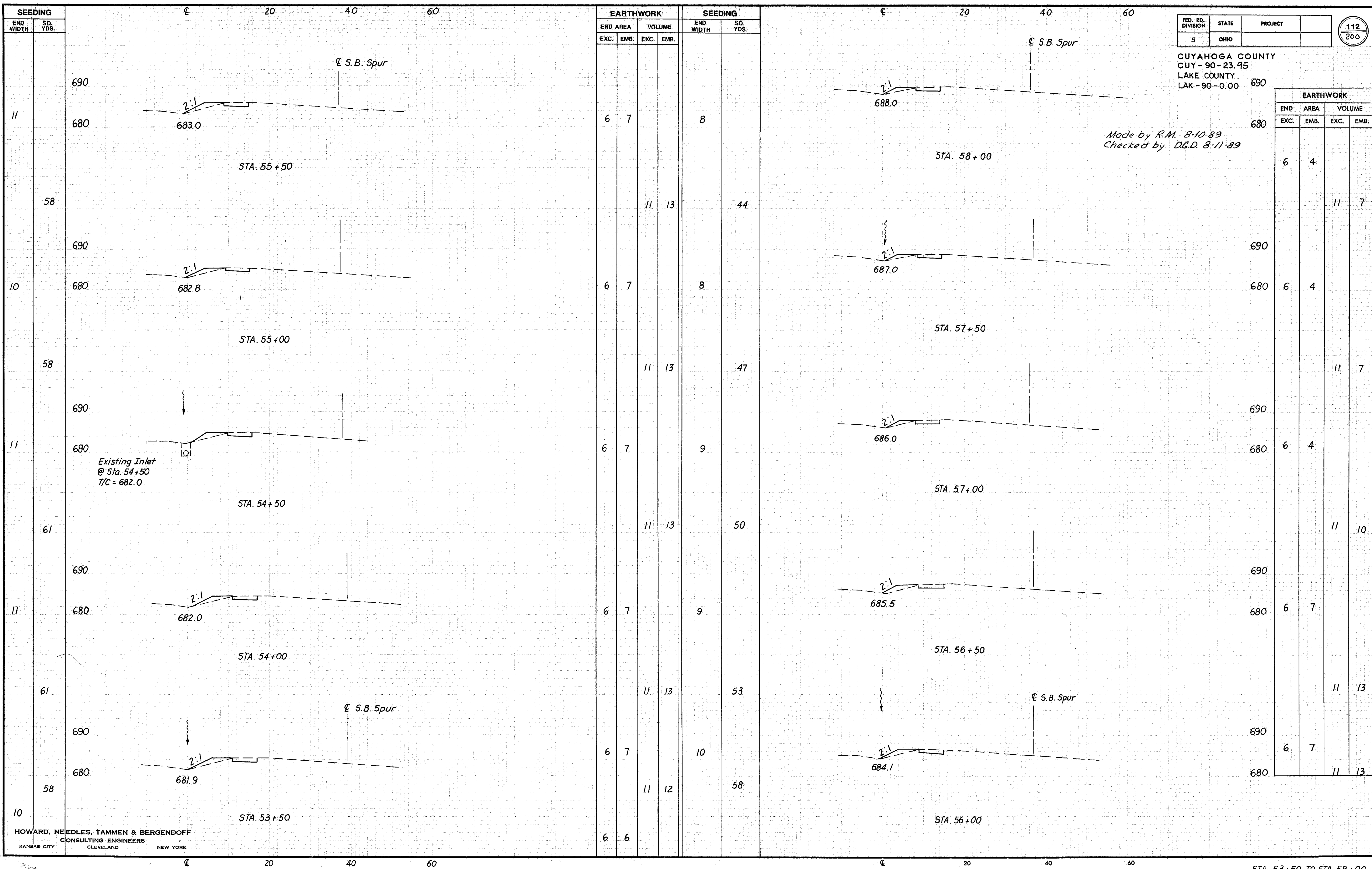
110
200

EARTHWORK				SEEDING	
END AREA		VOLUME		END WIDTH	SQ. YDS.
EXC.	EMB.	EXC.	EMB.		
2	0				
	4	2		0	
2	2			178	
	5	5		32	
3	3			178	
	6	9		0	
4	7				
	86				
6	15			0	
	11	28		0	
6	15				

EARTHWORK			
END AREA		VOLUME	
EXC.	EMB.	EXC.	EMB.
0	0		
		6	28
3	15		
		6	28
0	0		
2	0		
		4	0

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STA. 44+50 TO STA. 44+63 & STA. 301+00 TO STA. 303+00



FED. RD. DIVISION	STATE	PROJECT	112 200
5	OHIO		

CUYAHOGA COUNTY
 CUY-90-23.95
 LAKE COUNTY
 LAK-90-0.00

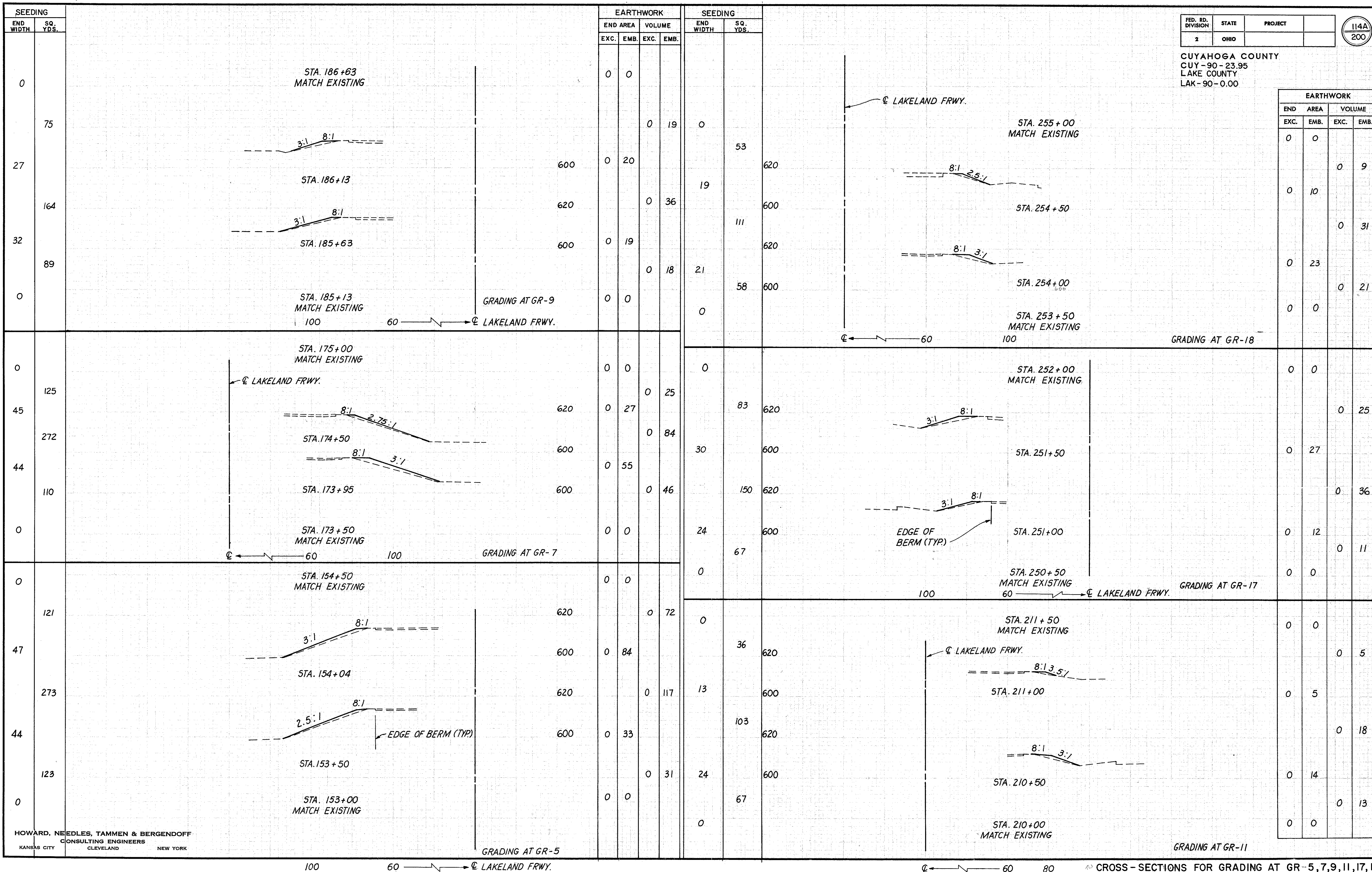
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 Checked by D.G.D. 8-11-89

EARTHWORK				SEEDING	
END AREA		VOLUME		END WIDTH	SQ. YDS.
EXC.	EMB.	EXC.	EMB.		
6	7			8	
		11	13	44	
6	7			8	
		11	13	47	
6	7			9	
		11	13	50	
6	7			9	
		11	13	53	
6	7			10	
		11	12	58	
6	6				

EARTHWORK			
END AREA		VOLUME	
EXC.	EMB.	EXC.	EMB.
6	4		
		11	7
6	4		
		11	7
6	4		
		11	10
6	7		
		11	13
6	7		
		11	13

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CUYAHOGA COUNTY
 CUY-90-23.95
 LAKE COUNTY
 LAK-90-0.00



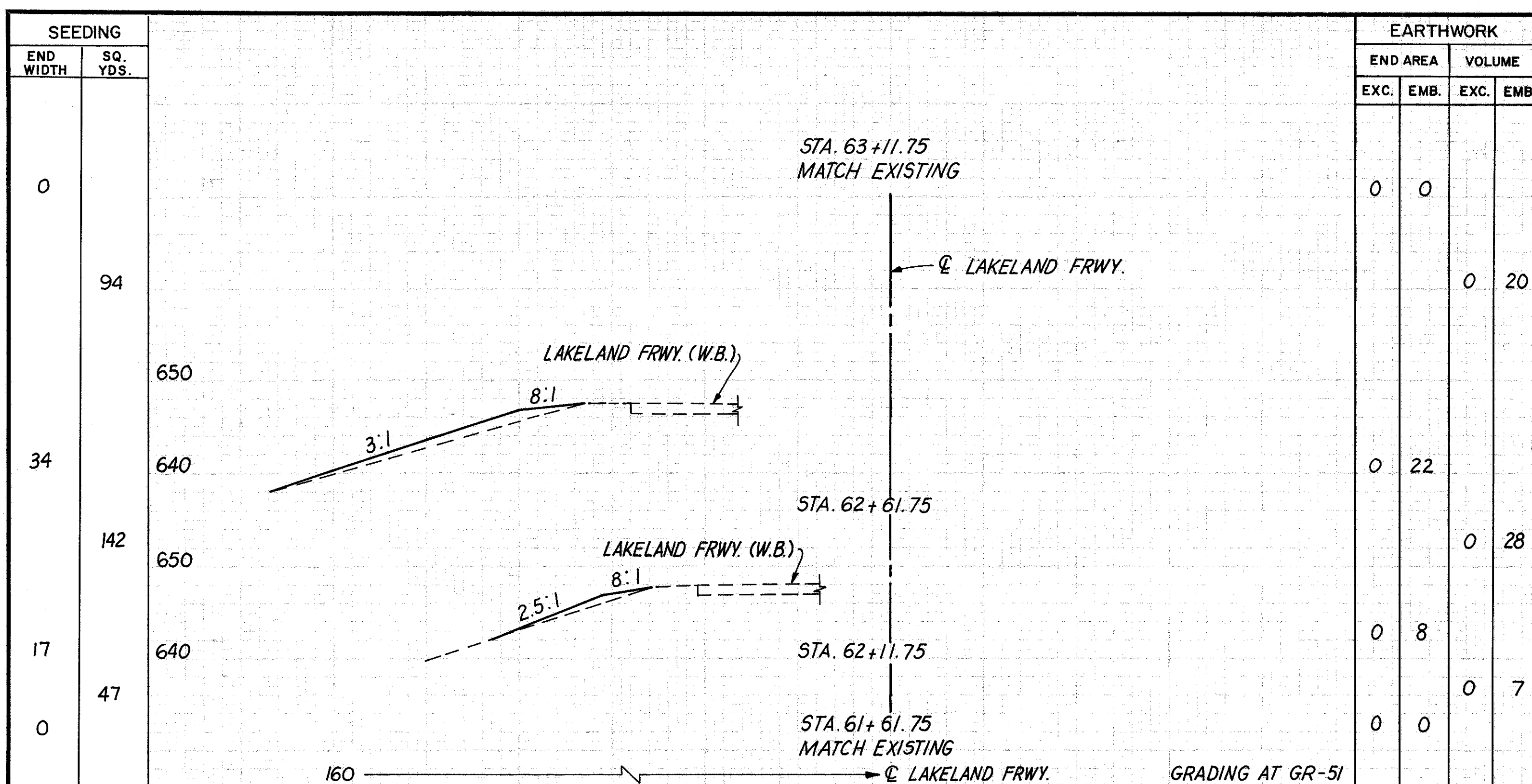
EARTHWORK			
END AREA		VOLUME	
EXC.	EMB.	EXC.	EMB.
0	0	0	19
0	20	0	36
0	19	0	18
0	0	0	0

SEEDING	
END WIDTH	SQ. YDS.
0	53
19	620
111	600
21	620
58	600
0	0

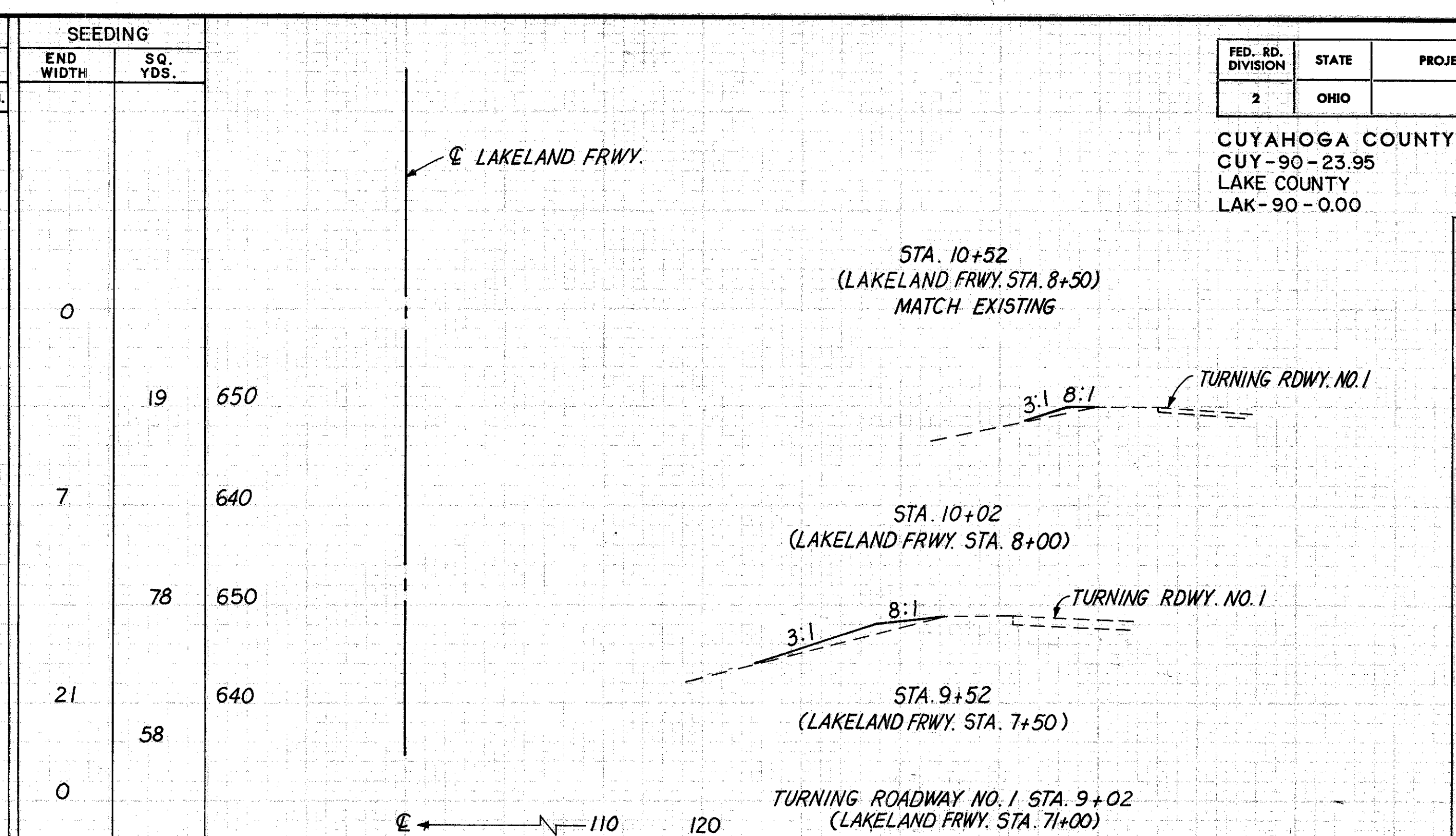
EARTHWORK			
END AREA		VOLUME	
EXC.	EMB.	EXC.	EMB.
0	0	0	9
0	10	0	31
0	23	0	21
0	0	0	0

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

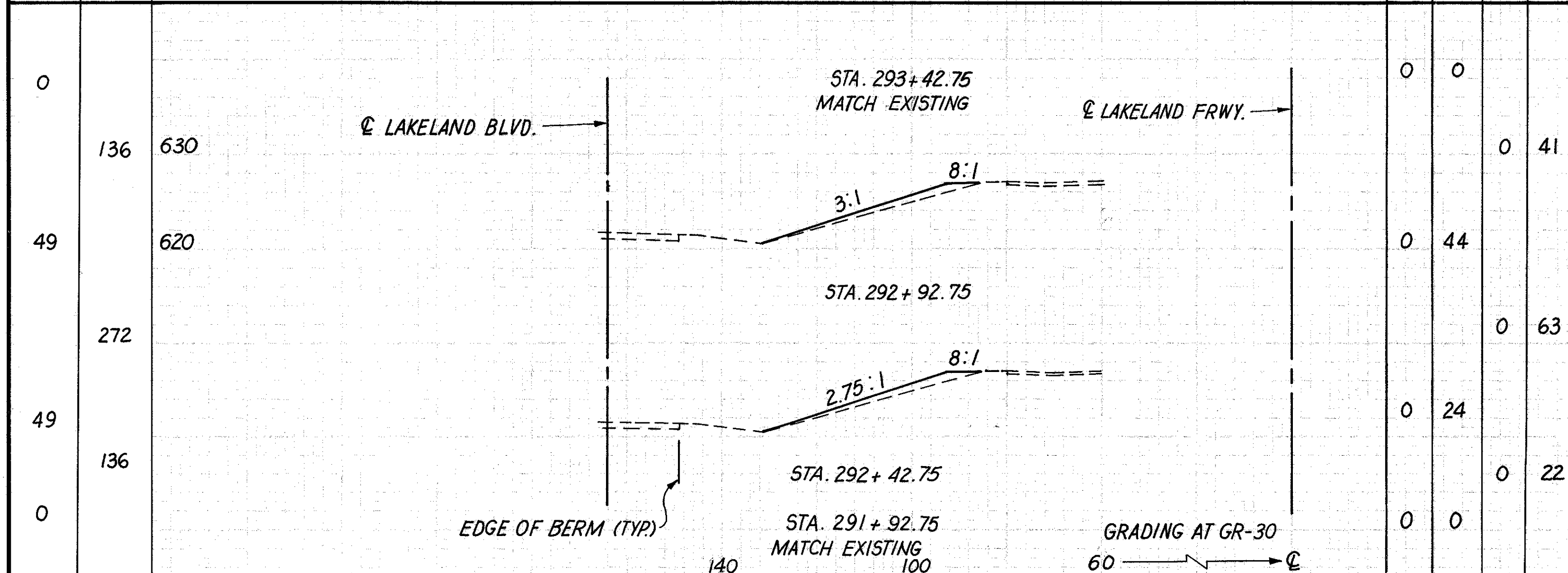
CUYAHOGA COUNTY
 CUY-90-23.95
 LAKE COUNTY
 LAK-90-0.00



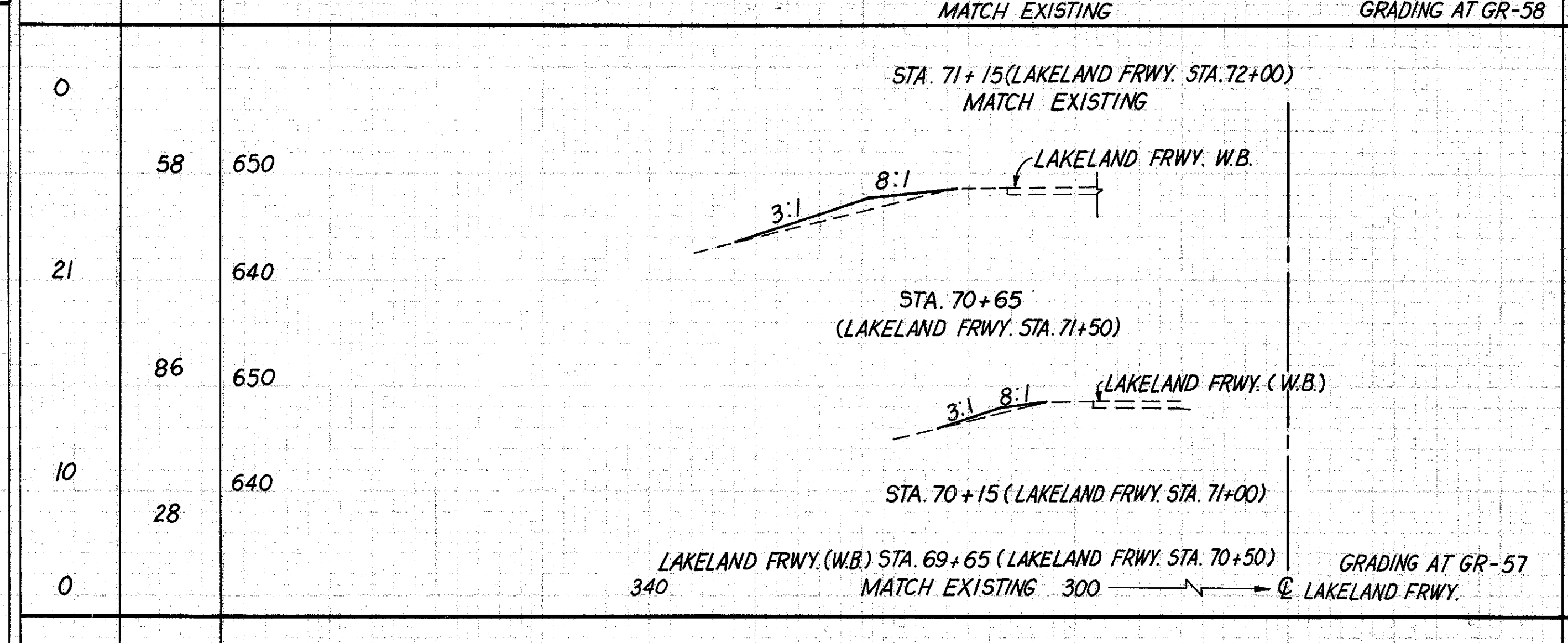
EARTHWORK			
END AREA		VOLUME	
EXC.	EMB.	EXC.	EMB.
0	0	0	20
0	22	0	28
0	8	0	7
0	0	0	0



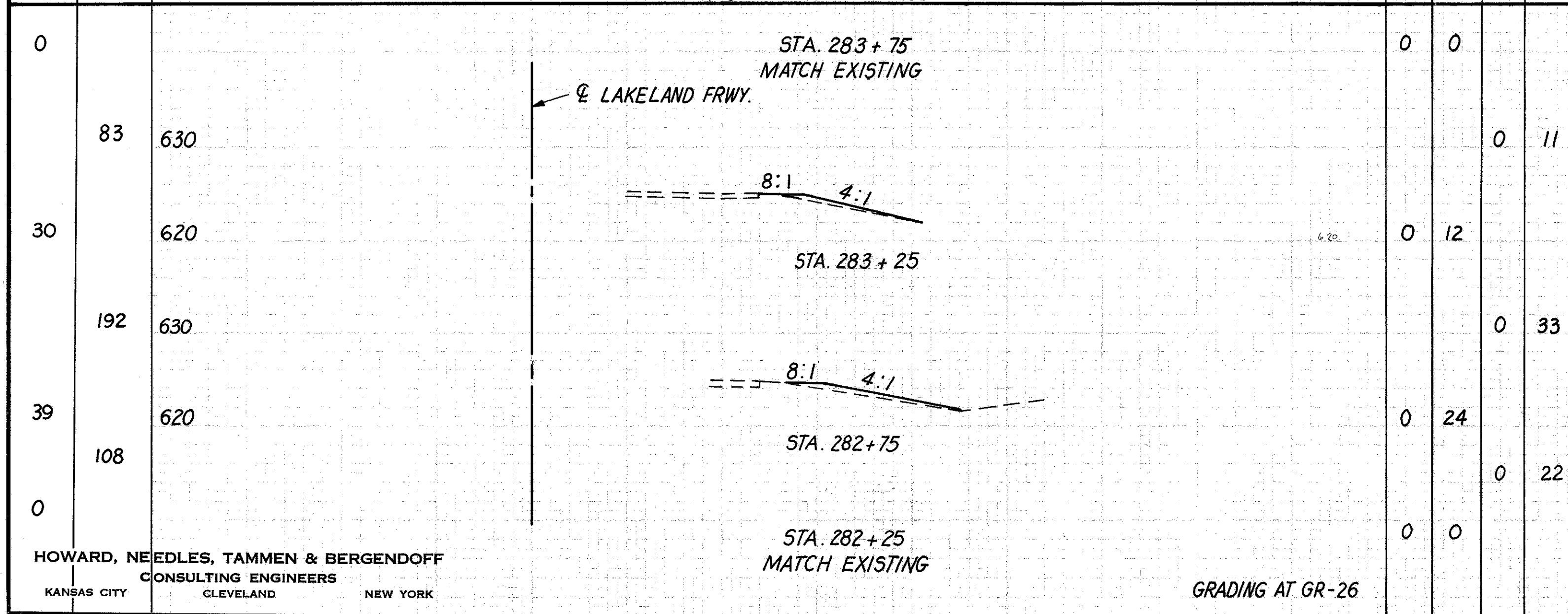
EARTHWORK			
END AREA		VOLUME	
EXC.	EMB.	EXC.	EMB.
0	0	0	2
0	2	0	11
0	10	0	9
0	0	0	0



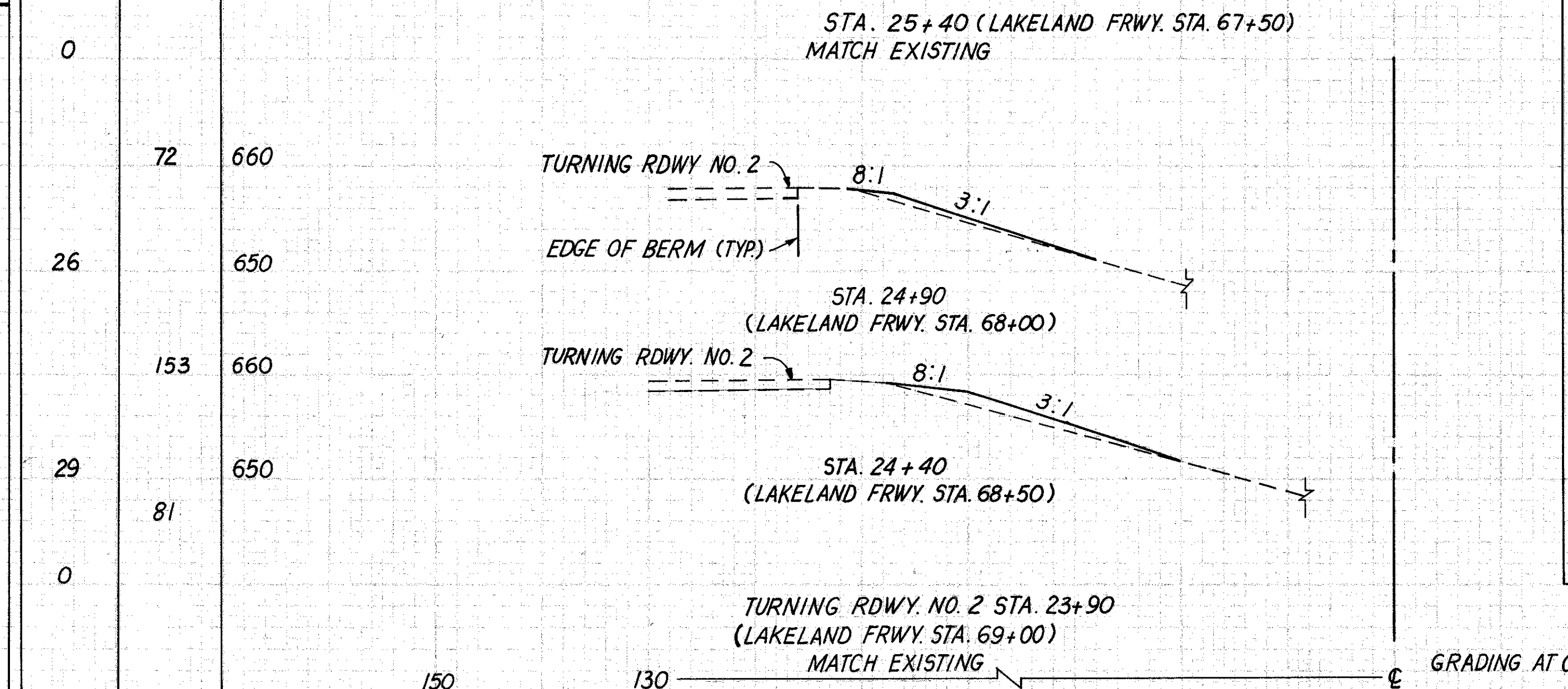
EARTHWORK			
END AREA		VOLUME	
EXC.	EMB.	EXC.	EMB.
0	0	0	41
0	44	0	63
0	24	0	22
0	0	0	0



EARTHWORK			
END AREA		VOLUME	
EXC.	EMB.	EXC.	EMB.
0	0	0	10
0	11	0	14
0	4	0	4
0	0	0	0



EARTHWORK			
END AREA		VOLUME	
EXC.	EMB.	EXC.	EMB.
0	0	0	11
0	12	0	33
0	24	0	22
0	0	0	0



EARTHWORK			
END AREA		VOLUME	
EXC.	EMB.	EXC.	EMB.
0	0	0	8
0	9	0	29
0	22	0	20
0	0	0	0

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

11-8

TRAFFIC CONTROL NOTES

FHWA REGION	STATE	PROJECT
5	OHIO	

115
200

CUYAHOGA COUNTY
CUY - 90-23.95
LAKE COUNTY
LAK - 90-0.00

TRAFFIC CONTROL

PROPOSED SIGNING WORK

MAJOR GROUND MOUNTED SIGNS

THESE SIGNS SHALL BE REPLACED WITH NEW EXTRUSHEET SIGNS AND SUPPORTS.

MAJOR OVERHEAD SIGN SUPPORTS

THESE SUPPORTS SHALL BE RELOCATED OR MODIFIED AS NECESSARY FOR LATERAL CLEARANCE DUE TO SHOULDER WIDENING.

GROUND MOUNTED SIGNS

THESE SIGNS AND SUPPORTS SHALL BE REMOVED AND REPLACED AT THE LOCATIONS AS DETAILED IN THE PLANS.

ITEM 620 REMOVAL OF DELINEATORS

THE FOLLOWING ESTIMATED QUANTITY HAS BEEN INCLUDED IN THE GENERAL SUMMARY FOR THE REMOVAL OF EXISTING DELINEATORS.

ITEM 620 DELINEATOR REMOVED FOR DISPOSAL 900 EACH

REMOVAL OF EXISTING ITEMS

ALL ITEM 630 REMOVAL ITEMS NOT SPECIFICALLY INCLUDING STORAGE OR REERECTION SHALL BECOME THE PROPERTY OF THE CONTRACTOR. REMOVAL AND DISPOSAL SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.

ITEM 630 PREPARATION AND SHIPMENT OF STORED SIGNS, BY TYPE

FLATSHEET AND EXTRUSHEET SIGNS REMOVED AND STORED UNDER OTHER ITEMS OF WORK SHALL BE PROCESSED AND SHIPPED TO THE DISTRICT 12 MAINTENANCE YARD ON ROUTE 91 IN MAYFIELD VILLAGE, OHIO.

PROCESSING OF FLATSHEET SIGNS SHALL INCLUDE THE STACKING AND BANDING TOGETHER OF SIMILAR SIZE SIGNS INTO 150 POUND MAXIMUM) BUNDLES. BANDING SHALL BE WITH TWO STEEL STRAPS AND CLIPS PLACED PERPENDICULAR TO EACH OTHER. FLATSHEET SIGNS WEIGH APPROXIMATELY 1.25 POUNDS PER SQUARE FOOT. BUNDLES SHALL BE LOADED ONTO PALLETS APPROXIMATELY 4' X 4'. SIGN BUNDLES SHALL ALSO BE Banded TO THE PALLETS. LOADED PALLETS SHALL HAVE A MAXIMUM WEIGHT OF 1,000 POUNDS.

PROCESSING OF EXTRUSHEET SIGNS SHALL INCLUDE THE CAREFUL REMOVAL OF ALL DEMOUNTABLE COPY AND THE DISSASSEMBLY OF THE SIGN INTO PANELS NO WIDER THAN 4-FT. DEMOUNTABLE COPY AND SIGN HARDWARE SHALL BE SUITABLY PACKAGED SUCH AS IN BURLAP BAGS FOR SHIPMENT. EXTRUSHEET PANELS OF SIMILAR LENGTHS SHALL BE Banded TOGETHER INTO A BUNDLE WEIGHING NO MORE THAN 1,000 POUNDS. BANDING SHALL BE WITH A MINIMUM OF 2 STEEL STRAPS AND CLIPS AND SHALL BE SPACED NO MORE THAN 5-FT APART. EXTRUSHEET SIGNS WEIGH APPROXIMATELY 2.25 POUNDS PER SQUARE FOOT. LOADED BUNDLES SHALL HAVE A MAXIMUM WEIGHT OF 1,000 POUNDS.

THE DISTRICT 12 TRAFFIC ENGINEER SHALL BE NOTIFIED AT LEAST 3 DAYS PRIOR TO THE DELIVERY OF THE SIGNS TO THE MAINTENANCE YARD. THE SIGNS SHALL BE TRANSPORTED BY THE CONTRACTOR TO THE MAINTENANCE YARD WHERE THEY WILL BE UNLOADED AND STORED. A FORK LIFT OF 1,000 POUND CAPACITY WILL BE PROVIDED BY THE STATE TO THE CONTRACTOR FOR UNLOADING.

PAYMENT WILL BE INCLUDED IN THE CONTRACT UNIT PRICE PER EACH SIGN REMOVED AND STORED INCLUDING ALL LABOR, EQUIPMENT, BANDING MATERIAL, PALLETS, TRANSPORTATION, AND MISCELLANEOUS MATERIAL TO PERFORM THE WORK.

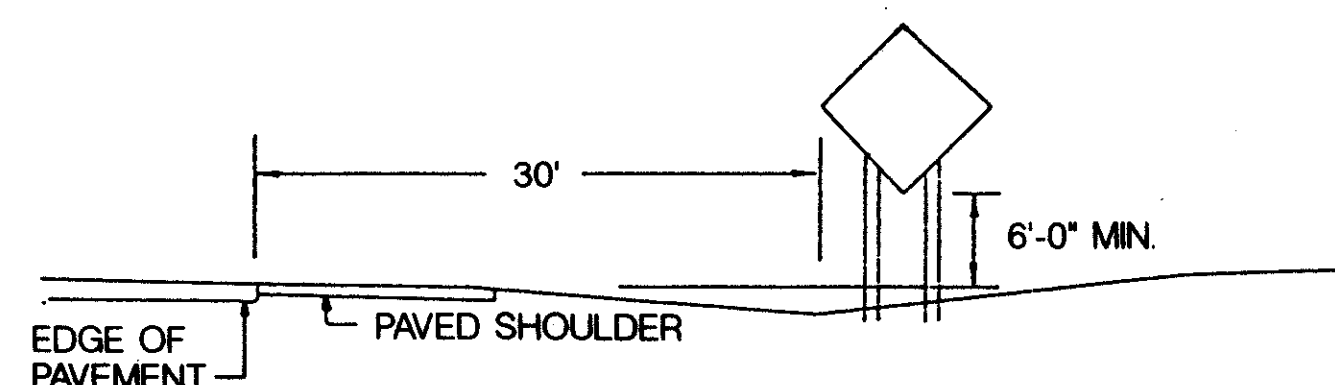
ITEM 630 SIGN LOCATIONS

SIGN LOCATIONS OF EXISTING AND PROPOSED SIGNS ON THE PLANS ARE APPROXIMATE. THE CONTRACTOR PRIOR TO ERECTION OF ALL SIGN SUPPORTS (POSTS, BEAMS, AND OVERHEADS) SHALL STAKE THE PROPOSED LOCATION, INCLUDING OFFSET. OVERHEAD SUPPORT LOCATIONS SHALL ALSO INCLUDE FOUNDATION ELEVATIONS. THE ENGINEER SHALL APPROVE ALL SUPPORT LOCATIONS AND MAY ADJUST THE LOCATION TO CORRECT SLOPE AND SUBSURFACE DIFFICULTIES, SIGN SIGHT DISTANCE OBSTRUCTIONS, IMPROVE SAFETY AND ELIMINATE OVERHEAD OBSTACLES.

PAYMENT FOR STAKING SHALL BE INCIDENTAL TO THE VARIOUS SIGN SUPPORT ITEMS.

ITEM 630 FLATSHEET SIGN INSTALLATIONS

ALL FREEWAY FLATSHEET SIGN INSTALLATIONS NOT BEHIND GUARDRAIL SHALL BE OFFSET 30-FT FROM THE EDGE OF PAVEMENT.



USE STANDARD DRAWING TAC-42.20 FOR FLATSHEET SIGNS INSTALLED BEHIND GUARDRAIL, ON CROSSROADS, ON RAMPS AND BETWEEN RAMPS AND MAINLINE.

ITEM 630 OVERHEAD SIGN SUPPORT MODIFICATION, NEW BOX TRUSS SECTION

THE FOLLOWING OVERHEAD SIGN SUPPORTS SHALL BE MODIFIED AS SHOWN IN THE PLANS. THE MODIFICATIONS SHALL CONSIST OF THE ADDITION OF A NEW BOX TRUSS SECTION ATTACHED TO THE CENTER OF THE EXISTING SPAN AND SHALL CONTAIN DIAGONAL TRUSS MEMBERS WHICH WILL BE ORIENTED TO FORM TRIANGULAR SPACES BETWEEN CHORDS AND DIAGONALS ON EACH FACE OF THE TRUSS.

SUPPORT NO.	LOCATION	TYPE	DESIGN NO.	NEW BOX TRUSS SECTION LENGTH
1	42+00 SB	7.65	6	7'
2	56+67 SB	7.65	6	5'
4	142+00 SB	7.65	6	7'
5	66+42 NB	7.65	6	5'
6	49+50 NB	7.65	6	4'
7	115+25 NB	7.65	8	7'
8	85+25 WB	7.4	2	5'

PAYMENT SHALL BE AT THE CONTRACT UNIT PRICE FOR ITEM 630 - OVERHEAD SIGN SUPPORT MODIFICATION. NEW BOX TRUSS SECTION, INCLUDING ALL NECESSARY MATERIAL, PARTS, EQUIPMENT AND LABOR.

TRAFFIC CONTROL STANDARD CONSTRUCTION DRAWINGS

REFERENCES TO SUPPLEMENTAL SPECIFICATIONS 857, 858, 861, 957, 958, AND 961 ON TRAFFIC CONTROL STANDARD CONSTRUCTION DRAWINGS IN THESE PLANS SHALL BE CONSIDERED TO READ AS RESPECTIVE REFERENCES TO ITEMS 630, 631, 730, 731, AND 733.

PAVEMENT MARKING

ITEM 621 SHALL BE USED ON MARGINAL ROADS AND ITEM 847 SHALL BE USED ON MAINLINE AND ALL RAMPS FOR PAVEMENT MARKINGS.

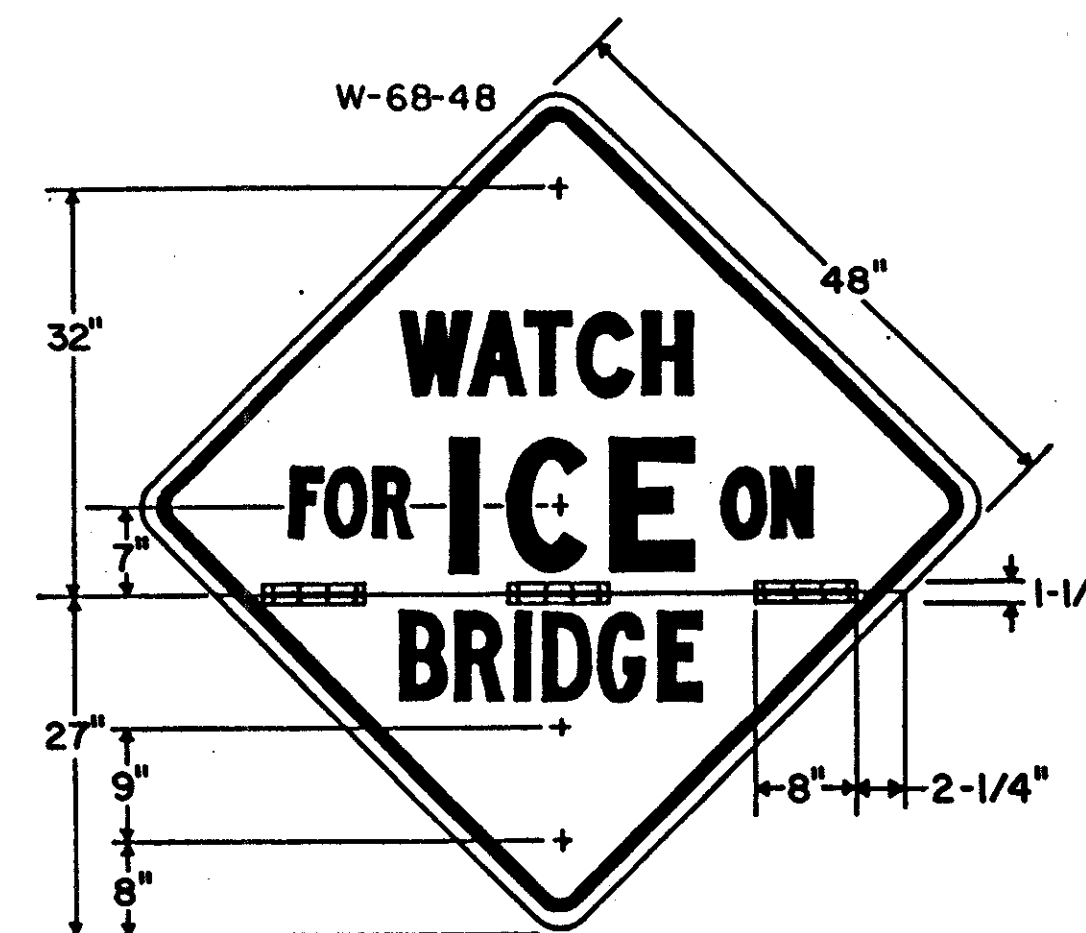
TRAFFIC SIGNAL LOOP DETECTORS

THIS WORK SHALL CONSIST OF REPLACING EXISTING TRAFFIC SIGNAL LOOP DETECTOR WIRE ON THE MARGINAL ROADS WHICH MAY BE DAMAGED BY PAVEMENT PLANING OR OTHER REPAIR OPERATIONS. THE LOOP DETECTOR WIRE SHALL BE REPLACED TO THE PULL BOX UNDER ITEM 625 AND STANDARD CONSTRUCTION DRAWING TC-82.10. THE FOLLOWING ESTIMATED QUANTITIES ARE INCLUDED IN THE GENERAL SUMMARY TO BE USED AS OUTLINED ABOVE AND AS DIRECTED BY THE ENGINEER.

ITEM 632 - LOOP DETECTOR PAVEMENT CUTTING	250 L.F.
ITEM 632 - LOOP DETECTOR WIRE, TYPE E	500 L.F.

ITEM 630 - SIGN FLATSHEET, TYPE G, AS PER PLAN

THE FOLLOWING SIGN SHALL BE PROVIDED WITH HINGES AS DETAILED BELOW. ALL COSTS SHALL BE INCLUDED IN THE UNIT PRICE BID FOR ITEM 630 - SIGN FLATSHEET, TYPE G, AS PER PLAN.



THE SIGN SHALL BE HINGED WITH 8" LENGTHS OF 1-1/2" BRASS-PLATED HINGE WHICH IS RIVETED TO EACH SECTION OF THE SIGN AND THEN COVERED WITH YELLOW REFLECTIVE SHEETING (TYPE F-730.18) TO MATCH THE BACKGROUND OF THE SIGN.

847 - Pavement Markings, By Type, 947.03 Inlaid, As Per Plan

This material is being installed as a part of a field evaluation comparing it to standard painted markings in adjacent sections.

The inlaid markings shall be laid out and installed as required by 847 and the manufacturer's directions. They shall be inlaid into the newly placed asphalt final course as described in 847.07-a. The contractor shall assign adequate personnel to layout and place the tape before final rolling is completed. Placement and rolling of the markings shall be completed before the asphalt pavement surface temperature cools below 150°F.

In lieu of 947.03, the marking material shall be StamarK Pliant Polymer marking tape model A-350 (White) or A-351 (Yellow) as manufactured by 3M Company, Traffic Materials Division, St. Paul Mn 55144-1000.

MADE J.M.W. DATE 7-31-81
 TRACED R.L.B. DATE 8-2-81
 CHECKED R.M. DATE 8-1-81
 SCALE _____

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

HNTB

TRAFFIC CONTROL QUANTITIES

* 947.03, In Aid, As Per Plan 100% State

ITEM 847- PAVEMENT MARKINGS

ROADWAY	SIDE	STATION		EDGE LINE (WHITE) LIN.FT.	EDGE LINE (YELLOW) LIN.FT.	4' LANE LINE LIN.FT.	8' CHANNEL LINE (WHITE) LIN.FT.	24' TRANSVERSE LINE (WHITE) LIN.FT.			ROADWAY	SIDE	STATION		EDGE LINE (WHITE) LIN.FT.	EDGE LINE (YELLOW) LIN.FT.	4' LANE LINE LIN.FT.	8' CHANNEL LINE (WHITE) LIN.FT.	24' TRANSVERSE LINE (WHITE) LIN.FT.
		FROM	TO										FROM	TO					
		I-90	RT										139+25	141+25					
	RT	141+25	143+75		250	750	250	238				LT	192+65	195+25		260	780	260	216
	RT	143+75	154+75	1,100	1,100	3,300						LT	195+25	197+90	265	265	1,060		
	RT	154+75	155+15	40	40	160						LT	197+90	243+75	4,585	4,585	13,755		
	RT	155+15	157+50		235	705	235	207				LT	243+75	246+65	290	290	1,160		
	RT	157+50	172+10	1,370	1,460	4,380						LT	246+65	247+60	95	95	285		
	RT	172+10	172+85	75	75	300						LT	247+60	257+85	1,025	1,025	3,075		
	RT	172+85	192+70	1,875	1,985	5,955						LT	257+85	259+57	172	172	688		
	RT	192+70	195+30	260	260	1,040						LT	259+57	261+55	198	198	594		
	RT	195+30	261+50	6,620	6,620	19,860						LT	261+55	268+40	685	685	2,055		
	RT	261+50	262+05	55	55	220						LT	268+40	270+65	225	225	900		
	RT	262+05	264+00		195	585	195	130				LT	270+65	271+50	85	85	255		
	RT	264+00	273+80	980	980	2,940						LT	271+50	284+60	1,310	1,310	3,930		
	RT	273+80	275+60		180	540	180	114				LT	284+60	286+67		207	621	207	133
	RT	275+60	286+65	1,030	1,105	3,315						LT	286+67	289+27	260	260	1,040		
	RT	286+65	288+85	220	220	880						LT	289+27	294+05	478	478	1,434		
	RT	288+85	296+30	745	745	2,235						LT	294+05	296+50	245	245	980		
	RT	296+30	298+00	170	170	680						LT	296+50	298+50	200	200	600		
	RT	298+00	301+00		300	900	300	336				LT	298+50	325+85	2,735	2,735	8,205		
	RT	301+00	326+75	2,575	2,575	7,725						LT	325+85	327+85	200	200	600	200	139
	RT	326+75	328+42	90	167	501						LT	327+85	330+20	235	235	940		
	RT	328+42	331+08	266	266	1,064						LT	330+20	343+20	1,300	1,300	3,900		
	RT	331+08	343+35	1,227	1,227	3,681						LT	343+20	344+33	113	113	452		
	RT	343+35	344+05	70	70	280						LT	344+33	345+80		147	441		
	RT	344+05	347+50		345	1,035	345	405				LT	345+80	359+50	1,370	1,370	4,110		
	RT	347+50	361+85	1,435	1,435	4,305						LT	359+50	363+47		397	1,191	397	516
	RT	361+85	363+30		145	435						LT	363+47	364+00	53	53	212		
	RT	363+30	364+70	140	140	560						LT	364+00	382+43	1,843	1,843	5,529		
	RT	364+70	386+35	2,165	2,165	6,495						LT	382+43	384+10	167	167	668		
	RT	386+35	387+35	100	100	400						LT	384+10	385+00	90	90	270		
	RT	387+35	390+25		290	870	290	357				LT	385+00	400+75	1,575	1,575	4,725		
	RT	390+25	41+32	1,240	1,295	3,885						LT	400+75	*42+30		343	1,029	343	427
	RT	41+32	43+15	183	183	732						LT	42+30	43+00	70	70	280		
	RT	43+15	55+00	1,185	1,185	3,555						LT	43+00	52+28.57	929	929	2,787		
	RT	55+00	61+87	687	687	1,374	687	1020			LAKELAND FRWY.	LT	**51+67.56	55+65	397	397	794		
	RT	61+87	68+40		653	653						LT	55+65	60+77	512	512	512	512	
	RT	68+40	92+65	2,425	2,425	2,425						LT	60+77	84+43	2,366	2,366	2,366		
	RT	92+65	94+00		135	135						LT	84+43	88+45	402	402	402	402	553
	RT	94+00	100+00	600	600	1,200						LT	88+45	93+90	545	545	545		
TURNING RDWY. NO.1		0+00	5+80	580	580	580	580					LT	93+90	94+95	105	105	210		
		5+80	22+44.88	1,664.88	1,585	1,664.88						LT	94+95	100+00	505	505	1,010		
S.B. SPUR	RT	39+67.34	51+05	1,137.66	1,137.66	2,275.32					TURNING RDWY. NO.2	LT	40+98.29	37+00		398	398		
	RT	51+05	59+73	287	868	868	868	480				LT	37+00	6+10	3,090	3,090	3,090		
	RT	59+73	87+00	2,657	2,727	2,727						LT	6+10	1+85		425	425	425	338
	RT	87+00	91+00	400	400	1,200						LT	1+85	0+00		185	185		
	RT	91+00	97+77		677	1,354	377	400			N.B.SPUR	LT	42+66.81	46+00	333	333	333	333	
	RT	97+77	116+00	1,823	1,823	3,646						LT	46+00	50+05	405	405	405		
	RT	116+00	117+67		167	334						LT	50+05	51+20	115	115	230		
	RT	117+67	119+50	183	183	549						LT	51+20	52+57		137	137		
	RT	119+50	162+08.40	4,258.40	4,258.40	8,516.80						LT	52+57	63+25	1,068	1,068	1,068		
	LT	139+25	155+93	1,668	1,668	5,004						LT	63+25	67+15		390	390	390	420
	LT	155+93	156+35	42	42	168						LT	67+15	71+65		450	450		
	LT	156+35	157+15		80	240						LT	71+65	90+20	1,855	1,855	3,710		
	LT	157+15	170+85	1,370	1,370	4,110						LT	90+20	92+00	180	180	540		
	LT	170+85	173+15		230	690	230	181				LT	92+00	93+00		100	200		
	LT	173+15	174+25	110	110	440						LT	93+00	113+30	2,030	2,030	4,060		
	LT	174+25	186+00	1,175	1,175	3,525						LT	113+30	116+45		315	630	315	292
	LT	186+00	188+00	200	200	800						LT	116+45	118+70	225	225	675		
												LT	118+70	162+08.40	4,338	4,338	8,677		
TOTALS				40,064	44,344	109,987	5,190	3868							31,619	34,092	77,816		
				= 15.99 mi.	= 20.14 mi.	= 37.6 mi.									7,247	7,540	23,572	3784	3034
				1.25 mi.	1.25 mi.	3.76 mi.									= 12.446 mi.	= 14.74 mi.			
				2.50 mi.											= 2.8 mi.	= 4.46 mi.	8974	6902	

TRAFFIC CONTROL QUANTITIES

CALCULATIONS
 MADE BY J.A.C. DATE 1/8/89
 CHECKED R.M. DATE 1/26/89

FHWA REGION	STATE	PROJECT
5	OHIO	

136
200

CUYAHOGA COUNTY
 CUY - 90-23.95
 LAKE COUNTY
 LAK - 90-0.00

ITEM 847 - PAVEMENT MARKINGS

ROADWAY	SIDE	STATION		EDGE LINE (WHITE)	EDGE LINE (YELLOW)	4' LANE LINE	8' CHANNEL LINE (WHITE)	24" TRANSVERSE LINE (WHITE)	24" STOP LINE	CROSSWALK LINE	CURB MARKING (WHITE)	CURB MARKING (YELLOW)	WORD "ONLY" ON PAVEMENT	LANE ARROWS						
		FROM	TO	LIN.FT.	LIN.FT.	LIN.FT.	LIN.FT.	LIN.FT.	LIN.FT.	LIN.FT.	LIN.FT.	LIN.FT.	EACH	EACH						
EUCLID SPUR																				
RAMP 1		2+10	11+60		950		950													
		11+60	23+83	1,223	1,223															
		23+83	27+24.93		342		342													
RAMP 2		0+00	1+85	185			185													
		1+85	6+08	423			423													
		6+08	19+75	1,367	1,367															
		19+75	22+40	265			265													
RAMP 3		0+30	12+52	1,242	1,222					80										
		12+52	16+43	391			391													
RAMP 7		0+00	2+10	210																
		2+10	4+92	282			282													
		4+92	14+10	918	918															
		14+10	15+95	185	185				29	66			2	4						
RAMP 4		-2+65	4+93	758			758													
		4+93	11+80	687	687															
		11+80	12+05	25	25		50	9												
		12+05	15+05	330	300					40										
		12+05	14+30	225	225				24	50										
RAMP 6		0+30	1+50	120	120					50										
		1+50	1+60		10		20				115									
		1+60	1+90	30	30															
RAMP 6A		0+25	1+50	150	125					57										
		1+90	14+53	1,263	1,263	1263														
		14+53	17+18	265		265	265													
RAMP 8		0+00	2+00	200			200													
		2+00	12+30	1,040	1,030															
RAMP 9		-1+00	5+00	600			600													
		5+00	14+70	985	970				34											
RAMP 10		-0+10	2+60	270			270													
		2+60	12+20	965	965															
RAMP 11		1+47	4+10	263			263													
		4+10	12+20	820	810				30											
LAKELAND FRWY.																				
RAMP 2		-1+47	0+39	186			186													
		0+39	6+61	622	622				22	54	221	61								
RAMP 3		1+30	3+00	170			170													
		3+00	5+42	242	242															
		5+42	6+57	115	115															
RAMP 4		0+00	1+58	158			158													
		1+58	5+20	362	362															
		5+20	5+90	70	70			43												
RAMP 5		0+63	1+40	77			77	41												
		1+40	5+05	365	365															
		5+05	6+63	158			158													
RAMP 6		0+55	1+20	65			65													
		1+20	3+80	260	260															
		3+80	5+38	158			158													
RAMP 7		4+25	7+15	295	290															
RAMP 8		2+00	2+70		70															
		2+70	3+20		50			27												
		3+20	6+72	352	352															
		6+72	8+33	161			161													
RAMP 9		4+93	3+05	188			188													
		3+05	0+25	280	280				16											
RAMP 11		0+00	1+58	158			158													
		1+58	12+60	1,102	1,068															
RAMP 12		2+53	3+71	118			118													
		3+71	12+20	849	849															
TOTALS				21,871	17,904		1,528	7,281	120	155	397	336	61	2	4					
				= 7.53 mi.			= 0.29 mi.					= 397 LIN. FT.								

MADE J.A.C. DATE 1-9-89 **Howard, Needles, Tammen & Bergendoff**
 TRACED R.M. DATE 1-24-89 **CONSULTING ENGINEERS**
 CHECKED R.M. DATE 1-24-89 **CLEVELAND, OHIO**
 SCALE _____



TRAFFIC CONTROL QUANTITIES

CALCULATIONS
 MADE BY J.A.C. DATE 1/10/89
 CHECKED R.M. DATE 1/27/89

FHWA REGION	STATE	PROJECT
5	OHIO	

138
200

CUYAHOGA COUNTY
 CUY - 90-23.95
 LAKE COUNTY
 LAK - 90-0.00

ITEM 621 - PAVEMENT MARKINGS

ROADWAY	SIDE	STATION		EDGE LINE (WHITE) LIN.FT.	EDGE LINE (YELLOW) LIN.FT.	4" LANE LINE LIN.FT.	8" CHANNEL LINE (WHITE) LIN.FT.	8" CHANNEL LINE (YELLOW) LIN.FT.	24" TRANSVERSE LINE (WHITE) LIN.FT.	24" TRANSVERSE LINE (YELLOW) LIN.FT.	24" STOP LINE LIN.FT.	CROSSWALK LINE LIN.FT.	CENTERLINE SOLID DOUBLE (YELLOW) LIN.FT.	CURB MARKING (YELLOW) LIN.FT.	CURB MARKING (WHITE) LIN.FT.	8" TRANSVERSE LINE (YELLOW) LIN.FT.	4" DOTTED LINE (WHITE) LIN.FT.	WORD "ONLY" ON PAVEMENT EACH	LANE ARROWS EACH	
		FROM	TO																	
S. Waterloo		150+00	151+60									71			20					
Marginal Connector		(1-S)+40	(2-S)+70				70								60					
S. Waterloo		152+43	159+20		677	677						69								
		159+20	160+30	110		110														
		160+30	161+80		150	300														
		161+80	164+75		295	295														
		164+75	166+25		150	300						63								
		166+25	167+00			75	75													
		167+00	175+85		885	885														
		175+85	176+95			110														
		176+95	177+65			55	25				45	106			25					
Marginal Connector		(1-S)+80	(2-S)+20				25								25					
S. Waterloo		178+30	180+67	247	444	227	252		20		41	181		334	25			4	4	
		180+67	183+28	261	522	522								522						
		183+28	184+85	157	314	314	157				10			314				1	2	
		184+85	186+25	140		140	140										140			
		186+25	186+65	40	75	40								75			40			
		186+65	187+33		136	68								136						
		187+33	189+67	184	468	458	50				22			468						
		189+67	190+67	100		200		200												
		190+67	192+00	133		266														
		192+00	194+00	200									133							
S. Waterloo/M. Connector		269+85	271+45	45			85					121			50					
S. Waterloo		271+45	277+45	600	595	600														
		277+45	278+05	120		60														
		278+05	279+25	120	120	240														
		279+25	281+50	225	225	225														
		281+50	282+65	115	115	230														
		282+65	283+25	60		60	60													
		283+25	288+30	510	508	495					40	113								
Lakeland Blvd. E.B.		288+90	303+68		1,483	1,463						130								
		303+68	304+25	57		57														
		304+25	304+70			45														
		304+70	306+38		168	336														
		306+38	321+02		1,464	1,464														
Gorse Dr. (Sta. 307+40)		307+27	307+57								12	66								
Lakeland Blvd. E.B.		321+02	323+35		233	466														
		323+35	324+00			65	65													
		324+00	327+93		393	393														
		327+93	329+35				125				42	92						1	1	
Lakeland/M. Connector		0+75	1+00				35		4											
Lakeland Blvd. E.B.		330+40	331+75			125									25					
Lakeland/M. Connector		331+75	332+42			67	67					94			45					
Lakeland Blvd. E.B.		332+42	342+18			1,952														
		342+18	343+57			139														
		343+57	348+50			493							986			110				
		348+50	350+50	200		200														
		350+50	351+30			80														
		351+30	352+73		143	286														
		352+73	355+50		277	277														
		355+50	356+95		145	290														
		356+95	357+55			60	60													
		357+55	361+50			395														
		361+50	372+50			2,200														
		372+50	375+45				831				35	102								
Lakeland Blvd/M. Connector		0+20	0+70						70									5	11	
Lakeland Blvd. E.B.		376+20	376+95			68						91			40			120		
Lakeland/M. Connector		376+95	378+03			108									20					
Lakeland Blvd. E.B.		378+03	385+35			1,464									20					
TOTALS				3,624	9985	19,445	2,230	200	94		247	1299	1119	1849	330	145		300	11	18
				= 2.577 mi.	= 3.68 mi.	= 2430 LIN. FT.							= 0.21 mi.	= 2179 LIN. FT.						

MADE J.A.C. DATE 1-10-89
 TRACED R.M. DATE 1-27-89
 CHECKED R.M. DATE 1-27-89
 SCALE ---

HNTB

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

TRAFFIC CONTROL QUANTITIES

CALCULATIONS
MADE BY J.A.C. DATE 1/11/89
CHECKED R.M. DATE 1/20/89

FHWA REGION	STATE	PROJECT
5	OHIO	

139
200

CUYAHOGA COUNTY
CUY - 90-23.95
LAKE COUNTY
LAK - 90-0.00

ITEM 621-PAVEMENT MARKINGS

ROADWAY	SIDE	STATION		EDGE LINE (WHITE)	EDGE LINE (YELLOW)	4" LANE LINE	8" CHANNEL LINE (WHITE)	8" CHANNEL LINE (YELLOW)	24" TRANSVERSE LINE (WHITE)	24" TRANSVERSE LINE (YELLOW)	24" STOP LINE	CROSSWALK LINE	CENTERLINE SOLID DOUBLE (YELLOW)	CURB MARKING (YELLOW)	CURB MARKING (WHITE)	8" TRANSVERSE LINE (YELLOW)	4" DOTTED LINE (WHITE)	WORD "ONLY" ON PAVEMENT	LANE ARROWS	
		FROM	TO	LIN.FT.	LIN.FT.	LIN.FT.	LIN.FT.	LIN.FT.	LIN.FT.	LIN.FT.	LIN.FT.	LIN.FT.	LIN.FT.	LIN.FT.	LIN.FT.	LIN.FT.	LIN.FT.	LIN.FT.	EACH	EACH
		385+35	386+28			93														
		386+28	391+00			472							944			90				
		391+00	393+55	255		255														
		393+55	394+65		110	220														
		394+65	396+80		215	215														
		396+80	397+85		105	210														
		397+85	398+90			105	105													
		398+90	13+85			1,760														
		13+85	16+50				495		7		60	120			20					
		0+15	0+35				20								25					
		17+80	19+85			205						96								
		19+85	23+75			250							720			90		2	4	
		23+75	24+75				130		55					45	45					
		24+75	27+00							50			450			52				
		151+37	152+50				130		3		26	55			25					
		(2-N)+00	(2-N)+30				30								15					
		153+10	161+45		835	835														
		161+45	162+10			65	65													
		162+10	163+90			180														
		163+90	166+80			290														
		166+80	168+50			170	340													
		168+50	169+10	60		60														
		169+10	177+20		795	810														
		177+20	179+55									46			25					
		(2-N)+00	(2-N)+50				35								15					
		261+12	264+60				25				20	95								
		264+60	265+95										135							
		266+37	267+75										138							
		267+75	268+20								29	129								
		268+65	271+95		270		300				40	96						3	6	
		271+95	274+25		230	230														
		274+25	274+50			25														
		7+30	8+10				40		20						40					
		274+50	275+35			85														
		275+35	279+10		375	375														
		279+10	279+70			60														
		279+70	280+65		95	190														
		280+65	282+25		160	160														
		282+25	283+20		95	190														
		283+20	283+95		75	75														
		283+95	289+80		545	570														
		290+40	292+65		140		210				32	120					100	2	3	
		292+65	304+30		1,165	1,165						64								
		304+30	304+75			45	45													
		304+75	306+85		210	420														
		306+85	321+85		1,500	1,500														
		321+85	324+15		230	460														
		324+15	325+05	90		90														
		325+05	330+65		560	560														
		330+65	332+20			138														
		333+10	336+08				580		30		48	98			40					
		336+08	350+00			1,392						108			30					
		350+00	350+75			75	75													
		351+10	352+45		135	270														
		352+45	355+08		263	263														
		355+08	356+43		135	270														
		356+43	357+50	107		107														
		357+50	375+00			1,750														
		375+00	375+60			60						100			25					
		TOTALS	COST PARTICIPATION I		9395 LIN.FT. = 1.78 MI	3.15 MI.	2240		60		255	1031	0.23 MI.		260	90		100	9	16
		TOTALS	COST PARTICIPATION II			0.08 MI.	270		105			96	0.22 MI.		90	142			2	4

* COST PARTICIPATION II

MADE J.A.C. DATE 1-11-89
TRACED R.M. DATE 2-18-89
CHECKED R.M. DATE 1-21-89
SCALE

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

HNTB

ITEM 620 DELINEATORS

CALCULATIONS
 MADE BY JAC DATE 1/23/89
 CHECKED RM DATE 2/28/89

FNWA REGION	STATE	PROJECT
5	OHIO	

141
200

CUYAHOGA COUNTY
 CUY - 90-23.95
 LAKE COUNTY
 LAK - 90-0.00

ROADWAY	STATION		SIDE	INTERVAL	TYPE "C"		TYPE "D"		
	FROM	TO			FLEX. POST	BRACK.	FLEX. POST	BRACK.	
I-90 (E.B.)	140+00	142+00	RT	200'	2				
	144+00	152+00	RT	400'	3				
	152+00	156+00	RT	200'	2				
	158+00	166+00	RT	400'	3				
	166+00	168+00	RT	200'	1				
	171+00	175+00	RT	200'	3				
	175+00	187+00	RT	400'	2	1			
	187+00	189+00	RT	200'	1				
	191+00	195+00	RT	200'	3				
	195+00	259+00	RT	400'	16				
	259+00	261+00	RT	200'	1				
	264+00	272+00	RT	400'	3				
	272+00	274+00	RT	200'	1				
	276+00	284+00	RT	400'	3				
	284+00	286+00	RT	200'	1				
	286+00	294+00	RT	400'	2				
	294+00	298+00	RT	200'	2				
	301+00	325+00	RT	400'	7				
	327+00	335+00	RT	200'	4	1			
	335+00	339+00	RT	400'	1				
	339+00	345+00	RT	200'	3				
	348+00	356+00	RT	400'	3				
	356+00	358+00	RT	200'	1				
	360+00	370+00	RT	200'	6				
	370+00	382+00	RT	400'	3				
	382+00	388+00	RT	200'	3				
	391+00	399+00	RT	400'	3				
	LAKELAND FWY (E.B.)	*401+00	45+00	RT	200'	4			
		45+00	61+00	RT	400'	3	1		
		69+00	89+00	RT	400'	6			
		92+00	96+00	RT	200'	3			
		96+00	100+00	RT	400'	1			
	RDWY. NO. 1	**61+00	5+00	RT	200'	3			
	5+00	10+00	RT<	50'	9		9		
	10+00	19+00	RT<	100'	9		9		
	19+00	22+00	RT	100'		3			
S.B. SPUR	+22+00	58+00	RT	200'	9	1			
	60+00	80+00	RT	400'	6				
	80+00	82+00	RT	200'	1				
	85+00	95+00	RT	200'	6				
	98+00	113+00	RT	400'	5				
	116+00	122+00	RT	200'	4				
	122+00	162+00	RT	400'	10				
SUBTOTALS					162	7	18		

*STA. 403+00 CENTERLINE I-90 BACK = STA. 41+12.20 AHEAD (LAKELAND FWY. E.B.)
 **STA. 61+93.69 CENTERLINE I-90 BACK = STA. 0+00 TURNING RDWY. NO. 1
 +STA. 22+44.88 TURNING RDWY. NO. 1 = STA. 39+67.34 S.B. SPUR

ROADWAY	STATION		SIDE	INTERVAL	TYPE "C"		TYPE "D"		
	FROM	TO			FLEX. POST	BRACK.	FLEX. POST	BRACK.	
I-90 (W.B.)	140+00	148+00	LT	400'	3				
	148+00	150+00	LT	200'		1			
	153+00	157+00	LT	200'	3				
	160+00	168+00	LT	400'	3				
	168+00	170+00	LT	200'	1				
	173+00	177+00	LT	200'	3				
	177+00	185+00	LT	400'	2				
	185+00	187+00	LT	200'	1				
	190+00	192+00	LT	200'	2				
	194+00	202+00	LT	200'	5				
	202+00	238+00	LT	400'	9				
	238+00	248+00	LT	200'	5				
	250+00	254+00	LT	400'	2				
	254+00	262+00	LT	200'	3	1			
	264+00	272+00	LT	200'	3	2			
	275+00	283+00	LT	400'	3				
	286+00	298+00	LT	200'	6	1			
	303+00	323+00	LT	400'	6				
	323+00	325+00	LT	200'	1				
	327+00	335+00	LT	200'	4	1			
	335+00	339+00	LT	400'	1				
	339+00	347+00	LT	200'	4				
	351+00	359+00	LT	400'	3				
	362+00	368+00	LT	200'	4				
	368+00	376+00	LT	400'	1	1			
	376+00	384+00	LT	200'	4				
	388+00	400+00	LT	400'	4				
		*401+00	45+00	LT	200'	4			
	LAKELAND FWY (W.B.)	**45+00	100+00	LT	400'	13	1		
		7+00	19+00	LT	100'	10	3		
		19+00	29+00	LT	50'	20			
	N.B. SPUR	42+00	50+00	LT	200'	4	1		
		55+00	63+00	LT	400'	3			
	65+00	73+00	LT	200'	5				
	73+00	89+00	LT	400'	4				
	89+00	93+00	LT	200'	2				
	96+00	112+00	LT	400'	5				
	114+00	122+00	LT	200'	5				
	122+00	162+00	LT	400'	10				
SUBTOTALS					171	12			

*STA. 403+00 CENTERLINE I-90 BACK = STA. 41+12.20 AHEAD
 **STA. 52+28.57 CENTERLINE I-90 = STA. 51+67.56 LAKELAND FWY

SUB TOTALS	TYPE "C"		TYPE "D"	
	FLEX. POST	BRACK.	FLEX. POST	BRACK.
MAINLINE (E.B. & S.B.)	162	7	18	
MAINLINE (W.B. & N.B.)	171	12		
SHEET TOTALS	333	19	18	

ITEM 620 DELINEATORS

CALCULATIONS
 MADE BY JAC DATE 1/10/89
 CHECKED RM DATE 2/28/89

FHWA REGION	STATE	PROJECT
5	OHIO	

142
200

CUYAHOGA COUNTY
 CUY - 90-23.95
 LAKE COUNTY
 LAK - 90-0.00

RAMPS	STATION		SIDE	INTERVAL	TYPE "C"		TYPE "D"	
	FROM	TO			FLEX. POST	BRACK.	FLEX. POST	BRACK.
R#2	0+00	3+00	RT	100'	4			
	3+00	5+00	LT	100'			3	
	5+00	6+60	LT	50'			3	
R#3	3+00	6+00	RT<	100'/50'	3		7	
R#4	1+00	3+00	LT	50'	5			
	3+00	5+50	RT	50'			6	
R#5	0+00	2+00	LT	50'			5	
	2+00	4+00	LT	100'			2	
R#6	0+50	1+50	RT	50'			3	
	1+50	2+00	LT	50'	1			
	2+00	4+00	LT	100'	2			
R#7	4+00	4+50	LT	50'	1			
	4+00	5+00	LT	100'	2			
	5+50	7+00	RT<	50'	4		4	
R#8	2+00	5+00	LT	100'			4	
	5+00	6+00	RT	50'	2			
R#9	3+00	5+50	LT&RT	50'	1		5	
	2+00	5+00	LT	50'	7			
	5+00	6+00	LT	100'	1			
	6+00	10+00	LT	200'	2			
	10+00	11+00	LT	100'	1			
R#12	11+00	12+00	LT&RT	50'	2		3	
	2+50	3+50	RT	100'	1			
	3+50	10+00	RT<	50'	14		13	
	10+00	14+00	RT<	100'	4		4	
	14+00	16+00	LT	50'			4	
R#12-A	14+00	16+50	RT<	50'	5		2	
R#13	3+00	5+00	LT	100'	3			
	5+00	7+00	LT	50'	4			
	7+00	12+00	LT	100'	5			
R#14	3+00	11+50	RT	50'			18	
	2+00	7+00	LT&RT	100'	6		5	
	R#14-A	4+00	6+00	LT&RT	100'	3		3
R#15	6+00	6+50	RT	50'	1			
	6+00	7+00	LT	100'			1	
	0+00	1+00	LT	50'			3	
R#16	1+00	3+00	LT&RT	100'	3		2	
	3+00	4+00	RT	100'	1			
	0+00	3+00	RT	100'			4	
SUBTOTALS					94		104	

RAMPS	STATION		SIDE	INTERVAL	TYPE "C"		TYPE "D"	
	FROM	TO			FLEX. POST	BRACK.	FLEX. POST	BRACK.
R#1-E	2+00	4+00	RT	50'	5			
	4+00	7+00	RT<	100'	3		4	
	7+00	8+00	LT	50'			2	
R#2-E	2+00	3+00	LT	50'	3			
	3+00	6+00	LT	100'	3			
R#6-E	4+50	6+50	RT	50'			5	
	0+00	3+00	LT	100'			4	
R#7-E	1+00	4+00	RT	100'	4			
	0+00	2+00	LT&RT	100'	2		3	
	2+00	4+00	RT	50'			4	
R#8-E	2+00	4+00	LT	100'	2			
	3+50	4+00	LT	50'	2			
	4+00	7+00	RT	100'			4	
R#9-E	3+00	4+00	RT	50'	3			
	5+00	8+00	LT	100'			4	
R#10-E	0+00	4+00	RT	100'			5	
R#11-E	0+00	2+50	LT	50'			6	
R#12-E	3+00	3+50	RT	50'	2			
	3+50	4+50	RT	50'	3			
	5+00	8+00	LT	100'			4	
R#13-E	0+50	1+50	LT	50'	3			
	1+50	3+50	LT	100'	2			
	3+50	6+00	RT	50'			6	
R#14-E	0+00	1+00	LT	50'			3	
	1+00	3+00	LT&RT	100'	2		2	
	3+00	3+50	LT&RT	50'	1		1	
R#15-E	0+00	1+00	RT	50'			3	
	1+00	3+00	RT<	100'	1		2	
SUBTOTALS					41		62	

RAMPS	STATION		SIDE	INTERVAL	TYPE "C"		TYPE "D"	
	FROM	TO			FLEX. POST	BRACK.	FLEX. POST	BRACK.
EUCLID SPUR								
R#1	0+00	8+00	LT	200'			5	
	8+00	12+00	LT	100'			4	
	12+00	26+00	LT	100'			10	4
	12+00	14+00	RT	100'	3			
R#2	14+00	23+50	RT	50'	15	4		
	2+00	19+00	RT	100'	15	3		
	6+50	17+50	LT	50'			23	
R#3	1+50	7+50	RT<	200'	4		4	
	7+50	12+50	RT<	100'	5		5	
	12+50	14+00	RT	50'	3			
	14+00	16+00	RT	100'	2			
R#4	5+00	15+00	RT	100'	11			
	5+00	11+00	LT	50'			13	
	11+00	13+00	LT	100'			2	
R#4-A	12+50	14+50	LT	50'			5	
R#7	5+00	11+00	RT<	200'	4		4	
	11+00	14+00	RT<	100'	3		3	
	14+00	16+00	RT<	50'	4		4	
	0+50	1+50	LT&RT	50'	3		3	
R#6, (6-A)	2+00	3+00	LT&RT	100'	2		2	
	3+00	7+00	LT&RT	200'	2		2	
	7+00	11+00	LT&RT	200'&100'	4		2	
	11+00	14+00	LT&RT	100'	3		1	
	2+00	3+00	LT	100'	2			
R#8	3+00	5+00	LT&RT	50'	4		4	
	5+00	11+00	LT	200'	3			
	11+00	11+50	LT&RT	50'	1		1	
R#9	3+00	13+00	RT	200'	5			
	13+00	14+00	RT<	100'	1		1	
	14+00	14+50	RT<	50'	1		1	
	2+35	5+35	LT&RT	100'	4		1	
R#10	5+35	6+00	LT&RT	65'	1		1	
	6+00	10+00	LT&RT	200'	2		2	
	10+00	11+00	LT&RT	100'	1		1	
	11+00	11+50	LT&RT	50'	1		1	
	4+00	6+00	LT&RT	100'	2		3	
R#11	6+00	10+00	LT&RT	200'	2		2	
	10+00	11+00	LT&RT	100'	1		1	
	11+00	11+50	LT&RT	50'	1		1	
SUBTOTALS					115	7	112	4

SUBTOTALS	TYPE "C"		TYPE "D"	
	FLEX. POST	BRACK.	FLEX. POST	BRACK.
R#2 - R#16	94		104	
R#1-E - R#15-E	41		62	
R#1 - R#11 (EUCLID SPUR)	115	7	112	4
SHEET TOTALS	250	7	278	4

MADE JAC DATE 1/10/89
 TRACED RM DATE 2/28/89
 CHECKED RM DATE 2/28/89
 SCALE

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

HNTB

ITEM 862 RAISED PAVEMENT MARKERS

CALCULATIONS
MADE BY JAC DATE 2/6/89
CHECKED RM DATE 2/28/89

FHWA REGION	STATE	PROJECT
5	OHIO	

143
200

CUYAHOGA COUNTY
CUY - 90-23.95
LAKE COUNTY
LAK - 90-0.00

ROADWAY	STATION		SIDE	INTERVAL (FT)	ONE WAY		TWO WAY
	FROM	TO			WHITE	YELLOW	WHITE/RED
I-90 (EB)	140+45	141+25	RT	80	4		2
	141+25	142+85	RT	80	4		2
	141+25	143+15	RT	20	10		
	143+15	143+95	RT	40	2		
	142+85	154+85	RT	80	30		15
	155+15	156+80	RT	20	9		
	156+80	157+60	RT	40	2		
	154+85	170+85	RT	80	60		
	169+70	172+10	RT	40	7		
	170+85	190+85	RT	80	75		
	190+30	192+70	RT	40	7		
	190+85	252+05	RT	80	247		20
	262+05	263+25	RT	20	7		
	263+25	264+05	RT	40	2		
	262+05	273+25	RT	80	28		14
	273+80	274+85	RT	20	6		
	274+85	275+65	RT	40	2		
	273+25	285+25	RT	80	40		5
	284+70	286+80	RT	40	6		
	285+25	297+25	RT	80	30		15
	297+60	300+50	RT	20	15		
	300+50	301+50	RT	40	2		
	297+25	326+05	RT	80	108		
	326+00	328+40	RT	40	7		
	326+05	343+65	RT	80	46		20
	344+05	347+25	RT	20	17		
	347+25	348+05	RT	40	2		
	343+65	359+65	RT	80	60		
	359+70	363+30	RT	40	10		
	359+65	386+85	RT	80	82		20
	387+35	389+95	RT	20	14		
	389+95	390+75	RT	40	2		
386+85	401+25	RT	80	54			
400+80	*41+32	RT	40	7			
401+25	*54+57	RT	80	57			
LAKELAND FRWY (EB)	55+00	67+60	RT	20	64		
	67+60	68+40	RT	40	2		
	54+57	90+57	RT	80	45		
	90+80	94+00	RT	40	9		
	90+57	93+77	RT	80	5		
93+77	99+37	RT	80	14			
SUBTOTALS					1200		113

*STA. 403+00 I-90 = STA. 41+12.2

ROADWAY	STATION		SIDE	INTERVAL (FT)	ONE WAY		TWO WAY	
	FROM	TO			WHITE	YELLOW	WHITE/RED	
RDWY. NO. 1	54+57	61+77	RT	80	9			
	62+00	**5+80	RT	20	30			
	5+80	6+60	RT	40		2		
	61+77	**22+30	RT	80	28			
	S.B. SPUR	+39+55	50+75	RT	80	14		14
		51+00	58+80	RT	20	40		
		58+80	59+60	RT	40	2		
		50+75	86+75	RT	80	45		
		83+80	87+00	RT	40	9		
		86+75	90+75	RT	80	10		
		91+00	97+00	RT	20	31		
		97+00	97+80	RT	40	2		
		90+75	117+55	RT	80	62		
114+55		117+75	RT	40	9			
115+55	161+95	RT	80	116				
R#2	-1+50	0+40	LT	20	9			
	0+40	1+20	LT	40		2		
R#3	1+30	2+90	LT	20	8			
	2+90	3+70	LT	40		2		
R#5	4+30	5+50	LT	40	2	2		
R#8	6+00	7+20	LT	40	2	2		
R#12	2+75	3+75	LT	20	6		2	
R#14-A	3+75	4+55	LT	40		2		
	3+00	4+00	LT	20	5			
R#15	4+05	4+85	LT	40		2		
R#1-E	3+20	4+40	LT	40	2	2		
R#1-E	1+20	4+00	LT	20	14			
	4+00	4+80	LT	40		2		
R#6-E	3+85	5+05	LT	40	2	2		
R#9-E	1+55	4+75	LT	20	16			
R#11-E	4+75	5+55	LT	40		2		
	3+85	5+85	LT	40	4	2		
R#12-E	2+10	4+70	LT	20	13			
R#14-E	4+70	5+50	LT	40		2		
	4+15	6+15	LT	40	4	2		
R#2 (SPUR)	19+15	20+75	LT	40	3	2		
R#7 (SPUR)	2+10	4+90	LT	20	14			
R#6 (SPUR)	4+90	5+70	LT	40		2		
	14+00	16+40	LT	40	5	2		
R#9 (SPUR)	2+20	5+00	LT	20	15			
R#10	5+00	5+80	LT	40		2		
	1+85	3+05	RT	40	2	2		
SUBTOTALS					533	38	14	

** STA. 61+93.69 I-90 = STA. 0.00 TURNING RDWY. NO. 1
+ STA. 22+44.88 RDWY. NO. 1 = STA. 39+67.34 S.B. SPUR

ROADWAY	STATION		SIDE	INTERVAL (FT)	ONE WAY		TWO WAY
	FROM	TO			WHITE	YELLOW	WHITE/RED
I-90 (WB)	140+45	156+45	LT	80	63		
	156+35	158+75	LT	40	7		
	156+45	170+85	LT	80	54		
	170+75	171+55	LT	40	2		
	171+55	173+15	LT	20	9		
	170+85	187+65	LT	80	45		18
	188+00	189+60	LT	40	5		
	187+65	192+45	LT	80	16		2
	192+65	193+45	LT	40	2		
	193+45	195+25	LT	20	10		
	192+45	246+85	LT	80	184		20
	246+60	249+40	LT	40	8		
	246+85	259+65	LT	80	48		
	259+55	262+75	LT	40	9		
	259+65	270+85	LT	80	42		
	270+65	273+05	LT	40	7		
	270+85	284+45	LT	80	51		
	284+70	285+50	LT	40	2		
	285+50	286+70	LT	20	7		
	284+45	296+45	LT	80	33		12
	296+50	300+10	LT	40	10		
	296+45	325+25	LT	80	100		8
	325+85	326+65	LT	40	2		
	326+65	327+85	LT	20	7		
	325+25	344+45	LT	80	52		20
	344+35	347+55	LT	40	9		
	344+45	358+85	LT	80	54		
	358+70	359+50	LT	40	2		
	359+50	363+50	LT	20	21		
	358+85	383+65	LT	80	73		20
	384+10	386+50	LT	40	7		
	383+65	399+65	LT	80	60		
400+20	401+00	LT	40	2			
401+00	*42+32	LT	20	17			
399+65	402+85	LT	80	12			
402+85	*41+77	LT	80	3			
41+77	52+17	LT	80	26		13	
52+17	**52+37	LT	80	1		1	
52+37	55+57	LT	80	3		4	
SUBTOTALS					1065		118

* STA. 403+00 I-90 = STA. 41+12.2
** STA. 52+28.57 I-90 = STA. 51+67.56 LAKELAND FRWY. WB

SUBTOTALS	ONE WAY		TWO WAY	TOTALS
	WHITE	YELLOW	WHITE/RED	
I-90 E.B. & LAKELAND FRWY E.B.	1200		113	1313
RDWY. 1 - R#10	533	38	14	585
I-90 W.B.	1065		118	1183
SHEET TOTALS	2798	38	245	3081

MADE JAC DATE 2/6/89
TRACED RM DATE 2/28/89
CHECKED RM DATE 2/28/89
SCALE _____

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

HNTB

ITEM 862 RAISED PAVEMENT MARKERS

CALCULATIONS
 MADE BY JAC DATE 2/6/89
 CHECKED RM DATE 2/28/89

FHWA REGION	STATE	PROJECT
5	OHIO	

144
200

CUYAHOGA COUNTY
 CUY - 90-23.95
 LAKE COUNTY
 LAK - 90-0.00

ROADWAY	STATION		SIDE	INTERVAL (FT)	ONE WAY		TWO WAY
	FROM	TO			WHITE	YELLOW	WHITE/RED
LAKELAND	55+65	60+85	LT	20	27		
FWY. (WB)	60+85	61+65	LT	40		2	
	55+57	84+37	LT	80	36		
RDWY. NO. 2	83+60	84+40	LT	40		2	
	84+40	93+90	LT	20	49		
	84+37	93+97	LT	80	12		
	93+97	99+57	LT	80	14		
	52+17	+40+30	LT	80	1		
	40+30	37+10	LT	80	4		
	37+00	31+80	RT	20	26		
	31+80	31+00	RT	40	2		
	37+10	5+90	RT	80	39		
	5+40	4+60	RT	40	2		
N.B. SPUR	4+60	0+00	RT	20	24		
	5+90	0+30	RT	80	7		
	42+67	46+00	RT	20	17		
	0+30	++43+17	RT	80	1		
	43+17	51+17	RT	80	10		
	52+75	55+55	RT	40	8		
	51+17	63+17	RT	80	15		
	63+35	64+15	RT	40	2		
	64+15	71+65	RT	20	39		
	63+17	91+97	RT	80	61		
93+00	94+60	RT	40	5			
91+97	112+77	RT	80	52			
113+05	113+85	RT	40	2			
113+85	116+45	RT	20	14			
112+77	161+57	RT	80	102		20	
SUBTOTALS					571	4	20

+ STA. 52+28.57 I-90 = STA. 40+98.29 TURNING RDWY. NO. 2
 ++ STA. 0+00 RDWY. NO. 2 = STA. 42+66.81 N.B. SPUR

ROADWAY	STATION		SIDE	INTERVAL (FT)	ONE WAY		TWO WAY
	FROM	TO			WHITE	YELLOW	WHITE/RED
R#4	0+80	2+40	RT	40	3	2	
R#6	3+00	3+80	RT	40		2	
	3+80	5+20	RT	20	8		
R#7	4+25	5+05	RT	40		3	
R#9	1+05	2+85	LT	20	9		
	2+85	3+65	LT	40		2	
R#11	1+15	2+35	RT	40	2	2	
R#13	2+00	3+20	RT	40	2	2	
R#14	0+80	2+40	RT	40	3	2	
R#16	2+95	3+75	RT	40	2		
	3+75	4+75	RT	20	6		
R#2-E	2+00	3+60	RT	40	3	2	
R#7-E	3+40	4+20	RT	40		2	
	4+20	5+20	RT	20	6		
R#8-E	1+60	3+20	RT	40	3	2	
R#10-E	3+40	4+20	RT	40		2	
R#13-E	4+20	7+80	RT	20	19		
	0+80	2+40	RT	40	3	2	
R#15-E	3+00	3+80	RT	40		2	
R#1	3+80	7+00	RT	20	16		
	7+60	11+60	RT	20	21		
	11+60	12+40	RT	40	2		
R#2	23+25	27+25	RT	40	11		
	5+40	4+60	LT	40		2	
R#3	4+60	2+20	LT	20	13		
	11+65	12+45	LT	40		2	
R#4	12+45	16+45	LT	40	10		
	2+15	4+95	LT	20	15		
R#8	4+95	5+75	LT	40		2	
	0+00	2+00	RT	40	6		
R#11	2+00	2+80	RT	40		2	
	1+65	4+05	LT	20	13		
R#11	4+05	4+85	LT	40		2	
	SUBTOTALS					176	37

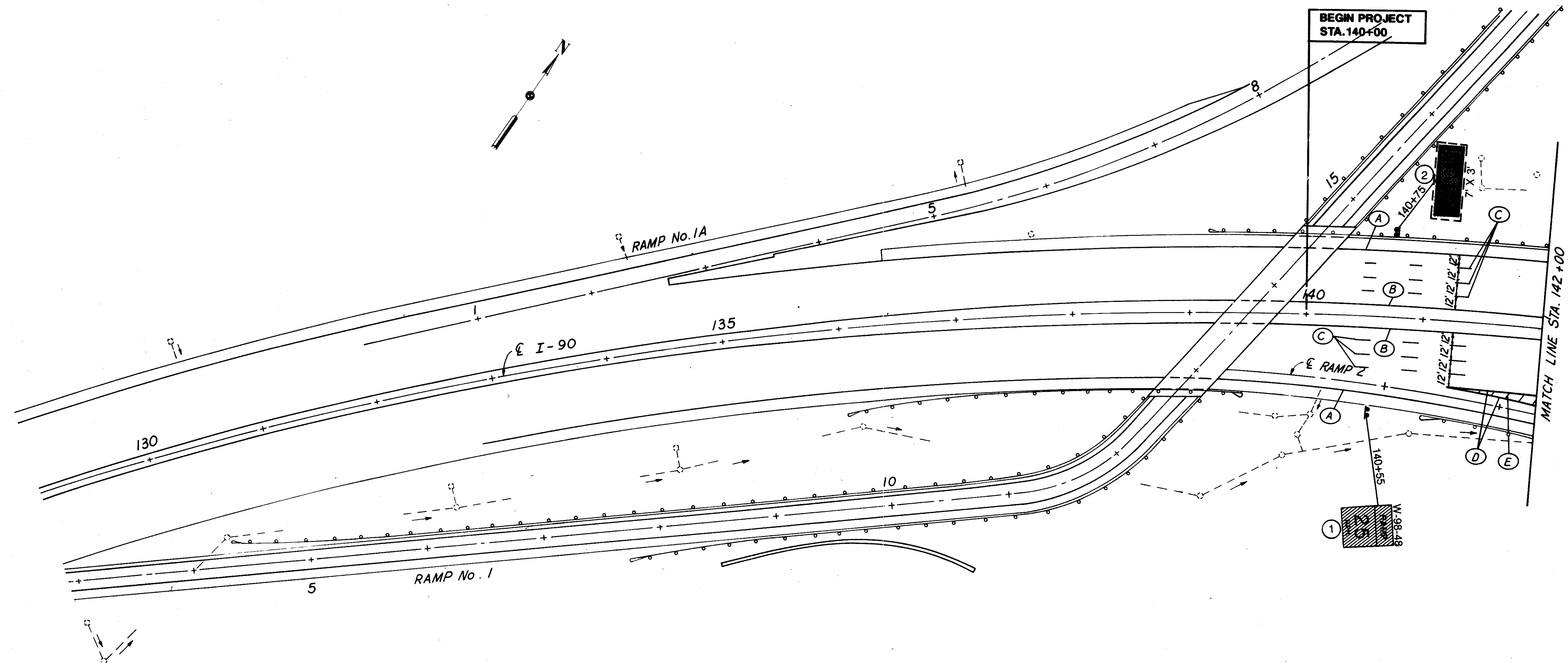
+ STA. 52+28.57 I-90 = STA. 40+98.29 TURNING RDWY. NO. 2
 ++ STA. 0+00 RDWY. NO. 2 = STA. 42+66.81 N.B. SPUR

SUBTOTALS	ONE WAY		TWO-WAY	TOTALS
	WHITE	YELLOW	WHITE/RED	
LAKELAND FRWY. WB.-N.B. SPUR	571	4	20	595
RAMPS	176	37		213
SHEET TOTALS	747	41	20	808

FHWA REGION	STATE	PROJECT	
5	OHIO		

146
200

CUYAHOGA COUNTY
CUY - 90-23.95
LAKE COUNTY
LAK - 90-0.00

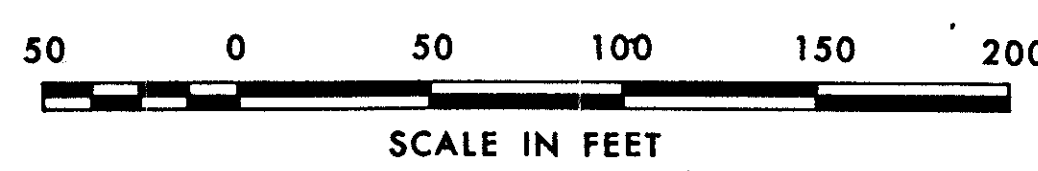


PAVEMENT MARKING LEGEND

- (A) EDGE LINE (WHITE)
- (B) EDGE LINE (YELLOW)
- (C) LANE LINE
- (D) CHANNELIZING LINE
- (E) TRANSVERSE LINE , 12' C/C
- (F) STOP LINE
- (G) CROSSWALK LINE
- (H) DOUBLE SOLID YELLOW CENTERLINE
- (I) CURB MARKING , (YELLOW)
- (J) CURB MARKING , (WHITE)

SIGN LEGEND

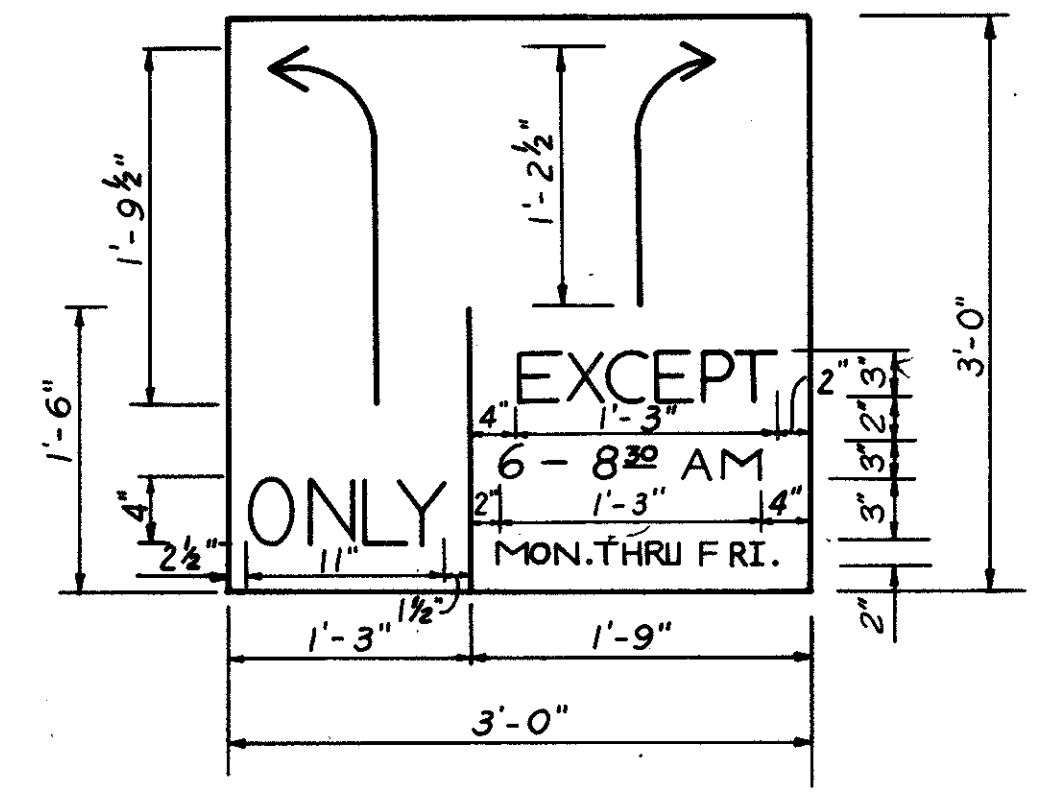
- EXISTING SIGN & SUPPORT(S) TO BE REPLACED , EXCEPT AS NOTED .
- NEW SIGN TO BE PROVIDED UNDER ANOTHER CONTRACT .
- NEW SUPPORT(S) TO BE PROVIDED FOR EXISTING SIGN (EXISTING SIGN REPLACED UNDER ANOTHER CONTRACT .)
- NEW SIGN & SUPPORT(S) .
- EXISTING SIGN REMOVED FOR STORAGE .



MADE M.J.P. DATE 8-16-88
TRACED T.D. DATE 8-19-88
CHECKED J.M.W. DATE 8-23-88
SCALE 1"=50'
Howard, Needles, Tammen & Bergendoff
CONSULTING ENGINEERS
CLEVELAND, OHIO

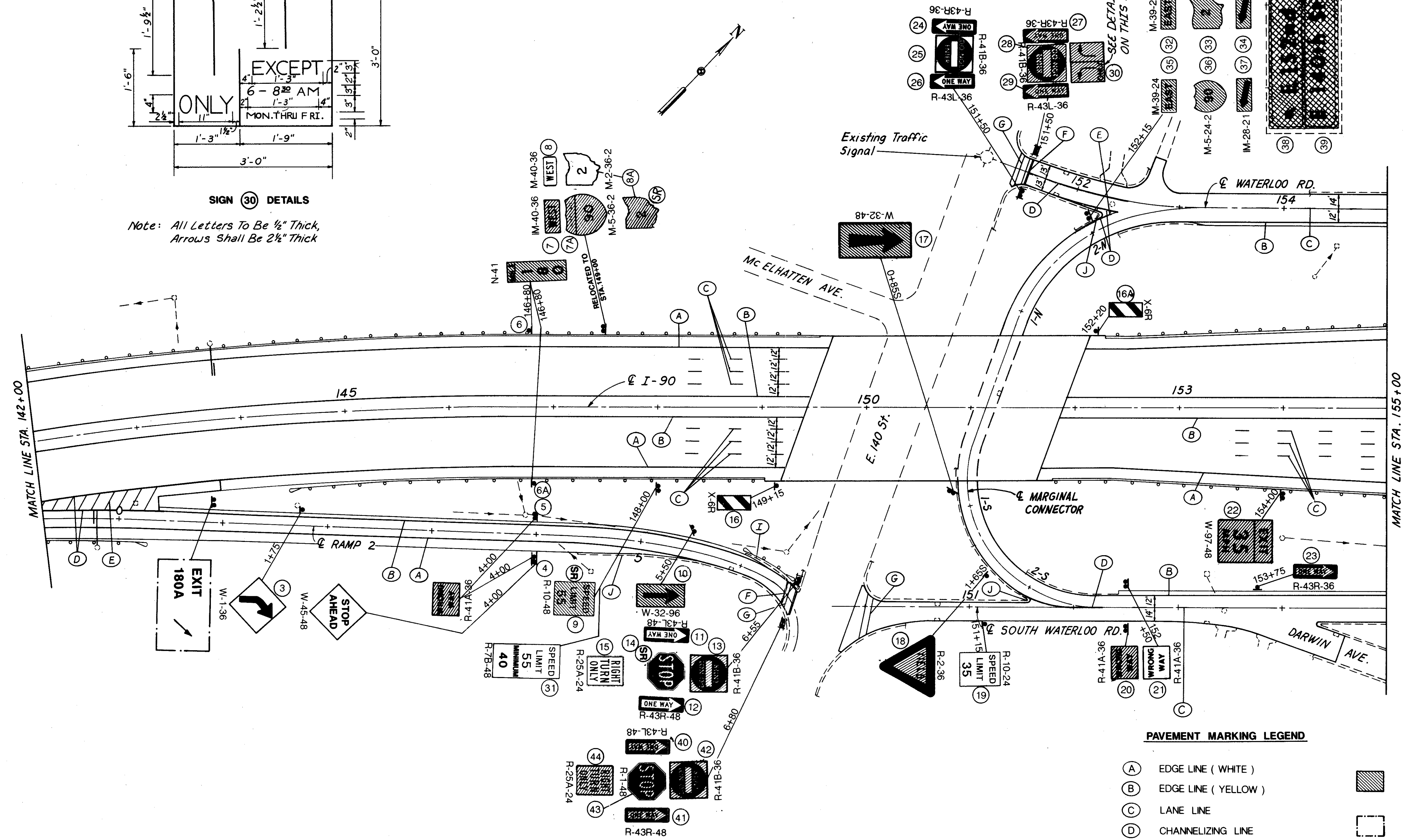


CUYAHOGA COUNTY
 CUY - 90-23.95
 LAKE COUNTY
 LAK - 90-0.00



SIGN 30 DETAILS

Note: All Letters To Be 1/2" Thick,
 Arrows Shall Be 2 1/2" Thick

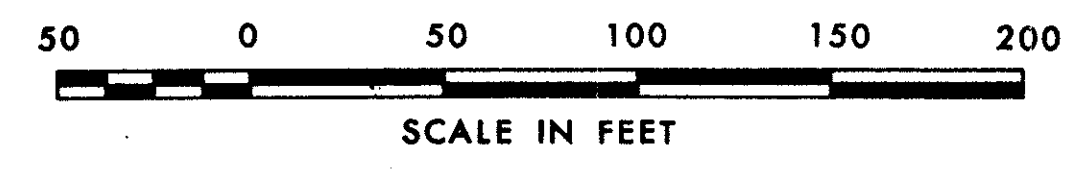


PAVEMENT MARKING LEGEND

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- (G) CROSSWALK LINE
- (H) DOUBLE SOLID YELLOW CENTERLINE
- (I) CURB MARKING, (YELLOW)
- (J) CURB MARKING, (WHITE)

SIGN LEGEND

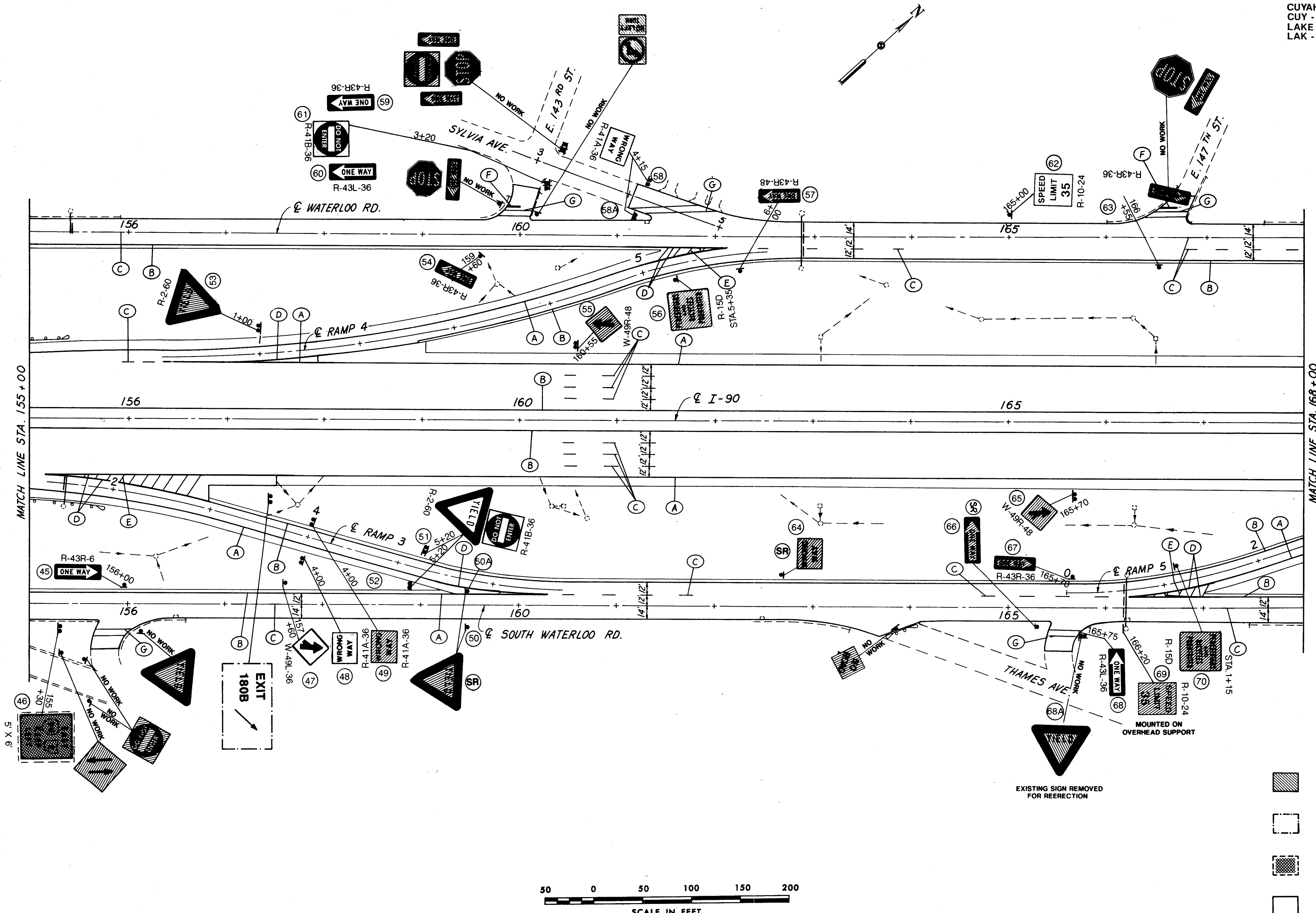
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FHWA REGION	STATE	PROJECT
5	OHIO	

148
200


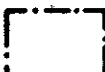



CUYAHOGA COUNTY
CUY - 90-23.95
LAKE COUNTY
LAK - 90-0.00

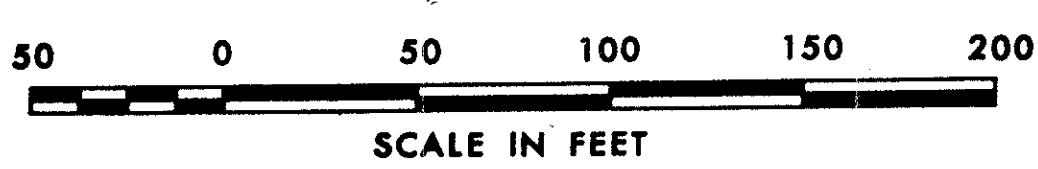


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- (G) CROSSWALK LINE
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- (I) CURB MARKING . (YELLOW)
- (J) CURB MARKING . (WHITE)

SIGN LEGEND

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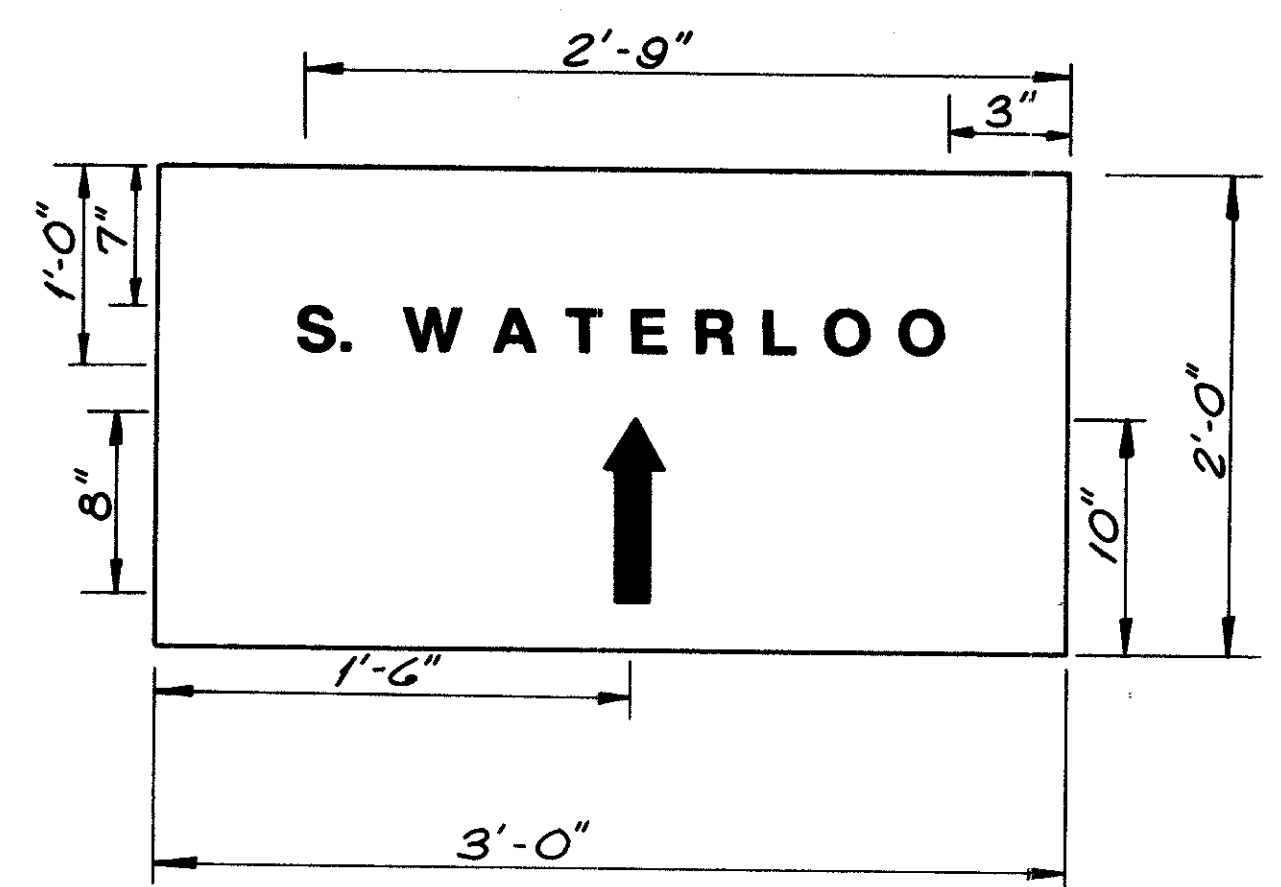


MADE M.J.P. DATE 8-16-88
TRACED J.D. DATE 8-22-88
CHECKED J.M.W. DATE 8-22-88
SCALE 1"=50'

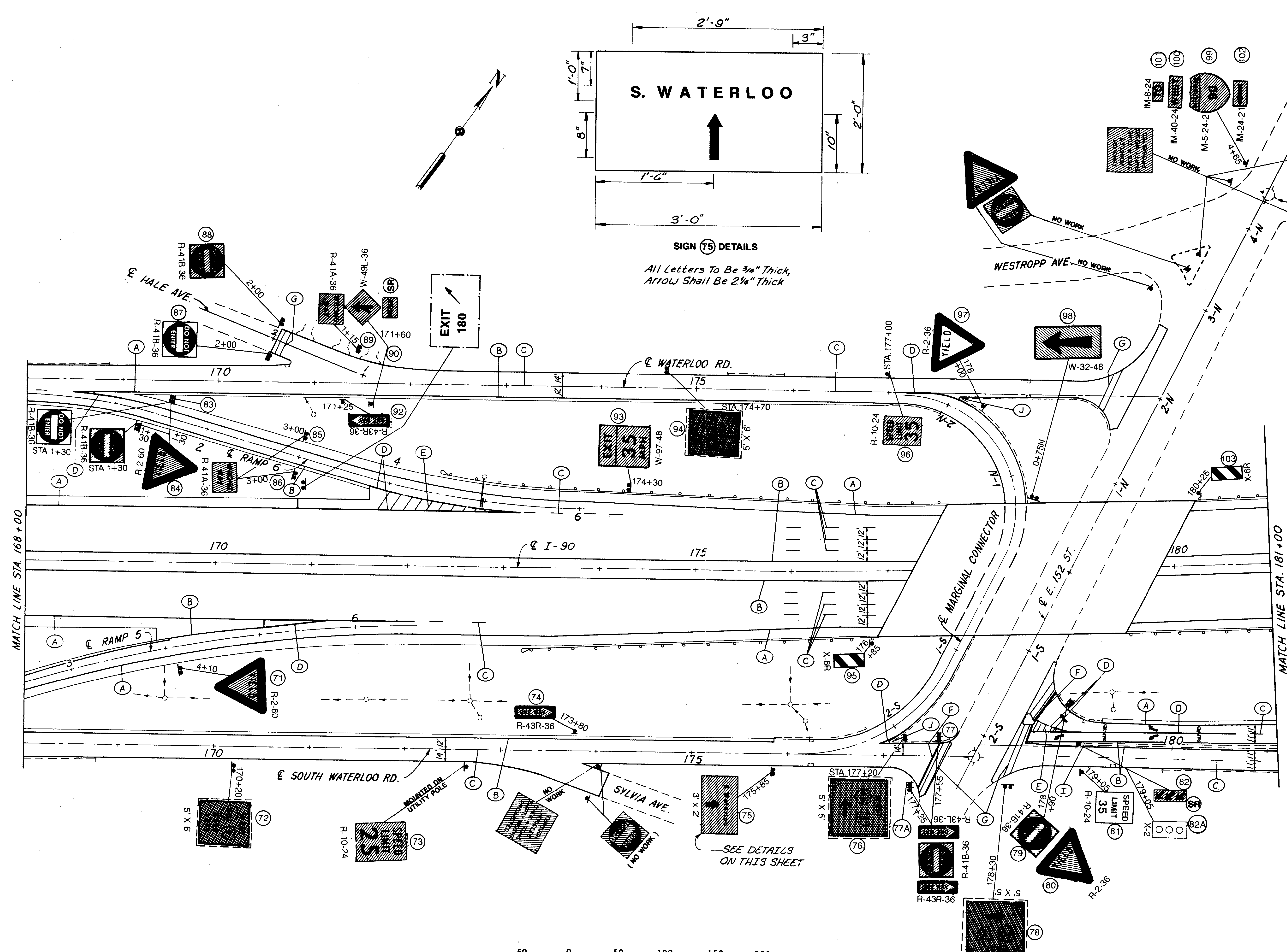
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CONSULTING ENGINEERS
CLEVELAND, OHIO

HNTB

CUYAHOGA COUNTY
 CUY - 90-23.95
 LAKE COUNTY
 LAK - 90-0.00



SIGN (75) DETAILS
 All Letters To Be 3/4" Thick,
 Arrow Shall Be 2 1/4" Thick



PAVEMENT MARKING LEGEND

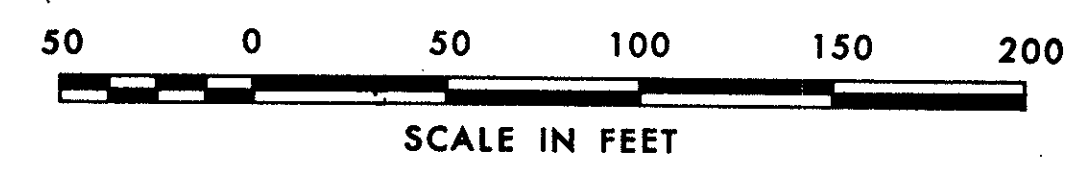
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- (D) CHANNELIZING LINE
- (E) TRANSVERSE LINE, 12' C/C
- (F) STOP LINE
- (G) CROSSWALK LINE
- (H) DOUBLE SOLID YELLOW CENTERLINE
- (I) CURB MARKING, (YELLOW)
- (J) CURB MARKING, (WHITE)

SIGN LEGEND

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MADE M.I.P. DATE 8-14-88
 TRACED T.D. DATE 8-27-88
 CHECKED J.M.W. DATE 8-22-88
 SCALE 1"=50'

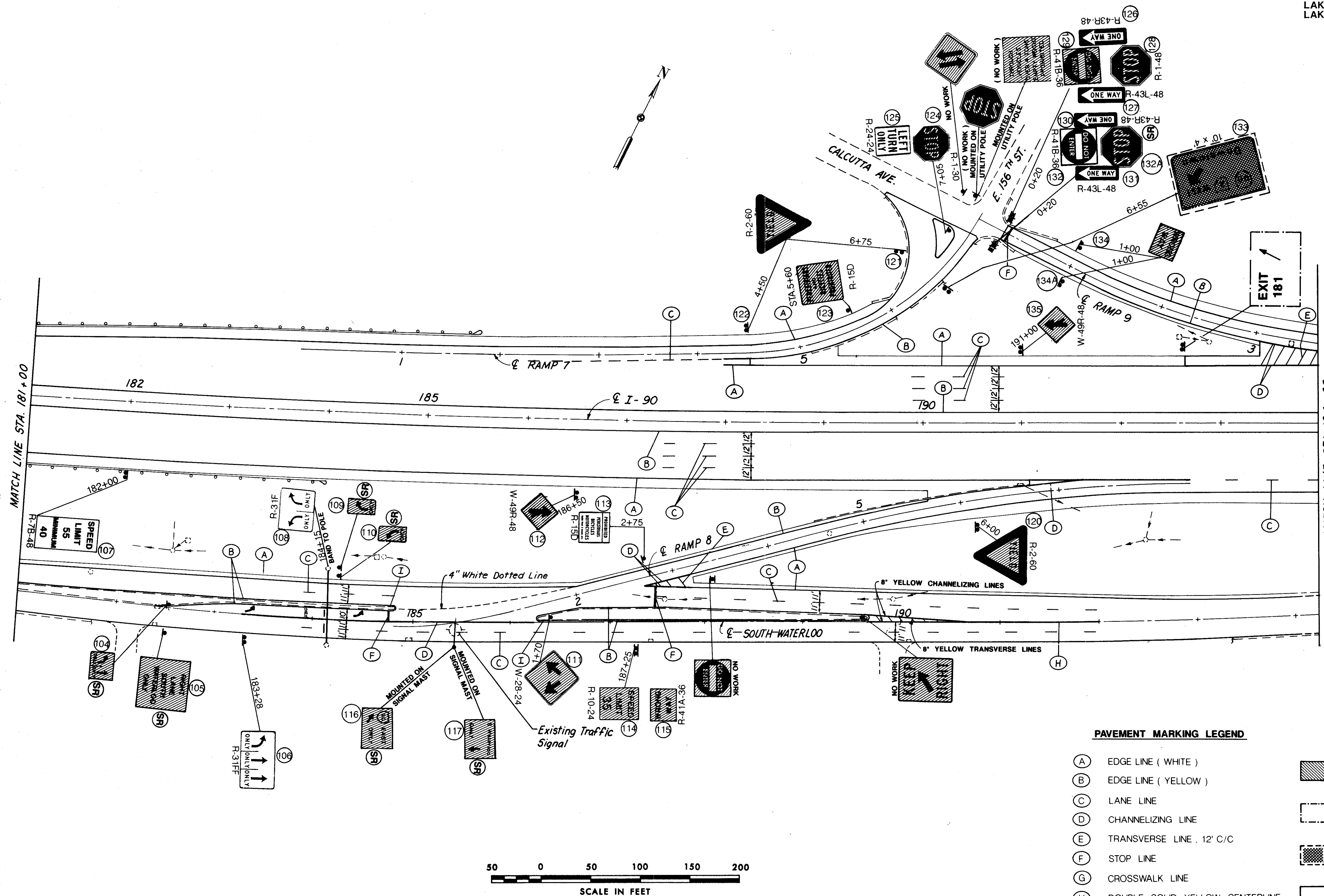
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 CONSULTING ENGINEERS
 CLEVELAND, OHIO



FHWA REGION	STATE	PROJECT	
5	OHIO		

150
200

CUYAHOGA COUNTY
CUY - 90-23.95
LAKE COUNTY
LAK - 90-0.00



PAVEMENT MARKING LEGEND

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MADE M.I.P. DATE 8-6-88
TRACED T.D. DATE 8-17-88
CHECKED I.M.W. DATE 8-23-88
SCALE 1"=50'

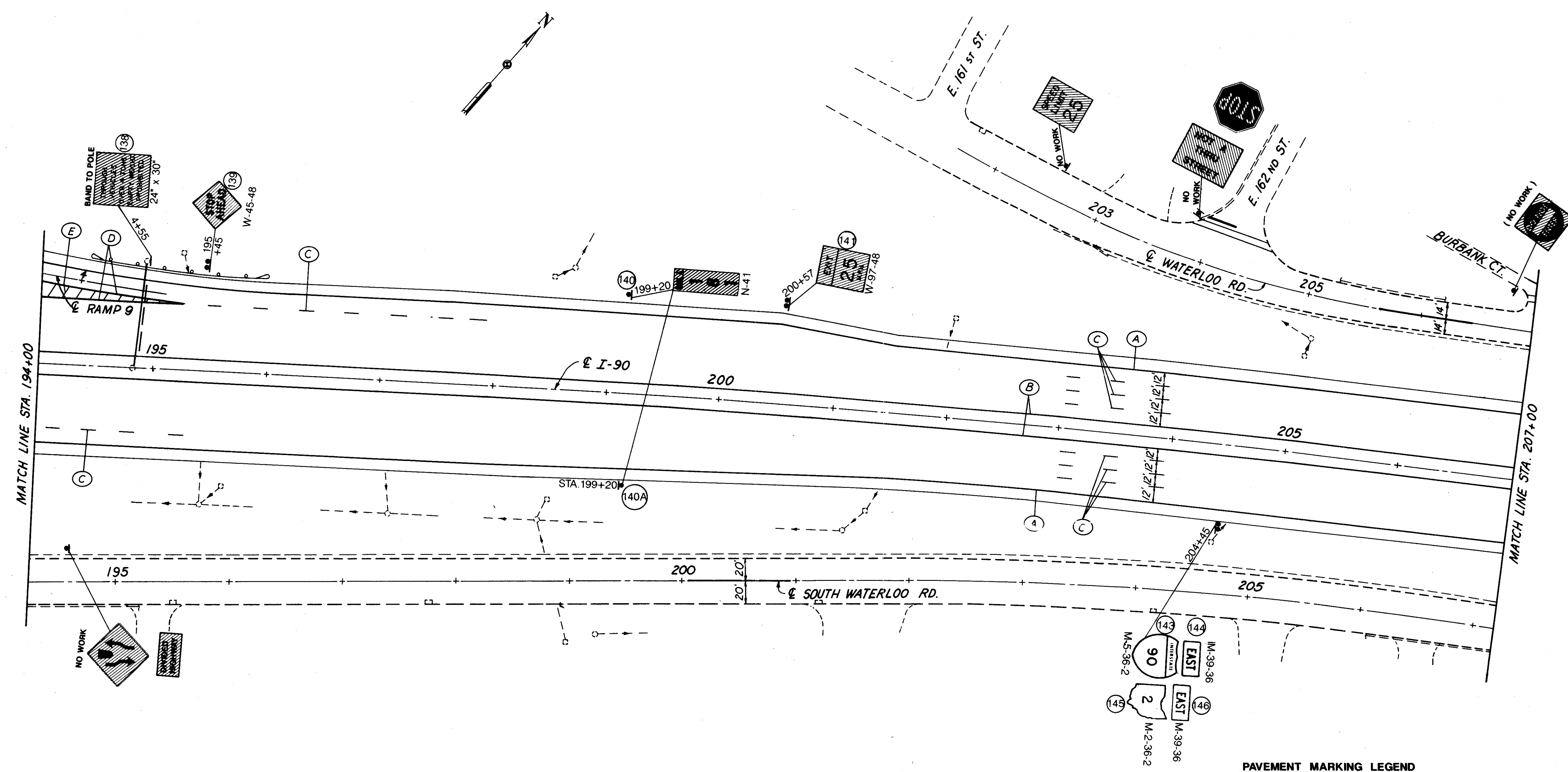
Howard, Needles, Tammen & Bergendoff
CONSULTING ENGINEERS
CLEVELAND, OHIO

HNTB

FHWA REGION	STATE	PROJECT
5	OHIO	

151
200

CUYAHOGA COUNTY
CUY - 90-23.95
LAKE COUNTY
LAK - 90-0.00

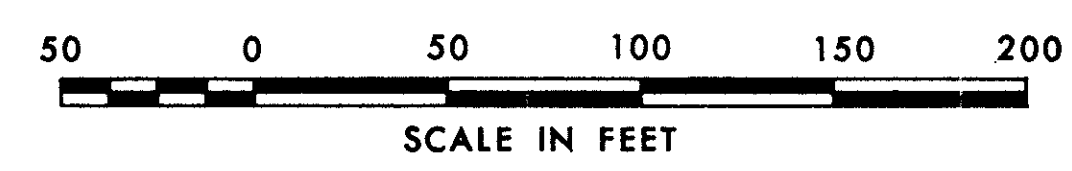


PAVEMENT MARKING LEGEND

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- (D) CHANNELIZING LINE
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- (J) CURB MARKING, (WHITE)

SIGN LEGEND

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MADE M.J.P. DATE 8-16-88
TRACED T.D. DATE 8-21-88
CHECKED J.M.W. DATE 8-22-88
SCALE 1"=50'

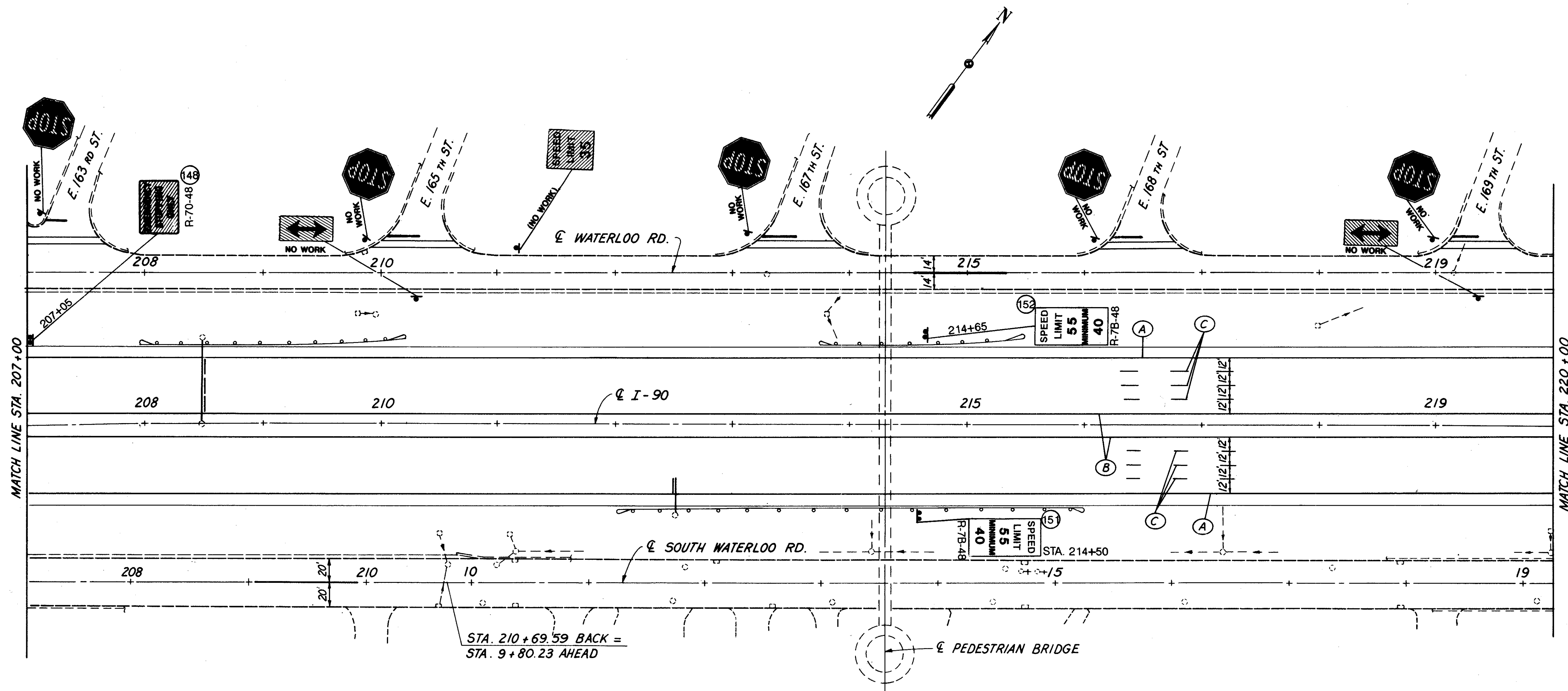
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CLEVELAND, OHIO



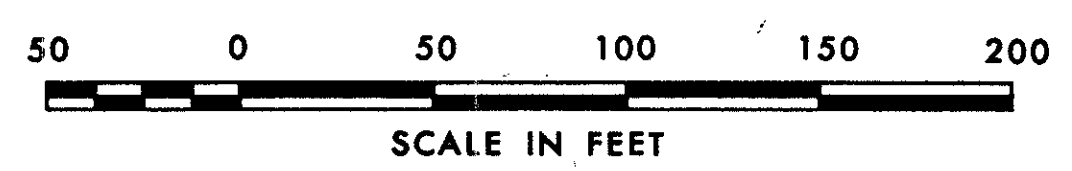
FHWA REGION	STATE	PROJECT	
5	OHIO		

152
200

CUYAHOGA COUNTY
CUY - 90-23.95
LAKE COUNTY
LAK - 90-0.00



STA. 210+69.59 BACK =
STA. 9+80.23 AHEAD



PAVEMENT MARKING LEGEND

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MADE M.J.P. DATE 8-16-88
TRACED F.D. DATE 8-21-88
CHECKED J.M.W. DATE 8-23-88
SCALE 1"=50'

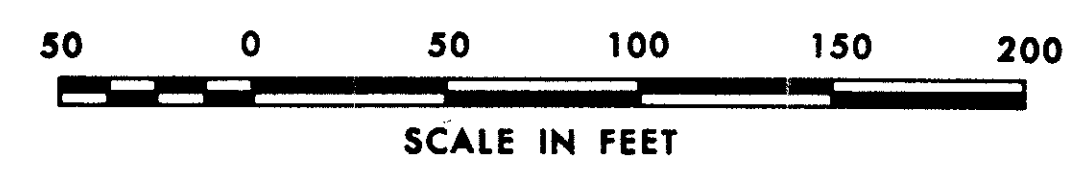
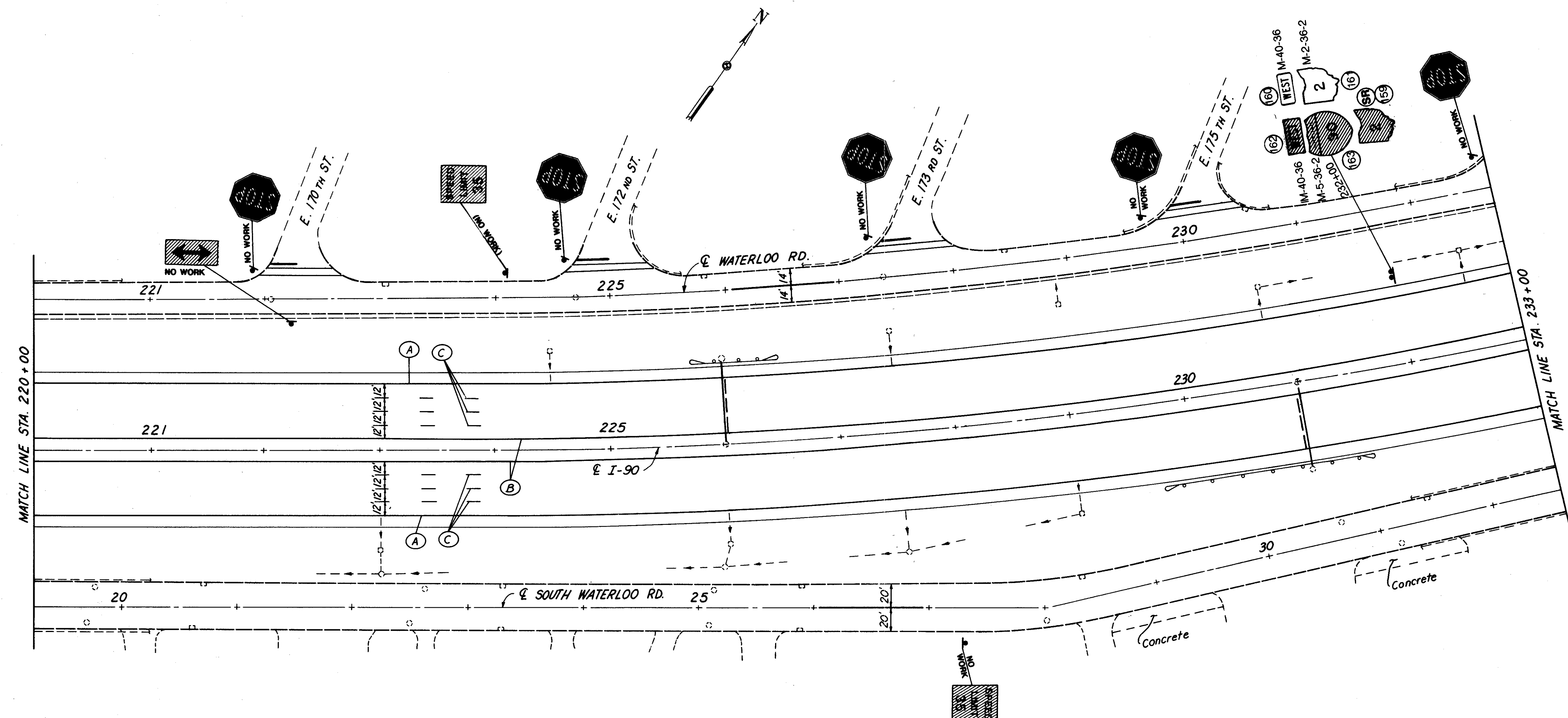
Howard, Needles, Tammen & Bergendoff
CONSULTING ENGINEERS
CLEVELAND, OHIO

HNTB

FHWA REGION	STATE	PROJECT	
5	OHIO		

153
200

CUYAHOGA COUNTY
CUY - 90-23.95
LAKE COUNTY
LAK - 90-0.00



PAVEMENT MARKING LEGEND

- (A) EDGE LINE (WHITE)
- (B) EDGE LINE (YELLOW)
- (C) LANE LINE
- (D) CHANNELIZING LINE
- (E) TRANSVERSE LINE, 12' C/C
- (F) STOP LINE
- (G) CROSSWALK LINE
- (H) DOUBLE SOLID YELLOW CENTERLINE
- (I) CURB MARKING, (YELLOW)
- (J) CURB MARKING, (WHITE)

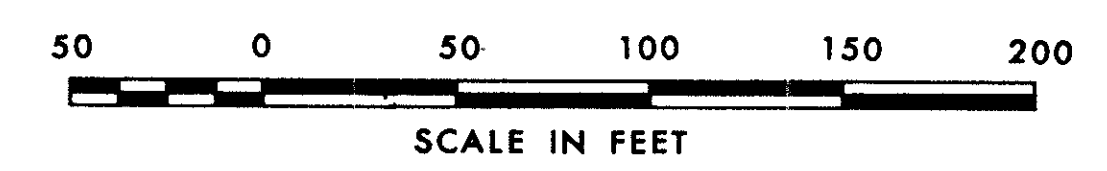
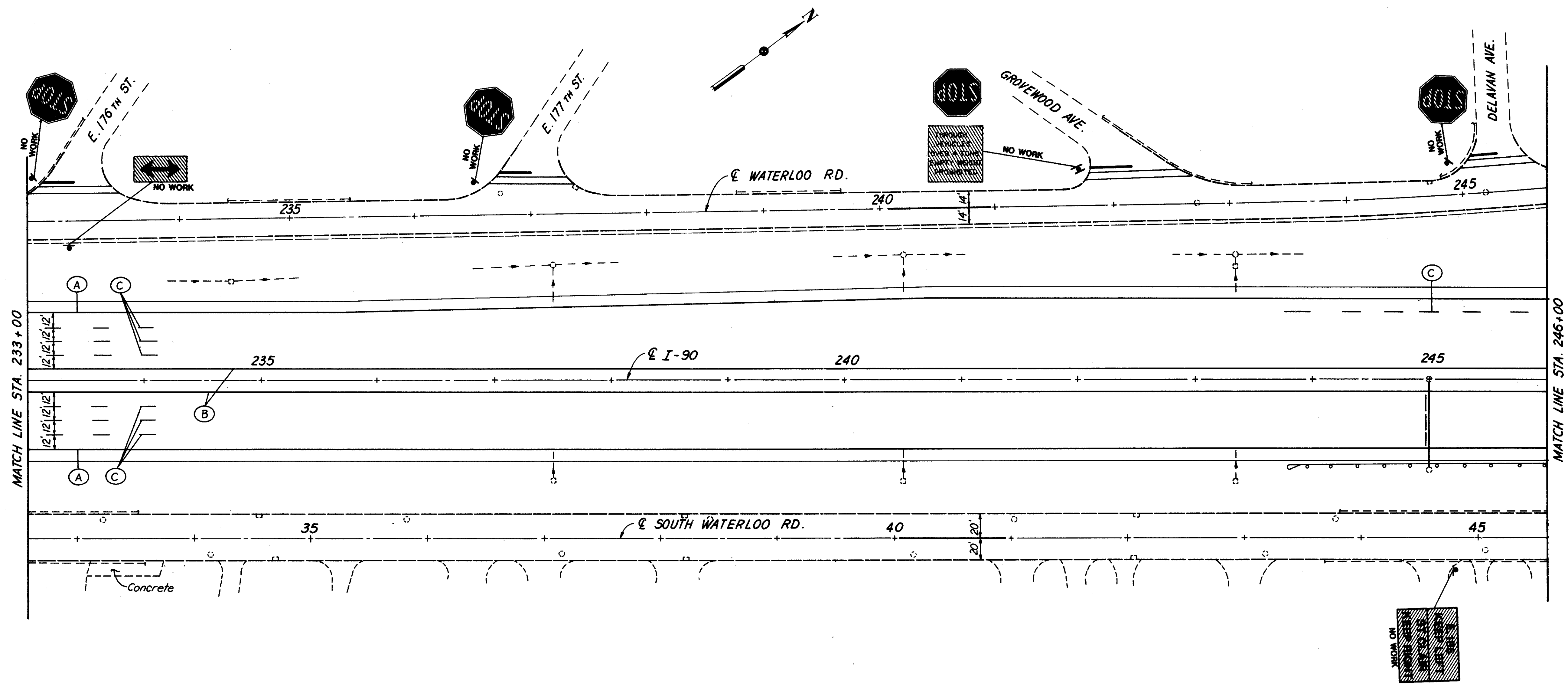
SIGN LEGEND

- EXISTING SIGN & SUPPORT(S) TO BE REPLACED, EXCEPT AS NOTED.
- NEW SIGN TO BE PROVIDED UNDER ANOTHER CONTRACT.
- NEW SUPPORT(S) TO BE PROVIDED FOR EXISTING SIGN (EXISTING SIGN REPLACED UNDER ANOTHER CONTRACT.)
- NEW SIGN & SUPPORT(S).
- EXISTING SIGN REMOVED FOR STORAGE.

FRWA REGION	STATE	PROJECT
5	OHIO	

154
200

CUYAHOGA COUNTY
CUY - 90-23.95
LAKE COUNTY
LAK - 90-0.00



PAVEMENT MARKING LEGEND

- (A) EDGE LINE (WHITE)
- (B) EDGE LINE (YELLOW)
- (C) LANE LINE
- (D) CHANNELIZING LINE
- (E) TRANSVERSE LINE, 12' C/C
- (F) STOP LINE
- (G) CROSSWALK LINE
- (H) DOUBLE SOLID YELLOW CENTERLINE
- (I) CURB MARKING, (YELLOW)
- (J) CURB MARKING, (WHITE)

SIGN LEGEND

- EXISTING SIGN & SUPPORT(S) TO BE REPLACED, EXCEPT AS NOTED.
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- NEW SIGN & SUPPORT(S).
- EXISTING SIGN REMOVED FOR STORAGE.

MADE M.J.P. DATE 8-16-88
TRACED J.D. DATE 8-21-88
CHECKED J.M.W. DATE 8-25-88
SCALE 1"=50'

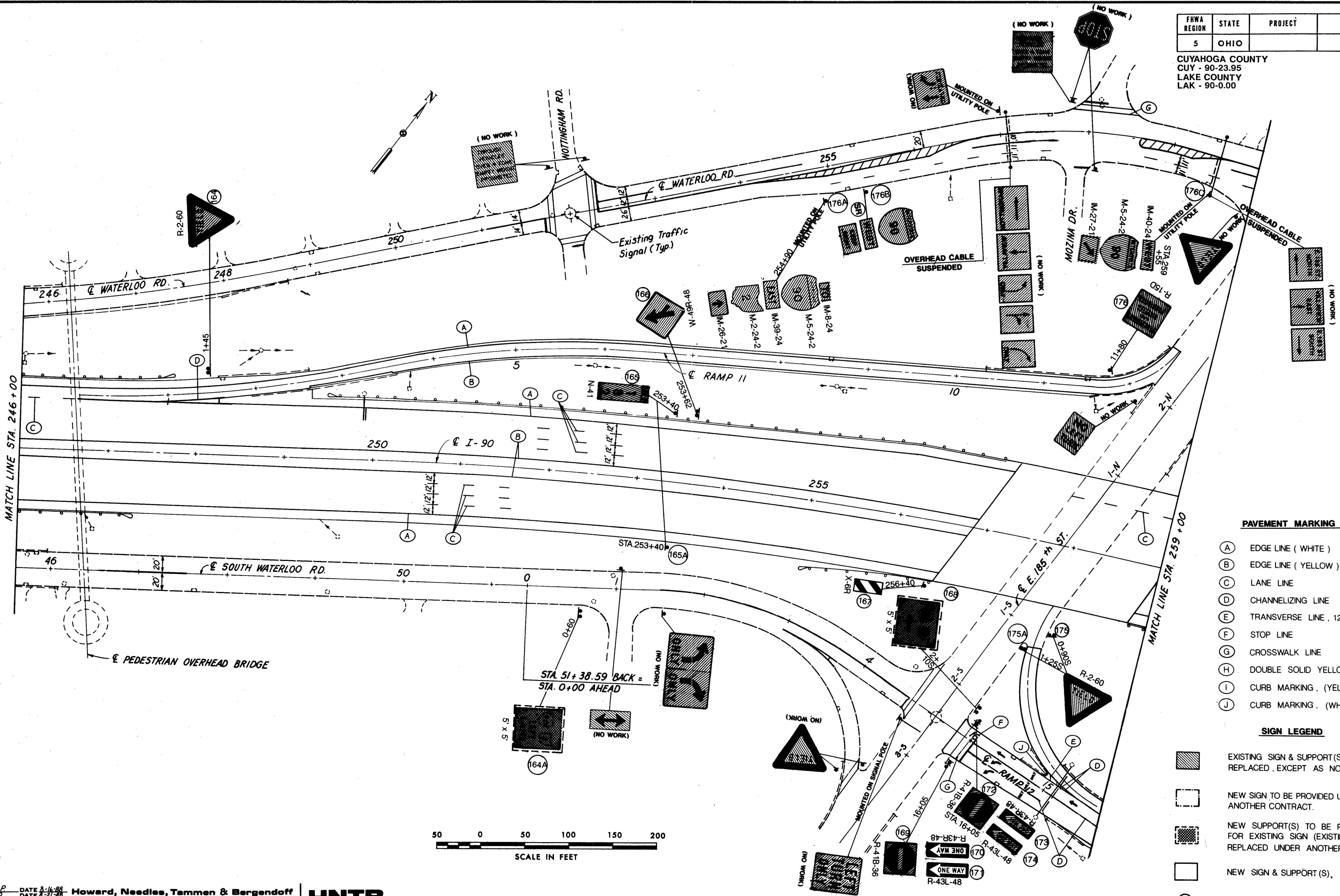
Howard, Needles, Tammen & Bergendoff
CONSULTING ENGINEERS
CLEVELAND, OHIO

HNTB

FHWA REGION	STATE	PROJECT
5	OHIO	

155
200

CUYAHOGA COUNTY
CUY - 90-23.95
LAKE COUNTY
LAK - 90-0.00



PAVEMENT MARKING LEGEND

- (A) EDGE LINE (WHITE)
- (B) EDGE LINE (YELLOW)
- (C) LANE LINE
- (D) CHANNELIZING LINE
- (E) TRANSVERSE LINE, 12' C/C
- (F) STOP LINE
- (G) CROSSWALK LINE
- (H) DOUBLE SOLID YELLOW CENTERLINE
- (I) CURB MARKING, (YELLOW)
- (J) CURB MARKING, (WHITE)

SIGN LEGEND

- EXISTING SIGN & SUPPORT(S) TO BE REPLACED, EXCEPT AS NOTED
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- NEW SUPPORT(S) TO BE PROVIDED FOR EXISTING SIGN (EXISTING SIGN REPLACED UNDER ANOTHER CONTRACT.)
- NEW SIGN & SUPPORT(S).
- EXISTING SIGN REMOVED FOR STORAGE.

MADE M.J.P. DATE 8-16-88
TRACED T.D. DATE 8-21-88
CHECKED M.W. DATE 8-25-88
SCALE 1"=50'

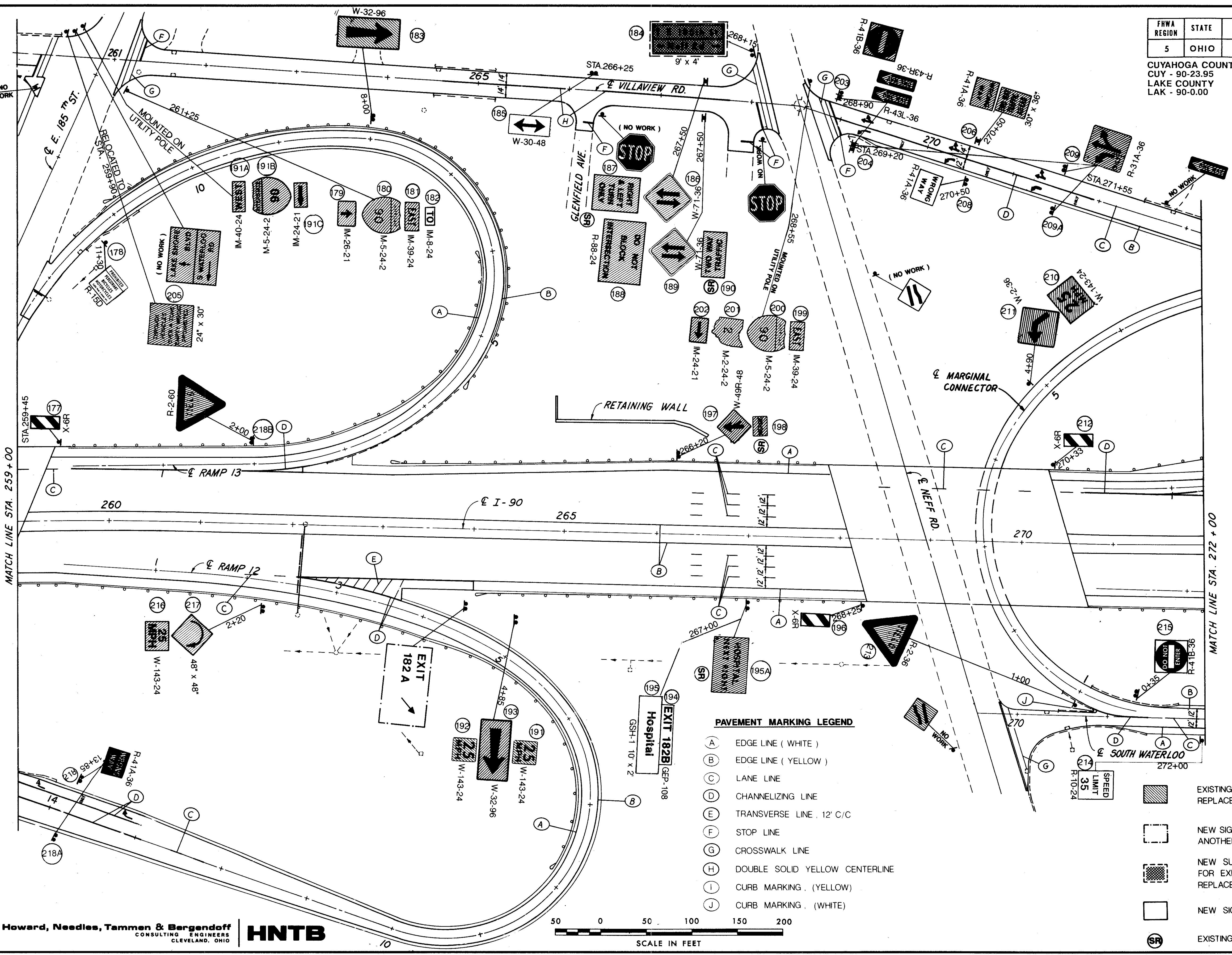
Howard, Needles, Tammen & Bergendoff
CONSULTING ENGINEERS
CLEVELAND, OHIO

HNTB

FHWA REGION	STATE	PROJECT
5	OHIO	

156
200

CUYAHOGA COUNTY
CUY - 90-23.95
LAKE COUNTY
LAK - 90-0.00

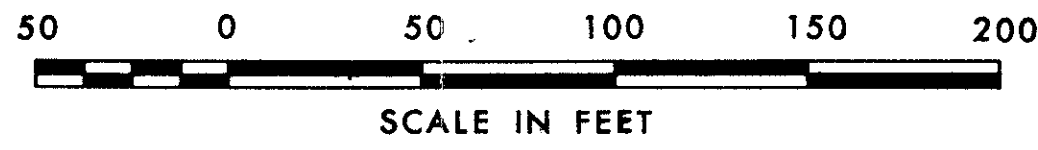


PAVEMENT MARKING LEGEND

- (A) EDGE LINE (WHITE)
- (B) EDGE LINE (YELLOW)
- (C) LANE LINE
- (D) CHANNELIZING LINE
- (E) TRANSVERSE LINE, 12' C/C
- (F) STOP LINE
- (G) CROSSWALK LINE
- (H) DOUBLE SOLID YELLOW CENTERLINE
- (I) CURB MARKING, (YELLOW)
- (J) CURB MARKING, (WHITE)

SIGN LEGEND

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- NEW SUPPORT(S) TO BE PROVIDED FOR EXISTING SIGN (EXISTING SIGN REPLACED UNDER ANOTHER CONTRACT.)
- NEW SIGN & SUPPORT(S).
- EXISTING SIGN REMOVED FOR STORAGE.



MADE M.J.P. DATE 8-16-92
TRACED T.D. DATE 8-21-92
CHECKED J.M.W. DATE 8-23-92
SCALE 1"=50'

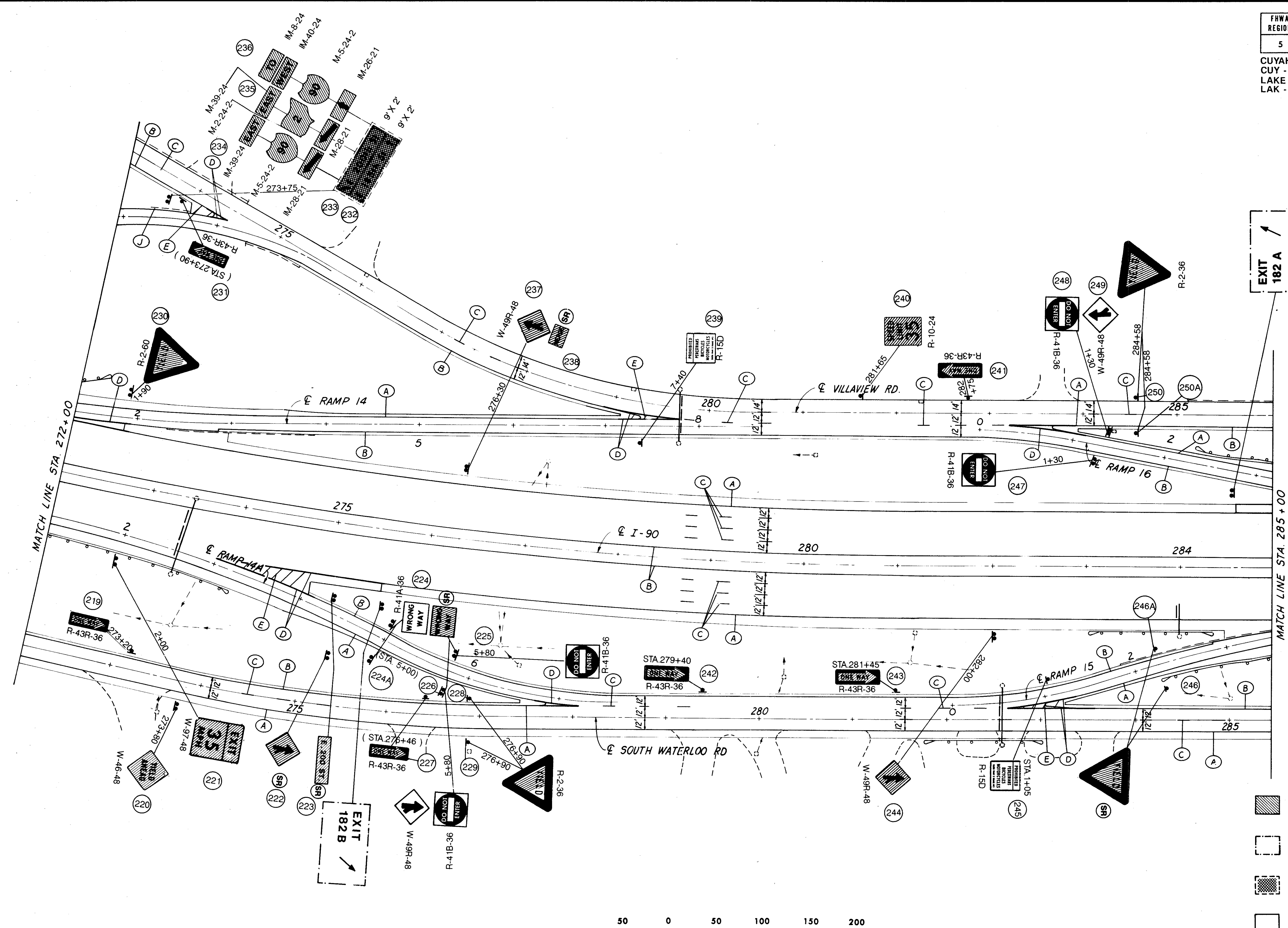
Howard, Needles, Tammen & Bergendoff
CONSULTING ENGINEERS
CLEVELAND, OHIO

HNTB

FHWA REGION	STATE	PROJECT
5	OHIO	

157
200

CUYAHOGA COUNTY
CUY - 90-23.95
LAKE COUNTY
LAK - 90-0.00

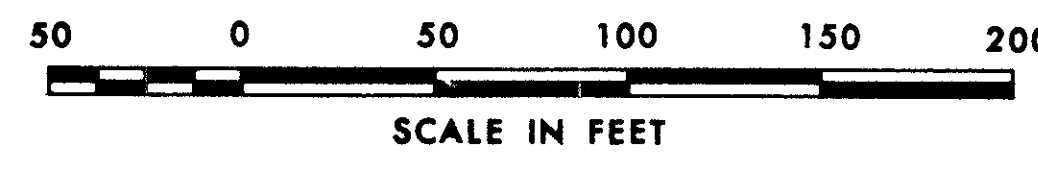


EXIT 182 A

EXIT 182 B

- PAVEMENT MARKING LEGEND**
- (A) EDGE LINE (WHITE)
 - (B) EDGE LINE (YELLOW)
 - (C) LANE LINE
 - (D) CHANNELIZING LINE
 - (E) TRANSVERSE LINE, 12' C/C
 - (F) STOP LINE
 - (G) CROSSWALK LINE
 - (H) DOUBLE SOLID YELLOW CENTERLINE
 - (I) CURB MARKING, (YELLOW)
 - (J) CURB MARKING, (WHITE)

- SIGN LEGEND**
- EXISTING SIGN & SUPPORT(S) TO BE REPLACED, EXCEPT AS NOTED.
 - NEW SIGN TO BE PROVIDED UNDER ANOTHER CONTRACT.
 - NEW SUPPORT(S) TO BE PROVIDED FOR EXISTING SIGN (EXISTING SIGN REPLACED UNDER ANOTHER CONTRACT.)
 - NEW SIGN & SUPPORT(S).
 - EXISTING SIGN REMOVED FOR STORAGE.



MADE M.I.P. DATE 8-16-88
TRACED L.D. DATE 8-21-88
CHECKED J.M.V. DATE 8-23-88
SCALE 1"=50'

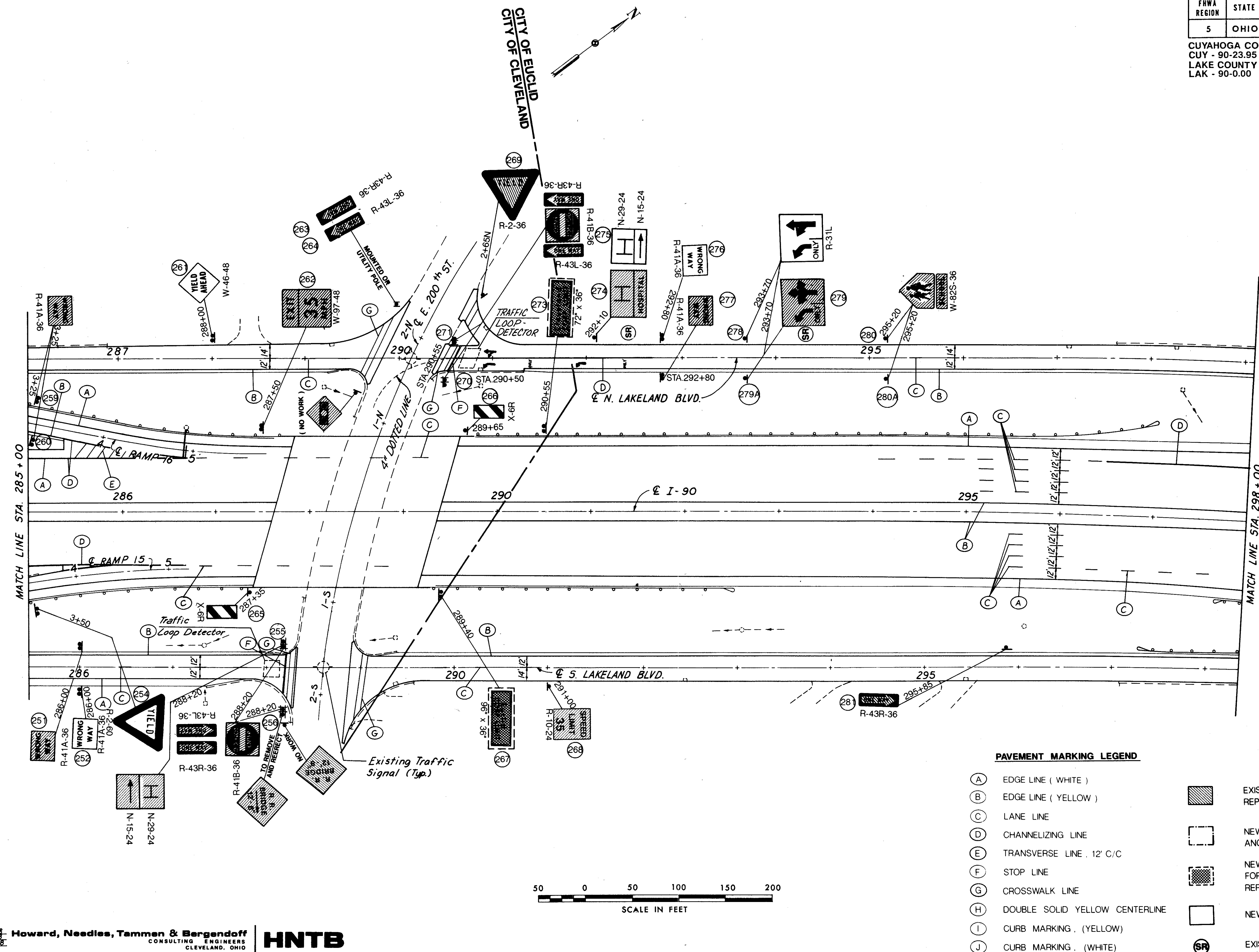
Howard, Needles, Tammen & Bergendoff
CONSULTING ENGINEERS
CLEVELAND, OHIO

HNTB

FHWA REGION	STATE	PROJECT	
5	OHIO		

158
200

CUYAHOGA COUNTY
CUY - 90-23.95
LAKE COUNTY
LAK - 90-0.00



PAVEMENT MARKING LEGEND

- (A) EDGE LINE (WHITE)
- (B) EDGE LINE (YELLOW)
- (C) LANE LINE
- (D) CHANNELIZING LINE
- (E) TRANSVERSE LINE . 12' C/C
- (F) STOP LINE
- (G) CROSSWALK LINE
- (H) DOUBLE SOLID YELLOW CENTERLINE
- (I) CURB MARKING . (YELLOW)
- (J) CURB MARKING . (WHITE)

SIGN LEGEND

- EXISTING SIGN & SUPPORT(S) TO BE REPLACED, EXCEPT AS NOTED.
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- NEW SIGN & SUPPORT(S).
- EXISTING SIGN REMOVED FOR STORAGE.



MADE M.J.P. DATE 8-16-88
TRACED T.D. DATE 4-21-88
CHECKED J.M.W. DATE 8-23-88
SCALE 1"=50'

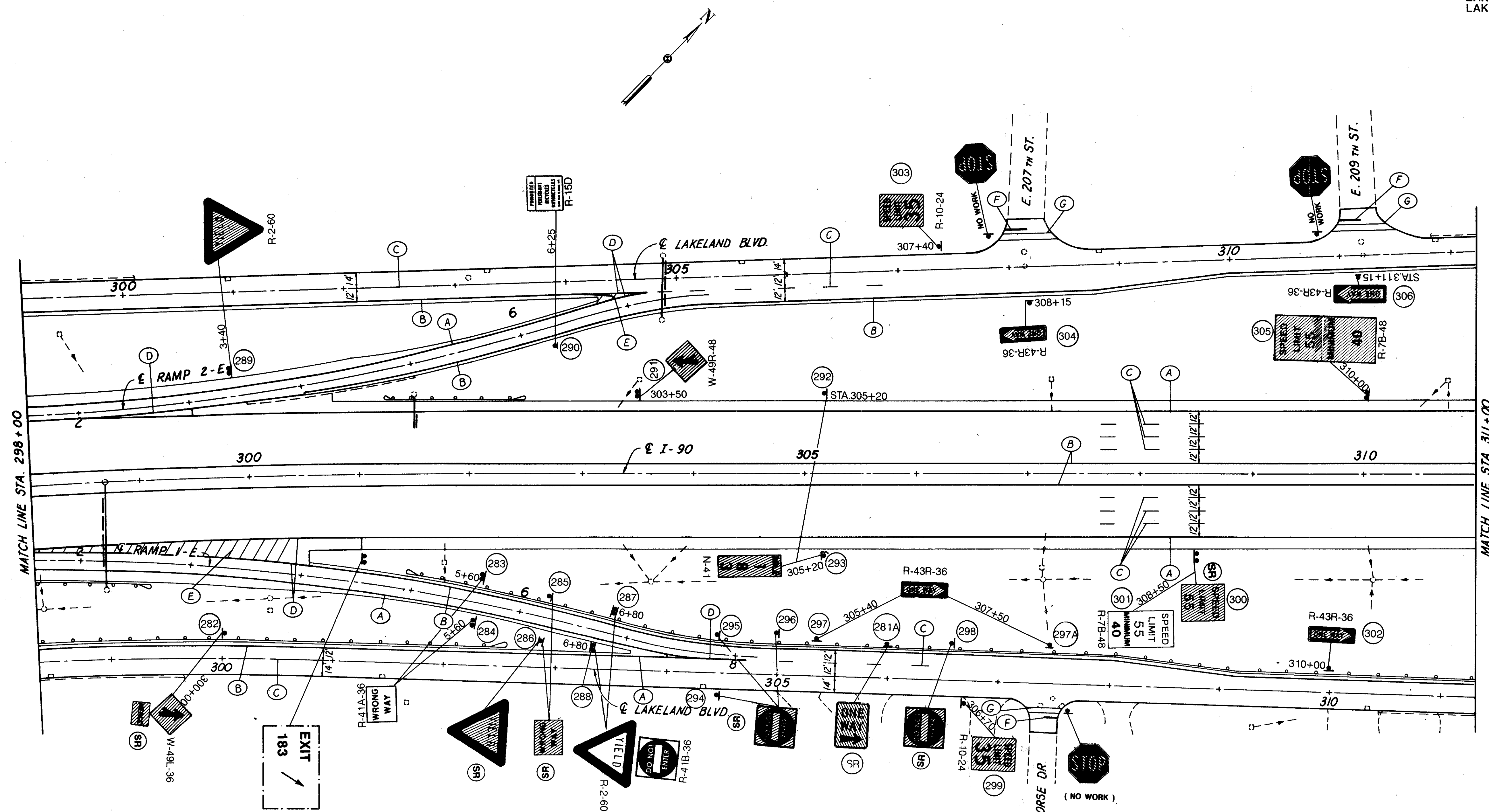
Howard, Needles, Tammen & Bergendoff
CONSULTING ENGINEERS
CLEVELAND, OHIO



FHWA REGION	STATE	PROJECT
5	OHIO	

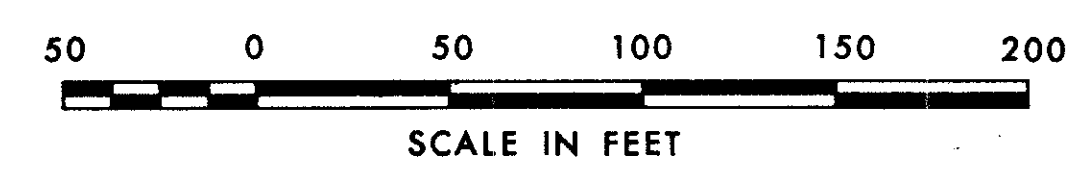
159
200

CUYAHOGA COUNTY
CUY - 90-23.95
LAKE COUNTY
LAK - 90-0.00



MATCH LINE STA. 298+00

MATCH LINE STA. 311+00



PAVEMENT MARKING LEGEND

- (A) EDGE LINE (WHITE)
- (B) EDGE LINE (YELLOW)
- (C) LANE LINE
- (D) CHANNELIZING LINE
- (E) TRANSVERSE LINE, 12' C/C
- (F) STOP LINE
- (G) CROSSWALK LINE
- (H) DOUBLE SOLID YELLOW CENTERLINE
- (I) CURB MARKING, (YELLOW)
- (J) CURB MARKING, (WHITE)

SIGN LEGEND

- EXISTING SIGN & SUPPORT(S) TO BE REPLACED, EXCEPT AS NOTED.
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- NEW SIGN & SUPPORT(S).
- EXISTING SIGN REMOVED FOR STORAGE.

MADE M.J.P. DATE 8-16-88
TRACED T.D. DATE 8-23-88
CHECKED J.M.W. DATE 8-23-88
SCALE 1"=50'

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

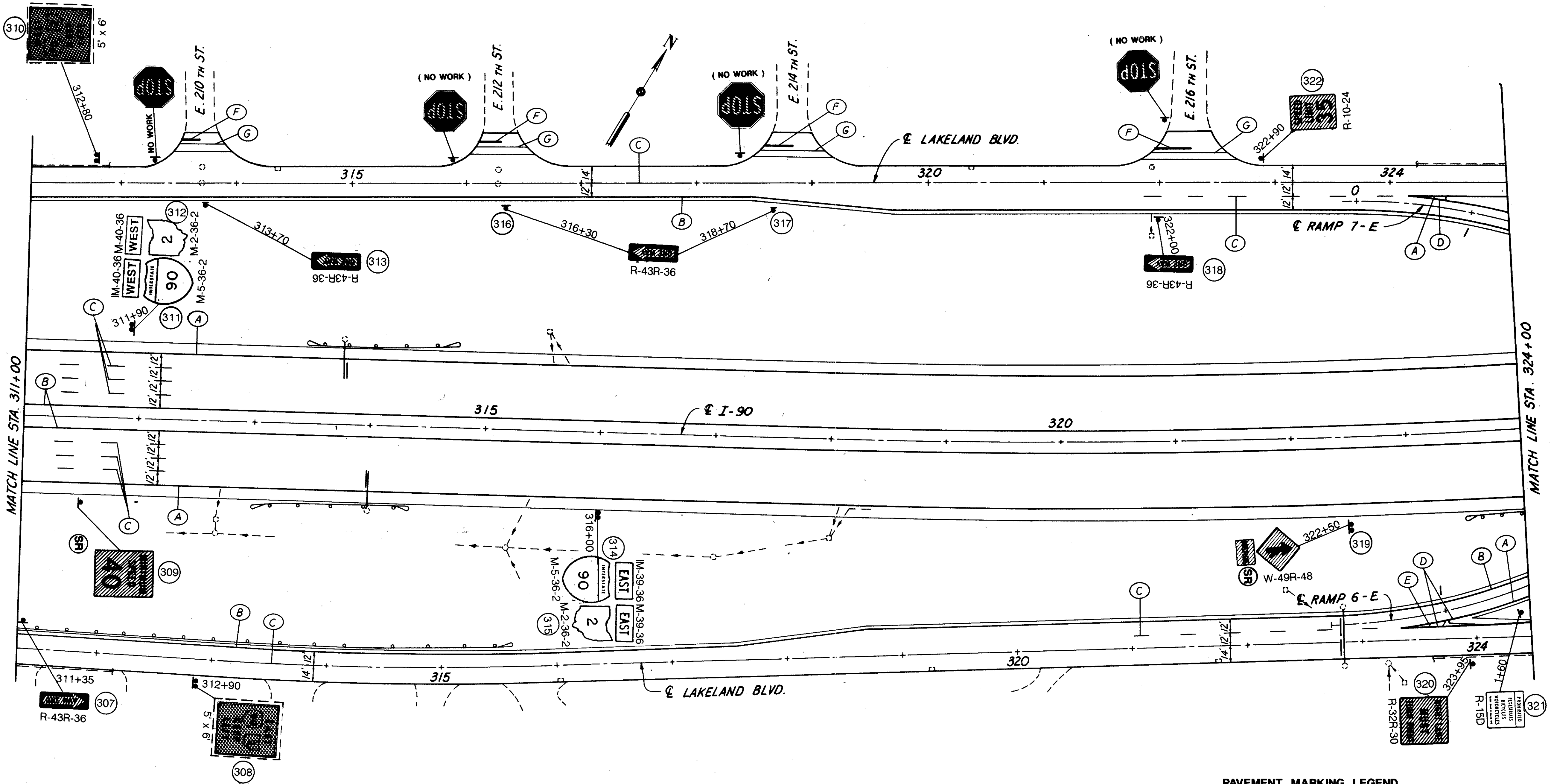
HNTB

R-11

FHWA REGION	STATE	PROJECT	
5	OHIO		

CUYAHOGA COUNTY
 CUY - 90-23.95
 LAKE COUNTY
 LAK - 90-0.00

160
200

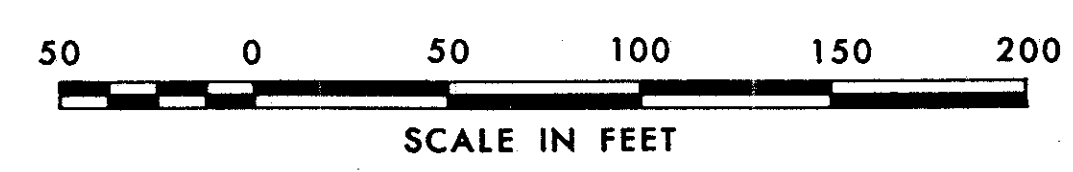


PAVEMENT MARKING LEGEND

- (A) EDGE LINE (WHITE)
- (B) EDGE LINE (YELLOW)
- (C) LANE LINE
- (D) CHANNELIZING LINE
- (E) TRANSVERSE LINE, 12' C/C
- (F) STOP LINE
- (G) CROSSWALK LINE
- (H) DOUBLE SOLID YELLOW CENTERLINE
- (I) CURB MARKING, (YELLOW)
- (J) CURB MARKING, (WHITE)

SIGN LEGEND

- EXISTING SIGN & SUPPORT(S) TO BE REPLACED, EXCEPT AS NOTED.
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- NEW SUPPORT(S) TO BE PROVIDED FOR EXISTING SIGN (EXISTING SIGN REPLACED UNDER ANOTHER CONTRACT.)
- NEW SIGN & SUPPORT(S).
- EXISTING SIGN REMOVED FOR STORAGE.



MADE M.J.P. DATE 8-16-99
 TRACED T.D. DATE 8-23-99
 CHECKED J.M.W. DATE 8-23-99
 SCALE 1"=50'

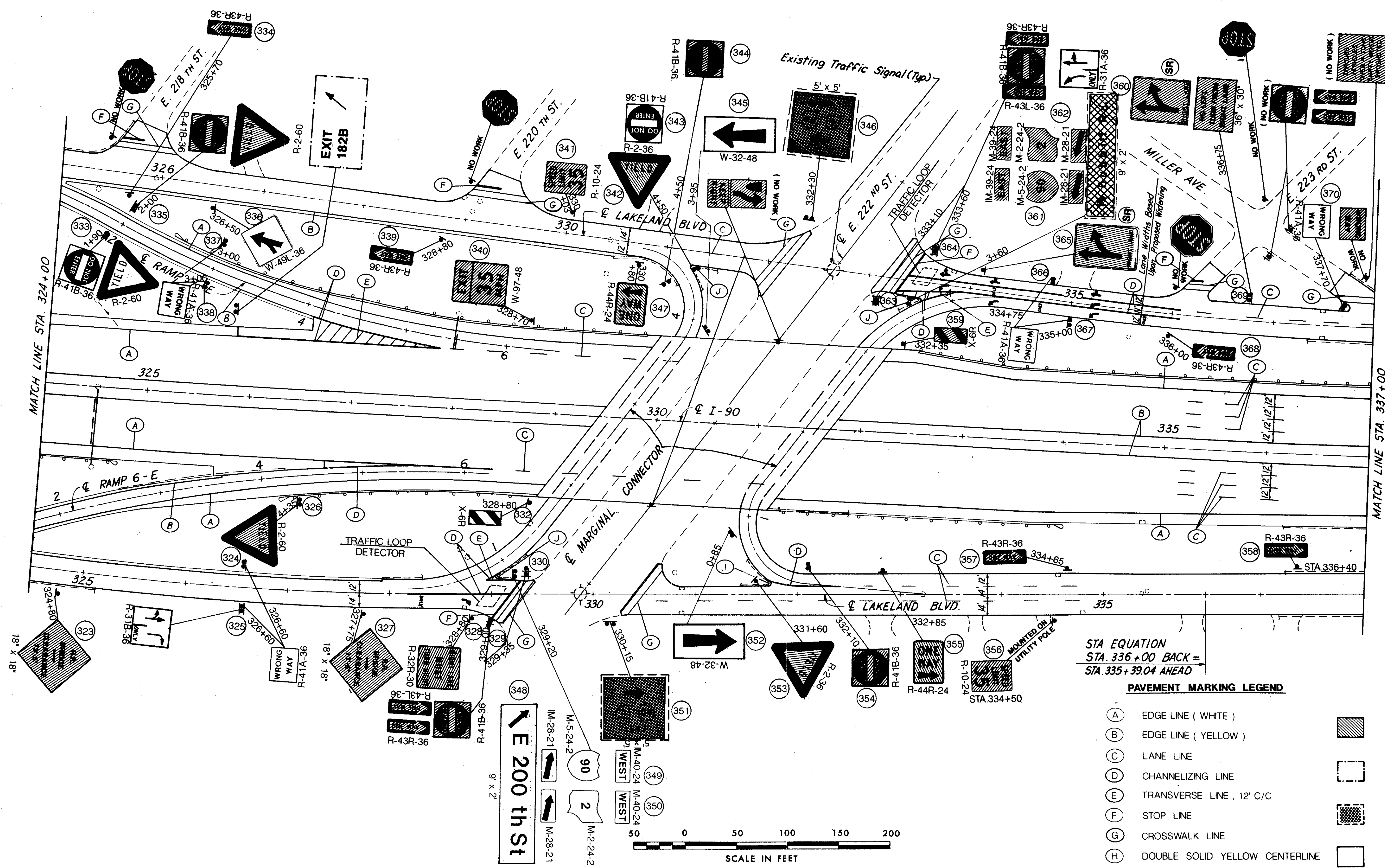
Howard, Needles, Tammen & Bergendoff
 CONSULTING ENGINEERS
 CLEVELAND, OHIO



FHWA REGION	STATE	PROJECT
5	OHIO	

161
200

CUYAHOGA COUNTY
CUY - 90-23.95
LAKE COUNTY
LAK - 90-0.00



STA EQUATION
STA. 336+00 BACK =
STA. 335+39.04 AHEAD

PAVEMENT MARKING LEGEND

- (A) EDGE LINE (WHITE)
- (B) EDGE LINE (YELLOW)
- (C) LANE LINE
- (D) CHANNELIZING LINE
- (E) TRANSVERSE LINE, 12' C/C
- (F) STOP LINE
- (G) CROSSWALK LINE
- (H) DOUBLE SOLID YELLOW CENTERLINE
- (I) CURB MARKING, (YELLOW)
- (J) CURB MARKING, (WHITE)

SIGN LEGEND

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- NEW SIGN & SUPPORT(S).
- EXISTING SIGN REMOVED FOR STORAGE.

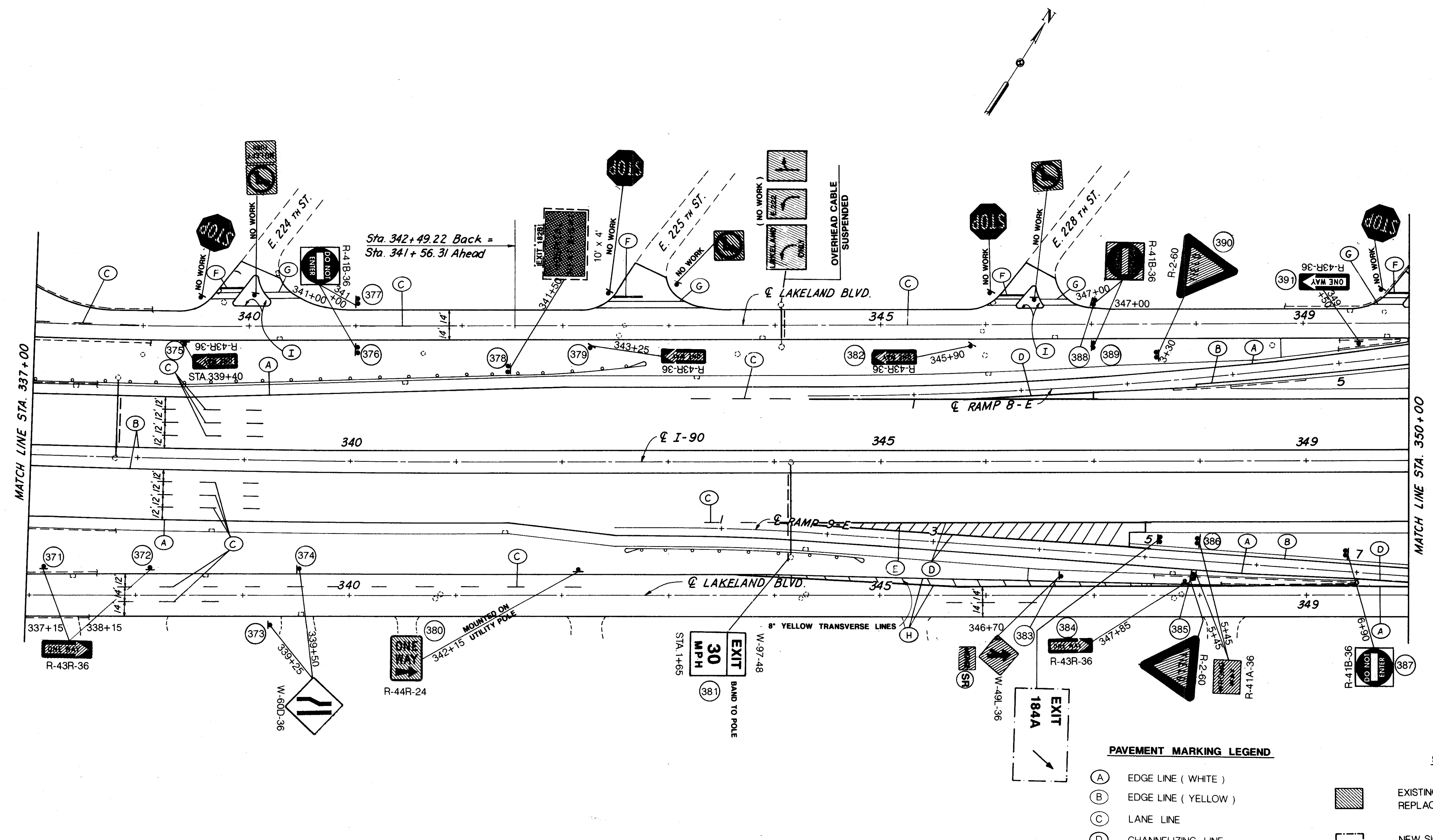
MADE M.I.P. DATE 8-16-88
TRACED T.D. DATE 2-7-89
CHECKED J.M.W. DATE 2-23-88
SCALE 1" = 50'
Howard, Needles, Tammen & Bergendoff
CONSULTING ENGINEERS
CLEVELAND, OHIO

HNTB

FHWA REGION	STATE	PROJECT
5	OHIO	

162
200

CUYAHOGA COUNTY
CUY - 90-23.95
LAKE COUNTY
LAK - 90-0.00

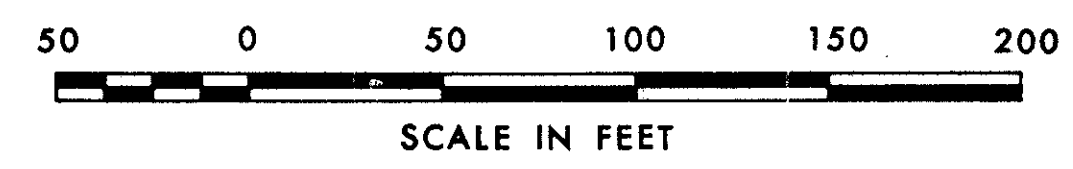


PAVEMENT MARKING LEGEND

- (A) EDGE LINE (WHITE)
- (B) EDGE LINE (YELLOW)
- (C) LANE LINE
- (D) CHANNELIZING LINE
- (E) TRANSVERSE LINE , 12' C/C
- (F) STOP LINE
- (G) CROSSWALK LINE
- (H) DOUBLE SOLID YELLOW CENTERLINE
- (I) CURB MARKING . (YELLOW)
- (J) CURB MARKING . (WHITE)

SIGN LEGEND

- EXISTING SIGN & SUPPORT(S) TO BE REPLACED , EXCEPT AS NOTED .
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- NEW SIGN & SUPPORT(S) .
- EXISTING SIGN REMOVED FOR STORAGE .



MADE M.J.P. DATE 8-4-98
TRACED T.D. DATE 8-12-98
CHECKED J.M.W. DATE 8-23-98
SCALE 1"=50'

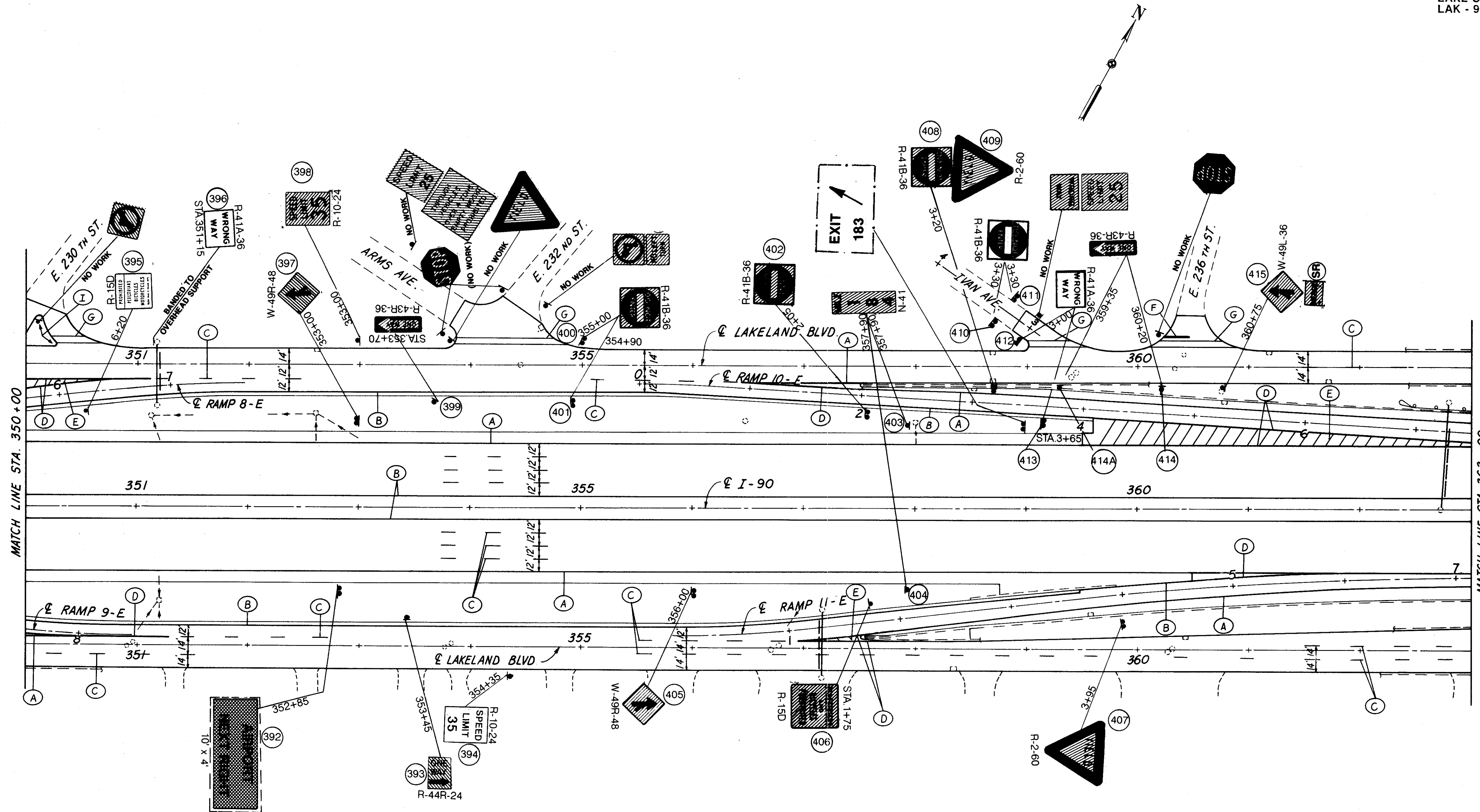
Howard, Needles, Tammen & Bergendoff
CONSULTING ENGINEERS
CLEVELAND, OHIO



FHWA REGION	STATE	PROJECT
5	OHIO	

163
200

CUYAHOGA COUNTY
CUY - 90-23.95
LAKE COUNTY
LAK - 90-0.00



PAVEMENT MARKING LEGEND

- (A) EDGE LINE (WHITE)
- (B) EDGE LINE (YELLOW)
- (C) LANE LINE
- (D) CHANNELIZING LINE
- (E) TRANSVERSE LINE . 12' C/C
- (F) STOP LINE
- (G) CROSSWALK LINE
- (H) DOUBLE SOLID YELLOW CENTERLINE
- (I) CURB MARKING . (YELLOW)
- (J) CURB MARKING . (WHITE)

SIGN LEGEND

- EXISTING SIGN & SUPPORT(S) TO BE REPLACED, EXCEPT AS NOTED.
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- NEW SIGN & SUPPORT(S).
- EXISTING SIGN REMOVED FOR STORAGE.



MADE M.I.P. DATE 8-16-89
TRACED T.D. DATE 8-22-89
CHECKED J.M.W. DATE 8-23-89
SCALE 1"=50'

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



FHWA REGION	STATE	PROJECT
5	OHIO	

164
200

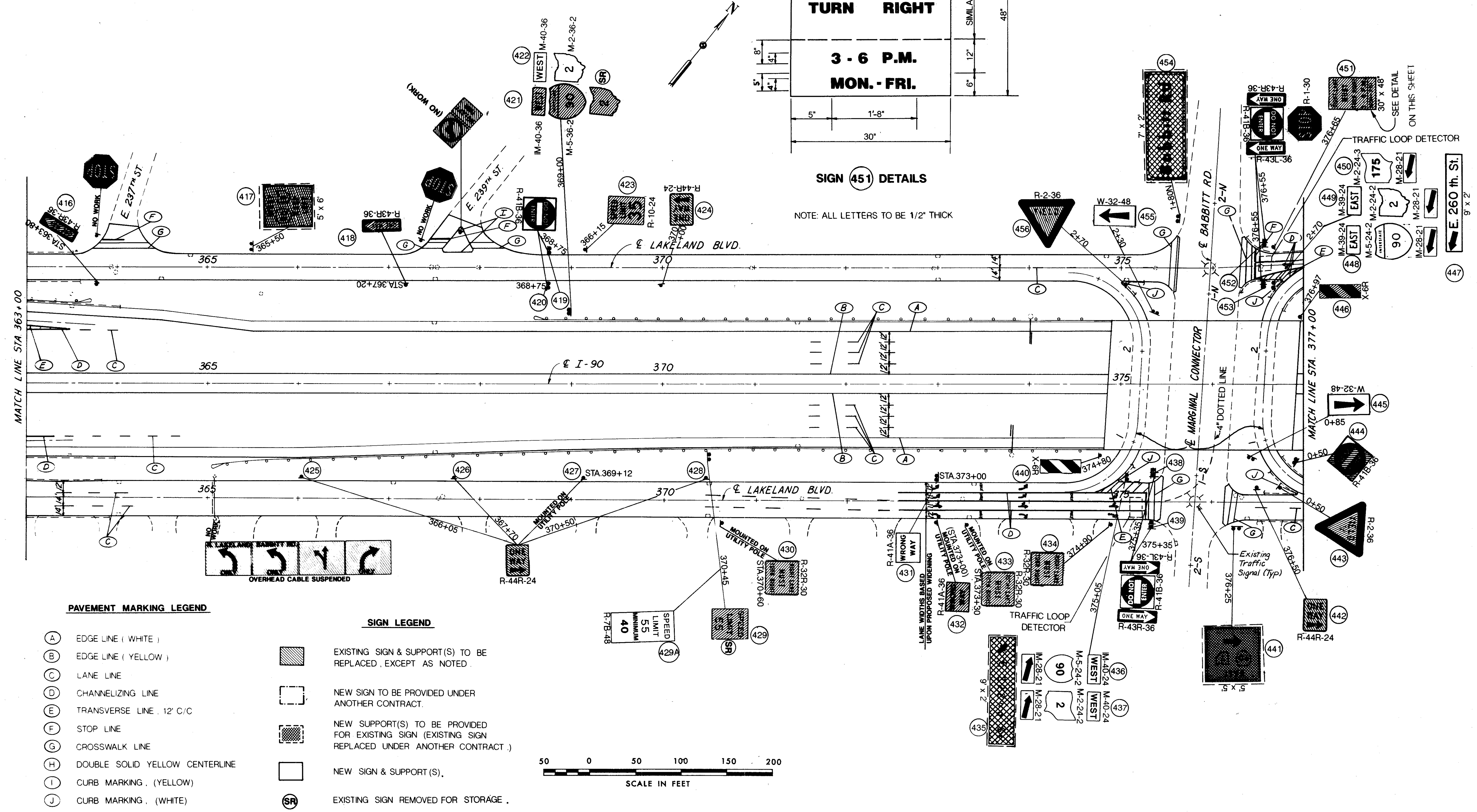
CUYAHOGA COUNTY
CUY - 90-23.95
LAKE COUNTY
LAK - 90-0.00

**RIGHT LANE
MUST
TURN RIGHT**

**3 - 6 P.M.
MON. - FRI.**

SIGN (451) DETAILS

NOTE: ALL LETTERS TO BE 1/2" THICK

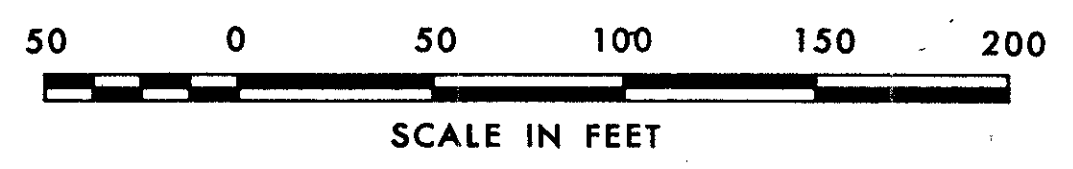


PAVEMENT MARKING LEGEND

- (A) EDGE LINE (WHITE)
- (B) EDGE LINE (YELLOW)
- (C) LANE LINE
- (D) CHANNELIZING LINE
- (E) TRANSVERSE LINE . 12" C/C
- (F) STOP LINE
- (G) CROSSWALK LINE
- (H) DOUBLE SOLID YELLOW CENTERLINE
- (I) CURB MARKING . (YELLOW)
- (J) CURB MARKING . (WHITE)

SIGN LEGEND

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- NEW SIGN & SUPPORT(S).
- EXISTING SIGN REMOVED FOR STORAGE.



MADE M.J.P. DATE 9-16-88
TRACED R.L.B. DATE 10-10-88
CHECKED J.M.V. DATE 9-23-88
SCALE 1" = 50'

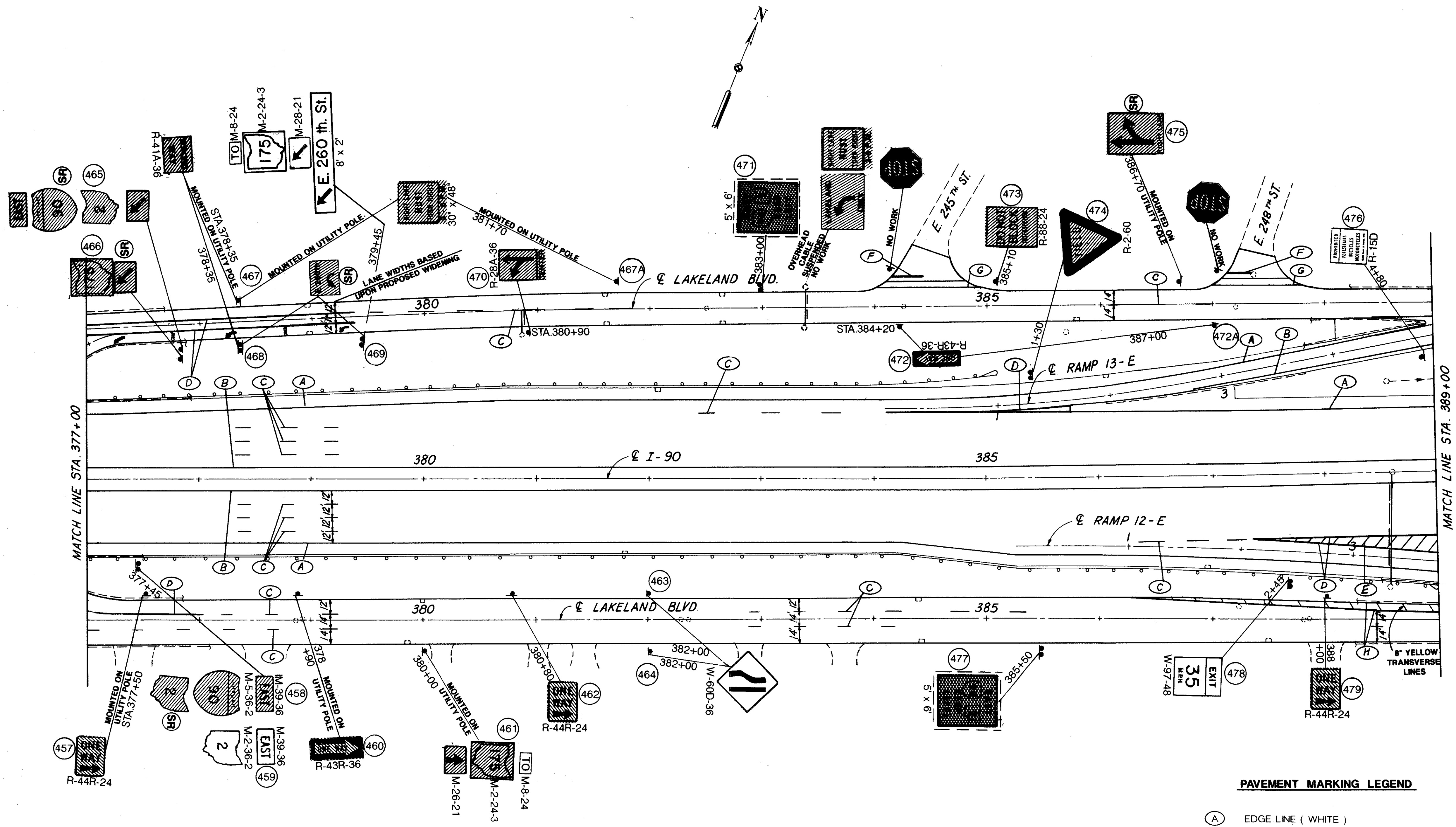
Howard, Needles, Tammen & Bergendoff
CONSULTING ENGINEERS
CLEVELAND, OHIO

HNTB

FHWA REGION	STATE	PROJECT	
5	OHIO		

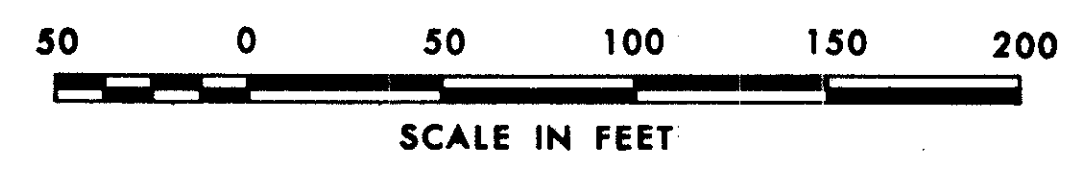
165
200

CUYAHOGA COUNTY
CUY - 90-23.95
LAKE COUNTY
LAK - 90-0.00



MATCH LINE STA. 377+00

MATCH LINE STA. 389+00



PAVEMENT MARKING LEGEND

- (A) EDGE LINE (WHITE)
- (B) EDGE LINE (YELLOW)
- (C) LANE LINE
- (D) CHANNELIZING LINE
- (E) TRANSVERSE LINE , 12' C/C
- (F) STOP LINE
- (G) CROSSWALK LINE
- (H) DOUBLE SOLID YELLOW CENTERLINE
- (I) CURB MARKING , (YELLOW)
- (J) CURB MARKING , (WHITE)

SIGN LEGEND

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- NEW SIGN & SUPPORT(S) .
- EXISTING SIGN REMOVED FOR STORAGE .

MADE M.J.P. DATE 9-16-88
TRACED R.L.B. DATE 10-27-88
CHECKED J.M.V. DATE 2-23-89
SCALE 1"=80'

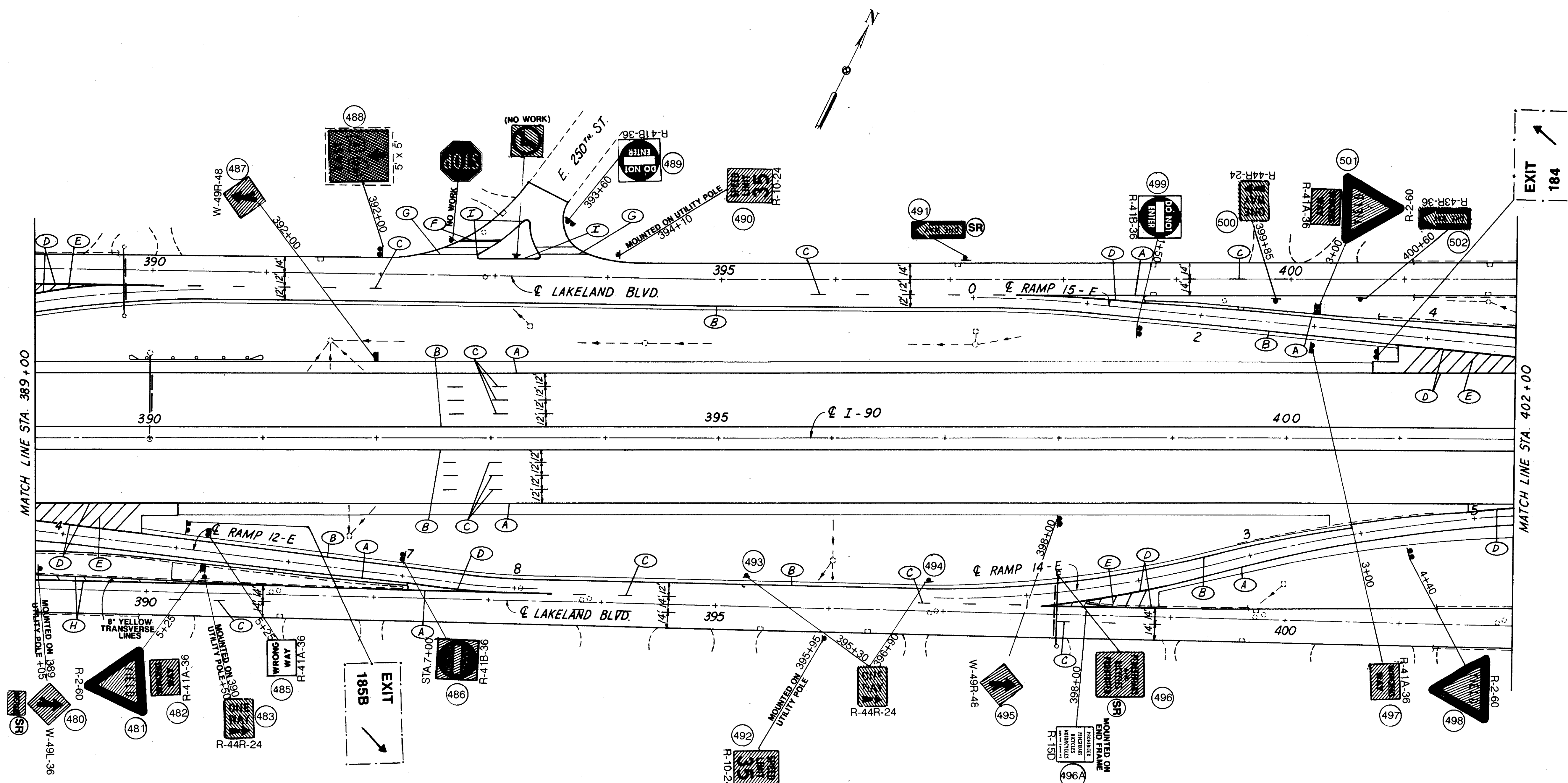
Howard, Needles, Tammen & Bergendoff
CONSULTING ENGINEERS
CLEVELAND, OHIO



FHWA REGION	STATE	PROJECT	
5	OHIO		

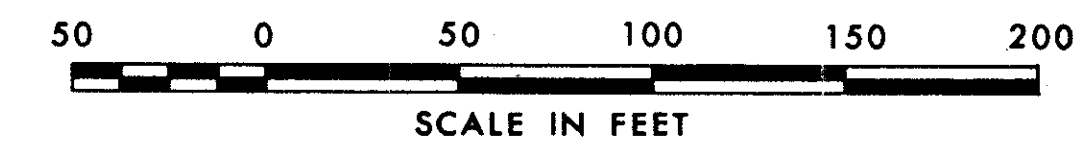
166
200

CUYAHOGA COUNTY
CUY - 90-23.95
LAKE COUNTY
LAK - 90-0.00



MATCH LINE STA. 389+00

MATCH LINE STA. 402+00



PAVEMENT MARKING LEGEND

- (A) EDGE LINE (WHITE)
- (B) EDGE LINE (YELLOW)
- (C) LANE LINE
- (D) CHANNELIZING LINE
- (E) TRANSVERSE LINE, 12' C/C
- (F) STOP LINE
- (G) CROSSWALK LINE
- (H) DOUBLE SOLID YELLOW CENTERLINE
- (I) CURB MARKING, (YELLOW)
- (J) CURB MARKING, (WHITE)

SIGN LEGEND

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- NEW SIGN & SUPPORT(S).
- EXISTING SIGN REMOVED FOR STORAGE.

MADE MJD DATE 8-16-88
 TRACED RLB DATE 10-10-88
 CHECKED JMTV DATE 9-24-88
 SCALE 1"=50'

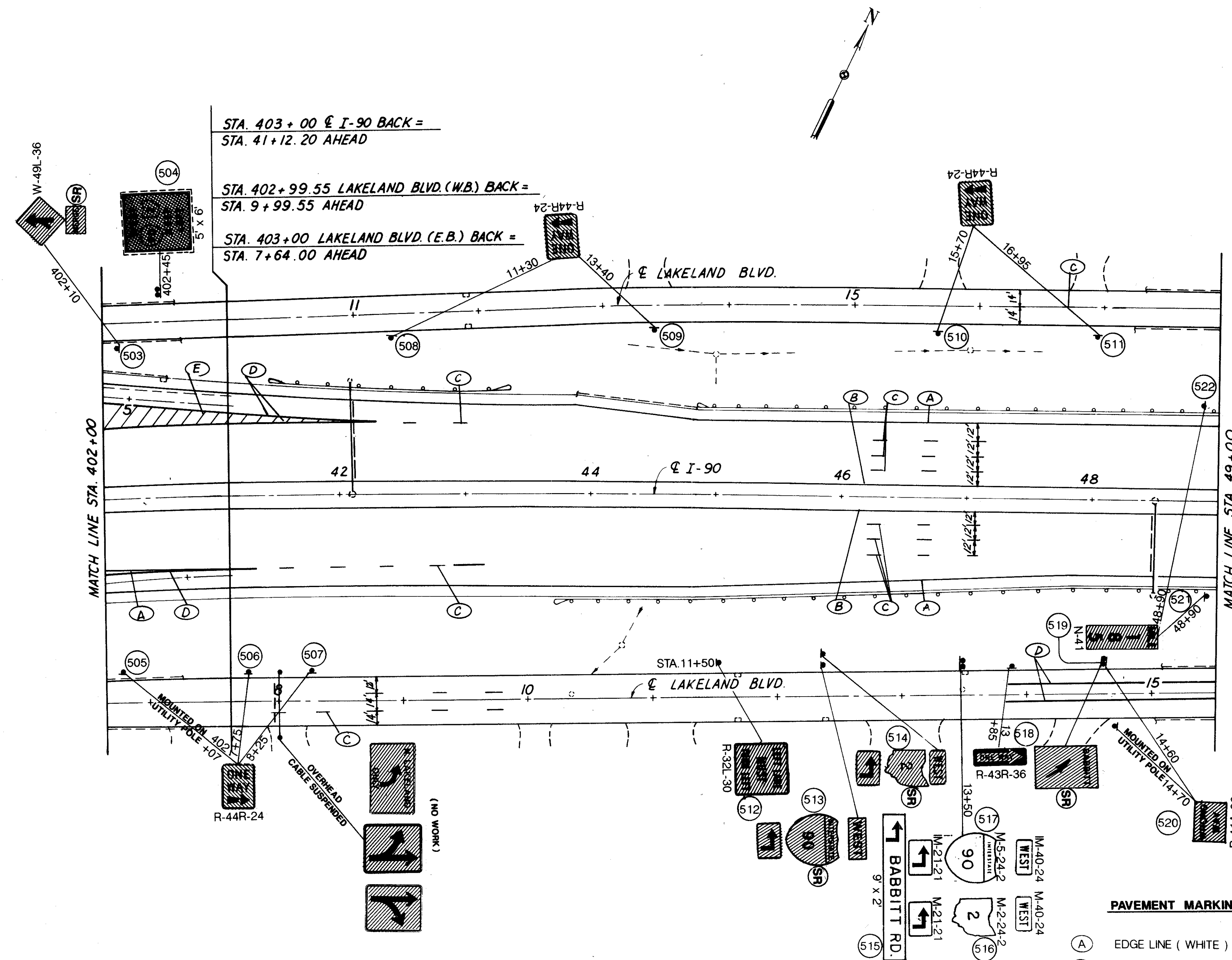
Howard, Needles, Tammen & Bergendoff
 CONSULTING ENGINEERS
 CLEVELAND, OHIO



FRWA REGION	STATE	PROJECT	
5	OHIO		

167
200

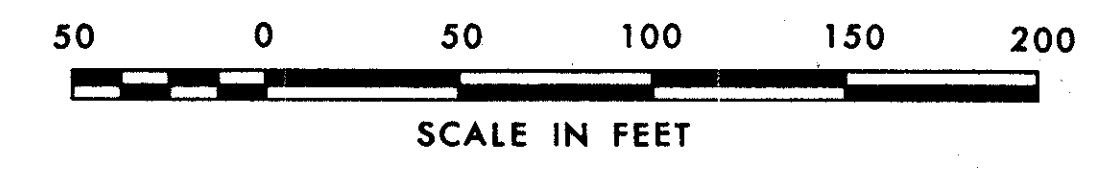
CUYAHOGA COUNTY
CUY - 90-23.95
LAKE COUNTY
LAK - 90-0.00



STA. 403+00 E I-90 BACK =
STA. 41+12.20 AHEAD

STA. 402+99.55 LAKELAND BLVD. (W.B.) BACK =
STA. 9+99.55 AHEAD

STA. 403+00 LAKELAND BLVD. (E.B.) BACK =
STA. 7+64.00 AHEAD



PAVEMENT MARKING LEGEND

- (A) EDGE LINE (WHITE)
- (B) EDGE LINE (YELLOW)
- (C) LANE LINE
- (D) CHANNELIZING LINE
- (E) TRANSVERSE LINE, 12' C/C
- (F) STOP LINE
- (G) CROSSWALK LINE
- (H) DOUBLE SOLID YELLOW CENTERLINE
- (I) CURB MARKING, (YELLOW)
- (J) CURB MARKING, (WHITE)

SIGN LEGEND

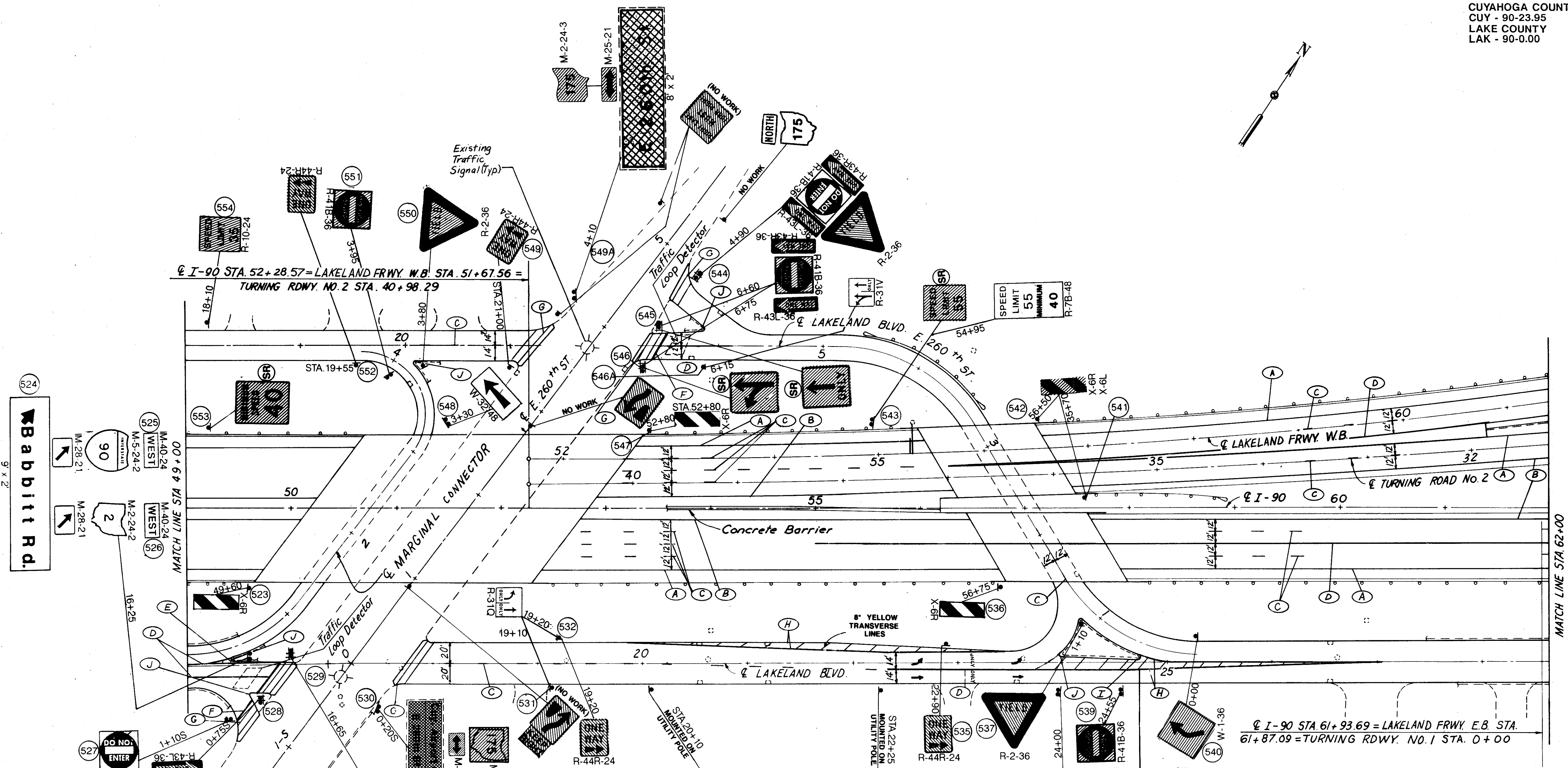
- EXISTING SIGN & SUPPORT(S) TO BE REPLACED, EXCEPT AS NOTED.
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- NEW SUPPORT(S) TO BE PROVIDED FOR EXISTING SIGN (EXISTING SIGN REPLACED UNDER ANOTHER CONTRACT)
- NEW SIGN & SUPPORT(S).
- EXISTING SIGN REMOVED FOR STORAGE.

MADE MJP DATE 9-16-88
TRACED RLB DATE 10-10-88
CHECKED VMW DATE 9-23-88
SCALE 1"=50'

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

HNTB

CUYAHOGA COUNTY
 CUY - 90-23.95
 LAKE COUNTY
 LAK - 90-0.00



PAVEMENT MARKING LEGEND

- (A) EDGE LINE (WHITE)
- (B) EDGE LINE (YELLOW)
- (C) LANE LINE
- (D) CHANNELIZING LINE
- (E) TRANSVERSE LINE , 12' C/C
- (F) STOP LINE
- (G) CROSSWALK LINE
- (H) DOUBLE SOLID YELLOW CENTERLINE
- (I) CURB MARKING , (YELLOW)
- (J) CURB MARKING , (WHITE)

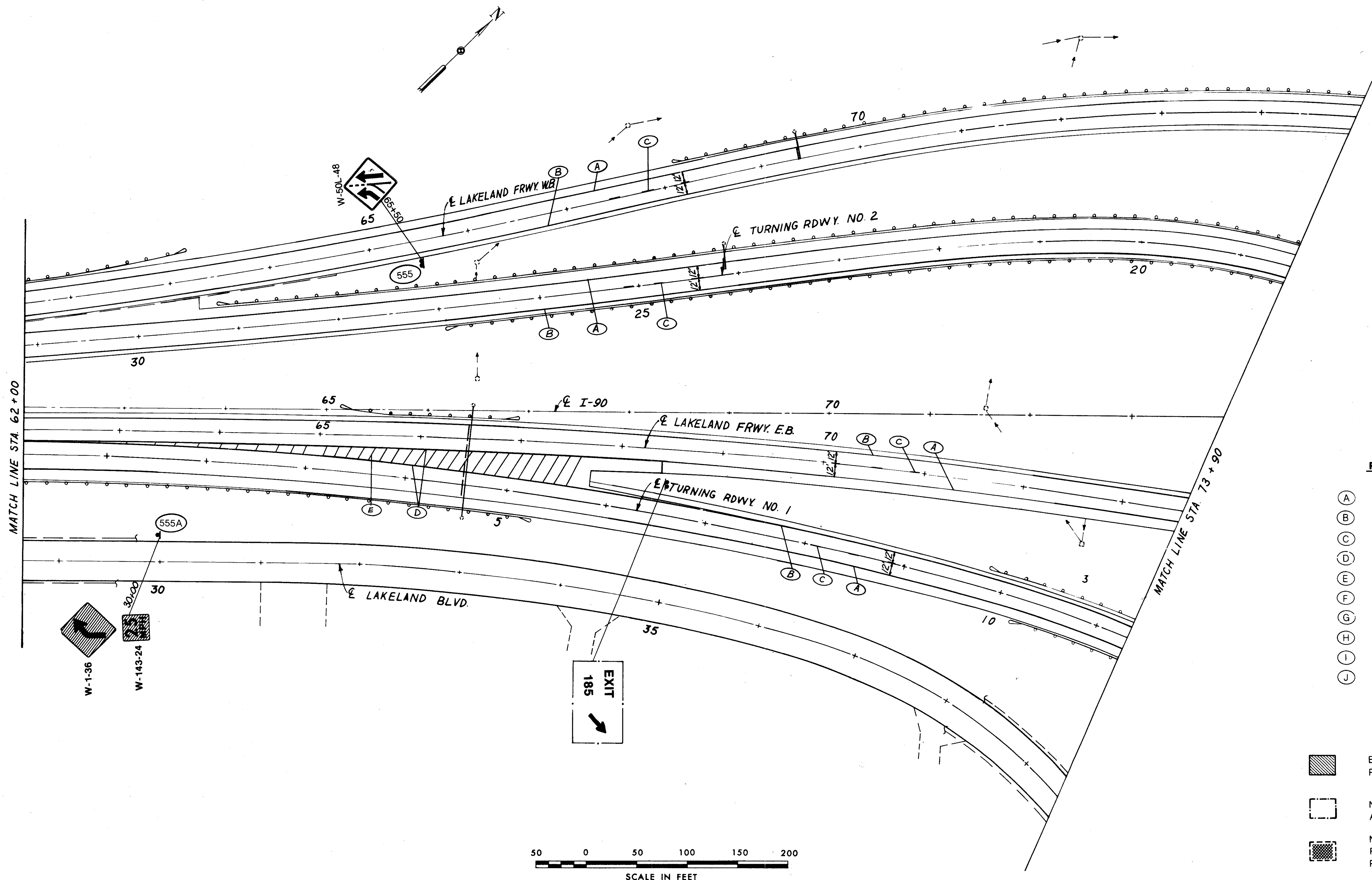
SIGN LEGEND

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FHWA REGION	STATE	PROJECT
5	OHIO	

169
200

CUYAHOGA COUNTY
CUY - 90-23.95
LAKE COUNTY
LAK - 90-0.00

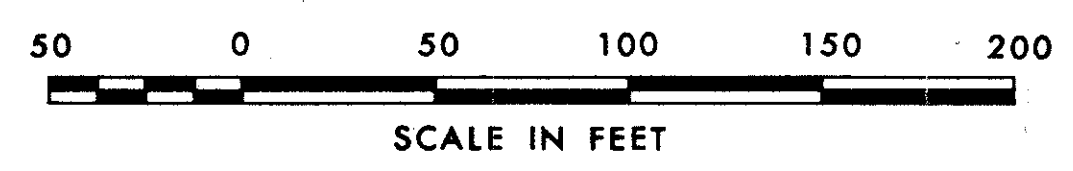


PAVEMENT MARKING LEGEND

- (A) EDGE LINE (WHITE)
- (B) EDGE LINE (YELLOW)
- (C) LANE LINE
- (D) CHANNELIZING LINE
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- (F) STOP LINE
- (G) CROSSWALK LINE
- (H) DOUBLE SOLID YELLOW CENTERLINE
- (I) CURB MARKING, (YELLOW)
- (J) CURB MARKING, (WHITE)

SIGN LEGEND

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MADE MJD DATE 9-16-88
 TRACED H.R. DATE 10-17-88
 CHECKED J.M.P. DATE 9-23-88
 SCALE 1"=20'

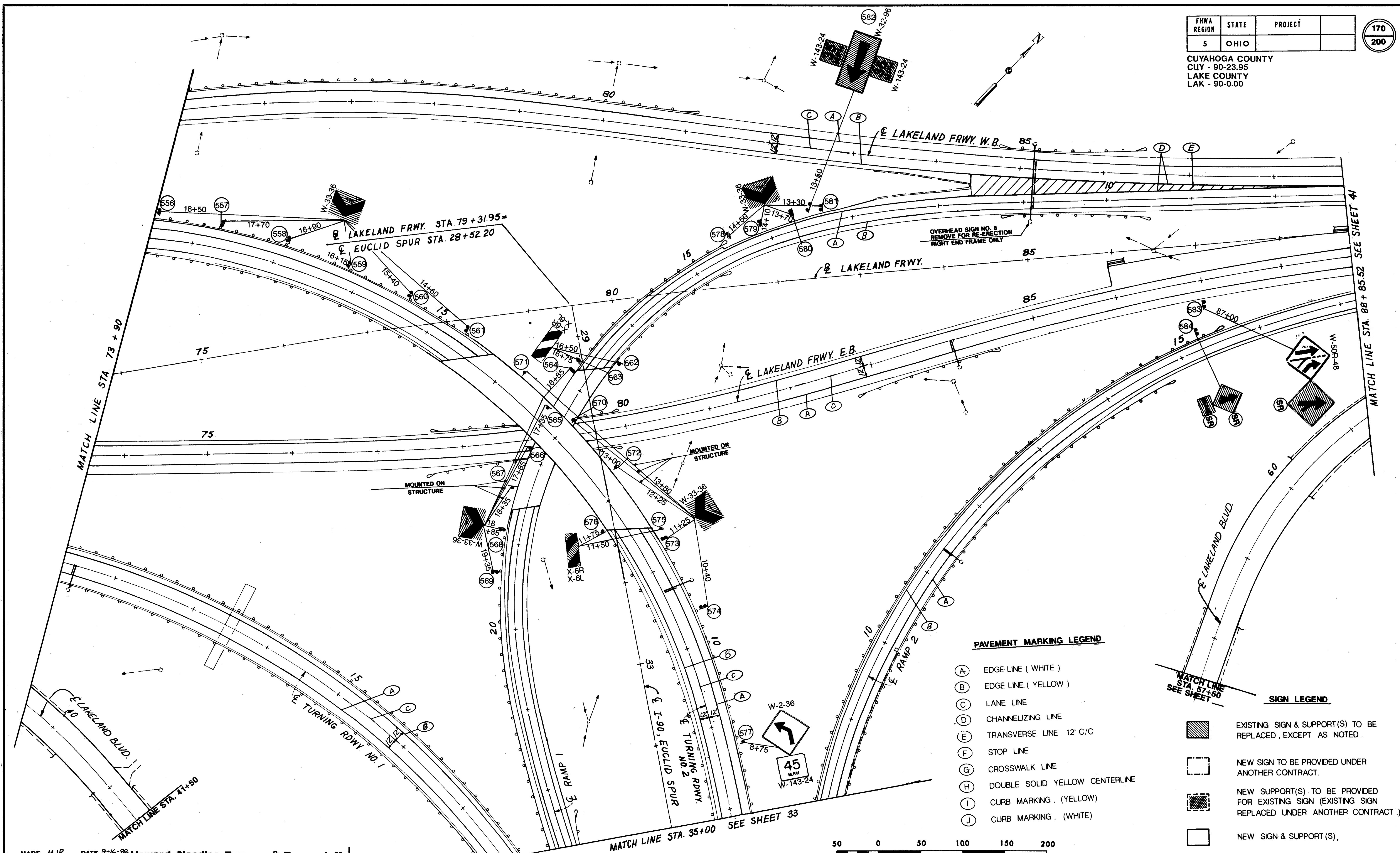
Howard, Needles, Tammen & Bergendoff
 CONSULTING ENGINEERS
 CLEVELAND, OHIO

HNTB

FHWA REGION	STATE	PROJECT
5	OHIO	

170
200

CUYAHOGA COUNTY
CUY - 90-23.95
LAKE COUNTY
LAK - 90-0.00

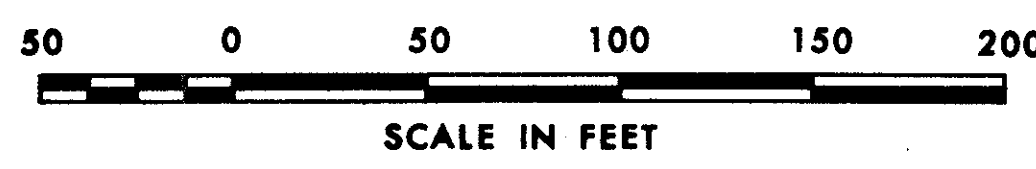


PAVEMENT MARKING LEGEND

- (A) EDGE LINE (WHITE)
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- (D) CHANNELIZING LINE
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- (G) CROSSWALK LINE
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- (J) CURB MARKING, (WHITE)

SIGN LEGEND

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- EXISTING SIGN REMOVED FOR STORAGE.



MADE M.P. DATE 9-16-88
TRACED P.L.S. DATE 10-10-88
CHECKED J.M.W. DATE 9-23-88
SCALE 1"=50'

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

HNTB

FHWA REGION	STATE	PROJECT
5	OHIO	

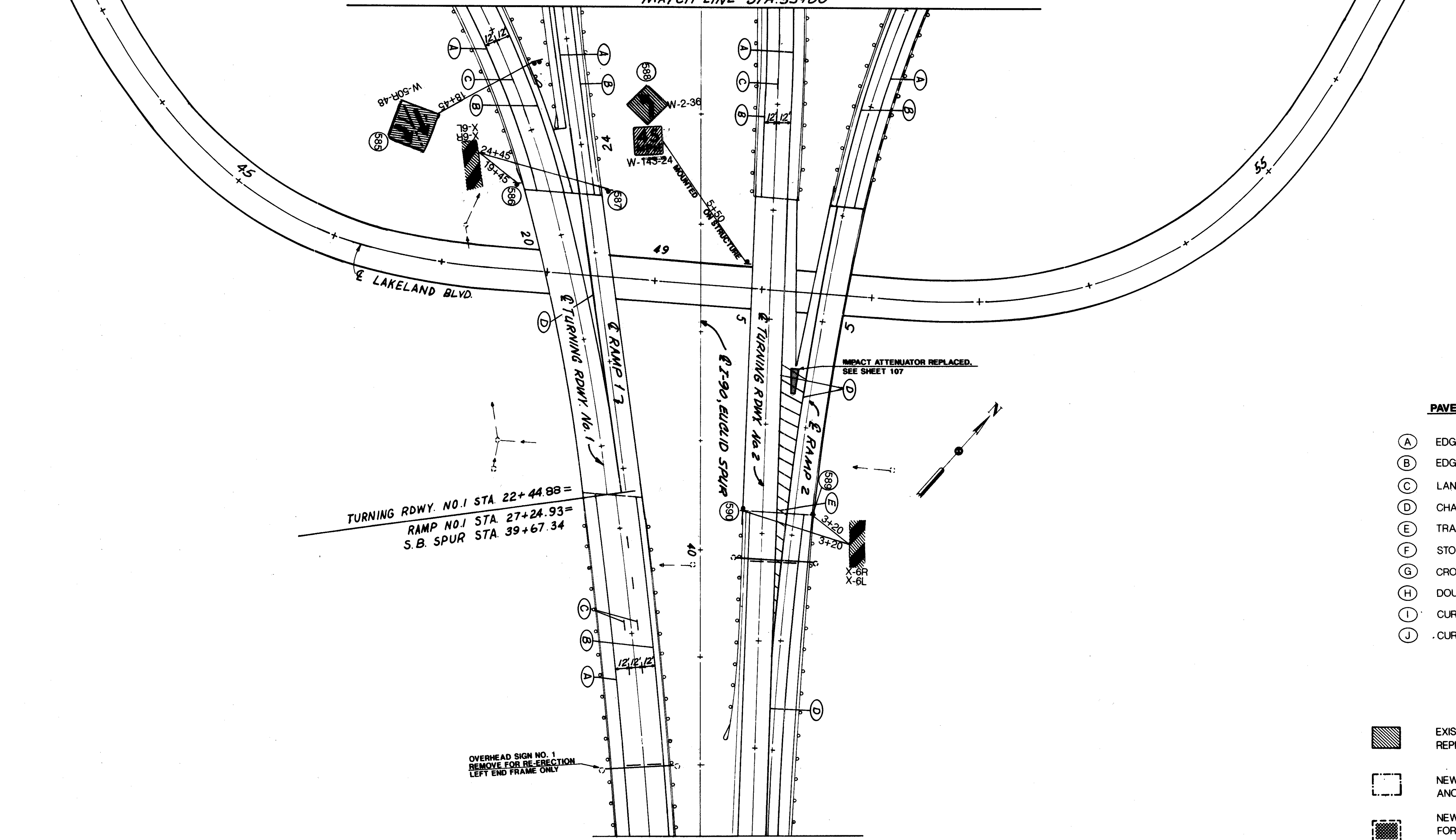
171
200

CUYAHOGA COUNTY
CUY - 90-23.95
LAKE COUNTY
LAK - 90-0.00

MATCH LINE
STA. 41+50
SEE SHEET

MATCH LINE
STA. 57+50
SEE SHEET

MATCH LINE STA. 35+00



TURNING RDWY. NO. 1 STA. 22+44.88 =
RAMP NO. 1 STA. 27+24.93 =
S.B. SPUR STA. 39+67.34

MATCH LINE N.B. SPUR STA. 42+66.81 =
RAMP NO. 2 STA. 0+00 =
TURNING RDWY. NO. 2 STA. 0+00

PAVEMENT MARKING LEGEND

- (A) EDGE LINE (WHITE)
- (B) EDGE LINE (YELLOW)
- (C) LANE LINE
- (D) CHANNELIZING LINE
- (E) TRANSVERSE LINE, 12' C/C
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- (G) CROSSWALK LINE
- (H) DOUBLE SOLID YELLOW CENTERLINE
- (I) CURB MARKING, (YELLOW)
- (J) CURB MARKING, (WHITE)

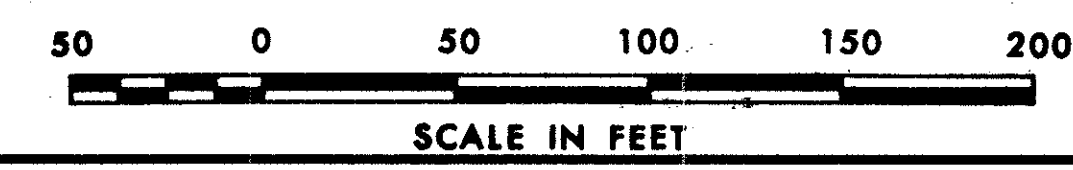
SIGN LEGEND

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MADE MJP DATE 8-16-88
TRACED MJP DATE 11-10-88
CHECKED MWV DATE 11-23-88
SCALE 1" = 50'

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

HNTB

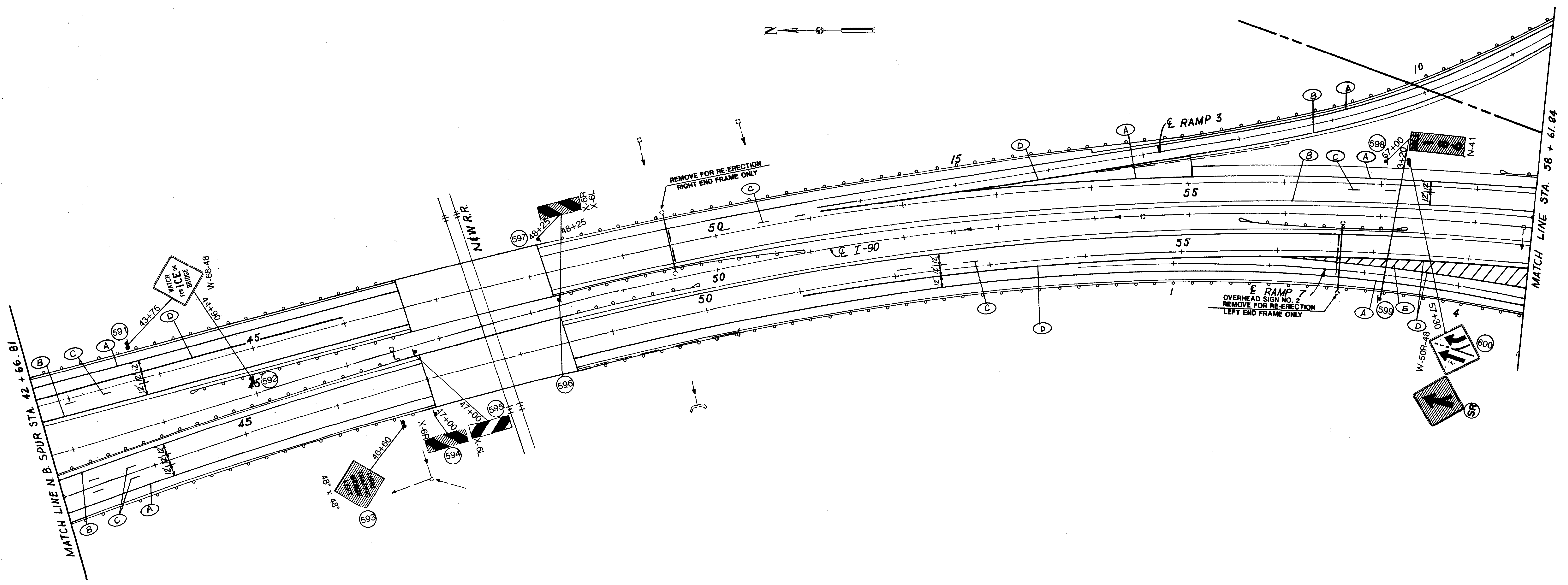


TRAFFIC CONTROL - STA. 35+00 TO STA. 42+66.81

FHWA REGION	STATE	PROJECT	
5	OHIO		

172
200

CUYAHOGA COUNTY
CUY - 90-23.95
LAKE COUNTY
LAK - 90-0.00



PAVEMENT MARKING LEGEND

- (A) EDGE LINE (WHITE)
- (B) EDGE LINE (YELLOW)
- (C) LANE LINE
- (D) CHANNELIZING LINE
- (E) TRANSVERSE LINE, 12' C/C
- (F) STOP LINE
- (G) CROSSWALK LINE
- (H) DOUBLE SOLID YELLOW CENTERLINE
- (I) CURB MARKING, (YELLOW)
- (J) CURB MARKING, (WHITE)

SIGN LEGEND

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MADE MJD DATE 9-16-88
 TRACED HJA DATE 10-12-88
 CHECKED JMW DATE 9-23-88
 SCALE 1"=50'

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








FHWA REGION	STATE	PROJECT
5	OHIO	

173
200

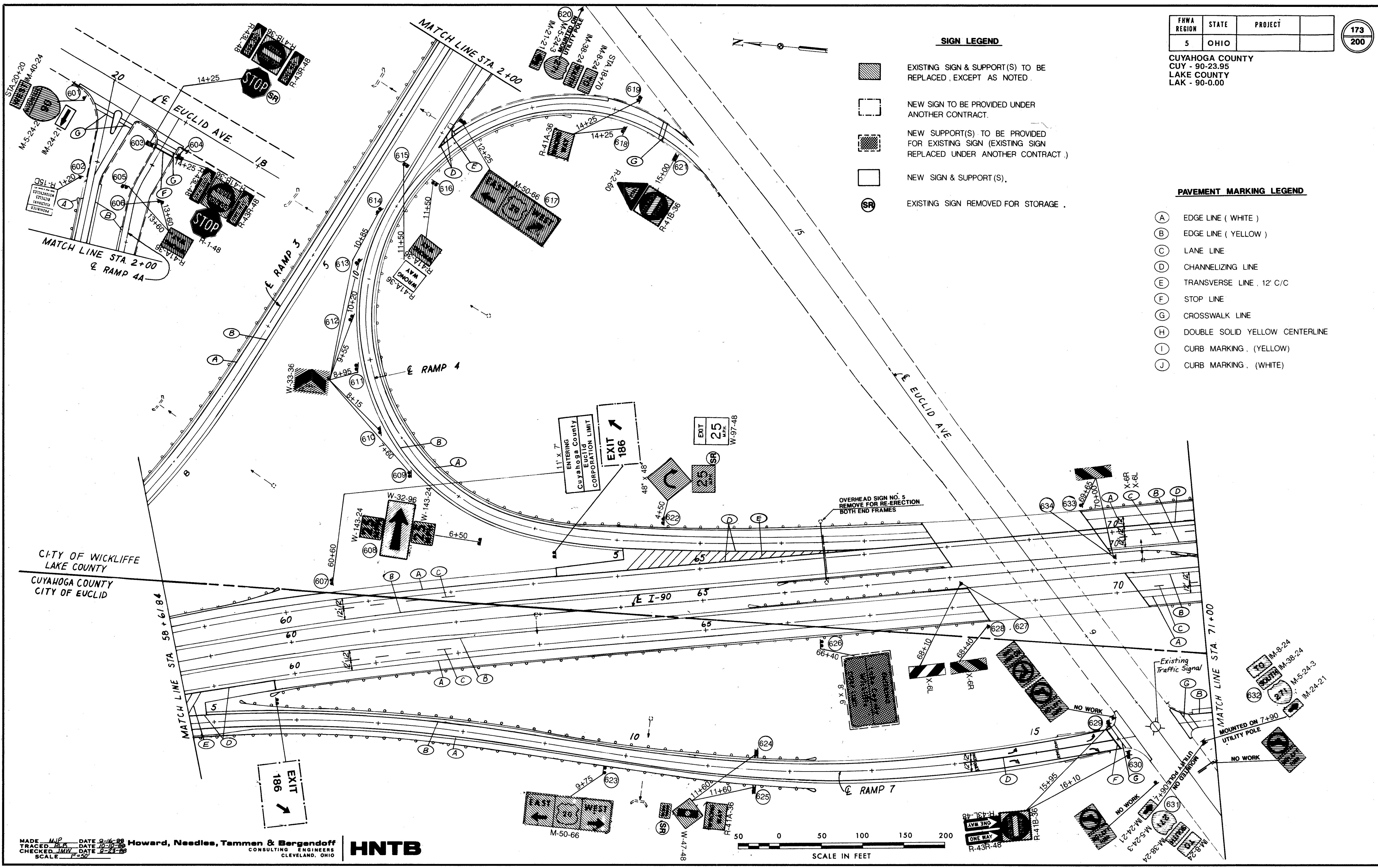
CUYAHOGA COUNTY
CUY - 90-23.95
LAKE COUNTY
LAK - 90-0.00

SIGN LEGEND

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PAVEMENT MARKING LEGEND

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- (D) CHANNELIZING LINE
- (E) TRANSVERSE LINE, 12' C/C
- (F) STOP LINE
- (G) CROSSWALK LINE
- (H) DOUBLE SOLID YELLOW CENTERLINE
- (I) CURB MARKING, (YELLOW)
- (J) CURB MARKING, (WHITE)



MADE MP DATE 9-16-98 **Howard, Needles, Tammen & Bergendoff**
 TRACED JK DATE 10-19-98 **CONSULTING ENGINEERS**
 CHECKED JMV DATE 9-23-98 **CLEVELAND, OHIO**
 SCALE 1"=50'

HNTB

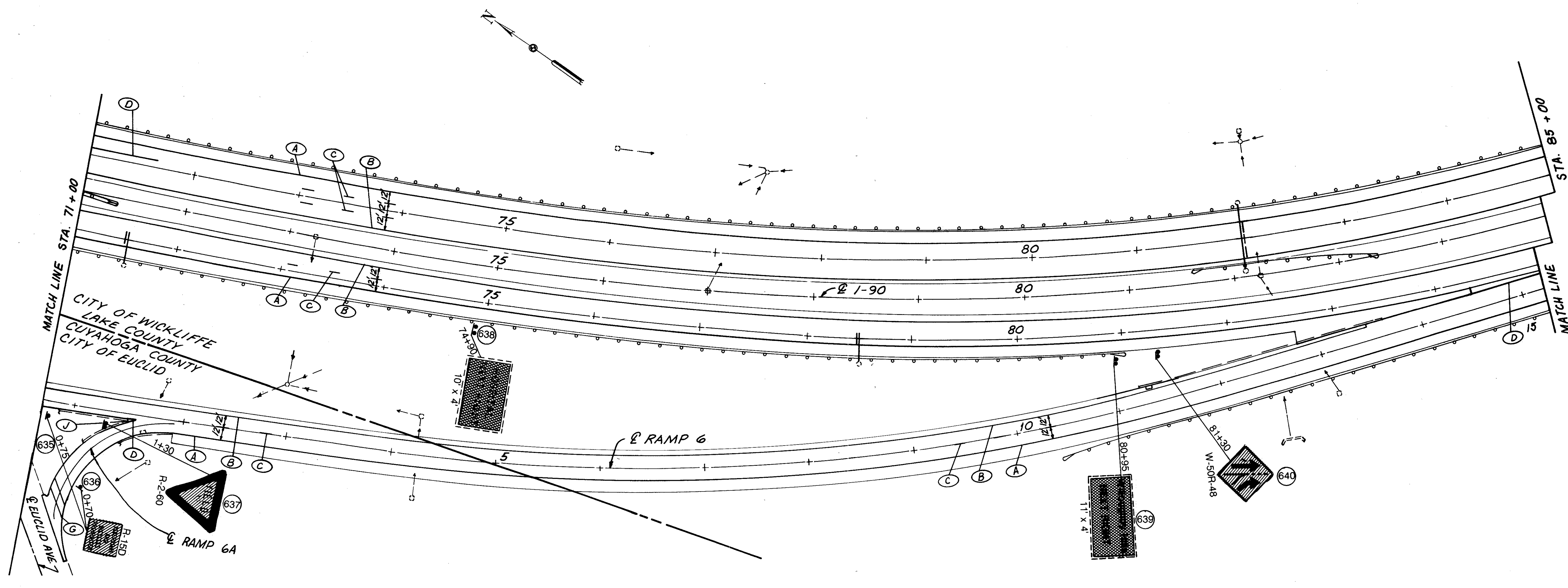
SCALE IN FEET
0 50 100 150 200

TRAFFIC CONTROL - STA.58+61.84 TO STA.71+00

FHWA REGION	STATE	PROJECT	
5	OHIO		

174
200






CUYAHOGA COUNTY
 CUY - 90-23.95
 LAKE COUNTY
 LAK - 90-0.00

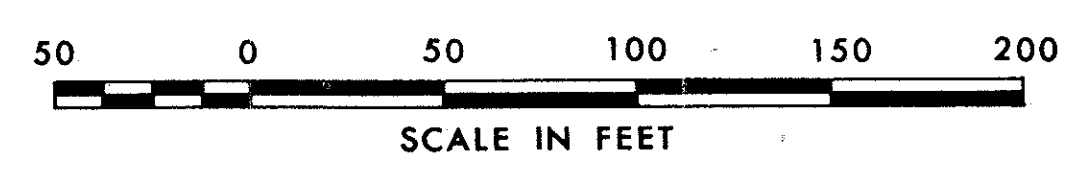


PAVEMENT MARKING LEGEND

- (A) EDGE LINE (WHITE)
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- (J) CURB MARKING , (WHITE)

SIGN LEGEND

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MADE MJP DATE 9-16-88
 TRACED JLB DATE 10-10-88
 CHECKED JMW DATE 9-23-88
 SCALE 1" = 50'

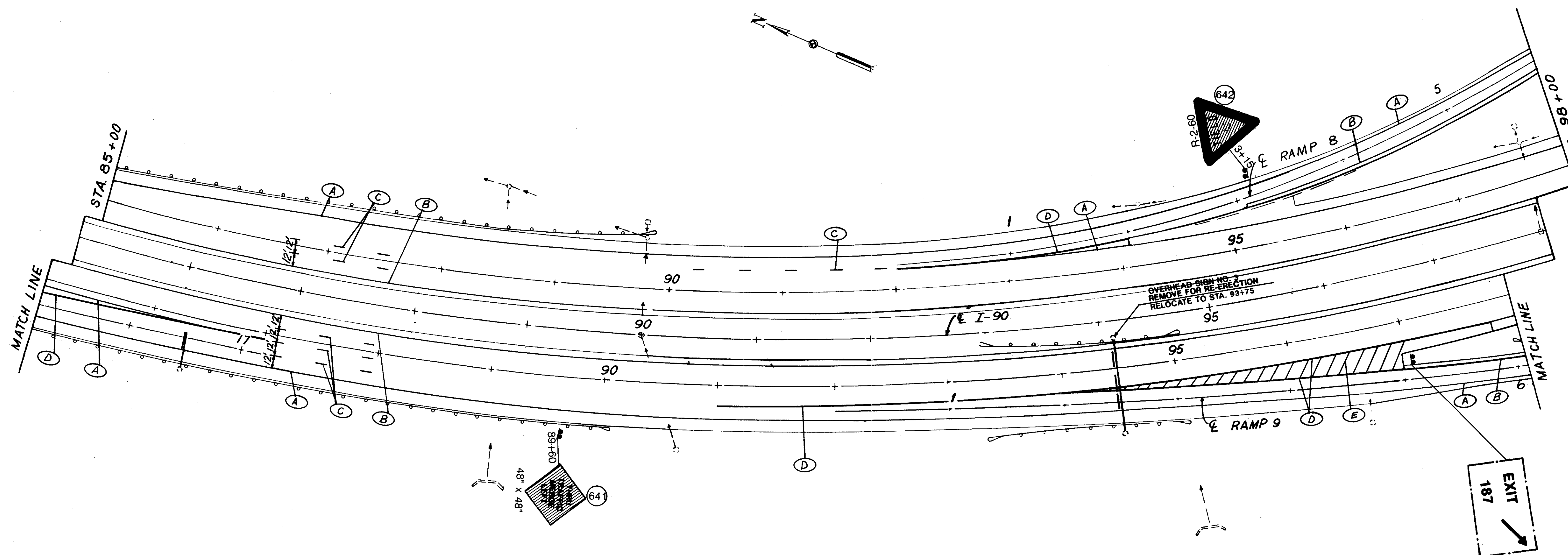
Howard, Needles, Tammen & Bergendoff
 CONSULTING ENGINEERS
 CLEVELAND, OHIO



FHWA REGION	STATE	PROJECT	
5	OHIO		

175
200






CUYAHOGA COUNTY
CUY - 90-23.95
LAKE COUNTY
LAK - 90-0.00

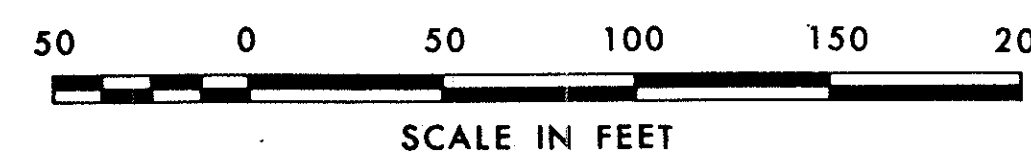


PAVEMENT MARKING LEGEND

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SIGN LEGEND

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MADE MJP DATE 9-16-88
 TRACED RJK DATE 10-9-88
 CHECKED JMW DATE 1-23-89
 SCALE 1"=50'

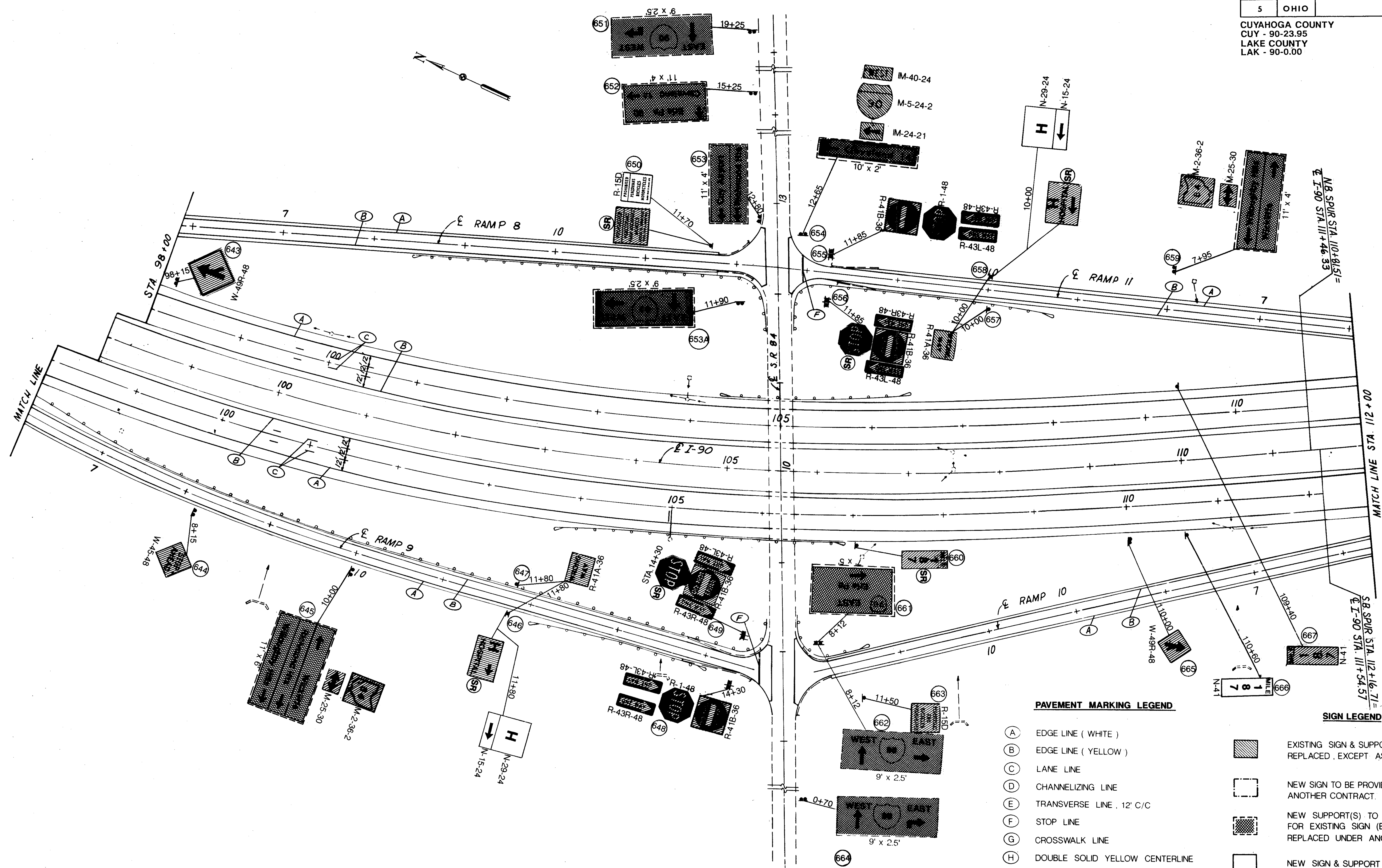
Howard, Needles, Tammen & Bergendoff
 CONSULTING ENGINEERS
 CLEVELAND, OHIO

HNTB

FHWA REGION	STATE	PROJECT
5	OHIO	

176
200

CUYAHOGA COUNTY
CUY - 90-23.95
LAKE COUNTY
LAK - 90-0.00



PAVEMENT MARKING LEGEND

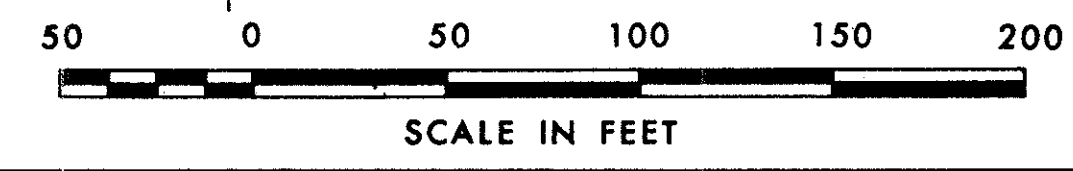
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- (D) CHANNELIZING LINE
- (E) TRANSVERSE LINE, 12' C/C
- (F) STOP LINE
- (G) CROSSWALK LINE
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- (I) CURB MARKING, (YELLOW)
- (J) CURB MARKING, (WHITE)

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MADE M.I.P. DATE 9-16-98
TRACED P.L.R. DATE 10-20-98
CHECKED J.M.W. DATE 9-23-98
SCALE 1"=50'

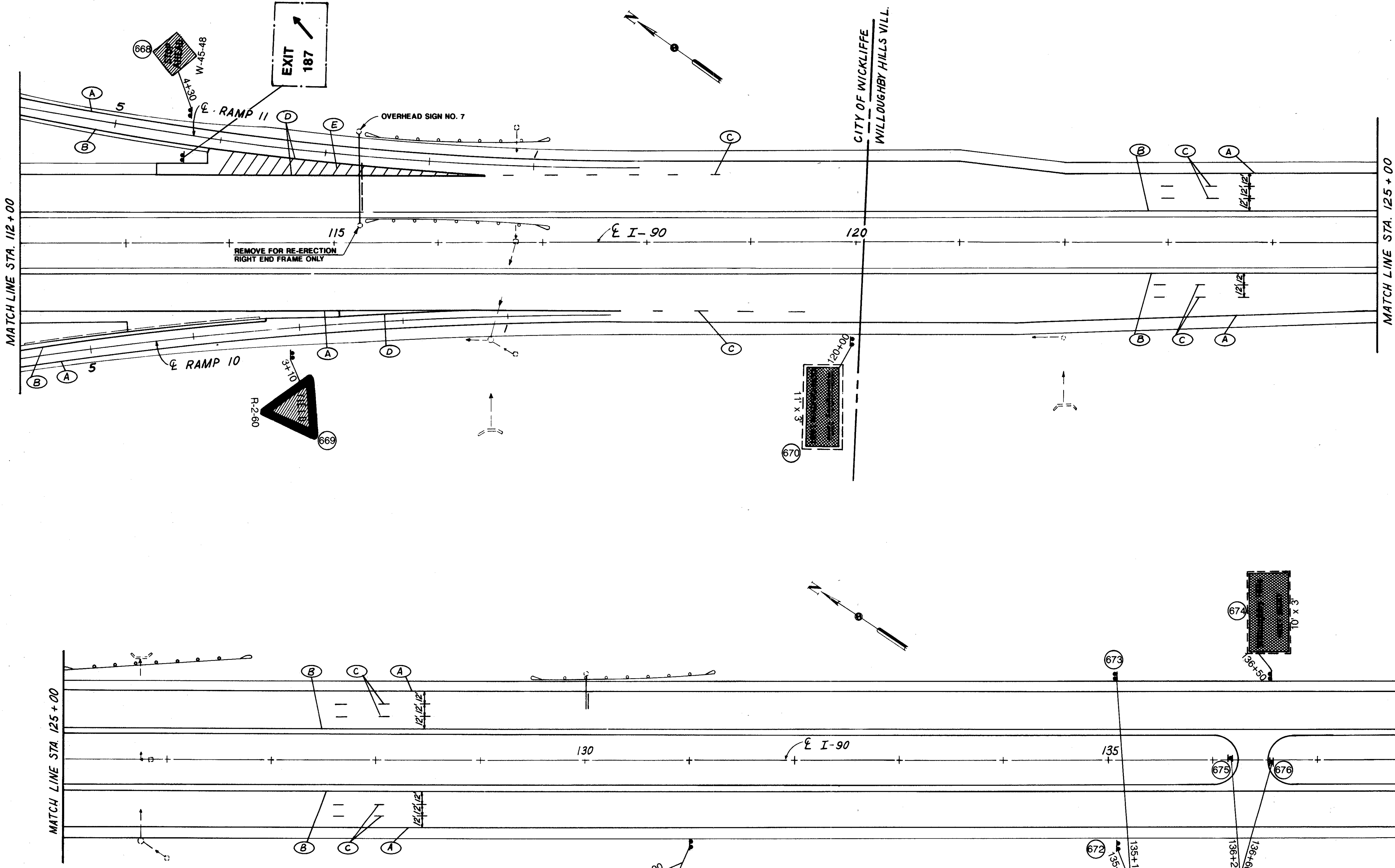
Howard, Needles, Tammen & Bergendoff
CONSULTING ENGINEERS
CLEVELAND, OHIO



FHWA REGION	STATE	PROJECT
5	OHIO	

177
200

CUYAHOGA COUNTY
CUY - 90-23.95
LAKE COUNTY
LAK - 90-0.00



PAVEMENT MARKING LEGEND

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- (I) CURB MARKING, (YELLOW)
- (J) CURB MARKING, (WHITE)

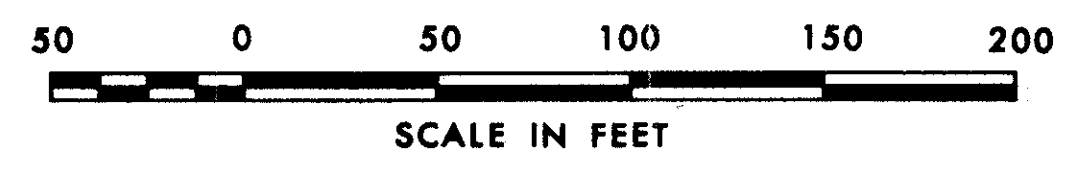
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MADE MJP DATE 9-15-88
TRACED RLB DATE 7-19-88
CHECKED JMM DATE 9-25-88
SCALE 1" = 50'

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

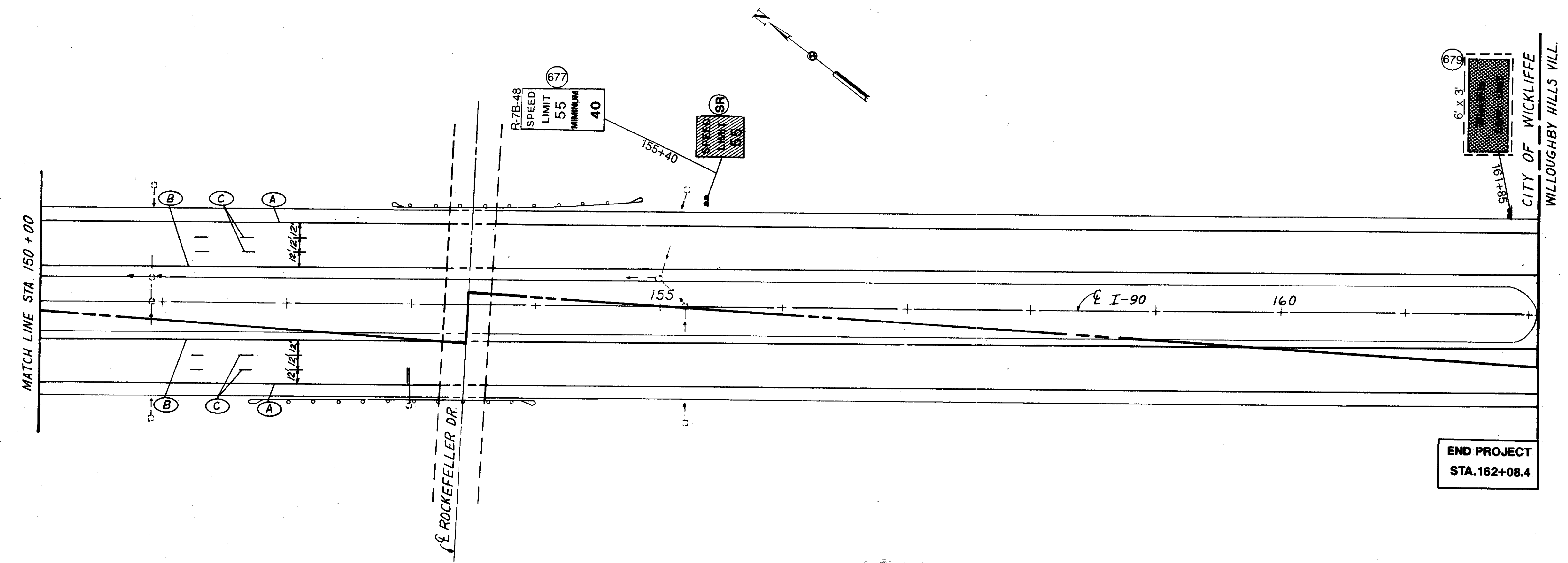
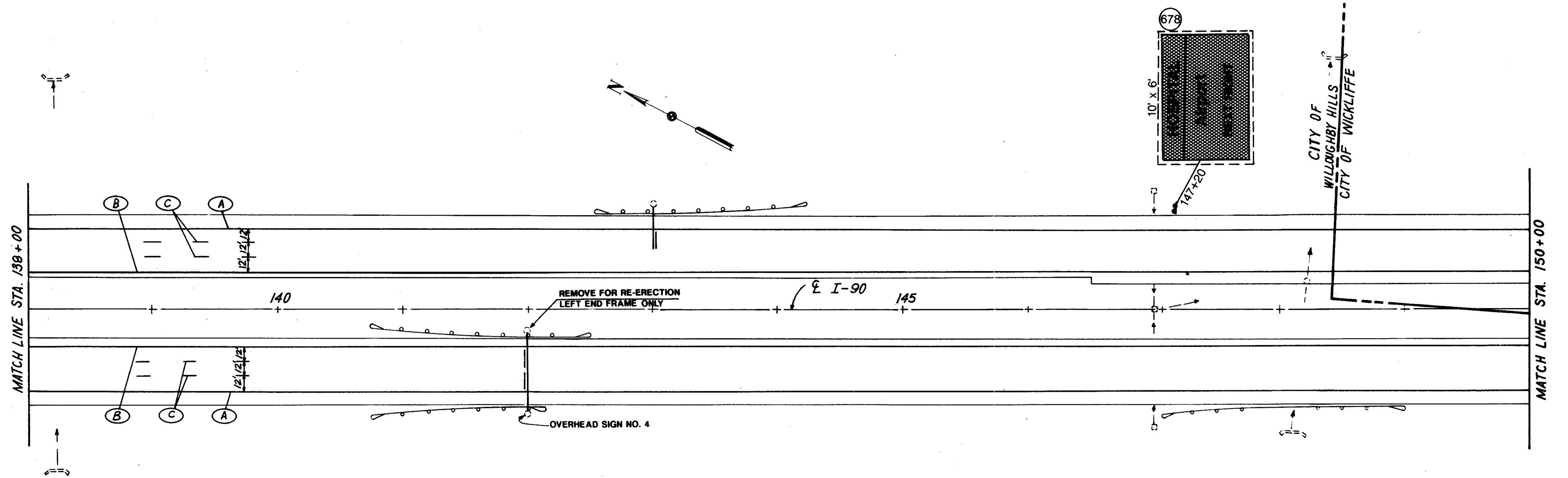
HNTB



FHWA REGION	STATE	PROJECT	
5	OHIO		

178
200

CUYAHOGA COUNTY
CUY - 90-23.95
LAKE COUNTY
LAK - 90-0.00

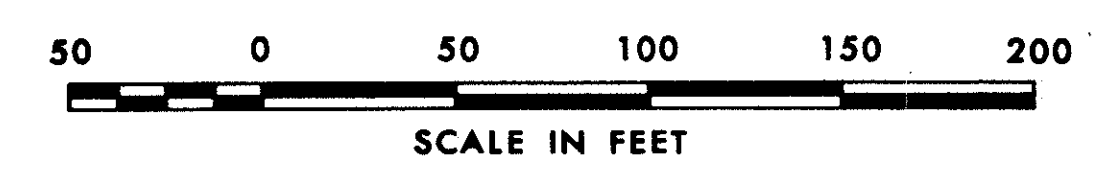


PAVEMENT MARKING LEGEND

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MADE MJP DATE 9-16-88
TRACED KML DATE 11-7-88
CHECKED MW DATE 9-23-88
SCALE 1"=50'

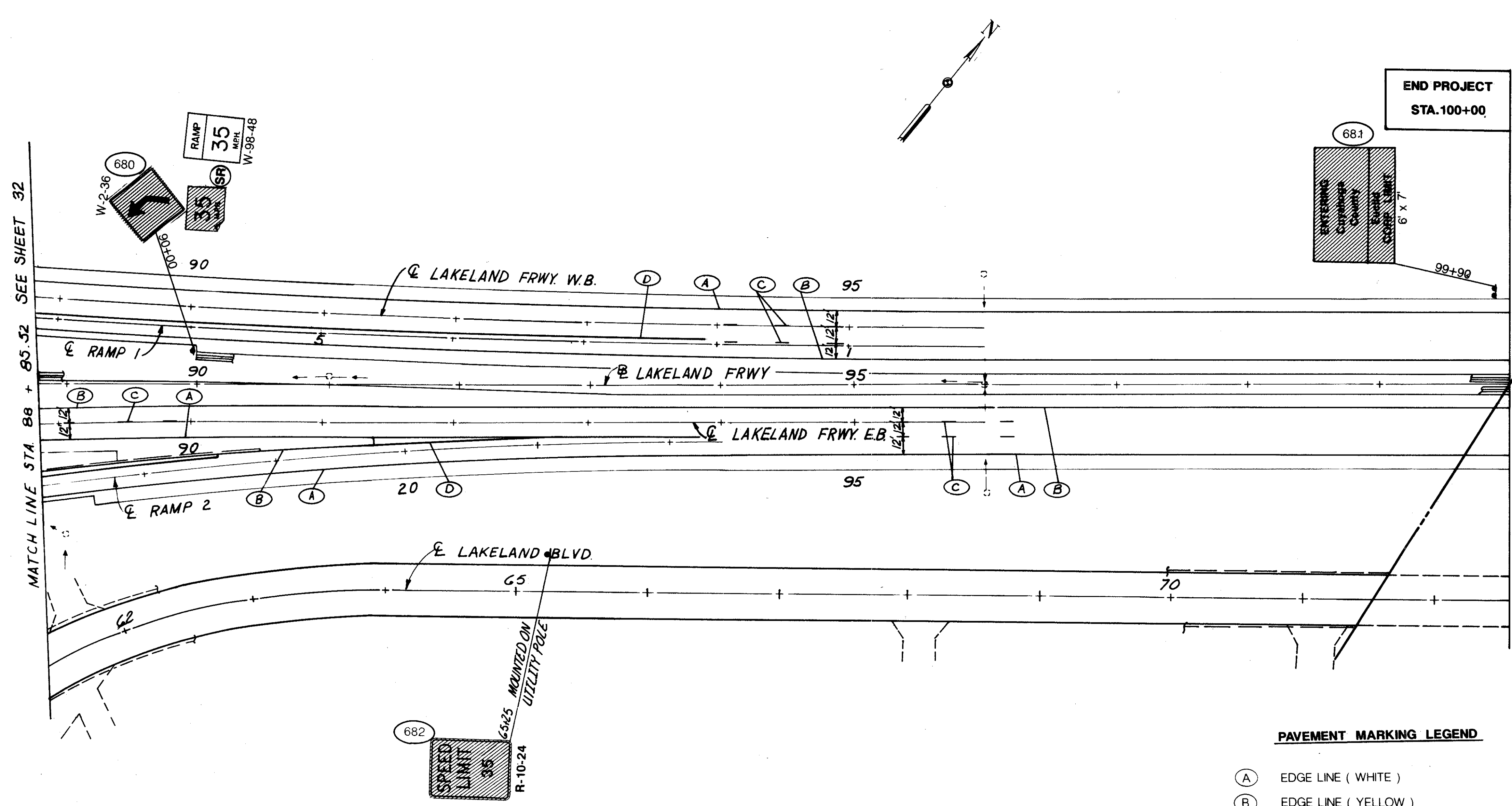
Howard, Needles, Tammen & Bergendoff
CONSULTING ENGINEERS
CLEVELAND, OHIO



FHWA REGION	STATE	PROJECT
5	OHIO	

179
200

CUYAHOGA COUNTY
CUY - 90-23.95
LAKE COUNTY
LAK - 90-0.00



END PROJECT
STA. 100+00

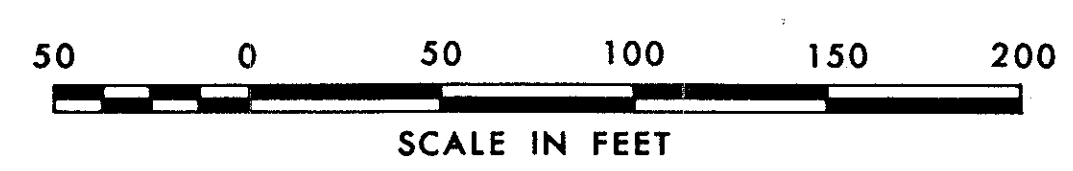
CITY OF EUCLID
CUYAHOGA COUNTY
LAKE COUNTY
CITY OF WICKLIFFE

PAVEMENT MARKING LEGEND

- (A) EDGE LINE (WHITE)
- (B) EDGE LINE (YELLOW)
- (C) LANE LINE
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- (G) CROSSWALK LINE
- (H) DOUBLE SOLID YELLOW CENTERLINE
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- (J) CURB MARKING, (WHITE)

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MADE MJP DATE 9-15-88
TRACED RLB DATE 11-17-88
CHECKED JMW DATE 1-23-89
SCALE 1"=50'

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

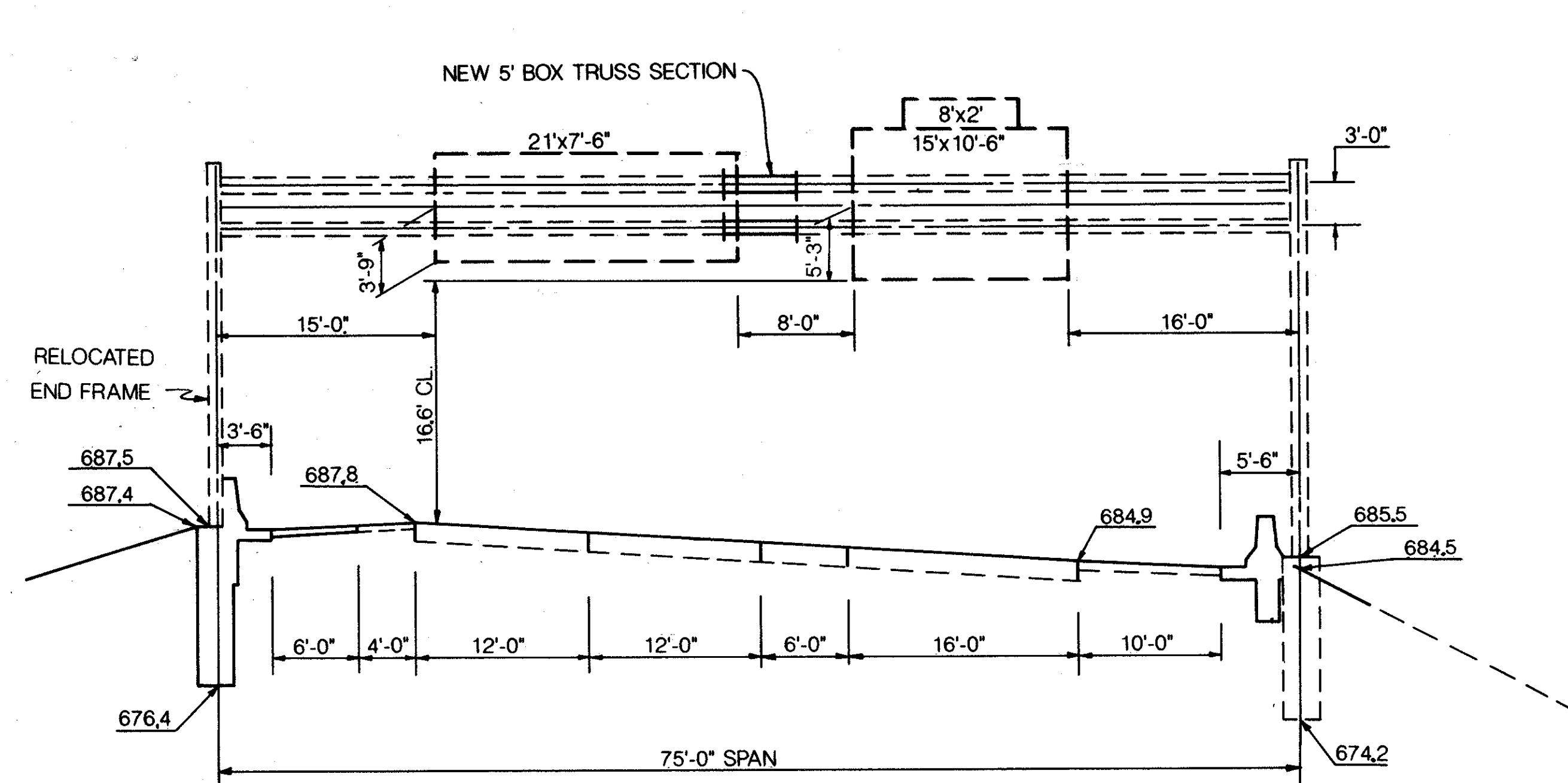


OVERHEAD SIGN SUPPORT DETAILS

FHWA REGION	STATE	PROJECT	
5	OHIO		

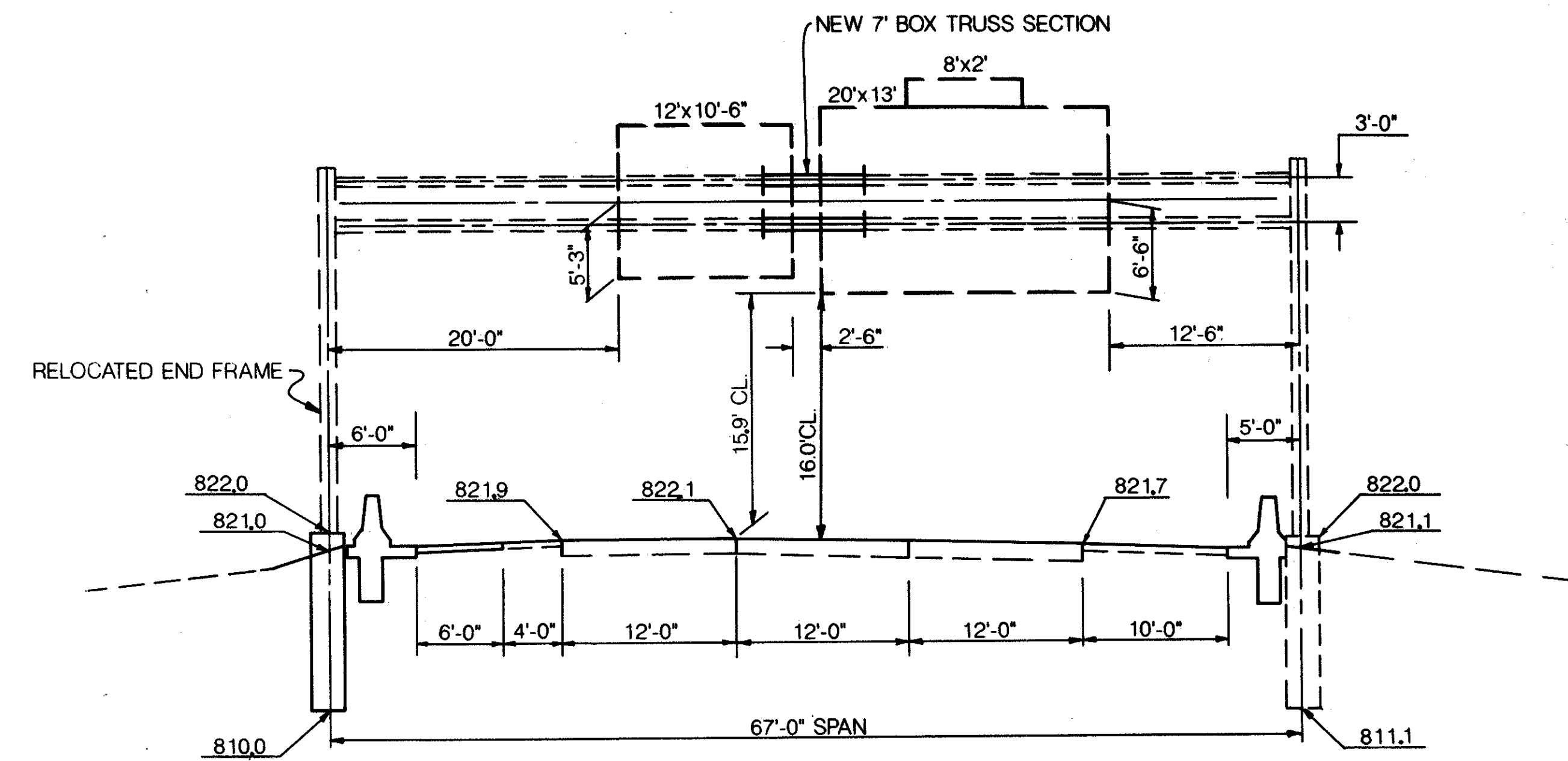
180
200

CUYAHOGA COUNTY
CUY - 90-23.95
LAKE COUNTY
LAK - 90-0.00



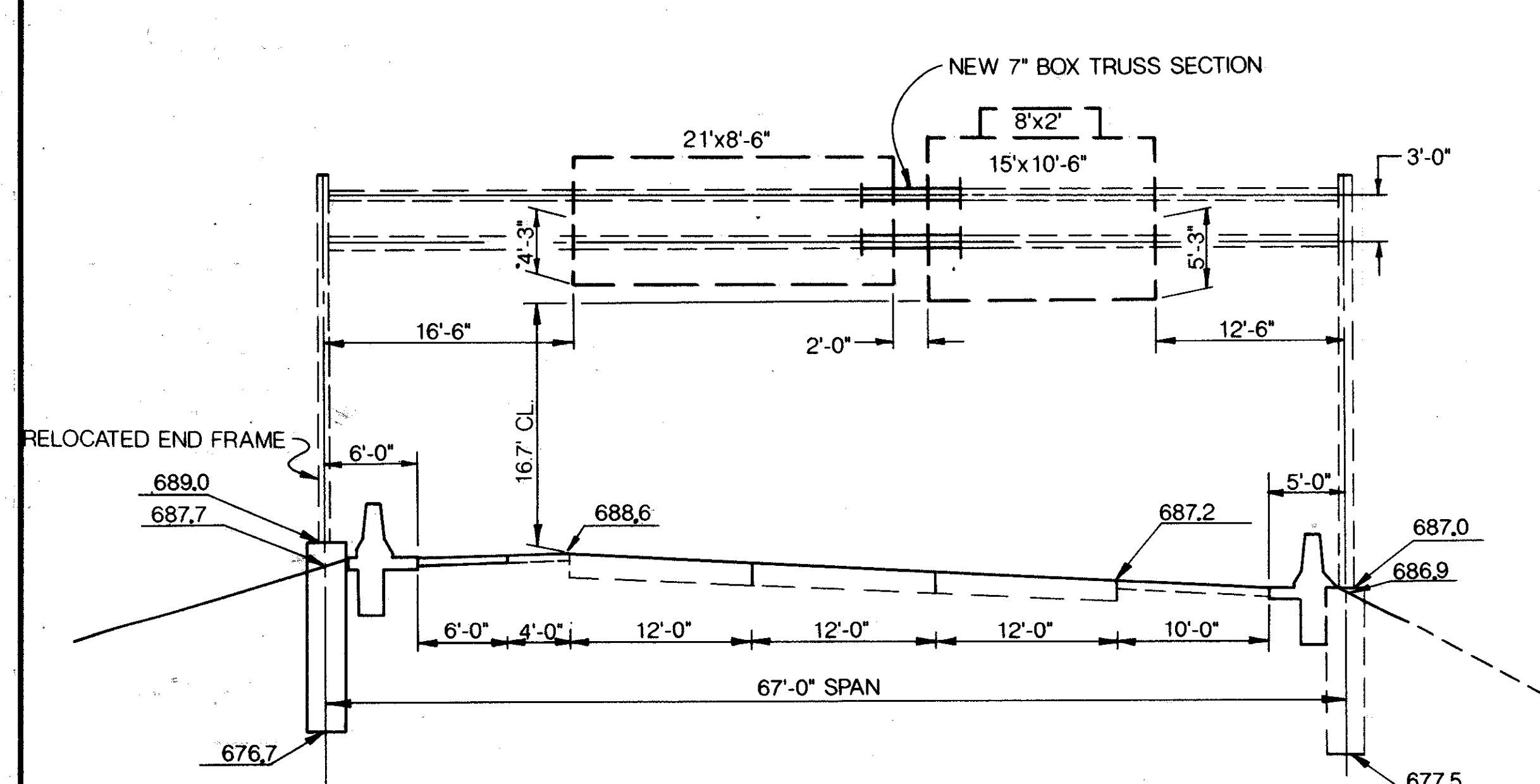
OVERHEAD SIGN NO. 2
STA. 56+67 S.B.

EXISTING: 7.4 DESIGN #1, MODIFIED, 70' SPAN
PROPOSED: 7.4 DESIGN #1 MODIFIED WITH 5'-7.65 DESIGN #6 SECTION, 75' SPAN



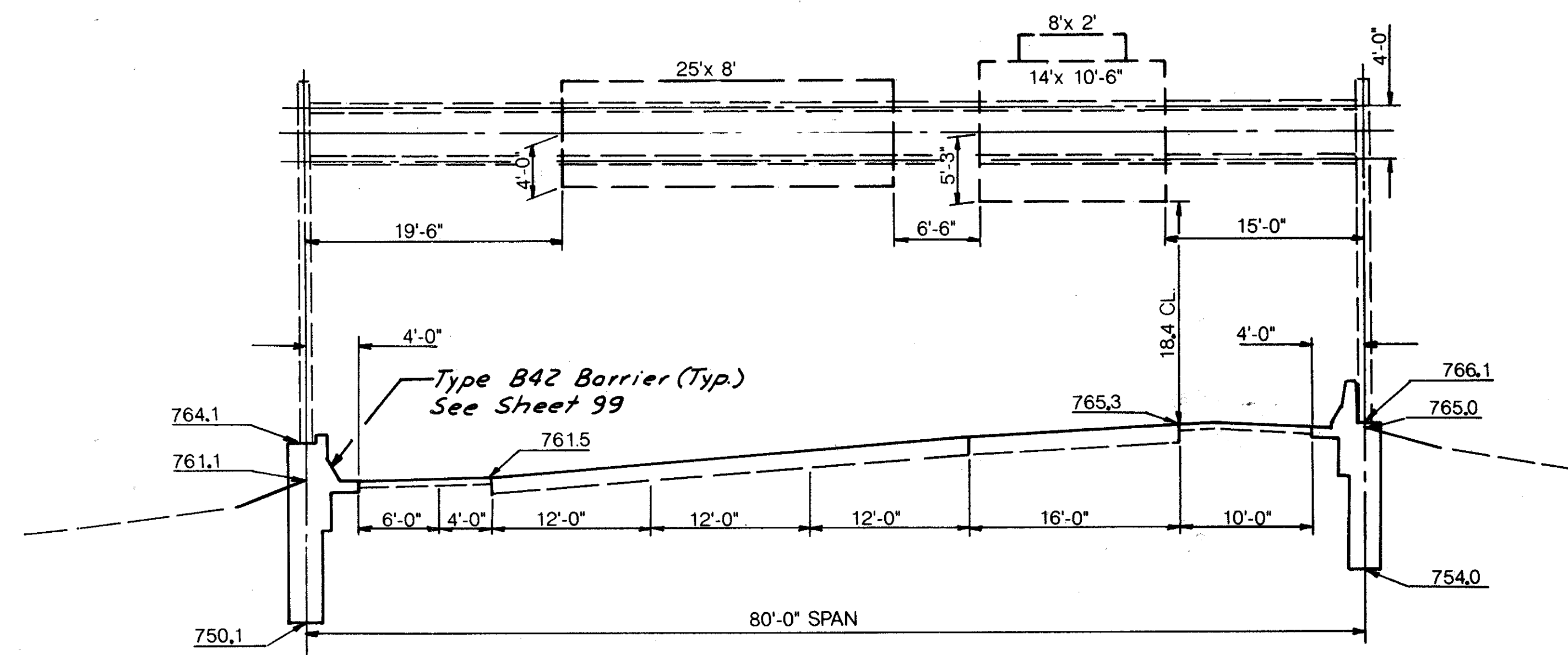
OVERHEAD SIGN NO. 4
STA. 142+00 S.B.

EXISTING: 7.4 DESIGN #1, 60' SPAN
PROPOSED: 7.4 DESIGN #1 WITH 7'-7.65 DESIGN #6 SECTION, 67' SPAN



OVERHEAD SIGN NO. 1
STA. 42+00 S.B.

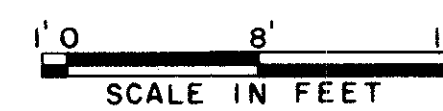
EXISTING: 7.4 DESIGN #1 MODIFIED, 60' SPAN
PROPOSED: 7.4 DESIGN #1 MODIFIED, WITH 7'-7.65 DESIGN #6 SECTION, 67' SPAN



OVERHEAD SIGN NO. 3
STA. 93+75 S.B.

7.5 DESIGN #2 MODIFIED 80' SPAN
(RELOCATED FROM STA. 94+50)

NOTE: ALL ELEVATIONS AND DIMENSIONS SHOWN ON THIS SHEET WERE OBTAINED FROM FORMER CONSTRUCTION PLANS. THE CONTRACTOR SHALL FIELD MEASURE TO VERIFY ACCURACY OF SECTIONS INDICATED PRIOR TO COMMENCEMENT OF WORK. PAVEMENT ELEVATIONS SHOWN INCLUDE PROPOSED 3" RESURFACING.



MADE 2.6.0 DATE 6-14-88
TRACED 2.0.7 DATE 9-8-88
CHECKED 2.0.7 DATE 6-20-88
SCALE 1/8"=1'

HOWARD NEEDLES TAMMEN & BERGENDOFF
ARCHITECTS ENGINEERS PLANNERS



NOTES

MATERIALS
THE OVERHEAD SPAN TRUSS SHALL BE ALUMINUM AND THE END FRAMES SHALL BE STEEL.
SPAN TRUSS AND END FRAMES, INCLUDING HARDWARE, SHALL BE IN ACCORDANCE WITH SUPPLEMENTAL SPECIFICATION I-129 UNLESS OTHERWISE NOTED.
STEEL POLE BASES AND GUSSETS SHALL CONFORM TO THE REQUIREMENTS OF ASTM SPECIFICATION A-373.
AFTER FABRICATION THE TAPERED POLES SHALL HAVE A MINIMUM YIELD STRENGTH OF 48,000 PSI.

FABRICATION
THE ENTIRE STEEL END FRAME SHALL BE HOT DIP GALVANIZED IN ACCORDANCE WITH SEC. M-7.4(d). MAXIMUM LENGTH OF SPAN SECTIONS IS 30 FT.

ERECTION
USE A MINIMUM OF 1" CAMBER IN SPAN TRUSS MEMBER FOR A 50' SPAN; ADD 1/4" OF CAMBER FOR EACH 5' OF INCREASE IN SPAN OVER 50'.

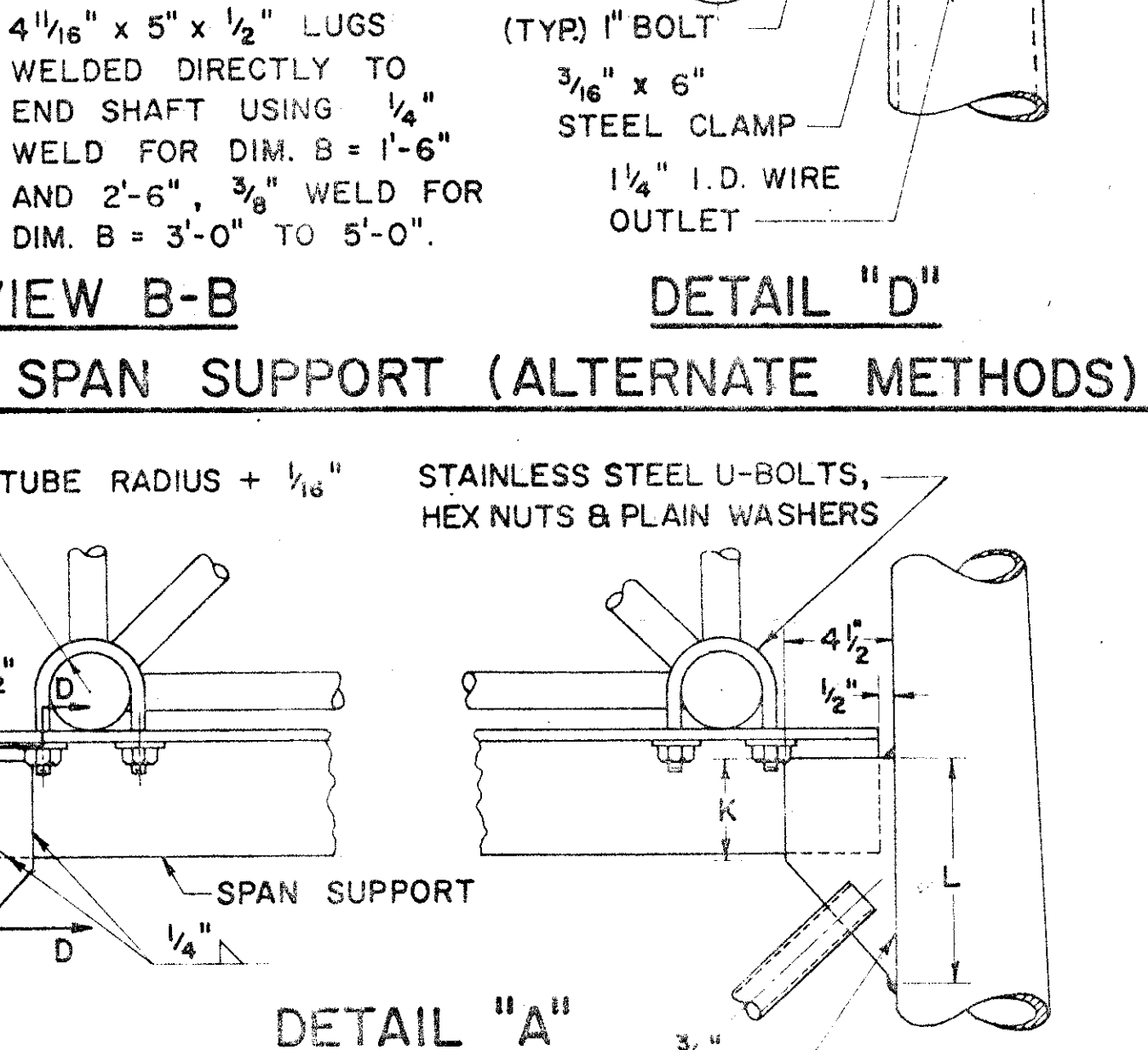
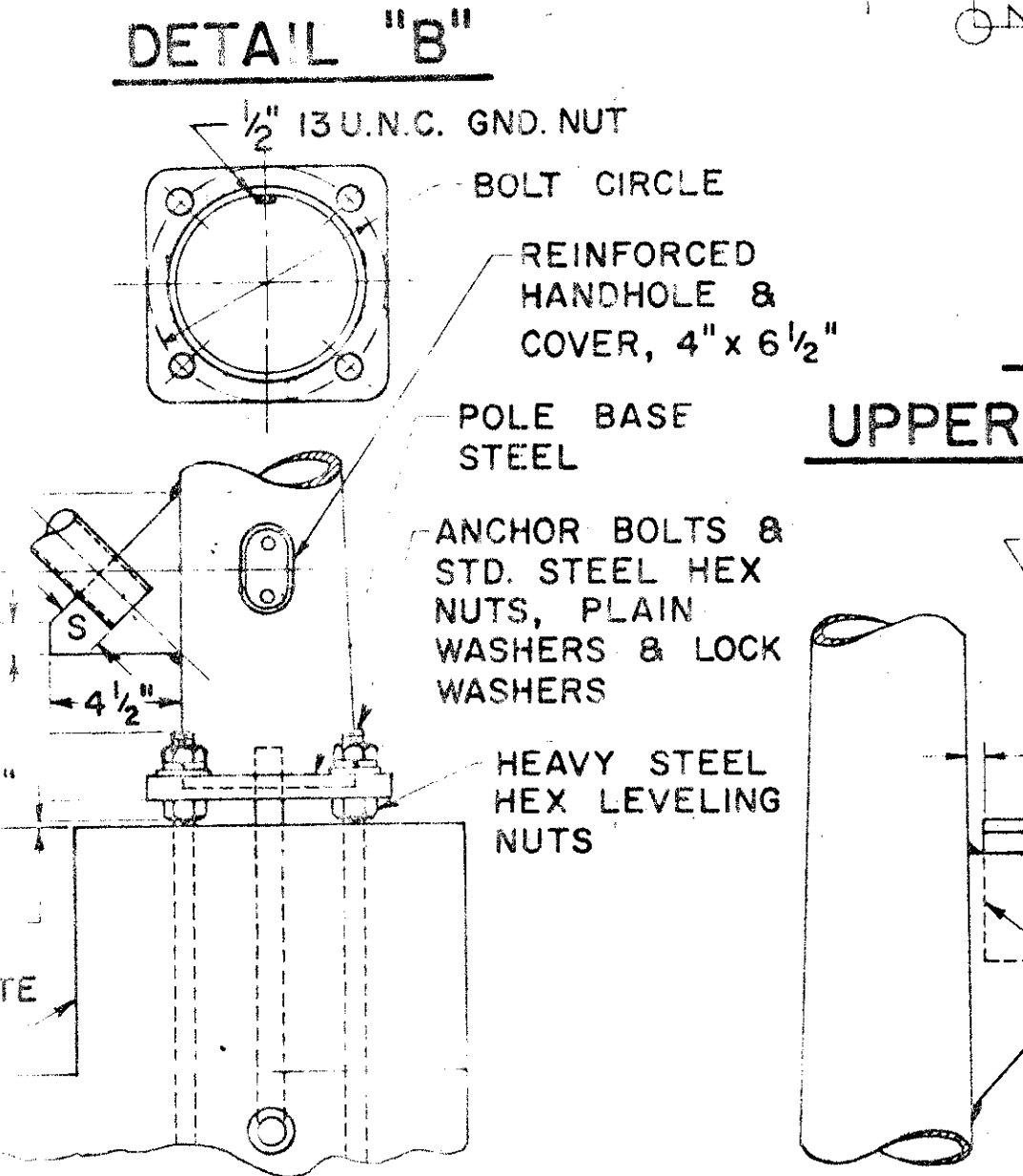
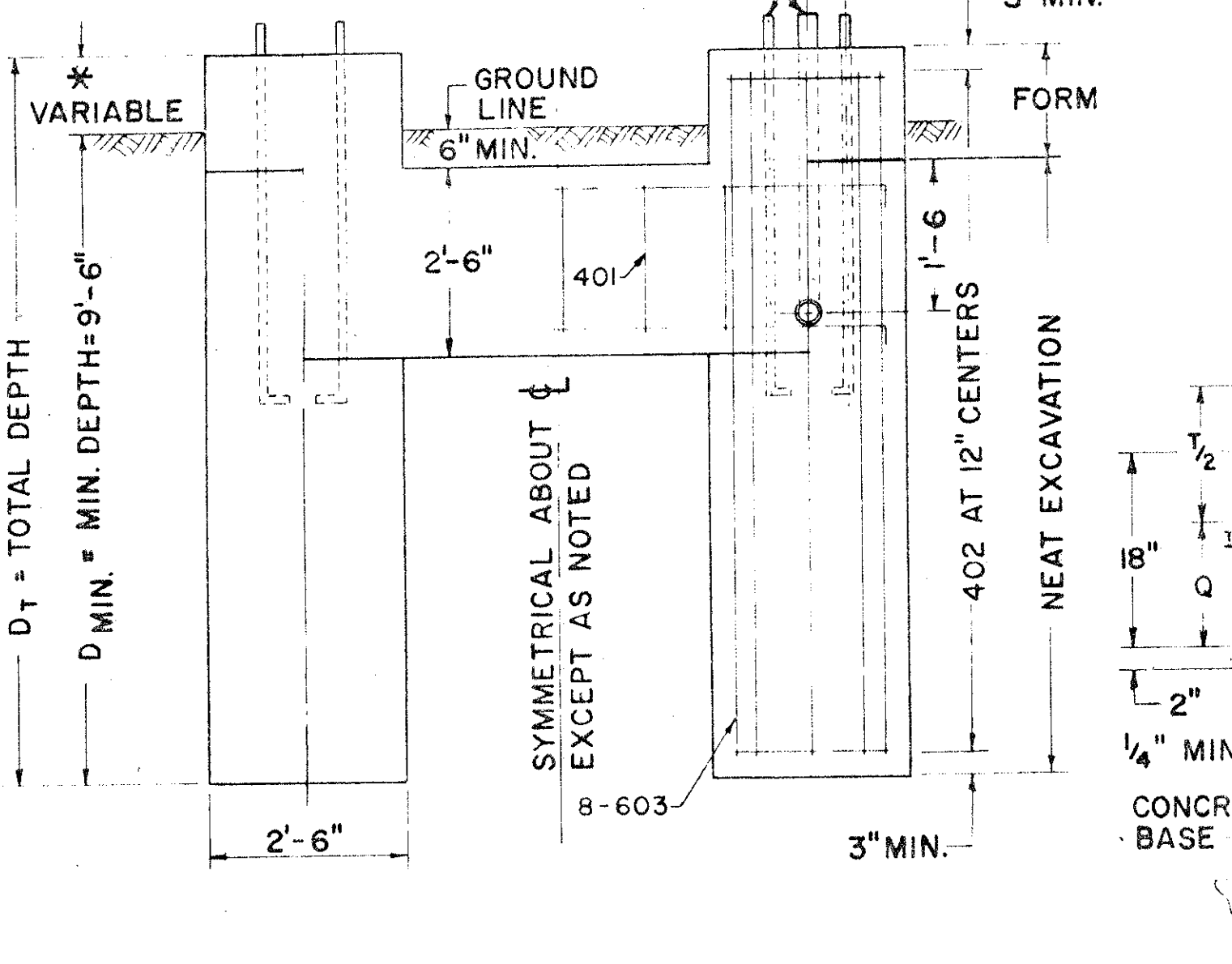
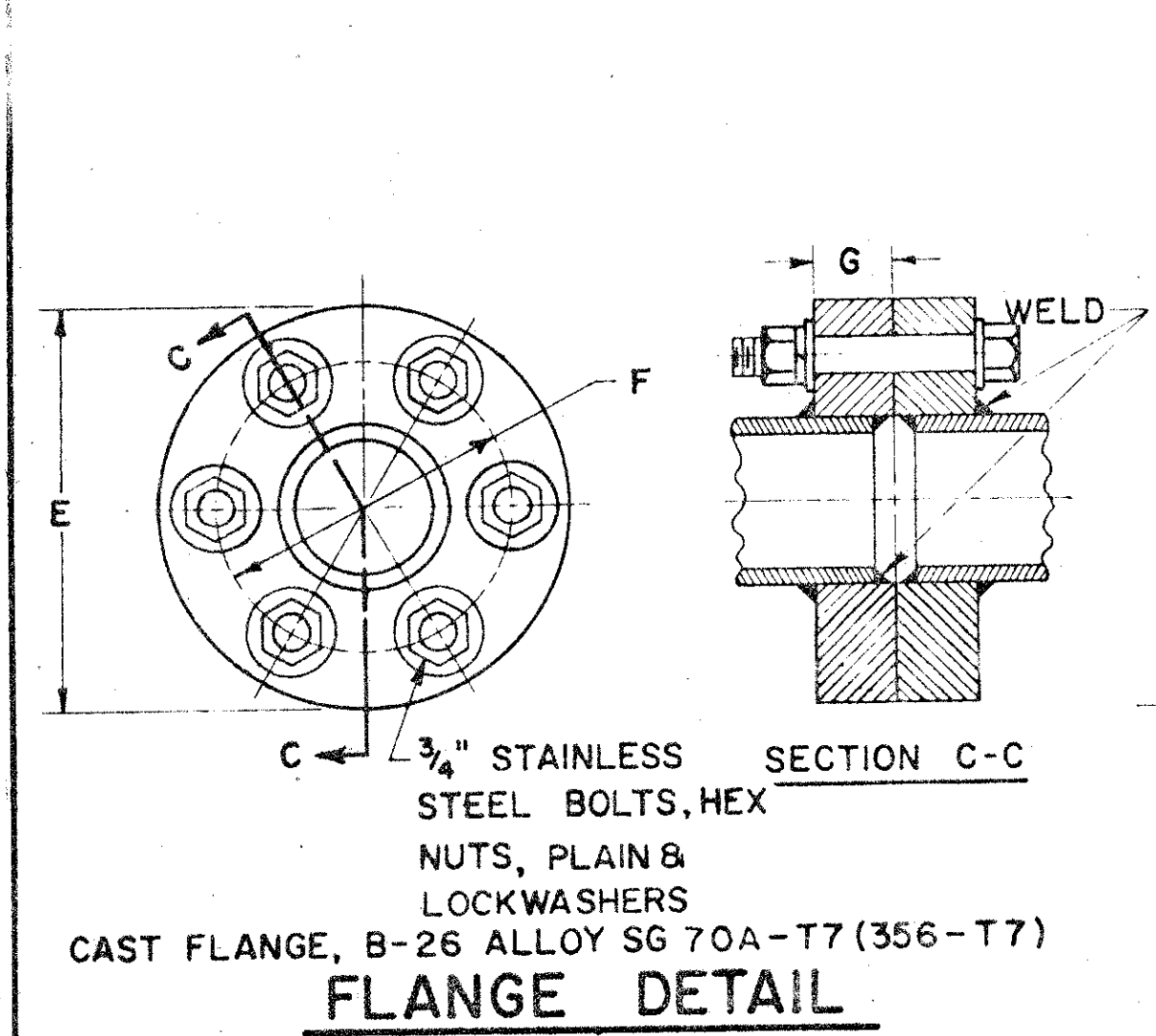
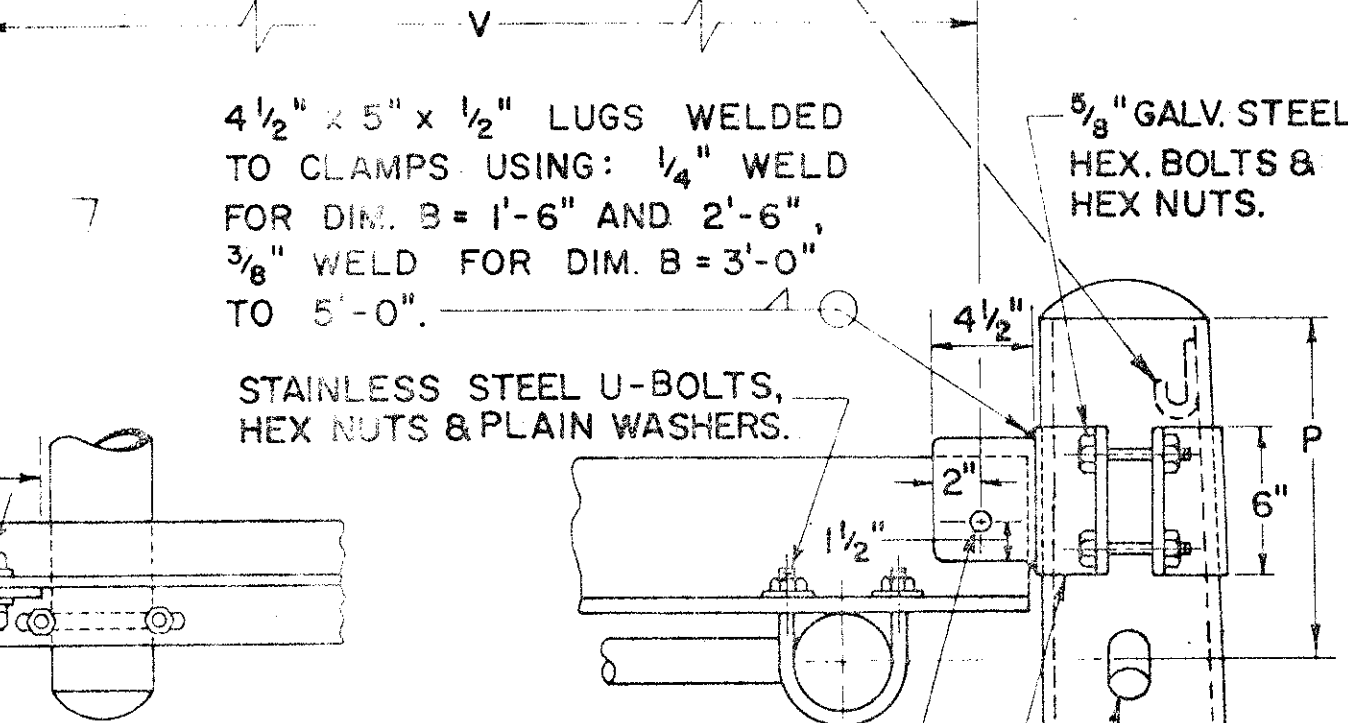
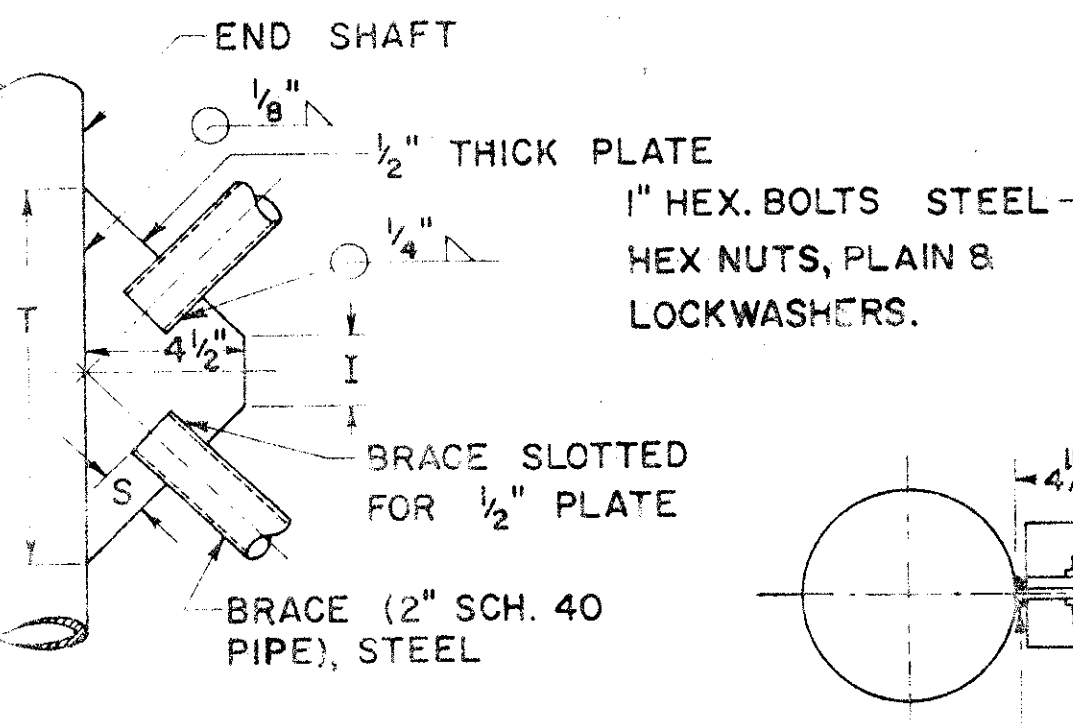
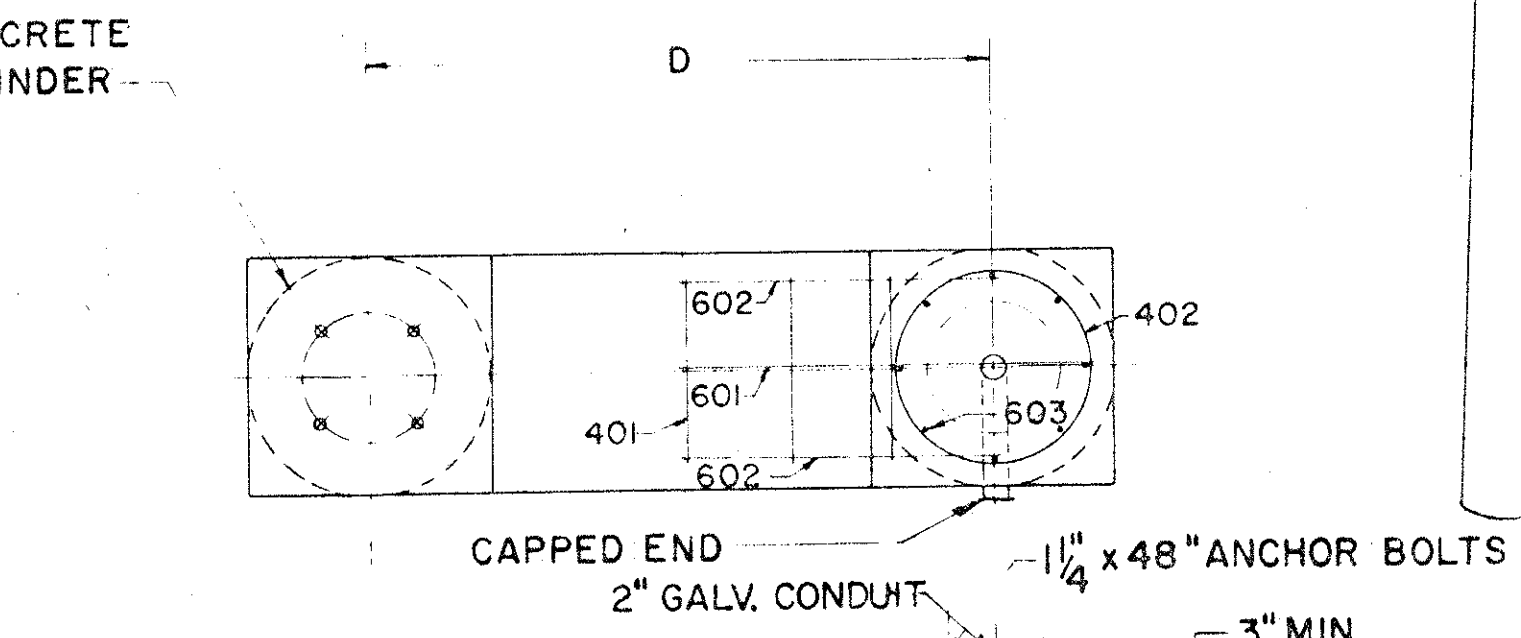
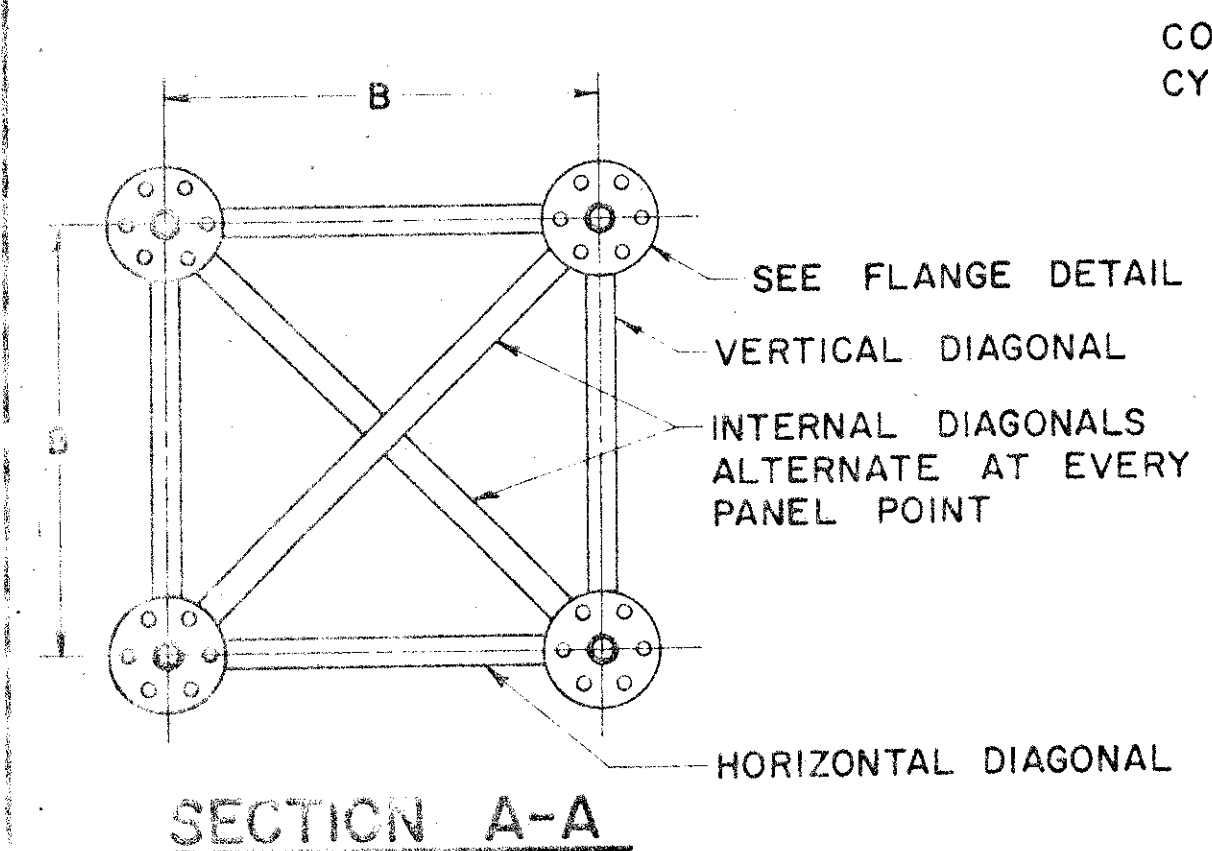
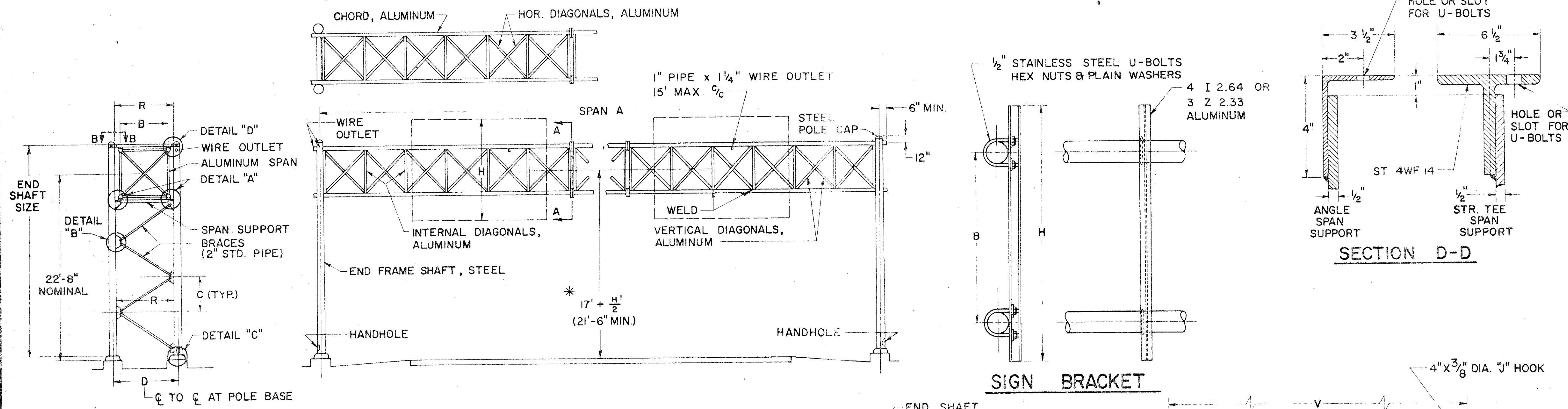
PAYMENT
PAYMENT FOR THE GALVANIZED CONDUIT SHALL BE INCLUDED IN THE UNIT PRICE BID FOR OVERHEAD SIGN SUPPORTS.

SOILS
THE FOUNDATION DETAILS SHOWN ARE FOR AVERAGE SOIL CONDITIONS (MEDIUM CLAY, CEMENTED SAND AND GRAVEL, SANDY CLAY, OR STIFF CLAY). FOR POOR SOIL CONDITIONS, INCREASE "D" MIN. BY: 50% IN DRY OR WET SAND, 60% IN SILTY CLAY, 100% IN SOFT CLAY, AND FROM 75% TO 150% IN WET SILT, DEPENDING ON QUICKSAND ACTION.

REINFORCING STEEL
COST OF REINFORCING STEEL SHALL BE INCLUDED IN THE UNIT PRICE FOR ITEM I-129 CONCRETE FOR SIGN SUPPORT FOUNDATIONS. BAR SIZE IS INDICATED IN THE BAR MARK. THE FIRST DIGIT WHERE THREE DIGITS ARE USED AND THE FIRST TWO DIGITS WHERE FOUR ARE USED, INDICATE THE BAR SIZE NUMBER.

***FOUNDATION ELEVATION**
ELEVATION OF TOPS OF FOUNDATIONS SHALL BE BUILT UP SO THAT 17" CLEARANCE IS MAINTAINED OVER THE ENTIRE WIDTH OF THE PAVEMENT AND SHOULDERS.

DESIGN
THE DESIGN OF OVERHEAD SUPPORTS IS IN ACCORDANCE WITH A.A.S.H.O. SPECIFICATION FOR THE DESIGN AND CONSTRUCTION OF STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, ADOPTED JUNE 12, 1961.



CAST FLANGE, B-26 ALLOY SG 70A-T7 (356-T7)

DESIGN NO.	SPAN A	B	C	D	E	END SHAFT	BRACE LENGTH	F	G	I	K	L	P	Q	R	S	T	U BOLTS	V	BOLT CIRCLE	SPAN SUPPORT SECTION D-D	CHORDS	HORIZONTAL AND INTERNAL DIAGONAL	VERTICAL DIAGONAL
1	50' thru 75'	3'-0"	4'-11 3/4"	4'-5"	9 1/4"	8" x 4.5" x 25'-0", 3 GA.	5'-10 13/16"	7 7/16"	1 3/8"	3 1/2"	4 3/4"	8"	12"	6 5/8"	3'-9"	1 1/2"	10"	5 5/8"	3'-3 5/8"	11"	SPLIT TEE 3'-8"	4 3/4" x .188"	1.900" x .145"	1.660" x .140"
2	76' thru 85'	4'-0"	4'-10 1/4"	5'-7"	9 1/4"	8" x 6.22" x 25'-6", 3 GA.	6'-7 1/8"	7 7/16"	3 3/8"	5 3/8"	4 3/8"	7 3/4"	12"	6 1/4"	4'-10"	1 1/2"	9 1/2"	5 5/8"	4'-4 5/8"	11"	SPLIT TEE 4'-10"	4 3/4" x .188"	2" x .188"	1.900" x .145"
3	86' thru 90'	4'-0"	4'-10 1/4"	5'-7"	11"	8" x 6.22" x 25'-6", 3 GA.	6'-7 1/8"	8 1/2"	1 1/2"	5 5/8"	4 3/8"	7 3/4"	12"	6 1/4"	4'-10"	1 1/2"	9 1/2"	5 5/8"	4'-4 5/8"	11"	SPLIT TEE 4'-10"	5 1/2" x .250"	2" x .188"	1.900" x .145"
4	91' thru 110'	5'-0"	4'-8 1/2"	6'-7"	11"	8" x 6.19" x 26'-0", 3 GA.	7'-3 1/4"	8 1/2"	1 1/2"	-	3 1/2"	7 3/4"	12"	7 1/4"	5'-10"	1 3/4"	11 1/4"	3 3/4"	5'-4 5/8"	11"	SPLIT TEE 5'-10"	5 1/2" x .250"	2 1/2" x .188"	2 1/2" x .188"

FOUNDATION DETAIL
(RIGHT HAND SHOWN - LEFT HAND OPPOSITE)

DETAIL 'C'
POLE BASE DETAIL

DETAIL 'A'
LOWER SPAN SUPPORT

REINFORCEMENT SCHEDULE

MARK	NO.	LENGTH	TYPE
401	12"C/C	8'-6"	102
402	12"C/C	7'-6"	103
601	4	D+4'-0"	101
602	8	D+2'-0"	101
603	32	D _T -6"	STR

BUREAU OF TRAFFIC
OHIO DEPARTMENT OF HIGHWAYS

OVERHEAD SIGN SUPPORTS No.7.4

DATE: 5-2-68
7-23-68
5-6-68

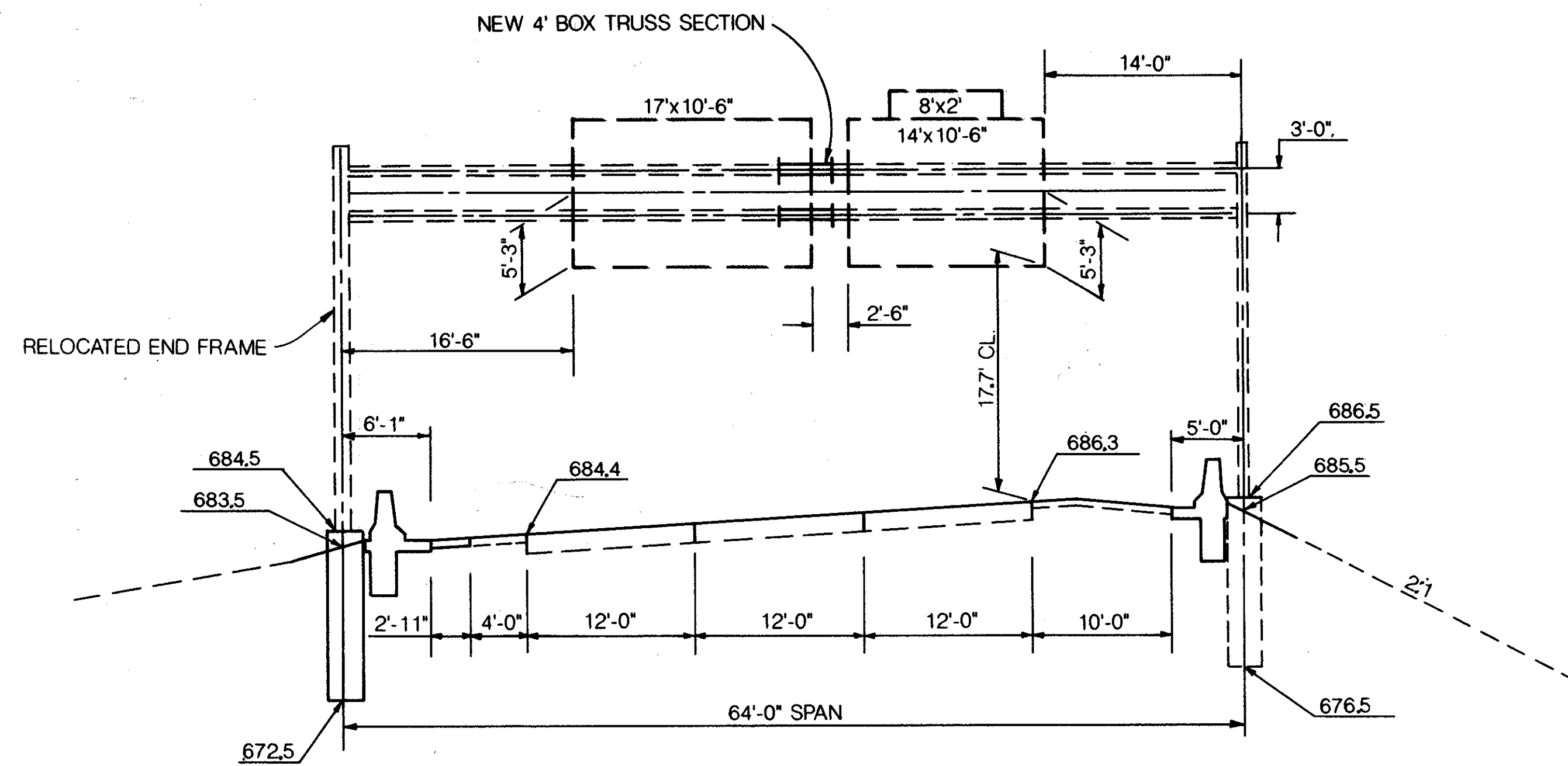
APPROVED: *Robert E. Conner*
ENGINEER OF TRAFFIC

OVERHEAD SIGN SUPPORT DETAILS

FHWA REGION	STATE	PROJECT
5	OHIO	

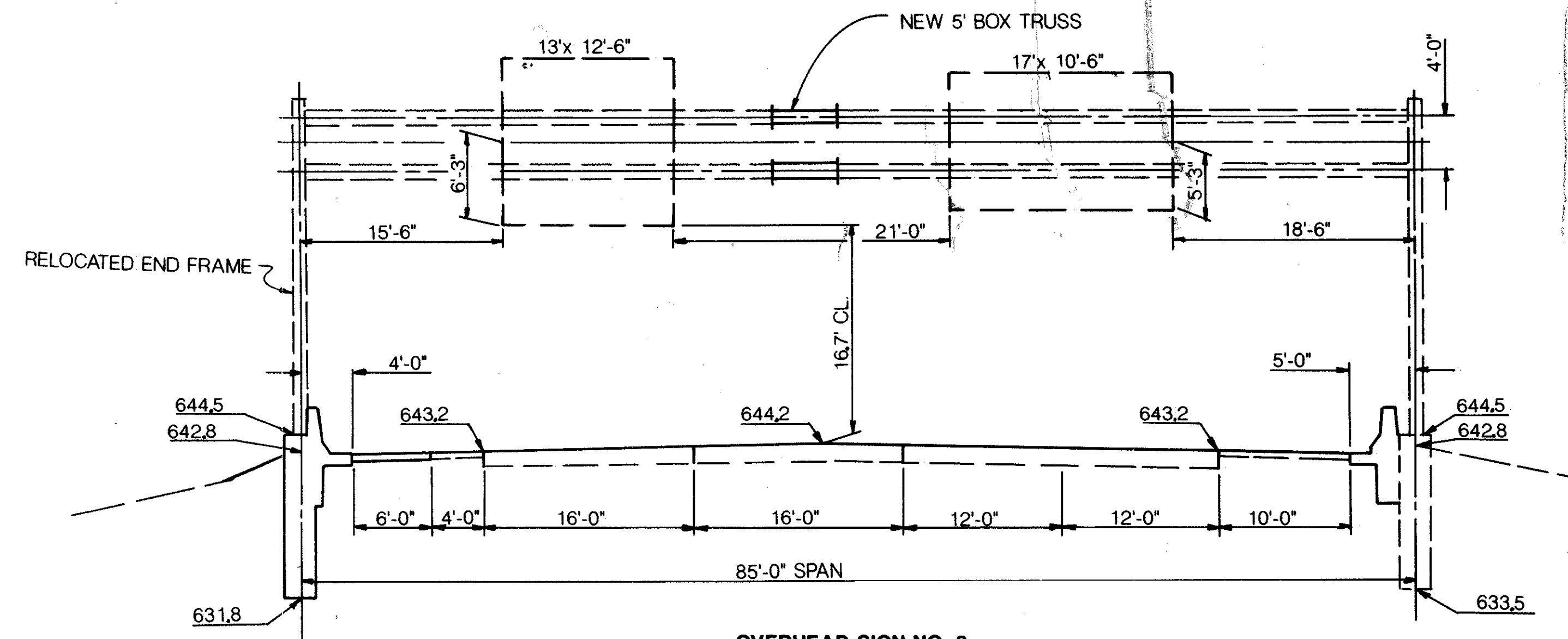
181
200

CUYAHOGA COUNTY
CUY - 90-23.95
LAKE COUNTY
LAK - 90-0.00



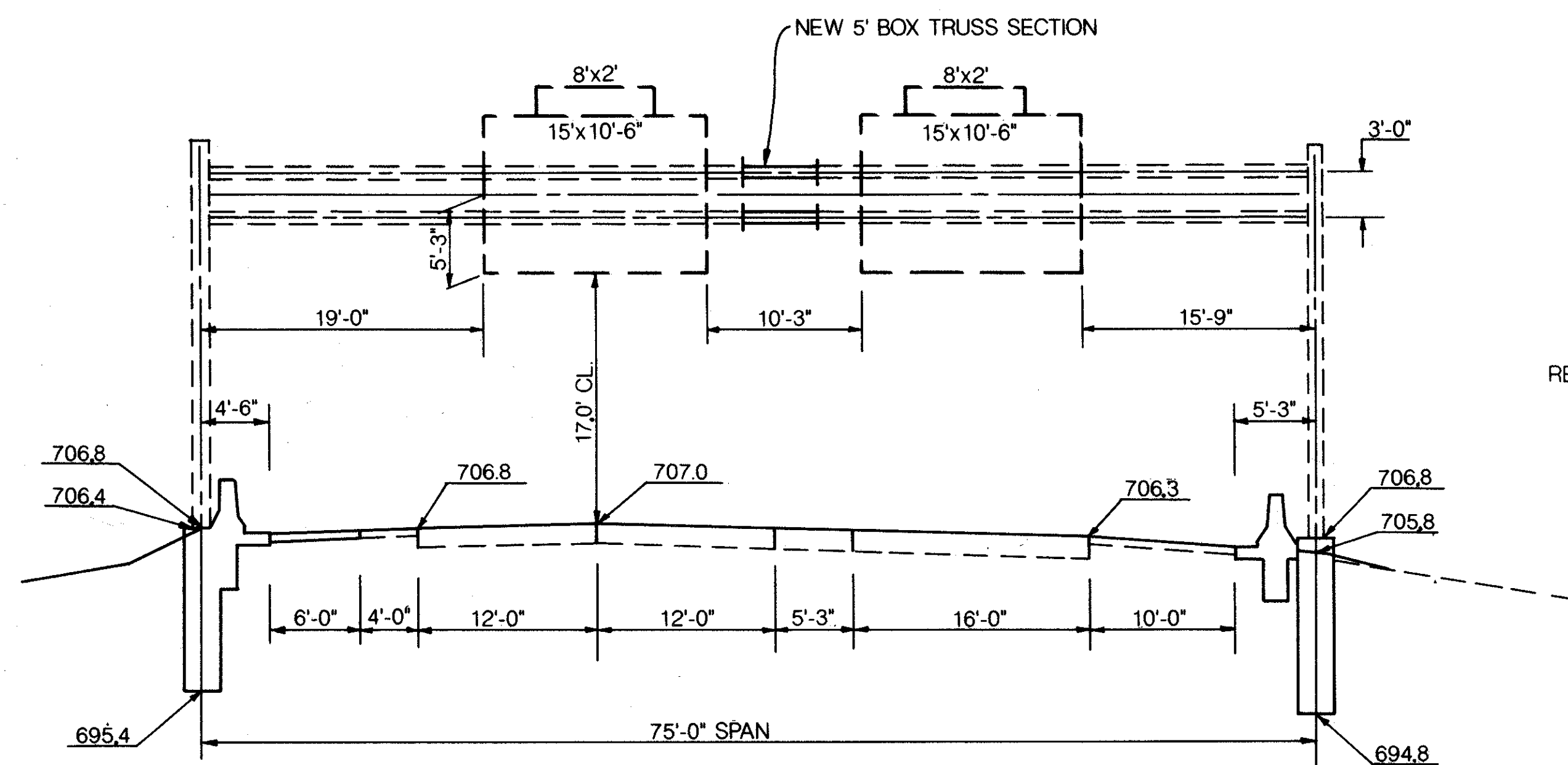
OVERHEAD SIGN NO. 6
STA. 49+50 N.B.

EXISTING: 7.4 DESIGN #1, MODIFIED, 60' SPAN
PROPOSED: 7.4 DESIGN #1 MODIFIED, WITH 4'-7.65 DESIGN #6 SECTION, 64' SPAN



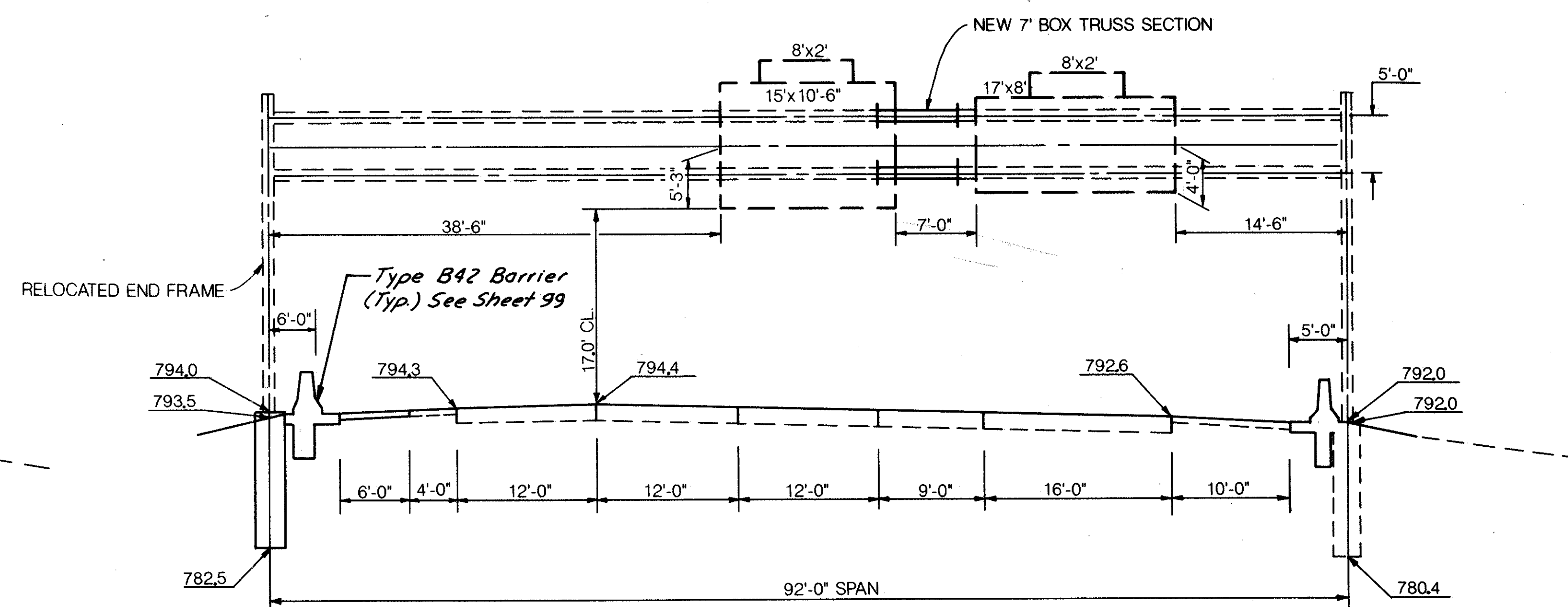
OVERHEAD SIGN NO. 8
STA. 85+25 LAKELAND FWY. W.B.

EXISTING: 7.4 DESIGN #2, 80' SPAN
PROPOSED: 7.4 DESIGN #2 WITH 5'-7.4 DESIGN #2 SECTION, 85' SPAN



OVERHEAD SIGN NO. 5
STA. 66+42 N.B.

EXISTING: 7.4 DESIGN #1, 70' SPAN
PROPOSED: 7.4 DESIGN #1 WITH 5'-7.65 DESIGN #6 SECTION, 75' SPAN
(RELOCATED FROM STA. 66+32)



OVERHEAD SIGN NO. 7
STA. 115+25 N.B.

EXISTING: 7.6 DESIGN #4 MODIFIED, 85' SPAN
PROPOSED: 7.6 DESIGN #4 MODIFIED, WITH 7'-7.65 DESIGN #8 SECTION, 92' SPAN

NOTE: ALL ELEVATIONS AND DIMENSIONS SHOWN ON THIS SHEET WERE OBTAINED FROM FORMER CONSTRUCTION PLANS. THE CONTRACTOR SHALL FIELD MEASURE TO VERIFY ACCURACY OF SECTIONS INDICATED PRIOR TO COMMENCEMENT OF WORK. PAVEMENT ELEVATIONS SHOWN INCLUDE PROPOSED 3" RESURFACING.

MADE D.G.D. DATE 8-14-89
TRACED BY DATE 8-8-89
CHECKED BY DATE 8-29-89
SCALE 1/8"=1'

HOWARD NEEDLES TAMMEN & BERGENDOFF
ARCHITECTS ENGINEERS PLANNERS **HNTB**



CUYAHOGA COUNTY
CUY - 90-23.95
LAKE COUNTY
LAK - 90-0.00

Note: All stations are off of E-90, unless otherwise noted.

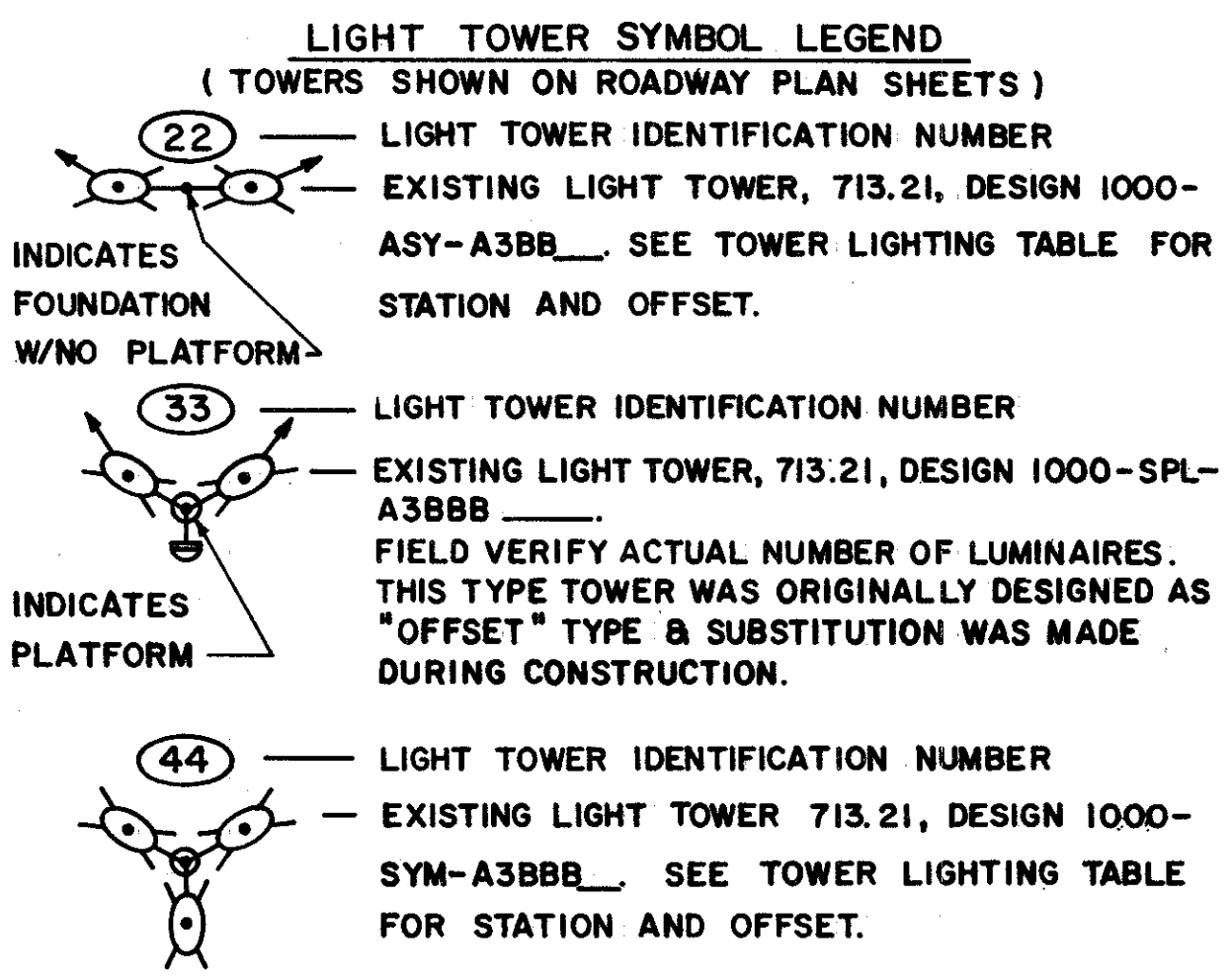
TOWER LIGHTING TABLE

LIGHT TOWER NUMBER	LOCATION STATION/OFFSET	NUMBER OF HPS 1000 W LAMPS	LIGHT TOWER NUMBER	LOCATION STATION/OFFSET	NUMBER OF HPS 1000 W LAMPS	LIGHT TOWER NUMBER	LOCATION STATION/OFFSET	NUMBER OF HPS 1000 W LAMPS
1	Sta. 132+16, 109' Rt.	2	65	Sta. 304+25, 125' Lt.	3	129	Sta. 6+82, 60' Rt., E Ramp 3	2
2	Sta. 137+25, 112' Rt.	2	66	Sta. 305+73, 135' Rt.	3	130	Sta. 15+48, 82' Lt., E Euclid Ave.	2
3	Sta. 141+60, 103' Lt.	2	67	Sta. 309+55, 125' Lt.	3	131	Sta. 7+00, 50' Rt., E Ramp 4	2
4	Sta. 146+40, 85' Rt.	3	68	Sta. 311+08, 125' Rt.	3	132	Sta. 2+25, 39' Rt., E Ramp 4	2
5	Sta. 151+60, 95' Rt.	3	69	Sta. 314+70, 130' Lt.	3	133	Sta. 6+95, 32' Rt., E Ramp 7	2
6	Sta. 153+89, 125' Lt.	3	70	Sta. 316+55, 140' Rt.	3	134	Sta. 12+35, 70' Lt., E Ramp 7	2
7	Sta. 156+82, 145' Rt.	3	71	Sta. 320+10, 150' Lt.	3	135	Sta. 0+45, 90' Lt., E Ramp 6	3
8	Sta. 159+48, 148' Lt.	3	72	Sta. 322+00, 120' Rt.	3	136	Sta. 4+20, 80' Lt., E Ramp 6	3
9	Sta. 162+50, 130' Rt.	3	73	Sta. 325+65, 160' Lt.	3	137	Sta. 8+05, 55' Lt., E Ramp 6	3
10	Sta. 165+20, 130' Lt.	3	74	Sta. 327+25, 137' Rt.	3	138	Sta. 11+65, 58' Rt., E Ramp 6	2
11	Sta. 168+28, 165' Rt.	3	75	Sta. 329+45, 125' Lt.	2	139	Sta. 86+62, 83' Rt., E Euclid Spur S.B.	2
12	Sta. 170+82, 160' Lt.	3	76	Sta. 332+77, 110' Rt.	3	140	Sta. 81+45, 70' Lt., E Euclid Spur N.B.	2
13	Sta. 173+92, 155' Rt.	3	77	Sta. 335+10, 96' Lt.	3	141	Sta. 86+35, 65' Lt., E Euclid Spur N.B.	2
14	Sta. 176+48, 135' Lt.	3	78	Sta. 338+37, 97' Rt.	3	142	Sta. 91+25, 78' Lt., E Euclid Spur N.B.	2
15	Sta. 179+22, 120' Rt.	3	79	Sta. 340+52, 94' Lt.	3	143	Sta. 90+70, 90' Rt., E Euclid Spur S.B.	2
16	Sta. 181+98, 115' Lt.	3	80	Sta. 343+75, 95' Rt.	3	144	Sta. 4+75, 53' Lt., E Ramp 8	2
17	Sta. 184+65, 125' Rt.	3	81	Sta. 346+30, 96' Lt.	3	145	Sta. 9+25, 70' Rt., E Ramp 8	2
18	Sta. 187+38, 117' Lt.	2	82	Sta. 350+43, 94' Rt.	3	146	Sta. 4+95, 60' Rt., E Ramp 9	2
19	Sta. 189+75, 150' Rt.	2	83	Sta. 352+05, 93' Lt.	3	147	Sta. 10+15, 30' Lt., E Ramp 9	2
20	Sta. 191+50, 100' Lt.	3	84	Sta. 354+85, 93' Rt.	3	148	Sta. 13+80, 57' Lt., E Ramp 9	3
21	Sta. 195+50, 145' Rt.	3	85	Sta. 355+85, 90' Lt.	3	149	Sta. 9+00, 36' Rt., E Ramp 10	2
22	Sta. 198+20, 110' Lt.	2	86	Sta. 360+45, 102' Rt.	3	150	Sta. 4+50, 60' Lt., E Ramp 10	2
23	Sta. 200+90, 119' Rt.	3	87	Sta. 362+83, 95' Lt.	3	151	Sta. 11+30, 65' Lt., E Ramp 11	3
24	Sta. 204+10, 105' Lt.	2	88	Sta. 366+00, 94' Rt.	3	152	Sta. 7+40, 50' Rt., E Ramp 11	2
25	Sta. 206+38, 100' Rt.	3	89	Sta. 368+80, 100' Lt.	3	153	Sta. 115+20, 40' Lt.	2
26	Sta. 209+00, 92' Lt.	2	90	Sta. 371+70, 90' Rt.	3	154	Sta. 118+70, 140' Rt.	2
27	Sta. 211+88, 86' Rt.	3	91	Sta. 374+55, 95' Lt.	3	155	Sta. 120+70, 140' Lt.	2
28	Sta. 213+63, 102' Lt.	2	92	Sta. 377+45, 90' Rt.	3	156	Sta. 124+40, 130' Rt.	2
29	Sta. 216+22, 96' Rt.	3	93	Sta. 380+10, 115' Lt.	3	157	Sta. 126+40, 123' Lt.	2
30	Sta. 218+86, 100' Lt.	2	94	Sta. 383+00, 95' Rt.	3	158	Sta. 129+30, 135' Rt.	2
31	Sta. 222+66, 95' Rt.	3	95	Sta. 385+95, 115' Lt.	3	159	Sta. 131+55, 120' Lt.	2
32	Sta. 224+52, 100' Lt.	2	96	Sta. 388+50, 100' Rt.	3	160	Sta. 135+00, 145' Rt.	2
33	Sta. 227+19, 111' Rt.	3	97	Sta. 391+65, 107' Lt.	3	161	Sta. 136+86, 120' Lt.	2
34	Sta. 230+08, 100' Lt.	2	98	Sta. 394+20, 110' Rt.	3	162	Sta. 140+35, 146' Rt.	2
35	Sta. 232+60, 98' Rt.	2	99	Sta. 397+10, 102' Lt.	3	163	Sta. 142+25, 120' Lt.	2
36	Sta. 235+30, 105' Lt.	2	100	Sta. 399+78, 137' Rt.	3	164	Sta. 145+30, 140' Rt.	2
37	Sta. 237+70, 98' Rt.	3	101	Sta. 402+95, 113' Lt.	3	165	Sta. 147+10, 120' Lt.	2
38	Sta. 240+00, 104' Lt.	2	102	Sta. 43+80, 110' Rt.	3	166	Sta. 150+65, 140' Rt.	2
39	Sta. 242+80, 96' Rt.	3	103	Sta. 45+88, 111' Lt.	3	167	Sta. 152+50, 120' Lt.	2
40	Sta. 244+60, 105' Lt.	2	104	Sta. 49+30, 100' Rt.	3	168	Sta. 156+05, 130' Rt.	2
41	Sta. 247+80, 96' Rt.	3	105	Sta. 50+70, 118' Lt.	3	169	Sta. 158+00, 120' Lt.	2
42	Sta. 2+50, 50' Lt., E Ramp 11	2	106	Sta. 55+00, 66' Rt., E I-90 E.B.	3	170	Sta. 161+50, 130' Rt.	2
43	Sta. 253+50, 90' Rt.	3	107	Sta. 55+20, 55' Lt., E Lkld Frwy W.B.	3	171	Sta. 11+50, 120' Lt.	2
44	Sta. 1+00, 70' Lt., E E. 185 St.	2	108	Sta. 60+55, 60' Rt., E I-90 E.B.	2	172	Sta. 14+80, 142' Rt.	2
45	Sta. 259+85, 100' Rt.	2	109	Sta. 4+35, 34' Rt., Turning Rdwy No.1	2	173	Sta. 95+15, 100' Lt., E Lkld Frwy W.B.	2
46	Sta. 9+40, 66' Lt., E Ramp 13	2	110	Sta. 74 90' Rt., Lkld Frwy E.B.	2	174	Sta. 99+25, 100' Rt., E Lkld Frwy E.B.	2
47	Sta. 261+50, 160' Lt.	2	111	Sta. 77+00, 60' Lt., Lkld Frwy E.B.	2	175	Sta. 0+70, 40' Rt., E Ramp 3	2
48	Sta. 11+80, 81' Rt., E Ramp 12	2	112	Sta. 82+65, 54' Lt., Lkld Frwy E.B.	2	176	Sta. 5+05, 53' Lt., E Ramp 1-A	2
49	Sta. 4+45, 105' Rt., E Ramp 12	2	113	Sta. 86+15, 60' Lt., Lkld Frwy E.B.	3	177	Sta. 142+35, 125' Rt.	2
50	Sta. 266+82, 118' Lt.	2	114	Sta. 60+60, 55' Lt., Lkld Frwy W.B.	3	178	Sta. 149+40, 80' Lt.	3
51	Sta. 268+70, 120' Rt.	2	115	Sta. 76+25, 80' Rt., Lkld Frwy W.B.	3	179	Sta. 8+00, 42' Lt., E Ramp 11	2
52	Sta. 272+24, 150' Lt.	2	116	Sta. 80+90, 85' Rt., Lkld Frwy W.B.	2	180		
53	Sta. 273+85, 125' Rt.	3	117	Sta. 14+00, 72' Lt., Turning Rdwy No.1	2	181		
54	Sta. 277+85, 115' Lt.	2	118	Sta. 10+95, 85' Lt., Turning Rdwy No.2	3	182	Sta. 15+80, 50' Lt., E Ramp 12	2
55	Sta. 278+65, 113' Rt.	3	119	Sta. 20+10, 60' Rt., Turning Rdwy No.2	2	183	Sta. 3+55, 70' Rt., E Neil Rd.	3
56			120	Sta. 26+45, 50' Lt., Turning Rdwy No.2	2	184	Sta. 273+50, 52' Lt., E Villa View	2
57	Sta. 282+30, 107' Lt.	3	121	Sta. 23+50, 95' Lt., E Ramp 1	3	185	Sta. 332+60, 90' Lt.	2
58	Sta. 284+95, 102' Rt.	3	122	Sta. 10+90, 57' Lt., E Ramp 2	2			
59	Sta. 287+80, 123' Lt.	3	123	Sta. 18+95, 50' Rt., E Ramp 2	2			
60	Sta. 290+25, 110' Rt.	3	124	Sta. 2+90, 80' Lt., Turning Rdwy No.2	2			
61	Sta. 293+25, 120' Lt.	3	125	Sta. 44+50, 34' Lt., E Euclid Spur S.B.	2			
62	Sta. 295+18, 135' Rt.	3	126	Sta. 48+30, 35' Rt., E Euclid Spur N.B.	2			
63	Sta. 298+80, 125' Lt.	3	127	Sta. 53+89, 40' Rt., E Euclid Spur S.B.	2			
64	Sta. 300+25, 140' Rt.	3	128	Sta. 58+00, 50' Lt., E Euclid Spur N.B.	2			
COLUMN - SUB-TOTAL		163	COLUMN - SUB-TOTAL		175	COLUMN - SUB-TOTAL		118
						GRAND TOTAL		456

LUMINAIRE RELAMPED
LIGHT TOWERS SHOWN ON ROADWAY PLANS ARE EXISTING AND SHALL BE RELAMPED. LAMPS SHALL BE HIGH PRESSURE SODIUM, 1,000 WATT AS PER 713.14. IN ADDITION TO RELAMPING LUMINAIRES SHALL BE CLEANED AND LEVELED AS PER 625.07.

BASIS OF PAYMENT SHALL BE AT THE UNIT PRICE PER EACH:

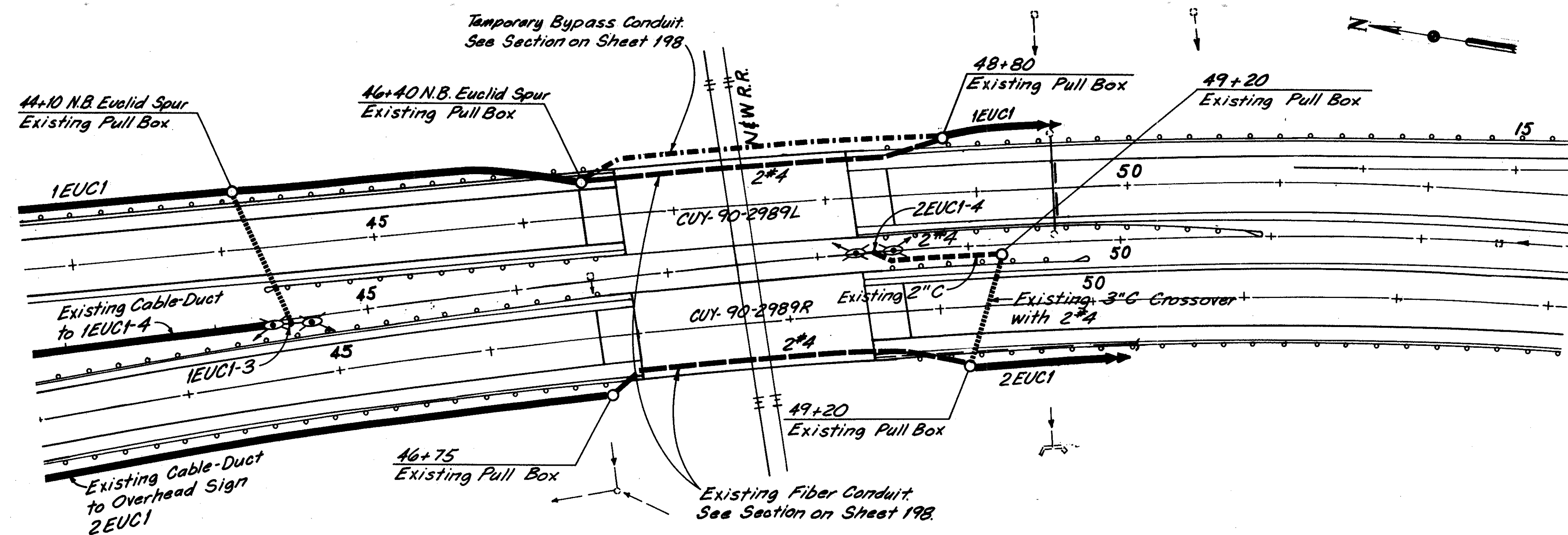
ITEM SPECIAL - LUMINAIRE - RELAMPED



FHWA REGION	STATE	PROJECT	
5	OHIO		

182A
200

CUYAHOGA COUNTY
CUY - 90-23.95
LAKE COUNTY
LAK - 90-0.00



LIGHTING QUANTITIES SUB-SUMMARY			
QUANTITY	UNIT	ITEM	DESCRIPTION
750	L.F.	625	CONDUIT 2" 713.04
810	L.F.	625	NO. 4 AWG 5000V DISTRIBUTION CABLE
12	EACH	625	CABLE SPLICING KIT 713.15
190	L.F.	625	TRENCH 24" DEEP

LIGHTING NOTES:

1. Bridge parapet rehabilitation work involving lighting power conduit is to be performed with no interruption of service to light towers.
2. Power service to overhead signs may be interrupted for the duration of the work
3. All connections, disconnections and removals shall be incidental to quantities as given in the Lighting Quantities Sub-Summary table.
4. Coordinate all power shutdowns on circuits 1EUC1 and 2EUC1 with O.D.O.T. District 12.
5. Conduit on structure: Expansion fittings for conduit on structure shall be OZ type AK Crouse-Hinds type XJ-4 or equal approved by the Engineer, for Bridges Nos. CUY-90-2989L and CUY-90-2989R.

6. LIGHTING REVISIONS CUY-90-2989R

- A. Disconnect circuit 2EUC1 at pull box at Sta. 49+20 south of 2989R. Maintain circuit continuity to light tower 2EUC1-4.
- B. Remove existing 2*4 in existing 2" fiber conduit in parapet. Conduit to be removed with parapet safety curb removal.
- C. Install new 2" conduit (713.04) in new safety curb from pull box at Sta. 49+20 to pull box at Sta. 46+75.
- D. Install new 2*4 in new conduit, reconnect circuit 2EUC1.

7. LIGHTING REVISIONS CUY-90-2989L

- A. Install new 2" bypass conduit w/ 2*4, for circuit 1EUC1. Connect at pull boxes north and south of 2989L to bypass existing circuit and wire in 2989L east parapet.
- B. Remove existing 2*4 in existing 2" fiber conduit in parapet. Conduit to be removed with parapet safety curb removal.
- C. Install new 2" conduit (713.04) in new safety curb from pull box at Sta. 46+40 to pull box at Sta. 48+80.
- D. Install new 2*4 in new conduit, reconnect circuit 1EUC1, and remove temporary bypass conduit and wire.

8. If any part of the existing conduit is in structure not being removed, transition new conduit to existing as required with appropriate fittings. Payment for this work will be incidental to new 2" Conduit (713.04).

MADE F.E.G. DATE 11-30-89
TRACED B.L.K. DATE 11-30-89
CHECKED C.K.B. DATE 11-30-89
SCALE 1"=30'

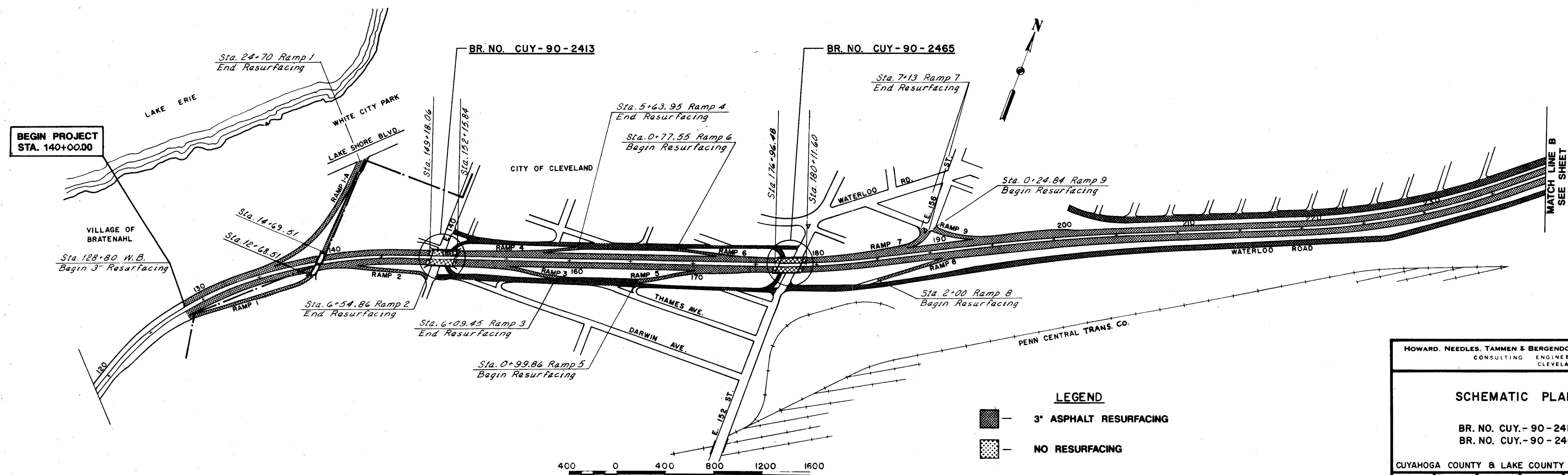
Howard, Needles, Tammen & Bergendoff
CONSULTING ENGINEERS
CLEVELAND, OHIO

HNTB

FHWA REGION	STATE	PROJECT
5	OHIO	

183
200

CUYAHOGA COUNTY
CUY-90-2395
LAKE COUNTY
LAK-90-000



BEGIN PROJECT
STA. 140+00.00

BR. NO. CUY-90-2413

BR. NO. CUY-90-2465

CITY OF CLEVELAND

VILLAGE OF
BRATENAHL

Sta. 128+80 W.B.
Begin 3" Resurfacing

Sta. 24+70 Ramp 1
End Resurfacing

Sta. 14+69.51

Sta. 12+68.51

Sta. 6+54.86 Ramp 2
End Resurfacing

Sta. 6+09.45 Ramp 3
End Resurfacing

Sta. 0+99.86 Ramp 5
Begin Resurfacing

Sta. 5+63.95 Ramp 4
End Resurfacing

Sta. 0+77.55 Ramp 6
Begin Resurfacing

Sta. 176+96.48

Sta. 180+11.60

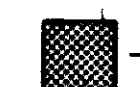

Sta. 7+13 Ramp 7
End Resurfacing

Sta. 0+24.84 Ramp 9
Begin Resurfacing

Sta. 2+00 Ramp 8
Begin Resurfacing

MATCH LINE B
SEE SHEET

LEGEND

-  3" ASPHALT RESURFACING
-  NO RESURFACING



HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
CLEVELAND

HNTB

SCHMATIC PLAN

BR. NO. CUY.-90-2413
BR. NO. CUY.-90-2465

CUYAHOGA COUNTY & LAKE COUNTY OHIO

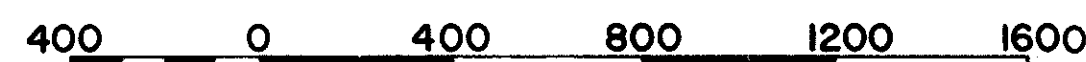
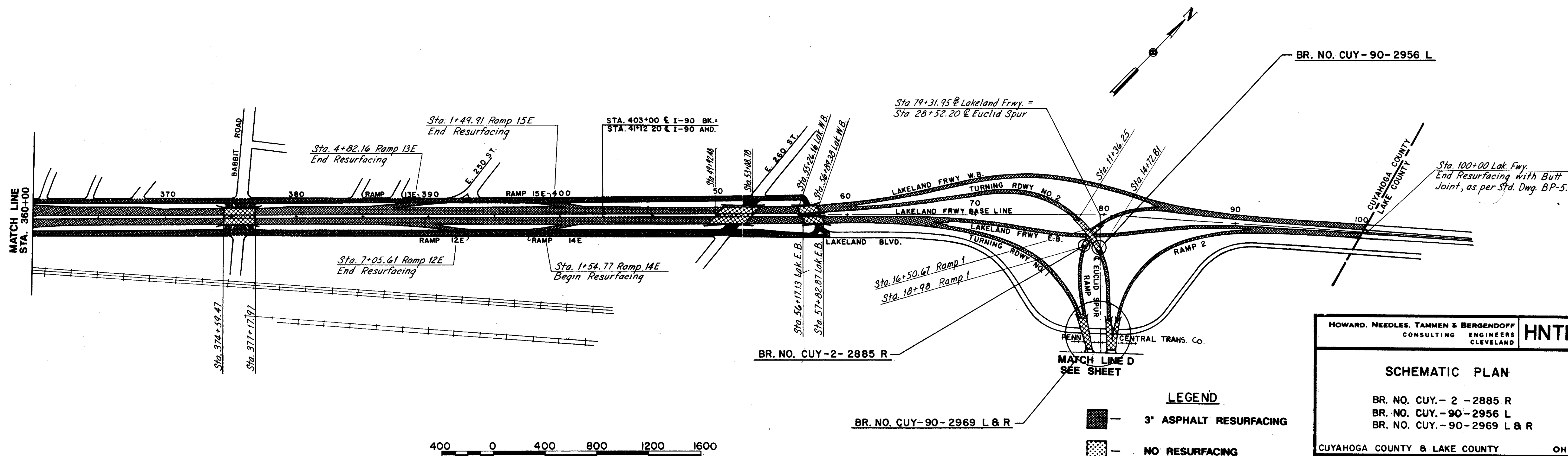
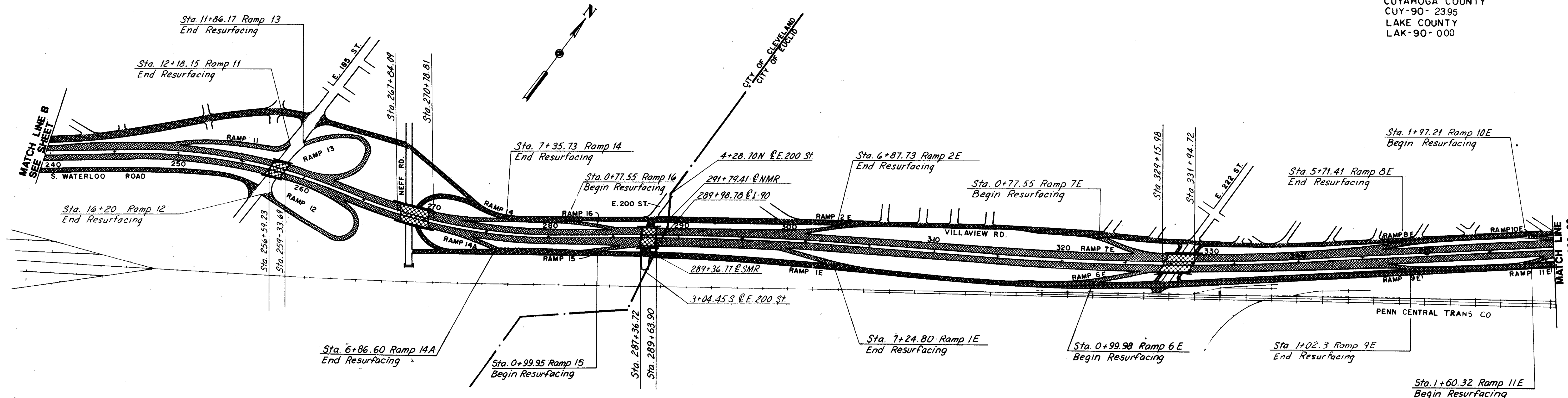
DRAWN	TRACED	CHECKED	REVIEWED	REVISED
D.L.R.	D.L.R.	C.A.C.	C.A.B.	
DATE 12-20-90	DATE 1-2-91	DATE 1-10-91	DATE 5-1-91	

SHEET 1/18

FHWA REGION	STATE	PROJECT
5	OHIO	

184
200

CUYAHOGA COUNTY
CUY-90-2395
LAKE COUNTY
LAK-90-000



LEGEND

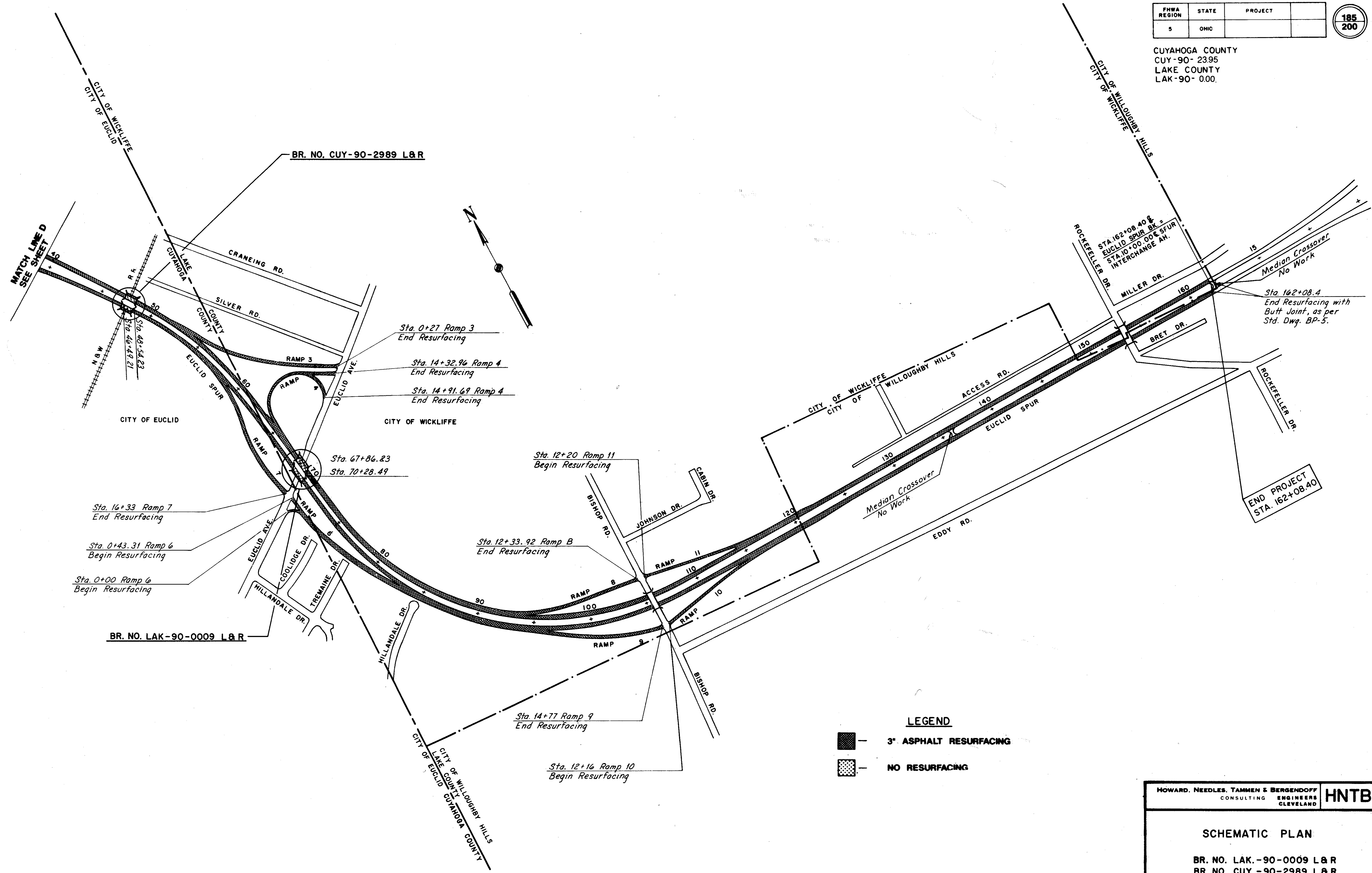
	3" ASPHALT RESURFACING
	NO RESURFACING

HOWARD, NEEDLES, TAMMEN & BERGENDOFF CONSULTING ENGINEERS CLEVELAND		HNTB
SCHEMATIC PLAN		
BR. NO. CUY-2-2885 R BR. NO. CUY-90-2956 L BR. NO. CUY-90-2969 L & R		
CUYAHOGA COUNTY & LAKE COUNTY OHIO		
DRAWN D.L.R. DATE 12-88	TRACED D.L.R. DATE 12-88	CHECKED C.A.C. DATE 1-89
REVIEWED C.A.B. DATE 5-89	REVIEWED C.A.B. DATE 5-89	SHEET 2/18

FHWA REGION	STATE	PROJECT
5	OHIO	

185
200

CUYAHOGA COUNTY
CUY-90-2395
LAKE COUNTY
LAK-90-000



LEGEND

- 3" ASPHALT RESURFACING
- NO RESURFACING



HOWARD, NEEDLES, TAMMEN & BERGENDOFF CONSULTING ENGINEERS CLEVELAND				HNTB
SCHEMATIC PLAN				
BR. NO. LAK-90-0009 L&R BR. NO. CUY-90-2989 L&R				
CUYAHOGA COUNTY & LAKE COUNTY				OHIO
DRAWN DATE	TRACED DATE	CHECKED DATE	REVIEWED DATE	REVISED DATE
DLR	DLR	CAC	CAB	CAB
1/28	1/28	1/28	1/28	1/28
				SHEET 3/12

GENERAL NOTES - STRUCTURES OVER 20 - FT SPAN

FHWA REGION	STATE	PROJECT
5	OHIO	



CUYAHOGA COUNTY
 CUY-90-23.95
 LAKE COUNTY
 LAK-90-0.00

ITEM	ITEM EXTENSION	GENERAL	STRUCTURE										ESTIMATED QUANTITIES			DESCRIPTION				
			CUY-90-2413	CUY-90-2465	CUY-2-2885R	CUY-90-2956L	CUY-90-2969L	CUY-90-2969R	CUY-90-2989L	CUY-90-2989R	LAK-90-0009L	LAK-90-0009R	ITEM	QUANTITY	UNIT					
509	11401	100													509	100	LB.	REINFORCING STEEL, AS PER PLAN		
517	70201		550	588	411	640	926	642	359	363	434	433				517	5,346	LIN.FT.	RAILING FACED, AS PER PLAN	
845	10300						6										845	6	SQ.YD.	LATEX MODIFIED CONCRETE OVERLAY (1-1/4" THICK) (SEE PROPOSAL NOTE)
SPEC.	512 67502		862	923	528	823	1,139	791	441	447	531	530				SPEC.	7015	SQ.YD.	SEALING OF CONCRETE SURFACES (EPOXY) (SEE PROPOSAL NOTE)	
SPEC.	519 10000					5,700	12,400	14,500	11,600	4,900	4,900	10,600	8,200				SPEC.	72,800	SQ.FT.	SOUNDING OF CONCRETE DECK BOTTOM ***
SPEC.	519 12602					*152	*338	*101	*130	*6	*6	*31	*82				SPEC.	*846	SQ.FT.	LOW-PRESSURE EPOXY INJECTING DELAMINATED CONCRETE
SPEC.	519 11600		*5	*30													SPEC.	*35	SQ.FT.	REPAIRING CONCRETE WITH TROWELABLE MORTAR ***
SPEC.	519 11600		*45	*75													SPEC.	*120	SQ.FT.	REPAIRING CONCRETE WITH SOLVENT-FREE EPOXY RESIN ***

NOTE:
 * SINCE THE AMOUNT OF WORK TO BE PERFORMED IS INDETERMINATE, ALL OR A PORTION OF THIS QUANTITY IS SUBJECT TO NON-PERFORMANCE WITHOUT PENALTY TO THE STATE OF OHIO.

** No Federal Participation
 *** 50% Federal Participation

1. PROPOSED WORK

A. REBUILD SAFETY CURBS TO SAFETY SHAPE PARAPETS AND WINGWALLS.

THE EXISTING SAFETY CURBS AND WINGWALLS SHALL BE REBUILT TO SAFETY SHAPE PARAPETS AND WINGWALLS IN ACCORDANCE WITH THE PROVISIONS OF GENERAL NOTES 2, 4, 10, 11, 12, 13 AND 14 AND AS DETAILED IN THE PLANS ON THE FOLLOWING BRIDGES:

BRIDGE NO. CUY-90-2413 BRIDGE NO. CUY-90-2969 L&R
 BRIDGE NO. CUY-90-2465 BRIDGE NO. CUY-90-2989 L&R
 BRIDGE NO. CUY-2-2885 R BRIDGE NO. LAK-90-0009 L&R
 BRIDGE NO. CUY-90-2965 L

THE EXISTING CHEVRON SIGN SUPPORTS ON BRIDGE NO. CUY-90-2885R AND BRIDGE NO. CUY-90-2956L SHALL BE LEFT IN PLACE.

B. SOUND AND REPAIR BRIDGE DECK BOTTOM.

THE BRIDGE DECK BOTTOM, EXCEPT SPANS OVER RAILROADS, SHALL BE SOUNDED AND REPAIRED IF NEEDED IN ACCORDANCE WITH THE PROVISIONS OF GENERAL NOTES 2, 5, AND 6 ON THE FOLLOWING BRIDGES:

BRIDGE NO. CUY-2-2885 R BRIDGE NO. CUY-90-2989 L&R
 BRIDGE NO. CUY-90-2956 L BRIDGE NO. LAK-90-0009 L&R
 BRIDGE NO. CUY-90-2969 L&R

C. REPAIR MEDIAN BARRIER.

THE MEDIAN BARRIER SHALL BE REPAIRED IN ACCORDANCE WITH THE PROVISIONS OF GENERAL NOTES 7, 8, 9 AND 10 AND AS DETAILED IN THE PLANS ON THE FOLLOWING BRIDGES:

BRIDGE NO. CUY-90-2413 BRIDGE NO. CUY-90-2465

D. LATEX MODIFIED CONCRETE OVERLAY.

A PORTION OF THE DECK OF BRIDGE NO. CUY-90-2969L SHALL BE OVERLAPPED WITH LATEX MODIFIED CONCRETE OVERLAY AS DETAILED IN THE PLANS.

2. PLAN OF OPERATIONS AND PROTECTION

THE CONTRACTOR SHALL SUBMIT TO THE ENGINEER A COMPLETE SCHEDULE OF CONSTRUCTION OPERATIONS ALONG WITH PLANS CONTAINING HIS PROPOSED METHODS OF PREVENTING DEBRIS FROM FALLING ON THE ROADWAY BELOW. THESE PLANS MUST BE SUBMITTED AND APPROVED PRIOR TO COMMENCING THE WORK. NO REMOVAL WORK SHALL BE STARTED WITHOUT PRIOR APPROVAL OF THE ENGINEER.

THE ABOVE WORK SHALL BE INCLUDED WITH THE APPROPRIATE REPAIR ITEM FOR PAYMENT.

3. ITEM 509 - REINFORCING STEEL, AS PER PLAN

THIS ITEM SHALL BE USED TO REPLACE REINFORCING STEEL WHICH IS BENT, ELONGATED, MISSING OR EXTREMELY CORRODED. BARS SHALL BE THE SAME SIZE AS ORIGINAL BARS AND SHALL BE PLACED AS NEAR AS POSSIBLE TO THEIR ORIGINAL LOCATION. BARS SHALL BE LAPPED ACCORDING TO SECTION 509.08. PAYMENT FOR THIS ITEM SHALL INCLUDE THE COST OF ALL MATERIALS AND LABOR NECESSARY TO COMPLETE THE ABOVE WORK, INCLUDING REMOVAL OF EXISTING STEEL. ANY EXISTING REINFORCING BARS WHICH ARE TO BE INCORPORATED INTO THE NEW WORK AND WHICH ARE MADE UNSEIZABLE BY THE CONTRACTOR'S REMOVAL OPERATIONS SHALL BE REPLACED WITH NEW STEEL AT HIS COST.

THE FOLLOWING ESTIMATED QUANTITY OF REINFORCING STEEL IS TO BE USED WHERE AND AS DIRECTED BY THE ENGINEER.

ITEM 509 - REINFORCING STEEL, AS PER PLAN 100 LB.

4. ITEM 517 - RAILING FACED, AS PER PLAN

A. DESCRIPTION: THIS ITEM SHALL CONSIST OF FACING EXISTING CURB STYLE PARAPETS TO ATTAIN A DEFLECTOR PARAPET SHAPE USING CAST IN PLACE CONCRETE.

B. REMOVAL: THE CONTRACTOR SHALL CAREFULLY REMOVE THE EXISTING ALUMINUM RAILING CURVED END TERMINALS WITH BASEPLATES FOR SUBSEQUENT PICK-UP BY STATE FORCES. THE EXISTING CONCRETE CURB SHALL BE REMOVED TO PROVIDE CLEARANCE FOR PLACING CONCRETE AS DETAILED IN THE PLANS. THE WINGWALL PARAPET AND CURB SHALL BE REMOVED WITHIN THE 14 FOOT WINGWALL TRANSITION LENGTH AS DETAILED IN THE PLANS. ALL LOOSE OR UNSOUND PARAPET CONCRETE SHALL ALSO BE REMOVED. ALL WORK SHALL BE DONE IN A MANNER THAT WILL NOT DAMAGE OR SHATTER THE CONCRETE THAT IS TO REMAIN, AND WILL NOT CUT, ELONGATE OR DAMAGE THE REINFORCING STEEL IN ANY WAY. CONCRETE MAY BE REMOVED BY CHIPPING OR HAND DRESSING. CHIPPING HAMMERS SHALL NOT BE HEAVIER THAN THE NOMINAL 35 LB. CLASS.

C. DOWEL HOLES AND REINFORCING STEEL: 1-1/4" DOWEL HOLES SHALL BE DRILLED AS SHOWN ON THE PLANS. THE GROUT SHALL CONSIST OF CEMENT AND WATER USING TYPE I, TYPE III, OR SHRINKAGE COMPENSATING CEMENT. CLEAN HOLES SHALL BE SATURATED THOROUGHLY WITH WATER FOR A MINIMUM OF 5 MINUTES PRIOR TO PLACING GROUT. IMMEDIATELY PRIOR TO GROUTING, ALL FREE STANDING WATER SHALL BE REMOVED FROM HOLES. AFTER INITIAL MIXING, THINNING OR RETEMPERING OF GROUT WITH EXTRA WATER SHALL NOT BE ALLOWED. HARDENED OR SET GROUT WHICH HAS BECOME TOO STIFF OR DRY TO PROVIDE A GOOD BOND SHALL BE DISCARDED. DOWELS SHALL NOT BE INSTALLED IF THE MEAN AIR OR GROUT TEMPERATURES ARE LESS THAN 45°F. FURTHERMORE, AFTER PLACING, THE FRESH GROUT SHALL BE MAINTAINED AT A TEMPERATURE OF NOT LESS THAN 45°F FOR 72 HOURS, AND AT NOT LESS THAN 40°F FOR AN ADDITIONAL 4 DAYS. THE TEMPERATURE OF THE MIXED GROUT, IMMEDIATELY BEFORE PLACING, SHALL BE NOT LESS THAN 50°F NOR MORE THAN 90°F. THE CEMENT GROUT SHALL BE CURED CONTINUOUSLY WITH EITHER WET RAGS OR A SATISFACTORY CURING COMPOUND (WHICH MUST BE SUBSEQUENTLY REMOVED) FOR A MINIMUM PERIOD OF 3 DAYS WITHOUT DISTURBING THE DOWELS.

GROUT ANCHORING USING EPOXY AS PER SS 853 AND 956 MAY BE USED IN LIEU OF THE ABOVE REQUIREMENTS WITH THE EXCEPTION THAT THE HOLE SIZE WILL REMAIN AT 1-1/4" DIA.

ALL REINFORCING STEEL IS INCLUDED UNDER THIS ITEM OF WORK.

D. SURFACE PREPARATION: THE PARAPET SURFACE SHALL BE THOROUGHLY CLEANED BY SANDBLASTING FOLLOWED BY AN AIR BLAST. IT MAY BE NECESSARY TO USE HAND TOOLS TO REMOVE SCALE FROM THE REINFORCING STEEL. THE SURFACE SHALL BE MADE FREE OF SPALLS, LAITANCE AND ALL TRACES OF FOREIGN MATERIAL. IF NECESSARY, DETERGENT CLEANING SHALL PRECEDE BLAST CLEANING TO ENSURE THE REMOVAL OF CONTAMINANTS THAT ARE DETRIMENTAL TO ACHIEVING AN ADEQUATE BOND.

E. MATERIALS:
 REINFORCING STEEL 509
 CONCRETE 511, CLASS "S"

F. PARAPET DEFLECTION JOINTS: DEFLECTION JOINTS SHALL BE PLACED IN THE NEW CONCRETE PARAPETS AT THE SAME LOCATION AS THE EXISTING.

DEFLECTION JOINTS SHALL BE MADE VERTICALLY OR AT RIGHT ANGLE TO THE DECK BY SAWING. THE SAWING SHALL BE DONE AFTER THE CONCRETE HAS TAKEN ITS INITIAL SET AND BEFORE ANY SHRINKAGE CRACKS CAN DEVELOP. THE USE OF AN EDGE GUIDE, FENCE OR JIG IS REQUIRED TO ENSURE THAT THE CUT OF THE JOINT IS STRAIGHT, TRUE AND ALIGNED ON ALL FACES OF THE PARAPET. THE NEED FOR A GUIDE ON THE BACK SIDE MAY BE ELIMINATED IF THE INITIAL CUT ON THE FRONT SIDE OF THE PARAPET EXTENDS AT LEAST TWO-THIRDS OF THE WAY THROUGH THE PARAPET. THE REAR CUT WOULD THEN BE GUIDED BY THE SLOT OF THE FIRST CUT AND BY THE EXISTING DEFLECTION JOINT SLOT. A SAW BLADE SUFFICIENTLY LARGE ENOUGH TO SAW THROUGH THE ENTIRE PARAPET WOULD BE ACCEPTABLE, BUT THE MINIMUM DEPTH OF THE SAW CUT SHALL BE 3-1/2". THE JOINT WIDTH SHALL BE THE WIDTH OF THE SAW BLADE, NOT TO EXCEED 1/4". THE OUTSIDE 1 INCH OF THE PERIMETER OF THE DEFLECTION JOINT SHALL BE SEALED WITH A POLYURETHANE OR POLYMERIC JOINT SEALANT MEETING THE REQUIREMENTS OF FEDERAL SPECIFICATION TT-5-00227E. THE BOTTOM 1/4" OF BOTH THE INSIDE AND OUTSIDE FACES OF THE PARAPET SHALL BE LEFT UNSEALED TO ALLOW ANY WATER WHICH MAY ENTER THE JOINT TO ESCAPE.

G. METHOD OF MEASUREMENT: THE QUANTITY SHALL BE THE ACTUAL LENGTH OF THE RAILING FACED, MEASURED FROM END OF WINGWALL TO END OF WINGWALL. THIS ITEM SHALL INCLUDE THE FURNISHING OF ALL LABOR, EQUIPMENT AND MATERIALS NECESSARY TO COMPLETE THIS WORK. ALL COSTS OF REMOVAL, DOWEL HOLES, REINFORCING STEEL, CONCRETE, INSTALLING DEFLECTION JOINTS, GROUT ANCHORING, CURB PLATE MODIFICATIONS AND CONSTRUCTING WINGWALL TRANSITIONS SHALL BE INCLUDED IN THE UNIT PRICE BID FOR:

ITEM	UNIT	DESCRIPTION
517	L.F.	RAILING FACED, AS PER PLAN

5. ITEM SPECIAL - SOUNDING OF CONCRETE DECK BOTTOMS

THIS WORK SHALL CONSIST OF SUPPLYING THE MATERIALS, LABOR AND EQUIPMENT TO PERMIT SOUNDING OF THE DECK BOTTOM. THE CONTRACTOR'S SUPERINTENDENT SHALL ACCOMPANY THE ENGINEER IN MAKING THE EXAMINATION WHICH SHALL INCLUDE THE FOLLOWING:

A. THE CONTRACTOR SHALL SOUND THE ENTIRE DECK BOTTOM, EXCEPT SPANS OVER RAILROADS, WITH HAMMERS AND THE ENGINEER SHALL OUTLINE ALL UNSOUND AREAS FOR EPOXY INJECTION.

B. THE CONTRACTOR SHALL REMOVE ALL LOOSE DECK BOTTOM CONCRETE ENCOUNTERED DURING HIS SOUNDING OPERATIONS.

THE FOOTAGE FOR THIS ITEM SHALL BE THE NUMBER OF SQUARE FEET OF DECK BOTTOM THAT ARE SATISFACTORILY SOUNDED AND ACCEPTED. THE ACCEPTED QUANTITIES OF DECK BOTTOM SOUNDING WILL BE PAID FOR AT THE CONTRACT UNIT PRICE PER SQUARE FOOT, WHICH PRICE AND PAYMENT SHALL BE FULL COMPENSATION FOR FURNISHING ALL MATERIAL, LABOR AND EQUIPMENT FOR SOUNDING CONCRETE DECK BOTTOMS AND REMOVING LOOSE CONCRETE.

PAYMENT WILL BE MADE UNDER ITEM SPECIAL - SOUNDING OF CONCRETE DECK BOTTOMS.

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

HNTB

ESTIMATED QUANTITIES AND GENERAL NOTES

BR. NO. CUY-90-2413
 BR. NO. CUY-90-2465
 BR. NO. CUY-2-2885 R
 BR. NO. CUY-90-2956 L
 BR. NO. CUY-90-2969 L&R
 BR. NO. CUY-90-2989 L&R
 BR. NO. LAK-90-0009 L&R

CUYAHOGA COUNTY & LAKE COUNTY OHIO

DRAWN C.K.B. DATE: 4-88	TRACED G.C.A. DATE: 2-88	CHECKED C.A.C. DATE: 4-88	REVIEWED C.A.B. DATE: 2-88	REVISION
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GENERAL NOTES - STRUCTURES OVER 20 - FT SPAN

FWWA REGION	STATE	PROJECT
5	OHIO	



CUYAHOGA COUNTY
 CUY-90-23.95
 LAKE COUNTY
 LAK-90-0.00

6. ITEM SPECIAL - LOW-PRESSURE EPOXY INJECTING DELAMINATED CONCRETE
 THIS WORK SHALL CONSIST OF LOW-PRESSURE EPOXY INJECTION OF DELAMINATED BOTTOM COVER CONCRETE OF BRIDGE DECKS IN ACCORDANCE WITH THESE SPECIFICATIONS, IN REASONABLY CLOSE CONFORMITY WITH THE PLANS AND MANUFACTURER'S RECOMMENDATIONS AS DIRECTED BY THE ENGINEER.

THE INJECTION RESIN SHALL BE THERMAL-CHEM INJECTION RESIN PRODUCT NO. 2, POLY-CARB MARK-10 INJECTION RESIN, SIKADUR 52 INJECTION RESIN OR DURALCRETE LV. THE BONDER SHALL BE THERMAL-CHEM BONDER PRODUCT NO. 4, POLY-CARB MARK 8 NON-SAG EPOXY BONDER, SIKADUR HI-MOD GEL (SIKASTIX 31) OR DURALCRETE GEL. ALL MATERIALS SHALL BE STORED AND INCORPORATED IN THE WORK AS RECOMMENDED BY THE MANUFACTURER. A MANUFACTURER'S REPRESENTATIVE SHALL BE PRESENT AT THE JOB SITE UNTIL SUCH TIME AS HE AND THE ENGINEER ARE SURE THAT THE CONTRACTOR IS QUALIFIED IN ALL ASPECTS OF EPOXY PRESSURE GROUTING.

PORTS SHALL BE INSTALLED IN CLEAN HOLES VACUUM-DRILLED 3 INCHES DEEP IN THE DECK BOTTOM SO THAT THE EPOXY WILL PENETRATE THE HOLLOW PLANE. THE FIRST PORT SHALL BE LOCATED NEAR THE EDGE OF THE OUTLINED UNSOUND AREA. ADDITIONAL PORTS SHALL BE PLACED AT DISTANCES SLIGHTLY GREATER THAN THE DISTANCE FROM THE FIRST PORT TO THE VOID EDGE. PORT PLACEMENT MUST ENSURE THAT THE GROUT FACE REACHES THE EDGE OF THE VOID BEFORE REACHING THE NEXT PORT. PORTS AND VISIBLE CRACKS SHALL BE SEALED WITH BONDER TO PREVENT EMISSION OF INJECTION RESIN. THE BONDER SHALL CURE 24 HOURS PRIOR TO INJECTION OF EPOXY RESIN.

THE RESIN SHALL BE INJECTED ONLY WHEN THE DECK IS DRY AND ITS TEMPERATURE IS ABOVE 50°F.

THE EPOXY INJECTION EQUIPMENT SHALL BE CAPABLE OF INJECTING THE MATERIAL INTO THE PORTS AT LOW PRESSURES OF 14 TO 20 PSI. THE INJECTION EQUIPMENT SHALL BE CAPABLE OF METERING, MIXING AND INJECTING THE EPOXY RESIN ACCORDING TO THE MANUFACTURER'S SPECIFICATIONS.

THE INJECTION SHALL COMMENCE AT THE EDGE OF THE DELAMINATION AND CONTINUE UNTIL THE EPOXY RESIN APPEARS AT THE NEXT PORT. MOST INCOMPLETELY FILLED VOIDS ARE CAUSED BY THE OPERATOR STOPPING THE INJECTION PROCESS PREMATURELY, THEREFORE, A STEADY, LOW PRESSURE SHALL BE MAINTAINED ON THE EPOXY UNTIL A STEADY CLEAR FLOW APPEARS AT THE NEXT PORT, THEN THE INJECTION NOZZLE IS REMOVED, THE PORT CLOSED AND THE INJECTION CONTINUED FROM PORT TO PORT UNTIL THE VOID IS COMPLETELY FILLED. SINCE THE GROUT FACE IS MOVING UNDER VISCOUS FLOW CONDITIONS WHICH ARE GOVERNED BY FLUID SURFACE FRICTION, THE INJECTION PROCESS IS SLOW. REGARDLESS, INJECTION PRESSURE SHALL BE 20 PSI MAXIMUM SO THAT BOTTOM COVER CONCRETE IS NOT BLOWN OFF. PROGRESS OF THE EPOXY SHALL BE CHECKED WITH A TAPPING HAMMER.

THE OUTLINED INJECTED VOIDS SHALL BE SOUNDED WITH A HAMMER BY THE ENGINEER. ANY REMAINING UNSOUND AREAS SHALL BE PORTED AND RE-INJECTED AT NO ADDITIONAL COST TO THE STATE. ALL EQUIPMENT, LABOR AND MATERIALS REQUIRED BY THE ENGINEER TO ACCOMPLISH THIS WORK SHALL BE SUPPLIED BY THE CONTRACTOR.

THE FOOTAGE UNDER THIS ITEM SHALL BE THE NUMBER OF SQUARE FEET OF DELAMINATED DECK BOTTOM CONCRETE THAT ARE SATISFACTORILY LOW-PRESSURE EPOXY INJECTED AND ACCEPTED.

THE ACCEPTED QUANTITIES OF LOW-PRESSURE EPOXY INJECTED CONCRETE WILL BE PAID FOR AT THE CONTRACT UNIT BID PRICE PER SQUARE FOOT, WHICH PRICE AND PAYMENT SHALL BE FULL COMPENSATION FOR FURNISHING AND PLACING ALL MATERIALS, SOUNDING THE INJECTED AREAS, SUPPLYING THE MANUFACTURER'S REPRESENTATIVE AND ALL OTHER MATERIAL, LABOR AND EQUIPMENT NECESSARY TO COMPLETE THIS WORK ACCORDING TO SPECIFICATIONS.

THIS ITEM IS A CONTINGENCY QUANTITY. IF NO VOIDS ARE FOUND, THIS ITEM SHALL BE NON-PERFORMED.

7. Deleted

8. ITEM SPECIAL - REPAIRING CONCRETE WITH TROWELABLE MORTAR
 THIS ITEM CONSISTS OF REPAIRING EXISTING CONCRETE MEDIAN BARRIERS USING A TROWELABLE MORTAR IN ACCORDANCE WITH THE FOLLOWING REQUIREMENTS:

A. DESCRIPTION: THIS ITEM CONSISTS OF THE REMOVAL OF ALL LOOSE AND DISINTEGRATED CONCRETE, PREPARATION OF THE SURFACE, AND THE MIXING, PLACING, FINISHING AND CURING OF THE PATCHES AS DIRECTED BY THE ENGINEER. THIS WORK SHALL BE PERFORMED IN ACCORDANCE WITH THESE SPECIFICATIONS, AND IN REASONABLY CLOSE CONFORMITY WITH THE PLANS AND THE MANUFACTURER'S SPECIFICATIONS AND RECOMMENDATIONS.

B. MATERIALS: THE PATCHING MATERIAL SHALL BE SIKATOP 122 AND 123, THERMAL-CHEM PRODUCT NO. 304, POLYCARB MARK 193.4 AND 194, FIVE STAR HIGHWAY PATCH, UPCO BOSTICK 964, EUCLID CHEMICAL EUCO VERTICOAT, MASTER BUILDERS SET VERTIPATCH OR DURALTOP AND DURALPATCH GEL. THE MATERIAL SHALL BE TINTED TO CURE TO THE COLOR OF THE EXISTING CONCRETE. ALL MATERIAL SHALL BE STORED AND INCORPORATED IN THE WORK AS RECOMMENDED BY THE MANUFACTURER. A MANUFACTURER'S REPRESENTATIVE SHALL BE PRESENT AT THE JOB SITE UNTIL SUCH TIME AS HE AND THE ENGINEER ARE SURE THAT THE CONTRACTOR IS QUALIFIED IN ALL ASPECTS OF PATCHING CONCRETE STRUCTURES WITH THE SELECTED MATERIAL.

C. REMOVAL OF CONCRETE: ALL LOOSE, SOFT, HONEY-COMBED, AND DISINTEGRATED CONCRETE, PLUS 1/4" DEPTH OF SOUND CONCRETE SHALL BE REMOVED. WHERE THE BOND BETWEEN THE CONCRETE AND A REINFORCING BAR HAS BEEN DESTROYED, OR WHERE MORE THAN 1/2 OF THE PERIPHERY OF SUCH A BAR HAS BEEN EXPOSED, THE ADJACENT CONCRETE SHALL BE REMOVED TO A DEPTH THAT WILL PROVIDE A MINIMUM 1/2" CLEARANCE AROUND THE BAR EXCEPT WHERE OTHER REINFORCING BARS MAKE THIS IMPRACTICAL. AFTER COMPLETION OF THE SECONDARY REMOVAL OPERATION, THE ENGINEER WILL RE-SOUND THE AREAS TO ENSURE THAT ONLY SOLID CONCRETE REMAINS. ALL WORK SHALL BE DONE IN A MANNER THAT WILL NOT DAMAGE OR SHATTER THE CONCRETE THAT IS TO REMAIN, AND WILL NOT CUT, ELONGATE OR DAMAGE THE REINFORCING STEEL IN ANY WAY. CONCRETE MAY BE REMOVED BY CHIPPING OR HAND DRESSING. CHIPPING HAMMERS SHALL NOT BE HEAVIER THAN THE NORMAL 35 LB. CLASS. WHERE EXISTING REINFORCING BARS WOULD BE LESS THAN 1" FROM THE PROPOSED FINISHED SURFACE OF CONCRETE, THEY SHALL, IF PRACTICAL, BE DRIVEN BACK INTO RECESSES CUT IN THE MASONRY TO OBTAIN THAT COVERAGE UNLESS OTHERWISE APPROVED BY THE ENGINEER.

D. SURFACE PREPARATION: CLEANING SHALL PRECEDE APPLICATION OF THE PATCHING MATERIAL BY NOT MORE THAN 24 HOURS. THE SURFACE TO BE PATCHED AND THE EXPOSED REINFORCING STEEL SHALL BE THOROUGHLY CLEANED BY SANDBLASTING FOLLOWED BY AN AIR BLAST. IT MAY BE NECESSARY TO USE HAND TOOLS TO REMOVE SCALE FROM THE REINFORCING STEEL. THE SURFACE SHALL BE MADE FREE OF SPALLS, LAITANCE AND ALL TRACES OF FOREIGN MATERIAL. IF NECESSARY, DETERGENT CLEANING SHALL PRECEDE BLAST CLEANING TO ENSURE THE REMOVAL OF CONTAMINANTS THAT ARE DETRIMENTAL TO ACHIEVING AN ADEQUATE BOND. THE PREPARED SURFACE SHALL BE LEFT IN THE CONDITION AS RECOMMENDED BY THE MANUFACTURER. ANY ADDITIONAL SURFACE PREPARATION SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS FOR THE PATCHING MATERIAL WHICH IS USED. ALL UNCHIPPED SURFACES THAT WILL RECEIVE NEW MATERIAL SHALL BE MECHANICALLY ROUGHENED.

E. PATCHING: THE MIXING, PROPORTIONING, PLACING AND CURING PROCEDURES AND TOOLS, EQUIPMENT, LABOR AND MATERIALS USED SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFICATIONS AND RECOMMENDATIONS. THE SURFACE OF THE REPAIR AREA SHALL BE FLUSH WITH THE SURROUNDING AREA.

F. CURING: PATCHES SHALL BE CURED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.

G. METHOD OF MEASUREMENT: THE QUANTITY SHALL BE THE ACTUAL AREA IN SQUARE FEET OF THE EXPOSED SURFACE OF ALL COMPLETED PATCHES, IRRESPECTIVE OF DEPTH OR THICKNESS OF THE PATCH COMPLETE, IN PLACE AND ACCEPTED. IF THE PATCH INCLUDES CORNERS OR EDGES OF MEMBERS ALL OF THE EXPOSED SURFACES SHALL BE INCLUDED. THE COST OF ALL LABOR, EQUIPMENT, INCIDENTALS AND MATERIALS SHALL BE INCLUDED IN THE UNIT PRICE BID FOR THIS ITEM.

H. BASIS OF PAYMENT: PAYMENT WILL BE MADE AT THE CONTRACT PRICE BID FOR:

ITEM	UNIT	DESCRIPTION
SPECIAL	SQ.FT.	REPAIRING CONCRETE WITH TROWELABLE MORTAR

HOWARD NEEDLES, TAMMEN & BERGENDOFF CONSULTING ENGINEERS CLEVELAND		HNTB	
GENERAL NOTES			
BR. NO. CUY-90-2413			
BR. NO. CUY-90-2465			
BR. NO. CUY-2-2885 R			
BR. NO. CUY-90-2956 L			
BR. NO. CUY-90-2969 L&R			
BR. NO. CUY-90-2989 L&R			
BR. NO. LAK-90-0009 L&R			
CUYAHOGA COUNTY & LAKE COUNTY OHIO			
DRAWN C.A.B. DATE 8-4-88	TRACED G.C.A. DATE 8-20-88	CHECKED C.A.C. DATE 10-4-88	REVIEWED C.A.B. DATE 12-2-88
			SHEET 5/10

GENERAL NOTES - STRUCTURES OVER 20 - FT SPAN

FHWA REGION	STATE	PROJECT
5	OHIO	



CUYAHOGA COUNTY
 CUY-90-23.95
 LAKE COUNTY
 LAK-90-0.00

9. ITEM SPECIAL - REPAIRING CONCRETE WITH SOLVENT FREE EPOXY RESIN
 THIS ITEM CONSISTS OF REPAIRING EXISTING CONCRETE MEDIAN BARRIERS USING SOLVENT-FREE EPOXY RESIN IN ACCORDANCE WITH THE FOLLOWING REQUIREMENTS:

A. DESCRIPTION: THIS ITEM CONSISTS OF THE REMOVAL OF ALL LOOSE AND DISINTEGRATED CONCRETE, PREPARATION OF THE SURFACE, AND THE MIXING AND APPLICATION OF THE EPOXY RESIN AS DIRECTED BY THE ENGINEER. THIS WORK SHALL BE PERFORMED IN ACCORDANCE WITH THESE SPECIFICATIONS, IN REASONABLY CLOSE CONFORMITY WITH THE PLANS AND THE MANUFACTURER'S SPECIFICATIONS AND RECOMMENDATIONS.

B. MATERIALS: SHALL BE A TWO PART, SOLVENT FREE, EPOXY RESIN COATING. THE COLOR SHALL CLOSELY MATCH THAT OF THE CONCRETE. THE MATERIAL SHALL BE SIKAGARD 62, EUCLID CHEMICAL EPOXY 452 LV, POLY-CARB MARK-65, THERMAL-CHEM PRODUCT NO. 901 OR DURALKOTE.

A MANUFACTURER'S REPRESENTATIVE SHALL BE PRESENT AT THE JOB SITE DURING THE APPLICATION OF THE EPOXY COATING UNTIL SUCH A TIME AS HE AND THE ENGINEER ARE SATISFIED THE CONTRACTOR IS QUALIFIED IN ALL ASPECTS OF APPLYING THE EPOXY COATING.

C. REMOVAL OF CONCRETE: ALL LOOSE AND DISINTEGRATED CONCRETE SHALL BE REMOVED FROM THE AREAS TO BE REPAIRED IN SUCH A MANNER AND TO SUCH AN EXTENT AS TO EXPOSE A SOLID CONCRETE SURFACE. AFTER COMPLETION OF THE REMOVAL OPERATION THE ENGINEER WILL RE-SOUND THE AREA TO INSURE THAT ONLY SOLID CONCRETE REMAINS.

CONCRETE MAY BE REMOVED BY SCABBLERS, CHIPPING, OR HAND DRESSING. CHIPPING HAMMERS SHALL NOT BE HEAVIER THAN THE NOMINAL 10 LB. CLASS. CARE SHALL BE USED IN WORKING NEAR REINFORCING STEEL SO AS NOT TO DAMAGE OR DEBOND THE STEEL, OR TO SHATTER THE CONCRETE AROUND IT. WHEN REMOVAL BECOMES EXTENSIVE THE ENGINEER MAY REQUIRE AN AREA TO BE REPAIRED AND PAID FOR UNDER THE APPROPRIATE CONCRETE PATCHING ITEM.

D. SURFACE PREPARATION: CLEANING SHALL PRECEDE THE APPLICATION OF THE COATING BY NOT MORE THAN 24 HOURS. THE SURFACE TO BE COATED AND EXPOSED REINFORCING STEEL SHALL BE THOROUGHLY CLEANED BY SANDBLASTING FOLLOWED BY AN AIR BLAST. IT MAY BE NECESSARY TO USE HAND TOOLS TO REMOVE SCALE FROM THE REINFORCING STEEL. SURFACES SHALL BE MADE FREE OF SPALLS, LAITANCE, AND ALL TRACES OF FOREIGN MATERIALS.

E. APPLICATION: THE EPOXY SHALL BE APPLIED TO THE CONCRETE SURFACES BY BRUSHING, UNDER CONDITIONS IN THE MANNER SPECIFIED BY THE MANUFACTURER. TWO COATS SHALL BE APPLIED AT THE RATE OF 200 SQ.FT PER GALLON FOR EACH COAT. THE FIRST COAT SHALL BE TINTED TO APPEAR DIFFERENT IN COLOR THAN THE SECOND COAT. THE COLOR OF THE SECOND SHALL CLOSELY MATCH THAT OF THE EXISTING CONCRETE SURFACE COAT.

F. PAYMENT: THE COST OF ALL LABOR, MATERIALS AND EQUIPMENT NECESSARY FOR THE COATING OF THE CONCRETE INCLUDING REMOVALS AND SURFACE PREPARATION, SHALL BE INCLUDED IN THE UNIT PRICE BID FOR:

ITEM	UNIT	DESCRIPTION
SPECIAL	SQ.FT	REPAIRING CONCRETE WITH SOLVENT-FREE EPOXY RESIN

10. ITEM SPECIAL - SEALING OF CONCRETE SURFACES (EPOXY)

A SEALER SHALL BE APPLIED TO THE EXPOSED CONCRETE SURFACES OF THE BRIDGES AS LISTED BELOW. SEE THE PROPOSAL NOTE FOR SEALER MATERIAL AND SURFACE PREPARATION REQUIREMENTS AND APPLICATION RATES AND PROCEDURES.

A. NEW CONCRETE PARAPET FACES AND DOWN THE BACK SIDE OF THE EXISTING PARAPET AND UNDER THE DECK TO THE FASCIA BEAM FLANGE (SUPERSTRUCTURE).

B. NEW CONCRETE PARAPET FACES AND DOWN THE BACK SIDE OF THE EXISTING PARAPET AND EXPOSED FACE OF WINGWALL (ABUTMENT).

C. CONCRETE MEDIAN BARRIERS (ALL FACES).

11. SPECIAL RAILROAD REQUIREMENTS

(BRIDGE NOS. CUY-90-2969L, CUY-90-2969R AND CUY-90-2983 L&R)

~~PRIOR TO COMMENCING ANY WORK INVOLVING THE REMOVAL OF THE EXISTING SAFETY CURB IN THE SPANS OVER THE RAILROAD, THE CONTRACTOR SHALL SUBMIT TO THE ENGINEER AND THE RAILROAD, FOR APPROVAL, COMPLETE DETAILS FOR REMOVING THE PORTION OF THE EXISTING STRUCTURE. NO DEMOLITION SHALL BEGIN UNTIL WRITTEN APPROVAL IS RECEIVED FROM THE RAILROAD AND THE ENGINEER.~~

~~ALL WORK ABOVE OR DIRECTLY ADJACENT TO THE RAILROAD SHALL BE SUBJECT TO THE APPROVAL OF THE RAILROAD AND TO INSPECTION AT ALL TIMES BY ITS PROPERLY DESIGNATED REPRESENTATIVE. SAFETY AND CONTINUITY OF OPERATIONS OF THE RAILROAD TRAFFIC SHALL BE OF MAJOR IMPORTANCE AND SHALL AT ALL TIMES BE PROTECTED AND SAFEGUARDED. THE CONTRACTOR SHALL GIVE WRITTEN NOTICE TO THE DULY AUTHORIZED REPRESENTATIVE OF THE RAILROAD AT LEAST TEN WORKING DAYS IN ADVANCE OF THE TIME THE CONTRACTOR INTENDS TO COMMENCE ANY WORK ABOVE OR DIRECTLY ADJACENT TO THE RAILROAD. WHENEVER PERFORMING ANY WORK SUCH AS REMOVING THE EXISTING SAFETY CURB FACING THE RAILING OR SEALING THE CONCRETE SURFACES WHICH, IN THE OPINION OF THE ENGINEER COULD AFFECT RAILROAD OPERATION, THE CONTRACTOR SHALL SUBMIT COMPLETE PLANS AND DETAILS OF THE PROPOSED WORK TO BOTH THE RAILROAD AND THE ENGINEER FOR APPROVAL. NO SUCH WORK SHALL BE COMMENCED OR PROSECUTED WITHOUT PRIOR APPROVAL OF BOTH AGENCIES. APPROVAL OF SUCH WORK SHALL NOT BE CONSTRUED AS A RELEASE FROM RESPONSIBILITY OR LIABILITY FOR ANY DAMAGE WHICH THE RAILROAD MAY SUFFER.~~

THE CONTRACTOR SHALL NOT AT ANY TIME PERMIT EQUIPMENT IN HIS USE TO ENTER UPON OR FOUL THE RAILROAD COMPANY'S TRACKS EXCEPT WHEN SUCH EQUIPMENT IS PROTECTED BY AUTHORIZED EMPLOYEES OF THE RAILROAD COMPANY.

12. LIMITATIONS OF OPERATIONS

CONCRETE REPAIR AND SEALING SHALL NOT BE PERFORMED DURING THE PERIOD OF NOVEMBER 1ST THRU MARCH 31ST.

13. ABANDONMENT OF EXISTING LIGHTING CONDUIT AND PULL BOXES

LIGHTING CONDUIT AND PULL BOXES EXIST AT THE FOLLOWING LOCATIONS:

BRIDGE NO. CUY-2-2885 R (WEST SAFETY CURB)
 BRIDGE NO. CUY-90-2956 L (SOUTH SAFETY CURB)
 BRIDGE NO. CUY-90-2969 L (WEST SAFETY CURB)
 BRIDGE NO. CUY-90-2969 R (BOTH SAFETY CURBS)
 BRIDGE NO. LAK-90-0009 L (EAST SAFETY CURB)
 BRIDGE NO. LAK-90-0009 R (WEST SAFETY CURB)

THESE CONDUITS ARE TO BE ABANDONED AND MAY BE REMOVED AT THE CONTRACTOR'S DISCRETION. PAYMENT WILL BE MADE UNDER ITEM 517 - RAILING FACED, AS PER PLAN.

14. MAINTAINING EXISTING LIGHTING CONDUIT AND PULL BOXES

LIGHTING CONDUIT AND PULL BOXES EXIST AT THE FOLLOWING LOCATIONS:

BRIDGE NO. CUY-90-2989L (EAST SAFETY CURB)
 BRIDGE NO. CUY-90-2989R (WEST SAFETY CURB)

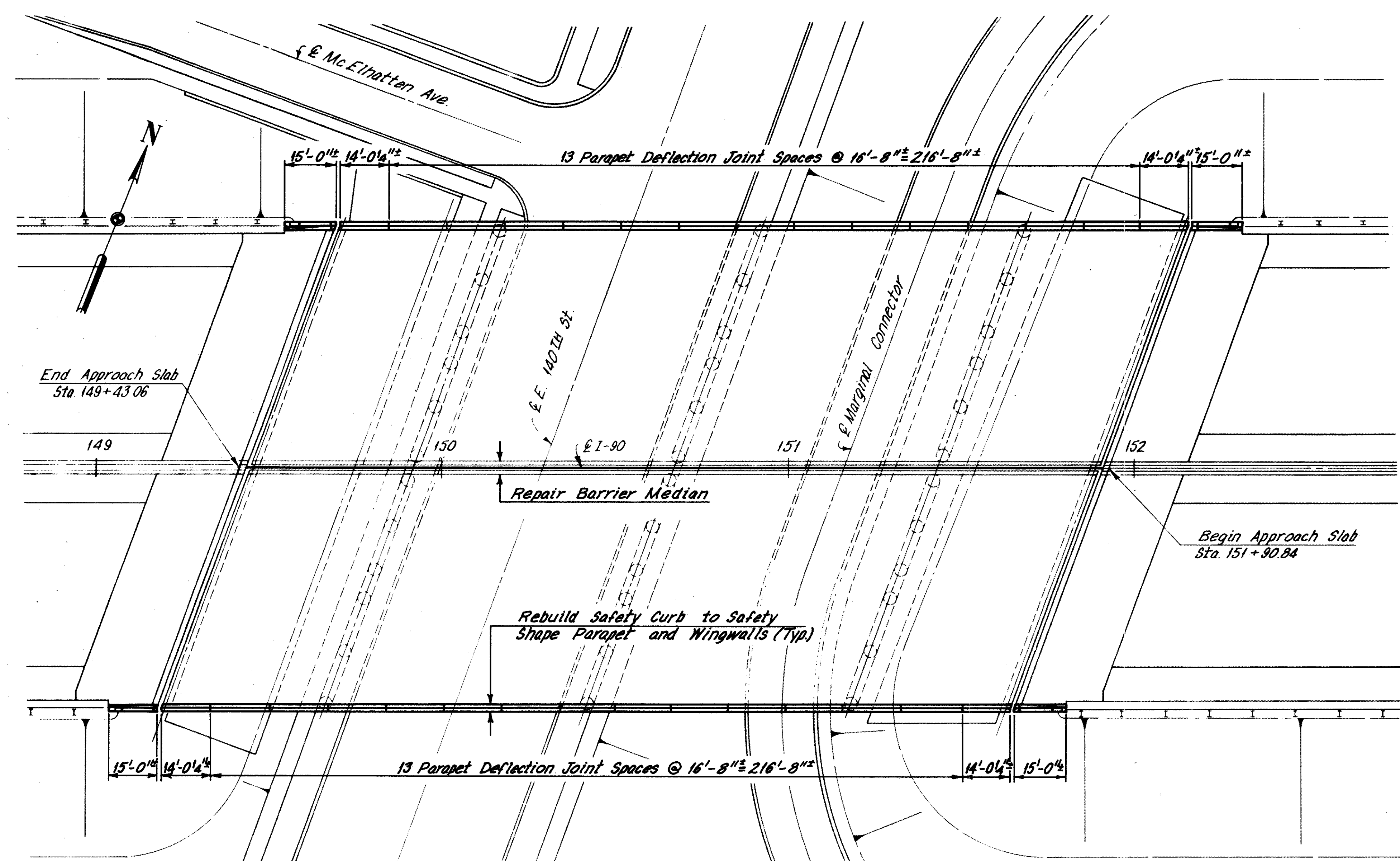
THESE CONDUITS CONTAIN ACTIVE CABLES. THE CONTRACTOR SHALL PERFORM WORK AS INDICATED ON SHEET 182A SO THAT SERVICE TO LIGHT TOWERS IS NOT INTERRUPTED DURING THE REMOVAL AND RAIL FACING OPERATIONS.

HOWARD, NEEDLES, TAMMEN & BERGENDOFF CONSULTING ENGINEERS CLEVELAND				HNTB
GENERAL NOTES				
BR. NO. CUY - 90 - 2413				
BR. NO. CUY - 90 - 2465				
BR. NO. CUY - 2 - 2885 R				
BR. NO. CUY - 90 - 2956 L				
BR. NO. CUY - 90 - 2969 L&R				
BR. NO. CUY - 90 - 2989 L&R				
BR. NO. LAK - 90 - 0009 L&R				
CUYAHOGA COUNTY & LAKE COUNTY OHIO				
DRAWN C.K.B. DATE 8-4-88	TRACED G.C.A. DATE 8-20-88	CHECKED C.A.C. DATE 10-4-88	REVIEWED C.A.B. DATE 12-2-88	REVISED
				SHEET 6 18

FHWA REGION	STATE	PROJECT
5	OHIO	

189
200

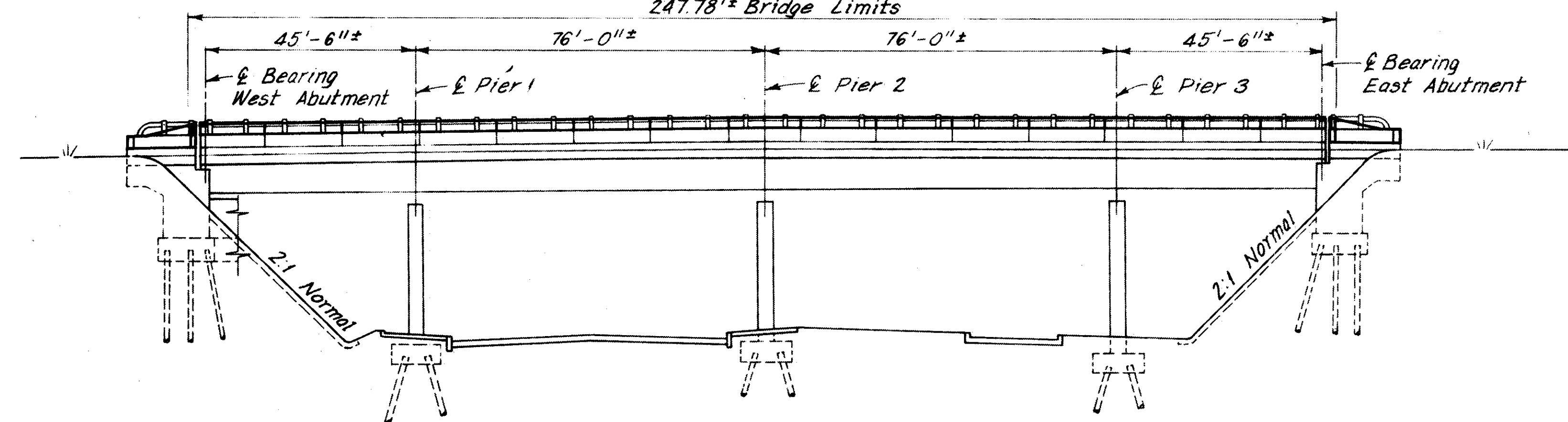
CUYAHOGA COUNTY
CUY-90-23.95
LAKE COUNTY
LAK-90-0.00



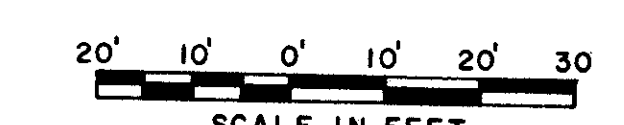
PLAN



247.78' ± Bridge Limits



ELEVATION



(Horizontal)



(Vertical)

PROPOSED WORK, BR. NO. CUY-90-2413
1. REBUILD SAFETY CURBS TO SAFETY SHAPE PARAPETS AND WINGWALLS.
2. REPAIR BARRIER MEDIAN

REMOVAL NOTES:
REMOVED PARTS SHALL INCLUDE THE EXISTING CURB ADJACENT TO PARAPETS AND WINGWALLS, AND HAND RAILINGS.
INCLUDE ALL ABOVE REMOVAL WORK WITH ITEM 517 - RAILING FACED, AS PER PLAN, FOR PAYMENT.
NOTES:
FOR SAFETY CURB TO SAFETY SHAPE PARAPET DETAILS, SEE SHEET 16/18.
FOR WINGWALL TRANSITION DETAILS, SEE SHEET 17/18.

HOWARD, NEEDLES, TAMMEN & BERGENDOFF CONSULTING ENGINEERS CLEVELAND HNTB

GENERAL PLAN AND ELEVATION

BR. NO. CUY - 90 - 2413

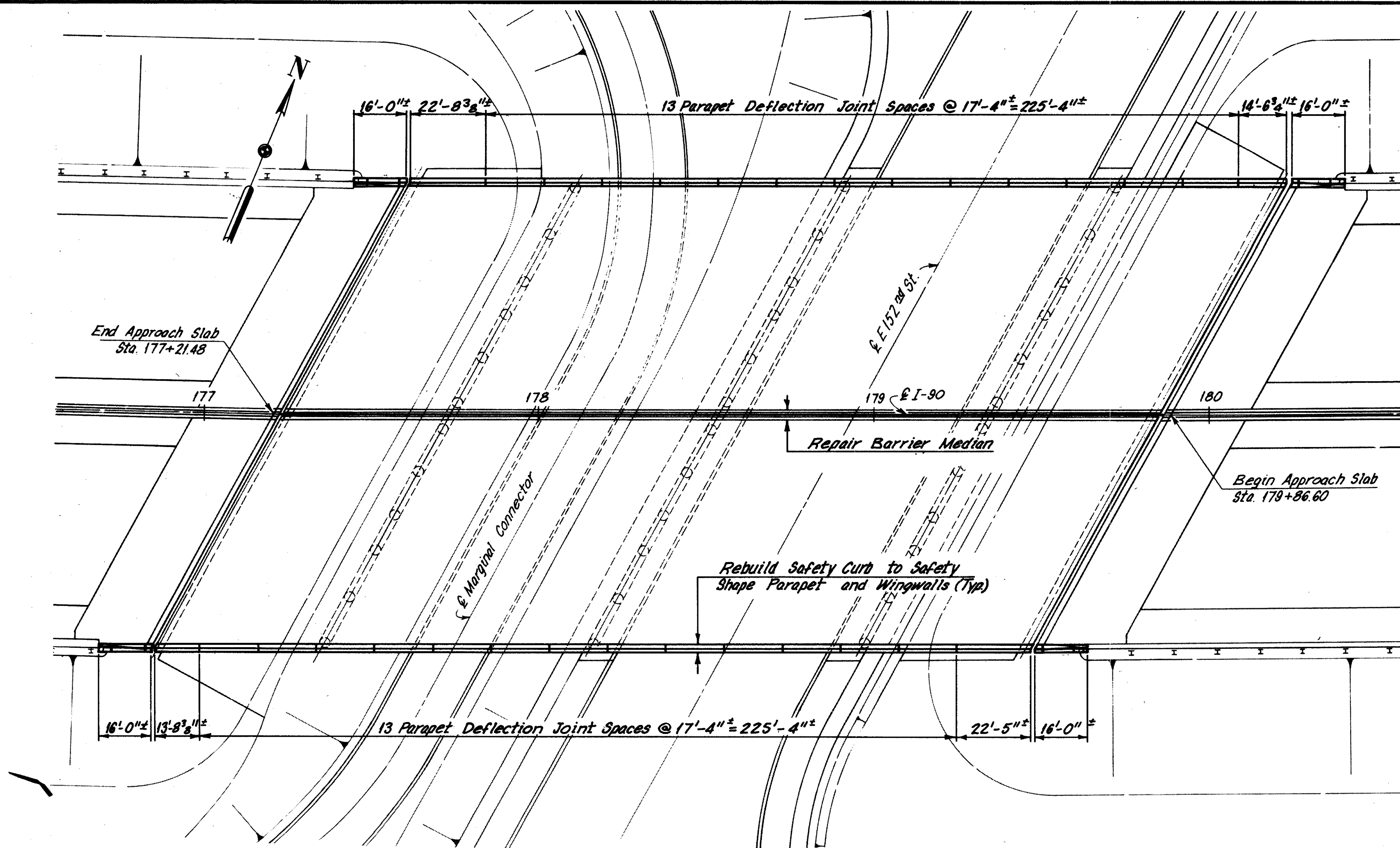
CUYAHOGA COUNTY & LAKE COUNTY OHIO

DRAWN	TRACED	CHECKED	REVIEWED	REVISED
G.C.A.	G.C.A.	C.F.P.	C.A.B.	
DATE 8-9-89	DATE 10-89	DATE 5-5-89	DATE 2-22-89	

FWWA REGION	STATE	PROJECT
5	OHIO	

190
200

CUYAHOGA COUNTY
CUY-90-23.95
LAKE COUNTY
LAK-90-0.00



PLAN
SCALE IN FEET
20' 10' 0' 10' 20' 30'

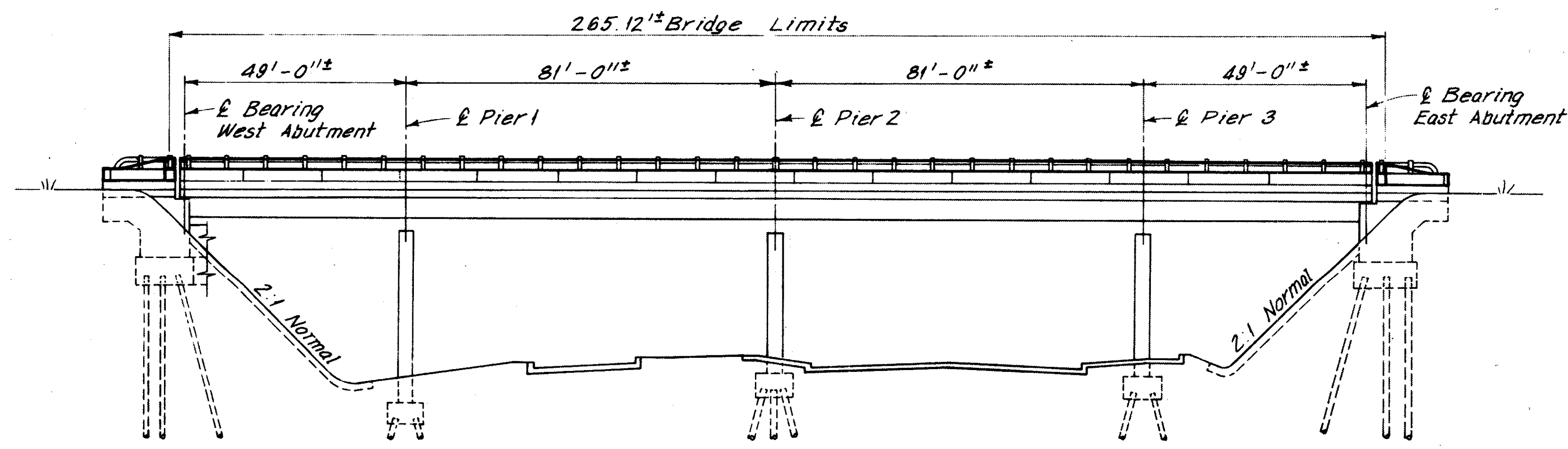
PROPOSED WORK, BR. NO. CUY-90-2465
1. REBUILD SAFETY CURBS TO SAFETY SHAPE PARAPETS AND WINGWALLS.
2. REPAIR BARRIER MEDIAN

REMOVAL NOTES:
REMOVED PARTS SHALL INCLUDE THE EXISTING CURB ADJACENT TO PARAPETS AND WINGWALLS, AND HAND RAILINGS.

INCLUDE ALL ABOVE REMOVAL WORK WITH ITEM 517 - RAILING FACED, AS PER PLAN, FOR PAYMENT.

NOTES:
FOR SAFETY CURB TO SAFETY SHAPE PARAPET DETAILS, SEE SHEET 16/18.

FOR WINGWALL TRANSITION DETAILS, SEE SHEET 17/18.



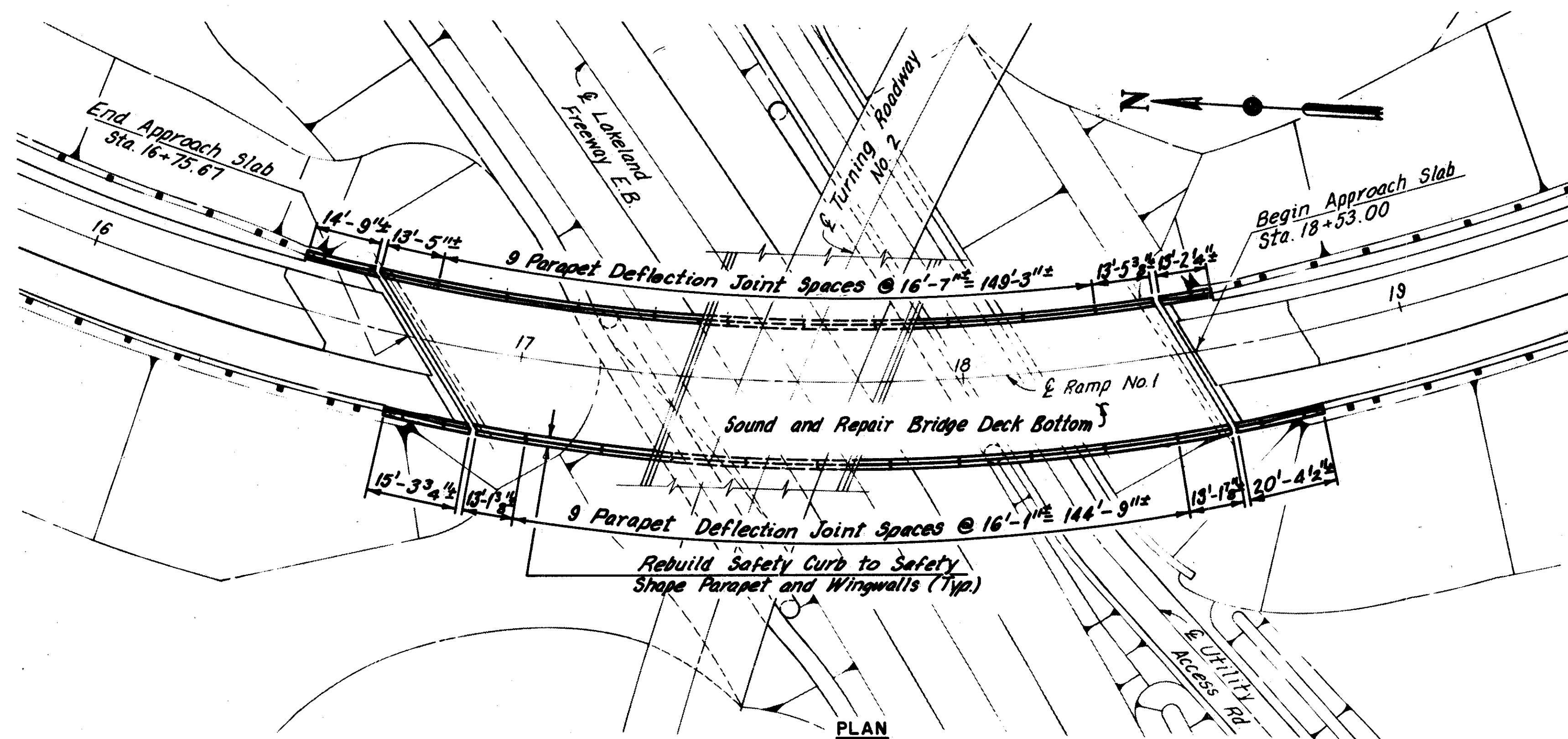
ELEVATION
SCALE IN FEET (Horizontal) 20' 10' 0' 10' 20' 30'
SCALE IN FEET (Vertical) 10' 5' 0' 10' 20'

HOWARD, NEEDLES, TAMMEN & BERGENDOFF CONSULTING ENGINEERS CLEVELAND				HNTB	
GENERAL PLAN AND ELEVATION					
BR. NO. CUY - 90 - 2465					
CUYAHOGA COUNTY & LAKE COUNTY				OHIO	
DRAWN G.C.A.	TRACED G.C.A.	CHECKED C.E.P.	REVIEWED C.A.B.	REVISION	DATE
DATE 5-18-90	DATE 5-16-90	DATE 5-6-90	DATE 12-27-90		
					SHEET 8 / 18

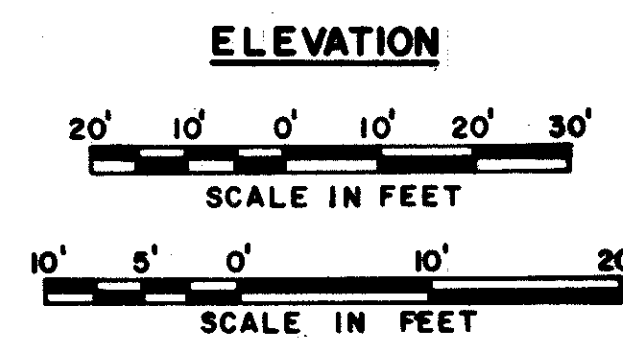
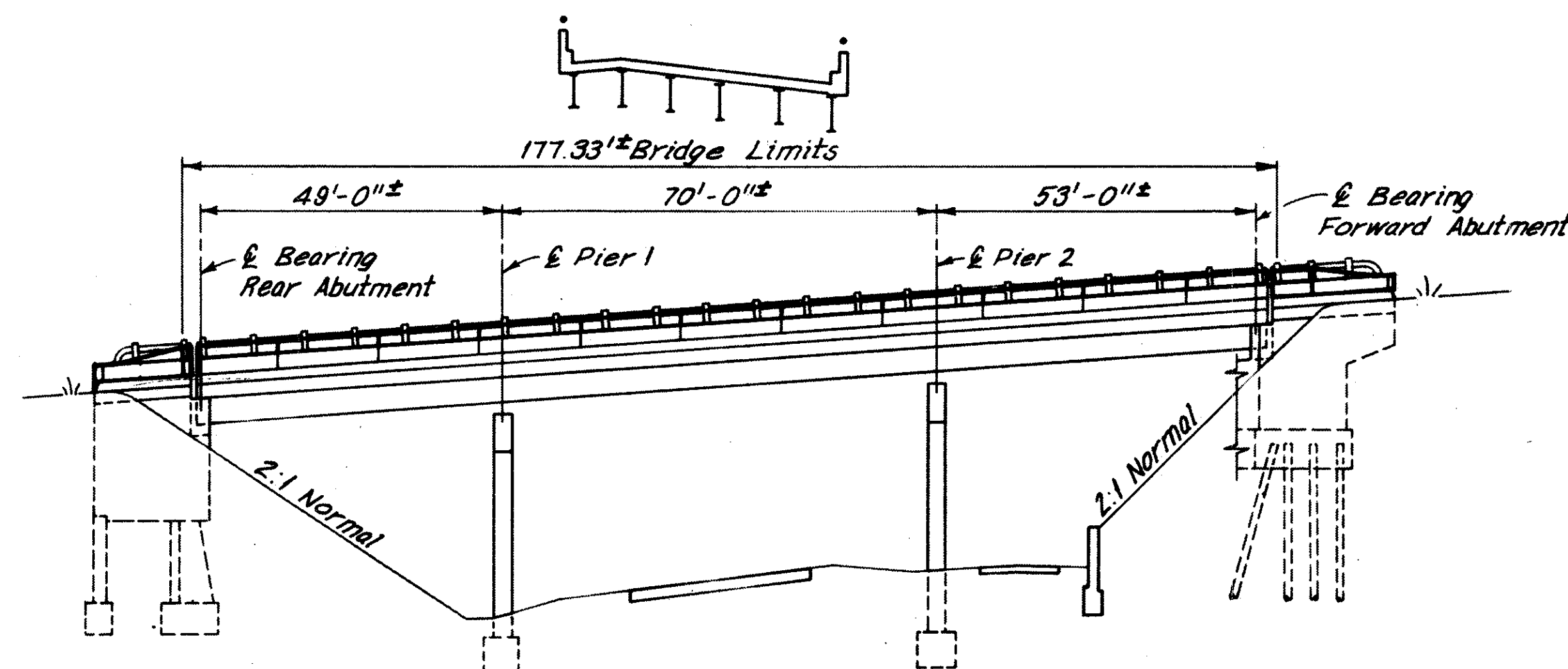
FHWA REGION	STATE	PROJECT
5	OHIO	

191
200

CUYAHOGA COUNTY
 CUY-90-23.95
 LAKE COUNTY
 LAK-90-0.00



PROPOSED WORK, BR. NO. CUY-2-2885R
1. REBUILD SAFETY CURBS TO SAFETY SHAPE PARAPETS AND WINGWALLS.
2. SOUND AND REPAIR BRIDGE DECK BOTTOM.



REMOVAL NOTES:
 REMOVED PARTS SHALL INCLUDE THE EXISTING CURB ADJACENT TO PARAPETS AND WINGWALLS, AND HAND RAILINGS.
 INCLUDE ALL ABOVE REMOVAL WORK WITH ITEM 517 - RAILING FACED, AS PER PLAN, FOR PAYMENT.

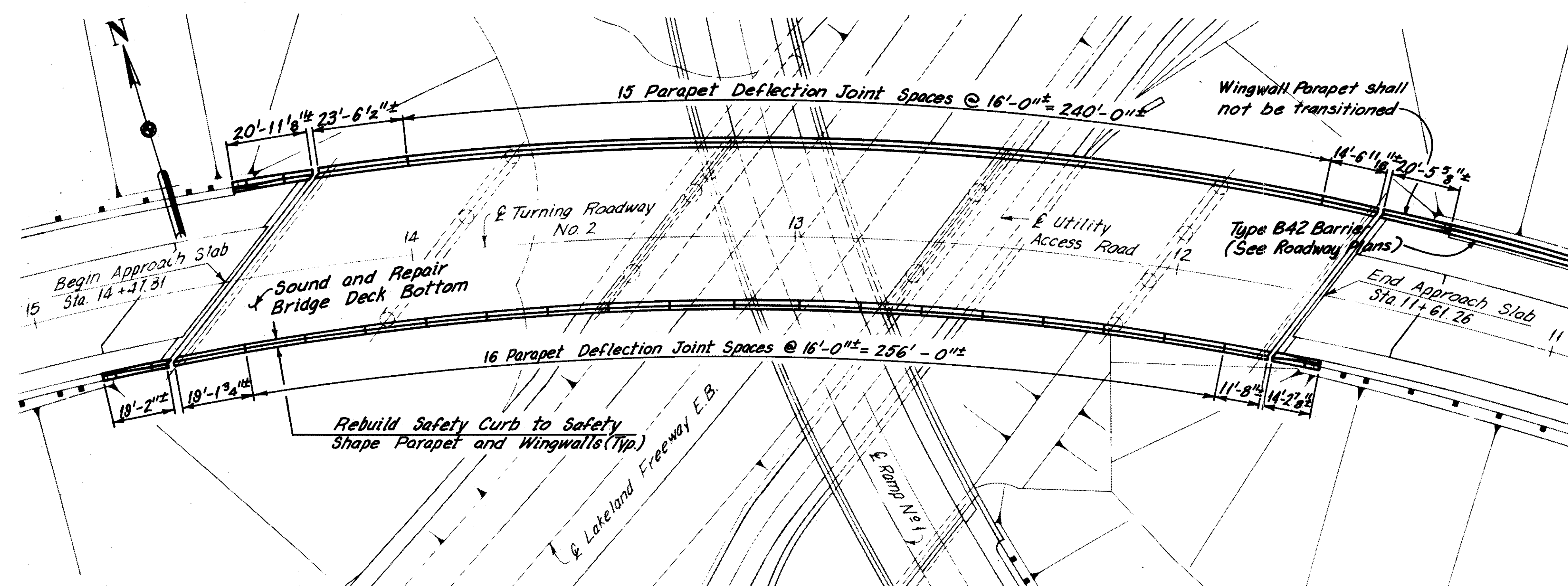
NOTES:
 FOR SAFETY CURB TO SAFETY SHAPE PARAPET DETAILS, SEE SHEET 16/18.
 FOR WINGWALL TRANSITION DETAILS, SEE SHEET 17/18.

HOWARD, NEEDLES, TAMMEN & BERGENDOFF CONSULTING ENGINEERS CLEVELAND		HNTB
GENERAL PLAN AND ELEVATION		
BR. NO. CUY-2-2885 R		
CUYAHOGA COUNTY & LAKE COUNTY		OHIO
DRAWN GCA DATE 10/98	TRACED GCA DATE 10/98	CHECKED GEP DATE 7/99
REVIEWED GAB DATE 10/98	REVISED	SHEET 9/18

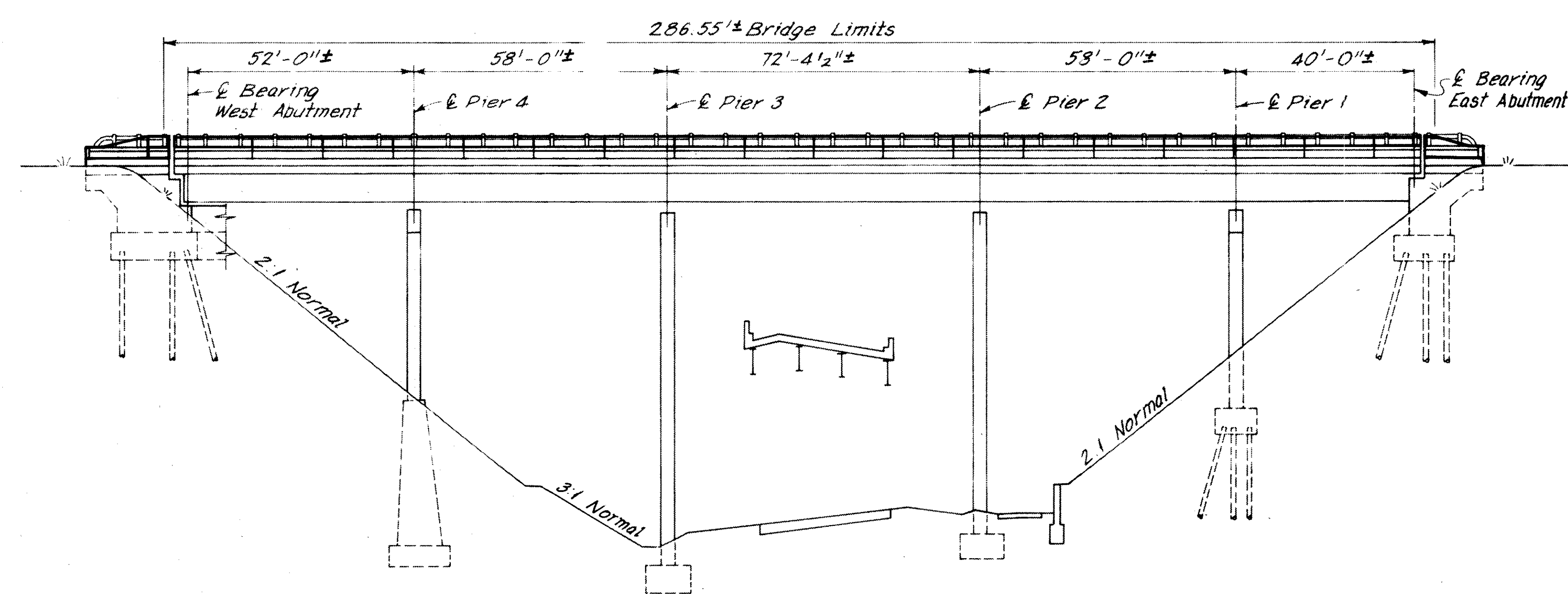
FHWA REGION	STATE	PROJECT
5	OHIO	

192
200

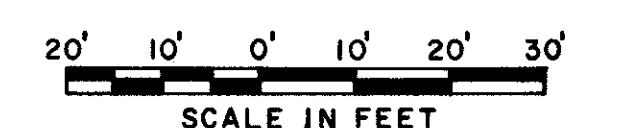
CUYAHOGA COUNTY
CUY - 90 - 23.95
LAKE COUNTY
LAK - 90 - 0.00



PLAN



ELEVATION



(Horizontal)



(Vertical)

PROPOSED WORK, BR. NO. CUY-90-2956L
1. REBUILD SAFETY CURBS TO SAFETY SHAPE PARAPETS AND WINGWALLS.
2. SOUND AND REPAIR BRIDGE DECK BOTTOM.

REMOVAL NOTES:
REMOVED PARTS SHALL INCLUDE THE EXISTING CURB ADJACENT TO PARAPETS AND WINGWALLS, AND HAND RAILINGS.

INCLUDE ALL ABOVE REMOVAL WORK WITH ITEM 517 - RAILING FACED, AS PER PLAN, FOR PAYMENT.

NOTES:
FOR SAFETY CURB TO SAFETY SHAPE PARAPET DETAILS, SEE SHEET 16/18.

FOR WINGWALL TRANSITION DETAILS, SEE SHEET 17/18.

HOWARD, NEEDLES, TAMMEN & BERGENDOFF CONSULTING ENGINEERS CLEVELAND HNTB

GENERAL PLAN AND ELEVATION

BR. NO. CUY-90-2956 L

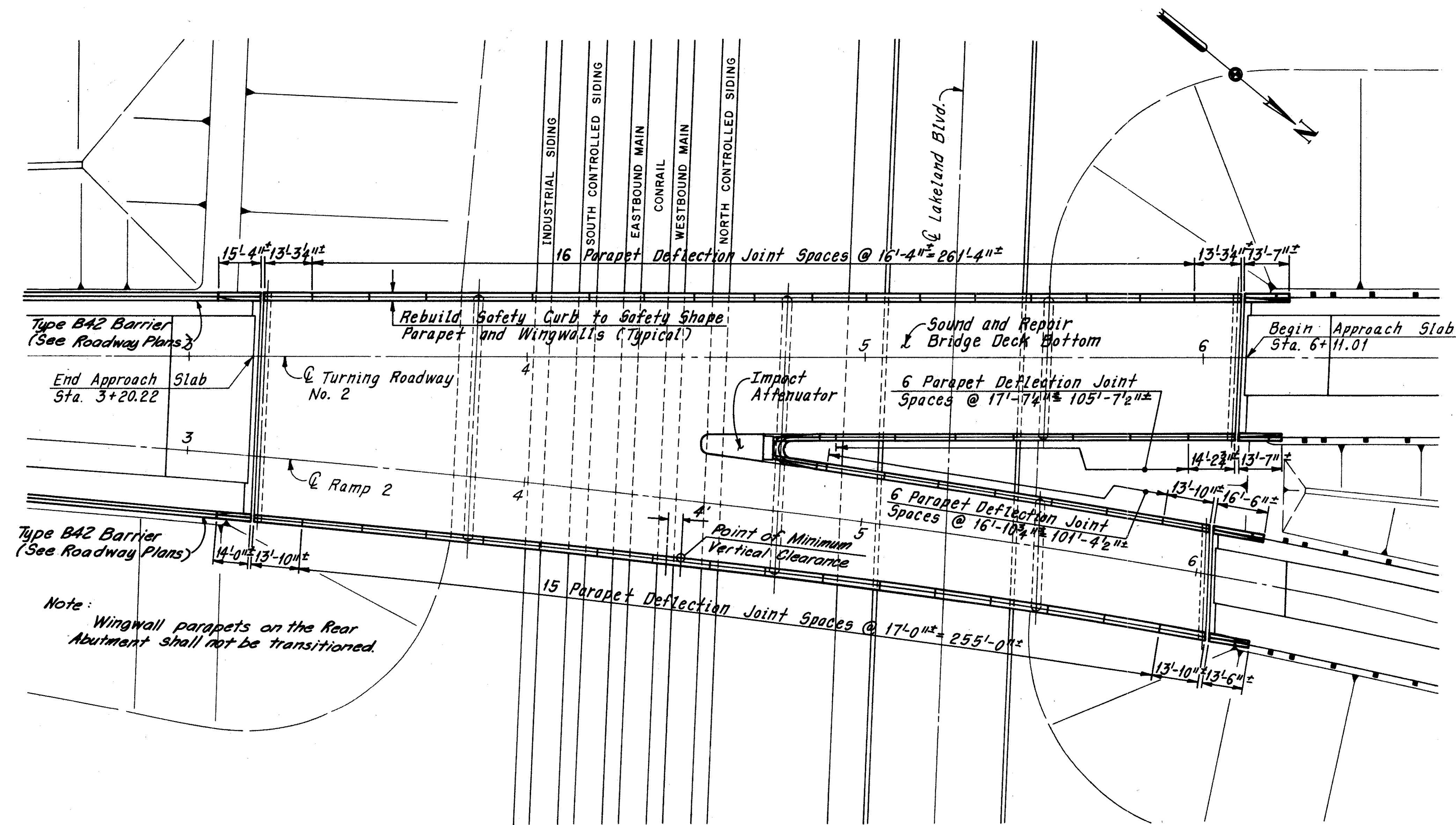
CUYAHOGA COUNTY & LAKE COUNTY OHIO

DRAWN GCA DATE 9/22/87	TRACED GCA DATE 9/23/87	CHECKED CEP DATE 9/8/88	REVIEWED CAB DATE 12/22/88	REVISED
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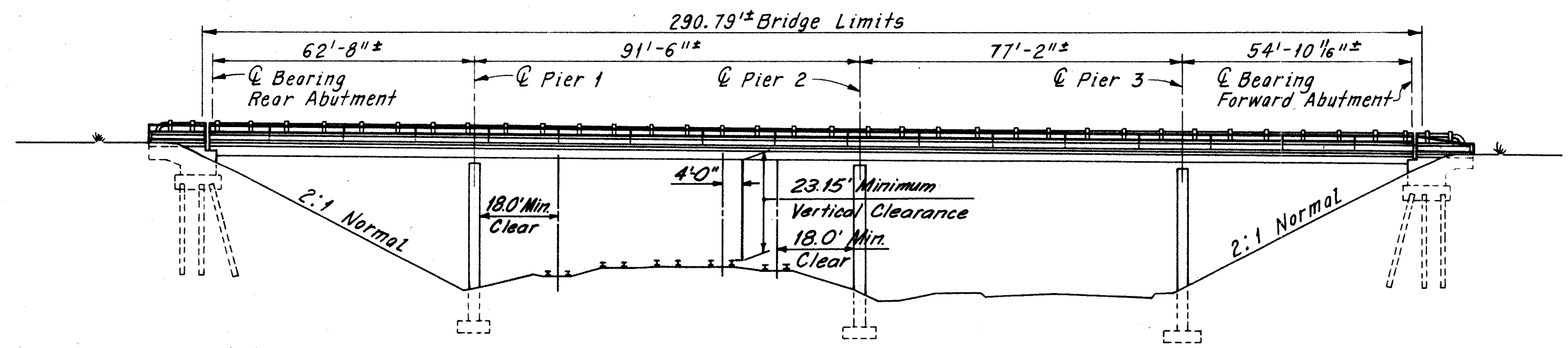
FHWA REGION	STATE	PROJECT
5	OHIO	

193
200

CUYAHOGA COUNTY
CUY-90-23.95
LAKE COUNTY
LAK-90-0.00



PLAN
SCALE IN FEET



ELEVATION
SCALE IN FEET

NOTE:
THERE SHALL BE NO CHANGE IN RAILROAD CLEARANCES AS A RESULT OF THIS WORK.

- PROPOSED WORK, BR. NO. CUY-90-2969L
1. REBUILD SAFETY CURBS TO SAFETY SHAPE PARAPETS AND WINGWALLS.
 2. SOUND AND REPAIR BRIDGE DECK BOTTOM. (EXCEPT SPAN OVER RAILROAD)
 3. OVERLAY A PORTION OF THE BRIDGE DECK IN THE VICINITY OF THE IMPACT ATTENUATOR WITH LATEX MODIFIED CONCRETE.

REMOVAL NOTES:
REMOVED PARTS SHALL INCLUDE THE EXISTING CURB ADJACENT TO PARAPETS AND WINGWALLS, AND HAND RAILINGS.

INCLUDE ALL ABOVE REMOVAL WORK WITH ITEM 517 - RAILING FACED, AS PER PLAN, FOR PAYMENT.

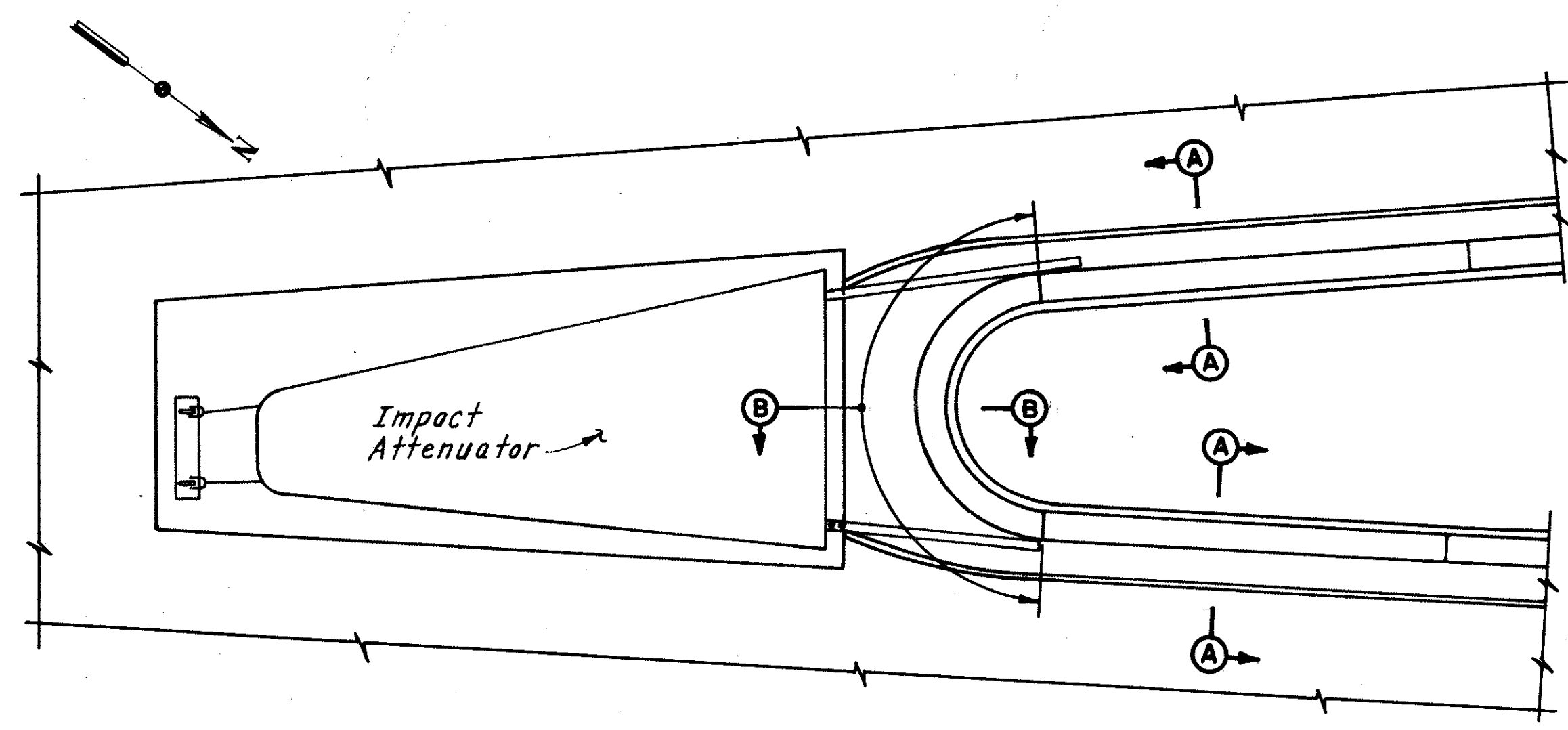
NOTES:
FOR SAFETY CURB TO SAFETY SHAPE PARAPET DETAILS, SEE SHEET 16/18.

FOR DETAILS OF SAFETY CURB TO SAFETY SHAPE PARAPET AT IMPACT ATTENUATOR, SEE SHEET 12/18.

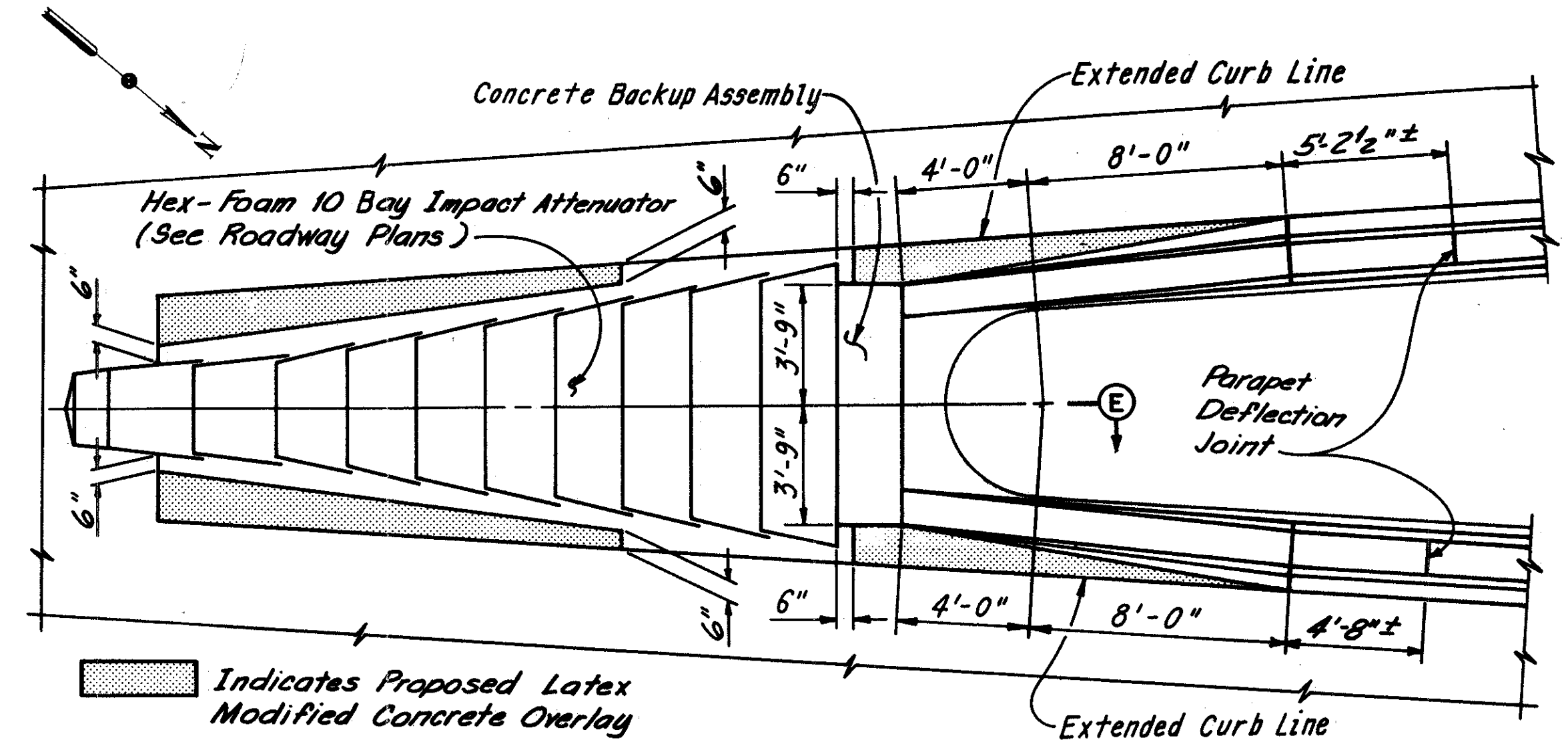
FOR WINGWALL TRANSITION DETAILS, SEE SHEET 17/18.

HOWARD, NEEDLES, TAMMEN & BERGENDOFF CONSULTING ENGINEERS CLEVELAND		HNTB	
GENERAL PLAN AND ELEVATION			
BR. NO. CUY - 90 - 2969L			
CUYAHOGA COUNTY & LAKE COUNTY		OHIO	
DRAWN C.K.B. DATE 8-26-88	TRACED W.E.B. DATE 9-2-88	CHECKED J.T. DATE 9-15-88	REVIEWED C.A.B. DATE 11-22-88
			SHEET 11/18

CUYAHOGA COUNTY
CUI-90-23.95
LAKE COUNTY
LAK-90-0.00



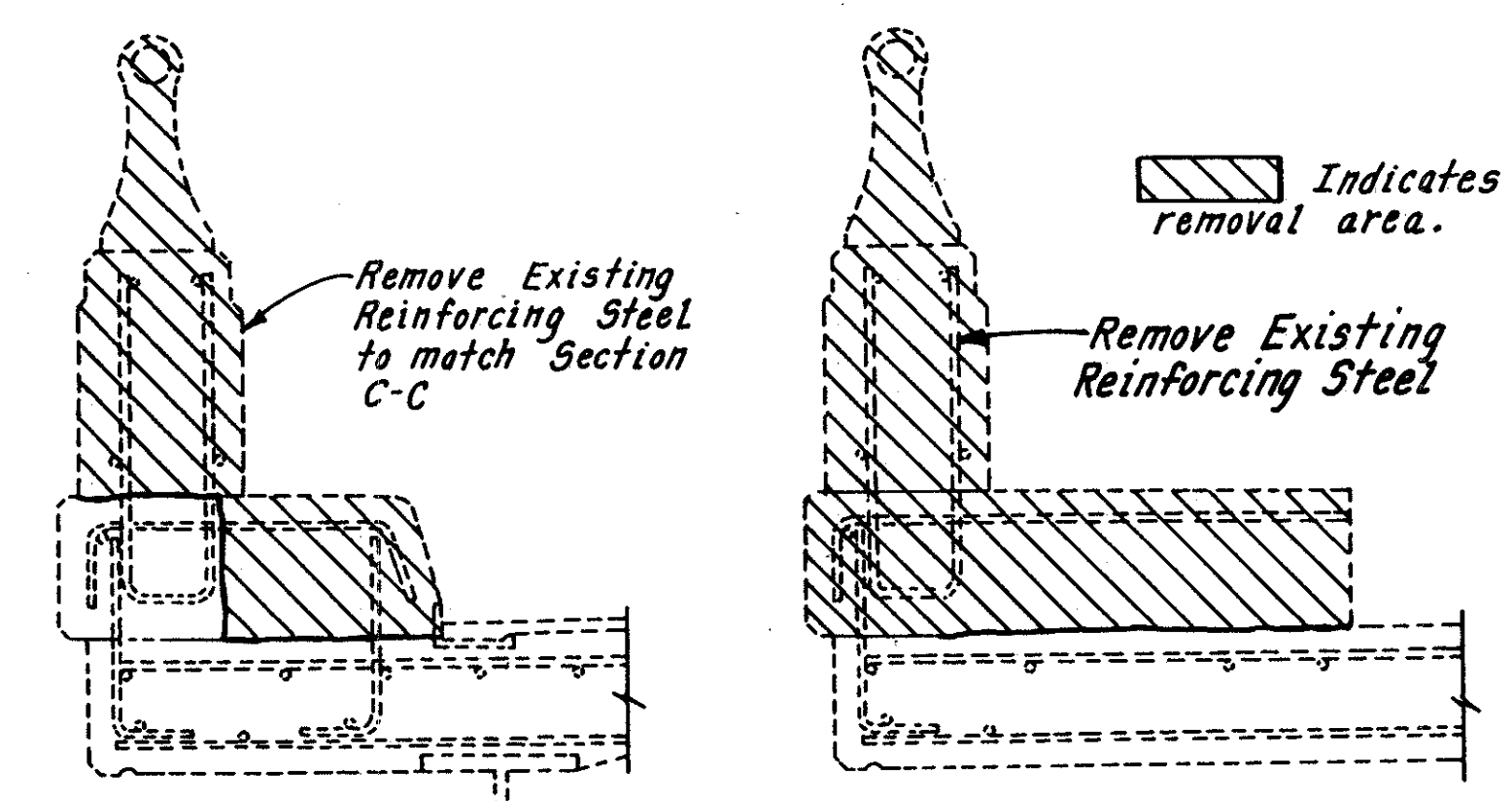
EXISTING



PROPOSED

PART PLAN

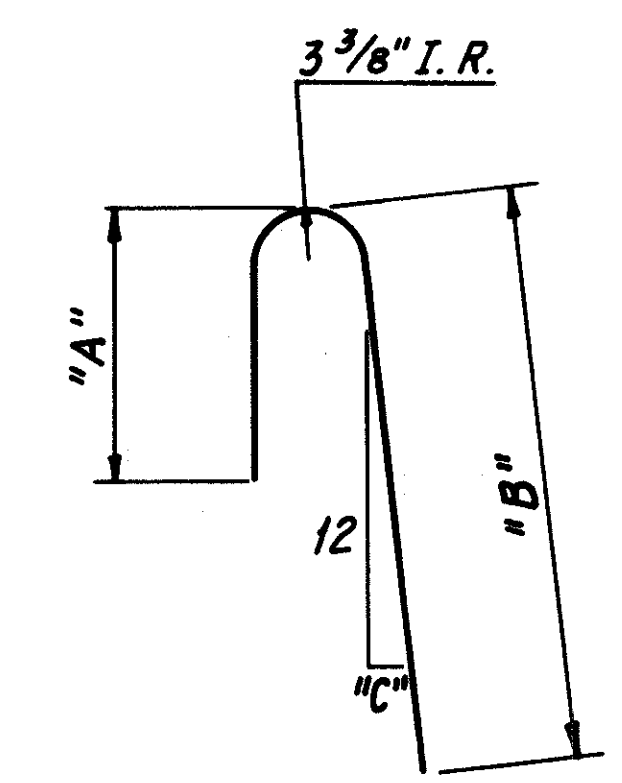
BAR DATA					
MARK	BAR SIZE	DIM. "A"	DIM. "B"	DIM. "C"	LENGTH
519	NO. 5	3'-2-1/4"	3'-10-1/4"	0"	7'-4"
520	NO. 5	3'-2-1/2"	3'-10-1/2"	1/8"	7'-5"
521	NO. 5	3'-2-3/4"	3'-10-3/4"	3/16"	7'-5"
522	NO. 5	3'-3"	3'-11"	5/16"	7'-6"
523	NO. 5	2'-0-1/4"	3'-11-1/4"	3/8"	6'-3"
524	NO. 5	2'-0-1/2"	3'-11-1/2"	1/2"	6'-4"
525	NO. 5	2'-0-3/4"	3'-11-3/4"	9/16"	6'-4"
526	NO. 5	2'-1"	4'-0"	11/16"	6'-5"
527	NO. 5	2'-1-1/4"	4'-0-1/4"	13/16"	6'-5"
528	NO. 5	2'-1-1/2"	4'-0-1/2"	15/16"	6'-6"
529	NO. 5	2'-1-3/4"	4'-0-3/4"	1"	6'-6"
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SECTION A-A

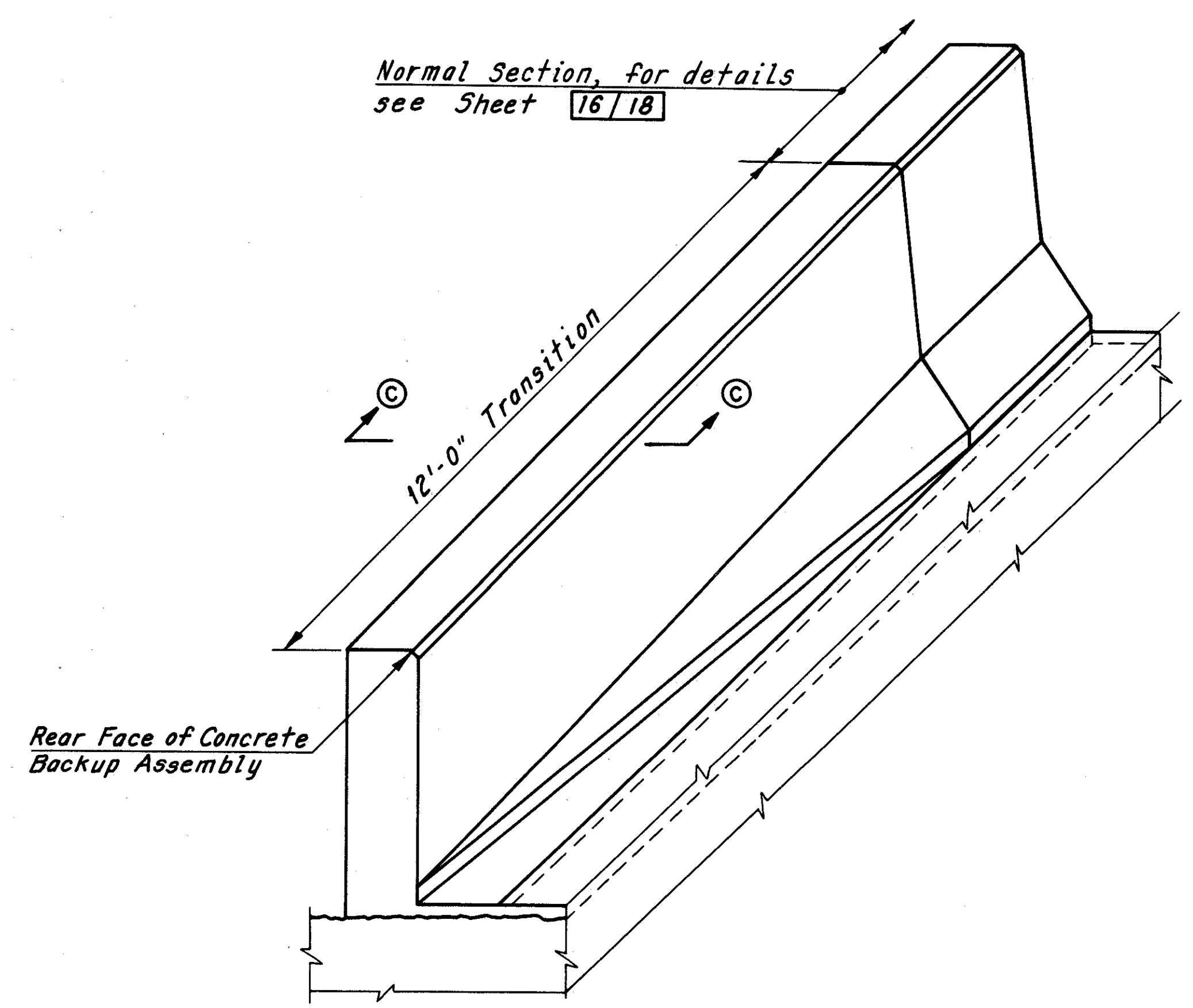
SECTION B-B

BAR PLACEMENT			
DISTANCE FROM BACKUP ASSEM.	BAR	DIM "D"	DIM "E"
3"	519	1'-5-1/8"	2'-7/16"
1'-3"	520	1'-3-11/16"	3"
2'-3"	521	1'-2-3/16"	3-1/2"
3'-3"	522	1'-0-3/4"	4-1/16"
4'-3"	523	11-5/16"	4-9/16"
5'-3"	524	9-7/8"	5-1/16"
6'-3"	525	8-3/8"	5-1/2"
7'-3"	526	6-15/16"	5-15/16"
8'-3"	527	5-1/2"	6-3/8"
9'-3"	528	4"	6-13/16"
10'-3"	529	2-9/16"	7-3/16"
11'-3"	530	1-1/8"	7-9/16"

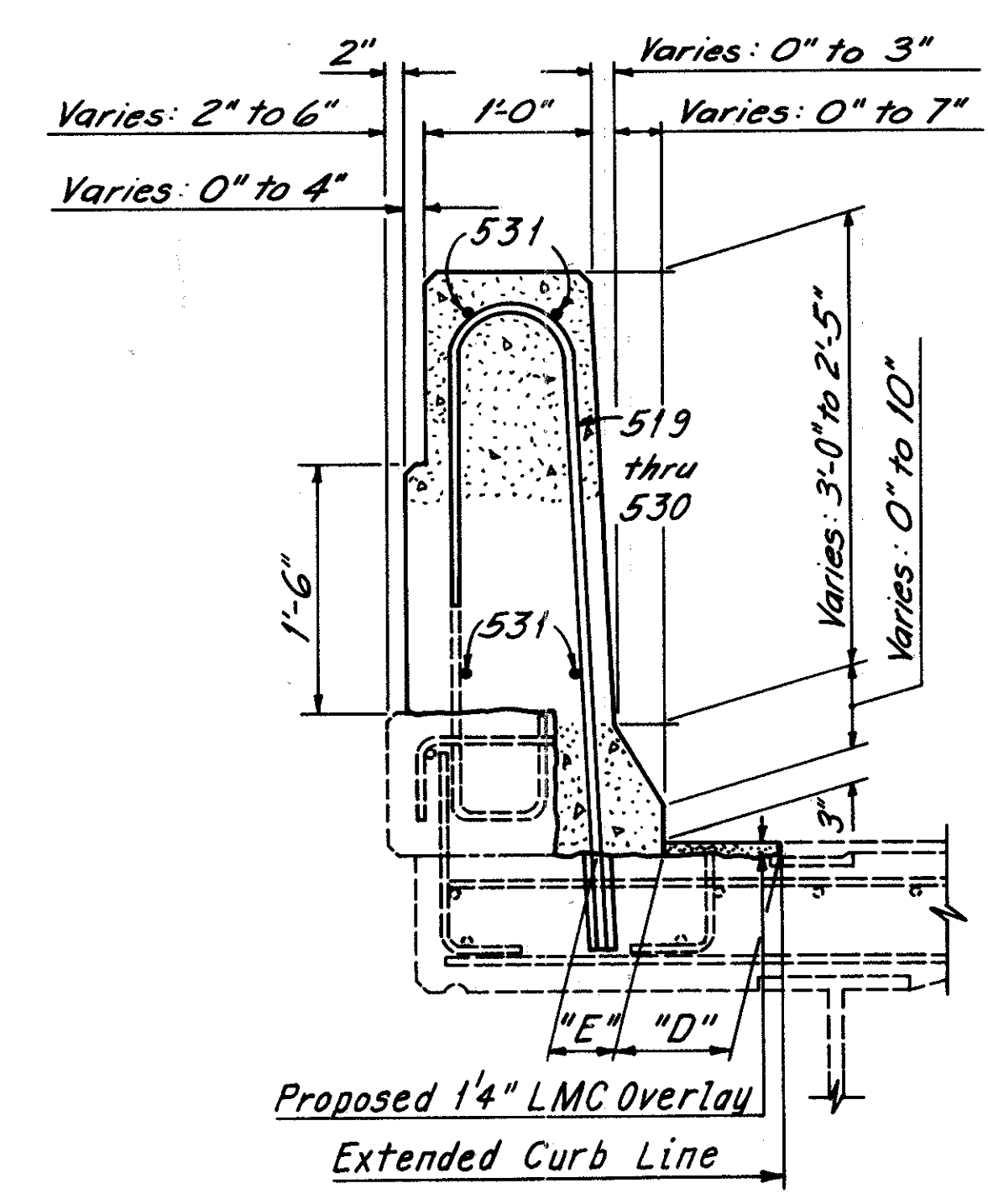


519 THRU 530
(No. 5)

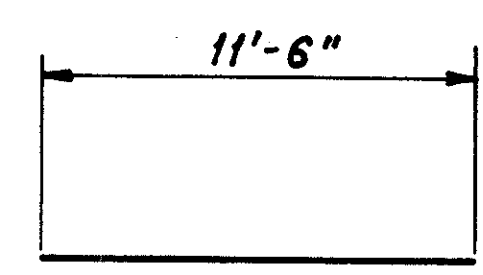
Normal Section, for details see Sheet 16/18



PERSPECTIVE VIEW OF PARAPET TRANSITION



SECTION C-C



531 (No. 5)

HOWARD, NEEDLES, TAMMEN & BERGENDOFF CONSULTING ENGINEERS CLEVELAND HNTB

SAFETY CURB TO SAFETY SHAPE PARAPET AT IMPACT ATTENUATOR
BR. NO. CUY - 90 - 2969L

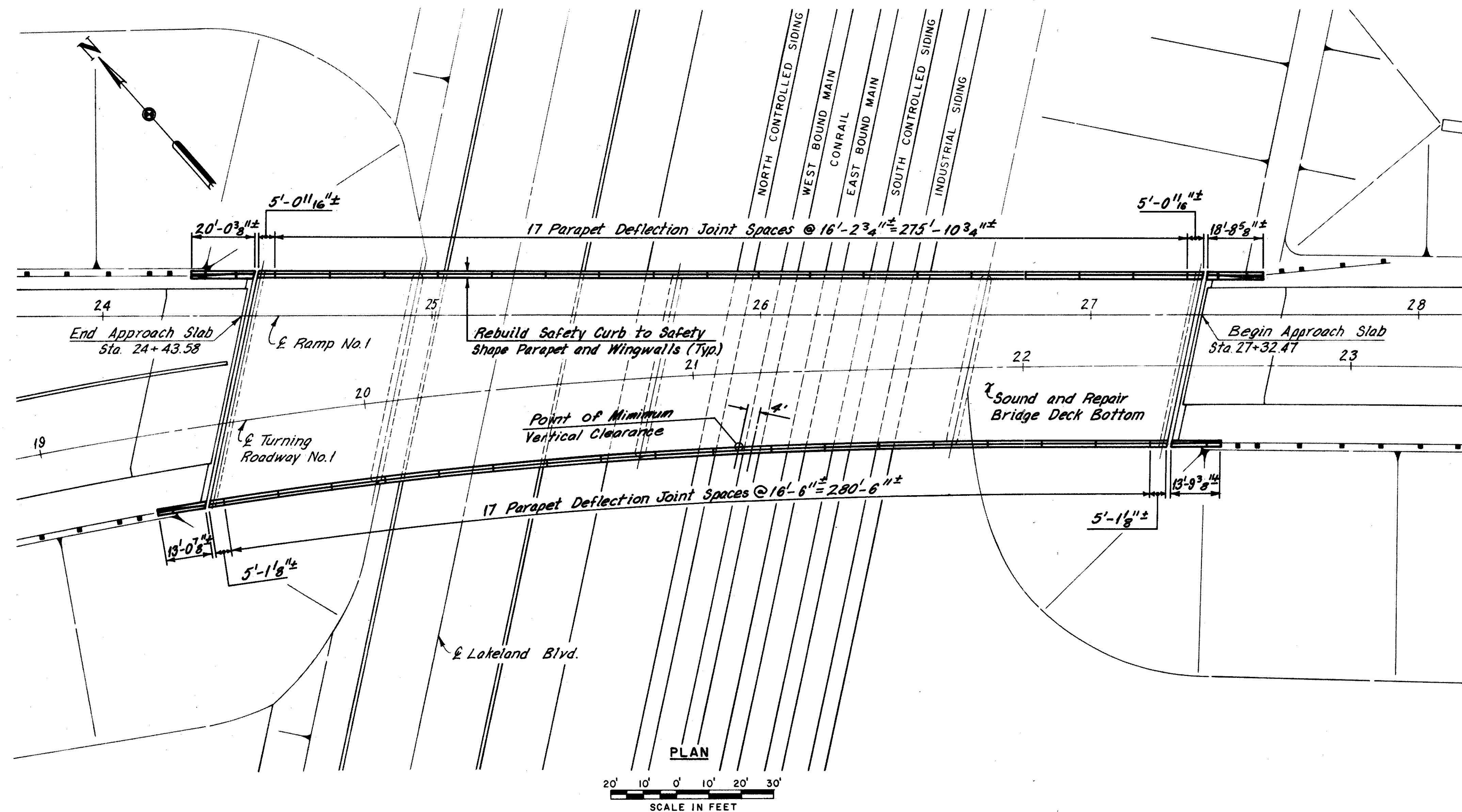
CUYAHOGA COUNTY & LAKE COUNTY OHIO

DRAWN C.K.B.	TRACED P.J.K.	CHECKED M.J.P.	REVIEWED C.A.B.	REVISED
DATE: 11-20-89	DATE: 11-21-89	DATE: 11-22-89	DATE: 11-27-89	

FNWA REGION	STATE	PROJECT
5	OHIO	

195
200

CUYAHOGA COUNTY
CUY-90-23.95
LAKE COUNTY
LAK-90-0.00



PLAN
SCALE IN FEET

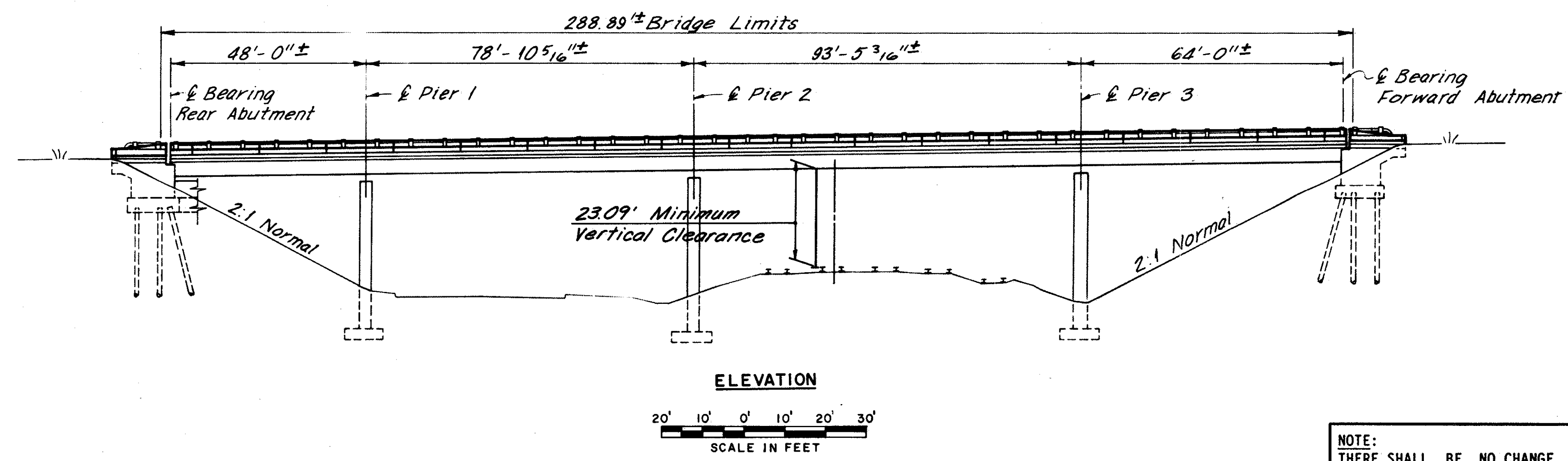
PROPOSED WORK, BR. NO. CUY-90-2969R
1. REBUILD SAFETY CURBS TO SAFETY SHAPE PARAPETS AND WINGWALLS.
2. SOUND AND REPAIR BRIDGE DECK BOTTOM. (EXCEPT SPAN OVER RAILROAD)

REMOVAL NOTES:
REMOVED PARTS SHALL INCLUDE THE EXISTING CURB ADJACENT TO PARAPETS AND WINGWALLS, AND HAND RAILINGS.

INCLUDE ALL ABOVE REMOVAL WORK WITH ITEM 517 - RAILING FACED, AS PER PLAN, FOR PAYMENT.

NOTES:
FOR SAFETY CURB TO SAFETY SHAPE PARAPET DETAILS, SEE SHEET 16/18.

FOR WINGWALL TRANSITION DETAILS, SEE SHEET 17/18.



ELEVATION
SCALE IN FEET

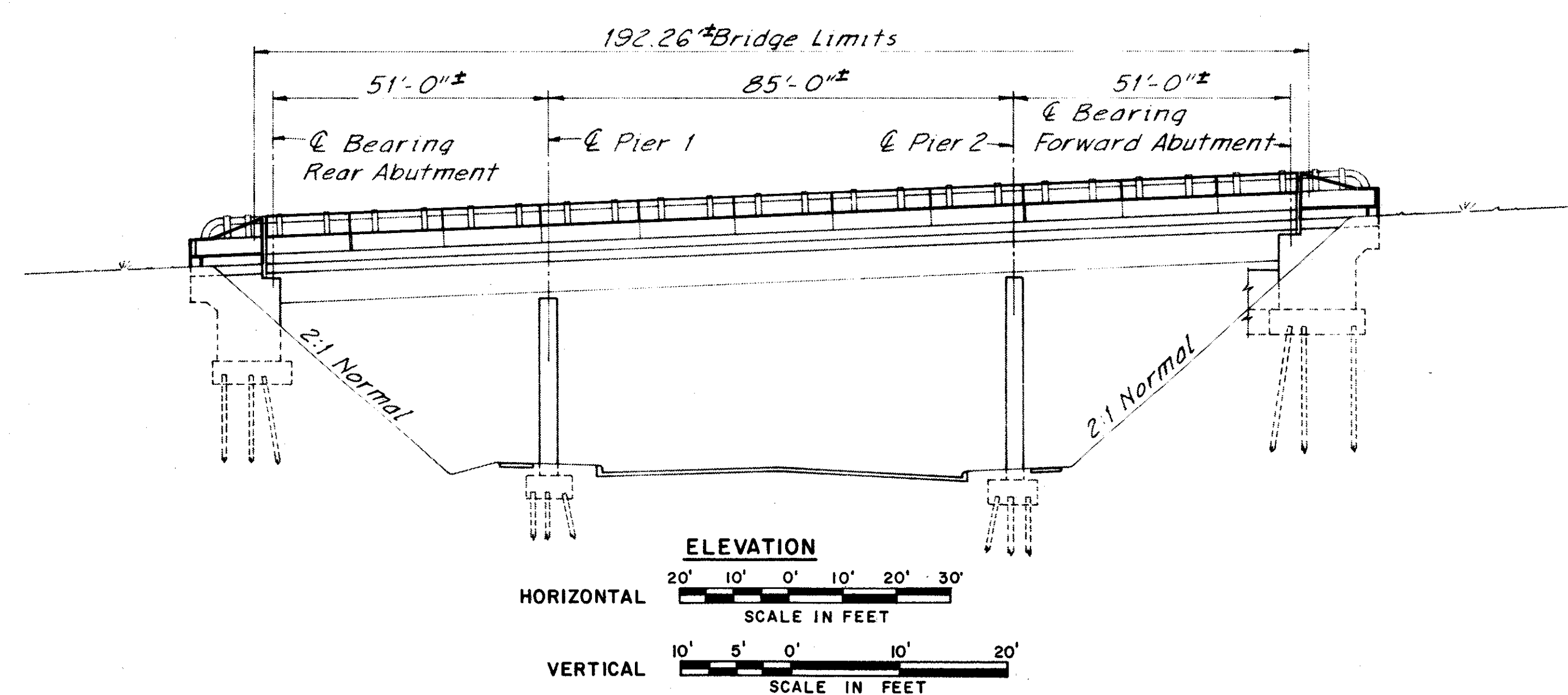
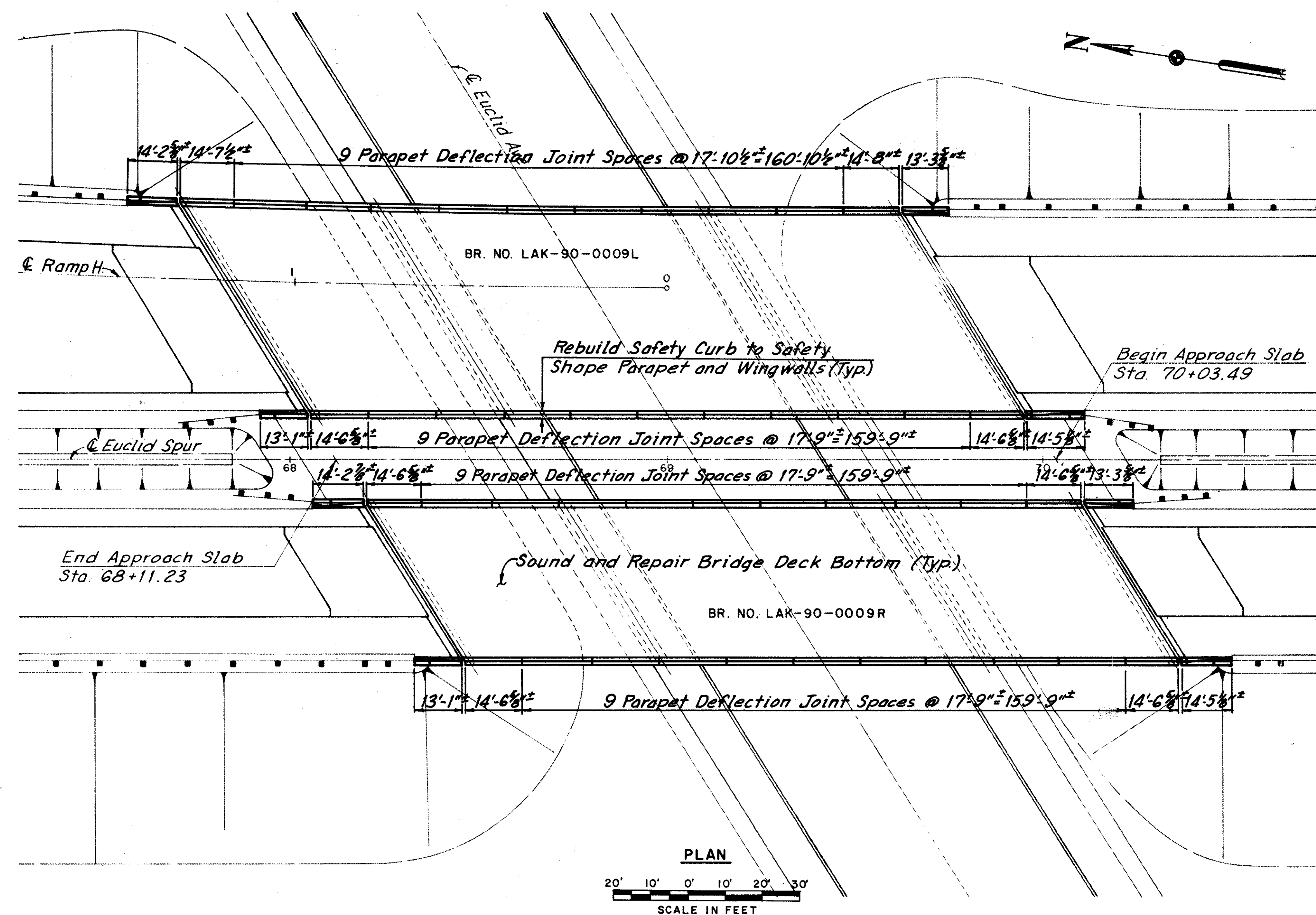
NOTE:
THERE SHALL BE NO CHANGE IN RAILROAD CLEARANCES AS A RESULT OF THIS WORK.

HOWARD, NEEDLES, TAMMEN & BERGENDOFF CONSULTING ENGINEERS CLEVELAND		HNTB
GENERAL PLAN AND ELEVATION		
BR. NO. CUY-90-2969 R		
CUYAHOGA COUNTY & LAKE COUNTY		OHIO
DRAWN C.K.B. DATE 8-2-88	TRACED G.C.A. DATE 8-4-88	CHECKED C.E.P. DATE 8-12-88
REVIEWED C.A.B. DATE 12-22-88		REVISED
		SHEET 13/18

FHWA REGION	STATE	PROJECT
5	OHIO	

197
200

CUYAHOGA COUNTY
 CUY - 90 - 23.95
 LAKE COUNTY
 LAK - 90 - 0.00



PROPOSED WORK, BR. NO. LAK-90-0009L&R

- REBUILD SAFETY CURBS TO SAFETY SHAPE PARAPETS AND WINGWALLS.
- SOUND AND REPAIR BRIDGE DECK BOTTOM.

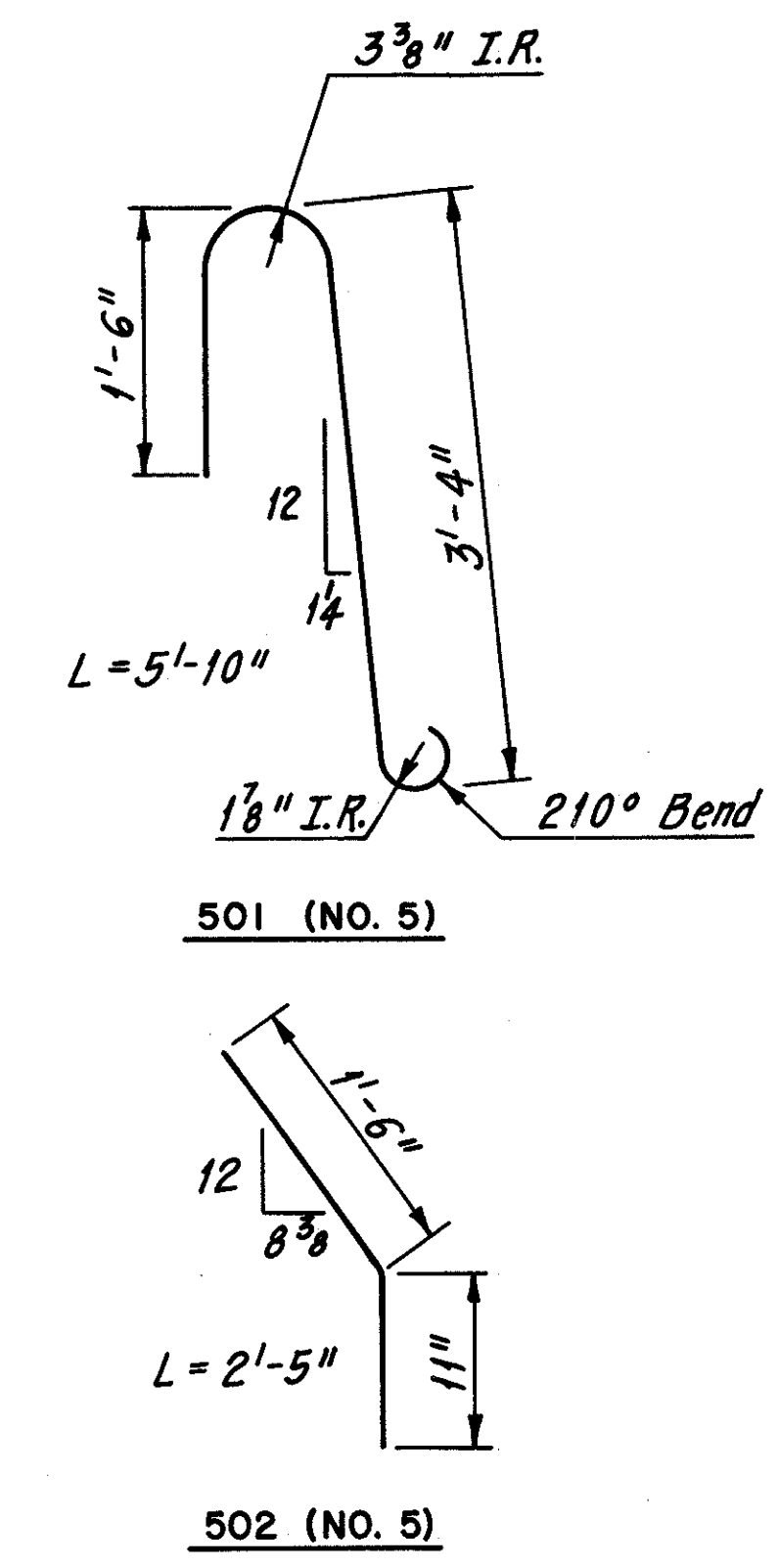
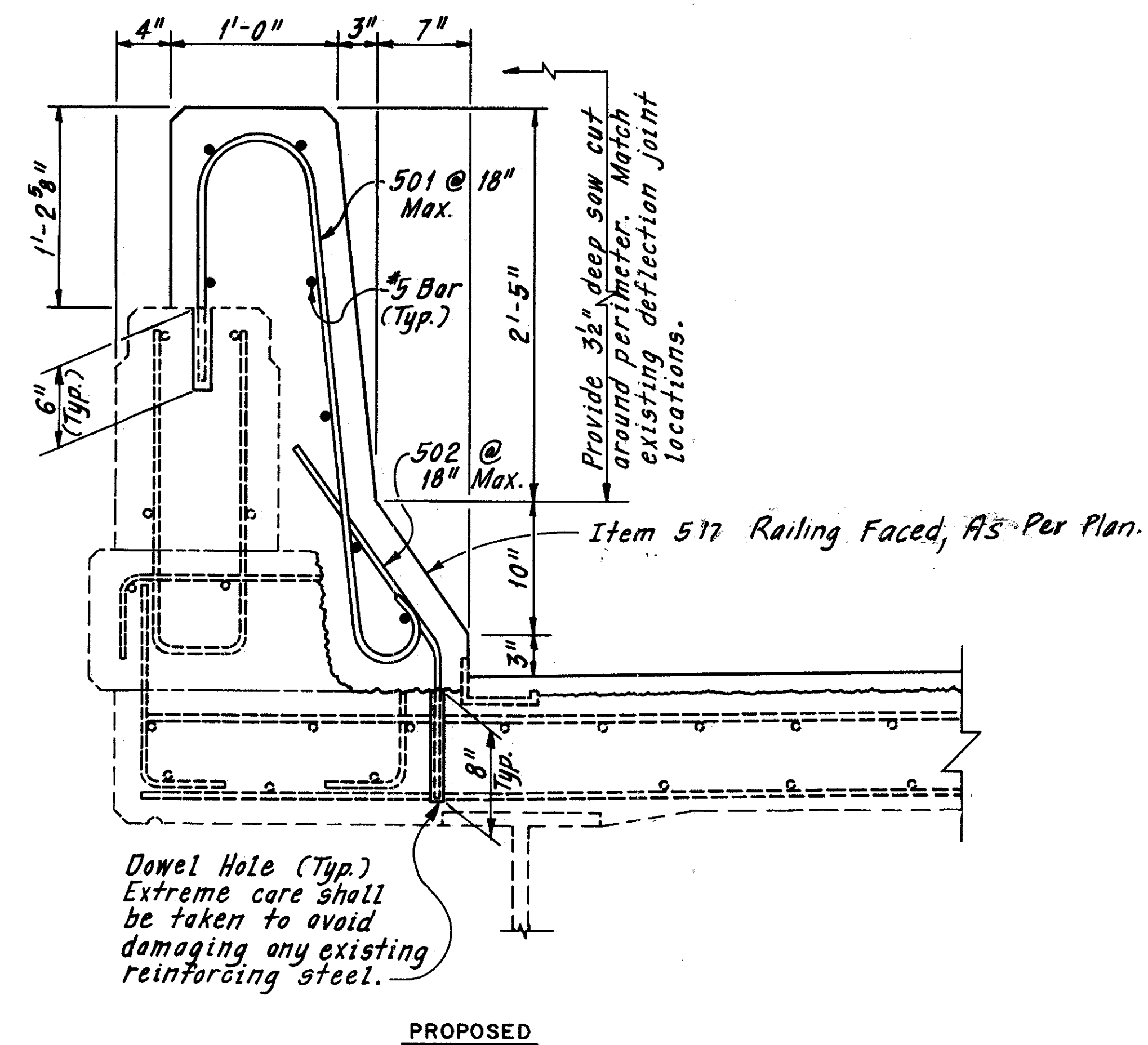
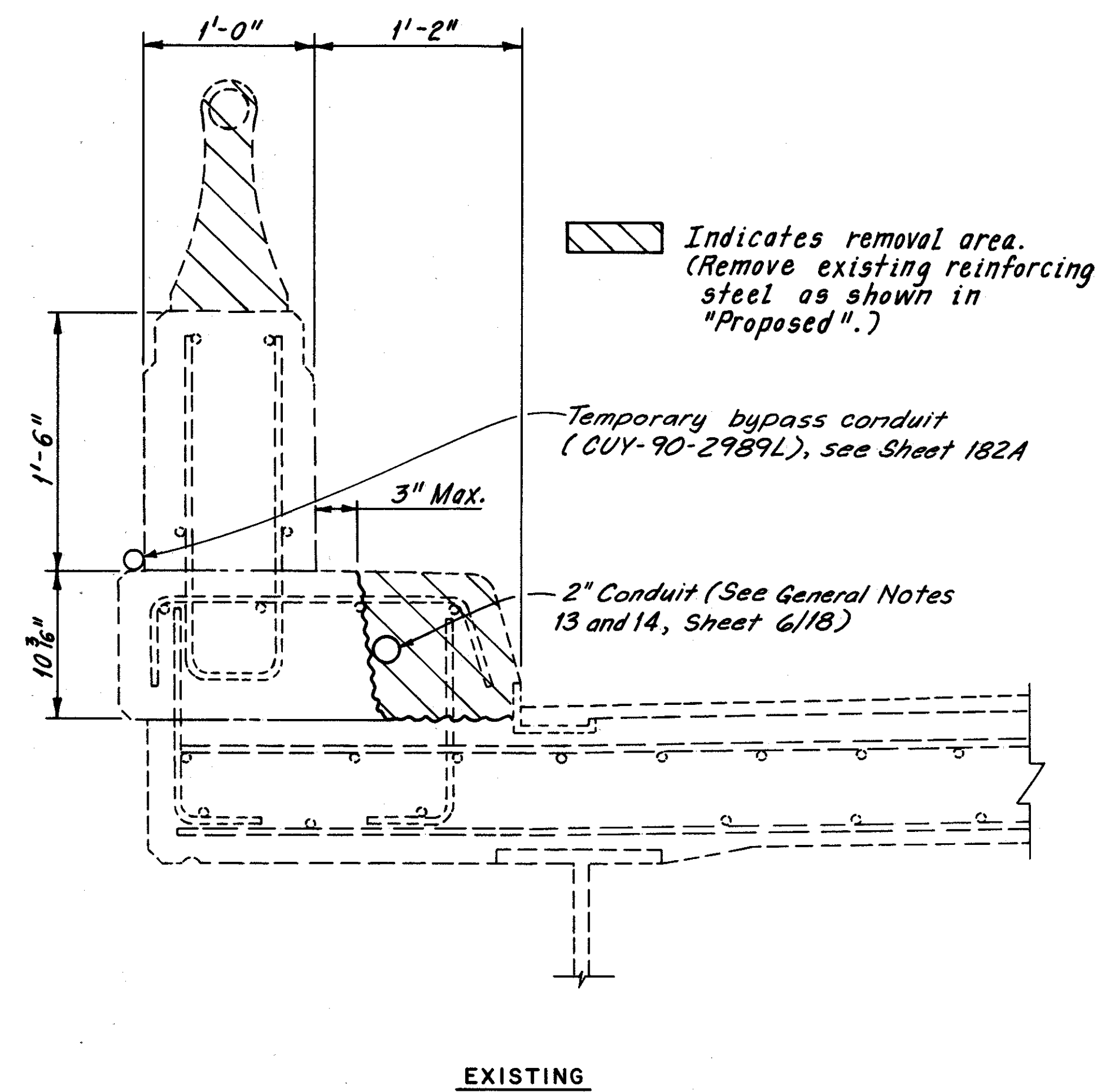
REMOVAL NOTES:
 REMOVED PARTS SHALL INCLUDE THE EXISTING CURB ADJACENT TO PARAPETS AND WINGWALLS, AND HAND RAILINGS.

INCLUDE ALL ABOVE REMOVAL WORK WITH ITEM 517 - RAILING FACED, AS PER PLAN, FOR PAYMENT.

NOTES:
 FOR SAFETY CURB TO SAFETY SHAPE PARAPET DETAILS, SEE SHEET 16/18.
 FOR WINGWALL TRANSITION DETAILS, SEE SHEET 17/18.

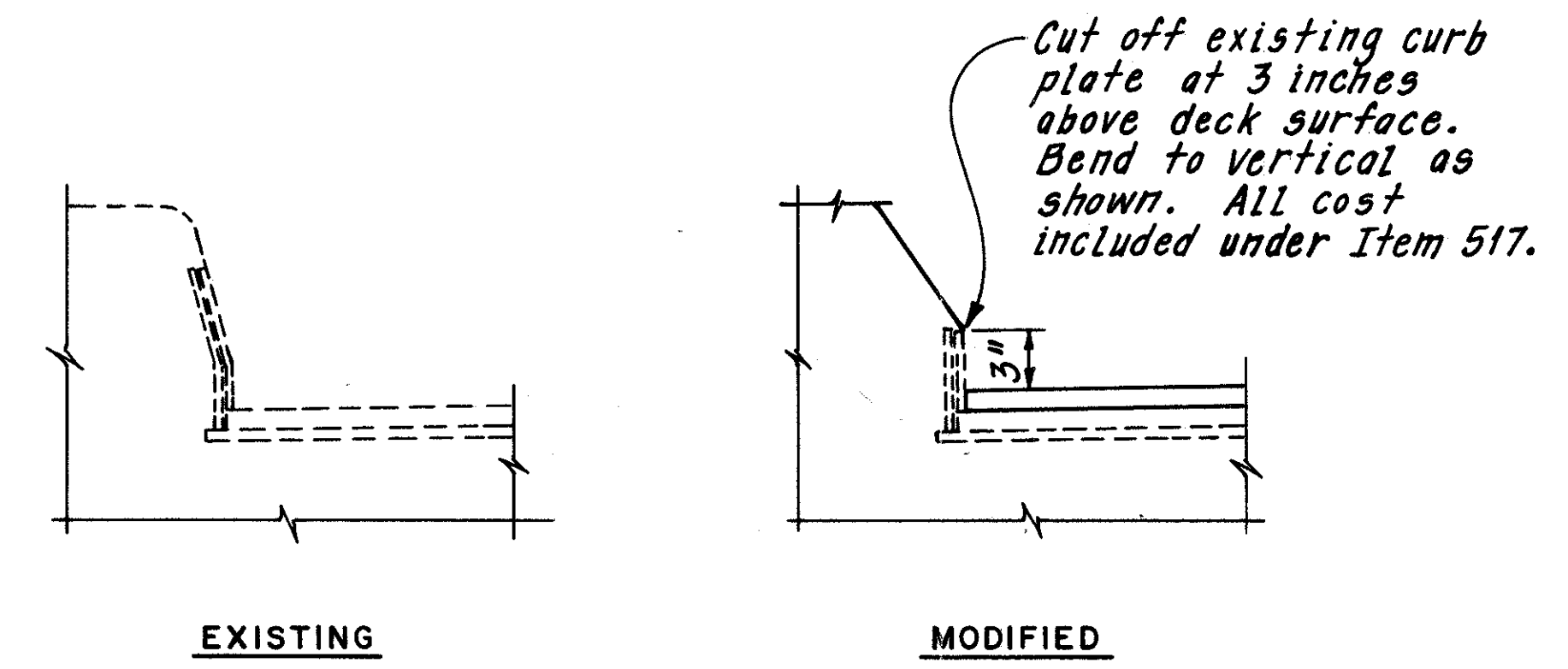
HOWARD, NEEDLES, TAMMEN & BERGENDOFF CONSULTING ENGINEERS CLEVELAND		HNTB	
GENERAL PLAN AND ELEVATION			
BR. NO. LAK - 90 - 0009 L & R			
CUYAHOGA COUNTY & LAKE COUNTY		OHIO	
DRAWN CAB DATE 8-7-88	TRACED JT DATE 8-11-88	CHECKED CEP DATE 8-14-88	REVIEWED CAB DATE 8-22-88
			SHEET 15/18

CUYAHOGA COUNTY
 CUY-90-23.95
 LAKE COUNTY
 LAK-90-0.00



TYPICAL SUPERSTRUCTURE SECTIONS
 (Wingwall sections, not in transition, similar)

- NOTES:
1. EXACT EXISTING REINFORCING STEEL LOCATIONS ARE NOT KNOWN.
 2. EXISTING REINFORCING STEEL MAY BE CUT OFF OR BENT OUT OF THE WAY.
 3. REMOVAL LIMITS SHALL PROVIDE 2" MINIMUM CLEARANCE AROUND ALL NEW REINFORCING BARS.
 4. VERTICAL REINFORCING STEEL SHALL CLEAR EXISTING DEFLECTION JOINTS BY 3" MINIMUM.
 5. ALL LONGITUDINAL REINFORCEMENT SHALL BE CONTINUOUS (WITH MINIMUM LAP SPLICES 1'-8").
 6. CONCRETE COVER SHALL BE 2" TYPICAL.
 7. REINFORCING STEEL - ASTM A615, A616 OR A617, GRADE 60. Fy = 60 KSI, Fs = 24 KSI.
 8. ALL REINFORCEMENT SHALL BE EPOXY COATED.

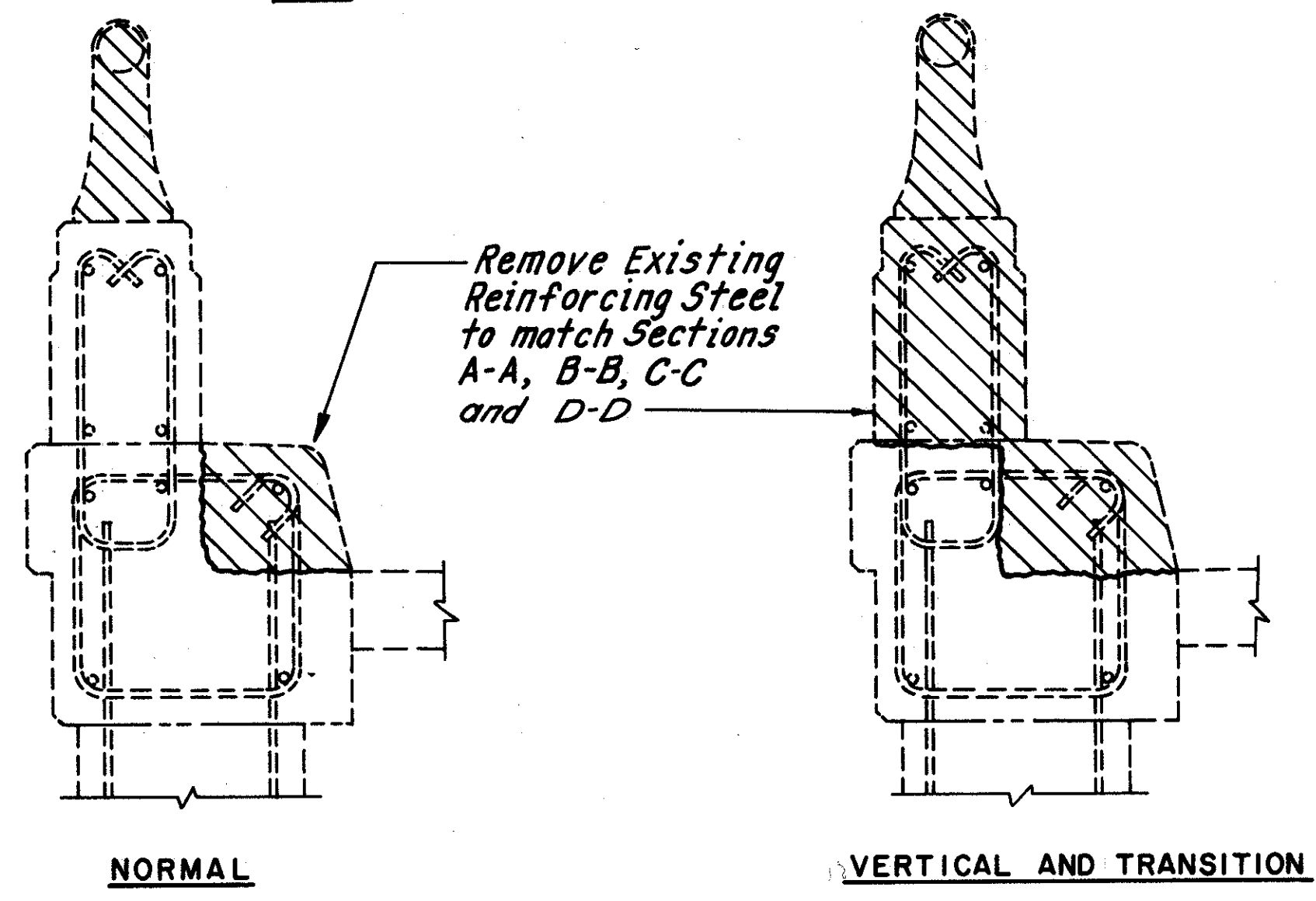


CURB PLATE MODIFICATIONS

HOWARD NEEDLES TAMMEN & BERGENDOFF CONSULTING ENGINEERS CLEVELAND				HNTB	
SAFETY CURB TO SAFETY SHAPE PARAPET DETAILS					
BR. NO. CUY-90-2413 BR. NO. CUY-90-2465 BR. NO. CUY-2-2885 R BR. NO. CUY-90-2956 L BR. NO. CUY-90-2969 L&R BR. NO. CUY-90-2989 L&R BR. NO. LAK-90-0009 L&R					
CUYAHOGA COUNTY & LAKE COUNTY OHIO					
DRAWN C.K.B. DATE 8-4-88	TRACED W.E.B. DATE 8-11-88	CHECKED C.P. DATE 9-1-88	REVIEWED C.A.B. DATE 12-22-88	REVISED	SHEET 16/18

CUYAHOGA COUNTY
CUY - 90-23.95
LAKE COUNTY
LAK - 90-0.00

Indicates removal area.

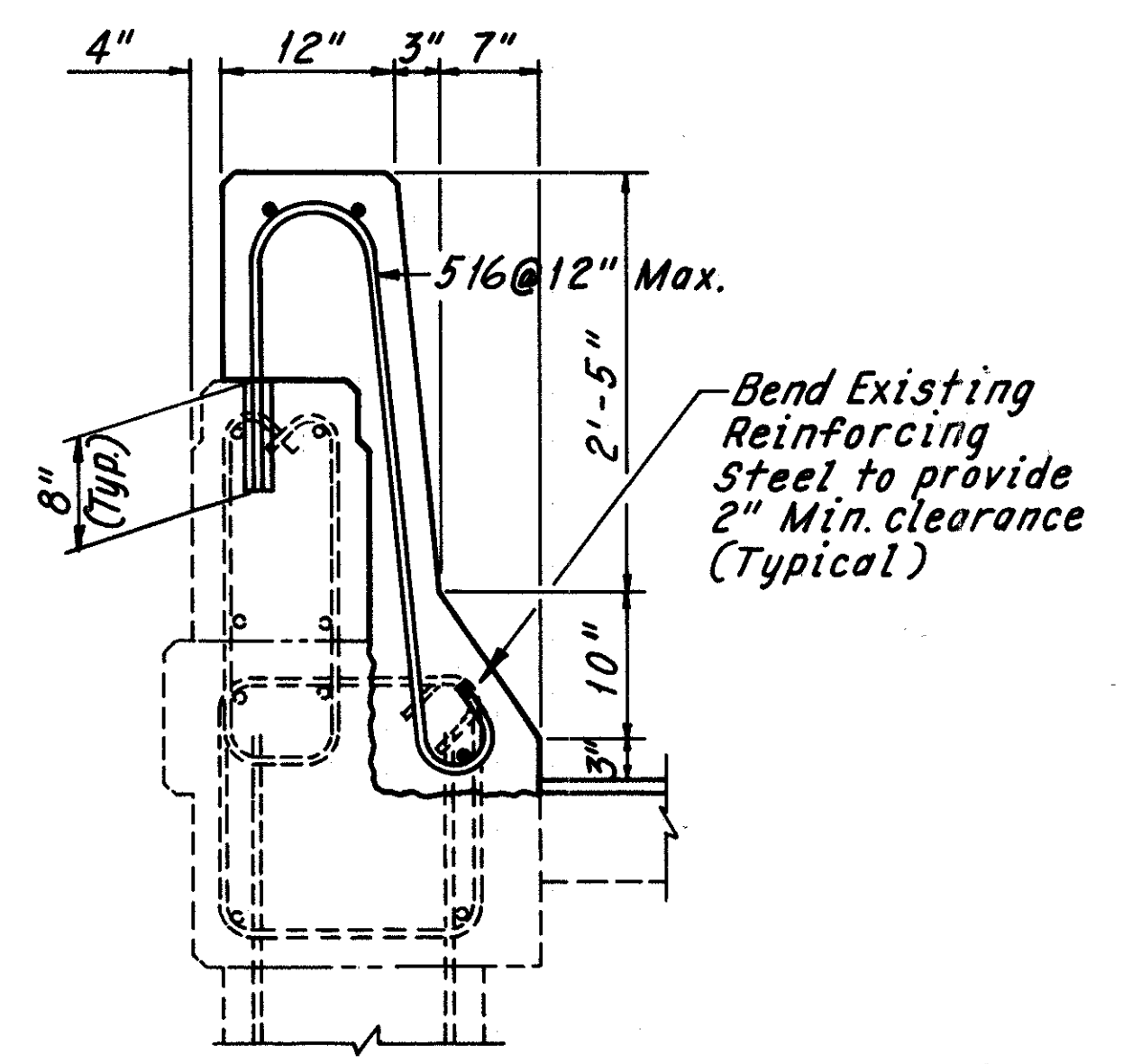


Remove Existing Reinforcing Steel to match Sections A-A, B-B, C-C and D-D

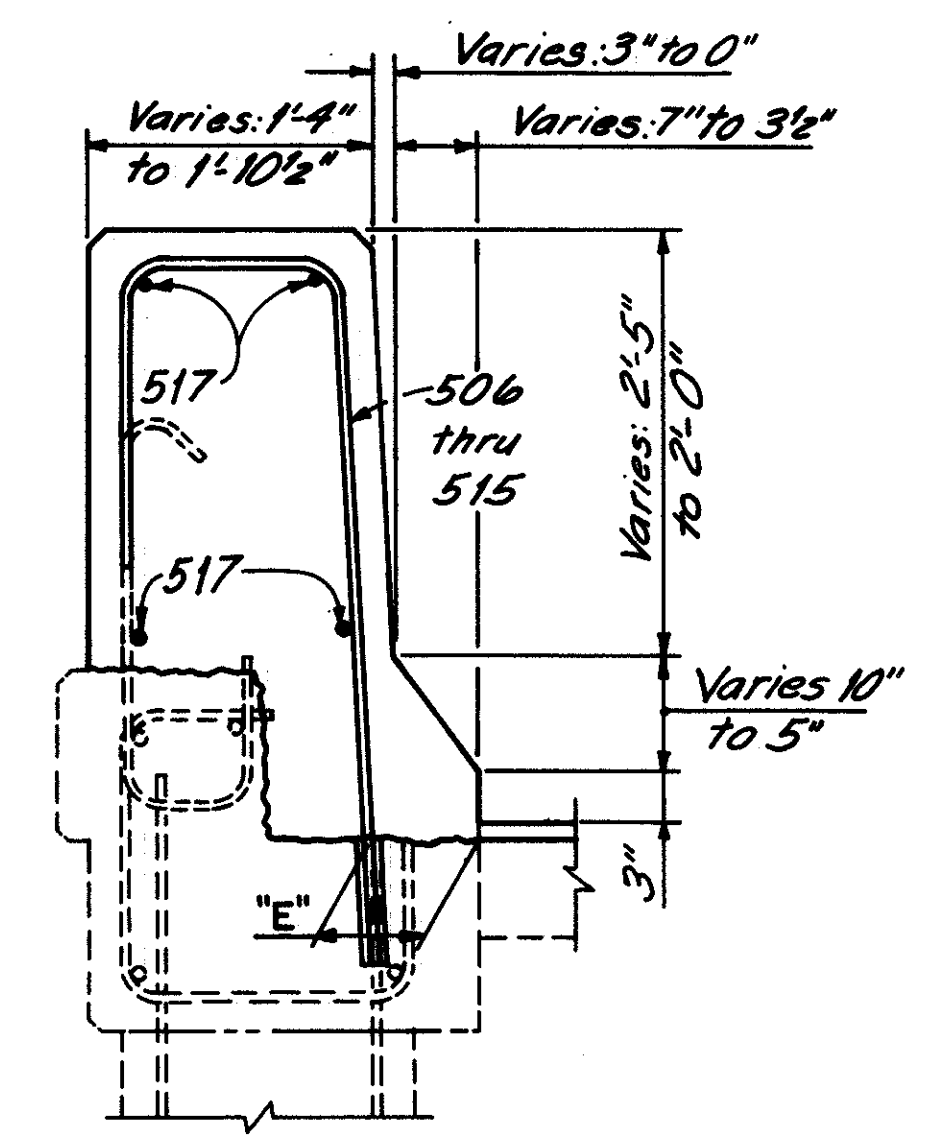
NORMAL

VERTICAL AND TRANSITION

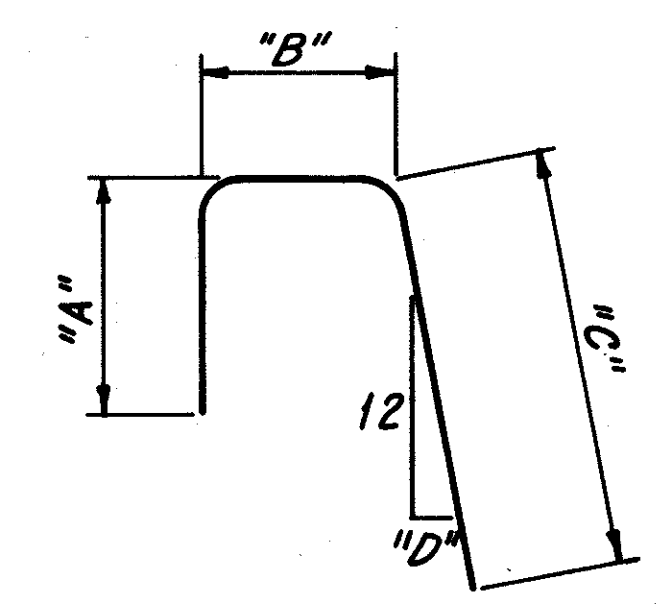
REMOVAL



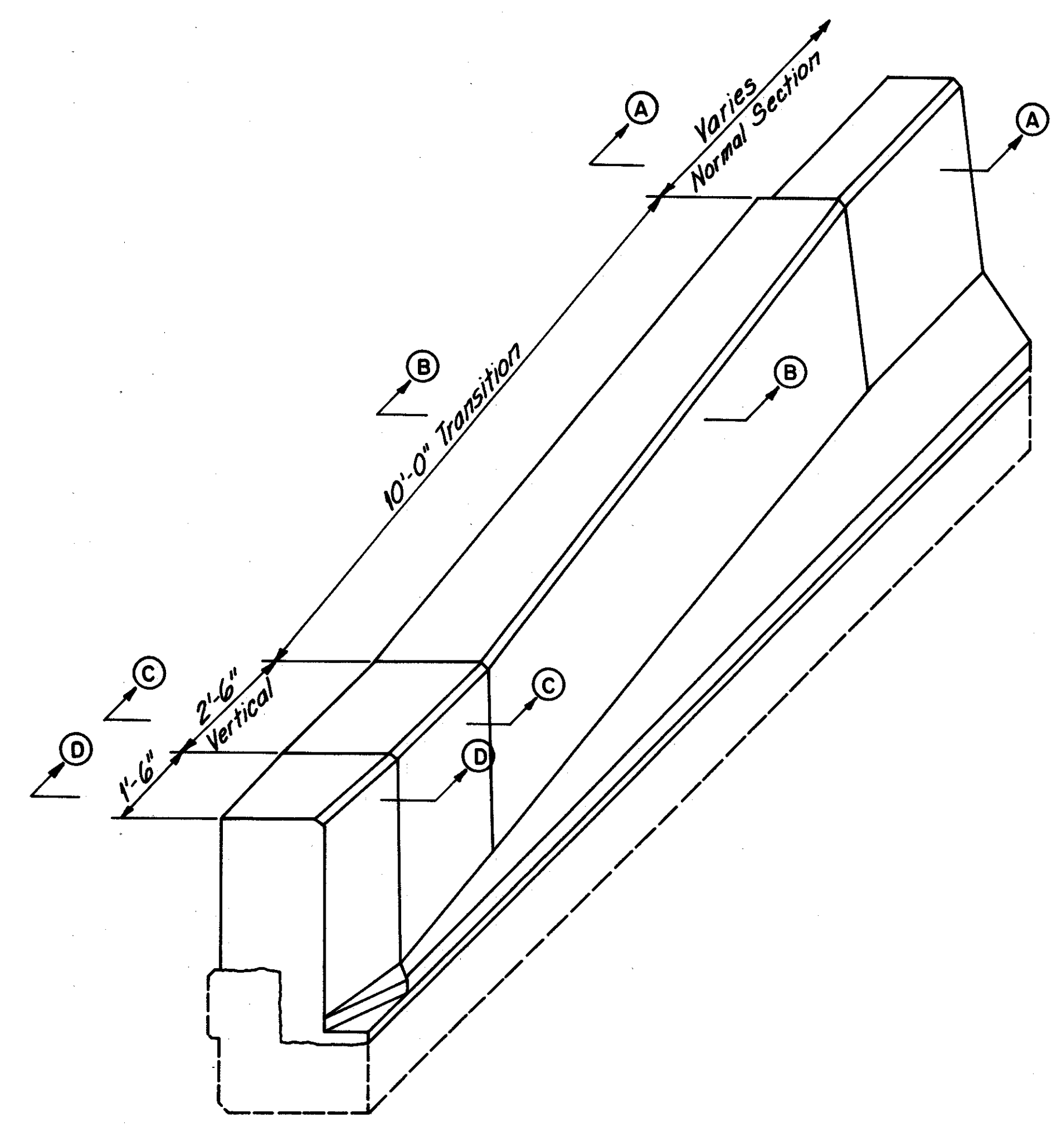
SECTION A-A



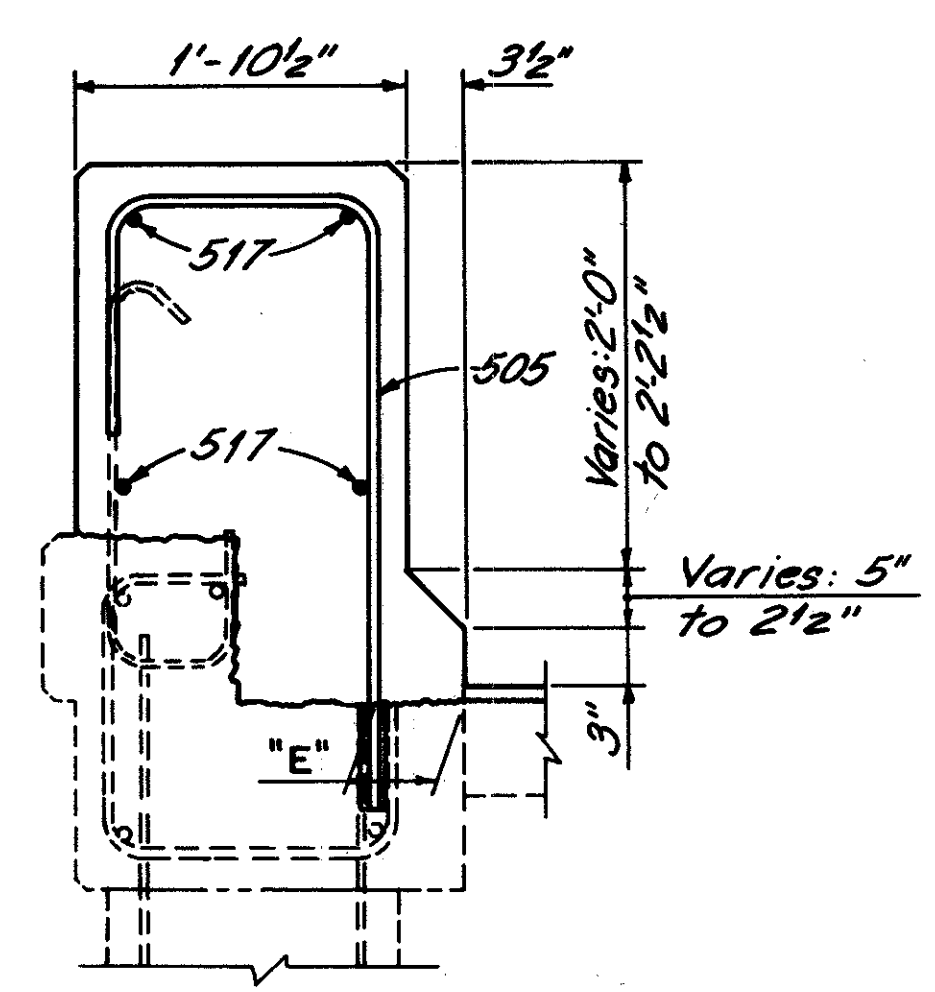
SECTION B-B



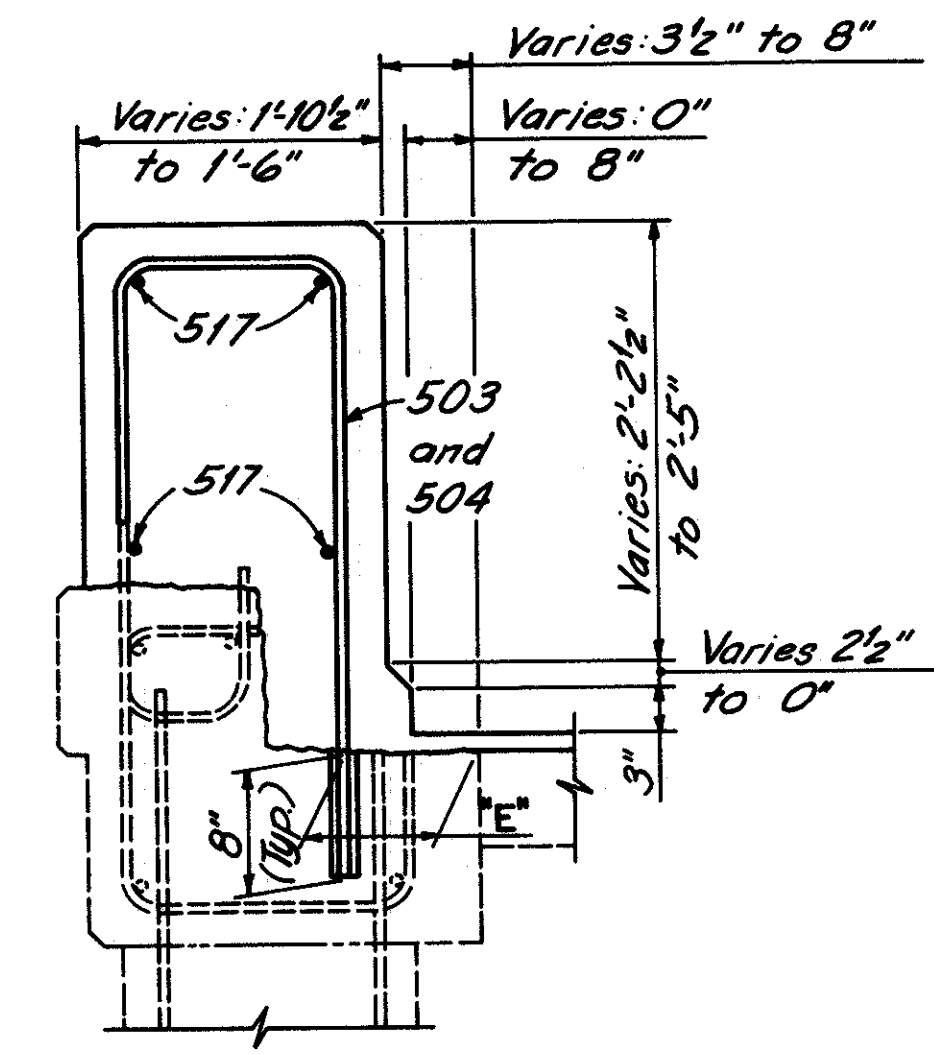
503 THRU 515



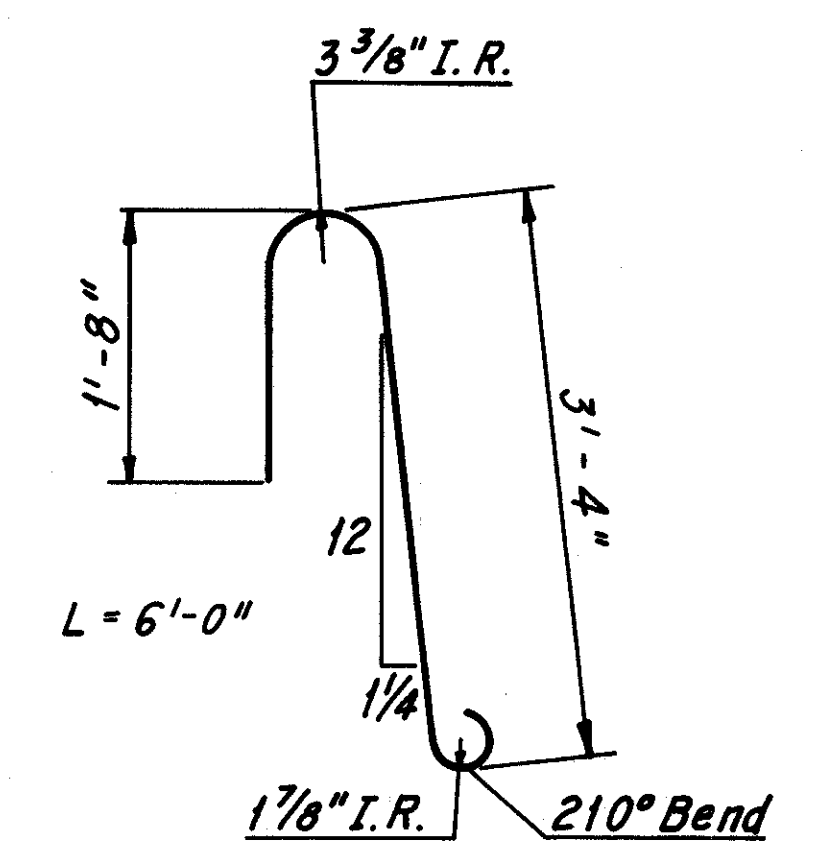
PERSPECTIVE VIEW OF PARAPET TRANSITION



SECTION C-C



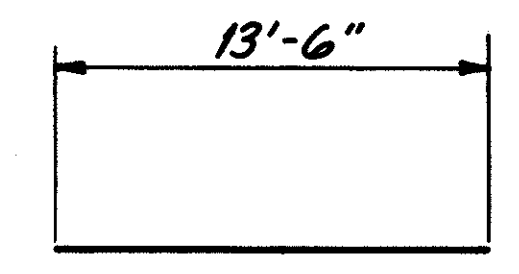
SECTION D-D



516 (No. 5)

BAR PLACEMENT		
DISTANCE FROM END OF WALL	BAR	DIM "E"
3"	503	9-1/2"
1'-3"	504	6-1/2"
2'-3"	505	5-3/4"
3'-3"	505	5-3/4"
4'-3"	506	5-7/8"
5'-3"	507	6-1/8"
6'-3"	508	6-3/8"
7'-3"	509	6-1/2"
8'-3"	510	6-3/4"
9'-3"	511	7"
10'-3"	512	7-1/8"
11'-3"	513	7-3/8"
12'-3"	514	7-1/2"
13'-3"	515	7-3/4"

BAR DATA						
MARK	BAR SIZE	DIM. "A"	DIM. "B"	DIM. "C"	DIM. "D"	LENGTH
503	NO. 5	1'-4"	1'-2-3/4"	3'-3"	0	5'-7"
504	NO. 5	1'-4"	1'-5-3/4"	3'-3"	0	5'-10"
505	NO. 5	1'-4"	1'-6-1/2"	3'-3"	0	5'-11"
506	NO. 5	1'-4-1/4"	1'-6-3/8"	3'-3-1/4"	1/16"	5'-11"
507	NO. 5	1'-5-1/4"	1'-5-3/4"	3'-4-1/4"	3/16"	6'-1"
508	NO. 5	1'-6-1/4"	1'-5-1/8"	3'-5-1/4"	5/16"	6'-2"
509	NO. 5	1'-7-1/4"	1'-4-1/2"	3'-6-1/4"	7/16"	6'-3"
510	NO. 5	1'-8-1/4"	1'-3-7/8"	3'-7-1/4"	9/16"	6'-5"
511	NO. 5	1'-9-1/4"	1'-3-1/4"	3'-8-1/4"	11/16"	6'-6"
512	NO. 5	1'-10-1/4"	1'-2-5/8"	3'-9-1/4"	13/16"	6'-8"
513	NO. 5	1'-11-1/4"	1'-2"	3'-10-1/4"	15/16"	6'-9"
514	NO. 5	2'-0-1/4"	1'-1-1/4"	3'-11-1/4"	1-1/16"	6'-10"
515	NO. 5	2'-1-1/4"	1'-0-5/8"	4'-0-1/4"	1-3/16"	7'-0"



517 (No. 5)

NOTES:
FOR ADDITIONAL WINGWALL TRANSITION DETAILS AND GUARDRAIL ATTACHMENT DETAILS, SEE SHEET 18/18.

FOR ADDITIONAL NOTES, SEE SHEET 16/18.

HOWARD, NEEDLES, TAMMEN & BERGENDOFF CONSULTING ENGINEERS CLEVELAND

HNTB

WINGWALL TRANSITION DETAILS

BR. NO. CUY - 90-2413
BR. NO. CUY - 90-2465
BR. NO. CUY - 2-2885 R
BR. NO. CUY - 90-2956 L
BR. NO. CUY - 90-2969 L&R
BR. NO. CUY - 90-2989 L&R
BR. NO. LAK - 90-0009 L&R

CUYAHOGA COUNTY & LAKE COUNTY OHIO

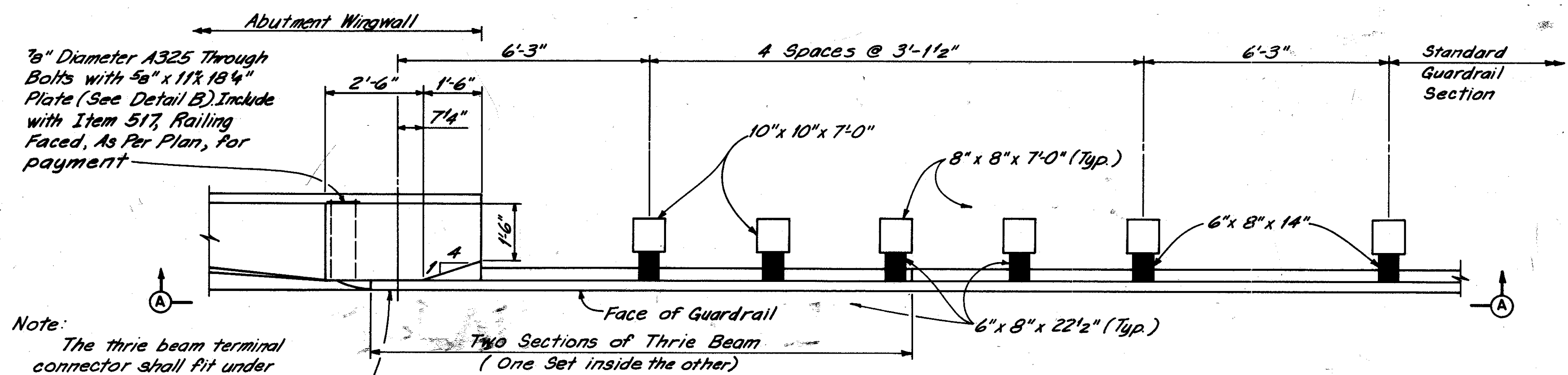
DRAWN C.K.B. DATE: 11-3-91	TRACED P.I.K. DATE: 11-5-91	CHECKED M.J.P. DATE: 11-10-91	REVIEWED C.A.B. DATE: 11-22-91
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SHEET 17/18

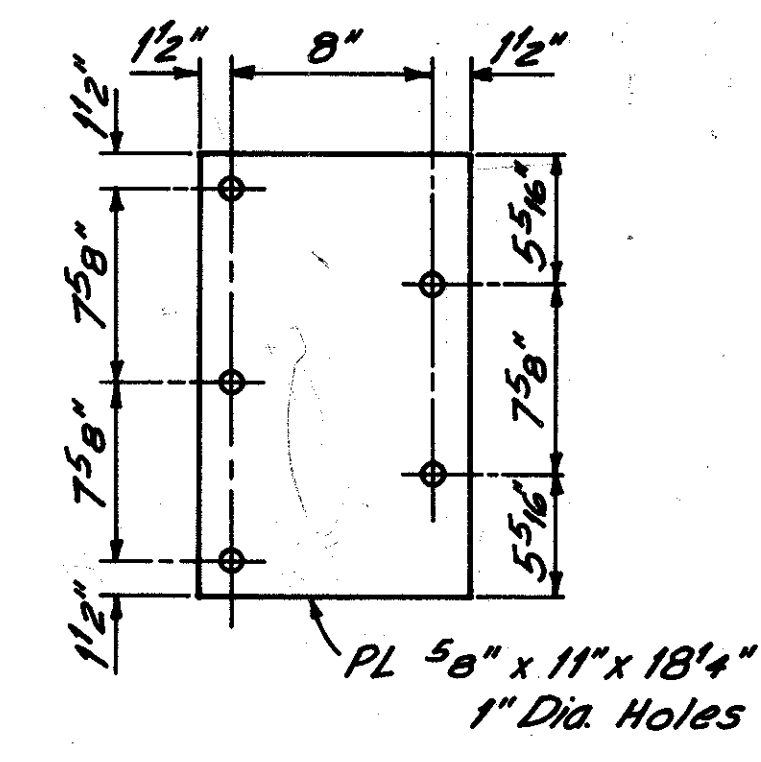
FHWA REGION	STATE	PROJECT	
5	OHIO		

200
200

CUYAHOGA COUNTY
CUY-90-23.95
LAKE COUNTY
LAK-90-0.00

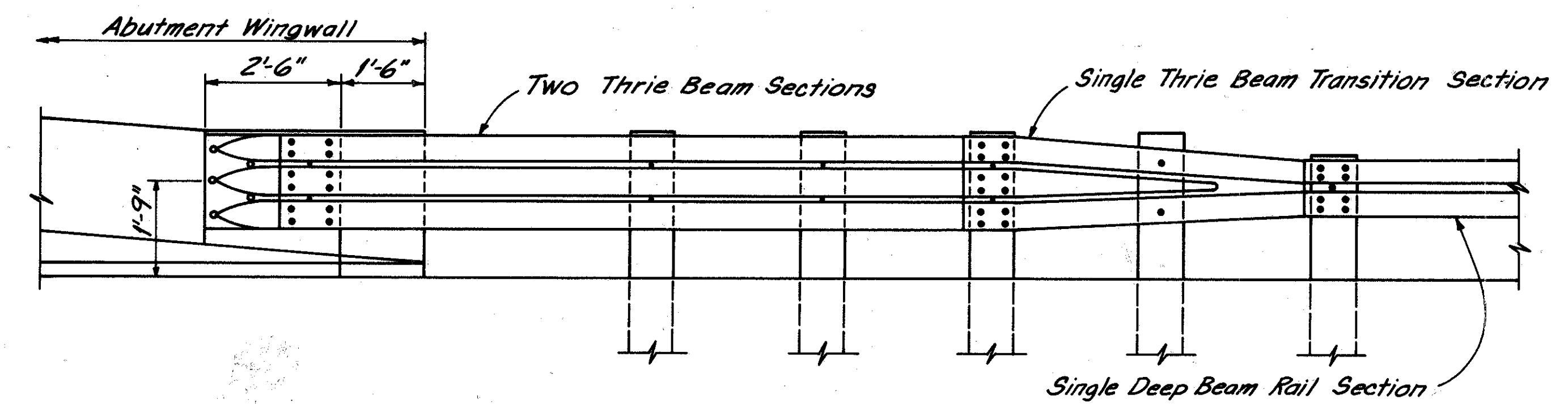


Note:
The thrie beam terminal connector shall fit under the standard guardrail section at the approach end. All laps shall be in the direction of traffic.

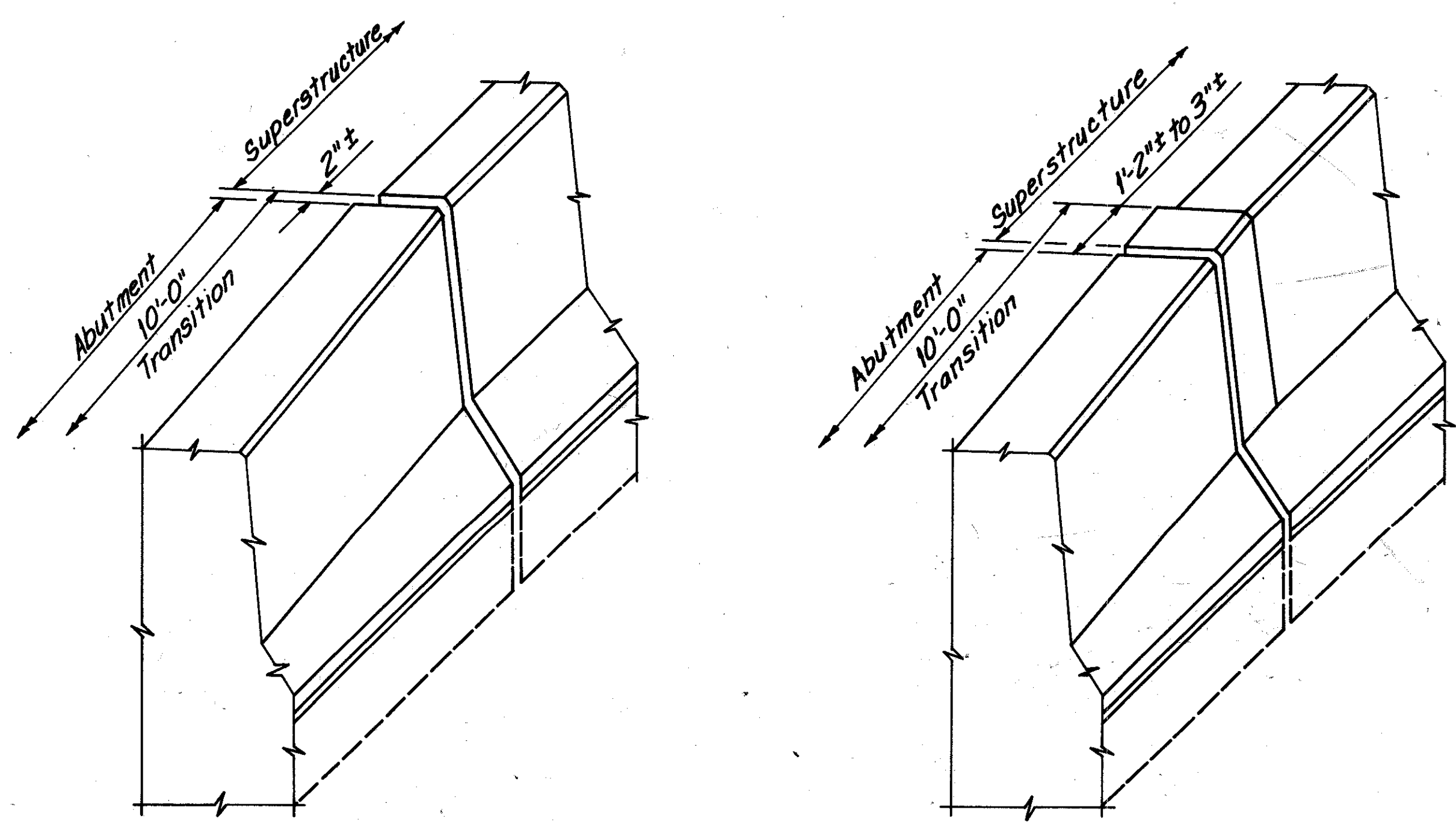


PART PLAN AT ABUTMENT

DETAIL B



ELEVATION A-A



PART PERSPECTIVE VIEW OF PARAPET TRANSITION
(WINGWALLS LESS THAN 14'-0" LONG)

HOWARD, NEEDLES, TAMMEN & BERGENDOFF CONSULTING ENGINEERS CLEVELAND HNTB

GUARDRAIL AND PARAPET TRANSITION DETAILS
BR. NO. CUY-90-2413
BR. NO. CUY-90-2465
BR. NO. CUY-2-2885 R
BR. NO. CUY-90-2956 L
BR. NO. CUY-90-2969 L&R
BR. NO. CUY-90-2989 L&R
BR. NO. LAK-90-0009 L&R

CUYAHOGA COUNTY & LAKE COUNTY OHIO

DRAWN C.K.B. DATE 11-5-89	TRACED P.J.K. DATE 11-7-89	CHECKED M.J.P. DATE 11-13-89	REVIEWED C.A.B. DATE 11-27-89	REVISED
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300 512
Cuy-LAKE-90-23.95